

**PUBLIC SERVICES AND
PROCUREMENT CANADA**

**St-Hyacinthe RDC
(Research and Development Center)**

**3600 Casavant Boulevard West,
St. Hyacinthe, Quebec, J2S 8E3**

**Replacement of HVAC Controls of Buildings
Nos. 001 and 002**

PSPC No.: R.107062.001

**TECHNICAL SPECIFICATION
SR5 - Issued for Tender**

Mechanical/Electrical

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PSPC

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END OF SECTION

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DIVISION 01

General Requirements

Part 1 General**1.1 CONTEXT OF INTERVENTIONS**

- .1 Interventions will take place in an operational context of the facilities. Constraints linked to a level of security and confidentiality in an industrial and scientific research environment must be considered by the Contractor. The Contract Documents shall take this into account.
- .2 The Contractor and his subcontractors shall meet security requirements. The level of personnel security control required is: Reliability Status. The Contractor shall provide planning, in advance, for his interventions carried out during the day, during working hours or in the evening, to the establishment's services since it may be necessary to be accompanied by a member of staff or a escort of the Canadian Corps of Commissionaires.

1.2 WORK COVERED BY CONTRACTUAL DOCUMENTS

- .1 Work covered by this Contract include the required demolition work as well as the replacement of HVAC controls for buildings Nos. 001 and 002, in accordance with the Contract Documents.
- .2 The Contractor shall supply, install, transport, connect, test, and commission the following equipment, materials, and accessories, without being limited to:
 - .1 Control work described in the drawings and specifications;
 - .2 Three-phase 120/208 V and 347/600 V power supply and distribution network;
 - .3 Electrical grounding;
 - .4 Power supply and connection of all mechanical loads;
 - .5 All safety switches and variable speed drives;
 - .6 Fire alarm system devices: Supply and install equipment, conduits, wiring, and perform tests;
 - .7 Supply and installation of all identification labels to identify all system components supplied by the Contractor, and as indicated in the drawings and specifications;
 - .8 Supply and installation of electrical conduits and conductors for installation;
 - .9 All supports and all structural steel elements required to support conduits, cables, devices, and equipment;
 - .10 Commissioning of systems;
 - .11 All specified tests;
 - .12 Any other intervention indicated in the drawings and specifications.
- .3 The Contractor shall work closely with other disciplines to determine the exact characteristics of the systems and provide all appropriate facilities, equipment, and connections to make them operational, all in accordance with laws and regulations.

1.3 COORDINATION WITH OTHER DIVISIONS

- .1 The Contractor shall submit all documents to the public authorities as soon as possible, i.e. a maximum of ten (10) working days after signing his Contract with the Owner and/or the authorities, so as not to delay the delivery date of the project.

1.4 WORK CARRIED OUT BY THIRD PARTIES

- .1 Work in collaboration with other contractors and carry out the instructions of the Departmental Representative.
- .2 Coordinate work with that of other contractors. If the execution or the result of any part of the work covered by this Contract depends on work of another contractor, report, without delay, in writing to the Departmental Representative, any anomaly or any defect likely to affect the good execution of the work.

1.5 WORK EXECUTION ORDER

- .1 Carry out work in such a way that the Departmental Representative can use the premises continuously during the work. The Contractor's areas of intervention shall be clearly indicated in the building during the work.
- .2 A perimeter must be established and accepted by the Departmental Representative around the work area in order to limit access to building personnel.
- .3 Maintain access for firefighting purposes; also provide means of firefighting.
- .4 Submit the work schedule to the Departmental Representative, considering the sequence of work for approval before work begins. Update this calendar and send it to the Departmental Representative once a week. Coordinate and detail the work execution schedule based on site occupancy and building constraints. Stages of the execution schedule must be detailed and listed by block (A, B, C, D, E, F, and Building 2), by systems and by disciplines, by identifying day work and evening/night work. The Contractor shall carefully consider the following elements:
 - .1 The Contractor shall properly plan, in his work execution schedule, demolition of the entire control installation and existing equipment (except for the exceptions indicated in the drawings and specifications), while respecting the project constraints mentioned in Contractual Documents. Among other things, the Contractor must respect the downtime of the systems allowed according to the needs of the building and the occupancy of the premises. In any case, the systems should not be down for more than an evening or a weekend. Therefore, the Contractor shall perform most of the new control installations in parallel with the existing installations according to the instructions in the drawings and specifications;
 - .2 Power outages shall be well planned in the implementation schedule. Particular attention shall be paid to equipment supplied by motor control centers (MCCs) (refer to the electrical drawings);
 - .3 Testing and commissioning activities should also be considered in the work schedule. Especially for systems requiring parallel installation, carefully plan the required tests before the transfer and demolition of the old control system.

1.6 USE OF PREMISES BY THE CONTRACTOR

- .1 The use of the premises is restricted to the areas necessary for the execution of the work to allow the partial occupation of the existing buildings on the site by the Departmental Representative, including deliveries and waste disposal.
- .2 Coordinate the use of the premises according to the directives of the Departmental Representative.
- .3 Find additional work or storage areas required to perform work under this Contract and pay the cost.
- .4 The Contractor must provide and install, at his own expense, a construction trailer and chemical toilets for all of his employees. The Contractor must coordinate the location of these equipment and have it approved by the Departmental Representative. In addition, the Contractor must provide, at his own expense, all hygiene devices and products to ensure hygiene measures against COVID-19 in accordance with the instructions of the Quebec Public Health. The use of the various rooms of the building (toilets, cafeteria, etc.), by the Contractor and his subcontractors, is strictly prohibited, unless written permission by the Departmental Representative.
- .5 Remove or modify existing work to avoid damaging the parts that shall remain in place.
- .6 Repair or replace, as directed by the Departmental Representative, for the purposes of connection to the existing structure or to an adjacent structure, or for the purposes of harmonization with them, the parts of the existing structure which have been modified during construction work.
- .7 Once the work is completed, the existing work shall be in a state equivalent or superior to the state it presented before the start of the work.
- .8 The Contractor will store materials in outdoor containers. The spaces required on the site for the containers and for the lifting equipment should be coordinated with the Departmental Representative. The Contractor will transport equipment, tools, and materials to the work areas. Before leaving the premises, the night shift will be responsible for putting away all equipment, materials, and tools used. They will also have to clean the places where work has been carried out and will have the task of securing the places for the return of the occupants at the beginning of the day in complete safety.

1.7 OCCUPANCY OF THE PREMISES BY THE DEPARTMENTAL REPRESENTATIVE

- .1 The Departmental Representative will occupy the premises for the duration of the construction work and will continue his normal activities during this period. Except for mechanical rooms, work shall therefore be carried out evening and night in accordance with the instructions in the Contract Documents.
- .2 Collaborate with the Departmental Representative in establishing the work schedule, to reduce conflicts and facilitate the latter's use of the premises.

1.8 MODIFICATIONS, ADDITIONS, OR REPAIRS TO THE EXISTING BUILDING

- .1 Execute work with the least possible interference with the operation of the building and the normal use of the premises. Make the necessary arrangements with the Departmental Representative to facilitate the execution of the work.

1.9 EXISTING ELECTRICAL SERVICES

- .1 Before interrupting electricity services, inform the Departmental Representative at least 48 hours before the scheduled time of interruption, and obtain the necessary authorizations.
- .2 Give the Departmental Representative a prior notice 48 hours before the scheduled time of interruption of the corresponding electrical or mechanical services. Make sure that the duration of the interruptions is as short as possible. Carry out the work at the times fixed by the competent local authorities, interfering as little as possible with the occupants' activities.
- .3 Submit to the Departmental Representative, for approval, a schedule relating to the shutdown or closure of active facilities or works, including the interruption of communications services or the power supply. Respect the approved schedule and inform the parties affected by these inconveniences.
- .4 Provide temporary utility services to maintain critical building and occupant systems.

1.10 REQUIRED DOCUMENTS

- .1 Keep one (1) copy of each of the following documents on site:
 - .1 Contract drawings;
 - .2 Quotation;
 - .3 Addendum;
 - .4 Shop drawings reviewed;
 - .5 List of unrevised shop drawings;
 - .6 Change orders;
 - .7 Other modifications made to the Contract;
 - .8 Field test reports;
 - .9 Copy of approved work schedule;
 - .10 Health and safety plan and other documents relating to safety;
 - .11 Other documents indicated.

Part 2 Products**2.1 NOT APPLICABLE**

- .1 Not applicable.

Part 3 Part 3 Execution

3.1 NOT APPLICABLE

.1 Not applicable.

END OF SECTION

Part 1 General**1.1 ACCESS AND EGRESS**

- .1 Design, construct, and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial, and other regulations.

1.2 ALIMENTARY PLANT

- .1 Work takes place in a food factory, with laboratories, where pathogens are present and where special sanitary conditions shall be respected. Appendix 1 refers to the affected areas.
- .2 Work in the pilot factory section requires the wearing of safety equipment such as coat, hair net, or other.
- .3 All employees will be required to attend a mini training to ensure safe work in the various building sectors.

1.3 COVID-19

- 1. Work are being done in the context of a Covid-19 pandemic. Special measures shall be taken to ensure safety for workers and staff. See Appendix 2.

1.4 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .5 Use conveyors existing in building for moving workers and material.
 - .1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
 - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.
- .6 Closures: Protect work temporarily until permanent enclosures are completed.

1.5 ALTERATIONS, ADDITIONS, OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to occupants, public building operations, and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.6 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48-hour notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for pedestrian personnel and vehicular traffic.

1.7 SPECIAL REQUIREMENTS

- .1 In general, work shall be performed Monday to Friday, between 7 p.m. and 7 a.m., or Saturday, Sunday, and public holidays. The hours may be different for some areas. See the table at Appendix 1.
- .2 Work in the mechanical rooms is permitted during the daytime if it does not disrupt normal operations (noise, system shutdown).
- .3 Submit schedule in accordance with Section 01 32 16.16 - Construction Progress Schedule - Critical Path Method (CPM).
- .4 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic, and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.

1.8 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security Clearances:
 - .1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for everyone who will require to enter premises.
 - .2 Obtain requisite clearance, as instructed, for everyone required to enter premises.
 - .3 Personnel will be checked daily at start of work shift and provided with pass which shall always be worn. Pass shall be returned at end of work shift and personnel checked out.
- .3 Security Escort:
 - .1 Personnel employed on this project shall be escorted when executing work in non-public areas during normal working hours. Personnel shall be escorted in all areas after normal working hours.
 - .2 Submit an escort request to Departmental Representative at least four (4) days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.

- .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least four (4) hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.
- .4 Calculation of costs will be based on average hourly rate of security officer for minimum of eight (8) hours per day for late service request and of four (4) hours for late cancellations.

1.9 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 Refer to laws, by laws, ordinances, rules, regulations, and orders of Authority Having Jurisdictions, and other legally enforceable requirements applicable to Work at that area; or become in force during Work performance.
- .2 Comply with specified Standards and Regulations to ensure safe operations at site containing hazardous or toxic materials.
 - .1 Canadian Environmental Protection Act, 1999 (CEPA 1999).
 - .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
 - .3 An Act Respecting Occupational Health and Safety, R.S.Q., c.S-2.1 (current edition) - Updated 2002.

1.2 DEFINITIONS

- .1 Designated Substances: Are those substances designated as hazardous by the Ministry of Labour under the Occupational Health and Safety Act. The following substances have been identified as designated substances:
 - .1 Acrylonitrile;
 - .2 Arsenic;
 - .3 Asbestos;
 - .4 Benzene;
 - .5 Coke Oven Emissions;
 - .6 Ethylene Oxide;
 - .7 Isocyanates;
 - .8 Lead;
 - .9 Mercury;
 - .10 Silica;
 - .11 Vinyl Chloride;
 - .12 Polychlorinated Biphenyls (PCBs);
 - .13 Halocarbons;
 - .14 Mould and Water Damage;
 - .15 Other Hazardous Materials; such as formaldehyde, cadmium, styrene, nickel and coal tar products.
- .2 Hazardous Materials: Dangerous substances, dangerous goods, hazardous commodities, and hazardous products, including, but not limited to: Corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

- .3 Polychlorinated Biphenyls (PCBs): Includes chlorobiphenyls referred to in Column I of item 1 of the List of Toxic Substances in Schedule I of Canadian Environmental Protection Act (CEPA).
- .4 Toxic: Substance is considered toxic if it is listed on Toxic Substances List found in Schedule 1 of CEPA.
- .5 List of Toxic Substances: Found in Schedule 1 of CEPA, lists substances that have been assessed as toxic. Federal Government can make regulations with respect to a substance specified on List of Toxic Substances. Column II of this list identifies type of regulation applicable to each substance.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Before start of Work arrange for Site visit with Departmental Representative to examine existing Site conditions.
- .2 Departmental Representative will ensure that Contractor has received a copy of the Site specific DSR date before binding on supplying Work for this project.

1.4 RESPONSIBILITY

- .1 Contractor shall be responsible for reading and evaluating the information provided in DSR date for the Site.
- .2 Contractor shall incorporate any recommendations in the Site DSR date as they pertain to the health and safety of workers on Site, in accordance with Section 01 35 29.06 - Health and Safety Requirements, and in compliance with Authority Having Jurisdictions for that area.
- .3 Contractor shall ask Departmental Representative should they have any questions related to the Site specific DSR date.
- .4 Contractor shall exercise every reasonable precaution for the protection of each worker on Site.
- .5 Contractor shall furnish the Site specific DSR date to all subcontractors who will be performing work on Site.

1.5 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Site-specific Health and Safety Plan, within seven (7) days after date of Notice to proceed and before mobilization to Site. List relevant hazardous or contaminated materials or substances required by the Authority Having Jurisdiction which need to be included in the Contractor's Health and Safety Plan.

Part 2 Products**2.1 NOT USED**

.1 Not Used.

Part 3 Execution**3.1 NOT USED**

.1 Not Used.

END OF SECTION

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Public Services and Procurement Canada (PSPC) will be responsible to organize the project meetings during the whole project.
- .2 The meetings will be announced four (4) days before the planned date.
- .3 Provide physical space and make arrangements for meetings.
- .4 PSPC will record the meeting minutes. Will be included all significant proceedings and decisions. Will be indicated the actions by parties.
- .5 Representative of Contractor, Subcontractors, and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within fifteen (15) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors, and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: In accordance with Section 01 32 16.16 - Construction Progress Schedule - Critical Path Method (CPM).
 - .3 Schedule of submission of shop drawings, samples, and colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
 - .5 Owner provided products.
 - .6 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .7 Maintenance manuals, in accordance with Section 01 78 00 - Closeout Submittals.
 - .8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
 - .9 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .10 Appointment of inspection and testing agencies or firms.

- .11 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work and two (2) weeks prior to project completion, schedule progress meetings monthly.
- .2 Contractor, major Subcontractors involved in Work, Owner, and Departmental Representative are to be in attendance.
- .3 Notify parties minimum five (5) days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: Expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Miscellaneous.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 Project Management Institute (PMI Standards).
 - .1 A Guide to the Project Management Body of Knowledge (PMBOK Guide) - 6th Edition.
 - .2 Practice Standard for Scheduling - 3rd Edition - 2019.

1.2 DEFINITIONS

- .1 Activity: Distinct, scheduled portion of work performed during course of a project.
- .2 Activity Duration: Time in calendar units between start and finish of a scheduled activity. See also Duration.
- .3 Assumption: Factor in planning process that is considered true, real, or certain without proof or demonstration.
- .4 Bar Chart (Gantt Chart): Graphic display of schedule-related information.
 - .1 In typical bar chart, schedule activities or work breakdown structure components are listed down left side of chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.
- .5 Baseline: Approved version of a work product that can be changed only through formal change control procedures and is used as a basis for comparison.
- .6 Budget: Approved estimate for a project or work breakdown structure component or schedule activity.
- .7 Cash Flow: Projection of progress payment requests based on cash loaded construction schedule.
- .8 Change Control: Process whereby modifications to documents, deliverables, or baselines associated with a project are identified, documented, approved, or rejected.
- .9 Completion Milestones: They are firstly Substantial Completion and secondly Final Certificate.
- .10 Constraint: Scheduled limiting factor that effects execution of a project, program, portfolio, or process.
- .11 Contract: Mutually binding agreement that obligates a seller to provide a specified product or service or result and obligates a buyer to pay for it.
- .12 Control: Comparing actual performance with planned performance, analyzing variance, assessing trends, to effect process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.
- .13 Corrective Action: Intentional activity that realigns performance of project work with Project Management Plan.

- .14 Critical Path: Sequence of activities that represents longest path through a project, which determines shortest possible duration.
- .15 Critical Path Activity: Activity on critical path in a project schedule.
- .16 Critical Path Method (CPM): Method used to estimate minimum project duration and determine amount of scheduling flexibility on logical network of paths within schedule model.
- .17 Data Date: Point in time when the status of the project is recorded.
- .18 Decomposition: Technique used for dividing and subdividing project scope and project deliverables into smaller, more manageable parts.
- .19 Deliverable: Unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.
- .20 Duration: Total number of work periods (not including holidays or other non-working periods) required to complete a schedule activity or work breakdown structure component.
 - .1 Usually expressed as workdays or work weeks.
- .21 Early Finish Date (EF): In Critical Path Method, earliest possible point in time when uncompleted portions of schedule activity can finish based on schedule network logic, data date, and schedule constraints.
 - .1 Early finish dates can change as Project progresses and changes are made to Project plan.
- .22 Early Start Date (ES): In Critical Path Method, earliest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, data date, and schedule constraints.
 - .1 Early start dates can change as Project progresses and changes are made to Project Plan.
- .23 Execute: Directing, managing, performing, and accomplishing project work; providing deliverables, and providing work performance information.
- .24 Finish Date: Point in time associated with a schedule activity's completion.
 - .1 Usually qualified by one of following: actual, planned, estimated, scheduled, early, late, baseline, target, or current.
- .25 Float: (Also known as slack) Amount of time a schedule activity can be delayed without delaying early start date of a successor or violating a schedule constraint.
 - .1 This resource is available to both PSPC and Contractor.
- .26 Forecast: Estimate or prediction of conditions and events in project future based on information and knowledge available at time of forecast.
 - .1 Information is based on projects past performance and expected future performance, and includes information that could impact project in future, a such as estimate at completion and estimate to complete.

- .27 Gantt Chart: See Bar Chart.
- .28 Impact Analysis: Schedule analysis technique that adds a modeled delay to an accepted construction schedule to determined possible outcome of that delay on project completion.
- .29 Imposed Date: A fixed date imposed on a schedule activity or schedule milestone, usually in form of a "start no earlier than" and "finish no later than" date.
- .30 Lag: Amount of time whereby a successor activity is required to be delayed with respect to a predecessor activity.
- .31 Late Finish Date (LF): In critical path method, latest possible point in time when uncompleted portions of a schedule activity can finish based on schedule network logic, project completion date, and schedule constraints.
- .32 Late Start Date (LS): In critical path method, latest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, project completion date, and schedule constraints.
- .33 Lead: Amount of time whereby a successor activity can be advanced with respect to a predecessor activity.
- .34 Logic Diagram: See Project network diagram.
- .35 Logical Relationship: Dependency between two activities or between an activity and a milestone.
- .36 Master Schedule: Summary-level schedule that identifies major deliverable; work breakdowns structure components, and key schedule milestones.
- .37 Milestone: Significant point or event in a project, program, or portfolio.
- .38 Monitor: Collect project performance data with respect to a plan, procedure performance measures, and report and disseminate performance.
- .39 Network: See Project Schedule Network Diagram.
- .40 Non-Critical Activities: Activities which when delayed, do not affect specified Contract duration.
- .41 Project Control System: Fully computerized system utilizing commercially available software packages.
- .42 Project Management: Application of knowledge, skills, tools, and techniques, to project activities to meet project requirements.
- .43 Project Management Plan: Approved document that describes how project will be executed, monitored, and controlled.
 - .1 Primary uses of Project management plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines.
 - .2 Project management plan may be summary or detailed.
- .44 Project Management Planning: Development and maintenance of Project Management Plan.

- .45 Project Management Planning, Monitoring, and Control System: Overall system operated to enable monitoring of Project Work in relation to established milestones.
- .46 Project Schedule: Planned dates for performing activities and planned dates for meeting milestones.
- .47 Project Schedule Network Diagram: Graphical representation of logical relationships among project schedule activities.
 - .1 Always drawn from left to right to reflect Project chronology.
- .48 Project Scope: Work performed to deliver a product, service, or result with specified features and functions.
- .49 Quantified days duration: Working days based on 5-day work week, discounting statutory holidays.
- .50 Risk: Uncertain event or condition that, if it occurs, has positive or negative effect on one or more project objectives.
- .51 Schedule: See Project Schedule.
- .52 Schedule Data: Collection of information for describing and controlling schedule.
- .53 Scope: See Project Scope.
- .54 Start Date: Point in time associated with activity's start, usually qualified by one of following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.
- .55 Work Breakdown Structure (WBS): Hierarchical decomposition of total scope of work to be carried out by project team to accomplish project objectives and create the required deliverables.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Project Meeting:
 - .1 Meet with Departmental Representative within 14 working days of Award of Contract date, to establish Work requirements and approach to project construction operations.
 - .2 Participate in regular project progress meetings with Departmental Representative specifically intended to discuss update of detailed schedule and Contract changes.
- .2 Scheduling:
 - .1 Ensure that planning process is iterative and results in generally top-down processing with more detail being developed as planning progresses, and decisions concerning options and alternatives are made.
 - .2 Ensure project schedule efficiencies through monitoring of project in detail to ensure integrity of Critical Path, by comparing actual completions of individual activities with their scheduled completions, and review progress of activities that has started but are not yet completed.
 - .3 Monitor sufficiently often so that causes of delays can immediately be identified and mitigated.

- .3 Project Monitoring and Reporting:
 - .1 Keep team aware of changes to schedule, and potential consequences as project progresses.
 - .2 Use narrative reports to provide advice on seriousness of challenges and measures to overcome them.
 - .3 Begin narrative reporting with statement on general status of project followed by summarization of delays, potential problems, corrective measures, and project status criticality.
- .4 Critical Path Method (CPM) Requirements:
 - .1 Ensure Master Plan and Detail Schedule are practical and remain within specified contract duration.
 - .2 Revise Master Schedule and Detail Schedule deemed impractical by Departmental Representative and resubmit for approval.
 - .3 Change to Contract Duration:
 - .1 Acceptance of Master Schedule and Detail Schedule showing scheduled Contract duration shorter than specified Contract duration does not constitute change to Contract.
 - .2 Duration of Contract may only be changed through bilateral Agreement.
 - .4 Consider Master Schedule and Detail Schedule deemed practical by Departmental Representative, showing Work completed in less than specified Contract duration, to have float.
 - .5 First Milestone on Master Schedule and Detail Schedule will identify start Milestone with an Early Start, "ES", constraint date equal to Award of Contract date.
 - .6 Calculate dates for completion of milestones from Plan and Schedule using specified time periods for Contract.
 - .7 Substantial Completion constraint equal to calculated date.
 - .8 Calculations on updates such that if early finish of Interim Certificate falls later than specified Contract duration then float calculation to reflect negative float.
 - .9 Delays to non-critical activities with float may not be basis for time extension.
 - .10 Do not use float suppression techniques such as imposed dates other than required by Contract software constraints, preferential sequencing, special lead/lag logic restraints, extended activity times.
 - .11 Allow for adverse weather conditions normally anticipated and show in Master Plan and Detail Schedule.
 - .1 Specified Contract duration has been predicated assuming normal amount of adverse weather conditions.
 - .12 Provide necessary crews and manpower to meet schedule requirements for performing Work within specified Contract duration.
 - .1 Simultaneous use of multiple crews on multiple fronts on multiple critical paths may be required.

- .13 Arrange participation on and off site of subcontractors and suppliers, as required by Departmental Representative, for purpose of network planning, scheduling, updating and progress monitoring.
 - .1 Approvals by Departmental Representative of original networks and revisions do not relieve Contractor from duties and responsibilities required by Contract.
- .14 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this Contract.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative Project Control System for planning, scheduling, monitoring and reporting of project progress.
- .3 Submit Project Control System to Departmental Representative for approval.
 - .1 Failure to comply with each required submission, may result in progress payment being withheld in accordance with Federal Government's GC5 Terms of Payment.
- .4 Include costs for execution, preparation, and reproduction of schedule submittals in bid documents.
- .5 Submit letter ensuring that schedule has been prepared in co-ordination with major sub-contractors.
- .6 Refer to article "PROGRESS MONITORING AND REPORTING" of this specification Section for frequency of Project control system submittals.
- .7 Submit impact analysis of schedule for changes that result in extension of contract duration.
 - .1 Include draft schedule update and report as outlined in article "PROGRESS MONITORING AND REPORTING".
- .8 Submit Project planning, monitoring and control system data as required by Departmental Representative in following form:
 - .1 USB Drive files in original scheduling software containing schedule and cash flow information, labelled with data date, specific update, and person responsible for update.
 - .2 Master Schedule Bar Chart.
 - .3 Construction Detail Schedule Bar Chart.
 - .4 Listing of project activities including milestones and logical connectors, networks (sub-networks) from Project start to end. Sort activities by activity identification number and accompany with descriptions. List early and late start and finish dates together with durations, codes, and float.
 - .5 Criticality report listing activities and milestones with up to five (5) days total float used as first sort for ready identification of near critical paths through entire

project. Give early and late starts and finishes dates, together with durations, codes, and float for critical activities.

- .6 Progress report in early start sequence, listing for each trade, activities within two (2) months from monthly update date. List activity identification number, description and duration. Provide columns for entry of actual start and finish dates, duration remaining and remarks concerning action required.

1.5 QUALITY ASSURANCE

- .1 Use experienced personnel, fully qualified in planning and scheduling to provide services from start of construction to Final Certificate, including Commissioning.

1.6 WORK BREAKDOWN STRUCTURE (WBS)

- .1 Prepare construction Work Breakdown Structure (WBS) within 10 working days of Award of Contract date.
 - .1 Develop WBS through at least five (5) levels: Project, stage, element, sub-element, and work package.

1.7 MASTER SCHEDULE

- .1 Structure and base CPM construction networks system on WBS coding to ensure consistency throughout Project.
- .2 Prepare comprehensive construction Master Schedule (CPM logic diagram) and dependent Cash Flow Projection within ten working days of finalizing Agreement to confirm validity or alternates of identified milestones.
 - .1 Master Schedule will be used as baseline.
 - .1 Revise baseline as conditions dictate and as required by Departmental Representative.
 - .2 Departmental Representative as Project progresses will review and return revised baseline.
- .3 Reconcile revisions to Master Schedule and Cash Flow Projections with previous baseline to provide continuous audit trail.
- .4 Initial and subsequent Master Schedule will include:
 - .1 USB Drive containing schedule and cash flow information, clearly labelled with data date, specific update, and person responsible for update.
 - .2 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status, and budget amounts.
 - .3 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status, and durations.
 - .4 Actual/projected monthly cash flow: Expressed monthly and shown in both graphical and numerical form.

1.8 DETAIL SCHEDULE

- .1 Provide detailed project schedule (CPM logic diagram) showing activity sequencing, interdependencies, and duration estimates. Include listed activities as follows:
 - .1 Shop drawings.
 - .2 Samples.
 - .3 Approvals.
 - .4 Procurement.
 - .5 Construction.
 - .6 Installation.
 - .7 Testing.
 - .8 Commissioning and acceptance.
- .2 Detail CPM schedule to cover the complete work execution period beginning from Award of Contract date.
 - .1 Show remaining activities for CPM construction network system up to Final Certificate and develop complete detail as project progresses.
 - .2 Detail activities completely and comprehensively throughout duration of project.
- .3 Relate Detail Schedule activities to basic activities and milestones developed and approved in Master Schedule.
- .4 Clearly show sequence and interdependence of construction activities and indicate:
 - .1 Start and completion of all items of Work, their major components, and interim milestone completion dates.
 - .2 Activities for procurement, delivery, installation, and completion of each major piece of equipment, materials, and other supplies, including:
 - .1 Time for submittals, resubmittals, and review.
 - .2 Time for fabrication and delivery of manufactured products for Work.
 - .3 Interdependence of procurement and construction activities.
 - .3 Include sufficient detail to assure adequate planning and execution of Work. Activities generally range in duration from 3 to 15 workdays each.
- .5 Provide level of detail for project activities such that sequence and interdependency of Contract tasks are demonstrated and allow co-ordination and control of project activities. Show continuous flow from left to right.
- .6 Ensure activities with no float are calculated and clearly indicated on logical CPM construction network system as being, whenever possible, continuous series of activities throughout length of Project to form "Critical Path". Increased number of critical activities is seen as indication of increased risk.
- .7 Insert Change Orders in appropriate and logical location of Detail Schedule. After analysis, clearly state and report to Departmental Representative for review effects created by insertion of new Change Order.

- .8 Consider cooling (May to September) and heating (October to April) seasons in scheduling. The heating system cannot be shut down in winter and cooling systems cannot be shut down in summer.

1.9 REVIEW OF CONSTRUCTION DETAIL SCHEDULE

- .1 Allow minimum five (5) workdays for review by Departmental Representative of proposed construction Detail Schedule, unless otherwise specified.
- .2 Upon receipt of reviewed Detail Schedule make necessary revisions and resubmit to Departmental Representative for review within maximum five (5) workdays, unless otherwise specified.
- .3 Promptly provide additional information to validate practicability of Detail Schedule as required by Departmental Representative.
- .4 Submittal of Detail Schedule indicates that it meets Contract requirements and will be executed generally in sequence.

1.10 COMPLIANCE WITH DETAIL SCHEDULE

- .1 Comply with reviewed Detail Schedule.
- .2 Proceed with significant changes and deviations from scheduled sequence of activities that cause delay, only after receipt of approval by Departmental Representative.
- .3 Identify activities that are behind schedule and causing delay. Provide measures to regain slippage.
 - .1 Corrective measures may include:
 - .1 Increase of personnel with more experience/qualifications on site for effected activities or work package.
 - .2 Overtime work.
- .4 Submit to Departmental Representative, justification, project schedule data and supporting evidence for approval of extension to Contract completion date or interim milestone date when required. As part of supporting evidence, include:
 - .1 Written submission of proof of delay based on revised activity logic, duration, and costs, showing time impact analysis illustrating influence of each change or delay relative to approved Contract Schedule.
 - .2 Prepared schedule indicating how change will be incorporated into overall logic diagram. Demonstrate perceived impact based on date of occurrence of change and include status of construction at that time.
 - .3 Other supporting evidence requested by Departmental Representative.
 - .4 Do not assume approval of Contract extension prior to receipt of written approval from Departmental Representative.

- .5 In event of Contract extension, display in Detail Schedule that scheduled float time available for work involved has been used in full without jeopardizing earned float.
 - .1 Departmental Representative will determine and advise Contractor number of allowable days for extension of Contract based on project schedule updates for period in question, and other factual information.
 - .2 Construction delays affecting project schedule will not constitute justification for extension of Contract completion date.

1.11 PROGRESS AND REPORTING

- .1 On an ongoing basis, Detail Schedule on job site to show "Progress to Date". Arrange participation on and off site of subcontractors and suppliers, as, and when necessary, for purpose of network planning, scheduling, updating and progress monitoring. Inspect Work with Departmental Representative at least once monthly to establish progress on each current activity shown on applicable networks.
- .2 Update and reissue project Work Breakdown Structure and relevant coding structures as project develops and changes.
- .3 Perform Detail Schedule update monthly with status dated (Data Date) on last working day of month. Update to reflect activities completed to date, activities in progress, logic, and duration changes.
- .4 Do not automatically update actual start and finish dates by using default mechanisms found in project management software.
- .5 Submit to Departmental Representative copies of updated Detail Schedule.
- .6 Requirements for monthly progress monitoring and reporting are basis for progress payment request.
- .7 Submit monthly written report based on Detail Schedule, showing Work to date performed, comparing Work progress to planned, and presenting current forecasts. Report summarize progress, defining problem areas and anticipated delays with respect to Work schedule, and critical paths. Explain alternatives for possible schedule recovery to mitigate potential delay. Include in report:
 - .1 Description of progress made.
 - .2 Pending items and status of possible time extensions change orders, shop drawings.
 - .3 Status of Contract completion date and milestones.
 - .4 Current and anticipated problem areas, potential delays, and corrective measures.
 - .5 Review of progress and status of Critical Path activities.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution**3.1 NOT USED**

.1 Not used.

END OF SECTION

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittals until review is complete.
- .3 Present shop drawings, product data, samples, and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 The Contractor must allow enough time in his submission to completely verify the compliance of the equipment, with the specifications of the Contract Documents, before submitting their technical sheets to the Departmental Representative. If the Contractor does not explicitly declare, in a large red box, any derogation from Contract Documents, such as non-compliance with any of the requested specifications, this fact must be considered as a confirmation from the Contractor of the full compliance of the products submitted to all the specifications of the Contract Documents. If a discrepancy in the contractual documents of one of the submitted products is discovered (even after the acceptance of the professionals and the installation at the site), the Contractor is contractually obliged, by this Contract, to insure all the costs required for the replacement of the product and to comply with the Contract Documents.
- .7 Notify Departmental Representative, in writing at time of submittals, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Verify field measurements and affected adjacent Work are co-ordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.
- .11 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

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- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .3 Allow ten (10) days for Departmental Representative's review of each submission.
 - .4 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
 - .5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
 - .6 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .7 Submittals include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.

- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.
- .8 After Departmental Representative's review, distribute copies.
- .9 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .10 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .11 Submit one (1) electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product, or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within three (3) years of date of contract award for project.
- .12 Submit one electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .13 Submit one (1) electronic copy of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system, or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.
- .14 Submit one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .15 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit one (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies transparency will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

- .20 The review of shop drawings by Public Services and Procurement Canada (PSPC) is for sole purpose of ascertaining conformance with general concept.
- .1 This review shall not mean that PSPC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

- .1 Submit for review samples in duplicate triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to 's business address 's Departmental Representative's site office.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic and hard copy of colour digital photography in jpg format, high resolution, monthly with progress statement as directed by Departmental Representative.
- .2 Project identification: Name and number of project and date of exposure indicated.
- .3 Number of viewpoints: Two (2) locations.
- .1 Viewpoints and their location as determined by Departmental Representative.

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 PRECEDENCE**

- .1 For Federal Government projects, Division 01 Sections take precedence over technical specifications in other Divisions of the Project Manual.

1.2 REFERENCE STANDARDS

- .1 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
 - .1 ASHRAE 55-2013, Thermal Environmental Conditions for Human Occupancy.
 - .2 ASHRAE 62.1-2016, Ventilation for Acceptable Indoor Air Quality.
 - .3 ASHRAE 62.2 2016, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings.
 - .4 ASHRAE 129-1997 (RA 2002), Measuring Air Change Effectiveness.
- .2 Provide copies of associated WHMIS Safety Data Sheets (SDS).

1.3 GENERAL CONSTRUCTION MATERIALS/PRACTICES

- .1 Storage and Collection of Recyclables.
 - .1 Provide floor and site plans indicating:
 - .1 Location of collection sites for recyclable materials and storage facilities and waste compactor in loading dock area.
- .2 Construction Waste Management.
 - .1 Submit copy of the waste audit and waste management workplan developed for project.
 - .2 Submit waybills for waste materials removed from site during construction along with destination point.
- .3 Resource Reuse.
 - .1 Provide written report including specifications:
 - .1 Describing salvaged and refurbished materials used during construction, including origin of salvaged materials.
 - .2 Showing calculations that indicate what percentage of total project's materials were salvaged or refurbished.
- .4 Local/Regional Materials.
 - .1 Provide product specification and data sheets for locally manufactured materials installed.
 - .2 Provide calculations indicating what percentage of total project's materials were locally manufactured.

- .5 Rapidly Renewable Materials.
 - .1 Provide product specification and data sheets for products containing rapidly renewable materials installed.
 - .2 Provide calculations indicating what percentage of total project's materials contained rapidly renewable materials.
- .6 Low-Emitting Materials
 - .1 Provide WHMIS Safety Data Sheets (SDS) or testing results indicating VOC emission rates for following materials:
 - .1 Adhesives.
 - .2 Sealants.
 - .3 Caulkings.
 - .4 Paints and coatings.
 - .5 Textile floor coverings.
 - .2 Provide WHMIS Safety Data Sheets (SDS) sheets indicating resin type for composite wood and agrifibre materials.

1.4 JANITORIAL SERVICES

- .1 Provide WHMIS Safety Data Sheets (SDS) for janitorial products.
- .2 Provide manufacturer's literature indicating percentage of recycled content.

1.5 MEASUREMENT AND VERIFICATION

- .1 Provide copy of commissioning plan.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

GENERAL NOTE: In this Section, the term “site” includes all the facilities located at the site where the work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 REFERENCE STANDARDS

- .1 Province of Québec.
 - .1 *Loi sur la santé et la sécurité du travail* L.R.Q., c. S-2.1 (Act Respecting Occupational Health and Safety).
 - .2 *Code de sécurité pour les travaux de construction* L.R.Q., c. S-2.1, r.4 (Safety Code for the Construction Industry).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, and the "CNESST" the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least ten (10) days prior to the start of work.
- .3 Departmental Representative will review Contractor’s site-specific prevention program and provide comments to Contractor within ten (10) days after receipt of the document. Revise plan as appropriate and resubmit to Departmental Representative within five (5) days after receipt of comments from Departmental Representative. Departmental Representative reserves the right not to authorize the start of work on the construction site if the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental Representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental Representative’s review of Contractor’s site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor’s overall responsibility for Construction Health and Safety during the work.
- .5 Submit copies of Contractor’s authorized representative’s construction site health and safety inspection reports to Departmental Representative, determine frequency, but at least once a week.
- .6 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial, and Territorial Health and Safety Inspectors.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

The investigation report shall contain at least the following:

- 1. Date, time, and place of accident;

2. Name of sub-contractor involved in accident;
 3. Number of persons involved and condition of wounded;
 4. Witness identification;
 5. Detailed description of tasks performed at the time of accident;
 6. Equipment being used to accomplish the tasks performed at the time of accident;
 7. Corrective measures taken immediately after accident;
 8. Causes of accident;
 9. Preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental Representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00. Contractor shall also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: Where prescribed by legislation, regulation, or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental Representative.
- .10 Submit to Departmental Representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan shall contain the elements listed in the article "GENERAL REQUIREMENTS" of this Section.
- .11 Submit to Departmental Representative one copy of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
- .1 First aid in the workplace and cardiopulmonary resuscitation;
 - .2 Work likely to release asbestos dust (mandatory for all work where asbestos is present);
 - .3 Work in confined spaces (mandatory for all work in confined spaces);
 - .4 Lockout-tagout procedures (mandatory for all work requiring lockout);
 - .5 Safely operating forklift trucks (mandatory for all forklift usage);
 - .6 Safely operating elevating work platforms (mandatory for the use of all elevating platforms);
 - .7 Any other requirement of Regulations or the safety program.
- In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer's plans and certificates of compliance: Contractor shall submit to the Departmental Representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* ("CNESST") a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor shall also submit a certificate of conformity signed by an engineer once the

facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents shall always be available on site.

1.3 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the "CNESST" before work begins. A copy of such notice and acknowledgment of receipt from the "CNESST" shall be submitted to Departmental Representative.

At the completion of all work, a notice of construction site closing shall be submitted to the "CNESST", with a copy to Departmental Representative.

- .2 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he shall execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the "CNESST".
- .3 The Contractor shall always accept to divide and identify the construction site adequately in order to define time and space throughout the course of the Project.

1.4 HAZARD ASSESSMENT

- .1 The contractor shall perform construction site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's representative with decision power shall attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety Code for the Construction Industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental Representative no later than five (5) days after the committee meeting.

1.6 REGULATORY REQUIREMENTS

- .1 Do the Work in accordance with Section 01 41 00 - Regulatory Requirements.
- .2 Comply with all Legislation, Regulations, and Standards applicable to the construction site and its related activities.
- .3 Comply with specified Standards and Regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .4 Always use the most recent version of the Standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry), notwithstanding the date indicated in that *Code*.

1.7 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety Code for the Construction Industry) in addition to respecting all requirements of this Specification Manual.

1.8 RESPONSIBILITIES

- .1 Contractor shall acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry).
- .2 The Contractor shall be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor shall clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site shall be submitted to the Departmental Representative.
- .4 Comply with, and enforce compliance by employees, with safety requirements of Contract Documents, applicable federal, provincial, territorial, and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.9 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article "HAZARD ASSESSMENT" and the article "RISKS INHERENT TO THE WORKSITE" in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all work to be executed on the construction site.

The safety program shall include at least the following:

- .1 Company safety and health policy;
- .2 Description of the stages of the work;
- .3 Total costs, schedule and projected workforce curves;
- .4 Flow chart of safety and health responsibilities;
- .5 Physical and material layout of the construction site;
- .6 Risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 Identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article "RISKS INHERENT TO THE WORKSITE";

- .8 Identification of preventive measures for health and safety of employees and/or public works site as indicated in the article "SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC";
- .9 Training requirements;
- .10 Procedures in case of accident/injury;
- .11 Written commitment from all parties to comply with the safety program;
- .12 Construction site inspection checklist based on the preventative measures;
- .13 Emergency response plan which shall contain at least the following:
 - .1 Construction site evacuation procedures;
 - .2 Identification of resources (police, firefighters, ambulance services, etc.);
 - .3 Identification of persons in charge of the construction site;
 - .4 Identification of the first-aid attendants;
 - .5 Communication organizational chart (including the person responsible for the site and the Departmental Representative);
 - .6 Training required for those responsible for its application;
 - .7 Any other information needed, in the light of the construction site's characteristics.

If available the Departmental Representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental Representative.

- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental Representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental Representative.
- .4 Contractor shall plan and organize work to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .5 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .6 All mechanical equipment (for example, but not limited to: Hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental Representative on demand.

- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental Representative on demand.
- .8 The Departmental Representative can always, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental Representative shall be consulted for the location of storing gas cylinders and tanks on the construction site.

1.10 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site, inherent to the area where work will be executed.

At the worksite there is presence of the following:

- .1 Materials containing asbestos;
 - .2 Laboratories.
- .2 Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on site. He shall include in its prevention program all risks that have been identified.

1.11 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

- .1 The worksite is occupied by employees and/or the public during the following times: Specify times. The Contractor shall consider the following specific requirements for the protection of employees and/or the public:
 - .1 Protection of zones close to work areas;
 - .2 Limitation of systems shutdown desserving the occupied areas;
 - .3 Cleaning of work areas for the time of return to normal occupation hours.

These requirements shall be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and/or the public on the site.

1.12 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor shall immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor shall do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.13 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer shall have the following qualifications:
 - .1 Have a safety officer certificate issued by the "CNESST";
 - .2 Have site-related working experience of at least two (2) years specific to the activities associated with the present project;
 - .3 Have working knowledge of occupational health and safety regulations in the workplace;
 - .4 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
 - .5 Be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
 - .6 Be on construction site at all times during execution of work;
 - .7 Inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
 - .8 Keep a daily log of actions taken and submitting a copy to Departmental Representative each week.

The safety officer's certificate shall be submitted to the Departmental Representative before the start of the work.

- .2 When the hiring of a safety officer is not required or if this person is hired by the Departmental Representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental Representative before the start of work.

1.14 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices, and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental Representative.
- .2 At a minimum, the following information and documents shall be posted in a location readily accessible to all workers:
 - .1 Notice of construction site opening;
 - .2 Identification of principal Contractor;
 - .3 Company OSH policy;

- .4 Site-specific prevention program;
- .5 Emergency plan;
- .6 Minutes of worksite committee meetings;
- .7 Names of worksite committee representatives;
- .8 Names of the first-aid attendants;
- .9 Action reports and correction notices issued by the "CNESST".

1.15 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental Representative in accordance with the article "ACTION AND INFORMATIONAL SUBMITTALS" in this Section.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the Authorities Having Jurisdiction or the Departmental Representative or his agent.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental Representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental Representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.16 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation, and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental Representative.

1.17 POWDER ACTUATED DEVICE

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

- .2 Any person using an explosive actuated tool shall hold a training certificate and meet all requirements of Section 7 of the *Code de sécurité pour les travaux de construction* (S- 2.1, r. 4). (Safety Code for the Construction Industry)
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable Standards and Regulations.

1.18 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: Use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades, or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.19 LOCKOUT

- .1 For all work on electrically or otherwise energized equipment, the Contractor shall draw up and implement a general lockout procedure and submit it to the Departmental Representative.
- .2 Supervisors and all workers concerned by work requiring lockout shall have received training on lockout procedures by a recognized organization; Contractor shall submit training certificates to the Departmental Representative.
- .3 Before starting the lockout procedure of a piece of equipment on an occupied site, Contractor shall coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor shall designate a qualified person as responsible for the lockout and shall make sure that that person prepares a lockout data sheet for each piece of equipment involved. The lockout data sheet shall be submitted to the Departmental Representative at least 48 hours before the beginning of the work. The Departmental Representative will review the data sheet with the representative of the site if the work takes place in an existing building. The data sheets for lockout shall contain at least the following information:
 - .1 Description of work to carry out;
 - .2 Identification, description, and location of the circuit and/or equipment to lockout;
 - .3 Identification of energy sources that feeds the equipment;
 - .4 Identification of each cutout point;
 - .5 Sequence of lockout and release of residual energy as well as the sequence of unlocking;
 - .6 List of material needed for the lockout;
 - .7 Method of verification of zero energy implementation;

.8 Name and signature of the person who prepared the data sheet.

When required by the Departmental Representative, Contractor shall record all this information on the site's representative form.

- .5 At the time of lockout, the person responsible shall date the data sheet and ensure that each worker involved in the work on the circuit/equipment to lockout puts his name on the data sheet and signs it.

1.20 ELECTRICAL WORK

- .1 Contractor shall ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor shall respect all requirements of CSA Z462 Standard *Workplace Electrical Safety Standard*.
- .3 No repairs or alterations shall be carried out on any live equipment, except where complete disconnection of the equipment is not feasible.
- .4 Contractor shall respect all requirements prescribed in paragraph "LOCKOUT" in this Section.
- .5 Contractor shall advise in writing the Departmental Representative of all work that cannot be done with de-energized equipment and obtain his authorization. Contractor shall demonstrate to the Departmental Representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in CSA Z462 Standard *Workplace Electrical Safety*.
- .6 The energized electrical work permit on shall contain at least the following elements:
- .1 Description of the circuit and equipment and its location;
 - .2 Justification for having to do the work in an energized condition;
 - .3 Description of safe work practices to apply;
 - .4 Results of the shock hazard analysis;
 - .5 Limit of the protective perimeter against electric shocks;
 - .6 Results of the arc flash hazard analysis;
 - .7 Description of the arc flash protection boundary;
 - .8 Description of the personal protective equipment required;
 - .9 Description of the means to limit access to unqualified persons;
 - .10 Proof that an information session has been carried out;
 - .11 Approval signature of the energized electrical work (by a person in authority or by the Owner).
- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor shall obtain all information required to request and obtain obtain an energized electrical

work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental Representative before the beginning of Work.

1.21 ASBESTOS EXPOSURE

- .1 It is not anticipated that the work covered by the present specifications involves the manipulation of materials containing asbestos; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of containing asbestos, the Contractor shall immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain asbestos, the Contractor shall comply with the requirements described to the specifications in appendix.
- .2 Insulation of heating water and chilled water pipes contains asbestos. If, in the process of replacing the control valves, the Contractor considers that he shall remove sections containing asbestos, work shall be done in accordance with the Specification Sections provided for this Contract.
- .3 Prior to starting any work likely to emit asbestos dust, the Contractor shall:
 - .1 Refer to the specifications in appendix and make sure to follow the procedures described. Submit certificates that demonstrate that all workers involved in the work have received training on asbestos hazards and on the procedure required in the preceding paragraph.
 - .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.22 FUNGAL CONTAMINATION

- .1 It is not anticipated that the work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor shall immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.
- .2 Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor shall:
 - .1 Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction* S-2.1, r- 4, (Safety Code for the Construction Industry), as well as the requirements indicated in the document “*Mould Guidelines for the Canadian Construction Industry*” published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
 - .2 Demonstrate that he has all material and equipment required on hand to meet the procedure and for safely conducting work.

1.23 EXPOSURE TO SILICA

- .1 For any interior or exterior work generating silica, the Contractor shall meet the following requirements, in addition to those in the *Code de sécurité pour les travaux de construction* S-2.1, r.4 (Safety Code for the Construction Industry).
 - .1 Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.
 - .2 Clean surfaces and tools with water, never with compressed air.
 - .3 Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).
 - .4 Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
 - .5 Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the *Code de sécurité pour les travaux de construction*, S-2.1, r.4 (Safety Code for the Construction Industry).
 - .6 Wear coveralls to prevent contamination outside the construction site.
 - .7 Do not eat, drink, or smoke in a dusty environment.
 - .8 Wash the hands and the face before drinking, eating, or smoking.

1.24 LEAD-BASE PAINT REMOVAL

- .1 Prior to all work where workers are likely to handle materials containing lead-base paint or other substances containing lead, the Contractor shall:
 - .1 Provide a written procedure for the work which meets all requirements of the *Code de sécurité pour les travaux de construction* S-2.1, r- 4, (Safety Code for the Construction Industry), as well as requirements indicated in the document “*Guideline for Lead on Construction Projects*” published by the Ontario Ministry of Labour (http://www.labour.gov.on.ca/english/hs/pdf/gl_lead.pdf). If there is a discrepancy between the Québec regulation and the Ontario document, the most stringent requirement shall apply.
 - .2 Demonstrate that he has all material and equipment required on hand to respect the procedure and for safely conducting the work.

1.25 EXPOSURE TO ANIMAL’S FECAL DROPPINGS

- .1 Prior to all work where workers are likely to encounter materials contaminated by animal’s fecal droppings, the Contractor shall:
 - .1 Provide a written procedure for the work which respects all the requirements of the *Code the sécurité pour les travaux de construction* S-2.1, r- 4, (Safety Code for the Construction Industry), as well as the requirements indicated in the document “*Des fientes de pigeons dans votre lieu de travail: méfiez-vous*” (Pigeon droppings in your workplace: Beware” published by the “CNESST” (http://www.csst.qc.ca/publications/100/Documents/DC100_1331_1web2.pdf)

- .2 Demonstrate that he has all material and equipment required on hand to meet the procedure and for safely conducting work.

1.26 RESPIRATORY PROTECTION

- .1 Contractor shall ensure that all workers who shall wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Z94.4 Standard *Selection, Use and Care of Respirators*. Submit the certificates of the fit testings to the Departmental Representative on demand.

1.27 FALL PROTECTION

- .1 Plan and organize work to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers shall use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt shall not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) shall have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate, or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof shall be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
- .6 Everyone who works within two m from a fall hazard of three m or more shall use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
- .7 Despite the requirements of the regulation, the Departmental Representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than 3 m.

1.28 SCAFFOLDINGS

- .1 In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), the Contractor who uses scaffoldings shall respect the following requirements:
 - .1 Foundation:
 - .1 Scaffoldings shall be installed on a solid foundation so that it does not slip or rock.
 - .2 Contractors wishing to install scaffoldings on a roof, overhang, canopy, or awning shall submit their calculations and loads, as well as drawings signed and sealed by an engineer to the Departmental Representative and obtain his authorization before beginning installation.

- .2 Assembly, bracing, and mooring:
 - .1 All scaffoldings shall be assembled, braced, and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry).
 - .2 Where a situation requires the removal of part of the scaffoldings (e.g., crosspieces), the Contractor shall submit to the Departmental Representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
 - .3 For scaffoldings where the span between two (2) supports is greater than 3 m, the Contractor shall provide the Departmental Representative an assembly plan signed and sealed by an engineer.
- .3 Protection against falls during assembly:
 - .1 Workers exposed to the risk of falling more than 3 m shall always be protected against falls during assembly.
- .4 Platforms:
 - .1 Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry).
 - .2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry).
 - .3 Scaffoldings of four (4) sections (or 6 m) high or more shall have a full platform covering the entire surface between the putlogs every 3 m high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.
- .5 Guardrails:
 - .1 A guardrail shall be installed on every landing.
 - .2 Cross braces shall not be considered as guardrails.
 - .3 If the platforms are not covering the entire surface between the putlogs, the guardrail shall be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
 - .4 Where scaffoldings have four (4) sections (or 6 m) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until work is completed.
- .6 Access:
 - .1 The Contractor shall ensure that access to the scaffoldings does not compromise worker safety.
 - .2 Where the platforms of the scaffoldings are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.

- .3 Notwithstanding the provisions of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), stairs shall be installed on all scaffoldings that have six (6) or more rows of uprights or is six (6) sections (or 9 m) high or higher.
- .7 Protection of the public and occupants:
 - .1 When scaffoldings are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
 - .2 Contractor shall install covered walkways, nets, or other similar devices to protect workers, public, and occupants against falling objects. The means of protection shall be approved by the Departmental Representative.
- .8 Engineering drawings:
 - .1 In addition to those required by the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry), the Departmental Representative reserves the right to require engineering drawings for other types or configurations of scaffoldings.
 - .2 A drawing signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin, or any other material that has wind resistance.
 - .3 A certificate of conformity signed by an engineer is required in all cases where an engineering drawing is required and this, before anybody uses the facility. A copy of these documents shall always be available on construction site.

1.29 **LIFTING LOADS WITH CRANE OR BOOM TRUCK**

- .1 Unless specified otherwise, the Contractor shall prepare a hoisting plan and submit it to the Departmental Representative for all lifting operations done with a crane or a boom truck at least five (5) days before these lifting operations begin. The hoisting plan shall contain at a minimum the information listed at the end of this Section.
- .2 The hoisting plan shall be signed and sealed by an engineer for the following lifting operations:
 - .1 Lifting of concrete panels;
 - .2 Lifting mechanical/electrical equipment on a roof or on the floor of a building;
 - .3 Lifting of loads encroaching on the public road;
 - .4 Lifting large dimensions or very heavy loads;
 - .5 All other lifting operation, in accordance with the requirements of the Departmental Representative.
- .3 In addition to the above requirements, the Contractor shall plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site. When there is no alternative, the hoisting plan shall absolutely be signed and sealed by an engineer and shall guarantee the security of the occupants in that zone; the plan shall also be approved

by the Departmental Representative. The Departmental Representative can, if he deems necessary, require that the work be done at night or on weekends.

- .4 Upon the beginning of the work on the construction site, the Contractor shall submit the list of the hoisting plans anticipated for the whole project to the Departmental Representative. That list shall be updated as needed if changes occur during the work.
- .5 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook shall be aboard all cranes and boom truck cabs.
- .6 The entire lifting area shall be marked off to prevent the entry of non-authorized persons.
- .7 The Contractor shall carefully inspect all slings and lifting accessories and make sure that those in poor condition are destroyed and scrapped.
- .8 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.

1.30**MINIMUM CONTENT OF HOISTING PLAN**

- .1 Sketch indicating at a minimum, the location of the crane, the surrounding facilities, the zone covered by the hoisting operations, the pedestrian's pathways and vehicular routes, the security perimeter, etc.
- .2 Weight of loads.
- .3 Dimensions of loads.
- .4 List of hoisting devices and weight of each.
- .5 Total weight lifted.
- .6 Maximum height of obstacles to clear.
- .7 Height of loads lifting relative to the surface of the roof (in the case of loads to be placed on roofs).
- .8 Use of guide cables.
- .9 Type of crane used.
- .10 Crane capacity.
- .11 Boom length.
- .12 Boom angle.
- .13 Crane's radius of action.
- .14 Deployment of stabilizers.
- .15 Percentage usage of the crane's capacity.
- .16 Verification confirmation of hoisting equipment.
- .17 Identification of the crane operator and the person responsible for the hoisting operations with date and signatures.

1.31 HOT WORK

- .1 Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.
- .2 Before the beginning of each shift of work and for each sector, the Contractor shall obtain a "Hot Work Permit" emitted by the person responsible for the site.
- .3 A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
- .4 The Contractor shall appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
- .5 When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area shall be scheduled four (4) hours after the work has finished. Unless specified otherwise by the Departmental Representative, the Contractor shall assign a person to carry out this monitoring.

1.32 WELDING AND CUTTING

- .1 In addition to the requirements prescribed in the preceding paragraphs, the Contractor shall respect the following requirements:
 - .1 Welding and cutting work shall be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety Code for the Construction Industry) and CSA W117.2 Standard, Safety in Cutting, Welding and Allied Processes.
 - .2 Air extraction system with filters shall be used for all welding and cutting work performed inside.
 - .3 Stop all activities producing flammable or combustible gas, vapours, or dust in the vicinity of the welding or cutting work.
 - .4 Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
 - .5 Store all oxygen cylinders more than 6 m from a flammable gas cylinder (ex: Acetylene) or a combustible, such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in Article 3.13.4 of the *Code de sécurité pour les travaux de construction, S-2, r. 6* (Safety Code for the Construction Industry)
 - .6 Store the cylinders far from all heat sources.
 - .7 Not to store the cylinders close to the staircases, exits, corridors, and elevators.
 - .8 Do not put acetylene in contact with metals, such as silver, mercury, copper, and alloys of brass, having more than 65% copper, to avoid the risk of an explosive reaction.
 - .9 Check that welding equipment with electric arc has the necessary tension and are grounded.

- .10 Ensure that the conducting wires of the electric welding equipment are not damaged.
- .11 Place welding equipment on a flat ground away from the bad weather.
- .12 Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
- .13 Move away or protect the combustible materials which are closer than 15 m from the welding work.
- .14 Prohibition to weld or cut any closed container.
- .15 Do not perform any cutting, welding, or work with a naked flame on a container, a tank, a pipe, or other container containing a flammable or explosive substance unless:
 - .1 They have been cleaned and air samples indicating that work can be done without danger has been taken; and
 - .2 Provisions to ensure the safety of the workers have been made.

1.33 ROOFING WORK

- .1 Protection against fall from heights.
 - .1 Installation of guardrails is mandatory at all times; however, the installation of a warning line is allowed to define the limits of the work zones provided that all requirements of Articles 2.9.4.0 and 2.9.4.1 of the *Code de sécurité pour les travaux de construction* (Safety Code for the Construction Industry) are respected.
 - .2 The guardrails shall remain in place until the end of the project. The Departmental Representative will authorize their dismantling when he can confirm that all the work, inspections, and corrections have been made.
 - .3 Workers installing guardrails shall wear safety harnesses.
 - .4 Workers installing and modifying guardrails or flashing shall wear safety harnesses in the event guardrails shall be moved temporarily.
 - .5 Workers shall wear safety harnesses when receiving material and giving directions to the crane operator next to a drop.
 - .6 Safety harnesses shall be worn when carrying out work next to a drop where collective protection is not sufficiently safe.
 - .7 The Contractor shall provide a fastening method and safety cable system compliant with Section 2.10.12 of the *Code de sécurité pour les travaux de construction (L.R.Q., S-2.1, r.4)* (Safety Code for the Construction Industry) for each construction site or location.
- .2 Lifting of Materials:
 - .1 For all winch installations, the Contractor shall provide the Departmental Representative with the installation method recommended by the manufacturer. If unavailable, the Contractor shall then provide an installation procedure signed and sealed by an engineer. The installation procedure shall consider load-bearing capacity, amount, weight and location of counterweight, and any other detail that may affect the capacity and stability of the device.

- .2 The Contractor shall carefully inspect all slings and lifting accessories and make sure that those in poor condition are destroyed or scrapped.
- .3 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.
- .4 In all cases where a crane or boom truck is used, the Contractor shall meet the requirements of the paragraph Lifting Loads with Crane or Boom Truck, in this Section.
- .3 Protection against burns:
 - .1 Individuals assigned to the boilers shall wear long sleeves, safety glasses, and a face shield when filling boilers.
 - .2 Individuals working with asphalt or other hot liquids shall wear gloves, long sleeves, and safety glasses.
- .4 Protection against fire:
 - .1 The storage and use of propane cylinders shall comply with the CAN/CSA-B149.2 Standard, *Propane Storage and Handling Code*. The cylinders shall be stored outdoors, in a safe place, away from any unauthorized handling, in a storage cabinet specially designed for this purpose. The cylinders shall always be securely kept upright and locked in a place where no vehicles are allowed, unless the cylinders are protected by barriers or similar protection.
 - .2 The number of propane cylinders on the roof shall not exceed the number of cylinders necessary for a day's work, and cylinders shall always be secured upright or held in a cart designed for this purpose.
 - .3 All hot work (burning, heating, riveting, welding, cutting, grinding, etc.) shall be done in accordance with paragraph "Hot Work" in this Section.
- .5 Material and Waste Management:
 - .1 On the roof, light material and sheet material shall be kept in containers or be securely fastened. In the event this requirement is disregarded in the slightest way, the Departmental Representative may disallow the storage of materials on the roof.
 - .2 Waste shall be discarded as produced using a waste chute or appropriate containers. The Contractor shall provide the means to prevent waste from being carried away by the wind.
 - .3 All waste shall be removed from the roof at the end of shifts.
 - .4 Unless otherwise authorized by the Departmental Representative, all waste bins shall be placed at least 3 m from any structure or building.
- .6 Protection of occupants and the public:
 - .1 Contractor shall install covered passageways, nets, or other devices above the entrances and the exits of the building to protect workers, public, and occupants against falling object. The means of protection shall be approved by the Departmental Representative.
 - .2 A safety perimeter on the ground shall be placed under the work zone to protect workers, public, and occupants.

- .3 The ground construction site, material handling area and boiler area shall be clearly sealed off to prevent occupants or the public from accessing the construction site and areas.
- .4 Before installing any device that may emit gas or fumes, the Contractor shall receive authorization from the person in charge of the construction site, who shall make sure that there is no risk of gas or fumes infiltrating the building's ventilation system.

1.34 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

- .1 In addition to meet Article 3.10.17 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety Code for the Construction Industry), the Contractor shall also meet requirements described in the following paragraphs.
- .2 Use of a gas-powered equipment inside a building is prohibited even if the building is provided with openings.
- .3 The use of other equipment powered by an internal combustion engine inside a building shall be submitted to the approval of the Departmental Representative.
- .4 For the use of any piece of equipment powered by an internal combustion engine inside a building, even if the building is provided with openings, the Contractor shall install a ventilation system able to maintain the concentrations of toxic gases below the regulatory values. The stale air shall be exhausted outside the building.
 - .1 Before using equipment powered by an internal combustion engine, the Contractor shall plan and write the following:
 - .1 Number of fans to install;
 - .2 Power of the fans;
 - .3 Location of the fans;
 - .4 Dimensions of the openings that will be open during the work.
- .5 During the operation of equipment with internal combustion engine, the Contractor shall measure the concentrations of carbon monoxide and nitrogen oxides in the work area and at the breathing area of the workers; the concentration levels measured shall be recorded in a register every 30 minutes that shall be available for consultation.
- .6 If work is in an occupied building, the Contractor shall also measure the concentrations of carbon monoxide and nitrogen oxides in the rooms next to the work area and the concentration levels measured shall be recorded in a register every 30 minutes.
- .7 If the carbon monoxide or nitrogen oxides detector alarm goes off during the work, the Contractor shall stop the work and take the corrective measures required before resuming the work.
- .8 A portable fire extinguisher shall always be available in the work area during the use of equipment with internal combustion engines.

- .9 The equipment shall be maintained at a safe distance from all combustible material.
- .10 The storage of fuel for any equipment with internal combustion engine is prohibited inside a building.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 22 05 05 - Selective Demolition for Plumbing.
- .2 Section 26 05 05 - Selective Demolition for Electrical.

1.2 REFERENCES TO REGULATORY REQUIREMENTS

- .1 Perform Work in accordance with National Building Code of Canada (NBC) 2015 including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code.
 - .1 Meet or exceed requirements of:
 - .1 Contract Documents.
 - .2 Specified Standards, Codes, and referenced documents.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.
- .2 It is forbidden to smoke in any federal buildings and on the ground.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: Except as otherwise specified, Constructor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
 - .1 Regulatory requirements and fees in force on date of Bid submission; and
 - .2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission.

Part 2 Products

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General**1.1 INSPECTION**

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative will pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not clear the Contractor of his responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.6 REPORTS

- .1 Submit four (4) copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to manufacturer or fabricator of material being inspected or tested subcontractor of work being inspected or tested.

1.7 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations as specified in specific Section acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.8 MILL TESTS

- .1 Submit mill test certificates as required of Specification Sections requested.

1.9 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical, and building equipment systems included in Contract Documents.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 Within text of each Specifications Section, reference may be made to Reference Standards.
- .2 Comply with these Reference Standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable Standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of compliance with Contract Documents or by Contractor in event of non-compliance.

1.2 QUALITY

- .1 Products, materials, equipment, and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, provide evidence as to type, source, and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in Specification, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks, and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING, AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .5 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle, and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves, and accessories.

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls, and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.10 REMEDIAL WORK

- .1 Refer to Section 01 73 00 - Execution Requirements.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical equipment indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

1.12 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour, and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized-steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in relevant Specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.15 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic and/or building occupants.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by Authority Having Jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals: In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 WORK EXECUTION

- .1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.

- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .12 Conceal pipes, ducts, and wiring in floor, wall, and ceiling construction of finished areas, except where indicated otherwise.

1.5 WORK IN OCCUPIED OFFICES

- 1. The replacement of the controls and heating valves (plumbing) in the occupied premises involves the removal of personal belongings and furniture. This portion of the work will have to be carefully planned with the users.
- 2. This work will be done gradually and during unoccupied periods, at night, and on weekends.
- 3. Personal belongings will be moved out of the room by the occupants. The Contractor will provide wheeled boxes and trolleys to facilitate the movement of equipment.
- 4. Equipment that does not interfere with the work will be left on site and must be protected by the Contractor.
- 5. The Contractor will be responsible for moving furniture, offices and libraries and replacing them when the work is completed.
- 6. In laboratories (block F), the Contractor will not move any equipment other than offices and libraries without on-site staff approval.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products**2.1 NOT USED**

.1 Not Used.

Part 3 Execution**3.1 NOT USED**

.1 Not Used.

END OF SECTION

Part 1 General**1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including other than that caused by Owner or other contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from Authorities Having Jurisdiction for disposal of waste and debris.
- .4 Provide, onsite, containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris off site.
- .6 Store volatile waste in covered metal containers and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .9 Schedule cleaning operations so that resulting dust, debris, and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1. CLEANING DAILY

1. Since the work will take place in occupied areas, clean the spaces after each work shift. The premises must be clean for the return of the occupants.
2. Hire a specialized firm to clean occupied spaces daily.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review, remove surplus products, tools, construction machinery, and equipment.
- .4 Remove waste products and debris other than including that caused by Owner or other contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.

- .6 Make arrangements with and obtain permits from Authorities Having Jurisdiction for disposal of waste and debris.
- .7 Inspect finishes, accessories, and equipment, and ensure specified workmanship and operation.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 ASTM International (ASTM).
 - .1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program.
- .2 Recycling Certification Institute (RCI).
 - .1 RCI Certification Construction and Demolition Materials Recycling.

1.2 DEFINITIONS

- .1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants, or similar materials.
- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling operations, repair, and demolition.
- .3 Hazardous: Exhibiting characteristics of hazardous substances, including properties, such as ignitability, corrosiveness, toxicity, or reactivity.
- .4 Nonhazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
- .5 Nontoxic: Not poisonous to humans either immediately or after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Volatile Organic Compounds (VOCs): Chemical compounds common in and emitted by many building products over time through outgassing:
 - .1 Solvents in paints and other coatings;
 - .2 Wood preservatives; strippers and household cleaners;
 - .3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation;
 - .4 When released, VOCs can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
- .17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
- .18 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project, and ensure that requirements of the Construction Waste Management Plan are followed.
- .2 Preconstruction Meeting: Arrange a pre-construction meeting, in accordance with Section 01 31 19- Project Meetings, before starting any Work of the Contract attended by the Owner and Departmental Representative, to discuss the Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide required information in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Draft Construction Waste Management Plan (Draft CWM Plan): Submit to Departmental Representative a preliminary analysis of anticipated site generated waste by listing a minimum of five (5) construction or demolition waste streams that have potential to generate the most volume of material indicating methods that will be used to divert construction waste from landfill and source reduction strategies; Departmental Representative will provide commentary before development of Contractor 's Construction Waste Management Plan.
 - .2 Construction Waste Management Plan (CWM Plan): Submit a CWM Plan for this project prior to any waste removal from site and that includes the following information:
 - .1 Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of

identified material streams in the Proposed Material Conservation Audit Draft CWM Plan ; materials removed from site destined for alternative daily cover at landfill sites and land clearing debris cannot be considered as contributing to waste diversion and will be included as a component of the total waste generated for the site.

- .2 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.
- .3 Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the project, and the proposed local market for each material.
- .4 Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification; energy will be considered as a viable alternative diversion strategy for these materials where facilities exist.
- .5 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the project.
- .6 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.
- .7 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.5 PROJECT CLOSEOUT SUBMISSIONS

- .1 Submit as constructed information in accordance with Section 01 78 00 - Closeout Submittals as follows:
 - .1 Construction Waste Management Report (CWM Report): Submit a CWM Report for this project including the following information:
 - .1 Accounting: Submit information indicating total waste produced by the project.
 - .2 Composition: Submit information indicating types of waste material and quantity of each material.
 - .3 Diversion Rate: Submit information indicating total waste diverted from landfill as a percentage of the total waste produced by the project.
 - .4 Transportation Documentation Diversion Documentation: Submit copies of transportation documents or shipping manifests indicating weights of materials, and other evidence of disposal indicating final location of waste diverted from landfill and waste sent to landfill.

- .5 Alternative Daily Cover (ADC): Submit quantities of material that were used as ADC at landfill sites, and that form a part of the total waste generated by the project.
- .6 Multiple Waste Hauling: Compile all information into a single CWM Report where multiple waste hauling and diversion strategies were used for the project.
- .7 Photographs: Submit photographs of waste diversion facilities documenting location and signage describing usage of waste separation containers.

1.6 QUALITY ASSURANCE

- .1 Resources for Development of Construction Waste Management Report (CWM Report): The following sources may be useful in developing the Draft Construction Waste Management Plan:
 - .1 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.
 - .2 Waste-to-Energy Systems: Investigate local waste-to-energy incentives where systems for diverting materials from landfill for reuse or recycling are not available.
- .2 Certifications: Provide proof of the following during Work:
 - .1 Compliance Certification: Provide proof that recycling center is third party verified and is listed as a Certified Facility through the registration and certification requirements of the Recycling Certification Institute.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- .2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
 - .1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - .2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.
- .3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution**3.1 (CWM PLAN) IMPLEMENTATION**

- .1 Manager: Contractor is responsible for designating onsite parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the project.
- .2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor, the Owner, the Departmental Representative, and other site personnel as required to maintain CWM Plan.
- .3 Instruction: Provide onsite instruction of appropriate separation, handling, and recycling, salvage, reuse, composting, and return methods being used for the project at appropriate stages of the project.
- .4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting, and return:
 - .1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
 - .2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulation.
- .5 Progressive Documentation: Submit a monthly summary of waste generated by the project to ensure that waste diversion goals are on track with project requirements:
 - .1 Submission of waste summary can coincide with application for progress payment, or similar milestone event as agreed upon between the Owner, Contractor, and Departmental Representative.
 - .2 Monthly waste summary shall contain the following information:
 - .1 The amount in tonnes or m³ and location of material landfilled;
 - .2 The amount in tonnes or m³;
 - .3 Indication of progress based on total waste generated by the project with materials diverted from landfill as a percentage.

3.2 SUBCONTRACTOR'S RESPONSIBILITY

- .1 Subcontractors shall cooperate fully with the Contractor to implement the CWM Plan.
- .2 Failure to cooperate may result in the Owner not achieving their environmental goals and in penalties being assessed by the Contractor to the responsible Subcontractor.

3.3 SAMPLE CONSTRUCTION WASTE MANAGEMENT FORMS

- .1 Sample waste tracking form below can be used by the Contractor to establish their own forms for recording management of construction waste:

Material Stream	Diverted Waste by Report Date	Sept	Oct	Nov	Dec	Total	Units
Plastic	0.00	1.25	2.50	10.00	5.00	18.75	m ³
Paper/Cardboard	5.00	2.50	2.50	5.00	15.00	30.00	m ³
Clean Wood	0.00	25.00	0.00	1.25	26.25	52.50	m ³
Metal	1.25	2.50	5.50	7.00	16.25	32.50	m ³
Asphalt Shingles	10.00	0.00	0.00	0.00	10.00	20.00	m ³
Total Diverted Waste	135.00 m³						
Screen Fines (ADC)	5.00	1.25	0.00	2.50	8.75	17.50	m ³
150 mm and less (ADC)	1.25	1.25	5.00	5.50	13.00	26.00	m ³
Total Landfill/ADC Waste	65.00 m³						
Total Waste	200.00 m³						
Percent Diverted	67.50 %						

END OF SECTION

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one (1) week prior to contract completion with Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review warranty requirements manufacturer's installation instructions.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: Provide name, telephone number, and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two (2) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four (4) final copies of operating and maintenance manuals in English and French.
- .3 Provide spare parts, maintenance materials, and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, three (3) "D" ring, 219 x 279-mm loose leaf, with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify well contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title "Project Record Documents"; list title of project and identify subject matter of contents.
- .5 Arrange content by process flow, systems, under Section numbers and sequence of Table of Contents.

- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Provide 1:1 scaled CAD files in .dwg format on CD.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: Provide title of project;
 - .1 Date of submission.
 - .2 Name, address, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.
 - .3 List of products and systems, indexed to content of volume.
- .2 For each product or system, indicate:
 - .1 Names, addresses, and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: Mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: As required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: Refer to Section 01 79 00 - Demonstration and Training.

1.5 "AS-BUILT" DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site, for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.

- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry, and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and Shop Drawings: Mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: Mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: Maintain field test records, manufacturer's certifications, inspection certifications, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.7 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics, and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: Provide electrical service characteristics, controls, and telecommunications circuits.
- .3 Include installed colour coded wiring diagrams.

- .4 Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shutdown, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Sections 01 45 00 - Quality Control and 01 91 13 - General Commissioning Requirements.
- .15 Additional Requirements: As specified in individual Specification Sections.

1.8 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual Specification Sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.

- .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.9 DELIVERY, STORAGE, AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.10 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative, for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within 10 days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.

- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 4-month and 9-month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers, or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include HVAC balancing, motors, roofs, pumps, transformers, lightning protection systems, fire protection, sprinkler systems, alarm systems, commissioned systems.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item, material, system, or lot.
 - .2 Model and serial numbers.
 - .3 Location.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses, and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: Include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates, as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
 - .4 Contractor's plans for attendance at 4- and 9-month post-construction warranty inspections.
 - .5 Procedure and status of tagging of equipment covered by extended warranties.
 - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.

- .11 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.11 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil- and water-resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Demonstrate operation and maintenance of equipment and systems to Owner's personnel two (2) weeks prior to date of interim completion final inspection substantial performance.
- .2 Owner: Provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
 - .3 Ensure equipment has been inspected and put into operation.
 - .4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 13 - General Commissioning Requirements and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, and maintenance of each item of equipment at agreed upon scheduled times, at the designated equipment location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.
- .5 Time Allocated for Instructions: Ensure amount of time required for instruction of each item of equipment or system as follows:
 - .1 Division 23 - Cooling and Ventilation System: Four (4) hours.
 - .2 Division 25 - Control System: Sixty (60) hours.
 1. Division 26 - Electricity (General): Two (2) hours.
 2. Division 28 - Multiplex Fire Alarm System: Two (2) hours.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two (2) weeks prior to designated dates, for Departmental Representative's approval.

- .3 Submit reports within one (1) week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.3 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Owner's personnel.
 - .2 Provide written report that demonstration and instructions have been completed.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED DOCUMENTS**

- .1 Section 22 11 16 – Domestic Water Piping.
- .2 Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .3 Section 25 90 01 - EMCS: Site Requirements, Applications and Systems Sequences of Operation.
- .4 Section 28 31 00.01 - Multiplex Fire Alarm System.

1.2 CODES AND STANDARDS

- .1 ACG Commissioning Guideline.
- .2 ASHRAE Guideline 0-2005.
- .3 ASHRAE Guideline 1.1-2007.
- .4 Building Commissioning Association (BCxA) Standard.
- .5 CSA-Z320-11 - Building Commissioning Standard.
- .6 Commissioning Guide for New Buildings ("CanmetÉnergie/Ressources naturelles Canada").

1.3 OBJECTIVES

- .1 Commissioning (Cx) is a quality process designed to ensure that all building systems achieve their intended objectives. This methodology starts in the design phase and continues in the construction and acceptance phases, with verification of system performance, validation, and optimization of operating sequences. The main objectives of Cx are as follows:
 - .1 Ensure that equipment, systems, and integrated systems operate in accordance with the requirements of Contract Documents, Design Criteria, and Owner's Requirements;
 - .2 Complete project according to schedule;
 - .3 Verify and document the performance of systems and equipment;
 - .4 Ensure that appropriate documentation has been incorporated into the O&M Manual;
 - .5 Train O&M personnel;
 - .6 Optimize equipment life cycle costs and improve energy performance of systems;
 - .7 Reduce costs of operation and maintenance.

1.4 ACRONYMS

- .1 A/E: Architect/Design Engineers.
- .2 BAS: Building Automation System.
- .3 BOD: Basis of Design.
- .4 CS: Contractors and Subcontractor.
- .5 Cx: Commissioning.
- .6 CxA: Commissioning Agent.
- .7 CxRC: Commissioning Representative for the Contractor.
- .8 CxRO: Commissioning Representative for the Owner.
- .9 OPR: Owner's Project Requirements.
- .10 TAB: Testing, Adjusting and Balancing.

1.5 DEFINITION

- .1 The Cx Authority: Person appointed by the Departmental Representative to lead the process of CX and submit a final report to the Departmental Representative on performance of the systems and the whole process.
- .2 Cx Team: The team members are Cx Authority, the project manager, the representative of the Departmental Representative, the Architect, the design Engineer, the General Contractor, the equipment suppliers, and the Subcontractors.
- .3 Commissioning Plan: An evolutive document that defines the activities of the Cx project, the schedule, the documentation requirements, and the roles and responsibilities of team members.
- .4 Cx Calendar: General Contractor shall coordinate with the Cx Authority to establish a protocol and a timetable for Cx systems and equipment, which will be updated with progress.
- .5 Deficiencies and Non-compliances Register: It is an official and evolutive directory of the deficiencies and anomalies (with solution when required) that the Cx Authority or other member of the Cx team will have observed during the process.
- .6 Cx Form: Document containing the performance data collected during the static tests (dynamic) carried out on equipment and systems.
- .7 Installation Control Form: Forms provided by the manufacturer or the engineer, which include checklist for proper installation of equipment.

- .8 Cx Coordinator of the Contractor: Person at the service of the Contractor, responsible for coordinating the activities of the commissioning.
- .9 Cx Coordinator of the Owner: Person at the service of the Owner, responsible for coordinating the activities and for supporting the Cx Activities.

Part 2 CX Steps

2.1 CX PROCESS

- .1 Use this Cx Plan as master planning document for Cx:
 - .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx;
 - .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures;
 - .3 Sets out deliverables relating to O&M, process and administration of Cx;
 - .4 Describes process of verification of how works meet design requirements;
 - .5 Produces a complete functional system prior to issuance of the certificate of occupancy;
 - .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
 - .1 Overview of Cx;
 - .2 Commissioned systems;
 - .3 Construction checklists;
 - .4 The overview of the Cx activities during the pre-design, design, construction, occupation, and operation phases;
 - .5 Cx schedule;
 - .6 Process and methodology for successful Cx;
 - .7 The expected objectives and results of the Cx;
 - .8 The list of team members, their responsibilities and expected deliverables;
 - .9 The training documents;
 - .10 Requirements of O&M Manuals.
- .2 Refinement of Cx Plan: During construction phase, revise, refine and update Cx Plan to include:
 - .1 Changes resulting from modifications;
 - .2 Approved design and construction changes;
 - .3 Results of previous steps.

.3 Overview of the Process:

- .1 Develop the Owner's Project Requirements (OPR), and ensure they are included in the basis of design (BOD);
- .2 Develop a Cx plan and presenting it to the Cx team at the starting meeting;
- .3 Coordinate with Contractors to establish a methodology for functional tests of equipment;
- .4 Develop a record of anomalies and deficiencies;
- .5 Oversee staff training;
- .6 Reviewing operation and maintenance manuals;
- .7 Optimize and validate the sequences of operation and solve the identified problems.

2.2 CONFLICTS

- .1 Report conflicts between requirements of this Section and other Sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

2.3 COMPOSITION AND RESPONSIBILITIES OF CX TEAM

.1 Cx Authority (Stantec):

- .1 Organize and lead the Cx team;
- .2 Develop a Cx plan and include it in the construction document as well as updating it regularly;
- .3 Organize and conduct Cx meetings, and draw up the minutes;
- .4 Provide the Construction Checklists;
- .5 Perform site inspections, check functional performance and attend tests;
- .6 Oversee the process of training staff;
- .7 Review operation and maintenance manuals;
- .8 Maintain up to date the list of the validity dates of the guarantees;
- .9 Approve or oversee the Cx balancing reports and sequences of control in collaboration with the Commissioning Representative for the Owner (CxRO);
- .10 Prepare a final Cx report summarizing undertaken works and the results of all tests;
- .11 Issuing a Cx acceptance report to validate the certificate of provisional acceptance.

.2 Engineers and Architects:

- .1 Assist to Cx meetings;
- .2 Verify installations compliance;

- .3 Attend selectively to installation Cx;
- .4 Make lists of deficiencies relating to the installation and testing;
- .5 Provide appropriate training sessions on the concept and the objectives of different systems;
- .6 Verify Cx reports;
- .7 Help resolve any problem related to the design, equipment, installation, or operation.
- .3 Contractors, Sub-contractors, and Commissioning Representative for the Contractor (CxRC):
 - .1 Assist to Cx meetings;
 - .2 Consolidate Cx steps in the construction schedule;
 - .3 Perform tests and functional tests on equipment and systems;
 - .4 Fill the Construction Checklists;
 - .5 Complete and provide to the Cx Authority the Cx schedule;
 - .6 Submit the different required reports;
 - .7 Coordinate and convene manufacturer representatives at the different steps of the Cx and to the meetings when requested;
 - .8 Produce operation and maintenance manuals;
 - .9 Coordinate and validate training program, plan and provide training sessions required for installed equipment as recommended by the Cx Authority;
 - .10 Correct deficiencies;
 - .11 Issue the appropriate warranties;
 - .12 Proceed with seasonal adjustments;
 - .13 Visit site prior to the end of warranties (10 months after provisional acceptance, to correct problems during occupancy period).
- .4 Departmental Representative, Users and Operation and Maintenance Members:
 - .1 Attend Cx meetings;
 - .2 Participate to training sessions;
 - .3 Facilitate the coordination work between the Cx Authority and the General Contractor;
 - .4 Raise any issues found during the Cx;
 - .5 Follow the process and work with the Cx Authority.

2.4 MANUFACTURERS' INVOLVEMENT

- .1 Employ the following Cx participants to verify performance of equipment and systems:
 - .1 Installation contractor/subcontractor.
 - .1 Equipment and systems, except as indicated otherwise.

- .2 Equipment Manufacturer: Equipment specified to be installed and started by manufacturer:
 - .1 To include performance verification.
- .3 Factory Testing: Manufacturer to:
 - .1 Coordinate time and location of testing;
 - .2 Provide testing documentation for approval by Cx Authority;
 - .3 Arrange for Cx Authority to witness tests;
 - .4 Obtain written approval of test results and documentation from Cx Authority before delivery to site.
- .4 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems, and review with Cx Authority:
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer;
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .5 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty;
 - .2 Verify with manufacturer that testing as specified will not void warranties;
 - .3 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of concerned equipment and systems;
 - .2 Ability to interpret test results concisely, logically, and accurately.
- .6 Specialized Companies: Required participation in the case of equipment and systems supplied and installed by a specialist company.

2.5 SCOPE OF COMMISSIONING (SYSTEMS AND EQUIPMENT TO VERIFY)

- .1 Cx of mechanical systems and associated equipment:
 - .1 Plumbing systems:
 - .1 Domestic CWS and HWS.
 - .2 HVAC and exhaust systems:
 - .1 HVAC ducts, sheaths, and systems;
 - .2 Exhaust systems.
 - .3 Building Management System (BMS).
- .2 Cx of electrical systems and equipment:
 - .1 Low voltage below 750 V:
 - .1 Low voltage equipment;

- .2 Low voltage distribution systems.
- .2 Fire alarm systems, equipment:
 - .1 Detection system;
 - .2 Signalling system.

2.6 INSTRUMENTS

- .1 Each report must indicate what tools were used for measures in the report:
 - .1 Balancing devices;
 - .2 Thermometers and manometers;
 - .3 Air quality devices;
 - .4 Multimeters;
 - .5 Luxmeter.
- .2 The Operation and Maintenance Manual must include the list of instruments used, including: Serial number, the current certificate of calibration, calibration date, date of expiration of the calibration, and the accuracy of the calibration.
- .3 Upon request, submit the instruments and equipment for the examination and approval by the Cx Authority.

2.7 COMMISSIONING DELIVERABLES OF CX PROCESS

- .1 Static verification of installation and components.
- .2 Quality and performance control by using functional tests on systems and equipment.
- .3 Training program.
- .4 Operation and Maintenance Manual.
- .5 Final Cx Reports.

2.8 COMMISSIONING MEETINGS

- .1 Convene Cx meetings.
- .2 Purpose: To explain process, resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.

- .4 At 60% construction completion stage, CxA must call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Addressing delays and potential problems;
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter, Contractor must call Cx meetings with his Subcontractors, to be held until project completion and as required, during Cx and functional testing periods.
- .6 Meetings will be chaired by Cx Agent, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturers' representative are present at Cx meetings when they are convened or as requested by CxA.

2.9 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of Authority Having Jurisdiction, arrange for authority to witness procedures to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of Authority Having Jurisdiction.
- .3 Include certificates of approval, acceptance and compliance with the Operation and Maintenance Manual, and provide copies upon request to Departmental Representative.

2.10 AEREAULIC AND HYDRAULIC BALANCING

- .1 Perform aeraulic and hydraulic balancing, as specified in the relevant Sections. Validate the balancing method with the Cx Authority or the Departmental Representative. Produce reports within 10 days after a series of interventions. Reports must indicate the observed anomalies.

2.11 CX CONTROL

- .1 Perform Cx control, as required in the relevant Sections.
- .2 Submit graphic trends (30 days) for the main control loop.
- .3 Produce reports and verifications as Cx forms.

2.12 START-UP OF INTEGRATED EQUIPMENT

- .1 Realize start-up of equipment requiring prior completion of the various disciplines. These devices can be started when:
 - .1 Installation is complete;

- .2 Power supply is checked;
- .3 Water network balancing is completed;
- .4 Auxiliary services are completed.
- .2 Obtain collaboration of manufacturers to confirm compliance of the installation before the Cx equipment.
- .3 Fill in the Cx forms of equipment, submitted by the Cx Authority or manufacturers, if they include all required information.
- .4 Cx reports shall specify conditions under which the start-up was made. These conditions include:
 - .1 External ambient conditions;
 - .2 Supply voltage;
 - .3 Pressure and supply temperature of auxiliary services;
 - .4 Any special condition that may influences the performance.
- .5 Integrated systems include the following:
 - .1 Systems related to indoor air quality;
 - .2 Automatic regulation systems for rooms;
 - .3 Fire alarm systems.

2.13 CONSTRUCTION CHECKLISTS (STATIC VERIFICATION FORMS)

- .1 These control forms of the installation must include the following:
 - .1 Installation instructions provided by the manufacturer and controls recommended by the manufacturer;
 - .2 Specific procedures established in technical relevant Section;
 - .3 Procedures considered as good practice in installation and construction of mechanical/electrical, and deemed necessary to a proper and effective operation of the equipment and systems.
- .2 The control forms for the installation, provided by the manufacturer, are also acceptable. If the Cx Authority deems them necessary, lists of additional data will be required in case of projects with special conditions.
- .3 Use control forms to verify the installation of equipment and systems involved. Confirm on the document the verifications carried out, indicate anomalies and deficiencies identified and corrective measures implemented.
- .4 Provide to the Cx Authority the control forms which have been duly signed by the subcontractor concerned or the representative of the manufacturer, once the process is completed, to confirm that the audits and inspections were actually performed. These forms will be required at the time of Cx and will be joined in the operation and maintenance manual at the project completion.

- .5 The control forms that are used in the Cx must be strictly complied with at the time of equipment and systems Cx.

2.14 FUNCTIONAL TESTINGS (DYNAMICS)

- .1 Before testing begins, ensure:
 - .1 That the Construction Checklist forms are available and filled;
 - .2 That the installation of components, equipment, systems, and related subsystems is completed;
 - .3 That the requirements and test procedures are well understood by all interveners;
 - .4 That the design criteria, the design intention and particular characteristics are well understood;
 - .5 That complete Cx documentation is up to date and available;
 - .6 That the Cx calendar is up to date;
 - .7 That all systems are completely cleaned;
 - .8 That the required tests in the different sections were made and reports were submitted;
 - .9 That the TAB operations of equipment and systems are completed and that relevant reports have been submitted to Departmental Representative, for consideration and approval;
 - .10 That the provisions related to records are taken.
- .2 Length of Testing:
 - .1 All equipment and systems specified in Cx plan must be subjected to functional tests for a continuous period of 30 days. During this period, the Contractor shall correct the deficiencies and make necessary adjustments to optimize the systems and obtain the specified performance. The modifications must be recorded and documented;
 - .2 During the testing period, conduct periodic audits and produce reports every three (3) days to confirm the sequence of tests.
- .3 The Cx forms are documents on which are recorded the results of audits, functional tests (dynamic) and adjustments that have been carried out on equipment and systems concerned to ensure they work efficiently and effectively, alone or in interaction with others, as required by work.
- .4 The Cx forms also include documents on which the Contractor has recorded the readings and the data measured during functional testing and in the control process of the performance of equipment and systems concerned.

2.15 TESTS RECORDING

- .1 Before testing starts, the Contractor shall take required dispositions and set up recording equipment required to produce reports that assess test compliance.

- .2 When possible, the permanent monitoring equipment can be used if the equipment were calibrated following the procedures and using instruments with calibration certificates that have been submitted.
- .3 Equipment must be able to record the required measures every 15 or 30 minutes throughout the duration of the tests, or more frequently if required for the test validation, when requested by Departmental Representative or Cx Authority.
- .4 The required measures must allow to certify:
 - .1 The stability of the equipment and measured values;
 - .2 The proper functioning of equipment with required efficiencies under different loads, including operation at full load and at minimum conditions;
 - .3 The start-up sequence of equipment.
- .5 If testing and measurement does not confirm the operation under conditions considered representative, the Cx Authority may require additional specific tests. At least one additional test will be asked for verification of networks in heating or cooling mode, depending on whether the official 30-day trials have been carried out in summer or winter.
- .6 The General Contractor shall assume the responsibilities and inspection costs, including disassembly and reassembly after approval, testing and adjustment of equipment and systems, as well as the provision of test equipment.

2.16 TOLERANCES - PERFORMANCE VERIFICATION

- .1 Application Tolerances:
 - .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within $\pm 10\%$ of specified values.
- .2 Instrument Accuracy Tolerances:
 - .1 To be of higher order of magnitude than equipment or system being tested.
- .3 Measurement tolerances during verification:
 - .1 Unless otherwise specified actual values to be within $\pm 2\%$ of recorded values.

2.17 COMMISSIONING SCHEDULE

- .1 The General Contractor, in collaboration with the Cx Authority, prepare a detailed Cx schedule, which must include the following:
 - .1 Cx meeting program;
 - .2 Sequence of testing of equipment and systems, interrelation between the various tests, test duration, and periods of training;
 - .3 Expected date of installation control of each equipment and system;

- .4 Expected date for the Cx of each equipment and system;
- .5 Expected date for the transmission of Operation and Maintenance Manuals;
- .6 Expected date for training of operating staff;
- .7 Expected date for the delivery of Cx final report;
- .8 Expected date of seasonal tests if applicable;
- .9 Expected date of seasonal finetuning (30 hours);
- .10 Expected date of contractors visit prior to end of warranties.
- .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project, and hand-over.
- .3 After approval, incorporate Cx Schedule into Construction Schedule.
- .4 The Cx team must monitor the progress of the Cx with respect to schedule and update as needed.

2.18 STANDARDS AND PROCEDURES FOR CX OF MECHANICAL INSTALLATIONS

- .1 Energy Management and Control System (EMCS).
 - .1 The system test performance and point to point must be performed by the Contractor under the supervision of the Departmental Representative or Cx Authority, and then checked through the control system.
 - .2 Demonstrate the operation of all systems in all operating conditions, before the trial period of 30 days, in the presence of the Departmental Representative and Cx Authority. This demonstration must include simulated trials in opposite seasons. Conduct an audit of programming and operating sequences of ECMS after TAB operations completed during the probationary period prescribed for 30 days. Data gathered during these tests must be registered to control panels or ECMS central.

2.19 STANDARDS AND PROCEDURES FOR THE CX OF THE ELECTRICAL INSTALLATIONS

- .1 Fire Alarm Systems.
 - .1 Make functional tests after considering all other aspects of the safety of persons and property.
 - .2 Testing shall be reviewed fully in accordance with the requirements of ULC.

2.20 CORRECTION OF DEFICIENCIES

- .1 The Cx Authority must give Cx lists of deficiencies in accordance with specific conditions.
- .2 If equipment, systems, components, and control/regulation devices have been incorrectly installed or have anomalies during the Cx, correct anomalies, repeat equipment and

components verification of the non operating system, including related systems therefore, if the Departmental Representative and the Cx Authority ask for them to ensure that the system works as it should.

- .3 The Contractor shall assume all costs associated with corrections, inspections, and additional tests to determine the acceptability and performance of these elements. These costs will be deducted from payments or will be retain.

2.21 VERIFICATION OF RESULTS

- .1 Labor:
 - .1 Provide labor and instrumentation to verify up to 30% of reported results, unless specified otherwise in other Sections of specs. Number and location are decided by the Cx Authority.
- .2 Conduct tests repeated during verification under same conditions as original tests, using same test equipment and instrumentation.
- .3 Review and repeat commissioning of systems if inconsistencies found in more than 20% of reported results.
- .4 Perform additional commissioning until results are acceptable to Departmental Representative and Cx Authority.

2.22 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Departmental Representative and Cx Authority for third and subsequent verifications where:
 - .1 Verification of reported results fails to receive Departmental Representative's and Cx Agent's approval;
 - .2 Repetition of second verification fails again to receive approval;
 - .3 Departmental Representative and Cx Authority deems Contractor's request for second verification was premature.

2.23 TEST RESULTS

- .1 If start-up, testing, and/or PV produce unacceptable results according to Departmental Representative or Cx Authority, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide labor, equipment, and materials for re-commissioning.

2.24 SEASONAL TESTING

- .1 If requested by the Cx Authority, additional seasonal testing recommended may be performed so that verification of performance is close to real conditions.

2.25 EXTRAPOLATION OF RESULTS

- .1 Where Cx of equipment or systems weather, occupancy, or seasonal-sensitive cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

2.26 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, Cx Agent to provide updated Cx form for affected item.

2.27 DEPARTMENTAL REPRESENTATIVE'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

2.28 ACTIVITIES DURING WARRANTY PERIOD

- .1 Cx activities must be completed before issuance of Interim Certificate, it is anticipated that certain Cx activities may be necessary during Warranty Period, including:
 - .1 Fine tuning of HVAC systems;
 - .2 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings;
 - .3 **Fine-tuning: Control contractor must provide 50 hours fine tuning to the Cx Agent;**
 - .4 **Control contractor must provide to Cx agent the software allowing system monitoring including license and updates.**

2.29 TRAINING SCHEDULE

- .1 Following training sessions are mandatory: Refer to Section 01 79 00 - Demonstration and Training.
- .2 Each training responsible must provide:
 - .1 Training program;
 - .2 List of persons attending training;
 - .3 Training location;
 - .4 Objectives;
 - .5 Subjects (description, time, techniques used, etc.);
 - .6 Training duration for each subject;
 - .7 Training methods.

- .3 Coordinate trainings to be given according to the requirements of the different sections with the initial training, given by the Departmental Representative.
- .4 The training by the Departmental Representative must include the following:
 - .1 Review of facility and occupancy profile;
 - .2 Functional requirements;
 - .3 System philosophy, limitations of systems and emergency procedures;
 - .4 Verification of operation and maintenance documents;
 - .5 Review of all systems using simplified diagrams for the cooling water systems, water condensers or heat exhausts, heating systems, gas supply, fuel and air, and exhaust system.
- .5 The training by the Contractor must include the following:
 - .1 Review of system layout, equipment, components and controls;
 - .2 Equipment and system start-up, operation, monitoring, servicing, maintenance, and shutdown procedures;
 - .3 System operating sequences, including step-by-step directions for starting up, shutdown, operation of valves, dampers, switches, adjustment of control settings and emergency procedures;
 - .4 Maintenance and servicing;
 - .5 Troubleshooting diagnosis;
 - .6 Interaction among systems during integrated operation.
- .6 Training to be completed prior to acceptance of facility of building.
- .7 Visual recordings of trainings can be requested by the Departmental Representative.

2.30 OPERATION AND MAINTENANCE MANUAL

- .1 Operating and maintenance manuals must be checked by the Cx Authority before final inspection by the Departmental Representative who retains the final copies.
- .2 Operation and maintenance manuals must include the following:
 - .1 A summary;
 - .2 The list of the Contractors and emergency information;
 - .3 Command and regulation network diagrams of each network, including ambient circuit;
 - .4 A description of each system or each installation and its control device;
 - .5 A description of the operation of each system or each installation, under various loads, with program of setpoint and indication of seasonal variations modifications;
 - .6 Instructions on the operation of each system or each facility and each component;
 - .7 A description of measures to be taken in case of equipment failure;

- .8 A color code;
 - .9 Instructions for maintenance, repair, operation and how to identify defects in each piece of equipment;
 - .10 The information on the periodicity of tasks to be done, as well as tools, parts and time needed for all these tasks;
 - .11 The performance data provided by the equipment manufacturer stating the points of use of equipment, once the Cx is completed;
 - .12 The Cx forms for all equipment and systems;
 - .13 Any other specific performance data specified elsewhere in the contract documents;
 - .14 TAB reports for each system;
 - .15 The name, address and phone number of the manufacturer or supplier and the Contractor who performed the installation;
 - .16 The shop drawings approved;
 - .17 The "As-built" drawings;
 - .18 The description of the exact operation, step by step, of each system installed;
 - .19 The description of the procedure, step-by-step, for the start up and stopping, in order to have a safe and reliable operation;
 - .20 A list of the different parts of the equipment that could be replaced on a regular basis, giving the replacement interval;
 - .21 The list of spare parts and the names, address and telephone numbers of suppliers of all equipment, engines and accessories supplied and installed, with reference to the appropriate Section.
 - .22 The final Cx report.
- .3 Approval:
- .1 For approval, submit to the Cx Authority and to the Departmental Representative, the copy of the operation and maintenance manual draft. Unless otherwise directed by the Cx Authority and the Departmental Representative, the forms must not be submitted individually.
 - .2 Make the necessary changes in the operation and maintenance manual and resubmit as directed by the Cx Authority and the Departmental Representative.
 - .3 Provide a final copy of the operation and maintenance manual to the Cx Authority and three (3) final copies to the Departmental Representative.
- .4 Additional information:
- .1 Prepare additional information forms and attach them to the operation and maintenance manual when the demonstrations or the instruction execution described above demonstrate that such records are necessary.

- .5 The operation and maintenance manual must be presented in a ring binder and must respect the order of the Specification Sections.

END OF SECTION

APPENDIX 1

Time Schedules

CRD ST-HYACINTHE		HORAIRES ET RESTRICTIONS PARTICULIÈRES					
	SYSTÈMES PRINCIPAUX			CONTRAINTES IMPACTANT LE PHASAGE DES TRAVAUX			
	Systèmes principaux	Secteurs principaux desservis	Emplacement	Horaire d'occupation du secteur	Horaires standards de fonctionnement du système	Périodes d'arrêt du système durant les horaires standards de fonctionnement	Conditions critiques à maintenir ? Période (24 h/24 ou autre) ? À quel endroit du secteur ?
Bloc « F » + une partie du Bloc « A »	<u>UV-1 & VE-1</u> <u>Système d'apport d'air neuf</u>	Bloc « F » Bloc « A » : 4 usines pilotes (A-141, A-151, A-161, A-171) avec leurs bureaux (A-142, A-145, A-152, A-155, A-165, A-172 et A-175)	F-301	6 h à 18 h du lundi au vendredi	Même que Horaire d'occupation, sauf A-151	Aucune	Locaux A-151 et A-153 24 h/24 Local F-130 présence de produits chimiques Frigo locaux A-143, A163 et A173 F 209 (Centre ACER): Le laboratoire contient plusieurs instruments analytiques qui nécessitent, pour un fonctionnement optimal, une température ambiante qui n’excède pas 25 °C. La chambre froide et le congélateur doivent fonctionner en permanence, à part certains arrêts temporaires de courte durée qui pourront être tolérés. F-214, F-219 et F-224 conditions à maintenir : Le matériel contenu dans les chambres froides à 4 °C (F-216 et F-226) et -20°C (F-217 et F-222) ne peut être déplacé ailleurs dans le CRDSH. Donc, il n'est pas possible de mettre toutes les chambres à l'arrêt pour une période de plus de 3 heures (considérant aucune ouverture de la chambre). Si une période plus longue est nécessaire, une chambre à 4 °C (F-216 ou F-226) et -20 °C (F-217 ou F-222) doit demeurer fonctionnelle. De plus, le matériel doit être déplacé par une personne compétente à cause des risques de biosécurité. Ces trois locaux sont régis par un programme de biosécurité qui implique que toute personne y ayant accès doit être accompagnée ou formée. Certaines contraintes supplémentaires pourraient donc s'appliquer (une demande de précisions est présentement en cours, en date du 25 février 2020, auprès de l'agence réglementaire concernée, soit l'Agence de santé publique du Canada). Pour le laboratoire F-209 dans le cas d'un arrêt prolongé des chambres froides F-211 (4 °C) et F-212 (-20 °C), le locataire devra prévoir un déménagement du matériel dans d'autres chambres froides à l'extérieur du secteur F. Finalement, en période estivale, cette aile à tendance à être chaude et comme les portes d'accès des laboratoires F-214, F-219 et F-224 doivent demeurer fermées en tout temps pour des raisons de biosécurité, un arrêt de la climatisation pourrait avoir un effet sur les travailleurs.
	<u>AC-1 à AC-17, AC-26, AC-27</u> <u>(VC & SerpRef)</u>	Bloc « F »	Bloc « F »		Même que Horaire d'occupation		
	<u>AC-18 à AC-25</u> <u>(VC & SerpRef)</u>	4 usines pilotes (A-141, A-151, A-161, A-171) avec leurs bureaux (A-142, A-145, A-152, A-155, A-165, A-172 et A-175)	Bloc « A »		Même que Horaire d'occupation, sauf A-151	Aucune	
	<u>VH-1 à VH-4</u> <u>(Évacuation hottes de laboratoire)</u>	Laboratoires F-209, F-214, F-219 et F-224	Toit Bloc « F »		Même que Horaire d'occupation, sauf A-151 F209 (Centre ACER) : Lundi au vendredi, de 7 h 30 à 4 h 30	F 209 (Centre ACER): Hottes : Lundi au vendredi, du 7 h30 à 4h30 Génératrice d’azote pour le système LC-MS : air comprimé en tout temps La chambre froide et le congélateur (walk-in) peuvent subir des arrêts temporaires (1 heure max). S.V.P. aviser à l’avance de ces arrêts. Pour un arrêt prolongé de ces équipements, S.V.P. nous aviser à l’avance pour qu’on puisse transférer le matériel dans une autre chambre que vous aurez mis en disposition.	
	<u>SYSTÈME VE-2 (Évacuateur)</u>	Usine pilotes A-141 et A-151	Proche de A-212		Même que Horaire d'occupation, sauf A-151	Aucune	
	<u>SYSTÈME VE-3 (Évacuateur)</u>	Usine pilotes A-161 et A-171	Proche de A-212		Même que Horaire d'occupation	Aucune	
	<u>Échangeur vapeur-eau EC-1</u> <u>(Chauffage)</u>	Bloc « F » Bloc « A » : 4 usines pilotes (A-141, A-151, A-161, A-171) avec leurs bureaux (A-142, A-145, A-152, A-155, A-165, A-172 et A-175)	F-301		Même que Horaire d'occupation, sauf A-151	Aucune	
	<u>Refroidisseur CC-1 et tour d'eau TR-1</u> <u>(Refroidissement)</u>	Bloc « F » Bloc « A » : 4 usines pilotes (A-141, A-151, A-161, A-171) avec leurs bureaux (A-142, A-145, A-152, A-155, A-165, A-172 et A-175)	F-301		Même que Horaire d'occupation, sauf A-151	Aucune	

CRD ST-HYACINTHE		HORAIRES ET RESTRICTIONS PARTICULIÈRES					
Bloc « A »	<u>Système V43-2 (& V36-18A)</u>	Bloc « A » - Ventilation Usines	Local technique Appentis A-302 & B-301	7 h à 19 h du lundi au vendredi	Même que Horaire d'occupation	Aucune	Frigo : Locaux A-102 - 103 et A-119 à A-121 24h/24
	<u>Système V43-5</u>				Même que Horaire d'occupation	Aucune	
	<u>Système V43-6</u>				Même que Horaire d'occupation	Aucune	
	<u>V43-33A/E</u>	Bloc « A » - Ventilation - Hotte d'équipements à induction SE-1			Même que Horaire d'occupation	Aucune	Hâloir (local A-104 et A-105) NE PAS TOUCHER
	<u>V43-25RE</u>	Bloc « A » (Évacuation hotte F0-9)			Même que Horaire d'occupation	Aucune	
	<u>V44-24E</u>	Bloc « A » (Évacuation unité Mojonnier)	Sur le toit		Activé selon les besoins d'utilisation	Aucune	
	<u>V36-1R et V36-2R</u>	Évacuation pièces A-107 et A-108 (vers système V43-2)	RDC Bloc « A »		Même que Horaire d'occupation	Aucune	local A-106 Mojonnier (présence de solvant) 24 h/24
	<u>V36-6RE à -17RE</u>	Bloc « A » (Évacuation hottes TR-2,TR-8, EM-4,FL-5, FL-2, FL-7, V1-5, VE-9 SE-7, V1-6 et FL-6)	RDC Bloc « A »		Même que Horaire d'occupation	Aucune	
Bloc « B »	<u>Système V43-11</u>	Bloc « B » (Ventilation Usines)	Local technique Appentis A-302 & B-301	7 h à 19 h du lundi au vendredi	Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	Frigo et congélateur : Locaux B-101 à B-113 et B-123 à B128 24 h/24
	<u>Système V43-13</u>				Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	
	<u>Système V43-16</u>				Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	
	<u>V43-30RE et V43-31RE</u>	Bloc « B » (Évacuateur hottes HU-6 et HU-12)			Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	B-114-A-B : Irradiateur : Accès restreint - Voir Bruno Laventure
	<u>V41-1E (Évacuateur)</u>	Bloc « B » (Usines)	Sur le toit		Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	
	<u>V41-2E (Évacuateur)</u>	Bloc « B » (Usines)	Sur le toit		Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	
	<u>V43-23RE</u>	Bloc « B » (Évacuateur hotte BT-15)	RDC Bloc « B »		Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	Locaux B-159 et B-129 24 h/24h
	<u>V43-26A/V41-3E</u>	Bloc « B » (Ventilation hottes)			Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	
	<u>V43-34A/E, -35A/E, -36A/E, -37A/E, -38A/E,</u>	VBloc « B » (Ventilation hottes HU-1 à -5 et HU-08)			Même que Horaire d'occupation, sauf B-159 et B-129	Aucune	

CRD ST-HYACINTHE		HORAIRES ET RESTRICTIONS PARTICULIÈRES						
Bloc « C »	SYSTÈME V43-1	Bloc « C » (Ventilation zone administration)	Local technique Appentis A-302 & B-301	8 h-18 h du lundi au vendredi	8 h-18 h du lundi au vendredi	Aucune période d'arrêt		
	SYSTÈME V43-3 (& V43-27E)					Aucune période d'arrêt		
	SYSTÈME V43-4					Aucune période d'arrêt		
	SYSTÈME V43-7	Bloc « D » (Ventilation Laboratoires & Bureaux)	Local technique Appentis	7 h à 19 h du lundi au vendredi	7 h à 19 h du lundi au vendredi	Aucune période d'arrêt		
	SYSTÈME V43-8					Aucune période d'arrêt		
	V44-2E (Évacuateur)	Bloc « C » (Évacuation toilettes)	Sur le toit			Aucune période d'arrêt		
	V44-29A/E	Bloc « C » (RDC Hotte cuisine (M304 axe 4/E))	Toit Bloc C (M308)	8 h-18 h du lundi au vendredi	8 h-18 h du lundi au vendredi	Aucune période d'arrêt	Arrêt des hottes et de la ventilation des bureaux attendant en alternance pour les secteurs et pour des durées maximales de 2 semaines. Ne pas produire de poussière ou éviter sa propagation dans les laboratoires (locaux très sensibles à la poussière B-164, D-118 et D 105). La procédure d'arrêt des chambres froides est dépendante du temps de l'arrêt. Voir ensemble des recommandations dans document joint.	
Bloc « D »	SYSTÈME V43-10	Bloc « D » (Ventilation Laboratoires & Bureaux)	Local technique Appentis A-302 & B-301	7 h à 19 h du lundi au vendredi	7 h à 19 h du lundi au vendredi	Aucune période d'arrêt		
	SYSTÈME V43-12					Aucune période d'arrêt		
	SYSTÈME V43-14 (& Évacuateur V44-1E)					Aucune période d'arrêt		
	SYSTÈME V43-15					Aucune période d'arrêt		
V44-5E (Évacuateur hotte d'acide perchlorique V44-5E)	Bloc « D » (Local D-104)	Sur le toit	Aucune période d'arrêt					
Blocs « C » & « D »	V-44-3E-1 / V-44-3E-2 (Évacuateurs laboratoires hottes)	Local C-255 (Hotte V-44-3EO) Local D-207 (Hottes V-44-3EK et V-44-3EL) Local D-233 (Hottes V-44-3EM et V-44-3EN) Local D-110 (Hottes V-44-3EA et V-44-3EB) Local D-110 (Hottes V-44-3EC et V-44-3ED) Local D-128 (Hottes V-44-3EG et V-44-3EH) Local D-128 (Hottes V-44-3EI et V-44-3EJ) Local D-118 (Hotte V-44-3EF)	Sur le toit	7 h à 19 h du lundi au vendredi	7 h à 19 h du lundi au vendredi	Aucune période d'arrêt		
		Système V43-9 (& V43-28E/-29E)	Blocs C & D (Ventilation Corridor)			Local technique Appentis A-302 & B-301		
Bloc « E »	Système V-35400-1-A (&V35-400-5E)	Bloc « E » (Ventilation Auditorium)	Bloc « E »	8 h-18 h du lundi au vendredi	8 h-18 h du lundi au vendredi			
	Système V-35400-2-A (& V35-400-1E/-3E)	Bloc « E » (Ventilation Bibliothèque)						
	Système V-35400-3-A/-3R	Bloc « E » (Ventilation Salle de formation)						
	Échangeur de chauffage EC-1	Bloc « E » (Chauffage)						
Centrale thermique	Chaudières 1 et 2 (Autonomes)	Tous les blocs « A » à « F »	Centrale thermique	S/O				
	Refroidisseur (P37-1, P37-2) et Tour d'eau (P-43-1, P-43-2)	Tous les blocs, à l'exception du Bloc « F »						
	Échangeurs P33-42, P33-43 et P43-25	Blocs « A » à « D »						
Bâtiment 2	Ventilation, système AC-1	Bâtiment 2 (Matières dangereuses)	Bâtiment 2	Variable	24 h /24		Locaux d'entreposage, zone antidéflagrante	

APPENDIX 2

COVID-19

Updated Guidance for Contractors Working in AAFC Buildings

- For the purposes of this document, the term Contractor will mean contractor, sub-contractor, consultants and sub-consultants. Contractors are responsible to ensure that all their hired sub-contractors also adhere to the requirements of this document.
- Prior to accessing AAFC building interiors, Contractors will hold a orientation meeting (tele or video conference) with AAFC Facility Manager and Project Manager, and the following will be agreed to in writing with the intent of maintain physical distancing:
 - ☐ Access/egress and material delivery door(s) for worksite.
 - ☐ Daily shift or specific occupancy times, including estimated number of personnel.
 - ☐ Construction or work zone limits.
 - ☐ Use of site: washrooms, drinking water, parking location, garbage and recycling disposal.
 - ☐ Protocol that whenever physical distancing cannot be achieved at the worksite, facial covering will be worn by all personnel involved (AAFC and Contractor).
- Contractors are to submit signed confirmation that they understand and will follow requirements set out in attached **COVID-19 Check List for Contractors Working in AAFC Buildings**.

COVID-19 Check List for Contractors Working in AAFC Buildings

Prior to beginning contracted work in an AAFC building, Contractors are to submit signed confirmation that they and their hired subcontractors agree to the following:

- ☐ Contractor will follow **Canadian Construction Association's COVID-19 – Standardized Protocols for All Canadian Construction Sites.**
(<https://www.cca-acc.com/covid-19-resources/>)
- ☐ All contractor personnel will complete Government of Canada's online **COVID-19 Symptom Self Assessment Tool** each day prior to work shift and will not come to AAFC site if Tool advises or recommends to self-isolate, stay at home or seek medical attention. (<https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html>)
- ☐ Advise AAFC Representative as soon as possible if any of Contractor's personnel who have worked in an AAFC building begin to exhibit flu-like symptoms.
- ☐ All contractor and hired sub-contract personnel will follow local, provincial and federal public health guidance and requirements including that of **Public Health Agency of Canada (PHAC) for Coronavirus disease (COVID-19): Prevention and risk.** (<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks.html?topic=tilelink>)
- ☐ While on AAFC property, all Contractor and sub-contractors will comply to all posted signage in AAFC buildings, or advise AAFC Representative immediately if unable to comply.

These above-mentioned requirements will be complied while conducting work in AAFC buildings for the duration of the contract.

Signature of Contractor Representative

APPENDIX 3

Asbestos

Services publics et approvisionnement Canada (SPAC)

DEVIS TECHNIQUE DES TRAVAUX EN PRÉSENCE DE CONTAMINANTS

REMPLACEMENT DES CONTRÔLES CVCA DES BÂTIMENTS #001 ET #002

JUIN 2020

Centre de recherche et de développement de
Saint-Hyacinthe sis au 3600, boul. Casavant
Ouest à Saint-Hyacinthe (Québec)

N° de projet TPSGC : R.107062.002

040-P-0021383-0-02-260-HS-S-0100-00

ÉMIS POUR SOUMISSION



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Registre des émissions		
N° de révision	Date	Description
0A	2020-06-12	Document émis pour commentaires 100%
00	2020-06-30	Document émis pour soumission

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TABLE DES MATIÈRES

DEVIS TECHNIQUE POUR LES TRAVAUX EN PRÉSENCE DE CONTAMINANTS REMPLACEMENT DES CONTRÔLES DES CVCA DES BÂTIMENTS #001 ET #002

**Centre de recherche et développement alimentaire (CRDA)
3600, boul. Casavant Ouest à Saint-Hyacinthe (Québec)**

N° de section	Description	Nb de pages
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02 82 00.02	Procédure de travail – Enlèvement d'isolant calorifuge contenant de l'amiante par la méthode du sac à gants	3

FIN DE LA SECTION

Annexes

Annexe 1 – Caractérisation complémentaire de matériaux susceptibles de contenir de l'amiante (WSP, 2020)

Annexe 2 – Registre des MSCA et MCA (WSP, 2020)

**02 82 00.00– Procédure de percement d'un matériau contenant de
l'amiante, du plomb ou de la silice cristalline avec
capteur de poussières**

**Procédure de percement d'un matériau
contenant de l'amiante, du plomb ou de la
silice cristalline avec capteur de poussières**

- .1 Cette section de devis est complémentaire aux plans des autres professionnels. Consulter les documents émis par les autres professionnels pour connaître la nature exacte des interventions et de la portée des travaux.
- .2 L'Entrepreneur doit prévoir d'utiliser cette procédure pour tout percement (trou, ancrage, fixation, etc.) pratiqué avec un outil muni d'un capteur de poussières à la source dans un matériau contenant de l'amiante (MCA), du plomb ou de la silice cristalline.
- .3 Cette procédure doit être appliquée seulement lorsque le percement à effectuer est d'un diamètre inférieur à celui du gabarit du capteur et si le percement se fait avec un outil muni d'un capteur de poussières à la source.
- .4 Dans le cadre du projet intitulé « Remplacement des contrôles des CVCA des bâtiments #001 et #002 » au Centre de recherche et de développement de Saint-Hyacinthe sis au 3600, boul. Casavant Ouest à Saint-Hyacinthe (Québec), les travaux suivants, sans s'y limiter, devront être exécutés selon les exigences décrites dans la présente procédure :
 - .1 La réalisation de tout percement, fixation ou ancrage dans un matériau contenant de l'amiante, du plomb ou de la silice cristalline. Se référer aux plans des autres professionnels afin de connaître la portée exacte des interventions nécessitant la réalisation de percements. Parmi les matériaux visés figurent notamment le béton, les blocs de béton, le mortier, la brique, les matériaux cimentaires, les tuiles de vinyle contenant de l'amiante et les revêtements peints.
- .5 Selon le rapport de caractérisation complémentaire de matériaux susceptibles de contenir de l'amiante (WSP, 2020) et le registre des MSCA et MCA du bâtiment (WSP, 2020), les matériaux ci-dessous sont considérés comme contenant de l'amiante dans le bâtiment.

BLOCS A, B, C ET D DU BÂTIMENT

- .1 La pâte cimentaire présente au niveau des sections irrégulières de tuyauterie de drain pluvial, vapeur, condensé, glycol, bouilloire, eau froide (labo), eau froide (chauffage), récupération de chaleur et eau chaude du bâtiment (55-60% de fibres d'amiante de type chrysotile);
- .2 La pâte cimentaire présente au niveau des sections irrégulières de tuyauterie dans les locaux B-104 et B-106 à l'étage 1 du bâtiment (40% de fibres d'amiante de type chrysotile);
- .3 La pâte cimentaire présente au niveau du réservoir situé dans le local A-118 à l'étage 1 du bâtiment (80% de fibres d'amiante de type chrysotile);
- .4 Les tuiles de vinyle de couleur beige et de dimension 12 pouces x 12 pouces présentes au plancher des locaux B-146 et B-147 de l'étage 1 et dans le corridor A-209 et des locaux A-201, A-202 et A-203 de l'étage 2 du bâtiment (4% de fibres d'amiante de type chrysotile);

**Procédure de percement d'un matériau
contenant de l'amiante, du plomb ou de la
silice cristalline avec capteur de poussières**

- .5 Le mastic/calfeutrante gris présent au niveau des insertions des conduits dans les murs de l'étage 1 du bâtiment, notamment dans les locaux C-112 et C-121C (0,1 à 1% de fibres d'amiante de type chrysotile);
- .6 Les mastics/calfeutnants gris et beige présents au niveau du système CVAC situé dans les locaux A-302 et B-301 à l'étage 3 du bâtiment (6% de fibres d'amiante de type chrysotile);
- .7 La membrane goudronnée présente au niveau de l'unité CVAC située à l'extérieur du bâtiment (5-10% de fibres d'amiante de type chrysotile).
- .6 Cette procédure doit être suivie rigoureusement. Tous les travailleurs qui entrent sur le site doivent avoir reçu une formation adéquate concernant les risques liés à une exposition aux poussières, à l'amiante, au plomb et à la silice cristalline, l'emploi et l'élimination des équipements de protection individuels, les modalités d'entrée et de sortie des zones contaminées et les différents aspects des méthodes de travail appropriées.
- .7 Pour ces travaux, les travailleurs doivent porter l'équipement de protection individuel requis, soit au minimum, un demi-masque respiratoire avec cartouches de type P-100 ainsi que des gants appropriés.
- .8 Séquence d'intervention
 - .1 Délimiter une zone de travail à l'aide d'un ruban indicateur;
 - .2 Installer un panneau d'avertissement pour les travaux en présence de contaminants.
 - .3 Au besoin, protéger les surfaces et les équipements à l'intérieur de la zone de travail à l'aide de feuilles de polyéthylène;
 - .4 Revêtir l'équipement de protection individuel indiqué ci-haut;
 - .5 Mouiller adéquatement l'endroit du percement ou y appliquer un produit scellant;
 - .6 Brancher le tuyau d'un aspirateur HEPA au collet de captage des poussières qui est installé sur la perceuse et mettre en fonction l'aspirateur HEPA;
 - .7 Effectuer le percement. Dans le cas du sciage de béton, dégarnir la surface totale du béton qui doit être coupée du matériau en effectuant une série de percements à l'aide de la perceuse munie du collet de captage de poussières à la source;
 - .8 Retirer doucement la perceuse et nettoyer l'intérieur du collet de captage des poussières à l'aide de l'aspirateur HEPA, puis à l'aide d'un linge humide;
 - .9 Nettoyer les abords du trou nouvellement percé ou dénudé à l'aide de l'aspirateur HEPA et appliquer un produit scellant sur le matériau contenant de l'amiante demeurant en place;

**Procédure de percement d'un matériau
contenant de l'amiante, du plomb ou de la
silice cristalline avec capteur de poussières**

- .10 Ensacher ou emballer les matériaux au fur et à mesure de l'avancement des travaux en identifiant correctement les sacs;
- .11 Aspirer et nettoyer les débris générés par les travaux au fur et à mesure de leur avancement à l'aide d'un aspirateur HEPA et d'un linge humide;
- .12 Une fois les travaux complétés :
 - .1 Procéder au nettoyage de toutes les surfaces dans la zone des travaux. Au besoin, enlever les feuilles de polyéthylène utilisées;
 - .2 Nettoyer les équipements de protection individuelle à l'aide d'un aspirateur HEPA ou un linge humide;
 - .3 Enlever les vêtements de protection jetables et en disposer dans le sac à déchets;
 - .4 Retirer l'appareil de protection respiratoire;
 - .5 Retirer rubans et panneau d'avertissement;
 - .6 Disposer du sac à déchets adéquatement;
 - .7 Se laver les mains et le visage.

FIN DE LA SECTION

02 82 00.02– Procédure de travail - Enlèvement d'isolant calorifuge contenant de l'amiante par la méthode du sac à gants

1.0 OBJET

- .1 Cette procédure de travail indique la technique pour l'enlèvement d'une section d'isolant calorifuge contenant de l'amiante sur un tuyau à l'aide de la méthode du sac à gants. Se référer au devis des autres professionnels afin de connaître l'emplacement de la tuyauterie visée par les travaux.
- .2 Dans le cadre du projet intitulé « Remplacement des contrôles des CVCA des bâtiments #001 et #002 » au Centre de recherche et de développement de Saint-Hyacinthe sis au 3600, boul. Casavant Ouest à Saint-Hyacinthe (Québec), l'Entrepreneur doit considérer que les interventions suivantes visant de la tuyauterie recouverte d'un isolant calorifuge contenant de l'amiante doivent être effectuées à l'aide de la méthode du sac à gants :
 - .1 Le dégarnissage d'approximativement trente-deux (32) sections irrégulières de tuyauterie isolées avec un isolant calorifuge contenant de l'amiante dans l'appentis mécanique du bâtiment;
 - .2 Le dégarnissage d'approximativement cinq (5) pieds linéaires d'une section de tuyauterie potentiellement isolée avec un isolant calorifuge contenant de l'amiante au niveau du réducteur de vapeur dans la centrale d'énergie (local A-118) du bâtiment;
 - .3 Le dégarnissage d'approximativement dix (10) sections irrégulières de tuyauterie isolées avec un isolant calorifuge contenant de l'amiante réparties sur les deux (2) étages de la centrale d'énergie du bâtiment.
- .1 L'Entrepreneur doit considérer que certains travaux doivent être effectués en hauteur ou dans des secteurs encombrés et prévoir les moyens d'accès requis.
- .2 L'Entrepreneur doit prendre en considération que les matériaux suivants contiennent de l'amiante dans les blocs A, B, C et D du bâtiment :
 - .1 La pâte cimentaire présente au niveau des sections irrégulières de tuyauterie de drain pluvial, vapeur, condensé, glycol, bouilloire, eau froide (labo), eau froide (chauffage), récupération de chaleur et eau chaude du bâtiment (55-60% de fibres d'amiante de type chrysotile);
 - .2 La pâte cimentaire présente au niveau des sections irrégulières de tuyauterie dans les locaux B-104 et B-106 à l'étage 1 du bâtiment (40% de fibres d'amiante de type chrysotile);
 - .3 La pâte cimentaire présente au niveau du réservoir situé dans le local A-118 à l'étage 1 du bâtiment (80% de fibres d'amiante de type chrysotile).
- .1 Le rapport de caractérisation complémentaire de matériaux susceptibles de contenir de l'amiante (WSP, 2020) ainsi que le registre des MSCA et MCA du bâtiment (WSP, 2020) sont présentés en annexe du présent devis pour référence.

2.0 MÉTHODE DU SAC À GANTS

2.1 NOTIONS GÉNÉRALES

- .1 L'enlèvement de l'amiante à l'aide d'un sac à gants est un travail à risque modéré, tel que défini à l'article 3.23.15 du *Code de sécurité pour les travaux de construction*;
- .2 La procédure suivante doit être suivie rigoureusement et seulement par les travailleurs ayant reçu la formation appropriée;
- .3 Ne pas utiliser de sac à gants sur des tuyaux chauds, car il pourrait fondre sous l'effet de la chaleur;
- .4 Ne pas surcharger le sac de débris ou d'eau, car il pourrait briser sous le poids;
- .5 Ne pas utiliser de sac à gants sur de la tuyauterie dont le recouvrement est fortement endommagé à l'extérieur de la section à enlever.

2.2 INSTALLATION DU SAC À GANTS

- .1 Les sacs à gants doivent être utilisés pour une seule intervention et ne peuvent être réutilisés;
- .2 Délimiter une zone de travail à l'aide d'un ruban indicateur de couleur jaune et portant la mention « danger »;
- .3 Le travailleur doit revêtir ses lunettes de protection, son vêtement de protection (Tyvek) et son masque respiratoire muni d'un filtre HEPA (type P-100);
- .4 S'il y a lieu, recouvrir de polyéthylène renforcé et de ruban adhésif les parties endommagées de l'enveloppe de l'isolant de chaque côté de l'endroit où le sac à gants sera installé;
- .5 Déposer les outils nécessaires au travail dans le sac à gants, dont couteau, lame, brosse, ruban adhésif, etc.;
- .6 Installer le sac autour du tuyau, fermer hermétiquement le sac à l'aide de la fermeture éclair en haut du sac ou bien avec un ruban adhésif. Sceller les deux extrémités du sac;
- .7 Insérer les buses du vaporisateur d'eau et de l'aspirateur HEPA dans les orifices conçus à cet effet et fermer à l'aide de ruban adhésif.

2.3 ENLÈVEMENT DE L'ISOLANT CALORIFUGE

- .1 Enfiler les gants du sac;
- .2 Mouiller l'isolant sur toute son épaisseur à l'aide du vaporisateur et laisser l'eau s'imbiber dans l'isolant calorifuge;
- .3 Procéder adéquatement à l'enlèvement de l'isolant et le déposer au fond du sac;
- .4 Laver la partie exposée du tuyau, les parois du sac à gants, les outils et mouiller l'isolant déposé au fond du sac afin de minimiser la quantité de poussière produite;

- .5 Recouvrir les extrémités mises à nu de l'isolant au moyen de ruban adhésif.

2.4 ENLÈVEMENT DU SAC À GANTS

- .1 Laver les outils et le tuyau;
- .2 Fermer la fermeture éclair au centre du sac ou tourner le sac sur lui-même de manière à confiner l'isolant retrouvé au fond du sac;
- .3 Déposer les outils dans un des gants et retourner ce gant vers l'extérieur du sac. Tordre la manche du gant et la sceller avec du ruban adhésif. Couper la manche au niveau du ruban adhésif;
- .4 Nettoyer les outils à l'eau avant de les sortir de la zone de travail;
- .5 Retirer la buse du vaporisateur d'eau et sceller l'orifice avec du ruban adhésif;
- .6 Glisser un sac à déchets d'amiante par-dessus le sac à gants;
- .7 Desserrer les courroies du sac à gants et ouvrir la fermeture du haut du sac;
- .8 Plier le sac à gants et le déposer dans le sac à déchets d'amiante;
- .9 Disposer des sacs à déchets dans un site autorisé à recevoir les déchets d'amiante;
- .10 Retirer rubans et affiches.

FIN DE LA SECTION

Annexe 1 – Caractérisation complémentaire de matériaux susceptibles de contenir de l’amiante (WSP, 2020)

SERVICES PUBLICS ET APPROVISIONNEMENT CANADA

CARACTÉRISATION COMPLÉMENTAIRE DE MATÉRIAUX SUSCEPTIBLES DE CONTENIR DE L'AMIANTE

**CENTRE DE RECHERCHE ET DE DÉVELOPPEMENT DE
SAINT-HYACINTHE**

3600, BOUL. CASAVANT OUEST, SAINT-HYACINTHE

REF. WSP : 181-00294-45

DATE : 26 MARS 2020

CONFIDENTIEL





SERVICES PUBLICS ET
APPROVISIONNEMENT CANADA

**CARACTÉRISATION
COMPLÉMENTAIRE DE
MATÉRIAUX SUSCEPTIBLES DE
CONTENIR DE L'AMIANTE**

**CENTRE DE RECHERCHE ET DE
DÉVELOPPEMENT DE SAINT-
HYACINTHE**

**3600, BOUL. CASAVANT OUEST, SAINT-
HYACINTHE**

CONFIDENTIEL

REF. WSP : 181-00294-45
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RAPPORT (VERSION FINALE)

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Les conclusions présentées dans ce rapport sont basées sur le travail effectué par du personnel technique, entraîné et professionnel, conformément à leur interprétation raisonnable des pratiques d'ingénierie et techniques courantes et acceptées au moment où le travail a été effectué.

Le contenu et les opinions exprimées dans le présent rapport sont basés sur les observations et/ou les informations à la disposition de WSP au moment de sa préparation, en appliquant des techniques d'investigation et des méthodes d'analyse conformes à celles habituellement utilisées dans des conditions similaires, et assujettis aux mêmes contraintes de temps, et aux mêmes contraintes financières et physiques applicables à ce type de projet.

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WSP ne fait aucune représentation relativement à la signification juridique de ses conclusions.

Référence à citer :

WSP. 2020. *Caractérisation complémentaire de matériaux susceptibles de contenir de l'amiante*, Centre de recherche et de développement de Saint-Hyacinthe, 3600, boul. Casavant Ouest, Saint-Hyacinthe. Rapport produit pour Services publics et Approvisionnement Canada. Réf. WSP : 181-00294-45. 7 pages et annexes.

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1 CONTEXTE D'INTERVENTION

1.1 MISE EN CONTEXTE

Dans le cadre de l'entente ouverte de fourniture des services d'expert-conseil en hygiène industrielle, pour la période 2017-2020, WSP a été mandatée par Services publics et Approvisionnement Canada (SPAC) pour effectuer une caractérisation complémentaire de matériaux susceptibles de contenir de l'amiante (MSCA) en même temps que l'inspection de l'état des matériaux contenant de l'amiante (MCA) des bâtiments situés au 3600 boulevard Casavant Ouest à Saint-Hyacinthe, au Centre de recherche et de développement de Saint-Hyacinthe – Agriculture et Agroalimentaire Canada (AAC).

SPAC a fourni à WSP le rapport de caractérisation complémentaire ainsi que le registre des MSCA et MCA réalisés en 2018 (Référence : WSP. 2018. *Caractérisation complémentaire des matériaux susceptibles de contenir de l'amiante dans les bâtiments du Centre de recherche et de développement, Agriculture et Agroalimentaire Canada situés au 3600, boulevard Casavant Ouest à Saint-Hyacinthe*, 268 p.).

SPAC a également fourni à WSP un rapport d'inspection et d'échantillonnage de la membrane de toiture du bâtiment principal (Référence : MHV, mars 2018. *Inspection et prélèvement d'échantillons de matériaux susceptibles de contenir de l'amiante, Centre de recherche et de développement – Agriculture et Agroalimentaire Canada à Saint-Hyacinthe*. 12 p.).

Selon l'information du registre de 2018, les MSCA déjà identifiés sont :

Blocs A, B, C et D :	Membrane de toiture (<i>échantillonnage partiel des bassins des blocs A et B par MHV, 2018</i>).
Bloc B :	Matériau recouvrant l'intérieur des hottes; Mastic brun (tuyaux entreplafond dans le local B-129).
Bloc E :	Membrane de toiture (<i>échantillonnage partiel par MHV, 2018</i>); Linoléum noir et colle (planchers).
Bloc F :	Linoléum gris et colle (plancher).
Entrepôt des produits chimiques :	Membrane de toiture

1.2 OBJECTIF DE L'ÉTUDE

L'objectif de cette étude est de procéder à la caractérisation de MSCA dans les secteurs qui n'ont pas été touchés lors de l'étude de caractérisation de 2018, notamment le mastic brun présent dans l'entreplafond du local B-129.

Il est à noter que le matériau en fibrociment à l'intérieur des hottes chimiques dans le Bloc B, ainsi que les revêtements en linoléum noir et gris et les colles sous-jacentes présents au plancher à certains endroits dans le Bloc F, n'ont pas été considérés dans cette caractérisation complémentaire, étant donné que ces matériaux ne peuvent pas être prélevés sans être endommagés. Ils sont donc toujours considérés comme MCA suspectés comme indiqué dans le registre des MSCA et des MCA mis à jour.

En ce qui concerne les matériaux de toiture, ils ne peuvent pas être échantillonnés en saison hivernale. Selon l'information reçue de SPAC, une caractérisation de ces matériaux est envisagée au printemps 2020 pour la toiture du bâtiment principal et celle de l'entrepôt des produits chimiques, en complément des échantillons prélevés par MHV pour répondre aux exigences de la Norme de SPAC sur la gestion de l'amiante.

2 CADRE RÉGLEMENTAIRE

Cette étude a été réalisée, sans s'y limiter, selon les principes de la réglementation, des directives et des politiques en vigueur applicables au niveau du gouvernement fédéral, notamment :

- La *Loi canadienne sur la protection de l'environnement* [L.C. 1999, ch. 33];
- Le *Règlement canadien sur la santé et la sécurité au travail* [RCSST, DORS/86-304];
- La *Norme de SPAC sur la gestion de l'amiante* [5 juin 2017];

Ainsi que des principes de la réglementation applicable au Québec, entre autres :

- La *Loi sur la santé et la sécurité du travail* [LSST, S-2.1];
- Le *Règlement sur la santé et la sécurité du travail* [RSST, S-2.1, r. 13];
- Le *Code de sécurité pour les travaux de construction* [CSTC, S-2.1, r. 4].

2.1 AMIANTE

L'amiante possède des propriétés réfractaires qui permettent de multiples applications, notamment en construction. L'amiante peut être trouvé dans divers matériaux friables d'un bâtiment (flocage, revêtements architecturaux, isolation thermique, etc.) et non friables (carreaux de plancher, panneaux de fibrociment, revêtements d'asphalte, etc.).

Un matériau contenant de l'amiante (MCA) est défini au Québec par l'article 3.23.01 du CSTC tel que « tout matériau ayant une concentration en amiante d'au moins 0,1 % est considéré comme un matériau contenant de l'amiante ».

Les travaux impliquant des MCA doivent être exécutés selon les exigences de la réglementation en vigueur. Lors de travaux de déconstruction, les matériaux contenant de l'amiante doivent être enlevés au préalable.

Il est à noter que l'amiante n'est pas une matière dangereuse selon le RMD, donc aucune démarche particulière pour l'enfouissement des MCA n'est requise. Toutefois, le transport des MCA provenant de travaux de déconstruction doit s'effectuer selon les exigences du *Règlement sur le transport des matières dangereuses* (C-24.2, r. 43) et le *Règlement sur les marchandises dangereuses* (DORS/2017-253).

3 MÉTHODOLOGIE

Les travaux de terrain ont été effectués le 11 février 2020 par M. Donald Buchan, technicien en hygiène industrielle et qualité de l'air intérieur chez WSP.

Les échantillons du mastic brun susceptible de contenir de l'amiante ont été prélevés et ensuite analysés par un laboratoire indépendant.

3.1 CARACTÉRISATION DE MATÉRIAUX SUSCEPTIBLES DE CONTENIR DE L'AMIANTE

Cette caractérisation complémentaire des matériaux susceptibles de contenir de l'amiante au Centre de recherche et de développement de Saint-Hyacinthe, a été réalisée selon les directives établies dans la *Norme de SPAC sur la gestion de l'amiante* publiée en juin 2017 et en fonction des exigences en vigueur à l'égard de l'amiante soit, le *Guide explicatif sur les nouvelles dispositions réglementaires – Gestion sécuritaire de l'amiante – Prévenir l'exposition des travailleurs à l'amiante* publié en 2013 par la Commission de la santé et de la sécurité du travail du Québec (maintenant la CNESST).

Les références ci-dessous ont été utilisées pour déterminer le nombre d'échantillons de mastic brun à prélever.

- Les MSCA fabriqués en usine, de texture et d'apparence uniformes, tels que les tuiles de vinyle, les colles, les panneaux d'amiante-ciment : 3 échantillons par zone présentant des similitudes d'ouvrage (ZPSO);

Au total, trois échantillons du mastic brun ont été prélevés pour respecter les exigences de la Norme de SPAC sur la gestion de l'amiante. Ce matériau a été observé seulement autour de tuyaux dans l'entreplafond du local B-129 situé au rez-de-chaussée du Bloc B du bâtiment principal. Toutefois, il est possible qu'il se trouve autour d'autres tuyaux présents dans l'entreplafond d'autres locaux du bâtiment principal.

Le prélèvement des échantillons en vrac de mastic brun a été effectué après une inspection visuelle et chacun des échantillons a été placé dans un sac de type « Ziploc » préalablement identifié. Le plan de localisation des échantillons prélevés dans le cadre de cette étude ainsi qu'un relevé photographique sont présentés respectivement aux annexes B et F de ce rapport. Le registre des MSCA et des MCA mis à jour est présenté à l'annexe E.

Les échantillons ont été analysés par le laboratoire EMSL Canada Inc. à Montréal, Québec, un laboratoire indépendant détenant des accréditations reconnues par l'Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST). L'identification de l'amiante a été réalisée selon la procédure analytique EPA/600/R-93/116, soit par microscopie à transmission électronique (MET) afin d'atteindre une limite de détection de 0,1 %. La demande d'analyse et le certificat d'analyse des échantillons sont présentés respectivement aux annexes C et D de ce rapport.

4 RÉSULTATS ET DISCUSSIONS

Cette section présente les résultats d'inspection et d'échantillonnage effectués par WSP dans le cadre de ce mandat.

4.1 MATÉRIAUX SUSCEPTIBLES DE CONTENIR DE L'AMIANTE

Les résultats analytiques des échantillons de mastic brun susceptible de contenir de l'amiante prélevés dans l'entreplafond du local B-129 du bâtiment principal du Centre de recherche et de développement de Saint-Hyacinthe sont présentés dans le tableau 1 ci-dessous.

Tableau 1 Tableau descriptif des échantillons de matériaux susceptibles de contenir de l'amiante prélevés dans le bâtiment principal du Centre de recherche et de développement de Saint-Hyacinthe le 11 février 2020 et résultats analytiques

Nom d'échantillon	Local	Description du matériau	Localisation du prélèvement	Résultats
B129 - Mastic brun - 1a	Entreplafond local B-129	Mastic / calfeutrant brun	Tuyauterie	Non détecté
B129 - Mastic brun - 1b	Entreplafond local B-129	Mastic / calfeutrant brun	Tuyauterie	Non détecté
B129 - Mastic brun - 1c	Entreplafond local B-129	Mastic / calfeutrant brun	Tuyauterie	Non détecté

Selon ces résultats,

- L'analyse par MET des trois échantillons de mastic brun prélevés autour de certains tuyaux dans l'entreplafond du local B-129 n'a révélé aucune détection d'amiante, par conséquent, il est considéré que l'ensemble des mastics bruns présents dans l'entreplafond du local B-129 ou à d'autres endroits du bâtiment principal ne contiennent pas d'amiante.

5 CONCLUSION ET RECOMMANDATIONS

Les travaux de caractérisation complémentaire de matériaux susceptibles de contenir de l'amiante dans le bâtiment principal du Centre de recherche et de développement de Saint-Hyacinthe situé au 3600, boulevard Casavant Ouest à Saint-Hyacinthe, effectués par WSP en date du 11 février 2020, ont révélé les éléments décrits ci-dessous.

5.1 MATÉRIAUX CONTENANT DE L'AMIANTE

Le mastic brun autour de certains tuyaux dans l'entreplafond du local B-129 ou à d'autres endroits du bâtiment principal ne contient pas d'amiante.

RECOMMANDATIONS

Advenant des travaux d'entretien, de rénovation, de réaménagement ou de déconstruction touchant le mastic brun autour de certains tuyaux dans l'entreplafond du local B-129 ou potentiellement à d'autres endroits du bâtiment principal du Centre de recherche et de développement de Saint-Hyacinthe, aucune disposition particulière n'est nécessaire en termes de travaux en condition d'amiante tels que définis dans le *Code de sécurité pour les travaux de construction* du Québec et le *Règlement canadien sur la santé et la sécurité du travail*.

En ce qui concerne les matériaux de toiture échantillonnés dans le cadre de la caractérisation faite par la firme MHV en mars 2018, des échantillons complémentaires doivent être prélevés et analysés dans les Blocs A, B et E du bâtiment principal, conformément aux exigences de la Norme sur la gestion de l'amiante de SPAC afin de confirmer ou infirmer l'absence d'amiante dans ces matériaux.

Mentionnons également que les MSCA non échantillonnés, étant donné qu'ils ne pouvaient pas être prélevés sans être endommagés, doivent toujours être considérés comme des MCA suspectés, comme indiqué dans le registre des MCA et des MSCA mis à jour. Il s'agit des revêtements de toiture des Blocs C, D et E du bâtiment principal et de l'entrepôt des produits chimiques, du matériau présent à l'intérieur des hottes chimiques dans le Bloc B ainsi que les revêtements de linoléum noir et gris présents au plancher à certains endroits dans les Blocs E et F.

Enfin, des matériaux susceptibles de contenir de l'amiante identifiés lors de l'inspection annuelle 2019-2020, comme le joint de mortier des murs en blocs de béton dans le bâtiment principal et dans l'entrepôt des produits chimiques, doivent également être caractérisés avant de procéder à d'éventuels travaux touchant ces matériaux. Ce MSCA est inscrit dans le registre mis à jour pour 2019-2020.

Les matériaux ci-dessus demeurent susceptibles de contenir de l'amiante et devraient faire partie d'une caractérisation complémentaire et les résultats répertoriés dans le registre des MCA.

RÉFÉRENCES

- ASSEMBLÉE NATIONALE DU QUÉBEC. *Code de construction* L.R.Q. B-1.1 r. 2.
- ASSEMBLÉE NATIONALE DU QUÉBEC. *Code de sécurité pour les travaux de construction* L.R.Q. S-2.1, r. 4.
- ASSEMBLÉE NATIONALE DU QUÉBEC. *Règlement sur la santé et la sécurité du travail* L.R.Q. S-2.1, r. 13.
- CNESST. 2012. *Guide des bonnes pratiques. Prévention de l'exposition des travailleurs à la silice*, Québec.
- CNESST. 2013. *Guide explicatif sur les nouvelles dispositions réglementaires – Gestion sécuritaire de l'amiante – Prévenir l'exposition des travailleurs à l'amiante*. Commission de la santé et de la sécurité du travail du Québec.
- HEALTH AND SAFETY EXECUTIVE. 2012. *Asbestos: The survey guide, second edition*, HSE, 2012, p. 35. MENV.
- LOIS CODIFIÉES DU CANADA. *Loi canadienne sur la protection de l'environnement* L.C. 199, ch. 33.
- MDDEP. 2002. *Guide de bonnes pratiques pour la gestion des matériaux de démantèlement*.

ANNEXE

A LIMITATIONS



LIMITATIONS DE RESPONSABILITÉ, PORTÉE DU RAPPORT ET UTILISATION PAR DES TIERS

Le présent rapport a été préparé par WSP inc et les travaux auxquels il fait référence ont été entrepris par WSP inc. pour le compte de SPAC. Il est destiné à l'usage unique et exclusif de SPAC. Toute personne autre que SPAC qui utilise ce rapport, s'appuie sur ce rapport ou prend une décision basée sur ce rapport en assume seule la responsabilité. WSP inc. ne fait aucune déclaration et ne donne aucune garantie concernant ce rapport et les travaux auxquels il fait référence. WSP inc. décline toute obligation envers toute autre personne ou toute responsabilité quelle qu'elle soit à l'égard de l'ensemble des pertes, frais, dommages, amendes, pénalités et autres préjudices que pourrait subir toute autre personne en raison de l'utilisation de ce rapport, de la foi qu'elle lui accorde ou de toute décision ou mesure fondée sur ce rapport ou les travaux mentionnés dans ce rapport.

Les investigations menées par WSP inc. pour ce rapport et toute conclusion ou recommandation présentée dans ce rapport traduisent l'appréciation de WSP inc. de l'état des lieux observés au moment de l'inspection des lieux à la date ou aux dates indiquées dans ce rapport ainsi que des informations disponibles au moment de la présentation de ce rapport. Ce rapport a été préparé pour s'appliquer spécifiquement à ce site et est basé, en partie, sur des observations visuelles des lieux, des recherches ainsi que sur des analyses spécifiques sur des matériaux susceptibles de contenir de l'amiante, tel que décrit dans ce rapport. À moins d'indications contraires, les conclusions ne peuvent être étendues à des parties de site qui n'étaient pas disponibles pour une investigation directe des matériaux. Des matériaux, autres que ceux visés par l'investigation décrite dans ce rapport peuvent exister sur le site, ces matériaux peuvent exister dans des endroits du site qui n'ont pas fait l'objet d'une investigation puisque hors de la portée du mandat ou en raison d'une inaccessibilité.

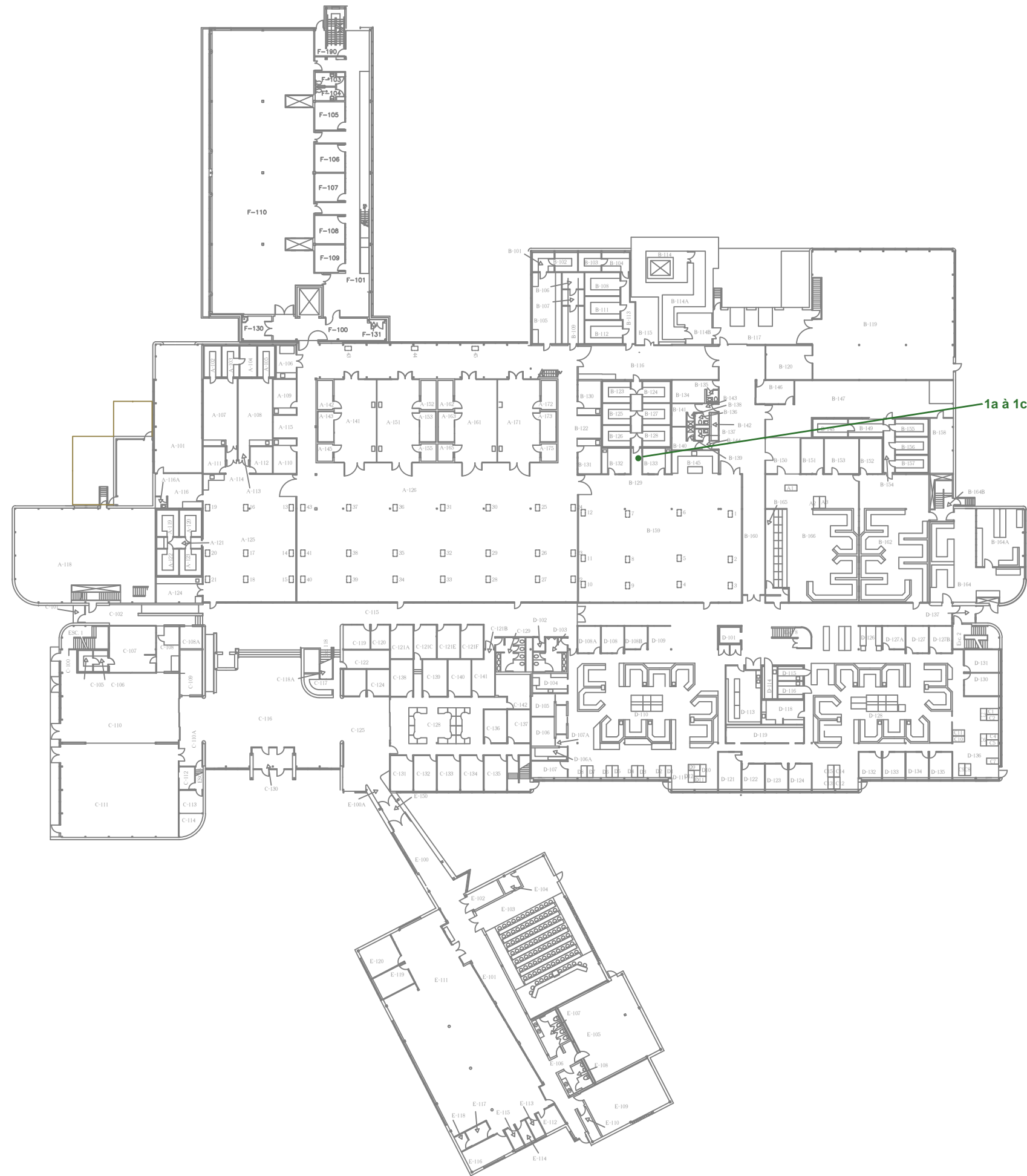
Si l'état du site ou les normes applicables changent ou si des renseignements supplémentaires deviennent disponibles à une date ultérieure, des modifications des constatations, conclusions et recommandations dans le présent rapport peuvent être nécessaires.

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ANNEXE

B

PLAN DE LOCALISATION
DES ÉCHANTILLONS
PRÉLEVÉS



1a à 1c Identification des échantillons
mastic brun susceptible de contenir
de l'amiante

Résultats

1X Matériau ne contenant pas d'amiante

Source
Plan : Agriculture et agroalimentaire Canada,
Centre de recherche et de développement sur les aliments,
Rez-de-chaussée, Version Janvier 2017

**AGRICULTURE ET
AGROALIMENTAIRE
CANADA** CARACTÉRISATION
COMPLÉMENTAIRE DES
MATÉRIAUX SUSCEPTIBLES
DE CONTENIR DE L'AMIANTE
Saint-Hyacinthe (QC)

Figure 1
Localisation des échantillons de MSCA
prélevés dans l'entreplafond du local B-129

ANNEXE

C

DEMANDE D'ANALYSE
DES ÉCHANTILLONS

EMSL CANADA, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number (Lab Use Only):

682000877

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Zip/Postal Code:	Country: <u>Canada</u>	Report To (Name):	
Telephone #: <u>514-217-3400</u>	Fax #:	Email Address: <u>Jean Kerner. Michel @ wsg. com</u>	
Project Name/Number: <u>AAC - Saint-Hyacinthe</u>			
Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email		Purchase Order: _____ State/Province Samples Taken:	
EMSL-Bill to: <input type="checkbox"/> Same <input type="checkbox"/> Different - If Bill to is Different note instructions in Comments**			
Third Party Billing requires written authorization from third party			
Turnaround Time (TAT) Options* - Please Check			
<input type="checkbox"/> 3 Hour	<input type="checkbox"/> 6 Hour	<input type="checkbox"/> 24 Hour	<input type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input checked="" type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week
*For TEM Air 3 hours through 6 hours, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PCM - Air <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> IRSST PCM PLM - Bulk (reporting limit) <input type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> 400 PTCT (<0.25%) <input type="checkbox"/> 1000 PTCT (<0.1%) <input type="checkbox"/> PLM EPA NOB (<1%) <input type="checkbox"/> 400 PTCT (<0.25%) <input type="checkbox"/> 1000 PTCT (<0.1%) <input type="checkbox"/> IRSST PLM <input type="checkbox"/> NIOSH 9002 (<1%) <input type="checkbox"/> Other		TEM - Air <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II TEM - Bulk <input type="checkbox"/> TEM EPA NOB <input checked="" type="checkbox"/> IRSST TEM (NYS 198.4) TEM- Dust <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 TEM - Water <input type="checkbox"/> EPA 100.2 (All fibre sizes) <input type="checkbox"/> EPA 100.2 (Fibres >10µm)	
Soil/Rock/Vermiculite <input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.25%) <input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.1%) <input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.1%) <input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.01%) <input type="checkbox"/> ASTM D7521 Sieve Method <input type="checkbox"/> TEM Qualitative via Filtration Prep <input type="checkbox"/> TEM Qualitative via Drop Mount Prep <input type="checkbox"/> Cincinnati Method EPA 600/R-04/004 - PLM/TEM* *(required for vermiculite in BC and NS)		Asphalt <input type="checkbox"/> PLM EPA Gravimetric with milling prep (<0.25%)	
<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Groups		Filter Pore Size (Air Samples): <input type="checkbox"/> 0.8µm <input type="checkbox"/> 0.45µm	
Samplers Name:		Sampler's Signature:	

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
B129 - Ashtic brun - 1b	Ashtic		2020-02-11
b-129 - Ashtic brun - 1b	"		"
B-129 - Ashtic brun - 1c	"		"

Client Sample # (s):	-	Total # of Samples:	3
Relinquished (Client):	Date:	Time:	
Received (Lab): <u>MRL walk-in 814</u>	Date:	Time:	
Comments/Special Instructions: <u>Projet SPAC (TPSGC)</u>			

ANNEXE

D

CERTIFICAT D'ANALYSE
DES ÉCHANTILLONS





EMSL Canada Inc.

4200 rue Seré Ville Saint-Laurent, QC H4T 1A6

Tél/Fax (438) 338-9142 / (438) 338-9143

<http://www.EMSL.com> / MontrealLab@EMSL.com

Réf. Commande: 682000877

N° Client: 55GENI26

Bon de Commande:

N° Projet:

Attn: Jean Kesner Michel
WSP Canada, Inc.
1600 Rene-Levesque Blvd. West
16th Floor
Montreal, QC H3H 1P9
Proj: AAC - Saint-Hyacinthe

Téléphone: (514) 217-3400
Fax: (514) 340-1337
Date de Réception: 13/2/2020
Date du Prélèvement: 11/2/2020
Date de l'analyse: 19/2/2020

Résumé du rapport d'analyse de l'amiante en utilisant la méthode analytique 244 de l'IRSST

Nom d'échantillon	Description d'échantillon	Couleur	ESSAI /	Partie non-amiante		Amiante
			Date d'analyse	Fibreux	Non Fibreux	
B129 - Mastic brun - 1a EMSL 682000877-0001	mastic	Brun	MET 19/2/2020	0.0%		Non Détecté
B129 - Mastic brun - 1b EMSL 682000877-0002	mastic	Brun	MET 19/2/2020	0.0%		Non Détecté
B129 - Mastic brun - 1c EMSL 682000877-0003	mastic	Brun	MET 19/2/2020	0.0%		Non Détecté

Analyste(s):

Stephen Mastromonaco MET(3)

Examiné et approuvé par:

Lemma Mohammad, Directeur(trice) du Laboratoire ou
autre signataire autorisé

Les intervalles de concentration applicables à la méthode d'analyse de l'IRSST 244 sont les suivantes: ND (non détecté), Trace (4 fibres ou moins, contamination possible), <1, (1 à 5%), (entre 5 à 10%), (entre 10 à 25%), (entre 25 à 50%), (entre 50 à 75 %), (entre 75 à 90%), (> 90%). Les tuiles de plancher signalées comme "Non détecté" ou "Trace" par l'analyse de MLP doivent être analysées par MET (Méthode ELAP 198.4). La limite de détection pour les échantillons "Non détecté" est <0.1%. En raison des limites inhérentes à la méthode MLP, les fibres d'amiante de dimensions inférieures à la limite de la résolution ne seront pas détectées. Ce rapport d'essai ne concerne que les échantillons testés, et ne peut être reproduit sous aucune forme sans l'accord écrite d'EMSL. La responsabilité d'EMSL est limitée au coût de l'analyse. EMSL ne porte aucune responsabilité pour les activités de collecte d'échantillon ou des limites des méthodes analytiques. L'interprétation et l'utilisation des résultats des tests sont à la charge du client. Les échantillons ont été reçus en bon état, sauf indication contraire.

Analyses effectués par EMSL Canada Inc. Ville Saint-Laurent, QC PLM IRSST: NVLAP Lab Code 201052-0, TEM IRSST: NYS ELAP Lab Code 12043

Rapport initial du: 20/2/2020

ANNEXE

E

REGISTRE DES MCA ET
DES MSCA

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
453	-	MSCA	Idem que échantillon (WSP) : 453	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
453	-	MSCA	Idem que échantillon (WSP) : 453	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
453	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
453	-	MSCA	Idem que échantillon (WSP) : 453	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
450	-	MSCA	Idem que échantillon (WSP) : 450	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
451	-	MSCA	Idem que échantillon (WSP) : 451	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
452	-	MSCA	Idem que échantillon (WSP) : 452	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
450	-	MSCA	Idem que échantillon (WSP) : 450	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
451	-	MSCA	Idem que échantillon (WSP) : 451	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
452	-	MSCA	Idem que échantillon (WSP) : 452	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
450	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
451	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
452	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
450	-	MSCA	Idem que échantillon (WSP) : 450	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
451	-	MSCA	Idem que échantillon (WSP) : 451	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
452	-	MSCA	Idem que échantillon (WSP) : 452	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
361	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Corridor A-209	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	3 unités		Aucun débris	
456	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Papier goudronné	2018-01-25										
144	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
145	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
146	-	MSCA	Idem que échantillon (WSP) : 130	Blocs A, B, C, D	Étage 1	Corridor C-100	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
134	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Corridor C-110A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
135	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Corridor C-110A	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
136	-	MSCA	Idem que échantillon (WSP) : 130	Blocs A, B, C, D	Étage 1	Corridor C-110A	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
345	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-101	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	1 unités		Aucun débris	
331	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-109	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
333	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-110	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
351	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-111	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
350	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-112	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
332	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-115	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
346	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-116A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
347	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-116A	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
353	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	3 unités		Aucun débris	
355	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	83 unités		Aucun débris	
356	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	100 unités		Aucun débris	
357	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	20 unités		Aucun débris	
358	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	8 unités		Aucun débris	
359	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Récupération chaleur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	8 unités		Aucun débris	
360	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	30 unités		Aucun débris	
454	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local A-118	Élément mécanique	Réservoir	Non applicable	Pâte cimentaire	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	6 m2		Aucun débris	
354	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités		Aucun débris	
28	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-125	Entre-plafond	Non applicable	Non applicable	Mastic/Calféutrant	2020-02-10										
348	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-125	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
349	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-125	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
309	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-126	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
310	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-126	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
323	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-142	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
324	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-142	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
325	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-145	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
326	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-145	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
319	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-152	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
320	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-152	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
321	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-155	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
322	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-155	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
315	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-162	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
316	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-162	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
317	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-165	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
318	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-165	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
311	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-172	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
312	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-172	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
313	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-175	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
314	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-175	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
330	-	MCA	Idem que échantillon (WSP) : 328	Blocs A, B, C, D	Étage 1	Local B-104	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire	2018-01-24			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	1 unités		Aucun débris	
327	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-105	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
522	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-105	Plancher	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-26										
328	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-106	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire	2018-01-24			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unité	Aucun débris	
37	-	Non MSCA	Local non accessible	Blocs A, B, C, D	Étage 1	Local B-114	Mur	Béton	Non applicable	Non applicable	2020-02-11										
N/A	-	MSCA	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-114B	Mur	Bloc de béton	Non applicable	Joint de mortier	2020-02-11										
187	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-117	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités		Aucun débris	
188	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-117	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	1 unités		Aucun débris	
191	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-117	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-23										
N/A	-	MSCA	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-117	Mur	Bloc de béton	Non applicable	Joint de mortier	2020-02-11										
N/A	-	MSCA	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-119	Mur	Bloc de béton	Non applicable	Joint de mortier	2020-02-11										
184	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-119	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités		Aucun débris	
335	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-122	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
337	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-127	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	2 unités		Aucun débris	
338	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-128	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	1 unités		Aucun débris	
341	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-129	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
352	-	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-129	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2020-02-10	Bon (aucun dommage)		Bon	Non friable (ex.: tuile de vinyle)	Accessibilité (C2) - dissimulé	7	1 m2		Aucun débris	
336	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-130	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
334	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-131	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
340	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-133	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-136	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-136	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-137	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-137	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-138	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-138	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-139	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-139	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-140	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-140	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-141	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-141	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-142	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-142	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-143	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-143	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-144	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-144	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
214	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 1	Local B-146	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	20 m2		Aucun débris	
204	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-147	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	250 m2		Aucun débris	
203	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-151	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
24	A, B, C	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-152	Plafond	Non applicable	Non applicable	Tuile suspendue	2020-02-10										
26	A, B, C	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-152	Mur	Non applicable	Non applicable	Composé à joint	2020-02-10										
N/A	A, B, C	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-152	Mur	Non applicable	Non applicable	Gypse	2020-02-10										
342	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-159	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
343	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-159	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
339	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local B-159	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	4 unités		Aucun débris	
27	-	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-159	Entre-plafond	Non applicable	Non applicable	Mastic/Calféutrant	2020-02-10										
200	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-162	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
201	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-162	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
202	-	MSCA potentielle	Non accessible	Blocs A, B, C, D	Étage 1	Local B-162	Entre-plafond	Non applicable	Non applicable	Non applicable	2018-01-24										
403	-	MCA (suspecté)	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-164	Élément mécanique	Hotte	Non applicable	Matériau inconnu	2018-01-25	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	4 m2		Aucun débris	
195	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-166	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
196	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-166	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
197	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-166	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	4 unités		Aucun débris	
29	-	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-166	Entre-plafond	Non applicable	Non applicable	Mastic/Calféutrant	2020-02-10										
122	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-107	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
123	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-107	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
142	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-108	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
143	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-108	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
140	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-108A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
141	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-108A	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
137	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-109	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
138	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-109	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
139	-	MSCA	Idem que échantillon (WSP) : 130	Blocs A, B, C, D	Étage 1	Local C-109	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
130	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
131	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
132	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-110	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
133	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-110	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
128	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
129	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
147	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-112	Mur	Non applicable	Non applicable	Mastic/Calféutrant	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (C2) - dissimulé	7	3 m ²		Aucun débris	
124	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local C-114	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités		Aucun débris	
126	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
127	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
176	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-121B	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
177	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-121B	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
172	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local C-121C	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
173	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-121C	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-23										
175	-	MCA	Idem que échantillon (WSP) : 147	Blocs A, B, C, D	Étage 1	Local C-121C	Mur	Non applicable	Non applicable	Mastic/Calféutrant	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (C2) - dissimulé	7	2 m ²		Aucun débris	
167	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-123	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
152	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-125	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
150	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-125	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
151	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-125	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
165	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-128	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
166	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-128	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
169	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local C-128	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
178	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-129	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
179	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-129	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
168	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local C-142	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
180	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local D-102	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
181	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local D-102	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
182	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local D-103	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
183	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local D-103	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
209	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local D-105	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
208	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local D-106	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
205	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local D-106A	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
210	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local D-110	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	7 unités		Aucun débris	
211	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local D-110	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire	2018-01-23			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	2 unités		Aucun débris	
455	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local D-113	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-127	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-127	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-129	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor A-129	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
363	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Corridor A-209	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-25	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	20 m2		Aucun débris	
367	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 2	Corridor A-209	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
368	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 2	Corridor A-209	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
398	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-210	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
399	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor A-210	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
394	-	MSCA	Idem que échantillon (WSP) : 272	Blocs A, B, C, D	Étage 2	Corridor A-210	Plancher	Non applicable	Non applicable	Linoléum	2018-01-25										
381	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor C-219	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
382	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor C-219	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
395	-	MSCA	Idem que échantillon (WSP) : 272	Blocs A, B, C, D	Étage 2	Corridor C-219	Plancher	Non applicable	Non applicable	Linoléum	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-130	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-130	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-131	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-131	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-132	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-132	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-132A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-132A	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-133	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-133	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-134	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-134	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-135	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-135	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-136	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-136	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
364	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Local A-201	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-25	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	20 m2		Aucun débris	
365	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Local A-202	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-25	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	20 m2		Aucun débris	
366	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Local A-203	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-25	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	20 m2		Aucun débris	
369	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-205	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
370	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-205	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
373	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-206	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
374	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-206	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
375	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-207	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
376	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-207	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
371	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-208	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
372	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-208	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
402	-	MCA (suspecté)	Non échantillonné	Blocs A, B, C, D	Étage 2	Local B-264	Élément mécanique	Hotte	Non applicable	Matériau inconnu	2018-01-25	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	4 m2		Aucun débris	
379	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-201	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
380	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-201	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
377	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-202	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
378	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-202	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
377	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-203	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
378	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-203	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
377	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-204	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
378	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-204	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
404	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 2	Local C-212	Ventilation	Non applicable	Rectiligne	Mastic/Calfeutrant	2018-01-25										
383	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-224	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
384	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-224	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
388	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local D-201	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
389	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local D-201	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
390	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local D-202	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
391	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local D-202	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
392	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 2	Local D-215	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	4 unités		Aucun débris	
393	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 2	Local D-215	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	3 unités		Aucun débris	
385	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local technique 2ème	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25										
386	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local technique 2ème	Plafond	Non applicable	Non applicable	Gypse	2018-01-25										
387	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 2	Local technique 2ème	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	2 unités		Aucun débris	
54	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-301	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-22										
4	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	20 unités		Aucun débris	
2	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	220 unités		Aucun débris	
6	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	95 unités		Aucun débris	
8	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	15 unités		Aucun débris	
10	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Récupération chaleur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	12 unités		Aucun débris	
12	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	12 unités		Aucun débris	
21	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Glycol	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	10 unités		Aucun débris	
14	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	3 unités		Aucun débris	
16	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	16 unités		Aucun débris	
19	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Dégazeur	Non applicable	Pâte cimentaire et canevas	2018-01-22										
22	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
23	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
39	-	MCA	Idem que échantillon (WSP) : 38	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	3 m2		Aucun débris	
43	-	MCA	Idem que échantillon (WSP) : 42	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	1 m2		Aucun débris	
24	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local A-303	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
25	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local A-303	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
47	-	MCA	Idem que échantillon (WSP) : 16	Blocs A, B, C, D	Étage 3	Local B-264	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	5 unités		Aucun débris	
44	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-264	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
45	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local B-264	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
29	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	127 unités	1 unité	Aucun débris	
31	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	96 unités	2 unités	Aucun débris	
35	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	28 unités		Aucun débris	
33	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Glycol	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	29 unités		Aucun débris	
37	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	56 unités		Aucun débris	
17	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	15 unités		Aucun débris	
26	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-301	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
27	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local B-301	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
38	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local B-301	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	3 m2		Aucun débris	
42	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local B-301	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	1 m2		Aucun débris	
52	-	MCA	Idem que échantillon (WSP) : 16	Blocs A, B, C, D	Étage 3	Local B-302	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-22			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	3 unités		Aucun débris	
49	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-302	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
50	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local B-302	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
521	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Non applicable	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités		Aucun débris	
520	-	MCA	Idem que échantillon (étude antérieur) : E0009 (Gesfor, 2017)	Blocs A, B, C, D	Extérieur	Non applicable	Élément mécanique	Unité CVAC	Non applicable	Membrane goudronnée	2018-01-26	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	36 m2		Aucun débris	
511	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	2018-01-26										
513	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Porte	Non applicable	Mastic/Calfeutrant	2018-01-26										
514	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fenêtre	Non applicable	Mastic/Calfeutrant	2018-01-26										
515	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	2018-01-26										
516	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	2018-01-26										
517	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	2018-01-26										
511	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	2018-01-26	Non visible			Friable si détérioré (ex.: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris	
515	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	2018-01-26	Non visible			Friable si détérioré (ex.: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris	
516	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	2018-01-26	Non visible			Friable si détérioré (ex.: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris	
517	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	2018-01-26	Non visible			Friable si détérioré (ex.: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris	
192	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Porte C	Mur	Non applicable	Non applicable	Crépi de finition	2018-01-23										
193	A, B, C, D, E, F, G, H, I	MCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Porte C	Mur	Non applicable	Non applicable	Crépi	2018-01-23	Passable (< 10 % de dommages)			Friable si détérioré (ex.: plâtre)	Accessibilité (D) - nécessite démolition	7	100 m2	0,5 m2	Aucun débris	

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
194	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Porte C	Marquise	Non applicable	Non applicable	Crépi de finition	2018-01-23										
N/A	-	MCA (suspecté)	Non échantillonné	Blocs A, B, C, D	Extérieur	Non applicable	Toiture	Non applicable	Non applicable	Membrane de toiture	2018-01-26							Inconnue		Aucun débris	
449	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Cage d'escalier C	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	7 unités		Aucun débris	
405	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Cage d'escalier D	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	4 unités		Aucun débris	
441	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	13 unités		Aucun débris	
442	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	15 unités		Aucun débris	
443	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
444	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	5 unités		Aucun débris	
445	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Eau chaude (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	8 unités		Aucun débris	
446	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Eau froide (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	4 unités		Aucun débris	
448	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Corridor C-002	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
406	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Sous-sol	Corridor D-002	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
407	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Sous-sol	Corridor D-002	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
438	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor D-002	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	23 unités		Aucun débris	
471	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Condensé/vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
473	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	4 unités	4 unités	Aucun débris	
474	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	2 unités	2 unités	Aucun débris	
475	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
476	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	1 unités	1 unités	Aucun débris	
477	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	2 unités	2 unités	Aucun débris	
478	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	ECL 80 degré C	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	2 unités	2 unités	Aucun débris	
479	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	ECL 80 degré C	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	2 unités	2 unités	Aucun débris	
481	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Tout	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	311 unités		Aucun débris	
482	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	13 unités		Aucun débris	
483	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	60 unités		Aucun débris	
484	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	20 unités		Aucun débris	

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
485	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Récupération chaleur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	17 unités		Aucun débris	
486	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	25 unités		Aucun débris	
487	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	31 unités		Aucun débris	
488	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	55 unités		Aucun débris	
489	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	27 unités		Aucun débris	
490	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	3 unités		Aucun débris	
491	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau chaude (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	35 unités		Aucun débris	
492	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau froide (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	9 unités		Aucun débris	
493	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
494	-	MCA	Idem que échantillon (WSP) : 454	Blocs A, B, C, D	Sous-sol	Local A-003	Élément mécanique	Réservoir	Non applicable	Pâte cimentaire	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	15 m2		Aucun débris	
495	-	MCA	Idem que échantillon (WSP) : 454	Blocs A, B, C, D	Sous-sol	Local A-003	Élément mécanique	Réservoir	Non applicable	Pâte cimentaire	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	15 m2		Aucun débris	
498	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	1 unités	1 unités	Aucun débris	
499	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
500	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
501	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
503	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	2 unités	2 unités	Aucun débris	
460	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
461	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	1 unités	1 unités	Aucun débris	
462	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	2 unités	2 unités	Aucun débris	
507	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	1 unités	1 unités	Aucun débris	
508	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	1 unités	1 unités	Aucun débris	
463	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	3 unités	3 unités	Aucun débris	
464	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
465	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
466	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
467	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
468	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
469	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
470	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
472	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
480	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Tout	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	426 unités		Aucun débris	
457	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-002	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	11 unités		Aucun débris	
458	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-002	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	1 unités	1 unités	Aucun débris	
459	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Sous-sol	Local B-002	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-26										
497	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-001	Tuyauterie	Alimentation Z-1	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Mauvais (> 10 % de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
430	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-003	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
431	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-003	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
432	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-003	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	4 unités		Aucun débris	
424	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-005	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
425	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-005	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
426	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-005	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	5 unités		Aucun débris	
439	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-005	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	27 unités		Aucun débris	
440	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-005	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	4 unités		Aucun débris	
422	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
423	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
433	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
434	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
447	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
435	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-007	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
436	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-007	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
437	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-008	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	6 unités		Aucun débris	
427	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-009	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
428	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-009	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
429	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-009	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5	10 unités	3 endommagés	Aucun débris	
502	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	Débris	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Débris	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5			Présence de débris	1
506	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	Débris	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Débris	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	6 ou 5			Présence de débris	0,1

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
504	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
505	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	ECL-60	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-26			Passable (< 10% de perforations)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	3	1 unités	1 unités	Aucun débris	
408	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-003	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
409	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-003	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
410	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-004	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
411	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-004	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
412	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-004	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	5 unités		Aucun débris	
413	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-005	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
414	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-005	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
415	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-005	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	5 unités		Aucun débris	
416	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
417	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-006	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
418	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-006	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	6 unités		Aucun débris	
419	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-007	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-25										
420	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-007	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-25										
421	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-007	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	2018-01-25			Bon (aucune perforation)	Isolants mécaniques (ex.: calorifure)	Accessibilité (B) - personnel d'entretien (< 8 pi)	7	5 unités		Aucun débris	
55	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-100	Plancher	Non applicable	Non applicable	Linoléum	2018-01-22										
64	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-100	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
65	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-100	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
153	-	MSCA	Idem que échantillon (WSP) : 119	Bloc E	Étage 1	Corridor E-100	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
154	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-100	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	12 m2		Aucun débris	
159	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-100A	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
160	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-100A	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
156	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-100A	Plancher	Non applicable	Non applicable	Linoléum	2018-01-22										
154	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-100A	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	12 m2		Aucun débris	
66	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-101	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
60	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-101	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-22										
61	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-101	Plafond	Non applicable	Non applicable	Gypse	2018-01-22										
63	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	Linoléum	2018-01-22										
67	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-101	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
119	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
120	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	12 m2		Aucun débris	
101	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Corridor E-106	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
102	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Corridor E-106	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
103	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-106	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
99	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-106	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
100	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-106	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
154	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-150	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	5 ou 7	12 m2		Aucun débris	
163	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-150	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
164	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-150	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
155	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-150	Plancher	Non applicable	Non applicable	Linoléum	2018-01-22										
161	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Corridor E-150	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
162	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Corridor E-150	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
157	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-100A	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
158	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-100A	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
56	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-102	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
57	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-102	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
58	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-102	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
62	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Local E-102	Plancher	Non applicable	Non applicable	Linoléum	2018-01-22										
68	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-103	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
69	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-103	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
70	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-103	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-22										
71	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-103	Plafond	Non applicable	Non applicable	Gypse	2018-01-22										
72	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-104	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-22										
73	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-104	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-22										
74	-	MSCA	Idem que échantillon (WSP) : 56	Bloc E	Étage 1	Local E-104	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
89	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-105	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
90	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-105	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
75	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-107	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
76	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-107	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
77	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-107	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
78	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-107	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
79	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-108	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
80	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-108	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
81	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-108	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
82	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-108	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
83	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-109	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
84	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-109	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
85	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-109	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
88	-	MSCA	Idem que échantillon (WSP) : 56	Bloc E	Étage 1	Local E-110	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
121	-	MSCA	Idem que échantillon (WSP) : 119	Bloc E	Étage 1	Local E-110	Plancher	Non applicable	Non applicable	Linoléum	2018-01-23										
86	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-110	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
87	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-110	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
104	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-111	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
105	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-111	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
106	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-111	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23										
107	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-111	Plafond	Non applicable	Non applicable	Gypse	2018-01-23										
108	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-111	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-23										
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-112	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-112	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-112	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-113	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-113	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-113	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-114	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-114	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-114	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-115	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-115	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-115	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-116	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-116	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-116	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-117	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-117	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-117	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
14	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-118	Entreplafond	Non applicable	Non applicable	Mastic/Calfeutrant	2020-02-10										
15	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-118	Plafond	Non applicable	Non applicable	Tuile suspendue	2020-02-10										
12	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-118	Mur	Non applicable	Périphérique et cloison	Composé à joint	2020-02-10										
12	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-118	Mur	Non applicable	Périphérique et cloison	Gypse	2020-02-10										
109	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-119	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
110	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-119	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
59	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-119	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
111	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-120	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-23										
112	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-120	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-23										
113	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-120	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-22										
518	A, B, C	MSCA	Échantillon initial	Bloc E	Extérieur	Non applicable	Mur	Fondation	Non applicable	Fibrociment	2018-01-26										
519	A, B, C	MSCA	Échantillon initial	Bloc E	Extérieur	Non applicable	Mur	Porte	Non applicable	Mastic/Calfeutrant	2018-01-26										
3820-T-01	A, B, C	MSCA	Échantillon initial	Bloc E	Extérieur	Non applicable	Toiture	Non applicable	Non applicable	Membrane de toiture	2018-03-10										
274	A, B, C	MSCA	Échantillon initial	Bloc F	Cage d'escalier	Cage d'escalier F	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
275	A, B, C	MSCA	Échantillon initial	Bloc F	Cage d'escalier	Cage d'escalier F	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
276	A, B, C	MSCA	Échantillon initial	Bloc F	Cage d'escalier	Cage d'escalier F	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
277	A, B, C	MSCA	Échantillon initial	Bloc F	Cage d'escalier	Cage d'escalier F	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
278	A, B, C	MSCA	Échantillon initial	Bloc F	Cage d'escalier	Cage d'escalier F	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
283	-	MSCA	Idem que échantillon (WSP) : 278	Bloc F	Cage d'escalier	Cage d'escalier F-291	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
279	-	MSCA	Idem que échantillon (WSP) : 274	Bloc F	Étage 1	Cage d'escalier F-291	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
295	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Corridor F-100	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
296	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Corridor F-100	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
287	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Corridor F-101	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
288	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Corridor F-101	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
305	-	MSCA	Idem que échantillon (WSP) : 271	Bloc F	Étage 1	Corridor F-101	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										

Instructions générales

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Veillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
306	-	MSCA	Idem que échantillon (WSP) : 272	Bloc F	Étage 1	Corridor F-101	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
289	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-103	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
290	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-103	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
291	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-104	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
292	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-104	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-105	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-105	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-105	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-106	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-106	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-106	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
523	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Local F-106	Plancher	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-26										
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-107	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-107	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-107	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-108	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-108	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-108	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-109	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-109	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-109	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
297	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-110	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
298	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-110	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
299	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-130	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
300	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-130	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
301	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Local F-130	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
302	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Local F-130	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
295	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-131	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
296	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-131	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-205	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-206	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-207	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-208	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
280	-	MSCA	Idem que échantillon (WSP) : 275	Bloc F	Étage 2	Cage d'escalier F-291	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
281	-	MSCA	Idem que échantillon (WSP) : 276	Bloc F	Étage 2	Cage d'escalier F-291	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
282	-	MSCA	Idem que échantillon (WSP) : 277	Bloc F	Étage 2	Cage d'escalier F-291	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
272	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Corridor F-200	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
273	-	MSCA	Idem que échantillon (WSP) : 271	Bloc F	Étage 2	Corridor F-200	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
257	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-200	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
258	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-200	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
251	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-202	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
252	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-202	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
253	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-203	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
254	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-203	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-204	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-204	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
308	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-204	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-205	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-205	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-206	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-206	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-207	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-207	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-208	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-208	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
268	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-209	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris	

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de	Mesure	Quantité			
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
241	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-209	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
242	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-209	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
247	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-209A	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
248	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-209A	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
263	-	MSCA	Idem que échantillon (WSP) : 261	Bloc F	Étage 2	Local F-209A	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
264	-	MSCA	Idem que échantillon (WSP) : 262	Bloc F	Étage 2	Local F-209A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
271	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-209A	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24										
243	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-210	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
244	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-210	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
249	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-213	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
250	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-213	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
265	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-214	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris	
239	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-214	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
240	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-214	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
266	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-215	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
237	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
238	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
259	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
260	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
267	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
269	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
270	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
245	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-218	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
246	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-218	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
227	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
228	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
229	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-219	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris	
232	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-24										
230	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-220	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
231	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-220	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
233	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-220	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
234	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-223	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
235	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-223	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
236	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-223	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
216	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
217	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
218	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-224	Plancher	Non applicable	Non applicable	Linoléum	2018-01-24	Bon (aucun dommage)			Non friable (ex.: tuile de vinyle)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris	
221	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
226	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-24										
220	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-225	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
223	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-225	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
222	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-228	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-24										
224	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-228	Mur	Non applicable	Périphérique et cloison	Composé à joint	2018-01-24										
225	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-228	Mur	Non applicable	Périphérique et cloison	Gypse	2018-01-24										
261	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-229	Plafond	Non applicable	Non applicable	Gypse	2018-01-24										
262	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-229	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24										
509	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	2018-01-26										
510	A, B, C	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Fondation	Non applicable	Mastic/Calfeutrant	2018-01-26										
512	A, B, C	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Porte	Non applicable	Mastic/Calfeutrant	2018-01-26										

1- Légende:

Non MSCA	Matériau non susceptible de contenir de l'amiante
MSCA	Matériau susceptible de contenir de l'amiante mais dont le résultat est négatif
MCA	Matériau contenant de l'amiante

2- Zone présentant des similitudes d'ouvrage (ZPSO)

Les ZPSO ont été déterminées en fonction des années de construction. Pour chaque année de construction, chaque étage, les cages d'escalier et l'extérieur ont été considérés comme des ZPSO distinctes.

3- Mesures d'intervention:

- MESURE 1 – Enlèvement immédiat des débris de MCA.
- MESURE 2 – Restriction d'accès aux débris de MCA.
- MESURE 3 – Enlèvement des MCA aux fins de la conformité aux règlements.
- MESURE 4 – Restriction d'accès aux aires où se trouvent des MCA.
- MESURE 5 – Enlèvement proactif des MCA.
- MESURE 6 – Réparation des MCA.
- MESURE 7 – Surveillance régulière.

4- Notes générales applicables seulement aux blocs A, B, C et D (voir instrctions dans le haut du tableau):

Le gypse et le composé à joints recouvrant les murs des locaux des étages 1 et 2 des blocs A, B, C et D ne contiennent pas d'amiante selon les échantillons E-0001, E-0002, E-0007 et E-0008 du rapport de Gesfor de 2017.

Tous les modèles de tuiles acoustiques présents dans les locaux des blocs A, B, C et D ne contiennent pas d'amiante selon les échantillons 167, 203 et 455 de WSP et les échantillons E-0003 et E-0004 du rapport de Gesfor de 2017.

La tuile de vinyle de 18 po x 18 po beige à points bruns et blancs et la colle sous-jacente ne contiennent pas d'amiante selon les échantillons E-0005 et E-0006 du rapport de Gesfor de 2017.

Le mastic gris (voir échantillon 147 de WSP) qui contient de l'amiante n'a été observé que dans les locaux C-112 et C-121C. Toutefois, il est possible que ce mastic se retrouve à d'autres endroits dans les blocs A, B, C et D, principalement au niveau des pénétrations des conduits de ventilation dans les murs.

5- Notes générales applicables à l'ensemble du bâtiment (voir instrctions dans le haut du tableau):

Toutes les systèmes de ventilation sont soit non isolés ou isolés avec de la fibre de verre (matériau reconnu sans amiante) recouverte de canevas ou de papier métallisé.

Toutes les sections rectilignes de la tuyauterie de tous les systèmes sont soit non isolées ou isolées avec de la fibre de verre (matériau reconnu dans amiante) recouverte de canevas ou de plastique.

La majorité des sections irrégulières de la tuyauterie sont non isolées ou isolées avec de la fibre de verre (matériau reconnu sans amiante) recouverte de canevas ou de plastique. Les sections irrégulières isolées avec de la pâte cimentaire contenant de l'amiante ont été identifiées dans ce registre.

ANNEXE E-1 - REGISTRE DES MSCA ET MCA

BÂTIMENTS D'AGRICULTURE ET AGROALIMENTAIRE CANADA - CENTRE DE RECHERCHE ET DE DÉVELOPPEMENT DE SAINT-HYACINTHE

3600, BOUL CASAVANT O., SAINT-HYACINTHE, QUÉBEC

STRUCTURE 30406 - BÂTIMENT PRINCIPAL : BLOCS A, B, C, D, E et F

Fichier Excel disponible

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous- chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
453	-	MSCA	Idem que échantillon (WSP) : 453	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
453	-	MSCA	Idem que échantillon (WSP) : 453	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
453	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
453	-	MSCA	Idem que échantillon (WSP) : 453	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
450	-	MSCA	Idem que échantillon (WSP) : 450	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
451	-	MSCA	Idem que échantillon (WSP) : 451	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
452	-	MSCA	Idem que échantillon (WSP) : 452	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier A	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
450	-	MSCA	Idem que échantillon (WSP) : 450	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
451	-	MSCA	Idem que échantillon (WSP) : 451	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
452	-	MSCA	Idem que échantillon (WSP) : 452	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier B	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
450	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
451	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
452	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier C	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
450	-	MSCA	Idem que échantillon (WSP) : 450	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
451	-	MSCA	Idem que échantillon (WSP) : 451	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
452	-	MSCA	Idem que échantillon (WSP) : 452	Blocs A, B, C, D	Cage d'escalier	Cage d'escalier D	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
361	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Corridor A-209	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
456	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Papier goudronné	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Déposé dans les faux-plafonds en bois
144	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
145	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
146	-	MSCA	Idem que échantillon (WSP) : 130	Blocs A, B, C, D	Étage 1	Corridor C-100	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige-rouge
134	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Corridor C-110A	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
135	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Corridor C-110A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
136	-	MSCA	Idem que échantillon (WSP) : 130	Blocs A, B, C, D	Étage 1	Corridor C-110A	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige-rouge
345	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-101	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
331	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-109	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
333	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-110	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
351	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-111	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
350	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-112	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
332	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local A-115	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
346	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-116A	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
347	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-116A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
353	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
355	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
356	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
357	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
358	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
359	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Récupération chaleur	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
360	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
454	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local A-118	Élément mécanique	Réservoir	Non applicable	Pâte cimentaire	Présence	Chrysotile	80%	Rapport WSP, 2018				
354	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevass	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
28	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-125	Entre-plafond	Non applicable	Non applicable	Mastic/Calefeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
348	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-125	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
349	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-125	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
309	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-126	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
310	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-126	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
323	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-142	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
324	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-142	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
325	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-145	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				

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3600, BOUL CASAVANT O., SAINT-HYACINTHE, QUÉBEC

STRUCTURE 30406 - BÂTIMENT PRINCIPAL : BLOCS A, B, C, D, E et F

Fichier Excel disponible

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
326	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-145	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
319	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-152	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
320	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-152	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
321	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-155	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
322	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-155	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
315	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-162	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
316	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-162	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
317	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-165	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
318	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-165	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
311	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-172	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
312	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-172	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
313	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local A-175	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
314	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local A-175	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
330	-	MCA	Idem que échantillon (WSP) : 328	Blocs A, B, C, D	Étage 1	Local B-104	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire	Présence	Chrysotile	40%	Rapport WSP, 2018				
327	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-105	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum gris antidérapant
522	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-105	Plancher	Non applicable	Non applicable	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic gris à l'intérieur des frigos
328	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-106	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire	Présence	Chrysotile	40%	Rapport WSP, 2018				
37	-	Non MSCA	Local non accessible	Blocs A, B, C, D	Étage 1	Local B-114	Mur	Béton	Non applicable	Non applicable	Absence	Non Applicable		Rapport WSP, 2020				
N/A	-	MSCA	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-114B	Mur	Bloc de béton	Non applicable	Joint de mortier	Présence suspectée							
187	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-117	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
188	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-117	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
191	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-117	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic blanc autour des portes extérieures
N/A	-	MSCA	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-117	Mur	Bloc de béton	Non applicable	Joint de mortier	Présence suspectée							
N/A	-	MSCA	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-119	Mur	Bloc de béton	Non applicable	Joint de mortier	Présence suspectée							
184	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-119	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
335	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-122	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
337	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-127	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
338	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-128	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
341	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-129	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
352	-	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-129	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2020				Mastic brun autour de certains tuyaux dans l'entre-plafond
336	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-130	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
334	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-131	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
340	-	MSCA	Idem que échantillon (WSP) : 203	Blocs A, B, C, D	Étage 1	Local B-133	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 lisse
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-136	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-136	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-137	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-137	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-138	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-138	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-139	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-139	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-140	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-140	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-141	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-141	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-142	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-142	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-143	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-143	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
189	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-144	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
190	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-144	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
214	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 1	Local B-146	Plancher	Non applicable	Non applicable	Tuile de vinyle	Présence	Chrysotile	4%	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige
204	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-147	Plancher	Non applicable	Non applicable	Tuile de vinyle	Présence	Chrysotile	4%	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige
203	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-151	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			2x4 lisse

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Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
24	A, B, C	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-152	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non Applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			
26	A, B, C	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-152	Mur	Non applicable	Non applicable	Composé à joint	Absence	Non Applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			
N/A	A, B, C	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-152	Mur	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			
342	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-159	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
343	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-159	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
339	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-159	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
27	-	MSCA	Idem que échantillon (WSP)	Blocs A, B, C, D	Étage 1	Local B-159	Entre-plafond	Non applicable	Non applicable	Mastic/Calfeutrnt	Absence	Non Applicable	Non détecté	Rapport WSP, 2020				
200	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-162	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
201	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-162	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
202	-	MSCA potentielle	Non accessible	Blocs A, B, C, D	Étage 1	Local B-162	Entre-plafond	Non applicable	Non applicable	Non applicable	Présence potentielle							Entre-plafond non accessible, trop haut
403	-	MCA (suspecté)	Non échantillonné	Blocs A, B, C, D	Étage 1	Local B-164	Élément mécanique	Hotte	Non applicable	Matériau inconnu	Présence suspectée							Non échantillonné afin de ne pas causer de dommages aux hottes, à échantillonner et analyser avant travaux.
195	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local B-166	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
196	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local B-166	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
197	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local B-166	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
29	-	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local B-166	Entre-plafond	Non applicable	Non applicable	Mastic/Calfeutrnt	Absence	Non applicable	Non détecté	Rapport WSP, 2020				Entre-plafond non accessible, trop haut
122	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-107	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
123	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-107	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
142	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-108	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
143	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-108	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
140	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-108A	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
141	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-108A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
137	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-109	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
138	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-109	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
139	-	MSCA	Idem que échantillon (WSP) : 130	Blocs A, B, C, D	Étage 1	Local C-109	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige-rouge
130	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige-rouge
131	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum gris
132	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-110	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
133	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-110	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
128	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
129	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
147	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-112	Mur	Non applicable	Non applicable	Mastic/Calfeutrnt	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Ce mastic gris n'a été observé que dans les locaux C-112 et C-121C. Toutefois, il est possible que ce mastic se retrouve à d'autres endroits dans les blocs A, B, C et D, principalement au niveau des pénétrations des conduits de ventilation dans les murs
124	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local C-114	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
126	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
127	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
176	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-121B	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
177	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-121B	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
172	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local C-121C	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
173	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-121C	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige à pois noirs et gris
175	-	MCA	Idem que échantillon (WSP) : 147	Blocs A, B, C, D	Étage 1	Local C-121C	Mur	Non applicable	Non applicable	Mastic/Calfeutrnt	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Ce mastic gris n'a été observé que dans les locaux C-112 et C-121C. Toutefois, il est possible que ce mastic se retrouve à d'autres endroits dans les blocs A, B, C et D, principalement au niveau des pénétrations des conduits de ventilation dans les murs
167	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-123	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 perforée
152	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-125	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum gris
150	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-125	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
151	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-125	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
165	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-128	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
166	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-128	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
169	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local C-128	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
178	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local C-129	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
179	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local C-129	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
168	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local C-142	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
180	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local D-102	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
181	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local D-102	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
182	-	MSCA	Idem que échantillon (WSP) : 122	Blocs A, B, C, D	Étage 1	Local D-103	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
183	-	MSCA	Idem que échantillon (WSP) : 123	Blocs A, B, C, D	Étage 1	Local D-103	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				

ANNEXE E-1 - REGISTRE DES MSCA ET MCA

BÂTIMENTS D'AGRICULTURE ET AGROALIMENTAIRE CANADA - CENTRE DE RECHERCHE ET DE DÉVELOPPEMENT DE SAINT-HYACINTHE

3600, BOUL CASAVANT O., SAINT-HYACINTHE, QUÉBEC

STRUCTURE 30406 - BÂTIMENT PRINCIPAL : BLOCS A, B, C, D, E et F

Fichier Excel disponible

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
209	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local D-105	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
208	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local D-106	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
205	-	MSCA	Idem que échantillon (WSP) : 167	Blocs A, B, C, D	Étage 1	Local D-106A	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
210	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local D-110	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
211	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 1	Local D-110	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
455	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local D-113	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 unie (dur)
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-127	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor A-127	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-129	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor A-129	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
363	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Corridor A-209	Plancher	Non applicable	Non applicable	Tuile de vinyle	Présence	Chrysotile	4%	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige
367	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 2	Corridor A-209	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
368	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 2	Corridor A-209	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
398	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor A-210	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
399	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor A-210	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
394	-	MSCA	Idem que échantillon (WSP) : 272	Blocs A, B, C, D	Étage 2	Corridor A-210	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			linoléum rouge vin - Échantillon pris sur le rouleau de surplus dans l'entrepôt afin de ne pas affecter l'esthétisme du bâtiment. Prendre en considération que le mastic est le même que celui de l'échantillon 271 de WSP
381	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Corridor C-219	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
382	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Corridor C-219	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
395	-	MSCA	Idem que échantillon (WSP) : 272	Blocs A, B, C, D	Étage 2	Corridor C-219	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			linoléum rouge vin - Échantillon pris sur le rouleau de surplus dans l'entrepôt afin de ne pas affecter l'esthétisme du bâtiment. Prendre en considération que le mastic est le même que celui de l'échantillon 271 de WSP
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-130	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-130	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-131	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-131	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-132	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-132	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-132A	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-132A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-133	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-133	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-134	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-134	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-135	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-135	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
400	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-136	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
401	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-136	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
364	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Local A-201	Plancher	Non applicable	Non applicable	Tuile de vinyle	Présence	Chrysotile	4%	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige
365	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Local A-202	Plancher	Non applicable	Non applicable	Tuile de vinyle	Présence	Chrysotile	4%	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige
366	-	MCA	Idem que échantillon (WSP) : 204	Blocs A, B, C, D	Étage 2	Local A-203	Plancher	Non applicable	Non applicable	Tuile de vinyle	Présence	Chrysotile	4%	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige
369	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-205	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
370	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-205	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
373	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-206	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
374	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-206	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
375	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-207	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
376	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-207	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
371	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local A-208	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
372	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local A-208	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
402	-	MCA (suspecté)	Non échantillonné	Blocs A, B, C, D	Étage 2	Local B-264	Élément mécanique	Hotte	Non applicable	Matériau inconnu	Présence suspectée							Non échantillonné afin de ne pas causer de dommages aux hottes, à échantillonner et analyser avant travaux.
379	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-201	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
380	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-201	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				

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Fichier Excel disponible

Instructions générales

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous- chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
377	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-202	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
378	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-202	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
377	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-203	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
378	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-203	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
377	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-204	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
378	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-204	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
404	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 2	Local C-212	Ventilation	Non applicable	Rectiligne	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic beige sur les conduits de ventilation
383	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local C-224	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
384	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local C-224	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
388	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local D-201	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
389	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local D-201	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
390	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local D-202	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
391	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local D-202	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
392	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 2	Local D-215	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
393	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 2	Local D-215	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
385	-	MSCA	Idem que échantillon (WSP) : 367	Blocs A, B, C, D	Étage 2	Local technique 2ème	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
386	-	MSCA	Idem que échantillon (WSP) : 368	Blocs A, B, C, D	Étage 2	Local technique 2ème	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
387	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 2	Local technique 2ème	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
54	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-301	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic gris à la jonction des panneaux muraux
4	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
2	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
6	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
8	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
10	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Récupération chaleur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
12	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
21	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Glycol	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
14	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
16	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local A-302	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
19	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Dégazeur	Non applicable	Pâte cimentaire et canevas	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Seulement aux extrémités du dégazeur
22	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
23	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
39	-	MCA	Idem que échantillon (WSP) : 38	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	Présence	Chrysotile	6%	Rapport WSP, 2018				Mastic beige à la jonction des panneaux des unités de ventilation
43	-	MCA	Idem que échantillon (WSP) : 42	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	Présence	Chrysotile	6%	Rapport WSP, 2018				Mastic gris autour des tuyaux des unités de ventilation
24	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local A-303	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
25	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local A-303	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
47	-	MCA	Idem que échantillon (WSP) : 16	Blocs A, B, C, D	Étage 3	Local B-264	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Partie haute accessible par l'étage 3
44	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-264	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Partie haute accessible par l'étage 3
45	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local B-264	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Partie haute accessible par l'étage 3

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous- chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
29	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
31	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
35	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
33	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Glycol	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
37	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
17	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
26	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-301	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
27	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local B-301	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
38	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local B-301	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	Présence	Chrysotile	6%	Rapport WSP, 2018				Mastic beige à la jonction des panneaux des unités de ventilation
42	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 3	Local B-301	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	Présence	Chrysotile	6%	Rapport WSP, 2018				Mastic gris autour des tuyaux des unités de ventilation
52	-	MCA	Idem que échantillon (WSP) : 16	Blocs A, B, C, D	Étage 3	Local B-302	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
49	-	MSCA	Idem que échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-302	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
50	-	MSCA	Idem que échantillon (WSP) : 23	Blocs A, B, C, D	Étage 3	Local B-302	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
521	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Étage 3	Non applicable	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
520	-	MCA	Idem que échantillon (étude antérieur) : E0009 (Gesfor, 2017)	Blocs A, B, C, D	Extérieur	Non applicable	Élément mécanique	Unité CVAC	Non applicable	Membrane goudronnée	Présence	Chrysotile	5 à 10%	Gesfor, 2017				
511	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
513	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Porte	Non applicable	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic gris à la jonction des murs et de la fondation
514	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fenêtre	Non applicable	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic gris autour des portes et des fenêtres extérieures
515	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
516	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
517	-	MSCA	Idem que échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi de finition	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
511	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Crépi derrière le crépi de finition
515	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Crépi derrière le crépi de finition
516	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Crépi derrière le crépi de finition
517	-	MCA	Idem que échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Crépi derrière le crépi de finition
192	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Porte C	Mur	Non applicable	Non applicable	Crépi de finition	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
193	A, B, C, D, E, F, G, H, I	MCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Porte C	Mur	Non applicable	Non applicable	Crépi	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018				Crépi derrière le crépi de finition

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194	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Blocs A, B, C, D	Extérieur	Porte C	Marquise	Non applicable	Non applicable	Crépi de finition	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
N/A	-	MCA (suspecté)	Non échantillonné	Blocs A, B, C, D	Extérieur	Non applicable	Toiture	Non applicable	Non applicable	Membrane de toiture	Présence suspectée							Non échantillonnée pour des raisons d'étanchéité, à faire analyser avant travaux
449	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Cage d'escalier C	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
405	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Cage d'escalier D	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
441	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
442	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
443	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
444	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
445	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Eau chaude (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
446	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor C-002	Tuyauterie	Eau froide (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
448	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Corridor C-002	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
406	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Sous-sol	Corridor D-002	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
407	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Sous-sol	Corridor D-002	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
438	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Corridor D-002	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
471	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Condensé/vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
473	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
474	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
475	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
476	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
477	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
478	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	ECL 80 degré C	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
479	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	ECL 80 degré C	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
481	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-001	Tuyauterie	Tout	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
482	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
483	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
484	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				

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3600, BOUL CASAVANT O., SAINT-HYACINTHE, QUÉBEC

STRUCTURE 30406 - BÂTIMENT PRINCIPAL : BLOCS A, B, C, D, E et F

Fichier Excel disponible

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
485	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Récupération chaleur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
486	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
487	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
488	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau froide (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
489	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
490	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Drain pluvial	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
491	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau chaude (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
492	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Eau froide (potable)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
493	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Bouilloire	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
494	-	MCA	Idem que échantillon (WSP) : 454	Blocs A, B, C, D	Sous-sol	Local A-003	Élément mécanique	Réservoir	Non applicable	Pâte cimentaire	Présence	Chrysotile	80%	Rapport WSP, 2018				
495	-	MCA	Idem que échantillon (WSP) : 454	Blocs A, B, C, D	Sous-sol	Local A-003	Élément mécanique	Réservoir	Non applicable	Pâte cimentaire	Présence	Chrysotile	80%	Rapport WSP, 2018				
498	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
499	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
500	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
501	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
503	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local A-003	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
460	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
461	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Vapeur 100 kPa
462	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Vapeur 860 kPa
507	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Vapeur 860 kPa
508	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Vapeur 860 kPa
463	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Inconnu	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
464	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Condensé 860 kPa

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Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
465	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				Vapeur 860 kpa
466	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
467	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
468	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
469	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau froide (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
470	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Eau chaude (labo)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
472	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Vapeur	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
480	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-001	Tuyauterie	Tout	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
457	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-002	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
458	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local B-002	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
459	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Sous-sol	Local B-002	Mur	Non applicable	Non applicable	Mastic/Calefeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic blanc autour des portes intérieures
497	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-001	Tuyauterie	Alimentation Z-1	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
430	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-003	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
431	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-003	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
432	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-003	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
424	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-005	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
425	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-005	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
426	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-005	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
439	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-005	Tuyauterie	Condensé	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
440	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-005	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
422	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
423	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
433	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
434	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
447	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
435	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-007	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
436	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-007	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
437	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-008	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
427	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local C-009	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
428	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local C-009	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
429	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local C-009	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
502	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	Débris	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
506	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	Débris	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				

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BÂTIMENTS D'AGRICULTURE ET AGROALIMENTAIRE CANADA - CENTRE DE RECHERCHE ET DE DÉVELOPPEMENT DE SAINT-HYACINTHE

3600, BOUL CASAVANT O., SAINT-HYACINTHE, QUÉBEC

STRUCTURE 30406 - BÂTIMENT PRINCIPAL : BLOCS A, B, C, D, E et F

Fichier Excel disponible

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
504	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	Vapeur 100KPa	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
505	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-001	Tuyauterie	ECL-60	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
408	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-003	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
409	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-003	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
410	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-004	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
411	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-004	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
412	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-004	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
413	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-005	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
414	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-005	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
415	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-005	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
416	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-006	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
417	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-006	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
418	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-006	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
419	-	MSCA	Idem que échantillon (WSP) : 406	Blocs A, B, C, D	Sous-sol	Local D-007	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
420	-	MSCA	Idem que échantillon (WSP) : 407	Blocs A, B, C, D	Sous-sol	Local D-007	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
421	-	MCA	Idem que les échantillons de Technisol, 2004 (étude antérieur)	Blocs A, B, C, D	Sous-sol	Local D-007	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et canevas	Présence	Chrysotile	55 à 60%	Rapport Technisol, 2004				
55	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-100	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige
64	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-100	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
65	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-100	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
153	-	MSCA	Idem que échantillon (WSP) : 119	Bloc E	Étage 1	Corridor E-100	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum rouge
154	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-100	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum noir, non échantillonné afin de ne pas affecter l'esthétisme du local; à échantillonner et analyser avant des travaux
159	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-100A	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
160	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-100A	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
156	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-100A	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige
154	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-100A	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum noir, non échantillonné afin de ne pas affecter l'esthétisme du local; à échantillonner et analyser avant des travaux
66	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-101	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
60	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-101	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
61	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-101	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
63	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige
67	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-101	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
119	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum rouge
120	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum noir, non échantillonné afin de ne pas affecter l'esthétisme du local; à échantillonner et analyser avant des travaux
101	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Corridor E-106	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
102	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Corridor E-106	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
103	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-106	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige
99	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-106	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
100	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-106	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
154	-	MCA (suspecté)	Non échantillonné	Bloc E	Étage 1	Corridor E-150	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum noir, non échantillonné afin de ne pas affecter l'esthétisme du local; à échantillonner et analyser avant des travaux
163	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Corridor E-150	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
164	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Corridor E-150	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
155	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Corridor E-150	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige
161	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Corridor E-150	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
162	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Corridor E-150	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
157	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-100A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
158	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-100A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
56	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-102	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
57	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-102	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
58	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-102	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
62	-	MSCA	Idem que échantillon (WSP) : 55	Bloc E	Étage 1	Local E-102	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige
68	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-103	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
69	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-103	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				

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Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
70	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-103	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
71	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-103	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
72	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-104	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
73	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-104	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
74	-	MSCA	Idem que échantillon (WSP) : 56	Bloc E	Étage 1	Local E-104	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
89	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-105	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
90	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-105	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
75	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-107	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
76	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-107	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
77	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-107	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
78	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-107	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
79	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-108	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
80	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-108	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
81	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-108	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
82	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-108	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
83	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-109	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
84	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-109	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
85	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-109	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
88	-	MSCA	Idem que échantillon (WSP) : 56	Bloc E	Étage 1	Local E-110	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
121	-	MSCA	Idem que échantillon (WSP) : 119	Bloc E	Étage 1	Local E-110	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum rouge
86	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-110	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
87	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-110	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
104	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-111	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
105	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-111	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
106	-	MSCA	Idem que échantillon (WSP) : 60	Bloc E	Étage 1	Local E-111	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
107	-	MSCA	Idem que échantillon (WSP) : 61	Bloc E	Étage 1	Local E-111	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
108	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-111	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-112	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-112	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-112	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-113	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-113	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-113	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-114	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-114	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-114	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-115	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-115	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-115	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-116	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-116	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-116	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
116	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-117	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
114	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-117	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
115	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-117	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
14	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-118	Entreplafond	Non applicable	Non applicable	Mastic/Calféutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
15	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-118	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				2x4 Unie
12	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-118	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
12	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-118	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
109	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-119	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
110	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-119	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
59	A, B, C	MSCA	Échantillon initial	Bloc E	Étage 1	Local E-119	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
111	-	MSCA	Idem que échantillon (WSP) : 57	Bloc E	Étage 1	Local E-120	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
112	-	MSCA	Idem que échantillon (WSP) : 58	Bloc E	Étage 1	Local E-120	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
113	-	MSCA	Idem que échantillon (WSP) : 59	Bloc E	Étage 1	Local E-120	Plafond	Non applicable	Non applicable	Tuile suspendue	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
518	A, B, C	MSCA	Échantillon initial	Bloc E														

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BÂTIMENTS D'AGRICULTURE ET AGROALIMENTAIRE CANADA - CENTRE DE RECHERCHE ET DE DÉVELOPPEMENT DE SAINT-HYACINTHE

3600, BOUL CASAVANT O., SAINT-HYACINTHE, QUÉBEC

STRUCTURE 30406 - BÂTIMENT PRINCIPAL : BLOCS A, B, C, D, E et F

Fichier Excel disponible

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
306	-	MSCA	Idem que échantillon (WSP) : 272	Bloc F	Étage 1	Corridor F-101	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			linoléum rouge vin - Échantillon pris sur le rouleau de surplus dans l'entrepôt afin de ne pas affecter l'esthétisme du bâtiment. Prendre en considération que le mastic est le même que celui de l'échantillon 271 de WSP
289	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-103	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
290	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-103	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
291	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-104	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
292	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-104	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-105	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-105	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-105	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré - Échantillon pris sur le rouleau de surplus dans l'entrepôt afin de ne pas affecter l'Esthétisme du bâtiment. Prendre en considération le résultat du mastic de l'échantillon de WSP 271
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-106	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-106	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-106	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
523	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Local F-106	Plancher	Non applicable	Non applicable	Mastic/Calefeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic gris à la jonction des panneaux de plancher
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-107	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-107	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-107	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-108	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-108	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-108	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
293	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-109	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
294	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-109	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
307	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-109	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
297	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-110	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
298	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-110	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
299	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-130	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
300	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-130	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
301	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Local F-130	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
302	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 1	Local F-130	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
295	-	MSCA	Idem que échantillon (WSP) : 287	Bloc F	Étage 1	Local F-131	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
296	-	MSCA	Idem que échantillon (WSP) : 288	Bloc F	Étage 1	Local F-131	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-205	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-206	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-207	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
308	-	MSCA	Idem que échantillon (WSP) : 308	Bloc F	Étage 1	Local F-208	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
280	-	MSCA	Idem que échantillon (WSP) : 275	Bloc F	Étage 2	Cage d'escalier F-291	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
281	-	MSCA	Idem que échantillon (WSP) : 276	Bloc F	Étage 2	Cage d'escalier F-291	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
282	-	MSCA	Idem que échantillon (WSP) : 277	Bloc F	Étage 2	Cage d'escalier F-291	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
272	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Corridor F-200	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			linoléum rouge vin - Échantillon pris sur le rouleau de surplus dans l'entrepôt afin de ne pas affecter l'esthétisme du bâtiment. Prendre en considération que le mastic est le même que celui de l'échantillon 271 de WSP
273	-	MSCA	Idem que échantillon (WSP) : 271	Bloc F	Étage 2	Corridor F-200	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum rouge
257	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-200	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
258	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-200	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
251	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-202	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
252	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-202	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
253	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-203	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
254	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-203	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-204	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-204	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
308	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-204	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum beige marbré
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-205	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-205	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-206	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-206	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-207	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-207	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
255	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-208	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
256	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-208	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
268	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-209	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétisme du local, à faire analyser avant travaux

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Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
241	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-209	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
242	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-209	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
247	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-209A	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
248	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-209A	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
263	-	MSCA	Idem que échantillon (WSP) : 261	Bloc F	Étage 2	Local F-209A	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
264	-	MSCA	Idem que échantillon (WSP) : 262	Bloc F	Étage 2	Local F-209A	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
271	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-209A	Plancher	Non applicable	Non applicable	Linoléum	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linoléum rouge
243	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-210	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
244	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-210	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
249	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-213	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
250	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-213	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
265	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-214	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétisme du local, à faire analyser avant travaux
239	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-214	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
240	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-214	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
266	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-215	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
237	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
238	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
259	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
260	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
267	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
269	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
270	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
245	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-218	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
246	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-218	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
227	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
228	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
229	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-219	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétisme du local, à faire analyser avant travaux
232	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Non applicable	Mastic/Calefeutrants	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic noir entre les murs et les H-beams
230	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-220	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
231	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-220	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
233	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-220	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
234	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-223	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
235	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-223	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
236	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-223	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
216	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
217	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
218	-	MCA (suspecté)	Non échantillonné	Bloc F	Étage 2	Local F-224	Plancher	Non applicable	Non applicable	Linoléum	Présence suspectée							Linoléum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétisme du local, à faire analyser avant travaux
221	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
226	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Non applicable	Mastic/Calefeutrants	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic rouge autour des tuyaux
220	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-225	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
223	-	MSCA	Idem que échantillon (WSP) : 222	Bloc F	Étage 2	Local F-225	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
222	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-228	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Tuile de vinyle 12 x 12 beige moustachée
224	-	MSCA	Idem que échantillon (WSP) : 216	Bloc F	Étage 2	Local F-228	Mur	Non applicable	Périphérique et cloison	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
225	-	MSCA	Idem que échantillon (WSP) : 217	Bloc F	Étage 2	Local F-228	Mur	Non applicable	Périphérique et cloison	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
261	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-229	Plafond	Non applicable	Non applicable	Gypse	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
262	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-229	Plafond	Non applicable	Non applicable	Composé à joint	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
509	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crépi	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
510	A, B, C	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Fondation	Non applicable	Mastic/Calefeutrants	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic à la jonction entre le mur et la fondation
512	A, B, C	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Porte	Non applicable	Mastic/Calefeutrants	Absence	Non applicable	Non détecté	Rapport WSP, 2018				Mastic gris autour des portes extérieures

1- Légende:

Non MSCA	Matériau non susceptible de contenir de l'amiante
MSCA	Matériau susceptible de contenir de l'amiante mais dont le résultat est négatif
MCA	Matériau contenant de l'amiante

2- Zone présentant des similitudes d'ouvrage (ZPSO)

Les ZPSO ont été déterminées en fonction des années de construction. Pour chaque année de construction, chaque étage, les cages d'escalier et l'extérieur ont été considérés comme des ZPSO distinctes.

3- Mesures d'intervention:

- MESURE 1 – Enlèvement immédiat des débris de MCA.
- MESURE 2 – Restriction d'accès aux débris de MCA.
- MESURE 3 – Enlèvement des MCA aux fins de la conformité aux règlements.
- MESURE 4 – Restriction d'accès aux aires où se trouvent des MCA.
- MESURE 5 – Enlèvement proactif des MCA.
- MESURE 6 – Réparation des MCA.
- MESURE 7 – Surveillance régulière.

4- Notes générales applicables seulement aux blocs A, B, C et D (voir instructions

Le gypse et le composé à joints recouvrant les murs des l
Tous les modèles de tuiles acoustiques présents dans les l
La tuile de vinyle de 18 po x 18 po beige à points bruns e
Le mastic gris (voir échantillon 147 de WSP) qui contient ventilation dans les murs.

5- Notes générales applicables à l'ensemble du bâtiment (voir instructions dans le

Toutes les systèmes de ventilation sont soit non isolés ou
Toutes les sections rectilignes de la tuyauterie de tous les
La majorité des sections irrégulières de la tuyauterie sont ce registre.

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau				Accessibilité et potentiel de dérangement	Mesure	Quantité			
No. d'échantillon et de photo	Sous- chantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (aaaa-mm-jj)	État du MCA lors de la vérification	Matériaux ignifugeants - isolants et finis, texturés et pulvérisés	Isolants mécaniques	Friabilité du MCA	Accessibilité	Mesure d'intervention 3	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m ³)
3	A, B, C	MSCA	Échantillon initial	-	Étage 1	Pièce 1	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	2018-01-26										
4	-	MSCA	Idem que échantillon (WSP) : 173 du bâtiment principal	-	Étage 1	Pièce 1	Plancher	Non applicable	Non applicable	Tuile de vinyle	2018-01-26										
7	-	MSCA	Idem que échantillon (WSP) : 3	-	Étage 1	Pièce 2	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	2018-01-26										
8	-	MSCA	Idem que échantillon (WSP) : 3	-	Étage 1	Pièce 3	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	2018-01-26										
10	-	MSCA	Idem que échantillon (WSP) : 3	-	Étage 1	Pièce 4	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	2018-01-26										
G1	-	MSCA	Non échantillonné	-	Étage 1	Pièce 3	Mur	Bloc de béton	Non applicable	Joint de mortier	2020-02-12										
13	A, B, C	MSCA	Échantillon initial	-	Extérieur	Non applicable	Mur	Porte	Porte extérieure	Mastic/Calfeutrant	2018-01-26										
N/A	-	MSCA	Non échantillonné	-	Extérieur	Non applicable	Mur	Brique	Non applicable	Joint de mortier	2020-02-12										
N/A	-	MCA (suspecté)	Non échantillonné	-	Extérieur	Non applicable	Toiture	Non applicable	Non applicable	Membrane de toiture	2018-01-26										

* ZPSO: zone présentant des similitudes d'ouvrages

1- Légende:	
Non MSCA	Matériau non susceptible de contenir de l'amiante
MSCA	Matériau susceptible de contenir de l'amiante mais dont le résultat est négatif
MCA	Matériau contenant de l'amiante

2- Zone présentant des similitudes d'ouvrage (ZPSO)
Les ZPSO ont été déterminées en fonction des années de construction. Pour chaque année de construction, chaque étage, les cages d'escalier et l'extérieur ont été considérés comme des ZPSO distinctes.

3- Mesures d'intervention:
MESURE 1 – Enlèvement immédiat des débris de MCA.
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MESURE 4 – Restriction d'accès aux aires où se trouvent des MCA.
MESURE 5 – Enlèvement proactif des MCA.
MESURE 6 – Réparation des MCA.
MESURE 7 – Surveillance régulière.

Identification et lieu de prélèvement de l'échantillon											Analyse et résultat					Enlèvement complet du matériau		Commentaires
No. d'échantillon et de photo	Sous-échantillons	Non MSCA, MSCA ou MCA ¹	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Présence ou absence d'amiante	Type d' amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'enlèvement	Document de preuve	Commentaire
3	A, B, C	MSCA	Échantillon initial	-	Étage 1	Pièce 1	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
4	-	MSCA	Idem que échantillon (WSP) : 173 du bâtiment principal	-	Étage 1	Pièce 1	Plancher	Non applicable	Non applicable	Tuile de vinyle	Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			12 x 12 beige à pois noirs et gris
7	-	MSCA	Idem que échantillon (WSP) : 3	-	Étage 1	Pièce 2	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
8	-	MSCA	Idem que échantillon (WSP) : 3	-	Étage 1	Pièce 3	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
10	-	MSCA	Idem que échantillon (WSP) : 3	-	Étage 1	Pièce 4	Mur	Porte	Porte intérieure	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
G1	-	MSCA	Non échantillonné	-	Étage 1	Pièce 3	Mur	Bloc de béton	Non applicable	Joint de mortier	Présence suspectée							
13	A, B, C	MSCA	Échantillon initial	-	Extérieur	Non applicable	Mur	Porte	Porte extérieure	Mastic/Calfeutrant	Absence	Non applicable	Non détecté	Rapport WSP, 2018				
N/A	-	MSCA	Non échantillonné	-	Extérieur	Non applicable	Mur	Brique	Non applicable	Joint de mortier	Présence suspectée							
N/A	-	MCA (suspecté)	Non échantillonné	-	Extérieur	Non applicable	Toiture	Non applicable	Non applicable	Membrane de toiture	Présence suspectée							Non échantillonnée pour des raisons d'étanchéité, à faire analyser avant travaux

* ZPSO: zone présentant des similitudes d'ouvrages

1- Légende:	
Non MSCA	Matériau non susceptible de contenir de l'amiante
MSCA	Matériau susceptible de contenir de l'amiante mais dont le résultat est négatif
MCA	Matériau contenant de l'amiante

2- Zone présentant des similitudes d'ouvrage (ZPSO)
Les ZPSO ont été déterminées en fonction des années de construction. Pour chaque année de construction, chaque étage, les cages d'escalier et l'extérieur ont été considérés comme des ZPSO distinctes.

3- Mesures d'intervention:
MESURE 1 – Enlèvement immédiat des débris de MCA.
MESURE 2 – Restriction d'accès aux débris de MCA.
MESURE 3 – Enlèvement des MCA aux fins de la conformité aux règlements.
MESURE 4 – Restriction d'accès aux aires où se trouvent des MCA.
MESURE 5 – Enlèvement proactif des MCA.
MESURE 6 – Réparation des MCA.
MESURE 7 – Surveillance régulière.

ANNEXE

F

RAPPORT
PHOTOGRAPHIQUE



MATÉRIAUX SUSCEPTIBLES DE CONTENIR DE L'AMIANTE (MSCA)

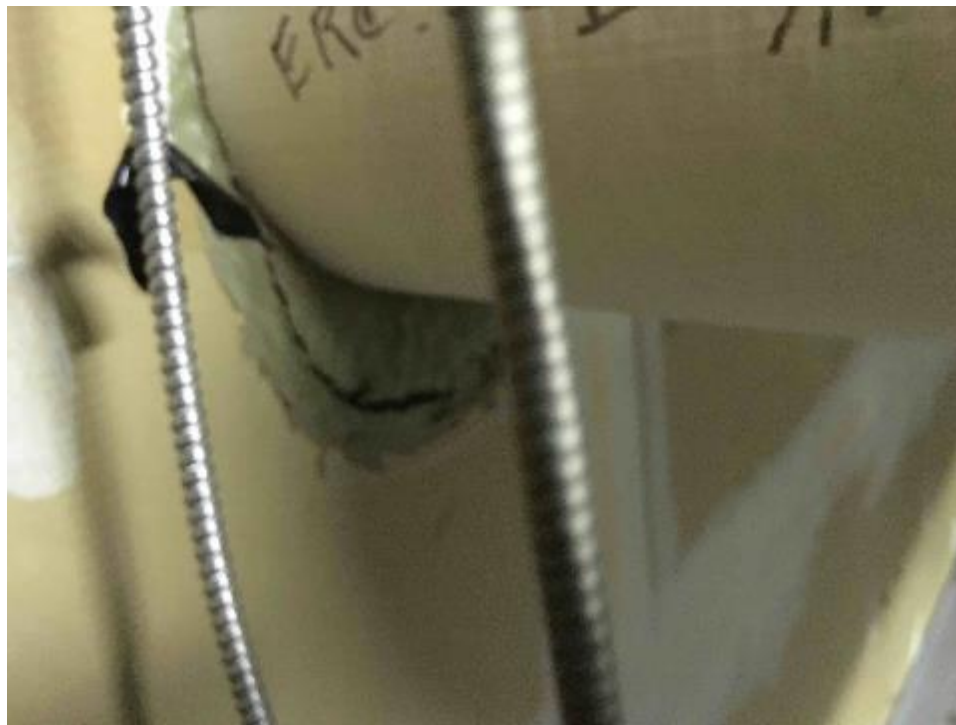


PHOTO 1 Le mastic brun présent dans l'entreplafond du local B-129 ne contient pas d'amiante



PHOTO 2 Le mastic brun présent dans l'entreplafond du local B-129 ne contient pas d'amiante



PHOTO 3 Le mastic brun présent dans l'entreplafond du local B-129 ne contient pas d'amiante



PHOTO 4 Le mastic brun présent dans l'entreplafond du local B-129 ne contient pas d'amiante

ANNEXE

G

ÉTUDE ANTÉRIEURE
(MHV, 2018)

Laval, le 10 mars 2018

Monsieur Sébastien Côté, M.Env.
Spécialiste principal en environnement
Division - Hygiène industrielle et équipements pétroliers
Services environnementaux
SPAC - Région du Québec
Place Bonaventure, portail Sud-Ouest
800, rue de La Gauchetière Ouest,
Bureau 7300
Montréal (Québec)
H5A 1L6

OBJET : Inspection et prélèvement d'échantillons de matériaux susceptibles de contenir de l'amiante

SITE : Centre de recherche et de développement - Agriculture et Agroalimentaire Canada

NOTRE NUMÉRO DE PROJET : P18-3820rev

Monsieur,

Pour faire suite à votre demande, il nous est agréable de vous transmettre notre rapport de caractérisation visant à identifier la présence possible d'amiante dans la membrane de toiture du bâtiment du Centre de recherche et de développement – Agriculture et Agroalimentaire Canada situé au 3600, boulevard Casavant, à Saint-Hyacinthe.

L'inspection et le prélèvement des échantillons ont été effectués le 1^{er} mars 2018 par M. Marc-André Huberdeau, M.Sc.(A), chimiste et hygiéniste industriel.



MÉTHODOLOGIE

Notre inspection et le prélèvement des matériaux susceptibles de contenir de l'amiante ont été établis afin d'obtenir une bonne représentativité des matériaux constituant les membranes de toiture. Suite à notre inspection et après avoir pris connaissance des informations fournies relativement au bâtiment et au projet, deux échantillons de matériaux susceptibles de contenir de l'amiante ont été prélevés, soit un échantillon dans le bassin A et un échantillon dans le bassin B.

Le nombre d'échantillons de matériaux prélevés a été déterminé d'après le guide *Gestion sécuritaire de l'amiante*, publié en 2013, sur lequel s'appuie la Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST).

Le prélèvement des échantillons de matériaux susceptibles de contenir de l'amiante consistait à effectuer une coupe transversale complète, c'est-à-dire de la couche extérieure jusqu'à la surface intérieure, pour s'assurer de recueillir chaque phase du matériau, considérant que chaque phase peut être analysée en microscopie.

L'analyse des échantillons a été effectuée en microscopie polarisante et dispersion de couleurs au laboratoire d'Eurofins par M^{me} Annie Garand, techniciennes, sous la supervision de M. Martin Gravelle, B.Sc., chimiste, en conformité avec la méthode 244-3 de l'IRSST intitulée *Caractérisation des fibres dans les poussières déposées ou dans les matériaux en vrac* pour en déterminer le type et le contenu en amiante. Eurofins est un laboratoire accrédité participant au programme AIHA PAT pour l'identification de l'amiante.

De plus, selon la méthode 244-3 de l'IRSST, l'analyse des revêtements goudronnés a également été réalisée en microscopie électronique à transmission (MET) et dispersion des énergies en rayons-X au laboratoire *ALS Laboratory Group* de Cincinnati, en Ohio. L'analyse a été effectuée par M^{me} Pamela Hizar, analyste, en conformité avec la méthode ELAP 198.4 *Microscopie électronique à transmission pour l'identification et la quantification de l'amiante dans les échantillons en vrac non friables, liés par des matériaux organiques* afin d'évaluer spécifiquement la présence d'amiante dans les échantillons avec une précision accrue.



RÉSULTATS

Selon les informations fournies sur place par la firme d'architecture, les toitures des différents bassins sont similaires et sont constituées d'une membrane géotextile, d'un isolant de polystyrène extrudé d'une épaisseur d'environ 4 pouces, d'une membrane de polyéthylène, d'une membrane de caoutchouc/goudron liquide derrière laquelle on retrouve des panneaux de gypse et du béton.

Lors de notre évaluation, un échantillon de membrane de toiture a été prélevé dans le bassin A et un second dans le bassin B. Les résultats d'analyse, résumés dans le tableau qui suit, n'ont démontré aucune présence d'amiante dans les échantillons analysés, autant en microscopie polarisante et dispersion de couleurs qu'en microscopie électronique à transmission (MET) et dispersion des énergies en rayons-X.

TABLEAU 1

TABLEAU DES LOCALISATIONS ET DES RÉSULTATS D'ÉCHANTILLONNAGE

Échantillon	Localisation	Description du matériau	Fibres d'amiante	Pourcentage
3820-T-01	Toiture Bassin A Membrane	Revêtement goudronné noir et carton brun	Non détectées	
3820-T-02	Toiture Bassin B Membrane	Revêtement goudronné noir et carton brun	Non détectées	

Cette méthode analytique est semi-quantitative.

Le domaine d'applicabilité de la méthode varie de 1 % à 100 % (V/V).



En espérant le tout à votre satisfaction, nous demeurons à votre disposition pour toute information que vous jugerez nécessaire et vous prions d'accepter l'expression de nos salutations distinguées.

MHV SERVICES D'HYGIÈNE INDUSTRIELLE INC.,

Marc-André Huberdeau, M. Sc. (A)
Chimiste et hygiéniste industriel

Annexe A – Dossier photographique

Annexe B – Certificat d'analyse

Annexe C – Plan de localisation d'échantillonnage



ANNEXE A

DOSSIER PHOTOGRAPHIQUE



Photo 1

Centre de recherche et développement d'Agriculture et Agroalimentaire Canada
Toiture, bassin A, membrane
*Prélèvement de l'échantillon **3820-T-01***



Photo 2

Centre de recherche et développement d'Agriculture et Agroalimentaire Canada
Toiture, bassin B, membrane
*Prélèvement de l'échantillon **3820-T-02***



ANNEXE B

CERTIFICAT D'ANALYSE

Madame Valérie Turcotte
MHV Services d'Hygiène Industrielle
 2377, rue Michelin
 Laval (Québec)
 H7L 5B9

CERTIFICAT D'ANALYSE

CERTIFICAT # 18-0306 VERSION 1.0

Client :	MHV Services d'Hygiène Industrielle	Numéro B.C. :	Non disponible
Notre Projet :	18-871468	Votre Projet :	P18-3820
Date réception :	Le 5 mars 2018	Date analyse :	Le 5 mars 2018

CARACTÉRISATION MINÉRALOGIQUE EN MICROSCOPIE POLARISANTE ET DISPERSION DE COULEURS – MÉTHODE IRSST 244

Deux (2) échantillons ont été soumis pour fins d'analyse par microscopie polarisante et dispersion de couleurs. Les échantillons ont été préparés et observés en respectant la méthode suivante :

Un fragment de chaque échantillon a été isolé. Selon le cas et afin d'extraire les fibres, les échantillons ont subi un léger broyage mécanique. Les particules et les fibres produites ont été transférées sur lames, recouvertes d'une lamelle et baignées dans des liquides d'indice de réfraction appropriés afin d'observer la dispersion de couleurs. Les propriétés optiques orthoscopiques et conoscopiques des échantillons sont également utilisées si elles permettent de compléter la caractérisation. Les résultats se résument comme suit :

3820-T-01 *	
Revêtement goudronné noir et carton brun, présence de mousse isolante	
<i>Phase revêtement goudronné</i>	
Fibres d'amiante	Non détectées
Fibres synthétiques	10 – 15 %
Fibres organiques naturelles (cellulose)	< 1 %
Particules anguleuses, fragments et autres	85 – 90 %
<i>Phase carton</i>	
Fibres d'amiante	Non détectées
Fibres organiques naturelles (cellulose)	> 95 %
Particules anguleuses, fragments et autres	1 – 5 %

* Cet échantillon contient deux (2) phases analysées séparément.

3820-T-02 *	
Revêtement goudronné noir et carton brun, présence de mousse isolante	
<i>Phase revêtement goudronné</i>	
Fibres d'amiante	Non détectées
Fibres synthétiques	10 – 15 %
Fibres organiques naturelles (cellulose)	< 1 %
Particules anguleuses, fragments et autres	85 – 90 %
<i>Phase carton</i>	
Fibres d'amiante	Non détectées
Fibres organiques naturelles (cellulose)	> 95 %
Particules anguleuses, fragments et autres	1 – 5 %

* Cet échantillon contient deux (2) phases analysées séparément.

Analysé par :

Annie Garand, Technicienne

Vérifié par :

Martin Gravelle, B.Sc. Chimiste

Notes : Il est reconnu que l'analyse par MLP ne peut déceler l'amiante dans un faible pourcentage d'échantillons contenant de l'amiante. Donc, un résultat négatif par MLP ne peut pas être garanti. Cette méthode analytique est semi-quantitative. Le domaine d'application de la méthode varie de <1 % à 100 % (v/v). Eurofins suggère que certains échantillons reportés comme « non détectées », « traces » ou « <1% » soient analysés par MET. Le présent certificat se rapporte seulement aux échantillons analysés. Ce certificat ne peut être reproduit, sauf en totalité, sans la permission écrite d'Eurofins. Le laboratoire n'est pas responsable de la précision des résultats lorsqu'une séparation physique des phases est requise. Le laboratoire n'est pas responsable de la représentativité de l'échantillon fourni. Les échantillons seront conservés pour une période de 60 jours ou selon les instructions écrites du client.

EUROFINS POINTE-CLAIRE PARTICIPE AU PROGRAMME AIHA PAT POUR L'IDENTIFICATION DE L'AMIANTE



Contact: Martin Gravelle
Company: Eurofins Essais Environmental
Address: 121, boul. Hymus,
Pointe-Claire, Quebec H9R 1E6

REFERENCE DATA

Project / Location: 18-871468

PO Number: 0000611

ALS Work Order: 1803612

NARRATIVE: Analysis performed on FEI Tecnai G2 Spirit TEM equipped with EDAX Octane T Plus Silicon Drift Detector System, Z2 Analyzer, and Genesis Software. Fiber morphology, ED, and EDXA used to determine species. All sample collection is performed outside ALS and is the sole responsibility of client. If sample collection or submission deviates from any method requirement, then interpretation of the results via the method cannot be made. Asbestos percentage based on estimate by area in final residue. Asbestos reported as "0.00" equivalent to ND. Samples disposed after 60 days. Grids archived 3 years. Results apply only to portions of samples analyzed. Raw data validated by analyst.

METHOD CODE: EPA/600/R-93/116 includes detailed preparation and analytical procedures for asbestos in bulk building materials by stereo microscope, PLM, Gravimetry, XRD, and/or electron microscopy. Specific prep/analysis procedures elected according to material type and client request. "EPA 600" refers to samples directly prepared by grinding with mortar and pestle. Materials that cannot be prepared directly may require ashing in a muffle furnace, acid digestion, or both. "EPA 600 ASH" refers to resinous or flexible material ashed to burn off interfering organics. "EPA 600 ACID" refers to cementitious material treated with acid to dissolve mineral carbonates. "ELAP 198.4" refers to those prepared using both ashing and acid treatment due to material type or client requirements. "ELAP 198.6" refers to samples analyzed by PLM requiring TEM confirmation. "ELAP 198.1" refers to samples analyzed by PLM that do not require TEM analysis. "EPA 600/R-04" refers to a modified version of method EPA 600/R-04/004, known as The Cincinnati Method, for analysis of asbestos in vermiculite by PLM/TEM where fine material remaining from ND PLM analyses may be analyzed by TEM upon client request. This qualitative method reports asbestos as PRESENT or ABSENT only; no quantitative data supplied. "ENV 004" refers to the ALS SOP for analysis of asbestos in soil by PLM/TEM in which fines from ND PLM soils may be analyzed by TEM upon request. "+STOP" denotes samples not analyzed at client request because a previous sample in a homogeneous group was determined to be ACM (asbestos containing material).

NOTES: *NA=Not Applicable, ND=None Detected, NON-ACM=Weight % of residue <1*,
TRACE=<1% for samples collected in US or <0.1% for samples collected in Canada,
*All samples from Canada are examined regardless of weight percent of residue.
ALS is accredited for NYELAP Method 198.4 through New York ELAP (Lab#11371).*

TEM ANALYSIS DATA

EDXA Resolution: <175 eV
Accelerating Voltage: 100keV
Prep Start Date: 3/20/2018

Calibration Constant (10,000x): 1.02 µm/cm
150mm CL Camera Constant: 8.46mm
Analysis Start Date: 3/22/2018

Pamela M. Hizar

Pamela M. Hizar
ALS TEM Analyst

SAMPLE IDENTIFICATION

Client Sample ID:	3820-T-01	3820-T-02
ALS Sample ID:	1803612-01	1803612-02
Method Code:	ELAP 198.4	ELAP 198.4

SAMPLE DESCRIPTION

Homogeneity:	Inseparable	Inseparable
Color:	Grey/ Brown	Grey/ Brown
	Crumbly/	Crumbly/
Texture:	Woven	Woven
Description:	Material	Material

GRAVIMETRIC DATA

Starting Weight (g):	0.4657	0.1710
Final Weight (g):	0.1025	0.0226
Weight % Residue:	22.0099	13.2164

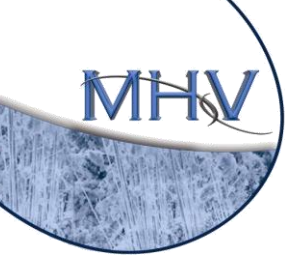
% ASBESTOS IN SAMPLE

Chrysotile:	0.0000	0.0000
Amosite:	0.0000	0.0000
Crocidolite:	0.0000	0.0000
Actinolite:	0.0000	0.0000
Tremolite:	0.0000	0.0000
Anthophyllite:	0.0000	0.0000
Total Asbestos:	0.0000	0.0000



ANNEXE C

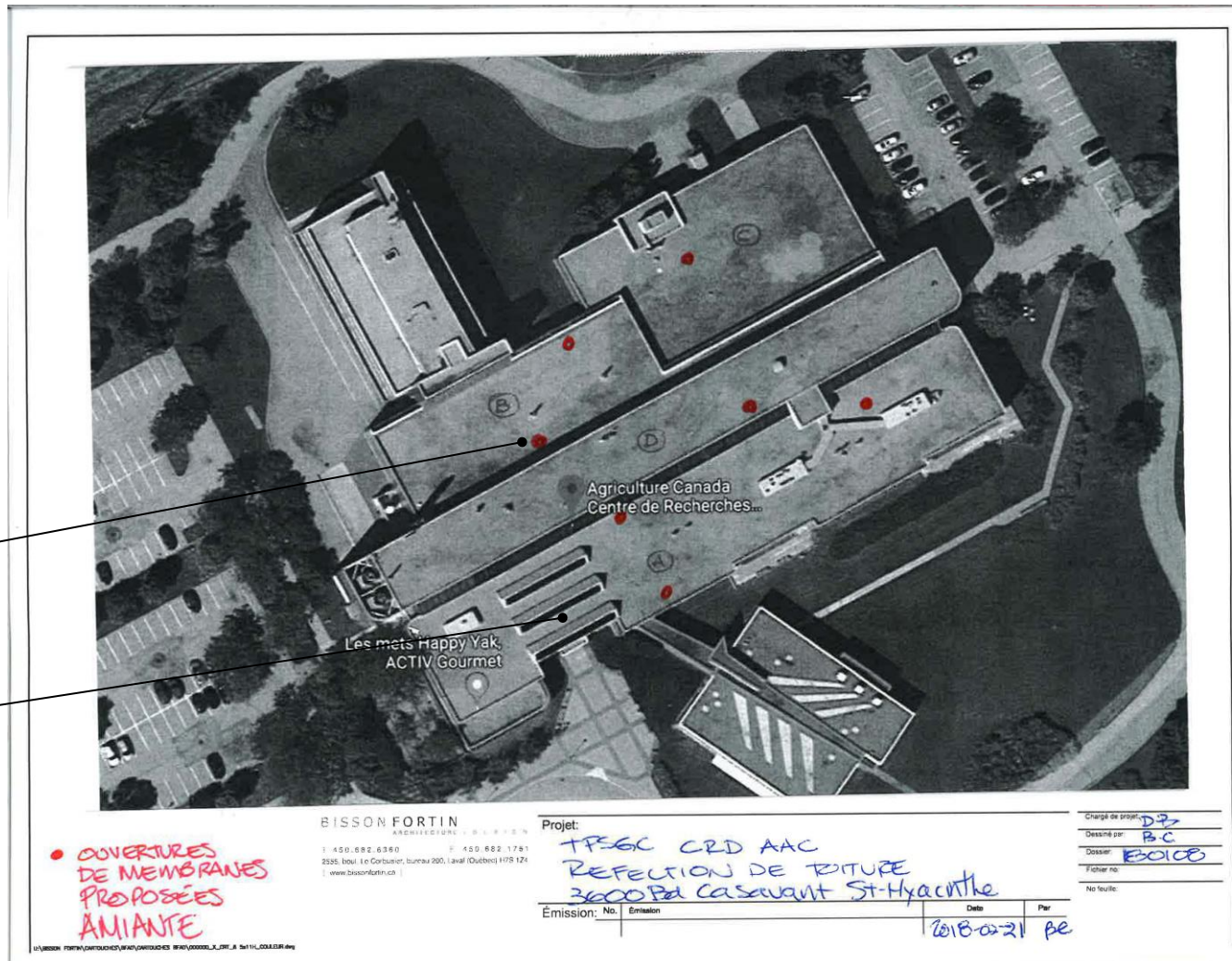
PLAN DE LOCALISATION D'ÉCHANTILLONNAGE



PLAN DE LOCALISATION D'ÉCHANTILLONNAGE

3820-T-02

3820-T-01



Annexe 2- Registre des MSCA et MCA (WSP, 2020)

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélevement de l'échantillon										Date	État du matériau		Accessibilité et potentialité de		Mesure	Quantité		Commentaire		Analyse et résultat				Entretien complet du matériau		Commentaire	
N ^o d'échantillon et de photo	Sous-échantillon	Non MSCA, MSCA ou MCA	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (année-mois-jour)	État du MCA lors de la vérification	Matériaux appliqués: isolants et finis, textures et polystyrène	Isolants minéraux	Évaluation du MCA	Accessibilité	Mesure d'intervention	Quantité estimée de MCA contaminé	Quantité estimée de débris de MCA contaminé	Présence ou absence d'antenne	Type d'antenne	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'entretien	Document de preuve	Commentaire
451	-	MSCA	Idem que échantillon (WSP) - 451	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier A	Plafond	Non applicable	Non applicable	Gypse	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
451	-	MSCA	Idem que échantillon (WSP) - 451	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier B	Plafond	Non applicable	Non applicable	Gypse	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
451	A, B, C	MSCA	Échantillon initial	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier C	Plafond	Non applicable	Non applicable	Gypse	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
451	-	MSCA	Idem que échantillon (WSP) - 451	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier D	Plafond	Non applicable	Non applicable	Gypse	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
450	-	MSCA	Idem que échantillon (WSP) - 450	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier A	Mur	Non applicable	Pénétration et chélon	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
450	-	MSCA	Idem que échantillon (WSP) - 450	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
450	-	MSCA	Idem que échantillon (WSP) - 450	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier B	Mur	Non applicable	Pénétration et chélon	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
451	-	MSCA	Idem que échantillon (WSP) - 451	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier B	Mur	Non applicable	Pénétration et chélon	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
450	A, B, C	MSCA	Échantillon initial	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier C	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
450	A, B, C	MSCA	Échantillon initial	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier C	Mur	Non applicable	Pénétration et chélon	Gypse	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
450	-	MSCA	Idem que échantillon (WSP) - 450	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier D	Mur	Non applicable	Pénétration et chélon	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
451	-	MSCA	Idem que échantillon (WSP) - 451	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier D	Mur	Non applicable	Pénétration et chélon	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
451	-	MSCA	Idem que échantillon (WSP) - 451	Bloccs A, B, C, D	Cave d'escalier	Cave d'escalier D	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				
361	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Corridor A-209	Tuyauterie	Inconnu	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	3 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
456	A, B, C	MSCA	Échantillon initial	Bloccs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Papier acoustique	2018-01-25									Absence	Non applicable	Non détecté	Rapport WSP 2018				Débris dans les bacs collectifs en bois
144	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
145	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Corridor C-100	Plafond	Non applicable	Non applicable	Gypse	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
146	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Corridor C-100	Plancher	Non applicable	Non applicable	Laitex	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				Antenne non détectée
124	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Corridor C-100A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
124	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Corridor C-100A	Plafond	Non applicable	Non applicable	Gypse	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
126	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Corridor C-100A	Plancher	Non applicable	Non applicable	Laitex	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				Antenne non détectée
345	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-101	Tuyauterie	Inconnu	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	1 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
331	-	MSCA	Idem que échantillon (WSP) - 201	Bloccs A, B, C, D	Étage 1	Local A-109	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
331	-	MSCA	Idem que échantillon (WSP) - 201	Bloccs A, B, C, D	Étage 1	Local A-110	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
351	-	MSCA	Idem que échantillon (WSP) - 201	Bloccs A, B, C, D	Étage 1	Local A-111	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
350	-	MSCA	Idem que échantillon (WSP) - 201	Bloccs A, B, C, D	Étage 1	Local A-112	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
332	-	MSCA	Idem que échantillon (WSP) - 201	Bloccs A, B, C, D	Étage 1	Local A-115	Plafond	Non applicable	Non applicable	Tuile suspendue	2018-01-21									Absence	Non applicable	Non détecté	Rapport WSP 2018				
346	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Local A-104A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24									Absence	Non applicable	Non détecté	Rapport WSP 2018				
347	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Local A-104A	Plafond	Non applicable	Non applicable	Gypse	2018-01-24									Absence	Non applicable	Non détecté	Rapport WSP 2018				
353	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Drain pluriel	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	3 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
355	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Eau froide (chauffage)	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	83 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
356	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Condensé	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	100 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
357	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Vapeur	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	20 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
358	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Radiateur	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	8 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
359	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Récepteur chaleur	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	8 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
360	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Eau chaude (chauffage)	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	30 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
454	A, B, C	MCA	Échantillon initial	Bloccs A, B, C, D	Étage 1	Local A-118	Élément mécanique	Réserveur	Non applicable	Pâte cimentaire	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (B) - personnel d'entretien (< 8 m)	7	6 m2	Aucun débris	Présence	Chrysoïlle	80%	Rapport WSP 2018				
354	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Bloccs A, B, C, D	Étage 1	Local A-118	Tuyauterie	Drain pluriel	Irrigatoire (sonde)	Pâte cimentaire et caucous	2018-01-25			Bon (aucune perforation)	Isolants minéraux (ex: calcaireux)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités	Aucun débris	Présence	Chrysoïlle	55 à 60%	Rapport Technol, 2004				
38	-	MSCA	Idem que échantillon (WSP) - 121	Bloccs A, B, C, D	Étage 1	Local A-125	Eau chaude																				

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon										Date	État du matériau		Accessibilité et potentiel de		Moins	Échantillon		Analyse et résultat				Entretien complet du matériau		Commentaires					
N° d'échantillon et de photo	Sous-échantillon	Non MSCA, MSCA ou MCA	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (sans année)	État du MCA lors de la vérification	Matériaux appliqués: isolants et finis, textures et polystyrène	Isolants minéraux	Étanchéité du MCA	Accessibilité	Moins d'intervention	Quantité estimée de MCA contaminé	Quantité estimée de débris de MCA (m²)	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'entretien	Document de preuve	Commentaire		
141	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-108A	Plafond	Non applicable	Non applicable	Gypse	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
142	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-109	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
143	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-109	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
144	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linéaire	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linéaire beige-rouge	
145	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linéaire	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linéaire beige-rouge	
146	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-110	Plancher	Non applicable	Non applicable	Linéaire	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée			Linéaire gris	
147	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-110	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
148	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
149	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
147	A, B, C	MCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-112	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-23	Bois (aucun dommage)			Non friable (ex: tulle de vitre)	Accessibilité (C2) - distendu	7	3 m²		Aucun débris	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018					Ce mastic gris/s' est observé que dans les locaux C-112 et C-121C. Toutefois, il est possible que ce mastic se retrouve à d'autres endroits dans les blocs A, B, C et D, principalement au niveau des plâtreries des conduits de ventilation dans les murs.
124	-	MCA	Idem que les échantillons de Technol, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 1	Local C-114	Tuyauterie	Eau chaude (chauffage)	Irrégulière (coude)	Pâte cimentaire et caoutchouc	2018-01-23			Bois (aucune perforation)	Isolants minéraux (ex: calcaire)	Accessibilité (C1) - apparent (> 8 pi)	7	2 unités		Aucun débris	Présence	Chrysotile	55 à 60%	Rapport Technol, 2004					
125	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
126	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
127	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
128	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-114	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
129	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-111	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
175	-	MCA	Idem que l'échantillon (WSP) : 147	Blocs A, B, C, D	Étage 1	Local C-121C	Mur	Non applicable	Non applicable	Mastic/Calfeutrant	2018-01-23	Bois (aucun dommage)			Non friable (ex: tulle de vitre)	Accessibilité (C2) - distendu	7	2 m²		Aucun débris	Présence	Chrysotile	0,1 à 1%	Rapport WSP, 2018					Ce mastic gris/s' est observé que dans les locaux C-112 et C-121C. Toutefois, il est possible que ce mastic se retrouve à d'autres endroits dans les blocs A, B, C et D, principalement au niveau des plâtreries des conduits de ventilation dans les murs.
167	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Tulle suspendu	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					12 x 12 beige à joint beige et gris
168	A, B, C	MSCA	Échantillon initial	Blocs A, B, C, D	Étage 1	Local C-121	Plancher	Non applicable	Non applicable	Linéaire	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018	Amiante non détectée				Linéaire beige-rouge
169	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
170	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
171	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
172	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
173	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
174	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
175	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
176	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
177	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
178	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
179	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
180	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
181	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
182	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
183	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
184	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
185	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
186	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
187	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
188	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP, 2018					
189	-	MSCA	Idem que l'échantillon (WSP) : 121	Blocs A, B, C, D	Étage 1	Local C-121	Plafond																						

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélèvement de l'échantillon											Date	État du matériau			Accessibilité et possibilité de		Moins	Quantité		Quantité		Quantité		Analyse et résultat		Entretien complet du matériau		Commentaires		
N° d'échantillon et de photo	Sous-échantillon	Non MSCA, MSCA ou MCA	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (au cas où)	État du MCA lors de la vérification	Matériaux significatifs isolants et finis, textures et polystyrène	Isolants mécaniques	Fracture du MCA	Accessibilité	Moins d'intervention	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m²)	Présence ou absence d'antenne	Type d'antenne	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'entretien	Document de preuve	Commentaire	
19	A, B, C	MSCA	Echantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Dégâts	Non applicable	Pâte cimentaire et caucous	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018				Seulement aux extrémités du dégrais	
27	A, B, C	MSCA	Echantillon initial	Blocs A, B, C, D	Étage 3	Local A-301	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
23	A, B, C	MSCA	Echantillon initial	Blocs A, B, C, D	Étage 3	Local A-302	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
39	-	MCA	Idem que l'échantillon (WSP) : 38	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Non (aucun dommage)			Non friable (ex: taille de vieilles)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	3 m²		Aucun débris		Présence	Chrysoïde	6%	Rapport WSP, 2018					Mastic beige à la jonction des panneaux des unités de ventilation
43	-	MCA	Idem que l'échantillon (WSP) : 42	Blocs A, B, C, D	Étage 3	Local A-302	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Non (aucun dommage)			Non friable (ex: taille de vieilles)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	1 m²		Aucun débris		Présence	Chrysoïde	6%	Rapport WSP, 2018					Mastic gris autour des tyrans des unités de ventilation
24	-	MSCA	Idem que l'échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local A-301	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
30	-	MSCA	Idem que l'échantillon (WSP) : 21	Blocs A, B, C, D	Étage 3	Local A-301	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
47	-	MCA	Idem que l'échantillon (WSP) : 16	Blocs A, B, C, D	Étage 3	Local B-244	Tuyauterie	Drain pluvial	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	5 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					Partie haute accessible par l'étage 3
44	-	MSCA	Idem que l'échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-244	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					Partie haute accessible sur l'étage 3
45	-	MSCA	Idem que l'échantillon (WSP) : 21	Blocs A, B, C, D	Étage 3	Local B-244	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					Partie haute accessible sur l'étage 3
29	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Eau froide (chauffage)	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Possible (c. 10% de perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	6 ou 5	127 unités	1 unité	Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
31	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Eau chaude (chauffage)	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Possible (c. 10% de perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	6 ou 5	96 unités	2 unités	Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
35	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Vapeur	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	28 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
33	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Glycol	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	29 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
37	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Condensé	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	56 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
17	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Local B-301	Tuyauterie	Drain pluvial	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	15 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
26	-	MSCA	Idem que l'échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-301	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
27	-	MSCA	Idem que l'échantillon (WSP) : 21	Blocs A, B, C, D	Étage 3	Local B-301	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
38	A, B, C	MCA	Echantillon initial	Blocs A, B, C, D	Étage 3	Local B-301	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Non (aucun dommage)			Non friable (ex: taille de vieilles)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	3 m²		Aucun débris		Présence	Chrysoïde	6%	Rapport WSP, 2018					Mastic beige à la jonction des panneaux des unités de ventilation
42	A, B, C	MCA	Echantillon initial	Blocs A, B, C, D	Étage 3	Local B-301	Élément mécanique	Unité CVAC	Non applicable	Mastic/Calfeutrant	2018-01-22	Non (aucun dommage)			Non friable (ex: taille de vieilles)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	1 m²		Aucun débris		Présence	Chrysoïde	6%	Rapport WSP, 2018					Mastic gris autour des tyrans des unités de ventilation
52	-	MCA	Idem que l'échantillon (WSP) : 16	Blocs A, B, C, D	Étage 3	Local B-302	Tuyauterie	Drain pluvial	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-22			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (C) - apparent (> 8 m)	7	3 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
49	-	MSCA	Idem que l'échantillon (WSP) : 22	Blocs A, B, C, D	Étage 3	Local B-302	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
50	-	MSCA	Idem que l'échantillon (WSP) : 21	Blocs A, B, C, D	Étage 3	Local B-302	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
521	-	MCA	Idem que les échantillons de Technico, 2004 (étude antérieure)	Blocs A, B, C, D	Étage 3	Non applicable	Tuyauterie	Drain pluvial	Irrigatoire (soudé)	Pâte cimentaire et caucous	2018-01-26			Non (aucune perforation)	Isolants mécaniques (ex: calfeutrage)	Accessibilité (C) - apparent (> 8 m)	7	2 unités		Aucun débris		Présence	Chrysoïde	55 à 60%	Rapport Technico, 2004					
520	-	MCA	Idem que l'échantillon (étude antérieure) : 10009 (Gardar, 2017)	Blocs A, B, C, D	Extérieur	Non applicable	Élément mécanique	Unité CVAC	Non applicable	Membrane gonflante	2018-01-26	Non (aucun dommage)			Non friable (ex: taille de vieilles)	Accessibilité (B) - personnel d'entretien (c. 8 m)	7	36 m²		Aucun débris		Présence	Chrysoïde	5 à 10%	Gedif, 2017					
511	-	MSCA	Idem que l'échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crête de finition	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
513	A, B, C	MSCA	Echantillon initial	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Pote	Non applicable	Mastic/Calfeutrant	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP, 2018					Mastic gris à la jonction des murs et de la fondation
514	A, B, C	MSCA	Echantillon initial	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Pote	Non applicable	Mastic/Calfeutrant	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP, 2018					Mastic gris autour des poteaux et des fondations extérieures
515	-	MSCA	Idem que l'échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crête de finition	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
516	-	MSCA	Idem que l'échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crête de finition	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
517	-	MSCA	Idem que l'échantillon (WSP) : 192	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crête de finition	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP, 2018					
511	-	MCA	Idem que l'échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crêpi	2018-01-26	Non visible			Fracture et détérioré (ex: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris		Présence	Chrysoïde	0,1 à 1%	Rapport WSP, 2018					Crêpi derrière le crêpi de finition
515	-	MCA	Idem que l'échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crêpi	2018-01-26	Non visible			Fracture et détérioré (ex: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris		Présence	Chrysoïde	0,1 à 1%	Rapport WSP, 2018					Crêpi derrière le crêpi de finition
516	-	MCA	Idem que l'échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crêpi	2018-01-26	Non visible			Fracture et détérioré (ex: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris		Présence	Chrysoïde	0,1 à 1%	Rapport WSP, 2018					Crêpi derrière le crêpi de finition
517	-	MCA	Idem que l'échantillon (WSP) : 193	Blocs A, B, C, D	Extérieur	Non applicable	Mur	Fondation	Non applicable	Crêpi	2018-01-26	Non visible			Fracture et détérioré (ex: plâtre)	Accessibilité (D) - nécessite démolition	7	Tout le périmètre des blocs A, B, C et D sur une hauteur de 1m		Aucun débris		Présence	Chrysoïde	0,						

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Identification et lieu de prélevement de l'échantillon										Date	État du matériau		Accessibilité et potentiel de		Moins	Échantillon		Analyse et résultat		Entretien complet du matériau		Commentaire								
No. d'échantillon et # de blocs	Sous-échantillon	Non MSCA, MSCA ou MCA	Type d'échantillon	Bâtiment	Étage	Précisions sur la localisation	Élément	Composante	Type	Matériau	Date de la vérification (sans échantillon)	État du MCA lors de la vérification	Matériaux appliqués (solants et fins, textures et polystyrène)	Isolants sous-jacents	Fiabilité du MCA	Accessibilité	Moins d'intervention	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA	Présence ou absence d'antenne	Type d'antenne	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'entretien	Document de preuve	Commentaire	
61	A, B, C	MSCA	Echantillon initial	Bloc E	Étage 1	Corridor E-101	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
62	-	MSCA	Mécanisme d'échantillon (WSP) 55	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	L'antenne	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
67	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Corridor E-101	Mur	Non applicable	Non applicable	Non applicable	Plâtre/bois et ciment	Gypse	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
119	A, B, C	MSCA	Echantillon initial	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	L'antenne	2018-01-23											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
120	-	MCA (suspect)	Non échantillon	Bloc E	Étage 1	Corridor E-101	Plancher	Non applicable	Non applicable	L'antenne	2018-01-23	Bois (aucun dommage)			Non fiable (ex: suite de vieilles)	Accessibilité (A) - tous (< 8 p)	5 m 7	12 m2		Aucun débris		Présence suspecte								L'antenne noir, non échantillon afin de ne pas affecter l'entretien du local, à échantillonner et analyser avant des travaux
101	-	MSCA	Mécanisme d'échantillon (WSP) 60	Bloc E	Étage 1	Corridor E-106	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
102	-	MSCA	Mécanisme d'échantillon (WSP) 61	Bloc E	Étage 1	Corridor E-106	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
103	-	MSCA	Mécanisme d'échantillon (WSP) 55	Bloc E	Étage 1	Corridor E-106	Plancher	Non applicable	Non applicable	L'antenne	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
99	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Corridor E-106	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-23										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
100	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Corridor E-106	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Gypse	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
154	-	MCA (suspect)	Non échantillon	Bloc E	Étage 1	Corridor E-150	Plancher	Non applicable	Non applicable	L'antenne	2018-01-23	Bois (aucun dommage)			Non fiable (ex: suite de vieilles)	Accessibilité (A) - tous (< 8 p)	5 m 7	12 m2		Aucun débris		Présence suspecte								L'antenne noir, non échantillon afin de ne pas affecter l'entretien du local, à échantillonner et analyser avant des travaux
163	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Corridor E-150	Mur	Non applicable	Non applicable	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
164	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Corridor E-150	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Gypse	2018-01-22										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
165	-	MSCA	Mécanisme d'échantillon (WSP) 60	Bloc E	Étage 1	Corridor E-150	Plafond	Non applicable	Non applicable	L'antenne	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
166	-	MSCA	Mécanisme d'échantillon (WSP) 61	Bloc E	Étage 1	Corridor E-150	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
167	-	MSCA	Mécanisme d'échantillon (WSP) 55	Bloc E	Étage 1	Local E-100A	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
157	-	MSCA	Mécanisme d'échantillon (WSP) 61	Bloc E	Étage 1	Local E-100A	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
96	A, B, C	MSCA	Echantillon initial	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Taille suspendue	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
97	A, B, C	MSCA	Echantillon initial	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-22										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
98	A, B, C	MSCA	Echantillon initial	Bloc E	Étage 1	Local E-100	Plancher	Non applicable	Non applicable	L'antenne	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
48	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-22										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
49	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-22										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
70	-	MSCA	Mécanisme d'échantillon (WSP) 60	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
71	-	MSCA	Mécanisme d'échantillon (WSP) 61	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Gypse	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
72	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-22										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
73	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Gypse	2018-01-22										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
74	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Taille suspendue	2018-01-22											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
89	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
90	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
75	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
76	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
77	-	MSCA	Mécanisme d'échantillon (WSP) 59	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
78	-	MSCA	Mécanisme d'échantillon (WSP) 61	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Gypse	2018-01-21											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
79	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
80	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-21										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
81	-	MSCA	Mécanisme d'échantillon (WSP) 60	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-23											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
82	-	MSCA	Mécanisme d'échantillon (WSP) 61	Bloc E	Étage 1	Local E-100	Plafond	Non applicable	Non applicable	Gypse	2018-01-23											Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
83	-	MSCA	Mécanisme d'échantillon (WSP) 57	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à joint	2018-01-23										Absence	Non applicable	Non détecté	Rapport WSP 2018	Antenne non détectée				L'antenne beige
84	-	MSCA	Mécanisme d'échantillon (WSP) 58	Bloc E	Étage 1	Local E-100	Mur	Non applicable	Non applicable	Plâtre/bois et ciment	Composé à																			

ANNEXE E-1 - REGISTRE DES MSCA ET MCA

BÂTIMENTS D'AGRICULTURE ET AGROALIMENTAIRE CANADA - CENTRE DE RECHERCHE ET DE DÉVELOPPEMENT DE SAINT-HYACINTHE
3600, BOUL. CASAVANTO, SAINT-HYACINTHE, QUÉBEC
STRUCTURE 3006 - BÂTIMENT PRINCIPAL - BLOCS A, B, C, D, E et F

Instructions générales

Veuillez noter que les notes générales 5 (voir au bas du tableau) sont applicables à l'ensemble du bâtiment

Veuillez noter que les notes générales 4 (voir au bas du tableau) sont applicables seulement aux blocs A, B, C et D

Fichier Excel disponible

Identification et lieu de prélèvement de l'échantillon										Date	État du matériau					Accessibilité et potentiel de		Moins	Échantillonnage				Analyse et résultat				Entretien complet du matériau		Commentaires		
N° de l'échantillon et de photo	Sous-échantillon	Non MSCA, MSCA ou MCA	Type d'échantillon	Bâtiment	Étage	Précédents ou la localisation	Élément	Composante	Type	Matériau	Date de la vérification (au cas où)	État du MCA lors de la vérification	Matériaux (appliqués, isolants et finis, textures et polystyrène)	Isolants mélangés	Fiabilité du MCA	Accessibilité (A) - tous (< 8 pi)	Moins d'intervention	Quantité estimée de MCA	Quantité estimée de MCA endommagé	Débris de MCA	Quantité estimée de débris de MCA (m²)	Présence ou absence d'amiante	Type d'amiante	Pourcentage	Document de preuve	Colle sous-jacente	Date de l'entretien	Document de preuve	Commentaire		
208	-	MCA (suspect)	Non échantillonné	Bloc F	Étage 2	Local F-209	Plancher	Non applicable	Non applicable	Lindéum	2018-01-24	Bois (aucun dommage)			Non friable (ex.: saie de vinyk)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris		Présence suspectée							Lindéum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétique du local, à faire analyser avant travaux		
241	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-209	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
242	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-209	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
247	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-209A	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
248	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-209A	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
249	-	MSCA	Item aux échantillon (WSP) - 261	Bloc F	Étage 2	Local F-209A	Plafond	Non applicable	Non applicable	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
254	-	MSCA	Item aux échantillon (WSP) - 261	Bloc F	Étage 2	Local F-209A	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
271	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-209A	Plancher	Non applicable	Non applicable	Lindéum	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Lindéum rouge	
245	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-210	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
244	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-210	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
246	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-211	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
245	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-211	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
205	-	MCA (suspect)	Non échantillonné	Bloc F	Étage 2	Local F-214	Plancher	Non applicable	Non applicable	Lindéum	2018-01-24	Bois (aucun dommage)			Non friable (ex.: saie de vinyk)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris		Présence suspectée								Lindéum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétique du local, à faire analyser avant travaux	
220	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-214	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
240	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-214	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
206	-	MSCA	Item aux échantillon (WSP) - 222	Bloc F	Étage 2	Local F-215	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Taille de vinyk 12 x 12 beige monomatière	
217	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
218	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
209	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-215	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
207	-	MSCA	Item aux échantillon (WSP) - 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Taille de vinyk 12 x 12 beige monomatière	
209	-	MSCA	Item aux échantillon (WSP) - 222	Bloc F	Étage 2	Local F-218	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Taille de vinyk 12 x 12 beige monomatière	
245	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-218	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
246	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-218	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
219	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
220	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
229	-	MCA (suspect)	Non échantillonné	Bloc F	Étage 2	Local F-219	Plancher	Non applicable	Non applicable	Lindéum	2018-01-24	Bois (aucun dommage)			Non friable (ex.: saie de vinyk)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris		Présence suspectée								Lindéum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétique du local, à faire analyser avant travaux	
216	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-219	Mur	Non applicable	Non applicable	Mur, Calfonnant	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018					Mur et entre les murs et les B-deux	
210	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-220	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
211	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-220	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
225	-	MSCA	Item aux échantillon (WSP) - 222	Bloc F	Étage 2	Local F-220	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Taille de vinyk 12 x 12 beige monomatière	
214	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-221	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
215	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
216	-	MSCA	Item aux échantillon (WSP) - 222	Bloc F	Étage 2	Local F-224	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018					Taille de vinyk 12 x 12 beige monomatière	
216	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée					Taille de vinyk 12 x 12 beige monomatière
217	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
218	-	MCA (suspect)	Non échantillonné	Bloc F	Étage 2	Local F-224	Plancher	Non applicable	Non applicable	Lindéum	2018-01-24	Bois (aucun dommage)			Non friable (ex.: saie de vinyk)	Accessibilité (A) - tous (< 8 pi)	7	80 m2		Aucun débris		Présence suspectée								Lindéum gris marbré - Pas échantillonné afin de ne pas affecter l'esthétique du local, à faire analyser avant travaux	
221	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
226	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-224	Mur	Non applicable	Non applicable	Mur, Calfonnant	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018					Mur, entre autres des travaux	
220	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-225	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018					Taille de vinyk 12 x 12 beige monomatière	
221	-	MSCA	Item aux échantillon (WSP) - 222	Bloc F	Étage 2	Local F-225	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Taille de vinyk 12 x 12 beige monomatière	
222	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-226	Plancher	Non applicable	Non applicable	Taille de vinyk	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018	Amiante non détectée				Taille de vinyk 12 x 12 beige monomatière	
214	-	MSCA	Item aux échantillon (WSP) - 216	Bloc F	Étage 2	Local F-226	Mur	Non applicable	Périmétrique et chéon	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
225	-	MSCA	Item aux échantillon (WSP) - 217	Bloc F	Étage 2	Local F-228	Mur	Non applicable	Périmétrique et chéon	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
261	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-229	Plafond	Non applicable	Non applicable	Grave	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
262	A, B, C	MSCA	Échantillon initial	Bloc F	Étage 2	Local F-229	Plafond	Non applicable	Non applicable	Composé à joint	2018-01-24											Absence	Non applicable	Non détecté	Rapport WSP 2018						
509	A, B, C, D, E, F, G, H, I	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Fondation	Non applicable	Craie	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP 2018					Mur, à la jonction entre le mur et la fondation	
510	A, B, C	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Fondation	Non applicable	Mur, Calfonnant	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP 2018					Mur, au-dessus des portes extérieures	
512	A, B, C	MSCA	Échantillon initial	Bloc F	Extérieur	Non applicable	Mur	Poutre	Non applicable	Mur, Calfonnant	2018-01-26											Absence	Non applicable	Non détecté	Rapport WSP 2018					Mur, au-dessus des portes extérieures	

1- Légende:

Non MSCA	Matériau non susceptible de contenir de l'amiante
MSCA	Matériau susceptible de contenir de l'amiante mais dont le résultat est négatif
MCA	Matériau contenant de l'amiante

2- Zone présentant des similitudes d'ouvrage (ZPSO)

Les ZPSO ont été déterminées en fonction des années

APPENDIX 4

Commissioning Plan

**PUBLIC SERVICES AND
PROCUREMENT CANADA**
St-Hyacinthe RDC
(Research and Development Center)
Replacement of HVAC Controls of Buildings
Nos. 001 and 002
PSPC No.: R.107062.001

Commissioning Plan
Version 1



Prepared for:
PSPC

Prepared by:
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CBCP LEED AP BD+C
Commissioning Agent

June 19, 2020

O/Ref.: 157102757-300.001-GN-S-0003-0

Sign-off Sheet

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Commissioning Agent
OIQ Membership: 140616

RECORD OF REVISIONS AND ISSUES		
Revision No.	Date	Description of the modification and/or the issue
0	2020-06-19	Version 1



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1.0 INTRODUCTION

The commissioning (hereafter Cx) of a new installation is an intensive process of quality assurance which starts with the design, which continues during the construction and operation phases.

This process guarantees that the new building operates according to the initial expectations, that it meets the Owner's requirements, that the electromechanical installations is operating according to the design criterion, and that the building maintenance staff is able to operate and to look after the various equipment and systems.

This Cx Plan is an evolutionary document that will define the Cx Activities of this project, the Cx Schedule, the documentation requirements, as well as the roles and responsibilities of the Commissioning Team.

Among other things, this plan will include:

- A description of the Cx Process used in this project;
- The Cx Team;
- The details of the Cx Activities.

Additional details concerning the Cx Process can be found in Section 01 91 13 (General Commissioning (Cx) Requirements) found in the specification of works.



2.0 OVERVIEW OF THE PROCESS

2.1 DESIGN PHASE

Here is a brief description of the Cx Process during the Design Phase:

- Definition of the Cx Objectives;
- Definition of the Owner's project requirements, which will be used as guidelines for the design, the construction, and the operation of the future building;
- Development of a preliminary Cx Plan, as well as updates;
- Incorporation of Cx Requirements into Construction Specification;
- Review of the design to ensure that it reflects the Owner's project requirement.

2.2 CONSTRUCTION PHASE

Here is a brief description of the Cx Process during the Construction Phase:

- Organization of Cx Coordination Meetings;
- Establishment of a Cx Schedule;
- Hold a review of workshop drawings (operation access);
- Verification of installation of systems and equipment;
- Verification of operation and performance of electromechanical systems;
- Verification and optimization of the functioning sequences;
- Training updates, as well as revision of Operation and Maintenance (O&M) Manuals;
- Submission of a final Cx Report (final version of the Cx Plan).

2.3 OPERATION PHASE

Here is a brief description of the Cx Process during the Operation Phase:

- Seasonal tests to verify the operation of the systems under various conditions;
- Carry out recordings and tendency analysis to supervise the operation parameters.



3.0 ACTIVITIES AND OBJECTIVES OF THE COMMISSIONING PROCESS

During the Construction Phase, the fixed objectives are as follows:

- Ensure that all Cx Team Members understand their roles;
- Establish a Cx Schedule for the Construction Phase;
- Carry out the global verification of the installation;
- Document system performance;
- Do the training follow-up as well as verification of O&M Manuals.



4.0 COMMISSIONING TEAM

TEAM MEMBER	COMPANY	RESOURCE PERSON/ TELEPHONE/ E-MAIL
Cx Authority		
Owner (Technical Services)		
Cx Owner's Representative		
General Contractor		
Electrical Contractor		
Balancing Contractor		
Control Contractor		
Ventilation Contractor		
Plumbing Contractor		
Fire Alarm Contractor		
Consultant		
Architects and Engineers		



5.0 ROLES AND RESPONSIBILITIES

ACTIVITIES	Cx A	OR	A/E	GCS
DESIGN PHASE				
Definition of Requirements Related to Operation and Maintenance of Equipment	P	P	P	
Review of Basic Design	P	P	P	
Organization and Management of the Cx Team	R	P	P	
Incorporation of Cx Specifications into Construction Bid Documents	R	P	R	
CONSTRUCTION AND OPERATION PHASES				
Follow the Cx Plan and Provide Help to Solve the Deficiencies Registered	R	P	P	P
Organization of Cx Meetings	R			
Attend Cx Meetings	P	P	P	R
Submit Workshop Drawings of Systems and Equipment	R		P	
Hold a Review of a Workshop Drawings	P		R	
Develop Testing Procedures	R		P	P
Hold a Review of the Cx Plan	R			
Develop and Hold a Record of Deficiencies and Anomalies	R		P	
Follow the Cx Plan and Help Resolve the Deficiencies	R	P	P	P
Verify Compliance of the Installations and Solve the Deficiencies	P	P	R	P
Elaboration of a Cx Schedule and Submission to the Cx Authority for Approval	P	P	P	R
Fill the Construction Checklist Forms	P			R
Perform the Performance Tests	P	P	P	R
Submission of Various Reports and Production of O&M Manuals				R
Training Sessions			P	R
Reports Verification	P	P	R	
Follow-up of Training and Verification of Operation Manuals	P	P	P	R
Warranty Review	P			P
Preparation of a Cx Final Report Summarizing the Work Done so far	R			

P: Participant

R: Responsible



6.0 COMMISSIONING PROCESS

This section details Cx Activities.

6.1 DESIGN PHASE

During this phase, we must ensure that the Owner's requirements are reflected in the basic of design and we have to ensure to obtain the required documentation as well. Needs related to the O&M must also be taken into consideration.

6.1.1 Owner's Project Requirements and Basic of Design

Documentation of the basic of design must include the following items:

- Energy performance;
- Codes and Standards applied to the project;
- Characteristics of the building envelope;
- Calculation of heat loads;
- Vibration and sound level;
- Design parameters (temperature and humidity);
- Equipment dimensioning;
- Indoor air quality;
- Lighting;
- Fire alarm zoning;
- Emergency supply systems.

6.1.2 Commissioning Plan

Elaborate a Cx Plan which will be used as guidelines during the entire project. This Cx Plan must include all required information and must be updated on a regular basis. The final version of the document will be used for the Cx Execution.

6.1.3 Training Requirements

The Cx Authority, in collaboration with Owner and A/E, will evaluate the needs for training, as well as its strictness, and will provide this information to the people responsible of the staff training.

Also include the training into the Cx Schedule and submit it, for approval, as well as the course outline to the Cx Authority.

The training sheets are provided in Appendix 4.

6.1.4 Specifications of the Commissioning in Bid Documents

The Cx must be incorporated into bid documents to enable tenderers to evaluate the actual needs. Moreover, tests procedures as well as responsibilities must be duly developed in the "Commissioning" section of bid documents.



6.1.5 Design and Drawings Review

A general overview of design and drawings at 40%, 95%, and 100% stages is necessary, and must include the following items:

- Make sure PWGSC Standards are met in the Design Phase;
- Verify O&M requirements;
- Ensure that tools required for the balancing of the installation are available;
- Verify needs for training.

6.2 CONSTRUCTION PHASE

The Cx Activities during the Construction Phase must be carried out starting from the lowest to the highest level of complexity of systems and subsystems. In general, tests must be done in the following order:

- Static verification (e.g. verification of components and tightness test);
- Equipment start-up (dynamic verifications);
- Verification stage-by-stage of control;
- Balancing;
- Interaction between the systems and performance verification.

Refer to Appendix 2 for the Construction Checklist Forms.

6.2.1 Review of Shop Drawings

The Cx Authority must carry out a selective review of workshop drawings as per Cx Requirements. This verification must include the following items:

- Ensure the equipment correspond to specifications;
- Verification of information availability;
- This review does not replace the one carried out by Design Engineers.

6.2.2 Site Observation

The Cx Authority schedules periodic visits in order to supervise the system and equipment installations, those will be coordinated with the Contractors and the Owner.

The Cx Authority will develop and update the register of the deficiencies and anomalies. This register will include pictures and actions foreseen to correct these deficiencies.

Also, the Cx Authority selectively attends site meetings to be kept informed of job progress.

6.2.3 Commissioning Schedule

The General Contractor must provide, for approval, a Cx Schedule for each equipment and system. This schedule must be updated as the project progresses. Refer to Appendix 3 for the Cx Schedule.

6.2.4 Construction Checklists Forms (Static Verification)

These verifications will allow ensuring that all equipment and systems are connected and operational, prior to conduct performance testing (examples of controlled point: Oil level, fan belt tension, labels affixed, alignment, calibration probes, etc.).



No sampling strategy is used. In general, the Contractors will complete the forms for all equipment and systems before beginning the performance tests (see Appendix 2 for the Construction Checklist Forms).

6.2.5 Functional Testing Procedure (Dynamic Verification)

The functional test will serve to verify the complete operation of the systems or the equipment (rather than just components). The test procedure will include the evaluation of different modes (low load, high load, heating, cooling, unoccupied, the interaction with the fire alarm, and emergency operation, if applicable) as well as the full review of the control sequences.

The TAB of hydraulic and ventilation systems must be completed, and results approved to make the performance testing.

After each test, reports or test results will be provided to the Owner, findings and recommendations will be annotated.

These tests will be using the Energy Monitoring and Control System (EMCS).

Here are the prerequisites for these tests:

- All features of BSA are programmed, graphics completed, as well as fine tuning of the loops (PID);
- All plumbing pipes flushed;
- Water treatment systems functional;
- TAB air and water completed and approved;
- Deficiencies corrected.

The Contractor, under the supervision of the Cx Authority, must carry out required tests and verifications (static and dynamic) on systems and equipment in order to evaluate their performance. Results must be documented in the Cx Sheets by the Cx Authority.

Verifications on less critical electrical components, such as switches, sockets, lighting, and other similar equipment, will be done with samplings between 10% and 30% (to be defined during Cx meetings).

6.2.6 Integrated Automation

Seasonal Adjustments: The Integrated Automation Contractor must foresee a 40-hour period to perform the seasonal adjustments. These hours will only be used on call and upon instructions of the Commissioning Agent.

The Integrated Automation Contractor must provide and install for the Commissioning Agent all software and access required to allow remote access to the Building Management System, including licenses.

6.2.7 Commissioning Meetings

Periodic meetings must be organized with the Cx Team to explain the process, to obtain the information concerning the progress of the Cx, and to solve possible problems observed. Minutes of meetings will be issued by the Cx Authority.



6.2.8 Operation and Maintenance Manuals

The documentation related to Operation and Maintenance Manuals must be gathered and submitted to the Cx Authority for approval. O&M Manuals must include the following:

- Summary;
- List of Contractors and any critical information;
- Verified workshop drawings;
- Equipment data sheets;
- Preventative maintenance sheets;
- "As-built" drawings;
- Warranties;
- Workshop test and in-situ test certificates of equipment or specified systems;
- Reports of tests and networks cleaning;
- Balancing report.

6.2.9 Commissioning Final Report

The Cx Authority will provide a Cx final report which will include the following items:

- Construction Checklists;
- Various tests results;
- Training program and O&M Manuals;
- Outstanding questions;
- Recommissioning Plan.



APPENDIX 1

Commissioning Systems



Commissioned Systems

FORM	SYSTEM AND EQUIPMENT	PRESENCE REQUIRED AT COMMISSIONING	DOCUMENTS TO SUBMIT	CX DATE
HVAC Systems				
1	Domestic Water Piping	General Contractor, Cx Agent, Subcontractors	Cleaning Report	
2	Vibration for HVAC	General Contractor, Cx Agent, Subcontractors	Report Vibration Report	
3	Testing, Adjusting and Balancing for HVAC	General Contractor, Cx Agent, Subcontractors	Cx Report	
4	Sequences of Operation	General Contractor, Cx Agent, Subcontractors	Installation Checklist	
Electrical and Physical Security				
5	Grounding - Secondary	General Contractor, Cx Agent, Subcontractors	Cx Report	
6	Panelboards Breaker Type	General Contractor, Cx Agent, Subcontractors	Installation Checklist	
7	Multiplex Fire Alarm System	General Contractor, Cx Agent, Subcontractors	Cx Report	

APPENDIX 2

Commissioning Forms





PROJECT: 157102757 (R.107062.001)	Public Services and Procurement Canada	Form: 13	No.:
	St-Hyacinthe RDC (Research and Development Center) Replacement of HVAC Controls of Buildings Nos. 001 and 002	1 of 1	
APPENDIX 2 - COMMISSIONING FORM			

SEQUENCE OF OPERATIONS

IDENTIFICATION	Name of System:
	Description of System:
	Controls: <input type="checkbox"/> N/A <input type="checkbox"/> Internal <input type="checkbox"/> External <input type="checkbox"/> Pneumatic <input type="checkbox"/> Electric <input type="checkbox"/> Digital Communication/Integration: <input type="checkbox"/> Coordination with BAS <input type="checkbox"/> N/A

SEQUENCE OF OPERATION	VERIFIED	COMMENTS
All sensors and actuators are calibrated, correctly positioned and working properly.		
Configuration of occupation schedule and pre-start-up mode or night set back temperature.		
Minimum position for fresh air damper.		
Modulation of valves and dampers		
Pressure, temperature and humidity control loops		
Supply and mixed air control loops		
Hardware protections (freeze, high pressure, proof of flow, high temperature, high humidity)		
Static pressure set point (also see bypass and variable frequency drives)		
Positioning of systems when stopped		
Variable frequency drives (minimum speed, acceleration ramps, deceleration) and bypass circuit		
Pressure, temperature, and CO ₂ alarms		
Functionality of terminal boxes		
Heating and cooling loops		
Special systems (recovery, energy measurement, gas detection)		

Name of Technician:	Date:
Approved by: (Commissioning Authority)	Date:

PROJECT: 157102757 PSPC No.: 107062.001	PUBLIC SERVICES AND PROCUREMENT CANADA	Form: 6	No.:
	St-Hyacinthe RDC (Research and Development (Center) Replacement of HVAC Controls of Buildings Nos. 001 and 002	1 of 3	
APPENDIX 2 - COMMISSIONING FORM			

PANELBOARDS BREAKER TYPE

IDENTIFICATION	Equipment Tag:		Drawing No.:	
	Brand:		Location:	
	Model Number:		Manufacturer:	
	Voltage:	NEMA:	Bars: <input type="checkbox"/> Cu <input type="checkbox"/> Al	
	Amp. horizontal:	Amp. vertical:	Amp. bar MALT:	
	Omnibus (kA):	Supply:	Connected to:	

INSPECTION	DESCRIPTION	YES	NO	NC	COMMENTS
	Nameplate readable				
	All enclosures clearly identified				
	Primary connection tight				
	Phase identification of the bus bars				
	Right grounding				
	Facility starters drawer checked				
	Adequate clearance in front of the CCM				
	Clean equipment / no scratch or damage				
	Good ventilation				

TESTS	TESTS			COMMENTS
	Electric Strength Test (MΩ):		Ph ABC/T:	
	Phase A-B:	Phase B-C:	Phase C-A:	
	Voltage test:			
	V _{AN} :	V _{BN} :	V _{CN} :	
	V _{AB} :	V _{BC} :	V _{CA} :	
	Balancing Charge Test:			
	I _A :	I _B :	I _C :	
	Note: The equipment must be isolated from any power source			

Name of Technician:	Date:
Approved by: (Commissioning Authority)	Date:

PROJECT: 157102757 PSPC No.: 107062.001	PUBLIC SERVICES AND PROCUREMENT CANADA	Form: 6	No.:
	St-Hyacinthe RDC (Research and Development (Center) Replacement of HVAC Controls of Buildings Nos. 001 and 002	2 of 3	
APPENDIX 2 - COMMISSIONING FORM			

PANELBOARDS BREAKER TYPE

ASSOCIATED CHECKLISTS					
Grounding	<input type="checkbox"/>	Lighting	<input type="checkbox"/>	Low Voltage Transformer	<input type="checkbox"/>
Low Voltage MCC	<input type="checkbox"/>	Low Voltage Switchgear	<input type="checkbox"/>	Unit Substation	<input type="checkbox"/>
Unit Substation Transformer	<input type="checkbox"/>	Other	<input type="checkbox"/>	Other	<input type="checkbox"/>
Comments:					

REQUESTED DOCUMENTATION SUBMITTED	REC'D	COMMENTS
Manufacturer's Cut Sheets	<input type="checkbox"/>	
Installation and Start-up Manual and Plan	<input type="checkbox"/>	
O&M Manuals	<input type="checkbox"/>	
Sequences and Control Strategies	<input type="checkbox"/>	
Warranty Certificate	<input type="checkbox"/>	
Comments:		

DISTRIBUTION PANEL ENCLOSURE/CABINETRY			
CHECK IF ACCEPTABLE; PROVIDE COMMENT IF UNACCEPTABLE	NA	COMMENT	
Equipment installed per manufacturer's instructions and specifications	<input type="checkbox"/>		
Equipment installed agrees with shop drawings and specifications	<input type="checkbox"/>		
Verify mounting, location and clearances are per drawings and specifications	<input type="checkbox"/>		
Inspect for physical, electrical and mechanical condition of equipment and cabinet - no damage evident	<input type="checkbox"/>		
Inspect panels and doors for proper fit and alignment	<input type="checkbox"/>		
Equipment labels permanently affixed	<input type="checkbox"/>		
Panel is clean and clear of dust or dirt	<input type="checkbox"/>		
Verify the application of manufacturer recommended torque values applied to bolted connections	<input type="checkbox"/>		
Verify correct circuit breaker sizes and types per the specifications and manufacturer's drawings	<input type="checkbox"/>		
Inspect insulators, barriers, and shields for damage or contamination	<input type="checkbox"/>		
Verify that ground bus is properly bonded to enclosure, enclosure is grounded and resistance to ground meets grounding specifications.	<input type="checkbox"/>		
Neutral bus isolated from cabinet	<input type="checkbox"/>		

Name of Technician:	Date:
Approved by: (Commissioning Authority)	Date:

PROJECT: 157102757 PSPC No.: 107062.001	PUBLIC SERVICES AND PROCUREMENT CANADA	Form: 6	No.:
	St-Hyacinthe RDC (Research and Development (Center) Replacement of HVAC Controls of Buildings Nos. 001 and 002	3 of 3	
APPENDIX 2 - COMMISSIONING FORM			

PANELBOARDS BREAKER TYPE

DISTRIBUTION PANEL ENCLOSURE/CABINETY			
CHECK IF ACCEPTABLE; PROVIDE COMMENT IF UNACCEPTABLE	NA	COMMENT	
Megger test of bus – phase to phase and phase to ground. Test voltage per manufacturer's recommendations.	<input type="checkbox"/>	<input type="checkbox"/>	
CIRCUIT BREAKERS 208/120 VAC PANELS			
Installed per manufacturer's instructions, plans and specifications	<input type="checkbox"/>	<input type="checkbox"/>	
No physical damage	<input type="checkbox"/>	<input type="checkbox"/>	
Verify voltage and current rating of circuit breaker are per plans and specifications	<input type="checkbox"/>	<input type="checkbox"/>	
Verify breakers are mounted securely and operates smoothly	<input type="checkbox"/>	<input type="checkbox"/>	
Verify wire is properly installed and suitable size for breaker	<input type="checkbox"/>	<input type="checkbox"/>	
Check cell fit and element alignment	<input type="checkbox"/>	<input type="checkbox"/>	
Check racking mechanism	<input type="checkbox"/>	<input type="checkbox"/>	

OPERATIONAL CHECKS			
CHECK IF ACCEPTABLE; PROVIDE COMMENT IF UNACCEPTABLE	NA	COMMENT	
Specified sequences of operation and operating schedules have been provided with all variations documented	<input type="checkbox"/>	<input type="checkbox"/>	
Specified point-to-point checks have been completed and documentation record submitted for this system	<input type="checkbox"/>	<input type="checkbox"/>	

MEMORANDUM (Deficiencies, repair work, sound, and maintenance)	STATUS
	<input type="checkbox"/> Compliance
	<input type="checkbox"/> Requires Additional Checking
	<input type="checkbox"/> To be Completed
	<input type="checkbox"/> Out of Service
	<input type="checkbox"/> Non-Compliance

Name of Technician:	Date:
Approved by: (Commissioning Authority)	Date:

APPENDIX 3

Commissioning Schedule





DETAILED COMMISSIONING SCHEDULE

Project: PUBLIC SERVICES AND PROCUREMENT CANADA St-Hyacinthe RDC (Research and Development Center) Replacement of HVAC Controls of Buildings Nos. 001 and 002 PSPC No.: R.107062.001	Date:		Update:																												
Task/Activities	Month		Weeks		Comments																										
	Design Phase		Construction Phase																												
	1	2	3	4		5	6	7	8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Construction Phase																															
1 Start-up and Initial Checkout (Construction Checklists)																															
Cx Meeting																															
AHU																															
Control																															
TAB																															
Plumbing																															
Lighting																															
Fire Protection																															
Intrusion Detection																															
Fire Alarm																															
2 Training																															
Training Plan Approval																															
Training Agenda																															
3 Commissioning Documentation																															
O & M Manuals																															
Warranties Verified																															
Final Cx Report																															

APPENDIX 4

Training



TRAINING PROGRAM

(To be completed by the Commissioning Authority)

Equipment/System	Spec Section	Total Hours (if spec'd)	Trainee Level (List No. of each)	Trainers' Company	Trainer	Planned Training Date(s)
Mechanical/HVAC/Electrical						
Controls	25 90 01	5 x 4 h				
Mechanical/General	23	2 h				
Electrical/General	26	2 h				
Fire Alarm System	28 31 00.01	2 h				

General Scope Codes: (Refer to the specifications and to the specific equipment Training Agenda for additional details.)

- A Provide an **overview** of the purpose and operation of this equipment, including required interactions of trainees with the equipment.
- B At an **intermediate level**, provide technical information regarding the purpose, operation and maintenance of this equipment, expecting that serious malfunctions will be addressed by factory reps.
- C At a **very technical level**, provide information regarding the purpose, operation, troubleshooting, and maintenance of this equipment, expecting that almost all operation, service, and repair will be provided by the trainees.



PUBLIC SERVICES AND PROCUREMENT CANADA
St-Hyacinthe RDC (Research and Development Center)
Replacement of HVAC Controls of Buildings Nos. 001 and 002
PSPC No.: R.107062.001

TRAINING AND ORIENTATION AGENDA

Project: _____ Date: _____

Equipment/System: _____ Spec Section: _____

Section 1. Audience and General Scope Owner and Commissioning Authority fill out this section and transmit entire form to responsible contractors. Attach training specification section.

Intended Audience Type (enter number of staff): ____ Facility Manager ____ Facility Engineer
____ Facility Technician, ____ Project Manager, ____ Tenant, Other: _____

General objectives and scope of training: (Check all that apply)

- ____ A. Provide an overview of the purpose and operation of this equipment, including required interactions of trainees with the equipment.
- ____ B. Provide technical information regarding the purpose, operation and maintenance of this equipment at an intermediate level, expecting that serious malfunctions will be addressed by factory reps.
- ____ C. Provide technical information regarding the purpose, operation, troubleshooting, and maintenance of this equipment at a very detailed level, expecting that almost all operation, service and repair will be provided by the trainees.

Section 2. Instructors (Commissioning agent fills in Company. Trainer fills out the balance, prior to training.)

<u>ID</u>	<u>Trainer</u>	<u>Company</u>	<u>Position/Qualifications</u>
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____

Section 3. Agenda The responsible contractors have their trainers fill out this section and submit to Owner and Commissioning Agent for review and approval prior to conducting training.

Location: _____ Date: _____

Agenda of General Subjects Covered

when completed)

	<u>Duration</u> (min.)	<u>Instructor</u> (ID)	<u>Completed</u> (✓)
____ General purpose of this system or equipment (Design intent)	_____	_____	_____
____ Review of control drawings and schematics (Have copies for attendees)	_____	_____	_____
____ Start-up, loading, normal operation, unloading, shutdown, unoccupied operation, seasonal changeover, etc., as applicable	_____	_____	_____
____ Integral controls (Packaged): Programming, troubleshooting, alarms, manual operation	_____	_____	_____
____ Building automation controls (BAS): Programming, troubleshooting, alarms, manual operation, interface with integral controls	_____	_____	_____



PUBLIC SERVICES AND PROCUREMENT CANADA
St-Hyacinthe RDC (Research and Development Center)
Replacement of HVAC Controls of Buildings Nos. 001 and 002
PSPC No.: R.107062.001

___ Interactions with other systems, operation during power outage and fire	_____	_____	_____
___ Relevant health and safety issues and concerns and special safety features	_____	_____	_____
___ Energy conserving operation and strategies	_____	_____	_____
___ Any special issues to maintain warranty	_____	_____	_____
___ Common troubleshooting issues and methods, control system warnings and error messages, including using the control system for diagnostics	_____	_____	_____
___ Special requirements of tenants for this equipment's function	_____	_____	_____
___ Service, maintenance, and preventative maintenance (sources, spare parts inventory, special tools, etc.)	_____	_____	_____
___ Question and answer period	_____	_____	_____

Other subjects covered, specific to the equipment:

Duration Instructor Completed

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total duration of training (hrs) ----->	<div style="border: 1px solid black; width: 60px; height: 15px;"></div>	_____	_____

Section 4. Approvals and Use *(Once the Agenda has been filled out by the Trainer, the Owner and Commissioning Agent review, make edits, sign and return to Contractor who provides to the Trainer for use during training. Copies of Agenda shall be provided to trainees.)*

Section 5. Comments Concerning the Training *(To be fill out by trainee)*

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This *plan* has been approved by the following individuals, subject to the additions and clarifications noted in the left columns marked "add." *(This is not an approval of training completion.)*

_____	_____
Owner's Representative	Date

_____	_____
Commissioning Authority	Date

**PUBLIC SERVICES AND PROCUREMENT CANADA
St-Hyacinthe RDC (Research and Development Center)
Replacement of HVAC Controls of Buildings Nos. 001 and 002
PSPC No.: R.107062.001**

PARTICIPANT SIGN-IN SHEET

Equipment or System: _____

Signature	Total Hours Specified	Total Hours Received	Date	Instructor's Signature	CxA Initials
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					

Supplied Notes (Y/N): _____

Training Final Approval:

Owner

Date

Commissioning Agent

Date

DIVISION 07

Thermal and Moisture Protection

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 00 - Common Work Results for HVAC.

1.2 REFERENCE STANDARDS

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).
- .2 National Research Council Canada (NRC).
 - .1 National Building Code of Canada 2015 (NBC).
- .3 Underwriters Laboratories of Canada (ULC).
 - .1 ULC-S115-1995, Fire Tests of Firestop Systems.

1.3 DEFINITIONS

- .1 Firestop Material: Device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts, and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2 Single-Component Firestop System: Firestop material that has Listed Systems Design and is used individually without use of high-temperature insulation or other materials to create firestop system.
- .3 Multiple-Component Firestop System: Exact group of firestop materials which are identified within Listed Systems Design to create on site firestop system.
- .4 Tightly Fitted; (ref: NBC Part 3.1.9.1(1) and 9.10.9.6(1)): Penetrating items which are cast-in-place in buildings of noncombustible construction or have 0 annular space in buildings of combustible construction.
 - .1 Works tightly fitted should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheets, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit shop drawings to show, proposed material, reinforcement, anchorage, fastenings, and method of installation.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling, and unloading:
 - .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
 - .3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, and ULC markings.
- .2 Storage and Protection:
 - .1 Store materials indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.6 DESCRIPTION OF WORK

- .1 Provide personnel, materials, equipment, and services required to install firebreaks and smoke controls around mechanical services passing through fire-resistant building components.

1.7 QUALITY ASSURANCE

- .1 The works in this Section shall be carried out by a qualified person, approved by the firestop manufacturer, employing qualified and certified personnel with experience in the installation/application of firestop and smoke controls.
- .2 All works shall be of superior quality and performed in accordance with the industry's best practices and in strict accordance with manufacturers' written specifications.
- .3 In case of fire-rated elements for which the manufacturer does not provide any ULC or CUL approved assembly, derived from similar UL listed or otherwise tested, drawings of such elements produced by the manufacturer's engineer must then be presented to local Authorities Having Jurisdiction, who will review and approve them prior their installation.
- .4 Site Meetings: Onsite inspections by the manufacturer, as prescribed in PART 3 ON-SITE QUALITY CONTROL, shall include site visits at the following stages:
 - .1 Once the products have been delivered and stored onsite, and preparatory work and other preliminary work were completed, but before the work begins;
 - .2 Twice during work, the first when completed at 25%, and the second at 60%;
 - .3 After completion of work and cleaning.

Part 2 Products**2.1 GENERAL**

- .1 All products used in the fire protection system shall be cUL, ULC, and FM certified, and shall be labeled as such.

2.2 MATERIAL

- .1 Firestop and smoke barrier assemblies:
 - .1 Asbestos-free materials and assemblies providing an effective barrier against flames, smoke, and gases, in accordance with CAN/ULC S115, having dimensions not exceeding those of the traverse or access point for which they are intended.
 - .2 Installation of firestop and smoke control assemblies: Certified by ULC, in accordance with CAN/ULC S115 requirements.
 - .3 The fire-resistance rating of all installed firebreaks shall not be less than the fire rating of the surrounding floors and walls, as specified in the Architectural Drawings.
- .2 Firestop assemblies for utility and service traverses: Tested according to CAN/ULC S115 Standard.
- .3 Components of firestop assemblies for utility and service traverses: Certified by a testing laboratory, in accordance with CAN/ULC S115.
- .4 The degree of fire resistance of installed firestop assemblies shall comply with the requirements of the NBC.
- .5 Firestop and smoke control assemblies installed at access points to concealed installations, e.g. cables: Elastomeric joints.
- .6 Firestop and smoke protection assemblies installed on pipes, air ducts, and other mechanical equipment requiring acoustic and vibration insulation: Elastomeric joints.
- .7 Firestop Devices:
 - .1 High-speed firestop devices for plastic piping, made of an intumescent material expanding when exposed to temperatures of 149°C (300°F) or more. Material can expand up to 25 times its original volume to seal opening created by the plastic piping.
 - .2 Devices certified to CAN/ULC S115, in accordance with a test conducted at 50 Pa (0.2 in of water) differential pressure, providing one- or two-hour fire resistance.
- .8 Primers: In accordance with manufacturer's recommendations as for material, substrate, and intended use.
- .9 Water (if applicable): Potable, clean, and free from excessive amounts of harmful substances.
- .10 Mineral Wool: Rock and slag fibers glued with heat resistant binder. Maximum service temperature 1,035°C (1,895°F). Materials with practically neutral pH.

- .11 Restraining, Supporting, and Anchoring Devices: As recommended by the manufacturer and compatible with assemblies used, proven, and deemed acceptable by the Authority Having Jurisdiction.
- .12 Sealants for Vertical Joints: Non-sagging products, in accordance with ULC test assemblies.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's requirements, recommendations, and written specifications, including any technical bulletins available, instructions for handling, storing and processing products, and data sheets.

3.2 PREPARATORY WORK

- .1 Examine the dimensions and condition of voids to be filled to determine thickness of material required and the method of application to be used.
 - .1 Ensure surfaces are clean, dry, and unfrozen.
- .2 Prepare surfaces meeting firestop and smoke control materials, as directed by the manufacturer.
- .3 Ensure integrity of insulation surrounding pipes and ducts through fire walls, including vapor barrier.
- .4 If required, cover contiguous surfaces to protect them from dripping and splashing and, after completion of work, remove unwanted stains or deposits.

3.3 INSTALLATION

- .1 Install firestop and smoke control assemblies and their component parts in accordance with manufacturer's instructions for tested and certified assemblies.
- .2 Seal gaps and clearances around piping or devices crossing, wholly or partly, the fire walls and seal openings reserved for later use and joints around them to ensure the continuity and integrity of the firestop protection provided.
- .3 If required, install temporary retainers and do not remove them until the initial cure is complete and the materials have attained enough strength.
- .4 Shape exposed surfaces or trowel smooth to get neat finish.
- .5 Remove excess surplus product as work is advanced and as soon as work is completed.

3.4 WORK SCHEDULING

- .1 Proceed with installation only after documents/samples to be submitted have been reviewed by the Departmental Representative.
- .2 Connection to a metal support: The firestop protection shall be carried out prior application of any fire-retardant coating to ensure the required connection

- .3 Mechanical System Pipe Insulation: Component of an approved firestop protection assembly

- .1 Ensure pipe insulation is installed before firestop protection.

3.5 ON SITE QUALITY CONTROL

- .1 Inspections: Before concealing or covering materials or firestop systems, inform the Departmental Representative that work is ready for inspection.
- .2 Manufacturer's Field Services:
 - .1 Obtain manufacturer's written report confirming that work complies with specified criteria regarding product handling, installation, and application, as well as protection and cleaning of work before submitting report in accordance with SUBMITTALS, as stated in PART 1.
 - .2 Manufacturer must provide recommendations regarding use of products and conduct periodic visits to verify if implementation is such as recommended.
 - .3 Site visits shall be in accordance with QUALITY ASSURANCE, of PART 1.

3.6 SITE CONDITIONS

- .1 Application and drying of firestop and smoke barrier materials must be in accordance with manufacturer recommendations regarding temperature, relative humidity, and moisture content of basecoats.
- .2 Protect all work against potential damage and deterioration caused by other trades and protect other trade installations against dirt and potential damage originating from this work.
- .3 Once completed, correct all imperfections, and leave workplace in impeccable condition.

3.7 VERIFICATION

- .1 Verify surfaces of all firestops to be sealed. Provide a written report stating conditions that are non-compliant or deemed unacceptable by the Contractor before starting work.
- .2 Delay work until surface conditions are acceptable.

3.8 MIXING

- .1 Mix materials in strict compliance with manufacturer's instructions.
- .2 Components must be well prepared and mixed by qualified personnel.

3.9 COATING MATURATION

- .1 Allow coatings to mature according to manufacturer's recommendations.
- .2 Do not cover materials before maturation is complete.

3.10 INSPECTION OF WORK

- .1 Inform the Departmental Representative when work is ready for inspection. work shall not yet be covered by fireproofing, control materials, or any other services traversing fire-resistant partitions.
- .2 Inspect penetrations in firestop systems in accordance with ASTM E2174.

3.11 CLEANING

- .1 Once installation and performance monitoring are finished, remove extra materials, rubbish, and tools from site.
- .2 Take off temporary safety restraints once initial setting is complete.

3.12 TESTS

- .1 Perform smoke penetration simulation tests.
- .2 If joint finishing, gaps, or openings described in this Section show clear smoke emission during tests, correct all defects, and start smoke test again at no additional costs to the Owner.
- .3 Smoke simulation product must not be toxic nor staining and must provide fog density of 80 mg/m³ (0.00008 oz/in³) with acceptable air concentration levels of 50 ppm.
- .4 Create smoke at a rate of 4 seconds/2.8 m³ (4 seconds/100 in³) and maintain fog density until inspection is complete.

3.13 FIRESTOP SYSTEM LOCATION

- .1 Ensure firestop and smoke barrier protection to building elements that are fire resistant, including the following places:
 - .1 Penetrations through partitions, masonry walls, concrete, and gypsum that are fire resistant;
 - .2 Penetrations through floor slabs, ceilings, and roofs that are fire resistant;
 - .3 Access openings and penetrations made in fire-resistant partitions for further use;
 - .4 Around pipes and other mechanical and electrical material that penetrate fire-resistant partitions;
 - .5 Rigid conduits with sections above 129 cm²: Fire protection by means of a fire-resistant joint located between angle bracket and fire-resistant partition, as well as between angle bracket and conduit on each side of the fire-resistant partition.

END OF SECTION

DIVISION 22

Plumbing

Part 1 General**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit required documents and samples.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets. Data sheets to include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Indicate on drawings:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance (O&M) clearances.
 - .2 Shop drawings and product data accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.
 - .3 Points of operation on performance curves.
 - .4 Manufacturer to certify current model production.
 - .5 Certification of compliance to applicable Codes.
 - .3 Use MCAC "Shop Drawing Submittal Title Sheet". Identify section and paragraph number.

1.2 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for incorporation into manual.
 - .1 Operation and Maintenance Manual approved by, and final copies deposited with, Departmental Representative before final inspection.
 - .2 Operation data to include:
 - .1 Control schematics for systems including environmental controls.
 - .2 Description of systems and their controls.
 - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
 - .4 Operation instruction for systems and component.
 - .5 Description of actions to be taken in event of equipment failure.
 - .6 Valves schedule and flow diagram.
 - .7 Colour coding chart.

- .3 Maintenance data to include:
 - .1 Servicing, maintenance, operation, and troubleshooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required, and task time.
- .4 Performance data to include:
 - .1 Equipment manufacturer's performance data sheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance verification test results.
 - .3 Special performance data as specified.
 - .4 Testing, adjusting and balancing reports as specified in Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .5 Approvals:
 - .1 Submit two (2) copies of draft Operation and Maintenance Manual to Departmental Representative for approval. Submission of individual data will not be accepted unless directed by Departmental Representative.
 - .2 Make changes as required and re-submit as directed by Departmental Representative.
- .6 Additional data:
 - .1 Prepare and insert into Operation and Maintenance Manual additional data when need for it becomes apparent during specified demonstrations and instructions.
- .7 Site records:
 - .1 Departmental Representative will provide one (1) set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems, and low voltage control wiring.
 - .2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection.
- .8 "As-Built" drawings:
 - .1 Prior to start of Testing, Adjusting and Balancing for HVAC, finalize production of "As-Built" drawings.
 - .2 Identify each drawing in lower right-hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).
 - .3 Submit to Departmental Representative for approval and make corrections as directed.

- .4 Perform testing, adjusting, and balancing for HVAC using "As-Built" drawings.
- .5 Submit completed reproducible "As-Built" drawings with Operating and Maintenance Manuals.
- .9 Submit copies of "As-Built" drawings for inclusion in final TAB report.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, in dry location, indoors, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 FIELD QUALITY CONTROL

- .1 Site Tests: conduct following tests in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

- .2 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting, and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.3 DEMONSTRATION

- .1 Departmental Representative will use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
- .2 Trial usage to apply to following equipment and systems.
- .3 Supply tools, equipment, and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, troubleshooting, and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .4 Use Operation and Maintenance Manual, "As-Built" drawings, and audiovisual aids as part of instruction materials.
- .5 Instruction duration time requirements as specified in appropriate sections.
- .6 Departmental Representative will record these demonstrations on video tape for future reference.

3.4 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for reuse recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 ASTM International (ASTM).
 - .1 ASTM A182/A 182M-16, Standard Specification for Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
 - .2 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .3 ASTM A536-84 (2014), Standard Specification for Ductile Iron Castings.
 - .4 ASTM B42-15a, Seamless Copper Tube, Standard Sizes.
 - .5 ASTM B88M-14, Standard Specification for Seamless Copper Water Tube (Metric).
- .2 American Society of Mechanical Engineers International (ASME).
 - .1 ANSI/ASME B16.15-13, Cast Copper Alloy Threaded Fittings, Classes 125 and 250.
 - .2 ANSI/ASME B16.18-12, Cast Copper Alloy Solder Joint Pressure Fittings.
 - .3 ANSI/ASME B16.22-13, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - .4 ANSI/ASME B16.24-11, Cast Copper Alloy Pipe Flanges and Flanged Fittings: Class 150, 300, 400, 600, 900, 1500 and 2500.
 - .5 ASME B16.26-13, Cast Copper Alloy Fittings for Flared Copper Tubes.
 - .6 ASME B31.9-14, Building Services Piping.
- .3 American National Standards Institute/American Water Works Association (ANSI)/(AWWA).
 - .1 ANSI/AWWA C111/A21.11-12, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - .2 ANSI/AWWA C151/A21.51-09, Ductile Iron Pipe, Centrifugally Cast, for Water.
- .4 CSA Group (CSA).
 - .1 CSA B242-05, Groove and Shoulder Type Mechanical Pipe Couplings.
- .5 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).
- .7 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
 - .1 MSS-SP-67-02a, Butterfly Valves.

- .2 MSS-SP-70-06, Grey Iron Gate Valves, Flanged and Threaded Ends.
- .3 MSS-SP-71-05, Grey Iron Swing Check Valves, Flanged and Threaded Ends.
- .4 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.
- .8 National Research Council Canada (NRCC).
 - .1 National Plumbing Code - Canada (CNP) 2015.
- .9 Transport Canada (TC).
 - .1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDGA).
- .10 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC S101-07, Fire Endurance Tests of Buildings Construction and Materials.
 - .2 CAN/ULC S102.2-10, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.
 - .3 CAN/ULC S115-11, Standard Method of Fire Tests of Firestop.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and data sheets for insulation and adhesives, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Closeout Submittals:
 - .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Packaging Waste Management: Remove for reuse and return by manufacturer of crates padding pallets packaging materials in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.

1.4 LEAD FREE MATERIAL

- .1 The authorized lead concentration of surfaces in contact with drinking water for products used to distribute water intended for consumption is limited to 0.25% in accordance with CSA and NSF Standards.

Part 2 Products**2.1 PIPING**

- .1 Domestic hot, cold, and recirculation systems, within building.
 - .1 Above ground:
 - .1 Copper tube, hard drawn, "L" type: To ASTM B88M.

2.2 FITTINGS

- .1 Cast bronze threaded fittings, Class 125: To ANSI/ASME B16.15.
- .2 Cast copper, solder type: To ANSI/ASME B16.18.
- .3 Wrought copper and copper alloy, solder type: To ANSI/ASME B16.22.

2.3 JOINTS

- .1 Rubber gaskets, 1.6 latex-free mm thick: To AWWA C111.
- .2 Bolts, nuts, hex head, and washers: To ASTM A307, Heavy Series.
- .3 Solder: 95/5 tin copper alloy.
- .4 Teflon tape: for threaded joints.
- .5 Grooved couplings: Designed with angle bolt pads to provide rigid joint, complete with EPDM gasket.
- .6 Dielectric connections between dissimilar metals: Dielectric fitting, complete with thermoplastic liner.

2.4 GLOBE VALVES

- .1 NPS 2 and under, soldered:
 - .1 To MSS-SP-80, Class 150, 860 kPa, bronze body, renewable composition disc, screwed over bonnet.
- .2 NPS 2 and under, screwed:
 - .1 To MSS-SP-80, Class 150, 1 MPa, bronze body, screwed over bonnet, renewable composition disc.

2.5 BALL VALVES

- .1 NPS 2 and under, screwed:
 - .1 Class 150.
 - .2 Forged brass or bronze body, chrome-plated brass stainless-steel ball, PTFE adjustable packing, brass gland.

Part 3 Execution**3.1 APPLICATION**

- .1 Manufacturer's Instructions: Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datas sheets.

3.2 INSTALLATION

- .1 Install in accordance with NPC local and Authority Having Jurisdiction.
- .2 Assemble piping using fittings manufactured to ANSI and Standard Council of Canada (SCC) Standards.

3.3 PRE-START-UP INSPECTIONS

- .1 Systems to be complete, prior to flushing, testing, and start-up.
- .2 Verify that system can be completely drained.

3.4 DISINFECTION

- .1 Flush out, disinfect, and rinse system to requirements of Authority Having Jurisdiction, to approval of Departmental Representative.
- .2 Upon completion, provide laboratory test reports on water quality for Departmental Representative approval.

3.5 START-UP

- .1 Timing: Start-up after:
 - .1 Pressure tests have been completed.
 - .2 Disinfection procedures have been completed.
 - .3 Certificate of static completion has been issued.
- .2 Provide continuous supervision during start-up.
- .3 Start-up Procedures:
 - .1 Establish circulation and ensure that air is eliminated.
 - .2 Check control, limit, safety devices for normal and safe operation.
- .4 Rectify start-up deficiencies.

3.6 PERFORMANCE VERIFICATION

- .1 Scheduling:
 - .1 Verify system performance after pressure and leakage tests and disinfection are completed, and Certificate of Completion has been issued By Authority Having Jurisdiction.

- .2 Procedures:
 - .1 Verify that flow rate and pressure meet Design Criteria.
 - .2 Verify compliance with safety and health requirements.
 - .3 Confirm water quality consistent with supply Standards, and ensure no residuals remain as result of flushing or cleaning.
- .3 Reports:
 - .1 In accordance with Section 01 91 13 - General Commissioning (Cx)
Requirements: Reports, using report forms as specified in Section 01 91 13 -
General Commissioning (Cx) Requirements: Report Forms and Schematics.
 - .2 Include certificate of water flow and pressure tests conducted on incoming water
service, demonstrating adequacy of flow and pressure.

3.7 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

DIVISION 23

Heating, Ventilation and Air Conditioning
(HVAC)

Part 1 General**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets.
- .3 Shop Drawings:
 - .1 Indicate on drawings:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
 - .2 Shop drawings and product data accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.
 - .3 Points of operation on performance curves.
 - .4 Manufacturer to certify current model production.
 - .5 Certification of compliance to applicable Codes.
 - .3 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures: Use "MCAC Shop Drawing Submittal Title Sheet". Identify Section and paragraph number.
- .4 Erection Drawings:
 - .1 Prepare and submit erection drawings to coordinate the work of the various construction sub-trades. Construction drawings are required for the following work:
 - .1 Plumbing (Domestic water and drainage);
 - .2 Plumbing (heating).
 - .2 All erection drawings shall be prepared with the latest AutoCAD version, presented as DWG and PDF files. Drawings shall be an appropriate scale, but no smaller than 1:50.
 - .3 The erection drawings shall consist of plans to scale, indicating the position of equipment, ducts, piping, valves, and other fittings with required sections and details, including the dimensions of piping and ducts, openings, anchors, and supports, relative positions with framework, architectural works, and other mechanical and electrical works.
 - .4 Preparation:
 - .1 Each discipline shall do its own erection drawing and coordinate it with other disciplines.
 - .2 The General Contractor shall be responsible for the coordination of all erection drawings of all mechanical and electrical disciplines which shall

provide all the data, drawings, and diagrams necessary for this coordination work.

- .3 All erection drawings shall be submitted for review simultaneously.
- .4 Mechanical and electrical contractors shall work in close collaboration to determine the location of their respective works and to avoid clashes.
- .5 Responsibilities:
 - .1 Each Subcontractor is directly responsible for the location and exact dimensions of the openings, bases, the location of its equipment, piping, and ducts, whether dimensions figure in the structural, architectural, or engineering drawings or not.
 - .2 No compensation shall be awarded for modifications to the work, for coordination and integration of mechanical and electrical systems with each other.
 - .3 The Departmental Representative's verification of the erection drawings is limited to ensuring that the technical requirements appear to be met. Departmental Representative does not verify the quality of the coordination carried out by contractors.

1.2 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance related data:
 - .1 Operation and Maintenance Manual approved by, and final copies deposited with, Departmental Representative before final inspection.
 - .2 Operation data to include:
 - .1 Control schematics for systems, including environmental controls.
 - .2 Description of systems and their controls.
 - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
 - .4 Operation instruction for each system and each component.
 - .5 Description of actions to be taken in event of equipment failure.
 - .6 Valves schedule and flow diagram.
 - .7 Colour coding chart.
 - .3 Maintenance data to include:
 - .1 Servicing, maintenance, operation, and troubleshooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required, and task time.
 - .4 Performance data to include:
 - .1 Equipment manufacturer's performance data sheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance test results.

- .3 Special performance data as specified elsewhere in Contract Documents.
- .4 Testing, adjusting, and balancing reports as specified in Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .5 Approval:
 - .1 Submit one (1) copy of draft Operation and Maintenance Manual to Departmental Representative for approval. Submission of individual data will not be accepted, unless directed by Departmental Representative.
 - .2 Make changes as required and re-submit as directed by Departmental Representative.
- .6 Additional data:
 - .1 Prepare and insert into Operation and Maintenance Manual additional data when need for it becomes apparent during specified demonstrations and instructions.
- .7 Site records:
 - .1 Departmental Representative will provide one (1) set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur.
 - .2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection.
- .8 "As-Built" drawings:
 - .1 Prior to start of Testing, Adjusting, and Balancing for HVAC, finalize production of "As-built" drawings.
 - .2 Identify each drawing in lower right-hand corner in letters at least 12 mm high as follows: - AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED (Signature of Contractor) (Date).
 - .3 Submit to Departmental Representative for approval and make corrections as directed.
 - .4 Perform testing, adjusting, and balancing for HVAC using "As-built" drawings.
 - .5 Submit completed reproducible "As-built" drawings with Operating and Maintenance Manuals.
- .9 Submit copies of "As-Built" drawings for inclusion in final TAB report.

1.3 MAINTENANCE MATERIAL SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide one (1) set of special tools required to service equipment as recommended by manufacturers.
- .3 Supply one (1) commercial quality grease gun, grease, and adapters to suit different types of grease and grease fittings.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, off ground, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: Before proceeding with installation:
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 PAINTING REPAIRS AND RESTORATION

- .1 Prime and touch-up marred finished paintwork to match original.
- .2 Restore to new condition, finishes which have been damaged.

3.3 SYSTEM CLEANING

- .1 Clean interior and exterior of all systems, including strainers. Vacuum interior of ductwork and air handling units.

3.4 FIELD QUALITY CONTROL

- .1 Site Tests: Conduct following tests in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

- .2 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting, and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.5 DEMONSTRATION

- .1 Departmental Representative will use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
- .2 Supply tools, equipment, and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, troubleshooting, and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .3 Use Operation and Maintenance Manual, "As-Built" drawings, and audiovisual aids as part of instruction materials.
- .4 Training duration time requirements as specified in appropriate Sections.
- .5 Departmental Representative will record these demonstrations on video tape for future reference.

3.6 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 - Cleaning.

3.7 PROTECTION

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 CSA Group (CSA)
 - .1 CSA S350 M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

1.2 DEFINITIONS

- .1 Demolish: Detach items from existing construction and legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .2 Remove: Planned deconstruction and disassembly of electrical items from existing construction including removal of conduit, junction boxes, cabling and wiring from electrical component to panel taking care not to damage adjacent assemblies designated to remain; legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .3 Remove and Salvage: Detach items from existing construction and deliver them to Departmental Representative ready for reuse.
- .4 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- .5 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed and salvaged, or removed and reinstalled.
- .6 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate work of this Section to avoid interference with work by other Sections.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: Perform work of this Section in accordance with the following:
 - .1 Federal Workers' Compensation Service.
- .2 Government of Canada, Labour Program: Workplace Safety.

1.5 SITE CONDITIONS

- .1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition, before tendering.

- .2 Existing Hazardous Substances: Departmental Representative performed a hazardous substances assessment and it is not expected that hazardous substances will be encountered in the Work other than asbestos.
- .1 Site contains asbestos in heating and air conditioning piping to be modified.

1.6 SALVAGE AND DEBRIS MATERIALS

- .1 Demolished items become Contractor's property and will be removed from Project site; except for items indicated as being reused, salvaged, or otherwise indicated to remain Owner's property.
- .2 Carefully remove materials and items designated for salvage and store in a manner to prevent damage or devaluation of materials.

Part 2 Products

2.1 MATERIAL

- .1 HVAC Repair Materials: Use only new materials required for completion or repair matching materials damaged during performance of work of this Section; new materials are required to meet assembly or system characteristics as existing systems indicated to remain and carry CSA approval labels required by the Authority Having Jurisdiction.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Existing Conditions: Visit site, thoroughly examine and become familiar with conditions that may affect the work of this Section before tendering the Bid; Departmental Representative will not consider claims for extras for work or materials necessary for proper execution and completion of the contract that could have been determined by a site visit.

3.2 PREPARATION

- .1 Protection of Existing Systems to Remain: Protect systems and components indicated to remain in place during selective demolition operations and as follows:
 - .1 Prevent debris from blocking drainage inlets.
 - .2 Protect mechanical systems that must remain in operation.
- .2 Protection of Building Occupants: Sequence demolition work so that interference with the use of the building by the Departmental Representative and users is minimized:
 - .1 Prevent debris from endangering the safe access to and egress from occupied buildings.
 - .2 Notify Departmental Representative and cease operations where safety of occupants appears to be endangered and await additional instructions before resuming demolition work specified in this Section.

3.3 EXECUTION

- .1 Demolition and Removal:
 - .1 Do not disrupt active or energized utilities without approval of the Departmental Representative.
 - .2 Erect and maintain dust proof and weather tight partitions to prevent the spread of dust and fumes to occupied building areas; remove partitions when complete.
 - .3 At end of each day's work, leave worksite in safe condition.
 - .4 Perform demolition work in a neat and workmanlike manner:
 - .1 Remove any tools or equipment after completion of work, and leave site clean and ready for subsequent renovation work.
 - .2 Repair and restore damages caused as a result of work of this Section to match existing materials and finishes.

3.4 CLOSEOUT ACTIVITIES

- .1 Demolition Waste Disposal: Arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle centre).
- .2 Hazardous Substances Disposal: Arrange for disposal of hazardous substances.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE).
 - .1 ASHRAE 90.1-01, Energy Standard for Buildings Except Low-Rise Residential Buildings (IESNA cosponsored; ANSI approved; Continuous Maintenance Standard).
- .2 Electrical Equipment Manufacturers' Association Council (EEMAC).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit required documents and samples.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
 - .1 Submit two (2) copies of Workplace Hazardous Materials Information System (WHMIS) Safety Data Sheets (SDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Quality Control:
 - .1 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .2 Instructions: Submit manufacturer's installation instructions.
 - .1 Departmental Representative will make available one (1) copy of systems supplier's installation instructions.
- .4 Closeout Submittals:
 - .1 Provide maintenance data for motors, drives, and guards for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.

1.4 WASTE MANAGEMENT

- .1 Waste Management: Sort waste for recycling.

Part 2 Products**2.1 GENERAL**

- .1 Motors: High efficiency, in accordance with local Hydro company standards and to ASHRAE 90.1.

2.2 MOTORS

- .1 Provide motors for mechanical equipment as specified.
- .2 Motors used with variable speed drive must comply with NEMA MG1 - Part 31, stating that motor windings must be capable to support peaks up to 2,000 V with a ramping of 0,1 microsecond.
 - .1 Acceptable products:
 - .1 Techtop, Green Line NEMA T-Frame Cast-Iron Series.
 - .2 Baldor, Premium Severe Duty.
 - .3 GE, XSD Ultra NEMA Premium.
 - .4 TECO Westinghouse, OPTIM TEFC.
- .3 Motors with a capacity equal or over to 373 W (½ HP) and less than 746 W (1 HP): 3-phase, 600 V, EEMAC, Class B, 1,725 rpm or according to indications, with roller bearings and maximum temperature rise of 40°C (104°F).
- .4 Motors with a capacity equal to or over 746 W (1 HP): Three-phase, 600 V, EEMAC, double intertwined windings, Class F and temperature rise of Class F, 1,725 rpm or according to indications with heavy-duty roller bearings.
- .5 Motors must be designed to operate satisfactorily within voltage fluctuations of $\pm 10\%$.
- .6 Each motor must comply with the following:
 - .1 CEMA frame;
 - .2 Continuous service;
 - .3 Squirrel cage induction;
 - .4 Normal starting torque;
 - .5 Frictionless bearing;
 - .6 Totally closed air-cooled.
- .7 Motors must have the characteristics specified with the equipment. They must be designed for a minimum vibration and silent operation.
- .8 Motors must be manufactured to CSA C22.2 and AMEEC M1-6 Standards and must have a service factor of 1.15.
- .9 Motors up to 5,595 W (7,5 HP) must be provided with permanent lubrication roller bearings and motors of 7,460 W (10 HP) and more must be grease lubricated type bearings.

- .10 Overheating protection will be with PTC thermistors, factory installed, one per phase, connected to numbered terminals in the motor control box. Provide thermistors for motors 14,920 W (20 HP) and more:
 - .1 Voltage: 120 V;
 - .2 Outlet contacts: 4 A continuous, 15 A circuit break;
 - .3 Ambient Temperature: -20°C to 55°C (-4°F to 131°F);
 - .4 Energy consumption: 3.5 VA.

2.3 TEMPORARY MOTORS

- .1 If delivery of specified motor will delay completion or commissioning work, install motor approved by Departmental Representative for temporary use. Work will only be accepted when specified motor is installed.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Fasten securely in place.
- .2 Make removable for servicing, easily returned into, and positively in position.

3.3 VIBRATION ANALYSIS

- .1 Perform vibration level measurements on the motors of the fans that were replaced and on the machine casing under ISO 10816-1. The technician required to take the measurements must be certified Category 2 in accordance with the technical requirements of ISO 18436-2. Provide a report showing the location of the measuring points in the machines as well as an analysis of the vibration level of the components under machine study.

3.4 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

- .2 Verification requirements in accordance with Section 01 33 29 - Sustainable Design Reporting, include:

- .1 Materials and resources.
- .2 Storage and collection of recyclables.
- .3 Construction waste management.
- .4 Resource reuse.
- .5 Recycled content.
- .6 Local/regional materials.
- .7 Low-emitting materials.

3.5 CLEANING

- .1 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools, and equipment.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 00 - Common Work Results for HVAC.

1.2 REFERENCE STANDARDS

- .1 Green Seal Environmental Standards (GSES).
 - .1 Standard GS-11-2008, 2nd Edition, Environmental Standard for Paints and Coatings.
- .2 National Research Council Canada (NRC).
 - .1 National Fire Code of Canada 2015 (NFC).
- .3 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards.
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications, and data sheets for piping and equipment, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
 - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 CONNECTIONS TO EQUIPMENT**

- .1 In accordance with manufacturer's instructions, unless otherwise indicated.
- .2 Use valves and either unions or flanges for isolation and ease of maintenance and assembly.
- .3 Use double swing joints when equipment mounted on vibration isolation and when piping subject to movement.

3.2 CLEARANCES

- .1 Provide clearance around systems, equipment, and components for observation of operation, inspection, servicing, maintenance, and as recommended by manufacturer.
- .2 Provide space for disassembly, removal of equipment and components without interrupting operation of other system, equipment, and components. The dimension of the space shall comply to that shown in the drawings or shall be consistent with the manufacturer's recommendation, whichever is greater.

3.3 DRAIN VALVES

- .1 Install drain valve at low points in piping systems, at equipment and at section isolating valves.
- .2 Pipe each drain valve discharge separately to above floor drain. Discharge must be visible.
- .3 Drain valves: NPS $\frac{3}{4}$ gate or globe valves, unless indicated otherwise, with hose end male thread, cap, and chain.

3.4 AIR VENTS

- .1 Install manual air vents at high points in piping systems.
- .2 Install isolating valve at each automatic air valve.
- .3 Install drain piping to approved location and terminate where discharge is visible.

3.5 DIELECTRIC COUPLINGS

- .1 Use appropriate dielectric couplings compatible with system and pipework, to suit pressure rating of system.
- .2 Locations of dielectric couplings: Where dissimilar metals are joined.
- .3 NPS 2 and under: Isolating unions or bronze valves.
- .4 Over NPS 2: Isolating flanges.

3.6 PIPEWORK

- .1 Screwed fittings covered and jointed with Teflon tape.
- .2 Protect openings against entry of foreign material.

- .3 Install to isolate equipment and allow removal without interrupting operation of other equipment or systems.
- .4 Assemble piping using fittings manufactured to ANSI Standards.
- .5 Saddle type branch fittings may be used on mains if branch line is no larger than half size of main.
 - .1 Hole saw (or drill) and ream main to maintain full inside diameter of branch line prior to welding saddle.
- .6 Install exposed piping, equipment, rectangular cleanouts, and similar items parallel or perpendicular to building lines.
- .7 Install concealed pipework to minimize furring space, maximize headroom, conserve space. Slope piping, except where indicated, in direction of flow for positive drainage and venting.
- .8 Install, except where indicated, to permit separate thermal insulation of each pipe.
- .9 Group piping wherever possible and as indicated.
- .10 Ream pipes, remove scale and other foreign material before assembly. Clean also after completion of installation work.
- .11 Use eccentric reducers at pipe size changes to ensure positive drainage and venting.
- .12 Provide for thermal expansion, as indicated.
- .13 Valves:
 - .1 Install in accessible locations.
 - .2 Remove interior parts before soldering.
 - .3 Install with stems above horizontal position or vertical upward, unless otherwise indicated.
 - .4 Valves accessible for maintenance without removing adjacent piping.

3.7 PRESSURE TESTING OF EQUIPMENT AND PIPEWORK

- .1 Advise the Departmental Representative 48 hours minimum prior to performance of pressure tests.
- .2 Pipework: Test as specified in relevant sections of Division 23.
- .3 Maintain specified test pressure without loss for four (4) hours minimum, unless specified for longer period in relevant Sections of Division 23.
- .4 Prior to tests, isolate equipment and other parts which are not designed to withstand test pressure or media.
- .5 Conduct tests in presence of the Departmental Representative.
- .6 Pay costs for repairs or replacement, retesting, and making good.

- .7 Whether repair or replacement is appropriate is to be determined by the Departmental Representative.
- .8 Insulate or conceal work only after approval and certification of tests by the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 00 - Common Work Results for HVAC.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM).
 - .1 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A105/A105M-05, Standard Specification for Carbon Steel Forgings, for Piping Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and datasheets for fixtures, and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .1 Manufacturer, model number, line contents, pressure, and temperature rating.
 - .2 Movement handled, axial, lateral, angular, and the amounts of each.
 - .3 Nominal size and dimensions, including details of construction and assembly.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance and operation data in accordance with Section 01 78 00 - Closeout Submittals.
 - .1 Data to include:
 - .1 Servicing requirements, including special requirements, stuffing box packing, lubrication, and recommended procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

Part 2 Products**2.1 STAINLESS-STEEL FLEXIBLE CONNECTIONS**

- .1 Application: To suit motion.
- .2 Minimum length in accordance with manufacturer's recommendations to suit offset.
- .3 Inner Hose: Corrugated stainless steel.
- .4 Outer jacket: Made of stainless-steel mesh.
- .5 Diameter and type of end connection: As indicated on drawings.
- .6 Operating Conditions: Working pressure: 1,034 kPa (150 psi) and working temperature: 93°C (200°F), respectively.
 - .1 To match system requirements.
- .7 The fitting must absorb lateral movement up to 1.6 mm ($1/16$ in.), the ratio between the length of its flexible part and diameter must not be less than six (6). The length of the flexible part should not be more than 600 mm (24 in.).
- .8 Ends: Appropriate to piping.
- .9 Acceptable Products:
 - .1 NPS 2 or less: Connectall, Style-19 or Style-A1 Series; Flexonics, model BSN; Hebdrastique.
 - .2 NPS 2½ or more: Connectall, Style-A1 Series; Flexonics, model BSFS or Hebdrastique.

2.2 FLEXIBLE CONNECTIONS FOR SEISMIC JOINTS

- .1 Flexible connections in compliance with UL536, CSA, and FM Standards.
- .2 Application: For pipework crossing buildings equipped with seismic joints.
- .3 The connections must have minimum length in compliance with manufacturer's recommendations, according to potential seismic movement.
- .4 Inner Hose: Corrugated stainless steel.
- .5 Outer jacket: Made of stainless-steel mesh.
- .6 Diameter and location: As indicated on drawings.
- .7 The flexible connections must be designed to withstand a minimum pressure of 1,206 kPa (175 psi) at an operating temperature of 204°C (400°F).
 - .1 Operating conditions must correspond to system requirements.
- .8 The connections must absorb movement in all axes.
- .9 Ends:
 - .1 NPS 1 to NPS 2½: Threaded;
 - .2 NPS 3 to NPS 12: Flanged.

- .10 For systems with flammable liquid or gas, the flexible joints must be UL 536 certified.
- .11 Flexible connections must be supported with cables as recommended by an engineer in earthquake-proof systems.

2.3 FLEXIBLE CONNECTIONS IN KEVLAR AND EPDM

- .1 Kevlar multi-layer flexible connections covered with EPDM.
- .2 Single or double-sphere connections, in accordance with manufacturer's recommendations, as required.
- .3 The diameter and type of the end elements are in accordance with the drawings.
- .4 Fittings shall be designed to withstand a pressure and operating temperature of 150 psi (1,034 kPa) and 93°C (200°F).
 - .1 Operating conditions must meet the requirements of the systems.

2.4 ANCHORS AND GUIDES

- .1 Anchoring: According to Section 23 05 29 - Hangers and Supports for HVAC Piping Equipment.
- .2 Pipe Guide Components: Galvanized-steel elements.

Part 3 Execution

3.1 INSTALLATION

- .1 Expansion joints must be installed under cold tension conditions as indicated by manufacturer. Tension value shall be documented.
- .2 Flexible fittings and expansion joints shall be installed according to manufacturer's instructions.
- .3 Anchoring and pipe guides shall be installed as indicated. Anchoring must absorb an axial movement of 150%.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 00 - Common Work Results for HVAC.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM).
 - .1 ASTM A125-1996 (2007), Standard Specification for Steel Springs, Helical, Heat-Treated.
 - .2 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60.000 PSI Tensile Strength.
 - .3 ASTM A563-07a, Standard Specification for Carbon and Alloy Steel Nuts.
- .2 American Society of Mechanical Engineers (ASME).
 - .1 ASME B31.1-07, Power Piping.
- .3 Factory Mutual (FM).
- .4 Manufacturer's Standardization Society of the Valves and Fittings Industry (MSS).
 - .1 MSS SP58-2002. Pipe Hangers and Supports - Materials, Design and Manufacture.
 - .2 MSS SP69-2003. Pipe Hangers and Supports - Selection and Application.
 - .3 MSS SP89-2003. Pipe Hangers and Supports - Fabrication and Installation Practices.
- .5 National Research Council Canada (NRC).
 - .1 National Plumbing Code of Canada 2015 (NPC).
- .6 Underwriters Laboratories of Canada (ULC).
 - .1 MSS SP58-2002, Pipe Hangers and Supports - Materials, Design and Manufacture.
 - .2 MSS SP69-2003, Pipe Hangers and Supports - Selection and Application.
 - .3 MSS SP89-2003, Pipe Hangers and Supports - Fabrication and Installation Practices.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and data sheets for hangers and supports, and include product characteristics, performance criteria, physical size, finish, and limitations.

- .3 Shop Drawings:
 - .1 Submit shop drawings for:
 - .1 Bases, hangers, and supports.
 - .2 Connections to equipment and structure.
 - .3 Structural assemblies.
 - .4 Certificates:
 - .1 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .5 Manufacturer's Instructions:
 - .1 Provide manufacturer's installation instructions.
 - .1 Departmental Representative will make available copy of systems supplier's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements:
 - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

Part 2 Products

2.1 DESCRIPTION OF SYSTEM

- .1 Design Requirements:
 - .1 Install pipe hangers and supports to manufacturer's recommendations utilizing manufacturer's recommendations using current components, parts, and assemblies.
 - .2 Nominal maximum load ratings on eligible stresses prescribed by ASME B31.1 or MSS SP58.
 - .3 Ensure that supports, guides, and anchors do not transmit adverse quantities of heat or stress to building structure.
 - .4 Design hangers and supports to support systems under conditions of operation, allow free expansion and contraction, prevent excessive stresses from being introduced into pipework or connected equipment.
 - .5 Provide for vertical adjustments after erection and during commissioning. Total of adjustment in accordance with MSS-SP-58.

- .2 Performance Requirements:
 - .1 Design supports, platforms, catwalks, and hangers to withstand seismic events.

2.2 GENERAL

- .1 Fabricate hangers, supports, and sway braces in accordance with ANSI B31.1 and MSS-SP-58 Standards.
- .2 Use components for intended design purpose only. Do not use for rigging or erection purposes.
- .3 Perforated metal straps are forbidden.
- .4 "Ramset" percussion and drop-in anchors are forbidden.

2.3 HANGERS

- .1 Finishes:
 - .1 Hangers and supports: Galvanized after manufacture.
 - .2 Use electro-plating galvanizing process.
 - .3 Ensure steel hangers in contact with copper piping are copper-plated or epoxy coated.
 - .4 Stainless-steel hangers for all stainless-steel pipework.
- .2 Suspension equipment from bottom flange of I-Beam:
 - .1 Piping NPS 2 or less and HVAC equipment: Malleable cast-iron, C-clamp with hardened steel cup point, set screw and locknut, UL, ULC, and FM approved, to MSS-SP-69.
 - .2 Piping NPS 2½ or greater: Malleable cast-iron beam clamp, eye rod, jaws, and cast-iron extension with retaining clip, tie rod, carbon iron nuts and washers, UL, ULC, and FM approved, to MSS-SP-69.
- .3 Hanger Rods: Threaded, to MSS-SP-58:
 - .1 Ensure that hanger rods are subject to tensile loading only.
 - .2 Provide linkages where vertical or horizontal movement of pipework is anticipated.
- .4 Supports and hangers installed on top of insulation (all diameters):
 - .1 Steel or copper piping, with longitudinal movement of less than 25 mm (1 in.): Adjustable clevis fastener, UL, ULC, and FM, in accordance with MSS-SP-69.
 - .2 Steel piping, with longitudinal movement of less than 25 mm (1 in.): Pipe roll in accordance with MSS-SP-69, type 43.
 - .3 Steel or copper hot piping supported underneath: Pipe roll stand in accordance with MSS-SP-69, type 44.

- .5 Supports and hangers installed directly on pipe (all diameters - Hot or tempered services only):
 - .1 Steel or plastic piping, with longitudinal movement of less than 25 mm (1 in.): Adjustable swivel ring, to MSS-SP-69, type 10, and UL and FM approved.
 - .2 Copper piping, with longitudinal movement of less than 25 mm (1 in.): Adjustable copper swivel ring, to MSS-SP-69, type 10.
 - .3 Steel or plastic piping, with longitudinal movement of less than 25 mm (1 in.): Pipe roll/roller support to MSS-SP-69, type 43.
 - .1 Plastic-coated for stainless-steel pipe.
 - .4 Steel or plastic piping supported underneath: Pipe roll in accordance with MSS-SP-69, type 44.
 - .1 Plastic-coated for stainless-steel pipe.
 - .5 Cast-iron drain piping and vent piping with steel mechanical joints, clamp on each side of the joint, (for NPS 2 to NPS 6) and cast-iron saddle (for NPS 8 and NPS 10).

2.4 PIPE SHIELDS AND SADDLES

- .1 Use high density insulation with continuous vapor barrier for pipe shields.
- .2 Pipe shields and saddles for horizontal support of insulated piping complying with the following characteristics:
 - .1 Rigid copper piping, NPS 1¼ or greater: Protective pipe shield;
 - .2 Ferrous metal piping:
 - .1 Chilled-water piping: Pipe shield and high-density insulation for all diameters.
 - .2 Hot-water pipes: Pipe shields for NPS up to 3 and saddles for NPS greater than 3.
 - .3 Steam and condensate piping: Saddles for all diameters.

2.5 EQUIPMENT ANCHOR BOLTS AND TEMPLATES

- .1 Provide templates to ensure accurate location of anchor bolts.

Part 3 Execution

3.1 MANUFACTURERS INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Provide antivibration devices to pumps, boilers, refrigeration equipment, cooling towers, and other specified items.

3.3 SPACING BETWEEN SUPPORTS AND SUSPENSIONS

- .1 Plumbing Piping: To National Plumbing Code of Canada.
- .2 Install a support or hanger every 1.5 m (5 ft) for NPS ½ or smaller copper piping.
- .3 Install a support or hanger no more than 300 mm (12 in.) from each elbow.
- .4 Comply with MSS-SP-69 for pipe NPS 12 or greater.
- .5 Flexible joint roll grooved pipe: Install a support or hanger at each joint.
- .6 Support cast-iron piping at all connections and each telescoping joint. The distance between two (2) supports shall not exceed 3 m (10 ft). Reduce this distance for piping with mechanical joints to 1 m (3.3 ft) when adjacent connections are 300 mm (12 in.) or less apart.
- .7 In addition to the above required supports, install supports and suspensions on the straight lengths of the piping as described in the tables below:

PLUMBING, COOLING, AND HEATING PIPING							
MAXIMUM SPACING ON HORIZONTAL PIPING, METRES (ft)							
Ø PIPE (NPS)	Ø ROD mm (in.)	STEEL		COPPER	ASBESTOS -CIMENT	ABS PVC	CPVC
		SCHED. 10	SCHED. 40				
Up to ½	10 (¾)	---	2.1 (6.9)	1.5 (4.9)	---	0.9 (3.0)	0.8 (2.6)
¾	10 (¾)	2.1 (6.9)	2.1 (6.9)	1.5 (4.9)	---	1.0 (3.3)	0.9 (3.0)
1	10 (¾)	2.1 (6.9)	2.1 (6.9)	1.8 (5.9)	---	1.1 (3.6)	1.0 (3.3)
1¼	10 (¾)	2.1 (6.9)	2.1 (6.9)	2.1 (6.9)	2.0 (6.6)	1.2 (3.9)	1.2 (3.9)
1½	10 (¾)	2.7 (8.9)	2.7 (8.9)	2.4 (7.9)	2.0 (6.6)	1.3 (4.3)	1.3 (4.3)
2	10 (¾)	3.0 (9.8)	3.0 (9.8)	2.4 (7.9)	2.0 (6.6)	1.5 (4.9)	1.4 (4.6)
2½	13 (½)	3.4 (11.2)	3.4 (11.2)	2.7 (8.9)	2.0 (6.6)	---	1.7 (5.6)
3	13 (½)	3.6 (11.8)	3.6 (11.8)	3.0 (9.8)	2.0 (6.6)	1.9 (6.2)	1.8 (5.9)
3½	13 (½)	---	3.9 (12.8)	3.4 (11.2)	2.0 (6.6)	---	---
4	16 (⅝)	---	4.2 (13.8)	3.7 (12.1)	2.0 (6.6)	2.2 (7.2)	2.1 (6.9)
5	16 (⅝)	---	4.8 (15.7)	---	2.0 (6.6)	---	---
6	19 (¾)	---	5.1 (16.7)	---	2.0 (6.6)	2.6 (8.5)	2.6 (8.5)
8	19 (¾)	---	5.7 (18.7)	---	2.0 (6.6)	3.0 (9.8)	3.0 (9.8)
10	22 (⅞)	---	6.6 (21.7)	---	2.0 (6.6)	3.5 (11.5)	3.3 (10.8)
12	22 (⅞)	---	6.9 (22.6)	---	2.0 (6.6)	3.8 (12.5)	3.7 (12.1)
14	25 (1)	---	7.6 (24.9)	---	---	4.0 (13.1)	3.9 (12.8)
16	25 (1)	---	8.2 (26.9)	---	---	4.4 (14.4)	4.3 (14.1)
18	25 (1)	---	8.5 (27.9)	---	---	4.7 (15.4)	---
20	32 (1¼)	---	9.1 (29.9)	---	---	5.0 (16.4)	---
24	32 (1¼)	---	9.7 (31.8)	---	---	5.6 (18.3)	---

3.4 HANGER - INSTALLATION

- .1 Install hanger so that rod is vertical under operating conditions.
- .2 Adjust hangers to equalize load.
- .3 Support from structural members. Where structural bearing does not exist or inserts are not in suitable locations, provide supplementary structural steel members.
- .4 Provide appropriate supports, hangers, guides, anchors, elbows, and thermal-expansion loops required to allow piping to expand due to temperature variations in a flexible manner.
- .5 Piping and equipment must be independently supported from each other.

3.5 HORIZONTAL MOVEMENT

- .1 Angularity of rod hanger resulting from horizontal movement of pipework from cold to hot position not to exceed 4° from vertical.
- .2 Where horizontal pipe movement is less than 13 mm (½ in.), offset pipe hanger and support so that rod hanger is vertical in the hot position.

3.6 PIPING ATTACHMENT TO METAL STRUCTURE

- .1 Support piping with diameter greater than NPS 4 to distribute load imposed on the structure on several structural elements.
- .2 When DN 4 pipework is parallel to joists, install piping in the center at equal distance between two (2) girders and install supports or hangers to distribute load equally among those two (2) girders.

3.7 FINAL ADJUSTMENT

- .1 Hangers and Supports:
 - .1 Ensure that rod is vertical under operating conditions.
 - .2 Equalize loads.
- .2 Adjustable Clevis:
 - .1 Tighten hanger load nut securely to optimize hanger performance.
 - .2 Tighten lock nut after adjustment done.
- .3 C-Clamps:
 - .1 Follow manufacturer's recommended written instructions and torque values when tightening C-clamps to bottom flange of beam.

END OF SECTION

Part 1 General**1.1 QUALIFICATIONS OF TAB PERSONNEL**

- .1 Submit names of personnel to perform TAB to Departmental Representative within 90 days of award of Contract.
- .2 Provide documentation confirming qualifications, successful experience.
- .3 TAB: Performed in accordance with the requirements of standard under which TAB Firm's qualifications are approved.
 - .1 Associated Air Balance Council, (AABC), National Standards for Total System Balance, MN-1.
 - .2 National Environmental Balancing Bureau (NEBB) TABES, Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems.
 - .3 Sheet Metal and Air-Conditioning Contractors' National Association (SMACNA), HVAC TAB HVAC Systems - Testing, Adjusting and Balancing.
- .4 Recommendations and prescribed practices contained in the TAB Standard: Mandatory.
- .5 Use TAB Standard provisions, including checklists, and report forms to satisfy Contract requirements.
- .6 Use TAB Standard for TAB, including qualifications for TAB Firm and Specialist and calibration of TAB instruments.
- .7 Where instrument manufacturer calibration recommendations are more stringent than those listed in TAB Standard, comply with manufacturer's recommendations.
- .8 TAB Standard quality assurance provisions such as performance guarantees form part of this Contract.
 - .1 For systems or system components not covered in TAB Standard, use TAB procedures developed by TAB Specialist.
 - .2 Where new procedures and requirements are applicable to Contract requirements have been published or adopted by body responsible for TAB Standard used (AABC, NEBB, or TABB), requirements and recommendations contained in these procedures and requirements are mandatory.

1.2 PURPOSE OF TAB

- .1 The ERE work includes two (2) phases:
 - .1 Measure existing flows before work begins.
 - .2 Balancing of systems after work to obtain the flows and pressures read at the beginning, or according to changes made by the Departmental Representative.
- .2 For each system, measure the maximum flow of the system at 100% opening of the inlet vanes and the fresh air intake. For systems supplying plant sectors and laboratories, there may be several positions for fresh air. Refer to control sequences.

- .3 For each terminal box and each venturi valve, measure the maximum adjusted flow and minimum flow. Refer to drawings and control sequences.
- .4 Measure the maximum adjusted flow and minimum flow for each speed pressure sensor "SPV". Refer to plans and control sequences.
- .5 Test to verify proper and safe operation, determine actual point of performance, evaluate qualitative and quantitative performance of equipment, systems and controls at design, average and low loads using actual or simulated loads.
- .6 Adjust and regulate equipment and systems to meet specified performance requirements, to achieve specified interaction with other related systems under normal and emergency loads and operating conditions.
- .7 Balance systems and equipment to regulate flow rates to match load requirements over full operating ranges. Provide pulleys and belts as needed to meet system performance.

1.3 SPECIAL STANDARDS AND CODES

- .1 TAB of systems and equipment regulated by Codes or Standards to satisfaction of Authority Having Jurisdiction.

1.4 WORK COORDINATION

- .1 Schedule time required for TAB (including repairs, re-testing) into project construction and completion schedule to ensure completion before acceptance of project.
- .2 Do TAB of each system independently and subsequently, where interlocked with other systems, in unison with those systems.

1.5 PRE-TAB REVIEW

- .1 Review Contract Documents before project construction is started and confirm in writing to Departmental Representative adequacy of provisions for TAB and other aspects of design and installation pertinent to success of TAB.
- .2 Review specified Standards and report to Departmental Representative in writing proposed procedures in Contract Documents, which vary from Standards.
- .3 During construction, co-ordinate location and installation of TAB devices, equipment, accessories, measurement ports, and fittings.

1.6 EQUIPMENT AND SYSTEMS START-UP

- .1 Operate equipment and systems for the time required for the execution of TAB operations, and for the time required by the Departmental Representative for the verification of TAB reports.

1.7 MEASURE INSTRUMENTS

- .1 Prior to TAB, submit to Departmental Representative list of instruments used together with serial numbers.
- .2 Calibrate in accordance with requirements of most stringent of referenced standard for either applicable system or mechanical system.

- .3 Calibrate within three (3) months of TAB. Provide a calibration certificate to the Departmental Representative.

1.8 OTHER TAB REQUIREMENTS

- .1 General requirements applicable to work specified this paragraph:
 - .1 Qualifications of TAB personnel: As for air systems specified this Section.
 - .2 Quality assurance: As for air systems specified this section.

1.9 LISTE OF SYSTEMS BEING PART OF MEASURING AND BALANCING

- .1 A-B-C-D Sectors: Systems are variable flow, with fan input blades, except for systems indicated at constant flow. The blades will be removed and replaced with speed dimmers.
 - .1 V43-1: Sector C, second floor, with terminal boxes;
 - .2 V43-2: Sector A, cheese factory;
 - .3 V43-3: Sector C, ground floor, entrance hall, with terminal boxes;
 - .4 V43-4: Sector C, ground floor, with terminal boxes;
 - .5 V43-5: Sector A, pilot plants;
 - .6 V43-6: Sector A, pilot plants (system shutdown);
 - .7 V43-7: Sector C, second floor, variable flow;
 - .8 V43-8: Sector C, second floor, with terminal boxes;
 - .9 V43-9: Sectors C and D, atrium (corridor), constant flow;
 - .10 V43-10: Sector D, ground floor, with terminal boxes;
 - .11 V43-11: Sector D, Biotech pilot plant;
 - .12 V43-12: Sector D, second floor, with terminal boxes;
 - .13 V43-13: Sector B, smells pilot plant;
 - .14 V43-14: Sector D, second floor, hood supply;
 - .15 V43-15: Sector D, second floor, hood supply;
 - .16 V43-16: Sector B, Engineering Alimentary Sector.
 - .17 All VAV boxes related to these 16 systems.
- .2 Sector E:
 - .1 V35400-1: Sector E, presentation room, constant flow;
 - .2 V35400-2: Sector E, library, constant flow;
 - .3 V35400-3: Sector E, training room, constant flow.
- .3 Sector F:
 - .1 UV-1: Fresh air from sector F, with terminal boxes for rooms and systems.
 - .2 Fresh air and distribution boxes for AC-1 to AC-27 systems in sectors A and F.

Part 2 Measures Before the Beginning of Mechanical Works**2.1 OPERATION OF SYSTEMS DURING TAB**

- .1 Systems are in operation and must remain so during the work.
- .2 V43-6 system is stopped.
- .3 V43-9 system can be started and must be stopped after balancing operations.

2.2 START OF TAB

- .1 Notify Departmental Representative two (2) days prior to start TAB.

2.3 PRELIMINARY REPORT

- .1 Submit for checking and approval of Departmental Representative, prior to submission of formal TAB report, sample of rough TAB sheets:
 - .1 Include: Details of instruments used.
 - .2 Details of TAB procedures employed.
 - .3 Calculations procedures.
 - .4 Summaries.

2.4 TAB REPORT

- .1 In the report, express results in units, as indicated on drawings, and include:
 - .1 Project record drawings.
 - .2 System schematics.
- .2 Submit electronic document (.pdf) of TAB Report to Departmental Representative for verification and approval, in both official languages.

2.5 VERIFICATION OF RESULTS

- .1 Reported results subject to verification by Departmental Representative.
- .2 Number and location of verified results as directed by Departmental Representative.

Part 3 TAB Work after the Mechanical work is Complete**3.1 START OF TAB**

- .1 Notify Departmental Representative seven (7) days prior to start TAB.

3.2 SPECIFIC WORK TO EXECUTE FOR TABS

- 1. Perform the TAB work to obtain the initial flow and pressure values of the systems and equipment that were initially measured.

3.3 APPLICATION TOLERANCES

- .1 Measured values accurate to within $\pm 5\%$ of actual values.

3.4 SUBMITTALS

- .1 Submit, prior to commencement of TAB:
 - .1 Proposed methodology and procedures for performing TAB if different from referenced Standard.

3.5 PRELIMINARY REPORT

- .1 Submit for checking and approval of Departmental Representative, prior to submission of formal TAB report, sample of rough TAB sheets:
 - .1 Include: Details of instruments used.
 - .2 Details of TAB procedures employed.
 - .3 Calculations procedures.
 - .4 Summaries.

3.6 TAB REPORT

- .1 Format in accordance with referenced Standard.
- .2 In the report, express results in units, as indicated on drawings, and include:
 - .1 Project record drawings.
 - .2 System schematics.
- .3 Submit electronic document (.pdf) of TAB Report to Departmental Representative for verification and approval, in both official languages.

3.7 VERIFICATION OF RESULTS

- .1 Reported results subject to verification by Departmental Representative.
- .2 Provide personnel and instrumentation to verify up to 30% of reported results.
- .3 Number and location of verified results as directed by Departmental Representative.
- .4 Pay costs to repeat TAB as required to satisfaction of Departmental Representative.

3.8 SETTINGS

- .1 After TAB is completed to satisfaction of Departmental Representative, replace drive guards, close access doors, lock devices in set positions, ensure sensors are at required settings.
- .2 Permanently mark settings to allow restoration at any time during life of facility.

3.9 COMPLETION OF TAB

- .1 TAB considered complete when final TAB Report received and approved by Departmental Representative.

3.10 AIR SYSTEMS

- .1 Standard: TAB to most stringent of this section or TAB Standards of AABC, ASHRAE, SMACNA, or NEBB.
- .2 Do TAB of systems, equipment, components, and controls as specified in Contract Documents.
- .3 Personnel performing TAB qualified to Standards of NEBB and current member in good standing of NEBB.
- .4 Perform TAB under direction of supervisor qualified to NEBB Standards.
- .5 Measurements: To include as appropriate for systems, equipment, components, controls: air velocity, static pressure, flow rate, pressure drop (or loss), temperatures (dry bulb, wet bulb, dewpoint), duct cross-sectional area, RPM, electrical power, voltage, noise, and vibration.
- .6 Locations of equipment measurements: To include as appropriate:
 - .1 Inlet and outlet of dampers, filter, coil, humidifier, fan, and other equipment causing changes in conditions.
 - .2 At controllers and controlled devices.
- .7 Locations of systems measurements to include as appropriate: Main ducts, main branch, sub-branch, run out (grilles or diffusers).

3.11 POST-OCCUPANCY TAB

- .1 Participate in systems checks twice during Warranty Period - #1 approximately three (3) months after acceptance and #2 within one (1) month of termination of Warranty Period.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 00 - Common Work Results for HVAC.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM).
 - .1 ASTM B209M-04, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate Metric.
 - .2 ASTM C335-04, Standard Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
 - .3 ASTM C411-04, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
 - .4 ASTM C449/C449M-00, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
 - .5 ASTM C533-2004, Calcium Silicate Block and Pipe Thermal Insulation.
 - .6 ASTM C547-2003, Mineral Fiber Pipe Insulation.
 - .7 ASTM C795-03, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
 - .8 ASTM C921-03a, Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
- .2 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).
 - .1 ASHRAE Standard 90.1-01, Energy Standard for Buildings Except Low-Rise Residential Buildings (IESNA co-sponsored; ANSI approved; Continuous Maintenance Standard).
- .3 Canadian General Standards Board (CGSB).
 - .1 CGSB 51-GP-52Ma-89, Vapor Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
 - .2 CAN/CGSB-51.53-95, Poly(chlorure de vinyle) en feuille pour gaines de tuyauteries, récipients et conduits cylindriques isolés.
- .4 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 33.
 - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Safety Data Sheets (SDS).

- .6 Manufacturer's Trade Associations.
 - .1 Thermal Insulation Association of Canada (TIAC): National Insulation Standards (Revised 2004).
- .7 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC-S102-03, Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S701-01, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .3 CAN/ULC-S702-1997, Thermal Insulation, Mineral Fibre, for Buildings

1.3 DEFINITIONS

- .1 For purposes of this Section, the following definitions shall apply:
 - .1 "Concealed": Insulated mechanical services in suspended ceilings and non-accessible chases and furred-in spaces.
 - .2 "Exposed": Will mean "not concealed" (as specified).
 - .3 "System": Piping, including all incorporated accessories, trim, etc., such as valves, elbows, pumps, tees, etc.
- .2 Insulation shall be thick enough to cover all components of element to be insulated, such as reinforcements, angle irons, supports, joints, etc.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
- .3 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit for approval: Complete assembly of each proposed type of insulation system, insulation, coating, and adhesive. Mount sample on 12-mm plywood board. Affix label beneath sample indicating service.
- .5 Quality Assurance Submittals: Submit following in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .2 Instructions: Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer: specialist in performing work of this Section, and member of TIAC.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, shipping, handling, and unloading:
 - .1 Deliver, store, and handle in accordance with manufacturer's written instructions and Section 01 61 00 - Common Product Requirements.
 - .2 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
 - .3 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Storage and Protection:
 - .1 Protect from weather, construction traffic (staff, material, and vehicles).
 - .2 Protect against damage.
 - .3 Store at temperatures and conditions required by manufacturer.

Part 2 Products**2.1 FIRE AND SMOKE RATING**

- .1 In accordance with CAN/ULC-S102.
 - .1 Maximum flame spread rating: 25.
 - .2 Maximum smoke developed rating: 50.
- .2 Materials must be tested according to ASTM C411.

2.2 SEALANTS

- .1 Do not use sealants that emit strong odors, contain toxic chemicals, or are not certified as mold-resistant in air handling units.
- .2 When low-toxicity products are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

2.3 INSULATION

- .1 Thermal conductivity ("k" factor) not to exceed specified values at 24°C (75°F) mean temperature when tested in accordance with ASTM C335.
- .2 Type **P-1** Thermal Insulation: Rigid molded mineral fibre with factory applied vapor barrier jacket.
 - .1 Mineral fibre: To ASTM C547.
 - .2 Jacket: To CGSB 51-GP-52Ma.

- .3 Maximum "K" factor: Of 0.033 W/m•°C (0.231 Btu-in/h•ft²•°F) at an average temperature of 24°C (75°F).
- .4 Temperature limits: -29°C (-20°F) to 454°C (850°F).
- .3 Type **P-2** Thermal Insulation: Rigid mineral fibre board faced with factory applied vapor barrier jacket.
 - .1 Mineral fibre: To ASTM C547.
 - .2 Jacket: To CGSB 51-GP-52Ma.
 - .3 Maximum "K" factor: Of 0.035 W/m•°C (0.24 Btu-in/h•ft²•°F) at an average temperature of 24°C (75°F).
 - .4 Temperature limits: 120°C (250°F).
 - .5 Density: 24 kg/m³ (1.5 lb/ft³).
- .4 Type **P-3** Thermal Insulation: Flexible unicellular tubular elastomer.
 - .1 Insulation: To CAN/CGSB-51.40.
 - .2 Maximum "K" factor: Of 0.039 W/m•°C (0.27 Btu-in/h•ft²•°F) at an average temperature of 24°C (75°F).
 - .3 Temperature limits: -57°C (-70°F) to 105°C (220°F).
 - .4 Certified by manufacturer: Free of potential stress corrosion cracking corrodents.
- .5 Type **P-5** Thermal Insulation: High density.
 - .1 Use: For installation with protective shield.
 - .2 Thickness: Equal to thickness of specified insulation.
 - .3 Material: Preformed stone wool, density of 180 kg/m³, fully water repellent.
 - .4 Maximum operating temperature: 760°C (1,400°F).
 - .5 Thermal Conductivity Coefficient "K" not exceeding 0.052 W/m•°C (0.36 Btu-in/hr•ft²•°F) at an average temperature of 149°C (300°F).
 - .6 Cover the insulation with a completely waterproof jacket.

2.4 ADHESIVES, TAPES, AND FASTENERS

- .1 Accessories:
 - .1 Tape: Self-adhesive, aluminum, reinforced, 50 mm (2 in.) wide minimum.
 - .2 Contact adhesive: Quick setting.
 - .3 Canvas adhesive: Washable.
 - .4 Tie Wire: 1.5 mm (0.6 in.) diameter stainless steel.
 - .5 Banding: 19 mm (¾ in.) wide, 0.5 mm (0.02 in.) thick stainless steel.
- .2 For P-1 and P-2 Thermal Insulation:
 - .1 Tape: Aluminum, self-adhesive ULC listed for the following characteristics: Flame spread rating of not more than 25 and a smoke developed classification of not more than 50.

- .2 Quick-setting lap adhesive: Used to seal vapor barrier joints and overlaps.
- .3 Thermal insulation adhesive, fireproof coating.
- .3 P-3 Thermal Insulation:
 - .1 Contact Adhesive: Quick-setting, air-drying adhesive used to seal transverse and longitudinal joints in thermal insulation.
 - .2 Self-adhesive PVC tape.
 - .3 Coating for Type P-3 thermal insulation: To be installed on all exposed piping, water-based, flexible semi-gloss finish, for interior and exterior application, white, can be brushed on or sprayed.

2.5 JACKETS

- 1. Canvas Sheating.
 - 1. Cotton canvas with a surface mass of 220 and 120 g/m², with a united armor, coated with heatproof glue and fire retardant, diluted, according to the ASTM C921 standard.
 - 2. Calorific glue: compatible with calorific material.

2.6 INSULATING CEMENT

- .1 Thermal Insulating and Finishing Cement.
 - .1 Hydraulic setting or air drying, on mineral wool, to ASTM C449/C449M.

Part 3 Execution

3.1 INSTALLATION

- .1 Apply insulation after all tests have been completed and results approved by Departmental Representative.
- .2 Insulation and surfaces to be clean and dry during installation and during application of finishes.
- .3 Apply insulation, accessories, jackets, and finishes in accordance with manufacturer's recommendations and as specified herein. Apply at least two (2) finish coats.
- .4 Apply adhesive to entire surface (100%) of insulation installed on roof drain bodies to hold it in place.
- .5 Provide protection saddles and shields as per Section 23 05 29 - Hangers and Supports for HVAC Piping and Equipment:
 - .1 Cut insulation under piping over at least the length of the saddle or shell and one third the circumference of the piping.
 - .2 Replace insulation with high-density insulation.
 - .3 Cover vapor barrier to maintain continuity for cold pipes.
 - .4 Install protective shield.

- .6 Vapor barrier to have no openings or breaks in sleeves, connectors, and supports.
- .7 Provide grooved joints insulation for drainage piping and water loop of heat pumps.

3.2 THERMAL INSULATION

- .1 Install thermal insulation in compliance with ANSI/NFPA 90A and 90B.
- .2 Use shell insulation for piping up to NPS 12 and shell or sectional insulation for piping over NPS 12.
- .3 Multiple Thickness Insulation: Stagger joints of each insulation layer.
- .4 Vertical Pipe over NPS 3: Install insulation supports welded or bolted to pipes directly above lowest fitting, thereafter, at 4.5-m (15-ft) intervals.
- .5 Expansion joints in insulation: Terminate each layer in straight cut, as recommended by manufacturer, leaving space of 25 mm (1 in.) between successive sections, and fill with Type P-2 flexible mineral fibre insulation without packing.
- .6 Seal and finish exposed ends and other terminations of all insulation, visible or not, with insulating cement.
- .7 Piping Expansion Joints: Provide for adequate expansion and contraction of piping without damage to insulation or jacket.
- .8 Orifice plate mounting flanges, flanges, and unions on inlets and outlets, expansion joints, valves, and other elements requiring periodic maintenance: Install insulation and finishes to permit disassembly and reassembly without damage to adjacent insulation and finishes.
- .9 Connectors, cold application (5°C (41°F) to 15°C (59°F)): Insulate connectors with flexible, tight-fitting insulation covered with reinforcing membrane and vapor barrier coating. Alternatively, insulate connectors with flexible tight-fitting insulation covered with reinforcing membrane and vapor barrier coating then enclosed in PVC.

3.3 FASTENINGS

- .1 Fasten each section of insulation with tape at a maximum of 900 mm (36 in.) center-to-center with at least one piece at each end and in its centre.

3.4 PIPING INSULATION - SCHEDULE

- .1 Includes valves, valve bonnets, strainers, flanges, and fittings, unless otherwise specified.
- .2 Do not insulate exposed chrome plated runouts to chrome plated piping, valves, fittings.
- .3 Insulate piping systems and equipment as indicated in the following table:

SYSTEMS AND EQUIPMENT	FLUID TEMPERATURE °C (°F)	INSULATION TYPE
.1 Potable cold-water systems	4 (39)	P-1
.2 Potable hot-water systems	60 (140)	P-1
.3 Chilled water	7 (45)	P-1

SYSTEMS AND EQUIPMENT	FLUID TEMPERATURE °C (°F)	INSULATION TYPE
.4 Hot-water heating	83 (181)	P-1
.5 Glycol heating water	83 (181)	P-1
.6 Low-pressure steam systems up to 103 kPa (15 psi)	118 (244)	P-1

- .4 Thickness of thermal insulation.

FLUID TEMPERATURE °C (°F)	NOMINAL PIPE SIZE (NPS) OF LINES			
	1 and under	1¼ to 2	2½ to 4	5 and over
	Thickness in mm (in.)			
151-240 (303-464)	64 (2½)		76 (3)	89 (3½)
121-150 (249-302)	51 (2)	64 (2½)		76 (3)
96-120 (204-248)	38 (1½)		51 (2)	
50-95 (121-203)	25 (1)		38 (1½)	
14-49 (56-120)	25 (1)		38 (1½)	
5-13 (41-55)	25 (1)	38 (1½)		
Under 5 (41)	25 (1)	38 (1½)		

3.5 FINISHES

- .1 Exposed in Mechanical Rooms: Canvas.
- .2 Installation: In accordance with TIAC recommendations.

3.6 SEALANTS

- .1 Complying with manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants, including special conditions governing use.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 00 - Common Work Results for HVAC.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM).
 - .1 ASTM A47/A47M-99 (2009), Standard Specification for Ferritic Malleable Iron Castings.
 - .2 ASTM A53/A53M-10, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
 - .3 ASTM A536-84 (2009), Standard Specification for Ductile Iron Castings.
 - .4 ASTM B61-08, Standard Specification for Steam or Valve Bronze Castings.
 - .5 ASTM B62-09, Standard Specification for Composition Bronze or Ounce Metal Castings.
 - .6 ASTM E202-10, Standard Test Method for Analysis of Ethylene Glycols and Propylene Glycols.
- .2 American National Standards Institute/American Water Works Association (ANSI/AWWA).
 - .1 ANSI/AWWA C111/A21.11-06, Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- .3 American Society of Mechanical Engineers (ASME).
 - .1 ASME B16.1-10, Grey Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
 - .2 ASME B16.3-06, Malleable Iron Threaded Fittings: Classes 150 and 300.
 - .3 ASME B16.5-09, Pipe Flanges and Flanged Fittings: NPS ½ through NPS 24 Metric/Inch Standard.
 - .4 ASME B16.9-07, Factory-Made Wrought Buttwelding Fittings.
 - .5 ASME B18.2.1-10, Square Hex, Heavy Hex and Askew Head Bolts and Hex, Heavy Hex, Hex Flange. Loded Head and Lag Screws (Inch Series).
 - .6 ASME B18.2.2-10, Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series).
- .4 CSA Group (CSA).
 - .1 CSA B242-05 (R2011), Groove and Shoulder Type Mechanical Pipe Couplings.
 - .2 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
- .5 Manufacturer's Standardization of the Valve and Fittings Industry (MSS).
 - .1 MSS-SP-67-2002a, Butterfly Valves.
 - .2 MSS-SP-70-06, Grey Iron Gate Valves, Flanged and Threaded Ends.

- .3 MSS-SP-71-05, Grey Iron Swing Check Valves Flanged and Threaded Ends.
- .4 MSS-SP-80-08, Bronze Gate, Globe, Angle and Check Valves.
- .5 MSS-SP-85-02, Grey Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for hydronic systems, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for hydronic systems for incorporation into manual.
 - .1 Include special servicing requirements.

1.5 EXTRA STOCK MATERIALS

- .1 Supply spare parts as follows:
 - .1 Gaskets for flanges: One (1) minimum for every ten (10) flanges installed, but at least one (1) in all cases.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect hydronic systems from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 PIPING

- .1 Steel Pipe: To ASTM A53/A53M, Grade B, Class STD.

2.2 JOINTS

- .1 NPS 2 and under: Screwed fittings with PTFE tape, to ASTM A47/A47M, Grade 32510.
- .2 NPS 2½ and over: Welding fittings and flanges, to CSA W47.1 and CSA W47.1S1.
- .3 Flanges: Raised face, weld neck.
- .4 Flange Gaskets: To ANSI/AWWA C111/A21.11.
- .5 Pipe Thread: Taper.
- .6 Bolts and Nuts: To ANSI/ASME B18.2.1 and ANSI/ASME B18.2.2.

2.3 FITTINGS

- .1 Cast-iron Flanges: Class 125, to ANSI/ASME B16.1.
- .2 Screwed Fittings: Malleable cast-iron, to ASME B16.3, Class 150.
- .3 Steel pipe flanges and flanged fittings: To ANSI/ASME B16.5.
- .4 Butt-welding fittings: Steel, to ANSI/ASME B16.9.
- .5 Unions: Malleable cast iron, to ASTM A47/A47M and ANSI/ASME B16.3.

2.4 BALL VALVE

- .1 NPS 2 and under, screwed.
 - .1 To ASTM B62, category 4 MPa, bronze body, PTFE sealed, solid chromium disc (rotating), Teflon seat, and control handle.
 - .2 Acceptable products: Anvil F 171 N; Milwaukee No. BA-100; Jenkins No. 201J; Toyo-R/W No. 5044 A/MAS B-3; Kitz No. 58; Apollo 70-100.
- .2 NPS 2½ and over, flanged:
 - .1 Class 125/150, epoxy-coated ductile cast iron, stainless-steel disc, stainless-steel stem, Teflon seat, gear operated for NPS 6 and over.

2.5 GLOBE VALVES

- .1 NPS 2 and under, screwed.
 - .1 To MSS-SP-80, Class 125, Category 860 kPa, bronze body, tapped and screwed bonnet, composite disc, renewable, appropriate for the fluid type.
 - .2 Adjustment devices protected: As indicated.
 - .3 Acceptable products: Crane No. 7; Nibco T 235 Y; Jenkins No. 106BJ; Milwaukee No. 590-T; Toyo-R/W No. 221; Kitz No. 09; Apollo 122T.
- .2 NPS 2½ and over, flanged:
 - .1 To MSS-SP-85, Class 125, Category 860 kPa, cast iron body, bronze internal parts, exterior rising stem and yoke, bolted bonnet, bronze disc and seat ring, flat-faced flange assemblies.
 - .2 Acceptable products: Crane No. 351; Nibco F 718 B; Jenkins No. 2342J.

Part 3 Execution**3.1 Piping**

- .1 Unless otherwise indicated, connect piping to equipment in accordance with manufacturer's instructions.
- .2 Tilt piping toward outlet and to ensure proper ventilation of system.
- .3 Use eccentric reducers to connect piping of different diameters and orient them to ensure free flow of liquid and air.
- .4 Provide adequate clearance for insulation and allow access to equipment, valves, and fittings for maintenance.
- .5 Prior to installation installing, deburr pipe ends and remove slag and dust, both inside and out. Clean them also after installation is completed.
- .6 Use ANSI-compliant fittings to assemble piping.
- .7 In the case of main pipelines, saddle connections are permitted if the diameter of the connection is equal to or less than half that of the main pipeline. Before welding the saddle, drill the hole on the main pipe with a saw or drill and deburr the edges of the hole at the entrance to the main pipe to keep the full diameter inside.

3.2 Valves

- .1 Unless otherwise indicated, install valves so the stem is vertical upward or horizontal.
- .2 Install shut-off valves (gate valve, ball valve, or butterfly valve) at each connection point, on the supply and return lines of each equipment in order to insulate it, and at other locations indicated.

3.3 DRAINING AND FILLING THE NETWORK

1. Empty the heating and cooled water systems as needed to replace system and room valves. Plan with staff for service outages outside of periods when systems are required.
2. Fill the system, remove the air and test the network at the end of the work.

3.4 Testing

- .1 Test system in accordance with requirements.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 ASTM International (ASTM).
 - .1 ASTM A47/A47M-99 (2004), Standard Specification for Ferritic Malleable Iron Castings.
 - .2 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
 - .3 ASTM A126-04, Standard Specification for Grey Iron Castings for Valves, Flanges, and Pipe Fittings.
- .2 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME).
 - .1 ASME B16.1-05, Cast Iron Pipe Flanges and Flanged Fittings: Class 25, 125, 250 and 800.
 - .2 ASME B16.25-07, Buttwelding Ends.
 - .3 ASME B16.3-06, Malleable Iron Threaded Fittings: Classes 150 and 300.
 - .4 ANSI/ASME B16.5-03, Pipe Flanges and Flanged Fittings: NPS ½ through 24.
 - .5 ANSI/ASME B16.9-07, Factory-Made Wrought Steel Buttwelding Fittings.
 - .6 ANSI B18.2.1-96 (R2005), Square and Hex Bolts and Screws (Inch Series).
 - .7 ANSI/ASME B18.2.2-87 (R2005), Square and Hex Nuts (Inch Series).
- .3 American National Standards Institute (ANSI)/American Water Works Association (AWWA).
 - .1 ANSI/AWWA C111/A21.11-07, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- .4 Bureau de normalisation du Québec (BNQ).
 - .1 NQ 3650-900, Code d'installation des appareils sous pression.
- .5 CSA Group (CSA).
 - .1 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
- .6 Éditeur officiel du Québec.
 - .1 Chapitre A-20-01, R-1, Règlement sur les appareils sous pression.
- .7 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
 - .1 MSS-SP-70-2006, Cast Iron Gate Valves, Flanged and Threaded Ends.
 - .2 MSS-SP-71-2005, Grey Iron Swing Check Valves, Flanged and Threaded Ends.
 - .3 MSS-SP-80-2003, Bronze Gate, Globe, Angle and Check Valves.
 - .4 MSS-SP-85-2002, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and datasheets for valves and pipes, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.3 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for incorporation into manual.
- .2 Maintenance Sheets:
 - .1 Maintenance sheets to include:
 - 1. A description of the devices, including the manufacturer's name, type, model, year of manufacture and power, flow, or capacity;
 - 2. Relevant operational, exploitation, and maintenance details;
 - 3. A list of recommended spare parts.
- .3 Spare Materials/Maintenance Materials:
 - 1. Provide the following replacement equipment:
 - 1. Seats: One (1) seat for ten (10) valves installed for each diameter provided, but at least one (1) in all cases;
 - 2. CAPS: One (1) cap element for ten (10) caps installed for each diameter provided, but at least one (1) in all cases;
 - 3. Packings (for stems): One (1) packing for ten (10) valves installed for each diameter provided, but at least one (1) in all cases;
 - 4. Steering wheel: Two (2) of each dimension;
 - 5. Gaskets for flanges: One (1) trim for ten (10) flanges installed.

Part 2 Products**2.1 PIPE**

- .1 Steel pipe: to ASTM A53/A53M, Grade B, as follows:
 - .1 Schedule 40;
 - .1 Saturated steam distribution piping.

2.2 SYSTEM CLASSES

- .1 Equipment and fittings designed for Class 300:
 - .1 Steam network: 413 kPa at 1,033 kPa (60 psi to 150 psi).

- .2 Equipment and fittings designed for Class 150:
 - .1 Steam network: Up to 413 kPa (60 psi).

2.3 JOINTS

- 1. Pipes with diameter equal to or less than DN 2: Screw fittings with Teflon tape.
- 2. Pipes with diameters of DN 2 ½ or greater: End-to-end welding fittings, compliant with CSA W47.1, CSA W47.1S1, ANSI/ASME B16.9, and B16.25 Standards.

Part 3 Execution

3.1 APPLICATION

- .1 Manufacturer's Instructions: Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and data sheets.

3.2 PIPING

- .1 Connect branch lines into top of mains.
- .2 Install piping in direction of flow with slopes as follows, unless indicated:
 - .1 Steam: 1:240.
 - .2 Condensate return: 1:70.
- .3 Install concealed piping as close as possible to the building's structural elements, so that technical elements occupy as little space as possible, and to maintain maximum height and clearance. Install exposed plumbing parallel to walls. Group piping as much as possible.
- .4 Provide sufficient clearance to allow the installation of insulation and allow access, for maintenance purposes, to equipment, faucets, and fittings.
- .5 Before installing, deburr the ends of the pipes, rid them of slag and dust, inside and out. They will also be cleaned once the installation work is complete.
- .6 Use ANSI-standard fittings to assemble piping.
- .7 In case of main pipes, saddle connections are permitted if the diameter of the branch is equal to or less than half that of the main line. Before welding the saddle, drill the hole on the main pipe with a saw or drill and deburr the sides of the hole at the entrance to the main line to maintain the branch's full inner diameter.

3.3 TESTING

- .1 Test Pressure: 1½ times maximum system operating pressure or 860 kPa whichever is greater.

3.4 SERVICE OUTAGE

1. Plan the service shutdown with the staff. For the modification to the boiler room, the work is located near the boilers.

3.5 PERFORMANCE VERIFICATION (PV)

- .1 Timing, only after:
 - .1 Pressure tests successfully completed.
- .2 PV Procedures:
 - .1 Verify complete drainage of condensate from steam coils.
 - .2 Verify proper operation of system components.
 - .3 Monitor operation of provisions for controlled pipe movement, including expansion joints, loops, guides, and anchors.

END OF SECTION

DIVISION 25

Integrated Automation

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS: General Requirements.

1.2 DEFINITIONS

- .1 Acronyms and Definitions: Refer to Section 25 05 01 - EMCS: General Requirements.
- .2 AEL: Ratio between total test period less any system downtime accumulated within that period, at test period.
- .3 Downtime: Results whenever EMCS is unable to fulfill required functions due to malfunction of equipment defined under responsibility of EMCS Contractor. Downtime is the interval during the test period, between time that Contractor is notified of failure and time system is restored to proper operating condition. Downtime not to include following:
 - .1 Outage of main power supply in excess of back-up power sources, provided that:
 - .1 Automatic initiation of back-up was accomplished.
 - .2 Automatic shutdown and re-start of components were as specified.
 - .2 Failure of communication link, provided that:
 - .1 Controller automatically and correctly operated in stand-alone mode.
 - .2 Failure was not due to any specified EMCS equipment.
 - .3 Functional failure resulting from individual sensor or I/O devices, provided that:
 - .1 System recorded fault.
 - .2 Equipment is switched to fail-safe mode.
 - .3 AEL of all input sensors and output devices is at least 99% during test period.

1.3 DESIGN REQUIREMENTS

- .1 Confirm with Departmental Representative that Design Criteria and Design Intent are still valid.
- .2 Commissioning personnel to be fully aware of and qualified to interpret Design Criteria and Design Intent.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Final Report: Submit report to Departmental Representative.
 - .1 Includes measurements, final settings, and certified test results.

- .2 Bears signature of commissioning technician and commissioning supervisor.
- .3 Format to be approved by the Departmental Representative prior to commissioning.
- .4 Revise "As-built" documentation and commissioning reports to reflect changes, adjustments, and modifications to EMCS during commissioning and submit to Departmental Representative.
- .5 Recommend additional changes and/or modifications deemed advisable in order to improve performance, environmental conditions, or energy consumption.
- .6 The final commissioning report must demonstrate the systems ability to meet all operating sequences and the Customer Standard. It must demonstrate to the Departmental Representative, specially, the operation of the systems, including normal and emergency operating sequences, start-up, shutdown, lockouts, causing the shutdown and any other aspect deemed relevant by the Departmental Representative.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide documentation, O&M Manuals, and training plan of O&M personnel for review by the Departmental Representative.

1.6 COMMISSIONING

- .1 Do the system commissioning in accordance with specifications requirements.
- .2 Complete commissioning under the supervision of the Departmental Representative and the Commissioning Manager.
- .3 Inform the Departmental Representative and the Commissioning Manager in writing, at least five (5) days prior to start of commissioning or before each test, to obtain their approval. Submit following information:
 - .1 Location and part of the system to be tested;
 - .2 Test/Commissioning procedures and anticipated results;
 - .3 Name of the persons who will perform tests/commissioning.
- .4 Correct deficiencies and re-test in presence of Commissioning Manager until results and performance are satisfactory.
- .5 Acceptance of tests will not relieve Contractor from his responsibility of ensuring that all systems are meeting Contract requirements.
- .6 Perform tests in accordance with requirements.

1.7 COMPLETION OF COMMISSIONING

- .1 Commissioning is considered as completed in a satisfactory manner once objectives of commissioning have been achieved and reviewed by the Departmental Representative and the Commissioning Manager.

1.8 ISSUANCE OF FINAL CERTIFICATE OF COMPLETION

- .1 Final Certificate of Completion will not be issued until receipt of written approval indicating successful completion of specified commissioning activities, including commissioning documentation.

Part 2 Products**2.1 EQUIPMENT**

- .1 Provide sufficient instrumentation to verify and commission the installed system. Provide radiotelephone.
- .2 Instrumentation Accuracy Tolerances: Higher order of magnitude than equipment or system being tested.
- .3 An independent laboratory must certify testing materials compliance no more than six months prior to testing.
- .4 Locations to be approved, readily accessible, and readable.
- .5 Application: Complying with industry standards.

Part 3 Execution**3.1 PROCEDURES**

- .1 Test each system independently and then in unison with other related systems.
- .2 Follow the Commissioning Manager and Departmental Representative's start-up procedures for each system.
- .3 Optimize operation and performance of systems by fine-tuning PID values and modifying CDLs as required.
- .4 Test full scale emergency evacuation and life safety procedures including operation and integrity of smoke management systems under normal and emergency power conditions.

3.2 FIELD QUALITY CONTROL

- .1 Pre-Installation Testing.
 - .1 Consists of field testing of equipment prior to installation.
 - .2 Testing may be on site or at Contractor's premises, subject to the approval of the Departmental Representative.

- .3 Configure major components to be tested in same architecture as designed system. Principal components to test include BECC equipment and two sets of building controllers, including MCUs, LCUs, and TCUs of EMCS.
- .4 Equip each building controller with sensor and controlled device of each type (AI, AO, DI, and DO).
- .5 Submit also following components to testing:
 - .1 DP transmitters;
 - .2 SP transmitters in supply duct - VAV;
 - .3 DP switches used to signal fan status and filter clogging.
- .6 Beyond testing material, the Contractor must also provide the following: Inclined tube manometer, digital micromanometer, milliammeter, and a pressure gauge with a range of 0 Pa to 500 Pa, which can be maintained constant at any value and with a direct output towards the milliammeter at the source and towards the EMCS.
- .7 After initial calibration, verify the zero value and the measuring range in 10% increments (by increasing and decreasing values).
- .8 The Commissioning Manager must affix "Approved for Installation" on instruments having an accuracy deviation of 2% in both directions.
- .9 Transmitters above 5% error will be rejected.
- .10 DP switches to open and close within 2% of setpoint.
- .2 Completion Testing:
 - .1 After installation of each part of system and after completion of electromechanical connections, in order to verify installation and its functioning.
 - .2 Must include the following:
 - .1 Test and verification of all safety devices for frost, pressure, fire, and physical interlocks;
 - .2 Verification and simulation of alarms;
 - .3 Test and calibrate field hardware including stand-alone capability of each controller;
 - .4 Test all analog-digital converters;
 - .5 Test and calibrate each AI using calibrated digital instruments;
 - .6 Test each DI to ensure proper settings and switching contacts;
 - .7 Test each DO to ensure proper operation and lag time;
 - .8 Test each AO to ensure proper operation of controlled devices. Verify tight closure and signals;
 - .9 Test operating software;
 - .10 Test application software: Contractor must provide samples of logs and commands;
 - .11 Verify each CDL, including energy optimization programs;
 - .12 Debug software;

- .13 Blow out static pressure stations with high air pressure at 100 psi (700 kPa);
- .14 Provide checklist of points in table format, including point identifier, point identifier expansion, point type and address, low and high limits, and engineering units. Include on list, spacing reserved for commissioning technician and Commissioning Manager. This document will be used in final start-up testing.
- .3 Final start-up Testing: Upon satisfactory completion of tests, perform point-by-point test of entire system under direction of the Commissioning Manager. Provide the following:
 - .1 Two (2) technicians capable of calibrating the equipment and modifying the software on the field;
 - .2 A detailed daily program, indicating the elements to be tested and the available personnel;
 - .3 Commissioning must start with final test before start-up;
 - .4 O&M personnel to assist in commissioning procedures as part of training;
 - .5 Commissioning to be supervised by qualified supervisory personnel and by Commissioning Manager;
 - .6 Start-up of the security systems before any of the concerned areas are occupied;
 - .7 Monitor progress and keep detailed records of activities and results.
- .4 Final Operational Testing: To demonstrate that EMCS functions are executed in accordance with Contract requirements.
 - .1 Prior to begin testing, of a 30-day duration, demonstrate that operating parameters (set points, alarm limits, operating control software, sequences of operation, trends, graphics, and CDL's) have been implemented to ensure proper operation and operator notification in event of abnormal operating condition.
 - .1 Repetitive alarm conditions to be resolved to minimize reporting of nuisance conditions.
 - .2 Tests to last at least 30 consecutive days, 24 hours a day.
 - .3 Tests must make possible to demonstrate:
 - .1 Correct operation of monitored and controlled points.
 - .2 Operation and capabilities of sequences, reports, special control algorithms, diagnostics, and software.
 - .4 System will be accepted when:
 - .1 EMCS equipment operates to meet overall performance requirements. Downtime as defined in this Section must not exceed acceptable duration calculated for this site.
 - .2 Requirements of Contract have been met.
 - .5 In event of failure to attain specified AEL during test period, extend test period on day-to-day basis until specified AEL is attained.

- .6 Correct defects when occurring and before resuming tests.
- .5 The Commissioning Manager must verify reported results.
- .3 Project's Special Feature:
 - 1. As part of this project, the replacement of control equipment for the majority of systems is planned by using parallel installations in order to keep the systems in operation during installation and to stop them only during the transfer that must be done during one (1) night or an unoccupied period, according to the customer's convenience. Before this transfer the Contractor must:
 - 1. Complete anything that can be completed before the transfer including, among others, installation (leads, wiring, sensors, equipment, panels with controllers, etc.), programming, graphics, preliminary tests (static as well as dynamics on the graphics to test the programming).
 - 2. Prior to the transfer, the Contractor must notify the Departmental Representative at least two (2) weeks before, and must coordinate and schedule meetings at the site to demonstrate that the work cited at the previous point has been completed and that everything is ready to complete the transfer.
 - 3. Once the transfer is completed, do the required testing according to the instructions of standard commissioning in accordance with the Contractual Documents.

3.3 ADJUSTING

- .1 Final Adjustment: Upon completion of commissioning and approved by Commissioning Manager, set and lock devices at their final position and permanently mark settings.

3.4 DEMONSTRATION

- .1 Demonstrate to the Commissioning Manager and the Departmental Representative the operation of the systems, (including sequences of operation in current and urgent modes as well as in normal and emergency conditions), start, shutdown, interlock, and prohibitions causing shutdown.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS: General Requirements.

1.2 DEFINITIONS

- .1 For additional acronyms and definitions: Refer to Section 25 05 01 - EMCS: General Requirements.

1.3 SUBMITTAL PROCEDURES

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures, and the requirements of this Section.
- .2 Submit training proposal complete with a detailed schedule, including a brief overview of content of each segment to Departmental Representative 30 days prior to date of beginning of training.
 - .1 Proposition must include the name of the trainer and type of audiovisual aids used.
 - .2 It must also indicate conformance of this training with other mechanical and electrical training programs linked to the EMCS System.
- .3 Submit training reports no later than one (1) week after satisfactory completion of the two-phase training program.

1.4 QUALITY ASSURANCE

- .1 Provide bilingual and competent instructors thoroughly familiar with aspects of EMCS installed under this agreement.
- .2 Departmental Representative reserves right to approve instructors.

1.5 INSTRUCTIONS

- .1 Provide instruction to designated staff in adjustment, operation, maintenance, and safety requirements of EMCS installed.
- .2 Training to be project-specific.

1.6 DURATION OF TRAINING

- .1 Number of days of training to be as specified in Section 01 79 00- Demonstration and Training.

- .2 One (1) day = 8 hours including two (2) 15-minute breaks but excluding lunchtime.

1.7 TRAINING MATERIALS

- .1 Provide audiovisual aids as well as material required for the training.
- .2 For each trainee, provide manual describing in detail content of each training program.
 - .1 Review content of manual in detail explaining the different aspects of Operation and Maintenance (O&M).

1.8 TRAINING PROGRAM

- .1 Training will be given in two phases over a six-month period. Dates must be coordinated with the Client and the Departmental Representative.
- .2 Phase 1: Two-day training program beginning before final test period, at a time convenient to both the Departmental Representative and the Commissioning Manager.
 - .1 Training for O&M staff on operations and functional procedures required to the system operation.
 - .2 Supplemented by ongoing training during the 30-day trial period.
 - .3 Training must include:
 - .1 Overview of system architecture.
 - .2 Communication network.
 - .3 Operation of the computer and peripherals.
 - .4 Generation of reports.
 - .4 Include detailed training on operator interface functions for control of mechanical systems, CDLs of each system, and basic preventative maintenance.
- .3 Phase 2: Five-day training program, starting eight (8) weeks after acceptance of system, intended to operators, maintenance staff, and programmers.
 - .1 This training must be divided among several instructors, according to a pre-established schedule. Provide at least the following:
 - .1 For operators, operations, maintenance staff, and programmers: A condensed version of Phase 1 training.
 - .2 For equipment maintenance staff: Training of a minimum of two (2) days within the five (5) days planned for EMCS equipment training, covering:
 - .1 General provision of the material;
 - .2 Troubleshooting and preventative maintenance of EMCS components;
 - .3 Maintenance and calibration of sensors and control/regulation devices;
 - .4 Preventative maintenance.

- .3 For programmers: At least two (2) days of training, within the specified five-day period, covering:
 - .1 Programming of controllers;
 - .2 Programming of central station;
 - .3 Creating charts;
 - .4 Generation of reports;
 - .5 History creation and management.
- .4 If the training program is shorter than the minimum described in Section 01 79 00, or if it is not required, the scheduled hours may be converted to hours of service that can be used by the Client.

1.9 ADDITIONAL TRAINING

- .1 Provide a list of training sessions giving the title of each training, duration, and approximate cost per person, per week. Note recommended courses for supervisory staff.

1.10 MONITORING OF TRAINING

- .1 The Departmental Representative must be kept informed of the progress of the training program and may change its content or schedule. The Departmental Representative may decide to attend the training if he deems it appropriate.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 02 - EMCS: Submittals and Review Process.
- .2 Section 25 05 54 - EMCS: Identification.
- .3 Section 25 90 01 - EMCS: Site Requirements Applications and Systems Sequences of Operation.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/The Instrumentation, Systems, and Automation Society (ISA).
 - .1 ANSI/ISA 5.5, Graphic Symbols for Process Displays.
- .2 American National Standards Institute (ANSI)/ Institute of Electrical and Electronics Departmental Representatives (IEEE).
 - .1 ANSI/IEEE 260.1, American National Standard Letter Symbols Units of Measurement (SI Units, Customary Inch-Pound Units, and Certain Other Units).
- .3 American Society of Heating, Refrigerating and Air-Conditioning Departmental Representatives (ASHRAE).
 - .1 ASHRAE STD 135, BACnet - Data Communication Protocol for Building Automation and Control Network.
- .4 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-Z234.1, Canadian Metric Practice Guide.
- .5 Consumer Electronics Association (CEA).
 - .1 CEA-709.1, Control Network Protocol Specification.
- .6 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Assessment Act (CEAA).
 - .2 Canadian Environmental Protection Act (CEPA).
- .7 Health Canada - Workplace Hazardous Materials Information System (WHMIS).
 - .1 Data Sheets (DS).
- .8 Transports Canada (TC).
 - .1 Transportation of Dangerous Goods Act, c. 34.

1.3 ACRONYMS AND ABBREVIATIONS

.1 Acronyms used in this Section:

- .1 AEL - Average Effectiveness Level.
- .2 AI - Analog Input.
- .3 AIT - Agreement on Internal Trade.
- .4 AO - Analog Output.
- .5 BACnet - Building Automation and Control Network.
- .6 BC(s) - Building Controller(s).
- .7 BECC - Building Environmental Control Center.
- .8 CAD - Computer Aided Design.
- .9 CDL - Control Description Logic.
- .10 CDS - Control Design Schematic.
- .11 COSV - Change of State or Value.
- .12 CPU - Central Processing Unit.
- .13 DI - Digital Input.
- .14 DO - Digital Output.
- .15 DP - Differential Pressure.
- .16 ECU - Equipment Control Unit.
- .17 EMCS - Energy Monitoring and Control System.
- .18 HVAC - Heating, Ventilation, Air Conditioning.
- .19 IDE - Interface Device Equipment.
- .20 I/O - Input/Output.
- .21 ISA - Industry Standard Architecture.
- .22 LAN - Local Area Network.
- .23 LCU - Local Control Unit.
- .24 MCU - Master Control Unit.
- .25 NAFTA - North American Free Trade Agreement.
- .26 NC - Normally Closed.
- .27 NO - Normally Open.
- .28 O&M - Operation and Maintenance.
- .29 OS - Operating System.
- .30 OWS - Operator Workstation.
- .31 PC - Personal Computer.
- .32 PCI - Peripheral Control Interface.
- .33 PCMCIA - Personal Computer Micro-Card Interface Adapter.
- .34 PID - Proportional, Integral, and Derivative.
- .35 RAM - Random Access Memory.
- .36 ROM - Read Only Memory.

- .37 SP - Static Pressure.
- .38 TCU - Terminal Control Unit.
- .39 UPS - Uninterruptible Power Supply.
- .40 USB - Universal Serial Bus.
- .41 VAV - Variable Air Volume.

1.4 DEFINITIONS

- .1 Point: May be logical or physical.
 - .1 Logical points: Values calculated by system such as totals, accounts, corrections further to results and/or commands of CDLs.
 - .2 Physical points: Inputs or outputs connected to controllers which are measuring monitoring or providing status of contacts or relays interacting with related equipment (on, off) or with actuators of valves or dampers.
- .2 Point Name: Composed of two (2) parts, such as point identifier and point expansion.
 - .1 Point identifier: Composed of three descriptors, such as "area" descriptor, "system" descriptor, and "point" descriptor. Database to provide 25-character field for each point identifier. The "System" is that of which the point belongs.
 - .1 Area descriptor: Building or part of building where point is located.
 - .2 System descriptor: System containing the point.
 - .3 Point descriptor: Physical or logical point description. For point identifier, "area", "system", and "point" will be represented by abbreviation or acronym. Database shall provide 25-character field for each point identifier.
 - .2 Point expansion: Composed of three fields, one for each descriptor. Expanded form of abbreviation or acronym used in "area", "system", and "point" descriptors is placed into appropriate point expansion field. Database shall provide a 32-character field for each point expansion.
 - .3 Bilingual systems to include additional point identifier expansion fields of equal capacity for each point name, for both languages.
 - .1 System to support use of numbers and readable characters, including blanks, periods, or underscores, to enhance user readability for each of the above strings.
- .3 Point Object Type: Points are classified as per following objects:
 - .1 AI (analog input);
 - .2 AO (analog output);
 - .3 DI (digital input);
 - .4 DO (digital output);
 - .5 Pulse inputs.

- .4 Symbols and Engineering unit abbreviations utilized in displays: To ANSI/ISA S5.5.
 - .1 Printouts: To ANSI/IEEE 260.1.
 - .2 Refer also to Section 25 05 54 - EMCS: Identification.

1.5 CONTRACTOR

- 1. The Contractor responsible for the installation of the SGE shall be specialized in automatic regulation with extensive expertise, including installation, programming, commissioning, and maintenance of digital control systems.
 - .1 Only the following contractors are eligible to bid:
 - .1 Authorized manufacturers or distributors (authorized by contract) of original equipment offering the full range of equipment required for the work;
 - .2 Current activities include the supply, installation, and commissioning of digital control systems;
 - .3 Having qualified service personnel able to respond to a call 24 hours a day, 365 days a year.

1.6 SYSTEM DESCRIPTION

- .1 Refer to drawings for system architecture.
- .2 The above-mentioned Sections are aiming the supply and installation of a fully operational EMCS system. System may include the following components, but not limited to:
 - .1 Building controllers;
 - .2 Control devices as listed in I/O point summary tables;
 - .3 Workstations;
 - .4 Communication equipment necessary for EMCS data transmission;
 - .5 Local instrumentation;
 - .6 Software/Hardware complete with full documentation;
 - .7 Complete Operating and Maintenance (O&M) manuals; On-site training of operators, programmers, and maintenance staff;
 - .8 Training of personnel;
 - .9 Acceptance tests, technical support during commissioning, full relevant documentation;
 - .10 Interface wiring co-ordination of equipment supplied by others;
 - .11 Miscellaneous work as specified in Sections mentioned in 1.1 and as indicated.

- .3 Design Requirements:
 - .1 Ensure design and delivery of all conduit and wiring interconnecting components of the system.
 - .2 Supply sufficient programmable controllers of all types to meet project requirements, event if not shown on network architecture, but required nonetheless.
 - .3 EMCS to be connected to sector and emergency power, as indicated.
 - .4 Metric references: In accordance with CAN/CSA Z234.1.
- .4 Operating Language Requirements:
 - .1 Provide relevant access codes for usage of system in English or in French, as required.
 - .2 Use non-linguistic symbols for displays on graphic terminals. Other information in to be displayed in English and French, when required.
 - .3 Operating system supervisor: Interface between the main hardware and the software prescribed at the purchase of equipment as well as related documentation shall be in English and/or French, as appropriate.
 - .4 Management software: System definition points database, additions, deletions or modifications, control loop statements, use of high-level programming languages, report generator utility and, other OS utilities used for maintaining optimal operating efficiency shall be in English and/or in French.
 - .5 Software shall include:
 - .1 I/O commands and messages from operator-initiated functions and field related changes and alarms as defined in CDLs or assigned limits (i.e. commands relating to day-to-day operating functions, but not related to system modifications, expansions, or logic redefinements).
 - .2 Graphic "display" functions, commands from terminals "on" or "off", manually override automatic control of specified hardware points. These functions shall be in French and in English in all prescribed workstations. It shall be possible to use termination in French and the other in English. Point designations shall be in both languages.
 - .3 Reporting features, such as graphs and trend log, and subsequent logs, i.e. power consumption and maintenance.

1.7 CRITERIA TO CONSIDER IN DESIGN AND BIDDING

- 1. Operating sequences description in Section 25 90 01, summarily defines the result to be obtained. Provide all necessary equipment and make all the necessary connections (even those that are not shown, but which are nevertheless required for the realization of the operation sequences according to the rules of the art).
- 2. In the event of discrepancies with Contractual Documents, Contractor shall submit to the stricter provisions.

3. Drawings of the different disciplines are complementary. All control equipment shown in one of the different drawings, unless clearly provided by others, shall be provided by the Contractor of this Division.
4. The Contractor is responsible for selecting and supplying control equipment (including sensors, actuators, transformers, and relays) with the right features for the application.
5. For third-party equipment to be integrated, such as variable frequency drives, chillers, boilers, one-piece HVAC units, power generators, and humidifiers, the Contractor is responsible for coordinating with the supplier/installer the integration of these equipment and providing all that is required for this at his own expense.
6. Quantities of equipment to be supplied shall be according to the Contractual Documents and their location shall be coordinated at the site with the other disciplines.
7. For equipment to be supplied by the Contractor, the Contractor is responsible for coordinating and ensuring that their installation complies with the manufacturer's recommendations.
8. The Contractor shall take the exact measurements at the site and validate the locations before the equipment is manufactured and ordered. He shall validate all dimensions and locations of the equipment before work begins.
9. All software licenses shall be in the Client's name. Licenses shall be permanent for life and no fees shall be charged to the Client to keep them in effect. Updates should be optional at the customer's discretion. The licenses provided shall also allow access to the controllers' programming code.
10. The Contractor shall provide in his mandate the coordination with the Client of the standard of the latter, as soon as the Contract is awarded, in order to respect it in its work. Standard and customer requirements, including programming standards and operating sequences, are an integral part of the Contractor's mandate.
11. The system shall be fully accessible remotely via a WEB page (remote control).

1.8 SUBMITTAL PROCEDURES

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit for review:
 - .1 List of equipment and system manufacturers within 15 days after award of Contract.
 - .2 List of recycled field instruments, which list is an integral part of the tender documents.
 - .3 The technical sheets of all the equipment used.

-
- .4 Control schemes including, among other things, hardware lists, operating sequences, point lists, controllers and equipment connections, and panel assembly;
 - .5 Each controller's reserve capacity, by numbers and point types;
 - .6 The location of controllers and auxiliary control cabinets.
 - .7 For control valves, submit a selection table indicating: Identification, flow, size, "Cv" flow coefficient, calculated pressure loss, and maximum "Close-Off" differential close-off pressure of control valves (required and selected).
- .3 Documents to be submitted shall include, among other things, the following information:
1. Dimensions and weight;
 2. Diagrams of wiring and connections;
 3. Full technical description of the product, including a full list of options provided. If a part of the product does not meet the specifications, you shall state it clearly in the submitted listings, otherwise the Contractor is obliged to provide and reinstall, at his own expense, all components that meet the specifications.
- .4 The Contractor shall allow time in his submission to properly verify the compliance of the products, to the specifications of the quote, before submitting their technical sheets to the Departmental Representative. If the Contractor does not explicitly declare, in a red boxed letter, any deviation from Contractual Documents, such as non-compliance with any of the requested specifications, this fact shall be considered as a certificate on the part of the contractor of the full compliance of the products submitted to all the specifications of the Contractual Documents. If a discrepancy in the Contractual Documents of one of the submitted products is discovered (even after the acceptance of the Departmental Representative and the installation at the site), the contractor is contractually obliged, to assume all the costs required for the replacement of the product and to comply with the Contractual Documents.
- .5 Quality Control:
- .1 Use equipment and material from manufacturer's regular production, CSA certified, manufactured to Standards quoted and responding to any specified requirements.
 - .2 Where CSA certified equipment is not available, submit such equipment to inspection authorities for approval before delivery to site.
 - .3 Submit proof of compliance to specified Standards with shop drawings and product data, in accordance with Section 25 05 02 - EMCS: Submittals and Review Process. Label or an approval document of the certification organization shall constitute an acceptable proof of conformity.
 - .4 In lieu of such evidence, submit certificate from testing organization approved by the Departmental Representative, certifying that item was tested in accordance with their Standards/Code.

- .5 For materials whose compliance with organizational Standards/Codes/ Specifications is not regulated by organization using its own listing or label as proof of compliance, provide certificate stating that material complies with applicable referenced Standard or Specification.
- .6 Permits and fees: In accordance with general conditions of Contract.
- .7 Submit to Departmental Representative an acceptance certificate issued by the competent authority.
- .8 Existing devices intended for re-use: Submit test report.

1.9 QUALITY ASSURANCE

- .1 Have local office within 100 km of project, staffed by trained personnel capable of providing EMCS training, as well as routine maintenance and emergency service on system.
- .2 Provide record of previous successful installations of computer-based systems.
- .3 Have access to local supplies of essential parts and provide 7-year guarantee of availability of spare parts after obsolescence.
- .4 Ensure that competent staff provide direct and continuous monitoring of work and attend site meetings.

1.10 EXISTING CONTROL/REGULATION DEVICES

- .1 Unless clearly specified in the contract documents, the entire control facility (including wiring, electrical conduits and all control equipment shall be completely replaced with new ones.
- .2 Existing devices to be reused shall be inspected within 30 days of Contract award, but before the installation of new devices.
 - .1 Provide, within 40 days of Contract award, a test report listing each reused device and indicating if it meets requirements or if it needs to be repaired. In the latter case, the Departmental Representative will take care of it.
 - .2 If the Contractor fails to provide test report, it is assumed that the Contractor accepts the existing devices.
- .3 Defective Devices:
 - .1 Provide, with the test report, specifications or functional requirements which is backing up results.
 - .2 Departmental Representative will request repair or replacement of defective existing devices but deemed necessary for the EMCS.
- .4 Before starting work, submit in writing an authorization request to unplug the control devices and put the material out of service.

- .5 The Contractor's responsibility concerning control devices that shall be integrated to the EMCS, starts after receiving the written authorization from the Departmental Representative.
 - .1 The Contractor is responsible for the components and devices repaired under the responsibility of the Departmental Representative.
 - .2 The Contractor is responsible for extra repair costs due to negligence or abusive material usage.
 - .3 The Contractor's responsibility concerning existing control devices ends upon receipt of the complete EMCS system, to the satisfaction of the Departmental Representative.
- .6 Collect existing control devices that will not be reused or unnecessary. Store them in an approved storage area, in order to dispose of them following instructions. At the Client's request, the Contractor shall dispose of the equipment not required.

Part 2 Products

2.1 EQUIPMENT

- .1 Control Network Protocol and Data Communication Protocol: To ASHRAE STD 135.
- .2 Indicate on list of equipment to be used in the present work, which list is an integral part of the bid documents, manufacturer's name, model number, and details of manufacturing materials for each device, and submit it for approval.

2.2 ADAPTORS

- .1 Provide adaptors between metric and imperial components.

Part 3 Execution

3.1 MANUFACTURER'S RECOMMENDATIONS

- .1 Installation: To manufacturer's recommendations.

3.2 PAINTING

- .1 Perform painting in accordance with following requirements:
 - .1 Clean and retouch surfaces that were scratched so that they present an identical finish as the original;
 - .2 Where retouches are not sufficient, a complete reconditioning (primer coat and finishing coat) of the damaged surfaces is required;

- .3 Clean and use a primer coating on visible elements, such as supports, equipment frames, and any other support devices;
- .4 Paint all unfinished equipment installed inside.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 01 11 - EMCS: Start-up, Verification and Commissioning.
- .2 Section 25 05 01 - EMCS: General Requirements.

1.2 PRELIMINARY DESIGN REQUIREMENTS

- .1 Preliminary Design Review: Provide following information concerning Contractor and proposed systems:
 - .1 Location of Contractor's local office;
 - .2 Description and location of installing and servicing technical staff as well as their qualifications;
 - .3 Location of programming design and programming support staff as well as their qualifications;
 - .4 List of spare parts;
 - .5 Location of spare parts stock;
 - .6 Names of subcontractors and site-specific key personnel;
 - .7 Sketch of site-specific system architecture;
 - .8 Related specification sheets for each item, including memory, programming language, speed, and type of data transmission;
 - .9 Descriptive brochures;
 - .10 CDLs sample and graphics (systems schematics);
 - .11 Response time for each type of command and report;
 - .12 Item-by-item statement of compliance;
 - .13 Proof of demonstrated ability of system to communicate utilizing BACnet Protocol, as indicated on drawings.

1.3 SUBMITTAL PROCEDURES

- .1 Submit required documents and samples in conformity with Section 01 33 00 – Submittal Procedures and with requirements of the present Section.
- .2 Submit preliminary design documents no later than five (5) working days from the closing date of the tender, but prior to the award of the Contract, for consideration by the Departmental Representative.
- .3 Provide three (3) hard copies and one soft copy of study documents, shop drawings, technical data sheets, and software.
- .4 Hard copies must be presented in an organized manner and must include an alphabetical table as required by the Contract. They must also respect the numerical order of the

sections of the specifications. A cross-reference system must be used to move to the corresponding specification and paragraph number.

- .5 Electronic documents must be in AutoCAD format, latest version, and in Word format, latest version. They must be structured in a menu to facilitate loading and retrieval at workstations.

1.4 PRELIMINARY SHOP DRAWINGS REVIEW

- .1 Submit preliminary shop drawings within 30 working days of award of Contract. Drawings to include/indicate the following:
 - .1 Relevant specification sheets for each item, such as manufacturer's descriptive literature, manufacturer's installation recommendations, specifications, drawings, diagrams, performance and characteristic curves, catalog cuts, manufacturer's name, trade name, catalog or model number, nameplate data, size, layout, dimensions, capacity, as well as any other data to establish compliance;
 - .2 Detailed system architecture showing all points associated with each controller, including signal levels and pressures where new EMCS ties into existing control equipment;
 - .3 Spare point capacity of each controller by numbers and point types;
 - .4 Location of controllers;
 - .5 Location of auxiliary control cabinets;
 - .6 Single-line diagrams showing cable routings, conduit sizes, spare conduit capacity between control centre, field controllers, and systems being controlled;
 - .7 Complete schedule listing including following information: Designation, fluid transported, manufacturer, model, point ID, design flow rate, design pressure drop, required Cv, valve size, actual Cv, spring range, pilot range, required and actual torques, as well as and close off pressure (Required and actual);
 - .8 Flow measuring stations: Complete schedule listing designation, fluid transported, point ID, manufacturer, model, size, velocity at design flow rate, manufacturer, model, and range of velocity transmitter.

1.5 DETAILED SHOP DRAWINGS REVIEW

- .1 Submit detailed shop drawings within 60 working days after award of Contract, but prior of installation; these drawings to include/indicated the following:
 - .1 Updated versions (hard copies only) of following documents submitted at the time of the examination of preliminary design (if applicable);
 - .2 Wiring diagrams;
 - .3 Piping diagrams and connections;
 - .4 Detailed system architecture showing all measurement points associated with each controller, including signal levels and pressures at the point where new EMCS is connected to existing control equipment;

- .5 Interface wiring diagrams showing termination connections and signal levels for equipment to be supplied by others;
- .6 Shop drawings for each input/output point (sensors, transmitters) showing relevant information, including:
 - .1 Sensing element type and its location;
 - .2 Transmitter type and range;
 - .3 Associated field wiring schematics, schedules, and related terminations;
 - .4 Set points, curves or graphs and alarm limits (High and low, classified in three types: Critical, cautionary, and maintenance required), and signal range.
 - .5 Software and programming details associated with each point;
 - .6 Manufacturer's recommended installation instructions including procedures;
 - .7 I/O signal levels and pressures where new system ties into existing control equipment.
- .7 Control schematics, narrative description, CDL's fully showing and describing automatic and manual procedure required to achieve proper operation of installation, even under complete failure of EMCS;
- .8 Complete system CDLs. CDLs to contain specified energy optimization programs;
- .9 Listing and example of prescribed reports;
- .10 Listing of daily schedules;
- .11 Detailed construction drawing, true to scale, of control room showing location of equipment and workstations;
- .12 Type and capacity of memory as well as its reserve capacity;
- .13 Full description of programs included with provided software;
- .14 Sample of "Operating Instructions Manual" to be used for training purposes;
- .15 Outline of proposed start-up and verification procedures: Refer to Section 25 01 11 - EMCS: Start-up, Verification and Commissioning.

1.6 QUALITY ASSURANCE

- .1 Preliminary Design Review Meeting: No later than 45 days before contract being awarded, summon a meeting to:
 - .1 Verify the preliminary design documents and resolve any issues.
 - .2 Resolve the differences between the requirements in the Contract document and real item characteristics (i.e.: Irregularities in the points list).
 - .3 Review the material interface requirements provided by others.
 - .4 Review the sequence of operation.
- .2 The Contractor's programmer must attend this meeting.

- .3 Departmental Representative has the right to review the sequence of operation or subsequent control logic before completion of programming, without any extra cost.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 01 11 - EMCS: Start-up, Verification and Commissioning.
- .2 Section 25 05 01 - EMCS: General Requirements.
- .3 Section 25 05 02 - EMCS: Submittals and Review Process.

1.2 DEFINITIONS

- .1 Acronyms and Definitions: Refer to Section 25 05 01 - EMCS: General Requirements.

1.3 SUBMITTAL PROCEDURES

- .1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit Record Documents in French and in English.
- .3 Provide a soft as well as three hard copies in 50-mm binders with "3-D" rings.
 - .1 Binders to be $\frac{2}{3}$ maximum full.
 - .2 Provide index of entire volume in each binder.
 - .3 Identify contents of each manual on cover and spine.
 - .4 Provide Table of Contents in each manual.
 - .5 Assemble each manual to comply with the Table of Contents prior to training, with tab sheets, of covered subject.

1.4 "AS-BUILT" DRAWINGS

- .1 Provide one copy of detailed shop drawings generated as per Section 25 05 02 - EMCS: Submittals and Review Process and include also:
 - .1 Changes to Contract Documents as well as addenda and Contract extras.
 - .2 Changes to interface wiring.
 - .3 Routing of conduit, wiring, and control air lines associated with EMCS installation.
 - .4 Locations of obscure devices.
 - .5 Listing of alarm messages.
 - .6 Panel/circuit breaker number associated with sources of normal/emergency power.
 - .7 Name, address, and telephone number of each subcontractor having installed equipment, as well as local representative, for each piece of equipment of each system.

- .8 Test procedures and reports: Provide records of start-up procedures, test procedures, checkout tests, and final commissioning reports, as specified in Section 25 01 11 - EMCS: Start-up, Verification and Commissioning.
- .9 Basic system design and full documentation on system configuration.
- .2 Submit for final review by Departmental Representative.

1.5 O&M MANUALS

- .1 Custom design O&M Manuals (both hard and soft copy) to contain material pertinent to this project specifically; shall provide full and complete coverage of subjects referred to in this Section.
- .2 Include complete coverage in concise language, readily understood by operating personnel using common terminology of functional and operational requirements of system. Do not presume that operating staff have knowledge of computers, electronics, or in-depth control theory.
- .3 Functional description to include:
 - .1 Principle of operation.
 - .2 Design philosophy.
 - .3 Specific functions of design philosophy and system.
 - .4 Full details of data communications, including data types and formats, data processing and disposition data link components, interfaces, and automatic or manual verification of data link integrity.
 - .5 Hardware and software functions, interfaces, and characteristics of components for functions and operating modes of the system.
 - .6 Person-machine interactions required to supplement system description, known or established constraints on system operation, operating procedures currently implemented or planned for implementation in automatic mode.
- .4 System operation information to include:
 - .1 Complete step-by-step procedures to follow for operation of system including required actions at each OWS.
 - .2 Operation of computer peripherals, and I/O formats.
 - .3 Return to normal operation after an emergency, alarm, or failure.
 - .4 Detailed instructions for start-up, back-up equipment operation, execution of systems functions and all operating modes, including entry for each command, so that operator only needs to refer to these pages to know which key to stroke to call up display or to input command.
- .5 Information related to software to include:
 - .1 Data required concerning theory, design, interface requirements, different functions, including test and verification procedures.
 - .2 Detailed descriptions of program capabilities and term of use.

- .3 Data necessary to permit modification, relocation, and reprogramming, and to enable software modules to respond to changing system functional requirements without disrupting normal operation.
- .4 Software modules, fully annotated source code listings, error free object code files, and ready for loading via peripheral devices.
- .5 All references between programs and links, required data exchange, necessary routine lists, requirements related to data file, as well as other information required for proper loading, integration, interfacing, and program execution.
- .6 Software controlling each controller and single-section referencing controller common parameters and functions.
- .6 Maintenance: Document maintenance procedures, including inspection, periodic preventative maintenance, fault diagnosis, repair or replacement of defective components, including calibration, maintenance, repair of sensors, transmitters, transducers, controller, interface firmware, as well as diagnostics and repair/replacement of system hardware.
- .7 System Configuration Document:
 - .1 Provisions and procedures for planning, implementing, and recording hardware and software modifications required during operating lifetime of system.
 - .2 Information to ensure co-ordination of hardware and software changes, data link or message format/content changes, sensor, or control changes in event that system modifications are required.
- .8 Programmer Control Panel Documentation: Provide where panels are independently interfaced with BECC, including interfacing schematics, signal identification, timing diagrams, and detailed commented source listing of applicable driver/handler.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 DOCUMENT INTEGRATION OF WORKSTATION**

- .1 All information relevant to operation of system shall be provided in electronic form and be integrated by Contractor at the central station as well as the control stations, This information should include:
 - .1 Complete database creation software.
 - .2 Updated back-up of database.
 - .3 System operation manual.
 - .4 Technical sheets of used apparatuses.

- .5 Control drawings in format that can be consulted by the operator.
- .6 Engineer's drawings in .pdf format.

3.2 WORK IN EXISTING INSTALLATIONS

- .1 If work is executed in an existing building, incorporate modifications made to system into Owner's documents, electronic media, and paper, in order to update them.
- .2 Incorporate to existing documents all modifications made to control system, by taking care to keep information on existing equipment.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS: General Requirements.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CSA C22.1, Canadian Electrical Code, Part I (19th Edition), Safety Standard for Electrical Installations.

1.3 DEFINITIONS

- .1 Acronyms and Definitions: Refer to Section 25 05 01 - EMCS: General Requirements.

1.4 SYSTEM DESCRIPTION

- .1 Provide identification for control/regulation apparatus in French and in English.

1.5 SUBMITTAL PROCEDURES

- .1 Submit required documents and samples specified in Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative, for approval, samples of nameplates, identification tags, as well as list of proposed wordings.

Part 2 Products**2.1 NAMEPLATES FOR TABLES**

- .1 Identify with plastic laminate, 3 mm ($\frac{1}{8}$ in.) thick, matt white finish, black core, square corners, lettering accurately aligned and engraved into core.
- .2 Sizes: 25 x 67 mm (1 in. x 2½ in.) minimum.
- .3 Lettering: Minimum 7 mm ($\frac{9}{32}$ in.) high, black.
- .4 Inscriptions: Machine engraved to identify table function.

2.2 NAMEPLATES FOR FIELD INSTRUMENTATION

- .1 Identify with plastic encased or metallic cards attached by a bead chain.
- .2 Sizes: 50 x 100 mm (2 in. x 4 in.) minimum.

- .3 Lettering: Minimum 5 mm ($\frac{3}{16}$ in.), black, engraved, and indelible.
- .4 Data: Point name and point address identical to those on shop drawings.
- .5 Cabinets: Identify interior components using plasticized cards indicating point name and address.
- .6 Used identification must be identical to those appearing on control diagrams.

2.3 NAMEPLATES FOR ROOM SENSORS

- .1 Identify with stick-on labels bearing point identifier.
- .2 Location: As directed by Departmental Representative.
- .3 Letter Size: As required, but in a clear manner.
- .4 Used identification must be identical to those appearing on control diagrams.

2.4 WARNING SIGNS

- .1 Equipment, including motors and starters under remote automatic control: Supply and install orange signs warning against automatic starting.
- .2 Sign to Read: "Caution: Under automatic remote control", which must be approved by the Departmental Representative.

2.5 WIRING IDENTIFICATION

- .1 Supply and install numbered tape markings on wiring, cabinets, tables, junction and splitters boxes, and outlet boxes.
- .2 Colour Coding: To CSA C22.1. Use of communication cables with same colour coding throughout system.
- .3 Free wiring must be orange and bear a marking of this colour.
 - .1 Power wiring: Identify circuit breaker panel/circuit breaker number inside each EMCS panel.

2.6 CONDUIT IDENTIFICATION

- .1 All EMCS conduits to be equipped with an orange colour mark.
- .2 Box covers, fittings, and accessories must be painted orange as well.
- .3 Coding: Use paint or ribbon in strips of 25 mm (1 in.) wide, fluorescent orange colour; confirm means of identification by Departmental Representative during "Preliminary Design Review".

Part 3 Execution**3.1 LABELS AND NAMEPLATES**

- .1 Ensure that CSA labels and manufacturer's nameplates are always visible and legible.

3.2 EXISTING TABLES

- .1 Correct existing nameplates and legends to reflect changes made on system.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 54 - EMCS: Identification.
- .2 Section 25 08 20 - EMCS: Warranty and Maintenance.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI C2, National Electrical Safety Code.
- .2 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME).
 - .1 ANSI/ASME B16.22, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- .3 American National Standards Institute (ANSI)/National Fire Protection Association (NFPA).
 - .1 ANSI/NFPA 70, National Electrical Code.
- .4 Canadian Standards Association (CSA)/CSA International.
 - .1 CSA C22.1, Canadian Electrical Code, Part 1.
 - .2 CSA C22.2, Canadian Electrical code, Part 2.
 - .3 CAN/CSA C22.3 No. 1, Overhead Systems.
 - .4 CAN/CSA C22.3 No. 7, Underground Systems.
 - .5 CSA 22.2 No. 45, Rigid Metal Conduits.

1.3 SYSTEM DESCRIPTION

- .1 Electrical Equipment:
 - .1 Unless otherwise specified, provide power wiring from existing power and emergency panels or provided by the Electrical Contractor to EMCS field panels. Circuits must be reserved exclusively for EMCS equipment. Panel switches must be labeled and existing contacts locked. Each panel must include an identification legend of the various circuit breakers.
 - .2 Hardwiring between field control devices and EMCS field panels.
 - .3 Communication wiring between EMCS field panels and OWS, including climate control centre.
 - .4 Modify existing starters to provide for EMCS, as indicated in I/O Summaries and as indicated.

- .5 Refer to wiring diagrams included as part of flow diagrams. Trace existing control wiring installation and provide updated wiring schematics including additions and/or deletions to control circuits for approval by Departmental Representative prior commencing work.
- .2 Mechanical Equipment:
 - .1 Pipe taps required for EMCS equipment will be supplied and installed according to the applicable sections (EMCS Contractor guidelines).
 - .2 Wells and control valves shall be supplied by EMCS contractor and installed according to the applicable sections (EMCS Contractor guidelines).
 - .3 Installation of air flow stations, dampers, and other sheet metal devices to be installed according to the applicable Sections.
- .3 VAV Terminal Units:
 - .1 Air flow probe for VAV boxes to be supplied and installed. Air flow dp sensor, actuator, and associated VAV controls to be supplied and installed by EMCS Contractor. Tubing from air probe to dp sensor as well as installation and adjustment of air flow sensors and actuators to be the responsibility of EMCS Contractor. Coordinate air flow adjustments with balancing trade.
- .4 Structural:
 - .1 Any metal construction as required for installation of work.

1.4 PERSONNEL QUALIFICATIONS

- .1 Qualified supervisory personnel to:
 - .1 Continuously direct and monitor all work.
 - .2 Attend all site meetings.

1.5 EXISTING CONDITIONS

- .1 Repair all surfaces damaged during execution of work.
- .2 Submit to Departmental Representative existing equipment and material removed from work which are not meant to be recovered.

Part 2 Products

2.1 SPECIAL SUPPORTS

- .1 Structural grade steel, primed and painted after construction, but before installation.

2.2 WIRING

- .1 As per requirements of Division 26 - Electrical.

- .2 For 70 V and above: Copper conductor with chemically cross-linked thermosetting polyethylene insulation rated RW90 and 600 V. Colour code to CSA 22.1.
- .3 For wiring under 70 V: Use FT6 conductors if not conveyed in a conduit. In any other cases, use FT4 conductors.
- .4 Sizes:
 - .1 120 V power supply: To match or exceed existing breaker, size #12 minimum.
 - .2 Wiring for safeties/interlocks for starters, motor control centers: To be stranded, #14 minimum.
 - .3 Field wiring to digital device: At least 20 AWG stranded twisted pair, and as per application.
 - .4 Analog I/O: At least shielded #20 minimum stranded twisted pair. Wiring must be continuous without joints.
- .5 Terminations:
 - .1 Screw connectors suitable for conductor rating and number of terminations planned.

2.3 CONDUITS

- .1 As per requirements of Division 26 - Electrical.
- .2 Conduits must have a minimum of 20 mm (0.79 in) diameter.
- .3 Electrical metallic tubing to CSA C22.3. Flexible and liquid tight flexible metal conduit to CSA C22.2. Rigid steel threaded conduit to CSA C22.2 No. 45.
- .4 Junction and Pull Boxes: Welded steel.
 - .1 Surface mounting cast FS: Screw-on flat covers.
 - .2 Flush mounting: Covers with 25 mm (1 in.) minimum extension all round.
- .5 Cabinets: Sheet steel, for surface mounting, with hinged door, latch lock, 2 keys, complete with perforated metal mounting backboard. Panels to be keyed alike for similar functions or all panels part of the Contract, as agreed.
- .6 Outlet Boxes: 100 mm (4 in.) sideway minimum, square.
- .7 Moulded Boxes, Fittings:
 - .1 Bushings and connectors: With nylon insulated throats.
 - .2 With push pennies to prevent entry of foreign materials.
- .8 Fittings for Rigid Conduits:
 - .1 Steel couplings and fittings: Threaded type.
 - .2 Double locknuts and insulated bushings: Use on sheet metal boxes.

- .3 Use factory "ells" where 90° bends required for 25 mm (1 in.) and larger conduits.
- .9 Fittings for Thin Wall Conduit:
 - .1 Steel connectors and couplings: Set screw type.
- 1. The control conduits will be identified with orange-coloured glued strips:
 - 1. Every 3 m;
 - 2. At junction boxes;
 - 3. Less than 1 m on either side of a wall.

2.4 RECEPTACLES AND COVER PLATES

- .1 Complying with relevant CSA Standards.
- .2 Receptacles:
 - .1 Duplex: CSA type 5-15R.
 - .2 Single: CSA type 5-15R.
 - .3 Cover plates and blank plates: Finish to match other plates installed in area.

2.5 SUPPORTS FOR CONDUIT, FASTENINGS, AND EQUIPMENT

- .1 Solid Masonry, Tile, and Plastic Surfaces: Lead anchors or nylon shields.
 - .1 Hollow masonry walls, suspended drywall ceilings: Toggle bolts.
- .2 Exposed Conduits or Cables:
 - .1 50 mm (2 in.) diameter and smaller: One-hole galvanized steel straps.
 - .2 Larger than 50 mm (2 in.) diameter: Two-hole galvanized steel straps.
- .3 Suspended Support Systems:
 - .1 Individual cable or conduit runs: 6 mm (¼ in.) diameter threaded rods with clamp.
 - .2 Two or more suspended cables or conduits: Stirrups on threaded suspension rods of 6 mm (¼ in.) diameter.

Part 3 Execution

3.1 INSTALLATION

- .1 Install equipment and components so that manufacturer's and CSA labels are visible and legible after commissioning is completed.

- .2 Pass-through Conduits:
 - .1 All wiring must be installed in EMT conduits:
 - .1 In exposed areas, mechanical and electrical rooms.
 - .2 In gypsum ceilings and other unattainable ceilings.
 - .3 Masonry walls.
 - .2 In suspended ceilings, protected multi-strand cables can be installed without conduit if properly affixed to structure.
 - .3 Use rigid conduits and weatherproof joints for conduits installed outside the building.
- .3 In the case of use of cables without conduit, the cables must follow the lines of the building and be attached neatly at least every 1.5 m with hooks (as used by the installers of computer networks) designed specifically for this purpose.

3.2 OTHER SUPPORTS

- .1 Install required special supports, as indicated.

3.3 ELECTRICAL NETWORK - GENERAL

- .1 Do complete installation in accordance with requirements of:
 - .1 Division 26 - Electrical and this Section;
 - .2 CSA 22.1, Canadian Electrical Code;
 - .3 ANSI/NFPA 70 Standard;
 - .4 ANSI C2 Standard.
- .2 Fully enclose or properly protect electrical wiring, terminal blocks, high voltage above 70 V contacts, and identify properly to prevent accidental injury.
- .3 Comply with manufacturer's recommendations for storage, handling, and installation.
- .4 Check factory-made connections and joints. Tighten where necessary to ensure continuity.
- .5 Install electrical equipment between 1,000 (39 in.) and 2,000 mm (78 in.) above finished floor, wherever possible, and close to related equipment.
- .6 Protect exposed live equipment such as panel, mains, and outlet wiring during construction for life safety.
- .7 Shield and identify live parts "LIVE 120 VOLTS" or other appropriate voltage.
- .8 Make necessary arrangements for cutting of chases, drilling holes, and other structural work required to install electrical conduit, cable, pull boxes, and outlet boxes.

- .9 Install cables, conduits, and fittings which are to be embedded or plastered over, neatly and closely to building structure to minimize furring.

3.4 CONDUIT NETWORK

- .1 Install telecommunications cables (Ethernet) in conduits.
- .2 Provide complete conduit system to link Building Controllers to EMCS. Conduit sizes to suit wiring requirements and allowing future expansion capabilities of system. Maximum conduit fill-up not to exceed 40%. Design drawings do not show conduit layout.
- .3 Install conduits parallel or perpendicular to building lines, to conserve headroom and to minimize interference.
- .4 Do not run exposed conduits in normally occupied spaces, unless otherwise indicated or impossible to do otherwise. Obtain approval from Departmental Representative before starting such work. Provide complete conduit system to link field panels and devices with main control centre. Conduit size to match conductors and allowing future expansion capabilities, as prescribed in Specifications.
- .5 Locate conduits at least 150 mm (6 in.) from parallel steam or hot water pipes and ducts installed parallel to the latter, and at least 50 mm (2 in.) at crossovers.
- .6 Bend conduit so that diameter is reduced by less than 1/10th original diameter.
- .7 Field thread on rigid conduit carried out on-site to be of sufficient length to give tight joints.
- .8 Limit conduit length between two pull boxes to less than 30 m (98 ft.).
- .9 Use outlet boxes for conduit up to 32 mm (1¼ in.) diameter and pull boxes for larger sizes.
- .10 Use flexible conduits to make the transition between control elements and the EMT conduits. Flexible conduits must not exceed 500 mm (20 in.) in length.
- .11 Fastenings and supports for conduits, cables, and apparatuses:
 - .1 Provide brackets, frames, hangers, clamps, and similar types of devices, as indicated and as required, to support cable and conduit runs.
 - .2 Provide adequate support for raceways and cables, sloped vertically to equipment.
 - .3 Use supports or equipment installed by other trades for conduit, cable, and raceway supports only after written approval from Departmental Representative.
- .12 Install polypropylene fish cord in empty conduits for future use.
- .13 Remove and replace blocked sections.

- .14 Pass conduits through structural components only after receipt of Departmental Representative's written approval.
- .15 Conduits may be run in steel structural shapes.
- .16 Group conduits wherever possible on suspended or surface channels.
- .17 Pull Boxes:
 - .1 Install in inconspicuous, but attainable locations.
 - .2 Support boxes independently of connecting conduits.
 - .3 Fill boxes with paper or foam to prevent entry of construction material.
 - .4 Provide correct size of openings. Reducing washers not permitted.
 - .5 Mark location of pull boxes on project record drawings.
 - .6 Identify AC power junction boxes, by panel and circuit breaker.
- .18 Install terminal blocks or strips indicated in cabinets according to Division 26 - Electrical.
- .19 Install bonding conductor for 120 V and above in conduit.

3.5 WIRING

- .1 Install multiple wiring in ducts simultaneously.
- .2 Do not pull spliced wiring inside conduits or ducts.
- .3 Use CSA certified lubricants of type compatible with insulation to reduce pulling tension.
- .4 Tests: Use only qualified personnel. Demonstrate that:
 - .1 Circuits are continuous, free from short-circuits or ground faults.
 - .2 Resistance to ground of all circuits is inferior to 50 Megohms.
- .5 Provide Departmental Representative with test results showing, among others, locations and circuits.
- .6 Remove insulation carefully from ends of conductors and install to manufacturer's recommendations. Accommodate all strands in lugs. Where insulation is stripped in excess, neatly tape so that only lug remains exposed.
- .7 Wiring in main junction boxes and pull boxes to terminate on terminal blocks only, clearly and permanently identified. Junctions or splices not permitted for sensing or control signal covering wiring.
- .8 Do not allow wiring to come into direct contact with compression screw.
- .9 Install ALL strands of conductor in lugs of components. Strip insulation only to extent necessary for installation.

3.6 RECEPTACLES AND COVER PLATES

- .1 Receptacles:
 - .1 Install vertically in gang type outlet box when more than one receptacle is required in one location.
- .2 Cover Plates:
 - .1 Install suitable common cover plate where wiring devices are grouped.
 - .2 Use flush type cover plates only on flush type outlet boxes.

3.7 FIRE-PROOFING

- 1. Consider all walls that go up to the ceiling as firewalls.
- 2. Seal all the openings created in the walls by the passage or removal of wiring, tubing, or conduit according to the requirements of section 07 84 00 - Fire protection.

3.8 GROUNDING

- .1 Install complete, permanent, and continuous grounding system for equipment, including conductors, connectors, and accessories.
- .2 Install separate grounding conductors in conduit within building.
- .3 Install ground wire in all PVC ducts and in tunnel conduit systems.
- .4 Tests: Perform ground continuity and resistance tests, using approved method appropriate to site conditions.

3.9 TESTS

- .1 Perform following tests in addition to tests specified in Section 25 08 20 - EMCS: Warranty and Maintenance.
 - .1 Preliminary tests:
 - .1 Conduct as directed to verify compliance with specified requirements.
 - .2 Make needed changes, adjustments, and replacements.
 - .3 Insulation resistance tests:
 - .1 Measure all circuits, feeders, and equipment for 120 - 600 V with 1,000 V megohmmeter. Ground resistance to be more than required by relevant Code before energizing.
 - .2 Test insulation between conductors and ground, efficiency of grounding system to satisfaction of Departmental Representative and Authority Having Jurisdiction.
 - .2 Give 14-day written notice prior to test.
 - .3 Conduct in presence of Departmental Representative and Authority Having Jurisdiction.

- .4 Conceal work only after tests satisfactorily completed.
- .5 Report results of tests to Departmental Representative in writing.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS: General Requirements.

1.2 REFERENCES

- .1 Canada Labour Code (R.S. 1985, c. L-2)/Part I - Industrial Relations.
- .2 Canadian Standards Association (CSA International).
 - .1 CSA Z204, Guidelines for Managing Indoor Air Quality in Office Buildings.

1.3 DEFINITIONS

- .1 Acronyms and definitions: refer to Section 25 05 01 - EMCS: General Requirements.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittal Procedures and the present Section.
- .2 Submit detailed preventative maintenance schedule for system components to Departmental Representative.
- .3 Submit detailed inspection reports to Departmental Representative.
- .4 Submit dated, maintenance task lists to Departmental Representative and include following sensor and output point details as proof of system verification:
 - .1 Point name and location;
 - .2 Device type and range;
 - .3 Measured value;
 - .4 System displayed value;
 - .5 Calibration detail;
 - .6 Indication if adjustment required;
 - .7 Other action taken or recommended.
- .5 Submit network analysis report showing results with detailed recommendations to correct problems found.
- .6 Records and Logs:
 - .1 Maintain records and logs of each maintenance task on site.
 - .2 Organize cumulative records for each major component and for entire EMCS chronologically.

- .3 Submit records to Departmental Representative, after inspection indicating that planned and systematic maintenance have been accomplished.
- .7 Revise and submit to Departmental Representative documentation and commissioning reports to reflect changes, adjustments, and modifications to EMCS made during warranty period.
- .8 Provide a warranty certificate, for all control work, one (1) year from the date of acceptance.

1.5 WARRANTY

- .1 All software components, parts, and assemblies supplied by the manufacturer must be warranted against defects in materials and workmanship for one (1) year from the date of acceptance.
- .2 Provide services, materials, and equipment to maintain EMCS for specified warranty period. Provide detailed preventative maintenance schedule for system components as described in Submittal article.
- .3 Emergency Service Calls:
 - .1 Initiate service calls when EMCS is not functioning correctly.
 - .2 Qualified control personnel to be available during warranty period to provide service to "CRITICAL" components whenever required at no extra cost.
 - .3 Provide Engineer with telephone number where service personnel may be reached at any time.
 - .4 Service personnel to be on site ready to service EMCS within 2 hours after receiving request for service.
 - .5 Perform work continuously until EMCS restored to reliable operating condition.
- .4 Operation: Foregoing and other servicing to provide proper sequencing of equipment and satisfactory operation of EMCS based on original design conditions and as recommended by manufacturer.
- .5 Work Requests: Record each service call request, when received separately on approved form and include:
 - .1 Serial number identifying component involved.
 - .2 Location, date, and time call received.
 - .3 Nature of trouble.
 - .4 Names of personnel assigned.
 - .5 Instructions of work to be done.
 - .6 Amount and nature of materials used.
 - .7 Time and date work started.
 - .8 Time and date of completion.

- .6 Provide system modifications in writing.
 - .1 No system modification, including operating parameters and control settings, to be made without prior written approval of Departmental Representative.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 ON-SITE QUALITY CONTROL**

- .1 During the warranty period, perform at least three (3) minor and one (1) major inspections or more if the manufacturer requires so, per year. Provide a detailed report to the Departmental Representative of each inspection.
- .2 Perform the inspections during normal office hours, between 8:00 AM and 4:30 PM, from Monday to Friday, except during holidays.
- .3 The following inspections are minimum requirements and their results should not be considered as a satisfactory operating state.
 - .1 All calibrations must be completed with testing equipment certified to be at least 50% more accurate than the values used by the system.
 - .2 Verify and calibrate every input/output onsite in accordance with Canada Labour Code, Part 1 and CSA Z204 Standard.
 - .3 Provide a dated maintenance tasks list in accordance with Submittal Procedures as proof of execution of the verification of entire system.
- .4 Minor inspections must include, but are not limited to, the following:
 - .1 Visual and operation control of the building controllers, hardware, interface panel, and other panels;
 - .2 If needed and depending on case, fan verification and replacement of controller filters;
 - .3 Visual inspections to spot flaws and air leakage; make sure that pressure and pneumatic elements are correct;
 - .4 Review system performance with the Operation Supervisor to discuss changes proposed or required.
- .5 Major inspections must include, but are not limited to, the following:
 - .1 Workstation peripheral equipment cleaning, building controllers, controller interfaces and other panels, as well as outer and inner microprocessor faces;

- .2 Signal, voltage, and system insulation verification, buildings controllers, peripheral hardware, interfaces, and other panels;
- .3 Verify calibration of every input/output element and recalibrate or replace them if necessary;
- .4 Mechanical adjustment and printer maintenance;
- .5 Diagnostic tests of the system software, if needed;
- .6 Software installation and update to make sure every component works on the latest version and thus have the maximum capacity and reliability:
 - .1 Perform network analysis and provide a report in accordance with the Submittals Procedure section.
- .6 Correct the flaws found during the maintenance inspections and by ambient controls.
- .7 Continue flaws corrections and system optimization.
- .8 Test/Control of systems sensitive to normal occupation and seasonal variations must be done during four consecutive seasons, after the job site has been received, transferred, and entirely occupied.
 - .1 Systems sensitive to climate conditions must be submitted to two (2) tests: When basic winter and summer conditions are almost reached.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS: General Requirements.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CSA T529, Telecommunications Cabling Systems in Commercial Buildings (Adopted ANSI/TIA/EIA-568-A with modifications).
 - .2 CSA T530, Commercial Building Standard for Telecommunications Pathways and Spaces (Adopted ANSI/TIA/EIA-569-A with modifications).
- .2 Institute of Electrical and Electronics Engineers (IEEE)/Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks - Specific Requirements.
 - .1 IEEE Std 802.3TM, Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications.
- .3 Telecommunications Industries Association (TIA)/Electronic Industries Alliance (EIA).
 - .1 TIA/EIA-568, Commercial Building Telecommunications Cabling Standards Set, Part 1 - General Requirements, Part 2 - Balanced Twisted-Pair Cabling Components, Part 3 - Optical Fiber Cabling Components Standard.
 - .2 TIA/EIA-569-A, Commercial Building Standard for Telecommunications Pathways and Spaces.
- .4 Treasury Board Information Technology Standard (TBITS).
 - .1 TBITS 6.9, Canadian Open Systems Application Criteria (COSAC), Profile for the Telecommunications Wiring System in Government Owned and Leased Buildings - Technical Specifications.

1.3 DEFINITIONS

- .1 Acronyms and Definitions: Refer to Section 25 05 01 - EMCS - General Requirements.

1.4 SYSTEM DESCRIPTION

- .1 Data communication network to link Operator Workstations and Master Control Units (MCU) in accordance with CSA T529 TIA/EIA-568, CSA T530 TIA/EIA-569-A, and TBITS 6.9.
 - .1 Provide reliable and secure connectivity of adequate performance between different sections (segments) of network.

- .2 Allow for future expansion of network, with selection of networking technology and communication protocol.
- .2 Data communication network to include, but not limited to:
 - .1 EMCS Local Area Network (EMCS-LAN);
 - .2 Network interface cards;
 - .3 Network management hardware and software;
 - .4 Network components necessary for complete network.

1.5 DESIGN REQUIREMENTS

- .1 EMCS Local Area Network (EMCS-LAN):
 - .1 High speed, high performance, local area network over which MCUs and OWSs communicate with each other directly on peer-to-peer basis in accordance with IEEE 802.3/Ethernet Standard.
 - .2 The building Energy Management and Control System (EMCS) must be able to communicate using BACnet protocol.
 - .3 Each EMCS-LAN to be capable of supporting at least 50 devices.
 - .4 Support of combination of MCUs and OWSs directly connected to EMCS-LAN.
 - .5 High speed data transfer rates for alarm reporting, quick report generation from multiple controllers, and upload/download information between network devices. Bit rate to be 10 Megabits per second minimum.
 - .6 Detection and accommodation of single or multiple failures of either OWSs, MCUs, or network media. Operational equipment to continue to perform designated functions effectively in event of single or multiple failures.
 - .7 Commonly available, multiple sourced, networking components and protocols to allow system to co-exist with other networking applications, including office automation.
 - .8 Guarantee the possibility of connecting a complete workstation near each control cabinet on the IP network. At a minimum, one (1) connection per mechanical room, at a maximum of 5 m from each master controller, must be possible. If controllers do not allow this connection, coordinate with the network provider to install additional IP outlets.

1.6 COMPATIBILITY LEVEL

- .1 Dynamic Data Access:
 - .1 LAN to provide capabilities for OWSs, either network resident or connected remotely, to access point status and application report data or execute control functions for other devices via LAN.
 - .2 Access to data to be based upon logical identification of building equipment.

- .2 The complete system must allow access from the control panel to the following points and minimum functions throughout the entire network:
 - .1 Points:
 - .1 In and out;
 - .2 Variables and setpoints;
 - .3 Point alarms;
 - .4 System alarms;
 - .5 Point histories.
 - .2 Functions:
 - .1 Read;
 - .2 Write;
 - .3 Create;
 - .4 Erase.
- .3 All points must be able to be displayed in the graphic set programmed at the central station.
- .4 In case of histories, they must be able to be archived in the memory of the central station or a server.
- .5 For integration of integrated controllers with the manufacturer's equipment, refer to the specific section of equipment and sequences for the list of points to be supported and displayed at the central station.
- .6 Transmission support:
 - .1 Shielded twisted cable and/or fiber optic cable, compatible with the network protocol to be used inside buildings. The fiber optic cable must be used for communications between buildings.
 - .2 Wireless transmission networks may be used upon Departmental Representative's approval.
 - .3 Sub-netted portions in Echelon mode may also be permitted, where specifically indicated or with the approval of the Departmental Representative.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 TCP/IP NETWORK**

1. The Contractor must install its own TCP/IP network for connecting the controllers, without going through the Client's network.
2. Only one (1) connection point will be provided to connect to a dedicated telephone line to the outside of the building.
- .1 Raceway primary system with 254 mm x 254 mm (10 in. x 10 in.) junction boxes every 15 m (50 ft).
- .2 Leave 1 m (3 ft) of extra cable in each box.
- .3 See drawings for diagram of network.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS - General Requirements.
- .2 Section 25 05 02 - EMCS - Submittals and Review Process.
- .3 Section 25 05 03 - EMCS - Project Record Documents.
- .4 Section 25 30 01 - EMCS - Building Controllers.
- .5 Section 25 90 01 - EMCS - Site Requirements, Application, and Systems - Sequences of Operation.

1.2 REFERENCES

- .1 CSA International.

1.3 DEFINITIONS

- .1 Acronyms and Definitions: Refer to Section 25 05 01 - EMCS: General Requirements.
- .2 Primary workstation: The main station that can be used as a server and contain historical system data and post-execution data provided by the Contractor.
- .3 Portable OWS: Used as remote dial-up OWS with same capabilities as primary OWS, including graphic display.
- .4 Remote Auxiliary OWS: Performs identical user interface functions as primary OWS.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.5 OWS SYSTEM DESCRIPTION

- .1 Consists of commercially available personal computer in current production, with sufficient memory and processor capacity to perform functions specified.
- .2 Primary OWS to include:
 - .1 Report printer.
 - .2 Color graphics printer.
 - .3 Modem or network interface card.
 - .4 Terminals and furniture.
- .3 Portable Laptop: Provide one (1) portable station.

1.6 ENVIRONMENTAL CONDITIONS

- .1 OWS to operate in conditions of 10°C to 32°C and 20% to 90% non-condensing RH.

1.7 MAINTENANCE AND OPERATION DATA SHEETS

- .1 Provide maintenance and operation data sheets in accordance with Section 25 05 03 - EMCS: Project Record Documents.

Part 2 Products**2.1 HARDWARE**

- .1 All equipment provided (including the primary workstation and laptop) shall have the recommended specifications for the proper operation of the control software to be installed.
- .2 PC to include:
 - .1 Processor: Pentium i7 micro-processor, clocked at least 2.8 Gigahertz, capable of supporting software necessary to perform functions specified in this section. Back panel bus (100 Megahertz) to support PCI and ISA boards.
 - .2 Internal clock.
 - .1 Uninterruptible clock: Accuracy of ± 5 seconds/month, capable of deriving year, month, day, hour, minute, and second.
 - .3 Asynchronous interfaces for connection to listed peripheral devices including LAN and remote devices.
- .3 Power supply unit to accept 120 V source, 60 Hz, and include line surge and low voltage protection for processor and its peripherals.
- .4 Include UPS to provide 5-minute minimum operation of PC, CRT, and communication and peripheral devices; applies to fixed (non-portable) OWSs and peripherals.

2.2 OWS PC COMPONENTS

- .1 Primary OWS: IBM PC compatible with following as minimum:
 - .1 Pentium i7 processor, 2.8 Gigahertz.
 - .2 IDE Disk drive controller to support 4 drives:
 - .1 One 1,000 GB hard disk drive, 12 ms;
 - .2 One CD-RW drive;
 - .3 Two future drives.
 - .3 8 GB RAM minimum;
 - .4 Enhanced 101 key keyboard, multilingual French/English;
 - .5 USB mouse;
 - .6 Color monitor: 483 mm (22 in.), flat panel display TFT, resolution 1,280 X 1,040, dot pitch 0.26 mm (0.01 in.), color support 24 bit;
 - .7 Video card with 1 GB video RAM;
 - .8 Four USB ports;
 - .9 Include two spare expansion slots in system for Client's usage;

- .10 PCI adapter to connect to local Ethernet LAN network;
- .11 300-W minimum power supply.
- .2 Portable OWS: IBM compatible personal laptop computer, with following as minimum:
 - .1 Pentium i7 processor, 2.8 GHz;
 - .2 500 GB hard disk drive, 9 ms access time;
 - .3 Internal CD/DVD;
 - .4 4 GB RAM;
 - .5 Enhanced 101-key keyboard;
 - .6 USB mouse device;
 - .7 330 mm (17 in.) color LCD (active matrix) display;
 - .8 Adapter to connect to local Ethernet Network.
 - .9 Protective case with carrying straps;
 - .10 PCU and peripherals: IBM compatible;
 - .11 Rechargeable battery lasting at least 4 hours in case of power failure;
 - .12 Operating system: Same as primary OWS, including licensed OWS software as installed on primary OWS.

2.3 PRINTERS

- .1 Report Printer:
 - .1 Laser printer.
 - .2 Paper sizes: 216 mm x 279 mm and 216 mm x 356 mm.
 - .3 Minimum 1,200 x 1,200 dpi resolution.
 - .4 Minimum 16 MB RAM, expandable to 72 MB RAM.
 - .5 Minimum 18 pages per minute print speed.
- .2 Color graphics printer:
 - .1 Ink-jet technology capable of printing high quality color images at speed of four pages per minute.
 - .2 Black cartridge to be separate from red, green, and blue cartridges.
 - .3 Minimum color resolution 2,400 x 1,200 dpi.
 - .4 Minimum black and white resolution 1,200 x 1,200 dpi.
 - .5 Minimum 8 MB RAM.
- .3 Printer to include one paper box of 216 mm x 279 mm and one paper box of 216 mm x 356 mm.

2.4 CONTROL DESK CONSOLE

- .1 Capable of accommodating all OWS and peripheral equipment specified having a workspace for operator.
- .2 Provide printer rack or separate desk for printers as indicated by Departmental Representative.

- .3 Layout: As indicated by Departmental Representative.
- .4 PC Desk: Steel, commercial type, standard sizes 1 m x 2 m (3.3 ft. x 6.6 ft.), factory-made, for equipment mounting, with drawers on one side only.
 - .1 Keyboard retractable tablet.
 - .2 Include above desk shelving to support manuals supplied by Contractor.
- .5 Chair: Upholstered, swivel type, with adjustable arms, back, and seat, pneumatic seat height adjustment, and 5 casters.

2.5 OPERATING SYSTEM (OS) OR SUPERVISOR

- .1 OS to support terminals and software programs specified.
- .2 OS to be true multitasking context.
- .3 OWS software to operate in "Windows" based operating environment: Windows 10 Professional or more recent.

2.6 MANAGEMENT SOFTWARE

- .1 Software must be compatible with Professional Windows 10 and must work perfectly in the desktop.
- .2 OWS is not to form part of real-time control functions either directly or indirectly or as part of communication link. Real-time control functions to reside in MCUs, LCUs, and TCUs with peer-to-peer communication occurring at MCU to MCU device level.
- .3 Time Synchronization Module.
 - .1 System performing time synchronization of controllers' real-time clocks.
 - .2 System to perform this feature on regular scheduled basis and on operator request.
- .4 Display Interface Module.
 - .1 OWS software to support "Point Names" as defined in Section 25 05 01 - EMCS: General Requirements.
 - .2 Upon operator's request in either text, graphic or table mode, system to present condition of single point, system, or any area, or connected points on system to OWS. Display analog values digitally to ne (1) decimal with negative sign as required. Update displayed analog values and status when new values received, flag points in alarm by blinking, reverse video, different color, bracketed, or other means to differentiate from points not in alarm. For systems supporting COSV, refresh rate of screen data not to exceed 5 seconds from time of field change and system is to execute supervisory background scan every 20 seconds to verify point data value. For other systems refresh rate not to exceed 5 seconds for points displayed. Initial display of new system graphic display (with up to 30 active points), including presentation of associated dynamic data, not to exceed 8 seconds.

- .5 General Event Log Module: To record system activities occurring at OWS or elsewhere in system, including:
 - .1 Operator Log-in from any user interface device;
 - .2 Errors, failures, and recovery;
 - .3 Event notifications and alarms by category;
 - .4 Record of operator-initiated commands.
- .6 General event log to allow following operations:
 - .1 Hold minimum of 4-month information and be readily accessible to operator;
 - .2 Able to be archived as necessary to prevent loss of information.
- .7 Management Software Module: To support entry of information into system from keyboard and mouse, disk, from disk or another network device. Display of information to user; dynamic displays, textual and graphic, to display logging and trending of system information. Must allow following tasks:
 - .1 Automatic logging of digital alarms and change of status messages;
 - .2 Automatic logging of analog alarms;
 - .3 System changes: Alarm limits, set points, and alarm lockouts;
 - .4 Display specific point values, states as selected by operator;
 - .5 Provide reports as requested and on scheduled basis, when required;
 - .6 Display graphics as requested and on alarm receptions (user's option);
 - .7 Display list of points within system;
 - .8 Display list of systems within building;
 - .9 Direct output of information to selected peripheral device.
 - .10 On-line changes of following settings:
 - .1 Alarm limits;
 - .2 Set points;
 - .3 Deadbands;
 - .4 Control and change of state changes;
 - .5 Time, day, month, and year;
 - .6 Control loop configuration changes for controller-based CDLs;
 - .7 Control loop tuning changes;
 - .8 Schedule change;
 - .9 Changes, additions, or deletions of measure points and/or graphics for installed and future systems.
 - .11 According to assigned user privileges (password definition), following functions are to be supported:
 - .1 Permit operator to terminate automatic (logic based) control and set value of field point to operator selected value. These values or settings to remain in effect until returned to automatic (logic based) control by operator;

- .2 Requests for status, analog values, graphic displays, logs, and control entries to be through user interface screens.
 - .12 Software and tools utilized to generate, modify, and configure building controllers to be installed and operational on the OWS.
- .8 Dial-up host module for off-site OWSs.
 - .1 Operators at dial-up OWS to be able to perform control functions, report functions, and data base generation and modification functions as described for OWS's connected via LAN. Provide routines to automatically answer calls and either file or display information sent from remote panels.
 - .2 Operator to be able to access remote buildings by selection of facility by its logical name. Dial-up module to maintain user-definable cross-reference of buildings and associated telephone numbers without manual dialing.
 - .3 Local OWS may serve as dial-up host for remotely connecting OWSs, remote controllers or networks. Alarms and data file transfers handled via dial-up transactions must not interfere with local LAN activity. LAN activity not to prevent workstation from handling incoming calls.
- .9 Message Handling Module and Error Messages: Module must have following functions:
 - .1 Message and alarm buffering to prevent loss of information;
 - .2 After error detection, correction, and retransmission of data to guarantee data integrity;
 - .3 Informative messages to operator for data error occurrences, errors in keyboard entry, failure of equipment to respond to requests or commands, and failure of communications between EMCS devices;
 - .4 Default device definition to be implemented to ensure alarms are reported as quickly as possible in event of faulty designated OWS.
- .10 Access Control Module.
 - .1 Minimum 5 levels of password access protection to limit control, display, or database manipulation of database. Recommended hierarchy of levels is as follows:
 - .1 Guest: No password data access and display only;
 - .2 Operator: Full operational commands including automatic override;
 - .3 Technician: Database modifications;
 - .4 Programmer: Database generation;
 - .5 Highest level - System administrator: password assignment and modification.
 - .2 User-definable, automatic log-off timers from 1 to 60 min. to prevent operators leaving devices on-line inadvertently. Default setting: 3 minutes.

- .11 Trend Data Module: Includes historical data collection utility, trend data utility, and control loop plot utility. Each utility to permit operator to add and delete trend points and to set scan rate.
 - .1 Historical data collection utility: Collect concurrently, operator selected, real or calculated point values at operator selectable rate 1-480 minutes. Samples to include, for each time interval (time-stamped), minimum, maximum, and average present values for point selected. Rate to be individually selectable for each point. Data collection to be continuous operation, stored in temporary storage until removed from historical data list by operator. Buffer to have at least 6-month capacity.
 - .2 Trend data utility: Continuously collect point object data variables for variables from building controllers as selected by operator, including at minimum; present value of following point object types - DI, DO, AI, AO set points value, and calculated values. Trend data utility to have capacity to trend concurrently points at operator-selectable rate of 5 to 3,600 seconds, selected by operator, or use of COSV detection. Collected trend data to be stored a minimum of 96-hour in buffer until removed from trend data list by operator. Option to archive data before overwriting to be available.
 - .3 Control loop plot utility: For AO points, provide for concurrent plotting of measured value input - present value, present value of output, and AO set point. Operator selectable sampling interval to be between 1 to 20 seconds. Plotting utility to scroll to left-hand side as plot reaches right-hand side of display window. Systems not supporting control loop plot as separate function must provide predefined groups of values. Each group to include values corresponding to one control loop display.
 - .4 Trend data module to include display of historical or trend data to OWS screen in X and Y plot presentation. Plot utility to display minimum of six historical points or six trend points concurrently, or one control loop plot. For display output of real time trend data, display to automatically index to left side when window becomes full. Provide plotting capabilities to display collected data based on range of selected value for (Y) component against time/date stamp of collected data for (X) component.
 - .5 Provide separate reports for each trend utility. Provide operator feature to specify report type, by point name and for output device. Reports to include time, day, month, year, report title, and operator's initials. Implement reports using report module. Ensure trend data is exportable to third-party spreadsheet or database applications for PCs.
- .12 Report Module: OWS to produce reports for energy management programs, function totalization, analog/pulse totalization and event totalization features available at MCU level. Refer also to Section 25 30 01- EMCS: Building Controllers.
 - .1 Reports to include time, day, month, year, report title, and operator's initials.
 - .2 Software to provide capability to:
 - .1 Generate and format reports for graphical and numerical display from real time and stored data.

- .2 Print and store reports as selected by operator.
- .3 Select and assign points used in such reports.
- .4 Sort output by areas, by systems.
- .3 Periodic/automatic report:
 - .1 Software to automatically produce the prescribed reports, and specify the start (time and date) of the period covered, the interval between reports (hourly, daily, weekly, and monthly reports), as well as the output device. In addition, the system must allow the operator to change the periodic/automatic reporting schedule at any time.
 - .2 Reports to include:
 - .1 Power demand and duty cycle summary: See application program for same.
 - .2 Disabled "Locked-out" point summary: Include point name, whether disabled automatically or by operator.
 - .3 Run-time summary: Summary of accumulated running time of selected equipment, including point name, run-time to date, and alarm limit setting. Run-time to accumulate until reset by operator.
 - .4 Summary of run-time alarms: Include point name, run-time to date, and alarm limit.
 - .5 Summary of start/stop schedules: Include start/stop times and dates of beginning and end of period covered by report, and point name.
 - .6 Motor status summary.
- .4 Report types:
 - .1 Dynamic data reports: System to printout or display measurement point data values requested by operator. System to indicate status at time of request, when displayed, and updated data at operator selected time intervals. Provide option for operator selection of report type, by point name, and/or output device. Ensure reports are available for following point value combinations:
 - .1 Points inaccessible from OWS (total connected to network), for multiple areas;
 - .2 Area (points and systems within);
 - .3 Area, system (points in system);
 - .4 System (points by system type);
 - .5 System point (points by system and point object type);
 - .6 Area point (points by system and point object type);
 - .7 Point (points by point object type).
- .5 Summary report: Printout or display of any point object data value selected by operator. Report header to indicate status at time of request. Ensure reports are available on same basis as dynamic data reports. Provide option as to report type, point name, and output device.

- .6 Include preformatted reports as listed in Event/Alarm Module.
- .13 Graphics Display Module: Graphics software utility allowing user to create, modify, delete, file, and recall graphics required by Section 25 90 01 - EMCS: Site Requirements, Applications and Systems Sequences of Operation.
 - .1 Provide capacity for 100% expansion of system graphics. Graphical interface providing the user with multi-layered site diagrams, building plan views, of its furniture and building systems, these diagrams are provided with dynamic data arranged appropriately, with the possibility of direct interaction with operator. Graphic interface to allow operator to start and stop equipment, change set points, modify alarm limits, and override system functions and points from graphic system displays by use of mouse or similar pointing device.
 - .2 Display specific system graphics: Provide for manual and/or automatic activation (on occurrence of an alarm). Include capability to call up and cancel display of graphic picture.
 - .3 Library of pre-engineered screens and symbols depicting standard air handling components (fans, cool and hot coils, filters, dampers, VAV), complete mechanical system components (chillers, boilers, pumps, etc.), and electrical symbols.
 - .4 Graphic development, creation, and modification package to use mouse and drawing utility permitting user to:
 - .1 Modify portion of graphic picture/schematic background.
 - .2 Delete graphic picture.
 - .3 Call up and cancel display of graphic picture.
 - .4 Define symbols.
 - .5 Establish position and size symbols.
 - .6 Define background screens.
 - .7 Define connecting lines and curves.
 - .8 Locate, orient, and size descriptive text.
 - .9 Define and display colors of elements.
 - .10 Establish co-relation between symbols or text and associated system points or other graphic displays.
 - .5 User to be able to build graphic displays showing on-line point data from multiple MCU panels. Graphic displays to represent logical grouping of system points or calculated data based upon building function, mechanical system, building layout, or another criterion, which aids operator in analysis of facility operation. Data to be refreshed on screen as "changed data" without redrawing of entire screen or row on screen.
 - .6 Dynamic data (temperature, humidity, flow, and status) to be shown in actual schematic locations, to be automatically updated to show current values without operator intervention.
 - .7 Multiple window environment to allow user to simultaneously view several graphics to permit analysis of building operation, system performance, and display of graphic associated with alarm to be viewed without interrupting work

- in progress. Utilize graphics package to generate system schematic diagrams as required in Section 25 90 01 - EMCS: Site Requirements, Applications and System Sequences of Operation, and as directed by Departmental Representative. In addition, provide graphics for schematic depicted on mechanical plan flow diagrams, point lists, and system graphics. Provide graphic for floor depicting room sensors and control devices located in their actual location. For floor graphic include secondary diagram to show TCU-VAV box actuator and flow sensor. Diagram to be single line schematic of ductwork as well as associated heating coil or radiation valve. Departmental Representative to provide CAD floor layouts. Provide display of TCU-VAV's in table form, include following values as minimum; room temperature, set point, mode, actual flow, min. flow set point, max. flow set point, cooling signal value, and heating signal value. Organize table by room and floor groupings.
- .8 Provide complete directory of system graphics, including other pertinent system information (i.e. List of system images). Utilize mouse or pointing device to "point and click" to activate selected graphic.
 - .9 Provide unique sequence of operation graphic or pop-up window for each graphic that is depicted on OWS. Provide access to sequence of operation graphic by link button on each system graphic. Provide translation of sequence of operation, a concise explanation of systems operation.
- .14 Event/Alarm Module: Displays in window alarms as received and stored in General Event Log.
- .1 Classify alarms as "critical", "cautionary", and "maintenance". Alarms and alarm classifications to be designated by personnel holding an appropriate password level.
 - .2 Presentation of alarms to include features identified under applicable report definitions of Report Module paragraph.
 - .3 Alarm reports content.
 - .1 Summary of points in critical, cautionary, or maintenance alarm. Include at least point name, alarm type, current value, and limit exceeded.
 - .2 Analog alarm limit summary: Include, at least, point name, alarm limits, and deviation limits.
 - .3 Summary of alarm messages: Include associated point name and alarm description.
 - .4 Software to notify operator of each occurrence of alarm conditions. Each point to have its own secondary alarm message.
 - .5 EMCS to notify operator of occurrence of alarms originating at field device within following time periods of detection:
 - .1 Critical: 5 seconds;
 - .2 Cautionary: 10 seconds;
 - .3 Maintenance: 10 seconds.
 - .6 Display alarm messages in French and/or in English, depending on case.

- .7 Primary alarm message to include as minimum: Point identifier, alarm classification, as well as occurrence time and type of alarm. Provide for initial message to be automatically presented to operator whenever associated alarm is reported. Assignment of secondary messages to point to be operator-editable function. Provide secondary messages giving further information (i.e. Telephone lists, maintenance functions, etc.) per point basis.
- .8 System reaction to alarm signals: Provide alarm annunciation by dedicated window (activated to foreground on receipt of new alarm or event) of OWS with visual and audible hardware indication. Acknowledgement of alarm to change visual indicator from flashing to steady state and to silence audible device. Acknowledgment of alarm to be time and date-stamped by operator, and stored in General Event Log. Steady state visual indicator to remain until alarm condition is corrected, but must not impede reporting of new alarm conditions. Notification of alarm not to impede notification of subsequent alarms or function of Controller's/CDL. Do not allow random occurrence of alarms to cause loss of alarm or over-burden system. Do not allow acknowledgement of one alarm as acknowledgement of other alarms.
- .9 Controller network alarms: System supervision of controllers and communications lines to provide following alarms:
 - .1 "Controller not Responding": Where possible delineate between controller and communication line failure;
 - .2 "Controller Responding": Return to normal;
 - .3 "Abnormal Controller Communications": High error rate or loss of communication;
 - .4 "Normal Controller Communications": Return to normal.
- .10 Digital alarm status to be interrogated every 2 seconds as minimum or be direct interrupting non-polling type (COV). Annunciate any non-expected status with alarm message.
- .15 Archiving and Restoration Module.
 - .1 Primary OWS to include services to store back-up copies of controller databases. Perform complete back-up of OWS software and data files at time of system installation and at time of final acceptance. Provide back-up copies before and after Controller's revisions or major modifications.
 - .2 Provide continuous integrity supervision of controller databases. When controller encounters database integrity problems with its database, system to notify operator of need to download copy database to restore proper operation.
 - .3 Ensure database back-up and downloading occurs over LAN without specialized operator technical knowledge. Provide operator with ability to manually download entire or partial controller database, as required.
- .16 CDL Generator and Modifier Module.
 - .1 CDL Generator module to permit generation and modification of CDLs used in automation network.

- .2 Provide standard reference modules for text-based systems module permitting modification to suit site specific applications. Module to include cut, paste, search, and comparison of utilities to permit easy CDLs modification and verification.
- .3 Provide full library of symbols used by manufacturer for system product installed, accessible to operators, for systems using graphical environment for creation of CDLs. Module to include graphic tools required to generate and create new object code for downloading towards building controllers.
- .4 Module to permit testing of code before downloading to building controllers.

2.7 ADDITIONAL UTILITY SOFTWARE

- .1 Supply and install on primary OWS, following CAD software products from Autodesk Inc.:
 - .1 AutoCAD LT latest version;
 - .2 Include special drivers and fonts, required for proper functioning of software packages specified. Deliver system complete with full set of User Manuals;
 - .3 Enter soft copy submissions, including "Record" drawings specified in Section 25 05 03 - EMCS: Project Record Documents in OWS;
 - .4 Enter soft copies of architectural and electromechanical systems drawings, and "Record" drawings in OWS. Drawings to be provided by Departmental Representative.

Part 3 Execution

3.1 INSTALLATION REQUIREMENTS

- .1 Provide necessary power as required from local 120 V emergency power branch circuit panels for OWS's and peripheral equipment.
 - .1 Install tamper locks on breakers of circuit panels.
 - .2 Refer to UPS requirements stated under OWS Hardware in PART 2.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 05 01 - EMCS: General Requirements.
- .2 Section 25 05 02 - EMCS: Submittals and Review Process
- .3 Section 25 05 03 - EMCS: Project Record Documents.
- .4 Section 25 30 02 - EMCS: Field Control Devices.
- .5 Section 25 90 01 - EMCS: Site Requirements Applications and Systems Sequences of Operation.

1.2 REFERENCES

- .1 American Society of Heating, Refrigeration and Air-Conditioning Departmental Representatives, Inc. (ASHRAE).
 - .1 ASHRAE, Applications Handbook, SI Edition.
- .2 Canadian Standards Association (CSA International).
 - .1 C22.2 No. 205, Signal Equipment.
- .3 Institute of Electrical and Electronics Departmental Representatives (IEEE).
 - .1 IEEE C37.90.1-02, Surge Withstand Capabilities (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus.
- .4 Public Works and Government Services Canada (PWGSC)/Real Property Branch/Architectural and Engineering Services.
 - .1 25 00 05, Energy Monitoring and control Systems (EMCS) Design Guidelines (Available upon request).

1.3 DEFINITIONS

- .1 Acronyms and Definitions: Refer to Section 25 05 01 - EMCS: General Requirements.

1.4 ACCEPTABLE PRODUCTS

- .1 The acceptable manufacturers' products must comply with the most recent BACnet standards.

1.5 NETWORK ARCHITECTURE

- .1 Drawings show minimum network architecture required, especially regarding the number of master controllers (MCU or NCU).

- .2 If additional controllers are required due to the nature of a vendor's controllers, the vendor will need to coordinate with other disciplines to provide for the required network outlets and power supply. The necessary modifications will be at his expense.
- .3 Submit proposed architecture with bid, indicating and highlighting elements where the proposal differs from specified architecture.
- .4 Integrated equipment controls (VFDs, humidifiers, etc.) must be connected to the subsystem of the system to which they are attached.
- .5 Input-output modules (DRIL) must be in the same enclosure as the processor controlling them.

1.6 DESCRIPTION OF CONTROLLERS

- .1 A network of controllers using MCUs (or NCU), LCUs, and TCUs must be provided in accordance with the architectural system schematic. This network must be compatible with building systems and related operation sequences described in this section.
 - .1 Provide sufficient controllers to meet intents and requirements of this section.
 - .2 Controller quantity and point contents to be approved by Departmental Representative during preliminary design review.
- .2 Controllers: Stand-alone intelligent control units. They must:
 - .1 Incorporate programmable microprocessor, non-volatile program memory, RAM, power supplies, as required to perform specified functions.
 - .2 Be provided with communication interface ports for communication to LANs to exchange information with other controllers.
 - .3 To be connected to operator interface device.
 - .4 Execute their logic and control using their primary inputs (inputs and outputs in direct interaction) directly connected to their onboard input/output field terminations or slave devices, without need to interact with another controller; secondary input used for resetting, such as outdoor temperature, may be located on the other controllers.
 - .1 Secondary input used for resetting, such as outdoor temperature, may be located on other controllers.
- .3 A connection via the network must allow remote connection. Network jacks are provided as shown in the architecture diagram. If more outlets are required to provide access to the system according to specifications, they will be at the expense of the Division 25 subcontractor.
- .4 The objective, in terms of access, is to allow a portable computer equipped with graphics software to be plugged into each room where are located master controllers, within a radius of 15 m from each control.
- .5 Digital controllers must be installed near the systems to be supervised or controlled.

- .6 The room TCU controllers must be connected under the network of the ventilation system controller supplying these rooms.

1.7 DESIGN REQUIREMENTS

- .1 All equipment and software used must be standard type, regularly used for this type of system, and not specially designed and manufactured for this project. All components, software and features must be an integral part of the manufacturer's available and catalogued products at the time of submission. All digital controllers and management units must come from the same manufacturer, the same product line, be BTL (BACnet Testing Laboratories) and be of the latest generation compatible.
- .2 Controllers must be able to execute the following functions:
 - .1 AI and DI inputs scanning for detection of change of value and processing alarms;
 - .2 "Go-No Go" digital control of connected points, including resulting required states, generated through programmable logic outputs;
 - .3 Analog control using programmable logic (including PID), with dead bands and adjustable deviation alarms;
 - .4 Control of systems, as described in sequence of operations;
 - .5 Optimization routines execution as listed in this section.
- .3 Total spare capacity for MCUs and LCUs: At least 20% of each point type distributed throughout different MCUs and LCUs. For the power plant, the reserve must be 30%.
- .4 Control points within a building system must reside into same controller. As well, a controller must be used for each main ventilation system or network portion. Refer to network architecture.
- .5 Local Interfaces Connection Modules (DRIL):
 - .1 To CSA C22.2 No. 205 Standard.
 - .2 DRIL electronically connect sensors and regulators to the central unit.
 - .3 DRIL must include, but not be limited to:
 - .1 Microprograms or logic circuits designed to meet technical and functional requirements;
 - .2 Power supplies for logic devices and related equipment on site;
 - .3 In the event of transmission failures between the DRIL and the central unit, or failure thereof, controlled systems must remain in or go into integrated security mode;
 - .4 Prescribed minimum number of analog and digital inputs and outputs for the I/O interface;
 - .5 Screw or plug-in connection terminals for wiring.

- .4 Analog input interfaces must:
 - .1 Make analog digital conversion with 10-bit analog digital definition;
 - .2 Receive signals having the following characteristics:
 - .1 4 to 20 mA;
 - .2 0 to 10 VDC;
 - .3 Temperature measuring probe thermistors 10 kohms.
 - .3 Comply with IEEE C37.90.1 - Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus;
 - .4 Weak signals greater than 60 dB at 60 Hz in common mode;
 - .5 Have certified precision resistors as required to supplement specified accuracy of sensors and transmitters.
- .5 Analog output interfaces must:
 - .1 Convert digital signals transmitted by the central unit to analog signals with a 10-bit digital analog resolution;
 - .2 Provide signals having the following characteristics:
 - .1 4 to 20 mA;
 - .2 0 to 10 VDC.
 - .3 Comply with IEEE C37.90.1 - Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus;
- .6 Digital input interfaces must:
 - .1 Be able to detect changes in state of field detection contacts and transmit result to the controller;
 - .2 Comply with IEEE C37.90.1 - Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus;
 - .3 Receive pulsed signals up to 2 kHz.
- .7 Digital output interfaces must:
 - .1 Respond to output signals from the controller processor and switch them; switch output signals up to 0.5 A at 24 VAC;
 - .2 Be able of switching output signals up to 5 A at 220 VAC using an optional interface relay.
- .6 Controllers and related hardware and software can operate properly in a temperature range of 0 to 44°C (32°F to 111.2°F), and relative humidity, 20% to 90%, without condensation.
- .7 Each MCU controller shall be mounted in a NEMA 1 wall cabinet with hinged doors and have its own power supply.
 - .1 Top, bottom, or sides of cabinet must have conduit entries.

- .2 LCU and TCU controllers may be mounted in equipment cabinets or in separate enclosures.
- .3 Submit mounting details of ceiling elements for approval.
- .8 Cabinets must protect equipment from water dripping from the ceiling while being sufficiently ventilated to prevent overheating inside.
- .9 Interconnect wiring connections shall provide surge protection and brownout protection.
- .10 Provide the DRIL to be able to connect a minimum of 20% (or 30% for the power plant) additional points of each type in each control panel. Ensure that the processor and memory have sufficient capacity to accept these additional points.

1.8 SUBMITTALS

- .1 Make submittals in accordance with Section 25 05 02 - EMCS: Submittal and Review Process.
 - .1 Submit product data sheets for each product proposed for this project.

1.9 MAINTENANCE PROCEDURES

- .1 Provide maintenance procedures recommended by manufacturers and included them with Section 25 05 03 - EMCS: Project Record Documents.

Part 2 Products

2.1 MASTER CONTROL UNIT (MCU/NCU)

- .1 General: Primary function of MCU/NCU is to provide co-ordination and supervision of subordinate devices in execution of optimization routines, such as demand limiting or enthalpy control programs.
- .2 MCU must include high-speed communication LAN Port for Peer-to-Peer communications with OWSs and other MCU level devices.
 - .1 MCU/NCU shall support BACnet/IP to the primary network and BACnet MS/TP to the subsystem.
- .3 UCP controllers must be configured in sufficient quantities to have a 50% reserve for each "bus" of communications to specific application controllers (UCL and UCT) and/or third-party controllers for further addition.
- .4 In the case of the use of a hybrid autonomous controller (a controller combining the functions of the network management controller and the autonomous controller), to perform the network management of a secondary network, In addition to system control and automatic control activities, the number of physical points connected to this controller should be limited to a maximum of 50% of the capacity announced in the manufacturer's technical sheets, while respecting operating systems.

- .5 Capacity input/outputs of MCU shall respect the following conditions:
 - .1 The I/O points of the CPU are allocated according to the I/O list or as indicated on drawings.
 - .2 LCUs may be added to support system functions.
 - .3 NCU have no input-output points. Points shown to be connected to a MCU must be connected to separate LCUs dedicated to those points.
- .6 Central Processing Unit (CPU/NCU).
 - .1 Processor must consist of minimum 16-bit microprocessor capable of supporting software meeting specified requirements.
 - .2 CPU idle time must be 30% superior when system is configured to maximum input and output, and deal with the most unfavorable case of program execution.
 - .3 Minimum addressable memory to be at manufacturer's discretion. It must, however, have sufficient capacity to fully meet all technical and functional requirements of specifications, and include a minimum of 25% of free space. This memory must include, but not be limited to, the following:
 - .1 Non-volatile EEPROM containing operating system, executive, application, routine, other configuration definitions software.
 - .2 Battery backed RAM (72-hour minimum capacity) to reduce need to reload operating data in event of power failure), with enough capacity to contain CDLs, application parameters, and operating data or software required to be alterable by the operator, such as schedules, set points, alarm limits, PID constants, which may be directly alterable, on-line through operator panel or remote operator's interface. RAM to be downline loadable from OWS.
 - .4 CPU must include an uninterruptible clock accurate to ± 5 secs/month, capable of deriving year/month/day/hour/minute/second, with accumulators providing a minimum of 72 hours of operation in event of power failure.
- .7 Local Operator Terminal (OT): For each MCU/NCU, provide at least one network port for connecting a portable terminal.
 - .1 TLs must support workstations for local control input, display of current and historical data, and program additions and modifications.
 - .2 OTs must display simultaneously a minimum of 16-point identifiers allowing operator to view single screen dynamic displays depicting entire mechanical systems.
 - .3 Functions to include to OTs, but not be limited to, as follows:
 - .1 Start and stop points;
 - .2 Modify set points;
 - .3 Modify PID loop parameters;
 - .4 Establish priority on PID command;
 - .5 Change time/date;
 - .6 Add/modify/start/stop weekly scheduling;

- .7 Add/modify set point weekly scheduling;
- .8 Enter temporary override schedules;
- .9 Define holiday schedules;
- .10 View analog limits;
- .11 Enter/modify analog warning limits;
- .12 Enter/modify analog alarm limits;
- .13 Enter/modify analog differentials.
- .4 OTs must provide access to real and calculated points in controller to which it is connected or to any other controller in network. This capability must not be restricted to subset of predefined "global points", but must allow fully open data exchange between an OT and each network controller.
- .5 Operator access to OTs: Same as OWS user password and password changes to automatically be downloaded to controllers on network.
- .6 OTs must provide prompting to eliminate need for user to remember command format or point names. Prompting to be consistent with user's password clearance and types of points displayed, to eliminate possibility of operator's error.
- .7 Indicative of real or calculated points must be consistent into entire network. Use same point indicatives as OWSs for access of points at OTs to eliminate looking-up tables.

2.2 LOCAL CONTROL UNIT (LCU)

- .1 LCUs must provide multiple control functions for autonomous apparatus and sets of autonomous HVAC or hydronic systems, and electrical systems.
- .2 Minimum of 16 I/O points of which minimum be 4 AOs, 4 AIs, 4 DIs, 4 DOs.
- .3 LCUs must include microprocessors capable of supporting necessary software and hardware meeting specified requirements as listed in previous MCUs article, with following additions:
 - .1 LCUs must include minimum two interface ports for connection of local computer terminal;
 - .2 LCUs must be design so that shorts, opens, or grounds on input or output will not interfere with other input or output signals;
 - .3 LCUs must include physically separated line voltage (70 V and over) circuits from DC logic circuits to permit maintenance on either circuit with minimum hazards to technician and equipment;
 - .4 LCUs must be equipped with power supplies for their own operation and related field equipment;
 - .5 In event of loss of communications with, or failure of, MCU, LCU to continue to perform control. Controllers that use defaults or fail to open or close positions not acceptable;
 - .6 Provide conveniently located screw type or spade lug terminals for field wiring.

2.3 TERMINAL CONTROL UNIT (TCU)

- .1 Microprocessor capable of supporting necessary software and hardware to meet TCU functional specifications.
- .2 Controller to communicate directly with EMCS through EMCS LAN and provide access from EMCS OWS for setting occupied and unoccupied space temperature set points, flow set points, and associated alarm values, permit reading of sensor values, field control values (% open) and transmit alarm conditions to EMCS OWS.
- .3 TCUs must be capable of controlling at least 4 outputs and 4 inputs, a minimum of 8 I/O points.
- .4 All controllers must be installed in panels. Install terminal controllers (TCU) in NEMA 1 protection boxes.
- .5 VAV Terminal Controller.
 - .1 Microprocessor-based controller with integral flow transducer, including routines to execute PID algorithms, calculate airflow for integral flow transducer, and measure temperatures, for producing I/O summary reports. Sequence of operation to ASHRAE HVAC Applications Handbook.
 - .2 Controller to support point definition in accordance with Section 25 05 01 - EMCS: General Requirements.
 - .3 Controller to operate independently of network in case of communication failure.
 - .4 Controller to include damper actuator and terminations for input and output sensors and devices. Damper actuator must be able to be replaced independently of the controller in case of breakage.

2.4 SOFTWARE

- .1 General:
 - .1 Include as minimum: Operating system executive, communications, application programs, operator interface, and systems sequence of operation (CDLs).
 - .2 Include "firmware" or instructions which are programmed into permanent memory.
 - .3 Include initial programming of all system controllers.
- .2 Program and Data Storage:
 - .1 Supervisor programs and configuration data must be stored in permanent memory.
 - .2 Control logic data and operating data, including set points, operating constants, and alarm trip thresholds, shall be stored in non-volatile memory or RAM type. or EEPROM with a backup battery guaranteed for 5 years, so that it can be displayed and modified by the operator.
 - .3 Historical operation data must be archived for a 7-year period at an interval of 15 minutes. Archive all analog and binary values of inputs, outputs, set points,

and variables. Provide the necessary storage space on the server to ensure required archiving.

- .3 Programming Languages.
 - .1 Program Control Description Logic software (CDL) shall be programmed using an advanced language or a high level general graphical control language.
 - .2 Structure software in modular fashion to permit simple restructuring of program modules if future software additions or modifications are required. "GO TO" constructs not allowed unless approved by Departmental Representative.
- .4 Operator Terminal Interface.
 - .1 Operating and control functions to include the following:
 - .1 Multi-level password access protection to allow user/manager to limit workstation control;
 - .2 Alarm management: Processing and messages;
 - .3 Operator commands;
 - .4 Reports;
 - .5 Displays;
 - .6 Point identifications.
- .5 Pseudo or Calculated Points.
 - .1 Software to provide access to all values or states registered in controller or other networked controller to define and calculate pseudo-points. When current pseudo-point's value is established, normal alarm checks must be performed or value used to totalize.
 - .2 Inputs and outputs for process: Include data from controllers to permit development of network-wide control strategies. Processes also to permit operator to use results of one process as input to number of other processes (e.g. cascading).
- .6 Control Description Logic (CDL):
 - .1 Capable of generating on-line project-specific CDLs which are software based, programmed into RAM or EEPROM and backed up to OWS. User must have access to these algorithms for modification or to be able to create new ones and to integrate these into CDLs on BC(s) from any OWS.
 - .2 CDL must use high level language allowing algorithms and interlocking programs to be written simply and clearly. Operator must only introduce parameters into system (e.g. set points) to be able to use an algorithm. Operator to be able to alter operating parameters on-line from OWS and BC(s) to tune control loops.
 - .3 Operator must be able to perform changes to CDL on-line.
 - .4 Control logic to have access to values or status of points available to controller, including global or common values, allowing cascading or interconnection control.

- .5 Energy optimization routines, including enthalpy control and supply temperature reset, to be LCU or MCU resident functions and be part of CDL.
- .6 MCU to be able to perform following pre-tested control algorithms:
 - .1 "GO-NO GO" position control;
 - .2 Proportional Integral and Derivative (PID) control.
- .7 Control software to provide ability to define time between successive starts of each piece of equipment to reduce cycling of motors.
- .8 Provide protection against excessive electrical-demand situations during start-up periods by automatically introducing time delays between successive start commands involving heavy electrical loads.
- .9 Power Fail Restart: Upon detection of power failure, system to verify availability of Emergency Power as determined by emergency power transfer switches, analyze controlled equipment to determine its appropriate status under Emergency power conditions, and start or stop equipment as defined by I/O Summary. Upon resumption of normal power as determined by emergency power transfer switches, MCU to analyze status of controlled equipment, verify normal occupancy scheduling, and turn equipment "On" or "Off", as required, to resume normal operation.
- .7 Event and Alarm Management: Alarm reports must be produced according to an exception management. This requirement is applicable to entire system. This approach will ensure that only principal alarms are reported to OWS. Events occurring as direct result of primary event are suppressed by system and only events which were supposed to occur, but did not, are reported. Such event sequence to be identified in I/O Summary and sequence of operation. Examples of above are operational temperature alarm limits which are exceeded when main air handler stops or general fire condition shuts down air handlers, only a fire alarm status is reported. Exception being when air handler, which is supposed to stop or start, fails to do so afterwards when it was supposed to.
- .8 Energy Management Programs: Include specific summarizing reports with time stamping indicating events detected which have activated and or terminated equipment.
 - .1 In coordination with subordinate LCU, TCU, MCU must execute the following energy management routines:
 - .1 Time-of-day scheduling;
 - .2 Calendar based scheduling;
 - .3 Holiday scheduling;
 - .4 Temporary schedule overrides;
 - .5 Optimal start-stop;
 - .6 Night setback control;
 - .7 Enthalpy (economizer) switchover;
 - .8 Peak demand limiting;
 - .9 Temperature compensation load transfer;
 - .10 Fan speed/flow rate control;

- .11 Cooling battery reset;
 - .12 Chilled water reset;
 - .13 Condenser water reset;
 - .14 Chiller sequencing;
 - .15 Night purge.
- .2 Programs to be automatically executed without need for operator to intervene and be flexible enough to allow customization.
- .3 Apply programs to equipment and systems, as specified or requested by the Departmental Representative.
- .9 Function/Event Totalization: Features to provide predefined reports which show daily, weekly, and monthly accumulating totals, and which include high rate (time stamped) and low rate (time stamped), as well as monthly cumulative total.
 - .1 MCUs to automatically accumulate and store run-time for binary input and output points.
 - .2 MCU to automatically sample, calculate, and store consumption totals on daily, weekly, or monthly basis for user-selected analog or binary pulse input-type points.
 - .3 MCU to automatically count events occurring (cycle number of a pump) on a daily, weekly, or monthly basis.
 - .4 Totalization routine to have sampling resolution of 1 minute or less for analog inputs.
 - .5 Totalization routine to provide calculations and storage of accumulations up to 99,999.9 units (e.g.: kWh, litres, tonnes, etc.).
 - .6 Store event totalization records with minimum of 9,999,999 events before reset.
 - .7 User to be able to define warning limits and generate user-specified messages when limits are reached.

2.5 LEVELS OF ACCESS

- .1 Upon operator's request, EMCS to present status of any single point, system or point group, entire area, or entire network on printer or OWS, as selected by operator. EMCS to also:
 - .1 Display analog values digitally to one (1) place of decimals with negative sign as required.
 - .2 Update displayed analog values and status when new values received.
 - .3 Flag points in alarm by blinking, reverse video, different colour, bracketed or other means to differentiate from points not in alarm.
 - .4 Updates to be change-of-value (COV)-driven or if polled, not exceeding 2-second intervals.

2.6 POINT NAME SUPPORT

- .1 Controllers (MCU, LCU) point designation to comply with the point naming convention specified in Section 25 05 01 - EMCS: General Requirements.

Part 3 Execution**3.1 LOCATION**

- .1 Location of Controllers to be approved by Departmental Representative.

3.2 INSTALLATION

- .1 Provide necessary power from local 120 V branch circuit panel, from local branch panels or circuits feeding the existing panels for equipment.
- .2 Equipment that must be functional in emergency and coordination mode are connected to an uninterrupted power supply (UPS).

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 01 11 - EMCS: Start-Up, Verification and Commissioning.
- .2 Section 25 05 01 - EMCS: General Requirements.
- .3 Section 25 05 02 - EMCS: Submittals and Review Process.
- .4 Section 25 05 54 - EMCS: Identification.
- .5 Section 25 90 01 - EMCS: Site Requirements Applications and Systems Sequences of Operation.

1.2 REFERENCES

- .1 Air Movement and Control Association, Inc. (AMCA).
 - .1 AMCA Standard 500D, Laboratory Method of Testing Dampers for Rating.
- .2 American National Standards Institute (ANSI).
 - .1 ANSI C12.7, Requirements for Watthour Meter Sockets.
 - .2 ANSI/IEEE C57.13, Standard Requirements for Instrument Transformers.
- .3 American Society for Testing and Materials International (ASTM).
 - .1 ASTM B148, Standard Specification for Aluminum-Bronze Sand Castings.
- .4 Canadian Standards Association (CSA).
 - .1 CSA-C22.1SB, Canadian Electrical Code, Part 1 (19th Edition) Safety Standard for Electrical Installations.
- .5 National Electrical Manufacturer's Association (NEMA).

1.3 SUBMITTALS

- .1 Submit shop drawings and manufacturer's installation instructions.
- .2 Testing prior to installation:
 - .1 Submit samples taken at random from equipment delivered, as required by the Engineer, to be tested prior to commencement of installation. Replace appliances or components whose performance and accuracy do not meet the prescribed requirements.

- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions for specified equipment and devices.

1.4 EXISTING CONDITIONS

- .1 Cutting, adjustment, and repair work: As per specific requirements and those indicated hereafter:
 - .1 If needed, repair surfaces that were damaged during work execution;
 - .2 Hand over to the Owner all removed material that cannot be reused.

Part 2 Products

2.1 GENERAL

- .1 Control devices of each category to be of same type and manufacturer.
- .2 External trim materials to be corrosion resistant. Internal parts to be assembled in watertight, vibration-proof assembly.
- .3 Operating Conditions: 0 - 32°C (32°F to 89,6°F) with 10 - 90% relative humidity (RH) (non-condensing), unless otherwise specified.
- .4 Terminations: Use standard conduit box with slot screwdriver compression connector block, unless otherwise specified.
- .5 Transmitters and sensors to be unaffected by external transmitters, including walkie-talkies.
- .6 Account for hysteresis, relaxation time, maximum and minimum limits in selections of sensors and controls.
- .7 Outdoor Installations: Use weatherproof construction in NEMA 4 enclosures.
- .8 Installed measuring instruments ranges must be such that normal reading should be between the first third and second third of the total measuring range of the instrument. The Contractor is responsible of choosing the operating ranges, even after the approval of shop drawings.
- .9 Devices installed in user occupied space must not exceed Noise Criteria (NC) of 35. Noise generated by any device must not be detectable above space ambient conditions.
- .10 The equipment provided, including actuators and relays/contactors, must be selected with the right characteristics depending on the application.

2.2 FREEZE THERMOSTATS (AUTOMATIC)

- .1 Low-Limit protection with capillary sensible on 30 cm length
 - .1 6-m capillary tube.
 - .2 Capillary tube to cover the whole surface of the equipment to protect; support the capillary adequately.
 - .3 Temperature range: 0°C to 5°C (32°F to 41°F).
 - .4 Nominal current: 6 A at 120 V.
 - .5 Return to normal: Automatic.
- .2 Acceptable Products: Schneider TC-5131; Johnson A11B; Siemens 134-1510; Honeywell L480B.

2.3 ELECTRIC HUMIDISTAT

- .1 Duct electric humidistat with synthetic sensing element.
- .2 Operating Range: 15-95%.
- .3 Nominal Current: 3,6 A at 240 VAC.
- .4 Acceptable Products: Schneider HC-201 or approved equivalent.

2.4 FLOW DETECTOR - LIQUIDS

- .1 Liquid flow detector for NPS 1 to NPS 8 pipes.
 - .1 Can be used for water or glycol.
 - .2 Adjustable sensibility.
 - .3 Nominal current: 16 A at 120 VAC.
 - .4 Ambient limits: 0°C to 82°C (32°F to 180°F). Liquid temperature: 0°C to 121°C (250°F). Maximum liquid pressure: 1,034 kPa.
- .2 Acceptable Products: McDonnell & Miller FS7-4; Johnson F61KB-11 or approved equivalent.

2.5 FLOW DETECTOR – FOR SHOWERS

- .1 Compact liquid flow detector specifically engineered to monitor liquid flows.
- .2 Available for installation in pipelines from 1/2" to 2" (12.70 to 50.80 mm).
- .3 Materials:
 - .1 Vane: 301 stainless steel.
 - .2 Body and tee: brass.
- .4 Switch: SPDT, 5 A @125/250 VAC.

- .5 Adjustable sensibility.
- .6 Temperature limits: -4 to 220°F (-20 to 105°C).
- .7 Pressure limit: 250 psi.
- .8 Ambient temperature Limits: -4 to 167°F (-20 to 75°C).
- .9 Enclosure Rating: Weatherproof, NEMA 4 and Explosion-proof.
- .10 Acceptable Products: Series V6 Flotect Mini-Size Flow Switches (DWYER) or approved equivalent.

2.6 PRESSURE DETECTOR (AIR)

- .1 Pressostat for air, used as an operating status.
 - .1 Sensible element, neoprene diaphragm.
 - .2 Adjustment range 0.07 to 1 in. (1.8 to 25.4 mm) pressure; differential 0.04 in. (1 mm).
 - .3 Maximum overpressure: 3 times the maximum reading.
 - .4 Nominal current: 6,25 A at 120 VAC. Automatic reset (or manual for high-pressure protection).
- .2 Acceptable Products: Dwyer 1823; Schneider PC-301; Johnson P32; Siemens 141-0518.

2.7 LIMIT SWITCH

- .1 Mechanical limit switch with contact 1PDD, sealed.
 - .1 Activation arm: Appropriate to the application.
 - .2 Nominal current: 10 A at 120 VAC.
- .2 Acceptable Products: LSA1A from Honeywell; Télémécanique or approved equivalent.

2.8 CONTROL TRANSFORMERS

- .1 Open type transformers.
- .2 Transformers installed in control panels or in separate boxes. Control boxes must be installed in accessible places. No transformer to be installed in ceilings.
- .3 All transformers not provided with short-circuit protection, or of capacity more than 45 VA must have a control fuse or a circuit breaker. Fuses or circuit breakers must not be installed on the transformer casing, but in the same control box.
- .4 Acceptable Products: Delta; Exacta or approved equivalent.

2.9 TEMPERATURE SENSORS

- .1 Resistive Type Temperature Sensors:
 - .1 Technology:
 - .1 Thermistor type resistive element, negative temperature coefficient, nominal value 10.000 ohms at 24°C (75.2°F), accuracy 0.2°C (0.36°F), usable when the reception module can linearize the signal. Response time lower than 3 seconds for a temperature variation of 10°C (50°F).
 - .2 Resistance: Platinum type, nominal value 100 or 1,000 ohms at 0°C (32°F) (± 0.2 ohm), designed to allow reduction of stress, with 3 wires, and a resistance variation of 0.00385 ohm/ohm°C. Use only with a 4-20 mA transmitter.
 - .3 Thermocouple: To be used for installations at high temperatures, equal or above 200°C (392°F).
 - .2 Mounting according to application:
 - .1 Duct sensors: Allow spacing for insulation.
 - .2 Outside: NEMA 12 connection box.
 - .3 Immersion: with stainless steel well.
 - .4 Averaging sensors for duct mounting, containing many sensor elements allowing the reading of the averaging temperature. Minimum length 6,000 mm (20 ft). When being installed, the averaging sensor must be flexible at any point with a bending radius of 100 mm (4 in.), without any effect on their efficiency.
 - .5 Unless otherwise specified, room sensors to be as indicated below:
 - .1 Offices: Adjustable smart sensors, with limited setpoints.
 - .2 Corridors and public spaces: Blind sensors.
 - .3 Technical spaces: Blind sensors.
 - .3 Range adapted to the application, with possibility to limit the range for room sensors.
 - .4 Power supply: 5 VDC, from an automaton.
 - .5 Options:
 - .1 Day-night models: With reset button for day mode.
- .2 Intelligent Sensors:
 - .1 Room temperature sensors are addressable. The sensing element is thermistor with a negative temperature coefficient, impedance compatible with the other room sensors. Sensors must be connected to the digital controller via a dedicated communication network. They are equipped with programmable pushbuttons and an alphanumeric display indicating the room temperature, set point, and all other points desired by the Owner.
 - .2 A connection plug for a portable programming tool is included. Wireless connection is also acceptable. Include one programming tool for every 100 sensors, or portion of it.

- .3 Acceptable Products: Delta DNS; Reliable SSL or approved equivalent.

2.10 HUMIDITY SENSORS

- .1 Relative humidity combined sensor and transmitter.
 - .1 Capacitive type sensor.
 - .2 Mounting:
 - .1 Duct: With stainless-steel connection box for conduit. Mechanical protection of the sensor in stainless steel to allow installation in ducts with air speed of 10 m/s (1,968.5 ft/min.).
 - .2 Room: With decorative box and separate base.
 - .3 Outside air humidity sensor: Temperature range from -40°C to 50°C (-40°F to 122°F). NEMA 12 protection enclosure. Not sensible to condensation or saturation at 100%.
 - .3 Range of relative humidity from 5% to 90%, minimum.
 - .4 Service temperature from 0°C to 60°C (32°F to 140°F).
 - .5 Signal transmitter with 0-5 VDC output.
 - .6 Measuring accuracy: $\pm 2\%$. Maximum linearity error $\pm 2\%$ from base curve.
- .2 Acceptable Products: Greystone RH100; Mamac HU224; Johnson Controls HE-6700; Siemens QFA; Honeywell H7600.

2.11 STATIC PRESSURE SENSOR

- .1 Pressure sensor for duct mounting.
 - .1 Multiple points and manifold for averaging reading.
 - .2 Accuracy of $\pm 1\%$ of actual static pressure in the duct.

2.12 DIFFERENTIAL PRESSURE SENSORS FOR VELOCITY READING

- .1 Differential pressure sensor for duct mounting.
 - .1 Multiple points and manifold for averaging reading, for both static pressure and total pressure.
 - .2 Accuracy of $\pm 1\%$ of actual velocity in the duct.

2.13 PRESSURE TRANSMITTERS, STATIC OR DIFFERENTIAL (AIR)

- .1 Transmitter for reading the pressure and converting to an electronic signal.
 - .1 Diaphragm type construction with capacitive element.
 - .2 Internal materials suitable for continuous contact with industrial standard instrument air or gas, as applicable.
 - .3 Input protection against overpressure, minimum twice the nominal pressure.
 - .4 Output short-circuit and open circuit protections.
 - .5 Duct mounting and connection box included.

- .6 Range required as per the application. Centered zero for room pressure sensors.
- .7 Output signal 4 to 20 mA with a maximum resistive load of 500 ohms (1-5 VDC).
- .8 Integral zero and span adjustment.
- .9 Hysteresis, non-linearity, and fidelity error combined must not be more than $\pm 0.5\%$ of full-scale output signal for the whole range. Temperature variation of 50°C (90°F) not affecting the reading by more than $\pm 1.5\%$ of full scale. Variation of output signal lower than 0.2% of full scale for a variation of $\pm 10\%$ of the input power voltage.
- .2 Acceptable Products: Setra 264; Mamac PR 200; Veris PXPLX.

2.14 PRESSURE TRANSMITTERS, STATIC OR DIFFERENTIAL (LIQUIDS)

- .1 Pressure transmitter for liquid medias.
 - .1 Single diaphragm construction.
 - .2 Duct mounting, 12,5 mm ($\frac{1}{2}$ in.), NPT, and connection box included.
 - .3 Output signal 4 to 20 mA with a maximum resistive load of 500 ohms (1-5 VDC).
 - .4 Fidelity error must not be more than $\pm 0.5\%$ of output signal for the whole range. Dead band or hysteresis of 0.1% of range. Linearity fo 1.5% of total range. Accuracy of $\pm 1\%$ of range.
 - .5 Integral zero and span adjustment.
 - .6 Bronze integrated 3-way valve manifold for the calibration and isolation of the instrument (differential pressure).
- .2 Acceptable Products: Setra, 230 Series; Mamac PR264; Veris, PW2 Series.

2.15 LEVEL DETECTOR FOR LIQUID LEVEL IN TANKS

- .1 Instrument for detecting and indicating low and high levels of fluids in tanks, and to indicate alarms when required.
 - .1 Snap acting contacts, nominal capacity of 1 A at 120 VAC. Multiple floats type, to be installed on top of tank or in an external pipe in the case of unstable levels (water towers).
 - .2 Maximum service temperature of 120°C (248°F).
- .2 Acceptable Products: Gem, LS-800 or approved equivalent.

2.16 ELECTROMECHANICAL RELAYS

- .1 Dual-voltage relays, inverters, bipolar, plug-in, with connection base.
 - .1 Electromagnetic coil activation, 120 VAC or 24 VDC.
 - .2 Change-over contacts plated, or not subject to corrosion.
 - .3 DIN rail mounting.

- .4 Output contacts 5 A to 120 VAC.
- .5 DEL status indication.
- .2 Acceptable Products: Carlo Gavazzi; Omron or approved equivalent.

2.17 RELAYS FOR ELECTRIC BASEBOARDS

- .1 Electric relays for installation in baseboard heaters, without heat dissipation.
 - .1 Instantaneous activation by electric signal.
 - .2 Installation with screws in in the baseboard heater or with electric connector ½ in.
 - .3 Control voltage: 24 VAC.
 - .4 Integrated transformer if required. Voltage as per application.
 - .5 Output capacity of 22 A at 208 VAC, 18 A at 347 VAC, 10 A at 600 VAC.
 - .6 Connections with pressure connectors.
 - .7 DEL status indicator.
 - .8 No heat dissipator required.
- .2 Acceptable Products: R840 from Aube/Honeywell or approved equivalent.

2.18 STATIC RELAYS (TRIACS)

- .1 Electronic relays, without any moving part for the activation of electrical loads.
 - .1 Activation by an electric signal on a transistor.
 - .2 Mounting on DIN rail or with screws.
 - .3 Control command 3 to 32 VDC or 24 VAC. Release tension of 1.2 VDC.
 - .4 Input/output electric isolation of 4 000 VAC at 25°C (77°F), for a maximum of 1 second.
 - .5 Input/output connection screws or wires suitable for 14 to 18 AWG cables.
 - .6 Service RANGE temperature of -20 to 70°C (-4°F to 158°F). Frequency operation of 45 to 65 Hz.
 - .7 DEL status indicator.
 - .8 Heat dissipator integrated or added as required.
- .2 Acceptable Products: Cristal; Omron; Carlo Gavazzi or approved equivalent.

2.19 CURRENT TRANSDUCERS

- .1 Combined sensor/transducer, to measure line current and produce proportional signal:
 - .1 Measurement by electromagnetic induction.
 - .2 Adjustable mounting brackets to allow for secure/safe mounting inside MCC.
 - .3 Field adjustable range to suit applications. Select range so that maximum reading is about $\frac{2}{3}$ of range.

- .4 Output signal 0-1 VDC, 0-5 VDC or 4-20 mA.
- .5 Accuracy to 1% of full scale. Frequency insensitive from 10 - 80 Hz.
- .6 Adjust setpoint to detect breakage of a belt (i.e. on a fan).
- .2 Acceptable Products: Veris H923; Greystone SC-550 or approved equivalent.

2.20 ELECTRONIC DAMPERS ACTUATORS

- .1 Direct Coupling Actuators.
 - .1 Gear mechanism, 2-direction electric motor with feedback position control.
 - .2 End of travel electronic stops.
 - .3 Rotating span of 95° limited by mechanical stops.
 - .4 Power supply 120 VAC or 24 VAC; typical power consumption of 5 VA. Select by priority 24 VAC actuators.
 - .5 Control signal 0-10 VDC for modulating actuators. Button for rotation direction selection.
 - .6 Safety spring return mechanism for outside air and mixing dampers, for return to normal position in case of power loss. Direction of safety return by actuator inversion on the shaft.
 - .7 Feedback signal: 0-10 VDC indicating the 0-100% position.
 - .8 Maximum travel time of 120 seconds for 0-100% positioning.
 - .9 Sufficient power double the one to allow the positioning of dampers at maximum operating pressure and dynamic pressure for opening and closing. Use multiple actuators mounting when required. Coordinate with the damper supplier.
 - .10 Provide and install remote installation kits if required where the direct mounting of actuators does not allow the access to actuators for service.
- .2 Acceptable Products: Belimo AFB/NFB; Johnson Controls M9200; Siemens GCA.

2.21 ACTUATORS FOR TERMINAL UNITS

- .1 Direct Coupling Actuators.
 - .1 Gear mechanism, 2-direction electric motor with feedback position control.
 - .2 End of travel mechanical and electronic stops.
 - .3 Power supply 24 VAC; typical power consumption of 2 VA.
 - .4 Control signal 0-10 VDC or floating with position feedback for modulating actuators. Button for rotation direction selection.
 - .5 Floating actuators acceptable when the damper positioning is not required in the sequence of operation.
 - .6 Maximum travel time of 120 seconds for 0-100% positioning.
- .2 Acceptable Products: Belimo LMB24; Neptronic; Siemens; Johnson Controls.

2.22 CONTROL VALVES

- .1 General:
 - .1 Select control valves with a pressure loss of 3 psi, except when otherwise specified.
 - .2 For steam valves, use the accessories allowing the protection of actuators against excessive heat.
 - .3 Select actuators allowing the required pressure close off required for the application.
 - .4 Select high pressure valves when required by the application.
 - .5 Provide the mounting instructions to the installer, especially for the 3-way valves mounting directions.
- .2 Globe type valves, with seat designed for optimized flow, 2 or 3-way.
 - .1 Equal percentage flow characteristics (liquid) or linear (steam), as indicated on the drawings.
 - .2 Leakage class IV as per ANSI, 0.01% of maximum opening position of valve.
 - .3 Easily replaceable packing, replaceable plug, material compatible with the service type.
 - .4 Stainless-steel stem; plug and seat in stainless steel, bronze, or brass, as per application.
 - .5 Maximum differential pressure as required by the application.
 - .6 NPS 2 or less control valves:
 - .1 Screwed type ends, conical NPT (National Pipe Thread).
 - .2 Class 150 or 250 where required, as per ANSI and bearing the seal of this organism.
 - .3 Theoretical turndown ration of 50:1 minimum.
 - .7 NPS 2 ½ or more control valves:
 - .1 Flange type.
 - .2 Class 125, or 250 where required, as per ANSI and bearing the seal of this organism.
 - .3 Theoretical turndown ration of 50:1 minimum.
 - .8 Acceptable Products: Belimo G2/G3; Spartan VE411/VE431; Honeywell V5011/V5013; Johnson Controls VG7000; Siemens Flowrite.
- .3 Body: Characterized ball, with characterization disc (modulating valves).
 - .1 Flow characteristic (liquids) or "go/no go" as indicated on Control Valve Schedule.
 - .2 2- or 3-way, as indicated.
 - .3 Leakage rate ANSI Class IV, 0.01% of full open valve capacity.
 - .4 Stainless-steel Ball and stem.
 - .5 Stainless-steel plug and seat.

- .6 Valves NPS 2 and under:
 - .1 Screwed National Pipe Thread (NPT) tapered female connections.
 - .2 Maximum operating pressure fo 600 psi.
 - .3 Rangeability 100:1 minimum.
- .7 Valves NPS 2½ and larger:
 - .1 Flanged connections.
 - .2 Valves to ANSI Class 150 or 250 as indicated, valves to bear ANSI mark.
 - .3 Rangeability 100:1 minimum.
- .8 Acceptable Products: Belimo B200S or B3; Bray, ST Series; Johnson Controls VG1000; Siemens, 599 Series.

2.23 ELECTRONIC CONTROL VALVE ACTUATORS

- .1 Direct coupling actuators or linear movement:
 - .1 Gear mechanism, 2-direction electric motor with feedback position control.
 - .2 Power supply: 24 VAC.
 - .3 Command signal of 0-10 VDC for modulating actuators. Button for direction of rotation mechanism.
 - .4 Spring return fail position return where required on Valves Schedule.
 - .5 Feedback signal 0-10 VCC indicating 0-100% position.
 - .6 Sufficient power to attain close-off pressure. Use multiple actuators when required.
- .2 Acceptable Products: Belimo; Neptronic; Keystone; Johnson Controls; Siemens.

2.24 UNINTERRUPTIBLE POWER SUPPLY (UPS)

- .1 Uninterruptible power supply to assure power stability and continuity.
 - .1 UPS must be able to provide twice of the required power capacity, but must not be less than 750 VA.
 - .2 Double-conversion model (no interruption during power outage).
 - .3 The UPS must be able to maintain the connected charge in operation for 15 minutes.
 - .4 Provide a contact to supervise the operation of the system.
 - .5 Acceptable models: APC; MGE or approved equivalent.

2.25 CONTROL / REGULATION PANELS

- .1 Multi-section tables as required and indicated, capable of accommodating all devices required for installation and with a 25% reserve, for the addition of other equipment, without addition of cabinets.

- .2 All instruments in the panel must be clearly marked with a “P-Touch” tape. The indications on the façade must be engraved on ebonite plates. All wiring inside the panels must be done properly inside gutters.
- .3 Each control panel must be equipped with a terminal strip to make all connections of the internal components to terminals. The terminals must be clearly identified as indicated in specs.
- .4 Each wire must be clearly identified and those to be connected to the outside must be returned to terminals. The unused inputs or outputs of the control panel must be connected to the terminals to facilitate any additions.
- .5 Each system must be equipped with a monobloc panel having the following characteristics:
 - .1 Table mounted in 2.5 mm thick steel cabinet, finished in baked enamel;
 - .2 Relays, switches, and controllers mounted inside panel;
 - .3 Temperature indicators, pressure gauges, graphic display of installation, indicator lamps and panel-mounted pushbuttons;
 - .4 NEMA 1 enclosure, with hinged door and key lock; A single lock key for all tables;
 - .5 NEMA 4 enclosure in humid environment.
 - .6 Panels mounted adjacent to associated equipment on vibration-free wall or on legs;
 - .7 Each control panel must be equipped with a 120 VCA, duplex receptacle and a transformer to power the controllers at 24 VAC.

2.26 VARIABLE SPEED DRIVES

- .1 Description:
 - .1 Speed reducers are variable speed type by variable frequency (VFD), with capacity adapted to motor size.
- .2 Materials:
 - .1 Designed to work with any make of AC motor, induction motor, standard motor, or high-efficiency motor.
 - .2 10% supply voltage variation tolerance. No input and output transformer for voltage adaptation.
 - .3 3% input line reactor.
 - .4 5% output line reactor.
 - .5 Safety from over-current.
 - .1 VFD stops immediately in case of short circuit. Interruption capacity is 40,000 A, without input fuse.
 - .6 Safety against input line overvoltage and undervoltage.
 - .7 Safety against phase loss and grounding.

- .8 Safety against internal components overvoltage.
- .9 Electronical safety against momentary overload.
- .10 Efficiency: 97% or more at full speed and nominal load mode.
- .11 0.98 Power factor at full speed.
- .12 Operating conditions: 0 - 40°C (32°F to 104°F) room temperature with maximum 95% relative humidity (RH) (non-condensing).
- .13 Speed range: 10% to 100% of motor nominal speed.
- .14 Adjustable starting and deceleration time: 1 to 600 sec.
- .15 All the releasing mechanisms in case of failure can be reset automatically or manually or limited to seven restart tries.
- .16 VFD able to operate while motor is not linked for commissioning trials and adjustments.
- .17 Can start on rotary load up to motor nominal speed independently of rotation direction.
- .18 Frequency discharge circuit.
- .3 Control Circuit:
 - .1 Conductive local parts of a switching device including following breakers:
 - .1 "Manual/Off/Line/Test" operation;
 - .2 "Local/Remote" speed control;
 - .3 Measure component selector switch.
 - .2 Microprocessor control circuit with LCD display back lighted showing following information:
 - .1 Voltage output;
 - .2 Load percentage (%);
 - .3 Speed percentage (%);
 - .4 Overload;
 - .5 Over-voltage and under-voltage;
 - .6 Phase loss;
 - .7 Over-current;
 - .8 Grounding failure;
 - .9 Overheating;
 - .10 Internal and external alarms with memory;
 - .11 Live putting;
 - .12 Ready for starting;
 - .13 Operation mode;
 - .14 Speed selected operation mode.
 - .3 Internal potentiometer controls of following operation parameters:
 - .1 Minimum speed;
 - .2 Maximum speed;

- .3 Current limit;
- .4 Overload;
- .5 Voltage and frequency increases;
- .6 Input speed signal phase difference and circuit gain.
- .4 Tie line with external control system:
 - .1 Control circuit accepts each of the following standard signals to speed control:
 - .1 0 to 5 VDC;
 - .2 0 to 10 VDC;
 - .3 4 to 20 mA.
 - .2 Accept "On/Off" mode dry contact for the VFD.
 - .3 Accept dry contact for external alarm.
 - .4 Provides a dry contact to show VFD failure.
 - .5 Provides a dry contact to show VFD operation.
 - .6 Provides 0 to 10 VDC or 4 to 20 mA signal to show motor speed and output voltage.
 - .7 Provides a dry contact to show bypass circuit.
- .5 Provide the following options:
 - .1 Main disconnect, non-fused;
 - .2 Two groups of independent fuses for the main circuit and the bypass circuit;
 - .3 Three-contactor bypass circuit. This circuit also includes a four-position selector (Run/Stop/Derivation/Test):
 - .1 "Run" position: The motor is controlled by the VFD;
 - .2 "Stop" position: All contactors are open, and the VFD and motor are shut down;
 - .3 "Derivation" position: The contactors at the entrance and exit of the VFD are off, the bypass contactor is on and the motor is running at full speed;
 - .4 "Test" position: The engine is bypassed and the VFD is powered but disconnected from the motor to check the operation without the motor.
- .6 Communication card:
 - .1 Provide a BACnet MS/TP communication card for integration into the building control network.
 - .2 Provide for the integration of at least ten software points. See Section 25 90 01 for a list of points to be forwarded. Only some points will be read, and others will be read and write.
- .7 Start-up:
 - .1 The start-up must be completed by a manufacturer's technician.
 - .2 Training course on the operation of the VFD.

- .3 3-year warranty upon delivery on parts and labour.
- .4 3-year warranty upon delivery for motor isolation.
- .4 Ensure that the installation of the variable speed drives and associated accessories does not create a noise level above the current level in the mechanical room.
- .5 Acceptable Products: ABB ACH550-xxx; Danfoss VLT 6000-HVAC; Cutler-Hammer; Yaskawa.

2.27 VENTURI VALVES

1. This Section concerns the Phoenix manufacturer's equipment shown, among other things, in the VH-1 to VH-4 control scheme. The Contractor must update the existing venturi valves with digital control. Unlike controls, the body of the valves is to be preserved.
2. The air flow control device must be provided for venturi valves. Air flow control devices, with flow or pressure reading, are not acceptable.
3. The new control devices should allow the valves to operate independently of changes in static pressure in the duct over its entire specified differential static pressure range (0.3/0.6 inches of water to 3 inches of pressure water).
4. The air flow control device must maintain a specific flow in the operating range with an accuracy of 5% of the setpoint.
5. Criteria for valves:
 1. Mount an electric actuator on the valve. The actuator must then be calibrated using a flow curve of at least 48 points over the entire flow range of the valve, which will be programmed into the valve control card.
 2. Venturi valves in laboratories with chemical hoods must be equipped with a high-speed actuator that can switch from minimum flow to maximum flow within a second.
 3. Air valves in laboratories without chemical hoods must be equipped with an intermediate-speed actuator that can switch from minimum flow to maximum flow within 60 seconds.
 4. Each of the air valves must include a controller capable of ensuring a linear variation in the air flow according to the project's needs. A device must generate a digital feedback signal corresponding to the valve's airflow. Each controller must have, thus, the terminals required for external controls, via the BMS, the following:
 1. Output signal (reading the airflow of the valve): 0 - 5 VDC, 0-10 VDC or 4 to 20 mA.
 5. Power supply: 24 VAC.
6. Air flow control devices must have an individual marking indicating their specific calibration data. At a minimum, this data should include: Serial number, model number,

and measurement values at 48 speeds. All this information will need to be retained by the manufacturer in the compliance documentation.

7. Terminal units must be programmed and commissioned by an authorized representative of the manufacturer. Submit a commissioning report confirming that the system meets the manufacturer's recommendations.
8. Providing, among other things, the following items:
 - .1 Eight (8) conversion kits for existing valves, room ventilation; complete with new Celeris-2 digital controller and high-speed electric actuator. Model: C2UX112M-XMEXC.
 - .2 Four (4) conversion kits for existing hood valves; complete with new Celeris-2 digital controller and high-speed electric actuator. Model: C2UX112M-XMHXO.
 - .3 Four (4) hood monitors. Model: FHD120.
 - .4 A Phoenix Controls integrator. Model: PCI8025.
9. Acceptable Products: Phoenix (The manufacturer of the retained existing valves).

2.28 GAS DETECTION SYSTEM

- .1 Gas sensors are used to detect hazardous gases, transmit information, and initiate actions.
 - .1 The sensors are electrochemical or catalytic depending on the gas to be detected. The sensors are CSA-approved. Power: 24 VAC (17-27 VAC).
 - .2 Dedicated transformer for each transmitter.
 - .3 Operation range:
 - .1 CO: 0-250 ppm (alarms: 25 and 100 ppm).
 - .4 Output signal; contacts 5 A to 250 VAC, and signal 4-20 mA.
 - .5 Reading accuracy: 3% of the full scale. Digital display of the read value; 85 dBA sound alarm; visual indications of power, alarm, and fault.
 - .6 Install the wiring in a dedicated conduit for this purpose. Install the sensors according to the manufacturer's recommendations.
 - .7 Provide a start-up and installation certificate produced by the manufacturer or an authorized representative.
- .2 Acceptable model: Honeywell E3Point, or approved equivalent of Opera or Armstrong.

2.29 REMOTE GAS SENSORS

- .1 The probe consists essentially of a gas-specific sensitive element and is of the electrochemical type.
 - .1 The probe must be protected from damage or other hazards, and the sensitive element must be enclosed in a lattice.
 - .2 The CO gas detection scale range should be from 0 to 250 ppm.
 - .3 The wiring of the sensors must be in a separate duct for this purpose.

- .2 Acceptable products (CO main probe): E3POINT E3SCO from Honeywell Analytics or equivalent of Opera or Armstrong.

2.30 Touch Panels

- .1 Touch panel, including aluminum frame with anodized finish, suited for visualization and operation of various applications in HVAC building automation.
- .2 Screen size : 15 in. (381 mm).
- .3 Dimensions: 394 x 318 x 65 mm (L x W x H).
- .4 Display resolution: 1024 x 768, 262,144 colors.
- .5 Power Supply: 24 VDC \pm 10%, 4.2 W.
- .6 Touch panels implement the BACnet Building Controller (B-BC) profile.
- .7 Interface and Communication:
 - .1 Two communication ports of BACnet Ethernet I/P.
 - .2 communication port of RS-485 (ANSI TIA/EIA-485) BACnet MS/TP.
- .8 Degree of Protection: Front: IP54 / back: IP10.
- .9 Acceptable Products: LVIS-3ME15-Ax (LOYTEC) or approved equivalent.

2.31 WATER DETECTORS

- .1 A microchip-based device that uses gold-plated sensing probes to detect the presence of water or other conductive liquid.
- .2 Power Supply: 14 - 30 V (AC or DC source).
- .3 Outputs: normally open and normally closed contacts rated at 5A @ 120 VAC/30 VDC.
- .4 Acceptable Products: WD-100 (Greystone) or approved equivalent.

Part 3 Execution

3.1 INSTALLATION

- .1 Install equipment and components so that manufacturer's and CSA labels are visible and legible after commissioning is complete.
- .2 Install field control devices in accordance with manufacturers recommended methods, procedures, and instructions.

- .3 Temperature transmitters, humidity transmitters, current-to-pneumatic transducers, solenoid air valves, controllers, relays: Install in NEMA I enclosure or as required for specific applications. Provide for electrolytic isolation in cases where dissimilar metals make contact.
- .4 Support field-mounted panels, transmitters, and sensors on pipe stands or channel brackets.
- .5 Manage required space for fire protection material. Provide and maintain the nominal characteristics of the fire protection.
- .6 Electrical System:
 - .1 Complete installation in accordance with Section 25 05 60.
 - .2 Modify existing starters to provide for EMCS as indicated in I/O Summaries and as indicated.
 - .3 Trace existing control wiring installation and provide updated wiring schematics including additions, deletions to control circuits for review before beginning Work. Refer to electrical control schematics included as part of control design schematics on drawings mentioned in Section 25 90 01 EMCS: Site Requirements, Applications and Systems Sequences of Operation.
 - .4 Terminate wires with screw terminal type connectors suitable for wire size and number of terminations.
 - .5 Install communication wiring in conduit.
 - .1 Provide complete conduit system to link Building Controllers, field panels, and OWS(s).
 - .2 Conduit sizes to suit wiring requirements and to allow for future expansion capabilities specified for systems.
 - .3 Conduit filling should not exceed 40% of their capacity.
 - .4 Design drawings do not show conduit layout.
 - .6 Do not run exposed conduits in normally occupied spaces, unless otherwise indicated or unless impossible to do otherwise. Wiring in mechanical rooms, wiring in service rooms, and exposed wiring must be in conduit.
- .7 Provide the following mechanical equipment:
 - .1 Required accessories for connections to piping;
 - .2 Thermal wells and control valves.
 - .3 Air flow control, dampers, and similar elements.
- .8 VAV Terminal Units: Supply, install and, adjust as required.
 - .1 Air probe, actuator, and associated VAV controls.
 - .2 Tubing from air probe to "dp" sensor as well as installation and adjustment of air flow sensors and actuators.
 - .3 Co-ordinate air flow adjustments with balancing trade.

3.2 TEMPERATURE AND HUMIDITY SENSORS

- .1 Install to ensure minimum field adjustments or calibrations.
- .2 Sensors must be readily accessible and adaptable to each type of application to allow for quick easy replacement and servicing without special tools or skills.
- .3 Install room sensors at a height of 1,400 mm. Align sensors above lighting switches where applicable, except when in presence of rheostats.
- .4 Outdoor Installations:
 - .1 Install the sensors in NEMA 4 enclosures, on north-east side, at a minimum height of 2,5 m from ground to protect against vandalism.
 - .2 Protect sensors from solar radiation and wind effects by non-corroding shields.
- .5 Air Duct Installations:
 - .1 Do not mount in dead air space.
 - .2 Locate sensors within sensor vibration and velocity limits.
 - .3 Securely mount averaging sensors.
 - .4 Thermally isolate sensors from brackets and supports to respond to air temperature only.
 - .5 Support sensors separately from hot or cold coils and filter racks.
- .6 Averaging duct type temperature sensors.
 - .1 Install averaging element horizontally across the ductwork starting 300 mm from top of ductwork. Each additional horizontal run to be no more than 300 mm from one above it. Continue until complete cross-sectional area of ductwork is covered. Use multiple sensors where single sensor does not meet required coverage.
 - .2 Wire multiple sensors in Series for low-temperature protection applications.
 - .3 Wire multiple sensors separately for temperature measurement.
 - .4 Use software averaging algorithm to derive overall average for control purposes.
- .7 Thermowells: Install for piping installations.
 - .1 Locate well in elbow where pipe diameter is less than well insertion length.
 - .2 Thermowell to restrict flow by less than 30%.
 - .3 Use thermal conducting paste inside wells.

3.3 CONTROL PANELS

- .1 Arrange for conduit and tubing entry from top, bottom, or either side. Install wiring trays where wiring enters the panel.
- .2 Identify devices with "P-Touch" type indicators.

- .3 Wiring and tubing within panels: Locate in trays or individually clipped to back of panel. All connections will be made on modular terminal plates of appropriate dimensions.

- .4 Clearly identify wiring and conduit in accordance with shop drawings.

3.4 MANOMETERS

- .1 Install a manometer near each static pressure sensor associated to an air handling system and near each duct air flow measuring station, as instructed by Departmental Representative.
- .2 Install the manometers as indicated on the drawings and required in the specifications.

3.5 PRESSOSTATS, DIFFERENTIAL PRESSOSTATS, AND SENSORS

- .1 When the Code allow it, install an isolation valve and a dampening device between the sensor and the pressure source.
 - .1 In steam and hot water piping at high temperature, protect the sensible elements with a pigtail siphon between the valve and the sensor.

3.6 PRESSURE/CURRENT TRANSDUCERS

- .1 Install a manometer on output signal of the transducers.

3.7 IDENTIFICATION

- .1 Identify field devices in accordance with Section 25 05 54 - EMCS: Identification.

3.8 AIR FLOW MEASURING STATIONS

- .1 Protect airflow measuring stations until the ducts cleaning is completed.

3.9 TESTING AND COMMISSIONING

- .1 Calibrate and test field devices for accuracy and performance in accordance with Section 25 01 11 - EMCS: Start-up, Verification and Commissioning.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 Public Works and Government Services Canada (PWGSC)/Real Estate General Directorate/Architectural and Engineering Services.
 - .1 25 00 05, Energy Management System Design Guidelines.

Part 2 Operating Sequences**2.1 GENERAL NOTE**

- .1 The sequence requirements required by the Client Standard take precedence over the sequences provided below. The Contractor must, in his tender, plan to coordinate with the Customer his control standards. Requests for changes to the Client, in order to comply with its standard, must be executed within a time frame acceptable to the Department's Representative, at no additional cost to the Client. These changes can be made until final acceptance of the project.

2.2 GENERAL SEQUENCES

- .1 Following sequences apply for all the mechanical systems, when necessary:
 - .1 When a ventilation or air conditioning system is shut down, the preheating, heating, cooling, and heating valves are in the closed position at the coil. Humidifiers are inoperative as soon as proof of flow is lost through the differential pressure switch. Also, humidifiers should be turned off at least 2 minutes before the fans stop. The fresh air and exhaust air dampers are closed, and the return dampers are open;
 - .2 When temperature at critical locations (where there is danger of freezing), within a ventilation system, reaches 5°C (41°F) or less and the system is shut down, an alarm is issued at the control panel and the preheat and/or heating coil valve is open to maintain 5°C (41°F);
 - .3 Critical protections or those required by Codes (detection of gas, fire, etc.) shall not be by-passed in any way, neither manually, nor by computer. If an input is required to the centralized system, supply a relay to execute the double function of control and alarm.
 - .4 At the start of a system or when a significant change in the percentage of fresh air, opening of the outdoor air damper must be done gradually to allow heating of the intake air.
 - .5 When there is an input of information as proof of operation, a totalization of hours of operation of mechanical equipment (compressors, water tower, fans, pumps, air conditioning units, etc.) must automatically be made, complete with operator control resetting.

- .6 Program alarms for all following situations:
- .1 Discrepancy between command and corresponding state signals.
 - .2 tapsRoom temperature at more than 2°C (3.6°F) from the effective setpoint.
 - .3 System temperature at more than 2°C (3.6°F) from the effective setpoint for 30 minutes.
 - .4 Hydronic network temperature at more than 1°C (1.8°F) from the effective setpoint for 30 minutes.
 - .5 Other values: Greater than 5% discrepancy with the setting.
- .7 When the program switches control modes (Example: Cooling to heating), a dead range must be included on setpoints. Also, several control stages monitored in sequence include a minimum time "IN" and "OUT". These measurements eliminate the danger of cyclical operation of equipment.
- .8 Space heating systems, where there is a night temperature reduction, must be restarted with an optimized starting strategy. Ensure that a return to normal temperature does not result in an increase in the overall building electrical demand. The same principle must be applied for systems serving for cooling rooms, where there is an increase in night temperature.
- .9 The setpoints must be programmed according to the table below. In occupied mode, occupants with temperature sensors with displays and selection buttons can only change the setpoint within the range shown in the table below.

SETPOINT – ROOM TEMPERATURE		
Mode	Occupied Period	Unoccupied Period
Heating	22°C (72°F)	18°C (65°F)
Cooling	25°C (77°F)	29°C (84°F)

- .10 Upon return from a power failure or other such disturbance, systems shall be returned to normal operating mode in a progressive sequence of start-up. It is possible to use an interval of up to 15 minutes.
- .11 All control valves will be corrected by software programming or by characterization of connecting rod and actuators to maintain a valve flow proportional to the controller's signal.
- .12 On evidence of fire detection through the fire control panel, fans stop. When restarting the systems, fans start according to their pre-established sequence.
- .13 The following control sequences apply to both new ventilation systems and existing ventilation systems to be incorporated into the EMCS.
- .14 The following sequences must be read together with drawings and list of points. Supply all control points necessary for the completion of control sequences, listed or implicit.
- .15 Program trend log points for all input and output analog points and variables that change in the time.

- .16 On proof of operation of equipment (fan, pump, etc.) without automatic or manual operation control on the screen, issue an "Equipment under maintenance" alarm and operate the system according to the standard sequences.
- .17 The setpoints as well as the times mentioned in the operating sequences must all be adjustable on the control station screen. Also, all the values (limits, etc.) used in sequences must be programmed with "BACnet object: AV" variables allowing their adjustment.
- .18 The modulation of frequency converters must be done gradually over an adjustable period of two (2) minutes.

2.3 V43-2 SYSTEM, DAIRY PLANT (BLOCK A)

- .1 System Description:
 - .1 This is a constant air-flow ventilation unit. It is equipped with an out-of-contract heat recovery coil, preheating coil, cooling coil, and a heating coil as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
 - .4 The face and bypass coil pump is off.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is switched on according to an hourly schedule.
 - .2 Supply and return fans start at their minimum speed.
 - .3 On proof of operation of the two fans, fan V36-18A starts, the dampers are placed at their position for minimum fresh air (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is gradually increased to its setpoint (to be determined during balancing) to maintain the flow required by the area served.
 - .5 The speed of the exhaust fan is modulated to maintain a slightly negative pressure in the plant (PC4 Pa, adjustable).
 - .6 The V43-25RE hood exhaust fan is started by a mechanical timer.
 - .7 The minimum position of the fresh air damper is 10% (adjustable), However, it is 30% (adjustable) when the V43-25RE fan is in operation.
 - .8 The supply damper for system V36-18A is modulated to maintain a constant pressure differential to the fan.
 - .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the setpoint of the supply temperature. This setpoint is adjusted,

between 13 and 15°C (adjustable), to keep the return air temperature at its (adjustable) setpoint.

- .3 On cooling request:
 - .1 The valves of the preheating coil and the heating coil are closed.
 - .2 The face and bypass coil pump is off.
 - .3 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when the return air enthalpy is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve in order to maintain its setpoint.
- .4 On heating request
 - .1 The cooling valve is closed.
 - .2 The face and bypass coil pump is running.
 - .3 The supply temperature sensor sequentially modulates the valves of the face and bypass coil and of the heating coil to maintain the supply temperature setpoint.
 - .4 The face and bypass coil are also modulated to maintain the mixing temperature at the inlet of the cooling coil at a minimum of 6°C (adjustable).
- .5 Humidification:
 - .1 The humidifier is modulated to maintain humidity in the unit's main return duct at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .6 Security:
 - .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.
 - .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .4 The system also stops on smoke detection or a fire alarm panel signal.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.

- .5 High/Low return humidity.
- .6 Dirty filters.

2.4 V43-5 PLANTS SYSTEM (BLOCK A)

- .1 System Description:
 - .1 This is a constant air-flow ventilation unit. It is equipped with an out-of-contract heating coil, a face and bypass heating coil, a cooling coil, and a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
 - .4 The face and bypass coil pump is off.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is switched on according to an hourly schedule.
 - .2 Supply and return fans start at their minimum speed.
 - .3 On proof of operation of the two fans, the dampers are placed at their position for minimum fresh air (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is gradually increased to its setpoint (to be determined during balancing) to maintain the flow required by the area served.
 - .5 The speed of the exhaust fan is modulated to maintain a slightly negative pressure in the plant (PC4 Pa, adjustable).
 - .6 The V4 4-244RE hood exhaust fan is started by a mechanical timer.
 - .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the setpoint of the supply temperature. This setpoint is adjusted, between 13 and 25°C (adjustable), to keep the return air temperature at its (adjustable) setpoint.
 - .3 On cooling request:
 - .1 The valve of the face and bypass coil is closed.
 - .2 The face and bypass coil pump is off.
 - .3 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when $T_{ext} < 19^{\circ}\text{C}$, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
 - .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The face and bypass coil pump is running.

- .3 The supply temperature sensor modulates the face and bypass coil to maintain the supply temperature setpoint.
- .4 The face and bypass coil is also modulated to keep the mixing temperature at the entrance of the cooling coil at a minimum of 6°C (adjustable).
- .5 Humidification:
 - .1 The humidifier is modulated to maintain humidity in the unit's main return duct at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to ensure a maximum of 70% RH in the supply.
- .6 Security:
 - .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.
 - .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .4 The system also stops on smoke detection or a fire alarm panel signal.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.5 V43-6 PLANTS SYSTEM (BLOCK A)

- .1 System Description:
 - .1 This is a constant air-flow ventilation unit. It is equipped with an out-of-contract heating coil, a face and bypass heating coil, a cooling coil, and a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and escape dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
 - .4 The front and avoidance coil pump is when stopped.

- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is switched on according to an hourly schedule.
 - .2 Supply and return fans start at their minimum speed.
 - .2 On proof of operation of the two fans, the dampers are placed at their position for minimum fresh air (10%, adjustable) and the equipment can operate according to the sequences below.
 - .3 The speed of the supply fan is gradually increased to its setpoint (to be determined during balancing) to maintain the flow required by the area served.
 - .4 The speed of the exhaust fan is modulated to maintain a slightly negative pressure in the plant (PC4 Pa, adjustable).
 - .5 The V44 -255RE, V43-14RE, V43-15RE, and V43-16RE hood exhaust fans start with their mechanical timers.
 - .6 The minimum position of the fresh air damper is 10% (adjustable), However, it is adjusted upwards (to coordinate during balancing) according to the number of exhaust fans V43-14RE, V43-15RE and V43-16RE in operation.
- .4 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the setpoint of the supply temperature. This setpoint is adjusted, between 13 and 25°C (adjustable), to keep the return air temperature at its (adjustable) setpoint.
- .5 On cooling request:
 - .1 The valve of the face and bypass coil is closed.
 - .2 The face and bypass coil pump is off.
 - .3 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when Text<15°C, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
- .6 On heating request:
 - .1 The cooling valve is closed.
 - .2 The face and bypass coil pump is running.
 - .3 The supply temperature sensor sequentially modulates the valves of the face and bypass coil and of the heating coil to maintain the supply temperature setpoint.
 - .4 The face and bypass coil is also modulated to maintain the mixing temperature at the inlet of the cooling coil at a minimum of 6° C (adjustable).
- .7 Humidification:
 - .1 The humidifier is modulated to maintain humidity in the unit's main return duct at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply

.8 Security:

- .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
- .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.
- .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
- .4 The system also stops on smoke detection or a fire alarm panel signal.

.9 Alarms:

- .1 High/Low supply temperature.
- .2 Freezing Alarm (BL).
- .3 Fan control failure.
- .4 High/Low supply humidity.
- .5 High/Low return humidity.
- .6 Dirty filters.

2.6 V36-1R AND V36-2R SYSTEMS, EVACUATION OF PARTS A-107 AND A-108 (BLOCK A)

.1 Operating Sequence:

- .1 The controller modulates the RM-2 (RM-5) exhaust damper to maintain a constant pressure differential to the filter via TPD.
- .2 When the system is running, the controller modulates the RM-1 (RM-4) and the RM-3 (RM-6) return damper to maintain slightly positive room pressure.

2.7 AC-18 AND AC-19 AIR CONDITIONING UNITS (LOCAL A-171, A-172 AND A175)

.1 System Description:

- .1 It is a split-type, constant-flow air conditioning unit that serves the pilot plant (A-171) and an office. The fresh air at its entrance comes from the UV-1 unit. The office is equipped with a terminal heat coil.

.2 When stopped:

- .1 The air conditioning unit is shut down.
- .2 The heating coil is inoperative
- .3 The fresh air damper of the unit is closed.

- .3 When in operation:
 - .1 The unit fan is started on a set schedule. (A 10-second delay is scheduled between the starting of each unit).
 - .2 When one of the units start, its fresh air damper is modulated to maintain the fresh air flow required of 55 L/s (120 cfm).
 - .3 On a cooling request according to the pilot plant's temperature sensor, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .4 On an office heating request, the heating coil is modulated with pulses to maintain the setpoint (P.C. 22°C, adjustable).
- .4 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.8 AIR CONDITIONING UNITS AC-20, AC-21, AC-24 AND AC-25 (ROOMS A161, A-162, A-165, A-141, A-142, AND A-145)

- .1 System Description:
 - .1 It is a constant flow split-type air conditioning unit that serves the pilot plant and an office. The fresh air at its entrance comes from the UV-1 unit. The office is equipped with a terminal heat coil.
- .2 When stopped:
 - .1 The air conditioning unit is shut down.
 - .2 The heating coil is inoperative
 - .3 The fresh air damper of the unit is closed.
- .3 When in operation:
 - .1 The unit fan is started on a set schedule. (A 10-second delay is scheduled between the departure of each unit).
 - .2 When one of the units start, its fresh air damper is modulated to maintain the fresh air flow required of 55 L/s (120 cfm).
 - .3 On a cooling request according to the pilot plant's temperature sensor, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .4 On an office heating request, the heating coil is modulated with pulses to maintain the setpoint (P.C. 22°C, adjustable).
 - .5 The supply sensor indicates the supply temperature to the control center.
- .4 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.

- .3 Fan control failure.
- .4 Unit internal alarm.

2.9 AIR CONDITIONING UNIT AC-22 (ROOMS A-151 AND A-152)

.1 System Description:

- .1 This is a split-type, constant-flow air conditioning unit. The fresh air at its entrance comes from the UV-1 unit. AC-22 operates in two modes: Normal mode (20°C) and mode (4°C). Depending on the mode it can serve the pilot plant and the A-152 and A-155 offices. These offices are each equipped with a terminal reheat coil. A CC-1/EV-1/EV-2 compressor/evaporator group is in place for the air conditioning of the A-151 plant in mode (4°C).

.2 When off:

- .1 The air conditioning unit is shut down.
- .2 The heating coil is inoperative
- .3 The fresh air damper of the unit is closed.
- .4 The supply damper to office A-155 and the bypass damper are closed.
- .5 The supply damper to the pilot plant and the return damper are open.

.3 When in operation: The operating modes (4°C) and (20°C) for the A-151 pilot plant are selected from the two selectors located in the A-152 and A-155 offices.

.1 Pilot plant in normal mode (20°C):

- .1 The CC-1 compressor-condenser and the EV-1 and EV-2 evaporators are stopped.
- .2 The dampers are positioned as follows:
 - .1 The supply damper to the pilot plant and the return damper are fully open.
 - .2 The supply damper to office A-155 and the bypass are completely closed.
- .3 The unit fan is started on a set schedule. (A 10-second delay is scheduled between the departure of each unit).
- .4 When a unit starts, the fresh air damper is modulated to maintain the fresh air air flow at 55 L/s (120 pcm).
- .5 On a cooling request according to the pilot plant's temperature sensor, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
- .6 On a heating request in the A-152 office, the electric coil TRIAC relay is modulated with pulses to keep the room temperature at the setpoint of (P.C. 22°C, adjustable).

.2 Pilot factory in mode (4°C):

- .1 The AC-22 unit is used to supply the A-152 and A-155 offices. To do this, the dampers are positioned as follows:

- .2 The supply damper of the A-151 pilot plant closes completely.
- .3 The supply damper to office A-155 and the bypass damper opens completely.
- .4 The return damper partially opens 150 L/s.
- .5 The digital controller switches on cc-1 condenser compressor fans and EV-1 and EV-2 evaporators.
- .6 The AC-22 unit is started on a pre-set schedule; the AC-23 unit is stopped.
- .7 At start-up of AC-22, its fresh air damper is modulated to maintain the fresh air flow at 100 L/s.
- .8 The room temperature sensors in offices A-152 and A-155 start the AC-22-unit compressor during a cooling request and pulse the TRIAC relay of their respective heating coils during a heating request.
- .9 The A-151 plant temperature sensor (dedicated for AC-22) controls the solenoid valve of the CC-1, EV-1, and EV-2 compressor-evaporator group to maintain temperature in the pilot plant A-151 at 4°C.
- .10 The high-humidity functions of the humidity sensors at the A-151 pilot plant are cancelled.

.4 Alarms:

- .1 High/Low room supply temperature.
- .2 Dirty filters.
- .3 Fan control failure.
- .4 Unit internal alarm.

2.10 AC-23 AIR CONDITIONING UNIT (ROOMS A-151 AND A-155)

.1 System Description:

- .1 This is a split-type, constant-flow air conditioning unit. The fresh air at its entrance comes from the UV-1 unit. AC-23 operates in two modes: Normal mode (20°C) and mode (4°C). In normal mode it supplies the pilot plant and office A-155. The office is equipped with a terminal reheat coil.

.2 When stopped:

- .1 The air conditioning unit is shut down.
- .2 The heating coil is inoperative
- .3 The fresh air damper of the unit is closed.

- .3 When in operation: The operating modes (4°C) and (20°C) for the A-151 pilot plant are selected from the SEL-151-1 and/or SEL-151-2 selectors located in offices A-152 and A-155.
 - .1 Pilot plant in normal mode (20°C):
 - .1 The unit fan is started on a set schedule. (A 10-second delay is scheduled between the departure of each unit).
 - .2 When a unit starts, its fresh air damper is modulated to maintain the fresh air flow required 55 L/s/s (120 cfm).
 - .3 On a cooling request according to the pilot plant's temperature sensor, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .4 On a heating request from the A-155 office, the heating coil is modulated with pulses to maintain the setpoint (P.C. 22°C, adjustable).
 - .2 Pilot factory in mode (4°C):
 - .1 The AC-23 unit is stopped.
 - .2 The fresh air damper and AC-23 supply damper are completely closed.
 - .3 The room temperature sensors in the A-152 and A-155 offices start the AC-22-unit compressor during a cooling request and pulse the TRIAC relay of their respective heating coil during a heating request.
 - .3 The high-humidity functions of the humidity sensors at the A-151 pilot plant are cancelled.
- .4 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.11 VE-2 SYSTEM (PILOT PLANTS A-141 AND A-151)

- .1 When stopped:
 - .1 The exhaust fan is stopped.
 - .2 The fresh air and evacuation dampers are closed.
- .2 When in operation:
 - .1 The operating modes (4°C) and (20°C) for the A-151 pilot plant are selected from the two SEL-151-1 and/or SEL-151-2 selectors located in offices A-152 and A-155.

- .2 Pilot plant in normal mode (20°C):
 - .1 On an increase in humidity at one of the four SH-141-1, 141-2, 151-1 or 151-2 sensors or on a signal from an M-141-1, 141-2, 151-1, or 151-2 timer, the following sequence occurs:
 - 1. The corresponding RME_1x1-x exhaust damper opens.
 - 2. The new RMA-1x1-x fresh air damper associated with this area is modulated to maintain a flow rate of 150 L/s (320 pcm).
 - 3. The VE-2 exhaust fan starts and has a speed of 25% of the total air flow exhausted, or 205 LL/s (435 pcm).
 - .2 When there is a request in another room, sequences 1 and 2 are repeated and the flow of evacuated air increases to 50% of the total (410 L/s, 870 pcm).
 - .3 On the third request, sequences 1 and 2 repeat and the flow of evacuated air increases to 75% of the total (615 LL/s, 1,305 pcm).
 - .4 When all four areas are in demand, all exhaust dampers are opened, fresh air air flows are maintained at their setpoint and the air flow is at its highest (820 L/s, 1,740 pcm). L
- .3 Pilot plant in normal mode (4°C):
 - .1 Same sequence as for normal mode with the following differences:
 - .1 RMA-151-1 and RME-151-1 are closed.
 - .2 RMA-151-2 modulate to maintain flow at 100 L/s and the RME-151-2 is modulated to 100 L L/s (215 cfm).
 - .3 The hp-151-1 and HP-151-2 (A-151) high humidity functions are cancelled.

2.12 VE-3 SYSTEM (PILOT PLANTS A-161 AND A-171)

- .1 When stopped:
 - .1 The ventilator is shut down.
 - .2 The fresh air and evacuation dampers are closed.
- .2 When in operation:
 - .1 On an increase in humidity at one of the four SH sensors -161-1, 161-2, 171-1 or 171-2 or on a signal from a timer M-1 61-1, 161-2, 1 771-1 or 171-2, the following sequence occurs:
 - .1 The corresponding RME_1x1-x exhaust damper opens.
 - .2 The new RMA-1x1-x fresh air damper associated with this area is modulated to maintain a flow rate of 150 L/s (320 pcm).
 - .3 The VE-3 exhaust fan starts and has a speed of 25% of the total air flow exhausted, or 205 L/s (435 pcm). L
 - .2 When there is a request in another room, sequences 1 and 2 are repeated and the flow of evacuated air increases to 50% of the total (410 L/s, 870 pcm).

- .3 On the third request, sequences 1 and 2 repeat and the flow of evacuated air increases to 75% of the total (615 LL/s, 1,305 pcm).
- .4 When all four areas are in demand, all exhaust dampers are opened, fresh air flows are maintained at their setpoint and the air flow is at its highest (820 L/s, 1,740 pcm).

2.13 V43-20E SYSTEM, AIR COMPRESSORS (BLOCK A)

- .1 Operating Sequence:
 - .1 At the start of a compressor, its isolation dampers open by electric interlock with the compressor's starter.
 - .2 When a compressor is running, the mixing dampers modulate to maintain the mixing temperature at its setpoint (20°C, adjustable).

2.14 V43-11 SYSTEM, BIOTECH PLANT (BLOCK B)

- .1 System Description:
 - .1 This is a constant air-flow ventilation unit. It is equipped with an out-of-contract heat recovery coil, heating coil and cooling coil, as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
 - .4 The face and bypass coil is stopped.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is switched on according to an hourly schedule.
 - .2 The supply and return fans start at their minimum speed.
 - .3 Upon proof of operation of the two fans, the dampers are placed in their minimum fresh air position (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is gradually increased to its setpoint (to be determined by balancing) to maintain the flow required by the area served.
 - .5 The speed of the exhaust fan is modulated to maintain a slightly negative pressure in the factory (PC = 4 Pa, adjustable).
 - .6 The V43-23RE hood exhaust starts with the mechanical timer.
 - .7 The minimum position of the fresh air damper is 10% (adjustable), however, it is 60% (adjustable) when the V43-23RE fan is on.
 - .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This setpoint is readjusted

between 13°C and 30°C (adjustable) to maintain the return temperature at its setpoint (adjustable).

.3 On cooling request:

- .1 The heating coil valve is closed.
- .2 The face and bypass coil pump is off.
- .3 The supply temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.

.4 On heating request:

- .1 The cooling valve is closed. The face and bypass heating coil is operational.
- .2 The face and bypass coil pump is operating.
- .3 The supply temperature sensor modulates the face and bypass coil valve to maintain the supply temperature setpoint.
- .4 The face and bypass coil is also modulated to maintain the mixing temperature at the inlet of the cooling coil at a minimum of 6°C (adjustable).

.5 Recirculation mode:

- .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.

.6 Humidification:

- .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
- .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.

.7 Security:

- .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
- .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.
- .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
- .4 The system also stops on smoke detection or a fire alarm panel signal.

.4 Alarms:

- .1 High/Low supply temperature.

- .2 Freezing Alarm (BL).
- .3 Fan control failure.
- .4 High/Low supply humidity.
- .5 High/Low return humidity.
- .6 Dirty filters.

2.15 SYSTEM V43-13, FLAVOUR PLANT (BLOCK B)

.1 System Description:

- .1 This is a constant air-flow ventilation unit. It is equipped with an out-of-contract heat recovery coil, pre-heat coil, heating coil and cooling coil, as well as a humidifier.

.2 When stopped:

- .1 The fans are off.
- .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
- .3 The heating, cooling and humidification valves are closed.
- .4 The face and bypass coil pump is off.

.3 When in operation:

.1 Start-up and air flow:

- .1 The system is switched on according to an hourly schedule.
- .2 Supply and return fans start at their minimum speed.
- .3 On proof of operation of the two fans, fan V36-18A starts, the dampers are placed at their position for minimum fresh air (10%, adjustable) and the equipment can operate according to the sequences below.
- .4 The speed of the supply fan is gradually increased to its setpoint (to be determined during balancing) to maintain the flow required by the area served.
- .5 The speed of the exhaust fan is modulated to maintain a slightly negative pressure in the plant (PC4 Pa, adjustable).
- .6 The V43-30RE and V43-31RE hood exhausts are started by mechanical timer.
- .7 The minimum position of the fresh air damper is 10% (adjustable), However, it is adjusted upwards (coordinated during balancing) when the V43-30RE and V43-31RE fans in operation.
- .8 The system (V41-1E) functions continuously.

.2 Supply temperature:

- .1 The unit's heating and cooling devices are controlled in sequence to maintain the setpoint of the supply temperature. This setpoint is adjusted, between 13 and 30°C (adjustable), to keep the return air temperature at its (adjustable) setpoint.

- .3 On cooling request:
 - .1 The valves of the preheating coil and the heating coil are closed.
 - .2 The face and bypass coil pump is off.
 - .3 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when the return air enthalpy is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve in order to maintain its setpoint.
- .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The face and bypass coil pump is running.
 - .3 The supply temperature sensor sequentially modulates the valves of the face and bypass coil and of the heating coil to maintain the supply temperature setpoint.
 - .4 The face and bypass coil is also modulated to maintain the mixing temperature at the inlet of the cooling coil at a minimum of 6°C (adjustable).
- .5 Humidification:
 - .1 The humidifier is modulated to maintain humidity in the unit's main return duct at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .6 Security:
 - .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A low temperature limit BL2, in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3°C, the BL2 action is cancelled via a dry contact of BL1.
 - .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .4 The system also stops on smoke detection or a fire alarm panel signal.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.16 SYSTEM V43-16A/R, AGRI-FOOD ENGINEERING (BLOCK B)**.1 System Description:**

- .1 This is a constant air-flow ventilation unit. It is equipped with a cooling coil, and a hot water heating coil as well as a humidifier.

.2 Operating Sequence:**.1 When stopped:**

- .1 The fans are off.
- .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
- .3 The heating, cooling and humidification valves are closed.

.2 When in operation:**.1 Start-up and air flow:**

- .1 The system is switched on according to an hourly schedule.
- .2 Supply and return fans start at their minimum speed.
- .3 On proof of operation of the two fans, fan V41-2E starts, the dampers are placed at their position for minimum fresh air (10%, adjustable) and the equipment can operate according to the sequences below.
- .4 The speed of the supply fan is gradually increased to its setpoint (to be determined during balancing) to maintain the flow required by the area served.
- .5 The speed of the exhaust fan is modulated to maintain a slightly negative pressure in the plant (PC4 Pa, adjustable).

.2 Return temperature:

- .1 The unit's heating and cooling devices are controlled in sequence to maintain the return air temperature at its (adjustable) setpoint 22°C.

.3 On cooling request:

- .1 The heating coil valve is closed.
- .2 The return temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.

.4 On heating request:

- .1 The cooling valve is closed.
- .2 The return temperature sensor modulates the heating coil valve to maintain its setpoint.

- .5 Recirculation mode:
 - .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.
- .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .7 Security:
 - .1 A low temperature limit BL stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .3 The system also stops on smoke detection or a fire alarm panel signal.
- .3 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.17 SYSTEMS V43-35A/E AND V43-38A/E, (BLOCK B)

- .1 Operating Sequence:
 - .1 On start-up of the exhaust fan by its timer, the supply fan starts by interlock.
 - .2 The fresh air and return dampers are modulated to assure the maximum of fresh air while maintaining a low limit temperature of 10°C (adjustable).

2.18 SYSTEM V33-4, GARAGE VENTILATION (BLOCK B)

- .1 Operating Sequence:
 - .1 On a temperature rise detected by the room temperature sensor, the system starts and the dampers are modulated in order to maintain the room temperature at its setpoint; However, the supply temperature must be kept above a low limit of 10°C (adjustable).

- .2 On detection of carbon monoxide, the CO detector starts the system and opens the dampers to 100%.
- .3 Upon detection of a high supply temperature by the high limit thermostats, the system stops.

2.19 SYSTEMS V43-17A/, V43-18A/R, V43-19A/R, TECHNICAL ROOM (BLOCKS A AND B)

- .1 Operating Sequence:
 - .1 On detection of a rise in the room temperature, the fans start, and the dampers modulate to maintain the room temperature at its setpoint (22°C, adjustable). The supply temperature is limited to a minimum of 13°C.
 - .2 If the system is recirculated for more than 30 minutes, the fans will stop, and the dampers will remain in their normal position.
 - .3 Unit heaters (where applicable) are controlled to maintain the room temperature setpoint.

2.20 SYSTEM V43-1, ADMINISTRATION ZONE, 1ST FLOOR (BLOCK C)

- .1 System Description:
 - .1 This is a variable air flow ventilation unit. It is equipped with a water-cooling coil, a water heating coil and a humidifier.
- .2 Operating Sequence:
 - .1 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started up on a schedule.
 - .2 The supply and return fans start at their minimum speed.
 - .3 Upon proof of operation of the two fans, the V44-2E exhaust fan starts, the dampers are placed in their position of minimum fresh air (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is modulated by the static supply pressure. The pressure setpoint is readjusted to keep the most open terminal box at a minimum of 90% (physical position).
 - .5 The exhaust fan speed is controlled by the same signal as the supply fan which can be offset up or down.

- .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This setpoint is readjusted, between 13° C and 15° C (adjustable) according to the average demand of the four rooms (supplied by V43-1) having the greatest cooling demand.
- .3 On cooling request:
 - .1 The heating coil valve is closed.
 - .2 The supply temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
- .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The supply temperature sensor modulates the heating coil valve to maintain its setpoint.
- .5 Recirculation mode:
 - .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.
- .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .7 Security :
 - .1 A low temperature limit BL stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .3 The system also stops on smoke detection or a fire alarm panel signal.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.21 SYSTEM V43-3 (BLOCK C)

- .1 System Description:
 - .1 This is a variable air-flow ventilation unit. It is equipped with a cooling coil, and a hot water heating coil as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started up on a schedule.
 - .2 The supply and return fans start at their minimum speed.
 - .3 Upon proof of operation of the two fans, the dampers are placed in their minimum fresh air position (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is modulated by the static supply pressure. The pressure setpoint is readjusted to keep the most open terminal box at a minimum of 90% (physical position).
 - .5 The exhaust fan speed is controlled by the same signal as the supply fan which can be offset up or down.
 - .6 The two dampers in the supply ducts open to maintain the temperature in the entrance hall at its setpoint.
 - .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This setpoint is readjusted, between 13°C and 15°C (adjustable) according to the average demand of the four rooms with the greatest cooling demand.
 - .3 On cooling request:
 - .1 The heating coil valve is closed.
 - .2 The supply temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
 - .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The supply temperature sensor modulates the heating coil valve to maintain its setpoint.

- .5 Recirculation mode:
 - .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.
- .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .7 Security :
 - .1 A low temperature limit BL stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .3 The system also stops on smoke detection or a fire alarm panel signal.
 - .4 On a signal from the alarm panel, the V43-27E fan starts up and the dampers are positioned to evacuate the smoke through the latter. Upon detection of the operating status of the V43-27E fan, the system is shut down while keeping the exhaust damper open.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.22 SYSTEM V43-4, V43-8 (BLOCK C)

- .1 System Description:
 - .1 This is a variable air-flow ventilation unit. It is equipped with a cooling coil, and a hot water heating coil as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.

- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started up on a schedule.
 - .2 The supply and return fans start at their minimum speed.
 - .3 Upon proof of operation of the two fans, the dampers are placed in their minimum fresh air position (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is modulated by the static supply pressure. The pressure setpoint is readjusted to keep the most open terminal box at a minimum of 90% (physical position).
 - .5 The exhaust fan speed is controlled by the same signal as the supply fan which can be offset up or down.
 - .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This setpoint is readjusted, between 13°C and 15°C (adjustable) according to the average demand of the four rooms with the greatest cooling demand.
 - .3 On cooling request:
 - .1 The heating coil valve is closed.
 - .2 The supply temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
 - .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The supply temperature sensor modulates the heating coil valve to maintain its setpoint.
 - .5 Recirculation mode:
 - .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.
 - .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
 - .7 Security :
 - .1 A low temperature limit BL stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.

- .2 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .3 The system also stops on smoke detection or a fire alarm panel signal.
 - .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.23 SYSTEM V43-7, V43-14, AND V43-15. FANS V44-3E-1 AND V44-3E-2. LABORATORIES AND OFFICES (BLOCKS C, D)

- .1 System Description:
 - .1 This is a 100% fresh air ventilation system and exhaust fans are used to compensate for the fresh air.
- .2 When stopped:
 - .1 Supply and exhaust fans are off.
 - .2 The dampers are closed.
 - .3 The preheating coil:
 - .1 When the outside temperature is above 10°C, the preheating coil valve is closed, and the recirculation pump is stopped.
 - .2 When the outside temperature is below 4°C, the recirculation pump is on and the preheating coil valve is modulated to maintain the mix temperature at 8°C.
 - .4 The cooling and heating coil valves are closed.
 - .5 The humidifier valve is closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The exhaust dampers open. Upon proof of opening of these dampers, the V44-3E-1 and / or V44-3E-2 fans are started (according to the sequence of the discharge static pressure control below).
 - .2 Upon proof of operation of the fans, the fresh air damper opens. On confirmation of the opening of the fresh air damper, the supply fan starts at its minimum speed. On proof of operation of the supply fan, the following sequences are activated.
 - .3 The speed of the supply fan is modulated to maintain the static pressure in the supply at its setpoint.

- .2 Control of discharge static pressure:
 - .1 During normal operation, one of the exhaust fans runs continuously.
 - .2 Initially, the two outside air dampers and the priority exhaust fan isolation damper open.
 - .3 On confirmation of the start of opening (22.5°) of the isolation damper, the exhaust fan starts by interlocking with the limit switch relay of the damper actuator.
 - .4 The evacuation can be in "emergency pressurization" mode or in "normal pressurization" mode.
 - .5 In "emergency pressurization" mode, the discharge static pressure setpoint will be 25% (adjustable) of the "normal" mode setpoint.
 - .6 The pressurization control will go into "emergency" mode if the condition is not confirmed or if the supply fan stops unintentionally. The fan speed controller in operation is modulated in sequence with the two outside air dampers to maintain the discharge static pressure setpoint. The speed should never drop below a certain limit (to be determined when balancing) to maintain an air projection speed above a minimum threshold.
 - .7 Upon confirmation of the ON status of the variable frequency drive supply fan, the pressurization mode will be in "normal" mode. Also, the static discharge pressure setpoint increases gradually over a 2-minute period (adjustable) from the "emergency pressurization" setpoint to the "normal" mode setpoint. Exhaust blower frequency converter modulation signal gradually increases over a two-minute period (adjustable) to the static pressure setpoint.
 - .8 If the exhaust fan stops unexpectedly, the second fan damper opens, and the fan starts within 10 seconds.
- .3 Supply temperature:
 - .1 The preheating, heating, and cooling coil valves are modulated, in sequence to maintain the laboratory temperature at its setpoint (adjustable) while maintaining the supply temperature at a minimum of 13°C.
- .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 At start-up, when the outside temperature is lower than 6°C, the preheating setpoint will be fixed at 24° C and gradually lowered to its operating setpoint, over a period of 10 minutes.
 - .3 The capacities of the preheating and heating coils are modulated, in sequence, to maintain the laboratory temperature at its setpoint.
 - .4 To prevent variations in the system supply temperature, the capacity of the preheating coil is modulated to maintain a minimum of 8°C.
- .5 On cooling request:
 - .1 The preheating and heating coil valves are closed.

- .2 The cooling coil valve is modulated to maintain the laboratory temperature at its setpoint.
- .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .7 Security:
 - .1 A low temperature limit BL will shut down the system, if it detects a temperature below 4°C. The system restarts automatically upon return to normal. After three shutdowns over a 30-minute period, the system shuts down and an alarm is issued to the control panel.
 - .2 A high limit humidistat, installed in the supply duct and adjusted to 85%, shuts the humidifier off to prevent condensation. Also, a flow switch stops the humidifier on lack of flow.
 - .3 The differential pressure transmitter, installed on the filter bank, allows knowledge of the state of fouling of the filters. An alarm is sent to the operator when the fouling exceeds a threshold (adjustable for balancing).
 - .4 Upon detection of a defective pressure or humidity sensor, the associated control loop will be deactivated or the speed of the VFDs will be reduced to a minimum.
 - .5 The temperature sensor, downstream of the coil, serves as “software” protection and stops the system if the temperature drops to its setpoint of 4°C (adjustable).
- .4 Alarm:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity
 - .5 Dirty filters.
 - .6 High and low pressures.

2.24 SYSTEM V44-5E, PERCHLORIC ACID HOOD (LOCAL D-104)

- .1 Operating Sequence:
 - .1 The V44-5E evacuator starts by interlocking upon detection of the start of the cleaning system.
- .2 Alarm:
 - .1 Fault in the cleaning system.
 - .2 Fan control failure.

2.25 HOODS V-44-3EA, V-44-3EB, V-44-3EC, V-44-3ED, V-44-3EF, V-44-3EG, V-44-3EH, V-44-3EI, V-44-3EJ, V-44-3EK, V-44-3EL, V-44-3EM, V-44-3EN, AND V-44-3EO

- .1 Operating Sequence:
 - .1 Pressurization control:
 - .1 The control of the venturi valves and the hoods is done by the existing “Phoenix” controls to be kept. The EMS allows monitoring of the operation of this equipment.
 - .2 Air flow control is provided by volumetric offset to the room served with the exhaust terminal unit and the supply terminal unit.
 - .3 On increasing the flow rates of exhaust air from the laboratory fume hood, the flow rate of the room exhaust terminal unit is reduced in the same proportion to the minimum, if necessary. If the difference between the flow rate of the supply terminal unit and that of the discharge terminal unit is below the desired volumetric offset, the supply unit flow rate will be increased until this difference is reduced.
 - .4 On a decrease in the air flow rates exhausted by the laboratory fume hood, the room supply flow rate is reduced in the same proportion to the minimum in occupied / unoccupied mode if necessary or to meet the room temperature setpoint.
 - .5 The exhaust flow rate of the ventilated cabinets (constant) and the supply flow rate of the perimeter heater box are included in the calculation of the volumetric offset for the required exhaust flow rate.
 - .6 Negative pressurization.
 - .2 Temperature control:
 - .1 The room temperature is maintained at its setpoint (21°C), by modulating the air supply reheat valve:
 - .1 On heating demand, the supply flow is at its minimum (according to the volumetric offset calculation) and the heating valve modulates to maintain the room temperature at the setpoint.
 - .2 On demand for cooling, the heating valve is closed, and the air supply flow rate is modulated to its maximum flow rate in order to maintain the desired setpoint
 - .3 Laboratory extractor hood:
 - .1 The variable volume fume hood operates continuously to maintain negative laboratory pressure.
 - .2 The extractor hood controller (CHA) directly measures the vertical open position of the door. This variable is used to calculate the air flow required to maintain the air speed setpoint at the face of the hood. As the position of the door is moved up and down and vice versa, the CHA responds immediately by modulating / positioning the terminal element at the exit of the extractor hood.

- .4 Occupation mode:
 - .1 Occupied mode:
 - .1 The supply and exhaust boxes are controlled at the ventilation rate in occupied mode. The face speed of the hoods is 100 fpm.
 - .2 Unoccupied mode:
 - .1 The supply and exhaust boxes are controlled at the minimum ventilation rate in unoccupied mode. The face speed of the hoods is 100 fpm.
- .2 Alarms:
 - .1 Hood extraction alarm.

2.26 SYSTEM V44-29A/E, KITCHEN HOOD (BLOCK C)

- .1 The system must be kept as it is.
- .2 When the exhaust fan starts up by the mechanical timer, the damper opens, and the supply fan starts by interlock.

2.27 SYSTEM V43-9 (BLOCKS C, D)

- .1 System Description:
 - .1 It is a constant air flow ventilation unit. It is equipped with a water-cooling coil, a water heating coil, and a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started up on a schedule.
 - .2 The supply and return fans start.
 - .3 Upon proof of operation of the two fans, the dampers are placed in their minimum fresh air position (10%, adjustable) and the equipment can operate according to the sequences below.
 - .2 Return temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the return temperature setpoint (adjustable).
 - .3 On cooling request:
 - .1 The heating coil valve is closed.
 - .2 The return temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the

enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.

- .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The return temperature sensor modulates the heating coil valve to maintain its setpoint.
- .5 Recirculation mode:
 - .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.
- .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .7 Security:
 - .1 On a signal from the alarm panel, the V43-28E and V43-29E fans start and the dampers are positioned to evacuate the smoke. Upon detection of the operating status of one of the two smoke exhaust fans, the system is shut down.
 - .2 A high-pressure switch is used to stop V43-9R if the return damper closes for smoke extraction while the unit is in operation. This protection is bypassed by the time delay relay when V43-9R is started.
 - .3 A low temperature limit BL will shut down the system, if it detects a temperature below 3°C. The system restarts automatically upon return to normal. After three shutdowns over a 30-minute period, the system shuts down and an alarm is issued to the control panel.
 - .4 A high limit humidistat, installed in the supply duct and adjusted to 85%, shuts down the humidifier to prevent condensation. Also, a flow switch stops the humidifier on lack of flow.
 - .5 The system also stops upon detection of smoke or upon a signal from the fire alarm panel.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.28 PH MEASURING AT THE DISCHARGE OF THE NEUTRALISATION BASIN

- .1 Operating Sequences:
 - .1 PH level on the neutralization tank outlet is transmitted to the control unit. On abnormal PH level, an alarm is sent to the control unit.

2.29 SYSTEM V43-10, GROUND FLOOR LABORATORIES (BLOCK D)

- .1 System Description:
 - .1 This is a variable air flow ventilation unit. It is equipped with a water-cooling coil, a water heating coil, and a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started up on a schedule.
 - .2 The supply and return fans start at their minimum speed.
 - .3 Upon proof of operation of the two (2) fans, the dampers are placed in their minimum fresh air position (10%, adjustable) and the equipment can operate according to the sequences below.
 - .4 The speed of the supply fan is modulated by the static supply pressure. The pressure setpoint is readjusted to keep the most open terminal box at a minimum of 90% (physical position).
 - .5 The exhaust fan speed is controlled by the same signal as the supply fan which can be offset up or down.
 - .2 Supply temperature:
 - .1 The heating valve and the cooling valve modulate in sequence to maintain the supply temperature at its setpoint. The setpoint is readjusted between 13°C and 15°C according to the average demand of the four rooms with the greatest demand.
 - .3 On cooling request:
 - .1 The heating coil valve is closed.
 - .2 The supply temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
 - .4 On heating request:
 - .1 The cooling valve is closed.

- .2 The supply temperature sensor modulates the heating coil valve to maintain its setpoint.
- .5 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .6 Security:
 - .1 A low temperature limit BL will shut down the system, if it detects a temperature below 3° C. The system restarts automatically upon return to normal. After three shutdowns over a 30-minute period, the system shuts down and an alarm is issued to the control panel.
 - .2 A high limit humidistat, installed in the supply duct and adjusted to 85%, shuts down the humidifier to prevent condensation. Also, a flow switch stops the humidifier on lack of flow.
 - .3 The system also stops upon detection of smoke or upon a signal from the fire alarm panel.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.30 SYSTEM V43-12, 1ST FLOOR LABORATORIES (BLOCK D)

- .1 System Description:
 - .1 This is a variable air flow ventilation unit. It is equipped with a water-cooling coil, a water heating coil and a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started up on a schedule.
 - .2 The supply and return fans start at their minimum speed.

- .3 Upon proof of operation of the two fans, the dampers are placed in their minimum fresh air position (10%, adjustable) and the equipment can operate according to the sequences below.
- .4 The speed of the supply fan is modulated by the static supply pressure. The pressure setpoint is readjusted to keep the most open terminal box at a minimum of 90% (physical position).
- .5 The exhaust fan speed is controlled by the same signal as the supply fan which can be offset up or down.
- .2 Supply temperature:
 - .1 The heating valve and the cooling valve modulate in sequence to maintain the supply temperature at its setpoint. The setpoint is readjusted between 13°C and 15°C according to the average demand of the four rooms with the greatest demand.
- .3 On cooling request:
 - .1 The heating coil valve is closed.
 - .2 The supply temperature sensor modulates the mixing dampers (if free cooling is allowed, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and the cooling valve to maintain its setpoint.
- .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The supply temperature sensor modulates the heating coil valve to maintain its setpoint.
- .5 Recirculation mode:
 - .1 During unoccupied periods, the system can restart in full recirculation mode if the room temperature drops below 15°C. The system will then be controlled to maintain the return temperature at 22°C.
- .6 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .7 Security:
 - .1 A low temperature limit BL will shut down the system, if it detects a temperature below 3°C. The system restarts automatically upon return to normal. After three shutdowns over a 30-minute period, the system shuts down and an alarm is issued to the control panel.
 - .2 A high limit humidistat, installed in the supply duct and adjusted to 85%, shuts down the humidifier to prevent condensation. Also, a flow switch stops the humidifier on lack of flow.
 - .3 The system also stops upon detection of smoke or upon a signal from the fire alarm panel.

- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.31 ROOM CONTROL, SINGLE DUCT

- .1 Operating Sequence:
 - .1 When their ventilation unit is on, VAV boxes are permitted to modulate.
 - .2 The room temperature sensors sequentially modulate the VAV boxes (between minimum and maximum flow) and the heater to maintain their adjustable setpoint.

2.32 ROOM CONTROL, WITH FAN

- .1 Operating Sequence:
 - .1 When their ventilation unit is on, VAV boxes are permitted to modulate and their fan starts.
 - .2 The room temperature sensors sequentially modulate the VAV boxes (between minimum and maximum flow) and the heater to maintain their adjustable setpoint.

2.33 FRESH AIR SUPPLY SYSTEM UV-1 AND VE-1 (BLOCK F)

- .1 System Description:
 - .1 UV-1 is a 100% fresh air variable flow ventilation unit. It is equipped with a preheating steam coil, a water-cooling coil and a water heating coil as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, and the mixing damper is opened.
 - .3 The heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up and air flow:
 - .1 The system is started according to a schedule (adjusted to 24 hours a day).
 - .2 The fresh air and exhaust dampers open. Upon proof of opening of the fresh air damper, the fans start (Alim at its minimum speed).

- .3 The speed of the supply fan is modulated to maintain the setpoint of the static supply pressure (to be determined during rocking) allowing the required static pressure to be maintained ensuring the flows to the different zones.
- .2 Supply temperature:
 - .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This setpoint is maintained at 20°C (adjustable).
- .3 On cooling request:
 - .1 The preheating coil valve is closed.
 - .2 The supply sensor modulates the cooling valve to maintain its setpoint.
 - .3 On a request for dehumidification by the humidity sensor on the outlet (P.C. 50% RH, adjustable), the position of the cooling valve is readjusted upwards. The supply sensor then modulates the heating valve to maintain its setpoint.
- .4 On heating request:
 - .1 The cooling valve is closed.
 - .2 The supply sensor modulates the preheating coil valve, the front and bypass damper and the heating valve to maintain its setpoint.
 - .3 When the outside temperature is less than 4°C, the preheating coil valve is open to 100% and only the front and avoidance dampers and the heating valve are modulated
- .5 Humidification:
 - .1 The humidity sensor located in the evacuation duct, modulates the humidification valve to maintain the setpoint determined by the following table:

Temp. ext.	P.C. Humidité
15°C	40%HR
-20°C	30%HR
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .6 Security:
 - .1 A low temperature limit (BL) shuts down the system if the supply temperature drops below 7°C. Use a time relay to bypass the low limit for a period of 3 minutes when the system starts. The system restarts automatically upon return to normal. After three shutdowns over a 30-minute period, the system shuts down and an alarm is issued to the control panel.
 - .2 A high limit humidistat, installed in the supply duct and adjusted to 85%, shuts the humidifier off to prevent condensation. Also, a flow switch stops the humidifier on lack of flow.

- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.34 TYPICAL AIR CONDITIONING UNIT: AC-01 (ROOM F-209) AND AC-02 (ROOM F-214)

- .1 When stopped:
 - .1 The air conditioning unit is switched off.
 - .2 The fresh air damper common to AC-01 and AC-02 is closed.
 - .3 The room temperature sensor modulates the heating valve to maintain the night setpoint (P.C. 18°C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the departure of each unit).
 - .2 When one of the units starts (AC-01 or AC-02), the fresh air damper is modulated to maintain the required fresh air flow:
 - .1 55 L/s (120 cfm) when only one unit is in operation.
 - .2 110 L/s (240 cfm) when both units are operating.
 - .3 The room sensor features buttons and a liquid crystal display, allowing for setpoint adjustment, mode change, and room temperature display.
 - .4 On a demand for cooling, the unit's compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .5 On a heat demand, the convector valve is modulated to maintain the setpoint (P.C. 22°C, adjustable).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.35 TYPICAL AIR CONDITIONING UNIT: AC-03, AC-09, AC-10, AC-11, AC-12, AND AC-16 (ROOMS F-219, F-225, F-220, F-215, F-210, AND F-102)

- .1 When stopped:
 - .1 The air conditioning unit is switched off.

- .2 The fresh air damper is closed.
- .3 The room temperature sensor modulates the heating valve to maintain the night setpoint (P.C. 18°C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a set schedule. (A 10-second delay is scheduled between the start of each unit).
 - .2 Upon startup of one of the units, the new air damper is modulated to maintain the required fresh air flow 55 L/s (120 pcm).
 - .3 The room sensor has buttons and a liquid crystal display, allowing the adjustment of the setpoint, the change of mode as well as the display of the room temperature.
 - .4 On a cooling request, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .5 On a heating request, the convector valve is modulated to maintain the setpoint (P.C. 22°C, adjustable).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.36 AIR CONDITIONING UNIT AC-04 (ROOM F-224)

- .1 When stopped:
 - .1 The air conditioning unit is switched off.
 - .2 The fresh air damper common to AC-04 and AC-07 is closed.
 - .3 The room temperature sensor modulates the heating valve to maintain the night setpoint (P.C. 18 °C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the start of each unit).
 - .2 When one of the units starts (AC-04 or AC-07), the fresh air damper is modulated to maintain the required fresh air flow:
 - .1 55 L/s (120 cfm) when AC-04 is in operation.
 - .2 50 L/s (105 cfm) when AC-07 is in operation.
 - .3 105 L/s (225 cfm) when both units are operating.
 - .3 The room sensor features buttons and a liquid crystal display, allowing for setpoint adjustment, mode change, and room temperature display.
 - .4 On a demand for cooling, the unit's compressor is started to maintain the setpoint (P.C. 23°C, adjustable).

- .5 On a heat demand, the convector valve is modulated to maintain the setpoint (P.C. 22°C, adjustable).
 - .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.
- 2.37 AIR CONDITIONING UNIT AC-05 (ROOM F-201)**
 - .1 When stopped:
 - .1 The air conditioning unit is switched off.
 - .2 The fresh air damper is closed.
 - .3 The room temperature sensor controls the baseboard heaters relays to maintain the night setpoint (P.C. 18°C, adjustable).
 - .2 When in operation:
 - .1 The unit fan is started on a set schedule. (A 10-second delay is scheduled between the start of each unit).
 - .2 When one of the units starts, the new air damper is modulated to maintain the required new air flow 55 L/s (120 pcm).
 - .3 On a cooling request, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .4 On a heating request, the heating coil is modulated using pulses. When heating demand reaches 50%, baseboard heating relays are activated to maintain the setpoint (adjustable P.C. 22°C).
 - .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.
- 2.38 AIR CONDITIONING UNITS AC-06 (ROOMS F-204, F-205, AND F-206) AND AC-15 (ROOM F-105, F-106, AND F-107)**
 - .1 When stopped:
 - .1 The air conditioning unit is switched off.
 - .2 The fresh air damper is closed.
 - .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the departure of each unit).

- .2 When one of the units starts, the fresh air damper is modulated to maintain the required fresh air flow 35 L/s (75 cfm).
- .3 The room sensor features buttons and a liquid crystal display, allowing for setpoint adjustment, mode change, and room temperature display.
- .4 On a demand for cooling, the unit's compressor is started in order to maintain the setpoint (P.C. 23°C, adjustable).
- .5 On a call for heat, the heating coil is pulsed to maintain the setpoint (P.C. 22°C, adjustable).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.39 AIR CONDITIONING UNIT AC-07 (ROOM F-200)

- .1 When stopped:
 - .1 The air conditioning unit is switched off.
 - .2 The fresh air damper common to AC-04 and AC-07 is closed.
 - .3 The room temperature sensor modulates the heating valve to maintain the night setpoint (P.C. 18 °C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the start of each unit).
 - .2 When one of the units starts (AC-04 or AC-07), the fresh air damper is modulated to maintain the required fresh air flow:
 - .1 55 L/s (120 cfm) when AC-04 is in operation.
 - .2 50 L/s (105 cfm) when AC-07 is in operation.
 - .3 105 L/s (225 cfm) when both units are operating.
 - .3 On a demand for cooling, the unit's compressor is started in order to maintain the setpoint (P.C. 23°C, adjustable).
 - .4 On a heating request, the heating coil is modulated using pulses. When heating demand reaches 50%, baseboard heating relays are activated to maintain the setpoint (adjustable P.C. 22°C).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.40 AIR CONDITIONING UNIT AC-08 (ROOMS F-207 AND F-208)

- .1 When stopped:
 - .1 The air conditioning unit is switched off.
 - .2 The fresh air damper is closed.
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the departure of each unit).
 - .2 When one of the units starts, the fresh air damper is modulated to maintain the required fresh air flow 35 L/s (75 cfm).
 - .3 The room sensor features buttons and a liquid crystal display, allowing for setpoint adjustment, mode change, and room temperature display.
 - .4 On a demand for cooling, the unit's compressor is started in order to maintain the setpoint (P.C. 23°C, adjustable).
 - .5 On a call for heat, the heating coil is pulsed to maintain the setpoint (P.C. 22°C, adjustable).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.41 AIR CONDITIONING UNIT AC-13 (ROOM F-101 AND F-100)

- .1 When stopped:
 - .1 The air conditioning unit is turned off.
 - .2 The temperature sensor for room F-100 controls the baseboard heaters relay to maintain the night setpoint (P.C. 18°C, adjustable).
 - .3 The temperature sensor for room F-101 modulates the heating valve to maintain the nighttime setpoint (P.C. 18°C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the start of each unit).
 - .2 On a demand for cooling, the unit's compressor is started in order to maintain the setpoint (P.C. 23 °C, adjustable).
 - .3 On a demand for heating in room F-101, the baseboard heaters relays are activated to maintain the setpoint (P.C. 22°C, adjustable).
 - .4 On a heating demand in room F-100, the heating valves are activated in order to maintain the setpoint (P.C. 22°C, adjustable).

- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.42 AIR CONDITIONING UNIT AC-14 (ROOMS F-108 AND F-109)

- .1 When stopped:
 - .1 The air conditioning unit is turned off.
 - .2 The fresh air damper, RM-1, of AC-14 is closed.
 - .3 The fresh air damper, RM-2, of the room F-002 is modulated to maintain a fresh air supply of 290 L/s (615 cfm) at this 1°C.
 - .4 The fresh air damper, RM-3, is modulated to maintain a fresh air supply of 300 L/s (635 cfm) to the room F-002.
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the departure of each unit).
 - .2 When one of the units starts, its fresh air damper, RM-1, is modulated to maintain the required fresh air flow of 50 L/s (110 cfm).
 - .3 The RM-3 fresh air damper modulates to maintain the required fresh air flow 50 L/s (110 cfm) for AC-14 and 300 L/s (635 cfm) at room F-002.
 - .4 Room sensors feature buttons and a liquid crystal display, allowing setpoint adjustment, mode change as well as room temperature display.
 - .5 On a demand for cooling, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .6 On a call for heat, the heating coil is modulated with pulses to maintain the setpoint (P.C. 22°C, adjustable).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.43 AIR CONDITIONING UNIT AC-17 (ROOM F-004)

- .1 When stopped:
 - .1 The air conditioning unit is turned off.
 - .2 The room temperature sensor controls the relays of the baseboard heaters in order to maintain the night setpoint (P.C. 18°C, adjustable).

- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the departure of each unit).
 - .2 Room sensors feature buttons and a liquid crystal display, allowing setpoint adjustment, mode change as well as room temperature display.
 - .3 On a demand for cooling, the unit compressor is started to maintain the setpoint (P.C. 23°C, adjustable).
 - .4 On a heating request, the baseboard heating relays are activated in order to maintain the setpoint (P.C. 22°C, adjustable).
- .3 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.44 AIR CONDITIONING UNIT AC-26 (ROOMS F-110 AND F-115)

- .1 When stopped:
 - .1 The air conditioning unit is turned off.
 - .2 The room temperature sensor controls the unit heater (A-6) to maintain the night setpoint (P.C. 18 °C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a pre-set schedule. (A 10-second delay is programmed between the departure of each unit).
 - .2 On a demand for cooling, the unit compressor is started to maintain the setpoint (P.C. 24°C, adjustable).
 - .3 On a heating request, the unit heater is activated to maintain the setpoint (P.C. 21°C, adjustable).
- .3 Supply, rooms F-110 and F-115:
 - .1 The two fresh air dampers modulate to maintain a constant air supply flow (115 L/s, 240 cfm for each room).
- .4 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.45 AIR CONDITIONING UNIT AC-27 (ROOMS F-120 AND F-125)

- .1 When stopped:
 - .1 The air conditioning unit is stopped.
 - .2 The room temperature sensor controls the unit heaters (A-4 and A-5) in order to maintain the night setpoint (P.C. 18°C, adjustable).
- .2 When in operation:
 - .1 The unit fan is started on a preset schedule. (A 10-second delay is programmed between the departure of each unit).
 - .2 On a demand for cooling, the unit compressor is started to maintain the setpoint (P.C. 24°C, adjustable).
 - .3 On a heating request, the unit heater is activated to maintain the setpoint (P.C. 21°C, adjustable).
- .3 Supply, rooms F-110 and F-115:
 - .1 The two fresh air dampers modulate to maintain a constant air supply flow (115 L/s, 240 cfm for each room).
- .4 Alarms:
 - .1 High/Low room supply temperature.
 - .2 Dirty filters.
 - .3 Fan control failure.
 - .4 Unit internal alarm.

2.46 SYSTEM VA-1 (F-301 MECHANICAL ROOM VENTILATION)

- .1 Operating Sequence:
 - .1 When the fan is stopped the motorized dampers return to their normal position by electrical interlock with the fan starter.
 - .2 On a room temperature increase of more than 24°C, the digital regulator starts the supply fan (VA-1) and modulates the dampers to maintain the supply temperature at the setpoint (P.C. 13°C, adjustable).
 - .3 When the room temperature drops below 23°C, the fan is shut down and the dampers return to their normal position.
 - .4 On a temperature drop below 18°C, the unit heaters are started until the room temperature has reached 19°C.
 - .5 An alarm will be generated at the control center in the event of non-concordance between the state and the supply fan control.

2.47 SYSTEMS VH-1 TO VH-4 (ROOMS F-209, F-214, F-219, AND F-224)

- .1 When stopped:
 - .1 The fan (VH-x) is stopped.

- .2 Venturi valves are in their normal position.
- .2 When in operation:
 - .1 The exhaust fan is in operation continuously. At the start of the fan (VH-x), the fresh air damper opens 100%.
 - .2 The exhaust venturi valve of the hood is modulated to maintain a constant velocity at the face of the hood.
 - .3 The bypass venturi valve is modulated to maintain constant total exhaust flow.
 - .4 The venturi supply valve modulates to maintain the volumetric offset in the room.
 - .5 A common alarm will be transmitted to the control center.

2.48 HEAT EXCHANGER EC-1 (BLOCK F)

- .1 When stopped:
 - .1 The pumps are stopped.
 - .2 The steam valve is closed.
- .2 When in operation:
 - .1 The system starts on receiving permission from the control center.
 - .2 Both pumps operate in redundancy. The pump with priority starts.
 - .3 On a defect of a pump, it is stopped, and the other pump starts. An electrical interlock prevents the operation of the two pumps simultaneously.
 - .4 On proof of pump operation, the exchanger valve is modulated to keep the hot water supply temperature at its setpoint. (P.C. 82 °C, adjustable).
- .3 Alarms:
 - .1 Pump control failure.
 - .2 Loss of flow while a pump is running.
 - .3 Low hot water supply temperature (P.C. 60oC, adjustable) while a pump is running.

2.49 CHILLER CC-1 (BLOCK F)

- .1 System Description:
 - .1 Chiller CC-1 rejects heat via the TR-1 water tower. It supplies Block F with chilled water.
- .2 When stopped:
 - .1 The chiller (CC-1) and the cooled water pump (PR-1A, B) are shut down. Only one of the two pumps (PR-1A or PR-1B) can function at a time.
- .3 When in operation:
 - .1 The system's operating permission is transmitted via the control center.

- .2 Both pumps (PR-1A or PR-1B) work in redundancy. Upon receiving a chiller start command the pump in priority starts. On a pump defect, it is stopped, and the other pump starts. An electrical interlock prevents the operation of the two pumps simultaneously.
- .3 On proof of water flow from the flow switch (DEB_ER), the chiller starts.
- .4 The chiller then maintains the supply temperature of the chilled water at the setpoint (P.C. 9°C, adjustable).
- .4 Alarms:
 - .1 Pump control failure.
 - .2 Loss of flow while a pump is running.
 - .3 Chilled water supply high temperature (T_ALI_ER, P.C. 13°C, adjustable) while a pump is running.
 - .4 Grouped alarms from the chiller.

2.50 WATER TOWER TR-1 (BLOCK F)

- .1 System Description:
 - .1 Water tower, installed in mechanical room F-301, which provides water chilled to 30°C for the CC-1 cooler, AC-xx air conditioning units and refrigeration compressors.
- .2 When stopped:
 - .1 The tower fan and pumps (PT-1 and PR-2A/B) are shut down.
 - .2 The fresh air and exhaust dampers are closed.
 - .3 The recirculation damper is open.
- .3 When in operation:
 - .1 The system's operating permission is transmitted via the control center.
 - .2 On a cooling request from the supply sensor (T_A_ER30), the following sequence will occur:
 - .1 Summer operation:
 - .1 Outdoor temperature above 4°C:
 - .1 The pump (PR-2A/B) is on.
 - .2 The fresh air and exhaust dampers are 100% open and the recirculation dampers are closed.
 - .3 The tower pump (PT-1) is turned on to maintain the supply temperature at the water tower exit at the setpoint (P.C. 30°C, adjustable).
 - .4 On a larger demand, the #1 fan of the tower is started (engine 10 HP).
 - .5 If demand persists, the #2 fan is started (40 HP engine).

- .6 On a drop in demand, the sequence is reversed (the fan #1 stops first, then the fan #2 and finally the PT-1 pump).
- .2 Outside temperature below 4°C:
 - .1 The pump (PR-2A/B) is on.
 - .2 The tower pump (PT-1) is inoperative.
 - .3 When the fan is shut down, the fresh air and exhaust dampers are closed the recirculation damper is opened.
 - .4 On a cooling request (T_A_ER30), the #1 fan of the tower is started (engine 10HP). The dampers are then modulated to maintain the temperature at the exit of the fan (T_AM_TR1) at the setpoint (P.C. 4°C).
 - .5 On a larger demand, the fan #2 is started (engine 40 HP) and the dampers are modulated to keep the temperature (T_AM_TR1) at 4°C.
 - .6 On a drop in demand, the sequence is reversed (the fan #1 stops first and then the fan #2).
- .2 Winter operation:
 - .1 The pump (PR-2A/B) is on.
 - .2 The tower basin is emptied manually.
 - .3 The power supply to the heating element is manually cut off.
 - .4 The tower pump (PT-1) is stopped manually via a selector located on the tower control panel and via the control center.
 - .5 On a cooling request (T_A_ER30), the dampers are modulated to maintain the supply temperature of the chilled water (T_A_ER30) at the setpoint (P.C. 30°C).
 - .6 On a higher demand, the tower's #1 fan (engine 10 HP) is started and the dampers are modulated to meet the sensor's demand (T_A_ER30).
 - .7 If demand persists the fan's second engine (40 HP) is started.
 - .8 On a drop in demand, the sequence is reversed (the fan #1 first and then the fan #2).
- .3 Miscellaneous:
 - .1 The following alarms will be reported to the central:
 - .1 Loss of flow (DEB_ER30) of the 30°C pump (PR-2A/B).
 - .2 High water supply temperature (T_A_ER30, 35°C).
 - .3 Low water supply temperature (T_A_ER30, 25°C).
 - .4 Low water level in the tower basin (BN_TR-1).
 - .2 The following indications from the tower control panel will be sent to the plant:
 - .1 The tower pump's working condition (PT-1).

- .2 Fan #1 (engine 10 HP) working state.
- .3 Fan #2 (engine 40 HP) working state.
- .4 The working condition of the heating element.

2.51 UNIT HEATERS A-1, A-2, AND A-3 (ROOM F-002)

- .1 Operating Sequence:
 - .1 On a heating request from the room temperature sensor, the unit heater is activated to keep the room temperature at the setpoint (P.C. 22°C, adjustable).

2.52 HIGH-LEVEL ALARM OF THE LABORATORY ACID TANK (ROOM F-002)

- .1 Operating Sequence:
 - .1 On high-level detection of the acid tank an alarm is transmitted to the control center.

2.53 SYSTEM V37-1A/R, VENTILATION OF THE THERMAL POWER PLANT

- .1 Operating Sequence:
 - .1 On a room temperature rise, the fans start, and the dampers modulate to keep the room temperature at its setpoint (22°C).
 - .2 If the system is recirculated for more than 30 minutes, it stops.

2.54 GENERATOR

- .1 Operating Sequence:
 - .1 The room temperature sensor modulates the dampers to maintain its setpoint (22°C, adjustable).

2.55 SYSTEM V43-24A/R, VENTILATION OF CRAWL SPACE

- .1 Operating Sequence:
 - .1 The system operates on a schedule (initially adjusted to 24 hours a day).
 - .2 Fans start and dampers modulate to keep the supply temperature at its setpoint (20°C, adjustable).
 - .3 A low temperature limit BL stops the system if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.

2.56 SYSTEMS V33-1 TO 3, V33-6 TO 9 AND V36-19 TO V36-22

- .1 Operating Sequence:
 - .1 At a low room temperature, the fan starts, and the heating valve is modulated to keep the room temperature at its setpoint.

2.57 SYSTEM V35-400-1, PRESENTATION ROOM (BLOCK E)

.1 System Description:

- .1 This is a constant flow ventilation unit. It is equipped with an electric preheating coil, a water-cooling coil and a water heating coil as well as a humidifier.

.2 When stopped:

- .1 The fans are off.
- .2 The fresh air and exhaust dampers are closed, the mixing damper and the safety damper are opened.
- .3 The electric coil is stopped, the heating, cooling and humidification valves are closed.

.3 When in operation:

.1 Start-up and air flow:

- .1 The system is started according to an hourly schedule or by the action of the occupation selector in the room.
- .2 The supply and return fans start, and the dampers are closed.
- .3 On proof of operation of the two fans, the V35400-5-E fan starts, the fresh air and exhaust dampers open to the minimum position, the mixing damper and the safety damper close and the equipment can operate according to the sequences below.

.2 Control of CO₂ level:

- .1 A reading of the CO₂ level in the return air readjusts the minimum fresh air according to the following schedule:

SETPOINT - RETURN CO ₂		
CO ₂ Level (PPM)	Minimum Fresh Air	Corresponding Fresh Air Damper Position
800	10 %	41 %
1 000	40 %	71 %

.3 Preheating coil:

- .1 The electric coil is operated according to the outside temperature.
- .1 At -26 C (-15 -F) stage 3 starts.
- .2 At -24 C (-11 -F) stage 3 stops.
- .3 At -22 C (-7 -F) stage 2 starts.
- .4 At -20 C (-4 -F) stage 2 stops.
- .5 At -18 C (0 -F) stage 1 starts.
- .6 At -16 C (3 F) stage 1 stops.

.4 Supply temperature:

- .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This is a setpoint that is

adjusted to meet the demand for air conditioning in the presentation room.

SETPOINT – SUPPLY TEMPERATURE		
Mode	Room Cooling Demand	Supply Temperature
Heating	0 %	18°C (65°F) - maximum
Cooling	100 %	13°C (55°F) - minimum

- .5 On cooling request:
 - .1 The heating valve is closed.
 - .2 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum fresh air required) and in sequence the cooling valve in order to maintain its setpoint.
- .6 On heating request:
 - .1 The cooling valve is closed. The valves of the humidifier and heating coil are operational.
 - .2 The supply temperature sensor modulates the heating coil's valve to maintain the supply temperature setpoint.
 - .3 In the room, the sensor controls the valves of the wall convectors.
 - .4 In secondary rooms, the room sensor sequences control the wall baseboards and the electric heating coil.
- .7 Humidification:
 - .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
 - .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 70% RH in the supply.
- .8 Security:
 - .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
 - .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.
 - .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
 - .4 The system also stops on smoke detection or a fire alarm panel signal.

- .9 During unoccupied periods:
 - .1 The system is shut down. Room temperature sensors control the wall convectors to maintain the night setpoint.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.58 **SYSTEM V35-400-2, LIBRARY (BLOCK E)**

- .1 System Description:
 - .1 This is a constant flow ventilation unit. It is equipped with a water-cooling coil and a water heating coil as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and exhaust dampers are closed, the mixing damper and the safety damper are open.
 - .3 The electric coil is stopped, the heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start-up:
 - .1 The system is set in operation according to an hourly schedule or by the action of the occupation selector in the room.
 - .2 The supply and return fans start, and the dampers open, and the safety damper closes.
 - .3 On proof of operation of the two fans, the fan V-35400-1-E, V-35400-3-E and V-35400-4-E are switched on, the fresh air and exhaust dampers open at the minimum position, the mixing damper and the safety damper close and the equipment can operate according to the sequences below.
 - .2 Control of CO₂ level:
 - .1 A reading of the CO₂ level in the return air readjusts the minimum fresh air according to the following schedule:

SETPOINT – RETURN CO ₂		
CO ₂ Level (PPM)	Minimum Fresh Air	Corresponding Fresh Air Damper Position
800	10 %	Coordinate during balancing
1 000	20 %	Coordinate during balancing

.3 Supply temperature:

- .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This is a setpoint that is adjusted to meet the demand for air conditioning in the presentation room.

SETPOINT – SUPPLY TEMPERATURE		
Mode	Room Cooling Demand	Supply Temperature
Heating	0 %	18°C (65°F) - maximum
Cooling	100 %	13°C (55°F) - minimum

.4 On cooling request:

- .1 The heating valve is closed.
- .2 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum new air required) and in sequence the cooling valve in order to maintain its setpoint.

.5 On heating request:

- .1 The cooling valve is closed. The valves of the humidifier and of the heating coil are operational.
- .2 The supply temperature sensor modulates the heating coil's valve to maintain the feed temperature record point.
- .3 In the library room, the sensor controls the valves of the wall convectors.
- .4 In secondary rooms, the room sensor sequences control the wall baseboards and the electric heating coil.

.6 Humidification:

- .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
- .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 75% RH in the supply.

.7 Security:

- .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
- .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.

- .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
- .4 The system also stops on smoke detection or a fire alarm panel signal.
- .8 During unoccupied periods:
 - .1 The system is shut down. Room temperature sensors control the wall convectors to maintain the night setpoint.
- .4 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing Alarm (BL).
 - .3 Fan control failure.
 - .4 High/Low supply humidity.
 - .5 High/Low return humidity.
 - .6 Dirty filters.

2.59 SYSTEM V35-400-3, TRAINING ROOM (BLOCK E)

- .1 System Description:
 - .1 This is a constant flow ventilation unit. It is equipped with a water-cooling coil and a water heating coil as well as a humidifier.
- .2 When stopped:
 - .1 The fans are off.
 - .2 The fresh air and evacuation dampers are closed, the mixing damper and the safety damper are open.
 - .3 The electric coil is stopped, the heating, cooling and humidification valves are closed.
- .3 When in operation:
 - .1 Start:
 - .1 The system is set When in operation according to an hourly schedule or by the action of the occupation selector in the room.
 - .2 The supply and return fans start, and the dampers open, and the safety damper closes.
 - .3 On proof of operation of the two fans, the fan V-35400-1-E, V-35400-3-E and V-35400-4-E are switched on the fresh air and exhaust dampers open at the minimum position, the mixing damper and the safety damper close and the equipment can operate according to the sequences below.

.2 Control of CO₂ level:

- .1 A reading of the CO₂ level in the return air readjusts the minimum fresh air according to the following schedule:

SETPOINT – RETURN CO ₂		
CO ₂ Level (PPM)	Minimum Fresh Air	Corresponding Fresh Air Damper Position
800	10 %	Coordinate during balancing
1 000	20 %	Coordinate during balancing

.3 Supply temperature:

- .1 The unit's heating and cooling devices are controlled in sequence to maintain the supply temperature setpoint. This is a setpoint that is adjusted to meet the demand for air conditioning in the presentation room.

SETPOINT – SUPPLY TEMPERATURE		
Mode	Room Cooling Demand	Supply Temperature
Heating	0 %	18°C (65°F) - maximum
Cooling	100 %	13°C (55°F) - minimum

.4 On cooling request:

- .1 The heating valve is closed.
- .2 The supply temperature sensor modulates the mixing dampers (if free cooling is permitted, when the enthalpy of the return air is greater than the enthalpy of the outside air, while respecting the minimum new air required) and in sequence the cooling valve in order to maintain its setpoint.

.5 On heating request:

- .1 The cooling valve is closed. The valves of the humidifier and of the heating coil are operational.
- .2 The supply temperature sensor modulates the heating coil's valve to maintain the feed temperature record point.
- .3 In the library room, the sensor controls the valves of the wall convectors.
- .4 In secondary rooms, the room sensor sequences control the wall baseboards and the electric heating coil.

.6 Humidification:

- .1 The humidifier is modulated to maintain the humidity in the main return duct of the unit at 30% in winter.
- .2 The humidity sensor in the supply duct limits the opening of the humidification valve to maintain a maximum of 75% RH in the supply.

.7 Security:

- .1 A low temperature limit BL1 stops the system, if it detects a temperature of less than 3°C. The system automatically restarts back to normal. After three stops over a 30-minute period, the system stops, and an alarm is issued at the control center.
- .2 A low temperature limit BL2, located in the heating water system at the exit of the face and bypass coil, stops the system if it detects a temperature below 20°C. However, if the air mixing temperature rises above 3degrees C, the BL2 action is cancelled via a dry contact of BL1.
- .3 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
- .4 The system also stops on smoke detection or a fire alarm panel signal.

.8 During unoccupied periods:

- .1 The system is shut down. Room temperature sensors control the wall convectors to maintain the night setpoint.

.4 Alarms:

- .1 High/Low supply temperature.
- .2 Freezing Alarm (BL).
- .3 Fan control failure.
- .4 High/Low supply humidity.
- .5 High/Low return humidity.
- .6 Dirty filters.

2.60 HEAT EXCHANGER EC-1 (BLOCK E)

.1 System Description:

- .1 This is the hot water heating system of Block E. It consists of a water steam exchanger and two hot water circuits: a primary circuit that supplies the coils and a secondary one supplying the perimeter heating convectors.

.2 Operating Sequence:

- .1 Pump control.
 - .1 One of the two heating pumps always functions during heating periods. When one pump stops, the other starts and an alarm is reported. The start-up order of the pumps is alternated once a month.
- .2 Primary hot water circuit:
 - .1 The hot water supply temperature is maintained at 82°C by the numerical controller operating the steam valve of the exchanger.
 - .2 The pressure differential between the suction and pump discharge is maintained by the digital controller operating the evasive valve.

- .3 When the pumps are shut down, the steam valve on the exchanger is closed.
- .3 Secondary hot water circuit:
 - .1 The hot water supply temperature is maintained by the digital controller with adjustments according to the outside temperature, operating the tempered water three-way valve.

SETPOINT - WATER TEMPERATURE		
Mode	Exterior Temperature	Supply Temperature
Winter	-20°C (4°F)	82°C (180°F) - maximum
Summer	20°C (68°F)	40°C (104°F) - minimum

- .2 The pressure differential between the suction and discharge of the pump is maintained by the differential pressure sensor by operating the bypass valve.

2.61 SYSTEM V35-400-2E, MECHANICAL ROOM (BLOCK E)

- .1 Operating Sequence:
 - .1 The temperature of the room is held at 25°C by the wall temperature sensor by the following operating sequence:
 - .1 The startup of the ventilation system.
 - .2 The modulation of fresh air, exhaust, and recirculation dampers.
 - .3 The supply temperature sensor; limits the temperature to a minimum of 13°C.
 - .2 An alarm is activated if the temperature detected is too high.

2.62 UNIT HEATER- MECHANICAL ROOM (BLOCK E)

- .1 A temperature sensor near the door controls the start of the unit heater to keep 20°C in the room.
- .2 An alarm is activated if the temperature detected is too low.

2.63 PERIMETER HEATING (BLOCK E)

- .1 A room temperature sensor controls the heating valve to maintain its setpoint (22°C, adjustable).
- .2 An alarm is activated if the temperature detected is too low.

2.64 EXCHANGER P33-42 STEAM/WATER

- .1 System Description:
 - .1 Steam/water heat exchanger. Using steam from the boilers, it produces hot water at 110°C for zone1.
- .2 When stopped:
 - .1 The pumps P33-13 and P33-14 are stopped.
 - .2 The valves are closed.
- .3 When in operation:
 - .1 The pumps P33-13 and P33-14 operate in redundancy. On proof of operation of one of the two pumps, the valves are allowed to open.
 - .2 The steam valve is modulated to keep the heat of the exchanger constant at its setpoint.
 - .3 The bypass valve is modulated to maintain differential pressure at its constant setpoint between supply and return.

2.65 EXCHANGER P33-43 STEAM/WATER

- .1 System Description:
 - .1 Steam/water heat exchanger. Using steam from the boilers, it produces hot water at up to 110°C for zone 2.
- .2 When stopped:
 - .1 The pumps P33-17 and P33-18 are stopped.
 - .2 The valves are closed.
- .3 When in operation:
 - .1 The pumps P33-17 and P33-18 operate in redundancy. On proof of operation of one of the two pumps, the valves are allowed to open.
 - .2 The steam valve is modulated to keep the heat of the exchanger at its setpoint. This setpoint is readjusted according to the outside temperature.
 - .3 The valve R43.3 is modulated to maintain the water supply temperature with the following curve:

SETPOINT -WATER TEMPERATURE		
Mode	Outside Air Temperature	Supply Temperature
Winter	-30 °C (°F)	110 °C (230 °F) - maximum
Summer	20 °C (68 °F)	50 °C (122 °F) - minimum

- .4 The bypass valve is modulated to maintain differential pressure at its constant setpoint between supply and return.

2.66 EXCHANGER P43-25 STEAM/WATER

- .1 System Description:
 - .1 Steam/water heat exchanger. Using steam from the boilers, it produces hot water at 40°C for zone 3.
- .2 When stopped:
 - .1 The pumps P33-22 and P33-23 are stopped.
 - .2 The valves are in their normal position.
- .3 When in operation:
 - .1 The pumps P43-22 and P43-23 operate in redundancy. On proof of operation of one of the two pumps, the valves can modulate.
 - .2 On the evidence of water flow via the flow switch, the steam valve is modulated to keep the exchangers supply temperature at its setpoint (40°C).
 - .3 The valves R-25.4 and R-25.2 are modulated, in sequence, to maintain the temperature downstream of valve R-25.2 at its setpoint (40°C).
 - .4 The bypass valve R-25.3 is modulated to maintain differential pressure at its constant setpoint between supply and return.

2.67 COOLING TOWERS P-43-01 AND P-43-02 (POWERPLANT)

- .1 System Description:
 - .1 The tank for the two towers is installed inside the powerplant. The water towers keep the water in the cooled tank at its setpoint for use in the building.
- .2 When stopped:
 - .1 The P-33-15 and P-33-16 cooling water pumps are shut down.
 - .2 The pumps of the P-37-05 and P-37-06 towers are stopped.
 - .3 The valves R-43-1.1 and R-43-2.1 are open.
 - .4 The booster water valve opens and closes to keep the water level in the inner tank at its setpoint (using the water level transmitter, determine the water level when both towers are stopped, the water level with a single tower running and the water level with the both towers running).
 - .5 Fans of the P-43-01 and P-43-02 water towers are stopped.
 - .6 The P-37-07 water treatment and filtration system is shutdown.
- .3 When in operation:
 - .1 The system starts manually via an order at the operator station.
 - .2 The P-33-15 (P-33-16) cooling water pump starts according to the operator's assigned priority.
 - .3 The P-37-07 water treatment and filtration system is operational.

- .4 The water temperature sensor on the hot side of the inner basin controls in sequence the operation of the two water towers in order to maintain its setpoint (25°C).
- .5 The P-37-05 (P-37-06) pump with the lowest number of operating hours starts.
- .6 The valve R-43-1.1 (R-43-2. 1) closes.
- .7 The fan of tower P-43-01 (P-43-02) starts at low speed when the water temperature of the indoor tank exceeds the starting setpoint (24°C, adjustable) for more than 1 minute.
- .8 The P-43-01 (P-43-02) tower fan modulates to maintain the water temperature of the indoor tank at its setpoint (25°C).
- .9 The second P-37-06 pump (P-36-05) and the second P - 43-02 (P-43-01) pump start when the fan speed of the first tower in operation is greater than 90% for more than 5 minutes.
- .10 The valve R-43-2. 1 (R-43-1. 1) closes.
- .11 The speed of the P-43-01 and P-43-02 fans is modulated in unison to maintain the temperature of the inner basin at the setpoint (25°C).
- .12 When the fan speed of the water towers becomes 20% or less for more than 5 minutes, the water tower fan with the highest number of hours stops, as does the associated pump.
- .13 When the tank temperature drops below the stop setpoint (23°C, adjustable) for more than 2 minutes, the remaining water tower fan and the associated pump stop.
- .14 When $T_{ext} < 14^{\circ}\text{C}$ and the coolers are stopped:
 - .1 The four isolation valves of both coolers open at all 24-hour (adjustable) periods.
 - .2 The P-33-03 pump (P-33-04 and P-33-05) with the lowest number of operating hours starts for a ten-minute period (adjustable).
 - .3 The P-33-03 pump (P-33-04 and P-33-05) shuts down and the isolation valves close.
- .4 Operation at night and on non-working days:
 - .1 Same as when in normal operation.
- .5 Security:
 - .1 A vibration switch stops the water tower and associated pump on excessive vibration of the water tower. If the system stops by the vibration switch, it must be manually reset at the switch and via the operator station.
 - .2 On a low-level alarm in the inner tank, the systems (water towers, pumps, water treatment system) stop and must be manually reset via the operator station.
- .6 Power outage:
 - .1 Emergency-powered equipment starts and is operational. The state of the transfer switch (normal-emergency power supply) connected to the building management system allows the automatic restart of equipment after an electrical failure.

- .7 Alarms:
 - .1 Unintended state of a pump.
 - .2 Excessive vibration of a water tower.
 - .3 High/Low water level in the basin. The corresponding light on the Volcano status panel will be on during an alarm.
 - .4 Speed variator fault.
 - .5 High/Low temperature of the basin.
 - .6 Alarm of the water filtration system.

2.68 CHILLERS P37-1 AND P37-2 (POWERPLANT)

- .1 System Description:
 - .1 Two coolers from the company Trane installed in the power plant. They reject their heat into the reservoir of the water towers P-43-1 and P-43-2 and produce chilled water for the building (Blocks A, B, C, D and E).
- .2 When stopped:
 - .1 The P-33-06, P-33-07 and P-33-08 chilled water pumps are shut down.
 - .2 The water pumps in the P-33-03, P-33-04 and P-33-05 towers are shut down.
 - .3 The four isolation valves on both chillers are closed.
 - .4 The P-37-01 and P-37-02 chillers are stopped.
- .3 When in operation:
 - .1 The first chiller is permitted to run manually via an order at the operator station.
 - .2 When the outside temperature is above the setpoint (PC_EXT - 15°C), the cooler with the lowest number of hours of operation, or the priority assigned by the operator, starts.
 - .3 The two isolation valves of the first chiller open.
 - .4 The P-33-06 (P-33-07, P-33-08) chilled water pump with the lowest number of operating hours, or the priority assigned by the operator, starts.
 - .5 The P-33-03 cooling water pump (P-33-04, P-33-05) with the lowest number of operating hours, or according to the operator's priority, starts.
 - .6 When proof of operation of the chilled water and cooling pumps is established, the start sequence of the controls built into them is performed and when the protections are satisfied, the P-37-01 chiller (P-37 02) starts.
 - .7 The second chiller is permitted to run manually via an order at the operator station.
 - .8 When the outside temperature is above the #2 setpoint (PC_EXT-2 - 25°C) for more than 10 minutes, a second P-33-06 chilled water pump (P-33-07, P-33-08) with the lowest number of hours of operation, or depending on the operator's priority, starts.

- .9 A second P-33-03 cooling water pump (P-33-04, P-33-05) with the lowest number of operating hours, or according to the operator's priority, starts.
- .10 The two isolation valves on the second chiller open.
- .11 When proof of operation of chilled water and cooling pumps is established, the start sequence of the controls built into them is performed and when the protections are satisfied, the P-37-02 chiller (P-37 01) starts.
- .12 The second chiller and associated pumps will stop when the outside temperature is lower than the #2 setpoint (PC_EXT-2 - 25°C) for more than 30 minutes.
- .13 The last chiller and associated pumps will stop when the outside temperature is below the setpoint (PC_EXT - 15°C) for more than 30 minutes.
- .14 The temperature sensors installed on the supply and return pipes of the cooled water system report the temperatures to the control center. They are not used to control coolers.
- .4 Operating at night and on non-working days:
 - .1 Same as during normal operation.
- .5 Power outage:
 - .1 The system stops.
- .6 Alarms:
 - .1 Non-intended pump stop.
 - .2 Non-intended chiller stop.
 - .3 High-temperature supply and chilled water return alarms.

2.69 COLD ROOMS, FREEZERS AND WATER LEAK DETECTORS

- .1 Description:
 - .1 Alarm contacts on low-temperature freezers are existing and must be connected to the SGE system. Alarms already connected to the security system must be transferred.
 - .2 Ground water leak detectors are new and are located mainly in mechanical rooms and garages.
 - .3 Refrigerator alarms are new. Install a wall temperature sensor in each room (all hatched rooms on plans). Their installation must be coordinated with users so as not to disrupt operations.
- .2 Alarms:
 - .1 Freezer faults.
 - .2 Water leak detection.
 - .3 High temperature in cold rooms.

2.70 SAFETY SHOWERS FLOW SENSORS

- .1 An alarm is transmitted to the security system in room C-005. Bring the contact to the panel and identify it appropriately. The wires will be connected to the safety panel by the system provider.

2.71 SYSTEM AC-1, DANGEROUS MATERIALS (BUILDING 2)

- .1 System Description:
 - .1 The system is constant flow and 100% fresh air. It heats, air conditions and humidifies the building's areas. Terminal coils allow the heating of the rooms.
 - .2 Areas are classified as explosion-proof, except for the mechanical room. Install the necessary protections (intrinsic barriers) for the room sensor wiring.
- .2 Operating Sequence:
 - .1 When stopped:
 - .1 The supply and exhaust fans are shut down.
 - .2 The fresh air damper is closed.
 - .3 The electric coils are stopped, as well as the air conditioning and electric humidifier.
 - .2 When in operation:
 - .1 Start:
 - .1 The system is always in operation.
 - .2 The power fan starts, the fresh air damper opens.
 - .3 V1, V2, V3 and V5 exhaust fans start manually and are always on. On a manual start of V4, the V1 system stops.
 - .2 Cooling:
 - .1 The average room cooling requests (excluding the mechanical room) control mechanical air conditioning to maintain 25°C.
 - .2 When the air conditioning is activated, the heating is stopped.
 - .3 Heating:
 - .1 The system heating coil limits the supply temperature to a minimum of 10°C. Choose a differential to avoid cycling the coil stages.
 - .2 On the request of heating: in each room, the electric coil is activated to keep the temperature at 20°C.
 - .4 Humidification:
 - .1 The humidifier is modulated to keep moisture at 30% in winter. The sensor is in the mechanical room.
 - .5 Security:
 - .1 The frost low limit stops the supply fan at 2°C.

- .2 A high-limit humidistat, installed in the supply duct and adjusted to 85%, stops the humidifier to avoid condensation. Also, a flow switch stops the humidifier at a lack of flow.
- .6 During unoccupied periods:
 - .1 The system is in operation.
- .3 Alarms:
 - .1 High/Low supply temperature.
 - .2 Freezing alarm (BL) at 5°C.
 - .3 Fan control failure.
 - .4 High/Low return humidity.

2.72 RESTART SEQUENCE AFTER POWER OUTAGE OR FIRE ALARM

- .1 When a power outage or other such disturbance occurs, the systems must be returned to normal operating mode in a progressive start-up sequence. It is possible to use an interval of up to 15 minutes. Schedule a minimum of 15 seconds between starts. Do not start more than 20 HP of engines at the same time.
- .2 Systems must be started, if in demand, in the following order of priority:
 - .1 Heating pumps.
 - .2 Cooling pumps.
 - .3 Mechanical room ventilation systems.
 - .4 Floor ventilation systems.
 - .5 Fresh air ventilation systems.
 - .6 Other ventilation systems.
 - .7 Chiller.
 - .8 Boilers.
 - .9 Telecom room fan-coils
 - .10 Water tower.

2.73 RESTART SEQUENCE IN EMERGENCY MODE

- .1 The sequence is the same as after the power outage, but for systems allowed to operate.
- .2 When the fire pump starts, systems must shut down to allow the pump to operate.

2.74 INTEGRATION OF SPEED VARIATORS

- .1 The following should be available to the centralized network for integration into control sequences and graphs:
 - .1 Points in read and write:
 - .1 Stop-start order.
 - .2 Modulation signal.

- .3 Limiting the maximum load.
- .2 Points in read only:
 - .1 Mode local/distant;
 - .2 Speed indication.
 - .3 Amperage.
 - .4 Overload adjustment.
 - .5 Bypass status (if applicable).
 - .6 Status of external entries.
 - .7 Acceleration and deceleration adjustment.
 - .8 Status of the system.
 - .9 Operating level (%).
 - .10 Local setpoint.
 - .11 Alarm.

2.75 INTEGRATING ELECTRIC METERS

- .1 The following should be available to the centralized network for integration into control sequences and graphs:
 - .1 Points in read only:
 - .1 kW indication
 - .2 KWh indication.

2.76 GRAPHICS PROGRAMMING

- .1 Program the system's graphical interface, including:
 - .1 An overview of the building.
 - .2 One (1) graph per main system.
 - .3 A page of alarms.
 - .4 Access to the operating sequences and technical sheets of the relevant equipment on each page.
- .2 All physical points, changeable instructions and trend points must be accessible on one of the screens.
- .3 Operating schedules must also be easily changed by the operator.

Part 3 Execution

3.1 DEMOLITION

- .1 The systems shown in the plans are existing and all controls, except when indicated, must be replaced.

- .2 Room controls as well as the majority of damper and valve operators are pneumatic. Remove all equipment and all control piping that is no longer used. Note that pneumatic controls related to boilers and coolers in the power plant must remain in operation.
- .3 Dismantle the day-night pressure stations (2) localized in the technical room of Block A and keep only what is necessary to power the controls kept at the thermal power plant.
- .4 For all systems, remove pneumatic controls, electronic temperature, humidity, pressure or other sensors, control panels and other accessories. Remove all pneumatic piping and electrical wiring.
- .5 Some main systems must be installed in parallel, and the control system in place must be retained until the new system is functional, in order to minimize system downtime. See below the list of systems.
- .6 For systems that have recently been installed (2018), sensors, ducts and wiring are retained, except for temperature sensors. See below for the systems involved.

3.2 SYSTEMS TO BE INSTALLED IN PARALLEL

- .1 Blocks A, B, C, D:
 - .1 V43-1;
 - .2 V43-2;
 - .3 V43-3;
 - .4 V43-4;
 - .5 V43-5;
 - .6 V43-6;
 - .7 V43-8;
 - .8 V43-9;
 - .9 V43-10;
 - .10 V43-11;
 - .11 V43-12;
 - .12 V43-13;
 - .13 V43-16.
- .2 Block F:
 - .1 VA-1 (general ventilation).

3.3 SYSTEMS WHOSE CONDUITS AND WIRING ARE RETAINED

- .1 Block D:
 - .1 V43-7;
 - .2 V43-14;

- .3 V43-15;
- .4 VE44-3E-1 and VE44-3E-2 (Strobic fans of block D).

3.4 HOOD CONTROLLERS

- .1 Phoenix hood controllers are stored in the C and D blocks. No wiring changes are required. The integration controller is existing and needs to be reconnected to the new control system.
- .2 Phoenix hood controllers from VH-1 to VH-4 hoods are replaced in Block F. They currently have pneumatic operators. Plan to install and connect the integration controller.

3.1 DUCTS AND WALLS REPAIR

- .1 Block holes left open on ventilation ducts by the sensors removed when the new sensors are not installed in existing openings. Re-insulate with canvas and glue, when applicable.
- .2 Repair openings left free in the walls by the removal of the room thermostats. Paint as existing or install a stainless-steel finishing plate to close the opening.

END OF SECTION

APPENDIX A
Section 25 90 01
Control Drawings from Johnson Controls
(Including updates realized after 2005)

Centre de Recherche et de Développement sur les Aliments



- ☐ Systèmes de contrôle pour l'environnement
- ☒ Systèmes d'automatisation de bâtiments METASYS
- ☐ Contrôleurs intelligents d'alarme-incendie - METASYS
- ☐ Contrôleurs intelligents d'accès par carte - METASYS
- ☐ Contrôleurs intelligents d'éclairage - réseau METASYS
- ☐ Systèmes de son et de communication
- ☐ Centres de contrôle des moteurs
- ☐ Balancement de systèmes d'air et d'eau
- ☐ Installation de systèmes d'instrumentation
- ☐ Gérance d'opération de bâtiments par contrat
- ☐ Énergie et contrôle de conservation
- ☐ Maintenance programmée pour:

Contrôles Automatiques de Température
Équipement de chauffage
Équipement de Climatisation
Filtre à air
Traitement d'eau
Nettoyage des serpents
Centre de contrôle
Alarme-incendie et détecteur de fumée
Système de Sécurité
Son et Communication
Système d'horlogerie
Opérations par contrat
Réfrigération
Équipement électrique
Équipement d'éclairage
Contrôles industriels / Enregistreurs

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07

DIAGRAMME ÉLECTRIQUE DE V-43-07

PANNEAU DE CONTRÔLE P-1A DE V-43-07

SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS

SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07

SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07

4068-015

4068-015A

4068-015B

4068-015C

4068-015D

4068-015E

DIAGRAMME DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO

SÉQUENCE DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO

DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX

DIAGRAMME DE DÉTAIL DE RACORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX

4068-016

4068-016A

4068-016B

4068-016C

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-14

DIAGRAMME ÉLECTRIQUE DE V-43-14

PANNEAU DE CONTRÔLE P-1C DE V-43-14

4068-019

4068-019A

4068-019B

DIAGRAMME DE CONTRÔLE DU LOCAL D-207 HOTTE V-44-3EK, V-44-3EL

DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EM, V-44-3EN

4068-020

4068-020A

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-15

DIAGRAMME ÉLECTRIQUE DE V-43-15

PANNEAU DE CONTRÔLE P-1E DE V-43-15

4068-021

4068-021A

4068-021B

DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, V-44-3EB

DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, V-44-3ED

DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EG, V-44-3EH

DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EI, V-44-3EJ

DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EF

4068-022

4068-022A

4068-022B

4068-022C

4068-022D

DIAGRAMME DE CONTRÔLE DE LA HOTTE D'ACIDE PERCHLORIQUE ET V-44-5E

4068-108

DIAGRAMME DE CONTRÔLE DU SYSTÈME D'ÉVACUATION VE-44-3E-1,VE-44-3E-2

DIAGRAMME ÉLECTRIQUE DU SYSTÈME D'ÉVACUATION VE-44-3E-1,VE-44-3E-2

4068-109

4068-109A

ARCHITECTURE DU RÉSEAU METASYS GLOBALE

ARCHITECTURE DU RÉSEAU METASYS NAE-1

4068-900

4068-901

LÉGENDE	
*	ÉQUIPEMENT FOURNI PAR D'AUTRES
▲	ÉQUIPEMENT MONTÉ EN FAÇADE
—	FILERIE ELECTRIQUE PAR D'AUTRES
.....	FILERIE ELECTRIQUE PAR JOHNSON CONTROLS
○	IDENTIFICATION DE LA TUYAUTERIE PNEUMATIQUE
□	IDENTIFICATION DES BORNIERES ÉLECTRIQUES
○	IDENTIFICATION DES CÂBLES ÉLECTRIQUES
⬡	IDENTIFICATION DES BORNIERES DANS PANNEAU JCL
⋈	REPRÉSENTATION DE 2 FILS ELECTRIQUES OU TUBES PNEUMATIQUES RACCORDES
⋈	REPRÉSENTATION DE 2 FILS ELECTRIQUES OU TUBES PNEUMATIQUES NON-RACCORDES

EU EGARD À LA RÉCEPTION DU PRÉSENT DOCUMENT, LE RÉCIPIENDAIRE S'ENGAGE À NE PAS REPRODUIRE OU TRANSMETTRE CE DOCUMENT OU LES INFORMATIONS QUI EN FONT PARTIE, EN TOUT OU EN PARTIE, ET À NE PAS TOLÉRER DE TELLES ACTIONS PAR D'AUTRES À MOINS D'AVOIR L'AUTORISATION ÉCRITE DE LA SOCIÉTÉ DE CONTRÔLE JOHNSON. DE PLUS, IL S'ENGAGE À REMETTRE CE DOCUMENT SUR DEMANDE.

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC. 1996

PROJET													
Annexe du Centre de Recherche et de Développement sur les aliments 3600, boul Casavant Ste-Hyacinthe Qué.													
ARCHITECTE				INGÉNIEUR									
NUMÉRO DE DESSIN:				CONTRACTEUR									
4068													
	1	CONSTRUCTION		97/05/28	A.B.								
DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE	PAR								
EU EGARD À LA RÉCEPTION DU PRÉSENT DOCUMENT, LE RÉCIPIENDAIRE S'ENGAGE À NE PAS REPRODUIRE OU TRANSMETTRE CE DOCUMENT OU LES INFORMATIONS QUI EN FONT PARTIE, EN TOUT OU EN PARTIE, ET À NE PAS TOLÉRER DE TELLES ACTIONS PAR D'AUTRES À MOINS D'AVOIR L'AUTORISATION ÉCRITE DE LA SOCIÉTÉ DE CONTRÔLE JOHNSON. DE PLUS, IL S'ENGAGE À REMETTRE CE DOCUMENT SUR DEMANDE.				<div> Groupe de la régulation</div>									
SUCOURS SALE				Société Contrôles Johnson 355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Téléphone: (514) 747-2580 Télécopieur: (514) 747-9562									
REPRESENTANT	GERANT DE PROJET	CONCEPTEUR	DATE	NUMERO DE CONTRAT									
J.C.R.	G.S.	M.C.D	97/01/02	7096-0004									

CENTRE DE RECHERCHE ET DÉVELOPPEMENT SUR LES ALIMENTS (CRDA) (Projet d'Innovation Technologique)



JOHNSON
CONTROLS

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- ☒ Système de gestion de bâtiments
- ☐ Équilibrage de systèmes d'air et d'eau
- ☐ Système de gestion des alarmes-incendies
- ☐ Système de contrôle d'accès
- ☐ Services d'éclairage
- ☐ Installation de systèmes d'instrumentation
- ☐ Exploitation de bâtiments
- ☐ Services d'efficacité énergétique
- ☐ Programme de formation
- ☐ Contrat de performance
- ☐ Contrats de maintenance préventive

Conditionnement d'air
Chauffage
Services de diagnostic
Nettoyage de serpentins
Réfrigération
Régulation automatique de température
Systèmes de gestion de bâtiments
Gestion des alarmes-incendies
Contrôle d'accès
Gestion et exploitation de bâtiments
Traitement de l'eau
Équipement électrique
Groupe électrogène de secours / Équipement d'éclairage
Matériel de signalisation / d'enregistrement / de régulation industrielle

Nom du Projet

CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

ARCHITECTES ALLAIRE, BERGERON, COURCHESNE, PERRAS 1511, St-Antoine St-Hyacinthe (Québec) J2S 3L5 Tél: (450) 778-1151 Fax: (450) 778-1594		INGÉNIEURS-CONSEILS GROUPE HBA EXPERTS-CONSEILS 2685, boul. Casavant ouest, bureau 200 St-Hyacinthe (Québec) J2S 8B8 Tél: (450) 773-6643 Fax: (450) 773-5409	
ENTREPRENEUR EN MÉCANIQUE		ENTREPRENEUR ÉLECTRICIEN	

9096-0055	6	POUR APPROBATION		01/01/29	
	5	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
	4	POUR CONSTRUCTION		18/09/01	D.B.

DESSIN DE RÉFÉRENCE	NO.	REVISION	ECN	DATE	PAR
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JOHNSON
CONTROLS
Groupe de la régulation

Information Succursale

Johnson Controls Ltée
355, boul. Montpellier
St-Laurent (Québec)
Téléphone: (514) 747-2580
Télécopieur: (514) 747-9562

REPRÉSENTANT J.-C. Rouillon	GÉRANT DE PROJET S- Bourque	CONCEPTEUR D. Bouchard	DATE 5/2/2001	NUMÉRO CONTRAT 1096-0093
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LISTE DES DESSINS

NO. DESSIN TITRE

4068-062 Unité de climatisation AC-01 - Local F-209 (Type 1)
4068-063 Unité de climatisation AC-02 - Local F-214 (Type 1)
4068-064 Unité de climatisation AC-03 - Local F-219 (Type 1)
4068-065 Unité de climatisation AC-04 - Local F-224 (Type 1)
4068-066 Unité de climatisation AC-05 - Local F-201 (Type 3)

4068-067 Unité de climatisation AC-06 - Locaux F-204, 205, 206 (Type 1)
4068-068 Unité de climatisation AC-07 - Local F-200 (Type 3)
4068-069 Unité de climatisation AC-08 - Local F-207, 208 (Type 2)
4068-070 Unité de climatisation AC-09 - Local F-225 (Type 1)
4068-071 Unité de climatisation AC-10 - Local F-220 (Type 1)

4068-072 Unité de climatisation AC-11 - Local F-215 (Type 1)
4068-073 Unité de climatisation AC-12 - Local F-210 (Type 1)
4068-074 Unité de climatisation AC-13 - Local F-101 (Type 1)
4068-075 Unité de climatisation AC-14 - Locaux F-108, 109 (Type 2)
4068-076 Unité de climatisation AC-15 - Local F-105, 106, 107 (Type 2)

4068-077 Unité de climatisation AC-16 - Local F-102 (Type 1)
4068-078 Unité de climatisation AC-17 - Local F-004 (Type 1)
4068-079 Unité de climatisation AC-18 - Locaux A-171, 172 (Type 4 – Usine pilote)
4068-080 Unité de climatisation AC-19 - Locaux A-171, 175 (Type 4 – Usine pilote)
4068-081 Unité de climatisation AC-20 - Locaux A-161, 162 (Type 4 – Usine pilote)

4068-082 Unité de climatisation AC-21 - Locaux A-161, 165 (Type 4 – Usine pilote)
4068-083 Unité de climatisation AC-22 - Locaux A-151, 152 (Type 4 – Usine pilote)
4068-084 Unité de climatisation AC-23 - Locaux A-151, 155 (Type 4 – Usine pilote)
4068-085 Unité de climatisation AC-24 - Locaux A-141, 142 (Type 4 – Usine pilote)
4068-086 Unité de climatisation AC-25 - Locaux A-141, 145 (Type 4 – Usine pilote)

4068-087 Unité de climatisation AC-26 - Locaux F-110, 115 (Type 1)
4068-088 Unité de climatisation AC-27 - Locaux F-120, 125 (Type 1)

NO. DESSIN TITRE

4068-089 Système VA-1 - Ventilation de la salle mécanique F-301
4068-090A Système UV-1 - Alimentation d'air neuf traité
4068-090B Système UV-1 (Séquence de fonctionnement)
4068-091A Système VE-2 - Usines pilotes A-141 et A-151
4068-091B Système VE-2 (Diagramme électrique)

4068-092A Système VE-3 - Usines pilotes A-161 et A-171
4068-092B Système VE-3 (Diagramme électrique)
4068-093 Échangeur vapeur-eau EC-1
4068-094A Refroidisseur CC-1 et tour d'eau TR-1
4068-094B Refroidisseur CC-1 et tour d'eau TR-1 (Diagramme électrique)

4068-095 Panneau de contrôle P-2A - F-301 - (AC-03, 04, 07, 08, EC-1, VA-1)
4068-096 Panneau de contrôle P-2B - F-301 - (AC-05, 06, UV-1, VE-1)
4068-097 Panneau de contrôle P-2C - F-301 - (CC-1, TR-1, VH-1, 2, 3, 4)
4068-098 Panneau de contrôle P-2D - F-301 - (AC-09, 10)
4068-099 Panneau de contrôle P-2E - F-301 - (AC-11, 12)

4068-100 Panneau de contrôle P-2F - F-002 - (AC-13, 14, 17, 27)
4068-101 Panneau de contrôle P-2G - F-002 - (AC-15, 16, 26)
4068-102 Panneau de contrôle P-2H - A-213 - (AC-18, 19)
4068-103 Panneau de contrôle P-2I - A-212 - (AC-20, 21, 22, 23, VE-2, VE-3)
4068-104 Panneau de contrôle P-2J - A-211 - (AC-24, 25)

4068-105A Systèmes VH-1 à VH-4 - Hottes de laboratoire (F-209, 214, 219, 224)
4068-105B Systèmes VH-1 à VH-4 (Diagramme électrique)
4068-106 Aérothermes
4068-107 Centrale d'énergie
4068-107A Centrale d'énergie, Diagramme électrique
4068-107B Centrale d'énergie, Variateur de vitesse et refroidisseurs
4068-107C Centrale d'énergie, Panneau de contrôle
4068-107D Centrale d'énergie, Séquence
4068-902 Architecture du réseau Metasys - NCU-2

PS-1 à PS-34 Liste des points (Gestionnaire de réseau NCU-2)

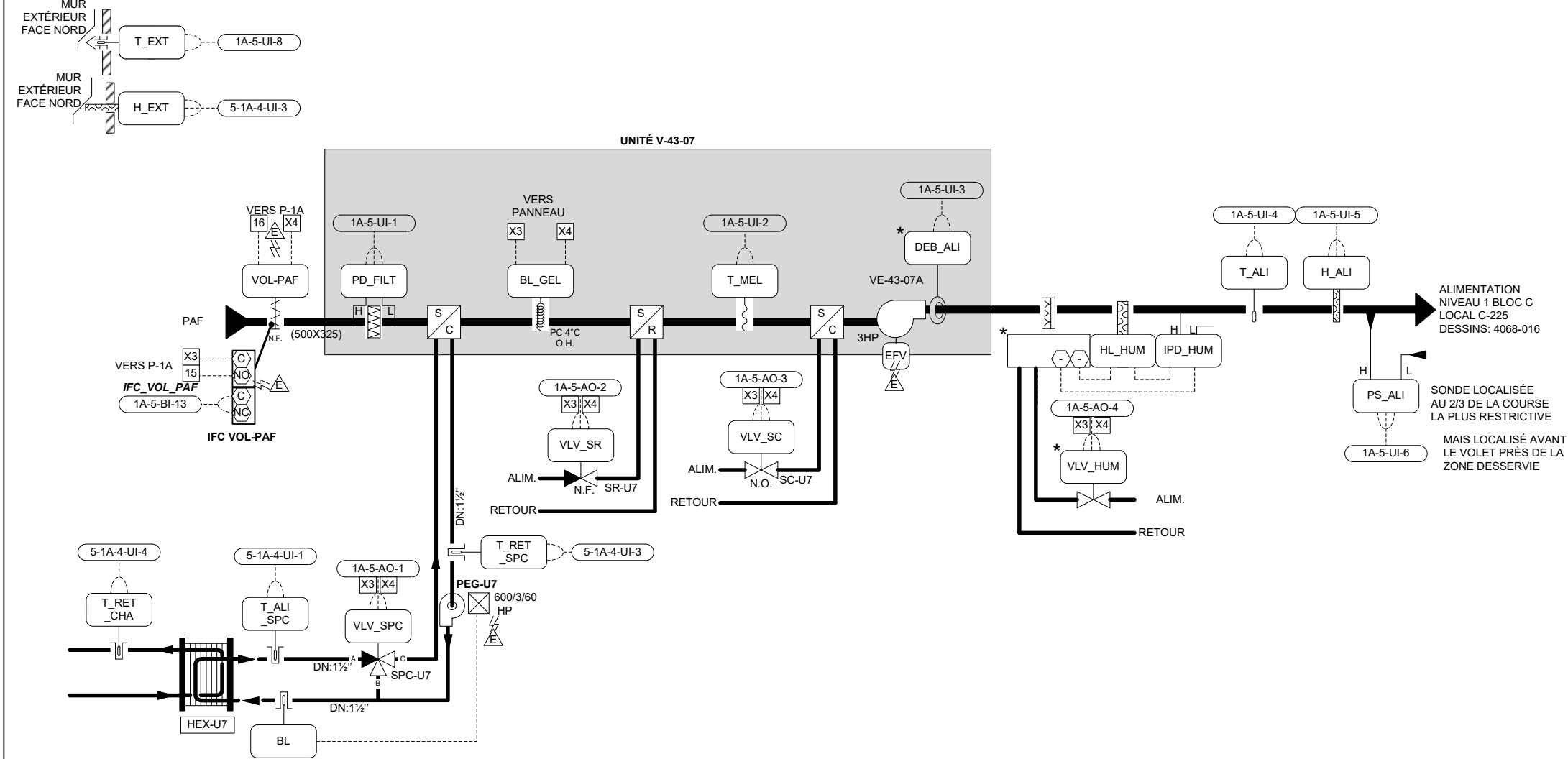
LÉGENDE:

- * ÉQUIPEMENT FOURNI PAR D'AUTRES
- ÉQUIPEMENT EXISTANT
- ▲ ÉQUIPEMENT INSTALLÉ EN FAÇADE
- ÉQUIPEMENT INSTALLÉ DANS LE PANNEAU
- FILERIE ÉLECTRIQUE PAR D'AUTRES
- - - - FILERIE ÉLECTRIQUE PAR JOHNSON
- ← - - - → CÂBLE 8 CONDUCTEURS AVEC FICHES AUX 2 EXTRÉMITÉS
- - - - - TUYAUTERIE PNEUMATIQUE PAR JOHNSON
- IDENTIFICATION DE LA TUYAUTERIE PNEUMATIQUE
- IDENTIFICATION DES BORNIERES DANS PANNEAU JOHNSON
- ⬡ IDENTIFICATION DES BORNIERES DANS DES ÉQUIPEMENTS FOURNIS PAR D'AUTRES
- ⊕ REPRÉSENTATION DE 2 FILS ÉLECTRIQUES OU TUBES PNEUMATIQUES RACCORDÉS
- ⊖ REPRÉSENTATION DE 2 FILS ÉLECTRIQUES OU TUBES PNEUMATIQUES NON-RACCORDÉS
- 2A-5-AI-1 IDENTIFICATION DES CÂBLES ÉLECTRIQUES (ADRESSE DES POINTS DE CONTRÔLE)
 - NO. DU POINT
 - TYPE DE POINT
 - ADRESSE DU RÉGULATEUR NUMÉRIQUE
 - NO. DU PANNEAU DE CONTRÔLE
- AI ou EA ENTRÉE ANALOGIQUE
- AO ou SA SORTIE ANALOGIQUE
- BI, DI ou EN ENTRÉE NUMÉRIQUE
- BO, DO ou SN SORTIE NUMÉRIQUE

EU EGARD À LA RÉCEPTION DU PRÉSENT DOCUMENT, LE RÉCIPIENDAIRE S'ENGAGE À NE PAS REPRODUIRE OU TRANSMETTRE CE DOCUMENT OU LES INFORMATIONS QUI EN FONT PARTIE, EN TOUT OU EN PARTIE, ET À NE PAS TOLÉRER DE TELLES ACTIONS PAR D'AUTRES À MOINS D'AVOIR L'AUTORISATION ÉCRITE DE LA SOCIÉTÉ DE CONTRÔLE JOHNSON LTÉE. DE PLUS, IL S'ENGAGE À REMETTRE CE DOCUMENT SUR DEMANDE.

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC. 1996

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-07



LÉGENDE

- * ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- ⚡ SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

Détails raccordement
Station Mesurage Débit

EBTRON

1

2

3

4

24 Vac

Com

11 VA

1

3

IN#

ICOM#

FEC INPUT

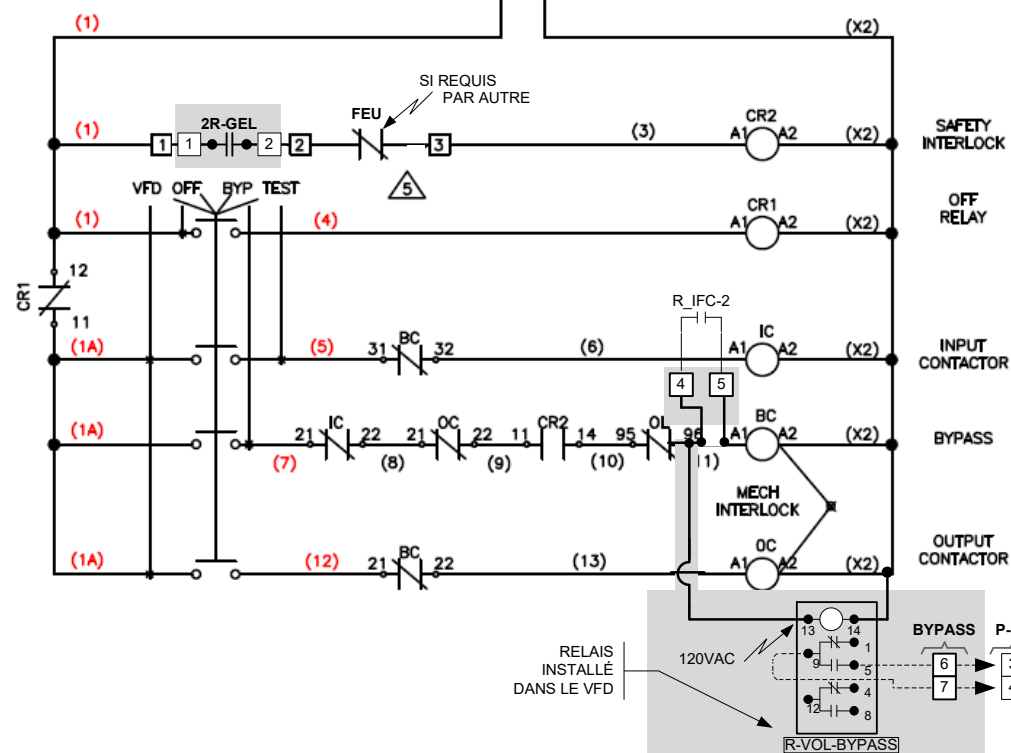
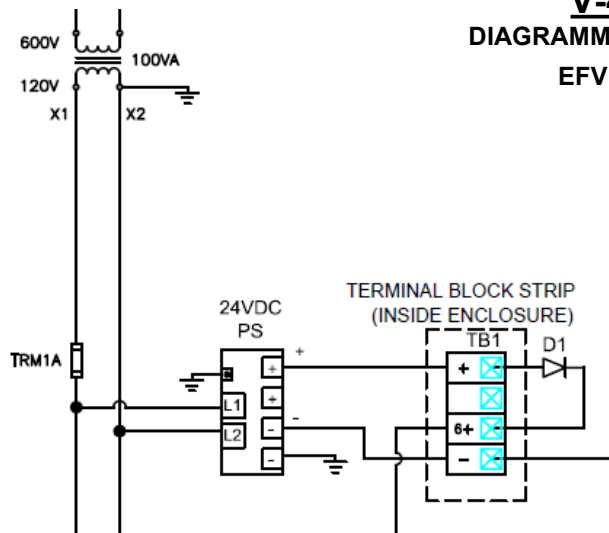
0-10 Vdc

LISTE DE MATÉRIEL CHANTIER			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
BL_GEL	1	A70GA-1C	THERMOSTAT DE GEL DPDT RÉARM AUTO.
BL	1		BASSE LIMITE DE GEL
IFC-VOL-PAF	1	KXCMS11N+KXAM1	INTERRUP. DE FIN DE COURSE + TIGE À RESSORT CONTACT N.O. + N.C.- LOVATO
PD_FILT	1	DPT260-MS2	TRANSMETTEUR DE PRESSION DIFF. 0-1.5"H2O
PS_ALI	2	FTG18A-600R	PITOT
PS_ALI	1	DPT2640-005D	TRANSM. DE PRESSION DIFF. 0-5"H2O 0-5VCC – SETRA
T_ALI_SPC	1	FTG18A-600R	PITOT
T_RET_SPC	2	TE-6312P-1	SONDE TEMP. IMMERSION NICKEL 1K OHM
H_ALI	2	T1-1/2P2	PUIT IMMERSION 2" – GREYSTONE
H_ALI	1	HE-67N3-0N00P	TRANSM. D'HUMIDITÉ 0-100% +/-3% 0-10 VCC C
H_EXT	1	RH300A02	SONDE DE TEMP. GAINÉ NICKEL 1K OHM
T_ALI	1		TRANSM. D'HUMIDITÉ EXT. 0-100% +/-2% 0-5 VCC – GREYSTONE
T_MEL	1	TE-6311M-1	SONDE TEMP. GAINÉ NICKEL 1K OHM
T_ALI	1	TE-6316M-1	SONDE TEMP. MÉLANGE 16' NICKEL 1K OHM
T_EXT	1	TE-6001-8	SUPPORT DE MONTAGE
VLV_SC	1	TE-6313P-1	SONDE TEMP. EXTÉRIEUR NICKEL 1K OHM
VLV_SC	1	VG1245CL+923GGA	SOUPAPE 2 VOIES/A BILLE/SOUPAPE 1" NO CV:7.4 24VCA CLOSE-OFF:200 PSI, C/A ACT. MODULANT ET RESSORT DE RAPPEL
VLV_SR	1	VG1245EP+923GGA	SOUPAPE 2 VOIES/A BILLE/SOUPAPE 1 1/2" NF CV:18.7 24VCA CLOSE-OFF:200 PSI, C/A ACT. MODULANT ET RESSORT DE RAPPEL
VLV_SPC	1	VG1845DP+948GGA	SOUPAPE 3 VOIES SOUPAPE 1 1/4" CV:18.7 24VCA CLOSE-OFF:200 PSI, C/A ACT. MODULANT ET RESSORT DE RAPPEL
VOL-PAF	1	M9203-BGA-2	SERVOMOTEUR ÉLECTRIQUE 27 LB-PO ON/OFF AVEC RESSORT DE RAPPEL 24VCA

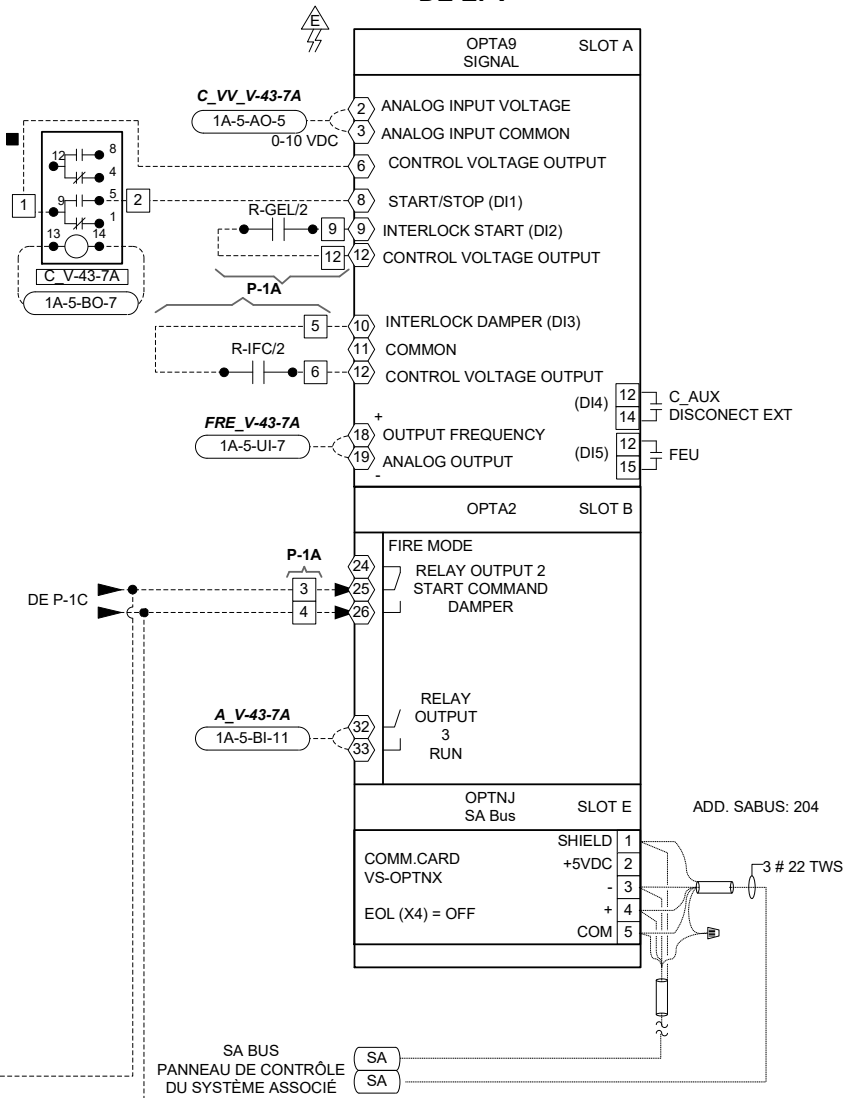
DESSINS DE RÉFÉRENCE					
DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07					4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07					4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07					4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS					4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07					4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07					4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO					4068-016

Titre du Dessin		7N0X-0300		02	TEL QUE CONSTRUCTION		11/23/2018	C.L.
Diagramme de contrôle du système de ventilation V-43-07		7N0X-0300		01	POUR APPROBATION		8/21/2017	C.L.
Représentant		Géant De Projet		Concepteur		DESSINE		APPROUVE
B.Carpenter		G.Garand		C.Labbé		PAR C.L. DATE 8/21/2017		PAR DATE 0
Nom du Projet		CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques		Information Succursale		NUMÉRO DE CONTRAT		
				Johnson Controls 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300		
						NUMÉRO DE DESSIN		
						4068-015		

V-43-07

EFV V-43-7A

POMPE PRÉCHAUFFAGE PEG-U7



IDENT.	QTE	MODÈLE	DESCRIPTION
C_PEG-U7	1	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
		ZM115/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
R-VOL-BYPASS	1	RMIA2-10 120AC	RELAIS DPDT 120VCA 10A – CARLO GAVAZZI
		ZM115/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
E_PEG-U7	1	H708	TRANSMETTEUR DE COURANT 0-135AMP CONTACT NO 1AMP à 30VCA/VCC – VERIS
EFV V-43-7A	1	VS3D9551D-SM100	ENTRAÎNEMENT À FRÉQUENCE VARIABLE 3HP JCI

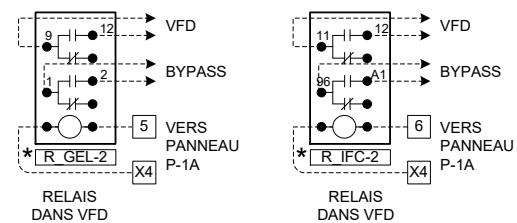


DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITES	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

		2	TEL QUE CONSTRUIT		R.G.	4/27/2018	M.M.
		1	POUR APPROBATION			8/21/2017	C.L.
DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR
Representant	Gérant De Projet	Concepteur	DESSINE			APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR	C.L.	DATE	8/21/2017	PAR DATE 0

Nom du Projet

CRDA ST-HYACINTHE
3600, boul. Casavant
St-Hyacinthe (Qc)
Remplacement hottes chimiques

Client	Johnson Controls	Information Succursale	NUMERO DE CONTRAT
Client	Johnson Controls	1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599	7N0X-0300
Client	Johnson Controls		NUMERO DE DESSIN
Client	Johnson Controls		4068-015A

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-07

PANNEAU DE CONTRÔLE
P-1A

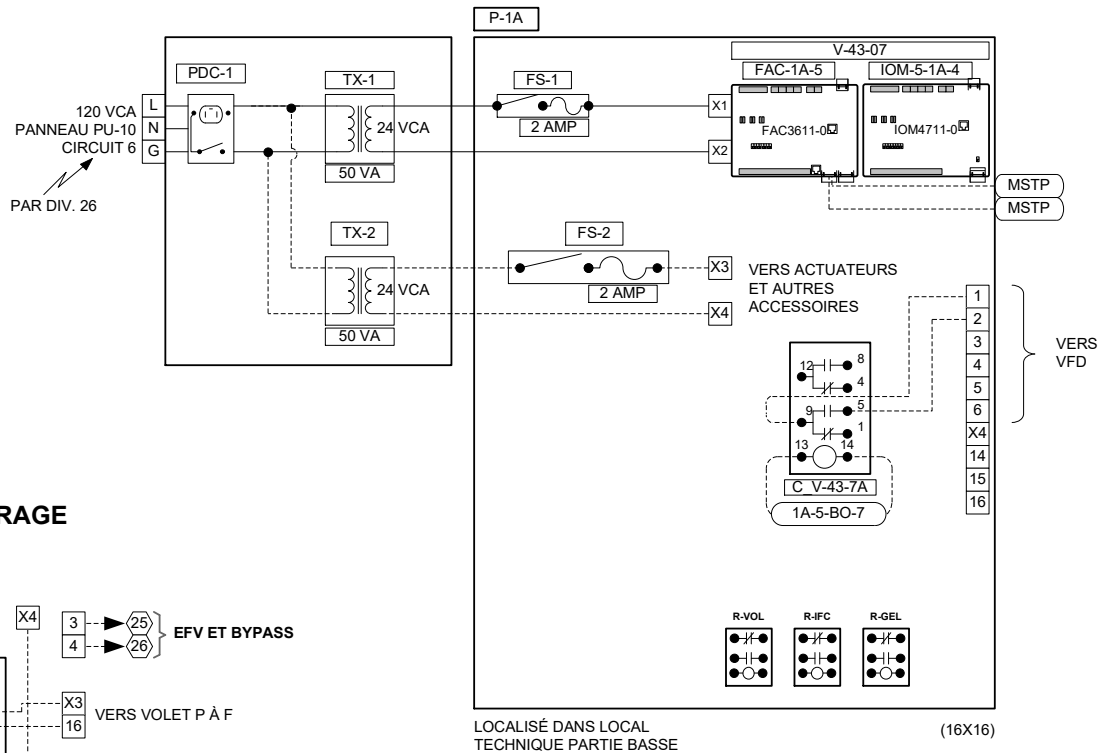
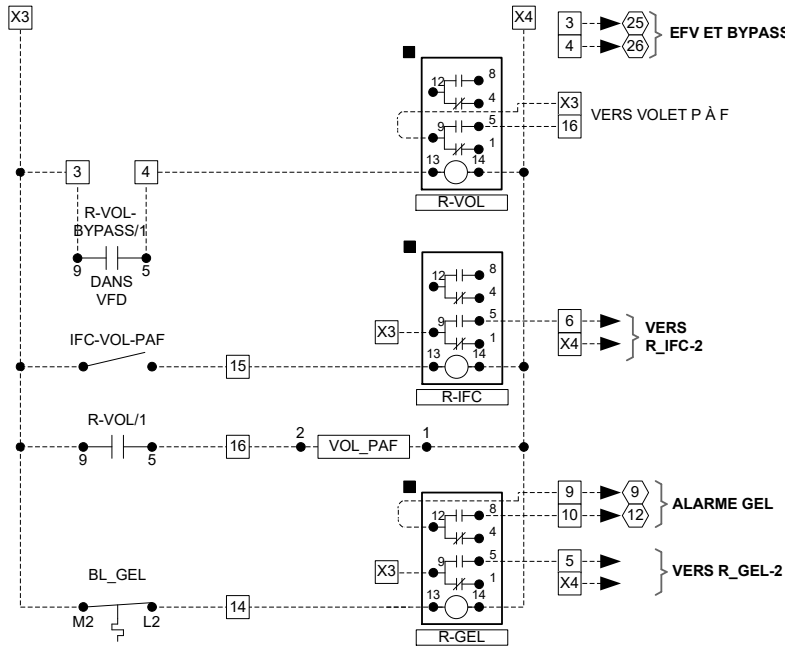


DIAGRAMME ÉLECTRIQUE ENTRE-BARRAGE
RELAIS P-1A



LÉGENDE

- * ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

LISTE DE MATÉRIEL PANNEAU P-1A

IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1, 2	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
P-1A	1	A16N16BLP	PANNEAU DE CTRL 16"x16"- HOFFMANN
	1		PLAQUE DE MONTAGE 16"x16"
TX-1, 2	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
PDC-1	1	SD-US 601xx	PRISE DIJONCTEUR 120V/8A
FAC-1A-5	1	MS-FAC3611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA
IOM-5-1A-4	1	MS-IOM4711-0	8 UI / 6 BI / 6 BO / 6 AO SA Bus
			MODULE D'EXPANSION IOM BACNET 24 VCA
C_V43-7A	4	RMIA2-10 024AC	6 UI / 2 BI / 3 BO / 2 AO / 4 CO
R-GEL,IFC,VOL	4	ZMI15/2N	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
			BASE DE RELAIS DPDT – CARLO GAVAZZI

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

Titre du Dessin		2		TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
Diagramme de contrôle du système de ventilation V-43-07		1		POUR APPROBATION		8/21/2017	C.L.
Panneau de contrôle P-1A		1		POUR APPROBATION		8/21/2017	C.L.
Nom du Projet		CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques		Johnson Controls 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300	
						4068-015B	

DIAGRAMME DE CONTRÔLE DES SYSTÈMES DE VENTILATION

SÉQUENCE DE CONTRÔLE

DIVISION 25 74 00

1.5 L'entrepreneur doit fournir un programme qui servira à superviser la perte de communication pour chaque contrôleur CAG, CAS ainsi que tous les types d'équipements raccordés sur le réseau. Lors d'une perte de communication, une alarme seras envoyée au terminal principal à la centralisation de contrôles.

PARTIE 1. DESCRIPTIONS GÉNÉRALES

1.1 GÉNÉRALITÉS

- .1

Vérifier auprès de TPSGC afin d'obtenir tous les calendriers d'évènements et l'horaire des différents modes et en faire la programmation.
- .2

Tous les paramètres d'opération tels que points de consigne, données de tableaux de réajustement, gains proportionnels, intégraux et dérivatifs, etc. doivent être programmés comme des variables afin de permettre leur modification aisée sans avoir à modifier la programmation.
- .3

Tous les gains proportionnels, intégraux et dérivatifs doivent être ajustés jusqu'à ce que chaque boucle de contrôle soit acceptée par le Représentant du Ministère.
- .4

Chaque moteur doit posséder un paramètre programmable permettant la remise en marche séquentielle de tous les moteurs lors du retour de l'alimentation électrique après une panne, et ce afin d'éliminer les surcharges à ce moment. Ce même paramètre sera utilisé pour le redémarrage des systèmes après alarme incendie. L'entrepreneur devra faire approuver par le Représentant du Ministère les paramètres qui seront programmés et faire la démonstration que la séquence est respectée au retour d'une panne. De plus, le temps de marche de chacun des moteurs doit être calculé et affiché incluant les alarmes sur demande de l'opérateur. Le temps de marche de chacun doit pouvoir être remis à zéro par une commande express de l'opérateur.
- .5

La fourniture, l'installation et le raccordement de tous les relais électriques, interverrouillages, convertisseurs et autres accessoires requis afin de respecter les séquences d'opérations décrites dans cette section sont la responsabilité de l'entrepreneur auquel s'applique la présente section.
- .6

Toutes transitions d'un point de consigne ou mode d'opération à un autre doivent se faire progressivement afin d'éviter les opérations brusques. Cette transition doit s'effectuer suivant une période de temps ajustable selon l'application.
- .7

Toutes les alarmes relatives à un système doivent être désactivées lorsque ce système est à l'arrêt. De plus, un délai ajustable doit permettre le retardement de l'activation de la fonction d'alarme au départ du système.
- .8

Toutes les valeurs de débit données aux plans et dans la présente section ne doivent pas être considérées comme exactes. L'entrepreneur doit relever les valeurs exactes sur les plans et plus particulièrement aux dessins d'atelier pour la ventilation, le chauffage, le refroidissement, la géothermie et l'eau chaude domestique; en cas de doute, vérifiez auprès du Représentant du Ministère.
- .9

Toutes les lectures des stations de mesure de débits (incluant les débits évalués par les lectures de pression différentielle des serpentins) seront programmées avec des fonctions d'amortissement et moyenne mobile afin d'assurer la stabilité des boucles de contrôle.
- .10

Quand plus d'une composante exécute la même action, un contrôle d'alternance sera programmé afin de répartir également l'usure des équipements. La priorité d'action des composantes pourra être sélectionnée par l'opérateur.
- .11

Effectuer la programmation de toutes les alarmes relatives aux températures ou humidités des pièces selon les paramètres qui seront fournis par le propriétaire.
- .12

Effectuer la programmation de toutes les alarmes relatives aux pressions différentielles des filtres (sur l'air et sur les réseaux d'eau).
- .13

Programmer des alarmes de haut ou bas niveau pour tous les points analogiques. Des alarmes d'état non voulu seront programmées pour les points digitaux lorsque la commande et l'état sont disponibles.

- .14

L'entrepreneur en régulation est responsable de la vérification de tous les instruments qu'il contrôle, même si cette composante est fournie par d'autres.
- .15

Toutes les valeurs seront programmées comme des variables que l'opérateur pourra changer facilement à la centrale de commande du SGE.
- .16

L'indication de débit doit être affichée à zéro lorsque les équipements sont à l'arrêt.
- .17

Toutes les boites VAV doivent fermer complètement leurs volets lorsque le point de consigne de débit est zéro. Le volet ne doit pas s'arrêter de fermer lorsque la lecture de débit est zéro, l'actuateur doit se refermer complètement à 0 % (fermé) lorsque la demande de débit est zéro.
- .18

Tous les systèmes décrits sur la liste des dessins doivent opérer en séquence et de façon autonome.
- .19

Certains entre barrages seront requis pour intégrer les équipements mécaniques et électriques.
- .20

La température extérieure et l'humidité extérieure seront associées à des variables analogiques dans le contrôleur principal du bâtiment. Ces variables analogiques seront utilisées dans les programmes de tous les contrôleurs du bâtiment.
- .21

Température et humidité extérieures

.1

Le CAG principal, de chaque bâtiment, aura un programme de transfert. Ce programme sera utilisé exclusivement pour associer la valeur du transmetteur de la température et d'humidité extérieure globale à des variables analogiques. Par la suite, ces variables analogiques seront utilisées dans les programmes de tous les contrôleurs du bâtiment.

.2

Le CAG principal de chaque bâtiment transférera la valeur de la variable analogique associée au transmetteur de température extérieure globale et la valeur de la variable analogique associée au transmetteur d'humidité extérieure globale.

.3

En cas de perte de communication avec le contrôleur ou de défectuosité du transmetteur de température ou d'humidité extérieure globale, prévoir une programmation permettant de se référer au transmetteur de température ou d'humidité extérieure locale.

.4

Toutes les valeurs transférées, entre les contrôleurs CAG et CAS, devront être faites selon les recommandations du fabricant.
- .22

Transfert de point entre contrôleurs

.1

Toutes les valeurs transférées, entre les contrôleurs CAG et CAS, devront être faites dans un programme dédié à cette fin. Aucun point de contrôle, sans avoir été transféré au préalable dans un programme de transfert, ne doit se retrouver dans les programmes d'opération.

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

Titre du Dessin									
Diagramme de contrôle du système de ventilation Séquence de contrôle Généralités		2	TEL QUE CONSTRUIT	R. G.	4/27/2018	M. M.			
		1	POUR APPROBATION		8/21/2017	C. L.			
	DESSIN DE REFERENCE	NO	REVISION	ECN	DATE	PAR			
	Représentant	Gérant De Projet	Concepteur	DESSINE	DATE	APPROUVE			
	B. Carpenter	G. Garrand	C. Labbé	PAR C. L.	DATE 8/21/2017	PAR	DATE	0	
Nom du Projet				Information Succursale		NUMÉRO DE CONTRAT			
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques	Johnson Controls			Johnson Controls Inc. 1375, rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300			
						NUMÉRO DE DESSIN			
						4068-015C			

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-07, V-43-14 ET V-43-15
SÉQUENCE DE CONTRÔLE

2.2 SYSTÈMES V43-07, V43-14 ET V43-15

- .1 Description générale :
- .1 Les points de contrôle de ce système seront raccordés dans de nouveaux contrôleurs.

.2 Le système alimente à 100 % d'air neuf et les ventilateurs d'évacuation sont utilisés pour compenser l'air frais.
- .2 Système à l'arrêt :
- .1 Les ventilateurs d'alimentation et d'évacuation sont à l'arrêt.

.2 Le volet d'air neuf est fermé.

.3 Le serpentin de préchauffage :

.1 Lorsque la température extérieure est supérieure à 10 C, la vanne du serpentin de chauffage est fermée et la pompe de recirculation est à l'arrêt.

.2 Lorsque la température extérieure est inférieure à 4 C, la pompe de recirculation est en marche et la vanne du serpentin de chauffage est modulée afin de maintenir la température de mélange à 8 C.

.4 La vanne du serpentin de refroidissement est fermée.

.5 Les vannes de l'humidificateur sont fermées.
- .3 Démarrage des systèmes :
- .1 Les évacuateurs sont mis en marche. Après avoir reçu la confirmation de l'état de marche des évacuateurs, le ventilateur d'alimentation est mis en marche. Sur confirmation de l'état de marche du ventilateur d'alimentation, les séquences suivantes sont activées.
- .4 Contrôle de la température d'alimentation :
- .1 L'unité de contrôle programmable, via le transmetteur de température, commande en séquence les serpents de chauffage et le serpentin de refroidissement, afin de satisfaire le point de consigne de la température du laboratoire tout en maintenant la température d'alimentation au minimum de 13 °C (ajustable).
- .5 Mode chauffage :
- .1 Au démarrage, lorsque la température extérieure est plus basse que 6 °C, le point de consigne de préchauffage sera fixé à 24 oC et abaissé graduellement jusqu'à son point de consigne d'opération, sur une période de 10 minutes.

.2 Afin de prévenir les variations de température d'alimentation du système, la capacité du serpentin de préchauffage est modulé pour maintenir un minimum de 8°C .

- .6 Demande d'humidification :
- .1 Le nouveau transmetteur d'humidité, situé dans la gaine d'évacuation, permet de moduler la vanne de l'humidificateur afin de maintenir le taux d'humidité relative à 30 % H.R. (ajustable).

.2 Le transmetteur d'humidité, situé dans la gaine d'alimentation, limite l'ouverture de la soupape de l'humidificateur afin que le taux d'humidité relative d'alimentation ne dépasse pas 80 % (ajustable).
- .7 Contrôle de la pression statique d'alimentation :
- .1 L'unité de contrôle programmable, via le transmetteur de pression statique, commande le variateur de fréquence du ventilateur afin de satisfaire le point de consigne (ajustable) de pression statique d'alimentation.

.2 Au départ du système, le point de consigne du niveau de pression statique est réinitialisé à zéro. Il augmente graduellement jusqu'à la consigne d'opération sur une période ajustable de deux (2) minutes.

DESSINS DE RÉFÉRENCE									
DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07					4068-015				
DIAGRAMME ÉLECTRIQUE DE V-43-07					4068-015A				
PANNEAU DE CONTRÔLE P-1A DE V-43-07					4068-015B				
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS					4068-015C				
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07					4068-015D				
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07					4068-015E				
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO					4068-016				


Titre du Dessin									
Diagramme de contrôle du système de ventilation V-43-07 Séquence de contrôle		2		TEL QUE CONSTRUIT		R. G.		4/27/2018	
		1		POUR APPROBATION				8/21/2017	
								C.L.	
DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE	
B.Carpenter		G.Garrand		C.Labbé		PAR C.L.		DATE 8/21/2017	
						PAR		DATE	
								0	
Nom du Projet								NUMÉRO DE CONTRAT	
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599				7N0X-0300	
								NUMÉRO DE DESSIN 4068-015D	

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-07, V-43-14 ET V-43-15

SÉQUENCE DE CONTRÔLE suite

- .8 Contrôle de la pression statique d'évacuation :
- .1 En opération normale, un des ventilateurs d'évacuation fonctionne continuellement.
- .2 Au départ, les deux registres d'air extérieur et le registre d'isolation du ventilateur d'évacuation prioritaire s'ouvrent.
- .3 Sur confirmation du début d'ouverture (22.5°) du registre d'isolation, le ventilateur d'évacuation démarre par entrebarrage avec le relai de fin de course de l'actuateur du registre.
- .4 L'évacuation peut être en mode « pressurisation d'urgence » ou en mode « pressurisation normale ».
- .5 En mode « pressurisation d'urgence », le point de consigne de la pression statique d'évacuation sera à 25 % (ajustable) du point de consigne du mode « normal ».
- .6 Le contrôle de pressurisation se met en mode « urgence » si l'état n'est pas confirmé ou sur tout arrêt non voulu du ventilateur d'alimentation. Le variateur de vitesse de l'évacuateur en fonction est modulé en séquence avec les deux registres d'air extérieur afin de maintenir le point de consigne de pression statique d'évacuation. La vitesse ne doit jamais descendre sous une certaine limite (à déterminer lors du balancement) afin de maintenir une vitesse de projection de l'air au-dessus d'un seuil minimum.
- .7 Sur confirmation de l'état de marche du ventilateur d'alimentation à entraînement à fréquence variable, le mode de pressurisation sera en mode « normal ». Aussi, le point de consigne de la pression statique d'évacuation augmente graduellement sur une période de deux (2) minutes (ajustable) du point de consigne « pressurisation d'urgence » au point de consigne du mode « normal »
- .8 Au démarrage, le signal de modulation du variateur de fréquence du ventilateur d'évacuation augmente graduellement sur une période de deux (2) minutes (ajustable) jusqu'au point de consigne de pression statique.
- .9 Sur l'arrêt non voulu du ventilateur d'évacuation, le registre du second ventilateur s'ouvre et le ventilateur démarre à l'intérieur de 10 secondes.

- .9 Protection :
- .1 Un humidistat « haute limite », situé dans la gaine d'alimentation, ferme la soupape de l'humidificateur si le taux d'humidité relative dépasse 85 %.
- .2 Un interrupteur de débit, situé dans la gaine d'alimentation, ferme la soupape de l'humidificateur si aucun débit n'est détecté.
- .3 Le transmetteur de pression différentielle, installé sur la banque de filtres, permet de connaître l'état d'encrassement des filtres. Une alarme est transmise à l'opérateur lorsque l'encrassement dépasse un seuil (ajustable au balancement).
- .4 Un interrupteur de basse limite de gel arrête le système en cas de danger de gel (température inférieure à 4 °C, ajustable).
- .5 Sur une détection d'une défectuosité d'une sonde de pression ou d'humidité, la boucle de contrôle associée sera désactivée ou la vitesse des EFV sera réduite au minimum.
- .6 La sonde de température, en aval du serpentin, sert de protection « *software* » et arrête le système si la température descend à son point de consigne de 4 °C (ajustable).
- .10 Supervision / Alarme:
- .1 États des filtres.
- .2 États non voulus des ventilateurs.
- .3 Hautes et basses températures.
- .4 Hautes et basses pressions.

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016


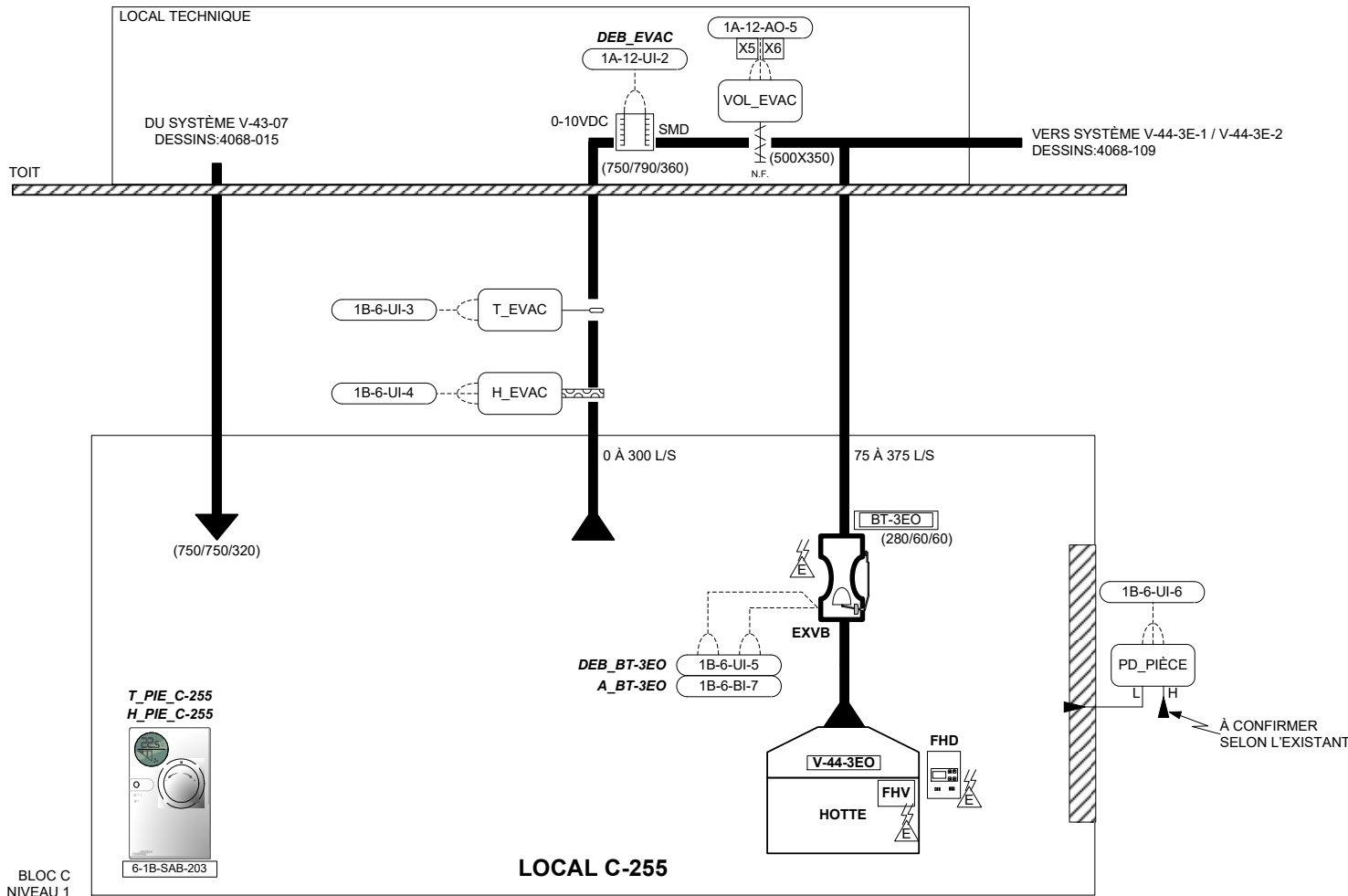
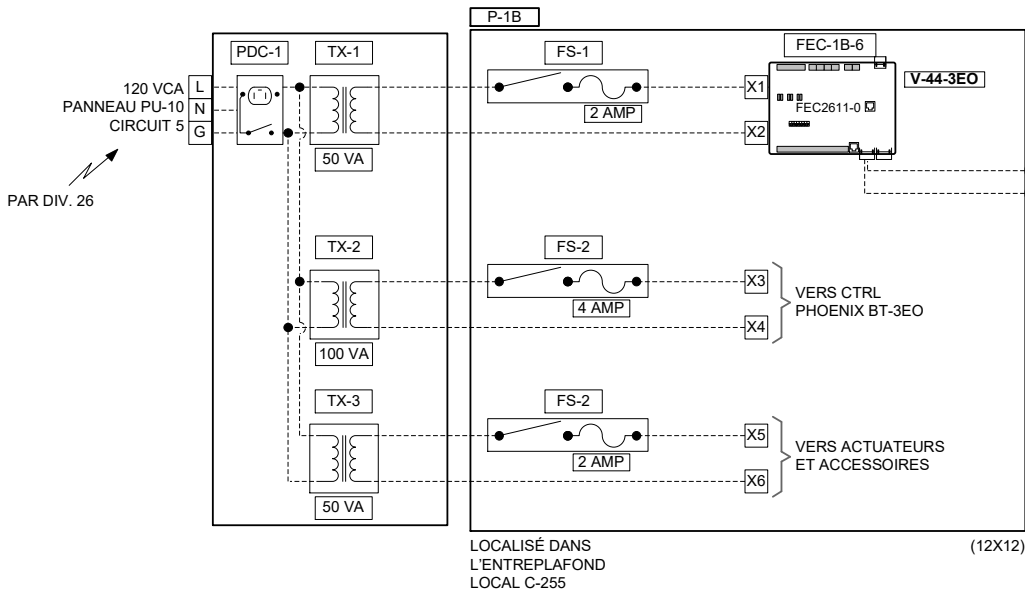
Titre du Dessin									
Diagramme de contrôle du système de ventilation V-43-07 Séquence de contrôle suite			2	TEL QUE CONSTRUIT	R.G.	4/27/2018	M.M.		
			1	POUR APPROBATION		8/21/2017	C.L.		
		DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE	PAR	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE				
B.Carpenter	G.Garrand	C.Labbé	PAR	C.L.	DATE	8/21/2017	PAR	DATE	0
Nom du Projet		Information Succursale		NUMÉRO DE CONTRAT					
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300			
						NUMÉRO DE DESSIN 4068-015E			

DIAGRAMME DE CONTRÔLE DU LOCAL C-255

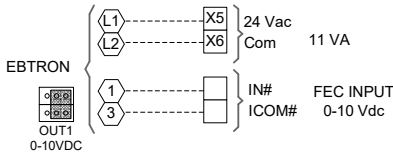
LOCAL C-255
HOTTE V-44-3EO



PANNEAU DE CONTRÔLE P-1B



Détails raccordement
Station Mesurage Débit



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DEB_EVAC	1	HTX104-PE	TRANSM. DE DÉBIT D'AIR - EBTRON
BT-3EO	1	EXVB110M-AMHH0	BOÎTE D'ÉVACUATION - PHOENIX CTRL
FHD	1	FHD130-ENG-FHV-RDI	AFFICHEUR - PHOENIX CTRL
SS	1	VSS4-0100-A	MODULE D'ÉTAT DE PORTE - PHOENIX CTRL
PD_PIECE	1	DPT2640-0R1B-1	TRANSM. DE PRESSION DIFF +0.1"H2O
	2	RPV	0-5VCC - SETRA
H_EVAC	1	HE-67N3-0N00P	PITOT S/S PIÈCE
T_EVAC	1	TE-6311M-1	TRANSM. D'HUMIDITÉ 0-100% +/-3% 0-10 VCC C/A H
T_PIE-C-255	1	NS-BHR7103-0	SONDE DE TEMP. GAINÉ NICKEL 1K OHM
H_PIE-C-255	1		SONDE TEMP. PIÈCE RÉSEAU SA BUS BACNET ADR
VOL_ALI, EVAC	2	M9203-GGA-2	PC.AJUSTABLE/AFFICHEUR/BOUTON OCCUPATION
			SONDE D'HUMIDITÉ DE PIÈCE/ AFFICHEUR
			SERVOMOTEUR ÉLECTRIQUE 27 LB-PO 2-10VCC
			AVEC RESSORT DE RAPPEL 24VCA

LISTE DE MATÉRIEL PANNEAU P-1B

IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1, 3	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
F-2	1	BJ-3004265-4	FUSIBLE 4 AMP. c/a PORTE FUSIBLE
P-1B	1	A12N12BLP	PANNEAU DE CTRL 12"x12"x6"- HOFFMANN
TX-1, 3	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
TX-2	1	FS100PR	TRANSFO., 120V/24Vac., 100VA
PDC-1	1	SD-US	PRISE
		601xx	DIJONCTEUR 120V/8A
FEC-1B-6	1	MS-FEC2611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA
			6 UI / 2 BI / 3 BO / 2 AO / 4 CO SA Bus

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

- SC1: MODE OCCUPÉ - HOTTES 100% OUVERTES / OCCUPIED MODE - FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ - HOTTES OUVERTURE MINIMALE / OCCUPIED MODE - FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ - HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE - FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO	4068-016
SÉQUENCE DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO	4068-016A
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C

Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
Diagramme de contrôle du local C-255	1	POUR APPROBATION		8/21/2017	C.L.
DESSIN DE REFERENCE					
Représentant		Gérant De Projet		Concepteur	
B.Carpenter		G.Garand		C.Labbé	
Nom du Projet		Information Succursale		APPROUVE	
CRDA ST-HYACINTHE		PAR C.L. DATE 8/21/2017		PAR DATE 0	
3600, boul. Casavant		Johnson Controls Inc.		7N0X-0300	
St-Hyacinthe (Qc)		1375,rue Frank-Carrel Bur.3		NUMÉRO DE DESSIN	
Remplacement hottes chimiques		Québec, (Québec)		4068-016	
		G1N 2E7			
		Tél: (418) 681-0085			
		Fax: (418) 681-3599			

HOTTE V-44-3EA, V-44-3EB, V-44-3EC, V-44-3ED,
V-44-3EF, V-44-3EG, V-44-3EH, V-44-3EI, V-44-3EJ,
V-44-3EK, V-44-3EL, V-44-3EM, V-44-3EN ET V-44-3EO

SÉQUENCE DE CONTRÔLE

PARTIE 2. SÉQUENCES D'OPÉRATIONS

2.1 CONTRÔLE DE PIÈCE

.1 Opération :

.1 Occupation : modes occupé, inoccupé.

.2 Boîte d'évacuation à débit variable.

.3 Hotte aspirante de laboratoire à débit variable.

.2 Contrôle de pressurisation :

.1 Le contrôleur de pressurisation de laboratoire assure le contrôle de débit d'air par décalage volumétrique à la pièce desservie avec l'unité terminale d'évacuation et l'unité terminale d'alimentation.

.2 Sur une augmentation des débits d'air évacué par la hotte aspirante de laboratoire, le débit de l'unité terminale d'évacuation de la pièce est réduit dans la même proportion jusqu'au minimum, si nécessaire. Dans l'éventualité où la différence entre le débit de l'unité terminale d'alimentation et celui de l'unité terminale d'évacuation serait en dessous du décalage volumétrique désiré, le débit de l'unité d'alimentation sera augmenté jusqu'à ce que cette différence soit réduite.

.3 Sur une diminution des débits d'air évacué par la hotte aspirante de laboratoire, le débit d'alimentation de la pièce est réduit dans la même proportion jusqu'au minimum en mode occupé/inoccupé si nécessaire ou de façon à satisfaire la température d'ambiance à son point de consigne.

.4 Le débit d'évacuation des cabinets ventilés (constant) et le débit d'alimentation de la boîte de chauffage périmétrique sont inclus dans le calcul du décalage volumétrique pour le débit d'évacuation requis.

.5 Pressurisation négative.

.3 Contrôle de la température :

.1 La température de pièce est maintenue à son point de consigne (21 °C), en modulant la soupape de réchauffe d'alimentation d'air :

- .1 Sur demande de chauffage, le débit d'alimentation est à son minimum (selon le calcul du décalage volumétrique) et la vanne de chauffage module pour maintenir la température de pièce au point de consigne.
- .2 Sur demande de refroidissement, la vanne de chauffage est fermée et le débit d'alimentation d'air est modulé jusqu'à son débit maximum afin de maintenir le point de consigne désiré.

.4 Hotte aspirante de laboratoire :

.1 La hotte de laboratoire à volume variable fonctionne en permanence afin de maintenir la pression du laboratoire négative.

.2 Le contrôleur de la hotte aspirante (CHA) mesure directement la position d'ouverture verticale de la porte. Cette variable est utilisée afin de calculer le débit d'air requis pour maintenir le point de consigne de la vitesse de l'air à la face de la hotte. Comme la position de la porte est déplacée de haut en bas et vice-versa, le CHA répond immédiatement en modulant/positionnant l'élément terminal à la sortie de la hotte aspirante.

.5 Modes d'occupation :

.1 Mode occupé :

.1 Les boîtes d'alimentation et d'évacuation sont commandées au taux de ventilation en mode occupé (se référer aux tableaux des boîtes terminales). La vitesse de façade des hottes est de 100 pi/min.

.2 Mode inoccupé :


.1 Les boîtes d'alimentation et d'évacuation sont commandées au taux minimum de ventilation en mode inoccupé (se référer aux tableaux des boîtes terminales). vitesse de façade des hottes est de 100 pi/min.

.6 Alarmes :

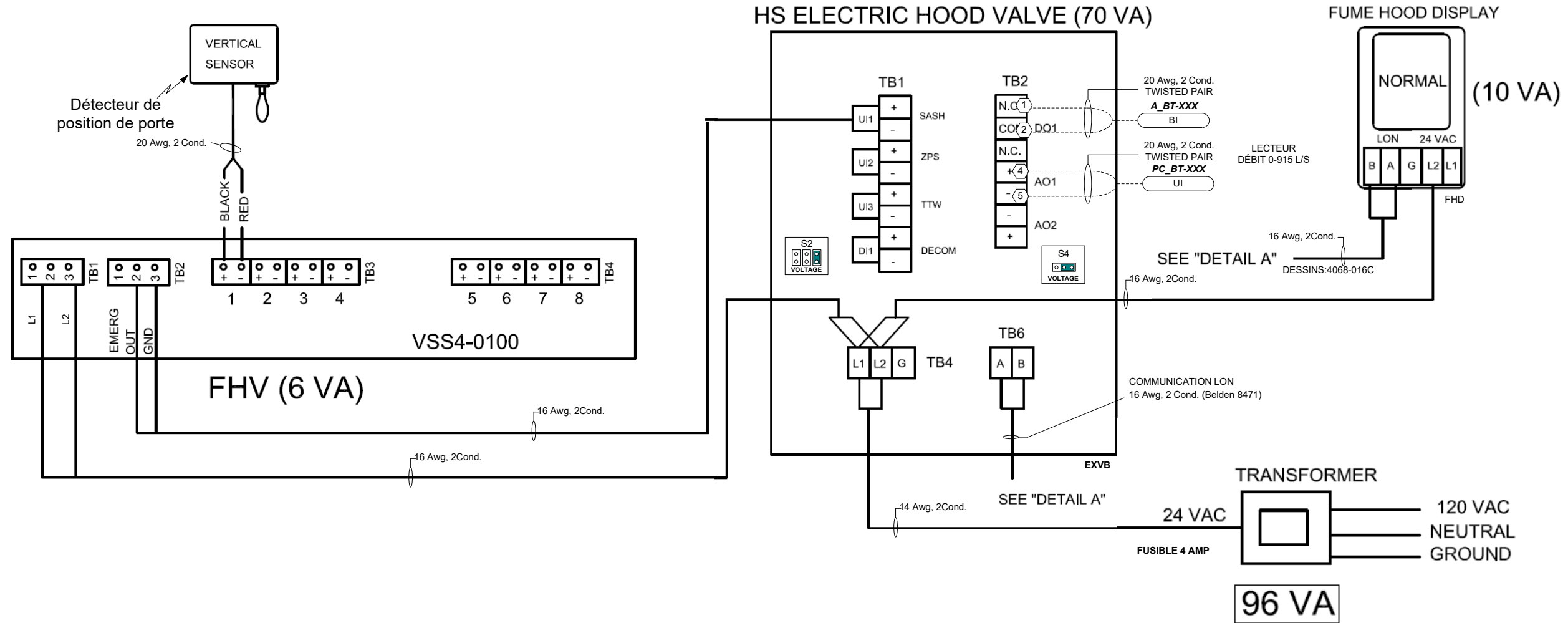
- .1 Lorsque la porte de la hotte aspirante de laboratoire est maintenue ouverte à plus de 15 po (ajustable) pendant plus de 20 minutes (ajustable), une alarme sonore est transmise au moniteur de la hotte pendant une période de 30 secondes (ajustable).
- .2 Si la condition persiste, refaire l'étape n° 1.
- .3 Si la condition est toujours présente après 90 minutes, une alarme est transmise au poste de commande central.
- .4 Lorsque l'utilisateur acquitte une alarme sonore sur le moniteur de la hotte (bouton silence), l'acquittement doit être en vigueur pour 30 minutes (ajustable). Si la condition d'alarme est toujours présente après ce délai, l'alarme sonore du moniteur de hotte est réactivée.

DESSINS DE RÉFÉRENCE

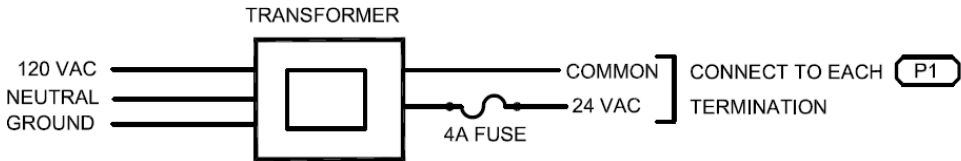
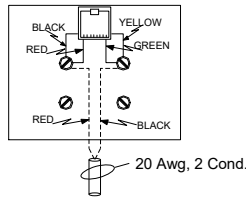
DIAGRAMME DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO 4068-016
SÉQUENCE DE CONTRÔLE DU LOCAL D-225 HOTTE V-44-3EO 4068-016A
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX 4068-016B
DIAGRAMME DE DÉTAIL DE RACORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX 4068-016C

Titre du Dessin													
Diagramme de contrôle du local C-225 Hotte V-44-3EO Séquence de contrôle		2		TEL QUE CONSTRUIT		R.G.		4/27/2018		M.M.			
		1		POUR APPROBATION				8/21/2017		C.L.			
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
		Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE			
B.Carpenter		G.Garrand		C.Labbé		PAR C.L.		DATE 8/21/2017		PAR		DATE 0	
Nom du Projet						Information Succursale		NUMÉRO DE CONTRAT					
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				Johnson Controls Inc. 1375, rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		NUMÉRO DE DESSIN		7N0X-0300					
								4068-016A					

**DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALVE
PHOENIX**



**Détail de raccordement
Boîte de jonction
Détecteur de position
de porte**

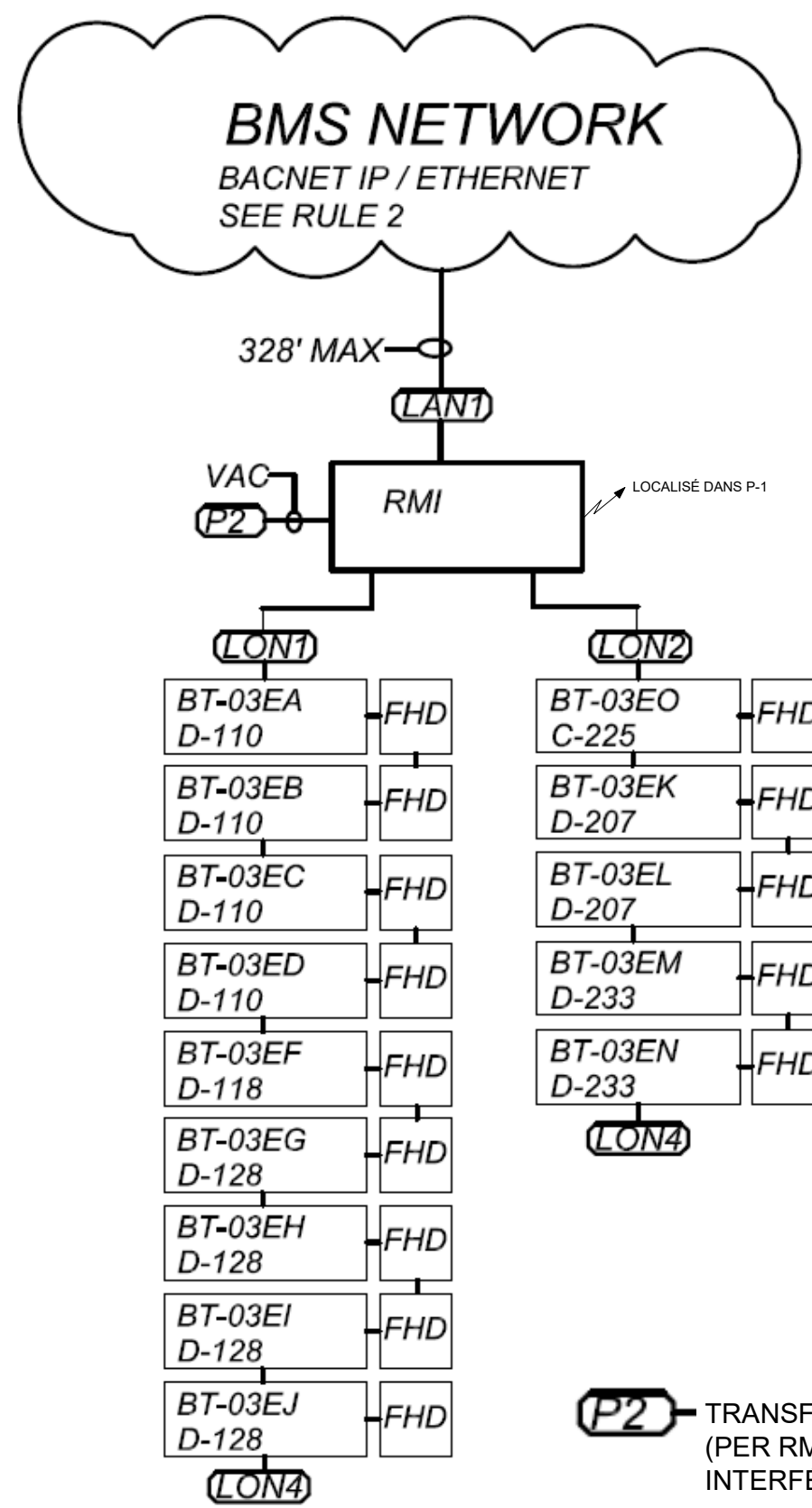


DESSINS DE RÉFÉRENCE

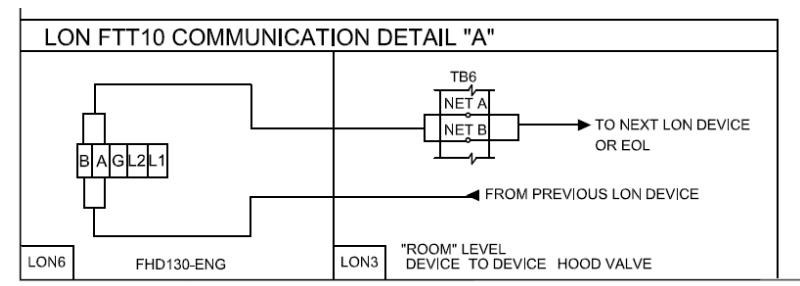
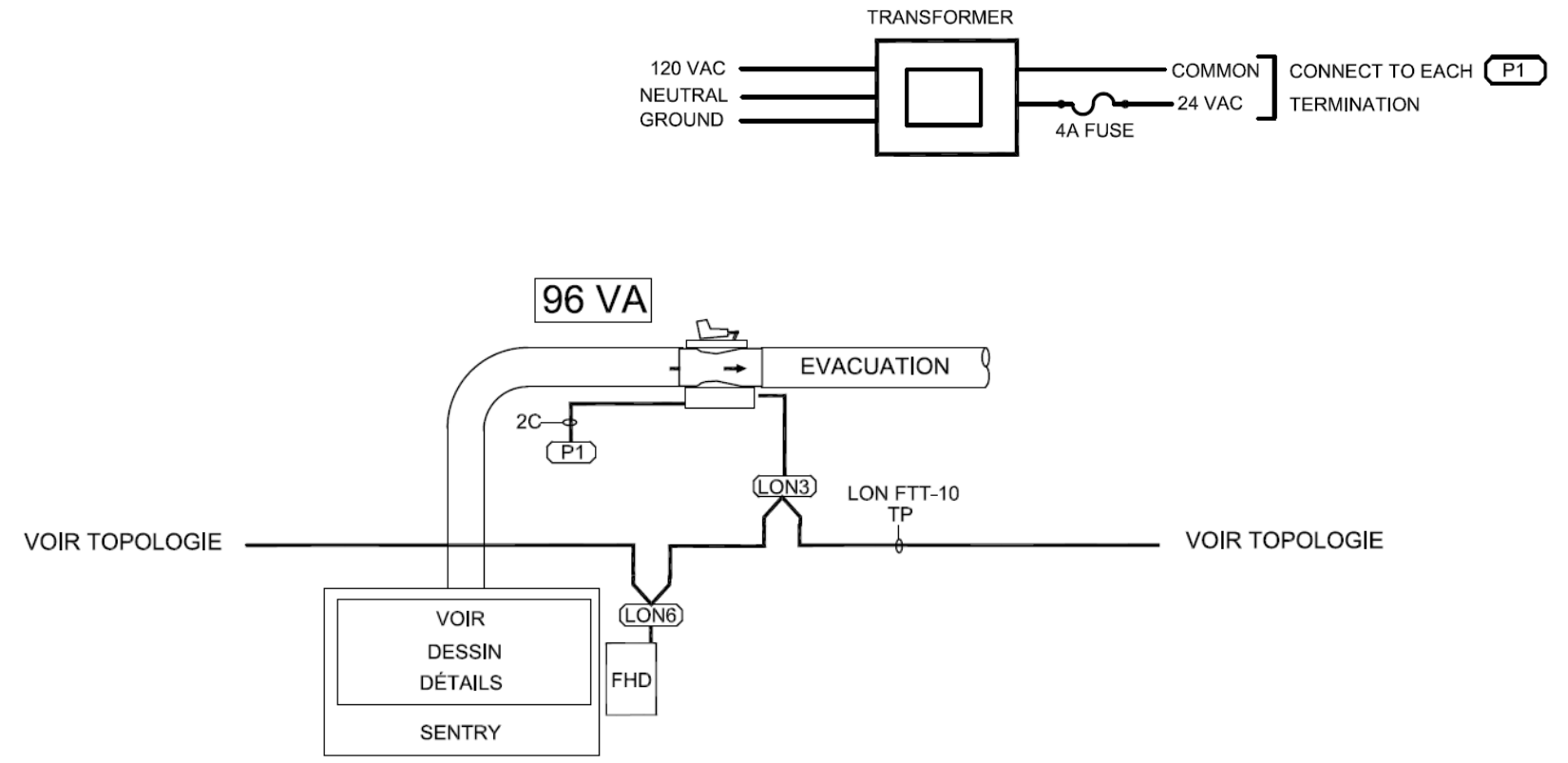
DIAGRAMME DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO 4068-016
SÉQUENCE DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO 4068-016A
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX 4068-016B
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX 4068-016C

Titre du Dessin		2		TEL QUE CONSTRUIT		R.G.		4/26/2018		M.M.	
Diagramme de raccordement de valve PHOENIX		1		POUR APPROBATION				8/21/2017		C.L.	
DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE		NUMERO DE CONTRAT	
B.Carpenter		G.Garand		C.Labbé		PAR C.L.		DATE 8/21/2017		PAR DATE 0	
Nom du Projet		CRDA ST-HYACINTHE		3600, boul. Casavant		St-Hyacinthe (Qc)		Remplacement hottes chimiques		Johnson Controls	
										7N0X-0300	
										4068-016B	

DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RÉSEAU DE COMMUNICATION
DE VALVE PHOENIX



(P2) TRANSFORMATEUR 24 VAC CLASS 2 UL DÉDIÉ
(PER RMI/RMC) POUR RÉDUIRE LES
INTERFÉRENCES




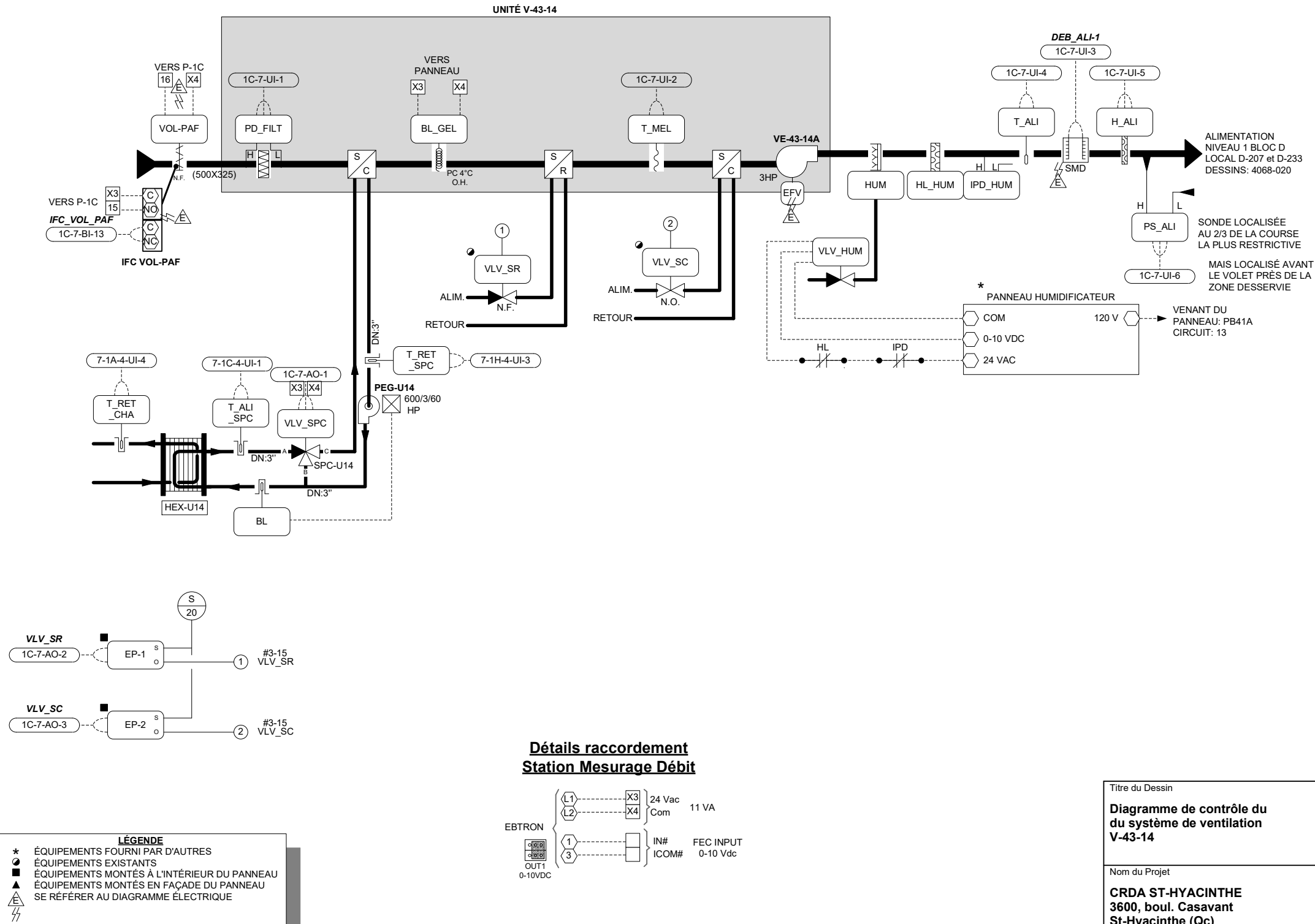
DESSINS DE RÉFÉRENCE						
DIAGRAMME DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO				4068-016		
SÉQUENCE DE CONTRÔLE DU LOCAL D-255 HOTTE V-44-3EO				4068-016A		
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX				4068-016B		
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX				4068-016C		
		2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
		1	POUR APPROBATION		8/21/2017	C.L.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR C.L.	DATE 8/21/2017	PAR	DATE 0
			Information Succursale		NUMERO DE CONTRAT	
			Johnson Controls Inc.		7N0X-0300	
			1375,rue Frank-Carrel Bur.3			
			Québec, (Québec)		NUMERO DE DESSIN	
			G1N 2E7		4068-016C	
			Tél: (418) 681-0085			
			Fax: (418) 681-3599			

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-14



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BL_GEL	1	A70GA-1C	THERMOSTAT DE GEL DPDT RÉARM.AUTO.
BL	1	TE-6001-8	SUPPORT DE MONTAGE POUR THERMOS. GEL
DEB_ALI	1	HTA104-F DI	BASSE LIMITE DE TEMPÉRATURE
IFC-VOL-PAF	1	KXCMS11N+KXAM1	TRANM. DE DÉBIT D'AIR - EBTRON
PD_FILT	1	DPT260-MS2	INTERRUP. DE FIN DE COURSE + TIGE À RESSORT
PS_ALI	2	FTG18A-600R	CONTACT N.O. + N.C.- LOVATO
PS_ALI	1	DPT2640-005D	TRANSMETTEUR DE PRESSION DIFF. 0-1.5"H2O
T_ALI_SPC	1	FTG18A-600R	PITOT
T_RET_SPC	2	TE-6312P-1	TRANSM. DE PRESSION DIFF. 0-5"H2O
H_ALI	2	T1-1/2P4	0-5VCC - SETRA
T_ALI	1	TE-6311M-1	PITOT
T_MEL	1	TE-6316M-1	SONDE TEMP. IMMERSION NICKEL 1K OHM
VLV_SPC	1	HE-67N3-0N00P	PUIT IMMERSION 4" - GREYSTONE
VOL-PAF	1	M9203-BGA-2	TRANSM. D'HUMIDITÉ 0-100% +/-3% 0-10 VCC C/A
			SONDE DE TEMP. GAINÉ NICKEL 1K OHM
			SONDE TEMP. GAINÉ NICKEL 1K OHM
			SONDE TEMP. MÉLANGE 16' NICKEL 1K OHM
			SUPPORT DE MONTAGE
			SOUPAPE 3 VOIES SOUPAPE 2 1/2" CV:72.8 24VCA
			CLOSE-OFF:200 PSI, C/A ACT. MODULANT ET
			RESSORT DE RAPPEL
			SERVOMOTEUR ÉLECTRIQUE 27 LB-PO ON/OFF
			AVEC RESSORT DE RAPPEL 24VCA

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-14	4068-019
DIAGRAMME ÉLECTRIQUE DE V-43-14	4068-019A
PANNEAU DE CONTRÔLE P-1C DE V-43-14	4068-019B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DE V-43-14	4068-015D
SÉQUENCE DE CONTRÔLE DE V-43-14	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL D-207 HOTTE V-44-3EK, V-44-3EL	4068-020
DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EM, V-44-3EN	4068-020A

Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/27/2018	M.M.
Diagramme de contrôle du système de ventilation V-43-14	1	POUR APPROBATION		8/21/2017	C.L.
Nom du Projet	CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques	Johnson Controls 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599	7N0X-0300	NUMÉRO DE DESSIN	4068-019

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION

V-43-14
DIAGRAMME ÉLECTRIQUE
EFV V-43-14A

DIAGRAMME ÉLECTRIQUE DU
BYPASS EFV

DIAGRAMME ÉLECTRIQUE DE RACCORDEMENT
DE EFV

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PEG-U7	1	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
R-VOL-BYPASS	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
E_PEG-U7	1	RMIA2-10 120AC	RELAIS DPDT 120VCA 10A – CARLO GAVAZZI
EFV V-43-7A	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
	1	H708	TRANSMETTEUR DE COURANT 0-135AMP CONTACT NO 1AMP À 30VCA/VCC – VERIS
	1	VS3D9551D-SM100	ENTRAÎNEMENT À FRÉQUENCE VARIABLE 3HP JCI

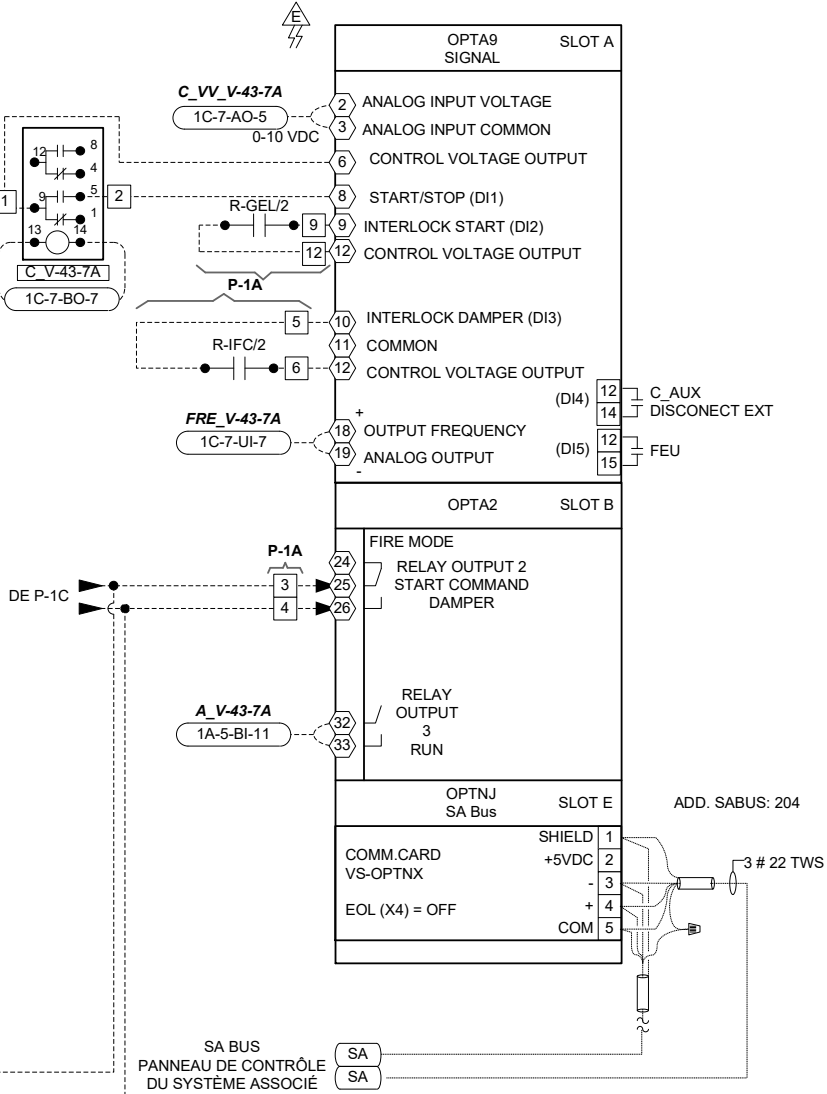
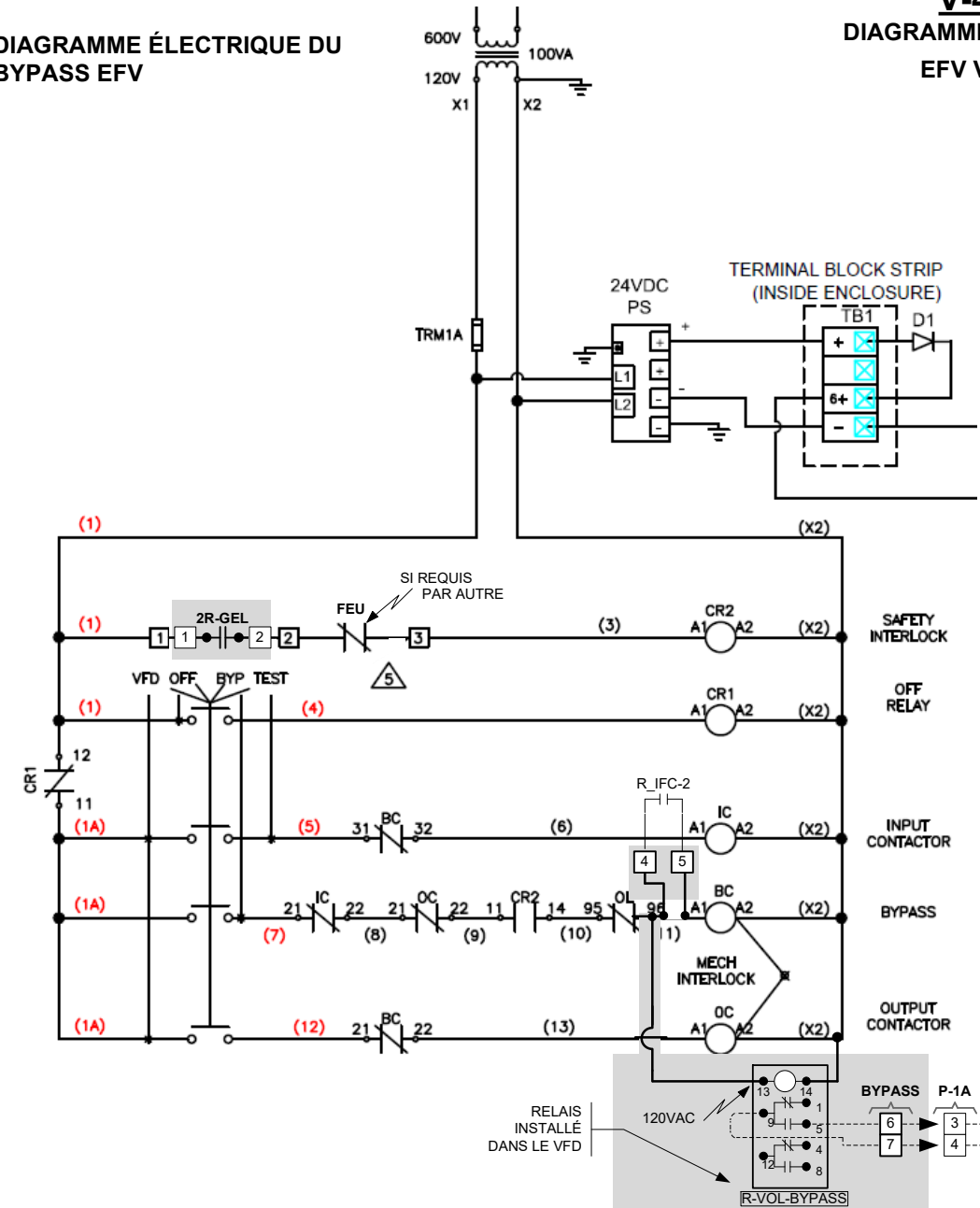
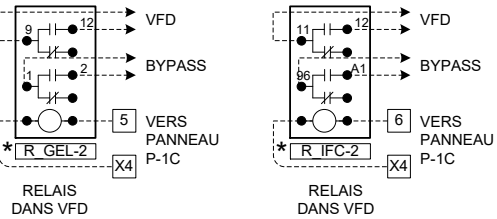
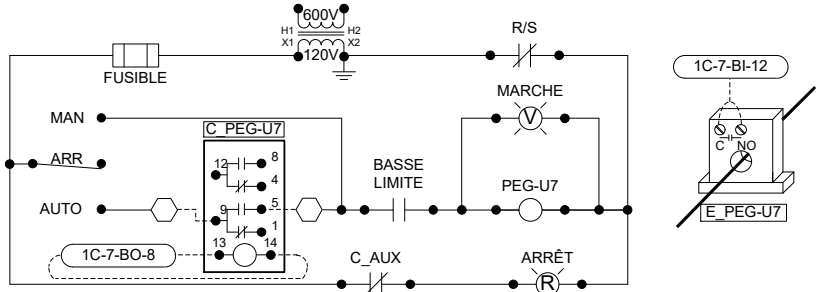


DIAGRAMME ÉLECTRIQUE
POMPE PRÉCHAUFFAGE PEG-U7

ARRÊT/DÉPART POMPE
PRÉCHAUFFAGE



Titre du Dessin	
Diagramme de contrôle du du système de ventilation V-43-07	
Diagramme électrique	
Nom du Projet	
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques	

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

Représentant	Gérant De Projet	Concepteur	DESSINE	ECN	DATE	PAR
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017			
Nom du Projet			NUMÉRO DE CONTRAT			
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques			7N0X-0300			
Johnson Controls			4068-019A			

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-14

PANNEAU DE CONTRÔLE
P-1C

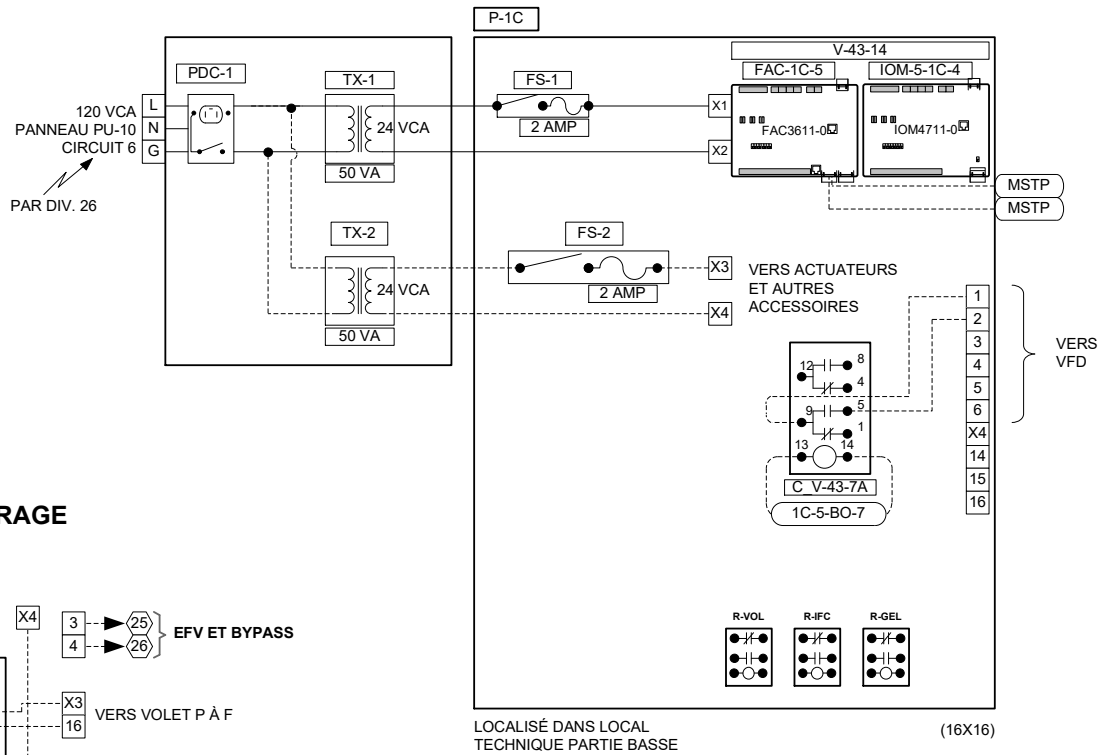
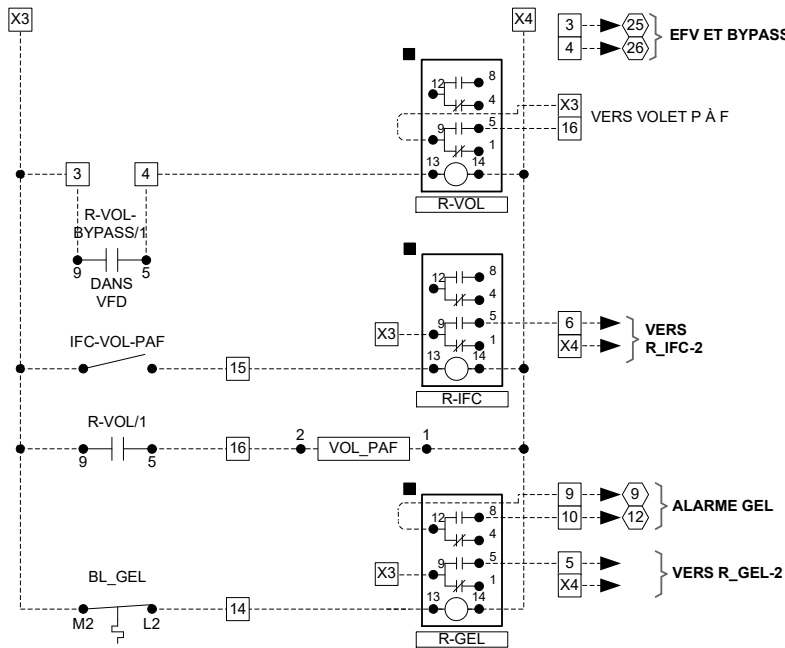


DIAGRAMME ÉLECTRIQUE ENTRE-BARRAGE
RELAIS P-1A



LISTE DE MATÉRIEL PANNEAU P-1A

IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1, 2	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
P-1A	1	A16N16BLP	PANNEAU DE CTRL 16"x16"- HOFFMANN
	1		PLAQUE DE MONTAGE 16"x16"
TX-1, 2	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
PDC-1	1	SD-US	PRISE
	601xx		DIJONCTEUR 120V/8A
FAC-1A-5	1	MS-FAC3611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA
IOM-5-1A-4	1	MS-IOM4711-0	8 UI / 6 BI / 6 BO / 6 AO SA Bus
			MODULE D'EXPANSION IOM BACNET 24 VCA
C_V43-7A	4	RMIA2-10 024AC	6 UI / 2 BI / 3 BO / 2 AO / 4 CO
R-GEL, IFC, VOL	4	ZMI15/2N	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
			BASE DE RELAIS DPDT – CARLO GAVAZZI

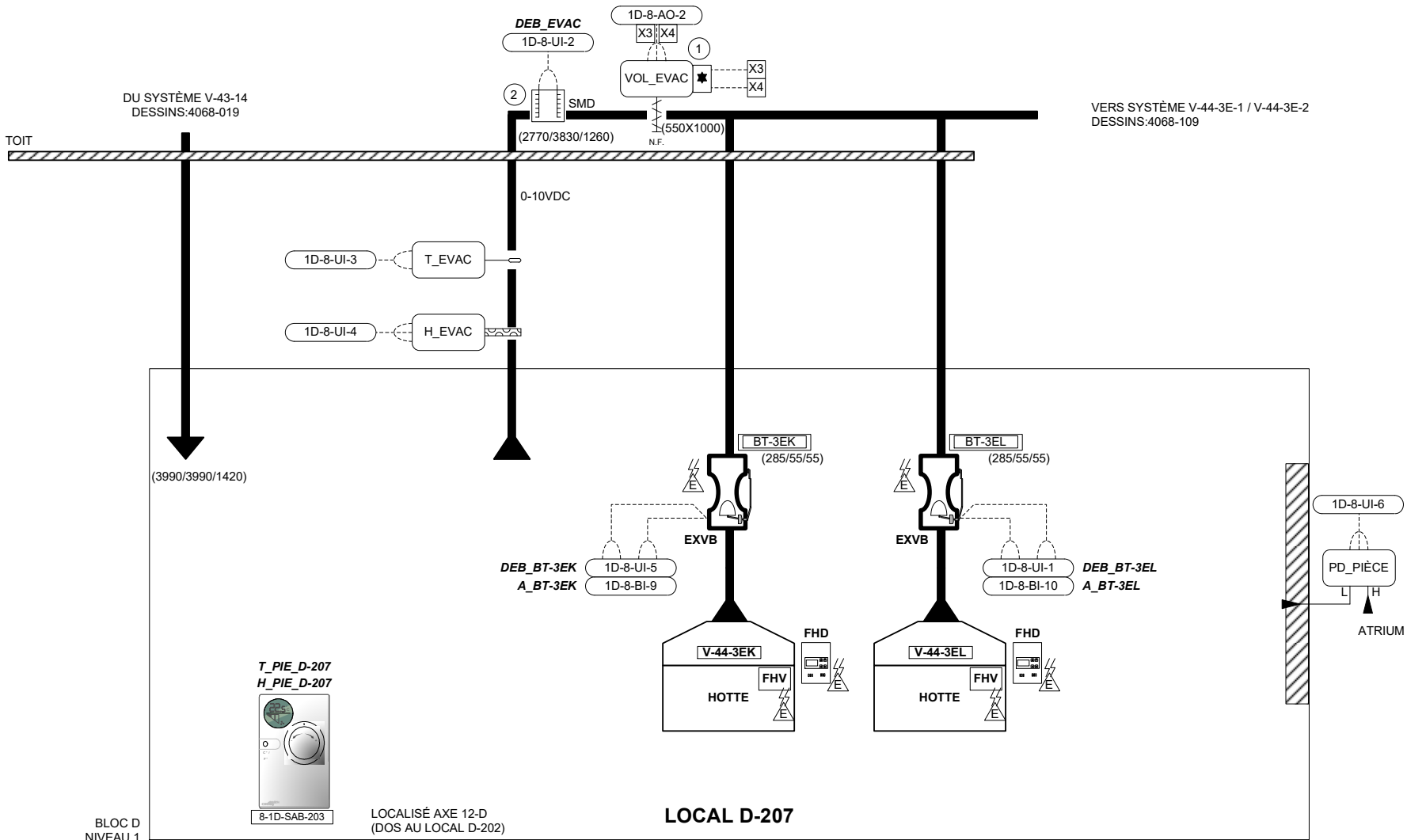
DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

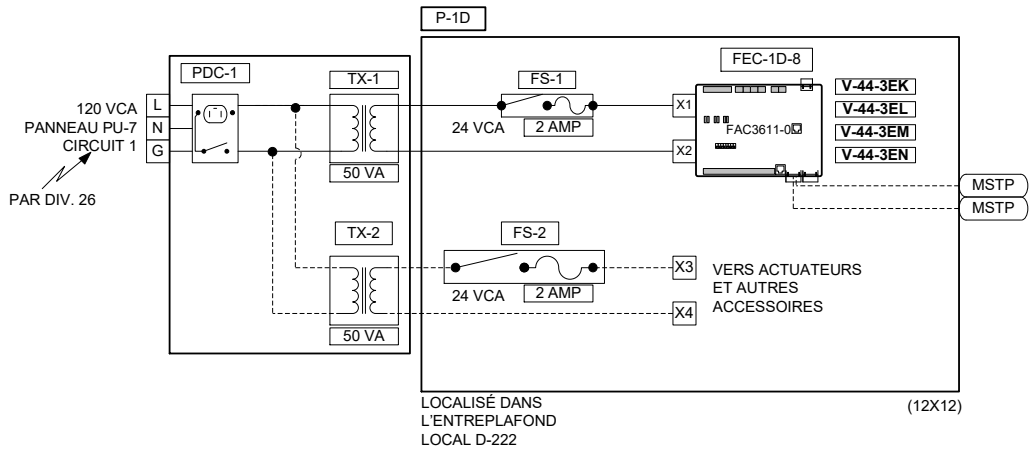
Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
Diagramme de contrôle du système de ventilation V-43-07	1	POUR APPROBATION		8/21/2017	C.L.
Panneau de contrôle P-1A					
Nom du Projet	CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				
Représentant	Géant De Projet	Concepteur	DESSINE		
B.Carpenter	G.Garand	C.Labbé	PAR C.L.	DATE 8/21/2017	PAR DATE 0
Information Succursale			NUMÉRO DE CONTRAT		
Johnson Controls			7N0X-0300		
1375, rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599			NUMÉRO DE DESSIN 4068-019B		

DIAGRAMME DE CONTRÔLE DU LOCAL D-207

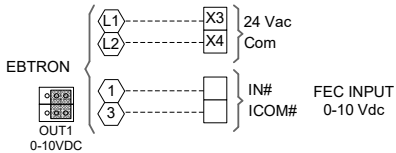
LABORATOIRE SECTEUR OUEST LOCAL D-207
HOTTE V-44-3EK ET V-44-3EL



PANNEAU DE CONTRÔLE P-1D



Détails raccordement
Station Mesurage Débit



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DEB_EVAC	1	HTX104-PE	TRANSM. DE DÉBIT D'AIR - EBTRON
BT-3EK, BT-3EL	2	EXVB110M-AMHH0	BOÎTE D'ÉVACUATION – PHOENIX CTRL
FHD	2	FHD130-ENG-FHV-RDI	AFFICHEUR – PHOENIX CTRL
SS	2	VSS4-0100-A	MODULE D'ÉTAT DE PORTE – PHOENIX CTRL
PD_PIECE	1	DPT2640-0R1B-1	TRANSM. DE PRESSION DIFF +0.1"H2O
	2	RPV	0-5VCC – SETRA
H_EVAC	1	HE-67N3-0N00P	PITOT S/S PIÈCE
T_EVAC	1	TE-6311M-1	TRANSM. D'HUMIDITÉ 0-100% +/-3% 0-10 VCC C/A
T_PIE-D-207	1	NS-BHR7103-0	SONDE DE TEMP. GAINÉ NICKEL 1K OHM
H_PIE-D-207	1		SONDE TEMP. PIÈCE RÉSEAU SA BUS BACNET ADR
	2	M9203-GGA-2	PC.AJUSTABLE/AFFICHEUR/BOUTON OCCUPATION
VOL_ALI, EVAC	1	50005859-001	SONDE D'HUMIDITÉ DE PIÈCE/ AFFICHEUR
	★ 1	M9000-302	SERVOMOTEUR ÉLECTRIQUE 27 LB-PO 2-10VCC
			AVEC RESSORT DE RAPPEL 24VCA
			BOÎTIER DE PROTECTION NEMA 4 – HONEYWELL
			ENSEMBLE DE CHAUFFAGE POUR ACTUATEUR

LISTE DE MATÉRIEL PANNEAU P-1D

IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1, 2	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
P-1D	1	A12N12BLP	PANNEAU DE CTRL 12"x12"x6"- HOFFMANN
TX-1, 2	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
PDC-1	1	SD-US	PRISE
		601xx	DIJONCTEUR 120V/8A
FAC-1D-8	1	MS-FAC3611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA
			8 UI / 6 BI / 6 BO / 6 AO SA Bus

- ① FOURNIR ET INSTALLER UN VOLET MOTORISÉ ISOLÉ. IL DEVRA ÊTRE RÉSISTANT AU INTEMPÉRIES. FOURNIR ET INSTALLER UNE PROTE D'ACCÈS ISOLÉE ... PAR VENTILATION
NOTE 4 M14/36
- ② Installer le transmetteur de la station de mesure de débit dans un espace chauffé à l'intérieur du bâtiment. La longueur maximal du filage entre la station de mesure de débit et son transmetteur est de 15.2m. À valider selon l'installation au chantier

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

- SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCE

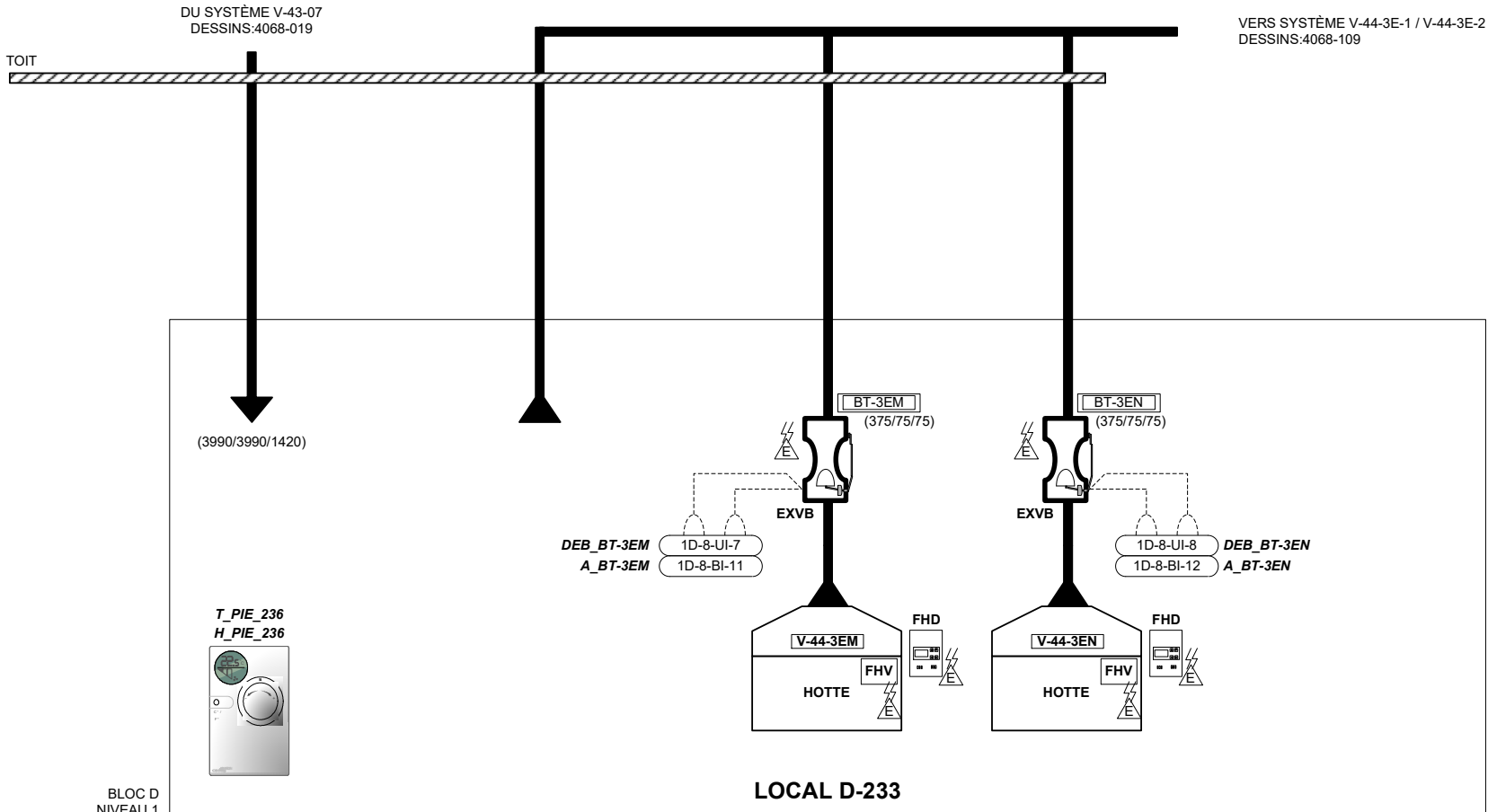
DIAGRAMME DE CONTRÔLE DU LOCAL D-207 HOTTE V-44-3EK, L	4068-020
DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EM, N	4068-020A
SÉQUENCE DE CONTRÔLE DU LOCAL D-207 HOTTE V-44-3EK, L, M, N	4068-016A
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C

Titre du Dessin		2		TEL QUE CONSTRUIT	R.G.	4/27/2018	M.M.
Diagramme de contrôle du local D-207		1		POUR APPROBATION		8/21/2017	C.L.
Représentant		Géant De Projet		Concepteur		DESSINE	
B.Carpenter		G.Garand		C.Labbé		PAR C.L. DATE 8/21/2017	
Nom du Projet		CRDA ST-HYACINTHE		3600, boul. Casavant		NUMÉRO DE CONTRAT	
St-Hyacinthe (Qc)		Remplacement hottes chimiques		Johnson Controls Inc.		7N0X-0300	
				1375,rue Frank-Carrel Bur.3		NUMÉRO DE DESSIN	
				Québec, (Québec)		4068-020	
				G1N 2E7			
				Tél: (418) 681-0085			
				Fax: (418) 681-3599			

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

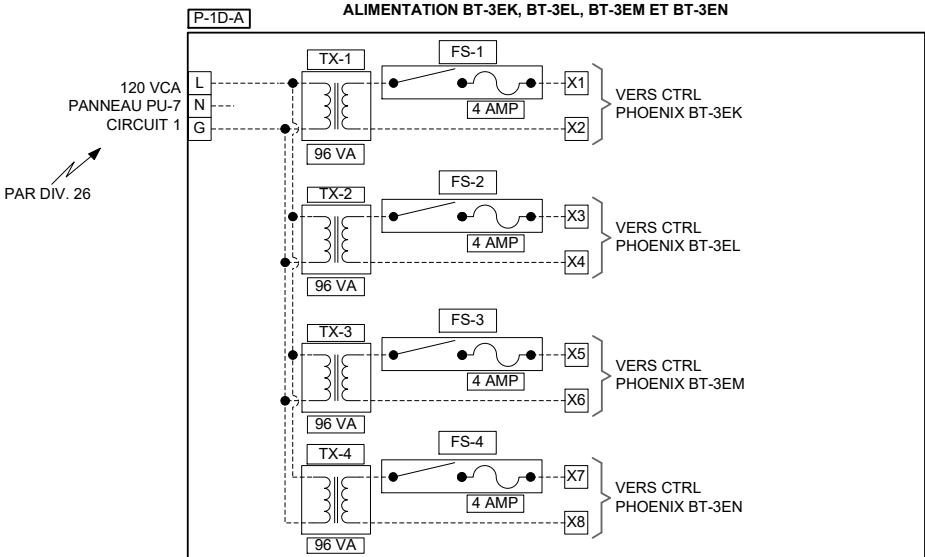
DIAGRAMME DE CONTRÔLE DU LOCAL D-233

LABORATOIRE SECTEUR EST LOCAL D-233
HOTTE V-44-3EM ET V-44-3EN



PANNEAU DE CONTRÔLE P-1D-A

ALIMENTATION BT-3EK, BT-3EL, BT-3EM ET BT-3EN



LÉGENDE

- ★ ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BT-3EM, BT-3EN	2	EXVB112M-AMHH0	BOÎTE D'ÉVACUATION – PHOENIX CTRL
FHD	2	FHD130-ENG-FHV-RD1	AFFICHEUR – PHOENIX CTRL
SS	2	VSS4-0100-A	MODULE D'ÉTAT DE PORTE – PHOENIX CTRL

LISTE DE MATÉRIEL DE PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
P-1D-A	1	PA0P00010FC0	PANNEAU 16"x20"x6.62" AVEC 4 TRANSFO 115/24VCA 96 VA

(SC1 / SC2 / SC3)

DEBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

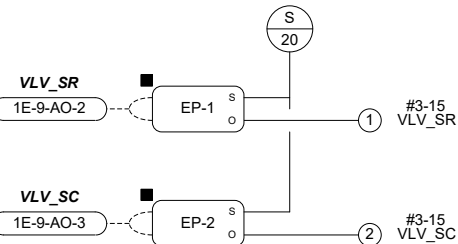
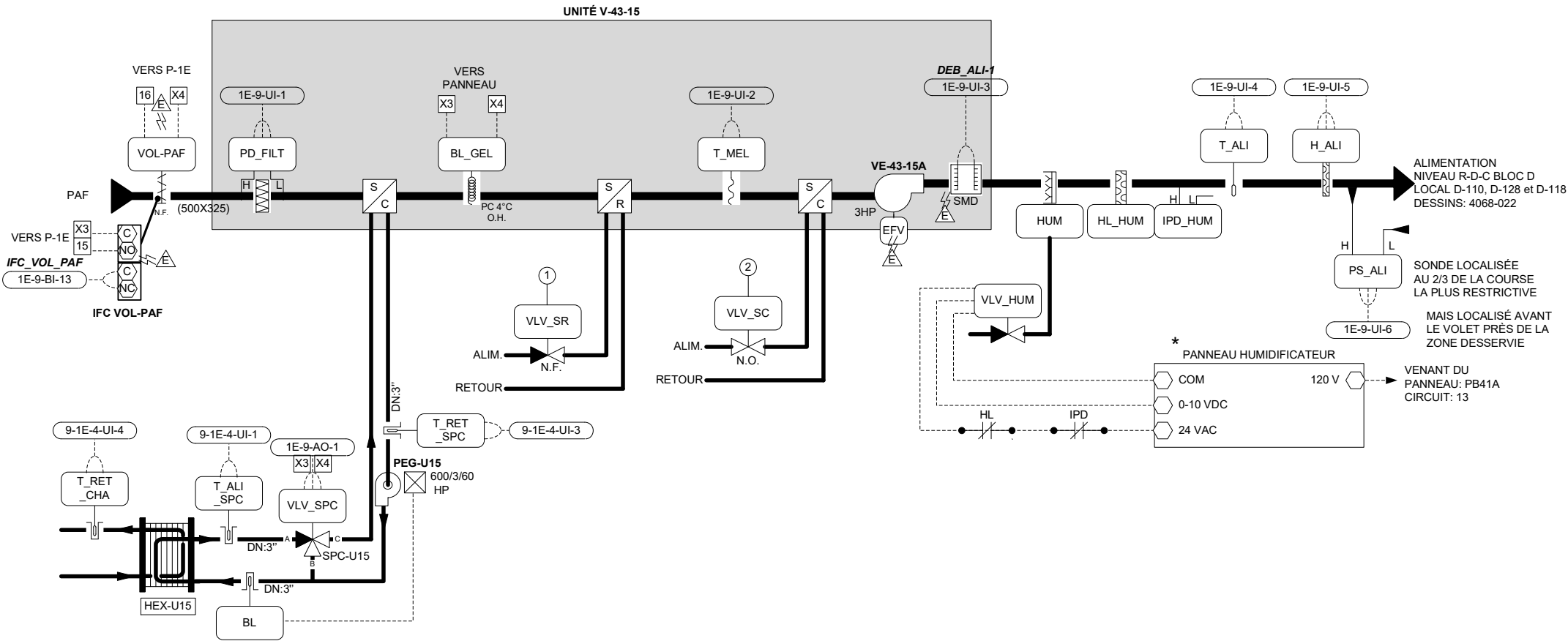
- SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCE

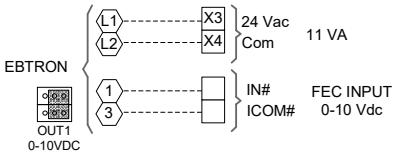
DIAGRAMME DE CONTRÔLE DU LOCAL D-207 HOTTE V-44-3EK, L	4068-020
DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EM, N	4068-020A
SÉQUENCE DE CONTRÔLE DU LOCAL D-207 HOTTE V-44-3EK, L, M, N	4068-016A
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C

Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/27/2018	M.M.
Diagramme de contrôle du local D-233	1	POUR APPROBATION		8/21/2017	C.L.
DESSIN DE REFERENCE					
Représentant	Géant De Projet	Concepteur	DESSINE	ECN	APPROUVE
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Nom du Projet			NUMÉRO DE CONTRAT		
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques			7N0X-0300		
			NUMÉRO DE DESSIN		
			4068-020A		

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION
V-43-15



Détails raccordement
Station Mesurage Débit



LÉGENDE	
★	ÉQUIPEMENTS FOURNI PAR D'AUTRES
●	ÉQUIPEMENTS EXISTANTS
■	ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
▲	ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
⚡	SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BL_GEL	1	A70GA-1C	THERMOSTAT DE GEL DPDT RÉARM.AUTO.
DEB_ALI	1	TE-6001-8	SUPPORT DE MONTAGE POUR THERMOS. GEL
IFC-VOL-PAF	1	HTA104-F DI	TRANSM. DE DÉBIT D'AIR - EBTRON
PD_FILT	1	KXCMS11N+KXAM1	INTERRUP. DE FIN DE COURSE + TIGE À RESSORT
PS_ALI	1	DPT260-MS2	CONTACT N.O. + N.C. - LOVATO
T_ALI_SPC	1	FTG18A-600R	TRANSMETTEUR DE PRESSION DIFF. 0-1.5"H2O
T_RET_SPC	2	FTG18A-600R	PITOT
H_ALI	1	DPT2640-005D	TRANSM. DE PRESSION DIFF. 0-5"H2O
T_ALI	1	FTG18A-600R	0-5VCC - SETRA
T_RET_SPC	2	TE-6312P-1	PITOT
H_ALI	1	T1-1/2P4	SONDE TEMP. IMMERSION NICKEL 1K OHM
VLV_SPC	1	HE-67N3-0N00P	PUIT IMMERSION 4" - GREYSTONE
VOL-PAF	1	VG18A5KT+94NGGA	TRANSM. D'HUMIDITÉ 0-100% +/-3% 0-10 VCC C/A LI
			SONDE DE TEMP. GAINÉ NICKEL 1K OHM
			SONDE DE TEMP. GAINÉ NICKEL 1K OHM
			SONDE TEMP. MÉLANGE 16" NICKEL 1K OHM
			SUPPORT DE MONTAGE
			SOUPAPE 3 VOIES SOUPAPE 2 1/2" CV:72.8 24VCA
			CLOSE-OFF:200 PSI, C/A ACT. MODULANT ET
			RESSORT DE RAPPEL
			SERVOMOTEUR ÉLECTRIQUE 27 LB-PO ON/OFF
			AVEC RESSORT DE RAPPEL 24VCA

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-15	4068-021
DIAGRAMME ÉLECTRIQUE DE V-43-15	4068-021A
PANNEAU DE CONTRÔLE P-1E DE V-43-15	4068-021B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DE V-43-15	4068-015D
SÉQUENCE DE CONTRÔLE DE V-43-15	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, V-44-3EB	4068-022
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, V-44-3ED	4068-022A
DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EG, V-44-3EH	4068-022B
DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EI, V-44-3EJ	4068-022C
DIAGRAMME DE CONTRÔLE DU LOCAL D-233 HOTTE V-44-3EF	4068-022D

Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/27/2018	M.M.
Diagramme de contrôle du système de ventilation V-43-15	1	POUR APPROBATION		8/21/2017	C.L.
Représentant	Géant De Projet	Concepteur	DESSINE	ECN	DATE
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Nom du Projet	NUMÉRO DE CONTRAT				
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques	7N0X-0300				
	NUMÉRO DE DESSIN				
	4068-021				

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION

V-43-05
DIAGRAMME ÉLECTRIQUE
EFV V-43-15A

DIAGRAMME ÉLECTRIQUE DU
BYPASS EFV

DIAGRAMME ÉLECTRIQUE DE RACCORDEMENT
DE EFV

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PEG-U7	1	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
R-VOL-BYPASS	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
E_PEG-U7	1	RMIA2-10 120AC	RELAIS DPDT 120VCA 10A – CARLO GAVAZZI
	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
EFV V-43-7A	1	H708	TRANSMETTEUR DE COURANT 0-135AMP CONTACT NO 1AMP À 30VCA/VCC – VERIS
	1	VS3D9551D-SM100	ENTRAÎNEMENT À FRÉQUENCE VARIABLE 3HP JCI

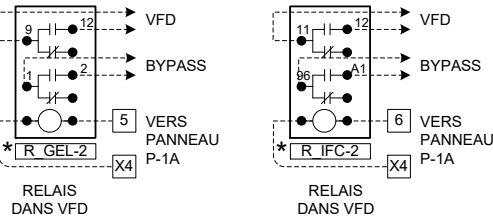
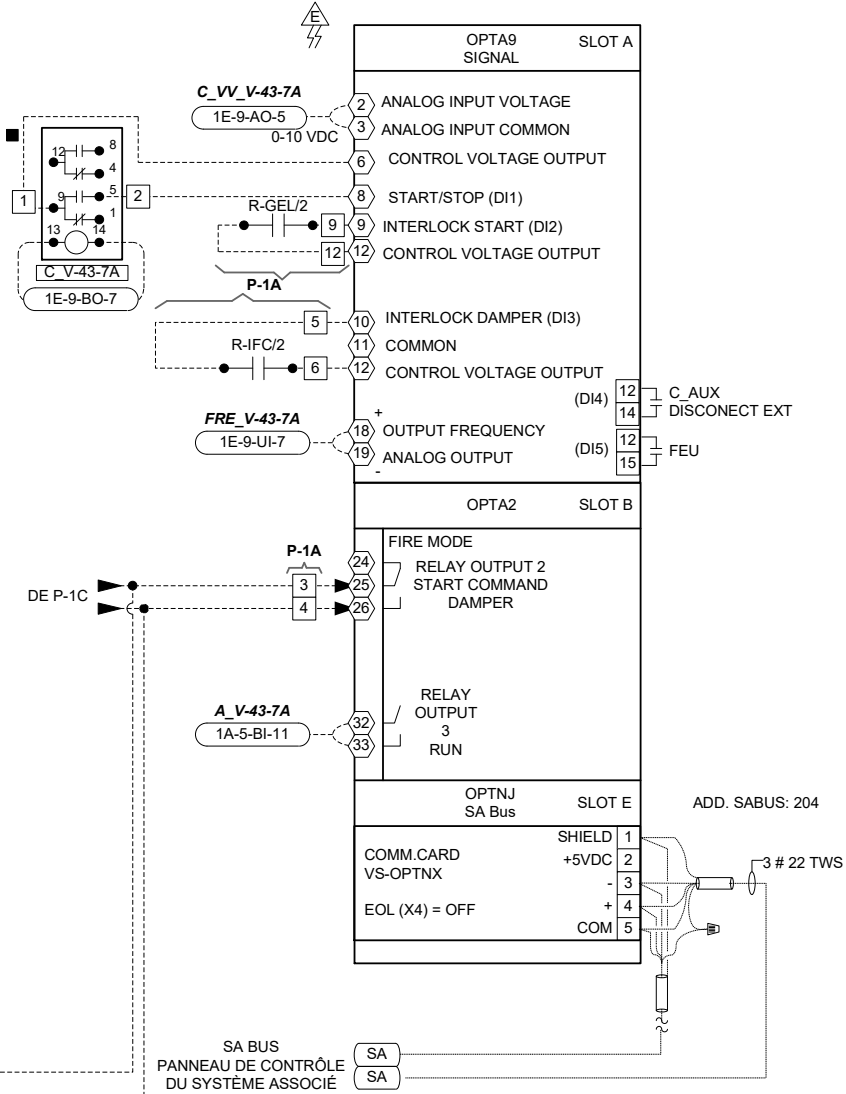
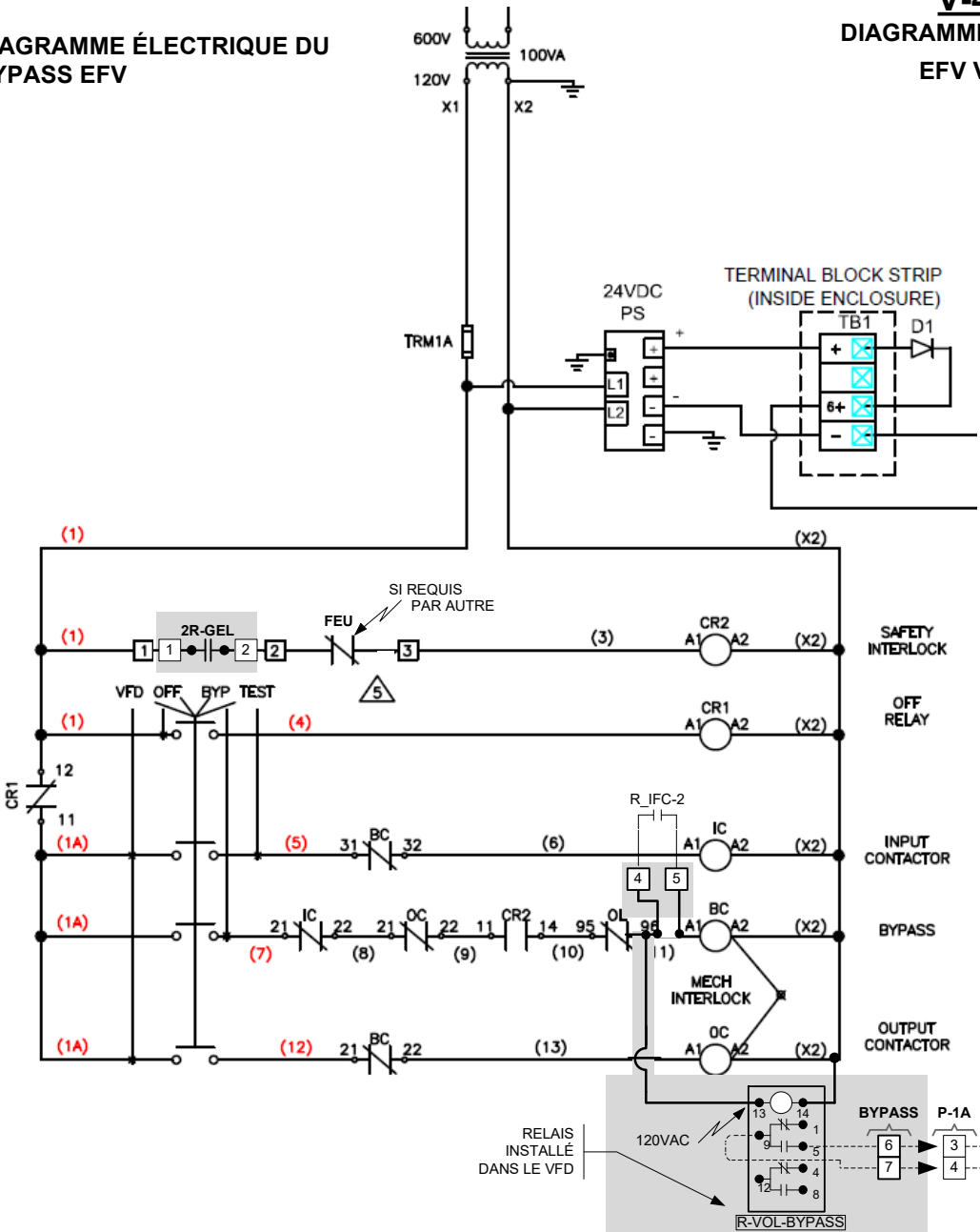
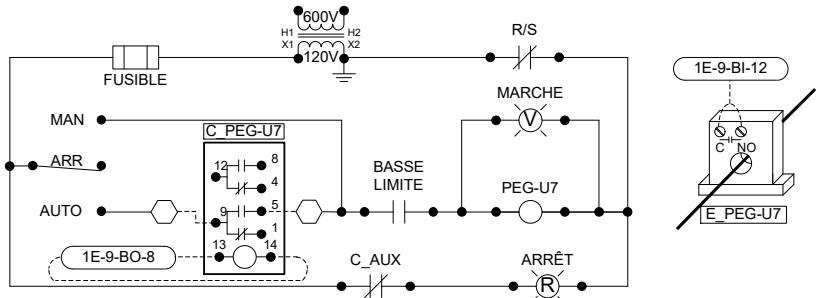


DIAGRAMME ÉLECTRIQUE
POMPE PRÉCHAUFFAGE PEG-U7

ARRÊT/DÉPART POMPE
PRÉCHAUFFAGE



Titre du Dessin
**Diagramme de contrôle du
du système de ventilation
V-43-07**
Diagramme électrique

Nom du Projet
**CRDA ST-HYACINTHE
3600, boul. Casavant
St-Hyacinthe (Qc)
Remplacement hottes chimiques**

DESSINS DE RÉFÉRENCE

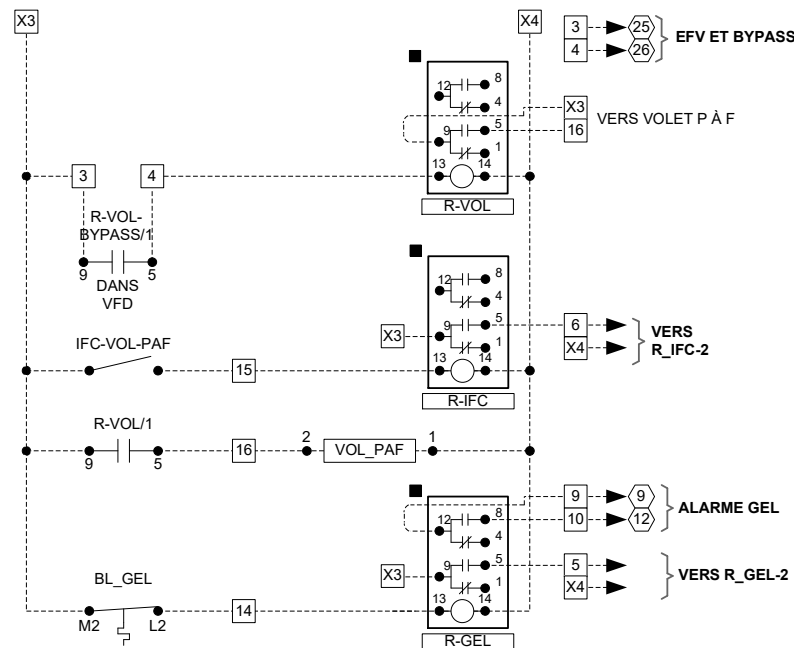
DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

	2	TEL QUE CONSTRUIT		R.G.	4/27/2018	M.M.				
	1	POUR APPROBATION			8/21/2017	C.L.				
DESSIN DE REFERENCE		NO.		REVISION		ECN	DATE	PAR		
Représentant	Gérant De Projet		Concepteur	DESSINE		APPROUVE				
B.Carpenter	G.Garand		C.Labbé	PAR	C.L.	DATE	8/21/2017	PAR	DATE	0
Information Succursale										

Johnson Controls	Johnson Controls Inc. 1375, rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599	7N0X-0300 NUMÉRO DE DESSIN 4068-021A
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TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

PANNEAU DE CONTRÔLE P-1E



★ ÉQUIPEMENTS FOURNIS PAR D'AUTRES
 ● ÉQUIPEMENTS EXISTANTS
 ■ ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
 ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
 ▲ SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

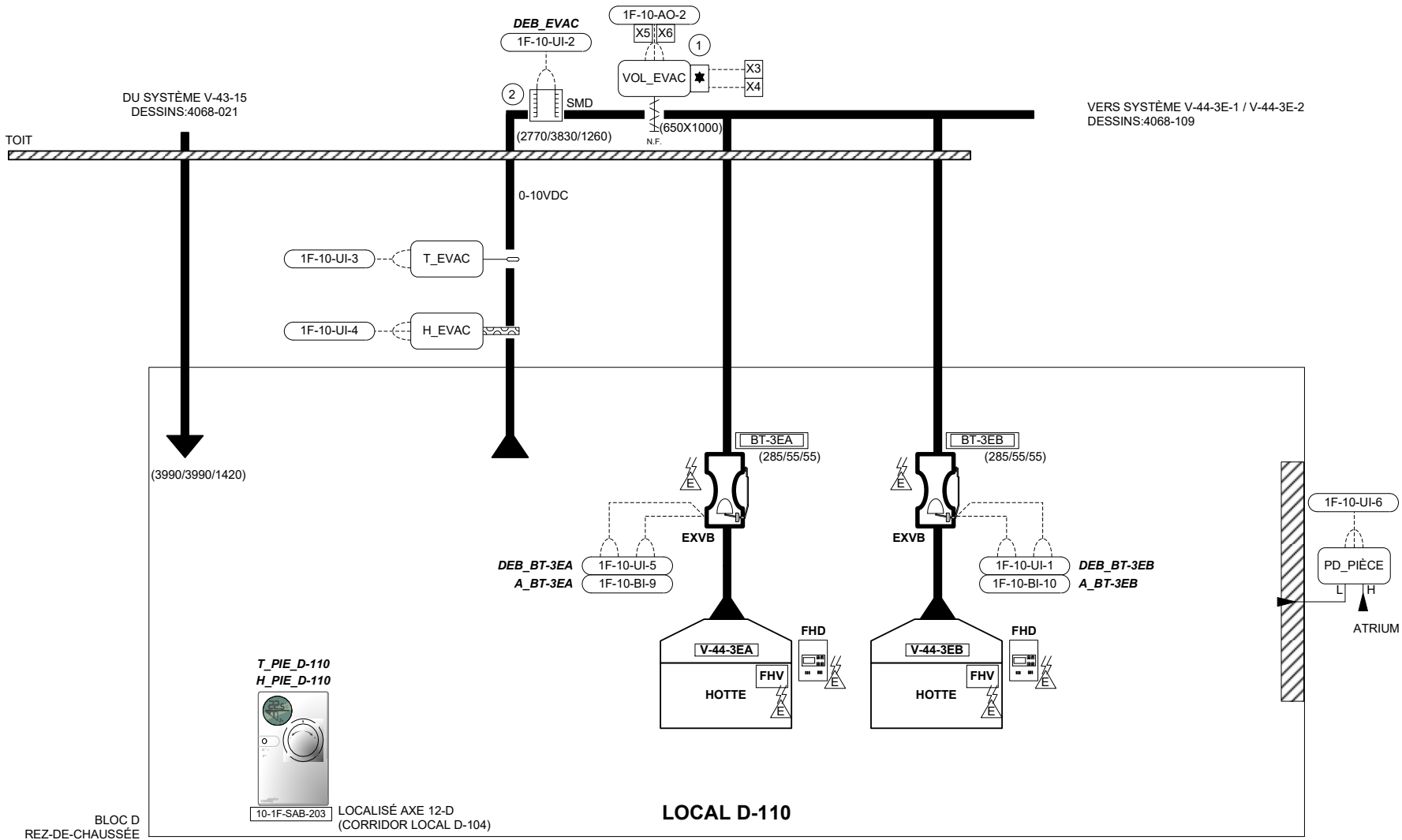
IDENT.	QTE	MODÈLE	DESCRIPTION
F-1, 2	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
P-1A	1	A16N16BLP	PANNEAU DE CTRL 16"x16"x6"- HOFFMANN
	1		PLAQUE DE MONTAGE 16"x16"
TX-1, 2	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
PDC-1	1	SD-US	PRISE
		601xx	DIJONCTEUR 120V/8A
FAC-1A-5	1	MS-FAC3611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA
			8 UI / 6 BI / 6 BO / 6 AO SA Bus
IOM-5-1A-4	1	MS-IOM4711-0	MODULE D'EXPANSION IOM BACNET 24 VCA
			6 UI / 2 BI / 3 BO / 2 AO / 4 CO
C_V43-7A	4	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
R-GEI, IFC, VOL	4	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

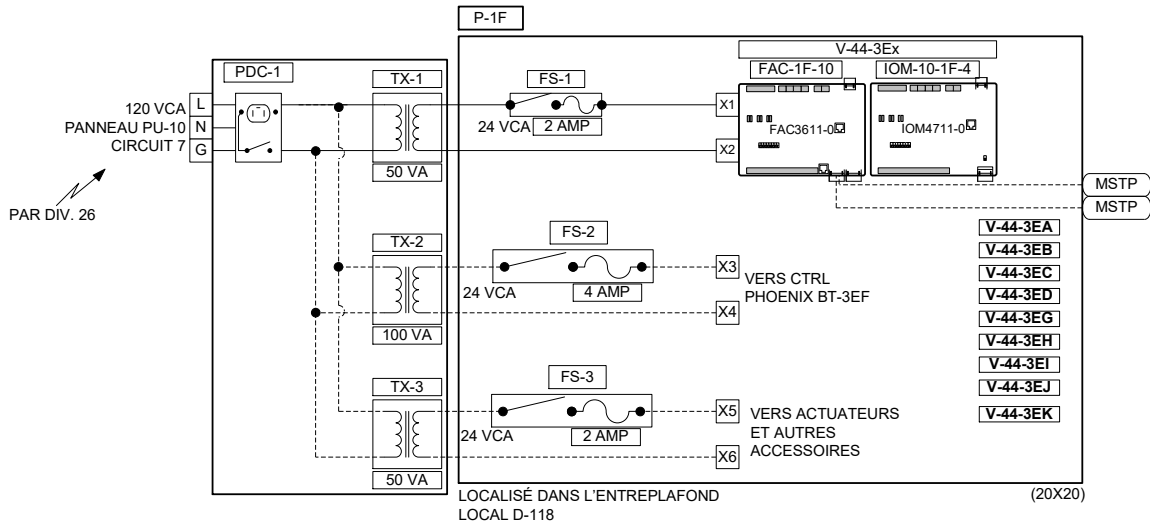
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DIAGRAMME DE CONTRÔLE DU LOCAL D-110

LABORATOIRE SECTEUR OUEST LOCAL D-110
HOTTE V-44-3EA ET V-44-3EB



PANNEAU DE CONTRÔLE P-1F



LÉGENDE

- ★ ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

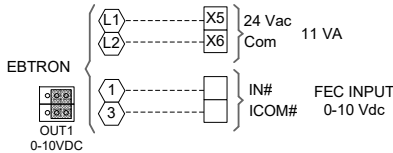
LISTE DE MATÉRIEL CHANTIER

IDENT.	QTE	MODÈLE	DESCRIPTION
DEB_EVAC	1	HTX104-PE	TRANSM. DE DÉBIT D'AIR - EBTRON
BT-3EA, BT-3EB	2	EXVB112M-AMHH0	BOÎTE D'ÉVACUATION - PHOENIX CTRL
FHD	2	FHD130-ENG-FHV-RDI	AFFICHEUR - PHOENIX CTRL
SS	2	VSS4-0100-A	MODULE D'ÉTAT DE PORTE - PHOENIX CTRL
PD_PIÈCE	1	DPT2640-0R1B-1	TRANSM. DE PRESSION DIFF. +0.1"H2O
	2	RPV	0-5VCC - SETRA
	1	HE-67N3-0N00P	PITOT S/S PIÈCE
T_EVAC	1	HE-67N3-0N00P	TRANSM. D'HUMIDITÉ 0-100% +/-3% 0-10 VCC C/A
H_EVAC	1	HE-67N3-0N00P	SONDE DE TEMP. GAIN NICKEL 1K OHM
T_PIE-D-110	1	NS-BHR7103-0	SONDE TEMP. PIÈCE RÉSEAU SA BUS BACNET ADR
H_PIE-D-110	1	NS-BHR7103-0	PC.AJUSTABLE/AFFICHEUR/BOUTON OCCUPATION
	2	M9203-GGA-2	SONDE D'HUMIDITÉ DE PIÈCE/ AFFICHEUR
VOL_ALI, EVAC	2	M9203-GGA-2	SERVOMOTEUR ÉLECTRIQUE 27 LB-PO 2-10VCC
	1	50005859-001	AVEC RESSORT DE RAPPEL 24VCA
	★ 1	M9000-302	BOÎTIER DE PROTECTION NEMA 4 - HONEYWELL
			ENSEMBLE DE CHAUFFAGE POUR ACTUATEUR

LISTE DE MATÉRIEL PANNEAU P-1F

IDENT.	QTE	MODÈLE	DESCRIPTION
F-1, 3	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
F-2	1	BJ-3004265-4	FUSIBLE 4 AMP. c/a PORTE FUSIBLE
P-1F	1	A20N20BLP	PANNEAU DE CTRL 20"x20"x6"- HOFFMANN
	1		PLAQUE DE MONTAGE 20"x20"
TX-1, 3	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
TX-2	1	FS100PR	TRANSFO., 120V/24Vac., 100VA
PDC-1	1	SD-US	PRISE
	601xx		DIJONCTEUR 120V/8A
FAC-1F-10	1	MS-FAC3611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA
			8 UI / 6 BI / 6 BO / 6 AO SA Bus
IOM-10-1F-4	1	MS-IOM4711-0	MODULE D'EXPANSION IOM BACNET 24 VCA
			6 UI / 2 BI / 3 BO / 2 AO / 4 CO

Détails raccordement Station Mesurage Débit



- FOURNIR ET INSTALLER UN VOLET MOTORISÉ ISOLÉ. IL DEVRA ÊTRE RÉSISTANT AU INTEMPÉRIES. FOURNI ET INSTALLER UNE PROTE D'ACCÈS ISOLÉE ... PAR VENTILATION
NOTE 4 M14/36
- Installer le transmetteur de la station de mesure de débit dans un espace chauffé à l'intérieure du bâtiment. La longueur maximal du filage entre la station de mesure de débit et son transmetteur est de 15.2m. À valider selon l'installation au chantier

(SC1 / SC2 / SC3)
DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):
• SC1: MODE OCCUPÉ - HOTTES 100% OUVERTES / OCCUPIED MODE - FUME HOODS 100% OPEN.
• SC2: MODE OCCUPÉ - HOTTES OUVERTURE MINIMALE / OCCUPIED MODE - FUME HOODS AT MINIMUM OPENING.
• SC3: MODE INOCCUPÉ - HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE - FUME HOODS AT MINIMUM OPENING.

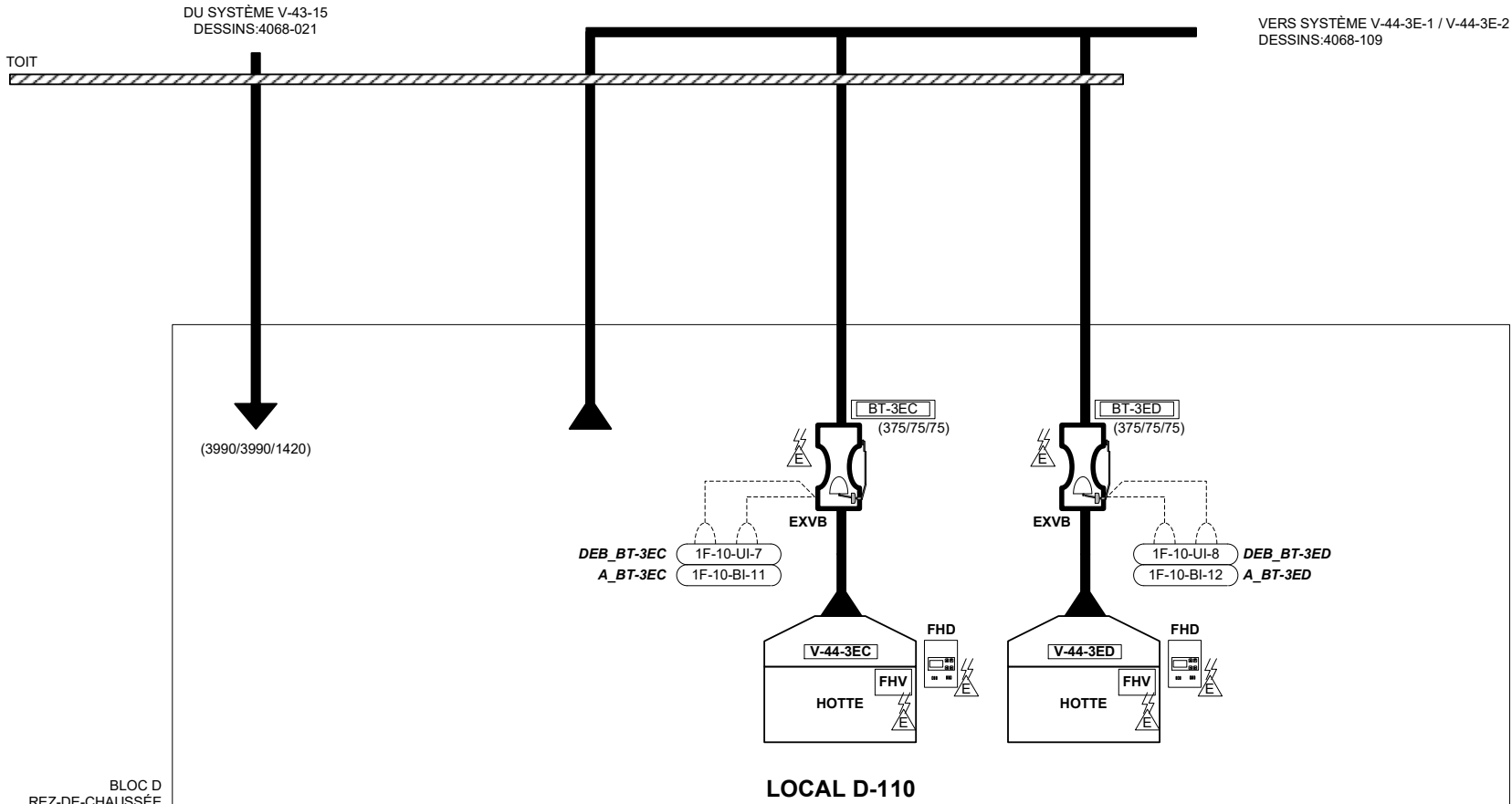
DESSINS DE RÉFÉRENCE

DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, B	4068-022
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, D	4068-022A
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EG, H	4068-022B
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EI, J	4068-022C
DIAGRAMME DE CONTRÔLE DU LOCAL D-118 HOTTE V-44-3EF	4068-022D
SÉQUENCE DE CONTRÔLE DE HOTTE V-44-3EA,B,C,D,G,H,I,J,F	4068-016A

Titre du Dessin	Diagramme de contrôle du local D-110	2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
		1	POUR APPROBATION		8/21/2017	C.L.
Représentant	Géant De Projet	Concepteur	NO	REVISION	ECN	DATE
B.Carpenter	G.Garand	C.Labbé	PAR C.L.	DATE 8/21/2017	PAR	DATE 0
Nom du Projet	CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques	Information Succursale	Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599	NUMÉRO DE CONTRAT	7N0X-0300	NUMÉRO DE DESSIN
						4068-022

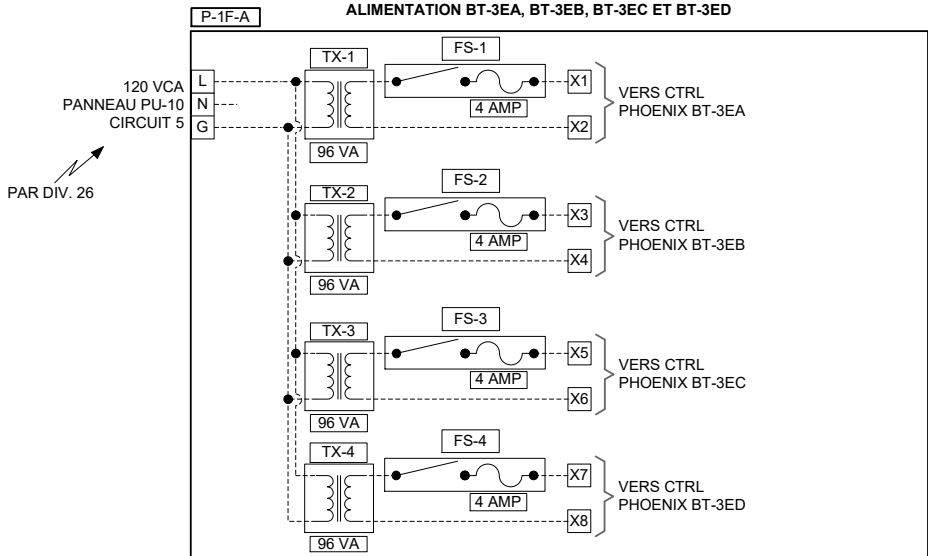
DIAGRAMME DE CONTRÔLE DU LOCAL D-110

LABORATOIRE SECTEUR OUEST LOCAL D-110
HOTTE V-44-3EC ET V-44-3ED



PANNEAU DE CONTRÔLE P-1F-A

ALIMENTATION BT-3EA, BT-3EB, BT-3EC ET BT-3ED



LOCALISÉ DANS L'ENTREPLAFOND
LOCAL D-118

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BT-3EC, BT-3ED	2	EXVB112M-AMHH0	BOÎTE D'ÉVACUATION – PHOENIX CTRL
FHD	2	FHD130-ENG-FHV-RD1	AFFICHEUR – PHOENIX CTRL
SS	2	VSS4-0100-A	MODULE D'ÉTAT DE PORTE – PHOENIX CTRL

LISTE DE MATÉRIEL DE PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
P-1F-A	1	PA0P00010FC0	PANNEAU 16"x20"x6.62" AVEC 4 TRANSFO 115/24VCA 96 VA

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

• SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.

• SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

• SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCE

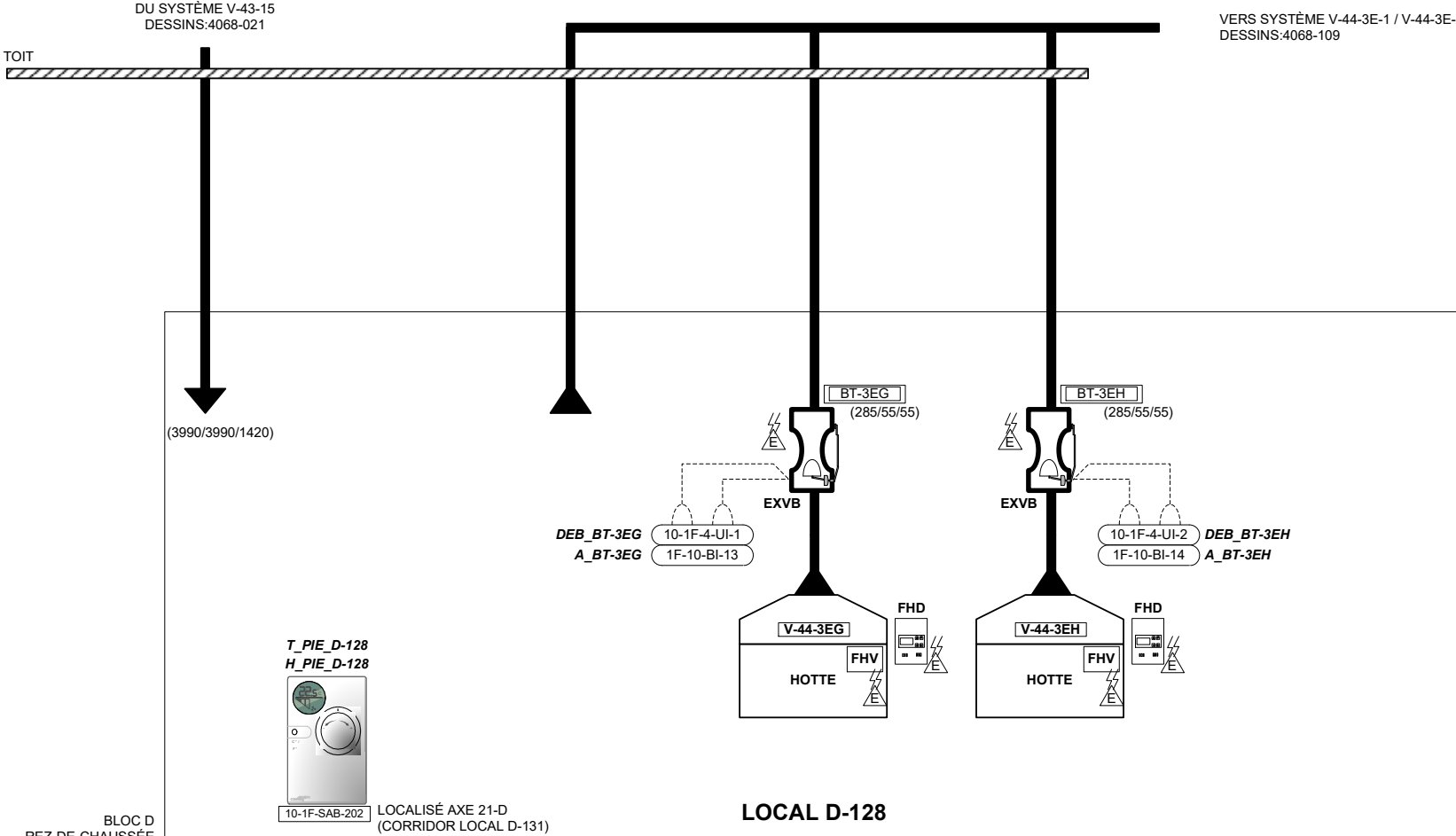
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, B	4068-022
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, D	4068-022A
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EG, H	4068-022B
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EI, J	4068-022C
DIAGRAMME DE CONTRÔLE DU LOCAL D-118 HOTTE V-44-3EF	4068-022D
SÉQUENCE DE CONTRÔLE DE HOTTE V-44-3EA,B,C,D,G,H,I,J,F	4068-016A

Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
Diagramme de contrôle du local D-110	1	POUR APPROBATION		8/21/2017	C.L.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Nom du Projet		Information Succursale		NUMÉRO DE CONTRAT	
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques		Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300	
		Johnson Controls		NUMÉRO DE DESSIN	
				4068-022A	

DIAGRAMME DE CONTRÔLE DU LOCAL D-128

LABORATOIRE SECTEUR OUEST LOCAL D-128

HOTTE V-44-3EG ET V-44-3EH



LÉGENDE

- * ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ◐ ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- ⚡ SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

TOUS DROITS RÉSERVÉS. JOHNSON CONTROLS, INC.

LISTE DE MATERIEL CHANTIER

IDENT.	QTE	MODELE	DESCRIPTION
BT-3EG, BT-3EH	2	EXVB112M-AMHU0	BOÎTE D'ÉVACUATION – PHOENIX CTRL
FHD	2	FHD130-ENG-FHV-RDI	AFICHEUR – PHOENIX CTRL
SS	2	VSS4-0100-A	MODULE D'ÉTAT DE PORTE – PHOENIX CTRL
T_PIE-D-128	1	NS-BHR7103-0	SONDE TEMP. PIÈCE RÉSEAU SA BUS BACNET ADR
H_PIE-D-128			PC.AJUSTABLE/AFICHEUR/BOUTON OCCUPATION
			SONDE D'HUMIDITÉ DE PIÈCE/ AFICHEUR

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s)

- SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCI

DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-0160
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DU RESEAU DE COMM. VALVE PHOENIX	4068-0160
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, B	4068-0222
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, D	4068-0222
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EG, H	4068-0222
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EI, J	4068-0222
DIAGRAMME DE CONTRÔLE DU LOCAL D-118 HOTTE V-44-3EF	4068-0222
SÉQUENCE DE CONTRÔLE DE HOTTE V-44-3EA, B, C, D, G, H, I, J, F	4068-0160



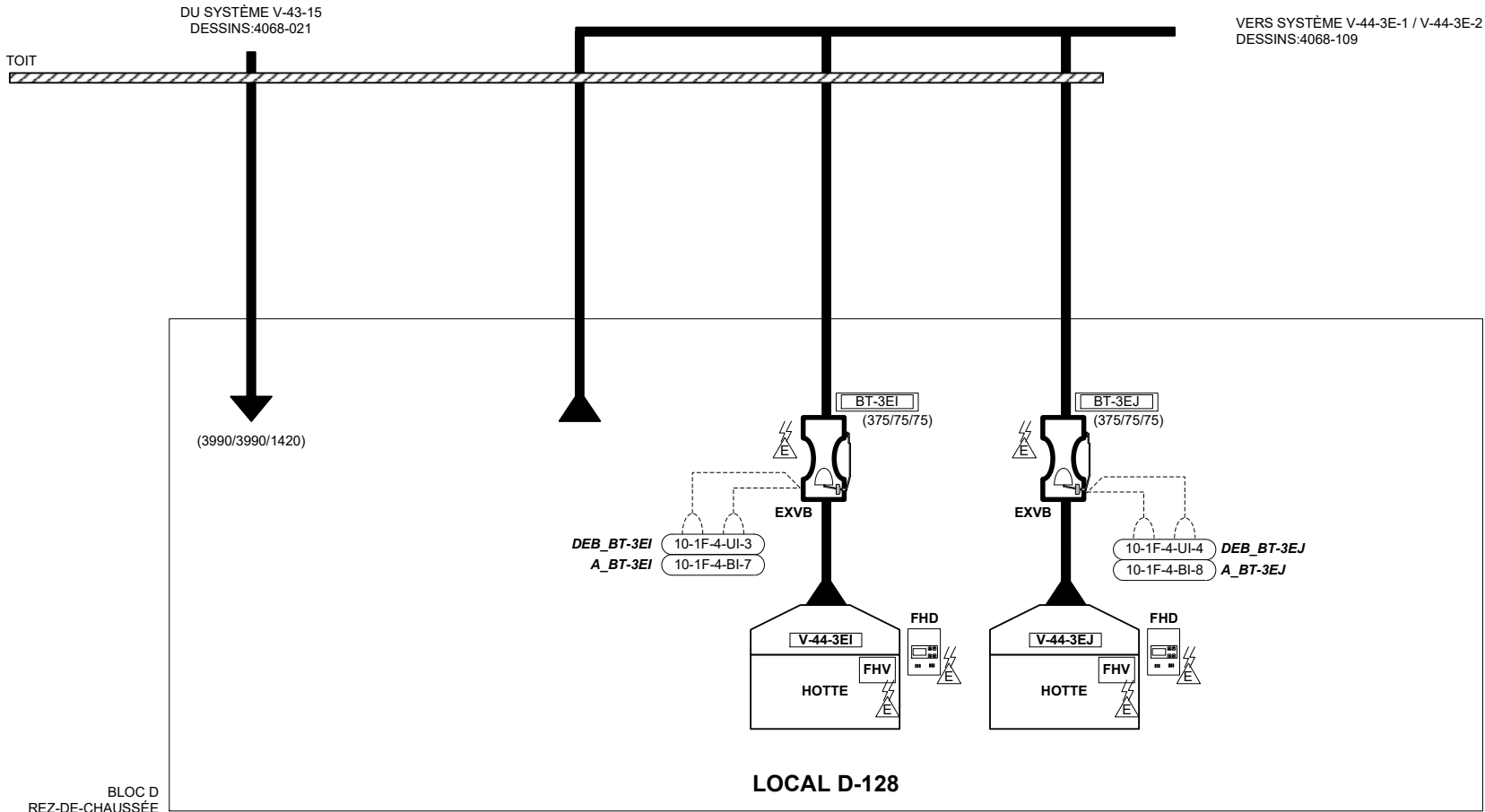
Titre du Dessin											
Diagramme de contrôle du local D-128				2		TEL QUE CONSTRUIT		R.G.		4/26/2018 M.M.	
				1		POUR APPROBATION				8/21/2017 C.L.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE	
		PAR		DATE		APPROUVE					
Représentant B.Carpenter		Gérant De Projet G.Garand		Concepteur C.Labbé		DESSINE PAR C.L. DATE 8/21/2017		PAR		DATE 0	
Nom du Projet						Information Succursale		NUMÉRO DE CONTRAT			
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques						Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300			
								NUMERO DE DESSIN 4068-022B			

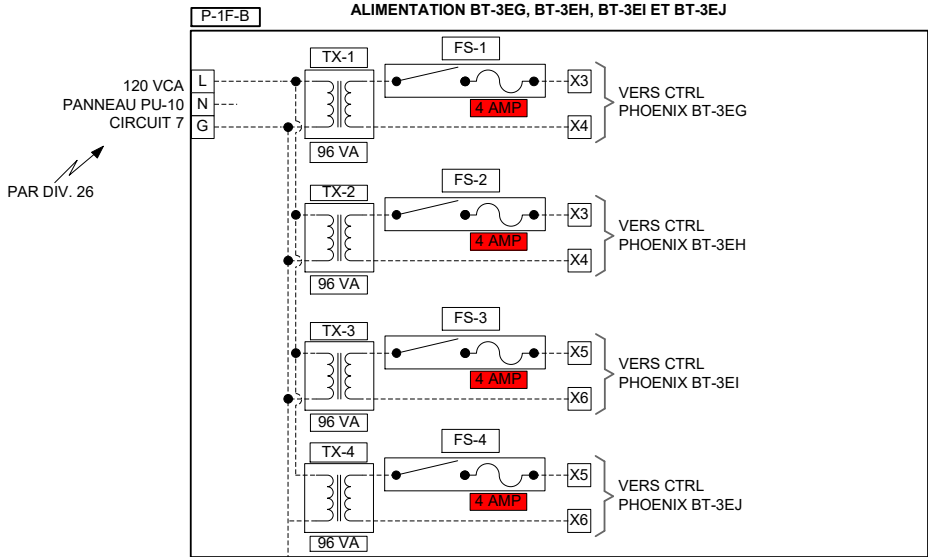
DIAGRAMME DE CONTRÔLE DU LOCAL D-128

LABORATOIRE SECTEUR OUEST LOCAL D-128
HOTTE V-44-3EI ET V-44-3EJ



PANNEAU DE CONTRÔLE P-1F-B

ALIMENTATION BT-3EG, BT-3EH, BT-3EI ET BT-3EJ



LOCALISÉ DANS L'ENTREPLAFOND
LOCAL D-118

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BT-3EI, BT-3EJ	2	EXVB112M-AMHU0	BOÎTE D'ÉVACUATION – PHOENIX CTRL
FHD	2	FHD130-ENG-FHV-RD1	AFFICHEUR – PHOENIX CTRL
SS	2	VSS4-0100-A	MODULE D'ÉTAT DE PORTE – PHOENIX CTRL

LISTE DE MATÉRIEL DE PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
P-1F-B	1	PA0P00010FC0	PANNEAU 16"x20"x6.62" AVEC 4 TRANSFO 115/24VCA 96 VA

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

- SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

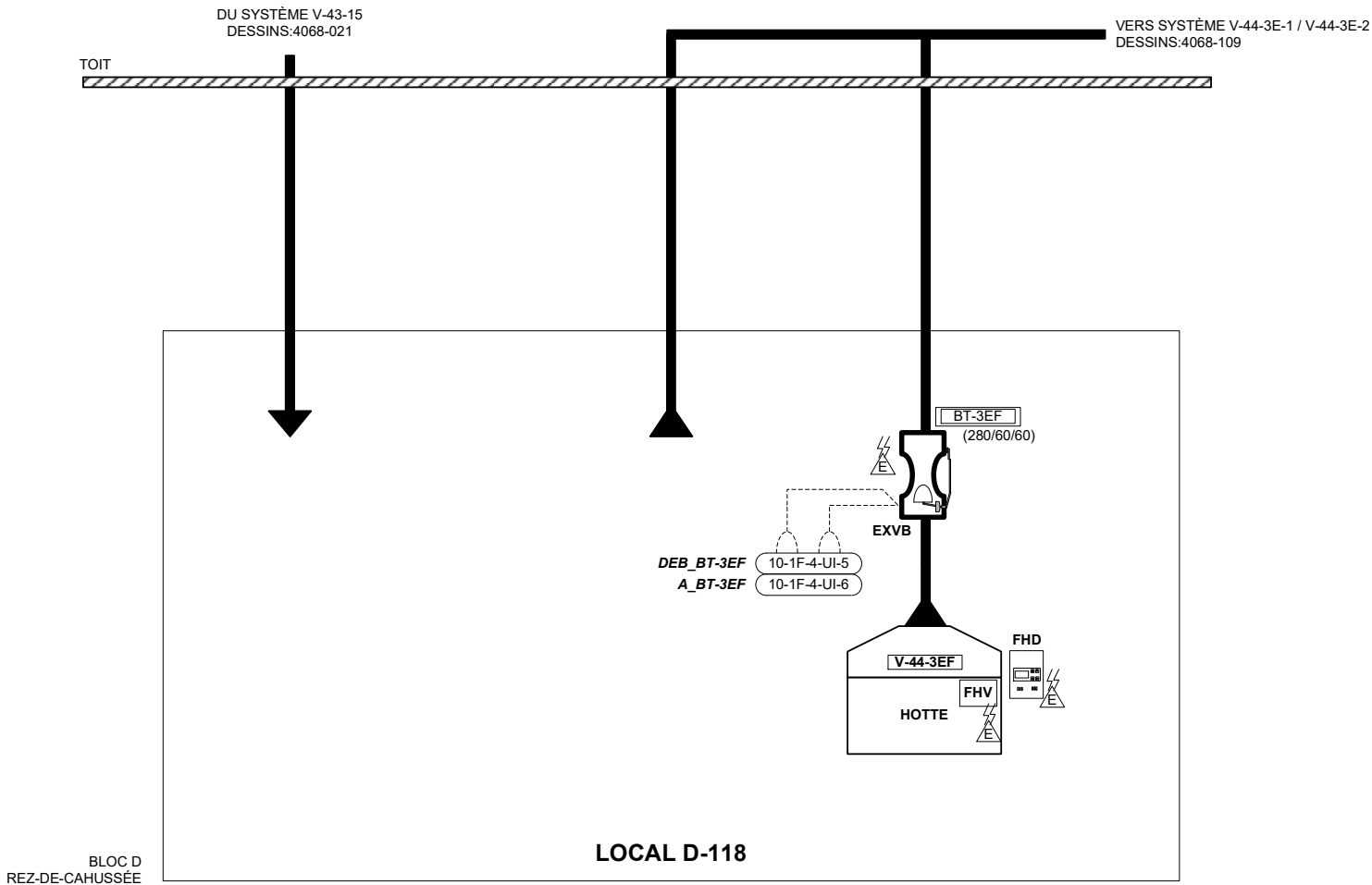
DESSINS DE RÉFÉRENCE

DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, B	4068-022
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, D	4068-022A
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EG, H	4068-022B
DIAGRAMME DE CONTRÔLE DU LOCAL D-128 HOTTE V-44-3EI, J	4068-022C
DIAGRAMME DE CONTRÔLE DU LOCAL D-118 HOTTE V-44-3EF	4068-022D
SÉQUENCE DE CONTRÔLE DE HOTTE V-44-3EA,B,C,D,G,H,I,J,F	4068-016A

Titre du Dessin	2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
Diagramme de contrôle du local D-128	1	POUR APPROBATION		8/21/2017	C.L.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Géant De Projet	Concepteur	DESSINE	APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Nom du Projet		Information Succursale		NUMÉRO DE CONTRAT	
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques		Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300 NUMÉRO DE DESSIN 4068-022C	

DIAGRAMME DE CONTRÔLE DU LOCAL D-118

LOCAL D-118
HOTTE V-44-3EF




LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BT-3EF	1	EXVB110M-AMHH0	BOÎTE D'ÉVACUATION – PHOENIX CTRL
FHD	1	FHD130-ENG-FHV-RDI	AFFICHEUR – PHOENIX CTRL
SS	1	VSS4-0100-A	MODULE D'ÉTAT DE PORTE – PHOENIX CTRL

(SC1 / SC2 / SC3)
DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):
• SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
• SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
• SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCE

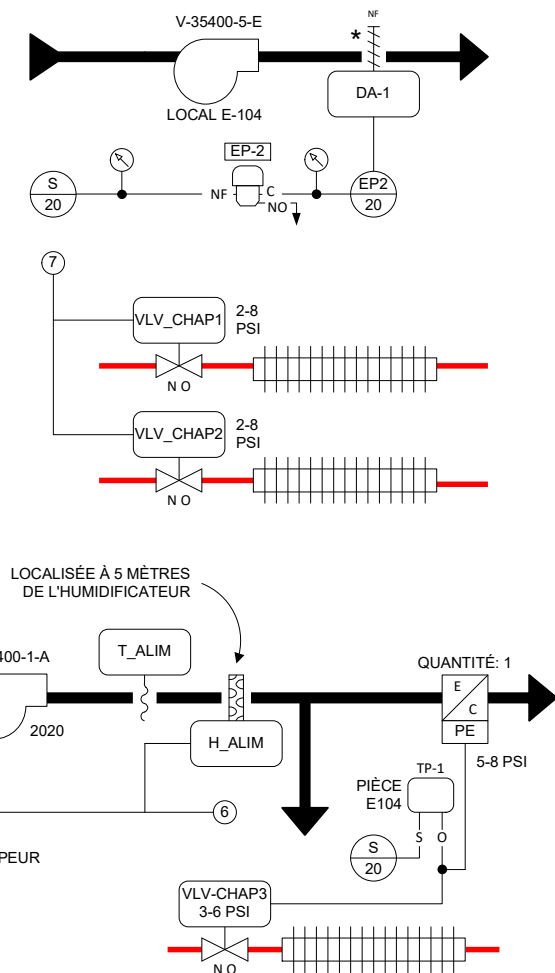
DIAGRAMME DE DÉTAIL DE RACCORDEMENT DE VALE PHOENIX	4068-016B
DIAGRAMME DE DÉTAIL DE RACORDEMENT DU RÉSEAU DE COMM. VALVE PHOENIX	4068-016C
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA, B	4068-022
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EC, D	4068-022A
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EG, H	4068-022B
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EI, J	4068-022C
DIAGRAMME DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EF	4068-022D
SÉQUENCE DE CONTRÔLE DU LOCAL D-110 HOTTE V-44-3EA,B,C,D,G,H,I,J,F	4068-016A

Titre du Dessin													
Diagramme de contrôle du local D-118				2		TEL QUE CONSTRUIT		R.G.		4/26/2018		M.M.	
				1		POUR APPROBATION				8/21/2017		C.L.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE					
B.Carpenter		G.Garant		C.Labbé		PAR C.L.		DATE 8/21/2017		PAR		DATE 0	
Nom du Projet						Information Succursale		NUMÉRO DE CONTRAT					
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599				7N0X-0300					
								NUMÉRO DE DESSIN		4068-022D			

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

SALLE DE PRÉSENTATION

The diagram illustrates the HVAC system for the Salle de Présentation. It shows the flow of air from the Salle Mécanique through various components including pumps (V-35400-1-R, V-35400-1-A), valves (VOL_PER1, VOL_PER2, VOL_MEL1, VOL_MEL2, VOL_MEL3, VOL_SEC, VOL_FE, VLV_CHA, VLV_REF, VLV_HUM, VLV_CHAP1, VLV_CHAP2, VLV_CHAP3), and heat exchangers (T-1, T_EXT, T_PIE, T_ALIM). It also includes a CO2 sensor, a pressure sensor (EP1 20), and a temperature sensor (T-1). The system is connected to the Salle Mécanique and the Salle de Présentation. The diagram is labeled with various components and their specifications, such as 4-14 PSI, 2-8 PSI, 3-6 PSI, and 5-8 PSI. The flow is indicated by arrows, and the system is controlled by a central unit (S) with multiple stages (STAGE 1, STAGE 2, STAGE 3). The diagram is a detailed technical drawing of the HVAC system for the Salle de Présentation.



LISTE DE MATÉRIEL CHANTIER			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
CO2	1	90DM2-DT	SONDE DE CO2 (VULCAIN)
E_VR	1	SENTRY 250	RELAIS COURANT -SENTRY
EP-2	1	V11HAA-115	VALVE SOLENOÏDE 3 VOIES 110/120 VOLTS
H_ALIM	1	H-3610-1001	SONDE HUM. CONDUIT PNEUM.
H_RET	1	RH3-VD	SONDE HUM. CONDUIT 0-5V. GENERAL EASTERN
R-2 à R-5	4	----	RELAIS 24 VAC 2PDT
SEL-1	1	----	SÉLECTEUR
T_ALIM	1	TE-6311P-1	SONDE TEMP. CONDUIT NI.
T_EXT	1	TE-6311P-1	SONDE TEMP. EXT. NI
T_PIE	1	TE-6314P-I	SONDE DE PIECE NI
TBL-1	1	A11A-1C	BASSE LIMITE TEMP.
TBL-2, T-1	2	A19ABC-41C	BASSE LIMITE TEMPÉRATURE
TP-1	1	T-4002-201	THERMOSTAT PNEUMATIQUE
VLV_CHA	1	VG7241LO + 3008B	SOUPAPE 2 VOIES N.O. 3/4" CV=7.3
VLV_CHAP1	1	VG7241ET + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV=1.8
VLV_CHAP2,	2	VG7241CT + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV=0.7
VLV_CHAP3			
VLV_HUM	1	----	PAR D'AUTRES
VLV_REF	1	VG744IRT + 3008E	SOUPAPE 2 VOIES N.C.1 1/2" CV=28.9
VOL_MEL1	4	D-3153-1	ACTUATEUR VOLET 8-13 PSIG W/P
à 3,			
VOL_FE			
VOL_PER1	2	D-3153-2	ACTUATEUR VOLET 8-13 PSI
à 2			
VOL_SEC,	2	D-4073-2	ACTUATEUR VOLET
DA-1,			
	2	G2010-5	MANOMÈTRE 0-30 PSI

LISTE DE MATÉRIEL PANNEAU			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-5	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	COUVERT
EP-1	1	V11HAA-115	VALVE SOLENOÏDE 3 VOIES 110/120V.
EPT-1 à 6	6	EP-8000-2	CONVERTISSEUR ÉLECT/PNEUM.
F-1, 2	2	AGC-2	FUSIBLE 2 AMPÈRES
P-0A	1	M8100-2436	PANNEAU DE CONTRÔLE 24" X 36" X 9"
PDC-1	1	274VBOX	PRISE/INTERRUPTEUR -LEVITON
---	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	PD-505-4	INDICATEUR PRESSION DIFF.
R-1	1	RCPTFU82D1024	RELAIS 24VAC -FEME
---	1	S-408	BASE 8 BROCHES -FEME
TX-1	1	Y65AS-1	TRANSFO 120/24 40VA
	8	G2010-5	MANOMÈTRE 0-30 PSI

NOTE 1 : LES SERPENTINS DE REFROIDISSEMENT DOIVENT ÊTRE VIDANGÉS ET HIVERNISÉS POUR LA PÉRIODE HIVERNALE.

* ÉQUIPEMENT FOURNI PAR D'AUTRES

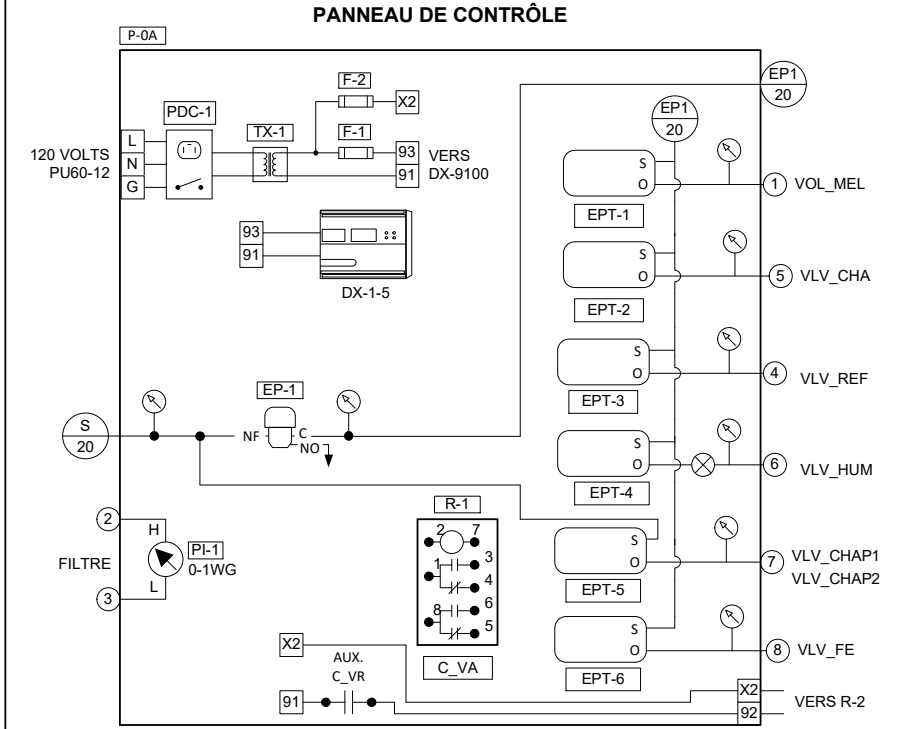


DIAGRAMME ÉLECTRIQUE

VENTILATEUR DE RETOUR
CMCI-1

120 V

R.S. H O A

AUX. C_VA

V-35400-1-R

VENTILATEUR D'ALIMENTATION
CMCI-4

120 V

R.S. H O A

R-1/1

TBL-1 TBL-2

T-1

EP-1

V-35400-1-A

VENTILATEUR D'ÉVACUATION
PB61-6

120 V

V-35400-5-E

EP-2

R-2

92 X2

EP-2 ET R-2 SONT
INSTALLÉS LOCALEMENT
AU DÉMARREUR

TITRE DU DESSIN

SYSTÈME V-35400-1-A
SALLE DE PRÉSENTATION

NOM DU PROJET

**ANNEXE DU CENTRE DE
RECHERCHE**
3600 BOUL.CASAVANT
STE-HYACINTHE (QC)

TOUT DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

TITRE DU DESSIN

SYSTÈME V-35400-1-A
SALLE DE PRÉSENTATION

**ANNEXE DU CENTRE DE
RECHERCHE
3600 BOUL.CASAVANT
STE-HYACINTHE (QC)**

**JOHNSON
CONTROLS**
Groupe de la régulation

355, boul. Montpellier
St-Laurent (Québec)
H4N 2G6
Tél: (514) 747-2580
Fax: (514) 747-9562

NUMÉRO DE CONTRAT	7096-0004
NUMÉRO DE DESSIN	4068-056

SÉQUENCE DE FONCTIONNEMENT

- ⚠


- Le ventilateur d'alimentation V-1-A est mis en marche par régulateur numérique en fonction du sélecteur local occupé - non occupé; ou en fonction de la cédule horaire établie. Le sélecteur est placé en position inoccupée en temps normal et seule la cédule horaire commande l'arrêt/départ du système. Lorsqu'on se trouve en dehors des heurs normales de fonctionnement, le système peut être remis en marche par le sélecteur occupé/inoccupé en plaçant celui-ci à « occupé ». Le ventilateur de retour V-1-R est mis en marche par entrebarrage électrique avec le ventilateur V-1-A. Le ventilateur d'évacuation V-35400-5-E est mis en marche par entrebarrage électrique avec le ventilateur V-1-R.
 - Au départ du ventilateur d'alimentation, les volets motorisés des persiennes ouvrent et le volet de sécurité ferme.
 - Sur preuve de marche, détectée par un relais de courant sur le ventilateur de retour, la séquence suivante est activée :
 - L'humidificateur est modulé de façon à maintenir l'humidité relative dans la gaine de retour au point de consigne requis. En tout temps, le transmetteur d'humidité relative d'alimentation (localisé à 5 M en aval du distributeur de vapeur) assure un taux d'humidité relative maximal en limitant la capacité de l'humidificateur.
 - Le serpentin électrique est opéré en fonction de la température extérieure;
 - À -26° C (-15° F) stage 3 marche
 - À -24° C (-11° F) stage 3 arrête
 - À -22° C (-7° F) stage 2 marche
 - À -20° C (-4° F) stage 2 arrête
 - À -18° C (0° F) stage 1 marche
 - À -16° C (3° F) stage 1 arrête
 - Contrôle du serpentin de face et évitement
 - .1 Lorsque la température extérieure est inférieure à 5°C, la soupape à 2 voies du serpentin de face et évitement est complètement ouverte et le contrôle de la température est effectué par le jeu des volets de face et évitement.
 - .2 Lorsque la température extérieure est supérieure à 7°C, la soupape à 2 voies du serpentin de face et évitement opère en unisson avec le volet de face et évitement.
 - Contrôle de la température de pièce
 - .1 La température de pièce est maintenue par la sonde localisée dans l'amphithéâtre et le contrôleur numérique en opérant :
 - .1 lorsque la température extérieure est égale ou inférieure au point de consigne du mode ECONO.
 - .1 la section des volets d'air frais, de retour et d'évacuation : un minimum de 60% d'air frais est requis jusqu'à un maximum de 100%..
 - .2 les soupapes des convecteurs du chauffage périphérique et en séquence le serpentin de face et évitement.
 - .2 lorsque la température extérieure est supérieure à 13°C :
 - .1 la soupape d'eau refroidie; la section des volets est positionnée pour un minimum de 60% d'air frais.
 - Sur une baisse de température à 8°C de l'air d'alimentation ou sur une baisse de température du retour d'eau chaude à 10°C, le système arrête; cette séquence est annulée lorsque la température extérieure est supérieure à 5°C.
 - Les ventilateurs sont arrêtés par le régulateur numérique. Cette condition entraîne les actions suivantes :
 - .1 Valve de modulation d'eau chaude ouverte
 - .2 Volets d'air frais et d'évacuation fermés, volets de sécurité et de retour ouverts
 - .3 Humidificateur à l'arrêt
 - .4 Valve de modulation d'eau froide fermée
 - .5 SCR inopérant
 - Lorsque le système de ventilation est à l'arrêt, la sonde de température de pièce contrôle les soupapes des convecteurs du chauffage périphérique.

- ⚠

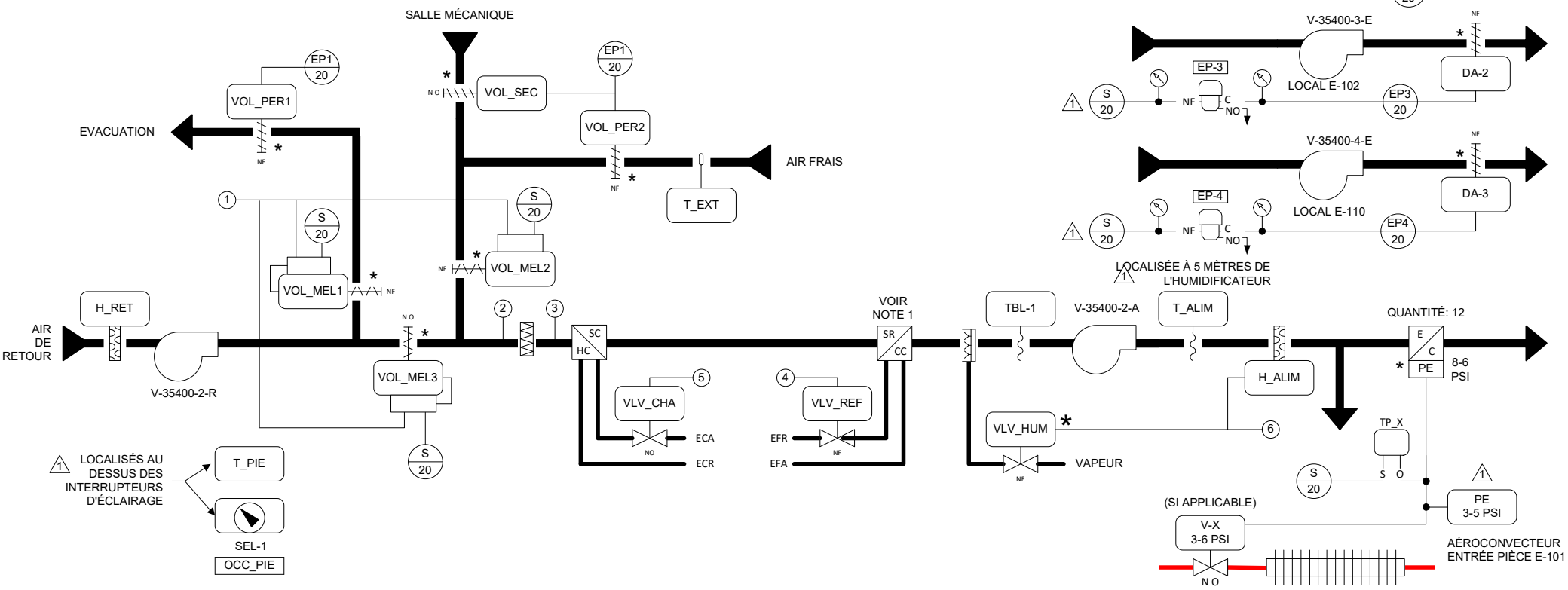
CONTRÔLE DU NIVEAU DE CO2 :

 - Une lecture du niveau de CO2 dans l'air de retour, réajuste le minimum d'air neuf selon la cédule suivante :

Niveau CO2 (PPM)	Minimum d'air neuf	Position correspondante du volet d'air neuf
800	10%	41%
1000	40%	71%

TITRE DU DESSIN		9096-5018	3	TEL QUE CONSTRUIT		99/06/17	A.B.
SÉQUENCE D'OPÉRATION SYSTÈME V-35400-1-A SALLE DE PRÉSENTATION			2	TEL QUE CONSTRUIT		97/09/17	A.B.
			1	CONSTRUCTION		97/05/26	A.B.
		DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	Dessin		APPROUVE		
J.C.R.	G.S.	M.C.D.	Par I.M.	DATE 96/12/11	Par	DATE	
NOM DU PROJET		Information Succursale		SLW: 000000			
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)				355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT	
						7096-0004	
						NUMÉRO DE DESSIN	
Groupe de la régulation						4068-056S	

BIBLIOTHÈQUE



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_VR	1	SENTRY 250	RELAIS COURANT -SENTRY
EP-3,4	2	V11HAA-115	VALVE SOLENOÏDE 3 VOIES 110/120 VOLTS
H_ALIM	1	H-3610-1001	SONDE HUM. CONDUIT PNEUM.
H_RET	1	RH-3-V-D	SONDE HUM. CONDUIT 0-5V. GENERAL EASTERN
PE	1	P7100-1	RELAIS PNEUMATIQUE/ÉLECT.
R-2, R-3	2	----	RELAIS 24VAC 2PDT
SEL-1	1	----	SÉLECTEUR
T_ALIM,EXT	2	TE-6311P-1	SONDE TEMP. CONDUIT NI.
T_PIE	1	TE-6314P-I	SONDE DE PIECE NI
TBL-1	1	A11A-1C	BASSE LIMITE TEMP.
TP_X	12	T-4002-201	THERMOSTAT PNEUMATIQUE
V_X	12	VG7241XT+3008B	SOUPAPE 2 VOIES N.O. 1/2" CV= 1.8 OU 0.7
VLV_CHA	1	VG7241GT + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV= 4.6
VLV_HUM	1	----	PAR D'AUTRES
VLV_REF	1	VG7443PT + 3008E	SOUPAPE 2 VOIES N.C.1 1/4" CV= 18.7
VOL_MEL1 à 3,	3	D-3153-1	ACTUATEUR VOLET 8-13 PSIG W/P
VOL_PER1 à 2	2	D-3153-2	ACTUATEUR VOLET 8-13 PSI
VOL_SEC	4	D-4073-2	ACTUATEUR VOLET
DA-1 a 3	4	G2010-5	MANOMÈTRE 0-30 PSI

LISTE DE MATÉRIEL PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-10	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	COUVERT
EP-1, 2	2	V11HAA-115	VALVE SOLENOÏDE 3 VOIES 110/120V.
EPT-1 à 4	4	EP-8000-2	CONVERTISSEUR ÉLECT/PNEUM.
F-1,2	2	AGC-2	FUSIBLE 2 AMPÈRES
P-0B	1	M8100-2436	PANNEAU DE CONTRÔLE 24" X 36" X 9"
PDC-1	1	274VBOX	PRISE/INTERRUPTEUR -LEVITON
---	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	PD-505-4	INDICATEUR PRESSION DIFF.
R-1	1	RCPTFU82D1024	RELAIS 24VAC -FEME
---	1	S-408	BASE 8 BROCHES -FEME
TX-1	1	Y65AS-1	TRANSFO 120/24 40VA
	7	G2010-5	MANOMÈTRE 0-30 PSI

SÉQUENCE D'OPÉRATION VOIR DESSIN 4068-56S


NOTE 1 : LES SERPENTINS DE REFROIDISSEMENT DOIVENT ÊTRE VIDANGÉS ET HIVERNISÉS POUR LA PÉRIODE HIVERNALE.

TITRE DU DESSIN

SYSTEME V-35400-2-A
BIBLIOTHEQUE

NOM DU PROJET

ANNEXE DU CENTRE DE RECHERCHE
3600 BOUL.CASAVANT
STE-HYACINTHE (QC)

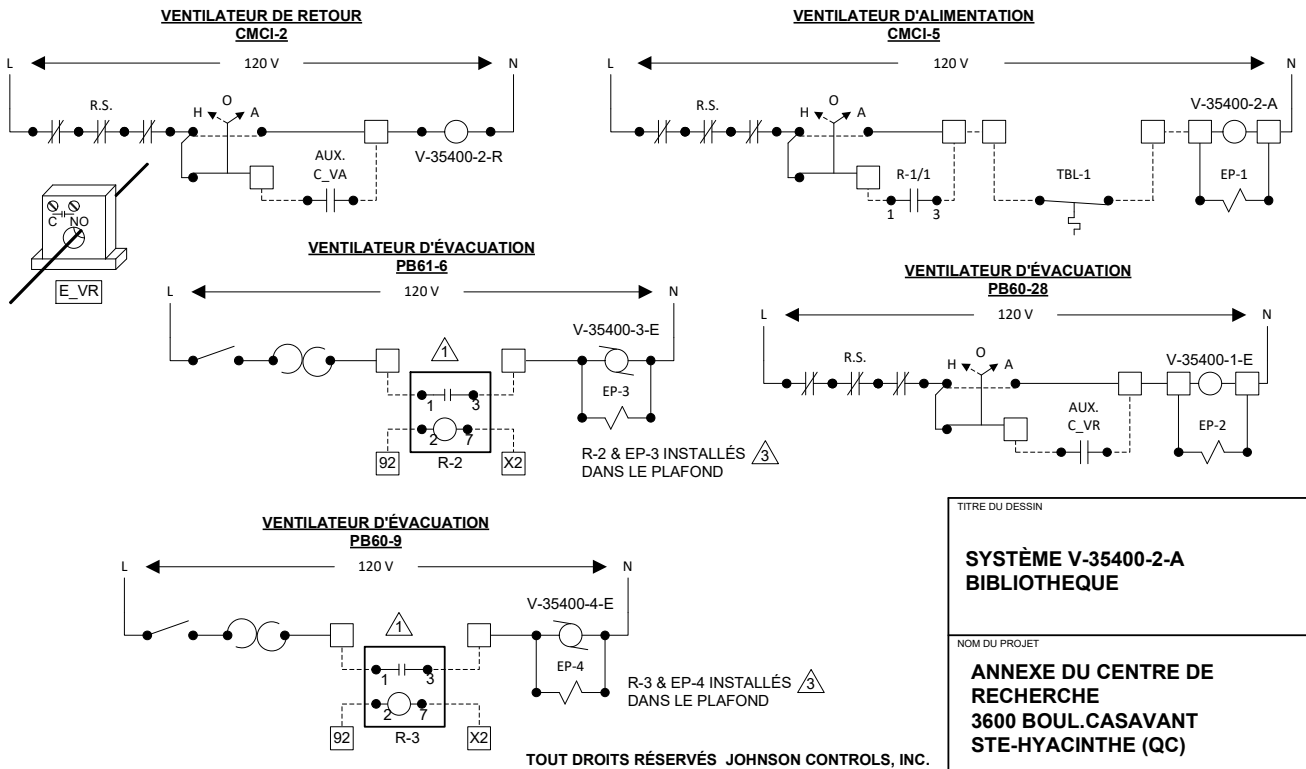
		2	TEL QUE CONSTRUIT			97/09/17	A.B.
		1	CONSTRUCTION			97/05/26	A.B.
DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR
representant	Gérant De Projet	Concepteur	Dessin		APPROUVE		
J.C.R.	G.S.	M.C.D.	Par	I.M.	DATE	96/12/11	Par
						DATE	
						SLW: 000000	
 Groupe de la régulation		355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMERO DE CONTRAT			
				7096-0004			
				NUMERO DE DESSIN			
				4068-057			



Groupe de la régulation

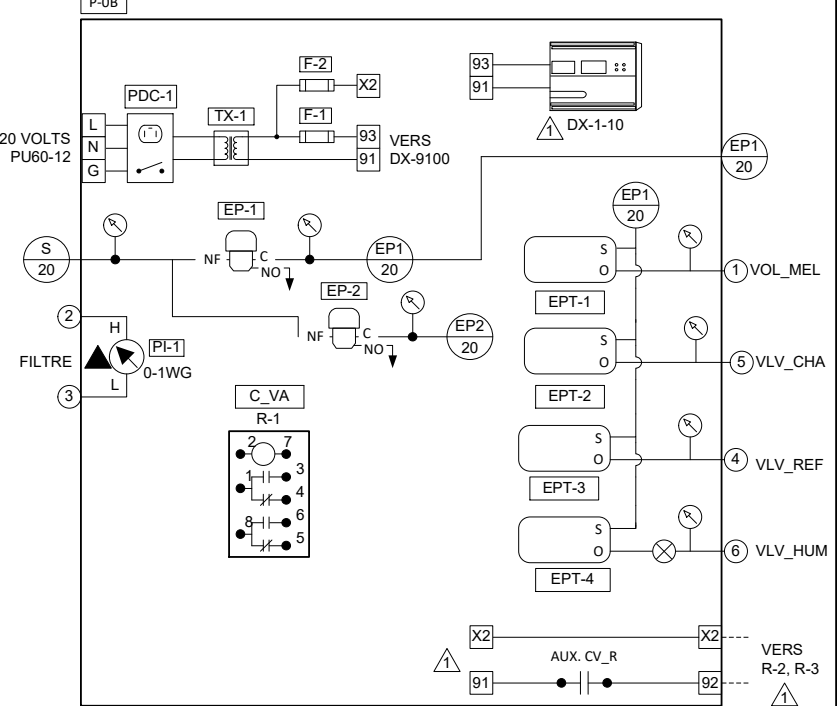
355, boul. Montpellier
St-Laurent (Québec)
H4N 2G6
Tél: (514) 747-2580
Fax: (514) 747-9562

DIAGRAMME ÉLECTRIQUE



TOUT DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

PANNEAU DE CONTRÔLE




SÉQUENCE DE FONCTIONNEMENT

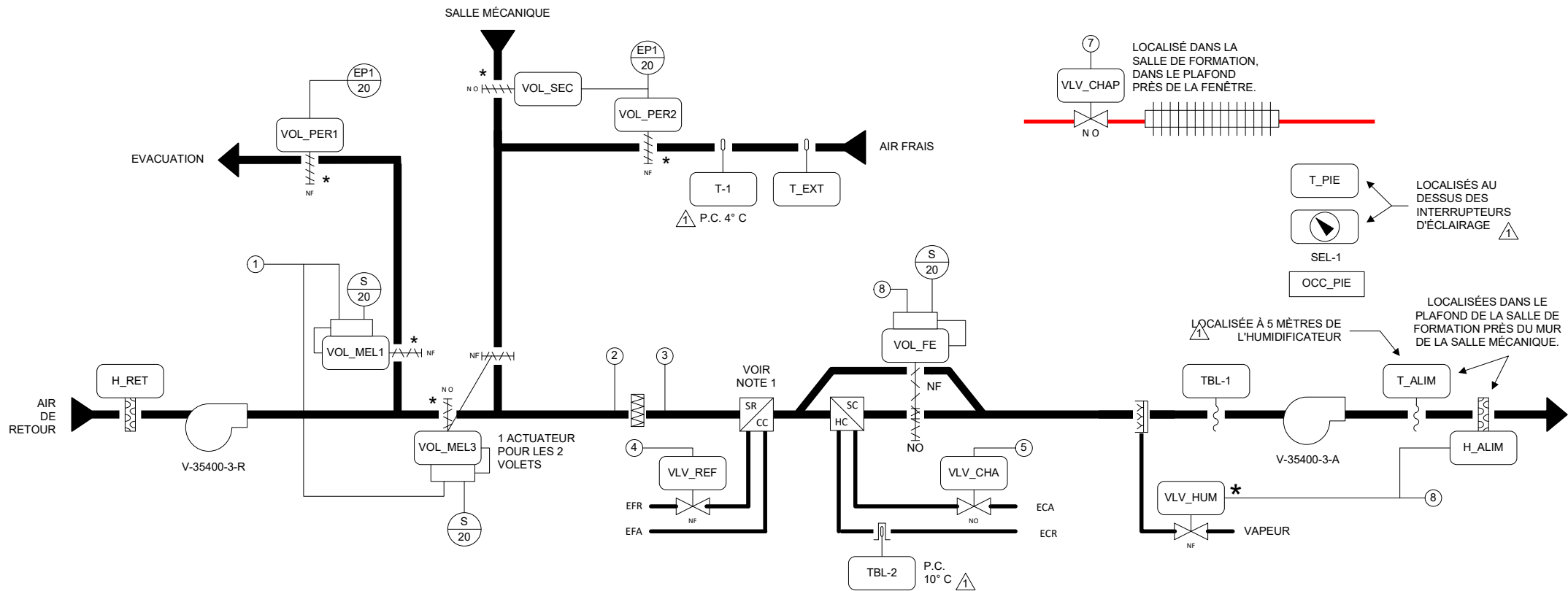


- Le ventilateur d'alimentation V-2-A est mis en marche par régulateur numérique en fonction du sélecteur local occupé - non occupé; ou en fonction de la cédule horaire établie. Le sélecteur est placé en position inoccupée en temps normal et seule la cédule horaire commande l'arrêt/départ du système. Lorsqu'on se trouve en dehors des heures normales de fonctionnement, le système peut être remis en marche par le sélecteur occupé/inoccupé en plaçant celui-ci à « occupé ». Le ventilateur de retour V-2-R est mis en marche par entrebarrage électrique avec le ventilateur V-2-A. Les ventilateurs d'évacuation V-35400-1-E, V-35400-3-E et V-35400-4-E sont mis en marche par entrebarrage électrique avec le ventilateur V-2-R.
- Au départ du ventilateur d'alimentation, les volets motorisés des persiennes ouvrent et le volet de sécurité ferme.
- Au départ des ventilateurs d'évacuation leur volet d'évacuation d'air respectifs ouvre.
- Sur preuve de marche, détectée par un relais de courant sur le ventilateur de retour, la séquence suivante est activée :
 - L'humidificateur est modulé de façon à maintenir l'humidité relative dans la gaine de retour au point de consigne requis. En tout temps, le transmetteur d'humidité relative d'alimentation (localisé à 5 M en aval du distributeur de vapeur) assure un taux d'humidité relative maximal en limitant la capacité de l'humidificateur.
- Contrôle de la température de pièce
 - La température de pièce est maintenue par la sonde localisée dans la bibliothèque et le contrôleur numérique en opérant :
 - lorsque la température extérieure est égale ou inférieure au point de consigne ECONO.
 - la section des volets d'air frais, de retour et d'évacuation : un minimum de 18% d'air frais est requis jusqu'à un maximum de 100%.
 - les soupapes des convecteurs du chauffage périmétrique et en séquence le serpentín de face et d'évitement.
 - lorsque la température extérieure est supérieure au point de consigne ECONO.
 - la soupape d'eau refroidie; la section des volets est positionnée pour un minimum de 18% d'air frais.
 - la température de pièce des bureaux fermés et du corridor est maintenue par un thermostat pneumatique opérant en séquence :
 - le serpentín électrique et la soupape du convecteur du chauffage périmétrique.
- Sur une baisse de température à 8°C de l'air d'alimentation, le système arrête.
- Les ventilateurs sont arrêtés par le régulateur numérique. Cette condition entraîne les actions suivantes :
 - Valve de modulation d'eau chaude ouverte
 - Volets d'air frais et d'évacuation fermés, volets de sécurité et de retour ouverts
 - Humidificateur à l'arrêt
 - Valve de modulation d'eau froide fermée

TOUT DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

TITRE DU DESSIN		9096-5018		3	TEL QUE CONSTRUIT			99/06/17	A.B.		
SÉQUENCE D'OPÉRATION SYSTÈME V-35400-2-A BIBLIOTHEQUE				2	TEL QUE CONSTRUIT			97/09/17	A.B.		
				1	CONSTRUCTION			97/05/29	A.B.		
		DESSIN DE REFERENCE		NO.		REVISION		ECN	DATE	PAR	
Représentant		Gérant De Projet		Concepteur		Dessin		APPROUVE			
J.C.R.		G.S.		M.C.D.		Par	I.M.	DATE	96/12/11	Par	DATE
NOM DU PROJET						Information Succursale		SLW:		000000	
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)						355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT			
								7096-0004			
								NUMÉRO DE DESSIN			
								4068-057S			

SALLE DE FORMATION



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_VR	1	SENTRY 250	RELAIS COURANT -SENTRY
H_ALIM	1	H-3610-1001	SONDE HUM. CONDUIT PNEUM.
H_RET	1	RH3-V-D	SONDE HUM. CONDUIT 0-5V. GENERAL EASTERN
SEL-1	1	----	SÉLECTEUR
T_ALIM,EXT	2	TE-6311P-1	SONDE TEMP. CONDUIT NI.
T_PIE	1	TE-6314P-I	SONDE DE PIECE NI
TBL-1	1	A11A-1C	BASSE LIMITE TEMP.
TBL-2, T-1	2	A19ABC-41C	BASSE LIMITE TEMP. MANUELLE
VLV_CHA	1	VG7241ET + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV= 1.8
VLV_CHAP	1	VG7241ET + 3008B	SOUPAPE 2 VOIES N.C. 1/2" CV= 1.8
VLV_HUM	1	----	PAR D'AUTRES
VLV_REF	1	VG7441GT + 3008E	SOUPAPE 2 VOIES N.C. 1/2" CV= 4.6
VOL_MEL1 à 3,	4	D-3153-1	ACTUATEUR VOLET 8-13 PSIG W/P
VOL_FE	2	D-3153-2	ACTUATEUR VOLET 8-13 PSI
VOL_PER1 à 2	1	D-4073-2	ACTUATEUR VOLET
VOL_SEC	1	D-4073-2	ACTUATEUR VOLET

LISTE DE MATÉRIEL PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-15	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	COUVERT
EP-1	1	V11HAA-115	VALVE SOLENOÏDE 3 VOIES 110/120V.
EPT-1 à 6	6	EP-8000-2	CONVERTISSEUR ÉLECT/PNEUM.
F-1,2	2	AGC-2	FUSIBLE 2 AMPÈRES
P-0C	1	M8100-2436	PANNEAU DE CONTRÔLE 24" X 36" X 9"
PDC-1	1	274VBOX	PRISE/INTERRUPTEUR -LEVITON
---	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	PD-505-4	INDICATEUR PRESSION DIFF.
R-1	1	RCPTFU82D1024	RELAIS 24VAC -FEME
---	1	S-408	BASE 8 BROCHES -FEME
TX-1	1	Y65AS-1	TRANSFO 120/24 40VA
⊗	8	G2010-5	MANOMÈTRE 0-30 PSI

PANNEAU DE CONTRÔLE

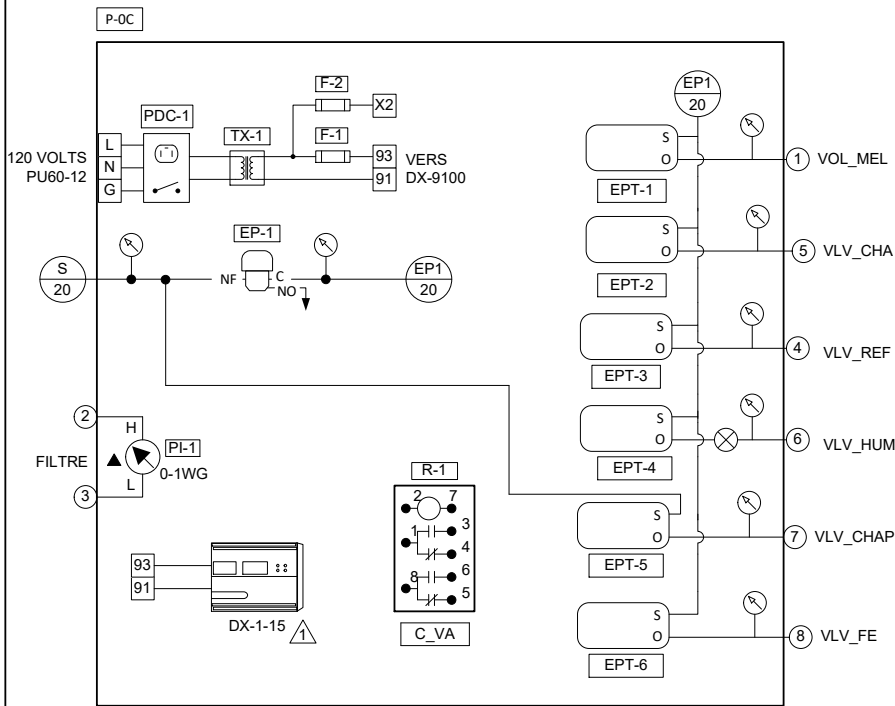
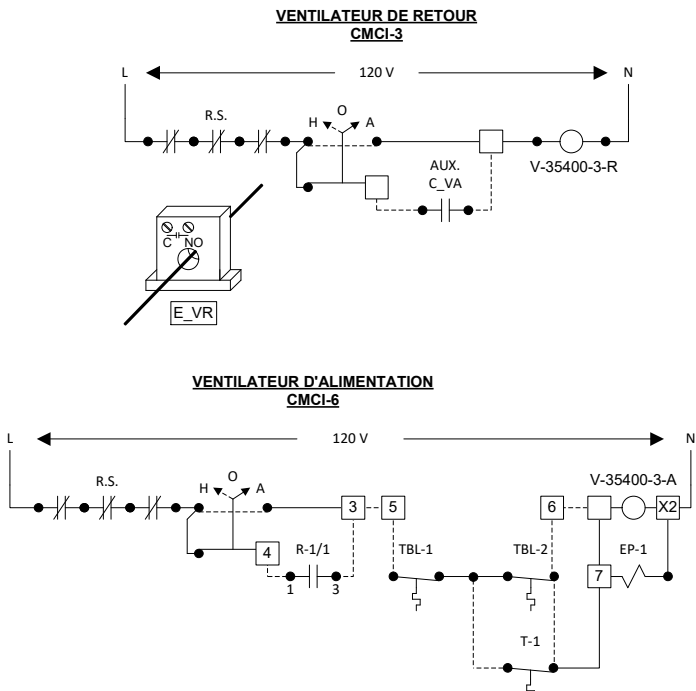


DIAGRAMME ÉLECTRIQUE



SÉQUENCE D'OPÉRATION VOIR DESSIN 4068-56S

NOTE 1 : LES SERPENTINS DE REFROIDISSEMENT DOIVENT ÊTRE VIDANGÉS ET HIVERNISÉS POUR LA PÉRIODE HIVERNALE.

TITRE DU DESSIN
**SYSTÈME V-35400-3-A
SALLE DE FORMATION**

NOM DU PROJET
**ANNEXE DU CENTRE DE
RECHERCHE
3600 BOUL.CASAVANT
STE-HYACINTHE (QC)**

**JOHNSON
CONTROLS**
Groupe de la régulation

355, boul. Montpellier
St-Laurent (Québec)
H4N 2G6
Tél: (514) 747-2580
Fax: (514) 747-9562


NUMÉRO DE CONTRAT
7096-0004
NUMÉRO DE DESSIN
4068-058

SÉQUENCE DE FONCTIONNEMENT

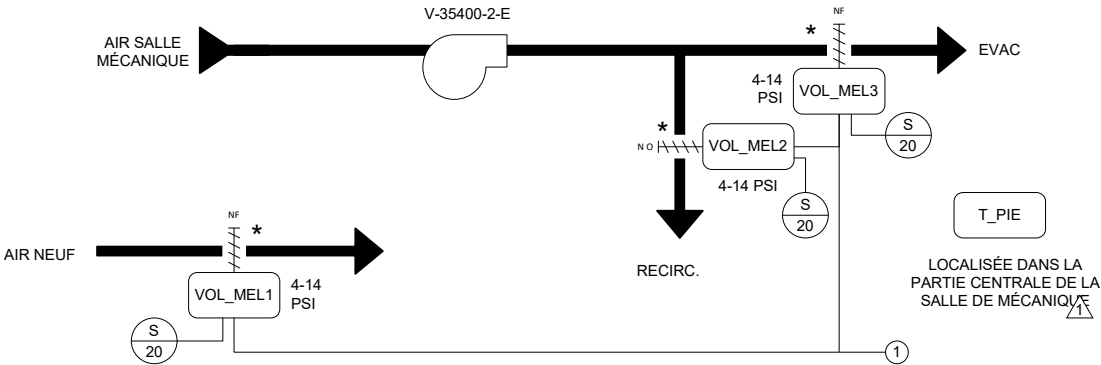
- ⚠

- Le ventilateur d'alimentation V-3-A est mis en marche par régulateur numérique en fonction du sélecteur local occupé - non occupé; ou en fonction de la cédule horaire établie. Le sélecteur est placé en position inoccupé en temps normal et seule la cédule horaire commande l'arrêt/départ du système. Lorsqu'on se trouve en dehors des heures normales de fonctionnement, le système peut être remis en marche par le sélecteur occupé/inoccupé en plaçant celui-ci à « occupé ». Le ventilateur de retour V-3-R est mis en marche par entrebarrage électrique avec le ventilateur V-3-A.
 - Au départ du ventilateur d'alimentation, les volets motorisés des persiennes ouvrent et le volet de sécurité ferme.
 - Sur preuve de marche, détectée par un relais de courant sur le ventilateur de retour, la séquence suivante est activée :
 - L'humidificateur est modulé de façon à maintenir l'humidité relative dans la gaine de retour au point de consigne requis. En tout temps, le transmetteur d'humidité relative d'alimentation (localisé à 5 M en aval du distributeur de vapeur) assure un taux d'humidité relatif maximal en limitant la capacité de l'humidificateur.
 - Contrôle du serpentin de face et évitement
 - lorsque la température extérieure est inférieure à 5°C, la soupape à 2 voies du serpentin de face et évitement est complètement ouverte et le contrôle de la température est effectué par le jeu des volets de face et évitement.
 - lorsque la température extérieure est supérieure à 5°C, la soupape à 2 voies du serpentin de face et évitement opère en unisson avec le volet de face et évitement.
 - Contrôle de la température de pièce
 - La température de pièce est maintenue par la sonde localisée dans la salle de formation et le contrôleur numérique en opérant :
 - lorsque la température extérieure est égale ou inférieure au point de consigne ECONO.
 - la section des volets d'air frais, de retour et d'évacuation : un minimum de 18% d'air frais est requis jusqu'à un maximum de 100%.
 - les soupapes des convecteurs du chauffage périmétrique et en séquence le serpentin de face et évitement.
 - lorsque la température extérieure est supérieure au point de consigne ECONO :
 - la soupape d'eau refroidie; la section des volets est positionnée pour un minimum de 48.5% d'air frais.
 - Sur une baisse de température à 8°C de l'air d'alimentation ou sur une baisse de température du retour d'eau chaude à 10°C, le système arrête; cette séquence est annulée lorsque la température extérieure est supérieure à 5°C.
 - Les ventilateurs sont arrêtés par le régulateur numérique. Cette condition entraîne les actions suivantes :
 - Valve de modulation d'eau chaude ouverte
 - Volets d'air frais et d'évacuation fermés, volets de sécurité et de retour ouverts
 - Humidificateur à l'arrêt
 - Valve de modulation d'eau froide fermée
 - Lorsque le système de ventilation est à l'arrêt, la sonde de température de pièce contrôle la soupape du convecteur du chauffage périphérique.

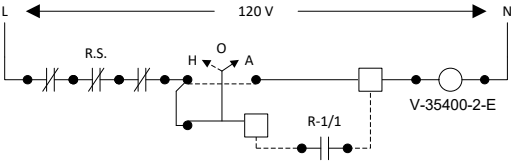
TOUT DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

TITRE DU DESSIN		9096-5018	3	TEL QUE CONSTRUIT		99/06/17	A.B.
SÉQUENCE D'OPÉRATION SYSTÈME V-35400-3-A SALLE DE FORMATION			2	TEL QUE CONSTRUIT		97/09/17	A.B.
			1	CONSTRUCTION		97/05/29	A.B.
		DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	Dessin		APPROUVE		
J.C.R.	G.S.	M.C.D.	Par I.M.	DATE 96/12/11	Par	DATE	
NOM DU PROJET		Information Succursale		SLW: 000000			
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)				355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT	
						7096-0004	
						NUMÉRO DE DESSIN	
		Groupe de la régulation				4068-058S	

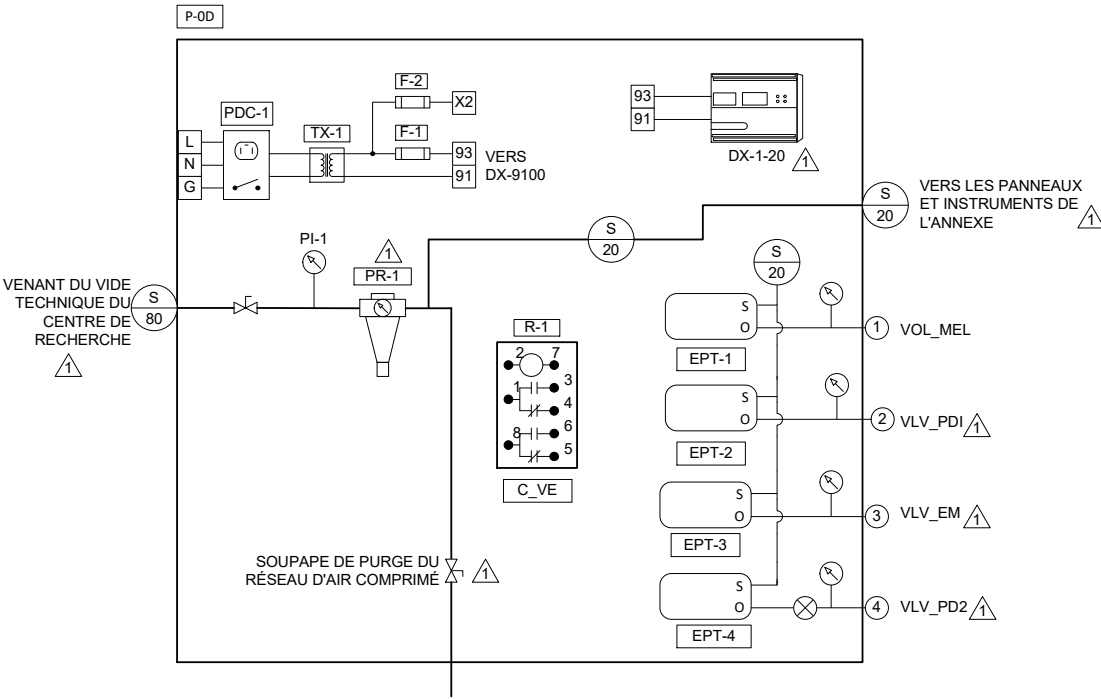
SYSTÈME V-35400-2-E



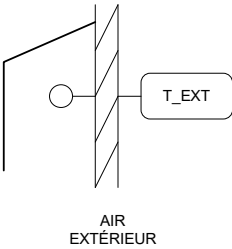
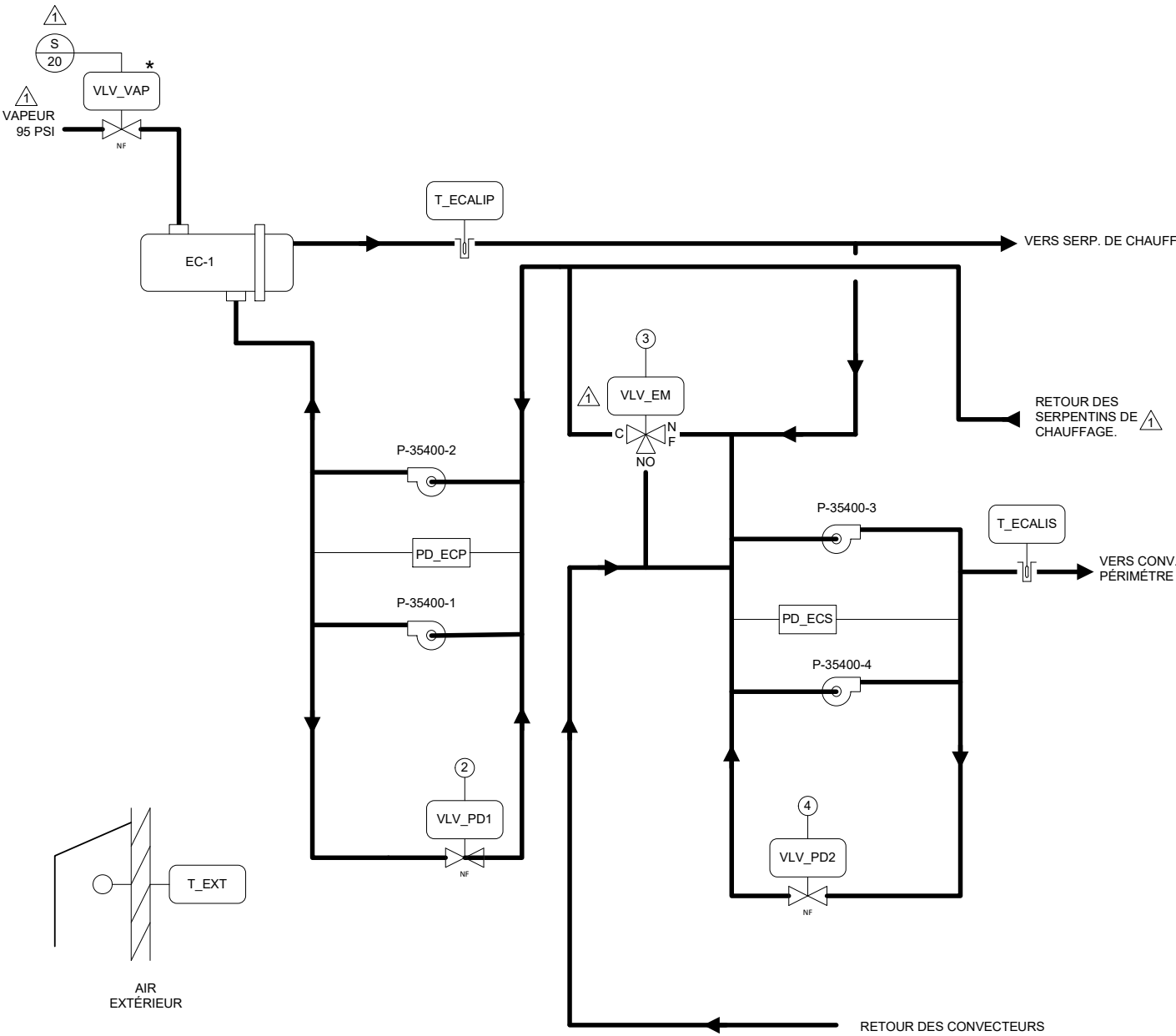
VENTILATEUR DE RETOUR PB60-26



PANNEAU DE CONTRÔLE



CIRCUIT EAU CHAUDE PRIMAIRE ET SECONDAIRE



NOTE: SÉQUENCE D'OPÉRATION ET LISTE DE MATÉRIEL; VOIR DESSIN 4068-59S

TITRE DU DESSIN		NO.		REVISION		ECN		APPROUVE	
SYSTÈME V-35400-2-E SALLE MÉCANIQUE CIRCUIT EAU CHAUDE PRIMAIRE ET SECONDAIRE		2		TEL QUE CONSTRUIT		97/09/17		A.B.	
		1		CONSTRUCTION		97/05/29		A.B.	
DESSIN DE REFERENCE		NO.		REVISION		ECN		APPROUVE	
Représentant	Gérant De Projet	Concepteur	Dessin	Par	I.M.	DATE	96/12/11	Par	DATE
J.C.R.	G.S.	M.C.D.							
NOM DU PROJET		Information Succursale		SLW:		NUMÉRO DE CONTRAT		NUMÉRO DE DESSIN	
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)		JOHNSON CONTROLS		355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		7096-0004		4068-059	
		Groupe de la régulation							

SÉQUENCE DE FONCTIONNEMENT

SYSTÈME V-35400-2-E (SALLE MÉCANIQUE)

- La température de la salle est maintenue par le régulateur numérique opérant en séquence.
 - Le départ du système de ventilation.
 - Les volets d'air frais, d'évacuation et de recirculation

EAU CHAUDE CIRCUIT PRIMAIRE

- La température d'eau chaude d'alimentation est maintenue à 93°C par le contrôleur numérique opérant la soupape de vapeur de l'échangeur.
- Le différentiel de pression entre la succion et la décharge de la pompe est maintenue par le contrôleur numérique opérant la soupape d'évitement.
- Lorsque le différentiel de pression devient inférieur à la valeur minimum, la soupape de vapeur de l'échangeur est fermée.

EAU CHAUDE CIRCUIT SECONDAIRE

- La température d'eau chaude d'alimentation est maintenue par le contrôleur numérique avec réajustement en fonction de la température extérieure (voir tableau 1), en opérant la soupape trois voies d'eau mitigée.
- Le différentiel de pression entre la succion et la décharge de la pompe est maintenue par le contrôleur numérique opérant la soupape d'évitement.

TABLEAU 1	
Température extérieur	Température d'alimentation secondaite
-20°C	82°C
20°C	50°C

LISTE DE MATÉRIEL CHANTIER

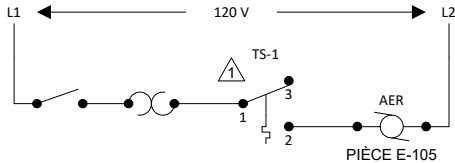
IDENT.	QTÉ	MODÈLE	DESCRIPTION
PD_ECP, PD_ECS	2	152CP030	TRANSMETTEUR DE PRESSION DIFFÉRENTIELLE
T_ECALIP T_ECALIS	2	TE-6312P-1	SONDE DE TEMP. NI POUR PUIITS
T_EXT T_PIE	1	TE-6313P-1	SONDE DE TEMP. EXT NI
	1	TE-6314P-1	SONDE TEMP. PIÈCE NI
VLV_EM	1	VG7844NT+V400B	SOUPAPE 3 VOIES 1", C.V. 11.6
VLV_PD1	1	VG7443PT+V400B	SOUPAPE 2 VOIES 1¼", C.V. 18.5
VLV_PD2	1	VG7443LT+3008B	SOUPAPE 2 VOIES ¾", C.V. 7.3
VOLMEL1	3	D-3153-1	ACTUATEURS VOLETS 8-13 PSI à 3

LISTE DE MATÉRIEL PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-20	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE
	1	DX-9100-8991	COUVERT
EPT-1à 4	4	EP-8000-2	CONVERTISSEUR ELECTRO/PNEUM.
F-1,2	2	AGC-2	FUSIBLE 2 AMP.
P-0D	1	M8100-2436	PANNEAU DE CONTRÔLE 24" x 36" x 9"
PDC-1	1	274 BOX	PRISE/INTERRUPTEUR -LEVITON
----	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	G2010-16	MANOMÈTRE 0-160 PSI
PR-1	1	A-4000-138	STATION DE DÉTECTION DE PRESSION
R-1	1	RCPTFU821024	RELAIS 24V DPDT -FEME
TX-1	1	----	TRANSFO 120/24 50VA
Ⓢ	4	G2010-5	MANOMÈTRE 0-30 PSI

TITRE DU DESSIN																	
LISTE DE MATÉRIEL ET SÉQUENCE D'OPÉRATION DU SYSTÈME V-35400-2-E ET CIRCUIT EAU CHAUDE																	
		2		TEL QUE CONSTRUIT				97/09/17		A.B.							
		1		CONSTRUCTION				97/05/29		A.B.							
DESSIN DE REFERENCE				NO.		REVISION				ECN		DATE		PAR			
Représentant		Gérant De Projet		Concepteur		Dessin				APPROUVE							
J.C.R.		G.S.		M.C.D.		Par A.B.		DATE 97/01/28		Par		DATE					
NOM DU PROJET										Information Succursale				SLW: 000000			
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)										JOHNSON CONTROLS Groupe de la régulation				355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT 7096-0004 NUMÉRO DE DESSIN 4068-059S	

AÉROTHERME PB60-24



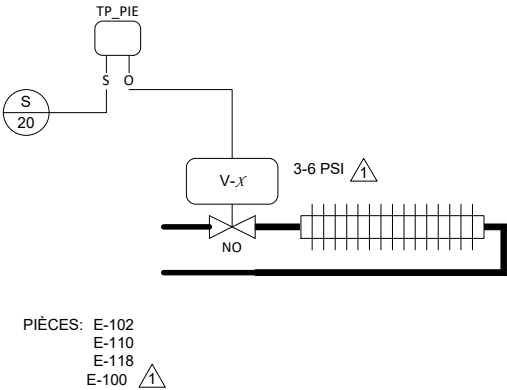
LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
TP_PIE	3	T-4002-201	THERMOSTAT PNEUMATIQUE
TS-1	1	T26S-18C	THERMOSTAT ÉLECTRIQUE
V-X	3	VG7241CT+3008B	SOUPAPE 2 VOIES N.O. C.V. 0.7 ½" Ø
	1	VG7241ET+3008B	SOUPAPE 2 VOIES N.O. C.V. 1.8, ½"Ø

SÉQUENCE DE FONCTIONNEMENT

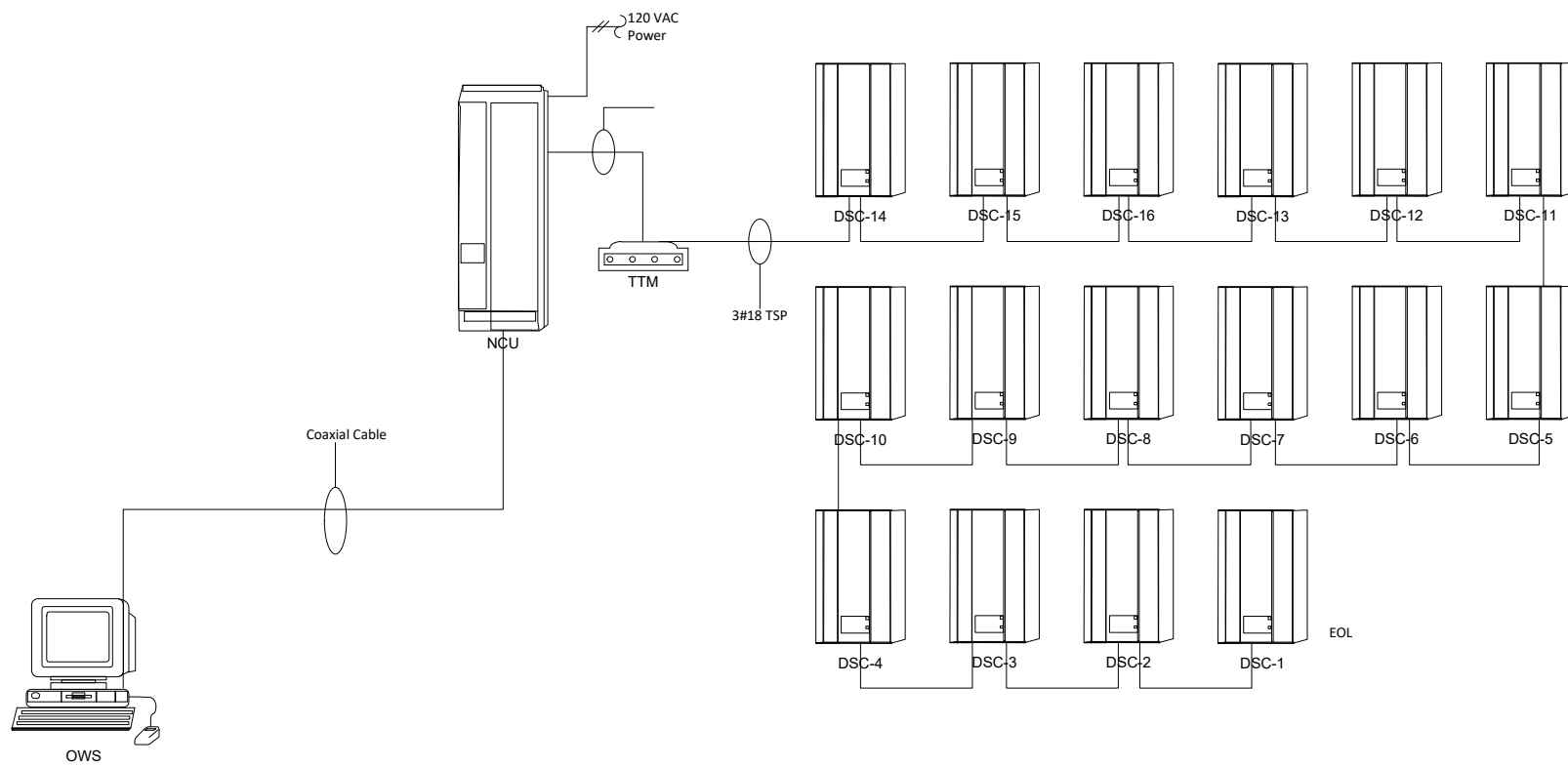
- CONTRÔLE DES CONVECTEURS**
- La température de pièce est maintenue par un thermostat pneumatique opérant la soupape de chauffage du convecteur.
- CONTRÔLE DES UNITÉS À AIR FORCÉ (AÉROTHERMES)**
- La température est maintenue par un thermostat de ligne opérant le ventilateur.

CHAUFFAGE PÉRIMÉTRIQUE



TITRE DU DESSIN											
CHAUFFAGE PÉRIMÉTRIQUE ET AÉROTHERME		2		TEL QUE CONSTRUIT				97/09/17		A.B.	
		1		CONSTRUCTION				97/05/29		A.B.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE	
Représentant		Gérant De Projet		Concepteur		Dessin		APPROUVE			
J.C.R.		G.S.		M.C.D.		Par A.B. DATE 97/01/28		Par		DATE	
NOM DU PROJET						Information Succursale		SLW: 000000			
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)		<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>				355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT			
								7096-0004			
								NUMÉRO DE DESSIN			
								4068-060			

Agriculture Canada, St-Hyacinthe Y2000 Compliance Network Architecture



Cable connections from the TTM101, TTM102, and TTM103 to the S2 NCM Port 2 require the following cable:

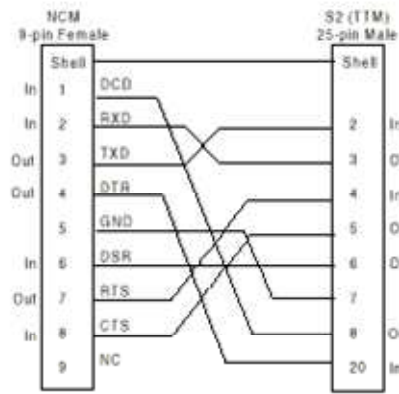


Figure 5: Table Top Modems to Port 2 of the S2 NCM

The JC/85 trunk cable attaches to the Table Top Modem via the connector (included with TTM), shown with its pinouts.

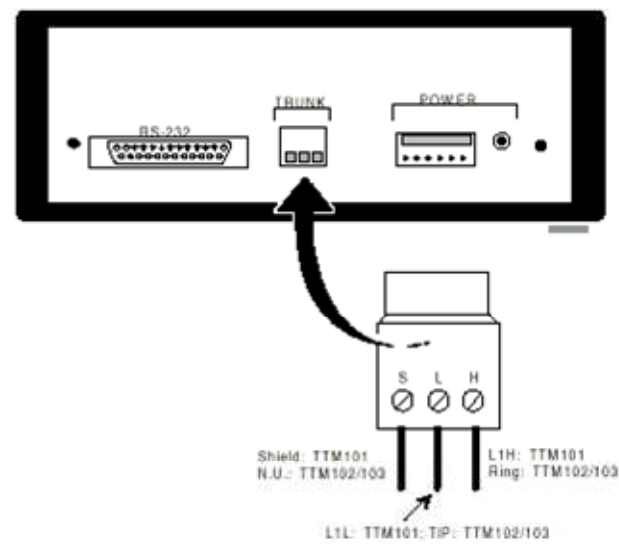


Figure 4: Table Top Modem to JC/85 Trunk

BILL OF MATERIALS

Estimate: Agriculture Canada, St-Hyacinthe Y2000 Compliance Network
 Desig. QtyPart # Description

Field Devices:

OWS	1	3C900	ADD ETHERNET, 3COM, COMBO, COAX/RJ45
	1	Q-975432	DELL GX1/L+, PENT II , 350MHZ, 64MB, 17"

MON

TTM 1 TTM-101-0

Panel Devices:

NCU 1

```

1  NU-NCM350-8      NETWORK CNTRL MOD 350,8MB,ARC/ETHERNET
1  NU-NET301-0      NCM,PREFCONFIGURED ETHERNET CARD

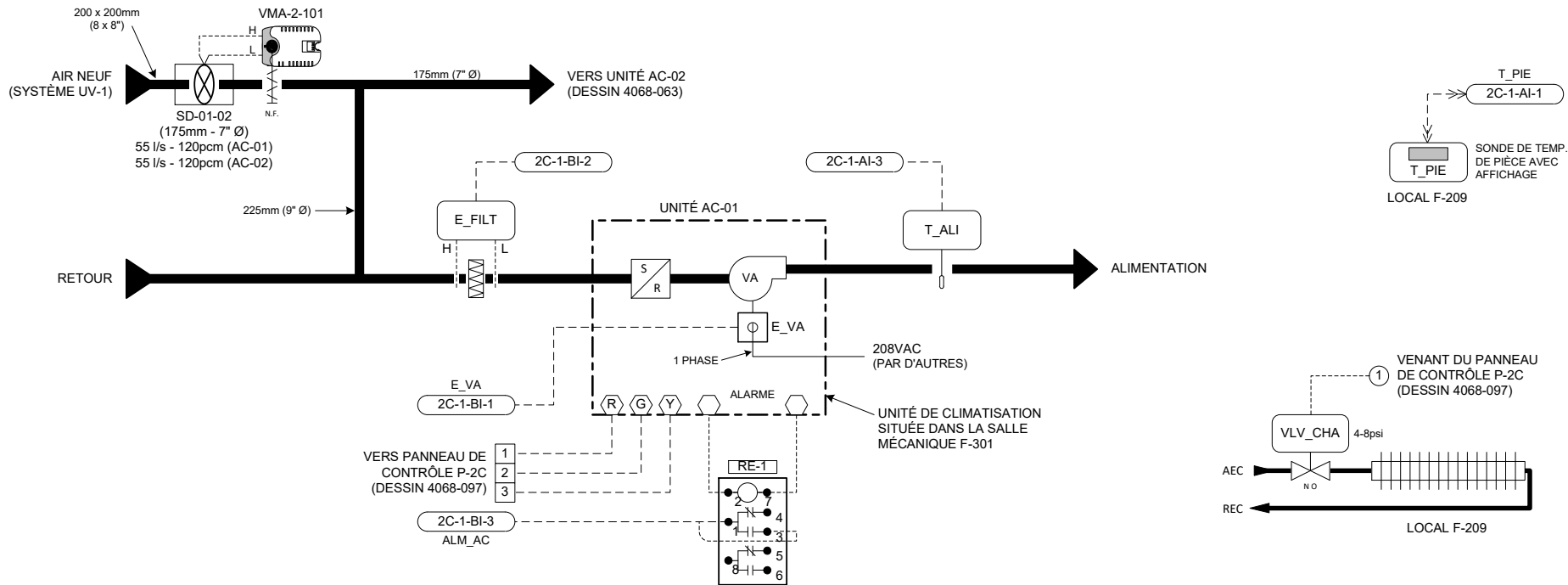
```

Other Devices:

1 WS-SWOPMI-0 SOFTWARE,WRKSTN PMI,NEW

TITRE DU DESSIN													
Network Architecture													
		DESSIN DE REFERENCE		NO.		REVISION				ECN			
		Representant		Gérant De Projet		Concepteur		Dessin				APPROUVE	
		PS		CA		CA		Par CA		DATE 99/06/17		Par DATE	
NOM DU PROJET								Information Succursale				SLW: 000000	
Agriculture Canada, St-Hyacinthe Y2000 Compliance		JOHNSON CONTROLS		Groupe de la régulation		355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562				NUMERO DE CONTRAT			
										9096-5018			
										NUMERO DE DESSIN			
										4068-61			

UNITÉ DE CLIMATISATION AC-01 - LOCAL F-209
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



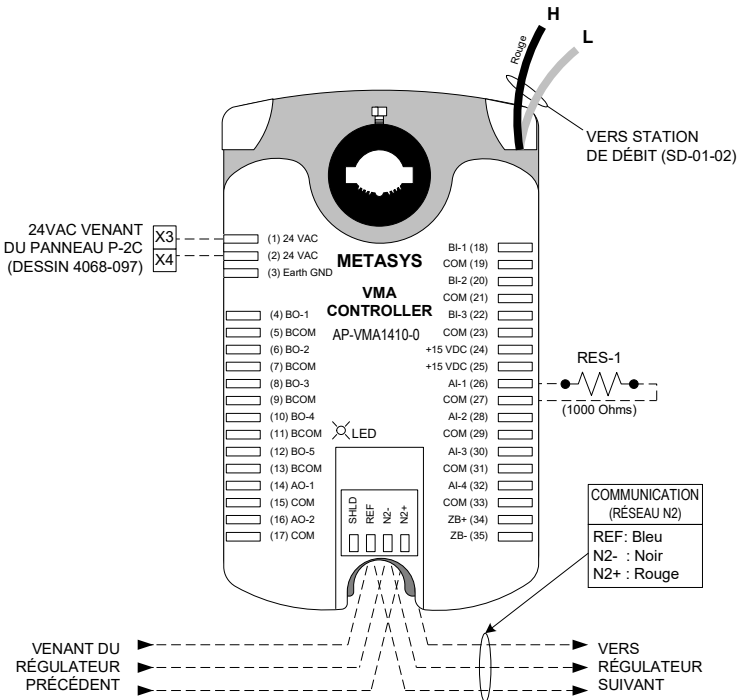
LISTE DE MATÉRIEL			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-101	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-01-02	1	RMS-7	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf commun à AC-01 et AC-02 (VMA-2-101) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ d'une des unités (AC-01 ou AC-02), le régulateur (VMA-2-101) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsqu'une seule unité est en fonction.
 - 110 l/s (240 pcm) lorsque les deux unités fonctionnent.
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

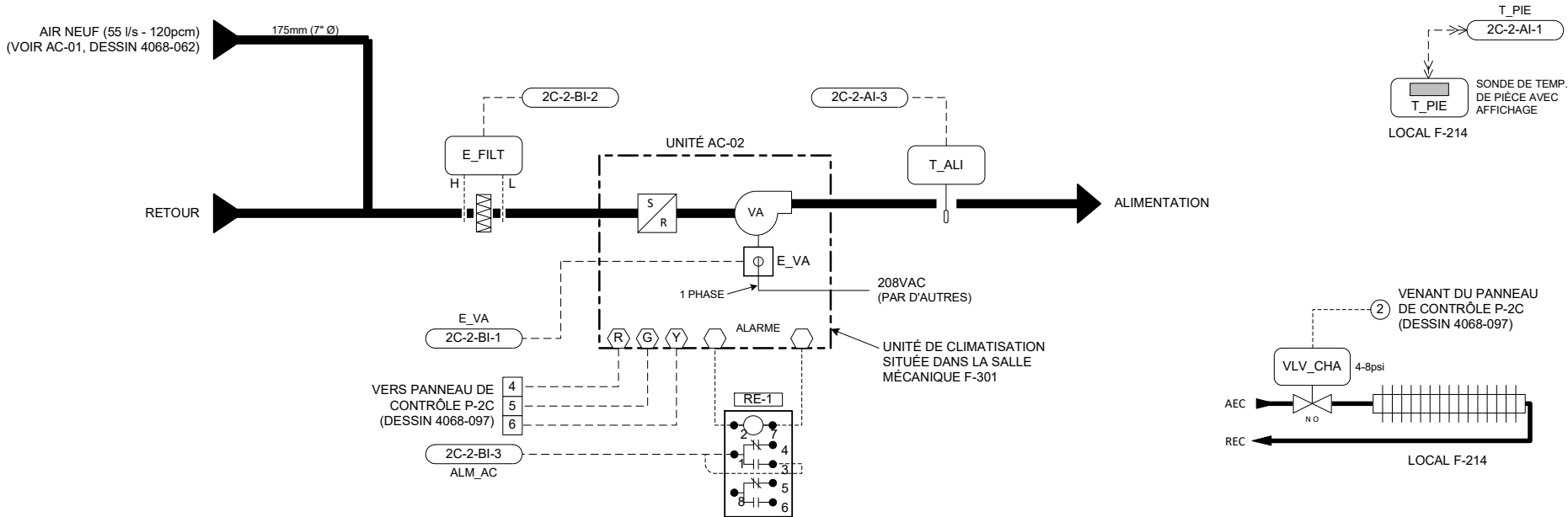
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-101)



Titre du Dessin					
Unité de climatisation AC-01		2	TEL QUE CONSTRUIT	D.B.	02/04/24
Local F-209		1	POUR APPROBATION		6/12/2001
Type 1 (Unité avec chauffage					
périmétrique)					
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE		Johnson Controls Ltée		1096-0093	
Projet d'Innovation Technologique		355, boul. Montpellier		NUMERO DESSIN	
3600, boul. Casavant		St-Laurent, Qc, H4N 2G6		4068-062	
St-Hyacinthe (Québec)		Tél: (514) 747-2580			
		Fax: (514) 747-9562			

UNITÉ DE CLIMATISATION AC-02 - LOCAL F-214
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

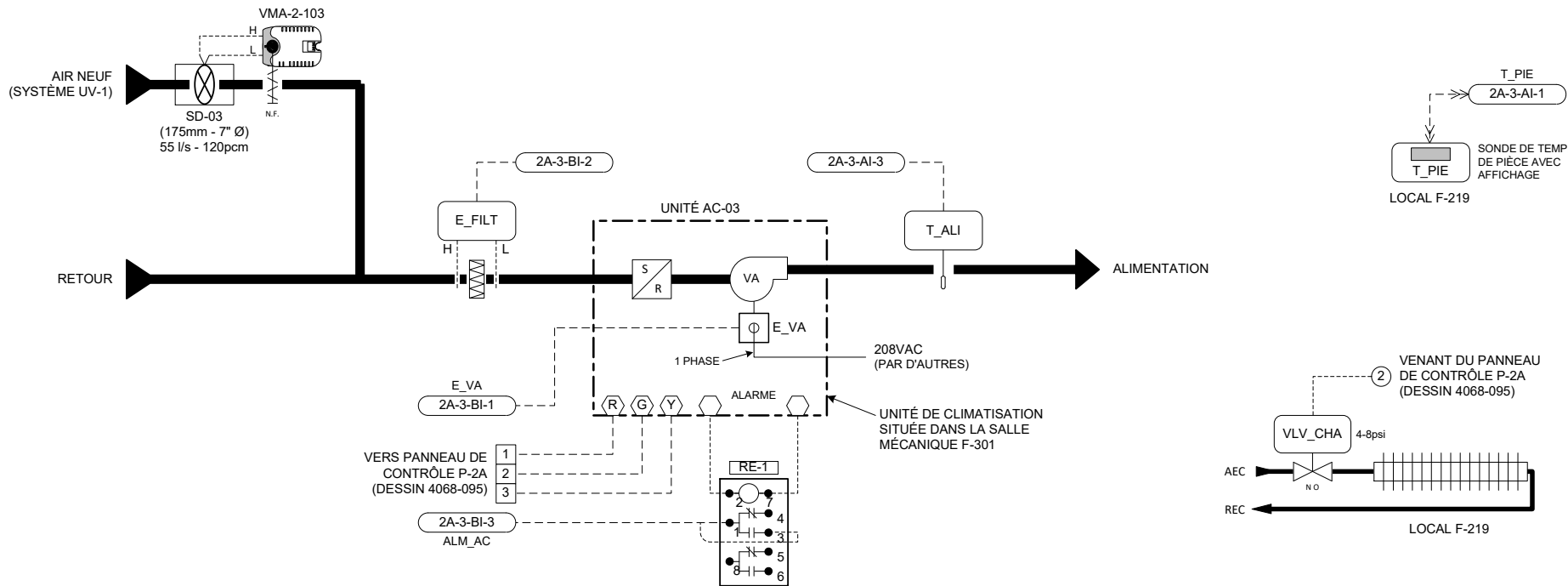
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-01 et AC-02 (VMA-2-111, voir dessin 4068-062) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-01 ou AC-02), le régulateur (VMA-2-111) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsqu'une seule unité est en fonction.
 - 110 l/s (240 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin											
Unité de climatisation AC-02 Local F-214 Type 1 (Unité avec chauffage périmétrique)				2		TEL QUE CONSTRUIT		D.B.		02/04/24 O.P.	
				1		POUR APPROBATION				6/12/2001 D.B.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE			
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/22/2001		PAR DATE 5/22/2001			
Nom du Projet						Information Succursale		NUMERO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093		NUMERO DESSIN			
								4068-063			

UNITÉ DE CLIMATISATION AC-03 - LOCAL F-219
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-103	1	AP-VMA1410-0	RÉGULATEUR VAV <i>cla</i> ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-03	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

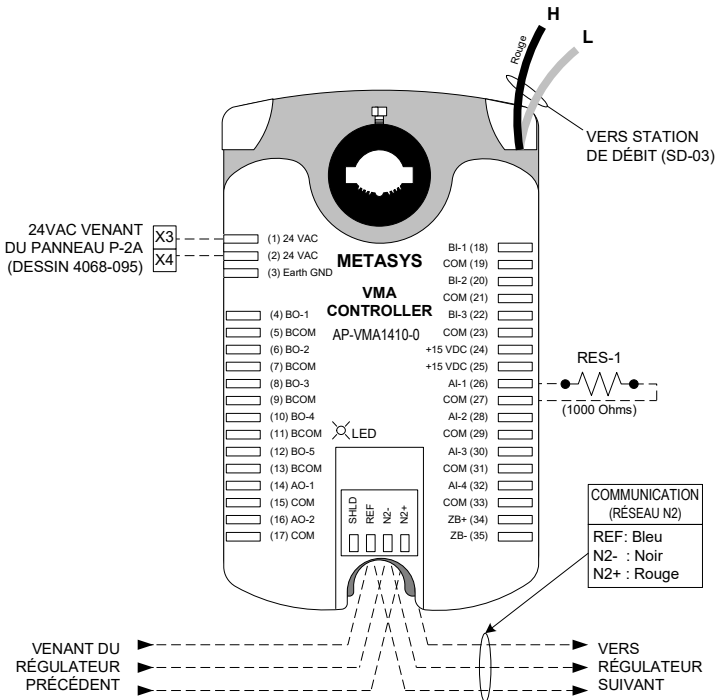
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-103) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-103) module son volet afin de maintenir le débit d'air neuf requis (55 l/s - 120 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

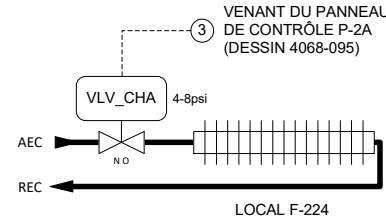
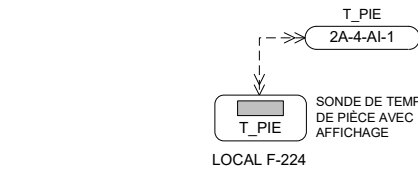
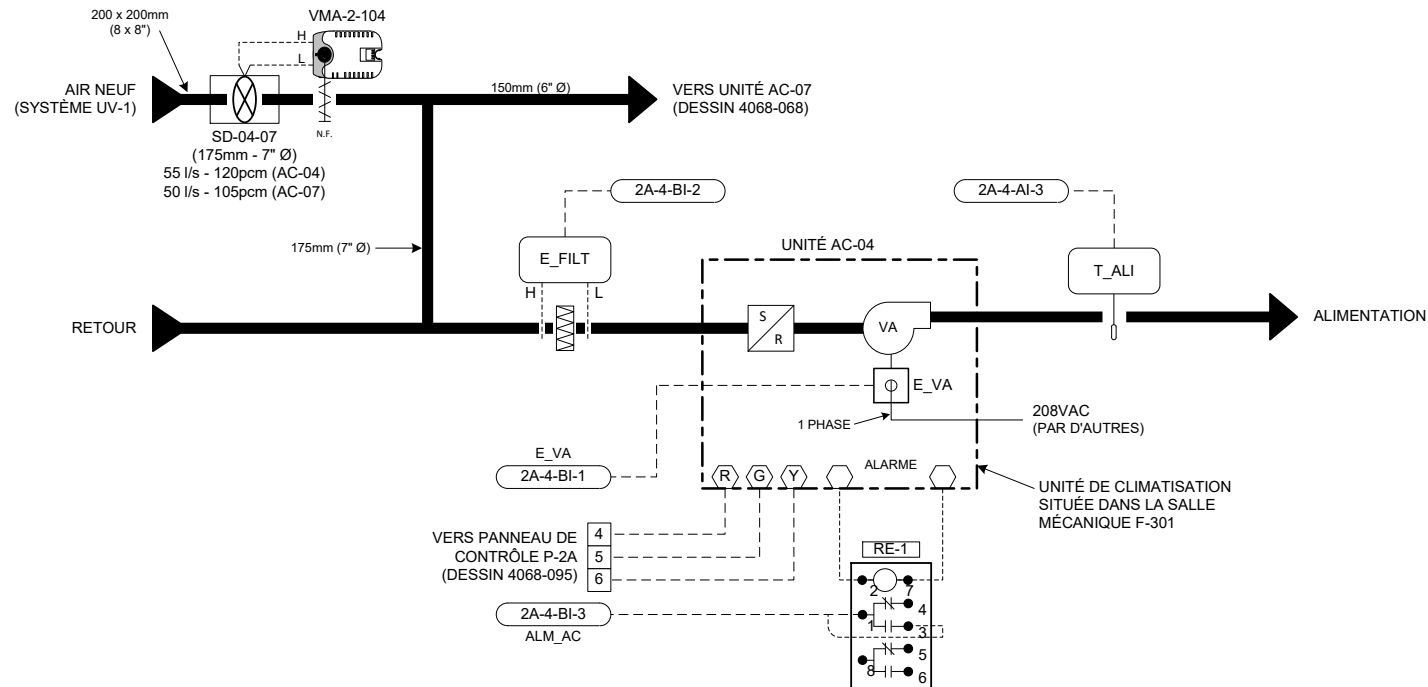
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-103)



Titre du Dessin					
Unité de climatisation AC-03 Local F-219 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24
		1	POUR APPROBATION		6/12/2001
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-064	

UNITÉ DE CLIMATISATION AC-04 - LOCAL F-224
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-104	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-04-07	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

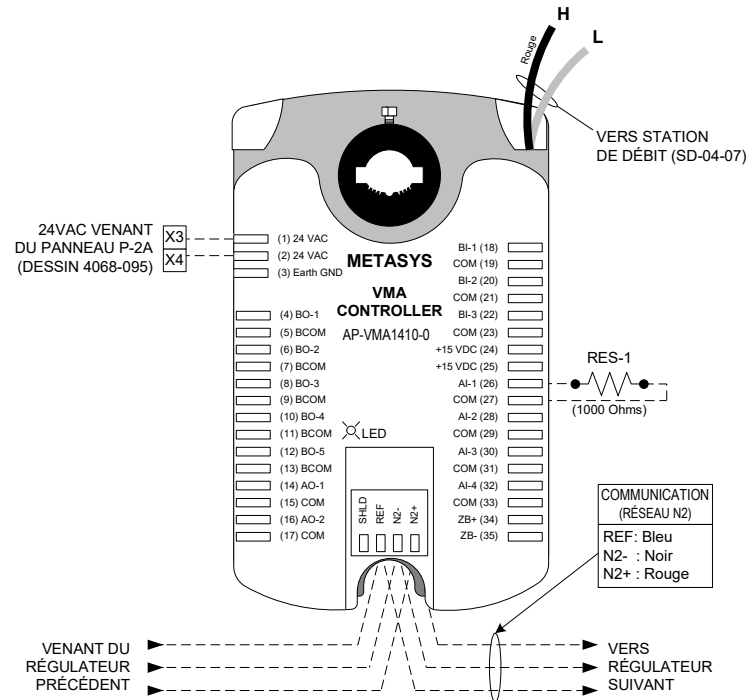
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-04 et AC-07 (VMA-2-104) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

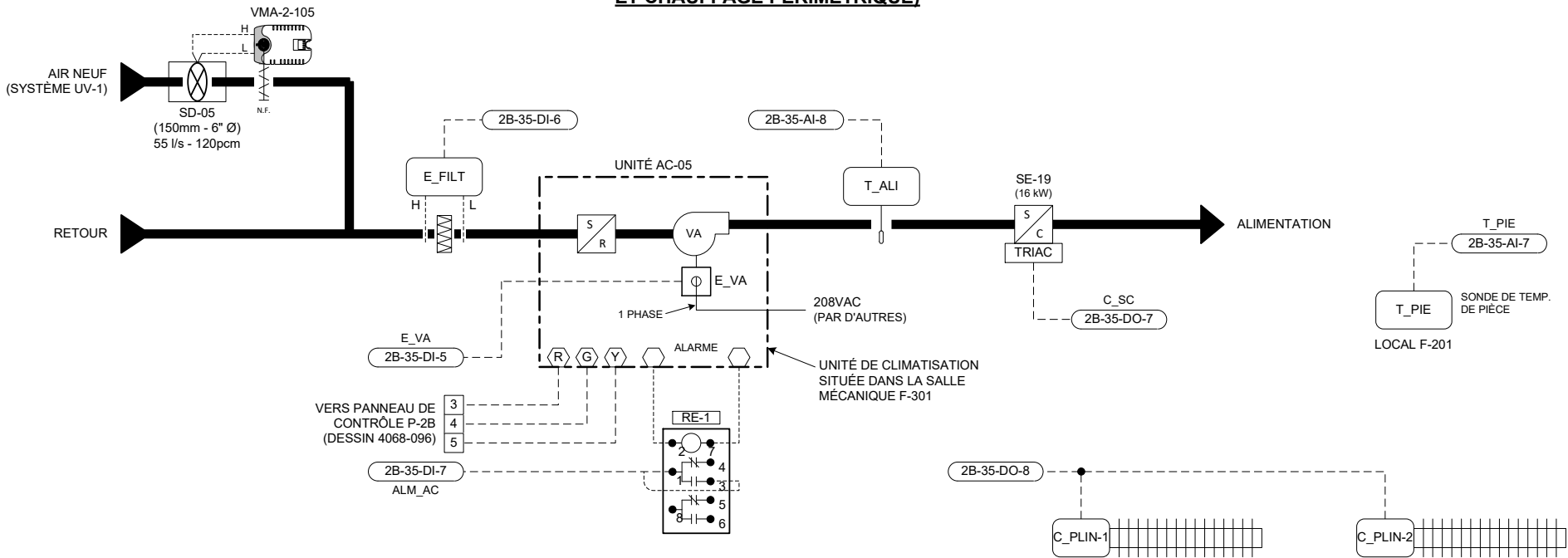
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-04 ou AC-07), le régulateur (VMA-2-104) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsque l'unité AC-04 est en fonction.
 - 50 l/s (105 pcm) lorsque l'unité AC-07 est en fonction.
 - 105 l/s (225 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-104)

[illegible]

UNITÉ DE CLIMATISATION AC-05 - LOCAL F-201
(TYPE 3 - UNITÉ DE CLIMATISATION AVEC SERPENTIN ÉLECTRIQUE
ET CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

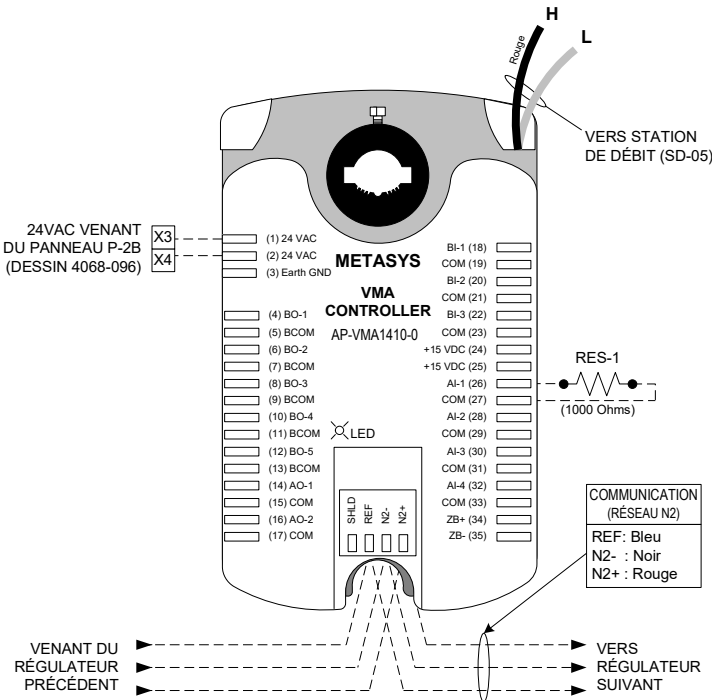
IDENT.	QTE	MODÈLE	DESCRIPTION
C_PLIN-1	1	CCT-15-1-C1	RELAIS TRIAC,15Amps.,347/1/60,PLAQUE 4"x4"
C_PLIN-2	1	CCT-30-1-C1	RELAIS TRIAC,30Amps.,600/1/60,PLAQUE 4 11/16"x4 11/16"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VA	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-105	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-05	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 3)

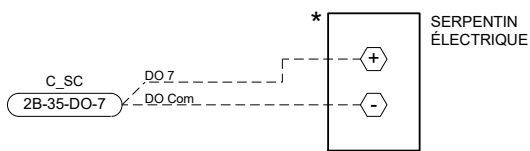
- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-105) est fermé.
 - La sonde de pièce (T_PIE) contrôle les relais de plinthes chauffantes (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-105) module son volet afin de maintenir le débit d'air neuf requis (55 l/s - 120 pcm).
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, le serpentín de chauffage (SE-19) est modulé à l'aide d'impulsions. Lorsque la demande de chauffage atteint 50%, les relais de plinthes chauffantes (C_PLIN) sont activés de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

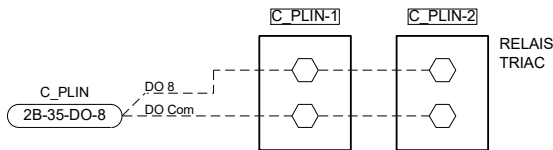
RACCORDEMENTS DU RÉGULATEUR (VMA-2-105)



RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-19)

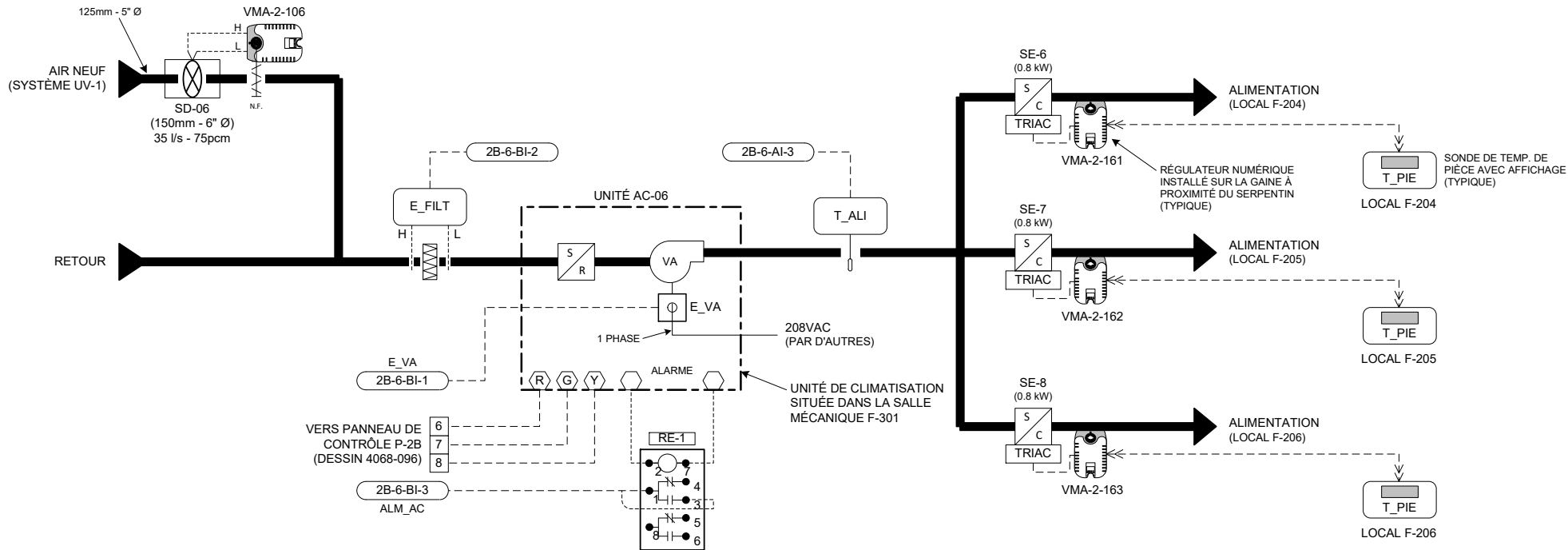


RACCORDEMENTS DES RELAIS DE PLINTHES CHAUFFANTES (C_PLIN)



Titre du Dessin					
Unité de climatisation AC-05 Local F-201 Type 3 (Unité avec serpentín de chauffage et chauffage pérím.)		2	TEL QUE CONSTRUIT	D.B.	02/04/24 O.P.
		1	POUR APPROBATION		6/12/2001 D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-066	

UNITÉ DE CLIMATISATION AC-06 - LOCAUX F-204, F-205 ET F-206
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	3	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-106	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-161 À 163	3	AP-VMA1420-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF.
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-06	1	RMS-6	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

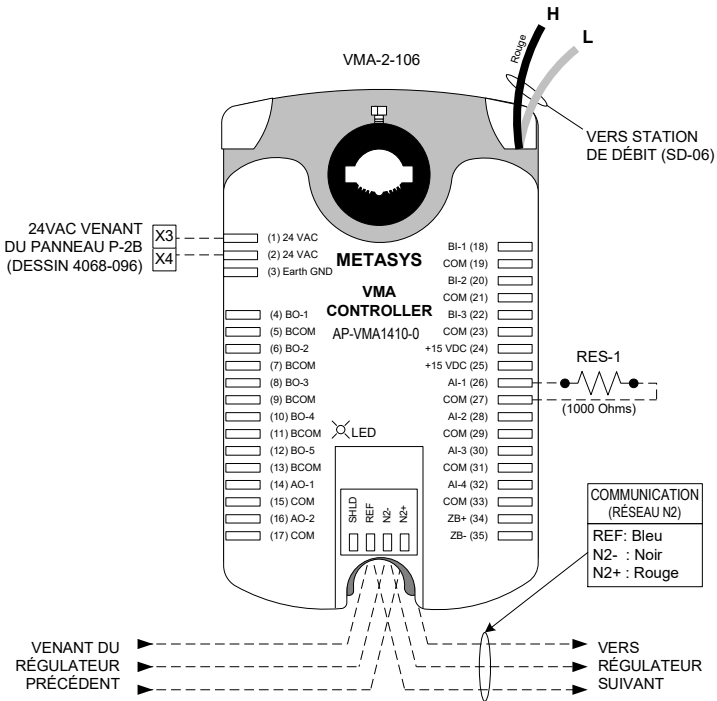
SÉQUENCE D'OPÉRATION (TYPE 2)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-106) est fermé.

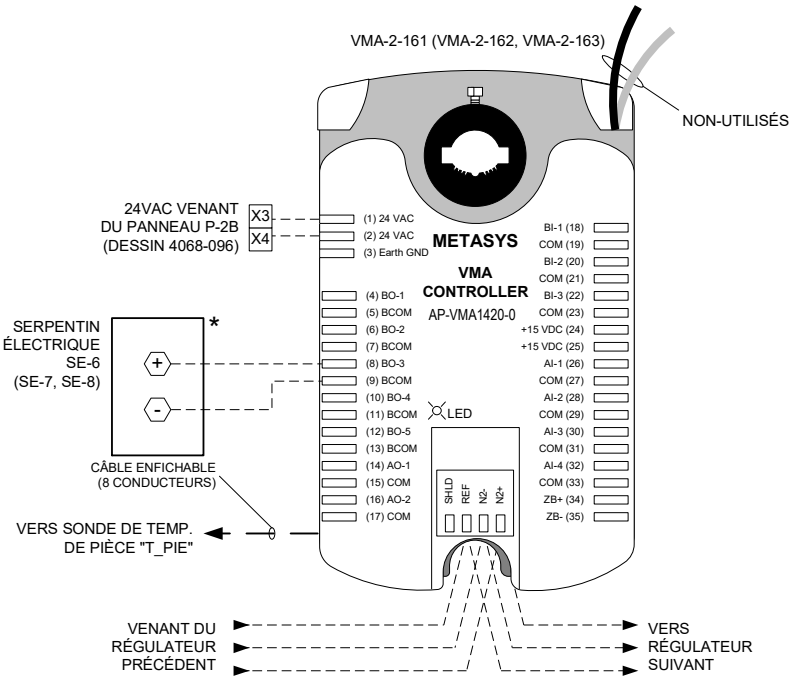
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-106) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
 - Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de l'une des trois pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-16x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-106)



RACCORDEMENTS DES RÉGULATEURS (VMA-2-161, 162 ET 163)
(TYPIQUE POUR 3)



Titre du Dessin		2		TEL QUE CONSTRUIT		D.B.	02/04/24	O.P.
Unité de climatisation AC-06 Locaux F-204, F-205 et F-206 Type 2 (Unité de climatisation pour bureaux)		1		POUR APPROBATION			6/12/2001	D.B.
Dessin de Référence		NO.		REVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	Dessine		Approuve		Date	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	5/22/2001	PAR	5/22/2001
Nom du Projet		Information Succursale		NUMERO CONTRAT				
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMERO DESSIN 4068-067		

UNITÉ DE CLIMATISATION AC-07 - LOCAL F-200
(TYPE 3 - UNITÉ DE CLIMATISATION AVEC SERPENTIN ÉLECTRIQUE
ET CHAUFFAGE PÉRIMÉTRIQUE)

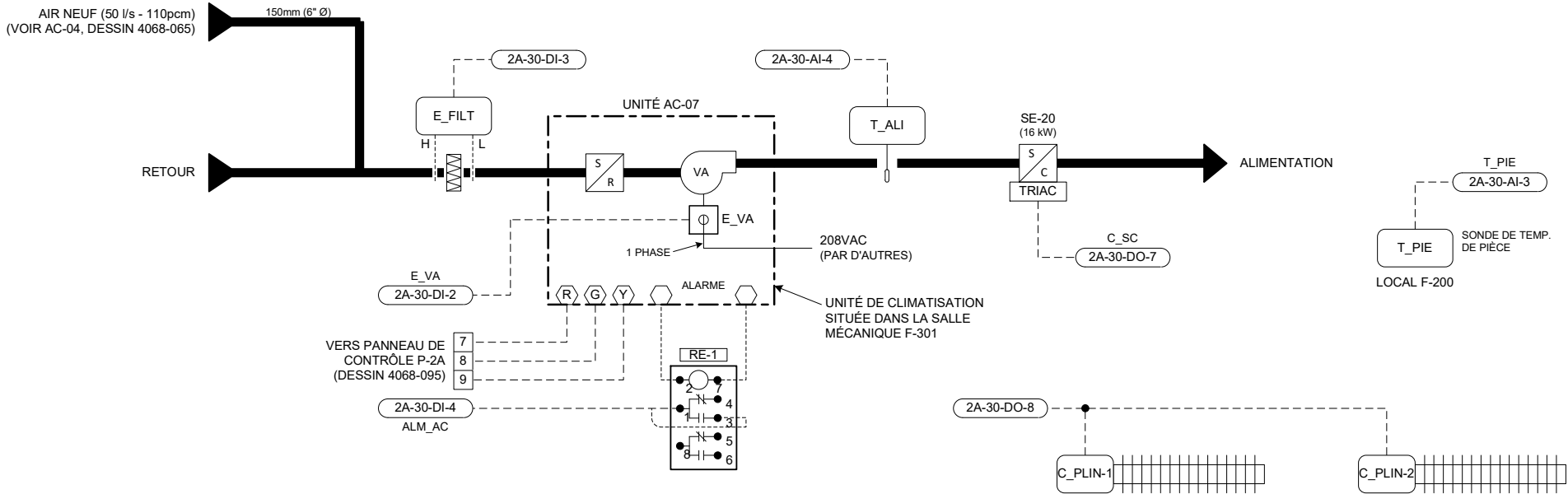
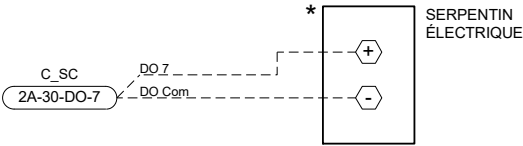
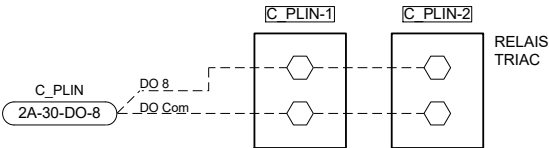


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-20)



RACCORDEMENTS DES RELAIS DE PLINTHES CHAUFFANTES (C_PLIN)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PLIN-1,2	2	CCT-25-1-C1	RELAIS TRIAC, 25Amps, .347/1/60, PLAQUE 4"x4"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VA	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI

SÉQUENCE D'OPÉRATION (TYPE 3)

À L'ARRÊT:

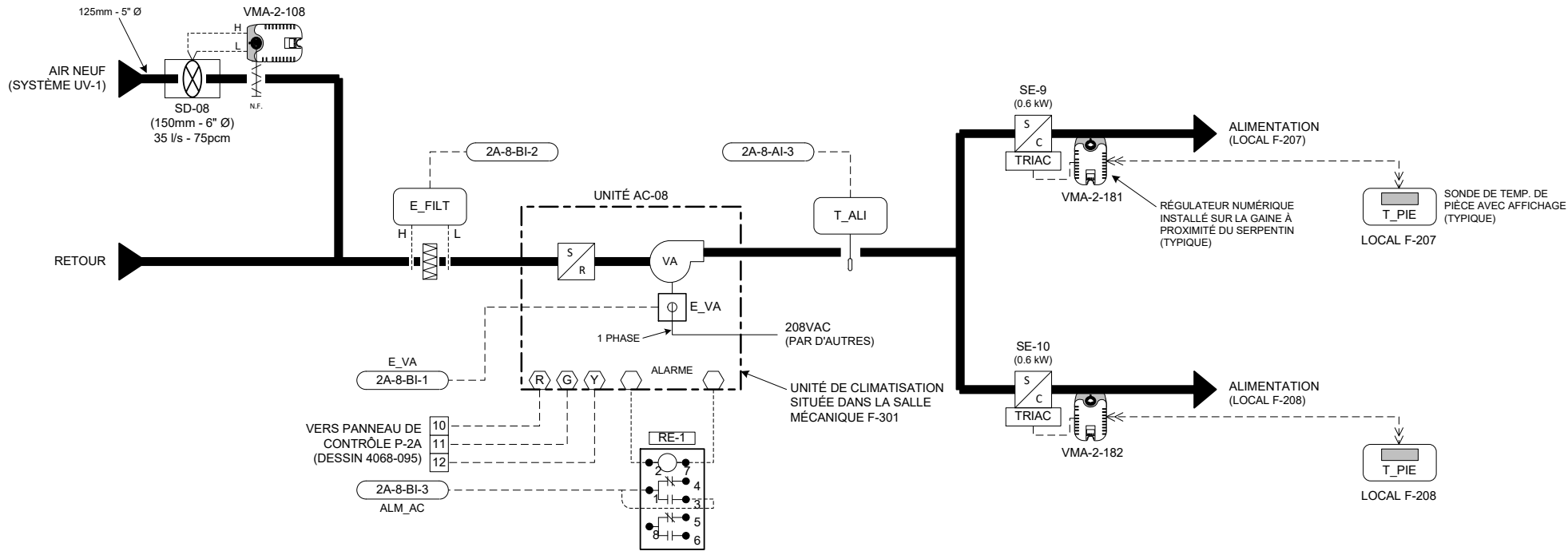
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-04 et AC-07 (VMA-2-104, dessin 4068-065) est fermé.
- La sonde de pièce (T_PIE) contrôle les relais de plinthes chauffantes (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-04 ou AC-07), le régulateur (VMA-2-104, dessin 4068-065) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsque l'unité AC-04 est en fonction.
 - 50 l/s (105 pcm) lorsque l'unité AC-07 est en fonction.
 - 105 l/s (225 pcm) lorsque les deux unités fonctionnent.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, le serpentin de chauffage (SE-20) est modulé à l'aide d'impulsions. Lorsque la demande de chauffage atteint 50%, les relais de plinthes chauffantes (C_PLIN) sont activés de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin											
Unité de climatisation AC-07 Local F-200 Type 3 (Unité avec serpentin de chauffage et chauffage périm.)				1		TEL QUE CONSTRUIT		D.B.		02/04/24 O.P.	
				1		POUR APPROBATION				6/12/2001 D.B.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE			
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/22/2001		PAR DATE 5/22/2001			
Nom du Projet		<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>		Information Succursale Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc. H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMERO CONTRAT 1096-0093		NUMERO DESSIN 4068-068			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)											

UNITÉ DE CLIMATISATION AC-08 - LOCAUX F-207 ET F-208
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	2	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-108	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-181, 182	2	AP-VMA1420-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF.
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-08	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

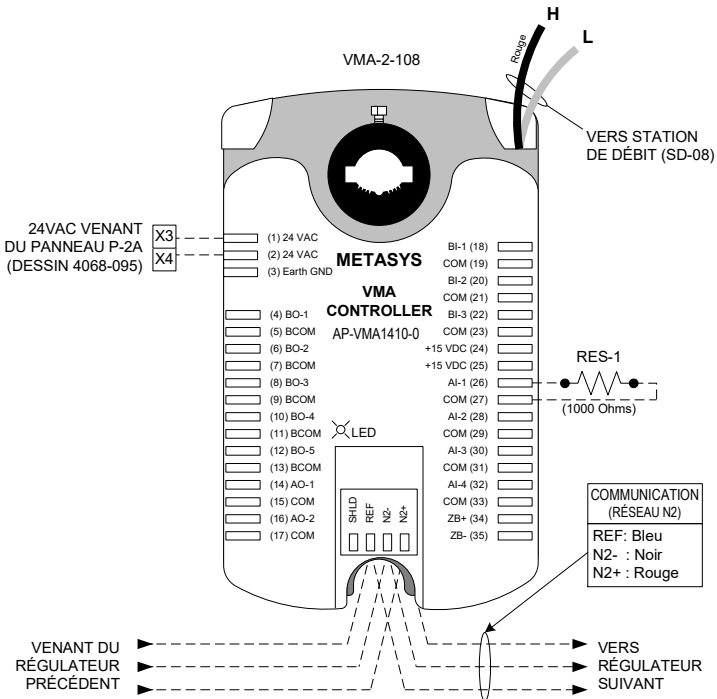
SÉQUENCE D'OPÉRATION (TYPE 2)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-108) est fermé.

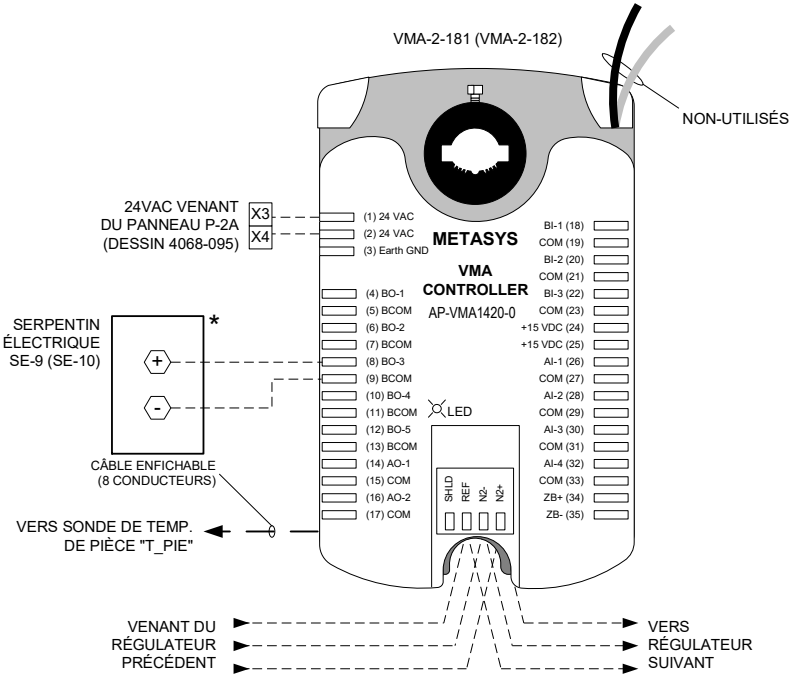
- EN MARCHE:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-108) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
 - Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de l'une des deux pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-18x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-108)

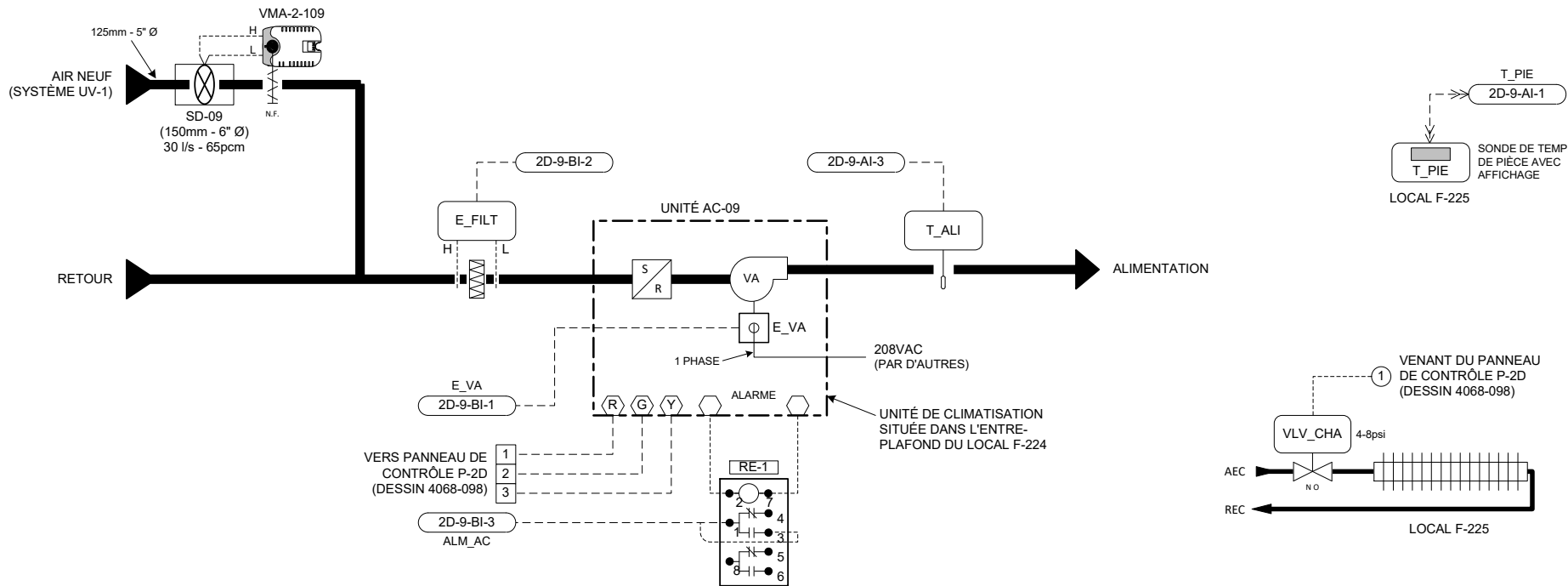


RACCORDEMENTS DES RÉGULATEURS (VMA-2-181 ET VMA-2-182)
(TYPIQUE POUR 2)



Titre du Dessin		1		TEL QUE CONSTRUIT		D.B.		02/04/24		O.P.	
Unité de climatisation AC-08 Locaux F-207 et F-208 Type 2 (Unité de climatisation pour bureaux)		1		POUR APPROBATION				6/12/2001		D.B.	
DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE		NUMERO CONTRAT	
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B.		DATE 5/22/2001		DATE 5/22/2001	
Nom du Projet		CRDA ST-HYACINTHE		Projet d'Innovation Technologique		3600, boul. Casavant		St-Hyacinthe (Québec)		JOHNSON CONTROLS	
										Johnson Controls Ltée	
										355, boul. Montpellier	
										St-Laurent, Qc, H4N 2G6	
										Tél: (514) 747-2580	
										Fax: (514) 747-9562	
										1096-0093	
										NUMERO DESSIN	
										4068-069	

UNITÉ DE CLIMATISATION AC-09 - LOCAL F-225
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

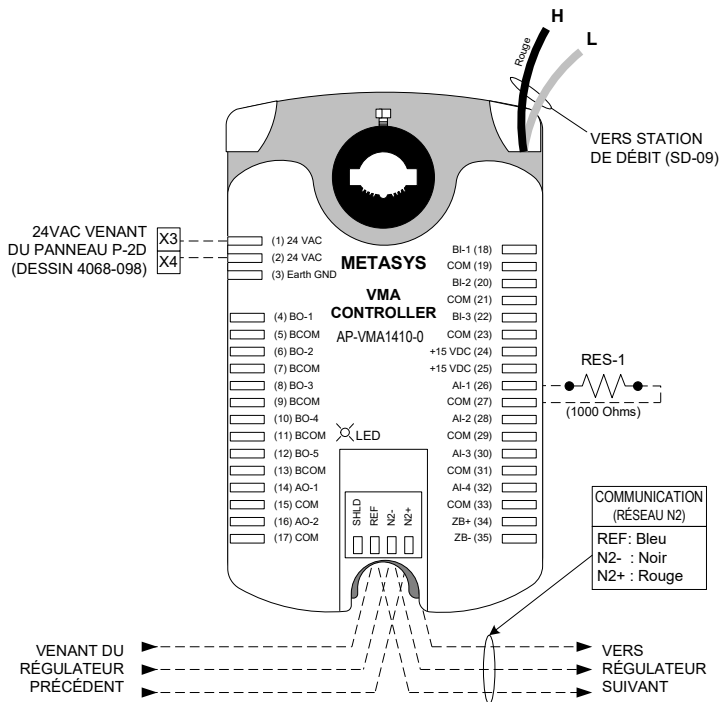
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-109	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-09	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-109) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHE:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-109) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

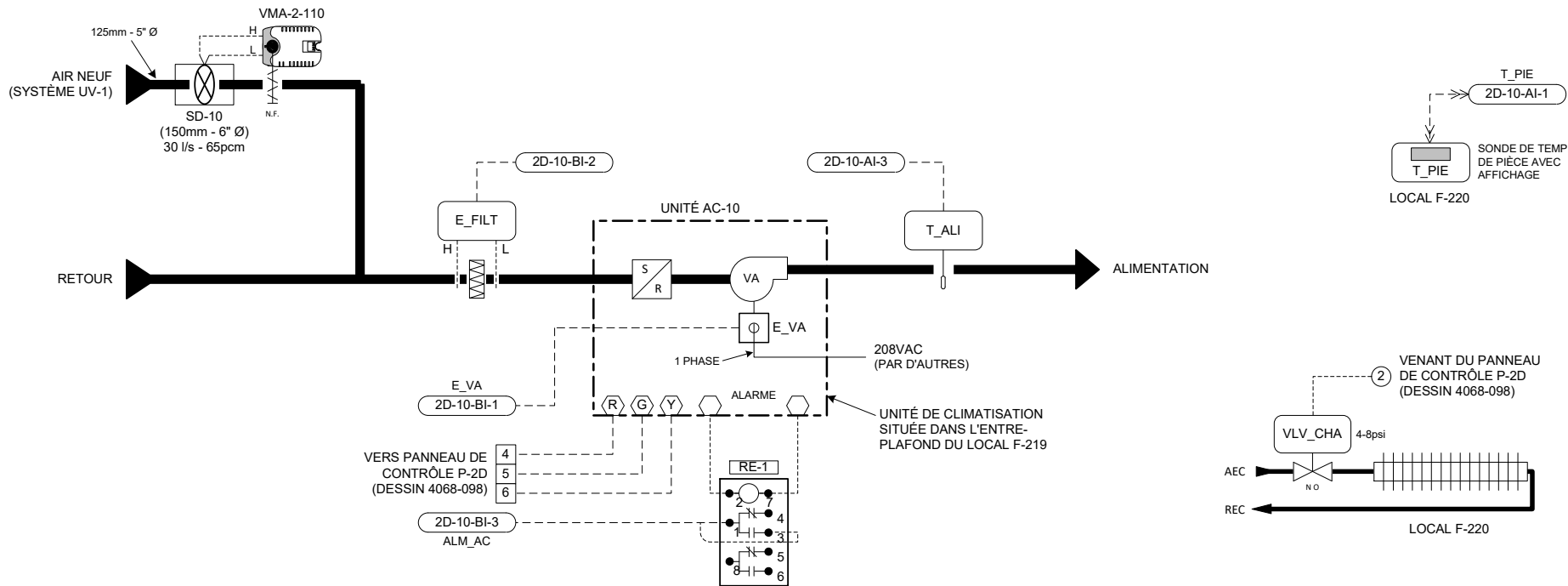
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-109)



Titre du Dessin					
Unité de climatisation AC-09 Local F-225 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24
		1	POUR APPROBATION		6/12/2001
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-070	

UNITÉ DE CLIMATISATION AC-10 - LOCAL F-220
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



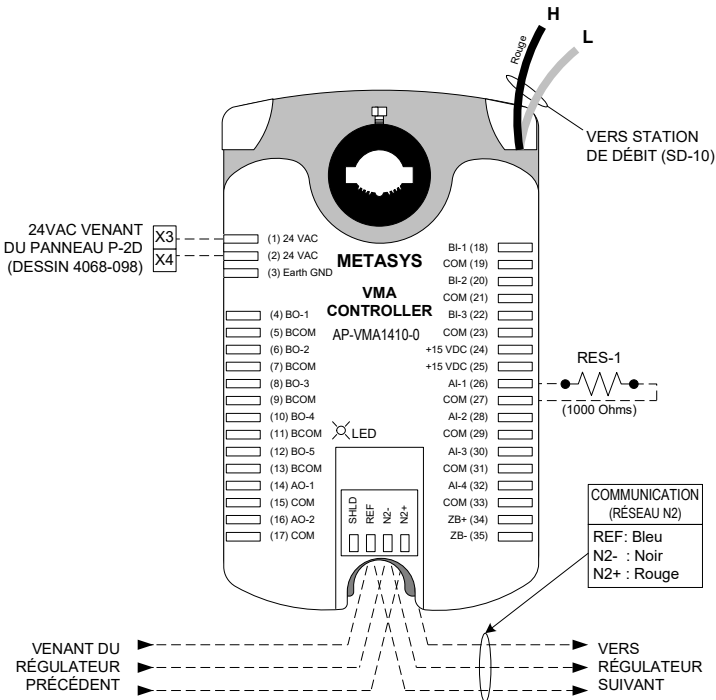
LISTE DE MATÉRIEL			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-110	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-10	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-110) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-110) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

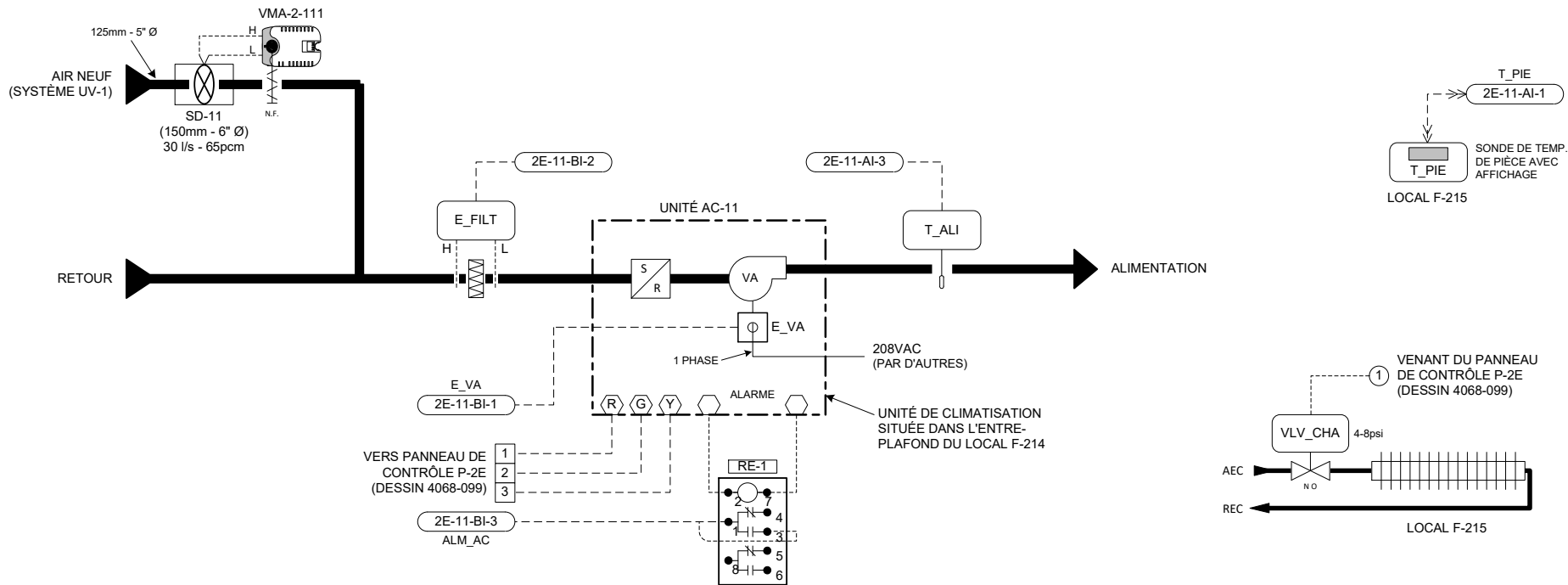
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-110)



Titre du Dessin					
Unité de climatisation AC-10 Local F-220		2	TEL QUE CONSTRUIT	D.B.	02/04/24
Type 1 (Unité avec chauffage périmétrique)		1	POUR APPROBATION		6/12/2001
Représentant		NO.		REVISION	
J.-C. Rouillon	S. Bourque	D. Bouchard		ECN	
Nom du Projet		DATE		DATE	
CRDA ST-HYACINTHE		5/22/2001		5/22/2001	
Projet d'Innovation Technologique		Information Succursale		NUMERO CONTRAT	
3600, boul. Casavant		Johnson Controls Ltée		1096-0093	
St-Hyacinthe (Québec)		355, boul. Montpeller		NUMERO DESSIN	
		St-Laurent, Qc, H4N 2G6		4068-071	
		Tél: (514) 747-2580			
		Fax: (514) 747-9562			

UNITÉ DE CLIMATISATION AC-11 - LOCAL F-215
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

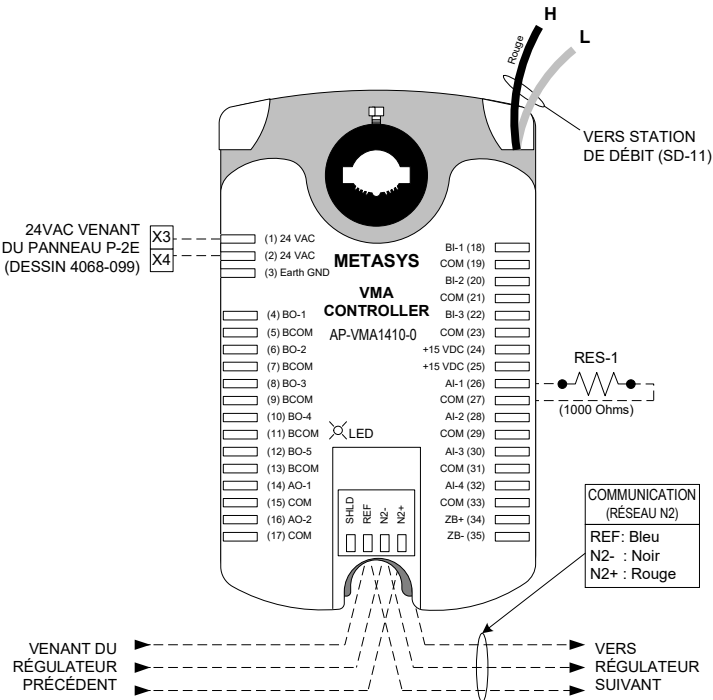
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-111	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-11	1	RMS-6	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-111) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-111) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

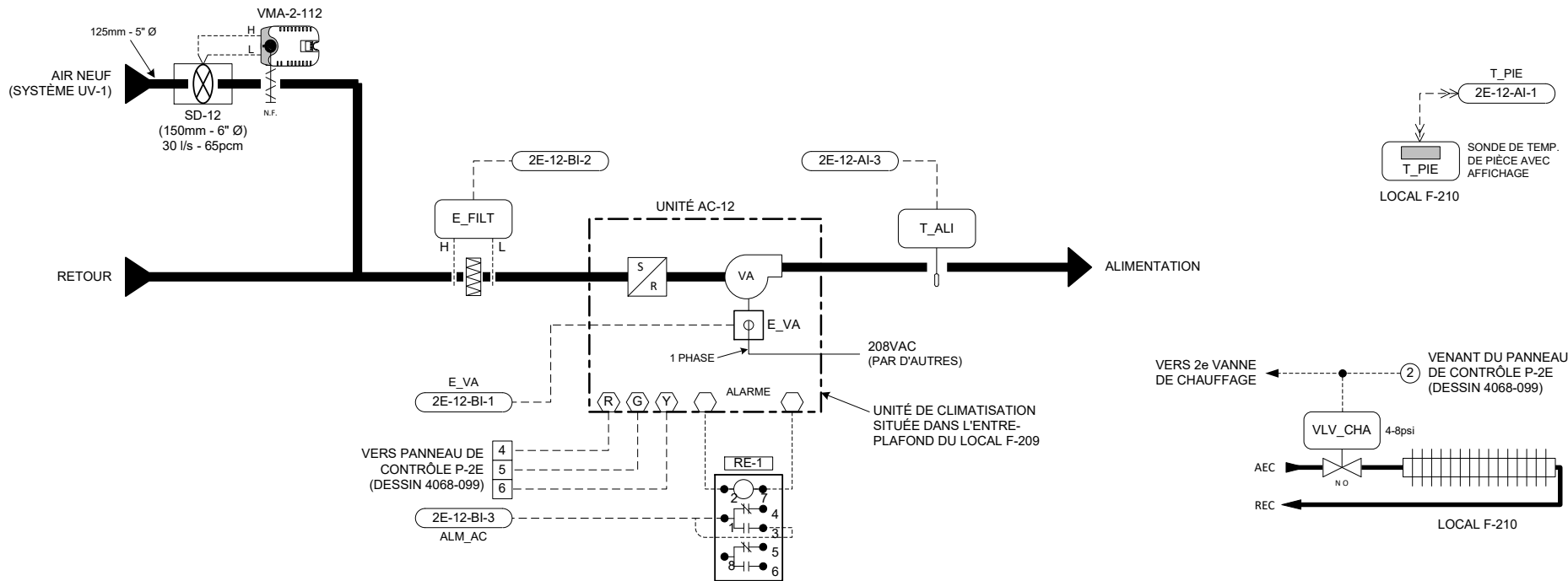
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-111)



Titre du Dessin					
Unité de climatisation AC-11 Local F-215 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24
		1	POUR APPROBATION		6/12/2001
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-072	

UNITÉ DE CLIMATISATION AC-12 - LOCAL F-210
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-112	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-12	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

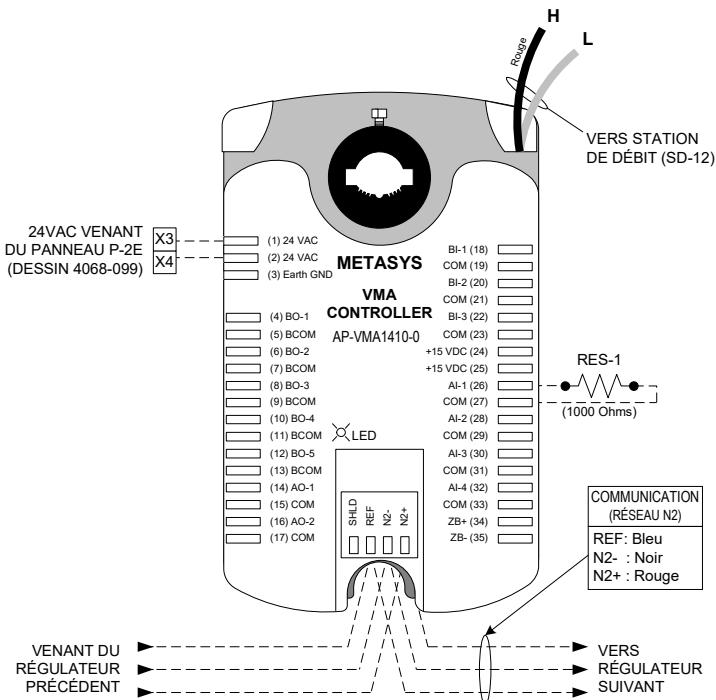
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-112) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-112) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

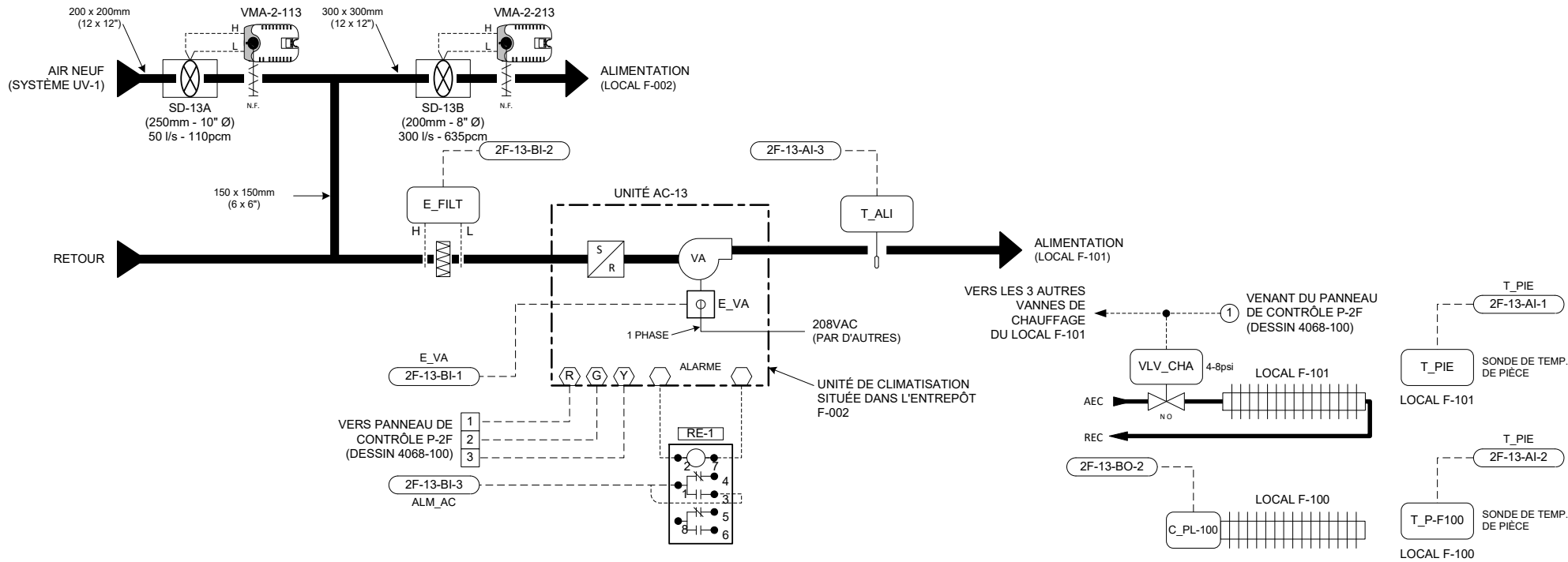
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-112)



Titre du Dessin					
Unité de climatisation AC-12 Local F-210 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24
		1	POUR APPROBATION		6/12/2001
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-073	

UNITÉ DE CLIMATISATION AC-13 - LOCAL F-101
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

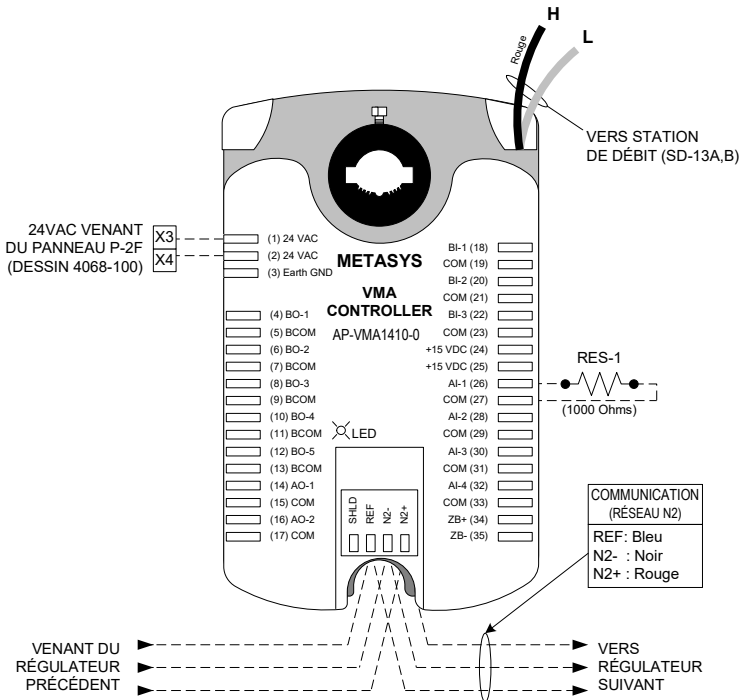
IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PL-100	1	CCT-15-1-C1	RELAIS TRIAC, 15AMPS, 347/1/60 C/A PALQUE 4"x4"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VA	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE, T_P_F100	2	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VLV_CHA	4	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-113, 213	2	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	2	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-13A	1	RMS-10	STATION DE MESURE DE VÉLOCITÉ 250mm, 10" Ø - EH PRICE
SD-13B	1	RMS-8	STATION DE MESURE DE VÉLOCITÉ 200mm, 8" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-113) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
 - Le régulateur (VMA-2-213) module son volet afin de maintenir le débit d'air neuf d'alimentation du local F-002 à 300 l/s (635 pcm).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-113) module son volet afin de maintenir le débit d'air neuf requis (50 l/s - 110 pcm).
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

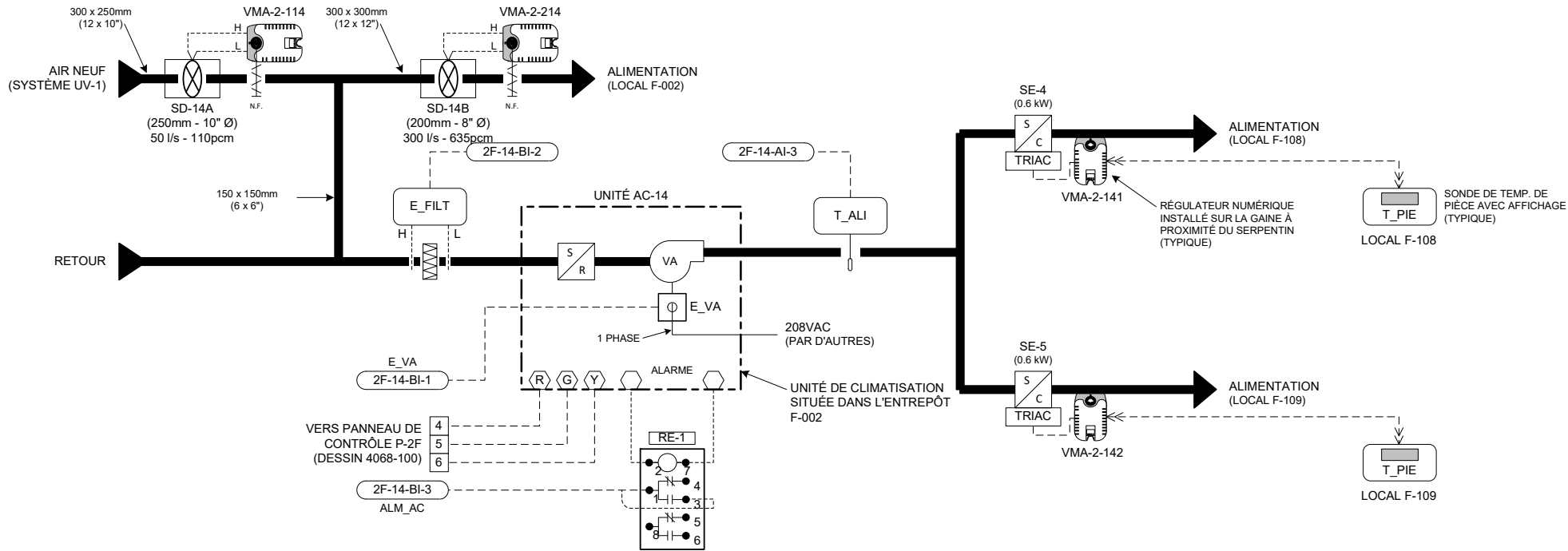
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES RÉGULATEURS (VMA-2-113 ET VMA-2-213)



Titre du Dessin					
Unité de climatisation AC-13 Local F-101 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/29 O.P.
		1	POUR APPROBATION		12/06/01 D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-074	

UNITÉ DE CLIMATISATION AC-14 - LOCAUX F-108 ET F-109
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

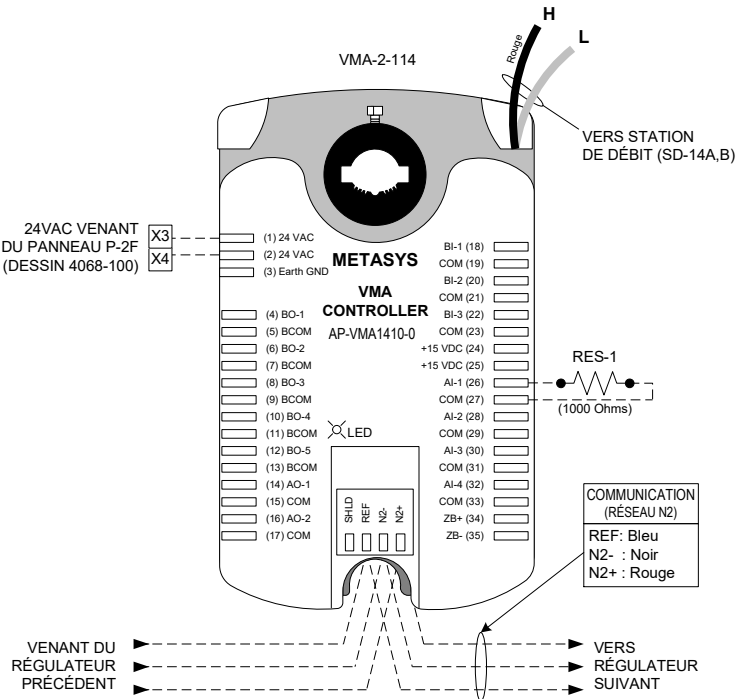
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	2	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-114,214	2	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-141,142	2	AP-VMA1430-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF., SANS ACTUATEUR
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
SD-14A	1	S-408	BASE DE RELAIS 8 BROCHES
SD-14B	1	RMS-10	STATION DE MESURE DE VÉLOCITÉ 250mm, 10" Ø - EH PRICE
	1	RMS-8	STATION DE MESURE DE VÉLOCITÉ 200mm, 8" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 2)

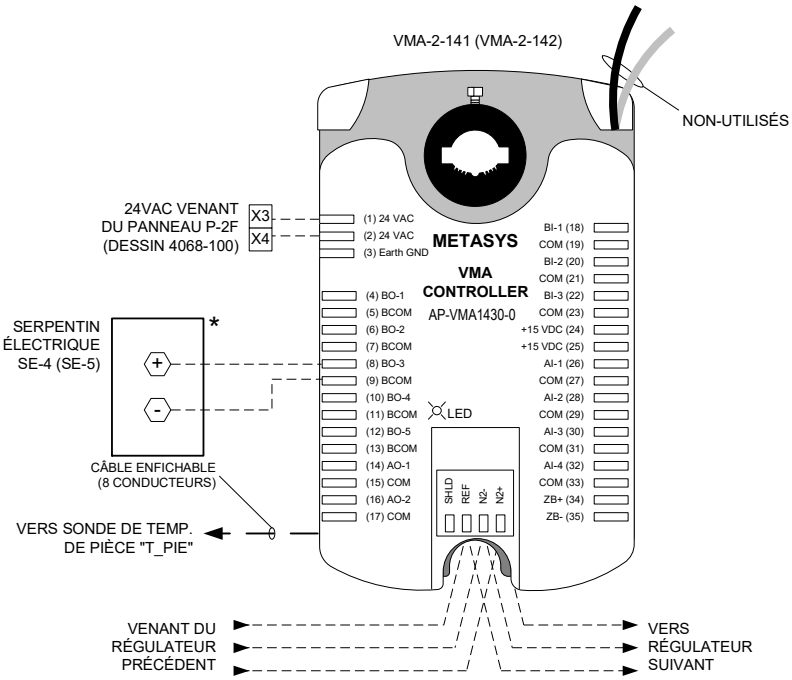
- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-108) est fermé.
 - Le régulateur (VMA-2-214) module son volet afin de maintenir le débit d'air neuf d'alimentation du local F-002 à 290 l/s (615 pcm).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-114) module son volet afin de maintenir le débit d'air neuf requis (50 l/s - 110 pcm).
 - Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de l'une des deux pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-18x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES RÉGULATEURS (VMA-2-114 ET VMA-2-214)

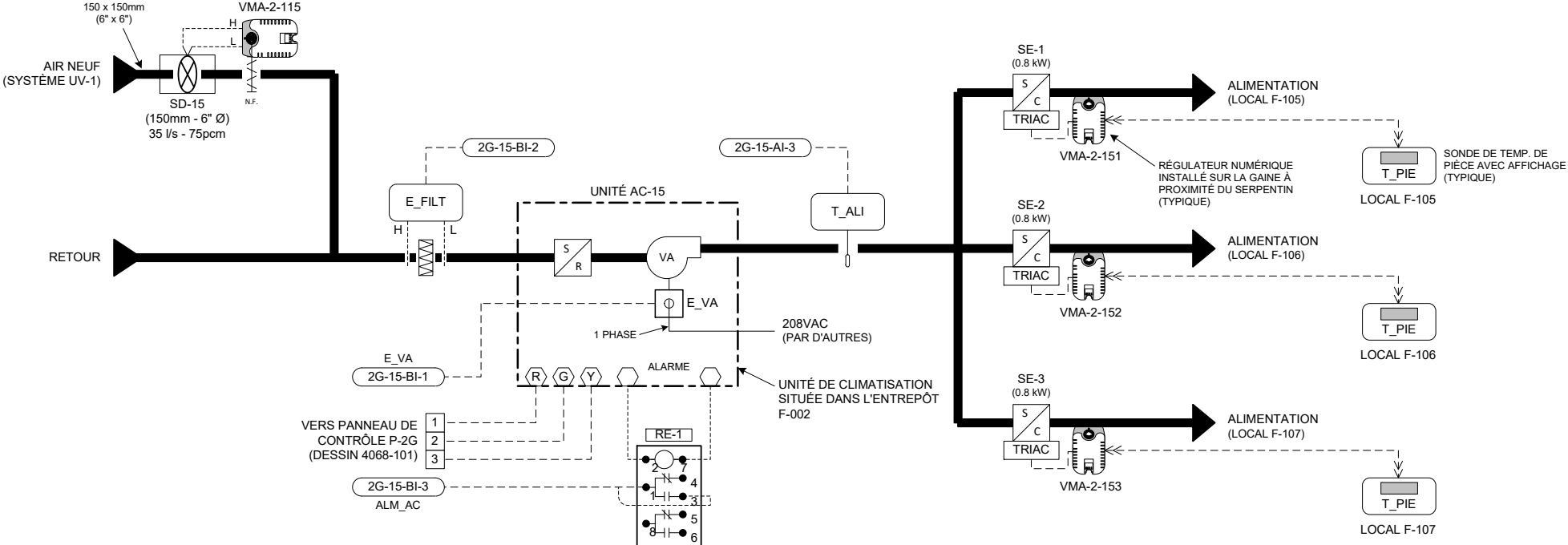


RACCORDEMENTS DES RÉGULATEURS (VMA-2-141 ET VMA-2-142)
(TYPIQUE POUR 2)



Titre du Dessin											
Unité de climatisation AC-14 Locaux F-108 et F-109 Type 2 (Unité de climatisation pour bureaux)				2		TEL QUE CONSTRUIT		D.B.		02/04/29 O.P.	
				1		POUR APPROBATION				12/06/01 D.B.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE	
		PAR		D.B.		DATE		5/22/2001		PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE		NUMERO CONTRAT	
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/22/2001		PAR DATE 5/22/2001			
Nom du Projet						Information Succursale				NUMERO DESSIN	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation				Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093			

UNITÉ DE CLIMATISATION AC-15 - LOCAUX F-105, F-106 ET F-107
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATERIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	3	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-115	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-151 À 153	3	AP-VMA1430-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF., SANS ACTUATEUR
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-15	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

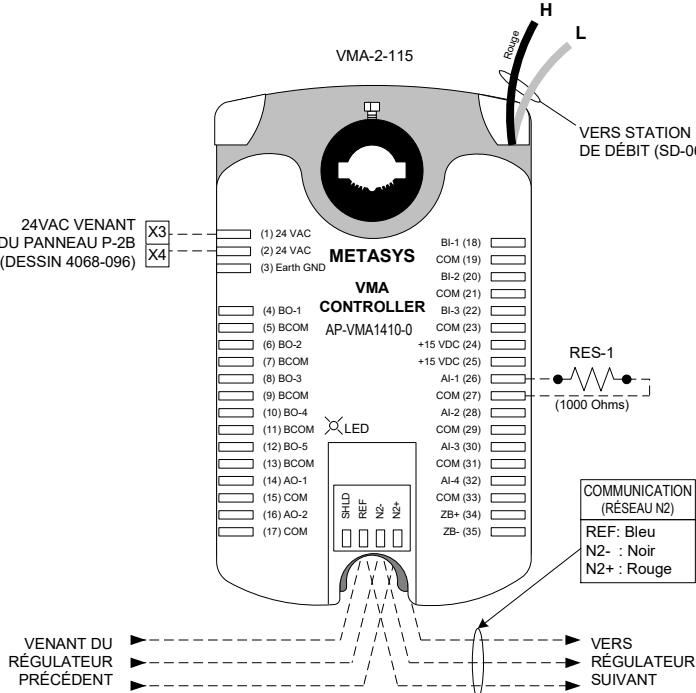
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-115) est fermé.

EN MARCHÉ:

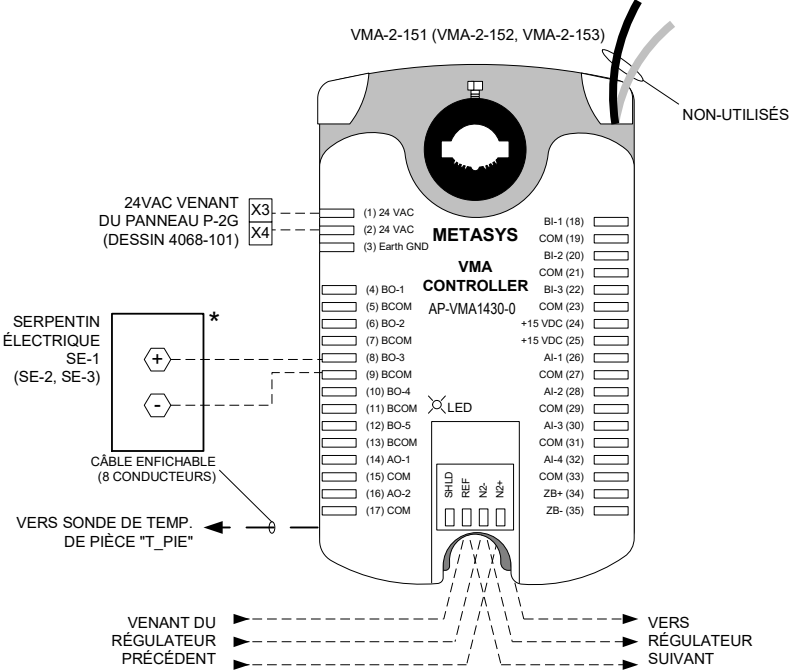
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-115) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des trois pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-15x), module (à l'aide d'impulsions) son serpentín de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

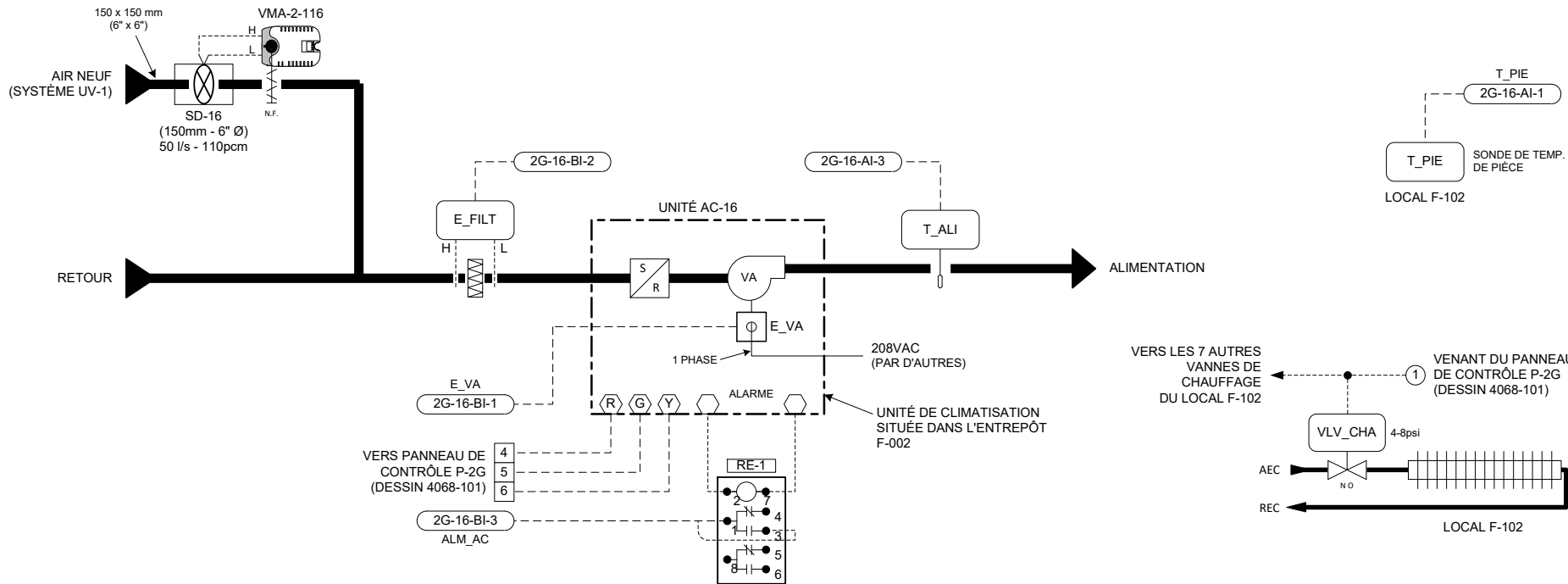
RACCORDEMENTS DU RÉGULATEUR (VMA-2-115)



RACCORDEMENTS DES RÉGULATEURS (VMA-2-151, 152 ET 153) (TYPIQUE POUR 3)

[illegible]

UNITÉ DE CLIMATISATION AC-16 - LOCAL F-102
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

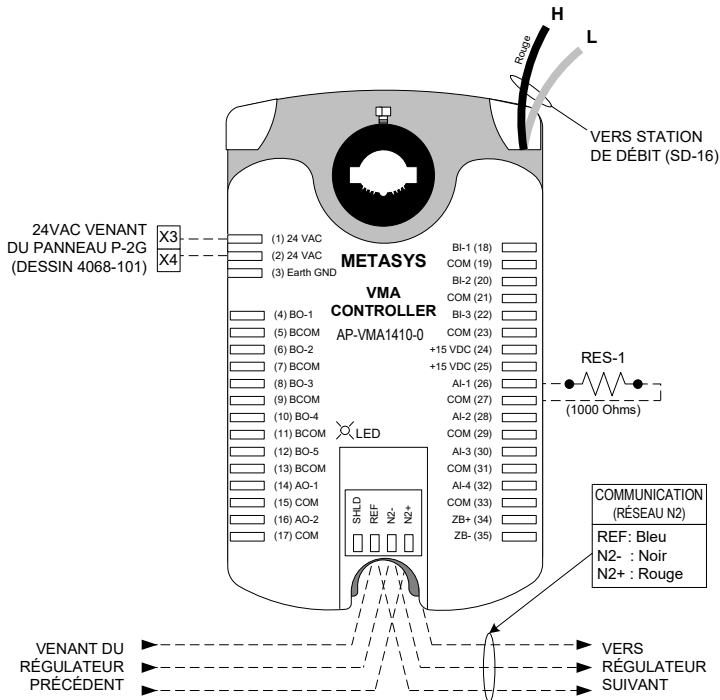
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
VLV_CHA	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-116	8	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-16	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-116) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHE:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-116) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

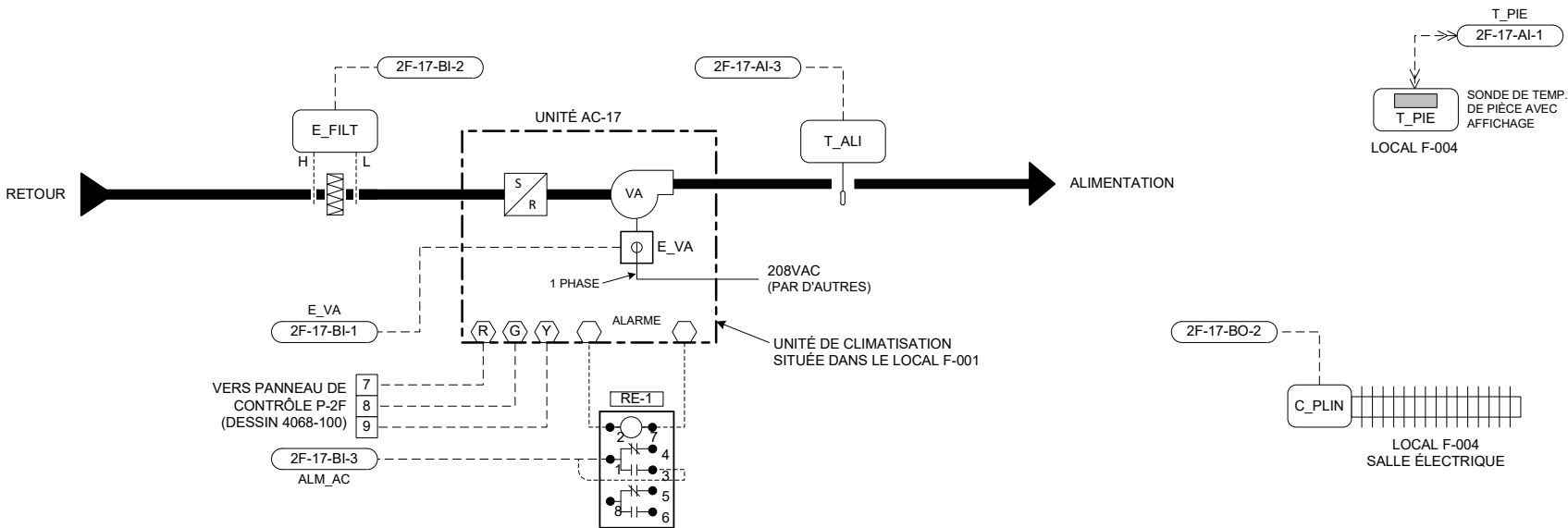
DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-116)



Titre du Dessin					
Unité de climatisation AC-16 Local F-102 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24 O.P.
		1	POUR APPROBATION		6/12/2001 D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-077	

UNITÉ DE CLIMATISATION AC-17 - LOCAL F-004
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

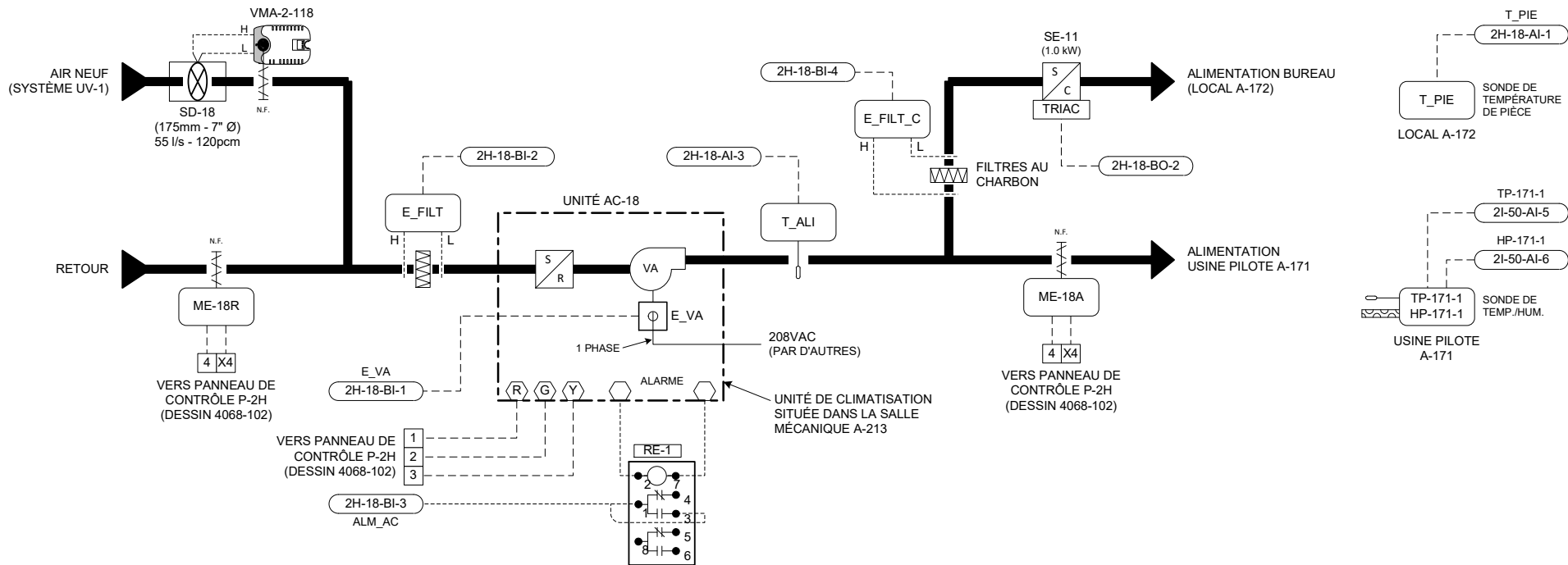
IDENT.	QTE	MODÈLE	DESCRIPTION
C_PLIN	1	CCT-10-1-C1	RELAIS TRIAC, 10Amps.,347/1/60, PLAQUE 4"x4"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALI	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
T_PIE	1	S-408	BASE DE RELAIS 8 BROCHES
	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - La sonde de pièce (T_PIE) contrôle le relais de la plinthe chauffante (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, le relais triac (C_PLIN) de la plinthe chauffante est activé afin de maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin													
Unité de climatisation AC-17 Local F-004 Type 1 (Unité avec chauffage périmétrique)				2		TEL QUE CONSTRUIT		D.B.		02/04/24 O.P.			
				1		POUR APPROBATION				6/12/2001 D.B.			
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE					
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/22/2001		PAR DATE 5/22/2001					
Nom du Projet						Information Succursale		NUMERO CONTRAT					
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093		NUMERO DESSIN					
								4068-078					

UNITÉ DE CLIMATISATION AC-18 - LOCAUX A-171 ET A-172
(TYPE 4 - USINE PILOTE A-171)



LISTE DE MATÉRIEL

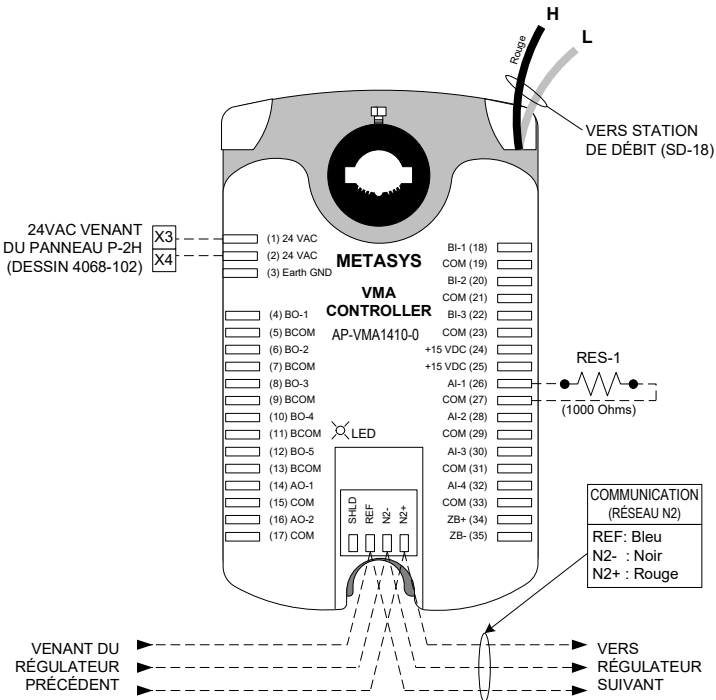
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
ME-18A, ME-18R	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	2	M9206-AGA-2	ACTUATEUR DE VOLET 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-171-1 / HP-171-1	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-118	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-18	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

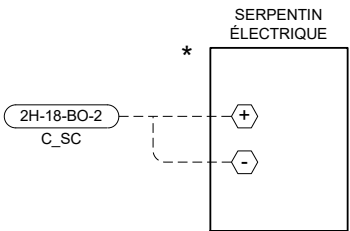
- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le serpentin de chauffage est inopérant.
 - Le volet d'air neuf (VMA-2-118) est fermé.
- EN MARCHE:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-118) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
 - Sur une hausse de température de l'usine pilote (sonde TP-171-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage dans le bureau A-172 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-118)



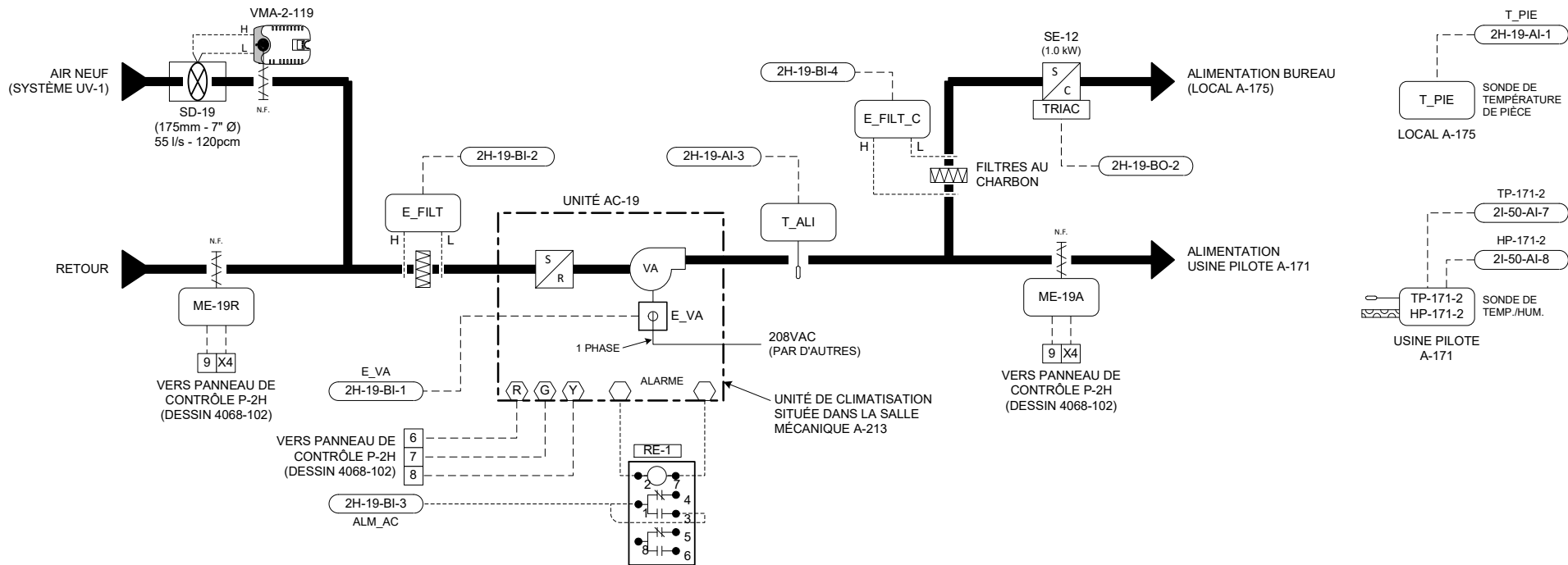
RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-11)



VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-171

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-18		2	POUR CONSTRUCTION		9/18/2001	D.B.
Type 4 (Usine pilote A-171)		1	POUR APPROBATION		6/12/2001	D.B.
(Locaux A-171 et A-172)						
Norm du Projet						
CRDA ST-HYACINTHE						
Projet d'Innovation Technologique						
3600, boul. Casavant						
St-Hyacinthe (Québec)						
Représentant		Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon		S. Bourque	D. Bouchard	PAR D.B.	DATE 5/22/2001	PAR DATE 5/22/2001
Information Succursale						
NUMERO CONTRAT						
JOHNSON CONTROLS						
Groupe de la régulation						
Johnson Controls Ltée						
355, boul. Montpellier						
St-Laurent, Qc, H4N 2G6						
Tél: (514) 747-2580						
Fax: (514) 747-9562						
1096-0093						
NUMERO DESSIN						
4068-079						

UNITÉ DE CLIMATISATION AC-19 - LOCAUX A-171 ET A-175
(TYPE 4 - USINE PILOTE A-171)



LISTE DE MATÉRIEL

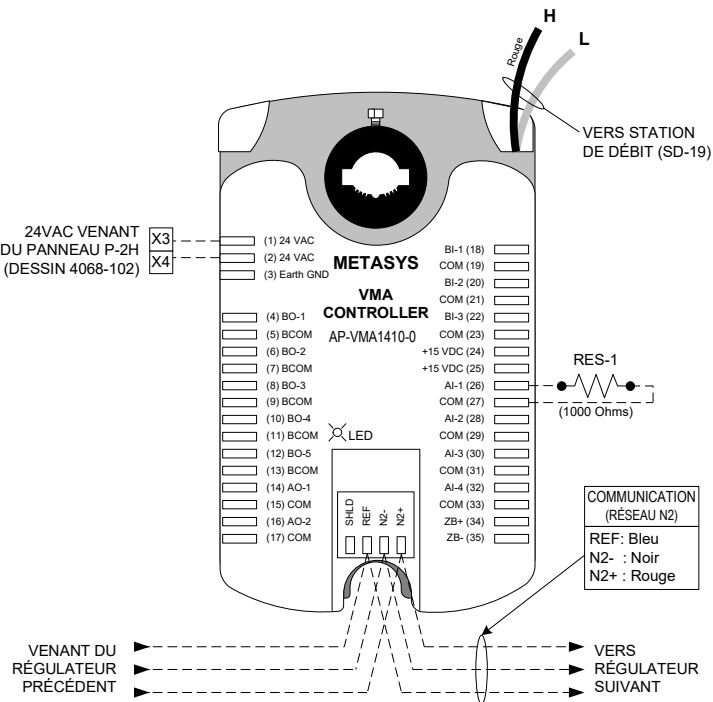
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
ME-18A, ME-18R	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	2	M9206-AGA-2	ACTUATEUR DE VOLET 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-171-1 / HP-171-1	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-118	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-18	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

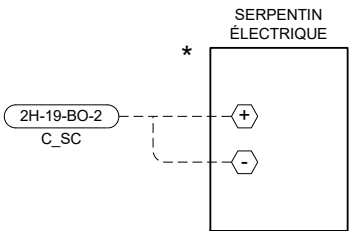
- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le serpentin de chauffage est inopérant.
 - Le volet d'air neuf (VMA-2-119) est fermé.
- EN MARCHE:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-119) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
 - Sur une hausse de température de l'usine pilote (sonde TP-171-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage dans le bureau A-175 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (C_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-119)



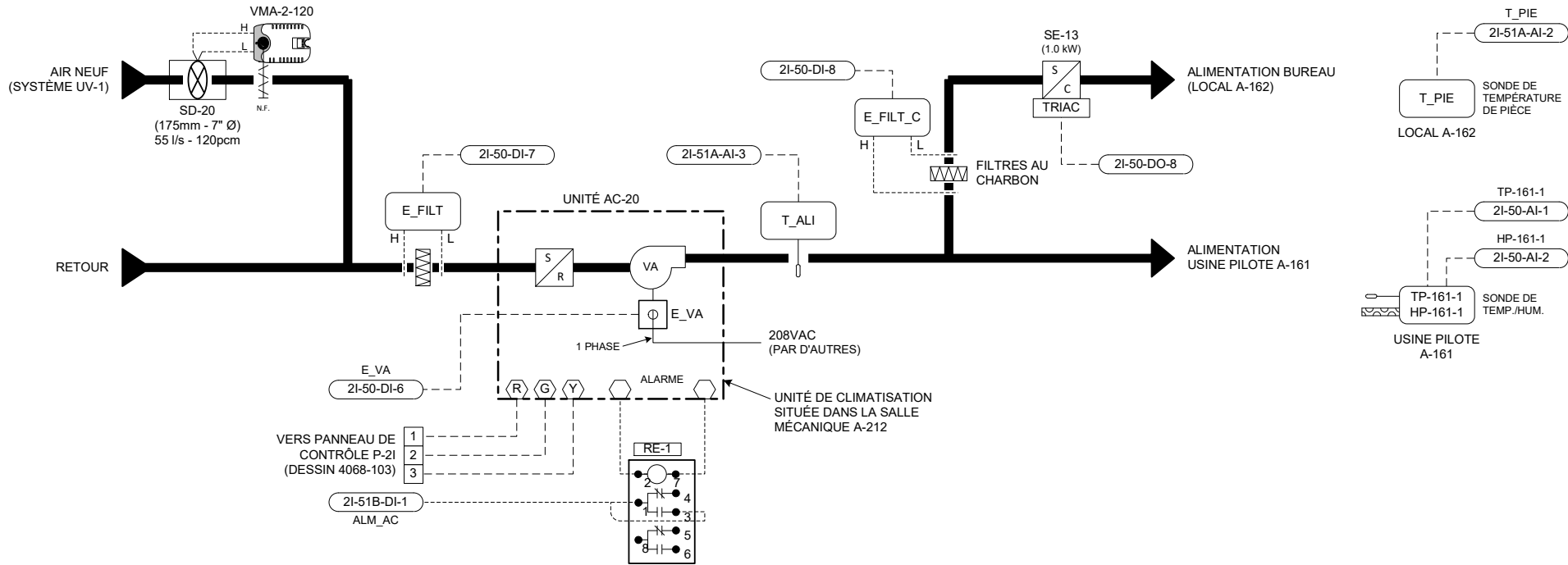
RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-12)



VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-171

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-19 Type 4 (Usine pilote A-171) (Locaux A-171 et A-175)		2	POUR CONSTRUCTION		9/18/2001	D.B.
		1	POUR APPROBATION		6/12/2001	D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR	DATE 5/22/2001	
Norm du Projet		JOHNSON CONTROLS		1096-0093		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMERO DESSIN 4068-080		
		Groupe de la régulation				

UNITÉ DE CLIMATISATION AC-20 - LOCAUX A-161 ET A-162
(TYPE 4 - USINE PILOTE A-161)



LISTE DE MATÉRIEL

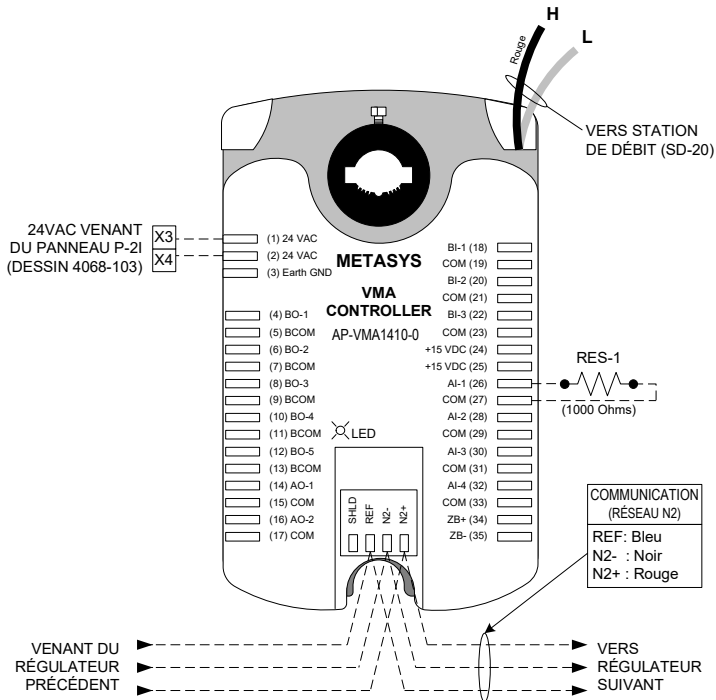
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-161-1 / HP-161-1	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-120	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
RES-1	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-20	1	S-408	RELAIS 2PDT, 24Vac.
	1	RMS-7	BASE DE RELAIS 8 BROCHES
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

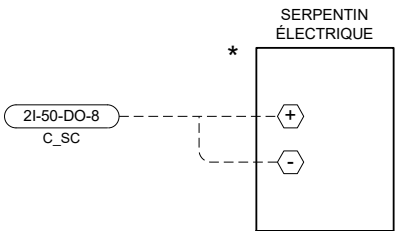
- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le serpentin de chauffage est inopérant.
 - Le volet d'air neuf (VMA-2-120) est fermé.
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-120) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
 - Sur une hausse de température de l'usine pilote (sonde TP-161-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage dans le bureau A-162 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-120)



RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-13)



VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-161

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-20 Type 4 (Usine pilote A-161) (Locaux A-161 et A-162)		2	POUR CONSTRUCTION		9/18/2001	D.B.
		1	POUR APPROBATION		6/12/2001	D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 5/22/2001	PAR	DATE 5/22/2001
Norm du Projet		JOHNSON CONTROLS		1096-0093		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMERO DESSIN 4068-081		
		Groupe de la régulation				

UNITÉ DE CLIMATISATION AC-21 - LOCAUX A-161 ET A-165
(TYPE 4 - USINE PILOTE A-161)

AIR NEUF (SYSTÈME UV-1) → SD-21 (175mm - 7" Ø) 55 l/s - 120pcm → VMA-2-121 → UNITÉ AC-21

UNITÉ AC-21 : S, R, VA, E_FILT, E_FILT, ALARME, 1 PHASE, 208VAC (PAR D'AUTRES)

RETOUR → E_FILT → VMA-2-121 → UNITÉ AC-21

UNITÉ AC-21 → E_FILT_C → SE-14 (1.0 kW) TRIAC → ALIMENTATION BUREAU (LOCAL A-165)

UNITÉ AC-21 → E_FILT → FILTRES AU CHARBON → ALIMENTATION USINE PILOTE A-161

2I-21-BI-4, 2I-21-AI-3, 2I-21-BI-2, 2I-21-BO-2, 2I-21-AI-1, 2I-21-AI-4, 2I-50-AI-3, TP-161-2, HP-161-2, T_PIE, TP-161-2, HP-161-2, SONDE DE TEMP. HUM., USINE PILOTE A-161, LOCAL A-165, ALIMENTATION BUREAU (LOCAL A-165), ALIMENTATION USINE PILOTE A-161, VERS PANNEAU DE CONTRÔLE P-2I (DESSIN 4068-103), 2I-21-BI-3, ALM_AC, RE-1

<u>LISTE DE MATÉRIEL</u>			
IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILTER, E_FILTER_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VAL	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-161-2 / HP-161-2	1	HE-67N2-0N00P	SONDE DE TEMP. / HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-121	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-21	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-121) est fermé.

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-121) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-161-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-165 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

[illegible]

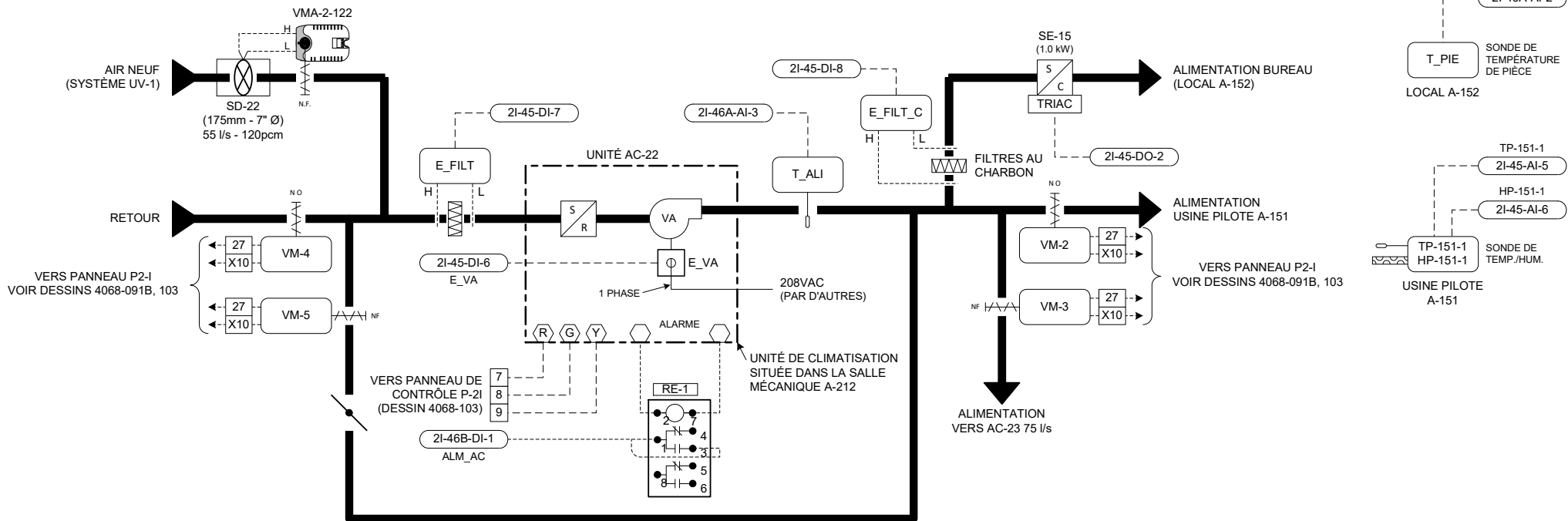
Diagram illustrating the electrical connection for the 2I-21-BO-2 sensor. The sensor is connected to the 'SERPENTIN ÉLECTRIQUE' (Electrical Heating Element) terminals, marked with a positive (+) and negative (-) sign. The connection is labeled '2I-21-BO-2 C_SC'.

VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-161

Titre du Dessin				3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-21 Type 4 (Usine pilote A-161) (Locaux A-161 et A-165)				2	POUR CONSTRUCTION		9/18/2001	D.B.
				1	POUR APPROBATION		6/12/2001	D.B.
		DESSIN DE REFERENCE		NO.	REVISION		EON	DATE
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR	D.B.	DATE 5/22/2001
Nom du Projet				Information Succursale		NUMERO CONTRAT		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093		
						NUMERO DESSIN 4068-082		

UNITÉ DE CLIMATISATION AC-22 - LOCAUX A-151 ET A-152 (TYPE 4, USINE PILOTE A-151)

DIAGRAMME DE DÉBIT



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-631P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-151-1 / HP-151-1	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
	1	HE-67N2-0N00P	SONDE DE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-122	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
RE-2,3	1	S-408	BASE DE RELAIS 8 BROCHES
RE-2,3	2	60.32-8024	RELAIS 1PDT,24Vac., 15Amps.
VM-2,3,4,5	2	90.32	BASE DE RELAIS
	4	M9206-AGA-2	ACTUATEUR DE VOLET, 2 POSITIONS C/A
SD-22	1	RMS-7	RESSORT DE RAPPEL, 24Vac.
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION

A L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf VMA-2-122 est fermé.
- Les volets VM-3, VM-5 sont fermés.
- Les volets VM-2, VM-4 sont ouverts.

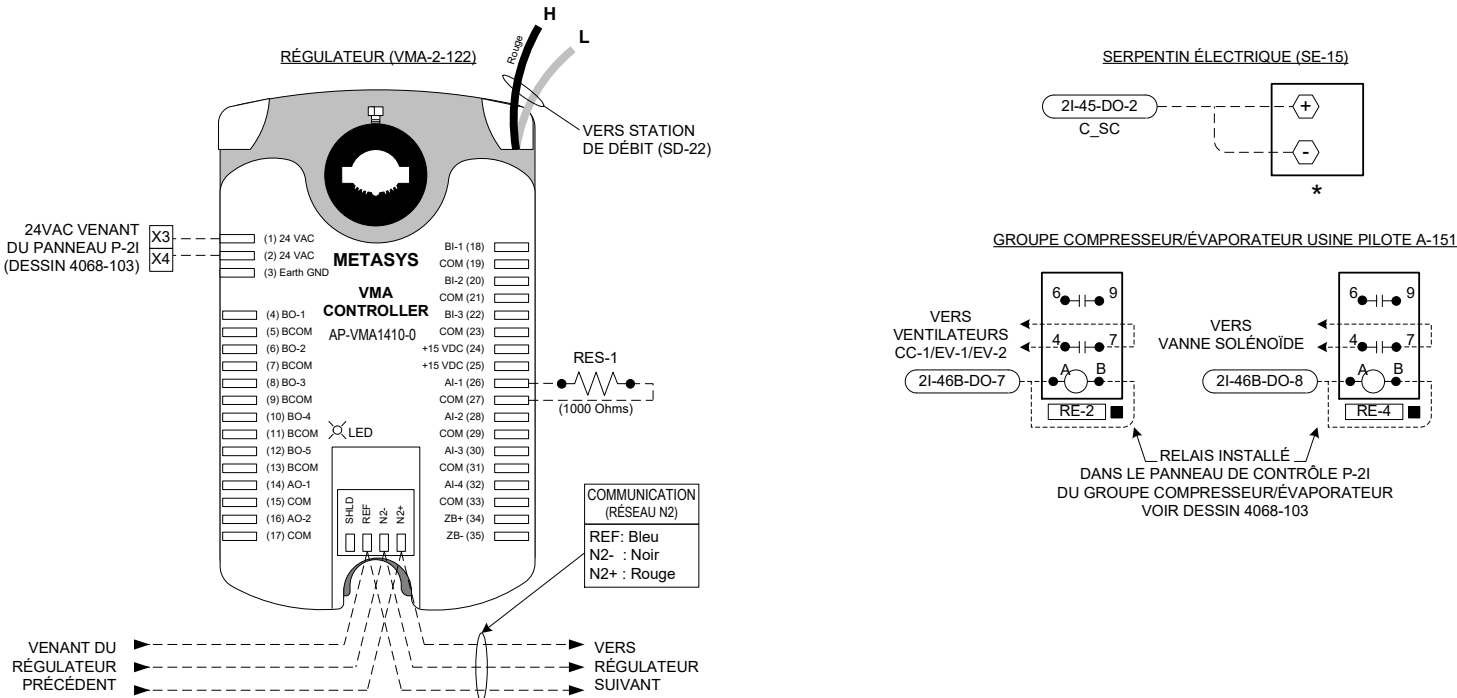
EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote A-151 sont sélectionnés à partir des sélecteurs SEL-151-1 et/ou SEL-151-2 localisé dans les bureaux A-152 et A-155.
- **Usine pilote en mode normal (20°C):**
 - Le compresseur-condenseur CC-1 et les évaporateurs EV-1 et EV-2 sont à l'arrêts.
 - Les contrôleurs numérique positionnent les volets comme suit:
 - VM-2, VM-4 complètement ouvert.
 - VM-3, VM-5 complètement fermé.
 - Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur VMA-2-122 module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
 - Sur une hausse de température de l'usine pilote (sonde TP-151-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage dans le bureau A-152 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).

Usine pilote en mode (4°C):

- L'unité AC-22 est utilisé pour alimenté les bureaux A-152 et A-155 pour ce faire les contrôleurs numériques positionnent les volets comme suit:
 - VM-2 ferme complètement.
 - VM-3, VM-5 ouvre complètement.
 - VM-4 partiellement ouvert 150l/s.
- Le contrôleur numérique met en marche les ventilateurs du compresseur-condenseur CC-1 et les évaporateurs EV-1 et EV-2.
- Le ventilateur de l'unité AC-22 est démarré selon un horaire pré-établi, le ventilateur de l'unité AC-23 est à l'arrêt.
- Au départ de l'unité AC-22 le régulateur VMA-2-122 module son volet afin de maintenir le débit d'air neuf à 100 l/s.
- Les sondes de températures de pièce TP-1 dans les bureaux A-152 et A-155 démarre le compresseur de l'unité AC-22 lors d'une demande de refroidissement et module à l'aide d'impulsion le relais triac de leur serpentin de chauffage respectif lors d'une demande de chauffage.
- Le transmetteur TP-151-1 contrôle la vanne solénoïde du groupe compresseur-évaporateur CC-1, EV-1 et EV-2 afin de maintenir la température dans l'usine pilot A-151 à 4°C.
- Les fonctions haute humidité des transmetteurs HP-151-1 et HP-151-2 sont annulés.
- **Usine pilote en mode 4°C ou 20°C:**
 - La sonde T_ALI indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

RACCORDEMENT ÉLECTRIQUE

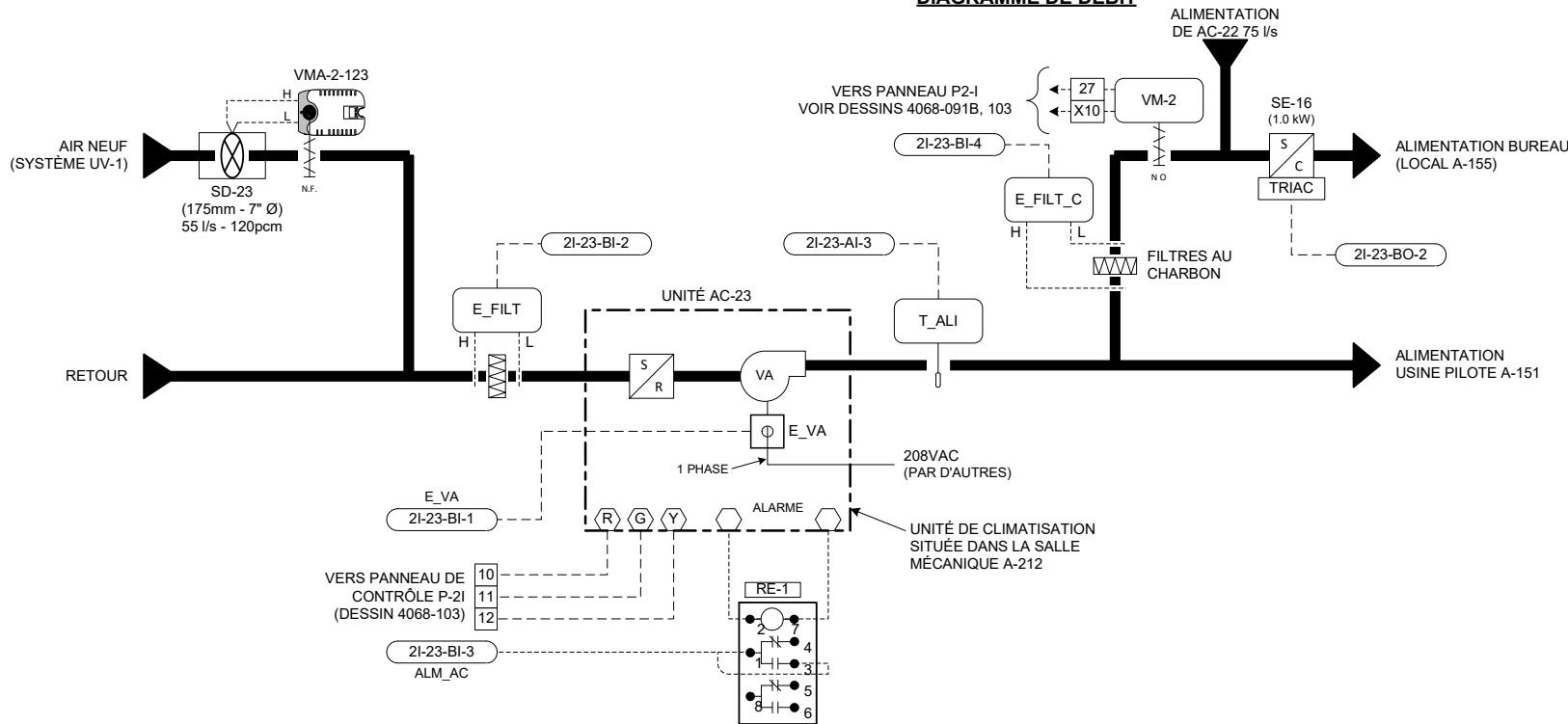


VOIR 4068-091A POUR LE DIAGRAMME DE L'USINE PILOTE A-151

Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Unité de climatisation AC-22 Type 4 (Usine pilote A-151) (Locaux A-151 et A-152)		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE	PAR	
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE			
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR	DATE 5/22/2001		
Norm du Projet		JOHNSON CONTROLS		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		Groupe de la régulation				NUMERO DESSIN 4068-083	

UNITÉ DE CLIMATISATION AC-23 - LOCAUX A-151 ET A-155 (TYPE 4 - USINE PILOTE A-151)

DIAGRAMME DE DÉBIT



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-151-2 / HP-151-2	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
	1	HE-67N2-0N00P	SONDE DE TEMP. / HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-151	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VM-2	1	M9206-AGA-2	ACTUATEUR DE VOILET, 2 POSITIONS C/A
RES-1	1	-----	RESSORT DE RAPPEL, 24VaC.
RE-1	1	RCPTFU82D1024	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
	1	S-408	RELAIS 2PDT, 24Vac.
SD-23	1	RMS-7	BASE DE RELAIS 8 BROCHES
	1	-----	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

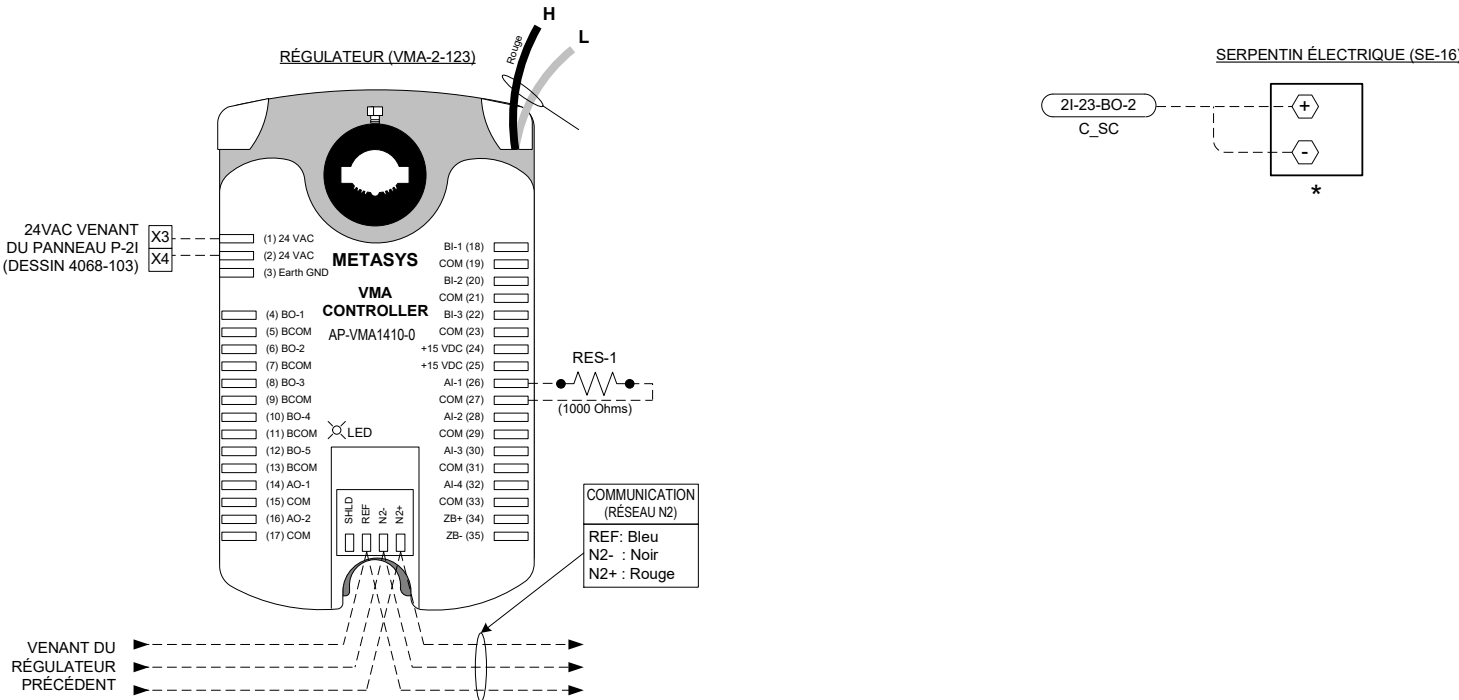
A L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf VMA-2-123 est fermé.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote sont sélectionnés à partir des sélecteurs SEL-151-1 et /ou SEL-1-151-2 localisé dans les bureaux A-152 et A-155
- Usine pilote en mode normal (20°C):**
 - Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur VMA-2-123 module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
 - Sur une hausse de température de l'usine pilote (sonde TP-151-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage dans le bureau A-155 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
 - La sonde T_ALI indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.
- Usine pilote en mode (4°C):**
 - L'unité AC-23 est à l'arrêt.
 - Les volets VMA-2-123 et VM-2 sont complètement fermés.
 - La sonde de pièce du local A-155 démarre le compresseur de l'unitéAC-22 lors d'une demande de refroidissement et module le relais triac du serpentin de chauffage de la pièce lors d'une demande de chauffage.
 - La fonction haute humidité du transmetteur HP-151-2 est annulé.

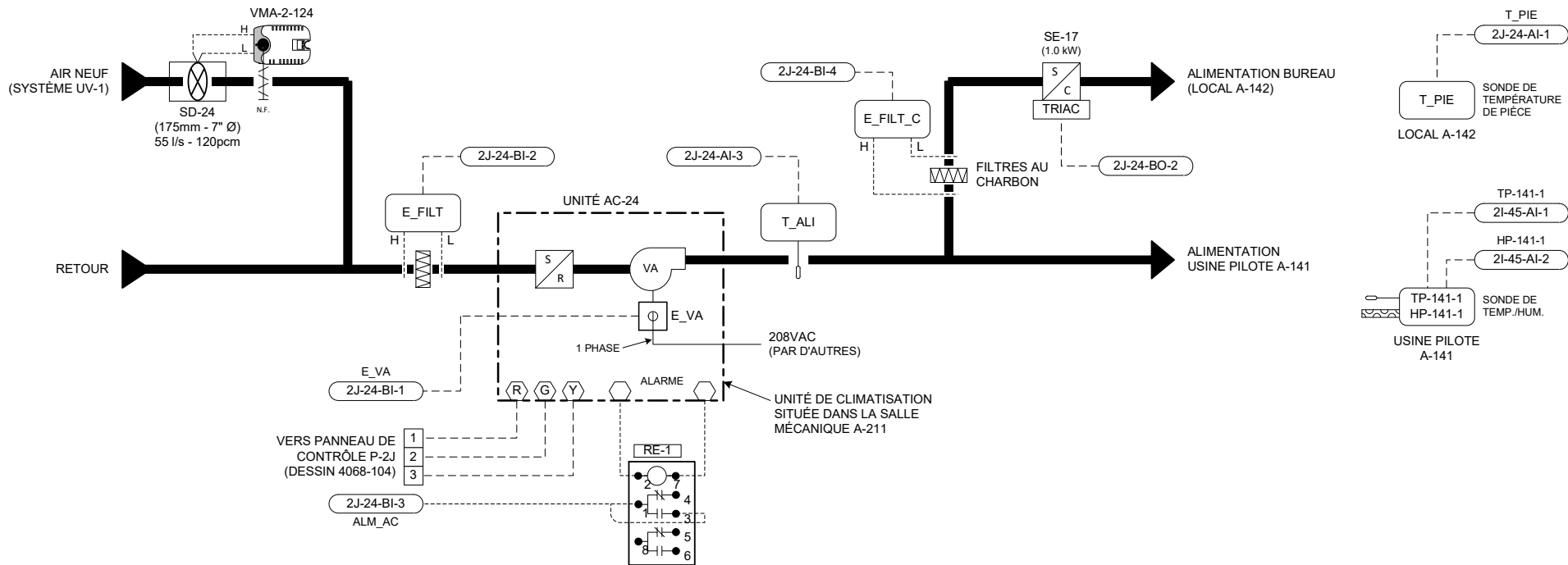
RACCORDEMENT ÉLECTRIQUE



VOIR 4068-091A POUR LE DIAGRAMME DE L'USINE PILOTE A-151

Titre du Dessin	4096-0019		5	TEL QUE CONSTRUIT		C.D.	04/02/12	O.P.		
Unité de climatisation AC-23 Type 4 (Usine pilote A-151) (Locaux A-151 et A-155)	4096-0019		4	AJOUT 4°C		C.D.	03/11/21	O.P.		
			3	TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.		
	DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR		
	Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE				
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/22/2001	PAR	DATE	05/22/2001
Norm du Projet				Information Succursale				NUMERO CONTRAT		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	 Groupe de la régulation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562				1096-0093		
								NUMERO DESSIN 4068-084		

UNITÉ DE CLIMATISATION AC-24 - LOCAUX A-141 ET A-142
(TYPE 4 - USINE PILOTE A-141)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-141-1 / HP-141-1	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-124	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
RES-1	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-24	1	S-408	RELAIS 2PDT, 24Vac.
	1	RMS-7	BASE DE RELAIS 8 BROCHES
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

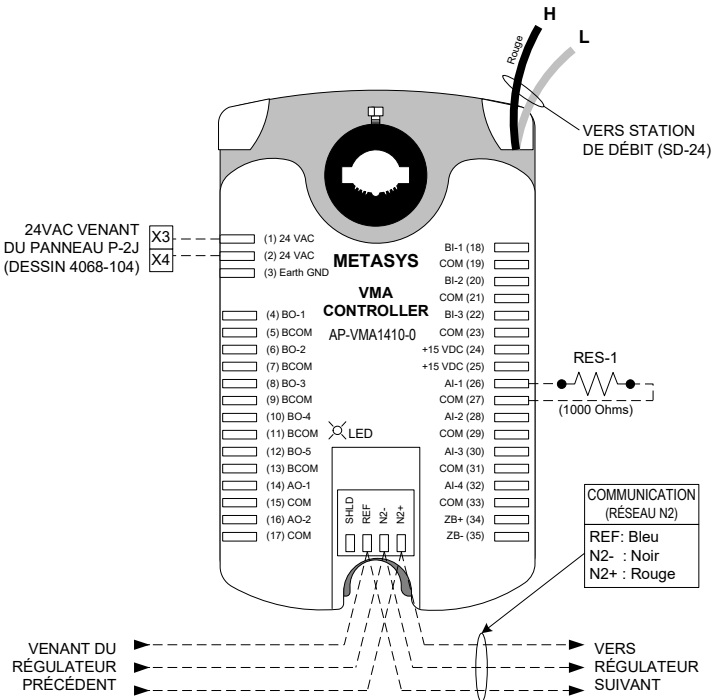
- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-124) est fermé.

EN MARCHÉ:

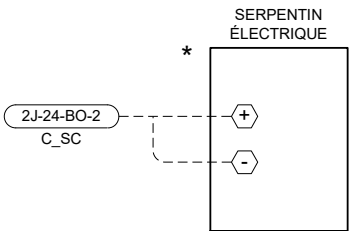
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-124) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-141-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-142 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-124)



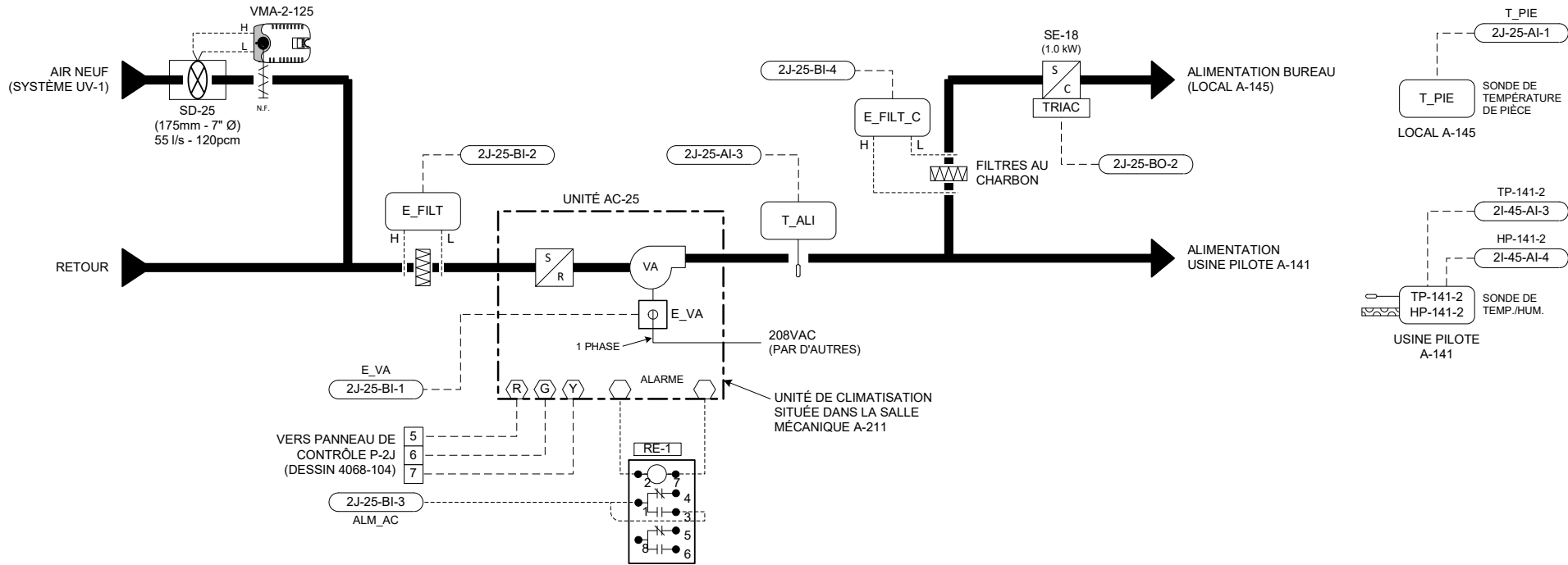
RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-17)



VOIR 4068-091A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-141

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-24 Type 4 (Usine pilote A-141) (Locaux A-141 et A-142)		2	POUR CONSTRUCTION		9/18/2001	D.B.
		1	POUR APPROBATION		6/12/2001	D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	PAR	D.B.	DATE
J.-C. Rouillon	S. Bourque	D. Bouchard	5/22/2001	PAR	DATE	5/22/2001
Norm du Projet		JOHNSON CONTROLS Groupe de la régulation		1096-0093 NUMERO DESSIN 4068-085		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562				

UNITÉ DE CLIMATISATION AC-25 - LOCAUX A-141 ET A-145
(TYPE 4 - USINE PILOTE A-141)



LISTE DE MATÉRIEL

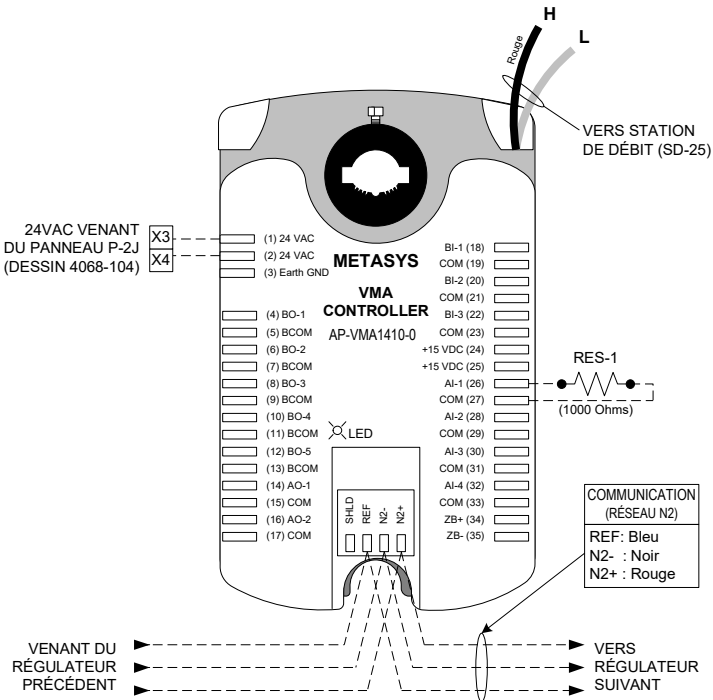
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-141-2 / HP-141-2	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-125	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
RES-1	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-25	1	S-408	RELAIS 2PDT, 24Vac.
	1	RMS-7	BASE DE RELAIS 8 BROCHES
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

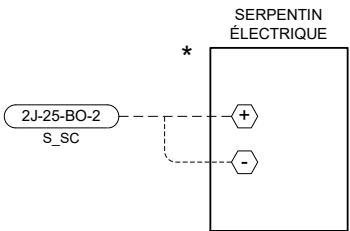
- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le serpentin de chauffage est inopérant.
 - Le volet d'air neuf (VMA-2-125) est fermé.
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-125) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
 - Sur une hausse de température de l'usine pilote (sonde TP-141-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage dans le bureau A-145 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-125)



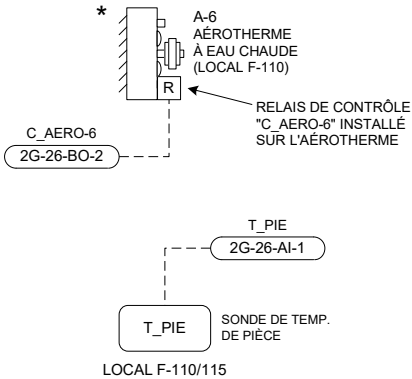
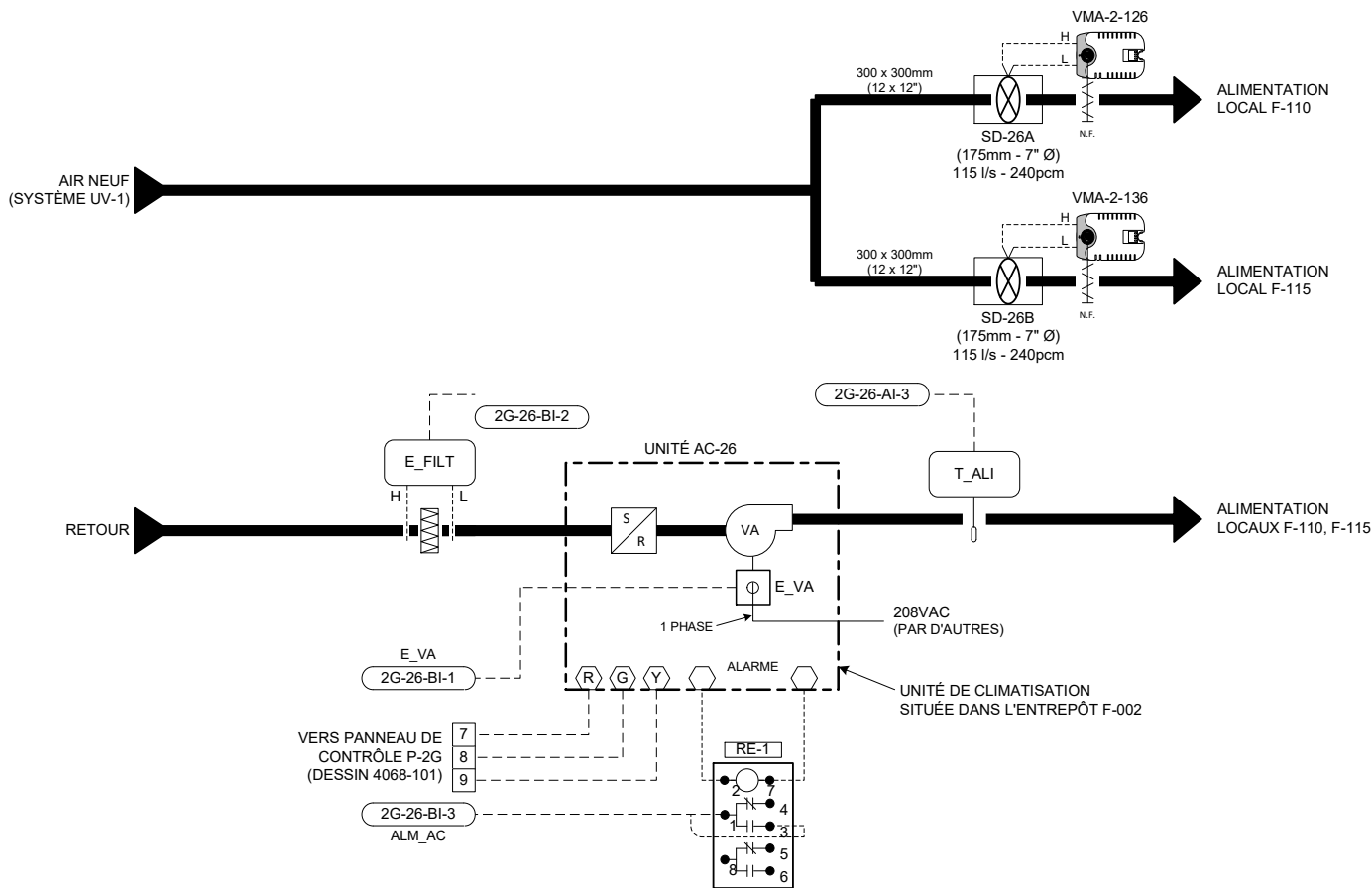
RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-18)



VOIR 4068-091A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-141

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-25 Type 4 (Usine pilote A-141) (Locaux A-141 et A-145)		2	POUR CONSTRUCTION		9/18/2001	D.B.
		1	POUR APPROBATION		6/12/2001	D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 5/22/2001	PAR	DATE 5/22/2001
Norm du Projet		JOHNSON CONTROLS Groupe de la régulation		NUMERO DESSIN		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093		
				4068-086		

UNITÉ DE CLIMATISATION AC-26 - LOCAUX F-110, F-115
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC AÉROTHERME)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-6	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
E_FILT	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
SD-26A, B	1	S-408	BASE DE RELAIS 8 BROCHES
	2	RMS-8	STATION DE MESURE DE VÉLOCITÉ 175mm,8" Ø - EH PRICE
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-126,136	2	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF.(DÉBIT)

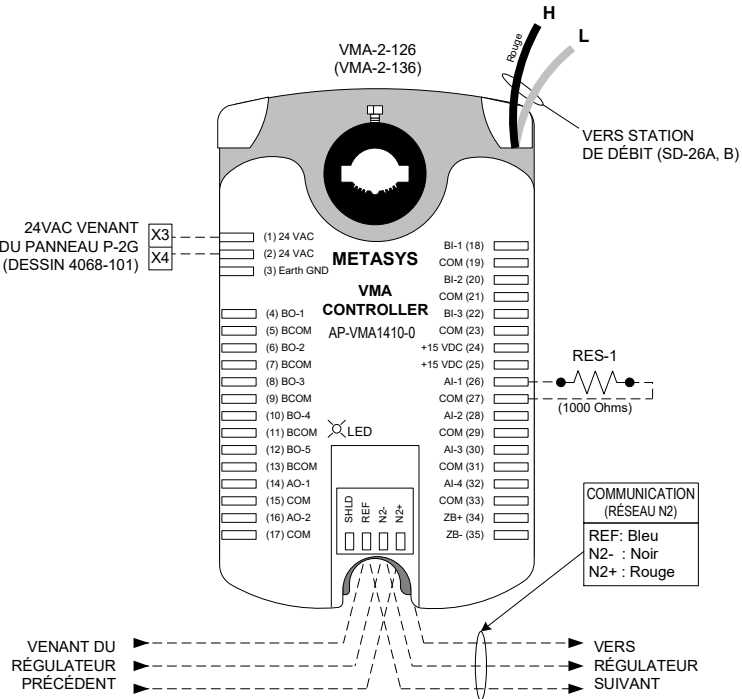
SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - La sonde de pièce (T_PIE) contrôle l'aérotherme (A-6) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 24°C, ajustable).
 - Sur une demande de chauffage, l'aérotherme est activé afin de maintenir la température de la pièce au point de consigne (P.C. 21°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

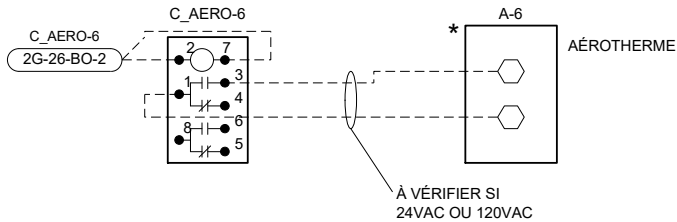
- ALIMENTATION LOCAUX F-110 ET F-115:
- Les régulateurs (VMA-2-126 et VMA-2-136) modulent leur volet respectif de façon à maintenir un débit d'alimentation d'air constant (115 l/s, 240 pcm pour chaque local).

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES RÉGULATEURS (VMA-2-126 ET VMA-2-136)



RACCORDEMENTS DE L'AÉROTHERME (A-6)



Titre du Dessin					
Unité de climatisation AC-26 Locaux F-110, F-115 Type 1 (Unité avec aérotherme)		2	TEL QUE CONSTRUIT	D.B.	02/04/29 O.P.
		1	POUR APPROBATION		12/06/01 D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 5/22/2001	PAR DATE 5/22/2001	
Norm du Projet		Information Succursale		NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc. H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMERO DESSIN 4068-087	

[illegible]

<u>LISTE DE MATÉRIEL</u>		
IDENT.	QTE MODÈLE	DESCRIPTION
C_AERO-4, 5	2 RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	2 S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
E_FILTER	1 P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1 FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VA	1 H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
RE-1	1 RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1 S-408	BASE DE RELAIS 8 BROCHES
SD-27A, B	2 RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø - EH PRICE
T_ALI	1 TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1 TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-127,137	2 AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF.(DÉBIT)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- La sonde de pièce (T_PIE) contrôle les aérothermes (A-4 et A-5) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 24°C, ajustable).
- Sur une demande de chauffage, les aérothermes sont démarrés de façon à maintenir la température de la pièce au point de consigne (P.C. 21°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

- Les régulateurs (VMA-2-127 et VMA-2-137) modulent leur volet respectif de façon à maintenir un débit d'alimentation d'air constant (115 l/s, 240 pcm pour chaque local).

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES RÉGULATEURS (VMA-2-127 ET VMA-2-137)

24VAC VENANT DU PANNEAU P-2F (DESSIN 4068-100)

VMA-2-127 (VMA-2-137)

VERS STATION DE DÉBIT (SD-27A, B)

METASYS

VMA CONTROLLER

AP-VMA1410-0

LED

SHLD REF N2- N2+

COMMUNICATION (RÉSEAU N2)

REF: Bleu
N2- : Noir
N2+ : Rouge

VENANT DU RÉGULATEUR PRÉCÉDENT

VERS RÉGULATEUR SUIVANT

RACCORDEMENTS DE L'AÉROTHERME (A-4 ET A-5)

C_AERO-45 2F-17-BO-2

C_AERO-4

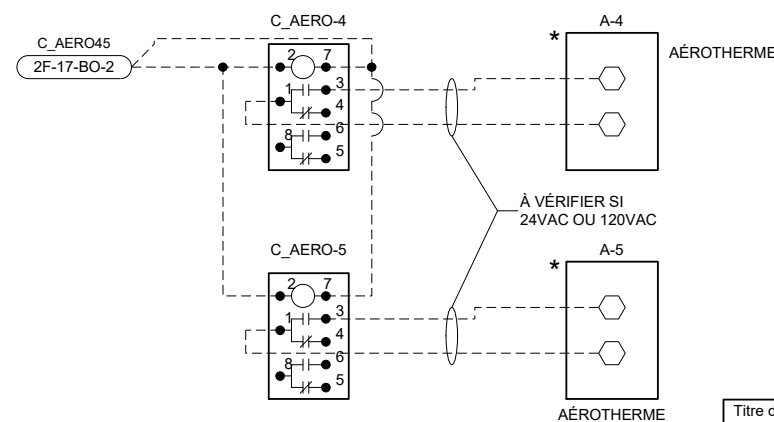
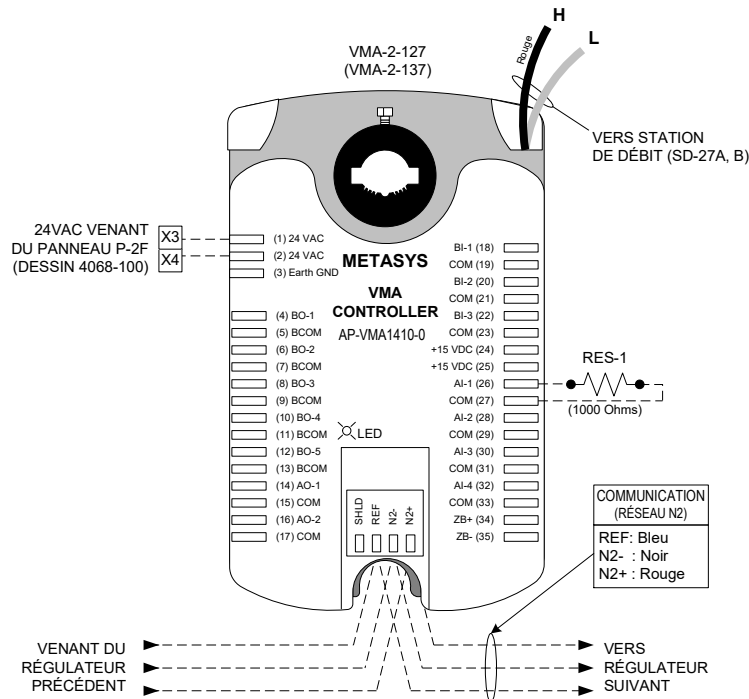
C_AERO-5


A-4 AÉROTHERME

A-5 AÉROTHERME

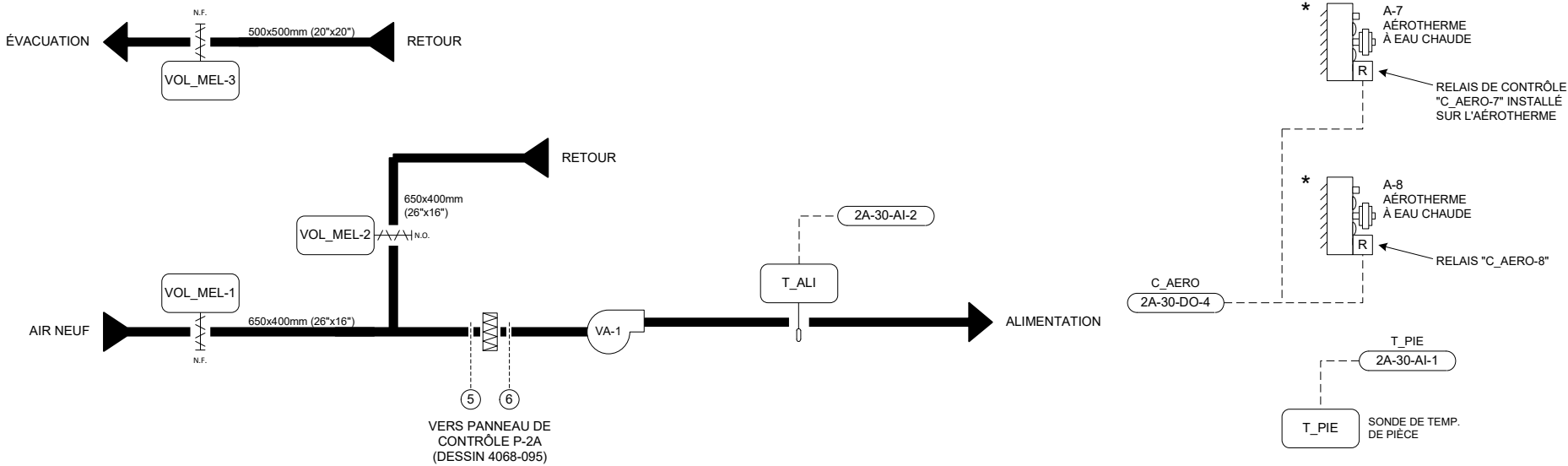
À VÉRIFIER SI 24VAC OU 120VAC

RACCORDEMENTS DE L'AÉROTHERME (A-4 ET A-5)



Titre du Dessin Unité de climatisation AC-27 Locaux F-120, F-125 Type 1 (Unité avec aérotherme)										
			2	TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.		
			1	POUR APPROBATION			12/06/01	D.B.		
	DESSIN DE REFERENCE		NO.		REVISION		ECN	DATE	PAR	
	Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE				
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	5/22/2001	PAR	DATE	5/22/2001
Nom du Projet				Information Succursale			NUMERO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	 Groupe de la régulation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562			1096-0093			
							NUMERO DESSIN 4068-088			

SYSTÈME VA-1
(VENTILATION DE LA SALLE MÉCANIQUE F-301)



LISTE DE MATÉRIEL

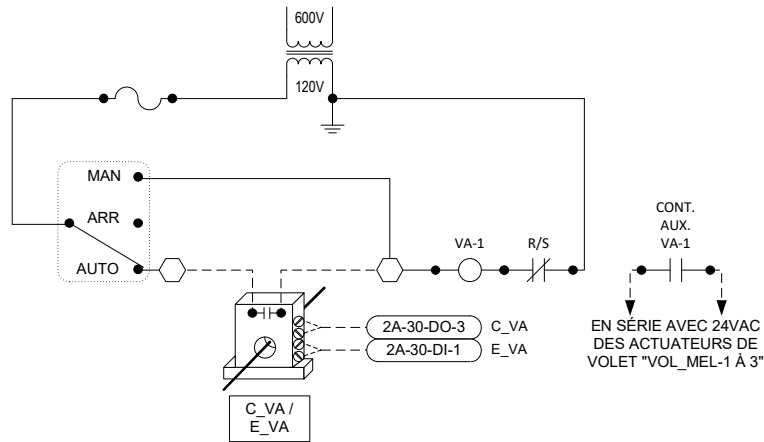
IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-7, 8	2	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VA / E_VA	2	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	1	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP, - VERIS
VOL_MEL-1, 2, 3	3	M9206-GGA-2	ACTUATEUR DE VOLET MODULANT, 24VAC, 0-10VDC
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI

SÉQUENCE D'OPÉRATION

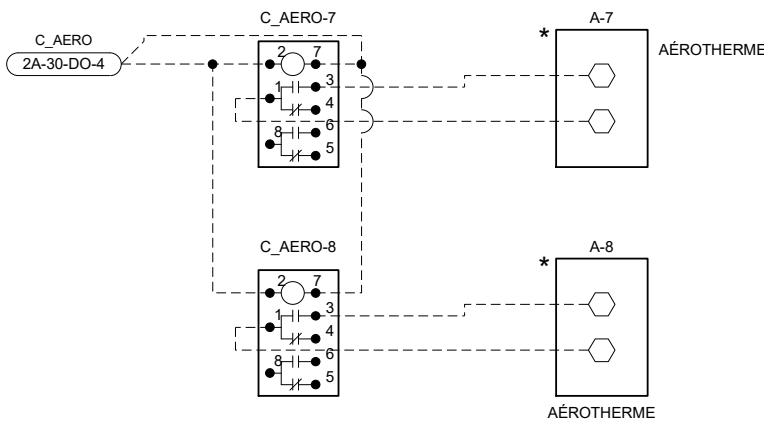
- Sur une hausse de température de pièce (T_PIE) supérieure à 24°C, le régulateur numérique démarre le ventilateur d'alimentation (VA-1) et module les volets de mélange (VOL_MEL-1 à 3) afin de maintenir la température d'alimentation au point de consigne (P.C. 13°C, ajustable).
- Lorsque la température de la pièce redescend sous 23°C, le ventilateur est arrêté et les volets retournent à leur position normale.
- Sur une baisse de température sous 18°C, les aérothermes sont démarrés jusqu'à ce que la température de la pièce ait atteint 19°C.
- Une alarme sera générée à la centrale sur non-concordance entre l'état (E_VA) et la commande (C_VA) du ventilateur d'alimentation.

DIAGRAMME ÉLECTRIQUE

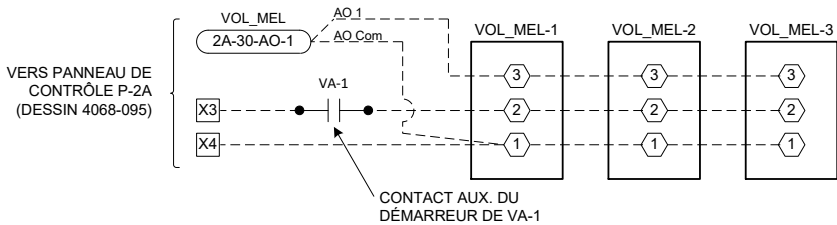
RACCORDEMENTS DU DÉMARREUR DU VENTILATEUR (VA-1)



RACCORDEMENTS DES AÉROTHERMES (A-7 ET A-8)

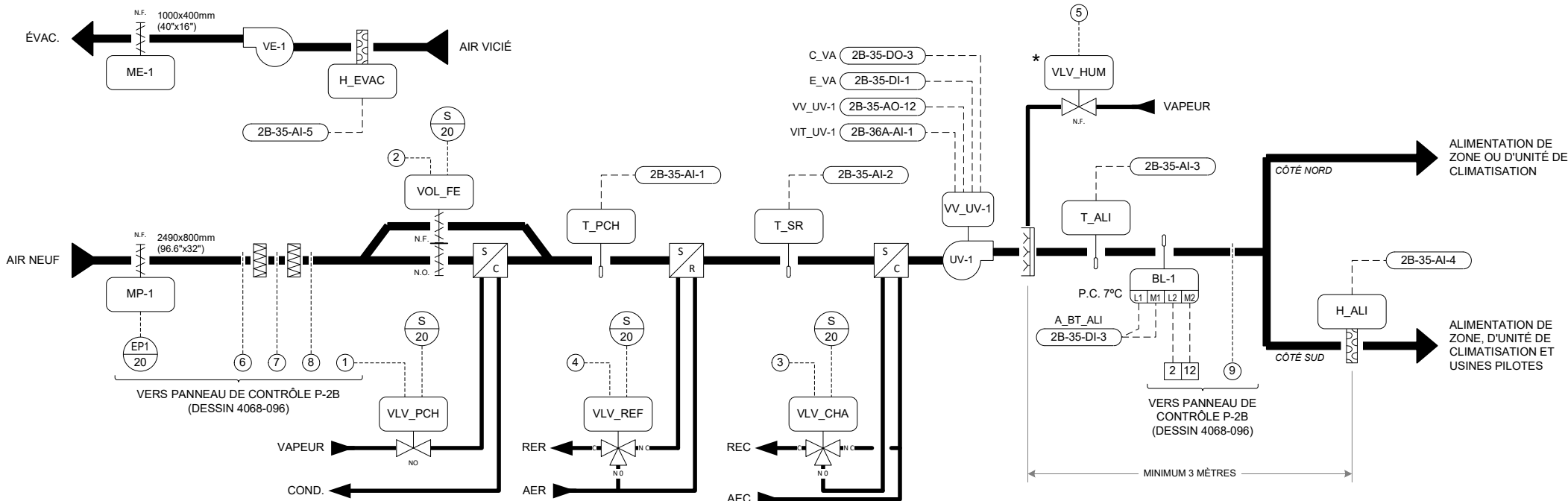


RACCORDEMENTS DES ACTUATEURS DE VOLET (VOL_MEL-1 À 3)



Titre du Dessin		2		TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.
Système VA-1 (Ventilation de la salle mécanique F-301)		1		POUR APPROBATION			6/12/2001	D.B.
Norm du Projet		CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMERO DESSIN 4068-089

SYSTÈME UV-1
(SYSTÈME D'APPORT D'AIR NEUF)



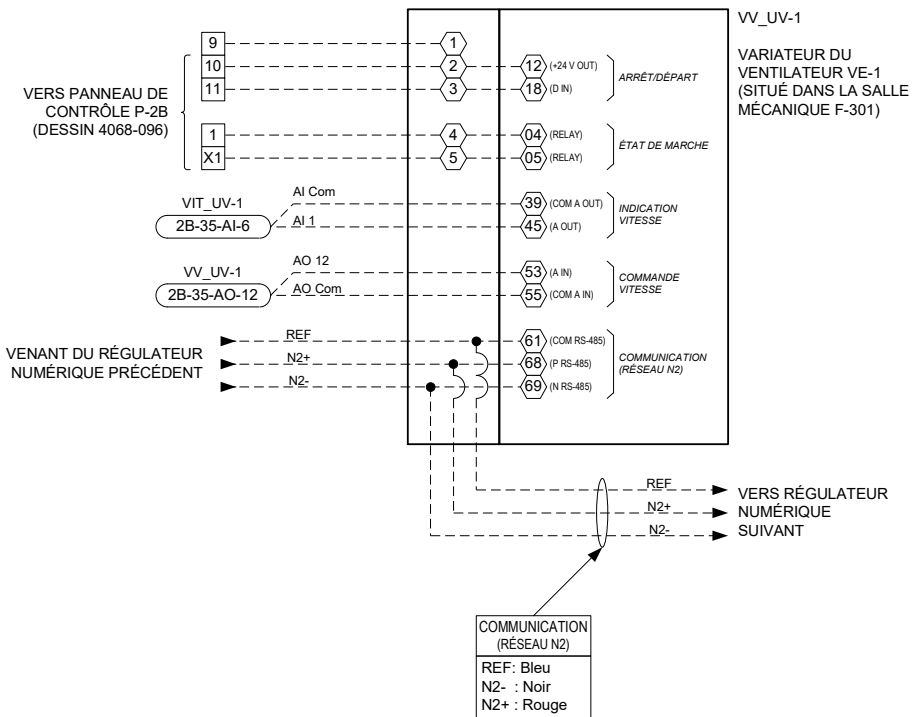
LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BL-1	1	A70GA-2C	BASSE LIMITE DE TEMP. DE GAINÉ À RÉARMEMENT AUTOMATIQUE, 0-25°C, 2 CONTACTS
C_VE / E_VE	1	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
H_ALI, H_EVAC	2	HT6703-0N00P	TRANSMETTEUR D'HUMIDITÉ DE GAINÉ, ±3%HR, 0-10VDC
ME-1	1	M9216-AGA-2	ACTUATEUR DE VOLET 2 POSITIONS, 24VAC, AVEC RESSORT DE RAPPEL
MP-1	1	D-3153-3	ACTUATEUR DE VOLET PNEUMATIQUE, 5-10psi
VLV_CHA	1	VG7842PT+822E01	VANNE 3 VOIES, MÉLANGE, 1-1/4", Cv 18.5, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
VLV_HUM	1	-----	VANNE D'HUMIDIFICATION PNEU. - PAR D'AUTRES
VLV_PCH	1	VG7243RM+843C01	VANNE 2 VOIES, N.O., 1-1/2", Cv 28.9, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
VLV_REF	1	VG2831UM+845D01	VANNE 3 VOIES, MÉLANGE, 3", Cv 80.0, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
VOL_FE	1	D-3153-1	ACTUATEUR DE VOLET PNEUMATIQUE AVEC POSITIONNEUR
T_ALI, T_PCH, T_SR	3	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
VV_UV-1	1	VL76000J17	VARIATEUR DE VITESSE, 15HP, 575V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

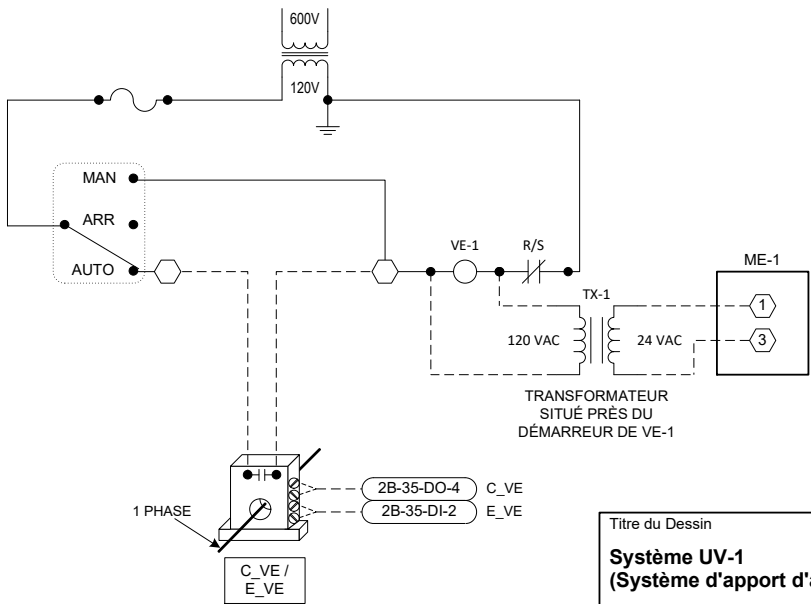
VOIR DESSIN 4068-090B POUR LA SÉQUENCE D'OPÉRATION

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU DÉMARREUR DU VARIATEUR DE VITESSE (VV_UV-1)



RACCORDEMENTS DU DÉMARREUR DU VENTILATEUR D'ÉVACUATION (VE-1)



Titre du Dessin Système UV-1 (Système d'apport d'air neuf)		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
		2	POUR CONSTRUCTION		10/26/2001	D.B.
		1	POUR APPROBATION		7/25/2001	D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Conceuteur	DESSINE	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE	6/12/2001	PAR
Information Succursale		NUMERO CONTRAT				
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMERO DESSIN 4068-090A

SYSTÈME UV-1
(SYSTÈME D'APPORT D'AIR NEUF)

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Les ventilateurs d'alimentation (UV-1) et d'évacuation (VE-1) sont arrêtés.
- Les volets d'air neuf (MP-1) et d'évacuation (ME-1) sont fermés.
- Les vannes de chauffage, de refroidissement et d'humidification sont à leur position normale.

EN MARCHÉ:

- Le système est en marche de façon continue. Au départ du ventilateur d'alimentation (UV-1), le volet d'air neuf (MP-1) ouvre, le ventilateur d'évacuation (VE-1) démarre et son volet (ME-1) ouvre.
- La température d'alimentation (T_ALI) est maintenue à 20°C en tout temps.

Mode été:

- En mode été, déterminé manuellement par l'opérateur au début de la saison chaude par le départ du refroidisseur, les vannes de l'humidificateur (VLV_HUM) et du serpentin de pré-chauffage (VLV_PCH) sont fermées.
- La sonde d'alimentation (T_ALI) module la vanne de refroidissement (VLV_REF) afin de maintenir son point de consigne (P.C. 20°C, ajustable).
- Sur une demande de déshumidification par la sonde (H_EVAC, P.C. 50%HR, ajustable), le régulateur numérique réajuste la position de la vanne (VLV_REF) à la hausse. La sonde d'alimentation (T_ALI) module alors la vanne de chauffage (VLV_CHA) de façon à maintenir la température d'alimentation à 20°C.

Mode hiver:

- En mode hiver, déterminé manuellement par l'opérateur à la fin de la saison chaude par l'arrêt du refroidisseur, la vanne de l'humidificateur (VLV_HUM) de même que celles des serpentins de pré-chauffage (VLV_PCH) et chauffage (VLV_CHA) sont opérationnelles. La vanne de refroidissement (VLV_REF) est fermée.
- La sonde d'alimentation (T_ALI) module la vanne du serpentin de pré-chauffage (VLV_PCH), le volet de face et évitement (VOL_FE) et la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne (P.C. 20°C, ajustable).
- Lorsque la température extérieure est inférieure à 4°C, la vanne du serpentin de pré-chauffage (VLV_PCH) est ouverte à 100% et seuls le volet de face et évitement et la vanne de chauffage sont modulés.

SÉQUENCE D'OPÉRATION (suite)

Débit:

- Les régulateur numériques (VMA-2-1xx) contrôlant le débit d'air neuf de chaque unité de climatisation ou usine pilote, modulent leur volet respectif afin de maintenir le débit d'air neuf requis.
- Le transmetteur de pression statique (PS_ALI, panneau P-2B, dessin 4068-096) module la vitesse du ventilateur d'alimentation (UV-1) afin de maintenir la pression statique requise assurant les débits aux différentes zones.

Humidification:

- Le transmetteur d'humidité (H_EVAC) situé dans la gaine d'évacuation, module la soupape d'humidification (VLV_HUM) afin de maintenir le point de consigne déterminé par le tableau suivant:

Temp. ext.	P.C. Humidité
15°C	40%HR
-20°C	30%HR

- Le transmetteur d'humidité d'alimentation (H_ALI) limite l'ouverture de la soupape d'humidification (VLV_HUM) de façon à maintenir un maximum de 70%HR dans la gaine d'alimentation.

Sécurité:

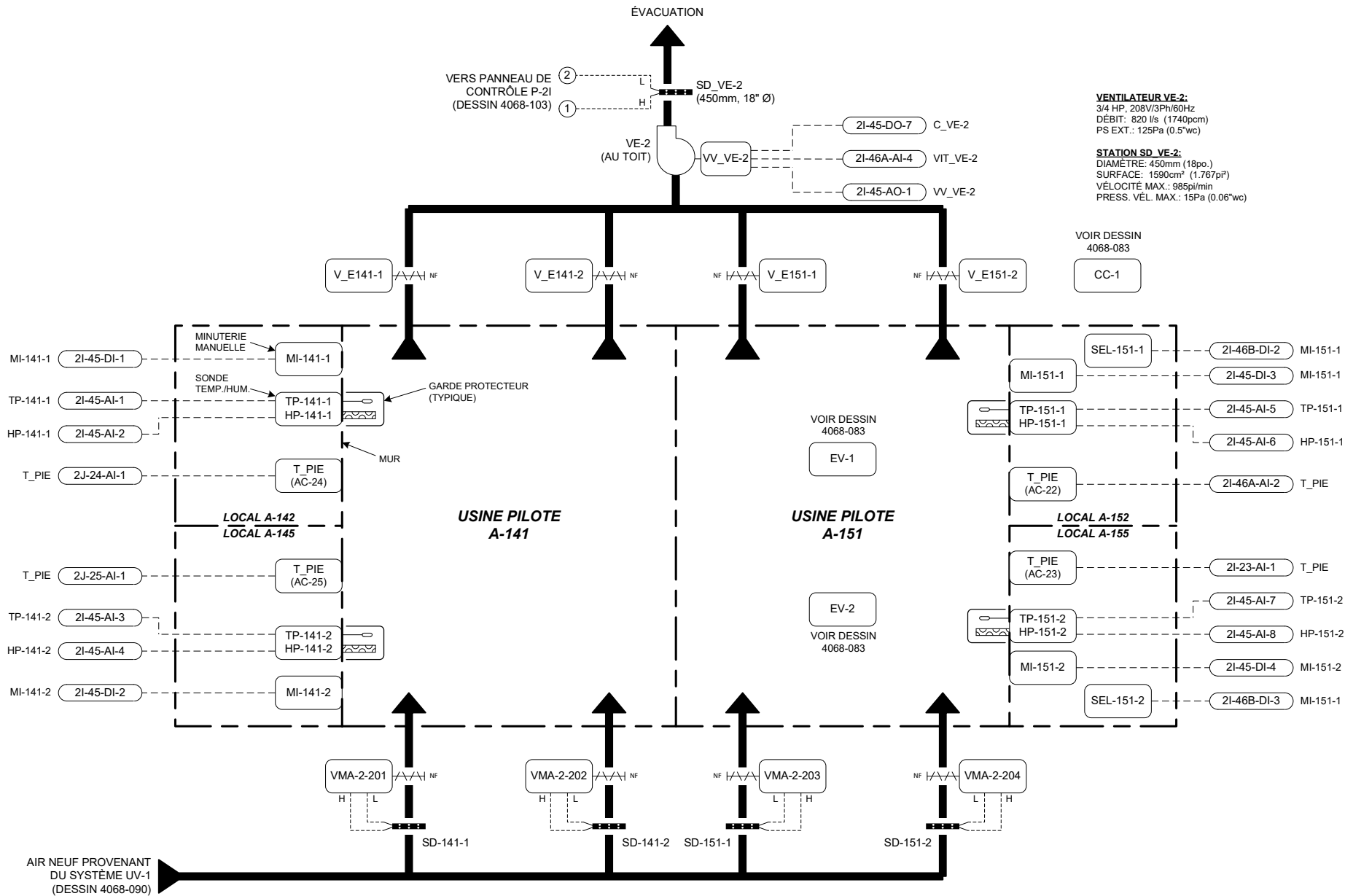
- Une basse limite de température (BL-1) arrêtera le système si la température d'alimentation baisse en dessous de 7°C. Un relais temporisé (RT-1, panneau P-2B, dessin 4068-096), contourne la basse limite pour une période de 3 minutes au départ du système.
- Un interrupteur à pression statique (IPS-1, panneau P-2B, dessin 4068-096), referme la vanne d'humidification (VLV_HUM) sur perte de débit d'air dans la gaine d'alimentation.

Alarmes diverses:

- Les alarmes suivantes seront transmises à la centrale de commandes:
 - Basse température d'alimentation (T_ALI).
 - Alarme de gel (BL-1).
 - Non-concordance entre la commande et l'état du ventilateur d'alimentation (UV-1).
 - Non-concordance entre la commande et l'état du ventilateur d'évacuation (VE-1).
 - Haute humidité d'alimentation (H_ALI).
 - Basse humidité d'évacuation (H_EVAC).

Titre du Dessin Système UV-1 (Système d'apport d'air neuf) Séquence d'opération						
		2	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
		1	POUR APPROBATION		7/25/2001	D.B.
		NO.	REVISION	ECN	DATE	PAR
Norm du Projet		Représentant	Gérant De Projet	Concepteur	DESSINE	
CRDA ST-HYACINTHE		J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 6/12/2001
Projet d'Innovation Technologique		Information Succursale		APPROUVE		NUMERO CONTRAT
3600, boul. Casavant		JOHNSON CONTROLS		Johnson Controls Ltée		1096-0093
St-Hyacinthe (Québec)		Groupe de la régulation		355, boul. Montpellier		NUMERO DESSIN
				St-Laurent, Qc, H4N 2G6		4068-090B
				Tél: (514) 747-2580		
				Fax: (514) 747-9562		

SYSTÈME VE-2 (USINES PILOTES A-141 ET A-151)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)



VENTILATEUR VE-2:
3/4 HP, 208V/3PH/60Hz
DÉBIT: 820 l/s (1740pcm)
PS EXT.: 125Pa (0.5"wc)

STATION SD_VE-2:
DIAMÈTRE: 450mm (18po.)
SURFACE: 1590cm² (1.767pi²)
VÉLOCITÉ MAX.: 985pi/min
PRESS. VÉL. MAX.: 15Pa (0.06"wc)

LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
MI-1x1-x	4	KLT 2H	MINUTERIE À REBOURS À RESSORT, 0 - 2 HEURES - GRASSLIN
SD-1x1-x	4	AYR1400	STATION DE DÉBIT, 350mm (14"), ALUMINIUM - PRESO
SD-VE-2	1	AYR1800	STATION DE DÉBIT, 450mm (18"), ALUMINIUM - PRESO
SEL-151-1,2	2	ZB2BD2	SÉLECTEUR C/A PALQUE EN ACIER INOXYDABLE INSCRIT(MODE 20°C/MODE 4°C)ET(USINE PILOTE A-151)
	2	ZB2BZ103	CORPS
	2	ZB2BE101	CONTACT NO
TP-1x1-x / HP-1x1-x	4	HE-67N2-0N00P	SONDE DE TEMP / HUMIDITÉ, 1000 OHMS NI, 0-10VDC, 0-100%HR, ± 2%HR
T_PIE	4	GRD10A-606	GARDE PROTECTEUR VERROUILLABLE, PLASTIQUE
V_E141-1 à 151-2	4	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-201 à 204	4	M9206-AGA-2	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VV_VE-2	4	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
	1	VL76000C4.6	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation est inopérant.
- Les volets d'air neuf VMA-2-201 à 204 et d'évacuation V_E141-1 à 151-2 sont fermés.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote A-151 sont sélectionnés à partir des sélecteurs SEL-151-1 et/ou SEL-151-2 localisé dans les bureaux A-152 et A-155.
- Usine pilote en mode normal (20°C):**
 - Sur une hausse d'humidité à l'une des sondes HP-141-1, 141-2, 151-1 ou 151-2 ou sur un signal provenant d'une minuterie à rebours MI-141-1, 141-2, 151-1 ou 151-2, la séquence suivante se produit :
 - Le volet d'évacuation correspondant V_E1x1-x ouvre.
 - Le régulateur de débit VMA-2-20x associé à cette zone module son volet d'air neuf afin de maintenir un débit de 150 l/s (320 pcm).
 - Le ventilateur d'évacuation VE-2 démarre et sa vitesse est modulée à 25% du total du débit d'air évacué, soit 205 l/s (435 pcm) par l'intermédiaire du variateur VV_VE-2. La station de débit SD_VE-2 est utilisée pour maintenir le débit d'évacuation à son point de consigne.
- Lorsqu'il y a une demande dans une autre pièce, les séquences 1 et 2 sont répétées et le débit d'air évacué passe à 50% du total (410 l/s, 870 pcm).
- À la troisième demande, les séquences 1 et 2 se répètent et le débit d'air évacué augmente à 75% du total (615 l/s, 1305 pcm).
- Lorsque les 4 zones sont en demande, tous les volets d'évacuation sont ouverts, les débits d'air neuf sont maintenus à leur point de consigne et le débit d'air évacué est à son maximum (820 l/s, 1740 pcm).
- Usine pilote en mode normal (4°C):**
 - Même séquence que pour le mode normale avec les différences suivantes:
 - VMA-2-203 et V_E151-1 sont fermés.
 - VMA-2-204 module pour maintenir le débit à 100 l/s et le volet V_E151-2 est balance à 100l/s (215 cfm).
 - L'opération sur hausse d'humidité de la pièce HP-151-1 et HP-151-2 (A-151) est annulée.

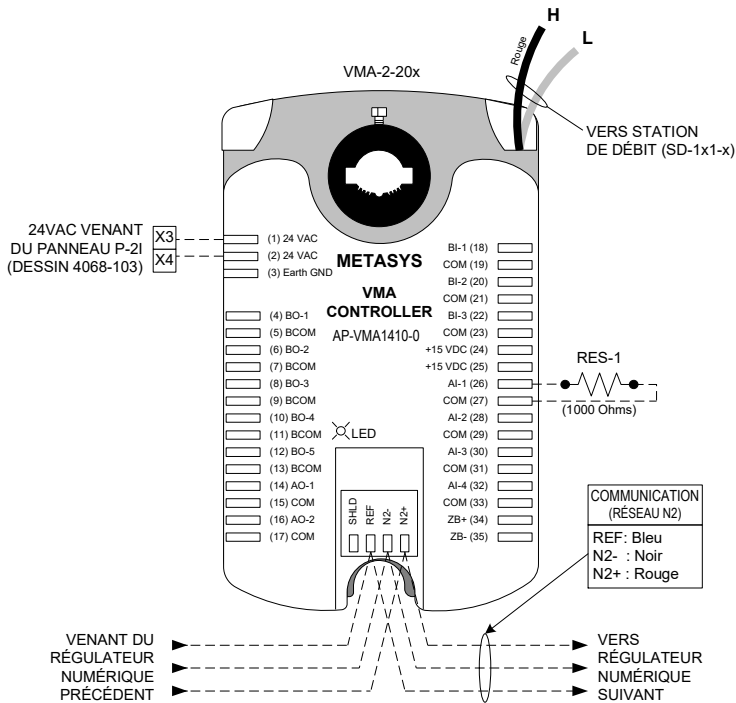
VOIR 4068-091B
POUR LE DIAGRAMME ÉLECTRIQUE

POUR LES DIAGRAMMES DES UNITÉS DE CLIMATISATION QUI DÉSSERVENT LES LOCAUX A-142, 145, 152 ET 155, VOIR :
DESSIN 4068-083 : LOCAL A-152 - UNITÉ AC-22
DESSIN 4068-084 : LOCAL A-155 - UNITÉ AC-23
DESSIN 4068-085 : LOCAL A-142 - UNITÉ AC-24
DESSIN 4068-086 : LOCAL A-145 - UNITÉ AC-25

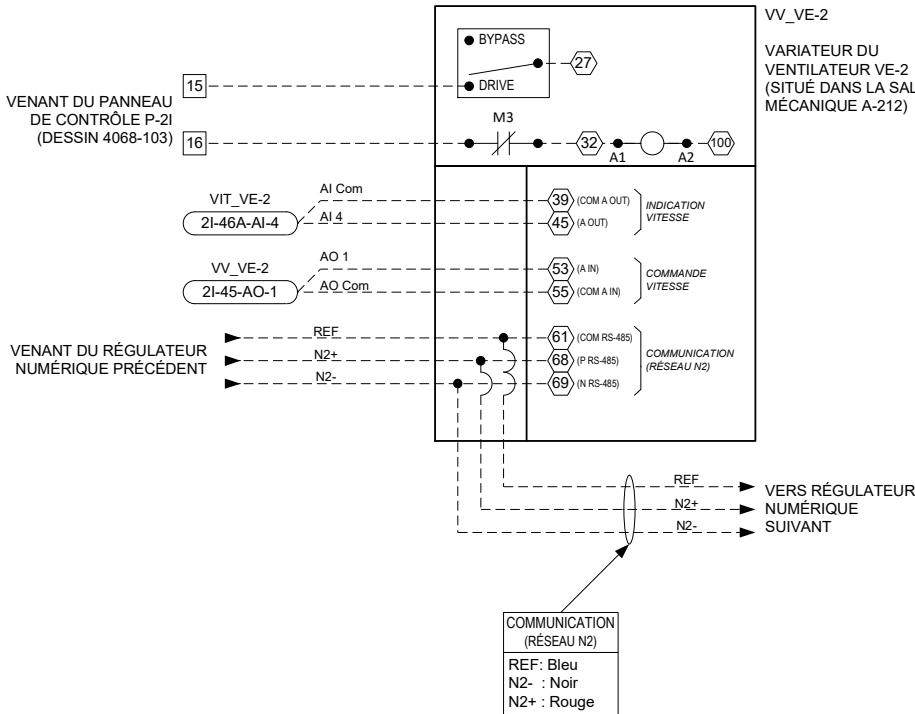
Titre du Dessin		4096-0019		5		TEL QUE CONSTRUIT		C.D.		04/02/12		O.P.	
Système VE-2 Usines pilotes A-141 et A-151		4096-0019		4		AJOUT 4°C		C.D.		03/11/21		O.P.	
				3		TEL QUE CONSTRUIT		D.B.		02/04/29		O.P.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
Nom du Projet		Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE			
		J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/8/2001		PAR DATE 5/8/2001			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Information Succursale Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMERO CONTRAT 1096-0093		NUMERO DESSIN 4068-091A					

SYSTÈME VE-2 (USINES PILOTES A-141 ET A-151)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)

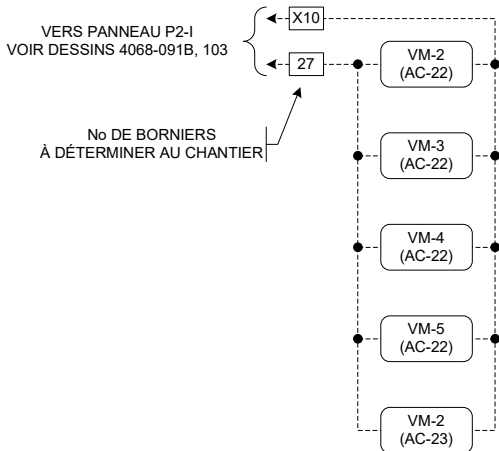
RACCORDEMENTS DES RÉGULATEURS (VMA-2-201 À 204)
(TYPIQUE POUR 4)



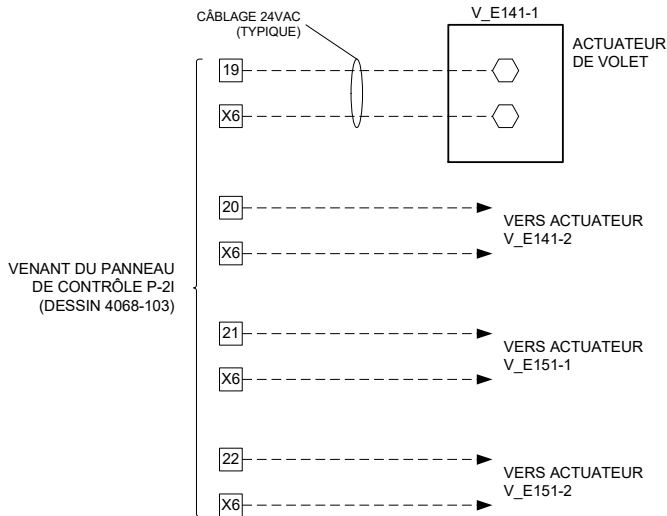
RACCORDEMENTS DU VARIATEUR DE VITESSE VV_VE-2



RACCORDEMENTS DES ACTUATEURS DE VOLET D'ÉVACUATION (VM-2, VM-3, VM-4 ET VM-5)



RACCORDEMENTS DES ACTUATEURS DE VOLET D'ÉVACUATION (V_E141-1 À 151-2)

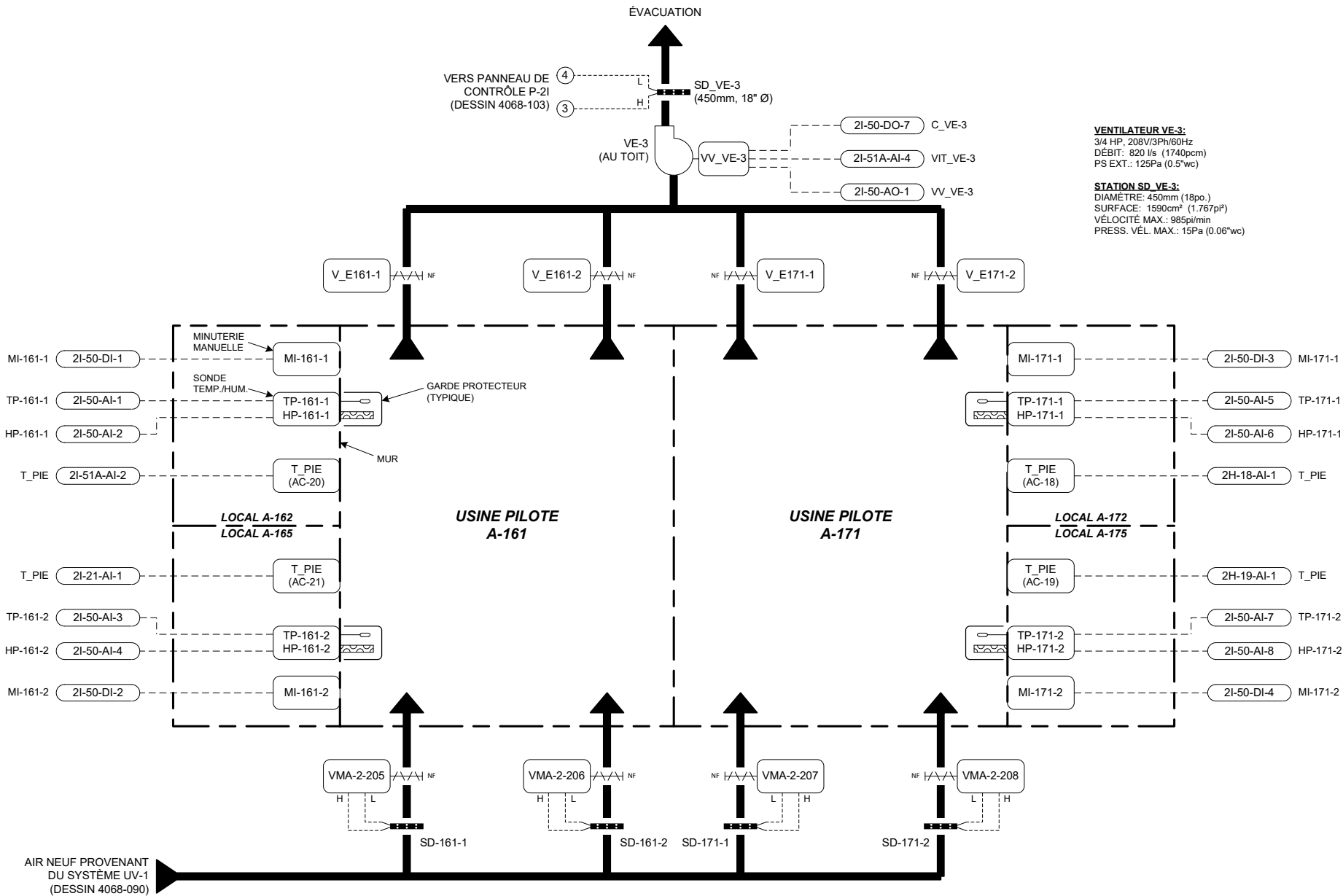


LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
V_E141-1 à 151-2	2	VOIR 4068-091A	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VMA-2-201 à 204	4	VOIR 4068-091A	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
VM-2..5	5	VOIR 4068-083	ACTUATEUR 2 POSITIONS
VV_VE-2	1	VOIR 4068-091A	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

Titre du Dessin Système VE-2 Usines pilotes A-141 et A-151	4096-0019		6	TEL QUE CONSTRUIT		C.D.	04/02/12	O.P.	
	4096-0019		5	AJOUT 4°C		C.D.	03/11/21	O.P.	
			4	TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.	
	DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR	
	Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE			
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	5/8/2001	PAR	DATE
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>		Information Succursale		NUMERO CONTRAT				
			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093				
					NUMERO DESSIN				
					4068-091B				

SYSTÈME VE-3 (USINES PILOTES A-161 ET A-171)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
MI-1x1-x	4	KLT 2H	MINUTERIE À REBOURS À RESSORT, 0 - 2 HEURES - GRASSLIN
SD-1x1-x	4	AYR1400	STATION DE DÉBIT, 350mm (14"), ALUMINIUM - PRESO
SD-VE-3	1	AYR1800	STATION DE DÉBIT, 450mm (18"), ALUMINIUM - PRESO
TP-1x1-x / HP-1x1-x	4	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC, 0-100%HR, ± 2%HR
T_PIE	4	GRD10A-606	GARDE PROTECTEUR VERROUILLABLE, PLASTIQUE
V_E161-1 à 171-2	4	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-205 à 208	4	M9206-AGA-2	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VV_VE-3	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
		VLT6000C4.6	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation est inopérant.
- Les volets d'air neuf (VMA-2-205 à 208) et d'évacuation (V_E161-1 à 171-2) sont fermés.

EN MARCHÉ:

- Sur une hausse d'humidité à l'une des sondes (HP-161-1, 161-2, 171-1 ou 171-2) ou sur un signal provenant d'une minuterie à rebours (MI-161-1, 161-2, 171-1 ou 171-2), la séquence suivante se produit :
 - Le volet d'évacuation correspondant (V_E1x1-x) ouvre.
 - Le régulateur de débit (VMA-2-20x) associé à cette zone module son volet d'air neuf afin de maintenir un débit de 150 l/s (320 pcm).
 - Le ventilateur d'évacuation (VE-3) démarre et sa vitesse est modulée à 25% du total du débit d'air évacué, soit 205 l/s (435 pcm) par l'intermédiaire du variateur (VV_VE-3). La station de débit (SD_VE-3) est utilisée pour maintenir le débit d'évacuation à son point de consigne.
- Lorsqu'il y a une demande dans une autre pièce, les séquences 1 et 2 sont répétées et le débit d'air évacué passe à 50% du total (410 l/s, 870 pcm).
- À la troisième demande, les séquences 1 et 2 se répètent et le débit d'air évacué augmente à 75% du total (615 l/s, 1305 pcm).
- Lorsque les 4 zones sont en demande, tous les volets d'évacuation sont ouverts, les débits d'air neuf sont maintenus à leur point de consigne et le débit d'air évacué est à son maximum (820 l/s, 1740 pcm).

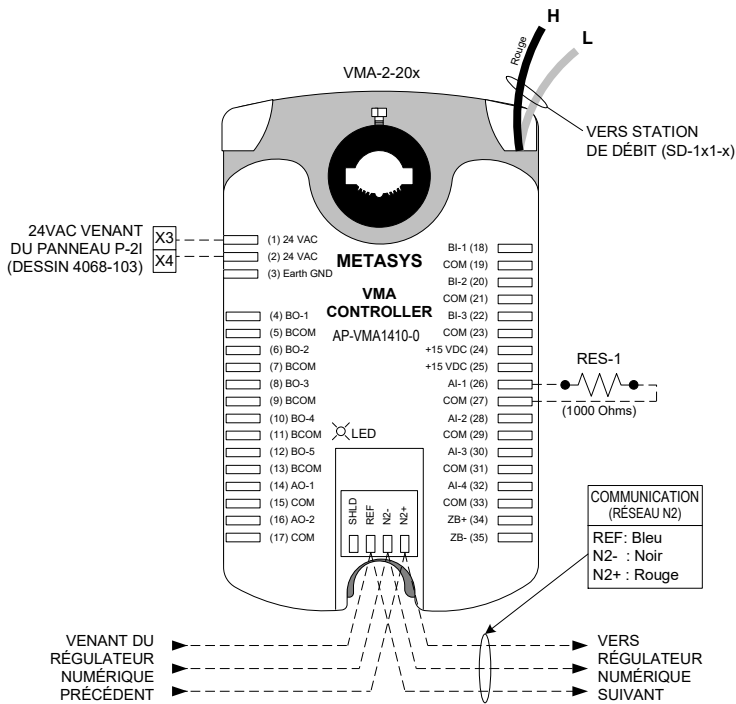
VOIR DESSIN 4068-092B POUR LE DIAGRAMME ÉLECTRIQUE.

POUR LES DIAGRAMMES DES UNITÉS DE CLIMATISATION QUI DÉSSERVENT LES LOCAUX A-162, 165, 172 ET 175, VOIR :
DESSIN 4068-079 : LOCAL A-172 - UNITÉ AC-18
DESSIN 4068-080 : LOCAL A-175 - UNITÉ AC-19
DESSIN 4068-081 : LOCAL A-162 - UNITÉ AC-20
DESSIN 4068-082 : LOCAL A-165 - UNITÉ AC-21

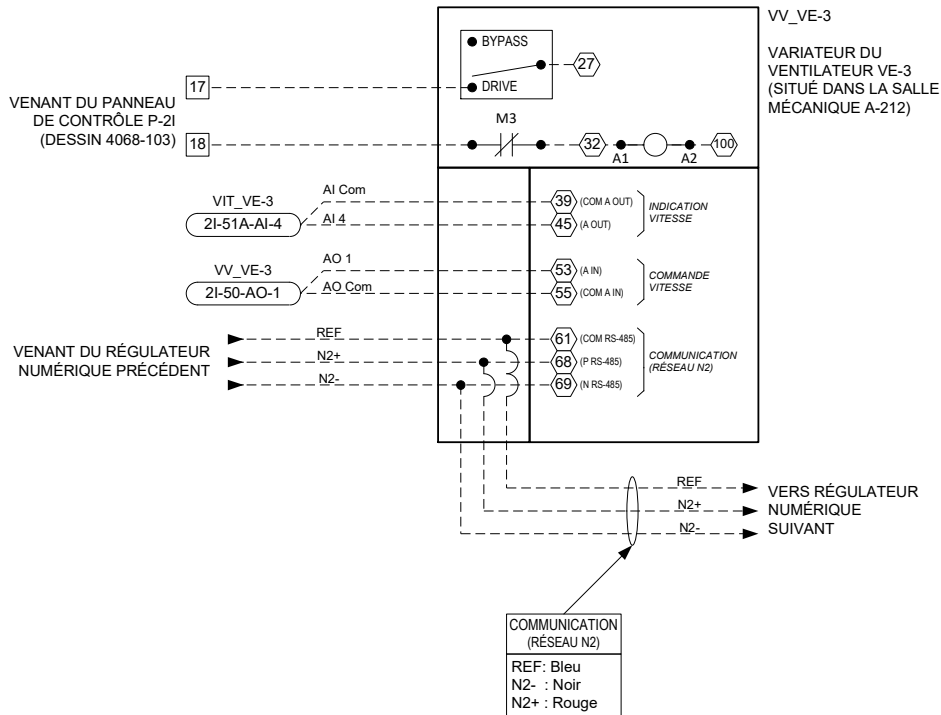
Titre du Dessin				3	TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.
Système VE-3 Usines pilotes A-161 et A-171				2	POUR CONSTRUCTION			9/18/2001	D.B.
				1	POUR APPROBATION			6/12/2001	D.B.
		DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR
Représentant		Gérant De Projet		Concepteur	DESSINE		APPROUVE		
J.-C. Rouillon		S. Bourque		D. Bouchard	PAR	D.B.	DATE	5/8/2001	PAR DATE 5/8/2001
Nom du Projet				Information Succursale		NUMERO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093			
						NUMERO DESSIN			
						4068-092A			

SYSTÈME VE-3 (USINES PILOTES A-161 ET A-171)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)

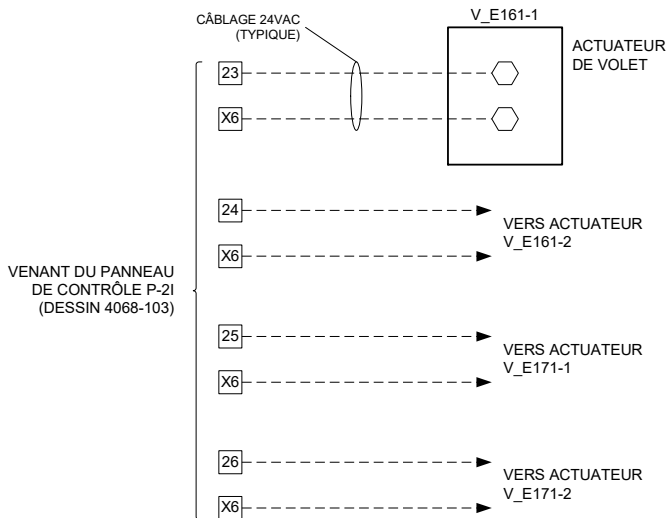
RACCORDEMENTS DES RÉGULATEURS (VMA-2-205 À 208)
(TYPIQUE POUR 4)



RACCORDEMENTS DU VARIATEUR DE VITESSE VV_VE-3



RACCORDEMENTS DES ACTUATEURS DE VOLET D'ÉVACUATION (V_E161-1 À 171-2)

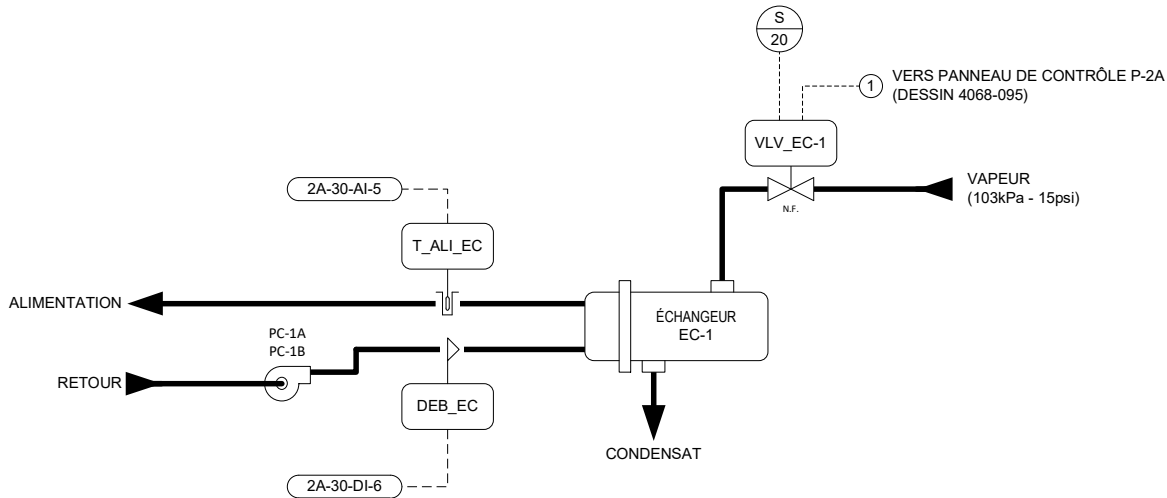


LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
V_E161-1 à 171-2	2	VOIR 4068-092A	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VMA-2-205 à 208	4	VOIR 4068-092A	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
VV_VE-2	1	VOIR 4068-092A	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

Système VE-3 Usines pilotes A-161 et A-171		3		BORNIER VV_VE-3 AJOUTÉS		10/26/2001		D.B.					
		2		POUR CONSTRUCTION		9/18/2001		D.B.					
		1		POUR APPROBATION		6/12/2001		D.B.					
		DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE		PAR	
		Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE			
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/8/2001		PAR DATE 5/8/2001					
Nom du Projet		<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>		Information Succursale		NUMERO CONTRAT		1096-0093					
CRDA ST-HYACINTHE				Johnson Controls Ltée									
Projet d'Innovation Technologique				355, boul. Montpellier									
3600, boul. Casavant				St-Laurent, Qc, H4N 2G6									
St-Hyacinthe (Québec)				Tél: (514) 747-2580									
				Fax: (514) 747-9562									

ÉCHANGEUR DE CHALEUR EC-1



LISTE DE MATÉRIEL

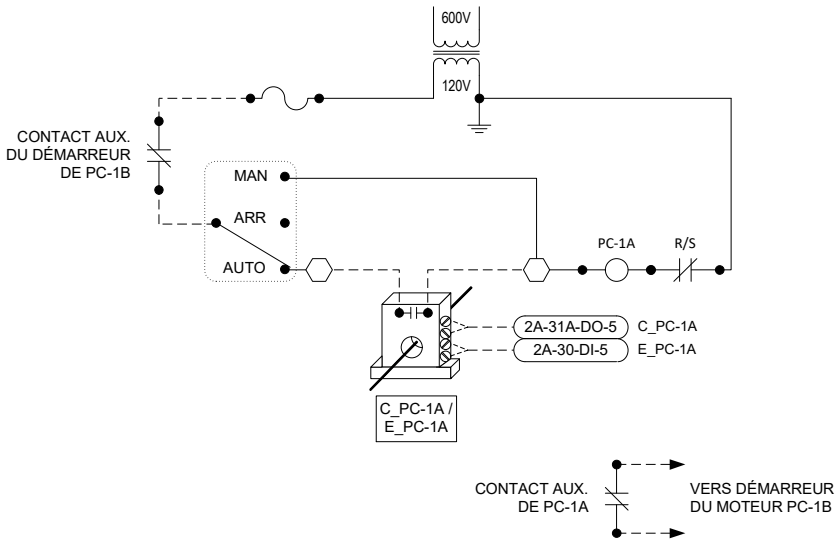
IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PC-1A / E_PC-1A			
C_PC-1B / E_PC-1B	2	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
DEB_EC	1	F61KB-11	INTERRUPTEUR DE DÉBIT D'EAU
VLV_EC-1	1	VG7441RT+823E01	VANNE 2 VOIES, 1-1/2", N.F., Cv 28.9, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
T_ALI_EC	1	TE-6312P-1	SONDE DE TEMP. IMMERSION, 1000 OHMS NI
	1	T 1-1/2P-4	PUITS D'IMMERSION, 100mm - 4", ACIER INOX. - GREYSTONE

SÉQUENCE D'OPÉRATION

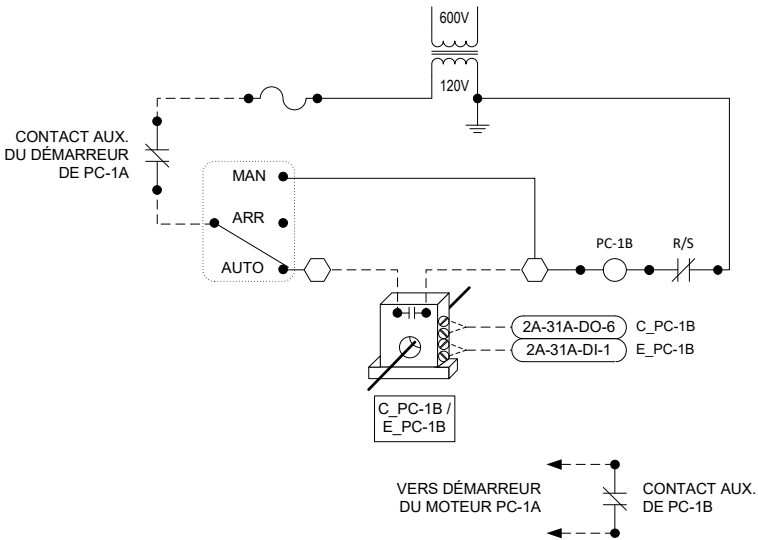
- À L'ARRÊT:**
- Les moteurs (PC-1A et PC-1B) de la pompe sont à l'arrêt.
 - La vanne (VLV_EC-1) est fermée.
- EN MARCHÉ:**
- Un seul des 2 moteurs de la pompe (P-1A ou P-1B) peut fonctionner à la fois. Ce moteur est démarré manuellement par l'opérateur à partir de la centrale de commandes.
 - Le régulateur numérique module la vanne de l'échangeur (VLV_EC-1) afin de maintenir la température d'alimentation d'eau chaude (T_ALI_EC) au point de consigne (P.C. 82°C, ajustable).
 - Des alarmes seront générées à la centrale sur non-concordance entre l'état (E_PC-1A, B) et la commande (C_PC-1A, B) de chacun des moteurs, sur perte de débit d'eau (DEB_EC) et sur basse température d'alimentation d'eau chaude (P.C. 60°C, ajustable). Ces deux dernières alarmes sont mises hors fonction lorsque les commandes de pompe sont à "ARRÊT".
 - Sur une défectuosité d'un des moteurs, le régulateur numérique met à l'arrêt la commande de ce dernier et démarre le second. Un entrebarrage électrique empêche le fonctionnement des 2 moteurs simultanément.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU DÉMARREUR DU MOTEUR (PC-1A) DE LA POMPE

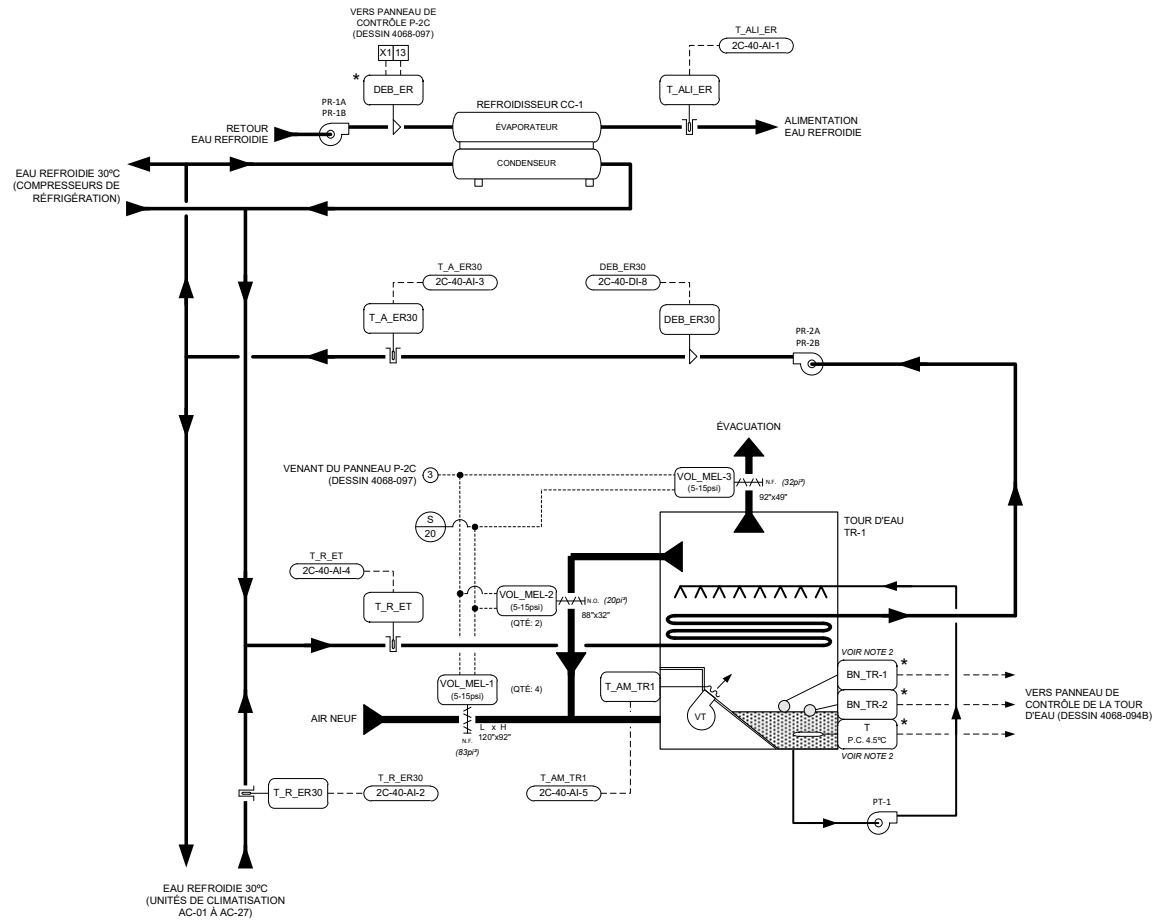


RACCORDEMENTS DU DÉMARREUR DU MOTEUR (PC-1B) DE LA POMPE



Titre du Dessin Échangeur de chaleur vapeur-eau EC-1 (Salle mécanique F-301)		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
		2	RÉV. POMPE 2 MOTEURS		3/14/2002	D.B.
		1	POUR APPROBATION		7/25/2001	D.B.
	DESSIN DE REFERENCE		NO.	REVISION		ECN
Représentant		Gérant De Projet	Concepteur	DESSINE		APPROUVE
J.-C. Rouillon		S. Bourque	D. Bouchard	PAR	D.B.	DATE 6/12/2001
Norm du Projet		Information Succursale		NUMERO CONTRAT		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMERO DESSIN 4068-093

REFROIDISSEUR CC-1 ET TOUR D'EAU TR-1



LISTE DE MATÉRIEL

IDENT.	QTE	MODELE	DESCRIPTION
BM_TR1,2	2	-----	DÉTECTEUR DE BAS NIVEAU D'EAU - PAR D'AUTRES
DEB_ER30	1	-----	INTER interrupteur DE DÉBIT D'EAU - PAR D'AUTRES
DEB_ER30	1	F16K1B-11	INTER interrupteur DE DÉBIT D'EAU
T	1	-----	-----
T_A_ER30,T_AL_ER30,T_ER30,T_R_ET	4	TE-6132P-1 T-1-12P-4	SONDE DE TEMP. IMMERSION, 1000 OHMS NI PUITS IMMERSION, 100mm - 4", ACIER INOX.
T_AM_TR1	1	TE-6135P-1	GREYSTONE SONDE DE TEMP. DE GAINÉ À LECTURE MOYENNE, 5 MÈTRES - 8', 1000 OHMS NI
VOL_MEL-1	4	D-5153-1	ACTUEUR PNEUMATIQUE AVEC POSITIONNEUR
VOL_MEL-2	2	D-5153-1	ACTUEUR PNEUMATIQUE AVEC POSITIONNEUR
VOL_MEL-3	2	D-5153-1	ACTUEUR PNEUMATIQUE AVEC POSITIONNEUR

SÉQUENCE D'OPÉRATION

REFROIDISSEUR CC-1

À L'ARRÊT

- Le refroidisseur (CC-1) et la pompe d'eau refroidie (PR-1A, B) sont arrêtées. Un seul des 2 moteurs de la pompe (PR-1A ou PR-1B) peut fonctionner à la fois.

EN MARCHÉ:

- Le refroidisseur est mis en marche manuellement par l'opérateur à partir de la centrale de commandes.
- Sur une commande de démarrage du refroidisseur, un des 2 moteurs de la pompe (PR-1A ou PR-1B) est mis en marche.
- Sur preuve de débit d'eau provenant de l'interrupteur de débit (DEB_ER), le refroidisseur démarre par l'entremise du relais DEB_ER situé dans le panneau de contrôle P-2C, dessin 4068-097).
- Le refroidisseur maintient alors la température d'alimentation d'eau refroidie au point de consigne (P.C. 9°C, ajustable à partir de la centrale).
- Sur une défectuosité d'un des moteurs (PR-1A ou PR-1B), le régulateur numérique met à l'arrêt la commande de ce dernier et démarre le second. Un entrebarrage électrique empêche le fonctionnement des 2 moteurs simultanément.
- Les alarmes suivantes seront rapportées à la centrale:
 - Non-concordance entre l'état et la commande de chacun des moteurs de la pompe (PR-1A/B).
 - Perte de débit (DEB_ER) de la pompe (PR-1A/B).
 - Haute température d'alimentation d'eau refroidie (T_ALI_ER, P.C. 13°C, ajustable).
 - Alarmes regroupées du refroidisseur.

VOIR LE DESSIN 4068-094B POUR LA SÉQUENCE D'OPÉRATION DE LA TOUR D'EAU TR-1 ET LES DIAGRAMMES ÉLECTRIQUES.

Titre du Dessin		3	REL. QUE CONSTRUIT		D.B.	2/4/2009	O.P.
Refrroidisseur CC-1 et tour d'eau TR-1		2	TEL. POMPES PR-1A/B, 2A/B		D.B.	3/14/2002	O.P.
pour d'eau		1	POUR APPROBATION		D.B.	7/25/2001	D.B.
DESSIN DE REFERENCE		NO	REVISION		ECO	DATE	PAR
Diagramme de débit							
Requiemant	Caract. du Projet	Contraintes	DATE D.B.	DATE	6/12/2001	DATE	APPROBATIVE
							6/12/2001
Nom du Projet			INFORMATION		NUMERO CATALOGUE		
CRDA ST-HYACINTHE			Johnson Controls Ltee		1096-0093		
Projet d'Innovation Technologique			355, boul. Montclair				
3600, boul. Casavant			St-Laurent, Qc. H4N 2G6				
St-Hyacinthe (Québec)			Tel: (514) 747-2580				
			Fax: (514) 747-9562				
Groupe de la régulation					NUMERO CATALOGUE		
					4068-094A		







FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

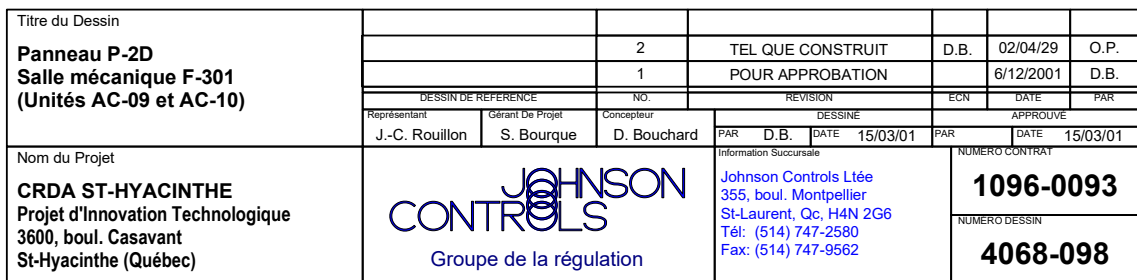
1 - PANNEAU P-2C

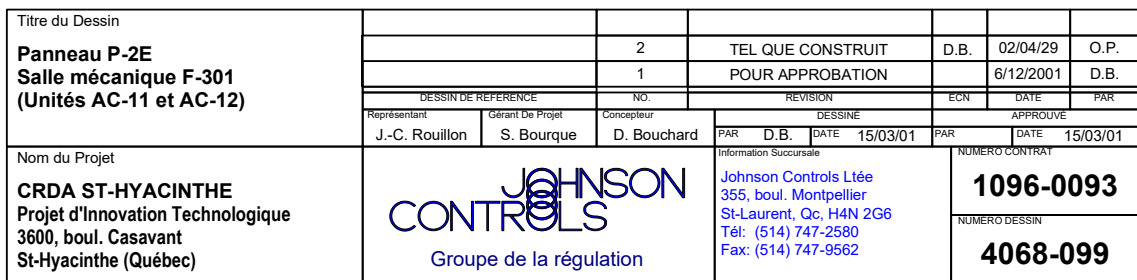
	4	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
	3	MODULES XT-2-42, XP-2-42A		3/14/2002	D.B.
	2	RELAIS "DEB ER" AJOUTÉ		7/30/2001	D.B.
	1	POUR APPROBATION		6/12/2001	D.B.

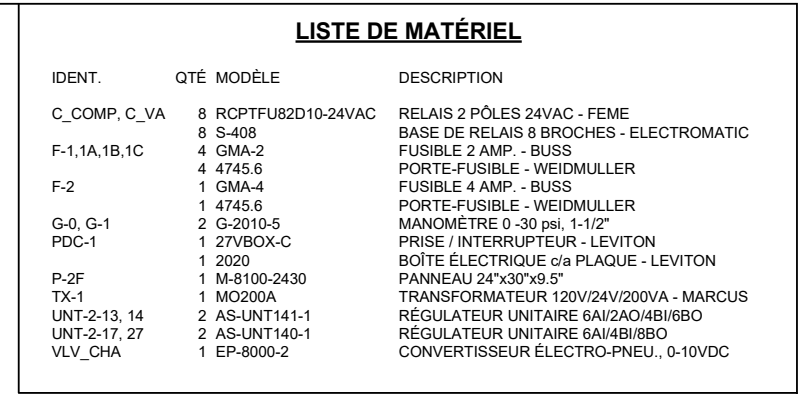
DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR
Représentant	Garant De Projet	Concepteur	PAR	D.B.	DATE	15/03/01	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard					

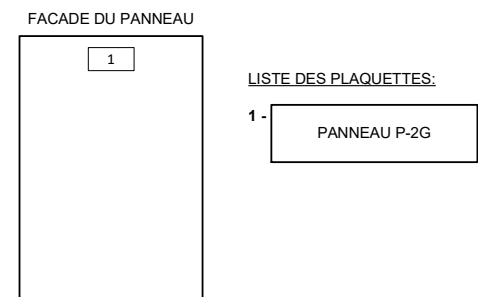
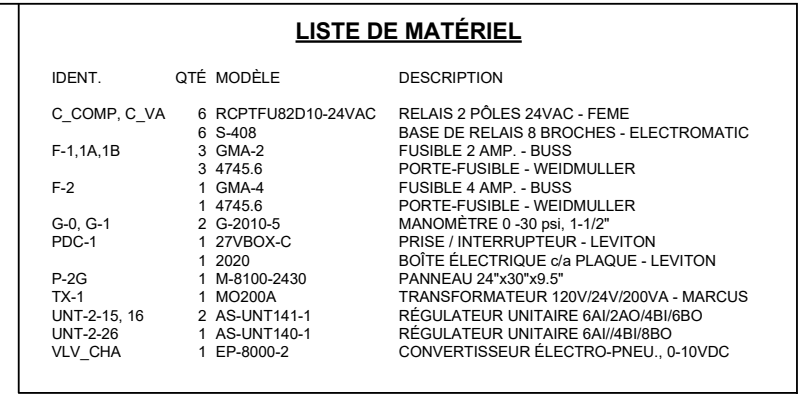
<p style="text-align: center; font-size: 2em; font-weight: bold;">JOHNSON CONTROLS</p> <p style="text-align: center;">Groupe de la régulation</p>	<p style="font-size: 0.8em;">Information Succursale</p> <p style="font-size: 0.8em;">Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562</p>
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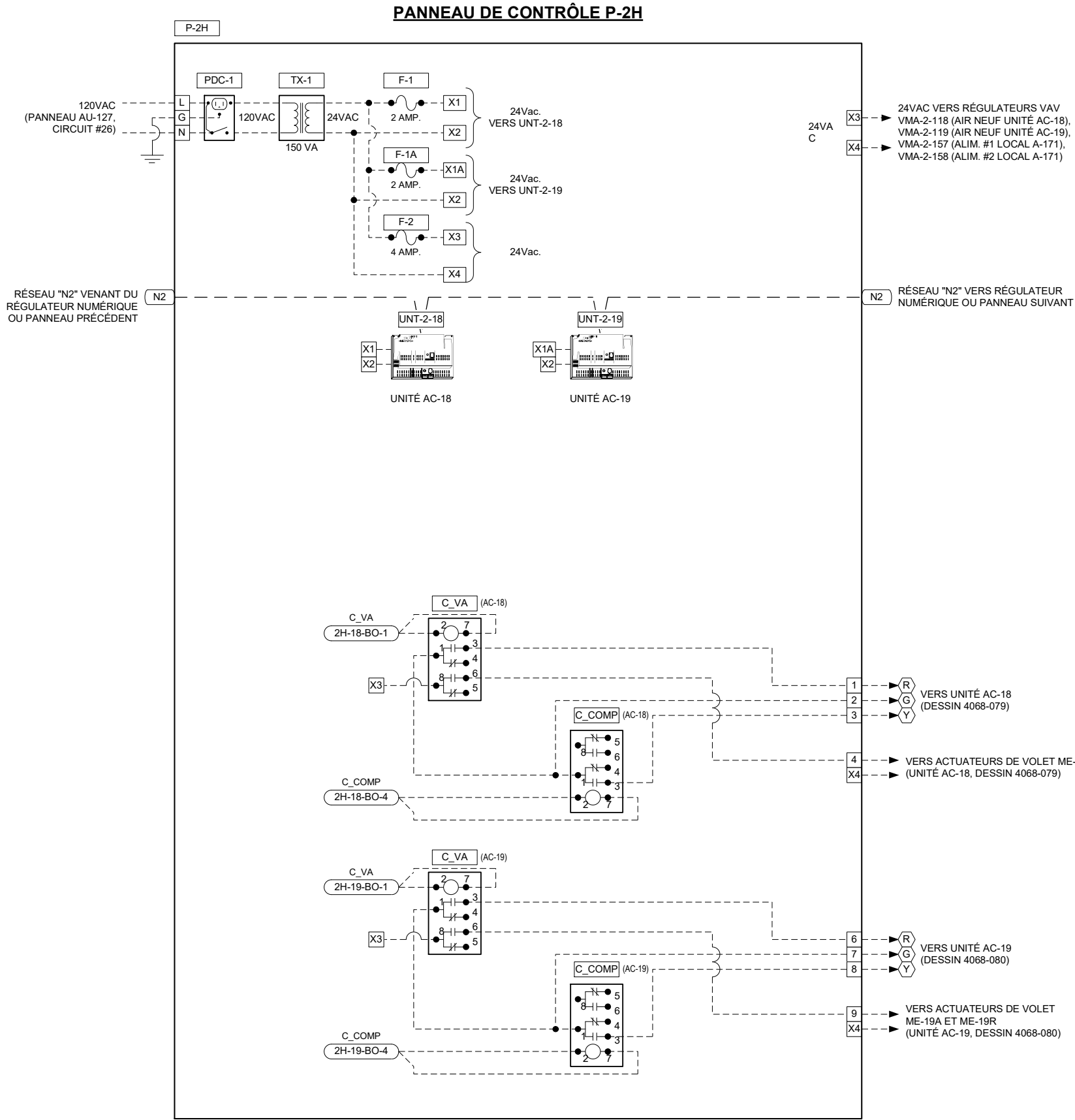
<p style="font-size: 0.8em;">NUMERO CONTRAT</p> <p style="font-size: 1.5em; font-weight: bold; text-align: center;">1096-0093</p> <p style="font-size: 0.8em;">NUMERO DESSIN</p> <p style="font-size: 1.5em; font-weight: bold; text-align: center;">4068-097</p>







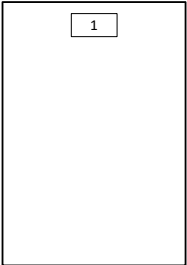
[illegible]



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_COMP, C_VA	4	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
F-1,1A	4	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-2	1	GMA-3	FUSIBLE 3 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2H	1	M-8100-2430	PANNEAU 24"x30"x9.5"
TX-1	1	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
UNT-2-18, 2-19	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/8BO

FACADE DU PANNEAU

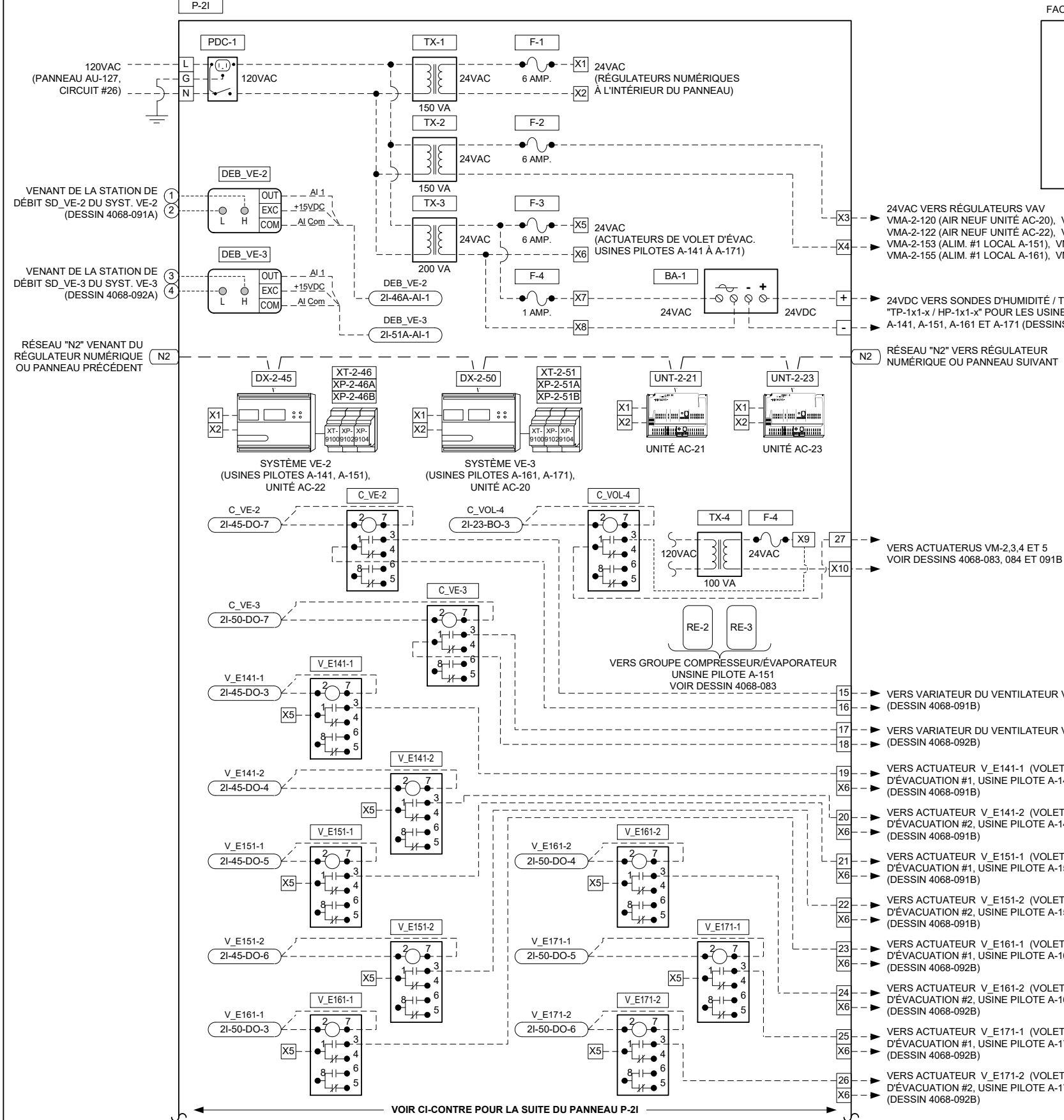


LISTE DES PLAQUETTES:

1 -	PANNEAU P-2H
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Titre du Dessin Panneau P-2H Salle mécanique A-213 (Unités AC-18 et AC-19)	3		TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
	2		POUR CONSTRUCTION		18/09/01	D.B.
	1		POUR APPROBATION		12/06/01	D.B.
	DESSIN DE REFERENCE		NO.	REVISION		ECN
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE 15/03/01
	Information Succursale		NUMERO CONTRAT		DATE 15/03/01	
	JOHNSON CONTROLS		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093	
Groupe de la régulation				NUMERO DESSIN		4068-102

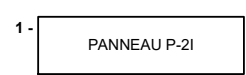
PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU



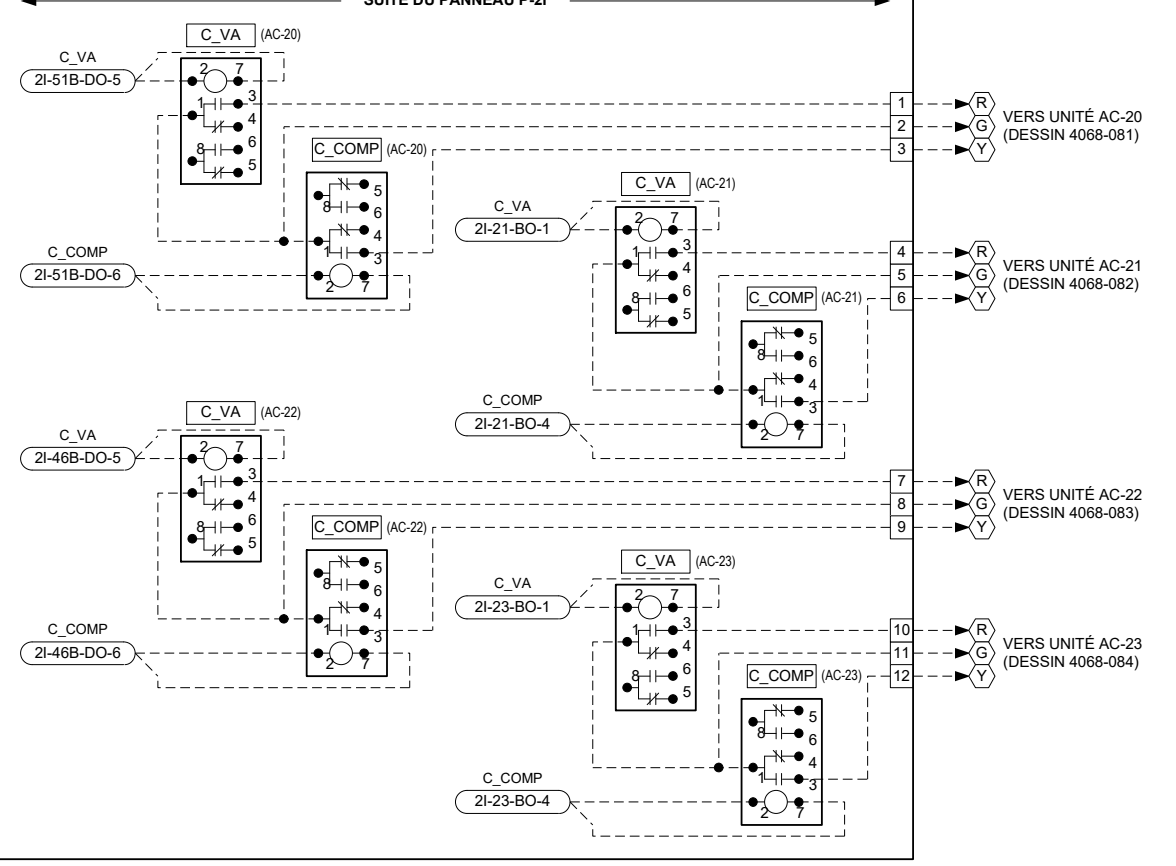
LISTE DES PLAQUETTES:



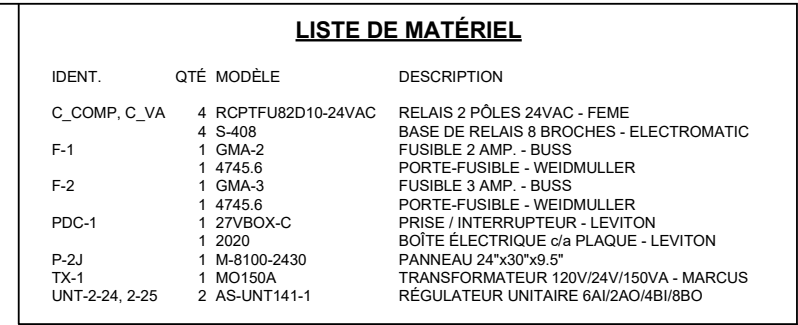
LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DX-2-45, 2-50	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120V/24VAC., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

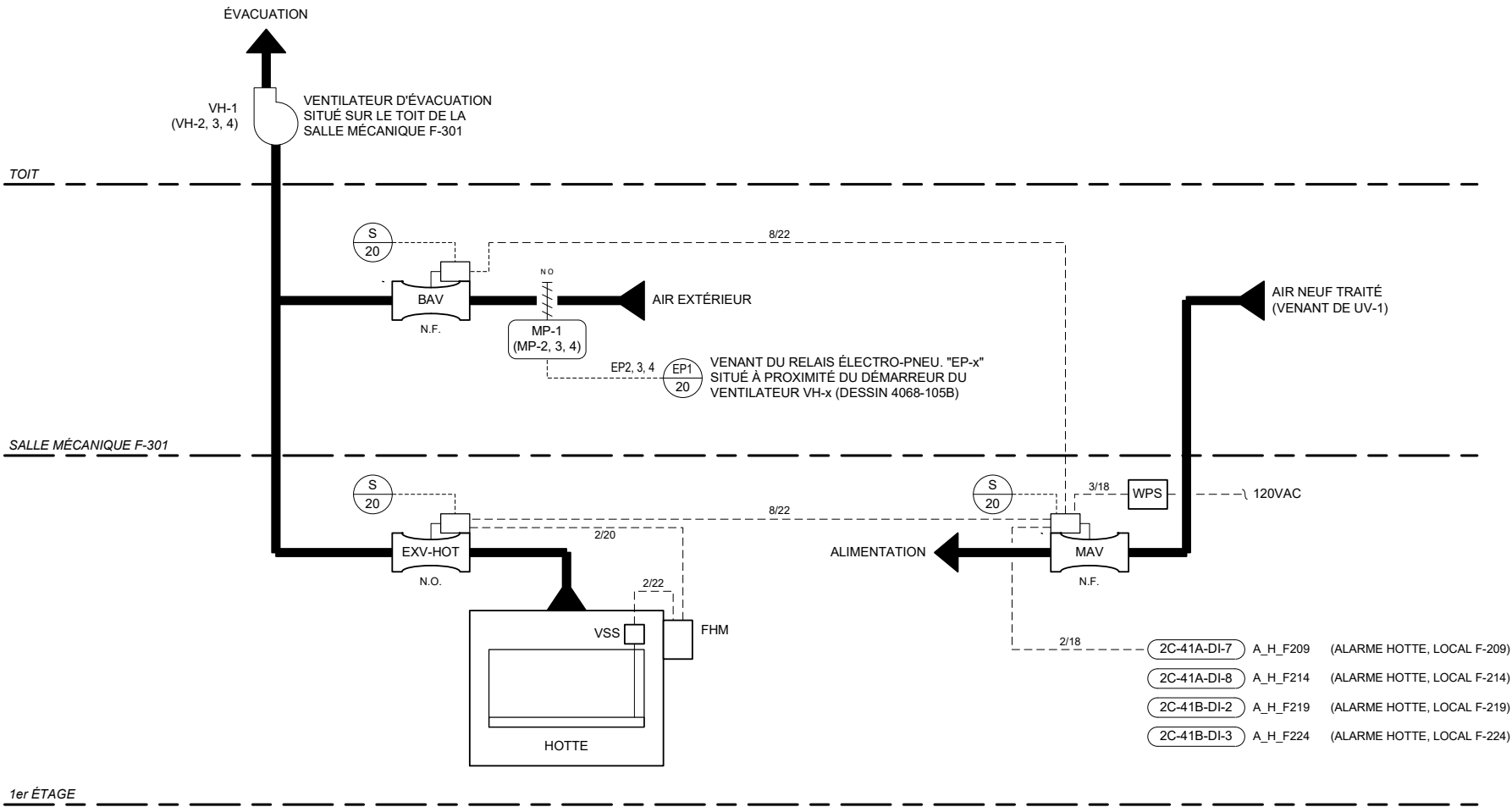
SUITE DU PANNEAU P-2I



Titre du Dessin	4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I Salle mécanique A-212 (Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)	4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE	PAR	
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 15/03/01	PAR	DATE 15/03/01
Norm du Projet	CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	JOHNSON CONTROLS Groupe de la régulation	Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	1096-0093 NUMERO DESSIN 4068-103		



SYSTÈMES VH-1 À VH-4 (LABORATOIRES F-209, F-214, F-219 ET F-224)
(TYPIQUE POUR 4)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BAV	4	MAVA112M-AAEHC-M	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
EXV-HOT	4	EXVB112M-AAHHO	VANNE D'ÉVACUATION "VENTURI", 30cm 12"Ø, N.O., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
FHM	4	FHM610-FRC	MONITEUR DE HOTTE - PHOENIX CONTROLS
MAV	4	MAVA112M-AAEHC	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
MP-1 à MP-4	4	MAC311V	CONTRÔLEUR DE DÉBIT - PHOENIX CONTROLS
	4	D-3062-3	ACTUATEUR DE VOLET PNEUMATIQUE
VSS	4	D-3062-103	BASE POUR ACTUATEUR
	4	VSS110	SENSEUR DE POSITION (OUVERTURE) - PHOENIX CONTROLS
WPS	4	WPS108	BLOC D'ALIMENTATION, 120VAC/+15VDC/-15VDC, 0.8A - PHOENIX CONTROLS

SÉQUENCE D'OPÉRATION

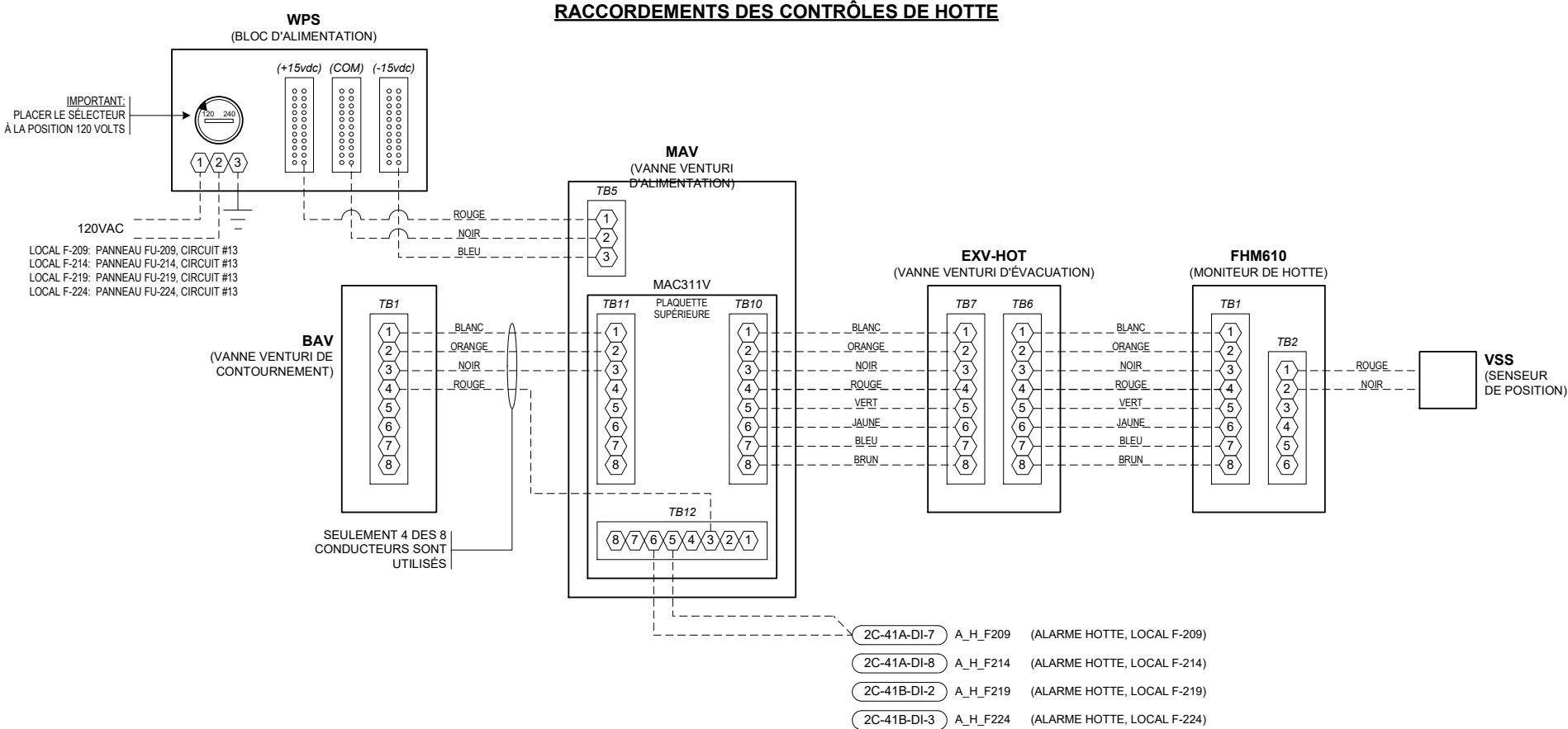
- À L'ARRÊT:
- Le ventilateur d'évacuation (VH-x) est à l'arrêt.
 - Les vannes Venturi sont à leur position normale.

- EN MARCHÉ:
- Le ventilateur d'évacuation est en marche de façon continue. Au départ du ventilateur (VH-x), le volet d'air extérieur (MP-x) ouvre à 100%.
 - Lorsque le volet de la hotte est levé par l'utilisateur, la vanne Venturi d'évacuation (EXV-HOT) est modulée vers la position ouverte, la vanne de contournement (BAV) est modulée vers la position fermée et la vanne d'alimentation (MAV) module afin de maintenir une vélocité constante à la face de la hotte.
 - Une alarme commune sera transmise à la centrale Metasys.

VOIR DESSIN 4068-105B POUR LE DIAGRAMME ÉLECTRIQUE.

Titre du Dessin				3	TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.		
Systèmes VH-1 à VH-4 Hottes de laboratoire (Locaux F-209, F-214, F-219 et F-224)				2	MP1 À MP-4 AJOUTÉS			03/08/01	D.B.		
				1	POUR APPROBATION			25/07/01	D.B.		
		DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR		
		Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE				
Nom du Projet					PAR	D.B.	DATE	5/8/2001	PAR	DATE	5/8/2001
				Information Succursale		NUMERO CONTRAT					
		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093					
						NUMERO DESSIN 4068-105A					

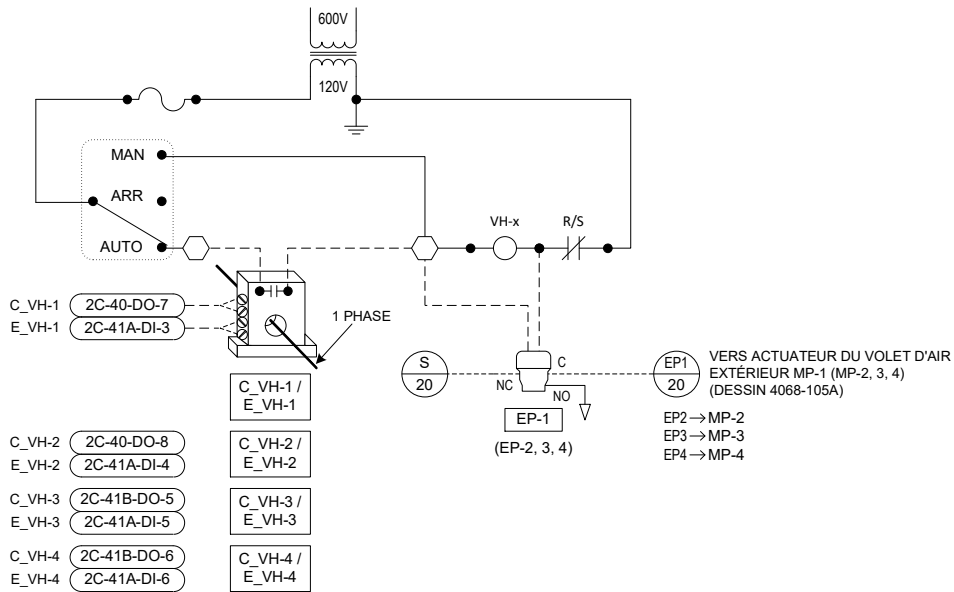
SYSTÈMES VH-1 À VH-4 (LABORATOIRES F-209, F-214, F-219 ET F-224)
(TYPIQUE POUR 4)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BAV	4	MAVA112M-AAEHC-M	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
C_VH-x / E_VH-x	4	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
EP-1, 2, 3, 4 EXV-HOT	4 4	V11HAA-115 EXVB112M-AAHHO	RELAIS ÉLECTRO-PNEUMATIQUE 120VAC VANNE D'ÉVACUATION "VENTURI", 30cm 12"Ø, N.O., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
FHM MAV	4 4	FHM610-FRC MAVA112M-AAEHC	MONITEUR DE HOTTE - PHOENIX CONTROLS VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
VSS	4	MAC311V VSS110	CONTRÔLEUR DE DÉBIT - PHOENIX CONTROLS SENSEUR DE POSITION (OUVERTURE) - PHOENIX CONTROLS
WPS	4	WPS108	BLOC D'ALIMENTATION, 120VAC/+15VDC/-15VDC, 0.8A - PHOENIX CONTROLS

DÉMARREUR DES VENTILATEURS D'ÉVACUATION VH-1 À VH-4



Titre du Dessin
Systèmes VH-1 à VH-4
Hottes de laboratoire

Diagramme électrique

Nom du Projet
CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

		3	TEL QUE CONSTRUIT	D.B.	03/08/01	O.P.
		2	EP-1 À EP-4 AJOUTÉS		03/08/01	D.B.
		1	POUR APPROBATION		25/07/01	D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION		ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE	
			PAR	D.B.	DATE	5/8/2001
Information Succursale			NUMÉRO CONTRAT			
			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093	
			Groupe de la régulation		NUMÉRO DESSIN 4068-105B	

AÉROTHERMES A-1, A-2 ET A-3
(LOCAL F-002)

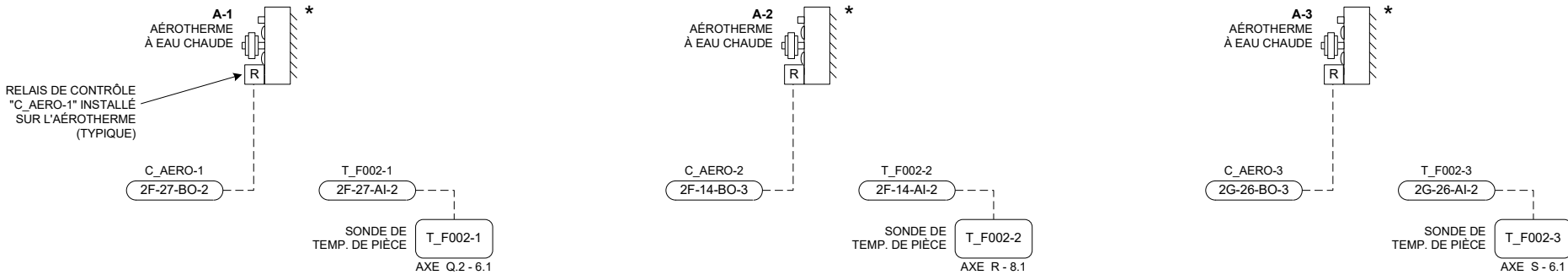
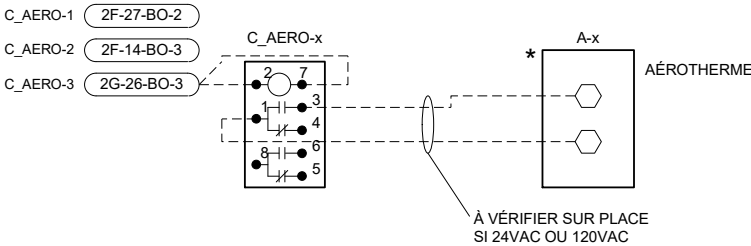


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES AÉROTHERMES (A-1 à A-3)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-1, 2, 3	3	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	3	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
T_F002-1, 2, 3	3	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI

SÉQUENCE D'OPÉRATION (TYPE 1)

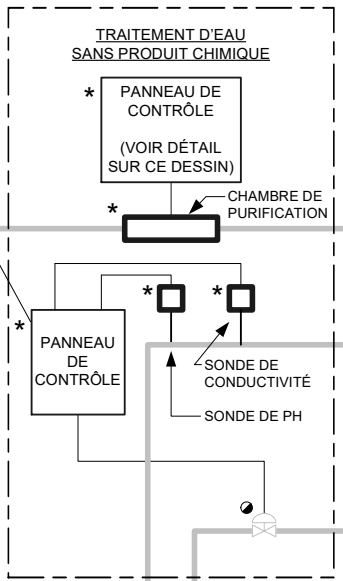
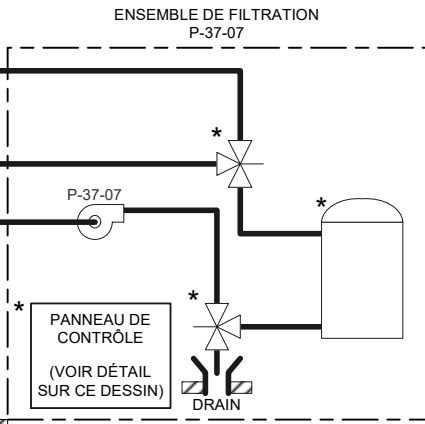
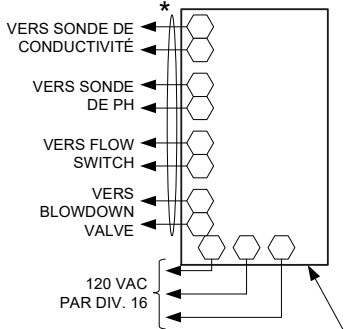
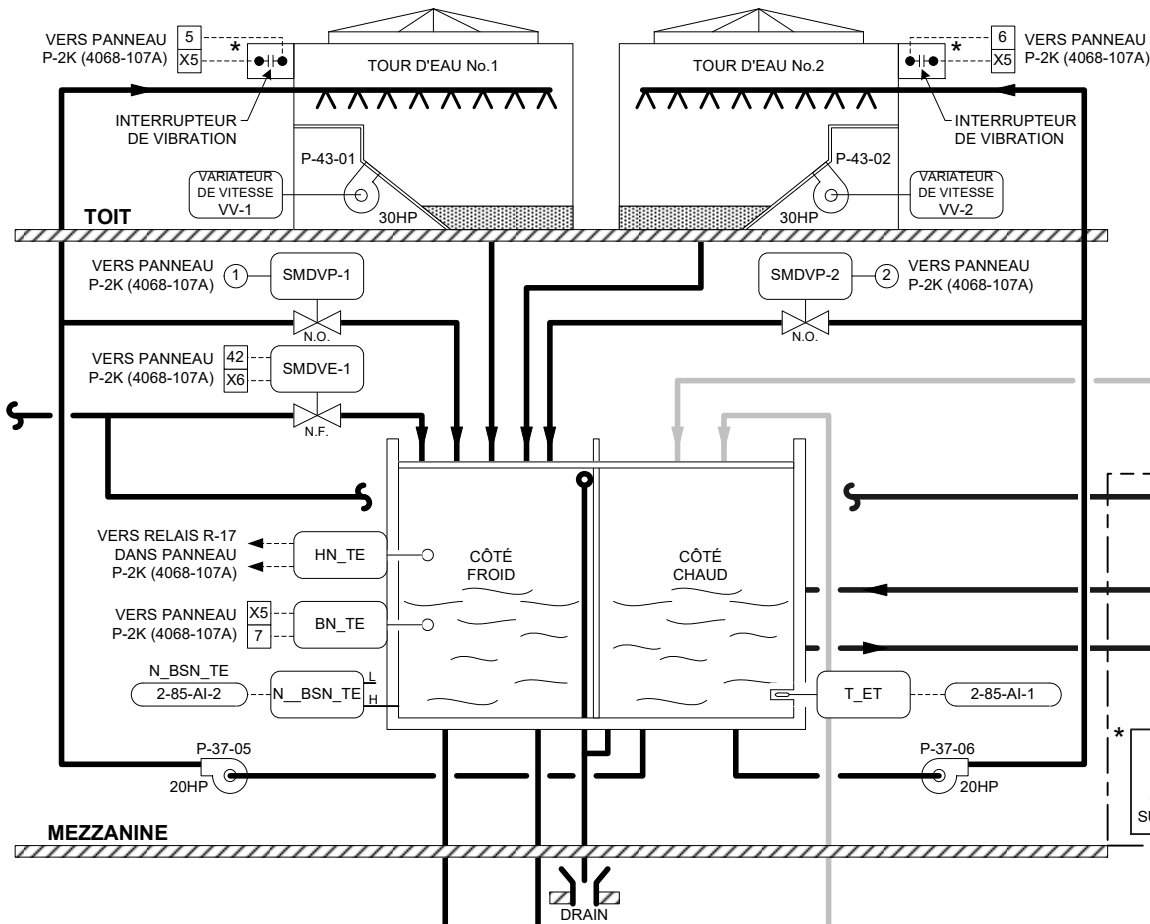
- Sur une demande de chauffage provenant de la sonde (T_F002-x), l'aérotherme est activé afin de maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).

AÉROTHERMES A-4 ET A-5: VOIR DESSIN 4068-088
AÉROTHERME A-6: VOIR DESSIN 4068-087
AÉROTHERMES A-7 ET A-8: VOIR DESSIN 4068-089

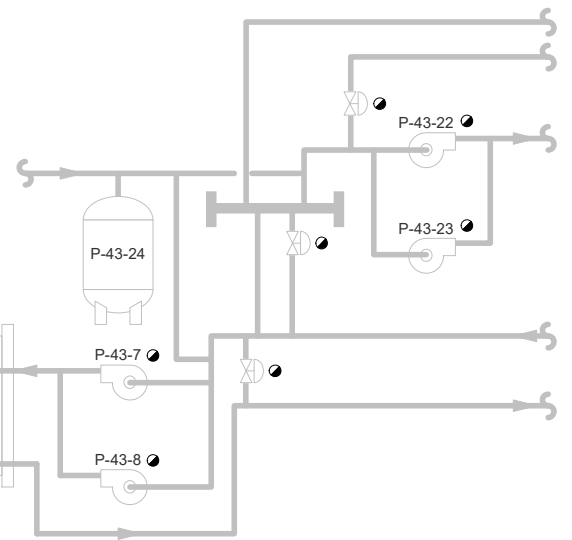
Titre du Dessin Aérotthermes				2	TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.
				1	POUR CONSTRUCTION			06/09/01	D.B.
		DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR
		Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE		
					PAR	D.B.	DATE	9/6/2001	PAR
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		<div> JOHNSON CONTROLS Groupe de la régulation</div>			Information Succursale Johnson Controls Ltée 355, boul. Montpellier St-Laurent Qc H4N 2G6 Phone: (514) 747-2556 Fax: (514) 747-9562		NUMERO CONTRAT		
							1096-0093		
							NUMERO DESSIN		
							4068-106		

CENTRALE D'ÉNERGIE

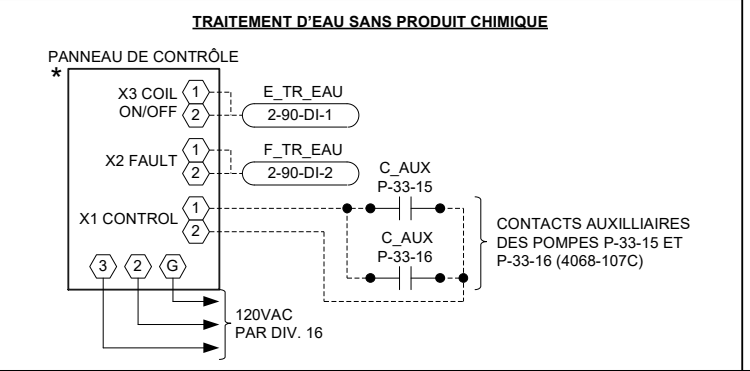
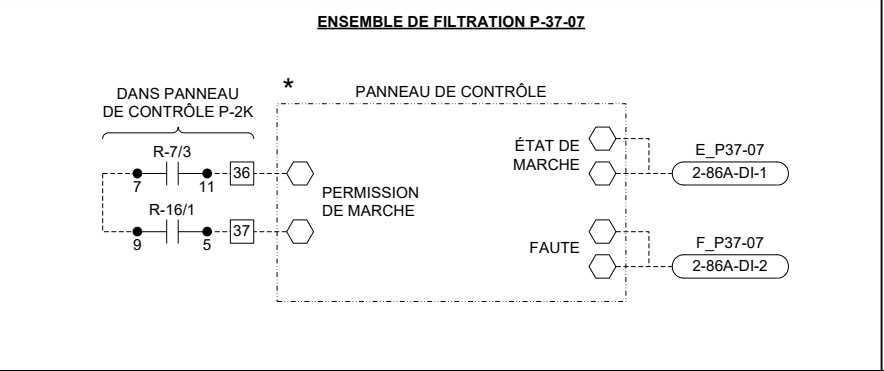
DIAGRAMME DE DÉBIT



LISTE DE MATÉRIEL			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
BN_TE, HN_TE	2	9037HG33	INTERRUPTEUR À FLOTTEUR, TIGE 45", NEMA 1 – SQUARE D
N_BSN_TE	1	264DSFSSA2A1-V2-E4-B1	TRANSMETTEUR PRESSION DIFF., SORTIE 4-20mA, 0.4-40kPa (1.6-160" H ₂ O), DIAPHRAGME INOX 316 – ABB
SMDVP-1, 2	1	3VD4NS	VANNE 3 VOIES MANIFOLD ½" NPT 316 – ALCO
	2	VG7243SM+843E00	VANNE 2 VOIES, N.O., 2", Cv 46.2, AVEC ACTUATEUR PNEUMATIQUE 9-13psi (63-91kPa)
SMDVE-1	1	8221G11	VANNE SOLENOÏDE 2 VOIES, N.F., 1 ½", 24VAC – ASCO
	2	TE-6312P-1	SONDE DE TEMP. IMMERSION, 1000 OHMS NI
T_ER_ALI, RET	2	T1 ½-R6	PUITS D'IMMERSION, 4", INOX. 316 – GREYSTONE
T_ET	1	TE-6312M-1	SONDE DE TEMP. IMMERSION, 1000 OHMS NI
	1	T1 ½-R4	PUITS D'IMMERSION, 4", INOX. 316 – GREYSTONE



— NOUVELLE TUYAUTERIE
— TUYAUTERIE EXISTANTE

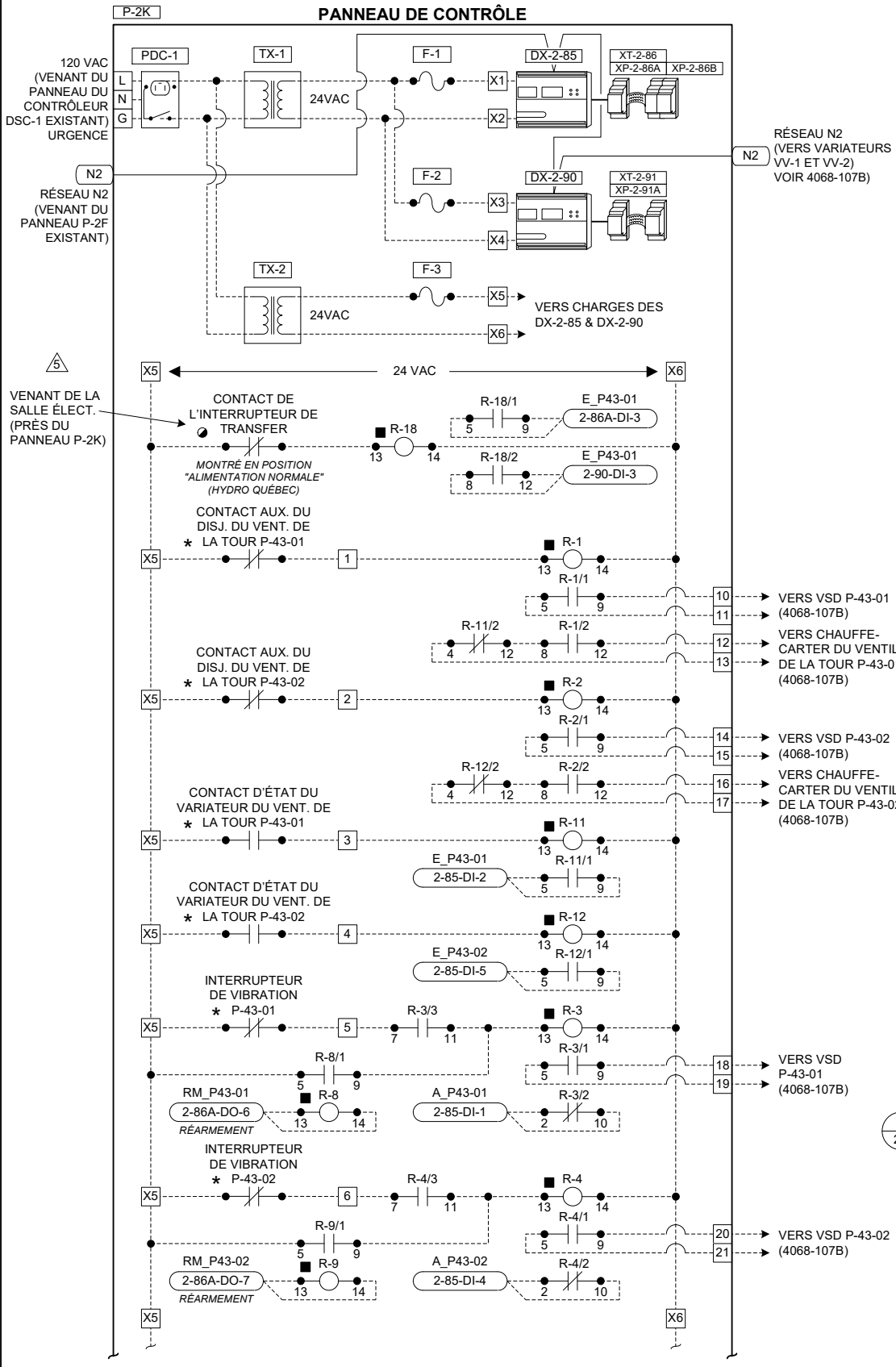


Titre du Dessin
CENTRALE D'ÉNERGIE

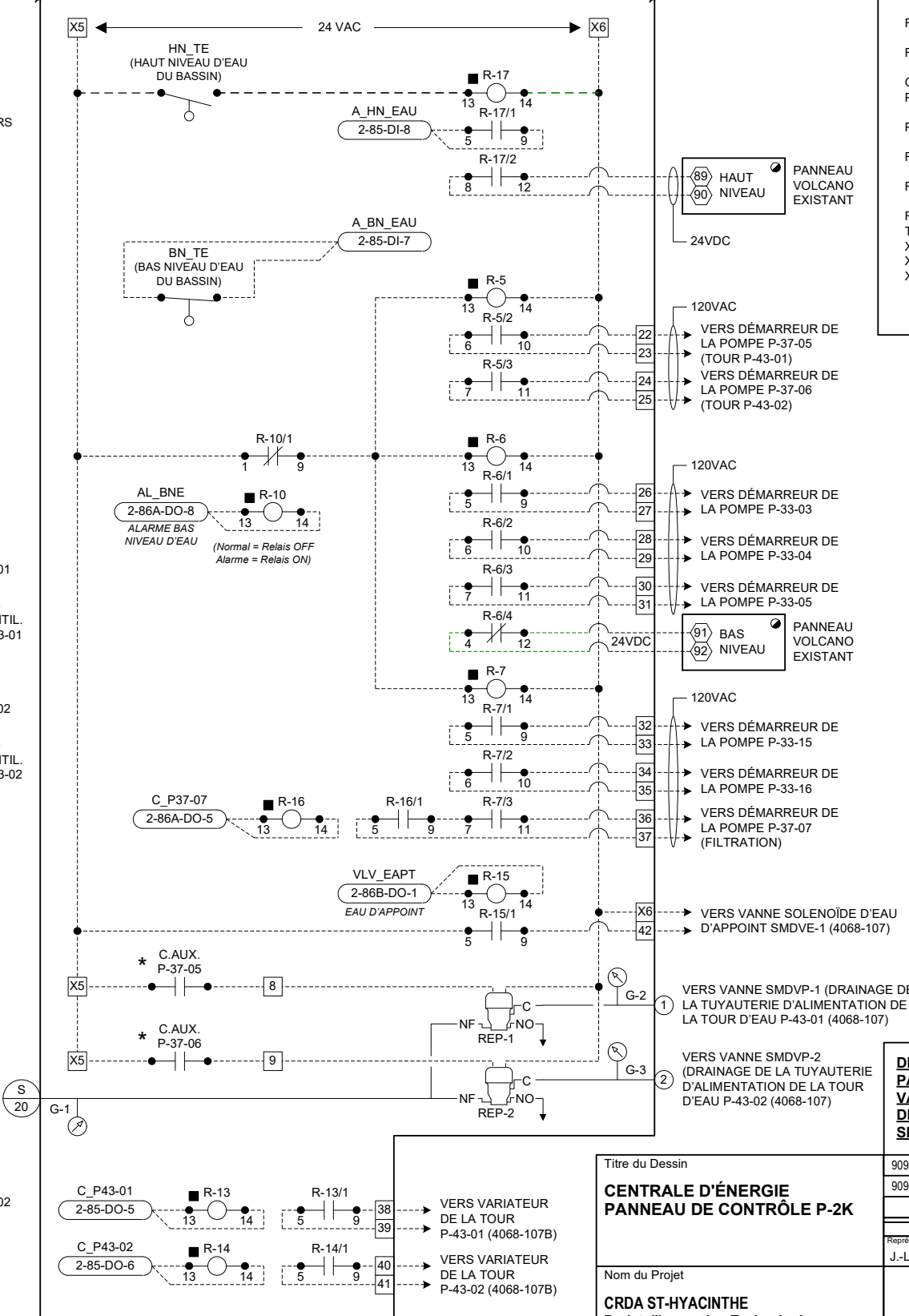
Nom du Projet
CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

DIAGRAMME DE DÉBIT				4068-107
PANNEAU DE CONTRÔLE P-2K				4068-107A
VARIATEURS DE VITESSE DES TOURS				4068-107B
DÉMARREURS POMPES ET CONTRÔLE DES REFROIDISSEURS				4068-107C
SÉQUENCE D'OPÉRATION				4068-107D
9096-0055 (EXTRAS)	6	TEL QUE CONSTRUIT	12/9/2009	D.B.
9096-0055 (EXTRAS)	5	SONDES AJOUTÉES	11/6/2009	D.B.
	4	TEL QUE CONSTRUIT	5/4/2009	D.B.
DESSIN DE REFERENCE		NO.	REVISION	ECN
Représentant	Gérant De Projet	Concepteur	DATE	APPROUVE
J.-C. Rouillon	D. Bouchard	P. Cernosek	1/19/2009	PAR DATE 0
Nom du Projet		Information Succursale		NUMERO CONTRAT
Johnson Controls		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		9096-0055
				NUMERO DESSIN 4068-107

CENTRALE D'ÉNERGIE



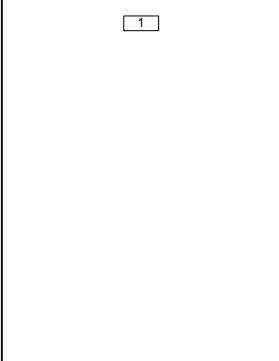
SUITE DU PANNEAU DE CONTRÔLE



LISTE DE MATÉRIE

<u>IDENT.</u>	<u>QTE</u>	<u>MODÈLE</u>	<u>DESCRIPTION</u>
DX-2-85, 90	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE 8AI/8AO/8DI/6D
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, 2	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-3	1	GMA-4	FUSIBLE 4 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
G-1 À G-3	3	G-2010-5	MANOMÈTRE 0 - 30 psi, 1-1/2"
PDC-1	1	27VB0X-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2K	1	1100CIP423009	PANNEAU 42"x30"x9" - EUROBEX
	1	881SP4230P	PLAQUE DE MONTAGE 42"x30" - EUROBEX
R-1, 2, 8 à 17	12	RMIA2-10 024AC	RELAIS DPDT, 24VAC - CARLO-GAVAZZI
	12	ZM15/2	BASE DE RELAIS DPDT - CARLO-GAVAZZI
R-3, 4, 5, 6, 7, 18	6	RMIA4-50024AC	RELAIS 4PDT 24VAC - CARLO-GAVAZZI
	6	ZM15/4N	BASE DE RELAIS 4PDT - CARLO-GAVAZZI
REP-1, 2	2	V11HGA-100	RELAIS ÉLECTRO-PNEUMATIQUE, 24VAC
TX-1, 2	1	TR150VA001	TRANSFORMATEUR 120V/24V/150VA - RIB
XP-2-86A	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XP-2-86B, 91A	1	XP-9103-8304	MODULE D'EXPANSION 8DO
XT-2-86, 91	2	XT-9100-8304	MODULE D'EXPANSION

FAÇADE DU PANNEAU




PLAQUETTES (1-1/2" x 4")

1 - P-2K
TOURS D'EAU ET
REFROIDISSEUR

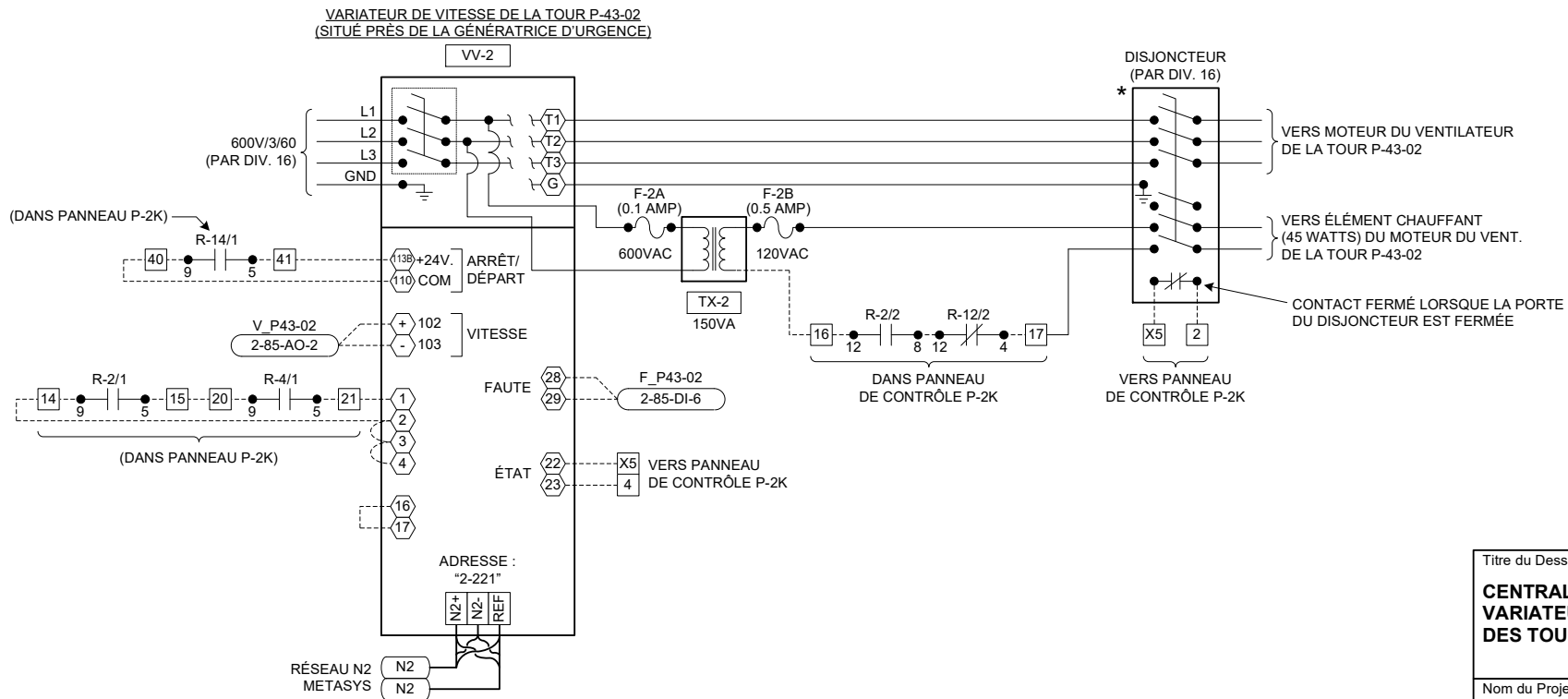
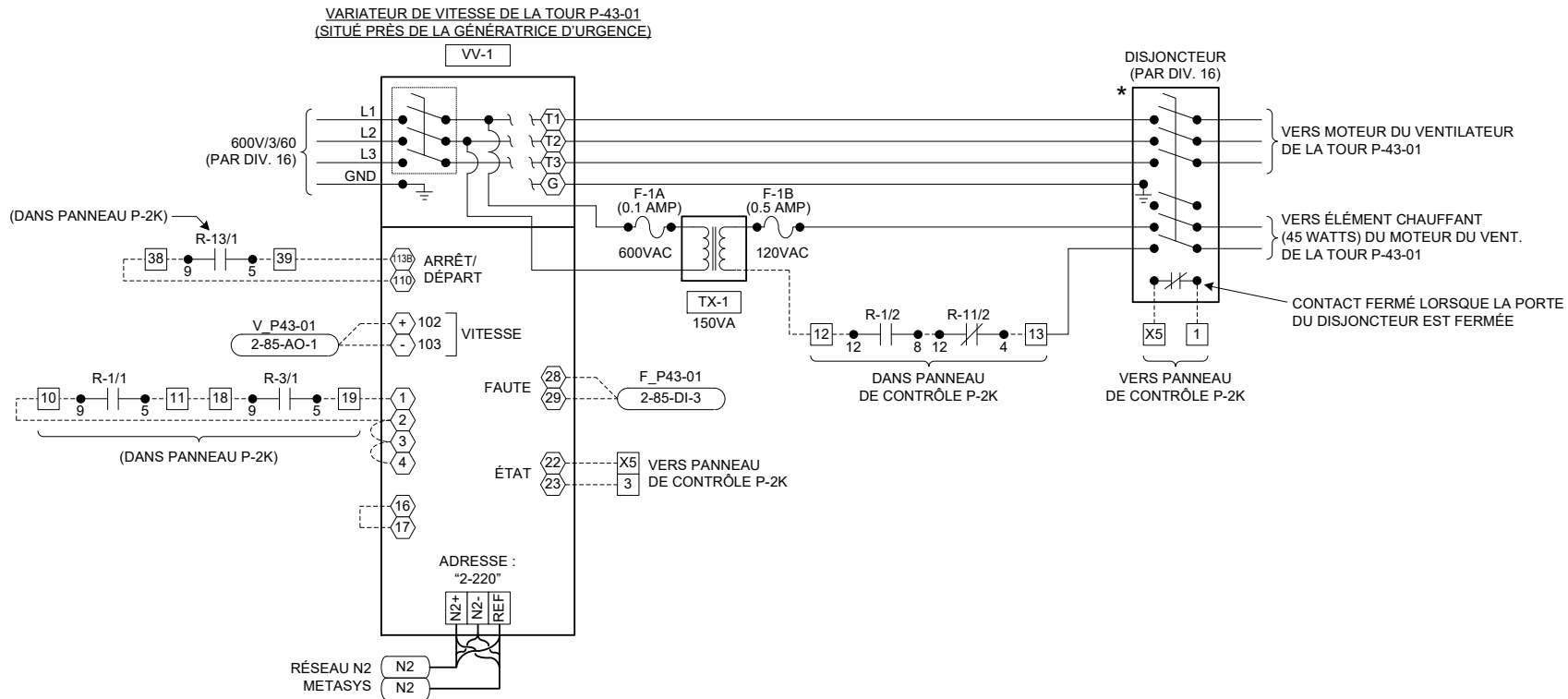
<u>DIAGRAMME DE DÉBIT</u>	4068-107
<u>PANNEAU DE CONTRÔLE P-2K</u>	4068-107A
<u>VARIATEURS DE VITESSE DES TOURS</u>	4068-107B
<u>DÉMARREURS POMPES ET CONTRÔLE DES REFRIGÉRISEURS</u>	4068-107C
<u>SÉQUENCE D'OPÉRATION</u>	4068-107D

096-0055 (EXTRAS)	6	TEL QUE CONSTRUIT		12/9/2009	D.E
096-0055 (EXTRAS)	5	MODIFICATIONS PANNEAU		11/13/2009	D.E
	4	TEL QUE CONSTRUIT		5/4/2009	D.E

DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAGE
présentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ		
-L. Martineau	D. Bouchard	P. Cernosek	PAR	DATE 1/19/2009	PAR	DATE 0	

	<p>Information Succursale</p> <p>Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562</p>	<p>NUMERO CONTRAT</p> <p>9096-0055</p> <hr/> <p>NUMERO DESSIN</p> <p>4068-107A</p>
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CENTRALE D'ÉNERGIE
VARIATEURS DE VITESSE DES TOURS



LISTE DE MATÉRIEL

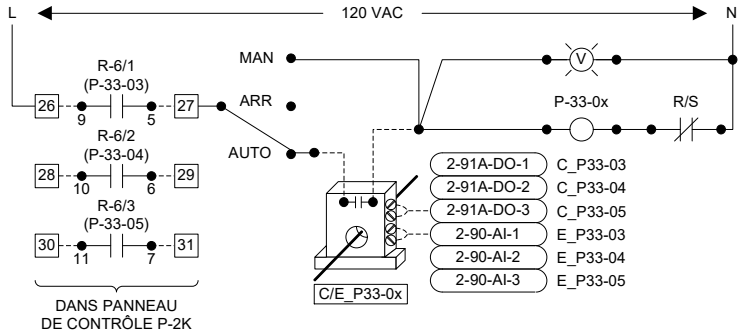
IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1A, F-2A	2	KTK-1/10	FUSIBLE 1/10 AMP., 600VAC – BUSS
	2	HPF	PORTE-FUSIBLE – BUSS
F-1B, F-2B	2	AGC-½	FUSIBLE 1/2 AMP., 120VAC – BUSS
	2	HKP-HH	PORTE-FUSIBLE – BUSS
TX-1, TX-2	2	MC150T	TRANSFORMATEUR 600V/120V/150VA - MARCUS
VV-1, VV-2	2	RT0810101500	VARIATEUR DE VITESSE (ACH550-UH-032A-6), 30HP, 600VAC, AVEC OPTION DÉRIVATION (BYPASS), c/a SECTIONNEUR 60 AMP. ET FILTRE RLC – ABB

DIAGRAMME DE DÉBIT	4068-107
PANNEAU DE CONTRÔLE P-2K	4068-107A
VARIATEURS DE VITESSE DES TOURS	4068-107B
DÉMARREURS POMPES ET CONTRÔLE DES REFROIDISSEURS	4068-107C
SÉQUENCE D'OPÉRATION	4068-107D

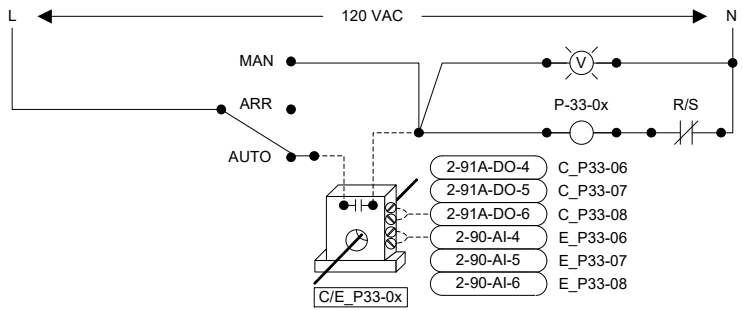
Titre du Dessin	3	TEL QUE CONSTRUIT	5/4/2009	D.B.
CENTRALE D'ÉNERGIE VARIATEURS DE VITESSE DES TOURS	2	POUR INSTALLATION	3/23/2009	D.B.
	1	POUR APPROBATION	P.C.	1/19/2009
DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DATE	APPROUVE
J.-L. Martineau	D. Bouchard	P. Cernosek	1/19/2009	0
Nom du Projet	CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	Information Succursale	NUMERO CONTRAT	9096-0055
		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	NUMERO DESSIN	4068-107B

CENTRALE D'ÉNERGIE
DÉMARREURS DES POMPES

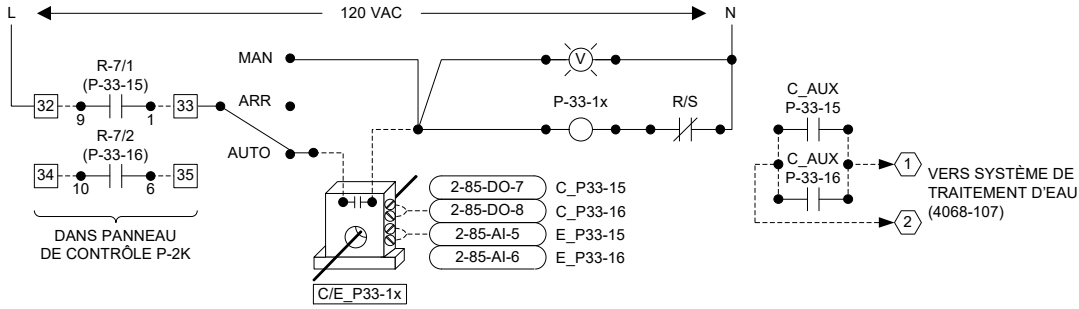
DÉMARREURS DES POMPES D'EAU DE REFOIDISSEMENT
P-33-03 (CCM-5), P-33-04 (CCM-5) ET P-33-05 (CCM-5)
(3 SEMBLABLES)



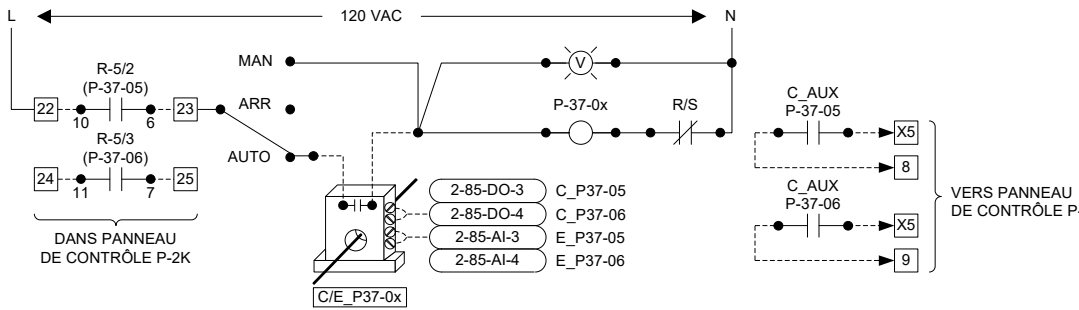
DÉMARREURS DES POMPES D'EAU GLACÉE
P-33-06, P-33-07 ET P-33-08
(3 SEMBLABLES)



DÉMARREURS DES POMPES D'EAU REFRIGÉRIÉE
P-33-15 (CCM-4) ET P-33-16 (CCM-5)
(2 SEMBLABLES)



DÉMARREURS DES POMPES D'EAU REFRIGÉRIÉE
P-37-05 ET P-37-06
(2 SEMBLABLES)



LISTE DE MATÉRIEL

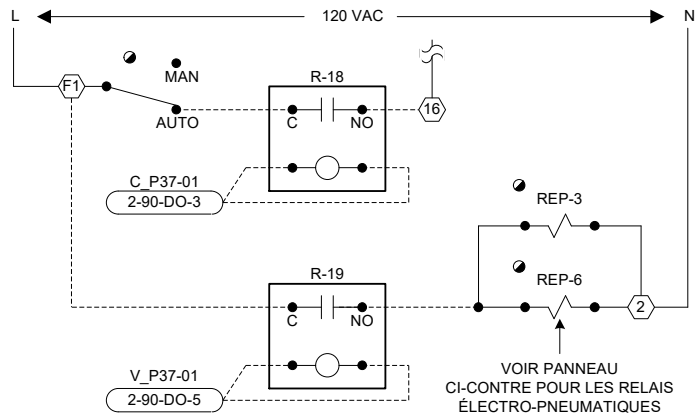
IDENT.	QTÉ	MODÈLE	DESCRIPTION
C/E_Pxx	10	H931	RELAIS DE COURANT COMBINÉ (COMMANDE / ÉTAT), 4-20mA, 0-30/60/120 AMP. - VERIS
E_REFR1, 2	2	H321	RELAIS DE COURANT ANALOGIQUE, 0-800 AMP., 4-20mA, SPLIT-CORE - VERIS
R-18 à R-21	4	RIBU1C	RELAIS SPDT, 24VAC - RIB (RELAY IN A BOX)
REP-3, 4, 6, 7	4	V11HAA-100	RELAIS ÉLECTRO-PNEUMATIQUE, 120VAC - EXISTANT

DIAGRAMME DE DÉBIT
PANNEAU DE CONTRÔLE P-2K
VARIATEURS DE VITESSE DES TOURS
DÉMARREURS POMPES ET CONTRÔLE DES REFRIGÉRISEURS
SÉQUENCE D'OPÉRATION

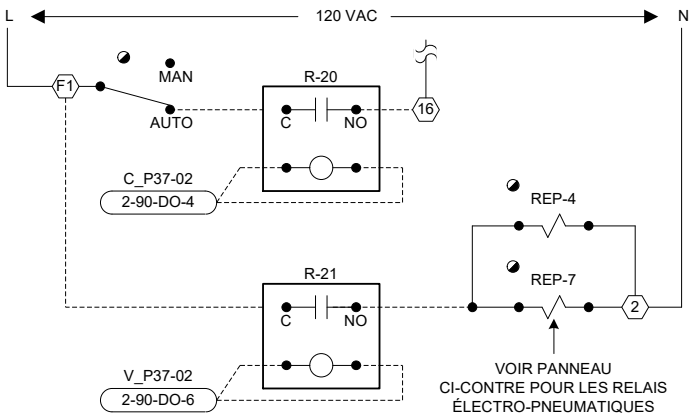
4068-107
4068-107A
4068-107B
4068-107C
4068-107D

CONTRÔLE DES REFRIGÉRISEURS

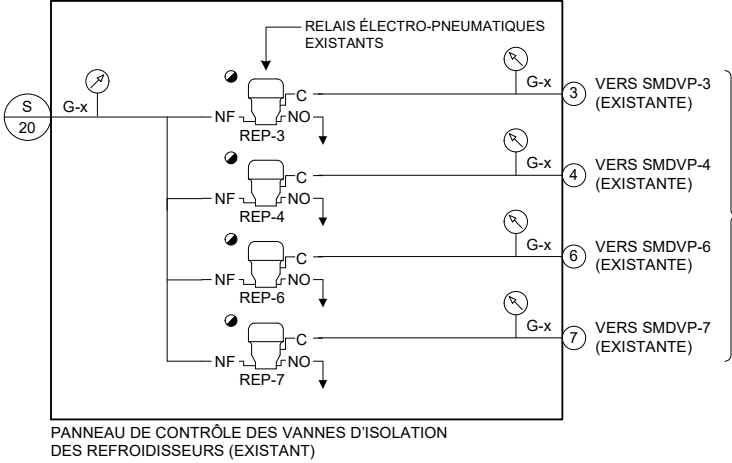
REFRIGÉRISEUR P-37-01



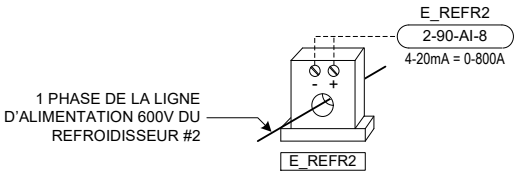
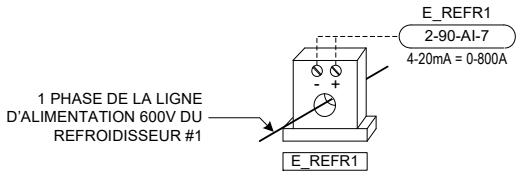
REFRIGÉRISEUR P-37-02



PANNEAU DE CONTRÔLE (EXISTANT)



VOIR DESSIN 4068-107 POUR
LES VANNES D'ISOLATION
DES REFRIGÉRISEURS



Titre du Dessin	9096-0055 (EXTRAS)	5	TEL QUE CONSTRUIT	12/9/2009	D.B.
CENTRALE D'ÉNERGIE DÉMARREURS DES POMPES ET CONTRÔLE DES REFRIGÉRISEURS	9096-0055 (EXTRAS)	4	ÉTAT REFRIG. AJOUTÉS	11/6/2009	D.B.
		3	TEL QUE CONSTRUIT	5/4/2009	D.B.
DESSIN DE REFERENCE	NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	PAR	DATE	APPROUVE
J.-L. Martineau	D. Bouchard	P. Cernosek	PAR	DATE	0
Nom du Projet	CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	Information Succursale	Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	NUMERO CONTRAT	9096-0055
				NUMERO DESSIN	4068-107C

CENTRALE D'ÉNERGIE
SÉQUENCE D'OPÉRATION

TOURS DE REFROIDISSEMENT P-43-01 ET P-43-02

À L'ARRÊT:

- Les pompes d'eau de refroidissement P-33-15 et P-33-16 sont à l'arrêt.
- Les pompes des tours P-37-05 et P-37-06 sont à l'arrêt.
- Les soupapes SMDVP-1 et SMDVP-2 sont ouvertes.
- La soupape d'eau d'appoint SMDVE-1 ouvre et ferme afin de maintenir le niveau d'eau dans le réservoir intérieur à son point de consigne (à l'aide du transmetteur de niveau d'eau, déterminer le niveau d'eau à l'arrêt des tours, le niveau d'eau avec une seule tour en marche et le niveau d'eau avec les deux tours en marche).
- Les ventilateurs des tours d'eau P-43-01 et P-43-02 sont à l'arrêt.
- Le système de traitement d'eau et de filtration P-37-07 est à l'arrêt.

AU DÉPART:

- Le système démarre manuellement via une commande au poste opérateur.
- Les contrôles des tours d'eau P-43-01 et P-43-02 sont opérationnels.
- La pompe d'eau de refroidissement P-33-15 (P-33-16) démarre selon la priorité assignée par l'opérateur.
- Le système de traitement d'eau et de filtration P-37-07 est opérationnel.

EN MARCHÉ:

- La température d'eau du bassin intérieur (T_ET) contrôle en séquence l'opération des deux tours d'eau afin de maintenir le point de consigne de 25°C.
- La pompe P-37-05 (P-37-06) ayant le plus petit nombre d'heures d'opération démarre.
- La soupape SMDVP-1 (SMDVP-2) ferme.
- Le ventilateur de la tour P-43-01 (P-43-02) démarre à basse vitesse lorsque la température d'eau du réservoir intérieur excède 24°C pour plus de 1 minute (point de consigne PC_DEP, ajustable).
- Le ventilateur de la tour P-43-01 (P-43-02) module afin de maintenir la température d'eau du réservoir intérieur au point de consigne T_ET (point de consigne PC_T_ET = 25°C).
- La deuxième pompe P-37-06 (P-36-05) et le deuxième ventilateur de la tour P-43-02 (P-43-01) démarrent lorsque la vitesse du ventilateur de la première tour en opération est supérieure à 90% pour plus de 5 minutes.
- La soupape SMDVP-2 (SMDVP-1) ferme.
- La vitesse des ventilateurs P-43-01 et P-43-02 est modulée à l'unisson afin de maintenir la température du bassin intérieur au point de consigne T_ET.
- Lorsque la vitesse des ventilateurs des tours d'eau devient inférieure à 20% pour plus de 5 minutes, le ventilateur de la tour d'eau ayant le plus grand nombre d'heures arrête, de même que la pompe associée.
- Lorsque la température du réservoir baisse en dessous du point de consigne d'arrêt (PC_ARR = 23°C, ajustable) pour plus de 2 minutes, le ventilateur de la tour d'eau restante et la pompe associée arrêtent.

LORSQUE T_EXT < 14°C ET QUE LES REFROIDISSEURS SONT À L'ARRÊT:

- Les soupapes d'isolation SMDVP-3, SMDVP-4, SMDVP-6 et SMDVP-7 ouvrent à toutes les périodes de 24 heures (ajustable).
- La pompe P-33-03 (P-33-04 et P-33-05) ayant le plus petit nombre d'heures d'opération démarre pour une période de dix minutes (ajustable).
- La pompe P-33-03 (P-33-04 et P-33-05) arrête et les soupapes d'isolation ferment.

MARCHE LA NUIT ET LES JOURS NON OUVRABLES:

- Même fonctionnement qu'en marche normale.

PROTECTIONS:

- Un interrupteur de vibration arrête la tour d'eau et la pompe associée sur vibration excessive de la tour d'eau. Si le système arrête par l'interrupteur de vibration, il doit être réarmé manuellement à l'interrupteur et via le poste opérateur.
- Sur une alarme de bas niveau dans le réservoir intérieur, les systèmes (tours d'eau, pompes, système de traitement d'eau) arrêtent et doivent être réarmé manuellement via le poste opérateur.

PANNE DE COURANT:

- Les équipements alimentés sur l'urgence démarrent et sont opérationnels. L'état de l'interrupteur de transfert (alimentation électrique normale-urgence) raccordé au système Metasys permet le redémarrage automatique des équipements après une panne électrique.

ALARMES:

- État non voulu d'une pompe.
- Vibration excessive d'une tour d'eau.
- Haut / bas niveau d'eau dans le bassin. Le témoin lumineux correspondant sur le panneau d'état Volcano sera allumé lors d'une alarme.
- Faute d'un variateur de vitesse.
- Haute / basse température du bassin.
- Alarme du système de filtration d'eau.

REFROIDISSEURS P-37-01 ET P-37-02

À L'ARRÊT:

- Les pompes d'eau glacée P-33-06, P-33-07 et P-33-08 sont à l'arrêt.
- Les pompes d'eau des tours P-33-03, P-33-04 et P-33-05 sont à l'arrêt.
- Les soupapes d'isolation SMDVP-03, SMDVP-04, SMDVP-06 et SMDVP-07 sont fermées.
- Les refroidisseurs P-37-01 et P-37-02 sont à l'arrêt.

AU DÉPART:

- La permission de marche du premier refroidisseur est donnée manuellement via une commande au poste opérateur.
- Lorsque la température extérieure est supérieure au point de consigne (PC_EXT = 15°C), le refroidisseur ayant le plus petit nombre d'heures d'opération, ou selon la priorité assignée par l'opérateur, démarre.
- Les soupapes d'isolation SMDVP-03 et SMDVP-06 (SMDVP-04 et SMDVP-07) ouvrent.
- La pompe d'eau glacée P-33-06 (P-33-07, P-33-08) ayant le plus petit nombre d'heures d'opération, ou selon la priorité assignée par l'opérateur, démarre.
- La pompe d'eau de refroidissement P-33-03 (P-33-04, P-33-05) ayant le plus petit nombre d'heures d'opération, ou selon la priorité assignée par l'opérateur, démarre.
- Lorsque la preuve de marche des pompes d'eau glacée et de refroidissement est établie, la séquence de démarrage des contrôles qui y sont intégrés est effectuée et lorsque les protections sont satisfaites, le refroidisseur P-37-01 (P-37-02) démarre.
- La permission de marche du deuxième refroidisseur est donnée manuellement via une commande au poste opérateur.
- Lorsque la température extérieure est supérieure au point de consigne #2 (PC_EXT-2 = 25°C) pour plus de 10 minutes, une deuxième pompe d'eau glacée P-33-06 (P-33-07, P-33-08) ayant le plus petit nombre d'heures d'opération, ou selon la priorité assignée par l'opérateur, démarre.
- Une deuxième pompe d'eau de refroidissement P-33-03 (P-33-04, P-33-05) ayant le plus petit nombre d'heures d'opération, ou selon la priorité assignée par l'opérateur, démarre.
- Les soupapes d'isolation SMDVP-04 et SMDVP-07 (SMDVP-03 et SMDVP-06) ouvrent.
- Lorsque la preuve de marche des pompes d'eau glacée et de refroidissement est établie, la séquence de démarrage des contrôles qui y sont intégrés est effectuée et lorsque les protections sont satisfaites, le refroidisseur P-37-02 (P-37-01) démarre.

- Le deuxième refroidisseur et pompes associées arrêteront lorsque la température extérieure sera inférieure au point de consigne #2 (PC_EXT-2 = 25°C) pour plus de 30 minutes.
- Le dernier refroidisseur et pompes associées arrêteront lorsque la température extérieure sera inférieure au point de consigne (PC_EXT = 15°C) pour plus de 30 minutes.

- Les sondes de température (T_ER_ALI et T_ER_RET) installées sur la tuyauterie d'alimentation et de retour du réseau d'eau refroidie rapportent les températures à la centrale de commandes. Elles ne sont pas utilisées pour contrôler les refroidisseurs.

- Des relais de courant analogiques (E_REFR1, E_REFR2) rapportent l'état de marche des refroidisseurs au système Metasys.

MARCHE LA NUIT ET LES JOURS NON OUVRABLES:

- Même fonctionnement qu'en marche normale.

PANNE DE COURANT:

- Le système arrête.

ALARMES:

- Arrêt non voulu de pompe.

- Arrêt non voulu d'un refroidisseur.

- Alarmes de haute température d'alimentation et de retour d'eau refroidie (T_ER_ALI et T_ER_RET). Points de consigne déterminés et ajustables par l'opérateur.

4

4

4

DIAGRAMME DE DÉBIT	4068-107
PANNEAU DE CONTRÔLE P-2K	4068-107A
VARIATEURS DE VITESSE DES TOURS	4068-107B
DÉMARREURS POMPES ET CONTRÔLE DES REFROIDISSEURS	4068-107C
SÉQUENCE D'OPÉRATION	4068-107D


Titre du Dessin CENTRALE D'ÉNERGIE SÉQUENCE D'OPÉRATION	9096-0055 (EXTRAS)	5	TEL QUE CONSTRUIT		12/9/2009	D.B.				
	9096-0055 (EXTRAS)	4	MODIFICATION SÉQUENCE		11/6/2009	D.B.				
		3	TEL QUE CONSTRUIT		5/4/2009	D.B.				
	DESSIN DE REFERENCE		NO.		REVISION		ECN	DATE	PAR	
Représentant J.-L. Martineau	Gérant De Projet D. Bouchard	Concepteur P. Cernosek	DESSINE			APPROUVE				
			PAR	DATE	1/19/2009	PAR	DATE	0		
Nom du Projet		Information Succursale					NUMERO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)					Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562			9096-0055		
								NUMERO DESSIN 4068-107D		

DIAGRAMME DE CONTRÔLE DE LA HOTTE D'ACIDE PERCHLORIQUE ET VENTILATEUR
VENTURI V44-5E

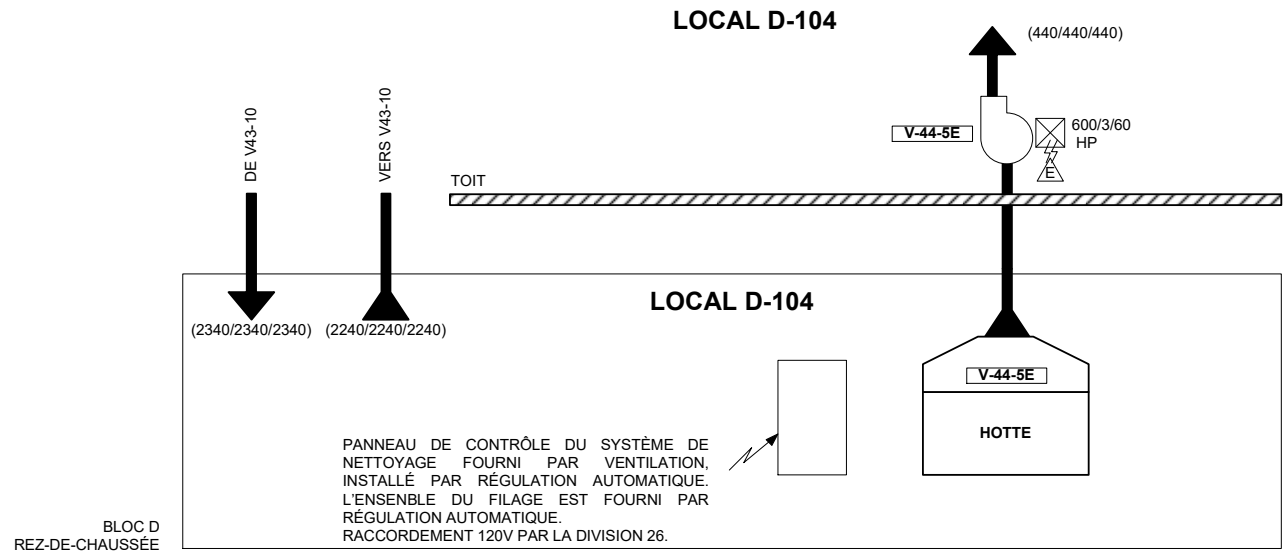
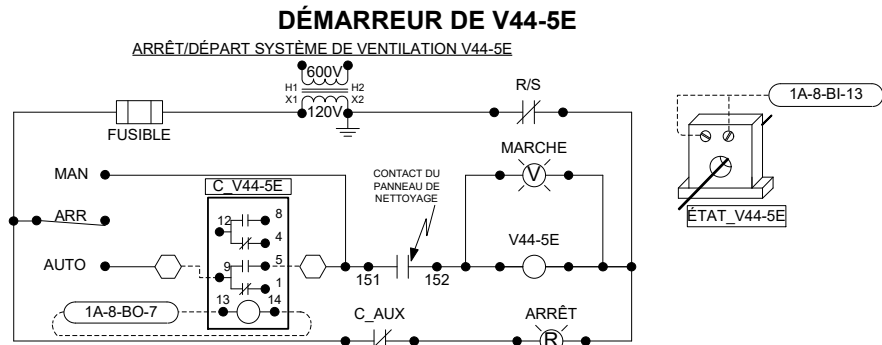
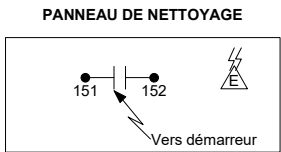


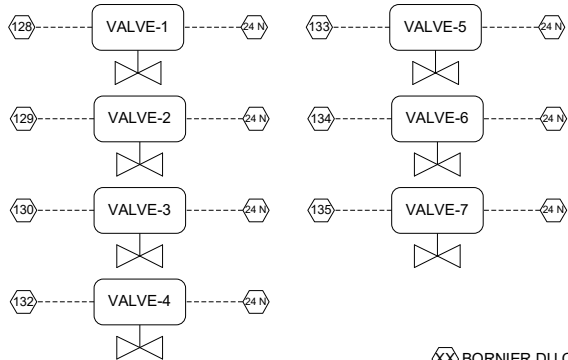
DIAGRAMME ÉLECTRIQUE



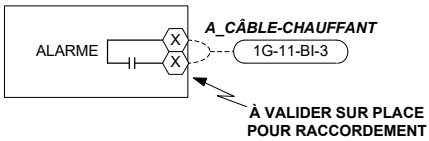
CONTRÔLEUR DU PANNEAU DE NETTOYAGE



RACCORDEMENT DE 7 VLV SOLENOIDE



PANNEAU DE CONTRÔLE CÂBLE CHAUFFANT



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
AMP_V44-5E	1	H722LC	TRANSM. DE COURANT 0-40AMP 0-5 VCC – VERIS
C_V44-5E	1	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI

VENTILATEUR VENTURI:

* FOURNI, INSTALLÉ ET RACCORDÉ PAR L'ENTREPRENEUR EN VENTILATION/
* SUPPLIED, INSTALLED AND CONNECTED BY THE VENTILATION CONTRACTOR

LIGNE DE NETTOYAGE:

** FOURNI, INSTALLÉ ET RACCORDÉ PAR L'ENTREPRENEUR EN PLOMBERIE/
** SUPPLIED, INSTALLED AND CONNECTED BY THE PLUMBING CONTRACTOR

ANNEAU ET BUSE DE NETTOYAGE:

*** FOURNI ET INSTALLÉ PAR VENTILATION, RACCORDÉ PAR L'ENTREPRENEUR EN PLOMBERIE/
*** SUPPLIED AND INSTALLED BY VENTILATION, CONNECTED BY PLUMBING CONTRACTOR

LIGNE D'EAU DU SYSTÈME DE NETTOYAGE DE LA CHEMINÉE AVEC CÂBLE CHAUFFANT:

**** FOURNI ET INSTALLÉ PAR VENTILATION, RACCORDÉ PAR L'ENTREPRENEUR EN ÉLECTRICITÉ/
**** SUPPLIED AND INSTALLED BY VENTILATION, CONNECTED BY ELECTRICAL CONTRACTOR

VALVE SOLENOIDE 3 VOIES:

***** FOURNI PAR ENTREPRENEUR EN VENTILATION, INSTALLÉ ET RACCORDÉ PAR ENTREPRENEUR EN PLOMBERIE/
***** SUPPLIED BY VENTILATION CONTRACTOR, INSTALLED AND CONNECTED BY PLUMBING CONTRACTOR.

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

- SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

Titre du Dessin

Diagramme de contrôle de la hotte d'acide perchlorique et ventilateur V44-5E

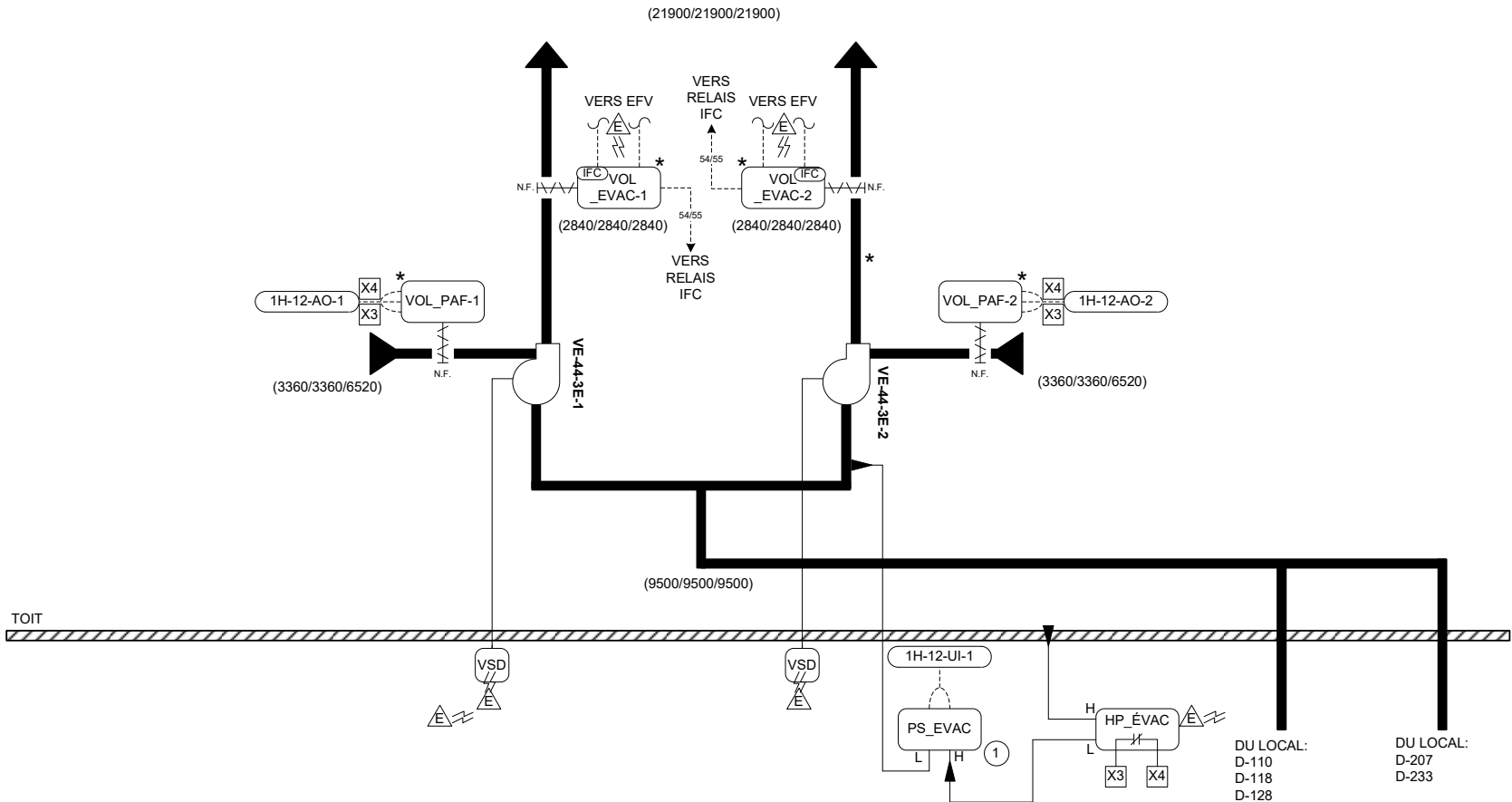
Nom du Projet

CRDA ST-HYACINTHE
3600, boul. Casavant
St-Hyacinthe (Qc)
Remplacement hottes chimiques

	2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
	1	POUR APPROBATION		8/21/2017	C.L.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Information Succursale			NUMÉRO DE CONTRAT		
Johnson Controls Inc. 1375, rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599			7N0X-0300		
			NUMÉRO DE DESSIN		
			4068-108		

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

DIAGRAMME DE CONTRÔLE DU SYSTÈME D'ÉVACUATION
VE-44-3E-1 ET VE-44-3E-2



LÉGENDE

- * ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- ⚡ SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
IPD_EVAC-1,2	2	AFS-222	INTERRUP. DE DÉBIT D'AIR REARM.AUTO – CLEVELAND CONTROLS
PS_EVAC	1	DPT2640-005D	TRANSM. DE PRESSION DIFF 0-5"H2O 0-5VCC – SETRA
	1	FTG18A-600R	PITOT

SÉQUENCE DE FONCTIONNEMENT

SYSTÈME VE-44-3E-1 ET VE-44-3E-2

VOIR PAGE 4068-015E

1. LOCALISER LA SONDE DE PRESSION SUR LA GAINÉ D'ÉVACUATION AU 3/4 DE LA COURSE LA PLUS RESTRICTIVE. CONFIRMER L'EMPLACEMENT AVEC L'INGÉNIEUR AVANT L'INSTALLATION. / LOCATE THE PRESSURE SENSOR ON TO THE EXHAUST VENT AT 3/4 OF THE RUN OF THE MOST RESTRICTIVE. CONFIRM THE LOCATION WITH THE ENGINEER BEFORE INSTALLING.

(SC1 / SC2 / SC3)

DÉBITS PAR SCÉNARIO (L/s)/AIR FLOW FOR GIVEN SCENARIO (L/s):

- SC1: MODE OCCUPÉ – HOTTES 100% OUVERTES / OCCUPIED MODE – FUME HOODS 100% OPEN.
- SC2: MODE OCCUPÉ – HOTTES OUVERTURE MINIMALE / OCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.
- SC3: MODE INOCCUPÉ – HOTTES OUVERTURE MINIMALE / UNOCCUPIED MODE – FUME HOODS AT MINIMUM OPENING.

DESSINS DE RÉFÉRENCE

SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU SYSTÈME D'ÉVACUATION VE-44-3E-1,VE-44-3E-2	4068-109
DIAGRAMME ÉLECTRIQUE DU SYSTÈME D'ÉVACUATION VE-44-3E-1,VE-44-3E-2	4068-109A


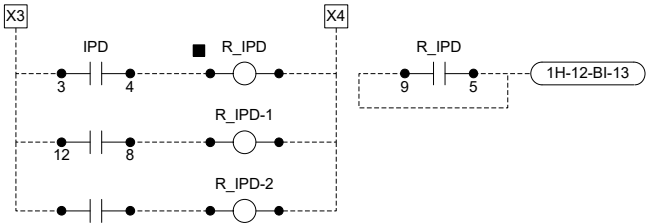
Titre du Dessin					
Diagramme de contrôle du système d'évacuation VE-44-3E-1 et VE-44-3E-2		2	TEL QUE CONSTRUIT	R.G.	4/26/2018 M.M.
		1	POUR APPROBATION		8/21/2017 C.L.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Nom du Projet		Information Succursale		NUMÉRO DE CONTRAT	
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599	
				7N0X-0300 NUMÉRO DE DESSIN 4068-109	

DIAGRAMME DE CONTRÔLE DU SYSTÈME D'ÉVACUATION
VE-44-3E-1 ET VE-44-3E-2
DIAGRAMME ÉLECTRIQUE



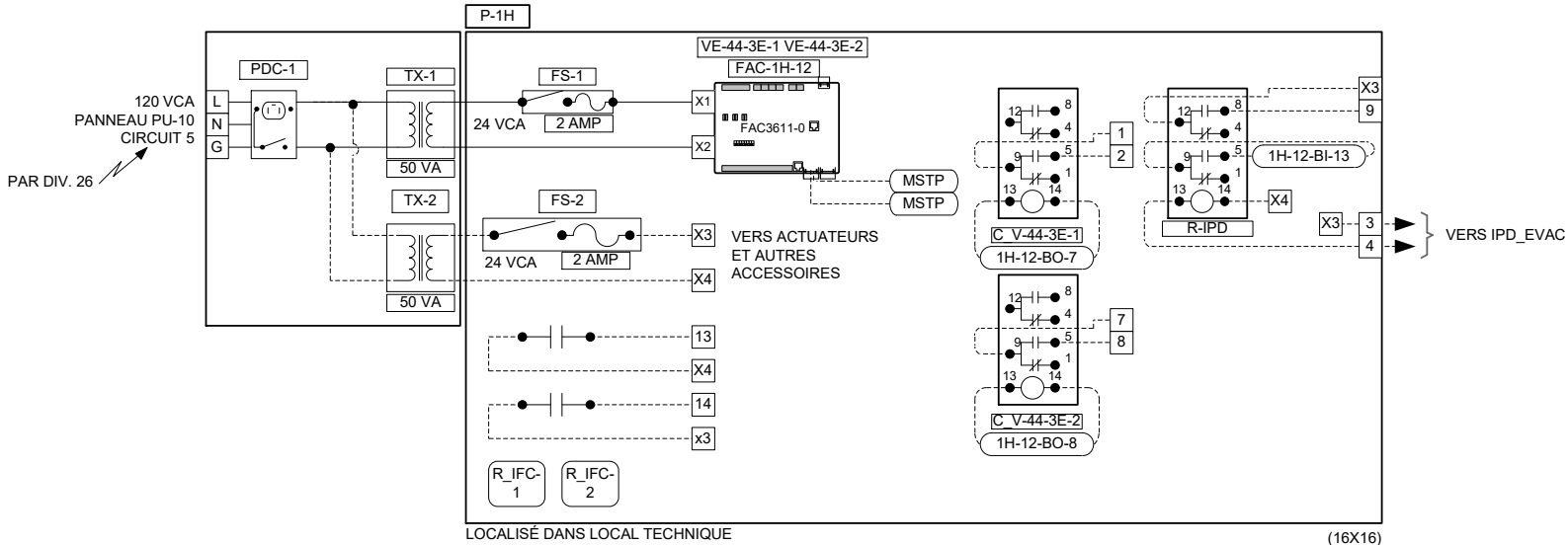
LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
EFV V-43-15A	1	VS022551D-SM100	ENTRAÎNEMENT À FRÉQUENCE VARIABLE 20HP JCI

LISTE DE MATÉRIEL PANNEAU P-1H

IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1,2	2	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
P-1H	1	A16N16BLP	PANNEAU DE CTRL 16"x16"x6"- HOFFMANN
	1		PLAQUE DE MONTAGE 16"x16"
TX-1,2	2	FS50PR	TRANSFO., 120V/24Vac., 50VA
PDC-1	1	SD-US	PRISE
		601xx	DIJONCTEUR 120V/8A
FAC-1H-12	1	MS-FAC3611-0	CONTRÔLEUR NUMÉRIQUE FEC BACNET 24 VCA 8 UI / 6 BI / 6 BO / 6 AO SA Bus
C_V-44-3E-1,2	2	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
	2	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
R-IPD-1,2	2	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
	2	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI

PANNEAU DE CONTRÔLE P-1H



DESSINS DE RÉFÉRENCE

SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU SYSTÈME D'ÉVACUATION VE-44-3E-1,VE-44-3E-2	4068-109
DIAGRAMME ÉLECTRIQUE DU SYSTÈME D'ÉVACUATION VE-44-3E-1,VE-44-3E-2	4068-109A

Titre du Dessin					
Diagramme de contrôle du système d'évacuation VE-44-3E-1 et VE-44-3E-2 Diagramme électrique		2	TEL QUE CONSTRUIT	R.G.	4/26/2018 M.M.
		1	POUR APPROBATION		8/21/2017 C.L.
DESSIN DE REFERENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE	
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0
Nom du Projet		Information Succursale		NUMÉRO DE CONTRAT	
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques		Johnson Controls 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300	
				NUMÉRO DE DESSIN 4068-109A	

LÉGENDE

- * ÉQUIPEMENTS FOURNI PAR D'AUTRES
- ÉQUIPEMENTS EXISTANTS
- ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
- ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
- ⚡ SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

DIAGRAMME DE CONTROLE DU SYSTEME DE VENTILATION

V-44-3E-1
DIAGRAMME ÉLECTRIQUE
EFV V-44-3E-1

DIAGRAMME ÉLECTRIQUE DU BYPASS EFV

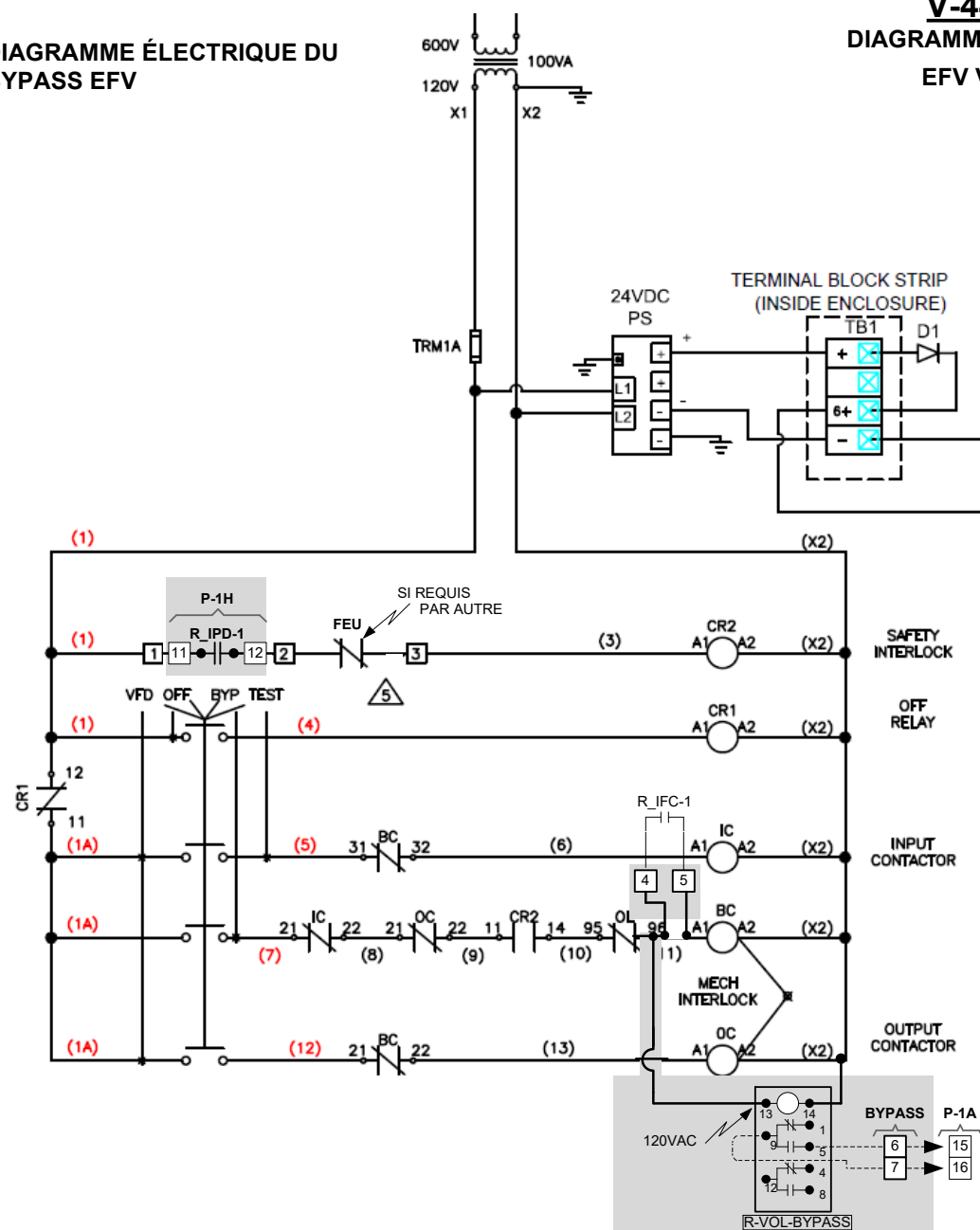
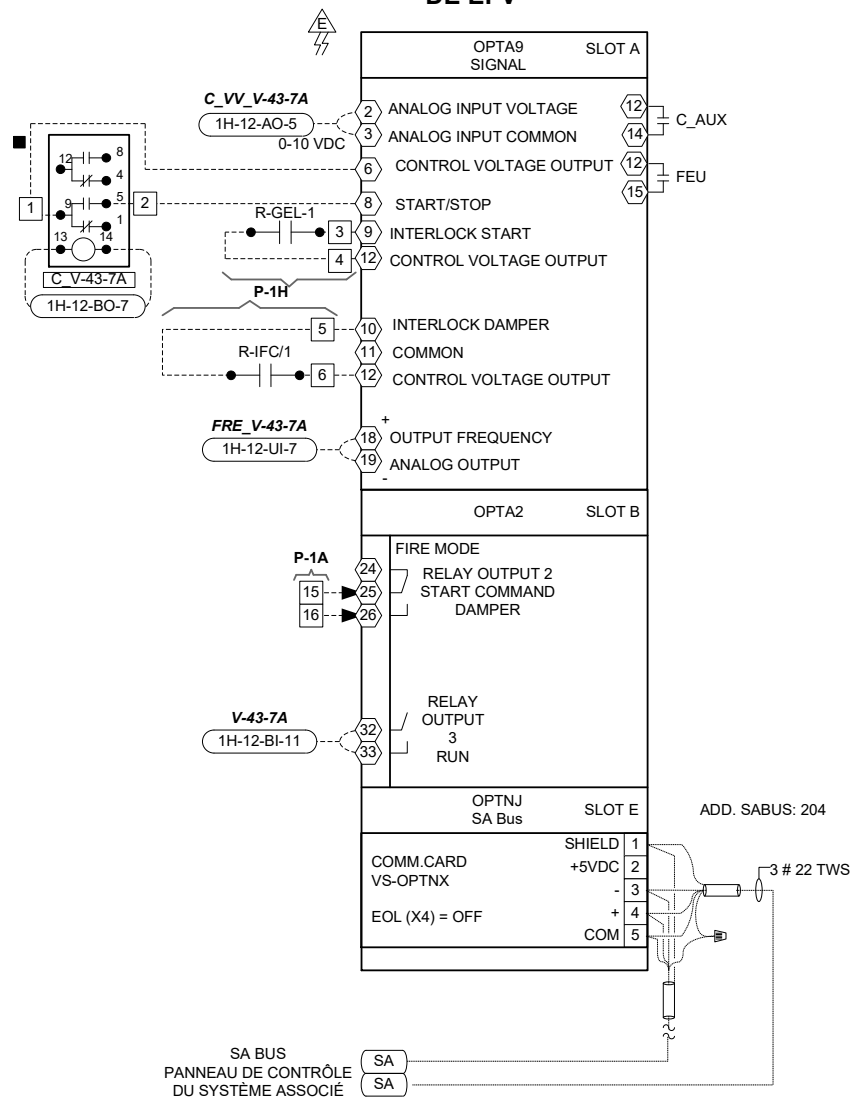
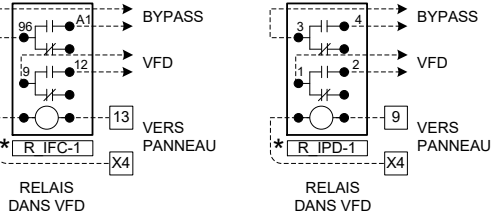


DIAGRAMME ÉLECTRIQUE DE RACCORDEMENT DE EFV




LISTE DE MATERIEL CHANTIER

IDENT.	QTE	MODÈLE	DESCRIPTION
C_PEG-U7	1	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
R-VOL-BYPASS	1	RMIA2-10 120AC	RELAIS DPDT 120VCA 10A – CARLO GAVAZZI
	1	ZMI15/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
E_PEG-U7	1	H708	TRANSMETTEUR DE COURANT 0-135AMP CONTACT NO 1AMP à 30VCA/VCC – VERIS
EFV V-43-7A	1	VS3D9551D-SM100	ENTRAÎNEMENT À FRÉQUENCE VARIABLE 3HP JCI



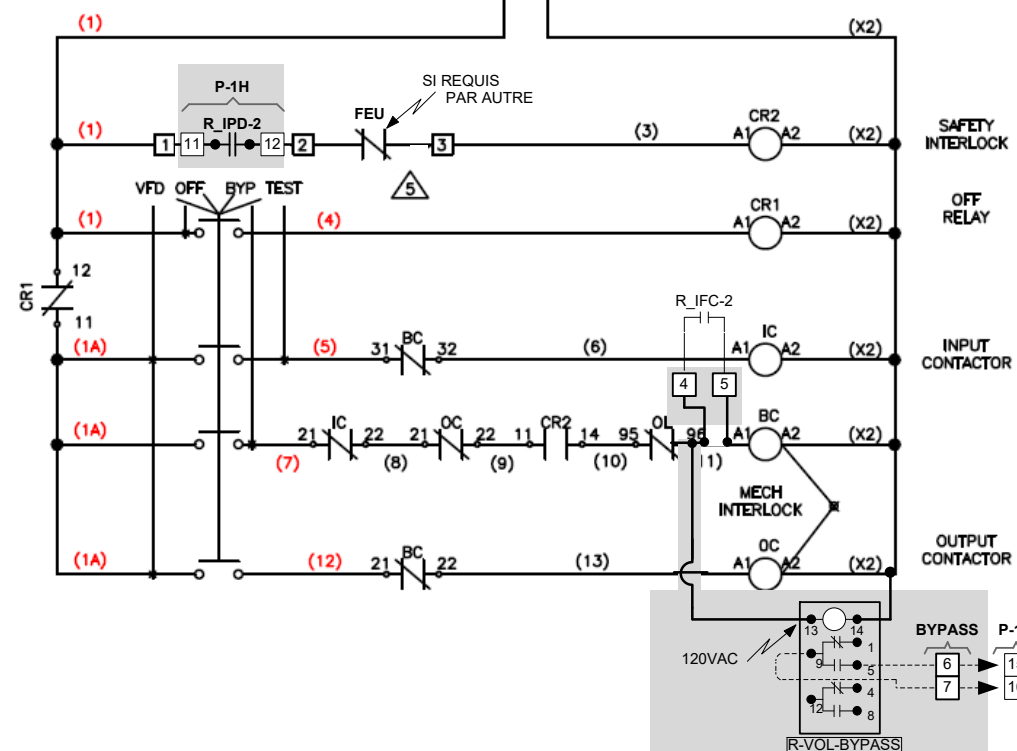
DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITES	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

Titre du Dessin											
Diagramme de contrôle du du système de ventilation V-43-07 Diagramme électrique				2		TEL QUE CONSTRUIT		R.G.		4/26/2018 M.M.	
				1		POUR APPROBATION				8/21/2017 C.L.	
		DESSIN DE REFERENCE		NOI		REVISION		ECN		DATE PAR	
		Representant		Gérant De Projet		Concepteur		DESSINE		APPROUVE	
B.Carpenter		G.Garand		C.Labbé		PAR C.L. DATE 8/21/2017		PAR		DATE 0	
Nom du Projet						Information Succursale		NUMERO DE CONTRAT			
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques						Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		7N0X-0300			
								NUMERO DE DESSIN 4068-0109B			

V-44-3E-2

EFV V-44-3E-2



NOUVEAU DANS BYPASS

* ÉQUIPEMENTS FOURNIS PAR D'AUTRES
 ÉQUIPEMENTS EXISTANTS
 ■ ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
 ▲ ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
 ⚡ SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

Wiring diagram for the OPTA9 and OPTA2 modules. The diagram shows connections for Slot A (OPTA9 SIGNAL) and Slot B (OPTA2).

Slot A (OPTA9 SIGNAL):

- 2: ANALOG INPUT VOLTAGE
- 3: ANALOG INPUT COMMON
- 6: CONTROL VOLTAGE OUTPUT
- 8: START/STOP
- 9: INTERLOCK START
- 12: CONTROL VOLTAGE OUTPUT
- 10: INTERLOCK DAMPER
- 11: COMMON
- 12: CONTROL VOLTAGE OUTPUT
- 18: OUTPUT FREQUENCY
- 19: ANALOG OUTPUT

Slot B (OPTA2):

- 24: FIRE MODE
- 25: RELAY OUTPUT 2
- 26: START COMMAND
- 26: DAMPER
- 32: RELAY OUTPUT 3
- 33: RUN

Slot E (OPTNJ SA Bus):

- SHIELD
- +5VDC
-
- +
- COM

Connections:

- C_VV_V-43-7A:** 1H-12-AO-4 (0-10 VDC) to terminal 2.
- C_V-43-7A:** 1H-12-BO-8 to terminal 12.
- P-1H:** R-GEL-2 to terminal 8.
- P-1H:** R-IFC/1 to terminal 10.
- FRE_V-43-7A:** 1H-12-UI-7 to terminal 18.
- P-1A:** 17 to terminal 25, 18 to terminal 26.
- V-43-7A:** 1H-12-BI-12 to terminal 32.
- SA BUS:** SA to terminal 1, SA to terminal 2.

Legend:

- SA BUS
- PANNEAU DE CONTRÔLE DU SYSTÈME ASSOCIÉ

Note: ADD. SABUS: 204

IDENT.	QTE	MODÈLE	DESCRIPTION
C_PEG-U7	1	RMIA2-10 024AC	RELAIS DPDT 24VCA 10A – CARLO GAVAZZI
R-VOL-BYPASS	1	ZM115/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
	1	RMIA2-10 120AC	RELAIS DPDT 120VCA 10A – CARLO GAVAZZI
E_PEG-U7	1	ZM115/2N	BASE DE RELAIS DPDT – CARLO GAVAZZI
	1	H708	TRANSMETTEUR DE COURANT 0-135AMP CONTACT NO 1AMP à 30VCA/VCC – VERIS
EFV V-43-7A	1	VS3D9551D-SM100	ENTRAÎNEMENT À FRÉQUENCE VARIABLE 3HP JCI

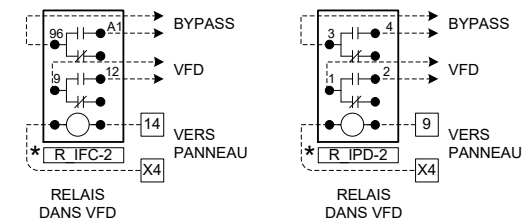


DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

2		TEL QUE CONSTRUIT		R.G.		4/26/2018		M.M.	
1		POUR APPROBATION				8/21/2017		C.L.	
DESSIN DE REFERENCE		NO.		REVISION		ECN		DATE	
PAR		DATE		PAR		DATE		PAR	
B.Carpenter		G.Garand		C.Labbé		8/21/2017		0	

Nom du Projet

CRDA ST-HYACINTHE
3600, boul. Casavant
St-Hyacinthe (Qc)
Remplacement hottes chimiques



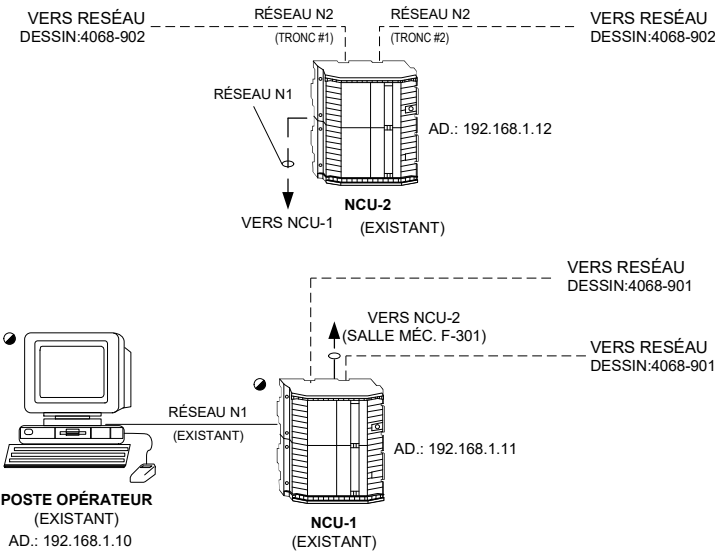
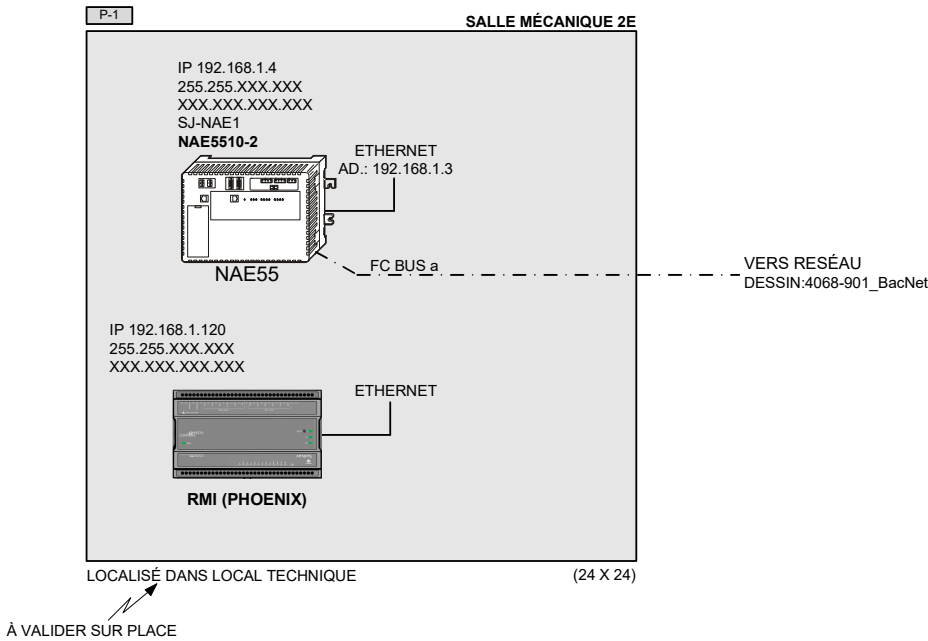
Johnson Controls Inc.
1375, rue Frank-Carrel Bur.3
Québec, (Québec)
G1N 2E7
Tél: (418) 681-0085
Fax: (418) 681-3599


7N0X-0300

NUMERO DE DESSIN

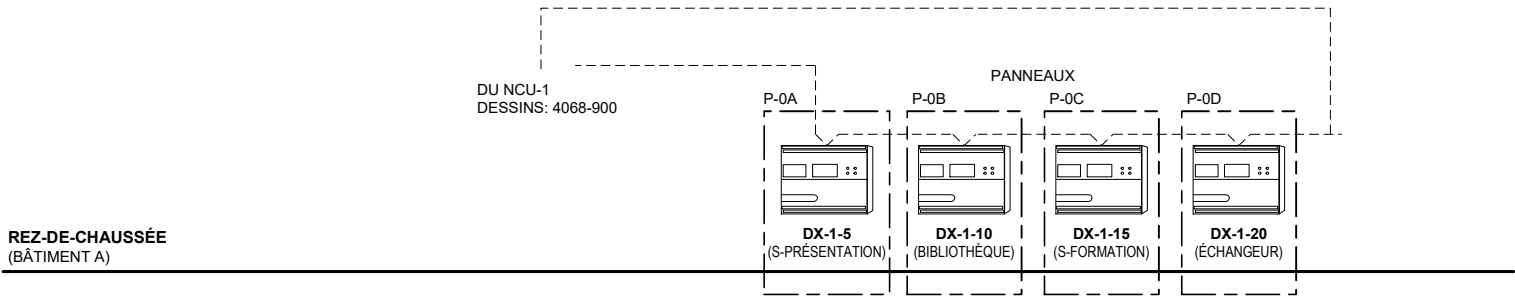
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ARCHITECTURE DU RÉSEAU METASYS
GLOBALE



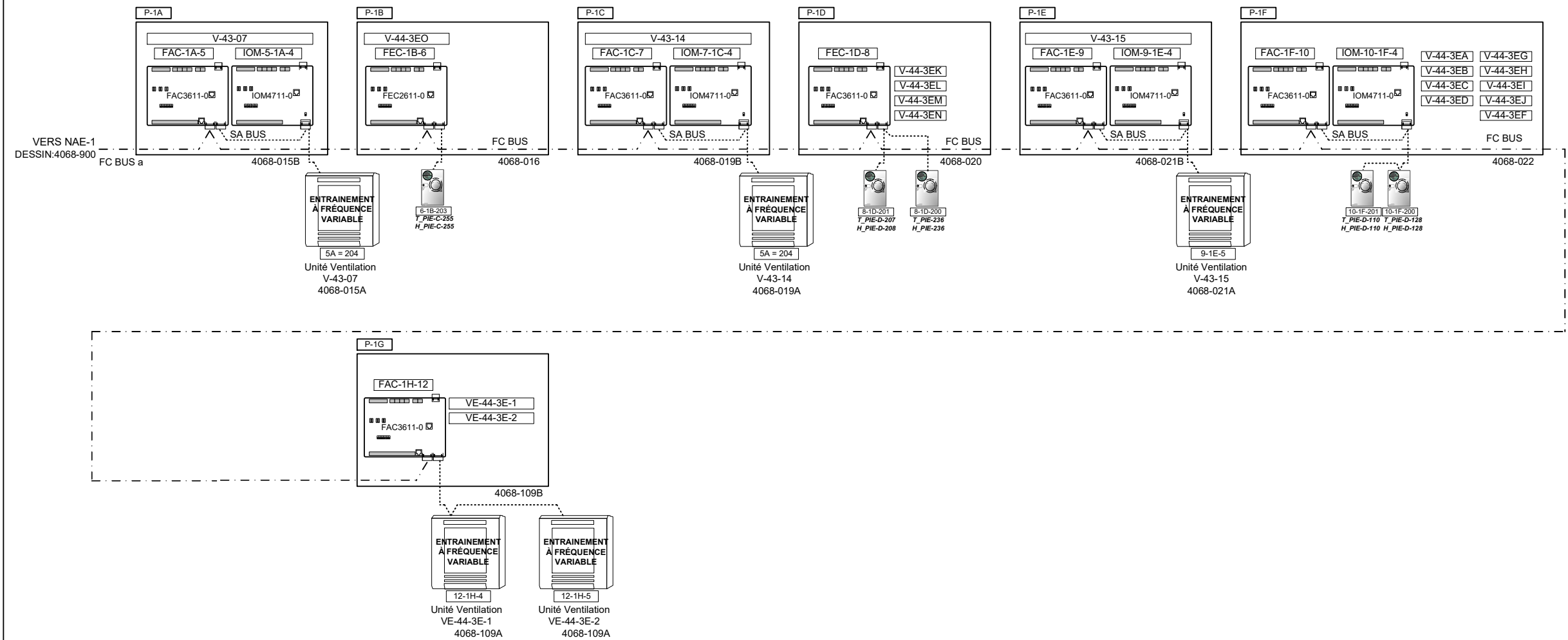
Titre du Dessin						
Architecture du réseau METASYS Globale		2	TEL QUE CONSTRUIT	R.G.	4/26/2018	M.M.
		1	POUR APPROBATION		8/21/2017	C.L.
		DESSIN DE REFERENCE	NO.	REVISION	ECN	APPROUVE
Représentant	Gérant De Projet	Concepteur	DESSINE	ECN	APPROUVE	PAR
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR	DATE 0	
Nom du Projet		Information Succursale		NUMÉRO DE CONTRAT		
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques				Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599		
				7N0X-0300 NUMÉRO DE DESSIN 4068-900		

ARCHITECTURE DU RÉSEAU METASYS NCU-1



Titre du Dessin Architecture du réseau Metasys NCU-1							
DESSIN DE REFERENCE		NO.	REVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	J.M.	DATE	3/4/2005	PAR
Information Succursale		Information Succursale		NUMERO CONTRAT			
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		7096-0004 NUMERO DESSIN 4068-901	

ARCHITECTURE DU RÉSEAU METASYS
NAE-1

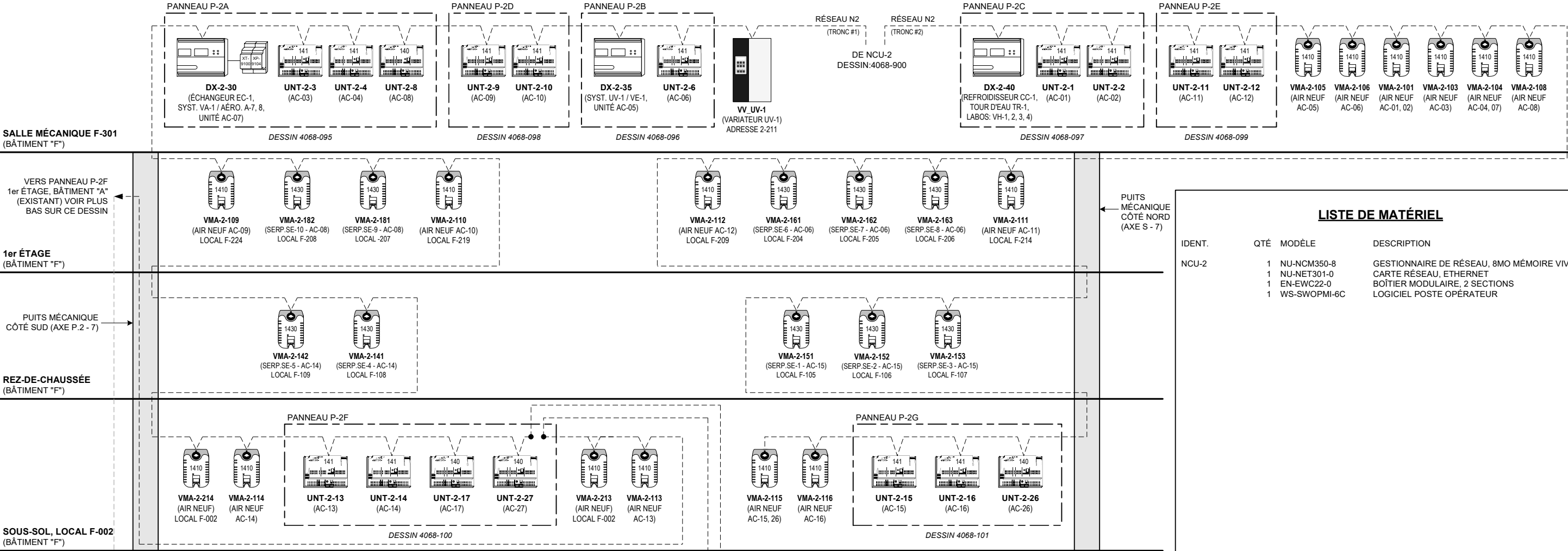


SA BUS
FC BUS - - - - -

TOUS DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

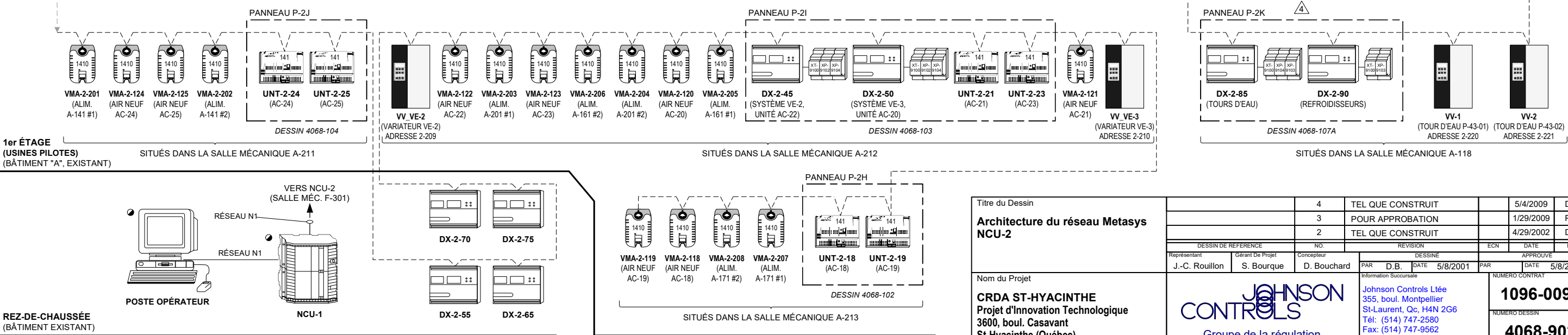
Titre du Dessin Achitecture du réseau METASYS NAE-1					
		2	TEL QUE CONSTRUIT	R.G.	4/26/2018 M.M.
		1	POUR APPROBATION		8/21/2017 C.L.
		DESSIN DE REFERENCE		NO.	REVISION
Représentant	Gérant De Projet	Concepteur	DESSINE		APPROUVE
B.Carpenter	G.Garand	C.Labbé	PAR C.L.	DATE 8/21/2017	PAR DATE 0
Nom du Projet			NUMÉRO DE CONTRAT		
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques			7N0X-0300		
			NUMÉRO DE DESSIN		
			4068-901		

ARCHITECTURE DU RÉSEAU METASYS (NOUVEAU BÂTIMENT "F")



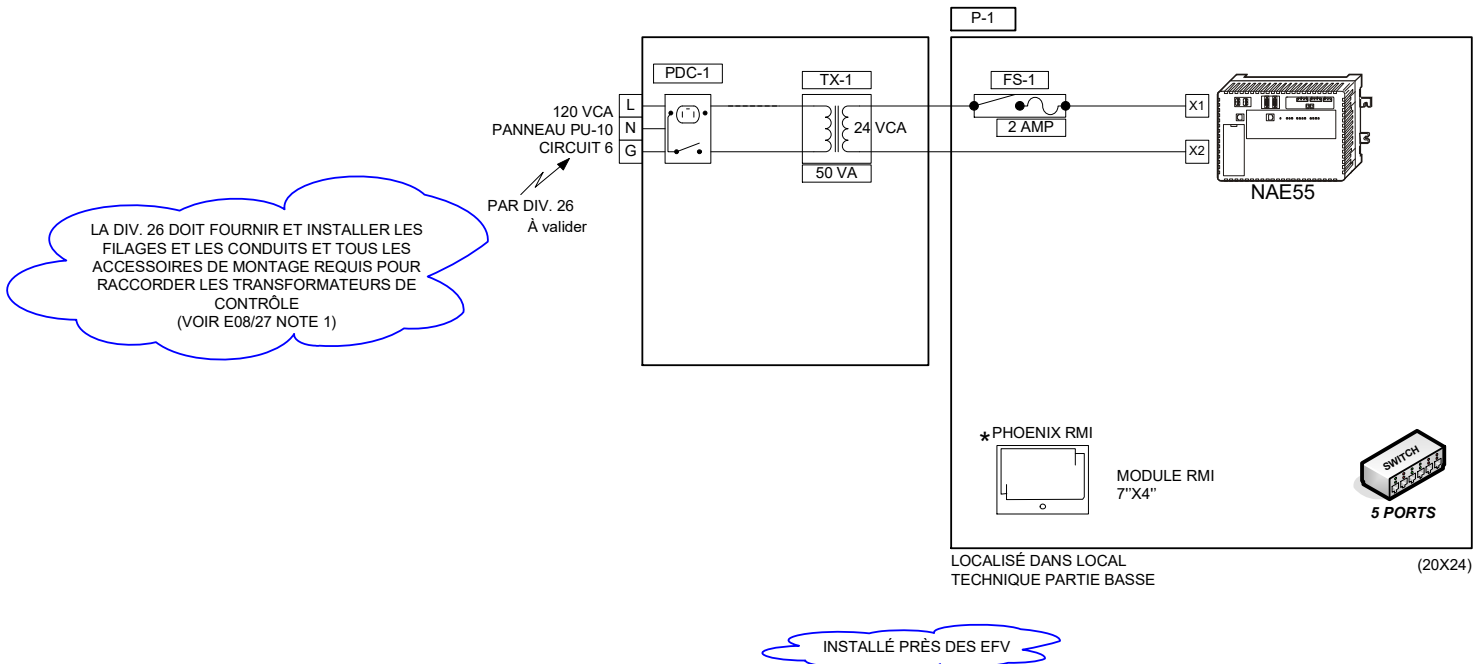
LISTE DE MATÉRIEL			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
NCU-2	1	NU-NCM350-8	GESTIONNAIRE DE RÉSEAU, 8MO MÉMOIRE VIVE
	1	NU-NET301-0	CARTE RÉSEAU, ETHERNET
	1	EN-EWC22-0	BOÎTIER MODULAIRE, 2 SECTIONS
	1	WS-SWOPMI-6C	LOGICIEL POSTE OPÉRATEUR

ARCHITECTURE DU RÉSEAU METASYS (BÂTIMENT "A" EXISTANT)



Titre du Dessin Architecture du réseau Metasys NCU-2		4		TEL QUE CONSTRUIT			5/4/2009	D.B.	
		3		POUR APPROBATION			1/29/2009	P.C.	
		2		TEL QUE CONSTRUIT			4/29/2002	D.B.	
		DESSIN DE REFERENCE		NO.		REVISION		ECN	DATE
Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE	
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 5/8/2001		PAR DATE 5/8/2001	
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 JOHNSON CONTROLS Groupe de la régulation		Information Succursale Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562				NUMERO CONTRAT	
								1096-0093	
								NUMERO DESSIN	
								4068-902	

PANNEAU DE CONTRÔLE
P-1



LISTE DE MATÉRIEL PANNEAU P-1A

IDENT.	QTÉ	MODÈLE	DESCRIPTION
F-1	1	BJ-3004265-2	FUSIBLE 2 AMP. c/a PORTE FUSIBLE
P-1A	1	A20N24BLP	PANNEAU DE CTRL 20"x24"x8"- HOFFMANN
	1		PLAQUE DE MONTAGE 20"x24"
TX-1	1	FS50PR	TRANSFO., 120V/24Vac., 50VA
PDC-1	1	SD-US	PRISE
	601xx		DIJONCTEUR 120V/8A
SWITCH	1	FS105	SWITCH 5 PORT – NET GEAR
NAE-1	1	MS-NAE5510-3	GESTIONNAIRE DE RÉSEAU 100 CONTRÔLEURS/ TRONC 2 TRONC BACNET ET/OU N2 24 VCA

DESSINS DE RÉFÉRENCE

DIAGRAMME DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015
DIAGRAMME ÉLECTRIQUE DE V-43-07	4068-015A
PANNEAU DE CONTRÔLE P-1A DE V-43-07	4068-015B
SÉQUENCE DE CONTRÔLE GÉNÉRALITÉS	4068-015C
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015D
SÉQUENCE DE CONTRÔLE DU SYSTÈME DE VENTILATION V-43-07	4068-015E
DIAGRAMME DE CONTRÔLE DU LOCAL C-255 HOTTE V-44-3EO	4068-016

Titre du Dessin						
Diagramme de contrôle du Panneau de contrôle P-1						
7N0X-0300	01	Pour approbation		8/21/2017	C.L.	
DESSIN DE RÉFÉRENCE	NO.	REVISION	ECN	DATE	PAR	
Représentant	Gérant De Projet	Concepteur	DESSINE	APPROUVE		
B.Carpenter	G.Garand	C.Labbé	PAR C.L. DATE 8/21/2017	PAR DATE 0		
Nom du Projet	Information Succursale		NUMÉRO DE CONTRAT			
CRDA ST-HYACINTHE 3600, boul. Casavant St-Hyacinthe (Qc) Remplacement hottes chimiques	Johnson Controls		Johnson Controls Inc. 1375,rue Frank-Carrel Bur.3 Québec, (Québec) G1N 2E7 Tél: (418) 681-0085 Fax: (418) 681-3599	7N0X-0300		
				NUMÉRO DE DESSIN		
				4068-NAE		

LÉGENDE	
*	ÉQUIPEMENTS FOURNI PAR D'AUTRES
●	ÉQUIPEMENTS EXISTANTS
■	ÉQUIPEMENTS MONTÉS À L'INTÉRIEUR DU PANNEAU
▲	ÉQUIPEMENTS MONTÉS EN FAÇADE DU PANNEAU
△	SE RÉFÉRER AU DIAGRAMME ÉLECTRIQUE

APPENDIX B
Section 25 90 01
Control Drawings from Johnson Controls
for Work Realized up to 2005

*Société de Contrôle Johnson, S.E.C.
355, boul. Montpellier
St-Laurent (Québec) H4N 2G6*



: (514) 747-2580

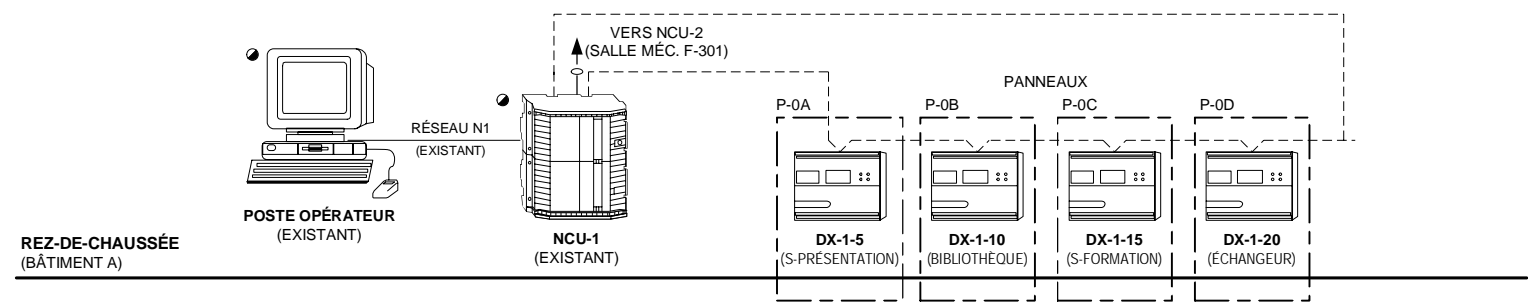


: (514) 747-9562

***CENTRE DE RECHERCHE ET DÉVELOPPEMENT SUR LES
ALIMENTS À ST-HYACINTHE***

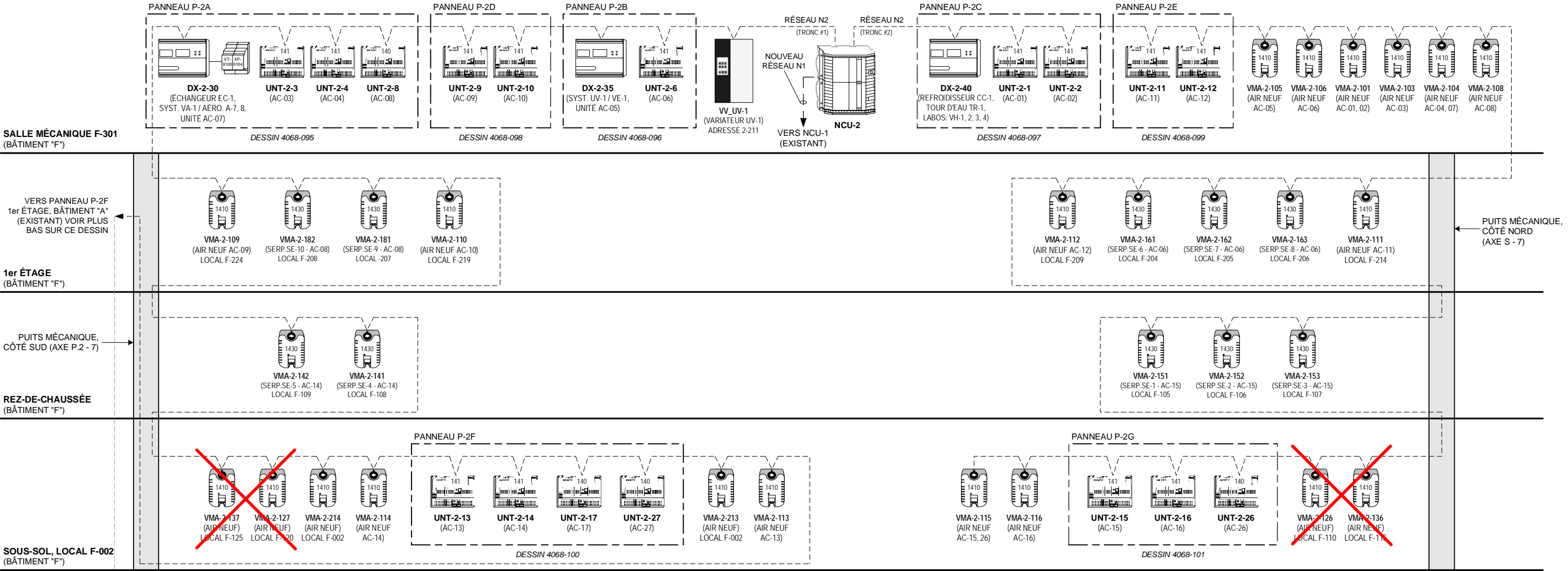
10 mars 2005

ARCHITECTURE DU RÉSEAU METASYS NCU-1

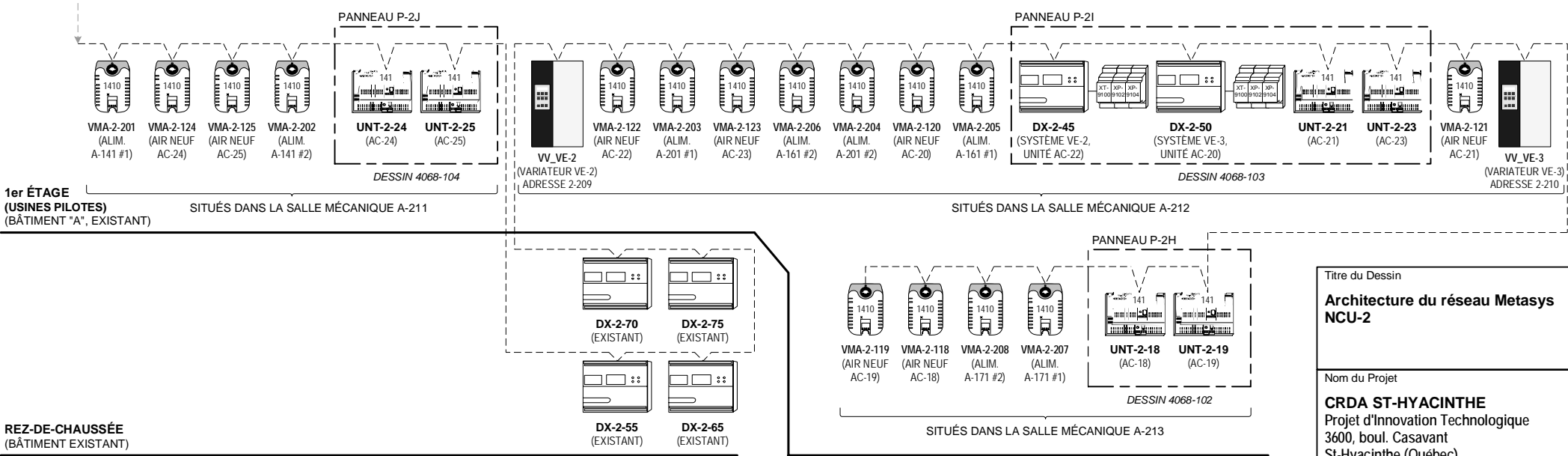


Titre du Dessin							
Architecture du réseau Metasys NCU-1							
DESSIN DE RÉFÉRENCE				NO.		RÉVISION	
Représentant	Gérant De Projet	Concepteur	DESSINÉ		ECN	DATE	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	J.M.	DATE	03/04/2005	APPROUVE
Nom du Projet				PAR	J.M.	DATE	0
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)				Information Succursale		NUMÉRO CONTRAT	
				JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
						7096-0004	
						NUMÉRO DESSIN 4068-901	

ARCHITECTURE DU RÉSEAU METASYS (NOUVEAU BÂTIMENT "F")



ARCHITECTURE DU RÉSEAU METASYS (BÂTIMENT "A" EXISTANT)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
NCU-2	1	NU-NCM350-8	GESTIONNAIRE DE RÉSEAU, 8MO MÉMOIRE VIVE
	1	NU-NET301-0	CARTE RÉSEAU, ETHERNET
	1	EN-EWC22-0	BOÎTIER MODULAIRE, 2 SECTIONS
	1	WS-SWOPMI-6C	LOGICIEL POSTE OPÉRATEUR

CHANGEMENT
PAR D'AUTRES

Titre du Dessin
**Architecture du réseau Metasys
NCU-2**

Nom du Projet
CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

		3	TEL QUE CONSTRUIT		04/29/2002	D.B.			
		1	POUR CONSTRUCTION		09/18/2001	D.B.			
			POUR APPROBATION		06/12/2001	D.B.			
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR		
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ				
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/08/2001	PAR	DATE	05/08/2001
			Information Succursale			NUMERO CONTRAT			
<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562			1096-0093			
						NUMERO DESSIN 4068-902			

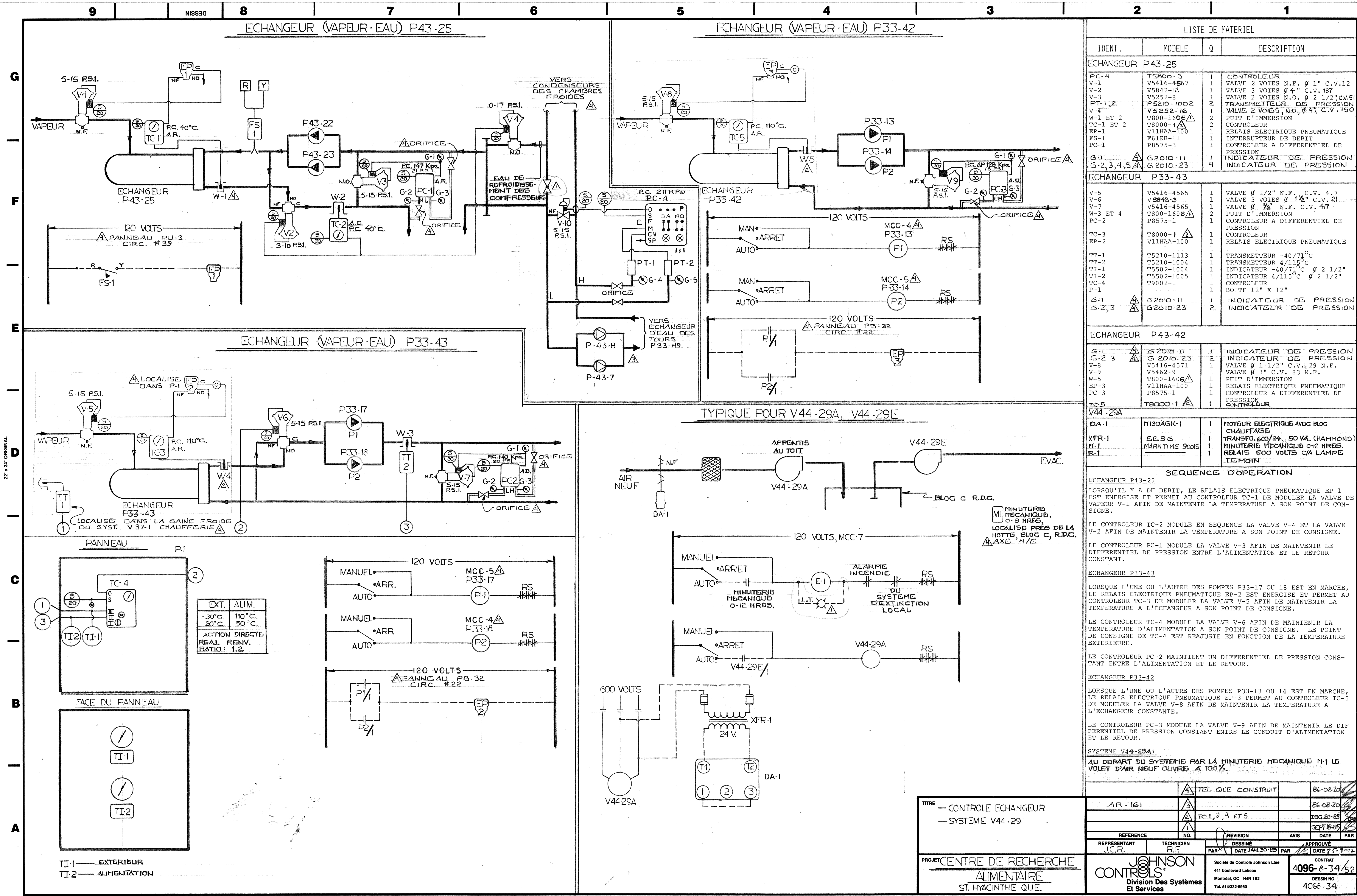
CRDA ST-HYACINTHE

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007	Ref. CC-1 et Tour d'eau TR-1	Alimentation eau refroidie
008	Échangeur alim. Eau chaude	Circuit eau chaude primaire et secondaire
009	Échangeur EC-1	Échangeur vapeur-eau
028	Distribution air comprimé	Contrôle
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030	Système V43-1	Alimentation bloc C
031	Système V43-3	Alimentation bloc C - étage
032	Système V43-4	Alimentation bloc C - Rez-de-chaussée
033	Système V43-8	Alimentation bloc C - étage
034	Système V43-12	Alimentation bloc D - étage
035	Système V43-16	Alimentation bloc B
036	Système V43-10	Alimentation bloc D - Rez-de-chaussée
037	Système V43-7	Alimentation bloc C - étage
038	Système V43-9	Alimentation bloc C et D
039	Système V43-14	Alimentation bloc D - étage
040	Système V43-15	Alimentation bloc D - Rez-de-chaussée
041	Système V43-11	Alimentation bloc B
042	Système V43-2	Alimentation bloc A - Rez-de-chaussée
043	Système V43-5	Alimentation bloc A
044	Système V43-6	Alimentation bloc A - Rez-de-chaussée
045	Système V43-13	Alimentation bloc B
046	Système V43-29	Alimentation bloc C - Rez-de-chaussée
047	Systèmes V37-1 et V33-4	Alimentation Salle Mécanique (niv.37250) - Système Garage
048	Systèmes V43-17, 18, 19	Alimentation Salle Mécanique
049	Systèmes V43-24, V33-1@3,6@9 et V36-19@22	Alimentation Vide Sanitaire
050	Systèmes V43-20, V36-1R, 2R	Alimentation pièce A107, A108
052	Système V-A1	Alimentation Pièce F-301
053	Système V-35400-1-A	Alimentation Salle de Présentation
054	Système V-35400-2-A	Alimentation Bibliothèque
055	Système V-35400-3-A	Alimentation Salle de Formation
056	Système VA-1	Ventillation de la salle mécanique F-301, Aérothermes A-7 et A-8
057	Système UV-1	Alimentation d'air neuf traité

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092	Système AC-01	Local F-209, Type1 avec chauffage périmétrique
093	Système AC-02	Local F-214, Type1 avec chauffage périmétrique
094	Système AC-03	Local F-219, Type1 avec chauffage périmétrique
095	Système AC-04	Local F-224, Type1 avec chauffage périmétrique
096	Système AC-05	Local F-201, Type3 avec serpentín électrique et chauffage périmétrique
097	Système AC-06	Locaux F-204, F-205, F-206, Type2 climatisation pour bureau
098	Système AC-07	Local F-200, Type3 avec serpentín électrique et chauffage périmétrique
099	Système AC-08	Locaux F-207, F-208, Type2 climatisation pour bureau
100	Système AC-09	Local F-225, Type1 avec chauffage périmétrique
101	Système AC-10	Local F-220, Type1 avec chauffage périmétrique
102	Système AC-11	Local F-215, Type1 avec chauffage périmétrique
103	Système AC-12	Local F-210, Type1 avec chauffage périmétrique
104	Système AC-13	Local F-101, Type1 avec chauffage périmétrique
105	Système AC-14	Locaux F-108, F-109, Type2 climatisation pour bureau
106	Système AC-15	Locaux F-105, F-106, F-107, Type2 climatisation pour bureau
107	Système AC-16	Local F-102, Type1 avec chauffage périmétrique
108	Système AC-17	Local F-004, Type1 avec chauffage périmétrique
109	Système AC-18	Locaux A-171, A-172, Type 4 - Usine pilote A-171
110	Système AC-19	Locaux A-171, A-175, Type 4 - Usine pilote A-171
111	Système AC-20	Locaux A-161, A-162, Type 4 - Usine pilote A-161
112	Système AC-21	Locaux A-161, A-165, Type 4 - Usine pilote A-171
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117	Système AC-26	Locaux F-110, F-115, Type 1 avec Aérotherme A-6
118	Système AC-27	Locaux F-120, F-125. Type 1 avec Aérothermes A-4 et A-5
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149	Hottes V44-27, V44-28	Bloc D - Rez-de-chaussée
150	Évacuateurs V36-6E@17E et Hottes V43-26A, 34A@38A	Évacuateurs des hottes du bloc A et Hottes du bloc B
151	Évacuateurs SE3 et SE4	
152	Évacuateur V-35400-2-E	Salle Mécanique
153	Évacuateur VE-2	Usines pilotes A-141 et A-151
154	Évacuateur VE-3	Usines pilotes A-161 et A-171
155	Hottes VH-1 à VH-4	Hottes laboratoires F-209, F-214, F-219 et F-224
SYSTÈMES SPÉCIAUX		
300	Contrôle de pièce et Aérothermes	Voir dessins pour référence aux autres Aérothermes
301	Aérotherme PB60-24 et Chauffage Périmétrique	
302	Aérothermes A-01 à A-03	Aérothermes à eau chaude Local F-002

RÉSEAUX



LISTE DE MATERIEL			
IDENT.	MODELE	Q	DESCRIPTION
ECHANGEUR P43-25			
PC-4	T5800-3	1	CONTROLEUR
V-1	V5416-4567	1	VALVE 2 VOIES N.F. Ø 1" C.V. 12
V-2	V5842-12	1	VALVE 3 VOIES Ø 1/2" C.V. 187
V-3	V5252-8	1	VALVE 2 VOIES N.O. Ø 2 1/2" C.V. 51
PT-1,2	P5210-1002	2	TRANSMETTEUR DE PRESSION
V-4	V5252-16	1	VALVE 2 VOIES N.O. Ø 4" C.V. 150
W-1 ET 2	T800-1606	2	PUIT D'IMMERSION
TC-1 ET 2	T8000-1	2	CONTROLEUR
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
FS-1	F61KB-11	1	INTERRUPTEUR DE DEBIT
PC-1	P8575-3	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
G-1	G2010-11	1	INDICATEUR DE PRESSION
G-2,3,4,5	G2010-23	4	INDICATEUR DE PRESSION
ECHANGEUR P33-43			
V-5	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
V-6	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-7	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
W-3 ET 4	T800-1606	2	PUIT D'IMMERSION
PC-2	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-3	T8000-1	1	CONTROLEUR
EP-2	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
TT-1	T5210-1113	1	TRANSMETTEUR -40/71°C
TT-2	T5210-1004	1	TRANSMETTEUR 4/115°C
TI-1	T5502-1004	1	INDICATEUR -40/71°C Ø 2 1/2"
TI-2	T5502-1005	1	INDICATEUR 4/115°C Ø 2 1/2"
TC-4	T9002-1	1	CONTROLEUR
P-1	-----	1	BOITE 12" X 12"
G-1	G2010-11	1	INDICATEUR DE PRESSION
G-2,3	G2010-23	2	INDICATEUR DE PRESSION

ECHANGEUR P43-42			
G-1	G2010-11	1	INDICATEUR DE PRESSION
G-2,3	G2010-23	2	INDICATEUR DE PRESSION
V-8	V5416-4571	1	VALVE Ø 1 1/2" C.V. 29 N.F.
V-9	V5462-9	1	VALVE Ø 3" C.V. 83 N.F.
W-5	T800-1606	1	PUIT D'IMMERSION
EP-3	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
PC-3	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-5	T8000-1	1	CONTROLEUR
V44-29A			
DA-1	M130AGK-1	1	MOTEUR ELECTRIQUE AVEC BLOC CHAUFFAGE
XFR-1	EE96	1	TRANSFO. 600/24, 50 VA. (HAMMOND)
M-1	MARKTIME 90015	1	MINUTERIE MECANIQUE 0-12 HRES.
R-1	-----	1	RELAIS 600 VOLTS C/A LAMPE TEMOIN

SEQUENCE D'OPERATION

ECHANGEUR P43-25
LORSQU'IL Y A DU DEBIT, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET PERMET AU CONTROLEUR TC-1 DE MODULER LA VALVE DE VAPEUR V-1 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-2 MODULE EN SEQUENCE LA VALVE V-4 ET LA VALVE V-2 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR PC-1 MODULE LA VALVE V-3 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION ENTRE L'ALIMENTATION ET LE RETOUR CONSTANT.

ECHANGEUR P33-43
LORSQUE L'UNE OU L'AUTRE DES POMPES P33-17 OU 18 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-2 EST ENERGISE ET PERMET AU CONTROLEUR TC-3 DE MODULER LA VALVE V-5 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-4 MODULE LA VALVE V-6 AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION A SON POINT DE CONSIGNE. LE POINT DE CONSIGNE DE TC-4 EST REAJUSTE EN FONCTION DE LA TEMPERATURE EXTERIEURE.

LE CONTROLEUR PC-2 MAINTIENT UN DIFFERENTIEL DE PRESSION CONSTANT ENTRE L'ALIMENTATION ET LE RETOUR.

ECHANGEUR P33-42
LORSQUE L'UNE OU L'AUTRE DES POMPES P33-13 OU 14 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-3 PERMET AU CONTROLEUR TC-5 DE MODULER LA VALVE V-8 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR CONSTATTE.

LE CONTROLEUR PC-3 MODULE LA VALVE V-9 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION CONSTANT ENTRE LE CONDUIT D'ALIMENTATION ET LE RETOUR.

SYSTEME V44-29A:
AU DEPART DU SYSTEME PAR LA MINUTERIE MECANIQUE M-1 LE VOLET D'AIR NEUF OUVRE A 100%.

TITRE	— CONTROLE ECHANGEUR — SYSTEME V44-29	
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST. HYACINTHE QUE.	

AR-161	TEL QUE CONSTRUIT	86-08-20
TC-1,2,3 ET 5		86-08-20
DEG.20-85		SEPT 18-85
REFERENCE	NO.	REVISION
REPRESENTANT	TECHNICIEN	DESSINE
J.C.R.	R.F.	DATE JAN.30-85
PAR	DATE JAN.30-85	PAR
Société de Contrôle Johnson Ltée		CONTRAT
441 boulevard Lebeau		4096-8-34/52
Montréal, QC H4N 1S2		DESSIN NO.
Tél. 514-332-6960		4068-34

SEQUENCE D'OPERATION

ECHANGEUR P43-25

LORSQU'IL Y A DU DEBIT, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET PERMET AU CONTROLEUR TC-1 DE MODULER LA VALVE DE VAPEUR V-1 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-2 MODULE EN SEQUENCE LA VALVE V-4 ET LA VALVE V-2 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR PC-1 MODULE LA VALVE V-3 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION ENTRE L'ALIMENTATION ET LE RETOUR CONSTANT.

ECHANGEUR P33-43

LORSQUE L'UNE OU L'AUTRE DES POMPES P33-17 OU 18 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-2 EST ENERGISE ET PERMET AU CONTROLEUR TC-3 DE MODULER LA VALVE V-5 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-4 MODULE LA VALVE V-6 AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION A SON POINT DE CONSIGNE. LE POINT DE CONSIGNE DE TC-4 EST REAJUSTE EN FONCTION DE LA TEMPERATURE EXTERIEURE.

LE CONTROLEUR PC-2 MAINTIENT UN DIFFERENTIEL DE PRESSION CONSTANT ENTRE L'ALIMENTATION ET LE RETOUR.

ECHANGEUR P33-42





LORSQUE L'UNE OU L'AUTRE DES POMPES P33-13 OU 14 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-3 PERMET AU CONTROLEUR TC-5 DE MODULER LA VALVE V-8 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR CONSTANTE.





LE CONTROLEUR PC-3 MODULE LA VALVE V-9 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION CONSTANT ENTRE LE CONDUIT D'ALIMENTATION ET LE RETOUR.





SYSTEME V44-29A:

AU DEPART DU SYSTEME PAR LA MINUTERIE MECANIQUE M-1 LE VOLET D'AIR NEUF OUVRE A 100%.

LISTE DE MATERIEL

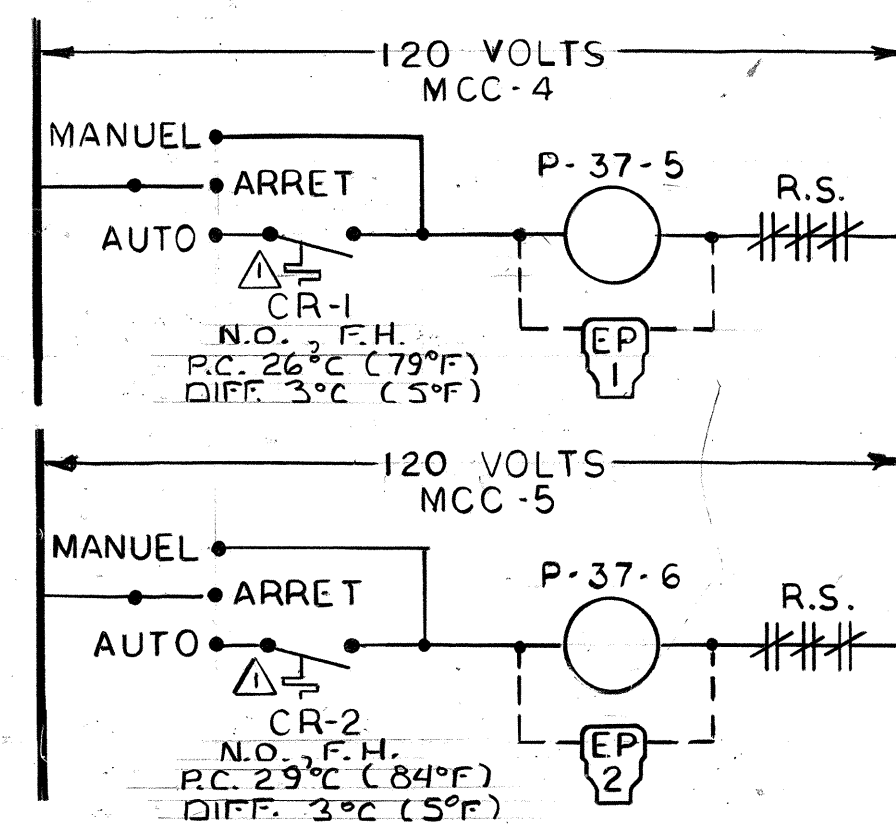
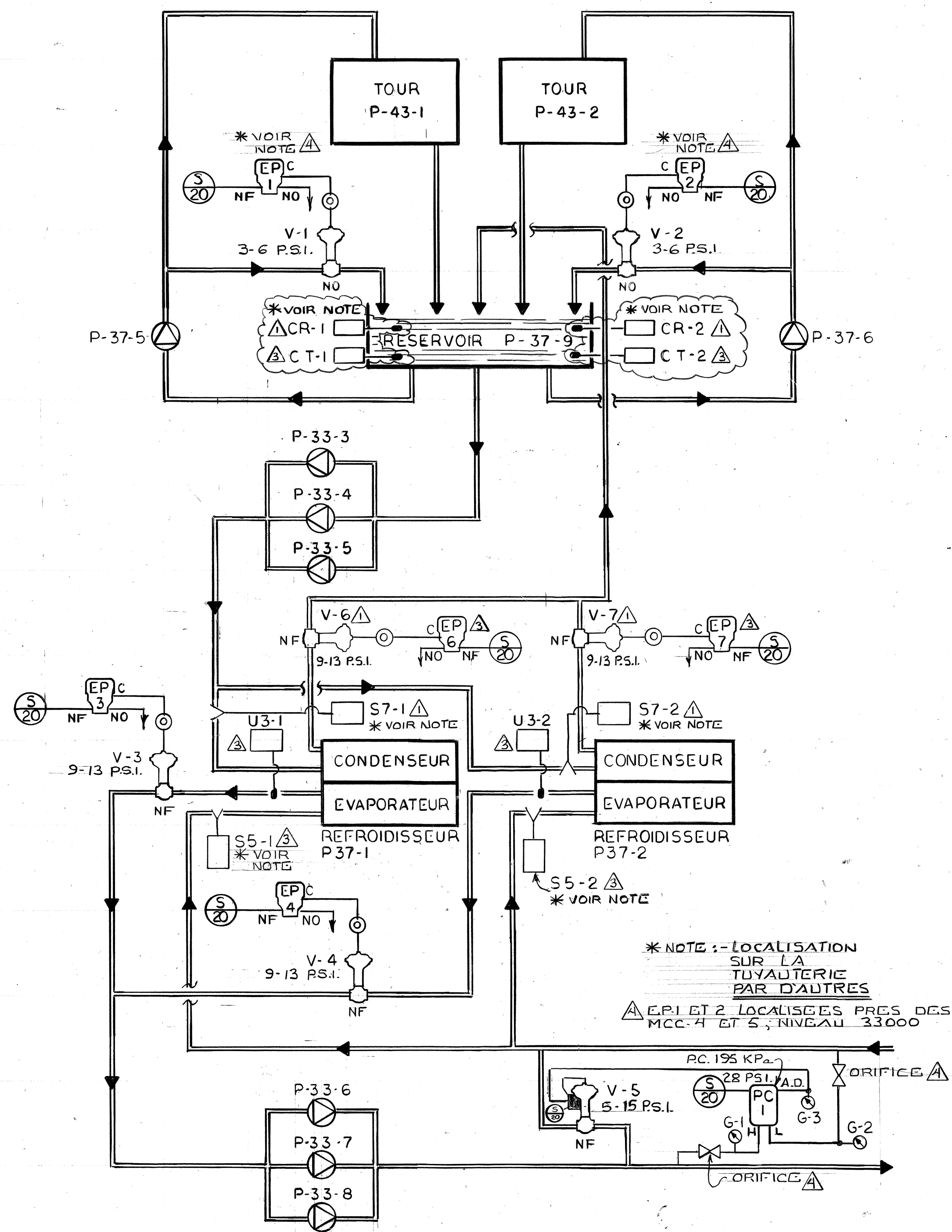
IDENT.	MODELE	Q	DESCRIPTION
ECHANGEUR P43-25			
PC-4	T5800-3	1	CONTROLEUR
V-1	V5416-4567	1	VALVE 2 VOIES N.F. Ø 1" C.V.12
V-2	V5842-12	1	VALVE 3 VOIES Ø 4" C.V. 187
V-3	V5252-8	1	VALVE 2 VOIES N.O. Ø 2 1/2" C.V.51
PT-1,2	P5210-1002	2	TRANSMETTEUR DE PRESSION
V-4	V5252-16	1	VALVE 2 VOIES, N.O., Ø 4", C.V.: 150
W-1 ET 2	T800-1606 	2	PUIT D'IMMERSION
TC-1 ET 2	T8000-1 	2	CONTROLEUR
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
FS-1	F61KB-11	1	INTERRUPTEUR DE DEBIT
PC-1	P8575-3	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
G-1 	G2010-11	1	INDICATEUR DE PRESSION
G-2,3,4,5 	G2010-23	4	INDICATEUR DE PRESSION

ECHANGEUR P33-43			
V-5	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
V-6	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-7	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
W-3 ET 4	T800-1606 	2	PUIT D'IMMERSION
PC-2	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-3	T8000-1 	1	CONTROLEUR
EP-2	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
TT-1	T5210-1113	1	TRANSMETTEUR -40/71°C
TT-2	T5210-1004	1	TRANSMETTEUR 4/115°C
TI-1	T5502-1004	1	INDICATEUR -40/71°C Ø 2 1/2"
TI-2	T5502-1005	1	INDICATEUR 4/115°C Ø 2 1/2"
TC-4	T9002-1	1	CONTROLEUR
P-1	-----	1	BOITE 12" X 12"
G-1 	G2010-11	1	INDICATEUR DE PRESSION
G-2,3 	G2010-23	2	INDICATEUR DE PRESSION

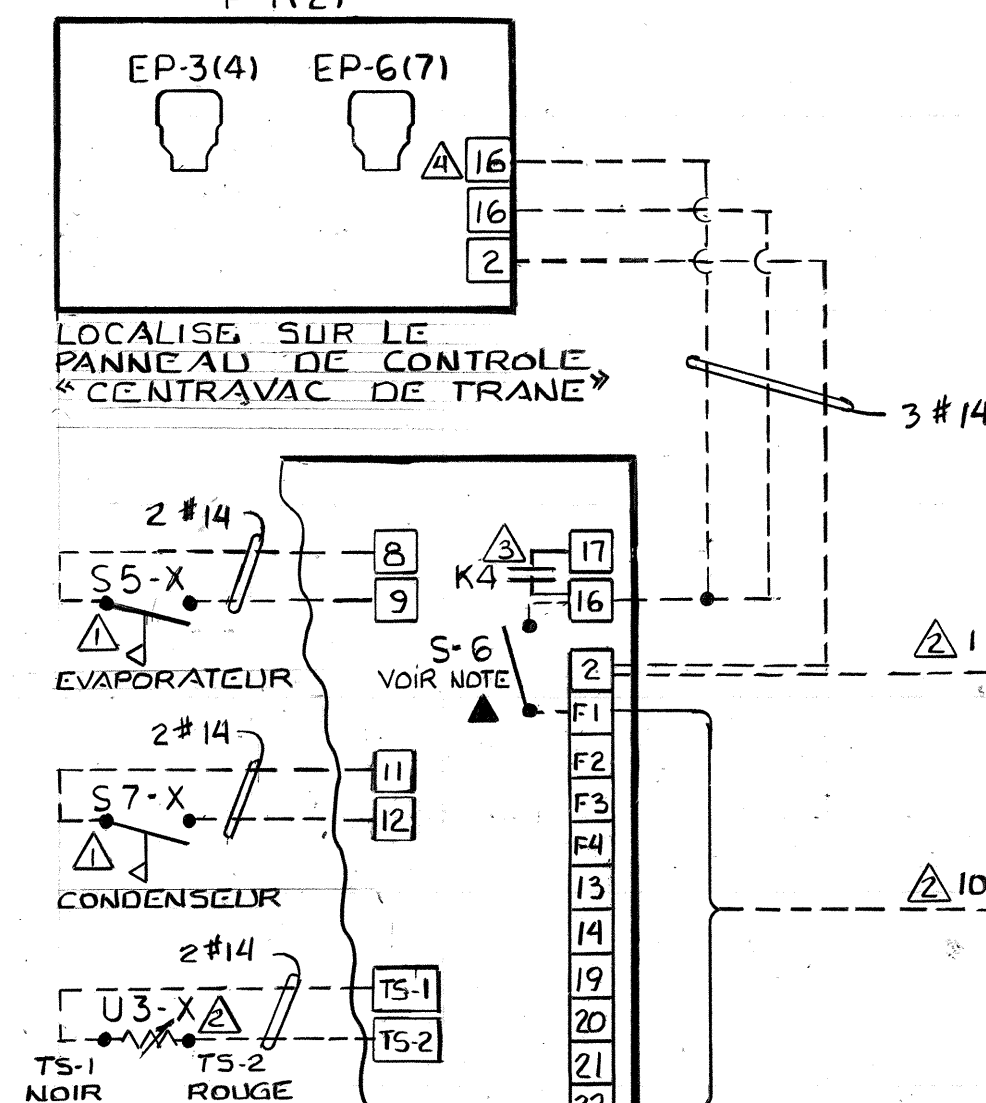
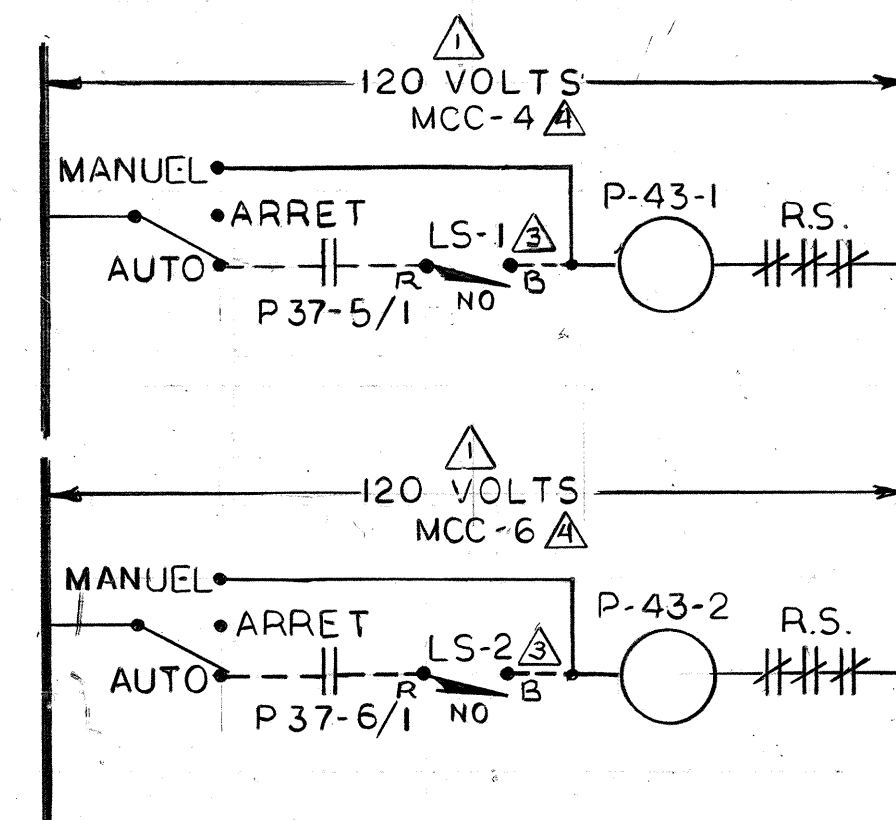
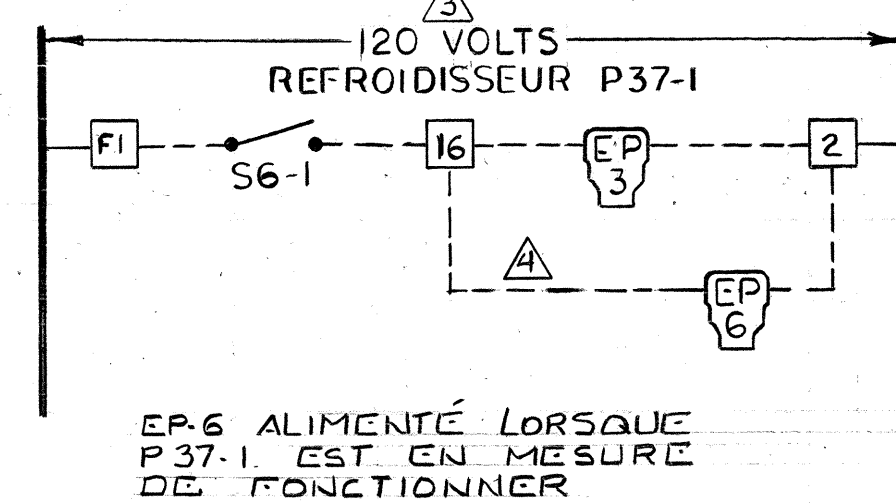
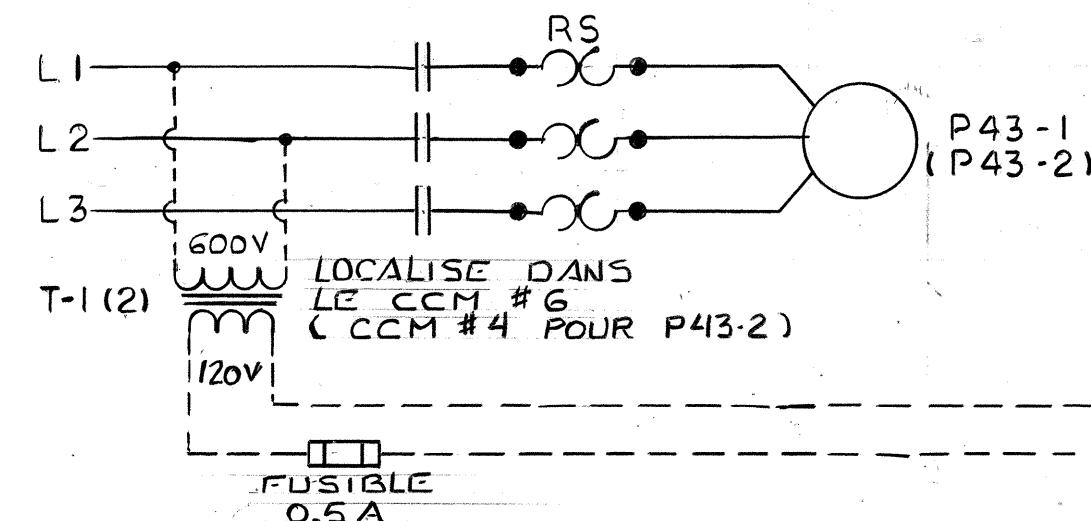
ECHANGEUR P43-42			
G-1 	G2010-11	1	INDICATEUR DE PRESSION
G-2 3 	G2010-23	2	INDICATEUR DE PRESSION
V-8	V5416-4571	1	VALVE Ø 1 1/2" C.V. 29 N.F.
V-9	V5462-9	1	VALVE Ø 3" C.V. 83 N.F.
W-5	T800-1606 	1	PUIT D'IMMERSION
EP-3	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
PC-3	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-5	T8000-1 	1	CONTROLEUR

V44-29A			
DA-1	M130AGK-1	1	MOTEUR ELECTRIQUE AVEC BLOC CHAUFFAGE
XFR-1	EE9G	1	TRANSFO. 600/24, 50 VA. (HAMMOND)
M-1	MARKTIME 90015	1	MINUTERIE MECANIQUE 0-12 HRES.
R-1		1	RELAIS 600 VOLTS C/A LAMPE TEMOIN

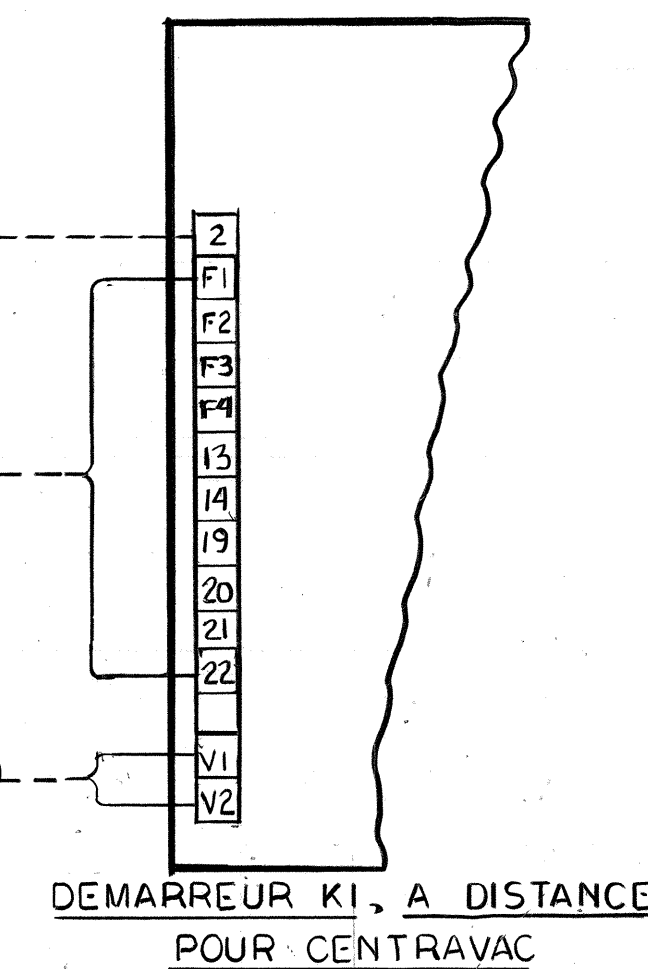
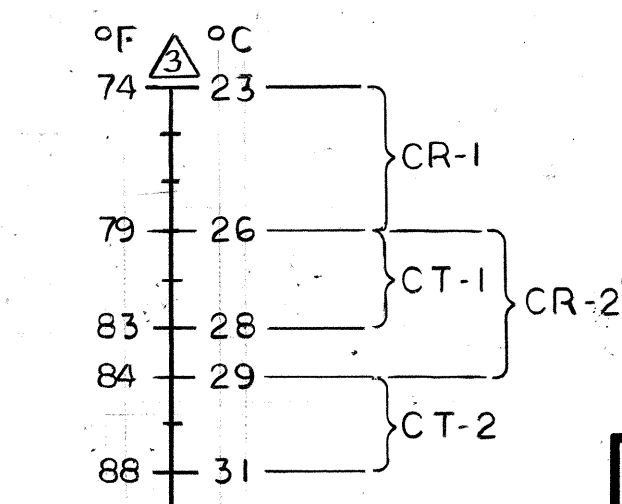
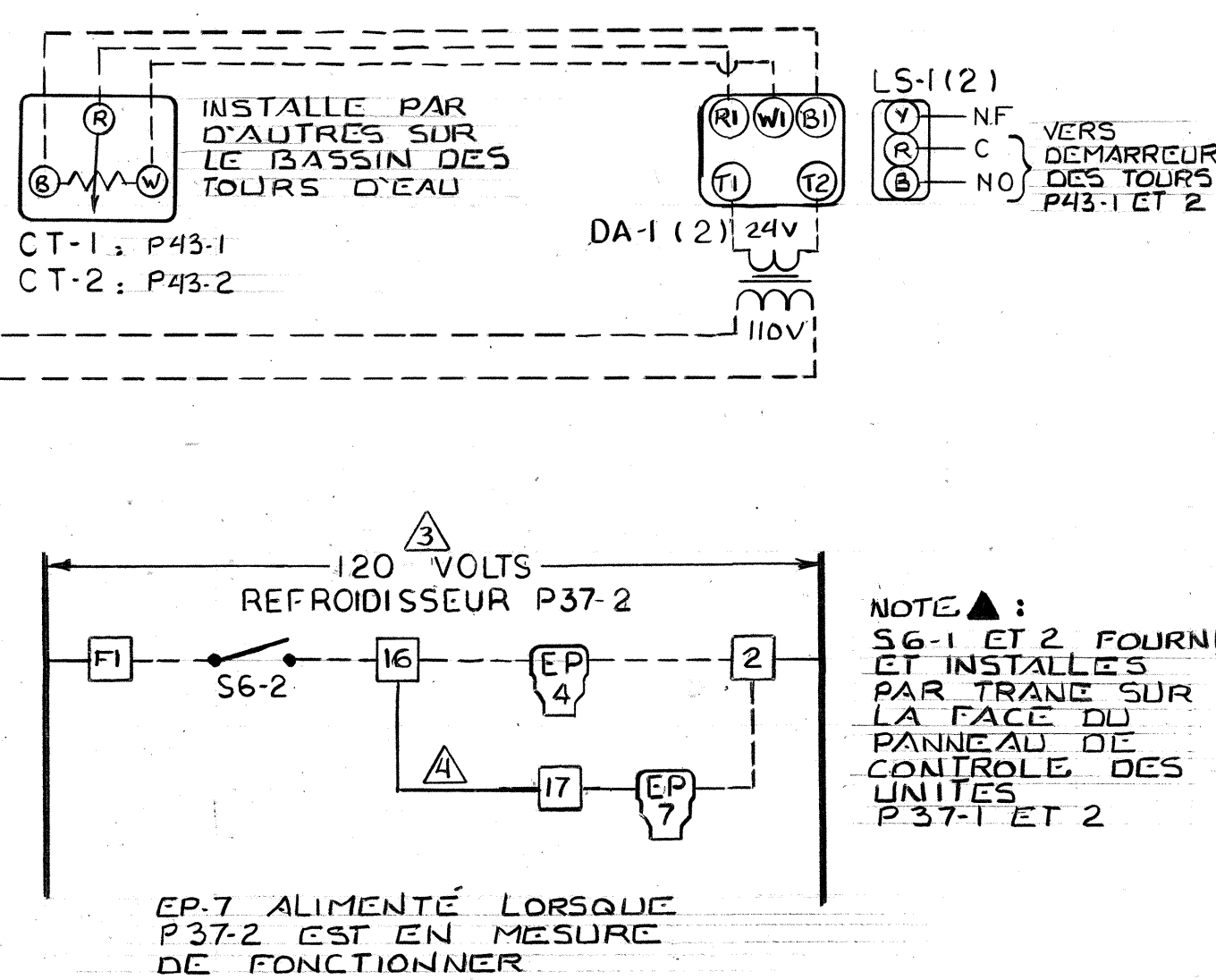
REFROIDISSEUR



TYPIQUE : QTEE 2

IPANNEAU PAR REFROIDISSEUR
P-1(2)PANNEAU DE CONTROLE CENTRAVAC DE
TRANETOUR D'EAU P-43-1 & 2
TYPIQUE : QTEE 2DIAGRAMME DE CONTROLE
REFROIDISSEUR P37-1 ET 2

TYPIQUE QUANTITE 2

REF: VOIR DESSIN SUR LA PORTE DU
PANNEAU DE CONTROLEDEMARREUR KI, A DISTANCE
POUR CENTRAVAC

REFROIDISSEURS

CENTRE DE RECHERCHE
ALIMENTAIRE
ST-HYACINTHE, QUE.JOHNSON
CONTROLS
Systems & Services Division

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
P1,2		2	BOITIER 8 X 8 X 4
EP-1	V11HAA-109	6	RELAIS ELECTRIQUE/PNEUMATIQUE
PC-1	P8575-1	1	CONTROLEUR DE PRESSION DIFFE.
T1, T2	TRANSFORMATEUR	2	50VA, 600/120 VAC
V-1	V-3752-1049	1	VALVE 2 VOIES Ø 1 1/2" C.V. 20
V-2	V-3752-1049	1	VALVE 2 VOIES Ø 1 1/2" C.V. 20
V-3	V-5462-17	1	VALVE 2 VOIES Ø 6" C.V. 344
V-4	V-5462-17	1	VALVE 2 VOIES Ø 6" C.V. 344
V-5	V-5462-16	1	VALVE 2 VOIES Ø 5" C.V. 237
V-6, V-7	V-5462-17	1	VALVE 2 VOIES Ø 6" C.V. 344
CR-1,2	PAR D'AUTRES	2	2BSBD, UNITED ELECTRIC
FS-5-1,5-2	PAR D'AUTRES	4	INTERRUPTEUR DE DEBIT
7-1, 7-2	PAR D'AUTRES	2	SENSEUR DE TEMPERATURE
U3-1,2	PAR D'AUTRES	2	INTERRUPTEUR 2 POSITIONS
S6-1,2	T991A	2	PAR D'AUTRES
CT-1,2	M944A	2	PAR D'AUTRES
DA-1,2	Q607A	2	PAR D'AUTRES
LS-1,2		2	PAR D'AUTRES
G-1,2	G 2010-23	2	INDICATEUR DE PRESSION
G-3	G 2010-11	1	INDICATEUR DE PRESSION

SEQUENCE D'OPERATION

EAU DES TOURS

LORSQUE LES POMPES P-37-5 ET 6 SONT A L'ARRET, LES SOUPAPES CORRESPONDANTES V-1 ET V-2 OUVRONT PAR EP-1 ET 2.

REFROIDISSEURS

LES SOUPAPES V3,4,6,7 SONT OUVERTES MANUELLEMENT VIA LES INTERRUPTEURS S6-1, S6-2 ET EP-3,4,6,7.

LE CONTROLEUR PC-1 MAINTIEN UN DIFFERENTIEL DE PRESSION ENTRE LA TUYAUTERIE D'ALIMENTATION ET DE RETOUR D'EAU REFRIGERIE EN MODULANT LA SOUPAPE V-5.

LA TEMPERATURE DANS LE RESERVOIR DES TOURS D'EAU EST CONTROLEE PAR CR-1, CR-2, CT-1 ET CT-2. LE THERMOSTAT CR-1 DEMARRE LA POMPE P37-5 LORSQUE LA TEMPERATURE DANS LE BASSIN MONTE AU DESSUS DE 26°C (79°F). CT-1 CONTROLE LE VOLET DE LA TOUR SELON LE POINT DE CONSIGNE SUIVANT: 27°C (81°F) BANDE PROPORTIONNELLE DE 2°C (4°F). LE THERMOSTAT CR-2 DEMARRE LA POMPE P37-6 LORSQUE LA TEMPERATURE DANS LE BASSIN MONTE AU DESSUS DE 29°C (84°F). CT-2 CONTROLE LE VOLET DE LA TOUR SELON LE POINT DE CONSIGNE SUIVANT: 30°C (86°F) BANDE PROPORTIONNELLE DE 2°C (4°F).

LES VENTILATEURS DES TOURS D'EAU P43-1 ET P43-2 POURRONT FONCTIONNER EN MODE AUTOMATIQUE SEULEMENT LORSQUE LES POMPES P37-5 ET P37-6 SERONT EN MARCHÉ. LES VENTILATEURS DES TOURS SONT DEMARRES PAR LES INTERRUPTEURS LS-1 ET 2 DES VOLETS DES TOURS.

NOTE: S6-1 ET 2 FOURNI ET INSTALLEES PAR TRANE SUR LA FACE DU PANNEAU DE CONTROLE DES UNITES P37-1 ET 2

CHANGEMENT AR-161	3	EP-6, EP-7, CT-1, CT-2	86-6-23
CHANGEMENT AR-148	2	RACC. REFRIGERIS.	86-4-10
CHANGEMENT AR-119	1	GENERALE	86-4-10
REFERENCE DRAWINGS	NO	REVISION - LOCATION	ECN
SALES ENGR.	J.C.R.	APPLICATION ENGR.	R.F.
DRAWN	BY 1/3	DATE	11-22-85
APPROVED	BY 1/3	DATE	11-22-85
CONTRACT NUMBER	441 BOUL. LEBEAU	4096-008-49	
DRAWING NUMBER	MONTREAL, QUE.	4068-40	
	HAN 152		
	Tél. 1-514-332-6960		

EAU DES TOURS

LORSQUE LES POMPES P-37-5 ET 6 SONT A L'ARRET, LES SOUPAPES CORRESPONDANTES V-1 ET V-2 OUVRENT PAR EP-1 ET 2.

3 REFROIDISSEURS

LES SOUPAPES V3, ~~4, 6, 7~~ SONT OUVERTES MANUELLEMENT VIA LES INTERRUPTEURS S6-1, S6-2 ET EP-3, ~~4, 6, 7~~.









LE CONTROLEUR PC-1 MAINTIENT UN DIFFERENTIEL DE PRESSION ENTRE LA TUYAUTERIE D'ALIMENTATION ET DE RETOUR D'EAU REFROIDIE EN MODULANT LA SOUPAPE V-5.

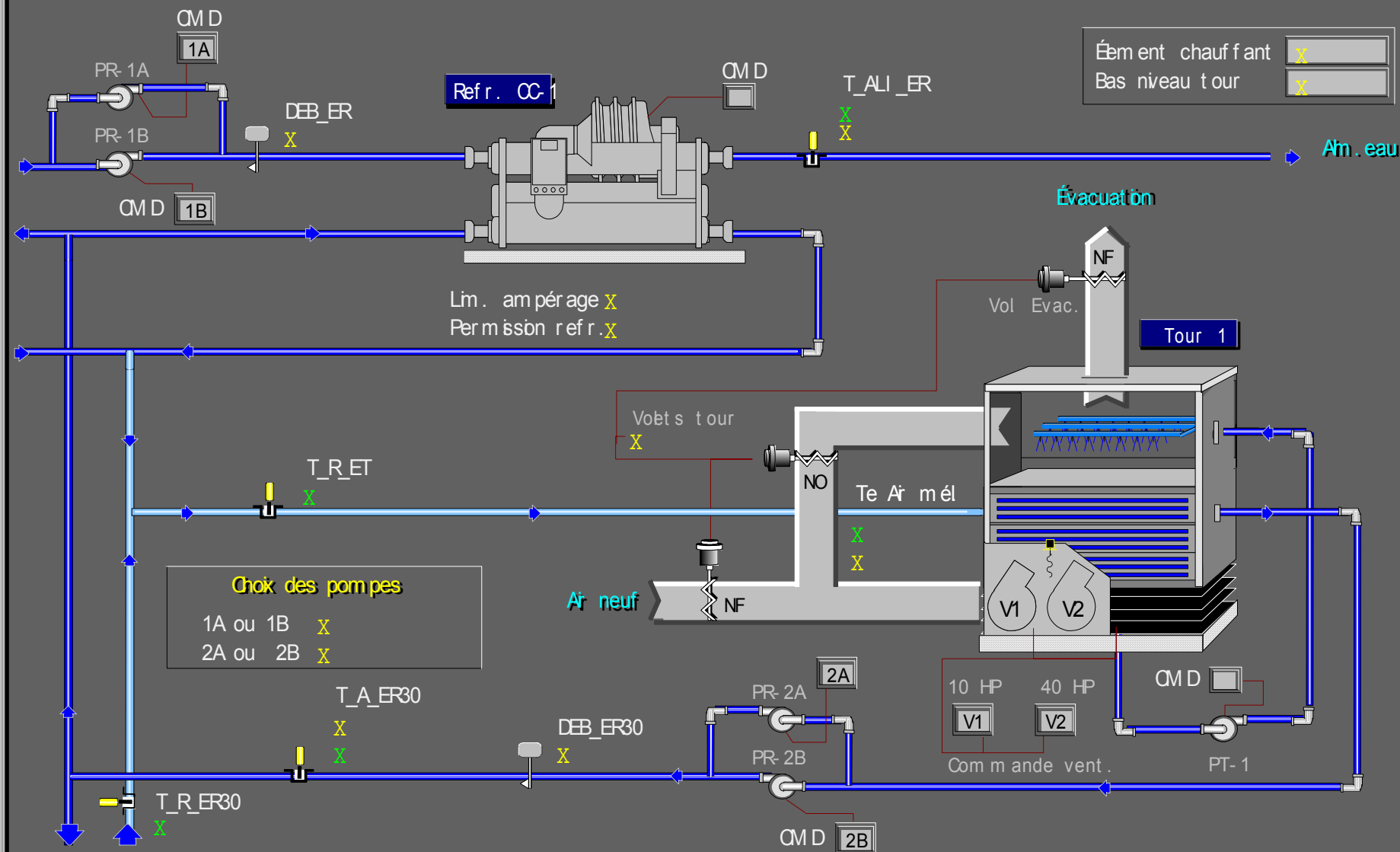
3 LA TEMPERATURE DANS LE RESERVOIRE DES TOURS D'EAU EST CONTROLEE PAR CR-1, CR-2, CT-1 ET CT-2. LE THERMOSTAT CR-1 DEMARRE LA POMPE P37-5 LORSQUE LA TEMPERATURE DANS LE BASSIN MONTE AU DESSUS DE 26°C (79°F). CT-1 CONTROLE LE VOLET DE LA TOUR SELON LE POINT DE CONSIGNE SUIVANT: 27°C (81°F) BANDE PROPORTIONNELLE DE 2°C (4°F). LE THERMOSTAT CR-2 DEMARRE LA POMPE P37-5 LORSQUE LA TEMPERATURE DANS LE BASSIN MONTE AU DESSUS DE 29.0°C (84°F). CT-1 CONTROLE LE VOLET DE LA TOUR SELON LE POINT DE CONSIGNE SUIVANT: 30°C (86°F) BANDE PROPORTIONNELLE DE 2°C (4°F).

3 LES VENTILATEURS DES TOURS D'EAU P43-1 ET P43-2 POURRONT FONCTIONNER EN MODE AUTOMATIQUE SEULEMENT LORSQUE LES POMPES P37-5 ET P37-6 SERONT EN MARCHE. LES VENTILATEURS DES TOURS SONT DEMARRES PAR LES INTERRUPTEURS **LS-1 ET 2** DES VOLETS DES TOURS.

REFROIDISSEUR ET
TOUR D'EAU

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
P1,2 		2	BOITIER 8 X 8 X 4
EP-1 @ 4,6,7	V11HAA-109	6	RELAIS ELECTRIQUE/PNEUMATIQUE
PC-1	P8575-1	1	CONTROLEUR DE PRESSION DIFFE.
T1,T2	TRANSFORMATEUR	2	50VA, 600/120 VAC
V-1	V-3752-1049	1	VALVE 2 VOIES \varnothing 1 $\frac{1}{2}$ " C.V. 20
V-2	V-3752-1049	1	VALVE 2 VOIES \varnothing 1 $\frac{1}{2}$ " C.V. 20
V-3	V-5462-17	1	VALVE 2 VOIES \varnothing 6" C.V. 344
V-4	V-5462-17	1	VALVE 2 VOIES \varnothing 6" C.V. 344
V-5	V-5462-16	1	VALVE 2 VOIES \varnothing 5" C.V. 237
V-6, V-7 	V-5462-17	1	VALVE 2 VOIES \varnothing 6" C.V. 344
CR-1,2 	PAR D'AUTRES	2	2BSBD, UNITED ELECTRIC
FS-5-1,5-2,			
7-1, 7-2 	PAR D'AUTRES	4	INTERRUPTEUR DE DEBIT
U3-1,2 	PAR D'AUTRES	2	SENSEUR DE TEMPERATURE
\$6-1,2 	PAR D'AUTRES	2	INTERRUPTEUR 2 POSITIONS
CT-1,2	T991A	2	PAR D'AUTRES
DA-1,2	M944A	2	PAR D'AUTRES
LS-1,2	Q607A	2	PAR D'AUTRES
G-1,2 	G 2010-23	2	INDICATEUR DE PRESSION
G-3 	G 2010-11	1	INDICATEUR DE PRESSION



<u>LISTE DE MATÉRIEL</u>				
IDENT.	QTE	MODÈLE	DESCRIPTION	
BN_TR-1,2	2	-----	DÉTECTEUR DE BAS NIVEAU D'EAU - PAR D'AUTRES	
DEB_ER	1	-----	INTERRUPTEUR DE DÉBIT D'EAU - PAR D'AUTRES	
DEB_ER30	1	F61KB-11	INTERRUPTEUR DE DÉBIT D'EAU	
T	1	-----	CONTRÔLEUR DE TEMP., IMMERSION - PAR D'AUTRES	
T_A_ER30, T_ALI_ER,	4	TE-6312P-1	SONDE DE TEMP. IMMERSION, 1000 OHMS NI	
T_R_ER30, T_R_ET	4	T 1-1/2P-4	PUITS D'IMMERSION, 100mm - 4", ACIER INOX. - GREYSTONE	
T_AM_TR1	1	TE-6315P-1	SONDE DE TEMP. DE GAINÉ À LECTURE MOYENNE, 5 MÈTRES - 8', 1000 OHMS NI	
VOL_MEL-1	4	D-3153-1	ACTUATEUR PNEUMATIQUE AVEC POSITIONNEUR	
VOL_MEL-2	2	D-3153-1	ACTUATEUR PNEUMATIQUE AVEC POSITIONNEUR	
VOL_MEL-3	1	D-3153-1	ACTUATEUR PNEUMATIQUE AVEC POSITIONNEUR	

REFROIDISSEUR CC-1

- Le refroidisseur (CC-1) et la pompe d'eau refroidie (PR-1A, B) sont arrêtées. Un seul des 2 moteurs de la pompe (PR-1A ou PR-1B) peut fonctionner à la fois.

- Le refroidisseur est mis en marche manuellement par l'opérateur à partir de la centrale de commandes.
- Sur une commande de démarrage du refroidisseur, un des 2 moteurs de la pompe (PR-1A ou PR-1B) est mis en marche.
- Sur preuve de débit d'eau provenant de l'interrupteur de débit (DEB_ER), le refroidisseur démarre (par l'entremise du relais DEB_ER situé dans le panneau de contrôle P-2C, dessin 4068-097).
- Le refroidisseur maintient alors la température d'alimentation de l'eau refroidie au point de consigne (P.C. 9°C, ajustable à partir de la centrale).
- Sur une détérioration d'un des moteurs (PR-1A ou PR-1B), le régulateur numérique met à l'arrêt la commande de ce dernier et démarre le second. Un entrebarrage électrique empêche le fonctionnement des 2 moteurs simultanément.
- Les alarmes suivantes seront rapportées à la centrale:
 - Non-concordance entre l'état et la commande de chacun des moteurs de la pompe (PR-1A/B).
 - Perte de débit (DEB_ER) de la pompe (PR-1A/B).
 - Haute température d'alimentation d'eau refroidie (T_ALI_ER, P.C. 13°C, ajustable).
 - Alarmes regroupées du refroidisseur.

Titre du Dessin		3		TEL QUE CONSTRUIT		D.B.		02/04/2029		O.P.	
Refrigeriseur CC-1 et tour d'eau TR-1		2		RÉV. POMPES PR-1A/B, 2A/B				03/14/2002		D.B.	
		1		POUR APPROBATION				07/25/2001		D.B.	
Diagramme de débit		DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN		DATE	
		Représentant		Gérant De Projet		Concepteur		DESSINÉ		APPROUVÉ	
								PAR D.B.		DATE 06/12/2001	
Nom du Projet						Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc. H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093		NUMÉRO DESSIN			
						4068-094A					

P-2C

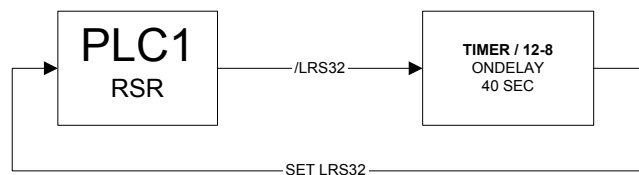


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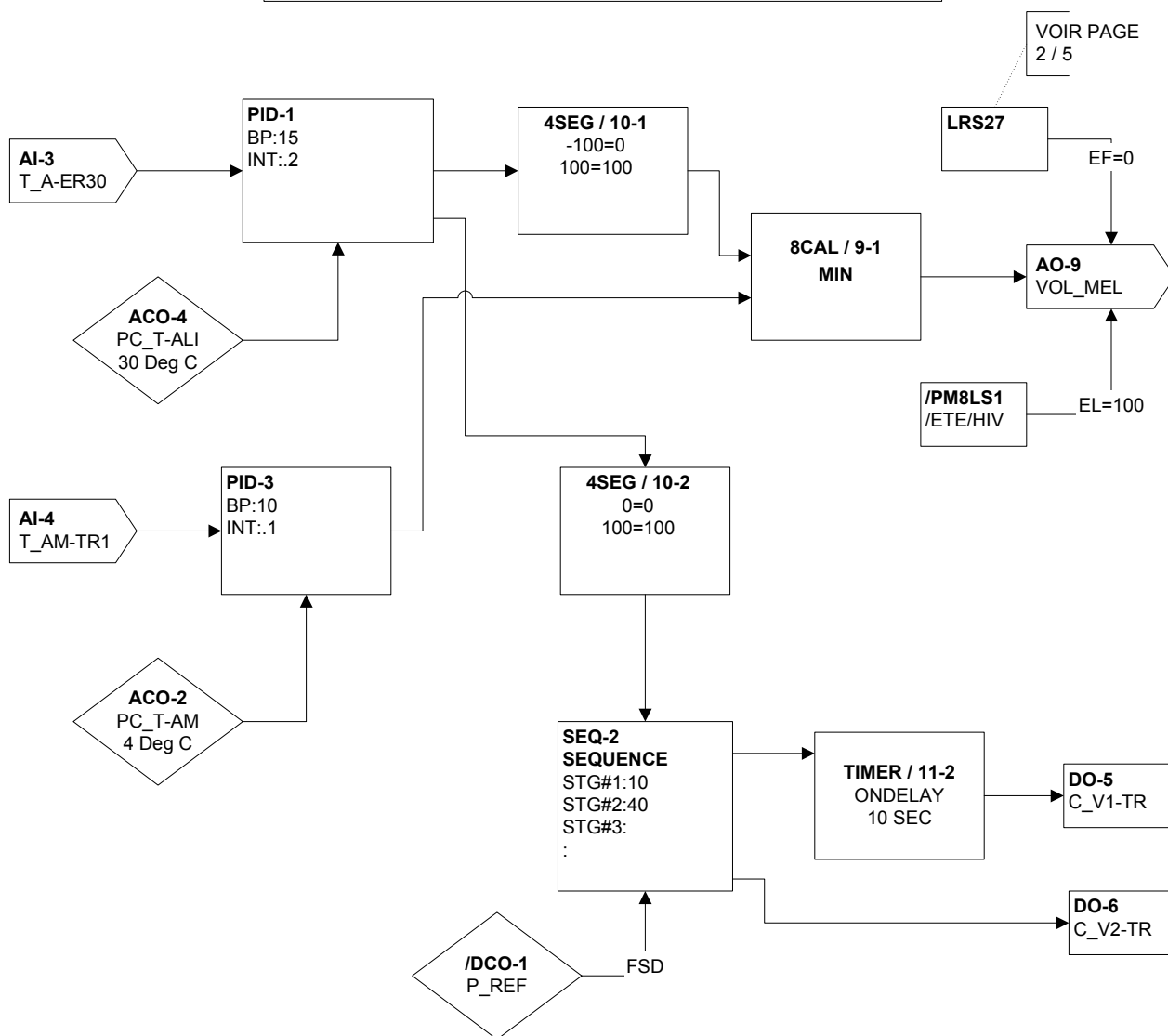
PANNEAU P-2C

Titre du Dessin		3		MODULES XT-2-42, XP-2-42A		03/14/2002		D.B.	
Panneau P-2C Salle mécanique F-301 (Refrroid. CC-1, tour d'eau TR-1, vent. laboratoires VH-1, 2, 3, 4)		2		RELAIS "DEB_ER" AJOUTÉ		07/30/2001		D.B.	
		1		POUR APPROBATION		06/12/2001		D.B.	
DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN		DATE	
Représentant		Gérant De Projet		Concepteur		DESSINÉ		APPROUVÉ	
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 15/03/01		PAR DATE 15/03/01	
Nom du Projet				Information Succursale				NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093		NUMERO DESSIN	
								4068-097	

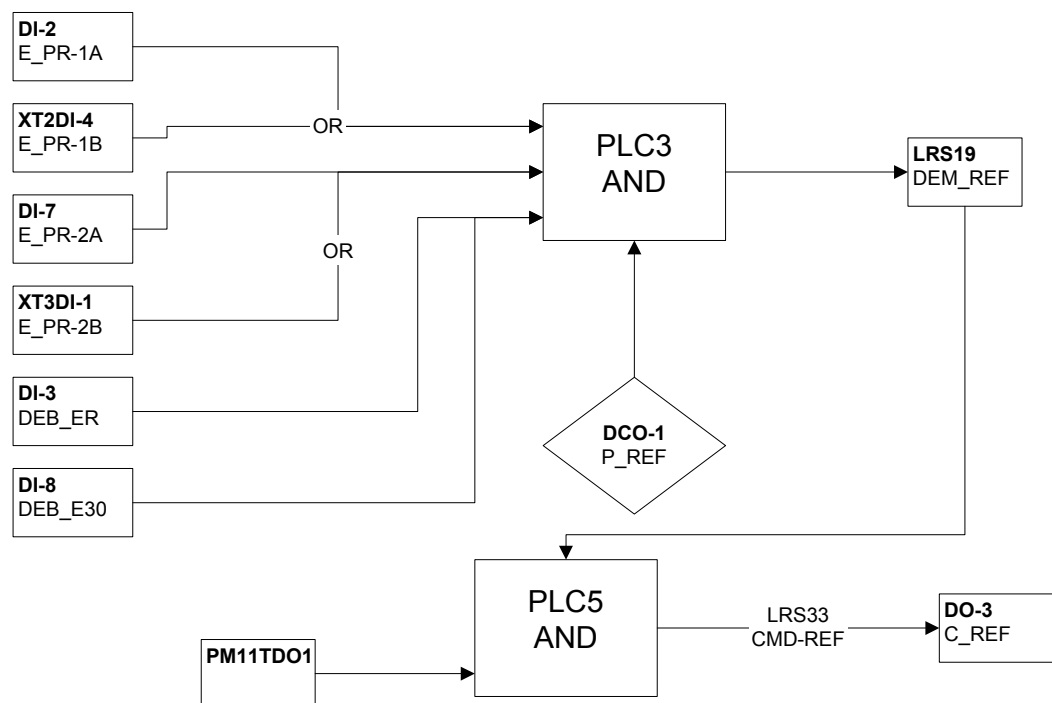
REDEMARRAGE APRES PANNE (DX-2-40)



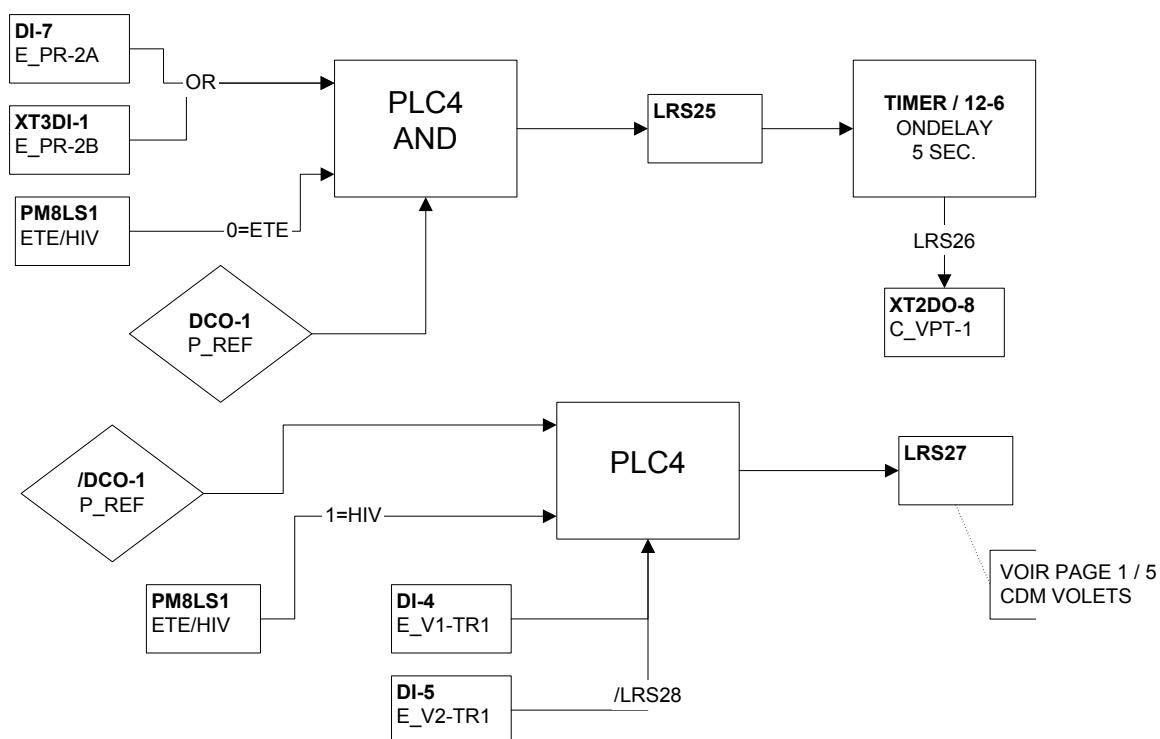
CONTROLE DES VENTILATEURS ET VOLETS TOUR D'EAU

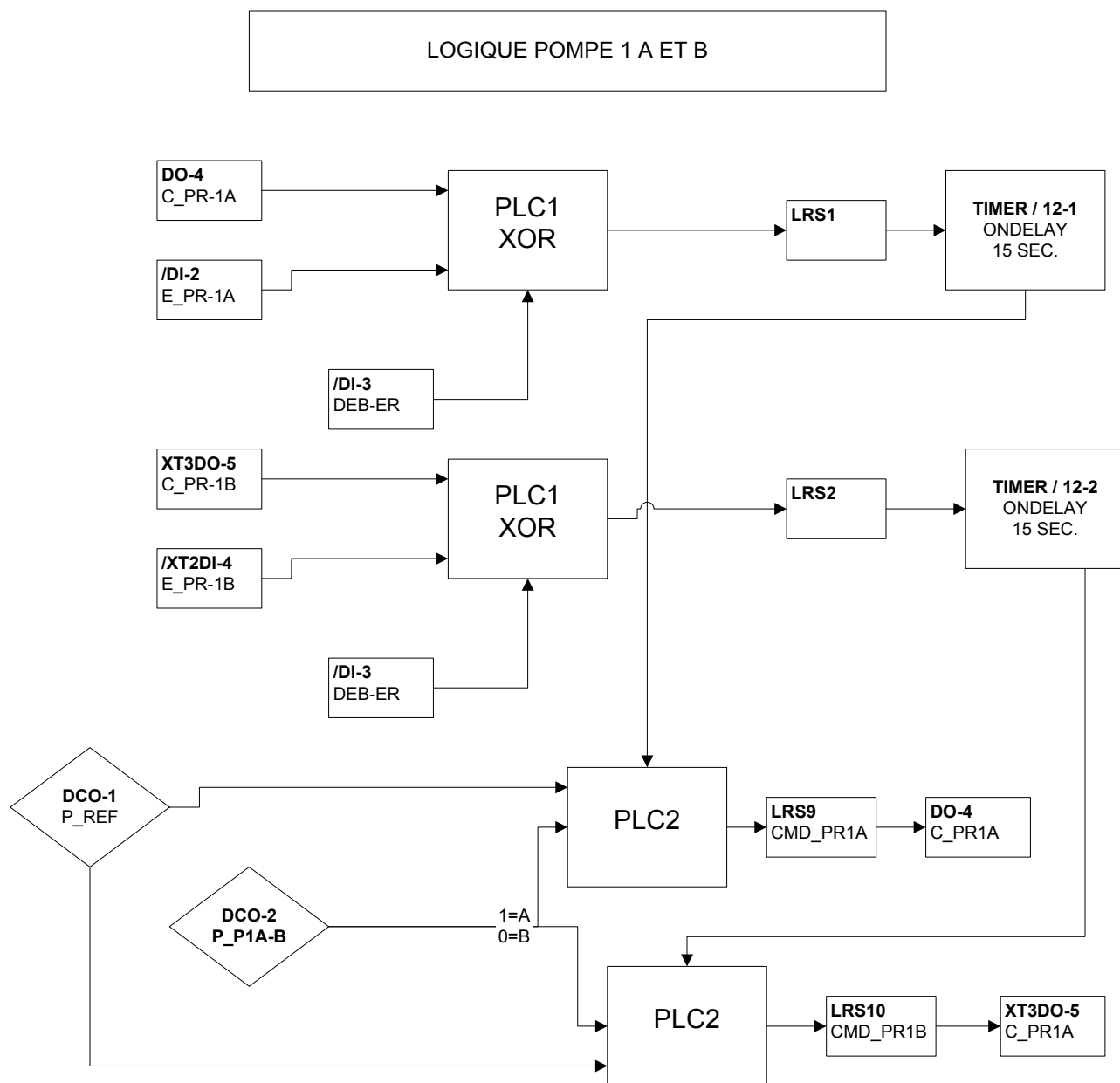


COMMANDE DU REFROIDISSEUR

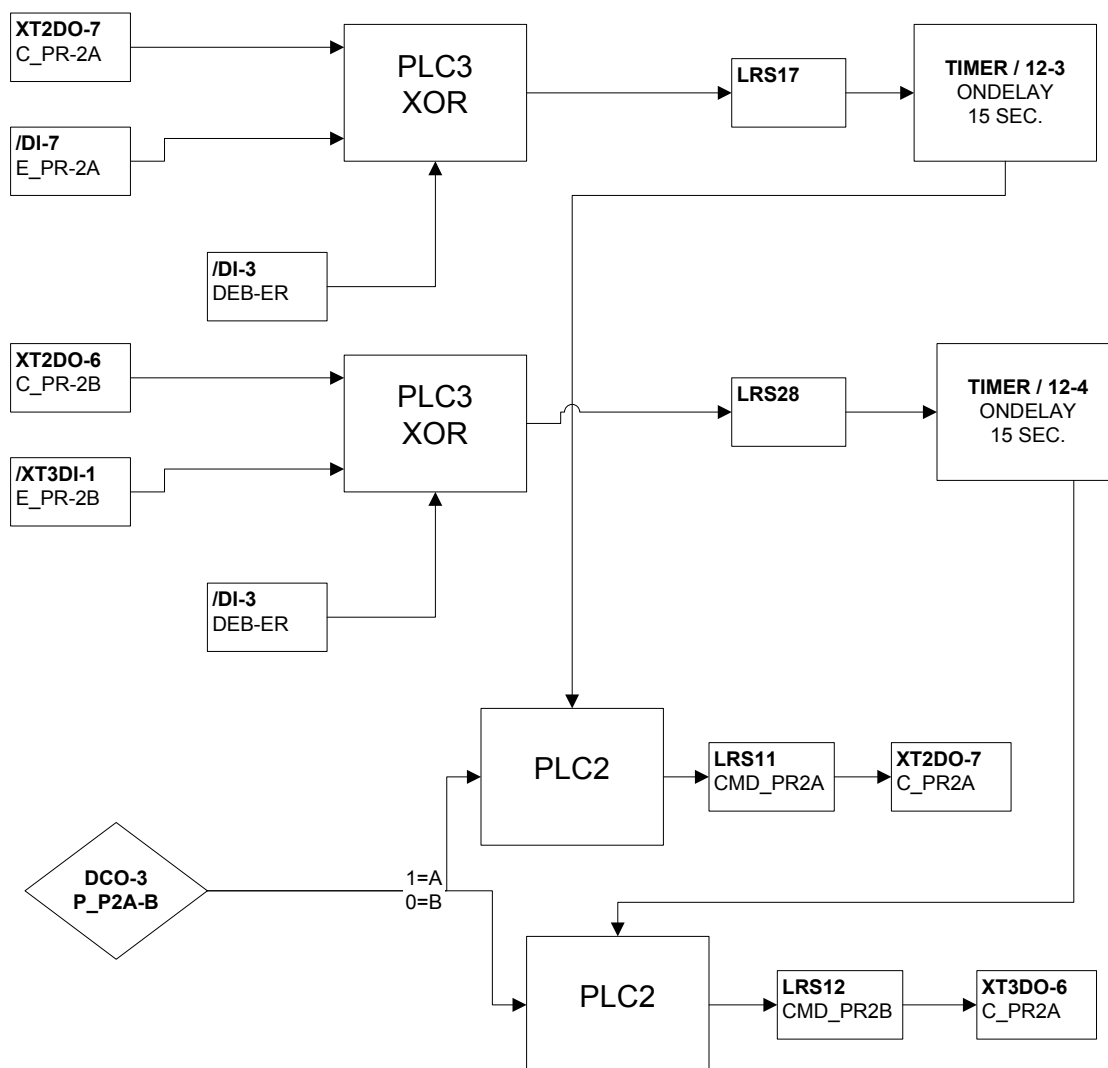


COMMANDE POMPE EAU TOUR





LOGIQUE POMPE 1 A ET B



POINT DE CONSIGNE ALIM. EAU REF.



POINT DE CONSIGNE AMPERAGE



COMMANDE DES HOTTES



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 40
Numéro du dessin : 4068
Système : REFROIDISSEUR ET TOUR D'EAU

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP ALIM EAU REFROI		
2	TEMP RETOUR EAU 30C		
3	TEMP. ALIM EAU 30C		
4	TEMP RETOUR EAU TOUR		
5	TEMP ALIM AIR TOUR		
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Précaler
1	ETAT REFROIDISSEUR	Off =arrêt / On marche	1
2	ETAT POMPE PR-1A	Off =arrêt / On marche	1
3	ETAT DEBIT EAU REF.	Off =arrêt / On marche	1
4	ETAT BASSE VIT VENT.	Off =arrêt / On marche	1
5	ETAT HAUTE VIT VENT	Off =arrêt / On marche	1
6	ETAT POMPE TOUR	Off =arrêt / On marche	1
7	ETAT POMPE PR-2A	Off =arrêt / On marche	1
8	ETAT DEBIT EAU 30C	Off =arrêt / On marche	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	PC ALIM EAU REFROI.	ACO1	0% = Min. / 100% = Max.
2	PC AMPERAGE	ACO5	0% = Min. / 100% = Max.
3	COMM. A/D REFROIDISSEUR	LRS33	Off = arrêt / On = marche
4	COMM. POMPE PR-1A	LRS9	Off = arrêt / On = marche
5	COMM. BASSE VIT. VENT.	PM2STO1	Off = arrêt / On = marche
6	COMM. HAUTE VIT. VENT.	PM2STO2	Off = arrêt / On = marche
7	COMM. VENT HOTTE 1	DCO4	Off = arrêt / On = marche
8	COMM. VENT. HOTTE 2	DCO5	Off = arrêt / On = marche
9	COMM VOLET MELANGE	Z3	0% = Min. / 100% = Max.
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO4	X3 Temp. alim. Eau 30C	0% = Min. / 100% = Max.
2	PM10NCM2	X3 Temp. alim. Eau 30C	0% = Min. / 100% = Max.
3	ACO2	X5 Temp. air mel tour	0%= Min. / 100% = Max.
4			
5			
6			
7			
8	Comparateur		
9	8 Calcul		
10	4- Segment		
11	Timer		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	15	.2	
2			
3	10	.1	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	9 degC	PC Alimentation refroidissement
2	4 degC	PC temperature air melange
3	4 degC	PC mode ete / hiver
4	30 deg C	PC temp alimentation eau 30
5	100 Amp	PC limite amperage
6		
7		
8	18 deg C	Temperature exterieure

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission refroidisseur
2	ON	Permission pompe 1a ou b
3	ON	Permission pompe 2a ou b
4	ON	Permission ventilateur hotte 1
5	ON	Permission ventilateur hotte 2
6	ON	Permission ventilateur hotte 3
7	ON	Permission ventilateur hotte 4
8	OFF	Mode ete/hiver
9		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068
Système : REFROIDISSEUR ET TOUR D'EAU
Adresse du NCM : 2
Adresse du DX-9100 : 40
Adresse du XT : 41

Numero du XP : 1

Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
11	BAS NIVEAU TOUR		
12	ETAT ELEMENT CHAUFF.		
13	ETAT VENT. HOTTE 1		
14	ETAT VENT. HOTTE 2		
15	ETAT VENT. HOTTE 3		
16	ETAT VENT. HOTTE 4		
17	ALARME HOTTE F-209		
18	ALARME HOTTE F-214		

Numero du XP : 2

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point	Précaler
19	ALARME REFROIDISSEUR	
20	ALARME HOTTE F-219	
21	ALARME HOTTE F-224	
22	ETAT POMPE PR-1B	

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
23	COMM POMPE PR-1B		Off = arrêt / On = marche
24	COMM POMPE PR-2B		Off = arrêt / On = marche
25			
26			

FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068
Système : REFROIDISSEUR ET TOUR D'EAU
Adresse du NCM : 2
Adresse du DX-9100 : 40
Adresse du XT : 42

Numero du XP : 4

Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
41	ETAT POMPE PR-2B		
42			
43			
44			

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
45	COMM POMPE PR-1B		Off = arrêt / On = marche
46	COMM POMPE PR-2B		Off = arrêt / On = marche
47			
48			

REFROIDISSEUR CC-1

SÉQUENCE D'OPÉRATION

REFROIDISSEUR CC-1

À L'ARRÊT

- Le refroidisseur (CC-1) et la pompe d'eau refroidie (PR-1A, B) sont arrêtées. Un seul des 2 moteurs de la pompe (PR-1A ou PR-1B) peut fonctionner à la fois.

EN MARCHÉ:

- Le refroidisseur est mis en marche manuellement par l'opérateur à partir de la centrale de commandes.
- Sur une commande de démarrage du refroidisseur, un des 2 moteurs de la pompe (PR-1A ou PR-1B) est mis en marche.
- Sur preuve de débit d'eau provenant de l'interrupteur de débit (DEB_ER), le refroidisseur démarre (par l'entremise du relais DEB_ER situé dans le panneau de contrôle P-2C, dessin 4068-097).
- Le refroidisseur maintient alors la température d'alimentation de l'eau refroidie au point de consigne (P.C. 9°C, ajustable à partir de la centrale).
- Sur une défectuosité d'un des moteurs (PR-1A ou PR-1B), le régulateur numérique met à l'arrêt la commande de ce dernier et démarre le second. Un entrebarrage électrique empêche le fonctionnement des 2 moteurs simultanément.
- Les alarmes suivantes seront rapportées à la centrale:
 - Non-concordance entre l'état et la commande de chacun des moteurs de la pompe (PR-1A/B).
 - Perte de débit (DEB_ER) de la pompe (PR-1A/B).
 - Haute température d'alimentation d'eau refroidie (T_ALI_ER, P.C. 13°C, ajustable).
 - Alarmes regroupées du refroidisseur.

TOUR D'EAU TR-1 (RÉSEAU D'EAU À 30°C)

SÉQUENCE D'OPÉRATION

À L'ARRÊT

- Le ventilateur de la tour et les pompes (PT-1 et PR-2A/B) sont arrêtés.
- Les volets d'air neuf et d'évacuation (VOL_MEL-1 et VOL_MEL-3) sont fermés.
- Le volet de recirculation (VOL_MEL-2) est ouvert.

EN MARCHÉ:

- Le système est mis en marche manuellement par l'opérateur à partir de la centrale de commandes.
- Sur une demande de refroidissement provenant de la sonde d'alimentation (T_A_ER30), la séquence suivante se produira:

OPÉRATION D'ÉTÉ

Température extérieure supérieure à 4°C:

- La pompe d'eau refroidie à 30°C (PR-2A/B) est en fonction.
- Les volets d'air neuf (VOL_MEL-1) et d'évacuation (VOL_MEL-3) sont ouverts à 100% et celui de recirculation (VOL_MEL-2) est fermé.
- La pompe de la tour (PT-1) est mise en marche afin de maintenir la température d'alimentation (T_A_ER30) au point de consigne (P.C. 30°C, ajustable).
- Sur une plus grande demande, le ventilateur #1 de la tour est démarré (moteur 10HP, point C_V1_TR1).
- Si la demande persiste, le ventilateur #2 est démarré (moteur 40HP, point C_V2_TR1).
- Sur une baisse de la demande, la séquence est inversée.
- la température (T_AM_TR1) à 4°C.
- Sur une baisse de la demande, la séquence est inversée.

Température extérieure inférieure à 4°C:

- La pompe d'eau refroidie à 30°C (PR-2A/B) est en fonction.
- La pompe de la tour (PT-1) est inopérante.
- Lorsque le ventilateur est arrêté, les volets d'air neuf (VOL_MEL-1) et d'évacuation (VOL_MEL-3) sont fermés celui de recirculation (VOL_MEL-2) est ouvert.
- Sur une demande de refroidissement (T_A_ER30), le ventilateur #1 de la tour est démarré (moteur 10HP, point C_V1_TR1). Les volets de mélange (VOL_MEL-1, 2 et 3) sont alors modulés afin de maintenir la température à la sortie du ventilateur (T_AM_TR1) au point de consigne (P.C. 4°C).
- Sur une plus grande demande, le 2e moteur du ventilateur #2 est démarré (moteur 40HP, point C_V2_TR1) et les volets sont modulés pour maintenir la température (T_AM_TR1) à 4°C.

- Sur une baisse de la demande, la séquence est inversée.

OPÉRATION D'HIVER

- La pompe d'eau refroidie à 30°C (PR-2A/B) est en fonction.
- Le bassin de la tour est vidé manuellement.
- L'alimentation électrique de l'élément chauffant est coupée manuellement.
- La pompe de la tour (PT-1) est mise à l'arrêt manuellement via un sélecteur situé sur le panneau de contrôle de la tour et via la centrale de commande.
- Sur une demande de refroidissement (T_A_ER30), les volets de mélange (VOL_MEL-1, 2 et 3) sont modulés afin de maintenir la température d'alimentation de l'eau refroidie (T_A_ER30) au point de consigne (P.C. 30°C).
- Sur une plus grande demande, le ventilateur #1 (moteur 10HP) de la tour est démarré et les volets sont modulés pour satisfaire la demande à la sonde (T_A_ER30).
- Si la demande persiste, le 2e moteur (40HP) du ventilateur est démarré.
- Sur une baisse de la demande, la séquence est inversée.

DIVERS

- Les alarmes suivantes seront rapportées à la centrale:
 - Perte de débit (DEB_ER30) de la pompe 30°C (PR-2A/B).
 - Haute température d'alimentation d'eau (T_A_ER30, 35°C).
 - Basse température d'alimentation d'eau (T_A_ER30, 25°C).
 - Bas niveau d'eau du bassin de la tour (BN_TR-1).
- Les indications suivantes provenant du panneau de contrôle de la tour seront transmises à la centrale:
 - État de marche de la pompe de la tour (PT-1).
 - État de marche du ventilateur #1 (moteur 10HP)
 - État de marche du ventilateur #2 (moteur 40HP)
 - État de marche de l'élément chauffant.

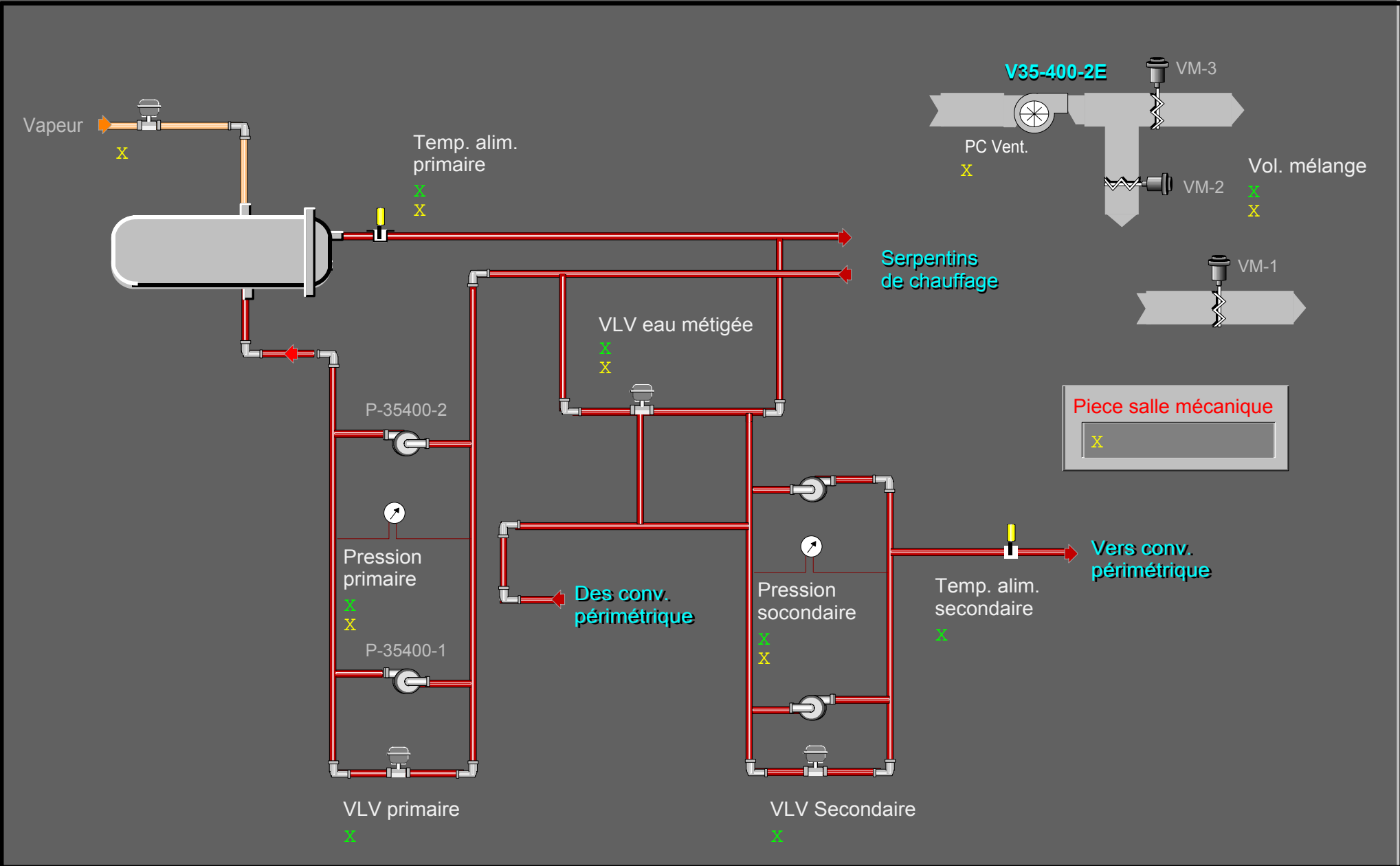
4096-0019 T.Q.C.
4096-0019 AJOUT 4°C
1096-0093

LISTE DE MATÉRIEL POUR LE SYSTÈME CC-1 ET TR-1

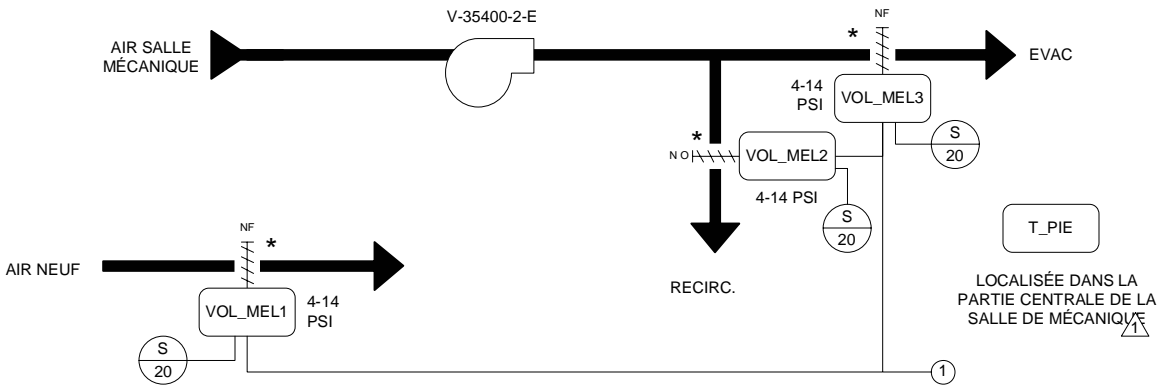
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BN_TR-1, 2	DÉTECTEUR DE BAS NIVEAU D'EAU - PAR D'AUTRES	-----	-----
C_PR-x, E_PR-x	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT) 1-135 AMP	H-735	VÉRIS
C_PT-1,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_Vx_TR1	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_ER	INTERRUPTEUR DE DÉBIT D'EAU - PAR D'AUTRES	-----	-----
DEB_ER30	INTERRUPTEUR DE DÉBIT D'EAU	F61KB-11	JOHNSON CONTROLS
T	CONTRÔLEUR DE TEMP., IMMERSION - PAR D'AUTRES	-----	-----
T_A_ER30,	SONDE DE TEMP. IMMERSION, 1000 OHMS NI	TE-6312P-1	JOHNSON CONTROLS
T_ALI_ER,			
T_R_ER30,			
T_R_ET	PUITS D'IMMERSION, 100mm - 4", ACIER INOX.	T-1-1/2P-4	GREYSTONE
VOL_MEL-1, 2, 3	ACTUATEUR DE VOLET PNEUMATIQUE ET POSITIONNEUR	D-3153-1	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2C

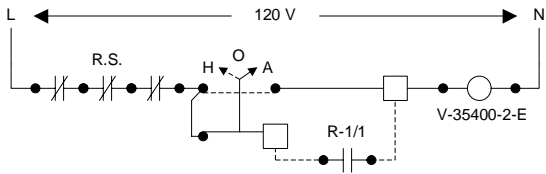
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_REF	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_ER	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-40	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
F-1	FUSIBLE 3 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-1A, B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2C	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-1, 2-2	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_CHA, VOL_M_E	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-42B	MODULE D'EXPENSION 8DI	XP-9105-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-41	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-42	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



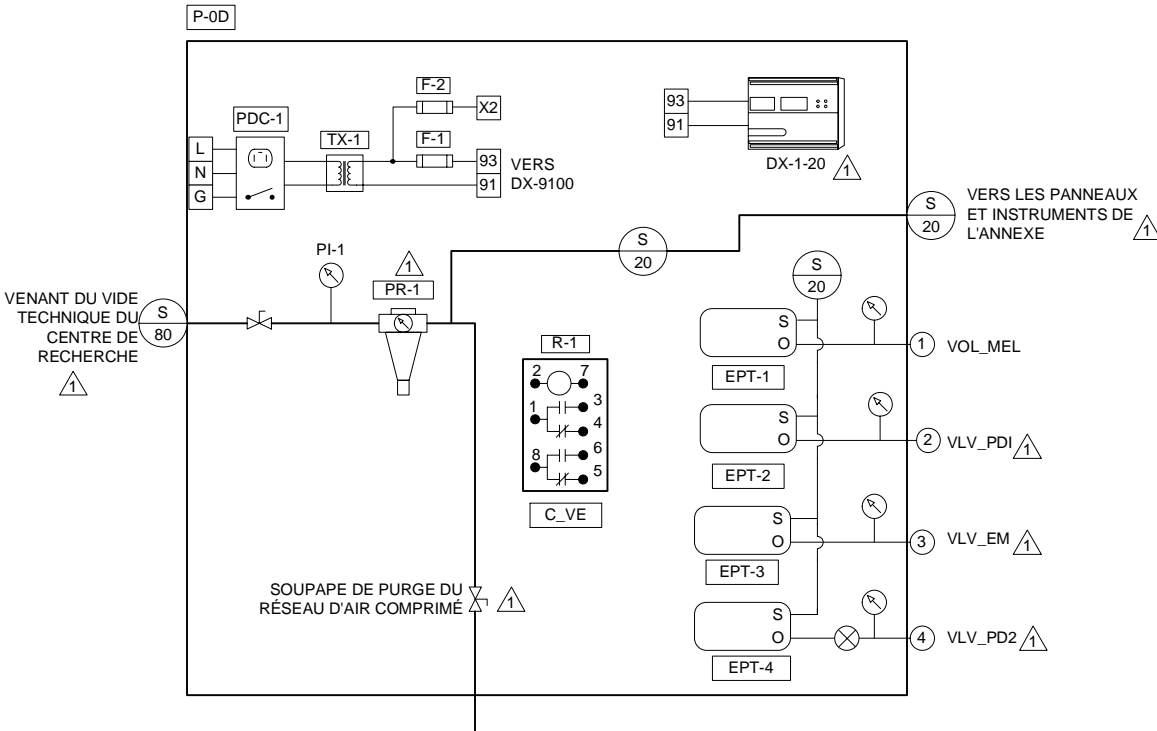
SYSTÈME V-35400-2-E



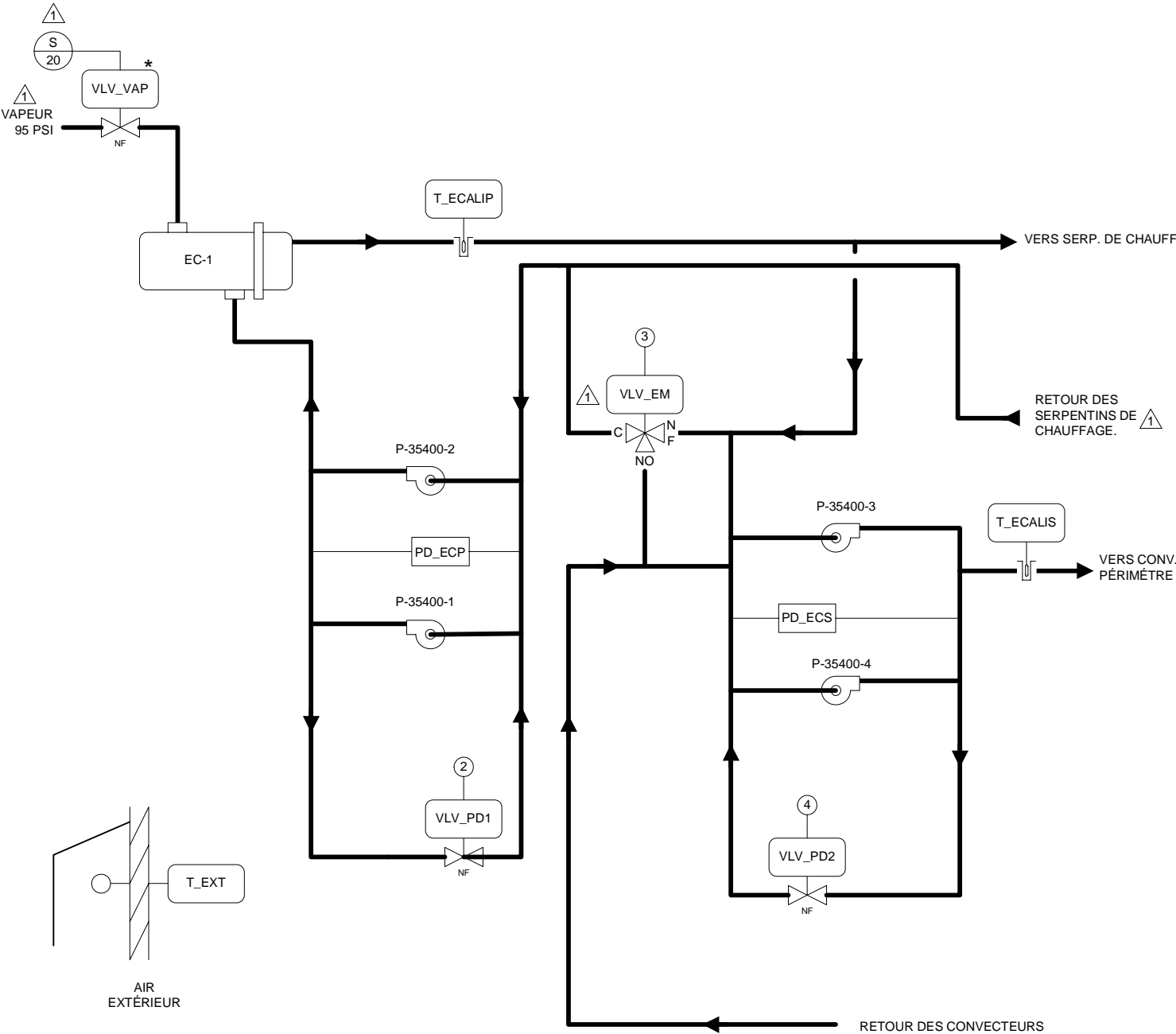
VENTILATEUR DE RETOUR PB60-26



PANNEAU DE CONTRÔLE



CIRCUIT EAU CHAUDE PRIMAIRE ET SECONDAIRE



NOTE: SÉQUENCE D'OPÉRATION ET LISTE DE MATÉRIEL; VOIR DESSIN 4068-59S

TITRE DU DESSIN		2		TEL QUE CONSTRUIT		97/09/17		A.B.	
SYSTÈME V-35400-2-E		1		CONSTRUCTION		97/05/29		A.B.	
SALLE MÉCANIQUE		NO.		RÉVISION		ECN		DATE	
CIRCUIT EAU CHAUDE PRIMAIRE		Représentant		Gérant De Projet		Concepteur		Dessin	
ET SECONDAIRE		J.C.R.		G.S.		M.C.D.		Par I.M. DATE 96/12/11	
NOM DU PROJET		ANNEXE DU CENTRE DE		RECHERCHE		3600 BOUL.CASAVANT		STE-HYACINTHE (QC)	
TOUT DROITS RÉSERVÉS JOHNSON CONTROLS, INC.		JOHNSON CONTROLS		Groupe de la régulation		355, boul. Montpellier St-Laurent (Québec) H4N 2G6		Tél: (514) 747-2580 Fax: (514) 747-9562	
		NUMÉRO DE CONTRAT		7096-0004		NUMÉRO DE DESSIN		4068-059	

600V

120V

PR-1A

MAN

ARR

AUTO

CONTACT AUX. DU DÉMARREUR DE PR-1A

C, PR-1B / E, PR-1B

2C-42A-DO-5

2C-41B-DI-4

PR-1B

R/S

C, PR-1B

E, PR-1B

600V

120V

PR-2B

MAN

ARR

AUTO

CONTACT AUX. DU DÉMARREUR DE PR-2B

C_PR-2A / E_PR-2A

2C-41B-DO-7

2C-40-DI-7

PR-2A

R/S

C_PR-2A

E_PR-2A

[illegible]

CÂBLAGE 24VAC

CÂBLAGE BAS VOLTAGE

PANNEAU DE CONTRÔLE DE LA TOUR D'EAU TR-1

STAGE 1

STAGE 2

STAGE 3

BAS NIVEAU

THERMOSTAT 40°F

BAS NIVEAU

C_PT-1
2C-41B-DO-8
ARRÊT/DÉPART POMPE PT-1

C_V1_TR1
2C-40-DO-5
ARRÊT/DÉPART VENTILATEUR #1 (MOTEUR 10HP)

C_V2_TR1
2C-40-DO-6
ARRÊT/DÉPART VENTILATEUR #2 (MOTEUR 40HP)

T
CONTRÔLEUR DE TEMPÉRATURE DU BASSIN DE LA TOUR

BN_TR-1
2C-41A-D1-1
BAS NIVEAU D'EAU

E_EL_TR
2C-41A-D1-2
ÉTAT ÉLÉMENT CHAUFFANT

E_PT-1
2C-40-DI-6
ÉTAT POMPE PT-1

E_V1_TR1
2C-40-DI-4
ÉTAT VENTILATEUR (MOTEUR 10HP)

E_V2_TR1
2C-40-DI-5
ÉTAT VENTILATEUR (MOTEUR 40HP)

BN_TR-1
DÉTECTEUR DE BAS NIVEAU D'E BASSIN DE LA TO (SERPENTIN ELE

BN_TR-2
DÉTECTEUR DE BAS NIVEAU D'E BASSIN DE LA TO (POMPE)


IDENT.	QTÉ	MODÈLE	DESCRIPTION
BN_TR-1	1	-----	DÉTECTEUR DE BAS NIVEAU D'EAU - PAR D'AUTRES
C_PR-x / E_PR-x	4	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
C_PT-1, C_Vx_TR1	3	RCPTFU82D10-214VAC	RELAIS 2 PÔLES 24VAC - FEME
	3	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
T	1	-----	CONTRÔLEUR DE TEMP. - IMMERSION - PAR D'AUTRES

- Le ventilateur de la tour et les pompes (PT-1 et PR-2A/B) sont arrêtés.
- Les volets d'air neuf et d'évacuation (VOL_MEL-1 et VOL_MEL-3) sont fermés.
- Le volet de recirculation (VOL_MEL-2) est ouvert.

- Le système est mis en marche manuellement par l'opérateur à partir de la centrale de commandes.
- Sur une demande de refroidissement provenant de la sonde d'alimentation (T A ER30), la séquence suivante se produira:

VOIR SUITE CI-CONTRE →

		REFROIDISSEUR CC-1		
VENANT DU PANNEAU DE CONTRÔLE P-2C (DESSIN 4068-097)	7	* TB3	3	} ARRÊT/DÉPART
	8		4	
	9	TB3	1	} DÉBIT ÉVAPORATEUR
	10		2	
PC_A_ER 2C-40-A0-1	AO 1 AO Com	TB1	4 (+)	} POINT DE CONSIGNE DE TEMP. D'ALIM.
			5 (-)	
PC_AMP 2C-40-A0-9	AO 2 AO Com	TB1	7 (+)	} POINT DE CONSIGNE D'AMPÉRAGE
			8 (-)	
A_REF 2C-41B-D1-1		TB1	1	} ALARME COMMUNE
			2	
E_REF 2C-40-D1-1		TB4	4	} ÉTAT DE MARCHÉ
			5	

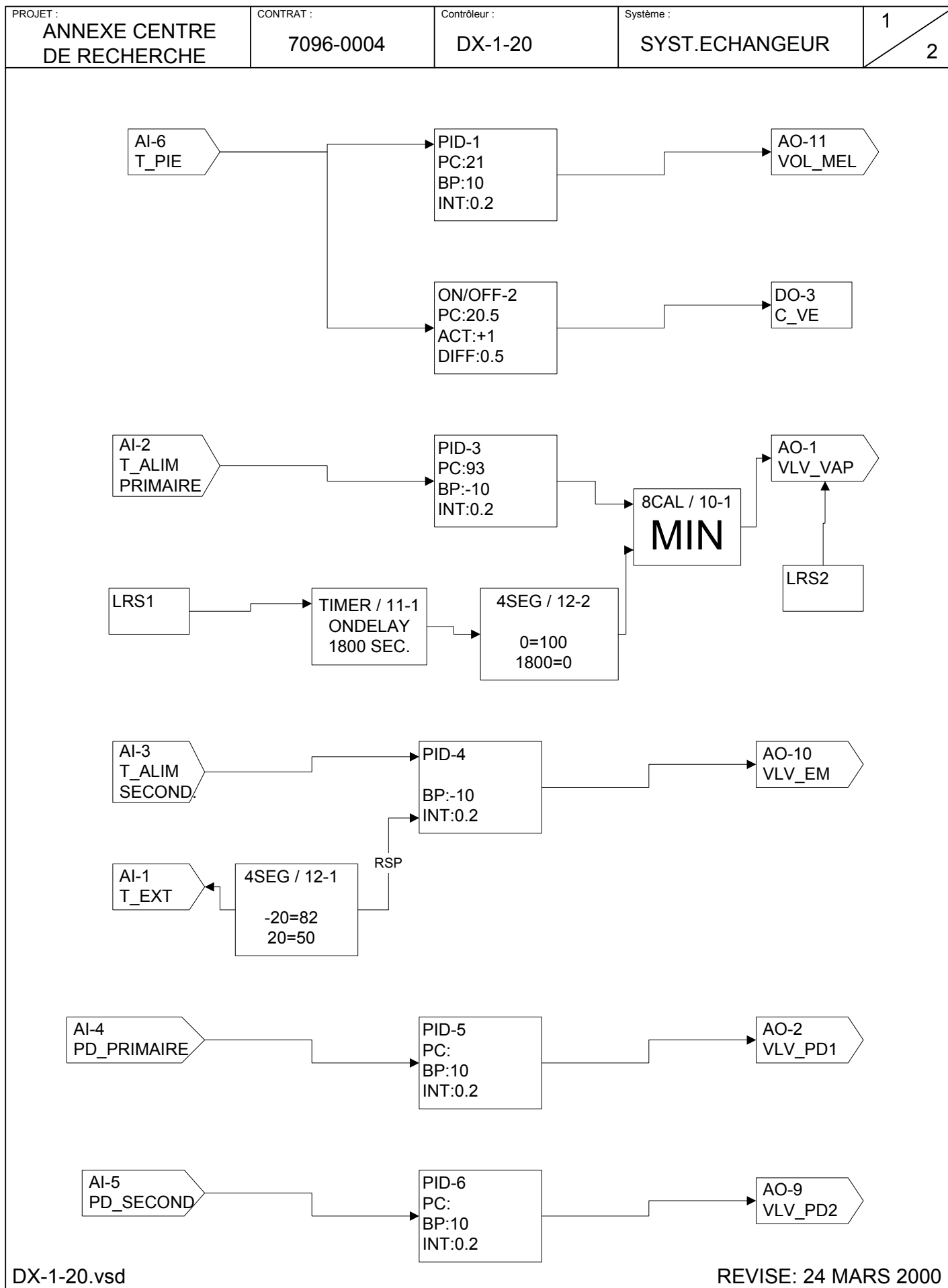
Titre du Dessin Refroidisseur CC-1 et tour d'eau TR-1		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
		2	RÉV. POMPES PR-1A/B, 2A/B		03/14/2002	D.B.
		1	POUR APPROBATION		07/25/2001	D.B.
	DESSIN DE RÉFÉRENCE	NO	RÉVISION	ECN	DATE	PAR
	Représentant	Gérant De Projet	Concepteur	PAR	D.B.	DATE 06/12/2001
Diagrammes électriques				DESSINÉ	APPROUVÉ	
				PAR	D.B.	DATE 06/12/2001
Nom du Projet				Information Succursale	NUMERO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	 Groupe de la régulation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	1096-0093 NUMERO DESSIN 4068-094B	

- La pompe d'eau refroidie à 30°C (PR-2A/B) est en fonction.
- Les volets d'air neuf (VOL_MEL-1) et d'évacuation (VOL_MEL-3) sont ouverts à 100% et celui de recirculation (VOL_MEL-2) est fermé.
- La pompe de la tour (PT-1) est mise en marche afin de maintenir la température d'alimentation (T_A_ER30) au point de consigne (P.C. 30°C, ajustable).
- Sur une plus grande demande, le ventilateur #1 de la tour est démarré (moteur 10HP, point C_V1_TR1).
- Si la demande persiste, le ventilateur #2 est démarré (moteur 40HP, point C_V2_TR1).
- Sur une baisse de la demande, la séquence est inversée.
- la température (T_AM_TR1) à 4°C.
- Sur une baisse de la demande, la séquence est inversée.

- La pompe d'eau refroidie à 30°C (PR-2A/B) est en fonction.
- La pompe de la tour (PT-1) est inopérante.
- Lorsque le ventilateur est arrêté, les volets d'air neuf (VOL_MEL-1) et d'évacuation (VOL_MEL-3) sont fermés celui de recirculation (VOL_MEL-2) est ouvert.
- Sur une demande de refroidissement (T_A_ER30), le ventilateur #1 de la tour est démarré (moteur 10HP, point C_V1_TR1). Les volets de mélange (VOL_MEL-1, 2 et 3) sont alors modulés afin de maintenir la température à la sortie du ventilateur (T_AM_TR1) au point de consigne (P.C. 4°C).
- Sur une plus grande demande, le 2e moteur du ventilateur #2 est démarré (moteur 40HP, point C_V2_TR1) et les volets sont modulés pour maintenir la température (T_AM_TR1) à 4°C.
- Sur une baisse de la demande, la séquence est inversée.

- La pompe d'eau refroidie à 30°C (PR-2A/B) est en fonction.
- Le bassin de la tour est vidé manuellement.
- L'alimentation électrique de l'élément chauffant est coupée manuellement.
- La pompe de la tour (PT-1) est mise à l'arrêt manuellement via un sélecteur situé sur le panneau de contrôle de la tour et via la centrale de commande.
- Sur une demande de refroidissement (T_A_ER30), les volets de mélange (VOL_MEL-1, 2 et 3) sont modulés afin de maintenir la température d'alimentation de l'eau refroidie (T_A_ER30) au point de consigne (P.C. 30°C).
- Sur une plus grande demande, le ventilateur #1 (moteur 10HP) de la tour est démarré et les volets sont modulés pour satisfaire la demande à la sonde (T_A_ER30).
- Si la demande persiste, le 2e moteur (40HP) du ventilateur est démarré.
- Sur une baisse de la demande, la séquence est inversée.

- Les alarmes suivantes seront rapportées à la centrale:
 - Perte de débit (DEB_ER30) de la pompe 30°C (PR-2A/B).
 - Haute température d'alimentation d'eau (T_A_ER30, 35°C).
 - Basse température d'alimentation d'eau (T_A_ER30, 25°C).
 - Bas niveau d'eau du bassin de la tour (BN_TR-1).
- Les indications suivantes provenant du panneau de contrôle de la tour seront transmises à la centrale:
 - État de marche de la pompe de la tour (PT-1).
 - État de marche du ventilateur #1 (moteur 10HP)
 - État de marche du ventilateur #2 (moteur 40HP)
 - État de marche de l'élément chauffant.



FEUILLE DE L'UTILISATEUR

Nom du projet: ANNEXE CRASH
Numéro du projet : 7096-0004
Date de révision : 22-08-97
Adresse du DX-9100 : 20
Numéro du dessin : 4068-059
Système : ECHANGEUR

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
1	TEMP.AIR NEUF	-45°C	121°C
2	TEMP.ALIM.PRIMAIRE	-45°C	121°C
3	TEMP.ALIM.SECONDA	-45°C	121°C
4	PRESS.DIFF.PRIMAIRE	0	30 KPA
5	PRESS.DIFF.PRIMAIRE	0	30 KPA
6	TEMP.PIECE	-45°C	121°C
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point	Précaler
1		1
2		1
3		1
4		1
5		1
6		1
7		1
8		1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
1	VALVE VAPEUR	MIN : RAMPE & PM3OCM	0% = Min. / 100% = Max.
2	VALVE EVITEMENT PR	PM5OCM	0% = Min. / 100% = Max.
3	COMM.VENT.EVAC.	PM2OCM	Off = arrêt / On = marche
4			Off = arrêt / On = marche
5			Off = arrêt / On = marche
6			Off = arrêt / On = marche
7			Off = arrêt / On = marche
8			Off = arrêt / On = marche
9	VALVE EVITEMENT SE	PM6OCM	0% = Min. / 100% = Max.
10	VALVE EAU MITIGEE	PM4OCM	0% = Min. / 100% = Max.
11	VOLETS MELANGE	PM1OCM	0% = Min. / 100% = Max.
12			0% = Min. / 100% = Max.
13			0% = Min. / 100% = Max.
14			0% = Min. / 100% = Max.

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	21°C	X6 TEMP.PIECE	0% = Min. / 100% = Max.
2	20.5°C	X6 TEMP.PIECE	0% = Min. / 100% = Max.
3	93°C	X2 TEMP.ALIM.PRIM.	0% = Min. / 100% = Max.
4	SECON TEMP.AIR NEUF	X3 TEMP.ALIM.SEC.	0% = Min. / 100% = Max.
5		X4 PRESS.DIFF.PRIM.	0% = Min. / 100% = Max.
6		X4 PRESS.DIFF.SEC.	0% = Min. / 100% = Max.
7			
8			
9			
10			
11			
12	4 SEGMENTS		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-10	0.2	
2	+1	0.5	
3			
4	-10	0.2	
5	10	0.2	
6	10	0.2	
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1		
2		
3		
4		
5		
6		
7		
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut (0 = off / 1 = on)	Description des points
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
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25		
26		
27		
28		
29		
30		
31		
32		

CIRCUIT EAU CHAUDE PRIMAIRE ET SECONDAIRE

SÉQUENCE D'OPÉRATION

Système V-35400-2-E (salle Mécanique)

- La température de la salle est maintenue par le régulateur numérique opérant en séquence.
 1. Le départ du système de ventilation.
 2. Les volets d'air frais, d'évacuation et de recirculation

Eau chaude circuit primaire

- La température d'eau chaude d'alimentation est maintenue à 93°C par le contrôleur numérique opérant la soupape de vapeur de l'échangeur.
- Le différentiel de pression entre la succion et la décharge de la pompe est maintenu par le contrôleur numérique opérant la soupape d'évitement.
- Lorsque le différentiel de pression devient inférieur à la valeur minimum, la soupape de vapeur de l'échangeur est fermée.

Eau chaude circuit secondaire

- La température d'eau chaude d'alimentation est maintenue par le contrôleur numérique avec réajustement en fonction de la température extérieure (voir tableau 1), en opérant la soupape trois voies d'eau mitigée.
- Le différentiel de pression entre la succion et la décharge de la pompe est maintenue par le contrôleur numérique opérant la soupape d'évitement.

TABLEAU 1	
Température extérieure	Température d'alimentation secondaire
-20°C	82°C
20°C	50°C

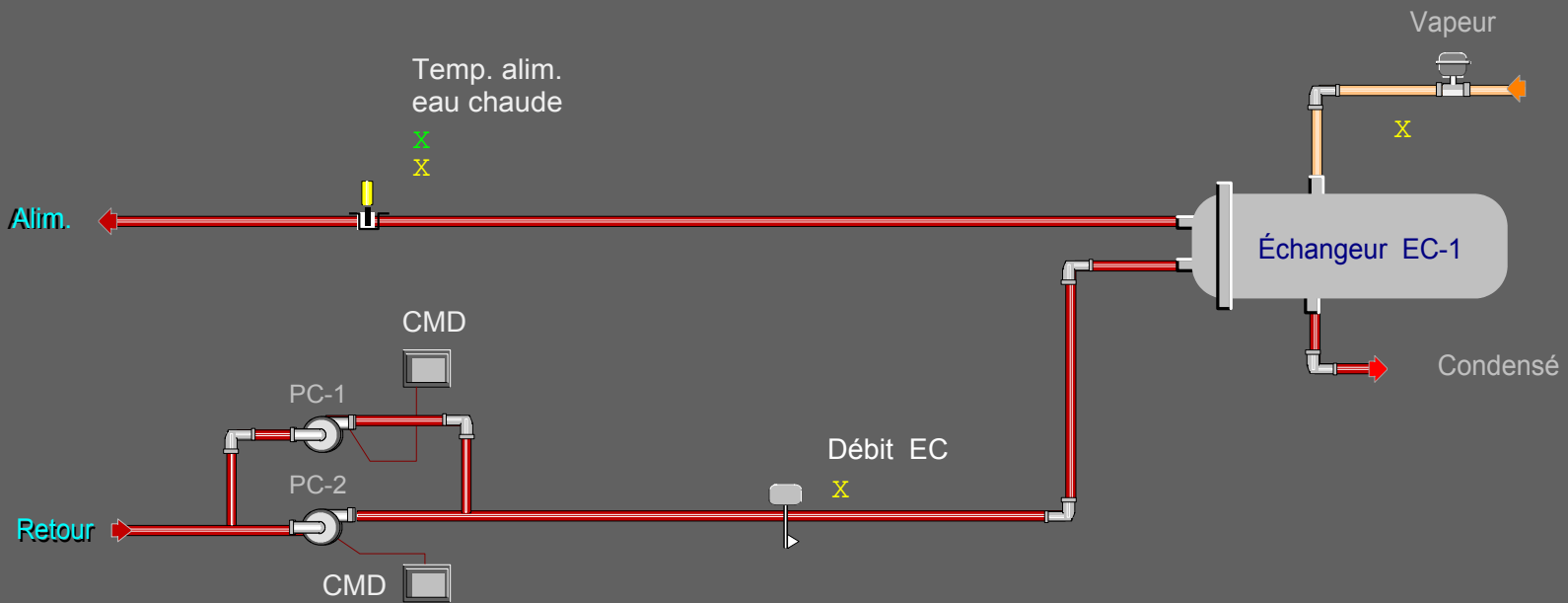
Liste de points		Logiciel					Info sur régulateurs					Info sur panneaux					Appareil intermédiaire					Appareil hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unité d'affichage	Type régul.	Tronc N2	Adr. N2	Destination câble	Type de module	Terminaison	Pann.	Emplacement du panneau	No de logem.	Dessin de référence	No de câble	Câble/tube	Entrée terminaison	Appareil	Sortie terminaison	Emplac.	Câble/tube	Terminaison	Appareil	Emplac.	Détail réf.	Commentaire	
		EAU CH										P-0D	SALLE MECANIQUE		4068-59												Power to Controller	
		EAU CH				DX9100		1	20			P-0D	SALLE MECANIQUE		0 4068-59												N2 Trunk	
	DI-1	EAU CH				DX9100		1	20	DI-1		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-1											
	DI-2	EAU CH				DX9100		1	20	DI-2		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-2											
	DI-3	EAU CH				DX9100		1	20	DI-3		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-3											
	DI-4	EAU CH				DX9100		1	20	DI-4		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-4											
	DI-5	EAU CH				DX9100		1	20	DI-5		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-5											
	DI-6	EAU CH				DX9100		1	20	DI-6		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-6											
	DI-7	EAU CH				DX9100		1	20	DI-7		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-7											
	DI-8	EAU CH				DX9100		1	20	DI-8		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DI-8											
	AO-1	EAU CH	VLV VAP	Valve échangeur chaleur	%	DX9100		1	20	AO-1	AO#AOCOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AO-1					2/18	Device depend	EP3 4-20mA OUT		D21		
	AO-2	EAU CH	VLV PD1	Valve évitement (primaire)	%	DX9100		1	20	AO-2	AO#AOCOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O			1/4"	Barb Fitting	EP-PNEU		D22	
	AO-9	EAU CH	VLV PD2	Valve évitement (secondaire)	%	DX9100		1	20	AO-9	AO#AOCOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O			1/4"	Barb Fitting	EP-PNEU		D22	
	AO-10	EAU CH	VLV EM	Valve eau mitoyèe (secondaire)	%	DX9100		1	20	AO-10	AO#AOCOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O			1/4"	Barb Fitting	EP-PNEU		D22	
	AO-11	V-354002E	VOI MEL	Volets air mélange	%	DX9100		1	20	AO-11	AO#AOCOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O			1/4"	Barb Fitting	EP-PNEU		D22	
	AO-12	EAU CH				DX9100		1	20	AO-12		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AO-12											
	AO-13	EAU CH				DX9100		1	20	AO-13		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AO-13											
	AO-14	EAU CH				DX9100		1	20	AO-14		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AO-14											
	DO-3	V-354002E	C_VE	Comm. vent. évac.	Arret Marche	DX9100		1	20	DO-3	DO#24V	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DC2/18	COIL	RELAY	COM.NO		2/14	See starter detail	Starter (NO)		D51		
	DO-4	EAU CH				DX9100		1	20	DO-4		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DO-4											
	DO-5	EAU CH				DX9100		1	20	DO-5		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DO-5											
	DO-6	EAU CH				DX9100		1	20	DO-6		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DO-6											
	DO-7	EAU CH				DX9100		1	20	DO-7		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DO-7											
	DO-8	EAU CH				DX9100		1	20	DO-8		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-DO-8											
	AI-1	EAU CH	T_EXT	Temp. air extérieur	Deg C	DX9100		1	20	AI-1	AI#AICOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-1					2/18	2-Wire	TE		D3		
	AI-2	EAU CH	T_EC_ALIP	Temp. alim. eau chaude prim.	Deg C	DX9100		1	20	AI-2	AI#AICOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-1					2/18	2-Wire	TE		D3		
	AI-3	EAU CH	T_EC_ALIS	Temp alim eau chaude second.	Deg C	DX9100		1	20	AI-3	AI#AICOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-1					2/18	2-Wire	TE		D3		
	AI-4	EAU CH	PD_ECP	Press. diff. eau chaude (primaire)	kPa	DX9100		1	20	AI-4	AI#AICOM.15V	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-1					3/18	OUT.COM.EXC		D7			
	AI-5	EAU CH	PD_ECS	Press. diff. eau chaude (secondaire)	kPa	DX9100		1	20	AI-5	AI#AICOM.15V	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-1					3/18	OUT.COM.EXC		D7			
	AI-6	V-354002E	T_PIE	Temperature piece	Deg C	DX9100		1	20	AI-6	AI#AICOM	P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-1					2/18	2-Wire	TE		D3		
	AI-7	EAU CH				DX9100		1	20	AI-7		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-7											
	AI-8	EAU CH				DX9100		1	20	AI-8		P-0D	SALLE MECANIQUE		0 4068-59		0D-20-AI-8											

LISTE DE MATÉRIEL POUR LE SYSTÈME EC PRIMAIRE ET SECONDAIRE

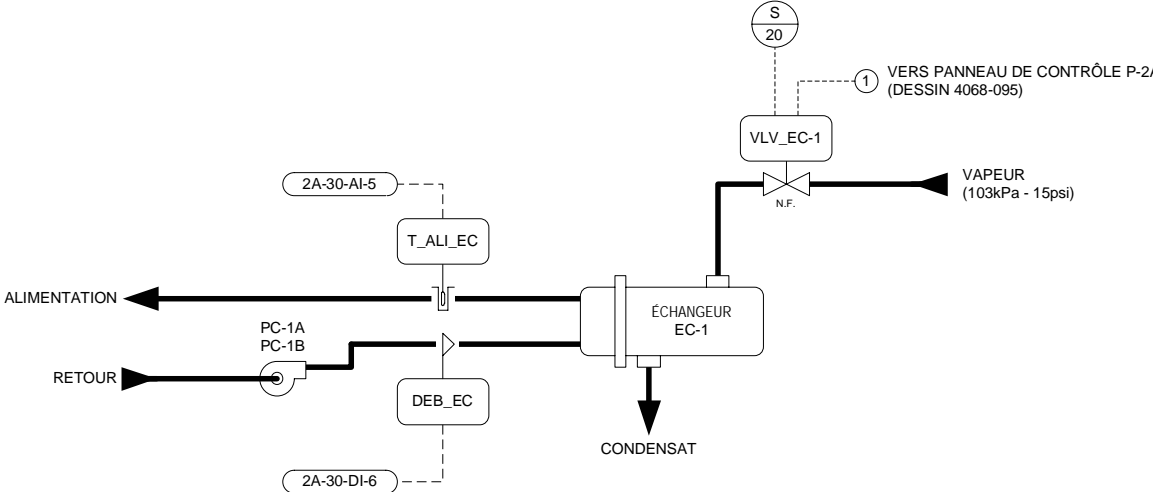
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
PD_ECP, PD_ECS	TRANSMETTEUR DE PRESSION DIFFÉRENTIELLE	152CP030	JOHNSON CONTROLS
T_ECALIP, T_ECALIS	SONDE DE TEMP. NI POUR PUIITS	TE-6312P-1	JOHNSON CONTROLS
T_EXT	SONDE DE TEMP. EXT NI	TE-6313P-1	JOHNSON CONTROLS
T_PIE	SONDE TEMP. PIÈCE NI	TE-6314P-1	JOHNSON CONTROLS
VLV_EM	SOUPAPE 3 VOIES 1", C.V. 11.6	VG7844NT+V400B	JOHNSON CONTROLS
VLV_PD1	SOUPAPE 2 VOIES 1¼", C.V. 18.5	VG7443PT+V400B	JOHNSON CONTROLS
VLV_PD2	SOUPAPE 2 VOIES ¾", C.V. 7.3	VG7443LT+3008B	JOHNSON CONTROLS
VOLMEL1, 2, 3	ACTUATEURS VOLETS 8-13 PSI	D-3153-1	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-0D

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
DX-1-20	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	COUVERT	DX-9100-8991	JOHNSON CONTROLS
EP-1, 2	VALVE SOLÉNOÏDE 3 VOIES 110/120V.	V11HAA-115	JOHNSON CONTROLS
EPT-1 à 4	CONVERTISSEUR ÉLECT/PNEUM.	EP-8000-2	JOHNSON CONTROLS
F-1,2	FUSIBLE 2 AMPÈRES	AGC-2	JOHNSON CONTROLS
P-0A	PANNEAU DE CONTRÔLE 24" X 36" X 9"	M8100-2436	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	274VBOX	LEVITON
---	BOÎTE 2020 C/A COUVERT	2020	JOHNSON CONTROLS
PI-1	INDICATEUR PRESSION DIFF.	PD-505-4	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
---	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
TX-1	TRANSFO 120/24 40VA	Y65AS-1	JOHNSON CONTROLS
⊗	MANOMÈTRE 0-30 PSI	G2010-5	JOHNSON CONTROLS

Permission chauffage ☒PC basse temp. ☒Basse temp. échangeur ☒Pompe 1 ou 2 ☒

ÉCHANGEUR DE CHALEUR EC-1



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
C_PC-1A / E_PC-1A			
C_PC-1B / E_PC-1B	2	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
DEB_EC	1	F61KB-11	INTERRUPTEUR DE DÉBIT D'EAU
VLV_EC-1	1	VG7441RT+823E01	VANNE 2 VOIES, 1-1/2", N.F., Cv 28.9, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
T_ALI_EC	1	TE-6312P-1	SONDE DE TEMP. IMMERSION, 1000 OHMS NI
	1	T 1-1/2P-4	PUITS D'IMMERSION, 100mm - 4", ACIER INOX. - GREYSTONE

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

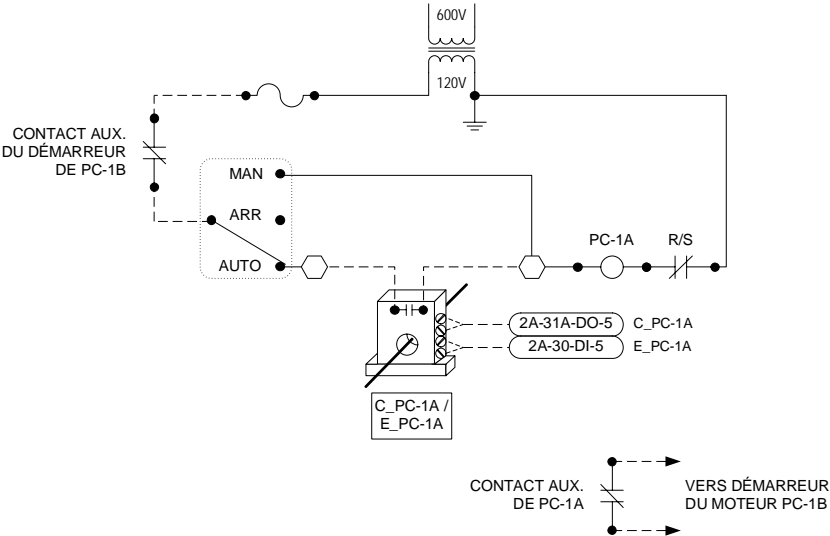
- Les moteurs (PC-1A et PC-1B) de la pompe sont à l'arrêt.
- La vanne (VLV_EC-1) est fermée.

EN MARCHÉ

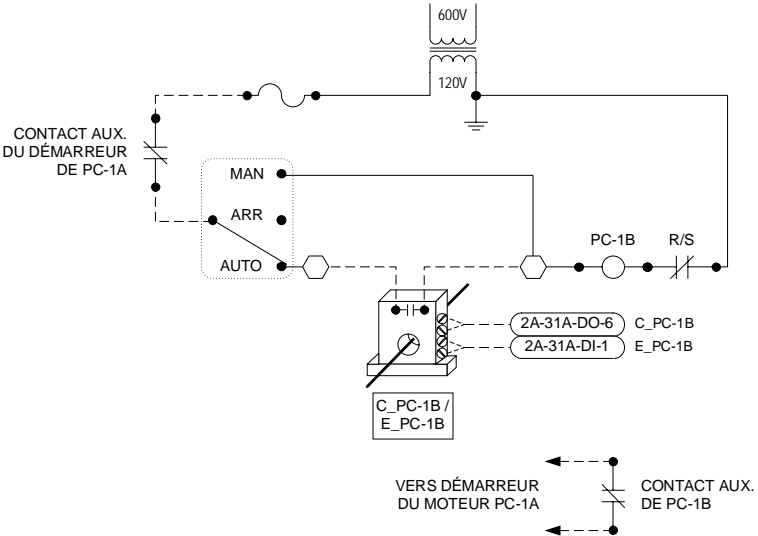
- Un seul des 2 moteurs de la pompe (P-1A ou P-1B) peut fonctionner à la fois. Ce moteur est démarré manuellement par l'opérateur à partir de la centrale de commandes.
- Le régulateur numérique module la vanne de l'échangeur (VLV_EC-1) afin de maintenir la température d'alimentation d'eau chaude (T_ALI_EC) au point de consigne (P.C. 82°C, ajustable).
- Des alarmes seront générées à la centrale sur non-concordance entre l'état (E_PC-1A, B) et la commande (C_PC-1A, B) de chacun des moteurs, sur perte de débit d'eau (DEB_EC) et sur basse température d'alimentation d'eau chaude (P.C. 60°C, ajustable). Ces deux dernières alarmes sont mises hors fonction lorsque les commandes de pompe sont à "ARRÊT".
- Sur une défectuosité d'un des moteurs, le régulateur numérique met à l'arrêt la commande de ce dernier et démarre le second. Un entrebarrage électrique empêche le fonctionnement des 2 moteurs simultanément.


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU DÉMARREUR DU MOTEUR (PC-1A) DE LA POMPE

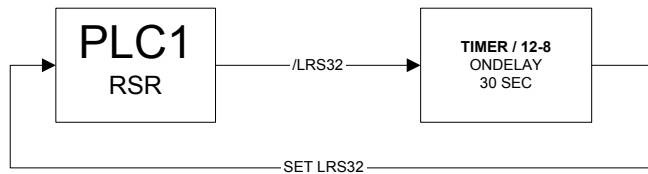


RACCORDEMENTS DU DÉMARREUR DU MOTEUR (PC-1B) DE LA POMPE

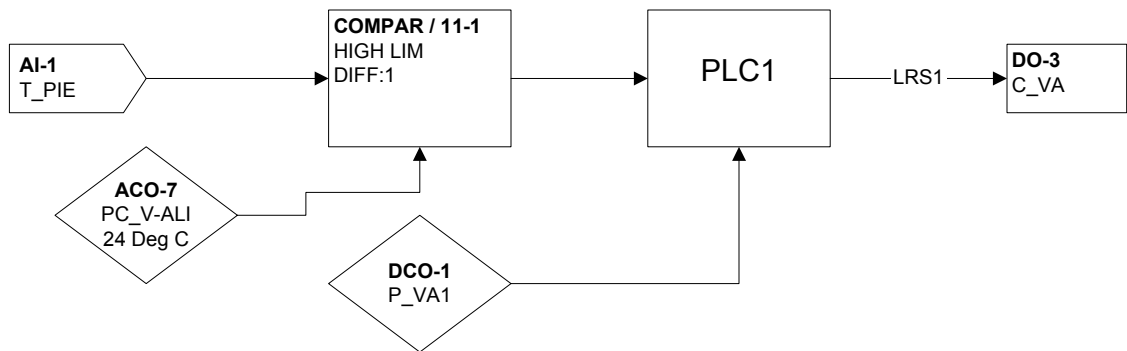


Titre du Dessin		3		TEL QUE CONSTRUIT		D.B.		02/04/29		O.P.	
Échangeur de chaleur vapeur-eau EC-1 (Salle mécanique F-301)		2		RÉV. POMPE 2 MOTEURS				03/14/2002		D.B.	
		1		POUR APPROBATION				07/25/2001		D.B.	
		DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN		DATE	
		Représentant		Gérant De Projet		Concepteur		DESSINÉ		APPROUVÉ	
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B.		DATE 06/12/2001		PAR DATE 06/12/2001	
Nom du Projet		 Groupe de la régulation		Information Succursale				NUMÉRO CONTRAT			
CRDA ST-HYACINTHE				Johnson Controls Ltée				1096-0093			
Projet d'Innovation Technologique				355, boul. Montpellier				NUMÉRO DESSIN			
3600, boul. Casavant				St-Laurent, Qc, H4N 2G6							
St-Hyacinthe (Québec)				Tél: (514) 747-2580							
				Fax: (514) 747-9562							

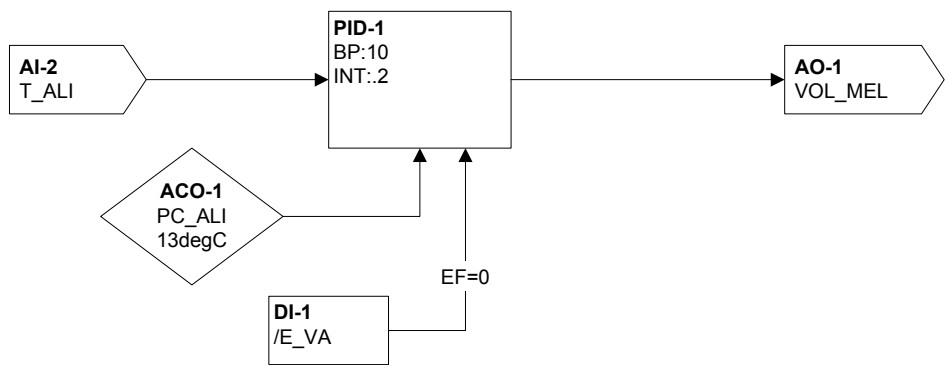
REDEMARRAGE APRES PANNE (DX-2-30)



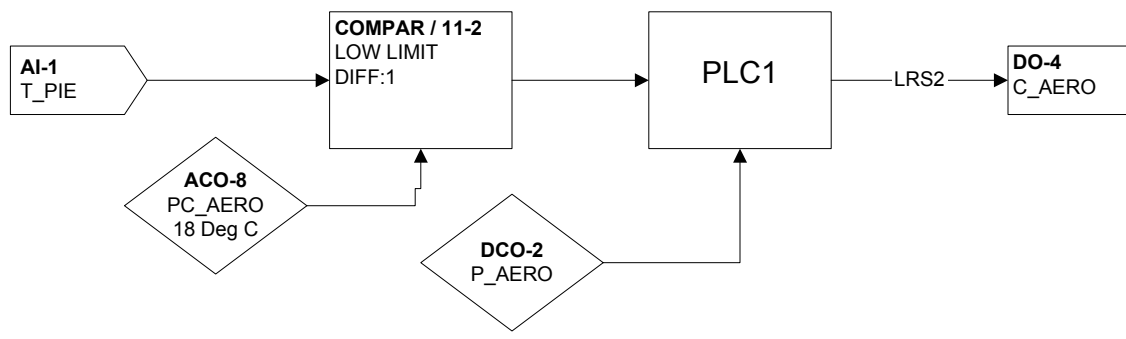
COMMANDE VENTILATEUR ALIMENTATION



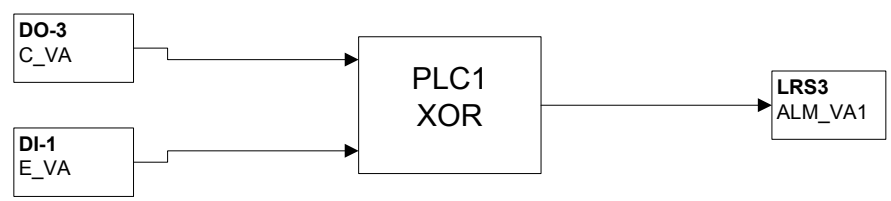
CONTROLE DES VOLETS DE MELANGE



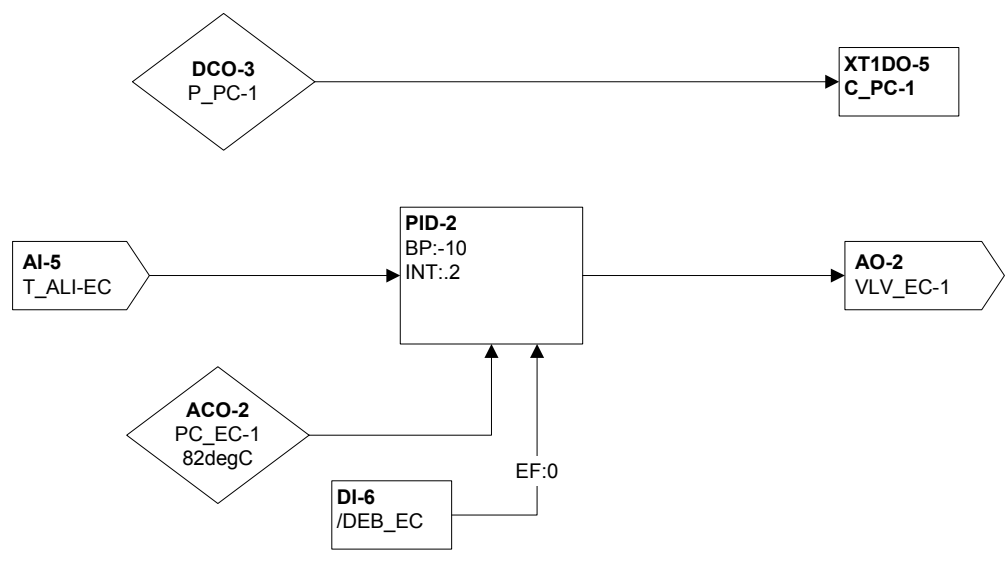
ARRET DEPART AEROTHERMES



LOGIQUE D'ALARME VENTILATEUR

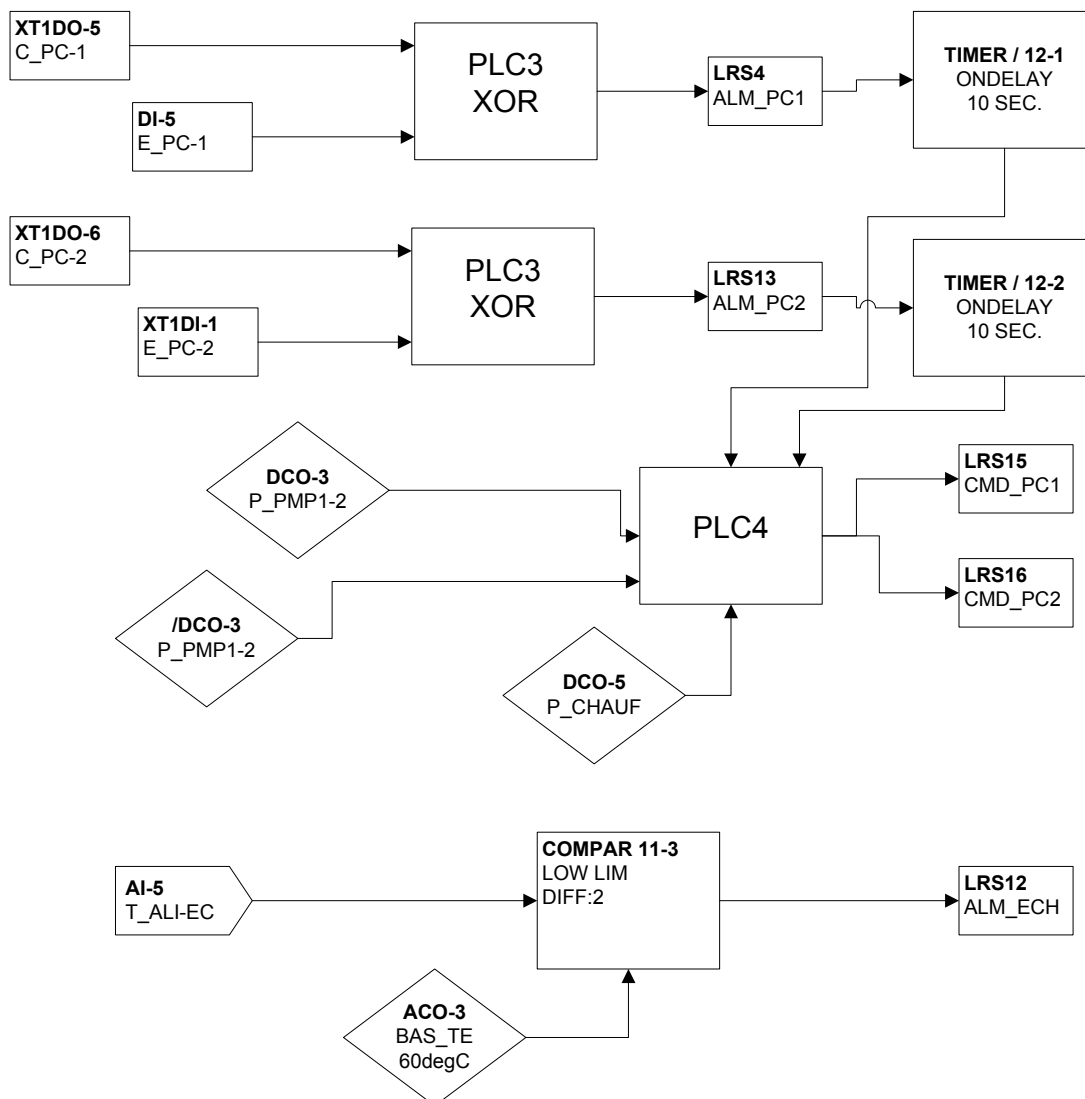


CONTROLE ECHANGEUR DE CHALEUR



PROJET :	CONTRAT :	Contrôleur :	Système :	3 / 4
CRDA ST-HYACINTHE	1096-0093	DX-2-30	UNITE ECHANGEUR	

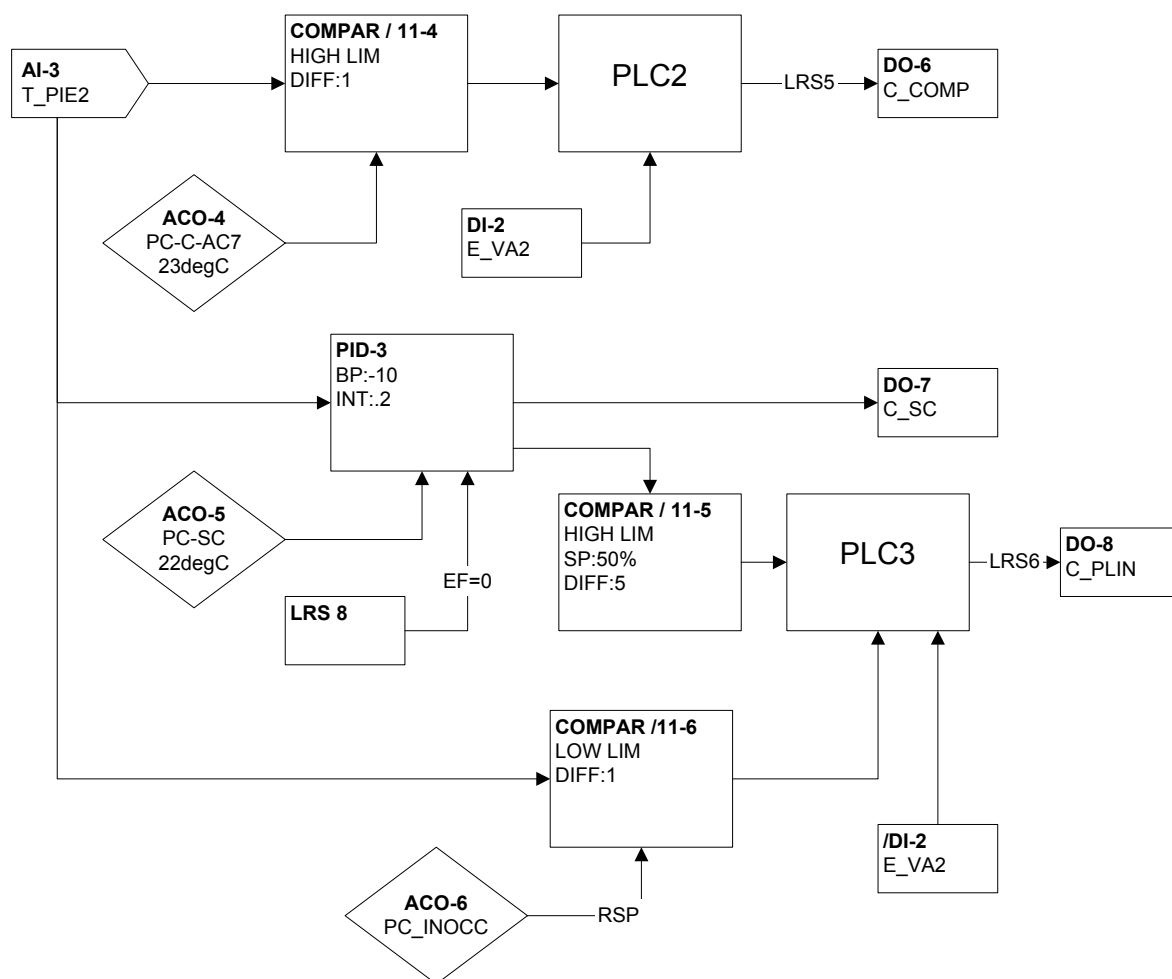
ALARME ECHANGEUR DE CHALEUR



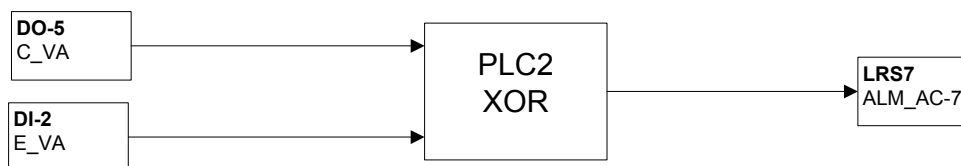
CONTROLE UNITE AC-07



CONTROLE UNITE AC-07



ALARME UNITE CLIMATISATION AC-07



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 30
Numéro du dessin : 4068-93, 68, 89
Système : Système VA-1, Echangeur, AC-7

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE VA-1		
2	TEMP ALIMENTATION VA-1		
3	TEMP. PIECE AC-07		
4	TEMP ALIMENTATION AC-07		
5	TEMP ALIM. EAU CHAUDE		
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	ETAT VENT. ALIMEN. VA-1	Off =arret / On marche	1
2	ETAT VENT. ALIMEN. AC-07	Off =arret / On marche	1
3	ETAT DES FILTRES	Off =arret / On sale	1
4	ALARME UNITE AC	Off =normal / On alarme	1
5	ETAT POMPE CHAUF. PC-1	Off =arret / On marche	1
6	PREUVE DEBIT EAU CHAUF.	Off =arret / On marche	1
7	ALARME HOTTE F-219	Off = arret / On marche	1
8	ALARME HOTTE F-224	Off = arret / On marche	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VOLETS DE MELANGE	Z1	0% = Min. / 100% = Max.
2	VANNE ECHANGEUR EC-1	Z2	0% = Min. / 100% = Max.
3	COMM. A/D VENT. ALIM VA-1	LRS1	Off = ferme / On = ouvert
4	COMM. AEROTHERMES	LRS2	Off = ferme / On = ouvert
5	COMM. A/D VENT. ALIM AC-7	DCO4	Off = ferme / On = ouvert
6	COMM. A/D COMPRESSEUR	LRS5	Off = ferme / On = ouvert
7	COMM SERPENTIN CHAUFF.	Z3	Off = arret / On = depart
8	COMM PLINTHES CHAUFF.	LRS6	Off = arret / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO1	X2 Temp. alim.	0% = Min. / 100% = Max.
2	ACO2	X5 Temp alim eau chaude	0% = Min. / 100% = Max.
3	ACO5	X3 Temp. alim. Ac-07	0%= Min. / 100% = Max.
4			
5			
6			
7			
8			
9			
10			
11	Compateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	10	.2	
2	-10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	13 degC	PC Alimentation VA-1
2	82 degC	PC Valve echangeur chaleur 1
3	60 degC	PC Alarme basse temperature
4	23 deg C	PC Compresseur refrigeration AC-07
5	22 deg C	PC Serpentin de chauffage Occupe AC-07
6	18 deg C	PC Plinthes chauffage nuit
7	24 deg C	PC demarrage ventilateur alimentation
8	18 deg C	PC aérothermes

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission ventilateur alimentation VA-1
2	ON	Permission aérothermes
3	ON	Permission pompe eau chaude 1 ou 2
4	ON	Permission ventilateur alimentation AC-07
5	ON	Permission de chauffage
6		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-93, 68, 89
Système : Système VA-1, Echangeur, AC-7
Adresse du NCM : 2
Adresse du DX-9100 : 30
Adresse du XT : 31

Numero du XP : 1

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point	Précaler
11	ETAT POMPE CHAUFF PC-2	
12		
13		
14		

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
15	COMM POMPE CHAUFF PC-1	DCO-3	Off = arrêt / On = marche
16	COMM POMPE CHAUFF PC-2	/DCO-3	Off = arrêt / On = marche
17			
18			

ÉCHANGEUR DE CHALEUR EC-1

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Les moteurs (PC-1A et PC-1B) de la pompe sont à l'arrêt.
- La vanne (VLV_EC-1) est fermée.

EN MARCHE:

- Un seul des 2 moteurs de la pompe (P-1A ou P-1B) peut fonctionner à la fois. Ce moteur est démarré manuellement par l'opérateur à partir de la centrale de commandes.
- Le régulateur numérique module la vanne de l'échangeur (VLV_EC-1) afin de maintenir la température d'alimentation d'eau chaude (T_ALI_EC) au point de consigne (P.C. 82°C, ajustable).
- Des alarmes seront générées à la centrale sur non-concordance entre l'état (E_PC-1A, B) et la commande (C_PC-1A, B) de chacun des moteurs, sur perte de débit d'eau (DEB_EC) et sur basse température d'alimentation d'eau chaude (P.C. 60°C, ajustable). Ces deux dernières alarmes sont mises hors fonction lorsque les commandes de pompe sont à "ARRÊT".
- Sur une défectuosité d'un des moteurs, le régulateur numérique met à l'arrêt la commande de ce dernier et démarre le second. Un entrebarrage électrique empêche le fonctionnement des 2 moteurs simultanément.

Étiq.	Type de point	Informations sur points		Description	Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires
		Nom du système	Nom de l'objet		Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration		
							DX9100 DX 9100	1	30			P-2A	Salle méc. F-301													Alimentation 24VAC
							DX9100 DX 9100	1	30			P-2A	Salle méc. F-301													Tronc N2
2A-30-DO-3	DO-3	VA-1	C VA	Comm.a/d vent.alim.	Arrêt	Marche	DX9100 DX 9100	1	30	DO-3	DO3.COM	P-2A	Salle méc. F-301	4068-089	2A-30-DO-3	2/18	(Bobine) +,-	H-735	COM.NO		2/14	Voir détail déma	Démarreur (H-735 mar/arr)		DX49	
2A-30-DO-4	DO-4	VA-1	C AERO	Comm.aérothermes	Arrêt	Marche	DX9100 DX 9100	1	30	DO-4	DO4.COM	P-2A	Salle méc. F-301	4068-089	2A-30-DO-4	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarreur. (NO)		DX51	Aérothermes A-7, A-8
2A-30-DO-5	DO-5	AC-07	C VA	Comm.a/d vent.alim.	Arrêt	Marche	DX9100 DX 9100	1	30	DO-5	DO5.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DO-5	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarreur. (NO)		DX51	
2A-30-DO-6	DO-6	AC-07	C COMP	Comm.a/d compresseur	Arrêt	Marche	DX9100 DX 9100	1	30	DO-6	DO6.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DO-6	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarreur. (NO)		DX51	
2A-30-DO-7	DO-7	AC-07	C SC	Comm.serpentin chauffage	Arrêt	Marche	DX9100 DX 9100	1	30	DO-7	DO7.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DO-7						2/18	Selon dispositif	SOR 24 V c.a.		DX51	Serpentin SE-20
2A-30-DO-8	DO-8	AC-07	C PLIN	Comm.plinthe chauff.	Arrêt	Marche	DX9100 DX 9100	1	30	DO-8	DO8.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DO-8						2/18	Selon dispositif	SOR 24 V c.a.		DX51	2 relais TRIAC
2A-30-DI-1	DI-1	VA-1	E VA	État vent.alimentation	Arrêt	Marche	DX9100 DX 9100	1	30	DI-1	DI1.COM	P-2A	Salle méc. F-301	4068-089	2A-30-DI-1						2/18	NO.COM	Veris H-735 état		DX49	
2A-30-DI-2	DI-2	AC-07	E VA	État vent.alimentation	Arrêt	Marche	DX9100 DX 9100	1	30	DI-2	DI2.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DI-2						2/18	NO.COM	H-708		DX49	
2A-30-DI-3	DI-3	AC-07	E FILT	État des filtres	Normal	Sales	DX9100 DX 9100	1	30	DI-3	DI3.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DI-3						2/18	Y.R	P32 (NO)		DX70	
2A-30-DI-4	DI-4	AC-07	ALM AC	Alarme unité AC	Normal	Alarme	DX9100 DX 9100	1	30	DI-4	DI4.COM	P-2A	Salle méc. F-301	4068-068	2A-30-DI-4						2/18	Selon dispositif	Contact (NO)		DX70	
2A-30-DI-5	DI-5	ECH_EC-1	E PC-1A	État pompe chauff. PC-1A	Arrêt	Marche	DX9100 DX 9100	1	30	DI-5	DI5.COM	P-2A	Salle méc. F-301	4068-093	2A-30-DI-5						2/18	NO.COM	Veris H-735 état		DX49	Nom et description du point modifiés (14 mar
2A-30-DI-6	DI-6	ECH_EC-1	DEB_EC	Priseue débit eau chauff.	Npn	Qui	DX9100 DX 9100	1	30	DI-6	DI6.COM	P-2A	Salle méc. F-301	4068-093	2A-30-DI-6						2/18	Selon dispositif	Contact (NO)		DX70	
2A-30-DI-7	DI-7	LABO	A.H.F219	Alarme hotte (F-219)	Normal	Alarme	DX9100 DX 9100	1	30	DI-7	DI7.COM	P-2A	Salle méc. F-301		2A-30-DI-7						2/18	Y.R	F61KB-11		DX70	Hotte associée au vent. d'évac. VH-1
2A-30-DI-8	DI-8	LABO	A.H.F224	Alarme hotte (F-224)	Normal	Alarme	DX9100 DX 9100	1	30	DI-8	DI8.COM	P-2A	Salle méc. F-301		2A-30-DI-8						2/18	Selon dispositif	Contact (NO)		DX70	Hotte associée au vent. d'évac. VH-2
2A-30-AI-1	AI-1	VA-1	T PIE	Temp.pèce			DX9100 DX 9100	1	30	AI-1	AI1.AICOM	P-2A	Salle méc. F-301	4068-089	2A-30-AI-1						2/18	2 fils	TE		DX3	Salle méc. F-301
2A-30-AI-2	AI-2	VA-1	T ALI	Temp.alimentation			DX9100 DX 9100	1	30	AI-2	AI2.AICOM	P-2A	Salle méc. F-301	4068-089	2A-30-AI-2						2/18	2 fils	TE (Gaine)		DX3	
2A-30-AI-3	AI-3	AC-07	T PIE	Temp.pèce			DX9100 DX 9100	1	30	AI-3	AI3.AICOM	P-2A	Salle méc. F-301	4068-068	2A-30-AI-3						2/18	2 fils	TE		DX3	Sonde située dans local F-200
2A-30-AI-4	AI-4	AC-07	T ALI	Temp.alimentation			DX9100 DX 9100	1	30	AI-4	AI4.AICOM	P-2A	Salle méc. F-301	4068-068	2A-30-AI-4						2/18	2 fils	TE (Gaine)		DX3	
2A-30-AI-5	AI-5	ECH_EC-1	T ALI_EC	Temp.alim.eau chaude			DX9100 DX 9100	1	30	AI-5	AI5.AICOM	P-2A	Salle méc. F-301	4068-093	2A-30-AI-5						2/18	2 fils	TE (Immersion)		DX3	
		AI-6					DX9100 DX 9100	1	30	AI-6		P-2A	Salle méc. F-301		2A-30-AI-6											
		AI-7					DX9100 DX 9100	1	30	AI-7		P-2A	Salle méc. F-301		2A-30-AI-7											
		AI-8					DX9100 DX 9100	1	30	AI-8		P-2A	Salle méc. F-301		2A-30-AI-8											
2A-30-AO-1	AO-1	VA-1	VOL MEL	Volets mélange		%	DX9100 DX 9100	1	30	AO-1	AO1.AOCOM/CON	P-2A	Salle méc. F-301	4068-089	2A-30-AO-1	2/18	+-	EP-8000	SUPPLY,O		3/18	1,2,5	M9216-HGA-2 0-10VDC		DX34	
2A-30-AO-2	AO-2	ECH_EC-1	VLV_EC-1	Vanne échangeur EC-1		%	DX9100 DX 9100	1	30	AO-2	AO2.AOCOM	P-2A	Salle méc. F-301	4068-093	2A-30-AO-2	2/18	+-	EP-8000	SUPPLY,O		1/4"	Raccord à crans	EP-PNEU.		DX27	
		AO-9					DX9100 DX 9100	1	30	AO-9		P-2A	Salle méc. F-301		2A-30-AO-9											
		AO-10					DX9100 DX 9100	1	30	AO-10		P-2A	Salle méc. F-301		2A-30-AO-10											
		AO-11					DX9100 DX 9100	1	30	AO-11		P-2A	Salle méc. F-301		2A-30-AO-11											
		AO-12					DX9100 DX 9100	1	30	AO-12		P-2A	Salle méc. F-301		2A-30-AO-12											
		AO-13					DX9100 DX 9100	1	30	AO-13		P-2A	Salle méc. F-301		2A-30-AO-13											
		AO-14					DX9100 DX 9100	1	30	AO-14		P-2A	Salle méc. F-301		2A-30-AO-14											
							XT9100 XT (Expansion Module)					P-2A	Salle méc. F-301													Alimentation 24VAC
							XT9100 XT (Expansion Module)	1	31			P-2A	Salle méc. F-301													Tronc N2
2A-31A-DI-1	DI-1	ECH_EC-1	E_PC-1B	État pompe chauff. PC-1B	Arrêt	Marche	XP9104 XP 9104 (4C)	1	31	DI-1	DI1.COM	P-2A	Salle méc. F-301		2A-31A-DI-1						2/18	NO.COM	Veris H-735 état		XP49	Nouveau point (14 mars 2002)
		DI-2					XP9104 XP 9104 (4C)	1	31	DI-2		P-2A	Salle méc. F-301		2A-31A-DI-2											
		DI-3					XP9104 XP 9104 (4C)	1	31	DI-3		P-2A	Salle méc. F-301		2A-31A-DI-3											
		DI-4					XP9104 XP 9104 (4C)	1	31	DI-4		P-2A	Salle méc. F-301		2A-31A-DI-4											
2A-31A-DO-1	DO-1	ECH_EC-1	C_PC-1A	Comm.pompe chauff. PC-1A	Arrêt	Marche	XP9104 XP 9104 (4C)	1	31	DO-5	DO5.COM	P-2A	Salle méc. F-301	4068-093	2A-31A-DO-1	2/18	(Bobine)+,-	H-735	COM.NO		2/14	Voir détail déma	Démarreur (H-735 mar/arr)		XP49	Nom et description du point modifiés (14 mar
2A-31A-DO-2	DO-2	ECH_EC-1	C_PC-1B	Comm.pompe chauff. PC-1B	Arrêt	Marche	XP9104 XP 9104 (4C)	1	31	DO-6	DO6.COM	P-2A	Salle méc. F-301		2A-31A-DO-2	2/18	(COIL)+,-	H-735	COM.NO		2/14	Voir détail déma	Démarreur (H-735 mar/arr)		XP49	Nouveau point (14 mars 2002)
		DO-7					XP9104 XP 9104 (4C)	1	31	DO-7		P-2A	Salle méc. F-301		2A-31A-DO-7											
		DO-8					XP9104 XP 9104 (4C)	1	31	DO-8		P-2A	Salle méc. F-301		2A-31A-DO-8											

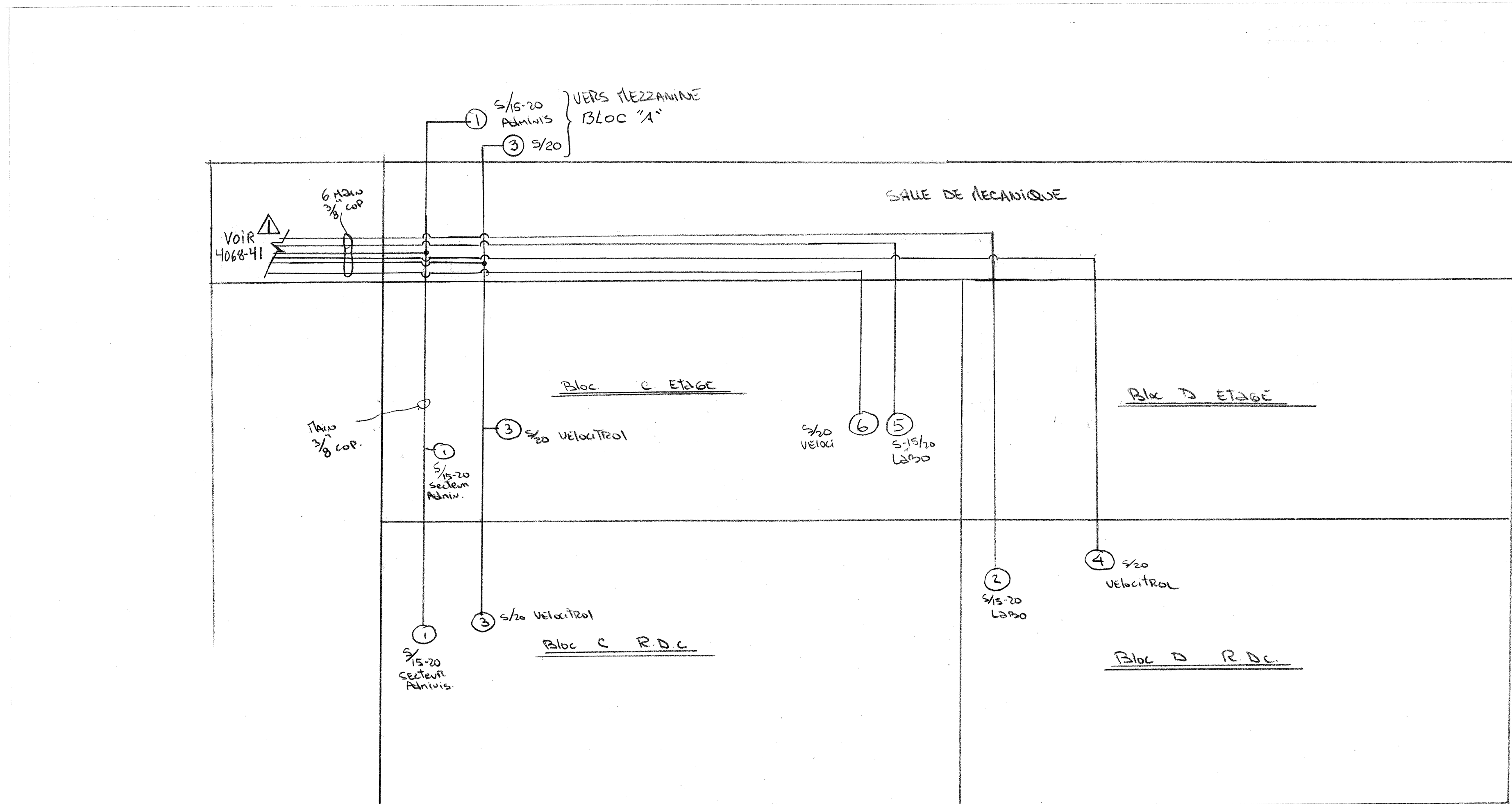
LISTE DE MATÉRIEL POUR LE SYSTÈME EC-1

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_VA,E_VA C_PC-1B, E_PC-1B	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT) 1-135 AMP	H-735	VÉRIS
DEB_EC	INTERRUPTEUR DE DÉBIT D'EAU	F61KB-11	JOHNSON CONTROLS
T_ALI_EC	SONDE DE TEMPÉRATURE IMMERSION, 1000 OHMS NI PUITS D'IMMERSION, 100mm- 4", ACIER INOX.	TE-6312P-1 T1-1/2P-4	JOHNSON CONTROLS GREYSTONE
VLV_EC-1	VANNE 2 VOIES, 1-1/2", NF, Cv 28.9, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR	VG7441RT+823E01	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-1-30	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
F-1, 1A 1B 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1	INDICATEUR DE PRESSION DIFF. 0-250Pa	2000-250Pa	DWYER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2A	PANNEAU 36"x48"x9.5	M-8100-3648	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-3, UNT-2-4	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-8	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_XXX	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-31A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-31	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS

G
F
E
D
C
B
A



VUE EN ELEVATION

NOTE: LES NUMEROS DANS ○
CORRESPONDENT AUX
NUMEROS SUR LES
TRACES DE CABLAGE
VOIR DESSIN #4068-412 @ 52

TITRE											
REFERENCE		NO.		REVISION		AVIS		DATE		PAR	
REPRESENTANT		TECHNICIEN		DESSINE		APPROUVE					
				PAR		DATE		PAR		DATE	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		ST-HYACINTHE, QUE		JOHNSON CONTROLS		Société de Contrôle Johnson Ltee 441 boulevard Labau Montréal, QC H4N 1S2 Tél. 514/332-6960		CONTRAT 41A 4096-008-52 DESSIN NO.: 4068-41A	

SEQUENCES D'OPERATION

RESEAU JOUR/NUIT:

LA NUIT LES RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 ET 2 SONT ALIMENTES ET PERMETTENT AUX THERMOSTATS DE PIECE DE PASSER AU POINT DE CONSIGNE DE NUIT.

CONTROLE DE PIECE

LES THERMOSTATS DE PIECE MODULENT EN SEQUENCE LES BOITES A DEBIT D'AIR VARIABLE ET LE CHAUFFAGE AFIN DE MAINTENIR LES PIECES A LEUR POINT DE CONSIGNE.

SALLE INFORMATIQUE



3 SEQUENCE D'OPERATION

EN OPERATION NORMALE LE VOLET EST OUVERT
PAR MEV-1 QUI EST ALIMENTE VIA LE CONTACT
N.F. DU PANNEAU DE CONTROLE AU HALON.
EN CAS DE DECHARGE DE HALON, LE
CONTACT OUVRE ET MEV-1 PREND SA POSITION
NORMALE, SOIT NORMALEMENT FERMEE.

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION

RESEAU DE THERMOSTAT JOUR/NUIT

PRV-1&2	A-4000-129	2	STATIONS DE REDUCTION DE PRESSION
EP-1&2	V-9011-1	2	RELAIS ELECTRIQUE/PNEUMATIQUE
G-1&2	G-2010-11	2	INDICATEURS 0-30PSI
ASV-1&2	V-4324-1004	2	VALVES A AIR 3 VOIES

CONTROLE DE PIECE

TP-X	T-4506-201		THERMOSTATS JOUR/NUIT AVEC BOUTON DE RAPPEL
	T-4506-203		THERMOSTATS JOUR/NUIT SANS BOUTON POUR ENDROIT OU ILS DOIVENT ETRE ENCASTRES
TPY	T-4002-201		THERMOSTAT DE PIECE
BE-X	T-4000-110		BOITE ASPIRANTE
	T-4000-111		COUVERCLE BEIGE
V-1	V-3754-1019		VALVE 2 VOIES Ø 1/2" C.V. 1.2
PE-1			RELAIS PNEUMATIQUE/ELECTRIQUE PAR D'AUTRES

CONTROLE AEROTHERME

TE-X	T265-22	3 2	THERMOSTAT DE PIECE ELECTRIQUE
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△ LISTE DE MATERIEL

IDENT.

MODELE

QTE

DESCRIPTION

SALLE INFORMATIQUE

T-1

TRANSFO.

1

120 / 24 V , 30 VA

MEV-1

FM. 24

1

ACTUATEUR ELECTRIQUE

SYSTÈMES CVCA

MODE CONTROLE DE NUIT X

PC REDEMARRAGE X

CÉDULE

RETOUR

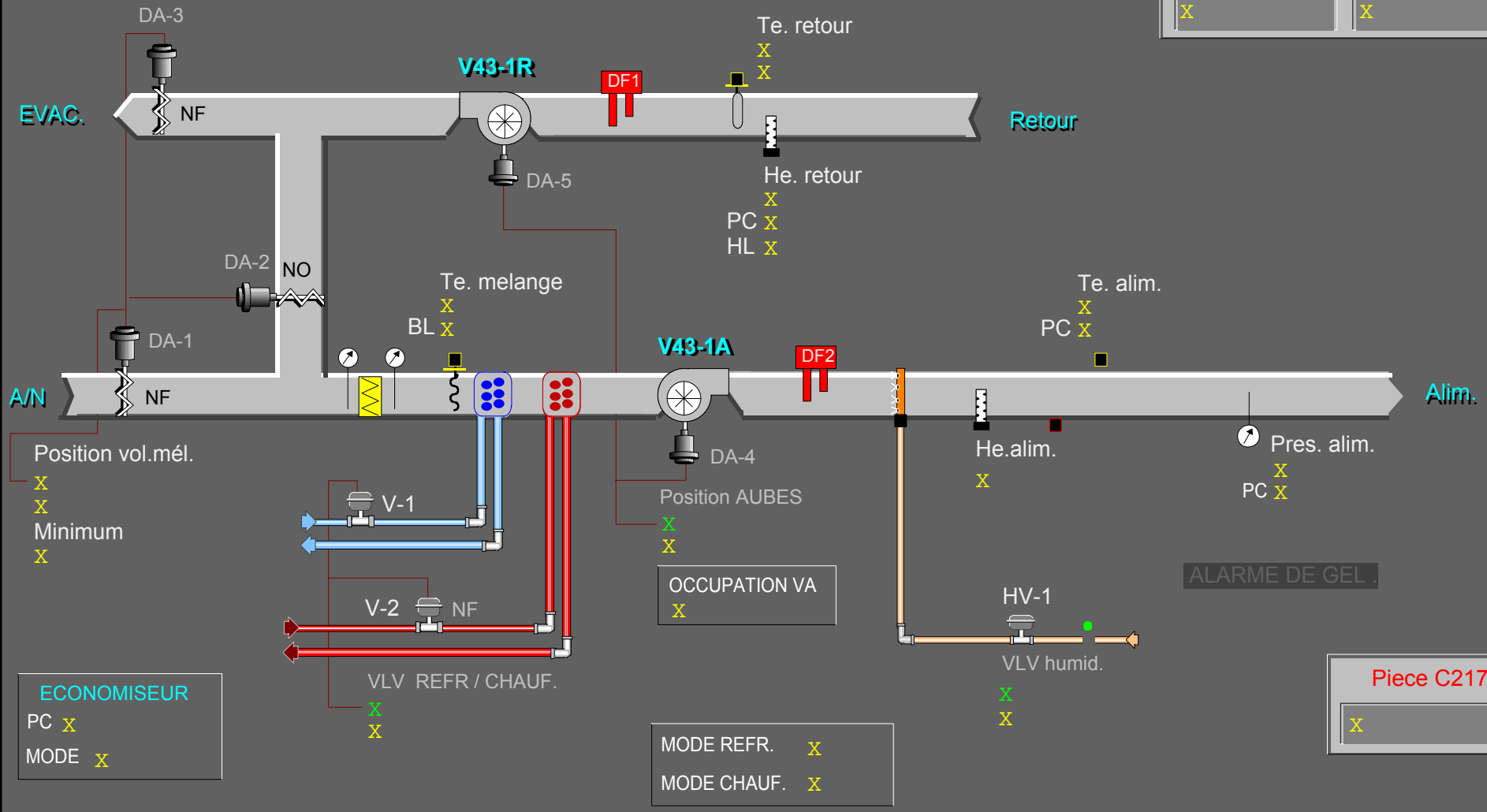
ALIMENT.

X

X

X

X



Piece C217

X

PARAMETRES

Contrôle de nuit

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidité

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidité

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

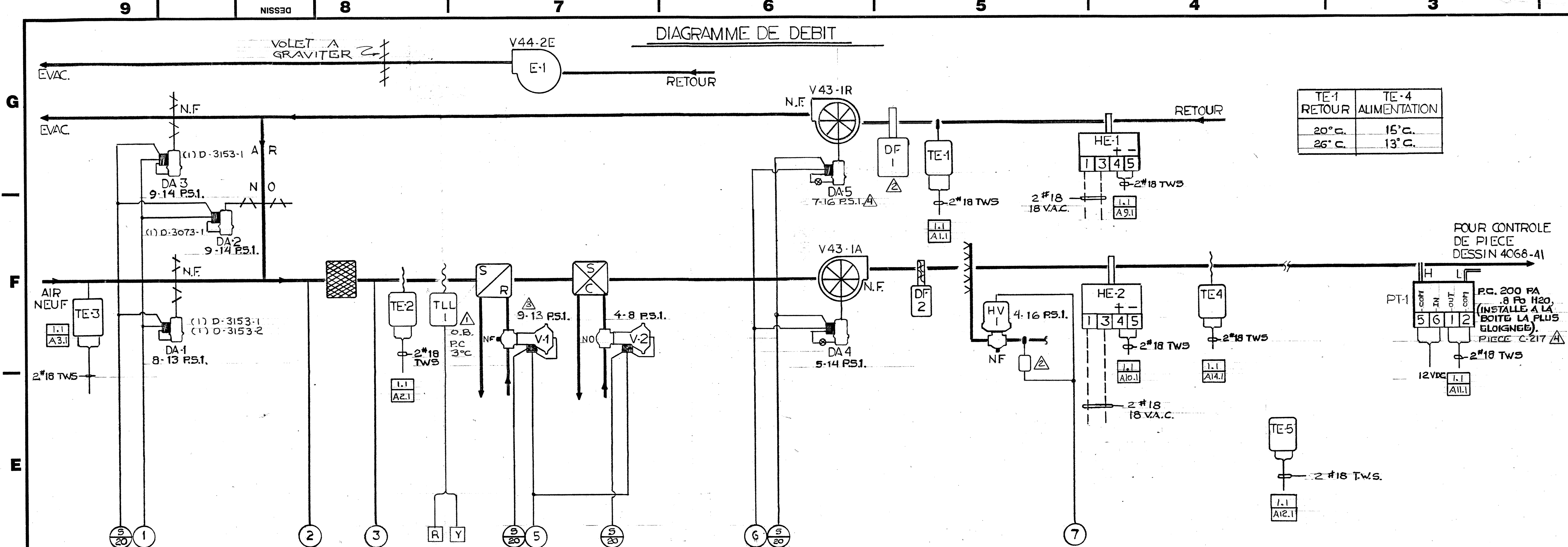
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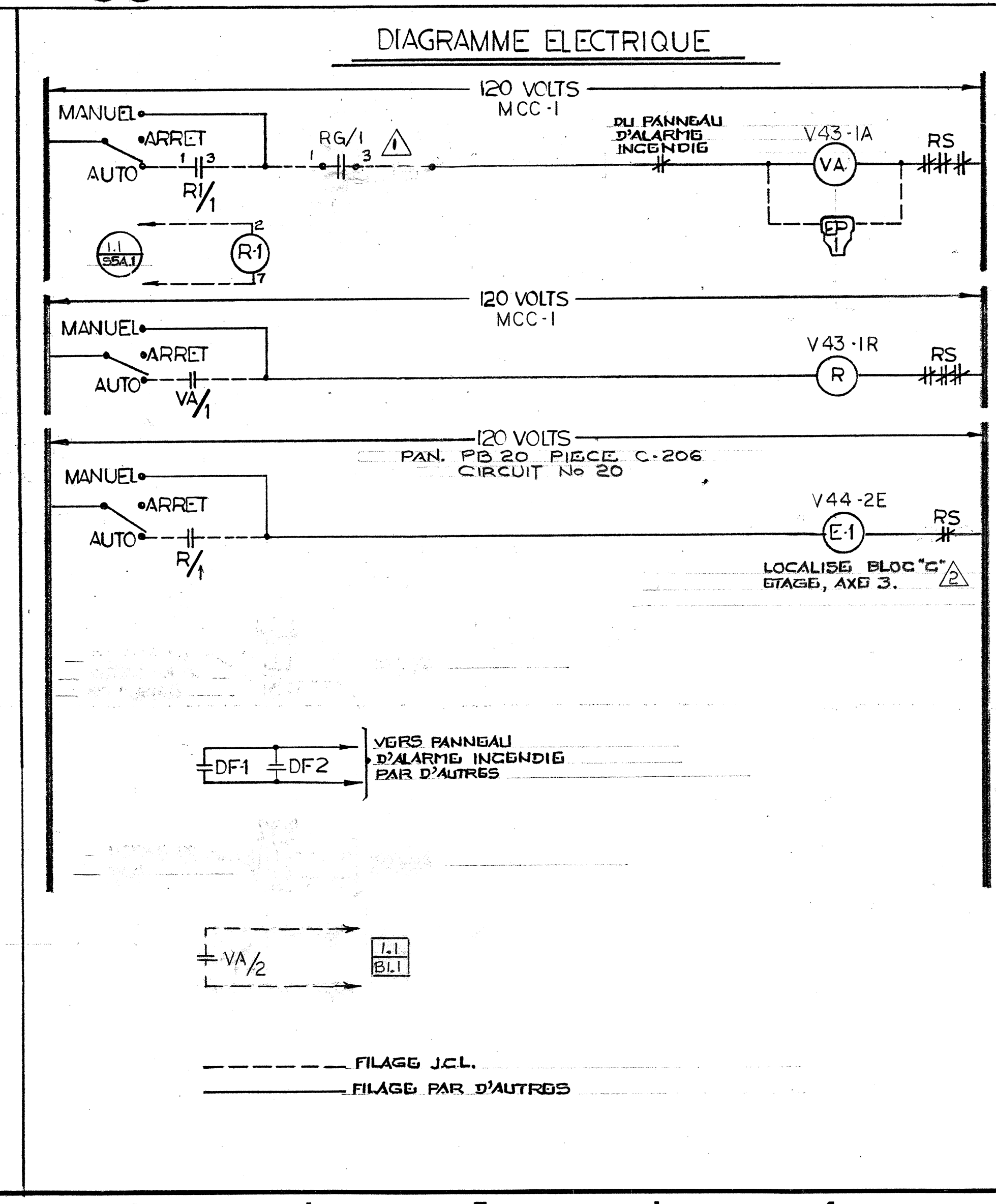
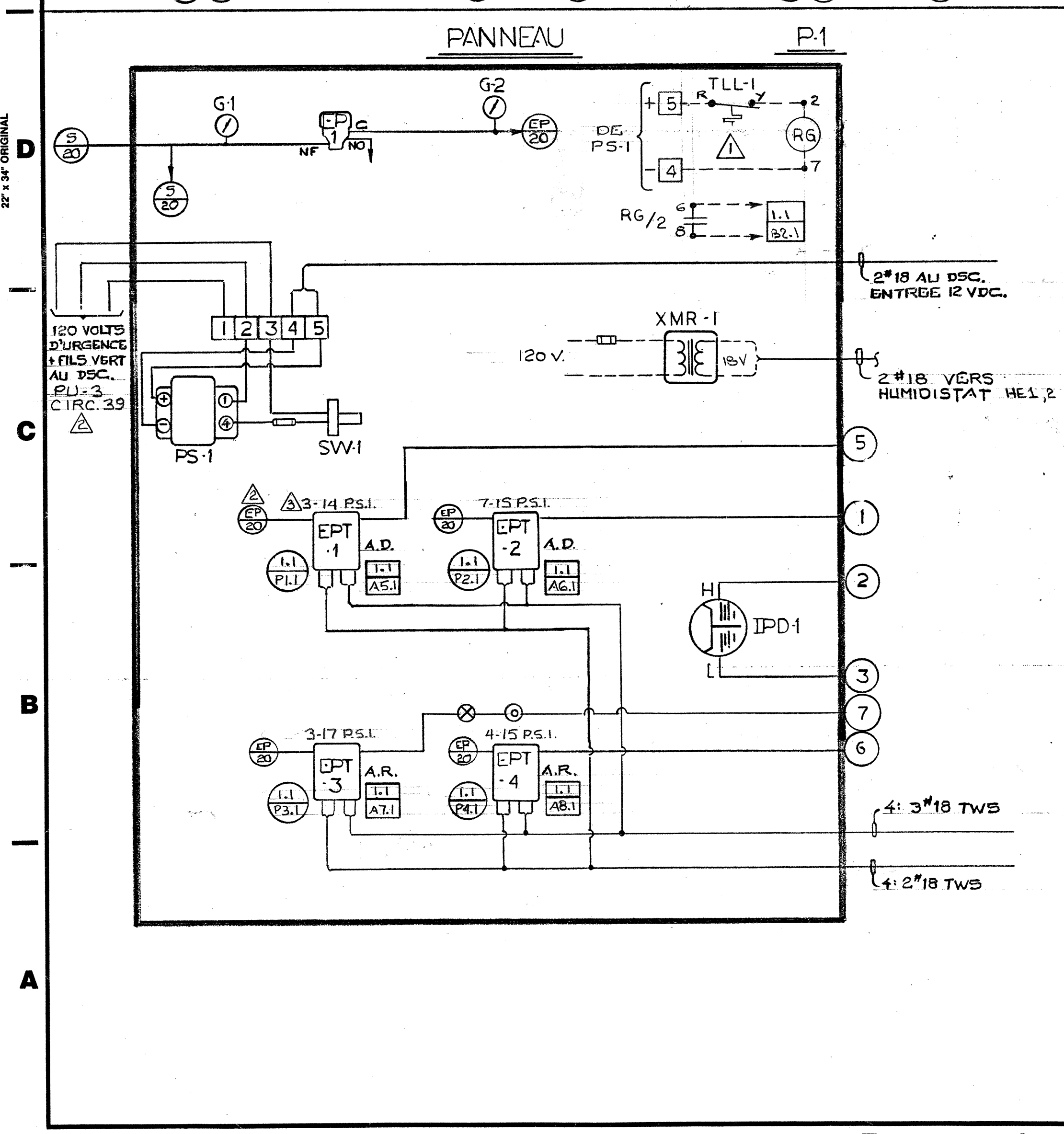
VACANCES DSC-1, V43-1

Jour / Mois	VACANCE 1	X
Jour / Mois	VACANCE 2	X
Jour / Mois	VACANCE 3	X
Jour / Mois	VACANCE 4	X
Jour / Mois	VACANCE 5	X
Jour / Mois	VACANCE 6	X





LISTE DE MATERIEL			
IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	TE1101-100	2	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1100-17	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	1.100.30.041	2	ELEMENT DE TEMPERATURE
HE-1 ET 2			ELEMENT D'HUMIDITE ENERCORP
TLL-1	Al1A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V5462-5	1	VALVE N.F. 2" C/A P.P.
V-2	V3754-1025	1	VALVE NO. 1/2" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HE12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1 ET RG	6012	2	RELAIS 12 VDC
XMR-1	BO 2 FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



FACE DU PANNEAU P1

DIAGRAMME PLASTIFIE

IPD-1

G-1, G-2

2

1

1 - CONTRACTEUR: PAVAL INC.
INGENIEUR: PAGEAU MOREL ET ASS.

2 - SYSTEME No. V43-1

IPD-1: STAT DES FILTRES

G-1: AIR D'ALIMENTATION

G-2: AIR DE CONTROLE

TITRE: SYSTEME V43.1
ALIMENTATION BLOC C

PROJET: CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE.

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE RETOUR.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

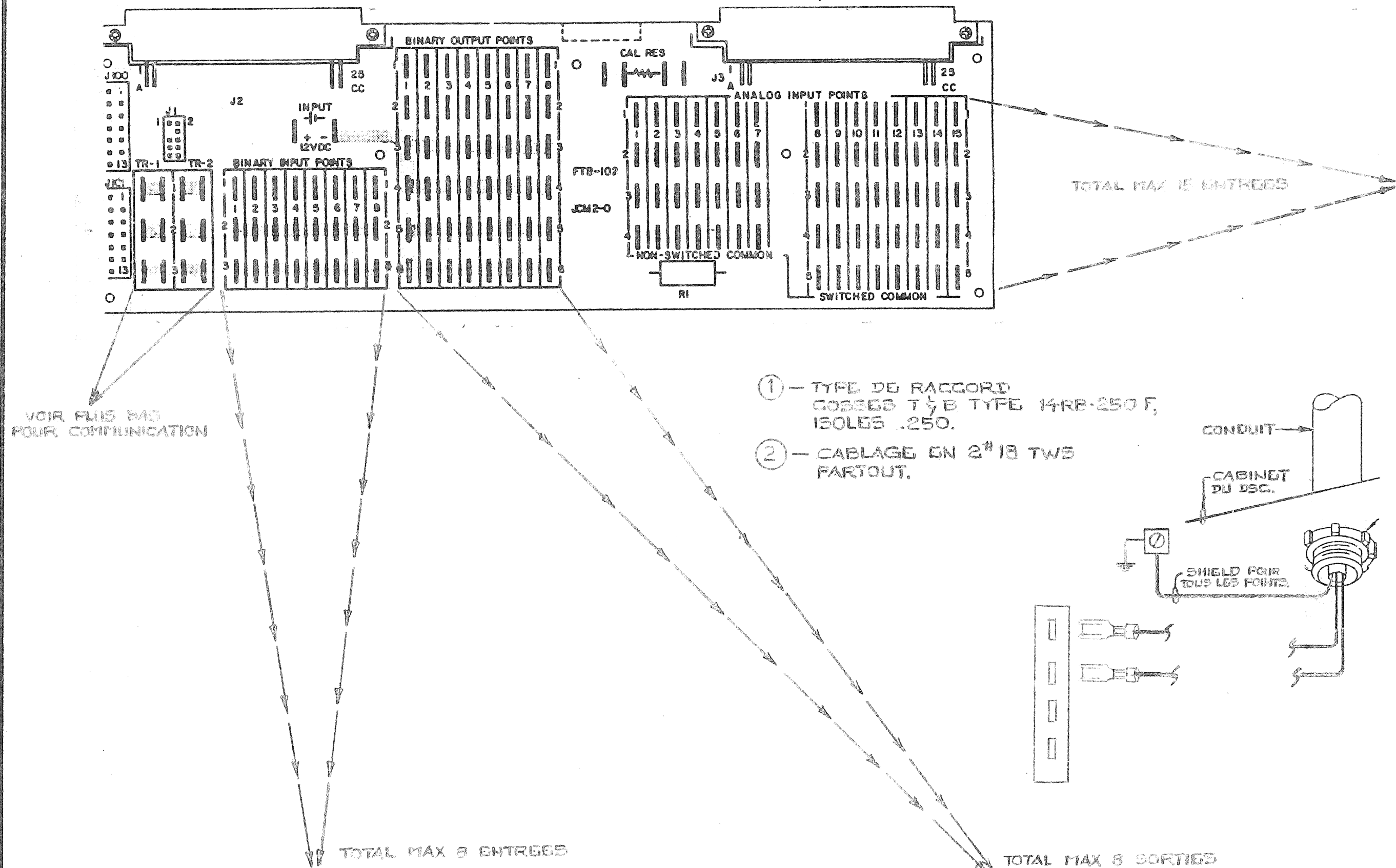
SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

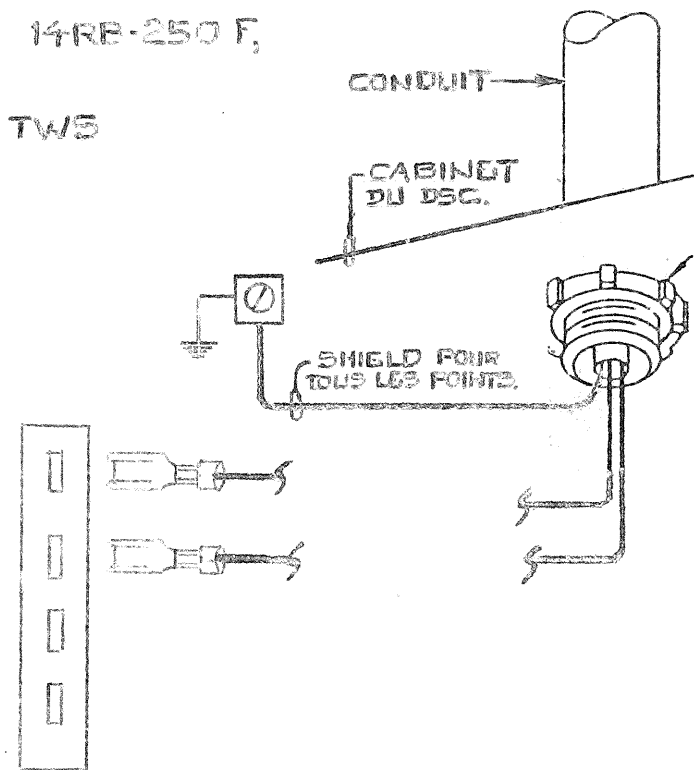
LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

096-0273490	PM-A-1	87-07-15
		87-05-27
		86-07-07
		SEPT-12-85
REFERENCE	NO.	REVISION
REPRESENTANT J.C.R.	TECHNICIEN R.F.	APPROUVE
PAR J.C.R.	DATE DEC 21-84	PAR J.C.R.
Société de Contrôle Johnson Ltd		CONTRAT
441 boulevard Labau		4096-0008-1/3
Montréal, QC H4N 1S2		DESSIN NO.
Tél. 514-332-6960		4068-1

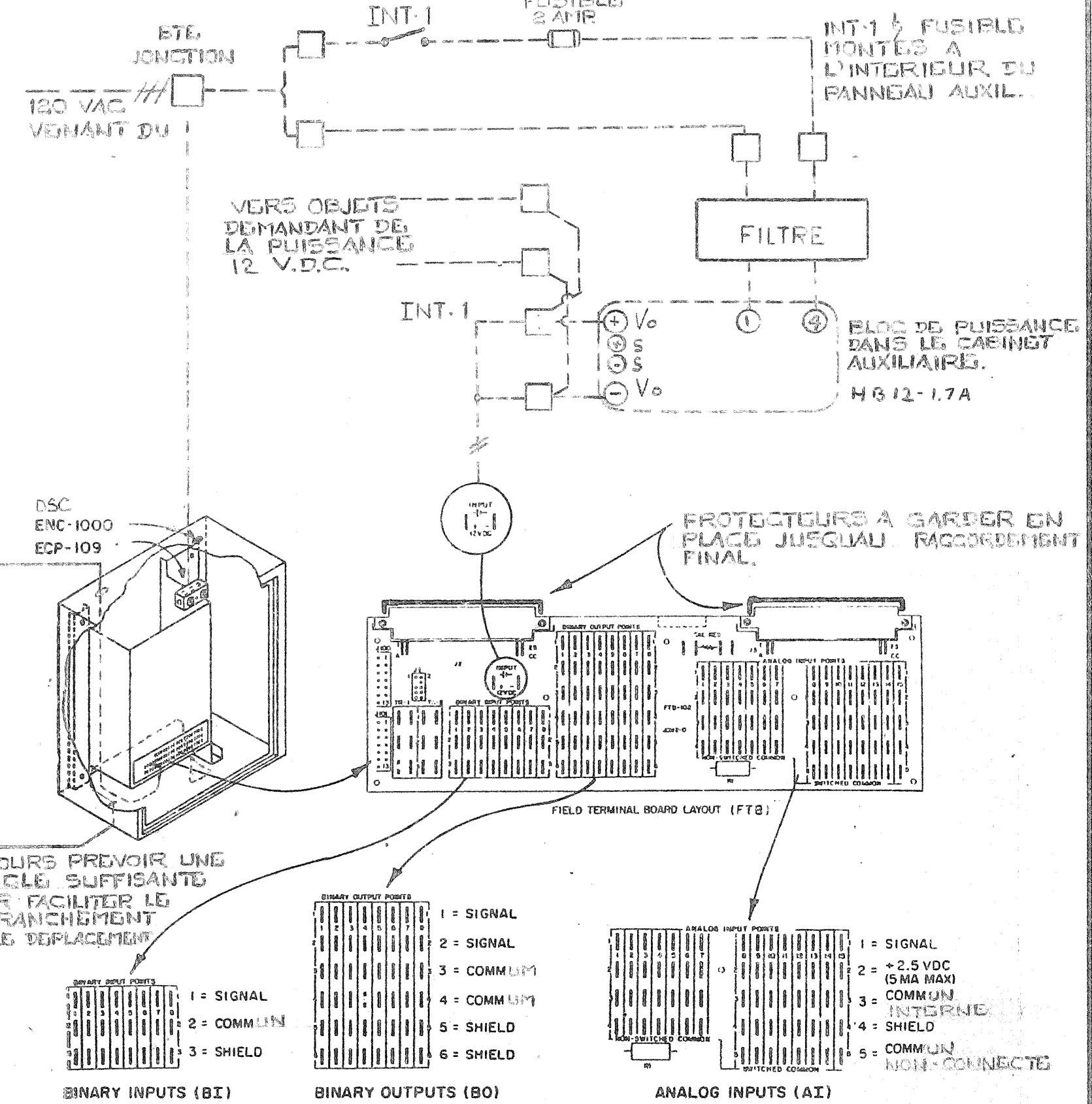
BORNIERS DE RACCORDEMENT (FTB-102)



- 1 - TYPE DE RACCORD: COSEES T & B TYPE 14RB-250 F, ISOLES .250.
- 2 - CABLAGE EN 2#18 TWS PARTOUT.



EMPLACEMENT		ADRESSE							
NOM: C.I.R.A.									
EMPLACEMENT: DU DSC									
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB
1	TE-1	TEMP RETOUR	ANA	1 3		TEL101-100	RETOUR	A1.1	
2	TE-2	TEMP MELANGE	ANA	1 3		TEL100-17	MELANGE	A2.1	
3	TE-3	AIR NEUF	ANA	1 3		TEL101-100	AIR NEUF	A3.1	
4	TE-4	ALIM	ANA	1 3		TEL100-17	ALIM	A4.1	
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1	
9	HE-1	HUMIDITE RETOUR	ANA	1 4 5		HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1	4.20 MA 10-90%HR
10	HE-2	HUMIDITE ALIM.	ANA	1 4 5		HUMIDISTAT HE-2	CONDUIT ALIM.	A10.1	4.20 MA 10-90%HR
11	PT-1	PRESSION ALIM.	ANA	1 5 2		SONDE DE PRESSION PT-1	AL.V43.1 BOITE LA PLUS LOIN	A11.1	0-5VDC 0-2.5 Pa
12	TE-5	TEMP. PIECE	ANA	1 3		TEL800-102		A12.1	

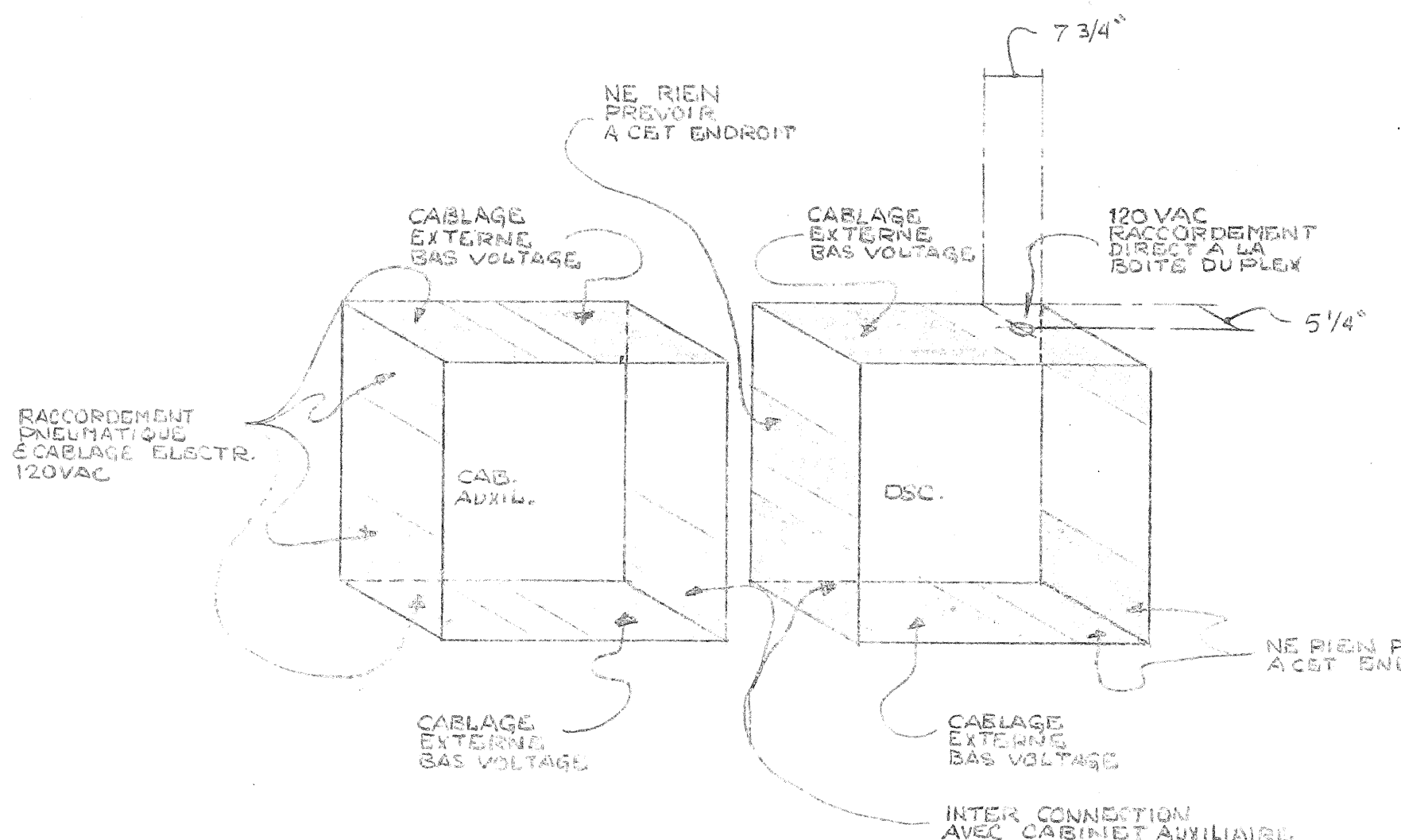


INT-1: INTERRUPTEUR "TOGGLE" EAGLE SPST, MOD 447, MONTE AVEC R-4000-101 J.C.L.

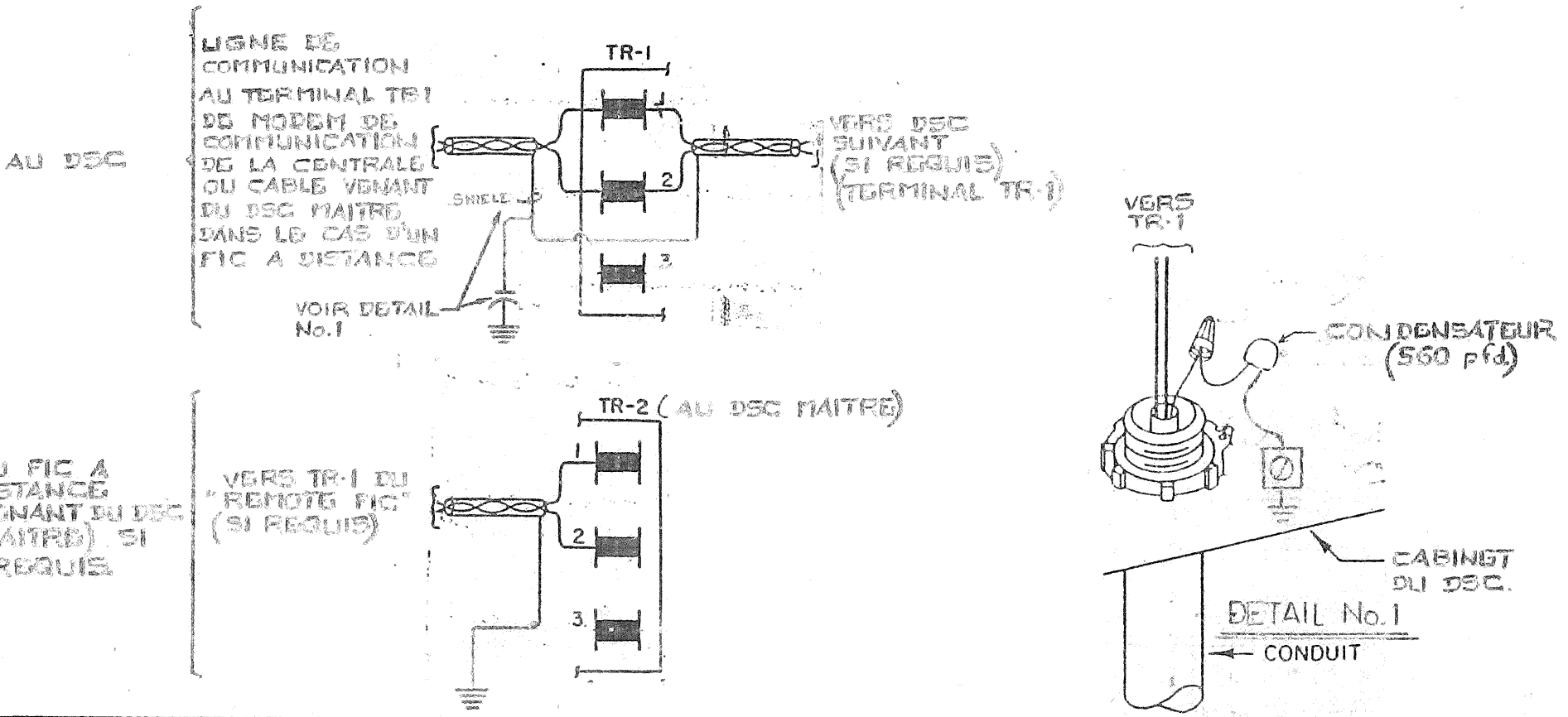
— TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT		ADRESSE							
NOM: C.I.R.A.									
EMPLACEMENT: DU DSC									
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB
1	STATUS	SYSTEME No 1	BIN	1 2		CONTACT AUX. DEM	MCC-1	B1.1	
2	GEL	SYSTEME No 1	BIN	1 2		RELAIS RG	CAB. AUX.	B2.1	

EMPLACEMENT		ADRESSE							
NOM: C.I.R.A.									
EMPLACEMENT: DU DSC									
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P1.1	
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P2.1	
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P3.1	
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P4.1	
5A	R1	ARRET DEPART SYSTEME 1	SST	1 3	2 7	RELAIS 12VDC	MCC-1	S5A.1	
6A	EP-1	RESEAU JOUR/NUIT ADMINISTRATION	SST	1 3		V-9011-1	COMP. D'AIR	S6A.1	
6B	EP-2	RESEAU JOUR/NUIT LABO	SST	2 4		V-9011-1	COMP. D'AIR	S6B.1	



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-6500		TEL QUE CONSTRUIT		86-07-07	
DSC-1							
REPRESENTANT	J.C.R.	TECHNICIEN	R.F.	REVISION	DATE	PAR	DATE
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.	PAR	DATE	APPROUVE	DATE	PAR	DATE
Société de Contrôle Johnson Ltd		441 boulevard Lebeau		Montréal, QC H4N 1S2		Tél. 514/332-6580	
CONTRAT		4096-0008-2		DESSIN NO.		4068-2	

```

/
/DSC 1      SYSTEME  V43.1
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      DISPLAY  DELSST,I      /DELAI APRES UNE PANNE
2      DISPLAY  OCCD,B        /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST   FSTRT,B       /DEMANDE VENTILATEUR
4      DISPLAY  FSTAT,B       /ETAT VENTIL. ALIM.
5      DISPLAY  FREEZE,B      /ETAT THERMOSTAT DE GEL  NORMAL -ON
/
6      DISPLAY  NCTL,B        /CONTROLE DE TEMP NUIT
7      DISPLAY  TLCON,B       /CONTROLE PAR TEMP.
8      ADJUST   NSBT,A        /PT DE CONSIGNE REDEMARRAGE
9      ADJUST   NSP,A         /POINT DE CONSIGNE RETOUR
10     DISPLAY  Z41,A         /RESULTAT CTL NUIT
/
11     DISPLAY  TE80,A        /TEMP RETOUR
12     DISPLAY  TE10,A       /TEMP MELANGE
13     DISPLAY  TE1,A        /TEMP EXTERIEURE
14     DISPLAY  TE60,A       /TEMP ALIMENTATION
15     DISPLAY  TE100,A      /TEMP PIECE
/
16     DISPLAY  MXD,B        /CONTROLE DE JOUR
17     ADJUST   RARL,A       /AIR RET BAS LIM REAJ TEMP ALIM
18     ADJUST   RARH,A       /AIR RET HAU LIM REAJ TEMP ALIM
19     ADJUST   SAHL,A       /REAJ TEMP ALIM HAU LIM
20     ADJUST   SALL,A       /REAJ TEMP ALIM BAS LIM
21     DISPLAY  DSSP,A       /POINT DE CONSIGNE ALIM
22     ADJUST   OASO,A       /TEMP LIM EXT ECONOMISEUR
23     DISPLAY  ECON,B       /RESULTAT ECONOMISEUR
24     ADJUST   MDP,A        /POSITION MINIMUM VOLETS
25     ADJUST   MXDSP,A      /POINT DE CONSIGNE LIMITE MEL.
26     DISPLAY  ZMXD,A       /RESULTAT PROPORTION.
27     DISPLAY  Z10M,A       /RESULTAT VOLETS LIMITE
28     DISPLAY  Z10C,A       /RESULTAT VOLETS CTL
29     DISPLAY  Z10,A        /RESULTAT VOLETS
30     DISPLAY  ZT10,A       /F.B. VOLETS
/
31     DISPLAY  HTG,B        /CHAUFFAGE
32     DISPLAY  Z40,A        /RESULTAT CHAUFFAGE
/
34     DISPLAY  CLG,B        /REFROIDISSEMENT
35     DISPLAY  Z30,A        /RESULTAT REFROIDISSEMENT
36     DISPLAY  ZT30,A       /F.B. SOUPAPES
/
37     DISPLAY  HT80,A       /HUMIDITE RETOUR
38     DISPLAY  HT60,A       /HUMIDITE ALIMENT
39     ADJUST   RHSP,A       /POINT DE CONSIGNE HUMIDITE DE RETOUR
40     ADJUST   RHSPA,A      /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41     DISPLAY  Z70HL,A      /RESULTAT CTL HUMIDITE HAUTE LIMITE
42     DISPLAY  Z70C,A       /RESULTAT CTL HUMIDITE CONT RETOUR
43     DISPLAY  Z70,A        /RESULTAT CTL HUMIDITE
44     DISPLAY  ZT70,A       /F.B. HUMIDITE
/

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45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
65      DISPLAY  OCCDR1,B   /CYCLE DE JOUR THERMOSTAT ADMINIS JOUR-ON
66      DISPLAY  OCCDR2,B   /CYCLE DE JOUR THERMOSTAT LABORAT NUIT-OFF

```

```

/-----/
/          FONCTIONS SPECIALES HORAIRE DES ZONES DE THERMOSTAT          /
/-----/
/
/  900 RESEAU THERMOSTAT ADMINISTRATION
/ 1000 RESEAU THERMOSTAT LABORATOIRE
/
67      ADJUST   STAXX,T    /HEURE DE DEPART JOUR EN COURS
68      ADJUST   STOXX,T    /HEURE D ARRET JOUR EN COURS
69      ADJUST   STA7XX,T   /HEURE DEPART SAMEDI
70      ADJUST   STO7XX,T   /HEURE D ARRET SAMEDI
71      ADJUST   STA8XX,T   /HEURE DEPART DIMANCHE
72      ADJUST   STO8XX,T   /HEURE D ARRET DIMANCHE
73      ADJUST   STA9XX,T   /HEURE DEPART SEMAINE
74      ADJUST   STO9XX,T   /HEURE D ARRET SEMAINE
/
/-----/
/          FONCTIONS SPECIALES PARAMETRES DE CONTROLE          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE

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/ 500 PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600 PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700 PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800 PARAMETRES CONTROLE REFROIDISSEMENT

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79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE

```

```

/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/

```

```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR

```

```

88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES

```

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89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME

```

```

/
/
/
/
/-----/
/              L I S T E   D E S   A L A R M E S              /
/

```

```

/      ALARME
/      NUMERO              DESCRIPTION
/

```

```

/-----/
/
/      10      ALARME THERMOSTAT GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-1
/
/      51      ALARME HORAIRE SYSTEME V43-1
/
/      101     ALARME HORAIRE RESEAU THERMOSTAT ADMINISTRATION
/
/      102     ALARME HORAIRE RESEAU THERMOSTAT LABORATOIRE
/
/

```

/CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 09:17:28
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 08:13:37
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-04-:1 13:54:13
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-04-:1 13:11:01
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 14:13:52
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 13:52:11
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 11:55:45
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 11:54:10
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:20
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:50:03
 /
 /TRANSLATION LISTING FOR CIRA1.CAL
 /
 /
 /-----

PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUEBEC
	DSC 1 SYSTEME V43.1
NUMERO DE TELEPHONE	
NUMERO CONTRAT	4096-0008
VENDEUR	JEAN CLAUDE ROUILLON
INGENIERIE	RICHARD FOREST
CONCEPTION PROGRAMME	JEAN MORISSETTE
REVISION	05 DECE 1986
	25 MAI 1990 MOD. BASSE LIMITE MELANGE JM

/
 /
 /-----

```

/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
/
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,1378
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  25
@ AD:  112
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-10,RAT-0,TOT-0
@ BO:  MOM-0,POS-4,MAN-3
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FREEZE     CON-2      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.7,129.6 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.6,129.7 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-44.7,129.7 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.7,129.7 /TEMP ALIM
AI-5      ZT30       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6      ZT10       FUL-6      E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-7      ZT70       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8      ZT50       FUL-8      E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-9      HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-11     SPT        FUL-9      E,0.1,E,N,O,0,621      /PRESSION STATIQUE EN P
AI-12     TE100      FUL-10     E,0.5,E,V,T,-45.8,129.6 /TEMP PIECE
/
/
BO-1      ZC30       POS-1      D,E,0      /SOUPAPE
BO-2      ZC10       POS-2      D,E,0      /VOLETS

```

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BO-3      ZC70      POS-3      D,E,0      /HUMIDITE
BO-4      ZC50      POS-4      D,E,0      /VAV
BO-5A     ZS50      MAN-1      E,E        /VENTIL ALIM
BO-6A     ZSJN1     MAN-2      E,E        /JOUR NUIT ADMINIST
BO-6B     ZSJN2     MAN-3      E,E        /JOUR NUIT LABO
/
/
CP-1      ZCP30     INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10     INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-3      ZCP70     INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4      ZCP50     INC-4      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
/
/
@ DATA POINT DEFINITION:
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
BD-1      OCCD      E,R      /CYCLE D OCCUPATION
BD-2      TLCON     E,R      /CONTROLE PAR TEMP.
BD-3      FSTRT     E,R      /DEMANDE VENTILATEUR
BD-4      COMP50    E,R      /RESULTAT DEMARRAGE
BD-5      CONON     E,R      /PERMISSION CONTROLE
/
/-----/
/                PARAMETRES CONTROLE DE NUIT
/-----/
/
BD-6      NCTL      E,R      /CONTROLE DE TEMP NUIT
/
/-----/
/                PARAMETRES ECONOMISEUR D AIR FRAIS
/-----/
/
BD-7      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/                PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE
/-----/
/
BD-8      MXD       E,R      /CONTROLE DE JOUR
BD-9      MIXLL     E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/                PARAMETRES CONTROLE DE CHAUFFAGE
/-----/
/
BD-10     HTG       E,R      /CHAUFFAGE
/
/-----/
/                PARAMETRES CONTROLE DE REFROIDISSEMENT
/-----/
/
BD-11     CLG       E,R      /REFROIDISSEMENT
/
/-----/

```

```

/  VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT ADMINISTRATION  /
/-----/
/
BD-12  OCCDR1    E,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT LABORATOIRE  /
/-----/
/
BD-13  OCCDR2    E,R
/
/-----/
/                                FONCTIONS SPECIALES                                /
/-----/
/
BD-14  SYS        D,R
BD-15  SYSP       D,R
BD-16  SYS1       D,R
BD-17  SYS2       D,R
BD-18  SYS3       D,R
BD-19  SYS4       D,R
BD-20  SYS5       D,R
BD-21  SYS6       D,R
BD-22  SYS7       D,R
BD-23  SYS8       D,R
BD-24  SYS9       D,R
BD-25  SYS10      D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
AD-1    DOW        E,2
AD-2    H1         E,00:00
AD-3    H2         E,00:00
AD-4    H3         E,00:00
AD-5    H4         E,00:00
AD-6    H5         E,00:00
AD-7    H6         E,00:00
AD-8    STA        E,00:00 /HORAIRE
AD-9    STO        E,00:00
AD-10   STA8       E,07:00
AD-11   STO8       E,07:00
AD-12   STA7       E,07:00
AD-13   STO7       E,07:00
AD-14   STA9       E,05.01
AD-15   STO9       E,18:00
AD-16   NSBT       E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17   DELSST     E,0      /DELAI APRES PANNE
/
/-----/
/                                PARAMETRES CONTROLE DE NUIT                                /
/-----/
/
AD-18   NSP        E,22.0  /POINT DE CONSIGNE RETOUR
AD-19   Z41        E,0.0   /RESULTAT CTL NUIT
AD-20   CST41      E,45     /INTERVAL CTL NUIT

```



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AD-21  CPB41    E,20.0  /BANDE PROP CTL NUIT
AD-22  CIG41    E,5      /GAIN CTL NUIT
AD-23  CDS41    E,0.0    /BANDE MORTE CTL NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-24  OASO      E,15.0    /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-25  RARL      E,20.0    /AIR RET BAS LIM REAJ TEMP ALIM
AD-26  RARH      E,24.0    /AIR RET HAU LIM REAJ TEMP ALIM
AD-27  SAHL      E,17.0    /REAJ TEMP ALIM HAU LIM
AD-28  SALL      E,13.0    /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-29  DSSP      E,0.0     /POINT DE CONSIGNE ALIM
AD-30  MXDSP     E,11.5    /POINT DE CONSIGNE LIMITE MEL.
AD-31  MDP       E,29.0    /POSITION MINIMUM VOLETS
AD-32  CST10A    E,5       /INTERVAL CTL VOLETS LIMITE
AD-33  CPB10A    E,-90.0   /BANDE PROP CTL VOLETS LIMITE
AD-34  CIG10A    E,33      /GAIN CTL VOLETS LIMITE
AD-35  CMP10A    E,0.0     /COMPENSATION CTL VOLETS LIMITE
AD-36  CDS10A    E,1.0     /BANDE MORTE CTL VOLETS LIMITE
AD-37  CST10     E,90      /INTERVAL CTL VOLETS
AD-38  CPB10     E,-90.0   /BANDE PROP CTL VOLETS
AD-39  CIG10     E,33      /GAIN CTL VOLETS
AD-40  CMP10     E,0.0     /COMPENS CTL VOLETS
AD-41  CDS10     E,0.0     /BANDE MORTE CTL VOLETS
AD-42  ZMXD      E,0.0     /RESULTAT PROPORTION.
AD-43  Z10M      E,100.0   /RESULTAT VOLETS LIMITE
AD-44  Z10C      E,0.0     /RESULTAT VOLETS CTL
AD-45  Z10       E,0.0     /RESULTAT VOLETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
AD-46  Z40       E,0.0     /RESULTAT CHAUFFAGE
AD-47  CST40     E,25      /INTERVAL CTL CHAUFF
AD-48  CPB40     E,50.0    /BANDE PROP CTL CHAUFF
AD-49  CIG40     E,33      /GAIN CTL CHAUFF
AD-50  CDS40     E,0.0     /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
AD-51  Z30       E,0.0     /RESULTAT REFROIDISSEMENT
AD-52  CST30     E,25      /INTERVAL CTL REFROIDI

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AD-53   CPB30      E,-45.0   /BANDE PROP CTL REFROIDI
AD-54   CIG30      E, 33     /GAIN CTL REFROIDI
AD-55   CDS30      E, 0.0     /BANDE MORTE CTL REFROIDI
/
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-56   SPSP       E,262     /POINT DE CONSIGNE PRESS STAT
AD-57   CST50      E, 40      /INTERVAL CTL VAV
AD-58   CPB50      E,27.5    /BANDE PROP CTL VAV
AD-59   CIG50      E, 30      /GAIN CTL VAV
AD-60   CMP50      E, 0.0     /COMPENS CTL VAV
AD-61   CDS50      E, 0.0     /BANDE MORTE CTL VAV
AD-62   Z50        E, 0.0     /RESULTAT CTL VAV
AD-63   FSP        E, 0.0     /PRESS STAT FILTREE
/
/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-64   RHSP       E, 38.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65   RHSPA      E, 80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66   CST70      E, 20      /INTERVAL CTL HUMIDITE
AD-67   CPB70      E, 90.0    /BANDE PROP CTL HUMIDITE
AD-68   CIG70      E, 33      /GAIN CTL HUMIDITE
AD-69   CDS70      E, 0.0     /BANDE MORTE CTL HUMIDITE
AD-70   CST70A     E, 5       /INTERVAL H LIM HUMIDITE
AD-71   CPB70A     E, 90.0    /BANDE PROP H LIM HUMIDITE
AD-72   CIG70A     E, 33      /GAIN H LIM HUMIDITE
AD-73   CDS70A     E, 0.0     /BANDE MORTE H LIM HUMIDITE
AD-74   Z70        E, 0.0     /RESULTAT CTL HUMIDITE
AD-75   Z70HL      E, 0.0     /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-76   Z70C       E, 0.0     /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/      VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT ADMINISTRATION      /
/-----/
/
AD-77   STAR1      E, 00:00   /HORAIRE
AD-78   STOR1      E, 00:00
AD-79   STA8R1     E, 03:00
AD-80   STO8R1     E, 18:00
AD-81   STA7R1     E, 03:00
AD-82   STO7R1     E, 18:00
AD-83   STA9R1     E, 03:00
AD-84   STO9R1     E, 18:00
/
/-----/
/      VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT LABORATOIRE      /
/-----/
/
AD-85   STAR2      E, 00:00   /HORAIRE
AD-86   STOR2      E, 00:00
AD-87   STA8R2     E, 04:00
AD-88   STO8R2     E, 18:00

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AD-89   STA7R2   E,04:00
AD-90   STO7R2   E,18:00
AD-91   STA9R2   E,04:00
AD-92   STO9R2   E,18:00
/
/-----/
/                                     /
/                                     /
/-----/
/
AD-93   UPTIM     E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-94   UPDAT     E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-95   DNTIM     E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-96   DNDAT     E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-97   TOD       E,00:00   /DERNIERE HEURE
AD-98   LDAT      E,00:00   /DERNIERE DATE
/
/-----/
/                                     /
/                                     /
/-----/
/
AD-99   SYSDIS    D,0
AD-100  CSTXXX    D,0
AD-101  CPBXXX    D,0.0
AD-102  CIGXXX    D,0
AD-103  CMPXXX    D,0.0
AD-104  CDSXXX    D,0.0
AD-105  STAXX     D,00:00
AD-106  STOXX     D,00:00
AD-107  STA7XX    D,07:00
AD-108  STO7XX    D,17:00
AD-109  STA8XX    D,07:00
AD-110  STO8XX    D,17:00
AD-111  STA9XX    D,07:00
AD-112  STO9XX    D,17:00
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      DISPLAY    DELSST,I   /DELAI APRES UNE PANNE
2      DISPLAY    OCCD,B     /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST     FSTRT,B    /DEMANDE VENTILATEUR
4      DISPLAY    FSTAT,B    /ETAT VENTIL. ALIM.
5      DISPLAY    FREEZE,B   /ETAT THERMOSTAT DE GEL  NORMAL -ON
/
6      DISPLAY    NCTL,B     /CONTROLE DE TEMP NUIT
7      DISPLAY    TLCON,B    /CONTROLE PAR TEMP.
8      ADJUST     NSBT,A     /PT DE CONSIGNE REDEMARRAGE
9      ADJUST     NSP,A      /POINT DE CONSIGNE RETOUR
10     DISPLAY    Z41,A      /RESULTAT CTL NUIT
/
11     DISPLAY    TE80,A     /TEMP RETOUR
12     DISPLAY    TE10,A     /TEMP MELANGE
13     DISPLAY    TE1,A      /TEMP EXTERIEURE
14     DISPLAY    TE60,A     /TEMP ALIMENTATION
15     DISPLAY    TE100,A    /TEMP PIECE
/

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16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV
/			
49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI
53	ADJUST	STA8,T	/HEURE DEPART DIMANCHE
54	ADJUST	STO8,T	/HEURE D ARRET DIMANCHE
55	ADJUST	STA9,T	/HEURE DEPART SEMAINE
56	ADJUST	STO9,T	/HEURE D ARRET SEMAINE
/			
57	ADJUST	H1,T	/VACANCE 1
58	ADJUST	H2,T	/VACANCE 2
59	ADJUST	H3,T	/VACANCE 3
60	ADJUST	H4,T	/VACANCE 4
/			
61	OVERRIDE	ZCP30,A,2	/SOUPAPES
62	OVERRIDE	ZCP10,A,2	/VOLETS
63	OVERRIDE	ZCP70,A,2	/HUMIDITE
64	OVERRIDE	ZCP50,A,2	/VAV
/			
65	DISPLAY	OCCDR1,B	/CYCLE DE JOUR THERMOSTAT ADMINIS JOUR-ON

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66      DISPLAY  OCCDR2,B      /CYCLE DE JOUR THERMOSTAT LABORAT NUIT-OFF
/
/-----/
/      FONCTIONS SPECIALES HORAIRE DES ZONES DE THERMOSTAT      /
/-----/
/
/ 900 RESEAU THERMOSTAT ADMINISTRATION
/ 1000 RESEAU THERMOSTAT LABORATOIRE
/
67      ADJUST   STAXX,T      /HEURE DE DEPART JOUR EN COURS
68      ADJUST   STOXX,T      /HEURE D ARRET JOUR EN COURS
69      ADJUST   STA7XX,T     /HEURE DEPART SAMEDI
70      ADJUST   STO7XX,T     /HEURE D ARRET SAMEDI
71      ADJUST   STA8XX,T     /HEURE DEPART DIMANCHE
72      ADJUST   STO8XX,T     /HEURE D ARRET DIMANCHE
73      ADJUST   STA9XX,T     /HEURE DEPART SEMAINE
74      ADJUST   STO9XX,T     /HEURE D ARRET SEMAINE
/
/-----/
/      FONCTIONS SPECIALES PARAMETRES DE CONTROLE      /
/-----/
/
/ 100 PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200 PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300 PARAMETRES CONTROLE VOLUME VARIABLE
/ 400 PARAMETRES CONTROLE CHAUFFAGE
/ 500 PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600 PARAMETRES CONTROLE VOILETS PAR MELANGE
/ 700 PARAMETRES CONTROLE VOILETS PAR ALIMENTATION
/ 800 PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I     /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A     /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I     /GAIN INTEGRAL
82      ADJUST   CMPXXX,A     /COMPENSATION
83      ADJUST   CDSXXX,A     /BANDE MORTE
/
/
/-----/
/      RECORD PANNE DE POUVOIR      /
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR

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```

97      DATE
98      DAY
99      TIME
/
/
/-----/
/
/      L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO
/      DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-1
/
/      51      ALARME HORAIRE SYSTEME V43-1
/
/      101     ALARME HORAIRE RESEAU THERMOSTAT ADMINISTRATION
/
/      102     ALARME HORAIRE RESEAU THERMOSTAT LABORATOIRE
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:

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```

/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/          RESET     TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET     OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET        OCCD,SUF,R
2.3      SET        TLCON,SDF,S
2.4      SET        BPD,SUF,R
2.5      EXIT       C,R
2.6      SET        FSTRT,S,S
2.7      EXIT       U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT      TLCON,S
3.2      SET        BPD,TLCON,S
3.3      EXIT       C,R
3.4      INTERVAL   300,U
3.5      COMPARE    TE100,LE,NSBT,2.0
3.6      SET        FSTRT,BPD,S
3.7      EXIT       U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET        AUTO,S,S
4.3      DELAY      25,U
4.4      SET        COMP50,R,R
4.5      INTERVAL   10,U
4.6      XOR        COMP50,FSTAT
4.7      ALARM      50,C,S
4.8      SET        BPD,FSTRT,R
4.9      BOUT       ZS50,3,OFF
4.10     SET        COMP50,BPD,R
4.11     EXIT       U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
5.1      RESTART
5.2      DELAY      25,U
5.3      INTERVAL   5,U
5.4      SET        BPD,FREEZE,R
5.5      ALARM      10,C,R
5.6      EXIT       U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.
/-----/
/

```

/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.

/

```

6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT       C,R
6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U

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/

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7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT       C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U

```

/

/

/-----/

/ CONTROLE DE LA PRESSION STATIQUE /

/-----/

/

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.

/

```

8.1      EVENT      CONON,S
8.2      SET        BPD,CONON,R
8.3      STORE      FSP,0,0,C,R
8.4      STORE      APD,0.0,0.0,C,R
8.5      STORE      Z50,APD,APD,C,R
8.6      AOUT       ZCP50,3,0.0,C,R
8.7      EXIT       C,R
8.8      DELAY      15,U
8.9      INTERVAL   CST50,U
8.10     FILTER     SPT,63,100
8.11     STORE      FSP,APD,APD,U
8.12     CALC       CPB50,0,10,1,1,T
8.13     PROP       SPSP,FSP,APD,CIG50,CMP50,CDS50
8.14     STORE      Z50,APD,APD,U
8.15     AOUT       ZCP50,3,0,U
8.16     EXIT       U

```

/

/

/-----/

/ CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE /


```

/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1      RESTART
9.2      SET      MXD,R,R
9.3      SET      NCTL,R,R
9.4      SET      CONON,R,R
9.5      DELAY    25,U
9.6      INTERVAL 5,U
9.7      AND      FSTAT,OCCD
9.8      SET      MXD,BPD,R
9.9      XOR      FSTAT,OCCD
9.10     AND      BPD,FSTAT
9.11     SET      NCTL,BPD,S
9.12     SET      CONON,FSTAT,R
9.13     EXIT     U
/
/
/-----/
/              ECONOMISEUR D AIR FRAIS                      /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
10.1     EVENT    MXD,S
10.2     SET      ECON,R,R
10.3     SET      BPD,FSTAT,R
10.4     EXIT     C,R
10.5     INTERVAL 300,U
10.6     COMPARE  TE1,GE,OASO,1.0
10.7     SET      ECON,BPD,R
10.8     EXIT     U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1     EVENT    MXD,S
11.2     INTERVAL 300,U
11.3     STORE    APD,TE80,RARL,U
11.4     SPAN     RARL,RARH,SAHL,SALL
11.5     STORE    DSSP,APD,SAHL,U
11.6     EXIT     U
/
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE                /
/-----/
/

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```

/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS
/
/
12.1 EVENT MXD,S
12.2 SET MIXLL,R,R
12.3 SET BPD,MXD,R
12.4 EXIT C,R
12.5 INTERVAL 5,U
12.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7 SET MIXLL,BPD,R /A LA BASSE LIMITE
12.8 SELECT Z10M,Z10C,L
12.9 STORE Z10,APD,APD,U
12.10 AOUT ZCP10,3,0.0,U
12.11 EXIT U
/
13.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2 SET BPD,MIXLL,R
13.3 STORE Z10M,100.0,100.0,C,R
13.4 STORE CMP10A,Z10C,Z10C,U
13.5 EXIT C,R
13.6 INTERVAL CST10A,U
13.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8 STORE Z10M,APD,APD,U
13.9 EXIT U
/
14.1 EVENT MXD,R /POSITION D ARRET SOUPAPES
14.2 SET BPD,MXD,R
14.3 EXIT C,S
14.4 SET HTG,R,R
14.5 SET CLG,R,R
14.6 DELAY 7,C,R
14.7 STORE APD,0.0,0.0,C,R
14.8 AOUT ZCP30,3,0.0,C,R
14.9 EXIT U
/
15.1 EVENT MXD,S
15.2 SET BPD,MXD,R
15.3 STORE APD,0.0,0.0,C,R
15.4 STORE Z10,APD,APD,C,R
15.5 STORE Z10C,APD,APD,C,R
15.6 STORE Z10M,100.0,100.0,C,R
15.7 STORE ZMXD,APD,APD,C,R
15.8 AOUT ZCP10,3,0.0,C,R
15.9 EXIT C,R
15.10 DELAY 7,U
15.11 STORE APD,TE1,5.0,U

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15.12  SPAN      5.0,20.0,0.0,75.0
15.13  STORE    CMP10,APD,APD,U
15.14  STORE    APD,50.0,50.0,U
15.15  AOUT     ZCP30,3,0.0,U
15.16  INTERVAL CST10,U
15.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18  STORE    ZMXD,APD,APD,U
15.19  SPAN     MDP,100.0,MDP,100.0
15.20  SET      BPD,ECON,S
15.21  STORE    APD,MDP,MDP,C,S
15.22  STORE    Z10C,APD,APD,U
15.23  ORR      ZMXD,GE,85.0,10.0
15.24  SET      CLG,BPD,R
15.25  COMPARE  ZMXD,LE,15.0,10.0
15.26  SET      HTG,BPD,R
15.27  EXIT     U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
16.1   EVENT    HTG,S
16.2   SET      BPD,HTG,S
16.3   STORE    Z40,0.0,0.0,C,R
16.4   STORE    APD,50.0,50.0,C,R
16.5   AOUT     ZCP30,3,0.0,C,R
16.6   EXIT     C,R
16.7   INTERVAL CST40,U
16.8   CALC     DSSP,0.3,1,-1,1,T
16.9   PROP     APD,TE60,CPB40,CIG40,0.0,CDS40
16.10  STORE    Z40,APD,APD,U
16.11  SPAN     0.0,100.0,50.0,0.0
16.12  AOUT     ZCP30,3,100.0,U
16.13  EXIT     U
/
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/
17.1   EVENT    CLG,S
17.2   SET      BPD,CLG,R
17.3   STORE    Z30,0.0,0.0,C,R
17.4   STORE    APD,50.0,50.0,C,R
17.5   AOUT     ZCP30,3,0.0,C,R
17.6   EXIT     C,R

```

```

17.7    INTERVAL CST30,U
17.8    CALC      DSSP,0.3,1,1,1,T
17.9    PROP      APD,TE60,CPB30,CIG30,0.0,CDS30
17.10   STORE     Z30,APD,APD,U
17.11   SPAN      0.0,100.0,50.0,100.0
17.12   AOUT      ZCP30,3,0.0,U
17.13   EXIT      U
/
/
/-----/
/          CONTROLE DE NUIT                      /
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOILETS RESTENT EN RECIRCULATION.
/
18.1    EVENT     NCTL,S
18.2    SET       BPD,NCTL,S
18.3    STORE     Z41,0.0,0.0,C,R
18.4    STORE     APD,0.0,0.0,C,R
18.5    AOUT      ZCP30,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST41,U
18.8    PROP      NSP,TE80,CPB41,CIG41,0.0,CDS41
18.9    STORE     Z41,APD,APD,U
18.10   SPAN      0.0,100.0,50.0,0.0
18.11   AOUT      ZCP30,3,100.0,U
18.12   EXIT      U
/
/
/-----/
/          PROGRAMME HORAIRE ET CONTROLE RESEAU THERMOSTAT ADMINISTRATION /
/-----/
/
/DETERMINE HEURE DEBUT ET FIN CYCLE JOUR
/SELON JOUR DE LA SEMAINE OU VACANCE
/
19.1    PROG      DOW,0,00:01,23:59
19.2    SET       BPD,SDF,R
19.3    EXIT      C,S
19.4    HOLIDAY   H1,H2,H3,H4,H5,H6
19.5    STORE     DOW,APD,2,U
19.6    COMPARE   DOW,EQ,7,0
19.7    STORE     STAR1,STA7R1,STA9R1,C,S
19.8    STORE     STOR1,STO7R1,STO9R1,C,S
19.9    COMPARE   DOW,EQ,1,0
19.10   ORR       DOW,EQ,8,0
19.11   STORE     STAR1,STA8R1,STA9R1,C,S
19.12   STORE     STOR1,STO8R1,STO9R1,C,S
19.13   COMPARE   DOW,GE,2,0
19.14   ANDR      DOW,LE,6,0
19.15   STORE     STAR1,STA9R1,STA9R1,C,S
19.16   STORE     STOR1,STO9R1,STO9R1,C,S
19.17   SET       BPD,PAF,R
19.18   ALARM     101,C,S
19.19   EXIT      U

```

```

/
20.1    PROG      DOW,0,STAR1,STOR1
20.2    SET       OCCDR1,SUF,R
20.3    EXIT      U
/
21.1    RESTART
21.2    DELAY     25,U
21.3    INTERVAL  10,U
21.4    SET       BPD,OCCDR1,R
21.5    NEGATE    BPD
21.6    BOUT      ZSJN1,3,OFF
21.7    EXIT      U
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE RESEAU THERMOSTAT LABORATOIRE      /
/-----/
/
/DETERMINE HEURE DEBUT ET FIN CYCLE JOUR
/SELON JOUR DE LA SEMAINE OU VACANCE
/
22.1    PROG      DOW,0,00:01,23:59
22.2    SET       BPD,SDF,R
22.3    EXIT      C,S
22.4    HOLIDAY   H1,H2,H3,H4,H5,H6
22.5    STORE     DOW,APD,2,U
22.6    COMPARE   DOW,EQ,7,0
22.7    STORE     STAR2,STA7R2,STA9R2,C,S
22.8    STORE     STOR2,STO7R2,STO9R2,C,S
22.9    COMPARE   DOW,EQ,1,0
22.10   ORR       DOW,EQ,8,0
22.11   STORE     STAR2,STA8R2,STA9R2,C,S
22.12   STORE     STOR2,STO8R2,STO9R2,C,S
22.13   COMPARE   DOW,GE,2,0
22.14   ANDR      DOW,LE,6,0
22.15   STORE     STAR2,STA9R2,STA9R2,C,S
22.16   STORE     STOR2,STO9R2,STO9R2,C,S
22.17   SET       BPD,PAF,R
22.18   ALARM     102,C,S
22.19   EXIT      U
/
23.1    PROG      DOW,0,STAR2,STOR2
23.2    SET       OCCDR2,SUF,R
23.3    EXIT      U
/
24.1    RESTART
24.2    DELAY     25,U
24.3    INTERVAL  10,U
24.4    SET       BPD,OCCDR2,R
24.5    NEGATE    BPD
24.6    BOUT      ZSJN2,3,OFF
24.7    EXIT      U
/
/-----/
/      RECORD PANNE DE POUVOIR      /
/-----/
/
25.1    RESTART

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25.2    TIMDATA    DT
25.3    STORE      UPTIM,APD,APD,U      /SAUVE L HEURE ACTUEL ET
25.4    TIMDATA    MD                  /LA DATE DE LA RESTAURATION
25.5    STORE      UPDAT,APD,APD,U      /DU POUVOIR.
25.6    EXIT       U
/
26.1    RESTART
26.2    STORE      DNTIM,TOD,TOD,U      /RECORD DE LA DERNIERE HEURE
26.3    STORE      DNDAT,LDAT,LDAT,U    /ET DATE AVANT LA PANNE.
26.4    INTERVAL   60,U
26.5    TIMDATA    DT
26.6    STORE      TOD,APD,APD,U        /SAUVE L HEURE ET LA DATE
26.7    TIMDATA    MD                  /ACTUEL A TOUTES LES MINUTES.
26.8    STORE      LDAT,APD,APD,U
26.9    EXIT       U
/
/
/-----/
/                FONCTIONS SPECIALES                /
/-----/
/
27.1    EVERY
27.2    SET         SYSP,R,R            /SELECTION DU STSTEME POUR LE
27.3    COMPARE     SYSDIS,EQ,100,0      /
27.4    SET         SYS1,BPD,R
27.5    OR          SYSP,BPD
27.6    SET         SYSP,BPD,S
27.7    COMPARE     SYSDIS,EQ,200,0
27.8    SET         SYS2,BPD,R
27.9    OR          SYSP,BPD
27.10   SET         SYSP,BPD,S
27.11   COMPARE     SYSDIS,EQ,300,0
27.12   SET         SYS3,BPD,R
27.13   OR          SYSP,BPD
27.14   SET         SYSP,BPD,S
27.15   COMPARE     SYSDIS,EQ,400,0
27.16   SET         SYS4,BPD,R
27.17   OR          SYSP,BPD
27.18   SET         SYSP,BPD,S
27.19   COMPARE     SYSDIS,EQ,500,0
27.20   SET         SYS5,BPD,R
27.21   OR          SYSP,BPD
27.22   SET         SYSP,BPD,S
27.23   COMPARE     SYSDIS,EQ,600,0
27.24   SET         SYS6,BPD,R
27.25   OR          SYSP,BPD
27.26   SET         SYSP,BPD,S
27.27   COMPARE     SYSDIS,EQ,700,0
27.28   SET         SYS7,BPD,R
27.29   OR          SYSP,BPD
27.30   SET         SYSP,BPD,S
27.31   COMPARE     SYSDIS,EQ,800,0
27.32   SET         SYS8,BPD,R
27.33   OR          SYSP,BPD
27.34   SET         SYSP,BPD,S
27.35   COMPARE     SYSDIS,EQ,900,0
27.36   SET         SYS9,BPD,R

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27.37 OR      SYSP,BPD
27.38 SET     SYSP,BPD,S
27.39 COMPARE SYSDIS,EQ,1000,0
27.40 SET     SYS10,BPD,R
27.41 OR      SYSP,BPD
27.42 SET     SYSP,BPD,S
27.43 SET     SYS,SYSP,S
27.44 EXIT    U
/
/
28.1  EVENT   SYS,S                      /RESET LES FONCTIONS POUR
28.2  SET     BPD,SUF,R                  /LE CDB SPECIAL
28.3  STORE   SYSDIS,0,0,C,R            /SUR UNE PERIODE DE DISCLR
28.4  EXIT    C,R
28.5  DELAY   3600,U
28.6  STORE   SYSDIS,0,0,U
28.7  EXIT    U
/
/
29.1  EVENT   SYS1,S                      /SYS 100
29.2  SET     BPD,SUF,R
29.3  EXIT    C,R
29.4  INTERVAL 5,U
29.5  STORE   CSTXXX,CST70,CST70,U      /PERMET DE VOIR LES
29.6  STORE   CPBXXX,CPB70,CPB70,U      /VALEURS DU SYSTEME
29.7  STORE   CIGXXX,CIG70,CIG70,U
29.8  STORE   CMPXXX,0.0,0.0,U
29.9  STORE   CDSXXX,CDS70,CDS70,U
29.10 EXIT    U
/
/
30.1  EVENT   SYS1,S
30.2  SET     BPD,SUF,R
30.3  EXIT    C,R
30.4  DELAY   10,U
30.5  INTERVAL 1,U
30.6  STORE   CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
30.7  STORE   CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
30.8  STORE   CIG70,CIGXXX,CIG70,U
30.9  STORE   CDS70,CDSXXX,CDS70,U
30.10 EXIT    U
/
/
31.1  EVENT   SYS2,S                      /SYS 200
31.2  SET     BPD,SUF,R
31.3  EXIT    C,R
31.4  INTERVAL 5,U
31.5  STORE   CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
31.6  STORE   CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
31.7  STORE   CIGXXX,CIG70A,CIG70A,U
31.8  STORE   CMPXXX,0.0,0.0,U
31.9  STORE   CDSXXX,CDS70A,CDS70A,U
31.10 EXIT    U
/
/
32.1  EVENT   SYS2,S
32.2  SET     BPD,SUF,R

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32.3    EXIT      C,R
32.4    DELAY     10,U
32.5    INTERVAL  1,U
32.6    STORE     CST70A,CSTXXX,CST70A,U      /PERMET D AJUSTER LES
32.7    STORE     CPB70A,CPBXXX,CPB70A,U      /VALEURS DU SYSTEME
32.8    STORE     CIG70A,CIGXXX,CIG70A,U
32.9    STORE     CDS70A,CDSXXX,CDS70A,U
32.10   EXIT      U
/
/
33.1    EVENT     SYS3,S                      /SYS 300
33.2    SET       BPD,SUF,R
33.3    EXIT      C,R
33.4    INTERVAL  5,U
33.5    STORE     CSTXXX,CST50,CST50,U        /PERMET DE VOIR LES
33.6    STORE     CPBXXX,CPB50,CPB50,U        /VALEURS DU SYSTEME
33.7    STORE     CIGXXX,CIG50,CIG50,U
33.8    STORE     CMPXXX,CMP50,CMP50,U
33.9    STORE     CDSXXX,CDS50,CDS50,U
33.10   EXIT      U
/
/
34.1    EVENT     SYS3,S
34.2    SET       BPD,SUF,R
34.3    EXIT      C,R
34.4    DELAY     10,U
34.5    INTERVAL  1,U
34.6    STORE     CST50,CSTXXX,CST50,U        /PERMET D AJUSTER LES
34.7    STORE     CPB50,CPBXXX,CPB50,U        /VALEURS DU SYSTEME
34.8    STORE     CIG50,CIGXXX,CIG50,U
34.9    STORE     CMP50,CMPXXX,CMP50,U
34.10   STORE     CDS50,CDSXXX,CDS50,U
34.11   EXIT      U
/
/
35.1    EVENT     SYS4,S                      /SYS 400
35.2    SET       BPD,SUF,R
35.3    EXIT      C,R
35.4    INTERVAL  5,U
35.5    STORE     CSTXXX,CST40,CST40,U        /PERMET DE VOIR LES
35.6    STORE     CPBXXX,CPB40,CPB40,U        /VALEURS DU SYSTEME
35.7    STORE     CIGXXX,CIG40,CIG40,U
35.8    STORE     CMPXXX,0.0,0.0,U
35.9    STORE     CDSXXX,CDS40,CDS40,U
35.10   EXIT      U
/
/
36.1    EVENT     SYS4,S
36.2    SET       BPD,SUF,R
36.3    EXIT      C,R
36.4    DELAY     10,U
36.5    INTERVAL  1,U
36.6    STORE     CST40,CSTXXX,CST40,U        /PERMET D AJUSTER LES
36.7    STORE     CPB40,CPBXXX,CPB40,U        /VALEURS DU SYSTEME
36.8    STORE     CIG40,CIGXXX,CIG40,U
36.9    STORE     CDS40,CDSXXX,CDS40,U
36.10   EXIT      U

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/
/
37.1    EVENT      SYS5,S                               /SYS 500
37.2    SET        BPD,SUF,R
37.3    EXIT       C,R
37.4    INTERVAL   5,U
37.5    STORE      CSTXXX,CST41,CST41,U               /PERMET DE VOIR LES
37.6    STORE      CPBXXX,CPB41,CPB41,U               /VALEURS DU SYSTEME
37.7    STORE      CIGXXX,CIG41,CIG41,U
37.8    STORE      CMPXXX,0.0,0.0,U
37.9    STORE      CDSXXX,CDS41,CDS41,U
37.10   EXIT       U
/
/
38.1    EVENT      SYS5,S
38.2    SET        BPD,SUF,R
38.3    EXIT       C,R
38.4    DELAY      10,U
38.5    INTERVAL   1,U
38.6    STORE      CST41,CSTXXX,CST41,U               /PERMET D AJUSTER LES
38.7    STORE      CPB41,CPBXXX,CPB41,U               /VALEURS DU SYSTEME
38.8    STORE      CIG41,CIGXXX,CIG41,U
38.9    STORE      CDS41,CDSXXX,CDS41,U
38.10   EXIT       U
/
/
39.1    EVENT      SYS6,S                               /SYS 600
39.2    SET        BPD,SUF,R
39.3    EXIT       C,R
39.4    INTERVAL   5,U
39.5    STORE      CSTXXX,CST10A,CST10A,U             /PERMET DE VOIR LES
39.6    STORE      CPBXXX,CPB10A,CPB10A,U             /VALEURS DU SYSTEME
39.7    STORE      CIGXXX,CIG10A,CIG10A,U
39.8    STORE      CMPXXX,0.0,0.0,U
39.9    STORE      CDSXXX,CDS10A,CDS10A,U
39.10   EXIT       U
/
/
40.1    EVENT      SYS6,S
40.2    SET        BPD,SUF,R
40.3    EXIT       C,R
40.4    DELAY      10,U
40.5    INTERVAL   1,U
40.6    STORE      CST10A,CSTXXX,CST10A,U             /PERMET D AJUSTER LES
40.7    STORE      CPB10A,CPBXXX,CPB10A,U             /VALEURS DU SYSTEME
40.8    STORE      CIG10A,CIGXXX,CIG10A,U
40.9    STORE      CDS10A,CDSXXX,CDS10A,U
40.10   EXIT       U
/
/
41.1    EVENT      SYS7,S                               /SYS 700
41.2    SET        BPD,SUF,R
41.3    EXIT       C,R
41.4    INTERVAL   5,U
41.5    STORE      CSTXXX,CST10,CST10,U               /PERMET DE VOIR LES
41.6    STORE      CPBXXX,CPB10,CPB10,U               /VALEURS DU SYSTEME
41.7    STORE      CIGXXX,CIG10,CIG10,U

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41.8    STORE    CMPXXX,CMP10,CMP10,U
41.9    STORE    CDSXXX,CDS10,CDS10,U
41.10   EXIT     U
/
/
42.1    EVENT    SYS7,S
42.2    SET      BPD,SUF,R
42.3    EXIT     C,R
42.4    DELAY    10,U
42.5    INTERVAL 1,U
42.6    STORE    CST10,CSTXXX,CST10,U
42.7    STORE    CPB10,CPBXXX,CPB10,U
42.8    STORE    CIG10,CIGXXX,CIG10,U
42.9    STORE    CMP10,CMPXXX,CMP10,U
42.10   STORE    CDS10,CDSXXX,CDS10,U
42.11   EXIT     U
/
/
43.1    EVENT    SYS8,S
43.2    SET      BPD,SUF,R
43.3    EXIT     C,R
43.4    INTERVAL 5,U
43.5    STORE    CSTXXX,CST30,CST30,U
43.6    STORE    CPBXXX,CPB30,CPB30,U
43.7    STORE    CIGXXX,CIG30,CIG30,U
43.8    STORE    CMPXXX,0.0,0.0,U
43.9    STORE    CDSXXX,CDS30,CDS30,U
43.10   EXIT     U
/
/
44.1    EVENT    SYS8,S
44.2    SET      BPD,SUF,R
44.3    EXIT     C,R
44.4    DELAY    10,U
44.5    INTERVAL 1,U
44.6    STORE    CST30,CSTXXX,CST30,U
44.7    STORE    CPB30,CPBXXX,CPB30,U
44.8    STORE    CIG30,CIGXXX,CIG30,U
44.9    STORE    CDS30,CDSXXX,CDS30,U
44.10   EXIT     U
/
/
45.1    EVENT    SYS9,S
45.2    SET      BPD,SUF,R
45.3    EXIT     C,R
45.4    INTERVAL 5,U
45.5    STORE    STAXX,STAR1,STAR1,U
45.6    STORE    STOXX,STOR1,STOR1,U
45.7    STORE    STA7XX,STA7R1,STA7R1,U
45.8    STORE    STO7XX,STO7R1,STO7R1,U
45.9    STORE    STA8XX,STA8R1,STA8R1,U
45.10   STORE    STO8XX,STO8R1,STO8R1,U
45.11   STORE    STA9XX,STA9R1,STA9R1,U
45.12   STORE    STO9XX,STO9R1,STO9R1,U
45.13   EXIT     U
/
/

```

/PERMET D AJUSTER LES
/VALEURS DU SYSTEME

/SYS 800

/PERMET DE VOIR LES
/VALEURS DU SYSTEME

/PERMET D AJUSTER LES
/VALEURS DU SYSTEME

/SYS 900

/PERMET DE VOIR LES
/VALEURS DU SYSTEME
/VALEURS DU SYSTEME
/VALEURS DU SYSTEME
/VALEURS DU SYSTEME

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46.1    EVENT    SYS9,S
46.2    SET      BPD,SUF,R
46.3    EXIT     C,R
46.4    DELAY    10,U
46.5    INTERVAL 1,U
46.6    STORE    STAR1,STAXX,STAR1,U           /PERMET D AJUSTER LES
46.7    STORE    STOR1,STOXX,STOR1,U           /VALEURS DU SYSTEME
46.8    STORE    STA7R1,STA7XX,STA7R1,U
46.9    STORE    STO7R1,STO7XX,STO7R1,U
46.10   STORE    STA8R1,STA8XX,STA8R1,U
46.11   STORE    STO8R1,STO8XX,STO8R1,U
46.12   STORE    STA9R1,STA9XX,STA9R1,U
46.13   STORE    STO9R1,STO9XX,STO9R1,U
46.14   EXIT     U
/
/
47.1    EVENT    SYS10,S                       /SYS 1000
47.2    SET      BPD,SUF,R
47.3    EXIT     C,R
47.4    INTERVAL 5,U
47.5    STORE    STAXX,STAR2,STAR2,U           /PERMET DE VOIR LES
47.6    STORE    STOXX,STOR2,STOR2,U           /VALEURS DU SYSTEME
47.7    STORE    STA7XX,STA7R2,STA7R2,U         /VALEURS DU SYSTEME
47.8    STORE    STO7XX,STO7R2,STO7R2,U         /VALEURS DU SYSTEME
47.9    STORE    STA8XX,STA8R2,STA8R2,U         /VALEURS DU SYSTEME
47.10   STORE    STO8XX,STO8R2,STO8R2,U
47.11   STORE    STA9XX,STA9R2,STA9R2,U
47.12   STORE    STO9XX,STO9R2,STO9R2,U
47.13   EXIT     U
/
/
48.1    EVENT    SYS10,S
48.2    SET      BPD,SUF,R
48.3    EXIT     C,R
48.4    DELAY    10,U
48.5    INTERVAL 1,U
48.6    STORE    STAR2,STAXX,STAR2,U           /PERMET D AJUSTER LES
48.7    STORE    STOR2,STOXX,STOR2,U           /VALEURS DU SYSTEME
48.8    STORE    STA7R2,STA7XX,STA7R2,U
48.9    STORE    STO7R2,STO7XX,STO7R2,U
48.10   STORE    STA8R2,STA8XX,STA8R2,U
48.11   STORE    STO8R2,STO8XX,STO8R2,U
48.12   STORE    STA9R2,STA9XX,STA9R2,U
48.13   STORE    STO9R2,STO9XX,STO9R2,U
48.14   EXIT     U
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    964
/   CDB:       378
/   PROCESSES: 4228
/   OVERHEAD:  2700
/   TOTAL:     8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    964

```

```
/      CDB:      378
/    PROCESSES:  4228
/    OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4228
/    OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4228
/    OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4228
/    OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4234
/    OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4234
/    OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4234
/    OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/    PROCESSES:  4234
/    OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
```

```
/      CDB:      378
/  PROCESSES:  4234
/    OVERHEAD:  2700
/      TOTAL:  8276  16K DSC MEMORY NEEDED
```

SYSTÈME V43-1

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE RETOUR.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

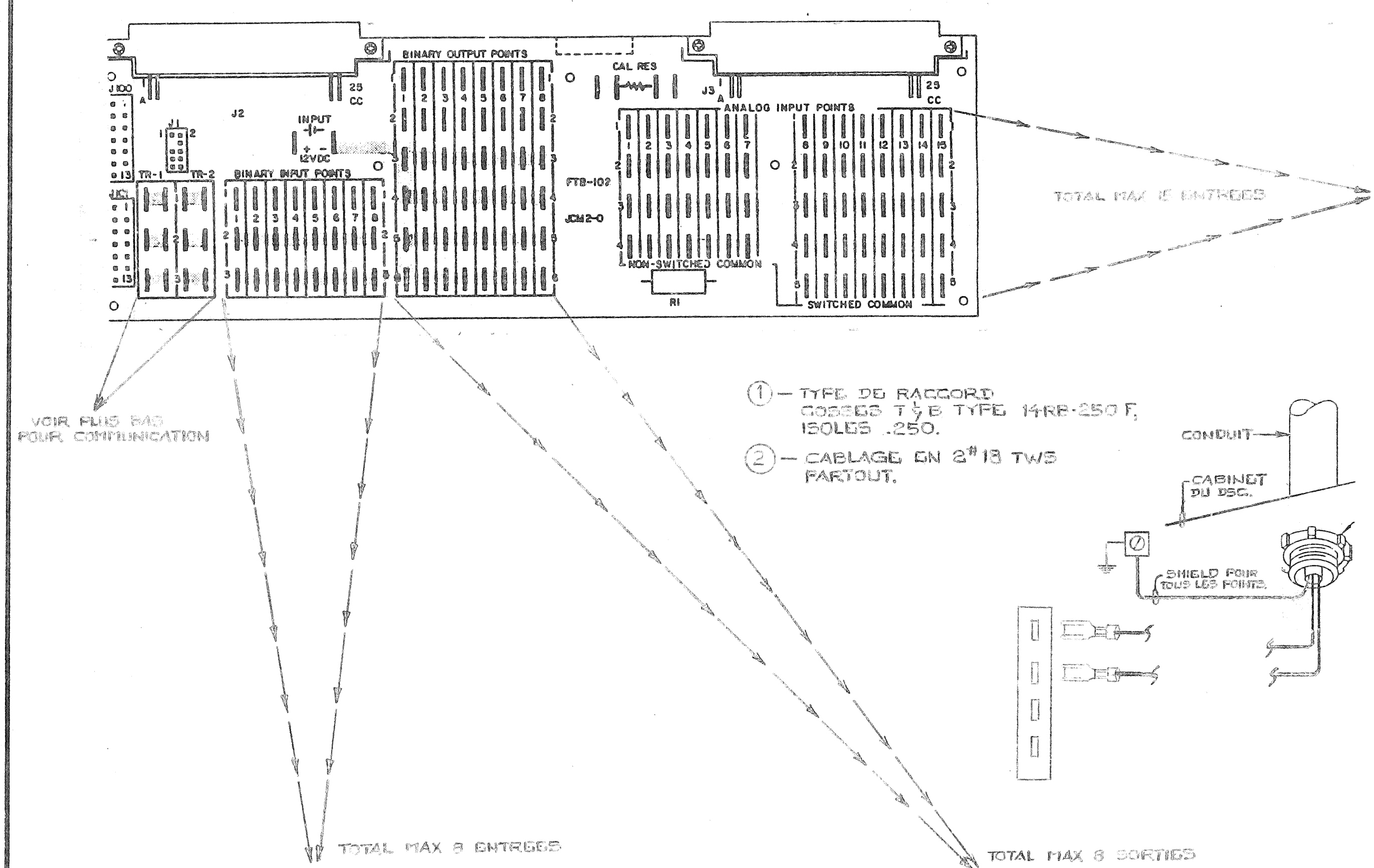
LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.






SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

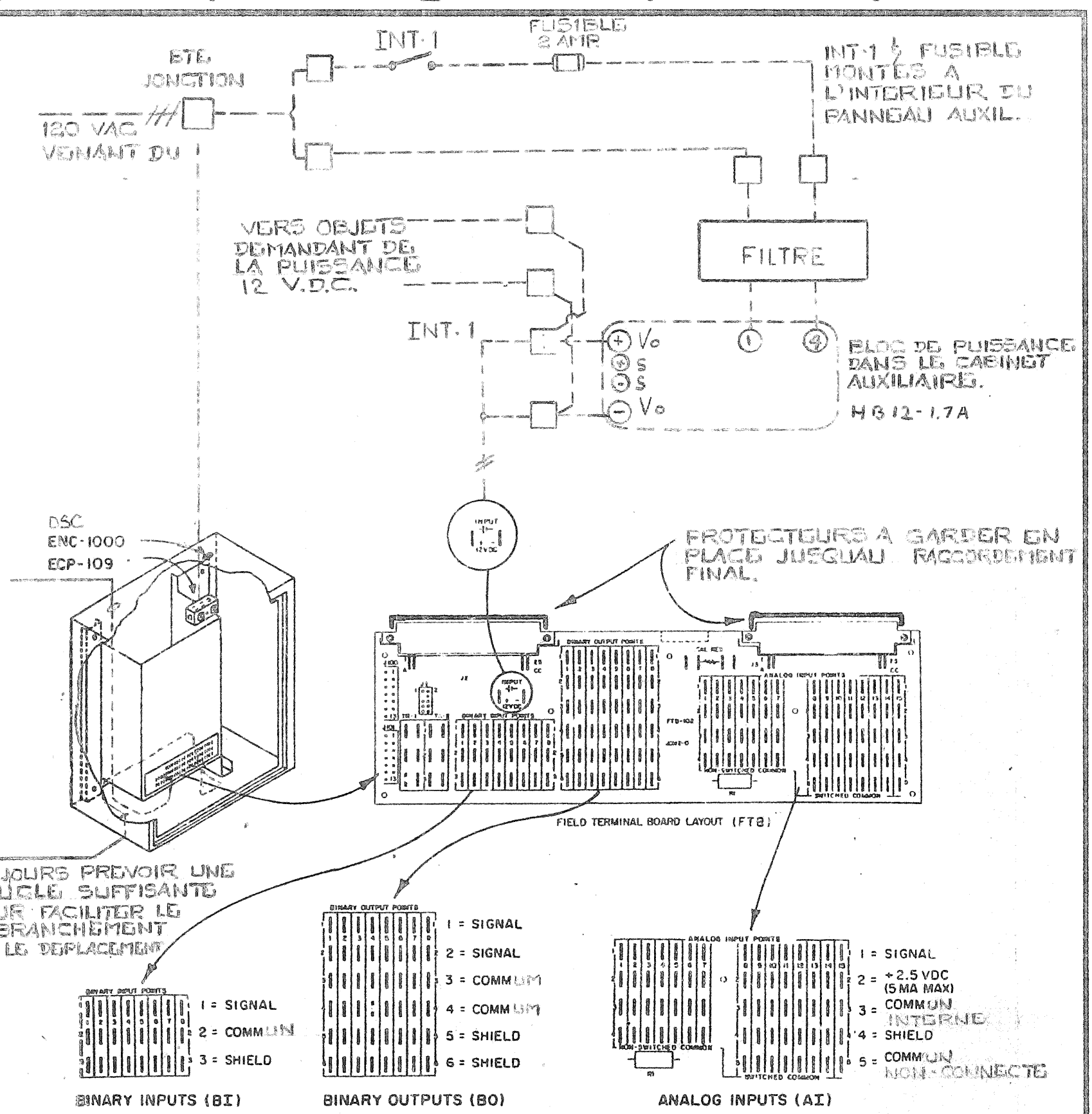
SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

BORNIERS DE RACCORDAMENTO (FTB-102)





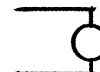
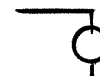
EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 1		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI- CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20 MA 16-90% RH
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20 MA 16-90% RH
11	PT-1	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL. V43.1 BOITE LA PLUS LOIN	A11.1		0-5 BAR 0-2.5 MPa
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		

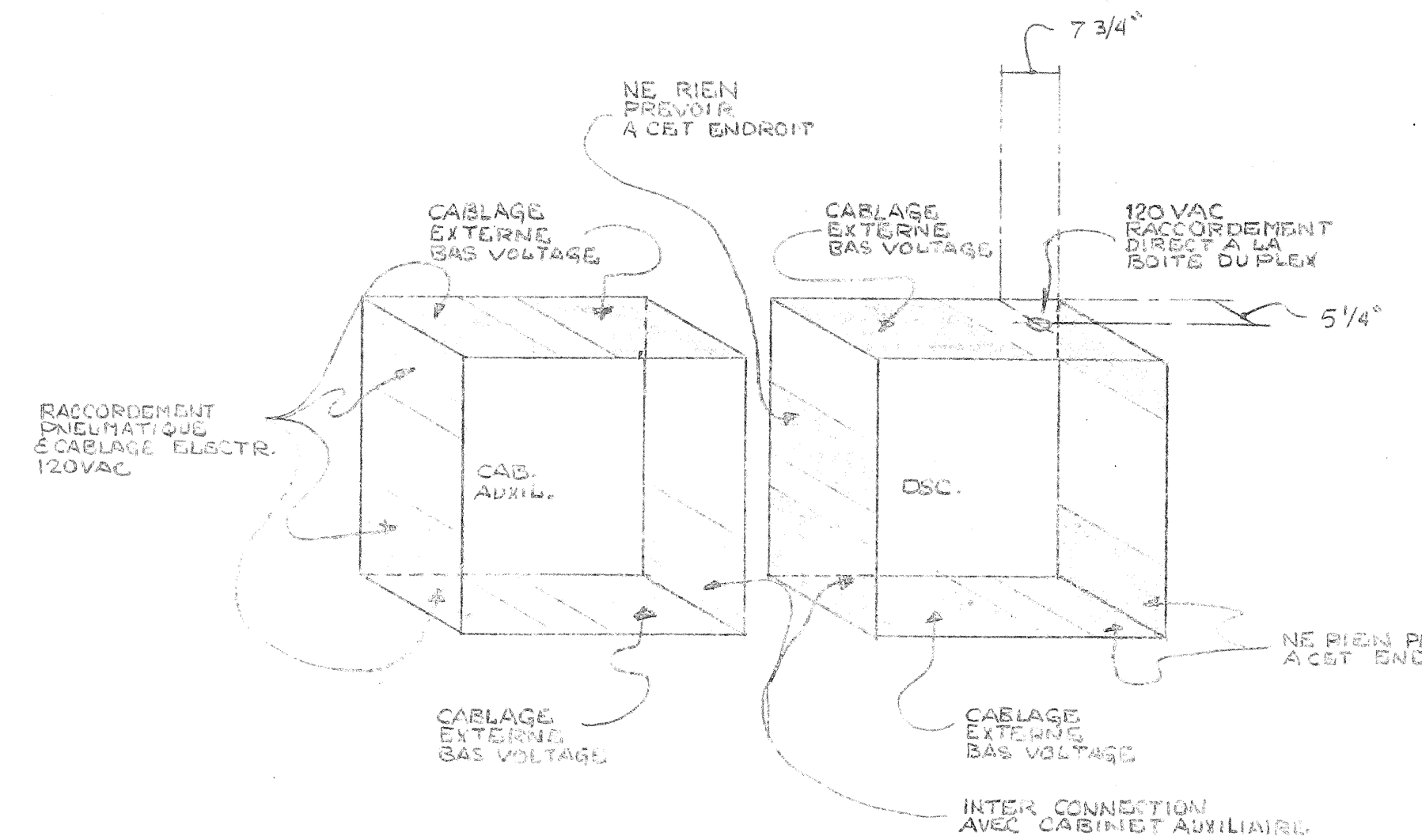


INT-1: INTERRUPTEUR "TOGGLE" EAGLE SP.ST. MOD 447, MONTÉ
AVEC R4000-101 J.C.L.

☐ — TERMINAUX DANS LE CABINET AUXILIAIRE

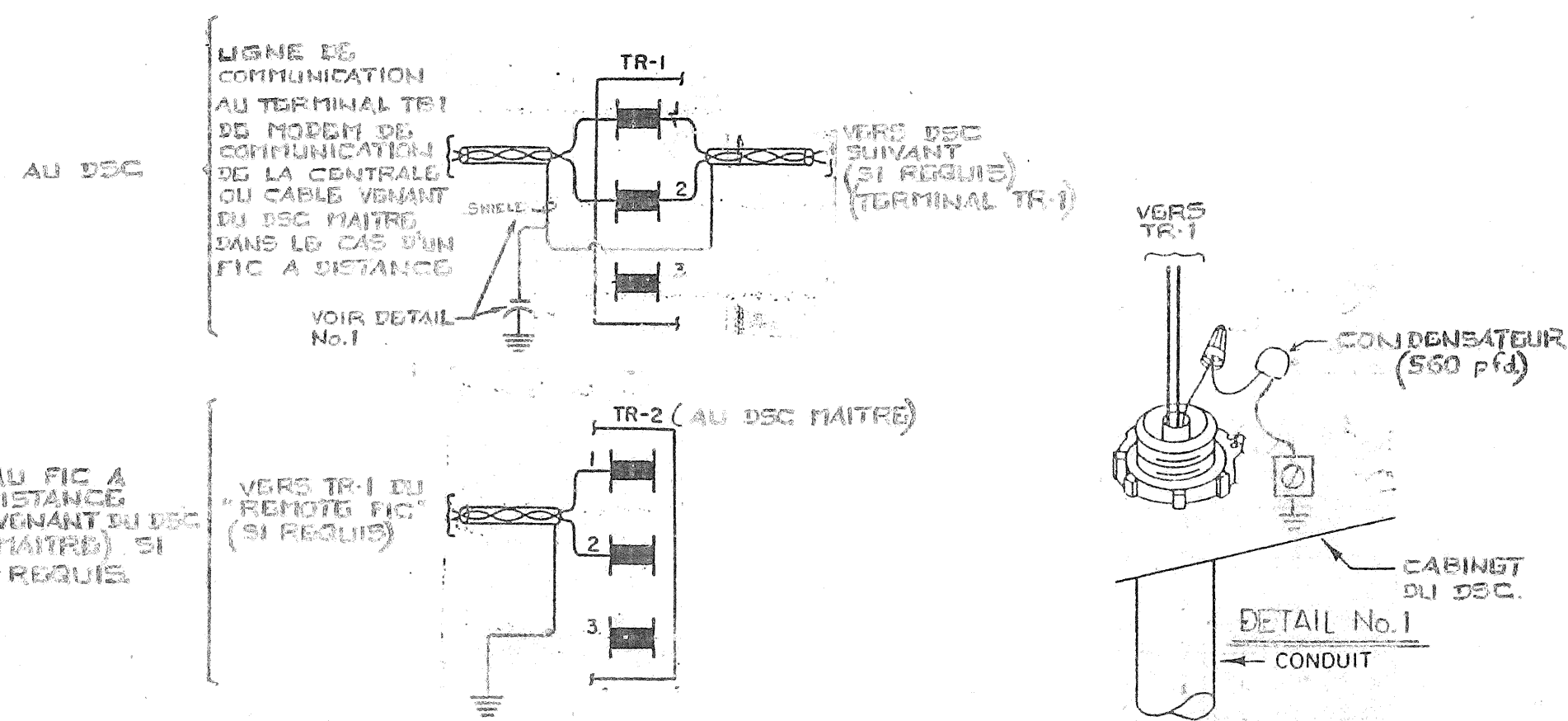
EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 1		
EMPLACEMENT:								FIC 1		
DU DSC										
TA	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME No 1	BIN	1 2		CONTACT AUX. DEM	MCC-1	B1.1		
2	GEL	SYSTEME No 1	BIN	1 2		RELAIS RG	CAB. AUX.	B2.1		

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DESC 1		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P4.1		
5A	RI	ARRET DEPART SYSTEME 1	SST	1 3	2 7	RELAIS 12VDC	MCC -1	S5A.1		
6A	EP-1	RESEAU JOUR/NUIT ADMINISTRATION	SST	1 3		V-9011-1	COMP. D'AIR	S6A.1		
6B	EP-2	RESEAU JOUR/NUIT LABO	SST	2 4		V-9011-1	COMP. D'AIR	S6B.1		



① — VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

②—VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES ET
ELECTRIQUES LOCAUX.

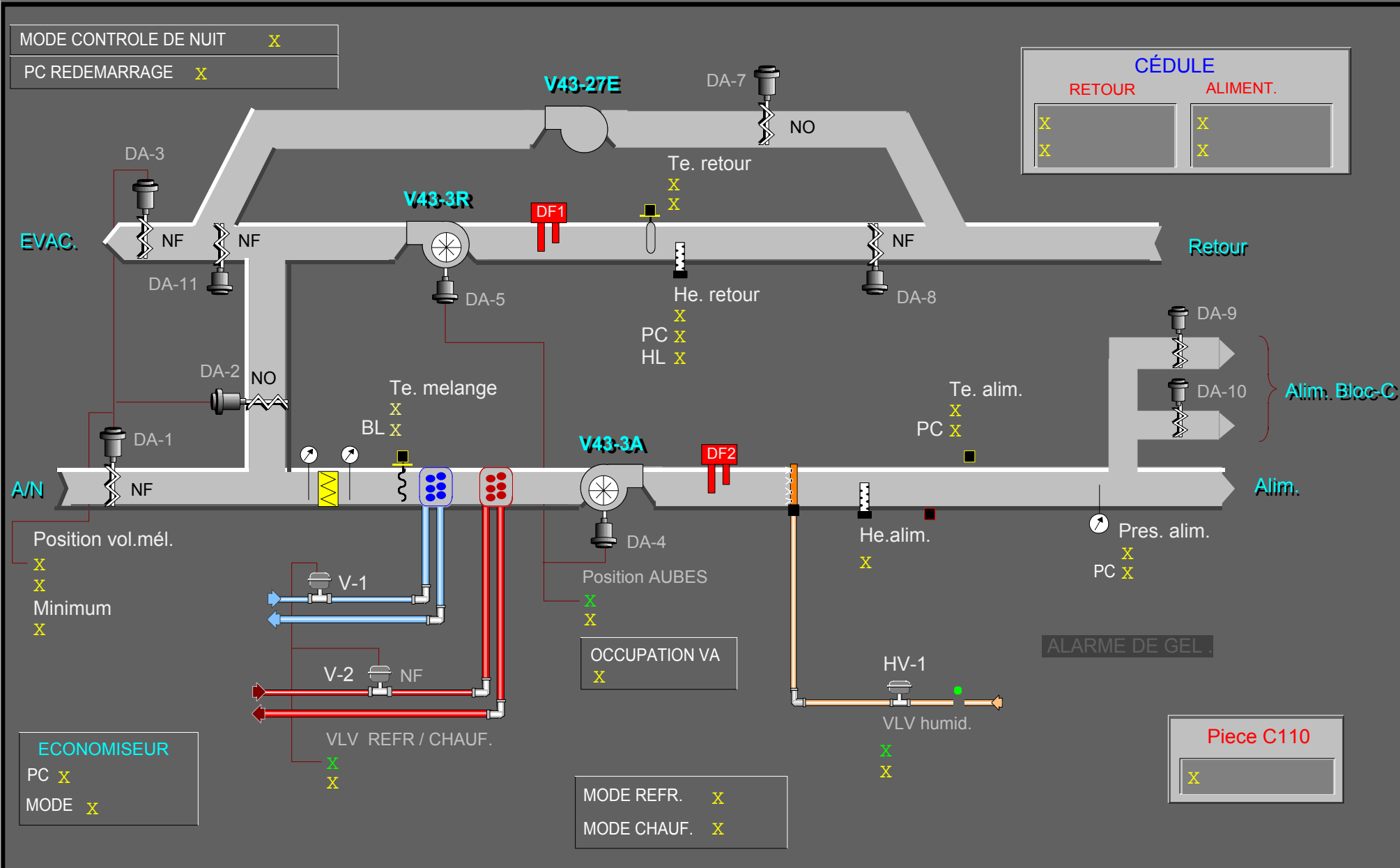


TITRE	IMPLANTATION DSC-6500		2		TEL QUE CONSTRUIT	86-07-07	86
DSC-1			2			SEP 12-85	85
RÉFÉRENCE		NO.		REVISION		AVIS	DATE
REPRÉSENTANT		TECHNICIEN		DESSINÉ		APPROUVÉ	
J. C. R.		R. F.		PAR DATE		PAR DATE 85-6-13	
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE		JOHNSON CONTROLS		Société de Contrôle Johnson Ltee		CONTRAT
ST-HYACINTHE, QUE.		Division Des Systèmes Et Services		441 boulevard Labauz		4096-0008-262	
				Montreal, QC HAN 1S2		DESSIN NO.:	
				Tel 5163-62680		4068-2	

SYTÈME V43-1

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	Al1A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V5462-5	1	VALVE N.F. ϕ 2" C/A P.P.
V-2	V3754-1025	1	VALVE NO. ϕ 1 1/2" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1 ET RG	6012	2	RELAIS 12 VDC
XMR-1	BD 2 FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



PARAMETRES

Contrôle de nuit

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle Chauffage

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle refroidissement

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle volets melange

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle Humidité

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle HL Humidité

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle B Limite mel.

Etat CTRL BL	<input checked="" type="checkbox"/>
Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle Pression statique

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

HORAIRE

Depart jour cour.

☒

Arret jour cour.

☒

Depart semaine

☒

Arret semaine

☒

Depart samedi

☒

Arret samedi

☒

Depart dimanche

☒

Arret dimanche

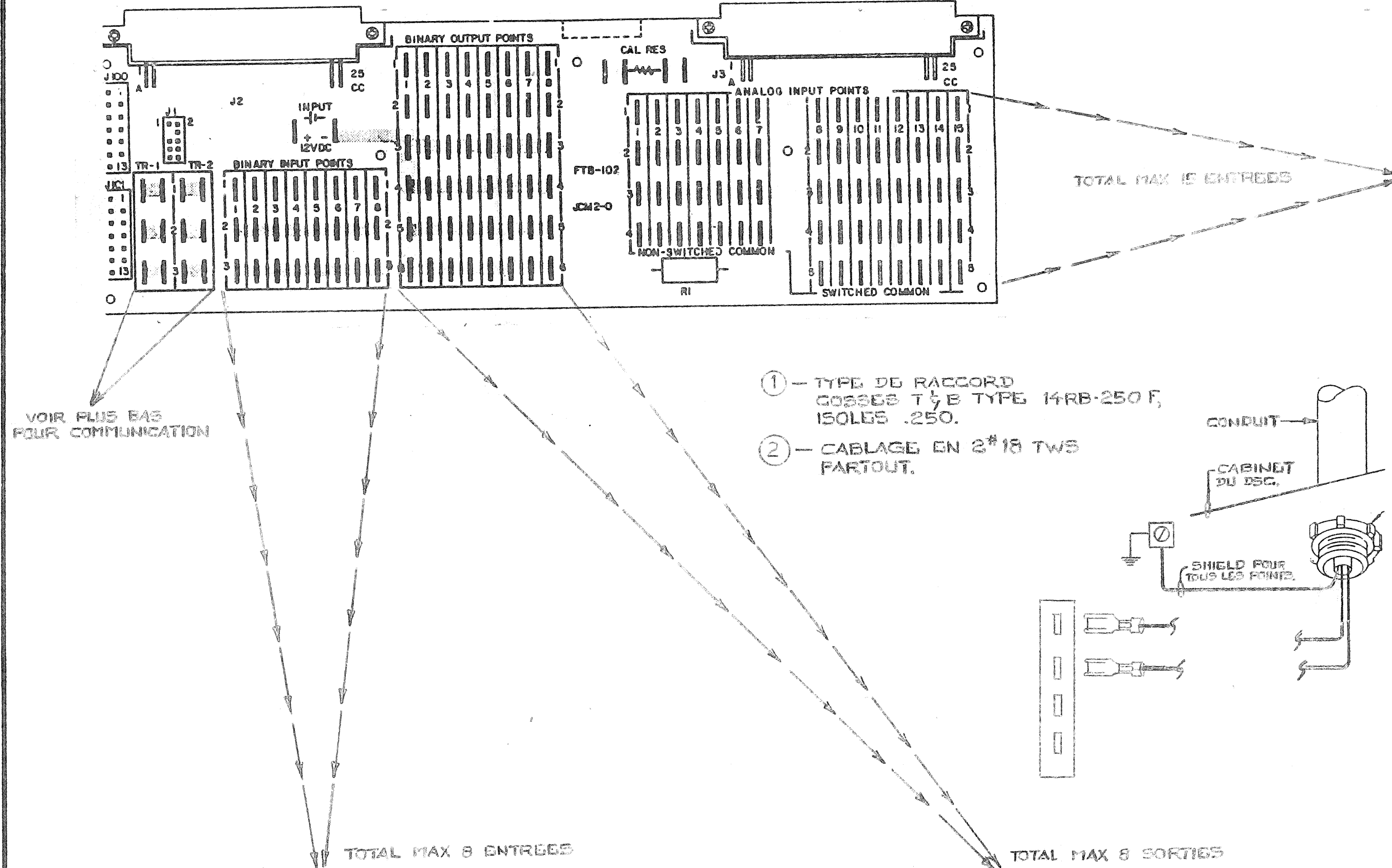
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VACANCES DSC-3 , V43-3

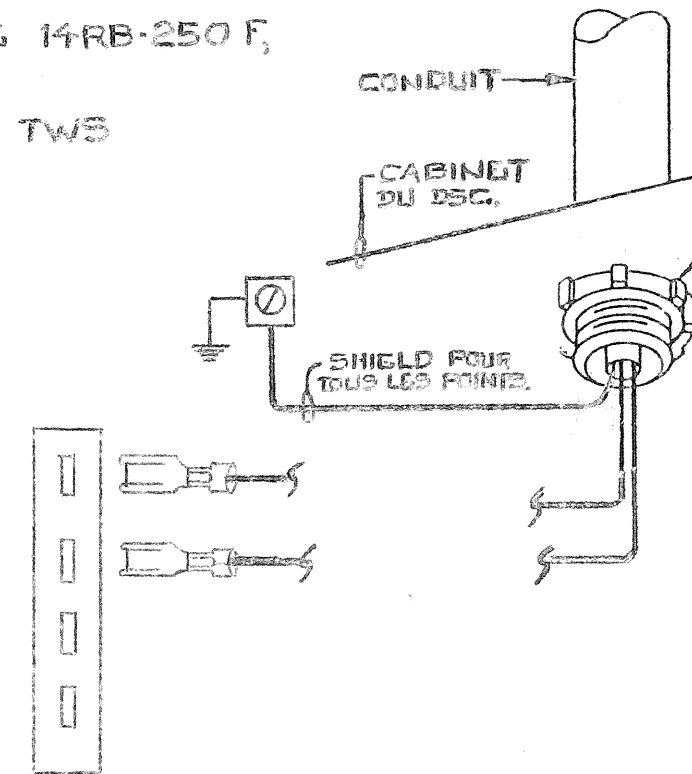
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Jour / Mois	VACANCE 2	<input type="text" value="X"/>
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Jour / Mois	VACANCE 5	<input type="text" value="X"/>
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BORNIERS DE RACCORDEMENT (FTB-102)



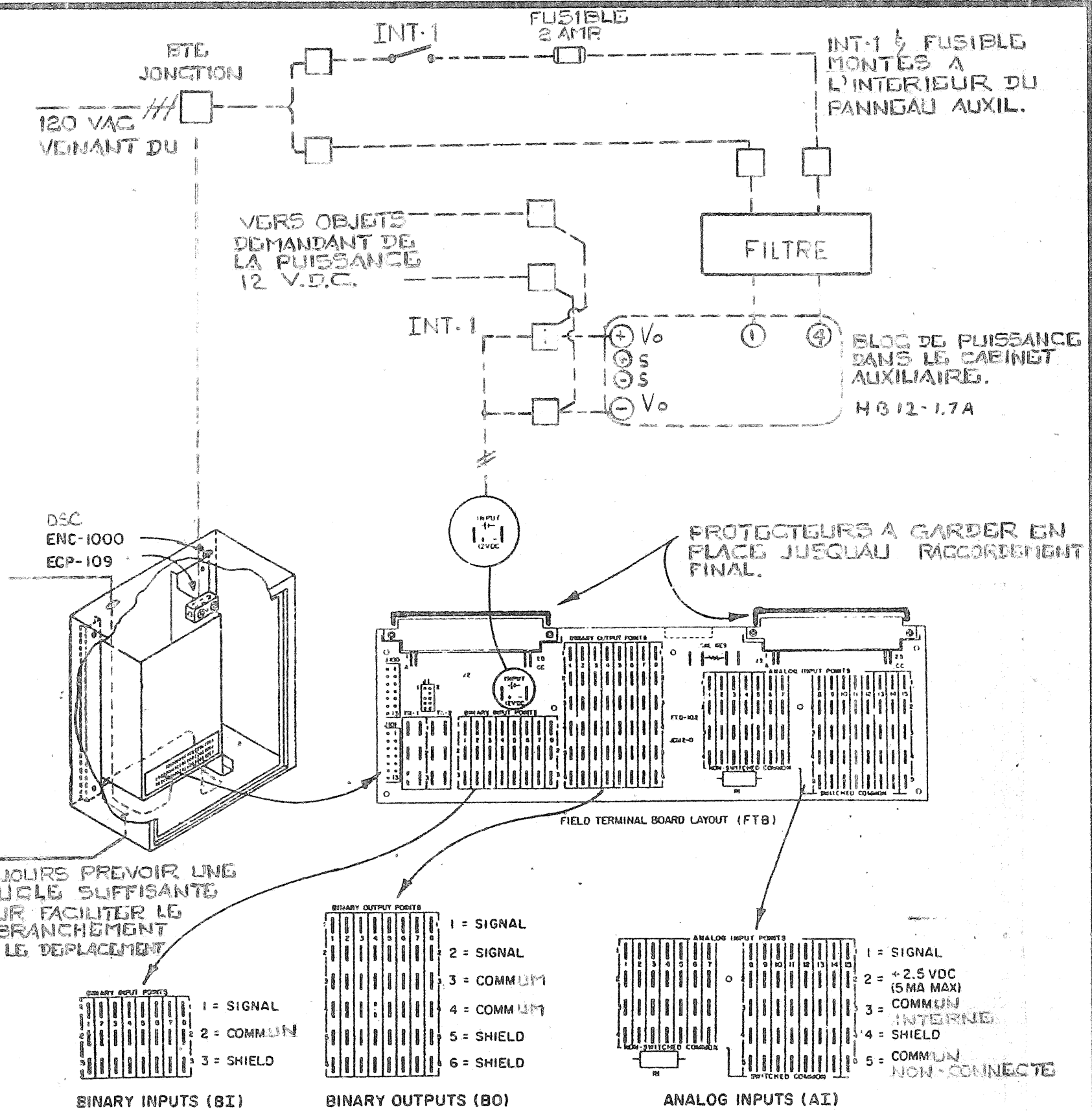
- 1 - TYPE DE RACCORD: COSSSES TYPE 14RB-250 F, ISOLÉS .250.
- 2 - CABLAGE EN 2*18 TWS PARTOUT.



EMPLACEMENT		ADRESSE							DSC 3	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 3	BIN	1 2		CONTACT AUX. DEM.	MCC - 1	B1.1		
2	GEL	SYSTEME 3	BIN	1 2		RELAIS RG	CAB AUX.	B2.1		

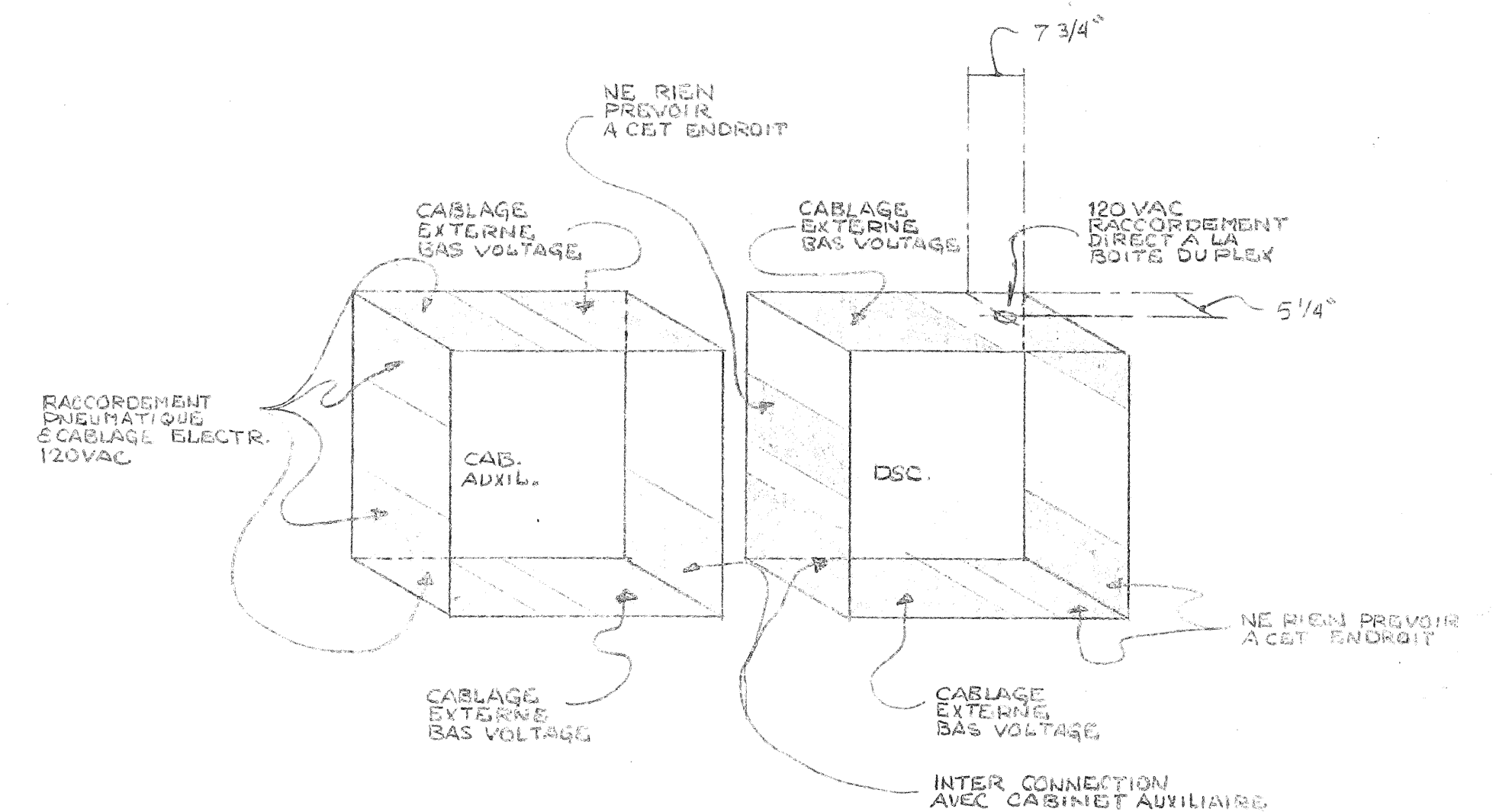
EMPLACEMENT		ADRESSE							DSC 3	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P4.1		
5A	RI	ARRET DEPART SYSTEME 3	SST	1 3	2 7	RELAIS 12VDC	MCC - 1	55A.1		

EMPLACEMENT		ADRESSE							DSC 3	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1	4-20MA 10-90%HR	
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1	4-20MA 10-90%HR	
11	PT-1	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL.V43.3 BOITE LA PLUS LOIN	A11.1	0-5 VDC 0-2.5%	
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		



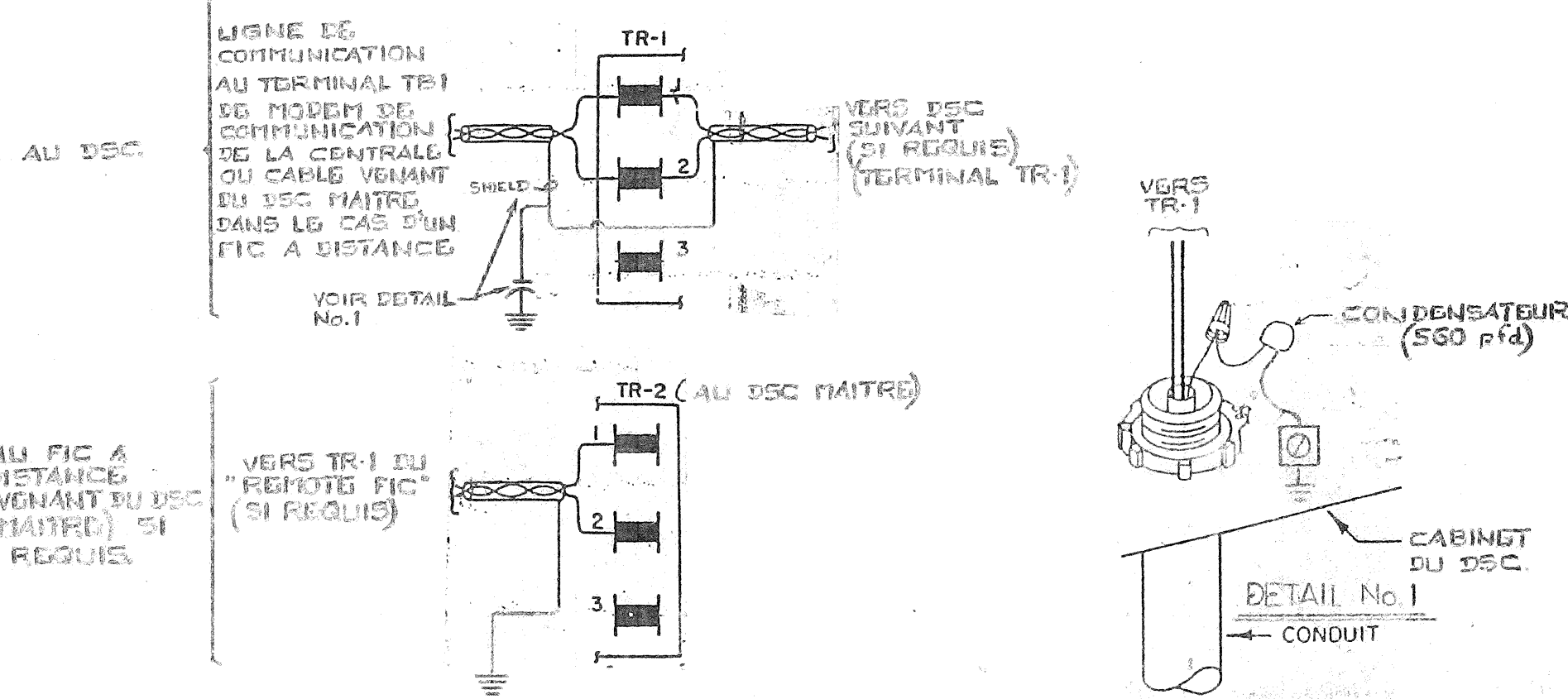
INT-1: INTERRUPTEUR "TOGGLE" CABLE SPST, MOD #17, MONTE AVEC R4000-101 J.C.L.

— TERMINAUX DANS LE CABINET AUXILIAIRE



① - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

② - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES, ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-8500		TEL QUE CONSTRUIT		86-07-07	
DSC-3						SEPT-85	
REPRESENTANT	TECHNICIEN	REVISION	AVIS	DATE	PAR		
J.C.R.	R.F.	PAR 1	DATE	PAR	DATE	25-6-13	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		JOHNSON CONTROLS		CONTRAT	
ST-HYACINTHE, QUE.				Division Des Systemes Et Services		4096-0008-4/2	
				Société de Contrôle Johnson Lite		4068-4	
				441 boulevard Lebeau			
				Montréal, QC H4N 1S2			
				Tél. 514-332-6900			

```

/
/DSC 1      SYSTEME  V43.1
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      DISPLAY  DELSST,I      /DELAI APRES UNE PANNE
2      DISPLAY  OCCD,B        /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST   FSTRT,B        /DEMANDE VENTILATEUR
4      DISPLAY  FSTAT,B        /ETAT VENTIL. ALIM.
5      DISPLAY  FREEZE,B       /ETAT THERMOSTAT DE GEL  NORMAL -ON
/
6      DISPLAY  NCTL,B         /CONTROLE DE TEMP NUIT
7      DISPLAY  TLCON,B        /CONTROLE PAR TEMP.
8      ADJUST   NSBT,A         /PT DE CONSIGNE REDEMARRAGE
9      ADJUST   NSP,A          /POINT DE CONSIGNE RETOUR
10     DISPLAY  Z41,A          /RESULTAT CTL NUIT
/
11     DISPLAY  TE80,A         /TEMP RETOUR
12     DISPLAY  TE10,A         /TEMP MELANGE
13     DISPLAY  TE1,A          /TEMP EXTERIEURE
14     DISPLAY  TE60,A         /TEMP ALIMENTATION
15     DISPLAY  TE100,A        /TEMP PIECE
/
16     DISPLAY  MXD,B          /CONTROLE DE JOUR
17     ADJUST   RARL,A         /AIR RET BAS LIM REAJ TEMP ALIM
18     ADJUST   RARH,A         /AIR RET HAU LIM REAJ TEMP ALIM
19     ADJUST   SAHL,A         /REAJ TEMP ALIM HAU LIM
20     ADJUST   SALL,A         /REAJ TEMP ALIM BAS LIM
21     DISPLAY  DSSP,A         /POINT DE CONSIGNE ALIM
22     ADJUST   OASO,A         /TEMP LIM EXT ECONOMISEUR
23     DISPLAY  ECON,B         /RESULTAT ECONOMISEUR
24     ADJUST   MDP,A          /POSITION MINIMUM VOLETS
25     ADJUST   MXDSP,A        /POINT DE CONSIGNE LIMITE MEL.
26     DISPLAY  ZMXD,A         /RESULTAT PROPORTION.
27     DISPLAY  Z10M,A         /RESULTAT VOLETS LIMITE
28     DISPLAY  Z10C,A         /RESULTAT VOLETS CTL
29     DISPLAY  Z10,A          /RESULTAT VOLETS
30     DISPLAY  ZT10,A         /F.B. VOLETS
/
31     DISPLAY  HTG,B          /CHAUFFAGE
32     DISPLAY  Z40,A          /RESULTAT CHAUFFAGE
/
34     DISPLAY  CLG,B          /REFROIDISSEMENT
35     DISPLAY  Z30,A          /RESULTAT REFROIDISSEMENT
36     DISPLAY  ZT30,A         /F.B. SOUPAPES
/
37     DISPLAY  HT80,A         /HUMIDITE RETOUR
38     DISPLAY  HT60,A         /HUMIDITE ALIMENT
39     ADJUST   RHSP,A         /POINT DE CONSIGNE HUMIDITE DE RETOUR
40     ADJUST   RHSPA,A        /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41     DISPLAY  Z70HL,A        /RESULTAT CTL HUMIDITE HAUTE LIMITE
42     DISPLAY  Z70C,A         /RESULTAT CTL HUMIDITE CONT RETOUR
43     DISPLAY  Z70,A          /RESULTAT CTL HUMIDITE
44     DISPLAY  ZT70,A         /F.B. HUMIDITE
/

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45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
65      DISPLAY  OCCDR1,B   /CYCLE DE JOUR THERMOSTAT ADMINIS JOUR-ON
66      DISPLAY  OCCDR2,B   /CYCLE DE JOUR THERMOSTAT LABORAT NUIT-OFF

```

```

/-----/
/          FONCTIONS SPECIALES HORAIRE DES ZONES DE THERMOSTAT          /
/-----/
/
/  900 RESEAU THERMOSTAT ADMINISTRATION
/ 1000 RESEAU THERMOSTAT LABORATOIRE
/
67      ADJUST   STAXX,T    /HEURE DE DEPART JOUR EN COURS
68      ADJUST   STOXX,T    /HEURE D ARRET JOUR EN COURS
69      ADJUST   STA7XX,T   /HEURE DEPART SAMEDI
70      ADJUST   STO7XX,T   /HEURE D ARRET SAMEDI
71      ADJUST   STA8XX,T   /HEURE DEPART DIMANCHE
72      ADJUST   STO8XX,T   /HEURE D ARRET DIMANCHE
73      ADJUST   STA9XX,T   /HEURE DEPART SEMAINE
74      ADJUST   STO9XX,T   /HEURE D ARRET SEMAINE
/
/-----/
/          FONCTIONS SPECIALES PARAMETRES DE CONTROLE          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE

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```

/ 500 PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600 PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700 PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800 PARAMETRES CONTROLE REFROIDISSEMENT

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79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE

```

```

/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/

```

```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR

```

```

88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES

```

```

89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME

```

```

/
/
/
/
/-----/
/                                L I S T E   D E S   A L A R M E S                                /
/

```

```

/      ALARME
/      NUMERO                                DESCRIPTION
/

```

```

/-----/
/
/      10      ALARME THERMOSTAT GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-1
/
/      51      ALARME HORAIRE SYSTEME V43-1
/
/      101     ALARME HORAIRE RESEAU THERMOSTAT ADMINISTRATION
/
/      102     ALARME HORAIRE RESEAU THERMOSTAT LABORATOIRE
/

```


/CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 09:17:28
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 08:13:37
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-04-:1 13:54:13
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 07-04-:1 13:11:01
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 14:13:52
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 13:52:11
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 11:55:45
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 06-29-:1 11:54:10
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:20
 /
 /TRANSLATION LISTING FOR DSC-1.CAL
 /
 /CAL1 TRANSLATOR VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:50:03
 /
 /TRANSLATION LISTING FOR CIRA1.CAL
 /
 /
 /-----

PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUEBEC
	DSC 1 SYSTEME V43.1
NUMERO DE TELEPHONE	
NUMERO CONTRAT	4096-0008
VENDEUR	JEAN CLAUDE ROUILLON
INGENIERIE	RICHARD FOREST
CONCEPTION PROGRAMME	JEAN MORISSETTE
REVISION	05 DECE 1986
	25 MAI 1990 MOD. BASSE LIMITE MELANGE JM

/
 /
 /-----

```

/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
/
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,1378
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  25
@ AD:  112
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-10,RAT-0,TOT-0
@ BO:  MOM-0,POS-4,MAN-3
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FREEZE     CON-2      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.7,129.6 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.6,129.7 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-44.7,129.7 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.7,129.7 /TEMP ALIM
AI-5      ZT30       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPE
AI-6      ZT10       FUL-6      E,0.5,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-7      ZT70       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8      ZT50       FUL-8      E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-9      HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIM
AI-11     SPT        FUL-9      E,0.1,E,N,O,0,621      /PRESSION STATIQUE EN P
AI-12     TE100      FUL-10     E,0.5,E,V,T,-45.8,129.6 /TEMP PIECE
/
/
BO-1      ZC30       POS-1      D,E,0      /SOUPE
BO-2      ZC10       POS-2      D,E,0      /VOILETS

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BO-3      ZC70      POS-3      D,E,0      /HUMIDITE
BO-4      ZC50      POS-4      D,E,0      /VAV
BO-5A     ZS50      MAN-1      E,E        /VENTIL ALIM
BO-6A     ZSJN1     MAN-2      E,E        /JOUR NUIT ADMINIST
BO-6B     ZSJN2     MAN-3      E,E        /JOUR NUIT LABO
/
/
CP-1      ZCP30     INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10     INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-3      ZCP70     INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4      ZCP50     INC-4      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
/
/
@ DATA POINT DEFINITION:
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
BD-1      OCCD      E,R      /CYCLE D OCCUPATION
BD-2      TLCON     E,R      /CONTROLE PAR TEMP.
BD-3      FSTRT     E,R      /DEMANDE VENTILATEUR
BD-4      COMP50    E,R      /RESULTAT DEMARRAGE
BD-5      CONON     E,R      /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT
/-----/
/
BD-6      NCTL      E,R      /CONTROLE DE TEMP NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS
/-----/
/
BD-7      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE
/-----/
/
BD-8      MXD       E,R      /CONTROLE DE JOUR
BD-9      MIXLL     E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE
/-----/
/
BD-10     HTG       E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT
/-----/
/
BD-11     CLG       E,R      /REFROIDISSEMENT
/
/-----/

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/  VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT ADMINISTRATION  /
/-----/
/
BD-12  OCCDR1    E,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT LABORATOIRE  /
/-----/
/
BD-13  OCCDR2    E,R
/
/-----/
/                                FONCTIONS SPECIALES                                /
/-----/
/
BD-14  SYS        D,R
BD-15  SYSP        D,R
BD-16  SYS1        D,R
BD-17  SYS2        D,R
BD-18  SYS3        D,R
BD-19  SYS4        D,R
BD-20  SYS5        D,R
BD-21  SYS6        D,R
BD-22  SYS7        D,R
BD-23  SYS8        D,R
BD-24  SYS9        D,R
BD-25  SYS10       D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
AD-1    DOW        E,2
AD-2    H1         E,00:00
AD-3    H2         E,00:00
AD-4    H3         E,00:00
AD-5    H4         E,00:00
AD-6    H5         E,00:00
AD-7    H6         E,00:00
AD-8    STA        E,00:00 /HORAIRE
AD-9    STO        E,00:00
AD-10   STA8       E,07:00
AD-11   STO8       E,07:00
AD-12   STA7       E,07:00
AD-13   STO7       E,07:00
AD-14   STA9       E,05.01
AD-15   STO9       E,18:00
AD-16   NSBT       E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17   DELSST     E,0      /DELAI APRES PANNE
/
/-----/
/                                PARAMETRES CONTROLE DE NUIT                                /
/-----/
/
AD-18   NSP        E,22.0  /POINT DE CONSIGNE RETOUR
AD-19   Z41        E,0.0   /RESULTAT CTL NUIT
AD-20   CST41      E,45     /INTERVAL CTL NUIT

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AD-21  CPB41    E,20.0  /BANDE PROP CTL NUIT
AD-22  CIG41    E,5     /GAIN CTL NUIT
AD-23  CDS41    E,0.0   /BANDE MORTE CTL NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-24  OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-25  RARL     E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-26  RARH     E,24.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-27  SAHL     E,17.0   /REAJ TEMP ALIM HAU LIM
AD-28  SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-29  DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-30  MXDSP    E,11.5   /POINT DE CONSIGNE LIMITE MEL.
AD-31  MDP      E,29.0   /POSITION MINIMUM VOLETS
AD-32  CST10A   E,5      /INTERVAL CTL VOLETS LIMITE
AD-33  CPB10A   E,-90.0  /BANDE PROP CTL VOLETS LIMITE
AD-34  CIG10A   E,33     /GAIN CTL VOLETS LIMITE
AD-35  CMP10A   E,0.0    /COMPENSATION CTL VOLETS LIMITE
AD-36  CDS10A   E,1.0    /BANDE MORTE CTL VOLETS LIMITE
AD-37  CST10    E,90     /INTERVAL CTL VOLETS
AD-38  CPB10    E,-90.0  /BANDE PROP CTL VOLETS
AD-39  CIG10    E,33     /GAIN CTL VOLETS
AD-40  CMP10    E,0.0    /COMPENS CTL VOLETS
AD-41  CDS10    E,0.0    /BANDE MORTE CTL VOLETS
AD-42  ZMXD     E,0.0    /RESULTAT PROPORTION.
AD-43  Z10M     E,100.0  /RESULTAT VOLETS LIMITE
AD-44  Z10C     E,0.0    /RESULTAT VOLETS CTL
AD-45  Z10      E,0.0    /RESULTAT VOLETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
AD-46  Z40      E,0.0    /RESULTAT CHAUFFAGE
AD-47  CST40    E,25     /INTERVAL CTL CHAUFF
AD-48  CPB40    E,50.0   /BANDE PROP CTL CHAUFF
AD-49  CIG40    E,33     /GAIN CTL CHAUFF
AD-50  CDS40    E,0.0    /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
AD-51  Z30      E,0.0    /RESULTAT REFROIDISSEMENT
AD-52  CST30    E,25     /INTERVAL CTL REFROIDI

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AD-53   CPB30      E,-45.0   /BANDE PROP CTL REFROIDI
AD-54   CIG30      E, 33     /GAIN CTL REFROIDI
AD-55   CDS30      E, 0.0     /BANDE MORTE CTL REFROIDI
/
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-56   SPSP       E,262     /POINT DE CONSIGNE PRESS STAT
AD-57   CST50      E, 40      /INTERVAL CTL VAV
AD-58   CPB50      E,27.5    /BANDE PROP CTL VAV
AD-59   CIG50      E, 30      /GAIN CTL VAV
AD-60   CMP50      E, 0.0     /COMPENS CTL VAV
AD-61   CDS50      E, 0.0     /BANDE MORTE CTL VAV
AD-62   Z50        E, 0.0     /RESULTAT CTL VAV
AD-63   FSP        E, 0.0     /PRESS STAT FILTREE
/
/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-64   RHSP       E, 38.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65   RHSPA      E, 80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66   CST70      E, 20      /INTERVAL CTL HUMIDITE
AD-67   CPB70      E, 90.0    /BANDE PROP CTL HUMIDITE
AD-68   CIG70      E, 33      /GAIN CTL HUMIDITE
AD-69   CDS70      E, 0.0     /BANDE MORTE CTL HUMIDITE
AD-70   CST70A     E, 5       /INTERVAL H LIM HUMIDITE
AD-71   CPB70A     E, 90.0    /BANDE PROP H LIM HUMIDITE
AD-72   CIG70A     E, 33      /GAIN H LIM HUMIDITE
AD-73   CDS70A     E, 0.0     /BANDE MORTE H LIM HUMIDITE
AD-74   Z70        E, 0.0     /RESULTAT CTL HUMIDITE
AD-75   Z70HL      E, 0.0     /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-76   Z70C       E, 0.0     /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/      VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT ADMINISTRATION      /
/-----/
/
AD-77   STAR1      E, 00:00   /HORAIRE
AD-78   STOR1      E, 00:00
AD-79   STA8R1     E, 03:00
AD-80   STO8R1     E, 18:00
AD-81   STA7R1     E, 03:00
AD-82   STO7R1     E, 18:00
AD-83   STA9R1     E, 03:00
AD-84   STO9R1     E, 18:00
/
/-----/
/      VARIABLES POUR LE PROG HORAIRE, RESEAU THERMOSTAT LABORATOIRE      /
/-----/
/
AD-85   STAR2      E, 00:00   /HORAIRE
AD-86   STOR2      E, 00:00
AD-87   STA8R2     E, 04:00
AD-88   STO8R2     E, 18:00

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AD-89   STA7R2   E,04:00
AD-90   STO7R2   E,18:00
AD-91   STA9R2   E,04:00
AD-92   STO9R2   E,18:00
/
/-----/
/                                     /
/                                     /
/-----/
/
AD-93   UPTIM     E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-94   UPDAT     E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-95   DNTIM     E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-96   DNDAT     E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-97   TOD       E,00:00   /DERNIERE HEURE
AD-98   LDAT      E,00:00   /DERNIERE DATE
/
/-----/
/                                     /
/                                     /
/-----/
/
AD-99   SYSDIS    D,0
AD-100  CSTXXX    D,0
AD-101  CPBXXX    D,0.0
AD-102  CIGXXX    D,0
AD-103  CMPXXX    D,0.0
AD-104  CDSXXX    D,0.0
AD-105  STAXX     D,00:00
AD-106  STOXX     D,00:00
AD-107  STA7XX    D,07:00
AD-108  STO7XX    D,17:00
AD-109  STA8XX    D,07:00
AD-110  STO8XX    D,17:00
AD-111  STA9XX    D,07:00
AD-112  STO9XX    D,17:00
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      DISPLAY    DELSST,I   /DELAI APRES UNE PANNE
2      DISPLAY    OCCD,B     /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST     FSTRT,B    /DEMANDE VENTILATEUR
4      DISPLAY    FSTAT,B    /ETAT VENTIL. ALIM.
5      DISPLAY    FREEZE,B   /ETAT THERMOSTAT DE GEL  NORMAL -ON
/
6      DISPLAY    NCTL,B     /CONTROLE DE TEMP NUIT
7      DISPLAY    TLCON,B    /CONTROLE PAR TEMP.
8      ADJUST     NSBT,A     /PT DE CONSIGNE REDEMARRAGE
9      ADJUST     NSP,A      /POINT DE CONSIGNE RETOUR
10     DISPLAY    Z41,A      /RESULTAT CTL NUIT
/
11     DISPLAY    TE80,A     /TEMP RETOUR
12     DISPLAY    TE10,A     /TEMP MELANGE
13     DISPLAY    TE1,A      /TEMP EXTERIEURE
14     DISPLAY    TE60,A     /TEMP ALIMENTATION
15     DISPLAY    TE100,A    /TEMP PIECE
/

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16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV
/			
49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI
53	ADJUST	STA8,T	/HEURE DEPART DIMANCHE
54	ADJUST	STO8,T	/HEURE D ARRET DIMANCHE
55	ADJUST	STA9,T	/HEURE DEPART SEMAINE
56	ADJUST	STO9,T	/HEURE D ARRET SEMAINE
/			
57	ADJUST	H1,T	/VACANCE 1
58	ADJUST	H2,T	/VACANCE 2
59	ADJUST	H3,T	/VACANCE 3
60	ADJUST	H4,T	/VACANCE 4
/			
61	OVERRIDE	ZCP30,A,2	/SOUPAPES
62	OVERRIDE	ZCP10,A,2	/VOLETS
63	OVERRIDE	ZCP70,A,2	/HUMIDITE
64	OVERRIDE	ZCP50,A,2	/VAV
/			
65	DISPLAY	OCCDR1,B	/CYCLE DE JOUR THERMOSTAT ADMINIS JOUR-ON


```

66      DISPLAY  OCCDR2,B      /CYCLE DE JOUR THERMOSTAT LABORAT NUIT-OFF
/
/-----/
/      FONCTIONS SPECIALES HORAIRE DES ZONES DE THERMOSTAT      /
/-----/
/
/ 900 RESEAU THERMOSTAT ADMINISTRATION
/ 1000 RESEAU THERMOSTAT LABORATOIRE
/
67      ADJUST   STAXX,T      /HEURE DE DEPART JOUR EN COURS
68      ADJUST   STOXX,T      /HEURE D ARRET JOUR EN COURS
69      ADJUST   STA7XX,T     /HEURE DEPART SAMEDI
70      ADJUST   STO7XX,T     /HEURE D ARRET SAMEDI
71      ADJUST   STA8XX,T     /HEURE DEPART DIMANCHE
72      ADJUST   STO8XX,T     /HEURE D ARRET DIMANCHE
73      ADJUST   STA9XX,T     /HEURE DEPART SEMAINE
74      ADJUST   STO9XX,T     /HEURE D ARRET SEMAINE
/
/-----/
/      FONCTIONS SPECIALES PARAMETRES DE CONTROLE      /
/-----/
/
/ 100 PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200 PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300 PARAMETRES CONTROLE VOLUME VARIABLE
/ 400 PARAMETRES CONTROLE CHAUFFAGE
/ 500 PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600 PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700 PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800 PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I     /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A     /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I     /GAIN INTEGRAL
82      ADJUST   CMPXXX,A     /COMPENSATION
83      ADJUST   CDSXXX,A     /BANDE MORTE
/
/
/-----/
/      RECORD PANNE DE POUVOIR      /
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR

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97      DATE
98      DAY
99      TIME
/
/
/-----/
/
/      L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO
/      DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-1
/
/      51      ALARME HORAIRE SYSTEME V43-1
/
/      101     ALARME HORAIRE RESEAU THERMOSTAT ADMINISTRATION
/
/      102     ALARME HORAIRE RESEAU THERMOSTAT LABORATOIRE
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:

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/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/          RESET     TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET     OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       TLCON,SDF,S
2.4      SET       BPD,SUF,R
2.5      EXIT      C,R
2.6      SET       FSTRT,S,S
2.7      EXIT      U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT     TLCON,S
3.2      SET       BPD,TLCON,S
3.3      EXIT      C,R
3.4      INTERVAL  300,U
3.5      COMPARE   TE100,LE,NSBT,2.0
3.6      SET       FSTRT,BPD,S
3.7      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET       AUTO,S,S
4.3      DELAY     25,U
4.4      SET       COMP50,R,R
4.5      INTERVAL  10,U
4.6      XOR       COMP50,FSTAT
4.7      ALARM     50,C,S
4.8      SET       BPD,FSTRT,R
4.9      BOUT      ZS50,3,OFF
4.10     SET       COMP50,BPD,R
4.11     EXIT      U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
5.1      RESTART
5.2      DELAY     25,U
5.3      INTERVAL  5,U
5.4      SET       BPD,FREEZE,R
5.5      ALARM     10,C,R
5.6      EXIT      U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.
/-----/
/

```

/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.

/

```

6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT       C,R
6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U

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/

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7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT       C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U

```

/

/

/-----/

/ CONTROLE DE LA PRESSION STATIQUE /

/-----/

/

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.

/

```

8.1      EVENT      CONON,S
8.2      SET        BPD,CONON,R
8.3      STORE      FSP,0,0,C,R
8.4      STORE      APD,0.0,0.0,C,R
8.5      STORE      Z50,APD,APD,C,R
8.6      AOUT       ZCP50,3,0.0,C,R
8.7      EXIT       C,R
8.8      DELAY      15,U
8.9      INTERVAL   CST50,U
8.10     FILTER     SPT,63,100
8.11     STORE      FSP,APD,APD,U
8.12     CALC       CPB50,0,10,1,1,T
8.13     PROP       SPSP,FSP,APD,CIG50,CMP50,CDS50
8.14     STORE      Z50,APD,APD,U
8.15     AOUT       ZCP50,3,0,U
8.16     EXIT       U

```

/

/

/-----/

/ CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE /

```

/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1      RESTART
9.2      SET      MXD,R,R
9.3      SET      NCTL,R,R
9.4      SET      CONON,R,R
9.5      DELAY    25,U
9.6      INTERVAL 5,U
9.7      AND      FSTAT,OCCD
9.8      SET      MXD,BPD,R
9.9      XOR      FSTAT,OCCD
9.10     AND      BPD,FSTAT
9.11     SET      NCTL,BPD,S
9.12     SET      CONON,FSTAT,R
9.13     EXIT     U
/
/
/-----/
/              ECONOMISEUR D AIR FRAIS                      /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
10.1     EVENT    MXD,S
10.2     SET      ECON,R,R
10.3     SET      BPD,FSTAT,R
10.4     EXIT     C,R
10.5     INTERVAL 300,U
10.6     COMPARE  TE1,GE,OASO,1.0
10.7     SET      ECON,BPD,R
10.8     EXIT     U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1     EVENT    MXD,S
11.2     INTERVAL 300,U
11.3     STORE    APD,TE80,RARL,U
11.4     SPAN     RARL,RARH,SAHL,SALL
11.5     STORE    DSSP,APD,SAHL,U
11.6     EXIT     U
/
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE                /
/-----/
/

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```

/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS
/
/
12.1 EVENT MXD,S
12.2 SET MIXLL,R,R
12.3 SET BPD,MXD,R
12.4 EXIT C,R
12.5 INTERVAL 5,U
12.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7 SET MIXLL,BPD,R /A LA BASSE LIMITE
12.8 SELECT Z10M,Z10C,L
12.9 STORE Z10,APD,APD,U
12.10 AOUT ZCP10,3,0.0,U
12.11 EXIT U
/
13.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2 SET BPD,MIXLL,R
13.3 STORE Z10M,100.0,100.0,C,R
13.4 STORE CMP10A,Z10C,Z10C,U
13.5 EXIT C,R
13.6 INTERVAL CST10A,U
13.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8 STORE Z10M,APD,APD,U
13.9 EXIT U
/
14.1 EVENT MXD,R /POSITION D ARRET SOUPAPES
14.2 SET BPD,MXD,R
14.3 EXIT C,S
14.4 SET HTG,R,R
14.5 SET CLG,R,R
14.6 DELAY 7,C,R
14.7 STORE APD,0.0,0.0,C,R
14.8 AOUT ZCP30,3,0.0,C,R
14.9 EXIT U
/
15.1 EVENT MXD,S
15.2 SET BPD,MXD,R
15.3 STORE APD,0.0,0.0,C,R
15.4 STORE Z10,APD,APD,C,R
15.5 STORE Z10C,APD,APD,C,R
15.6 STORE Z10M,100.0,100.0,C,R
15.7 STORE ZMXD,APD,APD,C,R
15.8 AOUT ZCP10,3,0.0,C,R
15.9 EXIT C,R
15.10 DELAY 7,U
15.11 STORE APD,TE1,5.0,U

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15.12  SPAN      5.0,20.0,0.0,75.0
15.13  STORE    CMP10,APD,APD,U
15.14  STORE    APD,50.0,50.0,U
15.15  AOUT     ZCP30,3,0.0,U
15.16  INTERVAL CST10,U
15.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18  STORE    ZMXD,APD,APD,U
15.19  SPAN     MDP,100.0,MDP,100.0
15.20  SET      BPD,ECON,S
15.21  STORE    APD,MDP,MDP,C,S
15.22  STORE    Z10C,APD,APD,U
15.23  ORR      ZMXD,GE,85.0,10.0
15.24  SET      CLG,BPD,R
15.25  COMPARE  ZMXD,LE,15.0,10.0
15.26  SET      HTG,BPD,R
15.27  EXIT     U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
16.1   EVENT    HTG,S
16.2   SET      BPD,HTG,S
16.3   STORE    Z40,0.0,0.0,C,R
16.4   STORE    APD,50.0,50.0,C,R
16.5   AOUT     ZCP30,3,0.0,C,R
16.6   EXIT     C,R
16.7   INTERVAL CST40,U
16.8   CALC     DSSP,0.3,1,-1,1,T
16.9   PROP     APD,TE60,CPB40,CIG40,0.0,CDS40
16.10  STORE    Z40,APD,APD,U
16.11  SPAN     0.0,100.0,50.0,0.0
16.12  AOUT     ZCP30,3,100.0,U
16.13  EXIT     U
/
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/
17.1   EVENT    CLG,S
17.2   SET      BPD,CLG,R
17.3   STORE    Z30,0.0,0.0,C,R
17.4   STORE    APD,50.0,50.0,C,R
17.5   AOUT     ZCP30,3,0.0,C,R
17.6   EXIT     C,R

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17.7    INTERVAL CST30,U
17.8    CALC      DSSP,0.3,1,1,1,T
17.9    PROP      APD,TE60,CPB30,CIG30,0.0,CDS30
17.10   STORE     Z30,APD,APD,U
17.11   SPAN      0.0,100.0,50.0,100.0
17.12   AOUT      ZCP30,3,0.0,U
17.13   EXIT      U
/
/
/-----/
/          CONTROLE DE NUIT                      /
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOILETS RESTENT EN RECIRCULATION.
/
18.1    EVENT     NCTL,S
18.2    SET       BPD,NCTL,S
18.3    STORE     Z41,0.0,0.0,C,R
18.4    STORE     APD,0.0,0.0,C,R
18.5    AOUT      ZCP30,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST41,U
18.8    PROP      NSP,TE80,CPB41,CIG41,0.0,CDS41
18.9    STORE     Z41,APD,APD,U
18.10   SPAN      0.0,100.0,50.0,0.0
18.11   AOUT      ZCP30,3,100.0,U
18.12   EXIT      U
/
/
/-----/
/          PROGRAMME HORAIRE ET CONTROLE RESEAU THERMOSTAT ADMINISTRATION /
/-----/
/
/DETERMINE HEURE DEBUT ET FIN CYCLE JOUR
/SELON JOUR DE LA SEMAINE OU VACANCE
/
19.1    PROG      DOW,0,00:01,23:59
19.2    SET       BPD,SDF,R
19.3    EXIT      C,S
19.4    HOLIDAY   H1,H2,H3,H4,H5,H6
19.5    STORE     DOW,APD,2,U
19.6    COMPARE   DOW,EQ,7,0
19.7    STORE     STAR1,STA7R1,STA9R1,C,S
19.8    STORE     STOR1,STO7R1,STO9R1,C,S
19.9    COMPARE   DOW,EQ,1,0
19.10   ORR       DOW,EQ,8,0
19.11   STORE     STAR1,STA8R1,STA9R1,C,S
19.12   STORE     STOR1,STO8R1,STO9R1,C,S
19.13   COMPARE   DOW,GE,2,0
19.14   ANDR      DOW,LE,6,0
19.15   STORE     STAR1,STA9R1,STA9R1,C,S
19.16   STORE     STOR1,STO9R1,STO9R1,C,S
19.17   SET       BPD,PAF,R
19.18   ALARM     101,C,S
19.19   EXIT      U

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/
20.1    PROG      DOW,0,STAR1,STOR1
20.2    SET       OCCDR1,SUF,R
20.3    EXIT      U
/
21.1    RESTART
21.2    DELAY     25,U
21.3    INTERVAL  10,U
21.4    SET       BPD,OCCDR1,R
21.5    NEGATE    BPD
21.6    BOUT      ZSJN1,3,OFF
21.7    EXIT      U
/
/-----/
/  PROGRAMME HORAIRE ET CONTROLE RESEAU THERMOSTAT LABORATOIRE  /
/-----/
/
/DETERMINE HEURE DEBUT ET FIN CYCLE JOUR
/SELON JOUR DE LA SEMAINE OU VACANCE
/
22.1    PROG      DOW,0,00:01,23:59
22.2    SET       BPD,SDF,R
22.3    EXIT      C,S
22.4    HOLIDAY   H1,H2,H3,H4,H5,H6
22.5    STORE     DOW,APD,2,U
22.6    COMPARE   DOW,EQ,7,0
22.7    STORE     STAR2,STA7R2,STA9R2,C,S
22.8    STORE     STOR2,STO7R2,STO9R2,C,S
22.9    COMPARE   DOW,EQ,1,0
22.10   ORR       DOW,EQ,8,0
22.11   STORE     STAR2,STA8R2,STA9R2,C,S
22.12   STORE     STOR2,STO8R2,STO9R2,C,S
22.13   COMPARE   DOW,GE,2,0
22.14   ANDR      DOW,LE,6,0
22.15   STORE     STAR2,STA9R2,STA9R2,C,S
22.16   STORE     STOR2,STO9R2,STO9R2,C,S
22.17   SET       BPD,PAF,R
22.18   ALARM     102,C,S
22.19   EXIT      U
/
23.1    PROG      DOW,0,STAR2,STOR2
23.2    SET       OCCDR2,SUF,R
23.3    EXIT      U
/
24.1    RESTART
24.2    DELAY     25,U
24.3    INTERVAL  10,U
24.4    SET       BPD,OCCDR2,R
24.5    NEGATE    BPD
24.6    BOUT      ZSJN2,3,OFF
24.7    EXIT      U
/
/-----/
/  RECORD PANNE DE POUVOIR  /
/-----/
/
25.1    RESTART

```

```

25.2    TIMDATA    DT
25.3    STORE      UPTIM,APD,APD,U          /SAUVE L HEURE ACTUEL ET
25.4    TIMDATA    MD                      /LA DATE DE LA RESTAURATION
25.5    STORE      UPDAT,APD,APD,U          /DU POUVOIR.
25.6    EXIT       U
/
26.1    RESTART
26.2    STORE      DNTIM,TOD,TOD,U          /RECORD DE LA DERNIERE HEURE
26.3    STORE      DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
26.4    INTERVAL   60,U
26.5    TIMDATA    DT
26.6    STORE      TOD,APD,APD,U            /SAUVE L HEURE ET LA DATE
26.7    TIMDATA    MD                      /ACTUEL A TOUTES LES MINUTES.
26.8    STORE      LDAT,APD,APD,U
26.9    EXIT       U
/
/
/-----/
/                FONCTIONS SPECIALES      /
/-----/
/
27.1    EVERY
27.2    SET        SYSP,R,R                /SELECTION DU STSTEME POUR LE
27.3    COMPARE    SYSDIS,EQ,100,0          /
27.4    SET        SYS1,BPD,R
27.5    OR         SYSP,BPD
27.6    SET        SYSP,BPD,S
27.7    COMPARE    SYSDIS,EQ,200,0
27.8    SET        SYS2,BPD,R
27.9    OR         SYSP,BPD
27.10   SET        SYSP,BPD,S
27.11   COMPARE    SYSDIS,EQ,300,0
27.12   SET        SYS3,BPD,R
27.13   OR         SYSP,BPD
27.14   SET        SYSP,BPD,S
27.15   COMPARE    SYSDIS,EQ,400,0
27.16   SET        SYS4,BPD,R
27.17   OR         SYSP,BPD
27.18   SET        SYSP,BPD,S
27.19   COMPARE    SYSDIS,EQ,500,0
27.20   SET        SYS5,BPD,R
27.21   OR         SYSP,BPD
27.22   SET        SYSP,BPD,S
27.23   COMPARE    SYSDIS,EQ,600,0
27.24   SET        SYS6,BPD,R
27.25   OR         SYSP,BPD
27.26   SET        SYSP,BPD,S
27.27   COMPARE    SYSDIS,EQ,700,0
27.28   SET        SYS7,BPD,R
27.29   OR         SYSP,BPD
27.30   SET        SYSP,BPD,S
27.31   COMPARE    SYSDIS,EQ,800,0
27.32   SET        SYS8,BPD,R
27.33   OR         SYSP,BPD
27.34   SET        SYSP,BPD,S
27.35   COMPARE    SYSDIS,EQ,900,0
27.36   SET        SYS9,BPD,R

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```

27.37 OR      SYSP,BPD
27.38 SET     SYSP,BPD,S
27.39 COMPARE SYSDIS,EQ,1000,0
27.40 SET     SYS10,BPD,R
27.41 OR      SYSP,BPD
27.42 SET     SYSP,BPD,S
27.43 SET     SYS,SYSP,S
27.44 EXIT    U
/
/
28.1  EVENT   SYS,S                      /RESET LES FONCTIONS POUR
28.2  SET     BPD,SUF,R                  /LE CDB SPECIAL
28.3  STORE   SYSDIS,0,0,C,R            /SUR UNE PERIODE DE DISCLR
28.4  EXIT    C,R
28.5  DELAY   3600,U
28.6  STORE   SYSDIS,0,0,U
28.7  EXIT    U
/
/
29.1  EVENT   SYS1,S                      /SYS 100
29.2  SET     BPD,SUF,R
29.3  EXIT    C,R
29.4  INTERVAL 5,U
29.5  STORE   CSTXXX,CST70,CST70,U      /PERMET DE VOIR LES
29.6  STORE   CPBXXX,CPB70,CPB70,U      /VALEURS DU SYSTEME
29.7  STORE   CIGXXX,CIG70,CIG70,U
29.8  STORE   CMPXXX,0.0,0.0,U
29.9  STORE   CDSXXX,CDS70,CDS70,U
29.10 EXIT    U
/
/
30.1  EVENT   SYS1,S
30.2  SET     BPD,SUF,R
30.3  EXIT    C,R
30.4  DELAY   10,U
30.5  INTERVAL 1,U
30.6  STORE   CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
30.7  STORE   CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
30.8  STORE   CIG70,CIGXXX,CIG70,U
30.9  STORE   CDS70,CDSXXX,CDS70,U
30.10 EXIT    U
/
/
31.1  EVENT   SYS2,S                      /SYS 200
31.2  SET     BPD,SUF,R
31.3  EXIT    C,R
31.4  INTERVAL 5,U
31.5  STORE   CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
31.6  STORE   CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
31.7  STORE   CIGXXX,CIG70A,CIG70A,U
31.8  STORE   CMPXXX,0.0,0.0,U
31.9  STORE   CDSXXX,CDS70A,CDS70A,U
31.10 EXIT    U
/
/
32.1  EVENT   SYS2,S
32.2  SET     BPD,SUF,R

```

```

32.3    EXIT      C,R
32.4    DELAY     10,U
32.5    INTERVAL  1,U
32.6    STORE     CST70A,CSTXXX,CST70A,U      /PERMET D AJUSTER LES
32.7    STORE     CPB70A,CPBXXX,CPB70A,U      /VALEURS DU SYSTEME
32.8    STORE     CIG70A,CIGXXX,CIG70A,U
32.9    STORE     CDS70A,CDSXXX,CDS70A,U
32.10   EXIT      U
/
/
33.1    EVENT     SYS3,S                      /SYS 300
33.2    SET       BPD,SUF,R
33.3    EXIT      C,R
33.4    INTERVAL  5,U
33.5    STORE     CSTXXX,CST50,CST50,U        /PERMET DE VOIR LES
33.6    STORE     CPBXXX,CPB50,CPB50,U        /VALEURS DU SYSTEME
33.7    STORE     CIGXXX,CIG50,CIG50,U
33.8    STORE     CMPXXX,CMP50,CMP50,U
33.9    STORE     CDSXXX,CDS50,CDS50,U
33.10   EXIT      U
/
/
34.1    EVENT     SYS3,S
34.2    SET       BPD,SUF,R
34.3    EXIT      C,R
34.4    DELAY     10,U
34.5    INTERVAL  1,U
34.6    STORE     CST50,CSTXXX,CST50,U        /PERMET D AJUSTER LES
34.7    STORE     CPB50,CPBXXX,CPB50,U        /VALEURS DU SYSTEME
34.8    STORE     CIG50,CIGXXX,CIG50,U
34.9    STORE     CMP50,CMPXXX,CMP50,U
34.10   STORE     CDS50,CDSXXX,CDS50,U
34.11   EXIT      U
/
/
35.1    EVENT     SYS4,S                      /SYS 400
35.2    SET       BPD,SUF,R
35.3    EXIT      C,R
35.4    INTERVAL  5,U
35.5    STORE     CSTXXX,CST40,CST40,U        /PERMET DE VOIR LES
35.6    STORE     CPBXXX,CPB40,CPB40,U        /VALEURS DU SYSTEME
35.7    STORE     CIGXXX,CIG40,CIG40,U
35.8    STORE     CMPXXX,0.0,0.0,U
35.9    STORE     CDSXXX,CDS40,CDS40,U
35.10   EXIT      U
/
/
36.1    EVENT     SYS4,S
36.2    SET       BPD,SUF,R
36.3    EXIT      C,R
36.4    DELAY     10,U
36.5    INTERVAL  1,U
36.6    STORE     CST40,CSTXXX,CST40,U        /PERMET D AJUSTER LES
36.7    STORE     CPB40,CPBXXX,CPB40,U        /VALEURS DU SYSTEME
36.8    STORE     CIG40,CIGXXX,CIG40,U
36.9    STORE     CDS40,CDSXXX,CDS40,U
36.10   EXIT      U

```

```

/
/
37.1  EVENT      SYS5,S                               /SYS 500
37.2  SET        BPD,SUF,R
37.3  EXIT       C,R
37.4  INTERVAL   5,U
37.5  STORE      CSTXXX,CST41,CST41,U                /PERMET DE VOIR LES
37.6  STORE      CPBXXX,CPB41,CPB41,U                /VALEURS DU SYSTEME
37.7  STORE      CIGXXX,CIG41,CIG41,U
37.8  STORE      CMPXXX,0.0,0.0,U
37.9  STORE      CDSXXX,CDS41,CDS41,U
37.10 EXIT       U
/
/
38.1  EVENT      SYS5,S
38.2  SET        BPD,SUF,R
38.3  EXIT       C,R
38.4  DELAY      10,U
38.5  INTERVAL   1,U
38.6  STORE      CST41,CSTXXX,CST41,U                /PERMET D AJUSTER LES
38.7  STORE      CPB41,CPBXXX,CPB41,U                /VALEURS DU SYSTEME
38.8  STORE      CIG41,CIGXXX,CIG41,U
38.9  STORE      CDS41,CDSXXX,CDS41,U
38.10 EXIT       U
/
/
39.1  EVENT      SYS6,S                               /SYS 600
39.2  SET        BPD,SUF,R
39.3  EXIT       C,R
39.4  INTERVAL   5,U
39.5  STORE      CSTXXX,CST10A,CST10A,U              /PERMET DE VOIR LES
39.6  STORE      CPBXXX,CPB10A,CPB10A,U              /VALEURS DU SYSTEME
39.7  STORE      CIGXXX,CIG10A,CIG10A,U
39.8  STORE      CMPXXX,0.0,0.0,U
39.9  STORE      CDSXXX,CDS10A,CDS10A,U
39.10 EXIT       U
/
/
40.1  EVENT      SYS6,S
40.2  SET        BPD,SUF,R
40.3  EXIT       C,R
40.4  DELAY      10,U
40.5  INTERVAL   1,U
40.6  STORE      CST10A,CSTXXX,CST10A,U              /PERMET D AJUSTER LES
40.7  STORE      CPB10A,CPBXXX,CPB10A,U              /VALEURS DU SYSTEME
40.8  STORE      CIG10A,CIGXXX,CIG10A,U
40.9  STORE      CDS10A,CDSXXX,CDS10A,U
40.10 EXIT       U
/
/
41.1  EVENT      SYS7,S                               /SYS 700
41.2  SET        BPD,SUF,R
41.3  EXIT       C,R
41.4  INTERVAL   5,U
41.5  STORE      CSTXXX,CST10,CST10,U                /PERMET DE VOIR LES
41.6  STORE      CPBXXX,CPB10,CPB10,U                /VALEURS DU SYSTEME
41.7  STORE      CIGXXX,CIG10,CIG10,U

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41.8    STORE    CMPXXX,CMP10,CMP10,U
41.9    STORE    CDSXXX,CDS10,CDS10,U
41.10   EXIT     U
/
/
42.1    EVENT    SYS7,S
42.2    SET      BPD,SUF,R
42.3    EXIT     C,R
42.4    DELAY    10,U
42.5    INTERVAL 1,U
42.6    STORE    CST10,CSTXXX,CST10,U
42.7    STORE    CPB10,CPBXXX,CPB10,U
42.8    STORE    CIG10,CIGXXX,CIG10,U
42.9    STORE    CMP10,CMPXXX,CMP10,U
42.10   STORE    CDS10,CDSXXX,CDS10,U
42.11   EXIT     U
/
/
43.1    EVENT    SYS8,S
43.2    SET      BPD,SUF,R
43.3    EXIT     C,R
43.4    INTERVAL 5,U
43.5    STORE    CSTXXX,CST30,CST30,U
43.6    STORE    CPBXXX,CPB30,CPB30,U
43.7    STORE    CIGXXX,CIG30,CIG30,U
43.8    STORE    CMPXXX,0.0,0.0,U
43.9    STORE    CDSXXX,CDS30,CDS30,U
43.10   EXIT     U
/
/
44.1    EVENT    SYS8,S
44.2    SET      BPD,SUF,R
44.3    EXIT     C,R
44.4    DELAY    10,U
44.5    INTERVAL 1,U
44.6    STORE    CST30,CSTXXX,CST30,U
44.7    STORE    CPB30,CPBXXX,CPB30,U
44.8    STORE    CIG30,CIGXXX,CIG30,U
44.9    STORE    CDS30,CDSXXX,CDS30,U
44.10   EXIT     U
/
/
45.1    EVENT    SYS9,S
45.2    SET      BPD,SUF,R
45.3    EXIT     C,R
45.4    INTERVAL 5,U
45.5    STORE    STAXX,STAR1,STAR1,U
45.6    STORE    STOXX,STOR1,STOR1,U
45.7    STORE    STA7XX,STA7R1,STA7R1,U
45.8    STORE    STO7XX,STO7R1,STO7R1,U
45.9    STORE    STA8XX,STA8R1,STA8R1,U
45.10   STORE    STO8XX,STO8R1,STO8R1,U
45.11   STORE    STA9XX,STA9R1,STA9R1,U
45.12   STORE    STO9XX,STO9R1,STO9R1,U
45.13   EXIT     U
/
/

```

/PERMET D AJUSTER LES
/VALEURS DU SYSTEME

/SYS 800

/PERMET DE VOIR LES
/VALEURS DU SYSTEME

/PERMET D AJUSTER LES
/VALEURS DU SYSTEME

/SYS 900

/PERMET DE VOIR LES
/VALEURS DU SYSTEME
/VALEURS DU SYSTEME
/VALEURS DU SYSTEME
/VALEURS DU SYSTEME

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46.1    EVENT    SYS9,S
46.2    SET      BPD,SUF,R
46.3    EXIT     C,R
46.4    DELAY    10,U
46.5    INTERVAL 1,U
46.6    STORE    STAR1,STAXX,STAR1,U           /PERMET D AJUSTER LES
46.7    STORE    STOR1,STOXX,STOR1,U           /VALEURS DU SYSTEME
46.8    STORE    STA7R1,STA7XX,STA7R1,U
46.9    STORE    STO7R1,STO7XX,STO7R1,U
46.10   STORE    STA8R1,STA8XX,STA8R1,U
46.11   STORE    STO8R1,STO8XX,STO8R1,U
46.12   STORE    STA9R1,STA9XX,STA9R1,U
46.13   STORE    STO9R1,STO9XX,STO9R1,U
46.14   EXIT     U
/
/
47.1    EVENT    SYS10,S                       /SYS 1000
47.2    SET      BPD,SUF,R
47.3    EXIT     C,R
47.4    INTERVAL 5,U
47.5    STORE    STAXX,STAR2,STAR2,U           /PERMET DE VOIR LES
47.6    STORE    STOXX,STOR2,STOR2,U           /VALEURS DU SYSTEME
47.7    STORE    STA7XX,STA7R2,STA7R2,U        /VALEURS DU SYSTEME
47.8    STORE    STO7XX,STO7R2,STO7R2,U        /VALEURS DU SYSTEME
47.9    STORE    STA8XX,STA8R2,STA8R2,U        /VALEURS DU SYSTEME
47.10   STORE    STO8XX,STO8R2,STO8R2,U
47.11   STORE    STA9XX,STA9R2,STA9R2,U
47.12   STORE    STO9XX,STO9R2,STO9R2,U
47.13   EXIT     U
/
/
48.1    EVENT    SYS10,S
48.2    SET      BPD,SUF,R
48.3    EXIT     C,R
48.4    DELAY    10,U
48.5    INTERVAL 1,U
48.6    STORE    STAR2,STAXX,STAR2,U           /PERMET D AJUSTER LES
48.7    STORE    STOR2,STOXX,STOR2,U           /VALEURS DU SYSTEME
48.8    STORE    STA7R2,STA7XX,STA7R2,U
48.9    STORE    STO7R2,STO7XX,STO7R2,U
48.10   STORE    STA8R2,STA8XX,STA8R2,U
48.11   STORE    STO8R2,STO8XX,STO8R2,U
48.12   STORE    STA9R2,STA9XX,STA9R2,U
48.13   STORE    STO9R2,STO9XX,STO9R2,U
48.14   EXIT     U
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    964
/   CDB:       378
/   PROCESSES: 4228
/   OVERHEAD:  2700
/   TOTAL:     8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    964

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```
/      CDB:      378
/  PROCESSES:  4228
/  OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4228
/  OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4228
/  OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4228
/  OVERHEAD:   2700
/      TOTAL:   8270  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4234
/  OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4234
/  OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4234
/  OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
/      CDB:      378
/  PROCESSES:  4234
/  OVERHEAD:   2700
/      TOTAL:   8276  16K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    964
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/      CDB:      378
/  PROCESSES:  4234
/    OVERHEAD:  2700
/      TOTAL:  8276  16K DSC MEMORY NEEDED
```

SYSTÈME V43-3

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE.

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE ~~RETOUR~~.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

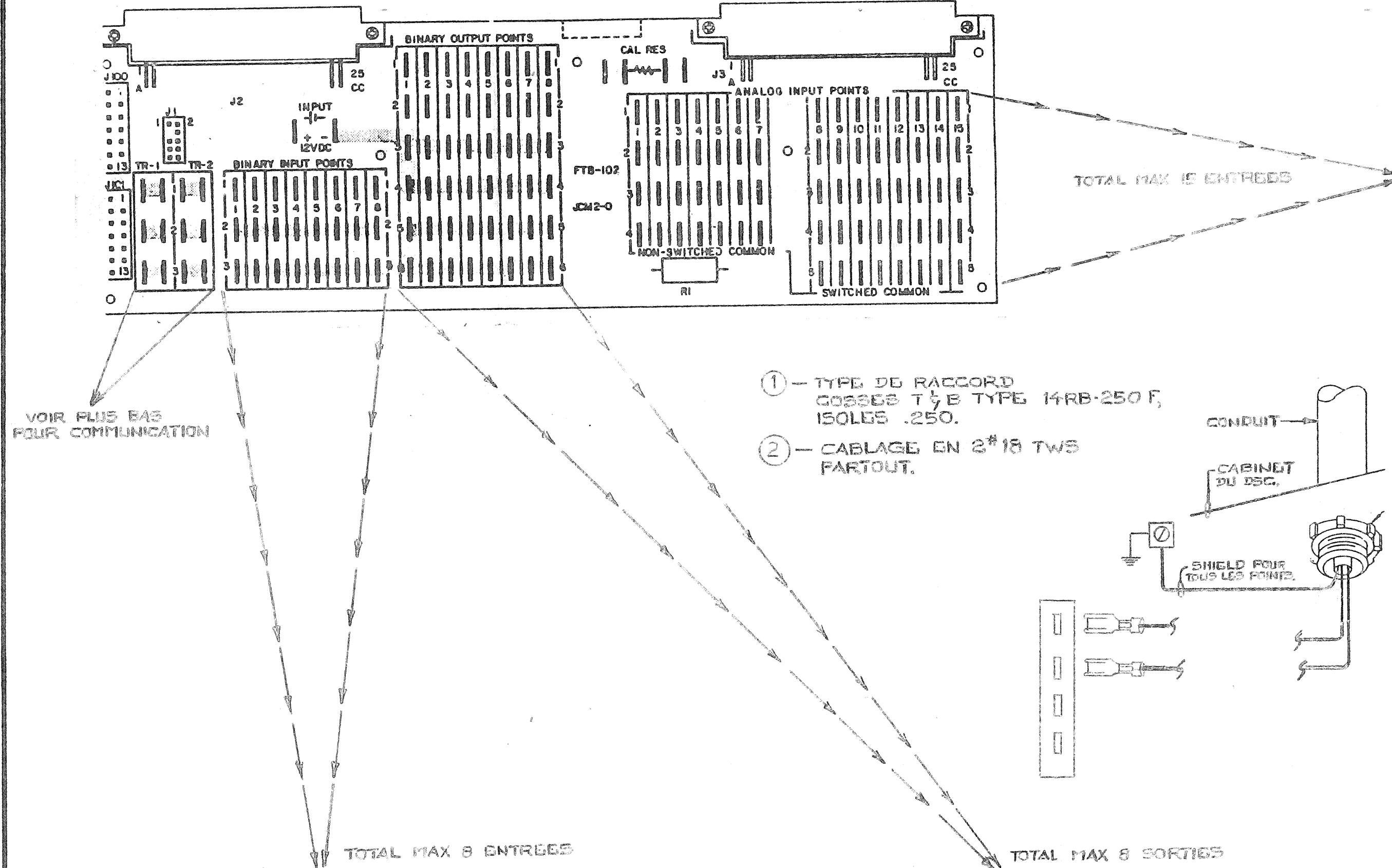
SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

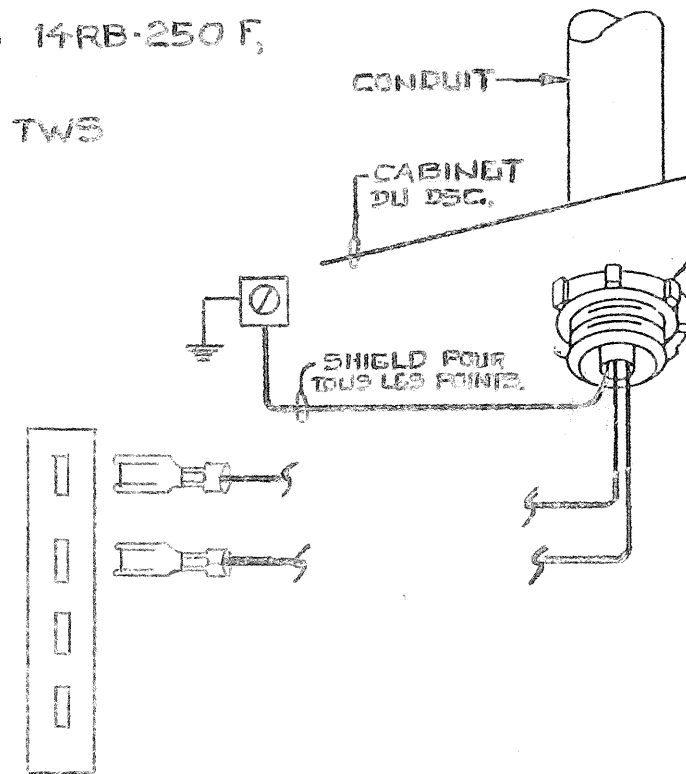
SUR UN SIGNAL DU PANNEAU D'ALARME LE VENTILATEUR NO V43-27E DEMARRE AFIN D'EVACUER LA FUMEE. EP-2 EST ENERGISE ET PERMET AU VOILET DA-6 ET 7 D'OUVRIR ET DA-8 DE FERMER.

AU DEMARRAGE DU VENTILATEUR V43-27E, LE SYSTEME V43-3 EST ARRETE VIA LE PANNEAU D'ALARME INCENDIE. A

BORNIERS DE RACCORDEMENT (FTB-102)








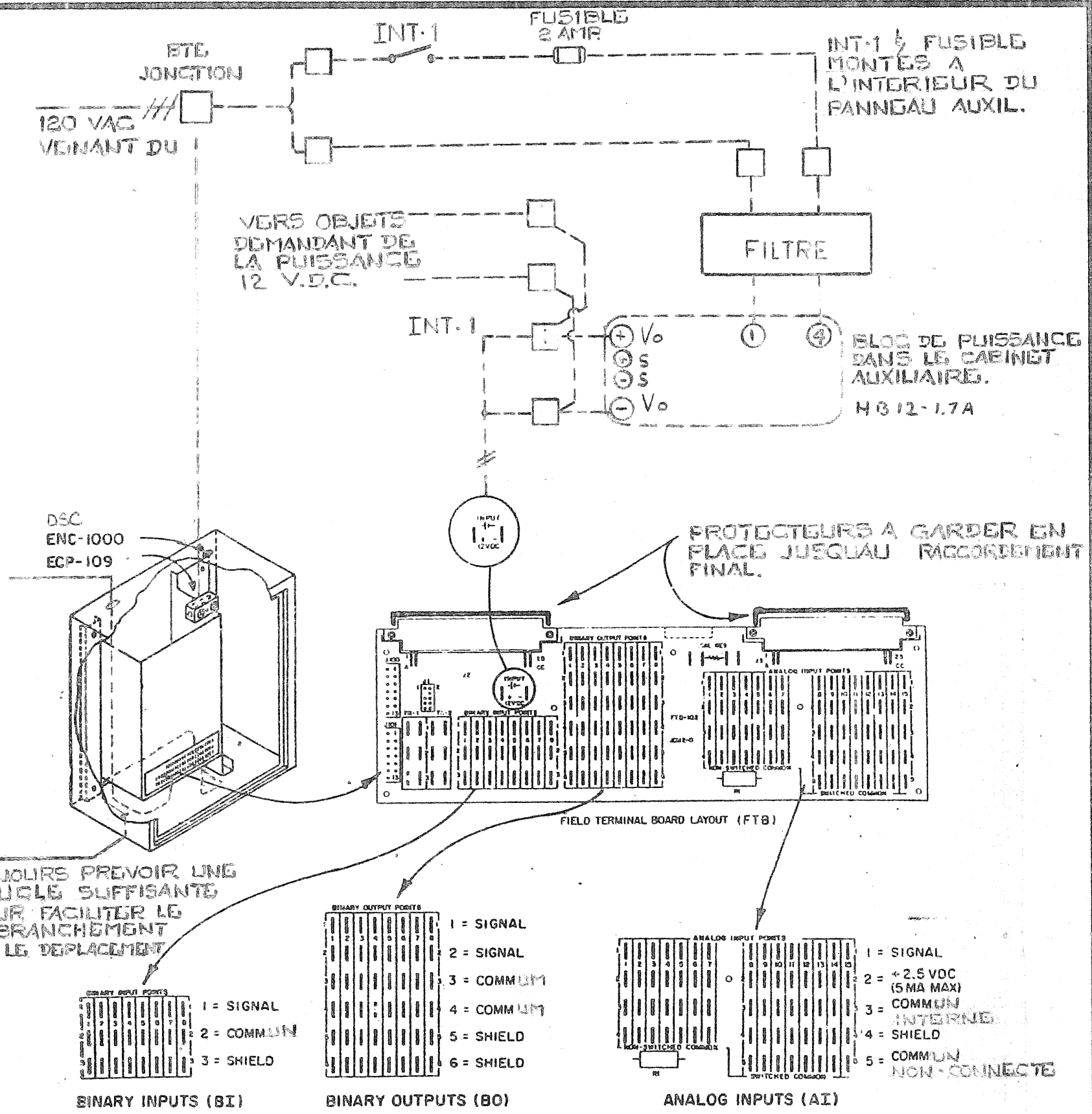
- 1 - TYPE DE RACCORD: COSSSES TYPE 14RB-250 F, ISOLÉS .250.
- 2 - CABLAGE EN 2*18 TWS PARTOUT.



EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 3		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 3	BIN	1 2	<u> </u> <u> </u>	CONTACT AUX. DEM.	MCC - 1	B1.1		
2	GEL	SYSTEME 3	BIN	1 2	<u> </u> <u> </u>	RELAIS RG	CAB AUX.	B2.1		

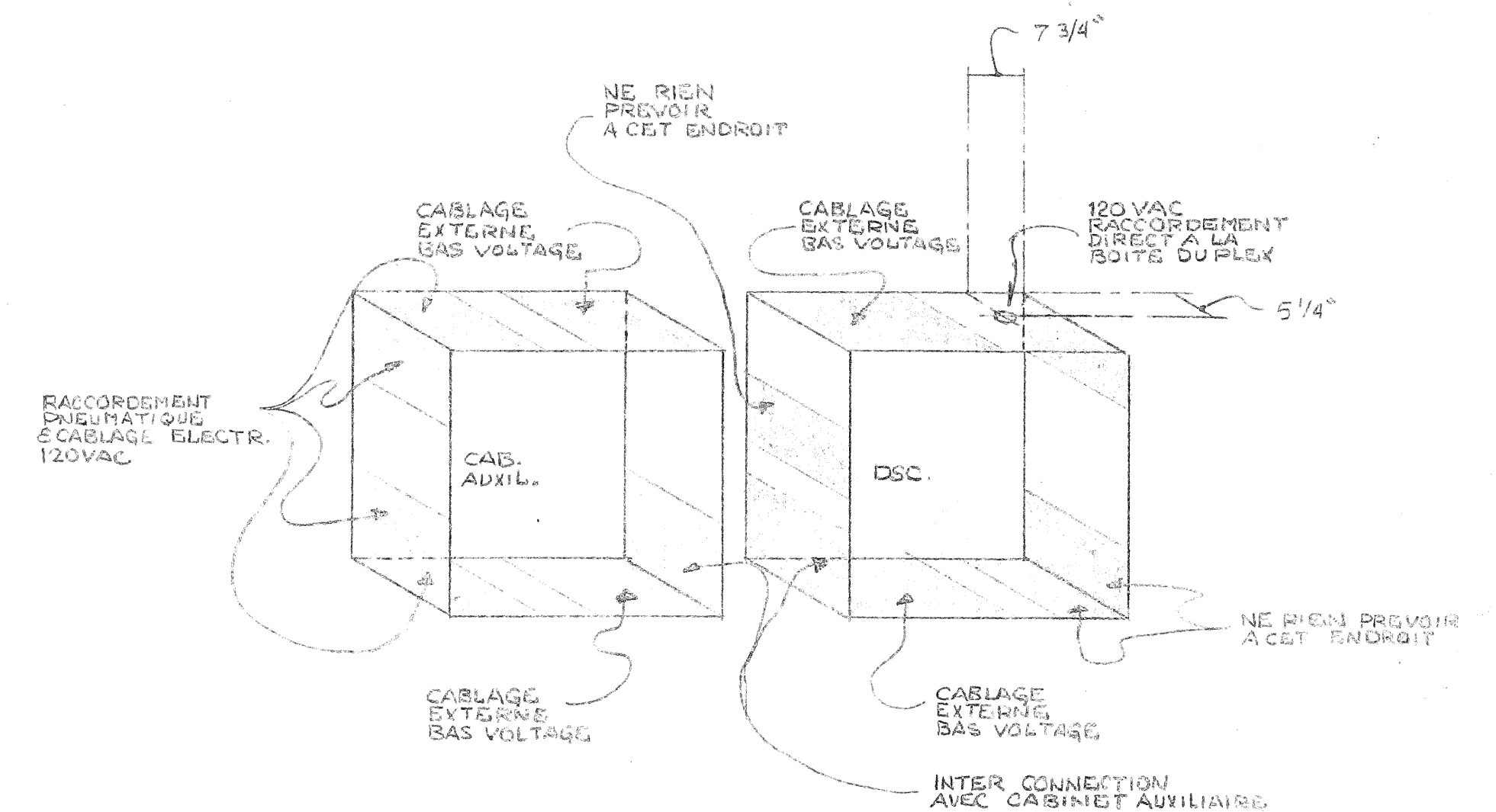
EMPLACEMENT			ADRESSE								
NOM: C.I.R.A.								DSC 3			
EMPLACEMENT:								FIC 1			
DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-10 2	CAB AUX	P1.1			
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1			
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1			
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-10 2	CAB AUX	P4.1			
5A	RI	ARRET DEPART SYSTEME 3	SST	1 3	2 7	RELAIS 12VDC	MCC - 1	55A.1			

EMPLACEMENT			ADRESSE					DSC 3		
NOM: C.I.R.A.								FIC 1		
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20MA 10-90%
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20MA 10-90%
11	PT-1	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL.V43.3 BOITE LA PLUS LOIN	A11.1		0-5VDC 0-2.5%
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		

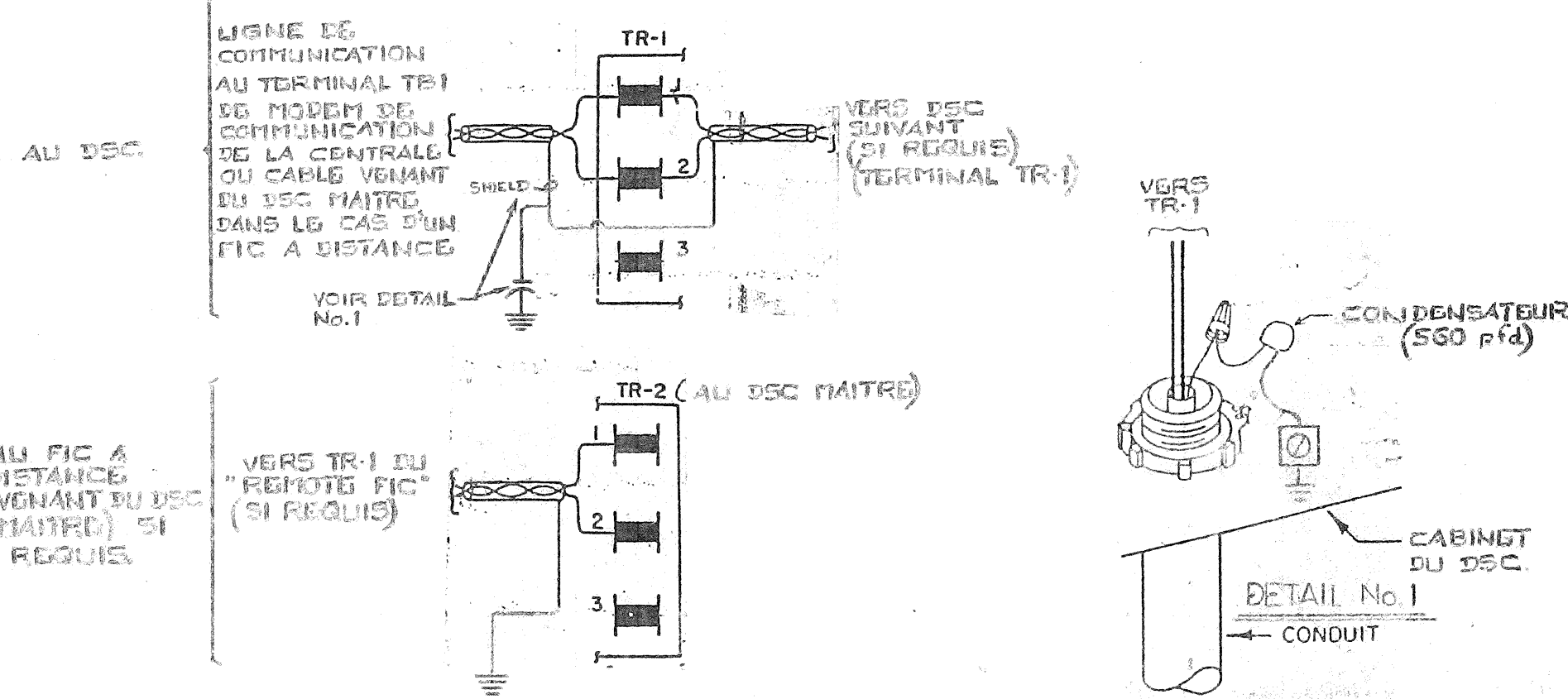


INT-1: INTERRUPTEUR "TOGGLE" CABLE SPST, MOD #17, MONTE AVEC R4000-101 J.C.L.

□ — TERMINAUX DANS LE CABINET AUXILIAIRE





- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES, ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-8500		TEL QUE CONSTRUIT		86-07-07	
DSC-3						SEPT-85	
REPRESENTANT	TECHNICIEN	REVISION	AVIS	DATE	PAR		
J.C.R.	R.F.	PAR 1	DATE	PAR	DATE	25-6-13	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		JOHNSON CONTROLS		CONTRAT	
ST-HYACINTHE, QUE.				Division Des Systemes Et Services		4096-0008-4/2	
				Société de Contrôle Johnson Lite		4068-4	
				441 boulevard Lebeau			
				Montréal, QC H4N 1S2			
				Tél. 514-332-6900			

LISTE DE MATERIEL

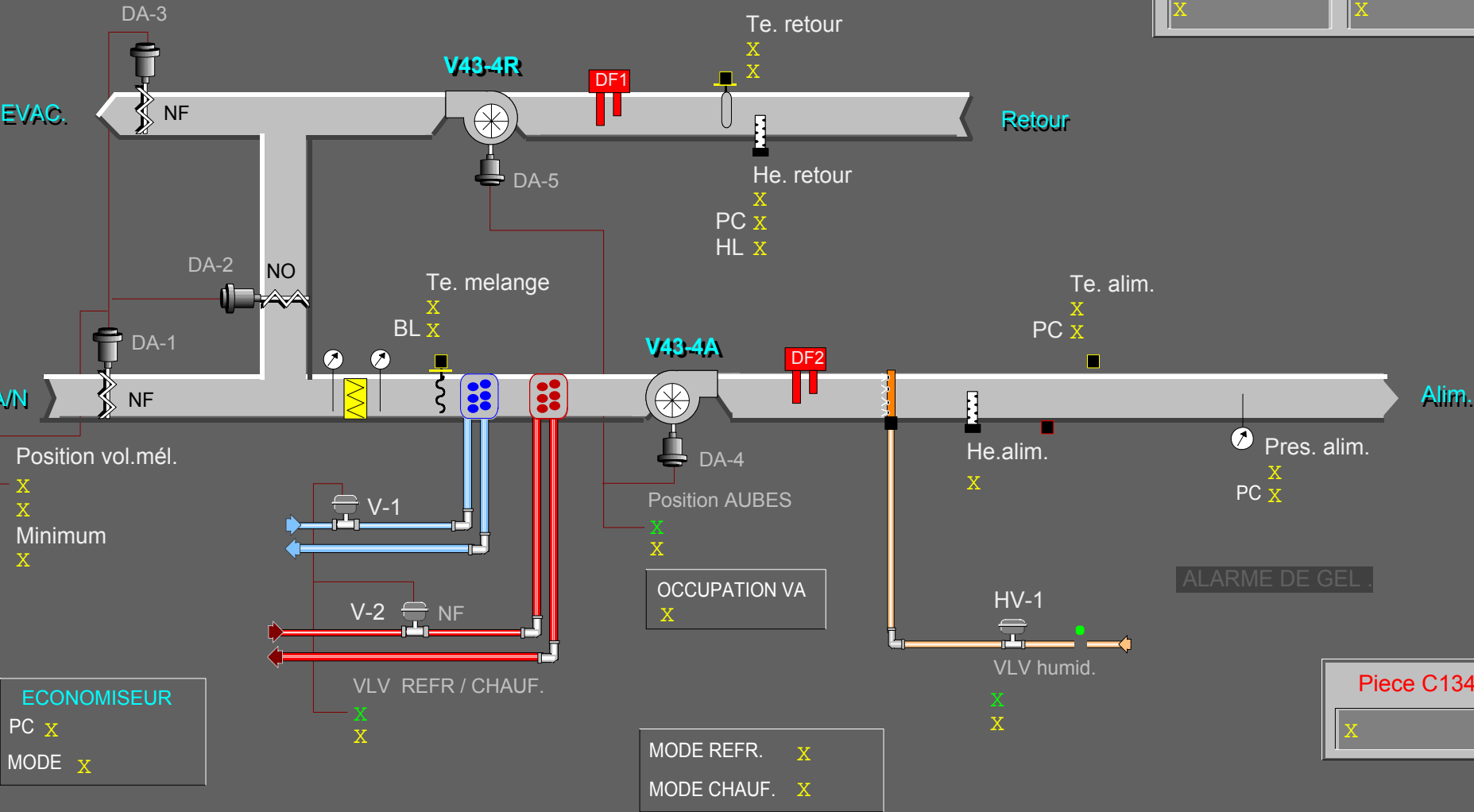
IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
DA-7, 8	D-3073-2	2	MOTEUR PNEUMATIQUE
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V5462-7	1	VALVE N.F. $\phi 2 \frac{1}{2}$ " C/A P.P.
V-2	V5252-2	1	VALVE NO. $\phi 2$ " C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1, 2, 3, 4	V11HAA-100	4	RELAIS ELECTRIQUE PNEUMATIQUE
G-1, 2, 3	G2010-101	3	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB 12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	BD 2 FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
DA-9, 10	D3073-2	2	MOTEUR PNEUMATIQUE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR
C-1 	C 208-2	1	INVERSEUR DE SIGNAL
DA-11 	D4400-8145	1	MOTEUR PNEUMATIQUE

MODE CONTROLE DE NUIT ☒

PC REDEMARRAGE ☒

CÉDULE

RETOUR	ALIMENT.
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



PARAMETRES

Contrôle de nuit

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle Chauffage

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle refroidissement

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle volets melange

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle Humidité

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle HL Humidité

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle B Limite mel.

Etat CTRL BL	<input checked="" type="checkbox"/>
Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

Contrôle Pression statique

Resultat PID	<input checked="" type="checkbox"/>
Interval PID	<input checked="" type="checkbox"/>
Bande propr.	<input checked="" type="checkbox"/>
Gain boucle PID	<input checked="" type="checkbox"/>
Bande morte	<input checked="" type="checkbox"/>

HORAIRE

Depart jour cour.

☒

Arret jour cour.

☒

Depart semaine

☒

Arret semaine

☒

Depart samedi

☒

Arret samedi

☒

Depart dimanche

☒

Arret dimanche

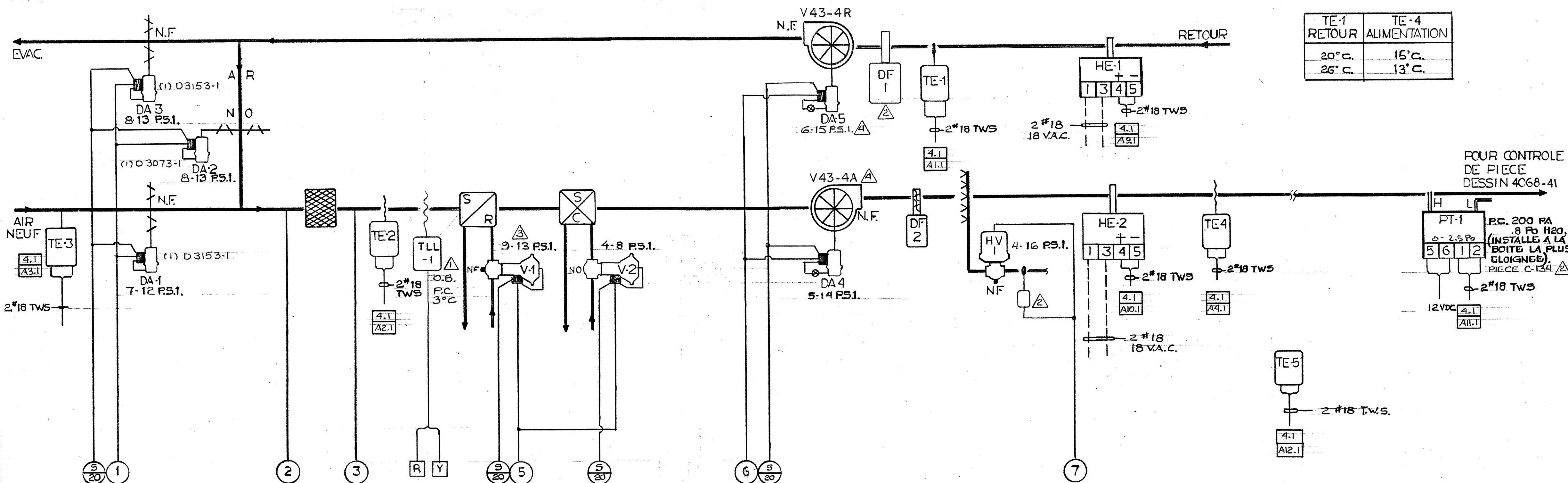
☒

VACANCES DSC-4, V43-4

Jour / Mois	VACANCE 1	X
Jour / Mois	VACANCE 2	X
Jour / Mois	VACANCE 3	X
Jour / Mois	VACANCE 4	X
Jour / Mois	VACANCE 5	X
Jour / Mois	VACANCE 6	X



DIAGRAMME DE DEBIT



TE-1	TE-4
RETOUR	ALIMENTATION
20°C.	15°C.
26°C.	13°C.

LISTE DE MATERIEL			
IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3153-1	3	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	ALLA-6	1	BASSE LIMITE
DF-1 ET 2	SETRA 261	1	DETECTEUR DE FUMEE PYROTRONIC
PT-1	EPT-102	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	2000-50	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	V3970-1010	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V3754-1025	1	VALVE N.F. 1 1/2" C/A P.P.
V-2	----	1	VALVE NO. 1 1/2" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	HB12-1.7A	1	INTERRUPTEUR 2 POSITIONS
PS-1	M8100-109	1	BLOC DE PUISSANCE 12 VDC
P-1	6012	1	PANNEAU 24" X 36" X 7"
R-1, RG	GO2FF	2	RELAIS 12 VDC
XMR-1	TE-1800-102	1	TRANSFORMATEUR 120/18 VAC
TE-5	PAR D'AUTRES	1	ELEMENT DE TEMP. DE PIECE
HV-1	----	1	SOUPAPE HUMIDIFICATEUR

PANNEAU P-1

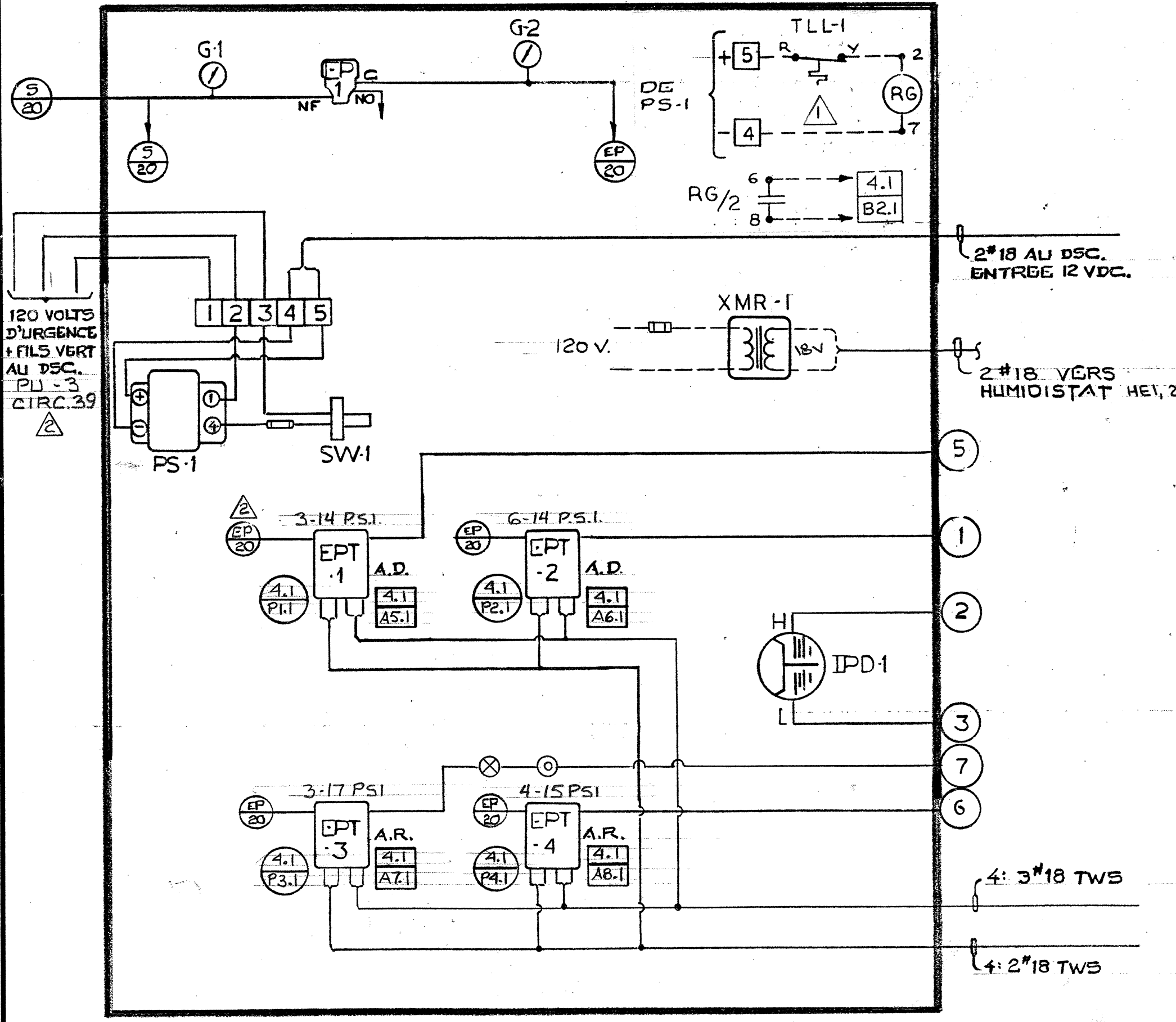
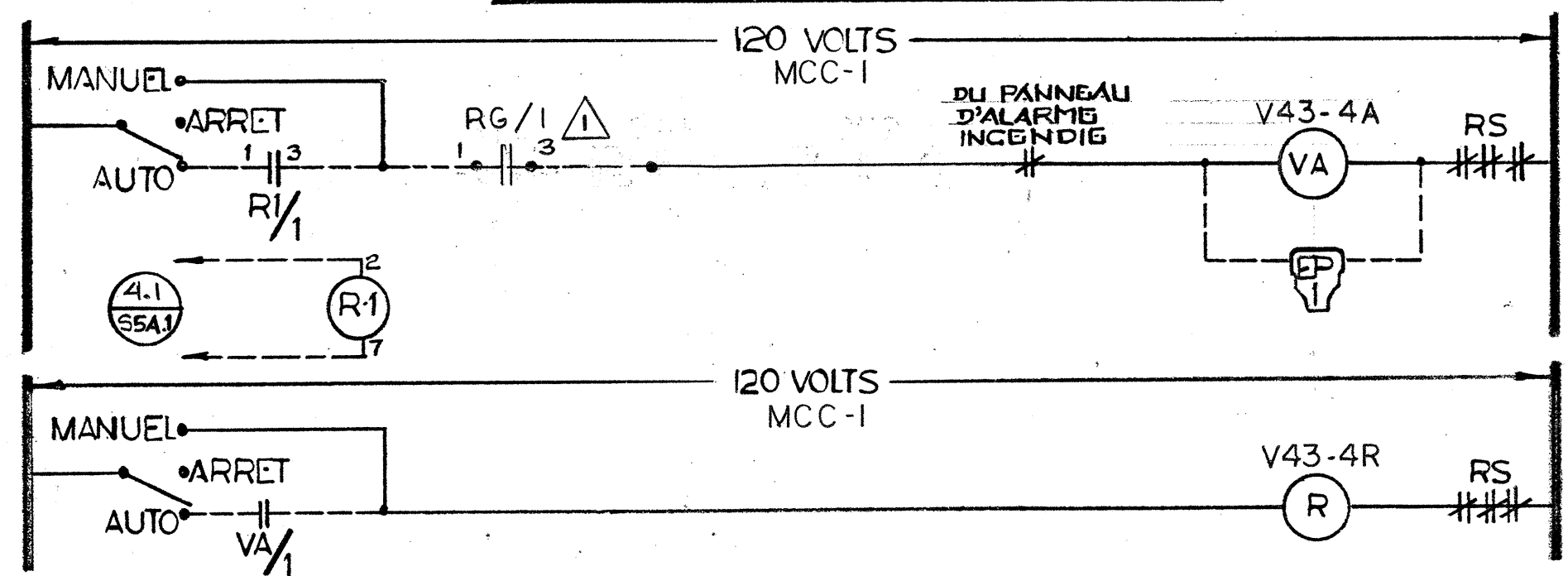
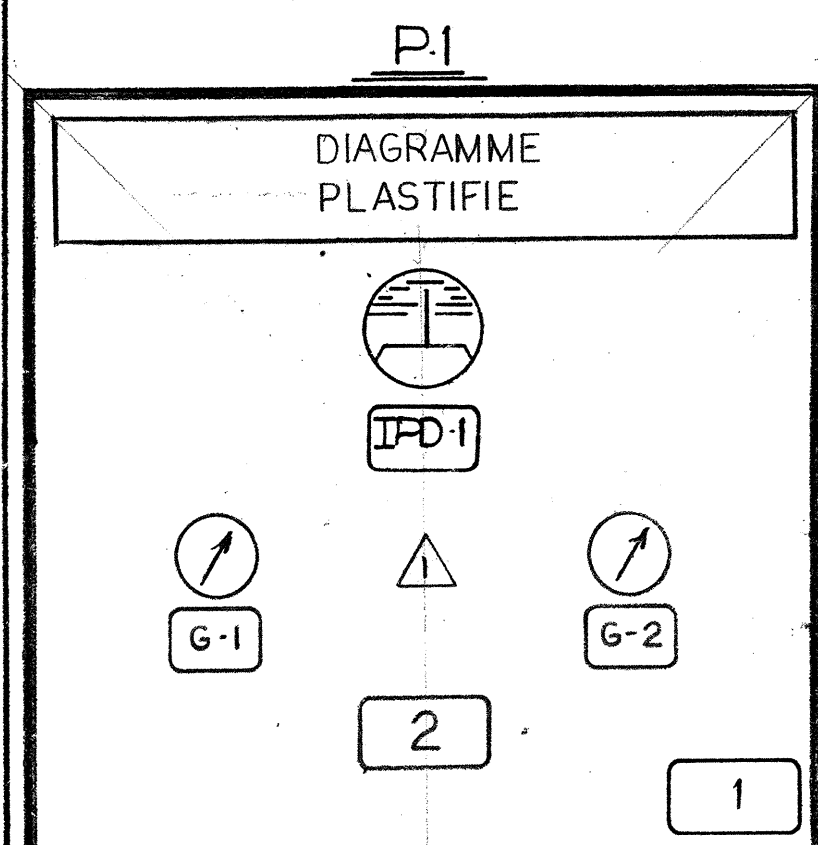


DIAGRAMME ELECTRIQUE



FACE DU PANNEAU P-1



- 1—CONTRACTEUR: PAVAL INC. INGENIEUR: PAGEAU MOREL ET ASS.
- 2—SYSTEME NO. V43-4
- IPD-1—ETAT DES FILTRES
- G-1—AIR D'ALIMENTATION
- G-2—AIR DE CONTROLE

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE.

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFRIGIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT-1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

TITRE
SYSTEME V43-4
ALIMENTATION BLOC C - R.D.C.

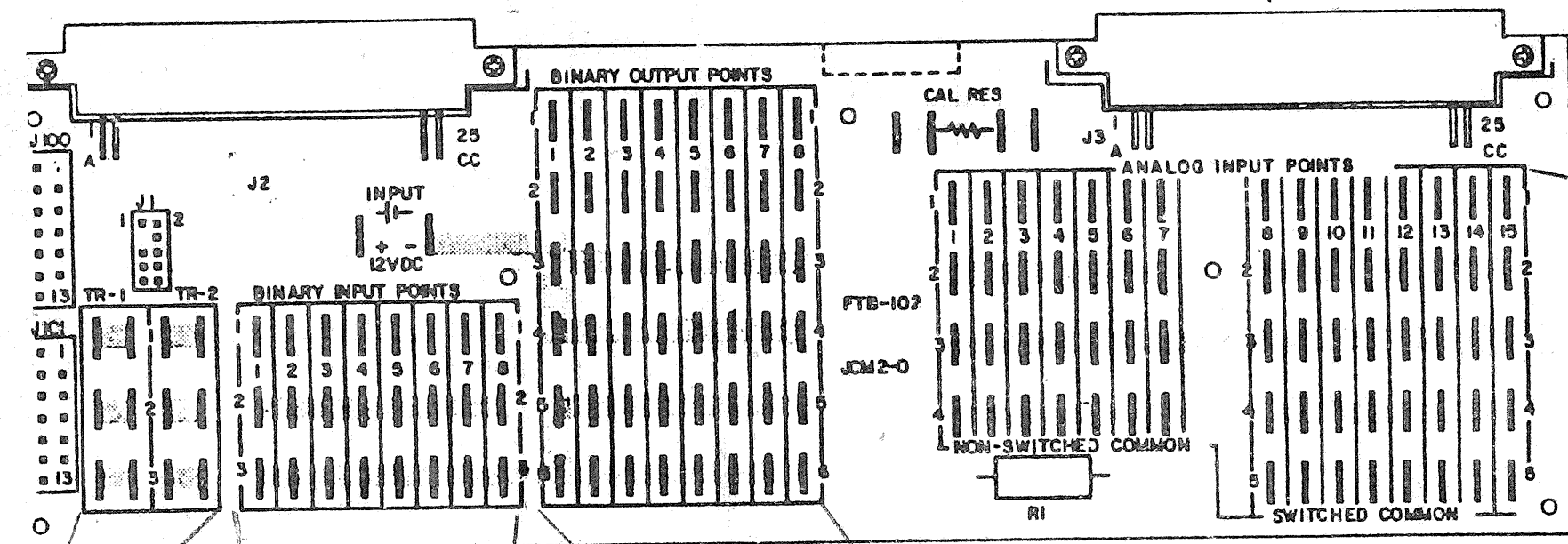
PROJET: CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE.

JOHNSON CONTROLS
Division Des Systemes Et Services

Société de Contrôle Johnson Ltee
441 boulevard Labeau
Montréal, QC H4N 1S2
Tél. 514-332-6960

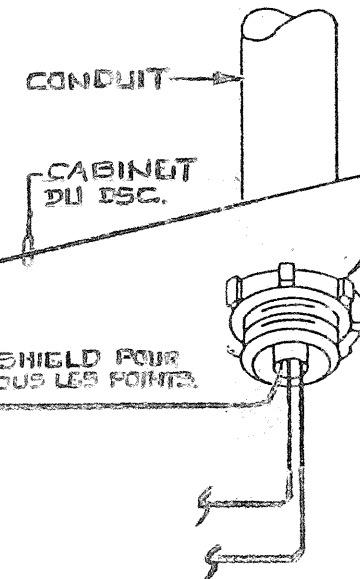
CONTRAT
4096-0008-5
DESSIN NO.:
4068-5

BORNIERS DE RACCORDEMENT (FTB-102)



TOTAL MAX 15 ENTREES

- 1 - TYPE DE RACCORD: GOSSES TYPE 14RB-250 F, ISOLEES .250.
- 2 - CABLAGE EN 2" 18 TWS PARTOUT.



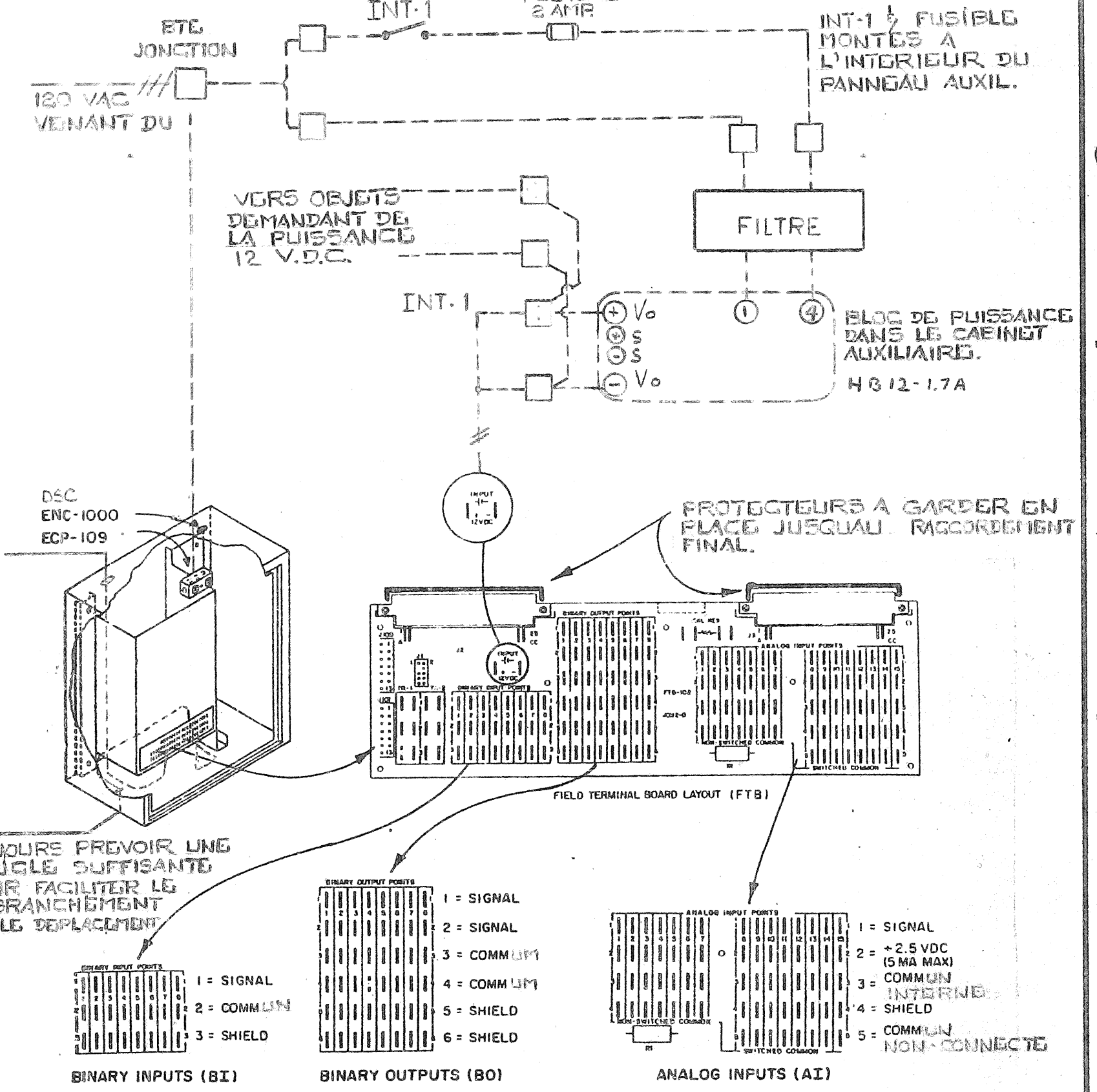
TOTAL MAX 8 ENTREES

TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE									
NOM: C.I.R.A.											
EMPLACEMENT: DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	STATUS	SYSTEME 4	BIN	1	2	CONTACT AUX. DEM.	MCC	B1.1			
2	GEL	SYSTEME 4	BIN	1	2	RELAIS RG	CAB AUX.	B2.1			

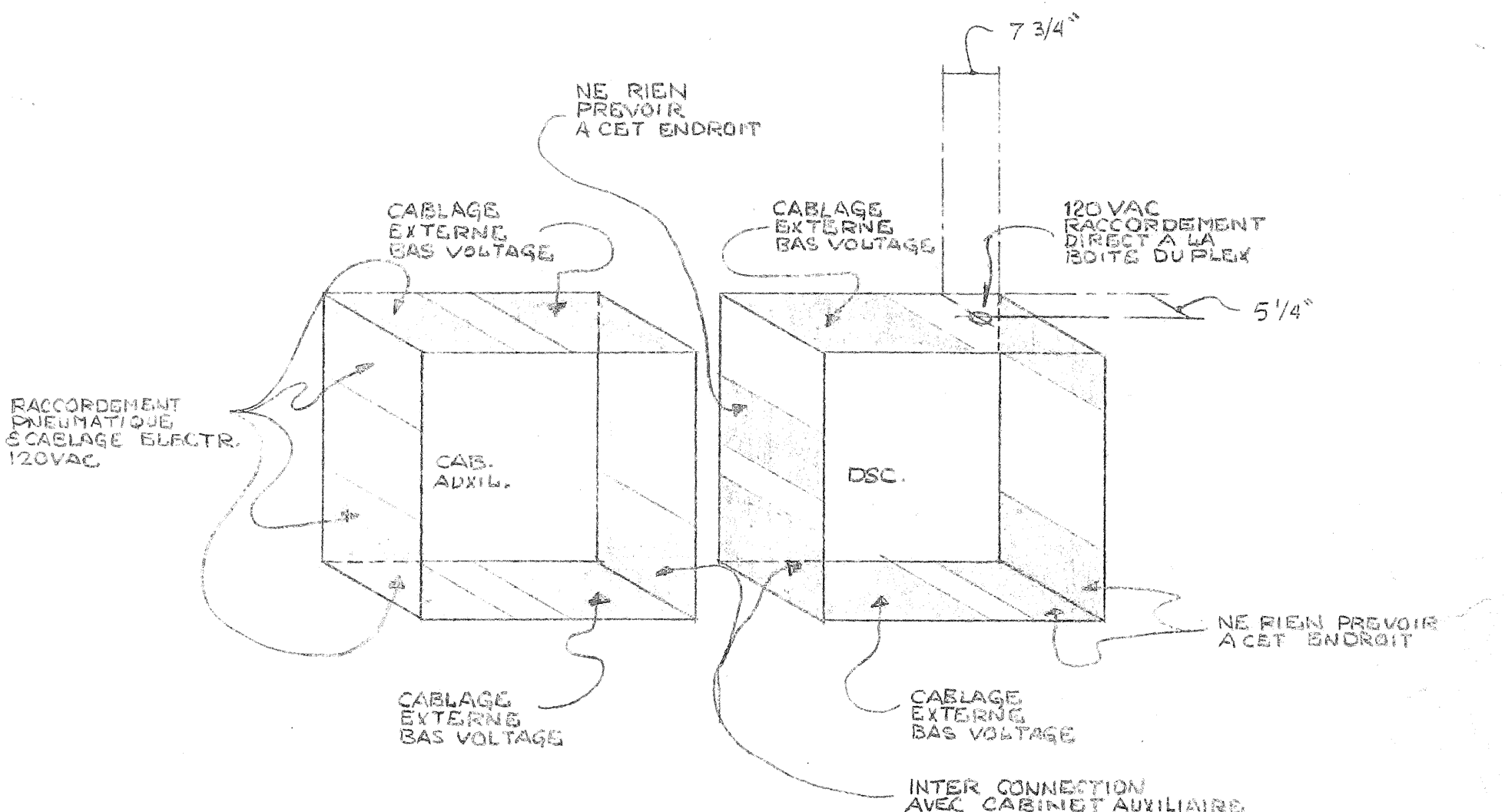
EMPLACEMENT		ADRESSE									
NOM: C.I.R.A.											
EMPLACEMENT: DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	EPT-1	VALVE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P4.1		
5A	R1	ARRET DEPART SYSTEME 4	SST	1	2	RELAIS 12VDC	MCC	S5A.1			

EMPLACEMENT		ADRESSE									
NOM: C.I.R.A.											
EMPLACEMENT: DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	TE-1	TEMP RETOUR	ANA	1	3	TE1101-100	RETOUR	A1.1			
2	TE-2	TEMP MELANGE	ANA	1	3	TE1100-17	MELANGE	A2.1			
3	TE-3	AIR NEUF	ANA	1	3	TE1101-100	AIR NEUF	A3.1			
4	TE-4	ALIM	ANA	1	3	TE1100-17	ALIM	A4.1			
5	EPT-1	VALVE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI-CATEUR	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1	4	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20MA 10-90%HR	
10	HE-2	HUMIDITE ALIM.	ANA	1	4	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20MA 10-90%HR	
11	PT-1	PRESSION ALIM.	ANA	1	5	SONDE DE PRESSION PT-1	AL.V43.4 BOITE LA PLUS LOIN	A11.1		0-5VDC 0-2.5Pa	
12	TE-5	TEMP. PIECE	ANA	1	3	TE1800-102		A12.1			

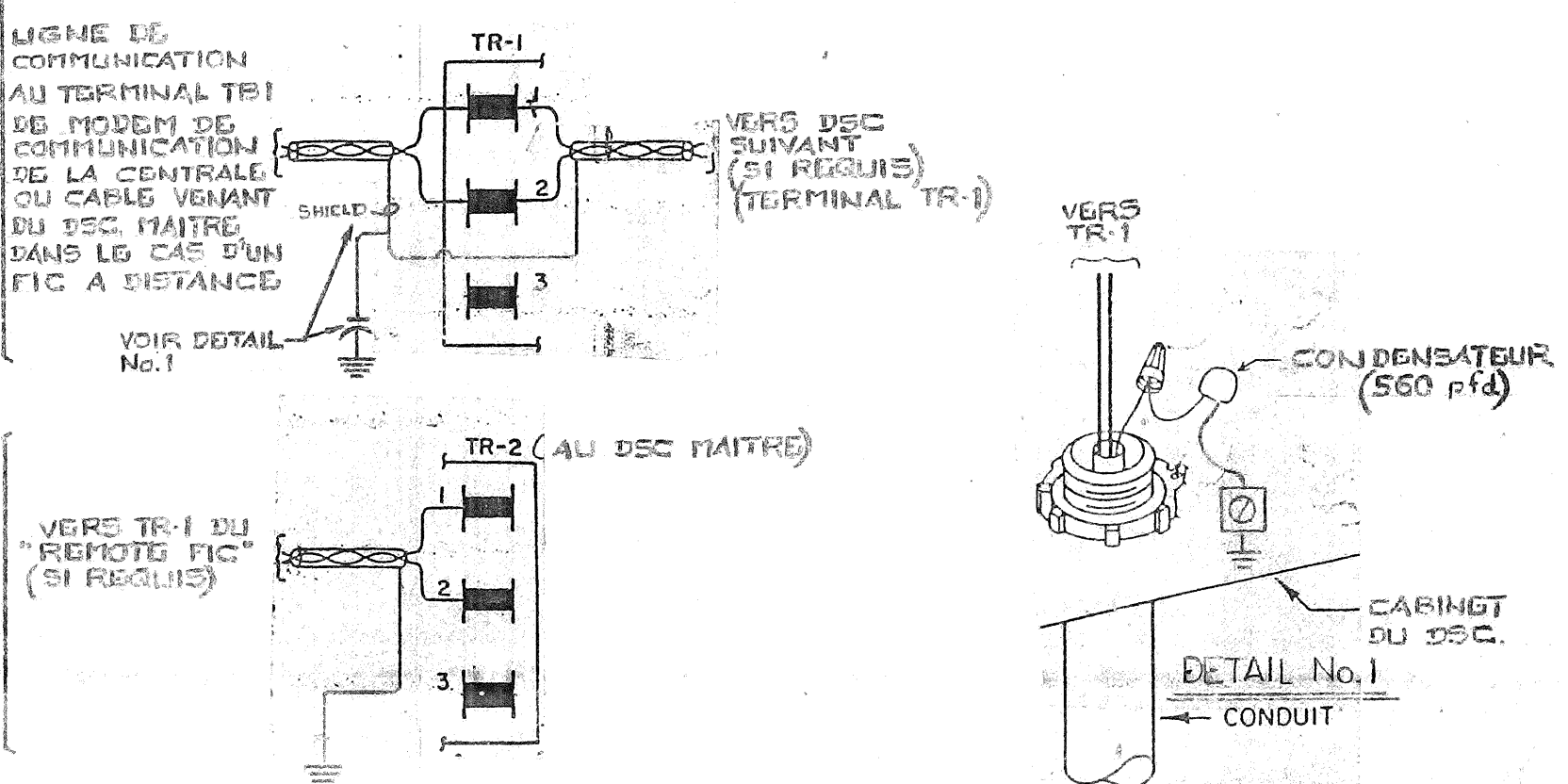


INT-1: INTERRUPTEUR "TOGGLE" CABLE SP.37, MOD 447, MONTE AVEC R-000-101 J.C.L.

□ — TERMINAUX DANS LE CABINET AUXILIAIRE



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-8500		TEL QUE CONSTRUIT		86-07-07	
DSC-4							
REFERENCE	J.C.R.	TECHNICIEN	R.E.	REVISION	DATE	PAR	APPROUVE
PROJET	CENTRE DE RECHERCHE ALIMENTATION	ST-HYACINTHE		DATE	85-7-13	PAR	4096-0008-32
Société de Contrôle Johnson Ltd		441 Boulevard Lebeau		Montréal, QC H4N 1S2		Tél. 514-332-6880	
CONTRAT		4096-0008-32		DESSIN NO.		4068-6	

```

/DSC 4 SYSTEME V43.4
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      ADJUST  DELSST,I      /DELAI APRES UNE PANNE
2      DISPLAY OCCD,B        /CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3      ADJUST  FSTRT,B       /DEMANDE VENTILATEUR
4      DISPLAY FSTAT,B       /ETAT VENTIL. ALIM.
5      DISPLAY FREEZE,B      /ETAT THERMOSTAT DE GEL NORMAL-ON
/
6      DISPLAY NCTL,B        /CONTROLE DE TEMP NUIT
7      DISPLAY TLCON,B       /CONTROLE PAR TEMP.
8      ADJUST  NSBT,A        /PT DE CONSIGNE REDEMARRAGE
9      ADJUST  NSP,A         /POINT DE CONSIGNE RETOUR
10     DISPLAY Z41,A         /RESULTAT CTL NUIT
/
11     DISPLAY TE80,A        /TEMP RETOUR
12     DISPLAY TE10,A       /TEMP MELANGE
13     DISPLAY TE1,A        /TEMP EXTERIEURE
14     DISPLAY TE60,A       /TEMP ALIMENTATION
15     DISPLAY TE100,A      /TEMP PIECE
/
16     DISPLAY MXD,B        /CONTROLE DE JOUR
17     ADJUST  RARL,A        /AIR RET BAS LIM REAJ TEMP ALIM
18     ADJUST  RARH,A        /AIR RET HAU LIM REAJ TEMP ALIM
19     ADJUST  SAHL,A        /REAJ TEMP ALIM HAU LIM
20     ADJUST  SALL,A        /REAJ TEMP ALIM BAS LIM
21     DISPLAY DSSP,A       /POINT DE CONSIGNE ALIM
22     ADJUST  OASO,A       /TEMP LIM EXT ECONOMISEUR
23     DISPLAY ECON,B       /RESULTAT ECONOMISEUR
24     ADJUST  MDP,A        /POSITION MINIMUM VOLETS
25     ADJUST  MXDSP,A      /POINT DE CONSIGNE LIMITE MEL.
26     DISPLAY ZMXD,A       /RESULTAT PROPORTION.
27     DISPLAY Z10M,A       /RESULTAT VOLETS LIMITE
28     DISPLAY Z10C,A       /RESULTAT VOLETS CTL
29     DISPLAY Z10,A        /RESULTAT VOLETS
30     DISPLAY ZT10,A       /F.B. VOLETS
/
31     DISPLAY HTG,B        /CHAUFFAGE
32     DISPLAY Z40,A        /RESULTAT CHAUFFAGE
/
34     DISPLAY CLG,B        /REFROIDISSEMENT
35     DISPLAY Z30,A        /RESULTAT REFROIDISSEMENT
36     DISPLAY ZT30,A       /F.B. SOUPAPES
/
37     DISPLAY HT80,A       /HUMIDITE RETOUR
38     DISPLAY HT60,A       /HUMIDITE ALIMENT
39     ADJUST  RHSP,A       /POINT DE CONSIGNE HUMIDITE DE RETOUR
40     ADJUST  RHSPA,A      /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41     DISPLAY Z70HL,A      /RESULTAT CTL HUMIDITE HAUTE LIMITE
42     DISPLAY Z70C,A       /RESULTAT CTL HUMIDITE CONT RETOUR
43     DISPLAY Z70,A        /RESULTAT CTL HUMIDITE
44     DISPLAY ZT70,A       /F.B. HUMIDITE
/

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45      DISPLAY  FSP,I          /PRESSION STATIQUE
46      ADJUST   SPSP,I        /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A         /RESULTAT CTL VAV
48      DISPLAY  ZT50,A        /F.B. VAV
/
49      ADJUST   STA,T         /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T         /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T        /HEURE DEPART SAMEDI
52      ADJUST   STO7,T        /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T        /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T        /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T        /HEURE DEPART SEMAINE
56      ADJUST   STO9,T        /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T          /VACANCE 1
58      ADJUST   H2,T          /VACANCE 2
59      ADJUST   H3,T          /VACANCE 3
60      ADJUST   H4,T          /VACANCE 4
/
61      OVERRIDE ZCP30,A,2     /SOUPAPES
62      OVERRIDE ZCP10,A,2     /VOLETS
63      OVERRIDE ZCP70,A,2     /HUMIDITE
64      OVERRIDE ZCP50,A,2     /VAV
/

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/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR      /
/-----/
/

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```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-4
/
/      51      ALARME HORAIRE SYSTEME V43-4
/
/-----/
/
/
/
□

```

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 15:26:16
/
/TRANSLATION LISTING FOR DSC-4.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:22
/
/TRANSLATION LISTING FOR DSC-4.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:52:16
/
/TRANSLATION LISTING FOR CIRA4.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   4   SYSTEME   V43.4
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     05 DECE 1986
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,7366
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  21
@ AD:  88
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-10,RAT-0,TOT-0

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@ BO:  MOM-0,POS-4,MAN-1
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1    FSTAT    CON-1    E,E      /ETAT VENTIL. ALIM.
BI-2    FREEZE   CON-2    E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1    TE80     FUL-1    E,0.5,E,V,T,-45.9,129.9 /TEMP RETOUR
AI-2    TE10     FUL-2    E,0.5,E,V,T,-45.9,130.0 /TEMP MELANGE
AI-3    TE1      FUL-3    E,0.5,E,V,T,-45.9,130.0 /TEMP EXT
AI-4    TE60     FUL-4    E,0.5,E,V,T,-45.8,130.0 /TEMP ALIM
AI-5    ZT30     FUL-5    E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6    ZT10     FUL-6    E,0.5,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-7    ZT70     FUL-7    E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8    ZT50     FUL-8    E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-9    HT80     LTD-1    E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10   HT60     LTD-2    E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-11   SPT      FUL-9    E,0.1,E,N,O,0,621      /PRESSION STATIQUE EN P
AI-12   TE100    FUL-10   E,0.5,E,V,T,-46.7,130.3 /TEMP PIECE
/
/
BO-1    ZC30     POS-1    D,E,0    /SOUPAPE
BO-2    ZC10     POS-2    D,E,0    /VOILETS
BO-3    ZC70     POS-3    D,E,0    /HUMIDITE
BO-4    ZC50     POS-4    D,E,0    /VAV
BO-5A   ZS50     MAN-1    E,E      /VENTIL ALIM
/
/
CP-1    ZCP30    INC-1    E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2    ZCP10    INC-2    E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOILETS
CP-3    ZCP70    INC-3    E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4    ZCP50    INC-4    E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
BD-1    OCCD     E,R      /CYCLE D OCCUPATION
BD-2    TLCON    E,R      /CONTROLE PAR TEMP.
BD-3    FSTRT    E,R      /DEMANDE VENTILATEUR
BD-4    COMP50   E,R      /RESULTAT DEMARRAGE
BD-5    CONON    E,R      /PERMISSION CONTROLE
/
/-----/
/  PARAMETRES CONTROLE DE NUIT /
/-----/
/
BD-6    NCTL     E,R      /CONTROLE DE TEMP NUIT
/
/-----/

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/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-7      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
BD-8      MXD        E,R      /CONTROLE DE JOUR
BD-9      MIXLL      E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-10     HTG        E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
BD-11     CLG        E,R      /REFROIDISSEMENT
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
BD-12     SYSP        D,R
BD-13     SYS         D,R
BD-14     SYS1        D,R
BD-15     SYS2        D,R
BD-16     SYS3        D,R
BD-17     SYS4        D,R
BD-18     SYS5        D,R
BD-19     SYS6        D,R
BD-20     SYS7        D,R
BD-21     SYS8        D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
AD-1      DOW         E,2
AD-2      H1          E,00:00
AD-3      H2          E,00:00
AD-4      H3          E,00:00
AD-5      H4          E,00:00
AD-6      H5          E,00:00
AD-7      H6          E,00:00
AD-8      STA         E,00:00 /HORAIRE
AD-9      STO         E,00:00
AD-10     STA8        E,18:00
AD-11     STO8        E,18:00
AD-12     STA7        E,18:00
AD-13     STO7        E,18:00
AD-14     STA9        E,06:34

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AD-15   STO9      E,17:00
AD-16   NSBT      E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17   DELSST    E,30    /DELAI APRES UNE PANNE
/
/-----/
/               PARAMETRES CONTROLE DE NUIT                      /
/-----/
/
AD-18   NSP       E,22.0  /POINT DE CONSIGNE RETOUR
AD-19   Z41       E,0.0   /RESULTAT CTL NUIT
AD-20   CST41     E,45    /INTERVAL CTL NUIT
AD-21   CPB41     E,20.0  /BANDE PROP CTL NUIT
AD-22   CIG41     E,5     /GAIN CTL NUIT
AD-23   CDS41     E,0.0   /BANDE MORTE CTL NUIT
/
/-----/
/               PARAMETRES ECONOMISEUR D AIR FRAIS                /
/-----/
/
AD-24   OASO      E,15.0  /TEMP LIM EXT ECONOMISEUR
/
/-----/
/               REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION    /
/-----/
/
AD-25   RARL      E,21.0  /AIR RET BAS LIM REAJ TEMP ALIM
AD-26   RARH      E,23.5  /AIR RET HAU LIM REAJ TEMP ALIM
AD-27   SAHL      E,17.0  /REAJ TEMP ALIM HAU LIM
AD-28   SALL      E,13.0  /REAJ TEMP ALIM BAS LIM
/
/-----/
/               PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE  /
/-----/
/
AD-29   DSSP      E,0.0   /POINT DE CONSIGNE ALIM
AD-30   MXDSP     E,8.5   /POINT DE CONSIGNE LIMITE MEL.
AD-31   MDP       E,22.0  /POSITION MINIMUM VOLETS
AD-32   CST10A    E,10    /INTERVAL CTL VOLETS LIMITE
AD-33   CPB10A    E,-90.0 /BANDE PROP CTL VOLETS LIMITE
AD-34   CIG10A    E,33    /GAIN CTL VOLETS LIMITE
AD-35   CMP10A    E,0.0   /COMPENSATION CTL VOLETS LIMITE
AD-36   CDS10A    E,0.0   /BANDE MORTE CTL VOLETS LIMITE
AD-37   CST10     E,45    /INTERVAL CTL VOLETS
AD-38   CPB10     E,-60.0 /BANDE PROP CTL VOLETS
AD-39   CIG10     E,33    /GAIN CTL VOLETS
AD-40   CMP10     E,0.0   /COMPENS CTL VOLETS
AD-41   CDS10     E,0.0   /BANDE MORTE CTL VOLETS
AD-42   ZMXD      E,0.0   /RESULTAT PROPORTION.
AD-43   Z10M      E,100.0 /RESULTAT VOLETS LIMITE
AD-44   Z10C      E,0.0   /RESULTAT VOLETS CTL
AD-45   Z10       E,0.0   /RESULTAT VOLETS
/
/-----/
/               PARAMETRES CONTROLE DE CHAUFFAGE                  /
/-----/
/
AD-46   Z40       E,0.0   /RESULTAT CHAUFFAGE

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AD-47   CST40      E,25   /INTERVAL CTL CHAUFF
AD-48   CPB40      E,50.0 /BANDE PROP CTL CHAUFF
AD-49   CIG40      E,33   /GAIN CTL CHAUFF
AD-50   CDS40      E,0.0  /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
AD-51   Z30        E,0.0   /RESULTAT REFROIDISSEMENT
AD-52   CST30      E,16    /INTERVAL CTL REFROIDI
AD-53   CPB30      E,-20.0 /BANDE PROP CTL REFROIDI
AD-54   CIG30      E,33    /GAIN CTL REFROIDI
AD-55   CDS30      E,0.0   /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE          /
/-----/
/
AD-56   SPSP       E,212   /POINT DE CONSIGNE PRESS STAT
AD-57   CST50      E,5     /INTERVAL CTL VAV
AD-58   CPB50      E,52.2  /BANDE PROP CTL VAV
AD-59   CIG50      E,22    /GAIN CTL VAV
AD-60   CMP50      E,25.0  /COMPENS CTL VAV
AD-61   CDS50      E,6     /BANDE MORTE CTL VAV
AD-62   Z50        E,0.0   /RESULTAT CTL VAV
AD-63   FSP        E,0.0   /PRESS STAT FILTREE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-64   RHSP       E,31.0   /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65   RHSPA      E,80.0   /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66   CST70      E,60     /INTERVAL CTL HUMIDITE
AD-67   CPB70      E,90.0   /BANDE PROP CTL HUMIDITE
AD-68   CIG70      E,33     /GAIN CTL HUMIDITE
AD-69   CDS70      E,0.0    /BANDE MORTE CTL HUMIDITE
AD-70   CST70A     E,5      /INTERVAL H LIM HUMIDITE
AD-71   CPB70A     E,90.0   /BANDE PROP H LIM HUMIDITE
AD-72   CIG70A     E,33     /GAIN H LIM HUMIDITE
AD-73   CDS70A     E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-74   Z70        E,0.0    /RESULTAT CTL HUMIDITE
AD-75   Z70HL      E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-76   Z70C       E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-77   SYSDIS     D,0
AD-78   CSTXXX     D,0
AD-79   CPBXXX     D,0.0
AD-80   CIGXXX     D,0
AD-81   CMPXXX     D,0.0
AD-82   CDSXXX     D,0.0

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```

/
/-----/
/
/-----/
/
AD-83   UPTIM      E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-84   UPDAT      E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-85   DNTIM      E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-86   DNDAT      E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-87   TOD        E,00:00   /DERNIERE HEURE
AD-88   LDAT       E,00:00   /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1       ADJUST     DELSST,I   /DELAI APRES UNE PANNE
2       DISPLAY     OCCD,B     /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3       ADJUST     FSTRT,B     /DEMANDE VENTILATEUR
4       DISPLAY     FSTAT,B     /ETAT VENTIL. ALIM.
5       DISPLAY     FREEZE,B    /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
6       DISPLAY     NCTL,B     /CONTROLE DE TEMP NUIT
7       DISPLAY     TLCON,B     /CONTROLE PAR TEMP.
8       ADJUST     NSBT,A      /PT DE CONSIGNE REDEMARRAGE
9       ADJUST     NSP,A       /POINT DE CONSIGNE RETOUR
10      DISPLAY     Z41,A       /RESULTAT CTL NUIT
/
11      DISPLAY     TE80,A      /TEMP RETOUR
12      DISPLAY     TE10,A      /TEMP MELANGE
13      DISPLAY     TE1,A       /TEMP EXTERIEURE
14      DISPLAY     TE60,A      /TEMP ALIMENTATION
15      DISPLAY     TE100,A     /TEMP PIECE
/
16      DISPLAY     MXD,B       /CONTROLE DE JOUR
17      ADJUST     RARL,A       /AIR RET BAS LIM REAJ TEMP ALIM
18      ADJUST     RARH,A       /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST     SAHL,A       /REAJ TEMP ALIM HAU LIM
20      ADJUST     SALL,A       /REAJ TEMP ALIM BAS LIM
21      DISPLAY     DSSP,A      /POINT DE CONSIGNE ALIM
22      ADJUST     OASO,A       /TEMP LIM EXT ECONOMISEUR
23      DISPLAY     ECON,B      /RESULTAT ECONOMISEUR
24      ADJUST     MDP,A        /POSITION MINIMUM VOLETS
25      ADJUST     MXDSP,A      /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY     ZMXD,A      /RESULTAT PROPORTION.
27      DISPLAY     Z10M,A      /RESULTAT VOLETS LIMITE
28      DISPLAY     Z10C,A      /RESULTAT VOLETS CTL
29      DISPLAY     Z10,A       /RESULTAT VOLETS
30      DISPLAY     ZT10,A      /F.B. VOLETS
/
31      DISPLAY     HTG,B       /CHAUFFAGE
32      DISPLAY     Z40,A       /RESULTAT CHAUFFAGE
/
34      DISPLAY     CLG,B       /REFROIDISSEMENT
35      DISPLAY     Z30,A       /RESULTAT REFROIDISSEMENT
36      DISPLAY     ZT30,A      /F.B. SOUPAPES
/

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37      DISPLAY  HT80,A      /HUMIDITE RETOUR
38      DISPLAY  HT60,A      /HUMIDITE ALIMENT
39      ADJUST   RHSP,A      /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A     /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A     /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A      /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A       /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A      /F.B. HUMIDITE
/
45      DISPLAY  FSP,I       /PRESSION STATIQUE
46      ADJUST   SPSP,I      /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A       /RESULTAT CTL VAV
48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2   /SOUPAPES
62      OVERRIDE ZCP10,A,2   /VOLETS
63      OVERRIDE ZCP70,A,2   /HUMIDITE
64      OVERRIDE ZCP50,A,2   /VAV
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I    /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A    /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I    /GAIN INTEGRAL
82      ADJUST   CMPXXX,A    /COMPENSATION
83      ADJUST   CDSXXX,A    /BANDE MORTE
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/

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```

/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-4
/
/      51      ALARME HORAIRE SYSTEME V43-4
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET        BPD,SDF,R
1.3      EXIT       C,S
1.4      HOLIDAY    H1,H2,H3,H4,H5,H6
1.5      STORE      DOW,APD,2,U
1.6      COMPARE    DOW,EQ,7,0

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1.7      STORE      STA,STA7,STA9,C,S
1.8      STORE      STO,STO7,STO9,C,S
1.9      COMPARE    DOW,EQ,1,0
1.10     ORR        DOW,EQ,8,0
1.11     STORE      STA,STA8,STA9,C,S
1.12     STORE      STO,STO8,STO9,C,S
1.13     COMPARE    DOW,GE,2,0
1.14     ANDR       DOW,LE,6,0
1.15     STORE      STA,STA9,STA9,C,S
1.16     STORE      STO,STO9,STO9,C,S
1.17     SET        BPD,PAF,R
1.18     ALARM      51,C,S
1.19     EXIT       U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/          RESET    TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET    OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       TLCON,SDF,S
2.4      SET       BPD,SUF,R
2.5      EXIT      C,R
2.6      SET       FSTRT,S,S
2.7      EXIT      U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT     TLCON,S
3.2      SET       BPD,TLCON,S
3.3      EXIT      C,R
3.4      INTERVAL  300,U
3.5      COMPARE   TE100,LE,NSBT,2.0
3.6      SET       FSTRT,BPD,S
3.7      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET       AUTO,S,S
4.3      DELAY     25,U
4.4      SET       COMP50,R,R
4.5      INTERVAL  10,U
4.6      XOR       COMP50,FSTAT
4.7      ALARM     50,C,S
4.8      SET       BPD,FSTRT,R
4.9      BOUT      ZS50,3,OFF
4.10     SET       COMP50,BPD,R
4.11     EXIT      U
/
/
/-----/

```

/ GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE /
/-----/

/

5.1	RESTART	
5.2	DELAY	25,U
5.3	INTERVAL	5,U
5.4	SET	BPD,FREEZE,R
5.5	ALARM	10,C,R
5.6	EXIT	U

/

/

/-----/

/ CONTROLE D HUMIDITE DE RETOUR HAUTE LIMITE ALIM. /

/-----/

/

/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE

/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.

/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA

/SOUPAPE EST RAMENNE VERS SA POSITION FERME.

/

/

6.1	EVENT	CONON,S
6.2	SET	BPD,CONON,R
6.3	STORE	APD,0.0,0.0,C,R
6.4	STORE	Z70C,APD,APD,C,R
6.5	STORE	Z70,APD,APD,C,R
6.6	AOUT	ZCP70,3,0.0,C,R
6.7	EXIT	C,R
6.8	DELAY	20,U
6.9	INTERVAL	CST70,U
6.10	PROP	RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11	STORE	Z70C,APD,APD,U
6.12	EXIT	U

/

/

7.1	EVENT	CONON,S
7.2	SET	BPD,CONON,R
7.3	EXIT	C,R
7.4	INTERVAL	CST70A,U
7.5	PROP	RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6	STORE	Z70HL,APD,APD,U
7.7	SELECT	APD,Z70C,L
7.8	STORE	Z70,APD,APD,U
7.9	AOUT	ZCP70,3,0.0,U
7.10	EXIT	U

/

/

/-----/

/ CONTROLE DE LA PRESSION STATIQUE /

/-----/

/

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE

/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.

/

/

8.1	EVENT	CONON,S
8.2	SET	BPD,CONON,R
8.3	STORE	FSP,0,0,C,R
8.4	STORE	APD,0.0,0.0,C,R
8.5	STORE	Z50,APD,APD,C,R

```

8.6      AOUT      ZCP50,3,0.0,C,R
8.7      EXIT      C,R
8.8      DELAY     15,U
8.9      INTERVAL  CST50,U
8.10     FILTER    SPT,63,100
8.11     STORE     FSP,APD,APD,U
8.12     CALC      CPB50,0,10,1,1,T
8.13     PROP      SPSP,FSP,APD,CIG50,CMP50,CDS50
8.14     STORE     Z50,APD,APD,U
8.15     AOUT      ZCP50,3,0,U
8.16     EXIT      U
/
/
/-----/
/      CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE      /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1      RESTART
9.2      SET       MXD,R,R
9.3      SET       NCTL,R,R
9.4      SET       CONON,R,R
9.5      DELAY     25,U
9.6      INTERVAL  5,U
9.7      AND       FSTAT,OCCD
9.8      SET       MXD,BPD,R
9.9      XOR       FSTAT,OCCD
9.10     AND       BPD,FSTAT
9.11     SET       NCTL,BPD,S
9.12     SET       CONON,FSTAT,R
9.13     EXIT      U
/
/
/-----/
/      ECONOMISEUR D AIR FRAIS      /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
10.1     EVENT     MXD,S
10.2     SET       ECON,R,R
10.3     SET       BPD,FSTAT,R
10.4     EXIT      C,R
10.5     INTERVAL  300,U
10.6     COMPARE   TE1,GE,OASO,1.0
10.7     SET       ECON,BPD,R
10.8     EXIT      U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,

```

/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.

/

11.1 EVENT MXD,S
11.2 INTERVAL 300,U
11.3 STORE APD,TE80,RARL,U
11.4 SPAN RARL,RARH,SAHL,SALL
11.5 STORE DSSP,APD,SAHL,U
11.6 EXIT U

/

/-----/

/ CONTROLE DES VOLETS AVEC BASSE LIMITE /

/-----/

/

/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.

/

/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS

/

/

12.1 EVENT MXD,S
12.2 SET MIXLL,R,R
12.3 SET BPD,MXD,R
12.4 EXIT C,R
12.5 INTERVAL 5,U
12.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7 SET MIXLL,BPD,R /A LA BASSE LIMITE
12.8 SELECT Z10M,Z10C,L
12.9 STORE Z10,APD,APD,U
12.10 AOUT ZCP10,3,0.0,U
12.11 EXIT U

/

13.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2 SET BPD,MIXLL,R
13.3 STORE Z10M,100.0,100.0,C,R
13.4 STORE CMP10A,Z10C,Z10C,U
13.5 EXIT C,R
13.6 INTERVAL CST10A,U
13.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8 STORE Z10M,APD,APD,U
13.9 EXIT U

/

14.1 EVENT MXD,R /POSITION D ARRET SOUPAPES
14.2 SET BPD,MXD,R
14.3 EXIT C,S
14.4 SET HTG,R,R
14.5 SET CLG,R,R
14.6 DELAY 7,C,R
14.7 STORE APD,0.0,0.0,C,R


```

14.8      AOUT      ZCP30,3,0.0,C,R
14.9      EXIT      U
/
15.1      EVENT     MXD,S
15.2      SET       BPD,MXD,R
15.3      STORE     APD,0.0,0.0,C,R
15.4      STORE     Z10,APD,APD,C,R
15.5      STORE     Z10C,APD,APD,C,R
15.6      STORE     Z10M,100.0,100.0,C,R
15.7      STORE     ZMXD,APD,APD,C,R
15.8      AOUT      ZCP10,3,0.0,C,R
15.9      EXIT      C,R
15.10     DELAY     7,U
15.11     STORE     APD,TE1,5.0,U
15.12     SPAN      5.0,20.0,0.0,75.0
15.13     STORE     CMP10,APD,APD,U
15.14     STORE     APD,50.0,50.0,U
15.15     AOUT      ZCP30,3,0.0,U
15.16     INTERVAL  CST10,U
15.17     PROP      DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18     STORE     ZMXD,APD,APD,U
15.19     SPAN      MDP,100.0,MDP,100.0
15.20     SET       BPD,ECON,S
15.21     STORE     APD,MDP,MDP,C,S
15.22     STORE     Z10C,APD,APD,U
15.23     ORR       ZMXD,GE,85.0,10.0
15.24     SET       CLG,BPD,R
15.25     COMPARE   ZMXD,LE,15.0,10.0
15.26     SET       HTG,BPD,R
15.27     EXIT      U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
16.1      EVENT     HTG,S
16.2      SET       BPD,HTG,S
16.3      STORE     Z40,0.0,0.0,C,R
16.4      STORE     APD,50.0,50.0,C,R
16.5      AOUT      ZCP30,3,0.0,C,R
16.6      EXIT      C,R
16.7      INTERVAL  CST40,U
16.8      CALC      DSSP,0.3,1,-1,1,T
16.9      PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
16.10     STORE     Z40,APD,APD,U
16.11     SPAN      0.0,100.0,50.0,0.0
16.12     AOUT      ZCP30,3,100.0,U
16.13     EXIT      U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/

```

```

/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/

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```

17.1    EVENT    CLG,S
17.2    SET      BPD,CLG,R
17.3    STORE    Z30,0.0,0.0,C,R
17.4    STORE    APD,50.0,50.0,C,R
17.5    AOUT     ZCP30,3,0.0,C,R
17.6    EXIT     C,R
17.7    INTERVAL CST30,U
17.8    CALC     DSSP,0.3,1,1,1,T
17.9    PROP     APD,TE60,CPB30,CIG30,0.0,CDS30
17.10   STORE    Z30,APD,APD,U
17.11   SPAN     0.0,100.0,50.0,100.0
17.12   AOUT     ZCP30,3,0.0,U
17.13   EXIT     U
/
/

```

```

/-----/
/
/          CONTROLE DE NUIT
/-----/
/

```

```

/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOLETS RESTENT EN RECIRCULATION.
/

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```

18.1    EVENT    NCTL,S
18.2    SET      BPD,NCTL,S
18.3    STORE    Z41,0.0,0.0,C,R
18.4    STORE    APD,0.0,0.0,C,R
18.5    AOUT     ZCP30,3,0.0,C,R
18.6    EXIT     C,R
18.7    INTERVAL CST41,U
18.8    PROP     NSP,TE80,CPB41,CIG41,0.0,CDS41
18.9    STORE    Z41,APD,APD,U
18.10   SPAN     0.0,100.0,50.0,0.0
18.11   AOUT     ZCP30,3,100.0,U
18.12   EXIT     U
/
/

```

```

/-----/
/
/          FONCTIONS SPECIALES
/-----/
/

```

```

19.1    EVERY                                /SELECTION DU STSTEME POUR LE
19.2    SET      SYSP,R,R                    /
19.3    COMPARE  SYSDIS,EQ,100,0
19.4    SET      SYS1,BPD,R
19.5    OR       SYSP,BPD
19.6    SET      SYSP,BPD,S
19.7    COMPARE  SYSDIS,EQ,200,0
19.8    SET      SYS2,BPD,R
19.9    OR       SYSP,BPD

```

```

19.10 SET SYSP,BPD,S
19.11 COMPARE SYSDIS,EQ,300,0
19.12 SET SYS3,BPD,R
19.13 OR SYSP,BPD
19.14 SET SYSP,BPD,S
19.15 COMPARE SYSDIS,EQ,400,0
19.16 SET SYS4,BPD,R
19.17 OR SYSP,BPD
19.18 SET SYSP,BPD,S
19.19 COMPARE SYSDIS,EQ,500,0
19.20 SET SYS5,BPD,R
19.21 OR SYSP,BPD
19.22 SET SYSP,BPD,S
19.23 COMPARE SYSDIS,EQ,600,0
19.24 SET SYS6,BPD,R
19.25 OR SYSP,BPD
19.26 SET SYSP,BPD,S
19.27 COMPARE SYSDIS,EQ,700,0
19.28 SET SYS7,BPD,R
19.29 OR SYSP,BPD
19.30 SET SYSP,BPD,S
19.31 COMPARE SYSDIS,EQ,800,0
19.32 SET SYS8,BPD,R
19.33 OR SYSP,BPD
19.34 SET SYSP,BPD,S
19.35 SET SYS,SYSP,S
19.36 EXIT U
/
/
20.1 EVENT SYS,S /RESET LES FONCTIONS POUR
20.2 SET BPD,SUF,R /LE CDB SPECIAL
20.3 STORE SYSDIS,0,0,C,R /SUR UNE PERIODE DE DISCLR
20.4 EXIT C,R
20.5 DELAY 3600,U
20.6 STORE SYSDIS,0,0,U
20.7 EXIT U
/
/
21.1 EVENT SYS1,S /SYS 100
21.2 SET BPD,SUF,R
21.3 EXIT C,R
21.4 INTERVAL 5,U
21.5 STORE CSTXXX,CST70,CST70,U /PERMET DE VOIR LES
21.6 STORE CPBXXX,CPB70,CPB70,U /VALEURS DU SYSTEME
21.7 STORE CIGXXX,CIG70,CIG70,U
21.8 STORE CMPXXX,0.0,0.0,U
21.9 STORE CDSXXX,CDS70,CDS70,U
21.10 EXIT U
/
/
22.1 EVENT SYS1,S
22.2 SET BPD,SUF,R
22.3 EXIT C,R
22.4 DELAY 10,U
22.5 INTERVAL 1,U
22.6 STORE CST70,CSTXXX,CST70,U /PERMET D AJUSTER LES
22.7 STORE CPB70,CPBXXX,CPB70,U /VALEURS DU SYSTEME

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22.8    STORE    CIG70,CIGXXX,CIG70,U
22.9    STORE    CDS70,CDSXXX,CDS70,U
22.10   EXIT     U
/
/
23.1    EVENT    SYS2,S                               /SYS 200
23.2    SET      BPD,SUF,R
23.3    EXIT     C,R
23.4    INTERVAL 5,U
23.5    STORE    CSTXXX,CST70A,CST70A,U               /PERMET DE VOIR LES
23.6    STORE    CPBXXX,CPB70A,CPB70A,U               /VALEURS DU SYSTEME
23.7    STORE    CIGXXX,CIG70A,CIG70A,U
23.8    STORE    CMPXXX,0.0,0.0,U
23.9    STORE    CDSXXX,CDS70A,CDS70A,U
23.10   EXIT     U
/
/
24.1    EVENT    SYS2,S
24.2    SET      BPD,SUF,R
24.3    EXIT     C,R
24.4    DELAY    10,U
24.5    INTERVAL 1,U
24.6    STORE    CST70A,CSTXXX,CST70A,U               /PERMET D AJUSTER LES
24.7    STORE    CPB70A,CPBXXX,CPB70A,U               /VALEURS DU SYSTEME
24.8    STORE    CIG70A,CIGXXX,CIG70A,U
24.9    STORE    CDS70A,CDSXXX,CDS70A,U
24.10   EXIT     U
/
/
25.1    EVENT    SYS3,S                               /SYS 300
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    INTERVAL 5,U
25.5    STORE    CSTXXX,CST50,CST50,U                 /PERMET DE VOIR LES
25.6    STORE    CPBXXX,CPB50,CPB50,U                 /VALEURS DU SYSTEME
25.7    STORE    CIGXXX,CIG50,CIG50,U
25.8    STORE    CMPXXX,CMP50,CMP50,U
25.9    STORE    CDSXXX,CDS50,CDS50,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS3,S
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    DELAY    10,U
26.5    INTERVAL 1,U
26.6    STORE    CST50,CSTXXX,CST50,U                 /PERMET D AJUSTER LES
26.7    STORE    CPB50,CPBXXX,CPB50,U                 /VALEURS DU SYSTEME
26.8    STORE    CIG50,CIGXXX,CIG50,U
26.9    STORE    CMP50,CMPXXX,CMP50,U
26.10   STORE    CDS50,CDSXXX,CDS50,U
26.11   EXIT     U
/
/
27.1    EVENT    SYS4,S                               /SYS 400
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R

```

```

27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG40,CIG40,U
27.8    STORE    CMPXXX,0.0,0.0,U
27.9    STORE    CDSXXX,CDS40,CDS40,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS4,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
28.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
28.8    STORE    CIG40,CIGXXX,CIG40,U
28.9    STORE    CDS40,CDSXXX,CDS40,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS5,S                    /SYS 500
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST41,CST41,U      /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB41,CPB41,U      /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG41,CIG41,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS41,CDS41,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS5,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST41,CSTXXX,CST41,U      /PERMET D AJUSTER LES
30.7    STORE    CPB41,CPBXXX,CPB41,U      /VALEURS DU SYSTEME
30.8    STORE    CIG41,CIGXXX,CIG41,U
30.9    STORE    CDS41,CDSXXX,CDS41,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS6,S                    /SYS 600
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U
31.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG10A,CIG10A,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS10A,CDS10A,U
31.10   EXIT     U
/
/

```

```

32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    DELAY    10,U
32.5    INTERVAL 1,U
32.6    STORE    CST10A,CSTXXX,CST10A,U      /PERMET D AJUSTER LES
32.7    STORE    CPB10A,CPBXXX,CPB10A,U      /VALEURS DU SYSTEME
32.8    STORE    CIG10A,CIGXXX,CIG10A,U
32.9    STORE    CDS10A,CDSXXX,CDS10A,U
32.10   EXIT     U
/
/
33.1    EVENT    SYS7,S                      /SYS 700
33.2    SET      BPD,SUF,R
33.3    EXIT     C,R
33.4    INTERVAL 5,U
33.5    STORE    CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
33.6    STORE    CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
33.7    STORE    CIGXXX,CIG10,CIG10,U
33.8    STORE    CMPXXX,CMP10,CMP10,U
33.9    STORE    CDSXXX,CDS10,CDS10,U
33.10   EXIT     U
/
/
34.1    EVENT    SYS7,S
34.2    SET      BPD,SUF,R
34.3    EXIT     C,R
34.4    DELAY    10,U
34.5    INTERVAL 1,U
34.6    STORE    CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
34.7    STORE    CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
34.8    STORE    CIG10,CIGXXX,CIG10,U
34.9    STORE    CMP10,CMPXXX,CMP10,U
34.10   STORE    CDS10,CDSXXX,CDS10,U
34.11   EXIT     U
/
/
35.1    EVENT    SYS8,S                      /SYS 800
35.2    SET      BPD,SUF,R
35.3    EXIT     C,R
35.4    INTERVAL 5,U
35.5    STORE    CSTXXX,CST30,CST30,U      /PERMET DE VOIR LES
35.6    STORE    CPBXXX,CPB30,CPB30,U      /VALEURS DU SYSTEME
35.7    STORE    CIGXXX,CIG30,CIG30,U
35.8    STORE    CMPXXX,0.0,0.0,U
35.9    STORE    CDSXXX,CDS30,CDS30,U
35.10   EXIT     U
/
/
36.1    EVENT    SYS8,S
36.2    SET      BPD,SUF,R
36.3    EXIT     C,R
36.4    DELAY    10,U
36.5    INTERVAL 1,U
36.6    STORE    CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
36.7    STORE    CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME
36.8    STORE    CIG30,CIGXXX,CIG30,U

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36.9    STORE    CDS30,CDSXXX,CDS30,U
36.10   EXIT     U
/
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
37.1    RESTART
37.2    TIMDATA  DT
37.3    STORE    UPTIM,APD,APD,U          /SAUVE L HEURE ACTUEL ET
37.4    TIMDATA  MD                      /LA DATE DE LA RESTAURATION
37.5    STORE    UPDAT,APD,APD,U          /DU POUVOIR.
37.6    EXIT     U
/
38.1    RESTART
38.2    STORE    DNTIM,TOD,TOD,U          /RECORD DE LA DERNIERE HEURE
38.3    STORE    DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
38.4    INTERVAL 60,U
38.5    TIMDATA  DT
38.6    STORE    TOD,APD,APD,U            /SAUVE L HEURE ET LA DATE
38.7    TIMDATA  MD                      /ACTUEL A TOUTES LES MINUTES.
38.8    STORE    LDAT,APD,APD,U
38.9    EXIT     U
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3266
/   OVERHEAD:    2700
/   TOTAL:       7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3266
/   OVERHEAD:    2700
/   TOTAL:       7150    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3268
/   OVERHEAD:    2700
/   TOTAL:       7152    8K DSC MEMORY NEEDED

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SYSTÈME V43-4

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOLETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

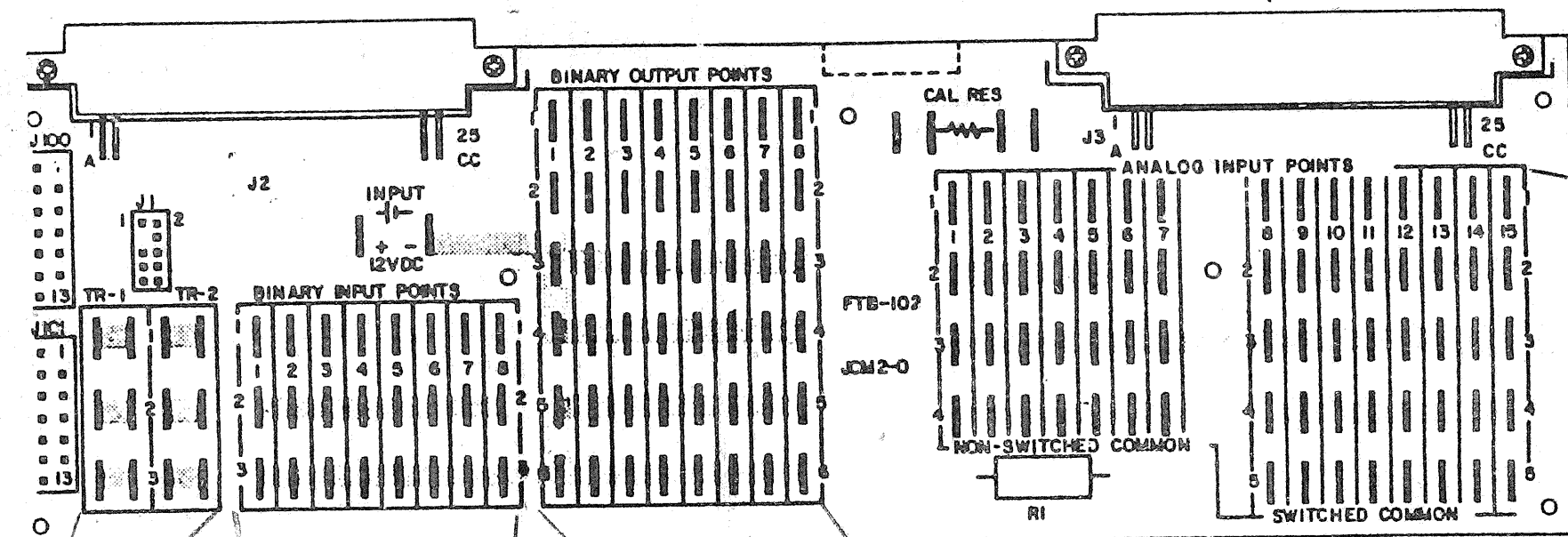
LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

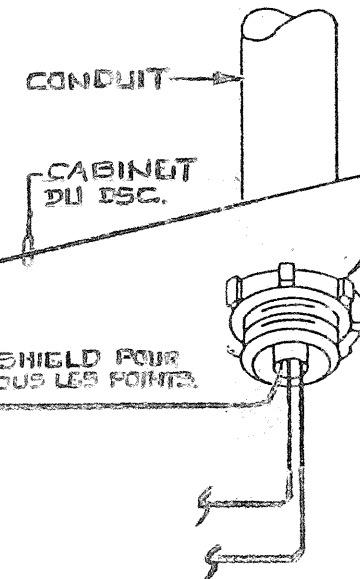
LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

BORNIERS DE RACCORDEMENT (FTB-102)



TOTAL MAX 15 ENTREES

- 1 - TYPE DE RACCORDEMENT: COSESSE TYPE 14RB-250 F, ISOLEES .250.
- 2 - CABLAGE EN 2" 18 TWS PARTOUT.



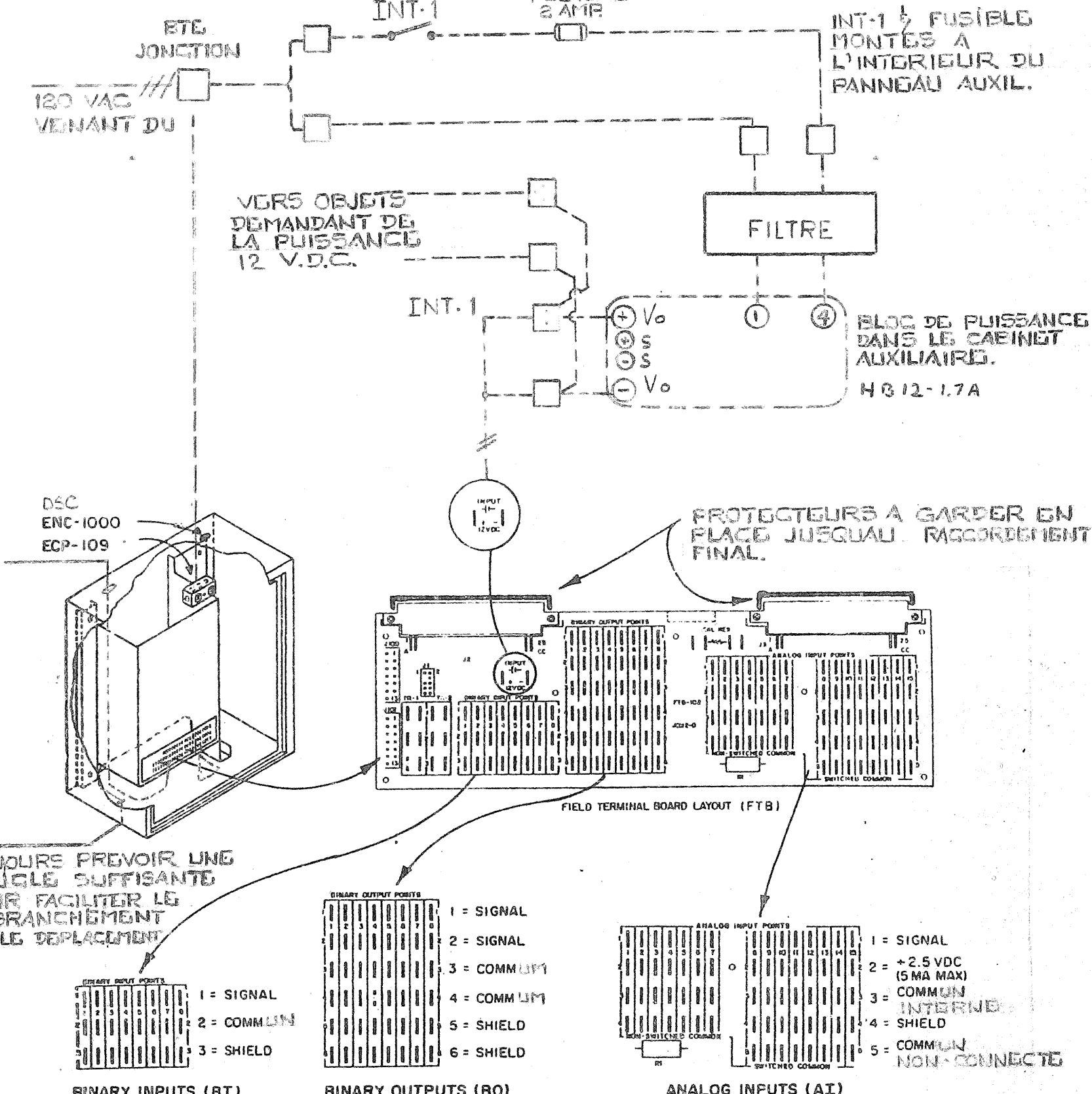
TOTAL MAX 8 ENTREES

TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE								DSC 4	
NOM: C.I.R.A.										FIG 1	
EMPLACEMENT: DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	STATUS	SYSTEME 4	BIN	1	2	CONTACT AUX. DEM.	MCC	B1.1			
2	GEL	SYSTEME 4	BIN	1	2	RELAIS RG	CAB AUX.	B2.1			

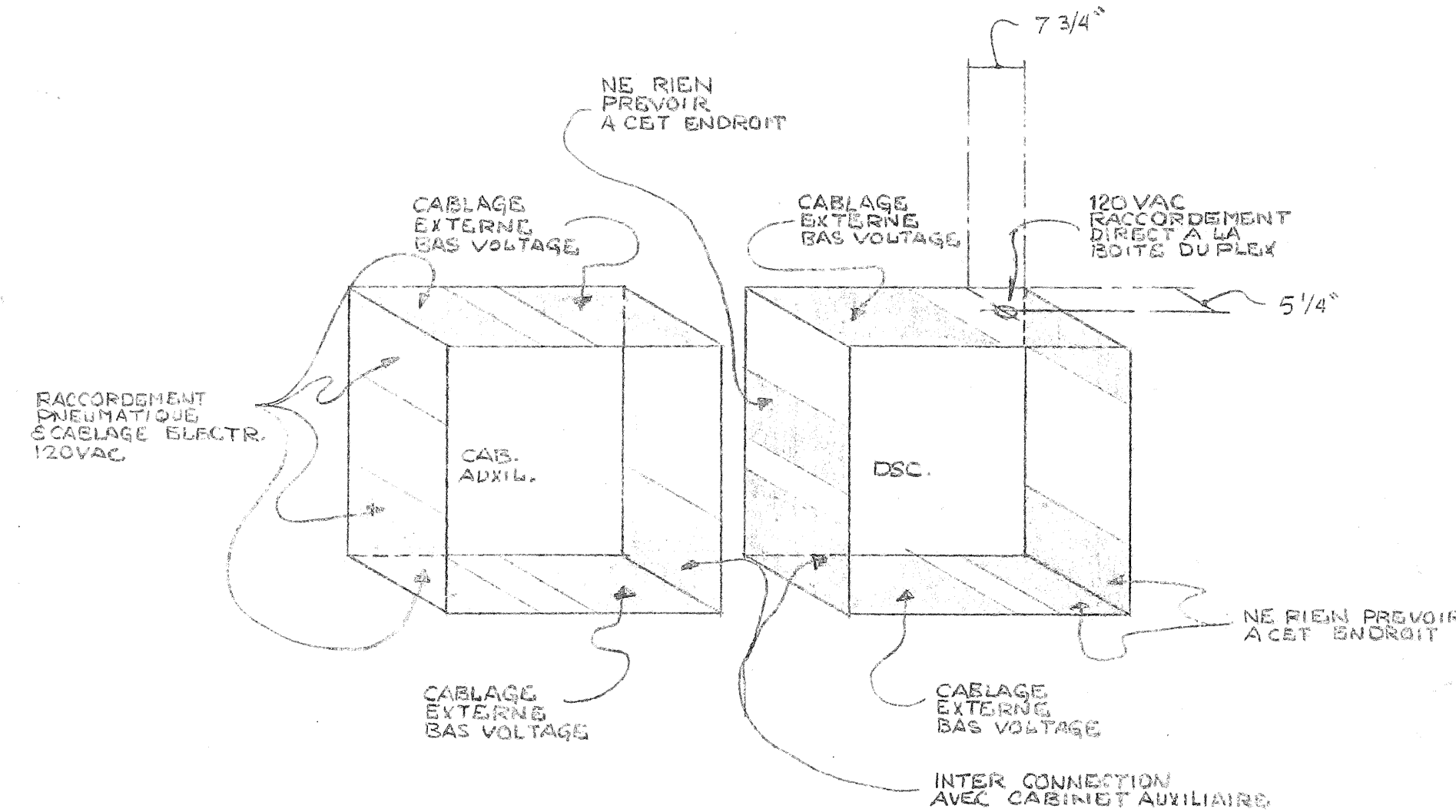
EMPLACEMENT		ADRESSE								DSC 4	
NOM: C.I.R.A.										FIG 1	
EMPLACEMENT: DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	EPT-1	VALVE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P4.1		
5A	R1	ARRET DEPART SYSTEME 4	SST	1	2	RELAIS 12VDC	MCC -1	S5A.1			

EMPLACEMENT		ADRESSE								DSC 4	
NOM: C.I.R.A.										FIG 1	
EMPLACEMENT: DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	TE-1	TEMP RETOUR	ANA	1	3	TE1101-100	RETOUR	A1.1			
2	TE-2	TEMP MELANGE	ANA	1	3	TE1100-17	MELANGE	A2.1			
3	TE-3	AIR NEUF	ANA	1	3	TE1101-100	AIR NEUF	A3.1			
4	TE-4	ALIM	ANA	1	3	TE1100-17	ALIM	A4.1			
5	EPT-1	VALVE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI-CATEUR	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1	4	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20MA 10-90%HR	
10	HE-2	HUMIDITE ALIM.	ANA	1	4	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20MA 10-90%HR	
11	PT-1	PRESSION ALIM.	ANA	1	5	SONDE DE PRESSION PT-1	AL.V43.4 BOITE LA PLUS LOIN	A11.1		0-5VDC 0-2.5Pa	
12	TE-5	TEMP. PIECE	ANA	1	3	TE1800-102		A12.1			

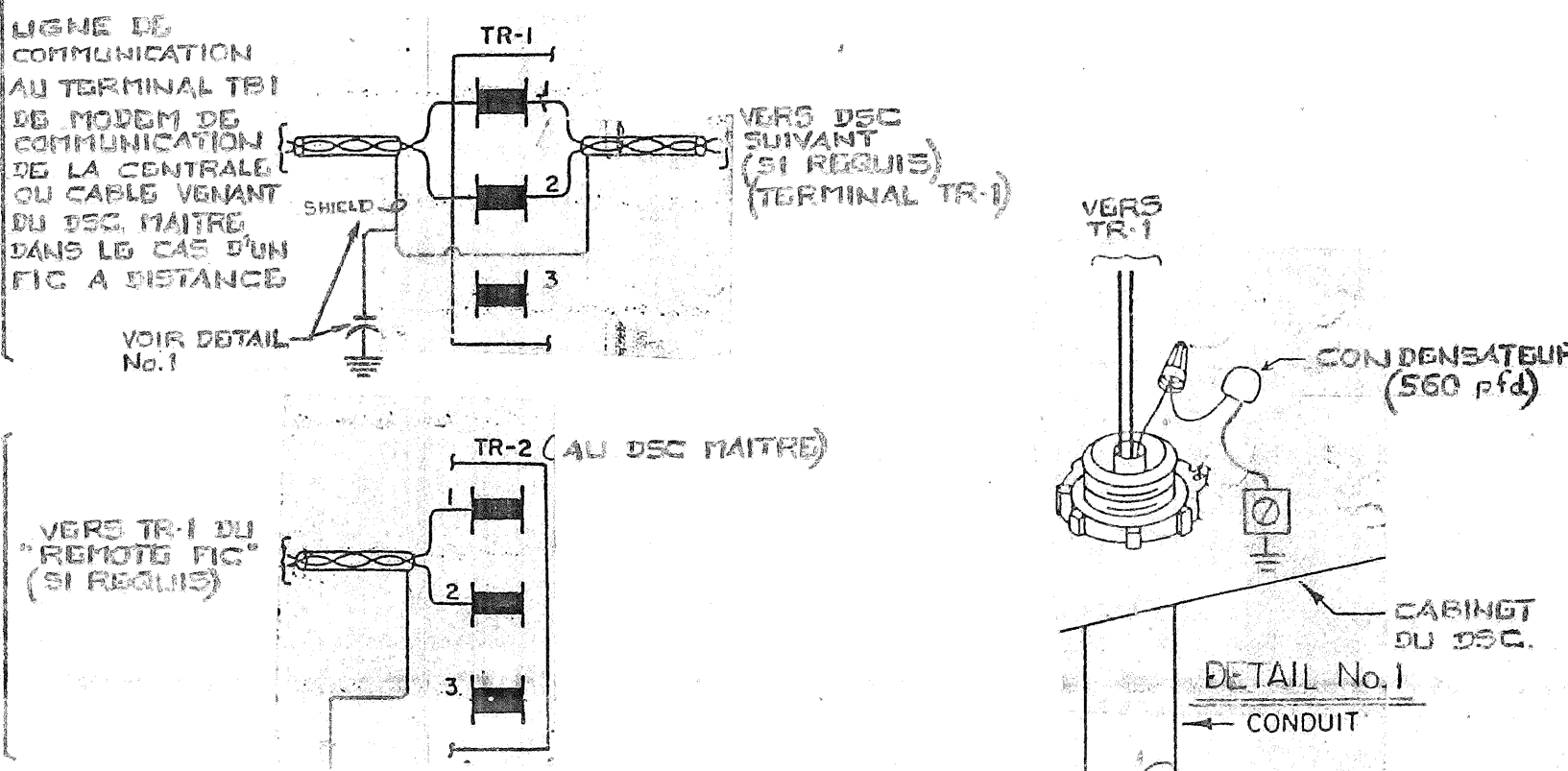


INT-1: INTERRUPTEUR "TOGGLE" CABLE SP.37, MOD 447, MONTE AVEC R-000-101 J.C.L.

□ — TERMINAUX DANS LE CABINET AUXILIAIRE



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE	IMPLANTATION DSC-8500		TEL QUE CONSTRUIT		86-07-07	
DSC-4					SEPT 12-85	
PROJET	CENTRE DE RECHERCHE ALIMENTATION	ST-HYACINTHE	REPRESENTANT	J.C.R.	TECHNICIEN	R.E.
DATE	12-85	12-85	DATE	12-85	DATE	12-85
CONTRAT	4096-0008-52		CONTRAT		4096-0008-52	
DESSIN NO.	4068-6		DESSIN NO.		4068-6	

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3153-1	3	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V3970-1010	1	VALVE N.F. 1 1/2" C/A P.P.
V-2	V3754-1025	1	VALVE NO. 1 1/2" C/A P.F.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	B02FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
HV-1	PAR D'AUTRES	1	SOUFAPE HUMIDIFICATEUR

MODE CONTROLE DE NUIT X

PC REDEMARRAGE X

CÉDULE

RETOUR

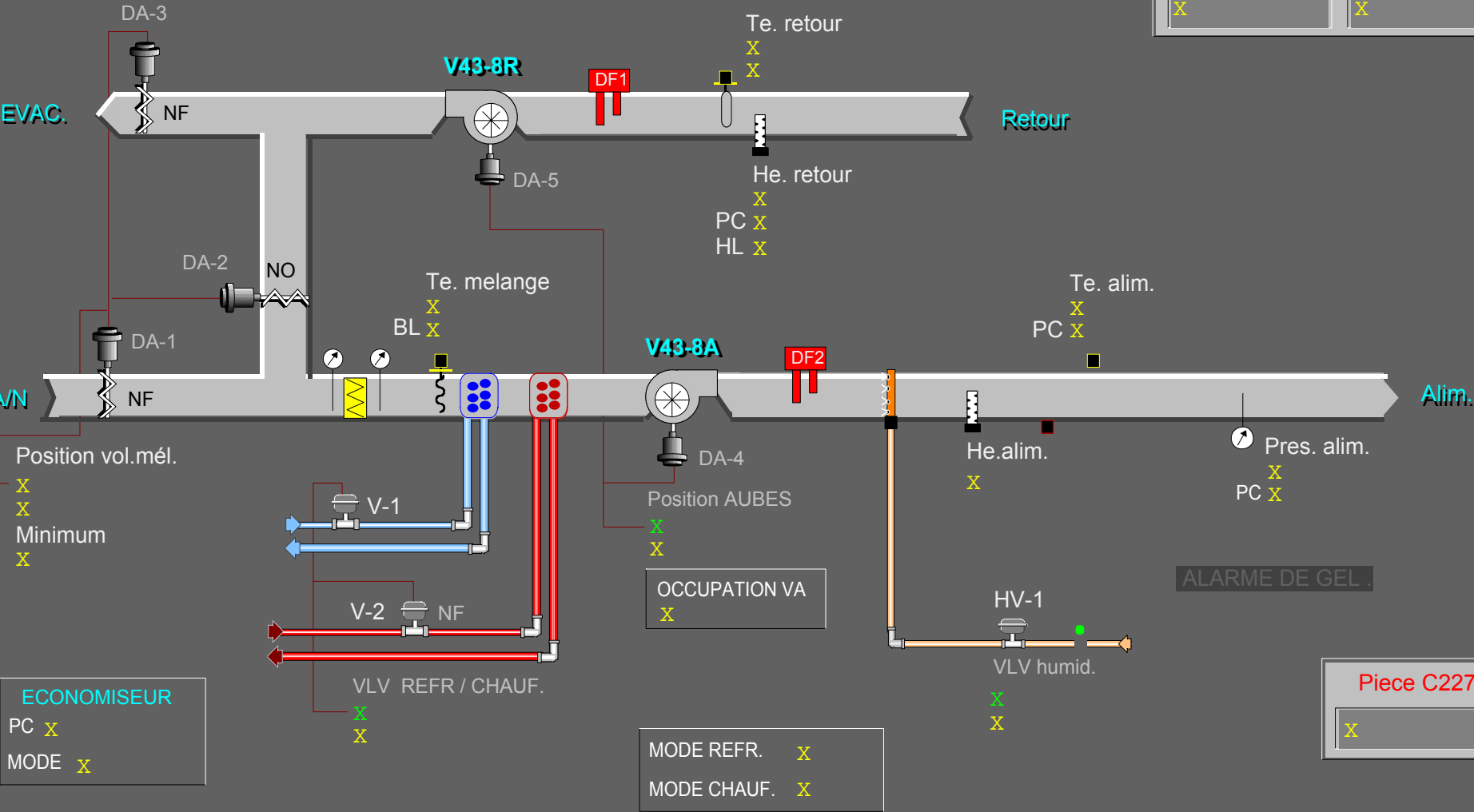
ALIMENT.

X

X

X

X



PARAMETRES

Contrôle de nuit

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

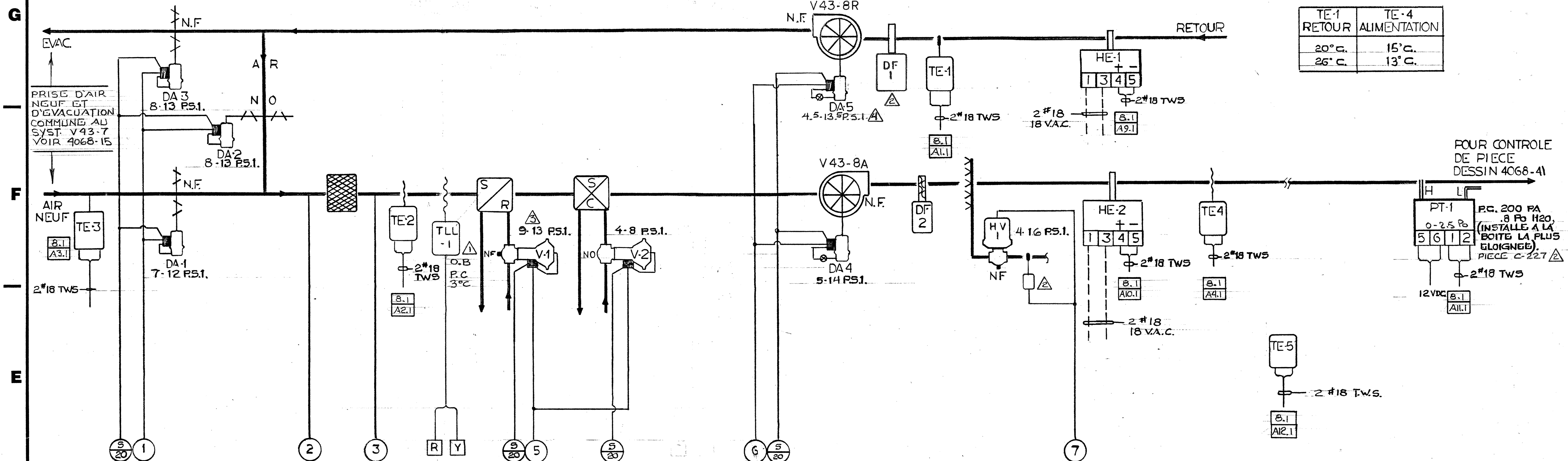


VACANCES DSC-8 , V43-8

Jour / Mois	VACANCE 1	<input type="text" value="X"/>
Jour / Mois	VACANCE 2	<input type="text" value="X"/>
Jour / Mois	VACANCE 3	<input type="text" value="X"/>
Jour / Mois	VACANCE 4	<input type="text" value="X"/>
Jour / Mois	VACANCE 5	<input type="text" value="X"/>
Jour / Mois	VACANCE 6	<input type="text" value="X"/>



DIAGRAMME DE DEBIT



TE-1	TE-4
RETOUR	ALIMENTATION
20°C.	15°C.
26°C.	13°C.

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3073-1	3	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2	SETRA 261	2	DETECTEUR DE FUMEE PYROTRONIC
EPT-1 @ 4	EPT-102	4	DETECTEUR DE PRESSION STATIQUE
IPD-1	2000-50	1	INTERFACE ELECTRIQUE PNEUMATIQUE
V-1	V3974-1010	1	INDICATEUR DE PRESSION 0-50 mm
V-2	V3754-1019	1	VALVE N.F. 3/4" C/A P.P.
DA-4 ET 5	----	2	VALVE NO. 1/2" C/A P.P.
EP-1	V11HAA-100	1	MOTEUR PNEUMATIQUE
G-1 ET 2	G2010-101	2	(PAR D'AUTRES)
SW-1	----	1	RELAIS ELECTRIQUE PNEUMATIQUE
PS-1	HB/2-1.7A	1	INDICATEUR 0/30 PSI
P-1	M8100-109	1	INTERRUPTEUR 2 POSITIONS
R-1, RG	6012	2	BLOC DE PUISSANCE 12 VDC
XMR-1	BO 2.FF	1	PANNEAU 24" X 36" X 7"
TE-5	TE-1800-102	1	RELAIS 12 VDC
HV-1	PAR D'AUTRES	1	TRANSFORMATEUR 120/18 VAC
			ELEMENT DE TEMP. DE PIECE
			SOUPAPE HUMIDIFICATEUR

PANNEAU P1

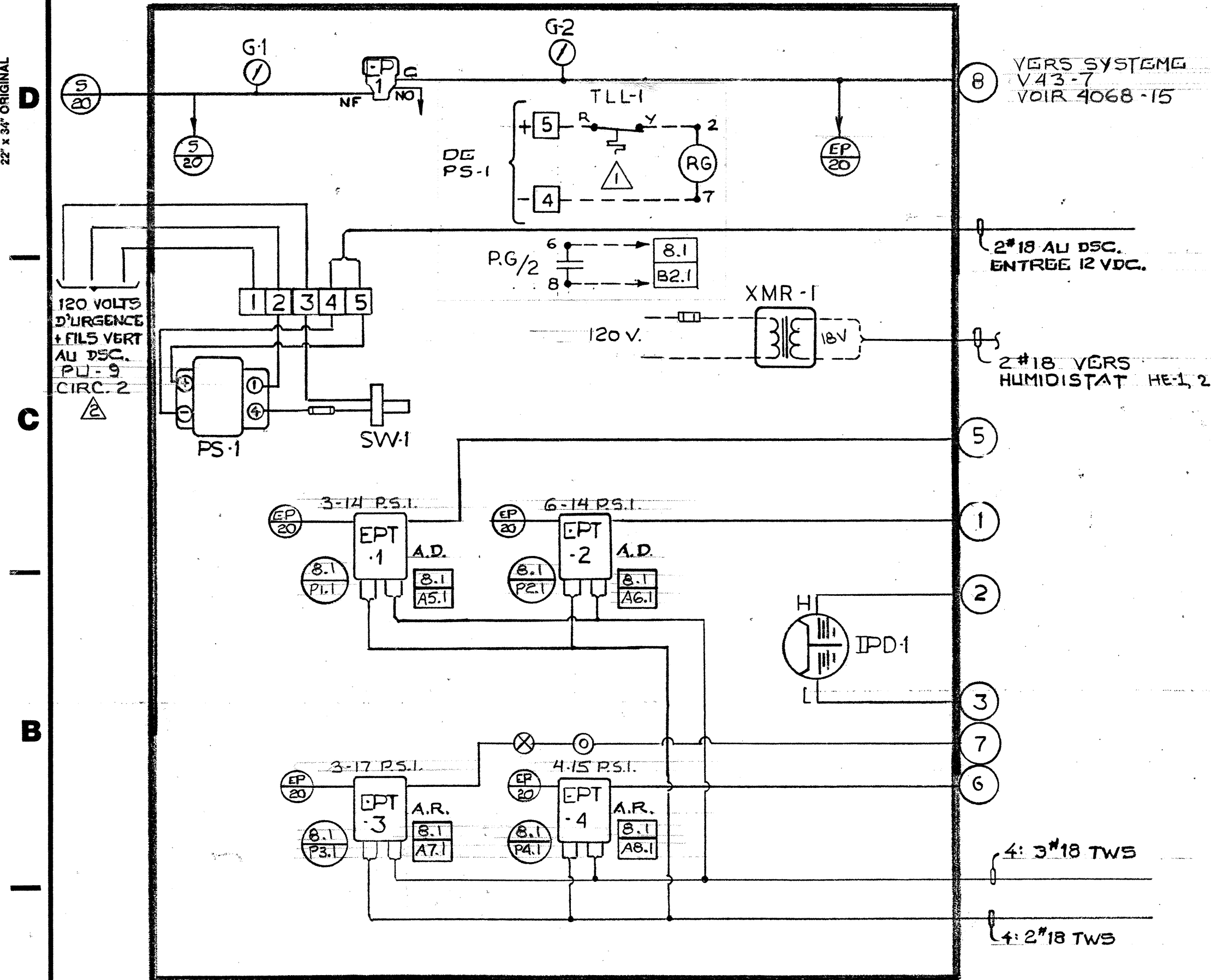
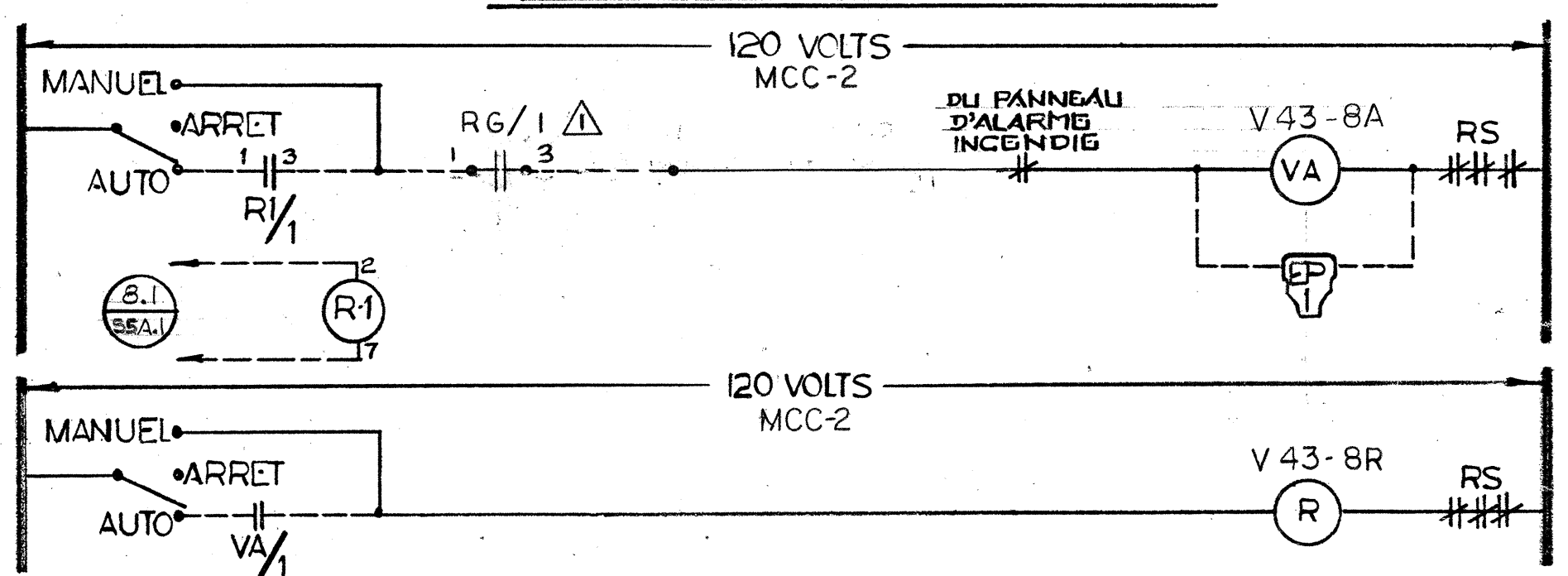
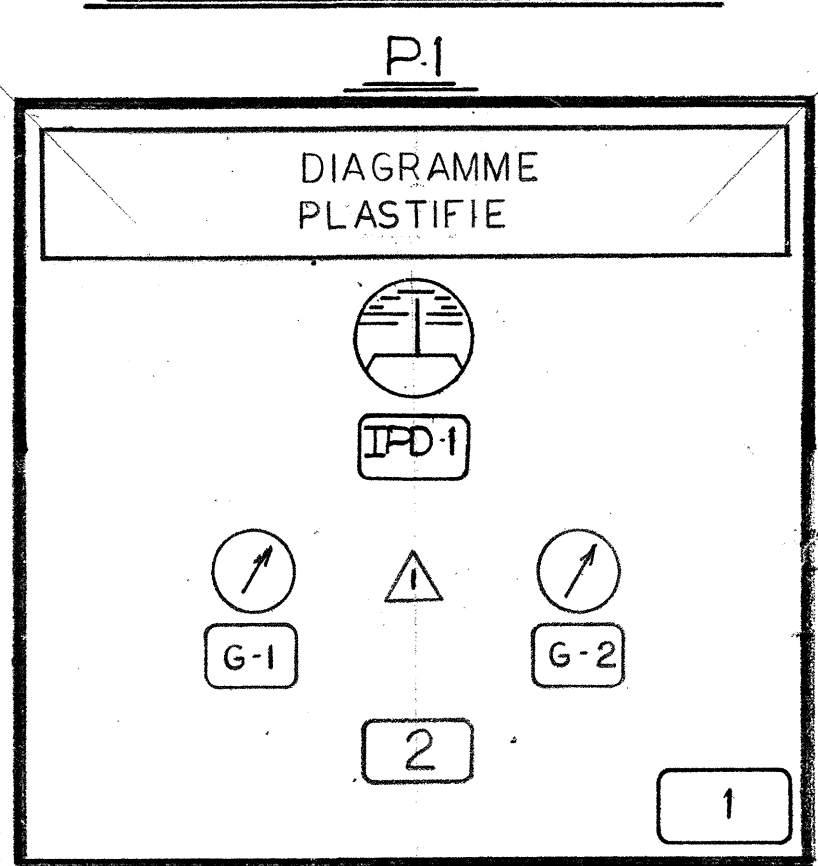


DIAGRAMME ELECTRIQUE



FACE DU PANNEAU P1



SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME S'ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRER EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

- 1 - CONTRACTEUR: PAVAL INC.
- 2 - INGENIEUR: PAGGAU MOREL ET ASS.
- 3 - SYSTEME No. V43-8
- 4 - IPD-1 - ETAT DES FILTRES
- 5 - G-1 - AIR D'ALIMENTATION
- 6 - G-2 - AIR DE CONTROLE

TITRE

SYSTEME V 43-8

ALIMENTATION BLOC C, ETAGE

PROJET CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE.

696-0273490

PM-A-1 87-07-15

87-05-27

86-07-07

59712-85

REFERENCE NO. REVISION

REPRESENTANT J.C.R. TECHNICIEN R.F.

DESSIN DATE DEC 21-84

APPROUVE DATE 85-6-13

JOHNSON CONTROLS

Division Des Systemes Et Services

441 boulevard Lebeau

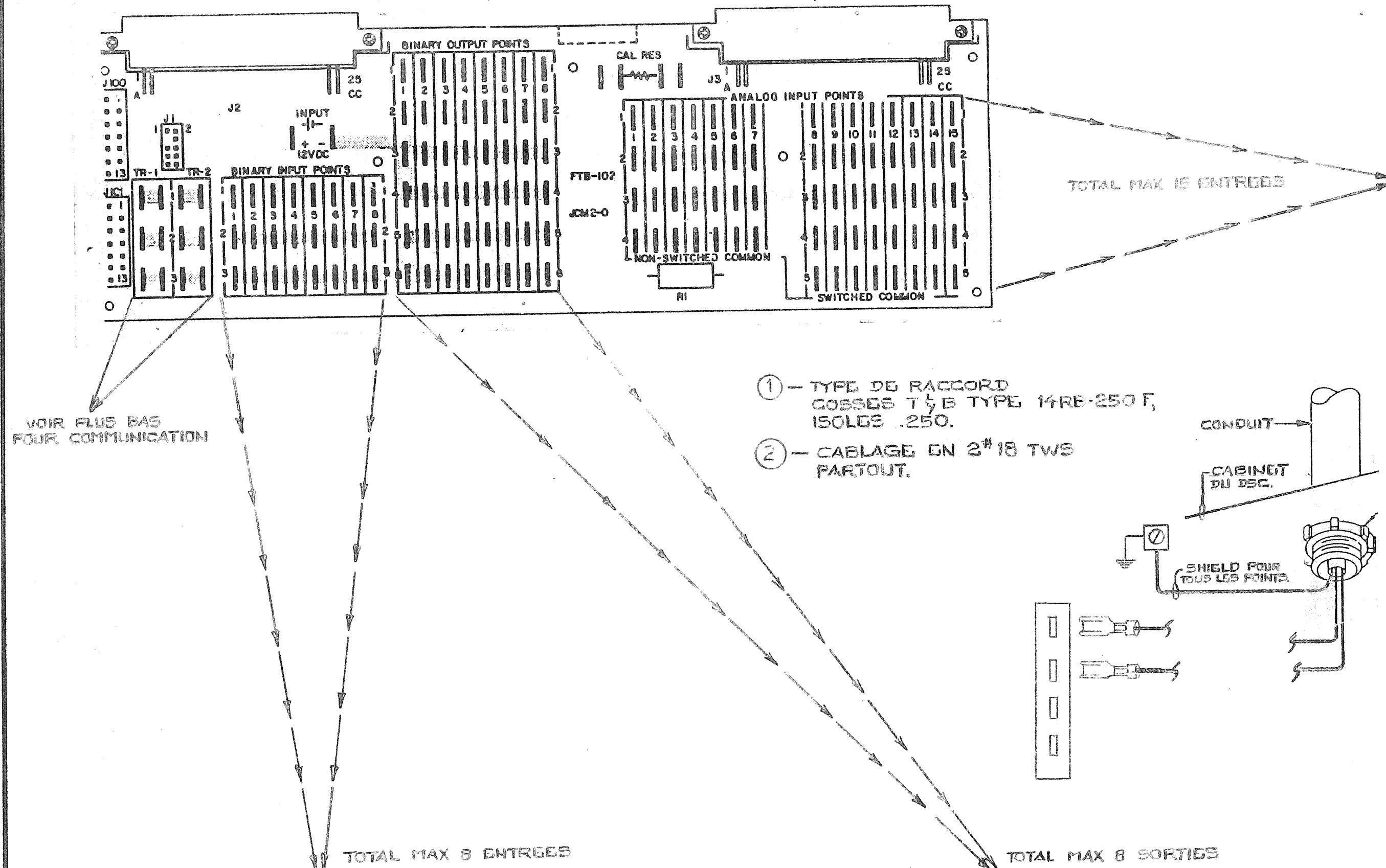
Montréal, QC H4N 1S2

Tel. 514-332-6960

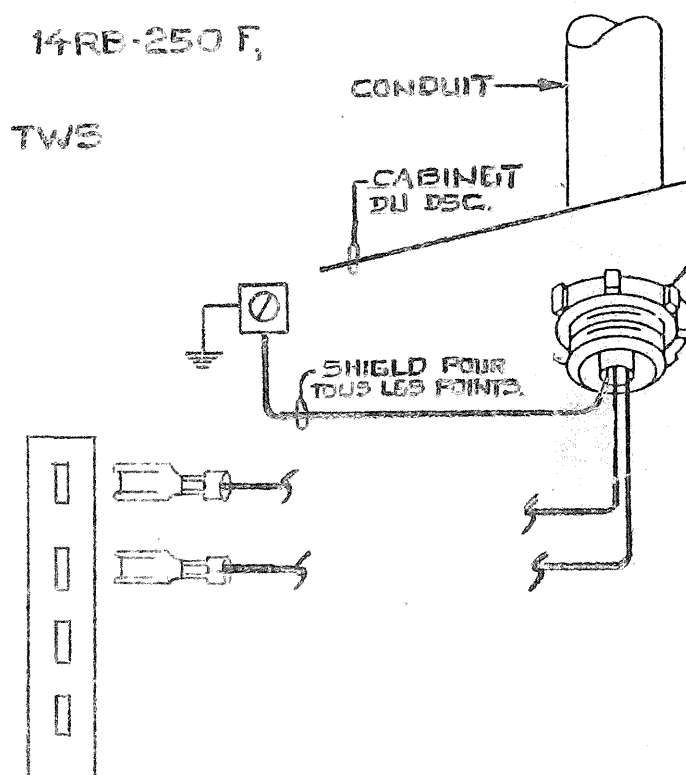
CONTRAT 4096-0008-762

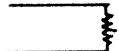
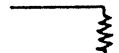
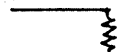


DESSIN NO. 4068-7

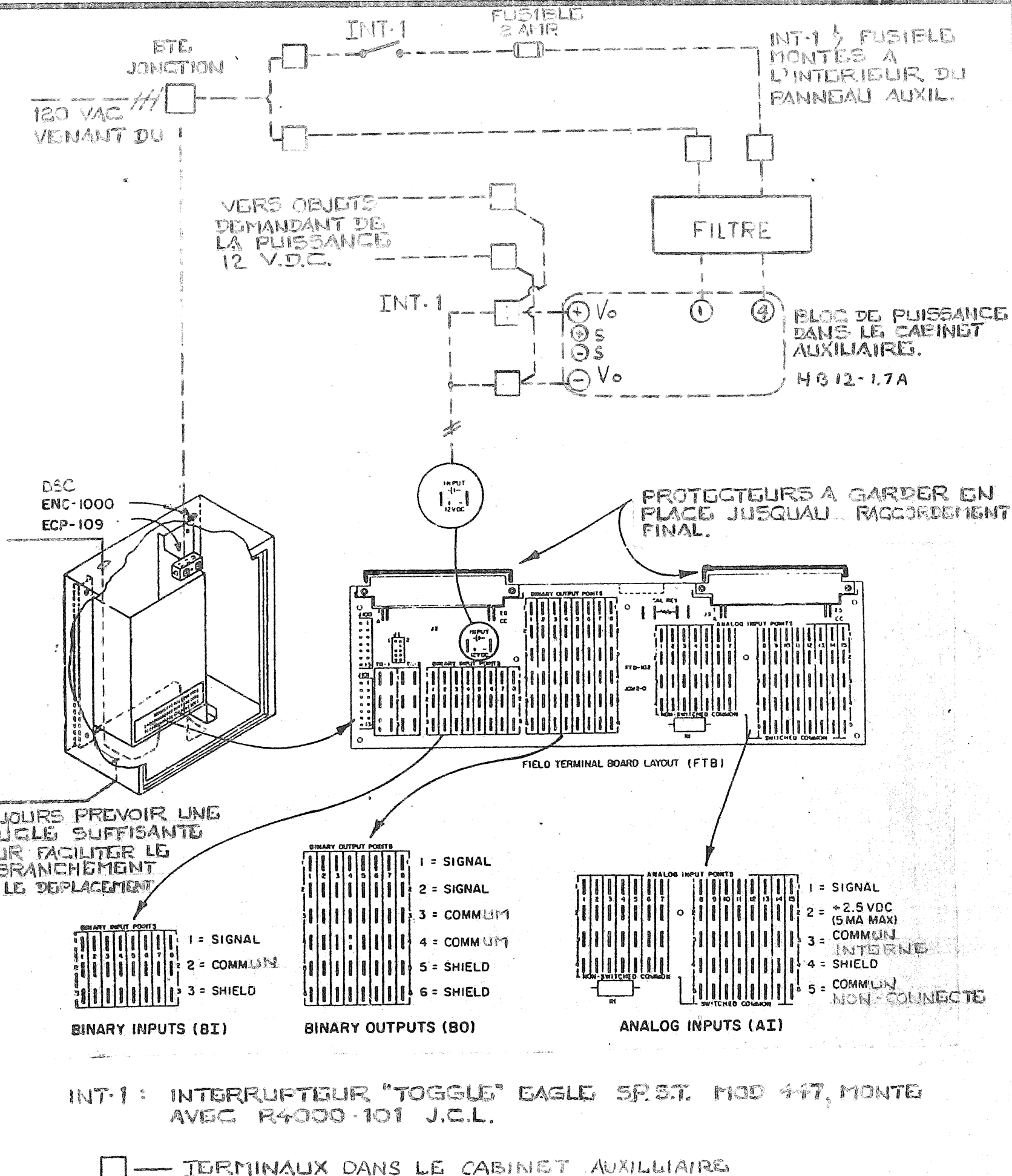
BORNERS DE RACCORDEMENT (FTB-102)





- 1 - TYPE DE RACCORD
COSESSES T & B TYPE 14RE-250 F,
ISOLÉS .250.
- 2 - CABLE EN 2*18 TWS
PARTOUT.

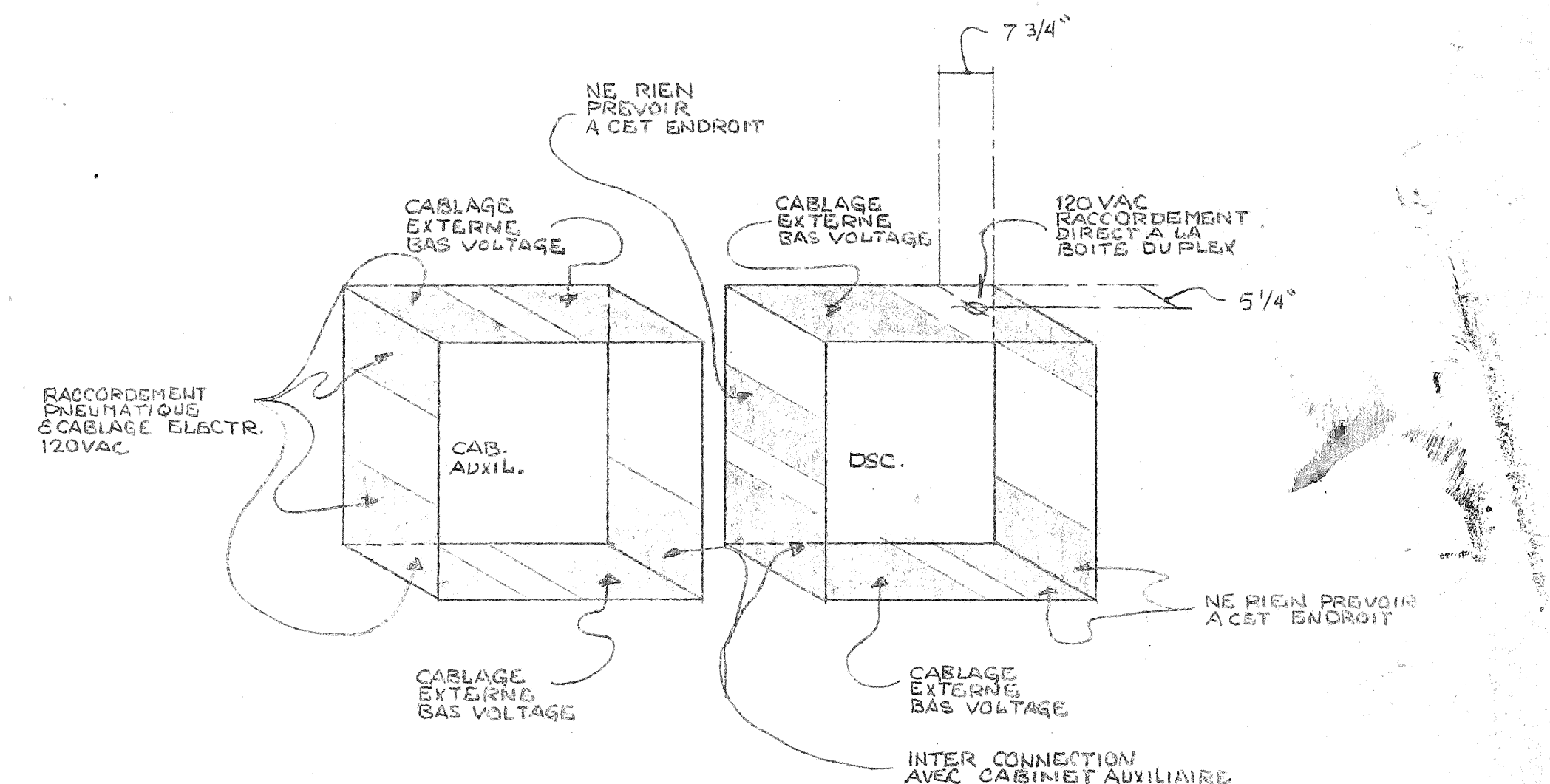


EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 8		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI- CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20 mA 10-90%
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20 mA 10-90%
11	PT-1	PRESSON ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL.V43.8 BOITE LA PLUS LOIN	A11.1		0-5 VDC 0-25%
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		

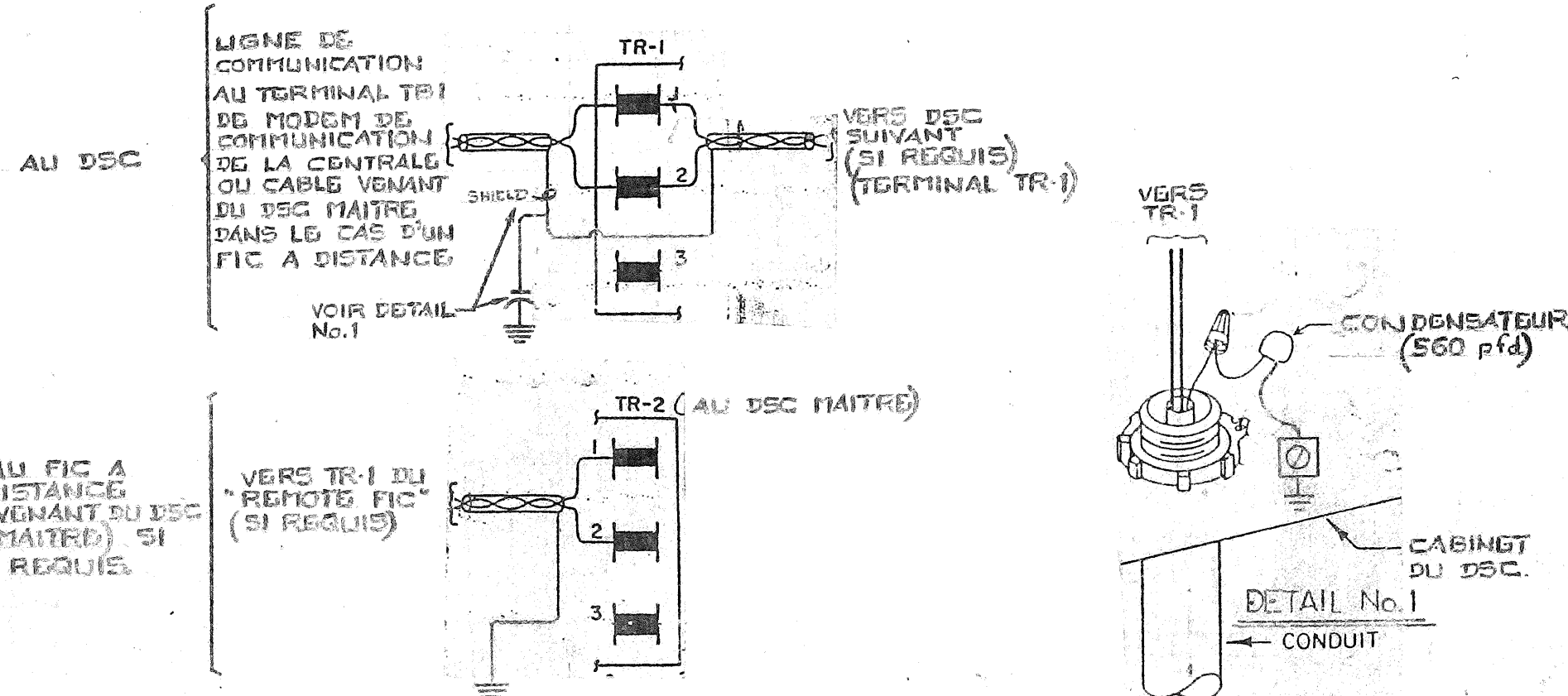


EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 8		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 8	BIN	1 2		CONTACT AUX. DEM	MCC -2	B1.1		
2	GEL	SYSTEME 8	BIN	1 2		RELAIS RG	CAB AUX.	B2.1		

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 8		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P4.1		
5A	R1	ARRET DEPART SYSTEME	SST	1 3	2 7	RELAIS 12VDC	MCC -2	S5A.1		



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-6500		TEL QUE CONSTRUIT		86-0701	
DSC-8							
REPRESENTANT	TECHNICIEN	REVISION	AVIS	DATE	PAR		
J. C. R.	R. F.						
PROJET		CENTRE DE RECHERCHE ALIMENTATION		ST. HYACINTHE, QUE.			
JOHNSON CONTROLS		Société de Contrôle Johnson Ltd		441 boulevard Lebeau		4096-0008-8	
						4068-8	

DSC 8 SYSTEME V43.8

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
----	---------	-------	--------------------


```

46      ADJUST   SPSP,I      /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A       /RESULTAT CTL VAV
48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2   /SOUPAPES
62      OVERRIDE ZCP10,A,2   /VOLETS
63      OVERRIDE ZCP70,A,2   /HUMIDITE
64      OVERRIDE ZCP50,A,2   /VAV
/

```

```

/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I    /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A    /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I    /GAIN INTEGRAL
82      ADJUST   CMPXXX,A    /COMPENSATION
83      ADJUST   CDSXXX,A    /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/

```

```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-8
/
/      51      ALARME HORAIRE SYSTEME V43-8
/
/-----/

```

□

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 14:03:38
/
/TRANSLATION LISTING FOR DSC-8.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:23
/
/TRANSLATION LISTING FOR DSC-8.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 10:05:22
/
/TRANSLATION LISTING FOR CIRA8.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   8   SYSTEME   V43.8
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     08 DECE 1986
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,6338
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  21
@ AD:  88
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-10,RAT-0,TOT-0

```

```

@ BO:  MOM-0,POS-4,MAN-1
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FREEZE     CON-2      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.0,E,V,T,-45.5,129.6 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.0,E,V,T,-45.3,129.6 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.0,E,V,T,-45.4,129.7 /TEMP EXT
AI-4      TE60       FUL-4      E,0.0,E,V,T,-45.5,129.6 /TEMP ALIM
AI-5      ZT30       FUL-5      E,0.0,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6      ZT10       FUL-6      E,0.0,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-7      ZT70       FUL-7      E,0.0,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8      ZT50       FUL-8      E,0.0,E,N,O,-12.5,250.0 /F.B. VAV
AI-9      HT80       LTD-1      E,0.0,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10     HT60       LTD-2      E,0.0,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-11     SPT        FUL-9      E,0.0,E,N,O,0,621      /PRESSION STATIQUE EN P
AI-12     TE100      FUL-10     E,0.0,E,V,T,-46.2,129.8 /TEMP PIECE
/
/
BO-1      ZC30       POS-1      D,E,0     /SOUPAPES
BO-2      ZC10       POS-2      D,E,0     /VOILETS
BO-3      ZC70       POS-3      D,E,0     /HUMIDITE
BO-4      ZC50       POS-4      D,E,0     /VAV
BO-5A     ZS50       MAN-1      E,E      /VENTIL ALIM
/
/
CP-1      ZCP30      INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10      INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOILETS
CP-3      ZCP70      INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4      ZCP50      INC-4      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
BD-1      OCCD       E,R      /CYCLE D OCCUPATION
BD-2      TLCON      E,R      /CONTROLE PAR TEMP.
BD-3      FSTRT      E,R      /DEMANDE VENTILATEUR
BD-4      COMP50     E,R      /RESULTAT DEMARRAGE
BD-5      CONON      E,R      /PERMISSION CONTROLE
/
/-----/
/  PARAMETRES CONTROLE DE NUIT /
/-----/
/
BD-6      NCTL       E,R      /CONTROLE DE TEMP NUIT
/
/-----/

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/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-7      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
BD-8      MXD      E,R      /CONTROLE DE JOUR
BD-9      MIXLL    E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-10     HTG      E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
BD-11     CLG      E,R      /REFROIDISSEMENT
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
BD-12     SYSP      D,R
BD-13     SYS      D,R
BD-14     SYS1     D,R
BD-15     SYS2     D,R
BD-16     SYS3     D,R
BD-17     SYS4     D,R
BD-18     SYS5     D,R
BD-19     SYS6     D,R
BD-20     SYS7     D,R
BD-21     SYS8     D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
AD-1      DOW      E,2
AD-2      H1      E,00:00
AD-3      H2      E,00:00
AD-4      H3      E,00:00
AD-5      H4      E,00:00
AD-6      H5      E,00:00
AD-7      H6      E,00:00
AD-8      STA      E,00:00 /HORAIRE
AD-9      STO      E,00:00
AD-10     STA8     E,00:01
AD-11     STO8     E,23:59
AD-12     STA7     E,00:01
AD-13     STO7     E,23:59
AD-14     STA9     E,00:01

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AD-15   STO9      E,23:59
AD-16   NSBT      E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17   DELSST    E,70    /DELAI APRES PANNE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT                      /
/-----/
/
AD-18   NSP       E,22.0  /POINT DE CONSIGNE RETOUR
AD-19   Z41       E,0.0   /RESULTAT CTL NUIT
AD-20   CST41     E,45    /INTERVAL CTL NUIT
AD-21   CPB41     E,20.0  /BANDE PROP CTL NUIT
AD-22   CIG41     E,5     /GAIN CTL NUIT
AD-23   CDS41     E,0.0   /BANDE MORTE CTL NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS                /
/-----/
/
AD-24   OASO      E,15.0  /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION    /
/-----/
/
AD-25   RARL      E,22.5  /AIR RET BAS LIM REAJ TEMP ALIM
AD-26   RARH      E,25.0  /AIR RET HAU LIM REAJ TEMP ALIM
AD-27   SAHL      E,17.0  /REAJ TEMP ALIM HAU LIM
AD-28   SALL      E,13.0  /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE  /
/-----/
/
AD-29   DSSP      E,0.0   /POINT DE CONSIGNE ALIM
AD-30   MXDSP     E,10.0  /POINT DE CONSIGNE LIMITE MEL.
AD-31   MDP       E,20.0  /POSITION MINIMUM VOLETS
AD-32   CST10A    E,4     /INTERVAL CTL VOLETS LIMITE
AD-33   CPB10A    E,-90.0 /BANDE PROP CTL VOLETS LIMITE
AD-34   CIG10A    E,33    /GAIN CTL VOLETS LIMITE
AD-35   CMP10A    E,0.0   /COMPENSATION CTL VOLETS LIMITE
AD-36   CDS10A    E,0.0   /BANDE MORTE CTL VOLETS LIMITE
AD-37   CST10     E,100   /INTERVAL CTL VOLETS
AD-38   CPB10     E,-60.0 /BANDE PROP CTL VOLETS
AD-39   CIG10     E,33    /GAIN CTL VOLETS
AD-40   CMP10     E,0.0   /COMPENS CTL VOLETS
AD-41   CDS10     E,4.0   /BANDE MORTE CTL VOLETS
AD-42   ZMXD      E,0.0   /RESULTAT PROPORTION.
AD-43   Z10M      E,100.0 /RESULTAT VOLETS LIMITE
AD-44   Z10C      E,0.0   /RESULTAT VOLETS CTL
AD-45   Z10       E,0.0   /RESULTAT VOLETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE                  /
/-----/
/
AD-46   Z40       E,0.0   /RESULTAT CHAUFFAGE

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AD-47   CST40      E,25   /INTERVAL CTL CHAUFF
AD-48   CPB40      E,50.0 /BANDE PROP CTL CHAUFF
AD-49   CIG40      E,33   /GAIN CTL CHAUFF
AD-50   CDS40      E,0.0  /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
AD-51   Z30        E,0.0   /RESULTAT REFROIDISSEMENT
AD-52   CST30      E,15    /INTERVAL CTL REFROIDI
AD-53   CPB30      E,-12.0 /BANDE PROP CTL REFROIDI
AD-54   CIG30      E,32    /GAIN CTL REFROIDI
AD-55   CDS30      E,0.0   /BANDE MORTE CTL REFROIDI
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE          /
/-----/
/
AD-56   SPSP       E,212   /POINT DE CONSIGNE PRESS STAT
AD-57   CST50      E,50    /INTERVAL CTL VAV
AD-58   CPB50      E,11.1  /BANDE PROP CTL VAV
AD-59   CIG50      E,30    /GAIN CTL VAV
AD-60   CMP50      E,0.0   /COMPENS CTL VAV
AD-61   CDS50      E,6     /BANDE MORTE CTL VAV
AD-62   Z50        E,0.0   /RESULTAT CTL VAV
AD-63   FSP        E,0.0   /PRESS STAT FILTREE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-64   RHSP       E,33.0   /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65   RHSPA      E,80.0   /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66   CST70      E,60     /INTERVAL CTL HUMIDITE
AD-67   CPB70      E,90.0   /BANDE PROP CTL HUMIDITE
AD-68   CIG70      E,33     /GAIN CTL HUMIDITE
AD-69   CDS70      E,0.0   /BANDE MORTE CTL HUMIDITE
AD-70   CST70A     E,5      /INTERVAL H LIM HUMIDITE
AD-71   CPB70A     E,90.0   /BANDE PROP H LIM HUMIDITE
AD-72   CIG70A     E,33     /GAIN H LIM HUMIDITE
AD-73   CDS70A     E,0.0   /BANDE MORTE H LIM HUMIDITE
AD-74   Z70        E,0.0   /RESULTAT CTL HUMIDITE
AD-75   Z70HL      E,0.0   /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-76   Z70C       E,0.0   /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-77   SYSDIS     D,0
AD-78   CSTXXX     D,0
AD-79   CPBXXX     D,0.0
AD-80   CIGXXX     D,0
AD-81   CMPXXX     D,0.0
AD-82   CDSXXX     D,0.0
/

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/-----/
/               RECORD PANNE DE POUVOIR               /
/-----/
/
AD-83   UPTIM      E,00:00      /HEURE DE LA RESTAURATION DU POUVOIR
AD-84   UPDAT      E,00:00      /DATE DE LA RESTAURATION DU POUVOIR
AD-85   DNTIM      E,00:00      /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-86   DNDAT      E,00:00      /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-87   TOD        E,00:00      /DERNIERE HEURE
AD-88   LDAT       E,00:00      /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      ADJUST      DELSST,I      /DELAI APRES UNE PANNE
2      DISPLAY      OCCD,B        /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST      FSTRT,B        /DEMANDE VENTILATEUR
4      DISPLAY      FSTAT,B        /ETAT VENTIL. ALIM.
5      DISPLAY      FREEZE,B      /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
6      DISPLAY      NCTL,B        /CONTROLE DE TEMP NUIT
7      DISPLAY      TLCON,B      /CONTROLE PAR TEMP.
8      ADJUST      NSBT,A        /PT DE CONSIGNE REDEMARRAGE
9      ADJUST      NSP,A        /POINT DE CONSIGNE RETOUR
10     DISPLAY      Z41,A        /RESULTAT CTL NUIT
/
11     DISPLAY      TE80,A        /TEMP RETOUR
12     DISPLAY      TE10,A       /TEMP MELANGE
13     DISPLAY      TE1,A        /TEMP EXTERIEURE
14     DISPLAY      TE60,A       /TEMP ALIMENTATION
15     DISPLAY      TE100,A      /TEMP PIECE
/
16     DISPLAY      MXD,B        /CONTROLE DE JOUR
17     ADJUST      RARL,A        /AIR RET BAS LIM REAJ TEMP ALIM
18     ADJUST      RARH,A        /AIR RET HAU LIM REAJ TEMP ALIM
19     ADJUST      SAHL,A        /REAJ TEMP ALIM HAU LIM
20     ADJUST      SALL,A        /REAJ TEMP ALIM BAS LIM
21     DISPLAY      DSSP,A        /POINT DE CONSIGNE ALIM
22     ADJUST      OASO,A        /TEMP LIM EXT ECONOMISEUR
23     DISPLAY      ECON,B       /RESULTAT ECONOMISEUR
24     ADJUST      MDP,A        /POSITION MINIMUM VOLETS
25     ADJUST      MXDSP,A       /POINT DE CONSIGNE LIMITE MEL.
26     DISPLAY      ZMXD,A       /RESULTAT PROPORTION.
27     DISPLAY      Z10M,A       /RESULTAT VOLETS LIMITE
28     DISPLAY      Z10C,A       /RESULTAT VOLETS CTL
29     DISPLAY      Z10,A        /RESULTAT VOLETS
30     DISPLAY      ZT10,A       /F.B. VOLETS
/
31     DISPLAY      HTG,B        /CHAUFFAGE
32     DISPLAY      Z40,A        /RESULTAT CHAUFFAGE
/
34     DISPLAY      CLG,B        /REFROIDISSEMENT
35     DISPLAY      Z30,A        /RESULTAT REFROIDISSEMENT
36     DISPLAY      ZT30,A       /F.B. SOUPAPES
/
37     DISPLAY      HT80,A       /HUMIDITE RETOUR

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38      DISPLAY  HT60,A      /HUMIDITE ALIMENT
39      ADJUST   RHSP,A      /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A     /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A     /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A      /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A       /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A      /F.B. HUMIDITE
/
45      DISPLAY  FSP,I       /PRESSION STATIQUE
46      ADJUST   SPSP,I      /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A       /RESULTAT CTL VAV
48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2   /SOUPAPES
62      OVERRIDE ZCP10,A,2   /VOLETS
63      OVERRIDE ZCP70,A,2   /HUMIDITE
64      OVERRIDE ZCP50,A,2   /VAV
/
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I    /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A    /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I    /GAIN INTEGRAL
82      ADJUST   CMPXXX,A    /COMPENSATION
83      ADJUST   CDSXXX,A    /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/

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```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-8
/
/      51      ALARME HORAIRE SYSTEME V43-8
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET        BPD,SDF,R
1.3      EXIT       C,S
1.4      HOLIDAY    H1,H2,H3,H4,H5,H6
1.5      STORE      DOW,APD,2,U
1.6      COMPARE    DOW,EQ,7,0
1.7      STORE      STA,STA7,STA9,C,S
1.8      STORE      STO,STO7,STO9,C,S

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```

1.9      COMPARE  DOW,EQ,1,0
1.10     ORR      DOW,EQ,8,0
1.11     STORE    STA,STA8,STA9,C,S
1.12     STORE    STO,STO8,STO9,C,S
1.13     COMPARE  DOW,GE,2,0
1.14     ANDR     DOW,LE,6,0
1.15     STORE    STA,STA9,STA9,C,S
1.16     STORE    STO,STO9,STO9,C,S
1.17     SET      BPD,PAF,R
1.18     ALARM    51,C,S
1.19     EXIT     U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/          RESET    TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET    OCCD      CYCLE D OCCUPATION
/
2.1      PROG     DOW,0,STA,STO
2.2      SET      OCCD,SUF,R
2.3      SET      TLCON,SDF,S
2.4      SET      BPD,SUF,R
2.5      EXIT     C,R
2.6      SET      FSTRT,S,S
2.7      EXIT     U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT    TLCON,S
3.2      SET      BPD,TLCON,S
3.3      EXIT     C,R
3.4      INTERVAL 300,U
3.5      COMPARE  TE100,LE,NSBT,2.0
3.6      SET      FSTRT,BPD,S
3.7      EXIT     U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET      AUTO,S,S
4.3      DELAY    25,U
4.4      SET      COMP50,R,R
4.5      INTERVAL 10,U
4.6      XOR      COMP50,FSTAT
4.7      ALARM    50,C,S
4.8      SET      BPD,FSTRT,R
4.9      BOUT     ZS50,3,OFF
4.10     SET      COMP50,BPD,R
4.11     EXIT     U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE          /
/-----/

```

```

/
5.1      RESTART
5.2      DELAY      25,U
5.3      INTERVAL   5,U
5.4      SET        BPD,FREEZE,R
5.5      ALARM      10,C,R
5.6      EXIT       U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR   HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT       C,R
6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U
/
7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT       C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE                          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/
8.1      EVENT      CONON,S
8.2      SET        BPD,CONON,R
8.3      STORE      FSP,0,0,C,R
8.4      STORE      APD,0.0,0.0,C,R
8.5      STORE      Z50,APD,APD,C,R
8.6      AOUT       ZCP50,3,0.0,C,R
8.7      EXIT       C,R

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8.8      DELAY      15,U
8.9      INTERVAL   CST50,U
8.10     FILTER     SPT,63,100
8.11     STORE      FSP,APD,APD,U
8.12     CALC       CPB50,0,10,1,1,T
8.13     PROP       SPSP,FSP,APD,CIG50,CMP50,CDS50
8.14     STORE      Z50,APD,APD,U
8.15     AOUT       ZCP50,3,0,U
8.16     EXIT       U
/
/
/-----/
/      CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE      /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1      RESTART
9.2      SET        MXD,R,R
9.3      SET        NCTL,R,R
9.4      SET        CONON,R,R
9.5      DELAY      25,U
9.6      INTERVAL   5,U
9.7      AND        FSTAT,OCCD
9.8      SET        MXD,BPD,R
9.9      XOR        FSTAT,OCCD
9.10     AND        BPD,FSTAT
9.11     SET        NCTL,BPD,S
9.12     SET        CONON,FSTAT,R
9.13     EXIT       U
/
/
/-----/
/      ECONOMISEUR D AIR FRAIS      /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
10.1     EVENT      MXD,S
10.2     SET        ECON,R,R
10.3     SET        BPD,FSTAT,R
10.4     EXIT       C,R
10.5     INTERVAL   300,U
10.6     COMPARE    TE1,GE,OASO,1.0
10.7     SET        ECON,BPD,R
10.8     EXIT       U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.

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/
11.1    EVENT      MXD,S
11.2    INTERVAL   300,U
11.3    STORE      APD,TE80,RARL,U
11.4    SPAN       RARL,RARH,SAHL,SALL
11.5    STORE      DSSP,APD,SAHL,U
11.6    EXIT       U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M    RESULTAT PAR TEMP DE MELANGE
/Z10C    RESULTAT PAR TEMP D ALIMENTATION
/Z10     RESULTAT VOLETS
/
/
12.1    EVENT      MXD,S
12.2    SET        MIXLL,R,R
12.3    SET        BPD,MXD,R
12.4    EXIT       C,R
12.5    INTERVAL   5,U
12.6    COMPARE    TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7    SET        MIXLL,BPD,R           /A LA BASSE LIMITE
12.8    SELECT     Z10M,Z10C,L
12.9    STORE      Z10,APD,APD,U
12.10    AOUT      ZCP10,3,0.0,U
12.11    EXIT      U
/
13.1    EVENT      MIXLL,S           /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2    SET        BPD,MIXLL,R
13.3    STORE      Z10M,100.0,100.0,C,R
13.4    STORE      CMP10A,Z10C,Z10C,U
13.5    EXIT       C,R
13.6    INTERVAL   CST10A,U
13.7    PROP       MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8    STORE      Z10M,APD,APD,U
13.9    EXIT       U
/
14.1    EVENT      MXD,R /POSITION D ARRET SOUPAPES
14.2    SET        BPD,MXD,R
14.3    EXIT       C,S
14.4    SET        HTG,R,R
14.5    SET        CLG,R,R
14.6    DELAY      7,C,R
14.7    STORE      APD,0.0,0.0,C,R
14.8    AOUT      ZCP30,3,0.0,C,R
14.9    EXIT       U

```

```

/
15.1    EVENT    MXD,S
15.2    SET      BPD,MXD,R
15.3    STORE    APD,0.0,0.0,C,R
15.4    STORE    Z10,APD,APD,C,R
15.5    STORE    Z10C,APD,APD,C,R
15.6    STORE    Z10M,100.0,100.0,C,R
15.7    STORE    ZMXD,APD,APD,C,R
15.8    AOUT     ZCP10,3,0.0,C,R
15.9    EXIT     C,R
15.10   DELAY    7,U
15.11   STORE    APD,TE1,5.0,U
15.12   SPAN     5.0,20.0,0.0,75.0
15.13   STORE    CMP10,APD,APD,U
15.14   STORE    APD,50.0,50.0,U
15.15   AOUT     ZCP30,3,0.0,U
15.16   INTERVAL CST10,U
15.17   PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18   STORE    ZMXD,APD,APD,U
15.19   SPAN     MDP,100.0,MDP,100.0
15.20   SET      BPD,ECON,S
15.21   STORE    APD,MDP,MDP,C,S
15.22   STORE    Z10C,APD,APD,U
15.23   ORR      ZMXD,GE,85.0,10.0
15.24   SET      CLG,BPD,R
15.25   COMPARE  ZMXD,LE,15.0,10.0
15.26   SET      HTG,BPD,R
15.27   EXIT     U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
16.1    EVENT    HTG,S
16.2    SET      BPD,HTG,S
16.3    STORE    Z40,0.0,0.0,C,R
16.4    STORE    APD,50.0,50.0,C,R
16.5    AOUT     ZCP30,3,0.0,C,R
16.6    EXIT     C,R
16.7    INTERVAL CST40,U
16.8    CALC     DSSP,0.3,1,-1,1,T
16.9    PROP     APD,TE60,CPB40,CIG40,0.0,CDS40
16.10   STORE    Z40,APD,APD,U
16.11   SPAN     0.0,100.0,50.0,0.0
16.12   AOUT     ZCP30,3,100.0,U
16.13   EXIT     U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/

```

/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.

/

17.1	EVENT	CLG,S
17.2	SET	BPD,CLG,R
17.3	STORE	Z30,0.0,0.0,C,R
17.4	STORE	APD,50.0,50.0,C,R
17.5	AOUT	ZCP30,3,0.0,C,R
17.6	EXIT	C,R
17.7	INTERVAL	CST30,U
17.8	CALC	DSSP,0.3,1,1,1,T
17.9	PROP	APD,TE60,CPB30,CIG30,0.0,CDS30
17.10	STORE	Z30,APD,APD,U
17.11	SPAN	0.0,100.0,50.0,100.0
17.12	AOUT	ZCP30,3,0.0,U
17.13	EXIT	U

/

/

/-----/

/ CONTROLE DE NUIT /

/-----/

/

/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOLETS RESTENT EN RECIRCULATION.

/

18.1	EVENT	NCTL,S
18.2	SET	BPD,NCTL,S
18.3	STORE	Z41,0.0,0.0,C,R
18.4	STORE	APD,0.0,0.0,C,R
18.5	AOUT	ZCP30,3,0.0,C,R
18.6	EXIT	C,R
18.7	INTERVAL	CST41,U
18.8	PROP	NSP,TE80,CPB41,CIG41,0.0,CDS41
18.9	STORE	Z41,APD,APD,U
18.10	SPAN	0.0,100.0,50.0,0.0
18.11	AOUT	ZCP30,3,100.0,U
18.12	EXIT	U

/

/

/-----/

/ FONCTIONS SPECIALES /

/-----/

/

19.1	EVERY		/SELECTION DU STSTEME POUR LE
19.2	SET	SYSP,R,R	/
19.3	COMPARE	SYSDIS,EQ,100,0	
19.4	SET	SYS1,BPD,R	
19.5	OR	SYSP,BPD	
19.6	SET	SYSP,BPD,S	
19.7	COMPARE	SYSDIS,EQ,200,0	
19.8	SET	SYS2,BPD,R	
19.9	OR	SYSP,BPD	
19.10	SET	SYSP,BPD,S	
19.11	COMPARE	SYSDIS,EQ,300,0	


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19.12 SET      SYS3,BPD,R
19.13 OR       SYSP,BPD
19.14 SET      SYSP,BPD,S
19.15 COMPARE  SYSDIS,EQ,400,0
19.16 SET      SYS4,BPD,R
19.17 OR       SYSP,BPD
19.18 SET      SYSP,BPD,S
19.19 COMPARE  SYSDIS,EQ,500,0
19.20 SET      SYS5,BPD,R
19.21 OR       SYSP,BPD
19.22 SET      SYSP,BPD,S
19.23 COMPARE  SYSDIS,EQ,600,0
19.24 SET      SYS6,BPD,R
19.25 OR       SYSP,BPD
19.26 SET      SYSP,BPD,S
19.27 COMPARE  SYSDIS,EQ,700,0
19.28 SET      SYS7,BPD,R
19.29 OR       SYSP,BPD
19.30 SET      SYSP,BPD,S
19.31 COMPARE  SYSDIS,EQ,800,0
19.32 SET      SYS8,BPD,R
19.33 OR       SYSP,BPD
19.34 SET      SYSP,BPD,S
19.35 SET      SYS,SYSP,S
19.36 EXIT     U
/
/
20.1  EVENT    SYS,S                               /RESET LES FONCTIONS POUR
20.2  SET      BPD,SUF,R                           /LE CDB SPECIAL
20.3  STORE    SYSDIS,0,0,C,R                       /SUR UNE PERIODE DE DISCLR
20.4  EXIT     C,R
20.5  DELAY    3600,U
20.6  STORE    SYSDIS,0,0,U
20.7  EXIT     U
/
/
21.1  EVENT    SYS1,S                               /SYS 100
21.2  SET      BPD,SUF,R
21.3  EXIT     C,R
21.4  INTERVAL 5,U
21.5  STORE    CSTXXX,CST70,CST70,U                /PERMET DE VOIR LES
21.6  STORE    CPBXXX,CPB70,CPB70,U                /VALEURS DU SYSTEME
21.7  STORE    CIGXXX,CIG70,CIG70,U
21.8  STORE    CMPXXX,0.0,0.0,U
21.9  STORE    CDSXXX,CDS70,CDS70,U
21.10 EXIT     U
/
/
22.1  EVENT    SYS1,S
22.2  SET      BPD,SUF,R
22.3  EXIT     C,R
22.4  DELAY    10,U
22.5  INTERVAL 1,U
22.6  STORE    CST70,CSTXXX,CST70,U                /PERMET D AJUSTER LES
22.7  STORE    CPB70,CPBXXX,CPB70,U                /VALEURS DU SYSTEME
22.8  STORE    CIG70,CIGXXX,CIG70,U
22.9  STORE    CDS70,CDSXXX,CDS70,U

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22.10  EXIT      U
/
/
23.1   EVENT     SYS2,S                               /SYS 200
23.2   SET       BPD,SUF,R
23.3   EXIT      C,R
23.4   INTERVAL  5,U
23.5   STORE     CSTXXX,CST70A,CST70A,U               /PERMET DE VOIR LES
23.6   STORE     CPBXXX,CPB70A,CPB70A,U               /VALEURS DU SYSTEME
23.7   STORE     CIGXXX,CIG70A,CIG70A,U
23.8   STORE     CMPXXX,0.0,0.0,U
23.9   STORE     CDSXXX,CDS70A,CDS70A,U
23.10  EXIT      U
/
/
24.1   EVENT     SYS2,S
24.2   SET       BPD,SUF,R
24.3   EXIT      C,R
24.4   DELAY     10,U
24.5   INTERVAL  1,U
24.6   STORE     CST70A,CSTXXX,CST70A,U               /PERMET D AJUSTER LES
24.7   STORE     CPB70A,CPBXXX,CPB70A,U               /VALEURS DU SYSTEME
24.8   STORE     CIG70A,CIGXXX,CIG70A,U
24.9   STORE     CDS70A,CDSXXX,CDS70A,U
24.10  EXIT      U
/
/
25.1   EVENT     SYS3,S                               /SYS 300
25.2   SET       BPD,SUF,R
25.3   EXIT      C,R
25.4   INTERVAL  5,U
25.5   STORE     CSTXXX,CST50,CST50,U                 /PERMET DE VOIR LES
25.6   STORE     CPBXXX,CPB50,CPB50,U                 /VALEURS DU SYSTEME
25.7   STORE     CIGXXX,CIG50,CIG50,U
25.8   STORE     CMPXXX,CMP50,CMP50,U
25.9   STORE     CDSXXX,CDS50,CDS50,U
25.10  EXIT      U
/
/
26.1   EVENT     SYS3,S
26.2   SET       BPD,SUF,R
26.3   EXIT      C,R
26.4   DELAY     10,U
26.5   INTERVAL  1,U
26.6   STORE     CST50,CSTXXX,CST50,U                 /PERMET D AJUSTER LES
26.7   STORE     CPB50,CPBXXX,CPB50,U                 /VALEURS DU SYSTEME
26.8   STORE     CIG50,CIGXXX,CIG50,U
26.9   STORE     CMP50,CMPXXX,CMP50,U
26.10  STORE     CDS50,CDSXXX,CDS50,U
26.11  EXIT      U
/
/
27.1   EVENT     SYS4,S                               /SYS 400
27.2   SET       BPD,SUF,R
27.3   EXIT      C,R
27.4   INTERVAL  5,U
27.5   STORE     CSTXXX,CST40,CST40,U                 /PERMET DE VOIR LES

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27.6    STORE    CPBXXX,CPB40,CPB40,U    /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG40,CIG40,U
27.8    STORE    CMPXXX,0.0,0.0,U
27.9    STORE    CDSXXX,CDS40,CDS40,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS4,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST40,CSTXXX,CST40,U    /PERMET D AJUSTER LES
28.7    STORE    CPB40,CPBXXX,CPB40,U    /VALEURS DU SYSTEME
28.8    STORE    CIG40,CIGXXX,CIG40,U
28.9    STORE    CDS40,CDSXXX,CDS40,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS5,S                    /SYS 500
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST41,CST41,U    /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB41,CPB41,U    /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG41,CIG41,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS41,CDS41,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS5,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST41,CSTXXX,CST41,U    /PERMET D AJUSTER LES
30.7    STORE    CPB41,CPBXXX,CPB41,U    /VALEURS DU SYSTEME
30.8    STORE    CIG41,CIGXXX,CIG41,U
30.9    STORE    CDS41,CDSXXX,CDS41,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS6,S                    /SYS 600
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U
31.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG10A,CIG10A,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS10A,CDS10A,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R

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32.3    EXIT      C,R
32.4    DELAY     10,U
32.5    INTERVAL  1,U
32.6    STORE     CST10A,CSTXXX,CST10A,U      /PERMET D AJUSTER LES
32.7    STORE     CPB10A,CPBXXX,CPB10A,U      /VALEURS DU SYSTEME
32.8    STORE     CIG10A,CIGXXX,CIG10A,U
32.9    STORE     CDS10A,CDSXXX,CDS10A,U
32.10   EXIT      U
/
/
33.1    EVENT     SYS7,S                      /SYS 700
33.2    SET       BPD,SUF,R
33.3    EXIT      C,R
33.4    INTERVAL  5,U
33.5    STORE     CSTXXX,CST10,CST10,U        /PERMET DE VOIR LES
33.6    STORE     CPBXXX,CPB10,CPB10,U        /VALEURS DU SYSTEME
33.7    STORE     CIGXXX,CIG10,CIG10,U
33.8    STORE     CMPXXX,CMP10,CMP10,U
33.9    STORE     CDSXXX,CDS10,CDS10,U
33.10   EXIT      U
/
/
34.1    EVENT     SYS7,S
34.2    SET       BPD,SUF,R
34.3    EXIT      C,R
34.4    DELAY     10,U
34.5    INTERVAL  1,U
34.6    STORE     CST10,CSTXXX,CST10,U        /PERMET D AJUSTER LES
34.7    STORE     CPB10,CPBXXX,CPB10,U        /VALEURS DU SYSTEME
34.8    STORE     CIG10,CIGXXX,CIG10,U
34.9    STORE     CMP10,CMPXXX,CMP10,U
34.10   STORE     CDS10,CDSXXX,CDS10,U
34.11   EXIT      U
/
/
35.1    EVENT     SYS8,S                      /SYS 800
35.2    SET       BPD,SUF,R
35.3    EXIT      C,R
35.4    INTERVAL  5,U
35.5    STORE     CSTXXX,CST30,CST30,U        /PERMET DE VOIR LES
35.6    STORE     CPBXXX,CPB30,CPB30,U        /VALEURS DU SYSTEME
35.7    STORE     CIGXXX,CIG30,CIG30,U
35.8    STORE     CMPXXX,0.0,0.0,U
35.9    STORE     CDSXXX,CDS30,CDS30,U
35.10   EXIT      U
/
/
36.1    EVENT     SYS8,S
36.2    SET       BPD,SUF,R
36.3    EXIT      C,R
36.4    DELAY     10,U
36.5    INTERVAL  1,U
36.6    STORE     CST30,CSTXXX,CST30,U        /PERMET D AJUSTER LES
36.7    STORE     CPB30,CPBXXX,CPB30,U        /VALEURS DU SYSTEME
36.8    STORE     CIG30,CIGXXX,CIG30,U
36.9    STORE     CDS30,CDSXXX,CDS30,U
36.10   EXIT      U

```

```

/
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
37.1    RESTART
37.2    TIMDATA    DT
37.3    STORE      UPTIM,APD,APD,U                /SAUVE L HEURE ACTUEL ET
37.4    TIMDATA    MD                            /LA DATE DE LA RESTAURATION
37.5    STORE      UPDAT,APD,APD,U                /DU POUVOIR.
37.6    EXIT       U
/
38.1    RESTART
38.2    STORE      DNTIM,TOD,TOD,U                /RECORD DE LA DERNIERE HEURE
38.3    STORE      DNDAT,LDAT,LDAT,U            /ET DATE AVANT LA PANNE.
38.4    INTERVAL   60,U
38.5    TIMDATA    DT
38.6    STORE      TOD,APD,APD,U                /SAUVE L HEURE ET LA DATE
38.7    TIMDATA    MD                            /ACTUEL A TOUTES LES MINUTES.
38.8    STORE      LDAT,APD,APD,U
38.9    EXIT       U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3266
/   OVERHEAD:    2700
/   TOTAL:       7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3266
/   OVERHEAD:    2700
/   TOTAL:       7150    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3268
/   OVERHEAD:    2700
/   TOTAL:       7152    8K DSC MEMORY NEEDED

```

SYSTÈME V43-8

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOLETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

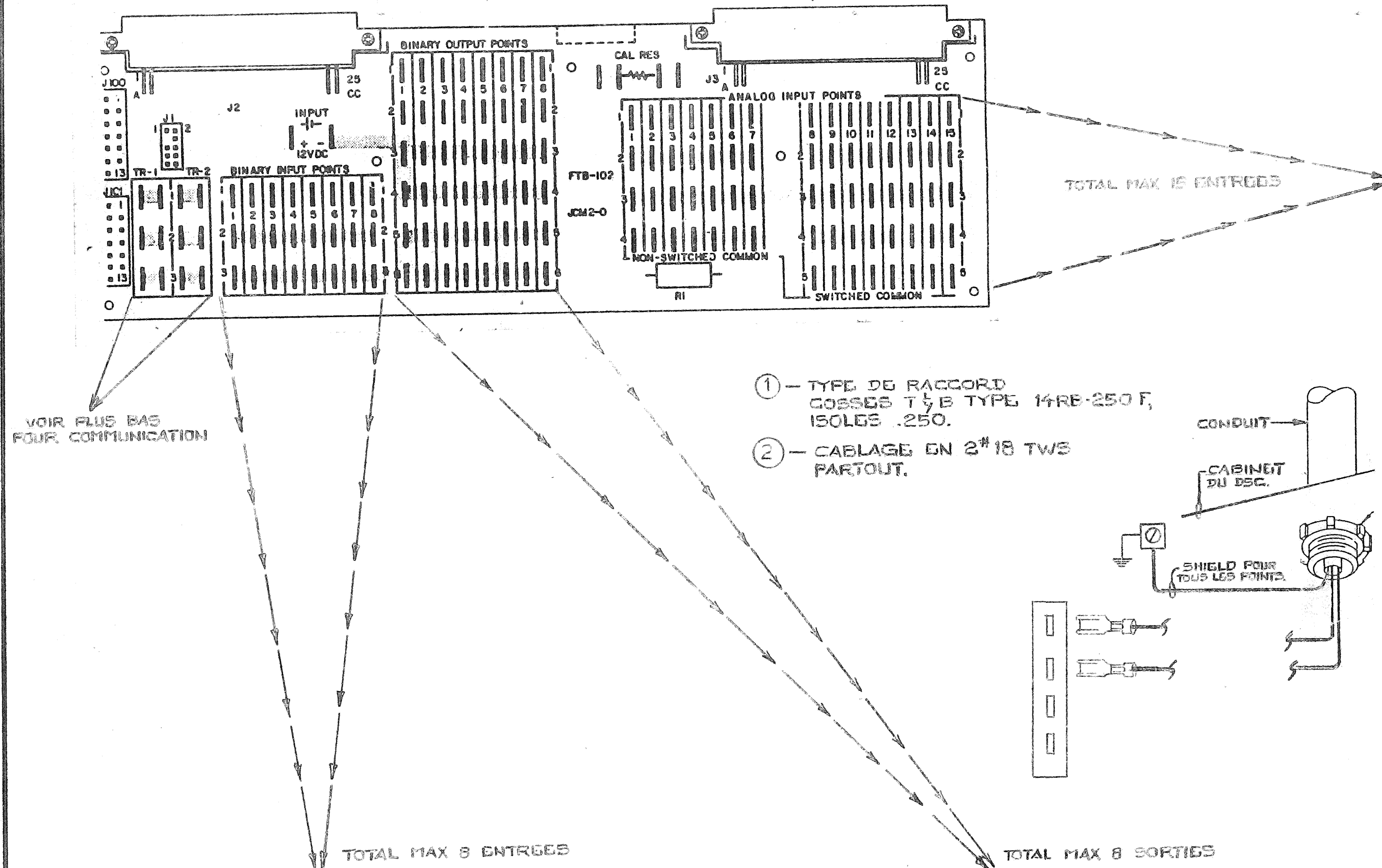
LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

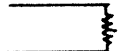
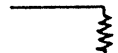
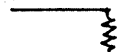


SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

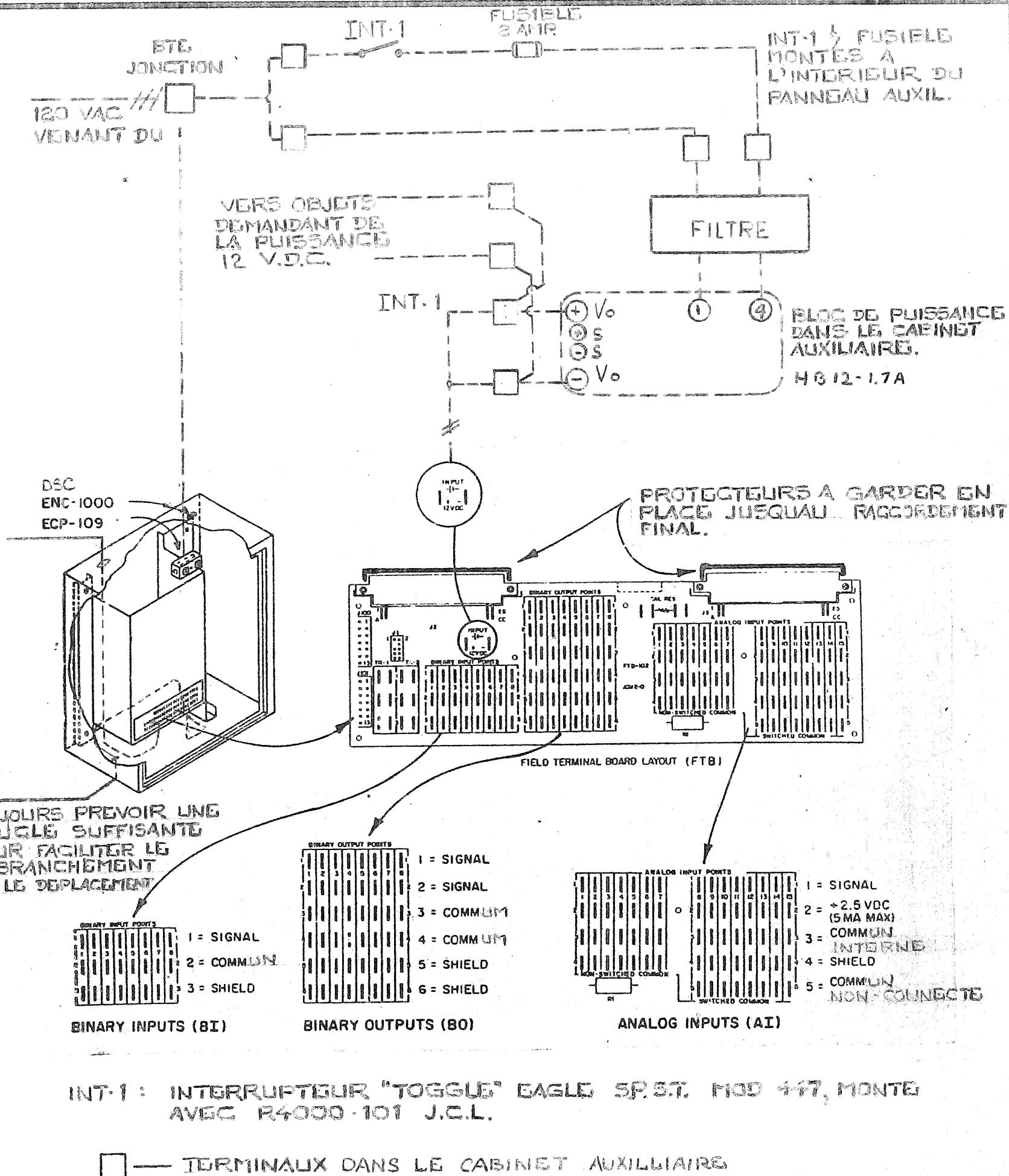
SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.



LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

BORNERS DE RACCORDEMENT (FTB-102)

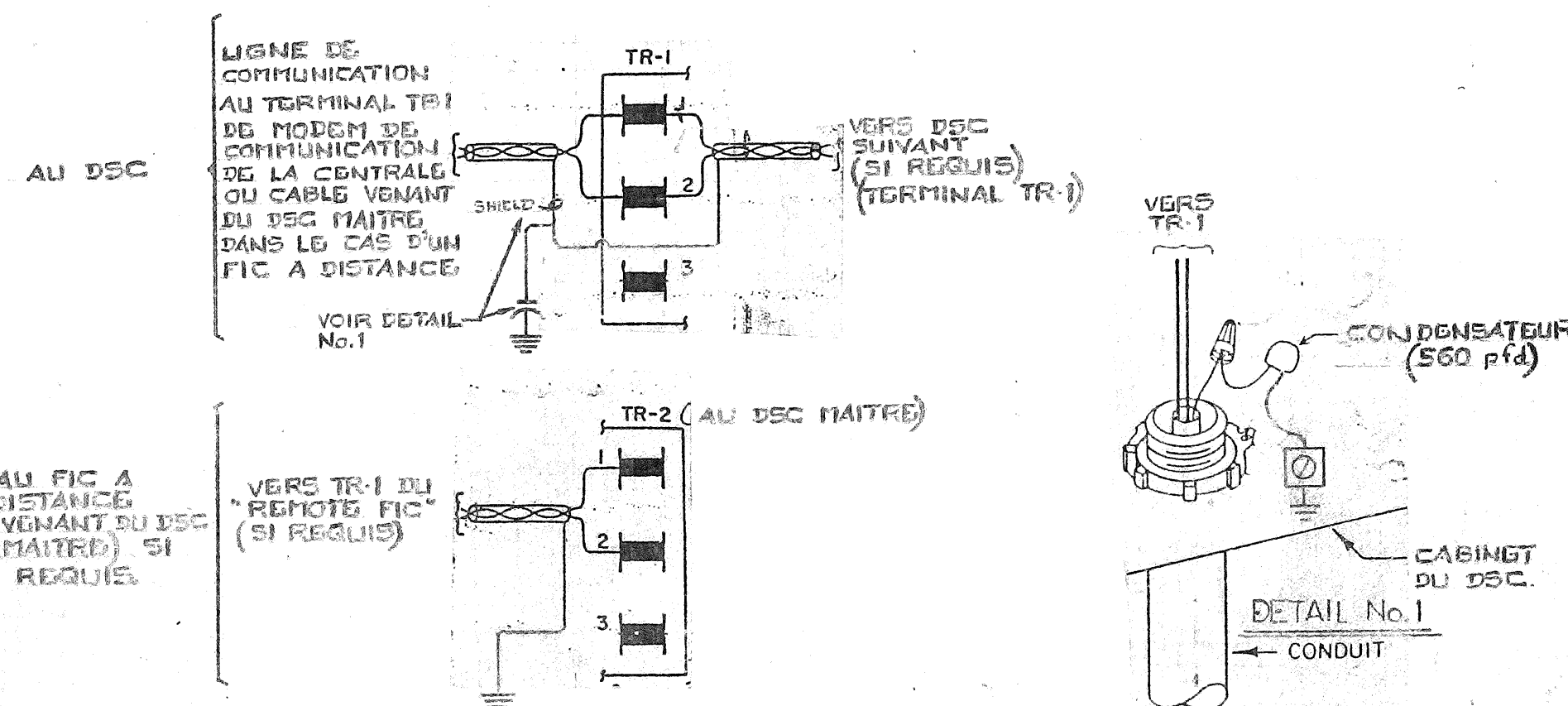
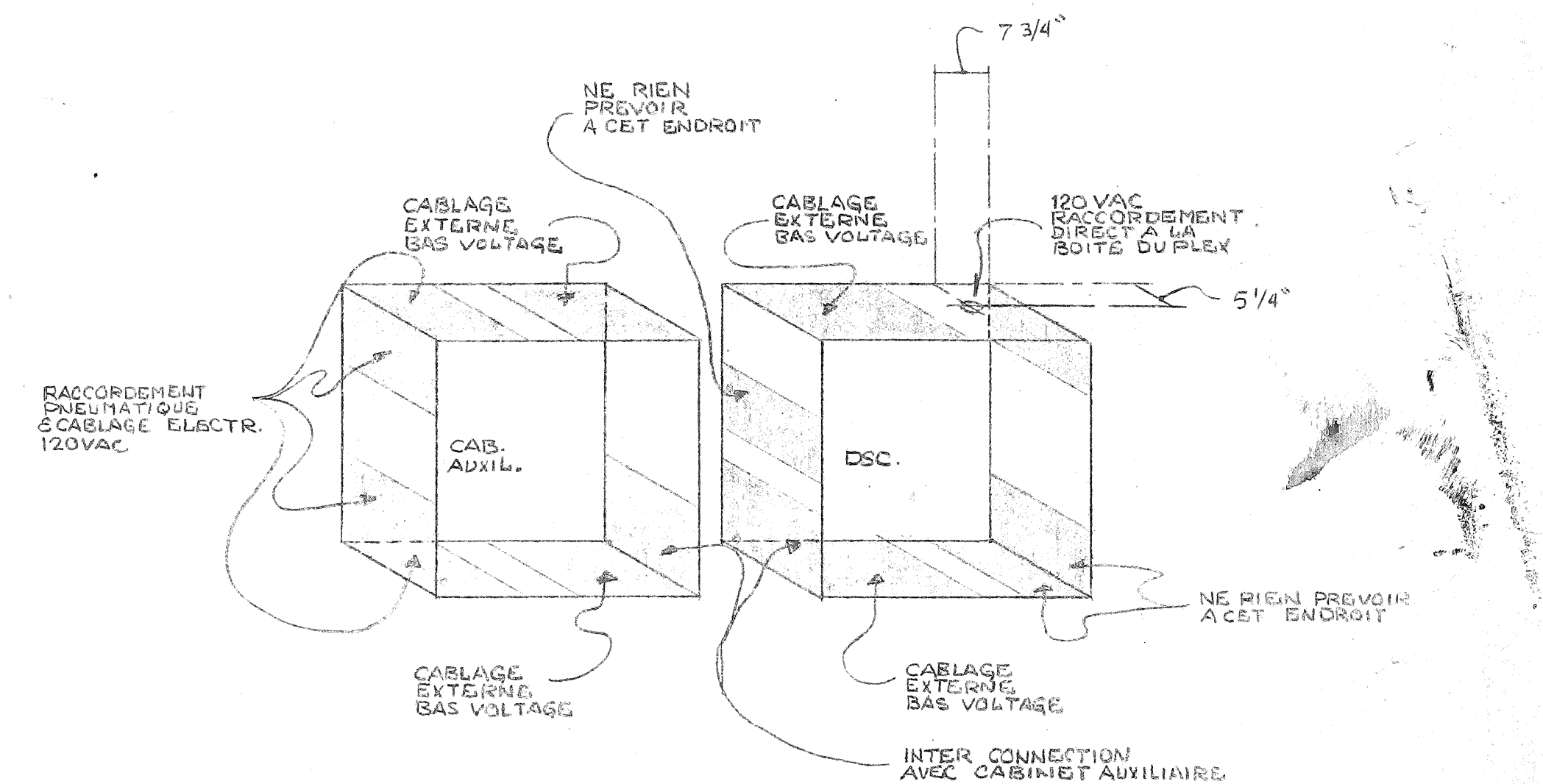


EMPLACEMENT			ADRESSE					DSC 8		
NOM: C.I.R.A.								FIC 1		
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI- CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20 mA 10-90%
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20 mA 10-90%
11	PT-1	PRESSON ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL.V43.8 BOITE LA PLUS LOIN	A11.1		0-5 VDC 0-25%
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		



EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 8		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 8	BIN	1 2		CONTACT AUX. DEM	MCC -2	B1.1		
2	GEL	SYSTEME 8	BIN	1 2		RELAIS RG	CAB AUX.	B2.1		

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 8		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P4.1		
5A	R1	ARRET DEPART SYSTEME	SST	1 3	2 7	RELAIS 12VDC	MCC -2	S5A.1		



TITRE		IMPLANTATION DSC-6500		TEL QUE CONSTRUIT		86-0701	
DSC-8							
REPRESENTANT	TECHNICIEN	REVISION	AVIS	DATE	PAR		
J. C. R.	R. F.						
PROJET		CENTRE DE RECHERCHE ALIMENTATION		ST. HYACINTHE, QUE.			
JOHNSON CONTROLS		Société de Contrôle Johnson Ltd		441 boulevard Lebeau		4096-0008-8	
						4068-8	

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3073-1	3	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V3974-1010	1	VALVE N.F. ϕ 3/4" C/A P.P.
V-2	V3754-1019	1	VALVE NO. ϕ 1/2" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	BD2FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

MODE CONTROLE DE NUIT X

PC REDEMARRAGE X

CÉDULE

RETOUR

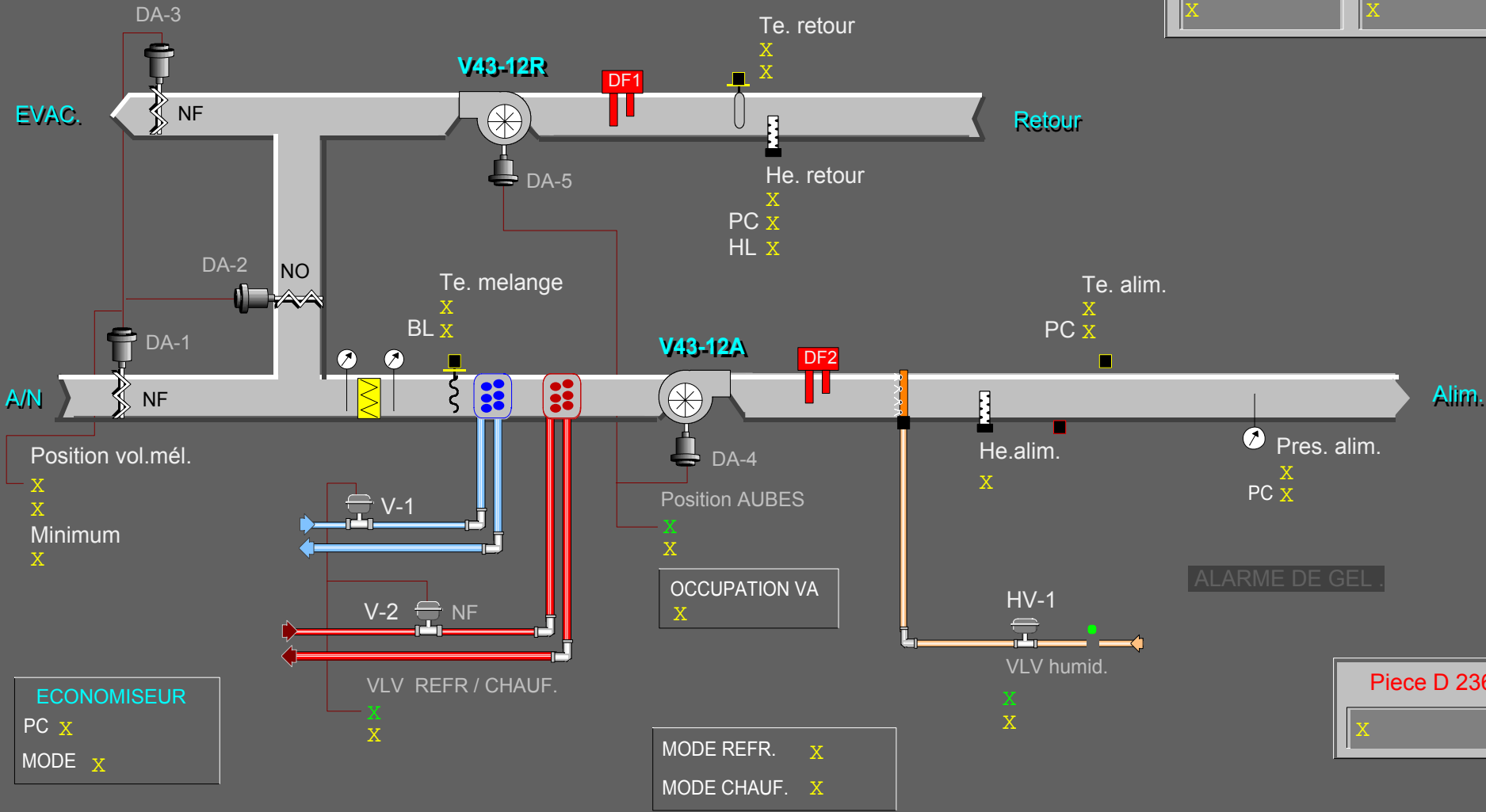
ALIMENT.

X

X

X

X



PARAMETRES

Contrôle de nuit

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

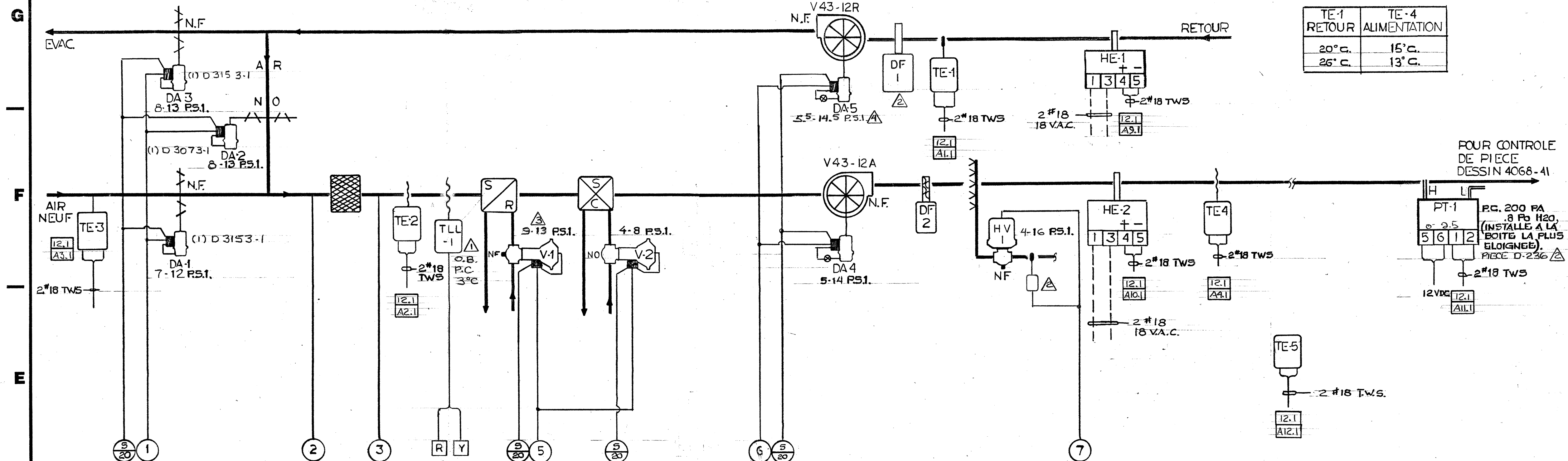


VACANCES DSC-12, V43-12

Jour / Mois	VACANCE 1	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 2	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 3	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 4	<input checked="" type="checkbox"/>
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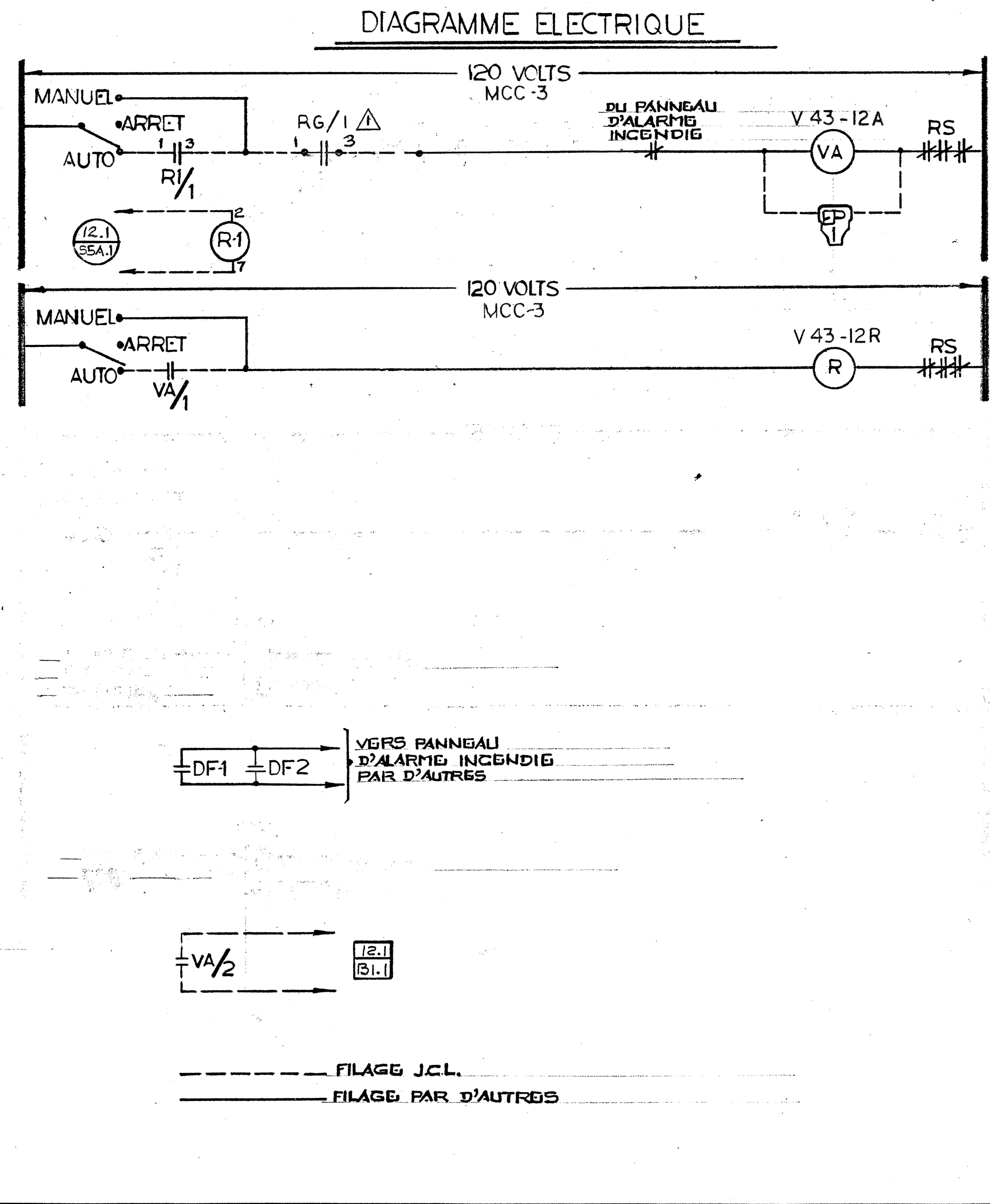
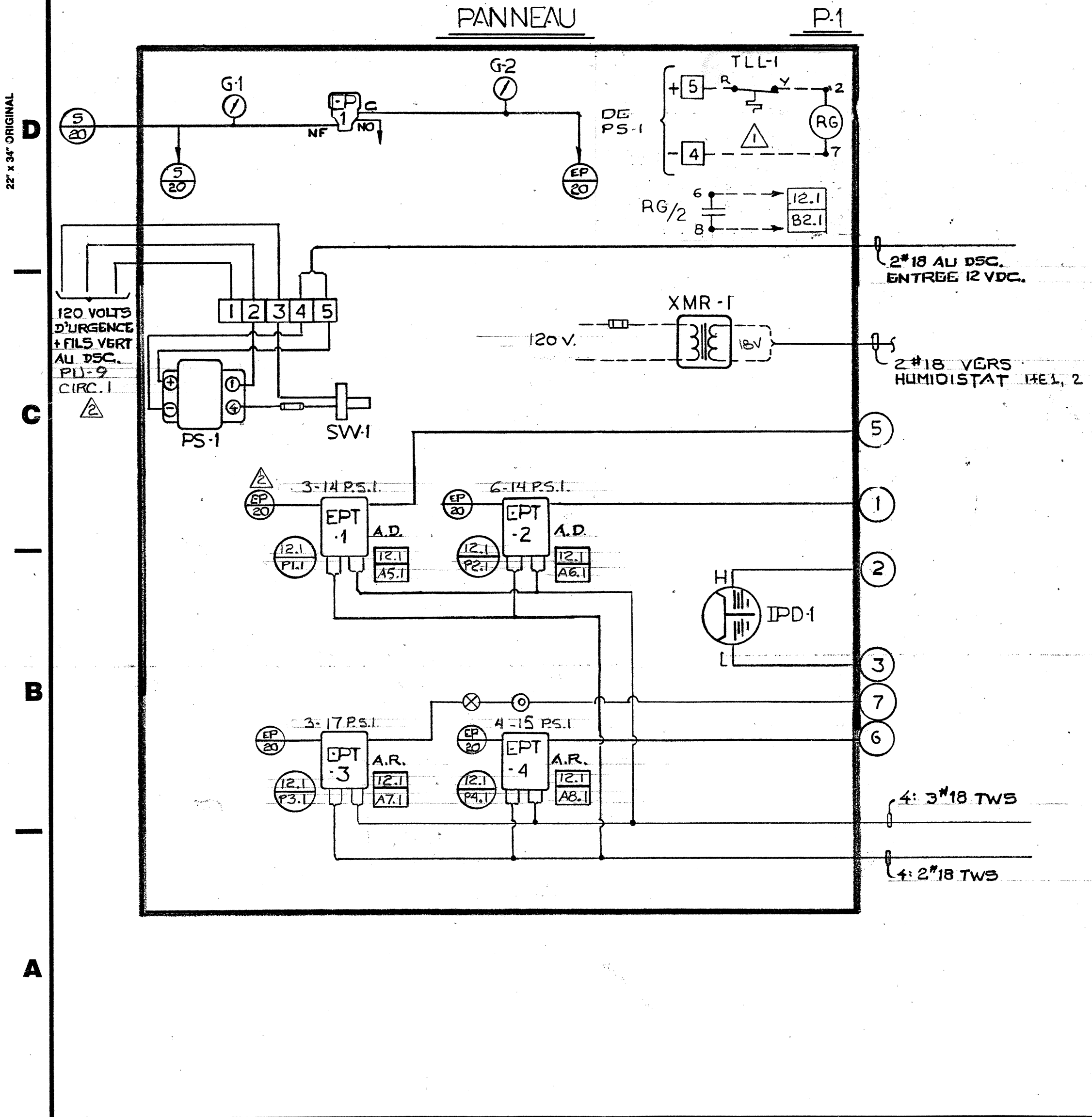


DIAGRAMME DE DEBIT



TE-1	TE-4
RETOUR	ALIMENTATION
20°C.	15°C.
26°C.	13°C.

LISTE DE MATERIEL			
IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	TE1101-100	2	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1100-17	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	1.100.30.041	2	ELEMENT DE TEMPERATURE
HE-1 ET 2			ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V3974-101	1	VALVE N.F. 1" C/A P.P.
V-2	V3754-1024	1	VALVE NO. 1/2" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	H012-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	QD2FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



FACE DU PANNEAU

P1

DIAGRAMME PLASTIFIE

1 — CONTRACTEUR: PAVAL INC.
INGENIEUR: PAGEAU MOREL ET ASS.

2 — SYSTEME No. V 43-12

IPD-1 — ETAT DES FILTRES

G-1 — AIR D'ALIMENTATION

G-2 — AIR DE CONTROLE

TITRE

SYSTEME V 43-12

ALIMENTATION BLOC D, ETAGE

PROJET: CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE.

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFRIGIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

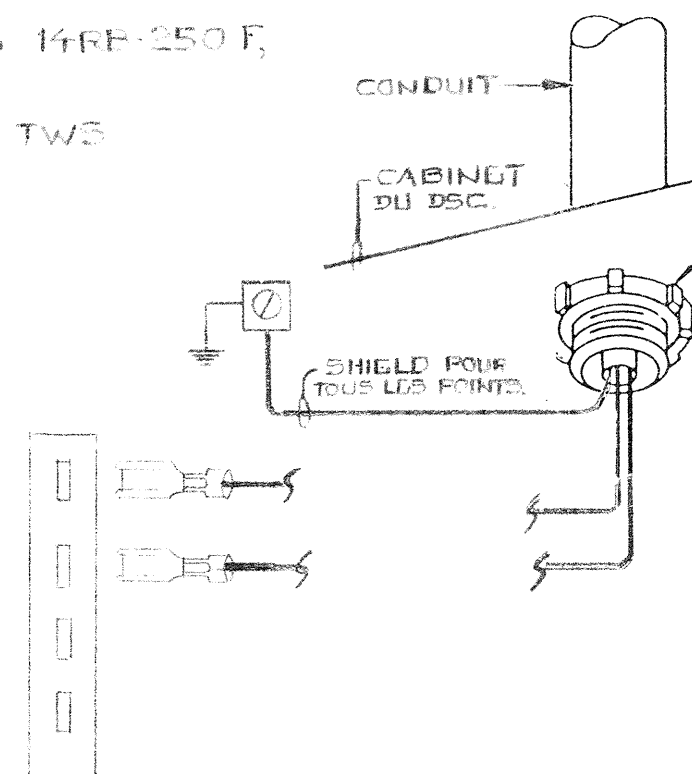
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	3		87-05-27
	2	TEL QUE CONSTRUIT	86-07-07
	1		SEPT 12 85
REFERENCE	NO.	REVISION	AVIS
REPRESENTANT J.C.R.	TECHNICIEN R.F.	DESINE	APPROUVE
PAR	DATE DEC 21 84	PAR	DATE 85-6-18
JOHNSON CONTROLS		Société de Contrôle Johnson Ltée	
Division Des Systèmes Et Services		441 boulevard Laboue	
		Montréal, QC H4N 1S2	
		Tél. 514-332-6960	
		CONTRAT 4096-0008-9	
		DESSIN NO.: 4068-9	

The diagram illustrates the front panel of the FTB-107 computer system. It features several sections for user interaction and data flow:

- Left Panel:** Includes a **VIDEO** section with a 15-pin connector (pins 1-15) and a **TR-2** section with a 15-pin connector (pins 1-15).
- Top Center:** A **BINARY OUTPUT POINTS** section with 16 points (1-16) and a **BINARY INPUT POINTS** section with 16 points (1-16). A **5VDC** input is also indicated.
- Top Right:** A **CAL RES** (Calibration Resistor) section with a 15-pin connector (pins 1-15) and a **25 CC** (Common Control) section with a 25-pin connector (pins 1-25).
- Right Panel:** Includes an **ANALOG INPUT POINTS** section with 16 points (1-16) and a **NON-SWITCHED COMMON** section with 16 points (1-16). A **SWITCHED COMMON** section is also present.
- Bottom Center:** A **FTB-107** label and a **COM-2-O** (Communication) section with a 15-pin connector (pins 1-15).

① - TYPE DE RACCORD
DOSSIER TYPE 14RB-250 F,
ISOLÉS .250.




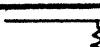

② - CARLAGE EN 2^e 18 TWS
PARTOUT.

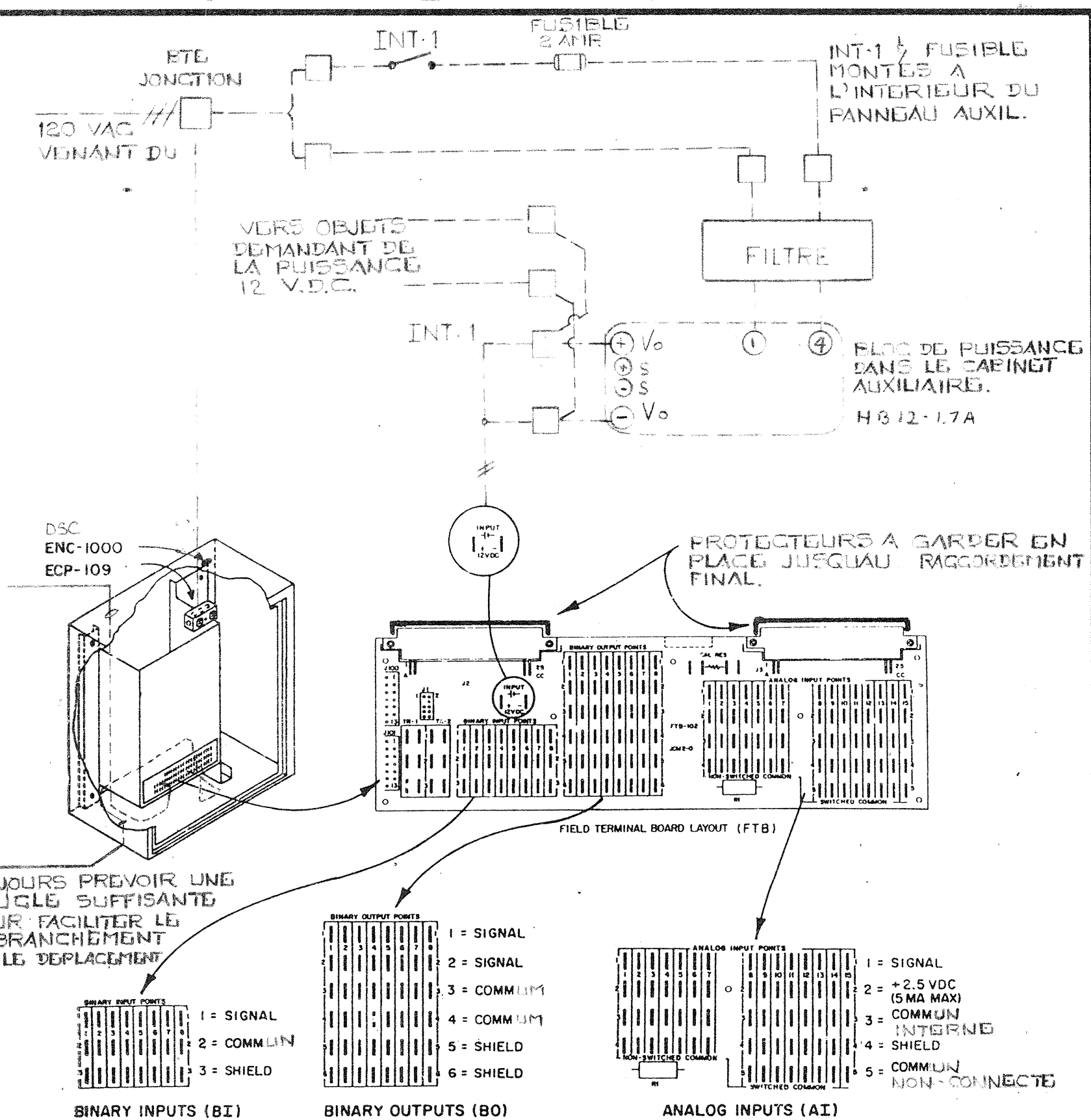


TOTAL MAX 8 SORTIES

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 12		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 12	BIN	1 2	<u>1</u> <u>2</u>	CONTACT AUX. DEM	MCC - 3	B1.1'		
2	GEL	SYSTEME 12	BIN	1 2	<u>1</u> <u>2</u>	RELAIS RG	CAB AUX	B2.1		

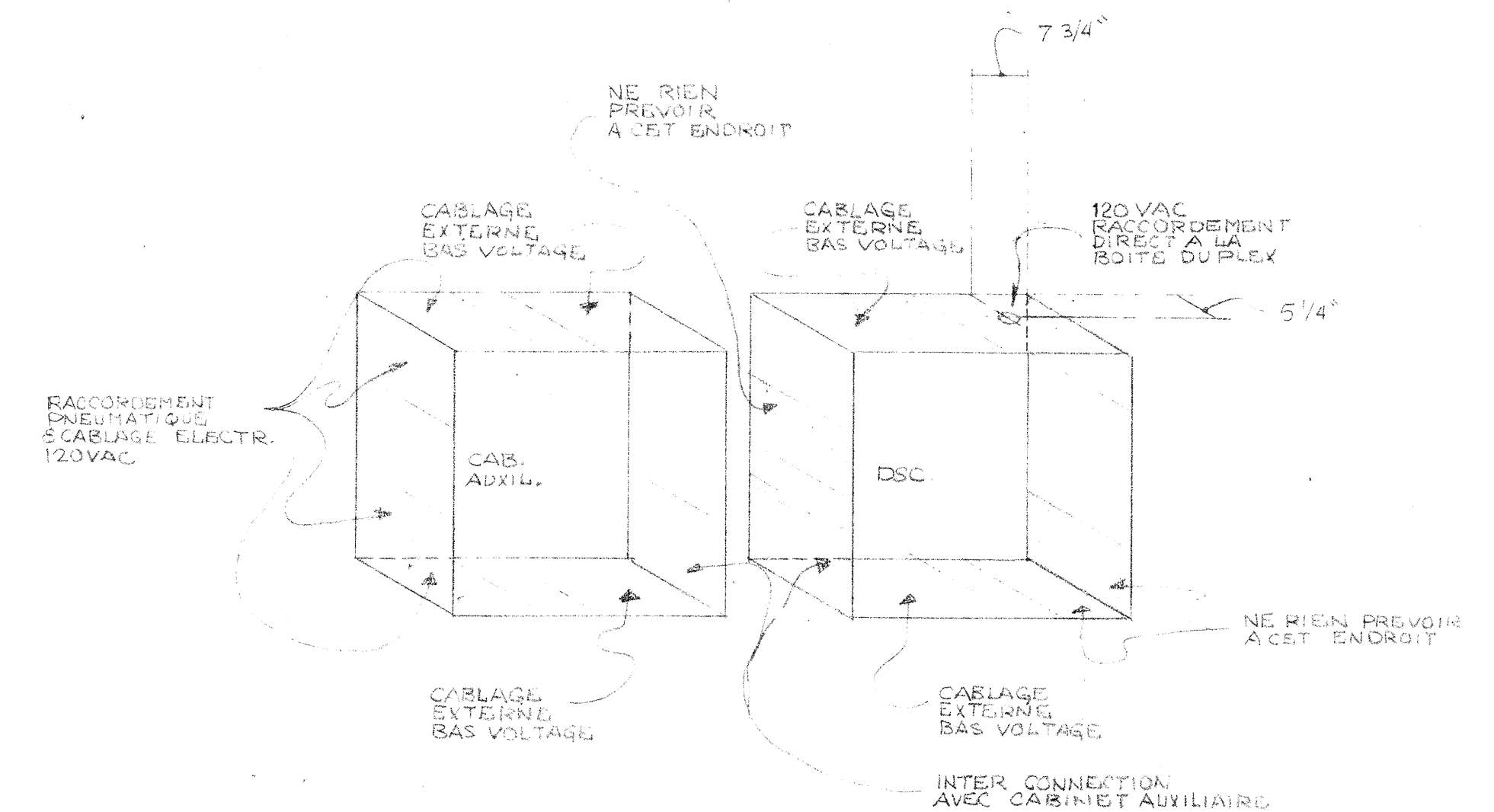
EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC	1	
EMPLACEMENT:								FIC	1	
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P4.1		
5A	R1	ARRET DEPART SYSTEME 12	SST	1 3	2 7	RELAIS 12VDC	MCC - 3	SSA.1		

EMPLACEMENT			ADRESSE							
NOM: C.I.R.&A.								DSC V2		
EMPLACEMENT:								FTC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI- CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4.20 M 10-90%
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4.20 M 10-90%
11	PT-1	PRESSIION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL.V43.12 BOITE LA PLUS LOIN	A11.1		0-5N 0-2.5
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		



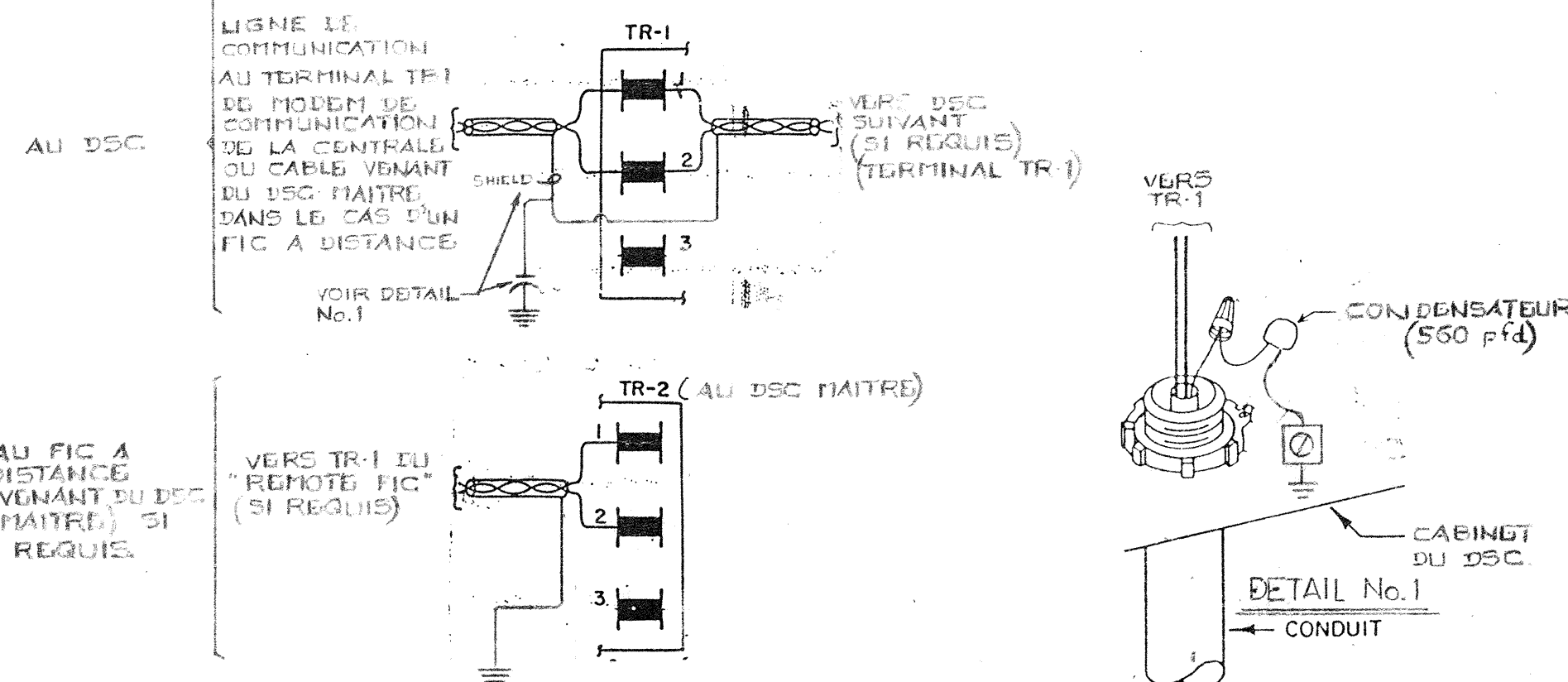
INT-1 : INTERRUPTEUR "TOGGLE" D'AGLE SP. ST. MOD 447, MONTE
AVEC R4000-101 J.C.L.

□ — TERMINAUX DANS LE CABINET AUXILIAIRE



① — VOIR DESSINS STD. DE RACCORDEMENT POUR
LES COMPOSANTES AUXILIAIRES.

② — VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES /
ELECTRIQUES LOCAUX.



TITRE	IMPLANTATION DSC-A500											
			TEL QUE CONSTRUIT				86-07-07					
							SEPT 12-85					
	REFERENCE		NO.		REVISION		AVIS		DATE		PAR	
	REPRESENTANT		TECHNICIEN		DESINE		APPROUVE					
	J. C. R.		R. F.		PAR DATE		PAR DATE		85-6-18			
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE		JOHNSON CONTROLS		Société de Contrôle Johnson Ltee 441 boulevard Lebeau Montreal, QC H4N 1B2 Tél. 514-332-6960		CONTRAT 4096-008-10					
	ST-HYACINTHE, QUE.		Division Des Systèmes Et Services				DESIGN NO. 4068 -10					

DSC 12 SYSTEME V43.12

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

```

45      DISPLAY  FSP,I          /PRESSION STATIQUE
46      ADJUST   SPSP,I        /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A         /RESULTAT CTL VAV
48      DISPLAY  ZT50,A        /F.B. VAV
/
49      ADJUST   STA,T         /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T         /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T        /HEURE DEPART SAMEDI
52      ADJUST   STO7,T        /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T        /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T        /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T        /HEURE DEPART SEMAINE
56      ADJUST   STO9,T        /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T          /VACANCE 1
58      ADJUST   H2,T          /VACANCE 2
59      ADJUST   H3,T          /VACANCE 3
60      ADJUST   H4,T          /VACANCE 4
/
61      OVERRIDE ZCP30,A,2     /SOUPAPES
62      OVERRIDE ZCP10,A,2     /VOLETS
63      OVERRIDE ZCP70,A,2     /HUMIDITE
64      OVERRIDE ZCP50,A,2     /VAV
/

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```

/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR      /
/-----/
/

```

```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-12
/
/      51      ALARME HORAIRE SYSTEME V43-12
/
/-----/
/
/
□

```



```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 11:09:26
/
/TRANSLATION LISTING FOR DSC-12.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 11:01:43
/
/TRANSLATION LISTING FOR DSC-12.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 08-02-99 14:38:14
/
/TRANSLATION LISTING FOR DSC-12.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-14-99 09:05:07
/
/TRANSLATION LISTING FOR DSC-12.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:25
/
/TRANSLATION LISTING FOR DSC-12.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 10:40:56
/
/TRANSLATION LISTING FOR CIRA12.CAL
/
/-----
/
/      PROJET                CENTRE DE RECHERCHE ALIMENTAIRE
/                               ST-HYACINTHE, QUEBEC
/
/      DSC  12  SYSTEME  V43.12
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT        4096-0008
/      VENDEUR                JEAN CLAUDE ROUILLON
/      INGENIERIE             RICHARD FOREST
/      CONCEPTION PROGRAMME   JEAN MORISSETTE
/      REVISION               08 DECE 1986
/                               25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/      SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED

```

```

/ 6 RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/ 7 INVALID START BIT
/ 8 FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID: CENTRE DE RECHERCHE ALIMENTAIRE,3296
@ FIC ADDRESSES: 1
@ POINT SUMMARY:
@ BD: 21
@ AD: 88
@ BI: CON-2,BIT-0,BIR-0
@ AI: LTD-2,FUL-10,RAT-0,TOT-0
@ BO: MOM-0,POS-4,MAN-1
@ CP: BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1 FSTAT CON-1 E,E /ETAT VENTIL. ALIM.
BI-2 FREEZE CON-2 E,E /ETAT THERMOSTAT DE GEL
/
/
AI-1 TE80 FUL-1 E,0.5,E,V,T,-45.5,129.6 /TEMP RETOUR
AI-2 TE10 FUL-2 E,0.5,E,V,T,-45.5,129.7 /TEMP MELANGE
AI-3 TE1 FUL-3 E,0.5,E,V,T,-45.6,129.6 /TEMP EXT
AI-4 TE60 FUL-4 E,0.5,E,V,T,-45.5,129.6 /TEMP ALIM
AI-5 ZT30 FUL-5 E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6 ZT10 FUL-6 E,0.5,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-7 ZT70 FUL-7 E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8 ZT50 FUL-8 E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-9 HT80 LTD-1 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10 HT60 LTD-2 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-11 SPT FUL-9 E,0.1,E,N,O,0,621 /PRESSION STATIQUE EN P
AI-12 TE100 FUL-10 E,0.5,E,V,T,-45.7,129.5 /TEMP PIECE
/
/
BO-1 ZC30 POS-1 D,E,0 /SOUPAPES
BO-2 ZC10 POS-2 D,E,0 /VOILETS
BO-3 ZC70 POS-3 D,E,0 /HUMIDITE
BO-4 ZC50 POS-4 D,E,0 /VAV
BO-5A ZS50 MAN-1 E,E /VENTIL ALIM
/
/
CP-1 ZCP30 INC-1 E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2 ZCP10 INC-2 E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOILETS
CP-3 ZCP70 INC-3 E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4 ZCP50 INC-4 E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
/
/
@ DATA POINT DEFINITION:
/
/-----
/ VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----
/
BD-1 OCCD E,R /CYCLE D OCCUPATION

```

```

BD-2    TLCON    E,R    /CONTROLE PAR TEMP.
BD-3    FSTRT    E,R    /DEMANDE VENTILATEUR
BD-4    COMP50   E,R    /RESULTAT DEMARRAGE
BD-5    CONON    E,R    /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT          /
/-----/
/
BD-6    NCTL     E,R    /CONTROLE DE TEMP NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS    /
/-----/
/
BD-7    ECON     E,R    /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /
/-----/
/
BD-8    MXD      E,R    /CONTROLE DE JOUR
BD-9    MIXLL    E,R    /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
BD-10   HTG      E,R    /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT /
/-----/
/
BD-11   CLG      E,R    /REFROIDISSEMENT
/
/-----/
/          FONCTIONS SPECIALES                   /
/-----/
/
BD-12   SYSP     D,R
BD-13   SYS      D,R
BD-14   SYS1     D,R
BD-15   SYS2     D,R
BD-16   SYS3     D,R
BD-17   SYS4     D,R
BD-18   SYS5     D,R
BD-19   SYS6     D,R
BD-20   SYS7     D,R
BD-21   SYS8     D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
AD-1    DOW      E,2
AD-2    H1       E,00:00

```

AD-3	H2	E,00:00	
AD-4	H3	E,00:00	
AD-5	H4	E,00:00	
AD-6	H5	E,00:00	
AD-7	H6	E,00:00	
AD-8	STA	E,00:00	/HORAIRE
AD-9	STO	E,00:00	
AD-10	STA8	E,07:03	
AD-11	STO8	E,07:03	
AD-12	STA7	E,07:03	
AD-13	STO7	E,07:03	
AD-14	STA9	E,06.42	
AD-15	STO9	E,17:00	
AD-16	NSBT	E,15.0	/POINT DE CONSIGNE REDEMARRAGE
AD-17	DELSST	E,110	/DELAI APRES PANNE
/			
/-----/			
/ PARAMETRES CONTROLE DE NUIT /			
/-----/			
/			
AD-18	NSP	E,22.0	/POINT DE CONSIGNE RETOUR
AD-19	Z41	E,0.0	/RESULTAT CTL NUIT
AD-20	CST41	E,45	/INTERVAL CTL NUIT
AD-21	CPB41	E,20.0	/BANDE PROP CTL NUIT
AD-22	CIG41	E,5	/GAIN CTL NUIT
AD-23	CDS41	E,0.0	/BANDE MORTE CTL NUIT
/			
/-----/			
/ PARAMETRES ECONOMISEUR D AIR FRAIS /			
/-----/			
/			
AD-24	OASO	E,16.0	/TEMP LIM EXT ECONOMISEUR
/			
/-----/			
/ REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION /			
/-----/			
/			
AD-25	RARL	E,20.0	/AIR RET BAS LIM REAJ TEMP ALIM
AD-26	RARH	E,25.0	/AIR RET HAU LIM REAJ TEMP ALIM
AD-27	SAHL	E,18.0	/REAJ TEMP ALIM HAU LIM
AD-28	SALL	E,13.0	/REAJ TEMP ALIM BAS LIM
/			
/-----/			
/ PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /			
/-----/			
/			
AD-29	DSSP	E,0.0	/POINT DE CONSIGNE ALIM
AD-30	MXDSP	E,8.5	/POINT DE CONSIGNE LIMITE MEL.
AD-31	MDP	E,20.0	/POSITION MINIMUM VOLETS
AD-32	CST10A	E,5	/INTERVAL CTL VOLETS LIMITE
AD-33	CPB10A	E,-90.0	/BANDE PROP CTL VOLETS LIMITE
AD-34	CIG10A	E,33	/GAIN CTL VOLETS LIMITE
AD-35	CMP10A	E,0.0	/COMPENSATION CTL VOLETS LIMITE
AD-36	CDS10A	E,0.0	/BANDE MORTE CTL VOLETS LIMITE
AD-37	CST10	E,100	/INTERVAL CTL VOLETS
AD-38	CPB10	E,-60.0	/BANDE PROP CTL VOLETS
AD-39	CIG10	E,33	/GAIN CTL VOLETS

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AD-40    CMP10    E,0.0    /COMPENS CTL VOLETS
AD-41    CDS10    E,0.5    /BANDE MORTE CTL VOLETS
AD-42    ZMXD     E,0.0    /RESULTAT PROPORTION.
AD-43    Z10M     E,100.0  /RESULTAT VOLETS LIMITE
AD-44    Z10C     E,0.0    /RESULTAT VOLETS CTL
AD-45    Z10      E,0.0    /RESULTAT VOLETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
AD-46    Z40      E,0.0    /RESULTAT CHAUFFAGE
AD-47    CST40    E,25     /INTERVAL CTL CHAUFF
AD-48    CPB40    E,50.0   /BANDE PROP CTL CHAUFF
AD-49    CIG40    E,33     /GAIN CTL CHAUFF
AD-50    CDS40    E,0.0    /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-51    Z30      E,0.0    /RESULTAT REFROIDISSEMENT
AD-52    CST30    E,25     /INTERVAL CTL REFROIDI
AD-53    CPB30    E,-45.0  /BANDE PROP CTL REFROIDI
AD-54    CIG30    E,33     /GAIN CTL REFROIDI
AD-55    CDS30    E,0.0    /BANDE MORTE CTL REFROIDI
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE  /
/-----/
/
AD-56    SPSP     E,212    /POINT DE CONSIGNE PRESS STAT
AD-57    CST50    E,5      /INTERVAL CTL VAV
AD-58    CPB50    E,43.9   /BANDE PROP CTL VAV
AD-59    CIG50    E,31     /GAIN CTL VAV
AD-60    CMP50    E,0.0    /COMPENS CTL VAV
AD-61    CDS50    E,6      /BANDE MORTE CTL VAV
AD-62    Z50      E,0.0    /RESULTAT CTL VAV
AD-63    FSP      E,0.0    /PRESS STAT FILTREE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-64    RHSP     E,34.0   /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65    RHSPA    E,80.0   /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66    CST70    E,20     /INTERVAL CTL HUMIDITE
AD-67    CPB70    E,90.0   /BANDE PROP CTL HUMIDITE
AD-68    CIG70    E,33     /GAIN CTL HUMIDITE
AD-69    CDS70    E,0.0    /BANDE MORTE CTL HUMIDITE
AD-70    CST70A   E,5      /INTERVAL H LIM HUMIDITE
AD-71    CPB70A   E,90.0   /BANDE PROP H LIM HUMIDITE
AD-72    CIG70A   E,33     /GAIN H LIM HUMIDITE
AD-73    CDS70A   E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-74    Z70      E,0.0    /RESULTAT CTL HUMIDITE
AD-75    Z70HL    E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE

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AD-76    Z70C      E,0.0      /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
AD-77    SYSDIS    D,0
AD-78    CSTXXX    D,0
AD-79    CPBXXX    D,0.0
AD-80    CIGXXX    D,0
AD-81    CMPXXX    D,0.0
AD-82    CDSXXX    D,0.0
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
AD-83    UPTIM     E,00:00      /HEURE DE LA RESTAURATION DU POUVOIR
AD-84    UPDAT     E,00:00      /DATE DE LA RESTAURATION DU POUVOIR
AD-85    DNTIM     E,00:00      /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-86    DNDAT     E,00:00      /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-87    TOD       E,00:00      /DERNIERE HEURE
AD-88    LDAT      E,00:00      /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1        ADJUST    DELSST,I      /DELAI APRES UNE PANNE
2        DISPLAY    OCCD,B        /CYCLE D OCCUPATION JOUR-ON  NUIT-OFF
3        ADJUST    FSTRT,B        /DEMANDE VENTILATEUR
4        DISPLAY    FSTAT,B        /ETAT VENTIL. ALIM.
5        DISPLAY    FREEZE,B      /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
6        DISPLAY    NCTL,B        /CONTROLE DE TEMP NUIT
7        DISPLAY    TLCON,B       /CONTROLE PAR TEMP.
8        ADJUST    NSBT,A        /PT DE CONSIGNE REDEMARRAGE
9        ADJUST    NSP,A         /POINT DE CONSIGNE RETOUR
10       DISPLAY    Z41,A         /RESULTAT CTL NUIT
/
11       DISPLAY    TE80,A        /TEMP RETOUR
12       DISPLAY    TE10,A        /TEMP MELANGE
13       DISPLAY    TE1,A         /TEMP EXTERIEURE
14       DISPLAY    TE60,A        /TEMP ALIMENTATION
15       DISPLAY    TE100,A       /TEMP PIECE
/
16       DISPLAY    MXD,B         /CONTROLE DE JOUR
17       ADJUST    RARL,A        /AIR RET BAS LIM REAJ TEMP ALIM
18       ADJUST    RARH,A        /AIR RET HAU LIM REAJ TEMP ALIM
19       ADJUST    SAHL,A        /REAJ TEMP ALIM HAU LIM
20       ADJUST    SALL,A        /REAJ TEMP ALIM BAS LIM
21       DISPLAY    DSSP,A        /POINT DE CONSIGNE ALIM
22       ADJUST    OASO,A        /TEMP LIM EXT ECONOMISEUR
23       DISPLAY    ECON,B       /RESULTAT ECONOMISEUR
24       ADJUST    MDP,A         /POSITION MINIMUM VOLETS
25       ADJUST    MXDSP,A       /POINT DE CONSIGNE LIMITE MEL.
26       DISPLAY    ZMXD,A       /RESULTAT PROPORTION.

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27      DISPLAY  Z10M,A      /RESULTAT VOILETS LIMITE
28      DISPLAY  Z10C,A      /RESULTAT VOILETS CTL
29      DISPLAY  Z10,A       /RESULTAT VOILETS
30      DISPLAY  ZT10,A      /F.B. VOILETS
/
31      DISPLAY  HTG,B       /CHAUFFAGE
32      DISPLAY  Z40,A       /RESULTAT CHAUFFAGE
/
34      DISPLAY  CLG,B       /REFROIDISSEMENT
35      DISPLAY  Z30,A       /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A      /F.B. SOUPAPES
/
37      DISPLAY  HT80,A      /HUMIDITE RETOUR
38      DISPLAY  HT60,A      /HUMIDITE ALIMENT
39      ADJUST   RHSP,A      /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A     /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A     /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A      /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A       /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A      /F.B. HUMIDITE
/
45      DISPLAY  FSP,I       /PRESSION STATIQUE
46      ADJUST   SPSP,I      /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A       /RESULTAT CTL VAV
48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2   /SOUPAPES
62      OVERRIDE ZCP10,A,2   /VOILETS
63      OVERRIDE ZCP70,A,2   /HUMIDITE
64      OVERRIDE ZCP50,A,2   /VAV
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOILETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOILETS PAR ALIMENTATION

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/ 800  PARAMETRES  CONTROLE  REFROIDISSEMENT
/
79      ADJUST    CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST    CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST    CIGXXX,I      /GAIN INTEGRAL
82      ADJUST    CMPXXX,A      /COMPENSATION
83      ADJUST    CDSXXX,A      /BANDE MORTE
/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/
84      DISPLAY   UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY   UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY   DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY   DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST    SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY   FIC1L,B
90      ADJUST    FIC1E,I
91      ADJUST    STEST,I
92      DISPLAY   OCNT,I
93      OVSCAN
94      DISPLAY   ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/                                L I S T E   D E S   A L A R M E S                                /
/                                /
/      ALARME                                /
/      NUMERO                                DESCRIPTION                                /
/-----/
/
/      10      ALARME THERMOSTAT DE GEL                                /
/
/      50      ALARME ARRET DEPART SYSTEME V43-12                                /
/
/      51      ALARME HORAIRE SYSTEME V43-12                                /
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/

```



```

/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE      /
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/          RESET    TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET    OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       TLCON,SDF,S
2.4      SET       BPD,SUF,R
2.5      EXIT      C,R
2.6      SET       FSTRT,S,S
2.7      EXIT      U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT     TLCON,S
3.2      SET       BPD,TLCON,S
3.3      EXIT      C,R
3.4      INTERVAL  300,U
3.5      COMPARE   TE100,LE,NSBT,2.0
3.6      SET       FSTRT,BPD,S
3.7      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET       AUTO,S,S

```

```

4.3      DELAY      25,U
4.4      SET        COMP50,R,R
4.5      INTERVAL   10,U
4.6      XOR        COMP50,FSTAT
4.7      ALARM      50,C,S
4.8      SET        BPD,FSTRT,R
4.9      BOUT       ZS50,3,OFF
4.10     SET        COMP50,BPD,R
4.11     EXIT       U
/
/
/-----/
/      GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE      /
/-----/
/
5.1      RESTART
5.2      DELAY      25,U
5.3      INTERVAL   5,U
5.4      SET        BPD,FREEZE,R
5.5      ALARM      10,C,R
5.6      EXIT       U
/
/
/-----/
/      CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT       C,R
6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U
/
7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT       C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U
/
/

```

/-----/
/ CONTROLE DE LA PRESSION STATIQUE /
/-----/
/

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.

/

8.1	EVENT	CONON, S
8.2	SET	BPD, CONON, R
8.3	STORE	FSP, 0, 0, C, R
8.4	STORE	APD, 0.0, 0.0, C, R
8.5	STORE	Z50, APD, APD, C, R
8.6	AOUT	ZCP50, 3, 0.0, C, R
8.7	EXIT	C, R
8.8	DELAY	15, U
8.9	INTERVAL	CST50, U
8.10	FILTER	SPT, 63, 100
8.11	STORE	FSP, APD, APD, U
8.12	CALC	CPB50, 0, 10, 1, 1, T
8.13	PROP	SPSP, FSP, APD, CIG50, CMP50, CDS50
8.14	STORE	Z50, APD, APD, U
8.15	AOUT	ZCP50, 3, 0, U
8.16	EXIT	U

/

/

/-----/
/ CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE /
/-----/
/

/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOILETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.

/

9.1	RESTART	
9.2	SET	MXD, R, R
9.3	SET	NCTL, R, R
9.4	SET	CONON, R, R
9.5	DELAY	25, U
9.6	INTERVAL	5, U
9.7	AND	FSTAT, OCCD
9.8	SET	MXD, BPD, R
9.9	XOR	FSTAT, OCCD
9.10	AND	BPD, FSTAT
9.11	SET	NCTL, BPD, S
9.12	SET	CONON, FSTAT, R
9.13	EXIT	U

/

/

/-----/
/ ECONOMISEUR D AIR FRAIS /
/-----/
/

/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOILETS SONT RAMENES A LEURS POSITIONS NORMALS.

/

10.1	EVENT	MXD, S
10.2	SET	ECON, R, R

```

10.3      SET      BPD,FSTAT,R
10.4      EXIT      C,R
10.5      INTERVAL 300,U
10.6      COMPARE  TE1,GE,OASO,1.0
10.7      SET      ECON,BPD,R
10.8      EXIT      U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1      EVENT     MXD,S
11.2      INTERVAL 300,U
11.3      STORE     APD,TE80,RARL,U
11.4      SPAN      RARL,RARH,SAHL,SALL
11.5      STORE     DSSP,APD,SAHL,U
11.6      EXIT      U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M  RESULTAT PAR TEMP DE MELANGE
/Z10C  RESULTAT PAR TEMP D ALIMENTATION
/Z10   RESULTAT VOLETS
/
/
12.1      EVENT     MXD,S
12.2      SET      MIXLL,R,R
12.3      SET      BPD,MXD,R
12.4      EXIT      C,R
12.5      INTERVAL 5,U
12.6      COMPARE  TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7      SET      MIXLL,BPD,R      /A LA BASSE LIMITE
12.8      SELECT   Z10M,Z10C,L
12.9      STORE     Z10,APD,APD,U
12.10     AOUT      ZCP10,3,0.0,U
12.11     EXIT      U
/
13.1      EVENT     MIXLL,S      /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2      SET      BPD,MIXLL,R
13.3      STORE     Z10M,100.0,100.0,C,R
13.4      STORE     CMP10A,Z10C,Z10C,U
13.5      EXIT      C,R

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13.6    INTERVAL CST10A,U
13.7    PROP      MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8    STORE     Z10M,APD,APD,U
13.9    EXIT      U
/
14.1    EVENT     MXD,R /POSITION D ARRET SOUPAPES
14.2    SET       BPD,MXD,R
14.3    EXIT      C,S
14.4    SET       HTG,R,R
14.5    SET       CLG,R,R
14.6    DELAY     7,C,R
14.7    STORE     APD,0.0,0.0,C,R
14.8    AOUT      ZCP30,3,0.0,C,R
14.9    EXIT      U
/
15.1    EVENT     MXD,S
15.2    SET       BPD,MXD,R
15.3    STORE     APD,0.0,0.0,C,R
15.4    STORE     Z10,APD,APD,C,R
15.5    STORE     Z10C,APD,APD,C,R
15.6    STORE     Z10M,100.0,100.0,C,R
15.7    STORE     ZMXD,APD,APD,C,R
15.8    AOUT      ZCP10,3,0.0,C,R
15.9    EXIT      C,R
15.10   DELAY     7,U
15.11   STORE     APD,TE1,5.0,U
15.12   SPAN      5.0,20.0,0.0,75.0
15.13   STORE     CMP10,APD,APD,U
15.14   STORE     APD,50.0,50.0,U
15.15   AOUT      ZCP30,3,0.0,U
15.16   INTERVAL CST10,U
15.17   PROP      DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18   STORE     ZMXD,APD,APD,U
15.19   SPAN      MDP,100.0,MDP,100.0
15.20   SET       BPD,ECON,S
15.21   STORE     APD,MDP,MDP,C,S
15.22   STORE     Z10C,APD,APD,U
15.23   ORR       ZMXD,GE,85.0,10.0
15.24   SET       CLG,BPD,R
15.25   COMPARE   ZMXD,LE,15.0,10.0
15.26   SET       HTG,BPD,R
15.27   EXIT      U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
16.1    EVENT     HTG,S
16.2    SET       BPD,HTG,S
16.3    STORE     Z40,0.0,0.0,C,R
16.4    STORE     APD,50.0,50.0,C,R

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16.5    AOUT      ZCP30,3,0.0,C,R
16.6    EXIT      C,R
16.7    INTERVAL  CST40,U
16.8    CALC      DSSP,0.3,1,-1,1,T
16.9    PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
16.10   STORE     Z40,APD,APD,U
16.11   SPAN      0.0,100.0,50.0,0.0
16.12   AOUT      ZCP30,3,100.0,U
16.13   EXIT      U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/
17.1    EVENT     CLG,S
17.2    SET       BPD,CLG,R
17.3    STORE     Z30,0.0,0.0,C,R
17.4    STORE     APD,50.0,50.0,C,R
17.5    AOUT      ZCP30,3,0.0,C,R
17.6    EXIT      C,R
17.7    INTERVAL  CST30,U
17.8    CALC      DSSP,0.3,1,1,1,T
17.9    PROP      APD,TE60,CPB30,CIG30,0.0,CDS30
17.10   STORE     Z30,APD,APD,U
17.11   SPAN      0.0,100.0,50.0,100.0
17.12   AOUT      ZCP30,3,0.0,U
17.13   EXIT      U
/
/
/-----/
/          CONTROLE DE NUIT                      /
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOLETS RESTENT EN RECIRCULATION.
/
18.1    EVENT     NCTL,S
18.2    SET       BPD,NCTL,S
18.3    STORE     Z41,0.0,0.0,C,R
18.4    STORE     APD,0.0,0.0,C,R
18.5    AOUT      ZCP30,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST41,U
18.8    PROP      NSP,TE80,CPB41,CIG41,0.0,CDS41
18.9    STORE     Z41,APD,APD,U
18.10   SPAN      0.0,100.0,50.0,0.0
18.11   AOUT      ZCP30,3,100.0,U
18.12   EXIT      U
/
/
/-----/

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```

/                                FONCTIONS SPECIALES                                /
/-----/
/
19.1    EVERY                                /SELECTION DU STSTEME POUR LE
19.2    SET      SYSP,R,R                                /
19.3    COMPARE  SYSDIS,EQ,100,0
19.4    SET      SYS1,BPD,R
19.5    OR       SYSP,BPD
19.6    SET      SYSP,BPD,S
19.7    COMPARE  SYSDIS,EQ,200,0
19.8    SET      SYS2,BPD,R
19.9    OR       SYSP,BPD
19.10   SET      SYSP,BPD,S
19.11   COMPARE  SYSDIS,EQ,300,0
19.12   SET      SYS3,BPD,R
19.13   OR       SYSP,BPD
19.14   SET      SYSP,BPD,S
19.15   COMPARE  SYSDIS,EQ,400,0
19.16   SET      SYS4,BPD,R
19.17   OR       SYSP,BPD
19.18   SET      SYSP,BPD,S
19.19   COMPARE  SYSDIS,EQ,500,0
19.20   SET      SYS5,BPD,R
19.21   OR       SYSP,BPD
19.22   SET      SYSP,BPD,S
19.23   COMPARE  SYSDIS,EQ,600,0
19.24   SET      SYS6,BPD,R
19.25   OR       SYSP,BPD
19.26   SET      SYSP,BPD,S
19.27   COMPARE  SYSDIS,EQ,700,0
19.28   SET      SYS7,BPD,R
19.29   OR       SYSP,BPD
19.30   SET      SYSP,BPD,S
19.31   COMPARE  SYSDIS,EQ,800,0
19.32   SET      SYS8,BPD,R
19.33   OR       SYSP,BPD
19.34   SET      SYSP,BPD,S
19.35   SET      SYS,SYSP,S
19.36   EXIT     U
/
/
20.1    EVENT    SYS,S                                /RESET LES FONCTIONS POUR
20.2    SET      BPD,SUF,R                                /LE CDB SPECIAL
20.3    STORE    SYSDIS,0,0,C,R                                /SUR UNE PERIODE DE DISCLR
20.4    EXIT     C,R
20.5    DELAY    3600,U
20.6    STORE    SYSDIS,0,0,U
20.7    EXIT     U
/
/
21.1    EVENT    SYS1,S                                /SYS 100
21.2    SET      BPD,SUF,R
21.3    EXIT     C,R
21.4    INTERVAL 5,U
21.5    STORE    CSTXXX,CST70,CST70,U                                /PERMET DE VOIR LES
21.6    STORE    CPBXXX,CPB70,CPB70,U                                /VALEURS DU SYSTEME
21.7    STORE    CIGXXX,CIG70,CIG70,U

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21.8    STORE    CMPXXX,0.0,0.0,U
21.9    STORE    CDSXXX,CDS70,CDS70,U
21.10   EXIT     U
/
/
22.1    EVENT    SYS1,S
22.2    SET      BPD,SUF,R
22.3    EXIT     C,R
22.4    DELAY    10,U
22.5    INTERVAL 1,U
22.6    STORE    CST70,CSTXXX,CST70,U
22.7    STORE    CPB70,CPBXXX,CPB70,U
22.8    STORE    CIG70,CIGXXX,CIG70,U
22.9    STORE    CDS70,CDSXXX,CDS70,U
22.10   EXIT     U
/
/
23.1    EVENT    SYS2,S
23.2    SET      BPD,SUF,R
23.3    EXIT     C,R
23.4    INTERVAL 5,U
23.5    STORE    CSTXXX,CST70A,CST70A,U
23.6    STORE    CPBXXX,CPB70A,CPB70A,U
23.7    STORE    CIGXXX,CIG70A,CIG70A,U
23.8    STORE    CMPXXX,0.0,0.0,U
23.9    STORE    CDSXXX,CDS70A,CDS70A,U
23.10   EXIT     U
/
/
24.1    EVENT    SYS2,S
24.2    SET      BPD,SUF,R
24.3    EXIT     C,R
24.4    DELAY    10,U
24.5    INTERVAL 1,U
24.6    STORE    CST70A,CSTXXX,CST70A,U
24.7    STORE    CPB70A,CPBXXX,CPB70A,U
24.8    STORE    CIG70A,CIGXXX,CIG70A,U
24.9    STORE    CDS70A,CDSXXX,CDS70A,U
24.10   EXIT     U
/
/
25.1    EVENT    SYS3,S
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    INTERVAL 5,U
25.5    STORE    CSTXXX,CST50,CST50,U
25.6    STORE    CPBXXX,CPB50,CPB50,U
25.7    STORE    CIGXXX,CIG50,CIG50,U
25.8    STORE    CMPXXX,CMP50,CMP50,U
25.9    STORE    CDSXXX,CDS50,CDS50,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS3,S
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    DELAY    10,U

```



```

26.5    INTERVAL 1,U
26.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
26.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
26.8    STORE    CIG50,CIGXXX,CIG50,U
26.9    STORE    CMP50,CMPXXX,CMP50,U
26.10   STORE    CDS50,CDSXXX,CDS50,U
26.11   EXIT     U
/
/
27.1    EVENT    SYS4,S                    /SYS 400
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG40,CIG40,U
27.8    STORE    CMPXXX,0.0,0.0,U
27.9    STORE    CDSXXX,CDS40,CDS40,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS4,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
28.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
28.8    STORE    CIG40,CIGXXX,CIG40,U
28.9    STORE    CDS40,CDSXXX,CDS40,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS5,S                    /SYS 500
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST41,CST41,U      /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB41,CPB41,U      /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG41,CIG41,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS41,CDS41,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS5,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST41,CSTXXX,CST41,U      /PERMET D AJUSTER LES
30.7    STORE    CPB41,CPBXXX,CPB41,U      /VALEURS DU SYSTEME
30.8    STORE    CIG41,CIGXXX,CIG41,U
30.9    STORE    CDS41,CDSXXX,CDS41,U
30.10   EXIT     U
/
/

```

```

31.1    EVENT    SYS6,S                               /SYS 600
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U
31.5    STORE    CSTXXX,CST10A,CST10A,U             /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB10A,CPB10A,U             /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG10A,CIG10A,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS10A,CDS10A,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    DELAY    10,U
32.5    INTERVAL 1,U
32.6    STORE    CST10A,CSTXXX,CST10A,U             /PERMET D AJUSTER LES
32.7    STORE    CPB10A,CPBXXX,CPB10A,U             /VALEURS DU SYSTEME
32.8    STORE    CIG10A,CIGXXX,CIG10A,U
32.9    STORE    CDS10A,CDSXXX,CDS10A,U
32.10   EXIT     U
/
/
33.1    EVENT    SYS7,S                               /SYS 700
33.2    SET      BPD,SUF,R
33.3    EXIT     C,R
33.4    INTERVAL 5,U
33.5    STORE    CSTXXX,CST10,CST10,U             /PERMET DE VOIR LES
33.6    STORE    CPBXXX,CPB10,CPB10,U             /VALEURS DU SYSTEME
33.7    STORE    CIGXXX,CIG10,CIG10,U
33.8    STORE    CMPXXX,CMP10,CMP10,U
33.9    STORE    CDSXXX,CDS10,CDS10,U
33.10   EXIT     U
/
/
34.1    EVENT    SYS7,S
34.2    SET      BPD,SUF,R
34.3    EXIT     C,R
34.4    DELAY    10,U
34.5    INTERVAL 1,U
34.6    STORE    CST10,CSTXXX,CST10,U             /PERMET D AJUSTER LES
34.7    STORE    CPB10,CPBXXX,CPB10,U             /VALEURS DU SYSTEME
34.8    STORE    CIG10,CIGXXX,CIG10,U
34.9    STORE    CMP10,CMPXXX,CMP10,U
34.10   STORE    CDS10,CDSXXX,CDS10,U
34.11   EXIT     U
/
/
35.1    EVENT    SYS8,S                               /SYS 800
35.2    SET      BPD,SUF,R
35.3    EXIT     C,R
35.4    INTERVAL 5,U
35.5    STORE    CSTXXX,CST30,CST30,U             /PERMET DE VOIR LES
35.6    STORE    CPBXXX,CPB30,CPB30,U             /VALEURS DU SYSTEME
35.7    STORE    CIGXXX,CIG30,CIG30,U
35.8    STORE    CMPXXX,0.0,0.0,U

```

```

35.9   STORE    CDSXXX,CDS30,CDS30,U
35.10  EXIT      U
/
/
36.1   EVENT    SYS8,S
36.2   SET      BPD,SUF,R
36.3   EXIT      C,R
36.4   DELAY     10,U
36.5   INTERVAL 1,U
36.6   STORE    CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
36.7   STORE    CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME
36.8   STORE    CIG30,CIGXXX,CIG30,U
36.9   STORE    CDS30,CDSXXX,CDS30,U
36.10  EXIT      U
/
/
/-----/
/              RECORD PANNE DE POUVOIR      /
/-----/
/
37.1   RESTART
37.2   TIMDATA   DT
37.3   STORE     UPTIM,APD,APD,U           /SAUVE L HEURE ACTUEL ET
37.4   TIMDATA   MD                       /LA DATE DE LA RESTAURATION
37.5   STORE     UPDAT,APD,APD,U           /DU POUVOIR.
37.6   EXIT      U
/
38.1   RESTART
38.2   STORE     DNTIM,TOD,TOD,U           /RECORD DE LA DERNIERE HEURE
38.3   STORE     DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
38.4   INTERVAL  60,U
38.5   TIMDATA   DT
38.6   STORE     TOD,APD,APD,U             /SAUVE L HEURE ET LA DATE
38.7   TIMDATA   MD                       /ACTUEL A TOUTES LES MINUTES.
38.8   STORE     LDAT,APD,APD,U
38.9   EXIT      U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3266
/   OVERHEAD:    2700
/   TOTAL:       7150      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338
/   PROCESSES:   3266
/   OVERHEAD:    2700
/   TOTAL:       7150      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      846
/   CDB:         338

```

```
/   PROCESSES:  3266
/   OVERHEAD:  2700
/   TOTAL:    7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    846
/   CDB:      338
/   PROCESSES: 3266
/   OVERHEAD:  2700
/   TOTAL:    7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    846
/   CDB:      338
/   PROCESSES: 3266
/   OVERHEAD:  2700
/   TOTAL:    7150    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    846
/   CDB:      338
/   PROCESSES: 3268
/   OVERHEAD:  2700
/   TOTAL:    7152    8K DSC MEMORY NEEDED
```

SYSTÈME V43-12

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOLETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

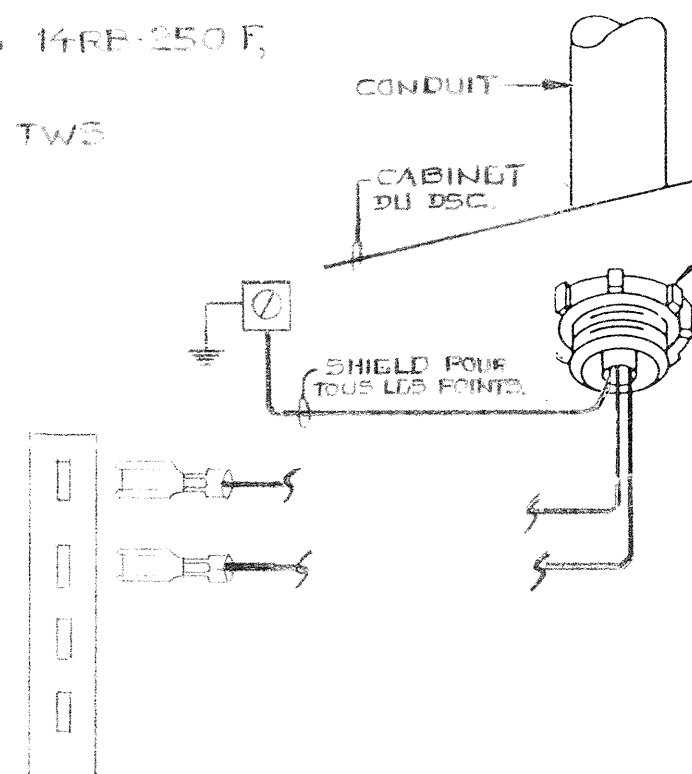
LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

The diagram illustrates the front panel of the FTB-107 computer system. It features several sections for user interaction and system control:

- Left Panel:** Includes a vertical column of 16 toggle switches labeled J1C1 through J1C16. To their right are two rows of 8 toggle switches each, labeled J2C1 through J2C16 and J3C1 through J3C16. Below these are two rows of 8 toggle switches labeled J4C1 through J4C16 and J5C1 through J5C16.
- Top Center:** A section labeled "BINARY OUTPUT POINTS" with 16 toggle switches numbered 1 through 16.
- Top Right:** A section labeled "ANALOG INPUT POINTS" with 16 toggle switches numbered 1 through 16.
- Bottom Center:** A section labeled "NON-SWITCHED COMMON" with 16 toggle switches numbered 1 through 16.
- Bottom Right:** A section labeled "SWITCHED COMMON" with 16 toggle switches numbered 1 through 16.
- Connectors and Labels:** Various connectors are labeled, including J1C, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100. Other labels include "INPUT", "CAL RES", "FTB-107", "JCM2-0", and "RI".

① - TYPE DE RACCORD
DOSSIER TYPE 14RB-250 F,
ISOLÉS .250.

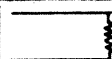
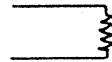
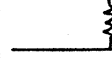
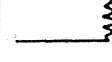
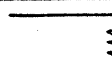
② - CARLAGE EN 2^e 18 TWS
PARTOUT.

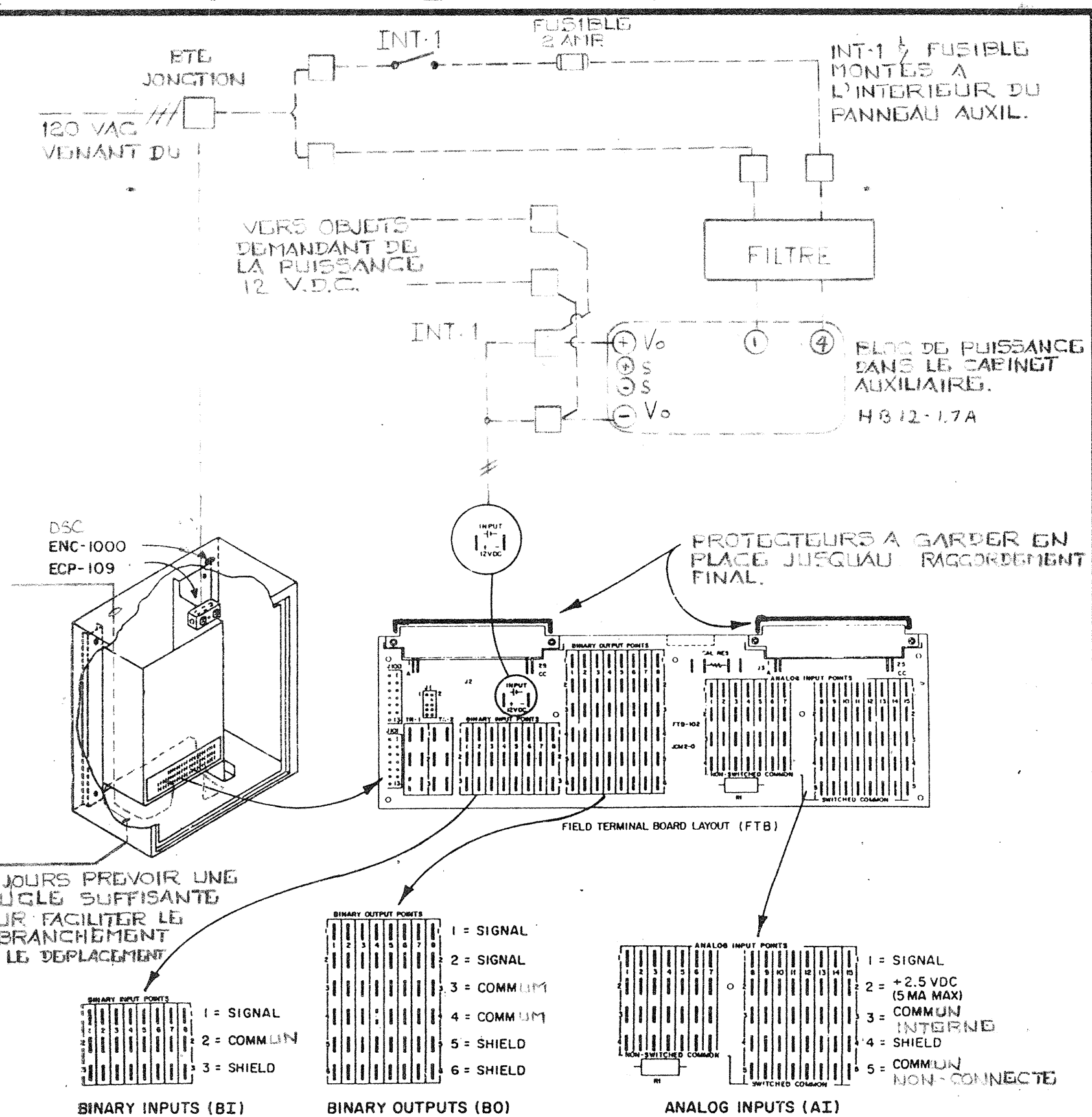


TOTAL MAX 8 SORTIES

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 12		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 12	BIN	1 2	<u>1</u> <u>2</u>	CONTACT AUX. DEM	MCC - 3	B1.1'		
2	GEL	SYSTEME 12	BIN	1 2	<u>1</u> <u>2</u>	RELAIS RG	CAB AUX	B2.1		

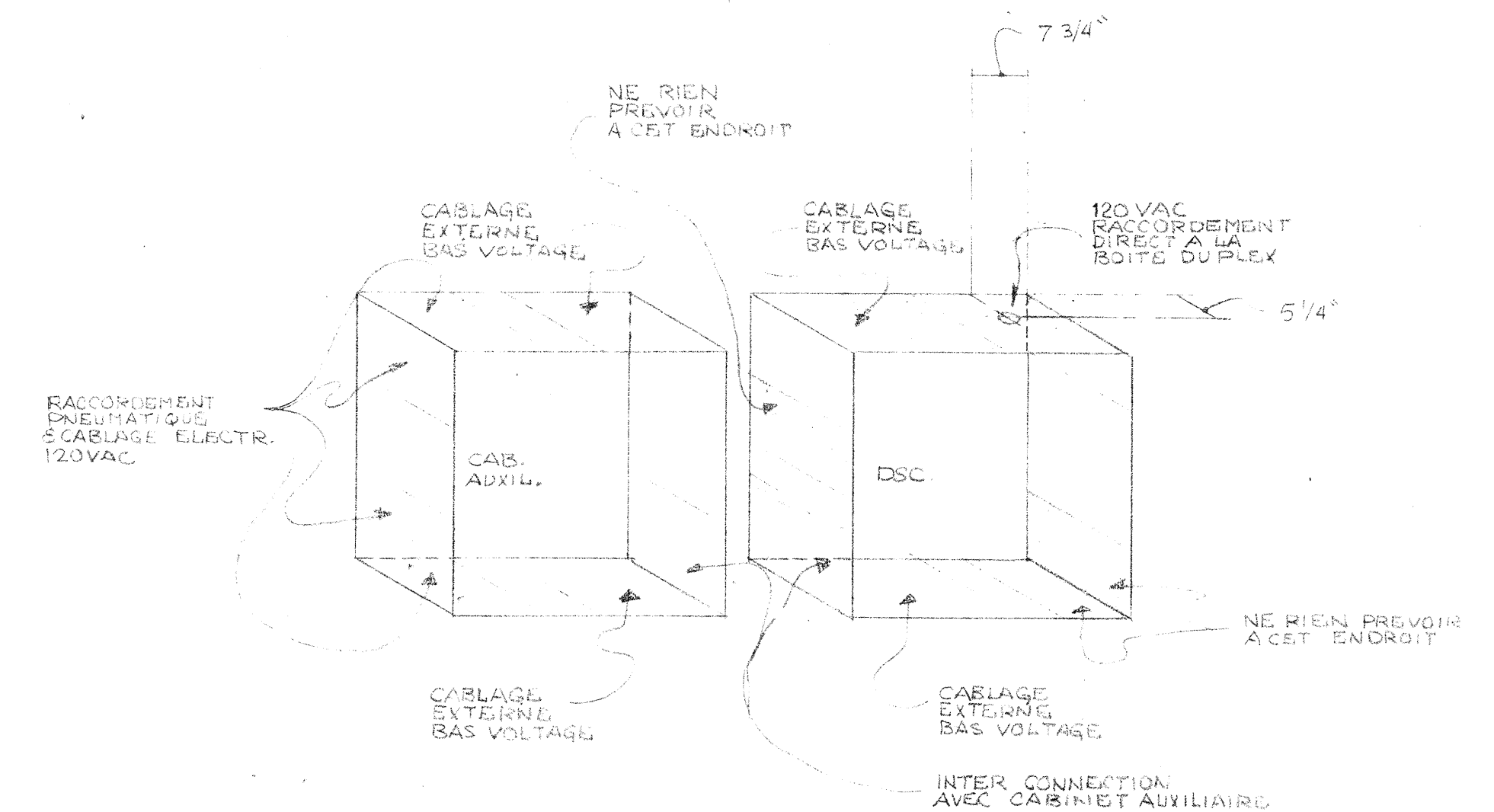
EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC	1	
EMPLACEMENT:								FIC	1	
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P4.1		
5A	R1	ARRET DEPART SYSTEME 12	SST	1 3	2 7	RELAIS 12VDC	MCC - 3	S5A.1		

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 12		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUS SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI- CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4.20 M 10-98%
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4.20 M 10-98%
11	PT-1	PRESSIION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL.V43.12 BOITE LA PLUS LOIN	A11.1		0-5N 0-2.5
12	TE-5	TEMP. PIECE	ANA	1 3		TE1800-102		A12.1		



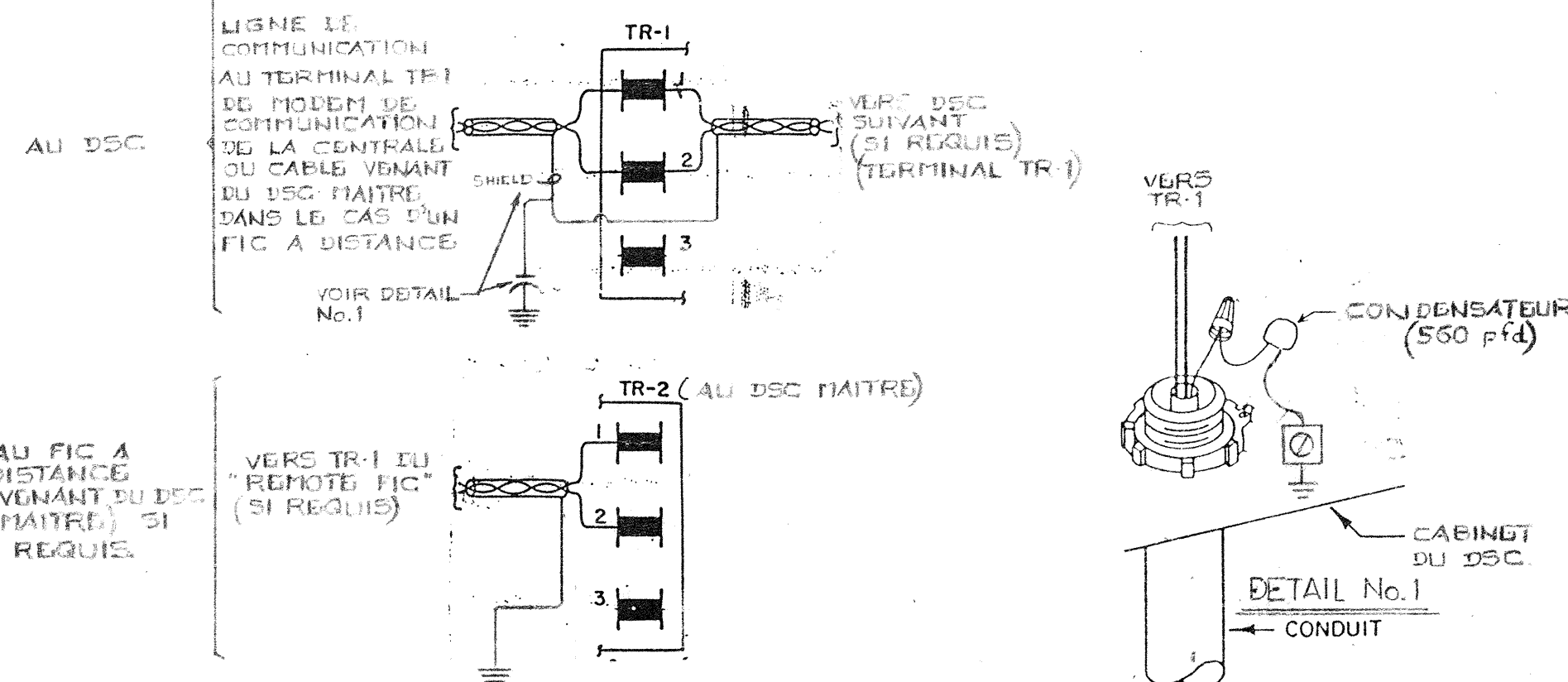
INT-1 : INTERRUPTEUR "TOGGLE" D'AGLE SP. ST. MOD 447, MONTE
AVEC R4000-101 J.C.L.

□ — TERMINAUX DANS LE CABINET AUXILIAIRE



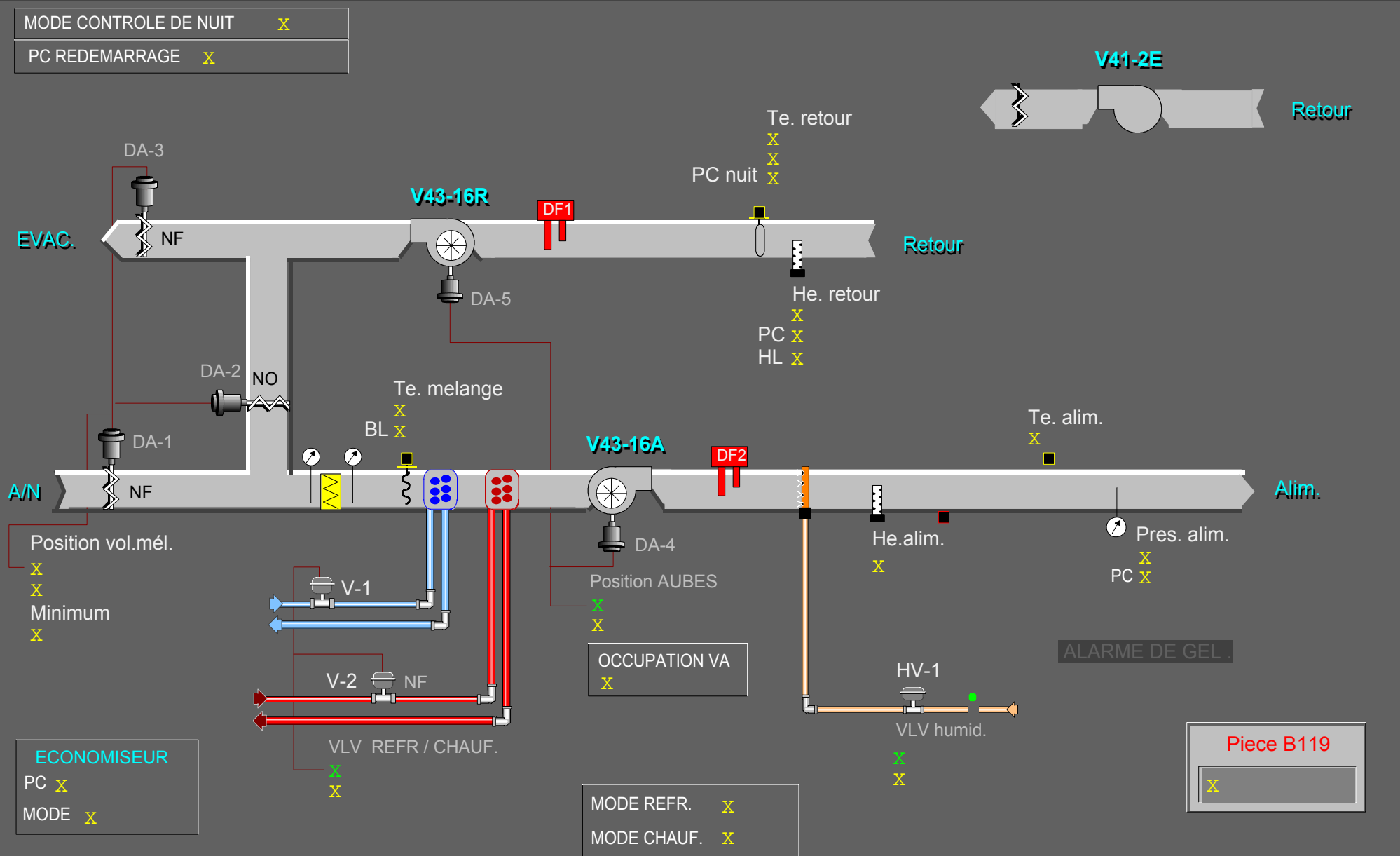
① — VOIR DESSINS STD. DE RACCORDEMENT POUR
LES COMPOSANTES AUXILIAIRES.

② — VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES /
ELECTRIQUES LOCAUX.



TITRE	IMPLANTATION DSC-4500											
	DSC-12				TEL QUE CONSTRUIT				26-07-07			
									SEPT 12-05			
	REFERENCE		NO.		REVISION		AVIS		DATE		PAR	
	REPRESENTANT		TECHNICIEN		DESSINE		APPROUVE					
	J. C. R.		R. F.		PAR DATE		PAR DATE		24 DATE 25-6-78			
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE		JOHNSON CONTROLS		Société de Contrôle Johnson Ltee 441 boulevard Lebeau Montreal, QC H4N 1B2 Tél. 514-332-6960		CONTRAT 4096-008-10		DESSIN NO. 4068-10			
	ST-HYACINTHE, QUE.		Division Des Systèmes Et Services									

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V3974-1011	1	VALVE N.F. Ø 1" C/A P.P.
V-2	V3754-1024	1	VALVE NO. Ø 1/2" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	302FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



PARAMETRES

Controle de nuit

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.
X

Arret jour cour.
X

Depart semaine
X

Arret semaine
X

Depart samedi
X

Arret samedi
X

Depart dimanche
X

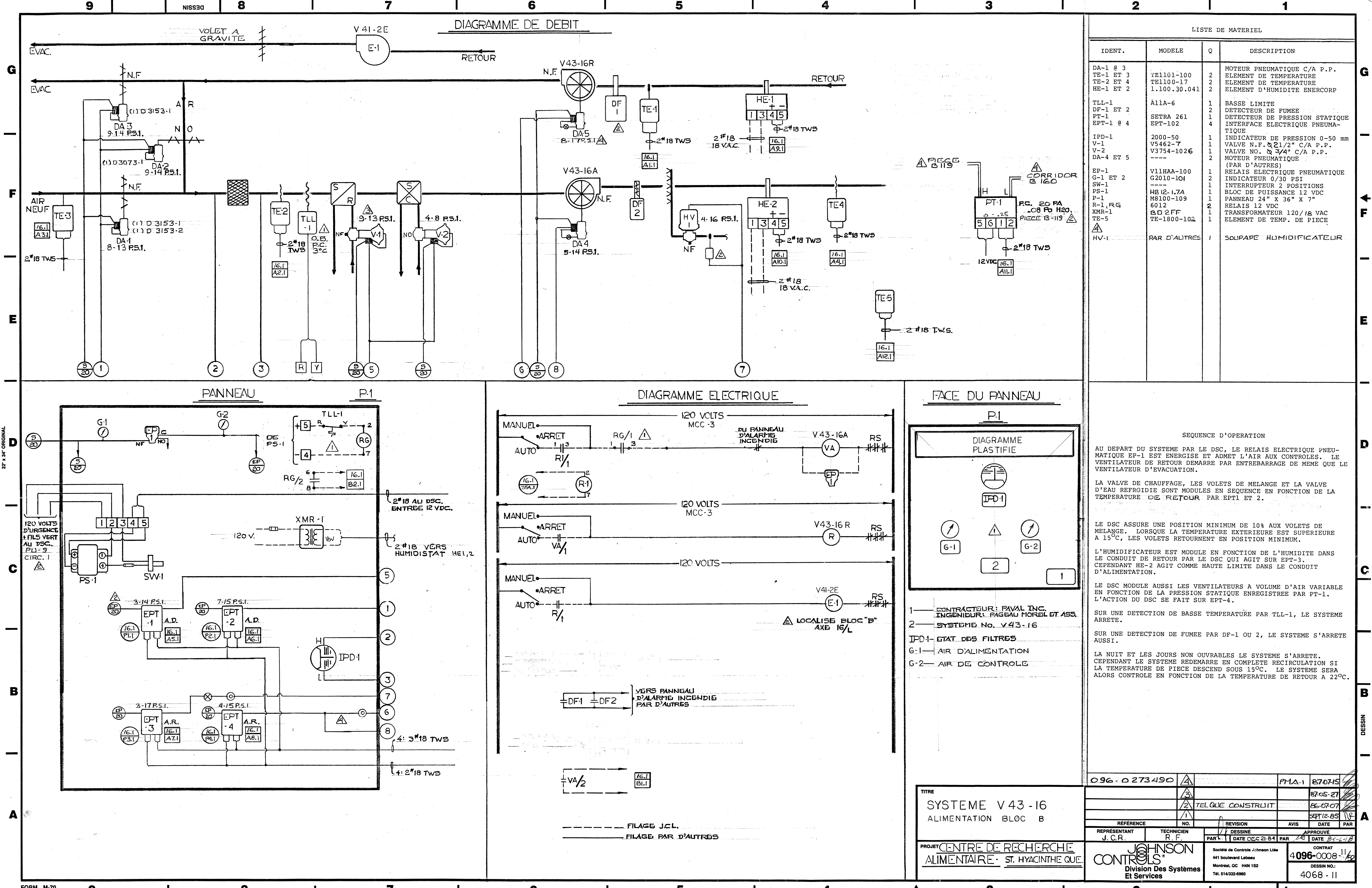
Arret dimanche
X



VACANCES DSC-16, V43-16

Jour / Mois	VACANCE 1	<input type="text" value="X"/>
Jour / Mois	VACANCE 2	<input type="text" value="X"/>
Jour / Mois	VACANCE 3	<input type="text" value="X"/>
Jour / Mois	VACANCE 4	<input type="text" value="X"/>
Jour / Mois	VACANCE 5	<input type="text" value="X"/>
Jour / Mois	VACANCE 6	<input type="text" value="X"/>





22" x 34" ORIGINAL

DESSIN

A

DSC 16 SYSTEME V43.16

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

```

45      DISPLAY  FSP,I          /PRESSION STATIQUE
46      ADJUST   SPSP,I        /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A         /RESULTAT CTL VAV
48      DISPLAY  ZT50,A        /F.B. VAV
/
49      ADJUST   STA,T         /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T         /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T        /HEURE DEPART SAMEDI
52      ADJUST   STO7,T        /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T        /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T        /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T        /HEURE DEPART SEMAINE
56      ADJUST   STO9,T        /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T          /VACANCE 1
58      ADJUST   H2,T          /VACANCE 2
59      ADJUST   H3,T          /VACANCE 3
60      ADJUST   H4,T          /VACANCE 4
/
61      OVERRIDE ZCP30,A,2     /SOUPAPES
62      OVERRIDE ZCP10,A,2     /VOLETS
63      OVERRIDE ZCP70,A,2     /HUMIDITE
64      OVERRIDE ZCP50,A,2     /VAV
/

```

```

/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR      /
/-----/
/

```

```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-16
/
/      51      ALARME HORAIRE SYSTEME V43-16
/
/-----/
/
/
□

```

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 08:50:23
/
/TRANSLATION LISTING FOR DSC-16.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 08-02-99 14:35:55
/
/TRANSLATION LISTING FOR DSC-16.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV A 08-02-99 09:01:23
/
/TRANSLATION LISTING FOR DSC-16.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV A 08-02-99 08:52:55
/
/TRANSLATION LISTING FOR DSC-16.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-14-99 09:05:07
/
/TRANSLATION LISTING FOR DSC-16.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  16  SYSTEME  V43.16
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                  RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                    08 DECE 1986
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----

```



```

/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,8703
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  21
@ AD:  88
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-10,RAT-0,TOT-0
@ BO:  MOM-0,POS-4,MAN-1
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FREEZE     CON-2      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.5,129.6 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.5,129.7 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-45.6,129.6 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.5,129.6 /TEMP ALIM
AI-5      ZT30       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6      ZT10       FUL-6      E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-7      ZT70       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8      ZT50       FUL-8      E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-9      HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-11     SPT        FUL-9      E,0.1,E,N,O,0,621       /PRESSION STATIQUE EN P
AI-12     TE100      FUL-10     E,0.5,E,V,T,-45.7,129.5 /TEMP PIECE
/
/
BO-1      ZC30       POS-1      D,E,0     /SOUPAPES
BO-2      ZC10       POS-2      D,E,0     /VOLETS
BO-3      ZC70       POS-3      D,E,0     /HUMIDITE
BO-4      ZC50       POS-4      D,E,0     /VAV
BO-5A     ZS50       MAN-1      E,E       /VENTIL ALIM
/
/
CP-1      ZCP30      INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10      INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-3      ZCP70      INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4      ZCP50      INC-4      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
BD-1      OCCD       E,R       /CYCLE D OCCUPATION
BD-2      TLCON      E,R       /CONTROLE PAR TEMP.
BD-3      FSTRT      E,R       /DEMANDE VENTILATEUR
BD-4      COMP50     E,R       /RESULTAT DEMARRAGE
BD-5      CONON      E,R       /PERMISSION CONTROLE

```

```

/
/-----/
/          PARAMETRES CONTROLE DE NUIT          /
/-----/
/
BD-6      NCTL      E,R      /CONTROLE DE TEMP NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS    /
/-----/
/
BD-7      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE
/-----/
/
BD-8      MXD      E,R      /CONTROLE DE JOUR
BD-9      MIXLL     E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
BD-10     HTG      E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT
/-----/
/
BD-11     CLG      E,R      /REFROIDISSEMENT
/
/-----/
/          FONCTIONS SPECIALES                  /
/-----/
/
BD-12     SYSP      D,R
BD-13     SYS       D,R
BD-14     SYS1      D,R
BD-15     SYS2      D,R
BD-16     SYS3      D,R
BD-17     SYS4      D,R
BD-18     SYS5      D,R
BD-19     SYS6      D,R
BD-20     SYS7      D,R
BD-21     SYS8      D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
AD-1      DOW      E,2
AD-2      H1       E,00:00
AD-3      H2       E,00:00
AD-4      H3       E,00:00
AD-5      H4       E,00:00
AD-6      H5       E,00:00

```

AD-7	H6	E,00:00	
AD-8	STA	E,00:00	/HORAIRE
AD-9	STO	E,00:00	
AD-10	STA8	E,07:03	
AD-11	STO8	E,07:03	
AD-12	STA7	E,07:03	
AD-13	STO7	E,07:03	
AD-14	STA9	E,07:03	
AD-15	STO9	E,18:00	
AD-16	NSBT	E,15.0	/POINT DE CONSIGNE REDEMARRAGE
AD-17	DELSST	E,150	/DELAI APRES PANNE
/			
/-----/			
/ PARAMETRES CONTROLE DE NUIT /			
/-----/			
/			
AD-18	NSP	E,22.0	/POINT DE CONSIGNE RETOUR
AD-19	Z41	E,0.0	/RESULTAT CTL NUIT
AD-20	CST41	E,45	/INTERVAL CTL NUIT
AD-21	CPB41	E,20.0	/BANDE PROP CTL NUIT
AD-22	CIG41	E,5	/GAIN CTL NUIT
AD-23	CDS41	E,0.0	/BANDE MORTE CTL NUIT
/			
/-----/			
/ PARAMETRES ECONOMISEUR D AIR FRAIS /			
/-----/			
/			
AD-24	OASO	E,15.0	/TEMP LIM EXT ECONOMISEUR
/			
/-----/			
/ REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION /			
/-----/			
/			
AD-25	RARL	E,19.0	/AIR RET BAS LIM REAJ TEMP ALIM
AD-26	RARH	E,23.5	/AIR RET HAU LIM REAJ TEMP ALIM
AD-27	SAHL	E,20.0	/REAJ TEMP ALIM HAU LIM
AD-28	SALL	E,13.0	/REAJ TEMP ALIM BAS LIM
/			
/-----/			
/ PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /			
/-----/			
/			
AD-29	DSSP	E,0.0	/POINT DE CONSIGNE ALIM
AD-30	MXDSP	E,7.0	/POINT DE CONSIGNE LIMITE MEL.
AD-31	MDP	E,20.0	/POSITION MINIMUM VOLETS
AD-32	CST10A	E,5	/INTERVAL CTL VOLETS LIMITE
AD-33	CPB10A	E,-90.0	/BANDE PROP CTL VOLETS LIMITE
AD-34	CIG10A	E,33	/GAIN CTL VOLETS LIMITE
AD-35	CMP10A	E,0.0	/COMPENSATION CTL VOLETS LIMITE
AD-36	CDS10A	E,0.0	/BANDE MORTE CTL VOLETS LIMITE
AD-37	CST10	E,45	/INTERVAL CTL VOLETS
AD-38	CPB10	E,-60.0	/BANDE PROP CTL VOLETS
AD-39	CIG10	E,33	/GAIN CTL VOLETS
AD-40	CMP10	E,0.0	/COMPENS CTL VOLETS
AD-41	CDS10	E,0.0	/BANDE MORTE CTL VOLETS
AD-42	ZMXD	E,0.0	/RESULTAT PROPORTION.
AD-43	Z10M	E,100.0	/RESULTAT VOLETS LIMITE

```

AD-44  Z10C      E,0.0  /RESULTAT VOILETS CTL
AD-45  Z10       E,0.0  /RESULTAT VOILETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
AD-46  Z40       E,0.0  /RESULTAT CHAUFFAGE
AD-47  CST40     E,25   /INTERVAL CTL CHAUFF
AD-48  CPB40     E,50.0 /BANDE PROP CTL CHAUFF
AD-49  CIG40     E,33   /GAIN CTL CHAUFF
AD-50  CDS40     E,0.0  /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT    /
/-----/
/
AD-51  Z30       E,0.0  /RESULTAT REFROIDISSEMENT
AD-52  CST30     E,25   /INTERVAL CTL REFROIDI
AD-53  CPB30     E,-45.0 /BANDE PROP CTL REFROIDI
AD-54  CIG30     E,33   /GAIN CTL REFROIDI
AD-55  CDS30     E,0.0  /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION    /
/          STATIQUE                                /
/-----/
/
AD-56  SPSP      E,212  /POINT DE CONSIGNE PRESS STAT
AD-57  CST50     E,5    /INTERVAL CTL VAV
AD-58  CPB50     E,43.9 /BANDE PROP CTL VAV
AD-59  CIG50     E,31   /GAIN CTL VAV
AD-60  CMP50     E,0.0  /COMPENS CTL VAV
AD-61  CDS50     E,6    /BANDE MORTE CTL VAV
AD-62  Z50       E,0.0  /RESULTAT CTL VAV
AD-63  FSP       E,0.0  /PRESS STAT FILTREE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-64  RHSP      E,40.0  /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65  RHSPA     E,80.0  /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66  CST70     E,60   /INTERVAL CTL HUMIDITE
AD-67  CPB70     E,90.0 /BANDE PROP CTL HUMIDITE
AD-68  CIG70     E,33   /GAIN CTL HUMIDITE
AD-69  CDS70     E,0.0  /BANDE MORTE CTL HUMIDITE
AD-70  CST70A    E,5    /INTERVAL H LIM HUMIDITE
AD-71  CPB70A    E,90.0 /BANDE PROP H LIM HUMIDITE
AD-72  CIG70A    E,33   /GAIN H LIM HUMIDITE
AD-73  CDS70A    E,0.0  /BANDE MORTE H LIM HUMIDITE
AD-74  Z70       E,0.0  /RESULTAT CTL HUMIDITE
AD-75  Z70HL     E,0.0  /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-76  Z70C      E,0.0  /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          FONCTIONS SPECIALES                        /
/-----/

```

```

/-----/
/
AD-77   SYSDIS   D,0
AD-78   CSTXXX   D,0
AD-79   CPBXXX   D,0.0
AD-80   CIGXXX   D,0
AD-81   CMPXXX   D,0.0
AD-82   CDSXXX   D,0.0
/
/-----/
/
RECORD PANNE DE POUVOIR
/-----/
/
AD-83   UPTIM     E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-84   UPDAT     E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-85   DNTIM     E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-86   DNDAT     E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-87   TOD       E,00:00   /DERNIERE HEURE
AD-88   LDAT      E,00:00   /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1       ADJUST    DELSST,I   /DELAI APRES UNE PANNE
2       DISPLAY    OCCD,B     /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3       ADJUST    FSTRT,B     /DEMANDE VENTILATEUR
4       DISPLAY    FSTAT,B     /ETAT VENTIL. ALIM.
5       DISPLAY    FREEZE,B    /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
6       DISPLAY    NCTL,B     /CONTROLE DE TEMP NUIT
7       DISPLAY    TLCON,B     /CONTROLE PAR TEMP.
8       ADJUST    NSBT,A      /PT DE CONSIGNE REDEMARRAGE
9       ADJUST    NSP,A       /POINT DE CONSIGNE RETOUR
10      DISPLAY    Z41,A      /RESULTAT CTL NUIT
/
11      DISPLAY    TE80,A     /TEMP RETOUR
12      DISPLAY    TE10,A     /TEMP MELANGE
13      DISPLAY    TE1,A      /TEMP EXTERIEURE
14      DISPLAY    TE60,A     /TEMP ALIMENTATION
15      DISPLAY    TE100,A    /TEMP PIECE
/
16      DISPLAY    MXD,B      /CONTROLE DE JOUR
17      ADJUST    RARL,A      /AIR RET BAS LIM REAJ TEMP ALIM
18      ADJUST    RARH,A      /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST    SAHL,A      /REAJ TEMP ALIM HAU LIM
20      ADJUST    SALL,A      /REAJ TEMP ALIM BAS LIM
21      DISPLAY    DSSP,A     /POINT DE CONSIGNE ALIM
22      ADJUST    OASO,A      /TEMP LIM EXT ECONOMISEUR
23      DISPLAY    ECON,B     /RESULTAT ECONOMISEUR
24      ADJUST    MDP,A       /POSITION MINIMUM VOLETS
25      ADJUST    MXDSP,A     /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY    ZMXD,A     /RESULTAT PROPORTION.
27      DISPLAY    Z10M,A     /RESULTAT VOLETS LIMITE
28      DISPLAY    Z10C,A     /RESULTAT VOLETS CTL
29      DISPLAY    Z10,A      /RESULTAT VOLETS
30      DISPLAY    ZT10,A     /F.B. VOLETS

```

```

/
31      DISPLAY  HTG,B      /CHAUFFAGE
32      DISPLAY  Z40,A      /RESULTAT CHAUFFAGE
/
34      DISPLAY  CLG,B      /REFROIDISSEMENT
35      DISPLAY  Z30,A      /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A     /F.B. SOUPAPES
/
37      DISPLAY  HT80,A     /HUMIDITE RETOUR
38      DISPLAY  HT60,A     /HUMIDITE ALIMENT
39      ADJUST   RHSP,A     /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A    /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A     /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A      /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A     /F.B. HUMIDITE
/
45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE

```

```

81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/                                /
/                                /
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/                                /
/                                /
/      L I S T E   D E S   A L A R M E S      /
/      ALARME      /
/      NUMERO      /
/                                /
/-----/
/                                /
/      10      ALARME THERMOSTAT DE GEL      /
/                                /
/      50      ALARME ARRET DEPART SYSTEME V43-16      /
/                                /
/      51      ALARME HORAIRE SYSTEME V43-16      /
/                                /
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE      /
/-----/
/
/DETERMINE HEURE ARRET DEPART

```

/SELON JOUR DE LA SEMAINE OU VACANCE

/

```
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
```

/

/A L HEURE DE DEPART:

```
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/          RESET     TLCON     NON OPERATION CONTROLE PAR TEMP.
```

/A L HEURE D ARRET:

```
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET     OCCD      CYCLE D OCCUPATION
```

/

```
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       TLCON,SDF,S
2.4      SET       BPD,SUF,R
2.5      EXIT      C,R
2.6      SET       FSTRT,S,S
2.7      EXIT      U
```

/

/REDEMARRAGE SUR BASSE LIMITE DE PIECE

/

```
3.1      EVENT     TLCON,S
3.2      SET       BPD,TLCON,S
3.3      EXIT      C,R
3.4      INTERVAL  300,U
3.5      COMPARE   TE100,LE,NSBT,2.0
3.6      SET       FSTRT,BPD,S
3.7      EXIT      U
```

/

/DEMARRAGE VENTILATEUR SI FSTRT EST ON

/VERIFICATION D ALARME

/

```
4.1      RESTART
4.2      SET       AUTO,S,S
4.3      DELAY     25,U
4.4      SET       COMP50,R,R
4.5      INTERVAL  10,U
4.6      XOR       COMP50,FSTAT
```



```

4.7      ALARM      50,C,S
4.8      SET        BPD,FSTRT,R
4.9      BOUT       ZS50,3,OFF
4.10     SET        COMP50,BPD,R
4.11     EXIT       U
/
/
/-----/
/      GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE      /
/-----/
/
5.1      RESTART
5.2      DELAY      25,U
5.3      INTERVAL   5,U
5.4      SET        BPD,FREEZE,R
5.5      ALARM      10,C,R
5.6      EXIT       U
/
/
/-----/
/      CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT       C,R
6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U
/
7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT       C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U
/
/
/-----/
/      CONTROLE DE LA PRESSION STATIQUE                          /
/-----/
/

```

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.

/

8.1	EVENT	CONON,S
8.2	SET	BPD,CONON,R
8.3	STORE	FSP,0,0,C,R
8.4	STORE	APD,0.0,0.0,C,R
8.5	STORE	Z50,APD,APD,C,R
8.6	AOUT	ZCP50,3,0.0,C,R
8.7	EXIT	C,R
8.8	DELAY	15,U
8.9	INTERVAL	CST50,U
8.10	FILTER	SPT,63,100
8.11	STORE	FSP,APD,APD,U
8.12	CALC	CPB50,0,10,1,1,T
8.13	PROP	SPSP,FSP,APD,CIG50,CMP50,CDS50
8.14	STORE	Z50,APD,APD,U
8.15	AOUT	ZCP50,3,0,U
8.16	EXIT	U

/

/

/-----/

/ CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE /

/-----/

/

/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOILETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.

/

9.1	RESTART	
9.2	SET	MXD,R,R
9.3	SET	NCTL,R,R
9.4	SET	CONON,R,R
9.5	DELAY	25,U
9.6	INTERVAL	5,U
9.7	AND	FSTAT,OCCD
9.8	SET	MXD,BPD,R
9.9	XOR	FSTAT,OCCD
9.10	AND	BPD,FSTAT
9.11	SET	NCTL,BPD,S
9.12	SET	CONON,FSTAT,R
9.13	EXIT	U

/

/

/-----/

/ ECONOMISEUR D AIR FRAIS /

/-----/

/

/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOILETS SONT RAMENES A LEURS POSITIONS NORMALS.

/

10.1	EVENT	MXD,S
10.2	SET	ECON,R,R
10.3	SET	BPD,FSTAT,R
10.4	EXIT	C,R
10.5	INTERVAL	300,U
10.6	COMPARE	TE1,GE,OASO,1.0

```

10.7      SET      ECON,BPD,R
10.8      EXIT      U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1      EVENT      MXD,S
11.2      INTERVAL 300,U
11.3      STORE      APD,TE80,RARL,U
11.4      SPAN      RARL,RARH,SAHL,SALL
11.5      STORE      DSSP,APD,SAHL,U
11.6      EXIT      U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS
/
/
12.1      EVENT      MXD,S
12.2      SET      MIXLL,R,R
12.3      SET      BPD,MXD,R
12.4      EXIT      C,R
12.5      INTERVAL 5,U
12.6      COMPARE  TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7      SET      MIXLL,BPD,R      /A LA BASSE LIMITE
12.8      SELECT   Z10M,Z10C,L
12.9      STORE      Z10,APD,APD,U
12.10     AOUT      ZCP10,3,0.0,U
12.11     EXIT      U
/
13.1      EVENT      MIXLL,S      /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2      SET      BPD,MIXLL,R
13.3      STORE      Z10M,100.0,100.0,C,R
13.4      STORE      CMP10A,Z10C,Z10C,U
13.5      EXIT      C,R
13.6      INTERVAL  CST10A,U
13.7      PROP      MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8      STORE      Z10M,APD,APD,U
13.9      EXIT      U

```

```

/
14.1  EVENT  MXD,R /POSITION D ARRET SOUPAPES
14.2  SET    BPD,MXD,R
14.3  EXIT   C,S
14.4  SET    HTG,R,R
14.5  SET    CLG,R,R
14.6  DELAY  7,C,R
14.7  STORE  APD,0.0,0.0,C,R
14.8  AOUT   ZCP30,3,0.0,C,R
14.9  EXIT   U

```

```

/
15.1  EVENT  MXD,S
15.2  SET    BPD,MXD,R
15.3  STORE  APD,0.0,0.0,C,R
15.4  STORE  Z10,APD,APD,C,R
15.5  STORE  Z10C,APD,APD,C,R
15.6  STORE  Z10M,100.0,100.0,C,R
15.7  STORE  ZMXD,APD,APD,C,R
15.8  AOUT   ZCP10,3,0.0,C,R
15.9  EXIT   C,R
15.10 DELAY  7,U
15.11 STORE  APD,TE1,5.0,U
15.12 SPAN   5.0,20.0,0.0,75.0
15.13 STORE  CMP10,APD,APD,U
15.14 STORE  APD,50.0,50.0,U
15.15 AOUT   ZCP30,3,0.0,U
15.16 INTERVAL CST10,U
15.17 PROP   DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18 STORE  ZMXD,APD,APD,U
15.19 SPAN   MDP,100.0,MDP,100.0
15.20 SET    BPD,ECON,S
15.21 STORE  APD,MDP,MDP,C,S
15.22 STORE  Z10C,APD,APD,U
15.23 ORR    ZMXD,GE,85.0,10.0
15.24 SET    CLG,BPD,R
15.25 COMPARE ZMXD,LE,15.0,10.0
15.26 SET    HTG,BPD,R
15.27 EXIT   U

```

```

/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/

```

```

/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/

```

```

16.1  EVENT  HTG,S
16.2  SET    BPD,HTG,S
16.3  STORE  Z40,0.0,0.0,C,R
16.4  STORE  APD,50.0,50.0,C,R
16.5  AOUT   ZCP30,3,0.0,C,R
16.6  EXIT   C,R
16.7  INTERVAL CST40,U
16.8  CALC   DSSP,0.3,1,-1,1,T

```

```

16.9      PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
16.10     STORE     Z40,APD,APD,U
16.11     SPAN      0.0,100.0,50.0,0.0
16.12     AOUT      ZCP30,3,100.0,U
16.13     EXIT      U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/
17.1      EVENT     CLG,S
17.2      SET       BPD,CLG,R
17.3      STORE     Z30,0.0,0.0,C,R
17.4      STORE     APD,50.0,50.0,C,R
17.5      AOUT      ZCP30,3,0.0,C,R
17.6      EXIT      C,R
17.7      INTERVAL  CST30,U
17.8      CALC      DSSP,0.3,1,1,1,T
17.9      PROP      APD,TE60,CPB30,CIG30,0.0,CDS30
17.10     STORE     Z30,APD,APD,U
17.11     SPAN      0.0,100.0,50.0,100.0
17.12     AOUT      ZCP30,3,0.0,U
17.13     EXIT      U
/
/-----/
/          CONTROLE DE NUIT
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOLETS RESTENT EN RECIRCULATION.
/
18.1      EVENT     NCTL,S
18.2      SET       BPD,NCTL,S
18.3      STORE     Z41,0.0,0.0,C,R
18.4      STORE     APD,0.0,0.0,C,R
18.5      AOUT      ZCP30,3,0.0,C,R
18.6      EXIT      C,R
18.7      INTERVAL  CST41,U
18.8      PROP      NSP,TE80,CPB41,CIG41,0.0,CDS41
18.9      STORE     Z41,APD,APD,U
18.10     SPAN      0.0,100.0,50.0,0.0
18.11     AOUT      ZCP30,3,100.0,U
18.12     EXIT      U
/
/-----/
/          FONCTIONS SPECIALES
/-----/
/
19.1      EVERY
/SELECTION DU STSME POUR LE

```

```

19.2      SET      SYSP,R,R      /
19.3      COMPARE  SYSDIS,EQ,100,0
19.4      SET      SYS1,BPD,R
19.5      OR       SYSP,BPD
19.6      SET      SYSP,BPD,S
19.7      COMPARE  SYSDIS,EQ,200,0
19.8      SET      SYS2,BPD,R
19.9      OR       SYSP,BPD
19.10     SET      SYSP,BPD,S
19.11     COMPARE  SYSDIS,EQ,300,0
19.12     SET      SYS3,BPD,R
19.13     OR       SYSP,BPD
19.14     SET      SYSP,BPD,S
19.15     COMPARE  SYSDIS,EQ,400,0
19.16     SET      SYS4,BPD,R
19.17     OR       SYSP,BPD
19.18     SET      SYSP,BPD,S
19.19     COMPARE  SYSDIS,EQ,500,0
19.20     SET      SYS5,BPD,R
19.21     OR       SYSP,BPD
19.22     SET      SYSP,BPD,S
19.23     COMPARE  SYSDIS,EQ,600,0
19.24     SET      SYS6,BPD,R
19.25     OR       SYSP,BPD
19.26     SET      SYSP,BPD,S
19.27     COMPARE  SYSDIS,EQ,700,0
19.28     SET      SYS7,BPD,R
19.29     OR       SYSP,BPD
19.30     SET      SYSP,BPD,S
19.31     COMPARE  SYSDIS,EQ,800,0
19.32     SET      SYS8,BPD,R
19.33     OR       SYSP,BPD
19.34     SET      SYSP,BPD,S
19.35     SET      SYS,SYSP,S
19.36     EXIT     U
/
/
20.1      EVENT    SYS,S      /RESET LES FONCTIONS POUR
20.2      SET      BPD,SUF,R  /LE CDB SPECIAL
20.3      STORE    SYSDIS,0,0,C,R  /SUR UNE PERIODE DE DISCLR
20.4      EXIT     C,R
20.5      DELAY    3600,U
20.6      STORE    SYSDIS,0,0,U
20.7      EXIT     U
/
/
21.1      EVENT    SYS1,S      /SYS 100
21.2      SET      BPD,SUF,R
21.3      EXIT     C,R
21.4      INTERVAL 5,U
21.5      STORE    CSTXXX,CST70,CST70,U  /PERMET DE VOIR LES
21.6      STORE    CPBXXX,CPB70,CPB70,U  /VALEURS DU SYSTEME
21.7      STORE    CIGXXX,CIG70,CIG70,U
21.8      STORE    CMPXXX,0.0,0.0,U
21.9      STORE    CDSXXX,CDS70,CDS70,U
21.10     EXIT     U
/

```

```

/
22.1  EVENT      SYS1,S
22.2  SET        BPD,SUF,R
22.3  EXIT       C,R
22.4  DELAY      10,U
22.5  INTERVAL   1,U
22.6  STORE      CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
22.7  STORE      CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
22.8  STORE      CIG70,CIGXXX,CIG70,U
22.9  STORE      CDS70,CDSXXX,CDS70,U
22.10 EXIT       U

/
/
23.1  EVENT      SYS2,S                    /SYS 200
23.2  SET        BPD,SUF,R
23.3  EXIT       C,R
23.4  INTERVAL   5,U
23.5  STORE      CSTXXX,CST70A,CST70A,U      /PERMET DE VOIR LES
23.6  STORE      CPBXXX,CPB70A,CPB70A,U      /VALEURS DU SYSTEME
23.7  STORE      CIGXXX,CIG70A,CIG70A,U
23.8  STORE      CMPXXX,0.0,0.0,U
23.9  STORE      CDSXXX,CDS70A,CDS70A,U
23.10 EXIT       U

/
/
24.1  EVENT      SYS2,S
24.2  SET        BPD,SUF,R
24.3  EXIT       C,R
24.4  DELAY      10,U
24.5  INTERVAL   1,U
24.6  STORE      CST70A,CSTXXX,CST70A,U      /PERMET D AJUSTER LES
24.7  STORE      CPB70A,CPBXXX,CPB70A,U      /VALEURS DU SYSTEME
24.8  STORE      CIG70A,CIGXXX,CIG70A,U
24.9  STORE      CDS70A,CDSXXX,CDS70A,U
24.10 EXIT       U

/
/
25.1  EVENT      SYS3,S                    /SYS 300
25.2  SET        BPD,SUF,R
25.3  EXIT       C,R
25.4  INTERVAL   5,U
25.5  STORE      CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
25.6  STORE      CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
25.7  STORE      CIGXXX,CIG50,CIG50,U
25.8  STORE      CMPXXX,CMP50,CMP50,U
25.9  STORE      CDSXXX,CDS50,CDS50,U
25.10 EXIT       U

/
/
26.1  EVENT      SYS3,S
26.2  SET        BPD,SUF,R
26.3  EXIT       C,R
26.4  DELAY      10,U
26.5  INTERVAL   1,U
26.6  STORE      CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
26.7  STORE      CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
26.8  STORE      CIG50,CIGXXX,CIG50,U

```

```

26.9    STORE    CMP50,CMPXXX,CMP50,U
26.10   STORE    CDS50,CDSXXX,CDS50,U
26.11   EXIT     U
/
/
27.1    EVENT    SYS4,S                               /SYS 400
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST40,CST40,U                /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB40,CPB40,U                /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG40,CIG40,U
27.8    STORE    CMPXXX,0.0,0.0,U
27.9    STORE    CDSXXX,CDS40,CDS40,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS4,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST40,CSTXXX,CST40,U                /PERMET D AJUSTER LES
28.7    STORE    CPB40,CPBXXX,CPB40,U                /VALEURS DU SYSTEME
28.8    STORE    CIG40,CIGXXX,CIG40,U
28.9    STORE    CDS40,CDSXXX,CDS40,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS5,S                               /SYS 500
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST41,CST41,U                /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB41,CPB41,U                /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG41,CIG41,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS41,CDS41,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS5,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST41,CSTXXX,CST41,U                /PERMET D AJUSTER LES
30.7    STORE    CPB41,CPBXXX,CPB41,U                /VALEURS DU SYSTEME
30.8    STORE    CIG41,CIGXXX,CIG41,U
30.9    STORE    CDS41,CDSXXX,CDS41,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS6,S                               /SYS 600
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U

```



```

31.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG10A,CIG10A,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS10A,CDS10A,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    DELAY    10,U
32.5    INTERVAL 1,U
32.6    STORE    CST10A,CSTXXX,CST10A,U    /PERMET D AJUSTER LES
32.7    STORE    CPB10A,CPBXXX,CPB10A,U    /VALEURS DU SYSTEME
32.8    STORE    CIG10A,CIGXXX,CIG10A,U
32.9    STORE    CDS10A,CDSXXX,CDS10A,U
32.10   EXIT     U
/
/
33.1    EVENT    SYS7,S                    /SYS 700
33.2    SET      BPD,SUF,R
33.3    EXIT     C,R
33.4    INTERVAL 5,U
33.5    STORE    CSTXXX,CST10,CST10,U    /PERMET DE VOIR LES
33.6    STORE    CPBXXX,CPB10,CPB10,U    /VALEURS DU SYSTEME
33.7    STORE    CIGXXX,CIG10,CIG10,U
33.8    STORE    CMPXXX,CMP10,CMP10,U
33.9    STORE    CDSXXX,CDS10,CDS10,U
33.10   EXIT     U
/
/
34.1    EVENT    SYS7,S
34.2    SET      BPD,SUF,R
34.3    EXIT     C,R
34.4    DELAY    10,U
34.5    INTERVAL 1,U
34.6    STORE    CST10,CSTXXX,CST10,U    /PERMET D AJUSTER LES
34.7    STORE    CPB10,CPBXXX,CPB10,U    /VALEURS DU SYSTEME
34.8    STORE    CIG10,CIGXXX,CIG10,U
34.9    STORE    CMP10,CMPXXX,CMP10,U
34.10   STORE    CDS10,CDSXXX,CDS10,U
34.11   EXIT     U
/
/
35.1    EVENT    SYS8,S                    /SYS 800
35.2    SET      BPD,SUF,R
35.3    EXIT     C,R
35.4    INTERVAL 5,U
35.5    STORE    CSTXXX,CST30,CST30,U    /PERMET DE VOIR LES
35.6    STORE    CPBXXX,CPB30,CPB30,U    /VALEURS DU SYSTEME
35.7    STORE    CIGXXX,CIG30,CIG30,U
35.8    STORE    CMPXXX,0.0,0.0,U
35.9    STORE    CDSXXX,CDS30,CDS30,U
35.10   EXIT     U
/
/

```

```

36.1    EVENT    SYS8,S
36.2    SET      BPD,SUF,R
36.3    EXIT     C,R
36.4    DELAY    10,U
36.5    INTERVAL 1,U
36.6    STORE    CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
36.7    STORE    CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME
36.8    STORE    CIG30,CIGXXX,CIG30,U
36.9    STORE    CDS30,CDSXXX,CDS30,U
36.10   EXIT     U
/
/
/-----/
/                                /
/-----/
/
37.1    RESTART
37.2    TIMDATA  DT
37.3    STORE    UPTIM,APD,APD,U          /SAUVE L HEURE ACTUEL ET
37.4    TIMDATA  MD                      /LA DATE DE LA RESTAURATION
37.5    STORE    UPDAT,APD,APD,U          /DU POUVOIR.
37.6    EXIT     U
/
38.1    RESTART
38.2    STORE    DNTIM,TOD,TOD,U          /RECORD DE LA DERNIERE HEURE
38.3    STORE    DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
38.4    INTERVAL 60,U
38.5    TIMDATA  DT
38.6    STORE    TOD,APD,APD,U            /SAUVE L HEURE ET LA DATE
38.7    TIMDATA  MD                      /ACTUEL A TOUTES LES MINUTES.
38.8    STORE    LDAT,APD,APD,U
38.9    EXIT     U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    846
/   CDB:       338
/   PROCESSES: 3266
/   OVERHEAD:  2700
/   TOTAL:     7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    846
/   CDB:       338
/   PROCESSES: 3266
/   OVERHEAD:  2700
/   TOTAL:     7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    846
/   CDB:       338
/   PROCESSES: 3266
/   OVERHEAD:  2700
/   TOTAL:     7150    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED

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```
/ MEMORY USAGE IN BYTES:
/   POINTS:   846
/   CDB:     338
/   PROCESSES: 3266
/   OVERHEAD: 2292
/   TOTAL:   6742   8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:   846
/   CDB:     338
/   PROCESSES: 3266
/   OVERHEAD: 2292
/   TOTAL:   6742   8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:   846
/   CDB:     338
/   PROCESSES: 3266
/   OVERHEAD: 2700
/   TOTAL:   7150   8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:   846
/   CDB:     338
/   PROCESSES: 3268
/   OVERHEAD: 2700
/   TOTAL:   7152   8K DSC MEMORY NEEDED
```

SYSTEME V43-16

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE DE RETOUR PAR EPT1 ET 2.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOLETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT EN POSITION MINIMUM.


L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

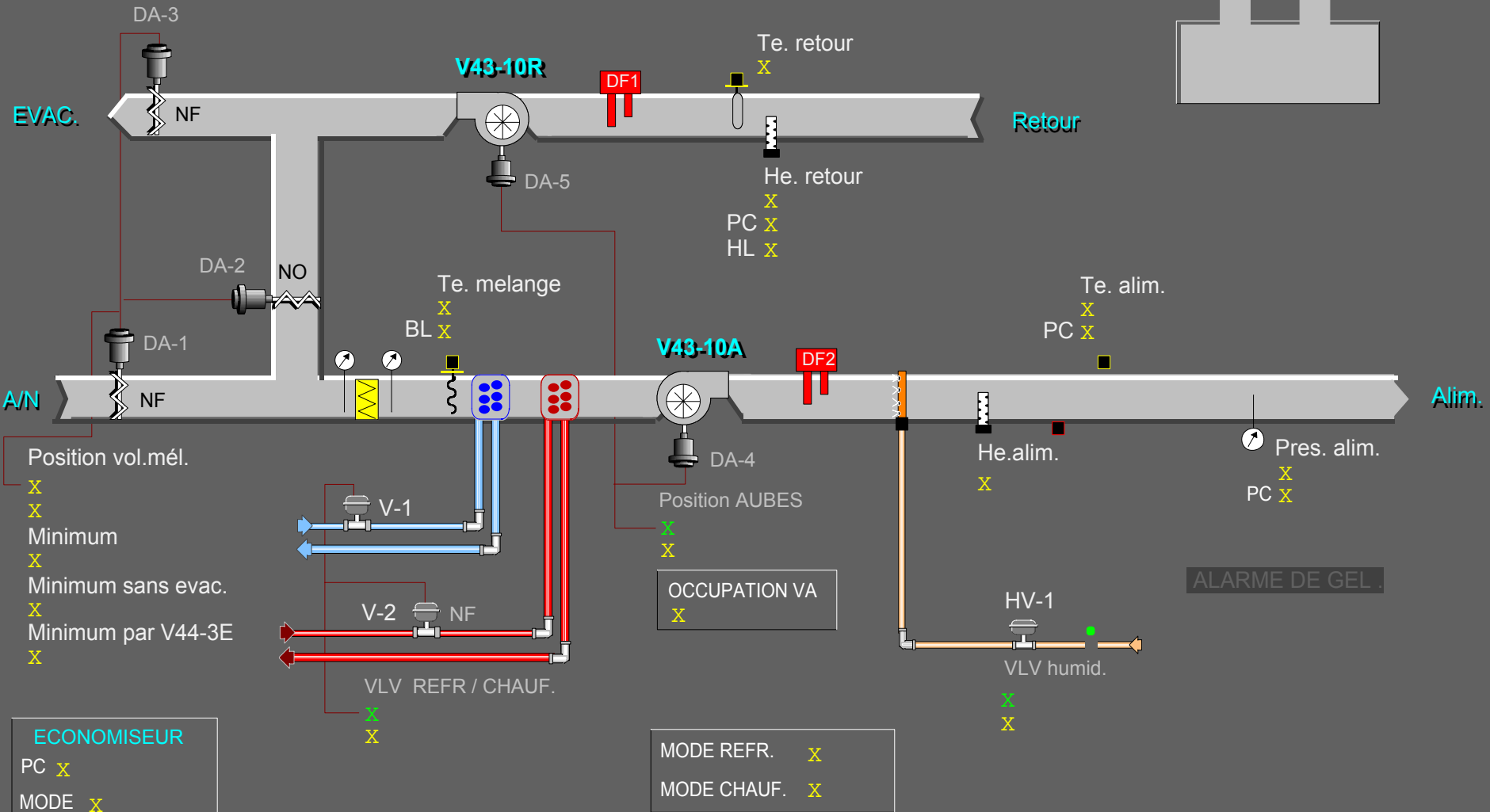
LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V5462-7	1	VALVE N.F. ϕ 2 1/2" C/A P.P.
V-2	V3754-1026	1	VALVE NO. ϕ 3/4" C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	H312-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	B02FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE-1800-102	1	ELEMENT DE TEMP. DE PIECE
			
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

CÉDULE

RETOUR

ALIMENT.

X
XX
X

Te.ext. X

DELAI APRES PANNE X

Parametres et Horaires

Vacance DSC-10

MENU PRINCIPAL

PARAMETRES

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

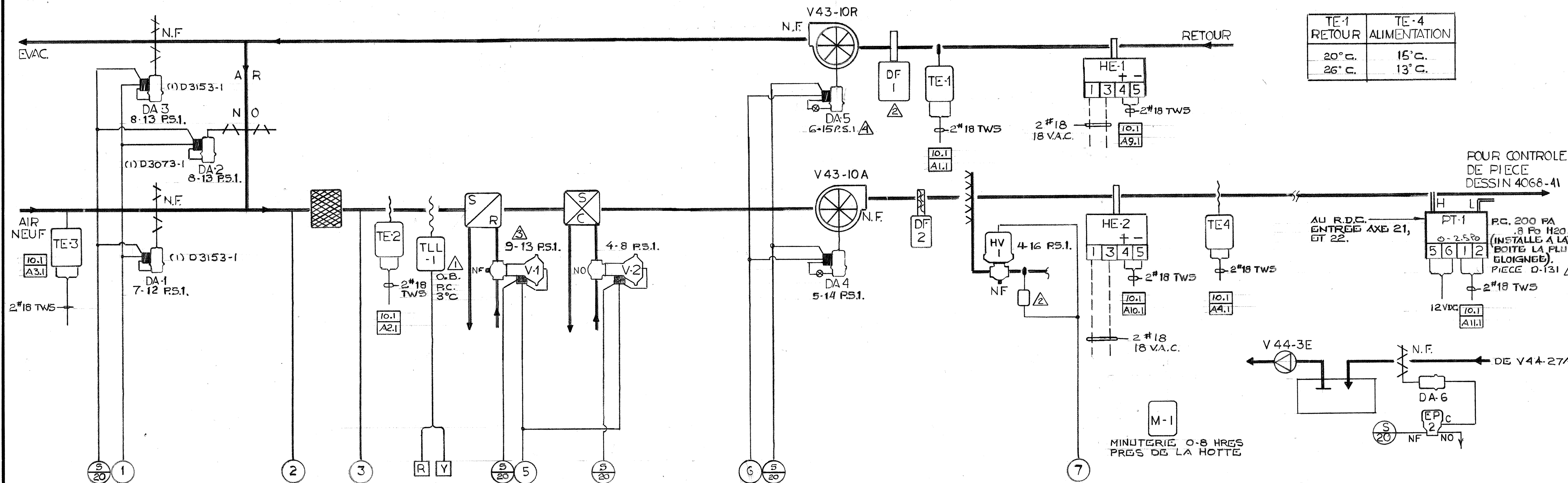


VACANCES DSC-10 , V43-10

Jour / M ois	VACANCE 1	X
Jour / M ois	VACANCE 2	X
Jour / M ois	VACANCE 3	X
Jour / M ois	VACANCE 4	X
Jour / M ois	VACANCE 5	X
Jour / M ois	VACANCE 6	X



DIAGRAMME DE DEBIT



TE-1	TE-4
20°C.	15°C.
26°C.	13°C.

POUR CONTROLE
DE PIECE
DESSIN 4068-41

AU R.D.C.
ENTREE AXE 21,
ET 22.

PC. 200 PA
(INSTALLER A LA
BOITE LA PLUS
BLOGNEE)
PIECE D-131

12 VDC
10.1
A4.1

2#18 TW5

2#18 TW5

2#18 TW5

2#18 TW5

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2#18 TW5

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3	TE1101-100	2	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1100-17	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
HE-1 ET 2	D-3073-2	1	MOTEUR PNEUMATIQUE
DA-6	A11A-6	1	BASSE LIMITE
TLL-1	SETRA 261	1	DETECTEUR DE FUMEE PYROTRONIC
DF-1 ET 2	EPT-102	5	DETECTEUR DE PRESSION STATIQUE
PT-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
EPT-1 @ 4 27	V3974-1011	1	VALVE N.F. 1" C/A P.P.
IPD-1	V3754-1024	1	VALVE NO. 1/2" C/A P.P.
V-1	---	2	MOTEUR PNEUMATIQUE
DA-4 ET 5	V11HAA-100	2	RELAIS ELECTRIQUE PNEUMATIQUE
EP-1, 2	G2010-101	2	INDICATEUR 0/30 PSI
G-1 ET 2	---	1	INTERRUPTEUR 2 POSITIONS
SW-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
PS-1	M8100-109	1	PANNEAU 24" X 36" X 7"
P-1	6012	2	RELAIS 12 VDC
R-1, RG	BD 2.FF	1	TRANSFORMATEUR 120/18 VAC
XMR-1	MARKTIME-90015	1	MINUTERIE MECANIQUE
M-1	---	1	0-12 HRES C/A LAMPE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARREGE.

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFRIGERIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE EXTERIEURE.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REPRENDRA SA FONCTION NORMALE LORSQU'IL Y ARA UNE DETECTION D'ALARME INCENDIE. LE SYSTEME REPRENDRA SA FONCTION NORMALE LORSQU'IL Y ARA UNE DETECTION D'ALARME INCENDIE.

LE VENTILATEUR D'EVACUATION V44-3E DEMARRE SUR UN SIGNAL DE LA MINUTERIE M-1. EP-2 EST ALIMENTE ET FAIT OUVRIR LE VOLET DA-6.

AU DEPART DE V44-3E, LE MINIMUM D'AIR NEUF EST AUGMENTE A 15%, ET LE VENTILATEUR V44-27A EST MIS EN MARCHE.

PANNEAU

P1

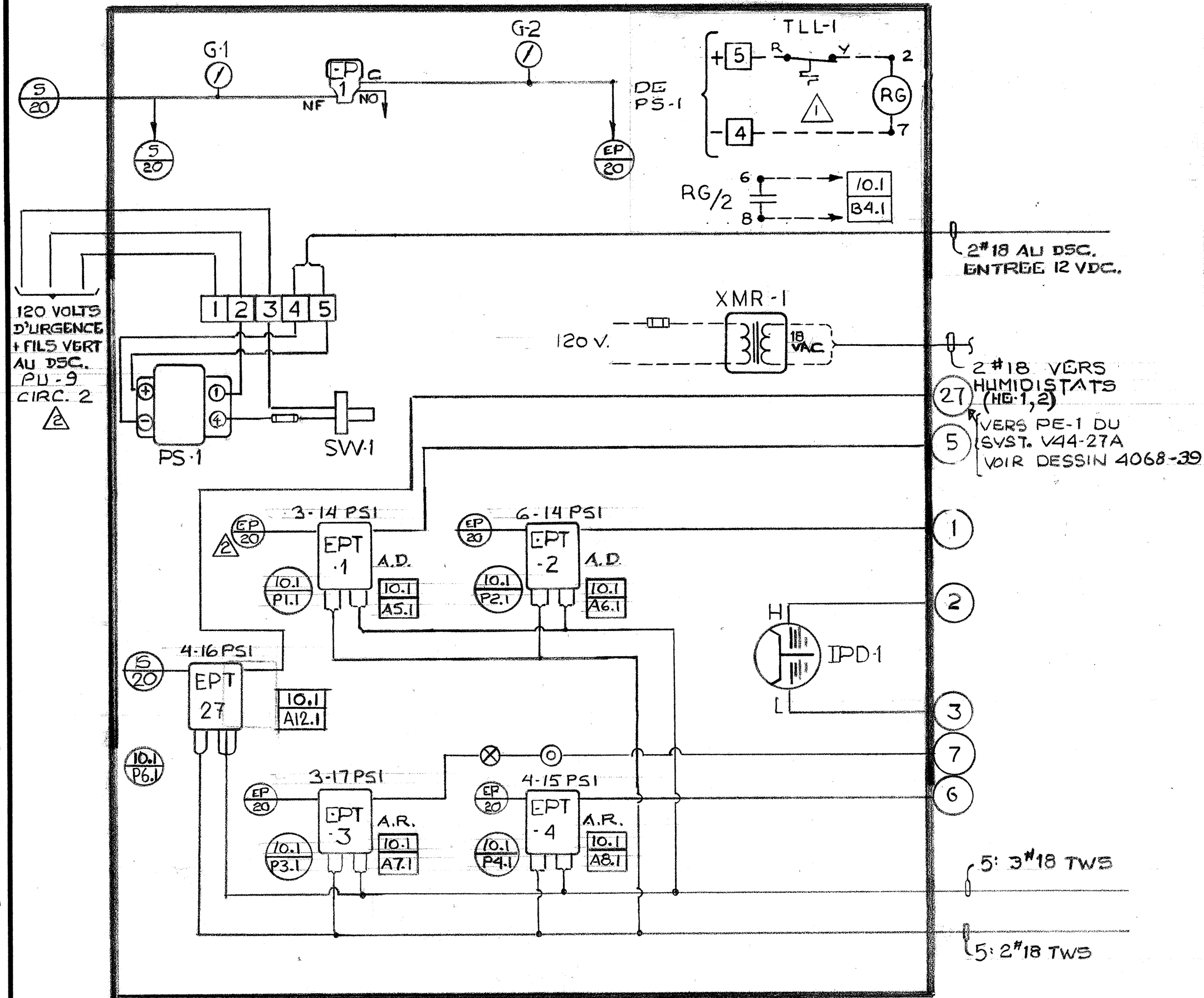
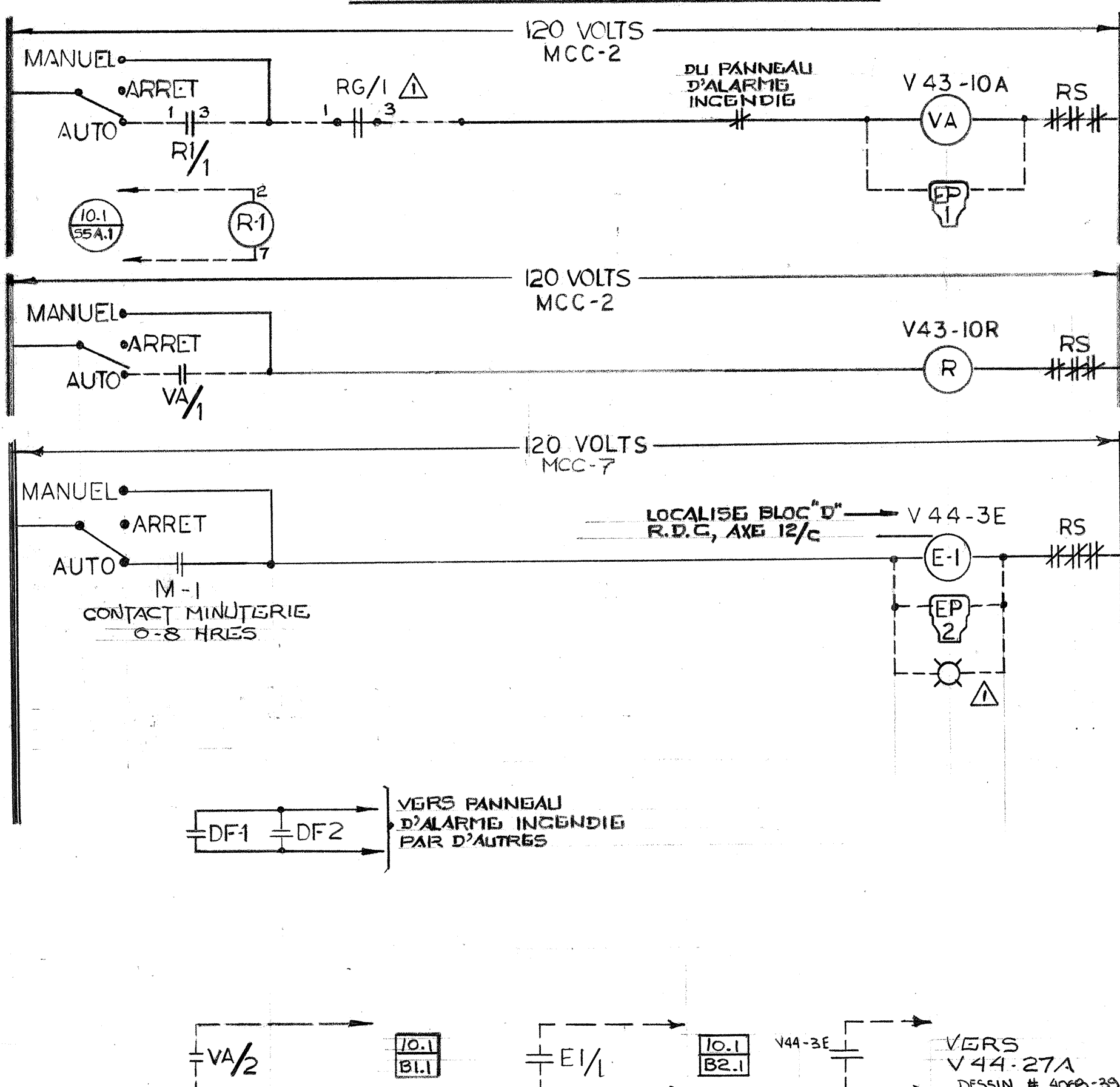
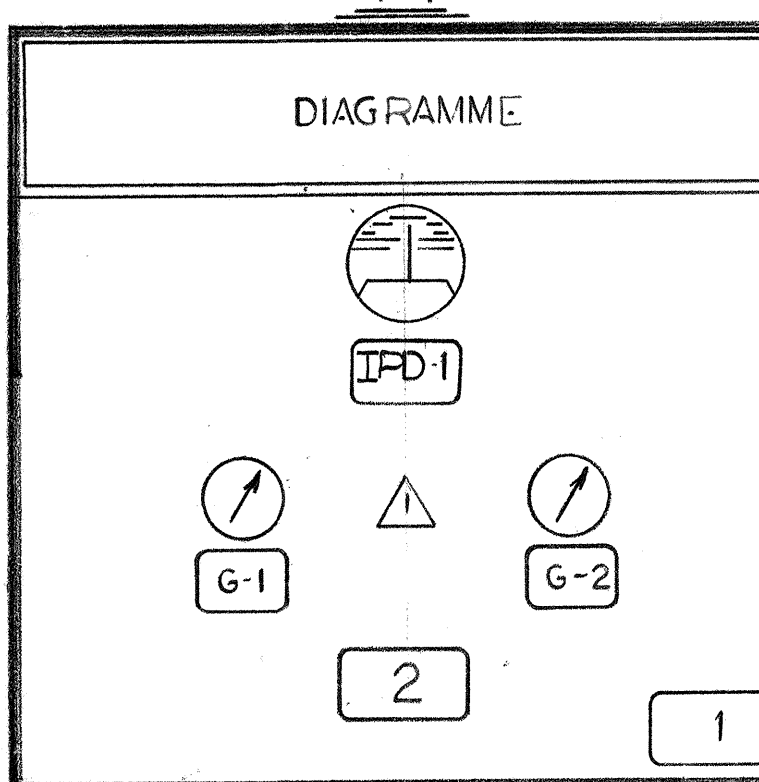


DIAGRAMME ELECTRIQUE



FACE DU PANNEAU

P1



- CONTRACTEUR: PAVAL INC. INGENIEUR: PAGEAU MOREL ET ASS.
 - SYSTEME NO. V43-10
- IPD-1 ETAT DES FILTRES
- G-1 AIR D'ALIMENTATION
- G-2 AIR DE CONTROLE

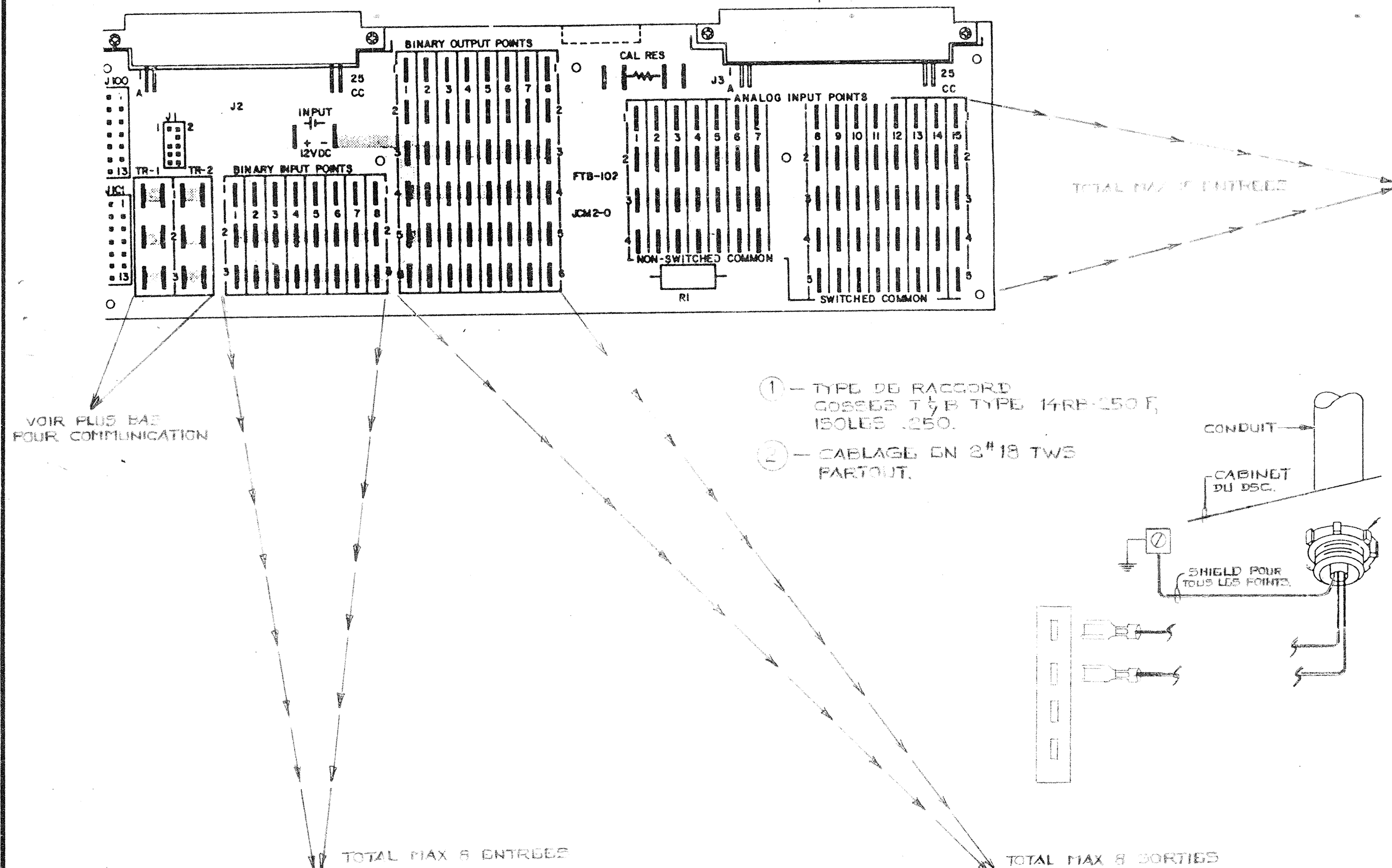
SYSTEME V43-10
ALIMENTATION BLOC D, R.D.C.

PROJET: CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE.

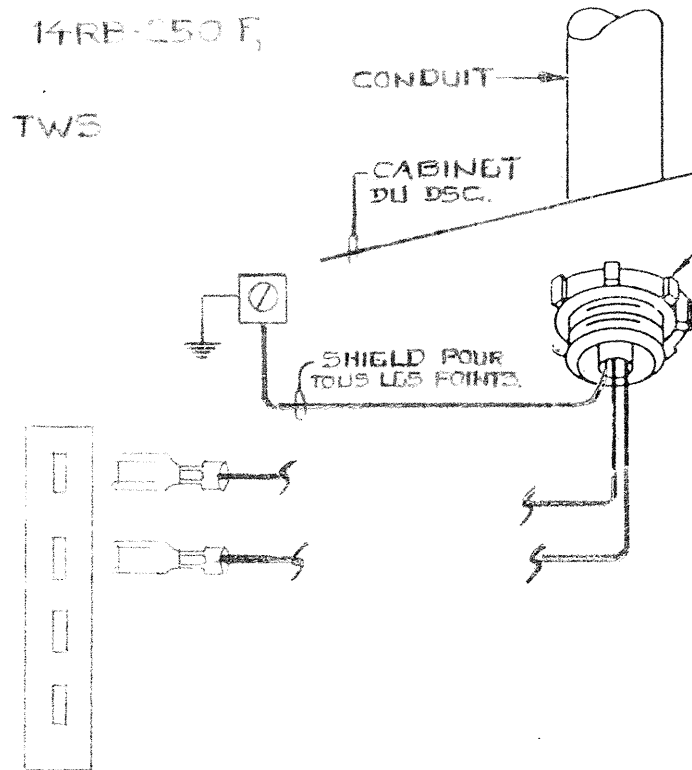
JOHNSON CONTROLS
Division Des Systemes Et Services

096-0273490
PMA-1 87-07-15
87-05-21
86-07-07
SEPT 12 87
DATE DEC 21-84
DATE 3-5-84
4096-0008-13
4068-13

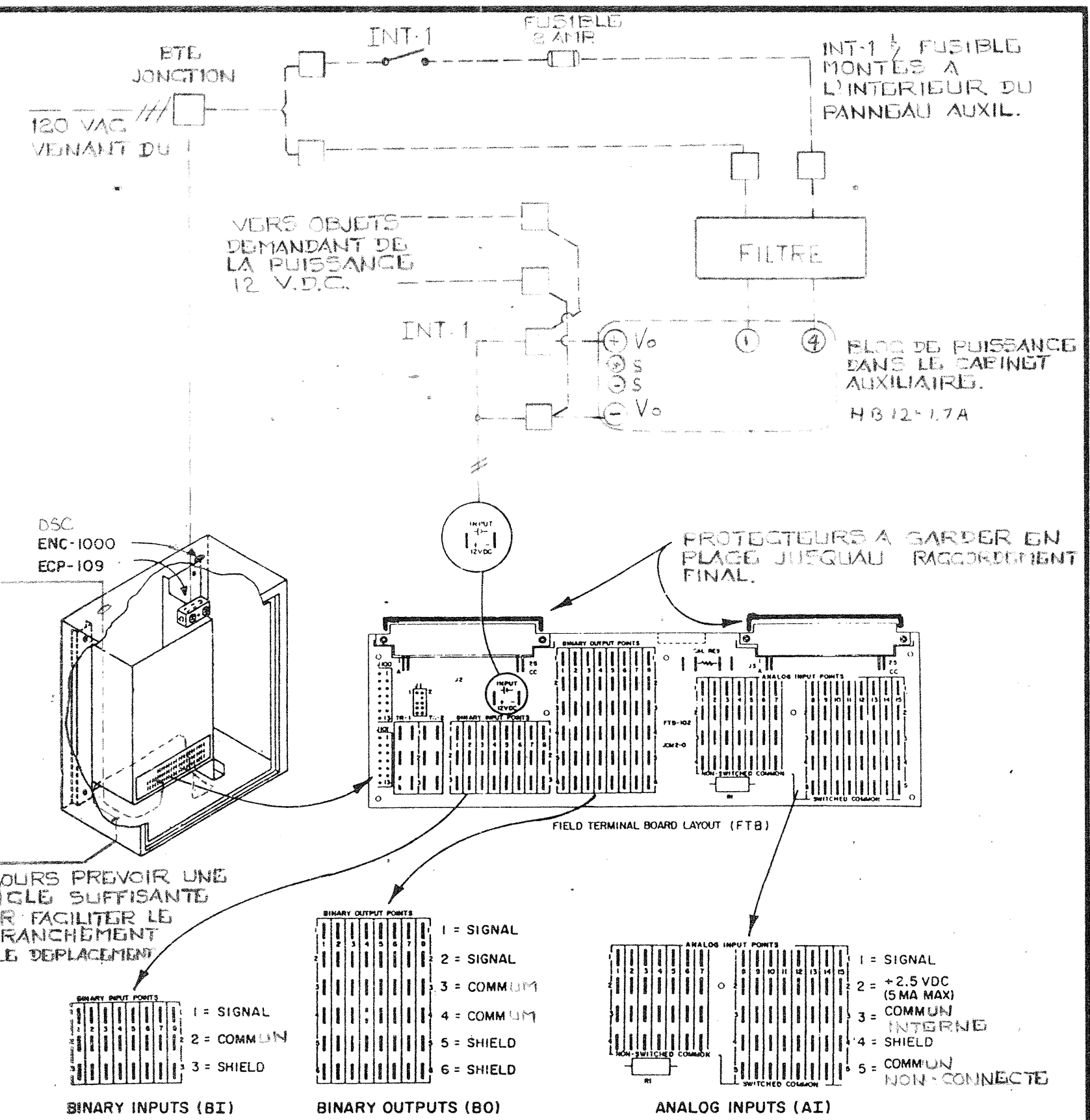
BORNIERS DE RACCORDEMENT (FTE-102)



- 1 - TYPE DE RACCORDEMENT: COBES TYP. 14R-150 F, ISOLÉS 1250.
- 2 - CABLES EN 3"18 TWS PARTOUT.



EMPLACEMENT		ADRESSE										DSC 10	FIC 1
EMPLACEMENT: DU DSC													
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM			
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1					
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1					
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1					
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1					
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1					
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1					
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1					
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1					
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1			4-20MA 1-90%HR		
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A10.1			4-20MA 1-90%HR		
11	PT-1	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL. V43.11 BOITE LA PLUS LOIN	A11.1			0-5VDC 0-25%		
12	EPT-27	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A12.1					
13	PT-2	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-2	ALIM. V44-27A	A13.1			0-5VDC 0-25%		

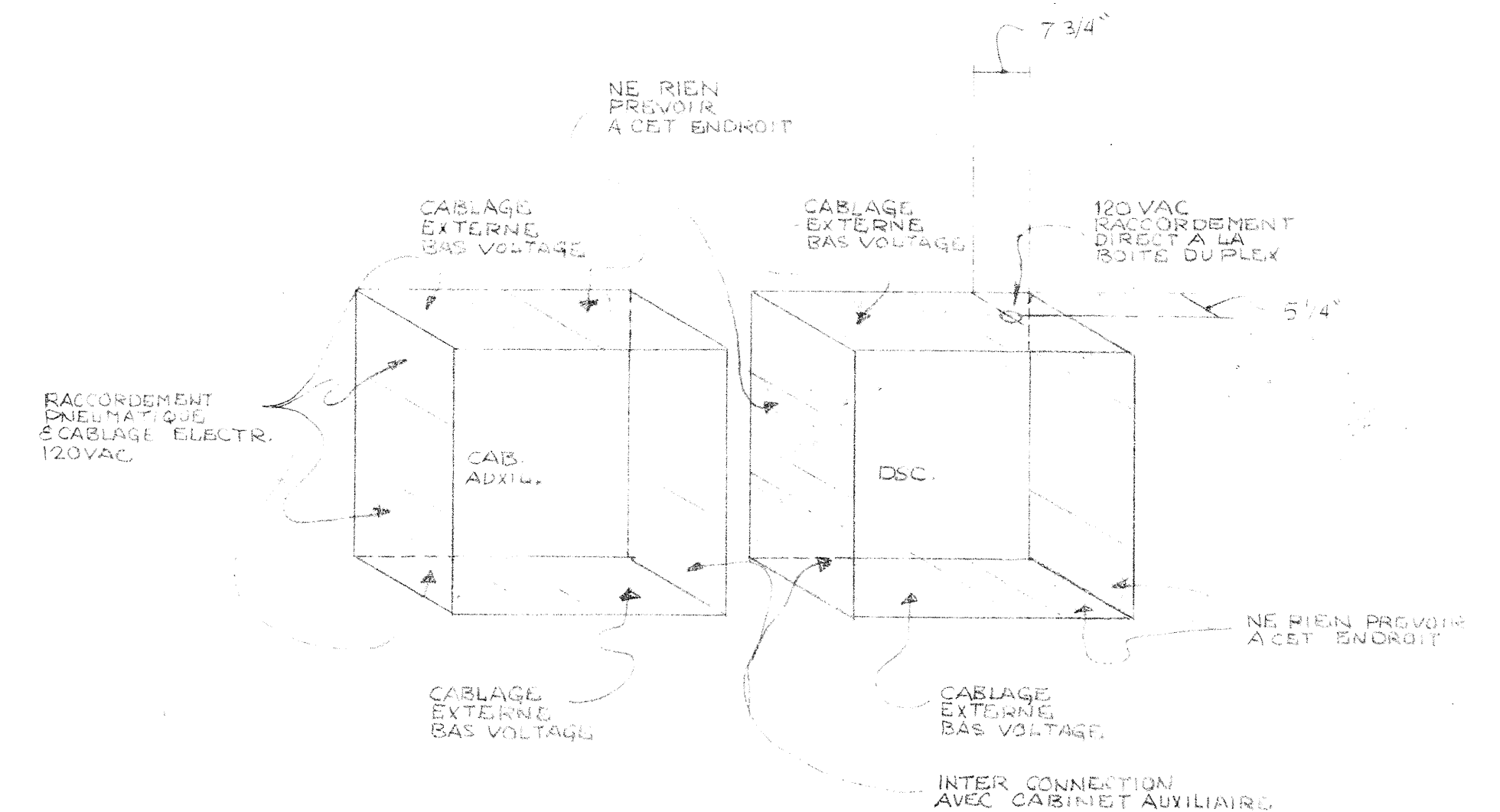


INT-1: INTERRUPTEUR "TOGGLE" EAGLE SPST. MOD. 447, MONTÉ AVEC R-4000-101 J.C.L.

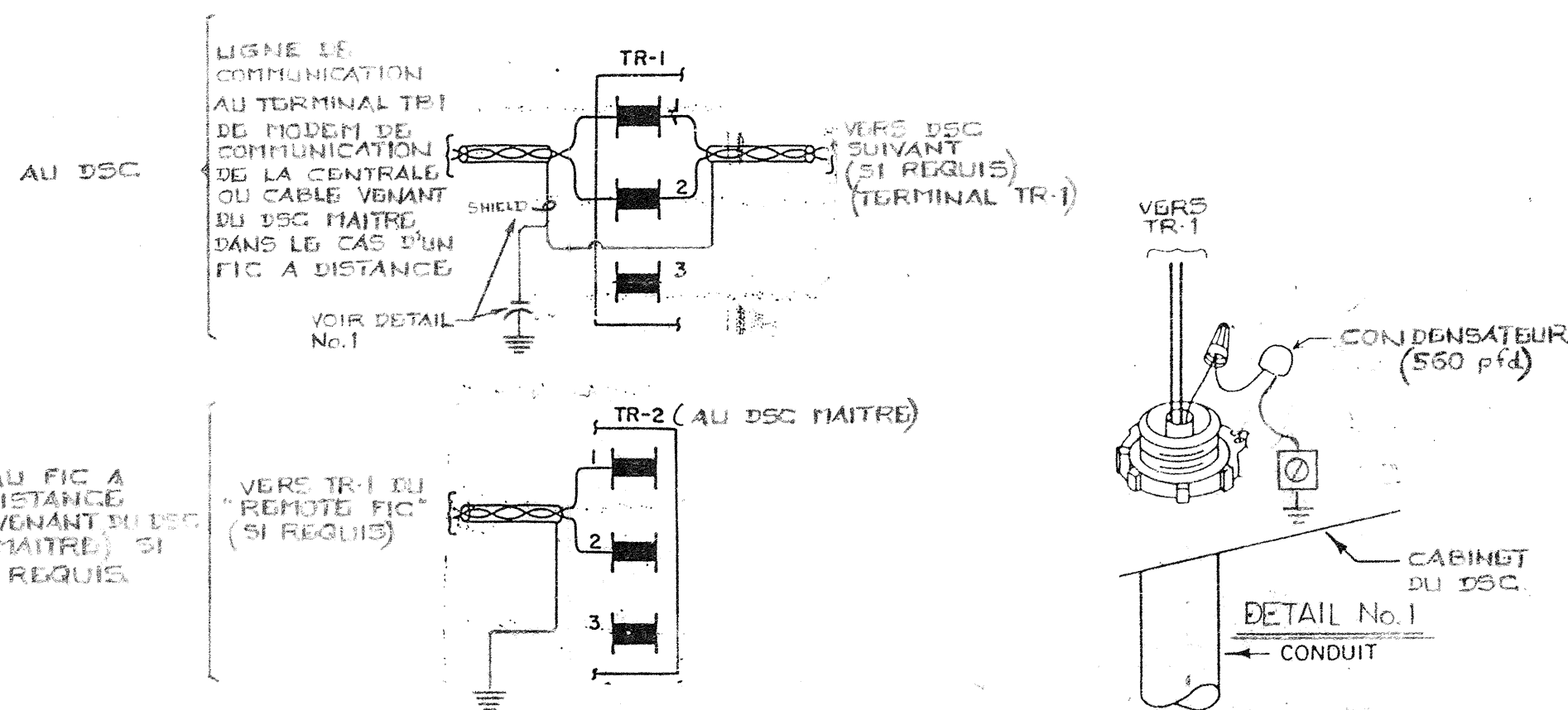
TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT		ADRESSE										DSC 10	FIC 1
EMPLACEMENT: DU DSC													
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM			
1	STATUS	SYSTEME 10	BIN	1 2		CONTACT AUX. DEM.	MCC-2	B1.1					
2	STATUS	SYSTEME V44-3E	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1					
3	STATUS	SYSTEME V44-27A	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1					
4	GEL	SYSTEME 10	BIN	1 2		RELAIS RG	CAB AUX.	B4.1					

EMPLACEMENT		ADRESSE										DSC 10	FIC 1
EMPLACEMENT: DU DSC													
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM			
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P1.1					
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P2.1					
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P3.1					
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P4.1					
5A	R1	ARRET DEPART SYSTEME 10	SST	1 3	2 7	RELAIS 12VDC	MCC-2	S5 A.1					
6	EPT-27	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P6.1					



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-6500		DSC-10		TEL QUE CONSTRUIT		86-07-07		86-07-07		86-07-07	
REFERENCE		NO.		REVISION		AVIS		DATE		PAR		APPROUVE	
REPRESENTANT		TECHNICIEN		DATE		DATE		DATE		DATE		DATE	
J.C.R.		R.F.		DATE		DATE		DATE		DATE		DATE	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		ST-HYACINTHE, QUE.		JOHNSON CONTROLS		Division Des Systemes Et Services		Société de Contrôle Johnson Ltd		4096-008.14	
CONTRAT		4096-008.14		4068-14		4068-14		4068-14		4068-14		4068-14	

DSC 10 SYSTEME V43-10

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS

```

51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2    /SOUPAPES
62      OVERRIDE ZCP10,A,2    /VOLETS
63      OVERRIDE ZCP70,A,2    /HUMIDITE
64      OVERRIDE ZCP50,A,2    /VAV
65      OVERRIDE ZCP51,A,2    /VAV SYST 27A
/
66      ADJUST   MDPOS,A      /POSITION MINIMUM SANS EVACUATION
67      ADJUST   MINF1,A      /MINIMUM PAR VENTIL. V43-3E
68      DISPLAY  FSTATE,B     /ETAT VENTIL. V44 3E
/
69      DISPLAY  FSTATATA,B    /ETAT VENTIL. V44 27A
70      DISPLAY  FSP1,I        /PRESSION STATIQUE
71      ADJUST   SPSP1,I       /POINT DE CONSIGNE PRESS STAT
72      DISPLAY  Z51,A         /RESULTAT CTL VAV
73      DISPLAY  ZT51,A        /F.B. VAV SYST 27A
/

```

```

/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES CONTROLE VOLUME VARIABLE SYST 27
/
79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/

```

```

/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-10
/
/      51      ALARME HORAIRE SYSTEME V43-10
/
/-----/

```

□

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 13:44:22
/
/TRANSLATION LISTING FOR DSC-10.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 11:23:07
/
/TRANSLATION LISTING FOR DSC-10.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-12-:1 15:54:58
/
/TRANSLATION LISTING FOR DSC-10.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:24
/
/TRANSLATION LISTING FOR DSC-10.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 10:25:12
/
/TRANSLATION LISTING FOR CIRA10.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC 10   SYSTEME   V43-10
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT             4096-0008
/      VENDEUR                    JEAN CLAUDE ROUILLON
/      INGENIERIE                 RICHARD FOREST
/      CONCEPTION PROGRAMME       JEAN MORISSETTE
/      REVISION                  08 DECE 1986
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN   PROCESSOR FAILURE
/  2  PCR-102 RAM    FAILURE
/  3  PCR-102 EPROM  FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----

```

```

/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,5642
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  20
@ AD:  91
@ BI:  CON-4,BIT-0,BIR-0
@ AI:  LTD-2,FUL-11,RAT-0,TOT-0
@ BO:  MOM-0,POS-5,MAN-1
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-5
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FSTATE     CON-2      E,E      /ETAT VENTIL. V44 3E
BI-3      FSTATATA   CON-3      E,E      /ETAT VENTIL. V44 27A
BI-4      FREEZE     CON-4      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80        FUL-1      E,0.5,E,V,T,-45.4,129.4 /TEMP RETOUR
AI-2      TE10        FUL-2      E,0.5,E,V,T,-45.4,129.4 /TEMP MELANGE
AI-3      TE1         FUL-3      E,0.5,E,V,T,-45.6,129.5 /TEMP EXT
AI-4      TE60        FUL-4      E,0.5,E,V,T,-45.5,129.4 /TEMP ALIM
AI-5      ZT30        FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6      ZT10        FUL-6      E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-7      ZT70        FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-8      ZT50        FUL-8      E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-11     SPT         FUL-9      E,0.1,E,N,O,0,621        /PRESSION STATIQUE EN P
AI-12     ZT51        FUL-10     E,0.5,E,N,O,-12.5,250.0 /F.B. VAV SYST 44 27A
AI-13     SPT1        FUL-11     E,0.1,E,N,O,0,621        /P S EN P SYST 44 27A
AI-14     HT80        LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-15     HT60        LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
/
/
BO-1      ZC30        POS-1      D,E,0     /SOUPAPE
BO-2      ZC10        POS-2      D,E,0     /VOLETS
BO-3      ZC70        POS-3      D,E,0     /HUMIDITE
BO-4      ZC50        POS-4      D,E,0     /VAV
BO-5A     ZS50        MAN-1      E,E       /VENTIL ALIM
BO-6      ZC51        POS-5      D,E,0     /VAV SYST V44 27A
/
/
CP-1      ZCP30       INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10       INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-3      ZCP70       INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-4      ZCP50       INC-4      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-5      ZCP51       INC-5      E,E,A,ZT51,ZC51,-100,0,5,0.0 /VAV SYST 27A
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/

```


BD-1	OCCD	E,R	/CYCLE D OCCUPATION
BD-2	FSTRT	E,R	/DEMANDE VENTILATEUR
BD-3	COMP50	E,R	/RESULTAT DEMARRAGE
BD-4	CONON	E,R	/PERMISSION CONTROLE
/			
/-----/			
/ PARAMETRES ECONOMISEUR D AIR FRAIS /			
/-----/			
/			
BD-5	ECON	E,R	/RESULTAT ECONOMISEUR
/			
/-----/			
/ PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /			
/-----/			
/			
BD-6	MXD	E,R	/CONTROLE DE JOUR
BD-7	MIXLL	E,R	/CONTROLE PAR BASSE LIMITE
/			
/-----/			
/ PARAMETRES CONTROLE DE CHAUFFAGE /			
/-----/			
/			
BD-8	HTG	E,R	/CHAUFFAGE
/			
/-----/			
/ PARAMETRES CONTROLE DE REFROIDISSEMENT /			
/-----/			
/			
BD-9	CLG	E,R	/REFROIDISSEMENT
/			
/-----/			
/ FONCTIONS SPECIALES /			
/-----/			
/			
BD-10	SYSP	D,R	
BD-11	SYS	D,R	
BD-12	SYS1	D,R	
BD-13	SYS2	D,R	
BD-14	SYS3	D,R	
BD-15	SYS4	D,R	
BD-16	SYS5	D,R	
BD-17	SYS6	D,R	
BD-18	SYS7	D,R	
BD-19	SYS8	D,R	
BD-20	SYS9	D,R	
/			
/-----/			
/ VARIABLES POUR LE PROG HORAIRE, ARRET DEPART /			
/-----/			
/			
AD-1	DOW	E,2	
AD-2	H1	E,00:00	
AD-3	H2	E,00:00	
AD-4	H3	E,00:00	
AD-5	H4	E,00:00	
AD-6	H5	E,00:00	
AD-7	H6	E,00:00	

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AD-8    STA      E,00:00 /HORAIRE
AD-9    STO      E,00:00
AD-10   STA8     E,07:01
AD-11   STO8     E,07:01
AD-12   STA7     E,07:01
AD-13   STO7     E,07:01
AD-14   STA9     E,06:40
AD-15   STO9     E,17:00
AD-16   DELSST   E,90    /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17   OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18   RARL     E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19   RARH     E,24.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20   SAHL     E,17.0   /REAJ TEMP ALIM HAU LIM
AD-21   SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-22   DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-23   MXDSP    E,10.0   /POINT DE CONSIGNE LIMITE MEL.
AD-24   MDP      E,0.0    /POSITION MINIMUM VOLETS
AD-25   CST10A   E,3      /INTERVAL CTL VOLETS LIMITE
AD-26   CPB10A   E,-90.0  /BANDE PROP CTL VOLETS LIMITE
AD-27   CIG10A   E,33     /GAIN CTL VOLETS LIMITE
AD-28   CMP10A   E,0.0    /COMPENSATION CTL VOLETS LIMITE
AD-29   CDS10A   E,0.0    /BANDE MORTE CTL VOLETS LIMITE
AD-30   CST10    E,100    /INTERVAL CTL VOLETS
AD-31   CPB10    E,-60.0  /BANDE PROP CTL VOLETS
AD-32   CIG10    E,33     /GAIN CTL VOLETS
AD-33   CMP10    E,0.0    /COMPENS CTL VOLETS
AD-34   CDS10    E,0.0    /BANDE MORTE CTL VOLETS
AD-35   ZMXD     E,0.0    /RESULTAT PROPORTION.
AD-36   Z10M     E,100.0  /RESULTAT VOLETS LIMITE
AD-37   Z10C     E,0.0    /RESULTAT VOLETS CTL
AD-38   Z10      E,0.0    /RESULTAT VOLETS
/
/-----/
/          PARAMETRES CALCUL POSITION MINIMUM          /
/-----/
/
AD-39   MDPOS    E,25.0   /MINIMUM SANS EVACUATION
AD-40   MINF1    E,0.0    /MINIMUM VENTIL. V44-3E
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/

```

```

/
AD-41  Z40      E,0.0  /RESULTAT CHAUFFAGE
AD-42  CST40    E,25   /INTERVAL CTL CHAUFF
AD-43  CPB40    E,50.0 /BANDE PROP CTL CHAUFF
AD-44  CIG40    E,33   /GAIN CTL CHAUFF
AD-45  CDS40    E,0.0  /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
AD-46  Z30      E,0.0   /RESULTAT REFROIDISSEMENT
AD-47  CST30    E,13    /INTERVAL CTL REFROIDI
AD-48  CPB30    E,-17.6 /BANDE PROP CTL REFROIDI
AD-49  CIG30    E,32    /GAIN CTL REFROIDI
AD-50  CDS30    E,0.0   /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE          /
/-----/
/
AD-51  SPSP     E,212   /POINT DE CONSIGNE PRESS STAT
AD-52  CST50    E,20    /INTERVAL CTL VAV
AD-53  CPB50    E,40.0  /BANDE PROP CTL VAV
AD-54  CIG50    E,33    /GAIN CTL VAV
AD-55  CMP50    E,0.0   /COMPENS CTL VAV
AD-56  CDS50    E,4     /BANDE MORTE CTL VAV
AD-57  Z50      E,0.0   /RESULTAT CTL VAV
AD-58  FSP      E,0     /PRESS STAT FILTREE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-59  RHSP     E,30.0  /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-60  RHSPA    E,80.0  /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-61  CST70    E,150   /INTERVAL CTL HUMIDITE
AD-62  CPB70    E,90.0  /BANDE PROP CTL HUMIDITE
AD-63  CIG70    E,33    /GAIN CTL HUMIDITE
AD-64  CDS70    E,0.0   /BANDE MORTE CTL HUMIDITE
AD-65  CST70A   E,5     /INTERVAL H LIM HUMIDITE
AD-66  CPB70A   E,90.0  /BANDE PROP H LIM HUMIDITE
AD-67  CIG70A   E,33    /GAIN H LIM HUMIDITE
AD-68  CDS70A   E,0.0   /BANDE MORTE H LIM HUMIDITE
AD-69  Z70      E,0.0   /RESULTAT CTL HUMIDITE
AD-70  Z70HL    E,0.0   /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-71  Z70C     E,0.0   /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE SYST 27          /
/-----/
/
AD-72  SPSP1    E,200   /POINT DE CONSIGNE PRESS STAT
AD-73  CST51    E,6     /INTERVAL CTL VAV
AD-74  CPB51    E,15.0  /BANDE PROP CTL VAV
AD-75  CIG51    E,30    /GAIN CTL VAV

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AD-76   CMP51      E,0.0   /COMPENS CTL VAV
AD-77   CDS51      E,0.0   /BANDE MORTE CTL VAV
AD-78   Z51        E,0.0   /RESULTAT CTL VAV
AD-79   FSP1       E,0     /PRESS STAT FILTREE
/
/-----/
/               FONCTIONS SPECIALES               /
/-----/
/
AD-80   SYSDIS     D,0
AD-81   CSTXXX     D,0
AD-82   CPBXXX     D,0.0
AD-83   CIGXXX     D,0
AD-84   CMPXXX     D,0.0
AD-85   CDSXXX     D,0.0
/
/-----/
/               RECORD PANNE DE POUVOIR             /
/-----/
/
AD-86   UPTIM      E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-87   UPDAT      E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-88   DNTIM      E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-89   DNDAT      E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-90   TOD        E,00:00   /DERNIERE HEURE
AD-91   LDAT       E,00:00   /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1       ADJUST     DELSST,I   /DELAI APRES UNE PANNE
2       DISPLAY     OCCD,B    /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3       ADJUST     FSTRT,B    /DEMANDE VENTILATEUR
4       DISPLAY     FSTAT,B    /ETAT VENTIL. ALIM.
5       DISPLAY     FREEZE,B   /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
11      DISPLAY     TE80,A     /TEMP RETOUR
12      DISPLAY     TE10,A     /TEMP MELANGE
13      DISPLAY     TE1,A      /TEMP EXTERIEURE
14      DISPLAY     TE60,A     /TEMP ALIMENTATION
/
16      DISPLAY     MXD,B      /CONTROLE DE JOUR
17      ADJUST     RARL,A      /AIR RET BAS LIM REAJ TEMP ALIM
18      ADJUST     RARH,A      /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST     SAHL,A      /REAJ TEMP ALIM HAU LIM
20      ADJUST     SALL,A      /REAJ TEMP ALIM BAS LIM
21      DISPLAY     DSSP,A     /POINT DE CONSIGNE ALIM
22      ADJUST     OASO,A      /TEMP LIM EXT ECONOMISEUR
23      DISPLAY     ECON,B     /RESULTAT ECONOMISEUR
24      DISPLAY     MDP,A      /POSITION MINIMUM VOLETS
25      ADJUST     MXDSP,A     /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY     ZMXD,A     /RESULTAT PROPORTION.
27      DISPLAY     Z10M,A     /RESULTAT VOLETS LIMITE
28      DISPLAY     Z10C,A     /RESULTAT VOLETS CTL
29      DISPLAY     Z10,A      /RESULTAT VOLETS
30      DISPLAY     ZT10,A     /F.B. VOLETS

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/
31      DISPLAY  HTG,B      /CHAUFFAGE
32      DISPLAY  Z40,A      /RESULTAT CHAUFFAGE
/
34      DISPLAY  CLG,B      /REFROIDISSEMENT
35      DISPLAY  Z30,A      /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A     /F.B. SOUPAPES
/
37      DISPLAY  HT80,A     /HUMIDITE RETOUR
38      DISPLAY  HT60,A     /HUMIDITE ALIMENT
39      ADJUST   RHSP,A     /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A    /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A     /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A      /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A     /F.B. HUMIDITE
/
45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
65      OVERRIDE ZCP51,A,2  /VAV SYST 27A
/
66      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
67      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. V43-3E
68      DISPLAY  FSTATE,B   /ETAT VENTIL. V44 3E
/
69      DISPLAY  FSTATATA,B /ETAT VENTIL. V44 27A
70      DISPLAY  FSP1,I     /PRESSION STATIQUE
71      ADJUST   SPSP1,I    /POINT DE CONSIGNE PRESS STAT
72      DISPLAY  Z51,A      /RESULTAT CTL VAV
73      DISPLAY  ZT51,A     /F.B. VAV SYST 27A
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR

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/ 200 PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300 PARAMETRES CONTROLE VOLUME VARIABLE
/ 400 PARAMETRES CONTROLE CHAUFFAGE
/ 600 PARAMETRES CONTROLE VOILETS PAR MELANGE
/ 700 PARAMETRES CONTROLE VOILETS PAR ALIMENTATION
/ 800 PARAMETRES CONTROLE REFROIDISSEMENT
/ 900 PARAMETRES CONTROLE VOLUME VARIABLE SYST 27
/
79      ADJUST    CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST    CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST    CIGXXX,I      /GAIN INTEGRAL
82      ADJUST    CMPXXX,A      /COMPENSATION
83      ADJUST    CDSXXX,A      /BANDE MORTE
/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/
84      DISPLAY   UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY   UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY   DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY   DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST    SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY   FIC1L,B
90      ADJUST    FIC1E,I
91      ADJUST    STEST,I
92      DISPLAY   OCNT,I
93      OVSCAN
94      DISPLAY   ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/                                L I S T E   D E S   A L A R M E S                                /
/                                /                                /
/      ALARME                                /                                /
/      NUMERO                                /                                /
/                                /                                /
/-----/
/
/      10      ALARME THERMOSTAT DE GEL                                /
/
/      50      ALARME ARRET DEPART SYSTEME V43-10                        /
/
/      51      ALARME HORAIRE SYSTEME V43-10                            /
/
/

```

```

/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/          PROGRAMME HORAIRE ET CONTROLE ARRET DEPART          /
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET    OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       FSTRT,SUF,R
2.4      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET       AUTO,S,S
3.3      DELAY     25,U
3.4      SET       COMP50,R,R
3.5      INTERVAL  10,U
3.6      XOR       COMP50,FSTAT
3.7      ALARM     50,C,S
3.8      SET       BPD,FSTRT,R
3.9      BOUT      ZS50,3,OFF

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```

3.10      SET      COMP50,BPD,R
3.11      EXIT      U
/
/
/-----/
/      GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE      /
/-----/
/
4.1      RESTART
4.2      DELAY      25,U
4.3      INTERVAL   5,U
4.4      SET        BPD,FREEZE,R
4.5      ALARM      10,C,R
4.6      EXIT      U
/
/
/-----/
/      CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.      /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT      CONON,S
5.2      SET        BPD,CONON,R
5.3      STORE      APD,0.0,0.0,C,R
5.4      STORE      Z70C,APD,APD,C,R
5.5      STORE      Z70,APD,APD,C,R
5.6      AOUT       ZCP70,3,0.0,C,R
5.7      EXIT      C,R
5.8      DELAY      20,U
5.9      INTERVAL   CST70,U
5.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11     STORE      Z70C,APD,APD,U
5.12     EXIT      U
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      EXIT      C,R
6.4      INTERVAL   CST70A,U
6.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6      STORE      Z70HL,APD,APD,U
6.7      SELECT     APD,Z70C,L
6.8      STORE      Z70,APD,APD,U
6.9      AOUT       ZCP70,3,0.0,U
6.10     EXIT      U
/
/
/-----/
/      CONTROLE DE LA PRESSION STATIQUE      /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/

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```

7.1    EVENT    CONON,S
7.2    SET      BPD,CONON,R
7.3    STORE    FSP,0,0,C,R
7.4    STORE    APD,0.0,0.0,C,R
7.5    STORE    Z50,APD,APD,C,R
7.6    AOUT     ZCP50,3,0.0,C,R
7.7    EXIT     C,R
7.8    DELAY    15,U
7.9    INTERVAL CST50,U
7.10   FILTER   SPT,63,100
7.11   STORE    FSP,APD,APD,U
7.12   CALC     CPB50,0,10,1,1,T
7.13   PROP     SPSP,FSP,APD,CIG50,CMP50,CDS50
7.14   STORE    Z50,APD,APD,U
7.15   AOUT     ZCP50,3,0,U
7.16   EXIT     U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-
/
8.1    RESTART
8.2    SET      MXD,R,R
8.3    SET      CONON,R,R
8.4    DELAY    25,U
8.5    INTERVAL 5,U
8.6    AND      FSTAT,OCCD
8.7    SET      MXD,BPD,R
8.8    SET      CONON,FSTAT,R
8.9    EXIT     U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS                                     /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
9.1    EVENT    MXD,S
9.2    SET      ECON,R,R
9.3    SET      BPD,FSTAT,R
9.4    EXIT     C,R
9.5    INTERVAL 300,U
9.6    COMPARE  TE1,GE,OASO,1.0
9.7    SET      ECON,BPD,R
9.8    EXIT     U
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION              /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,

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```

/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1    EVENT      MXD,S
10.2    INTERVAL  300,U
10.3    STORE      APD,TE80,RARL,U
10.4    SPAN       RARL,RARH,SAHL,SALL
10.5    STORE      DSSP,APD,SAHL,U
10.6    EXIT       U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M  RESULTAT PAR TEMP DE MELANGE
/Z10C  RESULTAT PAR TEMP D ALIMENTATION
/Z10   RESULTAT VOLETS
/
/
11.1    EVENT      MXD,S
11.2    SET         MIXLL,R,R
11.3    SET         BPD,MXD,R
11.4    EXIT        C,R
11.5    INTERVAL    5,U
11.6    COMPARE     TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
11.7    SET         MIXLL,BPD,R           /A LA BASSE LIMITE
11.8    SELECT      Z10M,Z10C,L
11.9    STORE       Z10,APD,APD,U
11.10   AOUT        ZCP10,3,0.0,U
11.11   EXIT        U
/
12.1    EVENT      MIXLL,S           /CONTROLE PAR BASSE LIMITE DE MELANGE
12.2    SET         BPD,MIXLL,R
12.3    STORE       Z10M,100.0,100.0,C,R
12.4    STORE       CMP10A,Z10C,Z10C,U
12.5    EXIT        C,R
12.6    INTERVAL    CST10A,U
12.7    PROP        MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
12.8    STORE       Z10M,APD,APD,U
12.9    EXIT        U
/
13.1    EVENT      MXD,R /POSITION D ARRET SOUPAPES
13.2    SET         BPD,MXD,R
13.3    EXIT        C,S
13.4    SET         HTG,R,R
13.5    SET         CLG,R,R
13.6    DELAY       7,C,R
13.7    STORE       APD,0.0,0.0,C,R

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13.8      AOUT      ZCP30,3,0.0,C,R
13.9      EXIT      U
/
14.1      EVENT     MXD,S
14.2      SET       BPD,MXD,R
14.3      STORE     APD,0.0,0.0,C,R
14.4      STORE     Z10,APD,APD,C,R
14.5      STORE     Z10C,APD,APD,C,R
14.6      STORE     Z10M,100.0,100.0,C,R
14.7      STORE     ZMXD,APD,APD,C,R
14.8      AOUT      ZCP10,3,0.0,C,R
14.9      EXIT      C,R
14.10     DELAY     7,U
14.11     STORE     APD,TE1,5.0,U
14.12     SPAN      5.0,20.0,0.0,75.0
14.13     STORE     CMP10,APD,APD,U
14.14     STORE     APD,50.0,50.0,U
14.15     AOUT      ZCP30,3,0.0,U
14.16     INTERVAL  CST10,U
14.17     PROP      DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18     STORE     ZMXD,APD,APD,U
14.19     SPAN      MDP,100.0,MDP,100.0
14.20     SET       BPD,ECON,S
14.21     STORE     APD,MDP,MDP,C,S
14.22     STORE     Z10C,APD,APD,U
14.23     ORR       ZMXD,GE,85.0,10.0
14.24     SET       CLG,BPD,R
14.25     COMPARE   ZMXD,LE,15.0,10.0
14.26     SET       HTG,BPD,R
14.27     EXIT      U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/ LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DU VENTILATEUR
/ D EVACUATION. LA FONCTION MINF1 EST LE POURCENTAGE RAJOUTE A LA POSITION
/ MINIMUM QUAND LE VENTILATEUR FONCTIONNE. LE RESULTAT S APPLIQUE DANS LA
/ ROUTINE DE CONTROLE DES VOLETS
/
15.1      RESTART
15.2      DELAY     25,U
15.3      INTERVAL  10,U
/
15.4      SET       BPD,FSTATA,R      /CALCUL VENT. V43-3E
15.5      STORE     APD,0.0,0.0,C,R
15.6      STORE     APD,MINF1,MINF1,C,S
15.7      CALC      APD,MDPOS,1,1,1,T
15.8      STORE     MDP,APD,20.0,U
15.9      EXIT      U
/
/
/-----/
/      CONTROLE DE CHAUFFAGE      /
/-----/
/

```

/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
 /LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
 /S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
 /LA PLAGE 0 A 50 POUR LE CHAUFFAGE.

```

/
16.1    EVENT    HTG,S
16.2    SET      BPD,HTG,S
16.3    STORE    Z40,0.0,0.0,C,R
16.4    STORE    APD,50.0,50.0,C,R
16.5    AOUT     ZCP30,3,0.0,C,R
16.6    EXIT     C,R
16.7    INTERVAL CST40,U
16.8    CALC     DSSP,0.3,1,-1,1,T
16.9    PROP     APD,TE60,CPB40,CIG40,0.0,CDS40
16.10   STORE    Z40,APD,APD,U
16.11   SPAN     0.0,100.0,50.0,0.0
16.12   AOUT     ZCP30,3,100.0,U
16.13   EXIT     U

```

```

/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/

```

/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
 /LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
 /S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
 /LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.

```

/
17.1    EVENT    CLG,S
17.2    SET      BPD,CLG,R
17.3    STORE    Z30,0.0,0.0,C,R
17.4    STORE    APD,50.0,50.0,C,R
17.5    AOUT     ZCP30,3,0.0,C,R
17.6    EXIT     C,R
17.7    INTERVAL CST30,U
17.8    CALC     DSSP,0.3,1,1,1,T
17.9    PROP     APD,TE60,CPB30,CIG30,0.0,CDS30
17.10   STORE    Z30,APD,APD,U
17.11   SPAN     0.0,100.0,50.0,100.0
17.12   AOUT     ZCP30,3,0.0,U
17.13   EXIT     U

```

```

/
/-----/
/          CONTROLE DE LA PRESSSION STATIQUE SYST 27          /
/-----/
/

```

/CE PROCEDE CONTROLE LA PRESSSION STATIQUE DE LA PIECE AU POINT DE
 /CONSIGNE -SPSP1-. LA LECTURE DE PRESSION EST EN PASCALS.

```

/
18.1    EVENT    FSTATATA,S
18.2    SET      BPD,FSTATATA,R
18.3    STORE    FSP1,0,0,C,R
18.4    STORE    APD,0.0,0.0,C,R
18.5    STORE    Z51,APD,APD,C,R
18.6    AOUT     ZCP51,3,0.0,C,R
18.7    EXIT     C,R

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```

18.8    DELAY      15,U
18.9    INTERVAL  CST51,U
18.10   FILTER    SPT1,63,100
18.11   STORE     FSP1,APD,APD,U
18.12   CALC      CPB51,1,10,1,1,T
18.13   PROP      SPSP1,FSP1,APD,CIG51,CMP51,CDS51
18.14   STORE     Z51,APD,APD,U
18.15   AOUT      ZCP51,3,0,U
18.16   EXIT      U
/
/
/-----/
/                FONCTIONS SPECIALES                /
/-----/
/
19.1    EVERY                                           /SELECTION DU STSTEME POUR LE
19.2    SET       SYSP,R,R                               /
19.3    COMPARE   SYSDIS,EQ,100,0
19.4    SET       SYS1,BPD,R
19.5    OR        SYSP,BPD
19.6    SET       SYSP,BPD,S
19.7    COMPARE   SYSDIS,EQ,200,0
19.8    SET       SYS2,BPD,R
19.9    OR        SYSP,BPD
19.10   SET       SYSP,BPD,S
19.11   COMPARE   SYSDIS,EQ,300,0
19.12   SET       SYS3,BPD,R
19.13   OR        SYSP,BPD
19.14   SET       SYSP,BPD,S
19.15   COMPARE   SYSDIS,EQ,400,0
19.16   SET       SYS4,BPD,R
19.17   OR        SYSP,BPD
19.18   SET       SYSP,BPD,S
19.19   COMPARE   SYSDIS,EQ,600,0
19.20   SET       SYS6,BPD,R
19.21   OR        SYSP,BPD
19.22   SET       SYSP,BPD,S
19.23   COMPARE   SYSDIS,EQ,700,0
19.24   SET       SYS7,BPD,R
19.25   OR        SYSP,BPD
19.26   SET       SYSP,BPD,S
19.27   COMPARE   SYSDIS,EQ,800,0
19.28   SET       SYS8,BPD,R
19.29   OR        SYSP,BPD
19.30   SET       SYSP,BPD,S
19.31   COMPARE   SYSDIS,EQ,900,0
19.32   SET       SYS9,BPD,R
19.33   OR        SYSP,BPD
19.34   SET       SYSP,BPD,S
19.35   SET       SYS,SYSP,S
19.36   EXIT      U
/
/
20.1    EVENT     SYS,S                               /RESET LES FONCTIONS POUR
20.2    SET       BPD,SUF,R                           /LE CDB SPECIAL
20.3    STORE     SYSDIS,0,0,C,R                       /SUR UNE PERIODE DE DISCLR
20.4    EXIT      C,R

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```

20.5    DELAY      3600,U
20.6    STORE      SYSDIS,0,0,U
20.7    EXIT       U
/
/
21.1    EVENT      SYS1,S                               /SYS 100
21.2    SET        BPD,SUF,R
21.3    EXIT       C,R
21.4    INTERVAL   5,U
21.5    STORE      CSTXXX,CST70,CST70,U                /PERMET DE VOIR LES
21.6    STORE      CPBXXX,CPB70,CPB70,U                /VALEURS DU SYSTEME
21.7    STORE      CIGXXX,CIG70,CIG70,U
21.8    STORE      CMPXXX,0.0,0.0,U
21.9    STORE      CDSXXX,CDS70,CDS70,U
21.10   EXIT       U
/
/
22.1    EVENT      SYS1,S
22.2    SET        BPD,SUF,R
22.3    EXIT       C,R
22.4    DELAY      10,U
22.5    INTERVAL   1,U
22.6    STORE      CST70,CSTXXX,CST70,U                /PERMET D AJUSTER LES
22.7    STORE      CPB70,CPBXXX,CPB70,U                /VALEURS DU SYSTEME
22.8    STORE      CIG70,CIGXXX,CIG70,U
22.9    STORE      CDS70,CDSXXX,CDS70,U
22.10   EXIT       U
/
/
23.1    EVENT      SYS2,S                               /SYS 200
23.2    SET        BPD,SUF,R
23.3    EXIT       C,R
23.4    INTERVAL   5,U
23.5    STORE      CSTXXX,CST70A,CST70A,U              /PERMET DE VOIR LES
23.6    STORE      CPBXXX,CPB70A,CPB70A,U              /VALEURS DU SYSTEME
23.7    STORE      CIGXXX,CIG70A,CIG70A,U
23.8    STORE      CMPXXX,0.0,0.0,U
23.9    STORE      CDSXXX,CDS70A,CDS70A,U
23.10   EXIT       U
/
/
24.1    EVENT      SYS2,S
24.2    SET        BPD,SUF,R
24.3    EXIT       C,R
24.4    DELAY      10,U
24.5    INTERVAL   1,U
24.6    STORE      CST70A,CSTXXX,CST70A,U              /PERMET D AJUSTER LES
24.7    STORE      CPB70A,CPBXXX,CPB70A,U              /VALEURS DU SYSTEME
24.8    STORE      CIG70A,CIGXXX,CIG70A,U
24.9    STORE      CDS70A,CDSXXX,CDS70A,U
24.10   EXIT       U
/
/
25.1    EVENT      SYS3,S                               /SYS 300
25.2    SET        BPD,SUF,R
25.3    EXIT       C,R
25.4    INTERVAL   5,U

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25.5    STORE    CSTXXX,CST50,CST50,U    /PERMET DE VOIR LES
25.6    STORE    CPBXXX,CPB50,CPB50,U    /VALEURS DU SYSTEME
25.7    STORE    CIGXXX,CIG50,CIG50,U
25.8    STORE    CMPXXX,CMP50,CMP50,U
25.9    STORE    CDSXXX,CDS50,CDS50,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS3,S
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    DELAY    10,U
26.5    INTERVAL 1,U
26.6    STORE    CST50,CSTXXX,CST50,U    /PERMET D AJUSTER LES
26.7    STORE    CPB50,CPBXXX,CPB50,U    /VALEURS DU SYSTEME
26.8    STORE    CIG50,CIGXXX,CIG50,U
26.9    STORE    CMP50,CMPXXX,CMP50,U
26.10   STORE    CDS50,CDSXXX,CDS50,U
26.11   EXIT     U
/
/
27.1    EVENT    SYS4,S                    /SYS 400
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST40,CST40,U    /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB40,CPB40,U    /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG40,CIG40,U
27.8    STORE    CMPXXX,0.0,0.0,U
27.9    STORE    CDSXXX,CDS40,CDS40,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS4,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST40,CSTXXX,CST40,U    /PERMET D AJUSTER LES
28.7    STORE    CPB40,CPBXXX,CPB40,U    /VALEURS DU SYSTEME
28.8    STORE    CIG40,CIGXXX,CIG40,U
28.9    STORE    CDS40,CDSXXX,CDS40,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS6,S                    /SYS 600
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG10A,CIG10A,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS10A,CDS10A,U
29.10   EXIT     U
/
/

```

```

30.1  EVENT    SYS6,S
30.2  SET      BPD,SUF,R
30.3  EXIT     C,R
30.4  DELAY    10,U
30.5  INTERVAL 1,U
30.6  STORE    CST10A,CSTXXX,CST10A,U      /PERMET D AJUSTER LES
30.7  STORE    CPB10A,CPBXXX,CPB10A,U      /VALEURS DU SYSTEME
30.8  STORE    CIG10A,CIGXXX,CIG10A,U
30.9  STORE    CDS10A,CDSXXX,CDS10A,U
30.10 EXIT     U
/
/
31.1  EVENT    SYS7,S                      /SYS 700
31.2  SET      BPD,SUF,R
31.3  EXIT     C,R
31.4  INTERVAL 5,U
31.5  STORE    CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
31.6  STORE    CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
31.7  STORE    CIGXXX,CIG10,CIG10,U
31.8  STORE    CMPXXX,CMP10,CMP10,U
31.9  STORE    CDSXXX,CDS10,CDS10,U
31.10 EXIT     U
/
/
32.1  EVENT    SYS7,S
32.2  SET      BPD,SUF,R
32.3  EXIT     C,R
32.4  DELAY    10,U
32.5  INTERVAL 1,U
32.6  STORE    CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
32.7  STORE    CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
32.8  STORE    CIG10,CIGXXX,CIG10,U
32.9  STORE    CMP10,CMPXXX,CMP10,U
32.10 STORE    CDS10,CDSXXX,CDS10,U
32.11 EXIT     U
/
/
33.1  EVENT    SYS8,S                      /SYS 800
33.2  SET      BPD,SUF,R
33.3  EXIT     C,R
33.4  INTERVAL 5,U
33.5  STORE    CSTXXX,CST30,CST30,U      /PERMET DE VOIR LES
33.6  STORE    CPBXXX,CPB30,CPB30,U      /VALEURS DU SYSTEME
33.7  STORE    CIGXXX,CIG30,CIG30,U
33.8  STORE    CMPXXX,0.0,0.0,U
33.9  STORE    CDSXXX,CDS30,CDS30,U
33.10 EXIT     U
/
/
34.1  EVENT    SYS8,S
34.2  SET      BPD,SUF,R
34.3  EXIT     C,R
34.4  DELAY    10,U
34.5  INTERVAL 1,U
34.6  STORE    CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
34.7  STORE    CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME
34.8  STORE    CIG30,CIGXXX,CIG30,U

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```

34.9   STORE    CDS30,CDSXXX,CDS30,U
34.10  EXIT      U
/
/
35.1   EVENT    SYS9,S                               /SYS 900
35.2   SET      BPD,SUF,R
35.3   EXIT      C,R
35.4   INTERVAL 5,U
35.5   STORE    CSTXXX,CST51,CST51,U                /PERMET DE VOIR LES
35.6   STORE    CPBXXX,CPB51,CPB51,U                /VALEURS DU SYSTEME
35.7   STORE    CIGXXX,CIG51,CIG51,U
35.8   STORE    CMPXXX,CMP51,CMP51,U
35.9   STORE    CDSXXX,CDS51,CDS51,U
35.10  EXIT      U
/
/
36.1   EVENT    SYS9,S
36.2   SET      BPD,SUF,R
36.3   EXIT      C,R
36.4   DELAY    10,U
36.5   INTERVAL 1,U
36.6   STORE    CST51,CSTXXX,CST51,U                /PERMET D AJUSTER LES
36.7   STORE    CPB51,CPBXXX,CPB51,U                /VALEURS DU SYSTEME
36.8   STORE    CIG51,CIGXXX,CIG51,U
36.9   STORE    CMP51,CMPXXX,CMP51,U
36.10  STORE    CDS51,CDSXXX,CDS51,U
36.11  EXIT      U
/
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
37.1   RESTART
37.2   TIMDATA   DT
37.3   STORE     UPTIM,APD,APD,U                    /SAUVE L HEURE ACTUEL ET
37.4   TIMDATA   MD                                /LA DATE DE LA RESTAURATION
37.5   STORE     UPDAT,APD,APD,U                    /DU POUVOIR.
37.6   EXIT      U
/
38.1   RESTART
38.2   STORE     DNTIM,TOD,TOD,U                    /RECORD DE LA DERNIERE HEURE
38.3   STORE     DNDAT,LDAT,LDAT,U                /ET DATE AVANT LA PANNE.
38.4   INTERVAL 60,U
38.5   TIMDATA   DT
38.6   STORE     TOD,APD,APD,U                      /SAUVE L HEURE ET LA DATE
38.7   TIMDATA   MD                                /ACTUEL A TOUTES LES MINUTES.
38.8   STORE     LDAT,APD,APD,U
38.9   EXIT      U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    910
/   CDB:       353

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```
/   PROCESSES:  3295
/   OVERHEAD:  2700
/   TOTAL:    7258      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    910
/   CDB:      353
/   PROCESSES: 3295
/   OVERHEAD:  2700
/   TOTAL:    7258      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    910
/   CDB:      353
/   PROCESSES: 3297
/   OVERHEAD:  2700
/   TOTAL:    7260      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    910
/   CDB:      353
/   PROCESSES: 3297
/   OVERHEAD:  2700
/   TOTAL:    7260      8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    910
/   CDB:      353
/   PROCESSES: 3297
/   OVERHEAD:  2700
/   TOTAL:    7260      8K DSC MEMORY NEEDED
```

SYSTÈME V43-10

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE.

LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE EXTERIEURE.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-3. CEPENDANT HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-4.

SUR UNE DETECTION DE BASSE TEMPERATURE PAR TLL-1, LE SYSTEME ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES LE SYSTEME S'ARRETE.

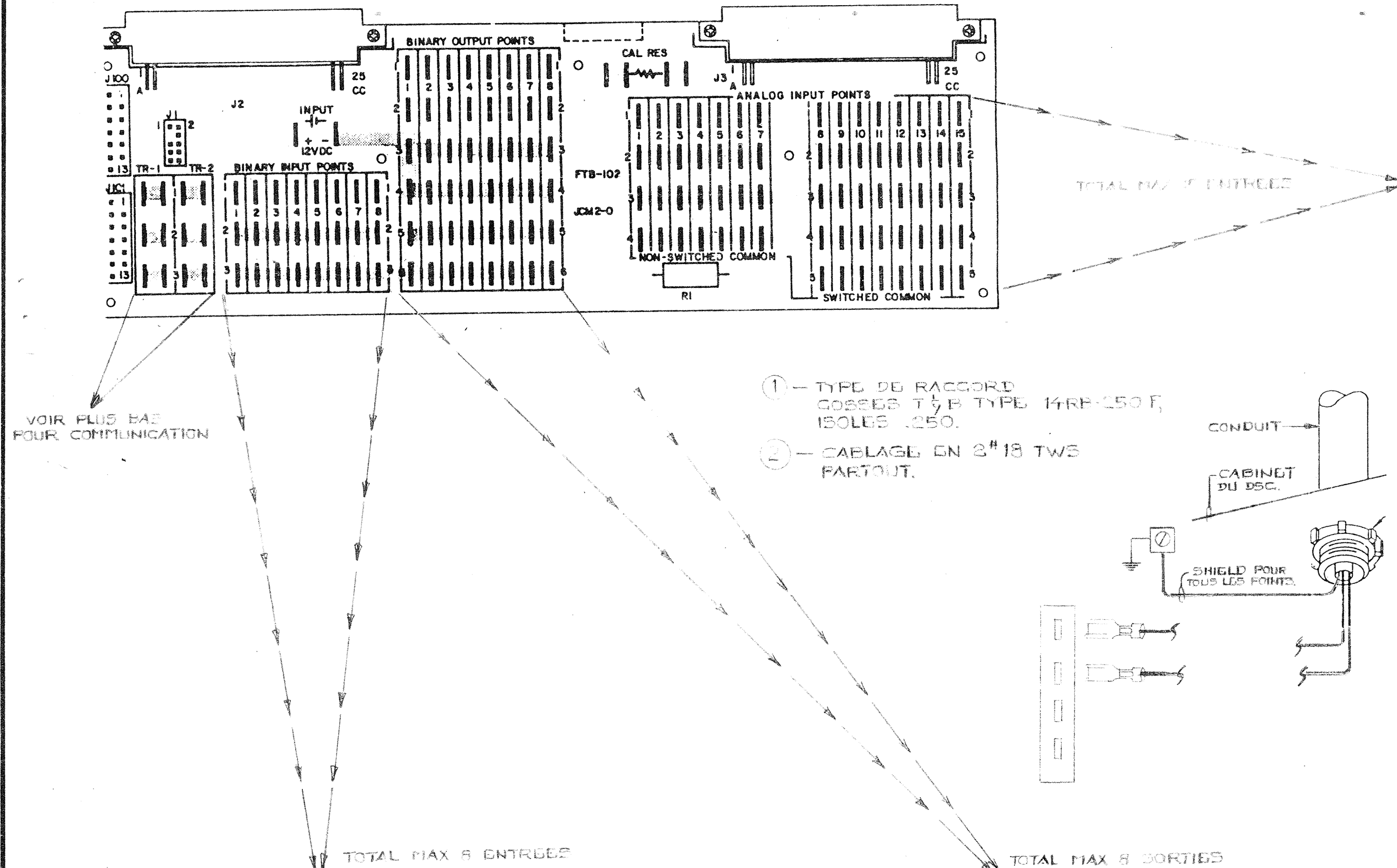
CEPENDANT LE SYSTEME REPREND EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE RETOUR DESCEND SOUS 15°C. LE SYSTEME SUPPLEMENTAIRE CONTROLE LA DETECTION DE LA TEMPERATURE DE RETOUR A 22°C.

LE VENTILATEUR D'EVACUATION V44-3E DEMARRE SUR UN SIGNAL DE LA MINUTERIE M-1.

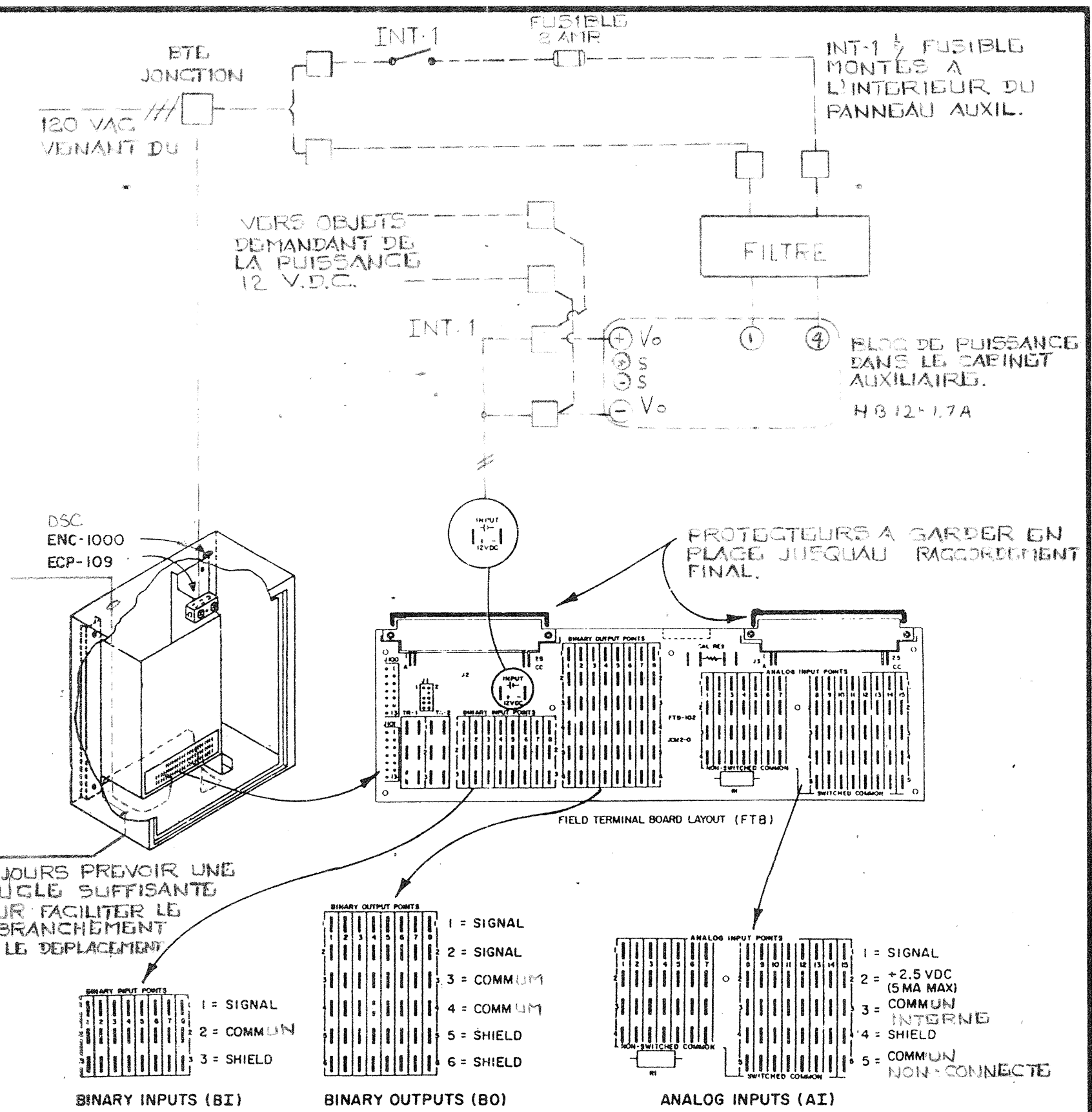
EP-2 EST ALIMENTE ET FAIT OUVRIR LE VOILET DA-6.

AU DEPART DE V44-3E LE MINIMUM D'AIR NEUF EST AUGMENTE A 15%, ET LE VENTILATEUR V44-27A EST MIS EN MARCHE.

BORNIERS DE RACCORDEMENT (FTE-102)



EMPLACEMENT		ADRESSE							DSC 10	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1	4-20mA 1-90%HR	
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A10.1	4-20mA 1-90%HR	
11	PT-1	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-1	AL. V43.11 BOITE LA PLUS LOIN	A11.1	0-5VDC 0-25%	
12	EPT-27	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A12.1		
13	PT-2	PRESSION ALIM.	ANA	1 5	1 2	SONDE DE PRESSION PT-2	ALIM. V44-27A	A13.1	0-5VDC 0-25%	

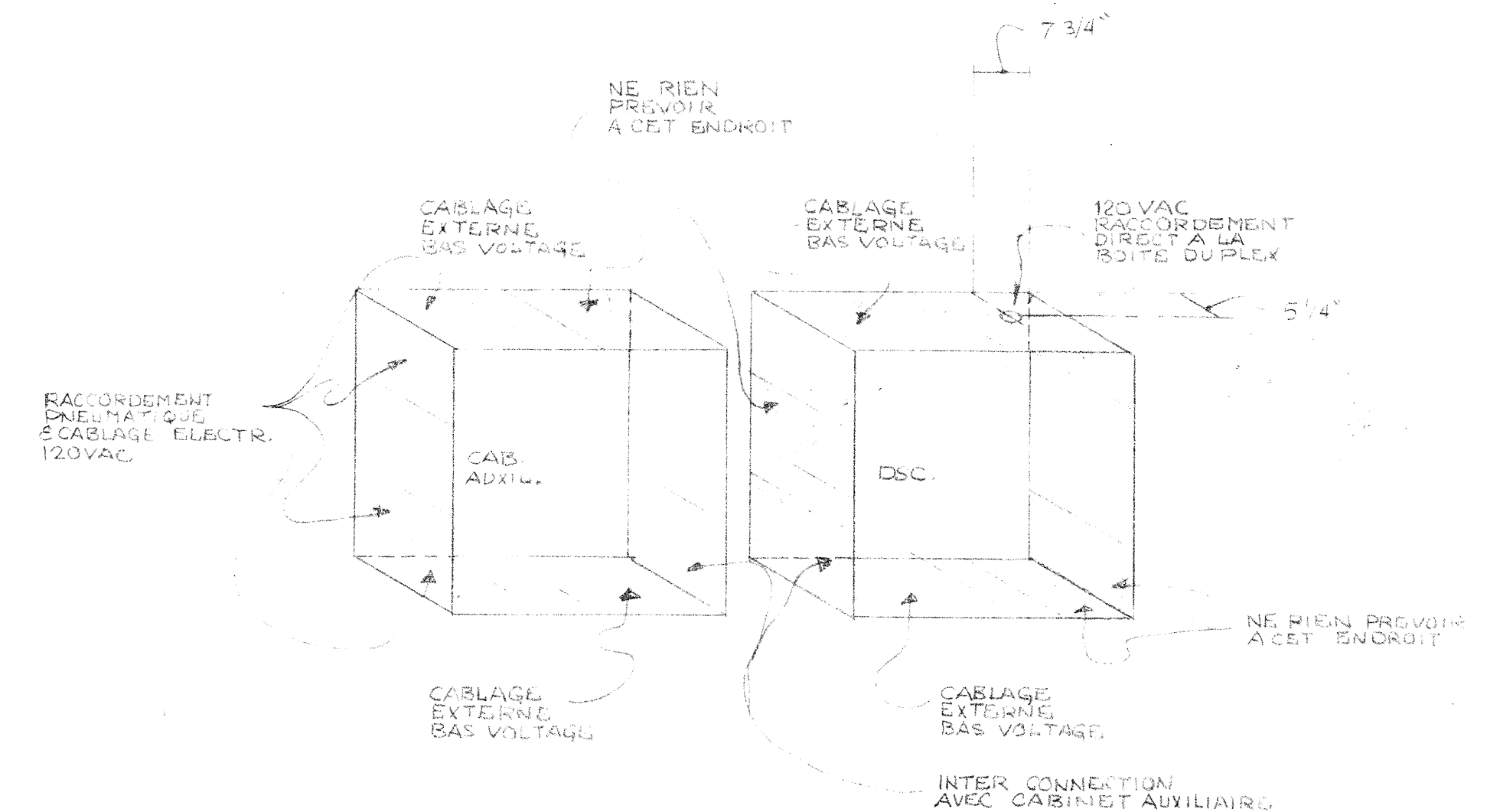


INT-1: INTERRUPTEUR "TOGGLE" EAGLE SPST. MOD. 447, MONTÉ AVEC R-4000-101 J.C.L.

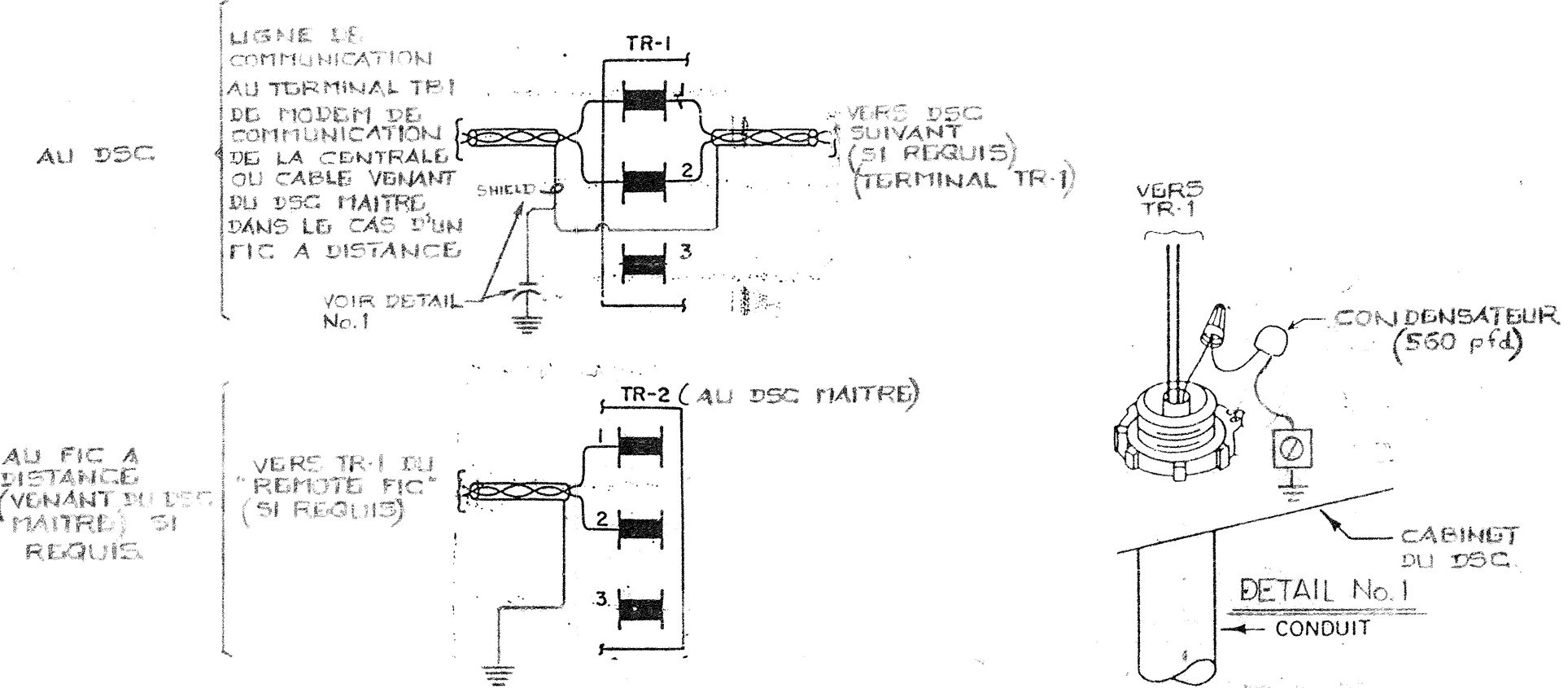
TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT		ADRESSE							DSC 10	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 10	BIN	1 2		CONTACT AUX. DEM.	MCC-2	B1.1		
2	STATUS	SYSTEME V44-3E	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	STATUS	SYSTEME V44-27A	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1		
4	GEL	SYSTEME 10	BIN	1 2		RELAIS RG	CAB AUX.	B4.1		


EMPLACEMENT		ADRESSE							DSC 10	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P3.1		
4	EPT-4	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P4.1		
5A	R1	ARRET DEPART SYSTEME 10	SST	1 3	2 7	RELAIS 12VDC	MCC-2	S5 A.1		
6	EPT-27	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P6.1		

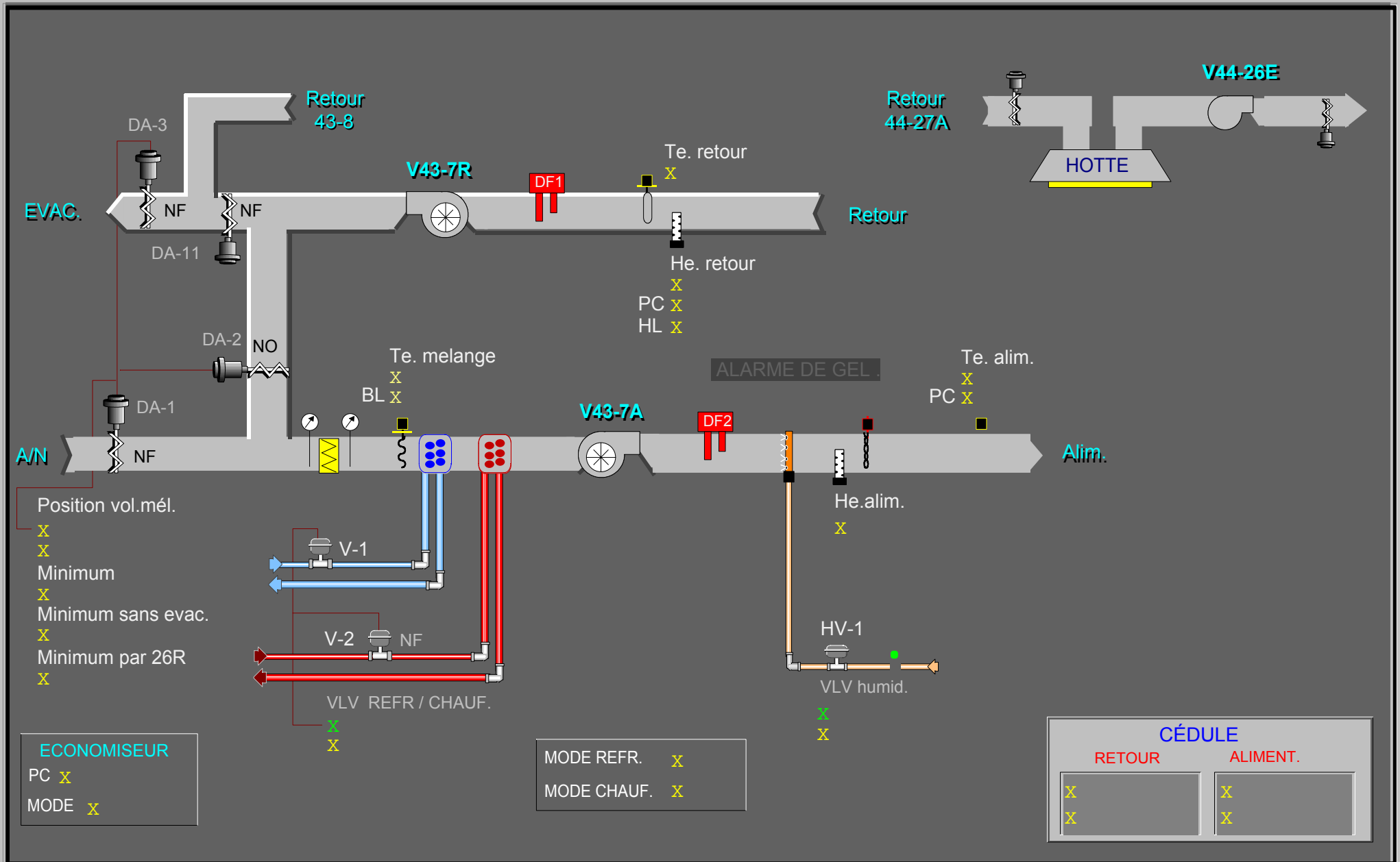


- VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-6500		DSC-10	
REFERENCE		NO.		REVISION	
REPRESENTANT		TECHNICIEN		DATE	
J.C.R.		R.F.		DATE	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		ST-HYACINTHE, QUE.	
SOCIÉTÉ DE CONTRÔLE JOHNSON LTD.		441 boulevard Lebeau		Montréal, QC H4N 1S2	
Tél. 514-332-6860		CONTRAT		4096-008.14	
DESIGN NO.		4068-14			

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
DA-6	D-3073-2	1	MOTEUR PNEUMATIQUE
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 4 & 27	EPT-102	5	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 mm
V-1	V3974-1011	1	VALVE N.F. $\frac{1}{4}$ " C/A P.P.
V-2	V3754-1024	1	VALVE NO. $\frac{1}{2}$ " C/A P.P.
DA-4 ET 5	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1, 2	V11HAA-100	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB 12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	BD 2 FF	1	TRANSFORMATEUR 120/18 VAC
M-1 	MARKTIME 90015	1	MINUTERIE MECANIQUE 0-12 HRES C/A LAMPE TEMOIN
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



PARAMETRES

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X



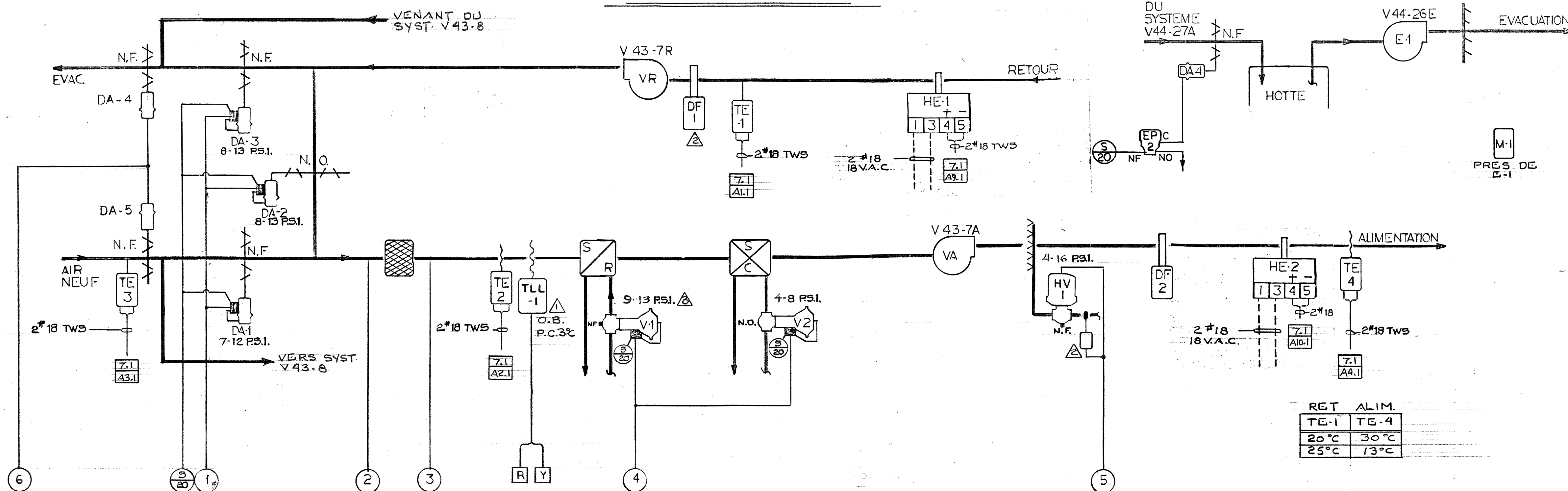
VACANCES DSC-7 , V43-7

Jour / Mois	VACANCE 1	X
Jour / Mois	VACANCE 2	X
Jour / Mois	VACANCE 3	X
Jour / Mois	VACANCE 4	X
Jour / Mois	VACANCE 5	X
Jour / Mois	VACANCE 6	X



G
F
E
D
C
B
A

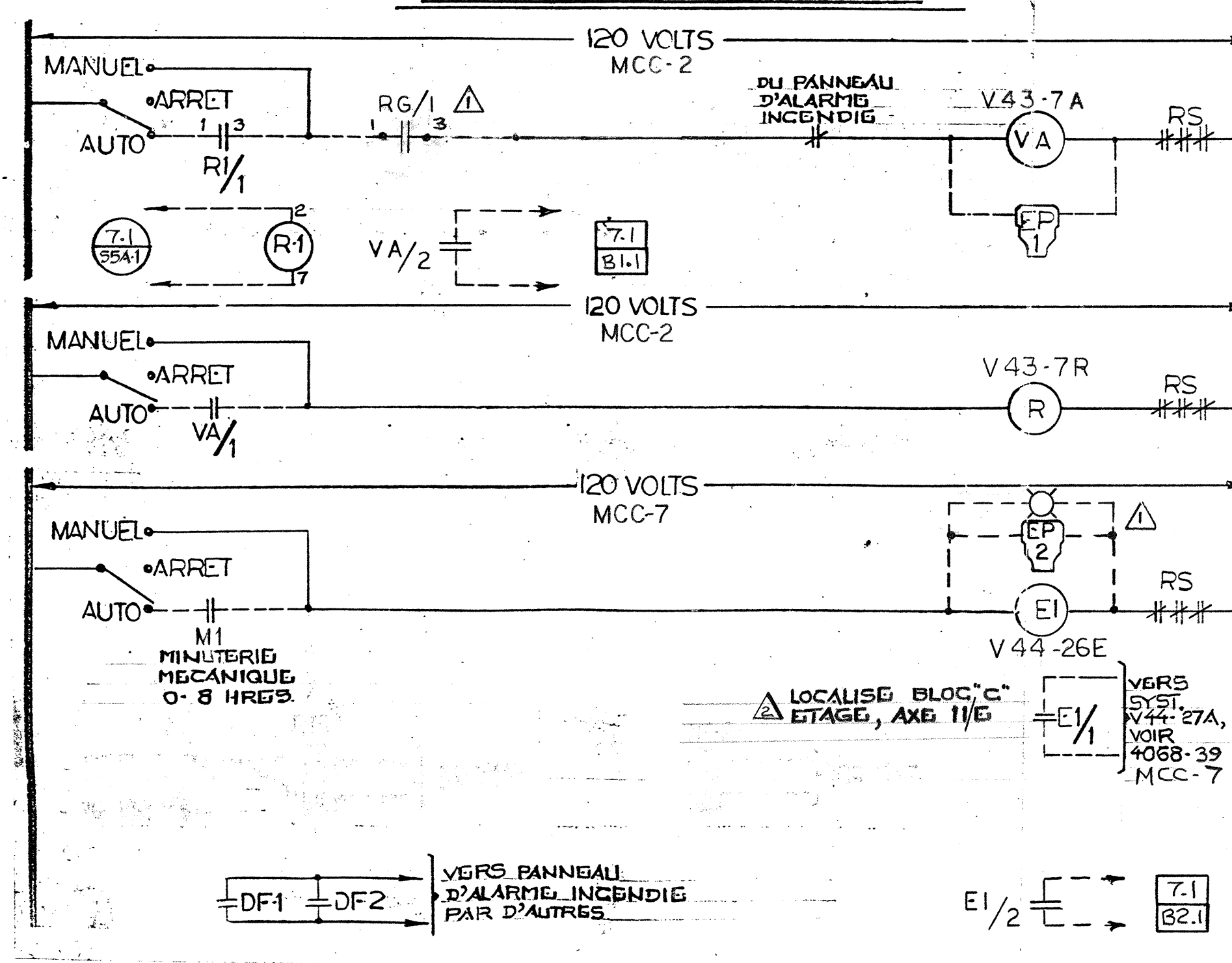
DIAGRAMME DE DEBIT



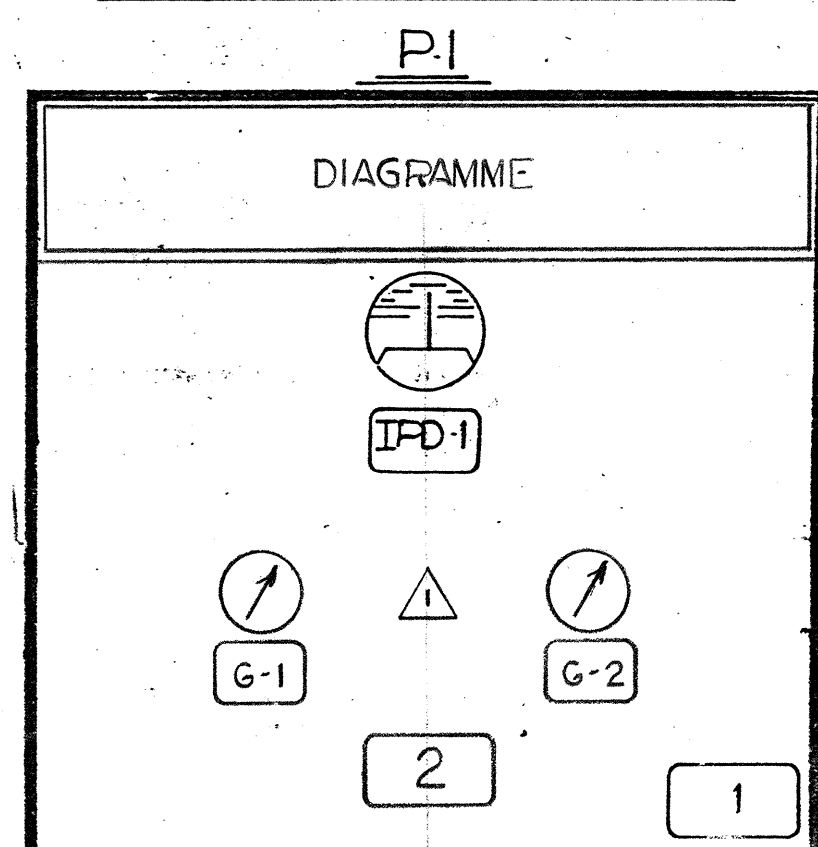
LISTE DE MATERIEL

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3073-1	3	MOTEUR DE VOLET
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
DA-4	D3073-2	1	MOTEUR DE VOLET
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2	EPT-102	2	DETECTEURS DE FUMEE PYROTRONIC
EPT-1 @ 3	2000-50	3	INTERFACE ELECTRIQUE/PNEUMATIQUE
IPD-1	V3974-1010	1	INDICATEUR DE PRESSION 0-50 MM
V-1	V3974-1010	1	VALVE N.F. Ø 3/4" C.V. 8.6
V-2	V3754-1025	1	VALVE N.O. Ø 1/2" C.V. 4.4
EP-1 ET 2	V11HAA-100	2	RELAIS ELECTRIQUE/PNEUMATIQUE
G-1, 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	H4812-17A	1	INTERRUPTEUR 2 POSITIONS
PS-1	M8100-109	1	BLOC DE PUISSANCE 12 VDC
P-1	6012	1	PANNEAU 24" X 36" X 7"
R-1, RG	BD2FF	2	RELAIS 12 VDC
XMR-1	MARKTIME 90015	1	TRANSFO 120/18 VAC
M-1		1	MINUTERIE MECANIQUE 0-12 HRES c/a LAMPE TEMOIN
C-1, 2	C5226-3	2	SELECTEUR DE HAUT SIGNAL
VA-1	R2080-1	1	AMPLIFICATEUR DE VITESSE
DA-5	D3153-2	1	MOTEUR PNEUMATIQUE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

DIAGRAMME ELECTRIQUE



FACE DU PANNEAU



SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBAR-RAGE.

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REPROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR LES EPT-1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

UNE POSITION MINIMUM DE 15% EST ASSURE AU VOLET EN TOUT TEMPS. LORSQUE LE VENTILATEUR V44-26E EST MIS EN MARCHÉ PAR LA MINU-TERIE MECANIQUE, SON VOLET MOTORISE OUVRE ET LA POSITION MINIMUM DES VOLETS DU SYSTEME EST RAMENE A 20%.

LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT AU MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR AFIN DE MAINTENIR 30% H.R. CEPENDANT, UNE HAUTE LIMITE DE 80% H.R. DANS LA GAINÉ D'ALIMENTATION EST ASSUREE.

SUR UNE DETECTION DE TEMPERATURE INFERIEURE AU POINT DE CONSIGNE DE TLL-1, LE SYSTEME S'ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU DF-2, LE SYSTEME S'ARRETE.

AU DEPART DU SYSTEME V43-7 OU 8, LES VOLETS DA-4 ET 5 OUVRENT A 100 %

- 1- CONTRACTEUR: PAVAL INC. INGENIEUR: PAGEAU MOREL ET ASS.
- 2- SYSTEME No. V43-7
- IPD-1- ETAT DES FILTRES
- G-1- AIR D'ALIMENTATION
- G-2- AIR DE CONTROLE

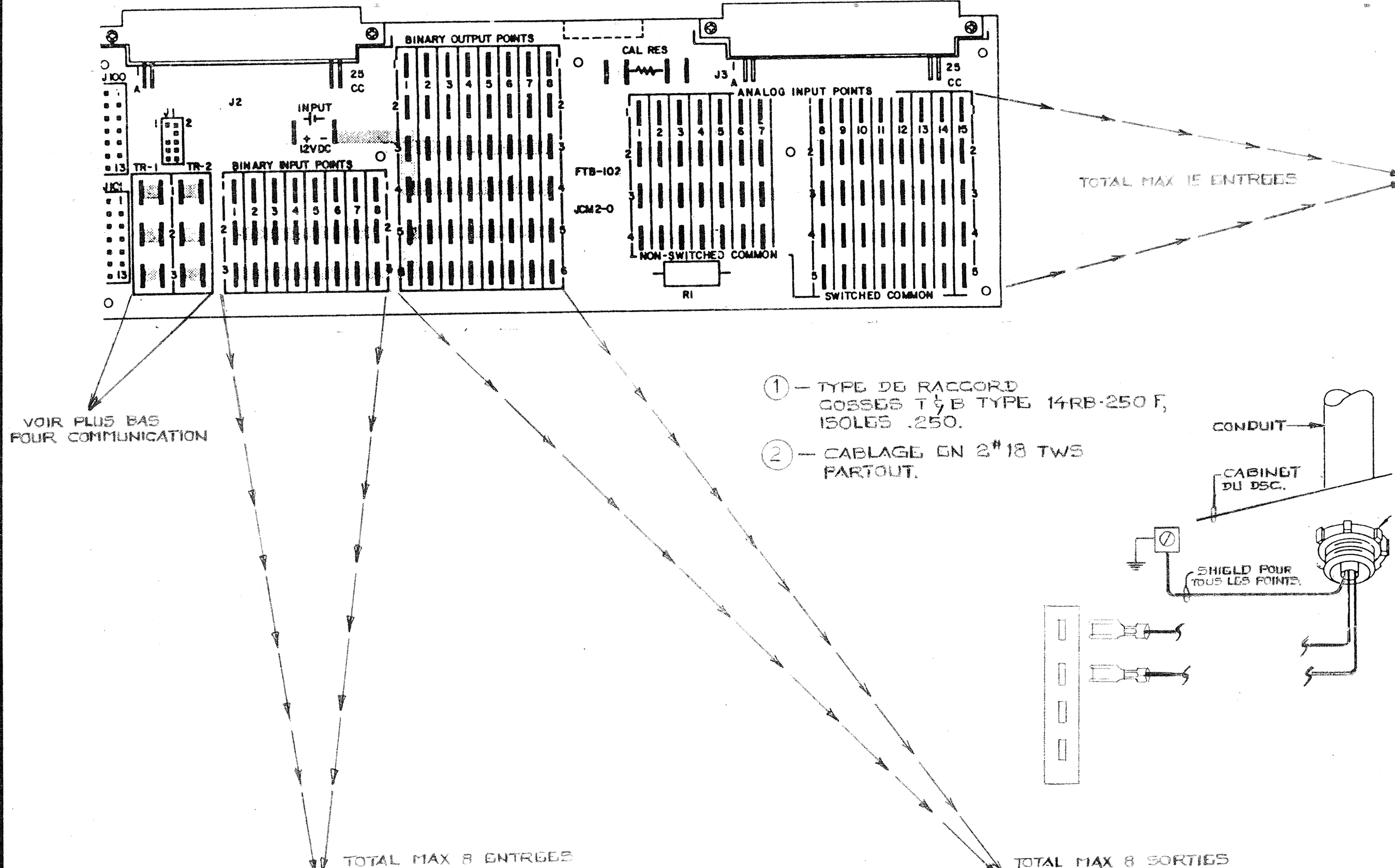
----- FILAGE J.C.L.
----- FILAGE PAR D'AUTRES

TITRE
SYSTEME V 43-7
ALIMENTATION BLOC C, ETAGE

PROJET: CENTRE DE RECHERCHE ALIMENTAIRE ST. HYACINTHE QUE.

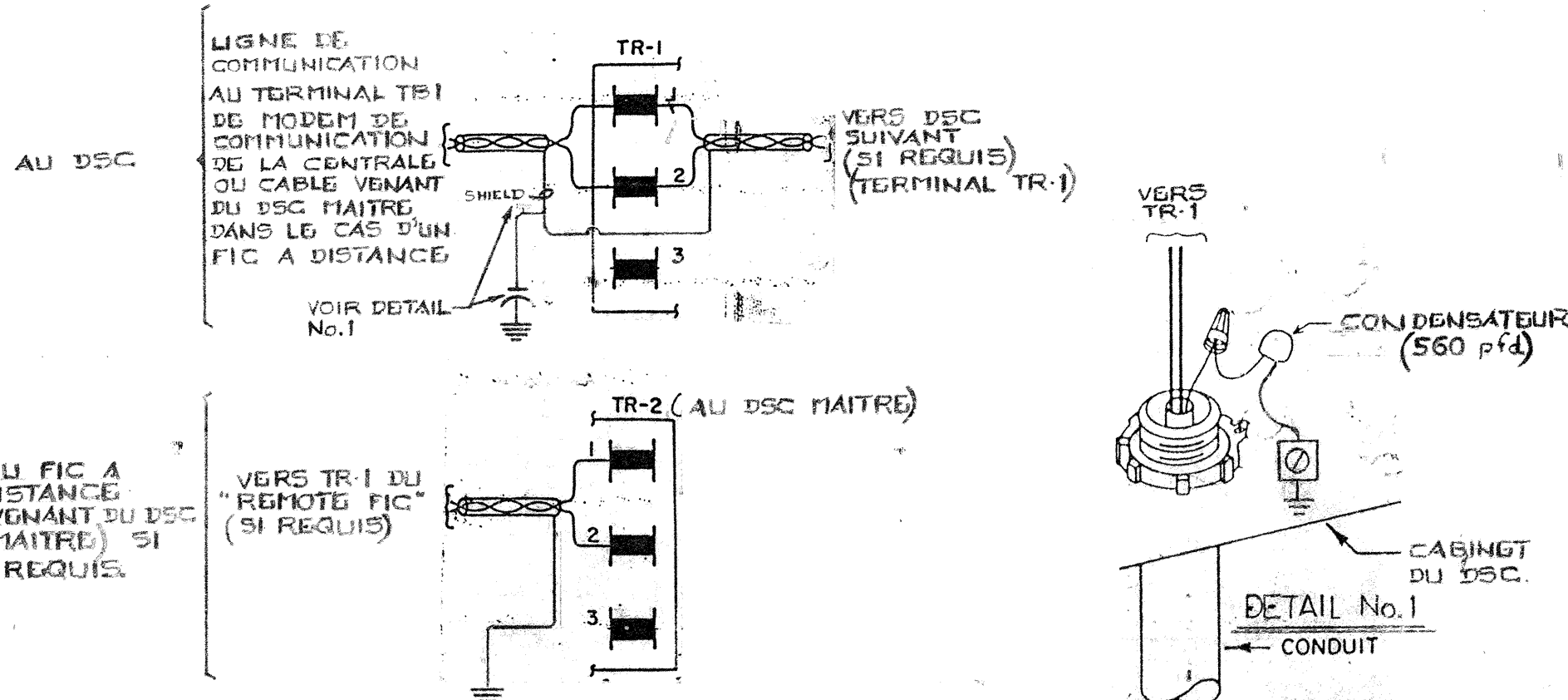
REFERENCE	NO.	REVISION	AVIS	DATE	PAR
REPRESANTANT	TECHNICIEN	DESINE	APPROUVE		
J.C.R.	R.F.	DATE: JAN. 30. 85	DATE: 8.5.85		
JOHNSON CONTROLS			Société de Contrôle Johnson Ltée		
441 boulevard Lebeau			4096-8-15		
Montreal, QC H4N 1S2			4068-15		
Tél. 514/332-6960					

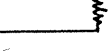
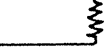
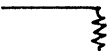
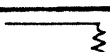
BORNIERI DE RACCORDAMENTO (FTE-102)

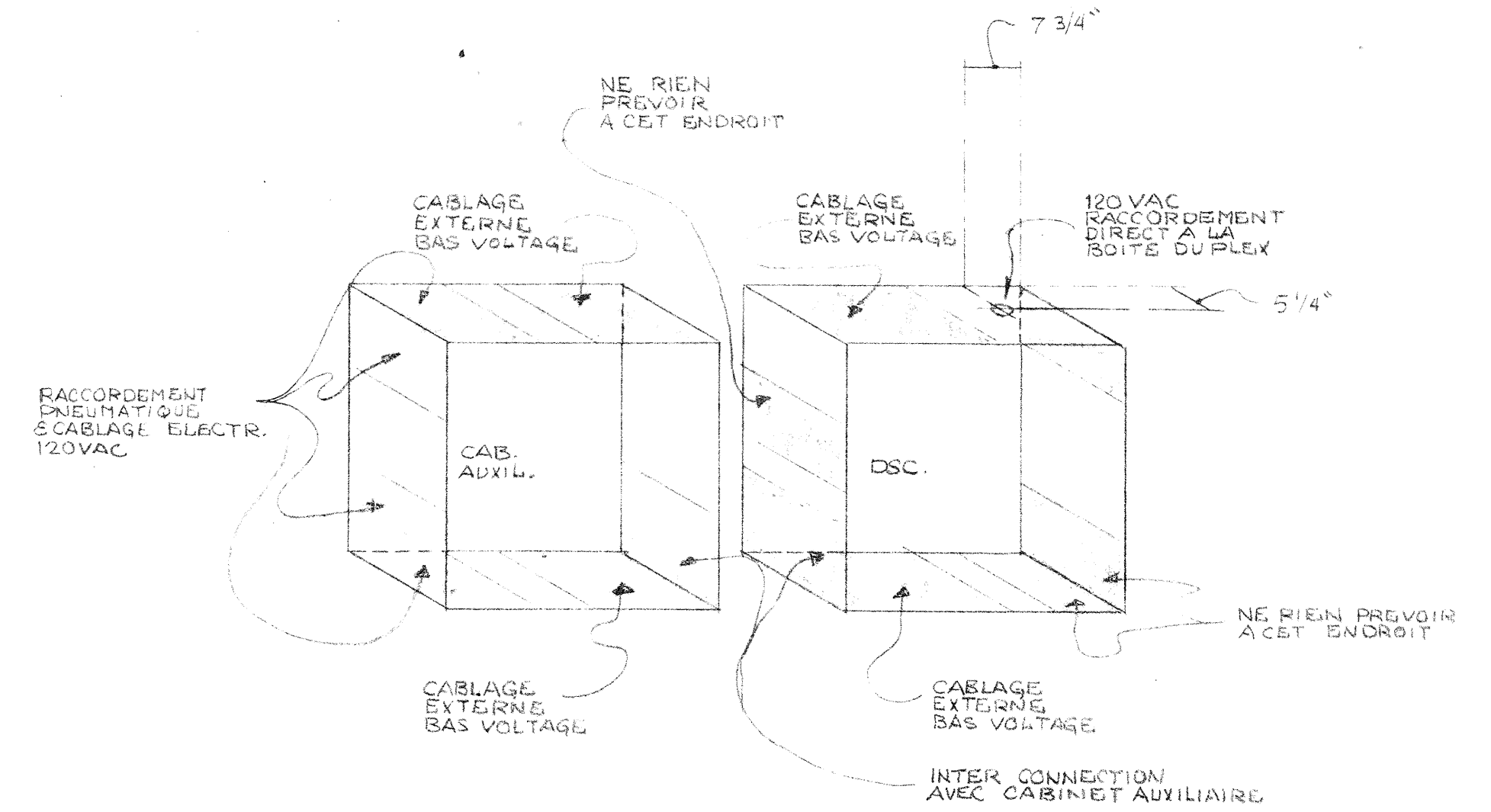
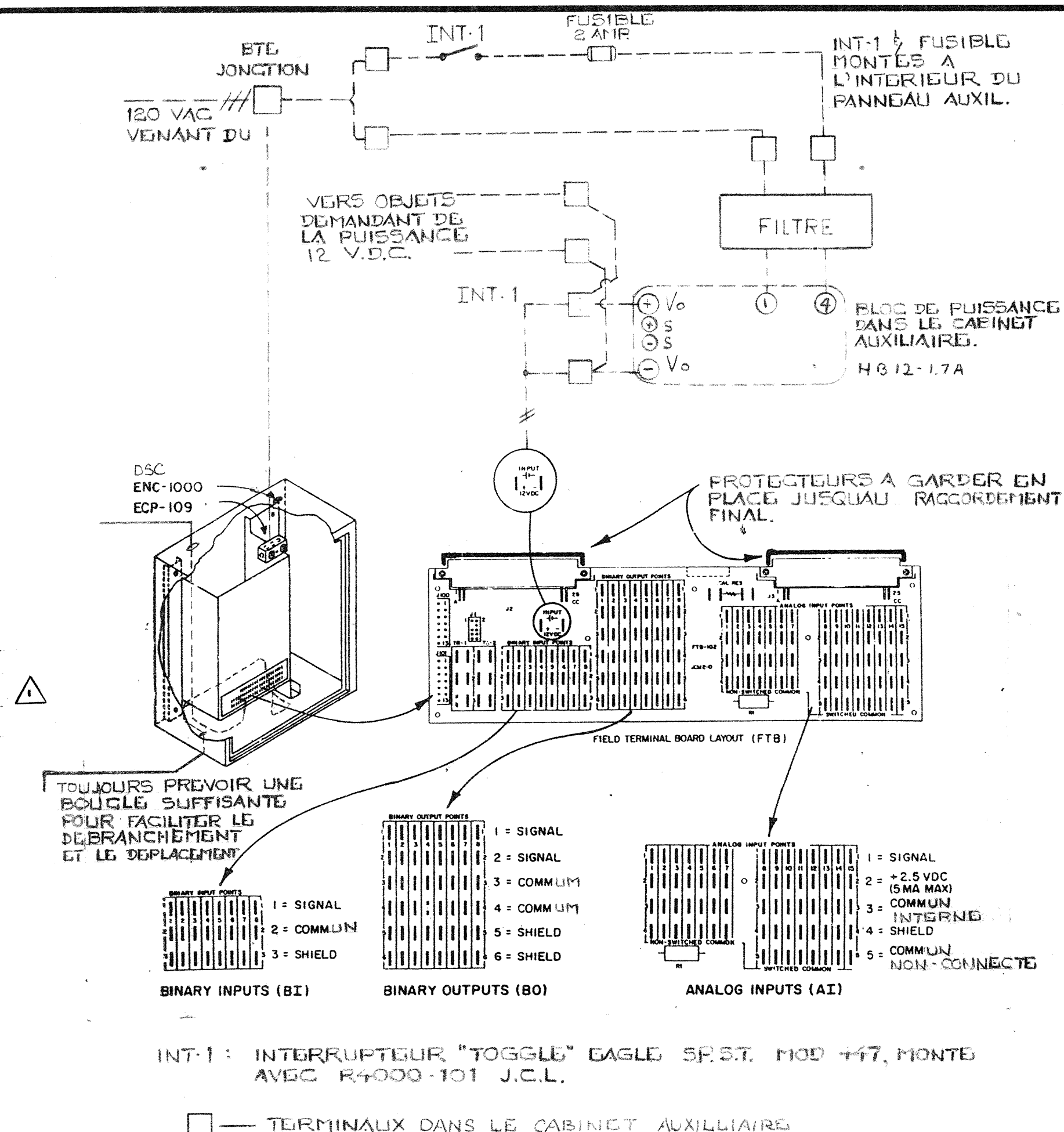


EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 7		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 7	BIN	1 2		CONTACT AUX. DEM	MCC-2	B1.1		
2	STATUS	SYSTEME V44-26E	BIN	1 2		CONTACT AUX. DEM	MCC-7	B2.1		
3	GEL	SYSTEME 7	BIN	1 2		RELAIS RG	CAB AUX	B3.1		

EMPLACEMENT				ADRESSE							
NOM: C.I.R.A.								DSC 7			
EMPLACEMENT: DU DSC								FIC 1			
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1			
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1			
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1			
5A	R1	ARRET DEPART SYSTEME	SST	1 3	2 7	RELAIS 12VDC	MCC	S5A.1			



EMPLACEMENT			ADRESSE					DSC 7		
NOM: C.I.R.A.								FIC 1		
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20 MA 10-90% HR
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20 MA 10-90% HR



- ① — VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- ② — VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES ET ELECTRIQUES LOCAUX.

TITRE		IMPLANTATION DSC-8500		TEL QUE CONSTRUIT		86.0707	
DSC-7		NO.		REVISION		SEPT 12-85	
PROJET		REFERENCE		AVIS		DATE	
CENTRE DE RECHERCHE ALIMENTAIRE		REPRESENTANT J. C. R.		TECHNICIEN R. F.		APPROUVE	
ST - HYACINTHE QUE.		JOHNSON CONTROLS		Société de Contrôle Johnson Ltee		CONTRAT	
		Division Des Systemes Et Services		441 boulevard Lebeau		4096-008-15	
				Montréal, QC HAN 1S2		DESSIN NO.	
				Tel. 514/332-8880		4068-16	

DSC 7 SYSTEME V43-7

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/AUX1 - ARRET DEPART SYSTEME V43-7

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI

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53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2    /SOUPAPES
62      OVERRIDE ZCP10,A,2    /VOLETS
63      OVERRIDE ZCP70,A,2    /HUMIDITE
/
65      ADJUST   MDPOS,A      /POSITION MINIMUM SANS EVACUATION
66      ADJUST   MINF1,A      /MINIMUM PAR VENTIL. V44-26E
/
67      DISPLAY  FSTATE,B     /ETAT VENTIL. V44 26E
/

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/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/          RECORD PANNE DE POUVOIR      /
/-----/
/
84      DISPLAY  UPTIM,T        /HEURE DE LA RESTAURATION DU POUVOIR

```

```

85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME

```

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/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-7
/
/      51      ALARME HORAIRE SYSTEME V43-7
/
/-----/
/
/
□

```

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-17-:1 13:48:53
/
/TRANSLATION LISTING FOR DSC-7.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-17-:1 11:30:55
/
/TRANSLATION LISTING FOR DSC-7.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:23
/
/TRANSLATION LISTING FOR DSC-7.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 08-26-91 09:35:45
/
/TRANSLATION LISTING FOR CIRA7.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   7   SYSTEME   V43-7
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     08 DECE 1986
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/                                  26 AOUT 1991 HORAIRE A/D SYSTEME JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN   PROCESSOR FAILURE
/  2  PCR-102 RAM    FAILURE
/  3  PCR-102 EPROM  FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,5983
@ FIC ADDRESSES:  1
@ POINT SUMMARY:

```

```

@ BD: 15
@ AD: 75
@ BI: CON-3,BIT-0,BIR-0
@ AI: LTD-2,FUL-7,RAT-0,TOT-0
@ BO: MOM-0,POS-3,MAN-1
@ CP: BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-3
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FSTATE     CON-2      E,E      /ETAT VENTIL. V44-26E
BI-3      FREEZE     CON-3      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.8,129.5 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.7,129.3 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-45.9,129.5 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.7,129.5 /TEMP ALIM
AI-5      ZT30       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6      ZT10       FUL-6      E,0.5,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-7      ZT70       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9      HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
/
/
BO-1      ZC30       POS-1      D,E,0     /SOUPAPES
BO-2      ZC10       POS-2      D,E,0     /VOILETS
BO-3      ZC70       POS-3      D,E,0     /HUMIDITE
BO-5A     ZS50       MAN-1      E,E      /VENTIL ALIM
/
/
CP-1      ZCP30      INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10      INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOILETS
CP-3      ZCP70      INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
BD-1      COMP50     E,R      /RESULTAT DEMARRAGE
BD-2      CONON      E,R      /PERMISSION CONTROLE
BD-3      FSTRT      E,R      /DEMANDE A/D VENTILATEUR
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-4      ECON       E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE    /
/-----/

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/
BD-5      MIXLL      E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-6      HTG        E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
BD-7      CLG        E,R      /REFROIDISSEMENT
/
/-----/
/          FONCTIONS SPECIALES                        /
/-----/
/
BD-8      SYSP       D,R
BD-9      SYS        D,R
BD-10     SYS1       D,R
BD-11     SYS2       D,R
BD-12     SYS4       D,R
BD-13     SYS6       D,R
BD-14     SYS7       D,R
BD-15     SYS8       D,R
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART      /
/-----/
/
AD-1      DOW        E,2
AD-2      H1         E,00:00
AD-3      H2         E,00:00
AD-4      H3         E,00:00
AD-5      H4         E,00:00
AD-6      H5         E,00:00
AD-7      H6         E,00:00
AD-8      STA        E,00:00 /HORAIRE
AD-9      STO        E,00:00
AD-10     STA8       E,00:01
AD-11     STO8       E,23:59
AD-12     STA7       E,00:01
AD-13     STO7       E,23:59
AD-14     STA9       E,00:01
AD-15     STO9       E,23:59
AD-16     DELSST     E,60      /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17     OASO       E,15.0    /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/

```



```

/-----/
/
AD-18   RARL      E,21.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19   RARH      E,26.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20   SAHL      E,25.0   /REAJ TEMP ALIM HAU LIM
AD-21   SALL      E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/      PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
AD-22   DSSP      E,0.0    /POINT DE CONSIGNE ALIM
AD-23   MXDSP     E,7.0    /POINT DE CONSIGNE LIMITE MEL.
AD-24   MDP       E,0.0    /POSITION MINIMUM VOLETS
AD-25   CST10A    E,5      /INTERVAL CTL VOLETS LIMITE
AD-26   CPB10A    E,-90.0  /BANDE PROP CTL VOLETS LIMITE
AD-27   CIG10A    E,33     /GAIN CTL VOLETS LIMITE
AD-28   CMP10A    E,0.0    /COMPENSATION CTL VOLETS LIMITE
AD-29   CDS10A    E,0.0    /BANDE MORTE CTL VOLETS LIMITE
AD-30   CST10     E,45     /INTERVAL CTL VOLETS
AD-31   CPB10     E,-60.0  /BANDE PROP CTL VOLETS
AD-32   CIG10     E,33     /GAIN CTL VOLETS
AD-33   CMP10     E,0.0    /COMPENS CTL VOLETS
AD-34   CDS10     E,0.0    /BANDE MORTE CTL VOLETS
AD-35   ZMXD      E,0.0    /RESULTAT PROPORTION.
AD-36   Z10M      E,100.0  /RESULTAT VOLETS LIMITE
AD-37   Z10C      E,0.0    /RESULTAT VOLETS CTL
AD-38   Z10       E,0.0    /RESULTAT VOLETS
/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39   MDPOS     E,20.0    /MINIMUM SANS EVACUATION
AD-40   MINF1     E,5.0     /MINIMUM VENTIL. V44-26E
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-41   Z40       E,0.0    /RESULTAT CHAUFFAGE
AD-42   CST40     E,25     /INTERVAL CTL CHAUFF
AD-43   CPB40     E,50.0   /BANDE PROP CTL CHAUFF
AD-44   CIG40     E,33     /GAIN CTL CHAUFF
AD-45   CDS40     E,0.0    /BANDE MORTE CTL CHAUFF
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-46   Z30       E,0.0    /RESULTAT REFROIDISSEMENT
AD-47   CST30     E,13     /INTERVAL CTL REFROIDI
AD-48   CPB30     E,-12.3  /BANDE PROP CTL REFROIDI
AD-49   CIG30     E,32     /GAIN CTL REFROIDI
AD-50   CDS30     E,0.0    /BANDE MORTE CTL REFROIDI
/
/

```

```

/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-51  RHSP      E,42.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-52  RHSPA     E,80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-53  CST70     E,150     /INTERVAL CTL HUMIDITE
AD-54  CPB70     E,90.0    /BANDE PROP CTL HUMIDITE
AD-55  CIG70     E,33      /GAIN CTL HUMIDITE
AD-56  CDS70     E,0.0     /BANDE MORTE CTL HUMIDITE
AD-57  CST70A    E,5       /INTERVAL H LIM HUMIDITE
AD-58  CPB70A    E,90.0    /BANDE PROP H LIM HUMIDITE
AD-59  CIG70A    E,33      /GAIN H LIM HUMIDITE
AD-60  CDS70A    E,0.0     /BANDE MORTE H LIM HUMIDITE
AD-61  Z70       E,0.0     /RESULTAT CTL HUMIDITE
AD-62  Z70HL     E,0.0     /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-63  Z70C      E,0.0     /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/      FONCTIONS SPECIALES      /
/-----/
/
AD-64  SYSDIS    D,0
AD-65  CSTXXX    D,0
AD-66  CPBXXX    D,0.0
AD-67  CIGXXX    D,0
AD-68  CMPXXX    D,0.0
AD-69  CDSXXX    D,0.0
/
/-----/
/      RECORD PANNE DE POUVOIR      /
/-----/
/
AD-70  UPTIM     E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-71  UPDAT     E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-72  DNTIM     E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-73  DNDAT     E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-74  TOD       E,00:00   /DERNIERE HEURE
AD-75  LDAT      E,00:00   /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/AUX1-                                AUX2-
/
0      ADJUST    FSTRT,B    /DEMANDE A/D VENTILATEUR
1      ADJUST    DELSST,I   /DELAI APRES UNE PANNE
4      DISPLAY   FSTAT,B    /ETAT VENTIL. ALIM.
5      DISPLAY   FREEZE,B   /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
11     DISPLAY   TE80,A     /TEMP RETOUR
12     DISPLAY   TE10,A     /TEMP MELANGE
13     DISPLAY   TE1,A      /TEMP EXTERIEURE
14     DISPLAY   TE60,A     /TEMP ALIMENTATION
/
15     DISPLAY   CONON,B    /PERMISSION DE CONTROLE
17     ADJUST    RARL,A     /AIR RET BAS LIM REAJ TEMP ALIM

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18      ADJUST   RARH,A      /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST   SAHL,A      /REAJ TEMP ALIM HAU LIM
20      ADJUST   SALL,A      /REAJ TEMP ALIM BAS LIM
21      DISPLAY  DSSP,A      /POINT DE CONSIGNE ALIM
22      ADJUST   OASO,A      /TEMP LIM EXT ECONOMISEUR
23      DISPLAY  ECON,B      /RESULTAT ECONOMISEUR
24      DISPLAY  MDP,A      /POSITION MINIMUM VOLETS
25      ADJUST   MXDSP,A     /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY  ZMXD,A      /RESULTAT PROPORTION.
27      DISPLAY  Z10M,A      /RESULTAT VOLETS LIMITE
28      DISPLAY  Z10C,A      /RESULTAT VOLETS CTL
29      DISPLAY  Z10,A      /RESULTAT VOLETS
30      DISPLAY  ZT10,A     /F.B. VOLETS
/
31      DISPLAY  HTG,B      /CHAUFFAGE
32      DISPLAY  Z40,A      /RESULTAT CHAUFFAGE
/
34      DISPLAY  CLG,B      /REFROIDISSEMENT
35      DISPLAY  Z30,A      /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A     /F.B. SOUPAPES
/
37      DISPLAY  HT80,A     /HUMIDITE RETOUR
38      DISPLAY  HT60,A     /HUMIDITE ALIMENT
39      ADJUST   RHSP,A      /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A    /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A     /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A      /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A     /F.B. HUMIDITE
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T      /VACANCE 1
58      ADJUST   H2,T      /VACANCE 2
59      ADJUST   H3,T      /VACANCE 3
60      ADJUST   H4,T      /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
/
65      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
66      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. V44-26E
/
67      DISPLAY  FSTATE,B   /ETAT VENTIL. V44 26E
/
/-----/
/      FONCTIONS SPECIALES      /
/-----/
/

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/ 100  PARAMETRES  CONTROLE  HUMIDITE  RETOUR
/ 200  PARAMETRES  CONTROLE  HAUTE  LIMITE  HUMIDITE
/ 400  PARAMETRES  CONTROLE  CHAUFFAGE
/ 600  PARAMETRES  CONTROLE  VOLETS  PAR  MELANGE
/ 700  PARAMETRES  CONTROLE  VOLETS  PAR  ALIMENTATION
/ 800  PARAMETRES  CONTROLE  REFROIDISSEMENT
/
79      ADJUST    CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST    CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST    CIGXXX,I      /GAIN INTEGRAL
82      ADJUST    CMPXXX,A      /COMPENSATION
83      ADJUST    CDSXXX,A      /BANDE MORTE
/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/
84      DISPLAY   UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY   UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY   DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY   DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST    SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY   FIC1L,B
90      ADJUST    FIC1E,I
91      ADJUST    STEST,I
92      DISPLAY   OCNT,I
93      OVSCAN
94      DISPLAY   ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/-----/
/                                L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO                                DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-7
/
/      51      ALARME HORAIRE SYSTEME V43-7
/
/-----/
/
/
@ CONTROL PROCESS CODE:

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/
/
/-----
/      PROGRAMME HORAIRE ET CYCLE D OCCUPATION
/-----
/
/DETERMINE HEURE PERIODE D OCCUPATION
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      FSTRT      OPERATION VENTILATEUR
/
/A L HEURE D ARRET:
/          RESET     FSTRT      OPERATION VENTILATEUR
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       BPD,SUF,R
2.3      SET       FSTRT,BPD,R
2.4      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET       AUTO,S,S
3.3      DELAY     25,U
3.4      SET       COMP50,R,R
3.5      INTERVAL  10,U
3.6      XOR       COMP50,FSTAT
3.7      ALARM     50,C,S
3.8      SET       BPD,FSTRT,R
3.9      BOUT      ZS50,3,OFF
3.10     SET       COMP50,BPD,R
3.11     EXIT      U
/
/
/-----

```

```

/      GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----
/
4.1      RESTART
4.2      DELAY      25,U
4.3      INTERVAL   5,U
4.4      SET        BPD,FREEZE,R
4.5      ALARM      10,C,R
4.6      EXIT       U
/
/
/-----
/      CONTROLE D HUMIDITE DE RETOUR   HAUTE LIMITE ALIM.
/-----
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT      CONON,S
5.2      SET        BPD,CONON,R
5.3      STORE      APD,0.0,0.0,C,R
5.4      STORE      Z70C,APD,APD,C,R
5.5      STORE      Z70,APD,APD,C,R
5.6      AOUT       ZCP70,3,0.0,C,R
5.7      EXIT       C,R
5.8      DELAY      20,U
5.9      INTERVAL   CST70,U
5.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11     STORE      Z70C,APD,APD,U
5.12     EXIT       U
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      EXIT       C,R
6.4      INTERVAL   CST70A,U
6.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6      STORE      Z70HL,APD,APD,U
6.7      SELECT     APD,Z70C,L
6.8      STORE      Z70,APD,APD,U
6.9      AOUT       ZCP70,3,0.0,U
6.10     EXIT       U
/
/
/-----
/      CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE
/-----
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-.
/
7.1      RESTART
7.2      SET        CONON,R,R
7.3      DELAY      25,U
7.4      INTERVAL   5,U
7.5      SET        CONON,FSTAT,R

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7.6      EXIT      U
/
/
/-----/
/              ECONOMISEUR D AIR FRAIS
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
8.1      EVENT      CONON,S
8.2      SET         ECON,R,R
8.3      SET         BPD,FSTAT,R
8.4      EXIT        C,R
8.5      INTERVAL    300,U
8.6      COMPARE      TE1,GE,OASO,1.0
8.7      SET         ECON,BPD,R
8.8      EXIT        U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
9.1      EVENT      CONON,S
9.2      INTERVAL    300,U
9.3      STORE       APD,TE80,RARL,U
9.4      SPAN        RARL,RARH,SAHL,SALL
9.5      STORE       DSSP,APD,SAHL,U
9.6      EXIT        U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE
/-----/
/
/QUAND LE SYSTEME DEMARRE, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M  RESULTAT PAR TEMP DE MELANGE
/Z10C  RESULTAT PAR TEMP D ALIMENTATION
/Z10   RESULTAT VOLETS
/
/
10.1     EVENT      CONON,S
10.2     SET         MIXLL,R,R
10.3     SET         BPD,CONON,R
10.4     EXIT        C,R
10.5     INTERVAL    5,U

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10.6   COMPARE   TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
10.7   SET      MIXLL,BPD,R           /A LA BASSE LIMITE
10.8   SELECT   Z10M,Z10C,L
10.9   STORE    Z10,APD,APD,U
10.10  AOUT     ZCP10,3,0.0,U
10.11  EXIT     U
/
11.1   EVENT    MIXLL,S               /CONTROLE PAR BASSE LIMITE DE MELANGE
11.2   SET      BPD,MIXLL,R
11.3   STORE    Z10M,100.0,100.0,C,R
11.4   STORE    CMP10A,Z10C,Z10C,U
11.5   EXIT     C,R
11.6   INTERVAL CST10A,U
11.7   PROP     MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
11.8   STORE    Z10M,APD,APD,U
11.9   EXIT     U
/
12.1   EVENT    CONON,R /POSITION D ARRET SOUPAPES
12.2   SET      BPD,CONON,R
12.3   EXIT     C,S
12.4   SET      HTG,R,R
12.5   SET      CLG,R,R
12.6   DELAY    7,C,R
12.7   STORE    APD,0.0,0.0,C,R
12.8   AOUT     ZCP30,3,0.0,C,R
12.9   EXIT     U
/
13.1   EVENT    CONON,S
13.2   SET      BPD,CONON,R
13.3   STORE    APD,0.0,0.0,C,R
13.4   STORE    Z10,APD,APD,C,R
13.5   STORE    Z10C,APD,APD,C,R
13.6   STORE    Z10M,100.0,100.0,C,R
13.7   STORE    ZMXD,APD,APD,C,R
13.8   AOUT     ZCP10,3,0.0,C,R
13.9   EXIT     C,R
13.10  DELAY    7,U
13.11  STORE    APD,TE1,5.0,U
13.12  SPAN     5.0,20.0,0.0,75.0
13.13  STORE    CMP10,APD,APD,U
13.14  STORE    APD,50.0,50.0,U
13.15  AOUT     ZCP30,3,0.0,U
13.16  INTERVAL CST10,U
13.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
13.18  STORE    ZMXD,APD,APD,U
13.19  SPAN     MDP,100.0,MDP,100.0
13.20  SET      BPD,ECON,S
13.21  STORE    APD,MDP,MDP,C,S
13.22  STORE    Z10C,APD,APD,U
13.23  ORR      ZMXD,GE,85.0,10.0
13.24  SET      CLG,BPD,R
13.25  COMPARE  ZMXD,LE,15.0,10.0
13.26  SET      HTG,BPD,R
13.27  EXIT     U
/
/
/-----/

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/          CALCUL DE LA POSITION MINIMUM DES VOLETS          /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DU VENTILATEUR
/D EVACUATION. LA FONCTION MINF1 EST LE POURCENTAGE RAJOUTE A LA POSITION
/MINIMUM QUAND LE VENTILATEUR FONCTIONNE. LE RESULTAT S APPLIQUE DANS LA
/ROUTINE DE CONTROLE DES VOLETS
/
14.1      RESTART
14.2      DELAY      25,U
14.3      INTERVAL  10,U
/
14.4      SET        BPD,FSTATE,R          /CALCUL VENT. V44-26E
14.5      STORE      APD,0.0,0.0,C,R
14.6      STORE      APD,MINF1,MINF1,C,S
14.7      CALC       APD,MDPOS,1,1,1,T
14.8      STORE      MDP,APD,20.0,U
14.9      EXIT       U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
15.1      EVENT      HTG,S
15.2      SET        BPD,HTG,S
15.3      STORE      Z40,0.0,0.0,C,R
15.4      STORE      APD,50.0,50.0,C,R
15.5      AOUT       ZCP30,3,0.0,C,R
15.6      EXIT       C,R
15.7      INTERVAL   CST40,U
15.8      CALC       DSSP,0.3,1,-1,1,T
15.9      PROP       APD,TE60,CPB40,CIG40,0.0,CDS40
15.10     STORE      Z40,APD,APD,U
15.11     SPAN       0.0,100.0,50.0,0.0
15.12     AOUT       ZCP30,3,100.0,U
15.13     EXIT       U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/
16.1      EVENT      CLG,S
16.2      SET        BPD,CLG,R
16.3      STORE      Z30,0.0,0.0,C,R
16.4      STORE      APD,50.0,50.0,C,R
16.5      AOUT       ZCP30,3,0.0,C,R

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16.6    EXIT      C,R
16.7    INTERVAL  CST30,U
16.8    CALC      DSSP,0.3,1,1,1,T
16.9    PROP      APD,TE60,CPB30,CIG30,0.0,CDS30
16.10   STORE     Z30,APD,APD,U
16.11   SPAN      0.0,100.0,50.0,100.0
16.12   AOUT      ZCP30,3,0.0,U
16.13   EXIT      U
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
17.1    EVERY                               /SELECTION DU STSTEME POUR LE
17.2    SET      SYSP,R,R                    /
17.3    COMPARE  SYSDIS,EQ,100,0
17.4    SET      SYS1,BPD,R
17.5    OR       SYSP,BPD
17.6    SET      SYSP,BPD,S
17.7    COMPARE  SYSDIS,EQ,200,0
17.8    SET      SYS2,BPD,R
17.9    OR       SYSP,BPD
17.10   SET      SYSP,BPD,S
17.11   COMPARE  SYSDIS,EQ,400,0
17.12   SET      SYS4,BPD,R
17.13   OR       SYSP,BPD
17.14   SET      SYSP,BPD,S
17.15   COMPARE  SYSDIS,EQ,600,0
17.16   SET      SYS6,BPD,R
17.17   OR       SYSP,BPD
17.18   SET      SYSP,BPD,S
17.19   COMPARE  SYSDIS,EQ,700,0
17.20   SET      SYS7,BPD,R
17.21   OR       SYSP,BPD
17.22   SET      SYSP,BPD,S
17.23   COMPARE  SYSDIS,EQ,800,0
17.24   SET      SYS8,BPD,R
17.25   OR       SYSP,BPD
17.26   SET      SYSP,BPD,S
17.27   SET      SYS,SYSP,S
17.28   EXIT     U
/
/
18.1    EVENT    SYS,S                      /RESET LES FONCTIONS POUR
18.2    SET      BPD,SUF,R                  /LE CDB SPECIAL
18.3    STORE     SYSDIS,0,0,C,R            /SUR UNE PERIODE DE DISCLR
18.4    EXIT      C,R
18.5    DELAY     3600,U
18.6    STORE     SYSDIS,0,0,U
18.7    EXIT      U
/
/
19.1    EVENT    SYS1,S                      /SYS 100
19.2    SET      BPD,SUF,R
19.3    EXIT      C,R
19.4    INTERVAL  5,U

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19.5    STORE    CSTXXX,CST70,CST70,U    /PERMET DE VOIR LES
19.6    STORE    CPBXXX,CPB70,CPB70,U    /VALEURS DU SYSTEME
19.7    STORE    CIGXXX,CIG70,CIG70,U
19.8    STORE    CMPXXX,0.0,0.0,U
19.9    STORE    CDSXXX,CDS70,CDS70,U
19.10   EXIT     U
/
/
20.1    EVENT    SYS1,S
20.2    SET      BPD,SUF,R
20.3    EXIT     C,R
20.4    DELAY    10,U
20.5    INTERVAL 1,U
20.6    STORE    CST70,CSTXXX,CST70,U    /PERMET D AJUSTER LES
20.7    STORE    CPB70,CPBXXX,CPB70,U    /VALEURS DU SYSTEME
20.8    STORE    CIG70,CIGXXX,CIG70,U
20.9    STORE    CDS70,CDSXXX,CDS70,U
20.10   EXIT     U
/
/
21.1    EVENT    SYS2,S                    /SYS 200
21.2    SET      BPD,SUF,R
21.3    EXIT     C,R
21.4    INTERVAL 5,U
21.5    STORE    CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
21.6    STORE    CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
21.7    STORE    CIGXXX,CIG70A,CIG70A,U
21.8    STORE    CMPXXX,0.0,0.0,U
21.9    STORE    CDSXXX,CDS70A,CDS70A,U
21.10   EXIT     U
/
/
22.1    EVENT    SYS2,S
22.2    SET      BPD,SUF,R
22.3    EXIT     C,R
22.4    DELAY    10,U
22.5    INTERVAL 1,U
22.6    STORE    CST70A,CSTXXX,CST70A,U    /PERMET D AJUSTER LES
22.7    STORE    CPB70A,CPBXXX,CPB70A,U    /VALEURS DU SYSTEME
22.8    STORE    CIG70A,CIGXXX,CIG70A,U
22.9    STORE    CDS70A,CDSXXX,CDS70A,U
22.10   EXIT     U
/
/
23.1    EVENT    SYS4,S                    /SYS 400
23.2    SET      BPD,SUF,R
23.3    EXIT     C,R
23.4    INTERVAL 5,U
23.5    STORE    CSTXXX,CST40,CST40,U    /PERMET DE VOIR LES
23.6    STORE    CPBXXX,CPB40,CPB40,U    /VALEURS DU SYSTEME
23.7    STORE    CIGXXX,CIG40,CIG40,U
23.8    STORE    CMPXXX,0.0,0.0,U
23.9    STORE    CDSXXX,CDS40,CDS40,U
23.10   EXIT     U
/
/
24.1    EVENT    SYS4,S

```

```

24.2    SET      BPD,SUF,R
24.3    EXIT     C,R
24.4    DELAY    10,U
24.5    INTERVAL 1,U
24.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
24.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
24.8    STORE    CIG40,CIGXXX,CIG40,U
24.9    STORE    CDS40,CDSXXX,CDS40,U
24.10   EXIT     U
/
/
25.1    EVENT    SYS6,S                    /SYS 600
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    INTERVAL 5,U
25.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
25.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
25.7    STORE    CIGXXX,CIG10A,CIG10A,U
25.8    STORE    CMPXXX,0.0,0.0,U
25.9    STORE    CDSXXX,CDS10A,CDS10A,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS6,S
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    DELAY    10,U
26.5    INTERVAL 1,U
26.6    STORE    CST10A,CSTXXX,CST10A,U    /PERMET D AJUSTER LES
26.7    STORE    CPB10A,CPBXXX,CPB10A,U    /VALEURS DU SYSTEME
26.8    STORE    CIG10A,CIGXXX,CIG10A,U
26.9    STORE    CDS10A,CDSXXX,CDS10A,U
26.10   EXIT     U
/
/
27.1    EVENT    SYS7,S                    /SYS 700
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG10,CIG10,U
27.8    STORE    CMPXXX,CMP10,CMP10,U
27.9    STORE    CDSXXX,CDS10,CDS10,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS7,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
28.7    STORE    CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
28.8    STORE    CIG10,CIGXXX,CIG10,U
28.9    STORE    CMP10,CMPXXX,CMP10,U
28.10   STORE    CDS10,CDSXXX,CDS10,U

```

```

28.11  EXIT      U
/
/
29.1   EVENT     SYS8,S                               /SYS 800
29.2   SET       BPD,SUF,R
29.3   EXIT      C,R
29.4   INTERVAL  5,U
29.5   STORE     CSTXXX,CST30,CST30,U                /PERMET DE VOIR LES
29.6   STORE     CPBXXX,CPB30,CPB30,U                /VALEURS DU SYSTEME
29.7   STORE     CIGXXX,CIG30,CIG30,U
29.8   STORE     CMPXXX,0.0,0.0,U
29.9   STORE     CDSXXX,CDS30,CDS30,U
29.10  EXIT      U
/
/
30.1   EVENT     SYS8,S
30.2   SET       BPD,SUF,R
30.3   EXIT      C,R
30.4   DELAY     10,U
30.5   INTERVAL  1,U
30.6   STORE     CST30,CSTXXX,CST30,U                /PERMET D AJUSTER LES
30.7   STORE     CPB30,CPBXXX,CPB30,U                /VALEURS DU SYSTEME
30.8   STORE     CIG30,CIGXXX,CIG30,U
30.9   STORE     CDS30,CDSXXX,CDS30,U
30.10  EXIT      U
/
/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/
31.1   RESTART
31.2   TIMDATA   DT
31.3   STORE     UPTIM,APD,APD,U                    /SAUVE L HEURE ACTUEL ET
31.4   TIMDATA   MD                                /LA DATE DE LA RESTAURATION
31.5   STORE     UPDAT,APD,APD,U                    /DU POUVOIR.
31.6   EXIT      U
/
32.1   RESTART
32.2   STORE     DNTIM,TOD,TOD,U                    /RECORD DE LA DERNIERE HEURE
32.3   STORE     DNDAT,LDAT,LDAT,U                  /ET DATE AVANT LA PANNE.
32.4   INTERVAL  60,U
32.5   TIMDATA   DT
32.6   STORE     TOD,APD,APD,U                      /SAUVE L HEURE ET LA DATE
32.7   TIMDATA   MD                                /ACTUEL A TOUTES LES MINUTES.
32.8   STORE     LDAT,APD,APD,U
32.9   EXIT      U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    710
/   CDB:       299
/   PROCESSES: 2631
/   OVERHEAD:  2700

```

```
/      TOTAL:  6340      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:   710
/      CDB:     299
/      PROCESSES: 2631
/      OVERHEAD: 2700
/      TOTAL:  6340      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:   710
/      CDB:     299
/      PROCESSES: 2633
/      OVERHEAD: 2700
/      TOTAL:  6342      8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:   710
/      CDB:     299
/      PROCESSES: 2633
/      OVERHEAD: 2700
/      TOTAL:  6342      8K DSC MEMORY NEEDED
```



AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBAR-RAGE.

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR LES EPT-1 ET 2. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

UNE POSITION MINIMUM DE 15% EST ASSURE AU VOLET EN TOUT TEMPS. LORSQUE LE VENTILATEUR V44-26E EST MIS EN MARCHÉ PAR LA MINUTERIE MECANIQUE, SON VOLET MOTORISE OUVRE ET LA POSITION MINIMUM DES VOLETS DU SYSTEME EST RAMENE A 20%.

LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT AU MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR AFIN DE MAINTENIR 30% H.R. CEPENDANT, UNE HAUTE LIMITE DE 80% H.R. DANS LA GAINÉ D'ALIMENTATION EST ASSUREE.

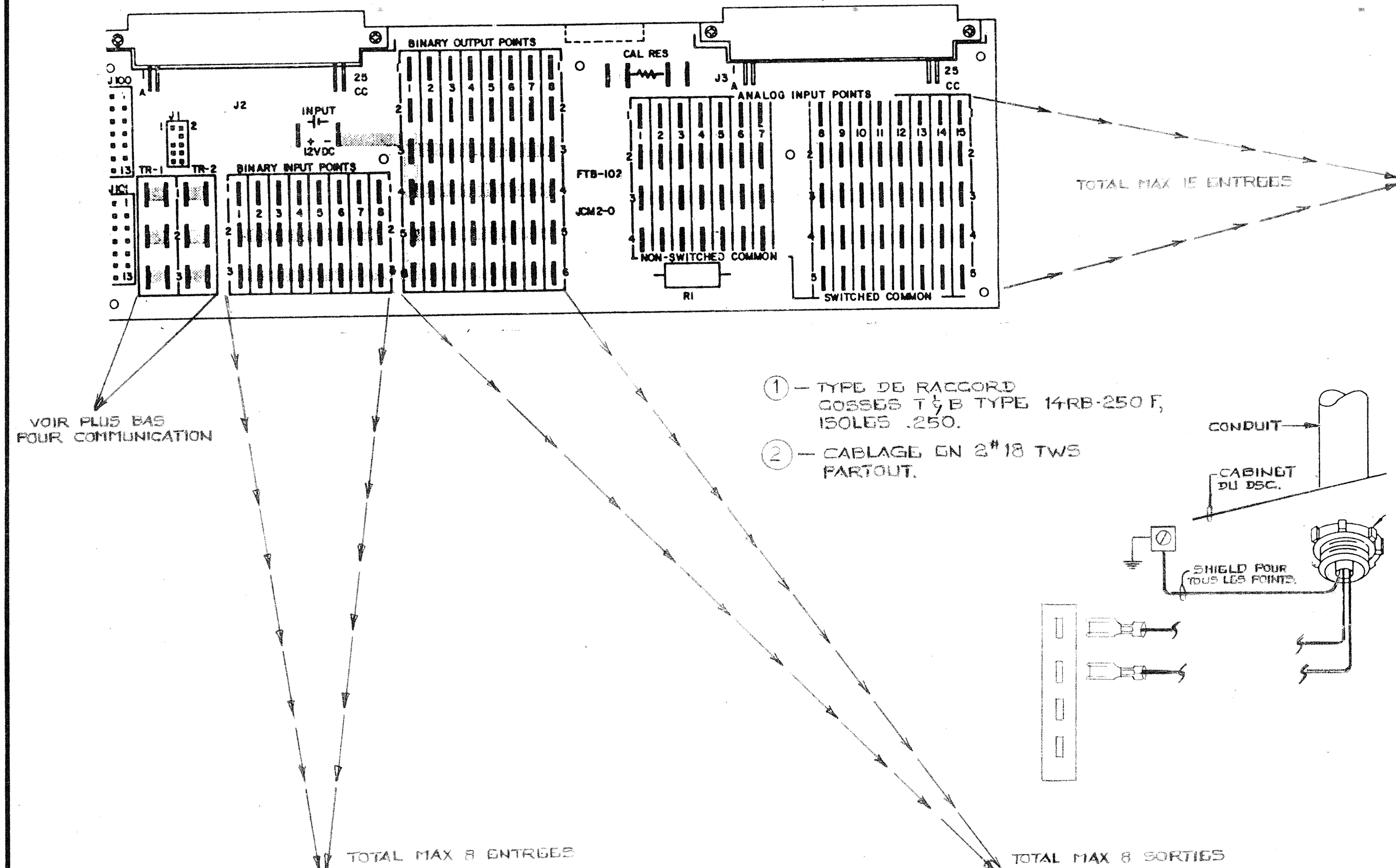
SUR UNE DETECTION DE TEMPERATURE INFERIEURE AU POINT DE CONSIGNE DE TLL-1, LE SYSTEME S'ARRETE.

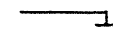
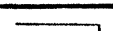

SUR UNE DETECTION DE FUMEE PAR DF-1 OU DF-2, LE SYSTEME S'ARRETE



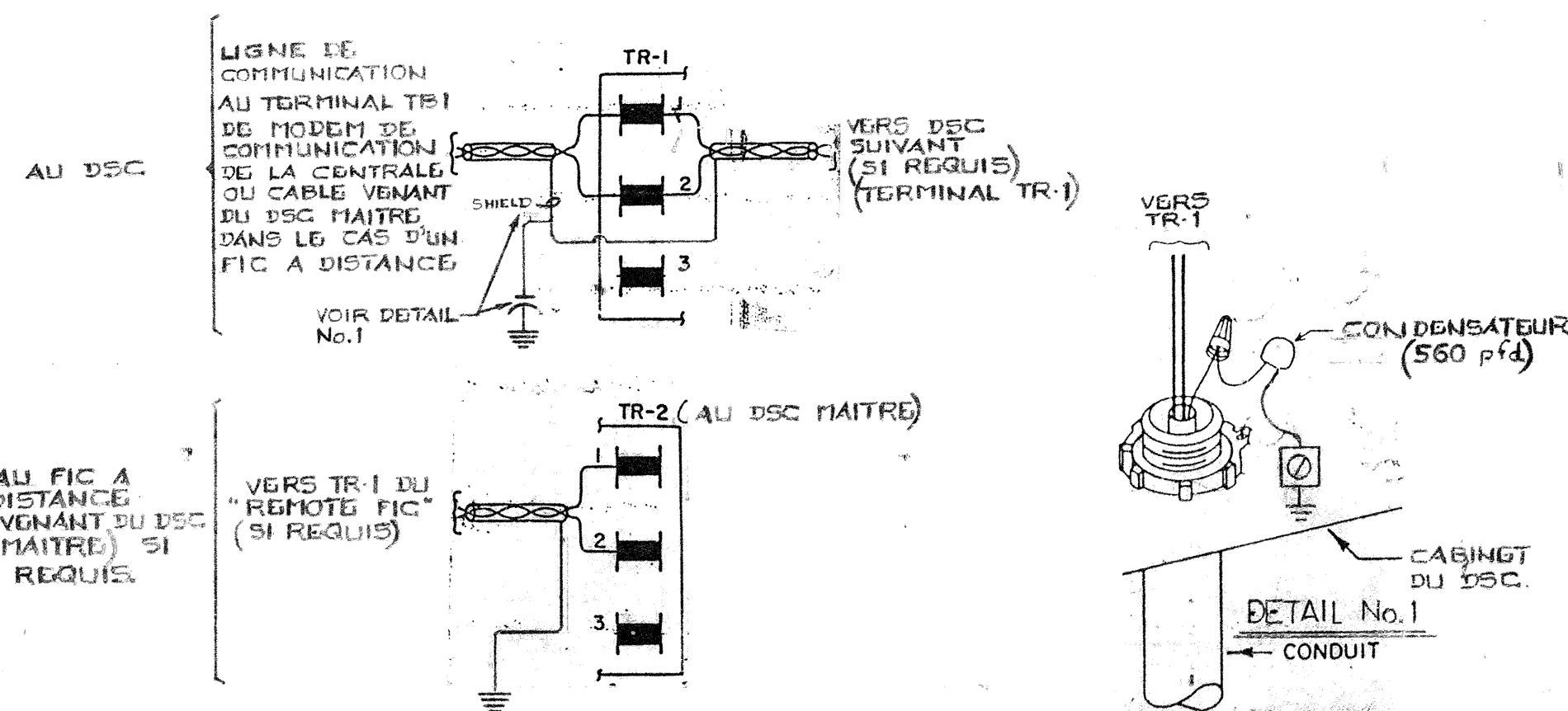
AU DEPART DU SYSTEME V43-7 OU 8, LES VOLETS DA-4 ET 5 OUVRENT A 100%





BORNIERI DE RACCORDAMENTO (FTE-102)

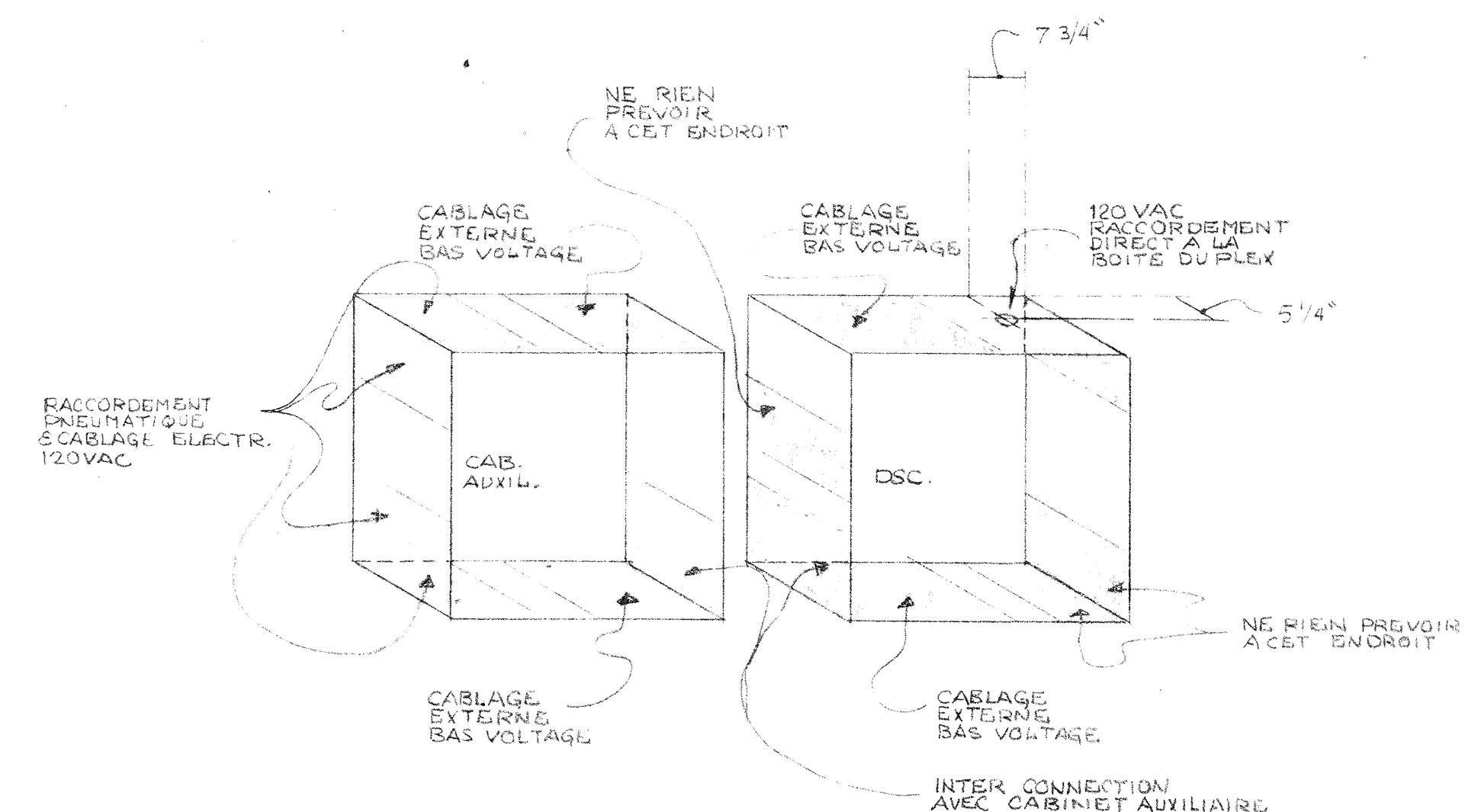
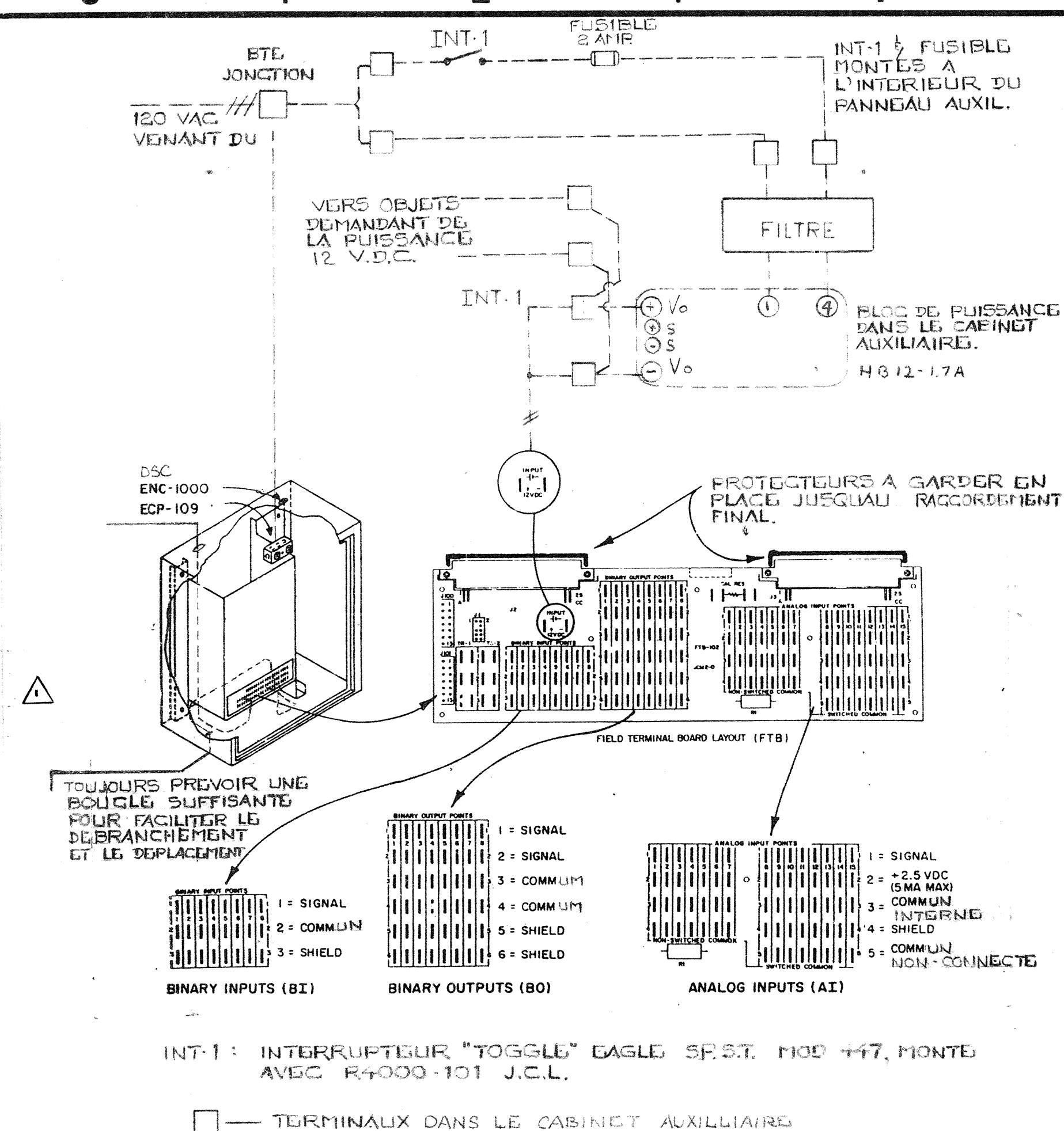


EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 7		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 7	BIN	1 2		CONTACT AUX. DEM	MCC-2	B1.1		
2	STATUS	SYSTEME V44-26E	BIN	1 2		CONTACT AUX DEM	MCC-7	B2.1		
3	GEL	SYSTEME 7	BIN	1 2		RELAIS RG	CAB AUX	B3.1		

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 7		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P1.1		
2	EPT-2	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P2.1		
3	EPT-3	HUMIDIFICAT.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CAB AUX	P3.1		
5A	R1	ARRET DEPART SYSTEME	SST	1 3	2 7	RELAIS 12VDC	MCC	S5A.1		




EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.A.								DSC 7		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3		TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	HUMIDIFI- CATEUR	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1		4-20 mA 10-90%RH
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1		4-20 mA 10-90%RH

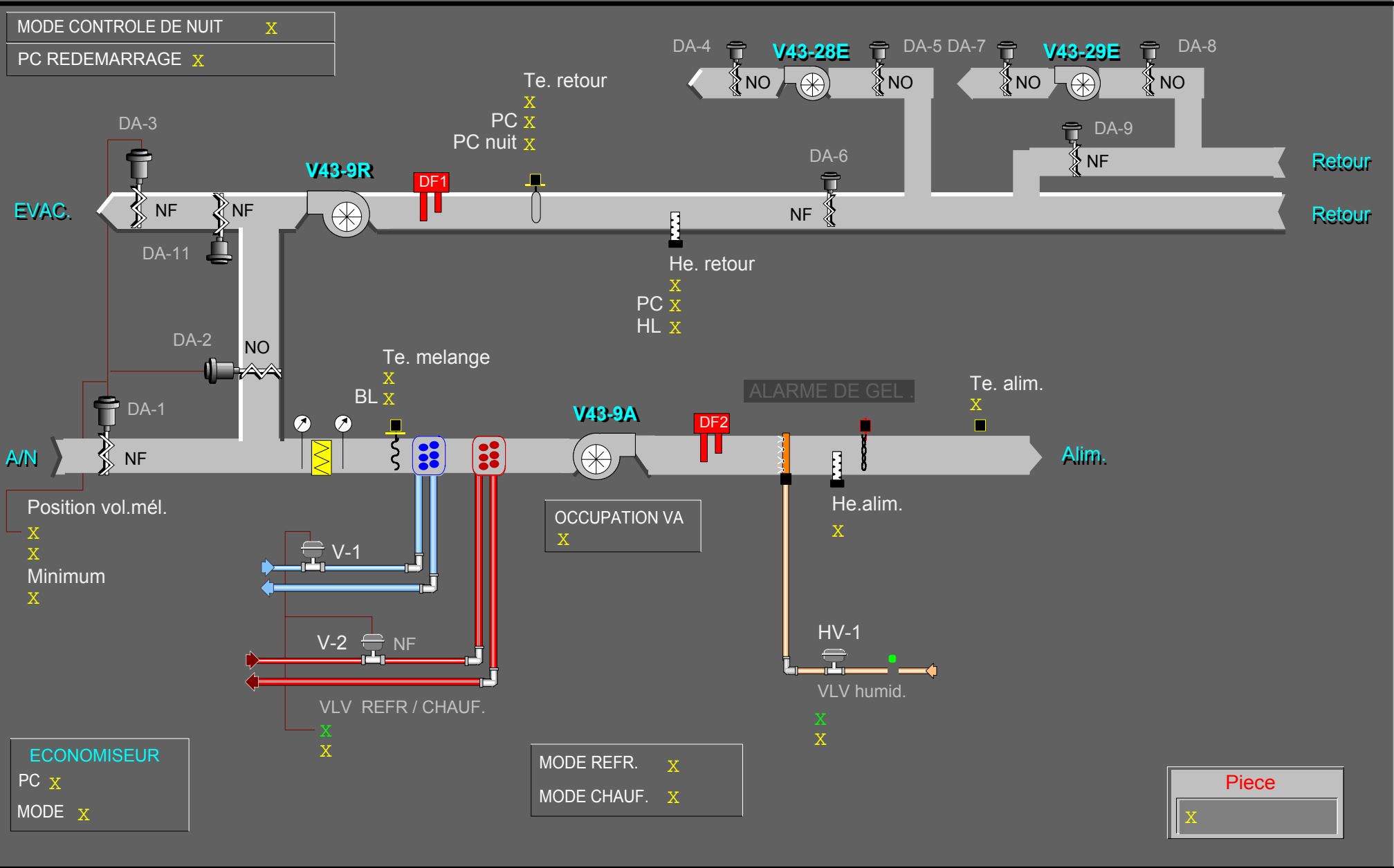


- ① — VOIR DESSINS STD. DE RACCORDEMENT POUR
LES COMPOSANTES AUXILIAIRES.
- ② — VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES ^{1/}
ELECTRIQUES LOCAUX.

[illegible]

LISTE DE MATERIEL

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3073-1	3	MOTEUR DE VOLET
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
DA-4	D3073-2	1	MOTEUR DE VOLET
TLL-1	ALLA-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEURS DE FUMEE PYROTRONIC
EPT-1 @ 3	EPT-102	3	INTERFACE ELECTRIQUE/PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 MM
V-1	V3974-1010	1	VALVE N.F. Ø 3/4" C.V. 8.6
V-2	V3754-1025	1	VALVE N.O. Ø 1/2" C.V. 4.4
EP-1 ET 2	V11HAA-100	2	RELAIS ELECTRIQUE/PNEUMATIQUE
G-1, 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1		1	INTERRUPTEUR 2 POSITIONS
PS-1	HB 12-17A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	BD 2 FF	1	TRANSFO 120 / 18 VAC
M-1 	MARKTIME 90015	1	MINUTERIE MECANIQUE 0.12 HRES C/A LAMPE TEMOIN
C-1, 2	C 5226-3	2	SELECTEUR DE HAUT SIGNAL
VA-1	R 2080-1	1	AMPLIFICATEUR DE VITESSE
DA-5	D3153-2	1	MOTEUR PNEUMATIQUE
H.V-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



PARAMETRES

Contrôle de nuit

Resultat PID	X	Gain boucle PID	X
Interval PID	X	Bande morte	X
Bande propr.	X		

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

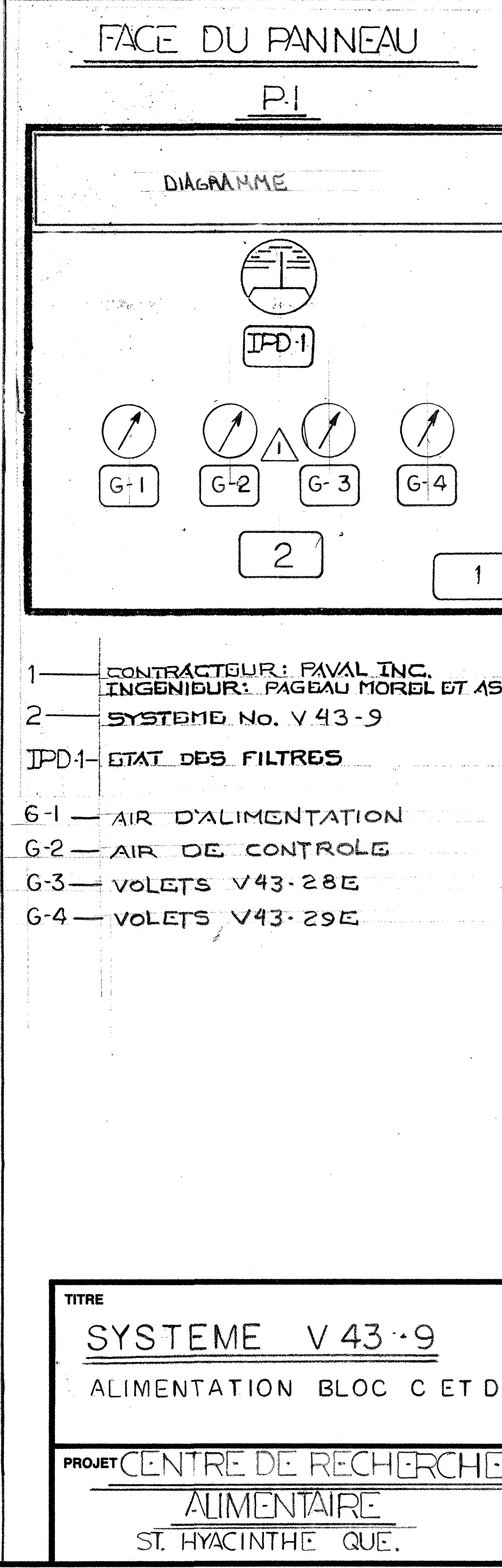
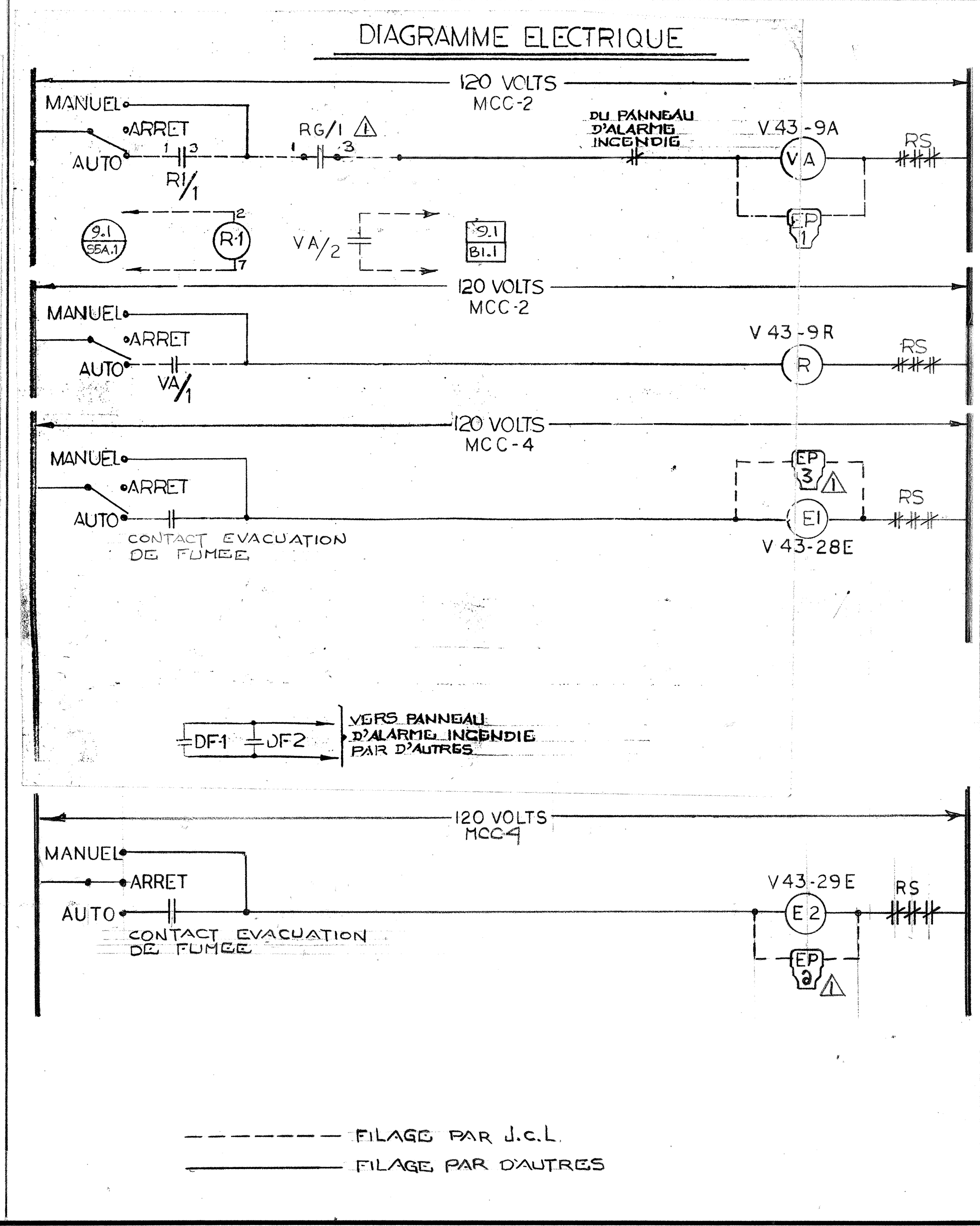
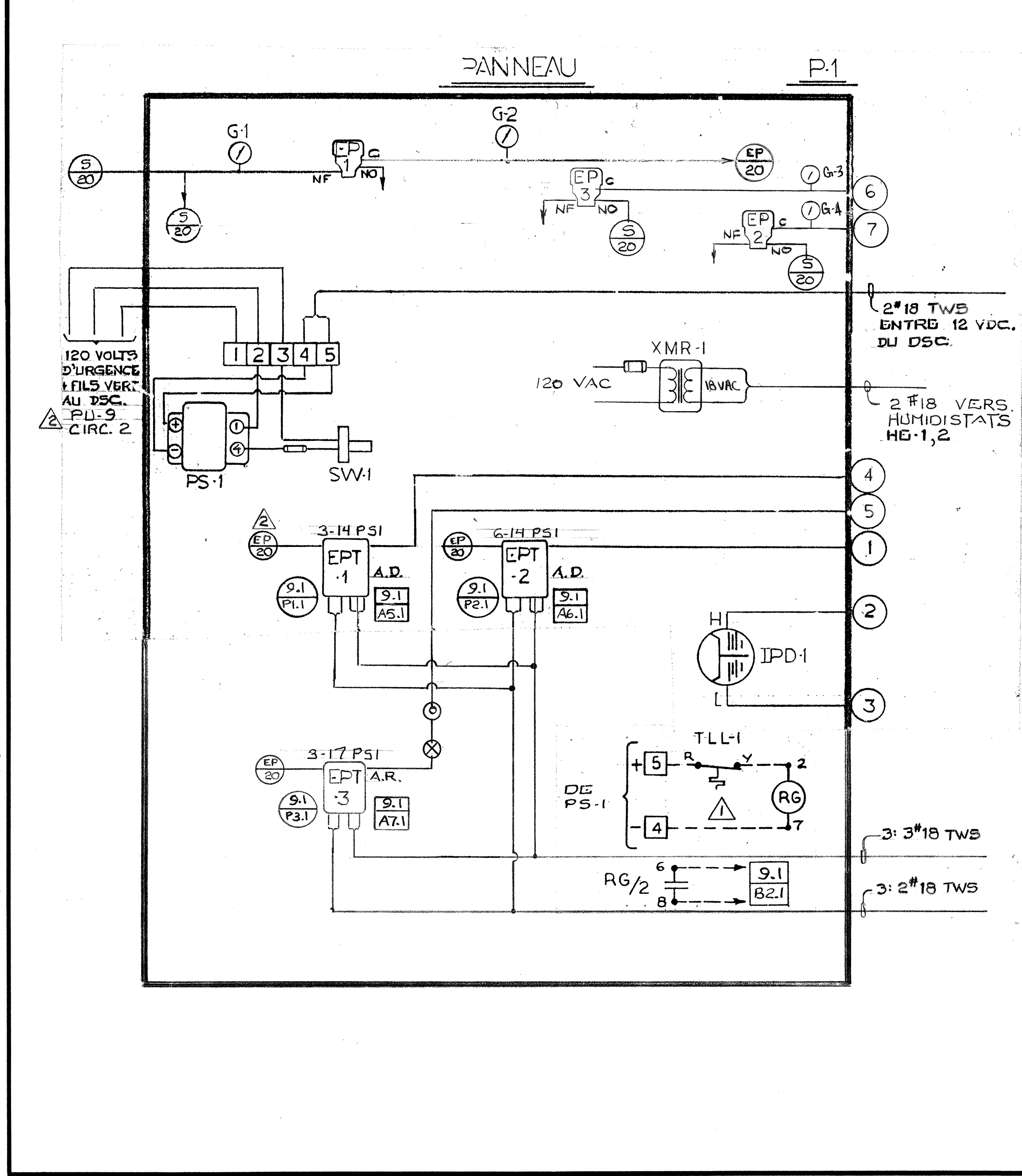
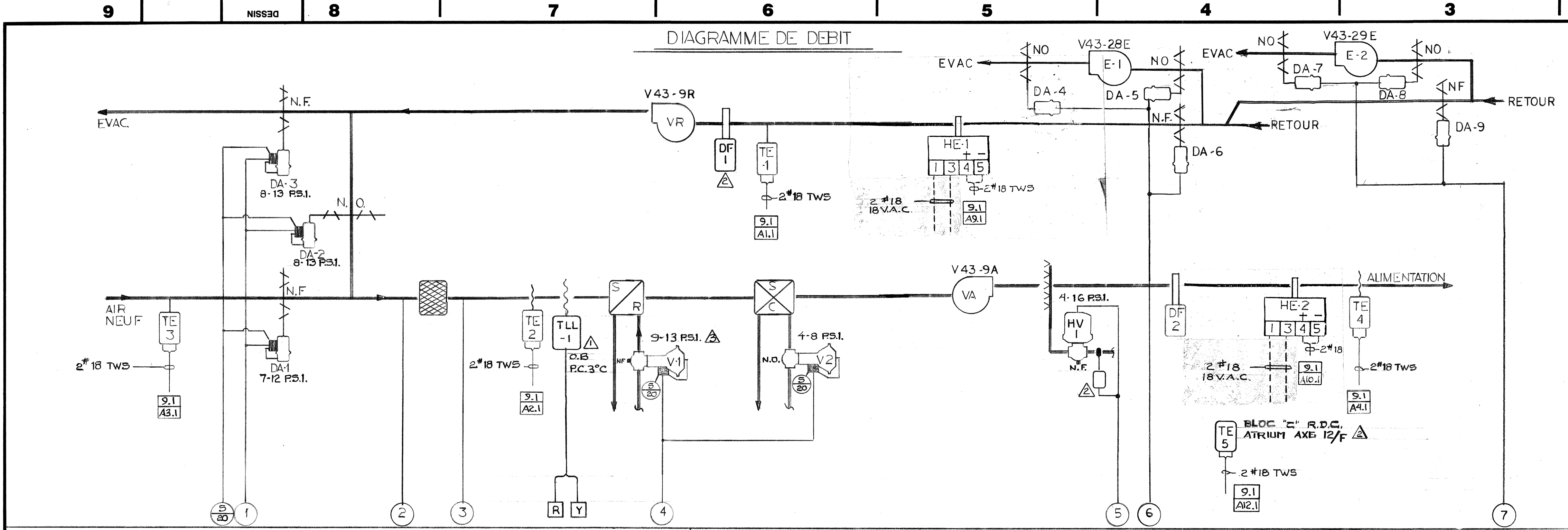


VACANCES DSC-9 , V43-9

Jour / M ois	VACANCE 1	X
Jour / M ois	VACANCE 2	X
Jour / M ois	VACANCE 3	X
Jour / M ois	VACANCE 4	X
Jour / M ois	VACANCE 5	X
Jour / M ois	VACANCE 6	X



22" x 34" ORIGINAL

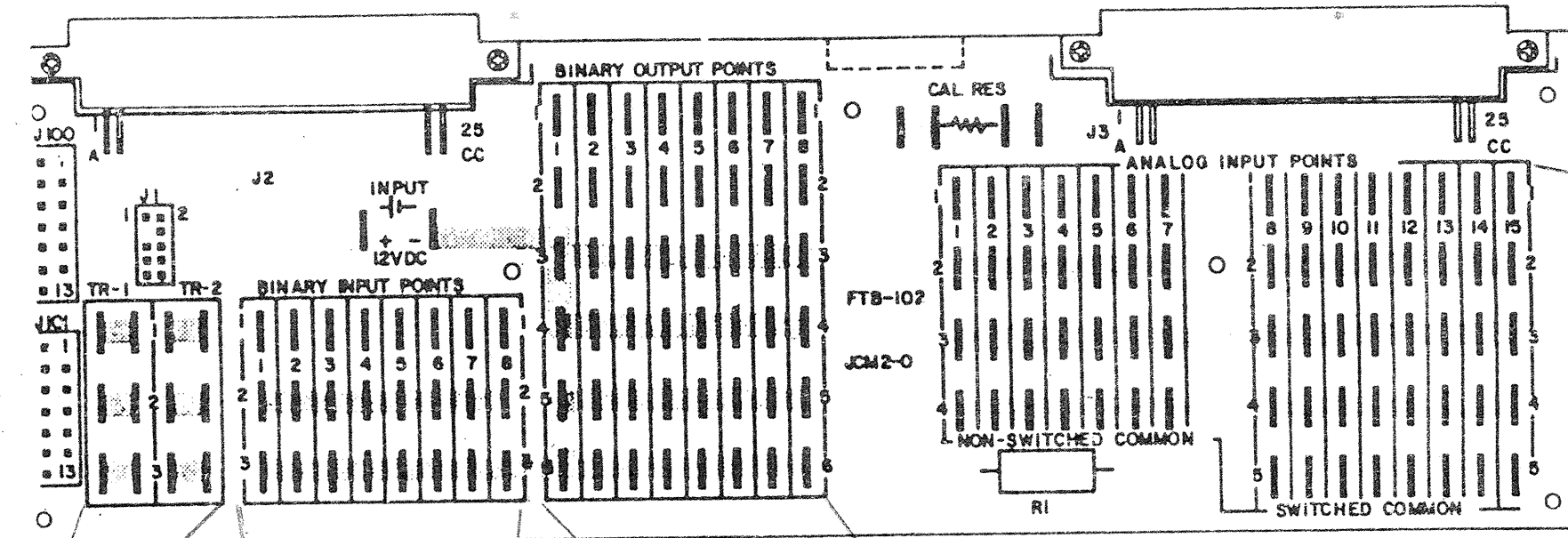


LISTE DE MATERIEL			
IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3	D8073-1	3	MOTEUR DE VOLET
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
DA-4 A 9	D5073-2	6	MOTEUR DE VOLET
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2	5000-1	2	DETECTEURS DE FUMEE PAROTRONIC
EPT-1 @ 3	EPT-102	3	INTERFACE ELECTRIQUE/PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 MM
V-1	V3974-1011	1	VALVE N.P. Ø 1" C.V. 13.9
V-2	V3754-1026	1	VALVE N.O. Ø 3/4" C.V. 8.6
EP-1 @ 3	V11HAA-109	3	RELAIS ELECTRIQUE/PNEUMATIQUE
G-1, 2, 3, 4	G2010-101	4	INDICATEUR 0/30 PSI
SW-1		1	INTERRUPTEUR 2 POSITIONS
PS-1	HG12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	B02FF	1	TRANSFO 120 / 18 VAC
TE-5	TC1800-102	1	ELEMENT DE TEMPERATURE DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

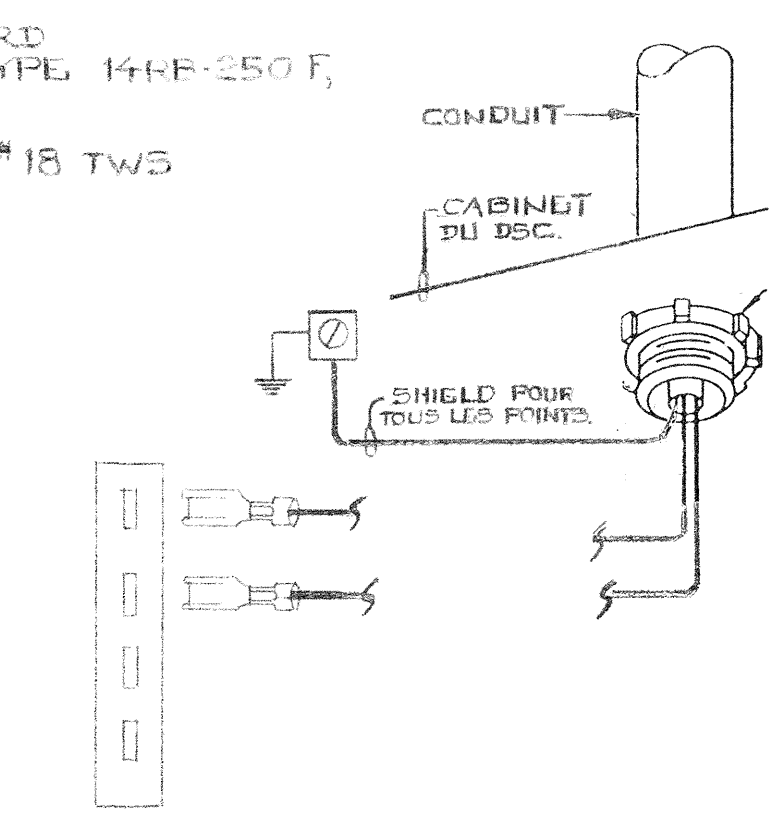
SEQUENCE D'OPERATION	
AU DEPART DU SYSTEME PAR LE OSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBAR-RAGE.	
LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFRIGERIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE DE RETOUR PAR LES EPT-1 ET 2.	
UNE POSITION MINIMUM DE 10% EST ASSURE AU VOLET EN TOUT TEMPS.	
LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT AU MINIMUM.	
L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LA GAIN DE RETOUR AFIN DE MAINTENIR 30% H.R. CEPENDANT, UNE HAUTE LIMITE DE 80% H.R. DANS LA GAIN D'ALIMENTATION EST ASSUREE.	
SUR UNE DETECTION DE TEMPERATURE INFERIEURE AU POINT DE CONSIGNE DE TLL-1, LE SYSTEME S'ARRETE.	
SUR UNE DETECTION DE FUMEE PAR DF-1 OU DF-2, LE SYSTEME S'ARRETE	
LA NUIT ET LES JOURS NON OUVRABLE LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C	
SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE LES VENTILATEURS V43-28E ET 29E DEMARRENT, EP-1 ET 2 SONT ALIMENTES ET PERMETTENT L'EVACUATION DE LA FUMEE	

TITRE	SYSTEME V43-9
ALIMENTATION BLOC C ET D	
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST. HYACINTHE QUE.
REFERENCE	J.C.R.
TECHNICIEN	R.F.
REVISION	1
DATE	JAN. 30.85
PAR	DATE 8-3-7
APPROUVE	DATE 8-3-7
CONTRAT	4096-8-17/52
DESSIN NO.	4068-17

BORNIERS DE RACCORDEMENT (FTB-102)



TOTAL MAX 8 ENTREES



- 1 - TYPE DE RACCORD COUSSES T&B TYPE 144R-250 F, ISOLÉS .250.
- 2 - CABLAGE EN 2*18 TWS PARTOUT.

VOIR PLUS BAS POUR COMMUNICATION

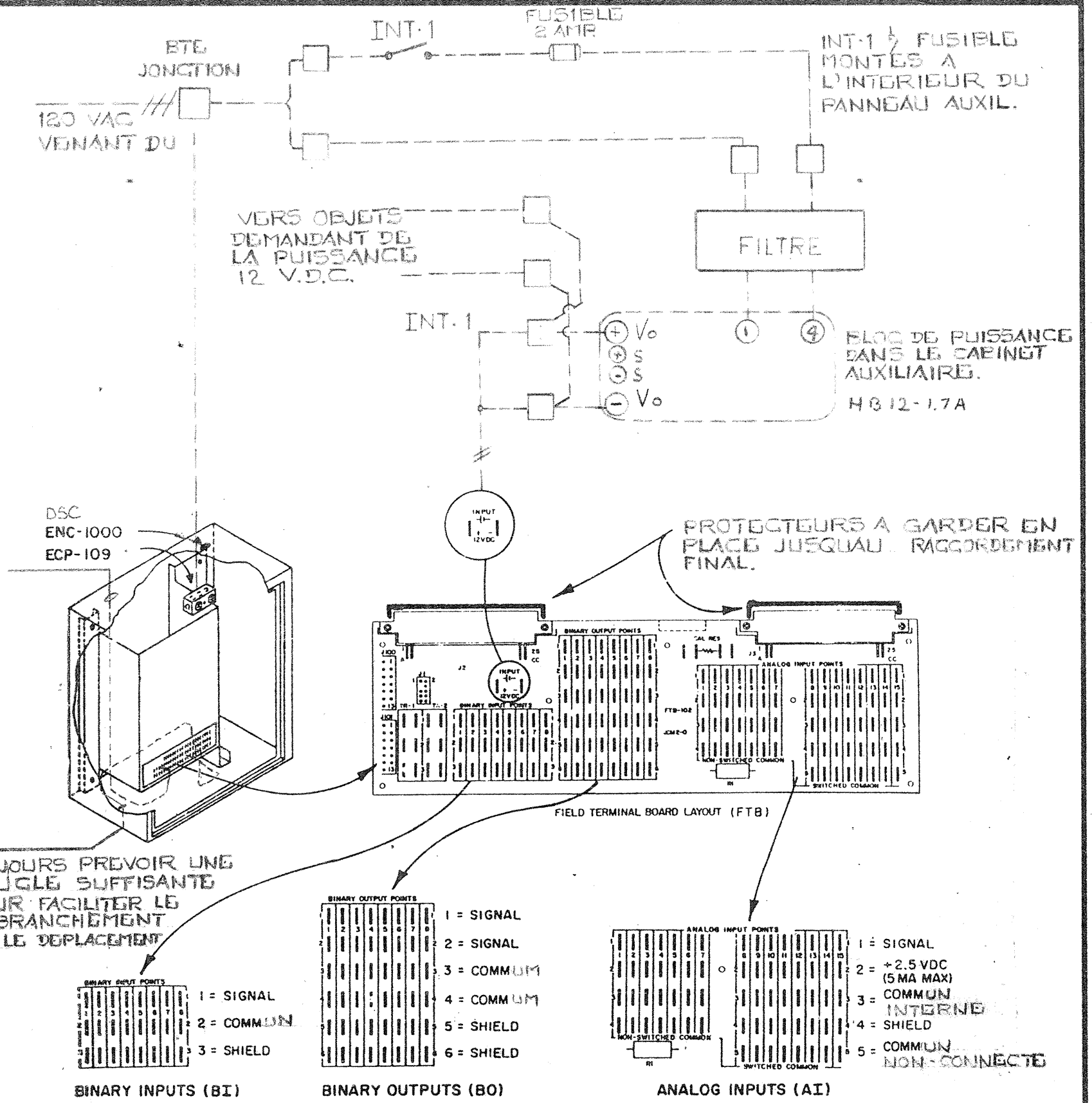
TOTAL MAX 8 SORTIES

TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE							DSC 9	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 9	BIN	1 2	1 2	CONTACT AUX. DEM.	MCC -2	B1.1		
2	REL	SYSTEME 9	BIN	1 2	1 2	RELAIS RG	CAB AUX.	B2.1		

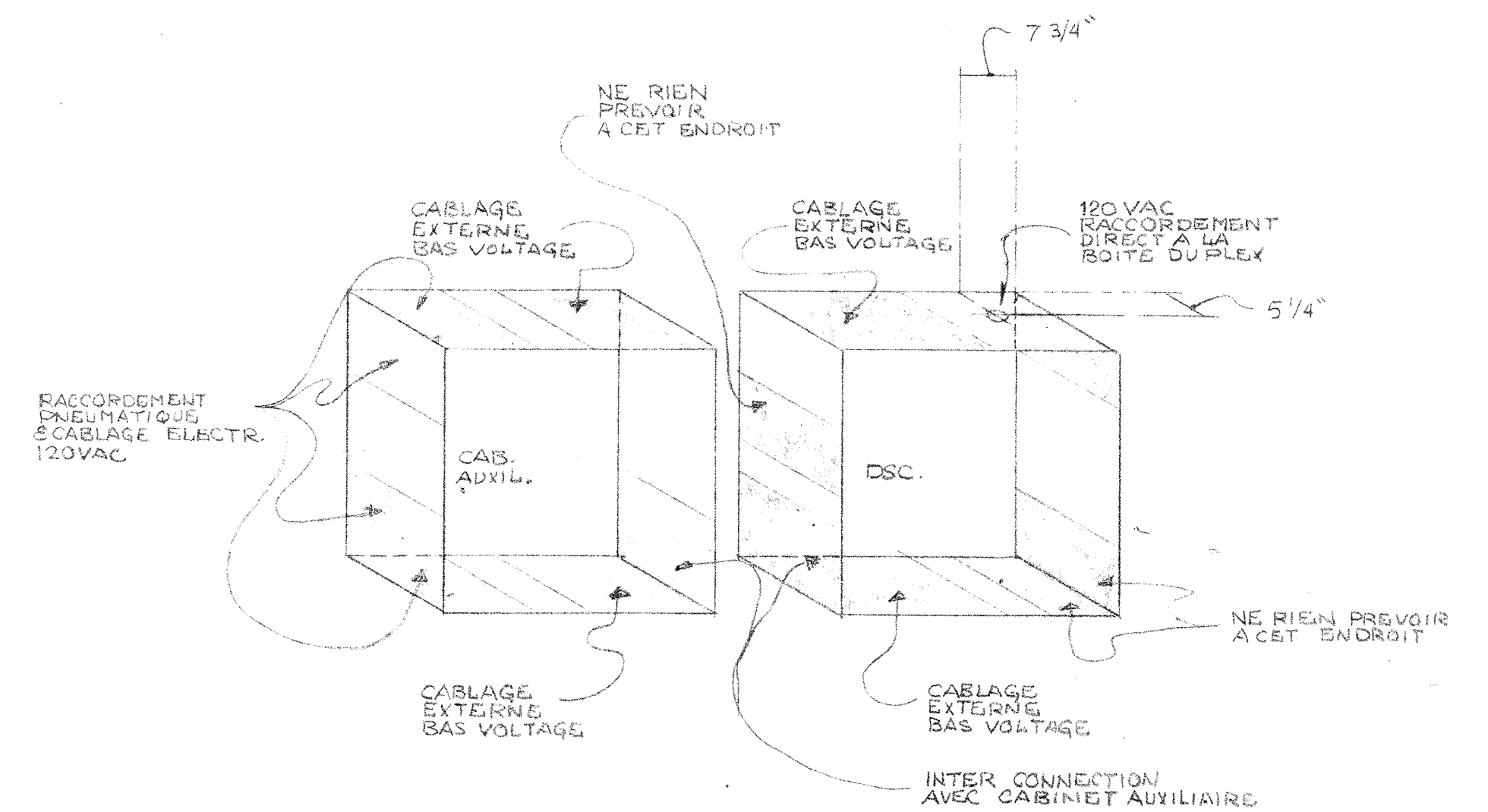
EMPLACEMENT		ADRESSE							DSC 9	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P1.1	
2	EPT-2	VOLET MELANGE	POS	1 2	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P2.1	
3	EPT-3	HUMIDIFICAT.	POS	1 2	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX.	P3.1	
4										
5A	R1	ARRET DEPART SYSTEME	SST	1 3	2 7	RELAIS 12VDC	MCC -2	SEA.1		

EMPLACEMENT		ADRESSE							DSC 9	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3	1 3	TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3	1 3	TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3	1 3	TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3	1 3	TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	VOLET MELANGE	ANA	1 2 3	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8										
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1	4-20MA 10-96%HR	
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A10.1	4-20MA 10-96%HR	
11										
12	TE-5	TEMP. PIECE	ANA	1 3	1 3	TE1800-102		A12.1		



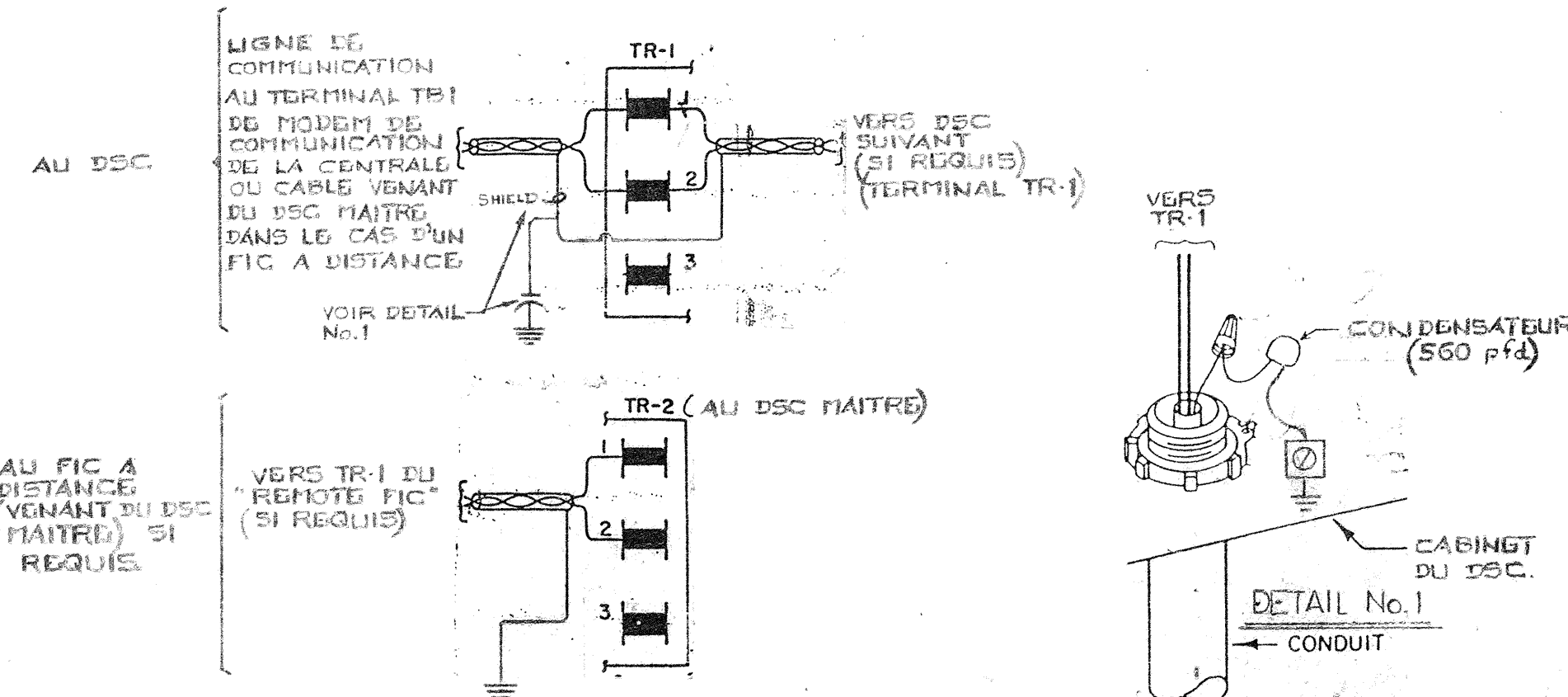
INT-1: INTERRUPTEUR "TOGGLE" CABLE SP37, MOD 447, MONTE AVEC R4000-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES ET ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-6500		TEL QUE CONSTRUIT		86-07-07	
DSC-9							
REPRESENTANT	TECHNICIEN	REVISION	NO.	AVIS	DATE	PAR	
JCR	R.T.						
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE	DATE	18/07/85	APPROUVE	DATE	18/07/85	
ST-HYACINTHE, QUE.		JOHNSON CONTROLS		Société de Contrôle Johnson Ltd		CONTRAT 5096-008-18	
		Division Des Systèmes Et Services		441 boulevard Lebeau		DESSIN NO. 4068-18	
				Montréal, QC H4N 1S2		Tel. 514-332-8980	

DSC 9 SYSTEME V43-9

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
21	ADJUST	RTSP,A	/POINT DE CONSIGNE RETOUR
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOILETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOILETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOILETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOILETS
30	DISPLAY	ZT10,A	/F.B. VOILETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI

```

53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2    /SOUPAPES
62      OVERRIDE ZCP10,A,2    /VOLETS
63      OVERRIDE ZCP70,A,2    /HUMIDITE
/

```

```

/
/-----/
/                FONCTIONS SPECIALES                /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/                RECORD PANNE DE POUVOIR                /
/-----/
/
84      DISPLAY   UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR

```


85 DISPLAY UPDAT,T /DATE DE LA RESTAURATION DU POUVOIR
86 DISPLAY DNTIM,T /HEURE DE LA DERNIERE PERTE DE POUVOIR
87 DISPLAY DNDAT,T /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88 ADJUST SYSDIS,I /SELECTION FONCTIONS SPECIALES
/
89 DISPLAY FIC1L,B
90 ADJUST FIC1E,I
91 ADJUST STEST,I
92 DISPLAY OCNT,I
93 OVSCAN
94 DISPLAY ACNT,I
95 ALMSCAN
96 YEAR
97 DATE
98 DAY
99 TIME

/

/

/

/

/

/-----/

/

 L I S T E D E S A L A R M E S /

/

ALARME			
NUMERO		DESCRIPTION	
			/
			/
10		ALARME THERMOSTAT DE GEL	/
			/
50		ALARME ARRET DEPART SYSTEME V43-9	/
			/
51		ALARME HORAIRE SYSTEME V43-9	/
			/
			/-----/
			/
			/

□

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 13:34:25
/
/TRANSLATION LISTING FOR DSC-9.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-12-:1 10:31:45
/
/TRANSLATION LISTING FOR DSC-9.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-12-:1 09:21:40
/
/TRANSLATION LISTING FOR DSC-9.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:24
/
/TRANSLATION LISTING FOR DSC-9.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 10:10:05
/
/TRANSLATION LISTING FOR CIRA9.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   9   SYSTEME   V43-9
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME         JEAN MORISSETTE
/      REVISION                     08 DECE 1986
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----

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/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,5545
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  20
@ AD:  76
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-8,RAT-0,TOT-0
@ BO:  MOM-0,POS-3,MAN-1
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-3
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FREEZE     CON-2      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.5,129.6 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.6,129.5 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-45.7,129.6 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.7,129.6 /TEMP ALIM
AI-5      ZT30       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPE
AI-6      ZT10       FUL-6      E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-7      ZT70       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9      HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-10     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-12     TE100      FUL-8      E,0.5,E,V,T,-46.1,129.5 /TEMP PIECE
/
/
BO-1      ZC30       POS-1      D,E,0     /SOUPAPES
BO-2      ZC10       POS-2      D,E,0     /VOLETS
BO-3      ZC70       POS-3      D,E,0     /HUMIDITE
BO-5A     ZS50       MAN-1      E,E      /VENTIL ALIM
/
/
CP-1      ZCP30      INC-1      E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPE
CP-2      ZCP10      INC-2      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-3      ZCP70      INC-3      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
BD-1      OCCD       E,R      /CYCLE D OCCUPATION
BD-2      TLCON      E,R      /CONTROLE PAR TEMP.
BD-3      FSTRT      E,R      /DEMANDE VENTILATEUR
BD-4      COMP50     E,R      /RESULTAT DEMARRAGE
BD-5      CONON      E,R      /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT          /
/-----/

```

```

/
BD-6      NCTL      E,R      /CONTROLE DE TEMP NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS
/-----/
/
BD-7      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE
/-----/
/
BD-8      MXD       E,R      /CONTROLE DE JOUR
BD-9      MIXLL     E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE
/-----/
/
BD-10     HTG       E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT
/-----/
/
BD-11     CLG       E,R      /REFROIDISSEMENT
/
/-----/
/          FONCTIONS SPECIALES
/-----/
/
BD-12     SYSP      D,R
BD-13     SYS       D,R
BD-14     SYS1      D,R
BD-15     SYS2      D,R
BD-16     SYS4      D,R
BD-17     SYS5      D,R
BD-18     SYS6      D,R
BD-19     SYS7      D,R
BD-20     SYS8      D,R
/
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.
/-----/
/
AD-1      DOW       E,2
AD-2      H1        E,00:00
AD-3      H2        E,00:00
AD-4      H3        E,00:00
AD-5      H4        E,00:00
AD-6      H5        E,00:00
AD-7      H6        E,00:00
AD-8      STA       E,00:00 /HORAIRE
AD-9      STO       E,00:00
AD-10     STA8      E,07:00

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AD-11  STO8      E,07:00
AD-12  STA7      E,07:00
AD-13  STO7      E,07:00
AD-14  STA9      E,08:09
AD-15  STO9      E,18:00
AD-16  NSBT      E,15.0 /POINT DE CONSIGNE REDEMARRAGE
AD-17  DELSST    E,80   /DELAI APRES PANNE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT          /
/-----/
/
AD-18  NSP       E,22.0 /POINT DE CONSIGNE RETOUR
AD-19  Z41       E,0.0  /RESULTAT CTL NUIT
AD-20  CST41     E,45   /INTERVAL CTL NUIT
AD-21  CPB41     E,20.0 /BANDE PROP CTL NUIT
AD-22  CIG41     E,5    /GAIN CTL NUIT
AD-23  CDS41     E,0.0  /BANDE MORTE CTL NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS    /
/-----/
/
AD-24  OASO      E,15.0  /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE /
/-----/
/
AD-25  RTSP      E,22.5  /POINT DE CONSIGNE RETOUR
AD-26  MXDSP     E,7.0   /POINT DE CONSIGNE LIMITE MEL.
AD-27  MDP       E,20.0  /POSITION MINIMUM VOILETS
AD-28  CST10A    E,5     /INTERVAL CTL VOILETS LIMITE
AD-29  CPB10A    E,-90.0 /BANDE PROP CTL VOILETS LIMITE
AD-30  CIG10A    E,33    /GAIN CTL VOILETS LIMITE
AD-31  CMP10A    E,0.0   /COMPENSATION CTL VOILETS LIMITE
AD-32  CDS10A    E,0.0   /BANDE MORTE CTL VOILETS LIMITE
AD-33  CST10     E,150   /INTERVAL CTL VOILETS
AD-34  CPB10     E,-20.0 /BANDE PROP CTL VOILETS
AD-35  CIG10     E,5     /GAIN CTL VOILETS
AD-36  CMP10     E,0.0   /COMPENS CTL VOILETS
AD-37  CDS10     E,1.0   /BANDE MORTE CTL VOILETS
AD-38  ZMXD      E,0.0   /RESULTAT PROPORTION.
AD-39  Z10M      E,100.0 /RESULTAT VOILETS LIMITE
AD-40  Z10C      E,0.0   /RESULTAT VOILETS CTL
AD-41  Z10       E,0.0   /RESULTAT VOILETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-42  Z40       E,0.0   /RESULTAT CHAUFFAGE
AD-43  CST40     E,45    /INTERVAL CTL CHAUFF
AD-44  CPB40     E,20.0  /BANDE PROP CTL CHAUFF
AD-45  CIG40     E,5     /GAIN CTL CHAUFF
AD-46  CDS40     E,0.0   /BANDE MORTE CTL CHAUFF
/

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```

/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
AD-47    Z30      E,0.0      /RESULTAT REFROIDISSEMENT
AD-48    CST30    E,45       /INTERVAL CTL REFROIDI
AD-49    CPB30    E,-15.0    /BANDE PROP CTL REFROIDI
AD-50    CIG30    E,5        /GAIN CTL REFROIDI
AD-51    CDS30    E,0.0      /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-52    RHSP     E,35.5     /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-53    RHSPA    E,80.0     /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-54    CST70    E,20       /INTERVAL CTL HUMIDITE
AD-55    CPB70    E,90.0     /BANDE PROP CTL HUMIDITE
AD-56    CIG70    E,33       /GAIN CTL HUMIDITE
AD-57    CDS70    E,0.0      /BANDE MORTE CTL HUMIDITE
AD-58    CST70A   E,5        /INTERVAL H LIM HUMIDITE
AD-59    CPB70A   E,90.0     /BANDE PROP H LIM HUMIDITE
AD-60    CIG70A   E,33       /GAIN H LIM HUMIDITE
AD-61    CDS70A   E,0.0      /BANDE MORTE H LIM HUMIDITE
AD-62    Z70      E,0.0      /RESULTAT CTL HUMIDITE
AD-63    Z70HL    E,0.0      /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-64    Z70C     E,0.0      /RESULTAT CTL HUMIDITE CONT RETOUR
/
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-65    SYSDIS   D,0
AD-66    CSTXXX   D,0
AD-67    CPBXXX   D,0.0
AD-68    CIGXXX   D,0
AD-69    CMPXXX   D,0.0
AD-70    CDSXXX   D,0.0
/
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
AD-71    UPTIM    E,00:00    /HEURE DE LA RESTAURATION DU POUVOIR
AD-72    UPDAT    E,00:00    /DATE DE LA RESTAURATION DU POUVOIR
AD-73    DNTIM    E,00:00    /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-74    DNDAT    E,00:00    /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-75    TOD      E,00:00    /DERNIERE HEURE
AD-76    LDAT     E,00:00    /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1          ADJUST    DELSST,I      /DELAI APRES UNE PANNE

```

2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON
/			
6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT
/			
11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE
/			
16	DISPLAY	MXD,B	/CONTROLE DE JOUR
21	ADJUST	RTSP,A	/POINT DE CONSIGNE RETOUR
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOILETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOILETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOILETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOILETS
30	DISPLAY	ZT10,A	/F.B. VOILETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI
53	ADJUST	STA8,T	/HEURE DEPART DIMANCHE
54	ADJUST	STO8,T	/HEURE D ARRET DIMANCHE
55	ADJUST	STA9,T	/HEURE DEPART SEMAINE
56	ADJUST	STO9,T	/HEURE D ARRET SEMAINE
/			
57	ADJUST	H1,T	/VACANCE 1
58	ADJUST	H2,T	/VACANCE 2
59	ADJUST	H3,T	/VACANCE 3

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60      ADJUST   H4,T           /VACANCE 4
/
61      OVERRIDE ZCP30,A,2      /SOUPAPES
62      OVERRIDE ZCP10,A,2      /VOLETS
63      OVERRIDE ZCP70,A,2      /HUMIDITE
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I       /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A       /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I       /GAIN INTEGRAL
82      ADJUST   CMPXXX,A       /COMPENSATION
83      ADJUST   CDSXXX,A       /BANDE MORTE
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
84      DISPLAY  UPTIM,T        /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T        /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T        /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T        /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I       /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S              /
/
/      ALARME      /

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/          NUMERO          DESCRIPTION          /
/
/
/-----/
/
/          10          ALARME THERMOSTAT DE GEL          /
/
/          50          ALARME ARRET DEPART SYSTEME V43-9          /
/
/          51          ALARME HORAIRE SYSTEME V43-9          /
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/          PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE          /
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET      BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET      BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/          RESET     TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET     OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET      OCCD,SUF,R
2.3      SET      TLCON,SDF,S
2.4      SET      BPD,SUF,R
2.5      EXIT      C,R

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2.6      SET      FSTRT,S,S
2.7      EXIT     U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT    TLCON,S
3.2      SET      BPD,TLCON,S
3.3      EXIT     C,R
3.4      INTERVAL 300,U
3.5      COMPARE  TE100,LE,NSBT,2.0
3.6      SET      FSTRT,BPD,S
3.7      EXIT     U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET      AUTO,S,S
4.3      DELAY    25,U
4.4      SET      COMP50,R,R
4.5      INTERVAL 10,U
4.6      XOR      COMP50,FSTAT
4.7      ALARM    50,C,S
4.8      SET      BPD,FSTRT,R
4.9      BOUT     ZS50,3,OFF
4.10     SET      COMP50,BPD,R
4.11     EXIT     U
/
/
/-----/
/      GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE      /
/-----/
/
5.1      RESTART
5.2      DELAY    25,U
5.3      INTERVAL 5,U
5.4      SET      BPD,FREEZE,R
5.5      ALARM    10,C,R
5.6      EXIT     U
/
/
/-----/
/      CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
6.1      EVENT    CONON,S
6.2      SET      BPD,CONON,R
6.3      STORE    APD,0.0,0.0,C,R
6.4      STORE    Z70C,APD,APD,C,R
6.5      STORE    Z70,APD,APD,C,R
6.6      AOUT     ZCP70,3,0.0,C,R
6.7      EXIT     C,R

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6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U
/
7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT       C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOILETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
8.1      RESTART
8.2      SET        MXD,R,R
8.3      SET        NCTL,R,R
8.4      SET        CONON,R,R
8.5      DELAY      25,U
8.6      INTERVAL   5,U
8.7      AND        FSTAT,OCCD
8.8      SET        MXD,BPD,R
8.9      XOR        FSTAT,OCCD
8.10     AND        BPD,FSTAT
8.11     SET        NCTL,BPD,S
8.12     SET        CONON,FSTAT,R
8.13     EXIT       U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS          /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOILETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
9.1      EVENT      MXD,S
9.2      SET        ECON,R,R
9.3      SET        BPD,FSTAT,R
9.4      EXIT       C,R
9.5      INTERVAL   300,U
9.6      COMPARE    TE1,GE,OASO,1.0
9.7      SET        ECON,BPD,R
9.8      EXIT       U
/

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/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M  RESULTAT PAR TEMP DE MELANGE
/Z10C  RESULTAT PAR TEMP D ALIMENTATION
/Z10   RESULTAT VOLETS
/
/
10.1    EVENT      MXD,S
10.2    SET        MIXLL,R,R
10.3    SET        BPD,MXD,R
10.4    EXIT       C,R
10.5    INTERVAL   5,U
10.6    COMPARE    TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
10.7    SET        MIXLL,BPD,R           /A LA BASSE LIMITE
10.8    SELECT     Z10M,Z10C,L
10.9    STORE      Z10,APD,APD,U
10.10   AOUT       ZCP10,3,0.0,U
10.11   EXIT       U
/
11.1    EVENT      MIXLL,S           /CONTROLE PAR BASSE LIMITE DE MELANGE
11.2    SET        BPD,MIXLL,R
11.3    STORE      Z10M,100.0,100.0,C,R
11.4    STORE      CMP10A,Z10C,Z10C,U
11.5    EXIT       C,R
11.6    INTERVAL   CST10A,U
11.7    PROP       MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
11.8    STORE      Z10M,APD,APD,U
11.9    EXIT       U
/
12.1    EVENT      MXD,R /POSITION D ARRET SOUPAPES
12.2    SET        BPD,MXD,R
12.3    EXIT       C,S
12.4    SET        HTG,R,R
12.5    SET        CLG,R,R
12.6    DELAY      7,C,R
12.7    STORE      APD,0.0,0.0,C,R
12.8    AOUT       ZCP30,3,0.0,C,R
12.9    EXIT       U
/
13.1    EVENT      MXD,S
13.2    SET        BPD,MXD,R
13.3    STORE      APD,0.0,0.0,C,R
13.4    STORE      Z10,APD,APD,C,R
13.5    STORE      Z10C,APD,APD,C,R
13.6    STORE      Z10M,100.0,100.0,C,R
13.7    STORE      ZMXD,APD,APD,C,R

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13.8      AOUT      ZCP10,3,0.0,C,R
13.9      EXIT      C,R
13.10     DELAY      7,U
13.11     STORE      APD,TE1,5.0,U
13.12     SPAN       5.0,20.0,0.0,75.0
13.13     STORE      CMP10,APD,APD,U
13.14     STORE      APD,50.0,50.0,U
13.15     AOUT      ZCP30,3,0.0,U
13.16     INTERVAL   CST10,U
13.17     PROP       RTSP,TE80,CPB10,CIG10,CMP10,CDS10
13.18     STORE      ZMXD,APD,APD,U
13.19     SPAN       MDP,100.0,MDP,100.0
13.20     SET        BPD,ECON,S
13.21     STORE      APD,MDP,MDP,C,S
13.22     STORE      Z10C,APD,APD,U
13.23     ORR        ZMXD,GE,85.0,10.0
13.24     SET        CLG,BPD,R
13.25     COMPARE    ZMXD,LE,15.0,10.0
13.26     SET        HTG,BPD,R
13.27     EXIT      U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A 50 POUR LE CHAUFFAGE.
/
14.1      EVENT      HTG,S
14.2      SET        BPD,HTG,S
14.3      STORE      Z40,0.0,0.0,C,R
14.4      STORE      APD,50.0,50.0,C,R
14.5      AOUT      ZCP30,3,0.0,C,R
14.6      EXIT      C,R
14.7      INTERVAL   CST40,U
14.8      CALC       RTSP,0.3,1,-1,1,T
14.9      PROP       APD,TE80,CPB40,CIG40,0.0,CDS40
14.10     STORE      Z40,APD,APD,U
14.11     SPAN       0.0,100.0,50.0,0.0
14.12     AOUT      ZCP30,3,100.0,U
14.13     EXIT      U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 50 A 100 POUR LE REFROIDISSEMENT.
/
15.1      EVENT      CLG,S
15.2      SET        BPD,CLG,R
15.3      STORE      Z30,0.0,0.0,C,R

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15.4    STORE    APD,50.0,50.0,C,R
15.5    AOUT     ZCP30,3,0.0,C,R
15.6    EXIT     C,R
15.7    INTERVAL CST30,U
15.8    CALC     RTSP,0.3,1,1,1,T
15.9    PROP     APD,TE80,CPB30,CIG30,0.0,CDS30
15.10   STORE    Z30,APD,APD,U
15.11   SPAN     0.0,100.0,50.0,100.0
15.12   AOUT     ZCP30,3,0.0,U
15.13   EXIT     U
/
/
/-----/
/          CONTROLE DE NUIT                      /
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOILETS RESTENT EN RECIRCULATION.
/
16.1    EVENT    NCTL,S
16.2    SET      BPD,NCTL,S
16.3    STORE    Z41,0.0,0.0,C,R
16.4    STORE    APD,0.0,0.0,C,R
16.5    AOUT     ZCP30,3,0.0,C,R
16.6    EXIT     C,R
16.7    INTERVAL CST41,U
16.8    PROP     NSP,TE80,CPB41,CIG41,0.0,CDS41
16.9    STORE    Z41,APD,APD,U
16.10   SPAN     0.0,100.0,50.0,0.0
16.11   AOUT     ZCP30,3,100.0,U
16.12   EXIT     U
/
/
/-----/
/          FONCTIONS SPECIALES                    /
/-----/
/
17.1    EVERY                                         /SELECTION DU STSTEME POUR LE
17.2    SET      SYSP,R,R                             /
17.3    COMPARE  SYSDIS,EQ,100,0
17.4    SET      SYS1,BPD,R
17.5    OR       SYSP,BPD
17.6    SET      SYSP,BPD,S
17.7    COMPARE  SYSDIS,EQ,200,0
17.8    SET      SYS2,BPD,R
17.9    OR       SYSP,BPD
17.10   SET      SYSP,BPD,S
17.11   COMPARE  SYSDIS,EQ,400,0
17.12   SET      SYS4,BPD,R
17.13   OR       SYSP,BPD
17.14   SET      SYSP,BPD,S
17.15   COMPARE  SYSDIS,EQ,500,0
17.16   SET      SYS5,BPD,R
17.17   OR       SYSP,BPD
17.18   SET      SYSP,BPD,S
17.19   COMPARE  SYSDIS,EQ,600,0

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17.20 SET      SYS6,BPD,R
17.21 OR       SYSP,BPD
17.22 SET      SYSP,BPD,S
17.23 COMPARE  SYSDIS,EQ,700,0
17.24 SET      SYS7,BPD,R
17.25 OR       SYSP,BPD
17.26 SET      SYSP,BPD,S
17.27 COMPARE  SYSDIS,EQ,800,0
17.28 SET      SYS8,BPD,R
17.29 OR       SYSP,BPD
17.30 SET      SYSP,BPD,S
17.31 SET      SYS,SYSP,S
17.32 EXIT     U
/
/
18.1  EVENT    SYS,S                      /RESET LES FONCTIONS POUR
18.2  SET      BPD,SUF,R                  /LE CDB SPECIAL
18.3  STORE    SYSDIS,0,0,C,R            /SUR UNE PERIODE DE DISCLR
18.4  EXIT     C,R
18.5  DELAY    3600,U
18.6  STORE    SYSDIS,0,0,U
18.7  EXIT     U
/
/
19.1  EVENT    SYS1,S                      /SYS 100
19.2  SET      BPD,SUF,R
19.3  EXIT     C,R
19.4  INTERVAL 5,U
19.5  STORE    CSTXXX,CST70,CST70,U      /PERMET DE VOIR LES
19.6  STORE    CPBXXX,CPB70,CPB70,U      /VALEURS DU SYSTEME
19.7  STORE    CIGXXX,CIG70,CIG70,U
19.8  STORE    CMPXXX,0.0,0.0,U
19.9  STORE    CDSXXX,CDS70,CDS70,U
19.10 EXIT     U
/
/
20.1  EVENT    SYS1,S
20.2  SET      BPD,SUF,R
20.3  EXIT     C,R
20.4  DELAY    10,U
20.5  INTERVAL 1,U
20.6  STORE    CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
20.7  STORE    CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
20.8  STORE    CIG70,CIGXXX,CIG70,U
20.9  STORE    CDS70,CDSXXX,CDS70,U
20.10 EXIT     U
/
/
21.1  EVENT    SYS2,S                      /SYS 200
21.2  SET      BPD,SUF,R
21.3  EXIT     C,R
21.4  INTERVAL 5,U
21.5  STORE    CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
21.6  STORE    CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
21.7  STORE    CIGXXX,CIG70A,CIG70A,U
21.8  STORE    CMPXXX,0.0,0.0,U
21.9  STORE    CDSXXX,CDS70A,CDS70A,U

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21.10  EXIT      U
/
/
22.1   EVENT     SYS2,S
22.2   SET       BPD,SUF,R
22.3   EXIT      C,R
22.4   DELAY     10,U
22.5   INTERVAL  1,U
22.6   STORE     CST70A,CSTXXX,CST70A,U      /PERMET D AJUSTER LES
22.7   STORE     CPB70A,CPBXXX,CPB70A,U      /VALEURS DU SYSTEME
22.8   STORE     CIG70A,CIGXXX,CIG70A,U
22.9   STORE     CDS70A,CDSXXX,CDS70A,U
22.10  EXIT      U
/
/
23.1   EVENT     SYS4,S                      /SYS 400
23.2   SET       BPD,SUF,R
23.3   EXIT      C,R
23.4   INTERVAL  5,U
23.5   STORE     CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
23.6   STORE     CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
23.7   STORE     CIGXXX,CIG40,CIG40,U
23.8   STORE     CMPXXX,0.0,0.0,U
23.9   STORE     CDSXXX,CDS40,CDS40,U
23.10  EXIT      U
/
/
24.1   EVENT     SYS4,S
24.2   SET       BPD,SUF,R
24.3   EXIT      C,R
24.4   DELAY     10,U
24.5   INTERVAL  1,U
24.6   STORE     CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
24.7   STORE     CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
24.8   STORE     CIG40,CIGXXX,CIG40,U
24.9   STORE     CDS40,CDSXXX,CDS40,U
24.10  EXIT      U
/
/
25.1   EVENT     SYS5,S                      /SYS 500
25.2   SET       BPD,SUF,R
25.3   EXIT      C,R
25.4   INTERVAL  5,U
25.5   STORE     CSTXXX,CST41,CST41,U      /PERMET DE VOIR LES
25.6   STORE     CPBXXX,CPB41,CPB41,U      /VALEURS DU SYSTEME
25.7   STORE     CIGXXX,CIG41,CIG41,U
25.8   STORE     CMPXXX,0.0,0.0,U
25.9   STORE     CDSXXX,CDS41,CDS41,U
25.10  EXIT      U
/
/
26.1   EVENT     SYS5,S
26.2   SET       BPD,SUF,R
26.3   EXIT      C,R
26.4   DELAY     10,U
26.5   INTERVAL  1,U
26.6   STORE     CST41,CSTXXX,CST41,U      /PERMET D AJUSTER LES

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[illegible]

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31.3    EXIT      C,R
31.4    INTERVAL  5,U
31.5    STORE     CSTXXX,CST30,CST30,U      /PERMET DE VOIR LES
31.6    STORE     CPBXXX,CPB30,CPB30,U      /VALEURS DU SYSTEME
31.7    STORE     CIGXXX,CIG30,CIG30,U
31.8    STORE     CMPXXX,0.0,0.0,U
31.9    STORE     CDSXXX,CDS30,CDS30,U
31.10   EXIT      U
/
/
32.1    EVENT     SYS8,S
32.2    SET       BPD,SUF,R
32.3    EXIT      C,R
32.4    DELAY     10,U
32.5    INTERVAL  1,U
32.6    STORE     CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
32.7    STORE     CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME
32.8    STORE     CIG30,CIGXXX,CIG30,U
32.9    STORE     CDS30,CDSXXX,CDS30,U
32.10   EXIT      U
/
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
33.1    RESTART
33.2    TIMDATA   DT
33.3    STORE     UPTIM,APD,APD,U          /SAUVE L HEURE ACTUEL ET
33.4    TIMDATA   MD                      /LA DATE DE LA RESTAURATION
33.5    STORE     UPDAT,APD,APD,U          /DU POUVOIR.
33.6    EXIT      U
/
34.1    RESTART
34.2    STORE     DNTIM,TOD,TOD,U          /RECORD DE LA DERNIERE HEURE
34.3    STORE     DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
34.4    INTERVAL  60,U
34.5    TIMDATA   DT
34.6    STORE     TOD,APD,APD,U            /SAUVE L HEURE ET LA DATE
34.7    TIMDATA   MD                      /ACTUEL A TOUTES LES MINUTES.
34.8    STORE     LDAT,APD,APD,U
34.9    EXIT      U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      737
/   CDB:         299
/   PROCESSES:   2889
/   OVERHEAD:    2700
/   TOTAL:       6625   8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      737
/   CDB:         299

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/   PROCESSES:  2889
/   OVERHEAD:  2700
/   TOTAL:    6625    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    737
/   CDB:       299
/   PROCESSES: 2891
/   OVERHEAD:  2700
/   TOTAL:    6627    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    737
/   CDB:       299
/   PROCESSES: 2891
/   OVERHEAD:  2700
/   TOTAL:    6627    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    737
/   CDB:       299
/   PROCESSES: 2891
/   OVERHEAD:  2700
/   TOTAL:    6627    8K DSC MEMORY NEEDED
```

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBAR-RAGE.

LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE DE RETOUR PAR LES EPT-1 ET 2. LE SYSTEME S'ARRETE SI LA TEMPERATURE DE RETOUR DESCEND SOUS 10°C.

UNE POSITION MINIMUM DE 10% EST ASSURE AU VOLET EN TOUT TEMPS. LE SYSTEME S'ARRETE SI LA TEMPERATURE DE RETOUR DESCEND SOUS 10°C.

LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT AU MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LA GAIN DE RETOUR AFIN DE MAINTENIR 30% H.R. CEPENDANT, UNE HAUTE LIMITE DE 80% H.R. DANS LA GAIN D'ALIMENTATION EST ASSUREE.

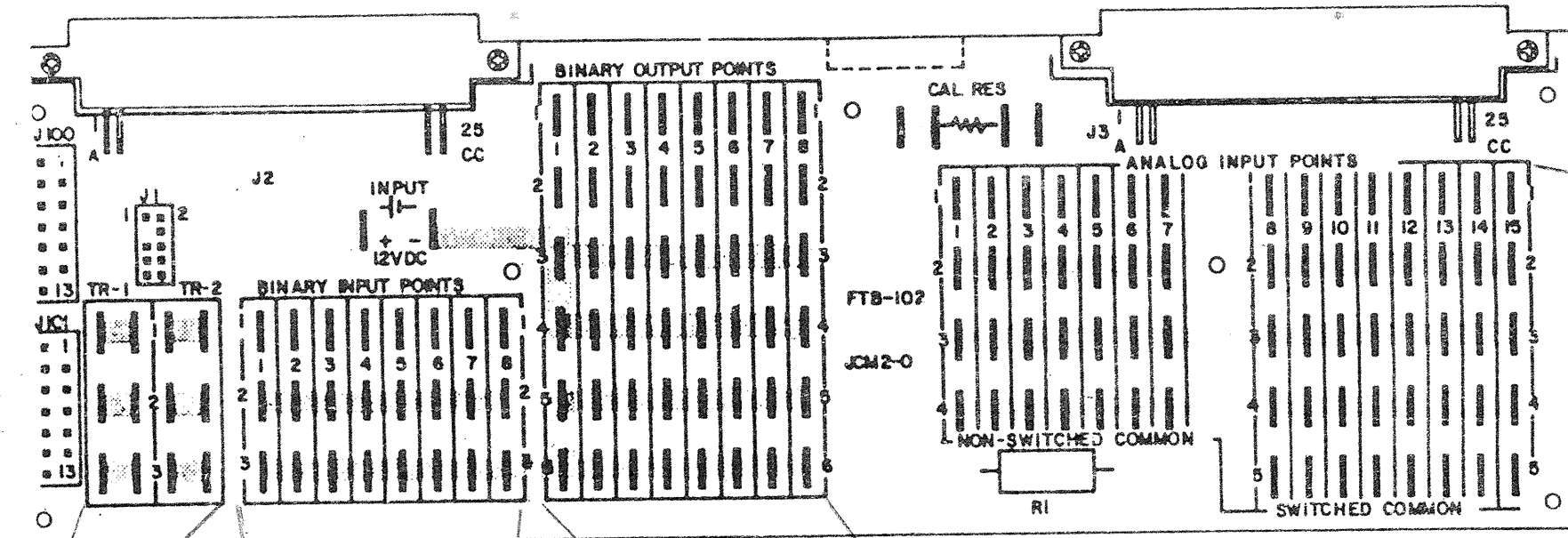
SUR UNE DETECTION DE TEMPERATURE INFERIEURE AU POINT DE CONSIGNE DE TLL-1, LE SYSTEME S'ARRETE.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU DF-2, LE SYSTEME S'ARRETE

LA NUIT ET LES JOURS NON OUVRABLE LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C

SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE LES VENTILATEURS V43-28E ET 29E DEMARRENT, EP-1 ET 2 SONT ALIMENTES ET PERMETTENT L'EVACUATION DE LA FUMEE

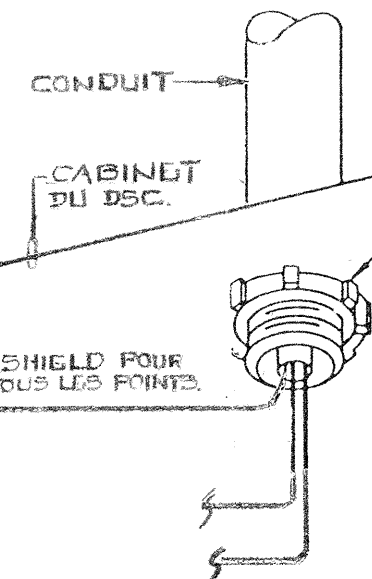
BORNIERS DE RACCORDEMENT (FTB-102)



TOTAL MAX 8 ENTREES

TOTAL MAX 8 SORTIES

- 1 - TYPE DE RACCORD COUSSES T&B TYPE 144R-250 F, ISOLÉS .250.
- 2 - CABLAGE EN 2*18 TWS PARTOUT.

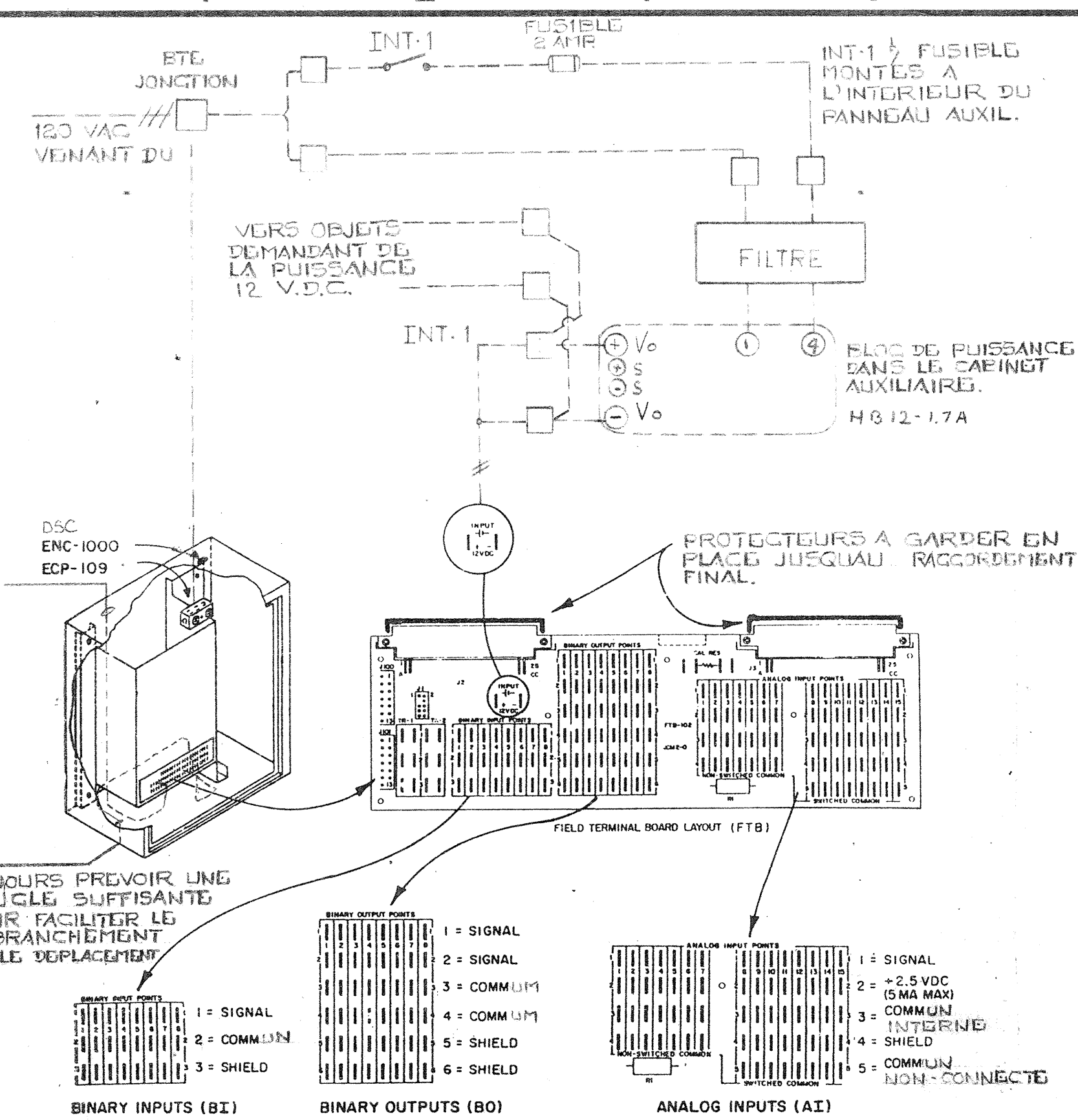


VOIR PLUS BAS POUR COMMUNICATION

EMPLACEMENT		ADRESSE							DSC 9	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME 9	BIN	1 2	1 2	CONTACT AUX. DEM.	MCC -2	B1.1		
2	REL	SYSTEME 9	BIN	1 2	1 2	RELAIS RG	CAB AUX.	B2.1		

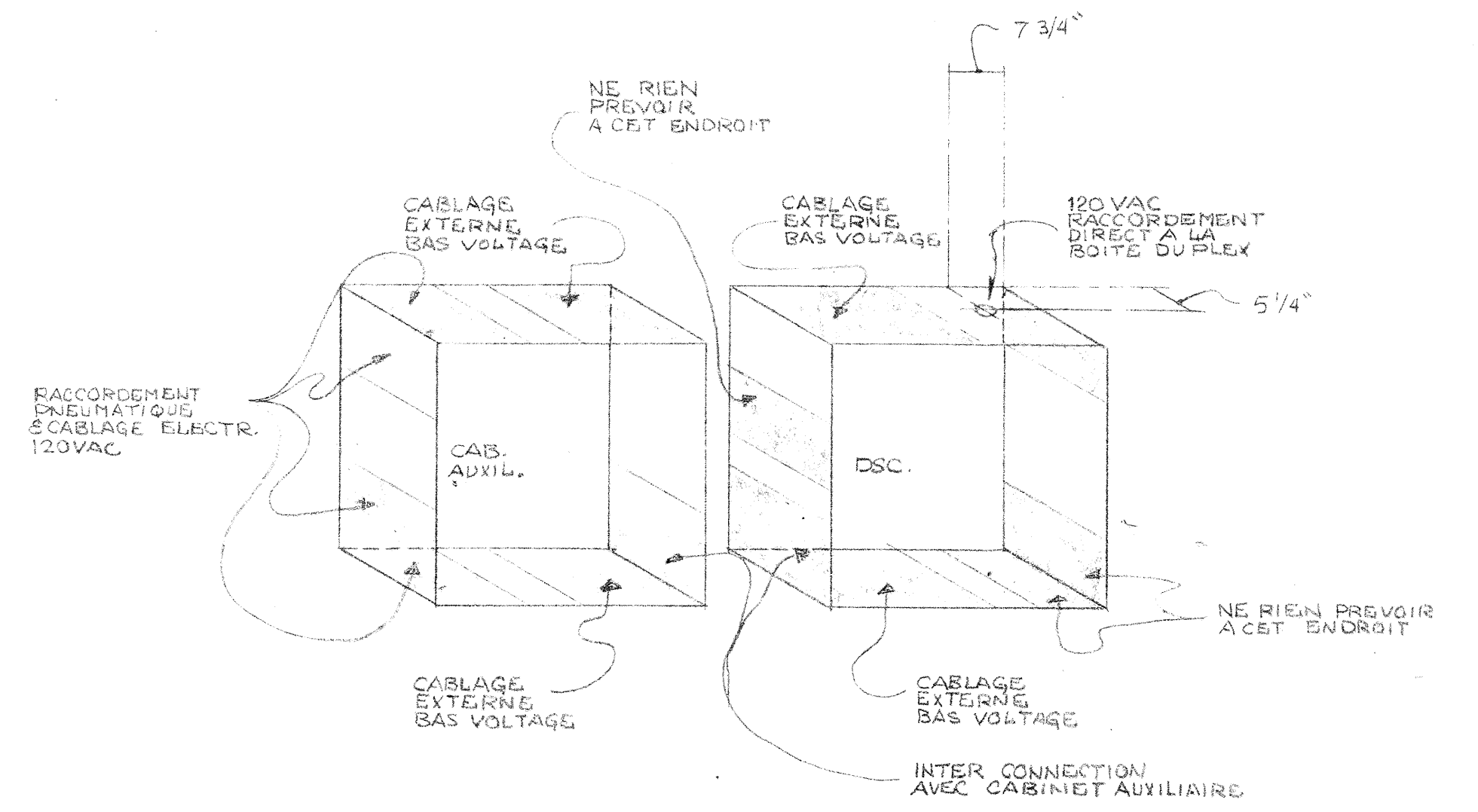
EMPLACEMENT		ADRESSE							DSC 9	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VALVE	POS	1 2	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P1.1	
2	EPT-2	VOLET MELANGE	POS	1 2	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P2.1	
3	EPT-3	HUMIDIFICAT.	POS	1 2	1 2	ROUGE ROUGE/BLANC	EPT-102	CAB AUX	P3.1	
4										
5A	R1	ARRET DEPART SYSTEME	SST	1 3	2 7	RELAIS 12VDC	MCC -2	SEA.1		

EMPLACEMENT		ADRESSE							DSC 9	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMP RETOUR	ANA	1 3	1 3	TE1101-100	RETOUR	A1.1		
2	TE-2	TEMP MELANGE	ANA	1 3	1 3	TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3	1 3	TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIM	ANA	1 3	1 3	TE1100-17	ALIM	A4.1		
5	EPT-1	VALVE	ANA	1 2 3	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	VOLET MELANGE	ANA	1 2 3	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	HUMIDIFI-CATEUR	ANA	1 2 3	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8										
9	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A9.1	4-20MA 10-96%HR	
10	HE-2	HUMIDITE ALIM.	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM	A10.1	4-20MA 10-96%HR	
11										
12	TE-5	TEMP. PIECE	ANA	1 3	1 3	TE1800-102		A12.1		

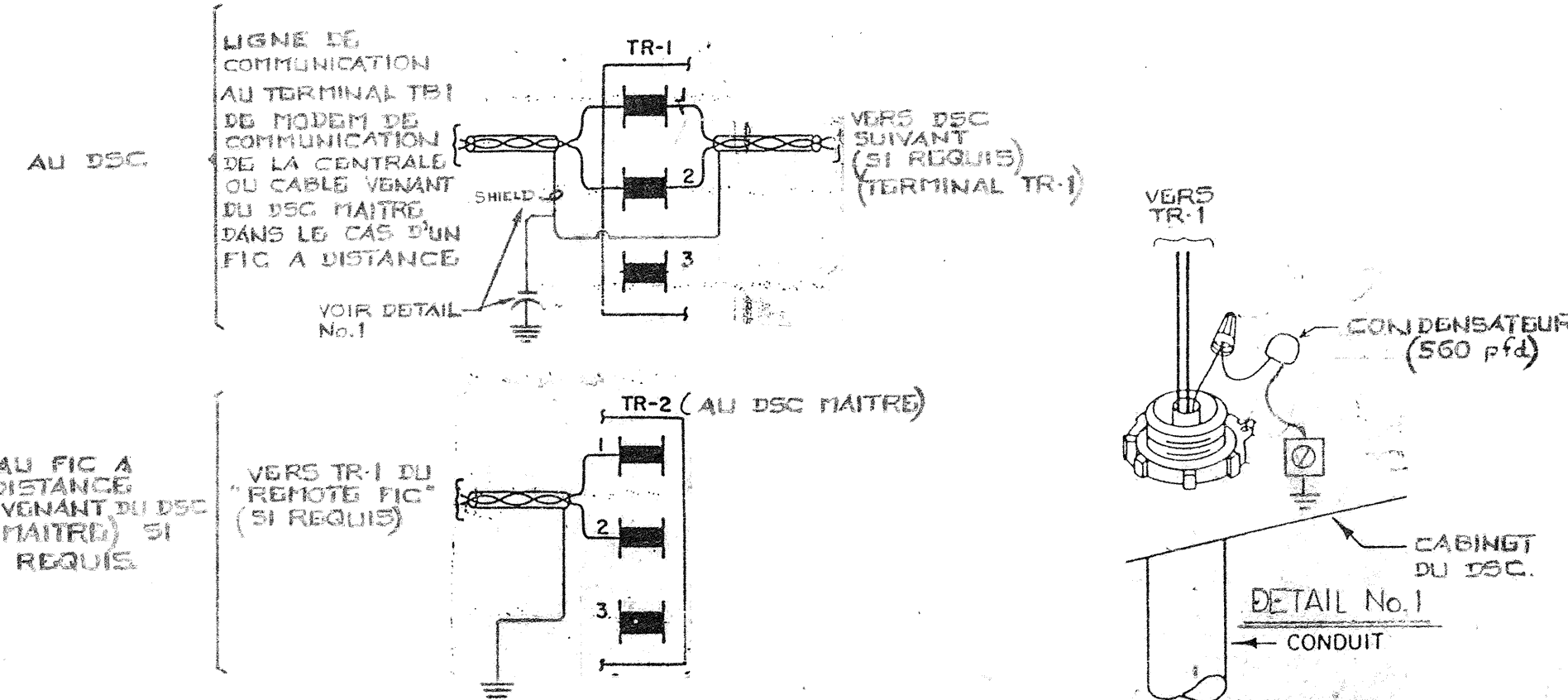


INT-1: INTERRUPTEUR "TOGGLE" CABLE SP37, MOD 447, MONTE AVEC R4000-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE

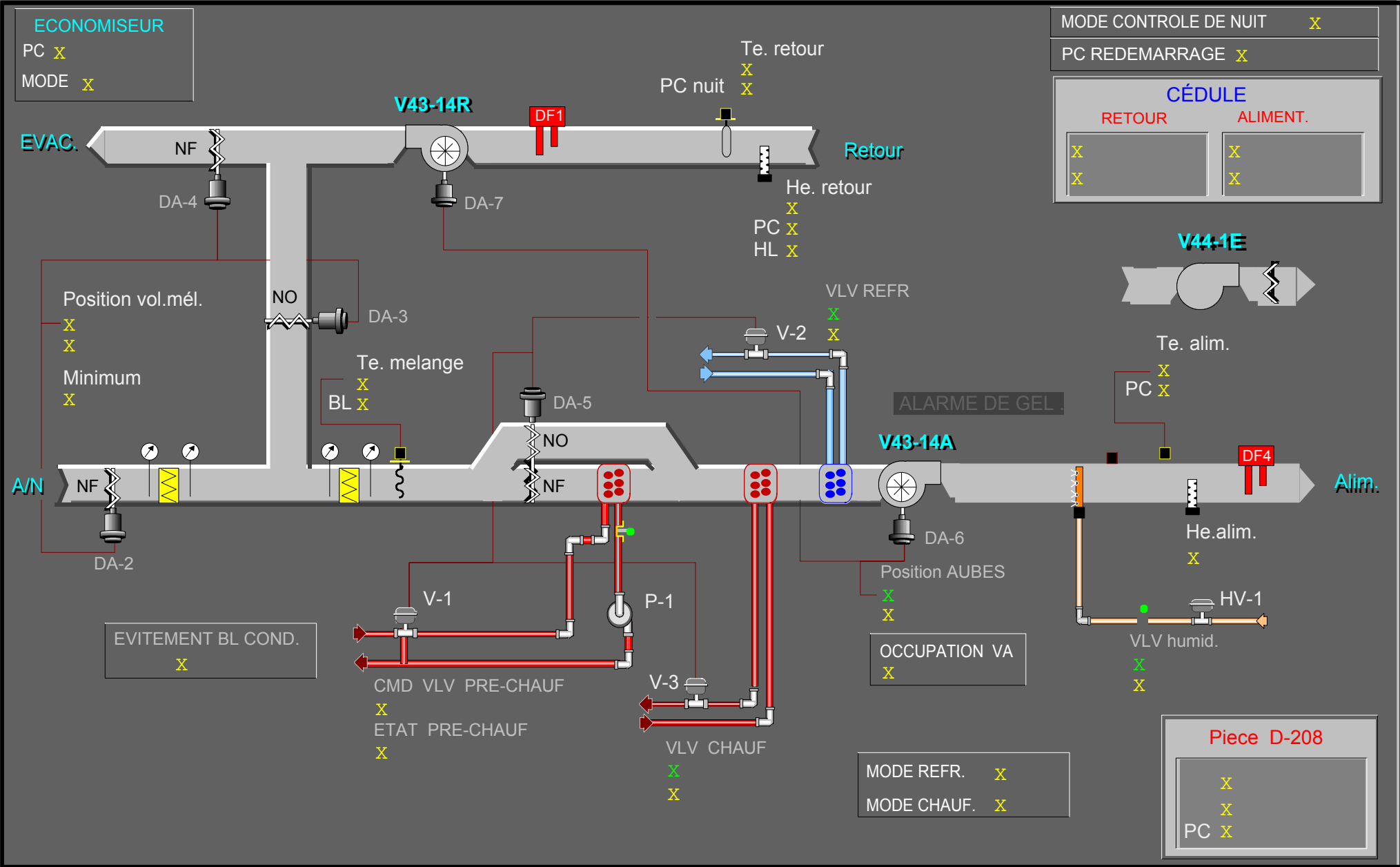


- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES ET ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-6500		TEL QUE CONSTRUIT		86-07-07	
DSC-9							
REFERENCE	NO.	REVISION	AVIS	DATE	PAR		
REPRESENTANT	TECHNICIEN	DATE	APPROUVE	DATE	PAR		
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE	ST-HYACINTHE, QUE.	JOHNSON CONTROLS		Société de Contrôle Johnson Ltd		CONTRAT
			441 boulevard Lebeau		Montreal, QC H4N 1S2		5096-008-18
			Tel. 514-332-8980				4068-18

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3	D3073-1	3	MOTEUR DE VOLET
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
DA-4 A 9	D3073-2	6	MOTEUR DE VOLET
TLL-1	A11A-6	1	BASSE LIMITE
DF-1 ET 2	50182	2	DETECTEURS DE FUMEE PYROTRONIC
EPT-1 @ 3	EPT-102	3	INTERFACE ELECTRIQUE/PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 MM
V-1	V3974-1011	1	VALVE N.F. Ø 1" C.V. 13.9
V-2	V3754-1026	1	VALVE N.O. Ø 3/4" C.V. 8.6
EP-1 @ 3	V11HAA-109	3	RELAIS ELECTRIQUE/PNEUMATIQUE
G-1, 2, 3, 4	G2010-101	4	INDICATEUR 0/30 PSI
SW-1		1	INTERRUPTEUR 2 POSITIONS
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG	6012	2	RELAIS 12 VDC
XMR-1	BD2FF	1	TRANSFO 120 / 18 VAC
TE-5	TE1800-102	1	ELEMENT DE TEMPERATURE DE PIECE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



Contrôle de nuit

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidité

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidité

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle de Pre-chauffage

Limite	X
Differentiel	X
Delai evitement	X

Contrôle Volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

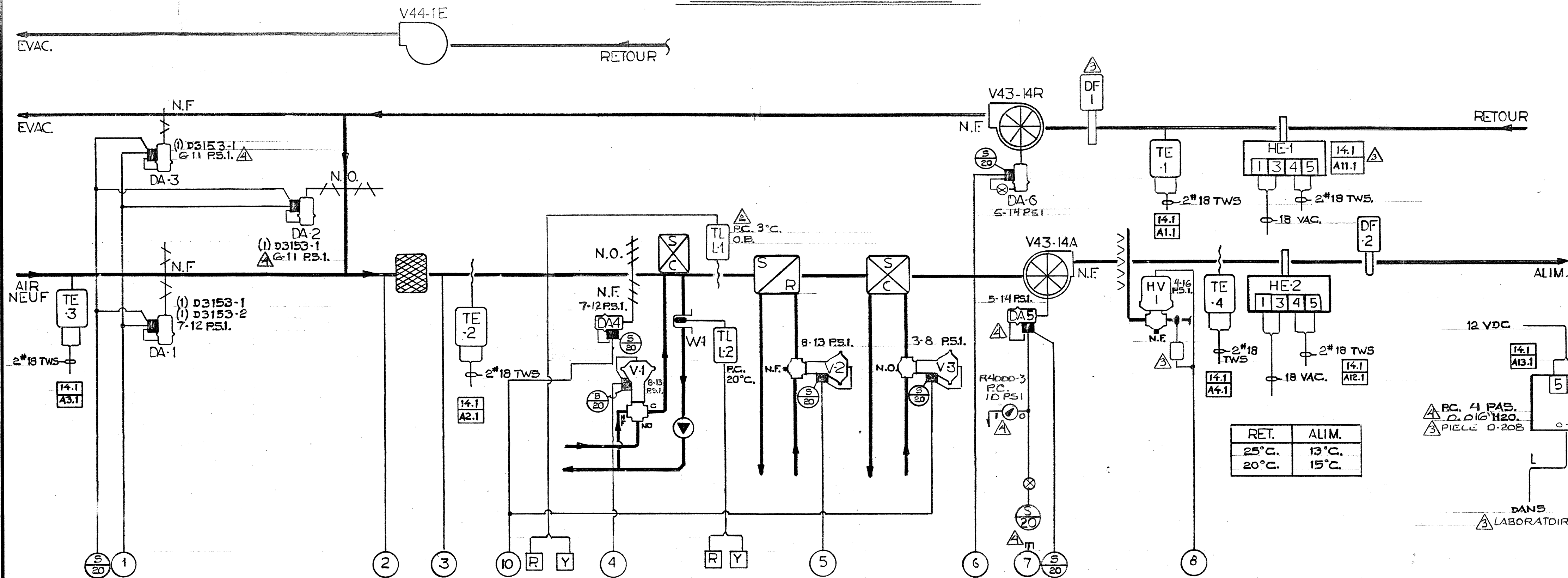


VACANCES DSC-14, V43 - 14

Jour / Mois	VACANCE 1	X
Jour / Mois	VACANCE 2	X
Jour / Mois	VACANCE 3	X
Jour / Mois	VACANCE 4	X
Jour / Mois	VACANCE 5	X
Jour / Mois	VACANCE 6	X



DIAGRAMME DE DEBIT



LISTE DE MATERIEL

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3		2	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	ALLA-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 5	EPT-102	5	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50mm
V-1	V4324-1014	1	VALVE Ø 1" C/A P.P.
V-2	V5462-9	1	VALVE N.F. Ø 3" C/A P.P.
DA-5 ET 6	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	H812-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG-1	6012	3	RELAIS 12 VDC, 2PDT
XFR-1	BD 2FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE1100-102	1	ELEMENT DE TEMPERATURE DE PIECE
DA-4	D3153-1	1	MOTEUR DE VOLET
TLL-2	A19AA-12	1	BASSE LIMITE
W-1	VZ1000-2	1	PUIT D'IMMERSION
V-3	V5252-2	1	VALVE 2 VOIES N.O. Ø 2"
SP-1	V9011-1	1	RELAIS ELECT./PNEUMATIQUE
HV-1	PAR D'AUTRES	1	SOLPAPE HUMIDIFICATEUR

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LE SERPENTIN DE FACE ET EVITEMENT, LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFRIGERIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT-1, EPT-2 ET EPT-5. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOLETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-4. CEPENDANT, HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-3.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE. CEPENDANT, LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TLL-2, L'ACTION DE TLL-2 EST ANNULEE VIA RG-1. LORSQUE LA TEMPERATURE DE MELANGE DESCEND SOUS 5°C LA VALVE DE PRECHAUFFAGE V-1 OUVRE A 100% PAR SP-1 ET RG-1 EST DESAMORCE.

PANNEAU

P1

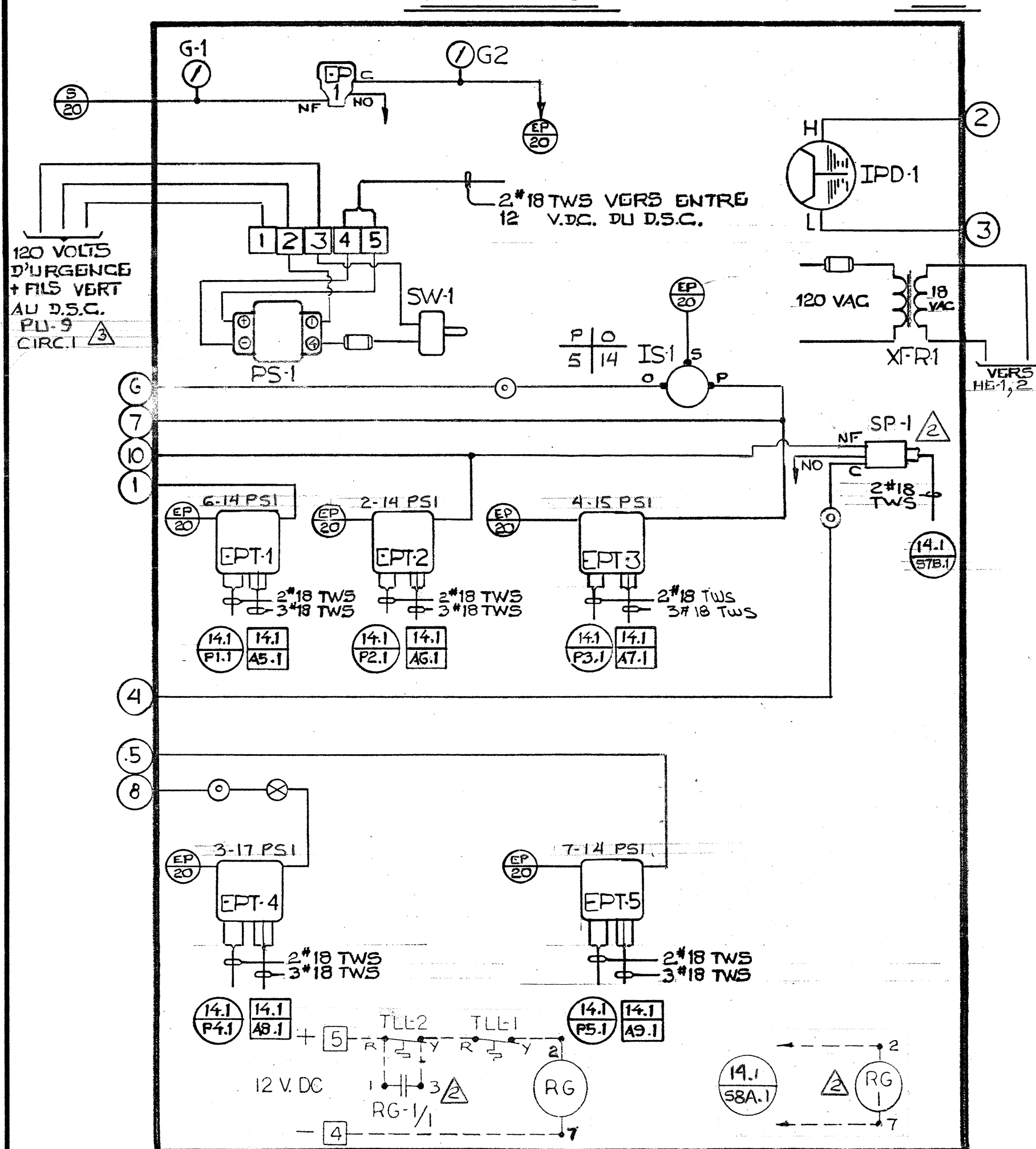
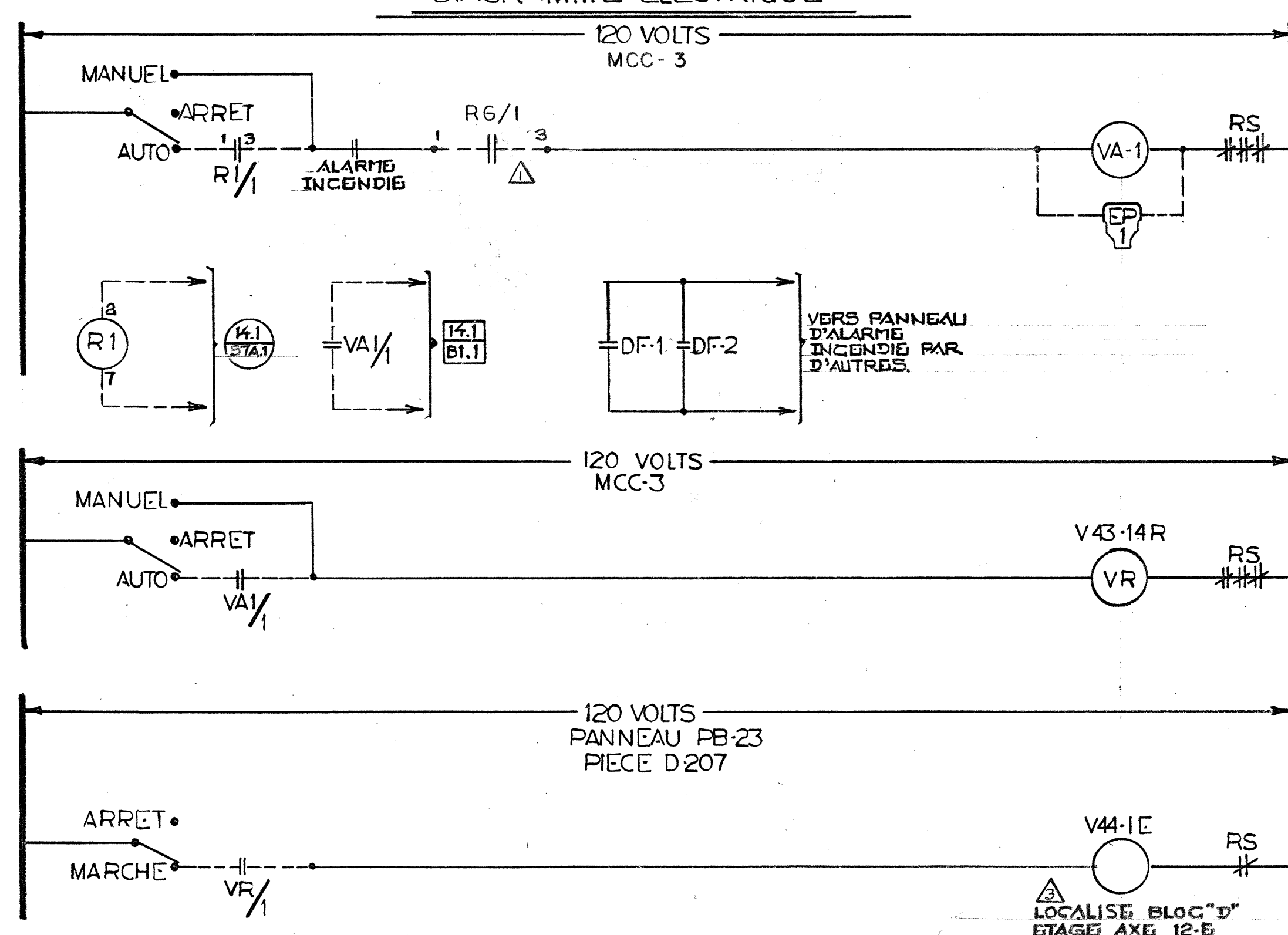


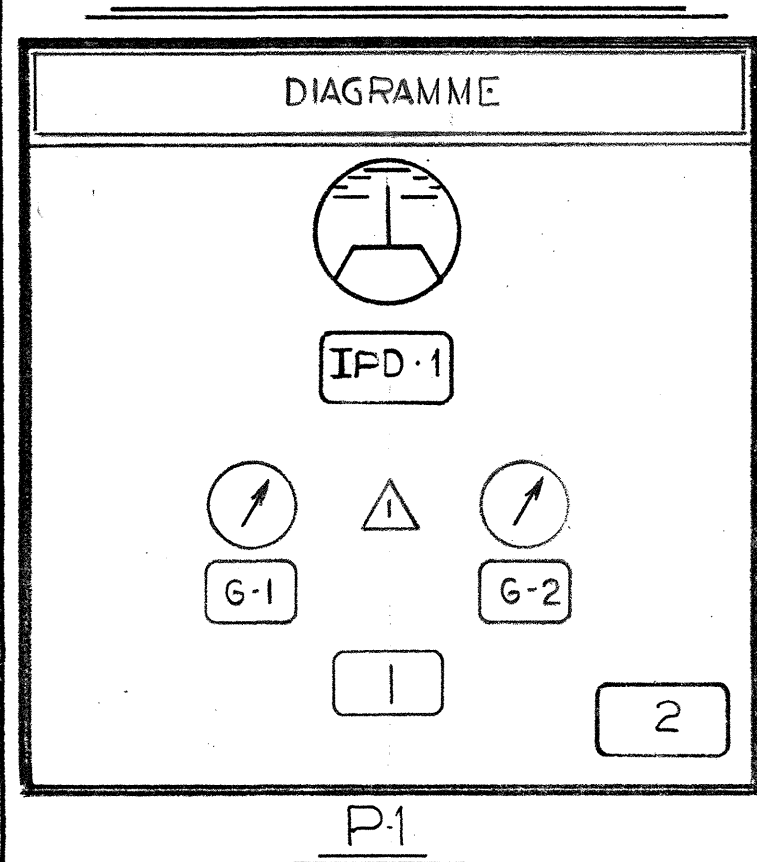
DIAGRAMME ELECTRIQUE



FILAGE J.C.L.

FILAGE PAR D'AUTRES

FACE DU PANNEAU



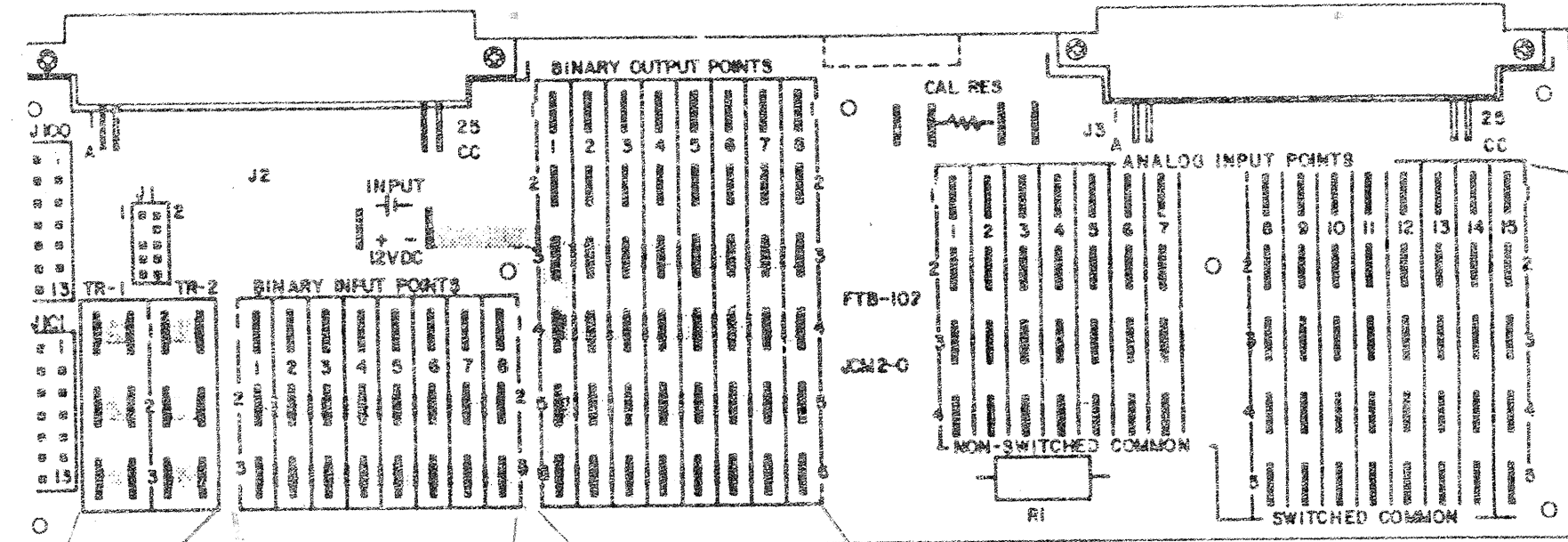
1 — SYSTEME V43-14
2 — CONTRACTEUR: PAVAL INC.
INGENIEUR: PABEAU MOREL & ASS.
IPD-1 — FILTRE
G-1 — AIR D'ALIMENTATION
G-2 — AIR DE CONTROLE

TITRE
SYSTEME Na V43-14
ALIMENTATION BLOC D
ETAGE
PROJET
CENTRE DE RECHERCHE
ALIMENTAIRE
ST. HYACINTHE QUE.

096-0 273490	TEL QUE CONSTRUIT	86-0707
CHANGEMENT #112	ADDITION RG-1	NOV2785
REFERENCE	NO.	REVISION
REPRESENTANT	TECHNICIEN	DATE
JCR	R.F.	DATE
PROJET	DATE	DATE
CENTRE DE RECHERCHE	DATE	DATE
ALIMENTAIRE	DATE	DATE
ST. HYACINTHE QUE.	DATE	DATE

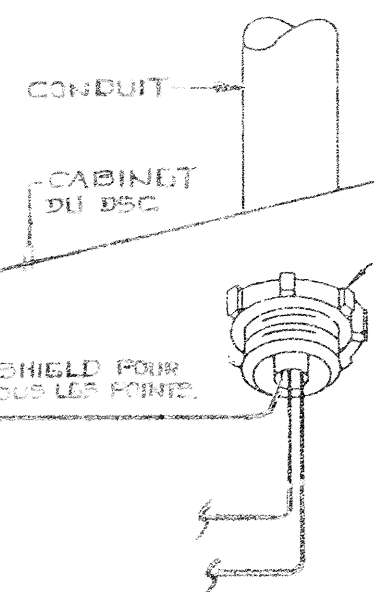
JOHNSON CONTROLS
Société de Contrôle Johnson Limitée
441 boulevard Lebeau
Montréal, QC H4N 1S2
Tél. 514-332-5960
CONTRAT
4096-0008-19/52
DESSIN NO.
4068-19

BOERNERS DE RACCORDEMENT (FTF-112)



TOTAL MAX 10 ENTRIES

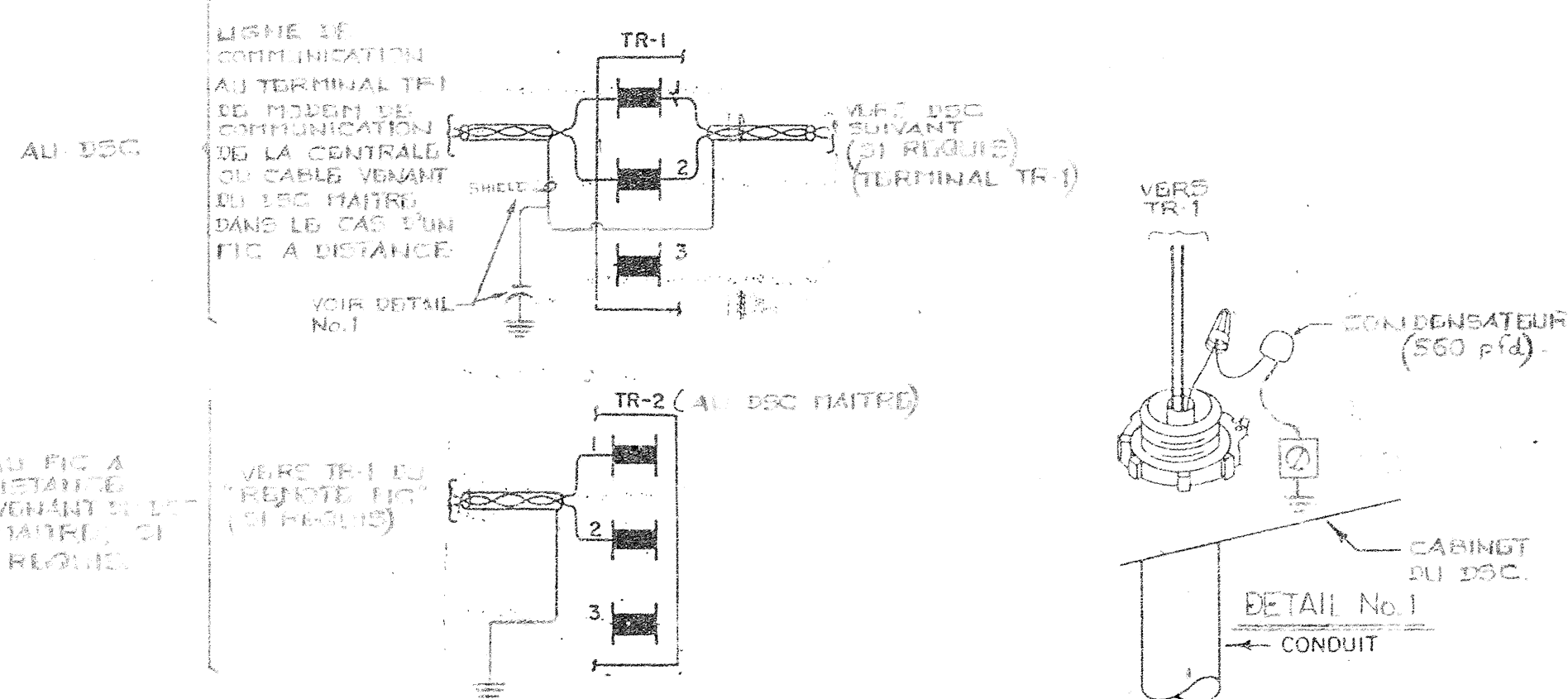
- 1 - TYPE DE RACCORDEMENT: DSC-14, TYPE 14R-150, ISOLÉ 1250.
- 2 - CABLE EN 3" 19 TWS FAÇON.



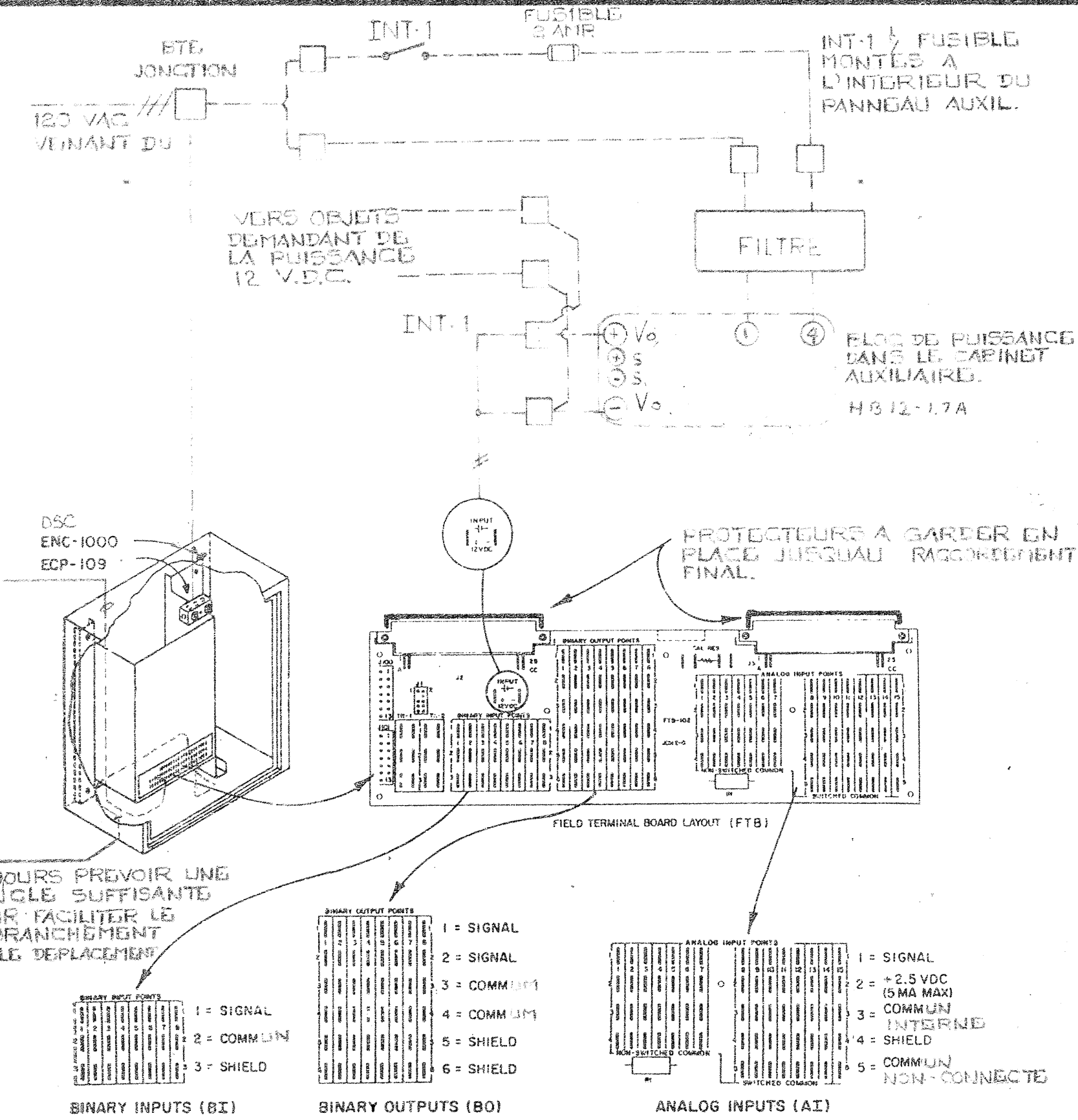
TOTAL MAX 10 ENTRIES

EMPLACEMENT		ADRESSE							DSC 14	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-14	BIN	1 2		CONTACT AUX. DEM.	MCC-3	B1.1		
2	GEL	SYSTEME 14	BIN	1 2		RELAIS RQ	CAB AUX	B2.1		

EMPLACEMENT		ADRESSE							DSC 14	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE/ROUGE/BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE	POS	1 2	ROUGE/ROUGE/BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE/ROUGE/BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE/ROUGE/BLANC	EPT-102	CABINET AUX.	P4.1		
5	EPT-5	REFROI.	POS	1 2	ROUGE/ROUGE/BLANC	EPT-102	CABINET AUX.	P5.1		
6										
7A	R-1	ARRET DEPART V43-14	SST	1 3	2 7	RELAIS 12VDC	MCC-3	S7A.1		
7B	SP-1	V-1 PRECHAUF. COUVERTE	SST	2 4	ROUGE ROUGE	V9011	CABINET AUX.	S7B.1		
8A	RQ-1	RELAIS D'EVITEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	S8A.1		

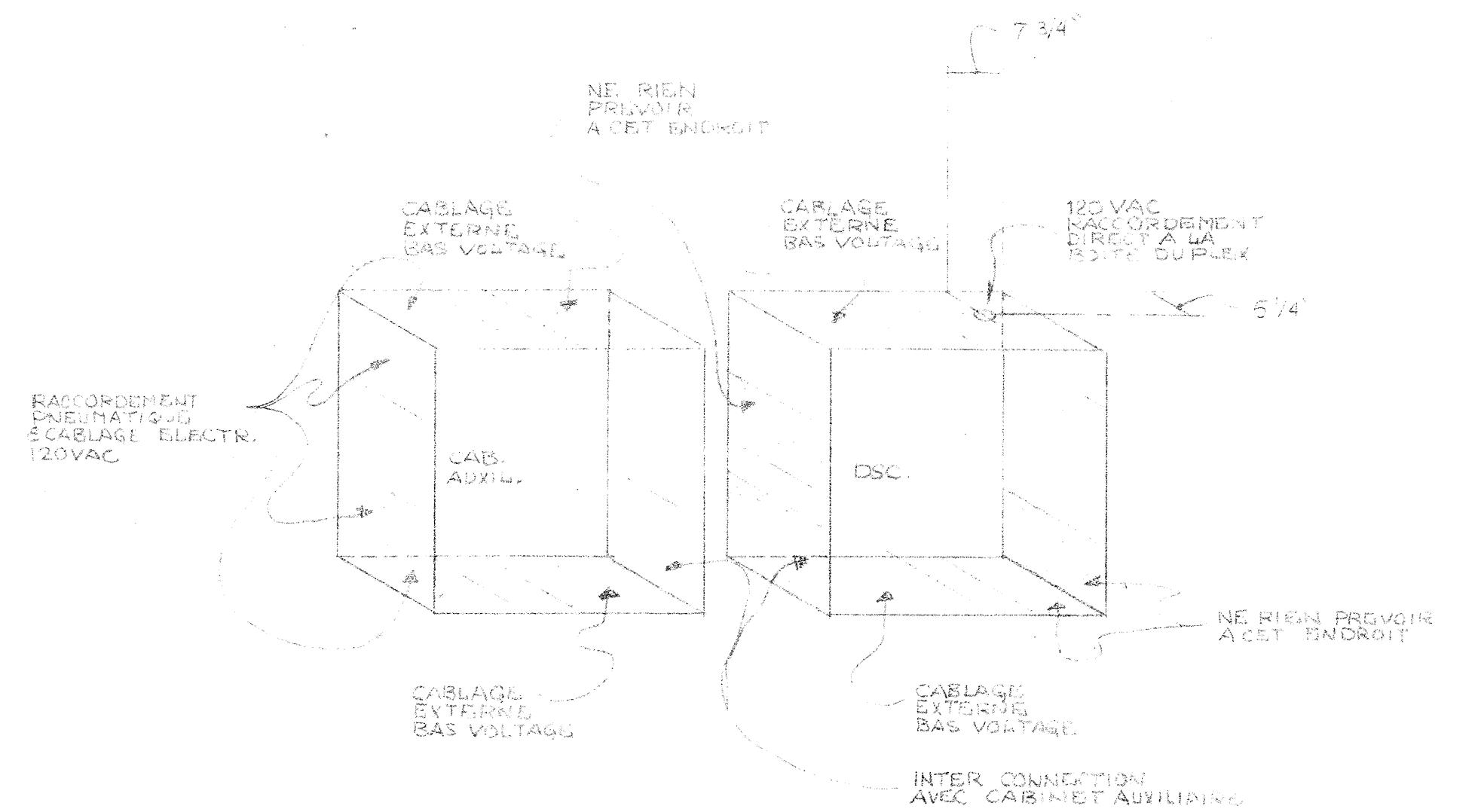


EMPLACEMENT		ADRESSE							DSC 14	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	EPT-5	REFROID.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1		
10	TE-5	TEMPERATURE PIECE	ANA	1 3		TE-1000-101		A10.1		
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-90%HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5VDC 0-25PSI



INT-1: INTERRUPTEUR "TOGGLE" CABLE SPEC. DSC 117, MONTÉ AVEC R-100-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



- 1 - VOIR DESSINS CYL. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE	IMPLANTATION DSC-6500		TEL QUE CONSTRUIT		86-07-07
	DSC-14		ADDITION RG-1		Nov 27 85
CHANGEMENT #112					SEPT 17 85
REFERENCE	NO.		REVISION	AVIS	
REPRESENTANT	J.C.R.		TECHNICIEN	R.F.	
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		PAR	DATE	10/16/85
			APPROUVE	DATE	
			PAR	15-7-12	
			CONTRAT	20/	
			4096-008-20	4068-20	
			JOHNSON CONTROLS	Société de Contrôle Johnson Ltd	
			Division Des Systemes Et Services	641 boulevard Labreau	
				Montréal, QC H4N 1B2	
				Tel: 514-332-6660	

DSC 14 SYSTEME V43-14

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
33	DISPLAY	ZT40,A	/F.B. SOUPAPE CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPE REFROIDISSEMENT

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

```

/
45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPE REFROID
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
65      OVERRIDE ZCP40,A,2  /SOUPAPE CHAUFF
/
73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
/
/-----/
/
/              FONCTIONS SPECIALES
/
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL
82      ADJUST   CMPXXX,A   /COMPENSATION
83      ADJUST   CDSXXX,A   /BANDE MORTE
/
/
/-----/
/
/              RECORD PANNE DE POUVOIR
/
/-----/
/

```

```

84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-14
/
/      51      ALARME HORAIRE SYSTEME V43-14
/
/-----/
/
/
□

```

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 09:09:00
/
/TRANSLATION LISTING FOR DSC-14.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-12-:1 15:43:00
/
/TRANSLATION LISTING FOR DSC-14.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-09-:1 13:10:33
/
/TRANSLATION LISTING FOR DSC-14.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:26
/
/TRANSLATION LISTING FOR DSC-14.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 17:25:46
/
/TRANSLATION LISTING FOR CIRA14.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  14    SYSTEME  V43-14
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     01 SEPT 1987
/                                  18 JANV 90  CHANGE AI 11, 12  POUR 14, 15
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----

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```

/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,1090
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  23
@ AD:  93
@ BI:  CON-2,BIT-0,BIR-0
@ AI:  LTD-2,FUL-11,RAT-0,TOT-0
@ BO:  MOM-0,POS-5,MAN-3
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-5
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FREEZE     CON-2      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.4,129.6 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.4,129.6 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-45.6,129.6 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.5,129.6 /TEMP ALIM
AI-5      ZT10       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-6      ZT40       FUL-6      E,0.5,E,N,O,112.5,-250.0 /F.B. CHAUFF
AI-7      ZT50       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8      ZT70       FUL-8      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9      ZT30       FUL-9      E,0.5,E,N,O,-12.5,250.0 /F.B. REFROID
AI-10     TE100      FUL-10     E,0.5,E,V,T,-45.9,129.6 /TEMP PIECE
AI-13     SPT        FUL-11     E,0.1,E,N,O,0,620       /PRESSION STATIQUE EN P
AI-14     HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-15     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
/
/
BO-1      ZC10       POS-1      D,E,0     /VOLETS
BO-2      ZC40       POS-2      D,E,0     /CHAUFFAGE
BO-3      ZC50       POS-3      D,E,0     /VAV
BO-4      ZC70       POS-4      D,E,0     /HUMIDITE
BO-5      ZC30       POS-5      D,E,0     /REFROID
BO-7A     ZS50       MAN-1      E,E       /VENTIL ALIM
BO-7B     ZS20       MAN-2      E,E       /SOUPAPE PRECHAUFF
BO-8A     ZSLI       MAN-3      E,E       /EVITEMENT BASS LIM EAU FROIDE
/
/
CP-1      ZCP10      INC-1      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-2      ZCP40      INC-2      E,E,A,ZT40,ZC40,100,0,5,0.0 /CHAUFF
CP-3      ZCP50      INC-3      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4      ZCP70      INC-4      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-5      ZCP30      INC-5      E,E,A,ZT30,ZC30,-100,0,5,0.0 /REFROID
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/

```


BD-1	OCCD	E,R	/CYCLE D OCCUPATION
BD-2	TLCON	E,R	/CONTROLE PAR TEMP.
BD-3	FSTRT	E,R	/DEMANDE VENTILATEUR
BD-4	COMP50	E,R	/RESULTAT DEMARRAGE
BD-5	CONON	E,R	/PERMISSION CONTROLE
/			
/-----/			
/ PARAMETRES CONTROLE DE NUIT /			
/-----/			
/			
BD-6	NCTL	E,R	/CONTROLE DE TEMP NUIT
/			
/-----/			
/ PARAMETRES ECONOMISEUR D AIR FRAIS /			
/-----/			
/			
BD-7	ECON	E,R	/RESULTAT ECONOMISEUR
/			
/-----/			
/ PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /			
/-----/			
/			
BD-8	MXD	E,R	/CONTROLE DE JOUR
BD-9	MIXLL	E,R	/CONTROLE PAR BASSE LIMITE
/			
/-----/			
/ PARAMETRES CONTROLE DE CHAUFFAGE /			
/-----/			
/			
BD-10	HTG	E,R	/CHAUFFAGE
/			
/-----/			
/ PARAMETRES CONTROLE DE REFROIDISSEMENT /			
/-----/			
/			
BD-11	CLG	E,R	/REFROIDISSEMENT
/			
/-----/			
/ PARAMETRES CONTROLE DU PRE CHAUFFAGE /			
/-----/			
/			
BD-12	PREHEA	E,R	/PRE CHAUFFAGE
BD-13	LLBYP	E,R	/RESULTAT TEMPORAIRE
/			
/-----/			
/ FONCTIONS SPECIALES /			
/-----/			
/			
BD-14	SYSP	D,R	
BD-15	SYS	D,R	
BD-16	SYS1	D,R	
BD-17	SYS2	D,R	
BD-18	SYS3	D,R	
BD-19	SYS4	D,R	
BD-20	SYS5	D,R	
BD-21	SYS6	D,R	
BD-22	SYS7	D,R	

```

BD-23   SYS8      D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
AD-1     DOW       E,2
AD-2     H1        E,00:00
AD-3     H2        E,00:00
AD-4     H3        E,00:00
AD-5     H4        E,00:00
AD-6     H5        E,00:00
AD-7     H6        E,00:00
AD-8     STA       E,00:00 /HORAIRE
AD-9     STO       E,00:00
AD-10    STA8      E,00:01
AD-11    STO8      E,23:59
AD-12    STA7      E,00:01
AD-13    STO7      E,23:59
AD-14    STA9      E,00:01
AD-15    STO9      E,23:59
AD-16    NSBT     E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17    DELSST   E,130   /DELAI APRES PANNE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT
/-----/
/
AD-18    NSP      E,22.0  /POINT DE CONSIGNE RETOUR
AD-19    Z41      E,0.0   /RESULTAT CTL NUIT
AD-20    CST41    E,45    /INTERVAL CTL NUIT
AD-21    CPB41    E,20.0  /BANDE PROP CTL NUIT
AD-22    CIG41    E,5     /GAIN CTL NUIT
AD-23    CDS41    E,0.0   /BANDE MORTE CTL NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS
/-----/
/
AD-24    OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION
/-----/
/
AD-25    RARL     E,21.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-26    RARH     E,24.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-27    SAHL     E,25.0   /REAJ TEMP ALIM HAU LIM
AD-28    SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE
/-----/
/
AD-29    DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-30    MXDSP    E,7.0    /POINT DE CONSIGNE LIMITE MEL.
AD-31    MDP      E,20.0   /POSITION MINIMUM VOILETS

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AD-32  CST10A  E,5      /INTERVAL CTL VOILETS LIMITE
AD-33  CPB10A  E,-90.0 /BANDE PROP CTL VOILETS LIMITE
AD-34  CIG10A  E,33     /GAIN CTL VOILETS LIMITE
AD-35  CMP10A  E,0.0    /COMPENSATION CTL VOILETS LIMITE
AD-36  CDS10A  E,0.0    /BANDE MORTE CTL VOILETS LIMITE
AD-37  CST10   E,45     /INTERVAL CTL VOILETS
AD-38  CPB10   E,-60.0  /BANDE PROP CTL VOILETS
AD-39  CIG10   E,33     /GAIN CTL VOILETS
AD-40  CMP10   E,0.0    /COMPENS CTL VOILETS
AD-41  CDS10   E,0.0    /BANDE MORTE CTL VOILETS
AD-42  ZMXD    E,0.0    /RESULTAT PROPORTION.
AD-43  Z10M    E,100.0  /RESULTAT VOILETS LIMITE
AD-44  Z10C    E,0.0    /RESULTAT VOILETS CTL
AD-45  Z10     E,0.0    /RESULTAT VOILETS
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
AD-46  Z40      E,0.0    /RESULTAT CHAUFFAGE
AD-47  CST40    E,25     /INTERVAL CTL CHAUFF
AD-48  CPB40    E,50.0   /BANDE PROP CTL CHAUFF
AD-49  CIG40    E,33     /GAIN CTL CHAUFF
AD-50  CDS40    E,0.0    /BANDE MORTE CTL CHAUFF
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT    /
/-----/
/
AD-51  Z30      E,0.0    /RESULTAT REFROIDISSEMENT
AD-52  CST30    E,25     /INTERVAL CTL REFROIDI
AD-53  CPB30    E,-45.0  /BANDE PROP CTL REFROIDI
AD-54  CIG30    E,33     /GAIN CTL REFROIDI
AD-55  CDS30    E,0.0    /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE /
/-----/
/
AD-56  SPSP     E,4      /POINT DE CONSIGNE PRESS STAT
AD-57  CST50    E,5      /INTERVAL CTL VAV
AD-58  CPB50    E,-10.0  /BANDE PROP CTL VAV
AD-59  CIG50    E,30     /GAIN CTL VAV
AD-60  CMP50    E,0.0    /COMPENS CTL VAV
AD-61  CDS50    E,0.4    /BANDE MORTE CTL VAV
AD-62  Z50      E,0.0    /RESULTAT CTL VAV
AD-63  FSP      E,0.0    /PRESS STAT FILTREE
AD-64  AD1      D,0.0    /RESULTAT TEMPORAIRE
AD-65  AD2      D,0.0    /RESULTAT TEMPORAIRE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-66  RHSP     E,33.0   /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-67  RHSPA    E,80.0   /POINT DE CONSIGNE HAUTE LIM HUMIDITE

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AD-68 CST70 E,60 /INTERVAL CTL HUMIDITE
AD-69 CPB70 E,90.0 /BANDE PROP CTL HUMIDITE
AD-70 CIG70 E,33 /GAIN CTL HUMIDITE
AD-71 CDS70 E,0.0 /BANDE MORTE CTL HUMIDITE
AD-72 CST70A E,5 /INTERVAL H LIM HUMIDITE
AD-73 CPB70A E,90.0 /BANDE PROP H LIM HUMIDITE
AD-74 CIG70A E,33 /GAIN H LIM HUMIDITE
AD-75 CDS70A E,0.0 /BANDE MORTE H LIM HUMIDITE
AD-76 Z70 E,0.0 /RESULTAT CTL HUMIDITE
AD-77 Z70HL E,0.0 /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-78 Z70C E,0.0 /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/ PARAMETRES CONTROLE DU PRE CHAUFFAGE /
/-----/
/
AD-79 PREALL E,5.0 /LIMITE CONTROLE PRE CHAUFFAGE
AD-80 PREADF E,1.0 /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-81 DELHEA E,120 /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/ FONCTIONS SPECIALES /
/-----/
/
AD-82 SYSDIS D,0
AD-83 CSTXXX D,0
AD-84 CPBXXX D,0.0
AD-85 CIGXXX D,0
AD-86 CMPXXX D,0.0
AD-87 CDSXXX D,0.0
/
/-----/
/ RECORD PANNE DE POUVOIR /
/-----/
/
AD-88 UPTIM E,00:00 /HEURE DE LA RESTAURATION DU POUVOIR
AD-89 UPDAT E,00:00 /DATE DE LA RESTAURATION DU POUVOIR
AD-90 DNTIM E,00:00 /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-91 DNDAT E,00:00 /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-92 TOD E,00:00 /DERNIERE HEURE
AD-93 LDAT E,00:00 /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1 ADJUST DELSST,I /DELAI APRES UNE PANNE
2 DISPLAY OCCD,B /CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3 ADJUST FSTRT,B /DEMANDE VENTILATEUR
4 DISPLAY FSTAT,B /ETAT VENTIL. ALIM.
5 DISPLAY FREEZE,B /ETAT THERMOSTAT DE GEL NORMAL-ON
/
6 DISPLAY NCTL,B /CONTROLE DE TEMP NUIT
7 DISPLAY TLCON,B /CONTROLE PAR TEMP.
8 ADJUST NSBT,A /PT DE CONSIGNE REDEMARRAGE
9 ADJUST NSP,A /POINT DE CONSIGNE RETOUR
10 DISPLAY Z41,A /RESULTAT CTL NUIT

```

/			
11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE
/			
16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	ADJUST	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
33	DISPLAY	ZT40,A	/F.B. SOUPAPE CHAUFFAGE
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPE REFROIDISSEMENT
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV
/			
49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI
53	ADJUST	STA8,T	/HEURE DEPART DIMANCHE
54	ADJUST	STO8,T	/HEURE D ARRET DIMANCHE
55	ADJUST	STA9,T	/HEURE DEPART SEMAINE
56	ADJUST	STO9,T	/HEURE D ARRET SEMAINE
/			
57	ADJUST	H1,T	/VACANCE 1
58	ADJUST	H2,T	/VACANCE 2
59	ADJUST	H3,T	/VACANCE 3

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60      ADJUST   H4,T           /VACANCE 4
/
61      OVERRIDE ZCP30,A,2      /SOUPAPE REFROID
62      OVERRIDE ZCP10,A,2      /VOLETS
63      OVERRIDE ZCP70,A,2      /HUMIDITE
64      OVERRIDE ZCP50,A,2      /VAV
65      OVERRIDE ZCP40,A,2      /SOUPAPE CHAUFF
/
73      DISPLAY  PREHEA,B       /PRE CHAUFFAGE
74      ADJUST   PREALL,A       /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A       /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I       /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I       /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A       /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I       /GAIN INTEGRAL
82      ADJUST   CMPXXX,A       /COMPENSATION
83      ADJUST   CDSXXX,A       /BANDE MORTE
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
84      DISPLAY  UPTIM,T        /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T        /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T        /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T        /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I       /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/

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/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/          ALARME
/          NUMERO          DESCRIPTION
/-----/
/
/          10          ALARME THERMOSTAT DE GEL
/
/          50          ALARME ARRET DEPART SYSTEME V43-14
/
/          51          ALARME HORAIRE SYSTEME V43-14
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/-----/
/          PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/          RESET    TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.

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/          RESET      OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       TLCON,SDF,S
2.4      SET       BPD,SUF,R
2.5      EXIT      C,R
2.6      SET       FSTRT,S,S
2.7      EXIT      U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT     TLCON,S
3.2      SET       BPD,TLCON,S
3.3      EXIT      C,R
3.4      INTERVAL  300,U
3.5      COMPARE   TE100,LE,NSBT,2.0
3.6      SET       FSTRT,BPD,S
3.7      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET       AUTO,S,S
4.3      DELAY     25,U
4.4      SET       COMP50,R,R
4.5      INTERVAL  10,U
4.6      XOR       COMP50,FSTAT
4.7      ALARM     50,C,S
4.8      SET       BPD,FSTRT,R
4.9      BOUT      ZS50,3,OFF
4.10     SET       COMP50,BPD,R
4.11     EXIT      U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE          /
/-----/
/
5.1      RESTART
5.2      DELAY     25,U
5.3      INTERVAL  5,U
5.4      SET       BPD,FREEZE,R
5.5      ALARM     10,C,R
5.6      EXIT      U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.              /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/

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6.1    EVENT    CONON,S
6.2    SET      BPD,CONON,R
6.3    STORE    APD,0.0,0.0,C,R
6.4    STORE    Z70C,APD,APD,C,R
6.5    STORE    Z70,APD,APD,C,R
6.6    AOUT     ZCP70,3,0.0,C,R
6.7    EXIT     C,R
6.8    DELAY    20,U
6.9    INTERVAL CST70,U
6.10   PROP     RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11   STORE    Z70C,APD,APD,U
6.12   EXIT     U
/
7.1    EVENT    CONON,S
7.2    SET      BPD,CONON,R
7.3    EXIT     C,R
7.4    INTERVAL CST70A,U
7.5    PROP     RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6    STORE    Z70HL,APD,APD,U
7.7    SELECT   APD,Z70C,L
7.8    STORE    Z70,APD,APD,U
7.9    AOUT     ZCP70,3,0.0,U
7.10   EXIT     U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/
8.1    EVENT    CONON,S
8.2    SET      BPD,CONON,R
8.3    STORE    FSP,0,0,C,R
8.4    STORE    APD,0.0,0.0,C,R
8.5    STORE    Z50,APD,APD,C,R
8.6    AOUT     ZCP50,3,0.0,C,R
8.7    EXIT     C,R
8.8    DELAY    15,U
8.9    INTERVAL CST50,U
8.10   FILTER   SPT,63,100
8.11   STORE    AD1,APD,APD,U    /PRESSION AVEC DECIMALE
8.12   CALC     APD,0,1,1,10,R
8.13   STORE    FSP,APD,APD,U    /PRESSION SANS DECIMALE
8.14   CALC     SPSP,0,10,1,1,T
8.15   STORE    AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
8.16   CALC     CPB50,0,10,1,1,T
8.17   PROP     AD2,AD1,APD,CIG50,CMP50,CDS50
8.18   STORE    Z50,APD,APD,U
8.19   AOUT     ZCP50,3,0,U
8.20   EXIT     U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/

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/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1      RESTART
9.2      SET      MXD,R,R
9.3      SET      NCTL,R,R
9.4      SET      CONON,R,R
9.5      DELAY    25,U
9.6      INTERVAL 5,U
9.7      AND      FSTAT,OCCD
9.8      SET      MXD,BPD,R
9.9      XOR      FSTAT,OCCD
9.10     AND      BPD,FSTAT
9.11     SET      NCTL,BPD,S
9.12     SET      CONON,FSTAT,R
9.13     EXIT     U
/
/
/-----/
/              ECONOMISEUR D AIR FRAIS              /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
10.1     EVENT    MXD,S
10.2     SET      ECON,R,R
10.3     SET      BPD,FSTAT,R
10.4     EXIT     C,R
10.5     INTERVAL 300,U
10.6     COMPARE  TE1,GE,OASO,1.0
10.7     SET      ECON,BPD,R
10.8     EXIT     U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1     EVENT    MXD,S
11.2     INTERVAL 300,U
11.3     STORE    APD,TE80,RARL,U
11.4     SPAN     RARL,RARH,SAHL,SALL
11.5     STORE    DSSP,APD,SAHL,U
11.6     EXIT     U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE              /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT

```

/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
 /MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
 /LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
 /A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
 /FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
 /OUVERT.

/

/Z10M RESULTAT PAR TEMP DE MELANGE

/Z10C RESULTAT PAR TEMP D ALIMENTATION

/Z10 RESULTAT VOLETS

/

12.1 EVENT MXD,S

12.2 SET MIXLL,R,R

12.3 SET BPD,MXD,R

12.4 EXIT C,R

12.5 INTERVAL 5,U

12.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE

12.7 SET MIXLL,BPD,R /A LA BASSE LIMITE

12.8 SELECT Z10M,Z10C,L

12.9 STORE Z10,APD,APD,U

12.10 AOUT ZCP10,3,0.0,U

12.11 EXIT U

/

13.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE

13.2 SET BPD,MIXLL,R

13.3 STORE Z10M,100.0,100.0,C,R

13.4 STORE CMP10A,Z10C,Z10C,U

13.5 EXIT C,R

13.6 INTERVAL CST10A,U

13.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A

13.8 STORE Z10M,APD,APD,U

13.9 EXIT U

/

14.1 EVENT MXD,R /POSITION D ARRET SOUPAPES

14.2 SET BPD,MXD,R

14.3 EXIT C,S

14.4 SET HTG,R,R

14.5 SET CLG,R,R

14.6 DELAY 7,C,R

14.7 STORE APD,0.0,0.0,C,R

14.8 AOUT ZCP30,3,0.0,C,R

14.9 STORE APD,100.0,100.0,C,R

14.10 AOUT ZCP40,3,0.0,C,R

14.11 EXIT U

/

15.1 EVENT MXD,S

15.2 SET BPD,MXD,R

15.3 STORE APD,0.0,0.0,C,R

15.4 STORE Z10,APD,APD,C,R

15.5 STORE Z10C,APD,APD,C,R

15.6 STORE Z10M,100.0,100.0,C,R

15.7 STORE ZMXD,APD,APD,C,R

15.8 AOUT ZCP10,3,0.0,C,R

15.9 EXIT C,R

15.10 DELAY 7,U

15.11 STORE APD,TE1,5.0,U

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15.12  SPAN      5.0,20.0,0.0,75.0
15.13  STORE    CMP10,APD,APD,U
15.14  STORE    APD,0.0,0.0,U
15.15  AOUT     ZCP40,3,0.0,U
15.16  INTERVAL CST10,U
15.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18  STORE    ZMXD,APD,APD,U
15.19  SPAN     MDP,100.0,MDP,100.0
15.20  SET      BPD,ECON,S
15.21  STORE    APD,MDP,MDP,C,S
15.22  STORE    Z10C,APD,APD,U
15.23  ORR      ZMXD,GE,85.0,10.0
15.24  SET      CLG,BPD,R
15.25  COMPARE  ZMXD,LE,15.0,10.0
15.26  SET      HTG,BPD,R
15.27  EXIT     U
/
/
/-----/
/               CONTROLE DU PRE CHAUFFAGE               /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE D EAU DE PRE
/CHAUFFAGE EST DESALIMENTE.
/
16.1    RESTART
16.2    SET      PREHEA,S,S
16.3    DELAY    25,U
16.4    BOUT     ZSLL,3,OFF
16.5    INTERVAL 5,U
16.6    COMPARE  TE10,LE,PREADL,PREADF
16.7    SET      PREHEA,BPD,R
16.8    NEGATE   BPD
16.9    BOUT     ZS20,3,OFF
16.10   SET      BPD,LLBYP,R
16.11   BOUT     ZSLL,3,OFF
16.12   EXIT     U
/
17.1    EVENT    PREHEA,S
17.2    SET      BPD,PREHEA,R
17.3    DELAY    DELHEA,C,S
17.4    NEGATE   PREHEA
17.5    SET      LLBYP,BPD,R
17.6    EXIT     U
/
/
/-----/
/               CONTROLE DE CHAUFFAGE               /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/
18.1    EVENT    HTG,S
18.2    SET      BPD,HTG,S
18.3    STORE    APD,0.0,0.0,C,R

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18.4      STORE      Z40,APD,APD,C,R
18.5      AOUT       ZCP40,3,0.0,C,R
18.6      EXIT       C,R
18.7      INTERVAL   CST40,U
18.8      CALC       DSSP,0.3,1,-1,1,T
18.9      PROP       APD,TE60,CPB40,CIG40,0.0,CDS40
18.10     STORE      Z40,APD,APD,U
18.11     AOUT       ZCP40,3,100.0,U
18.12     EXIT       U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/
19.1      EVENT      CLG,S
19.2      SET        BPD,CLG,R
19.3      STORE      APD,0.0,0.0,C,R
19.4      STORE      Z30,APD,APD,C,R
19.5      AOUT       ZCP30,3,0.0,C,R
19.6      EXIT       C,R
19.7      INTERVAL   CST30,U
19.8      CALC       DSSP,0.3,1,1,1,T
19.9      PROP       APD,TE60,CPB30,CIG30,0.0,CDS30
19.10     STORE      Z30,APD,APD,U
19.11     AOUT       ZCP30,3,0.0,U
19.12     EXIT       U
/
/-----/
/          CONTROLE DE NUIT          /
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOLETS RESTENT EN RECIRCULATION.
/
20.1      EVENT      NCTL,S
20.2      SET        BPD,NCTL,S
20.3      STORE      APD,0.0,0.0,C,R
20.4      STORE      Z41,APD,APD,C,R
20.5      AOUT       ZCP40,3,0.0,C,R
20.6      EXIT       C,R
20.7      INTERVAL   CST41,U
20.8      PROP       NSP,TE80,CPB41,CIG41,0.0,CDS41
20.9      STORE      Z41,APD,APD,U
20.10     AOUT       ZCP40,3,100.0,U
20.11     EXIT       U
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
21.1      EVERY      /SELECTION DU STSME POUR LE

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21.2      SET      SYSP,R,R      /
21.3      COMPARE  SYSDIS,EQ,100,0
21.4      SET      SYS1,BPD,R
21.5      OR       SYSP,BPD
21.6      SET      SYSP,BPD,S
21.7      COMPARE  SYSDIS,EQ,200,0
21.8      SET      SYS2,BPD,R
21.9      OR       SYSP,BPD
21.10     SET      SYSP,BPD,S
21.11     COMPARE  SYSDIS,EQ,300,0
21.12     SET      SYS3,BPD,R
21.13     OR       SYSP,BPD
21.14     SET      SYSP,BPD,S
21.15     COMPARE  SYSDIS,EQ,400,0
21.16     SET      SYS4,BPD,R
21.17     OR       SYSP,BPD
21.18     SET      SYSP,BPD,S
21.19     COMPARE  SYSDIS,EQ,500,0
21.20     SET      SYS5,BPD,R
21.21     OR       SYSP,BPD
21.22     SET      SYSP,BPD,S
21.23     COMPARE  SYSDIS,EQ,600,0
21.24     SET      SYS6,BPD,R
21.25     OR       SYSP,BPD
21.26     SET      SYSP,BPD,S
21.27     COMPARE  SYSDIS,EQ,700,0
21.28     SET      SYS7,BPD,R
21.29     OR       SYSP,BPD
21.30     SET      SYSP,BPD,S
21.31     COMPARE  SYSDIS,EQ,800,0
21.32     SET      SYS8,BPD,R
21.33     OR       SYSP,BPD
21.34     SET      SYSP,BPD,S
21.35     SET      SYS,SYSP,S
21.36     EXIT     U
/
/
22.1      EVENT    SYS,S      /RESET LES FONCTIONS POUR
22.2      SET      BPD,SUF,R  /LE CDB SPECIAL
22.3      STORE    SYSDIS,0,0,C,R  /SUR UNE PERIODE DE DISCLR
22.4      EXIT     C,R
22.5      DELAY    3600,U
22.6      STORE    SYSDIS,0,0,U
22.7      EXIT     U
/
/
23.1      EVENT    SYS1,S      /SYS 100
23.2      SET      BPD,SUF,R
23.3      EXIT     C,R
23.4      INTERVAL 5,U
23.5      STORE    CSTXXX,CST70,CST70,U  /PERMET DE VOIR LES
23.6      STORE    CPBXXX,CPB70,CPB70,U  /VALEURS DU SYSTEME
23.7      STORE    CIGXXX,CIG70,CIG70,U
23.8      STORE    CMPXXX,0.0,0.0,U
23.9      STORE    CDSXXX,CDS70,CDS70,U
23.10     EXIT     U
/

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```

/
24.1  EVENT      SYS1,S
24.2  SET        BPD,SUF,R
24.3  EXIT       C,R
24.4  DELAY      10,U
24.5  INTERVAL   1,U
24.6  STORE      CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
24.7  STORE      CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
24.8  STORE      CIG70,CIGXXX,CIG70,U
24.9  STORE      CDS70,CDSXXX,CDS70,U
24.10 EXIT       U

/
/
25.1  EVENT      SYS2,S                    /SYS 200
25.2  SET        BPD,SUF,R
25.3  EXIT       C,R
25.4  INTERVAL   5,U
25.5  STORE      CSTXXX,CST70A,CST70A,U      /PERMET DE VOIR LES
25.6  STORE      CPBXXX,CPB70A,CPB70A,U      /VALEURS DU SYSTEME
25.7  STORE      CIGXXX,CIG70A,CIG70A,U
25.8  STORE      CMPXXX,0.0,0.0,U
25.9  STORE      CDSXXX,CDS70A,CDS70A,U
25.10 EXIT       U

/
/
26.1  EVENT      SYS2,S
26.2  SET        BPD,SUF,R
26.3  EXIT       C,R
26.4  DELAY      10,U
26.5  INTERVAL   1,U
26.6  STORE      CST70A,CSTXXX,CST70A,U      /PERMET D AJUSTER LES
26.7  STORE      CPB70A,CPBXXX,CPB70A,U      /VALEURS DU SYSTEME
26.8  STORE      CIG70A,CIGXXX,CIG70A,U
26.9  STORE      CDS70A,CDSXXX,CDS70A,U
26.10 EXIT       U

/
/
27.1  EVENT      SYS3,S                    /SYS 300
27.2  SET        BPD,SUF,R
27.3  EXIT       C,R
27.4  INTERVAL   5,U
27.5  STORE      CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
27.6  STORE      CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
27.7  STORE      CIGXXX,CIG50,CIG50,U
27.8  STORE      CMPXXX,CMP50,CMP50,U
27.9  STORE      CDSXXX,CDS50,CDS50,U
27.10 EXIT       U

/
/
28.1  EVENT      SYS3,S
28.2  SET        BPD,SUF,R
28.3  EXIT       C,R
28.4  DELAY      10,U
28.5  INTERVAL   1,U
28.6  STORE      CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
28.7  STORE      CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
28.8  STORE      CIG50,CIGXXX,CIG50,U

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28.9    STORE    CMP50,CMPXXX,CMP50,U
28.10   STORE    CDS50,CDSXXX,CDS50,U
28.11   EXIT     U
/
/
29.1    EVENT    SYS4,S                               /SYS 400
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST40,CST40,U                /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB40,CPB40,U                /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG40,CIG40,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS40,CDS40,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS4,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST40,CSTXXX,CST40,U                /PERMET D AJUSTER LES
30.7    STORE    CPB40,CPBXXX,CPB40,U                /VALEURS DU SYSTEME
30.8    STORE    CIG40,CIGXXX,CIG40,U
30.9    STORE    CDS40,CDSXXX,CDS40,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS5,S                               /SYS 500
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U
31.5    STORE    CSTXXX,CST41,CST41,U                /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB41,CPB41,U                /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG41,CIG41,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS41,CDS41,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS5,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    DELAY    10,U
32.5    INTERVAL 1,U
32.6    STORE    CST41,CSTXXX,CST41,U                /PERMET D AJUSTER LES
32.7    STORE    CPB41,CPBXXX,CPB41,U                /VALEURS DU SYSTEME
32.8    STORE    CIG41,CIGXXX,CIG41,U
32.9    STORE    CDS41,CDSXXX,CDS41,U
32.10   EXIT     U
/
/
33.1    EVENT    SYS6,S                               /SYS 600
33.2    SET      BPD,SUF,R
33.3    EXIT     C,R
33.4    INTERVAL 5,U

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33.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
33.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
33.7    STORE    CIGXXX,CIG10A,CIG10A,U
33.8    STORE    CMPXXX,0.0,0.0,U
33.9    STORE    CDSXXX,CDS10A,CDS10A,U
33.10   EXIT     U
/
/
34.1    EVENT    SYS6,S
34.2    SET      BPD,SUF,R
34.3    EXIT     C,R
34.4    DELAY    10,U
34.5    INTERVAL 1,U
34.6    STORE    CST10A,CSTXXX,CST10A,U    /PERMET D AJUSTER LES
34.7    STORE    CPB10A,CPBXXX,CPB10A,U    /VALEURS DU SYSTEME
34.8    STORE    CIG10A,CIGXXX,CIG10A,U
34.9    STORE    CDS10A,CDSXXX,CDS10A,U
34.10   EXIT     U
/
/
35.1    EVENT    SYS7,S                    /SYS 700
35.2    SET      BPD,SUF,R
35.3    EXIT     C,R
35.4    INTERVAL 5,U
35.5    STORE    CSTXXX,CST10,CST10,U    /PERMET DE VOIR LES
35.6    STORE    CPBXXX,CPB10,CPB10,U    /VALEURS DU SYSTEME
35.7    STORE    CIGXXX,CIG10,CIG10,U
35.8    STORE    CMPXXX,CMP10,CMP10,U
35.9    STORE    CDSXXX,CDS10,CDS10,U
35.10   EXIT     U
/
/
36.1    EVENT    SYS7,S
36.2    SET      BPD,SUF,R
36.3    EXIT     C,R
36.4    DELAY    10,U
36.5    INTERVAL 1,U
36.6    STORE    CST10,CSTXXX,CST10,U    /PERMET D AJUSTER LES
36.7    STORE    CPB10,CPBXXX,CPB10,U    /VALEURS DU SYSTEME
36.8    STORE    CIG10,CIGXXX,CIG10,U
36.9    STORE    CMP10,CMPXXX,CMP10,U
36.10   STORE    CDS10,CDSXXX,CDS10,U
36.11   EXIT     U
/
/
37.1    EVENT    SYS8,S                    /SYS 800
37.2    SET      BPD,SUF,R
37.3    EXIT     C,R
37.4    INTERVAL 5,U
37.5    STORE    CSTXXX,CST30,CST30,U    /PERMET DE VOIR LES
37.6    STORE    CPBXXX,CPB30,CPB30,U    /VALEURS DU SYSTEME
37.7    STORE    CIGXXX,CIG30,CIG30,U
37.8    STORE    CMPXXX,0.0,0.0,U
37.9    STORE    CDSXXX,CDS30,CDS30,U
37.10   EXIT     U
/
/

```

```

38.1    EVENT    SYS8,S
38.2    SET      BPD,SUF,R
38.3    EXIT     C,R
38.4    DELAY    10,U
38.5    INTERVAL 1,U
38.6    STORE    CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
38.7    STORE    CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME
38.8    STORE    CIG30,CIGXXX,CIG30,U
38.9    STORE    CDS30,CDSXXX,CDS30,U
38.10   EXIT     U
/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/
39.1    RESTART
39.2    TIMDATA  DT
39.3    STORE    UPTIM,APD,APD,U          /SAUVE L HEURE ACTUEL ET
39.4    TIMDATA  MD                      /LA DATE DE LA RESTAURATION
39.5    STORE    UPDAT,APD,APD,U          /DU POUVOIR.
39.6    EXIT     U
/
40.1    RESTART
40.2    STORE    DNTIM,TOD,TOD,U          /RECORD DE LA DERNIERE HEURE
40.3    STORE    DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
40.4    INTERVAL 60,U
40.5    TIMDATA  DT
40.6    STORE    TOD,APD,APD,U            /SAUVE L HEURE ET LA DATE
40.7    TIMDATA  MD                      /ACTUEL A TOUTES LES MINUTES.
40.8    STORE    LDAT,APD,APD,U
40.9    EXIT     U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    927
/   CDB:       365
/   PROCESSES: 3408
/   OVERHEAD:  2700
/   TOTAL:     7400    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    927
/   CDB:       365
/   PROCESSES: 3408
/   OVERHEAD:  2700
/   TOTAL:     7400    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    927
/   CDB:       365
/   PROCESSES: 3410
/   OVERHEAD:  2700
/   TOTAL:     7402    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED

```

```
/ MEMORY USAGE IN BYTES:
/   POINTS:    927
/   CDB:      365
/  PROCESSES: 3410
/   OVERHEAD: 2700
/   TOTAL:    7402    8K DSC MEMORY NEEDED
```

```
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    927
/   CDB:      365
/  PROCESSES: 3410
/   OVERHEAD: 2700
/   TOTAL:    7402    8K DSC MEMORY NEEDED
```

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LE SERPENTIN DE FACE ET EVITEMENT, LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT-1, EPT-2 ET EPT-5. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-4. CEPENDANT, HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-3.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

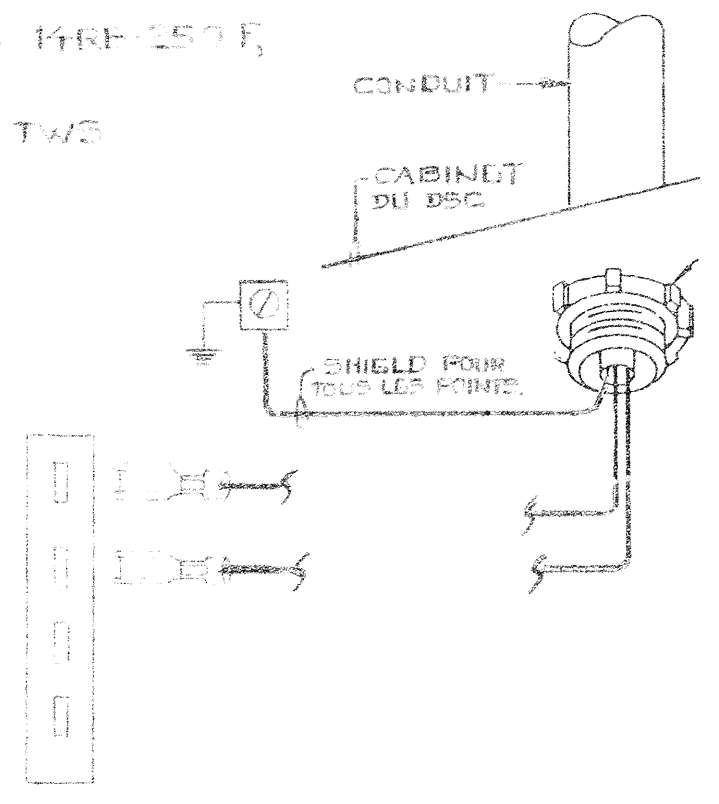
LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE. CEPENDANT, LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.



SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTÉ AU DESSUS DE 3°C A TLL-2, L'ACTION DE TLL-2 EST ANNULEE VIA RG-1. △
LORSQUE LA TEMPERATURE DE MELANGE DESCEND SOUS 5°C LA VALVE DE PRECHAUFFAGE V-1 OUVRE A 100 % PAR SP-1 ET RG-1 EST DESAMORCE. △

[illegible]

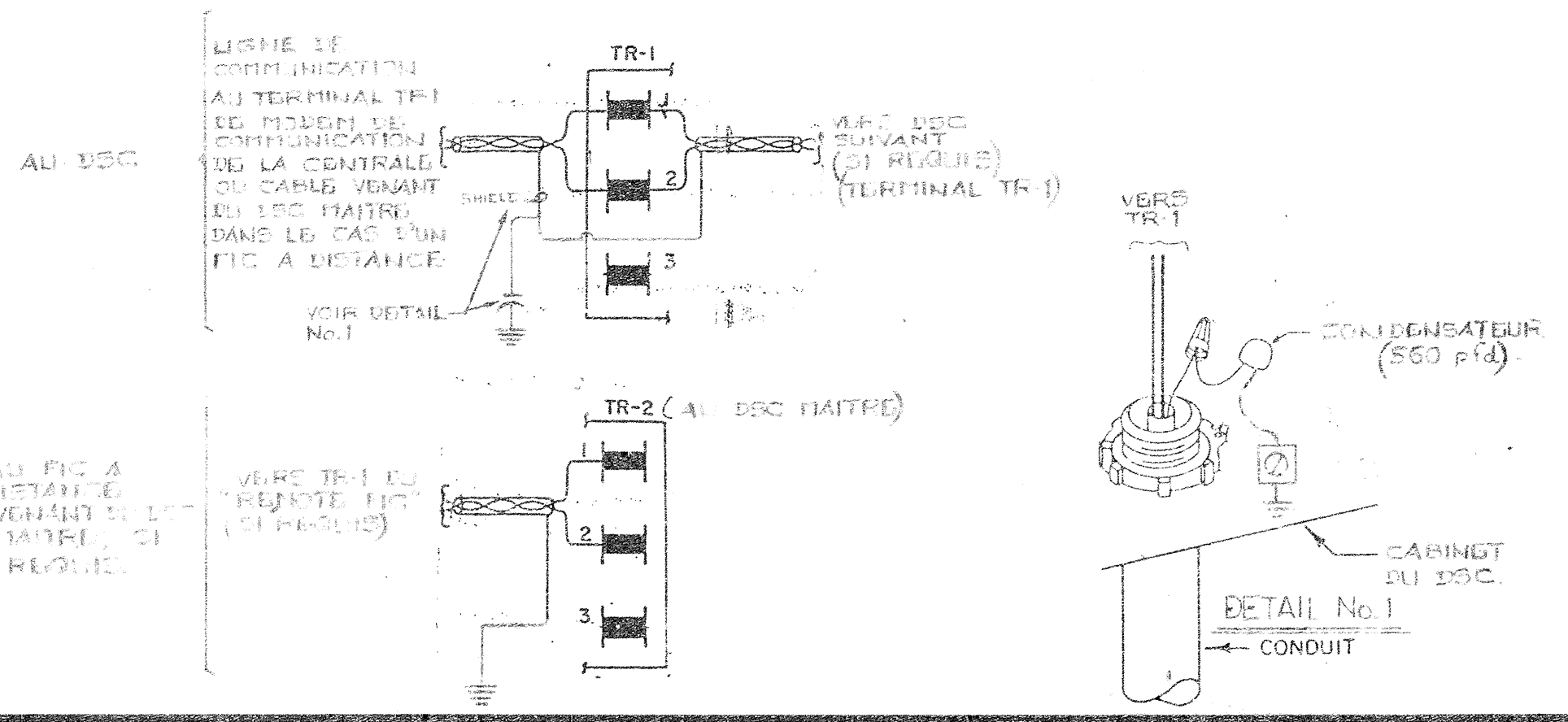
① - TYPE DE RACCORD
CORRESPONDRE TYPE KRF-250 F,
ISOLES 250.






② - CARLAGE EN 3" 18 TWS
FAÇOUT.

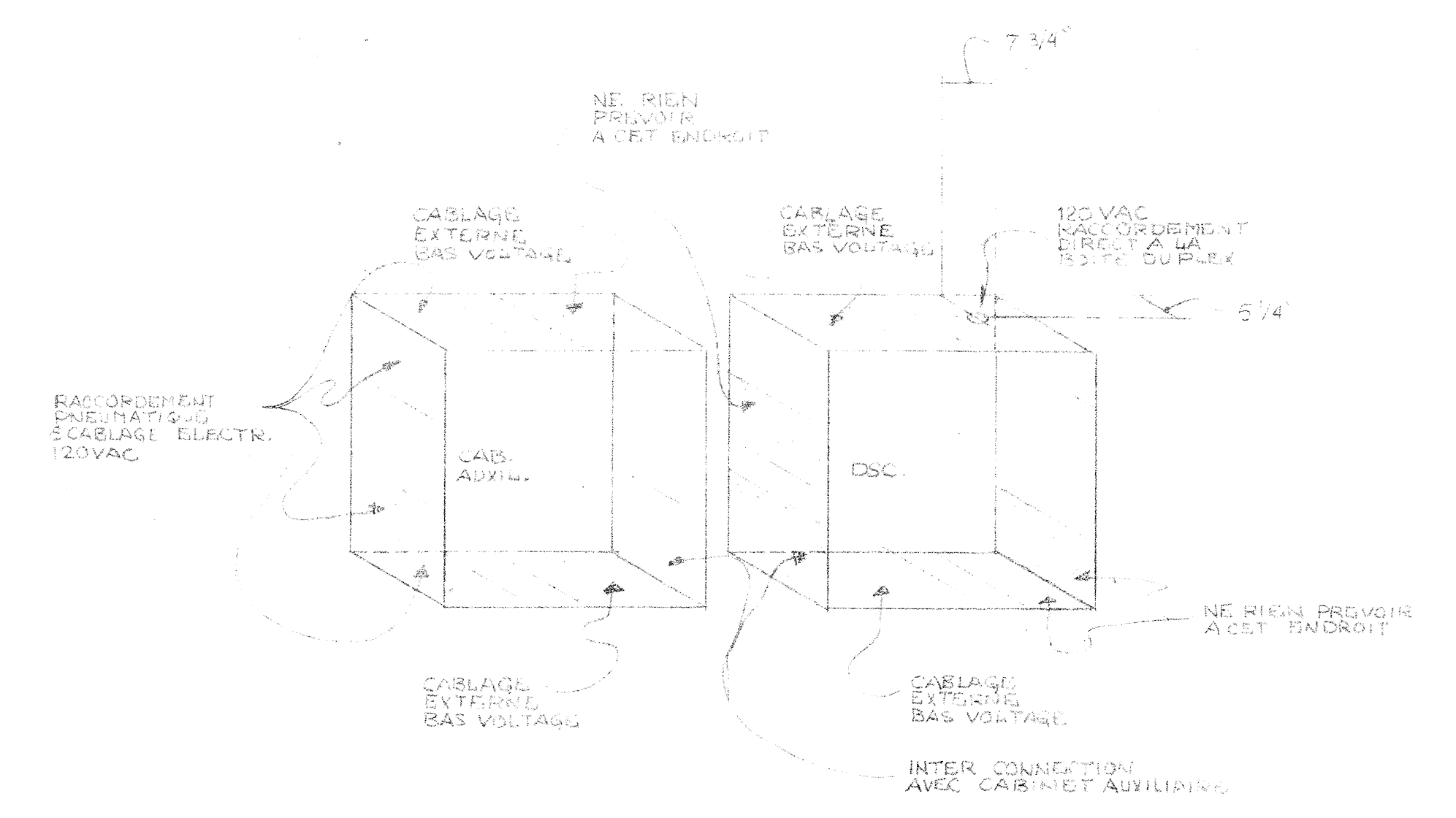
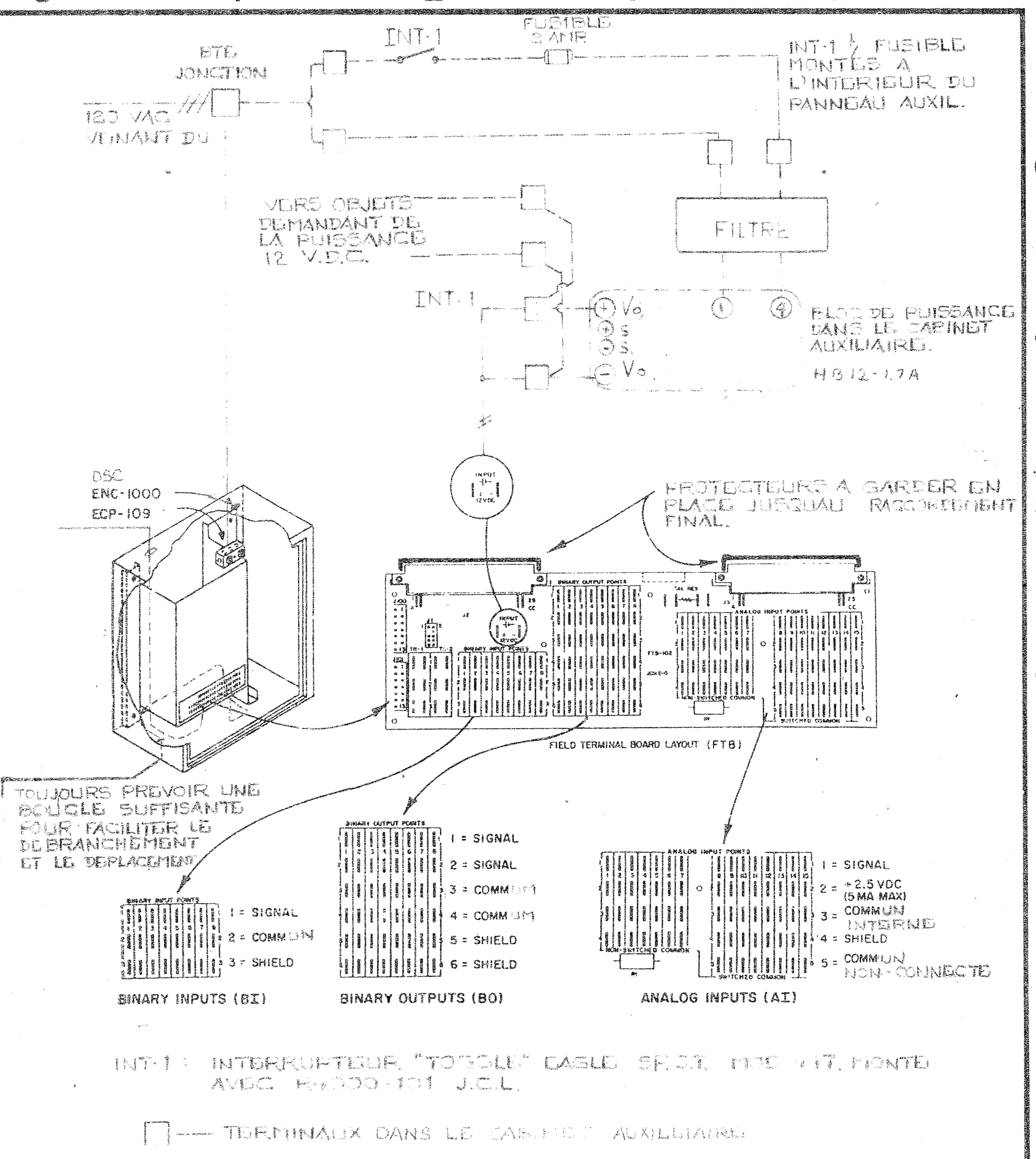


EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 14		
EMPLACEMENT: DIL DSC								PTC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43- 14	BIN	1		CONTACT AUX. DEM.	MCC- 3	B1.1		
2	GEL	SYSTEME 14	BIN	1 2		RELAIS RQ	CAB AUX	B2.1		

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 14		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1		
5	EPT-5	REFROI.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P5.1		
6										
7A	R-1	ARRET DEPART V43-W	SST	1 3	2 7	RELAIS 12VDC	MCC-3	57A.1		
7B	SP-1	V-1 PRECHAUF CARTIERE	SST	2 4	ROUGE NOIR	V9011	CABINET AUX.	57B.1		
8A	RQ-1	RELAIS DEVITEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX	58A.1		



EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 14		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	EPT-5	REFROID.	ANA	1 2 3	VOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1		
10	TE-5	TEMPERATURE PIECE	ANA	1 3		TE-1800-101		A10.1		
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-90%HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5 VOL 0-25 Po



① — VOIR DESSINS CTD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

② — VOIR LES DESSINS DE CONTRÔLES POUR LES RACCORDEMENTS PNEUMATIQUES / ÉLECTRIQUES LOCAUX.

TITRE	IMPLANTATION DSC-8500	TEL QUE CONSTRUIT	86-07-07
	CHANGEMENT #112	ADDITION RQ-1	Nov 27 85
			SEPT 17 85
PROJET	DSC-14	REFERENCE	NO.
		TECHNICIEN	REVISION
		AVIS	DATE
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.	REPRESENTANT	APPROUVES
		J.C.R.	R.F.
		PAR	DATE
		Société de Contrôle Johnson Ltee 441 boulevard Labeau Montréal, QC H4N 1S2 Tel: 514-332-6960	CONTRAT 4096-008-752 DESSIN NO.: 4068-20

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	A11A-6	1	BASSE LIMITE
DE-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 5	EPT-102	5	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50mm
V-1	V4324-1014	1	VALVE Ø 1" C/A P.P.
V-2	V5462-9	1	VALVE N.F. Ø 3" C/A P.P.
DA-5 ET 6	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB 12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG & RG-1	6012	3	RELAIS 12 VDC, 2PDT
XFR-1	BD 2FF	1	TRANSFORMATEUR 120/18 VAC
TE-5	TE1800-102	1	ELEMENT DE TEMPERATURE DE PIECE
DA-4	D3153-1	1	MOTEUR DE VOLET
TLL-2	A19AAF-12	1	BASSE LIMITE
W-1	WZ 1000-2A	1	PUIT D'IMMERSION
V-3	V5252-2	1	VALVE 2 VOIES N.O. Ø 2"
SP-1	V 9011-1	1	RELAIS ELECT. / PNEUMATIQUE
HV-1	PAR D'AUTRES	1	SOLAPPE HUMIDIFICATEUR



PARAMETRES

Contrôle de Pre-chauffage

Limite	X
Differentiel	X
Delai evitement	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

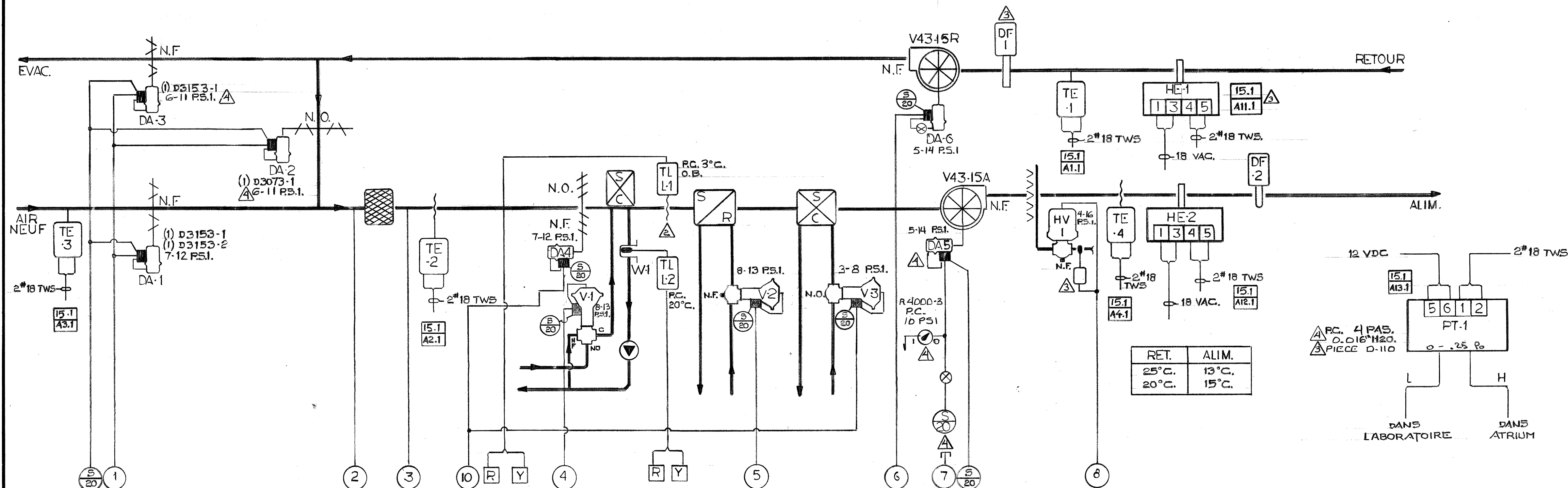


VACANCES DSC-15 , V43-15

Jour / M ois	VACANCE 1	X
Jour / M ois	VACANCE 2	X
Jour / M ois	VACANCE 3	X
Jour / M ois	VACANCE 4	X
Jour / M ois	VACANCE 5	X
Jour / M ois	VACANCE 6	X



DIAGRAMME DE DEBIT



PANNEAU

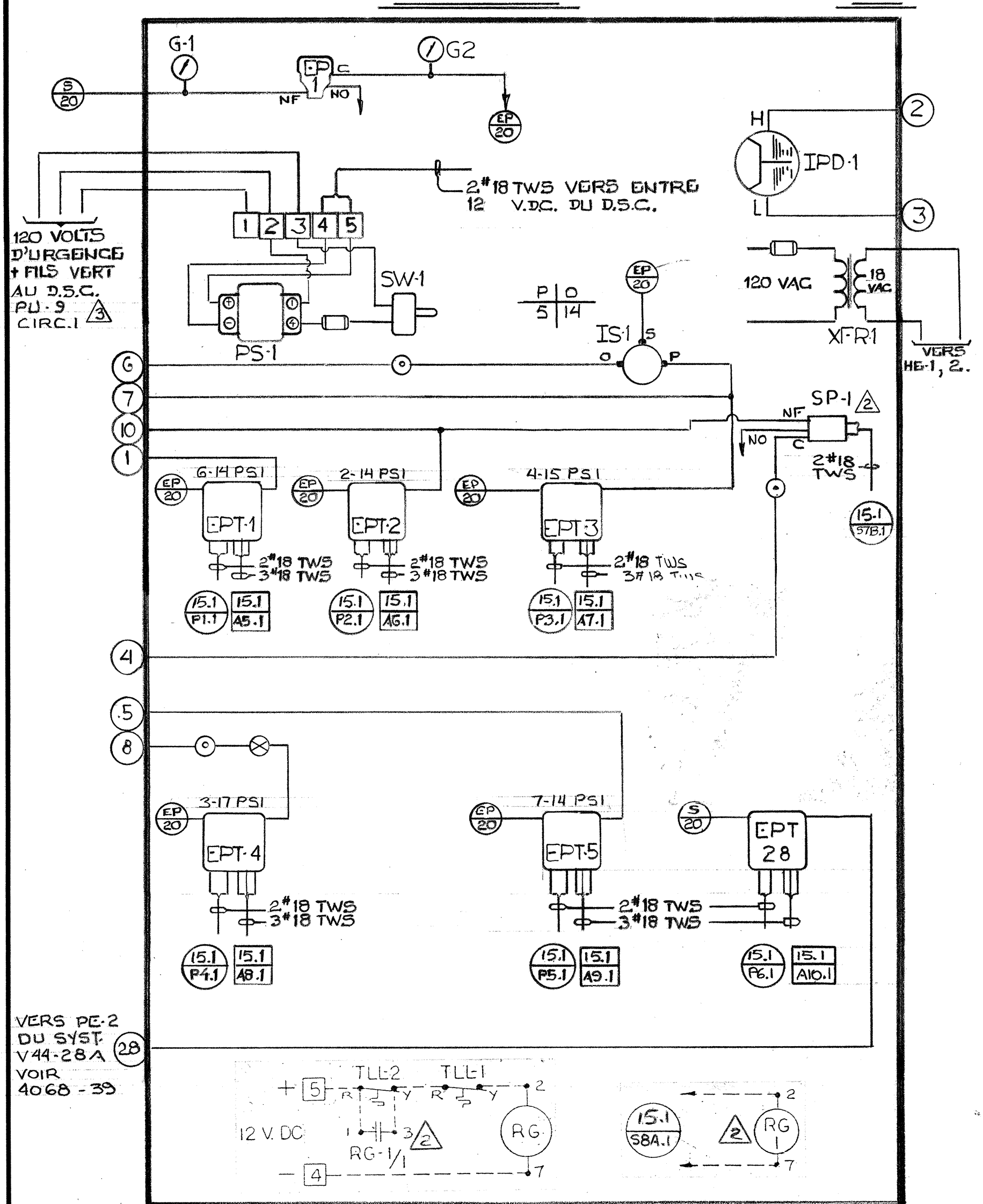
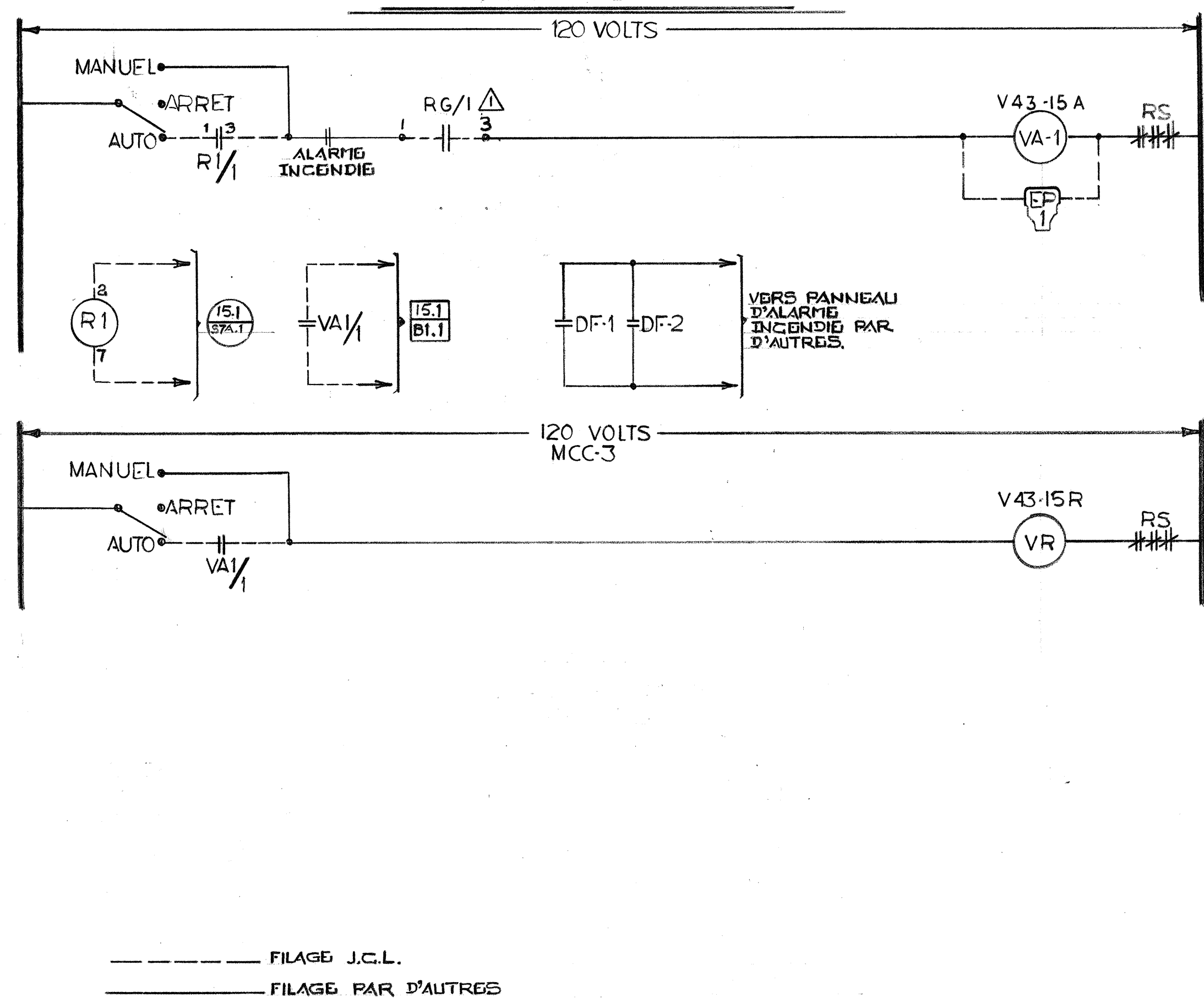
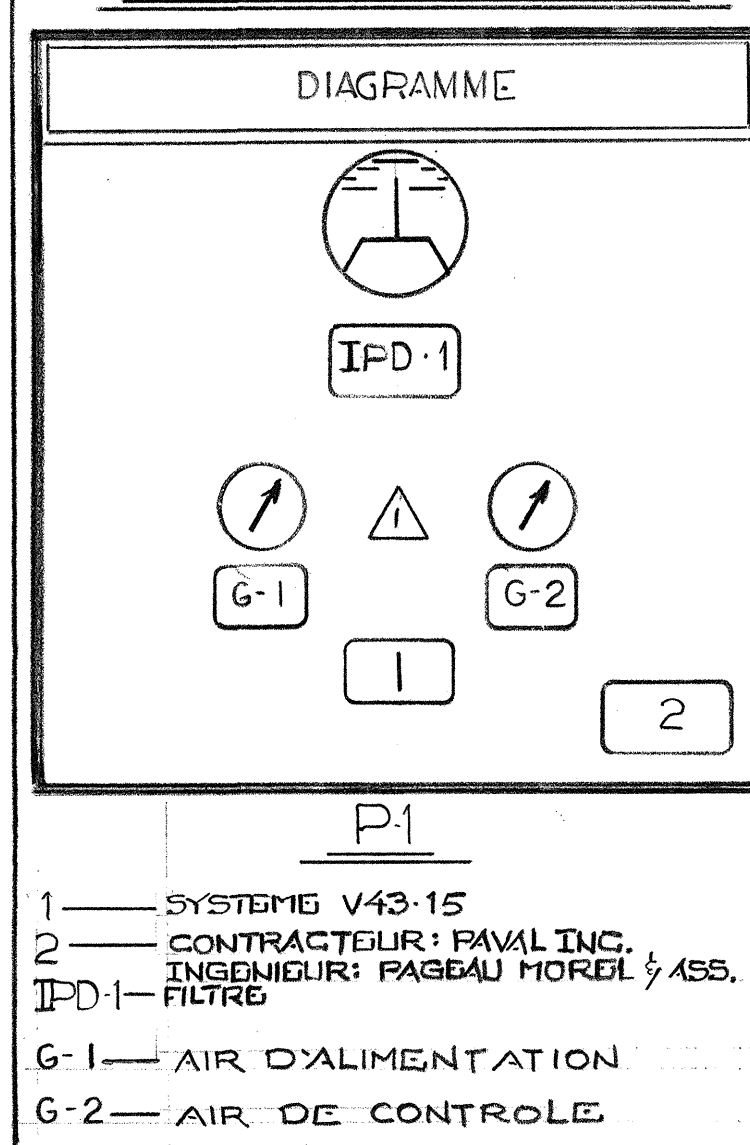


DIAGRAMME ELECTRIQUE



FACE DU PANNEAU



LISTE DE MATERIEL

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3		2	MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	AI1A-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 5 & 28	EPT-102	6	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50mm
V-1	V5842-3	1	VALVE 1/2" C/A P.P.
V-2	V5462-14	1	VALVE N.F. 1/4" C/A P.P.
DA-5 ET 6		2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	VIIHAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1		1	INTERRUPTEUR 2 POSITIONS
PS-1	HB12-17A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG-1	6012	3	RELAIS 12 VDC
XFR-1	602FF	1	TRANSFORMATEUR 120/18 VAC
DA-4	D3153-1	1	MOTEUR DE VOLET
TLL-2	AI9AAF-12	1	BASSE LIMITE
W-1	WZ1000-2	1	PUIT D'IMMERSION
V-3	V3752-1049	1	VALVE 2 VOIES N.O. 1/2"
SP-1	V90H-1	1	RELAIS ELECT/PNEUMATIQUE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LE SERPENTIN DE FACE ET EVITEMENT, LA VALVE DE CHAUFFAGE, LES VOLETS DE MELANGE ET LA VALVE D'EAU REFRIGERIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT-1, EPT-2 ET EPT-5. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOLETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOLETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-4. CEPENDANT, HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-3.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

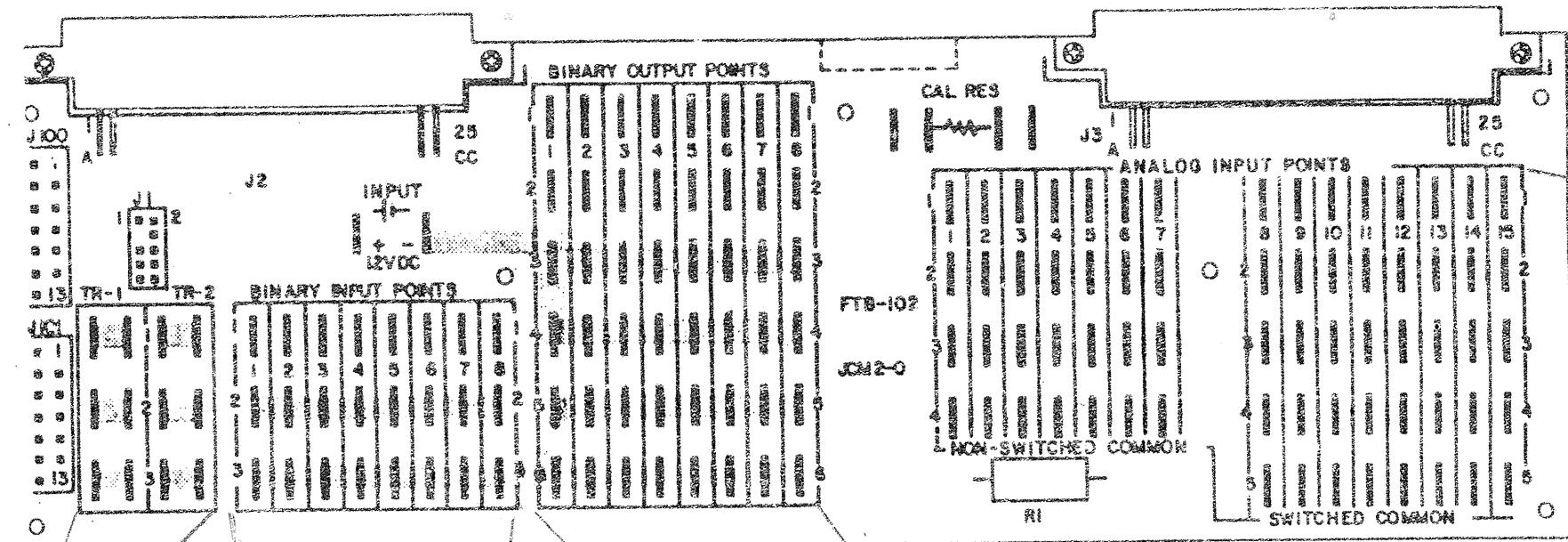
LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTA AU DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE. VIA RG-1. LORSQUE LA TEMPERATURE DE MELANGE DESCEND SOUS 5°C LA VALVE DE PRECHAUFFAGE V-1 OUVRE A 100% PAR SP-1 ET RG-1 EST DE SAUVEGARDE.

SI L'ECART DE POSITION ENTRE LE VENTILATEUR D'ALIMENTATION ET CELUI DE RETOUR AUGMENTE, LE MINIMUM D'AIR NEUF EST AUGMENTE

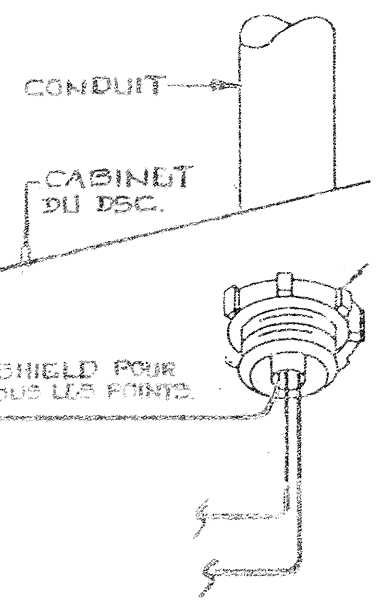
096-0273490	A	PMA-1	27-07-15
TITRE	SYSTEME No V43-15	TEL QUE CONSTRUIT	26-07-07
CHANGEMENT #112	ALIMENTATION BLOC D	ADDITION RG-1	Nov 27-85
REFERENCE	R.D.C.	REVISION	SEPT 17-85
REPRESENTANT	JCR	TECHNICIEN	R.F.
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST. HYACINTHE QUE.	DESSINE	DATE 21-85
APPROUVE	DATE 21-85	CONTRAT	4096-0008-21/52
JOHNSON CONTROLS	Division Des Systemes Et Services	Societe de Controle Johnson Ltee	441 boulevard Lebeau Montreal, QC H4N 1S2 Tel. 514-332-4960

BORNERS DE RACCORDEMENT (FTP-102)



VOIR PLUS BAS POUR COMMUNICATION

- 1 - TYPE DE RACCORDEMENT: 202505 T/B TYPE 14R-250 F, ISOLÉS 250.
- 2 - CABLE EN 2#18 TWS PARTOUT.

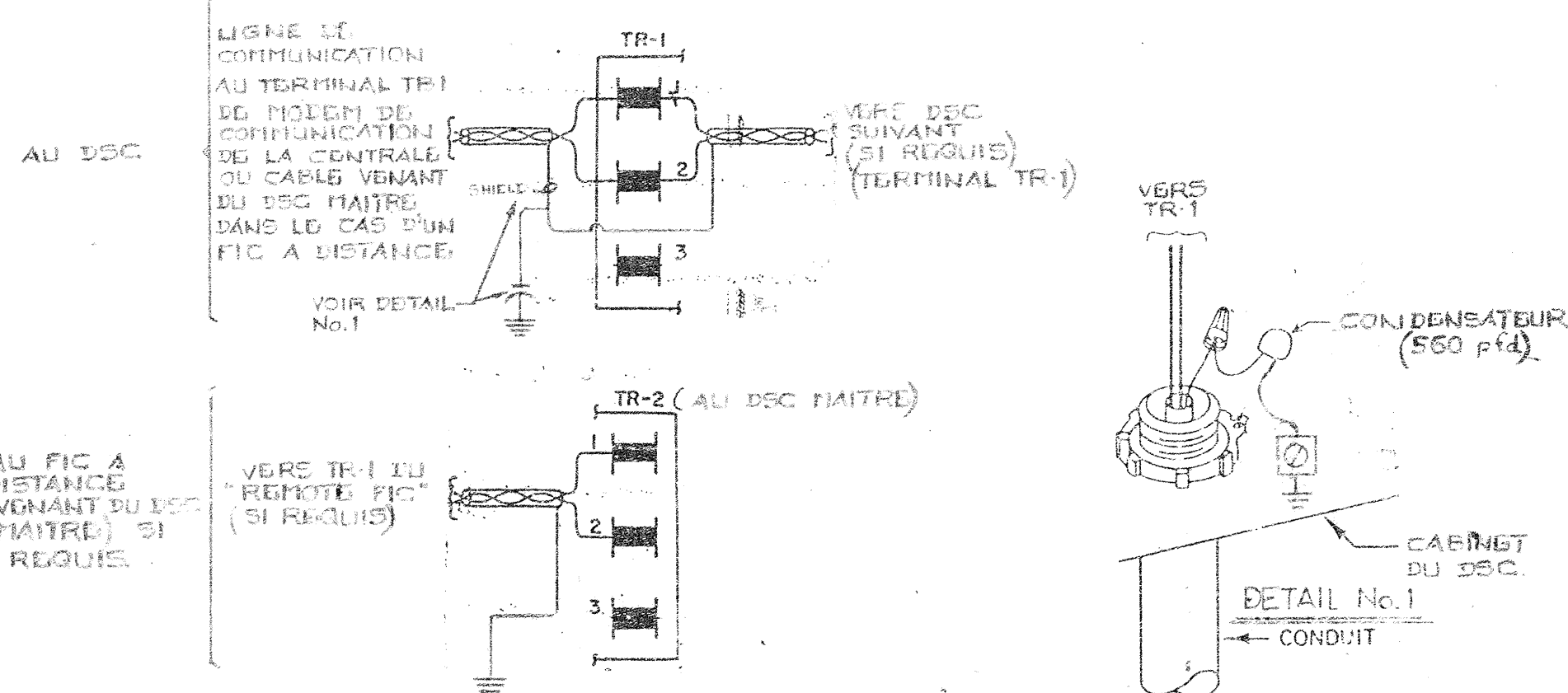


TOTAL MAX 8 ENTRÉES

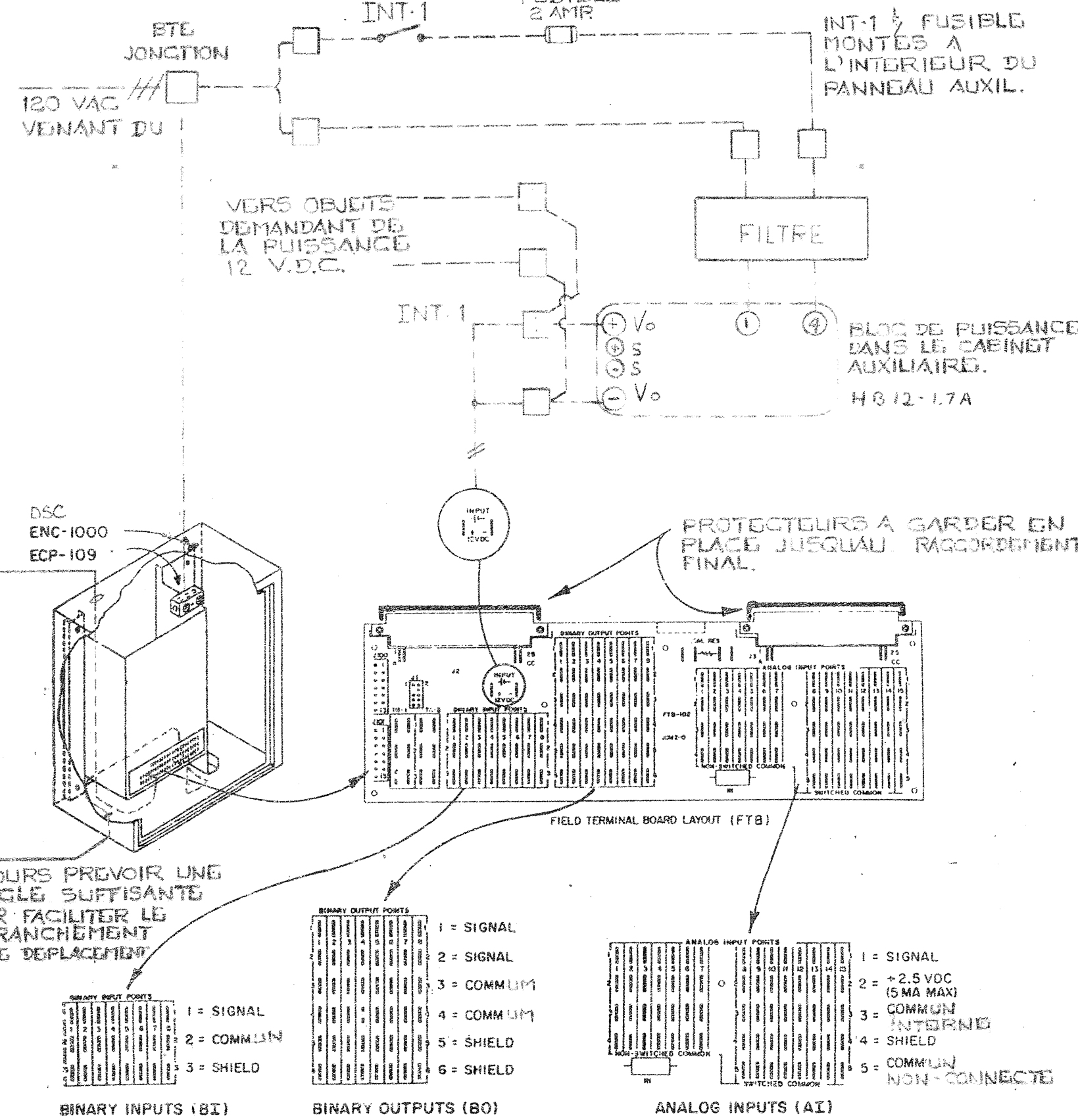
TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE							DSC 15	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-15	BIN	1 2		CONTACT AUX. DEM.	MCC-3	B1.1		
2	STATUS	SYSTEME V44-28A	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	GEL	SYSTEME V43-15	BIN	1 2		RELAIS RG	CAB. AUX.	B3.1		

EMPLACEMENT		ADRESSE							DSC 15	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLTE MELANGE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P4.1	
5	EPT-5	REFROI.	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P5.1	
6	EPT-28	VOLUME VARIABLE V44-28A	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P6.1	
7A	R-1	ARRET DEPART V43-15	SST	1 3	2 7	RELAIS 12VDC	MCC-3	STA.1		
7B	SP-1	V-1 PRECHAUF OUVERTE	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	
8A	RG-1	RELAIS DEVIEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	SA.1		

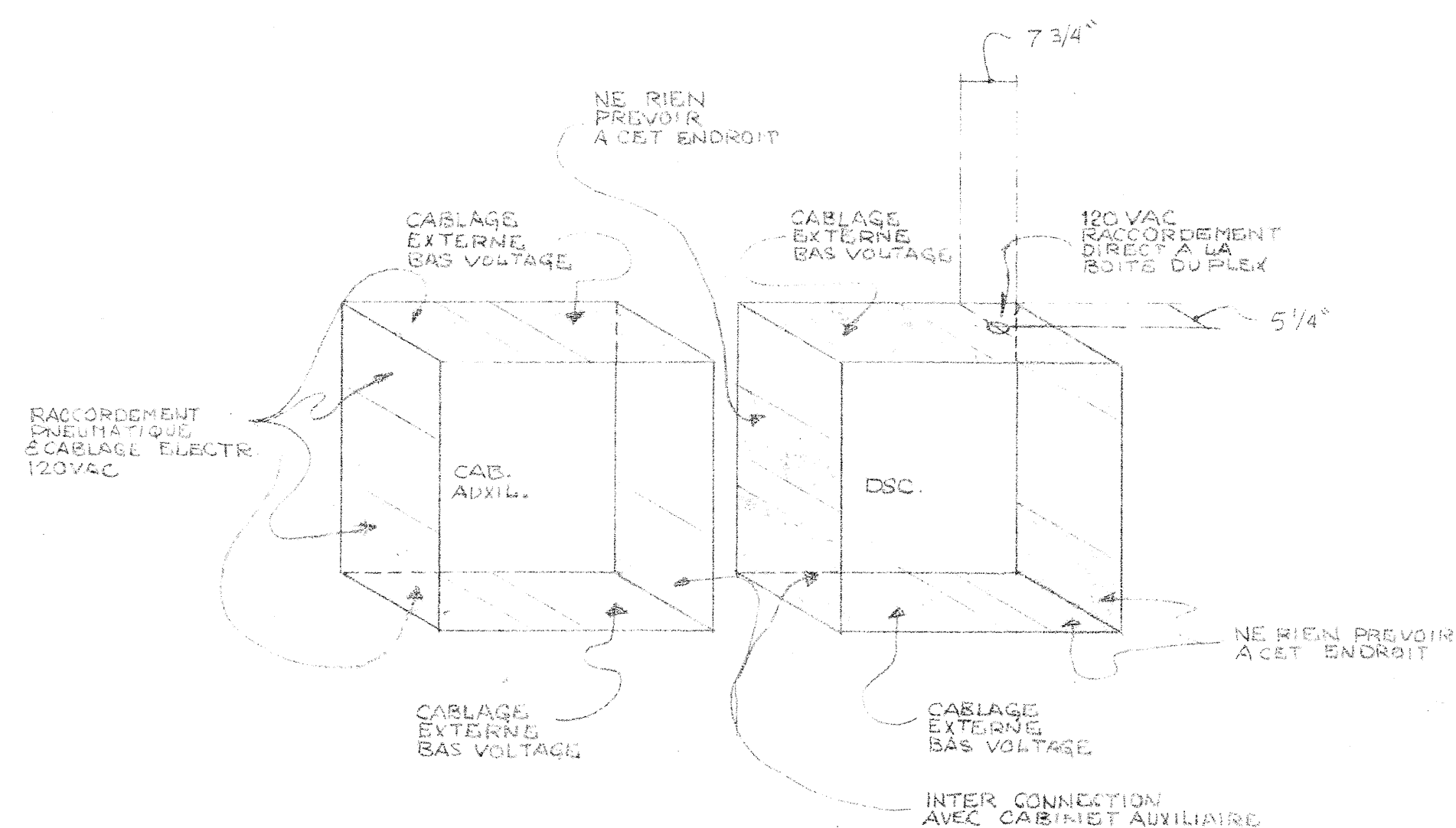


EMPLACEMENT		ADRESSE							DSC 15	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	CHAUFFAGE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8	EPT-4	HUMIDIF.	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1	
9	EPT-5	REFROID.	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1	
10	EPT-28	VOLUME VARIABLE V44-28A	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A10.1	
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-90%HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-90%HR	
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1	0-5VDC 0-25%	
14	PT-2	PRESSION ALIM. V44-28A	ANA	1 5	1 2	SONDE DE PRESSION PT-2	ALIM V44-28A	A14.1	0-5VDC 0-25%	



INT-1: INTERRUPTEUR "TOUSSE" CABLE SP-1, MOD 447, MONTÉ AVEC R-1000-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE		IMPLANTATION DSC-8500		3 TEL QUE CONSTRUIT		86-07-07	
CHANGEMENT #112		2 ADDITION RG-1		NOV 37-85		SEPT 17-85	
REFERENCE		NO		REVISION		AVIS	
REPRESENTANT J.C.R.		TECHNICIEN R.F.		DESSINE		APPROUVE	
PROJET CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		DATE 10/16/85		PAR 10		DATE 10/16/85	
JOHNSON CONTROLS		Société de Contrôle Johnson Ltd		441 boulevard Lebeau		4096-008-22	
Division Des Systemes Et Services		Montréal, QC H4H 1B2		Tel. 514/332-6660		4068-22	

DSC 15 SYSTEME V43-15

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
33	DISPLAY	ZT40,A	/F.B. SOUPAPE CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPE REFROIDISSEMENT

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
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50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPE REFROID
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
65      OVERRIDE ZCP40,A,2  /SOUPAPE CHAUFF
66      OVERRIDE ZCP51,A,2  /VAV SYST 28A
/
67      DISPLAY  FSTAT,A,B  /ETAT VENTIL. SYST 28A
68      DISPLAY  FSP1,I     /PRES STAT SYST 28A
69      ADJUST   SPSP1,I    /POINT DE CONSIGNE PRESS STATIQUE SYST 28A
70      DISPLAY  Z51,A      /RESULTAT CTL VAV SYST 28A
71      DISPLAY  ZT51,A     /F.B. VAV SYST 28A
/
73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU

/
77      ADJUST   MDPOS,A    /POSITION MINIMUM DES VOLETS
78      ADJUST   MXDPOS,A   /POSITION MAXIMUM DES VOLETS
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL
82      ADJUST   CMPXXX,A   /COMPENSATION
83      ADJUST   CDSXXX,A   /BANDE MORTE
/
/
/-----/

```

/ RECORD PANNE DE POUVOIR /

84	DISPLAY	UPTIM,T	/HEURE DE LA RESTAURATION DU POUVOIR
85	DISPLAY	UPDAT,T	/DATE DE LA RESTAURATION DU POUVOIR
86	DISPLAY	DNTIM,T	/HEURE DE LA DERNIERE PERTE DE POUVOIR
87	DISPLAY	DNDAT,T	/DATE DE LA DERNIERE PERTE DE POUVOIR
/			
88	ADJUST	SYSDIS,I	/SELECTION FONCTIONS SPECIALES
/			
89	DISPLAY	FIC1L,B	
90	ADJUST	FIC1E,I	
91	ADJUST	STEST,I	
92	DISPLAY	OCNT,I	
93	OVSCAN		
94	DISPLAY	ACNT,I	
95	ALMSCAN		
96	YEAR		
97	DATE		
98	DAY		
99	TIME		

/

/

/

/

/

/

/ L I S T E D E S A L A R M E S /

ALARME		
NUMERO		DESCRIPTION

10	ALARME THERMOSTAT DE GEL
50	ALARME ARRET DEPART SYSTEME V43-15
51	ALARME HORAIRE SYSTEME V43-15

/

/

/

```
/CAL1 TRANSLATOR    VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 09:01:07
/
/TRANSLATION LISTING FOR DSC-15.CAL
/
/CAL1 TRANSLATOR    VERSION A.43 - JOHNSON CONTROLS REV C 07-12-:1 15:47:26
/
/TRANSLATION LISTING FOR DSC-15.CAL
/
/CAL1 TRANSLATOR    VERSION A.43 - JOHNSON CONTROLS REV C 07-11-:1 14:28:55
/
/TRANSLATION LISTING FOR DSC-15.CAL
/
/CAL1 TRANSLATOR    VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:26
/
/TRANSLATION LISTING FOR DSC-15.CAL
/
/CAL1 TRANSLATOR    VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 17:33:03
/
/TRANSLATION LISTING FOR CIRA15.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  15    SYSTEME  V43-15
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                  RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                    01 SEPT 1987
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
```

```

/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,1017
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  22
@ AD:  96
@ BI:  CON-3,BIT-0,BIR-0
@ AI:  LTD-2,FUL-12,RAT-0,TOT-0
@ BO:  MOM-0,POS-6,MAN-3
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-6
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1      FSTAT      CON-1      E,E      /ETAT VENTIL. ALIM.
BI-2      FSTATATA   CON-2      E,E      /ETAT VENTIL. V44 28A
BI-3      FREEZE     CON-3      E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1      TE80       FUL-1      E,0.5,E,V,T,-45.7,129.2 /TEMP RETOUR
AI-2      TE10       FUL-2      E,0.5,E,V,T,-45.7,129.4 /TEMP MELANGE
AI-3      TE1        FUL-3      E,0.5,E,V,T,-45.7,129.4 /TEMP EXT
AI-4      TE60       FUL-4      E,0.5,E,V,T,-45.8,129.3 /TEMP ALIM
AI-5      ZT10       FUL-5      E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-6      ZT40       FUL-6      E,0.5,E,N,O,112.5,-250.0 /F.B. CHAUFF
AI-7      ZT50       FUL-7      E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8      ZT70       FUL-8      E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9      ZT30       FUL-9      E,0.5,E,N,O,-12.5,250.0 /F.B. REFROID
AI-10     ZT51       FUL-10     E,0.5,E,N,O,-12.5,250.0 /F.B. VAV SYST 28A
AI-11     HT80       LTD-1      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-12     HT60       LTD-2      E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-13     SPT        FUL-11     E,0.1,E,N,O,0,620       /PRESSION STATIQUE EN P
AI-14     SPT1       FUL-12     E,0.1,E,N,O,0,621       /PRESSION STATIQUE EN P
/
/
BO-1      ZC10       POS-1      D,E,0     /VOLETS
BO-2      ZC40       POS-2      D,E,0     /CHAUFF
BO-3      ZC50       POS-3      D,E,0     /VAV
BO-4      ZC70       POS-4      D,E,0     /HUMIDITE
BO-5      ZC30       POS-5      D,E,0     /REFROID
BO-6      ZC51       POS-6      D,E,0     /VAV SYST 28A
BO-7A     ZS50       MAN-1      E,E       /VENTIL ALIM
BO-7B     ZS20       MAN-2      E,E       /SOUPAPE PRECHAUFF
BO-8A     ZSSL       MAN-3      E,E       /EVITEMENT BASS LIMIT
/
/
CP-1      ZCP10      INC-1      E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-2      ZCP40      INC-2      E,E,A,ZT40,ZC40,100,0,5,0.0 /CHAUFF
CP-3      ZCP50      INC-3      E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4      ZCP70      INC-4      E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-5      ZCP30      INC-5      E,E,A,ZT30,ZC30,-100,0,5,0.0 /REFROID
CP-6      ZCP51      INC-6      E,E,A,ZT51,ZC51,-100,0,5,0.0 /VAV SYST 28A
/
/
@ DATA POINT DEFINITION:
/
/

```



```

/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
BD-1      OCCD      E,R      /CYCLE D OCCUPATION
BD-2      FSTRT     E,R      /DEMANDE VENTILATEUR
BD-3      COMP50    E,R      /RESULTAT DEMARRAGE
BD-4      CONON     E,R      /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-5      ECON      E,R      /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE      /
/-----/
/
BD-6      MXD       E,R      /CONTROLE DE JOUR
BD-7      MIXLL     E,R      /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-8      HTG       E,R      /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
BD-9      CLG       E,R      /REFROIDISSEMENT
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
BD-10     PREHEA    E,R      /PRE CHAUFFAGE
BD-11     LLBYP     E,R      /RESULTAT TEMPORAIRE
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
BD-12     SYSP      D,R
BD-13     SYS       D,R
BD-14     SYS1      D,R
BD-15     SYS2      D,R
BD-16     SYS3      D,R
BD-17     SYS4      D,R
BD-18     SYS5      D,R
BD-19     SYS6      D,R
BD-20     SYS7      D,R
BD-21     SYS8      D,R
BD-22     SYS9      D,R
/

```

```

/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
AD-1      DOW          E,2
AD-2      H1           E,00:00
AD-3      H2           E,00:00
AD-4      H3           E,00:00
AD-5      H4           E,00:00
AD-6      H5           E,00:00
AD-7      H6           E,00:00
AD-8      STA          E,00:00 /HORAIRE
AD-9      STO          E,00:00
AD-10     STA8          E,00:01
AD-11     STO8          E,23:59
AD-12     STA7          E,00:01
AD-13     STO7          E,23:59
AD-14     STA9          E,00:01
AD-15     STO9          E,23:59
AD-16     DELSST       E,140   /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17     OASO          E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18     RARL          E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19     RARH          E,23.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20     SAHL          E,25.0   /REAJ TEMP ALIM HAU LIM
AD-21     SALL          E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-22     DSSP          E,0.0   /POINT DE CONSIGNE ALIM
AD-23     MXDSP         E,7.0   /POINT DE CONSIGNE LIMITE MEL.
AD-24     MDP           E,0.0   /POSITION MINIMUM VOLETS
AD-25     CST10A        E,5     /INTERVAL CTL VOLETS LIMITE
AD-26     CPB10A        E,-90.0 /BANDE PROP CTL VOLETS LIMITE
AD-27     CIG10A        E,33    /GAIN CTL VOLETS LIMITE
AD-28     CMP10A        E,0.0   /COMPENSATION CTL VOLETS LIMITE
AD-29     CDS10A        E,0.0   /BANDE MORTE CTL VOLETS LIMITE
AD-30     CST10         E,45    /INTERVAL CTL VOLETS
AD-31     CPB10         E,-60.0 /BANDE PROP CTL VOLETS
AD-32     CIG10         E,33    /GAIN CTL VOLETS
AD-33     CMP10         E,0.0   /COMPENS CTL VOLETS
AD-34     CDS10         E,0.0   /BANDE MORTE CTL VOLETS
AD-35     ZMXD          E,0.0   /RESULTAT PROPORTION.
AD-36     Z10M          E,100.0 /RESULTAT VOLETS LIMITE
AD-37     Z10C          E,0.0   /RESULTAT VOLETS CTL
AD-38     Z10           E,0.0   /RESULTAT VOLETS

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```

/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39  MDPOS      E,20.0  /POSITION MINIMUM DES VOLETS
AD-40  MXDPOS      E,80.0  /POSITION MAXIMUM DES VOLETS
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-41  Z40         E,0.0   /RESULTAT CHAUFFAGE
AD-42  CST40        E,25    /INTERVAL CTL CHAUFF
AD-43  CPB40        E,50.0  /BANDE PROP CTL CHAUFF
AD-44  CIG40        E,33    /GAIN CTL CHAUFF
AD-45  CDS40        E,0.0   /BANDE MORTE CTL CHAUFF
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-46  Z30         E,0.0   /RESULTAT REFROIDISSEMENT
AD-47  CST30        E,25    /INTERVAL CTL REFROIDI
AD-48  CPB30        E,-45.0 /BANDE PROP CTL REFROIDI
AD-49  CIG30        E,33    /GAIN CTL REFROIDI
AD-50  CDS30        E,0.0   /BANDE MORTE CTL REFROIDI
/
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-51  SPSP         E,4     /POINT DE CONSIGNE PRESS STAT
AD-52  CST50        E,5     /INTERVAL CTL VAV
AD-53  CPB50        E,-10.0 /BANDE PROP CTL VAV
AD-54  CIG50        E,30    /GAIN CTL VAV
AD-55  CMP50        E,0.0   /COMPENS CTL VAV
AD-56  CDS50        E,0.4   /BANDE MORTE CTL VAV
AD-57  Z50          E,0.0   /RESULTAT CTL VAV
AD-58  FSP          E,0.0   /PRESS STAT FILTREE
AD-59  AD1          D,0.0   /RESULTAT TEMPORAIRE
AD-60  AD2          D,0.0   /RESULTAT TEMPORAIRE
/
/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-61  RHSP         E,30.0  /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-62  RHSPA        E,80.0  /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-63  CST70        E,150   /INTERVAL CTL HUMIDITE
AD-64  CPB70        E,90.0  /BANDE PROP CTL HUMIDITE
AD-65  CIG70        E,33    /GAIN CTL HUMIDITE
AD-66  CDS70        E,0.0   /BANDE MORTE CTL HUMIDITE
AD-67  CST70A       E,5     /INTERVAL H LIM HUMIDITE
AD-68  CPB70A       E,90.0  /BANDE PROP H LIM HUMIDITE
AD-69  CIG70A       E,33    /GAIN H LIM HUMIDITE

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AD-70  CDS70A  E,0.0  /BANDE MORTE H LIM HUMIDITE
AD-71  Z70     E,0.0  /RESULTAT CTL HUMIDITE
AD-72  Z70HL   E,0.0  /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-73  Z70C    E,0.0  /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
AD-74  PREALL  E,5.0  /LIMITE CONTROLE PRE CHAUFFAGE
AD-75  PREADF  E,1.0  /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-76  DELHEA  E,120  /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE SYST 28          /
/-----/
/
AD-77  SPSP1   E,200  /POINT DE CONSIGNE PRESS STAT
AD-78  CST51   E,6     /INTERVAL CTL VAV
AD-79  CPB51   E,15.0  /BANDE PROP CTL VAV
AD-80  CIG51   E,30    /GAIN CTL VAV
AD-81  CMP51   E,0.0   /COMPENS CTL VAV
AD-82  CDS51   E,0.0   /BANDE MORTE CTL VAV
AD-83  Z51     E,0.0   /RESULTAT CTL VAV
AD-84  FSP1    E,0     /PRESS STAT FILTREE
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-85  SYSDIS  D,0
AD-86  CSTXXX  D,0
AD-87  CPBXXX  D,0.0
AD-88  CIGXXX  D,0
AD-89  CMPXXX  D,0.0
AD-90  CDSXXX  D,0.0
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
AD-91  UPTIM   E,00:00  /HEURE DE LA RESTAURATION DU POUVOIR
AD-92  UPDAT   E,00:00  /DATE DE LA RESTAURATION DU POUVOIR
AD-93  DNTIM   E,00:00  /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-94  DNDAT   E,00:00  /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-95  TOD     E,00:00  /DERNIERE HEURE
AD-96  LDAT    E,00:00  /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      ADJUST  DELSST,I  /DELAI APRES UNE PANNE
2      DISPLAY OCCD,B    /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST  FSTRT,B   /DEMANDE VENTILATEUR
4      DISPLAY FSTAT,B   /ETAT VENTIL. ALIM.
5      DISPLAY FREEZE,B  /ETAT THERMOSTAT DE GEL  NORMAL-ON

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/
11      DISPLAY  TE80,A      /TEMP RETOUR
12      DISPLAY  TE10,A     /TEMP MELANGE
13      DISPLAY  TE1,A      /TEMP EXTERIEURE
14      DISPLAY  TE60,A     /TEMP ALIMENTATION
/
16      DISPLAY  MXD,B      /CONTROLE DE JOUR
17      ADJUST   RARL,A     /AIR RET BAS LIM REAJ TEMP ALIM
18      ADJUST   RARH,A     /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST   SAHL,A     /REAJ TEMP ALIM HAU LIM
20      ADJUST   SALL,A     /REAJ TEMP ALIM BAS LIM
21      DISPLAY  DSSP,A     /POINT DE CONSIGNE ALIM
22      ADJUST   OASO,A     /TEMP LIM EXT ECONOMISEUR
23      DISPLAY  ECON,B     /RESULTAT ECONOMISEUR
24      DISPLAY  MDP,A      /POSITION MINIMUM VOLETS
25      ADJUST   MXDSP,A    /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY  ZMXD,A     /RESULTAT PROPORTION.
27      DISPLAY  Z10M,A     /RESULTAT VOLETS LIMITE
28      DISPLAY  Z10C,A     /RESULTAT VOLETS CTL
29      DISPLAY  Z10,A      /RESULTAT VOLETS
30      DISPLAY  ZT10,A     /F.B. VOLETS
/
31      DISPLAY  HTG,B      /CHAUFFAGE
32      DISPLAY  Z40,A      /RESULTAT CHAUFFAGE
33      DISPLAY  ZT40,A     /F.B. SOUPAPE CHAUFFAGE
/
34      DISPLAY  CLG,B      /REFROIDISSEMENT
35      DISPLAY  Z30,A      /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A     /F.B. SOUPAPE REFROIDISSEMENT
/
37      DISPLAY  HT80,A     /HUMIDITE RETOUR
38      DISPLAY  HT60,A     /HUMIDITE ALIMENT
39      ADJUST   RHSP,A     /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A    /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A     /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A      /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A     /F.B. HUMIDITE
/
45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4

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/
61      OVERRIDE   ZCP30,A,2    /SOUPAPE REFROID
62      OVERRIDE   ZCP10,A,2    /VOLETS
63      OVERRIDE   ZCP70,A,2    /HUMIDITE
64      OVERRIDE   ZCP50,A,2    /VAV
/
65      OVERRIDE   ZCP40,A,2    /SOUPAPE CHAUFF
66      OVERRIDE   ZCP51,A,2    /VAV SYST 28A
/
67      DISPLAY    FSTATATA,B   /ETAT VENTIL. SYST 28A
68      DISPLAY    FSP1,I       /PRES STAT SYST 28A
69      ADJUST     SPSP1,I      /POINT DE CONSIGNE PRESS STATIQUE SYST 28A
70      DISPLAY    Z51,A        /RESULTAT CTL VAV SYST 28A
71      DISPLAY    ZT51,A       /F.B. VAV SYST 28A
/
73      DISPLAY    PREHEA,B     /PRE CHAUFFAGE
74      ADJUST     PREALL,A     /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST     PREADF,A     /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST     DELHEA,I     /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      ADJUST     MDPOS,A      /POSITION MINIMUM DES VOLETS
78      ADJUST     MXDPOS,A     /POSITION MAXIMUM DES VOLETS
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES  CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES  CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES  CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES  CONTROLE CHAUFFAGE
/ 600  PARAMETRES  CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES  CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES  CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES  CONTROLE VOLUME VARIABLE SYST 28
/
79      ADJUST     CSTXXX,I     /INTERVAL DE CONTROLE
80      ADJUST     CPBXXX,A     /BANDE PROPORTIONNELLE
81      ADJUST     CIGXXX,I     /GAIN INTEGRAL
82      ADJUST     CMPXXX,A     /COMPENSATION
83      ADJUST     CDSXXX,A     /BANDE MORTE
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
84      DISPLAY    UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY    UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY    DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY    DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST     SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY    FIC1L,B     /
90      ADJUST     FIC1E,I     /
91      ADJUST     STEST,I     /

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92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/      ALARME
/      NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-15
/
/      51      ALARME HORAIRE SYSTEME V43-15
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R

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1.18     ALARM      51,C,S
1.19     EXIT       U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET     OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/
2.1      PROG       DOW,0,STA,STO
2.2      SET        OCCD,SUF,R
2.3      SET        FSTRT,SUF,R
2.4      EXIT       U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET        AUTO,S,S
3.3      DELAY      25,U
3.4      SET        COMP50,R,R
3.5      INTERVAL   10,U
3.6      XOR        COMP50,FSTAT
3.7      ALARM      50,C,S
3.8      SET        BPD,FSTRT,R
3.9      BOUT       ZS50,3,OFF
3.10     SET        COMP50,BPD,R
3.11     EXIT       U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE /
/-----/
/
4.1      RESTART
4.2      DELAY      25,U
4.3      INTERVAL   5,U
4.4      SET        BPD,FREEZE,R
4.5      ALARM      10,C,R
4.6      EXIT       U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM. /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT      CONON,S
5.2      SET        BPD,CONON,R
5.3      STORE      APD,0.0,0.0,C,R
5.4      STORE      Z70C,APD,APD,C,R
5.5      STORE      Z70,APD,APD,C,R

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5.6      AOUT      ZCP70,3,0.0,C,R
5.7      EXIT      C,R
5.8      DELAY     20,U
5.9      INTERVAL  CST70,U
5.10     PROP      RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11     STORE     Z70C,APD,APD,U
5.12     EXIT      U
/
6.1      EVENT     CONON,S
6.2      SET       BPD,CONON,R
6.3      EXIT      C,R
6.4      INTERVAL  CST70A,U
6.5      PROP      RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6      STORE     Z70HL,APD,APD,U
6.7      SELECT    APD,Z70C,L
6.8      STORE     Z70,APD,APD,U
6.9      AOUT      ZCP70,3,0.0,U
6.10     EXIT      U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/
7.1      EVENT     CONON,S
7.2      SET       BPD,CONON,R
7.3      STORE     FSP,0,0,C,R
7.4      STORE     APD,0.0,0.0,C,R
7.5      STORE     Z50,APD,APD,C,R
7.6      AOUT      ZCP50,3,0.0,C,R
7.7      EXIT      C,R
7.8      DELAY     15,U
7.9      INTERVAL  CST50,U
7.10     FILTER    SPT,63,100
7.11     STORE     AD1,APD,APD,U    /PRESSION AVEC DECIMALE
7.12     CALC      APD,0,1,1,10,R
7.13     STORE     FSP,APD,APD,U    /PRESSION SANS DECIMALE
7.14     CALC      SPSP,0,10,1,1,T
7.15     STORE     AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
7.16     CALC      CPB50,0,10,1,1,T
7.17     PROP      AD2,AD1,APD,CIG50,CMP50,CDS50
7.18     STORE     Z50,APD,APD,U
7.19     AOUT      ZCP50,3,0,U
7.20     EXIT      U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-
/
8.1      RESTART

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8.2      SET      MXD,R,R
8.3      SET      CONON,R,R
8.4      DELAY    25,U
8.5      INTERVAL 5,U
8.6      AND      FSTAT,OCCD
8.7      SET      MXD,BPD,R
8.8      SET      CONON,FSTAT,R
8.9      EXIT     U
/
/
/-----/
/              ECONOMISEUR D AIR FRAIS              /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOILETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
9.1      EVENT    MXD,S
9.2      SET      ECON,R,R
9.3      SET      BPD,FSTAT,R
9.4      EXIT     C,R
9.5      INTERVAL 300,U
9.6      COMPARE  TE1,GE,OASO,1.0
9.7      SET      ECON,BPD,R
9.8      EXIT     U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1     EVENT    MXD,S
10.2     INTERVAL 300,U
10.3     STORE    APD,TE80,RARL,U
10.4     SPAN     RARL,RARH,SAHL,SALL
10.5     STORE    DSSP,APD,SAHL,U
10.6     EXIT     U
/
/-----/
/      CONTROLE DES VOILETS AVEC BASSE LIMITE              /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOILETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOILETS
/FERMENT AINSI QUE LA SOUPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10  RESULTAT VOILETS

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```

/
/
11.1  EVENT      MXD,S
11.2  SET        MIXLL,R,R
11.3  SET        BPD,MXD,R
11.4  EXIT       C,R
11.5  INTERVAL   5,U
11.6  COMPARE    TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
11.7  SET        MIXLL,BPD,R           /A LA BASSE LIMITE
11.8  SELECT     Z10M,Z10C,L
11.9  STORE      Z10,APD,APD,U
11.10 AOUT       ZCP10,3,0.0,U
11.11 EXIT       U

/
12.1  EVENT      MIXLL,S           /CONTROLE PAR BASSE LIMITE DE MELANGE
12.2  SET        BPD,MIXLL,R
12.3  STORE      Z10M,100.0,100.0,C,R
12.4  STORE      CMP10A,Z10C,Z10C,U
12.5  EXIT       C,R
12.6  INTERVAL   CST10A,U
12.7  PROP       MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
12.8  STORE      Z10M,APD,APD,U
12.9  EXIT       U

/
13.1  EVENT      MXD,R /POSITION D ARRET SOUPAPES
13.2  SET        BPD,MXD,R
13.3  EXIT       C,S
13.4  SET        HTG,R,R
13.5  SET        CLG,R,R
13.6  DELAY      7,C,R
13.7  STORE      APD,0.0,0.0,C,R
13.8  AOUT       ZCP30,3,0.0,C,R
13.9  STORE      APD,100.0,100.0,C,R
13.10 AOUT       ZCP40,3,0.0,C,R
13.11 EXIT       U

/
14.1  EVENT      MXD,S
14.2  SET        BPD,MXD,R
14.3  STORE      APD,0.0,0.0,C,R
14.4  STORE      Z10,APD,APD,C,R
14.5  STORE      Z10C,APD,APD,C,R
14.6  STORE      Z10M,100.0,100.0,C,R
14.7  STORE      ZMXD,APD,APD,C,R
14.8  AOUT       ZCP10,3,0.0,C,R
14.9  EXIT       C,R
14.10 DELAY      7,U
14.11 STORE      APD,TE1,5.0,U
14.12 SPAN       5.0,20.0,0.0,75.0
14.13 STORE      CMP10,APD,APD,U
14.14 STORE      APD,0.0,0.0,U
14.15 AOUT       ZCP40,3,0.0,U
14.16 INTERVAL   CST10,U
14.17 PROP       DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18 STORE      ZMXD,APD,APD,U
14.19 SPAN       MDP,100.0,MDP,100.0
14.20 SET        BPD,ECON,S
14.21 STORE      APD,MDP,MDP,C,S

```

```

14.22  STORE      Z10C,APD,APD,U
14.23  ORR        ZMXD,GE,85.0,10.0
14.24  SET        CLG,BPD,R
14.25  COMPARE    ZMXD,LE,15.0,10.0
14.26  SET        HTG,BPD,R
14.27  EXIT      U
/
/
/-----/
/          CALCUL DE LA POSITION MINIMUM DES VOLETS          /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DU POURCENTAGE
/DE CONTROLE DE LA PRESSION STATIQUE. LE RESULTAT S APPLIQUE DANS LA
/ROUTINE DE CONTROLE DES VOLETS
/
15.1    RESTART
15.2    DELAY      25,U
15.3    INTERVAL   10,U
15.4    STORE      APD,Z50,Z50,U
15.5    SPAN       50.0,80.0,MDPOS,MXDPOS
15.6    STORE      MDP,APD,MDPOS,U
15.7    EXIT      U
/
/
/-----/
/          CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE D EAU DE PRE
/CHAUFFAGE EST DESALIMENTE.
/
16.1    RESTART
16.2    SET        PREHEA,S,S
16.3    DELAY      25,U
16.4    BOUT       ZSLL,3,OFF
16.5    INTERVAL   5,U
16.6    COMPARE    TE10,LE,PREALL,PREADF
16.7    SET        PREHEA,BPD,R
16.8    NEGATE     BPD
16.9    BOUT       ZS20,3,OFF
16.10   SET        BPD,LLBYP,R
16.11   BOUT       ZSLL,3,OFF
16.12   EXIT      U
/
17.1    EVENT      PREHEA,S
17.2    SET        BPD,PREHEA,R
17.3    DELAY      DELHEA,C,S
17.4    NEGATE     PREHEA
17.5    SET        LLBYP,BPD,R
17.6    EXIT      U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/

```

/

/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.

/

18.1	EVENT	HTG,S
18.2	SET	BPD,HTG,S
18.3	STORE	APD,0.0,0.0,C,R
18.4	STORE	Z40,APD,APD,C,R
18.5	AOUT	ZCP40,3,0.0,C,R
18.6	EXIT	C,R
18.7	INTERVAL	CST40,U
18.8	CALC	DSSP,0.3,1,-1,1,T
18.9	PROP	APD,TE60,CPB40,CIG40,0.0,CDS40
18.10	STORE	Z40,APD,APD,U
18.11	AOUT	ZCP40,3,100.0,U
18.12	EXIT	U

/

/-----/

/ CONTROLE DE REFROIDISSEMENT /

/-----/

/

/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.

/

19.1	EVENT	CLG,S
19.2	SET	BPD,CLG,R
19.3	STORE	APD,0.0,0.0,C,R
19.4	STORE	Z30,APD,APD,C,R
19.5	AOUT	ZCP30,3,0.0,C,R
19.6	EXIT	C,R
19.7	INTERVAL	CST30,U
19.8	CALC	DSSP,0.3,1,1,1,T
19.9	PROP	APD,TE60,CPB30,CIG30,0.0,CDS30
19.10	STORE	Z30,APD,APD,U
19.11	AOUT	ZCP30,3,0.0,U
19.12	EXIT	U

/

/

/-----/

/ CONTROLE DE LA PRESSION STATIQUE SYST 28 /

/-----/

/

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP1-. LA LECTURE DE PRESSION EST EN PASCALS.

/

20.1	EVENT	FSTATATA,S
20.2	SET	BPD,FSTATATA,R
20.3	STORE	FSP1,0,0,C,R
20.4	STORE	APD,0.0,0.0,C,R
20.5	STORE	Z51,APD,APD,C,R
20.6	AOUT	ZCP51,3,0.0,C,R
20.7	EXIT	C,R
20.8	DELAY	15,U
20.9	INTERVAL	CST51,U
20.10	FILTER	SPT1,63,100
20.11	STORE	FSP1,APD,APD,U
20.12	CALC	CPB51,1,10,1,1,T

```

20.13  PROP      SPSP1,FSP1,APD,CIG51,CMP51,CDS51
20.14  STORE     Z51,APD,APD,U
20.15  AOUT      ZCP51,3,0,U
20.16  EXIT      U
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
21.1    EVERY                                     /SELECTION DU STSTEME POUR LE
21.2    SET      SYSP,R,R                        /
21.3    COMPARE  SYSDIS,EQ,100,0
21.4    SET      SYS1,BPD,R
21.5    OR       SYSP,BPD
21.6    SET      SYSP,BPD,S
21.7    COMPARE  SYSDIS,EQ,200,0
21.8    SET      SYS2,BPD,R
21.9    OR       SYSP,BPD
21.10   SET      SYSP,BPD,S
21.11   COMPARE  SYSDIS,EQ,300,0
21.12   SET      SYS3,BPD,R
21.13   OR       SYSP,BPD
21.14   SET      SYSP,BPD,S
21.15   COMPARE  SYSDIS,EQ,400,0
21.16   SET      SYS4,BPD,R
21.17   OR       SYSP,BPD
21.18   SET      SYSP,BPD,S
21.19   COMPARE  SYSDIS,EQ,600,0
21.20   SET      SYS6,BPD,R
21.21   OR       SYSP,BPD
21.22   SET      SYSP,BPD,S
21.23   COMPARE  SYSDIS,EQ,700,0
21.24   SET      SYS7,BPD,R
21.25   OR       SYSP,BPD
21.26   SET      SYSP,BPD,S
21.27   COMPARE  SYSDIS,EQ,800,0
21.28   SET      SYS8,BPD,R
21.29   OR       SYSP,BPD
21.30   SET      SYSP,BPD,S
21.31   COMPARE  SYSDIS,EQ,900,0
21.32   SET      SYS9,BPD,R
21.33   OR       SYSP,BPD
21.34   SET      SYSP,BPD,S
21.35   SET      SYS,SYSP,S
21.36   EXIT     U
/
/
22.1    EVENT    SYS,S                          /RESET LES FONCTIONS POUR
22.2    SET      BPD,SUF,R                      /LE CDB SPECIAL
22.3    STORE     SYSDIS,0,0,C,R                /SUR UNE PERIODE DE DISCLR
22.4    EXIT      C,R
22.5    DELAY     3600,U
22.6    STORE     SYSDIS,0,0,U
22.7    EXIT      U
/
/

```

```

23.1    EVENT      SYS1,S                               /SYS 100
23.2    SET        BPD,SUF,R
23.3    EXIT       C,R
23.4    INTERVAL   5,U
23.5    STORE      CSTXXX,CST70,CST70,U               /PERMET DE VOIR LES
23.6    STORE      CPBXXX,CPB70,CPB70,U               /VALEURS DU SYSTEME
23.7    STORE      CIGXXX,CIG70,CIG70,U
23.8    STORE      CMPXXX,0.0,0.0,U
23.9    STORE      CDSXXX,CDS70,CDS70,U
23.10   EXIT       U
/
/
24.1    EVENT      SYS1,S
24.2    SET        BPD,SUF,R
24.3    EXIT       C,R
24.4    DELAY      10,U
24.5    INTERVAL   1,U
24.6    STORE      CST70,CSTXXX,CST70,U               /PERMET D AJUSTER LES
24.7    STORE      CPB70,CPBXXX,CPB70,U               /VALEURS DU SYSTEME
24.8    STORE      CIG70,CIGXXX,CIG70,U
24.9    STORE      CDS70,CDSXXX,CDS70,U
24.10   EXIT       U
/
/
25.1    EVENT      SYS2,S                               /SYS 200
25.2    SET        BPD,SUF,R
25.3    EXIT       C,R
25.4    INTERVAL   5,U
25.5    STORE      CSTXXX,CST70A,CST70A,U             /PERMET DE VOIR LES
25.6    STORE      CPBXXX,CPB70A,CPB70A,U             /VALEURS DU SYSTEME
25.7    STORE      CIGXXX,CIG70A,CIG70A,U
25.8    STORE      CMPXXX,0.0,0.0,U
25.9    STORE      CDSXXX,CDS70A,CDS70A,U
25.10   EXIT       U
/
/
26.1    EVENT      SYS2,S
26.2    SET        BPD,SUF,R
26.3    EXIT       C,R
26.4    DELAY      10,U
26.5    INTERVAL   1,U
26.6    STORE      CST70A,CSTXXX,CST70A,U             /PERMET D AJUSTER LES
26.7    STORE      CPB70A,CPBXXX,CPB70A,U             /VALEURS DU SYSTEME
26.8    STORE      CIG70A,CIGXXX,CIG70A,U
26.9    STORE      CDS70A,CDSXXX,CDS70A,U
26.10   EXIT       U
/
/
27.1    EVENT      SYS3,S                               /SYS 300
27.2    SET        BPD,SUF,R
27.3    EXIT       C,R
27.4    INTERVAL   5,U
27.5    STORE      CSTXXX,CST50,CST50,U               /PERMET DE VOIR LES
27.6    STORE      CPBXXX,CPB50,CPB50,U               /VALEURS DU SYSTEME
27.7    STORE      CIGXXX,CIG50,CIG50,U
27.8    STORE      CMPXXX,CMP50,CMP50,U
27.9    STORE      CDSXXX,CDS50,CDS50,U

```

```

27.10  EXIT      U
/
/
28.1   EVENT     SYS3,S
28.2   SET       BPD,SUF,R
28.3   EXIT      C,R
28.4   DELAY     10,U
28.5   INTERVAL  1,U
28.6   STORE     CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
28.7   STORE     CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
28.8   STORE     CIG50,CIGXXX,CIG50,U
28.9   STORE     CMP50,CMPXXX,CMP50,U
28.10  STORE     CDS50,CDSXXX,CDS50,U
28.11  EXIT      U
/
/
29.1   EVENT     SYS4,S                    /SYS 400
29.2   SET       BPD,SUF,R
29.3   EXIT      C,R
29.4   INTERVAL  5,U
29.5   STORE     CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
29.6   STORE     CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
29.7   STORE     CIGXXX,CIG40,CIG40,U
29.8   STORE     CMPXXX,0.0,0.0,U
29.9   STORE     CDSXXX,CDS40,CDS40,U
29.10  EXIT      U
/
/
30.1   EVENT     SYS4,S
30.2   SET       BPD,SUF,R
30.3   EXIT      C,R
30.4   DELAY     10,U
30.5   INTERVAL  1,U
30.6   STORE     CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
30.7   STORE     CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
30.8   STORE     CIG40,CIGXXX,CIG40,U
30.9   STORE     CDS40,CDSXXX,CDS40,U
30.10  EXIT      U
/
/
31.1   EVENT     SYS6,S                    /SYS 600
31.2   SET       BPD,SUF,R
31.3   EXIT      C,R
31.4   INTERVAL  5,U
31.5   STORE     CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
31.6   STORE     CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
31.7   STORE     CIGXXX,CIG10A,CIG10A,U
31.8   STORE     CMPXXX,0.0,0.0,U
31.9   STORE     CDSXXX,CDS10A,CDS10A,U
31.10  EXIT      U
/
/
32.1   EVENT     SYS6,S
32.2   SET       BPD,SUF,R
32.3   EXIT      C,R
32.4   DELAY     10,U
32.5   INTERVAL  1,U

```



```

32.6   STORE      CST10A,CSTXXX,CST10A,U           /PERMET D AJUSTER LES
32.7   STORE      CPB10A,CPBXXX,CPB10A,U           /VALEURS DU SYSTEME
32.8   STORE      CIG10A,CIGXXX,CIG10A,U
32.9   STORE      CDS10A,CDSXXX,CDS10A,U
32.10  EXIT       U
/
/
33.1   EVENT      SYS7,S                           /SYS 700
33.2   SET        BPD,SUF,R
33.3   EXIT       C,R
33.4   INTERVAL   5,U
33.5   STORE      CSTXXX,CST10,CST10,U           /PERMET DE VOIR LES
33.6   STORE      CPBXXX,CPB10,CPB10,U           /VALEURS DU SYSTEME
33.7   STORE      CIGXXX,CIG10,CIG10,U
33.8   STORE      CMPXXX,CMP10,CMP10,U
33.9   STORE      CDSXXX,CDS10,CDS10,U
33.10  EXIT       U
/
/
34.1   EVENT      SYS7,S
34.2   SET        BPD,SUF,R
34.3   EXIT       C,R
34.4   DELAY      10,U
34.5   INTERVAL   1,U
34.6   STORE      CST10,CSTXXX,CST10,U           /PERMET D AJUSTER LES
34.7   STORE      CPB10,CPBXXX,CPB10,U           /VALEURS DU SYSTEME
34.8   STORE      CIG10,CIGXXX,CIG10,U
34.9   STORE      CMP10,CMPXXX,CMP10,U
34.10  STORE      CDS10,CDSXXX,CDS10,U
34.11  EXIT       U
/
/
35.1   EVENT      SYS8,S                           /SYS 800
35.2   SET        BPD,SUF,R
35.3   EXIT       C,R
35.4   INTERVAL   5,U
35.5   STORE      CSTXXX,CST30,CST30,U           /PERMET DE VOIR LES
35.6   STORE      CPBXXX,CPB30,CPB30,U           /VALEURS DU SYSTEME
35.7   STORE      CIGXXX,CIG30,CIG30,U
35.8   STORE      CMPXXX,0.0,0.0,U
35.9   STORE      CDSXXX,CDS30,CDS30,U
35.10  EXIT       U
/
/
36.1   EVENT      SYS8,S
36.2   SET        BPD,SUF,R
36.3   EXIT       C,R
36.4   DELAY      10,U
36.5   INTERVAL   1,U
36.6   STORE      CST30,CSTXXX,CST30,U           /PERMET D AJUSTER LES
36.7   STORE      CPB30,CPBXXX,CPB30,U           /VALEURS DU SYSTEME
36.8   STORE      CIG30,CIGXXX,CIG30,U
36.9   STORE      CDS30,CDSXXX,CDS30,U
36.10  EXIT       U
/
/
37.1   EVENT      SYS9,S                           /SYS 900

```

```

37.2    SET      BPD,SUF,R
37.3    EXIT     C,R
37.4    INTERVAL 5,U
37.5    STORE    CSTXXX,CST51,CST51,U      /PERMET DE VOIR LES
37.6    STORE    CPBXXX,CPB51,CPB51,U      /VALEURS DU SYSTEME
37.7    STORE    CIGXXX,CIG51,CIG51,U
37.8    STORE    CMPXXX,CMP51,CMP51,U
37.9    STORE    CDSXXX,CDS51,CDS51,U
37.10   EXIT     U
/
/
38.1    EVENT    SYS9,S
38.2    SET      BPD,SUF,R
38.3    EXIT     C,R
38.4    DELAY    10,U
38.5    INTERVAL 1,U
38.6    STORE    CST51,CSTXXX,CST51,U      /PERMET D AJUSTER LES
38.7    STORE    CPB51,CPBXXX,CPB51,U      /VALEURS DU SYSTEME
38.8    STORE    CIG51,CIGXXX,CIG51,U
38.9    STORE    CMP51,CMPXXX,CMP51,U
38.10   STORE    CDS51,CDSXXX,CDS51,U
38.11   EXIT     U
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
39.1    RESTART
39.2    TIMDATA  DT
39.3    STORE    UPTIM,APD,APD,U      /SAUVE L HEURE ACTUEL ET
39.4    TIMDATA  MD                  /LA DATE DE LA RESTAURATION
39.5    STORE    UPDAT,APD,APD,U      /DU POUVOIR.
39.6    EXIT     U
/
40.1    RESTART
40.2    STORE    DNTIM,TOD,TOD,U      /RECORD DE LA DERNIERE HEURE
40.3    STORE    DNDAT,LDAT,LDAT,U    /ET DATE AVANT LA PANNE.
40.4    INTERVAL 60,U
40.5    TIMDATA  DT
40.6    STORE    TOD,APD,APD,U      /SAUVE L HEURE ET LA DATE
40.7    TIMDATA  MD                  /ACTUEL A TOUTES LES MINUTES.
40.8    STORE    LDAT,APD,APD,U
40.9    EXIT     U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       376
/   PROCESSES: 3431
/   OVERHEAD:  2700
/   TOTAL:     7493    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986

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```
/      CDB:      376
/  PROCESSES:  3431
/  OVERHEAD:   2700
/      TOTAL:   7493      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    986
/      CDB:      376
/  PROCESSES:  3433
/  OVERHEAD:   2700
/      TOTAL:   7495      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    986
/      CDB:      376
/  PROCESSES:  3433
/  OVERHEAD:   2700
/      TOTAL:   7495      8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    986
/      CDB:      376
/  PROCESSES:  3433
/  OVERHEAD:   2700
/      TOTAL:   7495      8K DSC MEMORY NEEDED
```

AU DEPART DU SYSTEME PAR LE DSC, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LE VENTILATEUR DE RETOUR DEMARRE PAR ENTREBARRAGE DE MEME QUE LE VENTILATEUR D'EVACUATION.

LE SERPENTIN DE FACE ET EVITEMENT, LA VALVE DE CHAUFFAGE, LES VOILETS DE MELANGE ET LA VALVE D'EAU REFROIDIE SONT MODULES EN SEQUENCE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION PAR EPT-1, EPT-2 ET EPT-5. LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST CEPENDANT REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.


LE DSC ASSURE UNE POSITION MINIMUM DE 10% AUX VOILETS DE MELANGE. LORSQUE LA TEMPERATURE EXTERIEURE EST SUPERIEURE A 15°C, LES VOILETS RETOURNENT EN POSITION MINIMUM.

L'HUMIDIFICATEUR EST MODULE EN FONCTION DE L'HUMIDITE DANS LE CONDUIT DE RETOUR PAR LE DSC QUI AGIT SUR EPT-4. CEPENDANT, HE-2 AGIT COMME HAUTE LIMITE DANS LE CONDUIT D'ALIMENTATION.

LE DSC MODULE AUSSI LES VENTILATEURS A VOLUME D'AIR VARIABLE EN FONCTION DE LA PRESSION STATIQUE ENREGISTREE PAR PT-1. L'ACTION DU DSC SE FAIT SUR EPT-3.

SUR UNE DETECTION DE FUMEE PAR DF-1 OU 2, LE SYSTEME S'ARRETE AUSSI.

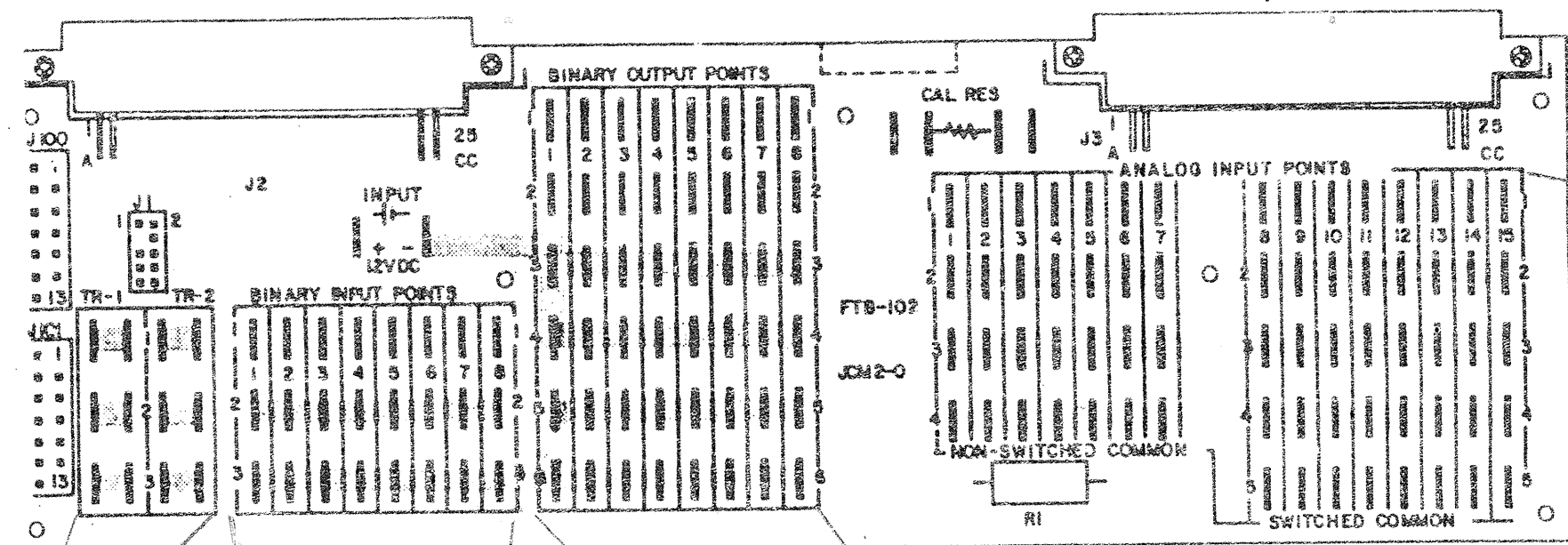
LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE. 

VIA RG-1.
LORSQUE LA TEMPERATURE DE MELANGE DESCEND SOUS 5°C LA VALVE DE PRECHAUFFAGE V-1 OUVRE A 100 % PAR SP-1 ET RG-1 EST DE SAMORCE.

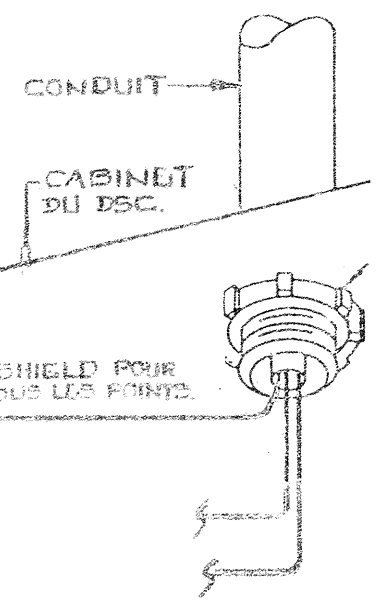
SI L'ECART DE POSITION ENTRE LE VENTILATEUR D'ALIMENTATION ET CELUI DE RETOUR AUGMENTE, LE MINIMUM D'AIR NEUF EST AUGMENTE

BORNERS DE RACCORDEMENT (FTP-102)



VOIR PLUS BAS POUR COMMUNICATION

- 1 - TYPE DE RACCORDEMENT: 202505 T/B TYPE 14R-250 F, ISOLÉS 250.
- 2 - CABLE EN 2#18 TWS PARTOUT.

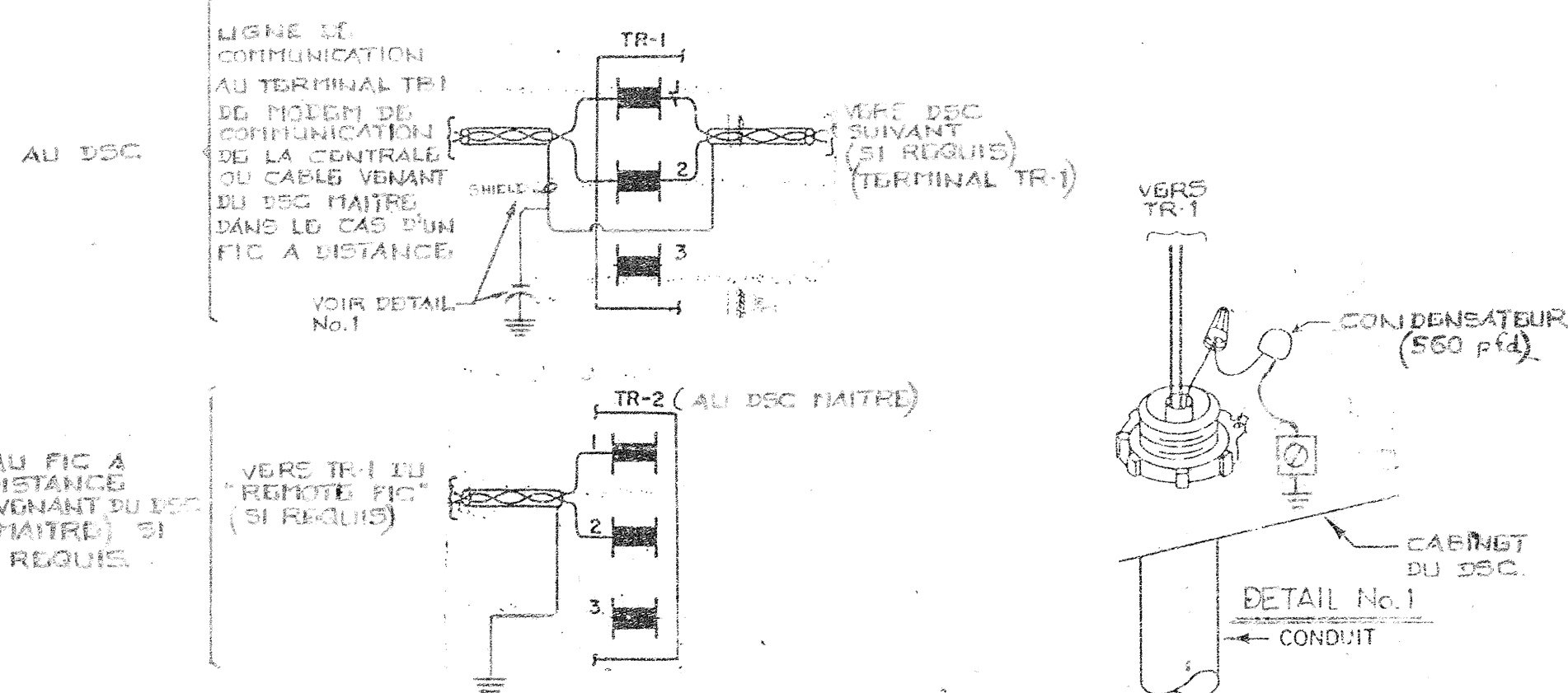


TOTAL MAX 8 ENTRÉES

TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE							DSC 15	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-15	BIN	1 2		CONTACT AUX. DEM.	MCC-3	B1.1		
2	STATUS	SYSTEME V44-28A	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	GEL	SYSTEME V43-15	BIN	1 2		RELAIS RG	CAB. AUX.	B3.1		

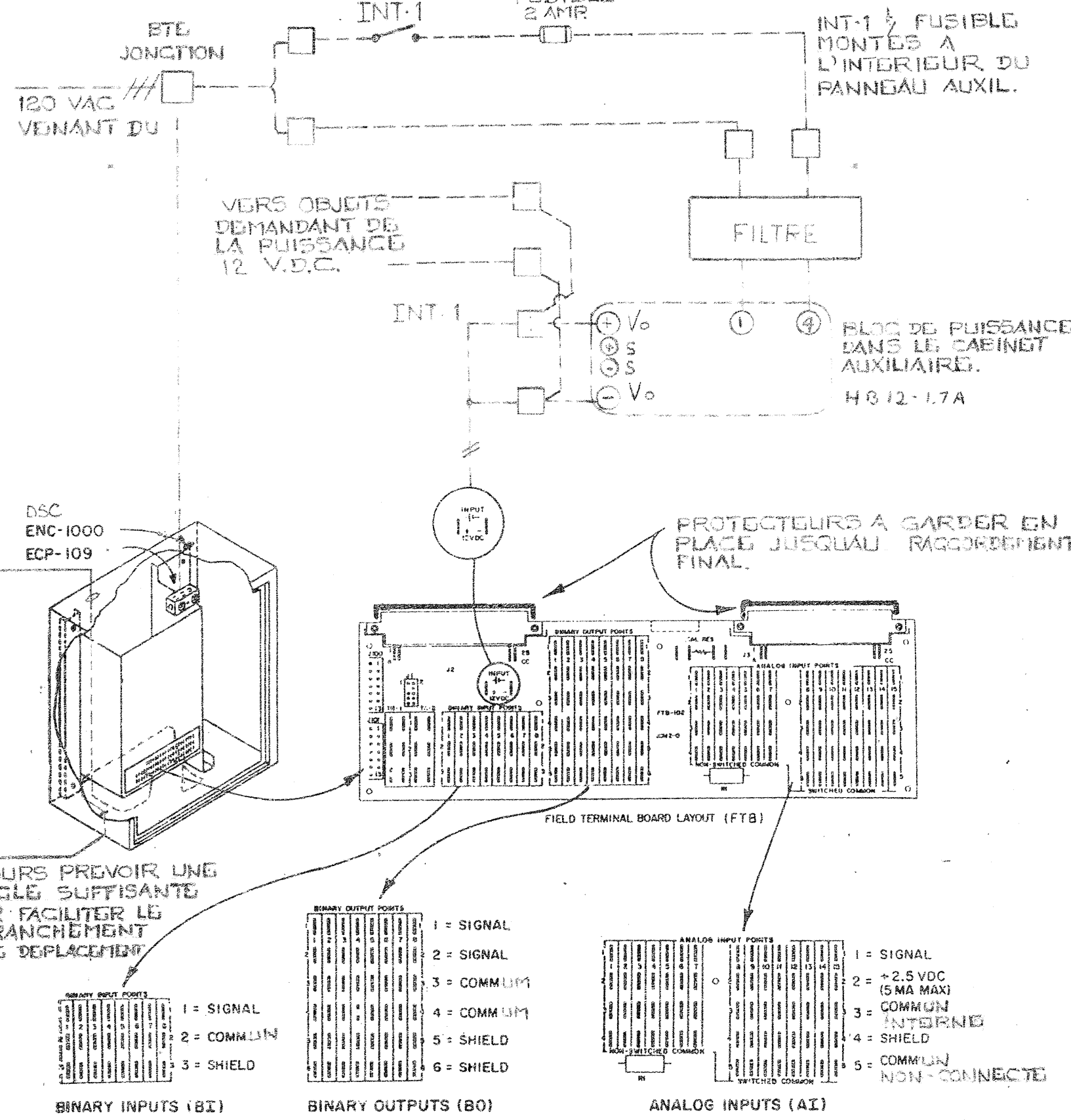
EMPLACEMENT		ADRESSE							DSC 15	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLTE MELANGE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P4.1	
5	EPT-5	REFROI.	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P5.1	
6	EPT-28	VOLUME VARIABLE V44-28A	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P6.1	
7A	R-1	ARRET DEPART V43-15	SST	1 3	2 7	RELAIS 12VDC	MCC-3	STA.1		
7B	SP-1	V-1 PRECHAUF OUVERTE	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	
8A	RG-1	RELAIS DEVIEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	SA.1		



BRUNING 40-520 56514

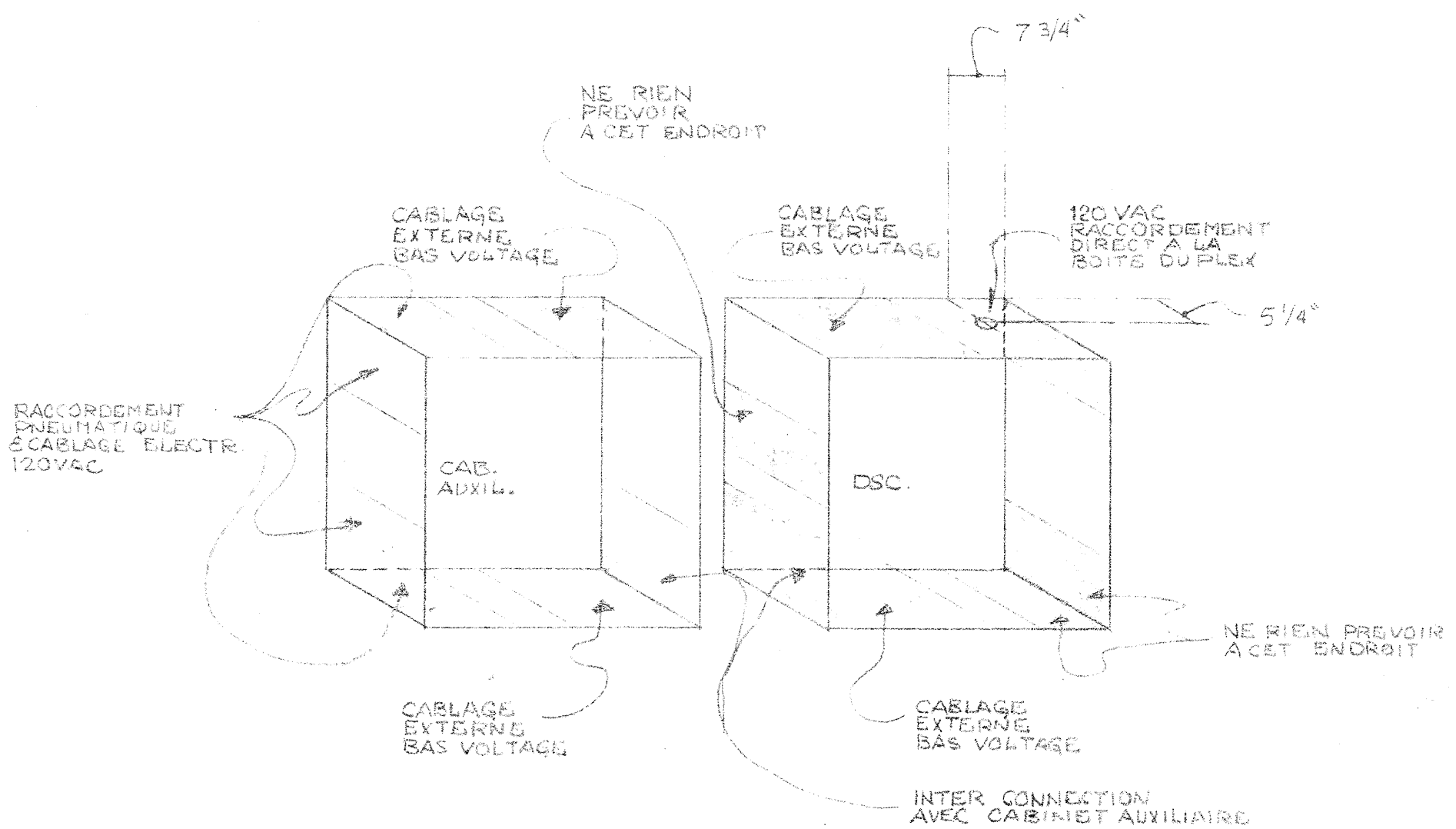
FORME M-70

EMPLACEMENT		ADRESSE							DSC 15	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	CHAUFFAGE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8	EPT-4	HUMIDIF.	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1	
9	EPT-5	REFROID.	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1	
10	EPT-28	VOLUME VARIABLE V44-28A	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A10.1	
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-90%HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-90%HR	
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1	0-5VDC 0-25%	
14	PT-2	PRESSION ALIM. V44-28A	ANA	1 5	1 2	SONDE DE PRESSION PT-2	ALIM. V44-28A	A14.1	0-5VDC 0-25%	



INT-1: INTERROMPTEUR "TOUSSE" CABLE SP-1, MOD 447, MONTÉ AVEC R-1000-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE	IMPLANTATION DSC-8500		3	TEL QUE CONSTRUIT	86-07-07
CHANGEMENT #112	DSC-15		2	ADDITION RG-1	NOV 87-85
REFERENCE	NO	REVISION	AVIS	DATE	PAR
REPRESENTANT J.C.R.	TECHNICIEN R.F.	DESSINE	DATE 10/16/85	PAR 10	DATE 10/16/85
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		JOHNSON CONTROLS		Société de Contrôle Johnson Ltd 441 boulevard Lebeau Montréal, QC H4H 1B2 Tél. 514/332-6660
CONTRAT 4096-008-22			DESSIN NO: 4068-22		

IDENT	MODELE	Q	DESCRIPTION
DA-1 @ 3			MOTEUR PNEUMATIQUE C/A P.P.
TE-1 ET 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2 ET 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HE-1 ET 2	1.100.30.041	2	ELEMENT D'HUMIDITE ENERCORP
TLL-1	AllA-6	1	BASSE LIMITE
DF-1 ET 2		2	DETECTEUR DE FUMEE PYROTRONIC
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EPT-1 @ 5 & 28	EPT-102	6	INTERFACE ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50mm
V-1	V 5842-3	1	VALVE Ø 1½" C/A P.P.
V-2	V5462-14	1	VALVE N.F. Ø 4" C/A P.P.
DA-5 ET 6	----	2	MOTEUR PNEUMATIQUE (PAR D'AUTRES)
EP-1	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 ET 2	G2010-101	2	INDICATEUR 0/30 PSI
SW-1	----	1	INTERRUPTEUR 2 POSITIONS
PS-1	HB 12-1.7A	1	BLOC DE PUISSANCE 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
XFR-1	BD2FF	1	TRANSFORMATEUR 120/18 VAC
DA-4	D3153-1	1	MOTEUR DE VOLET
TLL-2	Al9AAF-12	1	BASSE LIMITE
W-1	WZ 1000-2 [△]	1	PUIT D'IMMERSION
V-3	V 3752-1049	1	VALVE 2 VOIES N.O. Ø 1½"
SP-1	V 9011-1	1	RELAIS ELECT. / PNEUMATIQUE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

ECONOMISEUR

PC X

MODE X

MODE CONTROLE DE NUIT X

PC REDEMARRAGE X

CÉDULE

RETOUR

ALIMENT.

X

X

X

X

ALARME DE GEL

EVAC.

DA-4

NF

V43-11R

DF1

Te. retour

X

X

Retour

Position vol.mél.

X

X

Minimum

X

Minimum sans evac.

X

Minimum par 23 RE

X

NO

DA-3

Te. melange

X

BL X

He. retour

X

PC X

HL X

V-3

V43-11A

Te. alim.

X

PC X

Alim.

A/N

DA-2

NF

CMD VLV

X

V-2

NF

P-2

V-1

NF

VLV REFR / CHAUF.

X

X

P-1

Position AUBES

X

X

OCCUPATION VA

X

He.alim.

X

Pierce

X

X

PC X

ETAT RECUP.

X

RECIRC. GLYCOL

X

ETAT PRE-CH

X

EVITEMENT BL COND.

X

PRESSION SERP.GLY

X

MODE REFR.

X

MODE CHAUF.

X

HV-1

VLV humid.

X

X

Te.ext. X

DELAI APRES PANNE X

Parametres et Horaires

Vacance DSC-11

MENU PRINCIPAL

Contrôle de nuit

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Chauffage

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle refroidissement

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

HORAIRE

Depart jour cour.

Arret jour cour.

Depart semaine

Arret semaine

Depart samedi

Arret samedi

Depart dimanche

Arret dimanche

Contrôle volets melange

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Humidite

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle HL Humidite

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Pression statique

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Volets melange

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle B Limite mel.

Etat CTRL BL

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Recuperation

PC recup.

Differentiel rec.

Contrôle pre-chauffage

Limite CTRL

Differentiel

Delais evit.BL

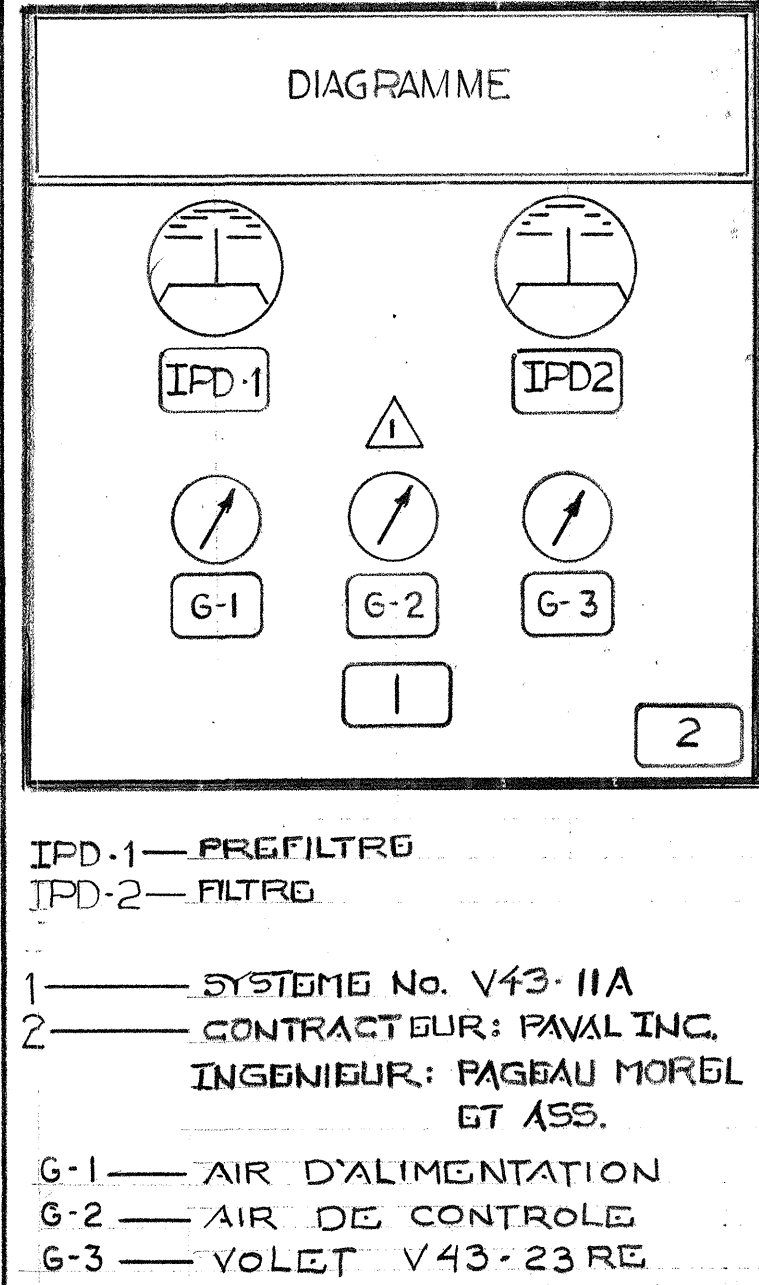
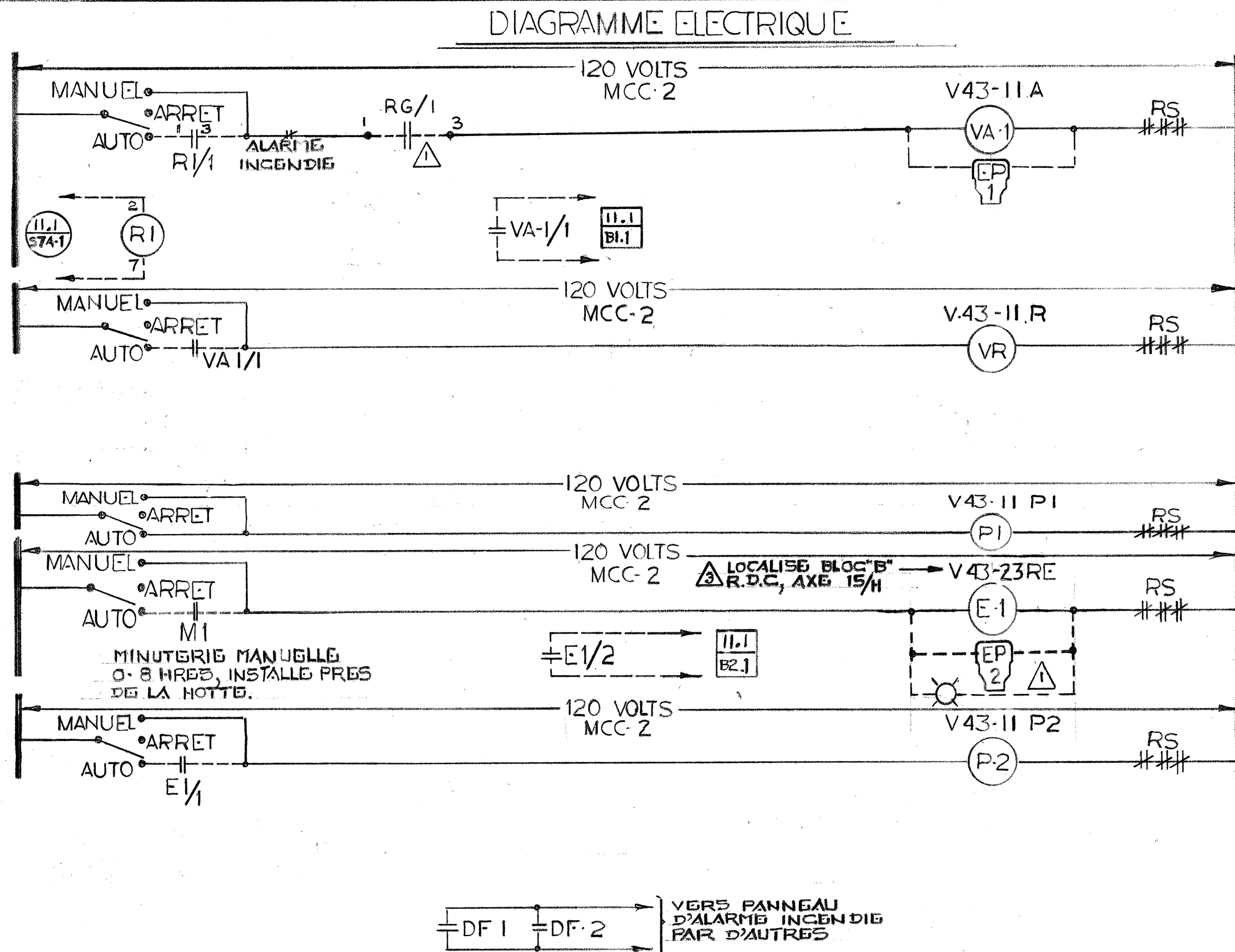
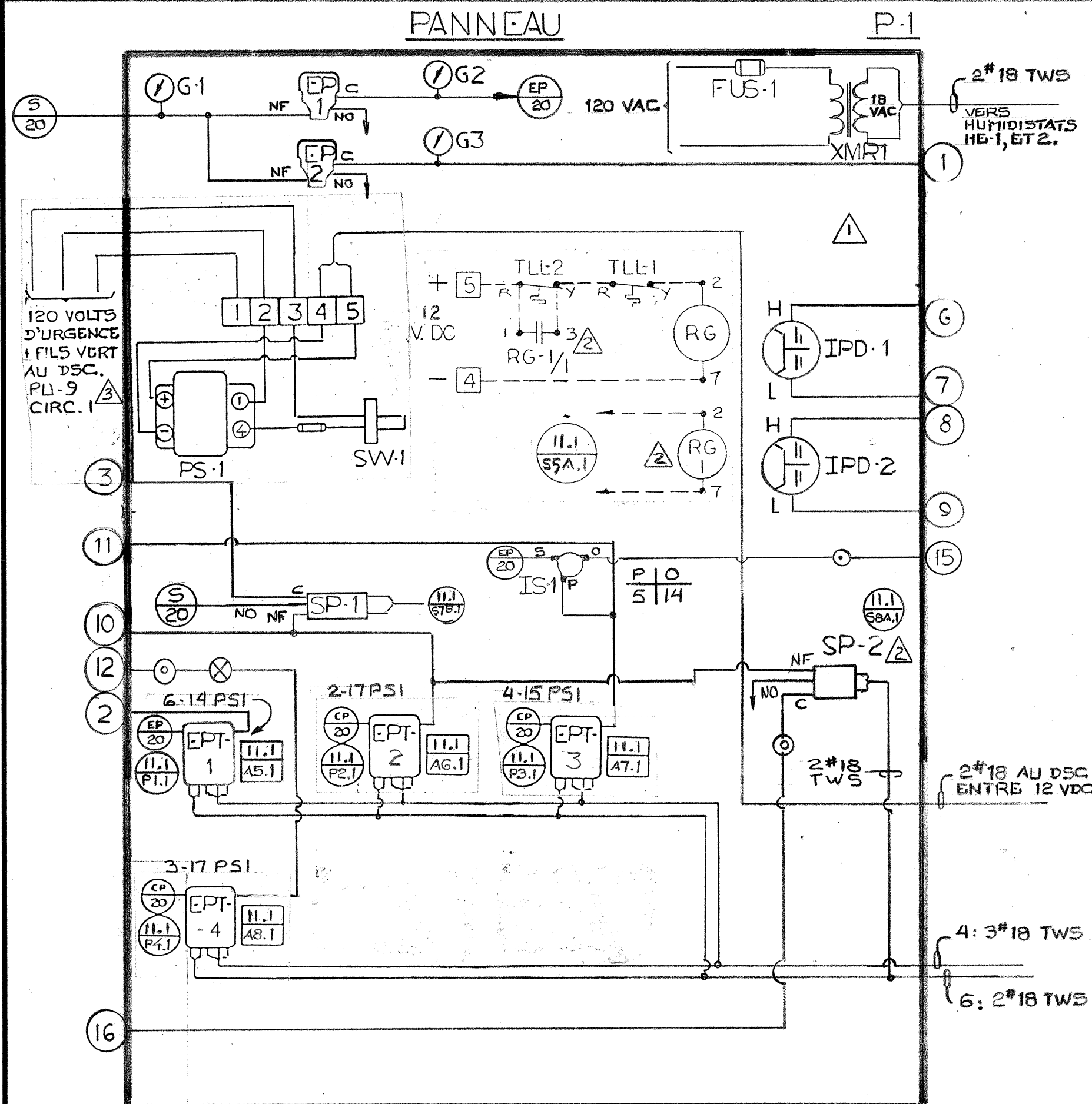
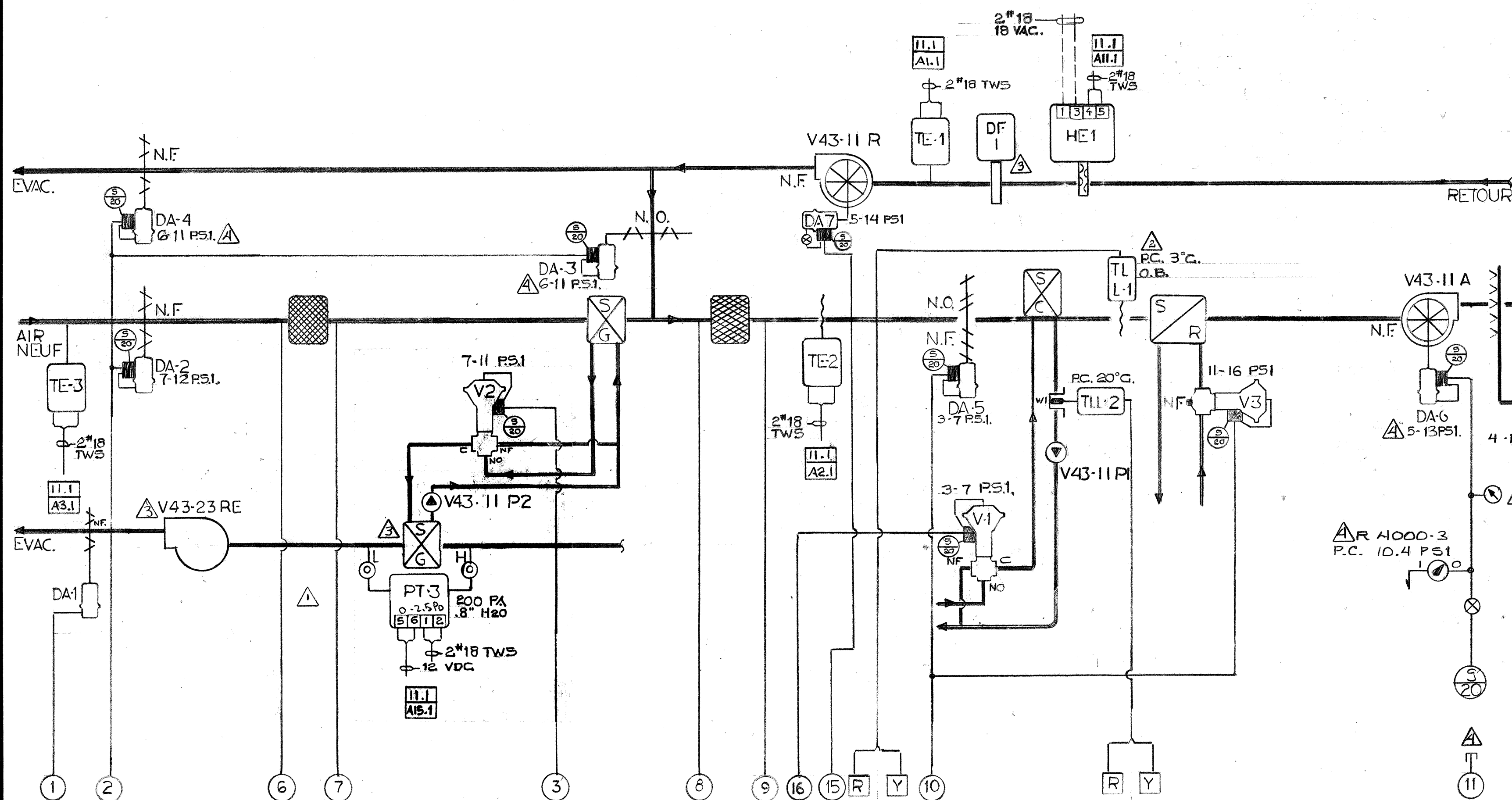


VACANCES DSC-11 , V43-11

Jour / Mois	VACANCE 1	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 2	<input checked="" type="checkbox"/>
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Jour / Mois	VACANCE 4	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 5	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 6	<input checked="" type="checkbox"/>



DIAGRAMME DE DEBIT



TITRE: SYSTEME No. 43-11
BLOC B

PROJET: CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
M1	MARKTIME 90015	1	MINUTERIE MANUELLE 0-12 HRES
DA-1	D3073-2	1	MOTEUR DE VOLET C/A LAMPE TEMOIN
DA-2	D3153-1	1	MOTEUR DE VOLET
DA-3, 4	D3073-1	2	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6, 7	D3153-1	2	MOTEUR FOURNI PAR D'AUTRES
V-1	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-2	V5842-6	1	VALVE 3 VOIES Ø 2" C.V. 30
V-3	V5462-7	1	VALVE 2 VOIES N.F. Ø 2 1/2" C.V. 54
TE-1, 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2, 4	TE1100-17	2	ELEMENT DE TEMPERATURE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR
IPD-1, 2	2000-50	2	INDICATEUR DE PRESSION 0-50 mm
HE-1, 2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1, 2		2	DETECTEUR DE FUMEE FYPOTRONIG
TLL-1	ALIA-6	1	BASSE LIMITE
TLL-2	A19AAP-12	1	BASSE LIMITE
W-1	WZ1000-2	1	PUIT D'IMMERSION
PT-1 ET 3	SSTRA 261	2	DETECTEUR DE PRESSION STATIQUE
EP-1, 2	V11HAA-100	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 à 3	G2010-11	3	INDICATEUR 0-30 PSI
PS-1	HB12-L7A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 à 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
M8100-109		1	PANNEAU 24"x36"x7"
XM-1	302FF	1	TRANSFO. 120/18 VAC.
SP-1, 2	V9011-1	2	VALVE A AIR 3 VOIES
IS-1	C-208-2	1	INVERSEUR DE SIGNAL
IPS-4	2000-100 mm	1	INDICATEUR 0-100 mm
TE-5	TE 1800-102	1	ELEMENT DE TEMPERATURE DE PIECE

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME V43-11A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-11R DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. AU DEPART DU SYSTEME V43-23 RE PAR LA MINUTERIE MECANIQUE M-1, LA POMPE DE RECUPERATION V43-11P2 SE MET EN MARCHE.

LA VALVE DE REFRIGERISSEMENT, LES VOIETS DE MELANGE, LA VALVE DE RECUPERATION LE SERPENTIN DE FACE ET EVITEMENT SONT CONTROLES.

EN SEQUENCE APIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANT; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C LA VALVE V-1 DU SERPENTIN DE FACE ET OUVREMENT OUVRE A 100% PAR SP-2 ET RG-1 EST DESAMORCE.

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOIETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT DE 60% LORSQUE LE VENTILATEUR V43-23RE EST EN FONCTION.

L'HUMIDIFICATEUR EST MODULE APIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA CAINE DE RETOUR; CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA CAINE D'ALIMENTATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE AU SERPENTIN APIN DE LE DEGIVRER PAR SP-1.

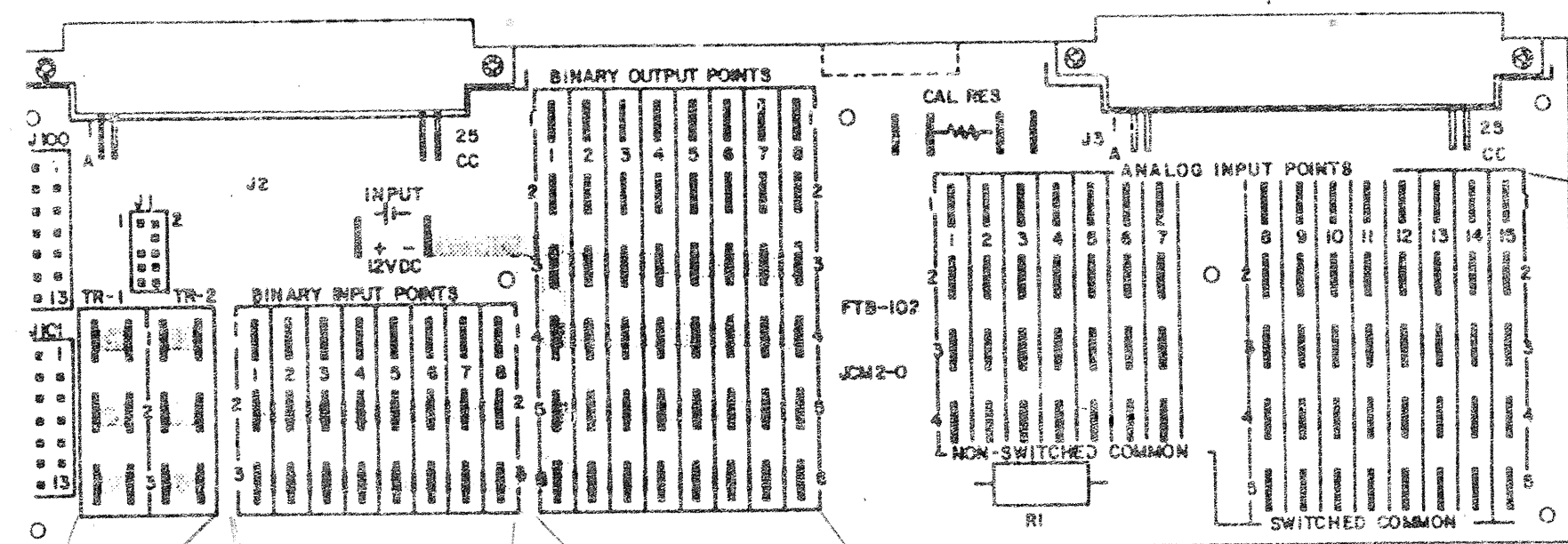
SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTG AU DESSUS DE 3°C A TE-2 L'ACTION DE TLL-2 EST ANNULEE VIA RG-1.

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE.

LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARR EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C.

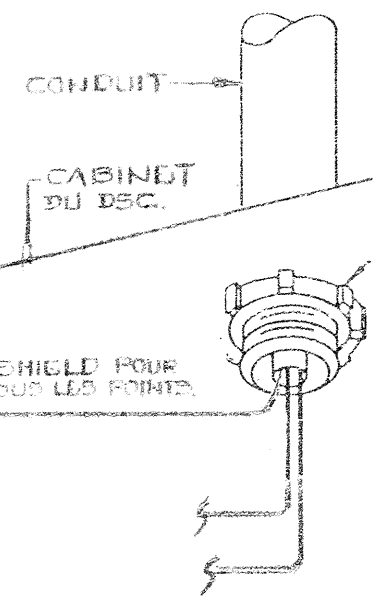
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CHANGEMENT #112	ADDITION RG-1	NOV 27 85
REFERENCE	NO.	REVISION
REPRESENTANT	TECHNICIEN	PAR DATE
J.C.R.	R.E.	DATE JAN. 2-85
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE	CONTRAT 4096-0008-1/2
JOHNSON CONTROLS	Division Des Systemes Et Services	4096-0008-1/2

BOITIERS DE RACCORDEMENT (TYPE 102)






VOIR PLUS HAUT POUR COMPLICATION

- 1 - TYPE DE RACCORDEMENT: GROUPE TYPE TYPE 102-2500 ISOLÉ 2500
- 2 - CÂBLAGE EN 3x18 TWS PARTOUT.

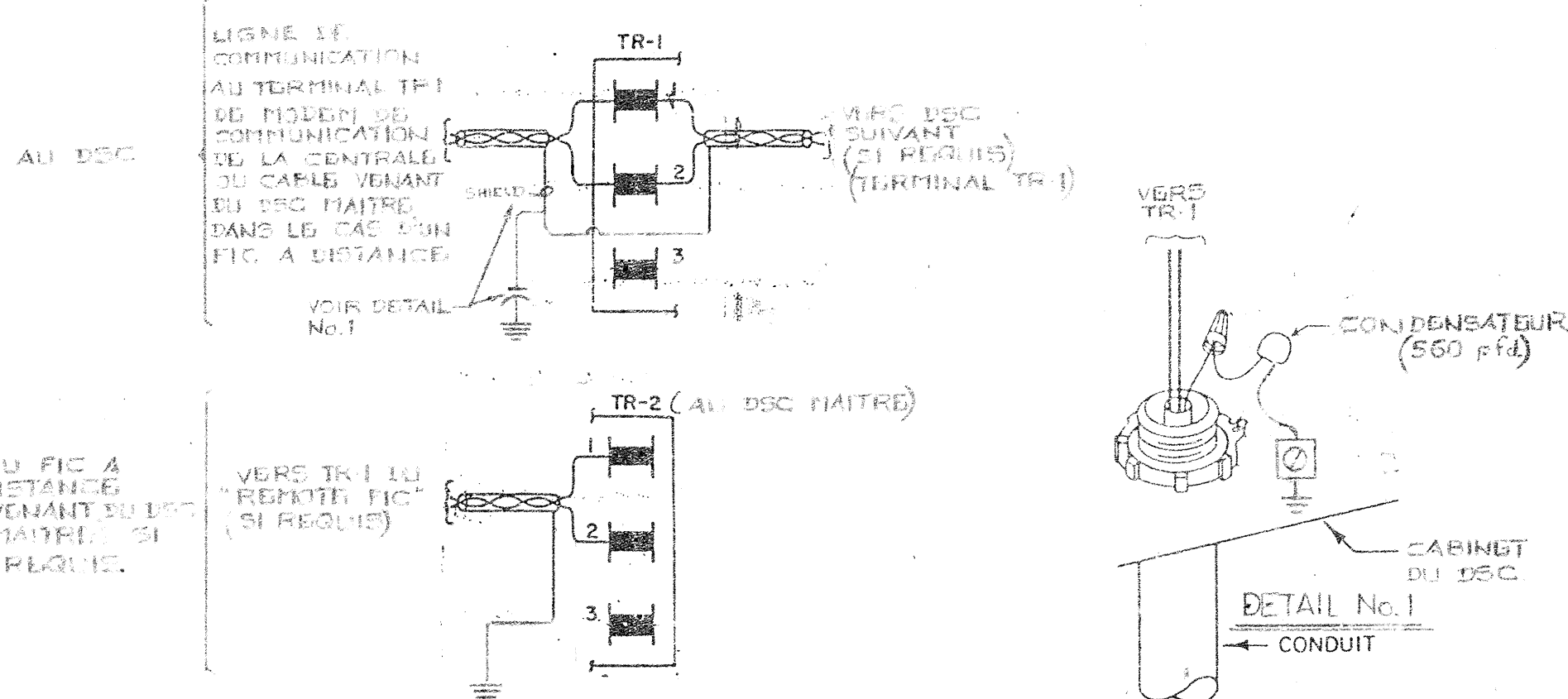







TOTAL MAX 9 ENTRÉES

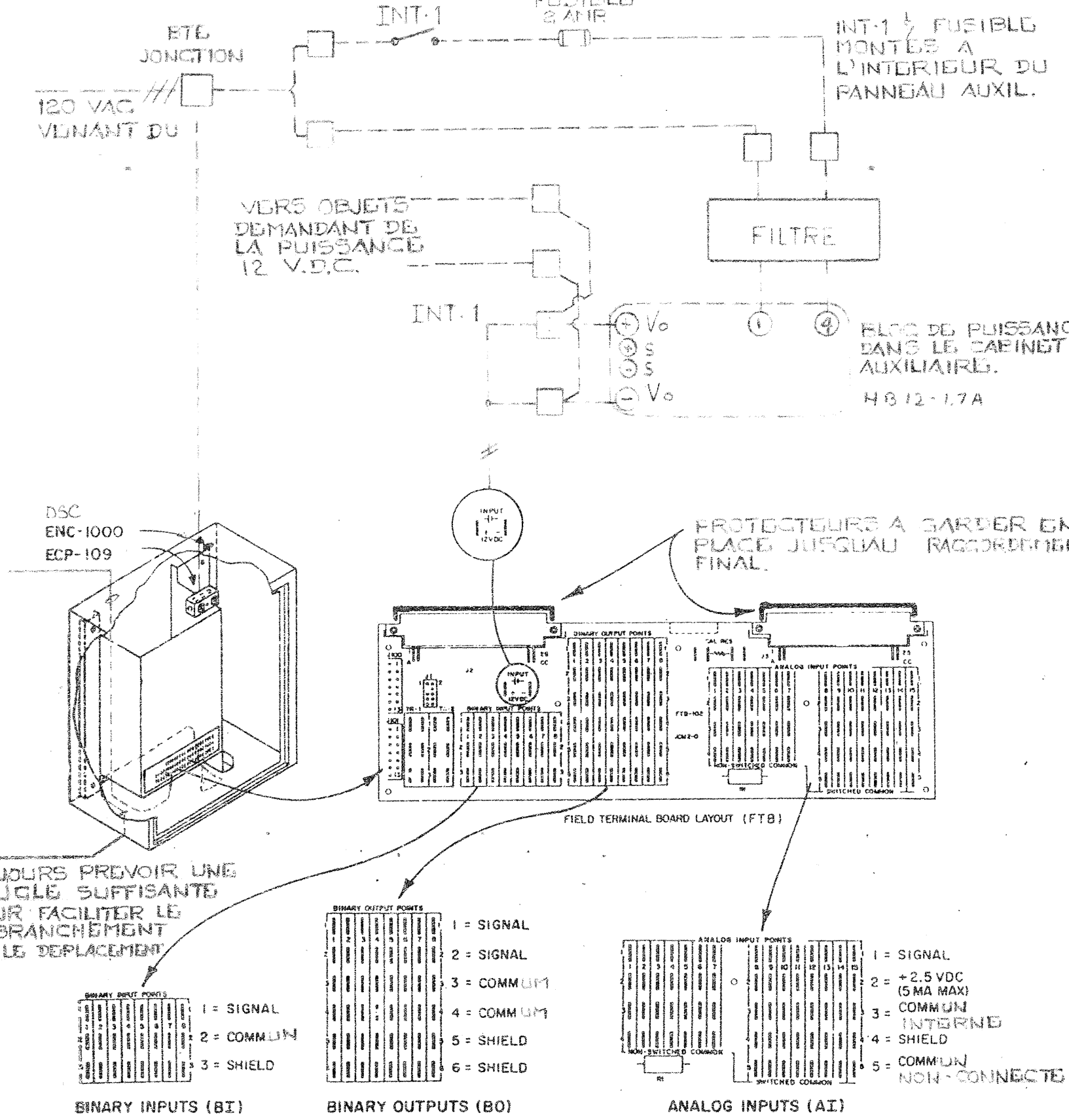
TOTAL MAX 9 SORTIES

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC II		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-1	BIN	1 2		CONTACT AUX. DEM.	MCC-2	B1.1		
2	STATUS	SYSTEME V43-23RE	BIN	1 2		CONTACT AUX. DEM.	MCC-2	B2.1		
3	GEL	SYSTEME V43-1	BIN	1 2		RELAIS RG	CAB. AUX.	B3.1		

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC II		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE REFROID.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1		
5A	RG-1	RELAIS DEVIEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX	55A.1		
7A	R-1	ARRET DEPART V43-11A	SST	1 3	2 7	RELAIS 12VDC	MCC-2	57A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	57B.1		
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1 3	ROUGE NOIR	V9011-1	CABINET AUX.	58A.1		

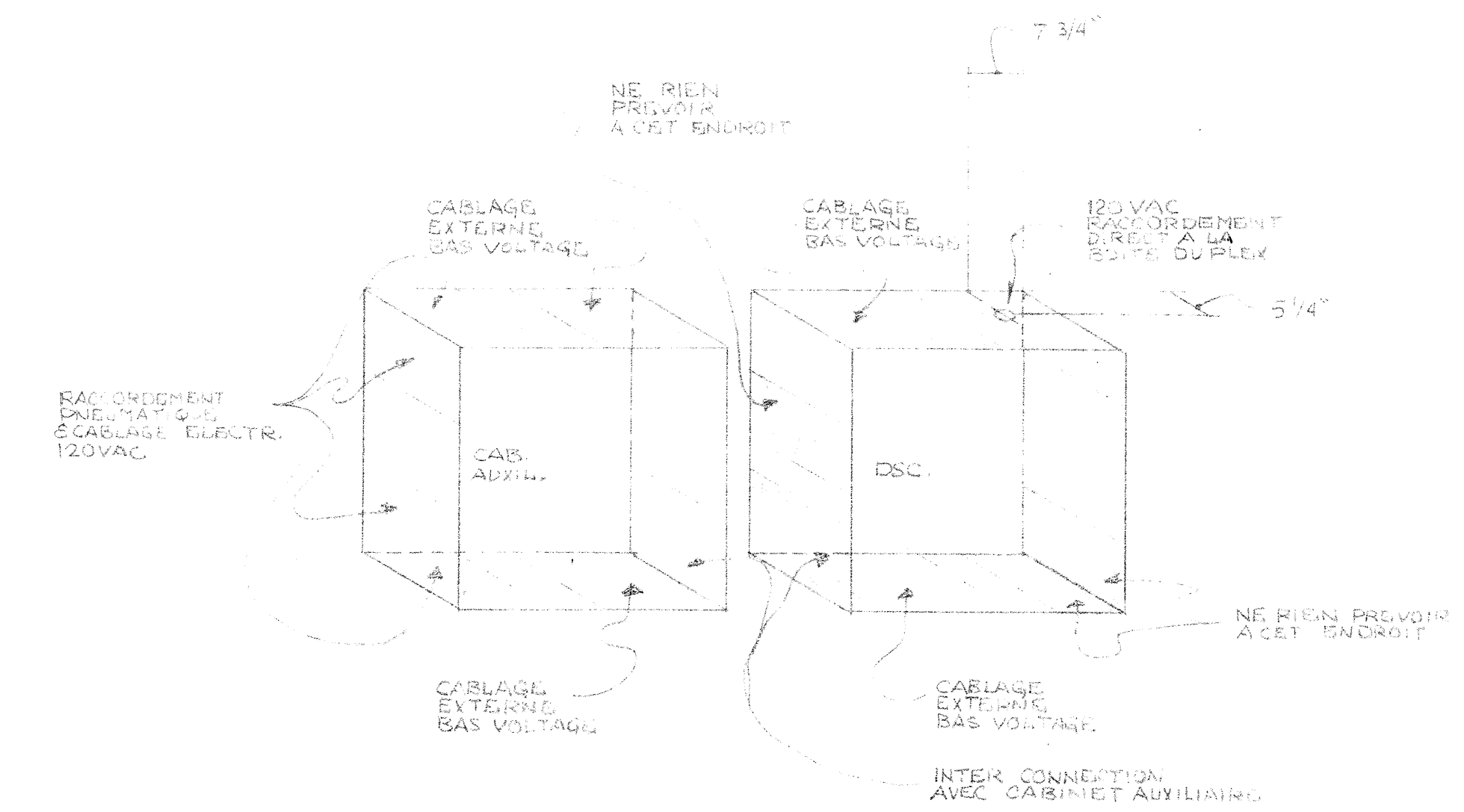


EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC II		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	TE-5	PIECE	ANA	1 2		TE-1000-101	PIECE	A9.1		
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-90%HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5VDC 0-15%0
14										
15	PT-3	PRESSION SERPENTIN V43-23RE	ANA	1 5	1 2	SONDE DE PRESSION PT-3	SERPENTIN GLYCOL V43-23RE	A15.1		0-5VDC 0-25%0



INT-1: INTERRUPTEUR "TOGGLE" EAGLE SPST, MOD. 117, MONTÉ AVEC R-100-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE	IMPLANTATION DSC-6500		3	TEL QUE CONSTRUIT	26-07-07
CHANGEMENT #112	2		ADDITION RG-1	Nov2785	
REFERENCE	NO.	REVISION	AVIS	DATE	PAR
REPRESENTANT J.C.R.	TECHNICIEN R.E.	DESSINE	APPROUVE	DATE 16-85	PAR 10
PROJET CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.	Société de Contrôle Johnson Ltd 441 boulevard Labreau Montréal, QC H4N 1S2 Tél. 514/332-6980		CONTRAT 24/ 4096-008-752		4068-24

DSC 11 SYSTEME V43-11A

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
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/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE

```

44      DISPLAY  ZT70,A      /F.B. HUMIDITE
/
45      DISPLAY  FSP,I       /PRESSION STATIQUE
46      ADJUST   SPSP,I      /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A       /RESULTAT CTL VAV
48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2   /SOUPAPES
62      OVERRIDE ZCP10,A,2   /VOLETS
63      OVERRIDE ZCP70,A,2   /HUMIDITE
64      OVERRIDE ZCP50,A,2   /VAV
/
65      ADJUST   MDPOS,A     /POSITION MINIMUM SANS EVACUATION
66      ADJUST   MINF1,A     /MINIMUM PAR VENTIL. 23RE
/
67      DISPLAY  FSTATE,B    /ETAT VENTIL. 23RE
/
73      DISPLAY  PREHEA,B    /PRE CHAUFFAGE
74      ADJUST   PREALL,A    /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  SPT1,I      /PRES STAT SERPENT GLYCOL
78      ADJUST   RECUHL,I    /POINT DE CONSIGNE RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I    /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A    /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I    /GAIN INTEGRAL
82      ADJUST   CMPXXX,A    /COMPENSATION
83      ADJUST   CDSXXX,A    /BANDE MORTE

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/
/-----/
/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-11
/
/      51      ALARME HORAIRE SYSTEME V43-11
/
/-----/

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/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 10:34:35
/
/TRANSLATION LISTING FOR DSC-11.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-12-:1 08:46:48
/
/TRANSLATION LISTING FOR DSC-11.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:24
/
/TRANSLATION LISTING FOR DSC-11.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 10:32:08
/
/TRANSLATION LISTING FOR CIRA11.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  11      SYSTEME  V43-11
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT      4096-0008
/      VENDEUR              JEAN CLAUDE ROUILLON
/      INGENIERIE           RICHARD FOREST
/      CONCEPTION PROGRAMME JEAN MORISSETTE
/      REVISION             01 SEPT 1987
/                          25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,2645
@ FIC ADDRESSES:  1
@ POINT SUMMARY:

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```

@ BD: 24
@ AD: 99
@ BI: CON-3,BIT-0,BIR-0
@ AI: LTD-2,FUL-11,RAT-0,TOT-0
@ BO: MOM-0,POS-4,MAN-4
@ CP: BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-5
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1 FSTAT CON-1 E,E /ETAT VENTIL. ALIM.
BI-2 FSTATE CON-2 E,E /ETAT VENTIL. 23RE
BI-3 FREEZE CON-3 E,E /ETAT THERMOSTAT DE GEL
/
/
AI-1 TE80 FUL-1 E,0.5,E,V,T,-46.1,129.8 /TEMP RETOUR
AI-2 TE10 FUL-2 E,0.5,E,V,T,-46.1,129.8 /TEMP MELANGE
AI-3 TE1 FUL-3 E,0.5,E,V,T,-46.2,129.8 /TEMP EXT
AI-4 TE60 FUL-4 E,0.5,E,V,T,-46.1,129.7 /TEMP ALIM
AI-5 ZT10 FUL-5 E,0.5,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-6 ZT30 FUL-6 E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPES
AI-7 ZT50 FUL-7 E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8 ZT70 FUL-8 E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9 TE100 FUL-9 E,0.5,E,V,T,-46.4,129.7 /TEMP PIECE
AI-11 HT80 LTD-1 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-12 HT60 LTD-2 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-13 SPT FUL-10 E,0.1,E,N,O,0,620 /PRESSION STATIQUE EN P
AI-15 SPT1 FUL-11 E,0.1,E,N,O,0,621 /PRES STA EN P SERP GLY
/
/
BO-1 ZC10 POS-1 D,E,0 /VOILETS
BO-2 ZC30 POS-2 D,E,0 /SOUPAPES
BO-3 ZC50 POS-3 D,E,0 /VAV
BO-4 ZC70 POS-4 D,E,0 /HUMIDITE
BO-5A ZSL1 MAN-1 E,E /EVITEMENT BASS LIM EAU FROIDE
BO-7A ZS50 MAN-2 E,E /VENTIL ALIM
BO-7B ZS10 MAN-3 E,E /RECIRCULATION RECUPERATION
BO-8B ZS20 MAN-4 E,E /SOUPAPE PRECHAUFF
/
/
CP-1 ZCP10 INC-1 E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOILETS
CP-2 ZCP30 INC-2 E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPES
CP-3 ZCP50 INC-3 E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4 ZCP70 INC-4 E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/ VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /
/-----/
/
BD-1 OCCD E,R /CYCLE D OCCUPATION
BD-2 TLCON E,R /CONTROLE PAR TEMP.
BD-3 FSTRT E,R /DEMANDE VENTILATEUR
BD-4 COMP50 E,R /RESULTAT DEMARRAGE

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    BD-5      CONON      E,R    /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
    BD-6      PREHEA     E,R     /PRE CHAUFFAGE
    BD-7      LLBYP      E,R     /RESULTAT TEMPORAIRE
/
/-----/
/          PARAMETRES CONTROLE DE NUIT                    /
/-----/
/
    BD-8      NCTL       E,R     /CONTROLE DE TEMP NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS            /
/-----/
/
    BD-9      ECON       E,R     /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE
/-----/
/
    BD-10     MXD        E,R     /CONTROLE DE JOUR
    BD-11     MIXLL      E,R     /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE              /
/-----/
/
    BD-12     HTG        E,R     /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT        /
/-----/
/
    BD-13     CLG        E,R     /REFROIDISSEMENT
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION            /
/-----/
/
    BD-14     RECUP      E,R     /RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES                            /
/-----/
/
    BD-15     SYSP       D,R
    BD-16     SYS        D,R
    BD-17     SYS1       D,R
    BD-18     SYS2       D,R
    BD-19     SYS3       D,R
    BD-20     SYS4       D,R
    BD-21     SYS5       D,R

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BD-22   SYS6   D,R
BD-23   SYS7   D,R
BD-24   SYS8   D,R
/
/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
AD-1     DOW     E,2
AD-2     H1      E,00:00
AD-3     H2      E,00:00
AD-4     H3      E,00:00
AD-5     H4      E,00:00
AD-6     H5      E,00:00
AD-7     H6      E,00:00
AD-8     STA     E,00:00 /HORAIRE
AD-9     STO     E,00:00
AD-10    STA8    E,00:01
AD-11    STO8    E,23:59
AD-12    STA7    E,00:01
AD-13    STO7    E,23:59
AD-14    STA9    E,00:01
AD-15    STO9    E,23:59
AD-16    NSBT    E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17    DELSST  E,100   /DELAI APRES PANNE
/
/-----/
/  PARAMETRES CONTROLE DU PRE CHAUFFAGE  /
/-----/
/
AD-18    PREALL  E,5.0    /LIMITE CONTROLE PRE CHAUFFAGE
AD-19    PREADF  E,1.0    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-20    DELHEA  E,120    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/  PARAMETRES CONTROLE DE NUIT  /
/-----/
/
AD-21    NSP     E,22.0   /POINT DE CONSIGNE RETOUR
AD-22    Z41     E,0.0    /RESULTAT CTL NUIT
AD-23    CST41   E,45     /INTERVAL CTL NUIT
AD-24    CPB41   E,20.0   /BANDE PROP CTL NUIT
AD-25    CIG41   E,5      /GAIN CTL NUIT
AD-26    CDS41   E,0.0    /BANDE MORTE CTL NUIT
/
/-----/
/  PARAMETRES ECONOMISEUR D AIR FRAIS  /
/-----/
/
AD-27    OASO    E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/  REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION  /
/-----/
/
AD-28    RARL    E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-29    RARH    E,23.0   /AIR RET HAU LIM REAJ TEMP ALIM

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AD-30    SAHL      E,20.0    /REAJ TEMP ALIM HAU LIM
AD-31    SALL      E,13.0    /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE          /
/-----/
/
AD-32    DSSP      E,0.0      /POINT DE CONSIGNE ALIM
AD-33    MXDSP     E,9.0      /POINT DE CONSIGNE LIMITE MEL.
AD-34    MDP       E,0.0      /POSITION MINIMUM VOILETS
AD-35    CST10A    E,20       /INTERVAL CTL VOILETS LIMITE
AD-36    CPB10A    E,-90.0    /BANDE PROP CTL VOILETS LIMITE
AD-37    CIG10A    E,33       /GAIN CTL VOILETS LIMITE
AD-38    CMP10A    E,0.0      /COMPENSATION CTL VOILETS LIMITE
AD-39    CDS10A    E,0.5      /BANDE MORTE CTL VOILETS LIMITE
AD-40    CST10     E,90       /INTERVAL CTL VOILETS
AD-41    CPB10     E,-60.0    /BANDE PROP CTL VOILETS
AD-42    CIG10     E,33       /GAIN CTL VOILETS
AD-43    CMP10     E,0.0      /COMPENS CTL VOILETS
AD-44    CDS10     E,0.0      /BANDE MORTE CTL VOILETS
AD-45    ZMXD      E,0.0      /RESULTAT PROPORTION.
AD-46    Z10M      E,100.0    /RESULTAT VOILETS LIMITE
AD-47    Z10C      E,0.0      /RESULTAT VOILETS CTL
AD-48    Z10       E,0.0      /RESULTAT VOILETS
/
/-----/
/          PARAMETRES CALCUL POSITION MINIMUM                          /
/-----/
/
AD-49    MDPOS     E,20.0      /MINIMUM SANS EVACUATION
AD-50    MINF1     E,5.0       /MINIMUM VENTIL.
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE                          /
/-----/
/
AD-51    Z40       E,0.0      /RESULTAT CHAUFFAGE
AD-52    CST40     E,25       /INTERVAL CTL CHAUFF
AD-53    CPB40     E,50.0     /BANDE PROP CTL CHAUFF
AD-54    CIG40     E,33       /GAIN CTL CHAUFF
AD-55    CDS40     E,0.0      /BANDE MORTE CTL CHAUFF
AD-56    Z30POS    E,66.0     /POSITION D ARRET SOUPAPES
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT                    /
/-----/
/
AD-57    Z30       E,0.0      /RESULTAT REFROIDISSEMENT
AD-58    CST30     E,25       /INTERVAL CTL REFROIDI
AD-59    CPB30     E,-45.0    /BANDE PROP CTL REFROIDI
AD-60    CIG30     E,33       /GAIN CTL REFROIDI
AD-61    CDS30     E,0.0      /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE          /
/-----/

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/
AD-62  SPSP      E,10    /POINT DE CONSIGNE PRESS STAT
AD-63  CST50     E,5      /INTERVAL CTL VAV
AD-64  CPB50     E,-10.0 /BANDE PROP CTL VAV
AD-65  CIG50     E,30     /GAIN CTL VAV
AD-66  CMP50     E,0.0    /COMPENS CTL VAV
AD-67  CDS50     E,0.4    /BANDE MORTE CTL VAV
AD-68  Z50       E,0.0    /RESULTAT CTL VAV
AD-69  FSP       E,0.0    /PRESS STAT FILTREE
AD-70  AD1       D,0.0    /RESULTAT TEMPORAIRE
AD-71  AD2       D,0.0    /RESULTAT TEMPORAIRE
/
/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-72  RHSP      E,30.0   /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-73  RHSPA     E,80.0   /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-74  CST70     E,60     /INTERVAL CTL HUMIDITE
AD-75  CPB70     E,90.0   /BANDE PROP CTL HUMIDITE
AD-76  CIG70     E,33     /GAIN CTL HUMIDITE
AD-77  CDS70     E,0.0    /BANDE MORTE CTL HUMIDITE
AD-78  CST70A    E,5      /INTERVAL H LIM HUMIDITE
AD-79  CPB70A    E,90.0   /BANDE PROP H LIM HUMIDITE
AD-80  CIG70A    E,33     /GAIN H LIM HUMIDITE
AD-81  CDS70A    E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-82  Z70       E,0.0    /RESULTAT CTL HUMIDITE
AD-83  Z70HL     E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-84  Z70C      E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/      PARAMETRES CONTROLE DE RECUPERATION      /
/-----/
/
AD-85  RECUHL    E,200    /POINT DE CONSIGNE RECUPERATION
AD-86  RECUDF    E,50     /DIFFERENTIEL RECUPERATION
AD-87  FSP2      E,0.0    /PRESSION STATIQUE FILTREE
/
/-----/
/      FONCTIONS SPECIALES                      /
/-----/
/
AD-88  SYSDIS    D,0
AD-89  CSTXXX    D,0
AD-90  CPBXXX    D,0.0
AD-91  CIGXXX    D,0
AD-92  CMPXXX    D,0.0
AD-93  CDSXXX    D,0.0
/
/-----/
/      RECORD PANNE DE POUVOIR                  /
/-----/
/
AD-94  UPTIM     E,00:00  /HEURE DE LA RESTAURATION DU POUVOIR
AD-95  UPDAT     E,00:00  /DATE DE LA RESTAURATION DU POUVOIR
AD-96  DNTIM     E,00:00  /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-97  DNDAT     E,00:00  /DATE DE LA DERNIERE PERTE DE POUVOIR

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AD-98   TOD      E,00:00   /DERNIERE HEURE
AD-99   LDAT     E,00:00   /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1       ADJUST   DELSST,I   /DELAI APRES UNE PANNE
2       DISPLAY  OCCD,B     /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3       ADJUST   FSTRT,B    /DEMANDE VENTILATEUR
4       DISPLAY  FSTAT,B    /ETAT VENTIL. ALIM.
5       DISPLAY  FREEZE,B   /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
6       DISPLAY  NCTL,B     /CONTROLE DE TEMP NUIT
7       DISPLAY  TLCON,B    /CONTROLE PAR TEMP.
8       ADJUST   NSBT,A     /PT DE CONSIGNE REDEMARRAGE
9       ADJUST   NSP,A      /POINT DE CONSIGNE RETOUR
10      DISPLAY  Z41,A      /RESULTAT CTL NUIT
/
11      DISPLAY  TE80,A     /TEMP RETOUR
12      DISPLAY  TE10,A    /TEMP MELANGE
13      DISPLAY  TE1,A     /TEMP EXTERIEURE
14      DISPLAY  TE60,A    /TEMP ALIMENTATION
15      DISPLAY  TE100,A   /TEMP PIECE
/
16      DISPLAY  MXD,B     /CONTROLE DE JOUR
17      ADJUST   RARL,A    /AIR RET BAS LIM REAJ TEMP ALIM
18      ADJUST   RARH,A    /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST   SAHL,A    /REAJ TEMP ALIM HAU LIM
20      ADJUST   SALL,A    /REAJ TEMP ALIM BAS LIM
21      DISPLAY  DSSP,A    /POINT DE CONSIGNE ALIM
22      ADJUST   OASO,A    /TEMP LIM EXT ECONOMISEUR
23      DISPLAY  ECON,B    /RESULTAT ECONOMISEUR
24      DISPLAY  MDP,A     /POSITION MINIMUM VOLETS
25      ADJUST   MXDSP,A   /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY  ZMXD,A    /RESULTAT PROPORTION.
27      DISPLAY  Z10M,A    /RESULTAT VOLETS LIMITE
28      DISPLAY  Z10C,A    /RESULTAT VOLETS CTL
29      DISPLAY  Z10,A     /RESULTAT VOLETS
30      DISPLAY  ZT10,A    /F.B. VOLETS
/
31      DISPLAY  HTG,B     /CHAUFFAGE
32      DISPLAY  Z40,A     /RESULTAT CHAUFFAGE
/
33      ADJUST   Z30POS,A  /POSITION D ARRET SOUPAPES
/
34      DISPLAY  CLG,B     /REFROIDISSEMENT
35      DISPLAY  Z30,A     /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A    /F.B. SOUPAPES
/
37      DISPLAY  HT80,A    /HUMIDITE RETOUR
38      DISPLAY  HT60,A    /HUMIDITE ALIMENT
39      ADJUST   RHSP,A    /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A   /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A   /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A    /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A     /RESULTAT CTL HUMIDITE

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44      DISPLAY  ZT70,A      /F.B. HUMIDITE
/
45      DISPLAY  FSP,I       /PRESSION STATIQUE
46      ADJUST   SPSP,I      /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A       /RESULTAT CTL VAV
48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2   /SOUPAPES
62      OVERRIDE ZCP10,A,2   /VOLETS
63      OVERRIDE ZCP70,A,2   /HUMIDITE
64      OVERRIDE ZCP50,A,2   /VAV
/
65      ADJUST   MDPOS,A     /POSITION MINIMUM SANS EVACUATION
66      ADJUST   MINF1,A     /MINIMUM PAR VENTIL. 23RE
/
67      DISPLAY  FSTATE,B    /ETAT VENTIL. 23RE
/
73      DISPLAY  PREHEA,B    /PRE CHAUFFAGE
74      ADJUST   PREALL,A    /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  SPT1,I      /PRES STAT SERPENT GLYCOL
78      ADJUST   RECUHL,I    /POINT DE CONSIGNE RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I    /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A    /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I    /GAIN INTEGRAL
82      ADJUST   CMPXXX,A    /COMPENSATION
83      ADJUST   CDSXXX,A    /BANDE MORTE

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/
/-----/
/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-11
/
/      51      ALARME HORAIRE SYSTEME V43-11
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59

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```

1.2      SET      BPD,SDF,R
1.3      EXIT     C,S
1.4      HOLIDAY  H1,H2,H3,H4,H5,H6
1.5      STORE    DOW,APD,2,U
1.6      COMPARE  DOW,EQ,7,0
1.7      STORE    STA,STA7,STA9,C,S
1.8      STORE    STO,STO7,STO9,C,S
1.9      COMPARE  DOW,EQ,1,0
1.10     ORR      DOW,EQ,8,0
1.11     STORE    STA,STA8,STA9,C,S
1.12     STORE    STO,STO8,STO9,C,S
1.13     COMPARE  DOW,GE,2,0
1.14     ANDR     DOW,LE,6,0
1.15     STORE    STA,STA9,STA9,C,S
1.16     STORE    STO,STO9,STO9,C,S
1.17     SET      BPD,PAF,R
1.18     ALARM    51,C,S
1.19     EXIT     U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT     OPERATION VENTIL.
/          RESET    TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET    OCCD      CYCLE D OCCUPATION
/
2.1      PROG     DOW,0,STA,STO
2.2      SET      OCCD,SUF,R
2.3      SET      TLCON,SDF,S
2.4      SET      BPD,SUF,R
2.5      EXIT     C,R
2.6      SET      FSTRT,S,S
2.7      EXIT     U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT    TLCON,S
3.2      SET      BPD,TLCON,S
3.3      EXIT     C,R
3.4      INTERVAL 300,U
3.5      COMPARE  TE100,LE,NSBT,2.0
3.6      SET      FSTRT,BPD,S
3.7      EXIT     U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      SET      AUTO,S,S
4.3      DELAY    25,U
4.4      SET      COMP50,R,R
4.5      INTERVAL 10,U
4.6      XOR      COMP50,FSTAT
4.7      ALARM    50,C,S
4.8      SET      BPD,FSTRT,R
4.9      BOUT     ZS50,3,OFF

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```

4.10      SET      COMP50,BPD,R
4.11      EXIT      U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE          /
/-----/
/
5.1      RESTART
5.2      DELAY      25,U
5.3      INTERVAL   5,U
5.4      SET        BPD,FREEZE,R
5.5      ALARM      10,C,R
5.6      EXIT      U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT      C,R
6.8      DELAY      20,U
6.9      INTERVAL   CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT      U
/
7.1      EVENT      CONON,S
7.2      SET        BPD,CONON,R
7.3      EXIT      C,R
7.4      INTERVAL   CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT      U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/

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8.1    EVENT    CONON,S
8.2    SET      BPD,CONON,R
8.3    STORE    FSP,0,0,C,R
8.4    STORE    APD,0.0,0.0,C,R
8.5    STORE    Z50,APD,APD,C,R
8.6    AOUT     ZCP50,3,0.0,C,R
8.7    EXIT     C,R
8.8    DELAY    15,U
8.9    INTERVAL CST50,U
8.10   FILTER   SPT,63,100
8.11   STORE    AD1,APD,APD,U    /PRESSION AVEC DECIMALE
8.12   CALC     APD,0,1,1,10,R
8.13   STORE    FSP,APD,APD,U    /PRESSION SANS DECIMALE
8.14   CALC     SPSP,0,10,1,1,T
8.15   STORE    AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
8.16   CALC     CPB50,0,10,1,1,T
8.17   PROP     AD2,AD1,APD,CIG50,CMP50,CDS50
8.18   STORE    Z50,APD,APD,U
8.19   AOUT     ZCP50,3,0,U
8.20   EXIT     U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOILETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1    RESTART
9.2    SET      MXD,R,R
9.3    SET      NCTL,R,R
9.4    SET      CONON,R,R
9.5    DELAY    25,U
9.6    INTERVAL 5,U
9.7    AND      FSTAT,OCCD
9.8    SET      MXD,BPD,R
9.9    XOR      FSTAT,OCCD
9.10   AND      BPD,FSTAT
9.11   SET      NCTL,BPD,S
9.12   SET      CONON,FSTAT,R
9.13   EXIT     U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS          /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOILETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
10.1   EVENT    MXD,S
10.2   SET      ECON,R,R
10.3   SET      BPD,FSTAT,R
10.4   EXIT     C,R
10.5   INTERVAL 300,U

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10.6    COMPARE    TE1,GE,OASO,1.0
10.7    SET        ECON,BPD,R
10.8    EXIT       U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1    EVENT      MXD,S
11.2    INTERVAL   300,U
11.3    STORE      APD,TE80,RARL,U
11.4    SPAN       RARL,RARH,SAHL,SALL
11.5    STORE      DSSP,APD,SAHL,U
11.6    EXIT       U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M    RESULTAT PAR TEMP DE MELANGE
/Z10C    RESULTAT PAR TEMP D ALIMENTATION
/Z10     RESULTAT VOLETS
/
/
12.1    EVENT      MXD,S
12.2    SET        MIXLL,R,R
12.3    SET        BPD,MXD,R
12.4    EXIT       C,R
12.5    INTERVAL   5,U
12.6    COMPARE    TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7    SET        MIXLL,BPD,R      /A LA BASSE LIMITE
12.8    SELECT     Z10M,Z10C,L
12.9    STORE      Z10,APD,APD,U
12.10   AOUT       ZCP10,3,0.0,U
12.11   EXIT       U
/
13.1    EVENT      MIXLL,S      /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2    SET        BPD,MIXLL,R
13.3    STORE      Z10M,100.0,100.0,C,R
13.4    STORE      CMP10A,Z10C,Z10C,U
13.5    EXIT       C,R
13.6    INTERVAL   CST10A,U
13.7    PROP       MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8    STORE      Z10M,APD,APD,U

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13.9      EXIT      U
/
14.1      EVENT     MXD,R /POSITION D ARRET SOUPAPES
14.2      SET       BPD,MXD,R
14.3      EXIT      C,S
14.4      SET       HTG,R,R
14.5      SET       CLG,R,R
14.6      DELAY     7,C,R
14.7      STORE     APD,0.0,0.0,C,R
14.8      AOUT      ZCP30,3,0.0,C,R
14.9      EXIT      U
/
15.1      EVENT     MXD,S
15.2      SET       BPD,MXD,R
15.3      STORE     APD,0.0,0.0,C,R
15.4      STORE     Z10,APD,APD,C,R
15.5      STORE     Z10C,APD,APD,C,R
15.6      STORE     Z10M,100.0,100.0,C,R
15.7      STORE     ZMXD,APD,APD,C,R
15.8      AOUT      ZCP10,3,0.0,C,R
15.9      EXIT      C,R
15.10     DELAY     7,U
15.11     STORE     APD,TE1,5.0,U
15.12     SPAN      5.0,20.0,0.0,75.0
15.13     STORE     CMP10,APD,APD,U
15.14     STORE     APD,Z30POS,Z30POS,U
15.15     AOUT      ZCP30,3,0.0,U
15.16     INTERVAL  CST10,U
15.17     PROP      DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18     STORE     ZMXD,APD,APD,U
15.19     SPAN      MDP,100.0,MDP,100.0
15.20     SET       BPD,ECON,S
15.21     STORE     APD,MDP,MDP,C,S
15.22     STORE     Z10C,APD,APD,U
15.23     ORR       ZMXD,GE,85.0,10.0
15.24     SET       CLG,BPD,R
15.25     COMPARE   ZMXD,LE,15.0,10.0
15.26     SET       HTG,BPD,R
15.27     EXIT      U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DU VENTILATEUR
/D EVACUATION. LA FONCTION MINF1 EST LE POURCENTAGE RAJOUTE A LA POSITION
/MINIMUM QUAND LE VENTILATEUR FONCTIONNE. LE RESULTAT S APPLIQUE DANS LA
/ROUTINE DE CONTROLE DES VOLETS
/
16.1      RESTART
16.2      DELAY     25,U
16.3      INTERVAL  10,U
/
16.4      SET       BPD,FSTATE,R           /CALCUL VENT. 23RE
16.5      STORE     APD,0.0,0.0,C,R
16.6      STORE     APD,MINF1,MINF1,C,S

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16.7    CALC      APD,MDPOS,1,1,1,T
16.8    STORE     MDP,APD,20.0,U
16.9    EXIT      U
/
/
/-----/
/              CONTROLE DU PRE CHAUFFAGE              /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE DE MELANGE
/EST DESALIMENTE.
/
17.1    RESTART
17.2    SET       PREHEA,S,S
17.3    DELAY     25,U
17.4    BOUT      ZSLL,3,OFF
17.5    INTERVAL  5,U
17.6    COMPARE   TE10,LE,PREADL,PREADF
17.7    SET       PREHEA,BPD,R
17.8    NEGATE    BPD
17.9    BOUT      ZS20,3,OFF
17.10   SET       BPD,LLBYP,R
17.11   BOUT      ZSLL,3,OFF
17.12   EXIT      U
/
18.1    EVENT     PREHEA,S
18.2    SET       BPD,PREHEA,R
18.3    DELAY     DELHEA,C,S
18.4    NEGATE    PREHEA
18.5    SET       LLBYP,BPD,R
18.6    EXIT      U
/
/
/-----/
/              CONTROLE DE CHAUFFAGE              /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A Z30POS POUR LE CHAUFFAGE.
/
19.1    EVENT     HTG,S
19.2    SET       BPD,HTG,S
19.3    STORE     Z40,0.0,0.0,C,R
19.4    STORE     APD,Z30POS,Z30POS,C,R
19.5    AOUT      ZCP30,3,0.0,C,R
19.6    EXIT      C,R
19.7    INTERVAL  CST40,U
19.8    CALC      DSSP,0.3,1,-1,1,T
19.9    PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
19.10   STORE     Z40,APD,APD,U
19.11   SPAN      0.0,100.0,Z30POS,0.0
19.12   AOUT      ZCP30,3,100.0,U
19.13   EXIT      U
/

```

/-----/
/ CONTROLE DE REFROIDISSEMENT /
/-----/
/

/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE Z30POS A 100 POUR LE REFROIDISSEMENT.
/

20.1 EVENT CLG,S
20.2 SET BPD,CLG,R
20.3 STORE Z30,0.0,0.0,C,R
20.4 STORE APD,Z30POS,Z30POS,C,R
20.5 AOUT ZCP30,3,0.0,C,R
20.6 EXIT C,R
20.7 INTERVAL CST30,U
20.8 CALC DSSP,0.3,1,1,1,T
20.9 PROP APD,TE60,CPB30,CIG30,0.0,CDS30
20.10 STORE Z30,APD,APD,U
20.11 SPAN 0.0,100.0,Z30POS,100.0
20.12 AOUT ZCP30,3,0.0,U
20.13 EXIT U

/

/

/-----/
/ CONTROLE DE NUIT /
/-----/
/

/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOLETS RESTENT EN RECIRCULATION.
/

21.1 EVENT NCTL,S
21.2 SET BPD,NCTL,S
21.3 STORE Z41,0.0,0.0,C,R
21.4 STORE APD,0.0,0.0,C,R
21.5 AOUT ZCP30,3,0.0,C,R
21.6 EXIT C,R
21.7 INTERVAL CST41,U
21.8 PROP NSP,TE80,CPB41,CIG41,0.0,CDS41
21.9 STORE Z41,APD,APD,U
21.10 SPAN 0.0,100.0,Z30POS,0.0
21.11 AOUT ZCP30,3,100.0,U
21.12 EXIT U

/

/

/-----/
/ CONTROLE RECUPERATION /
/-----/
/

/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPAPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/

22.1 RESTART
22.2 DELAY 25,U
22.3 INTERVAL 7,U

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22.4    FILTER    SPT1,63,100
22.5    STORE     FSP2,APD,APD,U
22.6    COMPARE   FSP2,GE,RECUHL,RECUDF
22.7    SET       RECUP,BPD,R
22.8    NEGATE    BPD
22.9    BOUT      ZS10,3,OFF
22.10   EXIT      U
/
/
/-----/
/                FONCTIONS SPECIALES                /
/-----/
/
23.1    EVERY                                /SELECTION DU STSTEME POUR LE
23.2    SET       SYSP,R,R                    /
23.3    COMPARE   SYSDIS,EQ,100,0
23.4    SET       SYS1,BPD,R
23.5    OR        SYSP,BPD
23.6    SET       SYSP,BPD,S
23.7    COMPARE   SYSDIS,EQ,200,0
23.8    SET       SYS2,BPD,R
23.9    OR        SYSP,BPD
23.10   SET       SYSP,BPD,S
23.11   COMPARE   SYSDIS,EQ,300,0
23.12   SET       SYS3,BPD,R
23.13   OR        SYSP,BPD
23.14   SET       SYSP,BPD,S
23.15   COMPARE   SYSDIS,EQ,400,0
23.16   SET       SYS4,BPD,R
23.17   OR        SYSP,BPD
23.18   SET       SYSP,BPD,S
23.19   COMPARE   SYSDIS,EQ,500,0
23.20   SET       SYS5,BPD,R
23.21   OR        SYSP,BPD
23.22   SET       SYSP,BPD,S
23.23   COMPARE   SYSDIS,EQ,600,0
23.24   SET       SYS6,BPD,R
23.25   OR        SYSP,BPD
23.26   SET       SYSP,BPD,S
23.27   COMPARE   SYSDIS,EQ,700,0
23.28   SET       SYS7,BPD,R
23.29   OR        SYSP,BPD
23.30   SET       SYSP,BPD,S
23.31   COMPARE   SYSDIS,EQ,800,0
23.32   SET       SYS8,BPD,R
23.33   OR        SYSP,BPD
23.34   SET       SYSP,BPD,S
23.35   SET       SYS,SYSP,S
23.36   EXIT      U
/
/
24.1    EVENT     SYS,S                      /RESET LES FONCTIONS POUR
24.2    SET       BPD,SUF,R                  /LE CDB SPECIAL
24.3    STORE     SYSDIS,0,0,C,R              /SUR UNE PERIODE DE DISCLR
24.4    EXIT      C,R
24.5    DELAY     3600,U
24.6    STORE     SYSDIS,0,0,U

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24.7    EXIT      U
/
/
25.1    EVENT     SYS1,S                               /SYS 100
25.2    SET       BPD,SUF,R
25.3    EXIT      C,R
25.4    INTERVAL  5,U
25.5    STORE     CSTXXX,CST70,CST70,U                /PERMET DE VOIR LES
25.6    STORE     CPBXXX,CPB70,CPB70,U                /VALEURS DU SYSTEME
25.7    STORE     CIGXXX,CIG70,CIG70,U
25.8    STORE     CMPXXX,0.0,0.0,U
25.9    STORE     CDSXXX,CDS70,CDS70,U
25.10   EXIT      U
/
/
26.1    EVENT     SYS1,S
26.2    SET       BPD,SUF,R
26.3    EXIT      C,R
26.4    DELAY     10,U
26.5    INTERVAL  1,U
26.6    STORE     CST70,CSTXXX,CST70,U                /PERMET D AJUSTER LES
26.7    STORE     CPB70,CPBXXX,CPB70,U                /VALEURS DU SYSTEME
26.8    STORE     CIG70,CIGXXX,CIG70,U
26.9    STORE     CDS70,CDSXXX,CDS70,U
26.10   EXIT      U
/
/
27.1    EVENT     SYS2,S                               /SYS 200
27.2    SET       BPD,SUF,R
27.3    EXIT      C,R
27.4    INTERVAL  5,U
27.5    STORE     CSTXXX,CST70A,CST70A,U              /PERMET DE VOIR LES
27.6    STORE     CPBXXX,CPB70A,CPB70A,U              /VALEURS DU SYSTEME
27.7    STORE     CIGXXX,CIG70A,CIG70A,U
27.8    STORE     CMPXXX,0.0,0.0,U
27.9    STORE     CDSXXX,CDS70A,CDS70A,U
27.10   EXIT      U
/
/
28.1    EVENT     SYS2,S
28.2    SET       BPD,SUF,R
28.3    EXIT      C,R
28.4    DELAY     10,U
28.5    INTERVAL  1,U
28.6    STORE     CST70A,CSTXXX,CST70A,U              /PERMET D AJUSTER LES
28.7    STORE     CPB70A,CPBXXX,CPB70A,U              /VALEURS DU SYSTEME
28.8    STORE     CIG70A,CIGXXX,CIG70A,U
28.9    STORE     CDS70A,CDSXXX,CDS70A,U
28.10   EXIT      U
/
/
29.1    EVENT     SYS3,S                               /SYS 300
29.2    SET       BPD,SUF,R
29.3    EXIT      C,R
29.4    INTERVAL  5,U
29.5    STORE     CSTXXX,CST50,CST50,U                /PERMET DE VOIR LES
29.6    STORE     CPBXXX,CPB50,CPB50,U                /VALEURS DU SYSTEME

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29.7    STORE    CIGXXX,CIG50,CIG50,U
29.8    STORE    CMPXXX,CMP50,CMP50,U
29.9    STORE    CDSXXX,CDS50,CDS50,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS3,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
30.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
30.8    STORE    CIG50,CIGXXX,CIG50,U
30.9    STORE    CMP50,CMPXXX,CMP50,U
30.10   STORE    CDS50,CDSXXX,CDS50,U
30.11   EXIT     U
/
/
31.1    EVENT    SYS4,S                    /SYS 400
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U
31.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG40,CIG40,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS40,CDS40,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS4,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    DELAY    10,U
32.5    INTERVAL 1,U
32.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
32.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
32.8    STORE    CIG40,CIGXXX,CIG40,U
32.9    STORE    CDS40,CDSXXX,CDS40,U
32.10   EXIT     U
/
/
33.1    EVENT    SYS5,S                    /SYS 500
33.2    SET      BPD,SUF,R
33.3    EXIT     C,R
33.4    INTERVAL 5,U
33.5    STORE    CSTXXX,CST41,CST41,U      /PERMET DE VOIR LES
33.6    STORE    CPBXXX,CPB41,CPB41,U      /VALEURS DU SYSTEME
33.7    STORE    CIGXXX,CIG41,CIG41,U
33.8    STORE    CMPXXX,0.0,0.0,U
33.9    STORE    CDSXXX,CDS41,CDS41,U
33.10   EXIT     U
/
/
34.1    EVENT    SYS5,S
34.2    SET      BPD,SUF,R

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34.3    EXIT      C,R
34.4    DELAY     10,U
34.5    INTERVAL  1,U
34.6    STORE     CST41,CSTXXX,CST41,U      /PERMET D AJUSTER LES
34.7    STORE     CPB41,CPBXXX,CPB41,U      /VALEURS DU SYSTEME
34.8    STORE     CIG41,CIGXXX,CIG41,U
34.9    STORE     CDS41,CDSXXX,CDS41,U
34.10   EXIT      U
/
/
35.1    EVENT     SYS6,S                    /SYS 600
35.2    SET       BPD,SUF,R
35.3    EXIT      C,R
35.4    INTERVAL  5,U
35.5    STORE     CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
35.6    STORE     CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
35.7    STORE     CIGXXX,CIG10A,CIG10A,U
35.8    STORE     CMPXXX,0.0,0.0,U
35.9    STORE     CDSXXX,CDS10A,CDS10A,U
35.10   EXIT      U
/
/
36.1    EVENT     SYS6,S
36.2    SET       BPD,SUF,R
36.3    EXIT      C,R
36.4    DELAY     10,U
36.5    INTERVAL  1,U
36.6    STORE     CST10A,CSTXXX,CST10A,U    /PERMET D AJUSTER LES
36.7    STORE     CPB10A,CPBXXX,CPB10A,U    /VALEURS DU SYSTEME
36.8    STORE     CIG10A,CIGXXX,CIG10A,U
36.9    STORE     CDS10A,CDSXXX,CDS10A,U
36.10   EXIT      U
/
/
37.1    EVENT     SYS7,S                    /SYS 700
37.2    SET       BPD,SUF,R
37.3    EXIT      C,R
37.4    INTERVAL  5,U
37.5    STORE     CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
37.6    STORE     CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
37.7    STORE     CIGXXX,CIG10,CIG10,U
37.8    STORE     CMPXXX,CMP10,CMP10,U
37.9    STORE     CDSXXX,CDS10,CDS10,U
37.10   EXIT      U
/
/
38.1    EVENT     SYS7,S
38.2    SET       BPD,SUF,R
38.3    EXIT      C,R
38.4    DELAY     10,U
38.5    INTERVAL  1,U
38.6    STORE     CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
38.7    STORE     CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
38.8    STORE     CIG10,CIGXXX,CIG10,U
38.9    STORE     CMP10,CMPXXX,CMP10,U
38.10   STORE     CDS10,CDSXXX,CDS10,U
38.11   EXIT      U

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```

/
/
39.1    EVENT      SYS8,S                               /SYS 800
39.2    SET        BPD,SUF,R
39.3    EXIT       C,R
39.4    INTERVAL   5,U
39.5    STORE      CSTXXX,CST30,CST30,U                /PERMET DE VOIR LES
39.6    STORE      CPBXXX,CPB30,CPB30,U                /VALEURS DU SYSTEME
39.7    STORE      CIGXXX,CIG30,CIG30,U
39.8    STORE      CMPXXX,0.0,0.0,U
39.9    STORE      CDSXXX,CDS30,CDS30,U
39.10   EXIT       U
/
/
40.1    EVENT      SYS8,S
40.2    SET        BPD,SUF,R
40.3    EXIT       C,R
40.4    DELAY      10,U
40.5    INTERVAL   1,U
40.6    STORE      CST30,CSTXXX,CST30,U                /PERMET D AJUSTER LES
40.7    STORE      CPB30,CPBXXX,CPB30,U                /VALEURS DU SYSTEME
40.8    STORE      CIG30,CIGXXX,CIG30,U
40.9    STORE      CDS30,CDSXXX,CDS30,U
40.10   EXIT       U
/
/
/-----/
/                                RECORD PANNE DE POUVOIR                                /
/-----/
/
41.1    RESTART
41.2    TIMDATA    DT
41.3    STORE      UPTIM,APD,APD,U                    /SAUVE L HEURE ACTUEL ET
41.4    TIMDATA    MD                                /LA DATE DE LA RESTAURATION
41.5    STORE      UPDAT,APD,APD,U                    /DU POUVOIR.
41.6    EXIT       U
/
42.1    RESTART
42.2    STORE      DNTIM,TOD,TOD,U                    /RECORD DE LA DERNIERE HEURE
42.3    STORE      DNDAT,LDAT,LDAT,U                  /ET DATE AVANT LA PANNE.
42.4    INTERVAL   60,U
42.5    TIMDATA    DT
42.6    STORE      TOD,APD,APD,U                      /SAUVE L HEURE ET LA DATE
42.7    TIMDATA    MD                                /ACTUEL A TOUTES LES MINUTES.
42.8    STORE      LDAT,APD,APD,U
42.9    EXIT       U
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    954
/   CDB:       378
/   PROCESSES: 3568
/   OVERHEAD:  2700
/   TOTAL:     7600    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:

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```
/      POINTS:    954
/      CDB:      378
/    PROCESSES:  3568
/    OVERHEAD:   2700
/      TOTAL:    7600    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    954
/      CDB:      378
/    PROCESSES:  3570
/    OVERHEAD:   2700
/      TOTAL:    7602    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/      POINTS:    954
/      CDB:      378
/    PROCESSES:  3570
/    OVERHEAD:   2700
/      TOTAL:    7602    8K DSC MEMORY NEEDED
```

AU DEPART DU SYSTEME V43-11A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-11R DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. AU DEPART DU SYSTEME V43-23 RE PAR LA MINUTERIE MECANIQUE M-1, LA POMPE DE RECUPERATION V43-11P2 SE MET EN MARCHÉ

LA VALVE DE REFROIDISSEMENT, LES VOILETS DE MELANGE, LA VALVE DE RECUPERATION LE SERPENTIN DE FACE ET EVITEMENT SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTATE; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C LA VALVE V-1 DU SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100 % PAR SP-2 ET RG-1 EST DESAMORCE 2

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOILETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT DE 60% LORSQUE LE VENTILATEUR V43-23RE EST EN FONCTION.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR; CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINÉ D'ALIMENTATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

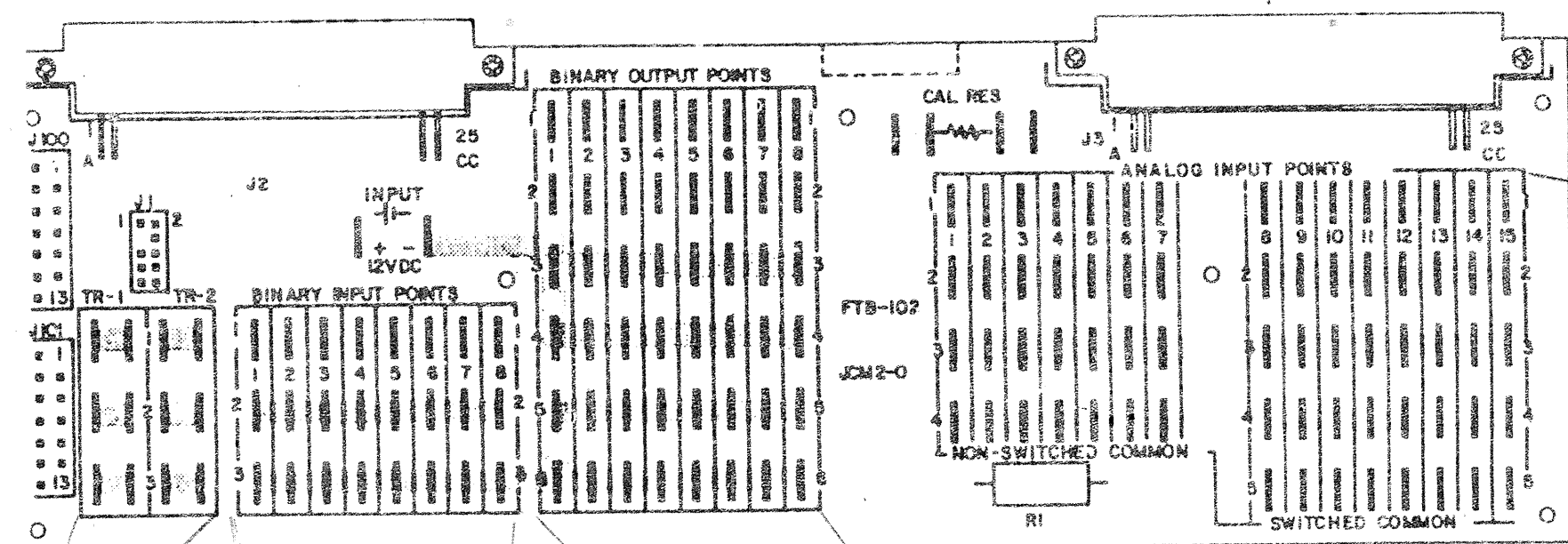
SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE AU SERPENTIN AFIN DE LE DEGIVRER PAR SP-1

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2 L'ACTION DE TLL-2 EST ANNULEE VIA RG-1 2

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE.

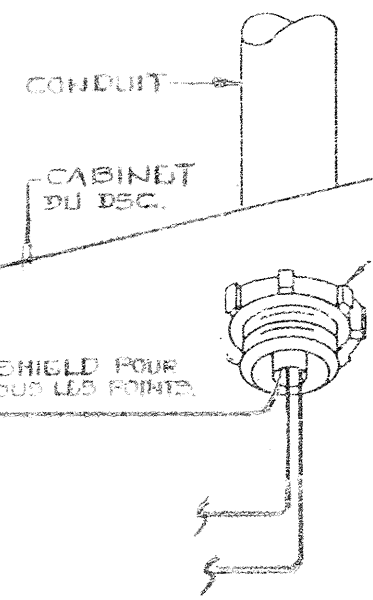
LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE. CEPENDANT, LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15°C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22°C

BOITIERS DE RACCORDEMENT (TYPE 102)






VOIR PLUS HAUT
POUR COMPLICATION

- 1 - TYPE DE RACCORDEMENT
CABLES TYPE TYPE 14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100
- 2 - CABLES EN 3/16 TWS
PARTOUT.

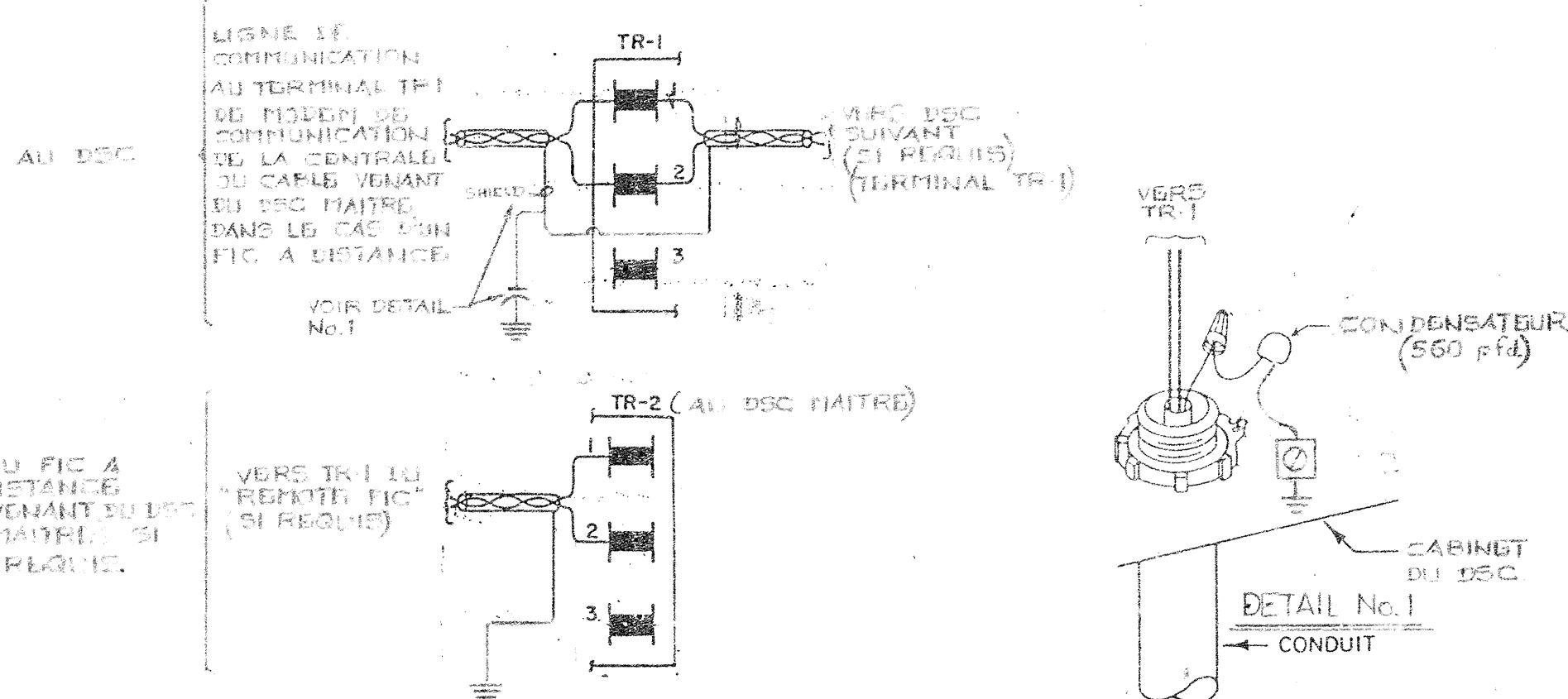


TOTAL MAX 9 ENTREES

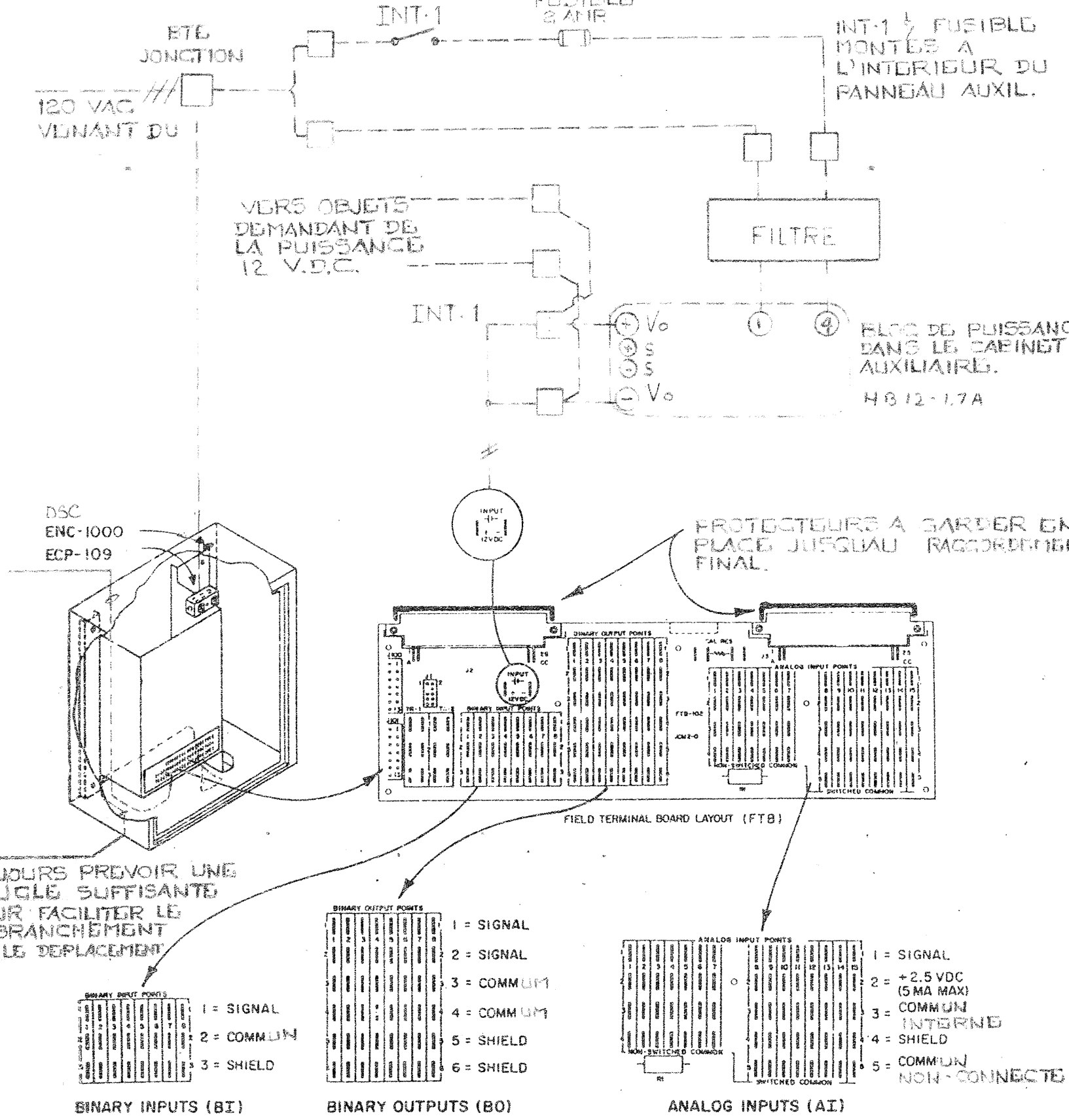
TOTAL MAX 9 SORTIES

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC II		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-1	BIN	1 2		CONTACT AUX. DEM.	MCC-2	B1.1		
2	STATUS	SYSTEME V43-23RE	BIN	1 2		CONTACT AUX. DEM.	MCC-2	B2.1		
3	GEL	SYSTEME V43-1	BIN	1 2		RELAIS RG	CAB. AUX.	B3.1		

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC II		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE REFROID.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1		
5A	RG-1	RELAIS DEVIEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	55A.1		
7A	R-1	ARRET DEPART V43-11A	SST	1 3	2 7	RELAIS 12VDC	MCC-2	57A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	57B.1		
8A	SP-2	V-1 PRECHAUF. OUVERTE	SST	1 3	ROUGE NOIR	V9011-1	CABINET AUX.	58A.1		

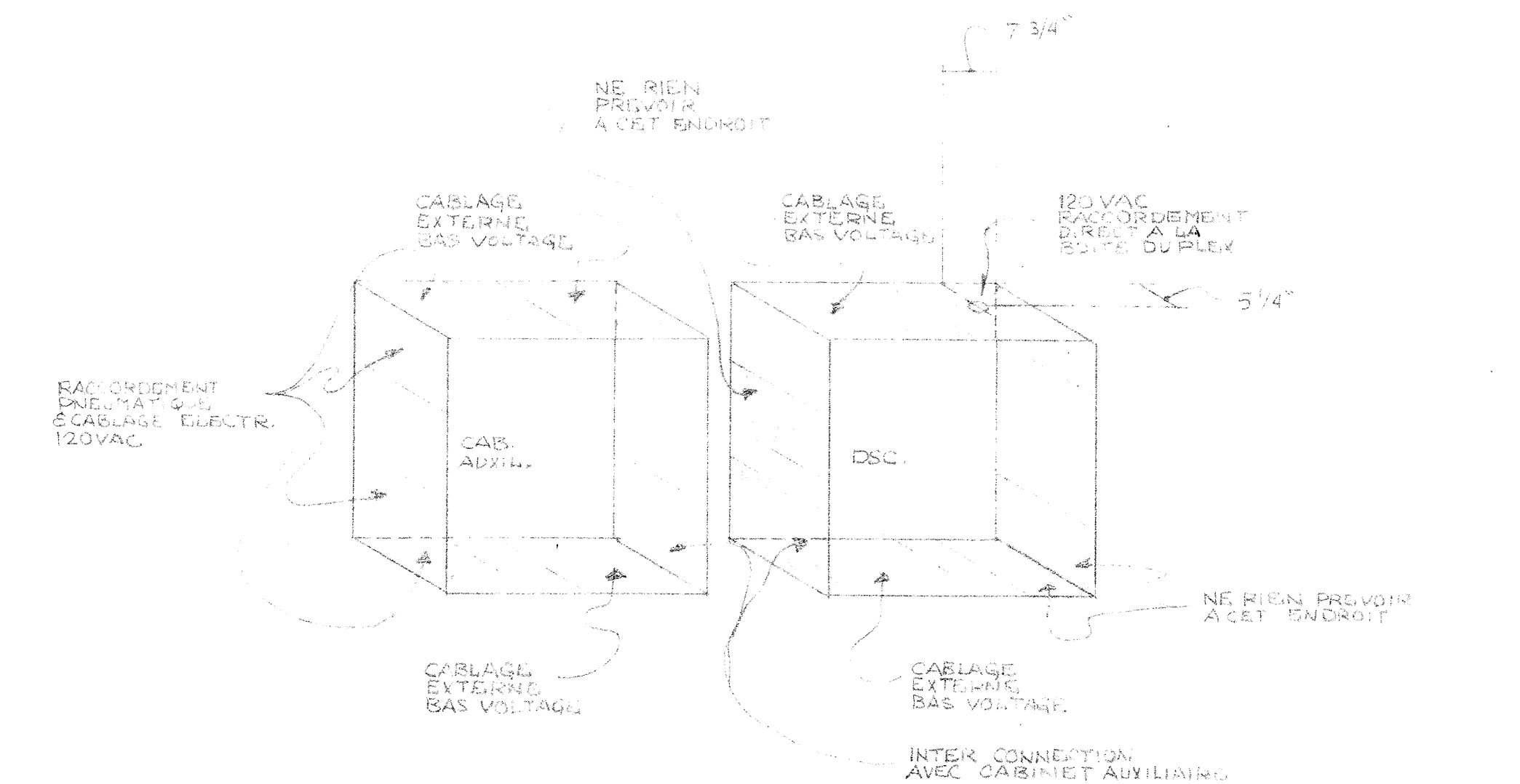


EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC II		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	TE-5	PIECE	ANA	1 2		TE-1800-101	PIECE	A9.1		
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-90%HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5VDC 0-15%0
14										
15	PT-3	PRESSION SERPENTIN V43-23RE	ANA	1 5	1 2	SONDE DE PRESSION PT-3	SERPENTIN GLYCOL V43-23RE	A15.1		0-5VDC 0-25%0



INT-1: INTERRUPTEUR "TOGGLE" EAGLE SPST. MOD. 117. MONTÉ AVEC R-400-101 J.C.L.



TERMINAUX DANS LE CABINET AUXILIAIRE



1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE		IMPLANTATION DSC-6500		3 TEL QUE CONSTRUIT		26-07-07	
CHANGEMENT #112		2 ADDITION RG-1		NOV2785		NOV2785	
REFERENCE		NO		REVISION		AVIS	
REPRESENTANT		TECHNICIEN		DESSINE		APPROUVE	
J.C.R.		R.F.		DATE 16-85		DATE 16-85	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		Société de Contrôle Johnson Ltd		CONTRAT 24/	
ST-HYACINTHE, QUE.		441 boulevard Labreau		Montréal, QC H4N 1S2		4096-008-752	
		Tél. 514/332-6980				4068-24	

IDENT.	MODELE	QTE	DESCRIPTION
MI 	MARKTIME 90015	1	MINUTERIE MANUELLE 0-12 HRES
DA-1	D3073-2	1	MOTEUR DE VOLET C/A LAMPE TEMOIN
DA-2	D3153-1	1	MOTEUR DE VOLET
DA-3,4	D3073-1	2	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6,7		2	MOTEUR FOURNI PAR D'AUTRES
V-1	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-2	V5842-6	1	VALVE 3 VOIES Ø 2" C.V. 30
V-3	V5462-7	1	VALVE 2 VOIES N.F. Ø 2 1/2" C.V. 54
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	ELEMENT DE TEMPERATURE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR
IPD-1,2	2000-50	2	INDICATEUR DE PRESSION 0-50 mm
HE-1,2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1,2		2	DETECTEUR DE FUMEE PYPOTRONIC
TLL-1	A11A-6	1	BASSE LIMITE
TLL-2	A19AAF-12	1	BASSE LIMITE
W-1	WZ1000-2 	1	PUIT D'IMMERSION
PT-1 ET 3	SETRA 261	2	DETECTEUR DE PRESSION STATIQUE
EP-1,2	V11HAA-100	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 à 3	G2010-11	3	INDICATEUR 0-30 PSI
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 à 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	PANNEAU 24"x36"x7"
XMR-1	BD2FF	1	TRANSFO. 120/18 VAC.
SP-1,2	V9011-1	2	VALVE A AIR 3 VOIES
IS-1	C-208-2	1	INVERSEUR DE SIGNAL
IPS-4	2000-100 mm	1	INDICATEUR 0-100 mm
TE-5	TE 1800-102	1	ELEMENT DE TEMPERATURE DE PIECE

ECONOMISEUR

PC X

MODE X

EVAC.

Position vol.mél.

X

X

Minimum

X

Minimum sans evac.

X

Minimum par 25 RE

X

A/N

DA-2

CMD VLV

V-2

NF

DA-1

V43-25RE

ETAT RECUP.

X

RECIRC. GLYCOL

X

ETAT PRE-CH

X

EVITEMENT BL COND.

X

PRESSION SERP.GLY

X

V-1

V-40°C

VLV CHAUF.

X

X

MODE REFR.

X

MODE CHAUF.

X

Te. retour

X

V43-2R

DF1

DA-7

He. retour

X

X

PC

X

HL

X

Te. melange

X

BL

X

VLV REFR

V-3

X

X

Picee A-125

X

PC

X

ALARME DE GEL

V43-2A

DA-6

Position AUBES

X

X

OCCUPATION VA

X

Pression

X

PC

X

V43-18A

DA-8

Position vol.alim.

X

X

Te. alim.

X

PC

X

CÉDULE

RETOUR

ALIMENT.

X

X

X

X

Te.ext. X

DELAI APRES PANNE X

Parametres et Horaires



Vacance DSC-2



MENU PRINCIPAL



Contrôle pression Syst-18A

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Chauffage

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle refroidissement

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

HORAIRE

Depart jour cour.

Arret jour cour.

Depart semaine

Arret semaine

Depart samedi

Arret samedi

Depart dimanche

Arret dimanche

Contrôle volets melange

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Humidité

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle HL Humidité

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Pression statique

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Volets melange

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle B Limite mel.

Etat CTRL BL

Resultat PID

Interval PID

Bande propr.

Gain boucle PID

Bande morte

Contrôle Recuperation

PC recup.

Differentiel rec.

Contrôle pre-chauffage

Limite CTRL

Differentiel

Delais evit.BL

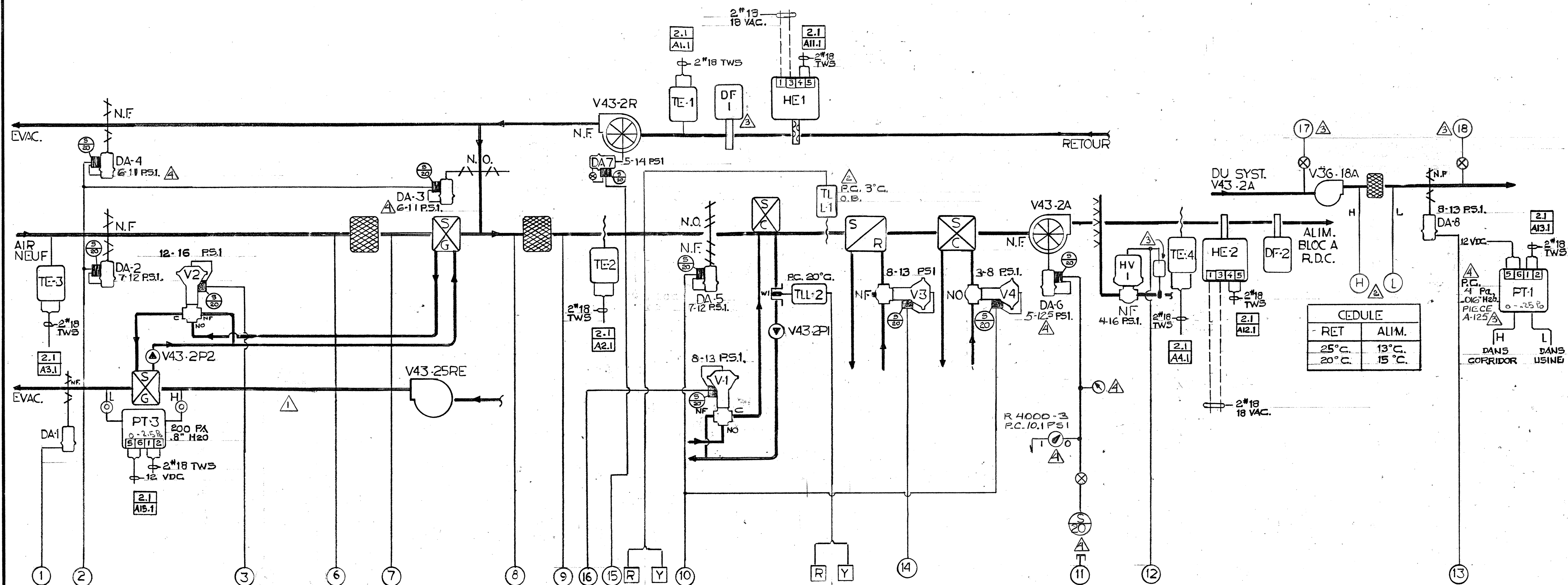


VACANCES DSC-2, V43-2

Jour / M ois	VACANCE 1	<input checked="" type="checkbox"/>
Jour / M ois	VACANCE 2	<input checked="" type="checkbox"/>
Jour / M ois	VACANCE 3	<input checked="" type="checkbox"/>
Jour / M ois	VACANCE 4	<input checked="" type="checkbox"/>
Jour / M ois	VACANCE 5	<input checked="" type="checkbox"/>
Jour / M ois	VACANCE 6	<input checked="" type="checkbox"/>



DIAGRAMME DE DEBIT



PANNEAU P-1

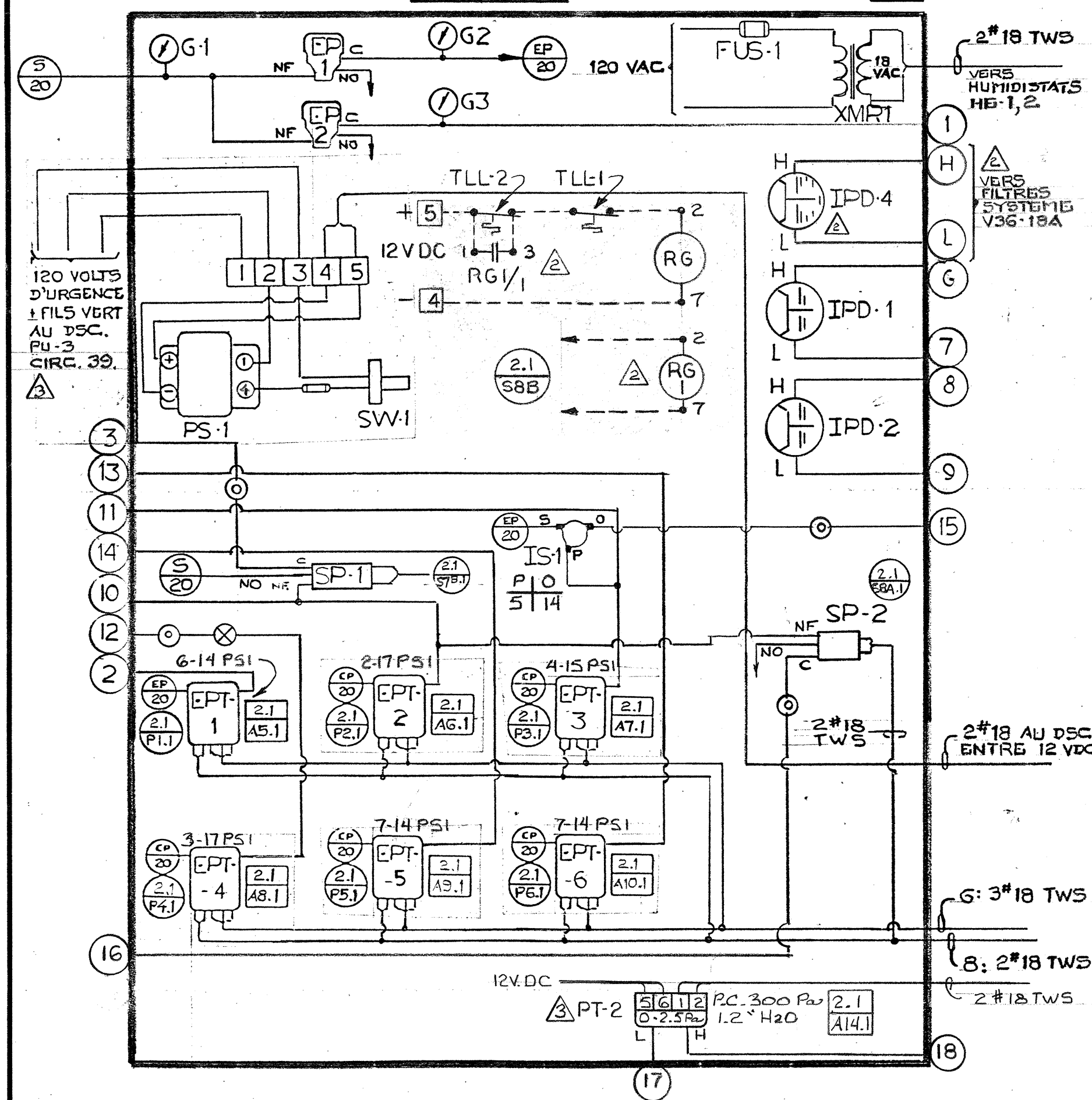
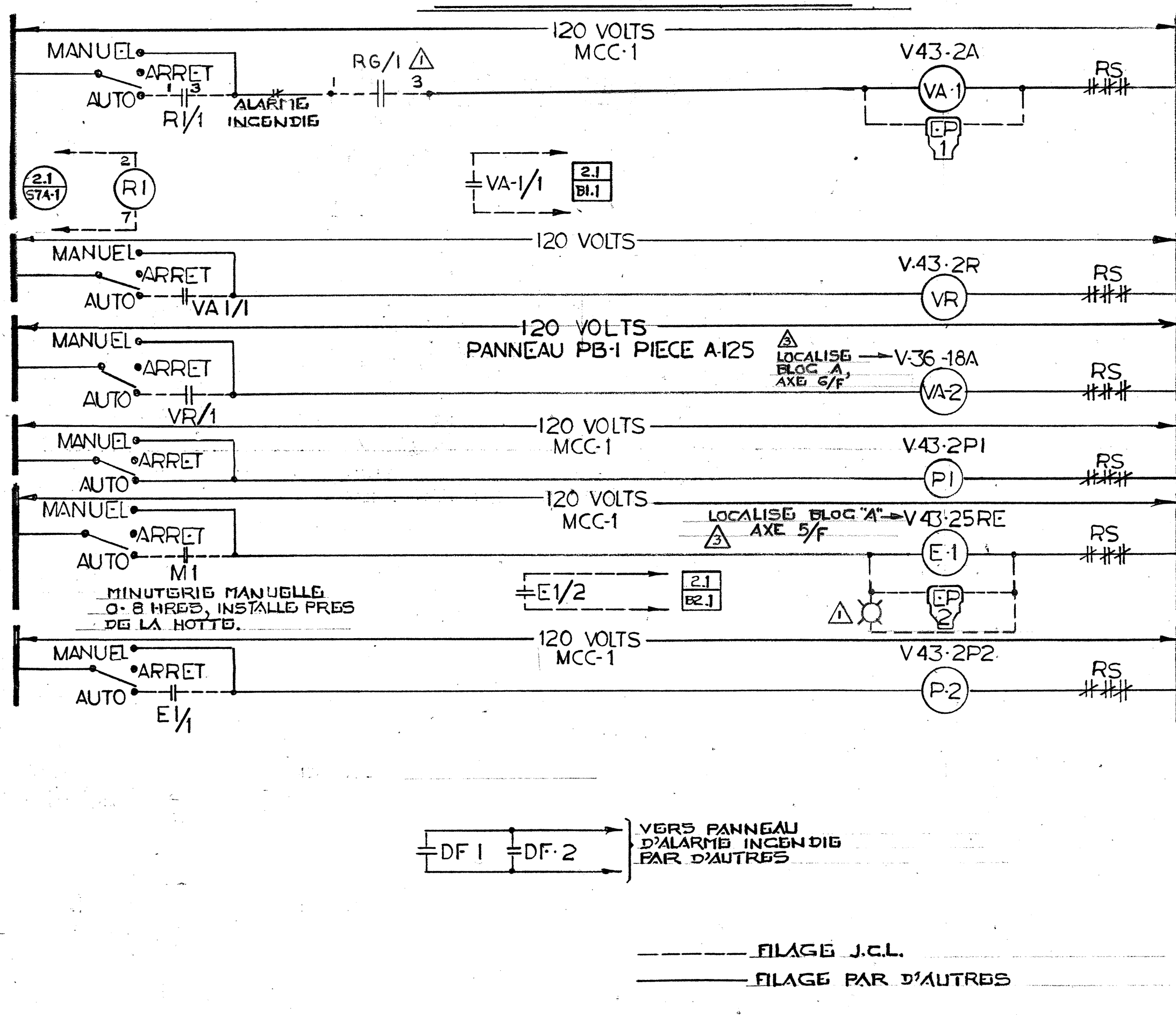
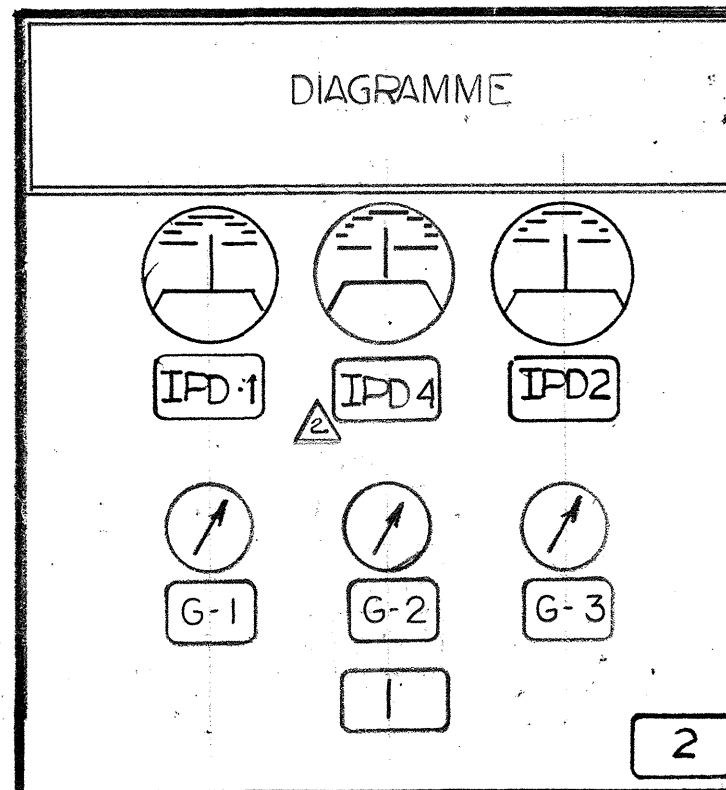


DIAGRAMME ELECTRIQUE



DIAGRAMME



IPD-1 — PRÉFILTRE
 IPD-2 — FILTRE
 IPD-4 — FILTRE V36-18A
 1 — SYSTEME No. V43-2A
 2 — CONTRACTEUR: PAVAL INC.
 INGENIEUR: PAGEAU MOREL
 ET ASS.

G-1 — AIR D'ALIMENTATION
 G-2 — AIR DE CONTROLE
 G-3 — VOLET V43-25RE

TITRE: SYSTEME No. 43-2
 BLOC A, R.D.C.

PROJET: CENTRE DE RECHERCHE
 ALIMENTAIRE - ST. HYACINTHE QUE

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
DA-1	D3073-2	1	MOTEUR DE VOLET
DA-2	D3153-1	1	MOTEUR DE VOLET
DA-3,4	D3073-1	2	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6,7		2	MOTEUR FOURNI PAR D'AUTRES
DA-8	D3073-2	1	MOTEUR DE VOLET
V-1	V4324-1014	1	VALVE 3 VOIES Ø 1" C.V. 13.9
V-2	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-3	V5462-7	1	VALVE 2 VOIES N.F. Ø 2 1/2" C.V. 54
V-4	V3754-1027	1	VALVE 2 VOIES N.O. Ø 1" C.V. 13.9
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	ELEMENT DE TEMPERATURE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR
IPD-1,2	2000-50	2	INDICATEUR DE PRESSION 0-50 mm
HE-1,2	1.1000.30.041	2	DETECTEUR D'HUMIDITE ENERCON
DF-1,2		2	DETECTEUR DE FUMEE PYROTROIC
TL-1	ALLA-6	1	BASSE LIMITE
TL-2	A19A4F-12	1	BASSE LIMITE
W-1	VZ1000-2	1	PUIT D'IMMERSION
PT-1 à 3	SETRA 261	3	DETECTEUR DE PRESSION STATIQUE
EP-1,2	V11HAA-100	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 à 3	G2010-101	3	INDICATEUR 0-30 PSI
PS-1	HE12-1.7A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 à 6	EPT-102	6	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, R2, R3, R4	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	PANNEAU 24"x36"x7"
MMR-1	B02FF	1	TRANSFO. 120/18 VAC.
SP-1,2	V9011-1	2	VALVE A AIR 3 VOIES
IS-1	C-208-2	1	INVERSEUR DE SIGNAL
IPD-4	2000-100 mm	1	INDICATEUR 0-100 mm
M-1	MARKTIME 90015	1	MINUTERIE MANUELLE 0-12 HRES C/A LAMPE TEMOIN

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME V43-2A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-2R, DEMARRE PAR ENTREBARRAGE. LORSQUE LE VENTILATEUR DE RETOUR EST EN MARCHE, CELUI-CI FAIT DEMARRER AUTOMATIQUEMENT V36-18A.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. AU DEPART DU SYSTEME V43-25RE PAR LA MINUTERIE MECANIQUE M-1, LA POMPE DE RECUPERATION V43-2P2 SE MET EN MARCHE.

LA VALVE DE REFOUILLISSEMENT, LES VOILETS DE MELANGE, LA VALVE DE RECUPERATION LE SERPENTIN DE FACE ET EVITEMENT ET LA VALVE DE CHAUFFAGE SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANTE; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C LA VALVE V-1 DU SERPENTIN DE FACE ET D'EVITEMENT OUVERTE A 100% PAR SP-2 ET R2-1 EST DESAMORCE.

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOILETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT DE 30% LORSQUE LE VENTILATEUR V43-25RE EST EN FONCTION.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINIE DE RETOUR; CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINIE D'ALIMENTATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

LE DSC MAINTIENT UN DIFFERENTIEL DE PRESSION CONSTANT AU VENTILATEUR V36-18A AGISSANT SUR LE VOLET DA-8.

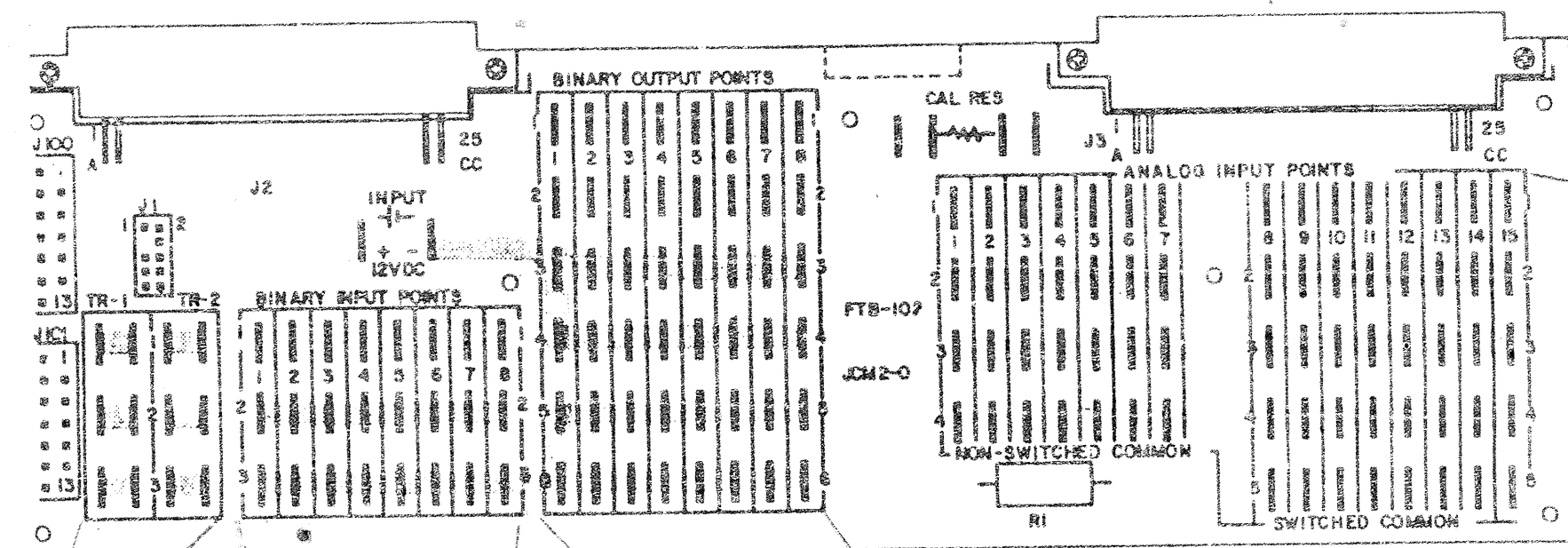
SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVERTE LA VALVE AU SERPENTIN AFIN DE LE DEGIVRER PAR SP-1.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE VIA RG-1.

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE.

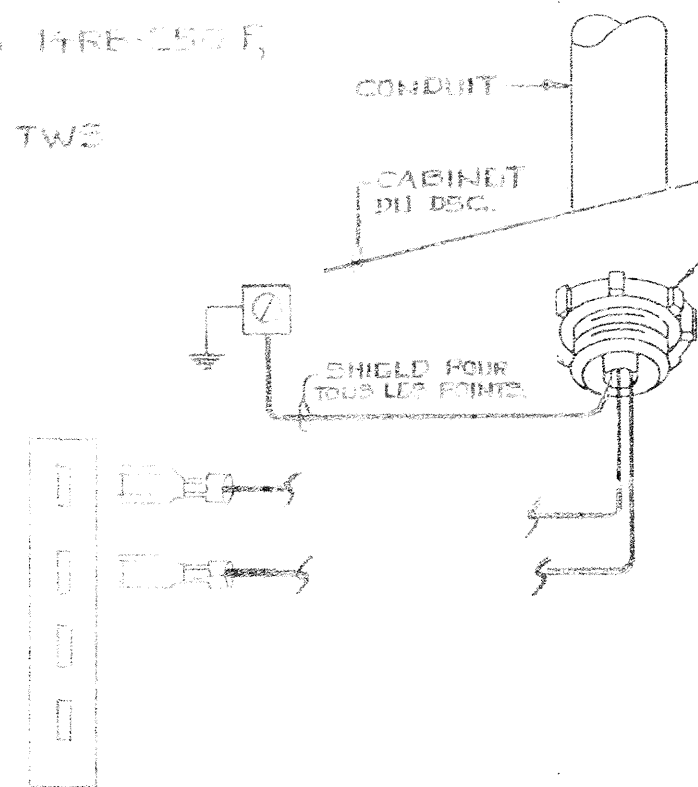
096-D273490	TEL QUE CONSTRUIT	8/07/07	25
CHANGEMENT #112	ADDITION RG-1	NOV 27 85	17
REFERENCE	REVISION	AVIS	DATE
REPRESENTANT J.C.R.	TECHNICIEN R.F.	DESSEIN	APPROUVE
PROJET: CENTRE DE RECHERCHE ALIMENTAIRE - ST. HYACINTHE QUE	DATE: JAN. 2-85	PAR: 21	DATE: 7-5-82
JOHNSON CONTROLS Division Des Systemes Et Services		CONTRAT 4096-0008-1/52	
Société de Contrôle Johnson Ltd. 441 boulevard Lebeau Montréal, QC H4N 1S2 Tél. 514-332-6960		DESIGN NO. 4068-25	

BOERNERS DE RACCORDEMENT (FTF-112)



VOIR FIG. 4
POUR COMMUNICATION

- 1 - TYPE DE RACCORDEMENT
COTÉ DU CÂBLE TYPE 14RE-25RE
ISOLÉS (250).
- 2 - CÂBLAGE EN 3" IS TWO
PARTOUT.

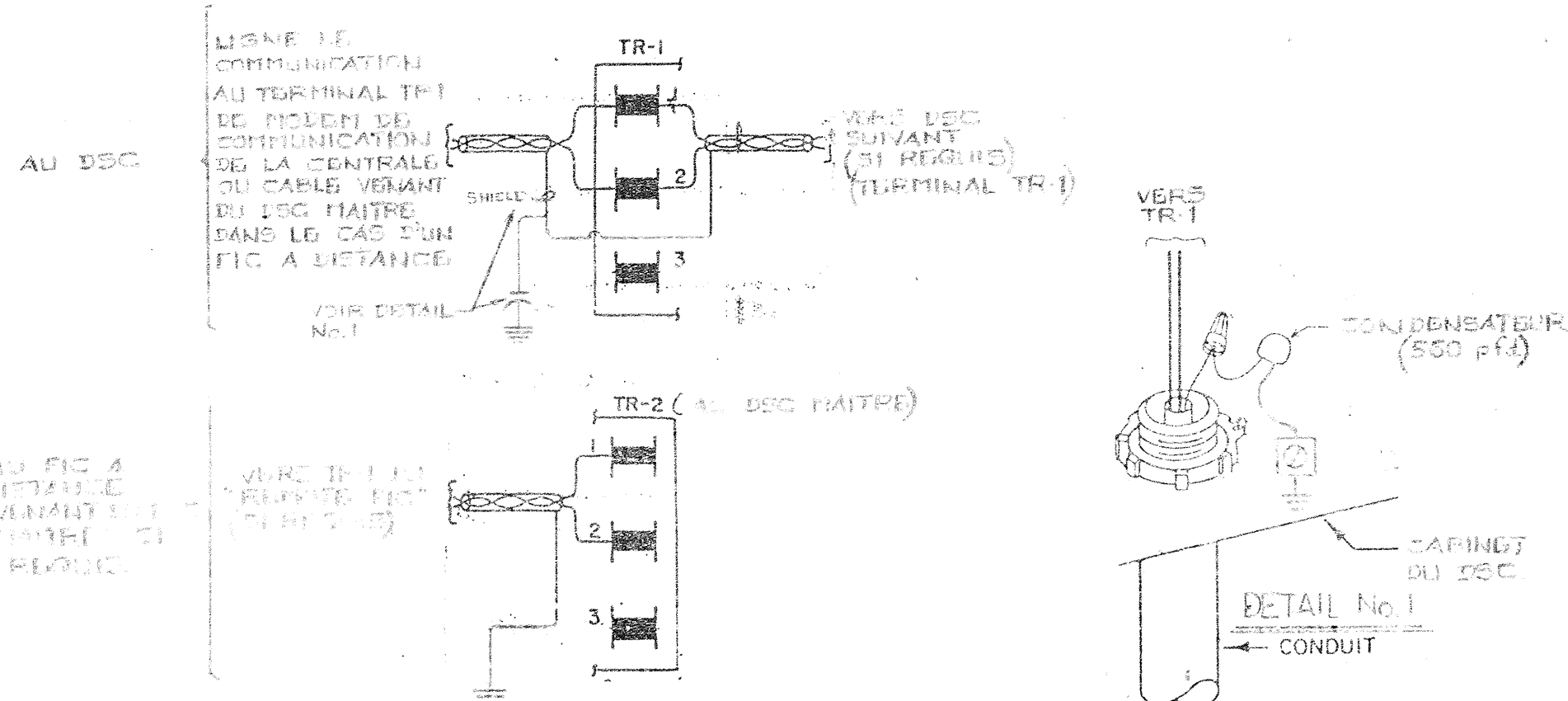


TOTAL MAX 5 SORTIES

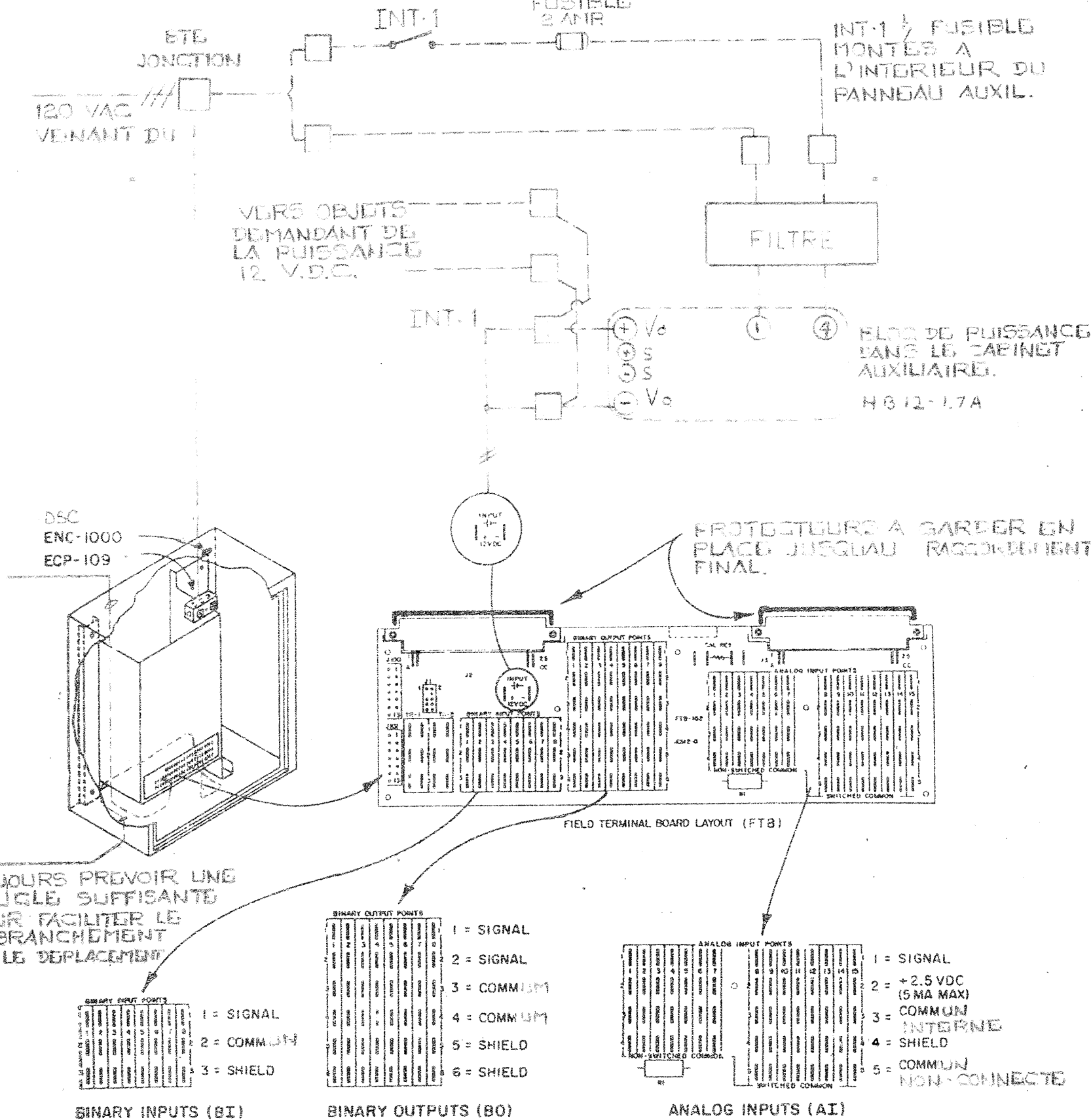
TOTAL MAX 3 SORTIES

EMPLACEMENT		ADRESSE							DSC 2	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-2	BIN	1	2	CONTACT AUX. DEM.	MCC-1	B1.1		
2	STATUS	SYSTEME V43-25RE	BIN	1	2	CONTACT AUX. DEM.	MCC-1	B2.1		
3	GEL	SYSTEME V43-2	BIN	1	2	RELAIS RG	DEM. AUX.	B3.1		

EMPLACEMENT		ADRESSE							DSC 2	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P4.1	
5	EPT-5	REFROI.	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P5.1	
6	EPT-6	PRESSION V36-18A	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P6.1	
7A	R-1	ARRET DEPART V43-2A	SST	1	3	ROUGE NOIR	MCC-1	S7A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2	4	ROUGE NOIR	V9011-1	CABINET AUX.	S7B.1	
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1	3	ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1	
8B	RQ-1	RELAIS D'ENTRETIEN DE TLL-2	SST	1	3	ROUGE NOIR	MCC-1	S8B.1		

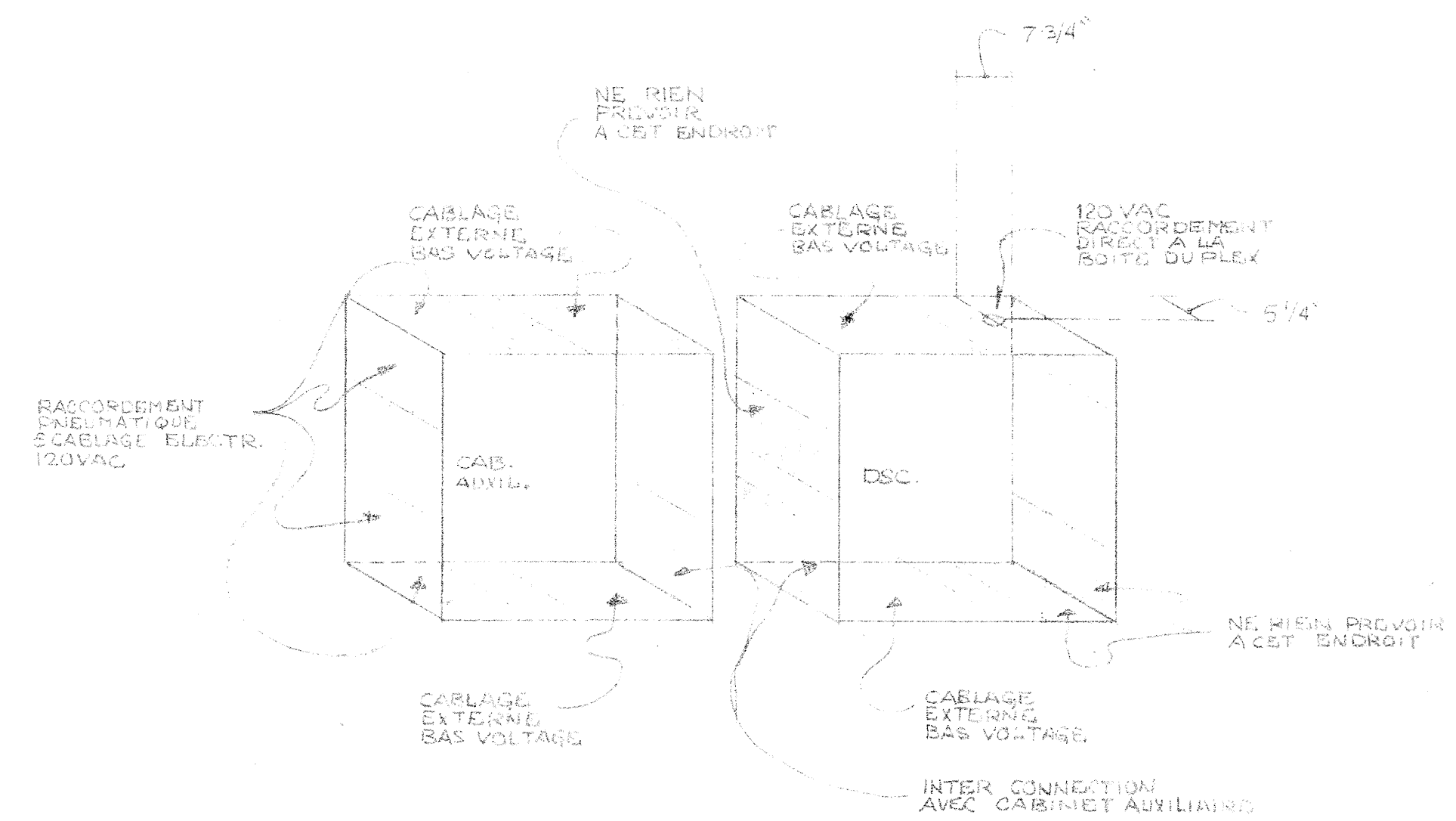


EMPLACEMENT		ADRESSE							DSC 2	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1	3	TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1	3	TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1	3	TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1	3	TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	CHAUFFAGE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	VOLUME VARIABLE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8	EPT-4	HUMIDIFIC.	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1	
9	EPT-5	REFROID.	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1	
10	EPT-6	PRESSION V36-18A	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A10.1	
11	HE-1	HUMIDITE RETOUR	ANA	1	5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-90%HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1	5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-90%HR	
13	PT-1	PRESSION PIECE	ANA	1	5	SONDE DE PRESSION PT-1	USINE	A13.1	0-5 VDC 0-2.5Pa	
14	PT-2	PRESSION V36-18A	ANA	1	5	SONDE DE PRESSION PT-2	SYST. V36-18A	A14.1	0-5 VDC 0-2.5Pa	
15	PT-3	PRESSION SERPENTIN V43-25RE	ANA	1	5	SONDE DE PRESSION PT-3	SERPENTIN GLYCOL V43-25RE	A15.1	0-5 VDC 0-2.5Pa	



INT-1: INTERRUPTEUR "TOGGLE" EAGLE SP-37, DSC +17, MONTÉ AVEC R-100 101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE		IMPLANTATION DSC-2		3 - TEL QUE CONSTRUIT		26-07-07	
CHANGEMENT #112		ADDITION RG-1		NOV 27-85		SEPT 17-85	
REFERENCE	NO.	REVISION	AVIS	DATE	PAR		
REPRESENTANT	TECHNICIEN	DESSINE	APPROUVE	DATE	PAR		
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.	JOHNSON CONTROLS	Division Des Systemes Et Services	441 boulevard Lebeau Montreal, QC H4N 1B2 Tel: 514/332-8900	CONTRAT 4096-008-26/4068-26		

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/DSC 2      SYSTEME  V43-2
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      ADJUST   DELSST,I      /DELAI APRES UNE PANNE
2      DISPLAY  OCCD,B        /CYCLE D OCCUPATION  JOUR-ON  NUIT-OFF
3      ADJUST   FSTRT,B       /DEMANDE VENTILATEUR
4      DISPLAY  FSTAT,B       /ETAT VENTIL. ALIM.
5      DISPLAY  FREEZE,B      /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
11     DISPLAY  TE80,A        /TEMP RETOUR
12     DISPLAY  TE10,A        /TEMP MELANGE
13     DISPLAY  TE1,A         /TEMP EXTERIEURE
14     DISPLAY  TE60,A        /TEMP ALIMENTATION
/
16     DISPLAY  MXD,B         /CONTROLE DE JOUR
17     ADJUST   RARL,A        /AIR RET BAS LIM REAJ TEMP ALIM
18     ADJUST   RARH,A        /AIR RET HAU LIM REAJ TEMP ALIM
19     ADJUST   SAHL,A        /REAJ TEMP ALIM HAU LIM
20     ADJUST   SALL,A        /REAJ TEMP ALIM BAS LIM
21     DISPLAY  DSSP,A        /POINT DE CONSIGNE ALIM
22     ADJUST   OASO,A        /TEMP LIM EXT ECONOMISEUR
23     DISPLAY  ECON,B        /RESULTAT ECONOMISEUR
24     DISPLAY  MDP,A         /POSITION MINIMUM VOLETS
25     ADJUST   MXDSP,A       /POINT DE CONSIGNE LIMITE MEL.
26     DISPLAY  ZMXD,A        /RESULTAT PROPORTION.
27     DISPLAY  Z10M,A        /RESULTAT VOLETS LIMITE
28     DISPLAY  Z10C,A        /RESULTAT VOLETS CTL
29     DISPLAY  Z10,A         /RESULTAT VOLETS
30     DISPLAY  ZT10,A        /F.B. VOLETS
/
31     DISPLAY  HTG,B         /CHAUFFAGE
32     DISPLAY  Z40,A         /RESULTAT CHAUFFAGE
33     DISPLAY  ZT40,A        /F.B. SOUPAPE CHAUFFAGE
/
34     DISPLAY  CLG,B         /REFROIDISSEMENT
35     DISPLAY  Z30,A         /RESULTAT REFROIDISSEMENT
36     DISPLAY  ZT30,A        /F.B. SOUPAPE REFROIDISSEMENT
/
37     DISPLAY  HT80,A        /HUMIDITE RETOUR
38     DISPLAY  HT60,A        /HUMIDITE ALIMENT
39     ADJUST   RHSP,A        /POINT DE CONSIGNE HUMIDITE DE RETOUR
40     ADJUST   RHSPA,A       /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41     DISPLAY  Z70HL,A       /RESULTAT CTL HUMIDITE HAUTE LIMITE
42     DISPLAY  Z70C,A       /RESULTAT CTL HUMIDITE CONT RETOUR
43     DISPLAY  Z70,A         /RESULTAT CTL HUMIDITE
44     DISPLAY  ZT70,A        /F.B. HUMIDITE
/
45     DISPLAY  FSP,I         /PRESSION STATIQUE
46     ADJUST   SPSP,I        /POINT DE CONSIGNE PRESS STAT
47     DISPLAY  Z50,A         /RESULTAT CTL VAV
48     DISPLAY  ZT50,A        /F.B. VAV
/
49     ADJUST   STA,T         /HEURE DE DEPART JOUR EN COURS

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50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPE REFROIDISSEMENT
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
65      OVERRIDE ZCP40,A,2  /SOUPAPE CHAUFFAGE
66      OVERRIDE ZCP51,A,2  /VAV SYST 18A
/
67      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
68      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. 25RE
/
69      DISPLAY  FSTAT,A,B  /ETAT VENTIL. SYST 25RE
70      DISPLAY  SPT1,I     /PRES STAT SYST 18A
72      DISPLAY  ZT51,A     /F.B. VAV SYST 18A

73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU

77      DISPLAY  FSP2,I     /PRES STAT SERPENT GLYCOL 25RE
78      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL
82      ADJUST   CMPXXX,A   /COMPENSATION

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83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-2
/
/      51      ALARME HORAIRE SYSTEME V43-2
/-----/

```

□

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 09:34:31
/
/TRANSLATION LISTING FOR DSC-2.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-16-:1 09:30:41
/
/TRANSLATION LISTING FOR DSC-2.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:21
/
/TRANSLATION LISTING FOR DSC-2.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:50:51
/
/TRANSLATION LISTING FOR CIRA2.CAL
/
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  2      SYSTEME  V43-2
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT      4096-0008
/      VENDEUR              JEAN CLAUDE ROUILLON
/      INGENIERIE           RICHARD FOREST
/      CONCEPTION PROGRAMME JEAN MORISSETTE
/      REVISION              01 SEPT 1987
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/
/-----
/
/      SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/      FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,1641

```



```

@ FIC ADDRESSES: 1
@ POINT SUMMARY:
@ BD: 22
@ AD: 99
@ BI: CON-3,BIT-0,BIR-0
@ AI: LTD-2,FUL-13,RAT-0,TOT-0
@ BO: MOM-0,POS-6,MAN-4
@ CP: BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-6
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1 FSTAT CON-1 E,E /ETAT VENTIL. ALIM.
BI-2 FSTATA CON-2 E,E /ETAT VENTIL. V43-25RE
BI-3 FREEZE CON-3 E,E /ETAT THERMOSTAT DE GEL
/
/
AI-1 TE80 FUL-1 E,0.5,E,V,T,-45.6,129.2 /TEMP RETOUR
AI-2 TE10 FUL-2 E,0.5,E,V,T,-45.7,129.2 /TEMP MELANGE
AI-3 TE1 FUL-3 E,0.5,E,V,T,-45.7,129.2 /TEMP EXT
AI-4 TE60 FUL-4 E,0.5,E,V,T,-45.6,129.2 /TEMP ALIM
AI-5 ZT10 FUL-5 E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-6 ZT40 FUL-6 E,0.5,E,N,O,112.5,-250.0 /F.B. CHAUFF
AI-7 ZT50 FUL-7 E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8 ZT70 FUL-8 E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9 ZT30 FUL-9 E,0.5,E,N,O,-12.5,250.0 /F.B. REFROID
AI-10 ZT51 FUL-10 E,0.5,E,N,O,-12.5,250.0 /F.B. VAV SYST 18A
AI-11 HT80 LTD-1 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-12 HT60 LTD-2 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-13 SPT FUL-11 E,0.1,E,N,O,0,620 /PRESSION STATIQUE EN P
AI-14 SPT1 FUL-12 E,0.1,E,N,O,0,621 /PRES STA EN P SYST 18A
AI-15 SPT2 FUL-13 E,0.1,E,N,O,0,621 /PRES STA EN P SERP GLY
/
/
BO-1 ZC10 POS-1 D,E,0 /VOLETS
BO-2 ZC40 POS-2 D,E,0 /CHAUFF
BO-3 ZC50 POS-3 D,E,0 /VAV
BO-4 ZC70 POS-4 D,E,0 /HUMIDITE
BO-5 ZC30 POS-5 D,E,0 /REFROID
BO-6 ZC51 POS-6 D,E,0 /VAV SYST 18A
BO-7A ZS50 MAN-1 E,E /VENTIL ALIM
BO-7B ZS10 MAN-2 E,E /RECIRCULATION RECUPERATION
BO-8A ZS20 MAN-3 E,E /SOUPAPE PRECHAUFF
BO-8B ZSLL MAN-4 E,E /EVITEMENT BASS LIM EAU FROIDE
/
/
CP-1 ZCP10 INC-1 E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-2 ZCP40 INC-2 E,E,A,ZT40,ZC40,100,0,5,0.0 /CHAUFF
CP-3 ZCP50 INC-3 E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4 ZCP70 INC-4 E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-5 ZCP30 INC-5 E,E,A,ZT30,ZC30,-100,0,5,0.0 /REFROID
CP-6 ZCP51 INC-6 E,E,A,ZT51,ZC51,-100,0,5,0.0 /VAV SYST 18A
/
/
@ DATA POINT DEFINITION:
/
/

```

```

/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
BD-1      OCCD      E,R    /CYCLE D OCCUPATION
BD-2      FSTRT     E,R    /DEMANDE VENTILATEUR
BD-3      COMP50    E,R    /RESULTAT DEMARRAGE
BD-4      CONON     E,R    /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-5      ECON      E,R    /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE    /
/-----/
/
BD-6      MXD       E,R    /CONTROLE DE JOUR
BD-7      MIXLL     E,R    /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-8      HTG       E,R    /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
BD-9      CLG       E,R    /REFROIDISSEMENT
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
BD-10     PREHEA    E,R    /PRE CHAUFFAGE
BD-11     LLBYP     E,R    /RESULTAT TEMPORAIRE
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
BD-12     RECUP     E,R    /RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
BD-13     SYSP      D,R
BD-14     SYS       D,R
BD-15     SYS1      D,R
BD-16     SYS2      D,R
BD-17     SYS3      D,R
BD-18     SYS4      D,R

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BD-19   SYS6   D,R
BD-20   SYS7   D,R
BD-21   SYS8   D,R
BD-22   SYS9   D,R
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
AD-1     DOW     E,2
AD-2     H1      E,00:00
AD-3     H2      E,00:00
AD-4     H3      E,00:00
AD-5     H4      E,00:00
AD-6     H5      E,00:00
AD-7     H6      E,00:00
AD-8     STA     E,00:00 /HORAIRE
AD-9     STO     E,00:00
AD-10    STA8    E,07:01
AD-11    STO8    E,07:01
AD-12    STA7    E,07:01
AD-13    STO7    E,07:01
AD-14    STA9    E,07:01
AD-15    STO9    E,17:00
AD-16    DELSST  E,10    /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17    OASO     E,15.0    /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18    RARL     E,21.0    /AIR RET BAS LIM REAJ TEMP ALIM
AD-19    RARH     E,23.0    /AIR RET HAU LIM REAJ TEMP ALIM
AD-20    SAHL     E,15.0    /REAJ TEMP ALIM HAU LIM
AD-21    SALL     E,11.0    /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE          /
/-----/
/
AD-22    DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-23    MXDSP    E,8.5    /POINT DE CONSIGNE LIMITE MEL.
AD-24    MDP      E,0.0    /POSITION MINIMUM VOILETS
AD-25    CST10A   E,15     /INTERVAL CTL VOILETS LIMITE
AD-26    CPB10A   E,-90.0  /BANDE PROP CTL VOILETS LIMITE
AD-27    CIG10A   E,33     /GAIN CTL VOILETS LIMITE
AD-28    CMP10A   E,0.0    /COMPENSATION CTL VOILETS LIMITE
AD-29    CDS10A   E,1.0    /BANDE MORTE CTL VOILETS LIMITE
AD-30    CST10    E,150    /INTERVAL CTL VOILETS
AD-31    CPB10    E,-60.0  /BANDE PROP CTL VOILETS
AD-32    CIG10    E,33     /GAIN CTL VOILETS
AD-33    CMP10    E,0.0    /COMPENS CTL VOILETS

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AD-34  CDS10      E,0.0   /BANDE MORTE CTL VOLETS
AD-35  ZMXD       E,0.0   /RESULTAT PROPORTION.
AD-36  Z10M       E,100.0 /RESULTAT VOLETS LIMITE
AD-37  Z10C       E,0.0   /RESULTAT VOLETS CTL
AD-38  Z10        E,0.0   /RESULTAT VOLETS
/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39  MDPOS      E,25.0   /MINIMUM SANS EVACUATION
AD-40  MINF1      E,15.0   /MINIMUM VENTIL. 25RE
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-41  Z40        E,0.0   /RESULTAT CHAUFFAGE
AD-42  CST40      E,25    /INTERVAL CTL CHAUFF
AD-43  CPB40      E,50.0   /BANDE PROP CTL CHAUFF
AD-44  CIG40      E,33    /GAIN CTL CHAUFF
AD-45  CDS40      E,0.0   /BANDE MORTE CTL CHAUFF
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT /
/-----/
/
AD-46  Z30        E,0.0   /RESULTAT REFROIDISSEMENT
AD-47  CST30      E,25    /INTERVAL CTL REFROIDI
AD-48  CPB30      E,-45.0  /BANDE PROP CTL REFROIDI
AD-49  CIG30      E,33    /GAIN CTL REFROIDI
AD-50  CDS30      E,0.0   /BANDE MORTE CTL REFROIDI
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE /
/-----/
/
AD-51  SPSP       E,8     /POINT DE CONSIGNE PRESS STAT
AD-52  CST50      E,5     /INTERVAL CTL VAV
AD-53  CPB50      E,-10.0 /BANDE PROP CTL VAV
AD-54  CIG50      E,30    /GAIN CTL VAV
AD-55  CMP50      E,0.0   /COMPENS CTL VAV
AD-56  CDS50      E,0.4   /BANDE MORTE CTL VAV
AD-57  Z50        E,0.0   /RESULTAT CTL VAV
AD-58  FSP        E,0.0   /PRESS STAT FILTREE
AD-59  AD1        D,0.0   /RESULTAT TEMPORAIRE
AD-60  AD2        D,0.0   /RESULTAT TEMPORAIRE
/
/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-61  RHSP       E,30.0   /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-62  RHSPA      E,80.0   /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-63  CST70      E,60    /INTERVAL CTL HUMIDITE
AD-64  CPB70      E,90.0   /BANDE PROP CTL HUMIDITE
AD-65  CIG70      E,33    /GAIN CTL HUMIDITE

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AD-66  CDS70    E,0.0    /BANDE MORTE CTL HUMIDITE
AD-67  CST70A   E,5      /INTERVAL H LIM HUMIDITE
AD-68  CPB70A   E,90.0   /BANDE PROP H LIM HUMIDITE
AD-69  CIG70A   E,33     /GAIN H LIM HUMIDITE
AD-70  CDS70A   E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-71  Z70      E,0.0    /RESULTAT CTL HUMIDITE
AD-72  Z70HL    E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-73  Z70C     E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
AD-74  PREALL   E,5.0    /LIMITE CONTROLE PRE CHAUFFAGE
AD-75  PREADF   E,1.0    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-76  DELHEA   E,120    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
AD-77  RECUHL   E,200    /POINT DE CONSIGNE RECUPERATION
AD-78  RECUDF   E,50     /DIFFERENTIEL RECUPERATION
AD-79  FSP2     E,0.0    /PRESSION STATIQUE FILTREE
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE SYST 18A          /
/-----/
/
AD-80  SPSP1    E,200    /POINT DE CONSIGNE PRESS STAT
AD-81  CST51    E,6      /INTERVAL CTL VAV
AD-82  CPB51    E,15.0   /BANDE PROP CTL VAV
AD-83  CIG51    E,30     /GAIN CTL VAV
AD-84  CMP51    E,0.0    /COMPENS CTL VAV
AD-85  CDS51    E,0.0    /BANDE MORTE CTL VAV
AD-86  Z51      E,0.0    /RESULTAT CTL VAV
AD-87  FSP1     E,0      /PRESS STAT FILTREE
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-88  SYSDIS   D,0
AD-89  CSTXXX   D,0
AD-90  CPBXXX   D,0.0
AD-91  CIGXXX   D,0
AD-92  CMPXXX   D,0.0
AD-93  CDSXXX   D,0.0
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
AD-94  UPTIM    E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-95  UPDAT    E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-96  DNTIM    E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-97  DNDAT    E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR

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AD-98   TOD      E,00:00   /DERNIERE HEURE
AD-99   LDAT     E,00:00   /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1       ADJUST   DELSST,I   /DELAI APRES UNE PANNE
2       DISPLAY  OCCD,B     /CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3       ADJUST   FSTRT,B    /DEMANDE VENTILATEUR
4       DISPLAY  FSTAT,B    /ETAT VENTIL. ALIM.
5       DISPLAY  FREEZE,B   /ETAT THERMOSTAT DE GEL  NORMAL-ON
/
11      DISPLAY  TE80,A     /TEMP RETOUR
12      DISPLAY  TE10,A     /TEMP MELANGE
13      DISPLAY  TE1,A      /TEMP EXTERIEURE
14      DISPLAY  TE60,A     /TEMP ALIMENTATION
/
16      DISPLAY  MXD,B      /CONTROLE DE JOUR
17      ADJUST   RARL,A     /AIR RET BAS LIM REAJ TEMP ALIM
18      ADJUST   RARH,A     /AIR RET HAU LIM REAJ TEMP ALIM
19      ADJUST   SAHL,A     /REAJ TEMP ALIM HAU LIM
20      ADJUST   SALL,A     /REAJ TEMP ALIM BAS LIM
21      DISPLAY  DSSP,A     /POINT DE CONSIGNE ALIM
22      ADJUST   OASO,A     /TEMP LIM EXT ECONOMISEUR
23      DISPLAY  ECON,B     /RESULTAT ECONOMISEUR
24      DISPLAY  MDP,A      /POSITION MINIMUM VOLETS
25      ADJUST   MXDSP,A    /POINT DE CONSIGNE LIMITE MEL.
26      DISPLAY  ZMXD,A     /RESULTAT PROPORTION.
27      DISPLAY  Z10M,A     /RESULTAT VOLETS LIMITE
28      DISPLAY  Z10C,A     /RESULTAT VOLETS CTL
29      DISPLAY  Z10,A      /RESULTAT VOLETS
30      DISPLAY  ZT10,A     /F.B. VOLETS
/
31      DISPLAY  HTG,B      /CHAUFFAGE
32      DISPLAY  Z40,A      /RESULTAT CHAUFFAGE
33      DISPLAY  ZT40,A     /F.B. SOUPAPE CHAUFFAGE
/
34      DISPLAY  CLG,B      /REFROIDISSEMENT
35      DISPLAY  Z30,A      /RESULTAT REFROIDISSEMENT
36      DISPLAY  ZT30,A     /F.B. SOUPAPE REFROIDISSEMENT
/
37      DISPLAY  HT80,A     /HUMIDITE RETOUR
38      DISPLAY  HT60,A     /HUMIDITE ALIMENT
39      ADJUST   RHSP,A     /POINT DE CONSIGNE HUMIDITE DE RETOUR
40      ADJUST   RHSPA,A    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
41      DISPLAY  Z70HL,A    /RESULTAT CTL HUMIDITE HAUTE LIMITE
42      DISPLAY  Z70C,A     /RESULTAT CTL HUMIDITE CONT RETOUR
43      DISPLAY  Z70,A      /RESULTAT CTL HUMIDITE
44      DISPLAY  ZT70,A     /F.B. HUMIDITE
/
45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS

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50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPE REFROIDISSEMENT
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
65      OVERRIDE ZCP40,A,2  /SOUPAPE CHAUFFAGE
66      OVERRIDE ZCP51,A,2  /VAV SYST 18A
/
67      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
68      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. 25RE
69      DISPLAY  FSTATA,B   /ETAT VENTIL. SYST 25RE
/
70      DISPLAY  FSP1,I     /PRES STAT SYST 18A
71      ADJUST   SPSP1,I    /POINT DE CONSIGNE SYST 18A
72      DISPLAY  ZT51,A     /F.B. VAV SYST 18A
/
73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  FSP2,I     /PRES STAT SERPENT GLYCOL 25RE
78      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES CONTROLE VOLUME VARIABLE SYST 18A
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL
82      ADJUST   CMPXXX,A   /COMPENSATION
83      ADJUST   CDSXXX,A   /BANDE MORTE
/
/
/-----/

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/                                     RECORD PANNE DE POUVOIR                                     /
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/  ALARME
/  NUMERO          DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-2
/
/      51      ALARME HORAIRE SYSTEME V43-2
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/          PROGRAMME HORAIRE ET CONTROLE ARRET DEPART
/
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET        BPD,SDF,R
1.3      EXIT       C,S
1.4      HOLIDAY    H1,H2,H3,H4,H5,H6

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1.5      STORE      DOW,APD,2,U
1.6      COMPARE    DOW,EQ,7,0
1.7      STORE      STA,STA7,STA9,C,S
1.8      STORE      STO,STO7,STO9,C,S
1.9      COMPARE    DOW,EQ,1,0
1.10     ORR        DOW,EQ,8,0
1.11     STORE      STA,STA8,STA9,C,S
1.12     STORE      STO,STO8,STO9,C,S
1.13     COMPARE    DOW,GE,2,0
1.14     ANDR       DOW,LE,6,0
1.15     STORE      STA,STA9,STA9,C,S
1.16     STORE      STO,STO9,STO9,C,S
1.17     SET        BPD,PAF,R
1.18     ALARM      51,C,S
1.19     EXIT       U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET    OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/
2.1      PROG      DOW,0,STA,STO
2.2      SET        OCCD,SUF,R
2.3      SET        FSTRT,SUF,R
2.4      EXIT       U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET        AUTO,S,S
3.3      DELAY      25,U
3.4      SET        COMP50,R,R
3.5      INTERVAL   10,U
3.6      XOR        COMP50,FSTAT
3.7      ALARM      50,C,S
3.8      SET        BPD,FSTRT,R
3.9      BOUT       ZS50,3,OFF
3.10     SET        COMP50,BPD,R
3.11     EXIT       U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
4.1      RESTART
4.2      DELAY      25,U
4.3      INTERVAL   5,U
4.4      SET        BPD,FREEZE,R
4.5      ALARM      10,C,R
4.6      EXIT       U
/
/
/-----/

```

/ CONTROLE D HUMIDITE DE RETOUR HAUTE LIMITE ALIM. /
/-----/

/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/

5.1 EVENT CONON,S
5.2 SET BPD,CONON,R
5.3 STORE APD,0.0,0.0,C,R
5.4 STORE Z70C,APD,APD,C,R
5.5 STORE Z70,APD,APD,C,R
5.6 AOUT ZCP70,3,0.0,C,R
5.7 EXIT C,R
5.8 DELAY 20,U
5.9 INTERVAL CST70,U
5.10 PROP RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11 STORE Z70C,APD,APD,U
5.12 EXIT U

/

6.1 EVENT CONON,S
6.2 SET BPD,CONON,R
6.3 EXIT C,R
6.4 INTERVAL CST70A,U
6.5 PROP RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6 STORE Z70HL,APD,APD,U
6.7 SELECT APD,Z70C,L
6.8 STORE Z70,APD,APD,U
6.9 AOUT ZCP70,3,0.0,U
6.10 EXIT U

/

/

/-----/

/ CONTROLE DE LA PRESSION STATIQUE /
/-----/

/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/

7.1 EVENT CONON,S
7.2 SET BPD,CONON,R
7.3 STORE FSP,0,0,C,R
7.4 STORE APD,0.0,0.0,C,R
7.5 STORE Z50,APD,APD,C,R
7.6 AOUT ZCP50,3,0.0,C,R
7.7 EXIT C,R
7.8 DELAY 15,U
7.9 INTERVAL CST50,U
7.10 FILTER SPT,63,100
7.11 STORE AD1,APD,APD,U /PRESSION AVEC DECIMALE
7.12 CALC APD,0,1,1,10,R
7.13 STORE FSP,APD,APD,U /PRESSION SANS DECIMALE
7.14 CALC SPSP,0,10,1,1,T
7.15 STORE AD2,APD,APD,U /POINT DE CONSIGNE AVEC DECIMALE
7.16 CALC CPB50,0,10,1,1,T
7.17 PROP AD2,AD1,APD,CIG50,CMP50,CDS50

```

7.18     STORE      Z50,APD,APD,U
7.19     AOUT       ZCP50,3,0,U
7.20     EXIT       U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-.
/
8.1      RESTART
8.2      SET        MXD,R,R
8.3      SET        CONON,R,R
8.4      DELAY      25,U
8.5      INTERVAL   5,U
8.6      AND        FSTAT,OCCD
8.7      SET        MXD,BPD,R
8.8      SET        CONON,FSTAT,R
8.9      EXIT       U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS                                     /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -20 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
9.1      EVENT      MXD,S
9.2      SET        ECON,R,R
9.3      SET        BPD,FSTAT,R
9.4      EXIT       C,R
9.5      INTERVAL   300,U
9.6      COMPARE    TE1,GE,OASO,1.0
9.7      SET        ECON,BPD,R
9.8      EXIT       U
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION              /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1     EVENT      MXD,S
10.2     INTERVAL   300,U
10.3     STORE      APD,TE80,RARL,U
10.4     SPAN       RARL,RARH,SAHL,SALL
10.5     STORE      DSSP,APD,SAHL,U
10.6     EXIT       U
/
/-----/
/          CONTROLE DES VOLETS AVEC BASSE LIMITE                      /
/-----/

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/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS
/
/
11.1 EVENT MXD,S
11.2 SET MIXLL,R,R
11.3 SET BPD,MXD,R
11.4 EXIT C,R
11.5 INTERVAL 5,U
11.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
11.7 SET MIXLL,BPD,R /A LA BASSE LIMITE
11.8 SELECT Z10M,Z10C,L
11.9 STORE Z10,APD,APD,U
11.10 AOUT ZCP10,3,0.0,U
11.11 EXIT U
/
12.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE
12.2 SET BPD,MIXLL,R
12.3 STORE Z10M,100.0,100.0,C,R
12.4 STORE CMP10A,Z10C,Z10C,U
12.5 EXIT C,R
12.6 INTERVAL CST10A,U
12.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
12.8 STORE Z10M,APD,APD,U
12.9 EXIT U
/
13.1 EVENT MXD,R /POSITION D ARRET SOUPAPES
13.2 SET BPD,MXD,R
13.3 EXIT C,S
13.4 SET HTG,R,R
13.5 SET CLG,R,R
13.6 DELAY 7,C,R
13.7 STORE APD,0.0,0.0,C,R
13.8 AOUT ZCP30,3,0.0,C,R
13.9 STORE APD,100.0,100.0,C,R
13.10 AOUT ZCP40,3,0.0,C,R
13.11 EXIT U
/
14.1 EVENT MXD,S
14.2 SET BPD,MXD,R
14.3 STORE APD,0.0,0.0,C,R
14.4 STORE Z10,APD,APD,C,R
14.5 STORE Z10C,APD,APD,C,R
14.6 STORE Z10M,100.0,100.0,C,R
14.7 STORE ZMXD,APD,APD,C,R
14.8 AOUT ZCP10,3,0.0,C,R

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14.9      EXIT      C,R
14.10     DELAY      7,U
14.11     STORE      APD,TE1,5.0,U
14.12     SPAN        5.0,20.0,0.0,75.0
14.13     STORE      CMP10,APD,APD,U
14.14     STORE      APD,0.0,0.0,U
14.15     AOUT        ZCP40,3,0.0,U
14.16     INTERVAL    CST10,U
14.17     PROP        DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18     STORE      ZMXD,APD,APD,U
14.19     SPAN        MDP,100.0,MDP,100.0
14.20     SET         BPD,ECON,S
14.21     STORE      APD,MDP,MDP,C,S
14.22     STORE      Z10C,APD,APD,U
14.23     ORR         ZMXD,GE,85.0,10.0
14.24     SET         CLG,BPD,R
14.25     COMPARE     ZMXD,LE,15.0,10.0
14.26     SET         HTG,BPD,R
14.27     EXIT        U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DU VENTILATEUR
/D EVACUATION. LA FONCTION MINF1 EST LE POURCENTAGE RAJOUTE A LA POSITION
/MINIMUM QUAND LE VENTILATEUR FONCTIONNE. LE RESULTAT S APPLIQUE DANS LA
/ROUTINE DE CONTROLE DES VOLETS
/
15.1      RESTART
15.2      DELAY      25,U
15.3      INTERVAL    10,U
/
15.4      SET         BPD,FSTATATA,R      /CALCUL VENT. 18A
15.5      STORE      APD,0.0,0.0,C,R
15.6      STORE      APD,MINF1,MINF1,C,S
15.7      CALC        APD,MDPOS,1,1,1,T
15.8      STORE      MDP,APD,20.0,U
15.9      EXIT        U
/
/
/-----/
/      CONTROLE DU PRE CHAUFFAGE      /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE DE MELANGE
/EST DESALIMENTE.
/
16.1      RESTART
16.2      SET         PREHEA,S,S
16.3      DELAY      25,U
16.4      BOUT        ZSLL,3,OFF
16.5      INTERVAL    5,U
16.6      COMPARE     TE10,LE,PREALL,PREADF
16.7      SET         PREHEA,BPD,R

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16.8    NEGATE    BPD
16.9    BOUT      ZS20,3,OFF
16.10   SET       BPD,LLBYP,R
16.11   BOUT      ZSLL,3,OFF
16.12   EXIT      U
/
17.1    EVENT     PREHEA,S
17.2    SET       BPD,PREHEA,R
17.3    DELAY     DELHEA,C,S
17.4    NEGATE    PREHEA
17.5    SET       LLBYP,BPD,R
17.6    EXIT      U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/
18.1    EVENT     HTG,S
18.2    SET       BPD,HTG,S
18.3    STORE     APD,0.0,0.0,C,R
18.4    STORE     Z40,APD,APD,C,R
18.5    AOUT      ZCP40,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST40,U
18.8    CALC      DSSP,0.3,1,-1,1,T
18.9    PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
18.10   STORE     Z40,APD,APD,U
18.11   AOUT      ZCP40,3,100.0,U
18.12   EXIT      U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT    /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/
19.1    EVENT     CLG,S
19.2    SET       BPD,CLG,R
19.3    STORE     APD,0.0,0.0,C,R
19.4    STORE     Z30,APD,APD,C,R
19.5    AOUT      ZCP30,3,0.0,C,R
19.6    EXIT      C,R
19.7    INTERVAL  CST30,U
19.8    CALC      DSSP,0.3,1,1,1,T
19.9    PROP      APD,TE60,CPB30,CIG30,0.0,CDS30
19.10   STORE     Z30,APD,APD,U
19.11   AOUT      ZCP30,3,0.0,U
19.12   EXIT      U
/
/
/-----/
/          CONTROLE RECUPERATION          /
/-----/

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/-----/
/
/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/
20.1    RESTART
20.2    DELAY      25,U
20.3    INTERVAL   7,U
20.4    FILTER     SPT2,63,100
20.5    STORE      FSP2,APD,APD,U
20.6    COMPARE    FSP2,GE,RECUHL,RECUDF
20.7    SET        RECUP,BPD,R
20.8    NEGATE     BPD
20.9    BOUT       ZS10,3,OFF
20.10   EXIT       U
/
/
/-----/
/          CONTROLE DE LA PRESSSION STATIQUE SYST 18          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSSION STATIQUE DU SYST 18 AU POINT DE
/CONSIGNE -SPSP1-. LA LECTURE DE PRESSION EST EN PASCALS.
/
21.1    RESTART
21.2    DELAY      25,U
21.3    INTERVAL   CST51,U
21.4    FILTER     SPT1,63,100
21.5    STORE      FSP1,APD,APD,U
21.6    CALC       CPB51,1,10,1,1,T
21.7    PROP       SPSP1,FSP1,APD,CIG51,CMP51,CDS51
21.8    STORE      Z51,APD,APD,U
21.9    AOUT       ZCP51,3,0,U
21.10   EXIT       U
/
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
22.1    RESTART
22.2    TIMDATA    DT
22.3    STORE      UPTIM,APD,APD,U          /SAUVE L HEURE ACTUEL ET
22.4    TIMDATA    MD                      /LA DATE DE LA RESTAURATION
22.5    STORE      UPDAT,APD,APD,U          /DU POUVOIR.
22.6    EXIT       U
/
/
23.1    RESTART
23.2    STORE      DNTIM,TOD,TOD,U          /RECORD DE LA DERNIERE HEURE
23.3    STORE      DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
23.4    INTERVAL   60,U
23.5    TIMDATA    DT
23.6    STORE      TOD,APD,APD,U          /SAUVE L HEURE ET LA DATE
23.7    TIMDATA    MD                      /ACTUEL A TOUTES LES MINUTES.
23.8    STORE      LDAT,APD,APD,U
23.9    EXIT       U

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/
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
24.1    EVERY                               /SELECTION DU STSTEME POUR LE
24.2    SET      SYSP,R,R                    /
24.3    COMPARE  SYSDIS,EQ,100,0
24.4    SET      SYS1,BPD,R
24.5    OR       SYSP,BPD
24.6    SET      SYSP,BPD,S
24.7    COMPARE  SYSDIS,EQ,200,0
24.8    SET      SYS2,BPD,R
24.9    OR       SYSP,BPD
24.10   SET      SYSP,BPD,S
24.11   COMPARE  SYSDIS,EQ,300,0
24.12   SET      SYS3,BPD,R
24.13   OR       SYSP,BPD
24.14   SET      SYSP,BPD,S
24.15   COMPARE  SYSDIS,EQ,400,0
24.16   SET      SYS4,BPD,R
24.17   OR       SYSP,BPD
24.18   SET      SYSP,BPD,S
24.19   COMPARE  SYSDIS,EQ,600,0
24.20   SET      SYS6,BPD,R
24.21   OR       SYSP,BPD
24.22   SET      SYSP,BPD,S
24.23   COMPARE  SYSDIS,EQ,700,0
24.24   SET      SYS7,BPD,R
24.25   OR       SYSP,BPD
24.26   SET      SYSP,BPD,S
24.27   COMPARE  SYSDIS,EQ,800,0
24.28   SET      SYS8,BPD,R
24.29   OR       SYSP,BPD
24.30   SET      SYSP,BPD,S
24.31   COMPARE  SYSDIS,EQ,900,0
24.32   SET      SYS9,BPD,R
24.33   OR       SYSP,BPD
24.34   SET      SYSP,BPD,S
24.35   SET      SYS,SYSP,S
24.36   EXIT     U
/
/
25.1    EVENT    SYS,S                      /RESET LES FONCTIONS POUR
25.2    SET      BPD,SUF,R                  /LE CDB SPECIAL
25.3    STORE     SYSDIS,0,0,C,R            /SUR UNE PERIODE DE DISCLR
25.4    EXIT      C,R
25.5    DELAY     3600,U
25.6    STORE     SYSDIS,0,0,U
25.7    EXIT      U
/
/
26.1    EVENT    SYS1,S                      /SYS 100
26.2    SET      BPD,SUF,R
26.3    EXIT      C,R
26.4    INTERVAL  5,U

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26.5   STORE      CSTXXX,CST70,CST70,U      /PERMET DE VOIR LES
26.6   STORE      CPBXXX,CPB70,CPB70,U      /VALEURS DU SYSTEME
26.7   STORE      CIGXXX,CIG70,CIG70,U
26.8   STORE      CMPXXX,0.0,0.0,U
26.9   STORE      CDSXXX,CDS70,CDS70,U
26.10  EXIT       U
/
/
27.1   EVENT      SYS1,S
27.2   SET        BPD,SUF,R
27.3   EXIT       C,R
27.4   DELAY      10,U
27.5   INTERVAL   1,U
27.6   STORE      CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
27.7   STORE      CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
27.8   STORE      CIG70,CIGXXX,CIG70,U
27.9   STORE      CDS70,CDSXXX,CDS70,U
27.10  EXIT       U
/
/
28.1   EVENT      SYS2,S                    /SYS 200
28.2   SET        BPD,SUF,R
28.3   EXIT       C,R
28.4   INTERVAL   5,U
28.5   STORE      CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
28.6   STORE      CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
28.7   STORE      CIGXXX,CIG70A,CIG70A,U
28.8   STORE      CMPXXX,0.0,0.0,U
28.9   STORE      CDSXXX,CDS70A,CDS70A,U
28.10  EXIT       U
/
/
29.1   EVENT      SYS2,S
29.2   SET        BPD,SUF,R
29.3   EXIT       C,R
29.4   DELAY      10,U
29.5   INTERVAL   1,U
29.6   STORE      CST70A,CSTXXX,CST70A,U    /PERMET D AJUSTER LES
29.7   STORE      CPB70A,CPBXXX,CPB70A,U    /VALEURS DU SYSTEME
29.8   STORE      CIG70A,CIGXXX,CIG70A,U
29.9   STORE      CDS70A,CDSXXX,CDS70A,U
29.10  EXIT       U
/
/
30.1   EVENT      SYS3,S                    /SYS 300
30.2   SET        BPD,SUF,R
30.3   EXIT       C,R
30.4   INTERVAL   5,U
30.5   STORE      CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
30.6   STORE      CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
30.7   STORE      CIGXXX,CIG50,CIG50,U
30.8   STORE      CMPXXX,CMP50,CMP50,U
30.9   STORE      CDSXXX,CDS50,CDS50,U
30.10  EXIT       U
/
/
31.1   EVENT      SYS3,S

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31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    DELAY    10,U
31.5    INTERVAL 1,U
31.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
31.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
31.8    STORE    CIG50,CIGXXX,CIG50,U
31.9    STORE    CMP50,CMPXXX,CMP50,U
31.10   STORE    CDS50,CDSXXX,CDS50,U
31.11   EXIT     U
/
/
32.1    EVENT    SYS4,S                    /SYS 400
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    INTERVAL 5,U
32.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
32.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
32.7    STORE    CIGXXX,CIG40,CIG40,U
32.8    STORE    CMPXXX,0.0,0.0,U
32.9    STORE    CDSXXX,CDS40,CDS40,U
32.10   EXIT     U
/
/
33.1    EVENT    SYS4,S
33.2    SET      BPD,SUF,R
33.3    EXIT     C,R
33.4    DELAY    10,U
33.5    INTERVAL 1,U
33.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
33.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
33.8    STORE    CIG40,CIGXXX,CIG40,U
33.9    STORE    CDS40,CDSXXX,CDS40,U
33.10   EXIT     U
/
/
34.1    EVENT    SYS6,S                    /SYS 600
34.2    SET      BPD,SUF,R
34.3    EXIT     C,R
34.4    INTERVAL 5,U
34.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
34.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
34.7    STORE    CIGXXX,CIG10A,CIG10A,U
34.8    STORE    CMPXXX,0.0,0.0,U
34.9    STORE    CDSXXX,CDS10A,CDS10A,U
34.10   EXIT     U
/
/
35.1    EVENT    SYS6,S
35.2    SET      BPD,SUF,R
35.3    EXIT     C,R
35.4    DELAY    10,U
35.5    INTERVAL 1,U
35.6    STORE    CST10A,CSTXXX,CST10A,U    /PERMET D AJUSTER LES
35.7    STORE    CPB10A,CPBXXX,CPB10A,U    /VALEURS DU SYSTEME
35.8    STORE    CIG10A,CIGXXX,CIG10A,U
35.9    STORE    CDS10A,CDSXXX,CDS10A,U

```

```

35.10  EXIT      U
/
/
36.1   EVENT     SYS7,S                               /SYS 700
36.2   SET       BPD,SUF,R
36.3   EXIT      C,R
36.4   INTERVAL  5,U
36.5   STORE     CSTXXX,CST10,CST10,U                /PERMET DE VOIR LES
36.6   STORE     CPBXXX,CPB10,CPB10,U                /VALEURS DU SYSTEME
36.7   STORE     CIGXXX,CIG10,CIG10,U
36.8   STORE     CMPXXX,CMP10,CMP10,U
36.9   STORE     CDSXXX,CDS10,CDS10,U
36.10  EXIT      U
/
/
37.1   EVENT     SYS7,S
37.2   SET       BPD,SUF,R
37.3   EXIT      C,R
37.4   DELAY     10,U
37.5   INTERVAL  1,U
37.6   STORE     CST10,CSTXXX,CST10,U                /PERMET D AJUSTER LES
37.7   STORE     CPB10,CPBXXX,CPB10,U                /VALEURS DU SYSTEME
37.8   STORE     CIG10,CIGXXX,CIG10,U
37.9   STORE     CMP10,CMPXXX,CMP10,U
37.10  STORE     CDS10,CDSXXX,CDS10,U
37.11  EXIT      U
/
/
38.1   EVENT     SYS8,S                               /SYS 800
38.2   SET       BPD,SUF,R
38.3   EXIT      C,R
38.4   INTERVAL  5,U
38.5   STORE     CSTXXX,CST30,CST30,U                /PERMET DE VOIR LES
38.6   STORE     CPBXXX,CPB30,CPB30,U                /VALEURS DU SYSTEME
38.7   STORE     CIGXXX,CIG30,CIG30,U
38.8   STORE     CMPXXX,0.0,0.0,U
38.9   STORE     CDSXXX,CDS30,CDS30,U
38.10  EXIT      U
/
/
39.1   EVENT     SYS8,S
39.2   SET       BPD,SUF,R
39.3   EXIT      C,R
39.4   DELAY     10,U
39.5   INTERVAL  1,U
39.6   STORE     CST30,CSTXXX,CST30,U                /PERMET D AJUSTER LES
39.7   STORE     CPB30,CPBXXX,CPB30,U                /VALEURS DU SYSTEME
39.8   STORE     CIG30,CIGXXX,CIG30,U
39.9   STORE     CDS30,CDSXXX,CDS30,U
39.10  EXIT      U
/
/
40.1   EVENT     SYS9,S                               /SYS 900
40.2   SET       BPD,SUF,R
40.3   EXIT      C,R
40.4   INTERVAL  5,U
40.5   STORE     CSTXXX,CST51,CST51,U                /PERMET DE VOIR LES

```

```

40.6    STORE    CPBXXX,CPB51,CPB51,U    /VALEURS DU SYSTEME
40.7    STORE    CIGXXX,CIG51,CIG51,U
40.8    STORE    CMPXXX,CMP51,CMP51,U
40.9    STORE    CDSXXX,CDS51,CDS51,U
40.10   EXIT     U
/
/
41.1    EVENT    SYS9,S
41.2    SET      BPD,SUF,R
41.3    EXIT     C,R
41.4    DELAY    10,U
41.5    INTERVAL 1,U
41.6    STORE    CST51,CSTXXX,CST51,U    /PERMET D AJUSTER LES
41.7    STORE    CPB51,CPBXXX,CPB51,U    /VALEURS DU SYSTEME
41.8    STORE    CIG51,CIGXXX,CIG51,U
41.9    STORE    CMP51,CMPXXX,CMP51,U
41.10   STORE    CDS51,CDSXXX,CDS51,U
41.11   EXIT     U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:  1016
/   CDB:     380
/   PROCESSES: 3474
/   OVERHEAD: 2700
/   TOTAL:   7570    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:  1016
/   CDB:     380
/   PROCESSES: 3474
/   OVERHEAD: 2700
/   TOTAL:   7570    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:  1016
/   CDB:     380
/   PROCESSES: 3474
/   OVERHEAD: 2700
/   TOTAL:   7570    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:  1016
/   CDB:     380
/   PROCESSES: 3476
/   OVERHEAD: 2700
/   TOTAL:   7572    8K DSC MEMORY NEEDED

```

AU DEPART DU SYSTEME V43-2A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-2R, DEMARRE PAR ENTREBARRAGE. LORSQUE LE VENTILATEUR DE RETOUR EST EN MARCHÉ, CELUI-CI FAIT DEMARRER AUTOMATIQUEMENT V36-18A.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. AU DEPART DU SYSTEME V43-25RE PAR LA MINUTERIE MECANIQUE M-1, LA POMPE DE RECUPERATION V43-2P2 SE MET EN MARCHÉ.

LA VALVE DE REFROIDISSEMENT, LES VOILETS DE MELANGE, LA VALVE DE RECUPERATION LE SERPENTIN DE FACE ET EVITEMENT ET LA VALVE DE CHAUFFAGE SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANTE; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C LA VALVE V-1 DU SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100 % PAR SP-2 ET RG-1 EST DESAMORCE 


LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOILETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT DE 30% LORSQUE LE VENTILATEUR V43-25RE EST EN FONCTION.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR; CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINÉ D'ALIMENTATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

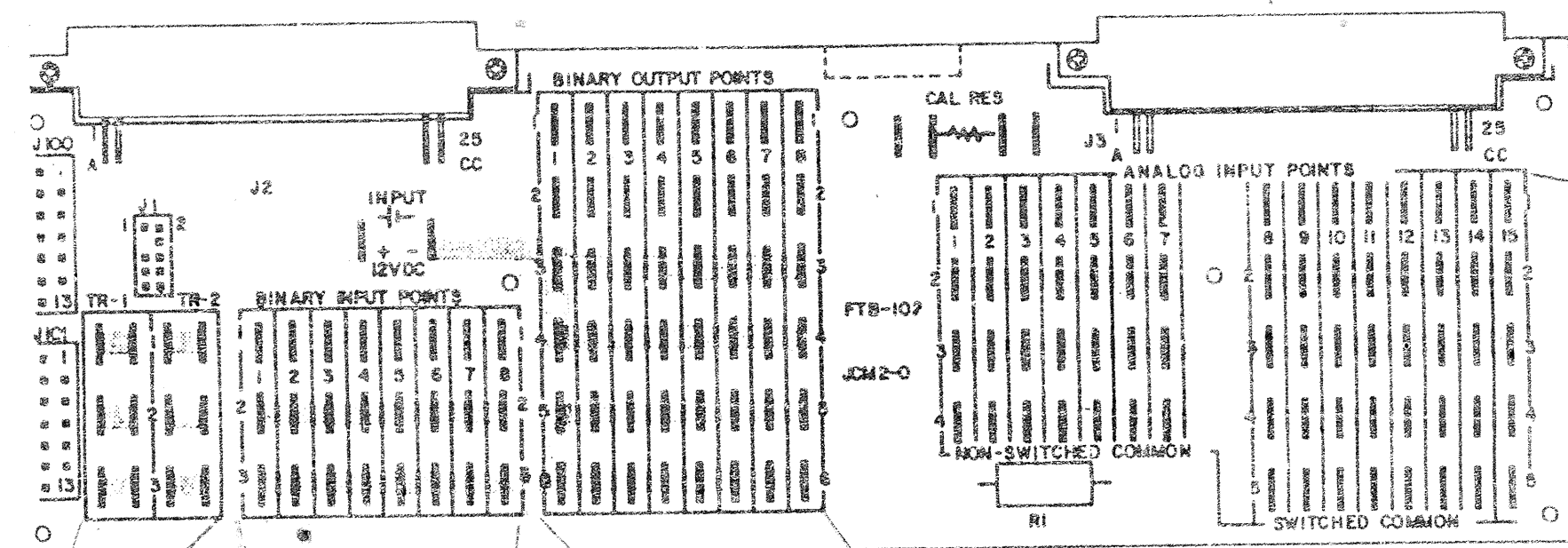
LE DSC MAINTIENT UN DIFFERENTIEL DE PRESSION CONSTANT AU VENTILATEUR V36-18A AGISSANT SUR LE VOILET DA-8.

SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE AU SERPENTIN AFIN DE LE DEGIVRER PAR SP-1

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE VIA RG-1, 

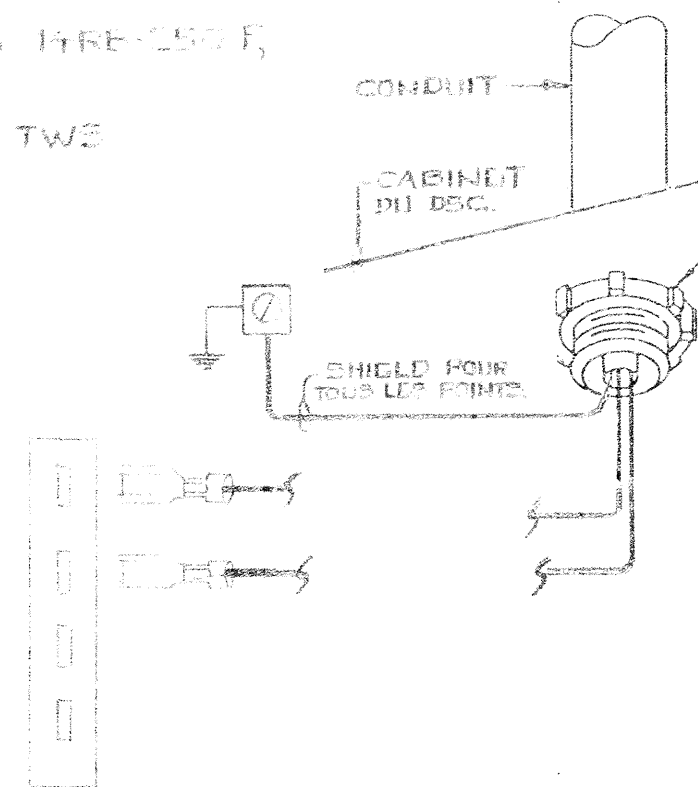
LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE.

BOERNIER DE RACCORDEMENT (FTF-112)



VOIR FIG. 4
POUR COMMUNICATION

- TYPE DE RACCORDEMENT
COTÉ DU CÂBLE TYPE 14RE-25RE
ISOLÉS (250).
- CABLAGE EN 3" IS TWO
PARTOUT.

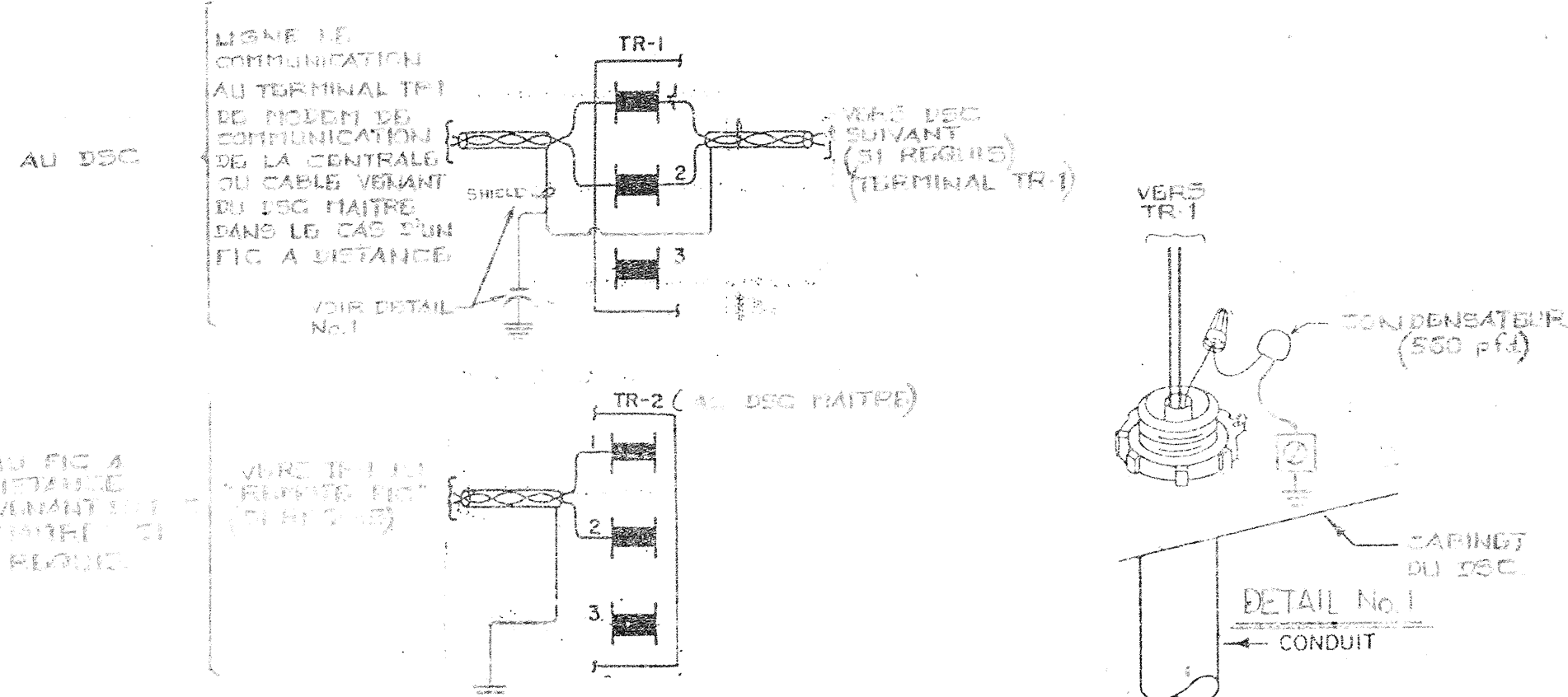


TOTAL MAX 5 ENTRÉES

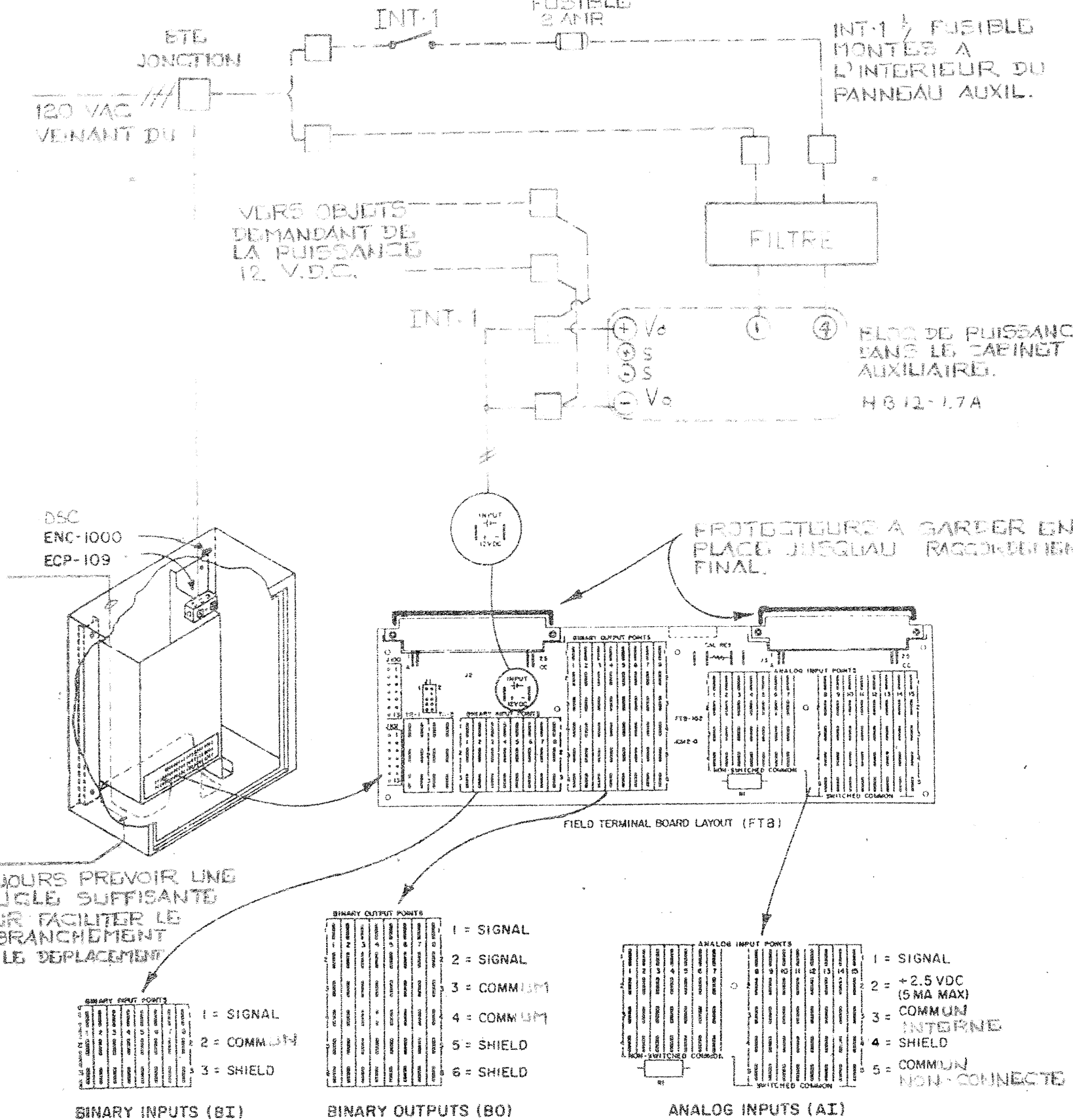
TOTAL MAX 3 SORTIES

EMPLACEMENT		ADRESSE							DSC 2	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-2	BIN	1	2	CONTACT AUX. DEM.	MCC-1	B1.1		
2	STATUS	SYSTEME V43-25RE	BIN	1	2	CONTACT AUX. DEM.	MCC-1	B2.1		
3	GEL	SYSTEME V43-2	BIN	1	2	RELAIS RG	DEM. AUX.	B3.1		

EMPLACEMENT		ADRESSE							DSC 2	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P4.1	
5	EPT-5	REFROI.	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P5.1	
6	EPT-6	PRESSION V36-18A	POS	1	2	ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P6.1	
7A	R-1	ARRET DEPART V43-2A	SST	1	3	ROUGE NOIR	MCC-1	S7A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2	4	ROUGE NOIR	V9011-1	CABINET AUX.	S7B.1	
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1	3	ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1	
8B	RQ-1	RELAIS D'ENTRETIEN DE TLL-2	SST	1	3	ROUGE NOIR	MCC-1	S8B.1		

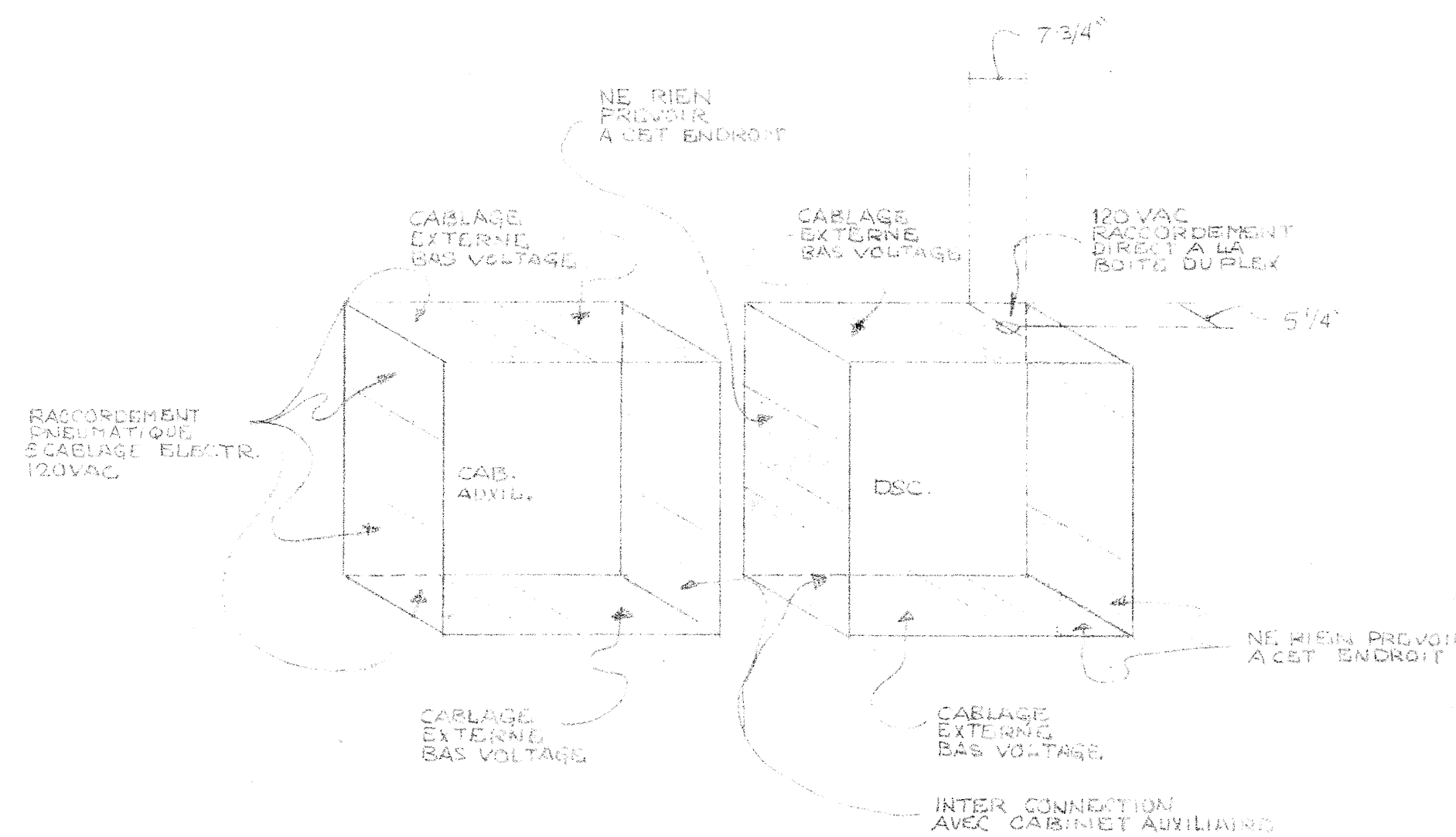


EMPLACEMENT		ADRESSE							DSC 2	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1	3	TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1	3	TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1	3	TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1	3	TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	CHAUFFAGE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	VOLUME VARIABLE	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8	EPT-4	HUMIDIFIC.	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1	
9	EPT-5	REFROID.	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1	
10	EPT-6	PRESSION V36-18A	ANA	1	2	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A10.1	
11	HE-1	HUMIDITE RETOUR	ANA	1	5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-90%HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1	5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-90%HR	
13	PT-1	PRESSION PIECE	ANA	1	5	SONDE DE PRESSION PT-1	USINE	A13.1	0-5 VDC 0-2.5Pa	
14	PT-2	PRESSION V36-18A	ANA	1	5	SONDE DE PRESSION PT-2	SYST. V36-18A	A14.1	0-5 VDC 0-2.5Pa	
15	PT-3	PRESSION SERPENTIN V43-25RE	ANA	1	5	SONDE DE PRESSION PT-3	SERPENTIN GLYCOL V43-25RE	A15.1	0-5 VDC 0-2.5Pa	



INT-1: INTERRUPTEUR "TOGGLE" EAGLE SP-37, DSC +17, MONTÉ AVEC R-100 101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE





1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE		IMPLANTATION DSC-2		3 TEL QUE CONSTRUIT		26-07-07	
CHANGEMENT #112		ADDITION RG-1		NOV 27-85		SEPT 17-85	
REFERENCE	NO.	REVISION	AVIS	DATE	PAR		
REPRESENTANT	TECHNICIEN	DESSINE	APPROUVE	DATE	PAR		
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.	JOHNSON CONTROLS	Division Des Systemes Et Services	441 boulevard Lebeau Montreal, QC H4N 1B2 Tel: 514/332-8900	CONTRAT 4096-008-26/4068-26		

SYSTÈME V43-2

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
DA-1	D3073-2	1	MOTEUR DE VOLET
DA-2	D3153-1	1	MOTEUR DE VOLET
DA-3,4	D3073-1	2	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6,7		2	MOTEUR FOURNI PAR D'AUTRES
DA-8	D3073-2	1	MOTEUR DE VOLET
V-1	V4324-1014	1	VALVE 3 VOIES Ø 1" C.V. 13.9
V-2	V5842-3	1	VALVE 3 VOIES Ø 1½" C.V. 21
V-3	V5462-7	1	VALVE 2 VOIES N.F. Ø 2½" C.V. 54.
V-4	V3754-1027	1	VALVE 2 VOIES N.O. Ø 1" C.V. 13.9
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	ELEMENT DE TEMPERATURE
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR
IPD-1,2	2000-50	2	INDICATEUR DE PRESSION 0-50 mm
HE-1,2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1,2		2	DETECTEUR DE FUMEE PYPOTRONIC
TLL-1	A11A-6	1	BASSE LIMITE
TLL-2	A19AAF-12	1	BASSE LIMITE
W-1	WZ 1000-2 	1	PUIT D'IMMERSION
PT-1 à 3	SETRA 261	3	DETECTEUR DE PRESSION STATIQUE
EP-1,2	V11HAA-100	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 à 3	G2010-101	3	INDICATEUR 0-30 PSI
PS-1	HB 12-17A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 à 6	EPT-102	6	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	PANNEAU 24"x36"x7"
XMR-1	B02FF	1	TRANSFO. 120/18 VAC.
SP-1,2	V9011-1	2	VALVE A AIR 3 VOIES
IS-1	C-208-2	1	INVERSEUR DE SIGNAL.
IPD-4	2000-100 mm	1	INDICATEUR 0-100 mm
M-1 	MARKTIME 90015	1	MINUTERIE MANUELLE 0-12 HRES C/A LAMPE TEMOIN

ECONOMISEUR

PC X

MODE X

CÉDULE

RETOUR

ALIMENT.

X

X

X

X

EVAC.

NF

DA-4

V43-5R

DA-7

Te. retour

X

Retour

He. retour

X

PC X

HL X

Position vol.mél.

X

X

Minimum

X

Minimum sans evac.

X

NO

DA-3

Te. melange

X

BL X

V-3

ALARME DE GEL.

Te. alim.

X

PC X

A/N

NF

DA-2

A/N

NF

DA-2

DA-5

NO

NF

V43-5A

DA-6

Position AUBES

X

X

OCCUPATION VA

X

Alim.

He.alim.

X

FAIRE PAGE DOWN
POUR LA SUITE DU
SYSTEME.

CMD VOILETS EVAC.

X

MODE REFR.

X

MODE CHAUF.

X

V-1

P-1

VLV CHAUF. / REFR.

X

X

HV-1

VLV humid.

X

X

Pression piece

X

PC X

Te.ext. X

DELAI APRES PANNE

X

Parametres et Horaires



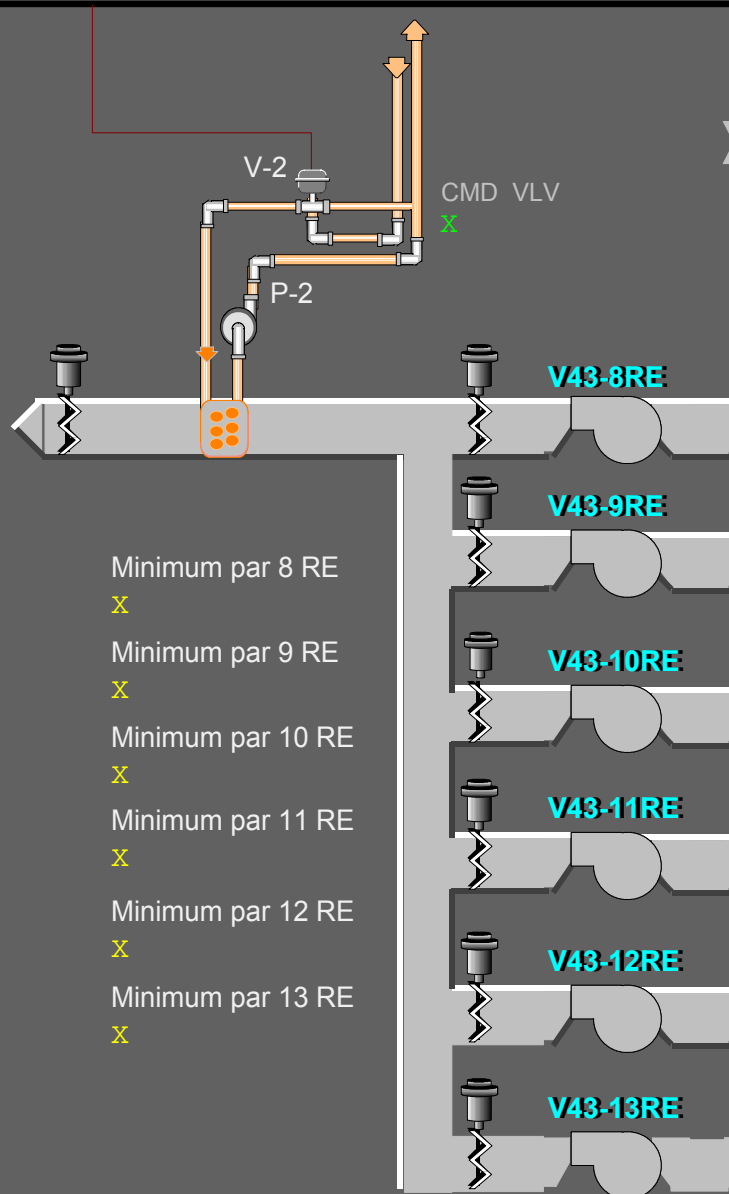
Vacance DSC-5



MENU PRINCIPAL



FAIRE PAGE UP
POUR RETOUR
AU SYSTEME.



Minimum par 8 RE

X

Minimum par 9 RE

X

Minimum par 10 RE

X

Minimum par 11 RE

X

Minimum par 12 RE

X

Minimum par 13 RE

X

V44-33A

V44-33E

ETAT RECUP.

X

RECIRC. GLYCOL

X

ETAT PRE-CH

X

EVITEMENT BL COND.

X

PRESSION SERP.GLY

X

CMD VOLETS EVAC.

X



PARAMETRES

Controle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

Controle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Recuperation

PC recup.	X
Differentiel rec.	X

Controle Volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle pre-chauffage

Limite CTRL	X
Differentiel	X
Delais evit.BL	X

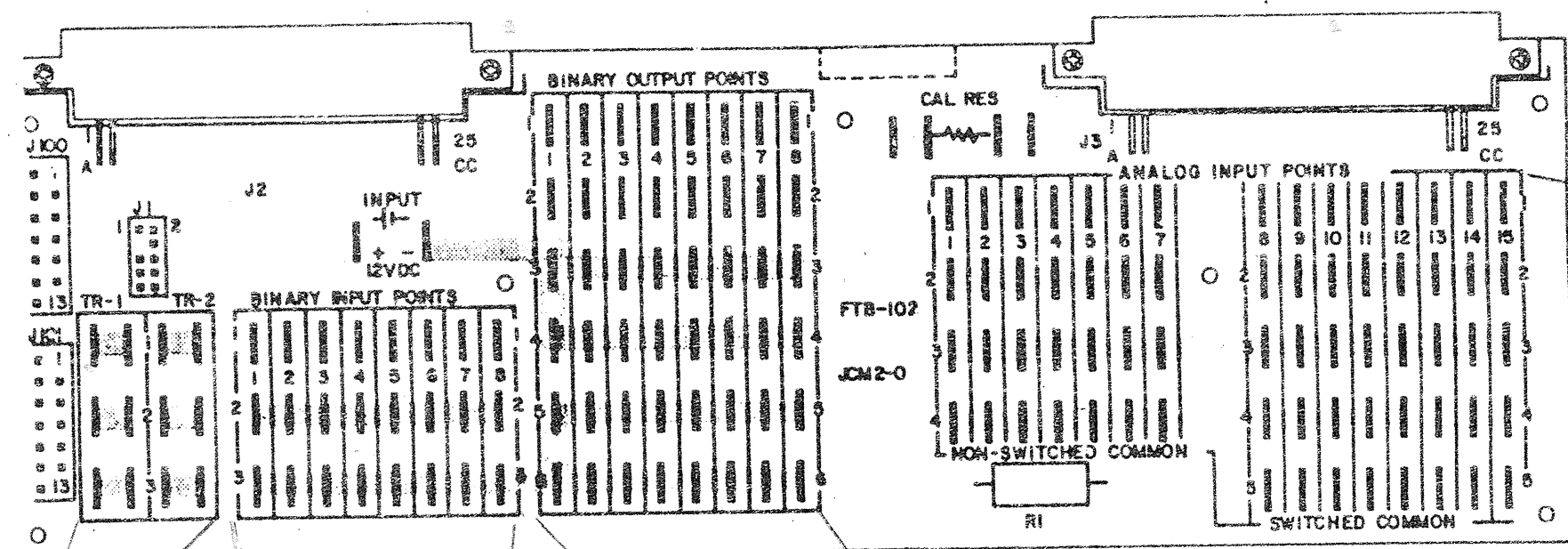


VACANCES DSC-5 , V43-5

Jour / M ois	VACANCE 1	X
Jour / M ois	VACANCE 2	X
Jour / M ois	VACANCE 3	X
Jour / M ois	VACANCE 4	X
Jour / M ois	VACANCE 5	X
Jour / M ois	VACANCE 6	X

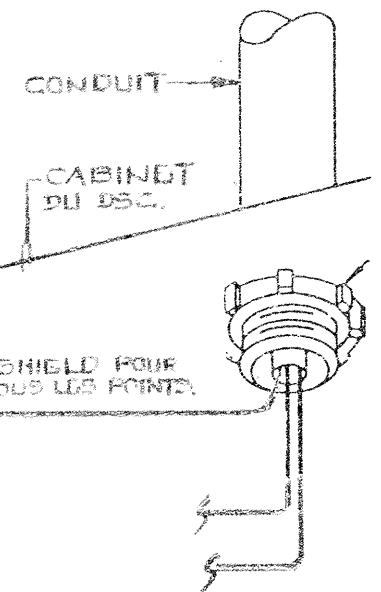


BORNIERS DE RACCORDEMENT (FTB-K2)



TOTAL MAX 15 ENTREES

- 1 - TYPE DE RACCORDEMENT: 2000ES T-18 TYPE 14RB-250 F, ISOLUS 250.
- 2 - CABLES EN 2#18 TWS FORTUIT.



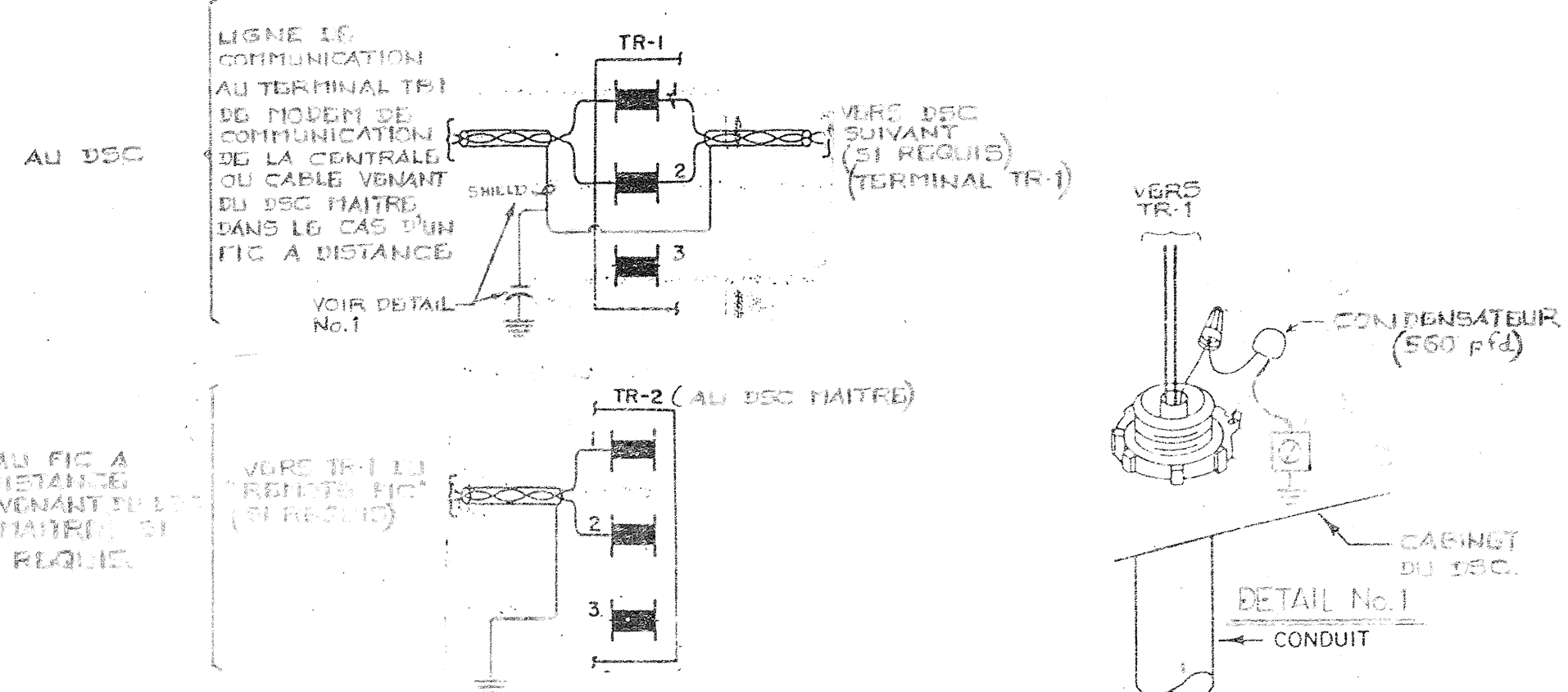
VOIR PLUS BAS POUR COMMUNICATION

TOTAL MAX 8 ENTREES

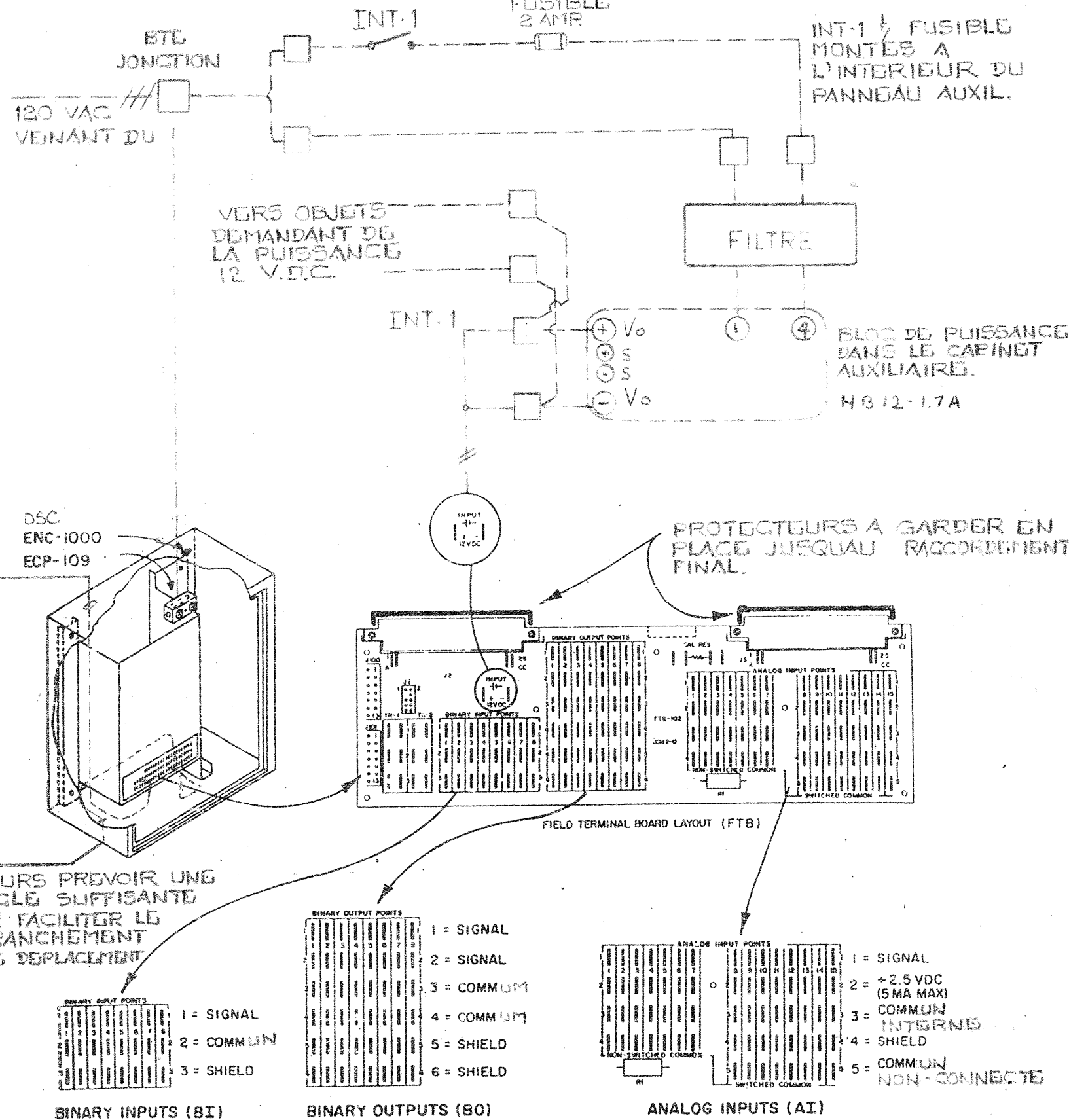
TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-5	BIN	1 2		CONTACT AUX. DEM.	MCC-1	B1.1		
2	STATUS	SYSTEME V36-13RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	STATUS	V36-12RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1		
4	STATUS	V36-11RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B4.1		
5	STATUS	V36-10RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B5.1		
6	STATUS	V36-9RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B6.1		
7	STATUS	V36-8RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B7.1		
8	GEL	SYSTEME V43-5	BIN	1 2		RELAIS RG	CAB AUX.	B8.1		

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1 2		ROUGE ROUGE/BLANC	EPT-102	CABINET AUX.	P4.1	
5A	RG-1	RELAIS DEVIEMENT DE ILL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	SSA.1		
7A	R-1	ARRET DEPART V43-5	SST	1 3	2 7	RELAIS 12VDC	MCC-1	STA.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1 3		ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1	
8B	SP-3	VOLET EVAL DA-13	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	S8B.1	

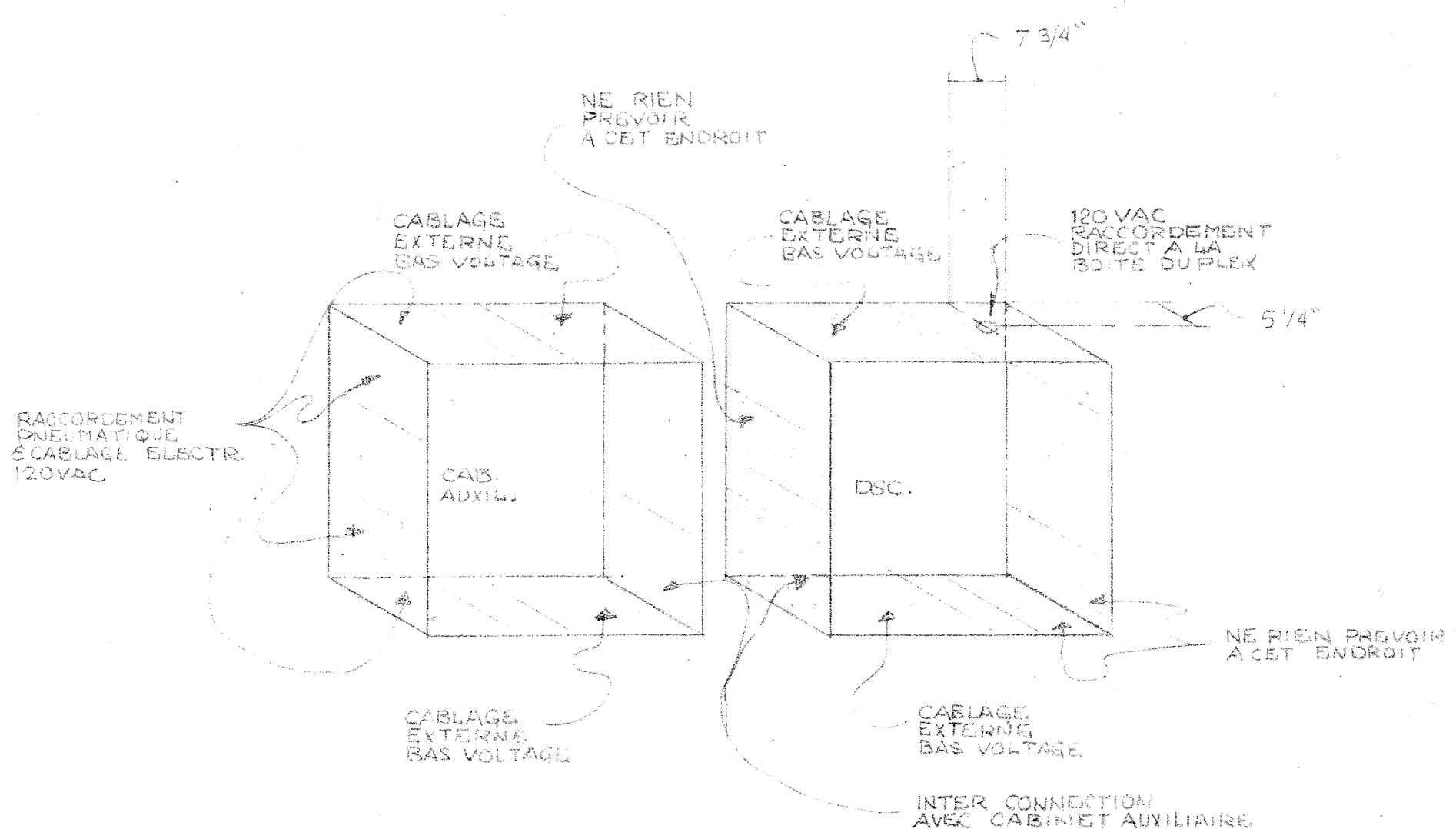


EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1	
6	EPT-2	CHAUFFAGE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1	
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1	
8	EPT-4	HUMIDIF.	ANA	1 2 3		VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1	
9										
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-95% HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-95% HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5 VDC 0-25 PSI
14	PT-2B	PRESSION SERP. GILKOL	ANA	1 5	1 2	SONDE DE PRESSION PT-2B	SEKP. GILKOL	A14.1		0-5 VDC 0-25 PSI



INT-1: INTERRUPTEUR "TOSSOL" CABLE SP-1, MOD 447, MONTE AVEC R-400-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE		IMPLANTATION DSC-8500		DSC-5	
CHANGEMENT #112		3		ADDITION RG-1	
REFERENCE		NO.		REVISION	
REPRESENTANT J.C.R.		TECHNICIEN R.F.		DATE 10/16/85	
PROJET CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		SOCIETE DE CONTROLE JOHNSON LEE		441 boulevard Lebeau Montreal, QC H4N 1S2 Tel. 514-332-6960	
DATE 10/16/85		DATE 10/16/85		DATE 10/16/85	
CONTRAT 4096-008/52		CONTRAT 4068-29		CONTRAT 4068-29	

DSC 5 SYSTEME V43-5A

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXT
14	DISPLAY	TE60,A	/TEMP ALIM

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOILETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOILETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOILETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOILETS
30	DISPLAY	ZT10,A	/F.B. VOILETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
----	--------	----------	----------------------------

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
----	--------	-------	--------------------------------

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50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
/
65      DISPLAY  FSTAXX,B   /ETAT VENTIL. 08RE 09RE
66      DISPLAY  FSTAYY,B   /ETAT VENTIL. 10RE 11RE
67      DISPLAY  FSTAZZ,B   /ETAT VENTIL. 12RE 13RE
68      ADJUST   MINFXX,A   /MINIMUM PAR V 08RE 09RE
69      ADJUST   MINFYY,A   /MINIMUM PAR V 10RE 11RE
70      ADJUST   MINFZZ,A   /MINIMUM PAR V 12RE 13RE
/
72      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION

73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A    /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      ADJUST   RECUHL,I    /POINT DE CONSIGNE RECUPERATION
78      DISPLAY  FSP1,I      /PRES STAT SERP GLYCOL
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/ 1000 PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/

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79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/-----/
/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-5
/
/      51      ALARME HORAIRE SYSTEME V43-5
/
/-----/

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□


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/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-17-:1 08:39:57
/
/TRANSLATION LISTING FOR DSC-5.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:22
/
/TRANSLATION LISTING FOR DSC-5.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:54:20
/
/TRANSLATION LISTING FOR CIRA5.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   5   SYSTEME   V43-5A
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     01 SEPT 1987
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,8897
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  27
@ AD:  106
@ BI:  CON-8,BIT-0,BIR-0

```

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@ AI:  LTD-2,FUL-10,RAT-0,TOT-0
@ BO:  MOM-0,POS-4,MAN-5
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1    FSTAT    CON-1    E,E      /ETAT VENTIL. ALIM.
BI-2    FSTA13   CON-2    E,E      /ETAT VENTIL. 13RE
BI-3    FSTA12   CON-3    E,E      /ETAT VENTIL. 12RE
BI-4    FSTA11   CON-4    E,E      /ETAT VENTIL. 11RE
BI-5    FSTA10   CON-5    E,E      /ETAT VENTIL. 10RE
BI-6    FSTA09   CON-6    E,E      /ETAT VENTIL. 9RE
BI-7    FSTA08   CON-7    E,E      /ETAT VENTIL. 8RE
BI-8    FREEZE   CON-8    E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1    TE80     FUL-1    E,0.5,E,V,T,-45.7,129.9 /TEMP RETOUR
AI-2    TE10     FUL-2    E,0.5,E,V,T,-45.7,129.9 /TEMP MELANGE
AI-3    TE1      FUL-3    E,0.5,E,V,T,-45.8,129.9 /TEMP EXT
AI-4    TE60     FUL-4    E,0.5,E,V,T,-45.8,129.9 /TEMP ALIM
AI-5    ZT10     FUL-5    E,0.5,E,N,O,-12.5,250.0 /F.B. VOILETS
AI-6    ZT30     FUL-6    E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPES
AI-7    ZT50     FUL-7    E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8    ZT70     FUL-8    E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-11   HT80     LTD-1    E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-12   HT60     LTD-2    E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-13   SPT      FUL-9    E,0.1,E,N,O,0,620      /PRESSION STATIQUE EN P
AI-14   SPT1     FUL-10   E,0.1,E,N,O,0,621      /PRES STAT EN P SERP GL
/
/
BO-1    ZC10     POS-1    D,E,0    /VOILETS
BO-2    ZC30     POS-2    D,E,0    /SOUPAPES
BO-3    ZC50     POS-3    D,E,0    /VAV
BO-4    ZC70     POS-4    D,E,0    /HUMIDITE
BO-5A   ZSL1     MAN-1    E,E      /EVITEMENT BASSE LIMIT
BO-7A   ZS50     MAN-2    E,E      /VENTIL ALIM
BO-7B   ZS10     MAN-3    E,E      /RECUPER RECIRCULATION
BO-8A   ZS20     MAN-4    E,E      /SOUPAPE PRECHAUFF
BO-8B   ZS80     MAN-5    E,E      /VOILETS EVACUATION
/
/
CP-1    ZCP10    INC-1    E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOILETS
CP-2    ZCP30    INC-2    E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPES
CP-3    ZCP50    INC-3    E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4    ZCP70    INC-4    E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
BD-1    OCCD      E,R      /CYCLE D OCCUPATION
BD-2    FSTRT     E,R      /DEMANDE VENTILATEUR

```

BD-3	COMP50	E,R	/RESULTAT DEMARRAGE
BD-4	CONON	E,R	/PERMISSION CONTROLE
/			
/-----/			
/ PARAMETRES ECONOMISEUR D AIR FRAIS /			
/-----/			
/			
BD-5	ECON	E,R	/RESULTAT ECONOMISEUR
/			
/-----/			
/ PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /			
/-----/			
/			
BD-6	MXD	E,R	/CONTROLE DE JOUR
BD-7	MIXLL	E,R	/CONTROLE PAR BASSE LIMITE
/			
/-----/			
/ PARAMETRES CONTROLE DU PRE CHAUFFAGE /			
/-----/			
/			
BD-8	PREHEA	E,R	/PRE CHAUFFAGE
BD-9	LLBYP	E,R	/RESULTAT TEMPORAIRE
/			
/-----/			
/ PARAMETRES CONTROLE DE CHAUFFAGE /			
/-----/			
/			
BD-10	HTG	E,R	/CHAUFFAGE
/			
/-----/			
/ PARAMETRES CONTROLE DE REFROIDISSEMENT /			
/-----/			
/			
BD-11	CLG	E,R	/REFROIDISSEMENT
/			
/-----/			
/ PARAMETRES CONTROLE DE RECUPERATION /			
/-----/			
/			
BD-12	RECUP	E,R	/RECUPERATION
/			
/-----/			
/ FONCTIONS SPECIALES /			
/-----/			
/			
BD-13	SYSP	D,R	
BD-14	SYS	D,R	
BD-15	SYS1	D,R	
BD-16	SYS2	D,R	
BD-17	SYS3	D,R	
BD-18	SYS4	D,R	
BD-19	SYS5	D,R	
BD-20	SYS6	D,R	
BD-21	SYS7	D,R	
BD-22	SYS8	D,R	
BD-23	SYS9	D,R	
BD-24	SYS10	D,R	

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BD-25   FSTAXX   D,R
BD-26   FSTAYY   D,R
BD-27   FSTAZZ   D,R
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
AD-1     DOW      E,2
AD-2     H1       E,00:00
AD-3     H2       E,00:00
AD-4     H3       E,00:00
AD-5     H4       E,00:00
AD-6     H5       E,00:00
AD-7     H6       E,00:00
AD-8     STA      E,00:00 /HORAIRE
AD-9     STO      E,00:00
AD-10    STA8     E,18:00
AD-11    STO8     E,18:00
AD-12    STA7     E,07:05
AD-13    STO7     E,17:00
AD-14    STA9     E,07:05
AD-15    STO9     E,18:00
AD-16    DELSST   E,40    /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17    OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18    RARL     E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19    RARH     E,25.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20    SAHL     E,25.0   /REAJ TEMP ALIM HAU LIM
AD-21    SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-22    DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-23    MXDSP    E,11.0   /POINT DE CONSIGNE LIMITE MEL.
AD-24    MDP      E,0.0    /POSITION MINIMUM VOLETS
AD-25    CST10A   E,15     /INTERVAL CTL VOLETS LIMITE
AD-26    CPB10A   E,-90.0  /BANDE PROP CTL VOLETS LIMITE
AD-27    CIG10A   E,33     /GAIN CTL VOLETS LIMITE
AD-28    CMP10A   E,0.0    /COMPENSATION CTL VOLETS LIMITE
AD-29    CDS10A   E,2.0    /BANDE MORTE CTL VOLETS LIMITE
AD-30    CST10    E,60     /INTERVAL CTL VOLETS
AD-31    CPB10    E,-60.0  /BANDE PROP CTL VOLETS
AD-32    CIG10    E,33     /GAIN CTL VOLETS
AD-33    CMP10    E,0.0    /COMPENS CTL VOLETS
AD-34    CDS10    E,0.0    /BANDE MORTE CTL VOLETS

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AD-35  ZMXD      E,0.0  /RESULTAT PROPORTION.
AD-36  Z10M      E,100.0 /RESULTAT VOILETS LIMITE
AD-37  Z10C      E,0.0  /RESULTAT VOILETS CTL
AD-38  Z10       E,0.0  /RESULTAT VOILETS
/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39  MDPOS     E,20.0  /MINIMUM SANS EVACUATION
AD-40  MINF1     E,9.0   /MINIMUM VENTIL. 8RE
AD-41  C1        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-42  MINF2     E,2.0   /MINIMUM VENTIL. 9RE
AD-43  C2        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-44  MINF3     E,2.0   /MINIMUM VENTIL. 10RE
AD-45  C3        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-46  MINF4     E,2.0   /MINIMUM VENTIL. 11RE
AD-47  C4        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-48  MINF5     E,2.0   /MINIMUM VENTIL. 12RE
AD-49  C5        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-50  MINF6     E,2.0   /MINIMUM VENTIL. 13RE
AD-51  C6        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
/
/-----/
/      PARAMETRES CONTROLE DU PRE CHAUFFAGE      /
/-----/
/
AD-52  PREALL    E,5.0   /LIMITE CONTROLE PRE CHAUFFAGE
AD-53  PREADF    E,1.0   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-54  DELHEA    E,120   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-55  Z40       E,0.0   /RESULTAT CHAUFFAGE
AD-56  CST40     E,40    /INTERVAL CTL CHAUFF
AD-57  CPB40     E,50.0  /BANDE PROP CTL CHAUFF
AD-58  CIG40     E,33    /GAIN CTL CHAUFF
AD-59  CDS40     E,0.0   /BANDE MORTE CTL CHAUFF
AD-60  Z30POS    E,66.0  /POSITION D ARRET SOUPAPES
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-61  Z30       E,0.0   /RESULTAT REFROIDISSEMENT
AD-62  CST30     E,30    /INTERVAL CTL REFROIDI
AD-63  CPB30     E,-41.2 /BANDE PROP CTL REFROIDI
AD-64  CIG30     E,60    /GAIN CTL REFROIDI
AD-65  CDS30     E,2.0   /BANDE MORTE CTL REFROIDI
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-66  SPSP      E,8     /POINT DE CONSIGNE PRESS STAT

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```

AD-67  CST50      E,6      /INTERVAL CTL VAV
AD-68  CPB50      E,-10.0 /BANDE PROP CTL VAV
AD-69  CIG50      E,30     /GAIN CTL VAV
AD-70  CMP50      E,0.0    /COMPENS CTL VAV
AD-71  CDS50      E,0.4    /BANDE MORTE CTL VAV
AD-72  Z50        E,0.0    /RESULTAT CTL VAV
AD-73  FSP        E,0.0    /PRESS STAT FILTREE
AD-74  AD1        D,0.0    /RESULTAT TEMPORAIRE
AD-75  AD2        D,0.0    /RESULTAT TEMPORAIRE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-76  RHSP       E,30.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-77  RHSPA      E,80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-78  CST70      E,60     /INTERVAL CTL HUMIDITE
AD-79  CPB70      E,90.0    /BANDE PROP CTL HUMIDITE
AD-80  CIG70      E,33     /GAIN CTL HUMIDITE
AD-81  CDS70      E,0.0    /BANDE MORTE CTL HUMIDITE
AD-82  CST70A     E,5      /INTERVAL H LIM HUMIDITE
AD-83  CPB70A     E,90.0    /BANDE PROP H LIM HUMIDITE
AD-84  CIG70A     E,33     /GAIN H LIM HUMIDITE
AD-85  CDS70A     E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-86  Z70        E,0.0    /RESULTAT CTL HUMIDITE
AD-87  Z70HL      E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-88  Z70C       E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
AD-89  RECUHL     E,200    /POINT DE CONSIGNE RECUPERATION
AD-90  RECUDF     E,50     /DIFFERENTIEL RECUPERATION
AD-91  FSP1       E,0.0    /PRESSION STATIQUE FILTREE
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-92  SYSDIS     D,0
AD-93  CSTXXX     D,0
AD-94  CPBXXX     D,0.0
AD-95  CIGXXX     D,0
AD-96  CMPXXX     D,0.0
AD-97  CDSXXX     D,0.0
AD-98  MINFXX     D,0.0
AD-99  MINFYY     D,0.0
AD-100 MINFZZ     D,0.0
/
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
AD-101 UPTIM      E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-102 UPDAT      E,00:00   /DATE DE LA RESTAURATION DU POUVOIR

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AD-103	DNTIM	E,00:00	/HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-104	DNDAT	E,00:00	/DATE DE LA DERNIERE PERTE DE POUVOIR
AD-105	TOD	E,00:00	/DERNIERE HEURE
AD-106	LDAT	E,00:00	/DERNIERE DATE
/			
/			
@	DISPLAY PANEL FUNCTIONS:		
/			
/			
1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL
/			
11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXT
14	DISPLAY	TE60,A	/TEMP ALIM
/			
16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
/			
33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV

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48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2    /SOUPAPES
62      OVERRIDE ZCP10,A,2    /VOLETS
63      OVERRIDE ZCP70,A,2    /HUMIDITE
64      OVERRIDE ZCP50,A,2    /VAV
/
/
65      DISPLAY  FSTAXX,B     /FUNCTION 88    900    1000
66      DISPLAY  FSTAYY,B     /ETAT VENTIL.  08RE   09RE
67      DISPLAY  FSTAZZ,B     /ETAT VENTIL.  10RE   11RE
68      ADJUST   MINFXX,A     /ETAT VENTIL.  12RE   13RE
69      ADJUST   MINFYY,A     /MINIMUM PAR V  08RE   09RE
70      ADJUST   MINFZZ,A     /MINIMUM PAR V  10RE   11RE
71      ADJUST   MINFZZ,A     /MINIMUM PAR V  12RE   13RE
/
72      ADJUST   MDPOS,A      /POSITION MINIMUM SANS EVACUATION
/
73      DISPLAY  PREHEA,B     /PRE CHAUFFAGE
74      ADJUST   PREALL,A     /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A     /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I     /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      ADJUST   RECUHL,I     /POINT DE CONSIGNE RECUPERATION
78      DISPLAY  FSP1,I       /PRES STAT SERP GLYCOL
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/ 1000 PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/
79      ADJUST   CSTXXX,I     /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A     /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I     /GAIN INTEGRAL
82      ADJUST   CMPXXX,A     /COMPENSATION

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83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/-----/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-5
/
/      51      ALARME HORAIRE SYSTEME V43-5
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/

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1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET    OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       FSTRT,SUF,R
2.4      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET       AUTO,S,S
3.3      DELAY     25,U
3.4      SET       COMP50,R,R
3.5      INTERVAL  10,U
3.6      XOR       COMP50,FSTAT
3.7      ALARM     50,C,S
3.8      SET       BPD,FSTRT,R
3.9      BOUT      ZS50,3,OFF
3.10     SET       COMP50,BPD,R
3.11     EXIT      U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
4.1      RESTART
4.2      DELAY     25,U
4.3      INTERVAL  5,U
4.4      SET       BPD,FREEZE,R
4.5      ALARM     10,C,R

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4.6      EXIT      U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT      CONON,S
5.2      SET        BPD,CONON,R
5.3      STORE      APD,0.0,0.0,C,R
5.4      STORE      Z70C,APD,APD,C,R
5.5      STORE      Z70,APD,APD,C,R
5.6      AOUT       ZCP70,3,0.0,C,R
5.7      EXIT       C,R
5.8      DELAY      20,U
5.9      INTERVAL   CST70,U
5.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11     STORE      Z70C,APD,APD,U
5.12     EXIT       U
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      EXIT       C,R
6.4      INTERVAL   CST70A,U
6.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6      STORE      Z70HL,APD,APD,U
6.7      SELECT     APD,Z70C,L
6.8      STORE      Z70,APD,APD,U
6.9      AOUT       ZCP70,3,0.0,U
6.10     EXIT       U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE                          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/LE RESULTAT AGIT SUR LES DEUX SYSTEMES 5 ET 6.
/
7.1      RESTART
7.2      DELAY      40,U
7.3      INTERVAL   CST50,U
7.4      FILTER     SPT,63,100
7.5      STORE      AD1,APD,APD,U    /PRESSION AVEC DECIMALE
7.6      CALC       APD,0,1,1,10,R
7.7      STORE      FSP,APD,APD,U    /PRESSION SANS DECIMALE
7.8      CALC       SPSP,0,10,1,1,T
7.9      STORE      AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
7.10     CALC       CPB50,0,10,1,1,T
7.11     PROP       AD2,AD1,APD,CIG50,CMP50,CDS50
7.12     STORE      Z50,APD,APD,U

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7.13      AOUT      ZCP50,3,0,U
7.14      EXIT      U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-.
/
8.1        RESTART
8.2        SET       MXD,R,R
8.3        SET       CONON,R,R
8.4        DELAY     25,U
8.5        INTERVAL  5,U
8.6        AND       FSTAT,OCCD
8.7        SET       MXD,BPD,R
8.8        SET       CONON,FSTAT,R
8.9        EXIT      U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS          /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALES.
/
9.1        EVENT     MXD,S
9.2        SET       ECON,R,R
9.3        SET       BPD,FSTAT,R
9.4        EXIT      C,R
9.5        INTERVAL  300,U
9.6        COMPARE    TE1,GE,OASO,1.0
9.7        SET       ECON,BPD,R
9.8        EXIT      U
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1       EVENT     MXD,S
10.2       INTERVAL  300,U
10.3       STORE     APD,TE80,RARL,U
10.4       SPAN      RARL,RARH,SAHL,SALL
10.5       STORE     DSSP,APD,SAHL,U
10.6       EXIT      U
/
/-----/
/          CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/

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```

/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS
/
/
11.1 EVENT MXD,S
11.2 SET MIXLL,R,R
11.3 SET BPD,MXD,R
11.4 EXIT C,R
11.5 INTERVAL 5,U
11.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
11.7 SET MIXLL,BPD,R /A LA BASSE LIMITE
11.8 SELECT Z10M,Z10C,L
11.9 STORE Z10,APD,APD,U
11.10 AOUT ZCP10,3,0.0,U
11.11 EXIT U
/
12.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE
12.2 SET BPD,MIXLL,R
12.3 STORE Z10M,100.0,100.0,C,R
12.4 STORE CMP10A,Z10C,Z10C,U
12.5 EXIT C,R
12.6 INTERVAL CST10A,U
12.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
12.8 STORE Z10M,APD,APD,U
12.9 EXIT U
/
13.1 EVENT MXD,R /POSITION D ARRET SOUPAPES
13.2 SET BPD,MXD,R
13.3 EXIT C,S
13.4 SET HTG,R,R
13.5 SET CLG,R,R
13.6 DELAY 7,C,R
13.7 STORE APD,0.0,0.0,C,R
13.8 AOUT ZCP30,3,0.0,C,R
13.9 EXIT U
/
14.1 EVENT MXD,S
14.2 SET BPD,MXD,R
14.3 STORE APD,0.0,0.0,C,R
14.4 STORE Z10,APD,APD,C,R
14.5 STORE Z10C,APD,APD,C,R
14.6 STORE Z10M,100.0,100.0,C,R
14.7 STORE ZMXD,APD,APD,C,R
14.8 AOUT ZCP10,3,0.0,C,R
14.9 EXIT C,R
14.10 DELAY 7,U
14.11 STORE APD,TE1,5.0,U

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14.12  SPAN      5.0,20.0,0.0,75.0
14.13  STORE    CMP10,APD,APD,U
14.14  STORE    APD,Z30POS,Z30POS,U
14.15  AOUT     ZCP30,3,0.0,U
14.16  INTERVAL CST10,U
14.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18  STORE    ZMXD,APD,APD,U
14.19  SPAN     MDP,100.0,MDP,100.0
14.20  SET      BPD,ECON,S
14.21  STORE    APD,MDP,MDP,C,S
14.22  STORE    Z10C,APD,APD,U
14.23  ORR      ZMXD,GE,85.0,10.0
14.24  SET      CLG,BPD,R
14.25  COMPARE  ZMXD,LE,15.0,10.0
14.26  SET      HTG,BPD,R
14.27  EXIT     U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DES VENTILATEURS
/D EVACUATION. LA FONCTION MINF1 A MINF6 SONT LES POURCENTAGES RAJOUTES
/A LA POSITION MINIMUM QUAND LE VENTILATEUR CORRESPONDANT FONCTIONNE. LE
/RESULTAT S APPLIQUE DANS LA ROUTINE DE CONTROLE DES VOLETS
/
15.1    RESTART
15.2    DELAY    25,U
15.3    INTERVAL 10,U
/
15.4    SET      BPD,FSTA08,R          /CALCUL VENT. 8RE
15.5    STORE    C1,0.0,0.0,C,R
15.6    STORE    C1,MINF1,MINF1,C,S
/
15.7    SET      BPD,FSTA09,R          /CALCUL VENT. 9RE
15.8    STORE    C2,0.0,0.0,C,R
15.9    STORE    C2,MINF2,MINF2,C,S
/
15.10   SET      BPD,FSTA10,R          /CALCUL VENT. 10RE
15.11   STORE    C3,0.0,0.0,C,R
15.12   STORE    C3,MINF3,MINF3,C,S
/
15.13   SET      BPD,FSTA11,R          /CALCUL VENT. 11RE
15.14   STORE    C4,0.0,0.0,C,R
15.15   STORE    C4,MINF4,MINF4,C,S
/
15.16   SET      BPD,FSTA12,R          /CALCUL VENT. 12RE
15.17   STORE    C5,0.0,0.0,C,R
15.18   STORE    C5,MINF5,MINF5,C,S
/
15.19   SET      BPD,FSTA13,R          /CALCUL VENT. 13RE
15.20   STORE    C6,0.0,0.0,C,R
15.21   STORE    C6,MINF6,MINF6,C,S
/
15.22   CALC     C1,C2,1,1,1,T
15.23   CALC     APD,C3,1,1,1,T

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15.24  CALC      APD,C4,1,1,1,T
15.25  CALC      APD,C5,1,1,1,T
15.26  CALC      APD,C6,1,1,1,T
15.27  CALC      APD,MDPOS,1,1,1,T
15.28  STORE     MDP,APD,20.0,U
15.29  EXIT      U
/
/
/-----/
/               CONTROLE DU PRE CHAUFFAGE               /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE DE MELANGE
/EST DESALIMENTE.
/
16.1    RESTART
16.2    SET       PREHEA,S,S
16.3    DELAY     25,U
16.4    BOUT      ZSLL,3,OFF
16.5    INTERVAL  5,U
16.6    COMPARE   TE10,LE,PREALL,PREADF
16.7    SET       PREHEA,BPD,R
16.8    NEGATE    BPD
16.9    BOUT      ZS20,3,OFF
16.10   SET       BPD,LLBYP,R
16.11   BOUT      ZSLL,3,OFF
16.12   EXIT      U
/
17.1    EVENT     PREHEA,S
17.2    SET       BPD,PREHEA,R
17.3    DELAY     DELHEA,C,S
17.4    NEGATE    PREHEA
17.5    SET       LLBYP,BPD,R
17.6    EXIT      U
/
/
/-----/
/               CONTROLE DE CHAUFFAGE               /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A Z30POS POUR LE CHAUFFAGE.
/
18.1    EVENT     HTG,S
18.2    SET       BPD,HTG,S
18.3    STORE     Z40,0.0,0.0,C,R
18.4    STORE     APD,Z30POS,Z30POS,C,R
18.5    AOUT      ZCP30,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST40,U
18.8    CALC      DSSP,0.3,1,-1,1,T
18.9    PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
18.10   STORE     Z40,APD,APD,U
18.11   SPAN      0.0,100.0,Z30POS,0.0

```

```

18.12  AOUT      ZCP30,3,100.0,U
18.13  EXIT      U
/
/-----/
/      CONTROLE DE REFROIDISSEMENT      /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE Z30POS A 100 POUR LE REFROIDISSEMENT.
/
19.1    EVENT    CLG,S
19.2    SET      BPD,CLG,R
19.3    STORE    Z30,0.0,0.0,C,R
19.4    STORE    APD,Z30POS,Z30POS,C,R
19.5    AOUT     ZCP30,3,0.0,C,R
19.6    EXIT     C,R
19.7    INTERVAL CST30,U
19.8    CALC     CPB30,0,10,1,1,T
19.9    STORE    AD1,APD,APD,U
19.10   CALC     DSSP,0.3,1,1,1,T
19.11   PROP     APD,TE60,AD1,CIG30,0.0,CDS30
19.12   STORE    Z30,APD,APD,U
19.13   SPAN     0.0,100.0,Z30POS,100.0
19.14   AOUT     ZCP30,3,0.0,U
19.15   EXIT     U
/
/
/-----/
/      CONTROLE RECUPERATION      /
/-----/
/
/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPAPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/
20.1    RESTART
20.2    DELAY    25,U
20.3    INTERVAL 7,U
20.4    FILTER   SPT1,63,100
20.5    STORE    FSP1,APD,APD,U
20.6    COMPARE  FSP1,GE,RECUHL,RECUDF
20.7    SET      RECUP,BPD,R
20.8    NEGATE   BPD
20.9    BOUT     ZS10,3,OFF
20.10   EXIT     U
/
/
/-----/
/      CONTROLE VOLETS EVACUATION SYST 08-13      /
/-----/
/
/SI UN DES VENTILATEUR EST EN MARCHE, OUVRE LES VOLETS D EVACUATION
/
21.1    RESTART
21.2    DELAY    25,U

```



```

21.3    INTERVAL 5,U
21.4    OR      FSTA08,FSTA09
21.5    OR      BPD,FSTA10
21.6    OR      BPD,FSTA11
21.7    OR      BPD,FSTA12
21.8    OR      BPD,FSTA13
21.9    BOUT    ZS80,3,OFF
21.10   EXIT    U
/
/
/-----/
/      FONCTIONS SPECIALES      /
/-----/
/
22.1    EVERY                                     /SELECTION DU STSTEME POUR LE
22.2    SET      SYSP,R,R                        /
22.3    COMPARE  SYSDIS,EQ,100,0
22.4    SET      SYS1,BPD,R
22.5    OR      SYSP,BPD
22.6    SET      SYSP,BPD,S
22.7    COMPARE  SYSDIS,EQ,200,0
22.8    SET      SYS2,BPD,R
22.9    OR      SYSP,BPD
22.10   SET      SYSP,BPD,S
22.11   COMPARE  SYSDIS,EQ,300,0
22.12   SET      SYS3,BPD,R
22.13   OR      SYSP,BPD
22.14   SET      SYSP,BPD,S
22.15   COMPARE  SYSDIS,EQ,400,0
22.16   SET      SYS4,BPD,R
22.17   OR      SYSP,BPD
22.18   SET      SYSP,BPD,S
22.19   COMPARE  SYSDIS,EQ,600,0
22.20   SET      SYS6,BPD,R
22.21   OR      SYSP,BPD
22.22   SET      SYSP,BPD,S
22.23   COMPARE  SYSDIS,EQ,700,0
22.24   SET      SYS7,BPD,R
22.25   OR      SYSP,BPD
22.26   SET      SYSP,BPD,S
22.27   COMPARE  SYSDIS,EQ,800,0
22.28   SET      SYS8,BPD,R
22.29   OR      SYSP,BPD
22.30   SET      SYSP,BPD,S
22.31   COMPARE  SYSDIS,EQ,900,0
22.32   SET      SYS9,BPD,R
22.33   OR      SYSP,BPD
22.34   SET      SYSP,BPD,S
22.35   COMPARE  SYSDIS,EQ,1000,0
22.36   SET      SYS10,BPD,R
22.37   OR      SYSP,BPD
22.38   SET      SYSP,BPD,S
22.39   SET      SYS,SYSP,S
22.40   EXIT    U
/
/
23.1    EVENT    SYS,S                        /RESET LES FONCTIONS POUR

```

```

23.2    SET      BPD,SUF,R          /LE CDB SPECIAL
23.3    STORE    SYSDIS,0,0,C,R     /SUR UNE PERIODE DE DISCLR
23.4    EXIT     C,R
23.5    DELAY    3600,U
23.6    STORE    SYSDIS,0,0,U
23.7    EXIT     U
/
/
24.1    EVENT    SYS1,S              /SYS 100
24.2    SET      BPD,SUF,R
24.3    EXIT     C,R
24.4    INTERVAL 5,U
24.5    STORE    CSTXXX,CST70,CST70,U /PERMET DE VOIR LES
24.6    STORE    CPBXXX,CPB70,CPB70,U /VALEURS DU SYSTEME
24.7    STORE    CIGXXX,CIG70,CIG70,U
24.8    STORE    CMPXXX,0.0,0.0,U
24.9    STORE    CDSXXX,CDS70,CDS70,U
24.10   EXIT     U
/
/
25.1    EVENT    SYS1,S
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    DELAY    10,U
25.5    INTERVAL 1,U
25.6    STORE    CST70,CSTXXX,CST70,U /PERMET D AJUSTER LES
25.7    STORE    CPB70,CPBXXX,CPB70,U /VALEURS DU SYSTEME
25.8    STORE    CIG70,CIGXXX,CIG70,U
25.9    STORE    CDS70,CDSXXX,CDS70,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS2,S              /SYS 200
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    INTERVAL 5,U
26.5    STORE    CSTXXX,CST70A,CST70A,U /PERMET DE VOIR LES
26.6    STORE    CPBXXX,CPB70A,CPB70A,U /VALEURS DU SYSTEME
26.7    STORE    CIGXXX,CIG70A,CIG70A,U
26.8    STORE    CMPXXX,0.0,0.0,U
26.9    STORE    CDSXXX,CDS70A,CDS70A,U
26.10   EXIT     U
/
/
27.1    EVENT    SYS2,S
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    DELAY    10,U
27.5    INTERVAL 1,U
27.6    STORE    CST70A,CSTXXX,CST70A,U /PERMET D AJUSTER LES
27.7    STORE    CPB70A,CPBXXX,CPB70A,U /VALEURS DU SYSTEME
27.8    STORE    CIG70A,CIGXXX,CIG70A,U
27.9    STORE    CDS70A,CDSXXX,CDS70A,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS3,S              /SYS 300

```

```

28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    INTERVAL 5,U
28.5    STORE    CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
28.6    STORE    CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
28.7    STORE    CIGXXX,CIG50,CIG50,U
28.8    STORE    CMPXXX,CMP50,CMP50,U
28.9    STORE    CDSXXX,CDS50,CDS50,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS3,S
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    DELAY    10,U
29.5    INTERVAL 1,U
29.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
29.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
29.8    STORE    CIG50,CIGXXX,CIG50,U
29.9    STORE    CMP50,CMPXXX,CMP50,U
29.10   STORE    CDS50,CDSXXX,CDS50,U
29.11   EXIT     U
/
/
30.1    EVENT    SYS4,S                    /SYS 400
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    INTERVAL 5,U
30.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
30.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
30.7    STORE    CIGXXX,CIG40,CIG40,U
30.8    STORE    CMPXXX,0.0,0.0,U
30.9    STORE    CDSXXX,CDS40,CDS40,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS4,S
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    DELAY    10,U
31.5    INTERVAL 1,U
31.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
31.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
31.8    STORE    CIG40,CIGXXX,CIG40,U
31.9    STORE    CDS40,CDSXXX,CDS40,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    INTERVAL 5,U
32.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
32.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
32.7    STORE    CIGXXX,CIG10A,CIG10A,U
32.8    STORE    CMPXXX,0.0,0.0,U
32.9    STORE    CDSXXX,CDS10A,CDS10A,U

```

```

32.10  EXIT      U
/
/
33.1   EVENT     SYS6,S
33.2   SET       BPD,SUF,R
33.3   EXIT      C,R
33.4   DELAY     10,U
33.5   INTERVAL  1,U
33.6   STORE     CST10A,CSTXXX,CST10A,U      /PERMET D AJUSTER LES
33.7   STORE     CPB10A,CPBXXX,CPB10A,U      /VALEURS DU SYSTEME
33.8   STORE     CIG10A,CIGXXX,CIG10A,U
33.9   STORE     CDS10A,CDSXXX,CDS10A,U
33.10  EXIT      U
/
/
34.1   EVENT     SYS7,S                      /SYS 700
34.2   SET       BPD,SUF,R
34.3   EXIT      C,R
34.4   INTERVAL  5,U
34.5   STORE     CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
34.6   STORE     CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
34.7   STORE     CIGXXX,CIG10,CIG10,U
34.8   STORE     CMPXXX,CMP10,CMP10,U
34.9   STORE     CDSXXX,CDS10,CDS10,U
34.10  EXIT      U
/
/
35.1   EVENT     SYS7,S
35.2   SET       BPD,SUF,R
35.3   EXIT      C,R
35.4   DELAY     10,U
35.5   INTERVAL  1,U
35.6   STORE     CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
35.7   STORE     CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
35.8   STORE     CIG10,CIGXXX,CIG10,U
35.9   STORE     CMP10,CMPXXX,CMP10,U
35.10  STORE     CDS10,CDSXXX,CDS10,U
35.11  EXIT      U
/
/
36.1   EVENT     SYS8,S                      /SYS 800
36.2   SET       BPD,SUF,R
36.3   EXIT      C,R
36.4   INTERVAL  5,U
36.5   STORE     CSTXXX,CST30,CST30,U      /PERMET DE VOIR LES
36.6   STORE     CPBXXX,CPB30,CPB30,U      /VALEURS DU SYSTEME
36.7   STORE     CIGXXX,CIG30,CIG30,U
36.8   STORE     CMPXXX,0.0,0.0,U
36.9   STORE     CDSXXX,CDS30,CDS30,U
36.10  EXIT      U
/
/
37.1   EVENT     SYS8,S
37.2   SET       BPD,SUF,R
37.3   EXIT      C,R
37.4   DELAY     10,U
37.5   INTERVAL  1,U

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```

37.6      STORE      CST30,CSTXXX,CST30,U          /PERMET D AJUSTER LES
37.7      STORE      CPB30,CPBXXX,CPB30,U          /VALEURS DU SYSTEME
37.8      STORE      CIG30,CIGXXX,CIG30,U
37.9      STORE      CDS30,CDSXXX,CDS30,U
37.10     EXIT       U
/
/
38.1      EVENT      SYS9,S                        /SYS 900
38.2      SET        BPD,SUF,R
38.3      EXIT       C,R
38.4      INTERVAL   5,U
38.5      SET        FSTAXX,FSTA08,R              /PERMET DE VOIR LES
38.6      SET        FSTAYY,FSTA10,R              /VALEURS DU SYSTEME
38.7      SET        FSTAZZ,FSTA12,R
38.8      STORE      MINFXX,MINF1,MINF1,U
38.9      STORE      MINFYY,MINF3,MINF3,U
38.10     STORE      MINFZZ,MINF5,MINF5,U
38.11     EXIT       U
/
/
39.1      EVENT      SYS9,S
39.2      SET        BPD,SUF,R
39.3      EXIT       C,R
39.4      DELAY      10,U
39.5      INTERVAL   1,U
39.6      STORE      MINF1,MINFXX,MINF1,U          /PERMET D AJUSTER LES
39.7      STORE      MINF3,MINFYY,MINF3,U          /VALEURS DU SYSTEME
39.8      STORE      MINF5,MINFZZ,MINF5,U
39.9      EXIT       U
/
/
40.1      EVENT      SYS10,S                       /SYS 1000
40.2      SET        BPD,SUF,R
40.3      EXIT       C,R
40.4      INTERVAL   5,U
40.5      SET        FSTAXX,FSTA09,R              /PERMET DE VOIR LES
40.6      SET        FSTAYY,FSTA11,R              /VALEURS DU SYSTEME
40.7      SET        FSTAZZ,FSTA13,R
40.8      STORE      MINFXX,MINF2,MINF2,U
40.9      STORE      MINFYY,MINF4,MINF4,U
40.10     STORE      MINFZZ,MINF6,MINF6,U
40.11     EXIT       U
/
/
41.1      EVENT      SYS10,S
41.2      SET        BPD,SUF,R
41.3      EXIT       C,R
41.4      DELAY      10,U
41.5      INTERVAL   1,U
41.6      STORE      MINF2,MINFXX,MINF2,U          /PERMET D AJUSTER LES
41.7      STORE      MINF4,MINFYY,MINF4,U          /VALEURS DU SYSTEME
41.8      STORE      MINF6,MINFZZ,MINF6,U
41.9      EXIT       U
/
/
/-----/
/
/
RECORD PANNE DE POUVOIR

```

```

/-----/
/
42.1    RESTART
42.2    TIMDATA    DT
42.3    STORE      UPTIM,APD,APD,U      /SAUVE L HEURE ACTUEL ET
42.4    TIMDATA    MD                  /LA DATE DE LA RESTAURATION
42.5    STORE      UPDAT,APD,APD,U      /DU POUVOIR.
42.6    EXIT       U
/
43.1    RESTART
43.2    STORE      DNTIM,TOD,TOD,U      /RECORD DE LA DERNIERE HEURE
43.3    STORE      DNDAT,LDAT,LDAT,U    /ET DATE AVANT LA PANNE.
43.4    INTERVAL   60,U
43.5    TIMDATA    DT
43.6    STORE      TOD,APD,APD,U        /SAUVE L HEURE ET LA DATE
43.7    TIMDATA    MD                  /ACTUEL A TOUTES LES MINUTES.
43.8    STORE      LDAT,APD,APD,U
43.9    EXIT       U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3765
/   OVERHEAD:  2700
/   TOTAL:     7821    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3765
/   OVERHEAD:  2700
/   TOTAL:     7821    8K DSC MEMORY NEEDED


/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3767
/   OVERHEAD:  2700
/   TOTAL:     7823    8K DSC MEMORY NEEDED

```

AU DEPART DU SYSTEME, V43-5A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-5R, DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES.


LA VALVE DE REFROIDISSEMENT, LES VOLETS DE MELANGE, LA VALVE DE RECUPERATION, LE SERPENTIN DE FACE ET EVITEMENT SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CON-
TANTE; CEPENDANT, LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALI-
MENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C , LA VALVE V-1 DU
SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100% PAR SP-2 
ET RG-1 EST DESAMORCE

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C , LES VOLETS RE-
TOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT
REAJUSTER EN FONCTION DU NOMBRE D'EVACUATEUR EN MARCHÉ.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE
RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR;
CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINÉ D'ALIMEN-
TATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE
LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGE-
REMENT NEGATIVE.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE
RECHAUFFAGE INFERIEURE AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME
S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU
DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE 
VIA RG-1.

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL
DU PANNEAU D'ALARME INCENDIE.

LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE.

AU DEPART DU SYSTEME V44-33 PAR LA MINUTERIE MECANIQUE M-1, LE
VOLET D'AIR NEUF DA-8 OUVRE A 100% PAR EP-3.

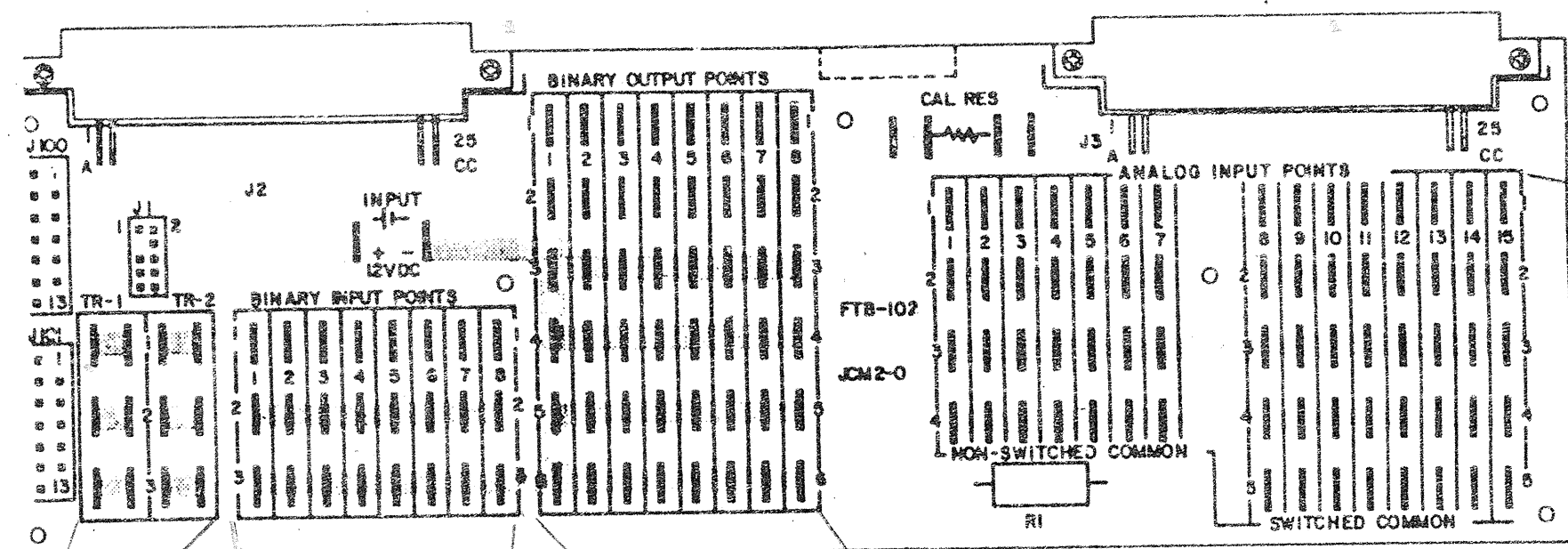
LE SYSTEME V44-24E DEMARRE PAR SA MINUTERIE MECANIQUE M-2.

SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-28,
AU SERPENTIN DE RECUPERATION EST SUPERIEUR
AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE
AU SERPENTIN AFIN DE LE DEGIVRER

LES EVACUATEURS QUI AFFECTENT LE MINIMUM
D'AIR NEUF SONT:

V 36 - 13 RE
V 36 - 12 RE
V 36 - 11 RE
V 36 - 10 RE
V 36 - 9 RE
V 36 - 8 RE

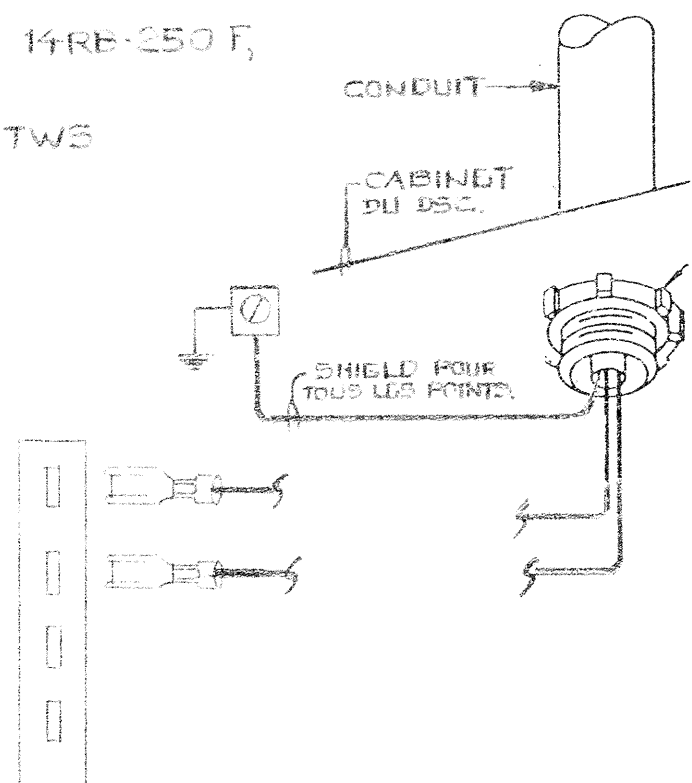
BORNIERS DE RACCORDEMENT (FTB-K2)



VOIR PLUS BAS
POUR COMMUNICATION

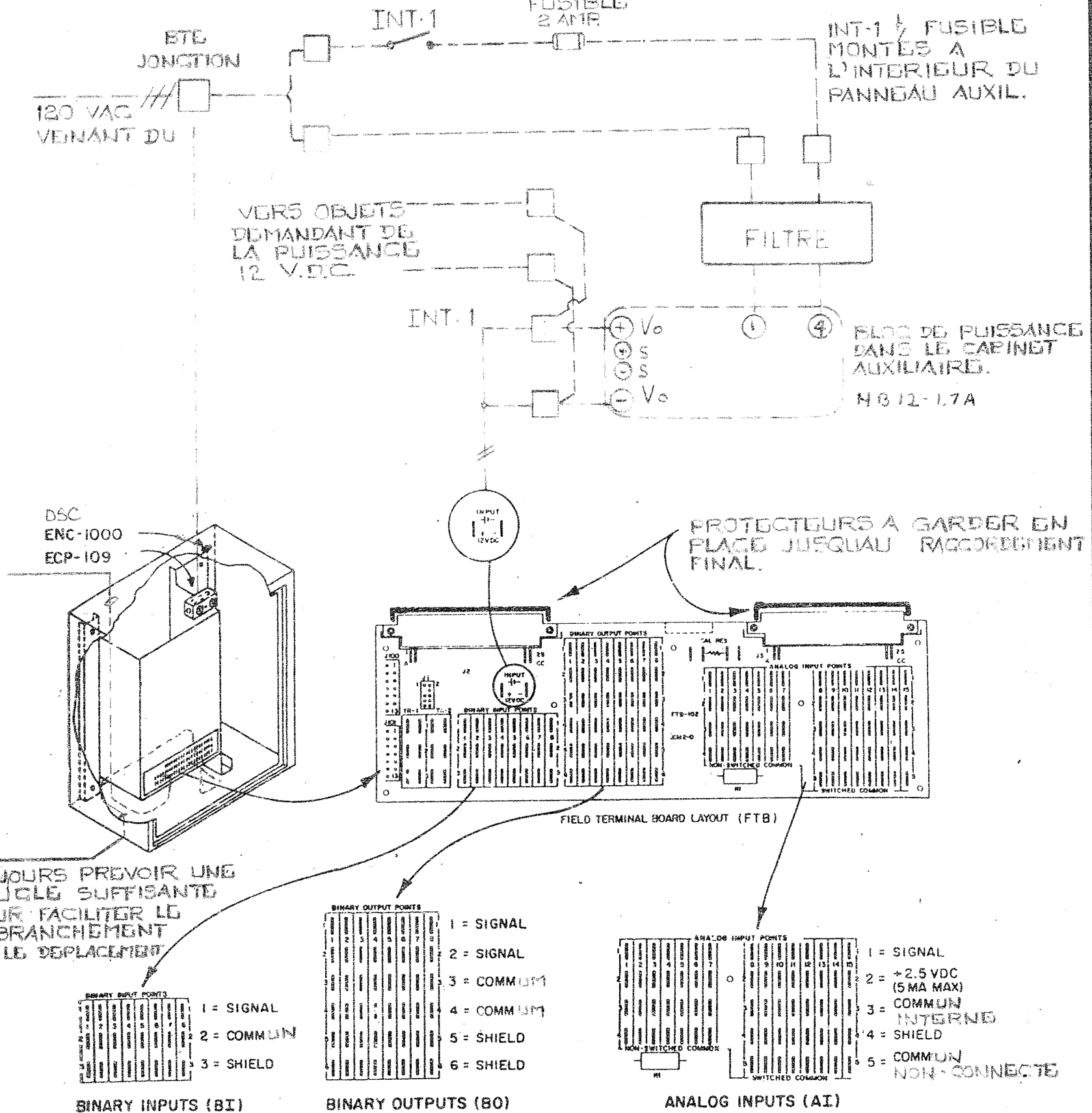
- 1 - TYPE DE RACCORDEMENT
BOBINES T & B TYPE 14RB-250 F,
ISOLUS .250.
- 2 - CABLES EN 2#18 TWS
FARTOUT.

TOTAL MAX 15 ENTREES

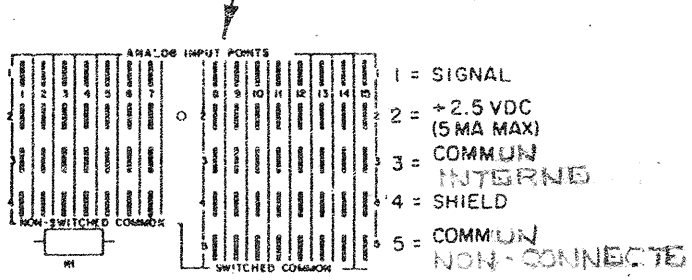
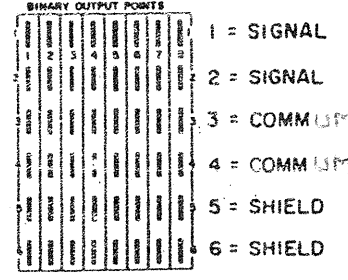
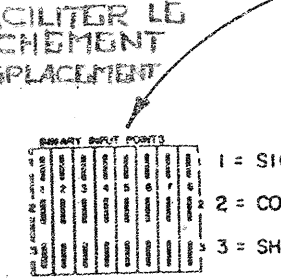


TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3		EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3		EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3		EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3		EPT-102	CABINET AUX.	A8.1		
9										
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-95% HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-95% HR	
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1	0-5 VDC 0-.25 PSI	
14	PT-2B	PRESSION SERP. GILKOL.	ANA	1 5	1 2	SONDE DE PRESSION PT-2B	SEKP GILKOL	A14.1	0-5 VDC 0-2.5 PSI	



TOUJOURS PREVOIR UNE
BOUCLE SUFFISANTE
POUR FACILITER LE
DEBRANCHEMENT
ET LE DEPLACEMENT

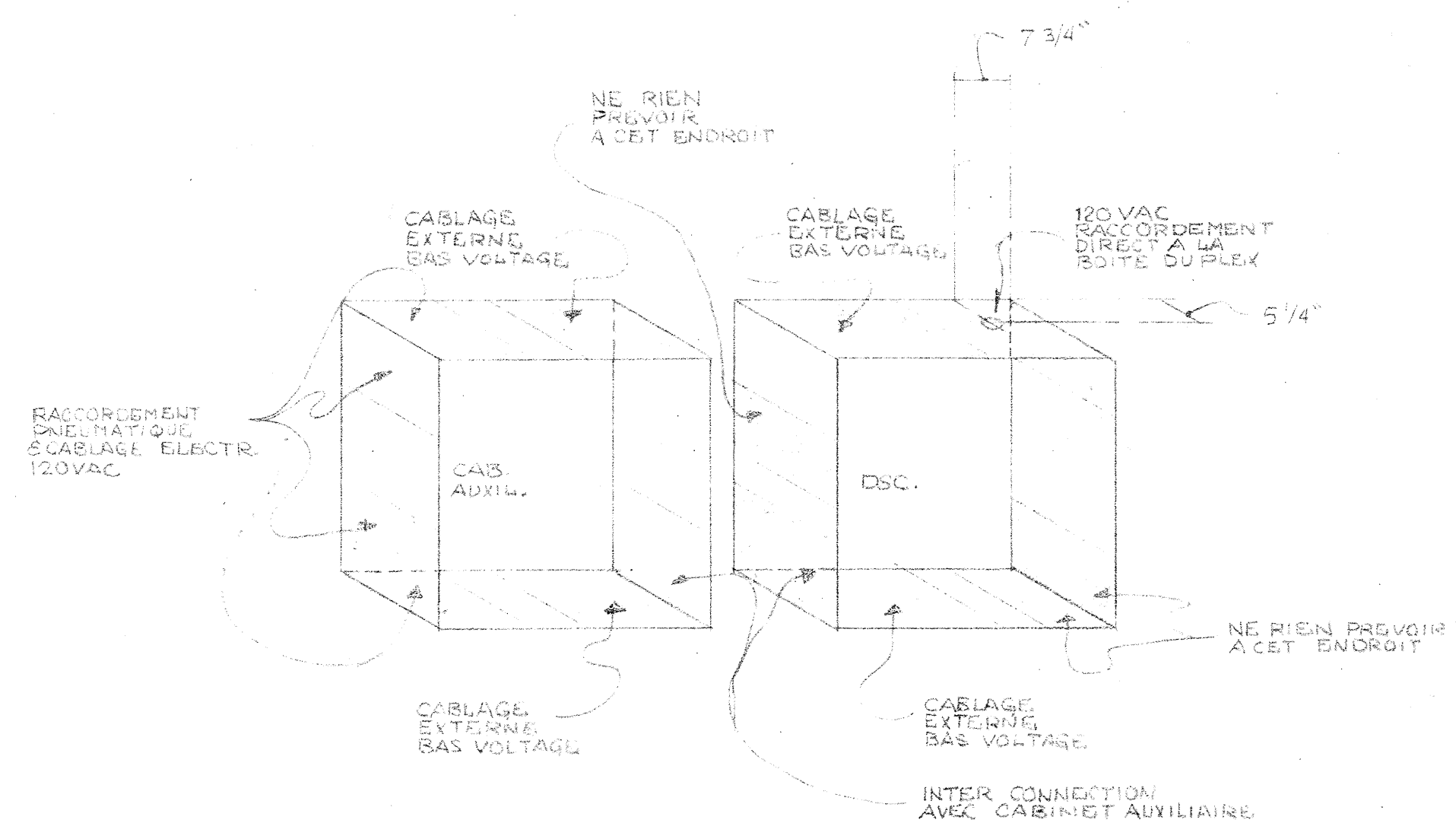


INT-1: INTERRUPTEUR "TOSOL" CABLE SP-21, MOD 447, MONTÉ
AVEC R-400-101 J.C.L.

TERMINAUX DANS LE CABINET AUXILIAIRE

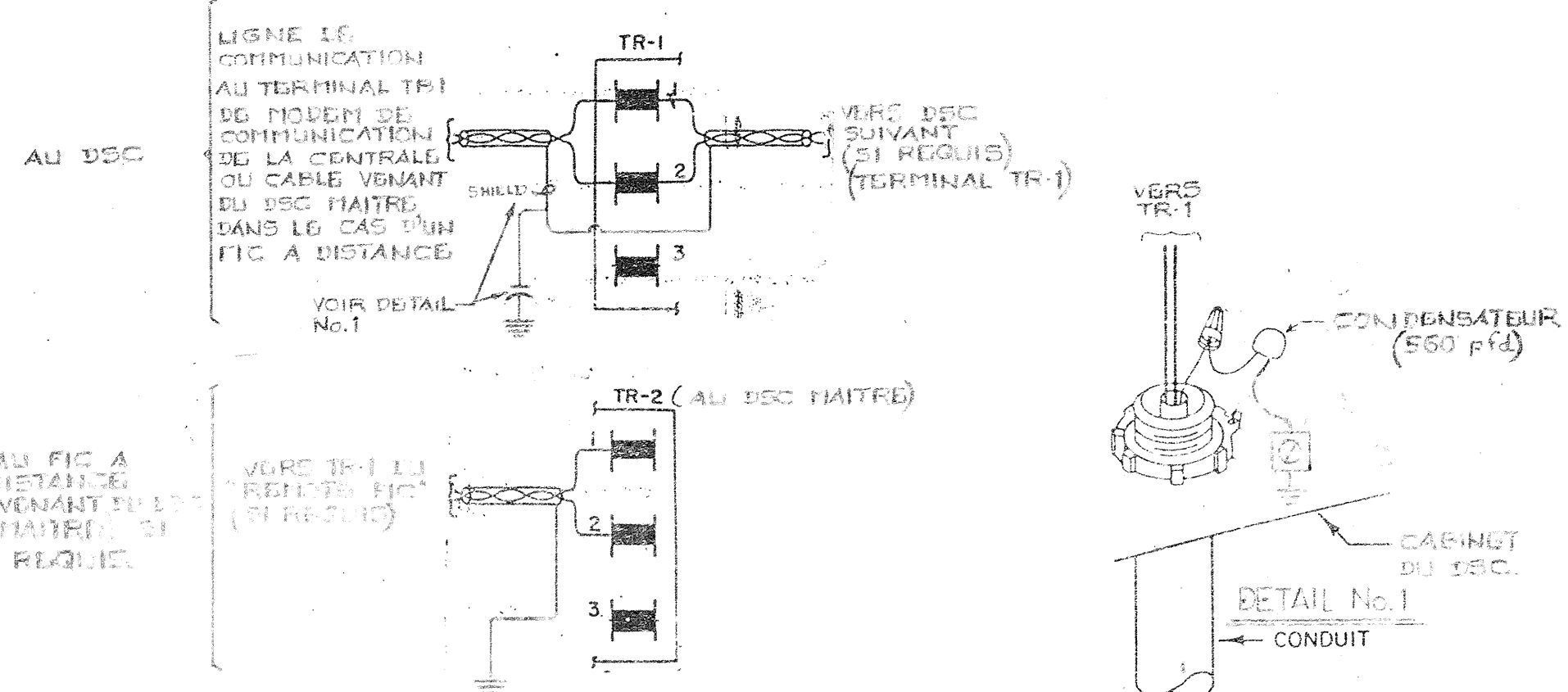
EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-5	BIN	1 2		CONTACT AUX. DEM.	MCC-1	B1.1		
2	STATUS	SYSTEME V36-13RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	STATUS	V36-12RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1		
4	STATUS	V36-11RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B4.1		
5	STATUS	V36-10RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B5.1		
6	STATUS	V36-9RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B6.1		
7	STATUS	V36-8RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B7.1		
8	GEL	SYSTEME V43-5	BIN	1 2		RELAIS RG	CAB AUX.	B8.1		

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1	
5A	RQ-1	RELAIS DEVIEMENT DE ILL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	SSA.1		
7A	R-1	ARRET DEPART V43-5	SST	1 3	2 7	RELAIS 12VDC	MCC-1	STA.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	
8A	SP-2	V-1 PRECHAF. OUVERTE	SST	1 3		ROUGE NOIR	V9011-1	CABINET AUX.	STA.1	
8B	SP-3	VOLET EVAC DA-13	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	




1 - VOIR DESSINS STD. DE RACCORDEMENT POUR
LES COMPOSANTES AUXILIAIRES.

2 - VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES /
ELECTRIQUES LOCAUX.



TITRE DSC-5		4 TEL QUE CONSTRUIT		86-07-08	
CHANGEMENT #112		3 ADDITION RG-1		NOV 27-85	
REPRESENTANT J.C.R.		TECHNICIEN R.F.		DATE 10-16-85	
PROJET CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		SOCIÉTÉ DE CONTRÔLE JOHNSON LEE 441 boulevard Lebeau Montréal, QC H4N 1S2 Tel. 514-332-6860		CONTRAT 4096-008/52 4068-29	

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 4	D3153-1	4	MOTEUR DE VOLET C/A P.P.
	D3153-2	2	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6,7		2	MOTEUR FOURNI PAR D'AUTRES
DA-8	D3073-2	1	MOTEUR DE VOLET
V-1	V5842-8	1	VALVE 3 VOIES Ø 2 1/2" C.V. 54
V-2	V5842-6	1	VALVE 3 VOIES Ø 2" C.V. 30
V-3	V5462-16	1	VALVE 2 VOIES N.F. Ø 5" C.V. 240
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	ELEMENT DE TEMPERATURE
IPD-1 @ 4	2000-50	4	INDICATEUR DE PRESSION 0-50 mm
HE-1,2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1 @ 4		4	DETECTEUR DE FUMEE PYROTRONIC
TLL-1	A11A-6	1	BASSE LIMITE
TLL-2	A19AAF-12	1	BASSE LIMITE
W-1	WZ1000-2 	1	PUIT D'IMMERSION
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EP-1, 2, 3	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 > 2	G2010-101	2	INDICATEUR 0-30 PSI
PS-1	HB12-17A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
XMR-1	B02FF	1	TRANSFO. 120/18 VAC
SP-1 @ 3	V9011-1	3	VALVE A AIR 3 VOIES
IS-1	C208-2	1	INVERSEUR DE SIGNAL
M1 ET 2	MARKTIME 90015	2	MINUTERIE MANUELLE 0-12 HRES C/A LAMPE TEMOIN
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

ECONOMISEUR

PC X

MODE X

CÉDULE

RETOUR

ALIMENT.

X

X

X

X

EVAC.

NF

DA-4

Position vol.mél.

X

X

Minimum

X

Minimum sans evac.

X

NO

DA-3

Te. melange

X

BL X

Te. retour

X

V43-6R

DF1

DA-7

He. retour

X

PC X

HL X

Retour

V-3

ALARME DE GEL

Te. alim.

X

PC X

A/N

NF

DA-2

A/N

NF

DA-2

DA-5

NO

NF

V43-6A

DA-6

Position AUBES

X

X

OCCUPATION VA

X

Alim.

He.alim.

X

DF4

FAIRE PAGE DOWN
POUR LA SUITE DU
SYSTEME.



CMD VOILETS EVAC.

X

MODE REFR.

X

MODE CHAUF.

X

VLV CHAUF. / REFR.

X

X

HV-1

VLV humid.

X

X

X

Pression piece

X

PC X

Te.ext. X

DELAI APRES PANNE

X

Parametres et Horaires



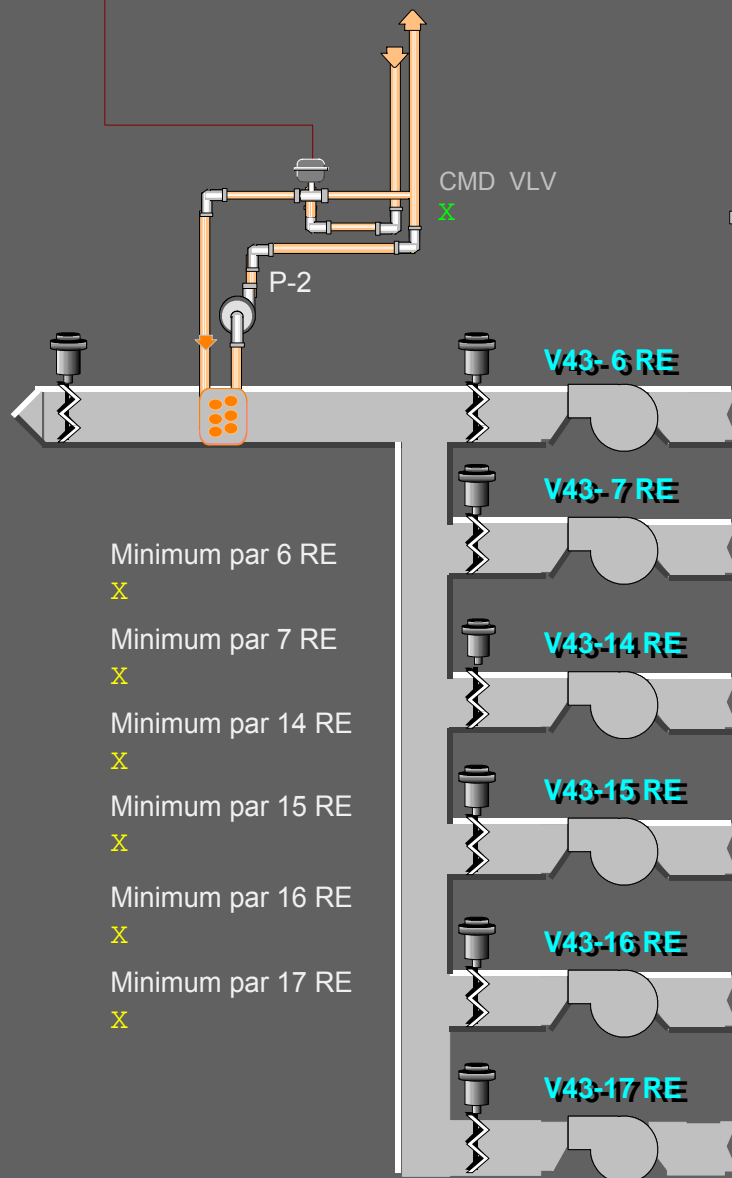
Vacance DSC-6



MENU PRINCIPAL



FAIRE PAGE UP
POUR RETOUR
AU SYSTEME.



Minimum par 6 RE

X

Minimum par 7 RE

X

Minimum par 14 RE

X

Minimum par 15 RE

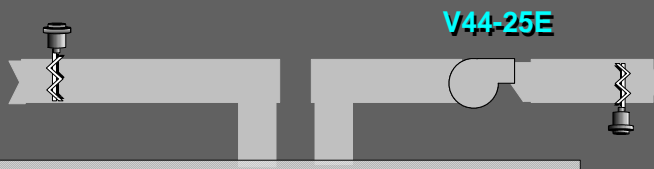
X

Minimum par 16 RE

X

Minimum par 17 RE

X



ETAT RECUP.

X

RECIRC. GLYCOL

X

ETAT PRE-CH

X

EVITEMENT BL COND.

X

PRESSION SERP.GLY

X

CMD VOILETS EVAC.

X

VACANCES DSC-6 , V43-6

Jour / Mois	VACANCE 1	<input type="text" value="X"/>
Jour / Mois	VACANCE 2	<input type="text" value="X"/>
Jour / Mois	VACANCE 3	<input type="text" value="X"/>
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Jour / Mois	VACANCE 5	<input type="text" value="X"/>
Jour / Mois	VACANCE 6	<input type="text" value="X"/>



PARAMETRES

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidité

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidité

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Recuperation

PC recup.	X
Differentiel rec.	X

Contrôle Volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle pre-chauffage

Limite CTRL	X
Differentiel	X
Delais evit.BL	X



DIAGRAMME DE DEBIT

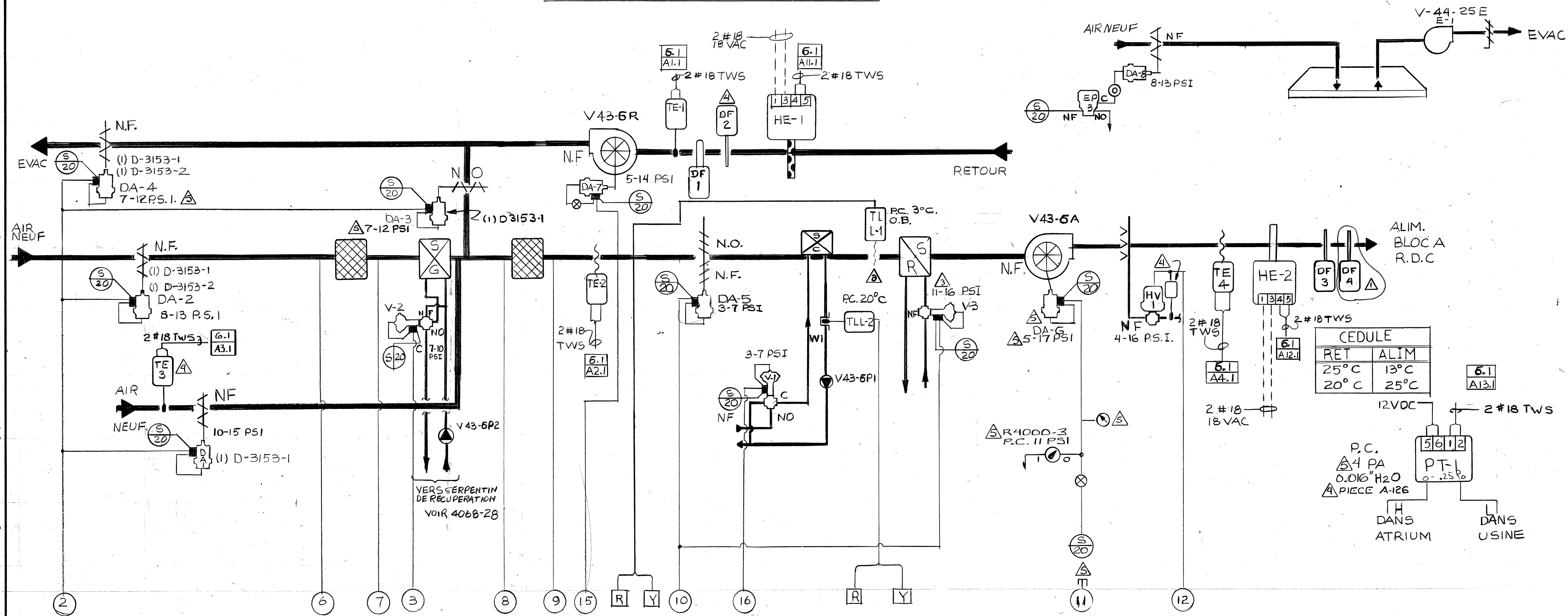
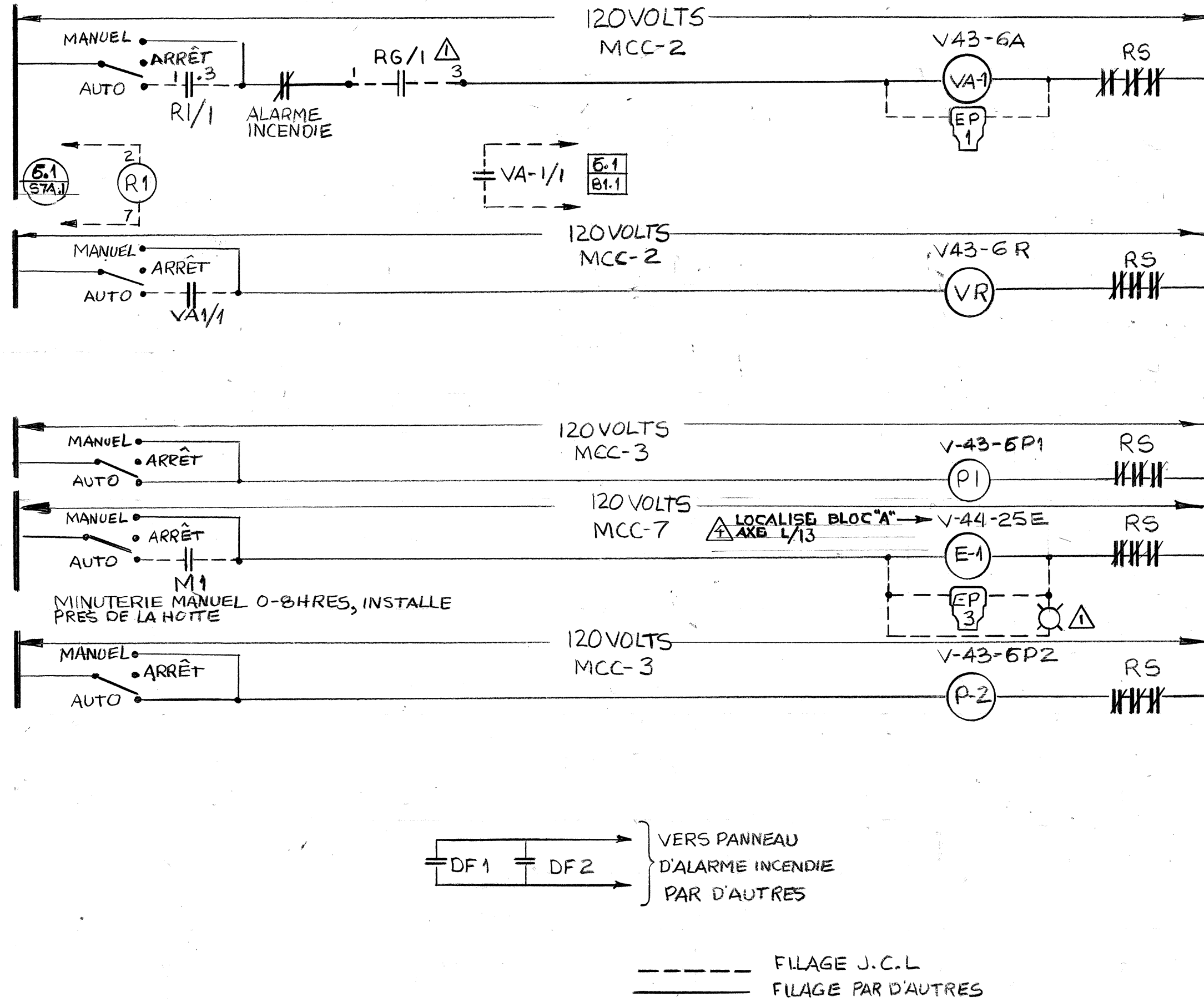
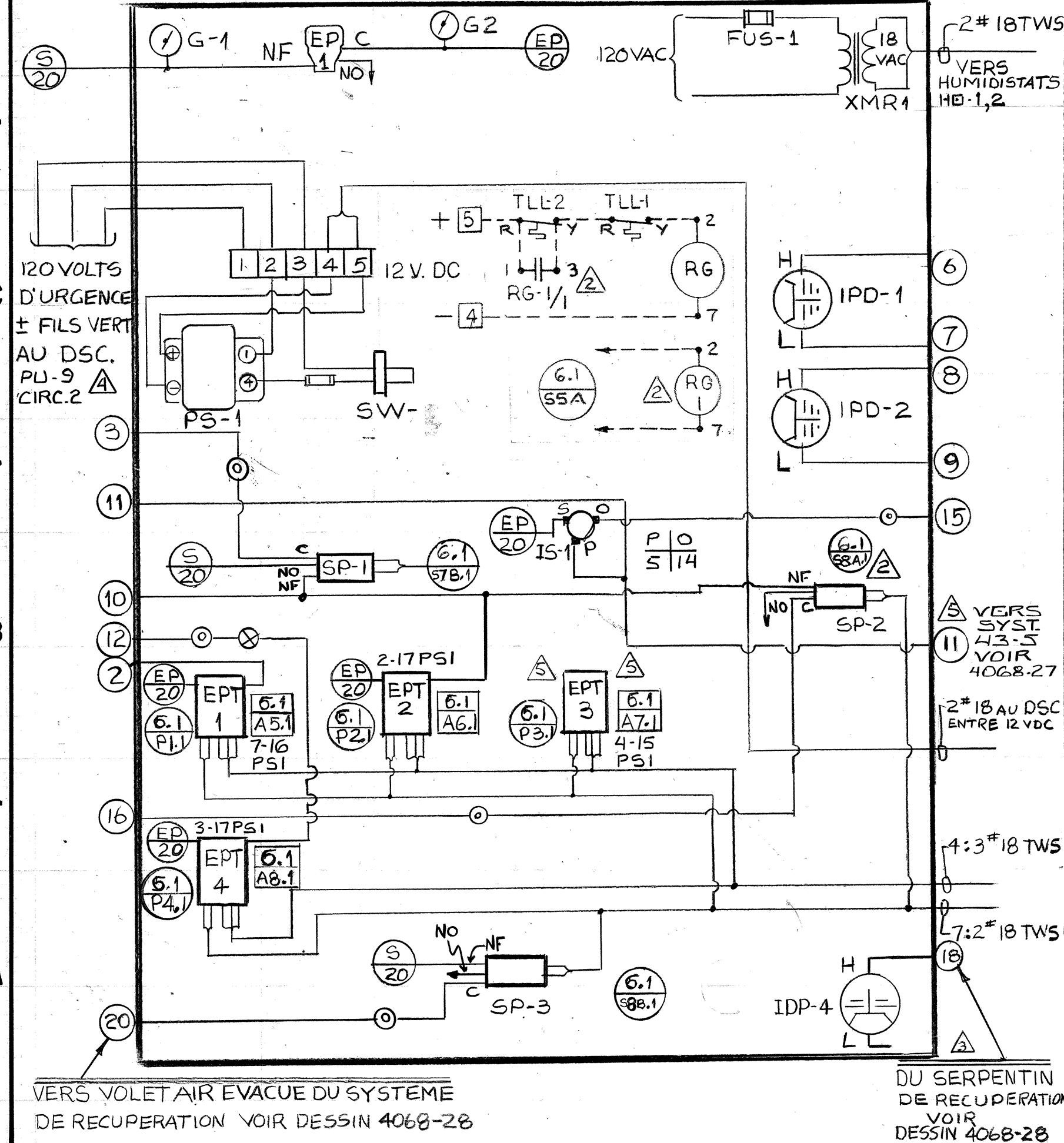



DIAGRAMME ELECTRIQUE



PANNEAU



LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 4	D3153-1	4	MOTEUR DE VOLET C/A P.P.
	D3153-2	2	MOTEUR DE VOLET
	D3153-1	1	MOTEUR DE VOLET
DA-5		2	MOTEUR FOURNI PAR D'AUTRES
DA-6,7		1	MOTEUR DE VOLET
DA-8	D3073-2	1	VALEVE 3 VOIES Ø 2 1/2" C.V. 54
V-1	V5842-8	1	VALEVE 3 VOIES Ø 2" C.V. 30
V-2	V5842-6	1	VALEVE 3 VOIES N.F. Ø 5" C.V. 240
V-3	V5462-16	1	ELEMENT DE TEMPERATURE
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	INDICATEUR DE PRESSION 0-50 mm
IPD-1,2,4	2000-50	3	ELEMENT D'HUMIDITE ENERCORP.
DE-1,2	1.1000.30.041	2	DETECTEUR DE FUMEE PYROTRONIC
HF-1 @ 4		4	BASSE LIMITE
TLL-1	A11A-6	1	BASSE LIMITE
TLL-2	A19AAF-12	1	PUIT D'IMMERSION
W-1	WZ1000-2 	1	DETECTEUR DE PRESSION STATIQUE
W-1,3	WZ1000-26	1	RELAIS ELECTRIQUE PNEUMATIQUE
EP-1,2	W11HA-109	2	INDICATEUR 0-30 PSI
G-1,2	G2010-101	1	BLOC DE PUISSANCE 12 VDC
HE12-1,7A		4	INTERFACE ELECTRIQUE PNEUMATIQUE
EPT-1 @ 4	EPT-102	3	RELAIS 12 VDC
R-1, RG \leq RG-1	6012	1	PANNEAU 24" X 36" X 7"
P-1	M8100-109	1	TRANSFO. 120/18 VAC
XMR-1	BD 2FF	1	VALVE A AIR 3 VOIES
SP-1 @ 3	V9011-1	3	INVERSEUR DE SIGNAL
IS-1	C208-2	1	MINUTERIE MANUELLE 0-12 HRES
M1	MARK TIME 90x15	1	C/A LAMPE TEMOIN
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME, V43-CA PAR LE DSC, LE VENTILATEUR DE RETOUR
 V43-GR DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES.


LA VALVE DE REFROIDISSEMENT, LES VOLETS DE MELANGE, LA VALVE DE RECUPERATION, LE SERPENTIN DE FACE ET EVITEMENT SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANTE; CEPENDANT, LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C, LA VALVE V-1 DU
SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100% PAR SP-2
ET RG-1 EST DESAMORCE

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOIETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT REAJUSTER EN FONCTION DU NOMBRE D'EVACUEUR EN MARCHÉ.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE
RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR;
CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINÉ D'ALIMEN-
TATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE 

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL
DU PANNEAU D'ALARME INCENDIE.

LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE.

AU DEPART DU SYSTEME V44-25E PAR LA MINUTERIE MECANIQUE M-1, LE
 VOILET D'AIR NEUF DA-8 OUVRE A 100% PAR EP-3.

SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-2A,
AU SERPENTIN DE RECUPERATION EST SUPERIEUR
AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE
AU SERPENTIN AFIN DE LE DEGIVRER

LES VENTILATEURS QUI AFFECTENT LE MINIMUM
D'AIR NEUF SONT: V 36-7 RE

V 36-17 RE
V 36-16 RE
V 36-15 RE
V 36-14 RE

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

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096-0273490	5	PM 2-1	8-6-13	
	↑↑	TELEPHONE CONSULTANT	% 27.00	

AR-83	3		DEC. 20-85	52
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CHANGING THE	2	ADDITION KEY	NOV 27-85	
	1		SEPT 18-85	

REFERENCE DRAWINGS	NO.	REVISION - LOCATION	ECN	DATE	BY
SALES ENGR. JCR	APPLICATION ENGR. RF	DRAWN	APPROVED		
		BY	DATE	BY	DATE
					8-5-8-12

441 BOUL. LEBEAU
 MONTRÉAL, QUÉ.
 CONTRACT NUMBER 30
 40 96-0008

CONTROLS Systems & Services Division	H4N 1S2 Tel: 1-514-333-6969	DRAWING NUMBER 4068-38
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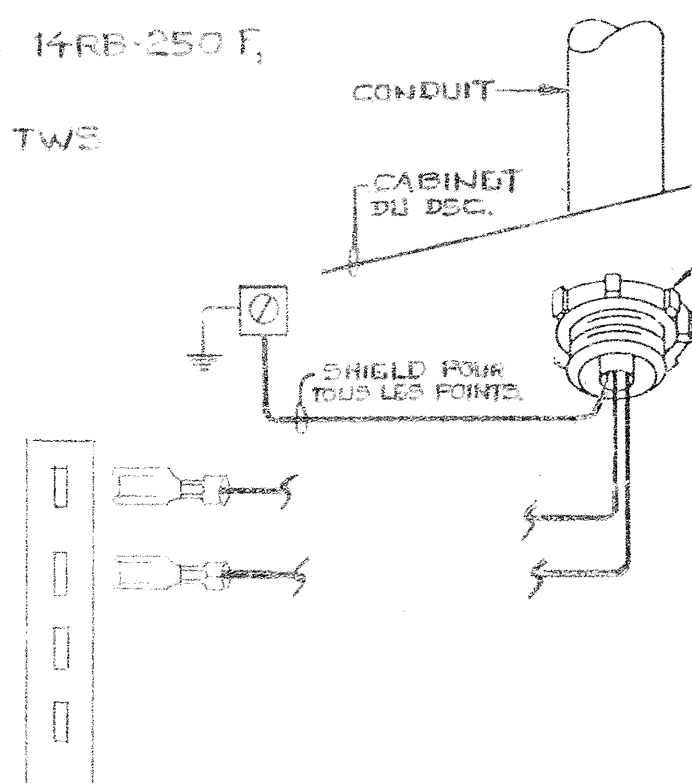
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The diagram illustrates the internal wiring of a control panel, organized into several functional sections:

- BINARY INPUT POINTS:** Located on the left side, this section contains 16 input points (1-16). Each point is connected to a specific switch or sensor, such as 'SWITCH 1', 'SWITCH 2', 'SWITCH 3', 'SWITCH 4', 'SWITCH 5', 'SWITCH 6', 'SWITCH 7', 'SWITCH 8', 'SWITCH 9', 'SWITCH 10', 'SWITCH 11', 'SWITCH 12', 'SWITCH 13', 'SWITCH 14', 'SWITCH 15', and 'SWITCH 16'. The inputs are also connected to a common ground (GND).
- BINARY OUTPUT POINTS:** Located at the top center, this section contains 16 output points (1-16). Each point is connected to a specific relay or solenoid, such as 'RELAY 1', 'RELAY 2', 'RELAY 3', 'RELAY 4', 'RELAY 5', 'RELAY 6', 'RELAY 7', 'RELAY 8', 'RELAY 9', 'RELAY 10', 'RELAY 11', 'RELAY 12', 'RELAY 13', 'RELAY 14', 'RELAY 15', and 'RELAY 16'. The outputs are also connected to a common ground (GND).
- ANALOG INPUT POINTS:** Located on the right side, this section contains 16 input points (1-16). Each point is connected to a specific analog sensor or transducer, such as 'SENSOR 1', 'SENSOR 2', 'SENSOR 3', 'SENSOR 4', 'SENSOR 5', 'SENSOR 6', 'SENSOR 7', 'SENSOR 8', 'SENSOR 9', 'SENSOR 10', 'SENSOR 11', 'SENSOR 12', 'SENSOR 13', 'SENSOR 14', 'SENSOR 15', and 'SENSOR 16'. The inputs are also connected to a common ground (GND).
- NON-SWITCHED COMMON:** Located at the bottom center, this section contains 16 common points (1-16). Each point is connected to a specific common terminal, such as 'COMMON 1', 'COMMON 2', 'COMMON 3', 'COMMON 4', 'COMMON 5', 'COMMON 6', 'COMMON 7', 'COMMON 8', 'COMMON 9', 'COMMON 10', 'COMMON 11', 'COMMON 12', 'COMMON 13', 'COMMON 14', 'COMMON 15', and 'COMMON 16'. The common points are also connected to a common ground (GND).
- Other Components:** The diagram also shows a 'CAL RES' (calibration resistor) connected to a 'CAL RES' terminal, a 'R1' (resistor) connected to a 'R1' terminal, and a 'JCM-2' (connector) connected to a 'JCM-2' terminal.

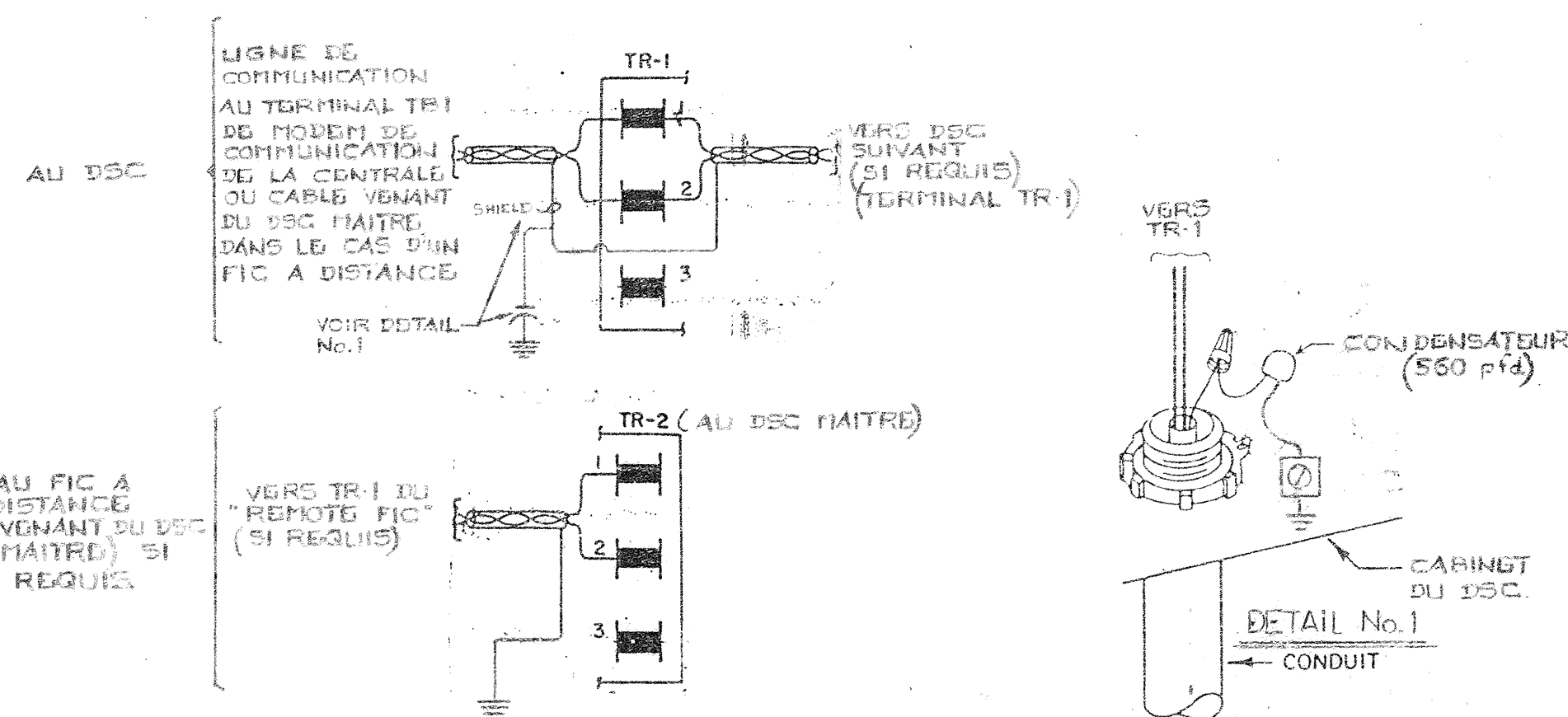
① - TYPE DE RACCORD
COSSSES T & B TYPE 14RB-250 F,
ISOLES .250.

② - CABLAGE EN 2#18 TWS
PARTOUT.

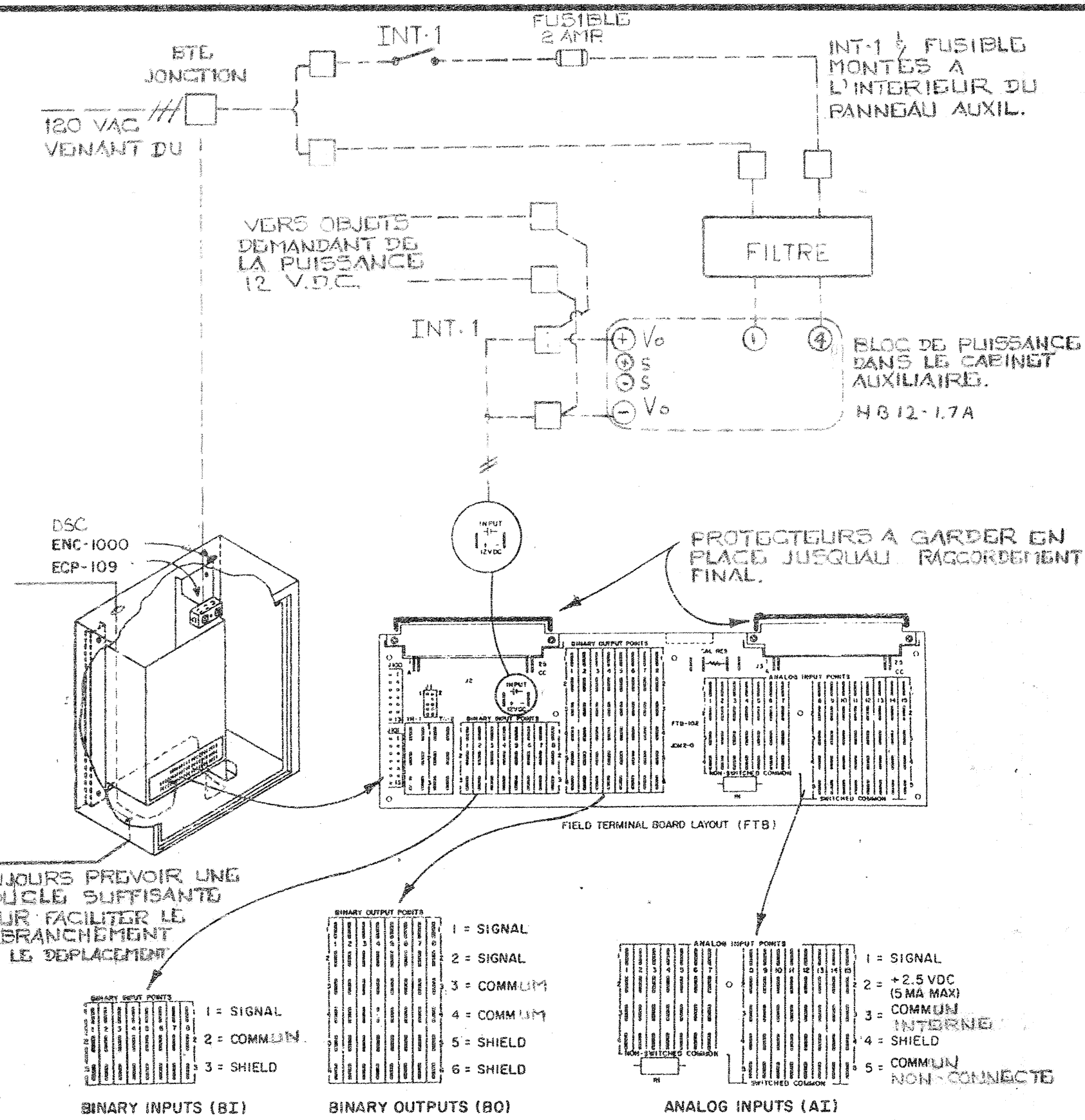


TOTAL MAX 8 BORTIES

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 6		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-6	BIN	1 2		CONTACT AUX. DEM.	MCC- 2	B1.1		
2	STATUS	SYSTEME V36-7RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B2.1		
3	STATUS	V36- GRE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1		
4	STATUS	V36- 17RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B4.1		
5	STATUS	V36- 16RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B5.1		
6	STATUS	V36- 15RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B6.1		
7	STATUS	V36- 14RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B7.1		
8	GEL	SYSTEME V43-6	BIN	1 2		RELAIS R G	CAB AUX	B8.1		



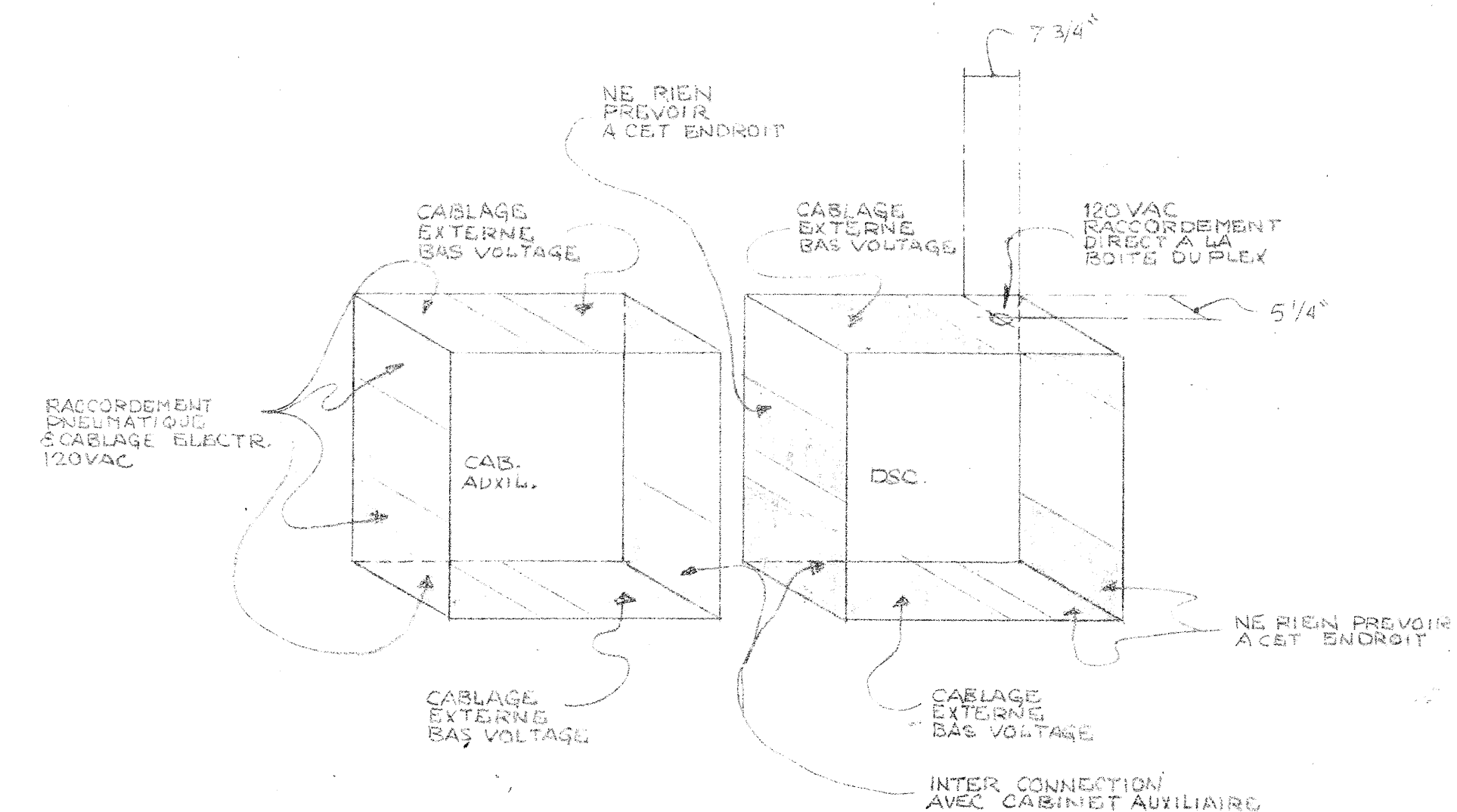
EMPLACEMENT				ADRESSE						
NO. : C.I.R.A.								DSC 6		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9										
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%RH
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-90%RH
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5VDC 0-25%
14	PT-2A	PRESSION SERP. CANC.	ANA	1 5	1 2	SONDE DE PRESSION PT-2A	SERP CANC.	A14.1		0-5VDC 0-25%



INT-1 : INTERRUPTEUR "TOGGLE" EAGLE SECT. MOD 447, MONTÉ
AVEC R-300-101 J.C.L.

□ — TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.A.								DSC 6		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1		
5A	RG-1	RELAIS DEVITEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	S5A.1		
7A	R-1	ARRET DEPART V43-6	SST	1 3	2 7	RELAIS 12VDC	MCC-2	S7A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	S7B.1		
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1 3	ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1		
8B	SP-3	VOLET EVAC DA-13	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	S8B.1		



① — VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

② — VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES /
ELECTRIQUES LOCAUX.

TITRE			TEL QUE CONSTRUIT		86-07-08	
	CHANGEMENT # 112	ADDITION RG-1		NOV 27-85		
			SEPT 27-85			
			SEPT 18-85			
IMPLANTATION DSC-8500			REFERENCE	NO.	REVISION	AVIS DATE PAR
DSC-6	REPRESENTANT J. C. R.	TECHNICIEN R. F.	DESSINE		APPROUVE	
			PAR DATE	DATE	PAR DATE	DATE
PROJET	DATE 25-8-1		CONTRAT		4096-008-1/2	
CENTRE DE RECHERCHE		JOHNSON		Société de Contrôle Johnson Ltee		DESSIN NO.
ALIMENTAIRE		CONTROLS		441 boulevard Lebeau		4068-31
ST-HYACINTHE, QUE.		Division Des Systemes		Montreal, QC H4N 1S2		
		Et Services		Tel: 514/332-6980		

DSC 6 SYSTEME V43-6A

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXT
14	DISPLAY	TE60,A	/TEMP ALIM

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
----	--------	----------	----------------------------

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
----	--------	-------	--------------------------------


```

50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
/
65      DISPLAY  FSTAXX,B   /ETAT VENTIL. 06RE 07RE
66      DISPLAY  FSTAYY,B   /ETAT VENTIL. 14RE 15RE
67      DISPLAY  FSTAZZ,B   /ETAT VENTIL. 16RE 17RE
68      ADJUST   MINFXX,A   /MINIMUM PAR V 06RE 07RE
69      ADJUST   MINFYY,A   /MINIMUM PAR V 14RE 15RE
70      ADJUST   MINFZZ,A   /MINIMUM PAR V 16RE 17RE
/
72      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION

73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  FSP1,I     /PRES STAT SERP GLYCOL
78      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/ 1000 PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/

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```

79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/-----/
/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-6
/
/      51      ALARME HORAIRE SYSTEME V43-6
/
/-----/

```

□

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-17-:1 08:17:17
/
/TRANSLATION LISTING FOR DSC-6.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:23
/
/TRANSLATION LISTING FOR DSC-6.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:55:30
/
/TRANSLATION LISTING FOR CIRA6.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   6   SYSTEME   V43-6A
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     01 SEPT 1987
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,8277
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  27
@ AD:  106
@ BI:  CON-8,BIT-0,BIR-0
@ AI:  LTD-2,FUL-10,RAT-0,TOT-0

```

@ BO: MOM-0, POS-4, MAN-5

@ CP: BIP-0, BOF-0, AIP-0, APP-0, PCP-0, INC-4

@ FIC POINT DEFINITION:

@ FIC NO. 1

/

/

BI-1	FSTAT	CON-1	E,E	/ETAT VENTIL. ALIM.
BI-2	FSTA07	CON-2	E,E	/ETAT VENTIL. 7RE
BI-3	FSTA06	CON-3	E,E	/ETAT VENTIL. 6RE
BI-4	FSTA17	CON-4	E,E	/ETAT VENTIL. 17RE
BI-5	FSTA16	CON-5	E,E	/ETAT VENTIL. 16RE
BI-6	FSTA15	CON-6	E,E	/ETAT VENTIL. 15RE
BI-7	FSTA14	CON-7	E,E	/ETAT VENTIL. 14RE
BI-8	FREEZE	CON-8	E,E	/ETAT THERMOSTAT DE GEL

/

/

AI-1	TE80	FUL-1	E,0.5,E,V,T,-45.9,128.9	/TEMP RETOUR
AI-2	TE10	FUL-2	E,0.5,E,V,T,-45.8,128.9	/TEMP MELANGE
AI-3	TE1	FUL-3	E,0.5,E,V,T,-45.8,128.9	/TEMP EXT
AI-4	TE60	FUL-4	E,0.5,E,V,T,-45.9,128.9	/TEMP ALIM
AI-5	ZT10	FUL-5	E,0.5,E,N,O,-12.5,250.0	/F.B. VOLETS
AI-6	ZT30	FUL-6	E,0.5,E,N,O,-12.5,250.0	/F.B. SOUPAPES
AI-7	ZT50	FUL-7	E,0.5,E,N,O,-12.5,250.0	/F.B. VAV
AI-8	ZT70	FUL-8	E,0.5,E,N,O,-12.5,250.0	/F.B. HUMIDITE
AI-11	HT80	LTD-1	E,0.5,E,N,O,-10.0,100.0	/HUMIDITE RETOUR
AI-12	HT60	LTD-2	E,0.5,E,N,O,-10.0,100.0	/HUMIDITE ALIMENT
AI-13	SPT	FUL-9	E,0.1,E,N,O,0,620	/PRESSION STATIQUE EN P
AI-14	SPT1	FUL-10	E,0.1,E,N,O,0,621	/PRES STAT EN P SERP GL

/

/

BO-1	ZC10	POS-1	D,E,0	/VOLETS
BO-2	ZC30	POS-2	D,E,0	/SOUPAPES
BO-3	ZC50	POS-3	D,E,0	/VAV
BO-4	ZC70	POS-4	D,E,0	/HUMIDITE
BO-5A	ZSL1	MAN-1	E,E	/EVITEMENT BASSE LIMIT
BO-7A	ZS50	MAN-2	E,E	/VENTIL ALIM
BO-7B	ZS10	MAN-3	E,E	/RECUPER RECIRCULATION
BO-8A	ZS20	MAN-4	E,E	/SOUPAPE PRECHAUFF
BO-8B	ZS80	MAN-5	E,E	/VOLETS EVACUATION

/

/

CP-1	ZCP10	INC-1	E,E,A,ZT10,ZC10,-100,0,5,0.0	/VOLETS
CP-2	ZCP30	INC-2	E,E,A,ZT30,ZC30,-100,0,5,0.0	/SOUPAPES
CP-3	ZCP50	INC-3	E,E,A,ZT50,ZC50,-100,0,5,0.0	/VAV
CP-4	ZCP70	INC-4	E,E,A,ZT70,ZC70,-100,0,5,0.0	/HUMIDITE

/

/

@ DATA POINT DEFINITION:

/

/

/-----/

/ VARIABLES POUR LE PROG HORAIRE, ARRET DEPART /

/-----/

/

BD-1	OCCD	E,R	/CYCLE D OCCUPATION
BD-2	FSTRT	E,R	/DEMANDE VENTILATEUR
BD-3	COMP50	E,R	/RESULTAT DEMARRAGE

```

BD-4    CONON    E,R    /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-5    ECON     E,R    /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE          /
/-----/
/
BD-6    MXD      E,R    /CONTROLE DE JOUR
BD-7    MIXLL    E,R    /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
BD-8    PREHEA   E,R    /PRE CHAUFFAGE
BD-9    LLBYP    E,R    /RESULTAT TEMPORAIRE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-10   HTG      E,R    /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
BD-11   CLG      E,R    /REFROIDISSEMENT
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
BD-12   RECUP    E,R    /RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
BD-13   SYSP     D,R
BD-14   SYS      D,R
BD-15   SYS1     D,R
BD-16   SYS2     D,R
BD-17   SYS3     D,R
BD-18   SYS4     D,R
BD-19   SYS5     D,R
BD-20   SYS6     D,R
BD-21   SYS7     D,R
BD-22   SYS8     D,R
BD-23   SYS9     D,R
BD-24   SYS10    D,R
BD-25   FSTAXX   D,R

```

```

BD-26   FSTAYY   D,R
BD-27   FSTAZZ   D,R
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
AD-1     DOW      E,2
AD-2     H1       E,00:00
AD-3     H2       E,00:00
AD-4     H3       E,00:00
AD-5     H4       E,00:00
AD-6     H5       E,00:00
AD-7     H6       E,00:00
AD-8     STA      E,00:00 /HORAIRE
AD-9     STO      E,00:00
AD-10    STA8     E,18:00
AD-11    STO8     E,18:00
AD-12    STA7     E,07:05
AD-13    STO7     E,17:00
AD-14    STA9     E,07:05
AD-15    STO9     E,18:00
AD-16    DELSST   E,50    /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17    OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18    RARL     E,21.5   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19    RARH     E,24.5   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20    SAHL     E,25.0   /REAJ TEMP ALIM HAU LIM
AD-21    SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-22    DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-23    MXDSP    E,11.0   /POINT DE CONSIGNE LIMITE MEL.
AD-24    MDP      E,0.0    /POSITION MINIMUM VOLETS
AD-25    CST10A   E,10     /INTERVAL CTL VOLETS LIMITE
AD-26    CPB10A   E,-90.0  /BANDE PROP CTL VOLETS LIMITE
AD-27    CIG10A   E,33     /GAIN CTL VOLETS LIMITE
AD-28    CMP10A   E,0.0    /COMPENSATION CTL VOLETS LIMITE
AD-29    CDS10A   E,2.0    /BANDE MORTE CTL VOLETS LIMITE
AD-30    CST10    E,70     /INTERVAL CTL VOLETS
AD-31    CPB10    E,-60.0  /BANDE PROP CTL VOLETS
AD-32    CIG10    E,33     /GAIN CTL VOLETS
AD-33    CMP10    E,0.0    /COMPENS CTL VOLETS
AD-34    CDS10    E,0.0    /BANDE MORTE CTL VOLETS
AD-35    ZMXD     E,0.0    /RESULTAT PROPORTION.

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AD-36   Z10M      E,100.0 /RESULTAT VOILETS LIMITE
AD-37   Z10C      E,0.0   /RESULTAT VOILETS CTL
AD-38   Z10       E,0.0   /RESULTAT VOILETS
/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39   MDPOS     E,20.0   /MINIMUM SANS EVACUATION
AD-40   MINF1     E,9.0    /MINIMUM VENTIL. 6RE
AD-41   C1        E,0.0    /RESULTAT TEMPORAIRE DE CALCUL
AD-42   MINF2     E,10.0   /MINIMUM VENTIL. 7RE
AD-43   C2        E,0.0    /RESULTAT TEMPORAIRE DE CALCUL
AD-44   MINF3     E,2.0    /MINIMUM VENTIL. 14RE
AD-45   C3        E,0.0    /RESULTAT TEMPORAIRE DE CALCUL
AD-46   MINF4     E,4.5    /MINIMUM VENTIL. 15RE
AD-47   C4        E,0.0    /RESULTAT TEMPORAIRE DE CALCUL
AD-48   MINF5     E,2.5    /MINIMUM VENTIL. 16RE
AD-49   C5        E,0.0    /RESULTAT TEMPORAIRE DE CALCUL
AD-50   MINF6     E,5.0    /MINIMUM VENTIL. 17RE
AD-51   C6        E,0.0    /RESULTAT TEMPORAIRE DE CALCUL
/
/-----/
/      PARAMETRES CONTROLE DU PRE CHAUFFAGE      /
/-----/
/
AD-52   PREALL    E,5.0    /LIMITE CONTROLE PRE CHAUFFAGE
AD-53   PREADF    E,1.0    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-54   DELHEA    E,120    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-55   Z40       E,0.0    /RESULTAT CHAUFFAGE
AD-56   CST40     E,25     /INTERVAL CTL CHAUFF
AD-57   CPB40     E,50.0   /BANDE PROP CTL CHAUFF
AD-58   CIG40     E,33     /GAIN CTL CHAUFF
AD-59   CDS40     E,0.0    /BANDE MORTE CTL CHAUFF
AD-60   Z30POS    E,60.0   /POSITION D ARRET SOUPAPES
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-61   Z30       E,0.0    /RESULTAT REFROIDISSEMENT
AD-62   CST30     E,30     /INTERVAL CTL REFROIDI
AD-63   CPB30     E,-41.2  /BANDE PROP CTL REFROIDI
AD-64   CIG30     E,60     /GAIN CTL REFROIDI
AD-65   CDS30     E,0.0    /BANDE MORTE CTL REFROIDI
/
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-66   SPSP      E,4      /POINT DE CONSIGNE PRESS STAT

```

```

AD-67  CST50      E,6      /INTERVAL CTL VAV
AD-68  CPB50      E,-10.0 /BANDE PROP CTL VAV
AD-69  CIG50      E,30     /GAIN CTL VAV
AD-70  CMP50      E,0.0    /COMPENS CTL VAV
AD-71  CDS50      E,0.4    /BANDE MORTE CTL VAV
AD-72  Z50        E,0.0    /RESULTAT CTL VAV
AD-73  FSP        E,0.0    /PRESS STAT FILTREE
AD-74  AD1        D,0.0    /RESULTAT TEMPORAIRE
AD-75  AD2        D,0.0    /RESULTAT TEMPORAIRE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-76  RHSP       E,30.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-77  RHSPA      E,80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-78  CST70      E,60     /INTERVAL CTL HUMIDITE
AD-79  CPB70      E,90.0    /BANDE PROP CTL HUMIDITE
AD-80  CIG70      E,33     /GAIN CTL HUMIDITE
AD-81  CDS70      E,0.0    /BANDE MORTE CTL HUMIDITE
AD-82  CST70A     E,5      /INTERVAL H LIM HUMIDITE
AD-83  CPB70A     E,90.0    /BANDE PROP H LIM HUMIDITE
AD-84  CIG70A     E,33     /GAIN H LIM HUMIDITE
AD-85  CDS70A     E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-86  Z70        E,0.0    /RESULTAT CTL HUMIDITE
AD-87  Z70HL      E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-88  Z70C       E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
AD-89  RECUHL     E,200    /POINT DE CONSIGNE RECUPERATION
AD-90  RECUDF     E,50     /DIFFERENTIEL RECUPERATION
AD-91  FSP1       E,0.0    /PRESSION STATIQUE FILTREE
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-92  SYSDIS     D,0
AD-93  CSTXXX     D,0
AD-94  CPBXXX     D,0.0
AD-95  CIGXXX     D,0
AD-96  CMPXXX     D,0.0
AD-97  CDSXXX     D,0.0
AD-98  MINFXX     D,0.0
AD-99  MINFYY     D,0.0
AD-100 MINFZZ     D,0.0
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
AD-101 UPTIM      E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-102 UPDAT      E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-103 DNTIM      E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR

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AD-104	DNDAT	E,00:00	/DATE DE LA DERNIERE PERTE DE POUVOIR
AD-105	TOD	E,00:00	/DERNIERE HEURE
AD-106	LDAT	E,00:00	/DERNIERE DATE

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXT
14	DISPLAY	TE60,A	/TEMP ALIM

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
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/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

```

/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
/
65      DISPLAY  FSTAXX,B   /FUNCTION 88    900    1000
66      DISPLAY  FSTAYY,B   /ETAT VENTIL.  06RE   07RE
67      DISPLAY  FSTAZZ,B   /ETAT VENTIL.  14RE   15RE
68      ADJUST   MINFXX,A   /ETAT VENTIL.  16RE   17RE
69      ADJUST   MINFYY,A   /MINIMUM PAR V 06RE   07RE
70      ADJUST   MINFZZ,A   /MINIMUM PAR V 14RE   15RE
71      ADJUST   MINFZZ,A   /MINIMUM PAR V 16RE   17RE
/
72      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
/
73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  FSP1,I     /PRES STAT SERP GLYCOL
78      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/ 1000 PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL
82      ADJUST   CMPXXX,A   /COMPENSATION
83      ADJUST   CDSXXX,A   /BANDE MORTE

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/
/-----/
/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-6
/
/      51      ALARME HORAIRE SYSTEME V43-6
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R

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1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET    OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/
2.1      PROG      DOW,0,STA,STO
2.2      SET        OCCD,SUF,R
2.3      SET        FSTRT,SUF,R
2.4      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET        AUTO,S,S
3.3      DELAY      25,U
3.4      SET        COMP50,R,R
3.5      INTERVAL   10,U
3.6      XOR        COMP50,FSTAT
3.7      ALARM      50,C,S
3.8      SET        BPD,FSTRT,R
3.9      BOUT       ZS50,3,OFF
3.10     SET        COMP50,BPD,R
3.11     EXIT      U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
4.1      RESTART
4.2      DELAY      25,U
4.3      INTERVAL   5,U
4.4      SET        BPD,FREEZE,R
4.5      ALARM      10,C,R
4.6      EXIT      U
/

```

```

/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT      CONON,S
5.2      SET        BPD,CONON,R
5.3      STORE      APD,0.0,0.0,C,R
5.4      STORE      Z70C,APD,APD,C,R
5.5      STORE      Z70,APD,APD,C,R
5.6      AOUT       ZCP70,3,0.0,C,R
5.7      EXIT       C,R
5.8      DELAY      20,U
5.9      INTERVAL   CST70,U
5.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11     STORE      Z70C,APD,APD,U
5.12     EXIT       U
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      EXIT       C,R
6.4      INTERVAL   CST70A,U
6.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6      STORE      Z70HL,APD,APD,U
6.7      SELECT     APD,Z70C,L
6.8      STORE      Z70,APD,APD,U
6.9      AOUT       ZCP70,3,0.0,U
6.10     EXIT       U
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE                          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/LE RESULTAT AGIT SUR LES DEUX SYSTEMES 5 ET 6.
/
7.1      RESTART
7.2      DELAY      40,U
7.3      INTERVAL   CST50,U
7.4      FILTER     SPT,63,100
7.5      STORE      AD1,APD,APD,U      /PRESSION AVEC DECIMALE
7.6      CALC       APD,0,1,1,10,R
7.7      STORE      FSP,APD,APD,U      /PRESSION SANS DECIMALE
7.8      CALC       SPSP,0,10,1,1,T
7.9      STORE      AD2,APD,APD,U      /POINT DE CONSIGNE AVEC DECIMALE
7.10     CALC       CPB50,0,10,1,1,T
7.11     PROP       AD2,AD1,APD,CIG50,CMP50,CDS50
7.12     STORE      Z50,APD,APD,U
7.13     AOUT       ZCP50,3,0,U
7.14     EXIT       U

```

```

/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-.O
/
8.1      RESTART
8.2      SET          MXD,R,R
8.3      SET          CONON,R,R
8.4      DELAY        25,U
8.5      INTERVAL     5,U
8.6      AND          FSTAT,OCCD
8.7      SET          MXD,BPD,R
8.8      SET          CONON,FSTAT,R
8.9      EXIT         U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS          /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
9.1      EVENT        MXD,S
9.2      SET          ECON,R,R
9.3      SET          BPD,FSTAT,R
9.4      EXIT         C,R
9.5      INTERVAL     300,U
9.6      COMPARE      TE1,GE,OASO,1.0
9.7      SET          ECON,BPD,R
9.8      EXIT         U
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1     EVENT        MXD,S
10.2     INTERVAL     300,U
10.3     STORE        APD,TE80,RARL,U
10.4     SPAN         RARL,RARH,SAHL,SALL
10.5     STORE        DSSP,APD,SAHL,U
10.6     EXIT         U
/
/-----/
/          CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT

```

/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
 /MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
 /LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
 /A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
 /FERMENT AINSI QUE LA SOUPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
 /OUVERT.

/

/Z10M RESULTAT PAR TEMP DE MELANGE

/Z10C RESULTAT PAR TEMP D ALIMENTATION

/Z10 RESULTAT VOLETS

/

11.1 EVENT MXD,S

11.2 SET MIXLL,R,R

11.3 SET BPD,MXD,R

11.4 EXIT C,R

11.5 INTERVAL 5,U

11.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE

11.7 SET MIXLL,BPD,R /A LA BASSE LIMITE

11.8 SELECT Z10M,Z10C,L

11.9 STORE Z10,APD,APD,U

11.10 AOUT ZCP10,3,0.0,U

11.11 EXIT U

/

12.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE

12.2 SET BPD,MIXLL,R

12.3 STORE Z10M,100.0,100.0,C,R

12.4 STORE CMP10A,Z10C,Z10C,U

12.5 EXIT C,R

12.6 INTERVAL CST10A,U

12.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A

12.8 STORE Z10M,APD,APD,U

12.9 EXIT U

/

13.1 EVENT MXD,R /POSITION D ARRET SOUPAPES

13.2 SET BPD,MXD,R

13.3 EXIT C,S

13.4 SET HTG,R,R

13.5 SET CLG,R,R

13.6 DELAY 7,C,R

13.7 STORE APD,0.0,0.0,C,R

13.8 AOUT ZCP30,3,0.0,C,R

13.9 EXIT U

/

14.1 EVENT MXD,S

14.2 SET BPD,MXD,R

14.3 STORE APD,0.0,0.0,C,R

14.4 STORE Z10,APD,APD,C,R

14.5 STORE Z10C,APD,APD,C,R

14.6 STORE Z10M,100.0,100.0,C,R

14.7 STORE ZMXD,APD,APD,C,R

14.8 AOUT ZCP10,3,0.0,C,R

14.9 EXIT C,R

14.10 DELAY 7,U

14.11 STORE APD,TE1,5.0,U

14.12 SPAN 5.0,20.0,0.0,75.0

14.13 STORE CMP10,APD,APD,U

```

14.14  STORE      APD,Z30POS,Z30POS,U
14.15  AOUT       ZCP30,3,0.0,U
14.16  INTERVAL  CST10,U
14.17  PROP       DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18  STORE      ZMXD,APD,APD,U
14.19  SPAN       MDP,100.0,MDP,100.0
14.20  SET        BPD,ECON,S
14.21  STORE      APD,MDP,MDP,C,S
14.22  STORE      Z10C,APD,APD,U
14.23  ORR        ZMXD,GE,85.0,10.0
14.24  SET        CLG,BPD,R
14.25  COMPARE    ZMXD,LE,15.0,10.0
14.26  SET        HTG,BPD,R
14.27  EXIT       U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DES VENTILATEURS
/D EVACUATION. LA FONCTION MINF1 A MINF6 SONT LES POURCENTAGES RAJOUTES
/A LA POSITION MINIMUM QUAND LE VENTILATEUR CORRESPONDANT FONCTIONNE. LE
/RESULTAT S APPLIQUE DANS LA ROUTINE DE CONTROLE DES VOLETS
/
15.1    RESTART
15.2    DELAY      25,U
15.3    INTERVAL  10,U
/
15.4    SET        BPD,FSTA06,R           /CALCUL VENT. 6RE
15.5    STORE      C1,0.0,0.0,C,R
15.6    STORE      C1,MINF1,MINF1,C,S
/
15.7    SET        BPD,FSTA07,R           /CALCUL VENT. 7RE
15.8    STORE      C2,0.0,0.0,C,R
15.9    STORE      C2,MINF2,MINF2,C,S
/
15.10   SET        BPD,FSTA14,R           /CALCUL VENT. 14RE
15.11   STORE      C3,0.0,0.0,C,R
15.12   STORE      C3,MINF3,MINF3,C,S
/
15.13   SET        BPD,FSTA15,R           /CALCUL VENT. 15RE
15.14   STORE      C4,0.0,0.0,C,R
15.15   STORE      C4,MINF4,MINF4,C,S
/
15.16   SET        BPD,FSTA16,R           /CALCUL VENT. 16RE
15.17   STORE      C5,0.0,0.0,C,R
15.18   STORE      C5,MINF5,MINF5,C,S
/
15.19   SET        BPD,FSTA17,R           /CALCUL VENT. 17RE
15.20   STORE      C6,0.0,0.0,C,R
15.21   STORE      C6,MINF6,MINF6,C,S
/
15.22   CALC       C1,C2,1,1,1,T
15.23   CALC       APD,C3,1,1,1,T
15.24   CALC       APD,C4,1,1,1,T
15.25   CALC       APD,C5,1,1,1,T

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15.26  CALC      APD,C6,1,1,1,T
15.27  CALC      APD,MDPOS,1,1,1,T
15.28  STORE     MDP,APD,20.0,U
15.29  EXIT      U
/
/
/-----/
/               CONTROLE DU PRE CHAUFFAGE               /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE DE MELANGE
/EST DESALIMENTE.
/
16.1    RESTART
16.2    SET       PREHEA,S,S
16.3    DELAY     25,U
16.4    BOUT      ZSLL,3,OFF
16.5    INTERVAL  5,U
16.6    COMPARE   TE10,LE,PREALL,PREADF
16.7    SET       PREHEA,BPD,R
16.8    NEGATE    BPD
16.9    BOUT      ZS20,3,OFF
16.10   SET       BPD,LLBYP,R
16.11   BOUT      ZSLL,3,OFF
16.12   EXIT      U
/
17.1    EVENT     PREHEA,S
17.2    SET       BPD,PREHEA,R
17.3    DELAY     DELHEA,C,S
17.4    NEGATE    PREHEA
17.5    SET       LLBYP,BPD,R
17.6    EXIT      U
/
/
/-----/
/               CONTROLE DE CHAUFFAGE               /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A Z30POS POUR LE CHAUFFAGE.
/
18.1    EVENT     HTG,S
18.2    SET       BPD,HTG,S
18.3    STORE     Z40,0.0,0.0,C,R
18.4    STORE     APD,Z30POS,Z30POS,C,R
18.5    AOUT      ZCP30,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST40,U
18.8    CALC      DSSP,0.3,1,-1,1,T
18.9    PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
18.10   STORE     Z40,APD,APD,U
18.11   SPAN      0.0,100.0,Z30POS,0.0
18.12   AOUT      ZCP30,3,100.0,U
18.13   EXIT      U

```

```

/
/-----/
/          CONTROLE DE REFROIDISSEMENT          /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE Z30POS A 100 POUR LE REFROIDISSEMENT.
/
19.1    EVENT    CLG,S
19.2    SET      BPD,CLG,R
19.3    STORE    Z30,0.0,0.0,C,R
19.4    STORE    APD,Z30POS,Z30POS,C,R
19.5    AOUT     ZCP30,3,0.0,C,R
19.6    EXIT     C,R
19.7    INTERVAL CST30,U
19.8    CALC     CPB30,0,10,1,1,T
19.9    STORE    AD1,APD,APD,U
19.10   CALC     DSSP,0.3,1,1,1,T
19.11   PROP     APD,TE60,AD1,CIG30,0.0,CDS30
19.12   STORE    Z30,APD,APD,U
19.13   SPAN     0.0,100.0,Z30POS,100.0
19.14   AOUT     ZCP30,3,0.0,U
19.15   EXIT     U
/
/
/-----/
/          CONTROLE RECUPERATION          /
/-----/
/
/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPAPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/
20.1    RESTART
20.2    DELAY     25,U
20.3    INTERVAL  7,U
20.4    FILTER    SPT1,63,100
20.5    STORE     FSP1,APD,APD,U
20.6    COMPARE   FSP1,GE,RECUHL,RECUDF
20.7    SET       RECUP,BPD,R
20.8    NEGATE    BPD
20.9    BOUT      ZS10,3,OFF
20.10   EXIT      U
/
/
/-----/
/          CONTROLE VOLETS EVACUATION SYST 06,07,14-17          /
/-----/
/
/SI UN DES VENTILATEUR EST EN MARCHÉ, OUVRE LES VOLETS D EVACUATION.
/
21.1    RESTART
21.2    DELAY     25,U
21.3    INTERVAL  5,U
21.4    OR        FSTA06,FSTA07

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21.5    OR      BPD,FSTA14
21.6    OR      BPD,FSTA15
21.7    OR      BPD,FSTA16
21.8    OR      BPD,FSTA17
21.9    BOUT    ZS80,3,OFF
21.10   EXIT    U
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
22.1    EVERY                                     /SELECTION DU STSTEME POUR LE
22.2    SET      SYSP,R,R                        /
22.3    COMPARE  SYSDIS,EQ,100,0
22.4    SET      SYS1,BPD,R
22.5    OR      SYSP,BPD
22.6    SET      SYSP,BPD,S
22.7    COMPARE  SYSDIS,EQ,200,0
22.8    SET      SYS2,BPD,R
22.9    OR      SYSP,BPD
22.10   SET      SYSP,BPD,S
22.11   COMPARE  SYSDIS,EQ,300,0
22.12   SET      SYS3,BPD,R
22.13   OR      SYSP,BPD
22.14   SET      SYSP,BPD,S
22.15   COMPARE  SYSDIS,EQ,400,0
22.16   SET      SYS4,BPD,R
22.17   OR      SYSP,BPD
22.18   SET      SYSP,BPD,S
22.19   COMPARE  SYSDIS,EQ,600,0
22.20   SET      SYS6,BPD,R
22.21   OR      SYSP,BPD
22.22   SET      SYSP,BPD,S
22.23   COMPARE  SYSDIS,EQ,700,0
22.24   SET      SYS7,BPD,R
22.25   OR      SYSP,BPD
22.26   SET      SYSP,BPD,S
22.27   COMPARE  SYSDIS,EQ,800,0
22.28   SET      SYS8,BPD,R
22.29   OR      SYSP,BPD
22.30   SET      SYSP,BPD,S
22.31   COMPARE  SYSDIS,EQ,900,0
22.32   SET      SYS9,BPD,R
22.33   OR      SYSP,BPD
22.34   SET      SYSP,BPD,S
22.35   COMPARE  SYSDIS,EQ,1000,0
22.36   SET      SYS10,BPD,R
22.37   OR      SYSP,BPD
22.38   SET      SYSP,BPD,S
22.39   SET      SYS,SYSP,S
22.40   EXIT    U
/
/
23.1    EVENT    SYS,S                          /RESET LES FONCTIONS POUR
23.2    SET      BPD,SUF,R                      /LE CDB SPECIAL
23.3    STORE     SYSDIS,0,0,C,R                /SUR UNE PERIODE DE DISCLR

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```

23.4    EXIT      C,R
23.5    DELAY     3600,U
23.6    STORE     SYSDIS,0,0,U
23.7    EXIT      U
/
/
24.1    EVENT     SYS1,S                               /SYS 100
24.2    SET       BPD,SUF,R
24.3    EXIT      C,R
24.4    INTERVAL  5,U
24.5    STORE     CSTXXX,CST70,CST70,U                /PERMET DE VOIR LES
24.6    STORE     CPBXXX,CPB70,CPB70,U                /VALEURS DU SYSTEME
24.7    STORE     CIGXXX,CIG70,CIG70,U
24.8    STORE     CMPXXX,0.0,0.0,U
24.9    STORE     CDSXXX,CDS70,CDS70,U
24.10   EXIT      U
/
/
25.1    EVENT     SYS1,S
25.2    SET       BPD,SUF,R
25.3    EXIT      C,R
25.4    DELAY     10,U
25.5    INTERVAL  1,U
25.6    STORE     CST70,CSTXXX,CST70,U                /PERMET D AJUSTER LES
25.7    STORE     CPB70,CPBXXX,CPB70,U                /VALEURS DU SYSTEME
25.8    STORE     CIG70,CIGXXX,CIG70,U
25.9    STORE     CDS70,CDSXXX,CDS70,U
25.10   EXIT      U
/
/
26.1    EVENT     SYS2,S                               /SYS 200
26.2    SET       BPD,SUF,R
26.3    EXIT      C,R
26.4    INTERVAL  5,U
26.5    STORE     CSTXXX,CST70A,CST70A,U              /PERMET DE VOIR LES
26.6    STORE     CPBXXX,CPB70A,CPB70A,U              /VALEURS DU SYSTEME
26.7    STORE     CIGXXX,CIG70A,CIG70A,U
26.8    STORE     CMPXXX,0.0,0.0,U
26.9    STORE     CDSXXX,CDS70A,CDS70A,U
26.10   EXIT      U
/
/
27.1    EVENT     SYS2,S
27.2    SET       BPD,SUF,R
27.3    EXIT      C,R
27.4    DELAY     10,U
27.5    INTERVAL  1,U
27.6    STORE     CST70A,CSTXXX,CST70A,U              /PERMET D AJUSTER LES
27.7    STORE     CPB70A,CPBXXX,CPB70A,U              /VALEURS DU SYSTEME
27.8    STORE     CIG70A,CIGXXX,CIG70A,U
27.9    STORE     CDS70A,CDSXXX,CDS70A,U
27.10   EXIT      U
/
/
28.1    EVENT     SYS3,S                               /SYS 300
28.2    SET       BPD,SUF,R
28.3    EXIT      C,R

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28.4    INTERVAL 5,U
28.5    STORE    CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
28.6    STORE    CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
28.7    STORE    CIGXXX,CIG50,CIG50,U
28.8    STORE    CMPXXX,CMP50,CMP50,U
28.9    STORE    CDSXXX,CDS50,CDS50,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS3,S
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    DELAY    10,U
29.5    INTERVAL 1,U
29.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
29.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
29.8    STORE    CIG50,CIGXXX,CIG50,U
29.9    STORE    CMP50,CMPXXX,CMP50,U
29.10   STORE    CDS50,CDSXXX,CDS50,U
29.11   EXIT     U
/
/
30.1    EVENT    SYS4,S                    /SYS 400
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    INTERVAL 5,U
30.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
30.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
30.7    STORE    CIGXXX,CIG40,CIG40,U
30.8    STORE    CMPXXX,0.0,0.0,U
30.9    STORE    CDSXXX,CDS40,CDS40,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS4,S
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    DELAY    10,U
31.5    INTERVAL 1,U
31.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
31.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
31.8    STORE    CIG40,CIGXXX,CIG40,U
31.9    STORE    CDS40,CDSXXX,CDS40,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S                    /SYS 600
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    INTERVAL 5,U
32.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
32.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
32.7    STORE    CIGXXX,CIG10A,CIG10A,U
32.8    STORE    CMPXXX,0.0,0.0,U
32.9    STORE    CDSXXX,CDS10A,CDS10A,U
32.10   EXIT     U
/

```

```

/
33.1  EVENT      SYS6,S
33.2  SET        BPD,SUF,R
33.3  EXIT       C,R
33.4  DELAY      10,U
33.5  INTERVAL   1,U
33.6  STORE      CST10A,CSTXXX,CST10A,U      /PERMET D AJUSTER LES
33.7  STORE      CPB10A,CPBXXX,CPB10A,U      /VALEURS DU SYSTEME
33.8  STORE      CIG10A,CIGXXX,CIG10A,U
33.9  STORE      CDS10A,CDSXXX,CDS10A,U
33.10 EXIT       U

/
/
34.1  EVENT      SYS7,S                      /SYS 700
34.2  SET        BPD,SUF,R
34.3  EXIT       C,R
34.4  INTERVAL   5,U
34.5  STORE      CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
34.6  STORE      CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
34.7  STORE      CIGXXX,CIG10,CIG10,U
34.8  STORE      CMPXXX,CMP10,CMP10,U
34.9  STORE      CDSXXX,CDS10,CDS10,U
34.10 EXIT       U

/
/
35.1  EVENT      SYS7,S
35.2  SET        BPD,SUF,R
35.3  EXIT       C,R
35.4  DELAY      10,U
35.5  INTERVAL   1,U
35.6  STORE      CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
35.7  STORE      CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
35.8  STORE      CIG10,CIGXXX,CIG10,U
35.9  STORE      CMP10,CMPXXX,CMP10,U
35.10 STORE      CDS10,CDSXXX,CDS10,U
35.11 EXIT       U

/
/
36.1  EVENT      SYS8,S                      /SYS 800
36.2  SET        BPD,SUF,R
36.3  EXIT       C,R
36.4  INTERVAL   5,U
36.5  STORE      CSTXXX,CST30,CST30,U      /PERMET DE VOIR LES
36.6  STORE      CPBXXX,CPB30,CPB30,U      /VALEURS DU SYSTEME
36.7  STORE      CIGXXX,CIG30,CIG30,U
36.8  STORE      CMPXXX,0.0,0.0,U
36.9  STORE      CDSXXX,CDS30,CDS30,U
36.10 EXIT       U

/
/
37.1  EVENT      SYS8,S
37.2  SET        BPD,SUF,R
37.3  EXIT       C,R
37.4  DELAY      10,U
37.5  INTERVAL   1,U
37.6  STORE      CST30,CSTXXX,CST30,U      /PERMET D AJUSTER LES
37.7  STORE      CPB30,CPBXXX,CPB30,U      /VALEURS DU SYSTEME

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37.8    STORE    CIG30,CIGXXX,CIG30,U
37.9    STORE    CDS30,CDSXXX,CDS30,U
37.10   EXIT     U
/
/
38.1    EVENT    SYS9,S                               /SYS 900
38.2    SET      BPD,SUF,R
38.3    EXIT     C,R
38.4    INTERVAL 5,U
38.5    SET      FSTAXX,FSTA06,R                       /PERMET DE VOIR LES
38.6    SET      FSTAYY,FSTA14,R                       /VALEURS DU SYSTEME
38.7    SET      FSTAZZ,FSTA16,R
38.8    STORE    MINFXX,MINF1,MINF1,U
38.9    STORE    MINFYY,MINF3,MINF3,U
38.10   STORE    MINFZZ,MINF5,MINF5,U
38.11   EXIT     U
/
/
39.1    EVENT    SYS9,S
39.2    SET      BPD,SUF,R
39.3    EXIT     C,R
39.4    DELAY    10,U
39.5    INTERVAL 1,U
39.6    STORE    MINF1,MINFXX,MINF1,U                   /PERMET D AJUSTER LES
39.7    STORE    MINF3,MINFYY,MINF3,U                   /VALEURS DU SYSTEME
39.8    STORE    MINF5,MINFZZ,MINF5,U
39.9    EXIT     U
/
/
40.1    EVENT    SYS10,S                               /SYS 1000
40.2    SET      BPD,SUF,R
40.3    EXIT     C,R
40.4    INTERVAL 5,U
40.5    SET      FSTAXX,FSTA07,R                       /PERMET DE VOIR LES
40.6    SET      FSTAYY,FSTA15,R                       /VALEURS DU SYSTEME
40.7    SET      FSTAZZ,FSTA17,R
40.8    STORE    MINFXX,MINF2,MINF2,U
40.9    STORE    MINFYY,MINF4,MINF4,U
40.10   STORE    MINFZZ,MINF6,MINF6,U
40.11   EXIT     U
/
/
41.1    EVENT    SYS10,S
41.2    SET      BPD,SUF,R
41.3    EXIT     C,R
41.4    DELAY    10,U
41.5    INTERVAL 1,U
41.6    STORE    MINF2,MINFXX,MINF2,U                   /PERMET D AJUSTER LES
41.7    STORE    MINF4,MINFYY,MINF4,U                   /VALEURS DU SYSTEME
41.8    STORE    MINF6,MINFZZ,MINF6,U
41.9    EXIT     U
/
/
/-----/
/                RECORD PANNE DE POUVOIR                /
/-----/
/

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```

42.1    RESTART
42.2    TIMDATA    DT
42.3    STORE      UPTIM,APD,APD,U      /SAUVE L HEURE ACTUEL ET
42.4    TIMDATA    MD                  /LA DATE DE LA RESTAURATION
42.5    STORE      UPDAT,APD,APD,U      /DU POUVOIR.
42.6    EXIT      U
/
43.1    RESTART
43.2    STORE      DNTIM,TOD,TOD,U      /RECORD DE LA DERNIERE HEURE
43.3    STORE      DNDAT,LDAT,LDAT,U    /ET DATE AVANT LA PANNE.
43.4    INTERVAL   60,U
43.5    TIMDATA    DT
43.6    STORE      TOD,APD,APD,U        /SAUVE L HEURE ET LA DATE
43.7    TIMDATA    MD                  /ACTUEL A TOUTES LES MINUTES.
43.8    STORE      LDAT,APD,APD,U
43.9    EXIT      U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3765
/   OVERHEAD:  2700
/   TOTAL:     7821    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3765
/   OVERHEAD:  2700
/   TOTAL:     7821    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3767
/   OVERHEAD:  2700
/   TOTAL:     7823    8K DSC MEMORY NEEDED

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SYSTÈME V43-6

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME, V43-6A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-6R DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES.


LA VALVE DE REFROIDISSEMENT, LES VOLETS DE MELANGE, LA VALVE DE RECUPERATION, LE SERPENTIN DE FACE ET EVITEMENT SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CON-
STANTE; CEPENDANT, LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALI-
MENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C , LA VALVE V-1 DU
SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100% PAR SP-2 
ET RG-1 EST DESAMORCE

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C , LES VOLETS RE-
TOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT
REAJUSTER EN FONCTION DU NOMBRE D'EVACUATEUR EN MARCHE.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE
RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR;
CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINÉ D'ALIMEN-
TATION, EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE
LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGE-
REMENT NEGATIVE.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE
RECHAUFFAGE INFERIEURE AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME
S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU
DESSUS DE 3°C A TE-2, L'ACTION DE TLL-2 EST ANNULEE 
VIA RG-1

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL
DU PANNEAU D'ALARME INCENDIE.

LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE.

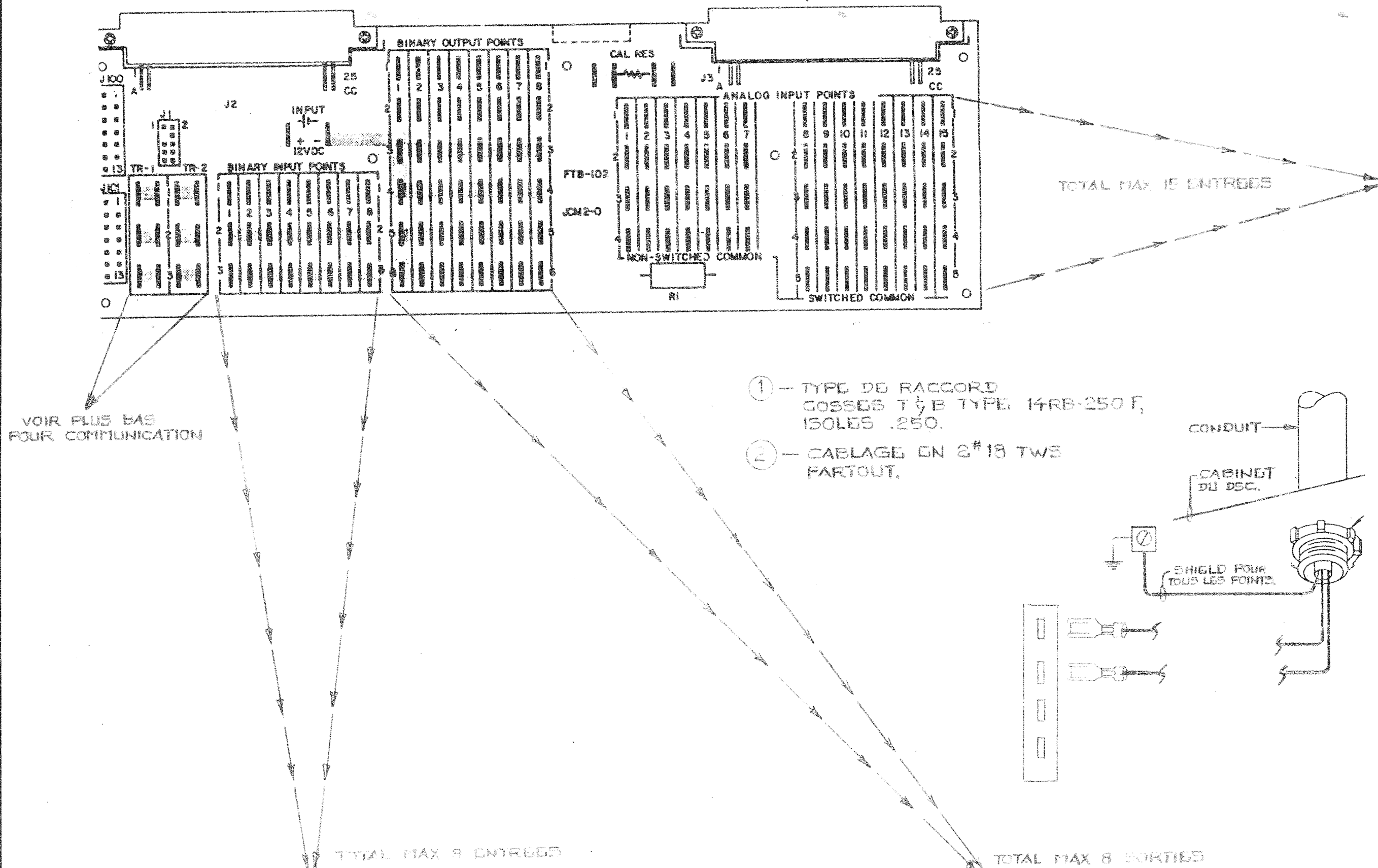
AU DEPART DU SYSTEME V44-25E PAR LA MINUTERIE MECANIQUE M-1, LE
VOLET D'AIR NEUF DA-8 OUVRE A 100% PAR EP-3.

SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-2A,
AU SERPENTIN DE RECUPERATION EST SUPERIEUR
AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE
AU SERPENTIN AFIN DE LE DEGIVRER

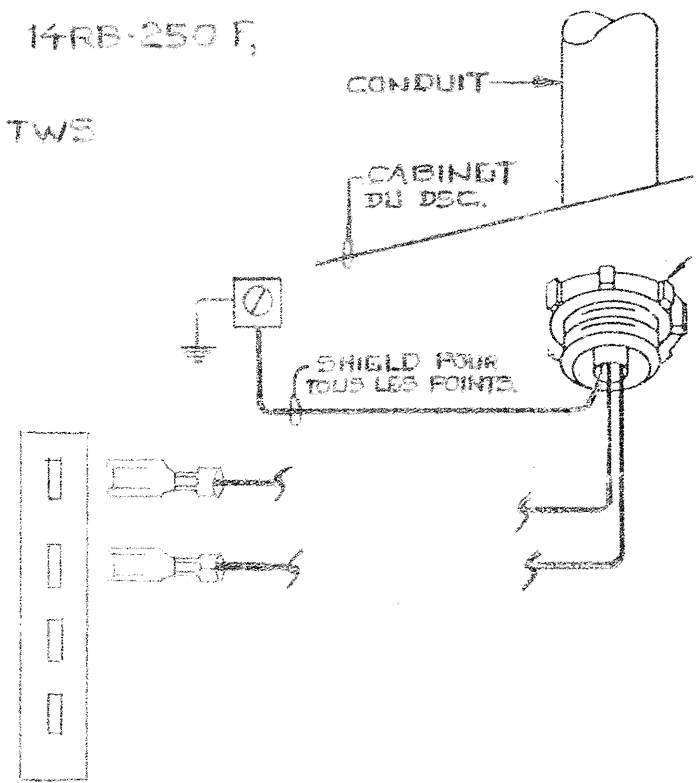
LES VENTILATEURS QUI AFFECTENT LE MINIMUM
D'AIR NEUF SONT:

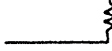

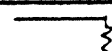
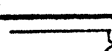
- V 36-7 RE
- V 36-6 RE
- V 36-17 RE
- V 36-16 RE
- V 36-15 RE
- V 36-14 RE

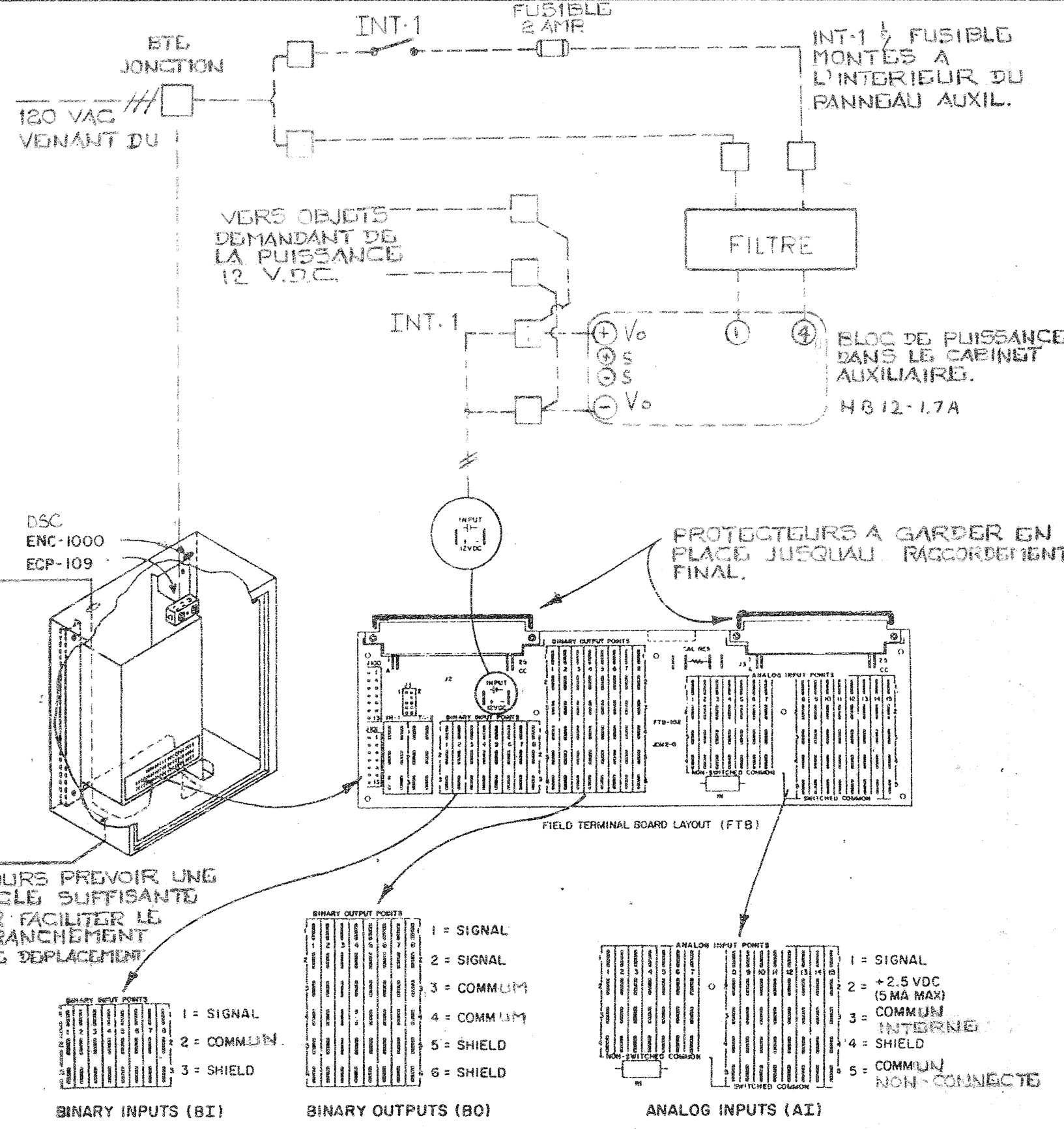
BORNIERS DE RACCORDEMENT (FTB-102)



- ① - TYPE DE RACCORDEMENT: COBES 7/8 TYPE 14RB-250 F, ISOLÉS .250.
- ② - CÂBLAGE EN 2#18 TWS PARTOUT.



EMPLACEMENT			ADRESSE							
NO.: C.I.R.A.								DSC 6		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9										
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20MA 10-90%HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5VDC 0-.25%
14	PT-2A	PRESSION SERP. GAINC.	ANA	1 5	1 2	SONDE DE PRESSION PT-2A	SERP GAINC.	A14.1		0-5VDC 0-.25%

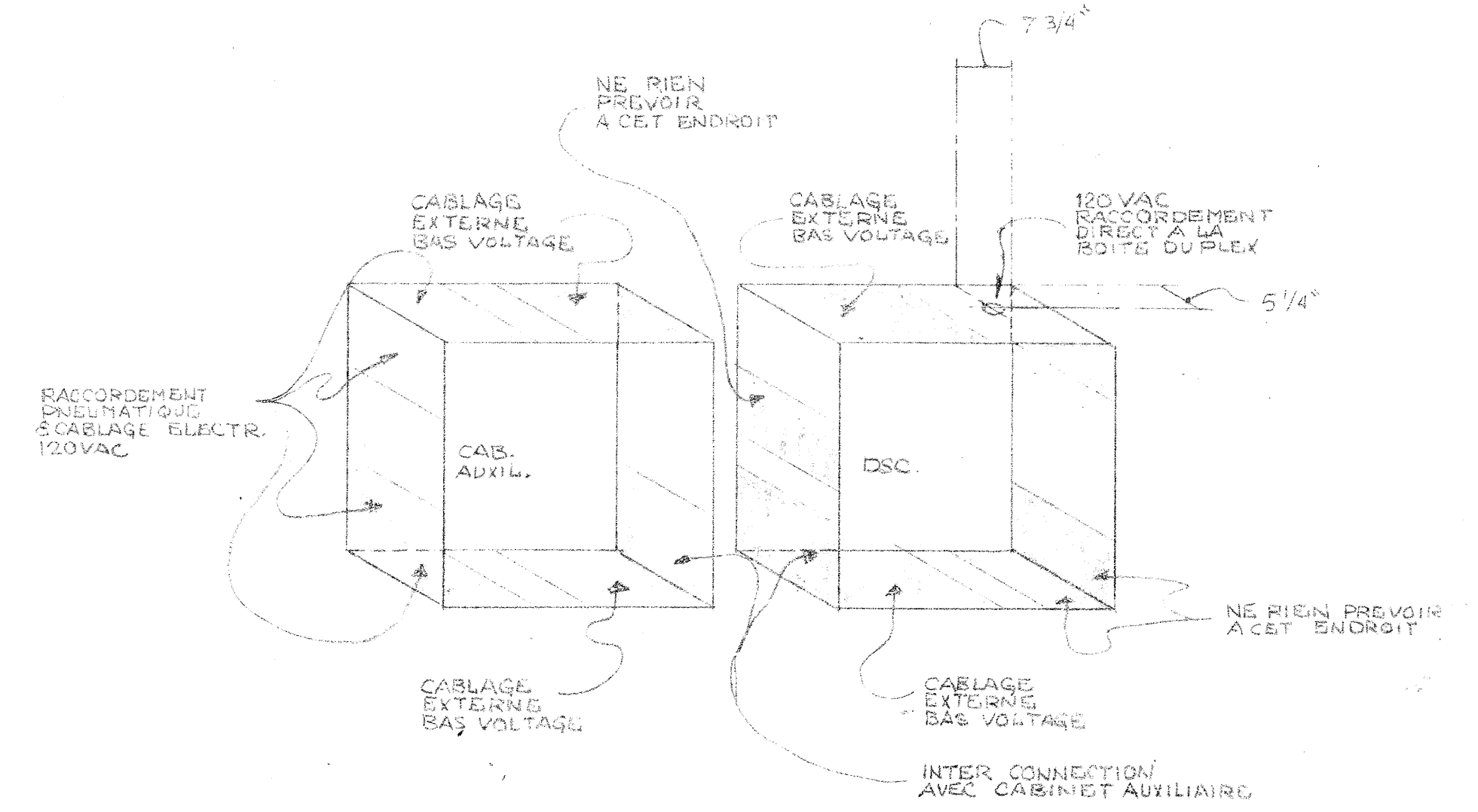


INT-1: INTERRUPTEUR "TOGGLE" CABLE SERP. N°47, MONTÉ AVEC R4539-101 J.C.L.

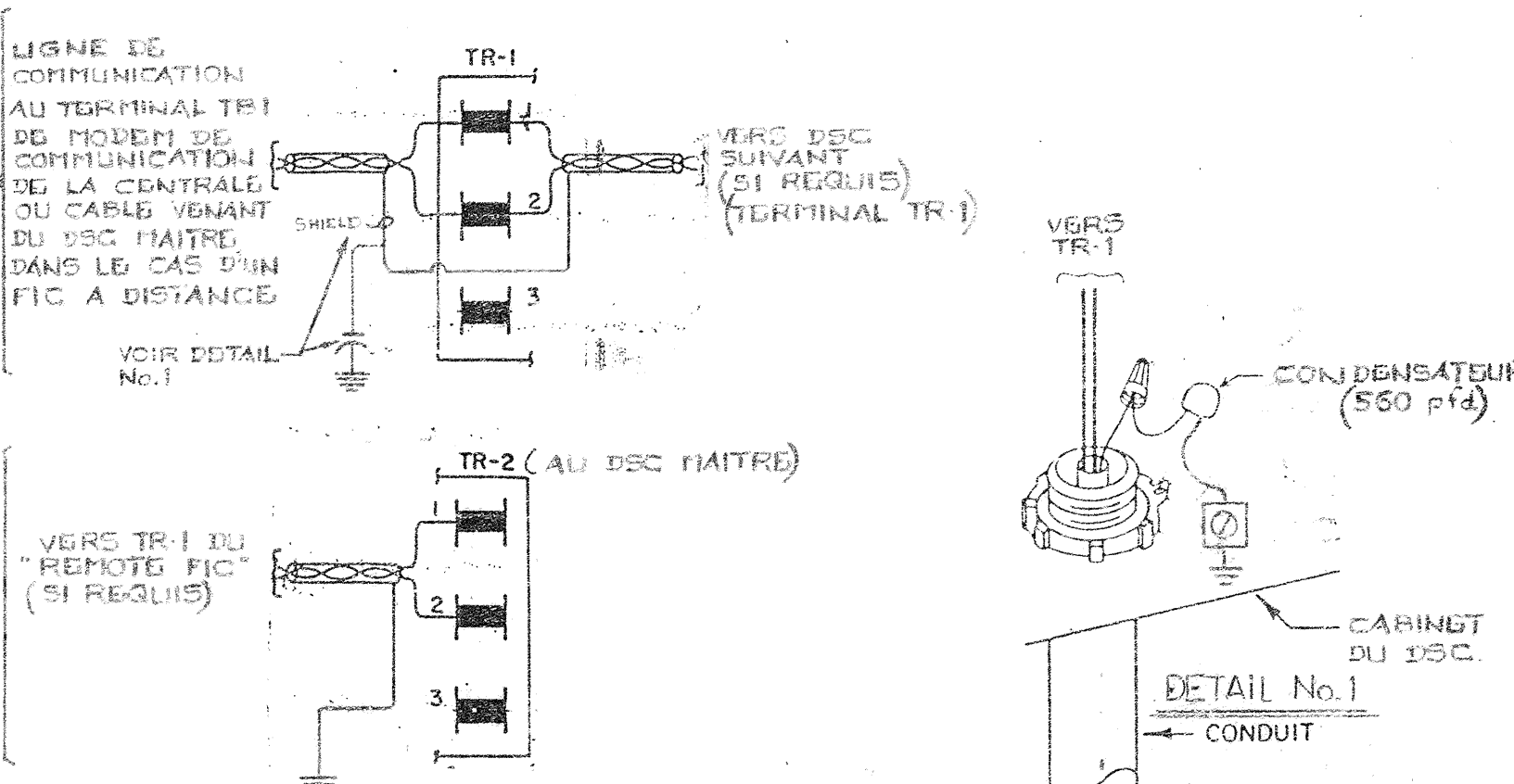
□ - TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 6		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-6	BIN	1 2		CONTACT AUX. DEM.	MCC- 2	B1.1		
2	STATUS	SYSTEME V36-7RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B2.1		
3	STATUS	V36- GRE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B3.1		
4	STATUS	V36- 17RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B4.1		
5	STATUS	V36- 16RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B5.1		
6	STATUS	V36- 15RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B6.1		
7	STATUS	V36- 14RE	BIN	1 2		CONTACT AUX. DEM.	MCC- 7	B7.1		
8	GEL	SYSTEME V43-6	BIN	1 2		RELAIS RG	CAB AUX	B8.1		


EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 6		
EMPLACEMENT:								FIC 1		
DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1		
5A	RG-1	RELAIS DEVIEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12V DC	CABINET AUX.	S5A.1		
7A	R-1	ARRET DEPART V43-6	SST	1 3	2 7	RELAIS 12VDC	MCC-2	S7A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	S7B.1		
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1 3	ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1		
8B	SP-3	VOLET EVAL DA-13	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	S8B.1		

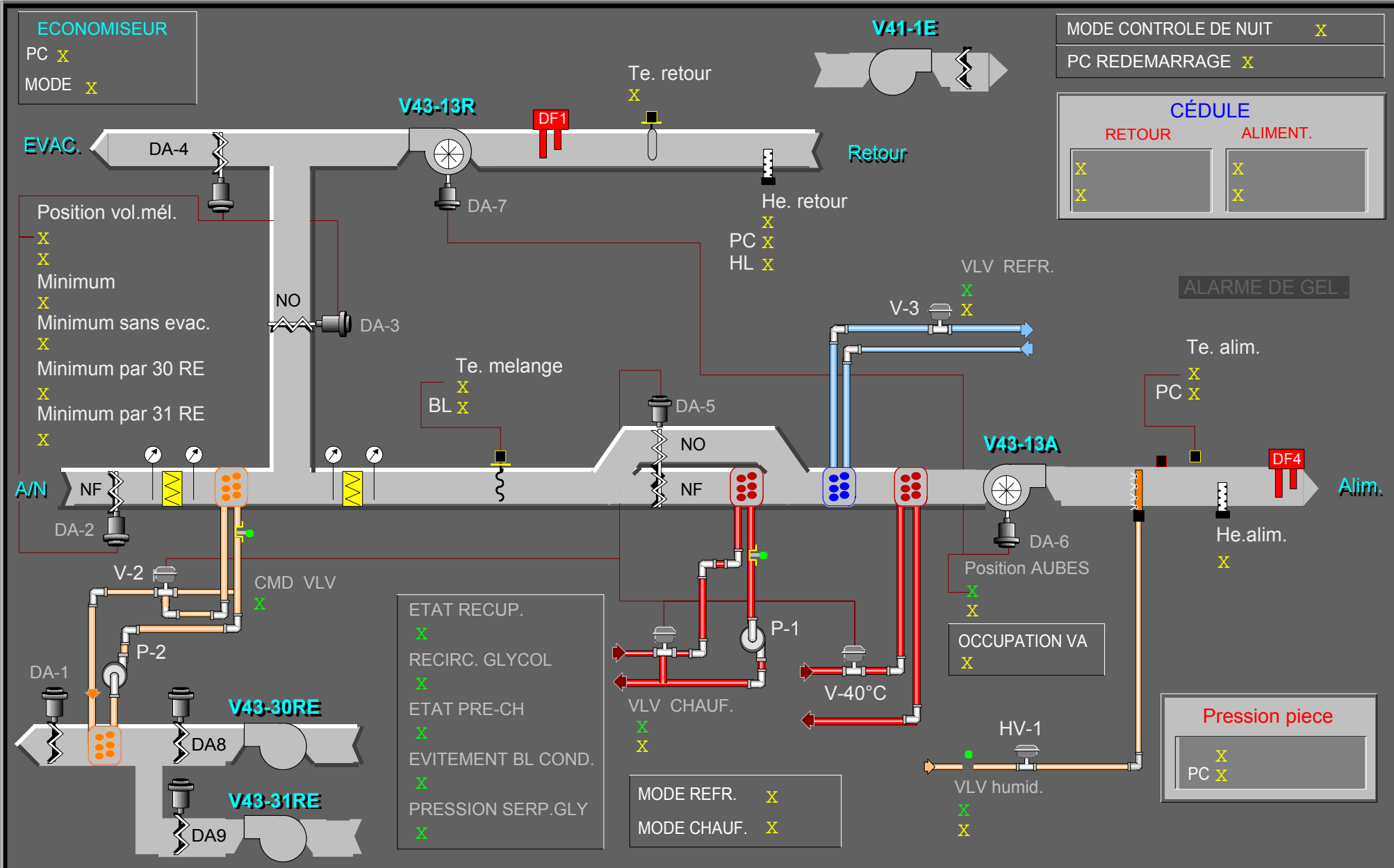


- ① - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.
- ② - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-8500		TEL QUE CONSTRUIT		26-07-08	
CHANGEMENT # 112		3 ADDITION RQ-1		NOV 27-85		SEP 27-85	
REFERENCE		NO.		REVISION		AVIS	
REPRESENTANT J.C.R.		TECHNICIEN R.F.		DESINE		APPROUVE	
PROJET CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		DATE 11/6-85		PAR 11/6-85		DATE 11/6-85	
JOHNSON CONTROLS		Division Des Systemes Et Services		Société de Contrôle Johnson Ltd 441 boulevard Lebeau Montréal, QC H4N 1S2 Tel. 514/332-6980		CONTRAT 4096-008-31/52	
DESSIN NO. 4068-31							

IDENT.	MODELE	Q	DESCRIPTION
DA-1 @ 4	D3153-1	4	MOTEUR DE VOLET C/A P.P.
	D3153-2	2	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6,7		2	MOTEUR FOURNI PAR D'AUTRES
DA-8	D3073-2	1	MOTEUR DE VOLET
V-1	V5842-8	1	VALVE 3 VOIES Ø 2 1/2" C.V. 54
V-2	V5842-6	1	VALVE 3 VOIES Ø 2" C.V. 30
V-3	V5462-16	1	VALVE 2 VOIES N.F. Ø 5" C.V. 240
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	ELEMENT DE TEMPERATURE
IPD-1,2,4	2000-50	3	INDICATEUR DE PRESSION 0-50 mm
HE-1,2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1 @ 4		4	DETECTEUR DE FUMEE PYROTRONIC
TLL-1	A11A-6	1	BASSE LIMITE
TLL-2	A19AAF-12	1	BASSE LIMITE
W-1	WZ 1000-2 	1	PUIT D'IMMERSION
PT-1	SETRA 261	1	DETECTEUR DE PRESSION STATIQUE
EP-1,3	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
G-1,2	G2010-101	2	INDICATEUR 0-30 PSI
PS-1	HB12-1.7A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 @ 4	EPT-102	4	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	PANNEAU 24" X 36" X 7"
XMR-1	BD 2 FF	1	TRANSFO. 120/18 VAC
SP-1 @ 3	V9011-1	3	VALVE A AIR 3 VOIES
IS-1	C208-2	1	INVERSEUR DE SIGNAL
M1	MARK TIME 90015	1	MINUTERIE MANUELLE 0-12 HRES C/A LAMPE TEMOIN
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR



PARAMETRES

Contrôle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Contrôle Recuperation

PC recup.	X
Differentiel rec.	X

Contrôle pre-chauffage

Limite CTRL	X
Differentiel	X
Delais evit.BL	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

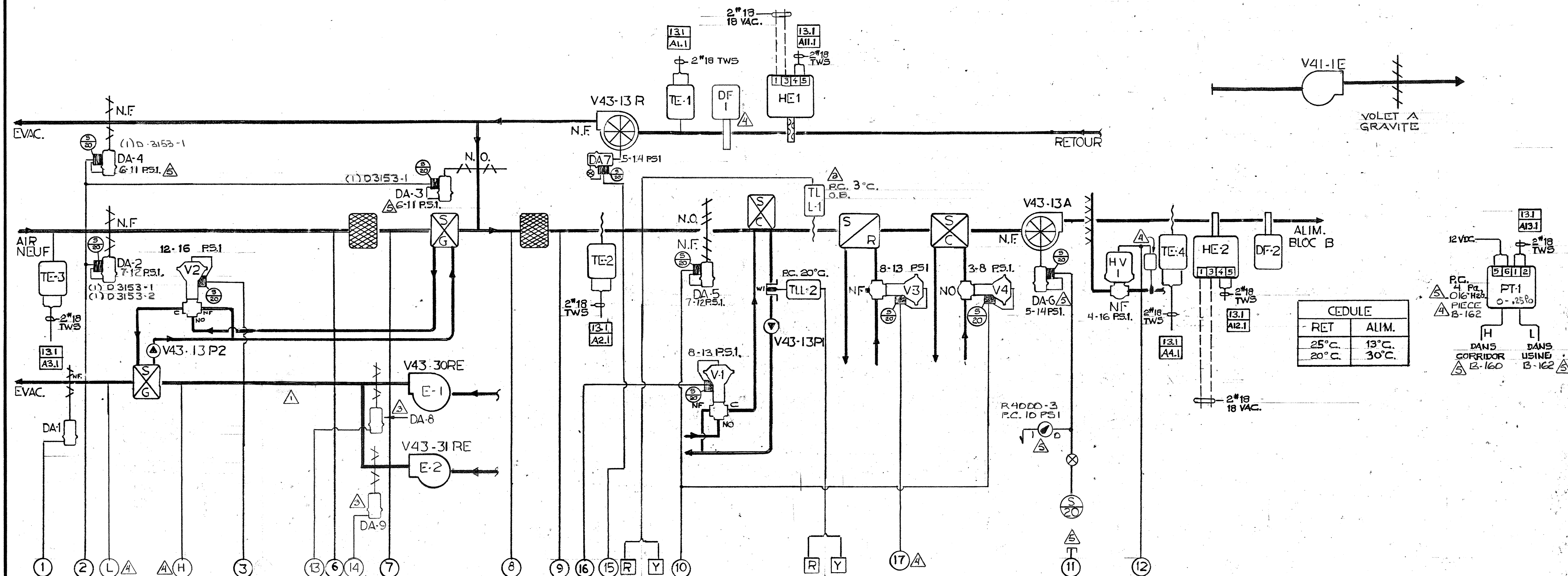


VACANCES DSC-13, V43-13

Jour / Mois	VACANCE 1	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 2	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 3	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 4	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 5	<input checked="" type="checkbox"/>
Jour / Mois	VACANCE 6	<input checked="" type="checkbox"/>



DIAGRAMME DE DEBIT



CECULE	
RET	ALIM.
25°C.	13°C.
20°C.	30°C.

LISTE DE MATERIEL			
IDENT.	MODELE	QTE	DESCRIPTION
M1, M2	MARKTIME 90015	2	MINUTERIE MANUELLE 0-12HRES
DA-1, 8, 9	D3073-2	3	MOTEUR DE VOLET C/A LAMPE TEMOIN
DA-2		1	MOTEUR DE VOLET
DA-3, 4		1	MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6, 7		2	MOTEUR FOURNI PAR D'AUTRES
V-1	V5842-8	1	VALVE 3 VOIES Ø 2" C.V. 54
V-2	V5842-6	1	VALVE 3 VOIES Ø 2" C.V. 30
V-3	V5462-14	1	VALVE 2 VOIES N.F. Ø 4" C.V. 150
V-4	V5252-2	1	VALVE 2 VOIES, N.O. Ø 2" C.V. 26
TE-1, 3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2, 4	TE1100-17	2	ELEMENT DE TEMPERATURE
IPD-1, 2	2000-50	2	INDICATEUR DE PRESSION 0-50 mm
HE-1, 2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1, 2		2	DETECTEUR DE FUMEE FYPOTRONIC
TLL-1	ALLA-6	1	BASSE LIMITE
TLL-2	AL9AAF-12	1	BASSE LIMITE
W-1	WZ1000-2	1	PUIT D'IMMERSION
PT-1 ET 3	SETRA 261	2	DETECTEUR DE PRESSION STATIQUE
VIHAA-100		1	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 à 3	G2010-100	3	INDICATEUR 0-30 PSI
PS-1	H3 (2-1.7A)	1	BLOC DE PUISSANCE 12 VDC
EPT-1 à 5	EPT-102	5	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RQ 5 RG-1	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	INTERFACCE ELECTRIQUE PNEUMATIQUE
XMR-1	602FE	1	TRANSFO. 120/18 VAC.
SP-1, 2	V5011-1	2	VALVE A AIR 3 VOIES
IS-1	C-208-2	1	INVERSEUR DE SIGNAL
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

SEQUENCE D'OPERATION

AU DEPART DU SYSTEME V43-13A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-13R DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LES SYSTEMES V43-30RE ET 31RE SONT MIS EN ROUTE PAR LEUR MINUTERIE MECANIQUE 0-8 HRES.

LA VALVE DE REFRIGERISSEMENT, LES VOILETS DE MELANGE, LA VALVE DE RECUPERATION LE SERPENTIN DE FACE ET EVITEMENT ET LA VALVE DE CHAUFFAGE SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANTE; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C LA VALVE V-1 DU SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100% PAR SP-2 ET RG-1 EST DESAMORCE.

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOILETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT REAJUSTE SI LES SYSTEMES V43-30RE ET 31RE SONT EN MARCHE.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINIE DE RETOUR CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINIE D'ALIMENTATION EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE AU SERPENTIN AFIN DE LE DEGIVRE PAR SP-1.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2 L'ACTION DE TLL-2 EST ANNULEE VIA RG-1.

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE.

LE SYSTEME V41-1E FONCTIONNE CONTINUELLEMENT.

PANNEAU

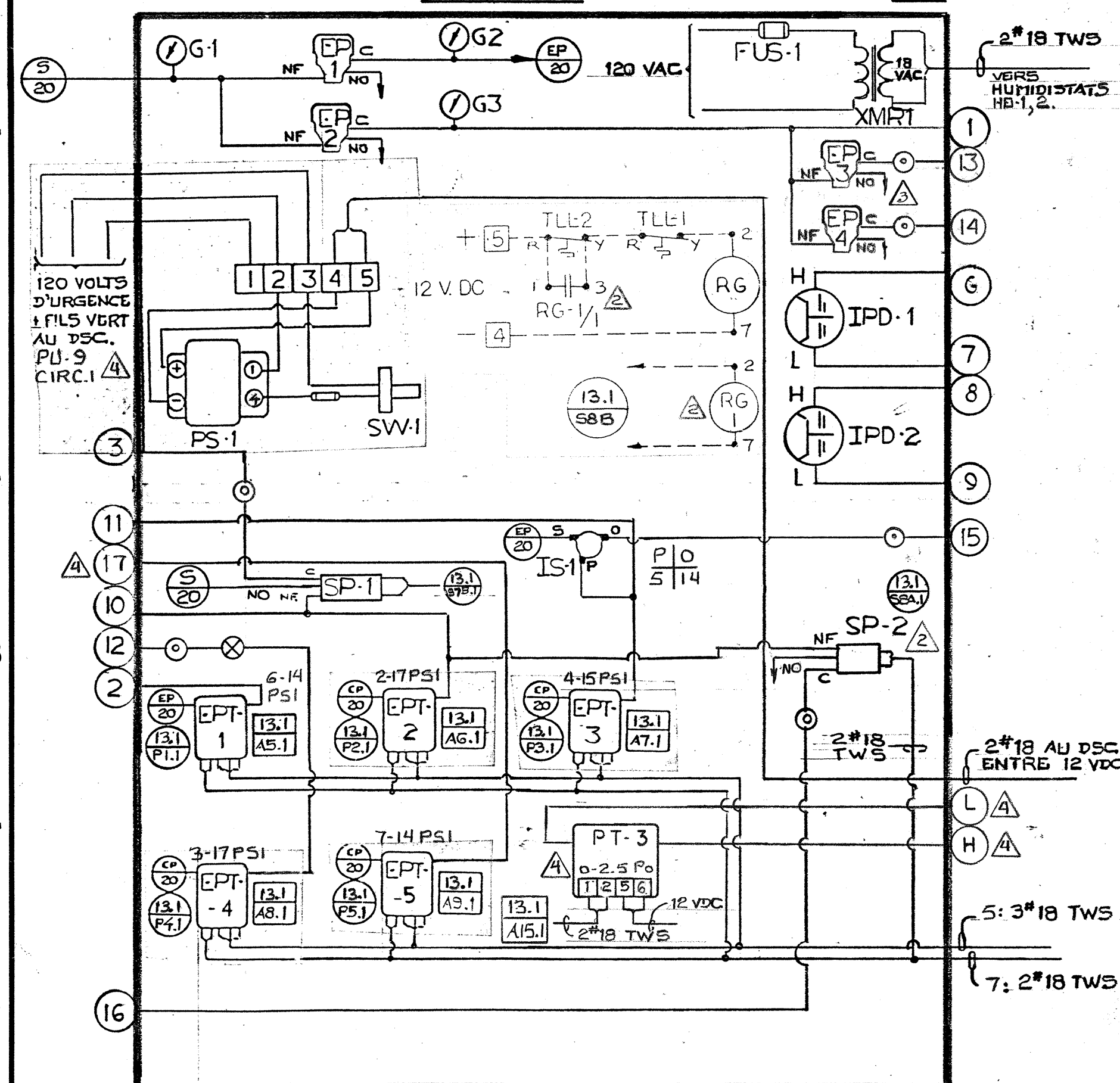
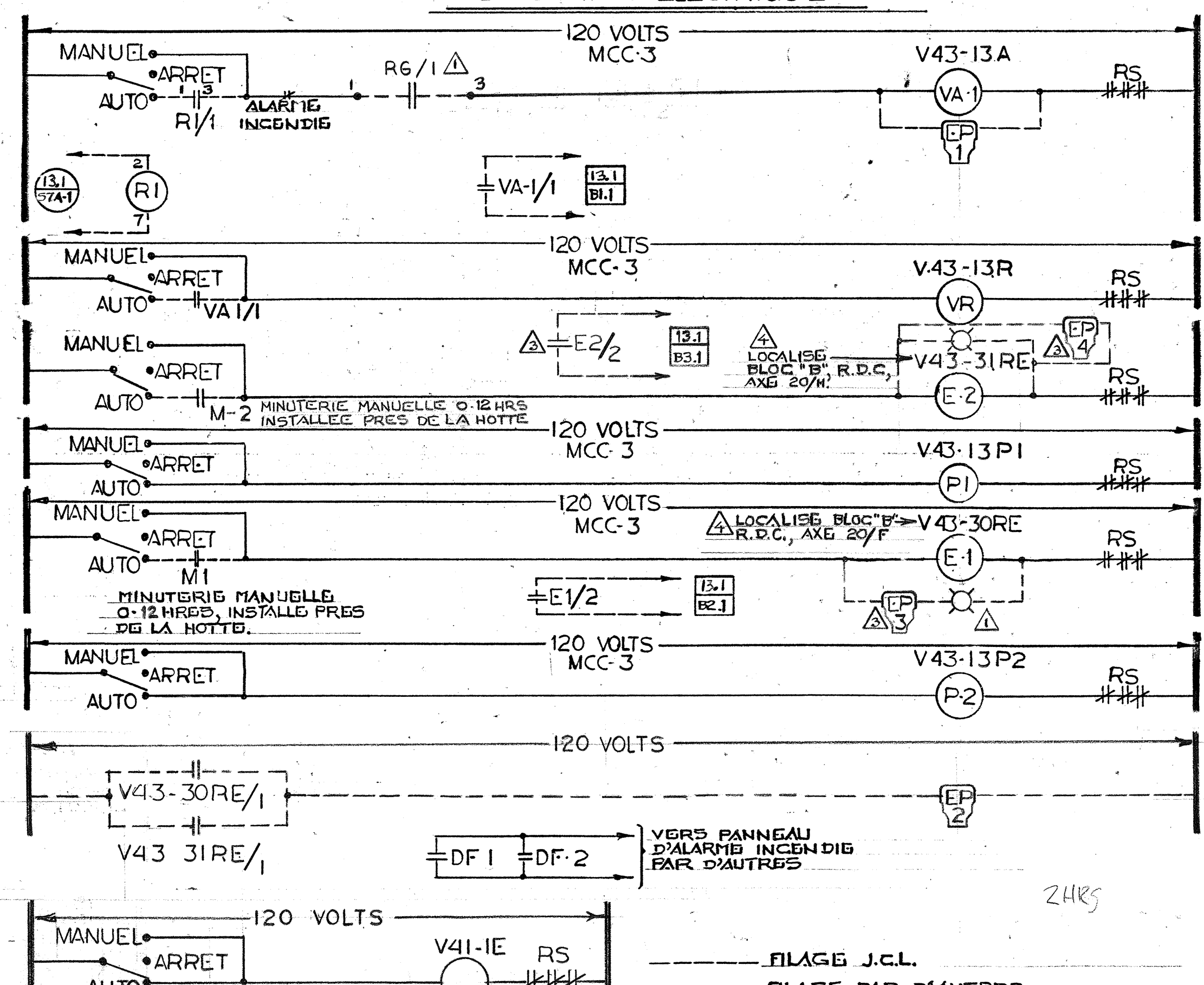
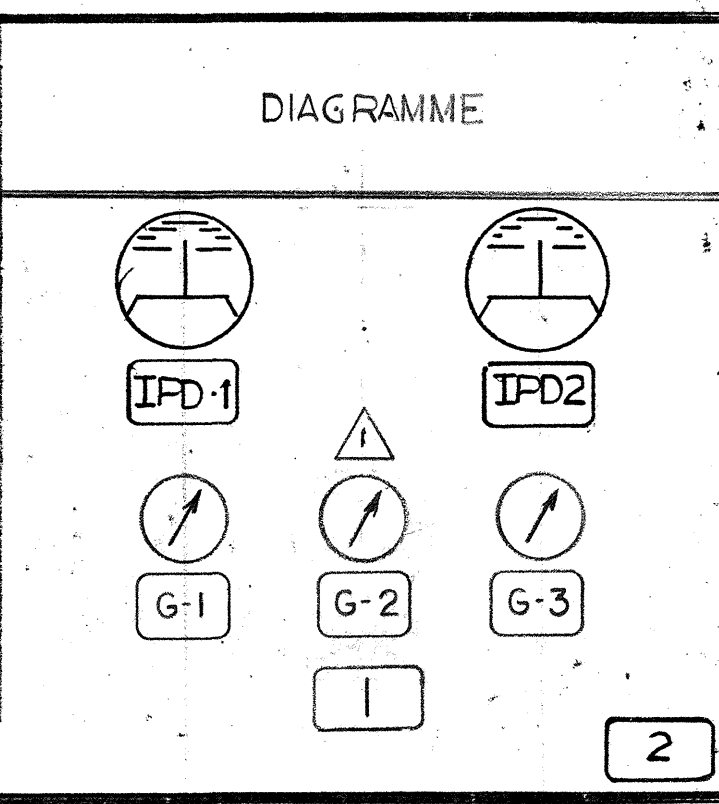


DIAGRAMME ELECTRIQUE



DIAGRAMME



- IPD-1 — PREFILTRE
- IPD-2 — FILTRE
- 1 — SYSTEME No. V43-13 A
- 2 — CONTRACTEUR: PAVAL INC.
- INGENIEUR: PAGEAU MOREL ET ASS.
- G-1 — AIR D'ALIMENTATION
- G-2 — AIR DE CONTROLE
- G-3 — VOLET V43-30 RE
- V43-31 RE

TITRE: SYSTEME No. 43-13
BLOC B.

PROJET: CENTRE DE RECHERCHE
ALIMENTAIRE-ST. HYACINTHE QUE.

096-0273490	TEL QUE CONSTRUIT	PMA-1	870745
EP-3, 4, ET DA-8, 9			26-07-85
CHANGEMENT #112	ADDITION RG-1		NOV 27-85
REFERENCE	NO.	- REVISION	AVIS
REPRESENTANT	TECHNICIEN	DATE	PAR
J.C.R.	R.F.	DATE JAN. 9-85	PAR
PROJET	DATE	DATE	DATE
CENTRE DE RECHERCHE	DATE	DATE	DATE
ALIMENTAIRE-ST. HYACINTHE QUE.	DATE	DATE	DATE
JOHNSON CONTROLS	DATE	DATE	DATE
Division Des Systemes Et Services	DATE	DATE	DATE
445 Boulevard Lebeau	DATE	DATE	DATE
Montréal, QC H4N 1S2	DATE	DATE	DATE
Tél. 514-332-6960	DATE	DATE	DATE
CONTRAT	DATE	DATE	DATE
4096-0008-32	DATE	DATE	DATE
4068-32	DATE	DATE	DATE

DSC 13 SYSTEME V43-13

/

/

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
33	DISPLAY	ZT40,A	/F.B. SOUPAPE CHAUFFAGE

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPE REFROIDISSEMENT

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
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50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPE REFFROID
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
65      OVERRIDE ZCP40,A,2  /SOUPAPE CHAUFF
/
66      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
67      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. 30RE
68      ADJUST   MINF2,A    /MINIMUM PAR VENTIL. 31RE
/
69      DISPLAY  FSTA30,B    /ETAT VENTIL. 30RE
70      DISPLAY  FSTA31,B    /ETAT VENTIL. 31RE
71      DISPLAY  FSP1,I      /PRES STAT SERP GLYCOL
/

/
73      DISPLAY  PREHEA,B    /PRE CHAUFFAGE
74      ADJUST   PREALL,A    /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
78      ADJUST   RECUHL,I    /POINT DE CONSIGNE RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I    /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A    /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I    /GAIN INTEGRAL
82      ADJUST   CMPXXX,A    /COMPENSATION

```

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83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/
/-----/
/      RECORD PANNE DE POUVOIR      /
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/
/      L I S T E   D E S   A L A R M E S      /
/      ALARME      /
/      NUMERO      DESCRIPTION      /
/-----/
/
/      10      ALARME THERMOSTAT DE GEL      /
/
/      50      ALARME ARRET DEPART SYSTEME V43-13      /
/
/      51      ALARME HORAIRE SYSTEME V43-13      /
/-----/
/
/
/
□

```

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-17-:1 09:24:53
/
/TRANSLATION LISTING FOR DSC-13.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-13-:1 10:50:44
/
/TRANSLATION LISTING FOR DSC-13.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:25
/
/TRANSLATION LISTING FOR DSC-13.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 10:46:24
/
/TRANSLATION LISTING FOR CIRA13.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  13    SYSTEME  V43-13
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     01 SEPT 1987
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,1743
@ FIC ADDRESSES:  1
@ POINT SUMMARY:

```

```

@ BD: 22
@ AD: 94
@ BI: CON-4,BIT-0,BIR-0
@ AI: LTD-2,FUL-11,RAT-0,TOT-0
@ BO: MOM-0,POS-5,MAN-4
@ CP: BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-5
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1 FSTAT CON-1 E,E /ETAT VENTIL. ALIM.
BI-2 FSTA30 CON-2 E,E /ETAT VENTIL. 30RE
BI-3 FSTA31 CON-3 E,E /ETAT VENTIL. 31RE
BI-4 FREEZE CON-4 E,E /ETAT THERMOSTAT DE GEL
/
/
AI-1 TE80 FUL-1 E,0.5,E,V,T,-46.0,129.8 /TEMP RETOUR
AI-2 TE10 FUL-2 E,0.5,E,V,T,-46.1,129.8 /TEMP MELANGE
AI-3 TE1 FUL-3 E,0.5,E,V,T,-46.3,129.9 /TEMP EXT
AI-4 TE60 FUL-4 E,0.5,E,V,T,-46.0,129.8 /TEMP ALIM
AI-5 ZT10 FUL-5 E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-6 ZT40 FUL-6 E,0.5,E,N,O,112.5,-250.0 /F.B. CHAUFF
AI-7 ZT50 FUL-7 E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8 ZT70 FUL-8 E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-9 ZT30 FUL-9 E,0.5,E,N,O,-12.5,250.0 /F.B. REFROID
AI-11 HT80 LTD-1 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-12 HT60 LTD-2 E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-13 SPT FUL-10 E,0.1,E,N,O,0,620 /PRESSION STATIQUE EN P
AI-15 SPT1 FUL-11 E,0.1,E,N,O,0,621 /PRES STAT EN P SERP GL
/
/
BO-1 ZC10 POS-1 D,E,0 /VOLETS
BO-2 ZC40 POS-2 D,E,0 /CHAUFF
BO-3 ZC50 POS-3 D,E,0 /VAV
BO-4 ZC70 POS-4 D,E,0 /HUMIDITE
BO-5 ZC30 POS-5 D,E,0 /REFROID
BO-7A ZS50 MAN-2 E,E /VENTIL ALIM
BO-7B ZS10 MAN-3 E,E /RECUPER RECIRCULATION
BO-8A ZS20 MAN-4 E,E /SOUPAPE PRECHAUFF
BO-8B ZSLL MAN-1 E,E /EVITEMENT BASSE LIMIT
/
/
CP-1 ZCP10 INC-1 E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-2 ZCP40 INC-2 E,E,A,ZT40,ZC40,100,0,5,0.0 /CHAUFF
CP-3 ZCP50 INC-3 E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4 ZCP70 INC-4 E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
CP-5 ZCP30 INC-5 E,E,A,ZT30,ZC30,-100,0,5,0.0 /REFROID
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/ VARIABLES POUR LE PROG HORAIRE, ARRET DEPART /
/-----/
/
BD-1 OCCD E,R /CYCLE D OCCUPATION

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BD-2    FSTRT    E,R    /DEMANDE VENTILATEUR
BD-3    COMP50   E,R    /RESULTAT DEMARRAGE
BD-4    CONON    E,R    /PERMISSION CONTROLE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
BD-5    ECON     E,R    /RESULTAT ECONOMISEUR
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
BD-6    MXD      E,R    /CONTROLE DE JOUR
BD-7    MIXLL    E,R    /CONTROLE PAR BASSE LIMITE
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
BD-8    HTG      E,R    /CHAUFFAGE
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT          /
/-----/
/
BD-9    CLG      E,R    /REFROIDISSEMENT
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
BD-10   PREHEA   E,R    /PRE CHAUFFAGE
BD-11   LLBYP    E,R    /RESULTAT TEMPORAIRE
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
BD-12   RECUP    E,R    /RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
BD-13   SYSP     D,R
BD-14   SYS      D,R
BD-15   SYS1     D,R
BD-16   SYS2     D,R
BD-17   SYS3     D,R
BD-18   SYS4     D,R
BD-19   SYS5     D,R
BD-20   SYS6     D,R
BD-21   SYS7     D,R
BD-22   SYS8     D,R
/

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/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
AD-1      DOW          E,2
AD-2      H1           E,00:00
AD-3      H2           E,00:00
AD-4      H3           E,00:00
AD-5      H4           E,00:00
AD-6      H5           E,00:00
AD-7      H6           E,00:00
AD-8      STA          E,00:00 /HORAIRE
AD-9      STO          E,00:00
AD-10     STA8          E,18:00
AD-11     STO8          E,18:00
AD-12     STA7          E,18:00
AD-13     STO7          E,18:00
AD-14     STA9          E,08:13
AD-15     STO9          E,17:30
AD-16     DELSST       E,120   /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17     OASO          E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18     RARL          E,21.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19     RARH          E,25.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20     SAHL          E,25.0   /REAJ TEMP ALIM HAU LIM
AD-21     SALL          E,15.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE          /
/-----/
/
AD-22     DSSP          E,0.0   /POINT DE CONSIGNE ALIM
AD-23     MXDSP         E,10.0   /POINT DE CONSIGNE LIMITE MEL.
AD-24     MDP           E,0.0   /POSITION MINIMUM VOLETS
AD-25     CST10A        E,5      /INTERVAL CTL VOLETS LIMITE
AD-26     CPB10A        E,-90.0  /BANDE PROP CTL VOLETS LIMITE
AD-27     CIG10A        E,33     /GAIN CTL VOLETS LIMITE
AD-28     CMP10A        E,0.0   /COMPENSATION CTL VOLETS LIMITE
AD-29     CDS10A        E,0.0   /BANDE MORTE CTL VOLETS LIMITE
AD-30     CST10         E,150    /INTERVAL CTL VOLETS
AD-31     CPB10         E,-60.0  /BANDE PROP CTL VOLETS
AD-32     CIG10         E,33     /GAIN CTL VOLETS
AD-33     CMP10         E,0.0   /COMPENS CTL VOLETS
AD-34     CDS10         E,0.0   /BANDE MORTE CTL VOLETS
AD-35     ZMXD          E,0.0   /RESULTAT PROPORTION.
AD-36     Z10M          E,100.0  /RESULTAT VOLETS LIMITE
AD-37     Z10C          E,0.0   /RESULTAT VOLETS CTL
AD-38     Z10           E,0.0   /RESULTAT VOLETS

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/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39  MDPOS      E,20.0  /MINIMUM SANS EVACUATION
AD-40  MINF1      E,8.0   /MINIMUM VENTIL. 30RE
AD-41  C1         E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-42  MINF2      E,11.0  /MINIMUM VENTIL. 31RE
AD-43  C2         E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-44  Z40        E,0.0   /RESULTAT CHAUFFAGE
AD-45  CST40      E,50    /INTERVAL CTL CHAUFF
AD-46  CPB40      E,50.0  /BANDE PROP CTL CHAUFF
AD-47  CIG40      E,33    /GAIN CTL CHAUFF
AD-48  CDS40      E,0.0   /BANDE MORTE CTL CHAUFF
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-49  Z30        E,0.0   /RESULTAT REFROIDISSEMENT
AD-50  CST30      E,50    /INTERVAL CTL REFROIDI
AD-51  CPB30      E,-45.0 /BANDE PROP CTL REFROIDI
AD-52  CIG30      E,33    /GAIN CTL REFROIDI
AD-53  CDS30      E,0.0   /BANDE MORTE CTL REFROIDI
/
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-54  SPSP       E,4     /POINT DE CONSIGNE PRESS STAT
AD-55  CST50      E,5     /INTERVAL CTL VAV
AD-56  CPB50      E,-10.0 /BANDE PROP CTL VAV
AD-57  CIG50      E,30    /GAIN CTL VAV
AD-58  CMP50      E,0.0   /COMPENS CTL VAV
AD-59  CDS50      E,0.4   /BANDE MORTE CTL VAV
AD-60  Z50        E,0.0   /RESULTAT CTL VAV
AD-61  FSP        E,0.0   /PRESS STAT FILTREE
AD-62  AD1        D,0.0   /RESULTAT TEMPORAIRE
AD-63  AD2        D,0.0   /RESULTAT TEMPORAIRE
/
/-----/
/      VARIABLES POUR LE CONTROLE D HUMIDITE      /
/-----/
/
AD-64  RHSP       E,36.0  /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-65  RHSPA      E,80.0  /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-66  CST70      E,60    /INTERVAL CTL HUMIDITE
AD-67  CPB70      E,90.0  /BANDE PROP CTL HUMIDITE
AD-68  CIG70      E,33    /GAIN CTL HUMIDITE
AD-69  CDS70      E,0.0   /BANDE MORTE CTL HUMIDITE

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AD-70  CST70A  E,5      /INTERVAL H LIM HUMIDITE
AD-71  CPB70A  E,90.0    /BANDE PROP H LIM HUMIDITE
AD-72  CIG70A  E,33     /GAIN H LIM HUMIDITE
AD-73  CDS70A  E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-74  Z70     E,0.0    /RESULTAT CTL HUMIDITE
AD-75  Z70HL   E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-76  Z70C    E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
AD-77  PREALL   E,5.0    /LIMITE CONTROLE PRE CHAUFFAGE
AD-78  PREADF   E,1.0    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-79  DELHEA   E,120    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
AD-80  RECUHL   E,200    /POINT DE CONSIGNE RECUPERATION
AD-81  RECUDF   E,50     /DIFFERENTIEL RECUPERATION
AD-82  FSP2     E,0.0    /PRESSION STATIQUE FILTREE
/
/-----/
/          FONCTIONS SPECIALES                          /
/-----/
/
AD-83  SYSDIS   D,0
AD-84  CSTXXX   D,0
AD-85  CPBXXX   D,0.0
AD-86  CIGXXX   D,0
AD-87  CMPXXX   D,0.0
AD-88  CDSXXX   D,0.0
/
/-----/
/          RECORD PANNE DE POUVOIR                      /
/-----/
/
AD-89  UPTIM    E,00:00  /HEURE DE LA RESTAURATION DU POUVOIR
AD-90  UPDAT    E,00:00  /DATE DE LA RESTAURATION DU POUVOIR
AD-91  DNTIM    E,00:00  /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-92  DNDAT    E,00:00  /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-93  TOD      E,00:00  /DERNIERE HEURE
AD-94  LDAT     E,00:00  /DERNIERE DATE
/
/
@ DISPLAY PANEL FUNCTIONS:
/
/
1      ADJUST   DELSST,I  /DELAI APRES UNE PANNE
2      DISPLAY  OCCD,B    /CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3      ADJUST   FSTRT,B   /DEMANDE VENTILATEUR
4      DISPLAY  FSTAT,B   /ETAT VENTIL. ALIM.
5      DISPLAY  FREEZE,B  /ETAT THERMOSTAT DE GEL NORMAL-ON
/
11     DISPLAY  TE80,A    /TEMP RETOUR

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12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
/			
16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
33	DISPLAY	ZT40,A	/F.B. SOUPAPE CHAUFFAGE
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPE REFROIDISSEMENT
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV
/			
49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
50	ADJUST	STO,T	/HEURE D ARRET JOUR EN COURS
51	ADJUST	STA7,T	/HEURE DEPART SAMEDI
52	ADJUST	STO7,T	/HEURE D ARRET SAMEDI
53	ADJUST	STA8,T	/HEURE DEPART DIMANCHE
54	ADJUST	STO8,T	/HEURE D ARRET DIMANCHE
55	ADJUST	STA9,T	/HEURE DEPART SEMAINE
56	ADJUST	STO9,T	/HEURE D ARRET SEMAINE
/			
57	ADJUST	H1,T	/VACANCE 1
58	ADJUST	H2,T	/VACANCE 2
59	ADJUST	H3,T	/VACANCE 3
60	ADJUST	H4,T	/VACANCE 4
/			
61	OVERRIDE	ZCP30,A,2	/SOUPAPE REFROID

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62      OVERRIDE   ZCP10,A,2    /VOLETS
63      OVERRIDE   ZCP70,A,2    /HUMIDITE
64      OVERRIDE   ZCP50,A,2    /VAV
65      OVERRIDE   ZCP40,A,2    /SOUPAPE CHAUFF
/
66      ADJUST     MDPOS,A      /POSITION MINIMUM SANS EVACUATION
67      ADJUST     MINF1,A      /MINIMUM PAR VENTIL. 30RE
68      ADJUST     MINF2,A      /MINIMUM PAR VENTIL. 31RE
/
69      DISPLAY    FSTA30,B      /ETAT VENTIL. 30RE
70      DISPLAY    FSTA31,B      /ETAT VENTIL. 31RE
71      DISPLAY    FSP2,I        /PRES STAT SERP GLYCOL
/
73      DISPLAY    PREHEA,B      /PRE CHAUFFAGE
74      ADJUST     PREALL,A      /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST     PREADF,A      /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST     DELHEA,I      /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
78      ADJUST     RECUHL,I      /POINT DE CONSIGNE RECUPERATION
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES  CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES  CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES  CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES  CONTROLE CHAUFFAGE
/ 600  PARAMETRES  CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES  CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES  CONTROLE REFROIDISSEMENT
/
79      ADJUST     CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST     CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST     CIGXXX,I      /GAIN INTEGRAL
82      ADJUST     CMPXXX,A      /COMPENSATION
83      ADJUST     CDSXXX,A      /BANDE MORTE
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
84      DISPLAY    UPTIM,T        /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY    UPDAT,T        /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY    DNTIM,T        /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY    DNDAT,T        /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST     SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY    FIC1L,B
90      ADJUST     FIC1E,I
91      ADJUST     STEST,I
92      DISPLAY    OCNT,I
93      OVSCAN
94      DISPLAY    ACNT,I
95      ALMSCAN

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96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/      L I S T E   D E S   A L A R M E S      /
/      ALARME      /
/      NUMERO      DESCRIPTION      /
/-----/
/
/      10      ALARME THERMOSTAT DE GEL      /
/
/      50      ALARME ARRET DEPART SYSTEME V43-13      /
/
/      51      ALARME HORAIRE SYSTEME V43-13      /
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART      /
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET      BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET      BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:

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/          SET          OCCD      CYCLE D OCCUPATION
/          FSTRT        OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET        OCCD      CYCLE D OCCUPATION
/          FSTRT        OPERATION VENTIL.
/
2.1      PROG          DOW,0,STA,STO
2.2      SET           OCCD,SUF,R
2.3      SET           FSTRT,SUF,R
2.4      EXIT          U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET           AUTO,S,S
3.3      DELAY         25,U
3.4      SET           COMP50,R,R
3.5      INTERVAL     10,U
3.6      XOR           COMP50,FSTAT
3.7      ALARM         50,C,S
3.8      SET           BPD,FSTRT,R
3.9      BOUT          ZS50,3,OFF
3.10     SET           COMP50,BPD,R
3.11     EXIT          U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
4.1      RESTART
4.2      DELAY         25,U
4.3      INTERVAL     5,U
4.4      SET           BPD,FREEZE,R
4.5      ALARM         10,C,R
4.6      EXIT          U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT         CONON,S
5.2      SET           BPD,CONON,R
5.3      STORE         APD,0.0,0.0,C,R
5.4      STORE         Z70C,APD,APD,C,R
5.5      STORE         Z70,APD,APD,C,R
5.6      AOUT          ZCP70,3,0.0,C,R
5.7      EXIT          C,R
5.8      DELAY         20,U
5.9      INTERVAL     CST70,U

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5.10    PROP      RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11    STORE     Z70C,APD,APD,U
5.12    EXIT      U
/
6.1     EVENT     CONON,S
6.2     SET       BPD,CONON,R
6.3     EXIT      C,R
6.4     INTERVAL  CST70A,U
6.5     PROP      RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6     STORE     Z70HL,APD,APD,U
6.7     SELECT    APD,Z70C,L
6.8     STORE     Z70,APD,APD,U
6.9     AOUT      ZCP70,3,0.0,U
6.10    EXIT      U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/
7.1     EVENT     CONON,S
7.2     SET       BPD,CONON,R
7.3     STORE     FSP,0,0,C,R
7.4     STORE     APD,0.0,0.0,C,R
7.5     STORE     Z50,APD,APD,C,R
7.6     AOUT      ZCP50,3,0.0,C,R
7.7     EXIT      C,R
7.8     DELAY     15,U
7.9     INTERVAL  CST50,U
7.10    FILTER    SPT,63,100
7.11    STORE     AD1,APD,APD,U    /PRESSION AVEC DECIMALE
7.12    CALC      APD,0,1,1,10,R
7.13    STORE     FSP,APD,APD,U    /PRESSION SANS DECIMALE
7.14    CALC      SPSP,0,10,1,1,T
7.15    STORE     AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
7.16    CALC      CPB50,0,10,1,1,T
7.17    PROP      AD2,AD1,APD,CIG50,CMP50,CDS50
7.18    STORE     Z50,APD,APD,U
7.19    AOUT      ZCP50,3,0,U
7.20    EXIT      U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-
/
8.1     RESTART
8.2     SET       MXD,R,R
8.3     SET       CONON,R,R
8.4     DELAY     25,U
8.5     INTERVAL  5,U

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8.6      AND      FSTAT,OCCD
8.7      SET      MXD,BPD,R
8.8      SET      CONON,FSTAT,R
8.9      EXIT     U
/
/
/-----/
/              ECONOMISEUR D AIR FRAIS              /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALS.
/
9.1      EVENT    MXD,S
9.2      SET      ECON,R,R
9.3      SET      BPD,FSTAT,R
9.4      EXIT     C,R
9.5      INTERVAL 300,U
9.6      COMPARE  TE1,GE,OASO,1.0
9.7      SET      ECON,BPD,R
9.8      EXIT     U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1     EVENT    MXD,S
10.2     INTERVAL 300,U
10.3     STORE    APD,TE80,RARL,U
10.4     SPAN     RARL,RARH,SAHL,SALL
10.5     STORE    DSSP,APD,SAHL,U
10.6     EXIT     U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE              /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10  RESULTAT VOLETS
/
/
11.1     EVENT    MXD,S
11.2     SET      MIXLL,R,R

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11.3   SET      BPD,MXD,R
11.4   EXIT     C,R
11.5   INTERVAL 5,U
11.6   COMPARE  TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
11.7   SET      MIXLL,BPD,R           /A LA BASSE LIMITE
11.8   SELECT   Z10M,Z10C,L
11.9   STORE    Z10,APD,APD,U
11.10  AOUT     ZCP10,3,0.0,U
11.11  EXIT     U
/
12.1   EVENT    MIXLL,S           /CONTROLE PAR BASSE LIMITE DE MELANGE
12.2   SET      BPD,MIXLL,R
12.3   STORE    Z10M,100.0,100.0,C,R
12.4   STORE    CMP10A,Z10C,Z10C,U
12.5   EXIT     C,R
12.6   INTERVAL CST10A,U
12.7   PROP     MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
12.8   STORE    Z10M,APD,APD,U
12.9   EXIT     U
/
13.1   EVENT    MXD,R /POSITION D ARRET SOUPAPES
13.2   SET      BPD,MXD,R
13.3   EXIT     C,S
13.4   SET      HTG,R,R
13.5   SET      CLG,R,R
13.6   DELAY    7,C,R
13.7   STORE    APD,0.0,0.0,C,R
13.8   AOUT     ZCP30,3,0.0,C,R
13.9   STORE    APD,100.0,100.0,C,R
13.10  AOUT     ZCP40,3,0.0,C,R
13.11  EXIT     U
/
14.1   EVENT    MXD,S
14.2   SET      BPD,MXD,R
14.3   STORE    APD,0.0,0.0,C,R
14.4   STORE    Z10,APD,APD,C,R
14.5   STORE    Z10C,APD,APD,C,R
14.6   STORE    Z10M,100.0,100.0,C,R
14.7   STORE    ZMXD,APD,APD,C,R
14.8   AOUT     ZCP10,3,0.0,C,R
14.9   EXIT     C,R
14.10  DELAY    7,U
14.11  STORE    APD,TE1,5.0,U
14.12  SPAN     5.0,20.0,0.0,75.0
14.13  STORE    CMP10,APD,APD,U
14.14  STORE    APD,0.0,0.0,U
14.15  AOUT     ZCP40,3,0.0,U
14.16  INTERVAL CST10,U
14.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18  STORE    ZMXD,APD,APD,U
14.19  SPAN     MDP,100.0,MDP,100.0
14.20  SET      BPD,ECON,S
14.21  STORE    APD,MDP,MDP,C,S
14.22  STORE    Z10C,APD,APD,U
14.23  ORR      ZMXD,GE,85.0,10.0
14.24  SET      CLG,BPD,R
14.25  COMPARE  ZMXD,LE,15.0,10.0

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14.26 SET      HTG,BPD,R
14.27 EXIT     U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DES VENTILATEURS
/D EVACUATION. LA FONCTION MINF1 ET MINF2 SONT LES POURCENTAGES RAJOUTES
/A LA POSITION MINIMUM QUAND LE VENTILATEUR CORRESPONDANT FONCTIONNE. LE
/RESULTAT S APPLIQUE DANS LA ROUTINE DE CONTROLE DES VOLETS
/
15.1 RESTART
15.2 DELAY     25,U
15.3 INTERVAL  10,U
/
15.4 SET      BPD,FSTA30,R           /CALCUL VENT. 30RE
15.5 STORE    C1,0.0,0.0,C,R
15.6 STORE    C1,MINF1,MINF1,C,S
/
15.7 SET      BPD,FSTA31,R           /CALCUL VENT. 31RE
15.8 STORE    C2,0.0,0.0,C,R
15.9 STORE    C2,MINF2,MINF2,C,S
/
15.10 CALC    C1,C2,1,1,1,T
15.11 CALC    APD,MDPOS,1,1,1,T
15.12 STORE    MDP,APD,20.0,U
15.13 EXIT     U
/
/
/-----/
/      CONTROLE DU PRE CHAUFFAGE      /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE D EAU DE PRE
/CHAUFFAGE EST DESALIMENTE.
/
16.1 RESTART
16.2 SET      PREHEA,S,S
16.3 DELAY     25,U
16.4 BOUT      ZSLL,3,OFF
16.5 INTERVAL  5,U
16.6 COMPARE   TE10,LE,PREALL,PREADF
16.7 SET      PREHEA,BPD,R
16.8 NEGATE    BPD
16.9 BOUT      ZS20,3,OFF
16.10 SET      BPD,LLBYP,R
16.11 BOUT      ZSLL,3,OFF
16.12 EXIT     U
/
17.1 EVENT     PREHEA,S
17.2 SET      BPD,PREHEA,R
17.3 DELAY     DELHEA,C,S
17.4 NEGATE    PREHEA
17.5 SET      LLBYP,BPD,R

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17.6      EXIT      U
/
/
/-----/
/          CONTROLE DE CHAUFFAGE          /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/
18.1      EVENT      HTG,S
18.2      SET        BPD,HTG,S
18.3      STORE      APD,0.0,0.0,C,R
18.4      STORE      Z40,APD,APD,C,R
18.5      AOUT       ZCP40,3,0.0,C,R
18.6      EXIT       C,R
18.7      INTERVAL   CST40,U
18.8      CALC       DSSP,0.3,1,-1,1,T
18.9      PROP       APD,TE60,CPB40,CIG40,0.0,CDS40
18.10     STORE      Z40,APD,APD,U
18.11     AOUT       ZCP40,3,100.0,U
18.12     EXIT       U
/
/-----/
/          CONTROLE DE REFROIDISSEMENT    /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/
19.1      EVENT      CLG,S
19.2      SET        BPD,CLG,R
19.3      STORE      APD,0.0,0.0,C,R
19.4      STORE      Z30,APD,APD,C,R
19.5      AOUT       ZCP30,3,0.0,C,R
19.6      EXIT       C,R
19.7      INTERVAL   CST30,U
19.8      CALC       DSSP,0.3,1,1,1,T
19.9      PROP       APD,TE60,CPB30,CIG30,0.0,CDS30
19.10     STORE      Z30,APD,APD,U
19.11     AOUT       ZCP30,3,0.0,U
19.12     EXIT       U
/
/
/-----/
/          CONTROLE RECUPERATION          /
/-----/
/
/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPAPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/
20.1      RESTART
20.2      DELAY      25,U
20.3      INTERVAL   7,U
20.4      FILTER      SPT1,63,100
20.5      STORE      FSP2,APD,APD,C,S

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20.6    COMPARE    FSP2,GE,RECUHL,RECUDF
20.7    SET        RECUP,BPD,R
20.8    NEGATE     BPD
20.9    BOUT       ZS10,3,OFF
20.10   EXIT       U
/
/
/-----/
/                FONCTIONS SPECIALES                /
/-----/
/
21.1    EVERY
21.2    SET        SYSP,R,R                          /SELECTION DU STSTEME POUR LE
21.3    COMPARE    SYSDIS,EQ,100,0                    /
21.4    SET        SYS1,BPD,R
21.5    OR         SYSP,BPD
21.6    SET        SYSP,BPD,S
21.7    COMPARE    SYSDIS,EQ,200,0
21.8    SET        SYS2,BPD,R
21.9    OR         SYSP,BPD
21.10   SET        SYSP,BPD,S
21.11   COMPARE    SYSDIS,EQ,300,0
21.12   SET        SYS3,BPD,R
21.13   OR         SYSP,BPD
21.14   SET        SYSP,BPD,S
21.15   COMPARE    SYSDIS,EQ,400,0
21.16   SET        SYS4,BPD,R
21.17   OR         SYSP,BPD
21.18   SET        SYSP,BPD,S
21.19   COMPARE    SYSDIS,EQ,600,0
21.20   SET        SYS6,BPD,R
21.21   OR         SYSP,BPD
21.22   SET        SYSP,BPD,S
21.23   COMPARE    SYSDIS,EQ,700,0
21.24   SET        SYS7,BPD,R
21.25   OR         SYSP,BPD
21.26   SET        SYSP,BPD,S
21.27   COMPARE    SYSDIS,EQ,800,0
21.28   SET        SYS8,BPD,R
21.29   OR         SYSP,BPD
21.30   SET        SYSP,BPD,S
21.31   SET        SYS,SYSP,S
21.32   EXIT       U
/
/
22.1    EVENT      SYS,S                              /RESET LES FONCTIONS POUR
22.2    SET        BPD,SUF,R                          /LE CDB SPECIAL
22.3    STORE      SYSDIS,0,0,C,R                    /SUR UNE PERIODE DE DISCLR
22.4    EXIT       C,R
22.5    DELAY      3600,U
22.6    STORE      SYSDIS,0,0,U
22.7    EXIT       U
/
/
23.1    EVENT      SYS1,S                              /SYS 100
23.2    SET        BPD,SUF,R
23.3    EXIT       C,R

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23.4    INTERVAL 5,U
23.5    STORE    CSTXXX,CST70,CST70,U      /PERMET DE VOIR LES
23.6    STORE    CPBXXX,CPB70,CPB70,U      /VALEURS DU SYSTEME
23.7    STORE    CIGXXX,CIG70,CIG70,U
23.8    STORE    CMPXXX,0.0,0.0,U
23.9    STORE    CDSXXX,CDS70,CDS70,U
23.10   EXIT     U
/
/
24.1    EVENT    SYS1,S
24.2    SET      BPD,SUF,R
24.3    EXIT     C,R
24.4    DELAY    10,U
24.5    INTERVAL 1,U
24.6    STORE    CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
24.7    STORE    CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
24.8    STORE    CIG70,CIGXXX,CIG70,U
24.9    STORE    CDS70,CDSXXX,CDS70,U
24.10   EXIT     U
/
/
25.1    EVENT    SYS2,S                    /SYS 200
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    INTERVAL 5,U
25.5    STORE    CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
25.6    STORE    CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
25.7    STORE    CIGXXX,CIG70A,CIG70A,U
25.8    STORE    CMPXXX,0.0,0.0,U
25.9    STORE    CDSXXX,CDS70A,CDS70A,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS2,S
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    DELAY    10,U
26.5    INTERVAL 1,U
26.6    STORE    CST70A,CSTXXX,CST70A,U    /PERMET D AJUSTER LES
26.7    STORE    CPB70A,CPBXXX,CPB70A,U    /VALEURS DU SYSTEME
26.8    STORE    CIG70A,CIGXXX,CIG70A,U
26.9    STORE    CDS70A,CDSXXX,CDS70A,U
26.10   EXIT     U
/
/
27.1    EVENT    SYS3,S                    /SYS 300
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG50,CIG50,U
27.8    STORE    CMPXXX,CMP50,CMP50,U
27.9    STORE    CDSXXX,CDS50,CDS50,U
27.10   EXIT     U
/
/

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28.1    EVENT    SYS3,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
28.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
28.8    STORE    CIG50,CIGXXX,CIG50,U
28.9    STORE    CMP50,CMPXXX,CMP50,U
28.10   STORE    CDS50,CDSXXX,CDS50,U
28.11   EXIT     U
/
/
29.1    EVENT    SYS4,S                    /SYS 400
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG40,CIG40,U
29.8    STORE    CMPXXX,0.0,0.0,U
29.9    STORE    CDSXXX,CDS40,CDS40,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS4,S
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    DELAY    10,U
30.5    INTERVAL 1,U
30.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
30.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
30.8    STORE    CIG40,CIGXXX,CIG40,U
30.9    STORE    CDS40,CDSXXX,CDS40,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS6,S                    /SYS 600
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    INTERVAL 5,U
31.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
31.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
31.7    STORE    CIGXXX,CIG10A,CIG10A,U
31.8    STORE    CMPXXX,0.0,0.0,U
31.9    STORE    CDSXXX,CDS10A,CDS10A,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    DELAY    10,U
32.5    INTERVAL 1,U
32.6    STORE    CST10A,CSTXXX,CST10A,U    /PERMET D AJUSTER LES
32.7    STORE    CPB10A,CPBXXX,CPB10A,U    /VALEURS DU SYSTEME
32.8    STORE    CIG10A,CIGXXX,CIG10A,U

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32.9   STORE   CDS10A,CDSXXX,CDS10A,U
32.10  EXIT    U
/
/
33.1   EVENT   SYS7,S                               /SYS 700
33.2   SET     BPD,SUF,R
33.3   EXIT    C,R
33.4   INTERVAL 5,U
33.5   STORE   CSTXXX,CST10,CST10,U               /PERMET DE VOIR LES
33.6   STORE   CPBXXX,CPB10,CPB10,U               /VALEURS DU SYSTEME
33.7   STORE   CIGXXX,CIG10,CIG10,U
33.8   STORE   CMPXXX,CMP10,CMP10,U
33.9   STORE   CDSXXX,CDS10,CDS10,U
33.10  EXIT    U
/
/
34.1   EVENT   SYS7,S
34.2   SET     BPD,SUF,R
34.3   EXIT    C,R
34.4   DELAY   10,U
34.5   INTERVAL 1,U
34.6   STORE   CST10,CSTXXX,CST10,U               /PERMET D AJUSTER LES
34.7   STORE   CPB10,CPBXXX,CPB10,U               /VALEURS DU SYSTEME
34.8   STORE   CIG10,CIGXXX,CIG10,U
34.9   STORE   CMP10,CMPXXX,CMP10,U
34.10  STORE   CDS10,CDSXXX,CDS10,U
34.11  EXIT    U
/
/
35.1   EVENT   SYS8,S                               /SYS 800
35.2   SET     BPD,SUF,R
35.3   EXIT    C,R
35.4   INTERVAL 5,U
35.5   STORE   CSTXXX,CST30,CST30,U               /PERMET DE VOIR LES
35.6   STORE   CPBXXX,CPB30,CPB30,U               /VALEURS DU SYSTEME
35.7   STORE   CIGXXX,CIG30,CIG30,U
35.8   STORE   CMPXXX,0.0,0.0,U
35.9   STORE   CDSXXX,CDS30,CDS30,U
35.10  EXIT    U
/
/
36.1   EVENT   SYS8,S
36.2   SET     BPD,SUF,R
36.3   EXIT    C,R
36.4   DELAY   10,U
36.5   INTERVAL 1,U
36.6   STORE   CST30,CSTXXX,CST30,U               /PERMET D AJUSTER LES
36.7   STORE   CPB30,CPBXXX,CPB30,U               /VALEURS DU SYSTEME
36.8   STORE   CIG30,CIGXXX,CIG30,U
36.9   STORE   CDS30,CDSXXX,CDS30,U
36.10  EXIT    U
/
/
/-----/
/               RECORD PANNE DE POUVOIR               /
/-----/
/

```

```

37.1    RESTART
37.2    TIMDATA    DT
37.3    STORE      UPTIM,APD,APD,U      /SAUVE L HEURE ACTUEL ET
37.4    TIMDATA    MD                  /LA DATE DE LA RESTAURATION
37.5    STORE      UPDAT,APD,APD,U      /DU POUVOIR.
37.6    EXIT       U
/
38.1    RESTART
38.2    STORE      DNTIM,TOD,TOD,U      /RECORD DE LA DERNIERE HEURE
38.3    STORE      DNDAT,LDAT,LDAT,U    /ET DATE AVANT LA PANNE.
38.4    INTERVAL   60,U
38.5    TIMDATA    DT
38.6    STORE      TOD,APD,APD,U        /SAUVE L HEURE ET LA DATE
38.7    TIMDATA    MD                  /ACTUEL A TOUTES LES MINUTES.
38.8    STORE      LDAT,APD,APD,U
38.9    EXIT       U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      943
/   CDB:         369
/   PROCESSES:   3232
/   OVERHEAD:    2700
/   TOTAL:       7244      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      943
/   CDB:         369
/   PROCESSES:   3232
/   OVERHEAD:    2700
/   TOTAL:       7244      8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      943
/   CDB:         369
/   PROCESSES:   3234
/   OVERHEAD:    2700
/   TOTAL:       7246      8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:      943
/   CDB:         369
/   PROCESSES:   3234
/   OVERHEAD:    2700
/   TOTAL:       7246      8K DSC MEMORY NEEDED

```

AU DEPART DU SYSTEME V43-13A PAR LE DSC, LE VENTILATEUR DE RETOUR V43-13R DEMARRE PAR ENTREBARRAGE.

LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGISE ET ADMET L'AIR AUX CONTROLES. LES SYSTEMES V43-30RE ET 31RE SONT MIS EN ROUTE PAR LEUR MINUTERIE MECANIQUE 0-8 HRES

LA VALVE DE REFROIDISSEMENT, LES VOILETS DE MELANGE, LA VALVE DE RECUPERATION LE SERPENTIN DE FACE ET EVITEMENT ET LA VALVE DE CHAUFFAGE SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANCE; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA-TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3°C LA VALVE V-1 DU SERPENTIN DE FACE ET D'EVITEMENT OUVRE A 100 % PAR SP-2 ET RG-1 EST DESAMORCE 2

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15°C, LES VOILETS RETOURNENT A UN MINIMUM DE 10%. LA POSITION MINIMUM EST CEPENDANT REAJUSTE SI LES SYSTEMES V43-30RE ET 31RE SONT EN MARCHE

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINÉ DE RETOUR CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINÉ D'ALIMENTATION EXCEDE 80%.

LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

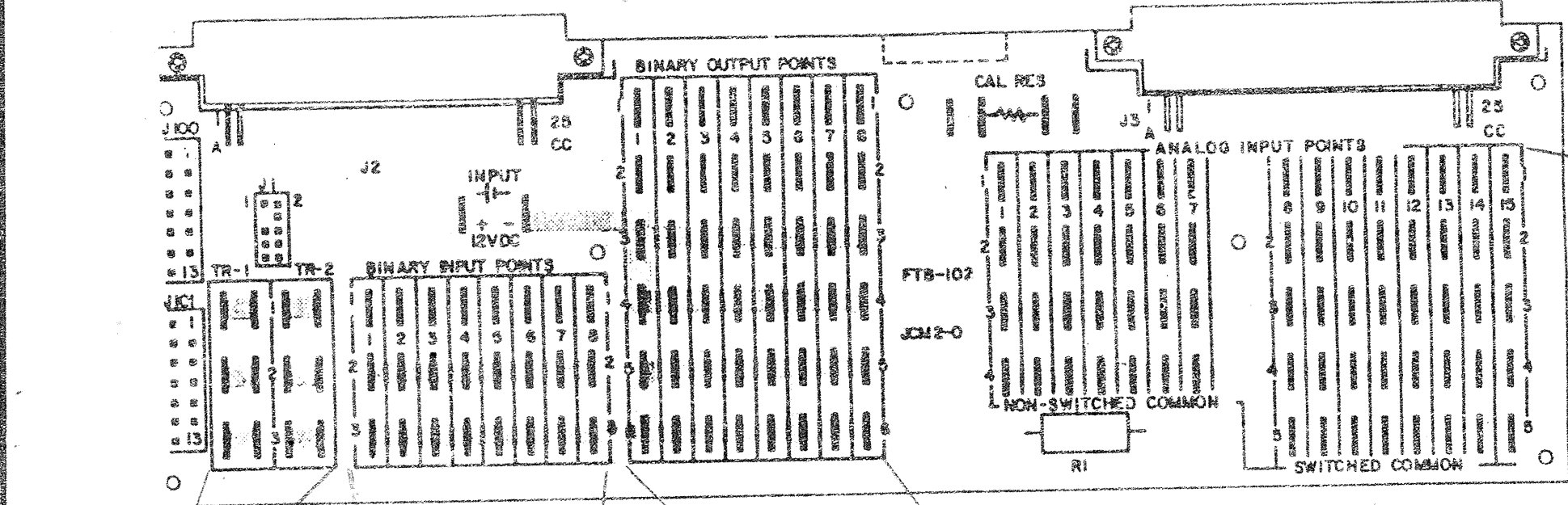
SI LE DIFFERENTIEL DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE AU SERPENTIN AFIN DE LE DEGIVRER PAR SP-1

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME S'ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU DESSUS DE 3°C A TE-2 L'ACTION DE TLL-2 EST ANNULEE VIA RG-1 2

LE SYSTEME S'ARRETE AUSSI SUR DETECTION DE FUMEE OU SUR UN SIGNAL DU PANNEAU D'ALARME INCENDIE.

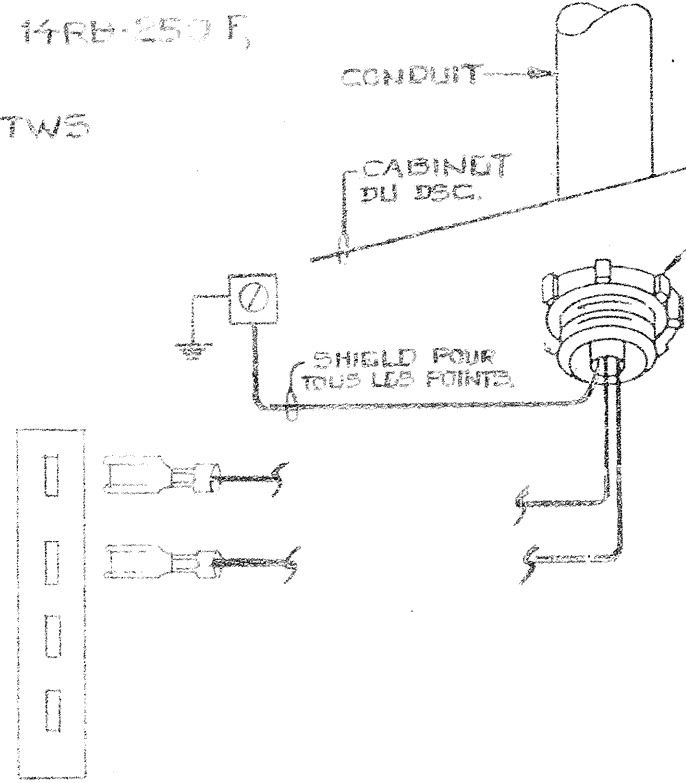
LE SYSTEME V41-1E FONCTIONNE CONTINUELLEMENT

BORNIER DE RACCORDEMENT (FIC-102)




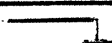
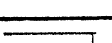

VOIR PLUS BAS
POUR COMMUNICATION

- ① - TYPE DE RACCORDEMENT
CORRESPONDANT TYPE 14RB-150 F,
ISOLÉS .250.
- ② - CÂBLAGE EN 2"18 TWS
PARTOUT.

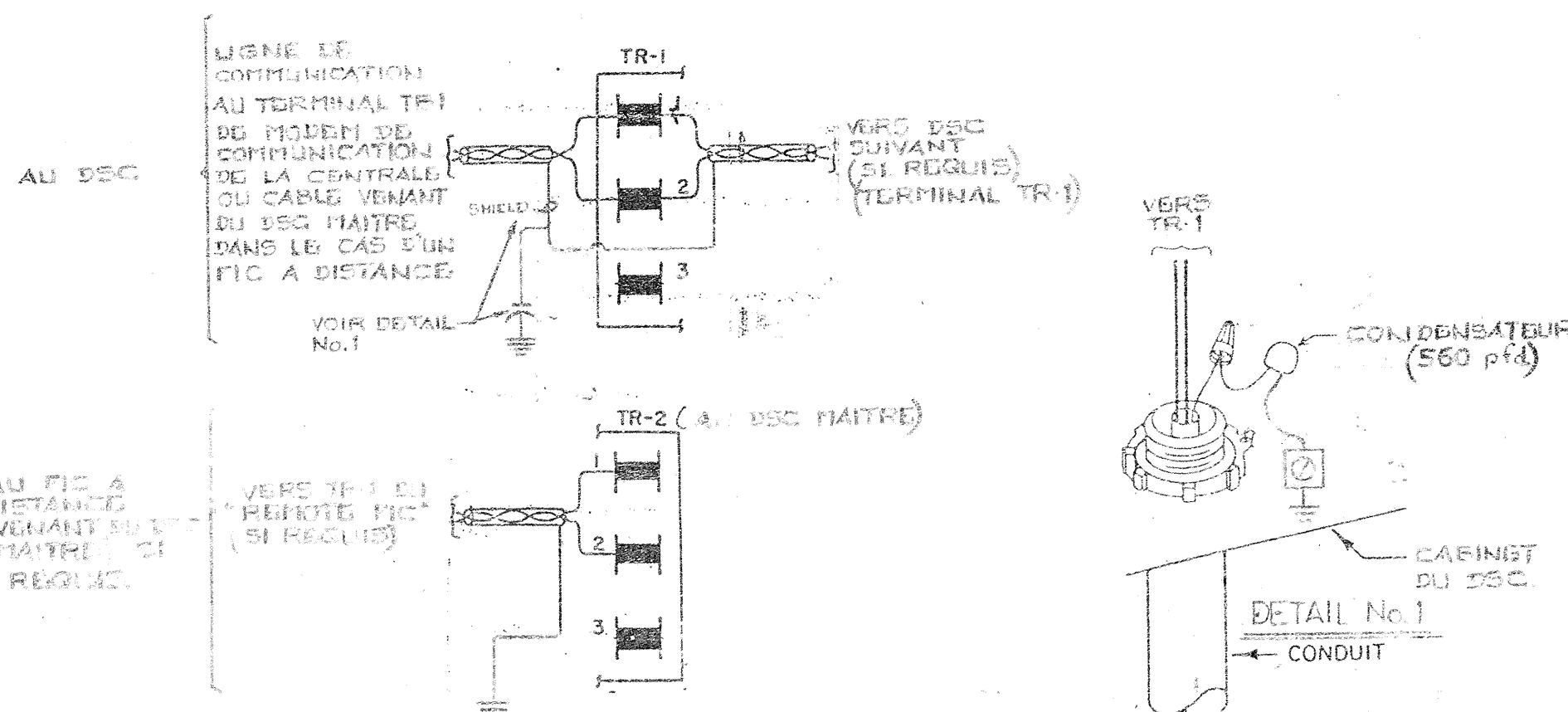


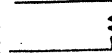
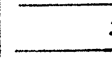

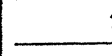
TOTAL MAX 3 ENTRÉES

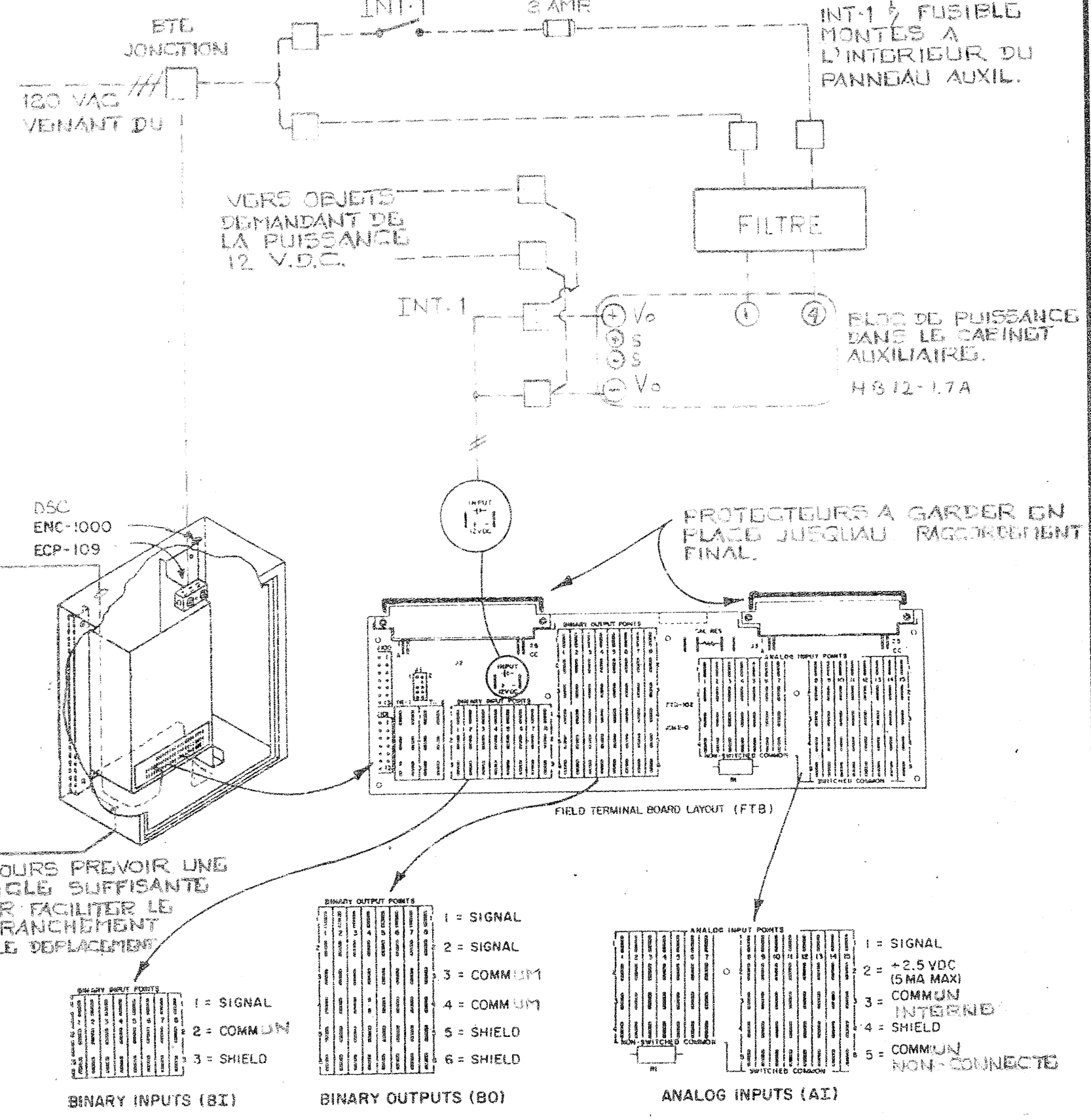
TOTAL MAX 3 SORTIES

EMPLACEMENT				ADRESSE							
NO.1: C.I.R.A.								DSC 13			
EMPLACEMENT:								FIC 1			
DU DSC											
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM	
1	STATUS	SYSTEME V43-13	BIN	1 2		CONTACT AUX. DEM.	MCC-3	B1.1			
2	STATUS	SYSTEME V43-30R	BIN	1 2		CONTACT AUX. DEM.	MCC-3	B2.1			
3	STATUS	SYSTEME V43-30R	BIN	1 2		CONTACT AUX. DEM.	MCC-3	B3.1			
4	REL	SYSTEME V43-13	BIN	1 2		RELAIS RG	CAB AUX.	B4.1			

EMPLACEMENT				ADRESSE						
NOM: C.I.R.A.								DSC 13		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1		
2	EPT-2	CHAUFFAGE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1		
3	EPT-3	VOLUME VARIABLE	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1		
4	EPT-4	HUMIDIF.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1		
5	EPT-5	REFROI.	POS	1 2	ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P5.1		
6										
7A	R-1	ARRET DEPART V43-13	SST	1 3	2 7	RELAIS 12VDC	MCC-3	S7A.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4	ROUGE NOIR	V9011-1	CABINET AUX.	S7B.1		
8A	SP-2	V-1 PRECHAUF OUVERTE	SST	1 3	ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1		
8B	RG-1	RELAIS DEVITEMENT DE TLL-2	SST	1 3	2 7	RELAIS 12V DC	CABINET AUX	S8B.1		

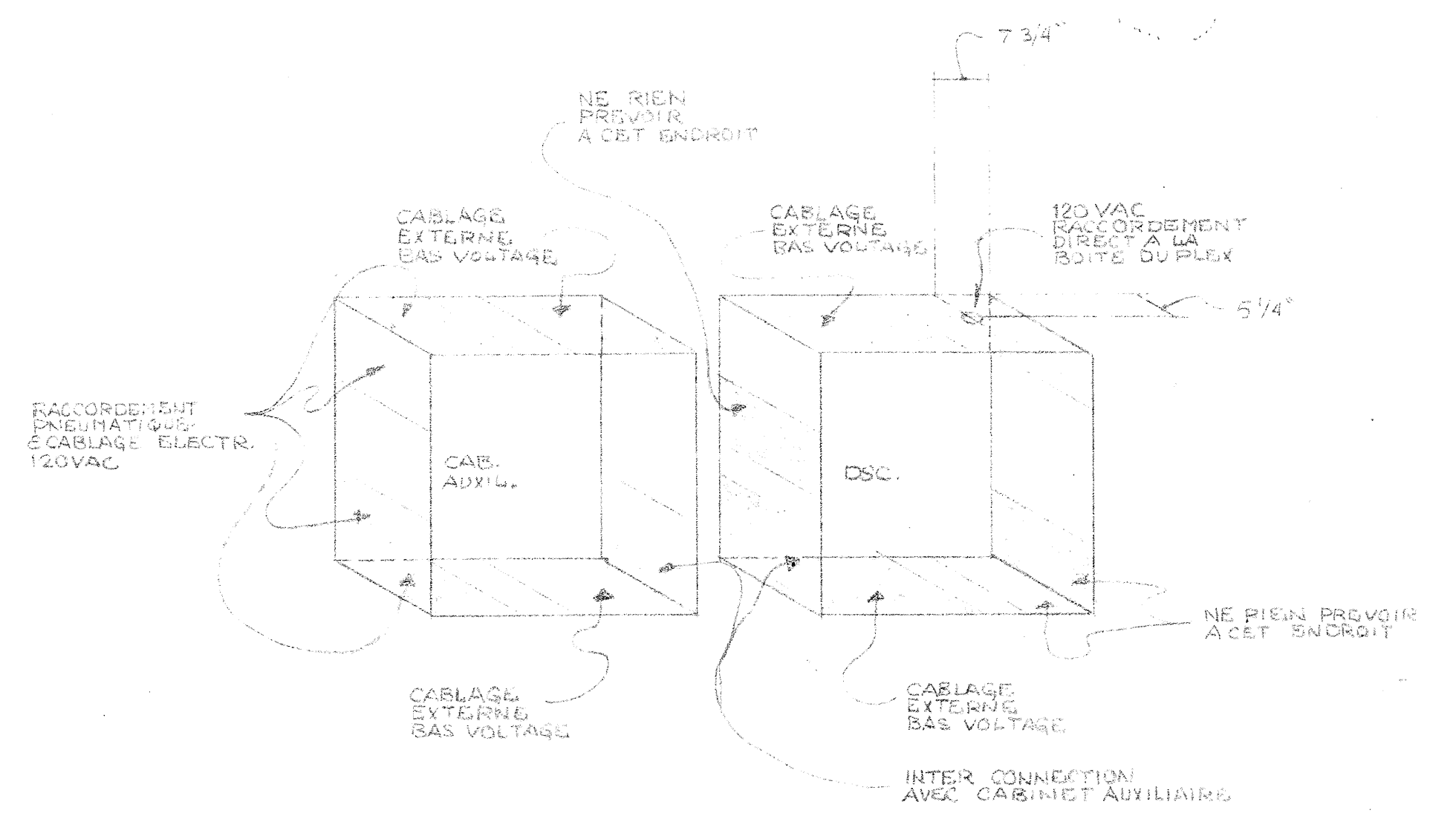


EMPLACEMENT			ADRESSE							
NOM: C.I.R.A.								DSC 13		
EMPLACEMENT: DU DSC								FIC 1		
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A8.1		
9	EPT-5	REFROID.	ANA	1 2 3	VIOLET JAUNE BLEU	EPT-102	CABINET AUX.	A9.1		
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1		4-20 MA 10-90%HR
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1		4-20 MA 10-90%HR
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1		0-5VDC 0-25%V
14										
15	PT-3	PRESSION SERPENTIN V43-30RE	ANA	1 5	1 2	SONDE DE PRESSION PT-3	SERPENTIN GLYCOL V43-30RE	A15.1		0-5VDC 0-25%V



INT-1: INTERRUPTEUR "TOGGU" CÂBLE SP. ST. MOD. 447, MONTÉ AVEC R-4000-101 J.C.L.


□ - TERMINAUX DANS LE CABINET AUXILIAIRE



① - VOIR DESSINS STD. DE RACCORDEMENT POUR LES COMPOSANTES AUXILIAIRES.

② - VOIR LES DESSINS DE CONTROLES POUR LES RACCORDEMENTS PNEUMATIQUES / ELECTRIQUES LOCAUX.

TITRE IMPLANTATION DSC-8500		CHANGEMENT #112		TEL QUE CONSTRUIT		8-07-08	
DSC-13				ADDITION RG-1		Nov 27 85	
PROJET CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.		REFERENCE J.C.R.		TECHNICIEN R.F.		AVIS DATE PAR	
REPRESENTANT J.C.R.		DATE JUL 16 85		REVISION DATE PAR		APPROUVE DATE PAR	
Division Des Systemes Et Services		Société de Contrôle Johnson Ltee 441 boulevard Labarre Montreal, QC H4H 1S2 Tel. 514-332-6989		CONTRAT 4096-008-33		DESIGN NO. 4068-33	

IDENT.	MODELE	QTE	DESCRIPTION
M1, M2	MARKTIME 90015	2	MINUTERIE MANUELLE 0-12HRES.
DA-1, 8 ET 9	D3073-2	3	MOTEUR DE VOLET C/A LAMPE TEMOIN
DA-2			MOTEUR DE VOLET
DA-3,4			MOTEUR DE VOLET
DA-5	D3153-1	1	MOTEUR DE VOLET
DA-6,7		2	MOTEUR FOURNI PAR D'AUTRES
V-1	V5842-8	1	VALVE 3 VOIES Ø 2½" C.V.54
V-2	V5842-6	1	VALVE 3 VOIES Ø 2" C.V.30
V-3	V5462-14	1	VALVE 2 VOIES N.F. Ø 4" C.V.150
V-4	V5252-2	1	VALVE 2 VOIES, N.O. Ø 2" C.V.26
TE-1,3	TE1101-100	2	ELEMENT DE TEMPERATURE
TE-2,4	TE1100-17	2	ELEMENT DE TEMPERATURE
IPD-1,2	2000-50	2	INDICATEUR DE PRESSION 0-50 mm
HE-1,2	1.1000.30.041	2	ELEMENT D'HUMIDITE ENERCORP.
DF-1,2		2	DETECTEUR DE FUMEE PYPOTRONIC
TLL-1	A11A-6	1	BASSE LIMITE
TLL-2	A19AAF-12	1	BASSE LIMITE
W-1	WZ 1000-2 	1	PUIT D'IMMERSION
PT-1 ET 3	SETRA 261	2	DETECTEUR DE PRESSION STATIQUE
EP-1,2,3 ET 4	VIIHAA-100	4	RELAIS ELECTRIQUE PNEUMATIQUE
G-1 à 3	G2010-101	3	INDICATEUR 0-30 PSI
PS-1	HB 12-1.7A	1	BLOC DE PUISSANCE 12 VDC
EPT-1 à 5	EPT-102	5	INTERFACE ELECTRIQUE PNEUMATIQUE
R-1, RG & RG-1	6012	3	RELAIS 12 VDC
P-1	M8100-109	1	PANNEAU 24"x36"x7"
XMR-1	BD 2 FE	1	TRANSFO. 120/18 VAC.
SP-1,2	V9011-1	2	VALVE A AIR 3 VOIES
IS-1	C-208-2	1	INVERSEUR DE SIGNAL
HV-1	PAR D'AUTRES	1	SOUPAPE HUMIDIFICATEUR

22" x 34" ORIGINAL

B

A

FORM M-70

C

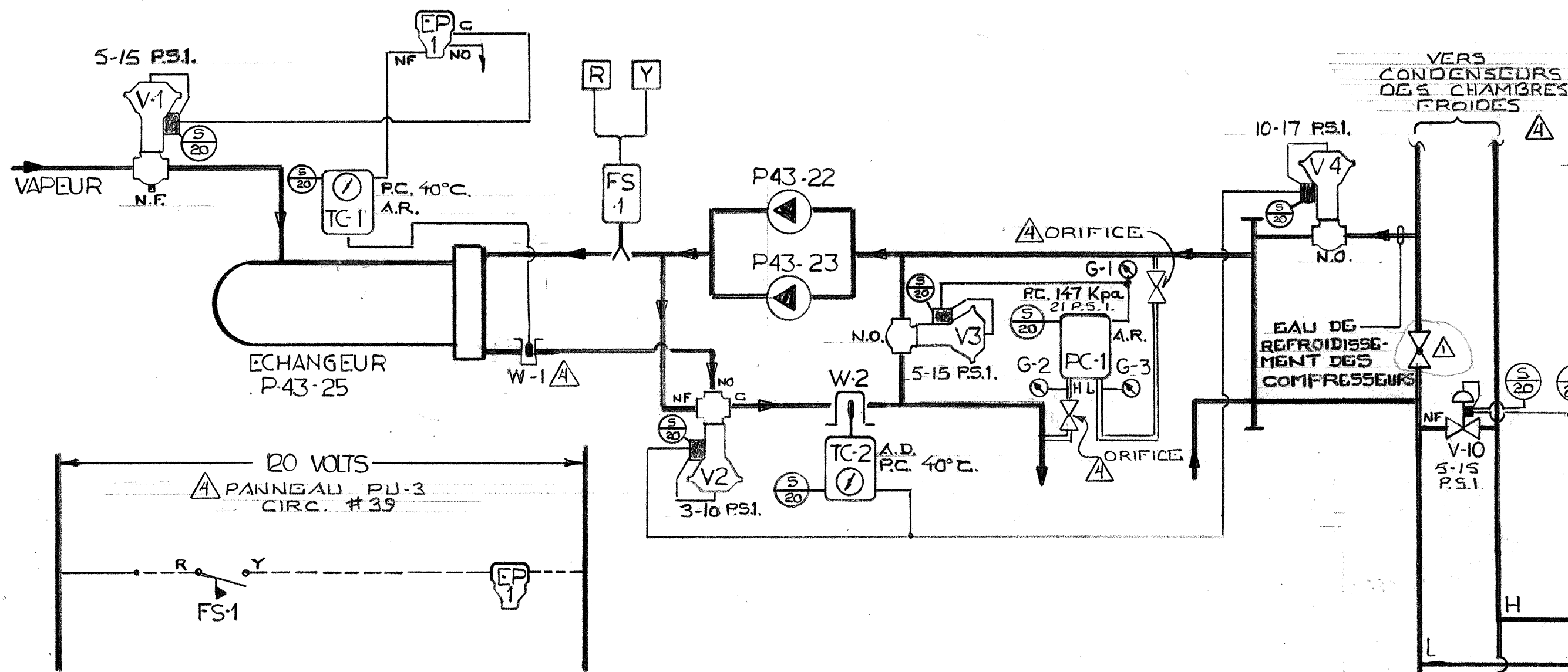
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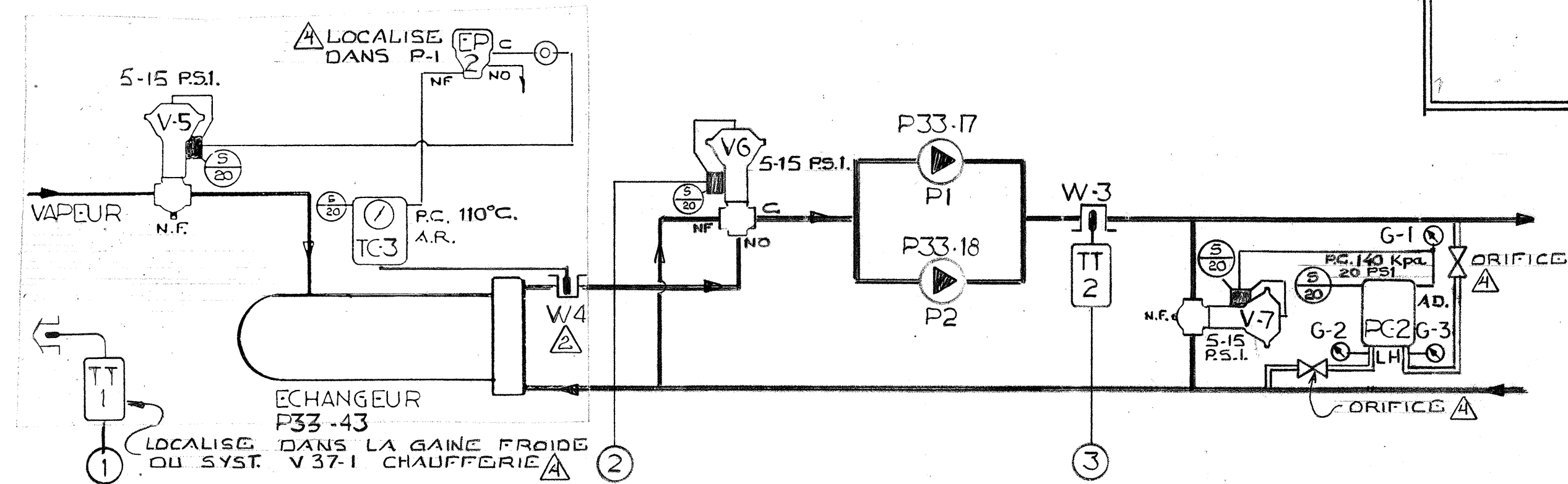
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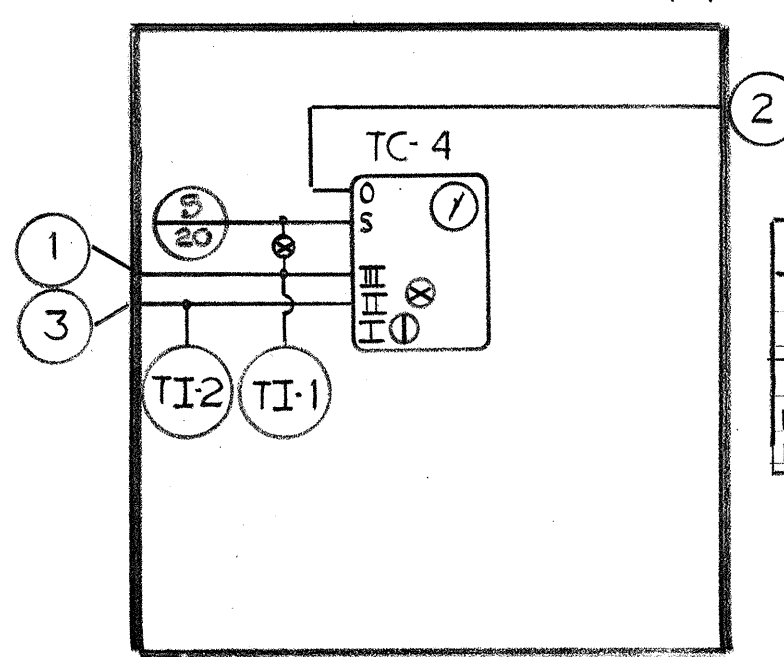
ECHANGEUR (VAPEUR-EAU) P43-25



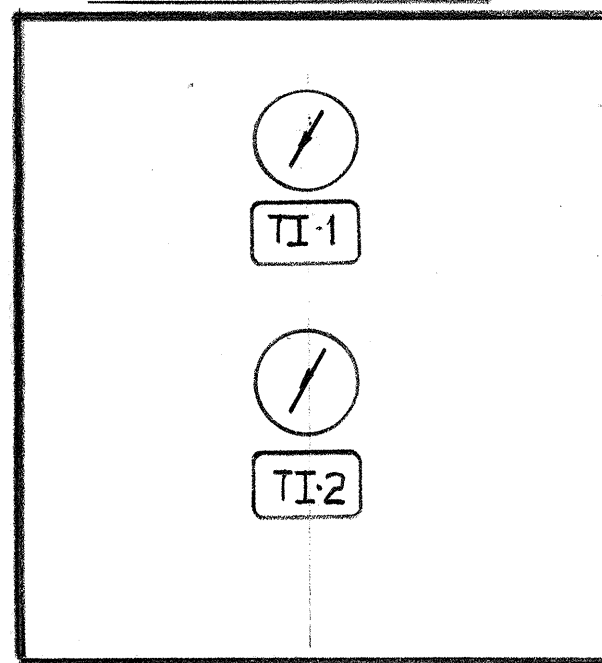
ECHANGEUR (VAPEUR-EAU) P33-43



PANNEAU P1



FACE DU PANNEAU

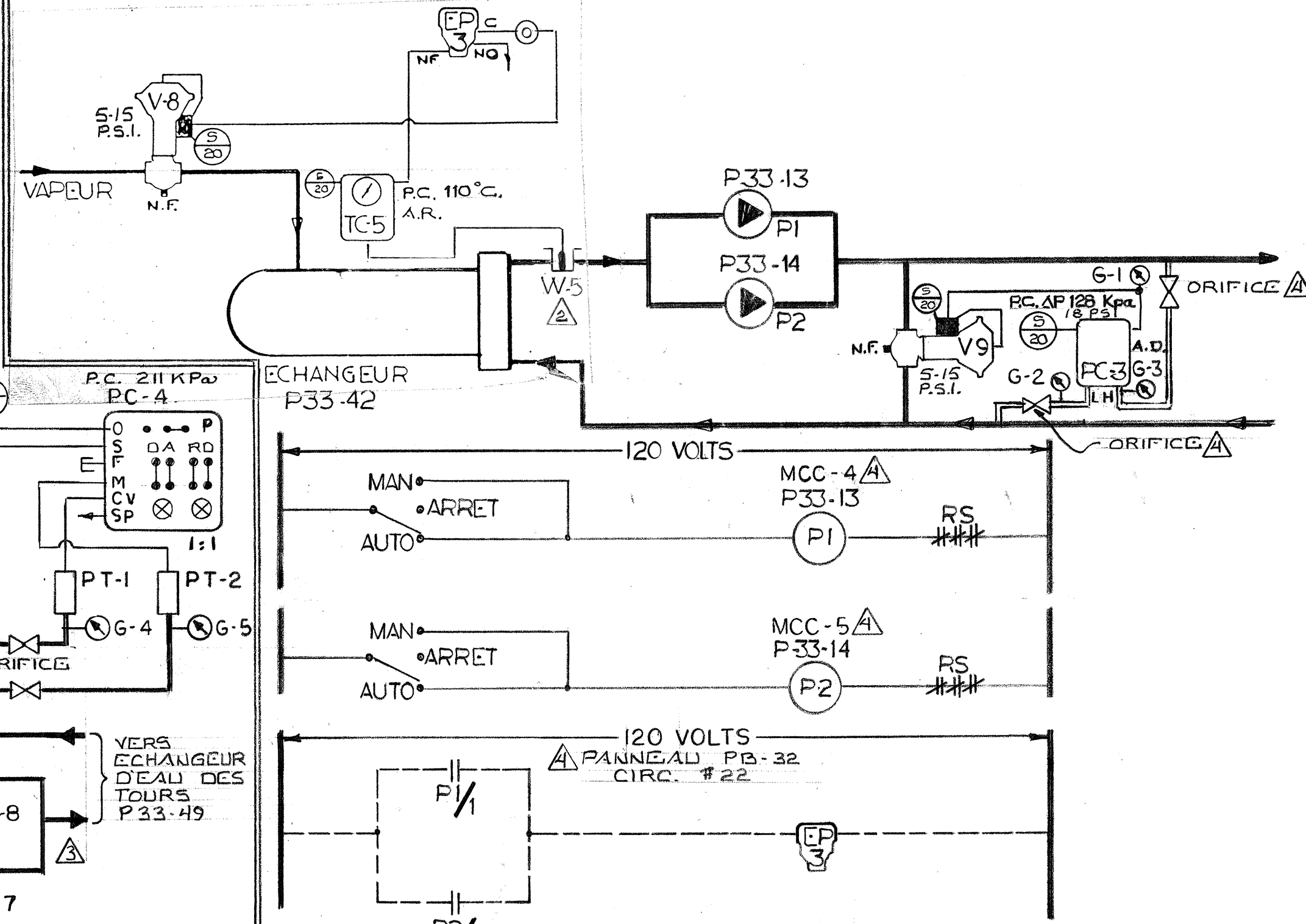


TI-1 — EXTERIEUR
TI-2 — ALIMENTATION

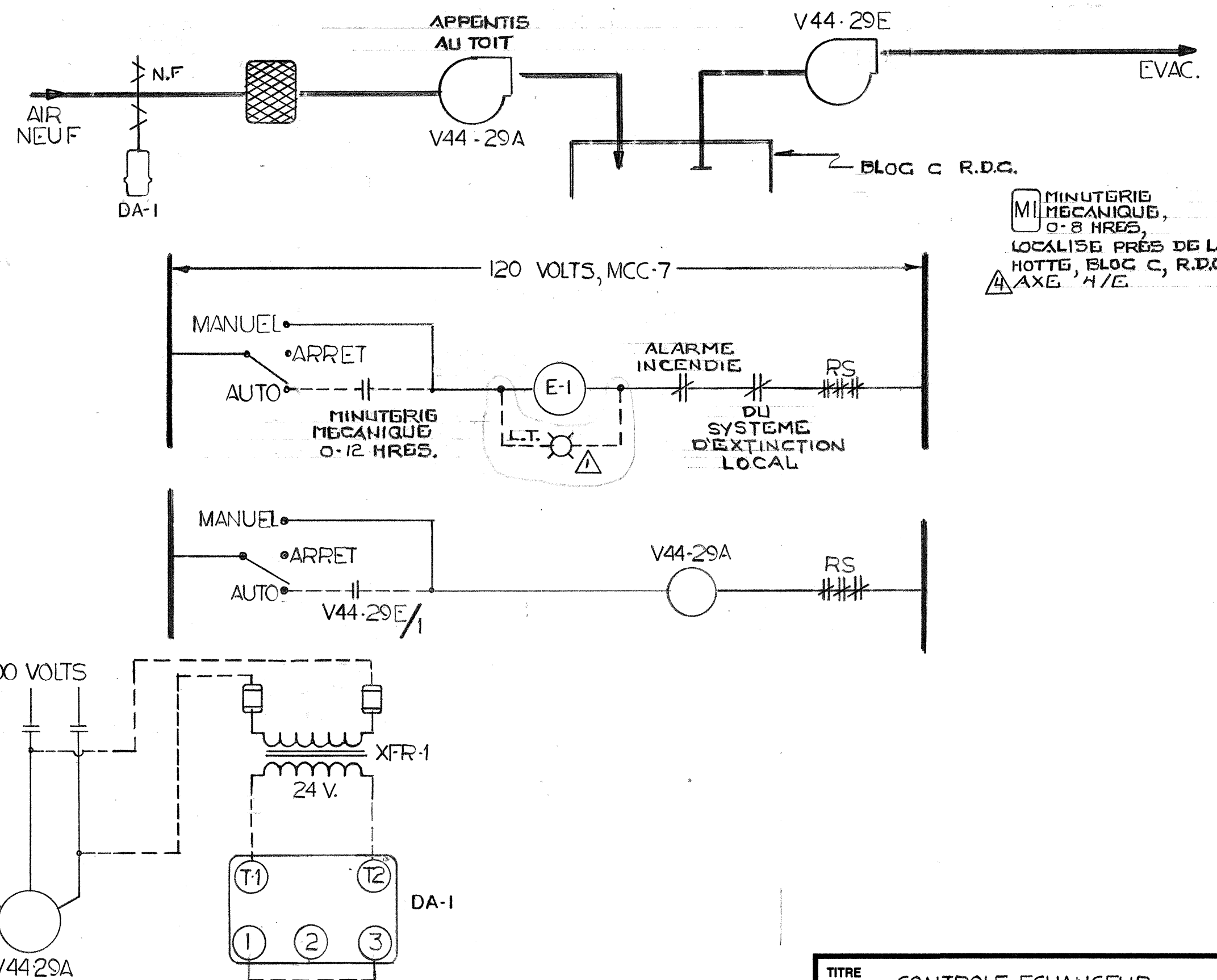
EXT.	ALIM.
-30°C.	110°C.
20°C.	50°C.

ACTION DIRECTE
REAL. RGVN.
RATIO: 1.2

ECHANGEUR (VAPEUR-EAU) P33-42



TIPIQUE POUR V44-29A, V44-29E



LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
ECHANGEUR P43-25			
PC-4	T5800-3	1	CONTROLEUR
V-1	V5416-4567	1	VALVE 2 VOIES N.F. Ø 1" C.V. 12
V-2	V5842-12	1	VALVE 3 VOIES Ø 1/2" C.V. 187
V-3	V5252-8	1	VALVE 2 VOIES N.O. Ø 2 1/2" C.V. 51
PT-1, 2	P5210-1002	2	TRANSMETTEUR DE PRESSION
V-4	V5252-16	1	VALVE 2 VOIES N.O. Ø 4" C.V. 150
W-1 ET 2	T800-1606	2	PUIT D'IMMERSION
TC-1 ET 2	T8000-1	2	CONTROLEUR
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
FS-1	F61KB-11	1	INTERRUPTEUR DE DEBIT
PC-1	P8575-3	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
G-1	G2010-11	1	INDICATEUR DE PRESSION
G-2, 3, 4, 5	G2010-23	4	INDICATEUR DE PRESSION
ECHANGEUR P33-43			
V-5	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
V-6	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-7	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
W-3 ET 4	T800-1606	2	PUIT D'IMMERSION
PC-2	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-3	T8000-1	1	CONTROLEUR
EP-2	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
TT-1	T5210-1113	1	TRANSMETTEUR -40/71°C
TT-2	T5210-1004	1	TRANSMETTEUR 4/115°C
TI-1	T5502-1004	1	INDICATEUR -40/71°C Ø 2 1/2"
TI-2	T5502-1005	1	INDICATEUR 4/115°C Ø 2 1/2"
TC-4	T9002-1	1	CONTROLEUR
P-1	-----	1	BOITE 12" X 12"
G-1	G2010-11	1	INDICATEUR DE PRESSION
G-2, 3	G2010-23	2	INDICATEUR DE PRESSION
ECHANGEUR P43-42			
G-1	G2010-11	1	INDICATEUR DE PRESSION
G-2, 3	G2010-23	2	INDICATEUR DE PRESSION
V-8	V5416-4571	1	VALVE Ø 1 1/2" C.V. 29 N.F.
V-9	V5462-9	1	VALVE Ø 3" C.V. 83 N.F.
W-5	T800-1606	1	PUIT D'IMMERSION
EP-3	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
PC-3	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-5	T8000-1	1	CONTROLEUR
V44-29A			
DA-1	M130AGK-1	1	MOTEUR ELECTRIQUE AVEC BLOC CHAUFFAGE
XFR-1	EE96	1	TRANSFO. 600/24, 50 VA. (HAMMOND)
M-1	MARKTIME 90015	1	MINUTERIE MECANIQUE 0-12 HRES.
R-1	-----	1	RELAIS 600 VOLTS C/A LAMPE TEMOIN

SEQUENCE D'OPERATION

ECHANGEUR P43-25
LORSQU'IL Y A DU DEBIT, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET PERMET AU CONTROLEUR TC-1 DE MODULER LA VALVE DE VAPEUR V-1 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-2 MODULE EN SEQUENCE LA VALVE V-4 ET LA VALVE V-2 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR PC-1 MODULE LA VALVE V-3 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION ENTRE L'ALIMENTATION ET LE RETOUR CONSTANT.

ECHANGEUR P33-43
LORSQUE L'UNE OU L'AUTRE DES POMPES P33-17 OU 18 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-2 EST ENERGISE ET PERMET AU CONTROLEUR TC-3 DE MODULER LA VALVE V-5 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-4 MODULE LA VALVE V-6 AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION A SON POINT DE CONSIGNE. LE POINT DE CONSIGNE DE TC-4 EST REAJUSTE EN FONCTION DE LA TEMPERATURE EXTERIEURE.

LE CONTROLEUR PC-2 MAINTIENT UN DIFFERENTIEL DE PRESSION CONSTANT ENTRE L'ALIMENTATION ET LE RETOUR.

ECHANGEUR P33-42
LORSQUE L'UNE OU L'AUTRE DES POMPES P33-13 OU 14 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-3 PERMET AU CONTROLEUR TC-5 DE MODULER LA VALVE V-8 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR CONSTATTE.

LE CONTROLEUR PC-3 MODULE LA VALVE V-9 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION CONSTANT ENTRE LE CONDUIT D'ALIMENTATION ET LE RETOUR.

SYSTEME V44-29A:
AU DEPART DU SYSTEME PAR LA MINUTERIE MECANIQUE M-1 LE VOLET D'AIR NEUF OUVRE A 100%.

TITRE — CONTROLE ECHANGEUR
— SYSTEME V44-29

PROJET CENTRE DE RECHERCHE
ALIMENTAIRE
ST. HYACINTHE QUE.

AR-161	TEL QUE CONSTRUIT	86-08-20
TC-1, 2, 3 ET 5	86-08-20	86-08-20
REVISION	NO.	DATE
REPRESENTANT	TECHNICIEN	DATE
J.C.R.	R.F.	DATE
DESIGNE	DATE	DATE
APPROUVE	DATE	DATE
JOHNSON CONTROLS	Division Des Systemes Et Services	4096-8-34/52
Societe de Controle Johnson Ltee	441 boulevard Lebeau	Montréal, QC H4N 1S2
Tel. 514-332-6960	CONTRAT	4096-8-34/52
	DESSIN NO.	4068-34

ECHANGEUR P43-25

LORSQU'IL Y A DU DEBIT, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ENERGISE ET PERMET AU CONTROLEUR TC-1 DE MODULER LA VALVE DE VAPEUR V-1 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-2 MODULE EN SEQUENCE LA VALVE V-4 ET LA VALVE V-2 AFIN DE MAINTENIR LA TEMPERATURE A SON POINT DE CONSIGNE.

LE CONTROLEUR PC-1 MODULE LA VALVE V-3 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION ENTRE L'ALIMENTATION ET LE RETOUR CONSTANT.

ECHANGEUR P33-43

LORSQUE L'UNE OU L'AUTRE DES POMPES P33-17 OU 18 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-2 EST ENERGISE ET PERMET AU CONTROLEUR TC-3 DE MODULER LA VALVE V-5 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR A SON POINT DE CONSIGNE.

LE CONTROLEUR TC-4 MODULE LA VALVE V-6 AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION A SON POINT DE CONSIGNE. LE POINT DE CONSIGNE DE TC-4 EST REAJUSTE EN FONCTION DE LA TEMPERATURE EXTERIEURE.

LE CONTROLEUR PC-2 MAINTIENT UN DIFFERENTIEL DE PRESSION CONSTANT ENTRE L'ALIMENTATION ET LE RETOUR.

ECHANGEUR P33-42





LORSQUE L'UNE OU L'AUTRE DES POMPES P33-13 OU 14 EST EN MARCHE, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-3 PERMET AU CONTROLEUR TC-5 DE MODULER LA VALVE V-8 AFIN DE MAINTENIR LA TEMPERATURE A L'ECHANGEUR CONSTANTE.





LE CONTROLEUR PC-3 MODULE LA VALVE V-9 AFIN DE MAINTENIR LE DIFFERENTIEL DE PRESSION CONSTANT ENTRE LE CONDUIT D'ALIMENTATION ET LE RETOUR.





SYSTEME V44-29A:

AU DEPART DU SYSTEME PAR LA MINUTERIE MECANIQUE M-1 LE
VOLET D'AIR NEUF OUVRE A 100%.

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
ECHANGEUR P43-25			
PC-4	T5800-3	1	CONTROLEUR
V-1	V5416-4567	1	VALVE 2 VOIES N.F. Ø 1" C.V.12
V-2	V5842-12	1	VALVE 3 VOIES Ø 4" C.V. 187
V-3	V5252-8	1	VALVE 2 VOIES N.O. Ø 2 1/2" C.V.51
PT-1,2	P5210-1002	2	TRANSMETTEUR DE PRESSION
V-4	V5252-16	1	VALVE 2 VOIES, N.O., Ø 4", C.V.: 150
W-1 ET 2	T800-1606 	2	PUIT D'IMMERSION
TC-1 ET 2	T8000-1 	2	CONTROLEUR
EP-1	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
FS-1	F61KB-11	1	INTERRUPTEUR DE DEBIT
PC-1	P8575-3	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
G-1 	G2010-11	1	INDICATEUR DE PRESSION
G-2,3,4,5 	G2010-23	4	INDICATEUR DE PRESSION

ECHANGEUR P33-43			
V-5	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
V-6	V5842-3	1	VALVE 3 VOIES Ø 1 1/2" C.V. 21
V-7	V5416-4565	1	VALVE Ø 1/2" N.F. C.V. 4.7
W-3 ET 4	T800-1606 	2	PUIT D'IMMERSION
PC-2	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-3	T8000-1 	1	CONTROLEUR
EP-2	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
TT-1	T5210-1113	1	TRANSMETTEUR -40/71°C
TT-2	T5210-1004	1	TRANSMETTEUR 4/115°C
TI-1	T5502-1004	1	INDICATEUR -40/71°C Ø 2 1/2"
TI-2	T5502-1005	1	INDICATEUR 4/115°C Ø 2 1/2"
TC-4	T9002-1	1	CONTROLEUR
P-1	-----	1	BOITE 12" X 12"
G-1 	G2010-11	1	INDICATEUR DE PRESSION
G-2,3 	G2010-23	2	INDICATEUR DE PRESSION

ECHANGEUR P43-42			
G-1 	G2010-11	1	INDICATEUR DE PRESSION
G-2 3 	G2010-23	2	INDICATEUR DE PRESSION
V-8	V5416-4571	1	VALVE Ø 1 1/2" C.V. 29 N.F.
V-9	V5462-9	1	VALVE Ø 3" C.V. 83 N.F.
W-5	T800-1606 	1	PUIT D'IMMERSION
EP-3	V11HAA-100	1	RELAIS ELECTRIQUE PNEUMATIQUE
PC-3	P8575-1	1	CONTROLEUR A DIFFERENTIEL DE PRESSION
TC-5	T8000-1 	1	CONTROLEUR

V44-29A			
DA-1	M130AGK-1	1	MOTEUR ELECTRIQUE AVEC BLOC CHAUFFAGE
XFR-1	EE9G	1	TRANSFO. 600/24, 50 VA. (HAMMOND)
M-1	MARKTIME 90015	1	MINUTERIE MECANIQUE 0-12 HRES.
R-1		1	RELAIS 600 VOLTS C/A LAMPE TEMOIN

22" x 34" ORIGINAL

SYSTEME V37-1

(SALLE MECANIQUE NIVEAU 37250)

REF. PLAN MEC. M-315

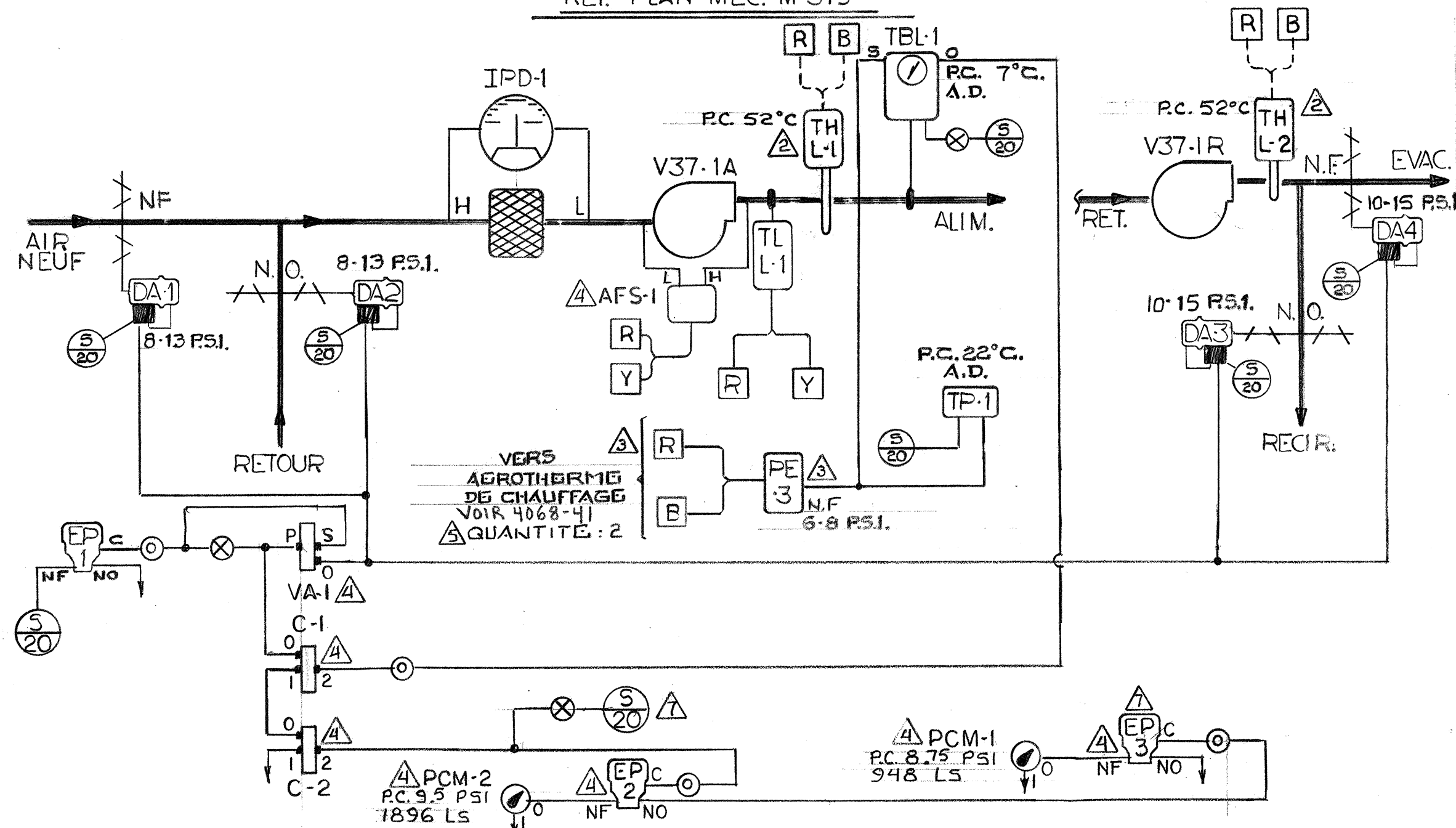
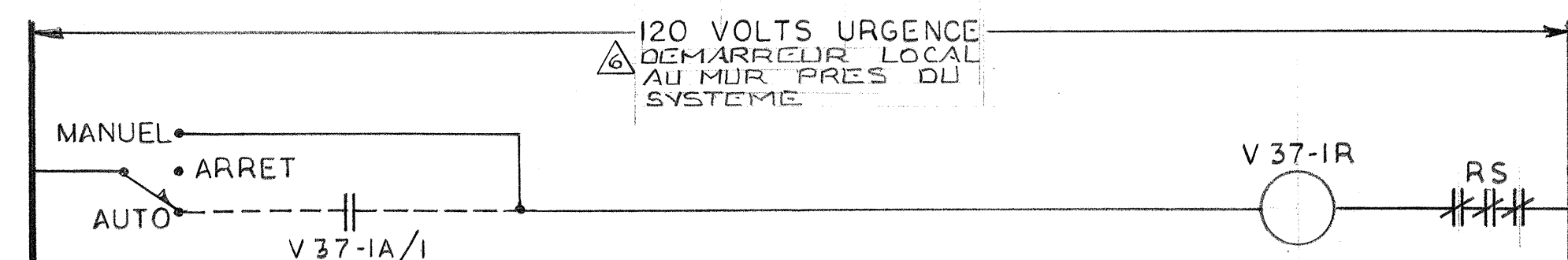
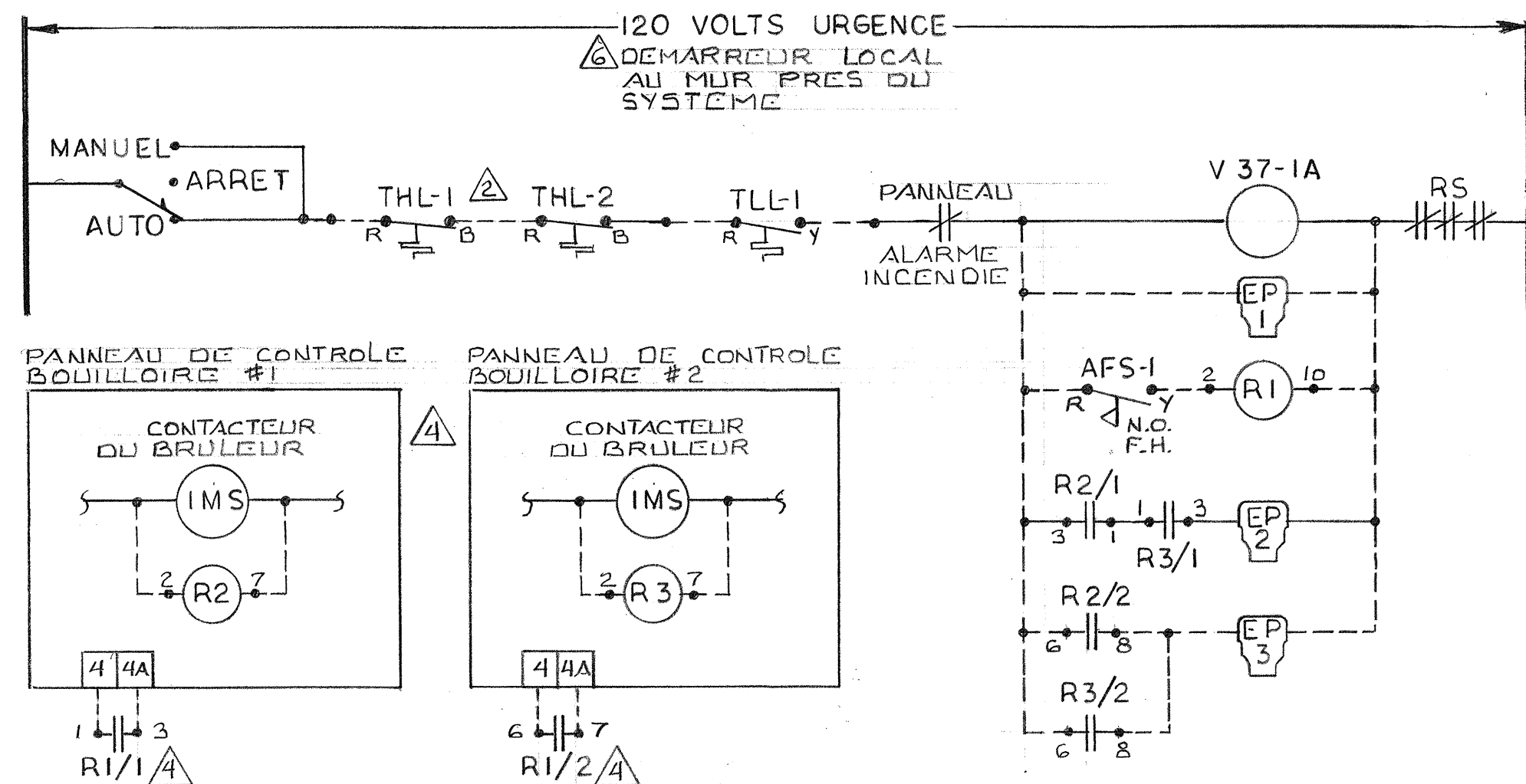


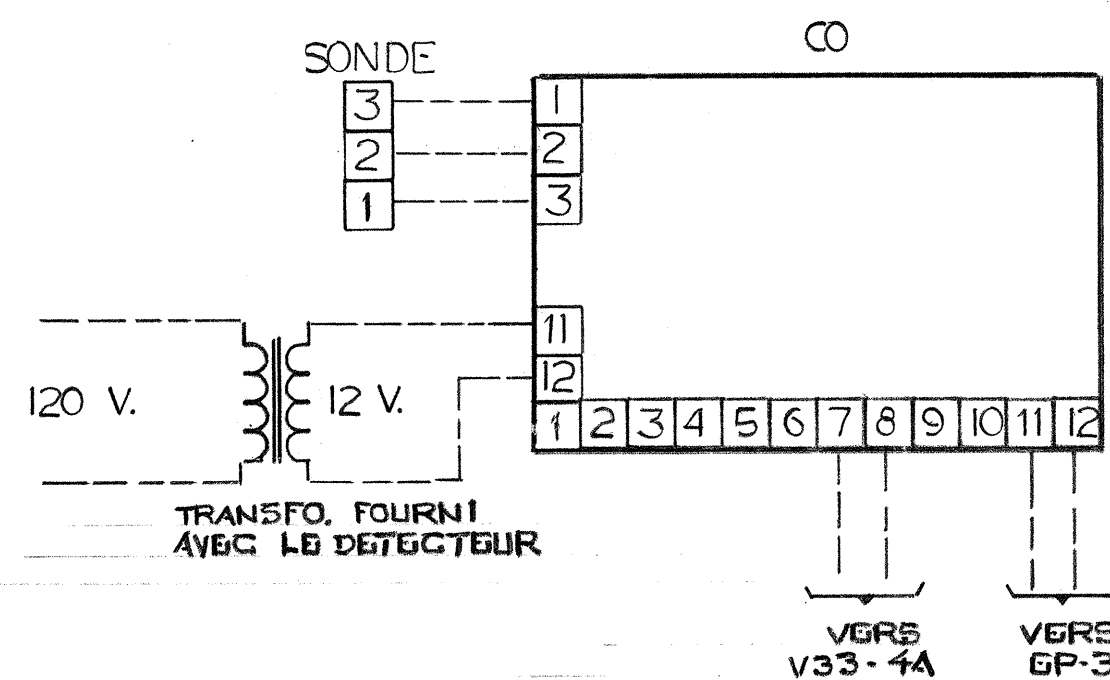
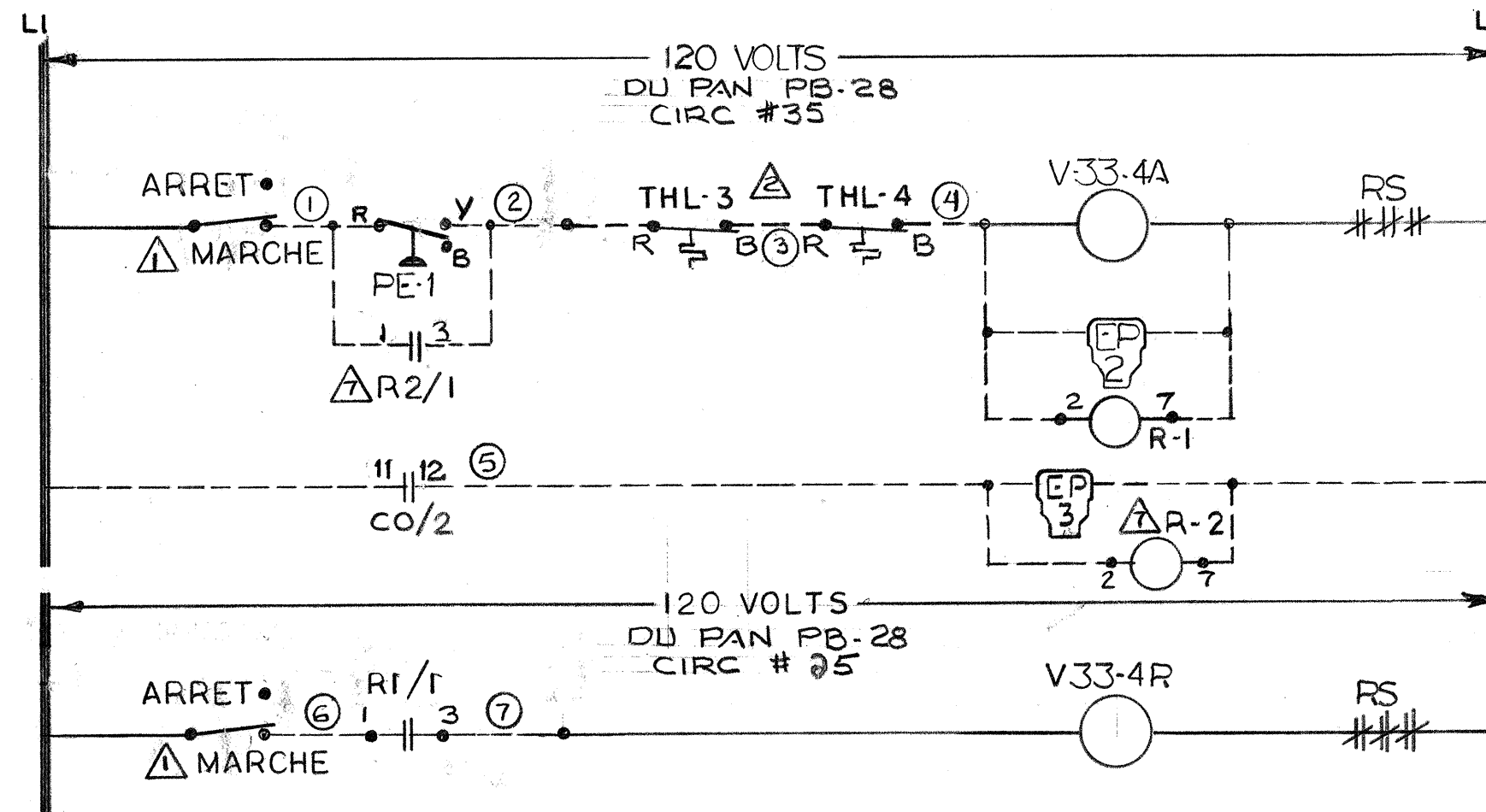
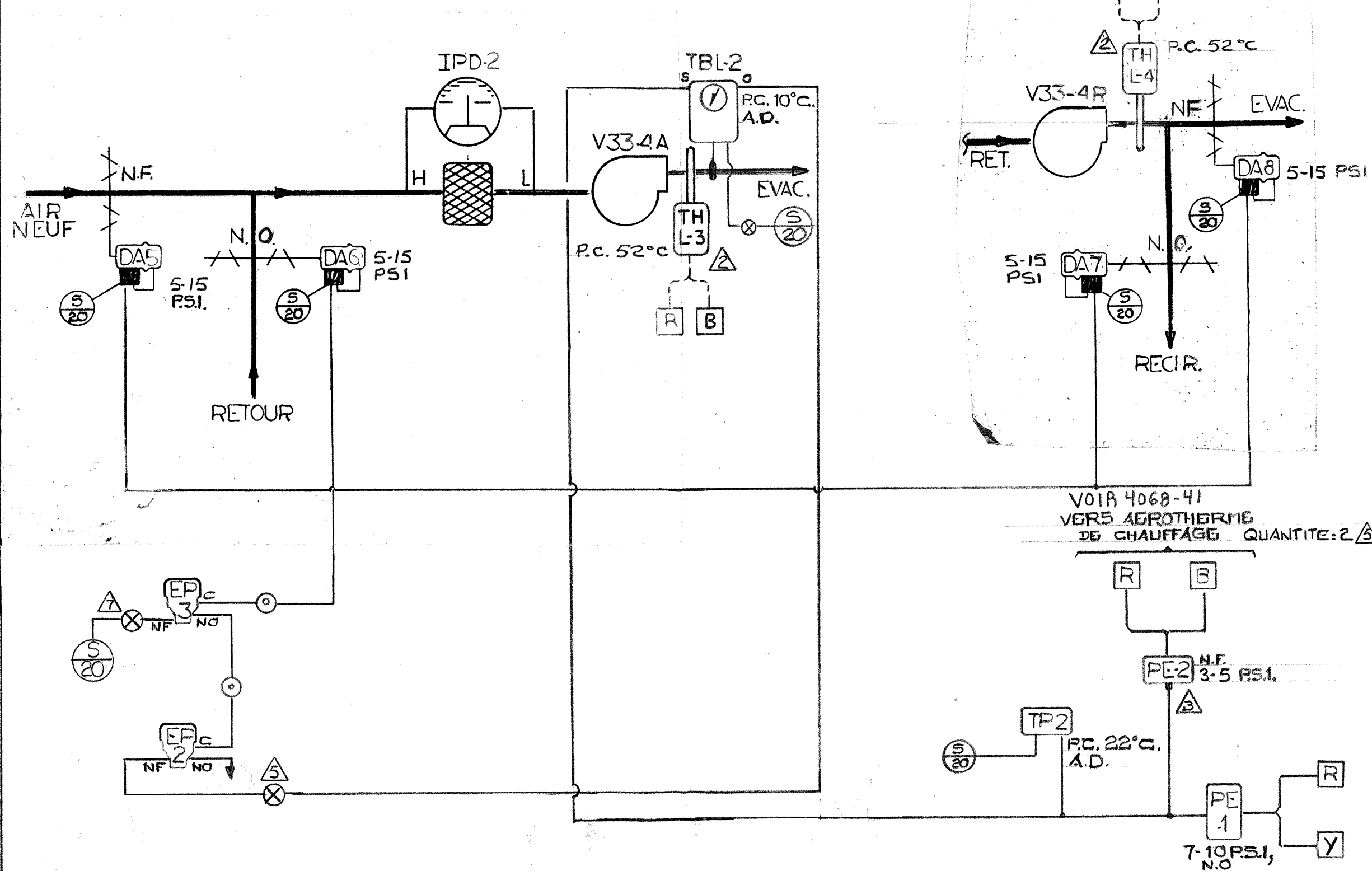
DIAGRAMME ELECTRIQUE



SYSTEME V33-4

(SYSTEME GARAGE)

REF. PLAN MEC. M-301



----- FILAGE J.C.L.
----- FILAGE PAR D'AUTRES

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
SYSTEME V37-1			
TP-1	T4002-201	1	THERMOSTAT DE PIECE
TBL-1	T8000-4-	1	CONTROLEUR
TLL-1	A19ACA-28	1	BASSE LIMITE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-5MM
THL-1,2	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-1,2,3	V11HAA-109	3	RELAIS ELECTRIQUE PNEUMATIQUE
DA-1	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-2 et 3	D3073-1	2	MOTEUR PNEUMATIQUE C/A P.P.
DA-4	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-3	D3153-2	1	MOTEUR PNEUMATIQUE
AFS-1	P10BJ-1	1	RELAIS
R1	P32AF-2	1	RELAIS
R2 - R3	D3073-1	2	RELAIS
PCM-1,2	R4000-3	2	RELAIS DE POSITION MINIMUM
CL1,2	C5226-3	2	ISOLATEUR DE SIGNAL
VA-1	R2080-1	1	AMPLIFICATEUR DE SIGNAL

SEQUENCE D'OPERATION

TP-2	T4002-201	1	THERMOSTAT DE PIECE
TBL-2	T8000-1	1	CONTROLEUR
EP-1,2	P10BJ-1	2	RELAIS PNEUMATIQUE ELECTRIQUE
EP-2 et 3	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
IPD-2	2000-50	1	INDICATEUR DE PRESSION 0-50MM
DA5 @ 8	D3073-1	4	MOTEUR PNEUMATIQUE C/A P.P.
CO	VA-102	1	DETECTEUR MONOXYDE DE CARBONE
R1, R2	6012	2	RELAIS 120 VAC 2 PDT
THL-3,4	A25AN-9	2	THERMOSTAT HAUTE LIMITE

SYSTEME V37-1

AU DEPART DU SYSTEME, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ALIMENTE ET PERMET AU THERMOSTAT DE PIECE DE MODULER LES VOLETS AFIN DE MAINTENIR LA TEMPERATURE DE LA PIECE A SON POINT DE CONSIGNE. TOUTEFOIS, LE CONTROLEUR TBL-1 PREND LE CONTROLE DES VOLETS SI LA TEMPERATURE D'ALIMENTATION DESCEND SOUS SON POINT DE CONSIGNE.

SUR DETECTION DE BASSE TEMPERATURE DANS L'ALIMENTATION OU SUR DETECTION DE HAUTE TEMPERATURE, LE SYSTEME S'ARRETE.

LORSQUE V37-1A EST EN MARCHÉ, LA PERMISSION DE FONCTIONNER EST ACCORDEE AUX BOUILLIRES 1 ET 2 VIA AFS-1 ET R1. LORSQUE L'UNE OU L'AUTRE DES BOUILLIRES EST EN OPERATION, EP-3 EST ALIMENTEE VIA R2 OU R3 ET LE MINIMUM D'AIR NEUF EST REAJUSTE PAR PCM-1. LORSQUE LES DEUX BOUILLIRES SONT EN OPERATION, EP-2 EST ALIMENTE VIA R2 ET R3 ET LE MINIMUM D'AIR NEUF EST REAJUSTE PAR PCM-2.

SYSTEME V33-4

SUR UNE HAUSSE DE TEMPERATURE DETECTEE PAR TP-2, LE SYSTEME DEMARRE ET LES VOLETS SONT MODULES AFIN DE MAINTENIR LA TEMPERATURE DE PIECE A SON POINT DE CONSIGNE, CEPENDANT, TBL-2 PREND LE CONTROLE DES VOLETS SI LA TEMPERATURE D'ALIMENTATION DESCEND SOUS SON POINT DE CONSIGNE.

SUR DETECTION DE MONOXYDE DE CARBONE, LE DETECTEUR CO DEMARRE LE SYSTEME ET OUVRE LES VOLETS A 100% PAR EP-3.

SUR DETECTION DE HAUTE TEMPERATURE PAR THL-3 ET 4, LE SYSTEME S'ARRETE.

TITRE SYSTEMES V37-1
V33-4


PROJET CENTRE DE RECHERCHE
ALIMENTAIRE
ST. HYACINTHE QUE.

AR 161
AR 148
ADDITION / REVISION
REFERENCE
REPRESENTANT
TECHNICIEN
PAR
DATE
DESSINE
PAR
DATE
APPROUVE
PAR
DATE
AVIS
DATE
PAR
DATE
CONTRAT
4096-0008-52
DESSIN NO.
4068-35

SYSTEME V37-1

AU DEPART DU SYSTEME, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ALIMENTE ET PERMET AU THERMOSTAT DE PIECE DE MODULER LES VOLETS AFIN DE MAINTENIR LA TEMPERATURE DE LA PIECE A SON POINT DE CONSIGNE. TOUTEFOIS, LE CONTROLEUR TBL-1 PREND LE CONTROLE DES VOLETS SI LA TEMPERATURE D'ALIMENTATION DESCEND SOUS SON POINT DE CONSIGNE.


SUR DETECTION DE BASSE TEMPERATURE DANS L'ALIMENTATION OU SUR DETECTION DE HAUTE TEMPERATURE , LE SYSTEME S'ARRETE.

LORSQUE V37-1A EST EN MARCHÉ, LA PERMISSION DE FONCTIONNER EST ACCORDEE AUX BOUILLOIRES 1 ET 2 VIA AFS-1 ET R1. LORSQUE L'UNE OU L'AUTRE DES BOUILLOIRES EST EN OPERATION, EP-3 EST ALIMENTEE VIA R2 OU R3 ET LE MINIMUM D'AIR NEUF EST REAJUSTE PAR PCM-1. LORSQUE LES DEUX BOUILLOIRES SONT EN OPERATION, EP-2 EST ALIMENTE VIA R2 ET R3 ET LE MINIMUM D'AIR NEUF EST REAJUSTE PAR PCM-2. 




SYSTEME V33-4

SUR UNE HAUSSE DE TEMPERATURE DETECTEE PAR TP-2, LE SYSTEME DEMARRE ET LES VOLETS SONT MODULES AFIN DE MAINTENIR LA TEMPERATURE DE PIECE A SON POINT DE CONSIGNE, CEPENDANT, TBL-2 PREND LE CONTROLE DES VOLETS SI LA TEMPERATURE D'ALIMENTATION DESCEND SOUS SON POINT DE CONSIGNE.

SUR DETECTION DE MONOXYDE DE CARBONE, LE DETECTEUR CO DEMARRE LE SYSTEME ET OUVRE LES VOLETS A 100% PAR EP-3.

SUR DETECTION DE HAUTE TEMPERATURE PAR THL-3 ET 4, LE SYSTEME S'ARRETE. 

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION
SYSTEME V37-1			
TP-1	T4002-201	1	THERMOSTAT DE PIECE
TBL-1	T8000-4-	1	CONTROLEUR
TLL-1	A19ACA-28	1	BASSE LIMITE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-5MM
THL-1,2 	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-1,2,3	V11HAA-109	3	RELAIS ELECTRIQUE PNEUMATIQUE
DA-1	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-2 et 3	D3073-1	2	MOTEUR PNEUMATIQUE C/A P.P.
DA-4	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
PE-3 	P10BJ-1	1	RELAIS PNEUMATIQUE ELECTRIQUE
AFS-1	P32AF-2	1	INTERRUPTEUR A PRESSION DIFF.
R1	RELAIS	1	120 VAC 3 PDT
R2 - R3 	RELAIS	2	120 VAC 2 PDT
PCM-1,2	R4000-3	2	RELAIS DE POSITION MINIMUM
C1,2	C5226-3	2	ISOLATEUR DE SIGNAL
VA-1	R2080-1	1	AMPLIFICATEUR DE SIGNAL

SYSTEME V33-4			
TP-2	T4002-201	1	THERMOSTAT DE PIECE
TBL-2	T8000-1	1	CONTROLEUR
PE-1,2	P10BJ-1	2	RELAIS PNEUMATIQUE ELECTRIQUE
EP-2 et 3	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
IPD-2	2000-50	1	INDICATEUR DE PRESSION 0-50MM
DA5 @ 8	D3073-1	4	MOTEUR PNEUMATIQUE C/A P.P.
C0	VA-102	1	DETECTEUR MONOXYDE DE CARBONE
R1, R2	6012	2	RELAIS 120 VAC 2 PDT
THL-3,4	A25AN-9	2	THERMOSTAT HAUTE LIMITE

22" x 34" ORIGINAL

B

A

SYSTEME V43-17: ALIMENTATION SALLE MECANIQUE

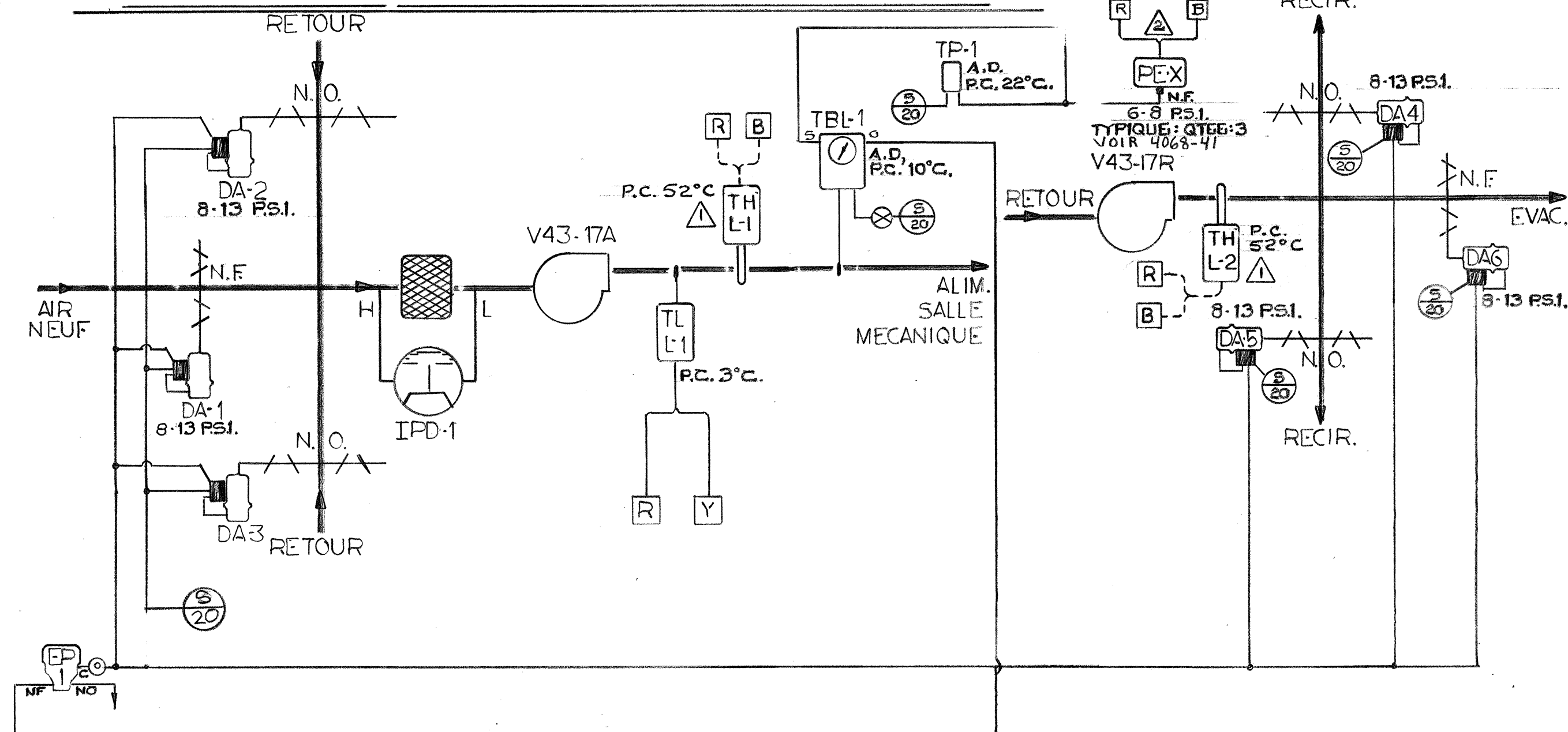
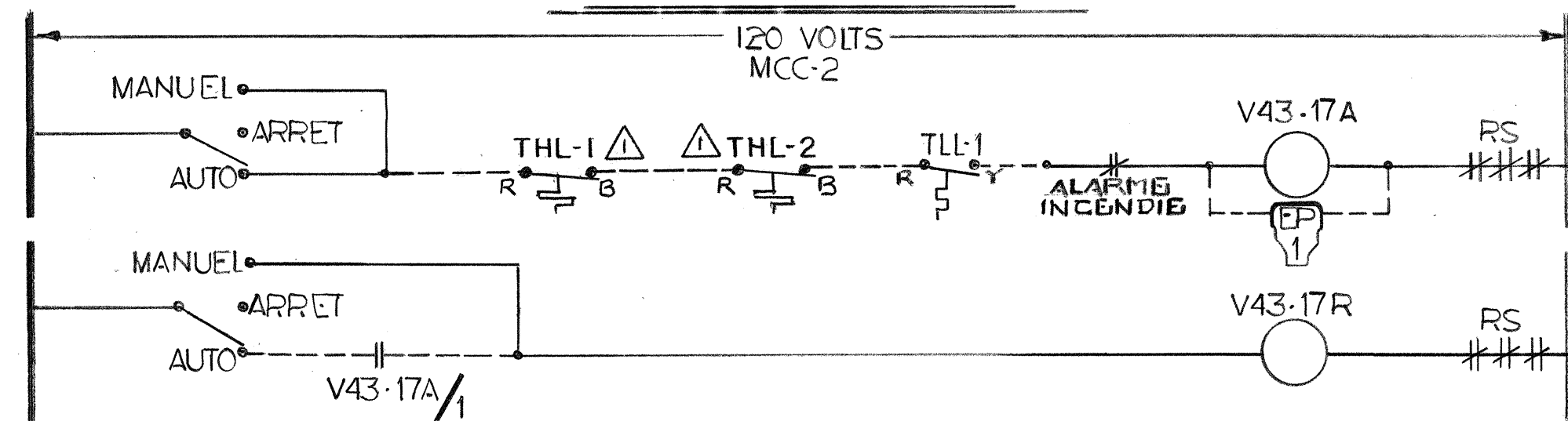


DIAGRAMME ELECTRIQUE



SYSTEME V43-18: ALIMENTATION SALLE MECANIQUE

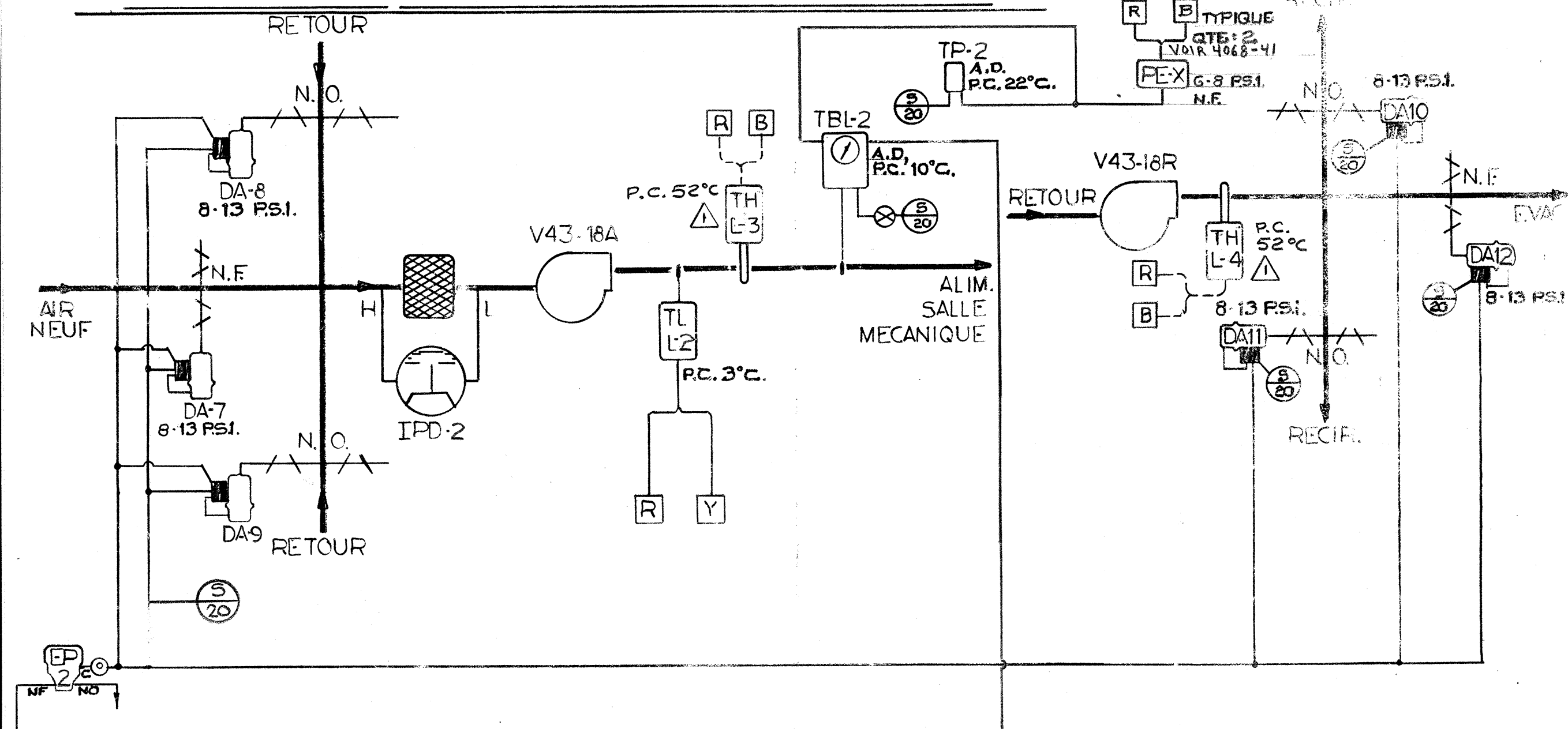
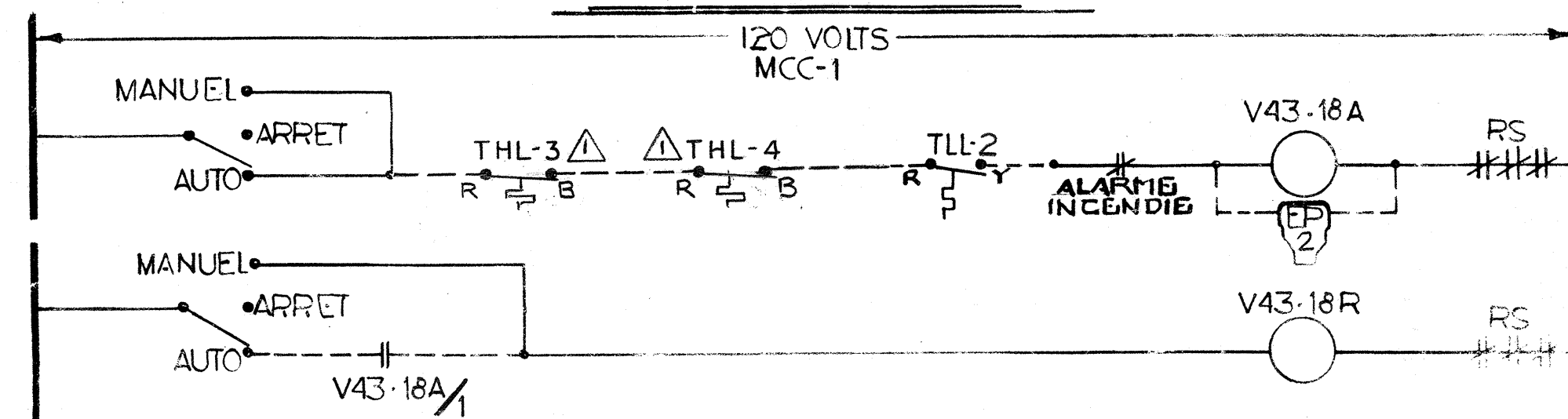


DIAGRAMME ELECTRIQUE



SYSTEME V43-19 (SALLE DE MECANIQUE, NIV. 33000) A

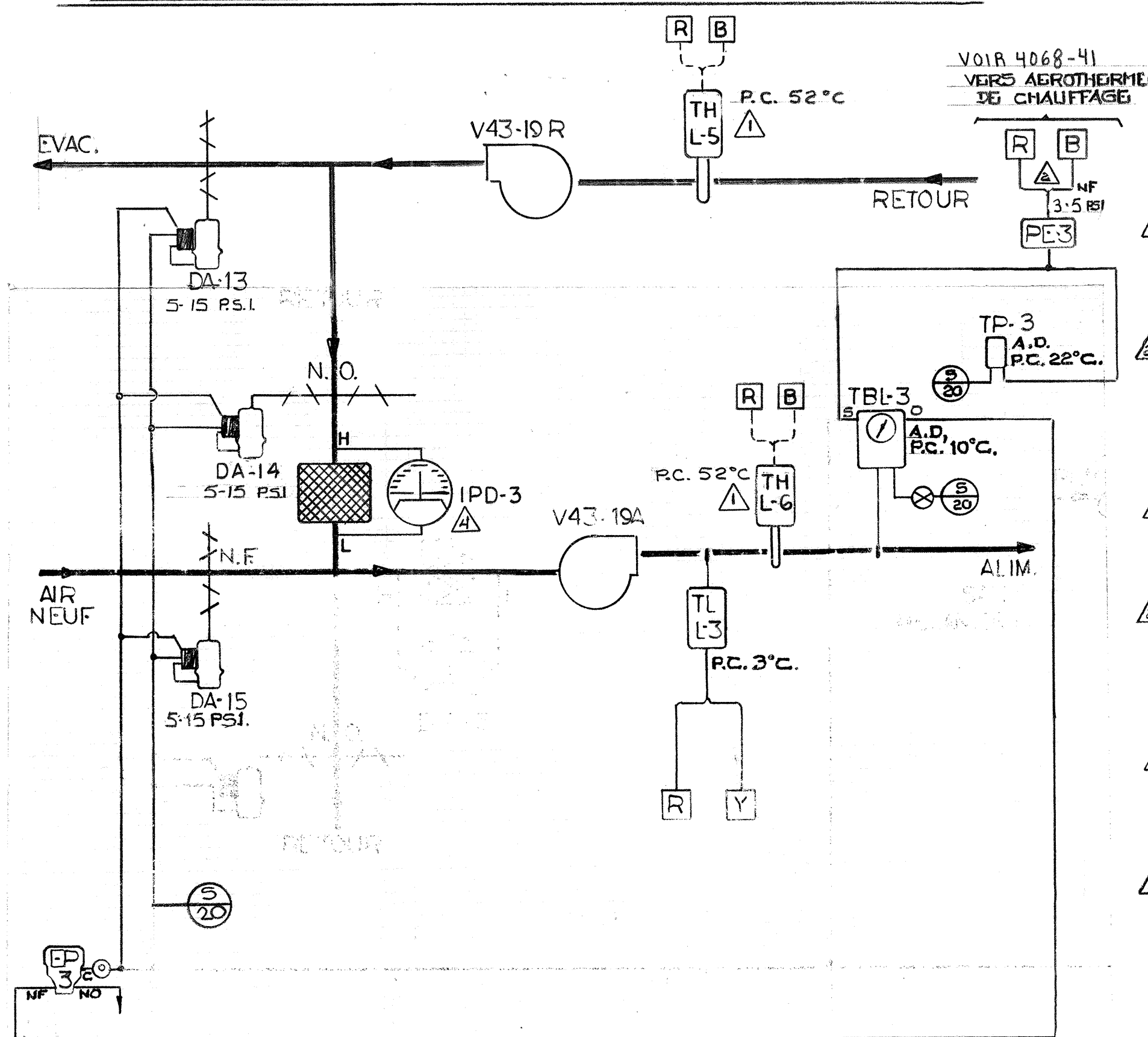
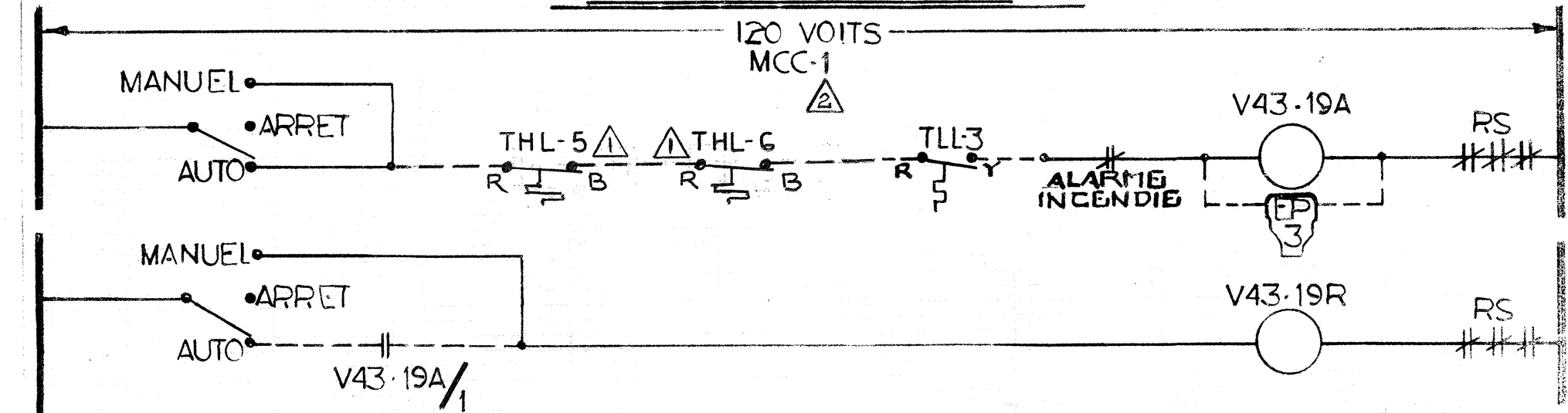


DIAGRAMME ELECTRIQUE



----- FILAGE J.C.L.
----- FILAGE PAR D'AUTRES

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
SYSTEME V43-17			
TP-1	T4002-201	1	THERMOSTAT DE PIECE
TBL-1	T8000-6	1	CONTROLEUR
TLL-1	A19ACA-28	1	BASSE LIMITE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50MM
THL-1 ET 2	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-1	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
DA-1	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-2 @ 5	D3153-2	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-6	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-X	P10BJ-1	3	RELAIS PNEUMATIQUE ELECTRIQUE
SYSTEME V43-18			
TP-2	T4002-201	1	THERMOSTAT DE PIECE
TBL-2	T8000-4	1	CONTROLEUR
TLL-2	A19ACA-28	1	BASSE LIMITE
IPD-2	2000-50	1	INDICATEUR DE PRESSION 0-50MM
THL-3, 4	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-2	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
DA-7	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-8 A 11	D3073-1	4	MOTEUR PNEUMATIQUE C/A P.P.
DA-12	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-X	P10BJ-1	2	RELAIS PNEUMATIQUE ELECTRIQUE
SYSTEME V43-19			
TP-3	T4002-201	1	THERMOSTAT DE PIECE
TBL-3	T8000-4	1	CONTROLEUR
TLL-3	A19ACA-28	1	BASSE LIMITE
IPD-3	2000-50	1	INDICATEUR DE PRESSION 0-50MM
THL-5, 6	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-3	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
DA-15	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-14	D3073-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-13	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-3	P10BJ-1	1	RELAIS PNEUMATIQUE ELECTRIQUE

SEQUENCE D'OPERATION

TYPIQUE POUR SYSTEME V43-17, 18, 19

AU DEPART DU SYSTEME, LE RELAIS ELECTRIQUE PNEUMATIQUE EP EST ALIMENTE ET PERMET AU THERMOSTAT DE PIECE DE MODULER LES VOLETS APIN DE MAINTENIR LA TEMPERATURE DE LA PIECE A SON POINT DE CONSIGNE. TOUTEFOIS, LE CONTROLEUR TBL PREND LE CONTROLE DES VOLETS SI LA TEMPERATURE D'ALIMENTATION DESCEND SOUS SON POINT DE CONSIGNE.

SUR DETECTION DE BASSE TEMPERATURE DANS L'ALIMENTATION OU SUR DETECTION DE HAUTE TEMPERATURE, LE SYSTEME S'ARRETE.

TITRE	SYSTEME V43-17, 18, 19.
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST. HYACINTHE QUE.

ADDITION / REVISION	NO.	REVISION	AVIS	DATE	PAR
1	1	PE-X (S), PE-3/TBL-123		28-07-10	
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3	3			28-07-10	
4	4			28-07-10	
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65	65			28-07-10	
66	66			28-07-10	
67	67			28-07-10	
68	68			28-07-10	
69	69			28-07-10	
70	70			28-07-10	
71	71			28-07-10	
72	72			28-07-10	
73	73			28-07-10	
74	74			28-07-10	
75	75			28-07-10	
76	76			28-07-10	
77	77			28-07-10	
78	78			28-07-10	
79	79			28-07-10	
80	80			28-07-10	
81	81			28-07-10	
82	82			28-07-10	
83	83			28-07-10	
84	84			28-07-10	
85	85			28-07-10	
86	86			28-07-10	
87	87			28-07-10	
88	88			28-07-10	
89	89			28-07-10	
90	90			28-07-10	
91	91			28-07-10	
92	92			28-07-10	
93	93			28-07-10	
94	94			28-07-10	
95	95			28-07-10	
96	96			28-07-10	
97	97			28-07-10	
98	98			28-07-10	
99	99			28-07-10	
100	100			28-07-10	

SYSTÈME V43-17,18, 19




SEQUENCE D'OPERATION

TYPIQUE POUR SYSTEME V43-17, 18, 19

AU DEPART DU SYSTEME, LE RELAIS ELECTRIQUE PNEUMATIQUE EP EST ALIMENTE ET PERMET AU THERMOSTAT DE PIECE DE MODULER LES VOLETS AFIN DE MAINTENIR LA TEMPERATURE DE LA PIECE A SON POINT DE CONSIGNE. TOUTEFOIS, LE CONTROLEUR TBL PREND LE CONTROLE DES VOLETS SI LA TEMPERATURE D'ALIMENTATION DESCEND SOUS SON POINT DE CONSIGNE.

SUR DETECTION DE BASSE TEMPERATURE DANS L'ALIMENTATION OU SUR DETECTION DE HAUTE TEMPERATURE $\triangle 3$, LE SYSTEME S'ARRETE.

LISTE DE MATERIEL

IDENT.	MODELE	Q	DESCRIPTION
SYSTEME V43-17			
TP-1	T4002-201	1	THERMOSTAT DE PIECE
TBL-1	T8000-6 	1	CONTROLEUR
TLL-1	A19ACA-28	1	BASSE LIMITE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50MM
THL-1 ET 2	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-1	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
DA-1	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-2 @ 5	D3073-1	4	MOTEUR PNEUMATIQUE C/A P.P.
DA-6	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-X	PIOBJ-1	3	RELAIS PNEUMATIQUE ELECTRIQUE
SYSTEME V43-18			
TP-2	T4002-201	1	THERMOSTAT DE PIECE
TBL-2	T8000-4 	1	CONTROLEUR
TLL-2	A19ACA-28	1	BASSE LIMITE
IPD-2	2000-50	1	INDICATEUR DE PRESSION 0-50MM
THL-3, 4	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-2	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
DA-7	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-8 A 11	D3073-1	4	MOTEUR PNEUMATIQUE C/A P.P.
DA-12	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-X	PIOBJ-1	2	RELAIS PNEUMATIQUE ELECTRIQUE
SYSTEME V43-19			
TP-3	T4002-201	1	THERMOSTAT DE PIECE
TBL-3	T8000-4 	1	CONTROLEUR
TLL-3	A19ACA-28	1	BASSE LIMITE
IPD-3	2000-50	1	INDICATEUR DE PRESSION 0-50MM
THL-5, 6	A25AN-9	2	THERMOSTAT HAUTE LIMITE
EP-3	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
DA-15	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-14	D3073-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-13	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
PE-3	PIOBJ-1	1	RELAIS PNEUMATIQUE ELECTRIQUE

SEQUENCE D'OPERATION

SYSTEME V43-24A

AU DEPART DU SYSTEME, LE RELAIS ELECTRIQUE PNEUMATIQUE EP-1 EST ALIMENTE ET PERMET AU CONTROLEUR TC-1 DE MODULER LES VOILETS DE MELANGE AFIN DE MAINTENIR UNE TEMPERATURE D'ALIMENTATION CONSTANTE.

SUR DETECTION DE BASSE TEMPERATURE DANS LA GAINES D'ALIMENTATION, OU SUR DETECTION DE FUMEE, LE SYSTEME S'ARRETE.

GENERATRICE D'URGENCE

LE THERMOSTAT DE PIECE TP-1 MODULE LES VOILETS DA-5 @ 9 AFIN DE MAINTENIR LA TEMPERATURE DE LA PIECE A SON POINT DE CONSIGNE.


SYSTEMES V33-1, 2, 3, 6, 7, 8, 9
TV36-19, 20, 21, 22

SUR UNE BAISSSE DE TEMPERATURE DE PIECE DETECTEE PAR TP-X, LE SYSTEME EST MIS EN ROUTE ET LA VALVE DE CHAUFFAGE V-X EST MODULEE AFIN DE MAINTENIR LA PIECE A SON POINT DE CONSIGNE.


LISTE DE MATERIEL

IDENT	MODELE	Q	DESCRIPTION
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SYSTEME V43-24

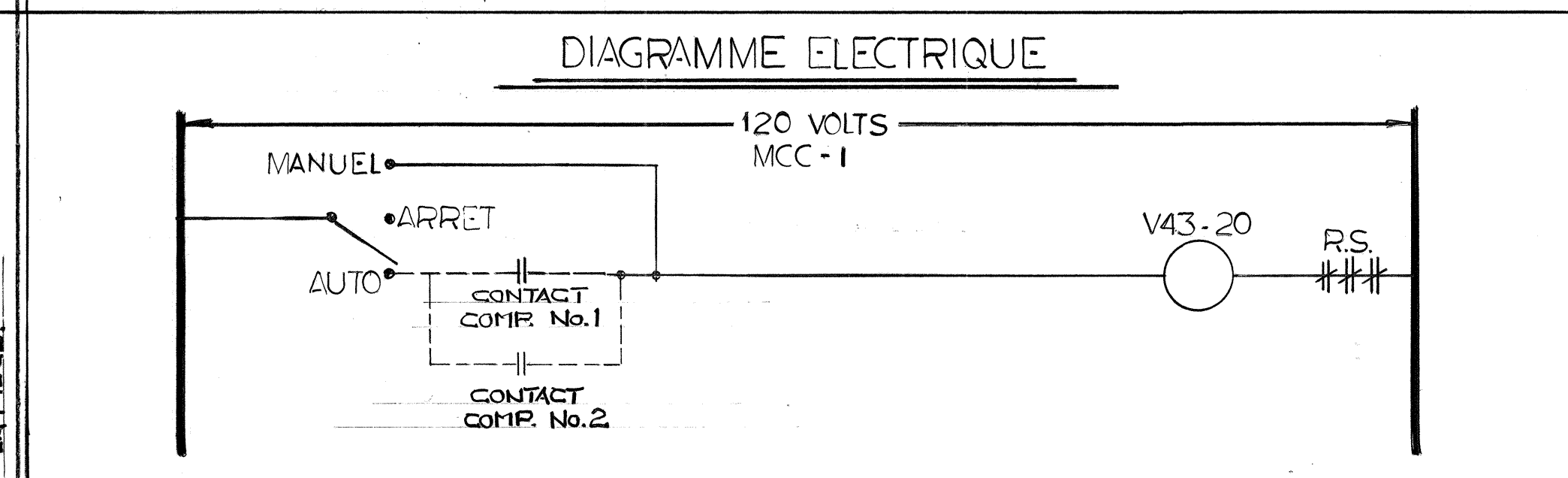
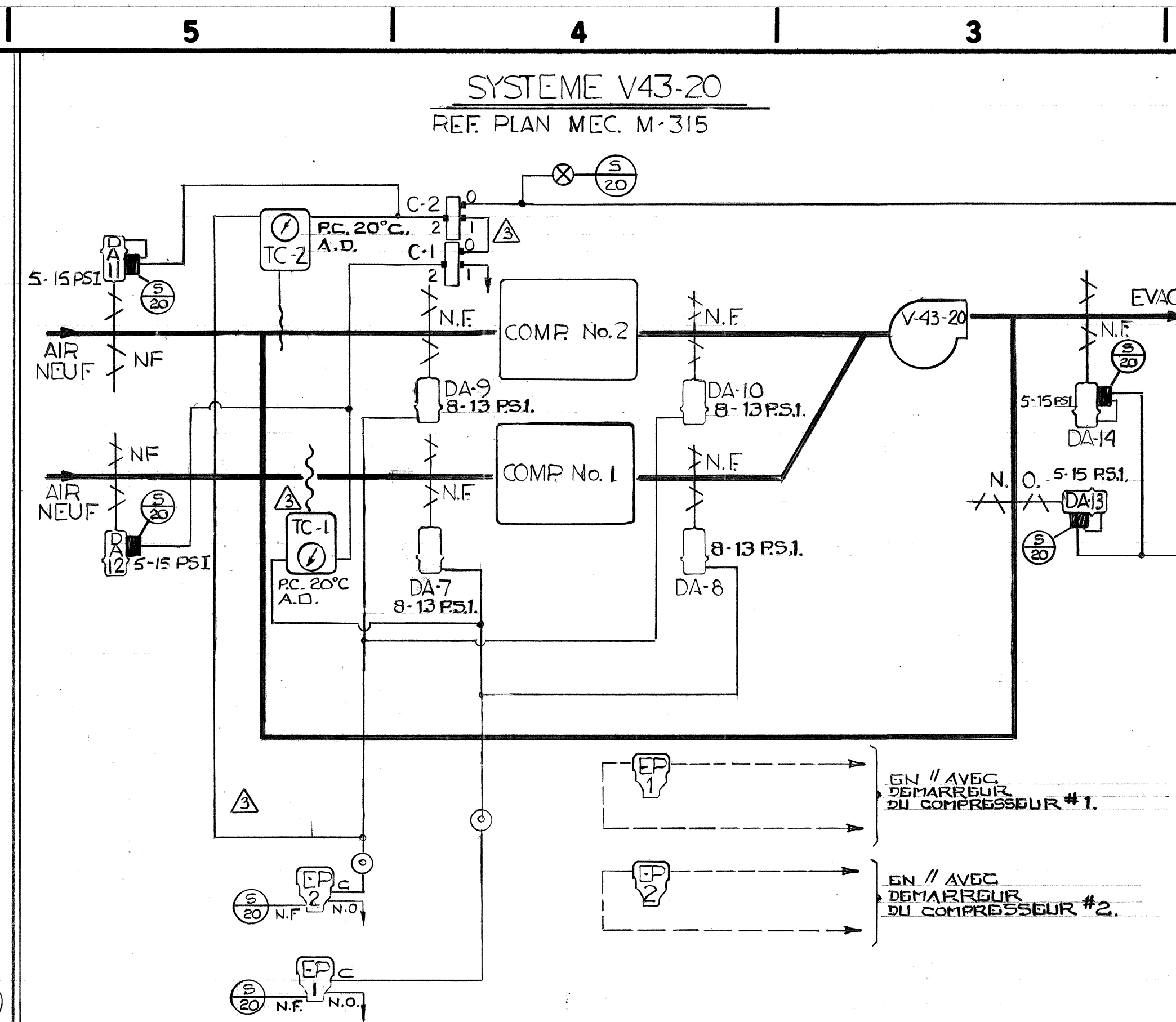
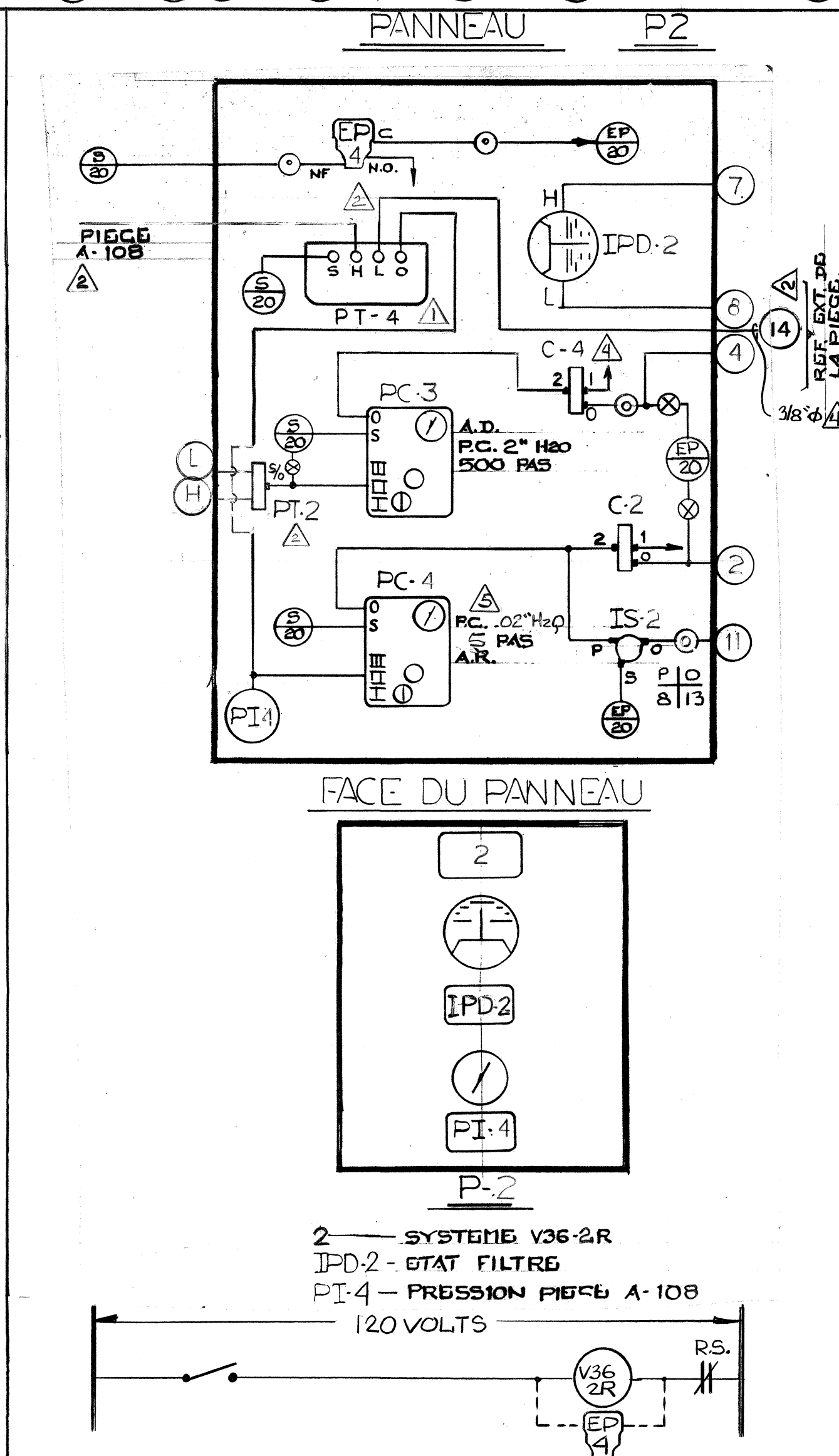
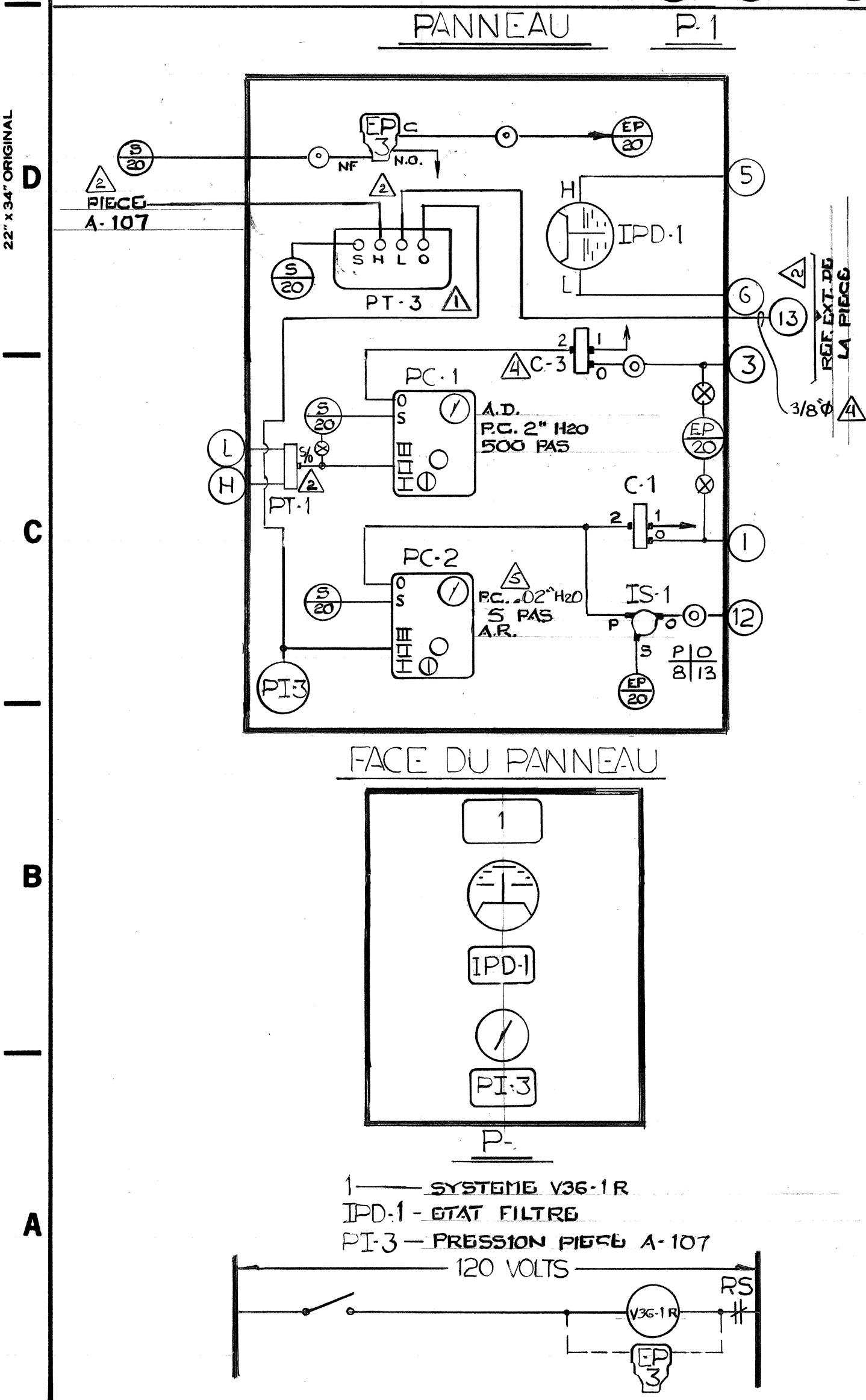
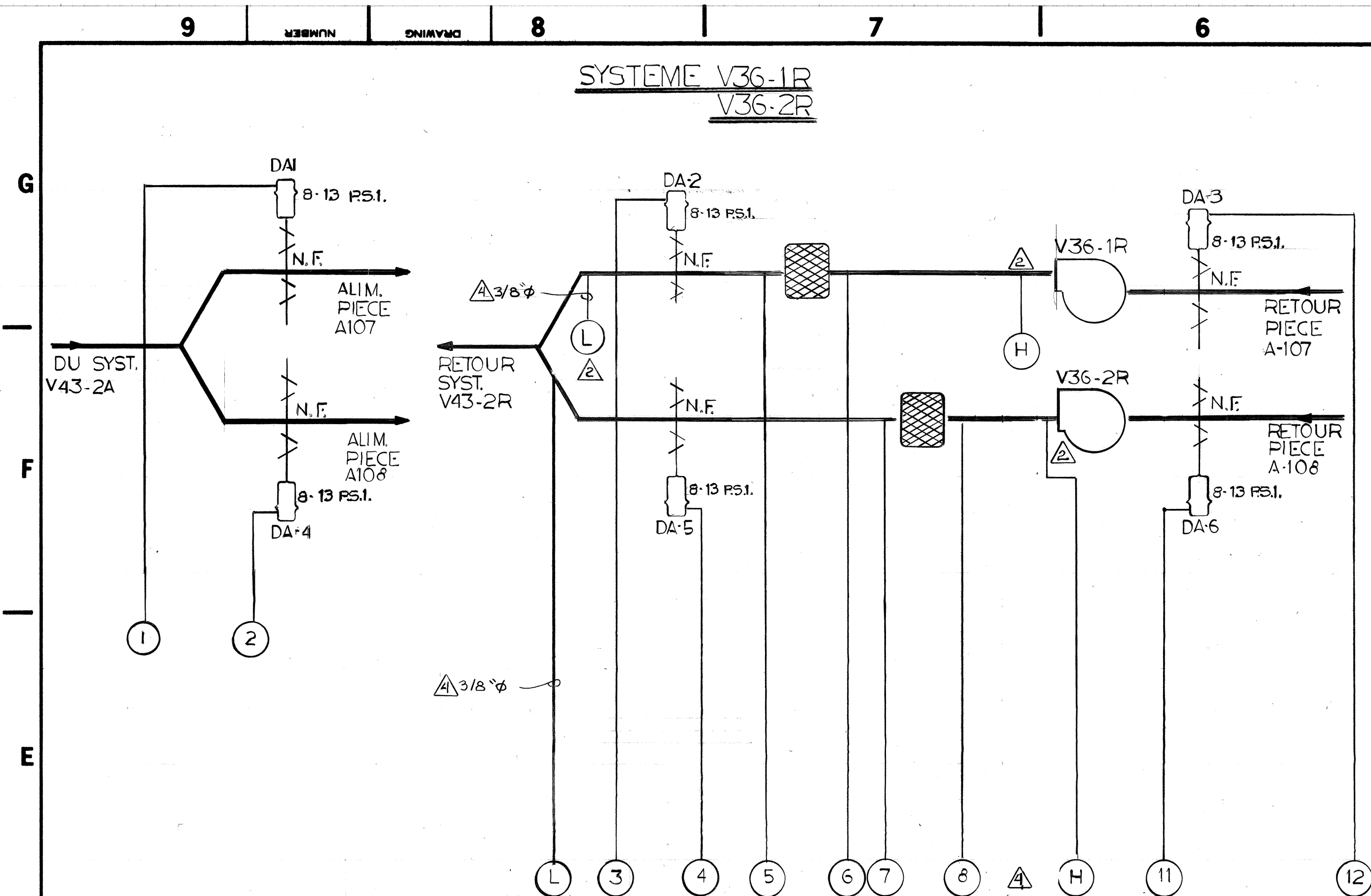
TC-1	T8000-6 	1	CONTROLEUR
TLL-1	A19ACA-28	1	BASSE LIMITE
EP-1	V11HAA-109	1	RELAIS ELECTRIQUE PNEUMATIQUE
IPD-1	2000-50	1	INDICATEUR DE PRESSION 0-50 MM
THL-1, 2	A25 AN-9	2	THERMOSTAT HAUTE LIMITE
DA-1	D3153-1	1	MOTEUR PNEUMATIQUE
	D3153-2	1	" "
DA-2	D3073-1	1	MOTEUR PNEUMATIQUE
DA-3	D3073-1	1	MOTEUR PNEUMATIQUE
DA-4	D3153-1	1	MOTEUR PNEUMATIQUE
	D3153-2	1	" "

GENERATRICE D'URGENCE

TP-1	T4002-201	1	THERMOSTAT DE PIECE
DA-5	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-6	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-7	D3153-1	2	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	3	MOTEUR PNEUMATIQUE
DA-8	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-9	D3153-1	4	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	4	MOTEUR PNEUMATIQUE
EP-1 	VII PNA-105	1	SOUPAPE SOLENOIDE 24V.DC
		1	

SYSTEME V33-1,2,3,6,7,8,9
V36-19,20,21,22

TP-X	T4002-201	5	THERMOSTAT PNEUMATIQUE
PE-X	P10BJ-1	11	RELAIS PNEUMATIQUE ELECTRIQUE
V-X	V5216-8014	7	VALVE Ø 3/4" C.V. 8.6 N.O.
V-Y	V3754-1019	4	VALVE Ø 1/2", C.V. 12, N.O.



LISTE DE MATERIEL			
IDENT.	MODELE	Q	DESCRIPTION
SYSTEME V43-20			
TC-1, 2	T8000-6	2	CONTROLEUR
EP-1 ET 2	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
DA-11	C5226-3	2	SELECTEUR DE HAUT SIGNAL
DA-12	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-13	D3153-2	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-14	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-7 @ 10	D3153-2	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3073-2	4	MOTEUR PNEUMATIQUE
SYSTEME V36-1R ET 2R			
DA-1 @ 6	D3073-2	6	MOTEUR PNEUMATIQUE
PT-1 ET 2	P5217-7	2	TRANSMETTEUR 0-5" H ₂ O
PT-3 ET 4	P5215-6	2	TRANSMETTEUR 0-.25" H ₂ O
IPD-1 ET 2	2000-100 MM	2	INDICATEUR 0-100 MM
EP-3 ET 4	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
PC-1 @ 4	T9001-1	4	CONTROLEUR
C-1, 2, 3, 4	C5226-3	4	ISOLATEUR
IS-1 ET 2	C208-2	2	INVERSEUR DE SIGNAL
PI-3 ET 4	P5500-1040	2	INDICATEUR 0-.25" H ₂ O Ø 3 1/2"
PI ET 2	M8100-103	2	PANNEAU 24" X 24" X 7"
SEQUENCE D'OPERATION			
SYSTEME V43-20			
AU DEPART D'UN COMPRESSEUR, LE RELAIS ELECTRIQUE PNEUMATIQUE CORRESPONDANT EST ALIMENTE ET PERMET AU VOLET DU COMPRESSEUR D'OUVRIRE.			
LORSQUE L'UN OU L'AUTRE DES COMPRESSEURS EST EN MARCHÉ, TC-1 PEUT ALORS MODULER LES VOLETS DE MELANGE AFIN DE MAINTENIR LA TEMPERATURE DE MELANGE A SON POINT DE CONSIGNE.			
SYSTEME V36-1R ET 2R			
LE CONTROLEUR PC-1 MODULE LE VOLET DA-2 AFIN DE MAINTENIR UN DIFFERENTIEL DE PRESSION CONSTANT AU FILTRE.			
LORSQUE LE SYSTEME EST EN MARCHÉ, LE CONTROLEUR PC-2 MODULE LES VOLETS DA-1 ET 3 AFIN DE MAINTENIR LA PRESSION DE LA PIECE LEGEREMENT POSITIVE.			

DRAWING TITLE
SYSTEME V43-20
V36-1R
V36-2R

PROJECT
CENTRE DE RECHERCHE
ALIMENTAIRE
ST. HYACINTHE QUE.

096-0273490	TEL QUE CONSTRUIT	PM1A-1	8707-15
AR-148	TC-2, V43-20		86-07-10
	PT-1, 2 TC-1		86-07-10
			86-07-10
REFERENCE DRAWINGS	NO.	REVISION - LOCATION	ECN
SALES ENGR.	APPLICATION ENGR.	DRAWN	APPROVED
		DATE JUN 25-85	DATE 85-7-14
CONTRACT NUMBER		DRAWING NUMBER	
4096-0008-38		4068-38	

SYSTÈME V43-20, V36-1R ET V36-2R

SEQUENCE D'OPERATION

SYSTEME V43-20

AU DEPART D'UN COMPRESSEUR, LE RELAIS ELECTRIQUE PNEUMATIQUE CORRESPONDANT EST ALIMENTE ET PERMET AU VOLET DU COMPRESSEUR D'OUVRIR.

LORSQUE L'UN OU L'AUTRE DES COMPRESSEURS EST EN MARCHE, TC-1 ²
~~PELIVENT ALORS~~ MODULER LES VOLETS DE MELANGE AFIN DE MAINTENIR
LA TEMPERATURE DE MELANGE A SON POINT DE CONSIGNE.

SYSTEME V36-1R ET 2R

LE CONTROLEUR PC-1 MODULE LE VOLET DA-2 AFIN DE MAINTENIR UN DIFFERENTIEL DE PRESSION CONSTANT AU FILTRE.

LORSQUE LE SYSTEME EST EN MARCHE, LE CONTROLEUR PC-2 MODULE LES VOLETS DA-1 ET 3 AFIN DE MAINTENIR LA PRESSION DE LA PIECE LEGEREMENT POSITIVE.

LISTE DE MATERIEL

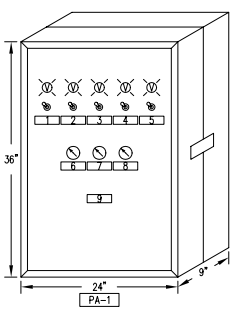
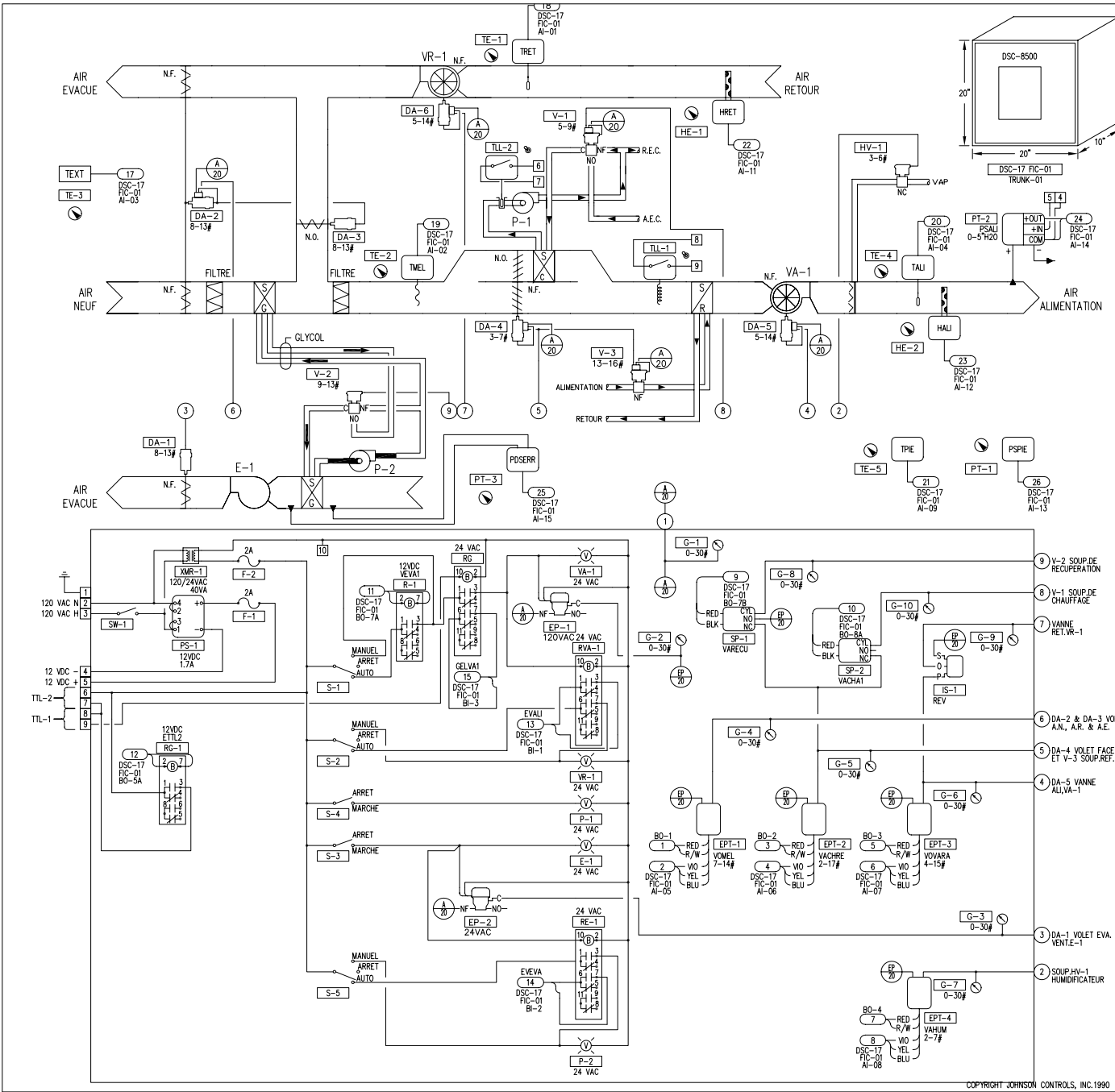
IDENT.	MODELE	Q	DESCRIPTION
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SYSTEME V43-20

TC-1, 2 ^{△3}	T8000-6 ^{△2}	2	CONTROLEUR
EP-1 ET 2	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
C-1, 2 ^{△3}	C5226-3	2	SELECTEUR DE HAUT SIGNAL
DA-11	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-12	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-13	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
DA-14	D3153-1	1	MOTEUR PNEUMATIQUE C/A P.P.
	D3153-2	1	MOTEUR PNEUMATIQUE
DA-7 @ 10	D3073-2	4	MOTEUR PNEUMATIQUE

SYSTEME V36-1R ET 2R

DA-1 @ 6	D3073-2	6	MOTEUR PNEUMATIQUE
PT-1 ET 2	P5217-7	2	TRANSMETTEUR 0-5" H ₂ O
PT-3 ET 4	P5215-6	2	TRANSMETTEUR 0-.25" H ₂ O
IPD-1 ET 2	2000-100 MM	2	INDICATEUR 0-100 MM
EP-3 ET 4	V11HAA-109	2	RELAIS ELECTRIQUE PNEUMATIQUE
PC-1 @ 4	T9001-1	4	CONTROLEUR
C-1, 2, 3, 4	C5226-3	4	ISOLATEUR
IS-1 ET 2	C208-2	2	INVERSEUR DE SIGNAL
PI-3 ET 4	P5500-1040	2	INDICATEUR 0-.25" H ₂ O Ø 3 1/2
PI ET 2	M8100-103	2	PANNEAU 24" X 24" X 7"



Nonetag Schedule

Item	Device Tag	Nonetag Description
1	VA-1	VENTILATEUR ALIMENTATION
2	VR-1	RETOUR
3	E-1	EVACUATEUR
4	P-1	POMPE DE CHAUFFAGE
5	P-2	POMPE DE RECUPERATION
6	G-1	AIR ALIMENTATION
7	G-2	AIR DE CONTROLE
8	G-3	VOLET
9	-	EVACUATEUR E-1

CEDULE	
RETOUR	ALIMENTATION
25C 20C	13C 30C

FIELD DEVICES			
DEVICE TAG	QTY	CODE NUMBER	DESCRIPTION
DA-1	1	D-3062-3	DAMPER ACTUATOR 8-13#
DA-2	4	D-3073-1	DPR ACT 8-13# W/POS
DA-3	1	D-3062-3	DAMPER ACTUATOR, 8-13#
DA-4	1	CEK-101-2	CONTR.ELECT.KIT FOR
DA-5	1	CEB-104-0	MOTHER BOARD FOR TRS,TRM
DA-6	1	EOP-109-1	ELECTRONIC CONFG. PANEL
DSC-17 FIC-01	1	ENC-1000-11	ENCLOSURE 20"x20"
	1	ENC-1000-117	DOOR W/WINDOW F/DSC-8500
	1	JC-828	BATTERY FOR DSC (GLOBE)
	1	PD-101-10	CAPACITOR, 560PF
	1	TRS-101-2	T/R SLAVE
	4	POT-2	POTENTIOMETRE 0-5K OHMS ()
HE-1&HE-2,			
PT-1&PT-3			
HY-1	1	V-3974-1001	1/2" NC GL 9-13# W/A 1.2
PT-2	1	261	SONDE DE PRES.STA. 0-5" H2O (SETRA)
TE-1-TE-5	5	POT-1	POT-0-1K OHMS & RES.680 OHMS ()
TLL-1&TLL-2	2	BP-3	INTERRUPTEUR SPST ()
V-1	2	V-4324-1011	1/2" MXX 9-13# W/P 2.2CV
V-2	1	V-4324-1003	1/2" MXX 9-13# W/A 2.2V
V-3	1	V-3974-1010	3/4" NC GL 9-13# W/P 8.6

PANEL DEVICES			
DEVICE TAG	QTY	CODE NUMBER	DESCRIPTION
E-1	5	35B1118-68E50	LAMPE TEMOIN VERTE 24 VAC (SIEMENS)
P-1&P-2,			
VA-1&VR-1			
EP-1&EP-2	2	V1HGA-103	3-WAY SAV, 24V 50/60HZ
EPT-1-EPT-4	4	EPT-102-1	E-P TRANSIDUCER
F-1&F-2	2		FUSIBLE 2 AMP. ()
	2	C-5222-100	MOUNTING BRACKET ()
G-1-G-3	3	G-2010-101	GAGE 2" 0-30# 0-200KPA
G-4-G-10	7	G-2010-5	AIR GAGE 1-1/2"
IS-1	1	C-208-2	REVERSING RELAY
PA-1	1	M-8100-2436	CONTROL CABINET STD. FACE
PS-1	1	HB12-1.7A	DC POWER SUPPLY, 120/12V (POWER ONE)
R-1&RG-1	2		RELAIS 12 VOLTS DC (8PINS)
RE-1RG,	3		RELAIS 3PDT 24 VOLTS (11PINS)
RVA-1			
S-1&S-2,	3	35B1100-20B52	SELECTEUR 3 POSITIONS ()
S-5	2	35B1100-2AB52	SELECTEUR 2 POSITIONS ()
S-3&S-4	2	V-9011-1	3-WAY SOLENOID VALVE
SW-1&SW-2	1	BP-3	INTERRUPTEUR SPST ()
SW-1	1	C-5222-100	MOUNTING BRACKET ()
XMR-1	1	Y6SAS-1	TRANSFORMER, 40VA,

SEQUENCE D'OPERATION
AU DEPART DU SYSTEME VA-1 PAR LE DSC, LE VENTILATEUR DE RETOUR VR-1 DEMARRE PAR ENTREBARRAGE.
LE RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 EST ENERGEISE ET ADMET L'AIR AUX CONTROLES. AU DEPART DU SYSTEME E-1, LA POMPE DE RECUPERATION P-2 SE MET EN MARCHE.

LA VALVE DE REFRIGERATION, LES VOILETS DE MELANGE, LA VALVE DE RECUPERATION ET LA SERPENTIN DE FACE ET EVITEMENT SONT CONTROLES EN SEQUENCE AFIN DE MAINTENIR LA TEMPERATURE D'ALIMENTATION CONSTANTE; CEPENDANT LE POINT DE CONSIGNE DE LA TEMPERATURE D'ALIMENTATION EST REAJUSTE EN FONCTION DE LA TEMPERATURE DE RETOUR.

SI LA TEMPERATURE DE MELANGE DESCEND SOUS 3C, LA VALVE V-1 DU SERPENTIN DE FACE ET EVITEMENT OUVRE A 100% PAR SP-2 ET RG-1 EST DESAMORCE APRES UN DELAI.

LORSQUE LA TEMPERATURE EXTERIEURE EXCEDE 15C, LES VOILETS RETOURNENT A UN MINIMUM DE 20%. LA POSITION MINIMUM EST CEPENDANT DE 70% LORSQUE LE VENTILATEUR E-1 EST EN FONCTION.

L'HUMIDIFICATEUR EST MODULE AFIN DE MAINTENIR 30% D'HUMIDITE RELATIVE EN FONCTION DE L'HUMIDITE DANS LA GAINIE DE RETOUR; CEPENDANT, LE DSC EVITE QUE L'HUMIDITE, DANS LA GAINIE D'ALIMENTATION, EXCEDE 80%.

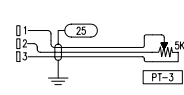
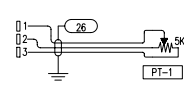
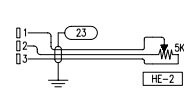
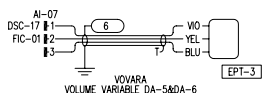
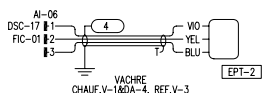
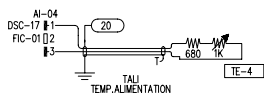
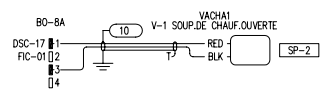
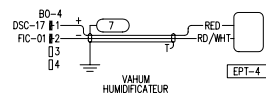
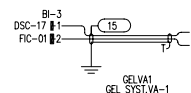
LES VENTILATEURS A VOLUME VARIABLE SONT MODULES EN FONCTION DE LA PRESSION DANS L'USINE DE FACON A MAINTENIR UNE PRESSION LEGEREMENT NEGATIVE.

SI LE DIFFERENTIELLE DE PRESSION, DETECTE PAR PT-3, AU SERPENTIN DE RECUPERATION EST SUPERIEUR AU POINT DE CONSIGNE, LE DSC OUVRE LA VALVE AU SERPENTIN AFIN DE LE DEGIVRE PAR SP-1.

SUR UNE DETECTION DE TEMPERATURE A LA SORTIE DU SERPENTIN DE RECHAUFFAGE INFERIEUR AU POINT DE CONSIGNE DE TLL-2, LE SYSTEME ARRETE. CEPENDANT, SI LA TEMPERATURE DE MELANGE MONTE AU-DESSUS DE 3C A TE-2, L'ACTION DE TLL-2 EST ANNULEE VIA RG-1.

LA NUIT ET LES JOURS NON OUVRABLES, LE SYSTEME S'ARRETE. CEPENDANT LE SYSTEME REDEMARRE EN COMPLETE RECIRCULATION SI LA TEMPERATURE DE PIECE DESCEND SOUS 15C. LE SYSTEME SERA ALORS CONTROLE EN FONCTION DE LA TEMPERATURE DE RETOUR A 22C.

DRAWING TITLE			
SYSTEME LABORATOIRE DE CONTROLE			
PROJECT	CIRA LABORATOIRE	ST HYACINTHE QUE.	
REFERENCE DRAWING	NO.	REVISION-LOCATION	ECN DATE BY
SALES ENRPROJECT	MGR APPL. ENGR	DRAWN	APPROVED
PS	PP	DATE 05/08/90	BY
CONTRACT NUMBER		DRAWING NUMBER	
90707-5004		4068-54	



DSC 17 SYSTEME LABORATOIRE

/

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@ DISPLAY PANEL FUNCTIONS:

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/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOLETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOLETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOLETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOLETS
30	DISPLAY	ZT10,A	/F.B. VOLETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
----	--------	----------	----------------------------

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE

```

44      DISPLAY  ZT70,A      /F.B. HUMIDITE
/
45      DISPLAY  FSP,I      /PRESSION STATIQUE
46      ADJUST   SPSP,I     /POINT DE CONSIGNE PRESS STAT
47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
65      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
66      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. E1
/
67      DISPLAY  FSTATE,B   /ETAT VENTIL. E1
/
69      DISPLAY  SPTA,I     /PRESSION STATIQUE ALIMENTATION
/
73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  SPT1,I     /PRES STAT SERPENT GLYCOL
78      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL

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82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/-----/
/                                /
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/                                /
/      L I S T E   D E S   A L A R M E S      /
/      ALARME      /
/      NUMERO      DESCRIPTION      /
/-----/
/
/      10      ALARME THERMOSTAT DE GEL      /
/
/      50      ALARME ARRET DEPART SYSTEME      /
/
/      51      ALARME HORAIRE SYSTEME      /
/-----/

```

□

```

/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:27
/
/TRANSLATION LISTING FOR DSC-17.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-12-90 15:07:02
/
/TRANSLATION LISTING FOR CIRA17.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 06-20-90 13:51:39
/
/TRANSLATION LISTING FOR CIRA17.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC  17      SYSTEME  LABORATOIRE
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT      0707-5004
/      VENDEUR      PHILLIPE SIMARD
/      INGENIERIE      PIERRE PATENAUDE
/      CONCEPTION PROGRAMME      JEAN MORISSETTE - MODIFIE PAR P.PATENAUDE
/      REVISION      14 JUIN 1990
/      INCLUANT MOD. BASSE LIMITE MELANGE PAR JM
/
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,3437
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  23
@ AD:  99
@ BI:  CON-3,BIT-0,BIR-0
@ AI:  LTD-2,FUL-12,RAT-0,TOT-0

```

@ BO: MOM-0,POS-4,MAN-4

@ CP: BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-5

@ FIC POINT DEFINITION:

@ FIC NO. 1

/

/

BI-1	FSTAT	CON-1	E,E	/ETAT VENTIL. ALIM.
BI-2	FSTATE	CON-2	E,E	/ETAT VENTIL. EVACUATION
BI-3	FREEZE	CON-3	E,E	/ETAT THERMOSTAT DE GEL

/

/

AI-1	TE80	FUL-1	E,0.5,E,V,T,-46.1,129.8	/TEMP RETOUR
AI-2	TE10	FUL-2	E,0.5,E,V,T,-46.1,129.8	/TEMP MELANGE
AI-3	TE1	FUL-3	E,0.5,E,V,T,-46.1,129.8	/TEMP EXT
AI-4	TE60	FUL-4	E,0.5,E,V,T,-46.1,129.8	/TEMP ALIM
AI-5	ZT10	FUL-5	E,0.5,E,N,O,-12.5,250.0	/F.B. VOILETS
AI-6	ZT30	FUL-6	E,0.5,E,N,O,-12.5,250.0	/F.B. SOUPAPES
AI-7	ZT50	FUL-7	E,0.5,E,N,O,-12.5,250.0	/F.B. VAV
AI-8	ZT70	FUL-8	E,0.5,E,N,O,-12.5,250.0	/F.B. HUMIDITE
AI-9	TE100	FUL-9	E,0.5,E,V,T,-46.4,129.7	/TEMP PIECE
AI-11	HT80	LTD-1	E,0.5,E,N,O,0,200.0	/HUMIDITE RETOUR
AI-12	HT60	LTD-2	E,0.5,E,N,O,0,200.0	/HUMIDITE ALIMENT
AI-13	SPT	FUL-10	E,0.5,E,N,O,0,1240	/PRES STA EN P PIECE
AI-14	SPTA	FUL-11	E,0.5,E,N,O,-2,1242	/PRES STA EN P ALIM
AI-15	SPT1	FUL-12	E,0.5,E,N,O,0,1240	/PRES STA EN P SERP GLY

/

/

BO-1	ZC10	POS-1	D,E,0	/VOILETS
BO-2	ZC30	POS-2	D,E,0	/SOUPAPES
BO-3	ZC50	POS-3	D,E,0	/VAV
BO-4	ZC70	POS-4	D,E,0	/HUMIDITE
BO-5A	ZSLI	MAN-1	E,E	/EVITEMENT BASS LIM EAU FROIDE
BO-7A	ZS50	MAN-2	E,E	/VENTIL ALIM
BO-7B	ZS10	MAN-3	E,E	/RECIRCULATION RECUPERATION
BO-8A	ZS20	MAN-4	E,E	/SOUPAPE PRECHAUFF

/

/

CP-1	ZCP10	INC-1	E,E,A,ZT10,ZC10,-100,0,5,0.0	/VOILETS
CP-2	ZCP30	INC-2	E,E,A,ZT30,ZC30,-100,0,5,0.0	/SOUPAPES
CP-3	ZCP50	INC-3	E,E,A,ZT50,ZC50,-100,0,5,0.0	/VAV
CP-4	ZCP70	INC-4	E,E,A,ZT70,ZC70,-100,0,5,0.0	/HUMIDITE

/

/

@ DATA POINT DEFINITION:

/

/

/-----/

/ VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP. /

/-----/

/

BD-1	OCCD	E,R	/CYCLE D OCCUPATION
BD-2	TLCON	E,R	/CONTROLE PAR TEMP.
BD-3	FSTRT	E,R	/DEMANDE VENTILATEUR
BD-4	COMP50	E,R	/RESULTAT DEMARRAGE

/

/-----/

/ PARAMETRES CONTROLE DU PRE CHAUFFAGE /


```

/-----/
/
BD-5    PREHEA    E,R    /PRE CHAUFFAGE
BD-6    LLBYP     E,R    /RESULTAT TEMPORAIRE
/
/-----/
/
PARAMETRES CONTROLE DE NUIT
/-----/
/
BD-7    NCTL      E,R    /CONTROLE DE TEMP NUIT
/
/-----/
/
PARAMETRES ECONOMISEUR D AIR FRAIS
/-----/
/
BD-8    ECON      E,R    /RESULTAT ECONOMISEUR
/
/-----/
/
PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE
/-----/
/
BD-9    MXD       E,R    /CONTROLE DE JOUR
BD-10   MIXLL     E,R    /CONTROLE PAR BASSE LIMITE
/
/-----/
/
PARAMETRES CONTROLE DE CHAUFFAGE
/-----/
/
BD-11   HTG       E,R    /CHAUFFAGE
/
/-----/
/
PARAMETRES CONTROLE DE REFROIDISSEMENT
/-----/
/
BD-12   CLG       E,R    /REFROIDISSEMENT
/
/-----/
/
PARAMETRES CONTROLE DE RECUPERATION
/-----/
/
BD-13   RECUP     E,R    /RECUPERATION
/
/-----/
/
FONCTIONS SPECIALES
/-----/
/
BD-14   SYSP      D,R
BD-15   SYS       D,R
BD-16   SYS1      D,R
BD-17   SYS2      D,R
BD-18   SYS3      D,R
BD-19   SYS4      D,R
BD-20   SYS5      D,R
BD-21   SYS6      D,R
BD-22   SYS7      D,R
BD-23   SYS8      D,R
/

```

```

/-----/
/  VARIABLES POUR LE PROG HORAIRE, ARRET DEPART ET LE CONTROLE DE TEMP.  /
/-----/
/
AD-1    DOW      E,2
AD-2    H1       E,00:00
AD-3    H2       E,00:00
AD-4    H3       E,00:00
AD-5    H4       E,00:00
AD-6    H5       E,00:00
AD-7    H6       E,00:00
AD-8    STA      E,00:00 /HORAIRE
AD-9    STO      E,00:00
AD-10   STA8     E,07:02
AD-11   STO8     E,18:00
AD-12   STA7     E,07:02
AD-13   STO7     E,18:00
AD-14   STA9     E,07:02
AD-15   STO9     E,18:00
AD-16   NSBT     E,15.0  /POINT DE CONSIGNE REDEMARRAGE
AD-17   DELSST   E,300   /DELAI APRES PANNE
/
/-----/
/          PARAMETRES CONTROLE DU PRE CHAUFFAGE          /
/-----/
/
AD-18   PREALL   E,5.0    /LIMITE CONTROLE PRE CHAUFFAGE
AD-19   PREADF   E,1.0    /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-20   DELHEA   E,120    /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/          PARAMETRES CONTROLE DE NUIT          /
/-----/
/
AD-21   NSP      E,22.0   /POINT DE CONSIGNE RETOUR
AD-22   Z41      E,0.0    /RESULTAT CTL NUIT
AD-23   CST41    E,45     /INTERVAL CTL NUIT
AD-24   CPB41    E,20.0   /BANDE PROP CTL NUIT
AD-25   CIG41    E,5      /GAIN CTL NUIT
AD-26   CDS41    E,0.0    /BANDE MORTE CTL NUIT
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-27   OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-28   RARL     E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-29   RARH     E,25.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-30   SAHL     E,30.0   /REAJ TEMP ALIM HAU LIM
AD-31   SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/

```

```

/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE          /
/-----/
/
AD-32  DSSP      E,0.0   /POINT DE CONSIGNE ALIM
AD-33  MXDSP     E,7.0   /POINT DE CONSIGNE LIMITE MEL.
AD-34  MDP       E,0.0   /POSITION MINIMUM VOILETS
AD-35  CST10A    E,5     /INTERVAL CTL VOILETS LIMITE
AD-36  CPB10A    E,-90.0 /BANDE PROP CTL VOILETS LIMITE
AD-37  CIG10A    E,33    /GAIN CTL VOILETS LIMITE
AD-38  CMP10A    E,0.0   /COMPENSATION CTL VOILETS LIMITE
AD-39  CDS10A    E,0.0   /BANDE MORTE CTL VOILETS LIMITE
AD-40  CST10     E,10    /INTERVAL CTL VOILETS
AD-41  CPB10     E,-60.0 /BANDE PROP CTL VOILETS
AD-42  CIG10     E,33    /GAIN CTL VOILETS
AD-43  CMP10     E,0.0   /COMPENS CTL VOILETS
AD-44  CDS10     E,0.0   /BANDE MORTE CTL VOILETS
AD-45  ZMXD      E,0.0   /RESULTAT PROPORTION.
AD-46  Z10M      E,100.0 /RESULTAT VOILETS LIMITE
AD-47  Z10C      E,0.0   /RESULTAT VOILETS CTL
AD-48  Z10       E,0.0   /RESULTAT VOILETS
/
/-----/
/          PARAMETRES CALCUL POSITION MINIMUM          /
/-----/
/
AD-49  MDPOS     E,20.0   /MINIMUM SANS EVACUATION
AD-50  MINF1     E,50.0   /MINIMUM VENTIL.
/
/-----/
/          PARAMETRES CONTROLE DE CHAUFFAGE          /
/-----/
/
AD-51  Z40       E,0.0   /RESULTAT CHAUFFAGE
AD-52  CST40     E,10    /INTERVAL CTL CHAUFF
AD-53  CPB40     E,50.0   /BANDE PROP CTL CHAUFF
AD-54  CIG40     E,33    /GAIN CTL CHAUFF
AD-55  CDS40     E,0.0   /BANDE MORTE CTL CHAUFF
AD-56  Z30POS    E,66.0   /POSITION D ARRET SOUPAPES
/
/-----/
/          PARAMETRES CONTROLE DE REFROIDISSEMENT    /
/-----/
/
AD-57  Z30       E,0.0   /RESULTAT REFROIDISSEMENT
AD-58  CST30     E,10    /INTERVAL CTL REFROIDI
AD-59  CPB30     E,-45.0  /BANDE PROP CTL REFROIDI
AD-60  CIG30     E,33    /GAIN CTL REFROIDI
AD-61  CDS30     E,0.0   /BANDE MORTE CTL REFROIDI
/
/
/-----/
/          VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE          /
/-----/
/
AD-62  SPSP      E,4     /POINT DE CONSIGNE PRESS STAT
AD-63  CST50     E,5     /INTERVAL CTL VAV
AD-64  CPB50     E,-10.0 /BANDE PROP CTL VAV

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AD-65  CIG50      E,30    /GAIN CTL VAV
AD-66  CMP50      E,0.0    /COMPENS CTL VAV
AD-67  CDS50      E,0.4    /BANDE MORTE CTL VAV
AD-68  Z50        E,0.0    /RESULTAT CTL VAV
AD-69  FSP        E,0.0    /PRESS STAT FILTREE
AD-70  AD1        D,0.0    /RESULTAT TEMPORAIRE
AD-71  AD2        D,0.0    /RESULTAT TEMPORAIRE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-72  RHSP       E,30.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-73  RHSPA      E,80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-74  CST70      E,10      /INTERVAL CTL HUMIDITE
AD-75  CPB70      E,90.0    /BANDE PROP CTL HUMIDITE
AD-76  CIG70      E,33      /GAIN CTL HUMIDITE
AD-77  CDS70      E,0.0    /BANDE MORTE CTL HUMIDITE
AD-78  CST70A     E,5       /INTERVAL H LIM HUMIDITE
AD-79  CPB70A     E,90.0    /BANDE PROP H LIM HUMIDITE
AD-80  CIG70A     E,33      /GAIN H LIM HUMIDITE
AD-81  CDS70A     E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-82  Z70        E,0.0    /RESULTAT CTL HUMIDITE
AD-83  Z70HL      E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-84  Z70C       E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
AD-85  RECUHL     E,200     /POINT DE CONSIGNE RECUPERATION
AD-86  RECUDF     E,50      /DIFFERENTIEL RECUPERATION
AD-87  FSP2       E,0.0     /PRESSION STATIQUE FILTREE
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
AD-88  SYSDIS     D,0
AD-89  CSTXXX     D,0
AD-90  CPBXXX     D,0.0
AD-91  CIGXXX     D,0
AD-92  CMPXXX     D,0.0
AD-93  CDSXXX     D,0.0
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/
/
AD-94  UPTIM      E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-95  UPDAT      E,00:00   /DATE DE LA RESTAURATION DU POUVOIR
AD-96  DNTIM      E,00:00   /HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-97  DNDAT      E,00:00   /DATE DE LA DERNIERE PERTE DE POUVOIR
AD-98  TOD        E,00:00   /DERNIERE HEURE
AD-99  LDAT       E,00:00   /DERNIERE DATE
/
/

```

@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION JOUR-ON NUIT-OFF
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL NORMAL-ON

/

6	DISPLAY	NCTL,B	/CONTROLE DE TEMP NUIT
7	DISPLAY	TLCON,B	/CONTROLE PAR TEMP.
8	ADJUST	NSBT,A	/PT DE CONSIGNE REDEMARRAGE
9	ADJUST	NSP,A	/POINT DE CONSIGNE RETOUR
10	DISPLAY	Z41,A	/RESULTAT CTL NUIT

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXTERIEURE
14	DISPLAY	TE60,A	/TEMP ALIMENTATION
15	DISPLAY	TE100,A	/TEMP PIECE

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOILETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOILETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOILETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOILETS
30	DISPLAY	ZT10,A	/F.B. VOILETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
----	--------	----------	----------------------------

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT

```

47      DISPLAY  Z50,A      /RESULTAT CTL VAV
48      DISPLAY  ZT50,A     /F.B. VAV
/
49      ADJUST   STA,T      /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
65      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION
66      ADJUST   MINF1,A    /MINIMUM PAR VENTIL. E1
/
67      DISPLAY  FSTATE,B   /ETAT VENTIL. E1
/
69      DISPLAY  SPTA,I     /PRESSION STATIQUE ALIMENTATION
73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      DISPLAY  SPT1,I     /PRES STAT SERPENT GLYCOL
78      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 500  PARAMETRES CONTROLE DE NUIT -CYCLE NON OCCUPE-
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/
79      ADJUST   CSTXXX,I   /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A   /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I   /GAIN INTEGRAL
82      ADJUST   CMPXXX,A   /COMPENSATION
83      ADJUST   CDSXXX,A   /BANDE MORTE
/
/-----/
/          RECORD PANNE DE POUVOIR          /
/-----/

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/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/          L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO          DESCRIPTION
/
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME
/
/      51      ALARME HORAIRE SYSTEME
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART AVEC BASSE LIMITE
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/
1.1      PROG      DOW,0,00:01,23:59
1.2      SET        BPD,SDF,R
1.3      EXIT       C,S
1.4      HOLIDAY    H1,H2,H3,H4,H5,H6

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1.5      STORE      DOW,APD,2,U
1.6      COMPARE    DOW,EQ,7,0
1.7      STORE      STA,STA7,STA9,C,S
1.8      STORE      STO,STO7,STO9,C,S
1.9      COMPARE    DOW,EQ,1,0
1.10     ORR        DOW,EQ,8,0
1.11     STORE      STA,STA8,STA9,C,S
1.12     STORE      STO,STO8,STO9,C,S
1.13     COMPARE    DOW,GE,2,0
1.14     ANDR       DOW,LE,6,0
1.15     STORE      STA,STA9,STA9,C,S
1.16     STORE      STO,STO9,STO9,C,S
1.17     SET        BPD,PAF,R
1.18     ALARM      51,C,S
1.19     EXIT       U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/          RESET    TLCON     NON OPERATION CONTROLE PAR TEMP.
/A L HEURE D ARRET:
/          SET      TLCON     OPERATION CONTROLE PAR TEMP.
/          RESET    OCCD      CYCLE D OCCUPATION
/
2.1      PROG      DOW,0,STA,STO
2.2      SET        OCCD,SUF,R
2.3      SET        TLCON,SDF,S
2.4      SET        BPD,SUF,R
2.5      EXIT       C,R
2.6      SET        FSTRT,S,S
2.7      EXIT       U
/
/REDEMARRAGE SUR BASSE LIMITE DE PIECE
/
3.1      EVENT      TLCON,S
3.2      SET        BPD,TLCON,S
3.3      EXIT       C,R
3.4      INTERVAL   20,U
3.5      COMPARE    TE100,LE,NSBT,2.0
3.6      SET        FSTRT,BPD,S
3.7      EXIT       U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
4.1      RESTART
4.2      DELAY      25,U
4.3      DELAY      DELSST,U
4.4      SET        COMP50,R,R
4.5      INTERVAL   10,U
4.6      XOR        COMP50,FSTAT
4.7      ALARM      50,C,S
4.8      SET        BPD,FSTRT,R
4.9      BOUT       ZS50,3,OFF
4.10     SET        COMP50,BPD,R
4.11     EXIT       U
/

```



```

/
/-----/
/      GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE      /
/-----/
/
5.1      RESTART
5.2      DELAY      25,U
5.3      INTERVAL  5,U
5.4      SET        BPD,FREEZE,R
5.5      ALARM      10,C,R
5.6      EXIT       U
/
/
/-----/
/      CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
6.1      EVENT      FSTAT,S
6.2      SET        BPD,FSTAT,R
6.3      STORE      APD,0.0,0.0,C,R
6.4      STORE      Z70C,APD,APD,C,R
6.5      STORE      Z70,APD,APD,C,R
6.6      AOUT       ZCP70,3,0.0,C,R
6.7      EXIT       C,R
6.8      DELAY      20,U
6.9      INTERVAL  CST70,U
6.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
6.11     STORE      Z70C,APD,APD,U
6.12     EXIT       U
/
7.1      EVENT      FSTAT,S
7.2      SET        BPD,FSTAT,R
7.3      EXIT       C,R
7.4      INTERVAL  CST70A,U
7.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
7.6      STORE      Z70HL,APD,APD,U
7.7      SELECT     APD,Z70C,L
7.8      STORE      Z70,APD,APD,U
7.9      AOUT       ZCP70,3,0.0,U
7.10     EXIT       U
/
/
/-----/
/      CONTROLE DE LA PRESSION STATIQUE                          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/
8.1      EVENT      FSTAT,S
8.2      SET        BPD,FSTAT,R
8.3      STORE      FSP,0,0,C,R

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8.4      STORE      APD,0.0,0.0,C,R
8.5      STORE      Z50,APD,APD,C,R
8.6      AOUT       ZCP50,3,0.0,C,R
8.7      EXIT       C,R
8.8      DELAY      15,U
8.9      INTERVAL   CST50,U
8.10     FILTER     SPT,63,100
8.11     STORE      AD1,APD,APD,U    /PRESSION AVEC DECIMALE
8.12     CALC       APD,0,1,1,10,R
8.13     STORE      FSP,APD,APD,U    /PRESSION SANS DECIMALE
8.14     CALC       SPSP,0,10,1,1,T
8.15     STORE      AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
8.16     CALC       CPB50,0,10,1,1,T
8.17     PROP       AD2,AD1,APD,CIG50,CMP50,CDS50
8.18     STORE      Z50,APD,APD,U
8.19     AOUT       ZCP50,3,0,U
8.20     EXIT       U
/
/
/-----/
/          CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE          /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOILETS-MXD- OU LE CONTROLE DE NUIT
/-NCTL-.
/
9.1      EVENT      FSTAT,S
9.2      INTERVAL   30,U
9.3      AND        FSTAT,OCCD
9.4      SET        MXD,BPD,R
9.5      XOR        FSTAT,OCCD
9.6      AND        BPD,FSTAT
9.7      SET        NCTL,BPD,S
9.8      EXIT       U
/
/
/-----/
/          ECONOMISEUR D AIR FRAIS          /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOILETS SONT RAMENES A LEURS POSITIONS NORMALES.
/
10.1     EVENT      MXD,S
10.2     SET        ECON,R,R
10.3     SET        BPD,FSTAT,R
10.4     EXIT       C,R
10.5     INTERVAL   10,U
10.6     COMPARE     TE1,GE,OASO,1.0
10.7     SET        ECON,BPD,R
10.8     EXIT       U
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/

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```

/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
11.1    EVENT      MXD,S
11.2    INTERVAL   5,U
11.3    STORE      APD,TE80,RARL,U
11.4    SPAN       RARL,RARH,SAHL,SALL
11.5    STORE      DSSP,APD,SAHL,U
11.6    EXIT       U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/
/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M  RESULTAT PAR TEMP DE MELANGE
/Z10C  RESULTAT PAR TEMP D ALIMENTATION
/Z10   RESULTAT VOLETS
/
/
12.1    EVENT      MXD,S
12.2    SET        MIXLL,R,R
12.3    SET        BPD,MXD,R
12.4    EXIT       C,R
12.5    INTERVAL   5,U
12.6    COMPARE    TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
12.7    SET        MIXLL,BPD,R           /A LA BASSE LIMITE
12.8    SELECT     Z10M,Z10C,L
12.9    STORE      Z10,APD,APD,U
12.10   AOUT       ZCP10,3,0.0,U
12.11   EXIT       U
/
13.1    EVENT      MIXLL,S      /CONTROLE PAR BASSE LIMITE DE MELANGE
13.2    SET        BPD,MIXLL,R
13.3    STORE      Z10M,100.0,100.0,C,R
13.4    STORE      CMP10A,Z10C,Z10C,U
13.5    EXIT       C,R
13.6    INTERVAL   CST10A,U
13.7    PROP       MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
13.8    STORE      Z10M,APD,APD,U
13.9    EXIT       U
/
14.1    EVENT      MXD,R /POSITION D ARRET SOUPAPES
14.2    SET        BPD,MXD,R
14.3    EXIT       C,S
14.4    SET        HTG,R,R
14.5    SET        CLG,R,R
14.6    DELAY      7,C,R

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14.7    STORE    APD,0.0,0.0,C,R
14.8    AOUT     ZCP30,3,0.0,C,R
14.9    EXIT     U
/
15.1    EVENT    MXD,S
15.2    SET      BPD,MXD,R
15.3    STORE    APD,0.0,0.0,C,R
15.4    STORE    Z10,APD,APD,C,R
15.5    STORE    Z10C,APD,APD,C,R
15.6    STORE    Z10M,100.0,100.0,C,R
15.7    STORE    ZMXD,APD,APD,C,R
15.8    AOUT     ZCP10,3,0.0,C,R
15.9    EXIT     C,R
15.10   DELAY    7,U
15.11   STORE    APD,TE1,5.0,U
15.12   SPAN     5.0,20.0,0.0,75.0
15.13   STORE    CMP10,APD,APD,U
15.14   STORE    APD,Z30POS,Z30POS,U
15.15   AOUT     ZCP30,3,0.0,U
15.16   INTERVAL CST10,U
15.17   PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
15.18   STORE    ZMXD,APD,APD,U
15.19   SPAN     MDP,100.0,MDP,100.0
15.20   SET      BPD,ECON,S
15.21   STORE    APD,MDP,MDP,C,S
15.22   STORE    Z10C,APD,APD,U
15.23   ORR      ZMXD,GE,85.0,10.0
15.24   SET      CLG,BPD,R
15.25   COMPARE  ZMXD,LE,15.0,10.0
15.26   SET      HTG,BPD,R
15.27   EXIT     U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/ LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DU VENTILATEUR
/ D EVACUATION. LA FONCTION MINF1 EST LE POURCENTAGE RAJOUTE A LA POSITION
/ MINIMUM QUAND LE VENTILATEUR FONCTIONNE. LE RESULTAT S APPLIQUE DANS LA
/ ROUTINE DE CONTROLE DES VOLETS
/
16.1    RESTART
16.2    DELAY     25,U
16.3    INTERVAL  10,U
/
16.4    SET      BPD,FSTATE,R          /CALCUL VENT. 23RE
16.5    STORE    APD,0.0,0.0,C,R
16.6    STORE    APD,MINF1,MINF1,C,S
16.7    CALC     APD,MDPOS,1,1,1,T
16.8    STORE    MDP,APD,20.0,U
16.9    EXIT     U
/
/
/-----/
/      CONTROLE DU PRE CHAUFFAGE      /
/-----/

```

/

/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE DE MELANGE
/EST DESALIMENTE.

/

17.1 RESTART
17.2 SET PREHEA,S,S
17.3 DELAY 25,U
17.4 BOUT ZSLL,3,OFF
17.5 INTERVAL 5,U
17.6 COMPARE TE10,LE,PREALL,PREADF
17.7 SET PREHEA,BPD,R
17.8 NEGATE BPD
17.9 BOUT ZS20,3,OFF
17.10 SET BPD,LLBYP,R
17.11 BOUT ZSLL,3,OFF
17.12 EXIT U

/

18.1 EVENT PREHEA,S
18.2 SET BPD,PREHEA,R
18.3 DELAY DELHEA,C,S
18.4 NEGATE PREHEA
18.5 SET LLBYP,BPD,R
18.6 EXIT U

/

/

/-----/

/ CONTROLE DE CHAUFFAGE /

/-----/

/

/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A Z30POS POUR LE CHAUFFAGE.

/

19.1 EVENT HTG,S
19.2 SET BPD,HTG,S
19.3 STORE Z40,0.0,0.0,C,R
19.4 STORE APD,Z30POS,Z30POS,C,R
19.5 AOUT ZCP30,3,0.0,C,R
19.6 EXIT C,R
19.7 INTERVAL CST40,U
19.8 CALC DSSP,0.3,1,-1,1,T
19.9 PROP APD,TE60,CPB40,CIG40,0.0,CDS40
19.10 STORE Z40,APD,APD,U
19.11 SPAN 0.0,100.0,Z30POS,0.0
19.12 AOUT ZCP30,3,100.0,U
19.13 EXIT U

/

/-----/

/ CONTROLE DE REFROIDISSEMENT /

/-----/

/

/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE Z30POS A 100 POUR LE REFROIDISSEMENT.

```

/
20.1    EVENT    CLG,S
20.2    SET      BPD,CLG,R
20.3    STORE    Z30,0.0,0.0,C,R
20.4    STORE    APD,Z30POS,Z30POS,C,R
20.5    AOUT     ZCP30,3,0.0,C,R
20.6    EXIT     C,R
20.7    INTERVAL CST30,U
20.8    CALC     DSSP,0.3,1,1,1,T
20.9    PROP     APD,TE60,CPB30,CIG30,0.0,CDS30
20.10   STORE    Z30,APD,APD,U
20.11   SPAN     0.0,100.0,Z30POS,100.0
20.12   AOUT     ZCP30,3,0.0,U
20.13   EXIT     U
/
/
/-----/
/          CONTROLE DE NUIT                      /
/-----/
/
/LORSQUE LE SYSTEME EST DEMARRE LA NUIT SUR UNE BASSE LIMITE, LA
/TEMPERATURE DE RETOUR EST MAINTENUE CONSTANTE AU POINT DE CONSIGNE
/DE NUIT -NSP-. LES VOILETS RESTENT EN RECIRCULATION.
/
21.1    EVENT    NCTL,S
21.2    SET      BPD,NCTL,S
21.3    STORE    Z41,0.0,0.0,C,R
21.4    STORE    APD,0.0,0.0,C,R
21.5    AOUT     ZCP30,3,0.0,C,R
21.6    EXIT     C,R
21.7    INTERVAL CST41,U
21.8    PROP     NSP,TE80,CPB41,CIG41,0.0,CDS41
21.9    STORE    Z41,APD,APD,U
21.10   SPAN     0.0,100.0,Z30POS,0.0
21.11   AOUT     ZCP30,3,100.0,U
21.12   EXIT     U
/
/
/-----/
/          CONTROLE RECUPERATION                  /
/-----/
/
/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/
22.1    RESTART
22.2    DELAY    25,U
22.3    INTERVAL 7,U
22.4    FILTER   SPT1,63,100
22.5    STORE    FSP2,APD,APD,U
22.6    COMPARE  FSP2,GE,RECUHL,RECUDF
22.7    SET      RECUP,BPD,R
22.8    NEGATE   BPD
22.9    BOUT     ZS10,3,OFF
22.10   EXIT     U
/

```

```

/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
23.1    EVERY                               /SELECTION DU STSTEME POUR LE
23.2    SET      SYSP,R,R                    /
23.3    COMPARE  SYSDIS,EQ,100,0
23.4    SET      SYS1,BPD,R
23.5    OR       SYSP,BPD
23.6    SET      SYSP,BPD,S
23.7    COMPARE  SYSDIS,EQ,200,0
23.8    SET      SYS2,BPD,R
23.9    OR       SYSP,BPD
23.10   SET      SYSP,BPD,S
23.11   COMPARE  SYSDIS,EQ,300,0
23.12   SET      SYS3,BPD,R
23.13   OR       SYSP,BPD
23.14   SET      SYSP,BPD,S
23.15   COMPARE  SYSDIS,EQ,400,0
23.16   SET      SYS4,BPD,R
23.17   OR       SYSP,BPD
23.18   SET      SYSP,BPD,S
23.19   COMPARE  SYSDIS,EQ,500,0
23.20   SET      SYS5,BPD,R
23.21   OR       SYSP,BPD
23.22   SET      SYSP,BPD,S
23.23   COMPARE  SYSDIS,EQ,600,0
23.24   SET      SYS6,BPD,R
23.25   OR       SYSP,BPD
23.26   SET      SYSP,BPD,S
23.27   COMPARE  SYSDIS,EQ,700,0
23.28   SET      SYS7,BPD,R
23.29   OR       SYSP,BPD
23.30   SET      SYSP,BPD,S
23.31   COMPARE  SYSDIS,EQ,800,0
23.32   SET      SYS8,BPD,R
23.33   OR       SYSP,BPD
23.34   SET      SYSP,BPD,S
23.35   SET      SYS,SYSP,S
23.36   EXIT     U
/
/
24.1    EVENT    SYS,S                      /RESET LES FONCTIONS POUR
24.2    SET      BPD,SUF,R                  /LE CDB SPECIAL
24.3    STORE     SYSDIS,0,0,C,R            /SUR UNE PERIODE DE DISCLR
24.4    EXIT     C,R
24.5    DELAY     3600,U
24.6    STORE     SYSDIS,0,0,U
24.7    EXIT     U
/
/
25.1    EVENT    SYS1,S                      /SYS 100
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    INTERVAL  5,U
25.5    STORE     CSTXXX,CST70,CST70,U      /PERMET DE VOIR LES

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25.6    STORE    CPBXXX,CPB70,CPB70,U      /VALEURS DU SYSTEME
25.7    STORE    CIGXXX,CIG70,CIG70,U
25.8    STORE    CMPXXX,0.0,0.0,U
25.9    STORE    CDSXXX,CDS70,CDS70,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS1,S
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    DELAY    10,U
26.5    INTERVAL 1,U
26.6    STORE    CST70,CSTXXX,CST70,U      /PERMET D AJUSTER LES
26.7    STORE    CPB70,CPBXXX,CPB70,U      /VALEURS DU SYSTEME
26.8    STORE    CIG70,CIGXXX,CIG70,U
26.9    STORE    CDS70,CDSXXX,CDS70,U
26.10   EXIT     U
/
/
27.1    EVENT    SYS2,S                    /SYS 200
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    INTERVAL 5,U
27.5    STORE    CSTXXX,CST70A,CST70A,U    /PERMET DE VOIR LES
27.6    STORE    CPBXXX,CPB70A,CPB70A,U    /VALEURS DU SYSTEME
27.7    STORE    CIGXXX,CIG70A,CIG70A,U
27.8    STORE    CMPXXX,0.0,0.0,U
27.9    STORE    CDSXXX,CDS70A,CDS70A,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS2,S
28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    DELAY    10,U
28.5    INTERVAL 1,U
28.6    STORE    CST70A,CSTXXX,CST70A,U    /PERMET D AJUSTER LES
28.7    STORE    CPB70A,CPBXXX,CPB70A,U    /VALEURS DU SYSTEME
28.8    STORE    CIG70A,CIGXXX,CIG70A,U
28.9    STORE    CDS70A,CDSXXX,CDS70A,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS3,S                    /SYS 300
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    INTERVAL 5,U
29.5    STORE    CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
29.6    STORE    CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
29.7    STORE    CIGXXX,CIG50,CIG50,U
29.8    STORE    CMPXXX,CMP50,CMP50,U
29.9    STORE    CDSXXX,CDS50,CDS50,U
29.10   EXIT     U
/
/
30.1    EVENT    SYS3,S
30.2    SET      BPD,SUF,R

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30.3    EXIT      C,R
30.4    DELAY     10,U
30.5    INTERVAL  1,U
30.6    STORE     CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
30.7    STORE     CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
30.8    STORE     CIG50,CIGXXX,CIG50,U
30.9    STORE     CMP50,CMPXXX,CMP50,U
30.10   STORE     CDS50,CDSXXX,CDS50,U
30.11   EXIT      U
/
/
31.1    EVENT     SYS4,S                    /SYS 400
31.2    SET       BPD,SUF,R
31.3    EXIT      C,R
31.4    INTERVAL  5,U
31.5    STORE     CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
31.6    STORE     CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
31.7    STORE     CIGXXX,CIG40,CIG40,U
31.8    STORE     CMPXXX,0.0,0.0,U
31.9    STORE     CDSXXX,CDS40,CDS40,U
31.10   EXIT      U
/
/
32.1    EVENT     SYS4,S
32.2    SET       BPD,SUF,R
32.3    EXIT      C,R
32.4    DELAY     10,U
32.5    INTERVAL  1,U
32.6    STORE     CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
32.7    STORE     CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
32.8    STORE     CIG40,CIGXXX,CIG40,U
32.9    STORE     CDS40,CDSXXX,CDS40,U
32.10   EXIT      U
/
/
33.1    EVENT     SYS5,S                    /SYS 500
33.2    SET       BPD,SUF,R
33.3    EXIT      C,R
33.4    INTERVAL  5,U
33.5    STORE     CSTXXX,CST41,CST41,U      /PERMET DE VOIR LES
33.6    STORE     CPBXXX,CPB41,CPB41,U      /VALEURS DU SYSTEME
33.7    STORE     CIGXXX,CIG41,CIG41,U
33.8    STORE     CMPXXX,0.0,0.0,U
33.9    STORE     CDSXXX,CDS41,CDS41,U
33.10   EXIT      U
/
/
34.1    EVENT     SYS5,S
34.2    SET       BPD,SUF,R
34.3    EXIT      C,R
34.4    DELAY     10,U
34.5    INTERVAL  1,U
34.6    STORE     CST41,CSTXXX,CST41,U      /PERMET D AJUSTER LES
34.7    STORE     CPB41,CPBXXX,CPB41,U      /VALEURS DU SYSTEME
34.8    STORE     CIG41,CIGXXX,CIG41,U
34.9    STORE     CDS41,CDSXXX,CDS41,U
34.10   EXIT      U

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/
/
35.1    EVENT      SYS6,S                               /SYS 600
35.2    SET        BPD,SUF,R
35.3    EXIT       C,R
35.4    INTERVAL   5,U
35.5    STORE      CSTXXX,CST10A,CST10A,U              /PERMET DE VOIR LES
35.6    STORE      CPBXXX,CPB10A,CPB10A,U              /VALEURS DU SYSTEME
35.7    STORE      CIGXXX,CIG10A,CIG10A,U
35.8    STORE      CMPXXX,0.0,0.0,U
35.9    STORE      CDSXXX,CDS10A,CDS10A,U
35.10   EXIT       U
/
/
36.1    EVENT      SYS6,S
36.2    SET        BPD,SUF,R
36.3    EXIT       C,R
36.4    DELAY      10,U
36.5    INTERVAL   1,U
36.6    STORE      CST10A,CSTXXX,CST10A,U              /PERMET D AJUSTER LES
36.7    STORE      CPB10A,CPBXXX,CPB10A,U              /VALEURS DU SYSTEME
36.8    STORE      CIG10A,CIGXXX,CIG10A,U
36.9    STORE      CDS10A,CDSXXX,CDS10A,U
36.10   EXIT       U
/
/
37.1    EVENT      SYS7,S                               /SYS 700
37.2    SET        BPD,SUF,R
37.3    EXIT       C,R
37.4    INTERVAL   5,U
37.5    STORE      CSTXXX,CST10,CST10,U              /PERMET DE VOIR LES
37.6    STORE      CPBXXX,CPB10,CPB10,U              /VALEURS DU SYSTEME
37.7    STORE      CIGXXX,CIG10,CIG10,U
37.8    STORE      CMPXXX,CMP10,CMP10,U
37.9    STORE      CDSXXX,CDS10,CDS10,U
37.10   EXIT       U
/
/
38.1    EVENT      SYS7,S
38.2    SET        BPD,SUF,R
38.3    EXIT       C,R
38.4    DELAY      10,U
38.5    INTERVAL   1,U
38.6    STORE      CST10,CSTXXX,CST10,U              /PERMET D AJUSTER LES
38.7    STORE      CPB10,CPBXXX,CPB10,U              /VALEURS DU SYSTEME
38.8    STORE      CIG10,CIGXXX,CIG10,U
38.9    STORE      CMP10,CMPXXX,CMP10,U
38.10   STORE      CDS10,CDSXXX,CDS10,U
38.11   EXIT       U
/
/
39.1    EVENT      SYS8,S                               /SYS 800
39.2    SET        BPD,SUF,R
39.3    EXIT       C,R
39.4    INTERVAL   5,U
39.5    STORE      CSTXXX,CST30,CST30,U              /PERMET DE VOIR LES
39.6    STORE      CPBXXX,CPB30,CPB30,U              /VALEURS DU SYSTEME

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39.7    STORE    CIGXXX,CIG30,CIG30,U
39.8    STORE    CMPXXX,0.0,0.0,U
39.9    STORE    CDSXXX,CDS30,CDS30,U
39.10   EXIT     U
/
/
40.1    EVENT    SYS8,S
40.2    SET      BPD,SUF,R
40.3    EXIT     C,R
40.4    DELAY    10,U
40.5    INTERVAL 1,U
40.6    STORE    CST30,CSTXXX,CST30,U           /PERMET D AJUSTER LES
40.7    STORE    CPB30,CPBXXX,CPB30,U           /VALEURS DU SYSTEME
40.8    STORE    CIG30,CIGXXX,CIG30,U
40.9    STORE    CDS30,CDSXXX,CDS30,U
40.10   EXIT     U
/
/
/-----/
/              RECORD PANNE DE POUVOIR              /
/-----/
/
41.1    RESTART
41.2    TIMDATA  DT
41.3    STORE    UPTIM,APD,APD,U           /SAUVE L HEURE ACTUEL ET
41.4    TIMDATA  MD                       /LA DATE DE LA RESTAURATION
41.5    STORE    UPDAT,APD,APD,U           /DU POUVOIR.
41.6    EXIT     U
/
42.1    RESTART
42.2    STORE    DNTIM,TOD,TOD,U           /RECORD DE LA DERNIERE HEURE
42.3    STORE    DNDAT,LDAT,LDAT,U        /ET DATE AVANT LA PANNE.
42.4    INTERVAL 60,U
42.5    TIMDATA  DT
42.6    STORE    TOD,APD,APD,U           /SAUVE L HEURE ET LA DATE
42.7    TIMDATA  MD                       /ACTUEL A TOUTES LES MINUTES.
42.8    STORE    LDAT,APD,APD,U
42.9    EXIT     U
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    964
/   CDB:       382
/   PROCESSES: 3543
/   OVERHEAD:  2700
/   TOTAL:     7589    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    964
/   CDB:       382
/   PROCESSES: 3543
/   OVERHEAD:  2700
/   TOTAL:     7589    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:

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```
/      POINTS:    964
/      CDB:      382
/  PROCESSES:   3543
/      OVERHEAD: 2700
/      TOTAL:    7589      8K DSC MEMORY NEEDED
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SYSTÈME VA-1 – LABORATOIRE DE CONTRÔLE

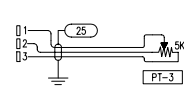
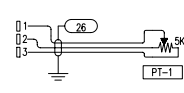
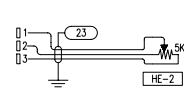
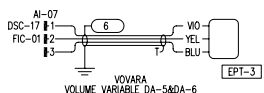
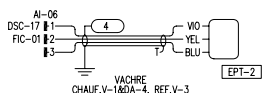
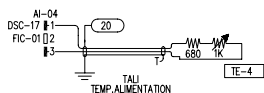
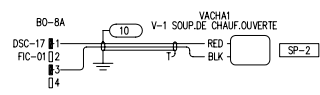
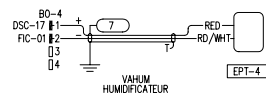
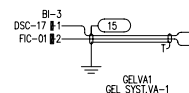
SÉQUENCE D'OPÉRATION

AU DÉPART:

- Le DSC met en marche le système VA-1 et le ventilateur de retour VR-1 démarre par entrebarrage. Le relais électrique/pneumatique EP-1 est énergisé et admet l'air aux contrôles.
- Au départ du système E-1, la pompe de récupération P-2 se met en marche.
- La vanne de refroidissement, les volets de mélange, la vanne de récupération et le serpentin de face et d'évitement sont contrôlés en séquence afin de maintenir la température d'alimentation constante. Cependant, le point de consigne de la température d'alimentation est réajusté en fonction de la température de retour.
- Si la température de mélange descend sous 3°C, la vanne V-1 du serpentin de face et d'évitement ouvre à 100% par SP-2, et RG-1 est désamorcé après un délai.
- Lorsque la température extérieure excède 15°C, les volets retournent à un minimum de 20%. La position minimum est cependant de 70% lorsque le ventilateur E-1 est en fonction.
- L'humidificateur est modulé afin de maintenir 30% d'humidité relative en fonction de l'humidité dans la gaine de retour. Cependant, le DSC évite que l'humidité dans la gaine d'alimentation excède 80%.
- Les ventilateurs à volume variable sont modulés en fonction de la pression dans l'usine de façon à maintenir une pression légèrement négative.
- Si le différentiel de pression, détecté par PT-3, au serpentin de récupération est supérieur au point de consigne, le DSC ouvre la valve au serpentin afin de le dégivrer par SP-1.
- Sur une détection de température inférieure au point de consigne à la sortie du serpentin de réchauffage de TLL-2, le système arrête. Cependant, si la température de mélange monte au-dessus de 3°C à TE_2, l'action de TLL-2 est annulée via RG-1.

EN PÉRIODE INNOCUPÉE :

- La nuit et les jours non ouvrables, le système s'arrête. Cependant, le système redémarre complètement si la température de pièce descend sous 15°C. Le système sera alors contrôlé en fonction de la température de retour à 22°C.

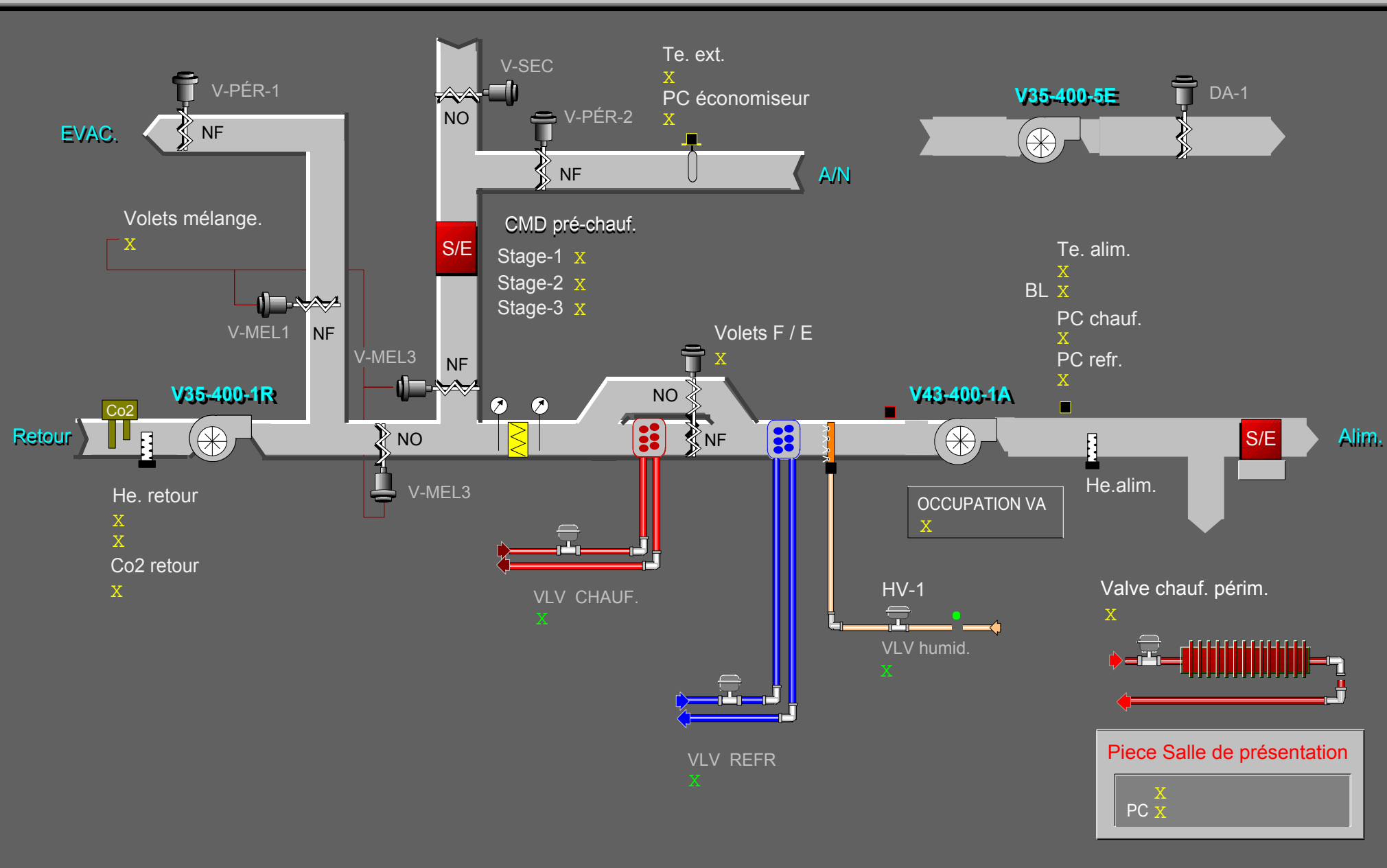


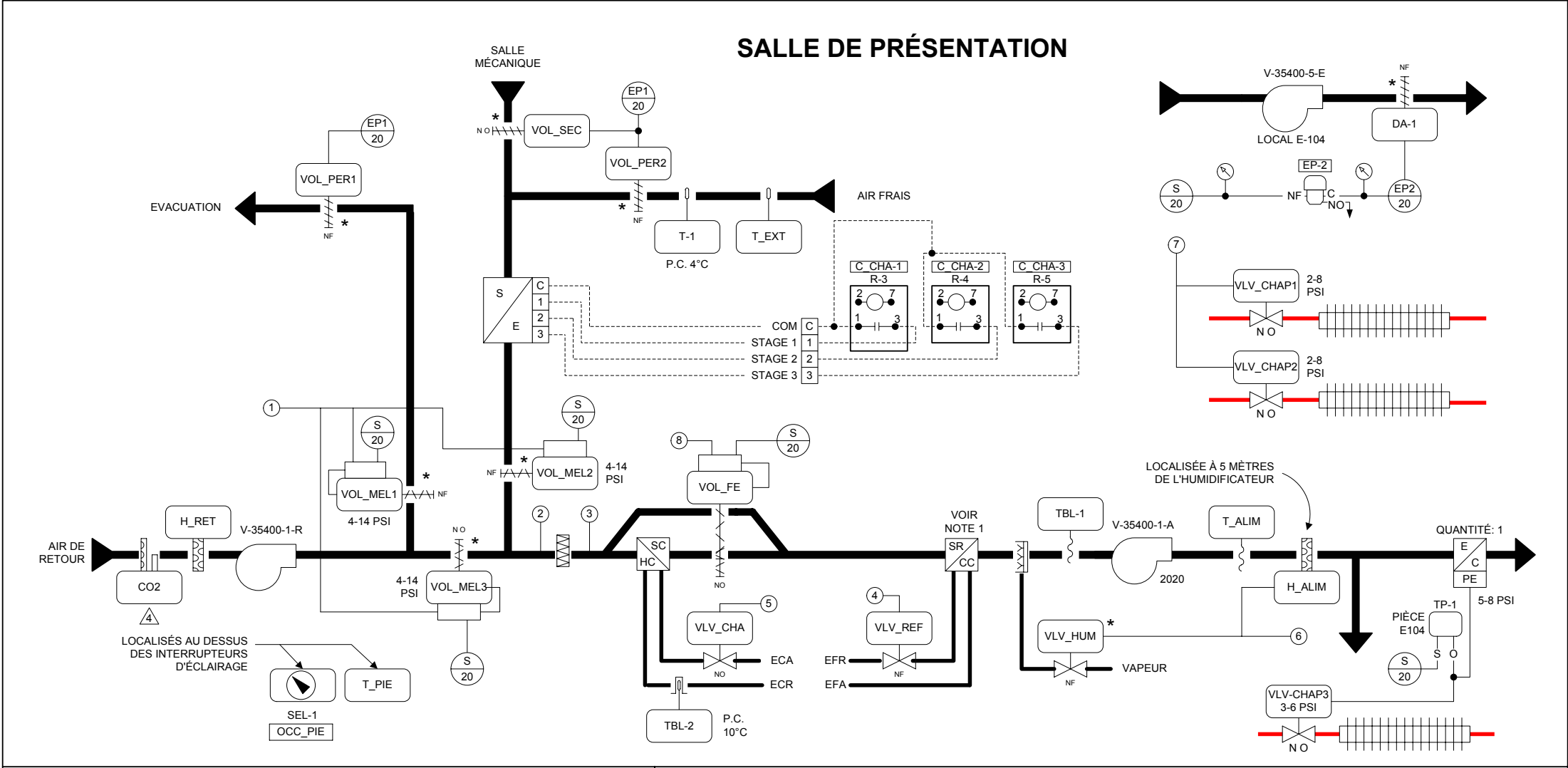
LISTE DE MATÉRIEL POUR LE SYSTÈME VA-1

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
DA-1, 3	ACTUATEUR DE VOLET PNEUMATIQUE, 8-13psi	D-3062-3	JOHNSON CONTROLS
DA-2, 4, 5, 6	ACTUATEUR DE VOLET PNEUMATIQUE, 8-13psi	D-3073-1	JOHNSON CONTROLS
DSC-17 FIC-01	ENSEMBLE DE CONTRÔLE ÉLECTRIQUE POUR	CEK-101-2	JOHNSON CONTROLS
	CARTE MÈRE POUR TRS, TRM	CEB-104-0	JOHNSON CONTROLS
	PANNEAU DE CONFIGURATION ÉLECTRONIQUE	ECP-109-1	JOHNSON CONTROLS
	PANNEAU 20"x20"	ENC-1000-11	JOHNSON CONTROLS
	PORTE a/c FENÊTRE POUR DSC-8500	ENC-1000-117	JOHNSON CONTROLS
	BATTERIE POUR DSC (GLOBE)	JC-828	JOHNSON CONTROLS
	CONDENSATEUR 560PF	PD-101-10	JOHNSON CONTROLS
	T/R SLAVE	TRS-101-2	JOHNSON CONTROLS
HE-1, HE-2 PT-1, PT-3	POTENTIOMÈTRE 0-5K OHMS	POT-2	JOHNSON CONTROLS
HV-1	VANNE 2 VOIES, NF, 1/2", GLYCOL, 9-13 psi, AVEC ACT. Cv 1.2	V-3974-1001	JOHNSON CONTROLS
PT-2	SONDE DE PRESSION STATIQUE 0-.5" H2O	261	SERTA
V-1	VANNE 3 VOIES, MÉLANGE, 1/2", 9-13psi, Cv 2.2	V-4324-1011	JOHNSON CONTROLS
V-2	VANNE 3 VOIES, MÉLANGE, 1/2", 9-13psi, AVEC ACT., Cv 2.3	V-4324-1003	JOHNSON CONTROLS
V-3	VANNE 2 VOIES, NF, 3/4", GLYCOL, 9-13psi, Cv 8.6	V-3974-1010	JOHNSON CONTROLS
VOL FE	ACTUATEUR DE VOLET PNEUMATIQUE ET POSITIONNEUR	D-3153-1	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE PA-1

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E-1, P-1, P-2, VA-1, VR-1	LAMPE TÉMOIN VERTE 24 VAC	3SB1118-6BE50	SEIMENS
EP-1, EP-2	VALVE SOLÉNOÏDE 3 VOIES 24V 50/60HZ	V11HGA-103	JOHNSON CONTROLS
EPT-1, 2, 3, 4	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE	EPT-102-1	JOHNSON CONTROLS
F-1, 2	FUSIBLE 2 AMP	-----	-----
	PORTE-FUSIBLE	C-5222-100	JOHNSON CONTROLS
G-1 à G-3	MANOMÈTRE 0-30 psi, 2", 0-200kPa	G-2010-101	JOHNSON CONTROLS
G-4 à G-10	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	DWYER
IS-1	RELAIS	C-208-2	JOHNSON CONTROLS
PA-1	PANNEAU 24"x36"x9.5"	M-8100-2436	JOHNSON CONTROLS
PS-1	DC POWER SUPPLY; 120/12V	HB12-1.7A	JOHNSON CONTROLS
R-1, RG-1	RELAIS 12 VDC (8 PINS)	-----	JOHNSON CONTROLS
RE-1, RG, RVA-	RELAIS 3PDT, 24 VAC (11 PINS)	-----	JOHNSON CONTROLS
S-1, 2, 5	SÉLECTEUR 3 POSITIONS	35B1100-2DB52	JOHNSON CONTROLS
S-3, 4	SÉLECTEUR 2 POSITIONS	35B1100-2AB52	JOHNSON CONTROLS
SP-1, 2	VALVE SOLÉNOÏDE 3 VOIES	V-9011-1	JOHNSON CONTROLS
SW-1	INTERRUPTEUR SPST	BP-3	JOHNSON CONTROLS
	PORTE-INTERRUPTEUR	C-5222-100	JOHNSON CONTROLS
XMR-1	TRANSFORMATEUR 120V/24V/40VA	Y65AS-1	JOHNSON CONTROLS





LISTE DE MATÉRIEL CHANTIER			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
CO2	1	90DM2-DT	SONDE DE CO2 (VULCAIN)
E VR	1	SENTRY 250	RELAIS COURANT -SENTRY
EP-2	1	V11HAA-115	VALVE SOLÉNOÏDE 3 VOIES 110/120 VOLTS
H ALIM	1	H-3610-1001	SONDE HUM. CONDUIT PNEUM.
H_RET	1	RH3-VD	SONDE HUM. CONDUIT 0-5V. GENERAL EASTERN
R-2 à R-5	4	----	RELAIS 24 VAC 2PDT
SEL-1	1	----	SÉLECTEUR
T ALIM	1	TE-6311P-1	SONDE TEMP. CONDUIT NI.
T_EXT	1	TE-6311P-1	SONDE TEMP. EXT. NI
T_PIE	1	TE-6314P-I	SONDE DE PIERCE NI
TBL-1	1	A11A-1C	BASSE LIMITE TEMP.
TBL-2, T-1	2	A19ABC-41C	BASSE LIMITE TEMPÉRATURE
TP-1	1	T-4002-201	THERMOSTAT PNEUMATIQUE
VLV_CHA	1	VG7241LO + 3008B	SOUPAPE 2 VOIES N.O. 3/4" CV=7.3
VLV_CHAP1	1	VG7241ET + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV=1.8
VLV_CHAP2, VLV_CHAP3	2	VG7241CT + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV=0.7
VLV HUM	1	----	PAR D'AUTRES
VLV_REF	1	VG744IRT + 3008E	SOUPAPE 2 VOIES N.C.1 1/2" CV=28.9
VOL MEL1 à 3,	4	D-3153-1	ACTUATEUR VOLET 8-13 PSIG W/P
VOL_FE	2	D-3153-2	ACTUATEUR VOLET 8-13 PSI
VOL_PER1 à 2	2	D-4073-2	ACTUATEUR VOLET
VOL_SEC, DA-1,	2	G2010-5	MANOMÈTRE 0-30 PSI

LISTE DE MATÉRIEL PANNEAU			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-5	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	COUVERT
EP-1	1	V11HAA-115	VALVE SOLÉNOÏDE 3 VOIES 110/120V.
EPT-1 à 6	6	EP-8000-2	CONVERTISSEUR ÉLECT/PNEUM.
F-1,2	2	AGC-2	FUSIBLE 2 AMPÈRES
P-0A	1	M8100-2436	PANNEAU DE CONTRÔLE 24" X 36" X 9"
PDC-1	1	274VBOX	PRISE/INTERRUPTEUR -LEVITON
---	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	PD-505-4	INDICATEUR PRESSION DIFF.
R-1	1	RCPTFU82D1024	RELAIS 24VAC -FEME
---	1	S-408	BASE 8 BROCHES -FEME
TX-1	1	Y65AS-1	TRANSFO 120/24 40VA
	8	G2010-5	MANOMÈTRE 0-30 PSI

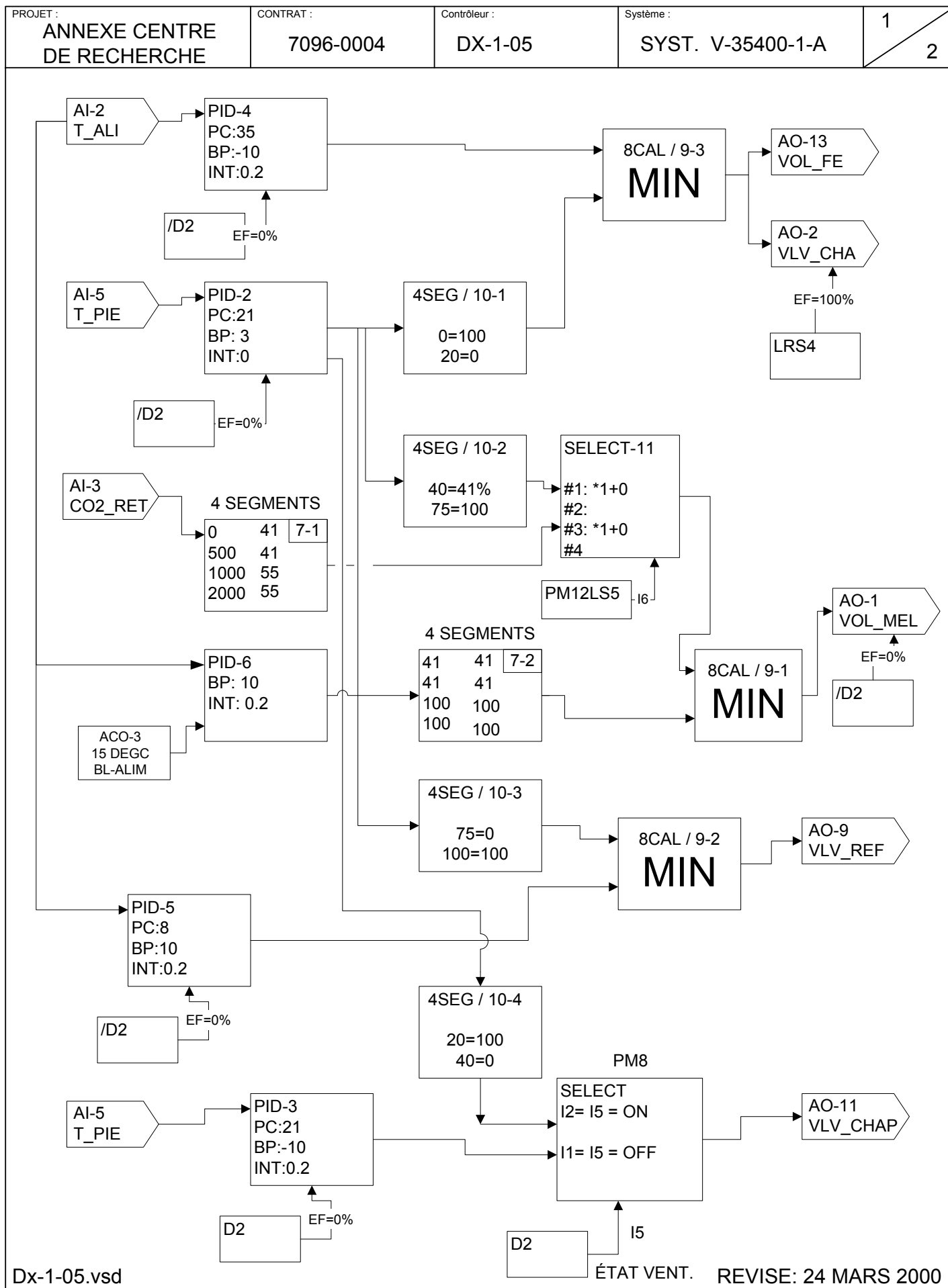
SÉQUENCE D'OPÉRATION VOIR DESSIN 4068-56S

NOTE 1 : LES SERPENTINS DE REFOUILLISSEMENT DOIVENT ÊTRE VIDANGÉS ET HIVERNISÉS POUR LA PÉRIODE HIVERNALE.

* ÉQUIPEMENT FOURNI PAR D'AUTRES

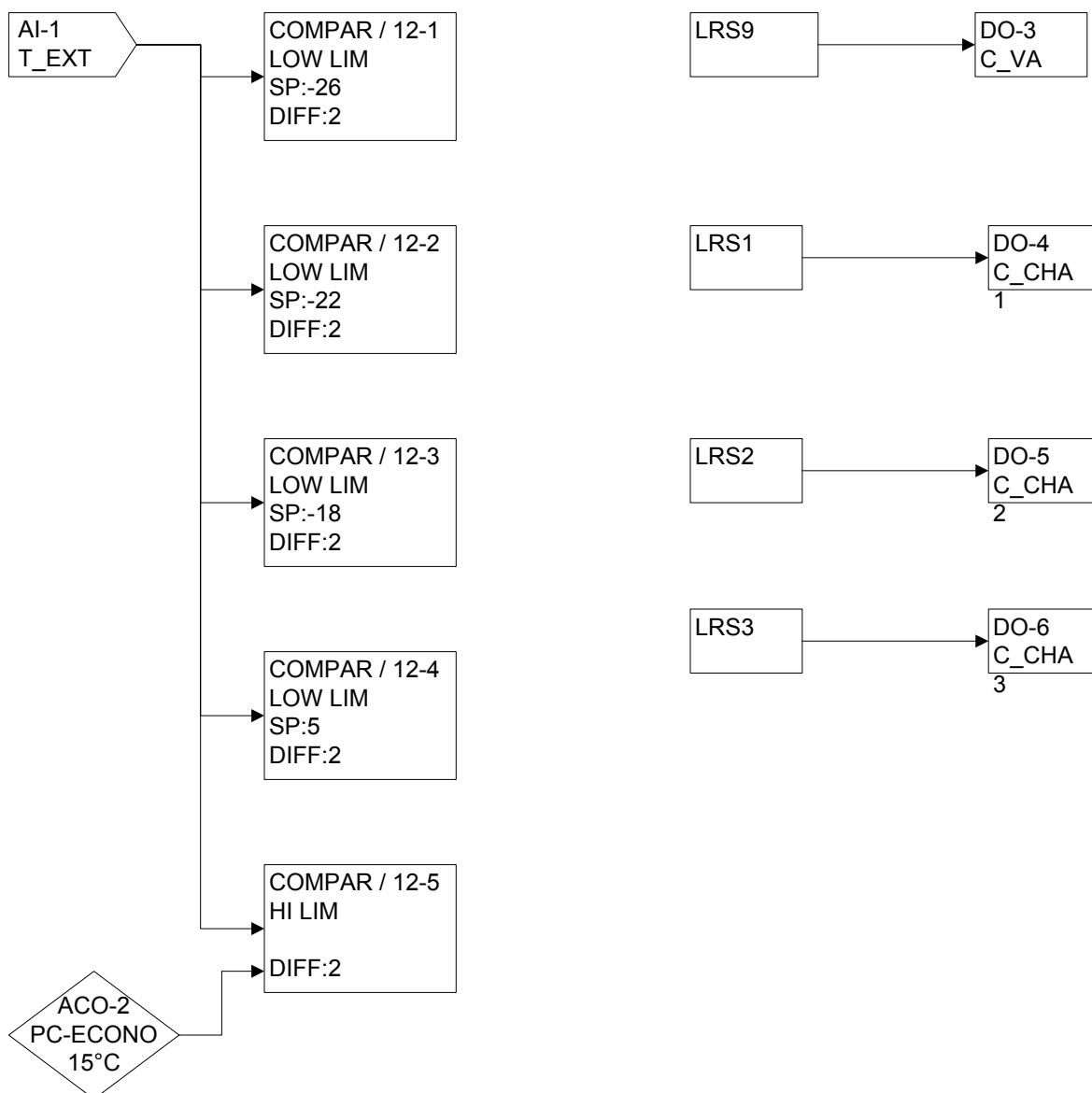
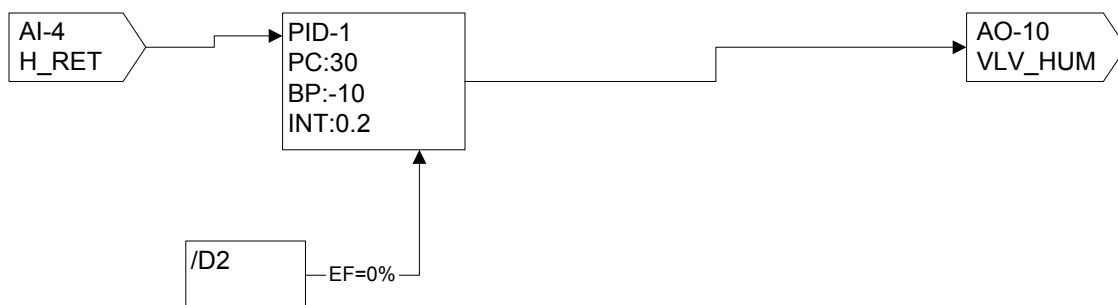
▲ MONTÉ EN FAÇADE DU PANNEAU LOCAL

9096-5018		4	TEL QUE CONSTRUIT			99/06/17	A.B.		
		3	TEL QUE CONSTRUIT			97/09/17	A.B.		
		2	CONSTRUCTION			97/05/28	A.B.		
		1	RÉVISION			97/01/30	A.B.		
DESSIN DE REFERENCE			NO.		RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	Dessin			APPROUVÉ			
J.C.R.	G.S.	M.C.D.	Par	I.M.	DATE	96/12/11	Par	DATE	
<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>			Information Succursale			SLW: 000000			
			<div>355, boul. Montpelliér St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562</div>			NUMÉRO DE CONTRAT			
						7096-0004			
						NUMÉRO DE DESSIN			
						4068-056			



Dx-1-05.vsd
ÉTAT VENT.
REVISE: 24 MARS 2000

PROJET : ANNEXE CENTRE DE RECHERCHE	CONTRAT : 7096-0004	Contrôleur : DX-1-05	Système : SYST. V-35400-1-A	2 2
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FEUILLE DE L'UTILISATEUR

Nom du projet: ANNEXE CRASH
Numéro du projet : 7096-0004
Date de révision : 24-03-2000
Adresse du DX-9100 : 5
Numéro du dessin : 4068-056
Système : SALLE DE PRESENTATION

Entrées Analogiques : (Touche X)

Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
1 TEMP.AIR NEUF	-45°C	121°C
2 TEMP.ALIMENTATION	-45°C	121°C
3 CO2 RETOUR	0	1200
4 HUMIDITE RETOUR	0	100%
5 TEMP.PIECE	-45°C	121°C
6		
7		
8		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

Définition du point	Précaler
1 OCCUPATION PIECE	1
2 ETAT VENT.RETOUR	1
3	1
4	1
5	1
6	1
7	1
8	1

Sorties Analogiques et Binaires : (Touche Y)

Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
1 VOLETS MELANGE	PM11NCM	0% = Min. / 100% = Max.
2 VALVE CHAUFFAGE	PM9NCM3	0% = Min. / 100% = Max.
3 COMM.VENT.ALIM.	D1	Off = arrêt / On = marche
4 COMM.PRECHAUFF.S	LRS1	Off = arrêt / On = marche
5 COMM.PRECHAUFF.S	LRS2	Off = arrêt / On = marche
6 COMM.PRECHAUFF.S	LRS3	Off = arrêt / On = marche
7		Off = arrêt / On = marche
8		Off = arrêt / On = marche
9 VALVE REFROIDISSEMENT	PM9NCM2	0% = Min. / 100% = Max.
10 VALVE HUMIDITE	PM1OCM	0% = Min. / 100% = Max.
11 VALVE CONV.PERIM.	PM9NCM1	0% = Min. / 100% = Max.
12		0% = Min. / 100% = Max.
13 VOLET FACE/EVITEMENT	PM9NCM3	0% = Min. / 100% = Max.
14		0% = Min. / 100% = Max.

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	30%	X4 HUM.RETOUR	0% = Min. / 100% = Max.
2	21°C	X5 TEMP.PIECE	0-40=CHAUF/40-75=VOLET/75-100=REF
3	21°C	X5 TEMP.PIECE	0% = Min. / 100% = Max.
4	35°C	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
5	8°C	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
6	15	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
7			
8			
9	8 CALCULS		
10	4 SEGMENTS		
11	SELECT		
12	COMPAREUR		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-10	0.2	
2	3	0.1	
3	-10	0.2	
4	-10	0.2	
5	10	0.2	
6	10	0.2	
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	60%	MINIMUM AIR NEUF
2	13°C	POINT CONSIGNE ECONOMIZER
3	15°C	BASSE LIMITE ALIMENTATION
4		
5		
6		
7		
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut (0 = off / 1 = on)	Description des points
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
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SYSTÈME V-35400-1-A – SALLE DE PRÉSENTATION

SÉQUENCE D'OPÉRATION

- Le ventilateur d'alimentation V-1-A est mis en marche par régulateur numérique en fonction du sélecteur local occupé - non occupé; ou en fonction de la cédule horaire établie. Le sélecteur est placé en position inoccupée en temps normal et seule la cédule horaire commande l'arrêt/départ du système. Lorsqu'on se trouve en dehors des heures normales de fonctionnement, le système peut être remis en marche par le sélecteur occupé/inoccupé en plaçant celui-ci à « occupé ». Le ventilateur de retour V-1-R est mis en marche par entrebarrage électrique avec le ventilateur V-1-A. Le ventilateur d'évacuation V-35400-5-E est mis en marche par entrebarrage électrique avec le ventilateur V-1-R.
- Au départ du ventilateur d'alimentation, les volets motorisés des persiennes ouvrent et le volet de sécurité ferme.
- Sur preuve de marche, détectée par un relais de courant sur le ventilateur de retour, la séquence suivante est activée :
 - L'humidificateur est modulé de façon à maintenir l'humidité relative dans la gaine de retour au point de consigne requis. En tout temps, le transmetteur d'humidité relative d'alimentation (localisé à 5 M en aval du distributeur de vapeur) assure un taux d'humidité relative maximal en limitant la capacité de l'humidificateur.
 - Le serpentin électrique est opéré en fonction de la température extérieure;
 - À -26° C (-15° F) stage 3 marche
 - À -24° C (-11° F) stage 3 arrête
 - À -22° C (-7° F) stage 2 marche
 - À -20° C (-4° F) stage 2 arrête
 - À -18° C (0° F) stage 1 marche
 - À -16° C (3° F) stage 1 arrête
 - Contrôle du serpentin de face et évitement
 - .1 Lorsque la température extérieure est inférieure à 5°C, la soupape à 2 voies du serpentin de face et évitement est complètement ouverte et le contrôle de la température est effectué par le jeu des volets de face et évitement.
 - .2 Lorsque la température extérieure est supérieure à 7°C, la soupape à 2 voies du serpentin de face et évitement opère en unisson avec le volet de face et évitement.
 - Contrôle de la température de pièce
 - .1 La température de pièce est maintenue par la sonde localisée dans l'amphithéâtre et le contrôleur numérique en opérant :
 - .1 lorsque la température extérieure est égale ou inférieure au point de consigne du mode ECONO.

- .1 la section des volets d'air frais, de retour et d'évacuation : un minimum de 60% d'air frais est requis jusqu'à un maximum de 100%..
- .2 les soupapes des convecteurs du chauffage périphérique et en séquence le serpentin de face et évitement.
- .2 lorsque la température extérieure est supérieure à 13°C :
 - .1 la soupape d'eau refroidie; la section des volets est positionnée pour un minimum de 60% d'air frais.
- Sur une baisse de température à 8°C de l'air d'alimentation ou sur une baisse de température du retour d'eau chaude à 10°C, le système arrête; cette séquence est annulée lorsque la température extérieure est supérieure à 5°C.
- Les ventilateurs sont arrêtés par le régulateur numérique. Cette condition entraîne les actions suivantes :
 - .1 Valve de modulation d'eau chaude ouverte
 - .2 Volets d'air frais et d'évacuation fermés, volets de sécurité et de retour ouverts
 - .3 Humidificateur à l'arrêt
 - .4 Valve de modulation d'eau froide fermée
 - .5 SCR inopérant
- Lorsque le système de ventilation est à l'arrêt, la sonde de température de pièce contrôle les soupapes des convecteurs du chauffage périphérique.

contrôle du niveau de CO₂ :

- Une lecture du niveau de CO₂ dans l'air de retour, réajuste le minimum d'air neuf selon la cédule suivante :

Niveau CO ₂ (PPM)	Minimum d'air neuf	Position correspondante du volet d'air neuf
800	10%	41%
1000	40%	71%

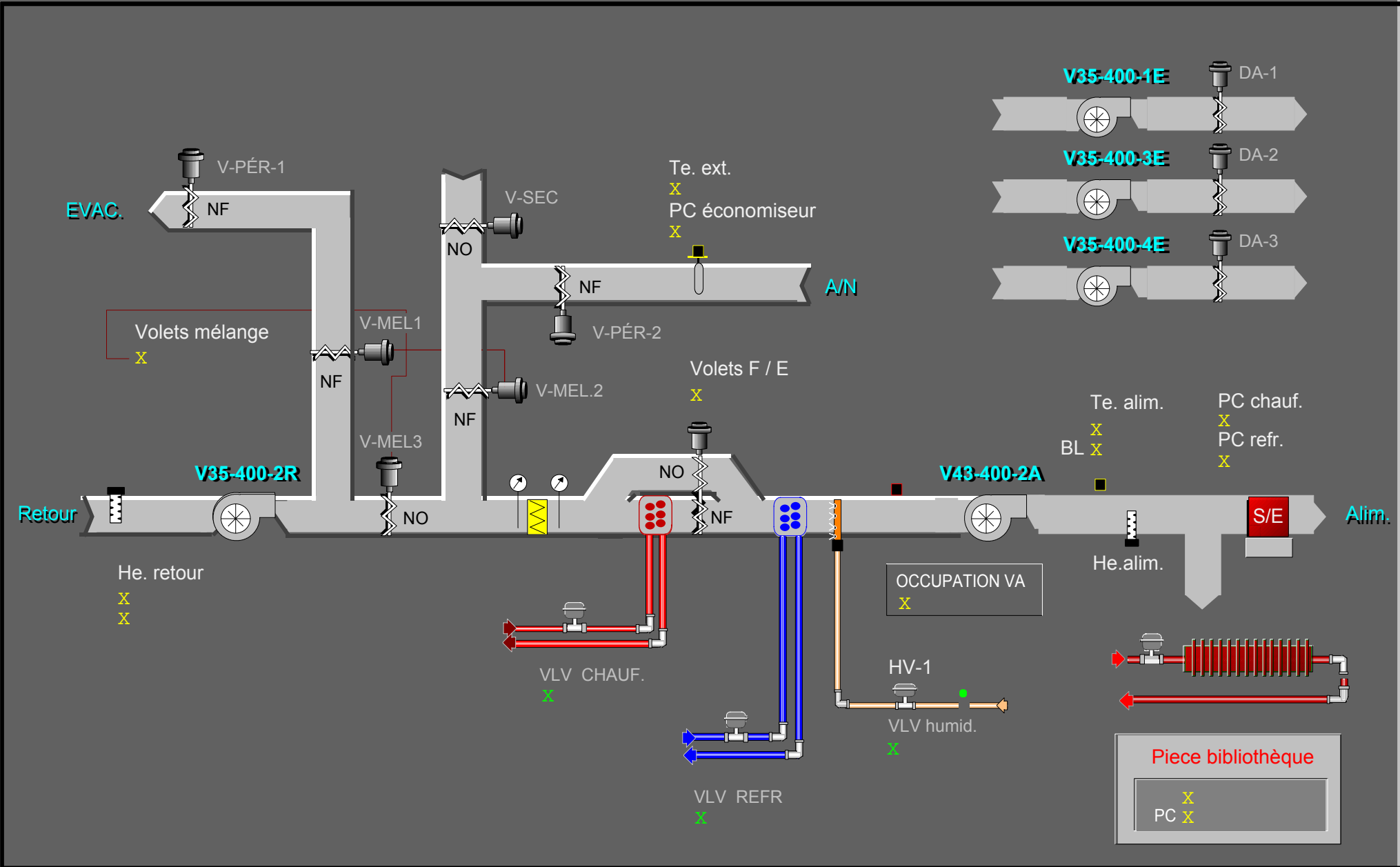
Liste de points		Logiciel					Info sur régulateurs					Info sur panneaux					Appareil intermédiaire					Appareil hors panneau						
Éiq.	Type de point	Nom du système	Nom de l'objet	Description	Unité d'affichage	Type régul.	Tronc N2	Adr. N2	Destination câble	Type de module	Terminalison	Pann.	Emplacement du panneau	No de logem.	Dessin de référence	No de câble	Câble/tube	Entrée terminalison	Sortie terminalison	Emplac.	Câblétube	Terminalison	Appareil	Emplac.	Détail réf.	Commentaire		
		V-354001				DX9100						P-0A	SALLE MÉCANIQUE	04068-56											Power to Controller			
		V-354001				DX9100	1	5				P-0A	SALLE MÉCANIC	04068-56											N2 Trunk			
DI-1	V-354001	OCC_PIE	Oco/Innoc.	Salle de Formation	Innoc. Occ.	DX9100	1	5	DI-1		DI# COM	P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-1						2/22	Device depend	Contact (NO)		D70			
DI-2	V-354001	E_VR	Etat ventilat.	air repri	Arret Marche	DX9100	1	5	DI-2		DI# COM	P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-2						2/18	2-vis	Sentry 250		D70			
DI-3	V-354001					DX9100	1	5	DI-3			P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-3													
DI-4	V-354001					DX9100	1	5	DI-4			P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-4													
DI-5	V-354001					DX9100	1	5	DI-5			P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-5													
DI-6	V-354001					DX9100	1	5	DI-6			P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-6													
DI-7	V-354001					DX9100	1	5	DI-7			P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-7													
DI-8	V-354001					DX9100	1	5	DI-8			P-0A	SALLE MÉCANIC	04068-56	0A-5-DI-8													
AO-1	V-354001	VOL_MEL	Volet air melange		%	DX9100	1	5	AO-1		AO# AOCCOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-1/18	+-		EP-8000	SUPPLY_O		1/4"	Barb Fitting	EP-PNEU		D22			
AO-2	V-354001	VLV_CHA	Valve serp. chauff.		%	DX9100	1	5	AO-2		AO# AOCCOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-2/18	+-		EP-8000	SUPPLY_O		1/4"	Barb Fitting	EP-PNEU		D22			
AO-9	V-354001	VLV_REF	Valve serp. refroid.		%	DX9100	1	5	AO-9		AO# AOCCOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-9/18	+-		EP-8000	SUPPLY_O		1/4"	Barb Fitting	EP-PNEU		D22			
AO-10	V-354001	VLV_HUM	Valve humidif.		%	DX9100	1	5	AO-10		AO# AOCCOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-10/18	+-		EP-8000	SUPPLY_O		1/4"	Barb Fitting	EP-PNEU		D22			
AO-11	V-354001	VLV_CHAP	Valve connecteur périmétrique		%	DX9100	1	5	AO-11		AO# AOCCOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-11/18	+-		EP-8000	SUPPLY_O		1/4"	Barb Fitting	EP-PNEU		D22			
AO-12	V-354001					DX9100	1	5	AO-12			P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-12													
AO-13	V-354001	VOL_FE	Volet face-évitement		%	DX9100	1	5	AO-13		AO# AOCCOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-13/18	+-		EP-8000	SUPPLY_O		1/4"	Barb Fitting	EP-PNEU		D22			
AO-14	V-354001					DX9100	1	5	AO-14			P-0A	SALLE MÉCANIC	04068-56	0A-5-AO-14													
DO-3	V-354001	C_VA	Comm. vent. aliment.	Arret Marche	DX9100	1	5	DO-3			DO# 24V	P-0A	SALLE MÉCANIC	04068-56	0A-5-DO-3/18	COIL	RELAY	COM NO		2/14	See starter detail	Starter (NO)		D51				
DO-4	V-354001	C_CHA1	Comm. prechauffage stage 1	Arret Marche	DX9100	1	5	DO-4			DO# 24V	P-0A	SALLE MÉCANIC	04068-56	0A-5-DO-4/18	COIL	RELAY	COM NO		2/14	Serpentin elect.	Contacteur (NO)		D51				
DO-5	V-354001	C_CHA2	Comm. prechauffage stage 2	Arret Marche	DX9100	1	5	DO-5			DO# 24V	P-0A	SALLE MÉCANIC	04068-56	0A-5-DO-5/18	COIL	RELAY	COM NO		2/14	Serpentin elect.	Contacteur (NO)		D51				
DO-6	V-354001	C_CHA3	Comm. prechauffage stage 3	Arret Marche	DX9100	1	5	DO-6			DO# 24V	P-0A	SALLE MÉCANIC	04068-56	0A-5-DO-6/18	COIL	RELAY	COM NO		2/14	Serpentin elect.	Contacteur (NO)		D51				
DO-7	V-354001					DX9100	1	5	DO-7			P-0A	SALLE MÉCANIC	04068-56	0A-5-DO-7													
DO-8	V-354001					DX9100	1	5	DO-8			P-0A	SALLE MÉCANIC	04068-56	0A-5-DO-8													
AI-1	V-354001	T_EXT	Temp. air neuf		Deg C	DX9100	1	5	AI-1		AI# AICOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-1						2/18	2-Wire	TE		D3			
AI-2	V-354001	T_ALI	Temp alimentation		Deg C	DX9100	1	5	AI-2		AI# AICOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-2						2/18	2-Wire	TE		D3			
AI-3	V-354001	CO2_RET	Niveau CO2 air retour		PPM	DX9100	1	5	AI-3		AI# AICOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-3						2/18	+-	Vulcan		D3	0-10V = 0-2000 PPM		
AI-4	V-354001	H_RET	Humidité air retour		% HR	DX9100	1	5	AI-4		AI# AICOM+15	P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-4						3/18	2-Wire	HE		D3			
AI-5	V-354001	T_PIE	Temperature piece		Deg C	DX9100	1	5	AI-5		AI# AICOM	P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-5						2/18	2-Wire	TE		D3			
AI-6	V-354001					DX9100	1	5	AI-6			P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-6													
AI-7	V-354001					DX9100	1	5	AI-7			P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-7													
AI-8	V-354001					DX9100	1	5	AI-8			P-0A	SALLE MÉCANIC	04068-56	0A-5-AI-8													

LISTE DE MATÉRIEL POUR LE SYSTÈME V-35400-1-A

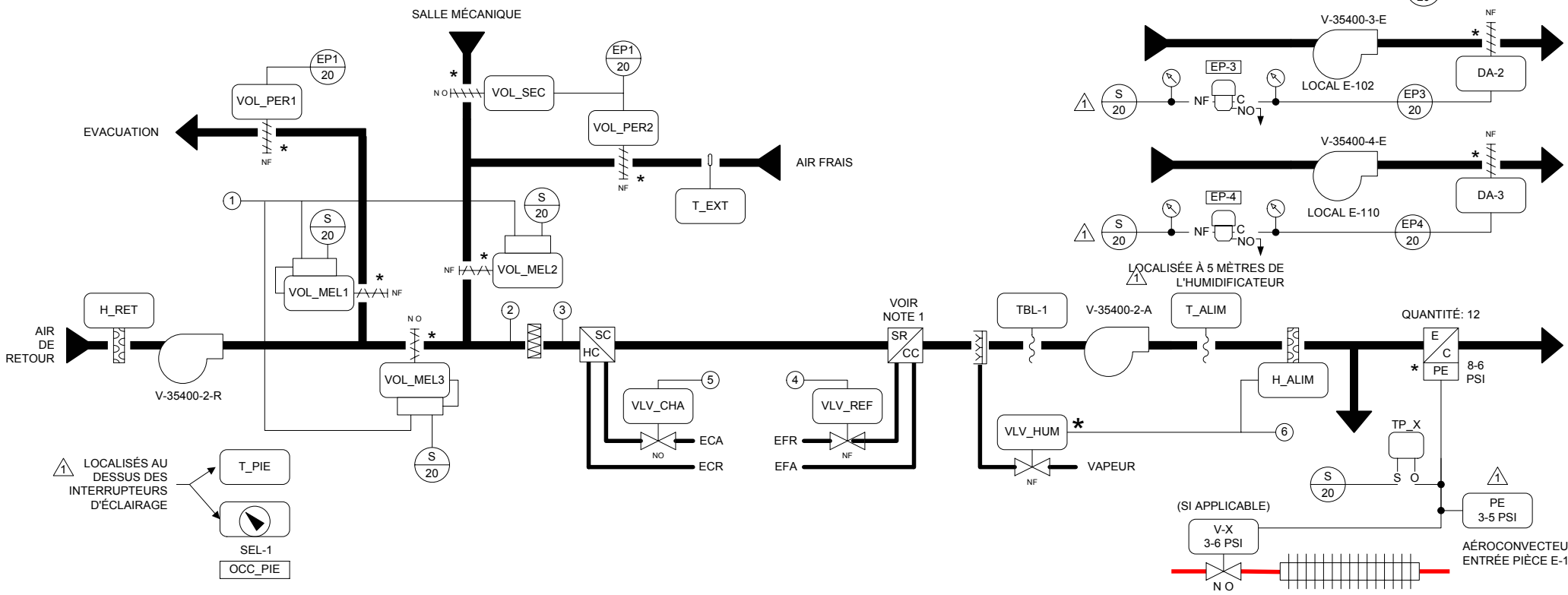
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
CO2	SONDE DE CO2	90DM2-DT	VULCAIN
E VR	RELAIS COURANT	SENTRY 250	SENTRY
EP-2	VALVE SOLÉNOÏDE 3 VOIES 110/120 VOLTS	V11HAA-115	JOHNSON CONTROLS
H ALIM	SONDE HUM. CONDUIT PNEUM.	H-3610-1001	JOHNSON CONTROLS
H RET	SONDE HUM. CONDUIT 0-5V.	RH3-VD	GENERAL EASTERN
R-2 à R-5	RELAIS 24 VAC 2PDT	----	JOHNSON CONTROLS
SEL-1	SÉLECTEUR	----	JOHNSON CONTROLS
T ALIM	SONDE TEMP. CONDUIT NI.	TE-6311P-1	JOHNSON CONTROLS
T EXT	SONDE TEMP. EXT. NI	TE-6311P-1	JOHNSON CONTROLS
T PIE	SONDE DE PIECE NI	TE-6314P-I	JOHNSON CONTROLS
TBL-1	BASSE LIMITE TEMP.	A11A-1C	JOHNSON CONTROLS
TBL-2, T-1	BASSE LIMITE TEMPÉRATURE	A19ABC-41C	JOHNSON CONTROLS
TP-1	THERMOSTAT PNEUMATIQUE	T-4002-201	JOHNSON CONTROLS
VLV_CHA	SOUPAPE 2 VOIES N.O. 3/4", CV=7.3	VG7241LO+3008B	JOHNSON CONTROLS
VLV_CHAP1	SOUPAPE 2 VOIES N.O. 1/2", CV=1.8	VG7241ET+3008B	JOHNSON CONTROLS
VLV_CHAP2, 3	SOUPAPE 2 VOIES N.O. 1/2", CV=0.7	VG7241CT+3008B	JOHNSON CONTROLS
VLV_HUM	PAR D'AUTRES	----	JOHNSON CONTROLS
VLV_REF	SOUPAPE 2 VOIES N.C.1 1/2", CV=28.9	VG744IRT+3008E	JOHNSON CONTROLS
VOL_MEL1, 2, 3,	ACTUATEUR VOLET 8-13 PSIG W/P	D-3153-1	JOHNSON CONTROLS
VOL_PER1, 2	ACTUATEUR VOLET 8-13 PSI	D-3153-2	JOHNSON CONTROLS
VOL_SEC, DA-1,	ACTUATEUR VOLET	D-4073-2	JOHNSON CONTROLS
⊙	MANOMÈTRE 0-30 psi, 1-1/2"	G2010-5	DWYER

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-0A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
DX-1-5	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	COUVERT	DX-9100-8991	JOHNSON CONTROLS
EP-1	VALVE SOLÉNOÏDE 3 VOIES 110/120V.	V11HAA-115	JOHNSON CONTROLS
EPT-1 à 6	CONVERTISSEUR ÉLECT/PNEUM.	EP-8000-2	JOHNSON CONTROLS
F-1,2	FUSIBLE 2 AMPÈRES	AGC-2	JOHNSON CONTROLS
P-0A	PANNEAU DE CONTRÔLE 24" X 36" X 9"	M8100-2436	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	274VBOX	LEVITON
---	BOÎTE 2020 C/A COUVERT	2020	JOHNSON CONTROLS
PI-1	INDICATEUR PRESSION DIFF.	PD-505-4	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
---	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
TX-1	TRANSFO 120/24 40VA	Y65AS-1	JOHNSON CONTROLS
⊙	MANOMÈTRE 0-30 PSI	G2010-5	JOHNSON CONTROLS



BIBLIOTHÈQUE



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E VR	1	SENTRY 250	RELAIS COURANT -SENTRY
EP-3, 4	2	V11HAA-115	VALVE SOLÉNOÏDE 3 VOIES 110/120 VOLTS
H ALIM	1	H-3610-1001	SONDE HUM. CONDUIT PNEUM.
H_RET	1	RH-3-V-D	SONDE HUM. CONDUIT 0-5V. GENERAL EASTERN
PE	1	P7100-1	RELAIS PNEUMATIQUE/ÉLECT.
R-2, R-3	2	----	RELAIS 24VAC 2PDT
SEL-1	1	----	SÉLECTEUR
T ALIM,EXT	2	TE-6311P-1	SONDE TEMP. CONDUIT NI.
T PIE	1	TE-6314P-I	SONDE DE PIECE NI
TBL-1	1	A11A-1C	BASSE LIMITE TEMP.
TP X	12	T-4002-201	THERMOSTAT PNEUMATIQUE
V_X	12	VG7241XT+3008B	SOUPAPE 2 VOIES N.O. 1/2" CV= 1.8 OU 0.7
VLV_CHA	1	VG7241GT + 3008B	SOUPAPE 2 VOIES N.O. 1/2" CV= 4.6
VLV_HUM	1	----	PAR D'AUTRES
VLV_REF	1	VG7443PT + 3008E	SOUPAPE 2 VOIES N.C.1 1/4" CV= 18.7
VOL_MEL1 à 3,	3	D-3153-1	ACTUATEUR VOLET 8-13 PSIG W/P
VOL_PER1 à 2	2	D-3153-2	ACTUATEUR VOLET 8-13 PSI
VOL_SEC	4	D-4073-2	ACTUATEUR VOLET
DA-1 à 3	4	G2010-5	MANOMÈTRE 0-30 PSI

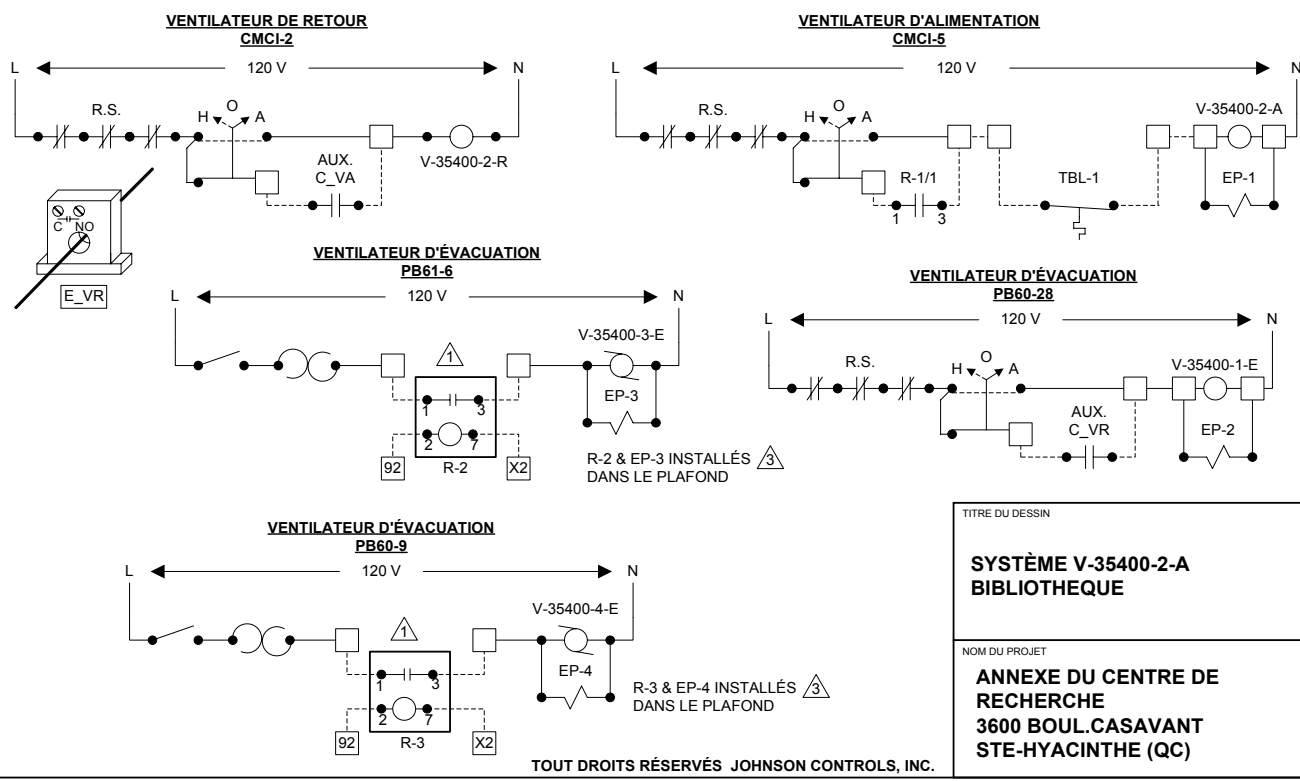
LISTE DE MATÉRIEL PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-10	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	COUVERT
EP-1, 2	2	V11HAA-115	VALVE SOLÉNOÏDE 3 VOIES 110/120V.
EPT-1 à 4	4	EP-8000-2	CONVERTISSEUR ÉLECT/PNEUM.
F-1, 2	2	AGC-2	FUSIBLE 2 AMPÈRES
P-0B	1	M8100-2436	PANNEAU DE CONTRÔLE 24" X 36" X 9"
PDC-1	1	274VBOX	PRISE/INTERRUPTEUR -LEVITON
---	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	PD-505-4	INDICATEUR PRESSION DIFF.
R-1	1	RCPTFU82D1024	RELAIS 24VAC -FEME
---	1	S-408	BASE 8 BROCHES -FEME
TX-1	1	Y65AS-1	TRANSFO 120/24 40VA
	7	G2010-5	MANOMÈTRE 0-30 PSI

SÉQUENCE D'OPÉRATION VOIR DESSIN 4068-56S

NOTE 1 : LES SERPENTINS DE REFFROIDISSEMENT DOIVENT ÊTRE VIDANGÉS ET HIVERNISÉS POUR LA PÉRIODE HIVERNALE.

DIAGRAMME ÉLECTRIQUE



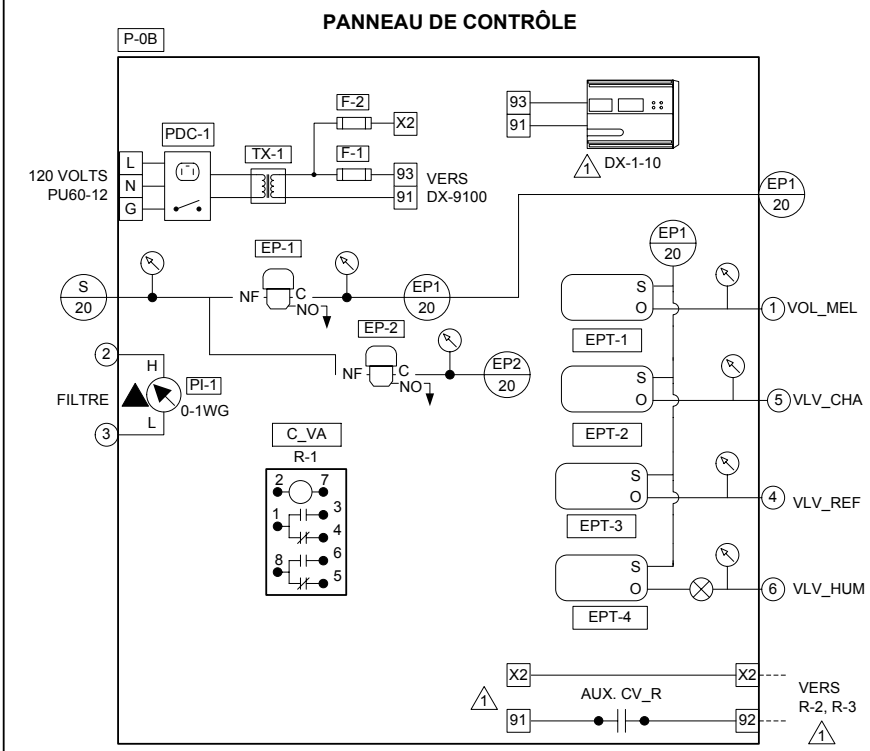
TOUT DROITS RÉSERVÉS JOHNSON CONTROLS, INC.

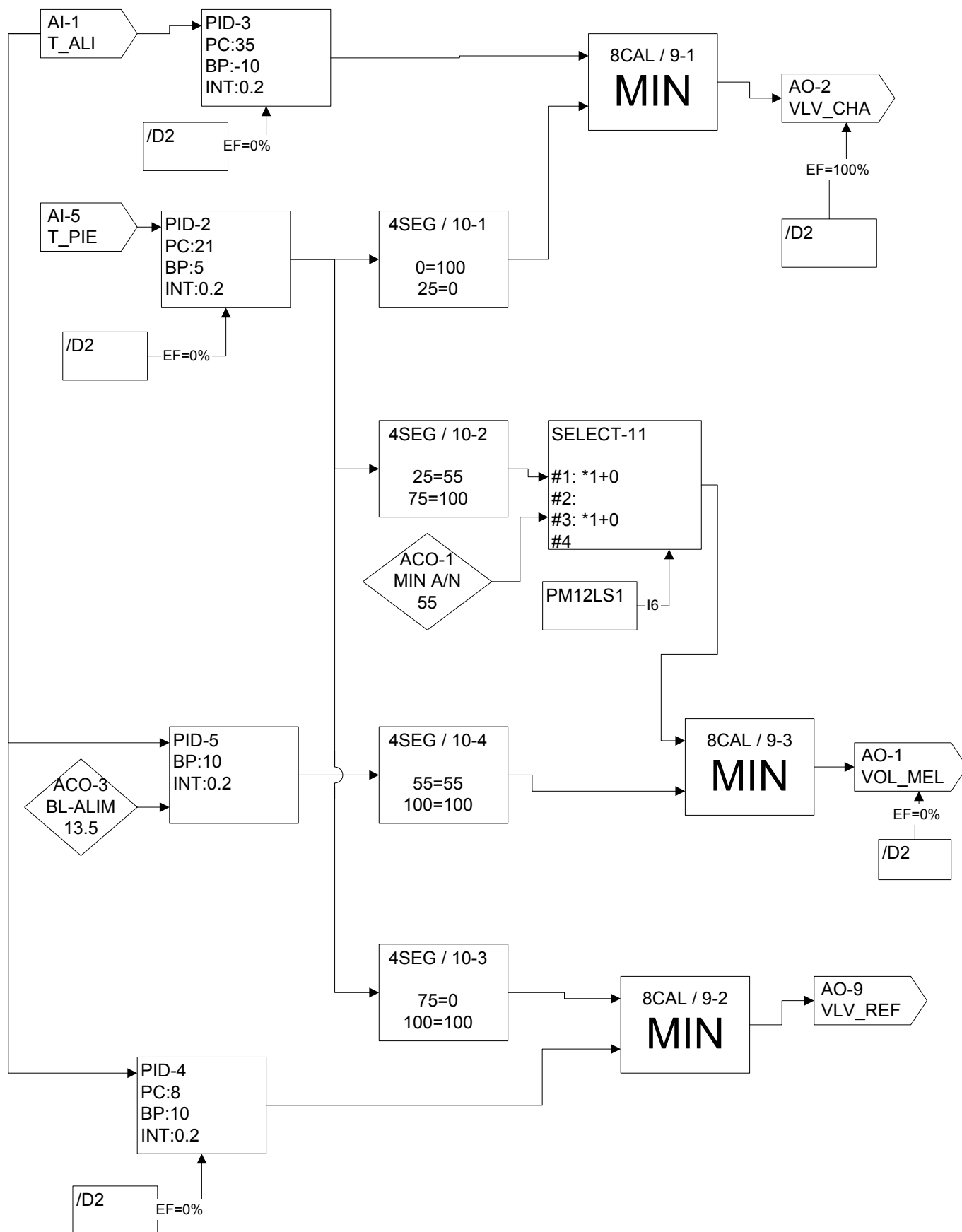
TITRE DU DESSIN

SYSTÈME V-35400-2-A
BIBLIOTHEQUE

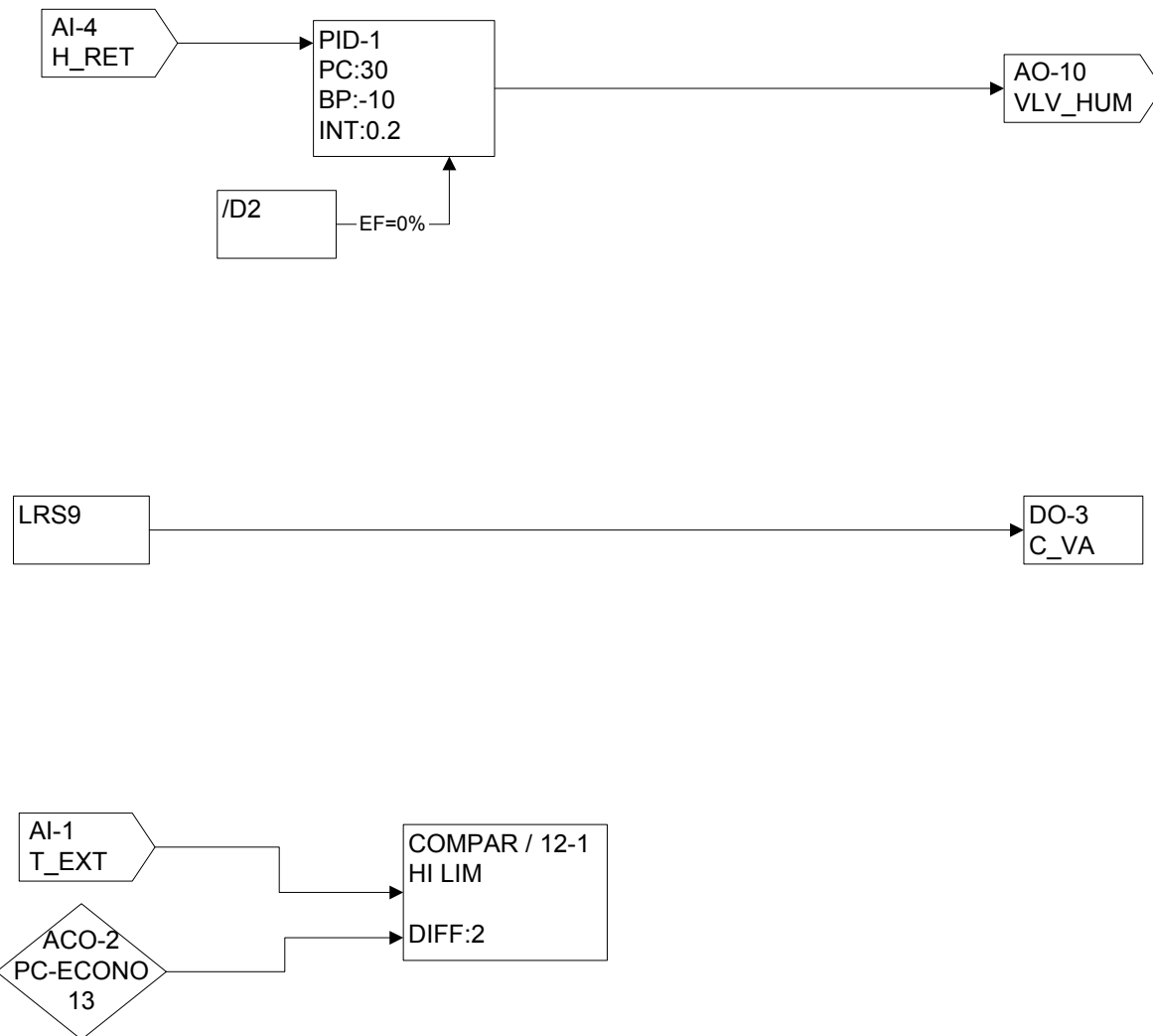
NOM DU PROJET

ANNEXE DU CENTRE DE RECHERCHE
3600 BOUL.CASAVANT
STE-HYACINTHE (QC)





CONTROLE HUMIDITE



FEUILLE DE L'UTILISATEUR

Nom du projet: ANNEXE CRASH
Numéro du projet : 7096-0004
Date de révision : 22-08-97
Adresse du DX-9100 : 10
Numéro du dessin : 4068-056
Système : BIBLIOTHEQUE

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
1	TEMP.AIR NEUF	-45°C	121°C
2	TEMP.ALIMENTATION	-45°C	121°C
3	CO2 RETOUR	0	1200
4	HUMIDITE RETOUR	0	100%
5	TEMP.PIECE	-45°C	121°C
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point	Préscaler
1	OCCUPATION PIECE ON=OCCUPE	1
2	ETAT VENT.RETOUR ON=MARCHE	1
3		1
4		1
5		1
6		1
7		1
8		1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
1	VOLETS MELANGE	PM11NCM	0% = Min. / 100% = Max.
2	VALVE CHAUFFAGE	PM9NCM1	0% = Min. / 100% = Max.
3	COMM.VENT.ALIM.	D1	Off = arrêt / On = marche
4			Off = arrêt / On = marche
5			Off = arrêt / On = marche
6			Off = arrêt / On = marche
7			Off = arrêt / On = marche
8			Off = arrêt / On = marche
9	VALVE REFROIDISSEMENT	PM9NCM2	0% = Min. / 100% = Max.
10	VALVE HUMIDITE	PM1OCM	0% = Min. / 100% = Max.
11			0% = Min. / 100% = Max.
12			0% = Min. / 100% = Max.
13			0% = Min. / 100% = Max.
14			0% = Min. / 100% = Max.

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	30%	X4 HUM.RETOUR	0% = Min. / 100% = Max.
2	21°C	X5 TEMP.PIECE	0-25=CHAUF/25-75=VOLET/75-100=REF
3	21°C	X5 TEMP.PIECE	0% = Min. / 100% = Max.
4	35°C	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
5	13.5°C	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
6			
7			
8			
9	8 CALCULS		
10	4 SEGMENTS		
11	SELECT		
12	COMPARATEUR		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-10	0.2	
2	5	0.2	
3	-10	0.2	
4	-10	0.2	
5	10	0.2	
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	55%	MINIMUM AIR NEUF
2	13°C	POINT CONSIGNE ECONOMIZER
3	13.5°C	BASSE LIMITE MELANGE (CONTROLE VOLETS)
4		
5		
6		
7		
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut (0 = off / 1 = on)	Description des points
1		
2		
3		
4		
5		
6		
7		
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9		
10		
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SYSTÈME V-35400-2-A – BIBLIOTHÈQUE

SÉQUENCE D'OPÉRATION

- Le ventilateur d'alimentation V-2-A est mis en marche par régulateur numérique en fonction du sélecteur local occupé - non occupé; ou en fonction de la cédule horaire établie. Le sélecteur est placé en position inoccupée en temps normal et seule la cédule horaire commande l'arrêt/départ du système. Lorsqu'on se trouve en dehors des heures normales de fonctionnement, le système peut être remis en marche par le sélecteur occupé/inoccupé en plaçant celui-ci à « occupé ». Le ventilateur de retour V-2-R est mis en marche par entrebarrage électrique avec le ventilateur V-2-A. Les ventilateurs d'évacuation V-35400-1-E, V-35400-3-E et V-35400-4-E sont mis en marche par entrebarrage électrique avec le ventilateur V-2-R.
- Au départ du ventilateur d'alimentation, les volets motorisés des persiennes ouvrent et le volet de sécurité ferme.
- Au départ des ventilateurs d'évacuation leur volet d'évacuation d'air respectifs ouvre.
- Sur preuve de marche, détectée par un relais de courant sur le ventilateur de retour, la séquence suivante est activée :
 - L'humidificateur est modulé de façon à maintenir l'humidité relative dans la gaine de retour au point de consigne requis. En tout temps, le transmetteur d'humidité relative d'alimentation (localisé à 5 M en aval du distributeur de vapeur) assure un taux d'humidité relative maximal en limitant la capacité de l'humidificateur.
 - Contrôle de la température de pièce
 - .1 La température de pièce est maintenue par la sonde localisée dans la bibliothèque et le contrôleur numérique en opérant :
 - .1 lorsque la température extérieure est égale ou inférieure au point de consigne ECONO.
 - .1 la section des volets d'air frais, de retour et d'évacuation : un minimum de 18% d'air frais est requis jusqu'à un maximum de 100%.
 - .2 les soupapes des convecteurs du chauffage périmétrique et en séquence le serpentín de face et d'évitement.
 - .2 lorsque la température extérieure est supérieure au point de consigne ECONO.
 - .3 la soupape d'eau refroidie; la section des volets est positionnée pour un minimum de 18% d'air frais.
 - .4 la température de pièce des bureaux fermés et du corridor est maintenue par un thermostat pneumatique opérant en séquence :
 - .1 le serpentín électrique et la soupape du convecteur du chauffage périmétrique.
- Sur une baisse de température à 8°C de l'air d'alimentation, le système arrête.

- Les ventilateurs sont arrêtés par le régulateur numérique. Cette condition entraîne les actions suivantes :
 - .1 Valve de modulation d'eau chaude ouverte
 - .2 Volets d'air frais et d'évacuation fermés, volets de sécurité et de retour ouverts
 - .3 Humidificateur à l'arrêt
 - .4 Valve de modulation d'eau froide fermée

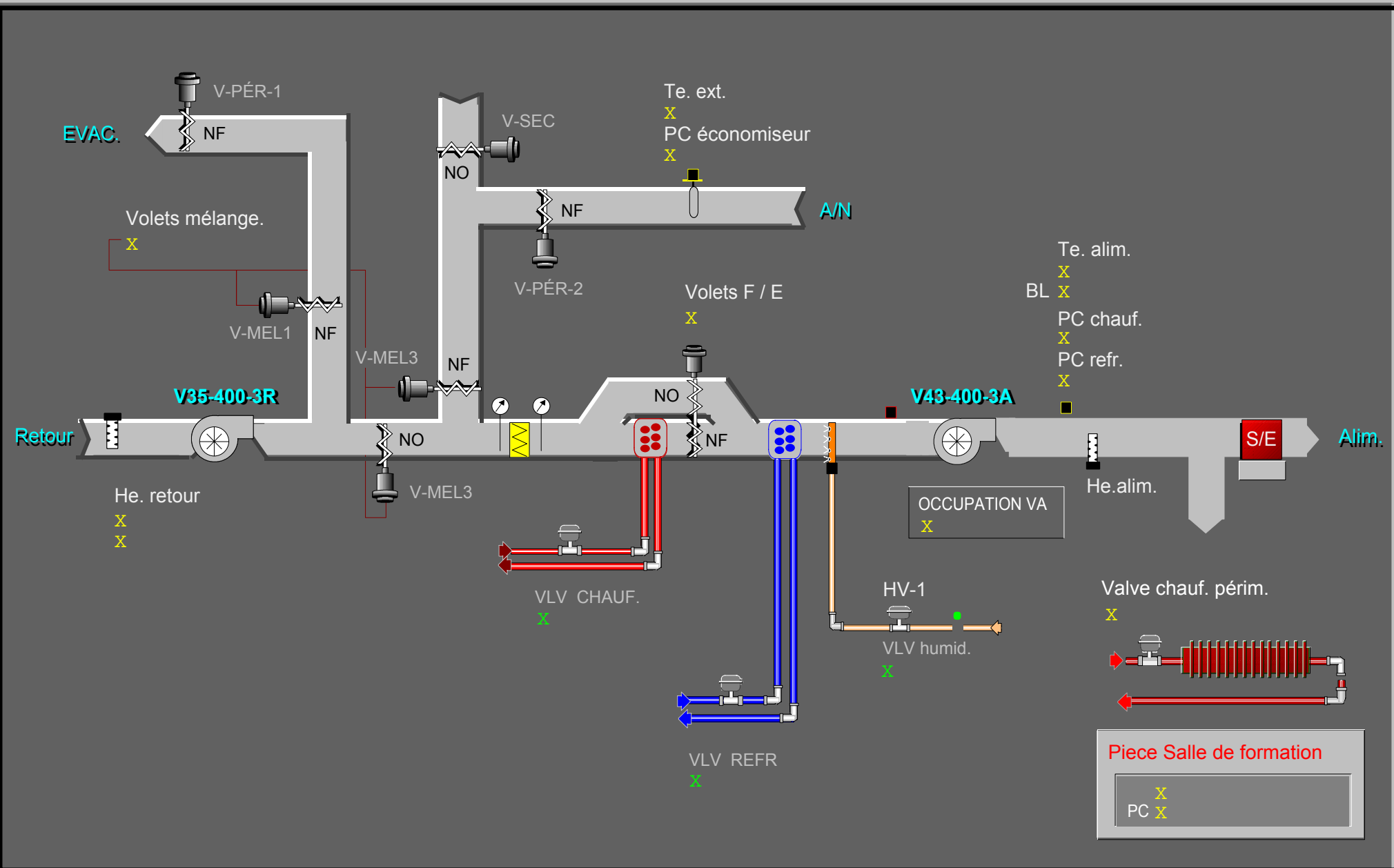
Liste de points		Logiciel					Info sur régulateurs					Info sur panneaux					Appareil intermédiaire					Appareil hors panneau				Détail	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unité d'affichage	Type rég.	Tronc N2	Adr. N2	Destination câble	Type de module	Terminaison	Pann.	Emplacement du panneau	No de logem.	Dessin de référence	No de câble	Câble/tube	Entrée terminaison	Appareil	Sortie terminaison	Emplac.	Câble/tube	Terminaison	Appareil	Emplac.	Détail référ.	Commentaire
		V-354002				DX9100						P-0B	SALLE MÉCANIQUE	04068-57													Power to Controller
		V-354002				DX9100	1	10				P-0B	SALLE MÉCANIQUE	04068-57													N2 Trunk
DI-1		V-354002	OCC_PIE	Oco/inocc. Salle de Formation	Inocc. Occ.	DX9100	1	10	DI-1		DI#_COM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-1						2/22	Device dependent	Contact (NO)		D70	
DI-2		V-354002	E_VR	Etat ventilat. air repri	Arret Marche	DX9100	1	10	DI-2		DI#_COM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-2						2/18	2-vis	Sentry 250		D70	
DI-3		V-354002				DX9100	1	10	DI-3			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-3											
DI-4		V-354002				DX9100	1	10	DI-4			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-4											
DI-5		V-354002				DX9100	1	10	DI-5			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-5											
DI-6		V-354002				DX9100	1	10	DI-6			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-6											
DI-7		V-354002				DX9100	1	10	DI-7			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-7											
DI-8		V-354002				DX9100	1	10	DI-8			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DI-8											
AO-1		V-354002	VOL_MEL	Volet air melange	%	DX9100	1	10	AO-1		AO#_AOCOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-1	2/18	+,-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU.		D22	
AO-2		V-354002	VLV_CHA	Valve seep. chauff.	%	DX9100	1	10	AO-2		AO#_AOCOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-2	2/18	+,-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU.		D22	
AO-9		V-354002	VLV_REF	Valve seep. refroid.	%	DX9100	1	10	AO-9		AO#_AOCOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-9	2/18	+,-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU.		D22	
AO-10		V-354002	VLV_HUM	Valve humidif.	%	DX9100	1	10	AO-10		AO#_AOCOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-10	2/18	+,-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU.		D22	
AO-11		V-35400				DX9100	1	10	AO-11			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-11											
AO-12		V-354002				DX9100	1	10	AO-12			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-12											
AO-13		V-354002				DX9100	1	10	AO-13			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-13											
AO-14		V-354002				DX9100	1	10	AO-14			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AO-14											
DO-3		V-354002	C_VA	Comm. vent. aliment	Arret Marche	DX9100	1	10	DO-3		DO#_24V	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DO-3	2/18	COIL	RELAY	COM.NO		2/14	See starter detail	Starter (NO)		D51	
DO-4		V-354002				DX9100	1	10	DO-4			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DO-4											
DO-5		V-354002				DX9100	1	10	DO-5			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DO-5											
DO-6		V-354002				DX9100	1	10	DO-6			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DO-6											
DO-7		V-354002				DX9100	1	10	DO-7			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DO-7											
DO-8		V-354002				DX9100	1	10	DO-8			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-DO-8											
AI-1		V-354002	T_EXT	Temp. air neuf	Deg C	DX9100	1	10	AI-1		AI#_AICOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-1						2/18	2-Wire	TE		D3	
AI-2		V-354002	T_ALI	Temp alimentation	Deg C	DX9100	1	10	AI-2		AI#_AICOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-2						2/18	2-Wire	TE		D3	
AI-3		V-354002				DX9100	1	10	AI-3			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-3											
AI-4		V-354002	H_RET	Humidité air retour	% HR	DX9100	1	10	AI-4		AI#_AICOM+15	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-4						3/18	2-Wire	HE		D3	
AI-5		V-354002	T_PIE	Temperature piece	Deg C	DX9100	1	10	AI-5		AI#_AICOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-5						2/18	2-Wire	TE		D3	
AI-6		V-354002				DX9100	1	10	AI-6		AI#_AICOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-6						2/18				D3	
AI-7		V-354002				DX9100	1	10	AI-7		AI#_AICOM	P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-7						2/18				D3	
AI-8		V-354002				DX9100	1	10	AI-8			P-0B	SALLE MÉCANIQUE	04068-57		0B-10-AI-8											

LISTE DE MATÉRIEL POUR LE SYSTÈME V-35400-2-A

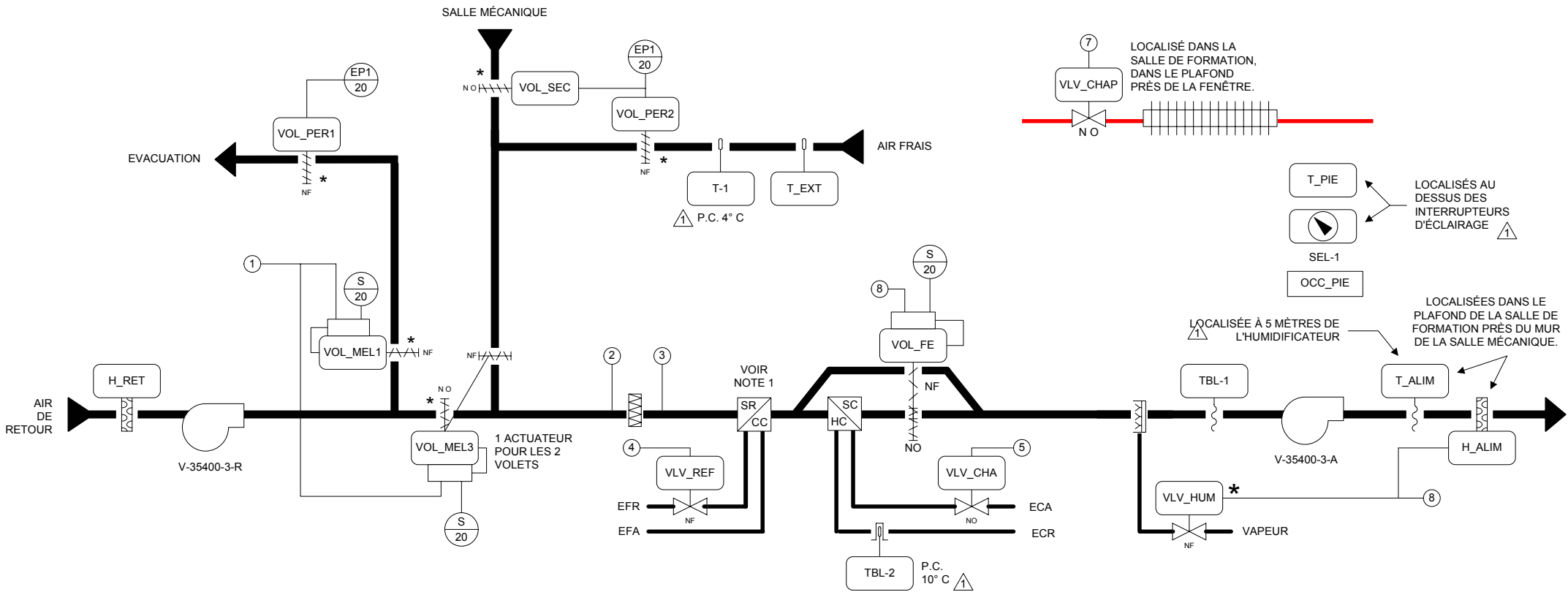
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E VR	RELAIS COURANT	SENTRY 250	SENTRY
EP-3,4	VALVE SOLÉNOÏDE 3 VOIES 110/120 VOLTS	V11HAA-115	JOHNSON CONTROLS
H ALIM	SONDE HUM. CONDUIT PNEUM.	H-3610-1001	JOHNSON CONTROLS
H RET	SONDE HUM. CONDUIT 0-5V.	RH-3-V-D	GENERAL EASTERN
PE	RELAIS PNEUMATIQUE/ÉLECT.	P7100-1	JOHNSON CONTROLS
R-2, R-3	RELAIS 24VAC 2PDT	----	JOHNSON CONTROLS
SEL-1	SÉLECTEUR	----	JOHNSON CONTROLS
T ALIM,EXT	SONDE TEMP. CONDUIT NI.	TE-6311P-1	JOHNSON CONTROLS
T PIE	SONDE DE PIECE NI	TE-6314P-I	JOHNSON CONTROLS
TBL-1	BASSE LIMITE TEMP.	A11A-1C	JOHNSON CONTROLS
TP X	THERMOSTAT PNEUMATIQUE	T-4002-201	JOHNSON CONTROLS
V X	SOUPAPE 2 VOIES N.O. 1/2", CV= 1.8 OU 0.7	VG7241XT+3008B	JOHNSON CONTROLS
VLV CHA	SOUPAPE 2 VOIES N.O. 1/2", CV=4.6	VG7241GT+3008B	JOHNSON CONTROLS
VLV HUM	PAR D'AUTRES	----	JOHNSON CONTROLS
VLV REF	SOUPAPE 2 VOIES N.C.1 1/4" CV= 18.7	VG7443PT+3008E	JOHNSON CONTROLS
VOL MEL1, 2, 3	ACTUATEUR VOLET 8-13 PSIG W/P	D-3153-1	JOHNSON CONTROLS
VOL PER1, 2	ACTUATEUR VOLET 8-13 PSI	D-3153-2	JOHNSON CONTROLS
VOL_SEC, DA-1, 2, 3	ACTUATEUR VOLET	D-4073-2	JOHNSON CONTROLS
☺	MANOMÈTRE 0-30 PSI	G2010-5	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-0B

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
DX-1-10	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	COUVERT	DX-9100-8991	JOHNSON CONTROLS
EP-1, 2	VALVE SOLÉNOÏDE 3 VOIES 110/120V.	V11HAA-115	JOHNSON CONTROLS
EPT-1 à 4	CONVERTISSEUR ÉLECT/PNEUM.	EP-8000-2	JOHNSON CONTROLS
F-1,2	FUSIBLE 2 AMPÈRES	AGC-2	JOHNSON CONTROLS
P-0B	PANNEAU DE CONTRÔLE 24" X 36" X 9"	M8100-2436	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	274VBOX	LEVITON
---	BOÎTE 2020 C/A COUVERT	2020	JOHNSON CONTROLS
PI-1	INDICATEUR PRESSION DIFF.	PD-505-4	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
---	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
TX-1	TRANSFO 120/24 40VA	Y65AS-1	JOHNSON CONTROLS
☺	MANOMÈTRE 0-30 PSI	G2010-5	JOHNSON CONTROLS



SALLE DE FORMATION



LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_VR	1	SENTRY 250	RELAIS COURANT -SENTRY
H_ALIM	1	H-3610-1001	SONDE HUM. CONDUIT PNEUM.
H_RET	1	RH3-V-D	SONDE HUM. CONDUIT 0-5V.
SEL-1	1	----	GENERAL EASTERN
SEL-1	1	----	SÉLECTEUR
T_ALIM,EXT	2	TE-6311P-1	SONDE TEMP. CONDUIT NI.
T_PIE	1	TE-6314P-I	SONDE DE PIECE NI
TBL-1	1	A11A-1C	BASSE LIMITE TEMP.
TBL-2, T-1	2	A19ABC-41C	BASSE LIMITE TEMP. MANUELLE
VLV_CHA	1	VG7241ET + 3008B	SOUPAPE 2 VOIES N.O. 1/2"
VLV_CHAP	1	VG7241ET + 3008B	CV= 1.8
VLV_CHAP	1	VG7241ET + 3008B	SOUPAPE 2 VOIES N.C. 1/2"
VLV_HUM	1	----	CV= 1.8
VLV_REF	1	VG7441GT + 3008E	PAR D'AUTRES
VLV_REF	1	VG7441GT + 3008E	SOUPAPE 2 VOIES N.C. 1/2"
VLV_REF	1	VG7441GT + 3008E	CV= 4.6
VOL_MEL1 à 3,	4	D-3153-1	ACTUATEUR VOLET
VOL_FE	2	D-3153-2	8-13 PSIG W/P
VOL_PER1 à 2	2	D-3153-2	ACTUATEUR VOLET 8-13 PSI
VOL_SEC	1	D-4073-2	ACTUATEUR VOLET

LISTE DE MATÉRIEL PANNEAU

IDENT.	QTÉ	MODÈLE	DESCRIPTION
DX-1-15	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
DX-1-15	1	DX-9100-8990	BASE DE MONTAGE
DX-1-15	1	DX-9100-8991	COUVERT
EP-1	1	V11HAA-115	VALVE SOLÉNOÏDE 3 VOIES 110/120V.
EPT-1 à 6	6	EP-8000-2	CONVERTISSEUR ÉLECT/PNEUM.
F-1,2	2	AGC-2	FUSIBLE 2 AMPÈRES
P-0C	1	M8100-2436	PANNEAU DE CONTRÔLE 24" X 36" X 9"
PDC-1	1	274VBOX	PRISE/INTERRUPTEUR -LEVITON
---	1	2020	BOÎTE 2020 C/A COUVERT
PI-1	1	PD-505-4	INDICATEUR PRESSION DIFF.
R-1	1	RCPTFU82D1024	RELAIS 24VAC -FEME
---	1	S-408	BASE 8 BROCHES -FEME
TX-1	1	Y65AS-1	TRANSFO 120/24 40VA
TX-1	8	G2010-5	MANOMÈTRE 0-30 PSI

PANNEAU DE CONTRÔLE

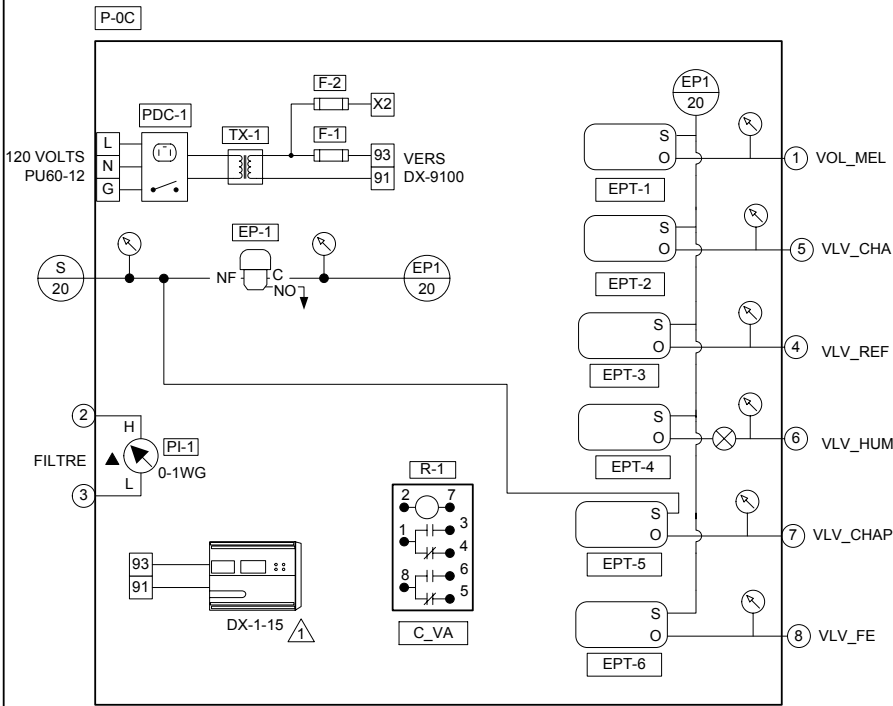
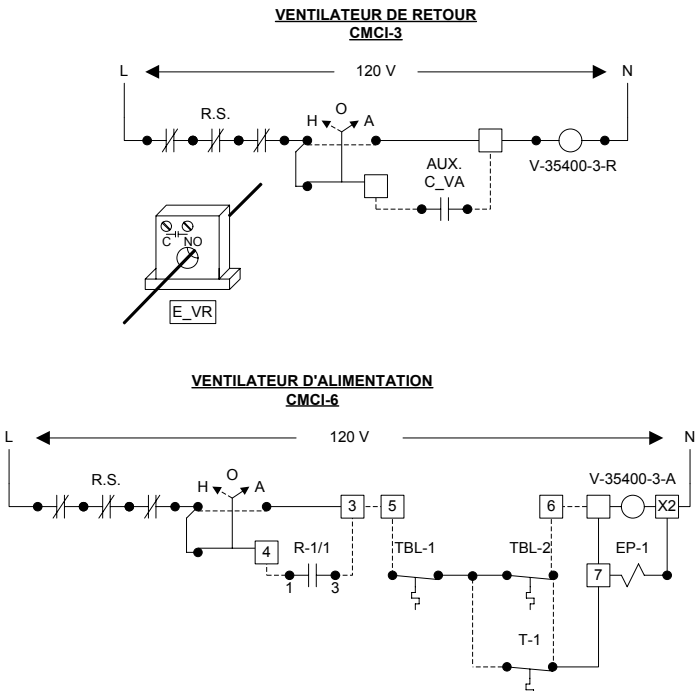


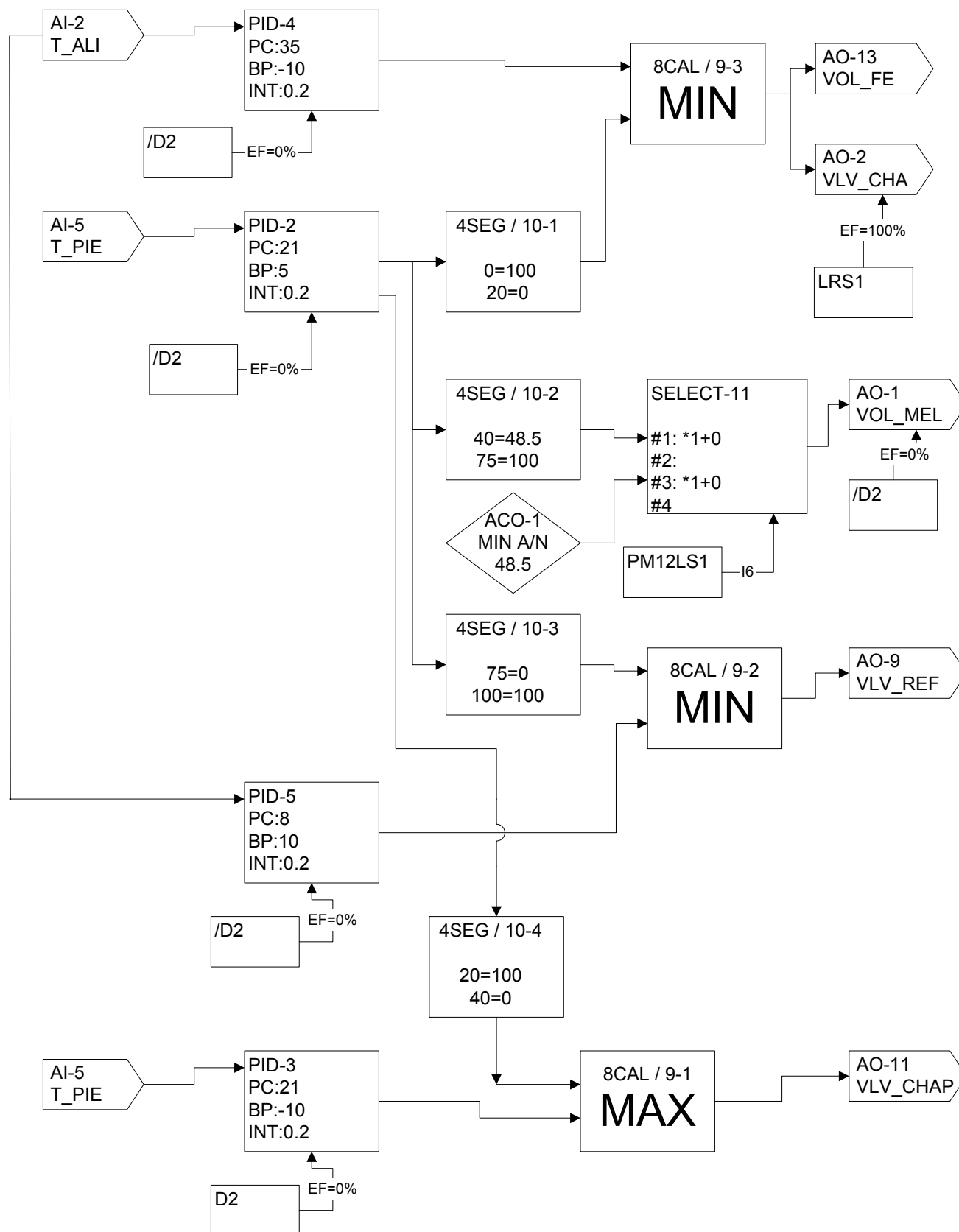
DIAGRAMME ÉLECTRIQUE



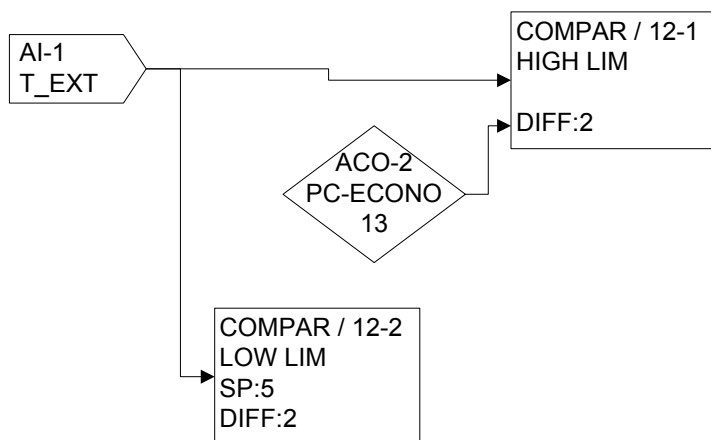
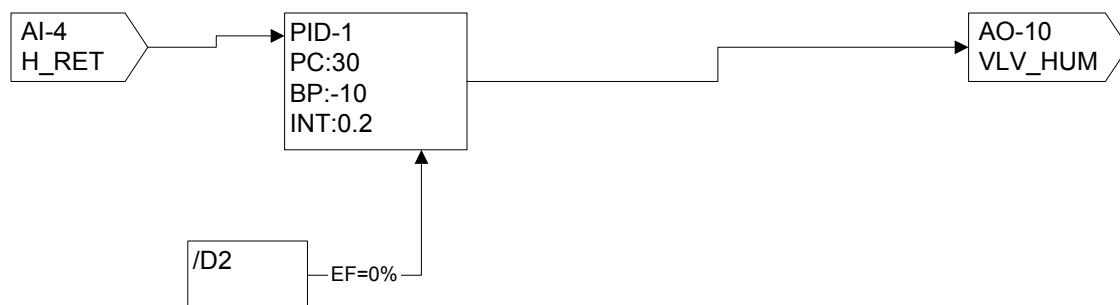
SÉQUENCE D'OPÉRATION VOIR DESSIN 4068-56S

NOTE 1 : LES SERPENTINS DE REFOUILLISSEMENT DOIVENT ÊTRE VIDANGÉS ET HIVERNISÉS POUR LA PÉRIODE HIVERNALE.

TITRE DU DESSIN											
SYSTÈME V-35400-3-A SALLE DE FORMATION				2		TEL QUE CONSTRUIT				97/09/17 A.B.	
				1		CONSTRUCTION				97/05/29 A.B.	
		DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN		DATE PAR	
Représentant J.C.R.		Gérant De Projet G.S.		Concepteur M.C.D.		Dessin Par I.M. DATE 96/12/11		APPROUVE Par DATE			
NOM DU PROJET		<div>JOHNSON CONTROLS</div> <div>Groupe de la régulation</div>				Information Succursale		SLW: 000000			
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)						355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT		7096-0004	
								NUMÉRO DE DESSIN		4068-058	



PROJET : ANNEXE CENTRE DE RECHERCHE	CONTRAT : 7096-0004	Contrôleur : DX-1-15	Système : SYST. V-35400-3-A	2 2
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FEUILLE DE L'UTILISATEUR

Nom du projet: ANNEXE CRASH
Numéro du projet : 7096-0004
Date de révision : 22-08-97
Adresse du DX-9100 : 15
Numéro du dessin : 4068-058
Système : SALLE DE FORMATION

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
1	TEMP.AIR NEUF	-45°C	121°C
2	TEMP.ALIMENTATION	-45°C	121°C
3			
4	HUMIDITE RETOUR	0	100%
5	TEMP.PIECE	-45°C	121°C
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point	Préscaler
1	OCCUPATION PIECE	ON=OCCUPE
2	ETAT VENT.RETOUR	ON=MARCHE
3		
4		
5		
6		
7		
8		

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
1	VOLETS MELANGE	PM11NCM	0% = Min. / 100% = Max.
2	VALVE CHAUFFAGE	PM9NCM3	0% = Min. / 100% = Max.
3	COMM.VENT.ALIM.	D1	Off = arrêt / On = marche
4			Off = arrêt / On = marche
5			Off = arrêt / On = marche
6			Off = arrêt / On = marche
7			Off = arrêt / On = marche
8			Off = arrêt / On = marche
9	VALVE REFROIDISSEMENT	PM9NCM2	0% = Min. / 100% = Max.
10	VALVE HUMIDITE	PM1OCM	0% = Min. / 100% = Max.
11	VALVE CONV.PERIM.	PM9NCM1	0% = Min. / 100% = Max.
12	VOLET FACE/EVITEMENT	PM9NCM3	0% = Min. / 100% = Max.
13			0% = Min. / 100% = Max.
14			0% = Min. / 100% = Max.

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	30%	X4 HUM.RETOUR	0% = Min. / 100% = Max.
2	21°C	X5 TEMP.PIECE	0-40=CHAUF/40-75=VOLET/75-100=REF
3	21°C	X5 TEMP.PIECE	0% = Min. / 100% = Max.
4	35°C	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
5	8°C	X2 TEMP.ALIM.	0% = Min. / 100% = Max.
6			
7			
8			
9	8 CALCULS		
10	4 SEGMENTS		
11	SELECT		
12	COMPARATEUR		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-10	0.2	
2	5	0.2	
3	-10	0.2	
4	-10	0.2	
5	10	0.2	
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	48.5%	MINIMUM AIR NEUF
2	13°C	POINT CONSIGNE ECONOMIZER
3		
4		
5		
6		
7		
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut (0 = off / 1 = on)	Description des points
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
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SYSTÈME V-35400-3-A – SALLE DE FORMATION

SÉQUENCE D'OPÉRATION

- Le ventilateur d'alimentation V-3-A est mis en marche par régulateur numérique en fonction du sélecteur local occupé - non occupé; ou en fonction de la cédule horaire établie. Le sélecteur est placé en position inoccupé en temps normal et seule la cédule horaire commande l'arrêt/départ du système. Lorsqu'on se trouve en dehors des heures normales de fonctionnement, le système peut être remis en marche par le sélecteur occupé/inoccupé en plaçant celui-ci à « occupé ». Le ventilateur de retour V-3-R est mis en marche par entrebarrage électrique avec le ventilateur V-3-A.
- Au départ du ventilateur d'alimentation, les volets motorisés des persiennes ouvrent et le volet de sécurité ferme.
- Sur preuve de marche, détectée par un relais de courant sur le ventilateur de retour, la séquence suivante est activée :
 - L'humidificateur est modulé de façon à maintenir l'humidité relative dans la gaine de retour au point de consigne requis. En tout temps, le transmetteur d'humidité relative d'alimentation (localisé à 5 M en aval du distributeur de vapeur) assure un taux d'humidité relative maximal en limitant la capacité de l'humidificateur.
 - Contrôle du serpentin de face et évitement
 - .1 lorsque la température extérieure est inférieure à 5°C, la soupape à 2 voies du serpentin de face et évitement est complètement ouverte et le contrôle de la température est effectué par le jeu des volets de face et évitement.
 - .2 lorsque la température extérieure est supérieure à 5°C, la soupape à 2 voies du serpentin de face et évitement opère en unisson avec le volet de face et évitement.
- Contrôle de la température de pièce
 - .1 La température de pièce est maintenue par la sonde localisée dans la salle de formation et le contrôleur numérique en opérant :
 - .1 lorsque la température extérieure est égale ou inférieure au point de consigne ECONO.
 - .1 la section des volets d'air frais, de retour et d'évacuation : un minimum de 18% d'air frais est requis jusqu'à un maximum de 100%.
 - .2 les soupapes des convecteurs du chauffage périmétrique et en séquence le serpentin de face et évitement.
 - .2 lorsque la température extérieure est supérieure au point de consigne ECONO :
 - .1 la soupape d'eau refroidie; la section des volets est positionnée pour un minimum de 48.5% d'air frais.

- Sur une baisse de température à 8°C de l'air d'alimentation ou sur une baisse de température du retour d'eau chaude à 10°C, le système arrête; cette séquence est annulée lorsque la température extérieure est supérieure à 5°C.
- Les ventilateurs sont arrêtés par le régulateur numérique. Cette condition entraîne les actions suivantes :
 - .1 Valve de modulation d'eau chaude ouverte
 - .2 Volets d'air frais et d'évacuation fermés, volets de sécurité et de retour ouverts
 - .3 Humidificateur à l'arrêt
 - .4 Valve de modulation d'eau froide fermée
- Lorsque le système de ventilation est à l'arrêt, la sonde de température de pièce contrôle la soupape du convecteur du chauffage périphérique.

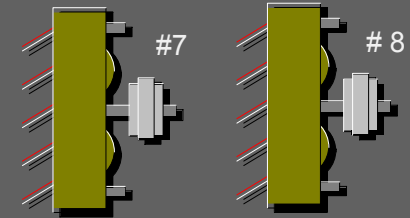
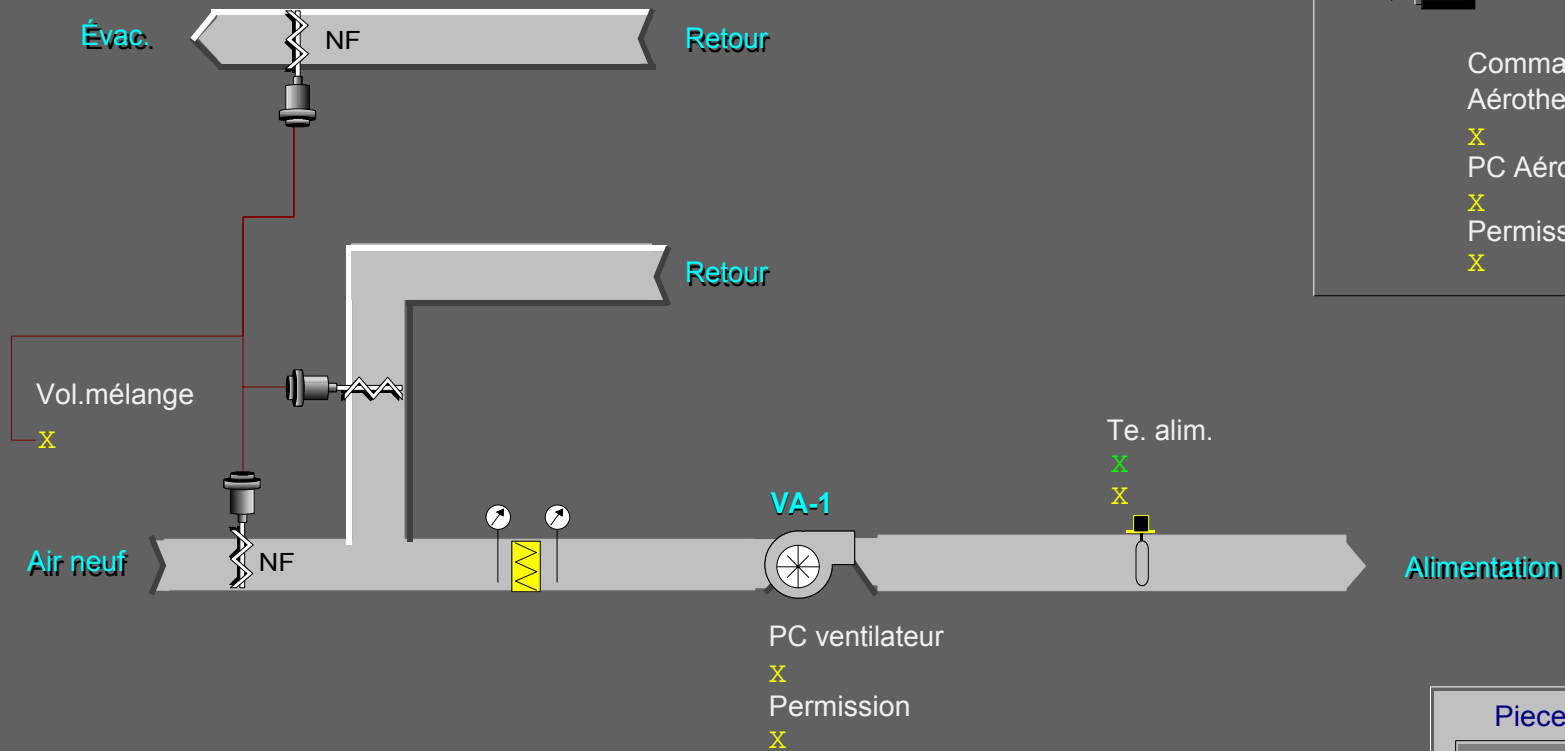
Liste de points		Logiciel					Info sur régulateurs					Info sur panneaux					Appareil intermédiaire					Appareil hors panneau					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unité d'affichage	Type régul.	Tronc N2	Adr. N2	Destination câble	Type de module	Terminaison	Pann.	Emplacement du panneau	No de logem.	Dessin de référence	No de câble	Câble/tube	Entrée terminaison	Appareil	Sortie terminaison	Emplac.	Câble/tube	Terminaison	Appareil	Emplac.	Détail réf.	Commentaire
		V-354003										P-0C	SALLE MÉCANIQUE		4068-58												Power to Controller
		V-354003										P-0C	SALLE MÉCANIQUE		4068-58												N2 Trunk
	DI-1	V-354003	OCCL PIE	Occ/inocc. Salle de Formation	Inocc. Occ.	DX9100	1	15	DI-1		DI# COM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-1					2/22	Device dependent	Contact (NO)	D70		
	DI-2	V-354003	E_VR	Etat ventilat. air repri	Arret Marche	DX9100	1	15	DI-2		DI# COM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-2					2/18	2-vis	Sentry 250	D70		
	DI-3	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-3										
	DI-4	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-4										
	DI-5	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-5										
	DI-6	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-6										
	DI-7	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-7										
	DI-8	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DI-8										
	AO-1	V-354003	VOL_MEL	Volet air melange	%	DX9100	1	15	AO-1		AO# AOCOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-1	+-	EP-8000	SUPPLY.O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-2	V-354003	VLV_CHA	Valve serp. chauff.	%	DX9100	1	15	AO-2		AO# AOCOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-2	+-	EP-8000	SUPPLY.O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-9	V-354003	VLV_REF	Valve serp. refroid.	%	DX9100	1	15	AO-9		AO# AOCOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-9	+-	EP-8000	SUPPLY.O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-10	V-354003	VLV_HUM	Valve humidif.	%	DX9100	1	15	AO-10		AO# AOCOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-10	+-	EP-8000	SUPPLY.O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-11	V-354003	VLV_CHAP	Valve convecteur périmétrique	%	DX9100	1	15	AO-11		AO# AOCOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-11	+-	EP-8000	SUPPLY.O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-12	V-354003	VOL_FE	Volet face-évitement	%	DX9100	1	15	AO-12		AO# AOCOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-12	+-	EP-8000	SUPPLY.O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-13	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-13										
	AO-14	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AO-14										
	DO-3	V-354003	C_VA	Comm. vent. aliment.	Arret Marche	DX9100	1	15	DO-3		DO# 24V	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DO-3		COIL	RELAY	COM.NO	2/14	See starter detail	Starter (NO)	D51		
	DO-4	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DO-4										
	DO-5	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DO-5										
	DO-6	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DO-6										
	DO-7	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DO-7										
	DO-8	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-DO-8										
	AI-1	V-354003	T_EXT	Temp. air neuf	Deg C	DX9100	1	15	AI-1		AI# AICOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-1					2/18	2-Wire	TE		D3	
	AI-2	V-354003	T_ALI	Temp alimentation	Deg C	DX9100	1	15	AI-2		AI# AICOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-2					2/18	2-Wire	TE		D3	
	AI-3	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-3										
	AI-4	V-354003	H_RET	Humidité air retour	% HR	DX9100	1	15	AI-4		AI# AICOM+15	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-4					3/18	2-Wire	HE		D3	
	AI-5	V-354003	T_PIE	Temperature piece	Deg C	DX9100	1	15	AI-5		AI# AICOM	P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-5					2/18	2-Wire	TE		D3	
	AI-6	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-6										
	AI-7	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-7										
	AI-8	V-354003										P-0C	SALLE MÉCANIQUE		4068-58		0C-15-AI-8										

LISTE DE MATÉRIEL POUR LE SYSTÈME V-35400-3-A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E VR	RELAIS COURANT	SENTRY 250	SENTRY
H ALIM	SONDE HUM. CONDUIT PNEUM.	H-3610-1001	JOHNSON CONTROLS
H RET	SONDE HUM. CONDUIT 0-5V.	RH3-V-D	GENERAL EASTERN
SEL-1	SÉLECTEUR	----	JOHNSON CONTROLS
T ALIM,EXT	SONDE TEMP. CONDUIT NI.	TE-6311P-1	JOHNSON CONTROLS
T PIE	SONDE DE PIECE NI	TE-6314P-I	JOHNSON CONTROLS
TBL-1	BASSE LIMITE TEMP.	A11A-1C	JOHNSON CONTROLS
TBL-2, T-1	BASSE LIMITE TEMP. MANUELLE	A19ABC-41C	JOHNSON CONTROLS
VLV_CHA	SOUPAPE 2 VOIES N.O. 1/2", CV= 1.8	VG7241ET+3008B	JOHNSON CONTROLS
VLV_CHAP	SOUPAPE 2 VOIES N.C. 1/2", CV= 1.8	VG7241ET+3008B	JOHNSON CONTROLS
VLV_HUM	PAR D'AUTRES	----	JOHNSON CONTROLS
VLV_REF	SOUPAPE 2 VOIES N.C. 1/2", CV= 4.6	VG7441GT+3008E	JOHNSON CONTROLS
VOL_MEL1, 2, 3, VOL_FE	ACTUATEUR VOLET 8-13 PSIG W/P	D-3153-1	JOHNSON CONTROLS
VOL_PER1, 2	ACTUATEUR VOLET 8-13 PSI	D-3153-2	JOHNSON CONTROLS
VOL_SEC	ACTUATEUR VOLET	D-4073-2	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-0C

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
DX-1-15	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	COUVERT	DX-9100-8991	JOHNSON CONTROLS
EP-1	VALVE SOLÉNOÏDE 3 VOIES 110/120V.	V11HAA-115	JOHNSON CONTROLS
EPT-1 à 6	CONVERTISSEUR ÉLECT/PNEUM.	EP-8000-2	JOHNSON CONTROLS
F-1,2	FUSIBLE 2 AMPÈRES	AGC-2	JOHNSON CONTROLS
P-0C	PANNEAU DE CONTRÔLE 24" X 36" X 9"	M8100-2436	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	274VBOX	LEVITON
---	BOÎTE 2020 C/A COUVERT	2020	JOHNSON CONTROLS
PI-1	INDICATEUR PRESSION DIFF.	PD-505-4	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
---	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
TX-1	TRANSFO 120/24 40VA	Y65AS-1	JOHNSON CONTROLS
⊗	MANOMÈTRE 0-30 PSI	G2010-5	JOHNSON CONTROLS



Comande
Aérothermes

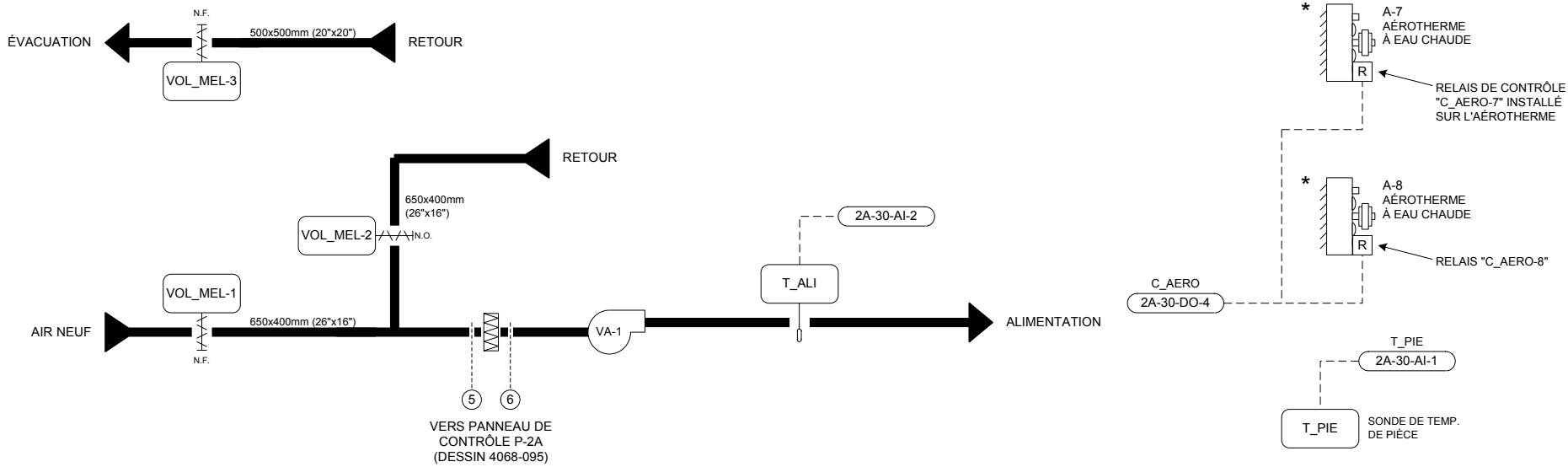
X
PC Aéro.
X
Permission
X

Piece F-301

X



SYSTÈME VA-1
(VENTILATION DE LA SALLE MÉCANIQUE F-301)



LISTE DE MATÉRIEL

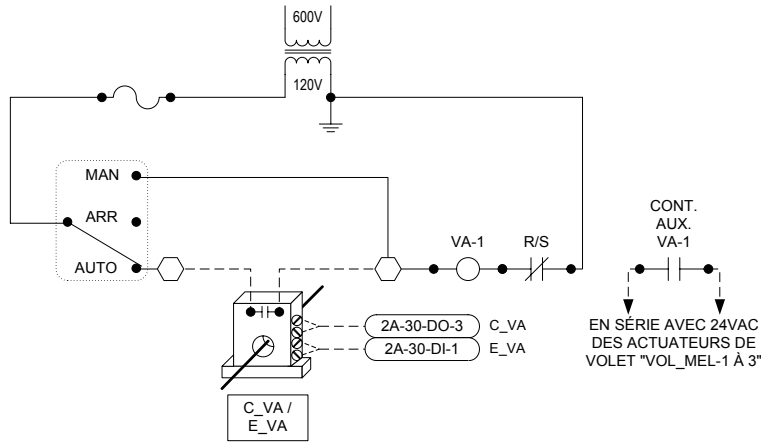
IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-7, 8	2	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VA / E_VA	2	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	1	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP - VERIS
VOL_MEL-1, 2, 3	3	M9206-GGA-2	ACTUATEUR DE VOLET MODULANT, 24VAC, 0-10VDC
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI

SÉQUENCE D'OPÉRATION

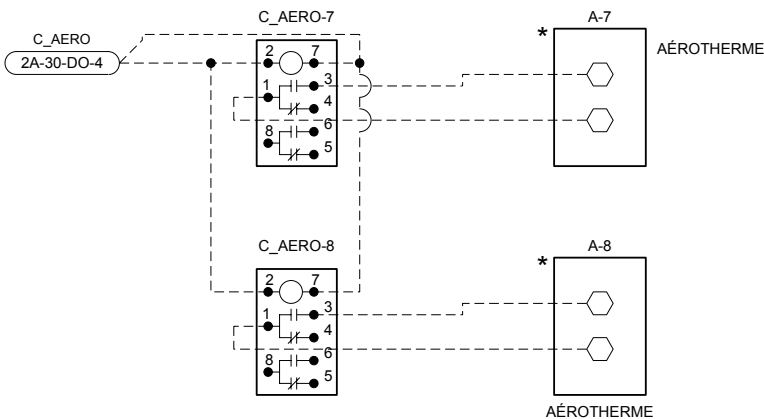
- Sur une hausse de température de pièce (T_PIE) supérieure à 24°C, le régulateur numérique démarre le ventilateur d'alimentation (VA-1) et module les volets de mélange (VOL_MEL-1 à 3) afin de maintenir la température d'alimentation au point de consigne (P.C. 13°C, ajustable).
- Lorsque la température de la pièce redescend sous 23°C, le ventilateur est arrêté et les volets retournent à leur position normale.
- Sur une baisse de température sous 18°C, les aérothermes sont démarrés jusqu'à ce que la température de la pièce ait atteint 19°C.
- Une alarme sera générée à la centrale sur non-concordance entre l'état (E_VA) et la commande (C_VA) du ventilateur d'alimentation.

DIAGRAMME ÉLECTRIQUE

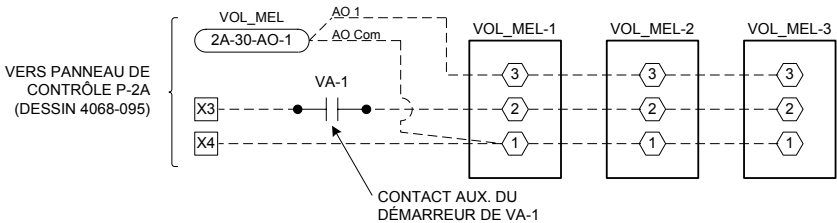
RACCORDEMENTS DU DÉMARREUR DU VENTILATEUR (VA-1)



RACCORDEMENTS DES AÉROTHERMES (A-7 ET A-8)



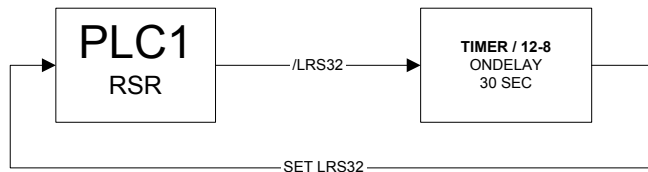
RACCORDEMENTS DES ACTUATEURS DE VOLET (VOL_MEL-1 À 3)



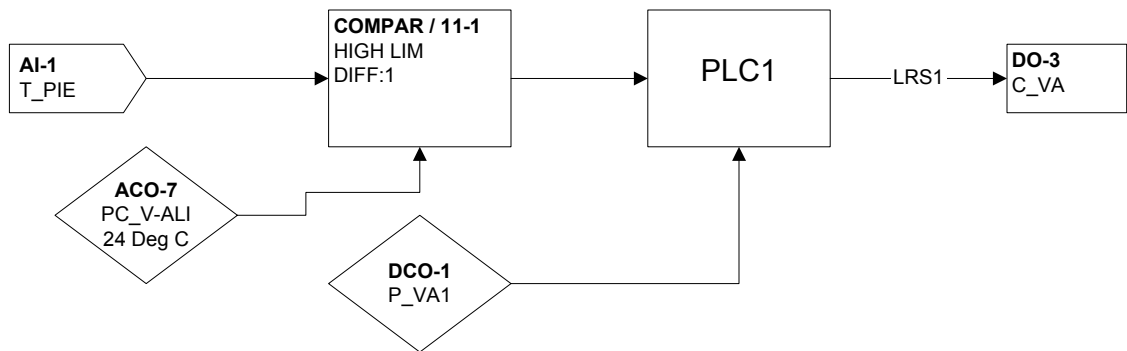
Titre du Dessin					
Système VA-1 (Ventilation de la salle mécanique F-301)		2	TEL QUE CONSTRUIT	D.B.	02/04/29
		1	POUR APPROBATION		06/12/2001
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 06/12/2001	PAR	DATE 06/12/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMÉRO DESSIN 4068-089	



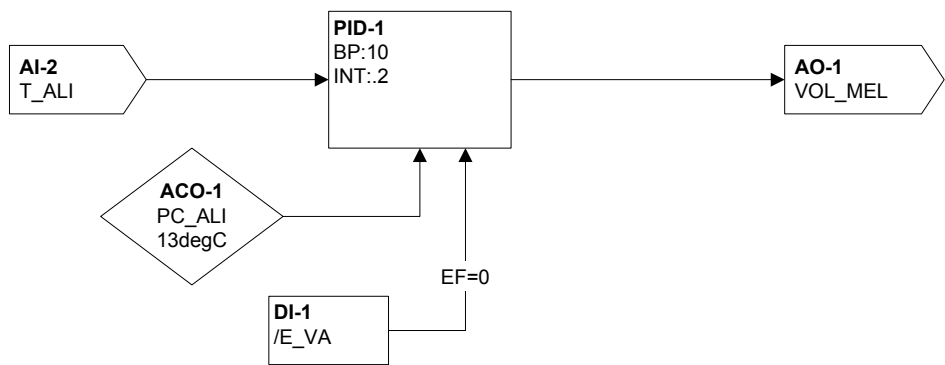
REDEMARRAGE APRES PANNE (DX-2-30)



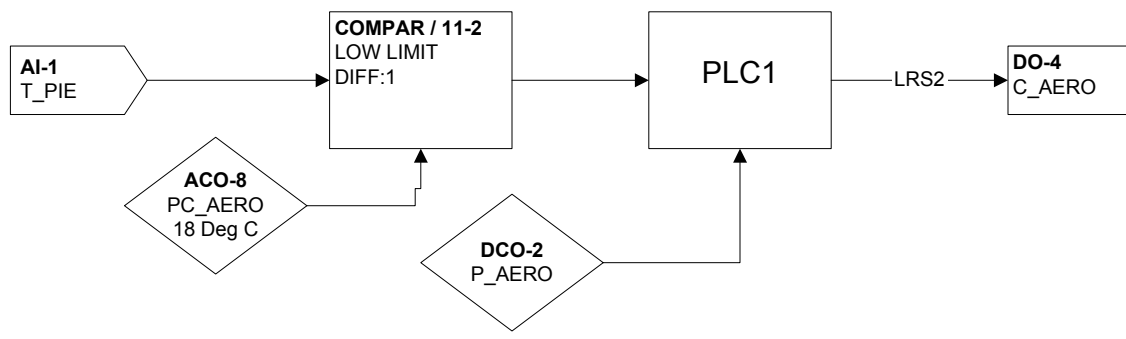
COMMANDE VENTILATEUR ALIMENTATION



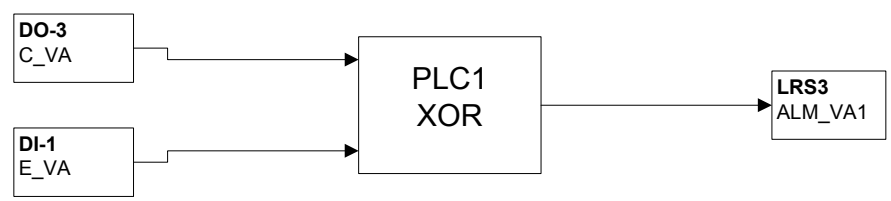
CONTROLE DES VOLETS DE MELANGE



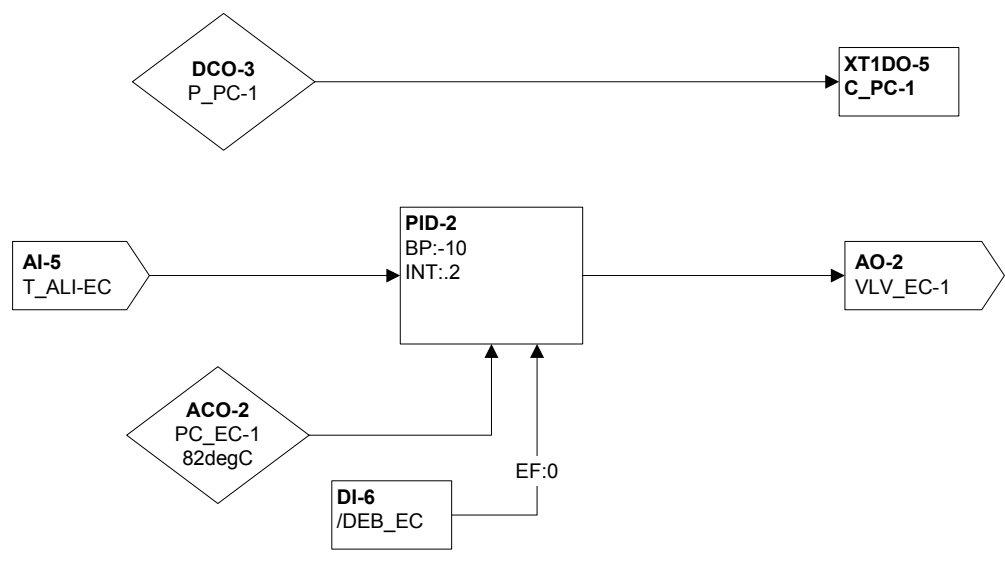
ARRET DEPART AEROTHERMES



LOGIQUE D'ALARME VENTILATEUR

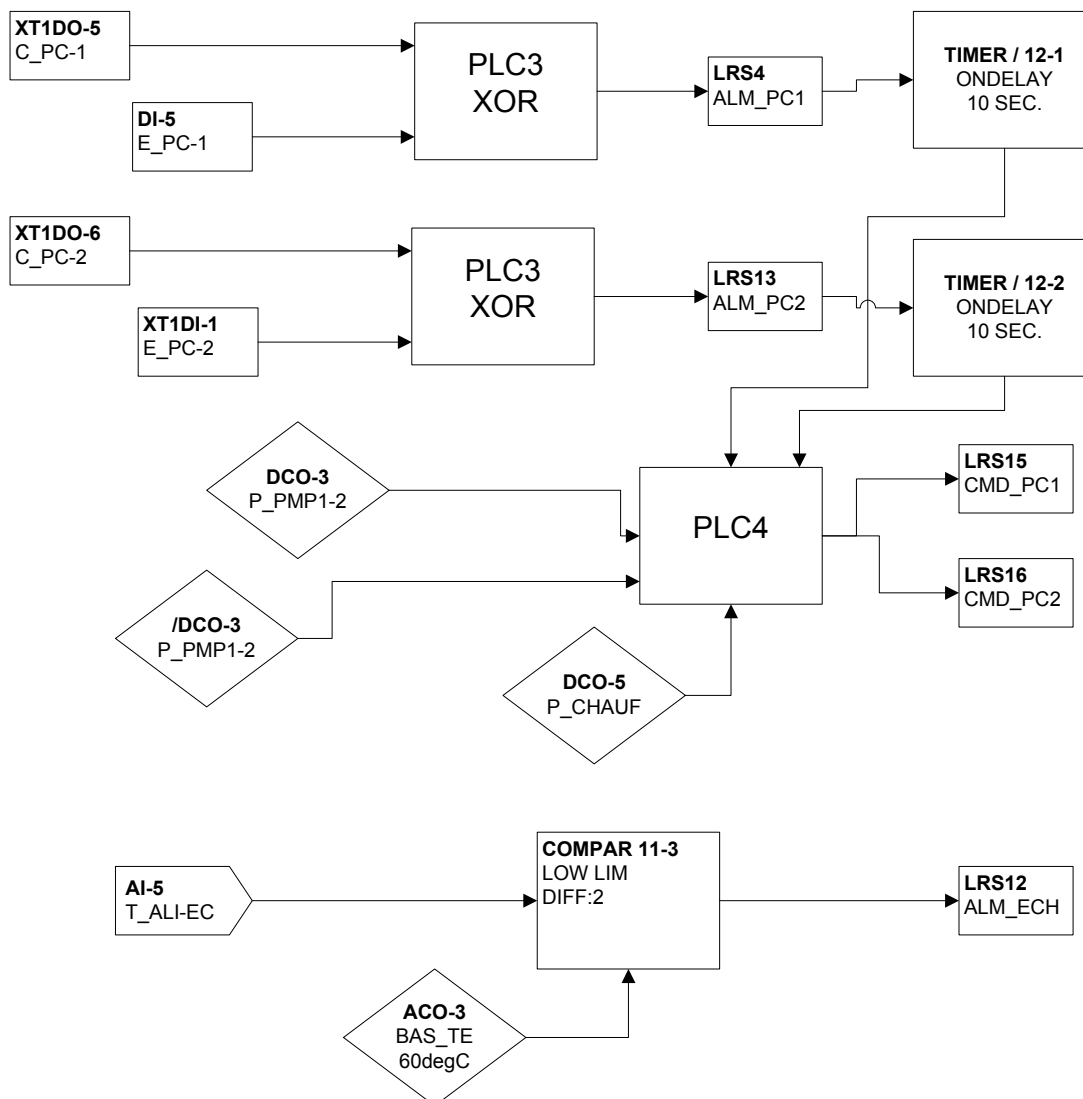


CONTROLE ECHANGEUR DE CHALEUR



PROJET :	CONTRAT :	Contrôleur :	Système :	3 / 4
CRDA ST-HYACINTHE	1096-0093	DX-2-30	UNITE ECHANGEUR	

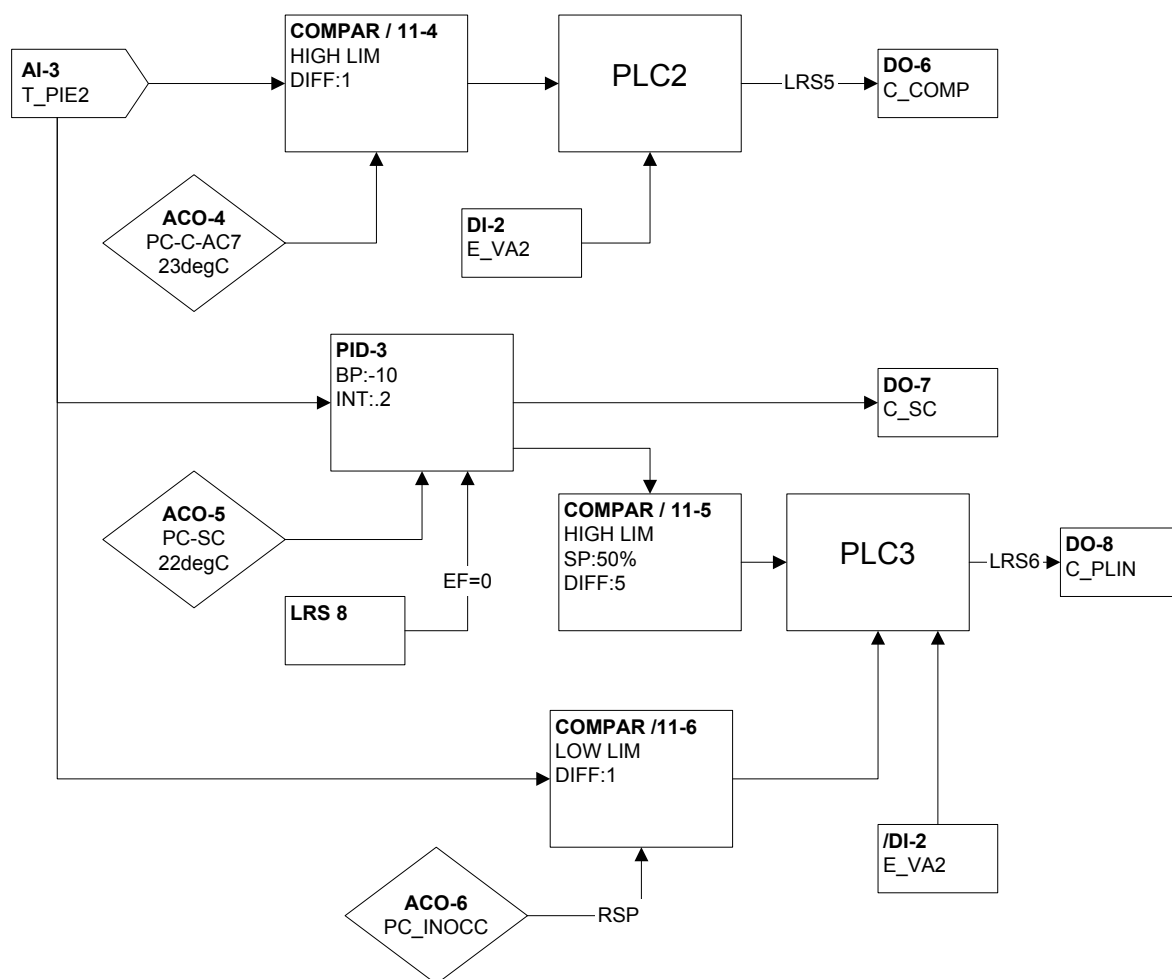
ALARME ECHANGEUR DE CHALEUR



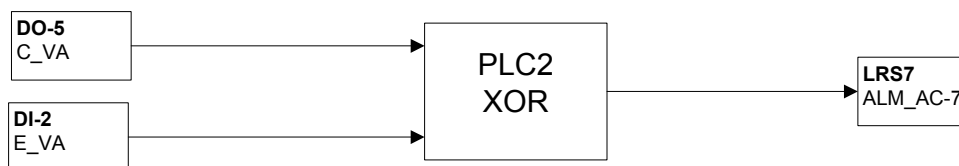
CONTROLE UNITE AC-07



CONTROLE UNITE AC-07



ALARME UNITE CLIMATISATION AC-07



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 30
Numéro du dessin : 4068-93, 68, 89
Système : Système VA-1, Echangeur, AC-7

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE VA-1		
2	TEMP ALIMENTATION VA-1		
3	TEMP. PIECE AC-07		
4	TEMP ALIMENTATION AC-07		
5	TEMP ALIM. EAU CHAUDE		
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	ETAT VENT. ALIMEN. VA-1	Off =arrêt / On marche	1
2	ETAT VENT. ALIMEN. AC-07	Off =arrêt / On marche	1
3	ETAT DES FILTRES	Off =arrêt / On sale	1
4	ALARME UNITE AC	Off =normal / On alarme	1
5	ETAT POMPE CHAUF. PC-1	Off =arrêt / On marche	1
6	PREUVE DEBIT EAU CHAUF.	Off =arrêt / On marche	1
7	ALARME HOTTE F-219	Off = arrêt / On marche	1
8	ALARME HOTTE F-224	Off = arrêt / On marche	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VOLETS DE MELANGE	Z1	0% = Min. / 100% = Max.
2	VANNE ECHANGEUR EC-1	Z2	0% = Min. / 100% = Max.
3	COMM. A/D VENT. ALIM VA-1	LRS1	Off = ferme / On = ouvert
4	COMM. AEROTHERMES	LRS2	Off = ferme / On = ouvert
5	COMM. A/D VENT. ALIM AC-7	DCO4	Off = ferme / On = ouvert
6	COMM. A/D COMPRESSEUR	LRS5	Off = ferme / On = ouvert
7	COMM SERPENTIN CHAUFF.	Z3	Off = arrêt / On = depart
8	COMM PLINTHES CHAUFF.	LRS6	Off = arrêt / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO1	X2 Temp. alim.	0% = Min. / 100% = Max.
2	ACO2	X5 Temp alim eau chaude	0% = Min. / 100% = Max.
3	ACO5	X3 Temp. alim. Ac-07	0%= Min. / 100% = Max.
4			
5			
6			
7			
8			
9			
10			
11	Compateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	10	.2	
2	-10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	13 degC	PC Alimentation VA-1
2	82 degC	PC Valve echangeur chaleur 1
3	60 degC	PC Alarme basse temperature
4	23 deg C	PC Compresseur refrigeration AC-07
5	22 deg C	PC Serpentin de chauffage Occupe AC-07
6	18 deg C	PC Plinthes chauffage nuit
7	24 deg C	PC demarrage ventilateur alimentation
8	18 deg C	PC aérothermes

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission ventilateur alimentation VA-1
2	ON	Permission aérothermes
3	ON	Permission pompe eau chaude 1 ou 2
4	ON	Permission ventilateur alimentation AC-07
5	ON	Permission de chauffage
6		
7		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-93, 68, 89
Système : Système VA-1, Echangeur, AC-7
Adresse du NCM : 2
Adresse du DX-9100 : 30
Adresse du XT : 31

Numero du XP : 1

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point	Préscaler
11	ETAT POMPE CHAUFF PC-2	
12		
13		
14		

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
15	COMM POMPE CHAUFF PC-1	DCO-3	Off = arrêt / On = marche
16	COMM POMPE CHAUFF PC-2	/DCO-3	Off = arrêt / On = marche
17			
18			

SYSTÈME VA-1 (SALLE MÉCANIQUE F-301)

SÉQUENCE D'OPÉRATION

- Sur une hausse de température de pièce (T_PIE) supérieure à 24°C, le régulateur numérique démarre le ventilateur d'alimentation (VA-1) et module les volets de mélange (VOL_MEL-1 à 3) afin de maintenir la température d'alimentation au point de consigne (P.C. 13°C, ajustable).
- Lorsque la température de la pièce redescend sous 23°C, le ventilateur est arrêté et les volets retournent à leur position normale.
- Sur une baisse de température sous 18°C, les aérothermes sont démarrés jusqu'à ce que la température de la pièce ait atteint 19°C.
- Une alarme sera générée à la centrale sur non-concordance entre l'état (E_VA) et la commande (C_VA) du ventilateur d'alimentation.

Étiq.	Type de point	Informations sur points		Description	Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires
		Nom du système	Nom de l'objet		Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration		
							DX9100 DX 9100	1	30			P-2A	Salle mec. F-301													Alimentation 24VAC
							DX9100 DX 9100	1	30			P-2A	Salle mec. F-301													Tronc N2
2A-30-DO-3	DO-3	VA-1	C VA	Comm.a/d vent alim.	Arrêt	Marche	DX9100 DX 9100	1	30	DO-3	DO3.COM	P-2A	Salle mec. F-301	4068-089	2A-30-DO-3	2/18	(Bobine) +,-	H-735	COM.NO		2/14	Voir détail déma	Démarreur (H-735 mar/arr)		DX49	
2A-30-DO-4	DO-4	VA-1	C AERO	Comm.aérothermes	Arrêt	Marche	DX9100 DX 9100	1	30	DO-4	DO4.COM	P-2A	Salle mec. F-301	4068-089	2A-30-DO-4	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarreur. (NO)		DX51	Aérothermes A-7, A-8
2A-30-DO-5	DO-5	AC-07	C VA	Comm.a/d vent alim.	Arrêt	Marche	DX9100 DX 9100	1	30	DO-5	DO5.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DO-5	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarreur. (NO)		DX51	
2A-30-DO-6	DO-6	AC-07	C COMP	Comm.a/d compresseur	Arrêt	Marche	DX9100 DX 9100	1	30	DO-6	DO6.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DO-6	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarreur. (NO)		DX51	
2A-30-DO-7	DO-7	AC-07	C SC	Comm.serpentin chauffage	Arrêt	Marche	DX9100 DX 9100	1	30	DO-7	DO7.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DO-7						2/18	Selon dispositif	SOR 24 V c.a		DX51	Serpentin SE-20
2A-30-DO-8	DO-8	AC-07	C PLIN	Comm.plinthe chauff.	Arrêt	Marche	DX9100 DX 9100	1	30	DO-8	DO8.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DO-8						2/18	Selon dispositif	SOR 24 V c.a		DX51	2 relais TRIAC
2A-30-DI-1	DI-1	VA-1	E VA	État vent alimentation	Arrêt	Marche	DX9100 DX 9100	1	30	DI-1	DI1.COM	P-2A	Salle mec. F-301	4068-089	2A-30-DI-1						2/18	NO.COM	Veris H-735 état		DX49	
2A-30-DI-2	DI-2	AC-07	E VA	État vent alimentation	Arrêt	Marche	DX9100 DX 9100	1	30	DI-2	DI2.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DI-2						2/18	NO.COM	H-708		DX49	
2A-30-DI-3	DI-3	AC-07	E FILT	État des filtres	Normal	Sales	DX9100 DX 9100	1	30	DI-3	DI3.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DI-3						2/18	Y.R	P32 (NO)		DX70	
2A-30-DI-4	DI-4	AC-07	ALM AC	Alarme unité AC	Normal	Alarme	DX9100 DX 9100	1	30	DI-4	DI4.COM	P-2A	Salle mec. F-301	4068-068	2A-30-DI-4						2/18	Selon dispositif	Contact (NO)		DX70	
2A-30-DI-5	DI-5	ECH EC-1	PC-1A	État pompe chauff. PC-1A	Arrêt	Marche	DX9100 DX 9100	1	30	DI-5	DI5.COM	P-2A	Salle mec. F-301	4068-093	2A-30-DI-5						2/18	NO.COM	Veris H-735 état		DX49	Nom et description du point modifiés (14 mai 2002)
2A-30-DI-6	DI-6	ECH EC-1	DEB EC	Preuve débit eau chauff.	Non	Oui	DX9100 DX 9100	1	30	DI-6	DI6.COM	P-2A	Salle mec. F-301	4068-093	2A-30-DI-6						2/18	Selon dispositif	Contact (NO)		DX70	
2A-30-DI-7	DI-7	LABO	A.H.F219	Alarme hotte (F-219)	Normal	Alarme	DX9100 DX 9100	1	30	DI-7	DI7.COM	P-2A	Salle mec. F-301		2A-30-DI-7						2/18	Y.R	F61KB-11		DX70	Hotte associée au vent. d'évac. VH-1
2A-30-DI-8	DI-8	LABO	A.H.F224	Alarme hotte (F-224)	Normal	Alarme	DX9100 DX 9100	1	30	DI-8	DI8.COM	P-2A	Salle mec. F-301		2A-30-DI-8						2/18	Selon dispositif	Contact (NO)		DX70	Hotte associée au vent. d'évac. VH-2
2A-30-AI-1	AI-1	VA-1	T PIE	Temp.pèce			DX9100 DX 9100	1	30	AI-1	AI1.AI.COM	P-2A	Salle mec. F-301	4068-089	2A-30-AI-1						2/18	2 fils	TE		DX3	Salle mec. F-301
2A-30-AI-2	AI-2	VA-1	T ALI	Temp.alimentation			DX9100 DX 9100	1	30	AI-2	AI2.AI.COM	P-2A	Salle mec. F-301	4068-089	2A-30-AI-2						2/18	2 fils	TE (Gaine)		DX3	
2A-30-AI-3	AI-3	AC-07	T PIE	Temp.pèce			DX9100 DX 9100	1	30	AI-3	AI3.AI.COM	P-2A	Salle mec. F-301	4068-068	2A-30-AI-3						2/18	2 fils	TE		DX3	Sonde située dans local F-200
2A-30-AI-4	AI-4	AC-07	T ALI	Temp.alimentation			DX9100 DX 9100	1	30	AI-4	AI4.AI.COM	P-2A	Salle mec. F-301	4068-068	2A-30-AI-4						2/18	2 fils	TE (Gaine)		DX3	
2A-30-AI-5	AI-5	ECH EC-1	T ALI EC	Temp.alim.eau chaude			DX9100 DX 9100	1	30	AI-5	AI5.AI.COM	P-2A	Salle mec. F-301	4068-093	2A-30-AI-5						2/18	2 fils	TE (Immersion)		DX3	
							DX9100 DX 9100	1	30	AI-6		P-2A	Salle mec. F-301		2A-30-AI-6											
							DX9100 DX 9100	1	30	AI-7		P-2A	Salle mec. F-301		2A-30-AI-7											
							DX9100 DX 9100	1	30	AI-8		P-2A	Salle mec. F-301		2A-30-AI-8											
2A-30-AO-1	AO-1	VA-1	VOL MEL	Volets mélange		%	DX9100 DX 9100	1	30	AO-1	AO1.AOCOM/CON	P-2A	Salle mec. F-301	4068-089	2A-30-AO-1	2/18	+,-	EP-8000	SUPPLY,O		3/18	1,2,5	M9216-HGA-2 0-10VDC		DX34	
2A-30-AO-2	AO-2	ECH EC-1	V.LV. EC-1	Vanne échangeur EC-1		%	DX9100 DX 9100	1	30	AO-2	AO2.AOCOM	P-2A	Salle mec. F-301	4068-093	2A-30-AO-2	2/18	+,-	EP-8000	SUPPLY,O		1/4"	Raccord à crans	EP-PNEU.		DX27	
							DX9100 DX 9100	1	30	AO-9		P-2A	Salle mec. F-301		2A-30-AO-9											
							DX9100 DX 9100	1	30	AO-10		P-2A	Salle mec. F-301		2A-30-AO-10											
							DX9100 DX 9100	1	30	AO-11		P-2A	Salle mec. F-301		2A-30-AO-11											
							DX9100 DX 9100	1	30	AO-12		P-2A	Salle mec. F-301		2A-30-AO-12											
							DX9100 DX 9100	1	30	AO-13		P-2A	Salle mec. F-301		2A-30-AO-13											
							DX9100 DX 9100	1	30	AO-14		P-2A	Salle mec. F-301		2A-30-AO-14											
							XT9100 XT (Expansion Module)					P-2A	Salle mec. F-301													Alimentation 24VAC
							XT9100 XT (Expansion Module)	1	31			P-2A	Salle mec. F-301													Tronc N2
2A-31A-DI-1	DI-1	ECH EC-1	E.PC-1B	État pompe chauff. PC-1B	Arrêt	Marche	XP9104 XP 9104 (4C)	1	31	DI-1	DI1.COM	P-2A	Salle mec. F-301		2A-31A-DI-1						2/18	NO.COM	Veris H-735 état		XP49	Nouveau point (14 mars 2002)
							XP9104 XP 9104 (4C)	1	31	DI-2		P-2A	Salle mec. F-301		2A-31A-DI-2											
							XP9104 XP 9104 (4C)	1	31	DI-3		P-2A	Salle mec. F-301		2A-31A-DI-3											
							XP9104 XP 9104 (4C)	1	31	DI-4		P-2A	Salle mec. F-301		2A-31A-DI-4											
2A-31A-DO-1	DO-1	ECH EC-1	C.PC-1A	Comm.pompe chauff. PC-1A	Arrêt	Marche	XP9104 XP 9104 (4C)	1	31	DO-5	DO5.COM	P-2A	Salle mec. F-301	4068-093	2A-31A-DO-1	2/18	(Bobine)+,-	H-735	COM.NO		2/14	Voir détail déma	Démarreur (H-735 mar/arr)		XP49	Nom et description du point modifiés (14 mai 2002)
2A-31A-DO-2	DO-2	ECH EC-1	C.PC-1B	Comm.pompe chauff. PC-1B	Arrêt	Marche	XP9104 XP 9104 (4C)	1	31	DO-6	DO6.COM	P-2A	Salle mec. F-301		2A-31A-DO-2	2/18	(COIL)+,-	H-735	COM.NO		2/14	Voir détail déma	Démarreur (H-735 mar/arr)		XP49	Nouveau point (14 mars 2002)
							XP9104 XP 9104 (4C)	1	31	DO-7		P-2A	Salle mec. F-301		2A-31A-DO-7											
							XP9104 XP 9104 (4C)	1	31	DO-8		P-2A	Salle mec. F-301		2A-31A-DO-8											

LISTE DE MATÉRIEL POUR LE SYSTÈME VA-1 ET AÉROTHERME A-6 ET A-7

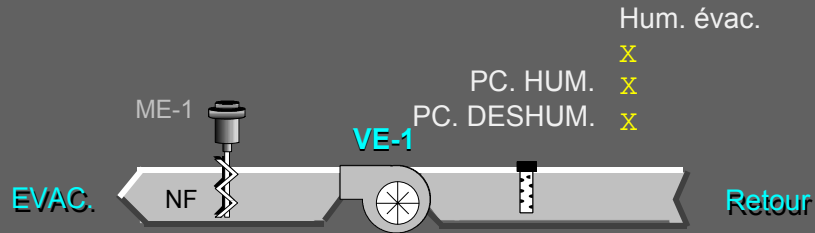
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_AERO-7,8	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VA, E_VA	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT) 1-135 AMP	H-735	VÉRIS
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
VOL_MEL-1,2,3	ACTUATEUR DE VOLET MODULANT, 24VAC, 0-10VDC	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-1-30	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, 1A 1B 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1	INDICATEUR DE PRESSION DIFF. 0-250Pa	2000-250Pa	DWYER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2A	PANNEAU 36"x48"x9.5	M-8100-3648	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-3, UNT-2-4	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-8	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_xxx	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-31A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-31	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS

MODE

X



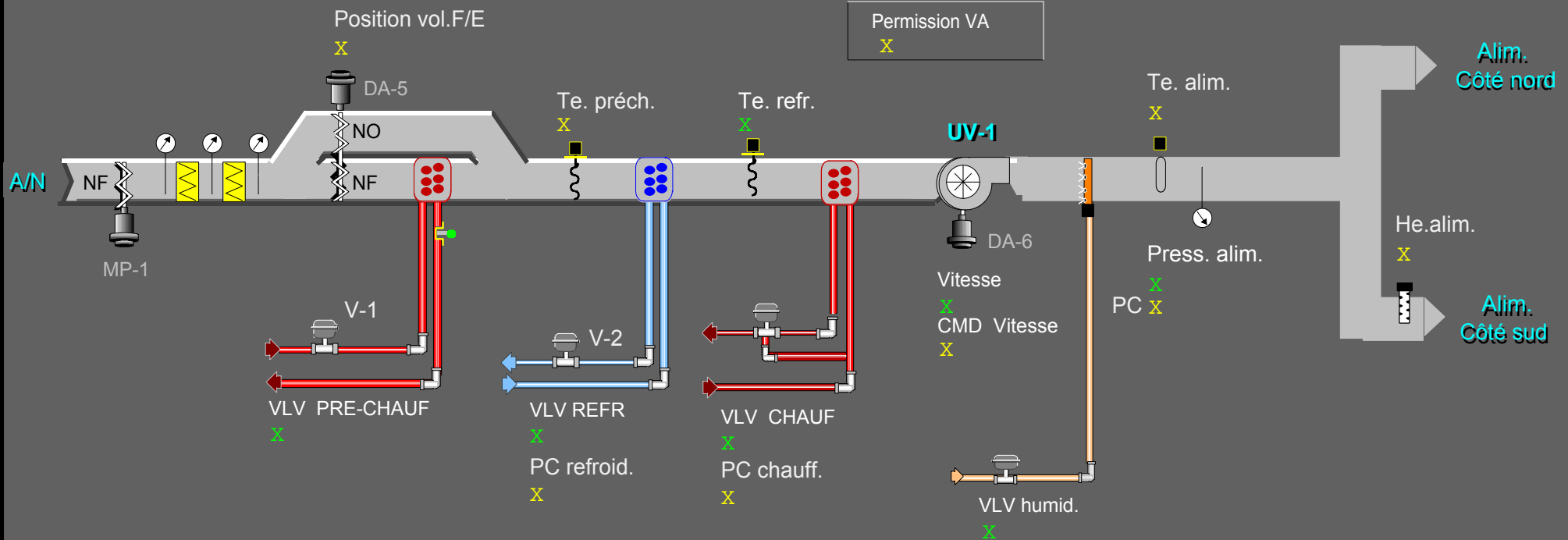
ALARMES

BL Alim.

X

Variateur
de vitesse

X



Te.ext. X

MENU PRINCIPAL



Le schéma de principe du système de climatisation pour la Zone 20 est divisé en plusieurs sections :

- Aspiration et Traitement de l'Air Neuf :** L'air neuf est aspiré par le ventilateur VE-1 (1000x400mm) et traité par le refroidisseur H_EVAC. Le réfrigérant circule à travers le compresseur UV-1, les condenseurs (C) et les évaporateurs (E).
- Circuit de Réfrigération :** Le réfrigérant circule à travers le compresseur UV-1, les condenseurs (C) et les évaporateurs (E). Les points de mesure de température (T_PCH, T_SR, T_ALI) et de pression (P1, P2) sont indiqués.
- Vannes de Régulation :** Les vannes de régulation (V1, V2, V3) et les sondes de température (S1, S2, S3) sont également représentées.
- Alimentation en Eau Glacée :** Le système est alimenté en électricité par le tableau de contrôle P-2B.

IDENT.	QTE	MODELE	DESCRIPTION
BL-1	1	A70GA-2C	BASSE LIMITE DE TEMP. DE GAINÉ À RÉARMEMENT AUTOMATIQUE, 0-25°C, 2 CONTACTS
C_VE / E_VE	1	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
H_ALI, H_EVAC	2	HT6703-0N00P	TRANSMETTEUR D'HUMIDITÉ DE GAINÉ, ±3%HR, 0-10VDC
ME-1	1	M9216-AGA-2	ACTUATEUR DE VOLET 2 POSITIONS, 24VAC, AVEC RESSORT DE RAPPEL
MP-1	1	D-3153-3	ACTUATEUR DE VOLET PNEUMATIQUE, 5-10psi
VLV_CHA	1	VG7842PT+822E01	VANNE 3 VOIES, MÉLANGE, 1-1/4", Cv 18.5, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
VLV_HUM	1	-----	VANNE D'HUMIDIFICATION PNEU. - PAR D'AUTRES
VLV_PCH	1	VG7243RM+843C01	VANNE 2 VOIES, N.O., 1-1/2", Cv 28.9, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
VLV_REF	1	VG2831UM+845D01	VANNE 3 VOIES, MÉLANGE, 3", Cv 80.0, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR
VOL_FE	1	D-3153-1	ACTUATEUR DE VOLET PNEUMATIQUE AVEC POSITIONNEUR
T_ALI, T_PCH, T_SR	3	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
VV_UV-1	1	VLT6000J17	VARIATEUR DE VITESSE, 15HP, 575V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

DIAGRAMME ÉLECTRIQUE

VERS PANNEAU DE CONTRÔLE P-2B (DESSIN 4068-096)

- 9 → 1
- 10 → 2
- 11 → 3
- 1 → 4
- X1 → 5

VIT_UV-1 (AI Com) → 39 (COM A OUT)

2B-35-AI-6 (AI 1) → 45 (A OUT)

VV_UV-1 (AO 12) → 53 (A IN)

2B-35-AO-12 (AO Com) → 55 (COM A IN)

VENANT DU RÉGULATEUR NUMÉRIQUE PRÉCÉDENT

- REF → 61 (COM RS-485)
- N2+ → 68 (P RS-485)
- N2- → 69 (N RS-485)

VV_UV-1

VARIATEUR DU VENTILATEUR VE-1 (SITUÉ DANS LA SALLE MÉCANIQUE F-301)

- 12 → +24 V OUT
- 18 → 0 IN
- 04 → (RELAY)
- 05 → (RELAY)
- 39 → (COM A OUT)
- 45 → (A OUT)
- 53 → (A IN)
- 55 → (COM A IN)
- 61 → (COM RS-485)
- 68 → (P RS-485)
- 69 → (N RS-485)

ARRÊT/DÉPART

ÉTAT DE MARCHÉ

INDICATION VITESSE

COMMANDE VITESSE

COMMUNICATION (RÉSEAU N2)

VERS RÉGULATEUR NUMÉRIQUE SUIVANT

- REF
- N2+
- N2-

COMMUNICATION (RÉSEAU N2)

REF: Bleu
N2- : Noir
N2+ : Rouge

600V

120V

MAN

ARR

AUTO

VE-1

R/S

TX-1

120 VAC

24 VAC

TRANSFORMATEUR
SITUÉ PRÈS DU
DÉMARREUR DE VE-1

ME-1

1

3

1 PHASE

2B-35-DO-4 C_VE

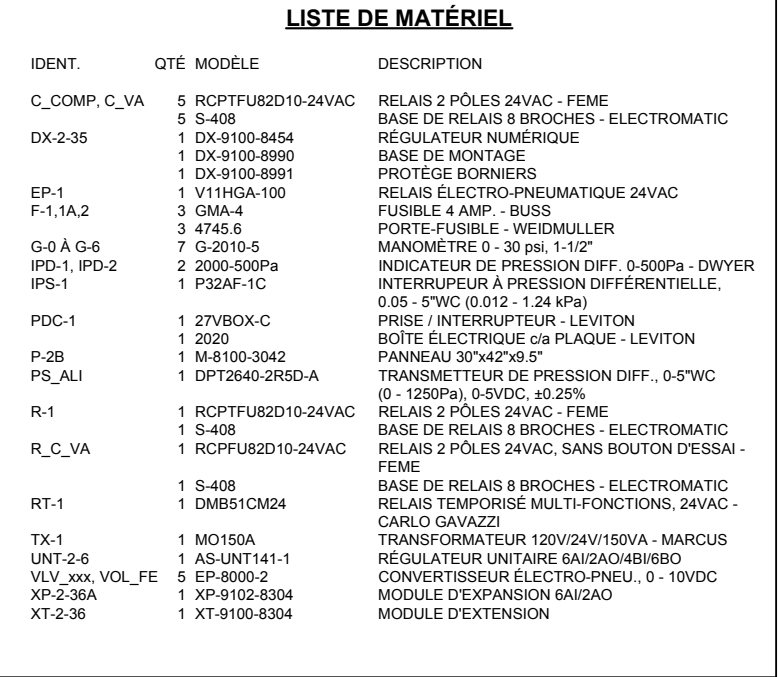
2B-35-DI-2 E_VE

C_VE /
E_VE

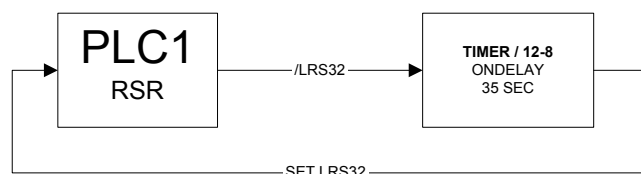
Titre du Dessin

Système UV-1
(Système d'apport d'...

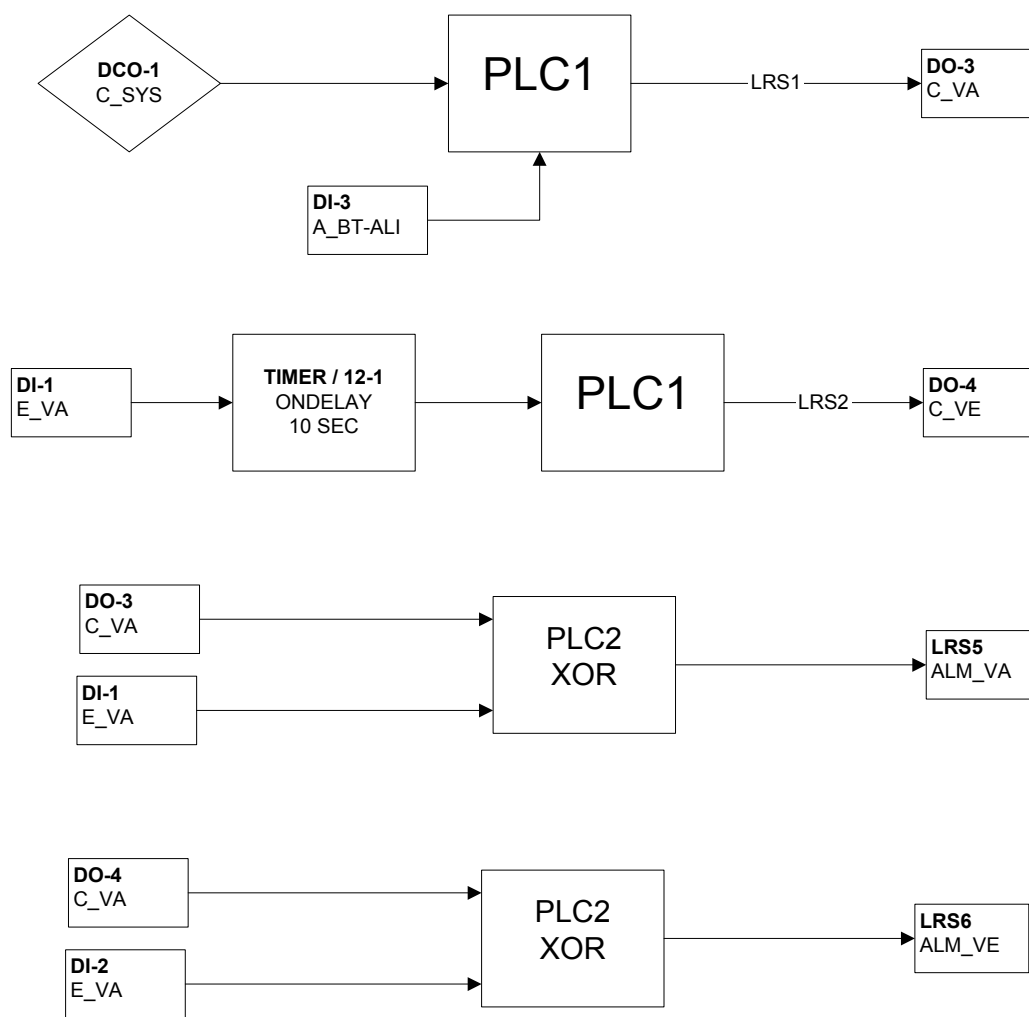
4068-090A.vsd Page 1 de 1 05/02/21



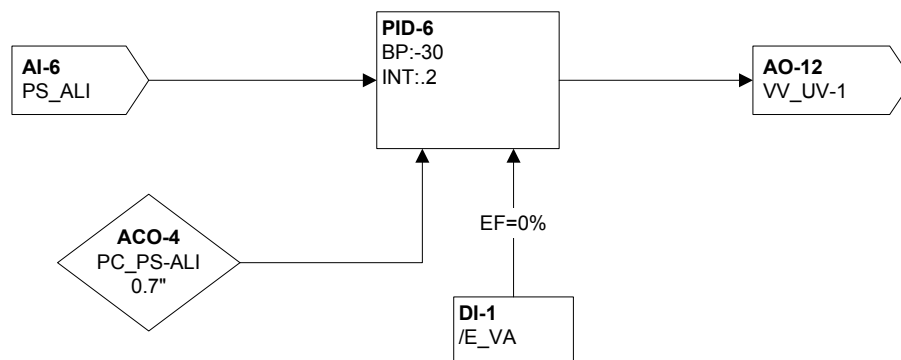
REDEMARRAGE APRES PANNE (DX-2-35)



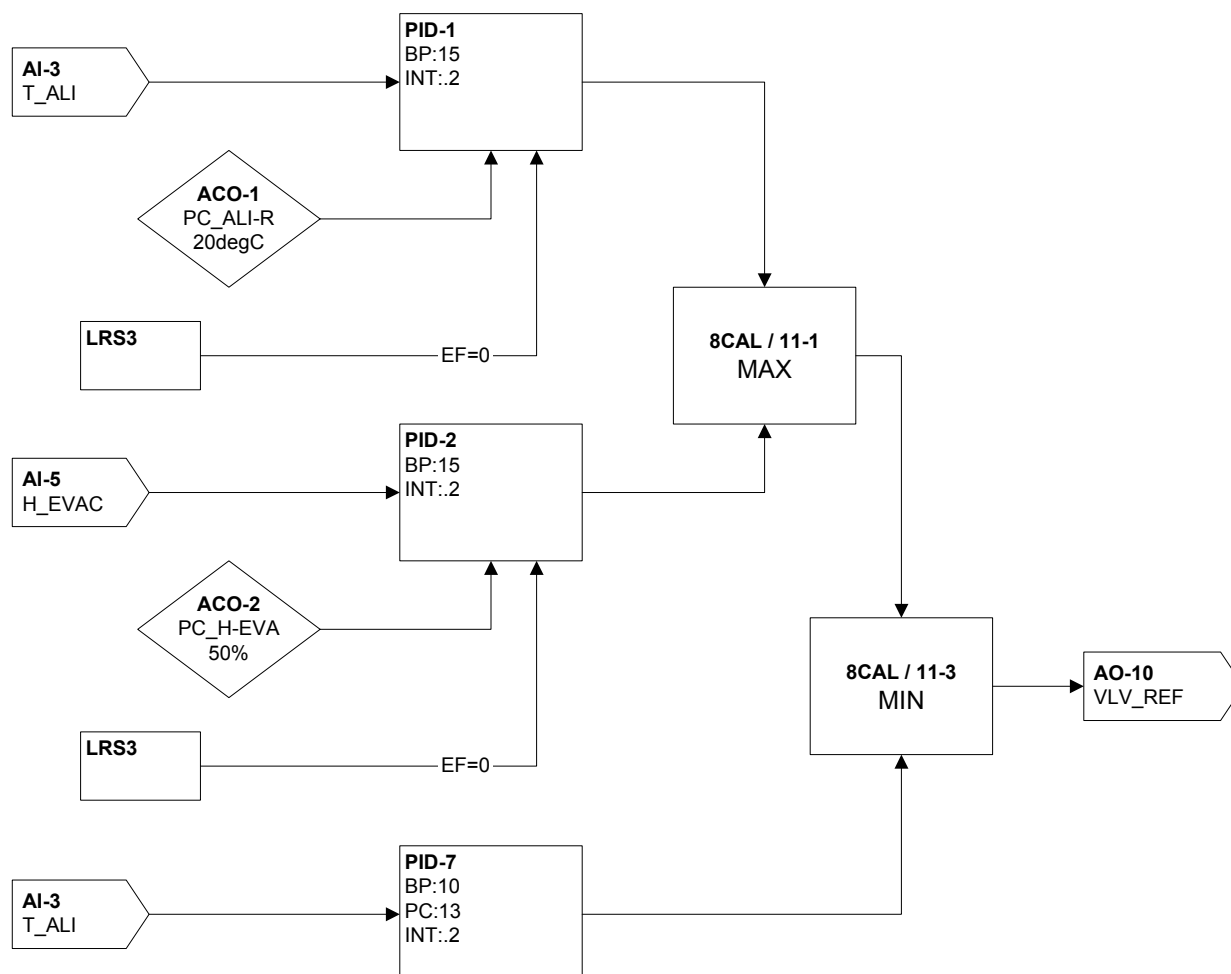
VENTILATEURS

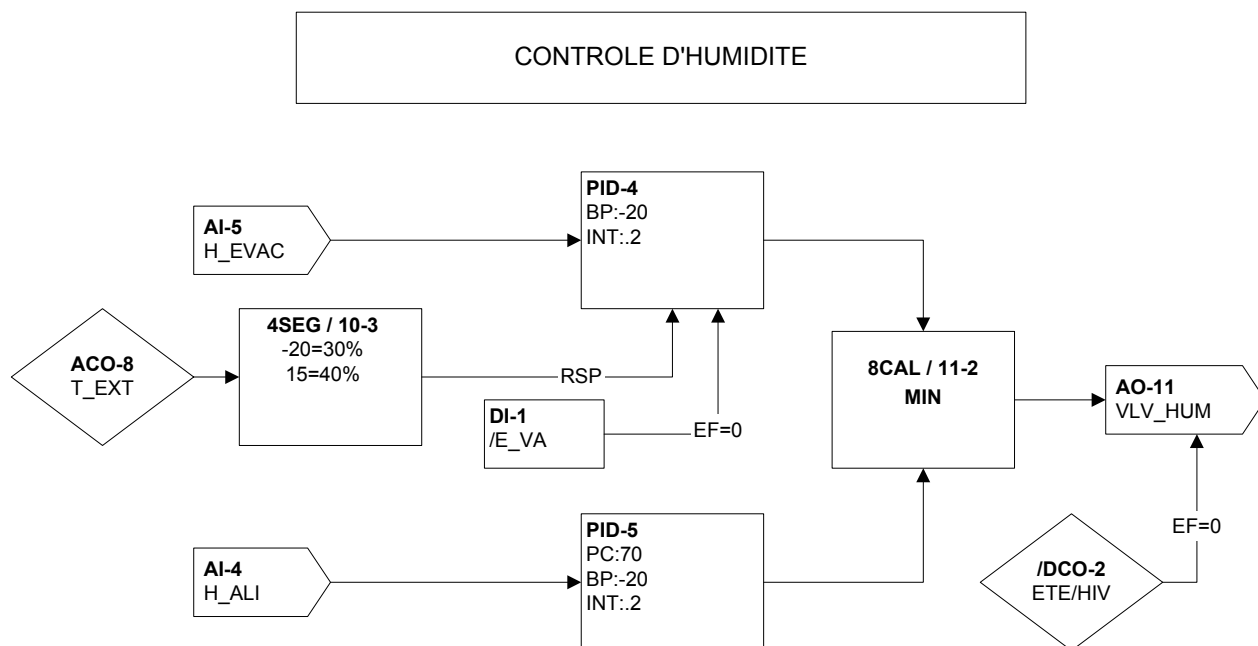
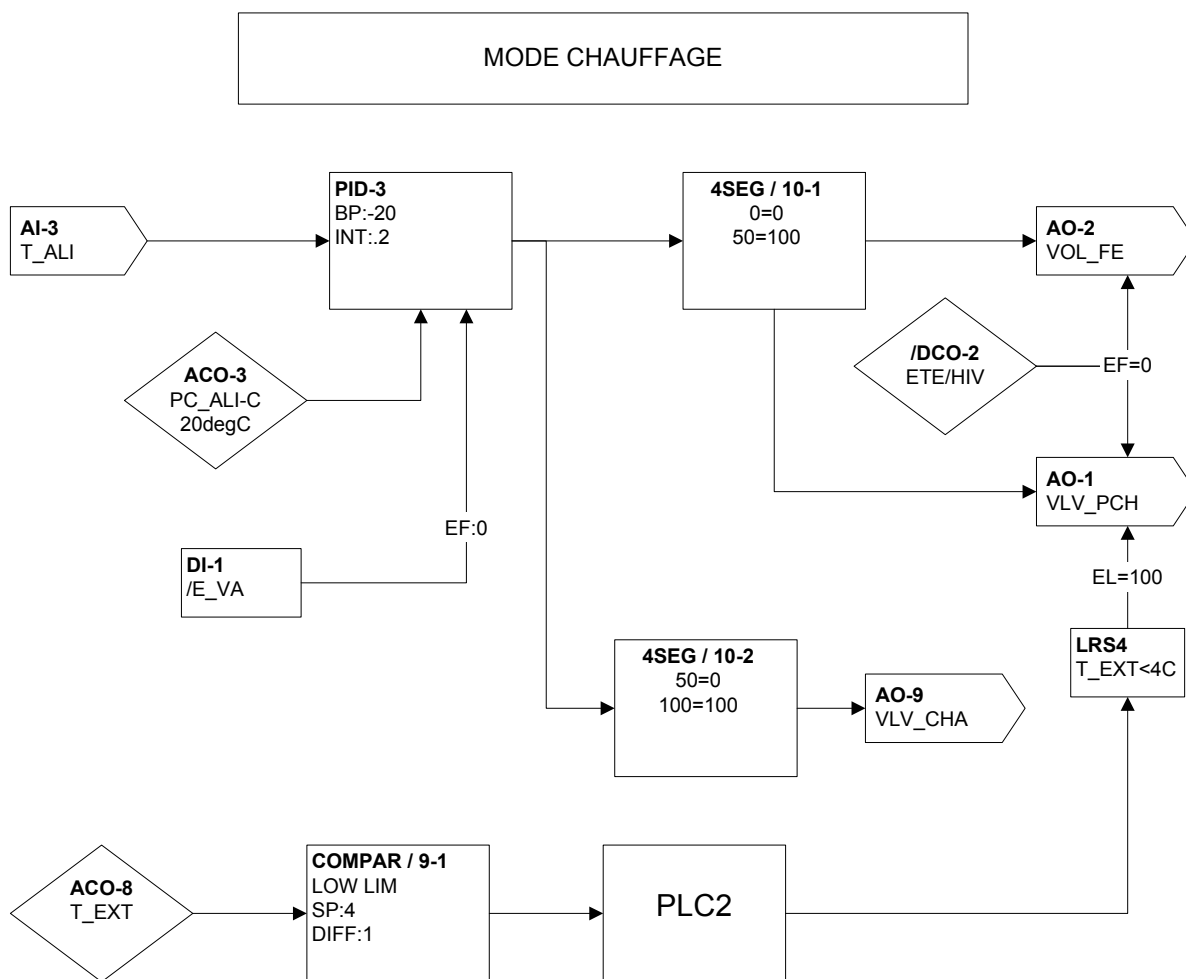


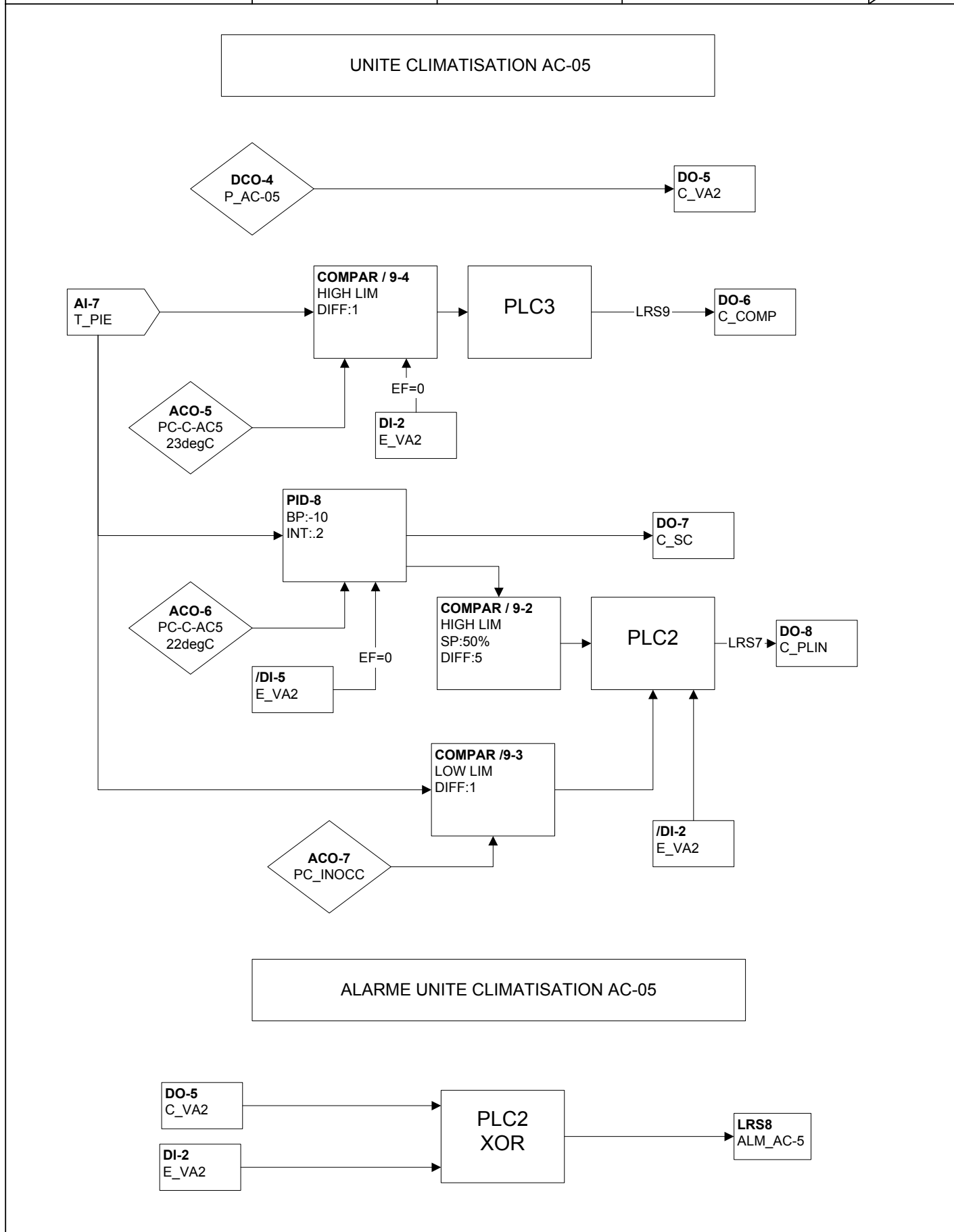
VARIATEUR DE VITESSE



MODE REFROIDISSEMENT







FEUILLE DE L'UTILISATEUR

Nom du projet : CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 22-Nov-01
Adresse du NCM : 2
Adresse du DX-9100 : 35
Numéro du dessin : 4068-66, 90
Système : Système UV-1, Echangeur, AC-5

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PRE-CHAUFFAGE		
2	TEMP SERPENTIN REFROI.		
3	TEMP. ALIMENTATION		
4	HUMIDITE ALIMENTATION		
5	HUMIDITE EVACUATION		
6	PRESS. STATIQUE ALIM.		
7	TEMP. PIECE		
8	TEMP. ALIMENTATION		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Précaler
1	ETAT VENT. ALIMEN. UV-1	Off =arrêt / On marche	1
2	ETAT VENT. EVAC.	Off =arrêt / On marche	1
3	ETAT BASSE TEMP. ALIM.	Off =normal / On alarme	1
4	ALARME VARIATEUR VIT.	Off =normal / On alarme	1
5	ETAT VENTILATEUR ALIM.	Off =arrêt / On marche	1
6	ETAT DES FILTRES	Off =normal / On sale	1
7	ALARME UNITE AC	Off = normal / On alarme	1
8			

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VANNE PRE-CHAUFFAGE	Z3	0% = Min. / 100% = Max.
2	VOLET SERP. FACE ET EVIT.	Z3	0% = Min. / 100% = Max.
3	COMM. A/D VENT. ALIM	LRS1	Off = arrêt / On = marche
4	COMM. A/D VENT. EVAC. VE-1	LRS2	Off = arrêt / On = marche
5	COMM. A/D VENT. ALIM AC-5	DCO4	Off = arrêt / On = marche
6	COMM. A/D COMPRESSEUR	Z7	Off = arrêt / On = marche
7	COMM. SERP. CHAUFFAGE	Z8	Off = arrêt / On = marche
8	COMM. PLINTHE CHAUFFAGE	LRS7	Off = arrêt / On = marche
9	VANNE CHAUFFAGE	Z3	0% = Min. / 100% = Max.
10	VANNE REFROIDISSEMENT	Z1, Z2	0% = Min. / 100% = Max.
11	VANNE HUMIDITE	Z4, Z5	0% = Min. / 100% = Max.
12	VARIATEUR VENT. ALIM. UV-1	Z6	0% = Min. / 100% = Max.
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO1	X3 Temp. alim.	0% = Min. / 100% = Max.
2	ACO2	X5 Humidite evac.	0% = Min. / 100% = Max.
3	ACO3	X3 Temp. alim.	0%= Min. / 100% = Max.
4	ACO8	X4 Temp. alim.	0%= Min. / 100% = Max.
5	70 %	X4 Humidite alim.	0%= Min. / 100% = Max.
6	ACO4	X6 Pression statique alim.	0%= Min. / 100% = Max.
7	ACO5	X7 Temp. Piece	Off = arret / On = marche
8	ACO6	X7 Temp. Piece	0%= Min. / 100% = Max.
9	Comparateur		
10	4- Segment		
11	8 Calcul		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	15	.2	
2	15	.2	
3	-20	.2	
4	-10	.2	
5	-10	.2	
6	10	.2	
7			
8	-10	.2	
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	20 degC	PC Alimentation refroidissement
2	50%	PC humidite evacuation
3	20 degC	PC Alimentation chauffage
4	1.5 "	PC Pression statique alimentation
5	23 deg C	PC Compresseur AC-5
6	22 deg C	PC Serpentin chauffage AC-5
7	18 deg C	PC Chauffage inoccupe AC-5
8	18 deg C	Temperature exterieure

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission ventilateur alimentation UV-1
2	OFF	Ete / Hiver
3		
4	ON	Permission ventilateur alimentation AC-05
5		
6		
7		
8		
9		
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SYSTÈME UV-1 (APPORT AIR NEUF)

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Les ventilateurs d'alimentation (UV-1) et d'évacuation (VE-1) sont arrêtés.
- Les volets d'air neuf (MP-1) et d'évacuation (ME-1) sont fermés.
- Les vannes de chauffage, de refroidissement et d'humidification sont à leur position normale.

EN MARCHÉ:

- Le système est en marche de façon continue. Au départ du ventilateur d'alimentation (UV-1), le volet d'air neuf (MP-1) ouvre, le ventilateur d'évacuation (VE-1) démarre et son volet (ME-1) ouvre.
- La température d'alimentation (T_ALI) est maintenue à 20°C en tout temps.

Mode été:

- En mode été, déterminé manuellement par l'opérateur au début de la saison chaude par le départ du refroidisseur, les vannes de l'humidificateur (VLV_HUM) et du serpentin de pré-chauffage (VLV_PCH) sont fermées.
- La sonde d'alimentation (T_ALI) module la vanne de refroidissement (VLV_REF) afin de maintenir son point de consigne (P.C. 20°C, ajustable).
- Sur une demande de déshumidification par la sonde (H_EVAC, P.C. 50%HR, ajustable), le régulateur numérique réajuste la position de la vanne (VLV_REF) à la hausse. La sonde d'alimentation (T_ALI) module alors la vanne de chauffage (VLV_CHA) de façon à maintenir la température d'alimentation à 20°C.

Mode hiver:

- En mode hiver, déterminé manuellement par l'opérateur à la fin de la saison chaude par l'arrêt du refroidisseur, la vanne de l'humidificateur (VLV_HUM) de même que celles des serpentins de pré-chauffage (VLV_PCH) et chauffage (VLV_CHA) sont opérationnelles. La vanne de refroidissement (VLV_REF) est fermée.
- La sonde d'alimentation (T_ALI) module la vanne du serpentin de pré-chauffage (VLV_PCH), le volet de face et évitement (VOL_FE) et la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne (P.C. 20°C, ajustable).
- Lorsque la température extérieure est inférieure à 4°C, la vanne du serpentin de pré-chauffage (VLV_PCH) est ouverte à 100% et seuls le volet de face et évitement et la vanne de chauffage sont modulés.

Débit:

- Les régulateur numériques (VMA-2-1xx) contrôlant le débit d'air neuf de chaque unité de climatisation ou usine pilote, modulent leur volet respectif afin de maintenir le débit d'air neuf requis.
- Le transmetteur de pression statique (PS_ALI, panneau P-2B, dessin 4068-096) module la vitesse du ventilateur d'alimentation (UV-1) afin de maintenir la pression statique requise assurant les débits aux différentes zones.

Humidification:

- Le transmetteur d'humidité (H_EVAC) situé dans la gaine d'évacuation, module la soupape d'humidification (VLV_HUM) afin de maintenir le point de consigne déterminé par le tableau suivant:

Temp. ext.	P.C. Humidité
15°C	40%HR
-20°C	30%HR

- Le transmetteur d'humidité d'alimentation (H_ALI) limite l'ouverture de la soupape d'humidification (VLV_HUM) de façon à maintenir un maximum de 70%HR dans la gaine d'alimentation.

Sécurités:

- Une basse limite de température (BL-1) arrêtera le système si la température d'alimentation baisse en dessous de 7°C. Un relais temporisé (RT-1, panneau P-2B, dessin 4068-096), contourne la basse limite pour une période de 3 minutes au départ du système.
- Un interrupteur à pression statique (IPS-1, panneau P-2B, dessin 4068-096), referme la vanne d'humidification (VLV_HUM) sur perte de débit d'air dans la gaine d'alimentation.

Alarmes diverses:

- Les alarmes suivantes seront transmises à la centrale de commandes:
 - Basse température d'alimentation (T_ALI).
 - Alarme de gel (BL-1).
 - Non-concordance entre la commande et l'état du ventilateur d'alimentation (UV-1).
 - Non-concordance entre la commande et l'état du ventilateur d'évacuation (VE-1).
 - Haute humidité d'alimentation (H_ALI).
 - Basse humidité d'évacuation (H_EVAC).

Informations sur points				Informations sur régulateurs										Appareils intermédiaires										Appareils hors panneau					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires			
							DX9100 DX 9100	2	35			P-2B	Salle méc. F-301														Alimentation 24VAC		
2B-35-DO-3	DO-3	UV-1	C VA	Comm.a/d vent.alm.	Arrêt	Marche	DX9100 DX 9100	2	35	DO-3	DO3/COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DO-3	2/18		(Bobine) + -	H-735	COM.NO		2/14	Voir détail démarreur	Démarreur (H-735 mar/arr)		DX49	Tronc N2		
2B-35-DO-4	DO-4	UV-1	C VE	Comm.a/d vent.évac.VE-1	Arrêt	Marche	DX9100 DX 9100	2	35	DO-4	DO4/COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DO-4	2/18		(Bobine) + -	H-735	COM.NO		2/14	Voir détail démarreur	Démarreur (H-735 mar/arr)		DX49			
2B-35-DO-5	DO-5	AC-05	C VA	Comm.a/d vent.alm.	Arrêt	Marche	DX9100 DX 9100	2	35	DO-5	DO5/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-5	2/18	2,7	RELAIS	1,3			2/14	Voir détail démarreur	Démarreur (NO)		DX51			
2B-35-DO-6	DO-6	AC-05	C COMP	Comm.a/d compresseur	Arrêt	Marche	DX9100 DX 9100	2	35	DO-6	DO6/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-6	2/18	2,7	RELAIS	1,3			2/14	Voir détail démarreur	Démarreur (NO)		DX51			
2B-35-DO-7	DO-7	AC-05	C SC	Comm.serpentin chauffage	Arrêt	Marche	DX9100 DX 9100	2	35	DO-7	DO7/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-7							2/18	Selon dispositif	SOR 24 V c.a.		DX51	Serpentin SE-19		
2B-35-DO-8	DO-8	AC-05	C PLIN	Comm.plinthe chauff.	Arrêt	Marche	DX9100 DX 9100	2	35	DO-8	DO8/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-8							2/18	Selon dispositif	SOR 24 V c.a.		DX51	2 relais TRIAC		
2B-35-DI-1	DI-1	UV-1	E VA	État vent.alimentation	Arrêt	Marche	DX9100 DX 9100	2	35	DI-1	DI1.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-1							2/18	NO.COM	Veris H-735 état		DX49			
2B-35-DI-2	DI-2	UV-1	E VE	État vent.évacuation	Arrêt	Marche	DX9100 DX 9100	2	35	DI-2	DI2.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-2							2/18	NO.COM	Veris H-735 état		DX49			
2B-35-DI-3	DI-3	UV-1	A, BT, ALI	Alm.basse temp.aliment.	Normal	Sales	DX9100 DX 9100	2	35	DI-3	DI3.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-3							2/18	LINE.M1	A70 (NO)		DX70			
2B-35-DI-4	DI-4	UV-1	A, V, VIT	Alm.variateur vitesse	Normal	Alarme	DX9100 DX 9100	2	35	DI-4	DI4.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-4							2/18	Selon dispositif	Contact (NO)		DX70			
2B-35-DI-5	DI-5	AC-05	E VA	État vent.alimentation	Arrêt	Marche	DX9100 DX 9100	2	35	DI-5	DI5.COM	P-2B	Salle méc. F-301	4068-066	2B-35-DI-5							2/18	NO.COM	H-709		DX49			
2B-35-DI-6	DI-6	AC-05	E FILT	État des filtres	Normal	Sales	DX9100 DX 9100	2	35	DI-6	DI6.COM	P-2B	Salle méc. F-301	4068-066	2B-35-DI-6							2/18	Y.R.	P32 (NO)		DX70			
2B-35-DI-7	DI-7	AC-05	ALIM AC	Alarme unité AC	Normal	Alarme	DX9100 DX 9100	2	35	DI-7	DI7.COM	P-2B	Salle méc. F-301	4068-066	2B-35-DI-7							2/18	Selon dispositif	Contact (NO)		DX70			
							DX9100 DX 9100	2	35	DI-8		P-2B	Salle méc. F-301		2B-35-DI-8														
2B-35-AI-1	AI-1	UV-1	T PCH	Temp.pré-chauffage	°C	DX9100	DX 9100	2	35	AI-1	AI1.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-1							2/18	2 fils	TE (Gaine)		DX3			
2B-35-AI-2	AI-2	UV-1	T SR	Temp.serp.refroid.	°C	DX9100	DX 9100	2	35	AI-2	AI2.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-2							2/18	2 fils	TE (Gaine)		DX3			
2B-35-AI-3	AI-3	UV-1	T ALI	Temp.alimentation	°C	DX9100	DX 9100	2	35	AI-3	AI3.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-3							2/18	2 fils	TE (Gaine)		DX3			
2B-35-AI-4	AI-4	UV-1	H ALI	Humidité alimentation	%HR	DX9100	DX 9100	2	35	AI-4	AI4,+15V	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-4							2/18	Selon dispositif	ENT 0-20 mA ALIM INT (HR)		DX1			
2B-35-AI-5	AI-5	UV-1	H EVAC	Humidité évacuation	%HR	DX9100	DX 9100	2	35	AI-5	AI5,+15V	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-5							2/18	Selon dispositif	ENT 0-20 mA ALIM INT (HR)		DX1			
2B-35-AI-6	AI-6	UV-1	PS ALI	Press.statique alm.	Pa	DX9100	DX 9100	2	35	AI-6	AI6.AICOM,+15V	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-6							3/18	OUT.COM.EXC	DPT-2640 (0-5 VDC)		DX7			
2B-35-AI-7	AI-7	AC-05	T PIE	Temp.pilce	°C	DX9100	DX 9100	2	35	AI-7	AI7.AICOM	P-2B	Salle méc. F-301	4068-066	2B-35-AI-7							2/18	2 fils	TE		DX3	Sonde située dans local F-201		
2B-35-AI-8	AI-8	AC-05	T ALI	Temp.alimentation	°C	DX9100	DX 9100	2	35	AI-8	AI8.AICOM	P-2B	Salle méc. F-301	4068-066	2B-35-AI-8							2/18	2 fils	TE (Gaine)		DX3			
2B-35-AO-1	AO-1	UV-1	VLV PCH	Vanne.pré-chauffage	%	DX9100	DX 9100	2	35	AO-1	AO1.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-1	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		DX27				
2B-35-AO-2	AO-2	UV-1	VOLET FE	Volet.serp.face & évit.	%	DX9100	DX 9100	2	35	AO-2	AO2.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-2	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		DX27				
2B-35-AO-9	AO-9	UV-1	VLV CHA	Vanne.chauffage	%	DX9100	DX 9100	2	35	AO-9	AO9.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-9	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		DX27				
2B-35-AO-10	AO-10	UV-1	VLV REF	Vanne.refroidissement	%	DX9100	DX 9100	2	35	AO-10	AO10.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-10	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		DX27				
2B-35-AO-11	AO-11	UV-1	VLV HUM	Vanne.humidif.	%	DX9100	DX 9100	2	35	AO-11	AO11.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-11	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		DX27				
2B-35-AO-12	AO-12	UV-1	VV UV-1	Variateur vent.alm UV-1	%	DX9100	DX 9100	2	35	AO-12	AO12.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-12							2/18	Selon dispositif	SORTIE 0-10 VDC		DX22			
	AO-13						DX9100 DX 9100	2	35	AO-13		P-2B	Salle méc. F-301		2B-35-AO-13														
	AO-14						DX9100 DX 9100	2	35	AO-14		P-2B	Salle méc. F-301		2B-35-AO-14														
							XT9100 XT (Expansion Module)					P-2B	Salle méc. F-301													Alimentation 24VAC			
							XT9100 XT (Expansion M)	2	36			P-2B	Salle méc. F-301													Tronc N2			
2B-36A-AI-1	XT1AI1	UV-1	VIT UV-1	Indication vitesse UV-1	%	XP9102	XP 9102 (BAI, 2A)	2	36	AI-1	AI1.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-36A-AI-1							2/18	Device dependent	ENT 0-20 mA ALIM EXT		XP2	Point ajouté (14 juin 2001)		
	XT1AI2						XP9102 XP 9102 (BAI, 2A)	2	36	AI-2		P-2B	Salle méc. F-301		2B-36A-AI-2														
	XT1AI3						XP9102 XP 9102 (BAI, 2A)	2	36	AI-3		P-2B	Salle méc. F-301		2B-36A-AI-3														
	XT1AI4						XP9102 XP 9102 (BAI, 2A)	2	36	AI-4		P-2B	Salle méc. F-301		2B-36A-AI-4														
	XT1AI5						XP9102 XP 9102 (BAI, 2A)	2	36	AI-5		P-2B	Salle méc. F-301		2B-36A-AI-5														
	XT1AI6						XP9102 XP 9102 (BAI, 2A)	2	36	AI-6		P-2B	Salle méc. F-301		2B-36A-AI-6														
	XT1AO7						XP9102 XP 9102 (BAI, 2A)	2	36	AO-7		P-2B	Salle méc. F-301		2B-36A-AO-7														
	XT1AO8						XP9102 XP 9102 (BAI, 2A)	2	36	AO-8		P-2B	Salle méc. F-301		2B-36A-AO-8														

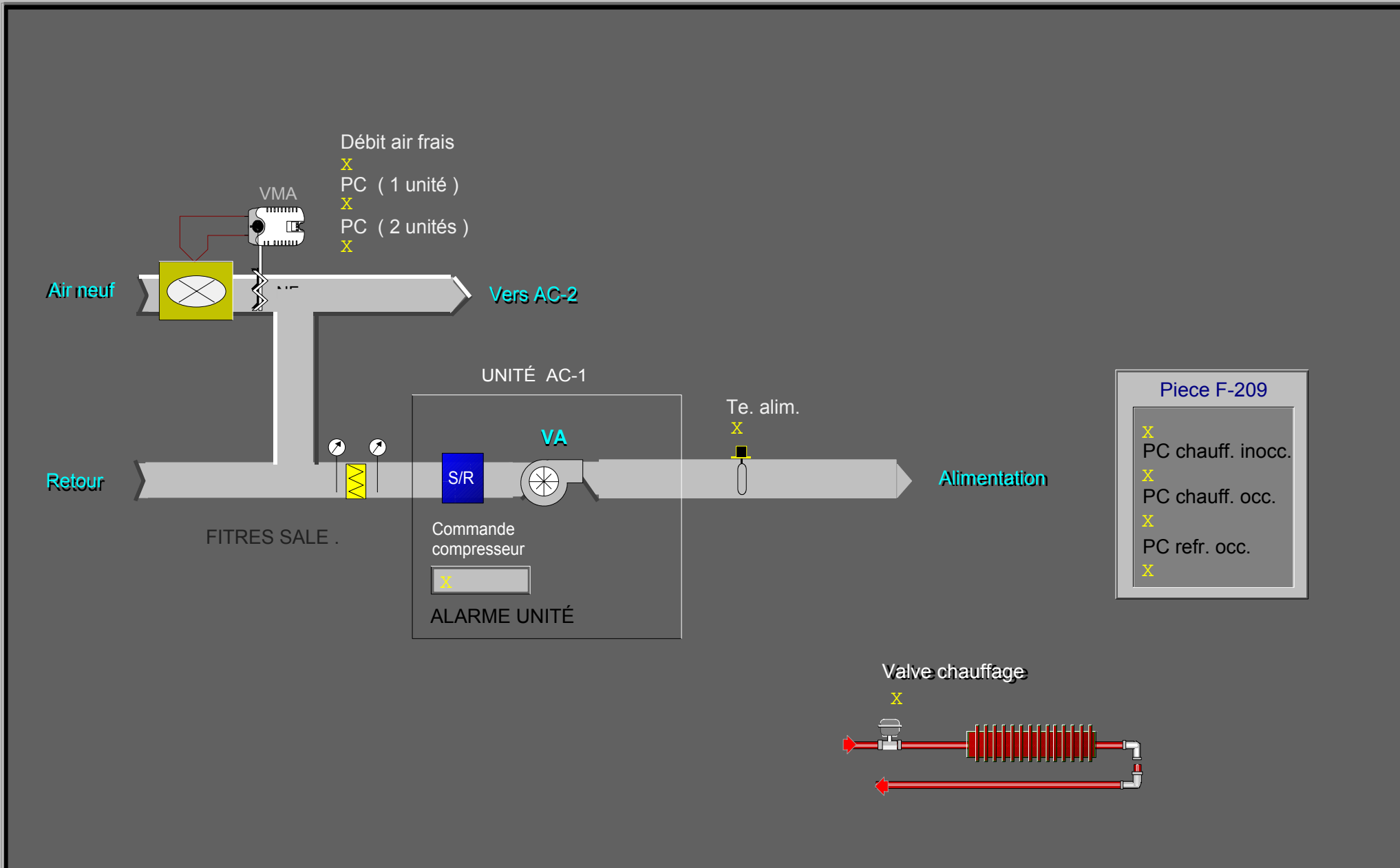
LISTE DE MATÉRIEL POUR LES SYSTÈMES UV-1 ET VE-1

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BL-1	BASSE LIMITE DE TEMP. DE GAINÉ À RÉARMEMENT AUTOMATIQUE, 0-25°C, 2 CONTACTS	A70GA-2C	JOHNSON CONTROLS
C_VE, E_VE	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT) 1-135 AMP	H-735	VÉRIS
H_ALI, H_EVAC	TRANSMETTEUR D'HUMIDITÉ DE GAINÉ, ±3%HR, 0-10VDC	HT6703-0N00P	JOHNSON CONTROLS
ME-1	ACTUATEUR DE VOLET 2 POSITIONS, 24VAC, AVEC RESSORT DE RAPPEL	M9216-AGA-2	JOHNSON CONTROLS
MP-1	ACTUATEUR DE VOLET PNEUMATIQUE, 5-10psi	D-3153-3	JOHNSON CONTROLS
T_ALI, T_PCH, T_SR	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
VLV_CHA	VANNE 3 VOIES, MÉLANGE, 1-1/4", Cv 18.5, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR	VG7842PT+822E01	JOHNSON CONTROLS
VLV_HUM	VANNE D'HUMIDIFICATION PNEU. - PAR D'AUTRE	-----	-----
VLV_PCH	VANNE 2 VOIES, N.O., 1-1/2", Cv 28.9, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR	VG7243RM+843C01	JOHNSON CONTROLS
VLV_REF	VANNE 3 VOIES, MÉLANGE, 3", Cv 80.0, AVEC ACTUATEUR PNEUMATIQUE ET POSITIONNEUR	VG2831UM+845D01	JOHNSON CONTROLS
VOL_FE	ACTUATEUR DE VOLET PNEUMATIQUE ET POSITIONNEUR	D-3153-1	JOHNSON CONTROLS
VV_UV-1	VARIATEUR DE VITESSE, 15HP, 575V/3PH, COMPATIBLE JOHNSON METASYS	VLT6000J17	DANFOSS GRAHAM

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2B

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-35	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
EP-1	RELAIS ÉLECTRO-PNEUMATIQUE 24 VAC	V11HGA-100	JOHNSON CONTROLS
F-1, 1A, 2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-6	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1, IPD-2	INDICATEUR DE PRESSION DIFF. 0-500Pa	2000-500Pa	DWYER
ISP-1	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-1C	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2B	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
PS_ALI	TRANSMETTEUR DE PRESSION DIFFÉRENTIELLE, 0-5"WC (0-1250Pa), 0-5 VDC, ±0.25%	DPT2640-2R5D-A	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
R_C_VA	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RT-1	RELAIS TEMPORISÉ MULTI-FONCTIONS, 24 VAC	DMB51CM24	CARLO GAVAZZI
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-6	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_XXX, VOL_FE	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-36A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS

CLIMATEURS



UNITÉ DE CLIMATISATION AC-01 - LOCAL F-209
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

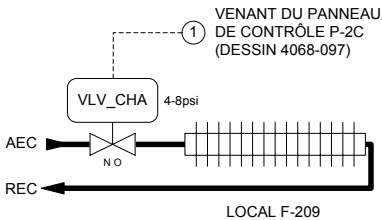
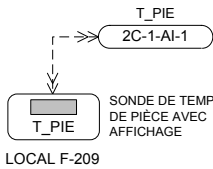
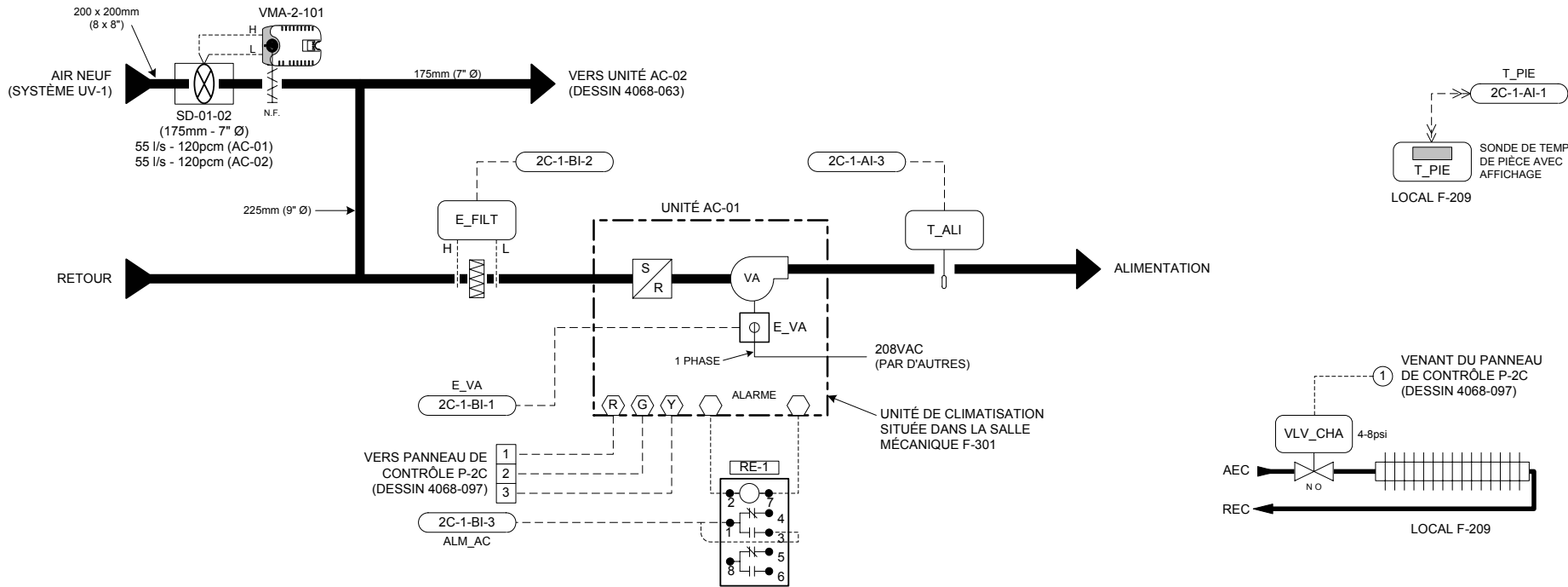
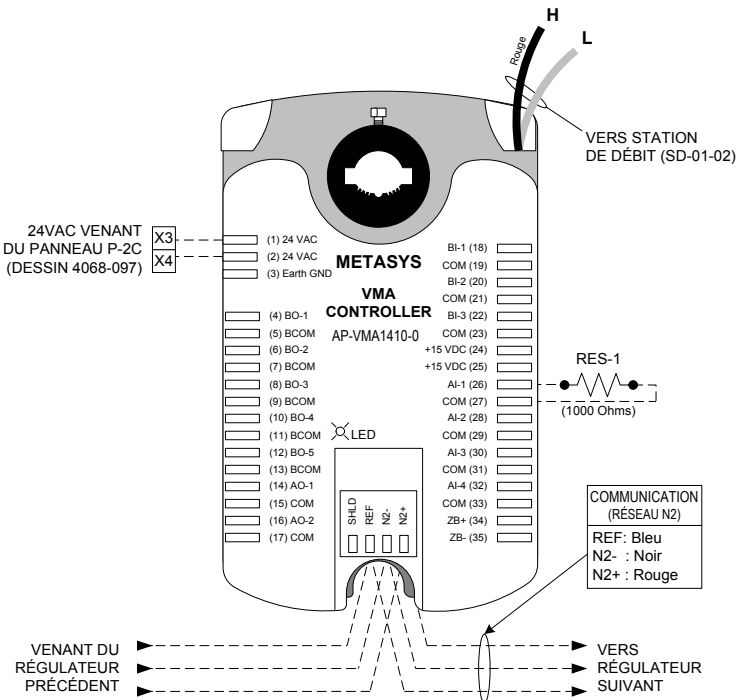


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-101)



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-101	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-01-02	1	RMS-7	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-01 et AC-02 (VMA-2-101) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-01 ou AC-02), le régulateur (VMA-2-101) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsqu'une seule unité est en fonction.
 - 110 l/s (240 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

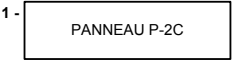
Titre du Dessin					
Unité de climatisation AC-01 Local F-209 Type 1 (Unité avec chauffage péri-métrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24
		1	POUR APPROBATION		06/12/2001
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/22/2001	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMÉRO DESSIN 4068-062	



IDENT.	QTE	MODÈLE	DESCRIPTION
C_COMP, C_VA	4	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	4	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
C_REF	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
DEB_ER	1	RCPFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
DX-2-40	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	PROTÈGE BORNIER
F-1	1	GMA-3	FUSIBLE 3 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-1A,B	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-2	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
G-0 À G-3	4	G-2010-5	MANOMÈTRE 0 - 30 psi, 1-1/2"
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2C	1	M-8100-3042	PANNEAU 30"x42"x9.5"
TX-1	1	MO100A	TRANSFORMATEUR 120V/24V/100VA - MARCUS
UNT-2-1, UNT-2-2	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
VLV_CHA,			
VOL_M_E	3	EP-8000-2	CONVERTISSEUR ÉLECTRO-PNEU., 0 - 10VDC
XP-2-41A	1	XP-9105-8304	MODULE D'EXPANSION 8DI
XP-2-41B	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-41	1	XT-9100-8304	MODULE D'EXTENSION
XP-2-42A	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-42	1	XT-9100-8304	MODULE D'EXTENSION



LISTE DES PLAQUETTES:



				4	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Titre du Dessin				3	MODULES XT-2-42, XP-2-42A		03/14/2002	D.B.
Panneau P-2C				2	RELAIS "DEB_ER" AJOUTÉ		07/30/2001	D.B.
Salle mécanique F-301				1	POUR APPROBATION		06/12/2001	D.B.
(Refroid. CC-1, tour d'eau TR-1, vent. laboratoires VH-1, 2, 3, 4)				DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN DATE PAR
Représentant		Gérant De Projet		Concepteur		DESSINE		
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B.	DATE 15/03/01	PAR DATE 15/03/01
Nom du Projet						Information Succursale		NUMERO CONTRAT
CRDA ST-HYACINTHE						Johnson Controls Ltée		1096-0093
Projet d'Innovation Technologique						355, boul. Montpellier		NUMERO DESSIN
3600, boul. Casavant						St-Laurent, Qc, H4N 2G6		
St-Hyacinthe (Québec)						Tél: (514) 747-2580		4068-097
						Fax: (514) 747-9562		

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-01.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
 Include diagnostics?
 Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	25.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.0
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	20.5
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMPCMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-101.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.0027705282

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	225
ADF	164	Occupied Clg Min	OCCCMIN	225
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.349
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	225

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-01 et AC-02 (VMA-2-101) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-01 ou AC-02), le régulateur (VMA-2-101) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsqu'une seule unité est en fonction.
 - 110 l/s (240 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

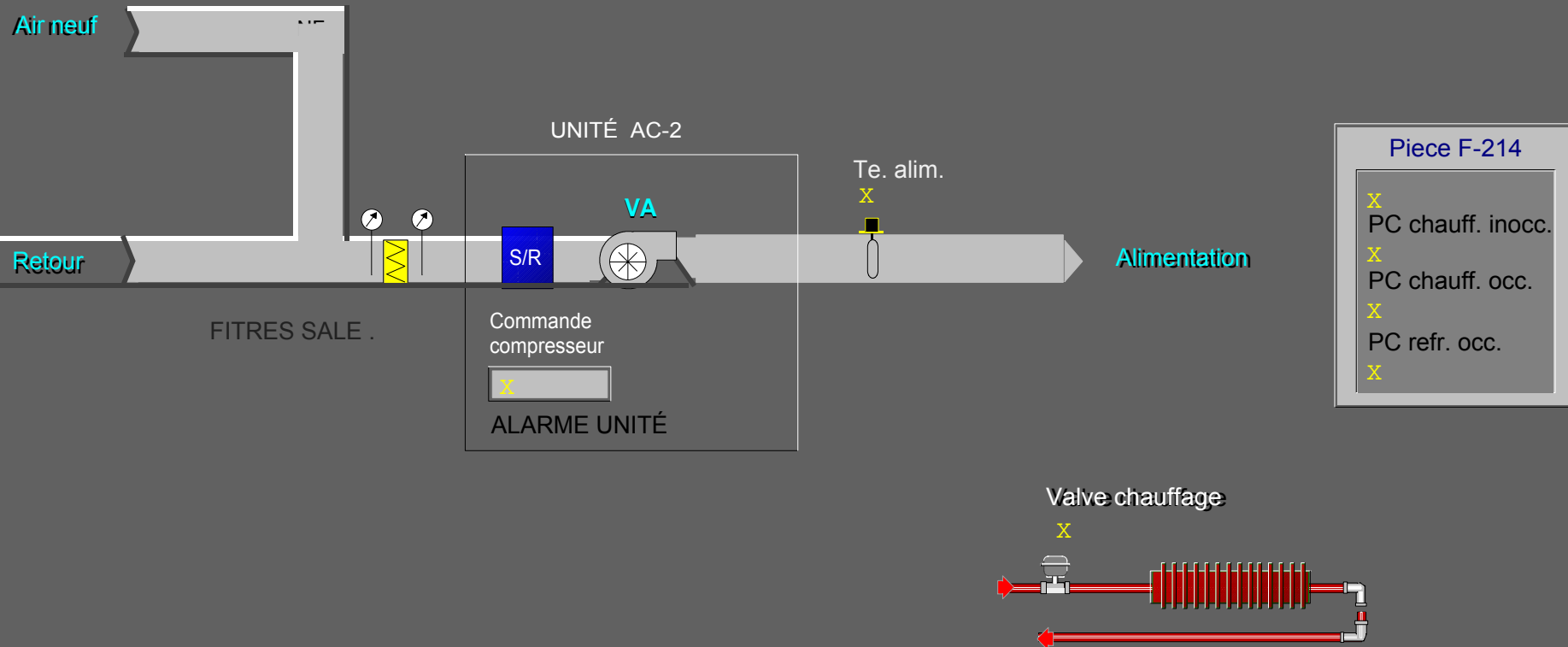
Informations sur points				Informations sur régulateurs								Appareils intermédiaires					Appareils hors panneau									
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-01				UNT	UNT 141					P-2C	Salle méc. F-301													Alimentation 24VAC
						UNT	UNT 141	2	1			P-2C	Salle méc. F-301													Tronc N2
2C-1-AI-1	AI-1	AC-01	T. PIE	Temp.pèce	°C	UNT	UNT 141	2	1	AI-1	PHONE JACK	P-2C	Salle méc. F-301	4068-062	2C-1-AI-1						8/24	Prise tél.	Metastat-Prise télep		UV2	Sonde située dans local F-209
	AI-2	AC-01				UNT	UNT 141	2	1	AI-2		P-2C	Salle méc. F-301		2C-1-AI-2											
2C-1-AI-3	AI-3	AC-01	T. ALI	Temp.alimentation	°C	UNT	UNT 141	2	1	AI-3	AI3.AICM	P-2C	Salle méc. F-301	4068-062	2C-1-AI-3						2/18	2 fils	TE (Gaine)		UV1	
	AI-4	AC-01				UNT	UNT 141	2	1	AI-4		P-2C	Salle méc. F-301		2C-1-AI-4											
	AI-5	AC-01				UNT	UNT 141	2	1	AI-5		P-2C	Salle méc. F-301		2C-1-AI-5											
	AI-6	AC-01				UNT	UNT 141	2	1	AI-6		P-2C	Salle méc. F-301		2C-1-AI-6											
2C-1-BI-1	BI-1	AC-01	E. VA	Etat vent.alimentation	Arrêt Marche	UNT	UNT 141	2	1	BI-1	BI1.24VAC	P-2C	Salle méc. F-301	4068-062	2C-1-BI-1						2/18	Selon dispositif	H-708		UV70	
2C-1-BI-2	BI-2	AC-01	E. FILT	Etat des filtres	Normal Sales	UNT	UNT 141	2	1	BI-2	BI2.24VAC	P-2C	Salle méc. F-301	4068-062	2C-1-BI-2						2/18	Y.R	F32 (NO)		UV70	
2C-1-BI-3	BI-3	AC-01	ALM. AC	Alarme unité AC	Normal Alarme	UNT	UNT 141	2	1	BI-3	BI3.24VAC	P-2C	Salle méc. F-301	4068-062	2C-1-BI-3						2/18	Selon dispositif	Contact (NO)		UV70	
	BI-4	AC-01				UNT	UNT 141	2	1	BI-4		P-2C	Salle méc. F-301		2C-1-BI-4											
2C-1-BO-1	BO-1	AC-01	C. VA	Comm.a/d vent.alim.	Arrêt Marche	UNT	UNT 141	2	1	BO-1	BO1.COM	P-2C	Salle méc. F-301	4068-062	2C-1-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
	BO-2	AC-01				UNT	UNT 141	2	1	BO-2		P-2C	Salle méc. F-301		2C-1-BO-2											
	BO-3	AC-01				UNT	UNT 141	2	1	BO-3		P-2C	Salle méc. F-301		2C-1-BO-3											
2C-1-BO-4	BO-4	AC-01	C. COMP	Comm.a/d compresseur	Arrêt Marche	UNT	UNT 141	2	1	BO-4	BO4.COM	P-2C	Salle méc. F-301	4068-062	2C-1-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
	BO-5	AC-01				UNT	UNT 141	2	1	BO-5		P-2C	Salle méc. F-301		2C-1-BO-5											
	BO-6	AC-01				UNT	UNT 141	2	1	BO-6		P-2C	Salle méc. F-301		2C-1-BO-6											
2C-1-AO-1	AO-1	AC-01	VLV. CHA	Vanne chauffage	%	UNT	UNT 141	2	1	AO-1	AO1.AOCOM	P-2C	Salle méc. F-301	4068-062	2C-1-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		UV27	Convecteur situé dans le local F-209
	AO-2	AC-01				UNT	UNT 141	2	1	AO-2		P-2C	Salle méc. F-301		2C-1-AO-2											
		AC-01				VMA	VMA 1410					P-2	Unité AC-01													Alimentation 24VAC
						VMA	VMA 1410	2	101			P-2	Unité AC-01													Tronc N2
2-101-AI-1	AI-1	AC-01	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	2	101	AI-1	AI1.AICM	P-2	Unité AC-01	4068-062	2-101-AI-1					VMA	2 fils		Résistance 1000 ohms		VMA1	
	AI-2	AC-01				VMA	VMA 1410	2	101	AI-2		P-2	Unité AC-01		2-101-AI-2											
	BI-1	AC-01				VMA	VMA 1410	2	101	BI-1		P-2	Unité AC-01		2-101-BI-1											
	BI-2	AC-01				VMA	VMA 1410	2	101	BI-2		P-2	Unité AC-01		2-101-BI-2											
	BI-3	AC-01				VMA	VMA 1410	2	101	BI-3		P-2	Unité AC-01		2-101-BI-3											
2-101-AI-5	AI-5	AC-01	P. VEL	Pression de vélocité	Pa	VMA	VMA 1410	2	101	AI-5		P-2	Unité AC-01	4068-062	2-101-AI-5											Air neuf AC-01, AC-02

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-01

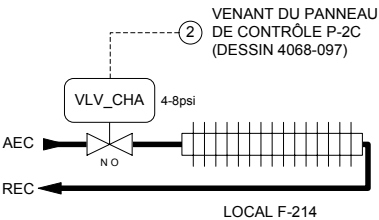
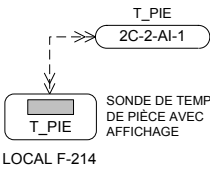
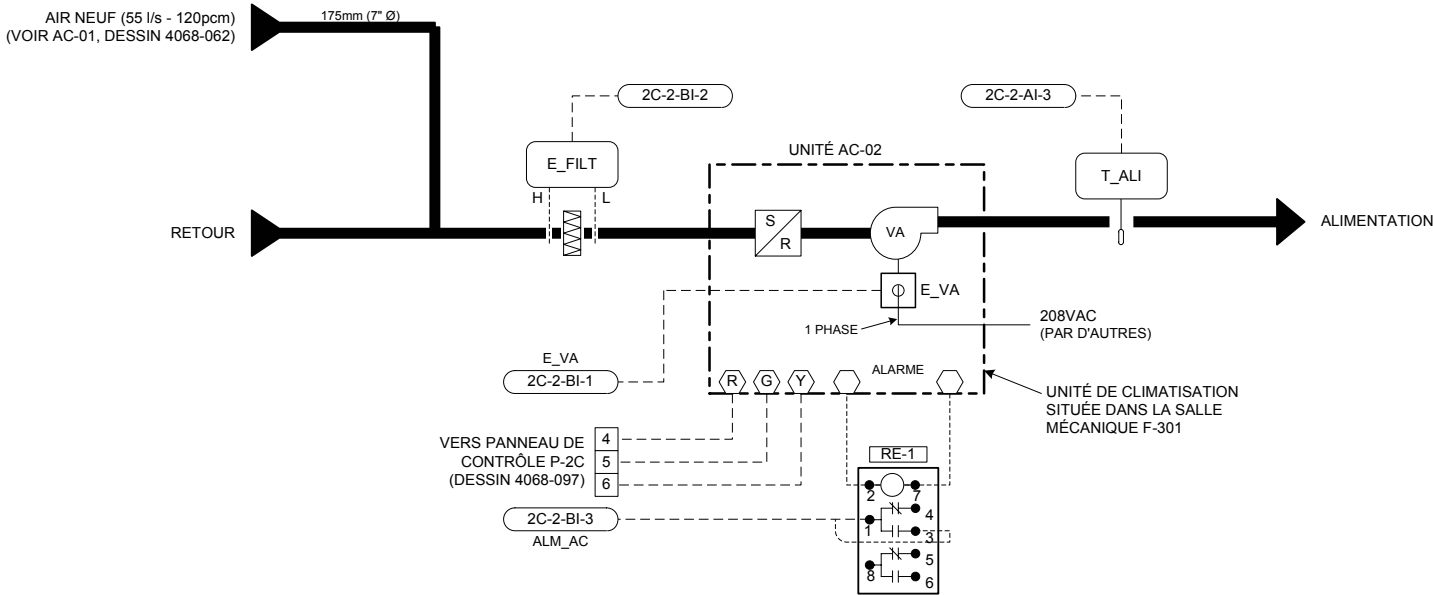
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-01-02	STATION DE MESURE DE VÉLOCITÉ 172mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-101	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2C

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_REF	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_ER	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-40	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1	FUSIBLE 3 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-1A, B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2C	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-1, 2-2	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_CHA, VOL_M_E	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-42B	MODULE D'EXPENSION 8DI	XP-9105-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-41	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-42	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-02 - LOCAL F-214
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

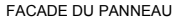
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi

SÉQUENCE D'OPÉRATION (TYPE 1)

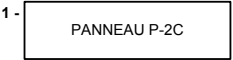
- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf commun à AC-01 et AC-02 (VMA-2-111, voir dessin 4068-062) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ d'une des unités (AC-01 ou AC-02), le régulateur (VMA-2-111) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsqu'une seule unité est en fonction.
 - 110 l/s (240 pcm) lorsque les deux unités fonctionnent.
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.



IDENT.	QTE	MODÈLE	DESCRIPTION
C_COMP, C_VA	4	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	4	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
C_REF	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
DEB_ER	1	RCPFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
DX-2-40	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	PROTÈGE BORNIER
F-1	1	GMA-3	FUSIBLE 3 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-1A,B	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-2	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
G-0 À G-3	4	G-2010-5	MANOMÈTRE 0 - 30 psi, 1-1/2"
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2C	1	M-8100-3042	PANNEAU 30"x42"x9.5"
TX-1	1	MO100A	TRANSFORMATEUR 120V/24V/100VA - MARCUS
UNT-2-1, UNT-2-2	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
VLV_CHA,			
VOL_M_E	3	EP-8000-2	CONVERTISSEUR ÉLECTRO-PNEU., 0 - 10VDC
XP-2-41A	1	XP-9105-8304	MODULE D'EXPANSION 8DI
XP-2-41B	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-41	1	XT-9100-8304	MODULE D'EXTENSION
XP-2-42A	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-42	1	XT-9100-8304	MODULE D'EXTENSION



LISTE DES PLAQUETTES:



				4	TEL QUE CONSTRUIT		D.B.		02/04/29	O.P.				
Titre du Dessin				3	MODULES XT-2-42, XP-2-42A				03/14/2002	D.B.				
Panneau P-2C				2	RELAIS "DEB_ER" AJOUTÉ				07/30/2001	D.B.				
Salle mécanique F-301				1	POUR APPROBATION				06/12/2001	D.B.				
(Refroid. CC-1, tour d'eau TR-1,				DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN	DATE	PAR		
vent. laboratoires VH-1, 2, 3, 4)				Représentant		Gérant De Projet		Concepteur		DESSINE		APPROUVE		
		J.-C. Rouillon		S. Bourque		D. Bouchard		PAR	D.B.	DATE	15/03/01	PAR	DATE	15/03/01
Nom du Projet								Information Succursale		NUMERO CONTRAT				
CRDA ST-HYACINTHE								Johnson Controls Ltée		1096-0093				
Projet d'Innovation Technologique								355, boul. Montpellier						
3600, boul. Casavant								St-Laurent, Qc, H4N 2G6						
St-Hyacinthe (Québec)								Tél: (514) 747-2580						
								Fax: (514) 747-9562		NUMERO DESSIN				
										4068-097				

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-02.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
Include diagnostics?
Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.5
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	1.0
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	15.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-101.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.0027705282

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	225
ADF	164	Occupied Clg Min	OCCCMIN	225
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.349
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	225

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-01 et AC-02 (VMA-2-111, voir dessin 4068-062) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-01 ou AC-02), le régulateur (VMA-2-111) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsqu'une seule unité est en fonction.
 - 110 l/s (240 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

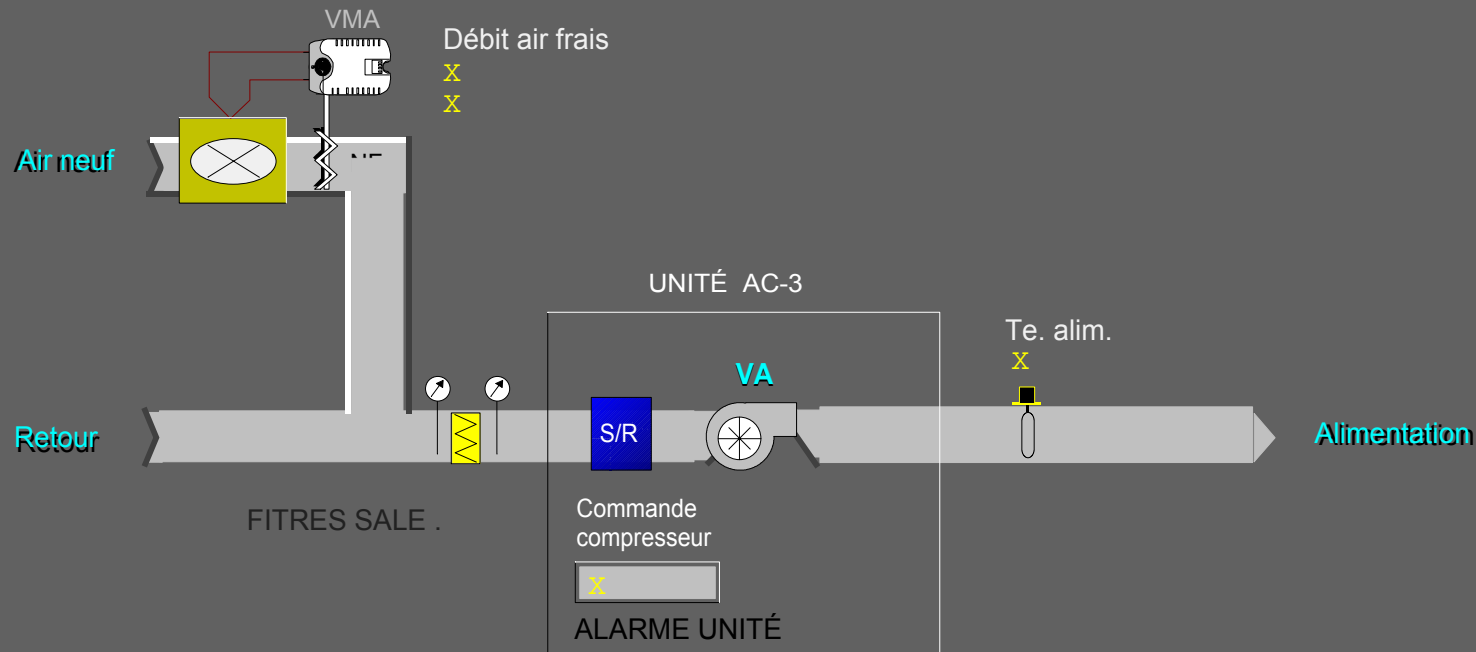
Informations sur points				Informations sur régulateurs								Appareils intermédiaires										Appareils hors panneau				
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-02				UNT	UNT 141	2	2			P-2C	Salle méc. F-301													Alimentation 24VAC
2C-2-AI-1	AI-1	AC-02	T_PIE	Temp.pieçe	°C	UNT	UNT 141	2	2	2AI-1	PHONE JACK	P-2C	Salle méc. F-301	4068-063	2C-2-AI-1						8/24	Prise tél.	Metastat-Prise télep		UV2	Tronc N2
2C-2-AI-2	AI-2	AC-02				UNT	UNT 141	2		2AI-2		P-2C	Salle méc. F-301		2C-2-AI-2											Sonde située dans local F-214
2C-2-AI-3	AI-3	AC-02	T_ALI	Temp.alimentation	°C	UNT	UNT 141	2		2AI-3	AI3,AICM	P-2C	Salle méc. F-301	4068-063	2C-2-AI-3						2/18	2 fils	TE (Gaine)		UV1	
	AI-4	AC-02				UNT	UNT 141	2		2AI-4		P-2C	Salle méc. F-301		2C-2-AI-4											
	AI-5	AC-02				UNT	UNT 141	2		2AI-5		P-2C	Salle méc. F-301		2C-2-AI-5											
	AI-6	AC-02				UNT	UNT 141	2		2AI-6		P-2C	Salle méc. F-301		2C-2-AI-6											
2C-2-BI-1	BI-1	AC-02	E_VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 141	2	2BI-1	BI1,24VAC	P-2C	Salle méc. F-301	4068-063	2C-2-BI-1						2/18	Selon dispositif	H-708		UV70	
2C-2-BI-2	BI-2	AC-02	E_FILT	État des filtres	Normal	Alarme	UNT	UNT 141	2	2BI-2	BI2,24VAC	P-2C	Salle méc. F-301	4068-063	2C-2-BI-2						2/18	Y.R	P32 (NO)		UV70	
2C-2-BI-3	BI-3	AC-02	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	2	2BI-3	BI3,24VAC	P-2C	Salle méc. F-301	4068-063	2C-2-BI-3						2/18	Selon dispositif	Contact (NO)		UV70	
	BI-4	AC-02				UNT	UNT 141	2		2BI-4		P-2C	Salle méc. F-301		2C-2-BI-4											
2C-2-BO-1	BO-1	AC-02	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	2	2BO-1	BO1.COM	P-2C	Salle méc. F-301	4068-063	2C-2-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw h)		UV51	
	BO-2	AC-02				UNT	UNT 141	2		2BO-2		P-2C	Salle méc. F-301		2C-2-BO-2											
	BO-3	AC-02				UNT	UNT 141	2		2BO-3		P-2C	Salle méc. F-301		2C-2-BO-3											
2C-2-BO-4	BO-4	AC-02	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	2	2BO-4	BO4.COM	P-2C	Salle méc. F-301	4068-063	2C-2-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw h)		UV51	Convecteur situé dans le local F-214
	BO-5	AC-02				UNT	UNT 141	2		2BO-5		P-2C	Salle méc. F-301		2C-2-BO-5											
	BO-6	AC-02				UNT	UNT 141	2		2BO-6		P-2C	Salle méc. F-301		2C-2-BO-6											
2C-2-AO-1	AO-1	AC-02	VLV_CHA	Vanne chauffage	%	UNT	UNT 141	2		2AO-1	AO1.AOCCOM	P-2C	Salle méc. F-301	4068-063	2C-2-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		UV27	
AO-2	AO-2					UNT	UNT 141	2		2AO-2		P-2C	Salle méc. F-301		2C-2-AO-2											

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-02

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2C

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_REF	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_ER	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-40	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
F-1	FUSIBLE 3 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-1A, B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2C	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-1, 2-2	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_CHA, VOL_M_E	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-42B	MODULE D'EXPENSION 8DI	XP-9105-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-41	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-42	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS

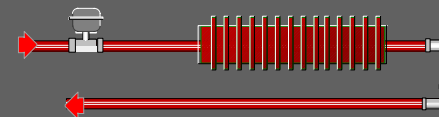


Piece F-219

- X PC chauff. inocc.
- X PC chauff. occ.
- X PC refr. occ.
- X

Valve chauffage

X



UNITÉ DE CLIMATISATION AC-03 - LOCAL F-219
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

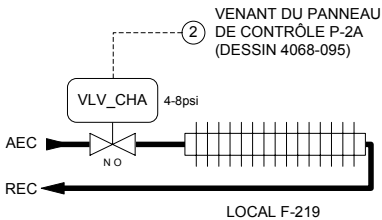
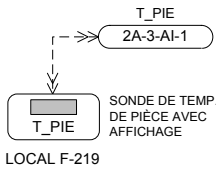
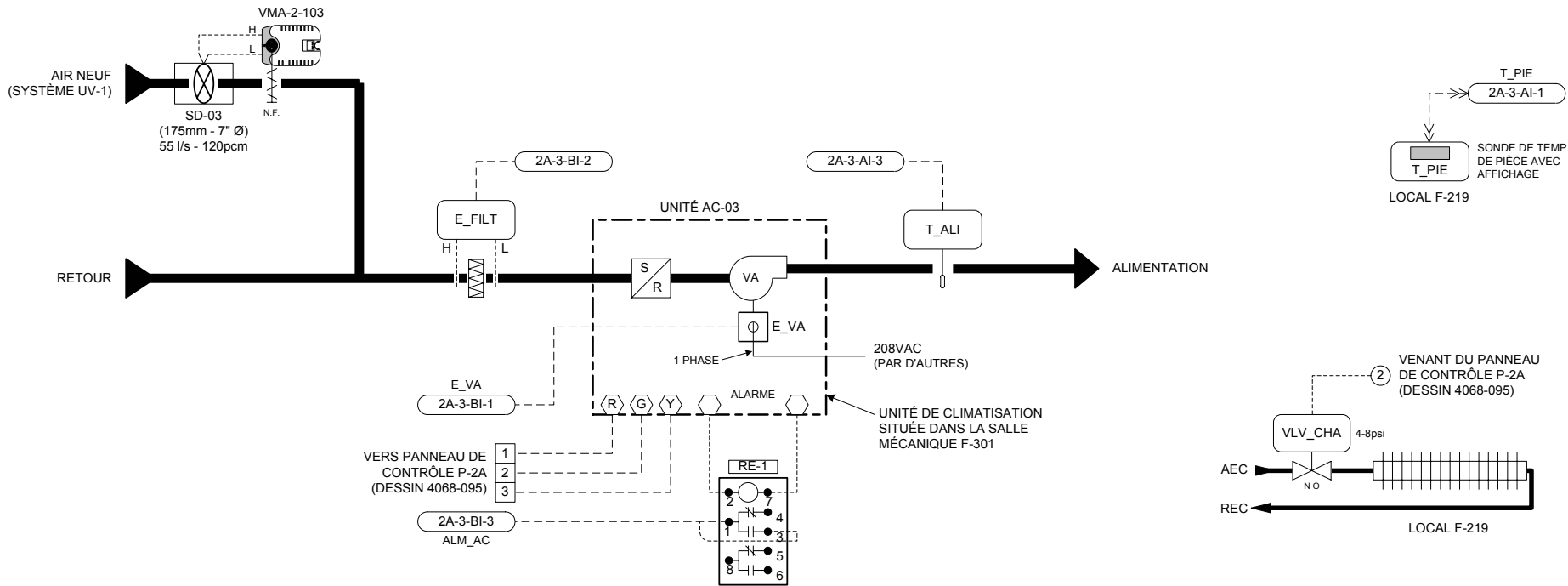
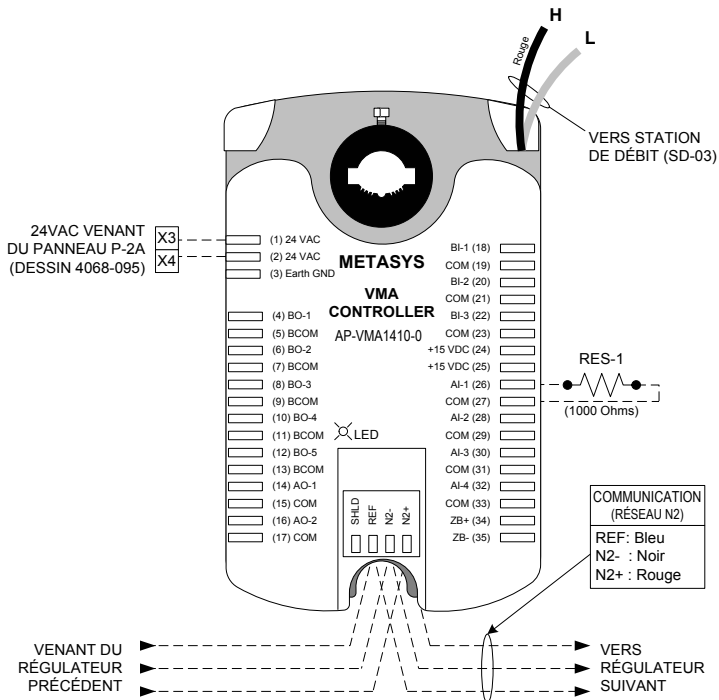


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-103)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-103	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-03	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-103) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-103) module son volet afin de maintenir le débit d'air neuf requis (55 l/s - 120 pcm).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin					
Unité de climatisation AC-03		2	TEL QUE CONSTRUIT	D.B.	02/04/24
Local F-219		1	POUR APPROBATION		06/12/2001
Type 1 (Unité avec chauffage					
périmétrique)					
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093	
Projet d'Innovation Technologique		Johnson Controls Ltée		NUMÉRO DESSIN	
3600, boul. Casavant		355, boul. Montpellier		4068-064	
St-Hyacinthe (Québec)		St-Laurent, Qc, H4N 2G6			
		Tél: (514) 747-2580			
		Fax: (514) 747-9562			
		Groupe de la régulation			



STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-03.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Proportional

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

TMZ Digital room sensor

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command

Do you want the temporary occupied feature?

No

Do you want boost mode?

No
Include diagnostics?
Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	20.6
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	19.5
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-103.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.034098059

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	170
ADF	164	Occupied Clg Min	OCCCMIN	170
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	170

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-103) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-103) module son volet afin de maintenir le débit d'air neuf requis (55 l/s - 120 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

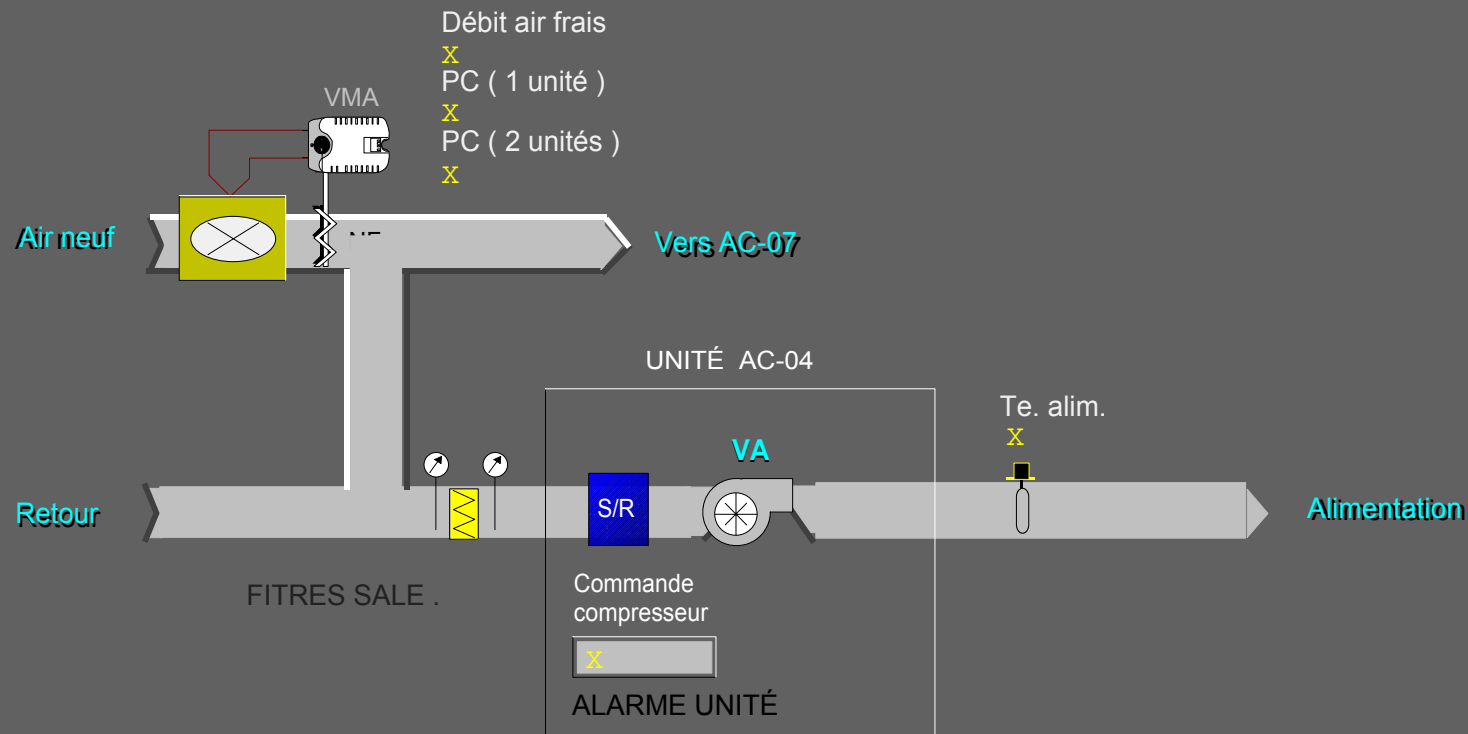
Informations sur points					Informations sur régulateurs							Appareils intermédiaires										Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminals sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminals entrée	Appareil	Terminals sortie	Emplac.	Câble / tube	Terminals entrée	Appareil	Calibration	Détail de réf.	Commentaires		
		AC-03				UNT	UNT 141		1	3		P-2A	Salle méc. F-301													Alimentation 24VAC		
2A-3-AI-1	AI-1	AC-03	T PIE	Temp.pièce	°C	UNT	UNT 141		1	3	AI-1	P-2A	Salle méc. F-301	4068-064	2A-3-AI-1						8/24	Prise téli.	Metastat-Prise Mémip			UV2	Tronc N2	
	AI-2	AC-03				UNT	UNT 141		1	3	AI-2	P-2A	Salle méc. F-301		2A-3-AI-2											Sonde située dans local F-219		
2A-3-AI-3	AI-3	AC-03	T ALI	Temp.alimentation	°C	UNT	UNT 141		1	3	AI-3	P-2A	Salle méc. F-301	4068-064	2A-3-AI-3						2/18	2 fils	TE (Gaine)			UV1		
	AI-4	AC-03				UNT	UNT 141		1	3	AI-4	P-2A	Salle méc. F-301		2A-3-AI-4													
	AI-5	AC-03				UNT	UNT 141		1	3	AI-5	P-2A	Salle méc. F-301		2A-3-AI-5													
	AI-6	AC-03				UNT	UNT 141		1	3	AI-6	P-2A	Salle méc. F-301		2A-3-AI-6													
2A-3-BI-1	BI-1	AC-03	E VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 141		1	3	BI-1	P-2A	Salle méc. F-301	4068-064	2A-3-BI-1					2/18	Selon dispositif	H-708			UV70		
2A-3-BI-2	BI-2	AC-03	E FILT	État des filtres	Normal	Alarme	UNT	UNT 141		1	3	BI-2	P-2A	Salle méc. F-301	4068-064	2A-3-BI-2					2/18	Y.R	P32 (NO)			UV70		
2A-3-BI-3	BI-3	AC-03	ALM AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141		1	3	BI-3	P-2A	Salle méc. F-301	4068-064	2A-3-BI-3					2/18	Selon dispositif	Contact (NO)			UV70		
	BI-4	AC-03					UNT	UNT 141		1	3	BI-4	P-2A	Salle méc. F-301		2A-3-BI-4												
2A-3-BO-1	BO-1	AC-03	C VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141		1	3	BO-1	P-2A	Salle méc. F-301	4068-064	2A-3-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)			UV51	
	BO-2	AC-03					UNT	UNT 141		1	3	BO-2	P-2A	Salle méc. F-301		2A-3-BO-2												
	BO-3	AC-03					UNT	UNT 141		1	3	BO-3	P-2A	Salle méc. F-301		2A-3-BO-3												
2A-3-BO-4	BO-4	AC-03	C COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141		1	3	BO-4	P-2A	Salle méc. F-301	4068-064	2A-3-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)			UV51	
	BO-5	AC-03					UNT	UNT 141		1	3	BO-5	P-2A	Salle méc. F-301		2A-3-BO-5												
	BO-6	AC-03					UNT	UNT 141		1	3	BO-6	P-2A	Salle méc. F-301		2A-3-BO-6												
2A-3-AO-1	AO-1	AC-03	VLV_CHA	Vanne chauffage	%		UNT	UNT 141		1	3	AO-1	P-2A	Salle méc. F-301	4068-064	2A-3-AO-1	2/18	+-	EP-8000	SUPPLY_O		1/4"	Raccord à crans	EP-PNEU.			UV27	
	AO-2	AC-03					UNT	UNT 141		1	3	AO-2	P-2A	Salle méc. F-301		2A-3-AO-2												
						VMA	VMA 1410		1			P-2	Unité AC-03													Alimentation 24VAC		
		AC-03				VMA	VMA 1410		1	103		P-2	Unité AC-03													Tronc N2		
2-103-AI-1	AI-1	AC-03	RES	Résistance 1000 ohms	°C		VMA	VMA 1410		1	103	AI-1	P-2	Unité AC-03	4068-064	2-103-AI-1				VMA		2 fils	Résistance 1000 ohms			VMA1		
	AI-2	AC-03					VMA	VMA 1410		1	103	AI-2	P-2	Unité AC-03		2-103-AI-2												
	BI-1	AC-03					VMA	VMA 1410		1	103	BI-1	P-2	Unité AC-03		2-103-BI-1												
	BI-2	AC-03					VMA	VMA 1410		1	103	BI-2	P-2	Unité AC-03		2-103-BI-2												
	BI-3	AC-03					VMA	VMA 1410		1	103	BI-3	P-2	Unité AC-03		2-103-BI-3												
2-103-AI-5	AI-5	AC-03	P VEL	Pression de vélocité	Pa		VMA	VMA 1410		1	103	AI-5	P-2	Unité AC-03	4068-064	2-103-AI-5											Air neuf AC-03	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-03

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-03	STATION DE MESURE DE VÉLOCITÉ 172mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-103	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-1-30	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, 1A 1B 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1	INDICATEUR DE PRESSION DIFF. 0-250Pa	2000-250Pa	DWYER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2A	PANNEAU 36"x48"x9.5	M-8100-3648	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-3, UNT-2-4	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-8	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_xxx	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-31A	MODULE D'EXPANSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-31	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



Piece F-224

- X PC chauff. inocc.
- X PC chauff. occ.
- X PC refr. occ.
- X



UNITÉ DE CLIMATISATION AC-04 - LOCAL F-224
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

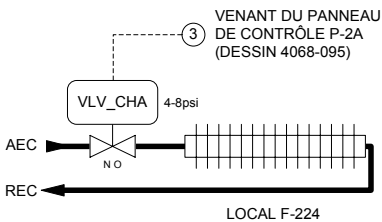
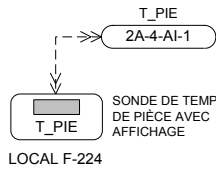
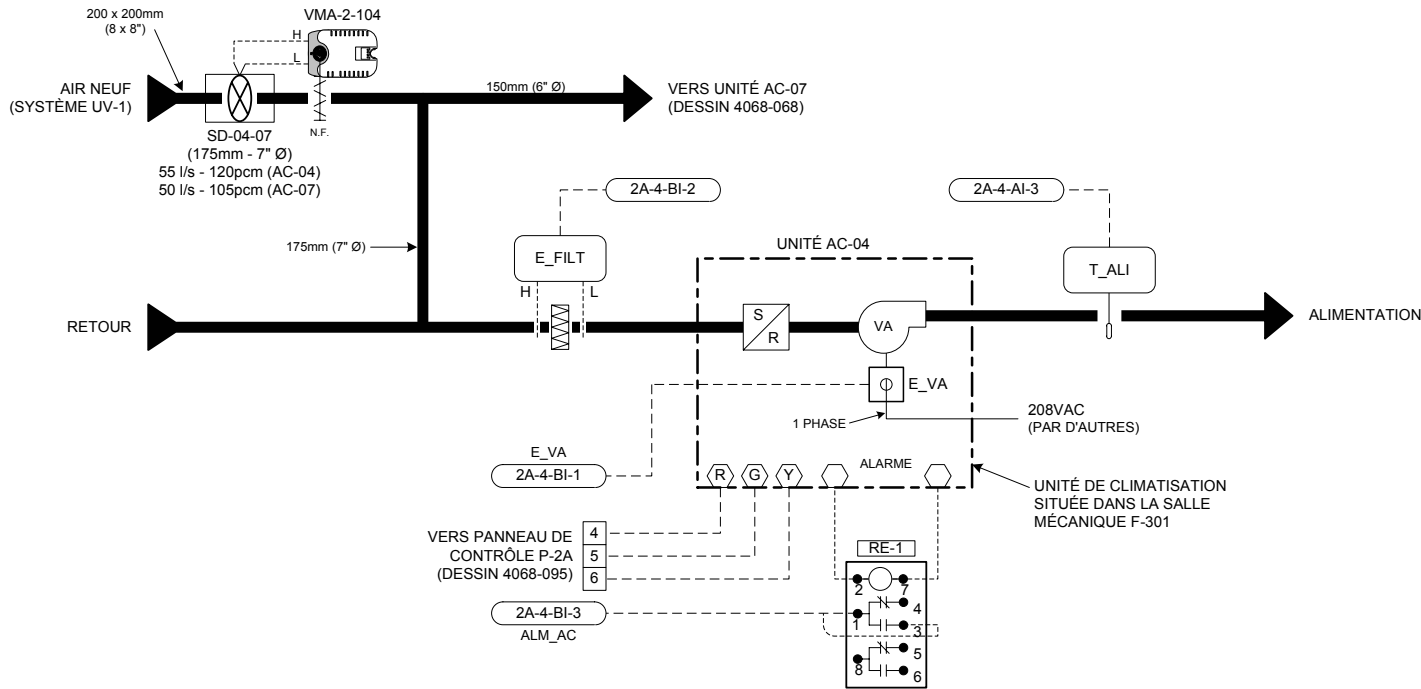
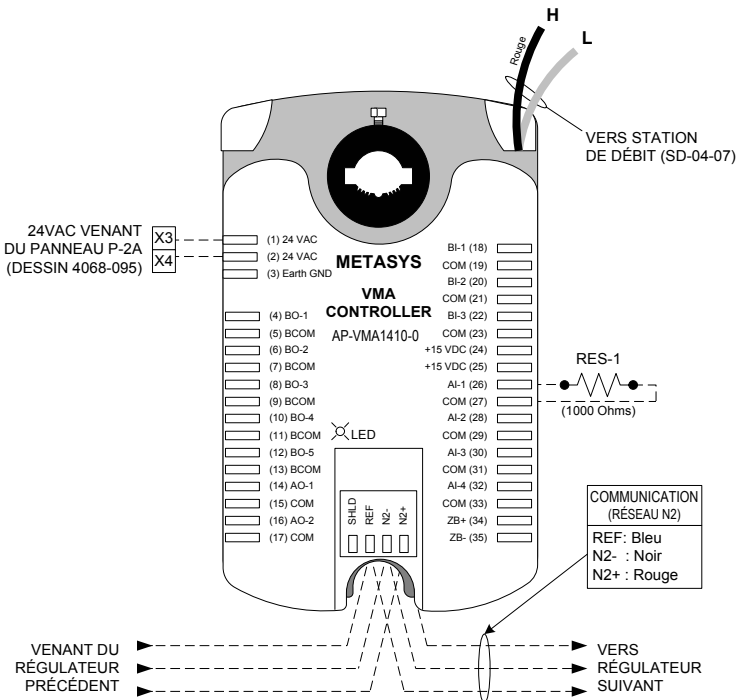


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-104)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241ES+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 1.8, ACT. PNEU 4-8psi
VMA-2-104	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-04-07	1	RMS-7	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-04 et AC-07 (VMA-2-104) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-04 ou AC-07), le régulateur (VMA-2-104) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsque l'unité AC-04 est en fonction.
 - 50 l/s (105 pcm) lorsque l'unité AC-07 est en fonction.
 - 105 l/s (225 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin					
Unité de climatisation AC-04		2	TEL QUE CONSTRUIT	D.B.	02/04/24
Local F-224		1	POUR APPROBATION		06/12/2001
Type 1 (Unité avec chauffage					
périmétrique)					
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/22/2001	PAR 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093	
Projet d'Innovation Technologique		Johnson Controls Ltée		NUMÉRO DESSIN	
3600, boul. Casavant		355, boul. Montpeller		4068-065	
St-Hyacinthe (Québec)		St-Laurent, Qc, H4N 2G6			
		Tél: (514) 747-2580			
		Fax: (514) 747-9562			
		Groupe de la régulation			

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-04.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
Include diagnostics?
Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	24.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	22.6
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-104.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.02118443

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	225
ADF	164	Occupied Clg Min	OCCCMIN	225
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.35
ADF	25	Pickup Gain	PKUPGAIN	1.7
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	225

VAV Box Mode

ADI

67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-04 et AC-07 (VMA-2-104) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-04 ou AC-07), le régulateur (VMA-2-104) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsque l'unité AC-04 est en fonction.
 - 50 l/s (105 pcm) lorsque l'unité AC-07 est en fonction.
 - 105 l/s (225 pcm) lorsque les deux unités fonctionnent.
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

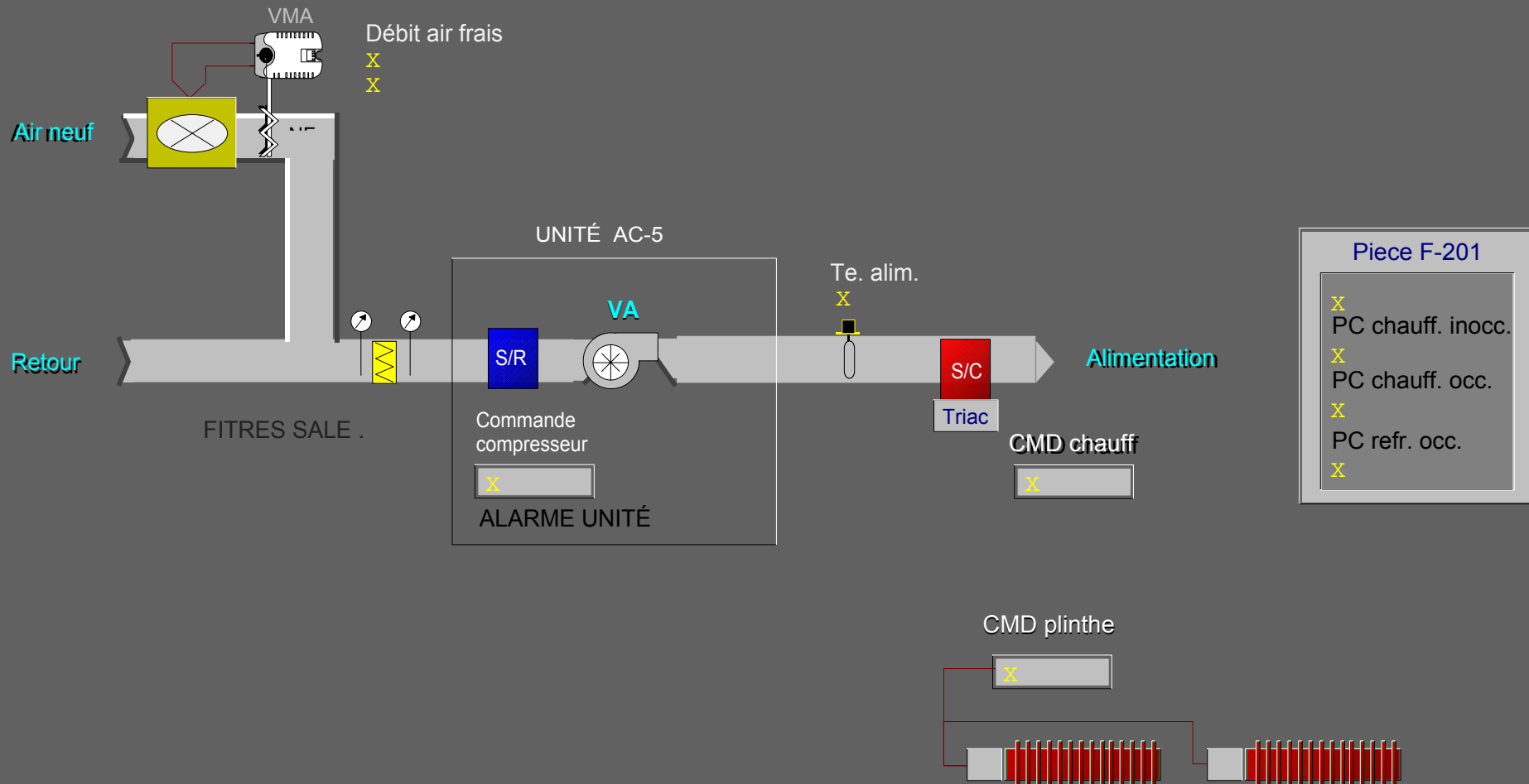
Informations sur points					Informations sur régulateurs							Appareils intermédiaires										Appareils hors panneau					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminals sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-04				UNT	UNT 141					P-2A	Salle méc. F-301													Alimentation 24VAC	
2A-4-AI-1	AI-1	AC-04	T PIE	Temp.pièce	°C	UNT	UNT 141	1	4			P-2A	Salle méc. F-301													Tronc N2	
	AI-2	AC-04				UNT	UNT 141	1		AI-1	PHONE JACK	P-2A	Salle méc. F-301	4068-065	2A-4-AI-1						8/24	Prise tél.	Metastat-Prise Mémip			UV2	Sonde située dans local F-224
2A-4-AI-3	AI-3	AC-04	T ALI	Temp.alimentation	°C	UNT	UNT 141	1		AI-2		P-2A	Salle méc. F-301														
	AI-4	AC-04				UNT	UNT 141	1		AI-3	AI3,AICM	P-2A	Salle méc. F-301	4068-065	2A-4-AI-3						2/18	2 fils	TE (Gaine)			UV1	
	AI-5	AC-04				UNT	UNT 141	1		AI-4		P-2A	Salle méc. F-301														
	AI-6	AC-04				UNT	UNT 141	1		AI-5		P-2A	Salle méc. F-301														
						UNT	UNT 141	1		AI-6		P-2A	Salle méc. F-301														
2A-4-BI-1	BI-1	AC-04	E VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 141	1	BI-1	BI1,24VAC	P-2A	Salle méc. F-301	4068-065	2A-4-BI-1						2/18	Selon dispositif	H-708			UV70	
2A-4-BI-2	BI-2	AC-04	E FILT	État des filtres	Normal	Alarme	UNT	UNT 141	1	BI-2	BI2,24VAC	P-2A	Salle méc. F-301	4068-065	2A-4-BI-2						2/18	Y.R	P32 (NO)			UV70	
2A-4-BI-3	BI-3	AC-04	ALM AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	BI-3	BI3,24VAC	P-2A	Salle méc. F-301	4068-065	2A-4-BI-3						2/18	Selon dispositif	Contact (NO)			UV70	
	BI-4	AC-04				UNT	UNT 141	1		BI-4		P-2A	Salle méc. F-301														
2A-4-BO-1	BO-1	AC-04	C VA	Comm.al'd vent.alim.	Arrêt	Marche	UNT	UNT 141	1	BO-1	BO1.COM	P-2A	Salle méc. F-301	4068-065	2A-4-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)			UV51	
	BO-2	AC-04				UNT	UNT 141	1		BO-2		P-2A	Salle méc. F-301														
	BO-3	AC-04				UNT	UNT 141	1		BO-3		P-2A	Salle méc. F-301														
2A-4-BO-4	BO-4	AC-04	C COMP	Comm.al'd compresseur	Arrêt	Marche	UNT	UNT 141	1	BO-4	BO4.COM	P-2A	Salle méc. F-301	4068-065	2A-4-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)			UV51	
	BO-5	AC-04				UNT	UNT 141	1		BO-5		P-2A	Salle méc. F-301														
	BO-6	AC-04				UNT	UNT 141	1		BO-6		P-2A	Salle méc. F-301														
2A-4-AO-1	AO-1	AC-04	VLV_CHA	Vanne chauffage	%	UNT	UNT 141	1		AO-1	AO1,AOCOM	P-2A	Salle méc. F-301	4068-065	2A-4-AO-1	2/18	+-	EP-8000	SUPPLY_O		1/4"	Raccord à crans	EP-PNEU.			UV27	
	AO-2	AC-04				UNT	UNT 141	1		AO-2		P-2A	Salle méc. F-301														
						VMA	VMA 1410					P-2	Unité AC-04													Alimentation 24VAC	
		AC-04				VMA	VMA 1410	1		104		P-2	Unité AC-04													Tronc N2	
2-104-AI-1	AI-1	AC-04	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1		104AI-1	AI1,AICM	P-2	Unité AC-04	4068-065	2-104-AI-1					VMA	2 fils		Résistance 1000 ohms			VMA1	
	AI-2	AC-04				VMA	VMA 1410	1		104AI-2		P-2	Unité AC-04														
	BI-1	AC-04				VMA	VMA 1410	1		104BI-1		P-2	Unité AC-04														
	BI-2	AC-04				VMA	VMA 1410	1		104BI-2		P-2	Unité AC-04														
	BI-3	AC-04				VMA	VMA 1410	1		104BI-3		P-2	Unité AC-04														
2-104-AI-5	AI-5	AC-04	P VEL	Pression de vélocité	Pa	VMA	VMA 1410	1		104AI-5		P-2	Unité AC-04	4068-065	2-104-AI-5											Air neuf AC-04, AC-07	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-4

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-04-07	STATION DE MESURE DE VÉLOCITÉ 172mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-104	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-1-30	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, 1A 1B 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1	INDICATEUR DE PRESSION DIFF. 0-250Pa	2000-250Pa	DWYER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2A	PANNEAU 36"x48"x9.5	M-8100-3648	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-3, UNT-2-4	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-8	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_xxx	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-31A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-31	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-05 - LOCAL F-201
(TYPE 3 - UNITÉ DE CLIMATISATION AVEC SERPENTIN ÉLECTRIQUE ET CHAUFFAGE PÉRIMÉTRIQUE)

AIR NEUF (SYSTÈME UV-1) → SD-05 (150mm - 6" Ø) 55 l/s - 120pcm → VMA-2-105 → N.F. → E_FILT → UNITÉ AC-05 → T_ALI → SE-19 (16 kW) TRIAC → ALIMENTATION

RETOUR → UNITÉ AC-05 → T_ALI → SE-19 (16 kW) TRIAC → ALIMENTATION

UNITÉ AC-05 (VA, E_VA, ALARME) → 1 PHASE → 208VAC (PAR D'AUTRES) → SE-19 (16 kW) TRIAC

SE-19 (16 kW) TRIAC → C_SC (2B-35-DO-7) → T_PIE (2B-35-AI-7) → SONDE DE TEMP. DE PIÈCE LOCAL F-201

VERS PANNEAU DE CONTRÔLE P-2B (DESSIN 4068-096) → 2B-35-DI-5 → 2B-35-DI-6 → 2B-35-DI-7 (ALM_AC) → RE-1 → 2B-35-DO-8 → C_PLIN-1 → C_PLIN-2

<u>LISTE DE MATÉRIEL</u>		
IDENT.	QTÉ	MODÈLE DESCRIPTION
C_PLIN-1	1	CCT-15-1-C1 RELAIS TRIAC,15Amps.,347/1/60,PLAQUE 4"x4"
C_PLIN-2	1	CCT-30-1-C1 RELAIS TRIAC,30Amps.,600/1/60,PLAQUE 4 11/16"x4 11/16"
E_FILTER	1	P32AF-2C INTERRUPTEUR à PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1	FTG18A-600R TUBE DE PITOT 4" (100mm)
E_VA	1	H-708 RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALI	1	TE-6311P-1 SONDÉ DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
P_PIE	1	TE-6314P-1 SONDÉ DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-105	1	AP-VMA1410-0 RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024 RELAIS 2PDT,24Vac.
	1	S-408 BASE DE RELAIS 8 BROCHES
RES-1	1	----- RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-05	1	RMS-6 STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-105) est fermé.
- La sonde de pièce (T_PIE) contrôle les relais des plinthes chauffantes (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-105) module son volet afin de maintenir le débit d'air neuf requis (55 l/s - 120 pcm).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, le serpentin de chauffage (SE-19) est modulé à l'aide d'impulsions. Lorsque la demande de chauffage atteint 50%, les relais de plinthes chauffantes (C_PLIN) sont activés de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

[illegible]

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-105)

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-19)

RACCORDEMENTS DES RELAIS DE PLINTHES CHAUFFANTES (C_PLIN)

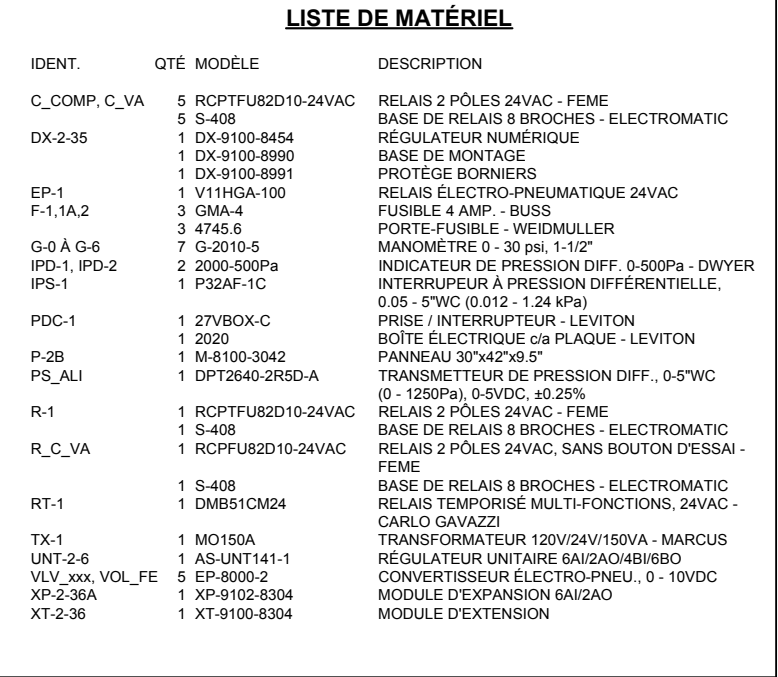
Titre du Dessin

**Unité de climatisation AC-05
Local F-201
Type 3 (Unité avec serpentin de chauffage et chauffage périm.)**

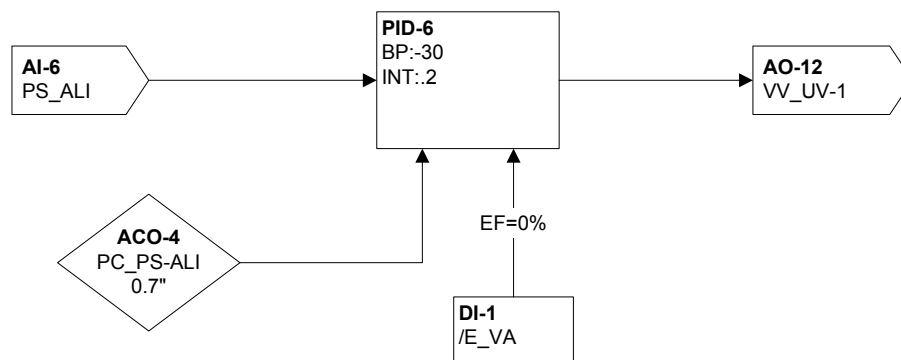
Nom du Projet

CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

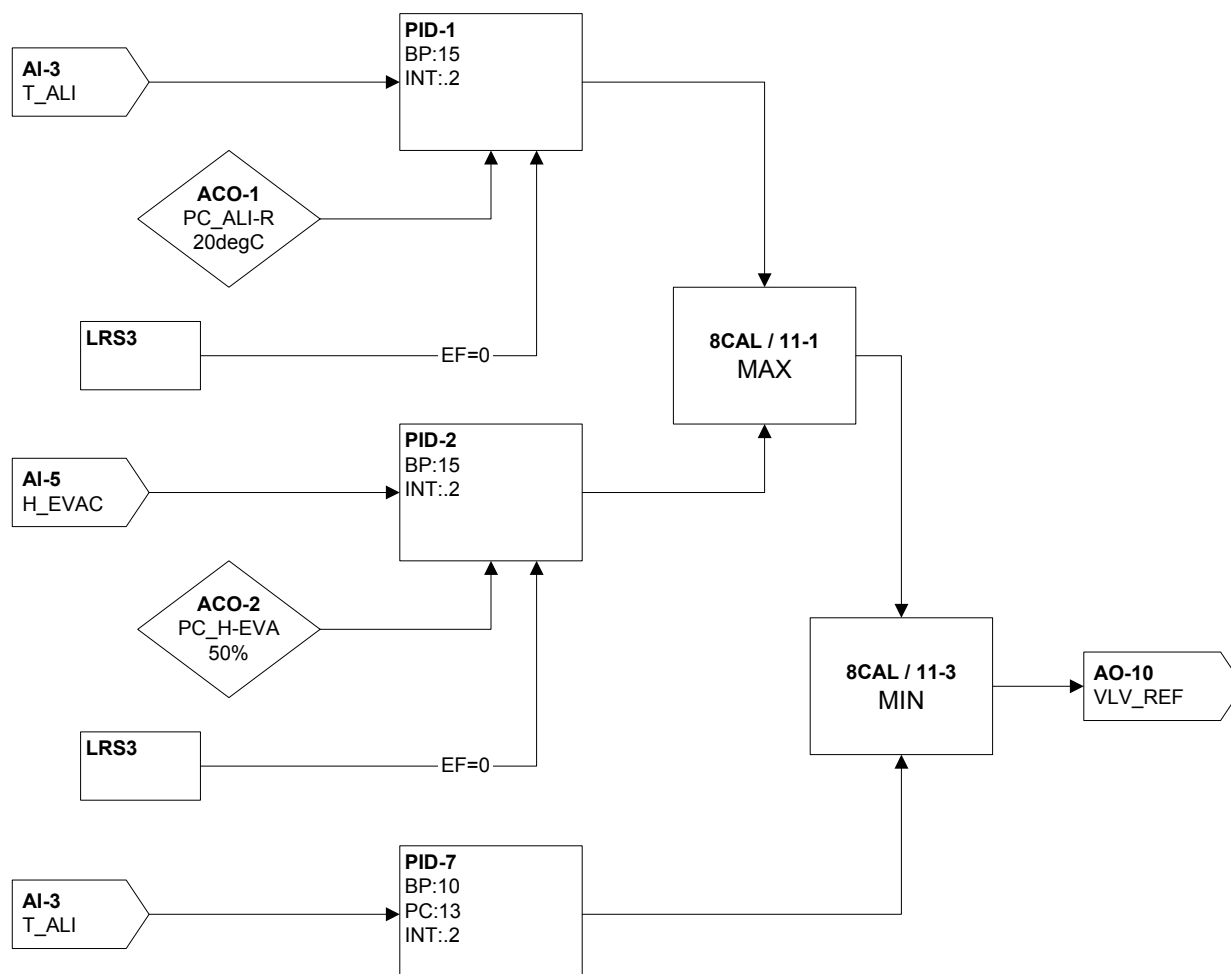
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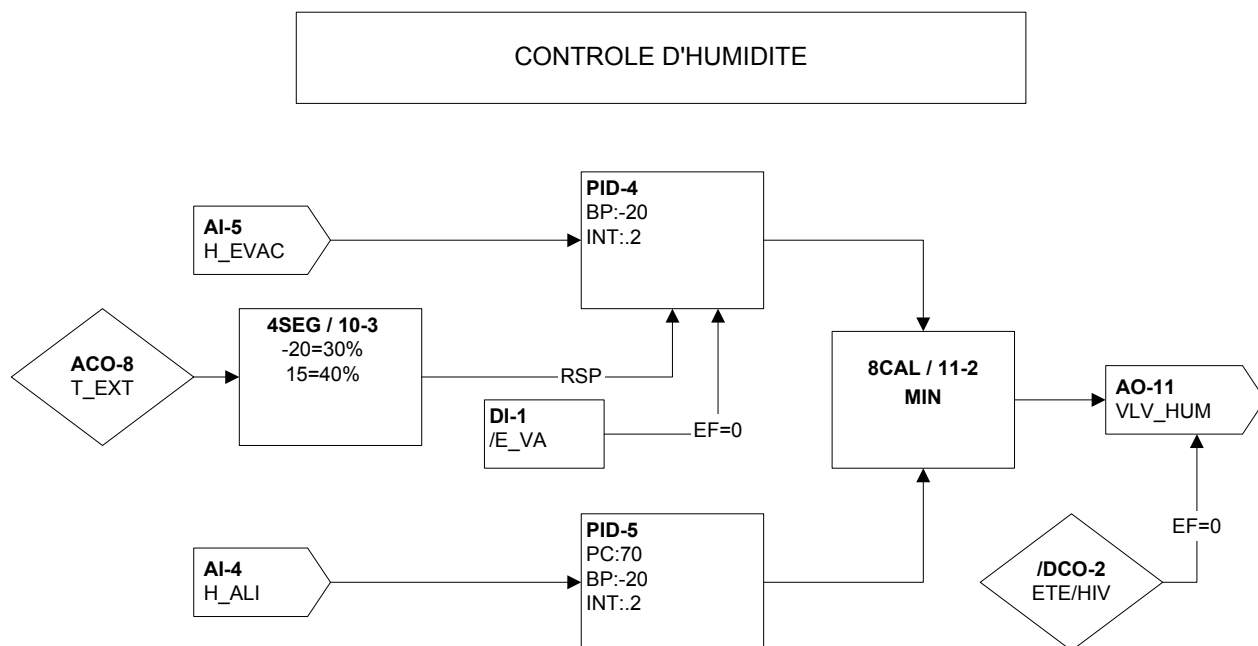
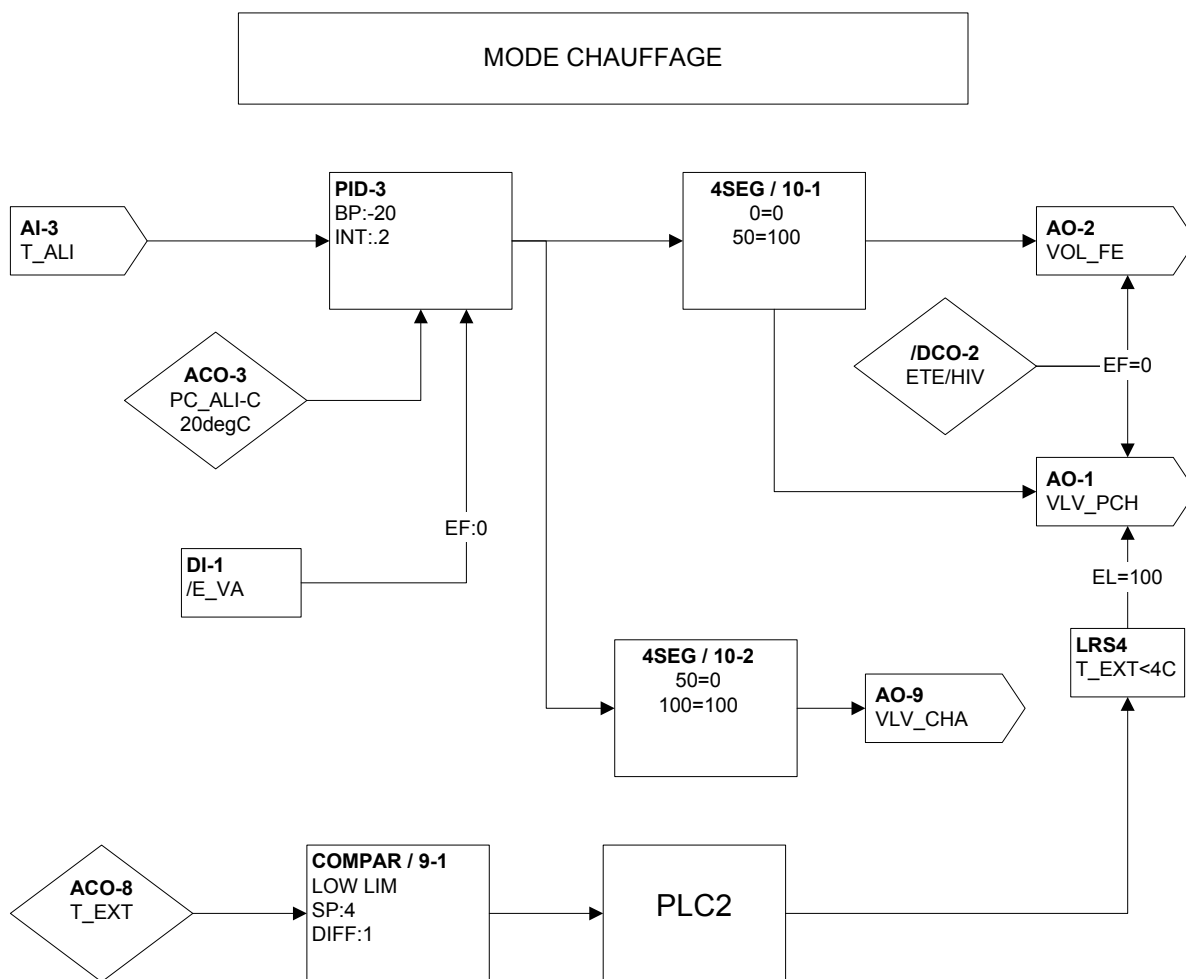


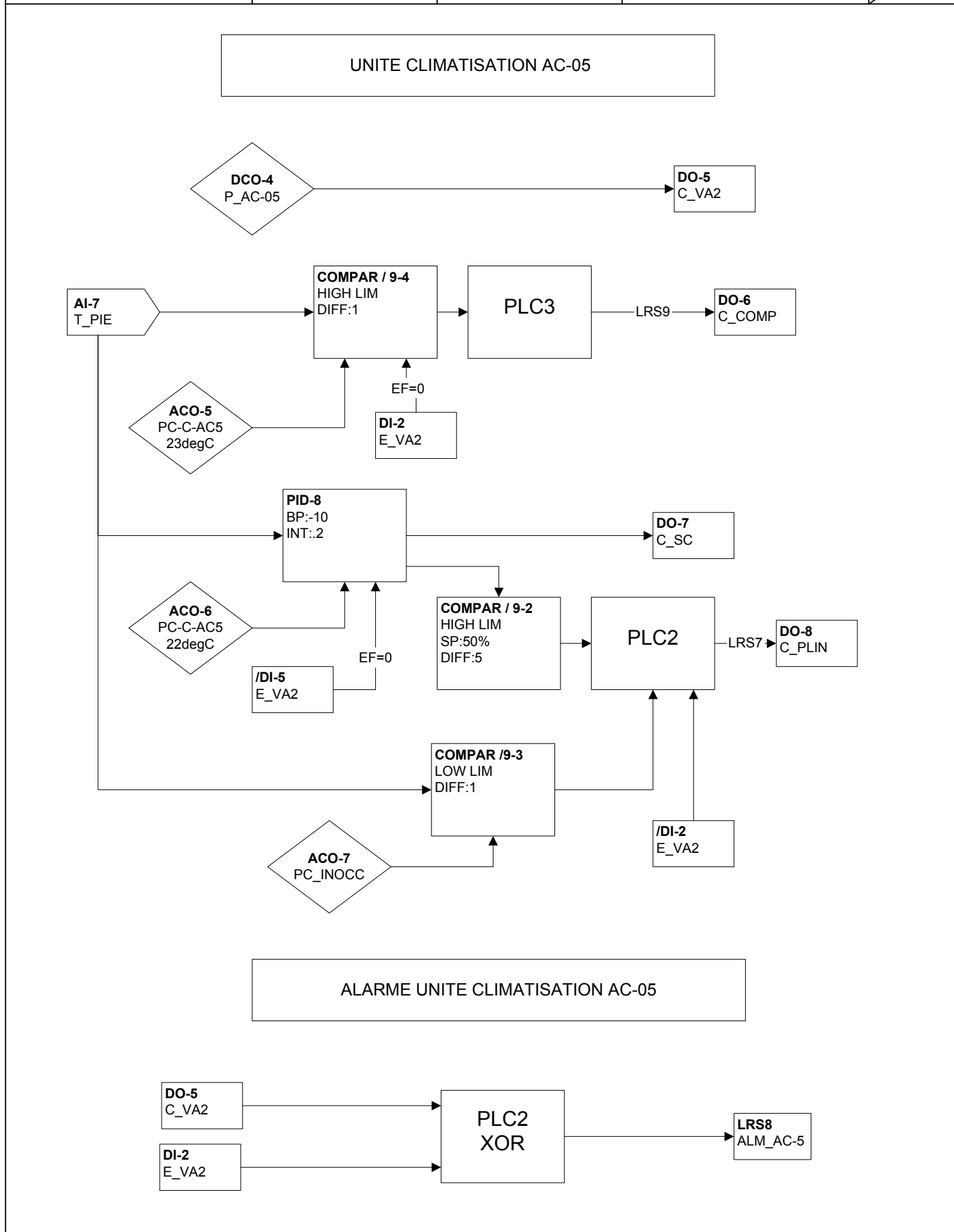
VARIATEUR DE VITESSE



MODE REFROIDISSEMENT







FEUILLE DE L'UTILISATEUR

Nom du projet : CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 22-Nov-01
Adresse du NCM : 2
Adresse du DX-9100 : 35
Numéro du dessin : 4068-66, 90
Système : Système UV-1, Echangeur, AC-5

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PRE-CHAUFFAGE		
2	TEMP SERPENTIN REFROI.		
3	TEMP. ALIMENTATION		
4	HUMIDITE ALIMENTATION		
5	HUMIDITE EVACUATION		
6	PRESS. STATIQUE ALIM.		
7	TEMP. PIECE		
8	TEMP. ALIMENTATION		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Précaler
1	ETAT VENT. ALIMEN. UV-1	Off =arrêt / On marche	1
2	ETAT VENT. EVAC.	Off =arrêt / On marche	1
3	ETAT BASSE TEMP. ALIM.	Off =normal / On alarme	1
4	ALARME VARIATEUR VIT.	Off =normal / On alarme	1
5	ETAT VENTILATEUR ALIM.	Off =arrêt / On marche	1
6	ETAT DES FILTRES	Off =normal / On sale	1
7	ALARME UNITE AC	Off = normal / On alarme	1
8			

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VANNE PRE-CHAUFFAGE	Z3	0% = Min. / 100% = Max.
2	VOLET SERP. FACE ET EVIT.	Z3	0% = Min. / 100% = Max.
3	COMM. A/D VENT. ALIM	LRS1	Off = arrêt / On = marche
4	COMM. A/D VENT. EVAC. VE-1	LRS2	Off = arrêt / On = marche
5	COMM. A/D VENT. ALIM AC-5	DCO4	Off = arrêt / On = marche
6	COMM. A/D COMPRESSEUR	Z7	Off = arrêt / On = marche
7	COMM. SERP. CHAUFFAGE	Z8	Off = arrêt / On = marche
8	COMM. PLINTHE CHAUFFAGE	LRS7	Off = arrêt / On = marche
9	VANNE CHAUFFAGE	Z3	0% = Min. / 100% = Max.
10	VANNE REFROIDISSEMENT	Z1, Z2	0% = Min. / 100% = Max.
11	VANNE HUMIDITE	Z4, Z5	0% = Min. / 100% = Max.
12	VARIATEUR VENT. ALIM. UV-1	Z6	0% = Min. / 100% = Max.
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO1	X3 Temp. alim.	0% = Min. / 100% = Max.
2	ACO2	X5 Humidite evac.	0% = Min. / 100% = Max.
3	ACO3	X3 Temp. alim.	0%= Min. / 100% = Max.
4	ACO8	X4 Temp. alim.	0%= Min. / 100% = Max.
5	70 %	X4 Humidite alim.	0%= Min. / 100% = Max.
6	ACO4	X6 Pression statique alim.	0%= Min. / 100% = Max.
7	ACO5	X7 Temp. Piece	Off = arret / On = marche
8	ACO6	X7 Temp. Piece	0%= Min. / 100% = Max.
9	Comparateur		
10	4- Segment		
11	8 Calcul		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	15	.2	
2	15	.2	
3	-20	.2	
4	-10	.2	
5	-10	.2	
6	10	.2	
7			
8	-10	.2	
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	20 degC	PC Alimentation refroidissement
2	50%	PC humidite evacuation
3	20 degC	PC Alimentation chauffage
4	1.5 "	PC Pression statique alimentation
5	23 deg C	PC Compresseur AC-5
6	22 deg C	PC Serpentin chauffage AC-5
7	18 deg C	PC Chauffage inoccupe AC-5
8	18 deg C	Temperature exterieure

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission ventilateur alimentation UV-1
2	OFF	Ete / Hiver
3		
4	ON	Permission ventilateur alimentation AC-05
5		
6		
7		
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-105.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1420
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.014808014

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	120
ADF	164	Occupied Clg Min	OCCCMIN	120
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.196
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	120

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 3)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-105) est fermé.
- La sonde de pièce (T_PIE) contrôle les relais de plinthes chauffantes (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-105) module son volet afin de maintenir le débit d'air neuf requis (55 l/s - 120 pcm).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, le serpentin de chauffage (SE-19) est modulé à l'aide d'impulsions. Lorsque la demande de chauffage atteint 50%, les relais de plinthes chauffantes (C_PLIN) sont activés de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Informations sur points				Informations sur régulateurs								Appareils intermédiaires							Appareils hors panneau							
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminals sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminals entrée	Appareil	Terminals sortie	Emplac.	Câble / tube	Terminals entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-05				VMA	VMA 1410					P-2	Unité AC-05													Alimentation 24VAC
2-105-AI-1		AC-05	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	105	AI-1	AI1 AICM	P-2	Unité AC-05	4068-066	2-105-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1	Tronc N2
	AI-2	AC-05				VMA	VMA 1410	1	105	AI-2		P-2	Unité AC-05		2-105-AI-2											
	BI-1	AC-05				VMA	VMA 1410	1	105	BI-1		P-2	Unité AC-05		2-105-BI-1											
	BI-2	AC-05				VMA	VMA 1410	1	105	BI-2		P-2	Unité AC-05		2-105-BI-2											
	BI-3	AC-05				VMA	VMA 1410	1	105	BI-3		P-2	Unité AC-05		2-105-BI-3											
2-105-AI-5	AI-5	AC-05	P VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	105	AI-5		P-2	Unité AC-05	4068-066	2-105-AI-5											Air neuf AC-05

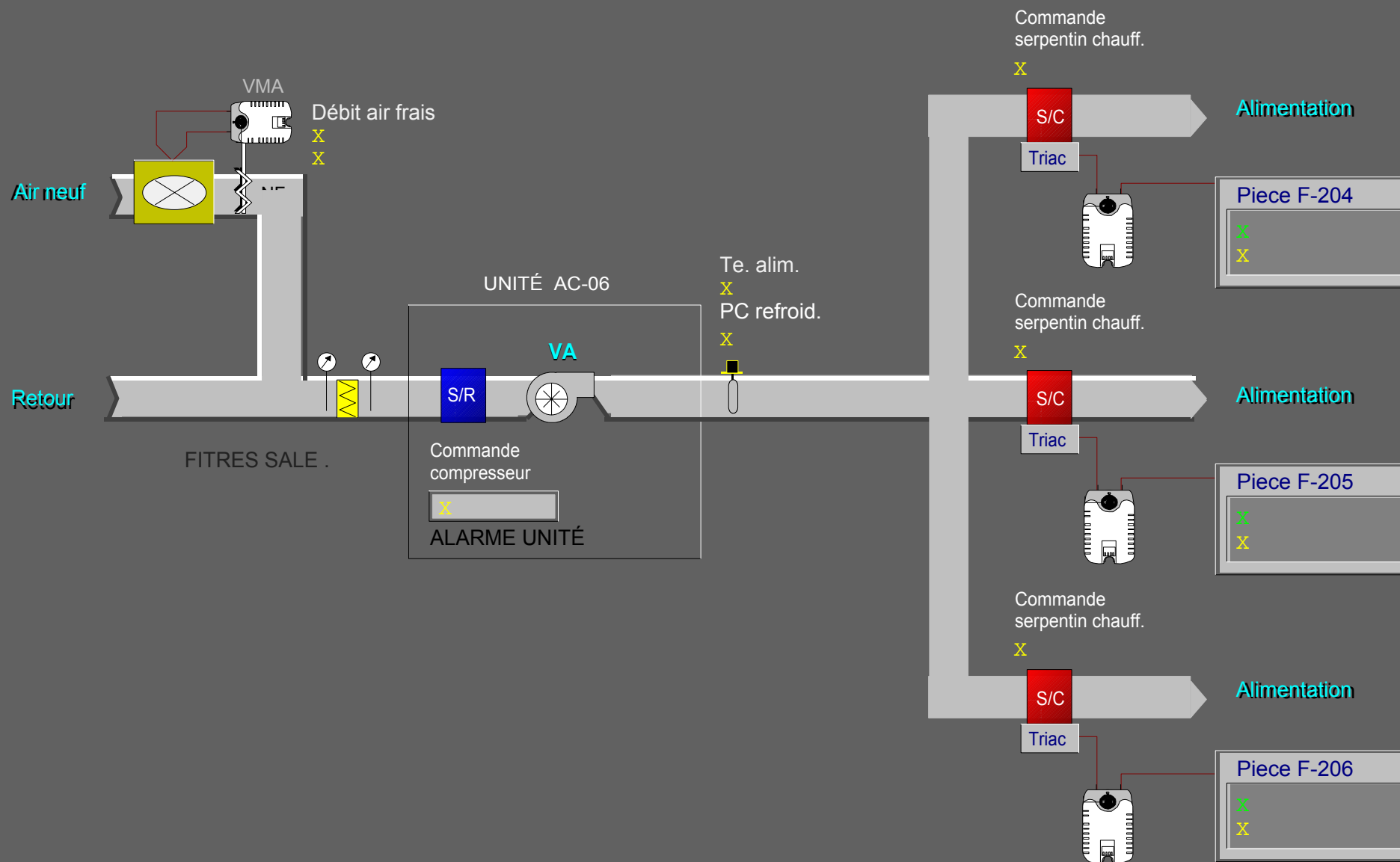
Informations sur points				Informations sur régulateurs										Appareils intermédiaires										Appareils hors panneau				
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires		
						DX9100	DX 9100					P-2B	Salle méc. F-301													Alimentation 24VAC		
2B-35-DO-3	DO-3	UV-1	C VA	Comm.a/d vent.alm.	Arrêt Marche	DX9100	DX 9100	2	35	DO-3	DO3/COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DO-3	2/18	(Bobine) +,-	H-735	COM.NO		2/14	Voir détail démarreur	Démarreur (H-735 mar/arr)			DX49		
2B-35-DO-4	DO-4	UV-1	C VE	Comm.a/d vent.évac.VE-1	Arrêt Marche	DX9100	DX 9100	2	35	DO-4	DO4/COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DO-4	2/18	(Bobine) +,-	H-735	COM.NO		2/14	Voir détail démarreur	Démarreur (H-735 mar/arr)			DX49		
2B-35-DO-5	DO-5	AC-05	C VA	Comm.a/d vent.alm.	Arrêt Marche	DX9100	DX 9100	2	35	DO-5	DO5/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-5	2/18	2,7	RELAIS	1,3		2/14	Voir détail démarreur	Démarreur (NO)			DX51		
2B-35-DO-6	DO-6	AC-05	C COMP	Comm.a/d compresseur	Arrêt Marche	DX9100	DX 9100	2	35	DO-6	DO6/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-6	2/18	2,7	RELAIS	1,3		2/14	Voir détail démarreur	Démarreur (NO)			DX51		
2B-35-DO-7	DO-7	AC-05	C SC	Comm serpentín chauffage	Arrêt Marche	DX9100	DX 9100	2	35	DO-7	DO7/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-7						2/18	Selon dispositif	SOR 24 V c.a.			DX51		
2B-35-DO-8	DO-8	AC-05	C PLIN	Comm plinthe chauff.	Arrêt Marche	DX9100	DX 9100	2	35	DO-8	DO8/COM	P-2B	Salle méc. F-301	4068-066	2B-35-DO-8						2/18	Selon dispositif	SOR 24 V c.a.			DX51		
2B-35-DI-1	DI-1	UV-1	E VA	État vent.alimentation	Arrêt Marche	DX9100	DX 9100	2	35	DI-1	DI1.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-1						2/18	NO.COM	Veris H-735 état			DX49		
2B-35-DI-2	DI-2	UV-1	E VE	État vent.évacuation	Arrêt Marche	DX9100	DX 9100	2	35	DI-2	DI2.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-2						2/18	NO.COM	Veris H-735 état			DX49		
2B-35-DI-3	DI-3	UV-1	A BT ALI	Alm.basse temp.aliment.	Normal Sales	DX9100	DX 9100	2	35	DI-3	DI3.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-3						2/18	LINE.M1	A70 (NO)			DX70		
2B-35-DI-4	DI-4	UV-1	A V VIT	Alm.variateur vitesse	Normal Alarme	DX9100	DX 9100	2	35	DI-4	DI4.COM	P-2B	Salle méc. F-301	4068-090A	2B-35-DI-4						2/18	Selon dispositif	Contact (NO)			DX70		
2B-35-DI-5	DI-5	AC-05	E VA	État vent.alimentation	Arrêt Marche	DX9100	DX 9100	2	35	DI-5	DI5.COM	P-2B	Salle méc. F-301	4068-066	2B-35-DI-5						2/18	NO.COM	H-708			DX49		
2B-35-DI-6	DI-6	AC-05	E FILT	État des filtres	Normal Sales	DX9100	DX 9100	2	35	DI-6	DI6.COM	P-2B	Salle méc. F-301	4068-066	2B-35-DI-6						2/18	Y.R	F32 (NO)			DX70		
2B-35-DI-7	DI-7	AC-05	ALIM AC	Alarme unité AC	Normal Alarme	DX9100	DX 9100	2	35	DI-7	DI7.COM	P-2B	Salle méc. F-301	4068-066	2B-35-DI-7						2/18	Selon dispositif	Contact (NO)			DX70		
						DX9100	DX 9100	2	35	DI-8		P-2B	Salle méc. F-301		2B-35-DI-8													
2B-35-AI-1	AI-1	UV-1	T PCH	Temp.pré-chauffage	°C	DX9100	DX 9100	2	35	AI-1	AI1.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-1						2/18	2 fils	TE (Gaine)			DX3		
2B-35-AI-2	AI-2	UV-1	T SR	Temp.serp.refroid	°C	DX9100	DX 9100	2	35	AI-2	AI2.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-2						2/18	2 fils	TE (Gaine)			DX3		
2B-35-AI-3	AI-3	UV-1	T ALI	Temp.alimentation	°C	DX9100	DX 9100	2	35	AI-3	AI3.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-3						2/18	2 fils	TE (Gaine)			DX3		
2B-35-AI-4	AI-4	UV-1	H ALI	Humidité alimentation	%HR	DX9100	DX 9100	2	35	AI-4	AI4.+15V	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-4						2/18	Selon dispositif	ENT 0-20 mA ALIM INT (HR)			DX1		
2B-35-AI-5	AI-5	UV-1	H EVAC	Humidité évacuation	%HR	DX9100	DX 9100	2	35	AI-5	AI5.+15V	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-5						2/18	Selon dispositif	ENT 0-20 mA ALIM INT (HR)			DX1		
2B-35-AI-6	AI-6	UV-1	PS ALI	Press statique alim.	Pa	DX9100	DX 9100	2	35	AI-6	AI6.AICOM.+15V	P-2B	Salle méc. F-301	4068-090A	2B-35-AI-6						3/18	OUT.COM.EXC	DPT-2640 (0-5 VDC)			DX7		
2B-35-AI-7	AI-7	AC-05	T PIE	Temp.pèce	°C	DX9100	DX 9100	2	35	AI-7	AI7.AICOM	P-2B	Salle méc. F-301	4068-066	2B-35-AI-7						2/18	2 fils	TE			DX3		
2B-35-AI-8	AI-8	AC-05	T ALI	Temp.alimentation	°C	DX9100	DX 9100	2	35	AI-8	AI8.AICOM	P-2B	Salle méc. F-301	4068-066	2B-35-AI-8						2/18	2 fils	TE (Gaine)			DX3		
2B-35-AO-1	AO-1	UV-1	VLV PCH	Vanne.pré-chauffage	%	DX9100	DX 9100	2	35	AO-1	AO1.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-1	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.			DX27		
2B-35-AO-2	AO-2	UV-1	VOIL FE	Volet.serp.face & évit.	%	DX9100	DX 9100	2	35	AO-2	AO2.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-2	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.			DX27		
2B-35-AO-9	AO-9	UV-1	VLV CHA	Vanne chauffage	%	DX9100	DX 9100	2	35	AO-9	AO9.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-9	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.			DX27		
2B-35-AO-10	AO-10	UV-1	VLV REF	Vanne refroidissement	%	DX9100	DX 9100	2	35	AO-10	AO10.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-10	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.			DX27		
2B-35-AO-11	AO-11	UV-1	VLV HUM	Vanne humidif.	%	DX9100	DX 9100	2	35	AO-11	AO11.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-11	2/18	+,-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.			DX27		
2B-35-AO-12	AO-12	UV-1	VV UV-1	Variateur vent.alm UV-1	%	DX9100	DX 9100	2	35	AO-12	AO12.AOCOM	P-2B	Salle méc. F-301	4068-090A	2B-35-AO-12						2/18	Selon dispositif	SORTIE 0-10 VDC			DX22		
	AO-13					DX9100	DX 9100	2	35	AO-13		P-2B	Salle méc. F-301		2B-35-AO-13													
	AO-14					DX9100	DX 9100	2	35	AO-14		P-2B	Salle méc. F-301		2B-35-AO-14													
						XT9100	XT (Expansion Module)					P-2B	Salle méc. F-301													Alimentation 24VAC		
						XT9100	XT (Expansion Module)	2	36			P-2B	Salle méc. F-301													Tronc N2		
2B-36-AJ-1	X11AI1	UV-1	VIT UV-1	Indication vitesse UV-1	%	XP9102	XP 9102 (BAI, 2A)	2	36	AI-1	AI1.AICOM	P-2B	Salle méc. F-301	4068-090A	2B-36-AJ-1						2/18	Device dependent	ENT 0-20 mA ALIM EXT			XP2		
	X11AI2					XP9102	XP 9102 (BAI, 2A)	2	36	AI-2		P-2B	Salle méc. F-301		2B-36-AJ-2											Point ajouté (14 juin 2001)		
	X11AI3					XP9102	XP 9102 (BAI, 2A)	2	36	AI-3		P-2B	Salle méc. F-301		2B-36-AJ-3													
	X11AI4					XP9102	XP 9102 (BAI, 2A)	2	36	AI-4		P-2B	Salle méc. F-301		2B-36-AJ-4													
	X11AI5					XP9102	XP 9102 (BAI, 2A)	2	36	AI-5		P-2B	Salle méc. F-301		2B-36-AJ-5													
	X11AI6					XP9102	XP 9102 (BAI, 2A)	2	36	AI-6		P-2B	Salle méc. F-301		2B-36-AJ-6													
	X11AO7					XP9102	XP 9102 (BAI, 2A)	2	36	AO-7		P-2B	Salle méc. F-301		2B-36-AJ-7													
	X11AO8					XP9102	XP 9102 (BAI, 2A)	2	36	AO-8		P-2B	Salle méc. F-301		2B-36-AJ-8													

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-05

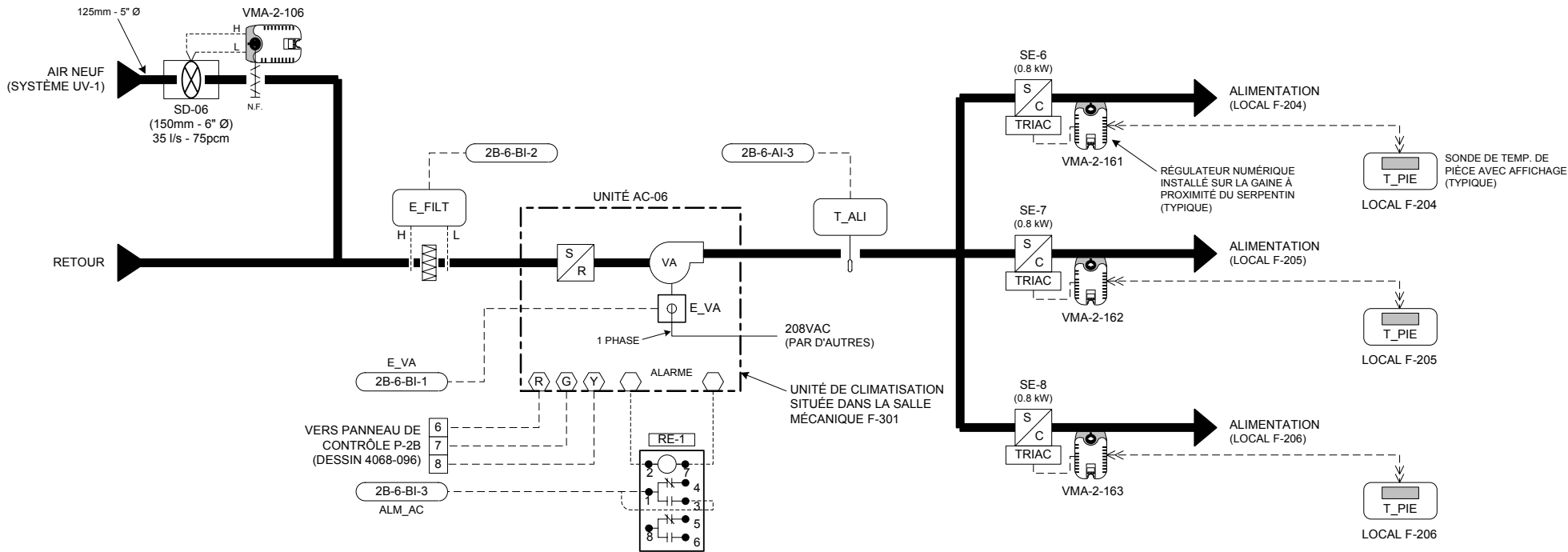
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_PLIN-1	RELAIS TRIAC, 30Amps, 347/1/60, PLAQUE 4"x4"	CTT-15-1-C1	CRISTAL CONTRÔLES
C_PLIN-2	RELAIS TRIAC, 15Amps, 600/1/60, PLAQUE 4 11/16"x4	CTT-30-1-C1	CRISTAL CONTRÔLES
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
E_VA	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
RE-1	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-05	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
VMA-2-105	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2B

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-35	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
EP-1	RELAIS ÉLECTRO-PNEUMATIQUE 24 VAC	V11HGA-100	JOHNSON CONTROLS
F-1, 1A, 2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-6	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1, IPD-2	INDICATEUR DE PRESSION DIFF. 0-500Pa	2000-500Pa	DWYER
ISP-1	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-1C	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2B	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
PS_ALI	TRANSMETTEUR DE PRESSION DIFFÉRENTIELLE, 0-5"WC (0-1250Pa), 0-5 VDC, ±0.25%	DPT2640-2R5D-A	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
R_C_VA	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RT-1	RELAIS TEMPORISÉ MULTI-FONCTIONS, 24 VAC	DMB51CM24	CARLO GAVAZZI
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-6	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_xxx, VOL_FE	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-36A	MODULE D'EXPANSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-06 - LOCAUX F-204, F-205 ET F-206
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	3	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-106	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-161 À 163	3	AP-VMA1420-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF.
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-06	1	RMS-6	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

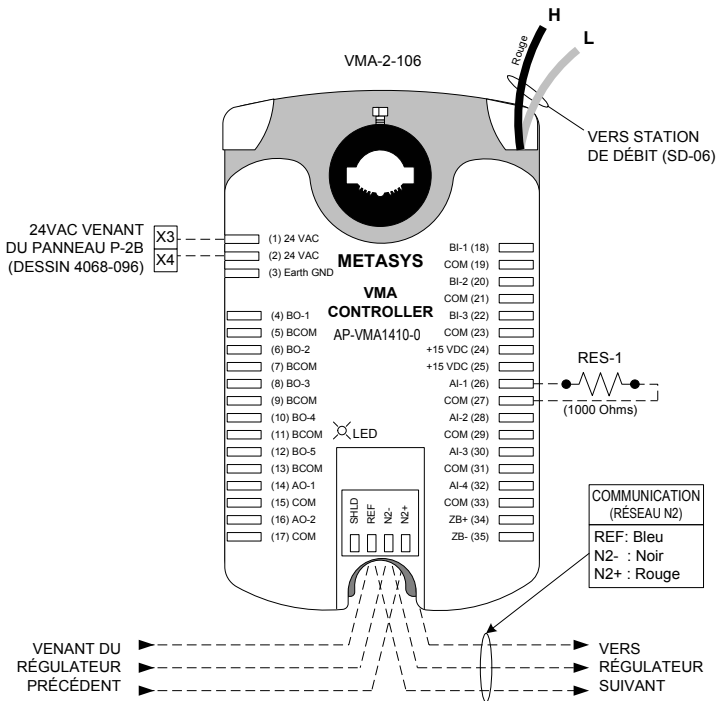
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-106) est fermé.

EN MARCHÉ:

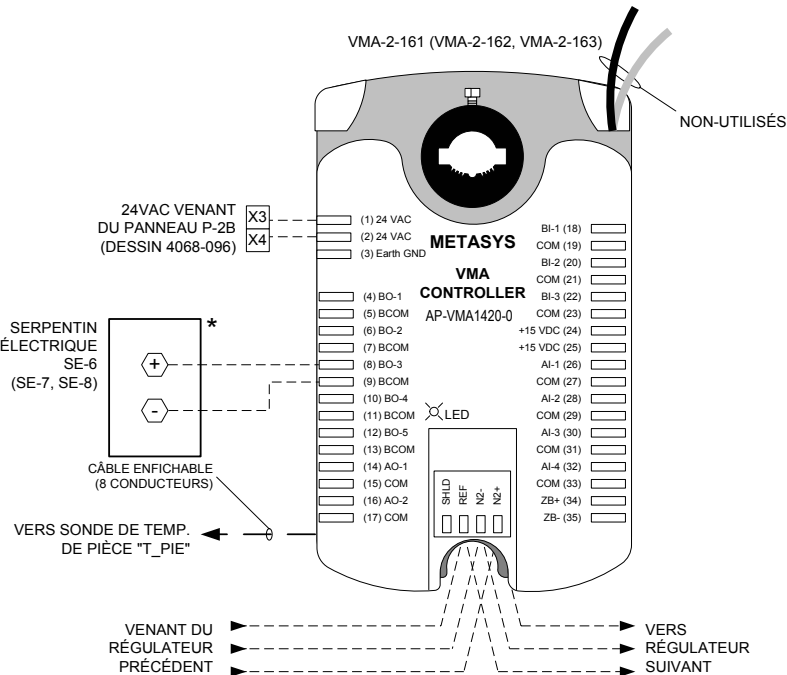
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-106) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des trois pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-16x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-106)



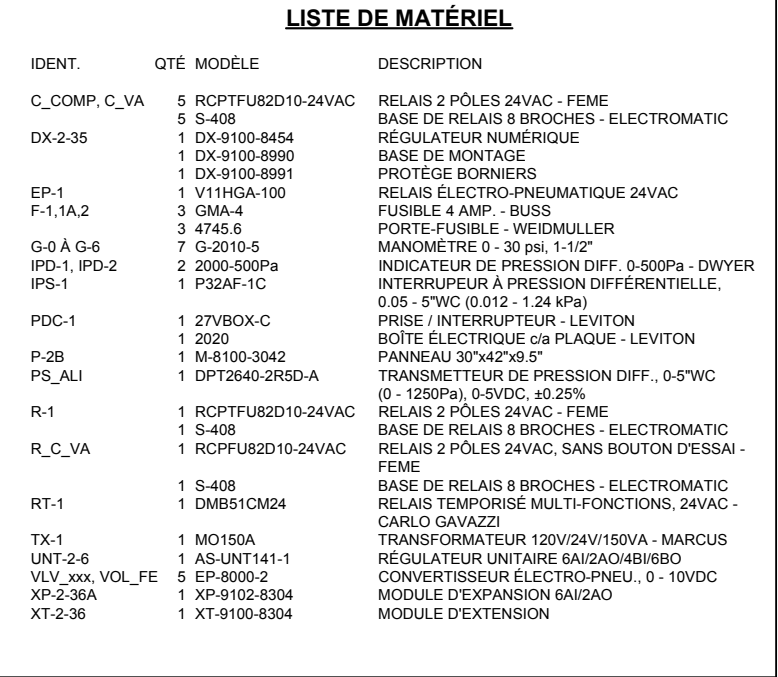
RACCORDEMENTS DES RÉGULATEURS (VMA-2-161, 162 ET 163)
(TYPIQUE POUR 3)



Titre du Dessin
Unité de climatisation AC-06
Locaux F-204, F-205 et F-206
Type 2 (Unité de climatisation pour bureaux)

Nom du Projet
CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

	2	TEL QUE CONSTRUIT	D.B.	02/04/24	O.P.
	1	POUR APPROBATION		06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001
Information Succursale			NUMÉRO CONTRAT		
JOHNSON CONTROLS Groupe de la régulation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		
			1096-0093 NUMÉRO DESSIN 4068-067		



STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-162.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.023670614

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	22
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrđ Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-161.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.021427065

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	18.8984
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrdr Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-106.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1420
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.014750108

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	75
ADF	164	Occupied Clg Min	OCCCMIN	75
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.136
ADF	25	Pickup Gain	PKUPGAIN	0.8
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	75

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-06.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
None
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?

Yes

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	2	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	22.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	1.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0

ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMPCMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-163.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.021787792

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	22
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrđ Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-106) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-106) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des trois pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-16x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

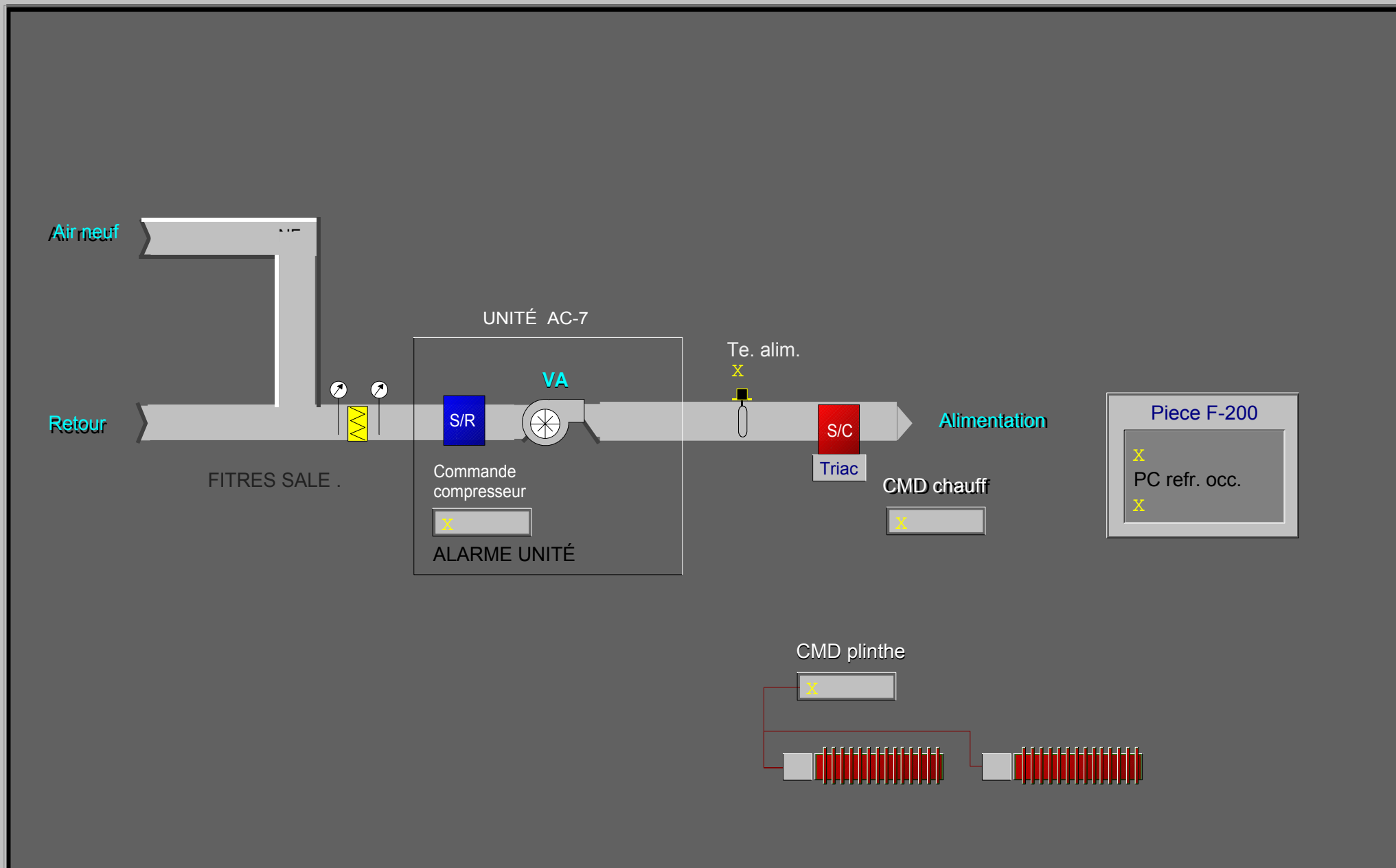
4096-0019 T.Q.C.
4096-0019 AJOUT 4°C
1096-0093

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-06

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-06	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VMA-2-106	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VMA-2-161 à VMA-2-163	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1420-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2B

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-35	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
EP-1	RELAIS ÉLECTRO-PNEUMATIQUE 24 VAC	V11HGA-100	JOHNSON CONTROLS
F-1, 1A, 2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-6	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1, IPD-2	INDICATEUR DE PRESSION DIFF. 0-500Pa	2000-500Pa	DWYER
ISP-1	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-1C	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2B	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
PS_ALI	TRANSMETTEUR DE PRESSION DIFFÉRENTIELLE, 0-5"WC (0-1250Pa), 0-5 VDC, ±0.25%	DPT2640-2R5D-A	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
R_C_VA	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RT-1	RELAIS TEMPORISÉ MULTI-FONCTIONS, 24 VAC	DMB51CM24	CARLO GAVAZZI
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-6	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_xxx, VOL_FE	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-36A	MODULE D'EXPANSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-07 - LOCAL F-200
(TYPE 3 - UNITÉ DE CLIMATISATION AVEC SERPENTIN ÉLECTRIQUE
ET CHAUFFAGE PÉRIMÉTRIQUE)

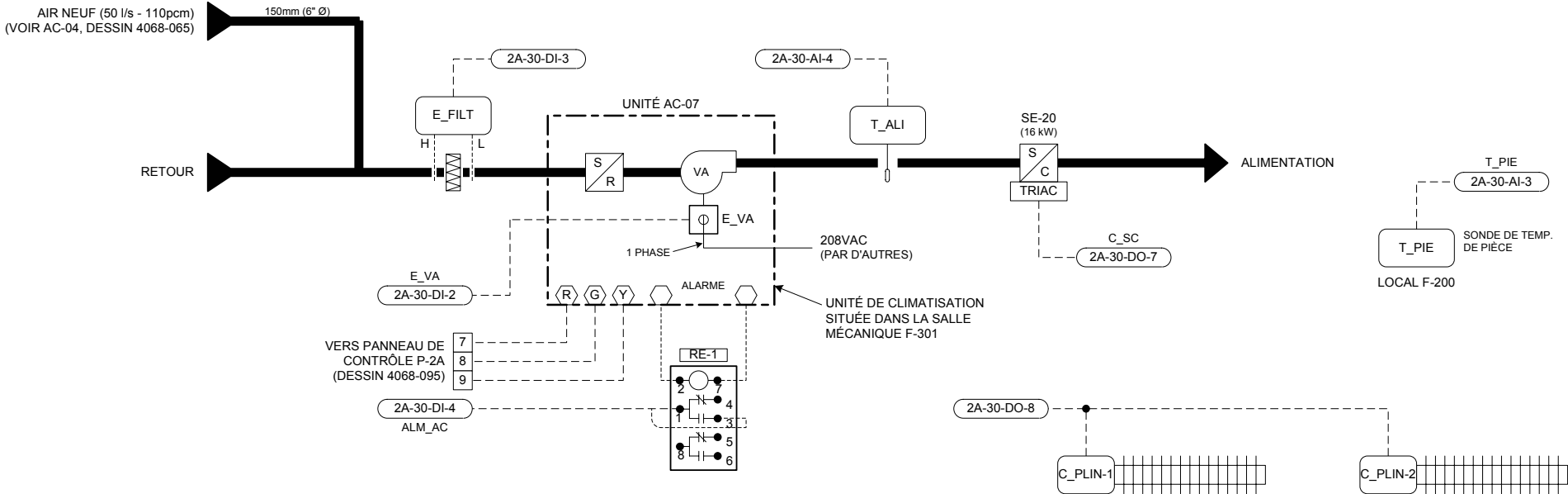
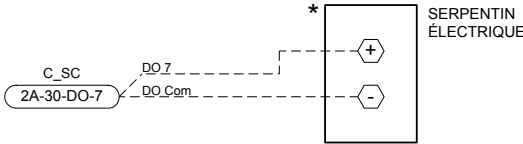
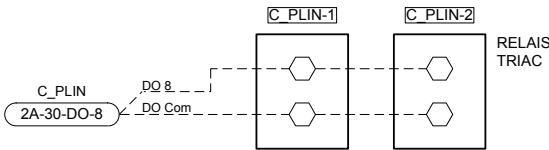


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-20)



RACCORDEMENTS DES RELAIS DE PLINTHES CHAUFFANTES (C_PLIN)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PLIN-1,2	2	CCT-25-1-C1	RELAIS TRIAC, 25Amps, 347/1/60, PLAQUE 4"x4"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
T_ALI	1	S-408	BASE DE RELAIS 8 BROCHES
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI

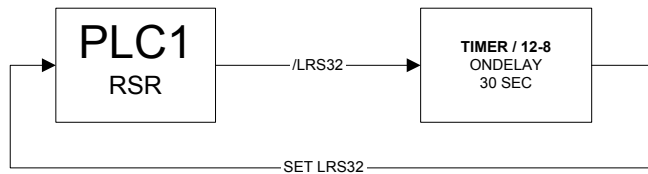
SÉQUENCE D'OPÉRATION (TYPE 3)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf commun à AC-04 et AC-07 (VMA-2-104, dessin 4068-065) est fermé.
 - La sonde de pièce (T_PIE) contrôle les relais de plinthes chauffantes (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ d'une des unités (AC-04 ou AC-07), le régulateur (VMA-2-104, dessin 4068-065) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsque l'unité AC-04 est en fonction.
 - 50 l/s (105 pcm) lorsque l'unité AC-07 est en fonction.
 - 105 l/s (225 pcm) lorsque les deux unités fonctionnent.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, le serpentin de chauffage (SE-20) est modulé à l'aide d'impulsions. Lorsque la demande de chauffage atteint 50%, les relais de plinthes chauffantes (C_PLIN) sont activés de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

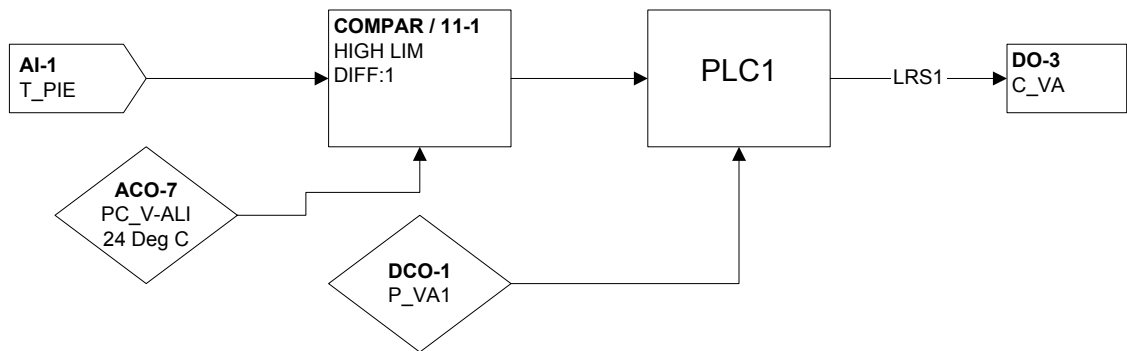
Titre du Dessin					
Unité de climatisation AC-07 Local F-200 Type 3 (Unité avec serpentin de chauffage et chauffage périm.)		1	TEL QUE CONSTRUIT	D.B.	02/04/24 O.P.
		1	POUR APPROBATION		06/12/2001 D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMÉRO DESSIN 4068-068	



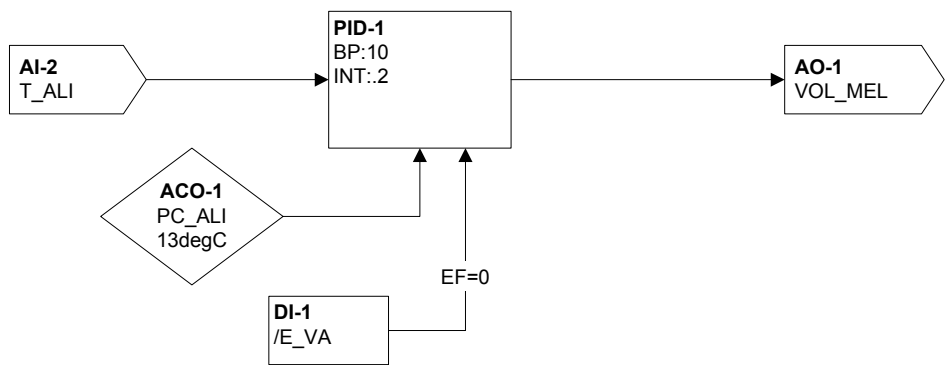
REDEMARRAGE APRES PANNE (DX-2-30)



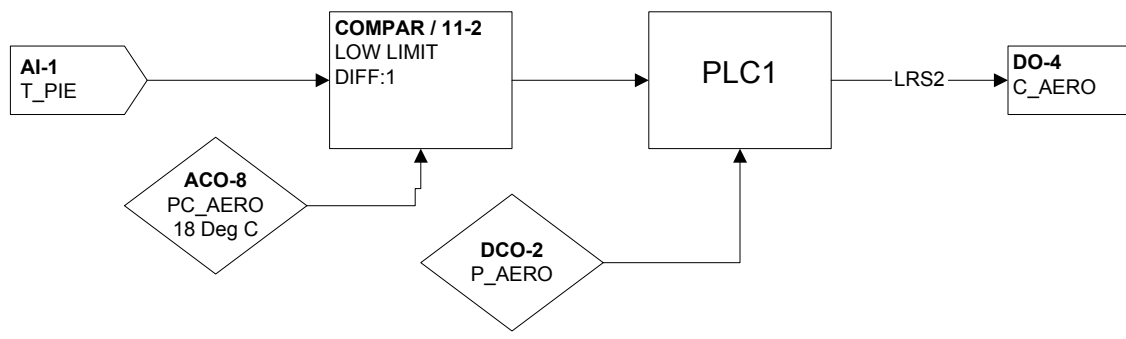
COMMANDE VENTILATEUR ALIMENTATION



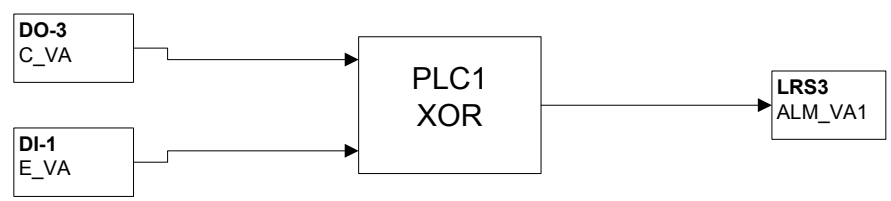
CONTROLE DES VOLETS DE MELANGE



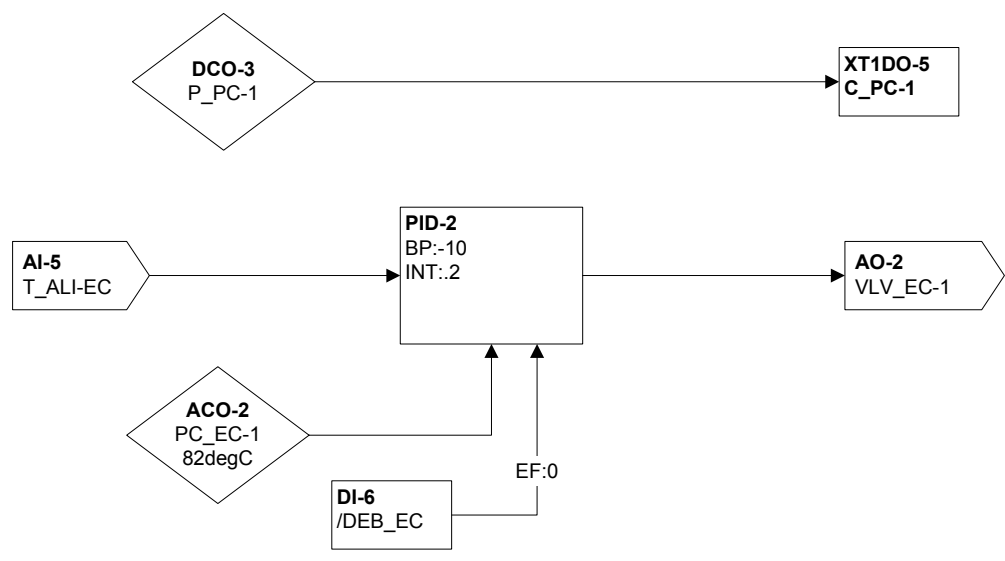
ARRET DEPART AEROTHERMES



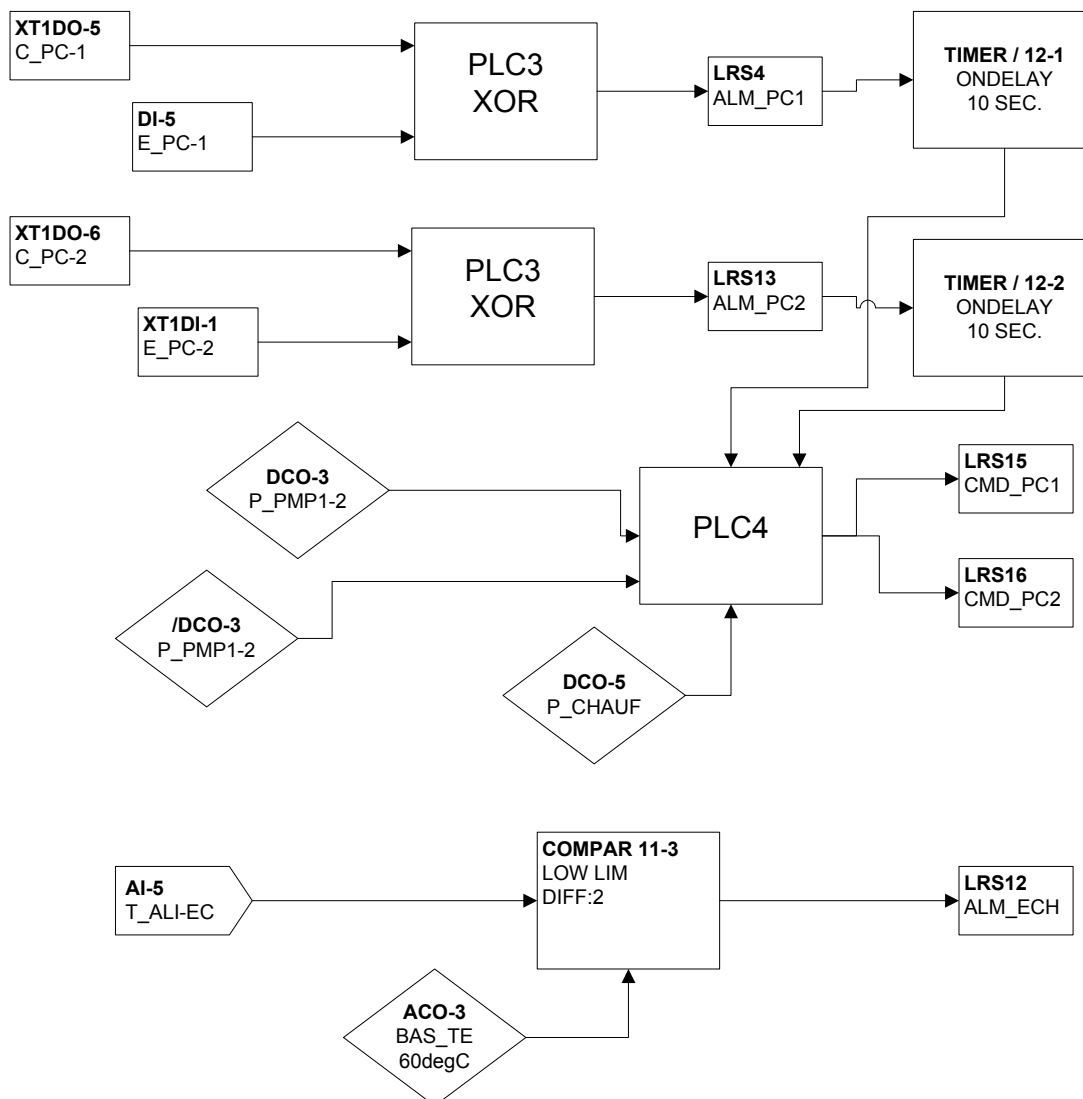
LOGIQUE D'ALARME VENTILATEUR



CONTROLE ECHANGEUR DE CHALEUR

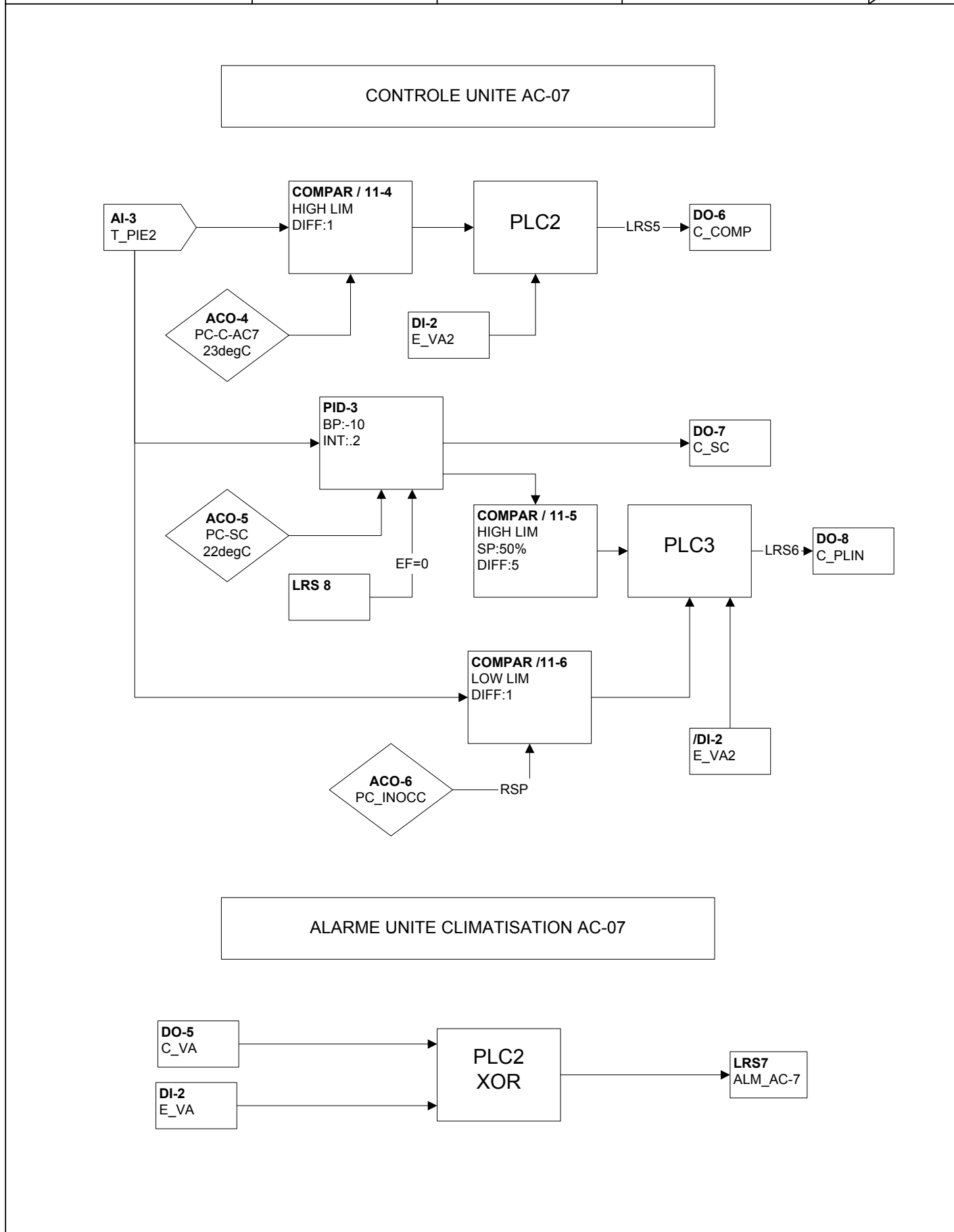


ALARME ECHANGEUR DE CHALEUR



CONTROLE UNITE AC-07





FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 30
Numéro du dessin : 4068-93, 68, 89
Système : Système VA-1, Echangeur, AC-7

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE VA-1		
2	TEMP ALIMENTATION VA-1		
3	TEMP. PIECE AC-07		
4	TEMP ALIMENTATION AC-07		
5	TEMP ALIM. EAU CHAUDE		
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	ETAT VENT. ALIMEN. VA-1	Off =arret / On marche	1
2	ETAT VENT. ALIMEN. AC-07	Off =arret / On marche	1
3	ETAT DES FILTRES	Off =arret / On sale	1
4	ALARME UNITE AC	Off =normal / On alarme	1
5	ETAT POMPE CHAUF. PC-1	Off =arret / On marche	1
6	PREUVE DEBIT EAU CHAUF.	Off =arret / On marche	1
7	ALARME HOTTE F-219	Off = arret / On marche	1
8	ALARME HOTTE F-224	Off = arret / On marche	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VOLETS DE MELANGE	Z1	0% = Min. / 100% = Max.
2	VANNE ECHANGEUR EC-1	Z2	0% = Min. / 100% = Max.
3	COMM. A/D VENT. ALIM VA-1	LRS1	Off = ferme / On = ouvert
4	COMM. AEROTHERMES	LRS2	Off = ferme / On = ouvert
5	COMM. A/D VENT. ALIM AC-7	DCO4	Off = ferme / On = ouvert
6	COMM. A/D COMPRESSEUR	LRS5	Off = ferme / On = ouvert
7	COMM SERPENTIN CHAUFF.	Z3	Off = arret / On = depart
8	COMM PLINTHES CHAUFF.	LRS6	Off = arret / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO1	X2 Temp. alim.	0% = Min. / 100% = Max.
2	ACO2	X5 Temp alim eau chaude	0% = Min. / 100% = Max.
3	ACO5	X3 Temp. alim. Ac-07	0%= Min. / 100% = Max.
4			
5			
6			
7			
8			
9			
10			
11	Compateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	10	.2	
2	-10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	13 degC	PC Alimentation VA-1
2	82 degC	PC Valve echangeur chaleur 1
3	60 degC	PC Alarme basse temperature
4	23 deg C	PC Compresseur refrigeration AC-07
5	22 deg C	PC Serpentin de chauffage Occupe AC-07
6	18 deg C	PC Plinthes chauffage nuit
7	24 deg C	PC demarrage ventilateur alimentation
8	18 deg C	PC aérothermes

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission ventilateur alimentation VA-1
2	ON	Permission aérothermes
3	ON	Permission pompe eau chaude 1 ou 2
4	ON	Permission ventilateur alimentation AC-07
5	ON	Permission de chauffage
6		
7		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-93, 68, 89
Système : Système VA-1, Echangeur, AC-7
Adresse du NCM : 2
Adresse du DX-9100 : 30
Adresse du XT : 31

Numero du XP : 1

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point	Préscaler
11	ETAT POMPE CHAUFF PC-2	
12		
13		
14		

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
15	COMM POMPE CHAUFF PC-1	DCO-3	Off = arrêt / On = marche
16	COMM POMPE CHAUFF PC-2	/DCO-3	Off = arrêt / On = marche
17			
18			

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-104.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.02118443

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	225
ADF	164	Occupied Clg Min	OCCCMIN	225
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.35
ADF	25	Pickup Gain	PKUPGAIN	1.7
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	225

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 3)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf commun à AC-04 et AC-07 (VMA-2-104, dessin 4068-065) est fermé.
- La sonde de pièce (T_PIE) contrôle les relais de plinthes chauffantes (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ d'une des unités (AC-04 ou AC-07), le régulateur (VMA-2-104, dessin 4068-065) module son volet afin de maintenir le débit d'air neuf requis:
 - 55 l/s (120 pcm) lorsque l'unité AC-04 est en fonction.
 - 50 l/s (105 pcm) lorsque l'unité AC-07 est en fonction.
 - 105 l/s (225 pcm) lorsque les deux unités fonctionnent.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, le serpentin de chauffage (SE-20) est modulé à l'aide d'impulsions. Lorsque la demande de chauffage atteint 50%, les relais de plinthes chauffantes (C_PLIN) sont activés de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

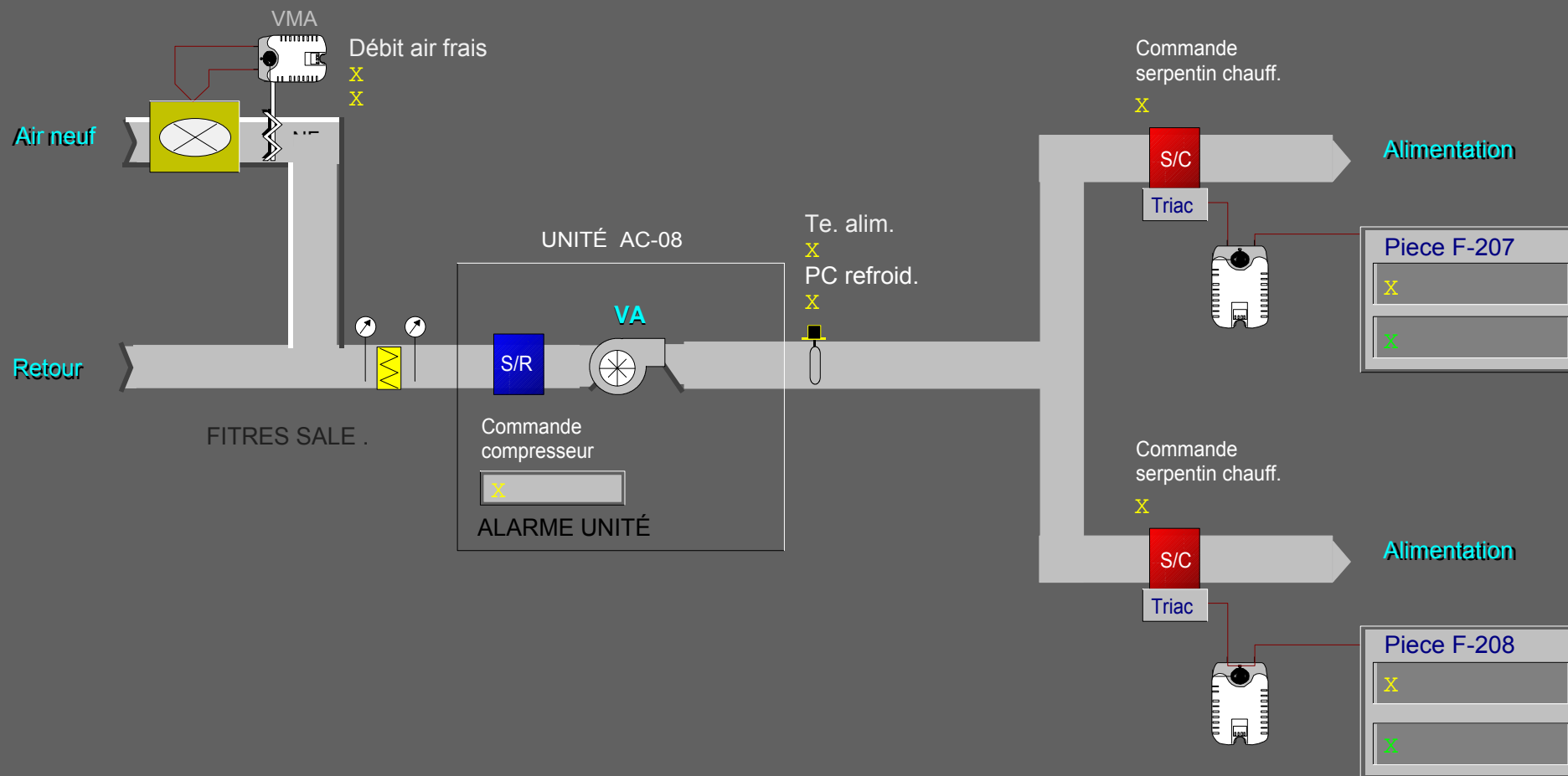
Étiq.	Type de point	Informations sur points		Description	Unités	Informations sur régulateurs						Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires
		Nom du système	Nom de l'objet			Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie					Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibratio n		
						DX9100	DX 9100					P-2A	Salle méc. F-301													Alimentation 24VAC
						DX9100	DX 9100	1	30			P-2A	Salle méc. F-301													Tronc N2
2A-30-DO-3	DO-3	VA-1	C VA	Comm.aid vent.alm.	Arrêt Marche	DX9100	DX 9100	1	30	DO-3	DO3.COM	P-2A	Salle méc. F-3014068-089			2A-30-DO-3/218	(Bobine) + -	H-735	COM.NO		2/14	Voir détail démarre	Démarreur (H-735 mar/arr)		DX49	
2A-30-DO-4	DO-4	VA-1	C AERO	Comm.aérothermes	Arrêt Marche	DX9100	DX 9100	1	30	DO-4	DO4.COM	P-2A	Salle méc. F-3014068-089			2A-30-DO-4/218	2.7	RELAIS	1.3		2/14	Voir détail démarre	Démarreur (NO)		DX51	Aérothermes A-7, A-8
2A-30-DO-5	DO-5	AC-07	C VA	Comm.aid vent.alm.	Arrêt Marche	DX9100	DX 9100	1	30	DO-5	DO5.COM	P-2A	Salle méc. F-3014068-068			2A-30-DO-5/218	2.7	RELAIS	1.3		2/14	Voir détail démarre	Démarreur (NO)		DX51	
2A-30-DO-6	DO-6	AC-07	C COMP	Comm.aid compresseur	Arrêt Marche	DX9100	DX 9100	1	30	DO-6	DO6.COM	P-2A	Salle méc. F-3014068-068			2A-30-DO-6/218	2.7	RELAIS	1.3		2/14	Voir détail démarre	Démarreur (NO)		DX51	
2A-30-DO-7	DO-7	AC-07	C SC	Comm.serpentin chauff.	Arrêt Marche	DX9100	DX 9100	1	30	DO-7	DO7.COM	P-2A	Salle méc. F-3014068-068			2A-30-DO-7/218					2/18	Selon dispositif	SCR 24 V c.a.		DX51	Serpentin SE-20
2A-30-DO-8	DO-8	AC-07	C PLIN	Comm.plinthe chauff.	Arrêt Marche	DX9100	DX 9100	1	30	DO-8	DO8.COM	P-2A	Salle méc. F-3014068-068			2A-30-DO-8					2/18	Selon dispositif	SCR 24 V c.a.		DX51	2 relais TRIAC
2A-30-DI-1	DI-1	VA-1	E VA	Etat vent alimentation	Arrêt Marche	DX9100	DX 9100	1	30	DI-1	DI1.COM	P-2A	Salle méc. F-3014068-089			2A-30-DI-1					2/18	NO.COM	Vers H-735 état		DX49	
2A-30-DI-2	DI-2	AC-07	E VA	Etat vent alimentation	Arrêt Marche	DX9100	DX 9100	1	30	DI-2	DI2.COM	P-2A	Salle méc. F-3014068-068			2A-30-DI-2					2/18	NO.COM	H-708		DX49	
2A-30-DI-3	DI-3	AC-07	E FILY	Etat des filtres	Normal Sales	DX9100	DX 9100	1	30	DI-3	DI3.COM	P-2A	Salle méc. F-3014068-068			2A-30-DI-3					2/18	Y.R	P32 (NO)		DX70	
2A-30-DI-4	DI-4	AC-07	ALM AC	Alarme unité AC	Normal Alarme	DX9100	DX 9100	1	30	DI-4	DI4.COM	P-2A	Salle méc. F-3014068-068			2A-30-DI-4					2/18	Selon dispositif	Contact (NO)		DX70	
2A-30-DI-5	DI-5	ECH EC	E PC-1A	Etat pompe chauff. PC-1A	Arrêt Marche	DX9100	DX 9100	1	30	DI-5	DI5.COM	P-2A	Salle méc. F-3014068-093			2A-30-DI-5					2/18	NO.COM	Vers H-735 état		DX49	Nom et description du point modifiés (14 mars 2002)
2A-30-DI-6	DI-6	ECH EC	DEB EC	Preuve débit eau chauff.	Non Out	DX9100	DX 9100	1	30	DI-6	DI6.COM	P-2A	Salle méc. F-3014068-093			2A-30-DI-6					2/18	Selon dispositif	Contact (NO)		DX70	
2A-30-DI-7	DI-7	LABO	A H F219	Alarme hotte (F-219)	Normal Alarme	DX9100	DX 9100	1	30	DI-7	DI7.COM	P-2A	Salle méc. F-301			2A-30-DI-7					2/18	Y. R	F81KB-11		DX70	Hotte associée au vent. d'évac. VH-1
2A-30-DI-8	DI-8	LABO	A H F224	Alarme hotte (F-224)	Normal Alarme	DX9100	DX 9100	1	30	DI-8	DI8.COM	P-2A	Salle méc. F-301			2A-30-DI-8					2/18	Selon dispositif	Contact (NO)		DX70	Hotte assouée au vent. d'évac. VH-2
2A-30-AI-1	AI-1	VA-1	T PIE	Temp pièce		DX9100	DX 9100	1	30	AI-1	AI1.AICOM	P-2A	Salle méc. F-3014068-089			2A-30-AI-1					2/18	2 fils	TE		DX3	Salle méc. F-301
2A-30-AI-2	AI-2	VA-1	T ALI	Temp alimentation		DX9100	DX 9100	1	30	AI-2	AI2.AICOM	P-2A	Salle méc. F-3014068-089			2A-30-AI-2					2/18	2 fils	TE (Gaine)		DX3	
2A-30-AI-3	AI-3	AC-07	T PIE	Temp pièce		DX9100	DX 9100	1	30	AI-3	AI3.AICOM	P-2A	Salle méc. F-3014068-089			2A-30-AI-3					2/18	2 fils	TE		DX3	Sonde située dans local F-200
2A-30-AI-4	AI-4	AC-07	T ALI	Temp alimentation		DX9100	DX 9100	1	30	AI-4	AI4.AICOM	P-2A	Salle méc. F-3014068-089			2A-30-AI-4					2/18	2 fils	TE (Gaine)		DX3	
2A-30-AI-5	AI-5	ECH EC	T ALI EC	Temp.alm.eau chaude		DX9100	DX 9100	1	30	AI-5	AI5.AICOM	P-2A	Salle méc. F-3014068-093			2A-30-AI-5					2/18	2 fils	TE (Immersion)		DX3	
						DX9100	DX 9100	1	30	AI-6		P-2A	Salle méc. F-301			2A-30-AI-6										
						DX9100	DX 9100	1	30	AI-7		P-2A	Salle méc. F-301			2A-30-AI-7										
						DX9100	DX 9100	1	30	AI-8		P-2A	Salle méc. F-301			2A-30-AI-8										
2A-30-AO-AO-1	AO-1	VA-1	VOL MEL	Volets mélange	%	DX9100	DX 9100	1	30	AO-1	AO1.ACCOM	P-2A	Salle méc. F-3014068-089			2A-30-AO-1/218	+	EP-8000	SUPPLY O		3/18	1.2.5	M9216-HGA-2 0-10VDC		DX34	
2A-30-AO-AO-2	AO-2	ECH EC	XLVY EC-1	Vanne échangeur EC-1	%	DX9100	DX 9100	1	30	AO-2	AO2.ACCOM	P-2A	Salle méc. F-3014068-093			2A-30-AO-2/218	+	EP-8000	SUPPLY O		1/4"	Raccord à crans	EP-PNEU		DX27	
		AO-9				DX9100	DX 9100	1	30	AO-9		P-2A	Salle méc. F-301			2A-30-AO-9										
		AO-10				DX9100	DX 9100	1	30	AO-10		P-2A	Salle méc. F-301			2A-30-AO-10										
		AO-11				DX9100	DX 9100	1	30	AO-11		P-2A	Salle méc. F-301			2A-30-AO-11										
		AO-12				DX9100	DX 9100	1	30	AO-12		P-2A	Salle méc. F-301			2A-30-AO-12										
		AO-13				DX9100	DX 9100	1	30	AO-13		P-2A	Salle méc. F-301			2A-30-AO-13										
		AO-14				DX9100	DX 9100	1	30	AO-14		P-2A	Salle méc. F-301			2A-30-AO-14										
						XT9100	XT (Expansion Module)					P-2A	Salle méc. F-301													Alimentation 24VAC
						XT9100	XT (Expansion Module)	1	31			P-2A	Salle méc. F-301													Tronc N2
2A-31A-DI-XT1D01	ECH EC	IE-PC-1B		Etat pompe chauff. PC-1B	Arrêt Marche	XP9104	XP 9104 (4DI, 4)	1	31	DI-1	DI1.COM	P-2A	Salle méc. F-301			2A-31A-DI-1					2/18	NO.COM	Vers H-735 état		XP49	Nouveau point (14 mars 2002)
		XT1D02				XP9104	XP 9104 (4DI, 4)	1	31	DI-2		P-2A	Salle méc. F-301			2A-31A-DI-2										
		XT1D03				XP9104	XP 9104 (4DI, 4)	1	31	DI-3		P-2A	Salle méc. F-301			2A-31A-DI-3										
		XT1D04				XP9104	XP 9104 (4DI, 4)	1	31	DI-4		P-2A	Salle méc. F-301			2A-31A-DI-4										
2A-31A-DO-XT1D05	ECH EC	C PC-1A		Comm.pompe chauff. PC-1A	Arrêt Marche	XP9104	XP 9104 (4DI, 4)	1	31	DO-5	DO5.COM	P-2A	Salle méc. F-3014068-093			2A-31A-DO/218	(Bobine)+ -	H-735	COM.NO		2/14	Voir détail démarre	Démarreur (H-735 mar/arr)		XP49	Nom et description du point modifiés (14 mars 2002)
2A-31A-DO-XT1D06	ECH EC	C PC-1B		Comm.pompe chauff. PC-1B	Arrêt Marche	XP9104	XP 9104 (4DI, 4)	1	31	DO-6	DO6.COM	P-2A	Salle méc. F-301			2A-31A-DO/218	(COIL)+ -	H-735	COM.NO		2/14	Voir détail démarre	Démarreur (H-735 mar/arr)		XP49	Nouveau point (14 mars 2002)
		XT1D07				XP9104	XP 9104 (4DI, 4)	1	31	DO-7		P-2A	Salle méc. F-301			2A-31A-DO-7										
		XT1D08				XP9104	XP 9104 (4DI, 4)	1	31	DO-8		P-2A	Salle méc. F-301			2A-31A-DO-8										

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-07

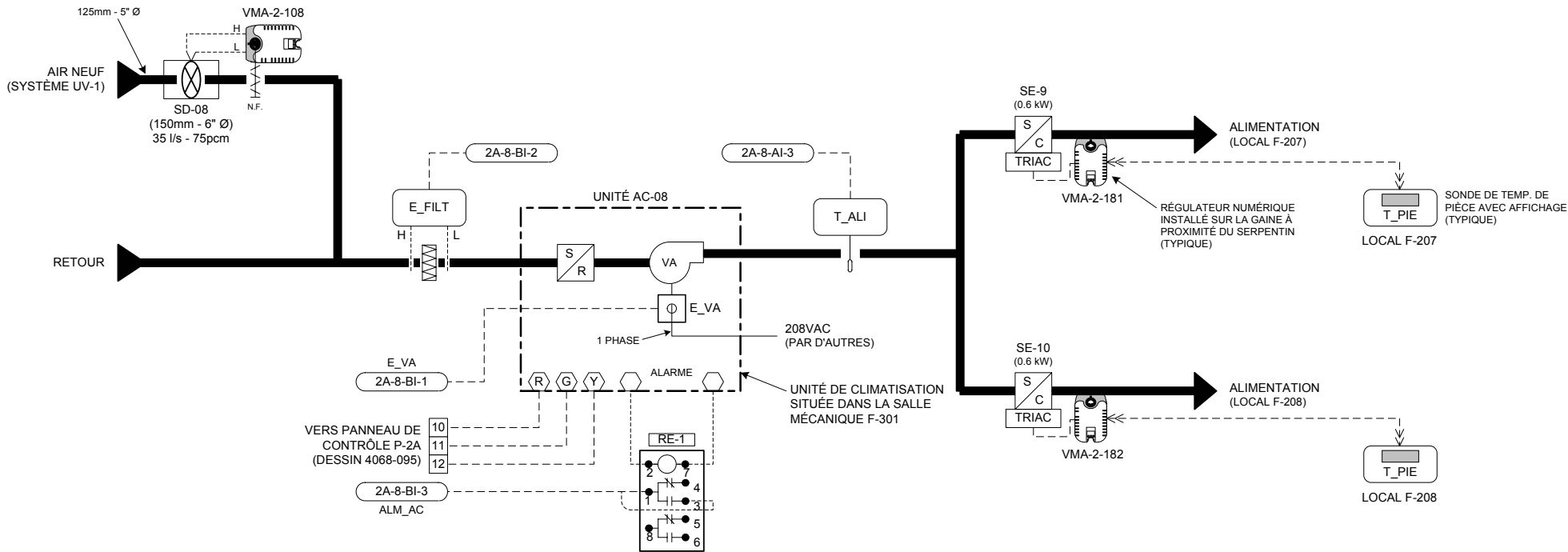
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_PLIN-1, 2	RELAIS TRIAC, 25Amps, 347/1/60, PLAQUE 4"x4"	CTT-25-1-C1	CRISTAL CONTRÔLES
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-1-30	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, 1A 1B 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1	INDICATEUR DE PRESSION DIFF. 0-250Pa	2000-250Pa	DWYER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2A	PANNEAU 36"x48"x9.5	M-8100-3648	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-3,	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-4			
UNT-2-8	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_xxx	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-31A	MODULE D'EXPANSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-31	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-08 - LOCAUX F-207 ET F-208
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	2	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-108	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-181, 182	2	AP-VMA1420-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF.
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-08	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

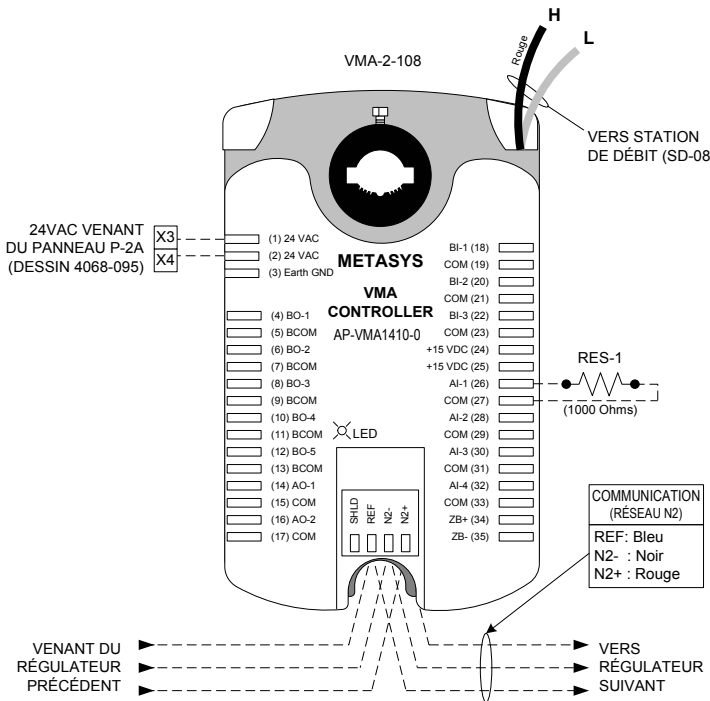
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-108) est fermé.

EN MARCHÉ:

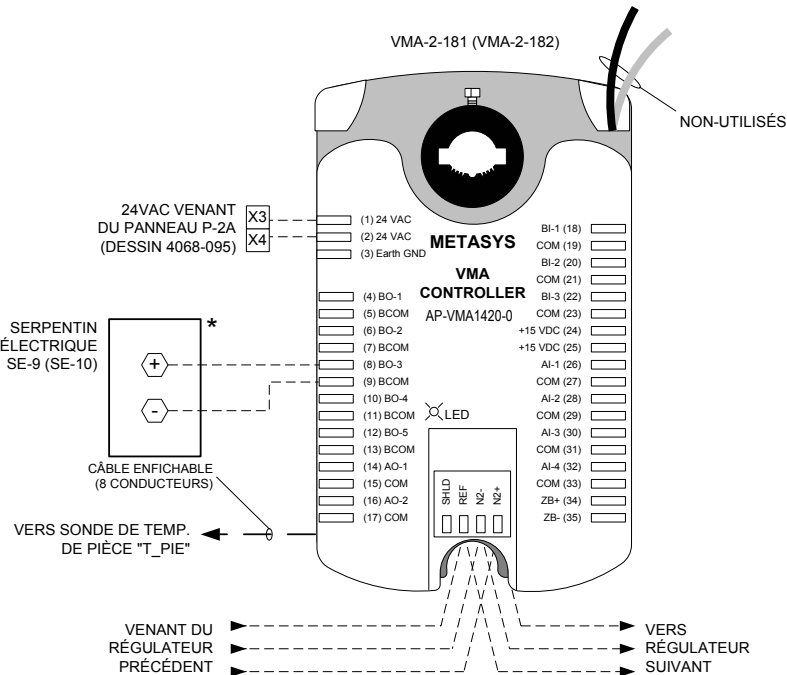
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-108) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des deux pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-18x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-108)



RACCORDEMENTS DES RÉGULATEURS (VMA-2-181 ET VMA-2-182)
(TYPIQUE POUR 2)



Titre du Dessin		1		TEL QUE CONSTRUIT		D.B.	02/04/24	O.P.
Unité de climatisation AC-08 Locaux F-207 et F-208 Type 2 (Unité de climatisation pour bureaux)		1		POUR APPROBATION			06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	PAR	D.B.	DATE	05/22/2001	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	Information Succursale	PAR	D.B.	DATE	05/22/2001	PAR
Nom du Projet		CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093		
Projet d'Innovation Technologique		3600, boul. Casavant		Johnson Controls Ltée		355, boul. Montpellier		
St-Hyacinthe (Québec)				Groupe de la régulation		St-Laurent, Qc, H4N 2G6		
						Tél: (514) 747-2580		
						Fax: (514) 747-9562		
						NUMÉRO DESSIN		
						4068-069		



STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-181.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.022332296

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	22
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrđ Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
-----	----	---------------	---------	-------

Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
----	----	---------------	----------	-------

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-108.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.025682345

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	75
ADF	164	Occupied Clg Min	OCCCMIN	75
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.136
ADF	25	Pickup Gain	PKUPGAIN	1.1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	75

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-08.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT140-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
None
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?

Yes

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	22.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	1.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0

ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMPCMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-182.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.028420001

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	22
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrdr Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-108) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-108) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des deux pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-18x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

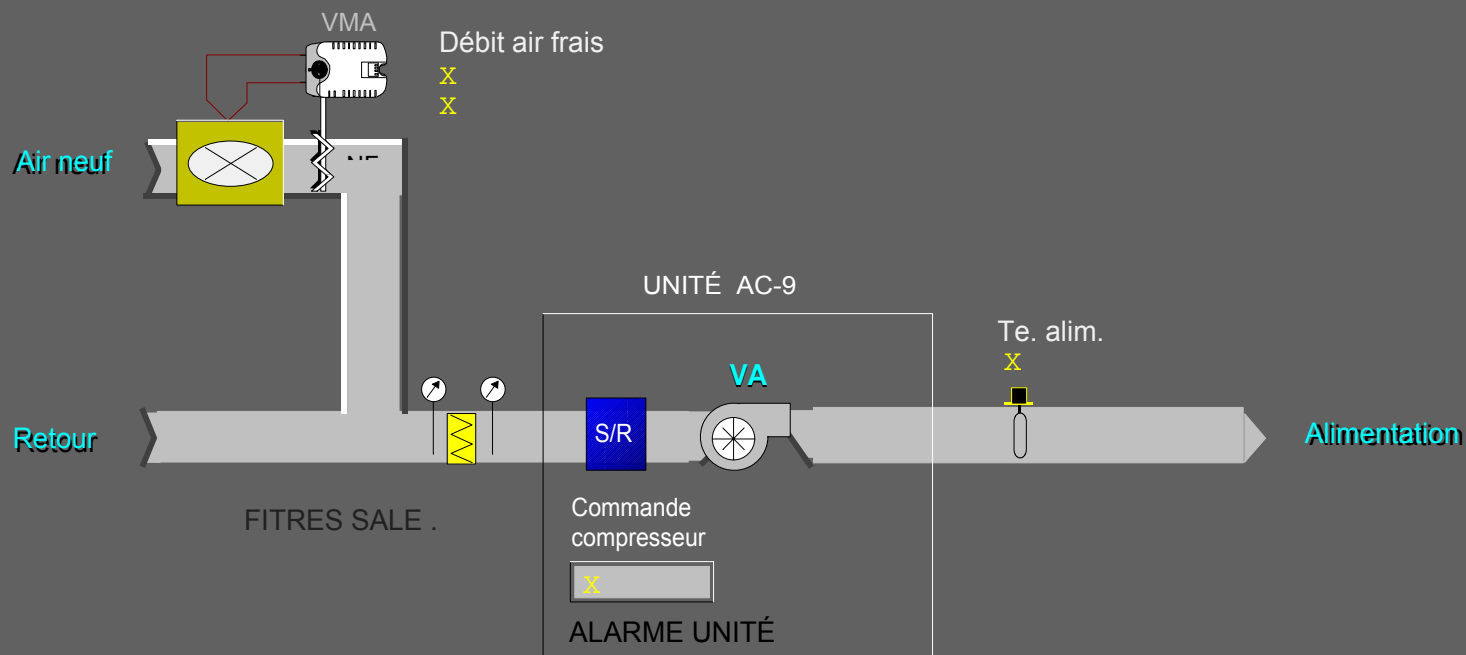
Informations sur points				Informations sur régulateurs								Appareils intermédiaires					Appareils hors panneau					Détail de					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-08				UNT	UNT 140	1	8			P-2A	Salle méc. F-301													Alimentation 24VAC	
	AI-1	AC-08				UNT	UNT 140	1	8 AI-1			P-2A	Salle méc. F-301		2A-8-AI-1											Tronc N2	
	AI-2	AC-08				UNT	UNT 140	1	8 AI-2			P-2A	Salle méc. F-301		2A-8-AI-2												
2A-8-AI-3	AI-3	AC-08	T ALI	Temp.alimentation	°C	UNT	UNT 140	1	8 AI-3	AI3,AICM	P-2A	Salle méc. F-301	4068-069A	2A-8-AI-3						2/18	2 fils		TE (Gaine)		UV1		
	AI-4	AC-08				UNT	UNT 140	1	8 AI-4			P-2A	Salle méc. F-301		2A-8-AI-4												
	AI-5	AC-08				UNT	UNT 140	1	8 AI-5			P-2A	Salle méc. F-301		2A-8-AI-5												
	AI-6	AC-08				UNT	UNT 140	1	8 AI-6			P-2A	Salle méc. F-301		2A-8-AI-6												
2A-8-BI-1	BI-1	AC-08	E VA	Etat vent.alimentation	Arrêt	Marche	UNT	UNT 140	1	8 BI-1	BI1,24VAC	P-2A	Salle méc. F-301	4068-069A	2A-8-BI-1					2/18	Selon dispositif		H-708		UV70		
2A-8-BI-2	BI-2	AC-08	E FILT	Etat des filtres	Normal	Sales	UNT	UNT 140	1	8 BI-2	BI2,24VAC	P-2A	Salle méc. F-301	4068-069A	2A-8-BI-2					2/18	Y.R		P32 (NO)		UV70		
2A-8-BI-3	BI-3	AC-08	ALM AC	Alarme unité AC	Normal	Alarme	UNT	UNT 140	1	8 BI-3	BI3,24VAC	P-2A	Salle méc. F-301	4068-069A	2A-8-BI-3					2/18	Selon dispositif		Contact (NO)		UV70		
	BI-4	AC-08				UNT	UNT 140	1	8 BI-4			P-2A	Salle méc. F-301		2A-8-BI-4												
2A-8-BO-1	BO-1	AC-08	C VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 140	1	8 BO-1	BO1.COM	P-2A	Salle méc. F-301	4068-069A	2A-8-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51		
	BO-2	AC-08				UNT	UNT 140	1	8 BO-2			P-2A	Salle méc. F-301		2A-8-BO-2												
	BO-3	AC-08				UNT	UNT 140	1	8 BO-3			P-2A	Salle méc. F-301		2A-8-BO-3												
2A-8-BO-4	BO-4	AC-08	C,COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 140	1	8 BO-4	BO4.COM	P-2A	Salle méc. F-301	4068-069A	2A-8-BO-4	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51		
	BO-5	AC-08				UNT	UNT 140	1	8 BO-5			P-2A	Salle méc. F-301		2A-8-BO-5												
	BO-6	AC-08				UNT	UNT 140	1	8 BO-6			P-2A	Salle méc. F-301		2A-8-BO-6												
	BO-7	AC-08				UNT	UNT 140	1	8 BO-7			P-2A	Salle méc. F-301		2A-8-BO-7												
	BO-8	AC-08				UNT	UNT 140	1	8 BO-8			P-2A	Salle méc. F-301		2A-8-BO-8												
						VMA	VMA 1410	1				P-2	Unité AC-08													Alimentation 24VAC	
		AC-08				VMA	VMA 1410	1	108			P-2	Unité AC-08													Tronc N2	
2-108-AI-1	AI-1	AC-08	RES	Résistance 1000 ohms	°C		VMA	VMA 1410	1	108 AI-1	AI1,AICM	P-2	Unité AC-08	4068-069A	2-108-AI-1					VMA		2 fils		Résistance 1000 ohms		VMA1	
	AI-2	AC-08					VMA	VMA 1410	1	108 AI-2		P-2	Unité AC-08		2-108-AI-2												
	BI-1	AC-08					VMA	VMA 1410	1	108 BI-1		P-2	Unité AC-08		2-108-BI-1												
	BI-2	AC-08					VMA	VMA 1410	1	108 BI-2		P-2	Unité AC-08		2-108-BI-2												
	BI-3	AC-08					VMA	VMA 1410	1	108 BI-3		P-2	Unité AC-08		2-108-BI-3												
2-108-AI-5	AI-5	AC-08	P VEL	Pression de vélocité	Pa		VMA	VMA 1410	1	108 AI-5		P-2	Unité AC-08	4068-069A	2-108-AI-5											Air neuf AC-08	
		AC-08					VMA	VMA 1430	1			P-2	Serp. SE-9 (F-207)													Alimentation 24VAC	
		AC-08					VMA	VMA 1430	1	81		P-2	Serp. SE-9 (F-207)													Tronc N2	
2-81-AI-1	AI-1	AC-08	T,PIE207	Temp.pièce F-207	°C		VMA	VMA 1430	1	81 AI-1	PHONE JACK	P-2	Serp. SE-9 (F-207)4068-069B	2-81-AI-1						8/24	Prise tél.		Metastat-Prise télép		VMA2		
	AI-2	AC-08					VMA	VMA 1430	1	81 AI-2		P-2	Serp. SE-9 (F-207)		2-81-AI-2												
	AI-3	AC-08					VMA	VMA 1430	1	81 AI-3		P-2	Serp. SE-9 (F-207)		2-81-AI-3												
	AI-4	AC-08					VMA	VMA 1430	1	81 AI-4		P-2	Serp. SE-9 (F-207)		2-81-AI-4												
	AI-5	AC-08					VMA	VMA 1430	1	81 AI-5		P-2	Serp. SE-9 (F-207)4068-069B	2-81-AI-5													
	BI-1	AC-08					VMA	VMA 1430	1	81 BI-1		P-2	Serp. SE-9 (F-207)		2-81-BI-1												
	BI-2	AC-08					VMA	VMA 1430	1	81 BI-2		P-2	Serp. SE-9 (F-207)		2-81-BI-2												
	BI-3	AC-08					VMA	VMA 1430	1	81 BI-3		P-2	Serp. SE-9 (F-207)		2-81-BI-3												
	BO-1	AC-08					VMA	VMA 1430	1	81 BO-1		P-2	Serp. SE-9 (F-207)		2-81-BO-1												
	BO-2	AC-08					VMA	VMA 1430	1	81 BO-2		P-2	Serp. SE-9 (F-207)		2-81-BO-2												
2-81-BO-3	BO-3	AC-08	C,SC	Comm.serpentin chauffage	Arrêt	Marche	VMA	VMA 1430	1	81 BO-3	BO3,24VAC	P-2	Serp. SE-9 (F-207)4068-069B	2-81-BO-3		2/18	Selon dispositif		SOR 24 V c.a.						VMA51	Serp. avec relais TRIAC	
	BO-4	AC-08					VMA	VMA 1430	1	81 BO-4		P-2	Serp. SE-9 (F-207)		2-81-BO-4												
	BO-5	AC-08					VMA	VMA 1430	1	81 BO-5		P-2	Serp. SE-9 (F-207)		2-81-BO-5												
	AO-1	AC-08					VMA	VMA 1430	1	81 AO-1		P-2	Serp. SE-9 (F-207)		2-81-AO-1												
	AO-2	AC-08					VMA	VMA 1430	1	81 AO-2		P-2	Serp. SE-9 (F-207)		2-81-AO-2												
		AC-08					VMA	VMA 1430	1			P-2	Serp. SE-10 (F-208)													Alimentation 24VAC	
		AC-08					VMA	VMA 1430	1	82		P-2	Serp. SE-10 (F-208)													Tronc N2	
2-82-AI-1	AI-1	AC-08	T,PIE208	Temp.pièce F-208	°C		VMA	VMA 1430	1	82 AI-1	PHONE JACK	P-2	Serp. SE-10 (F-208)4068-069B	2-82-AI-1		8/24	Prise tél.		Metastat-Prise télép						VMA2		
	AI-2	AC-08					VMA	VMA 1430	1	82 AI-2		P-2	Serp. SE-10 (F-208)		2-82-AI-2												
	AI-3	AC-08					VMA	VMA 1430	1	82 AI-3		P-2	Serp. SE-10 (F-208)		2-82-AI-3												
	AI-4	AC-08					VMA	VMA 1430	1	82 AI-4		P-2	Serp. SE-10 (F-208)		2-82-AI-4												
	AI-5	AC-08					VMA	VMA 1430	1	82 AI-5		P-2	Serp. SE-10 (F-208)4068-069	2-82-AI-5													
	BI-1	AC-08					VMA	VMA 1430	1	82 BI-1		P-2	Serp. SE-10 (F-208)		2-82-BI-1												
	BI-2	AC-08					VMA	VMA 1430	1	82 BI-2		P-2	Serp. SE-10 (F-208)		2-82-BI-2												
	BI-3	AC-08					VMA	VMA 1430	1	82 BI-3		P-2	Serp. SE-10 (F-208)		2-82-BI-3												
	BO-1	AC-08					VMA	VMA 1430	1	82 BO-1		P-2	Serp. SE-10 (F-208)		2-82-BO-1												
	BO-2	AC-08					VMA	VMA 1430	1	82 BO-2		P-2	Serp. SE-10 (F-208)		2-82-BO-2												
2-82-BO-3	BO-3	AC-08	C,SC	Comm.serpentin chauffage	Arrêt	Marche	VMA	VMA 1430	1	82 BO-3	BO3,24VAC	P-2	Serp. SE-10 (F-208)4068-069B	2-82-BO-3		2/18	Selon dispositif		SOR 24 V c.a.						VMA51	Serp. avec relais TRIAC	
	BO-4	AC-08					VMA	VMA 1430	1	82 BO-4		P-2	Serp. SE-10 (F-208)		2-82-BO-4												
	BO-5	AC-08					VMA	VMA 1430	1	82 BO-5		P-2	Serp. SE-10 (F-208)		2-82-BO-5												
	AO-1	AC-08					VMA	VMA 1430	1	82 AO-1		P-2	Serp. SE-10 (F-208)		2-82-AO-1												
	AO-2	AC-08					VMA	VMA 1430	1	82 AO-2		P-2	Serp. SE-10 (F-208)		2-82-AO-2												

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-08

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-08	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VMA-2-108	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VMA-2-181, VMA-2-182	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1420-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2A

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-1-30	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIS	DX-9100-8991	JOHNSON CONTROLS
F-1, 1A 1B 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
IPD-1	INDICATEUR DE PRESSION DIFF. 0-250Pa	2000-250Pa	DWYER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2A	PANNEAU 36"x48"x9.5	M-8100-3648	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-3, UNT-2-4	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-8	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_xxx	CONVERTISSEUR ÉLECTRO-PNEUMATIQUE 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-31A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-31	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS

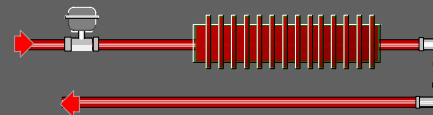


Piese F-225

- X PC chauff. inocc.
- X PC chauff. occ.
- X PC refr. occ.
- X

Valve chauffage

X



UNITÉ DE CLIMATISATION AC-09 - LOCAL F-225
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

Le schéma illustre le fonctionnement de l'unité de climatisation AC-09, qui intègre un chauffage périphérique. L'air neuf (système UV-1) passe par un filtre SD-09 (150mm - 6" Ø, 30 l/s - 65pcm) et est traité par une vanne à membrane VMA-2-109. Le retour d'air est traité par un filtre E_FILT. L'unité AC-09 comprend une vanne à trois voies VA, un électrovanne E_VA, et un système de chauffage à eau chaude (R, G, Y, ALARME). Le chauffage est contrôlé par un panneau de contrôle P-2D (dessin 4068-098) via des signaux 2D-9-BI-1, 2D-9-BI-2, 2D-9-BI-3, et 2D-9-AI-3. Le chauffage est alimenté par une pompe VLV_CHA (4-8psi) et un réservoir RE-1. Le système est alimenté par 208VAC (par d'autres) et 1 phase. Le chauffage est contrôlé par un thermostat T_PIE (sonde de température de pièce avec affichage) et un thermostat T_ALI (thermostat ambiant). Le chauffage est alimenté par une pompe VLV_CHA (4-8psi) et un réservoir RE-1. Le système est alimenté par 208VAC (par d'autres) et 1 phase.

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-109) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-109) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-109)

METASYS

VMA CONTROLLER

AP-VMA1410-0

(1) 24 VAC
(2) 24 VAC
(3) Earth GND
(4) BO-1
(5) BCOM
(6) BO-2
(7) BCOM
(8) BO-3
(9) BCOM
(10) BO-4
(11) BCOM
(12) BO-5
(13) BCOM
(14) AO-1
(15) VDC
(16) VDC
(17) AI-1
(18) COM
(19) BI-2
(20) COM
(21) BI-3
(22) COM
(23) +15 VDC
(24) +15 VDC
(25) AI-1
(26) COM
(27) AI-2
(28) COM
(29) AI-3
(30) COM
(31) AI-4
(32) COM

24VAC VENANT
DU PANNEAU P-2D
(DESSIN 4068-098)

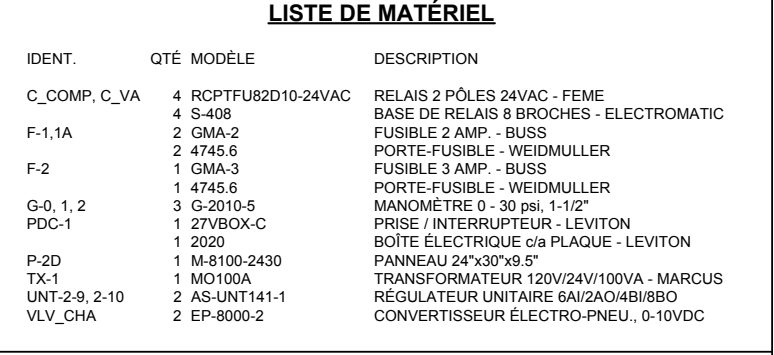
VERS STATION
DE DÉBIT (SD-09)

RES-1
(1000 Ohms)

COMMUNICATION

	<p>Titre du Dessin</p> <p>Unité de climatisation AC-09 Local F-225 Type 1 (Unité avec chauffage périmétrique)</p>
<p>VENANT DU RÉGULATEUR PRÉCÉDENT</p>	<p>Norm du Projet</p> <p>CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)</p>

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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-09.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
Include diagnostics?
Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	21.1
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	18.9
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-109.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.029695362

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	65
ADF	164	Occupied Clg Min	OCCCMIN	65
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.196
ADF	25	Pickup Gain	PKUPGAIN	2.7
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	65

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-109) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-109) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

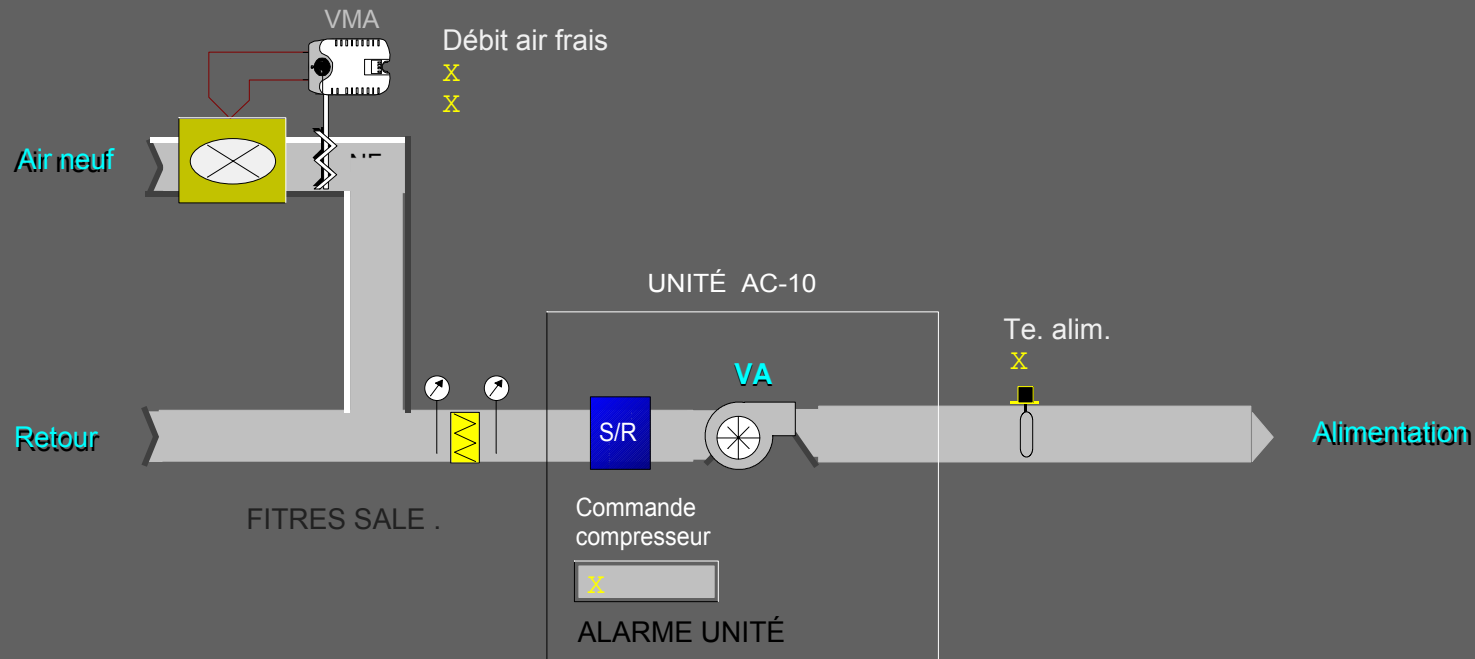
Informations sur points				Informations sur régulateurs								Appareils intermédiaires					Appareils hors panneau									
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminals sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminals entrée	Appareil	Terminals sortie	Emplac.	Câble / tube	Terminals entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-09				UNT	UNT 141					P-2D	Local F-224													Alimentation 24VAC
2D-9-AI-1	AI-1	AC-09	T PIE	Temp.pièce	°C	UNT	UNT 141	1	9			P-2D	Local F-224													Tronc N2
	AI-2	AC-09				UNT	UNT 141	1		9AI-1	PHONE JACK	P-2D	Local F-224	4068-070	2D-9-AI-1						8/24	Prise téli.	Metastat-Prise Mémip		UV2	Sonde située dans local F-225
2D-9-AI-3	AI-3	AC-09	T ALI	Temp.alimentation	°C	UNT	UNT 141	1		9AI-2		P-2D	Local F-224		2D-9-AI-2											
	AI-4	AC-09				UNT	UNT 141	1		9AI-3	AI3,AICM	P-2D	Local F-224	4068-070	2D-9-AI-3						2/18	2 fils	TE (Gaine)		UV1	
	AI-5	AC-09				UNT	UNT 141	1		9AI-4		P-2D	Local F-224		2D-9-AI-4											
	AI-6	AC-09				UNT	UNT 141	1		9AI-5		P-2D	Local F-224		2D-9-AI-5											
						UNT	UNT 141	1		9AI-6		P-2D	Local F-224		2D-9-AI-6											
2D-9-BI-1	BI-1	AC-09	E VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 141	1	9BI-1	BI1,24VAC	P-2D	Local F-224	4068-070	2D-9-BI-1						2/18	Selon dispositif	H-708		UV70	
2D-9-BI-2	BI-2	AC-09	E FILT	État des filtres	Normal	Alarme	UNT	UNT 141	1	9BI-2	BI2,24VAC	P-2D	Local F-224	4068-070	2D-9-BI-2						2/18	Y.R	P32 (NO)		UV70	
2D-9-BI-3	BI-3	AC-09	ALM AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	9BI-3	BI3,24VAC	P-2D	Local F-224	4068-070	2D-9-BI-3						2/18	Selon dispositif	Contact (NO)		UV70	
	BI-4	AC-09				UNT	UNT 141	1		9BI-4		P-2D	Local F-224		2D-9-BI-4											
2D-9-BO-1	BO-1	AC-09	C VA	Comm.al/d vent.alim.	Arrêt	Marche	UNT	UNT 141	1	9BO-1	BO1.COM	P-2D	Local F-224	4068-070	2D-9-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
	BO-2	AC-09				UNT	UNT 141	1		9BO-2		P-2D	Local F-224		2D-9-BO-2											
	BO-3	AC-09				UNT	UNT 141	1		9BO-3		P-2D	Local F-224		2D-9-BO-3											
2D-9-BO-4	BO-4	AC-09	C COMP	Comm.al/d compresseur	Arrêt	Marche	UNT	UNT 141	1	9BO-4	BO4.COM	P-2D	Local F-224	4068-070	2D-9-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
	BO-5	AC-09				UNT	UNT 141	1		9BO-5		P-2D	Local F-224		2D-9-BO-5											
	BO-6	AC-09				UNT	UNT 141	1		9BO-6		P-2D	Local F-224		2D-9-BO-6											
2D-9-AO-1	AO-1	AC-09	VLV_CHA	Vanne chauffage	%	UNT	UNT 141	1		9AO-1	AO1,AOCOM	P-2D	Local F-224	4068-070	2D-9-AO-1	2/18	+-	EP-8000	SUPPLY_O		1/4"	Raccord à crans	EP-PNEU.		UV27	
	AO-2	AC-09				UNT	UNT 141	1		9AO-2		P-2D	Local F-224		2D-9-AO-2											
		AC-09				VMA	VMA 1410					P-2	Unité AC-09													Alimentation 24VAC
						VMA	VMA 1410	1	109			P-2	Unité AC-09													Tronc N2
2-109-AI-1	AI-1	AC-09	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	109	AI-1	AI1,AICM	P-2	Unité AC-09	4068-070	2-109-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-09				VMA	VMA 1410	1	109	AI-2		P-2	Unité AC-09		2-109-AI-2											
	BI-1	AC-09				VMA	VMA 1410	1	109	BI-1		P-2	Unité AC-09		2-109-BI-1											
	BI-2	AC-09				VMA	VMA 1410	1	109	BI-2		P-2	Unité AC-09		2-109-BI-2											
	BI-3	AC-09				VMA	VMA 1410	1	109	BI-3		P-2	Unité AC-09		2-109-BI-3											
2-109-AI-5	AI-5	AC-09	P VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	109	AI-5		P-2	Unité AC-09	4068-070	2-109-AI-5											Air neuf AC-09

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-09

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-09	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-109	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2D

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-2	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2D	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-9, UNT-2-10	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS

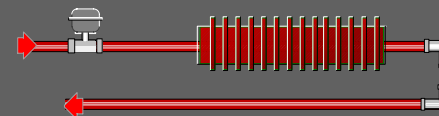


Piese F-220

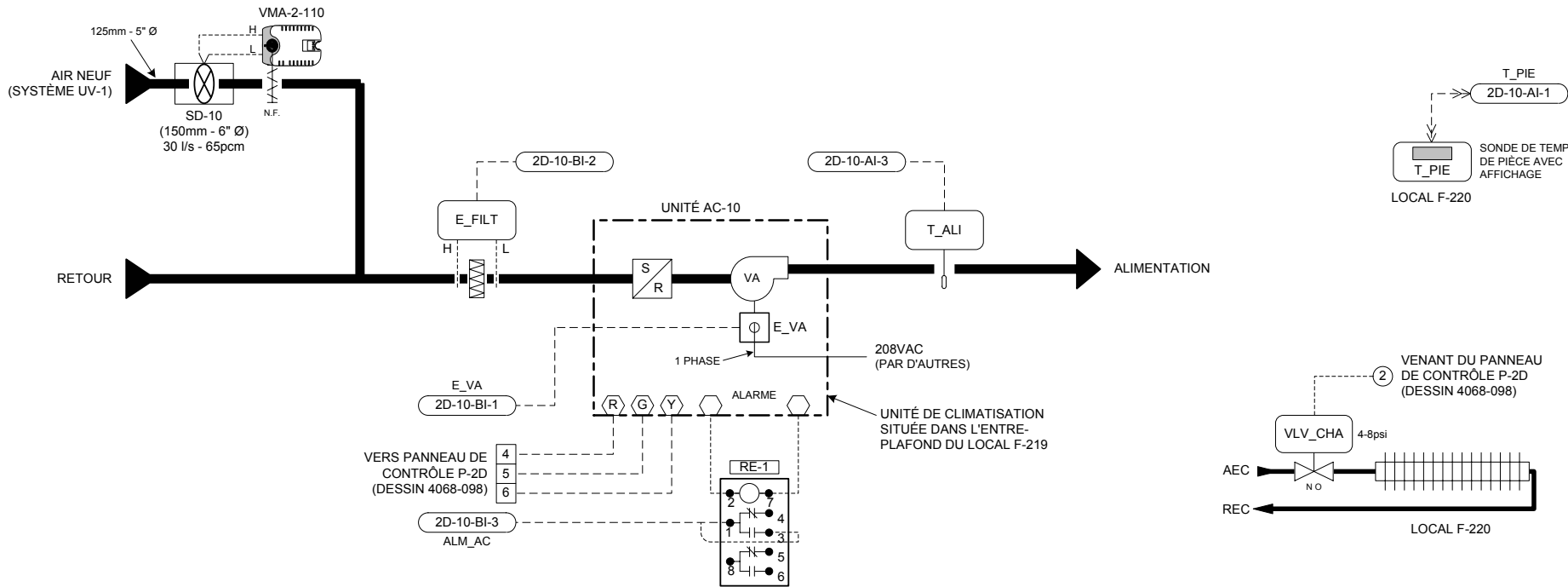
- X PC chauff. inocc.
- X PC chauff. occ.
- X PC refr. occ.
- X

Valve chauffage

X



UNITÉ DE CLIMATISATION AC-10 - LOCAL F-220
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-110	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-10	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

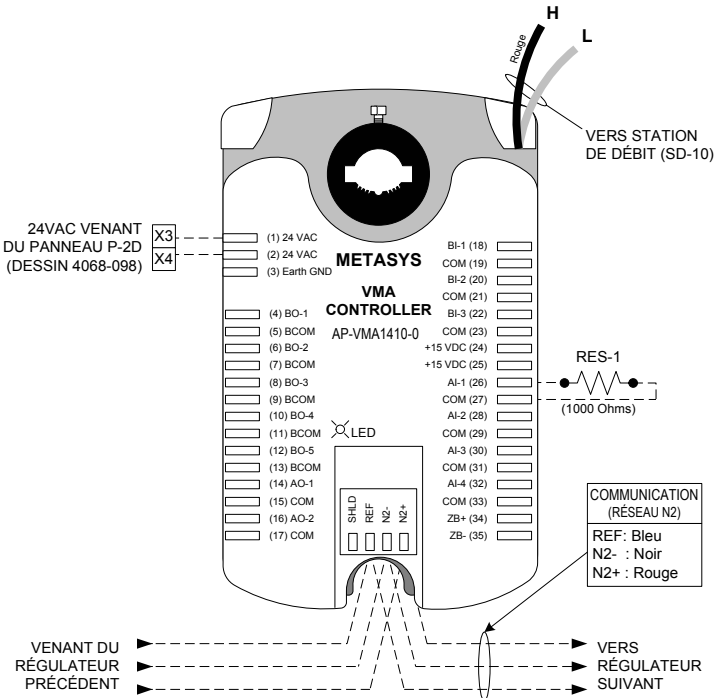
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-110) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

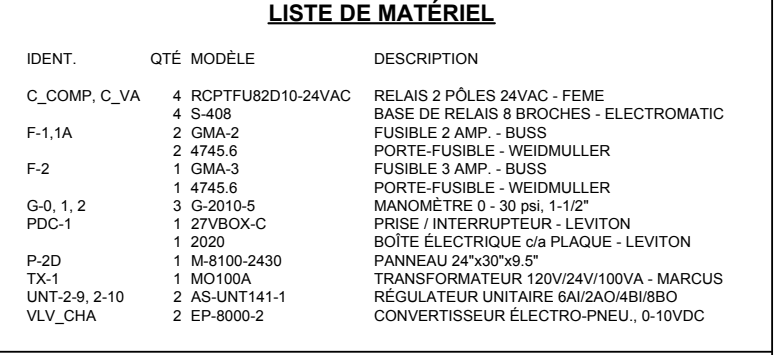
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-110) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-110)



Titre du Dessin					
Unité de climatisation AC-10 Local F-220 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24 O.P.
		1	POUR APPROBATION		06/12/2001 D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMÉRO DESSIN 4068-071	



STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-10.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
Include diagnostics?
Yes

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	21.5
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	22.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMPCMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-110.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1420
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.037743106

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	65
ADF	164	Occupied Clg Min	OCCCMIN	65
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.136
ADF	25	Pickup Gain	PKUPGAIN	0.3
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	65

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-110) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-110) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

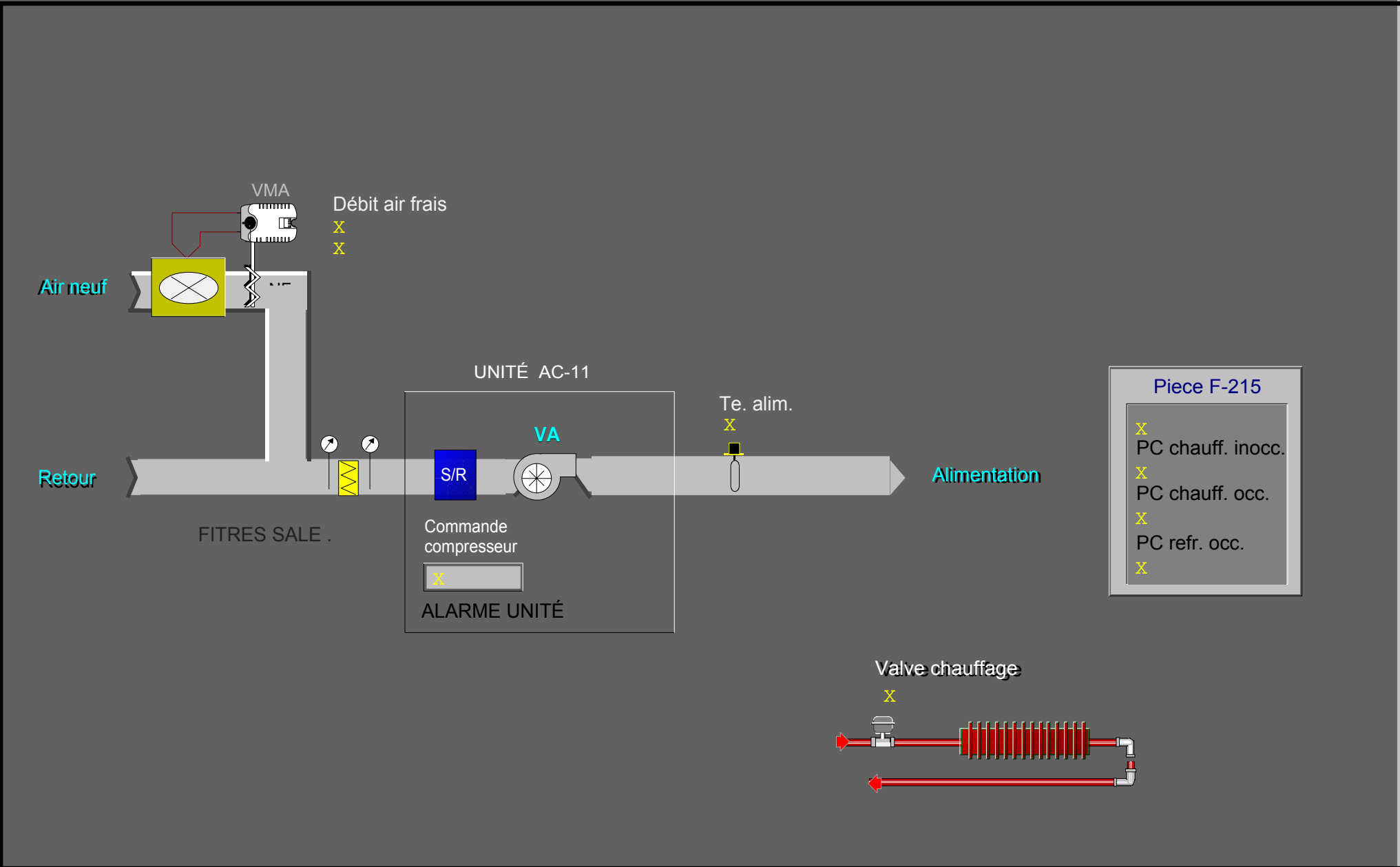
Informations sur points				Informations sur régulateurs								Appareils intermédiaires					Appareils hors panneau										
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminals sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminals entrée	Appareil	Terminals sortie	Emplac.	Câble / tube	Terminals entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-10				UNT	UNT 141		1	10		P-2D	Local F-219													Alimentation 24VAC	
2E-10-AI-1	AI-1	AC-10	T PIE	Temp.pièce	°C	UNT	UNT 141		1	10	AI-1	P-2D	Local F-219	4068-071	2D-10-AI-1						8/24	Prise tél.	Metastat-Prise télép		UV2	Tronc N2	
	AI-2	AC-10				UNT	UNT 141		1	10	AI-2	P-2D	Local F-219		2D-10-AI-2											Sonde située dans local F-220	
2E-10-AI-3	AI-3	AC-10	T ALI	Temp.alimentation	°C	UNT	UNT 141		1	10	AI-3	P-2D	Local F-219	4068-071	2D-10-AI-3						2/18	2 fils	TE (Gaine)		UV1		
	AI-4	AC-10				UNT	UNT 141		1	10	AI-4	P-2D	Local F-219		2D-10-AI-4												
	AI-5	AC-10				UNT	UNT 141		1	10	AI-5	P-2D	Local F-219		2D-10-AI-5												
	AI-6	AC-10				UNT	UNT 141		1	10	AI-6	P-2D	Local F-219		2D-10-AI-6												
2E-10-BI-1	BI-1	AC-10	E VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 141		1	10	BI-1	P-2D	Local F-219	4068-071	2D-10-BI-1					2/18	Selon dispositif	H-708		UV70		
2E-10-BI-2	BI-2	AC-10	E FILT	État des filtres	Normal	Salas	UNT	UNT 141		1	10	BI-2	P-2D	Local F-219	4068-071	2D-10-BI-2					2/18	Y.R	P32 (NO)		UV70		
2E-10-BI-3	BI-3	AC-10	ALM AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141		1	10	BI-3	P-2D	Local F-219	4068-071	2D-10-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
	BI-4	AC-10				UNT	UNT 141		1	10	BI-4	P-2D	Local F-219		2D-10-BI-4												
2E-10-BO-1	BO-1	AC-10	C VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141		1	10	BO-1	P-2D	Local F-219	4068-071	2D-10-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
	BO-2	AC-10				UNT	UNT 141		1	10	BO-2	P-2D	Local F-219		2D-10-BO-2												
	BO-3	AC-10				UNT	UNT 141		1	10	BO-3	P-2D	Local F-219		2D-10-BO-3												
2E-10-BO-4	BO-4	AC-10	C COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141		1	10	BO-4	P-2D	Local F-219	4068-071	2D-10-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
	BO-5	AC-10				UNT	UNT 141		1	10	BO-5	P-2D	Local F-219		2D-10-BO-5												
	BO-6	AC-10				UNT	UNT 141		1	10	BO-6	P-2D	Local F-219		2D-10-BO-6												
2E-10-AO-1	AO-1	AC-10	VLV_CHA	Vanne chauffage	%	UNT	UNT 141		1	10	AO-1	P-2D	Local F-219	4068-071	2D-10-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		UV27		
	AO-2	AC-10				UNT	UNT 141		1	10	AO-2	P-2D	Local F-219		2D-10-AO-2												
						VMA	VMA 1410					P-2	Unité AC-10													Alimentation 24VAC	
		AC-10				VMA	VMA 1410			110		P-2	Unité AC-10													Tronc N2	
2-110-AI-1	AI-1	AC-10	RES	Résistance 1000 ohms	°C	VMA	VMA 1410			110	AI1,AICM	P-2	Unité AC-10	4068-071	2-110-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1			
	AI-2	AC-10				VMA	VMA 1410			110	AI-2	P-2	Unité AC-10		2-110-AI-2												
	BI-1	AC-10				VMA	VMA 1410			110	BI-1	P-2	Unité AC-10		2-110-BI-1												
	BI-2	AC-10				VMA	VMA 1410			110	BI-2	P-2	Unité AC-10		2-110-BI-2												
	BI-3	AC-10				VMA	VMA 1410			110	BI-3	P-2	Unité AC-10		2-110-BI-3												
2-110-AI-5	AI-5	AC-10	P VEL	Pression de vélocité	Pa	VMA	VMA 1410			110	AI-5	P-2	Unité AC-10	4068-071	2-110-AI-5											Air neuf AC-10	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-10

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-10	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-110	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2D

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-2	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2D	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-9,	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-10			
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-11 - LOCAL F-215
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

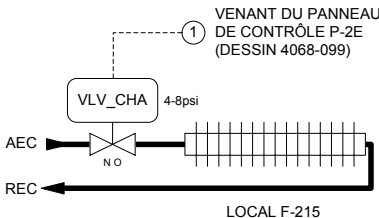
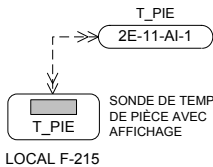
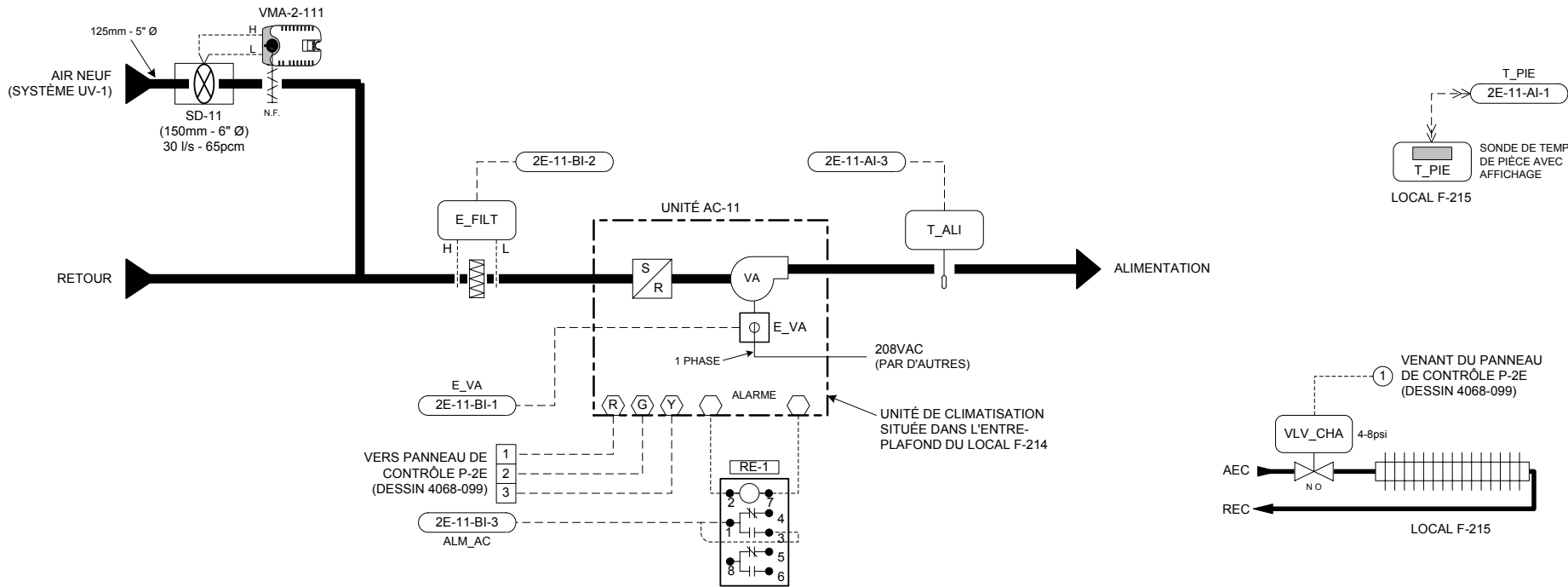
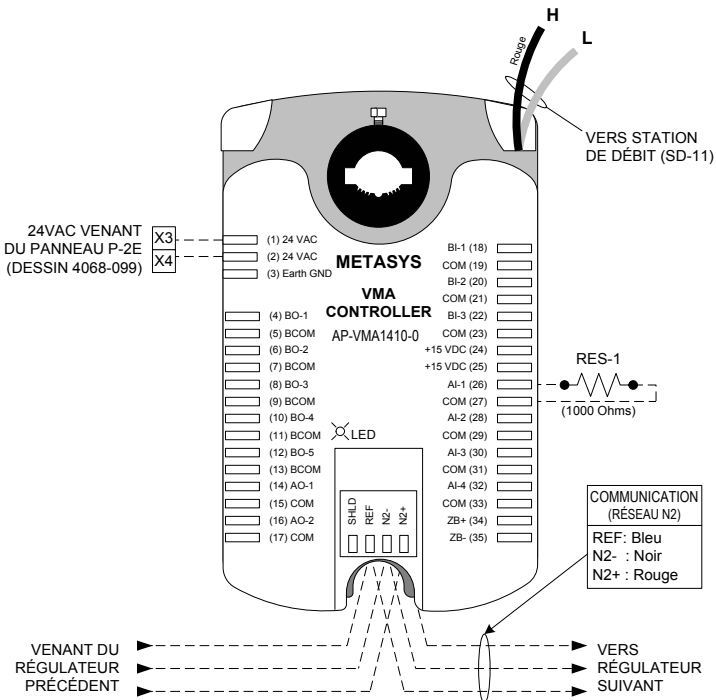


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-111)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-111	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
RES-1	1	S-408	BASE DE RELAIS 8 BROCHES
SD-11	1	RMS-6	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
			STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

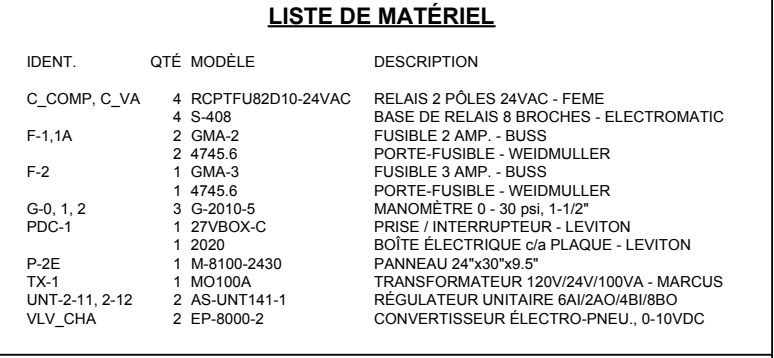
À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-111) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-111) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin					
Unité de climatisation AC-11		2	TEL QUE CONSTRUIT	D.B.	02/04/24
Local F-215		1	POUR APPROBATION		06/12/2001
Type 1 (Unité avec chauffage					
périmétrique)					
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/22/2001	PAR DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093	
Projet d'Innovation Technologique		Johnson Controls Ltée		NUMÉRO DESSIN	
3600, boul. Casavant		355, boul. Montpellier		4068-072	
St-Hyacinthe (Québec)		St-Laurent, Qc, H4N 2G6			
		Tél: (514) 747-2580			
		Fax: (514) 747-9562			
		Groupe de la régulation			



STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-11.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
Include diagnostics?
Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	22.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	3.0
ADF	133	Clg Integ Time	CLGINT	200
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	20.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-111.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1420
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.025382951

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	65
ADF	164	Occupied Clg Min	OCCCMIN	65
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.196
ADF	25	Pickup Gain	PKUPGAIN	0.8
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	65

VAV Box Mode

ADI

67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-111) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-111) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

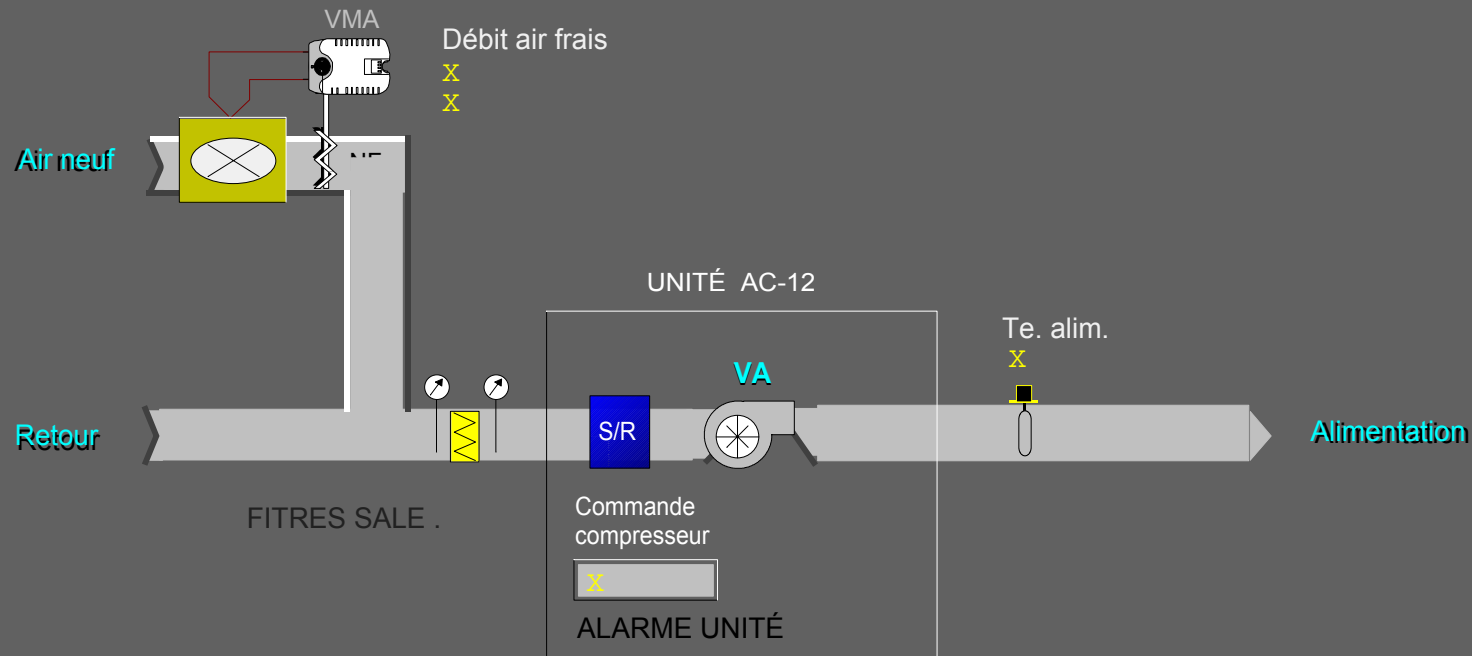
Informations sur points				Informations sur régulateurs								Appareils intermédiaires						Appareils hors panneau									
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminals sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-11				UNT	UNT 141					P-2E	Local F-214													Alimentation 24VAC	
2F-11-AI-1	AI-1	AC-11	T PIE	Temp.pièce	°C	UNT	UNT 141	2	11			P-2E	Local F-214													Tronc N2	
AI-2	AI-2	AC-11				UNT	UNT 141	2	11	AI-1	PHONE JACK	P-2E	Local F-214	4068-072	2E-11-AI-1						8/24	Prise tél.	Metastat-Prise télép		UV2	Sonde située dans local F-215	
2F-11-AI-3	AI-3	AC-11	T ALI	Temp.alimentation	°C	UNT	UNT 141	2	11	AI-2		P-2E	Local F-214		2E-11-AI-2												
AI-4	AI-4	AC-11				UNT	UNT 141	2	11	AI-3	AI3,AICM	P-2E	Local F-214	4068-072	2E-11-AI-3						2/18	2 fils	TE (Gaine)		UV1		
AI-5	AI-5	AC-11				UNT	UNT 141	2	11	AI-4		P-2E	Local F-214		2E-11-AI-4												
AI-6	AI-6	AC-11				UNT	UNT 141	2	11	AI-5		P-2E	Local F-214		2E-11-AI-5												
						UNT	UNT 141	2	11	AI-6		P-2E	Local F-214		2E-11-AI-6												
2F-11-BI-1	BI-1	AC-11	E VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 141	2	11	BI-1	BI1 24VAC	P-2E	Local F-214	4068-072	2E-11-BI-1					2/18	Selon dispositif	H-708		UV70		
2F-11-BI-2	BI-2	AC-11	E FILT	État des filtres	Normal	Alarme	UNT	UNT 141	2	11	BI-2	BI2 24VAC	P-2E	Local F-214	4068-072	2E-11-BI-2					2/18	Y.R	P32 (NO)		UV70		
2F-11-BI-3	BI-3	AC-11	ALM AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	2	11	BI-3	BI3 24VAC	P-2E	Local F-214	4068-072	2E-11-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
BI-4	BI-4	AC-11				UNT	UNT 141	2	11	BI-4		P-2E	Local F-214		2E-11-BI-4												
2F-11-BO-1	BO-1	AC-11	C VA	Comm.al/d vent.alim.	Arrêt	Marche	UNT	UNT 141	2	11	BO-1	BO1.COM	P-2E	Local F-214	4068-072	2E-11-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
BO-2	BO-2	AC-11				UNT	UNT 141	2	11	BO-2		P-2E	Local F-214		2E-11-BO-2												
BO-3	BO-3	AC-11				UNT	UNT 141	2	11	BO-3		P-2E	Local F-214		2E-11-BO-3												
2F-11-BO-4	BO-4	AC-11	C COMP	Comm.al/d compresseur	Arrêt	Marche	UNT	UNT 141	2	11	BO-4	BO4.COM	P-2E	Local F-214	4068-072	2E-11-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail démarreur	Démarreur (NO)-(sw hi)		UV51	
BO-5	BO-5	AC-11				UNT	UNT 141	2	11	BO-5		P-2E	Local F-214		2E-11-BO-5												
BO-6	BO-6	AC-11				UNT	UNT 141	2	11	BO-6		P-2E	Local F-214		2E-11-BO-6												
2F-11-AO-1	AO-1	AC-11	VLV_CHA	Vanne chauffage	%	UNT	UNT 141	2	11	AO-1	AO1 AOOCOM	P-2E	Local F-214	4068-072	2E-11-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		UV27		
AO-2	AO-2	AC-11				UNT	UNT 141	2	11	AO-2		P-2E	Local F-214		2E-11-AO-2												
		AC-11				VMA	VMA 1410	2	111			P-2	Unité AC-11													Alimentation 24VAC	
2-111-AI-1	AI-1	AC-11	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	2	111	AI-1	AI1,AICM	P-2	Unité AC-11	4068-072	2-111-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1	Tronc N2		
AI-2	AI-2	AC-11				VMA	VMA 1410	2	111	AI-2		P-2	Unité AC-11		2-111-AI-2												
BI-1	BI-1	AC-11				VMA	VMA 1410	2	111	BI-1		P-2	Unité AC-11		2-111-BI-1												
BI-2	BI-2	AC-11				VMA	VMA 1410	2	111	BI-2		P-2	Unité AC-11		2-111-BI-2												
BI-3	BI-3	AC-11				VMA	VMA 1410	2	111	BI-3		P-2	Unité AC-11		2-111-BI-3												
2-111-AI-5	AI-5	AC-11	P VEL	Pression de vélocité	Pa	VMA	VMA 1410	2	111	AI-5		P-2	Unité AC-11	4068-072	2-111-AI-5											Air neuf AC-11	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-11

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-11	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-111	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2E

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-2	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2E	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-11,	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-12			
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS

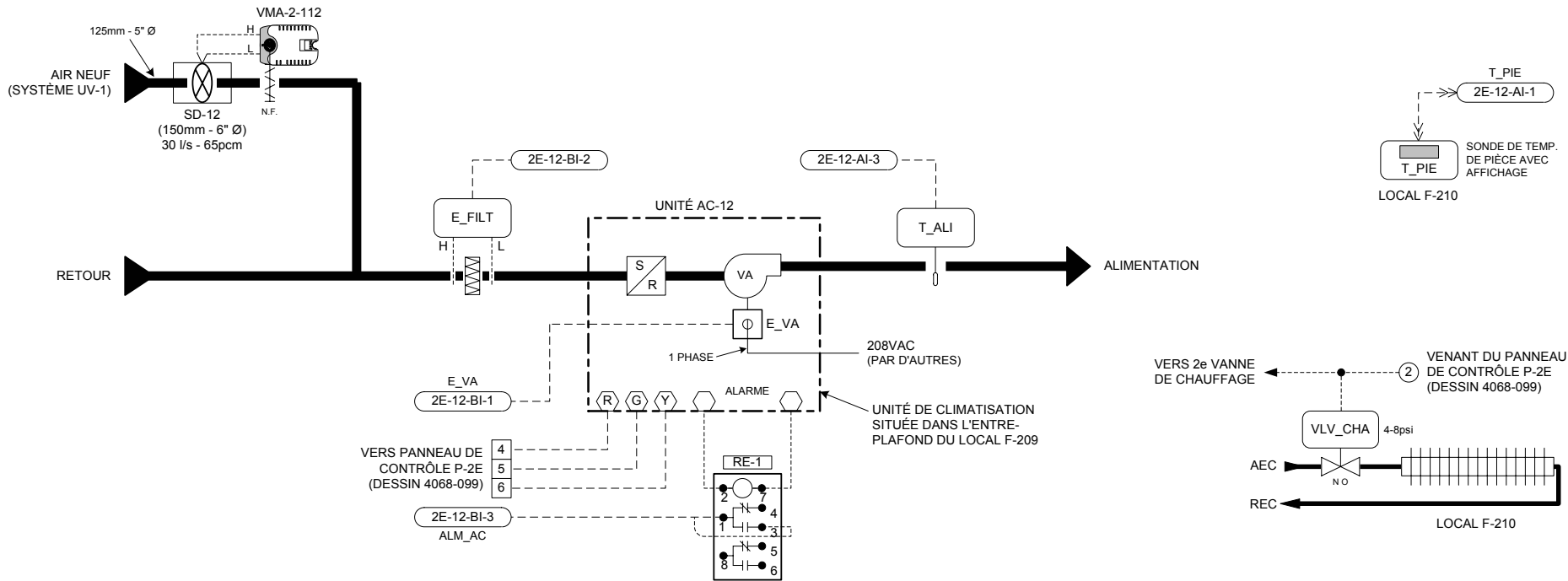


Piece F-220

- X PC chauff. inocc.
- X PC chauff. occ.
- X PC refr. occ.
- X



UNITÉ DE CLIMATISATION AC-12 - LOCAL F-210
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



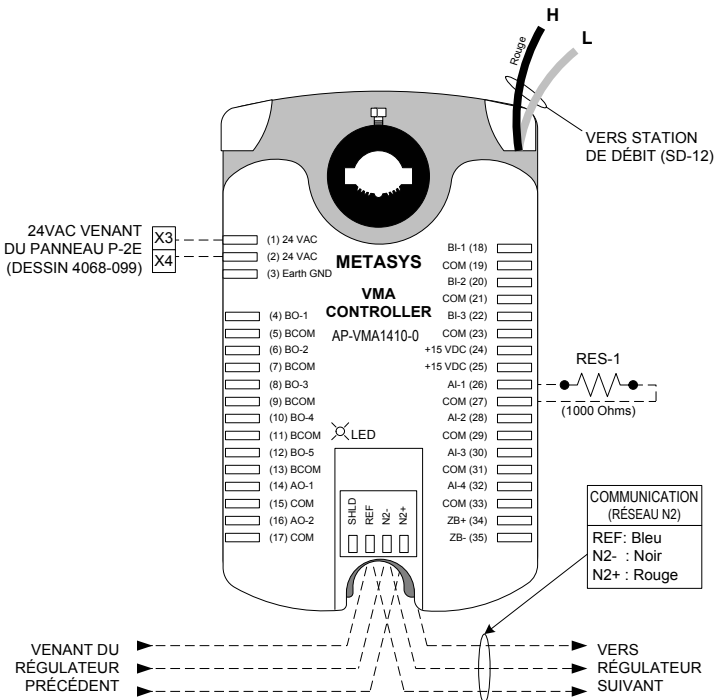
LISTE DE MATÉRIEL			
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VLV_CHA	1	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-112	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-12	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

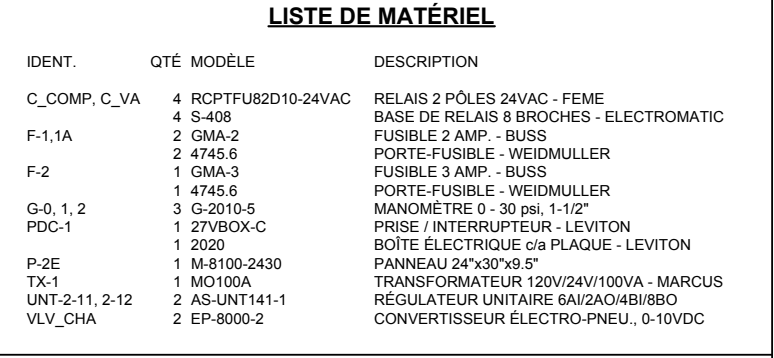
- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-112) est fermé.
 - La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-112) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-112)



Titre du Dessin					
Unité de climatisation AC-12 Local F-210		2	TEL QUE CONSTRUIT	D.B.	02/04/24
Type 1 (Unité avec chauffage périmétrique)		1	POUR APPROBATION		06/12/2001
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093	
Projet d'Innovation Technologique		Johnson Controls Ltée		NUMÉRO DESSIN	
3600, boul. Casavant		355, boul. Montpellier		4068-073	
St-Hyacinthe (Québec)		St-Laurent, Qc, H4N 2G6			
		Tél: (514) 747-2580			
		Fax: (514) 747-9562			
		Groupe de la régulation			



STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-12.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : No Target Device Selected
Device Name : No Target Device Selected
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
Proportional
Heating lockout from outdoor air?
No
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
TMZ Digital room sensor
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?

No
 Include diagnostics?
 Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
ADI	225	Occ Start Time	OCCSTART	00:00
ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.9
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	20.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
ADF	30	Controller Run Time	CTLRRUNT	****
ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-112.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1420
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.034049809

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	65
ADF	164	Occupied Clg Min	OCCCMIN	65
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.136
ADF	25	Pickup Gain	PKUPGAIN	0.08
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	65

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-112) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-112) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

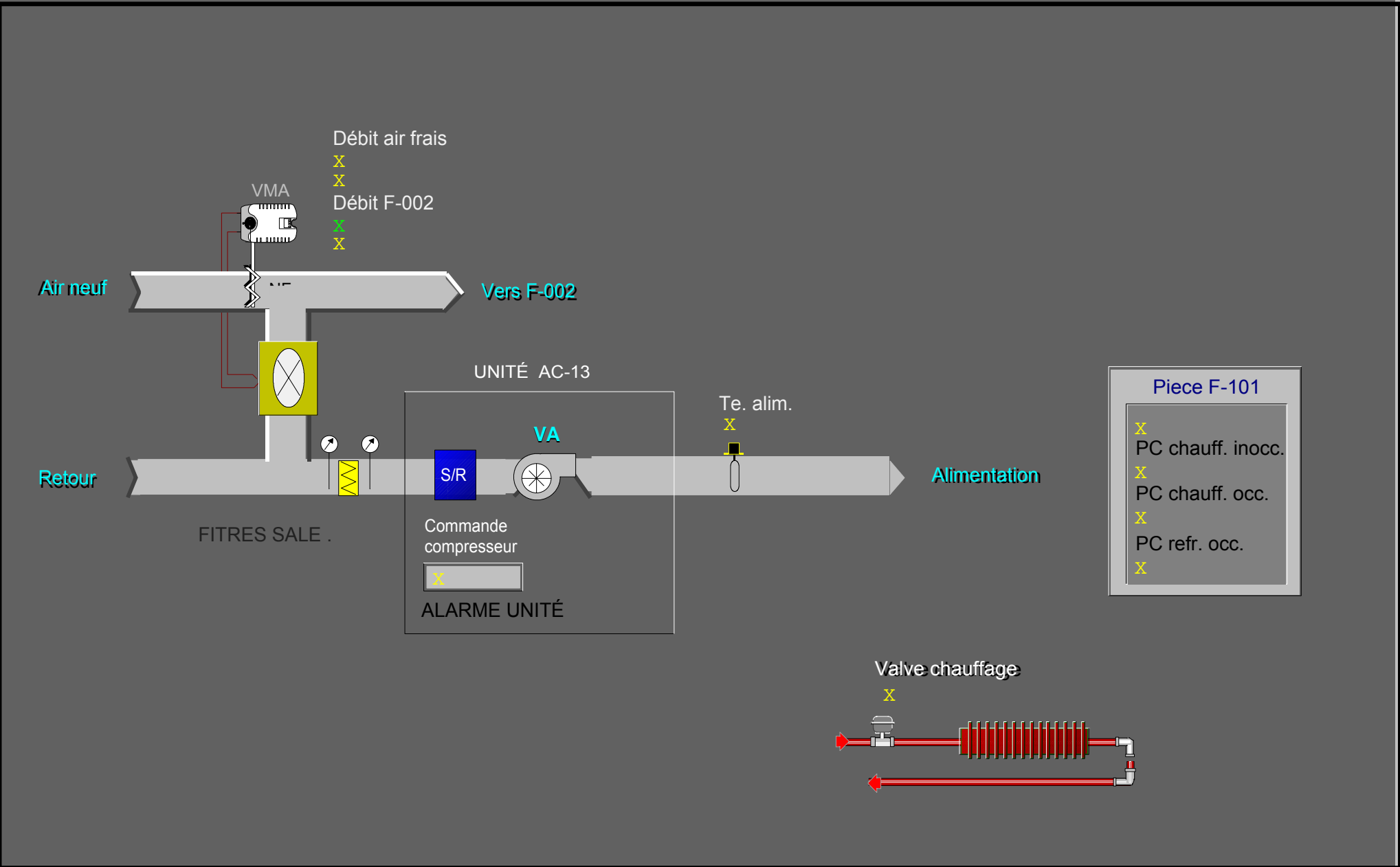
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau							
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-12				UNT	UNT 141	2	12			P-2E	Local F-209													Alimentation 24VAC	
2G-12-AI-1	AI-1	AC-12	T_PIE	Temp.pieçe	°C	UNT	UNT 141	2	12	AI-1	PHONE JACK	P-2E	Local F-209									8/24	Prise tél.	Metastat-Prise télép		UV2	Tronc N2
		AC-12				UNT	UNT 141	2	12	AI-2		P-2E	Local F-209	4068-073	2E-12-AI-1											Sonde située dans local F-210	
2G-12-AI-2	AI-2	AC-12	T_ALI	Temp.alimentation	°C	UNT	UNT 141	2	12	AI-2	AI3,AICM	P-2E	Local F-209		2E-12-AI-2							2/18	2 fils	TE (Gaine)		UV1	
	AI-3	AC-12				UNT	UNT 141	2	12	AI-3		P-2E	Local F-209	4068-073	2E-12-AI-3												
	AI-4	AC-12				UNT	UNT 141	2	12	AI-4		P-2E	Local F-209		2E-12-AI-4												
	AI-5	AC-12				UNT	UNT 141	2	12	AI-5		P-2E	Local F-209		2E-12-AI-5												
	AI-6	AC-12				UNT	UNT 141	2	12	AI-6		P-2E	Local F-209		2E-12-AI-6												
2G-12-BI-1	BI-1	AC-12	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	2	12	BI-1	BI1,24VAC	P-2E	Local F-209	4068-073	2E-12-BI-1						2/18	Selon dispositif	H-708		UV70	
2G-12-BI-2	BI-2	AC-12	E_FILT	État des filtres	Normal	Alarme	UNT	UNT 141	2	12	BI-2	BI2,24VAC	P-2E	Local F-209	4068-073	2E-12-BI-2						2/18	Y.R	P32 (NO)		UV70	
2G-12-BI-3	BI-3	AC-12	ALM_AC	Alarme unité AC			UNT	UNT 141	2	12	BI-3	BI3,24VAC	P-2E	Local F-209	4068-073	2E-12-BI-3						2/18	Selon dispositif	Contact (NO)		UV70	
	BI-4	AC-12					UNT	UNT 141	2	12	BI-4		P-2E	Local F-209		2E-12-BI-4											
2G-12-BO-1	BO-1	AC-12	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	2	12	BO-1	BO1.COM	P-2E	Local F-209	4068-073	2E-12-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-2	AC-12					UNT	UNT 141	2	12	BO-2		P-2E	Local F-209		2E-12-BO-2											
	BO-3	AC-12					UNT	UNT 141	2	12	BO-3		P-2E	Local F-209		2E-12-BO-3											
2G-12-BO-4	BO-4	AC-12	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	2	12	BO-4	BO4.COM	P-2E	Local F-209	4068-073	2E-12-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-12					UNT	UNT 141	2	12	BO-5		P-2E	Local F-209		2E-12-BO-5											
	BO-6	AC-12					UNT	UNT 141	2	12	BO-6		P-2E	Local F-209		2E-12-BO-6											
2G-12-AO-1	AO-1	AC-12	VLV_CHA	Vanne chauffage	%		UNT	UNT 141	2	12	AO-1	AO1.AOCOM	P-2E	Local F-209	4068-073	2E-12-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU		UV27	1 x EP-8000 pour 2 vannes
2G-12-AO-2	AO-2	AC-12					UNT	UNT 141	2	12	AO-2		P-2E	Local F-209		2E-12-AO-2											
							VMA	VMA 1410				P-2	Unité AC-12													Alimentation 24VAC	
		AC-12					VMA	VMA 1410	2	112		P-2	Unité AC-12													Tronc N2	
2-112-AI-1	AI-1	AC-12	RES	Résistance 1000 ohms	°C		VMA	VMA 1410	2	112	AI-1	AI1.AICM	P-2	Unité AC-12	4068-073	2-112-AI-1				VMA	2 fils	Résistance 1000 ohms		VMA1			
	AI-2	AC-12					VMA	VMA 1410	2	112	AI-2		P-2	Unité AC-12		2-112-AI-2											
	BI-1	AC-12					VMA	VMA 1410	2	112	BI-1		P-2	Unité AC-12		2-112-BI-1											
	BI-2	AC-12					VMA	VMA 1410	2	112	BI-2		P-2	Unité AC-12		2-112-BI-2											
	BI-3	AC-12					VMA	VMA 1410	2	112	BI-3		P-2	Unité AC-12		2-112-BI-3											
2-112-AI-5	AI-5	AC-12	P_VEL	Pression de vélocité	Pa		VMA	VMA 1410	2	112	AI-5		P-2	Unité AC-12	4068-073	2-112-AI-5										Air neuf AC-12	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-12

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-12	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-112	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2E

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0 à G-2	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2E	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-11,	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-12			
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-13 - LOCAL F-101
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

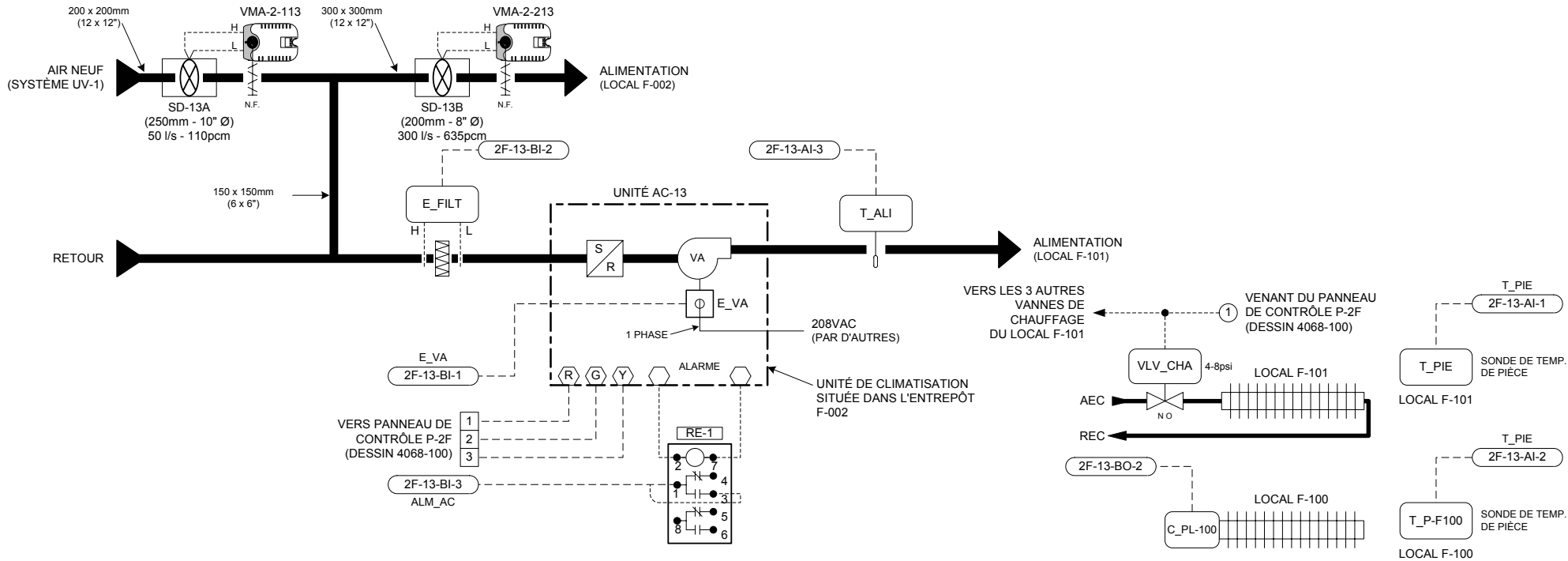
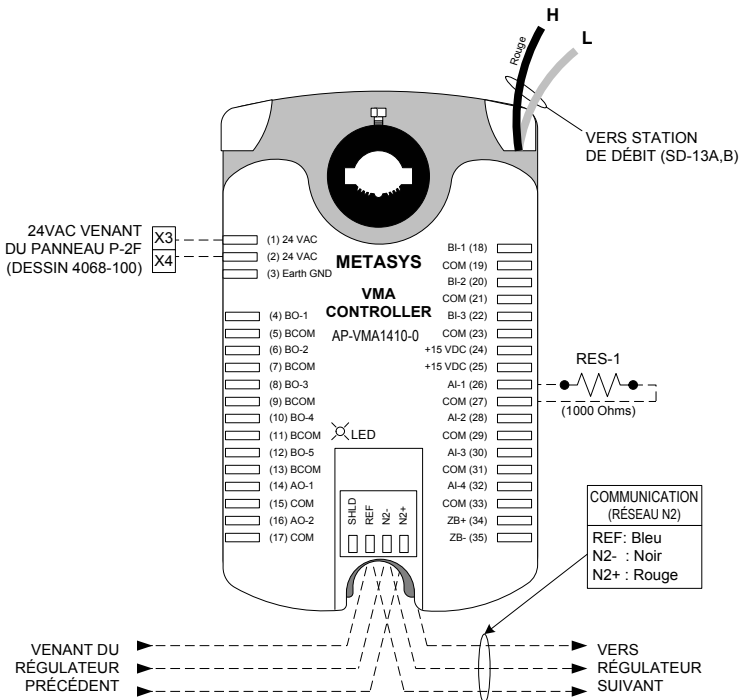


DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES RÉGULATEURS (VMA-2-113 ET VMA-2-213)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PL-100	1	CCT-15-1-C1	RELAIS TRIAC, 15AMPS, 347/1/60 C/A PALQUE 4"x4"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VA	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE, T_P_F100	2	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VLV_CHA	4	VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
VMA-2-113, 213	2	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	2	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-13A	1	RMS-10	STATION DE MESURE DE VÉLOCITÉ 250mm, 10" Ø - EH PRICE
SD-13B	1	RMS-8	STATION DE MESURE DE VÉLOCITÉ 200mm, 8" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 1)

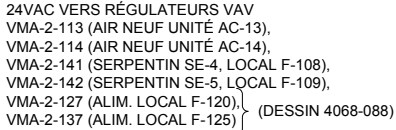
À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-113) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- Le régulateur (VMA-2-213) module son volet afin de maintenir le débit d'air neuf d'alimentation du local F-002 à 300 l/s (635 pcm).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-113) module son volet afin de maintenir le débit d'air neuf requis (50 l/s - 110 pcm).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin					
Unité de climatisation AC-13 Local F-101 Type 1 (Unité avec chauffage périmétrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/29 O.P.
		1	POUR APPROBATION		12/06/01 D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/22/2001	PAR DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMÉRO DESSIN 4068-074	



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4068-100.vsd Page 1 de 1 05/02/21

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-113.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.020462632

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	635
ADF	164	Occupied Clg Min	OCCCMIN	635
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	55
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.19
ADF	25	Pickup Gain	PKUPGAIN	1.6
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	635

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-13.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Proportional

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

None (unused)

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command

Do you want the temporary occupied feature?

No

Do you want boost mode?

No
Include diagnostics?
Yes

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	21.5
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	19.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	15.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5

Rooftop Diagnostics

*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-213.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.0029378235

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	410
ADF	164	Occupied Clg Min	OCCCMIN	410
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	55
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	1.2
ADF	25	Pickup Gain	PKUPGAIN	0.3
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	410

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
-----	----	---------------	---------	-------

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-113) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-113) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la vanne du convecteur (VLV_CHA) est modulée de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

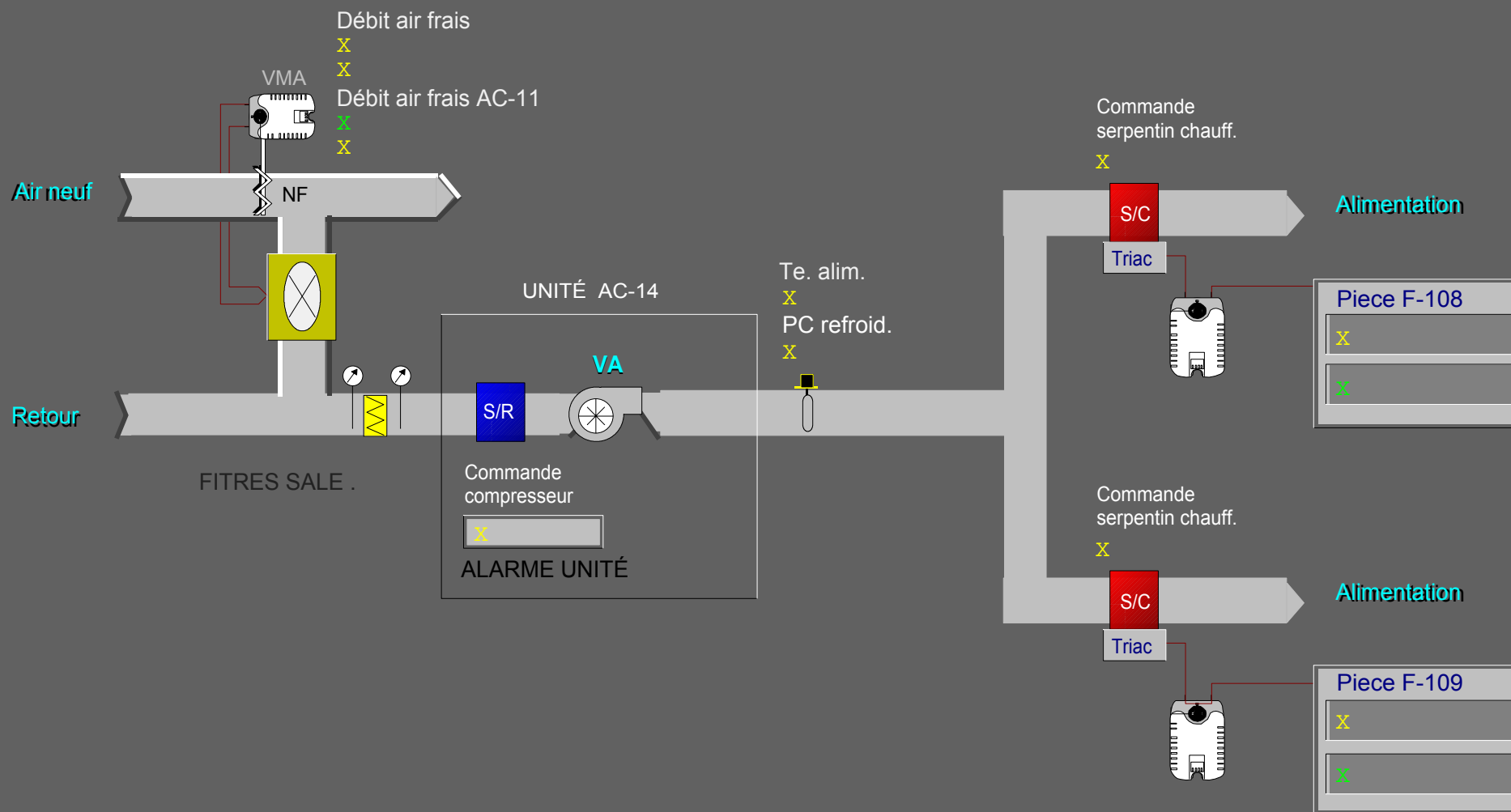
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-13				UNT	UNT 141	1	13			P-2F	Local F-002													Alimentation 24VAC	
		AC-13	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	13	AI-1	PHONE JACK	P-2F	Local F-002													Tronc N2	
2K-13-AI-1	AI-1	AC-13	T_P F100	Temp.pieçe F-100	°C	UNT	UNT 141	1	13	AI-2	AI2,AICM	P-2F	Local F-002	4068-074	2F-13-AI-1		8/24	Prise tél.	Metastat-Prise télep						UV2	Sonde située dans local F-101	
2K-13-AI-2	AI-2	AC-13	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	13	AI-3	AI3,AICM	P-2F	Local F-002	4068-074	2F-13-AI-2		2/18	2 fils	TE						UV1	Sonde située dans local F-100	
2K-13-AI-3	AI-3	AC-13				UNT	UNT 141	1	13	AI-4		P-2F	Local F-002		2F-13-AI-3		2/18	2 fils	TE (Gaine)								
	AI-4	AC-13				UNT	UNT 141	1	13	AI-5		P-2F	Local F-002		2F-13-AI-4												
	AI-5	AC-13				UNT	UNT 141	1	13	AI-6		P-2F	Local F-002		2F-13-AI-5												
	AI-6	AC-13				UNT	UNT 141	1	13	AI-6		P-2F	Local F-002		2F-13-AI-6												
2K-13-BI-1	BI-1	AC-13	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	1	13	BI-1	BI1,24VAC	P-2F	Local F-002	4068-074	2F-13-BI-1		2/18	Selon dispositif	H-708					UV70		
2K-13-BI-2	BI-2	AC-13	E_FILT	État des filtres	Normal	Alarme	UNT	UNT 141	1	13	BI-2	BI2,24VAC	P-2F	Local F-002	4068-074	2F-13-BI-2		2/18	P32 (NO)						UV70		
2K-13-BI-3	BI-3	AC-13	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	13	BI-3	BI3,24VAC	P-2F	Local F-002	4068-074	2F-13-BI-3		2/18	Selon dispositif	Contact (NO)					UV70		
	BI-4	AC-13					UNT	UNT 141	1	13	BI-4		P-2F	Local F-002		2F-13-BI-4											
2K-13-BO-1	BO-1	AC-13	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	1	13	BO-1	BO1,COM	P-2F	Local F-002	4068-074	2F-13-BO-1	2/18	COIL	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2K-13-BO-2	BO-2	AC-13	C_PL-100	Comm.plinthe chauff.F-100	Arrêt	Marche	UNT	UNT 141	1	13	BO-2	BO2,COM	P-2F	Local F-002	4068-074	2F-13-BO-2	2/18					2/18	Selon dispositif	SOR 24 V c.a. (sw h)		UV51	Plinthe élect. - local F-100 (contrôlée par AI-2)
	BO-3	AC-13					UNT	UNT 141	1	13	BO-3		P-2F	Local F-002		2F-13-BO-3											
2K-13-BO-4	BO-4	AC-13	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	1	13	BO-4	BO4,COM	P-2F	Local F-002	4068-074	2F-13-BO-4	2/18	Bobine	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-13					UNT	UNT 141	1	13	BO-5		P-2F	Local F-002		2F-13-BO-5											
	BO-6	AC-13					UNT	UNT 141	1	13	BO-6		P-2F	Local F-002		2F-13-BO-6											
2K-13-AO-1	AO-1	AC-13	VLV_CHA	Vanne chauffage	%		UNT	UNT 141	1	13	AO-1	AO1,AOCOM	P-2F	Local F-002	4068-074	2F-13-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		UV27	1 x EP-8000 pour 4 vannes
	AO-2	AC-13					UNT	UNT 141	1	13	AO-2		P-2F	Local F-002		2F-13-AO-2											
							VMA	VMA 1410	1	113		P-2	Unité AC-13													Alimentation 24VAC	
		AC-13					VMA	VMA 1410	1	113		P-2	Unité AC-13													Tronc N2	
2-113-AI-1	AI-1	AC-13	RES	Résistance 1000 ohms	°C		VMA	VMA 1410	1	113	AI-1	AI1,AICM	P-2	Unité AC-13	4068-074	2-113-AI-1						VMA	2 fils	Résistance 1000 ohms		VMA1	
	AI-2	AC-13					VMA	VMA 1410	1	113	AI-2		P-2	Unité AC-13		2-113-AI-2											
	BI-1	AC-13					VMA	VMA 1410	1	113	BI-1		P-2	Unité AC-13		2-113-BI-1											
	BI-2	AC-13					VMA	VMA 1410	1	113	BI-2		P-2	Unité AC-13		2-113-BI-2											
	BI-3	AC-13					VMA	VMA 1410	1	113	BI-3		P-2	Unité AC-13		2-113-BI-3											
2-113-AI-5	AI-5	AC-13	P_VEL	Pression de vélocité	Pa		VMA	VMA 1410	1	113	AI-5		P-2	Unité AC-13	4068-074	2-113-AI-5										Air neuf AC-13	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-13

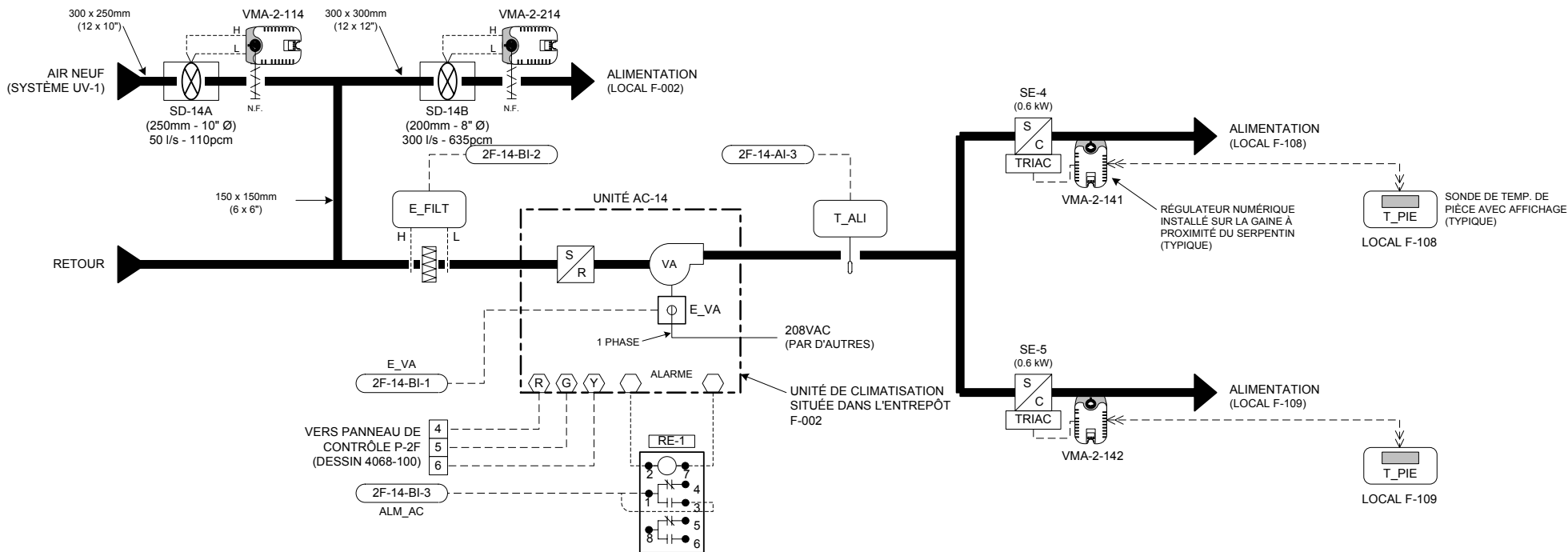
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_PL-100	RELAIS TRIAC, 15Amps, 347/1/60, PLAQUE 4"x4"	CTT-15-1-C1	CRISTAL CONTRÔLES
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
E_VA	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
RE-1	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-13A	STATION DE MESURE DE VÉLOCITÉ 250mm, 10"Ø	RMS-10	EH PRICE
SD-13B	STATION DE MESURE DE VÉLOCITÉ 200mm, 8"Ø	RMS-8	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE, T_P_F100	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-113, VMA-2-213	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2F

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B, 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2F	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-13, UNT-2-14	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-17, UNT-2-27	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-14 - LOCAUX F-108 ET F-109
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

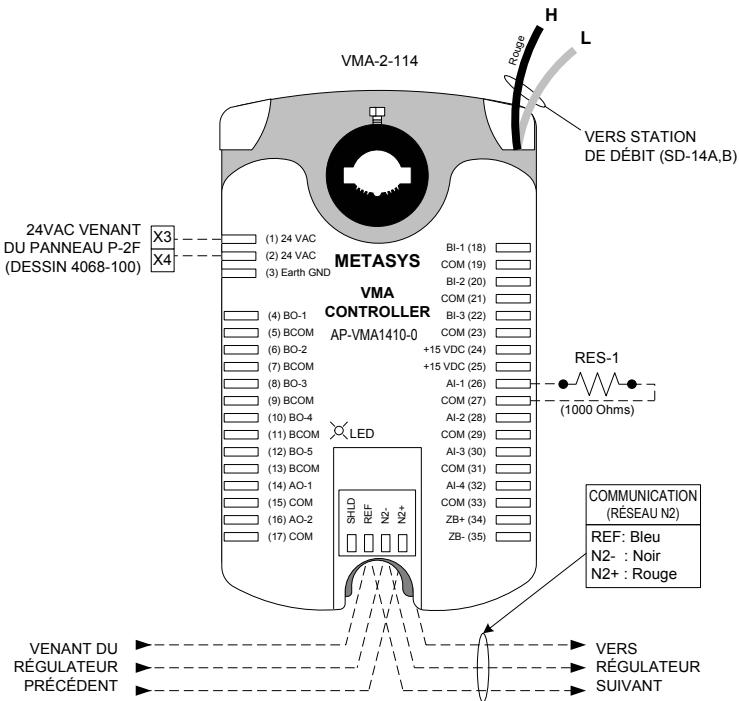
IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	2	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-114,214	2	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-141,142	2	AP-VMA1430-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF., SANS ACTUATEUR
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT,24Vac.
SD-14A	1	RMS-10	BASE DE RELAIS 8 BROCHES
SD-14B	1	RMS-8	STATION DE MESURE DE VÉLOCITÉ 250mm, 10" Ø - EH PRICE
			STATION DE MESURE DE VÉLOCITÉ 200mm, 8" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 2)

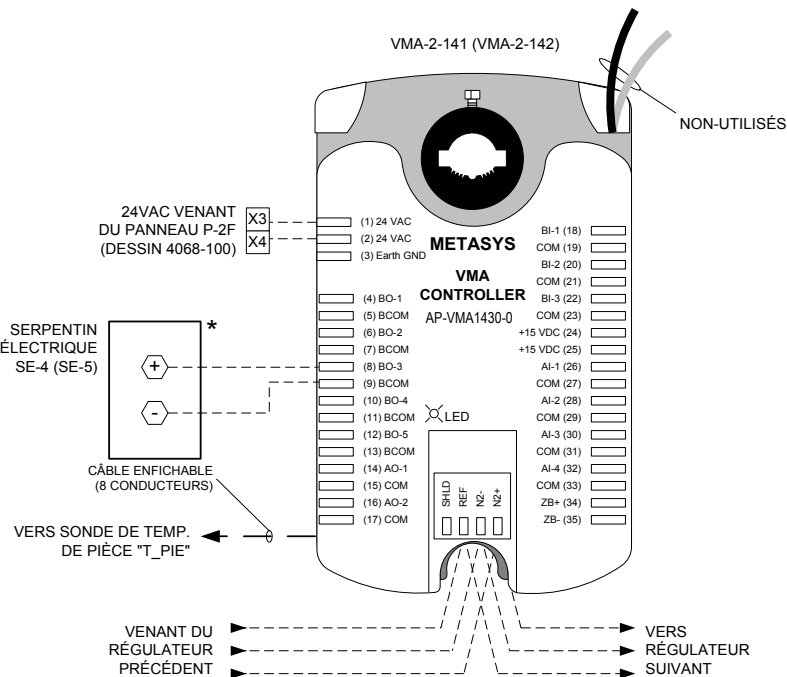
- À L'ARRÊT:
- L'unité de climatisation est arrêtée.
 - Le volet d'air neuf (VMA-2-108) est fermé.
 - Le régulateur (VMA-2-214) module son volet afin de maintenir le débit d'air neuf d'alimentation du local F-002 à 290 l/s (615 pcm).
- EN MARCHÉ:
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Au départ de l'unité, le régulateur (VMA-2-114) module son volet afin de maintenir le débit d'air neuf requis (50 l/s - 110 pcm).
 - Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de l'une des deux pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-18x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

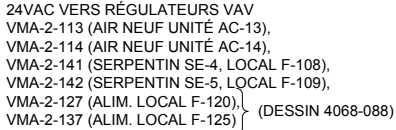
RACCORDEMENTS DES RÉGULATEURS (VMA-2-114 ET VMA-2-214)



RACCORDEMENTS DES RÉGULATEURS (VMA-2-141 ET VMA-2-142)
(TYPIQUE POUR 2)



Titre du Dessin		2		TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.
Unité de climatisation AC-14 Locaux F-108 et F-109 Type 2 (Unité de climatisation pour bureaux)		1		POUR APPROBATION			12/06/01	D.B.
DESSIN DE RÉFÉRENCE		NO.		REVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ			
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/22/2001	PAR	DATE
Nom du Projet		Information Succursale		NUMÉRO CONTRAT				
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-075		



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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-142.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.021032766

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	21
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrdr Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-141.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.024315149

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	21
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrđ Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-114.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.02642563

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	724
ADF	164	Occupied Clg Min	OCCCMIN	724
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	55
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.19
ADF	25	Pickup Gain	PKUPGAIN	1.7
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	724

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-14.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
None
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?

Yes

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 3

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	3	BO - 3	BO - 3

BO 4 Clg Stage 1 DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
-----	-----	-----	-----	-----
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	21.5
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	1.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****
Sideloop-1/Comp Stpt				
ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	0.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-214.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.025320679

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	410
ADF	164	Occupied Clg Min	OCCCMIN	410
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	55
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	1
ADF	25	Pickup Gain	PKUPGAIN	0.3
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	410

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-108) est fermé.
- Le régulateur (VMA-2-214) module son volet afin de maintenir le débit d'air neuf d'alimentation du local F-002 à 290 l/s (615 pcm).

EN MARCHE:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-114) module son volet afin de maintenir le débit d'air neuf requis (50 l/s - 110 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des deux pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-18x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

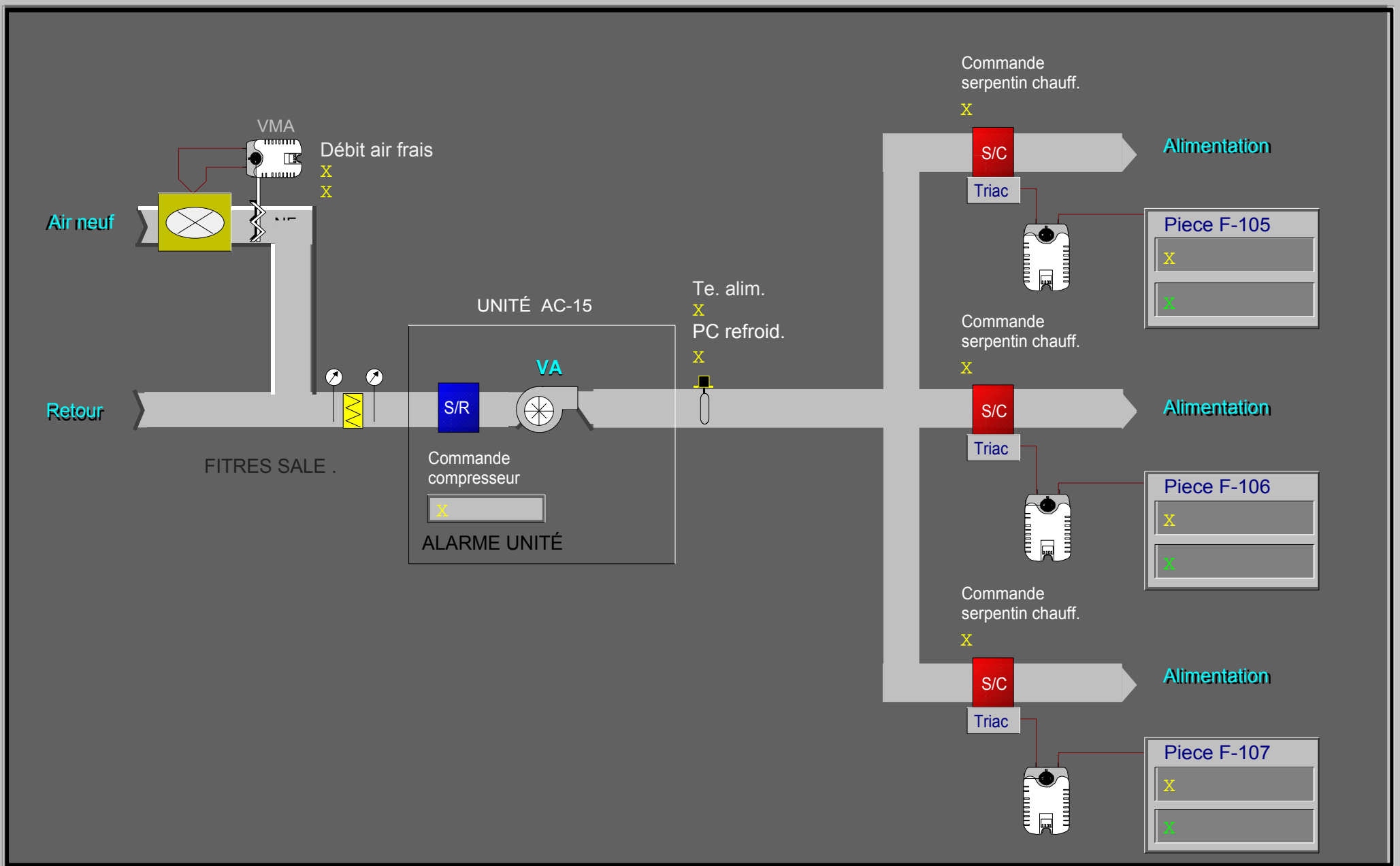
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-14				UNT	UNT 141	1	14			P-2F	Local F-002													Alimentation 24VAC
		AC-14				UNT	UNT 141	1	14	AI-1		P-2F	Local F-002		2F-14-AI-1											Tronc N2
2L-14-AI-2	AI-2	AERO	T_F002-2	Temp.pèce F-002 #2	°C	UNT	UNT 141	1	14	AI-2	AI2,AICM	P-2F	Local F-002	4068-075A	2F-14-AI-2						2/18	2 fils	TE		UV1	Sonde #2 située dans local F-002
2L-14-AI-3	AI-3	AC-14	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	14	AI-3	AI3,AICM	P-2F	Local F-002	4068-075A	2F-14-AI-3						2/18	2 fils	TE (Gaine)		UV1	
	AI-4	AC-14				UNT	UNT 141	1	14	AI-4		P-2F	Local F-002		2F-14-AI-4											
	AI-5	AC-14				UNT	UNT 141	1	14	AI-5		P-2F	Local F-002		2F-14-AI-5											
	AI-6	AC-14				UNT	UNT 141	1	14	AI-6		P-2F	Local F-002		2F-14-AI-6											
2L-14-BI-1	BI-1	AC-14	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	1	BI-1	BI1,24VAC	P-2F	Local F-002	4068-075A	2F-14-BI-1						2/18	Selon dispositif	H-708		UV70	
2L-14-BI-2	BI-2	AC-14	E_FILT	État des filtres	Normal	Sales	UNT	UNT 141	1	BI-2	BI2,24VAC	P-2F	Local F-002	4068-075A	2F-14-BI-2						2/18	Y.R	P32 (NO)		UV70	
2L-14-BI-3	BI-3	AC-14	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	BI-3	BI3,24VAC	P-2F	Local F-002	4068-075A	2F-14-BI-3						2/18	Selon dispositif	Contact (NO)		UV70	
	BI-4	AC-14				UNT	UNT 141	1	14	BI-4		P-2F	Local F-002		2F-14-BI-4											
2L-14-BO-1	BO-1	AC-14	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	1	BO-1	BO1,COM	P-2F	Local F-002	4068-075A	2F-14-BO-1	2/18	COIL	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-2	AC-14				UNT	UNT 141	1	14	BO-2		P-2F	Local F-002		2F-14-BO-2											
2L-14-BO-3	BO-3	AERO	C_AERO-2	Comm.aérotherme A-2	Arrêt	Marche	UNT	UNT 141	1	BO-3	BO3,COM	P-2F	Local F-002	4068-075A	2F-14-BO-3	2/18	Bobine	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	Aéro. A-2 - local F-002 (contrôlé par AI-2)
2L-14-BO-4	BO-4	AC-14	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	1	BO-4	BO4,COM	P-2F	Local F-002	4068-075A	2F-14-BO-4	2/18	Bobine	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-14				UNT	UNT 141	1	14	BO-5		P-2F	Local F-002		2F-14-BO-5											
	BO-6	AC-14				UNT	UNT 141	1	14	BO-6		P-2F	Local F-002		2F-14-BO-6											
	AO-1	AC-14				UNT	UNT 141	1	14	AO-1		P-2F	Local F-002	4068-075A	2F-14-AO-1											
	AO-2	AC-14				UNT	UNT 141	1	14	AO-2		P-2F	Local F-002		2F-14-AO-2											
		AC-14				VMA	VMA 1410	1	114			P-2	Unité AC-14													Alimentation 24VAC
		AC-14				VMA	VMA 1410	1	114	AI-1	AI1,AICM	P-2	Unité AC-14	4068-075A	2-114-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-14				VMA	VMA 1410	1	114	AI-2		P-2	Unité AC-14		2-114-AI-2											
	BI-1	AC-14				VMA	VMA 1410	1	114	BI-1		P-2	Unité AC-14		2-114-BI-1											
	BI-2	AC-14				VMA	VMA 1410	1	114	BI-2		P-2	Unité AC-14		2-114-BI-2											
	BI-3	AC-14				VMA	VMA 1410	1	114	BI-3		P-2	Unité AC-14		2-114-BI-3											
2-114-AI-5	AI-5	AC-14	P_VEL	Pression de vélocité	Pa		VMA	VMA 1410	1	AI-5		P-2	Unité AC-14	4068-075A	2-114-AI-5											Air neuf AC-14
		AC-14				VMA	VMA 1430	1	141			P-2	Serp. SE-4 (F-108)													Alimentation 24VAC
		AC-14				VMA	VMA 1430	1	141			P-2	Serp. SE-4 (F-108)													Tronc N2
2-141-AI-1	AI-1	AC-14	T_PIE108	Temp.pèce F-108	°C		VMA	VMA 1430	1	AI-1	PHONE JACK	P-2	Serp. SE-4 (F-108)	4068-075B	2-141-AI-1						8/24	Prise tél.	Metastat-Prise télép		VMA2	
	AI-2	AC-14				VMA	VMA 1430	1	141	AI-2		P-2	Serp. SE-4 (F-108)		2-141-AI-2											
	AI-3	AC-14				VMA	VMA 1430	1	141	AI-3		P-2	Serp. SE-4 (F-108)		2-141-AI-3											
	AI-4	AC-14				VMA	VMA 1430	1	141	AI-4		P-2	Serp. SE-4 (F-108)		2-141-AI-4											
	AI-5	AC-14				VMA	VMA 1430	1	141	AI-5		P-2	Serp. SE-4 (F-108)		2-141-AI-5											
	BI-1	AC-14				VMA	VMA 1430	1	141	BI-1		P-2	Serp. SE-4 (F-108)		2-141-BI-1											
	BI-2	AC-14				VMA	VMA 1430	1	141	BI-2		P-2	Serp. SE-4 (F-108)		2-141-BI-2											
	BI-3	AC-14				VMA	VMA 1430	1	141	BI-3		P-2	Serp. SE-4 (F-108)		2-141-BI-3											
	BO-1	AC-14				VMA	VMA 1430	1	141	BO-1		P-2	Serp. SE-4 (F-108)		2-141-BO-1											
	BO-2	AC-14				VMA	VMA 1430	1	141	BO-2		P-2	Serp. SE-4 (F-108)		2-141-BO-2											
2-141-BO-3	BO-3	AC-14	C_SC	Comm.serpentin chauffage	Arrêt	Marche	VMA	VMA 1430	1	BO-3	BO3,24VAC	P-2	Serp. SE-4 (F-108)	4068-075B	2-141-BO-3						2/18	Selon dispositif	SOR 24 V c.a.		VMA51	Serp. avec relais TRIAC
	BO-4	AC-14				VMA	VMA 1430	1	141	BO-4		P-2	Serp. SE-4 (F-108)		2-141-BO-4											
	BO-5	AC-14				VMA	VMA 1430	1	141	BO-5		P-2	Serp. SE-4 (F-108)		2-141-BO-5											
	AO-1	AC-14				VMA	VMA 1430	1	141	AO-1		P-2	Serp. SE-4 (F-108)		2-141-AO-1											
	AO-2	AC-14				VMA	VMA 1430	1	141	AO-2		P-2	Serp. SE-4 (F-108)		2-141-AO-2											
		AC-14				VMA	VMA 1430	1	142			P-2	Serp. SE-5 (F-109)													Alimentation 24VAC
		AC-14				VMA	VMA 1430	1	142			P-2	Serp. SE-5 (F-109)													Tronc N2
2-142-AI-1	AI-1	AC-14	T_PIE109	Temp.pèce F-109	°C		VMA	VMA 1430	1	AI-1	PHONE JACK	P-2	Serp. SE-5 (F-109)	4068-075B	2-142-AI-1						8/24	Prise tél.	Metastat-Prise télép		VMA2	
	AI-2	AC-14				VMA	VMA 1430	1	142	AI-2		P-2	Serp. SE-5 (F-109)		2-142-AI-2											
	AI-3	AC-14				VMA	VMA 1430	1	142	AI-3		P-2	Serp. SE-5 (F-109)		2-142-AI-3											
	AI-4	AC-14				VMA	VMA 1430	1	142	AI-4		P-2	Serp. SE-5 (F-109)		2-142-AI-4											
	AI-5	AC-14				VMA	VMA 1430	1	142	AI-5		P-2	Serp. SE-5 (F-109)		2-142-AI-5											
	BI-1	AC-14				VMA	VMA 1430	1	142	BI-1		P-2	Serp. SE-5 (F-109)		2-142-BI-1											
	BI-2	AC-14				VMA	VMA 1430	1	142	BI-2		P-2	Serp. SE-5 (F-109)		2-142-BI-2											
	BI-3	AC-14				VMA	VMA 1430	1	142	BI-3		P-2	Serp. SE-5 (F-109)		2-142-BI-3											
	BO-1	AC-14				VMA	VMA 1430	1	142	BO-1		P-2	Serp. SE-5 (F-109)		2-142-BO-1											
	BO-2	AC-14				VMA	VMA 1430	1	142	BO-2		P-2	Serp. SE-5 (F-109)		2-142-BO-2											
2-142-BO-3	BO-3	AC-14	C_SC	Comm.serpentin chauffage	Arrêt	Marche	VMA	VMA 1430	1	BO-3	BO3,24VAC	P-2	Serp. SE-5 (F-109)	4068-075B	2-142-BO-3						2/18	Selon dispositif	SOR 24 V c.a.		VMA51	Serp. avec relais TRIAC
	BO-4	AC-14				VMA	VMA 1430	1	142	BO-4		P-2	Serp. SE-5 (F-109)		2-142-BO-4											
	BO-5	AC-14				VMA	VMA 1430	1	142	BO-5		P-2	Serp. SE-5 (F-109)		2-142-BO-5											
	AO-1	AC-14				VMA	VMA 1430	1	142	AO-1		P-2	Serp. SE-5 (F-109)		2-142-AO-1											
	AO-2	AC-14				VMA	VMA 1430	1	142	AO-2		P-2	Serp. SE-5 (F-109)		2-142-AO-2											

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-14

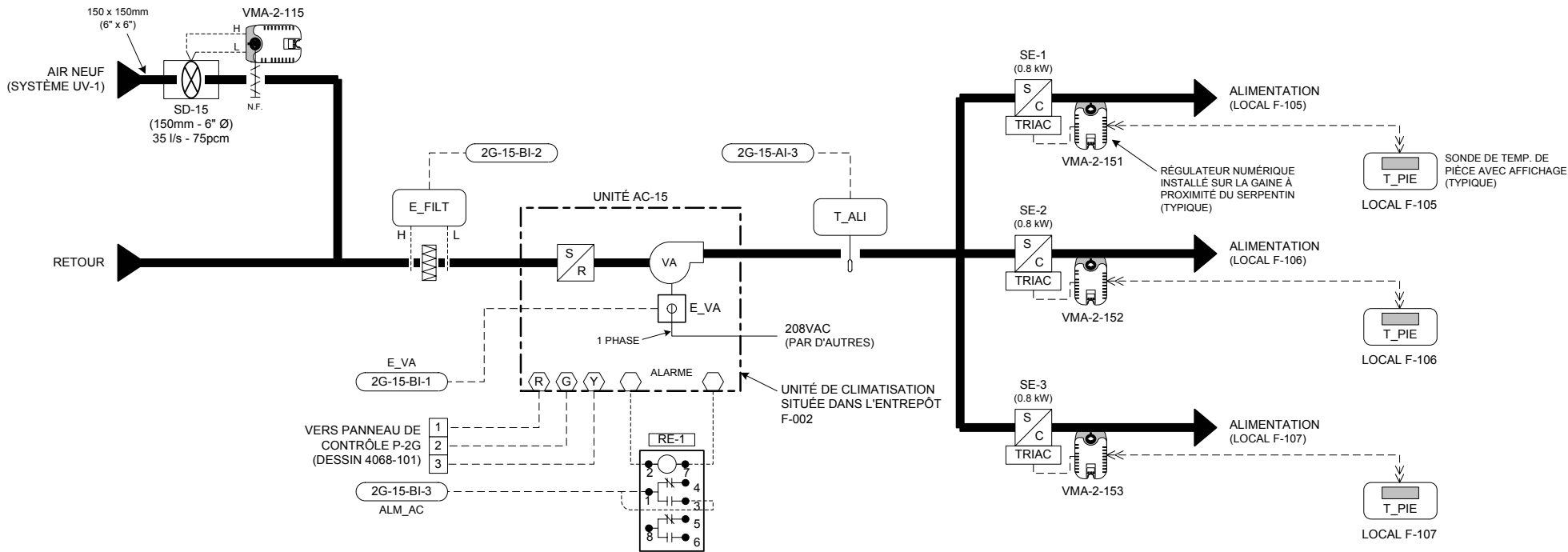
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-14A	STATION DE MESURE DE VÉLOCITÉ 250mm, 10"Ø	RMS-10	EH PRICE
SD-14B	STATION DE MESURE DE VÉLOCITÉ 200mm, 8"Ø	RMS-8	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VMA-2-114, 214	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VMA-2-141, 142	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF. SANS ACTUATEUR	AP-VMA1430-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2F

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B, 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2F	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-13, UNT-2-14	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-17, UNT-2-27	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-15 - LOCAUX F-105, F-106 ET F-107
(TYPE 2 - UNITÉ DE CLIMATISATION POUR BUREAUX)



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
	3	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT
VMA-2-115	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
VMA-2-151 À 153	3	AP-VMA1430-0	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF., SANS ACTUATEUR
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-15	1	RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

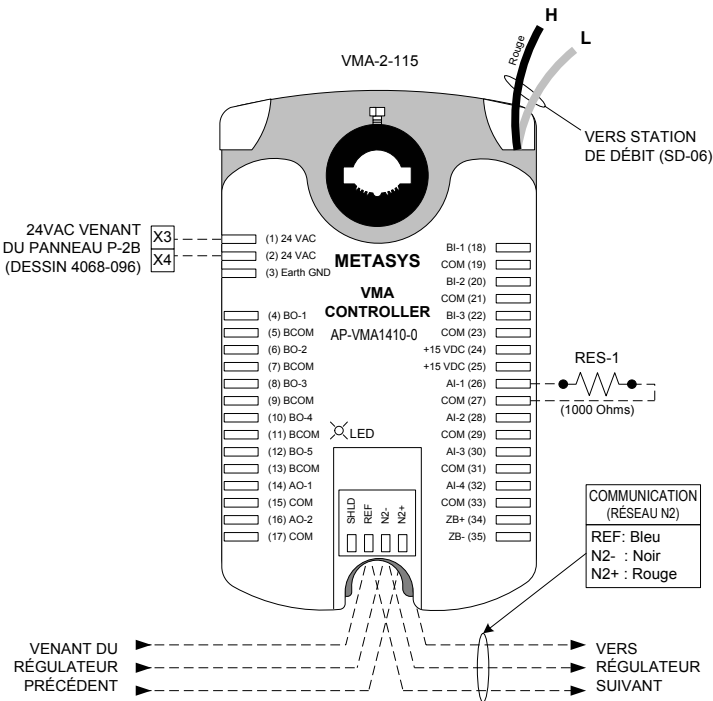
- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-115) est fermé.

EN MARCHÉ:

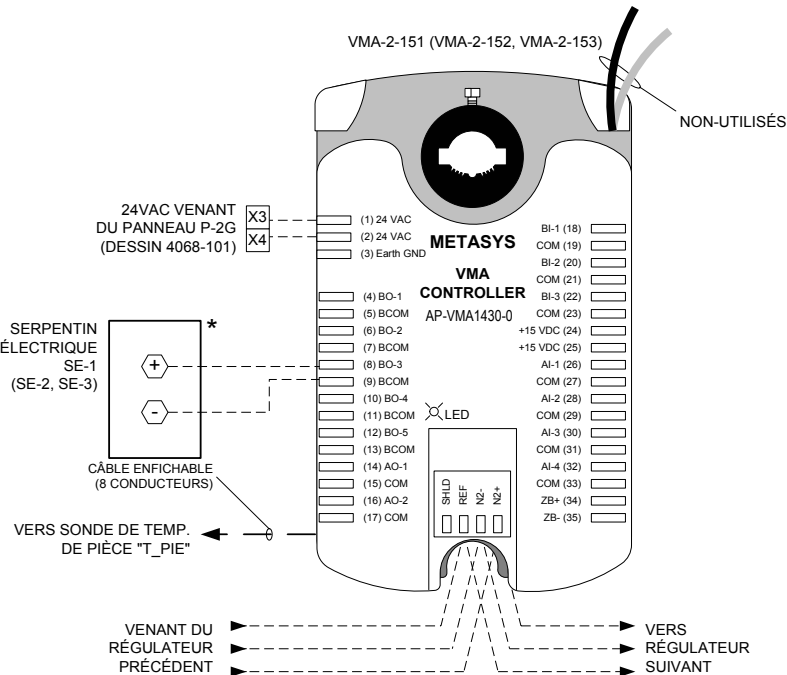
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-115) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des trois pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-15x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

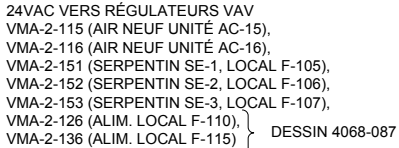
RACCORDEMENTS DU RÉGULATEUR (VMA-2-115)



RACCORDEMENTS DES RÉGULATEURS (VMA-2-151, 152 ET 153)
(TYPIQUE POUR 3)



Titre du Dessin		2		TEL QUE CONSTRUIT		D.B.	02/04/24	O.P.
Unité de climatisation AC-15 Locaux F-105, F-106 et F-107 Type 2 (Unité de climatisation pour bureaux)		1		POUR APPROBATION			06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur		DESSINÉ		APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard		PAR	D.B.	DATE	05/22/2001	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT				
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-076		



PANNE

**JOHNSON
CONTROLS**
Groupe de la régulation

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-152.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.027541965

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	20
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrđ Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-151.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.022551969

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	21
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrđ Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
-----	----	---------------	---------	-------

Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-115.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.026279569

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	75
ADF	164	Occupied Clg Min	OCCCMIN	75
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	75
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	0.4
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	75

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-15.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
None
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?

Yes

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	22.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	1.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0

ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMPCMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-153.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1430
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

Position Adjust Output (floating/3-wire)

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

Box heating

Box heating:

Duration Adjust Output

Increase box flow setpoint upon full heating?

No (Recommended)

Thermostat type:

TMZ digital room sensor

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.019888997

BINARY INPUTS (* Denotes MONITOR ONLY Points)

Point Type	Point Address	Long Name	Short Name	Value
Occupancy Button				
BI	1	Present Value	TEMP-OCC	*****
ADI	10	Reliability	OCCCNREL	*****

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
*BD	4	Inadequate Heating	NOHEAT	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
BD	169	Heating Available	HTGAVAIL	*****
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
*ADF	14	Actual Heating Setpt	ACTHTGSP	*****
ADF	189	Cooling Setpoint	CSP	0
ADF	193	Heating Setpoint	HSP	0
ADF	197	Common Setpoint	COMMONSP	21
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
VAV Box - TMZ Information Grou				
*ADF	10	Htg Active	HTGACT	*****
*BD	33	Standby Status	STANDBY	*****
*BD	34	Shutdown Status	SHUTDOWN	*****
*BD	35	Occ Status	OCCSTAT	*****
ADF	85	Occ Ovrdr Time	OCCTIME	*****
*BD	36	Device Units	DEVUNITS	*****
*ADF	27	Clg Active	CLGACT	*****
VAV Box - TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	19
ADF	128	High Setpoint Limit	TMZHSL	26
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
*ADF	16	Actual Heating Bias	HTGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	2
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
ADF	194	Occupied Htg Bias	OCCHBIAS	0
ADF	195	Standby Htg Bias	STBYHBIA	-4
ADF	196	Unoccupied Htg Bias	ONOCBIA	-4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	0
*XXX	XXX	Heating Flow	OCCHFSP	*****
ADF	165	Occupied Htg Flow	OCCHTGFL	0
ADF	167	Unoccupied Htg Flow	UNCHMAX	0

Cooling PID

ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300

Autocalibration

XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****

Flow Control.Actuator Diagnostics

ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****

Flow Control.Damper Command

*ADF	54	Output	DMPRPOS	*****
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
ADF	36	Reversals	DPRRVRSL	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.001
ADF	25	Pickup Gain	PKUPGAIN	2.25
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
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Heating Mode

ADI	69	Present Value	HTGMODE	*****
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Box Heating PID

ADF	72	Present Value	BHPIDPV	*****
ADF	32	Proportional Band	BHPIDPB	5
ADF	33	Integral Time	BHPIDIT	300

Box Heating Cmd

BD	40	Enabled	BHENABLE	1
*ADF	51	Output	BHOUTPUT	*****
ADF	140	Present Value	BOXHTG	*****
ADI	1	Reliability	BHREL	*****

Occupancy Timer

BD	12	Present Value	OCCTIMER	*****
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SÉQUENCE D'OPÉRATION (TYPE 2)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-115) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-115) module son volet afin de maintenir le débit d'air neuf requis (35 l/s - 75 pcm).
- Les sondes de pièce (T_PIE) comportent des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de l'une des trois pièces, le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, la sonde de pièce (T_PIE), via le régulateur (VMA-2-15x), module (à l'aide d'impulsions) son serpentin de chauffage de façon à maintenir le point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

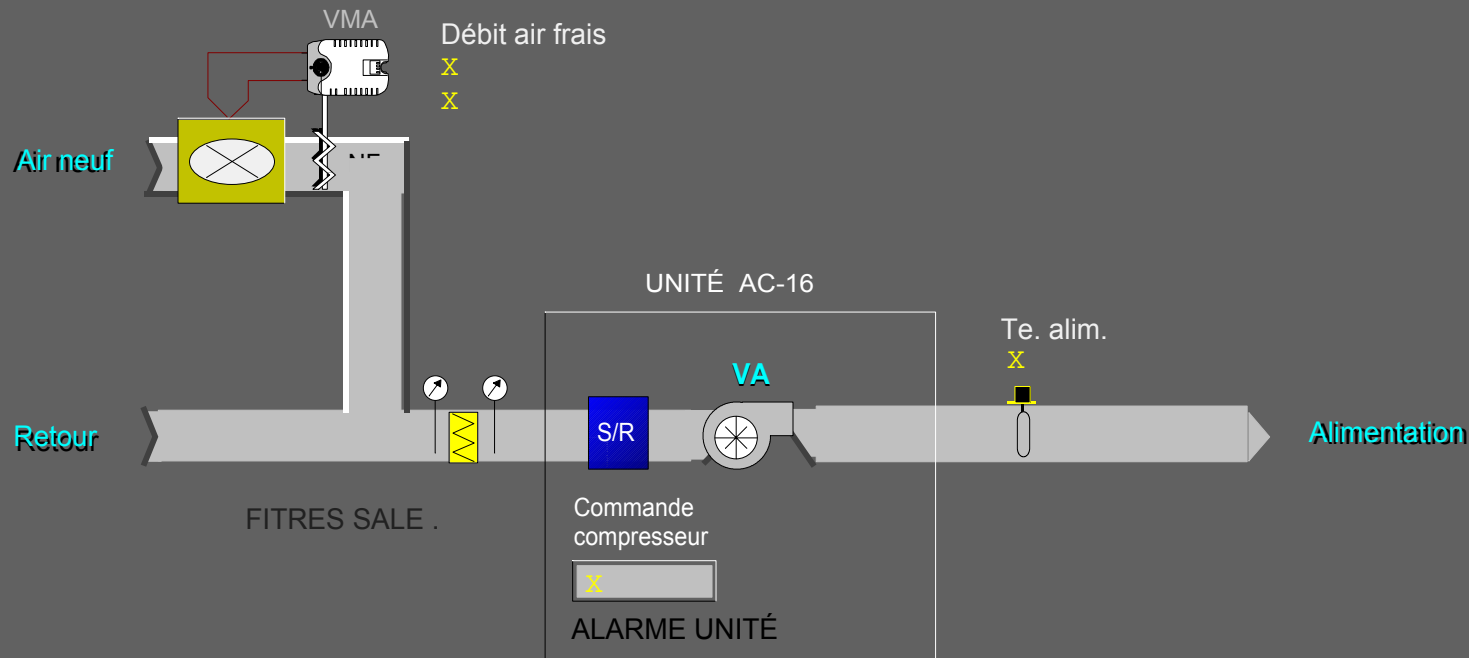
Informations sur points				Informations sur régulateurs										Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires		
		AC-15				UNT	UNT 141	2	15			P-2G	Local F-002													Alimentation 24VAC		
		AC-15				UNT	UNT 141	2	15	AI-1		P-2G	Local F-002		2G-15-AI-1											Tronc N2		
2P-15-AI-3	AI-2	AC-15	T_ALI	Temp.alimentation	°C	UNT	UNT 141	2	15	AI-2		P-2G	Local F-002		2G-15-AI-2													
	AI-3	AC-15				UNT	UNT 141	2	15	AI-3	AI3,AICM	P-2G	Local F-002	4068-076A	2G-15-AI-3		2/18	2 fils	TE (Gaine)						UV1			
	AI-4	AC-15				UNT	UNT 141	2	15	AI-4		P-2G	Local F-002		2G-15-AI-4													
	AI-5	AC-15				UNT	UNT 141	2	15	AI-5		P-2G	Local F-002		2G-15-AI-5													
	AI-6	AC-15				UNT	UNT 141	2	15	AI-6		P-2G	Local F-002		2G-15-AI-6													
2P-15-BI-1	BI-1	AC-15	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	2	15	BI-1	BI1,24VAC	P-2G	Local F-002	4068-076A	2G-15-BI-1		2/18	Selon dispositif	H-708					UV70			
2P-15-BI-2	BI-2	AC-15	E_FILT	État des filtres	Normal	Sales	UNT	UNT 141	2	15	BI-2	BI2,24VAC	P-2G	Local F-002	4068-076A	2G-15-BI-2		2/18	Y.R	P32 (NO)					UV70			
2P-15-BI-3	BI-3	AC-15	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	2	15	BI-3	BI3,24VAC	P-2G	Local F-002	4068-076A	2G-15-BI-3		2/18	Selon dispositif	Contact (NO)					UV70			
	BI-4	AC-15				UNT	UNT 141	2	15	BI-4		P-2G	Local F-002		2G-15-BI-4													
2P-15-BO-1	BO-1	AC-15	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	2	15	BO-1	BO1.COM	P-2G	Local F-002	4068-076A	2G-15-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw hi)		UV51		
	BO-2	AC-15				UNT	UNT 141	2	15	BO-2		P-2G	Local F-002		2G-15-BO-2													
	BO-3	AC-15				UNT	UNT 141	2	15	BO-3		P-2G	Local F-002		2G-15-BO-3													
2P-15-BO-4	BO-4	AC-15	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	2	15	BO-4	BO4.COM	P-2G	Local F-002	4068-076A	2G-15-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw hi)		UV51		
	BO-5	AC-15				UNT	UNT 141	2	15	BO-5		P-2G	Local F-002		2G-15-BO-5													
	BO-6	AC-15				UNT	UNT 141	2	15	BO-6		P-2G	Local F-002		2G-15-BO-6													
	AO-1	AC-15				UNT	UNT 141	2	15	AO-1		P-2G	Local F-002	4068-076A	2G-15-AO-1													
	AO-2	AC-15				UNT	UNT 141	2	15	AO-2		P-2G	Local F-002		2G-15-AO-2													
		AC-15				VMA	VMA 1410	2	115			P-2	Unité AC-15													Alimentation 24VAC		
2-115-AI-1	AI-1	AC-15	RES	Résistance 1000 ohms	°C		VMA	VMA 1410	2	115	AI-1	AI1,AICM	P-2	Unité AC-15	4068-076A	2-115-AI-1				VMA	2 fils	Résistance 1000 ohms			VMA1			
	AI-2	AC-15					VMA	VMA 1410	2	115	AI-2		P-2	Unité AC-15		2-115-AI-2												
	BI-1	AC-15					VMA	VMA 1410	2	115	BI-1		P-2	Unité AC-15		2-115-BI-1												
	BI-2	AC-15					VMA	VMA 1410	2	115	BI-2		P-2	Unité AC-15		2-115-BI-2												
	BI-3	AC-15					VMA	VMA 1410	2	115	BI-3		P-2	Unité AC-15		2-115-BI-3												
2-115-AI-5	AI-5	AC-15	P_VEL	Pression de vélocité	Pa		VMA	VMA 1410	2	115	AI-5		P-2	Unité AC-15	4068-076A	2-115-AI-5										Air neuf AC-15		
		AC-15					VMA	VMA 1430	2	151			P-2	Serp. SE-1 (F-105)												Alimentation 24VAC		
2-151-AI-1	AI-1	AC-15	T_PIE105	Temp.pèce F-105	°C		VMA	VMA 1430	2	151	AI-1	PHONE JACK	P-2	Serp. SE-1 (F-105)	4068-076B	2-151-AI-1					8/24	Prise tél.	Metastat-Prise télep			VMA2		
	AI-2	AC-15					VMA	VMA 1430	2	151	AI-2		P-2	Serp. SE-1 (F-105)		2-151-AI-2												
	AI-3	AC-15					VMA	VMA 1430	2	151	AI-3		P-2	Serp. SE-1 (F-105)		2-151-AI-3												
	AI-4	AC-15					VMA	VMA 1430	2	151	AI-4		P-2	Serp. SE-1 (F-105)		2-151-AI-4												
	AI-5	AC-15					VMA	VMA 1430	2	151	AI-5		P-2	Serp. SE-1 (F-105)	4068-076B	2-151-AI-5												
	BI-1	AC-15					VMA	VMA 1430	2	151	BI-1		P-2	Serp. SE-1 (F-105)		2-151-BI-1												
	BI-2	AC-15					VMA	VMA 1430	2	151	BI-2		P-2	Serp. SE-1 (F-105)		2-151-BI-2												
	BI-3	AC-15					VMA	VMA 1430	2	151	BI-3		P-2	Serp. SE-1 (F-105)		2-151-BI-3												
	BO-1	AC-15					VMA	VMA 1430	2	151	BO-1		P-2	Serp. SE-1 (F-105)		2-151-BO-1												
	BO-2	AC-15					VMA	VMA 1430	2	151	BO-2		P-2	Serp. SE-1 (F-105)		2-151-BO-2												
2-151-BO-3	BO-3	AC-15	C_SC	Comm.serpentin chauffage	Arrêt	Marche	VMA	VMA 1430	2	151	BO-3	BO3,24VAC	P-2	Serp. SE-1 (F-105)	4068-076B	2-151-BO-3		2/18	Selon dispositif	SOR 24 V c.a.					VMA51	Serp. avec relais TRIAC		
	BO-4	AC-15					VMA	VMA 1430	2	151	BO-4		P-2	Serp. SE-1 (F-105)		2-151-BO-4												
	BO-5	AC-15					VMA	VMA 1430	2	151	BO-5		P-2	Serp. SE-1 (F-105)		2-151-BO-5												
	AO-1	AC-15					VMA	VMA 1430	2	151	AO-1		P-2	Serp. SE-1 (F-105)		2-151-AO-1												
	AO-2	AC-15					VMA	VMA 1430	2	151	AO-2		P-2	Serp. SE-1 (F-105)		2-151-AO-2												
		AC-15					VMA	VMA 1430	2	152			P-2	Serp. SE-2 (F-106)												Alimentation 24VAC		
2-152-AI-1	AI-1	AC-15	T_PIE106	Temp.pèce F-106	°C		VMA	VMA 1430	2	152	AI-1	PHONE JACK	P-2	Serp. SE-2 (F-106)	4068-076B	2-152-AI-1		8/24	Prise tél.	Metastat-Prise télep					VMA2			
	AI-2	AC-15					VMA	VMA 1430	2	152	AI-2		P-2	Serp. SE-2 (F-106)		2-152-AI-2												
	AI-3	AC-15					VMA	VMA 1430	2	152	AI-3		P-2	Serp. SE-2 (F-106)		2-152-AI-3												
	AI-4	AC-15					VMA	VMA 1430	2	152	AI-4		P-2	Serp. SE-2 (F-106)		2-152-AI-4												
	AI-5	AC-15					VMA	VMA 1430	2	152	AI-5		P-2	Serp. SE-2 (F-106)	4068-076B	2-152-AI-5												
	BI-1	AC-15					VMA	VMA 1430	2	152	BI-1		P-2	Serp. SE-2 (F-106)		2-152-BI-1												
	BI-2	AC-15					VMA	VMA 1430	2	152	BI-2		P-2	Serp. SE-2 (F-106)		2-152-BI-2												
	BI-3	AC-15					VMA	VMA 1430	2	152	BI-3		P-2	Serp. SE-2 (F-106)		2-152-BI-3												
	BO-1	AC-15					VMA	VMA 1430	2	152	BO-1		P-2	Serp. SE-2 (F-106)		2-152-BO-1												
	BO-2	AC-15					VMA	VMA 1430	2	152	BO-2		P-2	Serp. SE-2 (F-106)		2-152-BO-2												
2-152-BO-3	BO-3	AC-15	C_SC	Comm.serpentin chauffage	Arrêt	Marche	VMA	VMA 1430	2	152	BO-3	BO3,24VAC	P-2	Serp. SE-2 (F-106)	4068-076B	2-152-BO-3		2/18	Selon dispositif	SOR 24 V c.a.					VMA51	Serp. avec relais TRIAC		
	BO-4	AC-15					VMA	VMA 1430	2	152	BO-4		P-2	Serp. SE-2 (F-106)		2-152-BO-4												
	BO-5	AC-15					VMA	VMA 1430	2	152	BO-5		P-2	Serp. SE-2 (F-106)		2-152-BO-5												
	AO-1	AC-15					VMA	VMA 1430	2	152	AO-1		P-2	Serp. SE-2 (F-106)		2-152-AO-1												
	AO-2	AC-15					VMA	VMA 1430	2	152	AO-2		P-2	Serp. SE-2 (F-106)		2-152-AO-2												
		AC-15					VMA	VMA 1430	2	153																		

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-15

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-15	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS
VMA-2-115	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VMA-2-151 à 153	RÉGULATEUR VAV c/a TRANSMETTEUR DE PRESS. DIFF. SANS ACTUATEUR	AP-VMA1430-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2G

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2G	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-15, UNT-2-16	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-26	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS

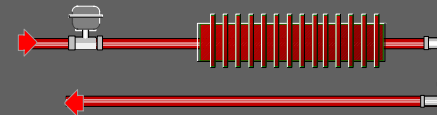


Piece F-102

- X PC chauff. inocc.
- X PC chauff. occ.
- X PC refr. occ.
- X

Valve chauffage

X



UNITÉ DE CLIMATISATION AC-16 - LOCAL F-102
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)

Le schéma illustre le système de climatisation et de chauffage pour l'unité AC-16. L'air neuf (Système UV-1) est traité par un filtre SD-16 (150mm - 6" Ø, 50 l/s - 110pcm) et une vanne VMA-2-116 avant d'entrer dans l'unité. Le retour d'air est traité par un filtre E_FILT. L'unité AC-16 comprend une vanne de régulation VA, un électrovanne E_VA (208VAC, 1 phase) et une sonde de température d'air T_ALI. Le chauffage est assuré par une vanne VLV_CHA (4-8psi) et une sonde de température de pièce T_PIE. Le système est contrôlé par un panneau de contrôle P-2G (dessin 4068-101) et une alarme RE-1. Les composants sont identifiés par des codes 2G-16-BI-1, 2G-16-BI-2, 2G-16-BI-3 et 2G-16-AI-1.

<u>LISTE DE MATÉRIEL</u>		
IDENT.	QTÉ MODÈLE	DESCRIPTION
E_FILTER	1 P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VAL	1 FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1 H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1 TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
VLV_CHA	1 TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-116	8 VG7241CS+3801D	VANNE 2 VOIES, 1/2", N.O., Cv 0.7, ACT. PNEU 4-8psi
	1 AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1 -----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1 RCP7FU82D1024	RELAIS 2PDT, 24Vac.
	1 S-408	BASE DE RELAIS 8 BROCHES
SD-16	1 RMS-6	STATION DE MESURE DE VÉLOCITÉ 150mm, 6" Ø - EH PRICE

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-116) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-116) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-116)

METASYS
VMA CONTROLLER
AP-VMA1410-0

24VAC VENANT DU PANNEAU P-2G (DESSIN 4068-101)

(1) 24 VAC
(2) 24 VAC
(3) Earth GND

(4) BO-1
(5) BCOM
(6) BO-2
(7) BCOM
(8) BO-3
(9) BCOM
(10) BO-4
(11) BCOM
(12) BO-5
(13) BCOM
(14) AO-1
(15) COM
(16) AO-2
(17) COM

BI-1 (18)
COM (19)
BI-2 (20)
COM (21)
BI-3 (22)
COM (23)
+15 VDC (24)
+15 VDC (25)
AI-1 (26)
COM (27)
AI-2 (28)
COM (29)
AI-3 (30)
COM (31)
AI-4 (32)
COM (33)
ZB+ (34)
ZB- (35)

H
L
Rouge

VERS STATION DE DÉBIT (SD-16)

RES-1
(1000 Ohms)

SHIELD
REF
N2-
N2+

VENANT DU RÉGULATEUR PRÉCÉDENT

VERS RÉGULATEUR SUIVANT

COMMUNICATION (RÉSEAU N2)
REF: Bleu
N2- : Noir
N2+ : Rouge

RACCORDEMENTS DU RÉGULATEUR (VMA-2-116)

METASYS
VMA CONTROLLER
AP-VMA1410-0

24VAC VENANT DU PANNEAU P-2G (DESSIN 4068-101)

(1) 24 VAC
(2) 24 VAC
(3) Earth GND

(4) BO-1
(5) BCOM
(6) BO-2
(7) BCOM
(8) BO-3
(9) BCOM
(10) BO-4
(11) BCOM
(12) BO-5
(13) BCOM
(14) AO-1
(15) COM
(16) AO-2
(17) COM

BI-1 (18)
COM (19)
BI-2 (20)
COM (21)
BI-3 (22)
COM (23)
+15 VDC (24)
+15 VDC (25)
AI-1 (26)
COM (27)
AI-2 (28)
COM (29)
AI-3 (30)
COM (31)
AI-4 (32)
COM (33)
ZB+ (34)
ZB- (35)

VENANT DU RÉGULATEUR PRÉCÉDENT

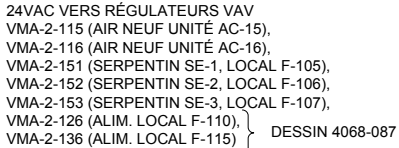
VERS RÉGULATEUR SUIVANT

COMMUNICATION (RÉSEAU N2)
REF: Bleu
N2- : Noir
N2+ : Rouge

VERS STATION DE DÉBIT (SD-16)

RES-1
(1000 Ohms)

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PAM

**JOHNSON
CONTROLS**
Groupe de la régulation

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-16.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Proportional

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

None (unused)

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command

Do you want the temporary occupied feature?

No

Do you want boost mode?

No
 Include diagnostics?
 Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

Point Type	Point Address	Long Name	Short Name
AO	1	Heating Valve	HTG-VLV

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.9
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	19.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-2.0
ADF	139	Htg Integ Time	HTGIT	200
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	190	Heating Failsoft	HEATFAIL	0
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	2.0
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-116.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.027508885

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	65
ADF	164	Occupied Clg Min	OCCCMIN	65
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	65
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.35
ADF	25	Pickup Gain	PKUPGAIN	0.4
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	65

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le volet d'air neuf (VMA-2-116) est fermé.
- La sonde de pièce (T_PIE) module la vanne de chauffage (VLV_CHA) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-116) module son volet afin de maintenir le débit d'air neuf requis (30 l/s - 65 pcm).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, les vannes de convecteur (VLV_CHA) sont modulées de façon à maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

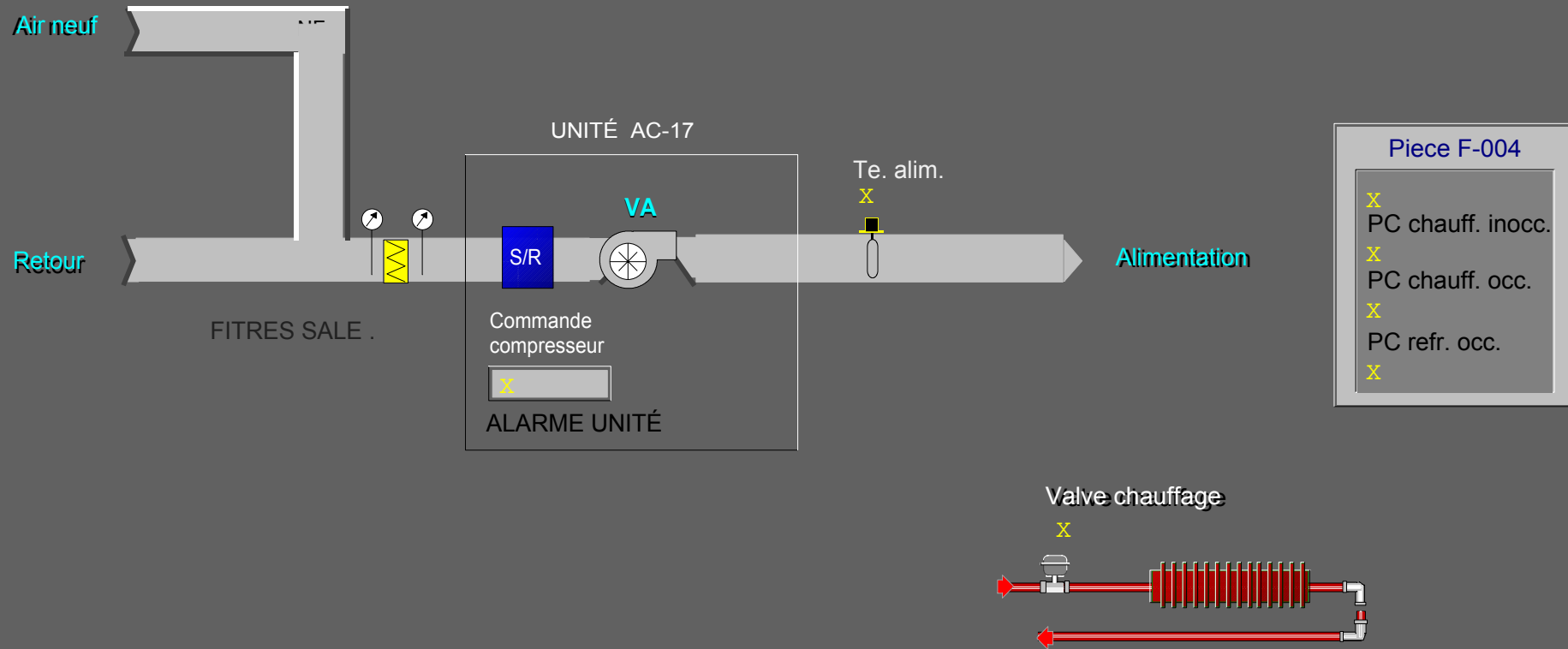
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration			
		AC-16				UNT	UNT 141	2	16			P-2G	Local F-002													Alimentation 24VAC	
20-16-AI-1	AI-1	AC-16	T_PIE	Temp.pieçe	°C	UNT	UNT 141	2	16	AI-1	PHONE JACK	P-2G	Local F-002	4068-077	2G-16-AI-1		8/24	Prise tél.	Metastat-Prise télép					UV2		Tronc N2 Sonde située dans local F-102	
20-16-AI-2	AI-2	AC-16				UNT	UNT 141	2	16	AI-2		P-2G	Local F-002		2G-16-AI-2												
20-16-AI-3	AI-3	AC-16	T_ALI	Temp.alimentation	°C	UNT	UNT 141	2	16	AI-3	AI3,AICM	P-2G	Local F-002	4068-077	2G-16-AI-3		2/18	2 fils	TE (Gaine)					UV1			
20-16-AI-4	AI-4	AC-16				UNT	UNT 141	2	16	AI-4		P-2G	Local F-002		2G-16-AI-4												
20-16-AI-5	AI-5	AC-16				UNT	UNT 141	2	16	AI-5		P-2G	Local F-002		2G-16-AI-5												
20-16-AI-6	AI-6	AC-16				UNT	UNT 141	2	16	AI-6		P-2G	Local F-002		2G-16-AI-6												
20-16-BI-1	BI-1	AC-16	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	2	16	BI-1	BI1,24VAC	P-2G	Local F-002	4068-077	2G-16-BI-1					2/18	Selon dispositif	H-708		UV70		
20-16-BI-2	BI-2	AC-16	E_FILT	État des filtres	Normal	Alarme	UNT	UNT 141	2	16	BI-2	BI2,24VAC	P-2G	Local F-002	4068-077	2G-16-BI-2					2/18	Y.R	P32 (NO)		UV70		
20-16-BI-3	BI-3	AC-16	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	2	16	BI-3	BI3,24VAC	P-2G	Local F-002	4068-077	2G-16-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
20-16-BI-4	BI-4	AC-16				UNT	UNT 141	2	16	BI-4		P-2G	Local F-002		2G-16-BI-4												
20-16-BO-1	BO-1	AC-16	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	2	16	BO-1	BO1,COM	P-2G	Local F-002	4068-077	2G-16-BO-1	2/18	COIL	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
20-16-BO-2	BO-2	AC-16				UNT	UNT 141	2	16	BO-2		P-2G	Local F-002		2G-16-BO-2												
20-16-BO-3	BO-3	AC-16				UNT	UNT 141	2	16	BO-3		P-2G	Local F-002		2G-16-BO-3												
20-16-BO-4	BO-4	AC-16	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	2	16	BO-4	BO4,COM	P-2G	Local F-002	4068-077	2G-16-BO-4	2/18	Bobine	RELAIS	NO,COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
20-16-BO-5	BO-5	AC-16				UNT	UNT 141	2	16	BO-5		P-2G	Local F-002		2G-16-BO-5												
20-16-BO-6	BO-6	AC-16				UNT	UNT 141	2	16	BO-6		P-2G	Local F-002		2G-16-BO-6												
20-16-AO-1	AO-1	AC-16	VLV_CHA	Vanne chauffage	%	UNT	UNT 141	2	16	AO-1	AO1,AOCOM	P-2G	Local F-002	4068-077	2G-16-AO-1	2/18	+-	EP-8000	SUPPLY.O		1/4"	Raccord à crans	EP-PNEU.		UV27	1 x EP-8000 pour 8 vannes	
20-16-AO-2	AO-2	AC-16				UNT	UNT 141	2	16	AO-2		P-2G	Local F-002		2G-16-AO-2												
						VMA	VMA 1410		116			P-2	Unité AC-16													Alimentation 24VAC	
2-116-AI-1	AI-1	AC-16	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	2	116	AI-1	AI1,AICM	P-2	Unité AC-16	4068-077	2-116-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-16				VMA	VMA 1410	2	116	AI-2		P-2	Unité AC-16		2-116-AI-2												
	BI-1	AC-16				VMA	VMA 1410	2	116	BI-1		P-2	Unité AC-16		2-116-BI-1												
	BI-2	AC-16				VMA	VMA 1410	2	116	BI-2		P-2	Unité AC-16		2-116-BI-2												
	BI-3	AC-16				VMA	VMA 1410	2	116	BI-3		P-2	Unité AC-16		2-116-BI-3												
2-116-AI-5	AI-5	AC-16	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	2	116	AI-5		P-2	Unité AC-16	4068-077	2-116-AI-5											Air neuf AC-16	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-16

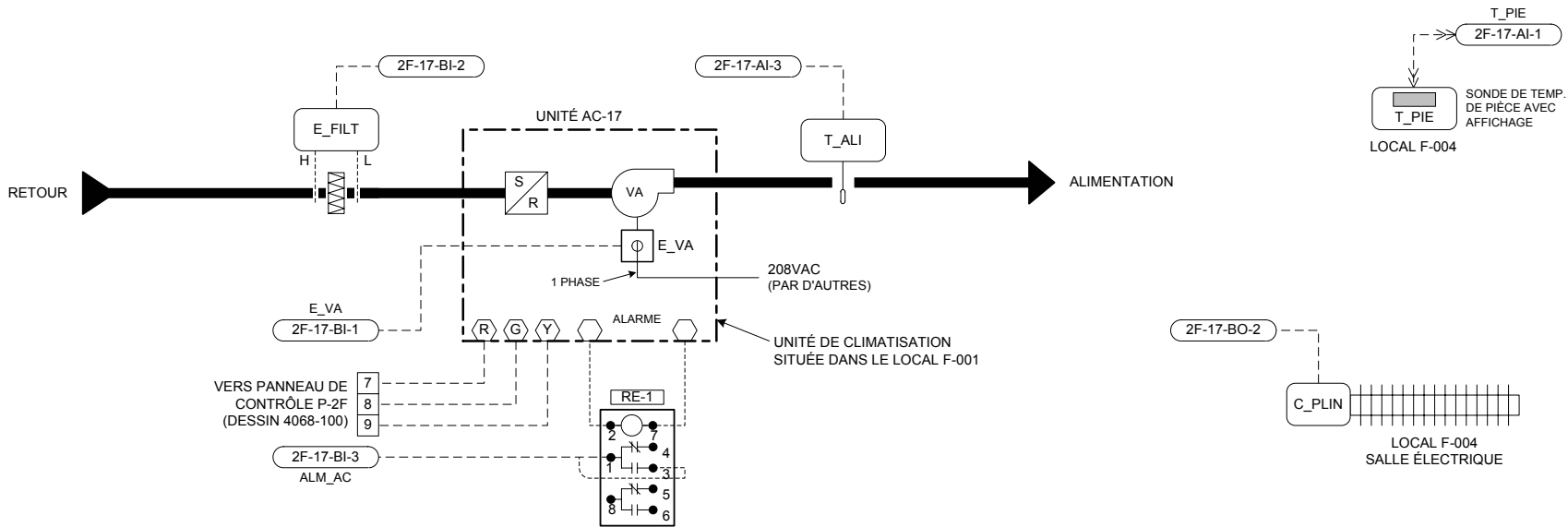
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-16	STATION DE MESURE DE VÉLOCITÉ 150mm, 6"Ø	RMS-6	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
VLV_CHA	VANNE 2 VOIES, 1/2", NO, Cv 1.8, ACT. PNEU. 4-8psi	VG7241ES+3801D	JOHNSON CONTROLS
VMA-2-116	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2G

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2G	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-15, UNT-2-16	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-26	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-17 - LOCAL F-004
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC CHAUFFAGE PÉRIMÉTRIQUE)



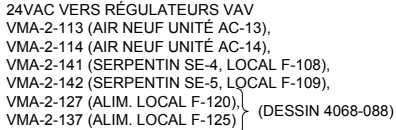
LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_PLIN	1	CCT-10-1-C1	RELAIS TRIAC, 10Amps, 347/1/60, PLAQUE 4"x4"
E_FILT	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VA	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	AP-TMZ1600-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT

SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - La sonde de pièce (T_PIE) contrôle le relais de la plinthe chauffante (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
 - Sur une demande de chauffage, le relais triac (C_PLIN) de la plinthe chauffante est activé afin de maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Titre du Dessin					
Unité de climatisation AC-17 Local F-004 Type 1 (Unité avec chauffage péri-métrique)		2	TEL QUE CONSTRUIT	D.B.	02/04/24 O.P.
		1	POUR APPROBATION		06/12/2001 D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE	
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT	
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				1096-0093 NUMÉRO DESSIN 4068-078	



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4068-100.vsd Page 1 de 1 05/02/21

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-17.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT140-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Staged

Heating diagnostics?

No

Select number of heating stages:

1 Stage

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

TMZ Digital room sensor

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
Yes

SIDELoop DEFINITION

(NONE)

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
BO	2	Htg Stage 1	HTG1-C
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	20.5
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	17.3
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-1.5
ADF	139	Htg Integ Time	HTGIT	0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****

Heating Output

ADF	185	Heat Stage 1 Percent	HTSTG1	5
ADF	190	Heating Failsoft	HEATFAIL	0
AO	7	Heating Command	HEATCMD	****

Cooling Output

ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMPCMD	****

OA Cooling Lockout

ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****

Fan Operation

ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5

TMZ Setpoint Range

ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26

Rooftop Diagnostics

*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- La sonde de pièce (T_PIE) contrôle le relais de la plinthe chauffante (C_PLIN) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- La sonde de pièce (T_PIE) comporte des boutons et un affichage à cristal liquide, permettant l'ajustement du point de consigne, le changement de mode de même que l'affichage de la température de la pièce.
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage, le relais triac (C_PLIN) de la plinthe chauffante est activé afin de maintenir le point de consigne de pièce (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

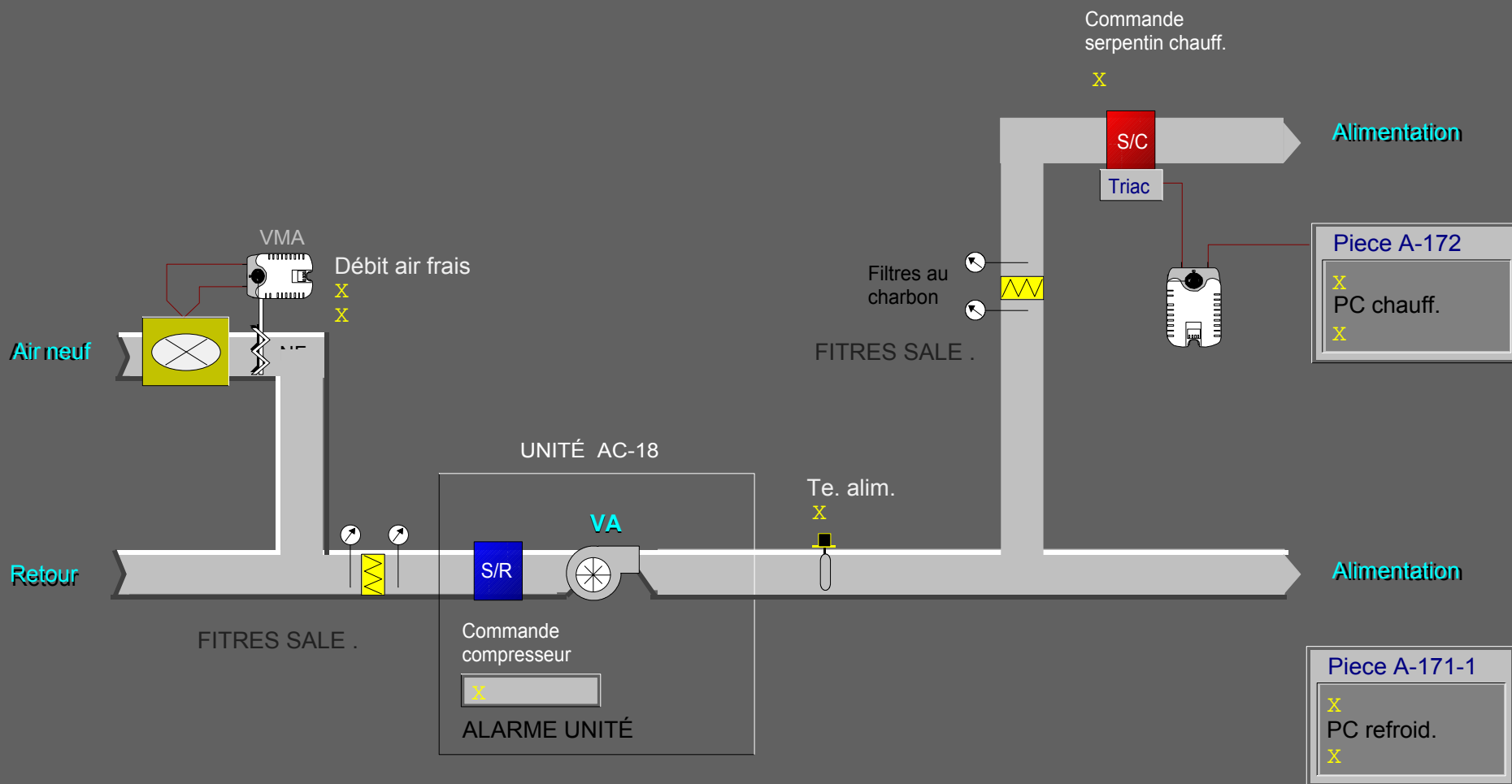
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau							
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-17				UNT	UNT 140					P-2F	Local F-001													Alimentation 24VAC	
2N-17-AI-1	AI-1	AC-17	T_PIE	Temp.pieçe	°C	UNT	UNT 140	1	17	AI-1	PHONE JACK	P-2F	Local F-001	4068-078	2F-17-AI-1						8/24	Prise tél.	Metastat-Prise télép		UV2	Tronc N2 Sonde située dans local F-004	
2N-17-AI-3	AI-2	AC-17	T_ALI	Temp.alimentation	°C	UNT	UNT 140	1	17	AI-2	AI3,AICM	P-2F	Local F-001	4068-078	2F-17-AI-2						2/18	2 fils	TE (Gaine)		UV1		
	AI-3	AC-17				UNT	UNT 140	1	17	AI-3		P-2F	Local F-001		2F-17-AI-3												
	AI-4	AC-17				UNT	UNT 140	1	17	AI-4		P-2F	Local F-001		2F-17-AI-4												
	AI-5	AC-17				UNT	UNT 140	1	17	AI-5		P-2F	Local F-001		2F-17-AI-5												
	AI-6	AC-17				UNT	UNT 140	1	17	AI-6		P-2F	Local F-001		2F-17-AI-6												
2N-17-BI-1	BI-1	AC-17	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 140	1	17	BI-1	BI1,24VAC	P-2F	Local F-001	4068-078	2F-17-BI-1					2/18	Selon dispositif	H-708		UV70		
2N-17-BI-2	BI-2	AC-17	E_FILT	État des filtres	Normal	Alarme	UNT	UNT 140	1	17	BI-2	BI2,24VAC	P-2F	Local F-001	4068-078	2F-17-BI-2					2/18	Y.R	P32 (NO)		UV70		
2N-17-BI-3	BI-3	AC-17	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 140	1	17	BI-3	BI3,24VAC	P-2F	Local F-001	4068-078	2F-17-BI-3					2/18	Device depende	Contact (NO)		UV70		
	BI-4	AC-17					UNT	UNT 140	1	17	BI-4		P-2F	Local F-001		2F-17-BI-4											
2N-17-BO-1	BO-1	AC-17	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 140	1	17	BO-1	BO1.COM	P-2F	Local F-001	4068-078	2F-17-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2N-17-BO-2	BO-2	AC-17	C_PLIN	Comm.plinthe chauf.	Arrêt	Marche	UNT	UNT 140	1	17	BO-2	BO2.COM	P-2F	Local F-001	4068-078	2F-17-BO-2					2/18	Device depende	SOR 24 V.c.a. (sw h)		UV51		
	BO-3	AC-17					UNT	UNT 140	1	17	BO-3		P-2F	Local F-001		2F-17-BO-3											
2N-17-BO-4	BO-4	AC-17	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 140	1	17	BO-4	BO4.COM	P-2F	Local F-001	4068-078	2F-17-BO-4	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-17					UNT	UNT 140	1	17	BO-5		P-2F	Local F-001		2F-17-BO-5											
	BO-6	AC-17					UNT	UNT 140	1	17	BO-6		P-2F	Local F-001		2F-17-BO-6											
	BO-7	AC-17					UNT	UNT 140	1	17	BO-7		P-2F	Local F-001		2F-17-BO-7											
	BO-8	AC-17					UNT	UNT 140	1	17	BO-8		P-2F	Local F-001		2F-17-BO-8											

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-17

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_PLIN	RELAIS TRIAC, 10Amps, 347/1/60, PLAQUE 4"x4"	CTT-10-1-C1	CRISTAL CONTRÔLES
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
E_VA	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
RE-1	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
RE-1	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI, AVEC AFFICHAGE, AJUSTEMENT DU POINT DE CONSIGNE ET BOUTON DE CONTOURNEMENT	AP-TMZ1600-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2F

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_COMP, C_VA	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B, 1C	FUSIBLE 2 AMP	GMA-2	BUSS
F-1, 1A, 1B, 1C	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
F-2	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
PDC-1	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2F	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-13, UNT-2-14	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-17, UNT-2-27	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-18 - LOCAUX A-171 ET A-172
(TYPE 4 - USINE PILOTE A-171)

Le schéma illustre le système de climatisation AC-18, alimenté par un réseau 208VAC. L'air neuf (SYSTÈME UV-1) passe par un filtre SD-18 (175mm - 7" Ø) et un ventilateur VMA-2-118. Le retour d'air passe par un filtre ME-18R. Le système est contrôlé par un panneau de contrôle P-2H (DESSIN 4068-102) via des câbles 2H-18-BI-1, 2H-18-BI-2, 2H-18-BI-3, 2H-18-BI-4, 2H-18-BO-2, 2H-18-BO-3, 2H-18-BO-4, 2H-18-BO-5, 2H-18-BO-6, 2H-18-BO-7, 2H-18-BO-8, 2H-18-BO-9, 2H-18-BO-10, 2H-18-BO-11, 2H-18-BO-12, 2H-18-BO-13, 2H-18-BO-14, 2H-18-BO-15, 2H-18-BO-16, 2H-18-BO-17, 2H-18-BO-18, 2H-18-BO-19, 2H-18-BO-20, 2H-18-BO-21, 2H-18-BO-22, 2H-18-BO-23, 2H-18-BO-24, 2H-18-BO-25, 2H-18-BO-26, 2H-18-BO-27, 2H-18-BO-28, 2H-18-BO-29, 2H-18-BO-30, 2H-18-BO-31, 2H-18-BO-32, 2H-18-BO-33, 2H-18-BO-34, 2H-18-BO-35, 2H-18-BO-36, 2H-18-BO-37, 2H-18-BO-38, 2H-18-BO-39, 2H-18-BO-40, 2H-18-BO-41, 2H-18-BO-42, 2H-18-BO-43, 2H-18-BO-44, 2H-18-BO-45, 2H-18-BO-46, 2H-18-BO-47, 2H-18-BO-48, 2H-18-BO-49, 2H-18-BO-50, 2H-18-BO-51, 2H-18-BO-52, 2H-18-BO-53, 2H-18-BO-54, 2H-18-BO-55, 2H-18-BO-56, 2H-18-BO-57, 2H-18-BO-58, 2H-18-BO-59, 2H-18-BO-60, 2H-18-BO-61, 2H-18-BO-62, 2H-18-BO-63, 2H-18-BO-64, 2H-18-BO-65, 2H-18-BO-66, 2H-18-BO-67, 2H-18-BO-68, 2H-18-BO-69, 2H-18-BO-70, 2H-18-BO-71, 2H-18-BO-72, 2H-18-BO-73, 2H-18-BO-74, 2H-18-BO-75, 2H-18-BO-76, 2H-18-BO-77, 2H-18-BO-78, 2H-18-BO-79, 2H-18-BO-80, 2H-18-BO-81, 2H-18-BO-82, 2H-18-BO-83, 2H-18-BO-84, 2H-18-BO-85, 2H-18-BO-86, 2H-18-BO-87, 2H-18-BO-88, 2H-18-BO-89, 2H-18-BO-90, 2H-18-BO-91, 2H-18-BO-92, 2H-18-BO-93, 2H-18-BO-94, 2H-18-BO-95, 2H-18-BO-96, 2H-18-BO-97, 2H-18-BO-98, 2H-18-BO-99, 2H-18-BO-100, 2H-18-BO-101, 2H-18-BO-102, 2H-18-BO-103, 2H-18-BO-104, 2H-18-BO-105, 2H-18-BO-106, 2H-18-BO-107, 2H-18-BO-108, 2H-18-BO-109, 2H-18-BO-110, 2H-18-BO-111, 2H-18-BO-112, 2H-18-BO-113, 2H-18-BO-114, 2H-18-BO-115, 2H-18-BO-116, 2H-18-BO-117, 2H-18-BO-118, 2H-18-BO-119, 2H-18-BO-120, 2H-18-BO-121, 2H-18-BO-122, 2H-18-BO-123, 2H-18-BO-124, 2H-18-BO-125, 2H-18-BO-126, 2H-18-BO-127, 2H-18-BO-128, 2H-18-BO-129, 2H-18-BO-130, 2H-18-BO-131, 2H-18-BO-132, 2H-18-BO-133, 2H-18-BO-134, 2H-18-BO-135, 2H-18-BO-136, 2H-18-BO-137, 2H-18-BO-138, 2H-18-BO-139, 2H-18-BO-140, 2H-18-BO-141, 2H-18-BO-142, 2H-18-BO-143, 2H-18-BO-144, 2H-18-BO-145, 2H-18-BO-146, 2H-18-BO-147, 2H-18-BO-148, 2H-18-BO-149, 2H-18-BO-150, 2H-18-BO-151, 2H-18-BO-152, 2H-18-BO-153, 2H-18-BO-154, 2H-18-BO-155, 2H-18-BO-156, 2H-18-BO-157, 2H-18-BO-158, 2H-18-BO-159, 2H-18-BO-160, 2H-18-BO-161, 2H-18-BO-162, 2H-18-BO-163, 2H-18-BO-164, 2H-18-BO-165, 2H-18-BO-166, 2H-18-BO-167, 2H-18-BO-168, 2H-18-BO-169, 2H-18-BO-170, 2H-18-BO-171, 2H-18-BO-172, 2H-18-BO-173, 2H-18-BO-174, 2H-18-BO-175, 2H-18-BO-176, 2H-18-BO-177, 2H-18-BO-178, 2H-18-BO-179, 2H-18-BO-180, 2H-18-BO-181, 2H-18-BO-182, 2H-18-BO-183, 2H-18-BO-184, 2H-18-BO-185, 2H-18-BO-186, 2H-18-BO-187, 2H-18-BO-188, 2H-18-BO-189, 2H-18-BO-190, 2H-18-BO-191, 2H-18-BO-192, 2H-18-BO-193, 2H-18-BO-194, 2H-18-BO-195, 2H-18-BO-196, 2H-18-BO-197, 2H-18-BO-198, 2H-18-BO-199, 2H-18-BO-200, 2H-18-BO-201, 2H-18-BO-202, 2H-18-BO-203, 2H-18-BO-204, 2H-18-BO-205, 2H-18-BO-206, 2H-18-BO-207, 2H-18-BO-208, 2H-18-BO-209, 2H-18-BO-210, 2H-18-BO-211, 2H-18-BO-212, 2H-18-BO-213, 2H-18-BO-214, 2H-18-BO-215, 2H-18-BO-216, 2H-18-BO-217, 2H-18-BO-218, 2H-18-BO-219, 2H-18-BO-220, 2H-18-BO-221, 2H-18-BO-222, 2H-18-BO-223, 2H-18-BO-224, 2H-18-BO-225, 2H-18-BO-226, 2H-18-BO-227, 2H-18-BO-228, 2H-18-BO-229, 2H-18-BO-230, 2H-18-BO-231, 2H-18-BO-232, 2H-18-BO-233, 2H-18-BO-234, 2H-18-BO-235, 2H-18-BO-236, 2H-18-BO-237, 2H-18-BO-238, 2H-18-BO-239, 2H-18-BO-240, 2H-18-BO-241, 2H-18-BO-242, 2H-18-BO-243, 2H-18-BO-244, 2H-18-BO-245, 2H-18-BO-246, 2H-18-BO-247, 2H-18-BO-248, 2H-18-BO-249, 2H-18-BO-250, 2H-18-BO-251, 2H-18-BO-252, 2H-18-BO-253, 2H-18-BO-254, 2H-18-BO-255, 2H-18-BO-256, 2H-18-BO-257, 2H-18-BO-258, 2H-18-BO-259, 2H-18-BO-260, 2H-18-BO-261, 2H-18-BO-262, 2H-18-BO-263, 2H-18-BO-264, 2H-18-BO-265, 2H-18-BO-266, 2H-18-BO-267, 2H-18-BO-268, 2H-18-BO-269, 2H-18-BO-270, 2H-18-BO-271, 2H-18-BO-272, 2H-18-BO-273, 2H-18-BO-274, 2H-18-BO-275, 2H-18-BO-276, 2H-18-BO-277, 2H-18-BO-278, 2H-18-BO-279, 2H-18-BO-280, 2H-18-BO-281, 2H-18-BO-282, 2H-18-BO-283, 2H-18-BO-284, 2H-18-BO-285, 2H-18-BO-286, 2H-18-BO-287, 2H-18-BO-288, 2H-18-BO-289, 2H-18-BO-290, 2H-18-BO-291, 2H-18-BO-292, 2H-18-BO-293, 2H-18-BO-294, 2H-18-BO-295, 2H-18-BO-296, 2H-18-BO-297, 2H-18-BO-298, 2H-18-BO-299, 2H-18-BO-300, 2H-18-BO-301, 2H-18-BO-302, 2H-18-BO-303, 2H-18-BO-304, 2H-18-

<u>LISTE DE MATÉRIEL</u>			
IDENT.	QTÉ	MODÈLE DESCRIPTION	
E_FILTER, E_FILTER_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VALVE	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
ME-18A, ME-18R	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	2	M9206-AGA-2	ACTUATEUR DE VOILET 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIERCE, 1000 OHMS NI
TP-171-1 / HP-171-1	1	HE-67N2-0N00P	SONDE DE TEMP / HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-118	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-18	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-118) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-171-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-172 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-118)

24VAC VENANT DU PANNEAU P-2H (DESSIN 4068-102)

METASYS VMA CONTROLLER AP-VMA1410-0

VERS STATION DE DÉBIT (SD-18)

RES-1 (1000 Ohms)

COMMUNICATION (RÉSEAU N2)
 REF: Bleu
 N2- : Noir
 N2+ : Rouge

VENANT DU RÉGULATEUR PRÉCÉDENT → **VERS RÉGULATEUR SUIVANT**

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-11)

SERPENTIN ÉLECTRIQUE

2H-18-BO-2 C_SC

Titre du Dessin

**Unité de climatisation AC-18
 Type 4 (Usine pilote A-171)
 (Locaux A-171 et A-172)**

Nom du Projet

CRDA ST-HYACINTHE
 Projet d'Innovation Technologique
 3600, boul. Casavant
 St-Hyacinthe (Québec)

METASYS
VMA CONTROLLER
AP-VMA1410-0

24VAC VENANT DU PANNEAU P-2H (DESSIN 4068-102)

X3 (1) 24 VAC
X4 (2) 24 VAC
(3) Earth GND

(4) BO-1
(5) BCOM
(6) BO-2
(7) BCOM
(8) BO-3
(9) BCOM
(10) BO-4
(11) BCOM
(12) BO-5
(13) BCOM
(14) AO-1
(15) COM
(16) AO-2
(17) COM

BI-1 (18)
COM (19)
BI-2 (20)
COM (21)
BI-3 (22)
COM (23)
+15 VDC (24)
+15 VDC (25)
AI-1 (26)
COM (27)
AI-2 (28)
COM (29)
AI-3 (30)
COM (31)
AI-4 (32)
COM (33)
ZB+ (34)
ZB- (35)

LED

SHLD
REF
N2-
N2+

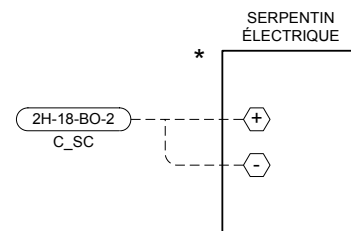
H
L

VERS STATION DE DÉBIT (SD-18)


RES-1
(1000 Ohms)

COMMUNICATION (RÉSEAU N2)
REF: Bleu
N2- : Noir
N2+ : Rouge

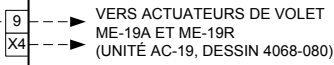
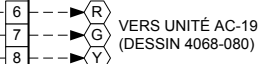
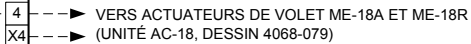
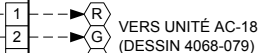
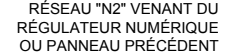
VENANT DU RÉGULATEUR PRÉCÉDENT
VERS RÉGULATEUR SUIVANT



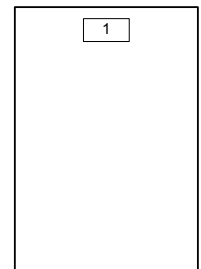
VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-171

Titre du Dessin Unité de climatisation AC-18 Type 4 (Usine pilote A-171) (Locaux A-171 et A-172)			3	TEL QUE CONSTRUIT	D.B.	02/04/2001	O.P.
			2	POUR CONSTRUCTION		09/18/2001	D.B.
			1	POUR APPROBATION		06/12/2001	D.B.
	DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Yacinthe (Québec)	Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ	
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/22/2001
	Information Succursale			PAR		DATE	05/22/2001
	 Groupe de la réglementation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO CONTRAT	
						NUMÉRO DESSIN	
						1096-0093	
						4068-079	

P-2H



IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_COMP, C_VA	4	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	4	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
F-1,1A	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-2	1	GMA-3	FUSIBLE 3 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2H	1	M-8100-2430	PANNEAU 24"x30"x9.5"
TX-1	1	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
UNT-2-18, 2-19	2	AS-UNT1141-1	RÉGULATEUR UNITAIRE 6A/12A/40A/80A



1 - PANNEAU P-2H

JOHNSON
CONTROLS
Groupe de la régulation

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-18.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Terminal Unit Applications
Application Name : Fan Coil
Configuration History:

QUESTION AND ANSWER SESSION

Select heating type:
None
Select cooling type:
None
Fan cycled during occupied and standby modes?
No
Is lighting required?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
No

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:
AI to BO
Input conditioning:
None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

Yes

Analog Inputs: AI - 1

Binary Inputs: BI - 1

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
* AI	1	AI - 1	AI - 1
AI	3	Zone Temp	ZN-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
* BI	1	BI - 1	BI - 1
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3
* BI	4	BI - 4	BI - 4

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
* BO	4	BO - 4	BO - 4

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****

BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	22.2

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-118.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
Pressure independent
Actuator for the VAV box damper:
VMA integrated actuator
Fan type and output type:
No fan
Exhaust box actuator type:
No exhaust box
Heating configuration:
None (cooling only)
Thermostat type:
No remote adjustment
Button for occupancy mode, and its action when pressed:
No occupancy button
Sensor for occupancy mode, and its action:
No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
No
Binary input for Low Limit mode?
No
Summer/winter compensation of zone setpt based on outdoor air temp:
None
Lighting control:
No lighting control
Separate control loop:
None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.021750793

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	116
ADF	164	Occupied Clg Min	OCCCMIN	116
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	116
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	2
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	116

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
-----	----	---------------	---------	-------

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-118) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-118) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-171-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-172 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

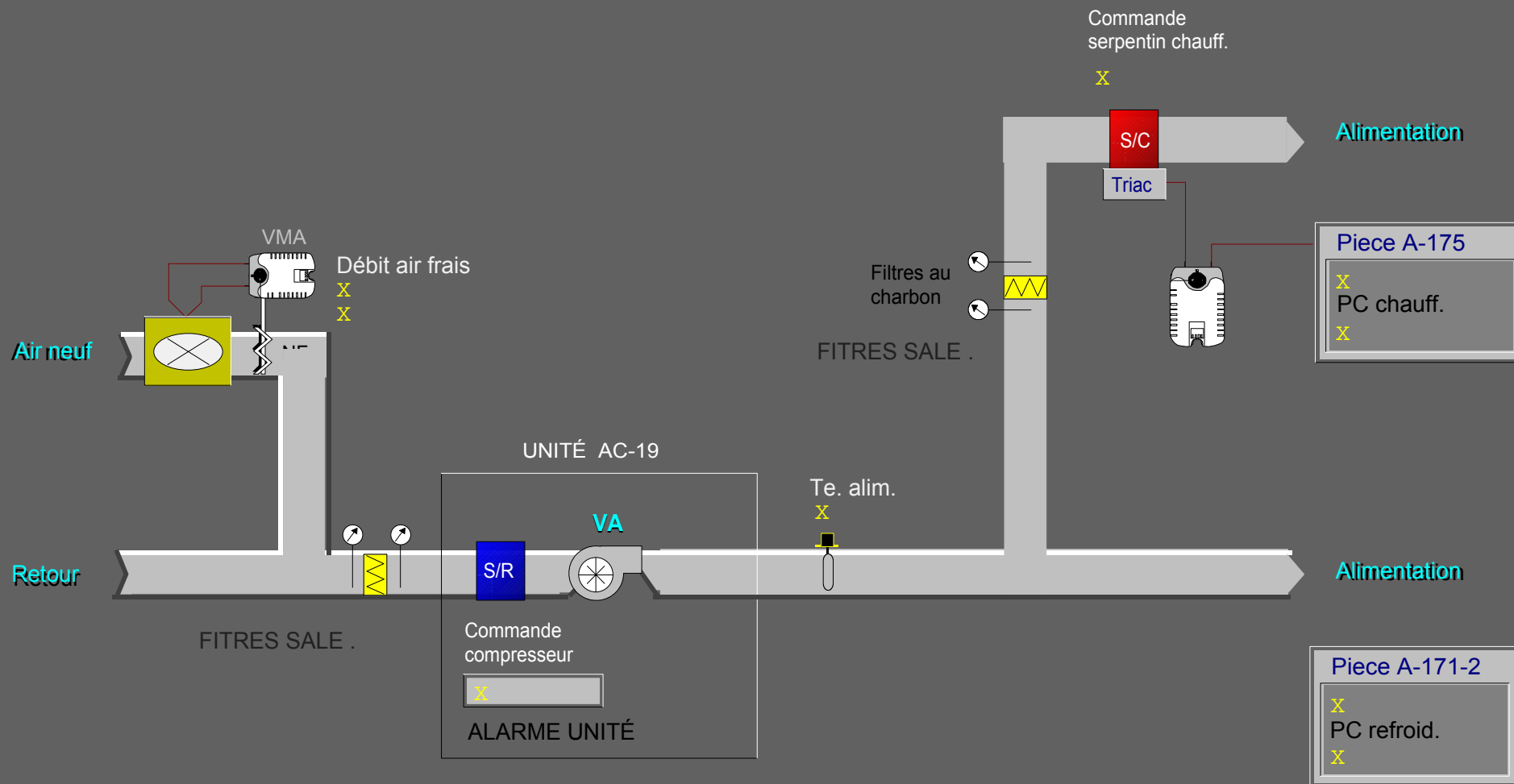
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminals on sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminals on entrée	Appareil	Terminals on sortie	Emplac.	Câble / tube	Terminals on entrée	Appareil	Calibration			
		AC-18				UNT	UNT 141					P-2H	Salle méc. A-213													Alimentation 24VAC	
2-118-AI-1	AI-1	AC-18	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	18	AI-1	PHONE JACK	P-2H	Salle méc. A-213	4068-079	2H-18-AI-1		8/24	Prise tél.	Metastat-Prise télep					UV2	Tronc N2		
2-118-AI-2	AI-2	AC-18				UNT	UNT 141	1	18	AI-2		P-2H	Salle méc. A-213		2H-18-AI-2											Sonde située dans local A-172	
2-118-AI-3	AI-3	AC-18	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	18	AI-3	AI3,AICM	P-2H	Salle méc. A-213	4068-079	2H-18-AI-3		2/18	2 fils	TE (Gaine)					UV1			
AI-4	AC-18					UNT	UNT 141	1	18	AI-4		P-2H	Salle méc. A-213		2H-18-AI-4												
AI-5	AC-18					UNT	UNT 141	1	18	AI-5		P-2H	Salle méc. A-213		2H-18-AI-5												
AI-6	AC-18					UNT	UNT 141	1	18	AI-6		P-2H	Salle méc. A-213		2H-18-AI-6												
2-118-BI-1	BI-1	AC-18	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	1	18	BI-1	BI1,24VAC	P-2H	Salle méc. A-213	4068-079	2H-18-BI-1		2/18	Selon dispositif	H-708					UV70		
2-118-BI-2	BI-2	AC-18	E_FILT	État des filtres	Normal	Sales	UNT	UNT 141	1	18	BI-2	BI2,24VAC	P-2H	Salle méc. A-213	4068-079	2H-18-BI-2		2/18	P32 (NO)						UV70		
2-118-BI-3	BI-3	AC-18	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	18	BI-3	BI3,24VAC	P-2H	Salle méc. A-213	4068-079	2H-18-BI-3		2/18	Selon dispositif	Contact (NO)					UV70		
2-118-BI-4	BI-4	AC-18	E_FILT_C	État des filtres charbon	Normal	Sales	UNT	UNT 141	1	18	BI-4	BI4,24VAC	P-2H	Salle méc. A-213	4068-079	2H-18-BI-4		2/18	Y.R	P32 (NO)					UV70		
2-118-BO-1	BO-1	AC-18	C_VA	Comm.a/d vent.alm.	Arrêt	Marche	UNT	UNT 141	1	18	BO-1	BO1,COM	P-2H	Salle méc. A-213	4068-079	2H-18-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
BO-2	AC-18					UNT	UNT 141	1	18	BO-2		P-2H	Salle méc. A-213		2H-18-BO-2												
BO-3	AC-18					UNT	UNT 141	1	18	BO-3		P-2H	Salle méc. A-213		2H-18-BO-3												
2-118-BO-4	BO-4	AC-18	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	1	18	BO-4	BO4,COM	P-2H	Salle méc. A-213	4068-079	2H-18-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
BO-5	AC-18					UNT	UNT 141	1	18	BO-5		P-2H	Salle méc. A-213		2H-18-BO-5												
BO-6	AC-18					UNT	UNT 141	1	18	BO-6		P-2H	Salle méc. A-213		2H-18-BO-6												
2-118-AO-1	AO-1	AC-18	C_SC	Comm.serpentin chauffage	%	UNT	UNT 141	1	18	AO-1	AO1,AOCOM	P-2H	Salle méc. A-213	4068-079	2H-18-AO-1	2/18	+-	EP-8000	SUPPLY_O		1/4"	Raccord à crans	EP-PNEU		UV27	Convert. 0-10VDC à impulsions (Serp. SE-11	
AO-2	AC-18					UNT	UNT 141	1	18	AO-2		P-2H	Salle méc. A-213		2H-18-AO-2											Alimentation 24VAC	
		AC-18				VMA	VMA 1410					P-2	Unité AC-18													Tronc N2	
2-118-AI-1	AI-1	AC-18	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	118	AI-1	AI1,AICM	P-2	Unité AC-18	4068-079	2-118-AI-1				VMA		2 fils	Résistance 1000 ohms		VMA1			
AI-2	AC-18					VMA	VMA 1410	1	118	AI-2		P-2	Unité AC-18		2-118-AI-2												
BI-1	AC-18					VMA	VMA 1410	1	118	BI-1		P-2	Unité AC-18		2-118-BI-1												
BI-2	AC-18					VMA	VMA 1410	1	118	BI-2		P-2	Unité AC-18		2-118-BI-2												
BI-3	AC-18					VMA	VMA 1410	1	118	BI-3		P-2	Unité AC-18		2-118-BI-3												
2-118-AI-5	AI-5	AC-18	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	118	AI-5		P-2	Unité AC-18	4068-079	2-118-AI-5											Air neuf AC-18	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-18

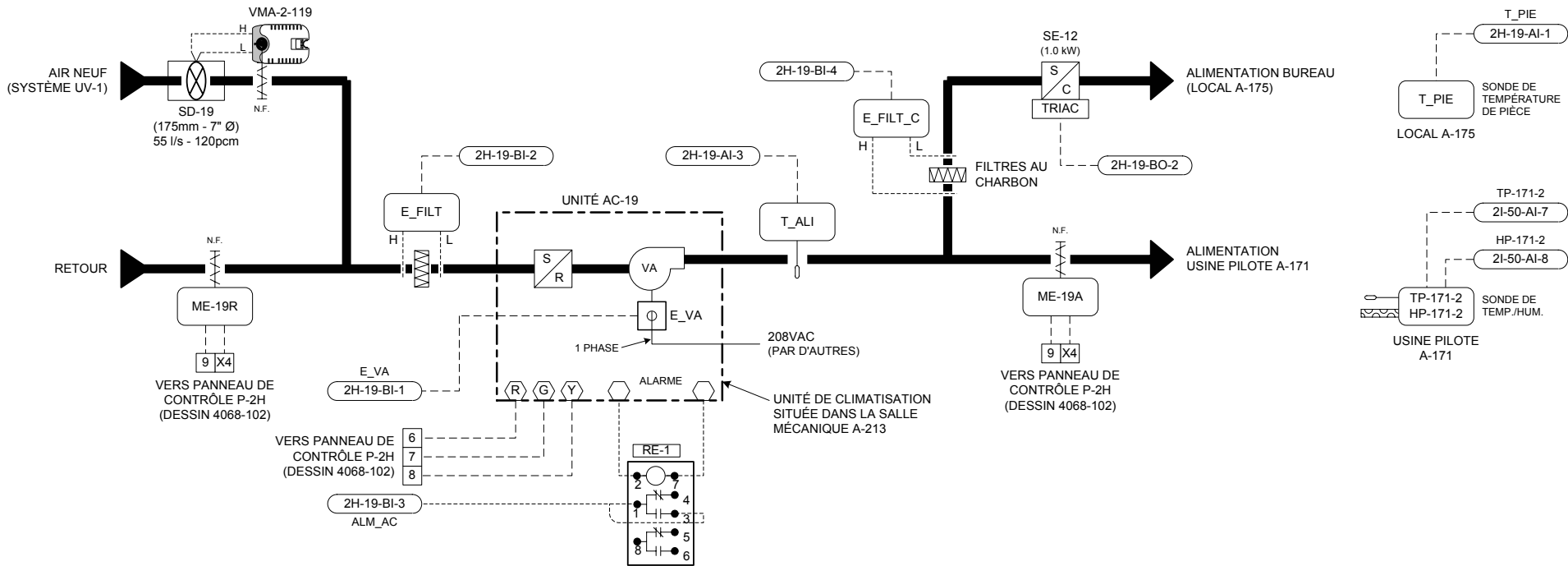
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
ME-18A, ME-18R	ACTUATEUR DE VOLET 2 POSITIONS AVEC RESSORT DE RAPPEL, 24 VAC	M9206-AGA-2	JOHNSON CONTROLS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-18	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-171-1, HP-171-1	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-118	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2H

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2H	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-18, UNT-2-19	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-19 - LOCAUX A-171 ET A-175
(TYPE 4 - USINE PILOTE A-171)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
ME-18A, ME-18R	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	2	M9206-AGA-2	ACTUATEUR DE VOLET 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-171-1 / HP-171-1	1	HE-67N2-0N00P	SONDE DE TEMP / HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-118	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-18	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

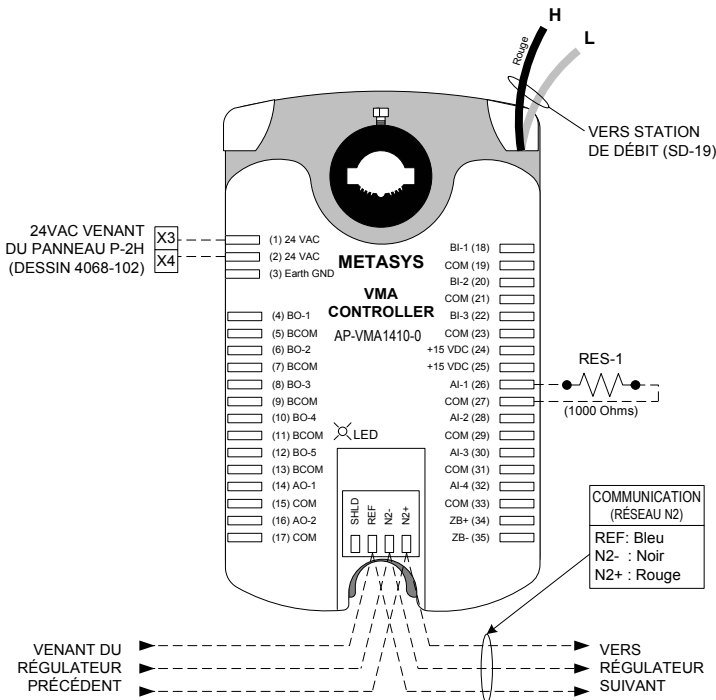
- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-119) est fermé.

EN MARCHÉ:

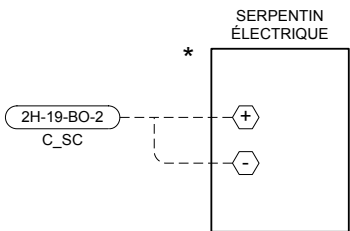
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-119) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-171-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-175 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (C_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-119)



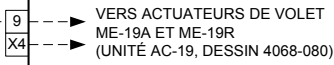
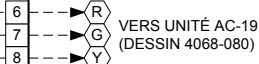
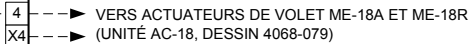
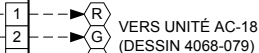
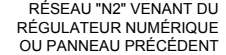
RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-12)



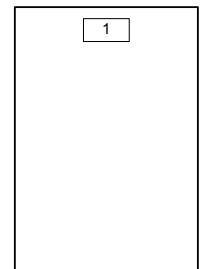
VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-171

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-19 Type 4 (Usine pilote A-171) (Locaux A-171 et A-175)		2	POUR CONSTRUCTION		09/18/2001	D.B.
		1	POUR APPROBATION		06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	PAR	DATE	APPROUVE
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-080

P-2H



IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_COMP, C_VA	4	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	4	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
F-1,1A	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-2	1	GMA-3	FUSIBLE 3 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2H	1	M-8100-2430	PANNEAU 24"x30"x9.5"
TX-1	1	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
UNT-2-18, 2-19	2	AS-UNT1141-1	RÉGULATEUR UNITAIRE 6A/12A/40A/80A



1 - PANNEAU P-2H

JOHNSON
CONTROLS
Groupe de la régulation

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-19.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Terminal Unit Applications
Application Name : Fan Coil
Configuration History:

QUESTION AND ANSWER SESSION

Select heating type:
None
Select cooling type:
None
Fan cycled during occupied and standby modes?
No
Is lighting required?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
No

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:
AI to BO
Input conditioning:
None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

Yes

Analog Inputs: AI - 1

Binary Inputs: BI - 1

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
* AI	1	AI - 1	AI - 1
AI	3	Zone Temp	ZN-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
* BI	1	BI - 1	BI - 1
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3
* BI	4	BI - 4	BI - 4

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
* BO	4	BO - 4	BO - 4

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****

BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	22.2

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-119.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.020779654

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	120
ADF	164	Occupied Clg Min	OCCCMIN	120
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	116
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	1.7
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	120

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
-----	----	---------------	---------	-------

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-119) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-119) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-171-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-175 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (C_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

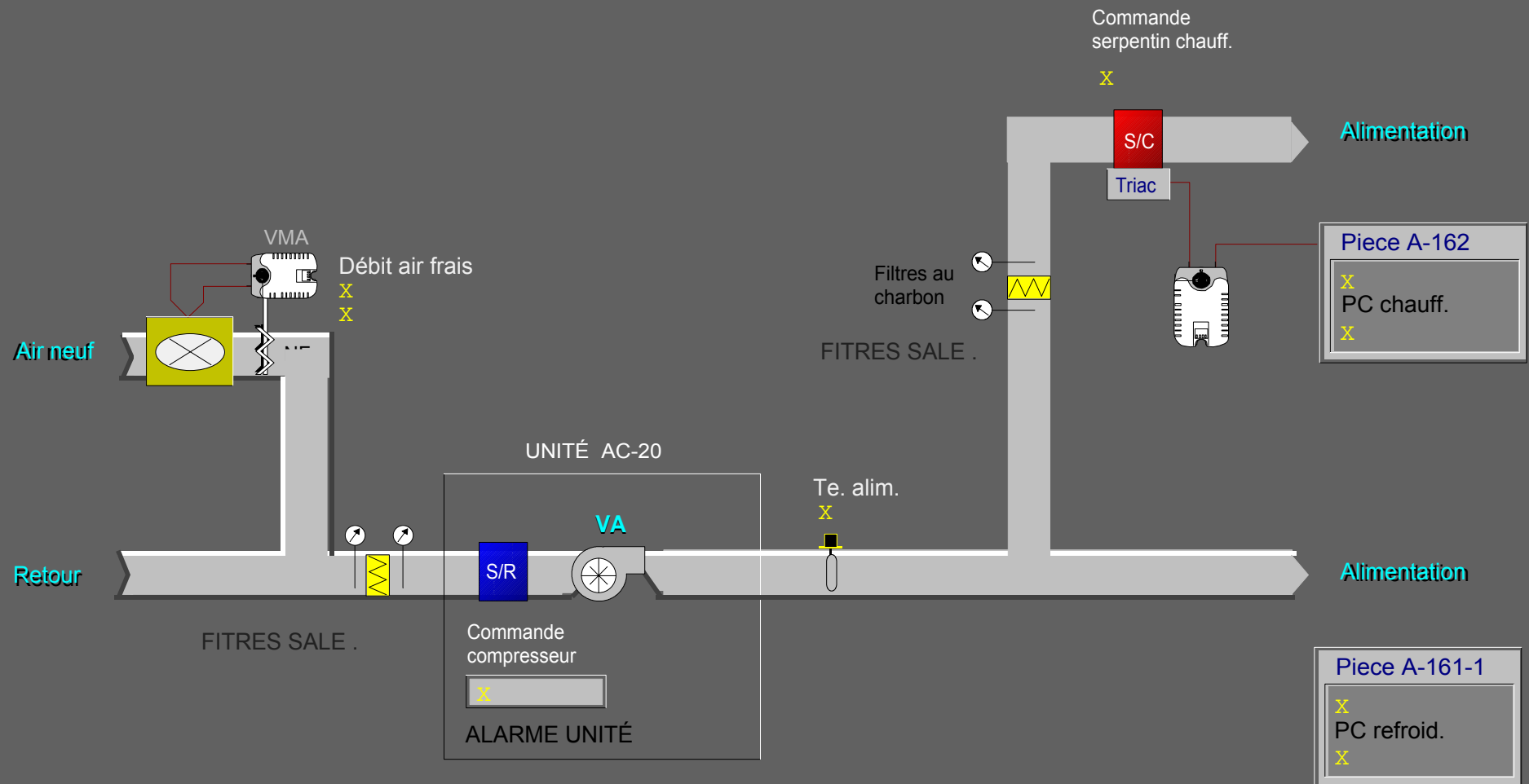
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-19				UNT	UNT 141					P-2H	Salle méc. A-213													Alimentation 24VAC
2-J-19-AI-1	AI-1	AC-19	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	19	AI-1	PHONE JACK	P-2H	Salle méc. A-213	4068-080	2H-19-AI-1		8/24	Prise tél.	Metastat-Prise télép					UV2		Tronc N2
2-J-19-AI-3	AI-3	AC-19	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	19	AI-3	AI3,AICM	P-2H	Salle méc. A-213	4068-080	2H-19-AI-3		2/18	2 fils	TE (Gaine)					UV1		Sonde située dans local A-175
AI-4	AC-19					UNT	UNT 141	1	19	AI-4		P-2H	Salle méc. A-213		2H-19-AI-4											
AI-5	AC-19					UNT	UNT 141	1	19	AI-5		P-2H	Salle méc. A-213		2H-19-AI-5											
AI-6	AC-19					UNT	UNT 141	1	19	AI-6		P-2H	Salle méc. A-213		2H-19-AI-6											
2-J-19-BI-1	BI-1	AC-19	E_VA	État vent alimentation	Arrêt Marche	UNT	UNT 141	1	19	BI-1	BI1,24VAC	P-2H	Salle méc. A-213	4068-080	2H-19-BI-1		2/18	Selon dispositif	H-708					UV70		
2-J-19-BI-2	BI-2	AC-19	E_FILT	État des filtres	Normal Sales	UNT	UNT 141	1	19	BI-2	BI2,24VAC	P-2H	Salle méc. A-213	4068-080	2H-19-BI-2		2/18	Y.R	P32 (NO)					UV70		
2-J-19-BI-3	BI-3	AC-19	ALM_AC	Alarme unité AC	Normal Alarme	UNT	UNT 141	1	19	BI-3	BI3,24VAC	P-2H	Salle méc. A-213	4068-080	2H-19-BI-3		2/18	Selon dispositif	Contact (NO)					UV70		
2-J-19-BI-4	BI-4	AC-19	E_FILT_C	État des filtres charbon	Normal Sales	UNT	UNT 141	1	19	BI-4	BI4,24VAC	P-2H	Salle méc. A-213	4068-080	2H-19-BI-4		2/18	Y.R	P32 (NO)					UV70		
2-J-19-BO-1	BO-1	AC-19	C_VA	Comm.a/d vent.alm.	Arrêt Marche	UNT	UNT 141	1	19	BO-1	BO1,COM	P-2H	Salle méc. A-213	4068-080	2H-19-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
BO-2	AC-19					UNT	UNT 141	1	19	BO-2		P-2H	Salle méc. A-213		2H-19-BO-2											
BO-3	AC-19					UNT	UNT 141	1	19	BO-3		P-2H	Salle méc. A-213		2H-19-BO-3											
2-J-19-BO-4	BO-4	AC-19	C_COMP	Comm.a/d compresseur	Arrêt Marche	UNT	UNT 141	1	19	BO-4	BO4,COM	P-2H	Salle méc. A-213	4068-080	2H-19-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
BO-5	AC-19					UNT	UNT 141	1	19	BO-5		P-2H	Salle méc. A-213		2H-19-BO-5											
BO-6	AC-19					UNT	UNT 141	1	19	BO-6		P-2H	Salle méc. A-213		2H-19-BO-6											
2-J-19-AO-1	AO-1	AC-19	C_SC	Comm.serpentin chauffage	%	UNT	UNT 141	1	19	AO-1	AO1,AOCOM	P-2H	Salle méc. A-213	4068-080	2H-19-AO-1	2/18	+-	EP-8000	SUPPLY O		1/4"	Raccord à crans	EP-PNEU		UV27	Convert. 0-10VDC à impulsions (Serp. SE-12
AO-2	AC-19					UNT	UNT 141	1	19	AO-2		P-2H	Salle méc. A-213		2H-19-AO-2											
						VMA	VMA 1410					P-2	Unité AC-19													Alimentation 24VAC
		AC-19				VMA	VMA 1410	1	119			P-2	Unité AC-19													Tronc N2
2-119-AI-1	AI-1	AC-19	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	119	AI-1	AI1,AICM	P-2	Unité AC-19	4068-080	2-119-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1	
AI-2	AC-19					VMA	VMA 1410	1	119	AI-2		P-2	Unité AC-19		2-119-AI-2											
BI-1	AC-19					VMA	VMA 1410	1	119	BI-1		P-2	Unité AC-19		2-119-BI-1											
BI-2	AC-19					VMA	VMA 1410	1	119	BI-2		P-2	Unité AC-19		2-119-BI-2											
BI-3	AC-19					VMA	VMA 1410	1	119	BI-3		P-2	Unité AC-19		2-119-BI-3											
2-119-AI-5	AI-5	AC-19	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	119	AI-5		P-2	Unité AC-19	4068-080	2-119-AI-5											Air neuf AC-19

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-19

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
ME-19A, ME-19R	ACTUATEUR DE VOLET 2 POSITIONS AVEC RESSORT DE RAPPEL, 24 VAC	M9206-AGA-2	JOHNSON CONTROLS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-19	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-171-2, HP-171-2	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-119	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2H

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2H	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-18, UNT-2-19	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-20 - LOCAUX A-161 ET A-162
(TYPE 4 - USINE PILOTE A-161)

Le schéma illustre le processus de refroidissement de l'air neuf (AIR NEUF) par un système UV-1 (SD-20) et un échangeur d'air (VMA-2-120). L'air est ensuite filtré (E_FILT) et distribué vers l'alimentation bureau (LOCAL A-162) et l'alimentation usine pilote A-161. L'unité AC-20 est alimentée par une phase 208VAC et dispose d'un système de contrôle (P-21) et d'un alarme (ALARME). Des sondes de température (T_PIE) et d'humidité (HP-161-1) sont installées dans les locaux A-162 et A-161.

<u>LISTE DE MATÉRIEL</u>			
IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILTER, E_FILTER_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
			TUBE DE PITOT 4" (100mm)
E_VALVE	2	FTG18A-600R	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALARM	1	H-708	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIPE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-161-1 / HP-161-1	1	TE-6314P-1	SONDE DE TEMP / HUMIDITÉ, 1000 OHMS NI,
		HE-67N2-0N00P	0-10VDC 0-100%HR, ± 2%HR
VMA-2-120	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFH82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-20	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-120) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-120) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-161-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-162 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-120)

METASYS
VMA
CONTROLLER
AP-VMA1410-0

24VAC VENANT DU PANNEAU P-21 (DESSIN 4068-103)

VERS STATION DE DÉBIT (SD-20)

RES-1 (1000 Ohms)

COMMUNICATION (RÉSEAU N2)

REF: Bleu
N2- : Noir
N2+ : Rouge

VENANT DU RÉGULATEUR PRÉCÉDENT

VERS RÉGULATEUR SUIVANT

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-13)

SERPENTIN ÉLECTRIQUE

2I-50-DO-8
C_SC

Titre du Dessin

Unité de climatisation AC-20
Type 4 (Usine pilote A-161)
(Locaux A-161 et A-162)

Nom du Projet

CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-120)

METASYS
VMA
CONTROLLER
AP-VMA1410-0

24VAC VENANT DU PANNEAU P-21 (DESSIN 4068-103)

VERS STATION DE DÉBIT (SD-20)

RES-1 (1000 Ohms)

COMMUNICATION (RÉSEAU N2)

REF: Bleu
N2- : Noir
N2+ : Rouge

VENANT DU RÉGULATEUR PRÉCÉDENT

VERS RÉGULATEUR SUIVANT

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-13)

SERPENTIN ÉLECTRIQUE

2I-50-DO-8
C_SC


Titre du Dessin

Unité de climatisation AC-20
Type 4 (Usine pilote A-161)
(Locaux A-161 et A-162)

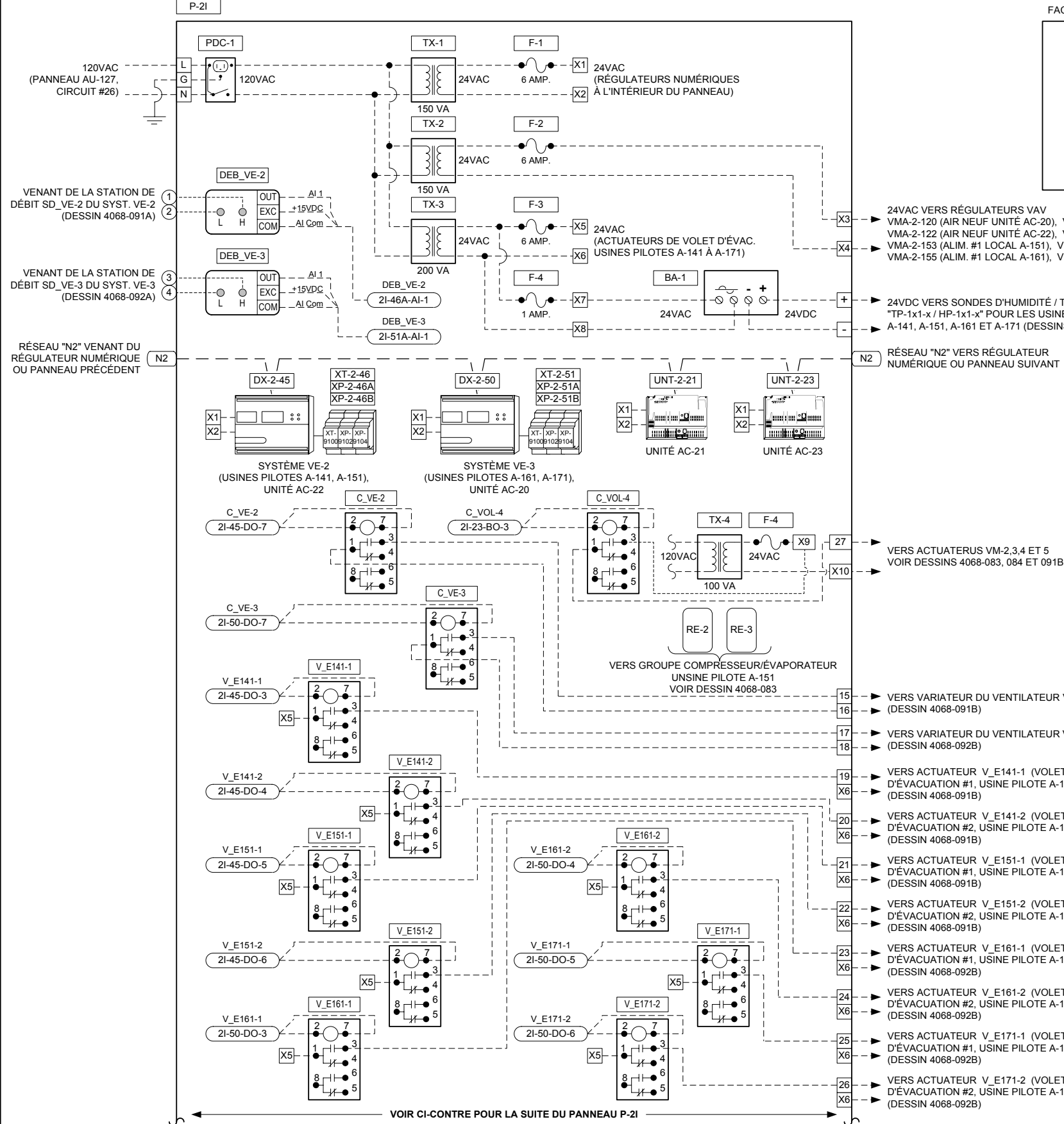
Nom du Projet

CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)

VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-161

Titre du Dessin Unité de climatisation AC-20 Type 4 (Usine pilote A-161) (Locaux A-161 et A-162)			3	TEL QUE CONSTRUIT	D.B.	02/04/2019	O.P.
			2	POUR CONSTRUCTION		09/18/2001	D.B.
			1	POUR APPROBATION		06/12/2001	D.B.
	DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE
Représentant J.-C. Rouillon	Gérant De Projet S. Bourque	Concepteur D. Bouchard	DESSINE			APPROUVE	
			PAR	D.B.	DATE	05/22/2001	PAR
Nom du Projet	Information Succursale			NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	 Groupe de la réglementation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093	
						NUMÉRO DESSIN 4068-081	

PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

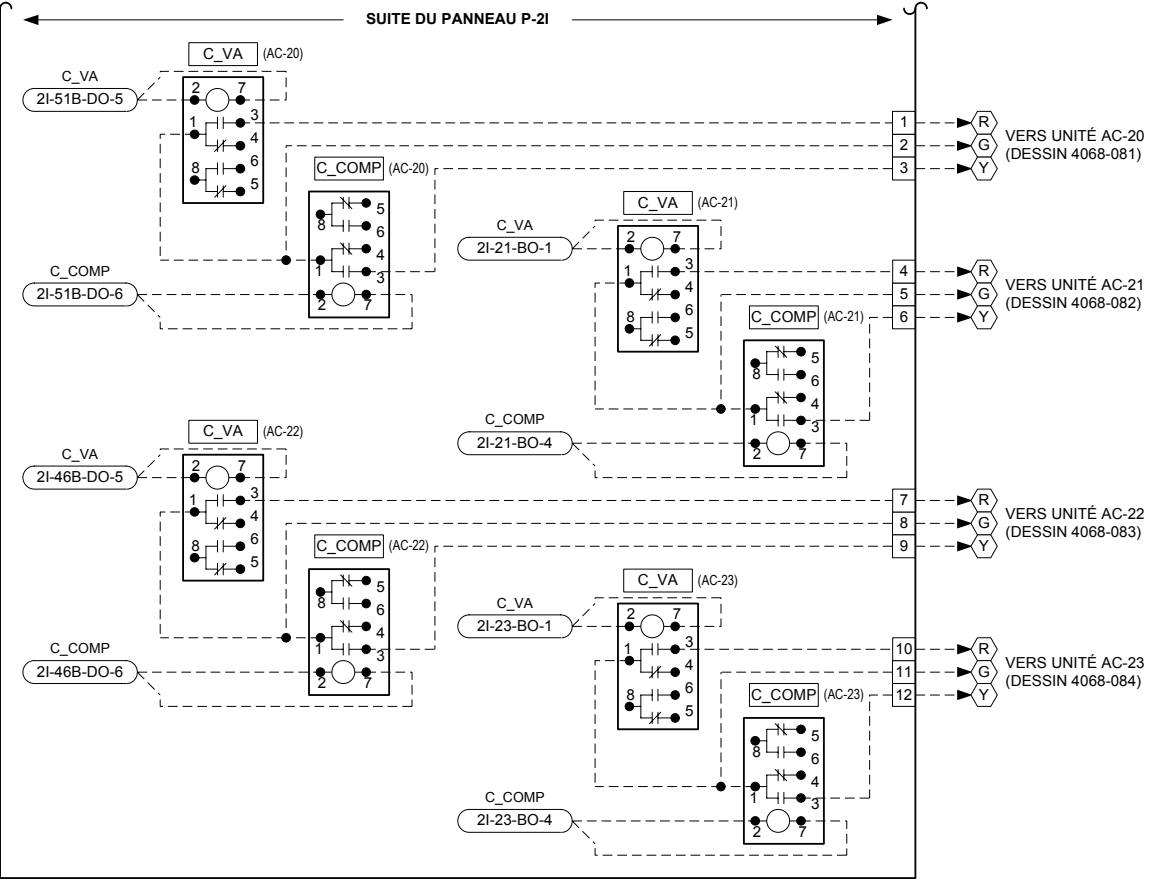
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PANNEAU P-2I

LISTE DE MATÉRIEL

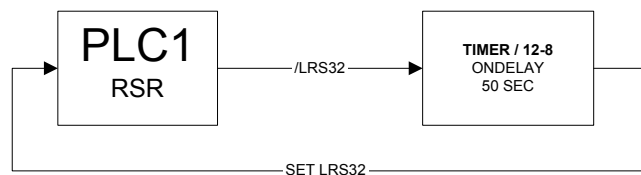
IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	10	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
DX-2-45, 2-50	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120/24Vac., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

SUITE DU PANNEAU P-2I

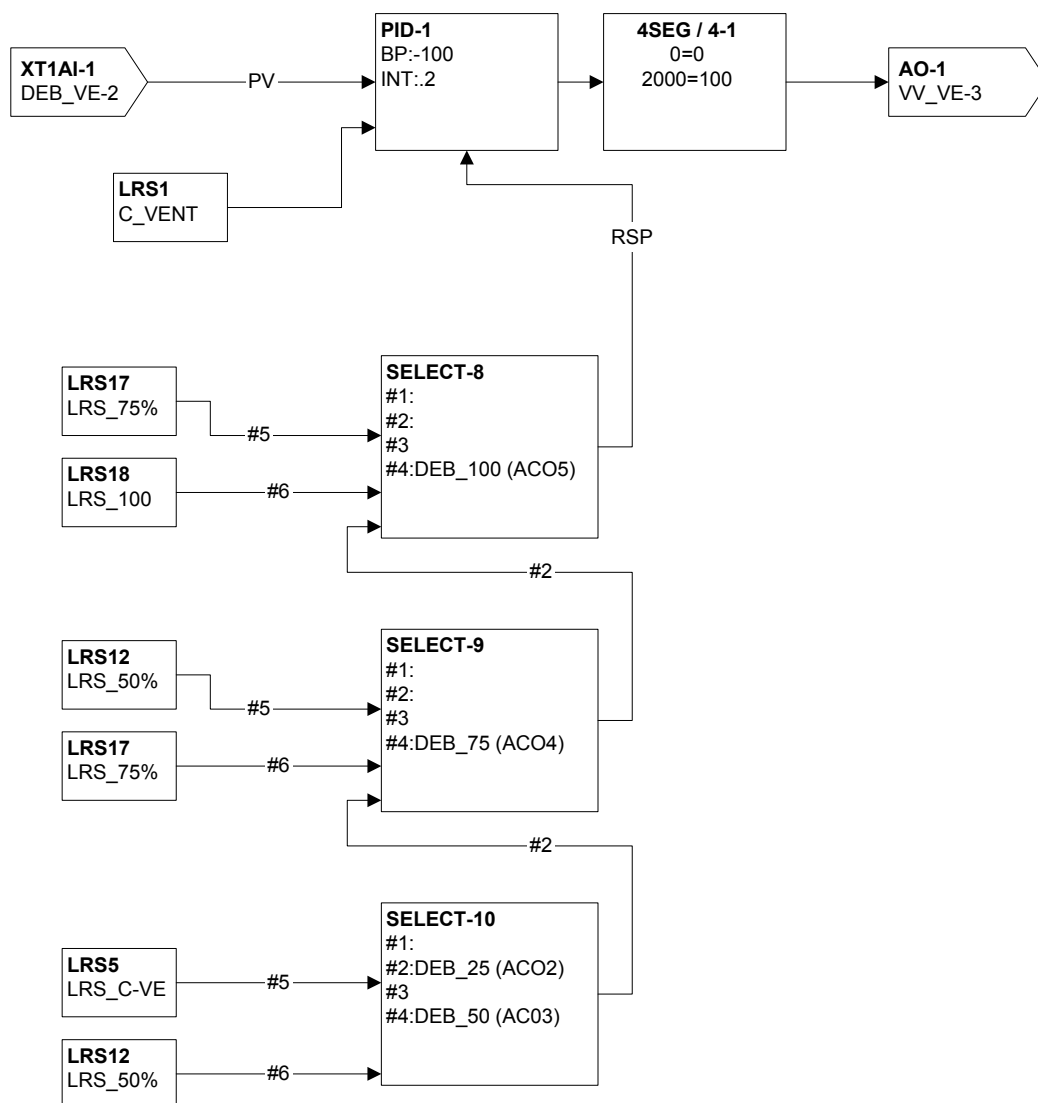


Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
Salle mécanique A-212			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
(Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)							
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE		JOHNSON CONTROLS		Johnson Controls Ltée		1096-0093	
Projet d'Innovation Technologique		Groupe de la régulation		355, boul. Montpellier		NUMÉRO DESSIN	
3600, boul. Casavant				St-Laurent, Qc, H4N 2G6		4068-103	
St-Hyacinthe (Québec)				Tél: (514) 747-2580			
				Fax: (514) 747-9562			

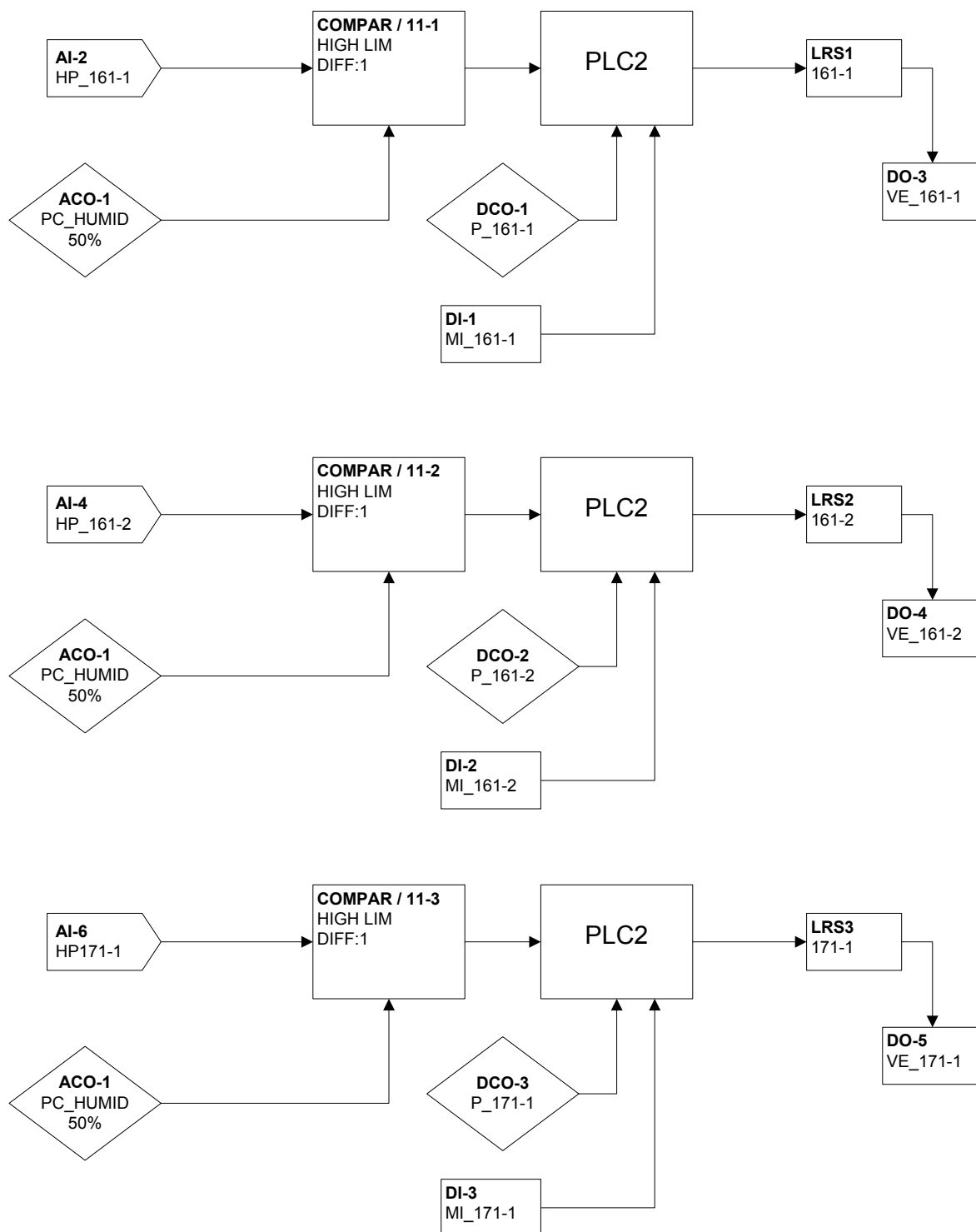
REDEMARRAGE APRES PANNE (DX-2-50)



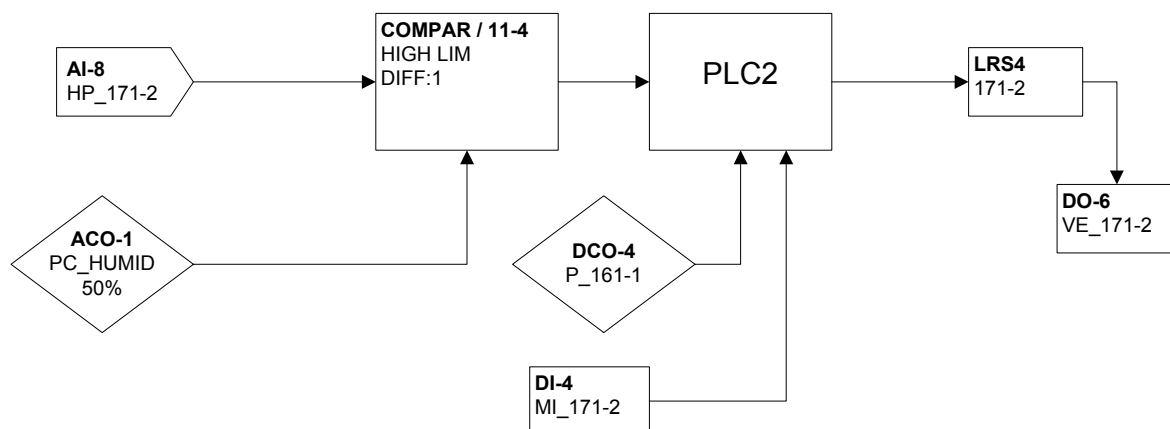
COMMANDE VENTILATEUR EVACUATION



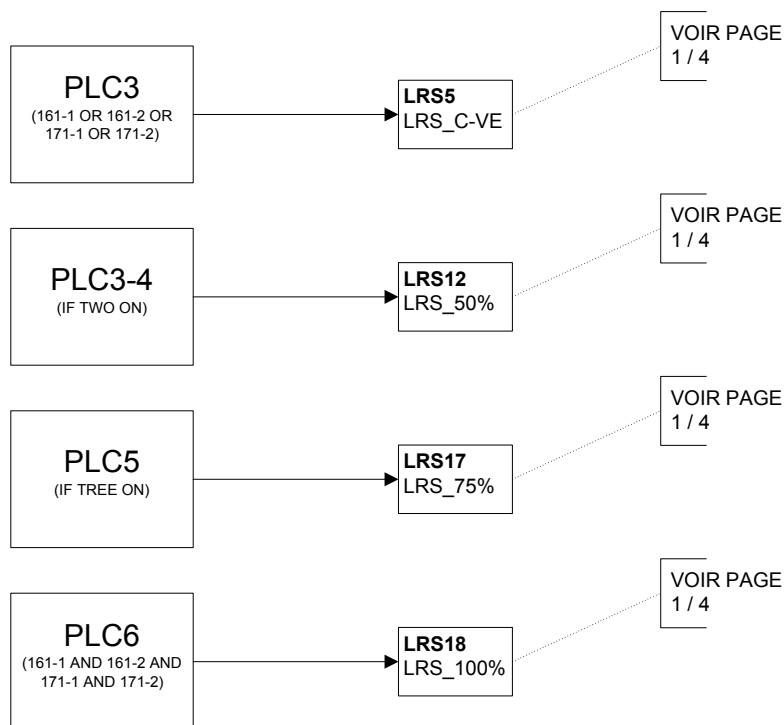
VITESSE VENTILATEUR EVACUATION



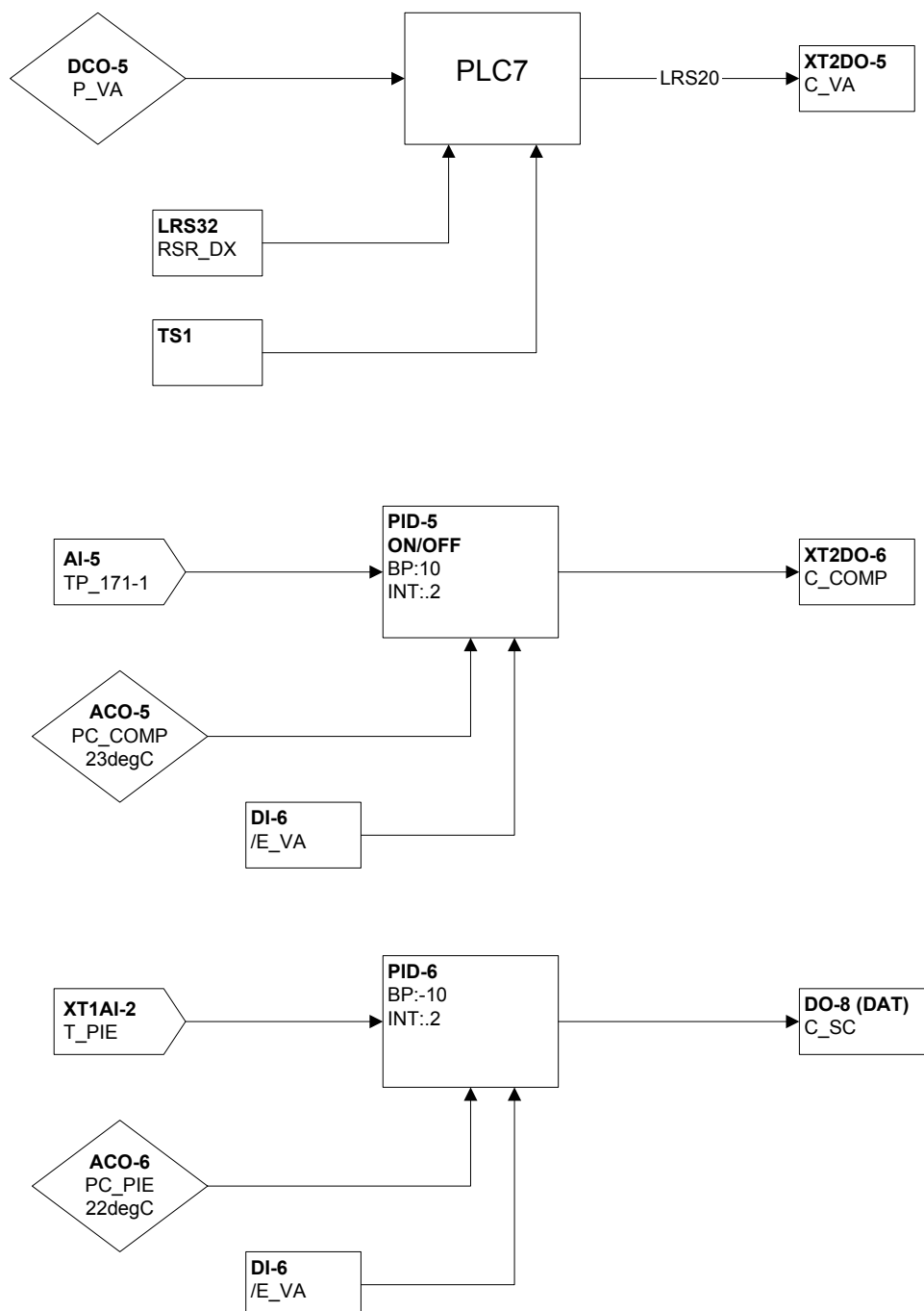
VITESSE VENTILATEUR EVACUATION (SUITE)



LOGIQUE OUVERTURE VOLETS



CONTROLE UNITE CLIMATISATION AC-20



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 50
Numéro du dessin : 4068-91
Système : Système VE-3 A-161 A-171

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE A-161 #1		
2	HUMIDITE PIECE A-161 #1		
3	TEMP. PIECE A-161 #2		
4	HUMIDITE PIECE A-161 #2		
5	TEMP. PIECE A-171 #1		
6	HUMIDITE PIECE A-171 #1		
7	TEMP. PIECE A-171 #2		
8	HUMIDITE PIECE A-171 #2		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	MINUTERIE PIECE A-161 #1	Off =arrêt / On marche	1
2	MINUTERIE PIECE A-161 #2	Off =arrêt / On marche	1
3	MINUTERIE PIECE A-171 #1	Off =arrêt / On marche	1
4	MINUTERIE PIECE A-171 #2	Off =arrêt / On marche	1
5			
6	ETAT VENT. ALIMENTATION	Off =arrêt / On marche	1
7	ETAT FILTRES	Off = normal / On = sale	1
8	ETAT FILTRES CHARBON	Off = normal / On = sale	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VARIATEUR VENT EVAC VE2	Z1	0% = Min. / 100% = Max.
2			
3	VOLET EVAC PIECE A-161 #1	LRS1	Off = ferme / On = ouvert
4	VOLET EVAC PIECE A-161 #2	LRS2	Off = ferme / On = ouvert
5	VOLET EVAC PIECE A-171 #1	LRS3	Off = ferme / On = ouvert
6	VOLET EVAC PIECE A-171 #2	LRS4	Off = ferme / On = ouvert
7	COMM VENT EVAC VE-3	DCO5	Off = arrêt / On = depart
8	COMM SERPENTIN CHAUFF.	Z6	Off = arrêt / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	Select - 4	XT1X1 Debit VE-3	0 = Min. / 2000 = Max.
2	ACO5	X5 Temp. 171-1	0%= Min. / 100%= Max.
3	ACO6	XT1X2 Temp. piece 162	0%= Min. / 100%= Max.
4	4 Segment		
5			
6			
7			
8	Select		
9	Select		
10	Select		
11	Comparateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-100	.2	
2	10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	50%	PC Humidité
2	435 cfm	Debit evacuation 25%
3	870 cfm	Debit evacuation 50%
4	1305 cfm	Debit evacuation 75%
5	23 deg C	PC Compresseur refrigeration
6	22 deg C	PC Chauffage piece 162
7	1740 cfm	Debit evacuation 100%
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission volet 161-1
2	ON	Permission volet 161-2
3	ON	Permission volet 171-1
4	ON	Permission volet 171-2
5	ON	Permission ventilateur alimentation
6		
7		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-91
Système : Système VE-3 A-161 A-171
Adresse du NCM : 2
Adresse du DX-9100 : 50
Adresse du XT : 51

Numero du XP : 1

Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
11	DEBIT D'EVACUATION		
12	TEMP. PIECE		
13	TEMP. ALIMENTATION		
14	INDICATION VITESSE VE-3		
15			
16			

Sorties Analogiques : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
17			
18			

Numero du XP : 2

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point		Précaler
19	ALARME UNITE AC	Off = arrêt / On = marche	1
20			
21			
22			

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
23	COMM A/D VENT ALIM		Off = arrêt / On = marche
24	COMM A/D COMPRESSEUR		Off = arrêt / On = marche
25			
26			

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-120.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.022429317

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	120
ADF	164	Occupied Clg Min	OCCCMIN	120
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	120
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	0.6
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	120

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
-----	----	---------------	---------	-------

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-120) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-120) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-161-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-162 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-20				VMA	VMA 1410					P-2	Unité AC-20													Alimentation 24VAC
		AC-20				VMA	VMA 1410	1	120			P-2	Unité AC-20													Tronc N2
2-120-AI-1	AI-1	AC-20	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	120	AI-1	AI1 AI-CM	P-2	Unité AC-20	4068-081	2-120-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1	
	AI-2	AC-20				VMA	VMA 1410	1	120	AI-2		P-2	Unité AC-20		2-120-AI-2											
	BI-1	AC-20				VMA	VMA 1410	1	120	BI-1		P-2	Unité AC-20		2-120-BI-1											
	BI-2	AC-20				VMA	VMA 1410	1	120	BI-2		P-2	Unité AC-20		2-120-BI-2											
	BI-3	AC-20				VMA	VMA 1410	1	120	BI-3		P-2	Unité AC-20		2-120-BI-3											
2-120-AI-5	AI-5	AC-20	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	120	AI-5		P-2	Unité AC-20	4068-081	2-120-AI-5											Air neuf AC-20

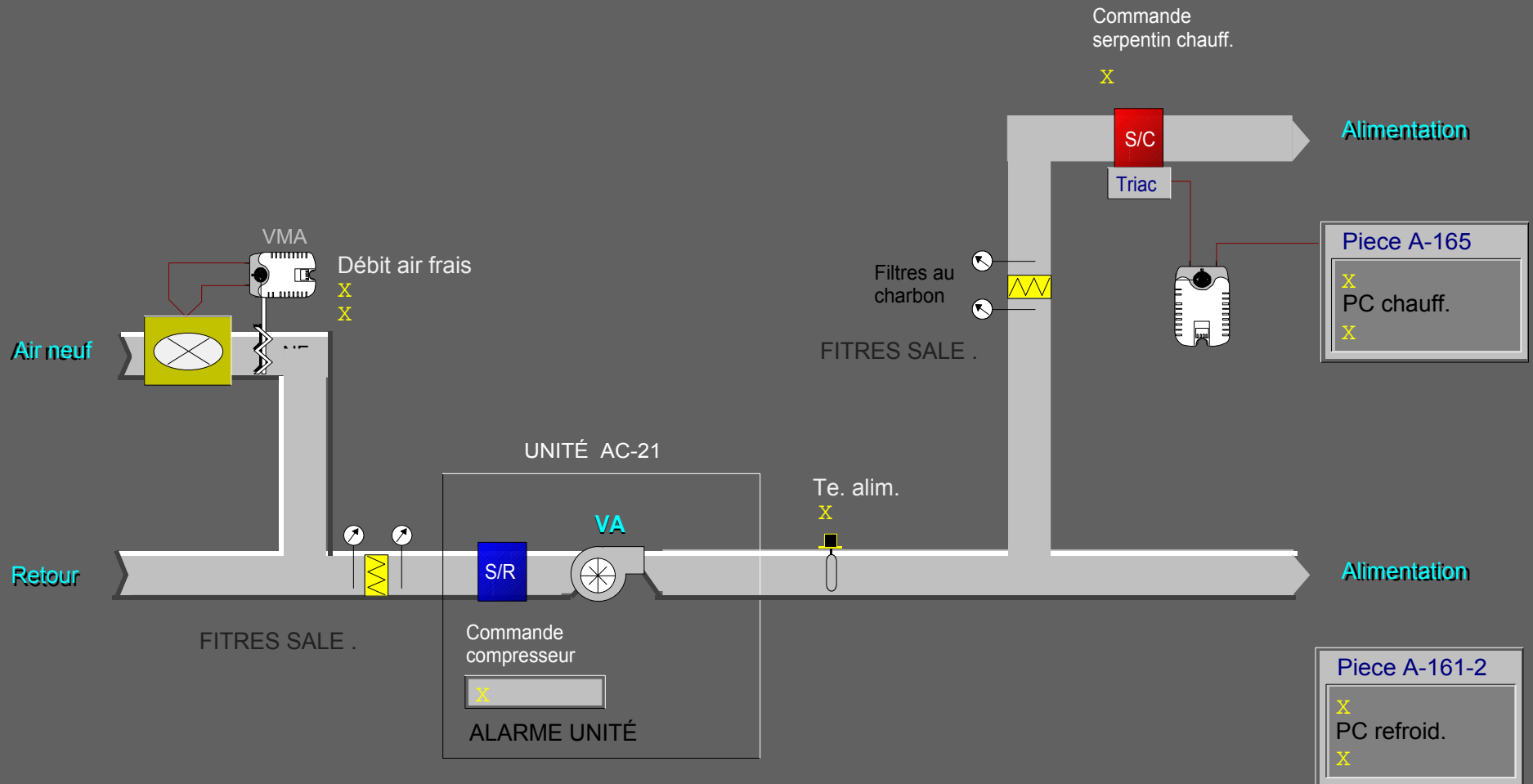
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau				Détail de réf.	Commentaires			
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble tube	Terminaisons entrée			Appareil	Calibration	
2i-50-DO-3	DO-3	USINES-3	V. E161-1	Volet évac.pèce A-141#1	Fermé	Ouvrnt	DX9100 DX 9100	1	50	DO-3	DO3.COM	P-21	Salle méc. A-212	4068-092B	2i-50-DO-3	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"	DX64	Alimentation 24VAC Tronc N2		
2i-50-DO-4	DO-4	USINES-3	V. E161-2	Volet évac.pèce A-141#2	Fermé	Ouvrnt	DX9100 DX 9100	1	50	DO-4	DO4.COM	P-21	Salle méc. A-212	4068-092B	2i-50-DO-4	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"	DX64			
2i-50-DO-5	DO-5	USINES-3	V. E171-1	Volet évac.pèce A-151#1	Fermé	Ouvrnt	DX9100 DX 9100	1	50	DO-5	DO5.COM	P-21	Salle méc. A-212	4068-092B	2i-50-DO-5	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"	DX64			
2i-50-DO-6	DO-6	USINES-3	V. E171-2	Volet évac.pèce A-151#2	Fermé	Ouvrnt	DX9100 DX 9100	1	50	DO-6	DO6.COM	P-21	Salle méc. A-212	4068-092B	2i-50-DO-6	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"	DX64			
2i-50-DO-7	DO-7	USINES-3	C. VE-3	Comm.vent évac. VE-3	Arrêt	Marche	DX9100 DX 9100	1	50	DO-7	DO7.COM	P-21	Salle méc. A-212	4068-092B	2i-50-DO-7	2/18					2/14	Voir détail déma	Démarrneur (H-735 mar/arr)	DX49			
2i-50-DO-8	DO-8	AC-20	C. SC	Comm serpent. chauffage	Arrêt	Marche	DX9100 DX 9100	1	50	DO-8	DO8.COM	P-21	Salle méc. A-212	4068-081	2i-50-DO-8	2/18		(Bobine) +,-	H-735	COM.NO	2/18	2	TE	Selon dispositif	SORT 24 V c.a.	DX51	Serpentin SE-13
2i-50-DI-1	DI-1	USINES-3	MI-161-1	Minuterie pièce A-141 #1	Inoccupé	Occupé	DX9100 DX 9100	1	50	DI-1	DI1.COM	P-21	Salle méc. A-212	4068-092A	2i-50-DI-1						2/18	Selon dispositif	Contact (NO)	DX70			
2i-50-DI-2	DI-2	USINES-3	MI-161-2	Minuterie pièce A-141 #2	Inoccupé	Occupé	DX9100 DX 9100	1	50	DI-2	DI2.COM	P-21	Salle méc. A-212	4068-092A	2i-50-DI-2						2/18	Selon dispositif	Contact (NO)	DX70			
2i-50-DI-3	DI-3	USINES-3	MI-171-1	Minuterie pièce A-151 #1	Inoccupé	Occupé	DX9100 DX 9100	1	50	DI-3	DI3.COM	P-21	Salle méc. A-212	4068-092A	2i-50-DI-3						2/18	Selon dispositif	Contact (NO)	DX70			
2i-50-DI-4	DI-4	USINES-3	MI-171-2	Minuterie pièce A-151 #2	Inoccupé	Occupé	DX9100 DX 9100	1	50	DI-4	DI4.COM	P-21	Salle méc. A-212	4068-092A	2i-50-DI-4						2/18	Selon dispositif	Contact (NO)	DX70			
2i-50-DI-5	DI-5						DX9100 DX 9100	1	50	DI-5		P-21	Salle méc. A-212	4068-092B	2i-50-DI-5												
2i-50-DI-6	DI-6	AC-20	E. VA	État vent alimentation	Arrêt	Marche	DX9100 DX 9100	1	50	DI-6	DI6.COM	P-21	Salle méc. A-212	4068-081	2i-50-DI-6						2/18	NO.COM	H-708		DX49		
2i-50-DI-7	DI-7	AC-20	E. FILT	État des filtres	Normal	Sales	DX9100 DX 9100	1	50	DI-7	DI7.COM	P-21	Salle méc. A-212	4068-081	2i-50-DI-7						2/18	Y.R	P32 (NO)		DX70		
2i-50-DI-8	DI-8	AC-20	E. FILT. C	État des filtres charbon	Normal	Sales	DX9100 DX 9100	1	50	DI-8	DI8.COM	P-21	Salle méc. A-212	4068-081	2i-50-DI-8						2/18	Y.R	P32 (NO)		DX70		
2i-50-AI-1	AI-1	USINES-3	TP-161-1	Temp.pèce A-141 #1			DX9100 DX 9100	1	50	AI-1	AI1.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-1						2/18	2 fils	TE		DX3		
2i-50-AI-2	AI-2	USINES-3	HP-161-1	Humidité pièce A-141 #1			DX9100 DX 9100	1	50	AI-2	AI2.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-2						2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)		DX6		
2i-50-AI-3	AI-3	USINES-3	TP-161-2	Temp.pèce A-141 #2			DX9100 DX 9100	1	50	AI-3	AI3.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-3						2/18	2 fils	TE		DX3		
2i-50-AI-4	AI-4	USINES-3	HP-161-2	Humidité pièce A-141 #2			DX9100 DX 9100	1	50	AI-4	AI4.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-4						2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)		DX6		
2i-50-AI-5	AI-5	USINES-3	TP-171-1	Temp.pèce A-151 #1			DX9100 DX 9100	1	50	AI-5	AI5.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-5						2/18	2 fils	TE		DX3		
2i-50-AI-6	AI-6	USINES-3	HP-171-1	Humidité pièce A-151 #1			DX9100 DX 9100	1	50	AI-6	AI6.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-6						2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)		DX6		
2i-50-AI-7	AI-7	USINES-3	TP-171-2	Temp.pèce A-151 #2			DX9100 DX 9100	1	50	AI-7	AI7.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-7						2/18	2 fils	TE		DX3		
2i-50-AI-8	AI-8	USINES-3	HP-171-2	Humidité pièce A-151 #2			DX9100 DX 9100	1	50	AI-8	AI8.AICOM	P-21	Salle méc. A-212	4068-092A	2i-50-AI-8						2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)		DX6		
2i-50-AO-1	AO-1	USINES-3	VV. VE-3	Variateur vent.évac.VE-3			DX9100 DX 9100	1	50	AO-1	AO1.AOCOM	P-21	Salle méc. A-212	4068-092A	2i-50-AO-1						2/18	Selon dispositif	SORTIE 0-10 V		DX22		
	AO-2						DX9100 DX 9100	1	50	AO-2		P-21	Salle méc. A-212		2i-50-AO-2												
	AO-9						DX9100 DX 9100	1	50	AO-9		P-21	Salle méc. A-212		2i-50-AO-9												
	AO-10						DX9100 DX 9100	1	50	AO-10		P-21	Salle méc. A-212		2i-50-AO-10												
	AO-11						DX9100 DX 9100	1	50	AO-11		P-21	Salle méc. A-212		2i-50-AO-11												
	AO-12						DX9100 DX 9100	1	50	AO-12		P-21	Salle méc. A-212		2i-50-AO-12												
	AO-13						DX9100 DX 9100	1	50	AO-13		P-21	Salle méc. A-212		2i-50-AO-13												
	AO-14						DX9100 DX 9100	1	50	AO-14		P-21	Salle méc. A-212		2i-50-AO-14												
							XT9100 XT (Expansion Module)					P-21	Salle méc. A-212												Alimentation 24VAC Tronc N2		
							XT9100 XT (Expansion Module)					P-21	Salle méc. A-212														
2i-51A-AI-1	XT1AI1	USINES-3	DEB. VE-3	Débit évacuation	Is		XP9102 XP 9102 (6A)	1	51	AI-1	AI1.AICOM.+15V	P-21	Salle méc. A-212	4068-099	2i-51A-AI-1						3/18	OUT.COM.EXC	DPT-2640 (0-5 VDC)		XP9		
2i-51A-AI-2	XT1AI2	AC-20	T. PIE	Temp.pèce			XP9102 XP 9102 (6A)	1	51	AI-2	AI2.AICOM	P-21	Salle méc. A-212	4068-081	2i-51A-AI-2						2/18	2 fils	TE		XP3	Sonde située dans local A-162	
2i-51A-AI-3	XT1AI3	AC-20	T. ALI	Temp.alimentation			XP9102 XP 9102 (6A)	1	51	AI-3	AI3.AICOM	P-21	Salle méc. A-212	4068-081	2i-51A-AI-3						2/18	2 fils	TE (Gaine)		XP3		
2i-51A-AI-4	XT1AI4	USINES-3	VIT. VE-3	Indication vitesse VE-3			XP9102 XP 9102 (6A)	1	51	AI-4	AI4.AICOM	P-21	Salle méc. A-212		2i-51A-AI-4						2/18	Device depende	ENT 0-20 mA ALIM EXT		XP2		
	XT1AI5						XP9102 XP 9102 (6A)	1	51	AI-5		P-21	Salle méc. A-212		2i-51A-AI-5												
	XT1AI6						XP9102 XP 9102 (6A)	1	51	AI-6		P-21	Salle méc. A-212		2i-51A-AI-6												
	XT1AO7						XP9102 XP 9102 (6A)	1	51	AO-7		P-21	Salle méc. A-212		2i-51A-AO-7												
	XT1AO8						XP9102 XP 9102 (6A)	1	51	AO-8		P-21	Salle méc. A-212		2i-51A-AO-8												
2i-51B-DI-1	XT2DI1	AC-20	ALM. AC	Alarme unité AC	Normal	Alarme	XP9104 XP 9104 (4C)	1	51	DI-1	DI1.COM	P-21	Salle méc. A-212	4068-081	2i-51B-DI-1						2/18	Selon dispositif	Contact (NO)		XP40		
	XT2DI2						XP9104 XP 9104 (4C)	1	51	DI-2		P-21	Salle méc. A-212		2i-51B-DI-2												
	XT2DI3						XP9104 XP 9104 (4C)	1	51	DI-3		P-21	Salle méc. A-212		2i-51B-DI-3												
	XT2DI4						XP9104 XP 9104 (4C)	1	51	DI-4		P-21	Salle méc. A-212		2i-51B-DI-4												
2i-51B-DO	XT2DO5	AC-20	C. VA	Comm.a/d vent.alim.	Arrêt	Marche	XP9104 XP 9104 (4C)	1	51	DO-5	DO5.COM	P-21	Salle méc. A-212	4068-081	2i-51B-DO-5	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarrneur (NO)		XP51		
2i-51B-DO	XT2DO6	AC-20	C. COMP	Comm.a/d compresseur	Arrêt	Marche	XP9104 XP 9104 (4C)	1	51	DO-6	DO6.COM	P-21	Salle méc. A-212	4068-081	2i-51B-DO-6	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démarrneur (NO)		XP51		
	XT2DO7						XP9104 XP 9104 (4C)	1	51	DO-7		P-21	Salle méc. A-212		2i-51B-DO-7												
	XT2DO8						XP9104 XP 9104 (4C)	1	51	DO-8		P-21	Salle méc. A-212		2i-51B-DO-8												

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-20

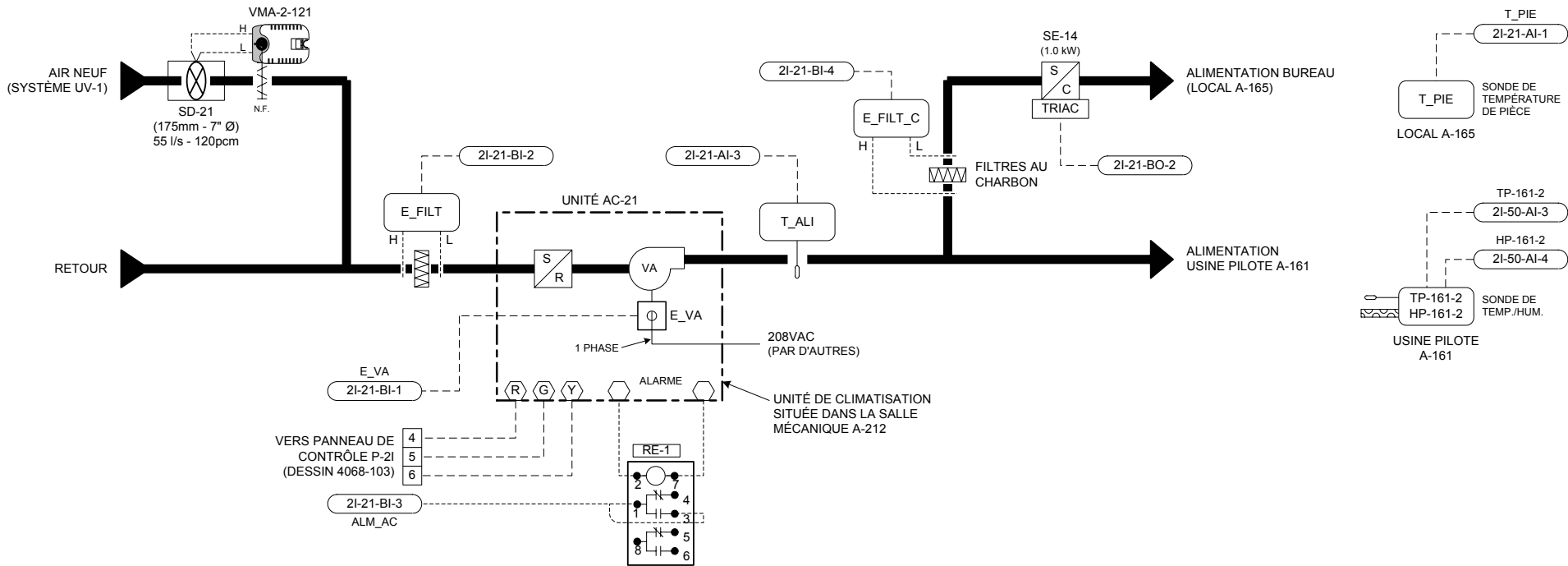
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-20	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-161-1, HP-161-1	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-120	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2I

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BA-1	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP.	PS-100-3	GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VOL-4	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_VE-2, VE-3	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%	DPT2640-0R1D-A	JOHNSON CONTROLS
DX-2-45, DX-2-50	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
F-1, F-2, F-3	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-4	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2I	PANNEAU 36"x48"x9.5"	M-8100-3648	JOHNSON CONTROLS
TX-1, TX-2	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
TX-3	TRANSFORMATEUR 120V/24V/100VA	MO200A	MARCUS
TX-4	TRANSFORMATEUR 120V/24V/200VA	MO100A	MARCUS
UNT-2-21, 2-23	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
V_E1x1-x	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
XP-2-46A, 2-51A	MODULE D'EXPENSION 6AI/2AO	XP-9102-8303	JOHNSON CONTROLS
XP-2-46B, 2-51B	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-21 - LOCAUX A-161 ET A-165
(TYPE 4 - USINE PILOTE A-161)



LISTE DE MATÉRIEL

IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-161-2 / HP-161-2	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-121	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
RES-1	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
SD-21	1	S-408	RELAIS 2PDT, 24Vac.
	1	RMS-7	BASE DE RELAIS 8 BROCHES
	1		STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

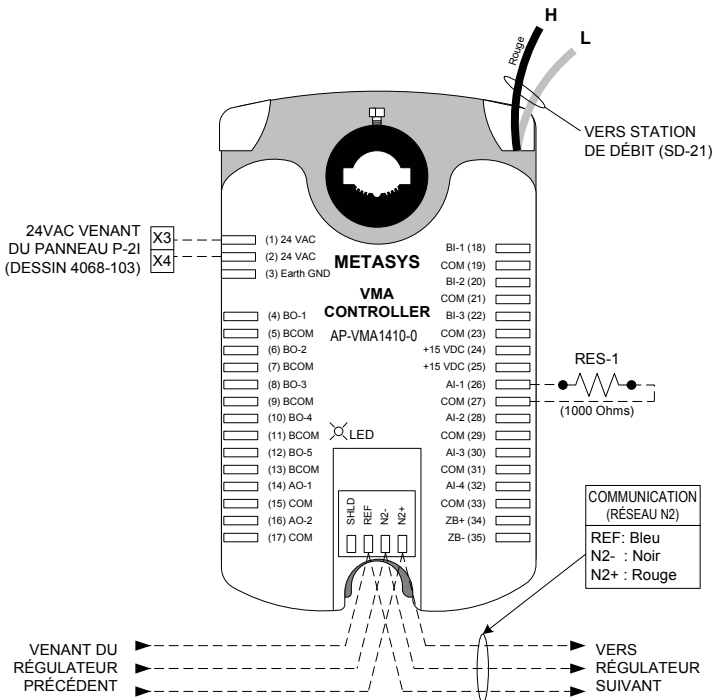
- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-121) est fermé.

EN MARCHÉ:

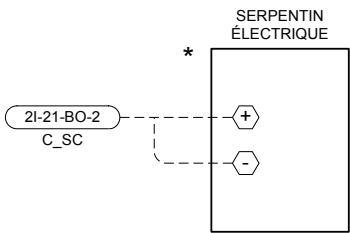
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-121) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-161-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-165 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-121)



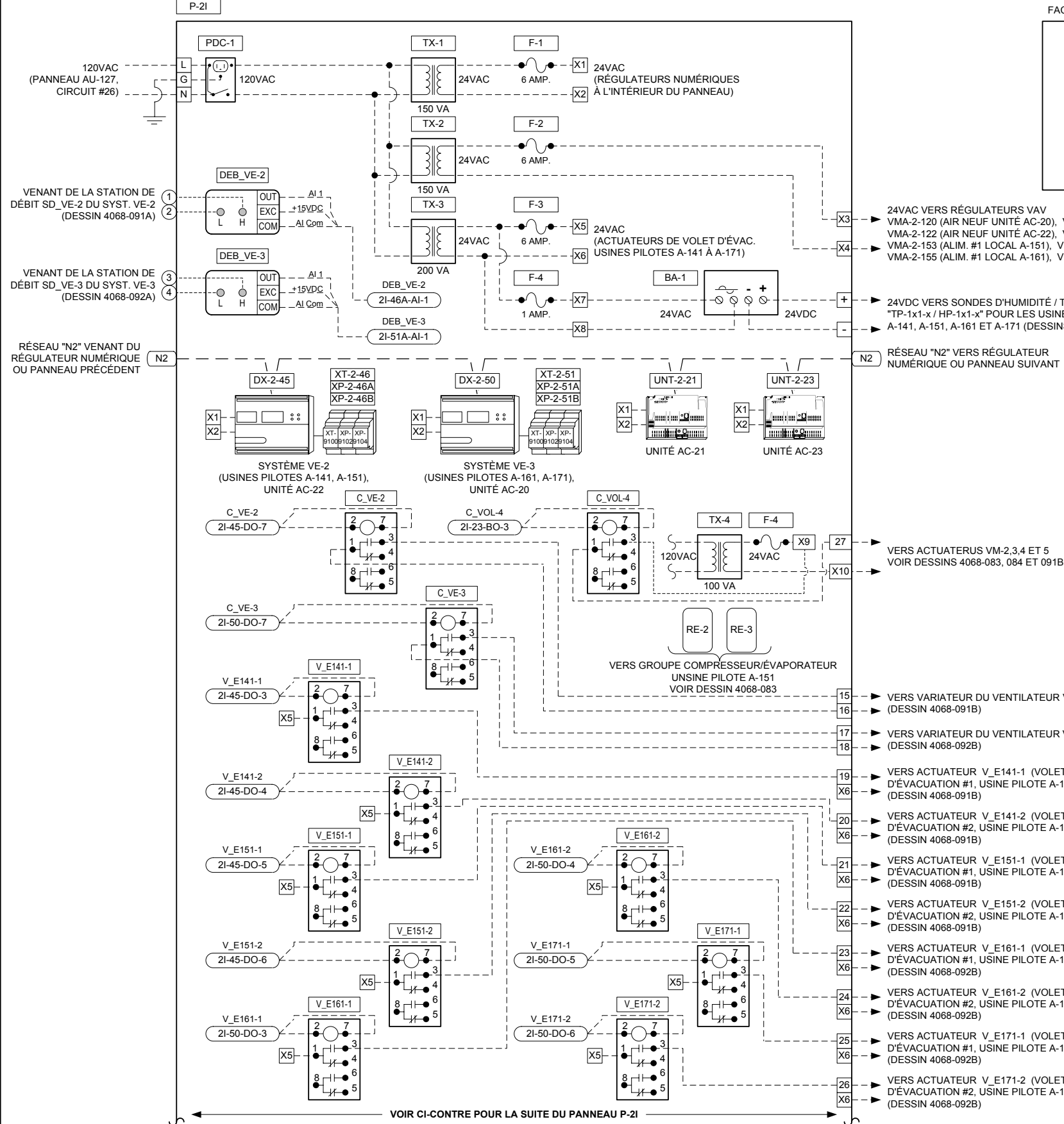
RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-14)



VOIR 4068-092A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-161

Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Unité de climatisation AC-21 Type 4 (Usine pilote A-161) (Locaux A-161 et A-165)		2	POUR CONSTRUCTION		09/18/2001	D.B.
		1	POUR APPROBATION		06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001	
Nom du Projet		Information Succursale		NUMÉRO CONTRAT		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-082

PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

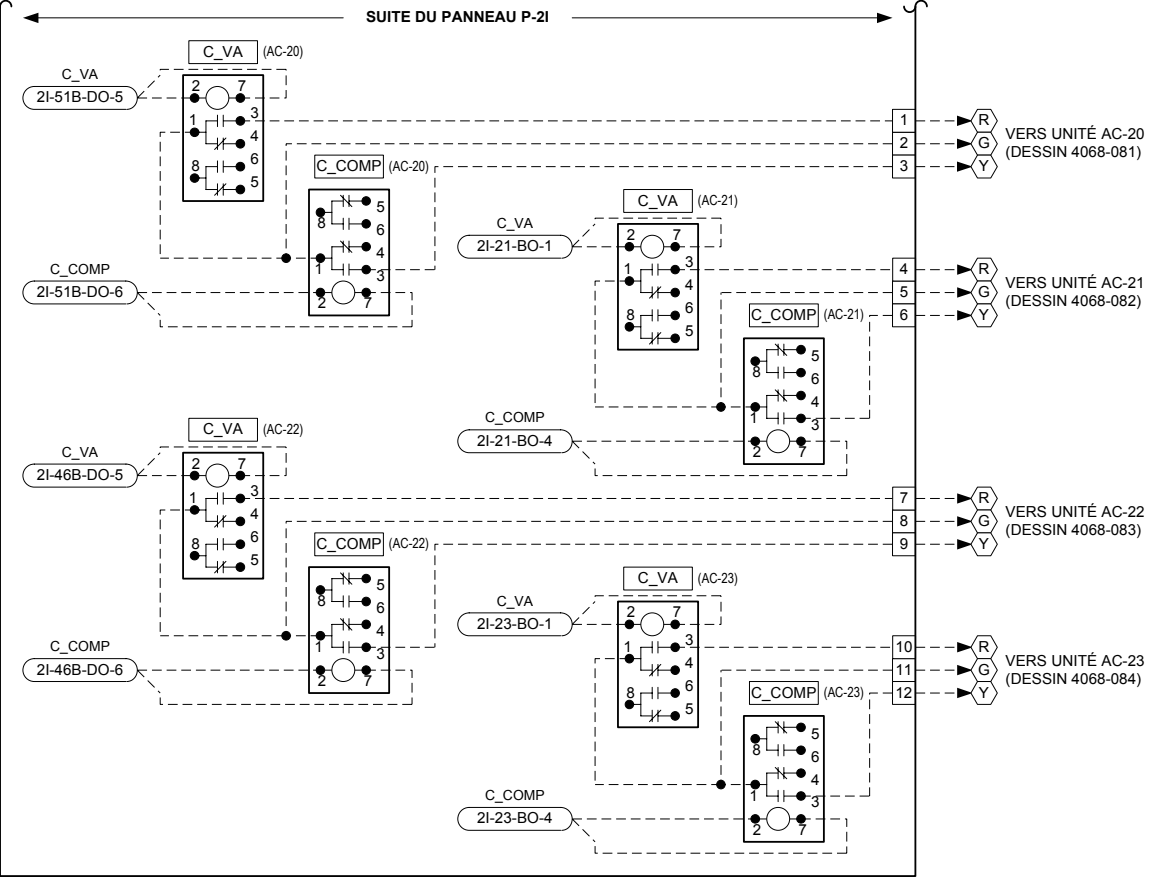
1-

PANNEAU P-2I

LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	10	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
DX-2-45, 2-50	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120/24Vac., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

SUITE DU PANNEAU P-2I



Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
Salle mécanique A-212			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
(Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)							
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093			
Projet d'Innovation Technologique		Johnson Controls Ltée		NUMÉRO DESSIN			
3600, boul. Casavant		355, boul. Montpellier		4068-103			
St-Hyacinthe (Québec)		St-Laurent, Qc, H4N 2G6					
		Tél: (514) 747-2580					
		Fax: (514) 747-9562					

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-21.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Terminal Unit Applications
Application Name : Fan Coil
Configuration History:

QUESTION AND ANSWER SESSION

Select heating type:
None
Select cooling type:
None
Fan cycled during occupied and standby modes?
No
Is lighting required?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
No

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:
AI to BO
Input conditioning:
None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

Yes

Analog Inputs: AI - 1

Binary Inputs: BI - 1

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
* AI	1	AI - 1	AI - 1
AI	3	Zone Temp	ZN-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
* BI	1	BI - 1	BI - 1
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3
* BI	4	BI - 4	BI - 4

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
* BO	4	BO - 4	BO - 4

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****

BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	22.2

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-121.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
ADF	179	Offset	ZT-OFFST	-0.8
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.070199713

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
*ADF	57	CurrentZoneTemp	ZN-T	*****
ADI	80	Fan Override	FANOVRD	*****
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
ADF	183	Setpoint Threshold	THRESHLD	3
XXX	XXX	Min PID Prop Band	MIN PB	0.5
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
ADF	181	PD Supply Max Pos	SPMAXPOS	100
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****

ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0
VAV Box - Temperature Setpoint				
*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
ADI	78	Schedule	OCCSCHED	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	120
ADF	164	Occupied Clg Min	OCCCMIN	120
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	120
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPRREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRS	*****

Flow Control.Flow Controller

ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	6.5
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	120

Mode.VAV Box Mode

ADI	67	Present Value	BOXMODE	*****
-----	----	---------------	---------	-------

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-121) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-121) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-161-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-165 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

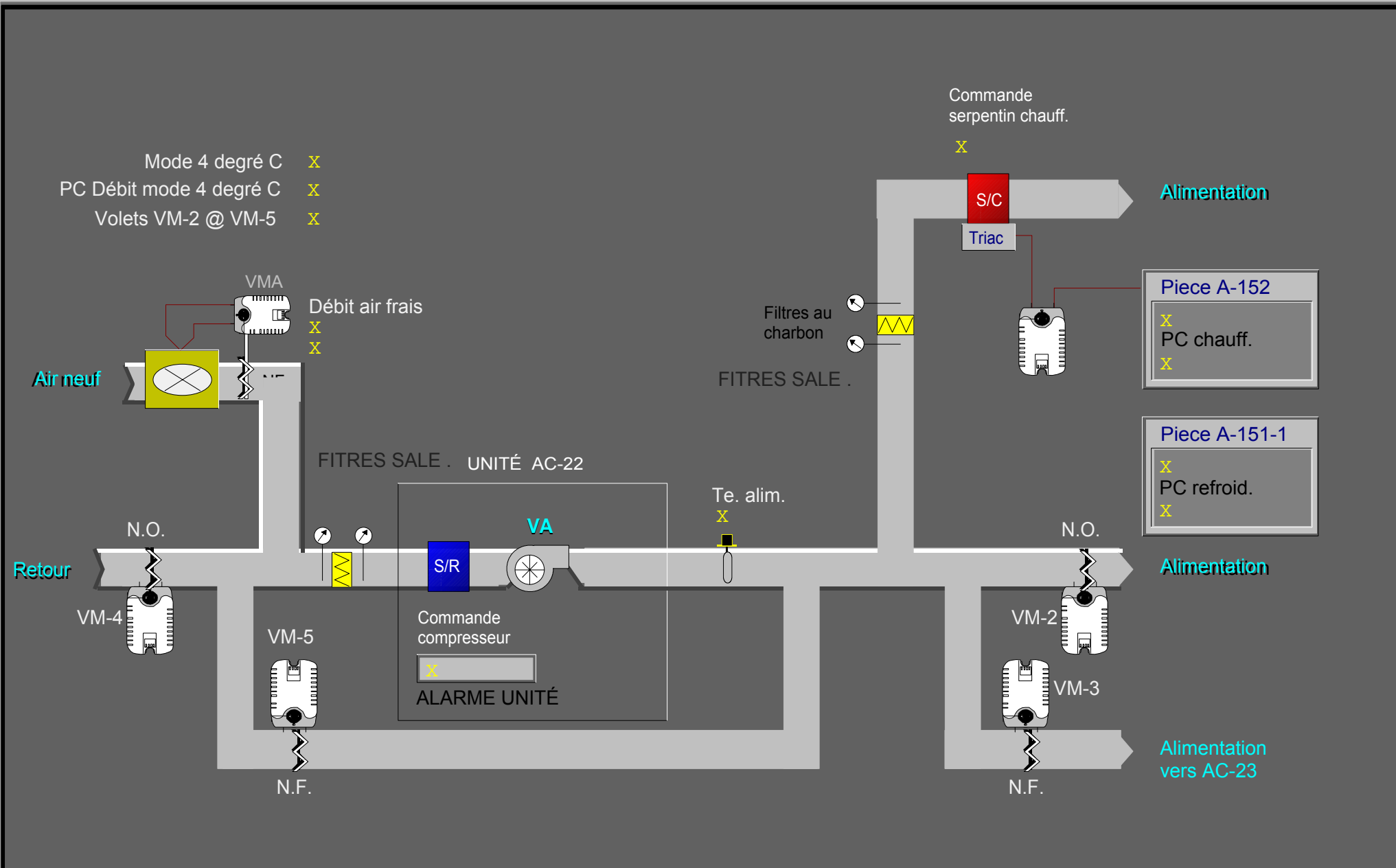
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil			Calibration
		AC-21				UNT	UNT 141					P-21	Salle méc. A-212													Alimentation 24VAC
21-21-AI-1	AI-1	AC-21	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	21	AI-1	PHONE JACK	P-21	Salle méc. A-212	4068-082	21-21-AI-1		8/24	Prise tél.	Metastat-Prise télep					UV2	Tronc N2	
21-21-AI-3	AI-3	AC-21	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	21	AI-3	AI3,AICM	P-21	Salle méc. A-212	4068-082	21-21-AI-3		2/18	2 fils	TE (Gaine)					UV1	Sonde située dans local A-165	
AI-4	AC-21					UNT	UNT 141	1	21	AI-4		P-21	Salle méc. A-212		21-21-AI-4											
AI-5	AC-21					UNT	UNT 141	1	21	AI-5		P-21	Salle méc. A-212		21-21-AI-5											
AI-6	AC-21					UNT	UNT 141	1	21	AI-6		P-21	Salle méc. A-212		21-21-AI-6											
21-21-BI-1	BI-1	AC-21	E_VA	État vent alimentation	Arrêt Marche	UNT	UNT 141	1	21	BI-1	BI1,24VAC	P-21	Salle méc. A-212	4068-082	21-21-BI-1		2/18	Selon dispositif	H-708					UV70		
21-21-BI-2	BI-2	AC-21	E_FILT	État des filtres	Normal Sales	UNT	UNT 141	1	21	BI-2	BI2,24VAC	P-21	Salle méc. A-212	4068-082	21-21-BI-2		2/18	Y.R	P32 (NO)					UV70		
21-21-BI-3	BI-3	AC-21	ALM_AC	Alarme unité AC	Normal Alarme	UNT	UNT 141	1	21	BI-3	BI3,24VAC	P-21	Salle méc. A-212	4068-082	21-21-BI-3		2/18	Selon dispositif	Contact (NO)					UV70		
21-21-BI-4	BI-4	AC-21	E_FILT_C	État des filtres charbon	Normal Sales	UNT	UNT 141	1	21	BI-4	BI4,24VAC	P-21	Salle méc. A-212	4068-082	21-21-BI-4		2/18	Y.R	P32 (NO)					UV70		
21-21-BO-1	BO-1	AC-21	C_VA	Comm.a/d vent.alm.	Arrêt Marche	UNT	UNT 141	1	21	BO-1	BO1,COM	P-21	Salle méc. A-212	4068-082	21-21-BO-1	2/18	COIL	RELAIS	NO.COM			2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51
BO-2	AC-21					UNT	UNT 141	1	21	BO-2		P-21	Salle méc. A-212		21-21-BO-2											
BO-3	AC-21					UNT	UNT 141	1	21	BO-3		P-21	Salle méc. A-212		21-21-BO-3											
21-21-BO-4	BO-4	AC-21	C_COMP	Comm.a/d compresseur	Arrêt Marche	UNT	UNT 141	1	21	BO-4	BO4,COM	P-21	Salle méc. A-212	4068-082	21-21-BO-4	2/18	Bobine	RELAIS	NO.COM			2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51
BO-5	AC-21					UNT	UNT 141	1	21	BO-5		P-21	Salle méc. A-212		21-21-BO-5											
BO-6	AC-21					UNT	UNT 141	1	21	BO-6		P-21	Salle méc. A-212		21-21-BO-6											
21-21-AO-1	AO-1	AC-21	C_SC	Comm.serpentin chauffage	%	UNT	UNT 141	1	21	AO-1	AO1,AOCOM	P-21	Salle méc. A-212	4068-082	21-21-AO-1	2/18	+-	EP-8000	SUPPLY O		1/4"	Raccord à crans	EP-PNEU		UV27	Convert. 0-10VDC à impulsions (Serp. SE-14
AO-2	AC-21					UNT	UNT 141	1	21	AO-2		P-21	Salle méc. A-212		21-21-AO-2											
						VMA	VMA 1410					P-2	Unité AC-21													Alimentation 24VAC
		AC-21				VMA	VMA 1410	1	121			P-2	Unité AC-21													Tronc N2
2-121-AI-1	AI-1	AC-21	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	121	AI-1	AI1,AICM	P-2	Unité AC-21	4068-082	2-121-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1	
AI-2	AC-21					VMA	VMA 1410	1	121	AI-2		P-2	Unité AC-21		2-121-AI-2											
BI-1	AC-21					VMA	VMA 1410	1	121	BI-1		P-2	Unité AC-21		2-121-BI-1											
BI-2	AC-21					VMA	VMA 1410	1	121	BI-2		P-2	Unité AC-21		2-121-BI-2											
BI-3	AC-21					VMA	VMA 1410	1	121	BI-3		P-2	Unité AC-21		2-121-BI-3											
2-121-AI-5	AI-5	AC-21	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	121	AI-5		P-2	Unité AC-21	4068-082	2-121-AI-5											Air neuf AC-21

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-21

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-21	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-161-2, HP-161-2	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-121	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

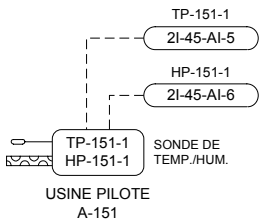
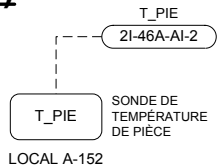
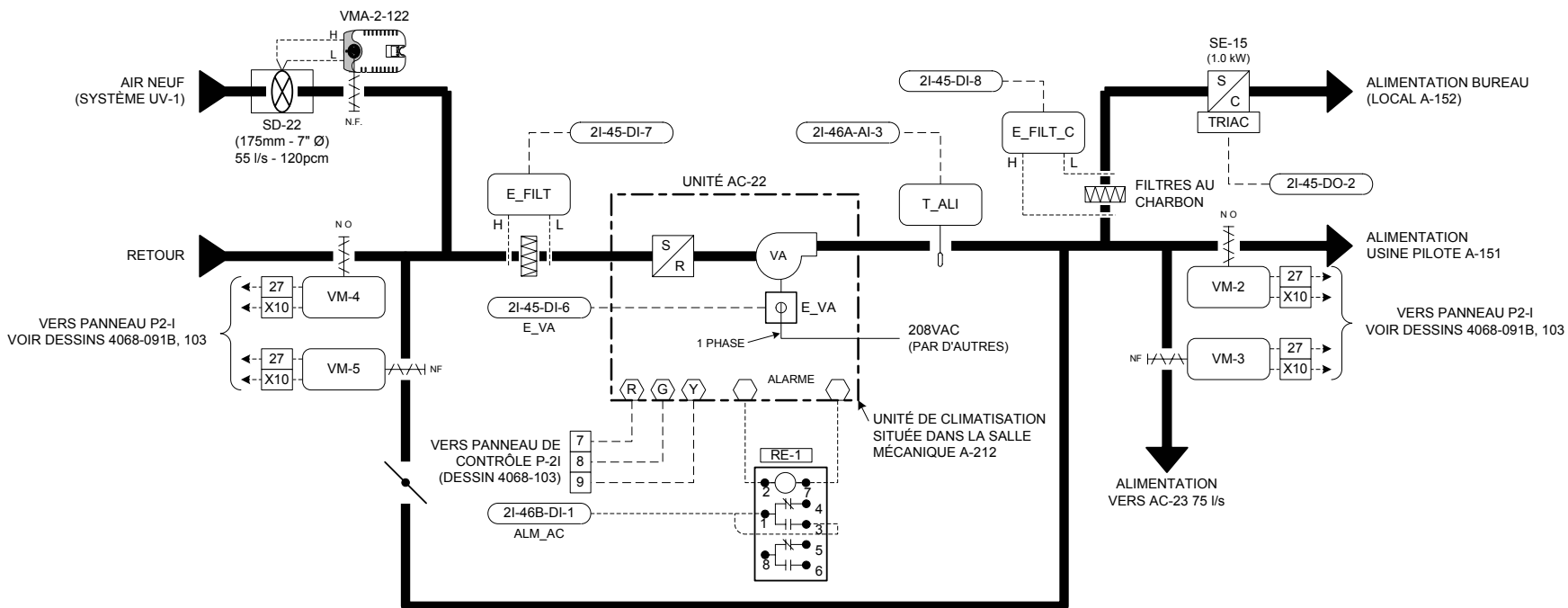
LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-21

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BA-1	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP.	PS-100-3	GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VOL-4	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_VE-2, VE-3	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%	DPT2640-0R1D-A	JOHNSON CONTROLS
DX-2-45, DX-2-50	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, F-2, F-3	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-4	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-21	PANNEAU 36"x48"x9.5"	M-8100-3648	JOHNSON CONTROLS
TX-1, TX-2	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
TX-3	TRANSFORMATEUR 120V/24V/100VA	MO200A	MARCUS
TX-4	TRANSFORMATEUR 120V/24V/200VA	MO100A	MARCUS
UNT-2-21, 2-23	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
V_E1x1-x	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
XP-2-46A, 2-51A	MODULE D'EXPENSION 6AI/2AO	XP-9102-8303	JOHNSON CONTROLS
XP-2-46B, 2-51B	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-22 - LOCAUX A-151 ET A-152 (TYPE 4, USINE PILOTE A-151)

DIAGRAMME DE DÉBIT



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-151-1 / HP-151-1	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-122	1	AP-VMA1410-0	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
RES-1	1	-----	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RE-1	1	RCPTFU82D1024	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-2,3	1	S-408	RELAIS 2PDT, 24Vac.
RE-2,3	2	60.32-8024	BASE DE RELAIS 8 BROCHES
VM-2,3,4,5	2	90.32	RELAIS 1PDT, 24Vac., 15Amps.
SD-22	4	M9206-AGA-2	BASE DE RELAIS
			ACTUATEUR DE VOILET, 2 POSITIONS C/A
			RESSORT DE RAPPEL, 24Vac.
			STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION

A L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf VMA-2-122 est fermé.
- Les volets VM-3, VM-5 sont fermés.
- Les volets VM-2, VM-4 sont ouverts.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote A-151 sont sélectionnés à partir des sélecteurs SEL-151-1 et/ou SEL-151-2 localisé dans les bureaux A-152 et A-155.

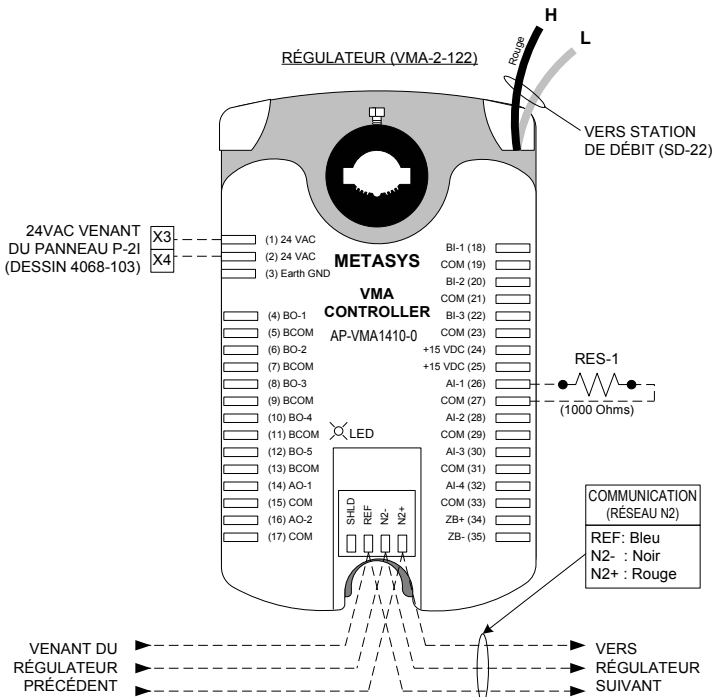
Usine pilote en mode normal (20°C):

- Le compresseur-condenseur CC-1 et les évaporateurs EV-1 et EV-2 sont à l'arrêts.
- Les contrôleurs numérique positionnent les volets comme suit:
 - VM-2, VM-4 complètement ouvert.
 - VM-3, VM-5 complètement fermé.
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur VMA-2-122 module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-151-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-152 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).

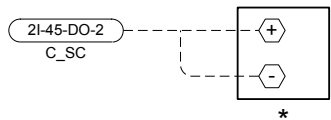
Usine pilote en mode (4°C):

- L'unité AC-22 est utilisé pour alimenté les bureaux A-152 et A-155 pour ce faire les contrôleurs numériques positionnent les volets comme suit:
 - VM-2 ferme complètement.
 - VM-3, VM-5 ouvre complètement.
 - VM-4 partiellement ouvert 150l/s.
 - Le contrôleur numérique met en marche les ventilateurs du compresseur-condenseur CC-1 et les évaporateurs EV-1 et EV-2.
 - Le ventilateur de l'unité AC-22 est démarré selon un horaire pré-établi, le ventilateur de l'unité AC-23 est à l'arrêt.
 - Au départ de l'unité AC-22 le régulateur VMA-2-122 module son volet afin de maintenir le débit d'air neuf à 100 l/s.
 - Les sondes de températures de pièce TP-1 dans les bureaux A-152 et A-155 démarre le compresseur de l'unité AC-22 lors d'une demande de refroidissement et module à l'aide d'impulsion le relais triac de leur serpentin de chauffage respectif lors d'une demande de chauffage.
 - Le transmetteur TP-151-1 contrôle la vanne solénoïde du groupe compresseur-évaporateur CC-1, EV-1 et EV-2 afin de maintenir la température dans l'usine pilot A-151 à 4°C.
 - Les fonctions haute humidité des transmetteurs HP-151-1 et HP-151-2 sont annulés.
- ### Usine pilote en mode 4°C ou 20°C:
- La sonde T_ALI indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

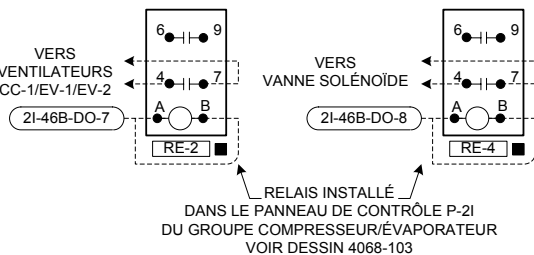
RACCORDEMENT ÉLECTRIQUE



SERPENTIN ÉLECTRIQUE (SE-15)



GROUPE COMPRESSEUR/ÉVAPORATEUR USINE PILOTE A-151



VOIR 4068-091A POUR LE DIAGRAMME DE L'USINE PILOTE A-151

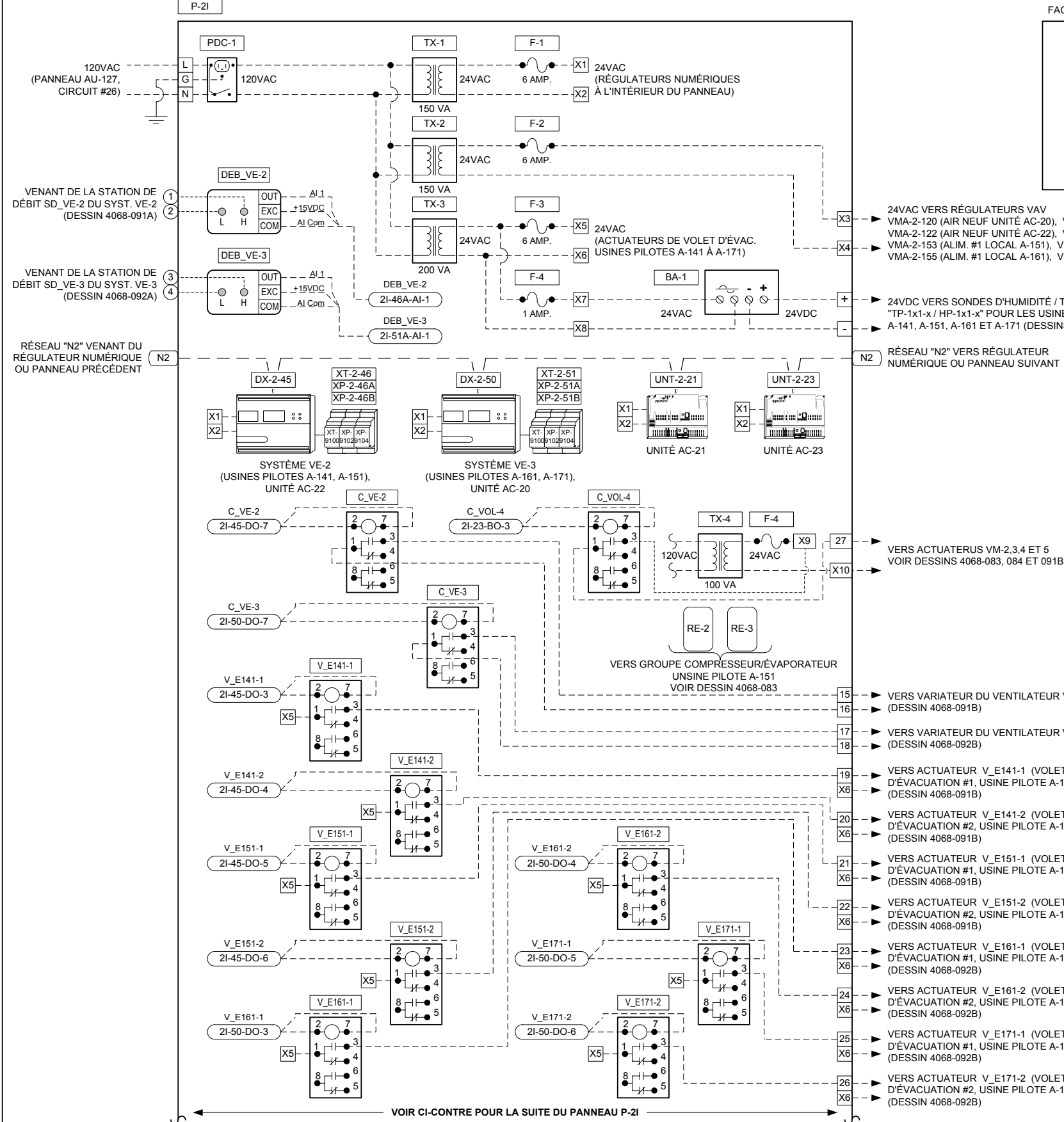
Titre du Dessin
**Unité de climatisation AC-22
Type 4 (Usine pilote A-151)
(Locaux A-151 et A-152)**

Nom du Projet
**CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)**

4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
	3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE	PAR
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/22/2001	PAR	DATE 05/22/2001

Information Succursale	NUMÉRO CONTRAT
JOHNSON CONTROLS Groupe de la régulation	1096-0093 NUMÉRO DESSIN 4068-083

PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

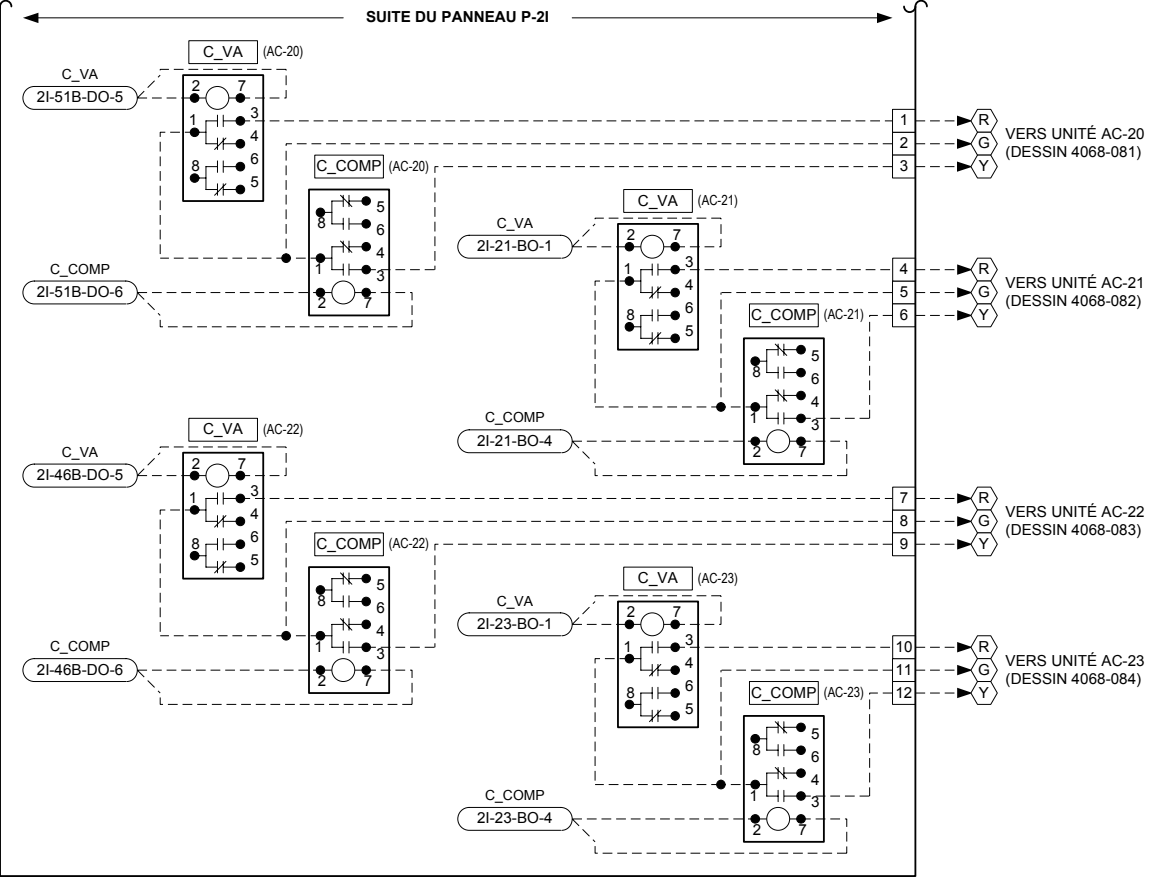
1-

PANNEAU P-2I

LISTE DE MATÉRIEL

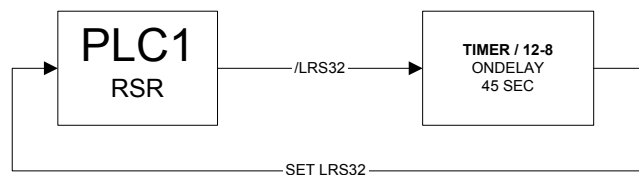
IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	10	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
DX-2-45, 2-50	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE 20a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120/24Vac., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

SUITE DU PANNEAU P-2I

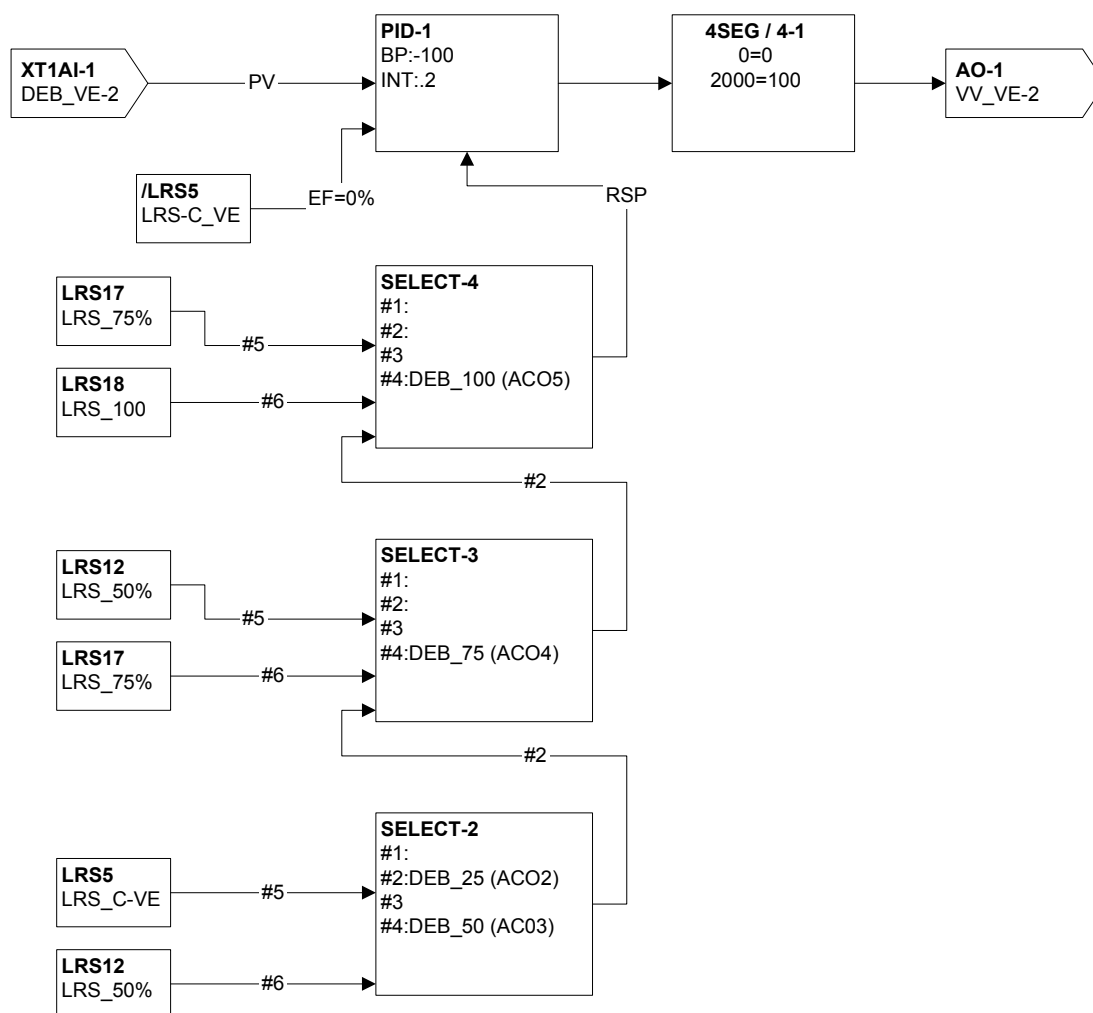


Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
Salle mécanique A-212			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
(Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)							
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE		JOHNSON CONTROLS		Johnson Controls Ltée		1096-0093	
Projet d'Innovation Technologique		Groupe de la régulation		355, boul. Montpellier		NUMÉRO DESSIN	
3600, boul. Casavant				St-Laurent, Qc, H4N 2G6		4068-103	
St-Hyacinthe (Québec)				Tél: (514) 747-2580			
				Fax: (514) 747-9562			

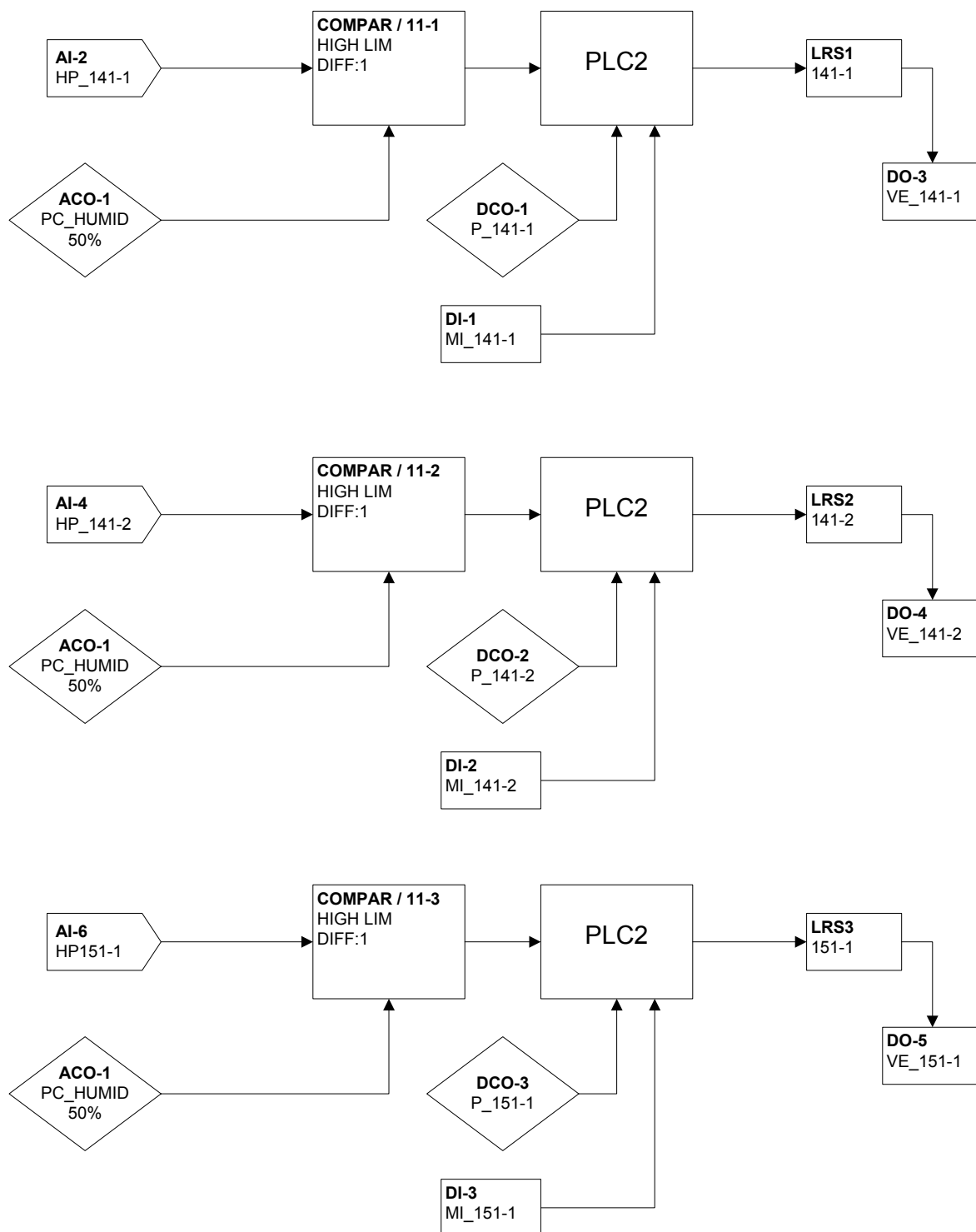
REDEMARRAGE APRES PANNE (DX-2-45)



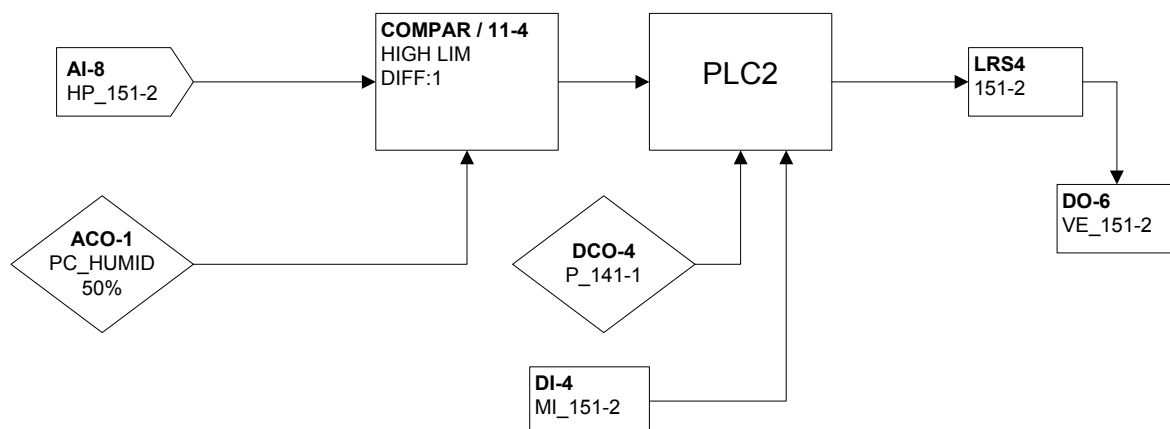
COMMANDE VENTILATEUR EVACUATION



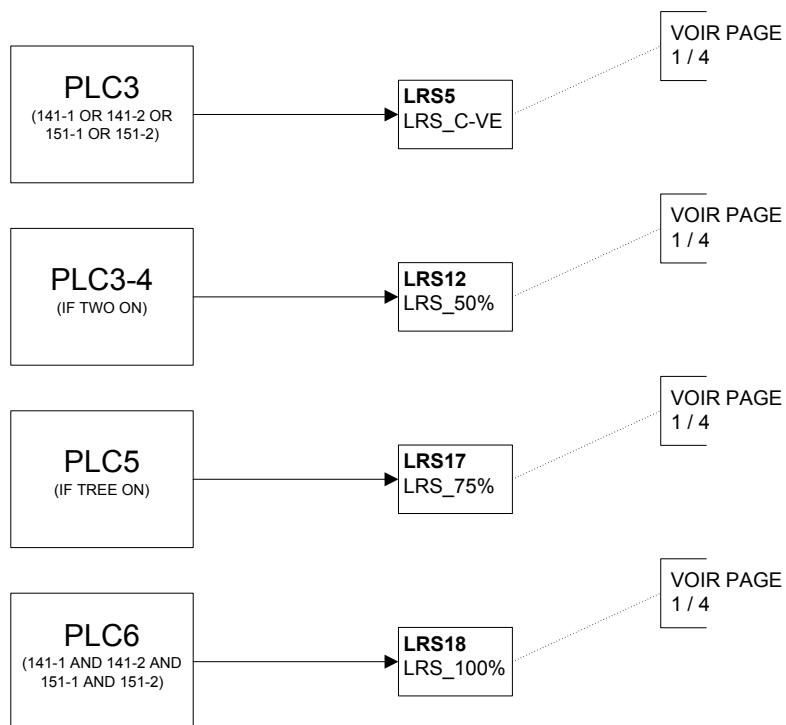
VITESSE VENTILATEUR EVACUATION



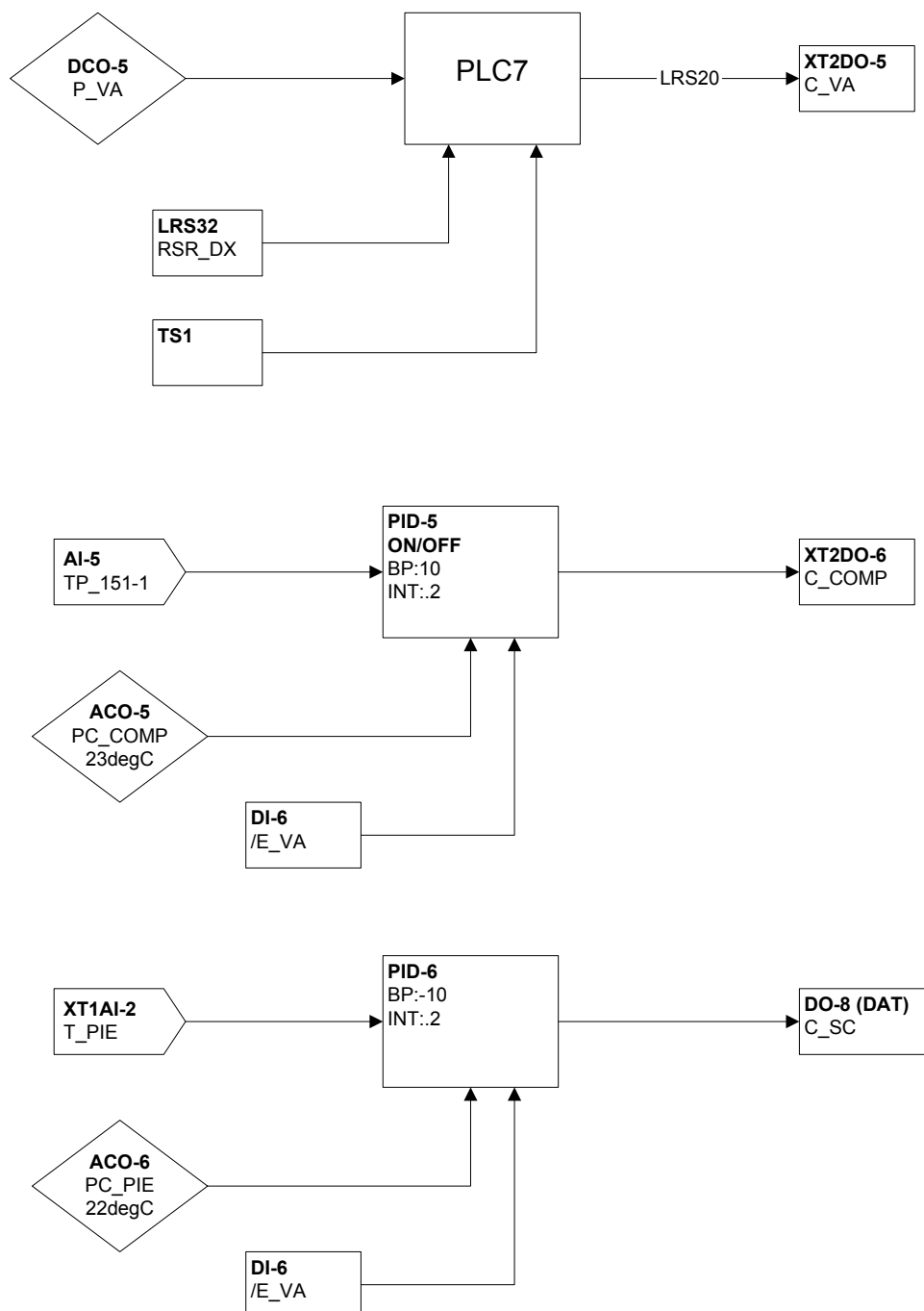
VITESSE VENTILATEUR EVACUATION (SUITE)



LOGIQUE OUVERTURE VOLETS



CONTROLE UNITE CLIMATISATION AC-22



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 45
Numéro du dessin : 4068-91
Système : Système VE-2 A-141 A-151

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE A-141 #1		
2	HUMIDITE PIECE A-141 #1		
3	TEMP. PIECE A-141 #2		
4	HUMIDITE PIECE A-141 #2		
5	TEMP. PIECE A-151 #1		
6	HUMIDITE PIECE A-151 #1		
7	TEMP. PIECE A-151 #2		
8	HUMIDITE PIECE A-151 #2		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	MINUTERIE PIECE A-141 #1	Off =arrêt / On marche	1
2	MINUTERIE PIECE A-141 #2	Off =arrêt / On marche	1
3	MINUTERIE PIECE A-151 #1	Off =arrêt / On marche	1
4	MINUTERIE PIECE A-151 #2	Off =arrêt / On marche	1
5			
6	ETAT VENT. ALIMENTATION	Off =arrêt / On marche	1
7	ETAT FILTRES	Off = normal / On = sale	1
8	ETAT FILTRES CHARBON	Off = normal / On = sale	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VARIATEUR VENT EVAC VE2	Z1	0% = Min. / 100% = Max.
2			
3	VOLET EVAC PIECE A-141 #1	LRS1	Off = ferme / On = ouvert
4	VOLET EVAC PIECE A-141 #2	LRS2	Off = ferme / On = ouvert
5	VOLET EVAC PIECE A-151 #1	LRS3	Off = ferme / On = ouvert
6	VOLET EVAC PIECE A-151 #2	LRS4	Off = ferme / On = ouvert
7	COMM VENT EVAC VE-2	DCO5	Off = arrêt / On = depart
8	COMM SERPENTIN CHAUFF.	Z6	Off = arrêt / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	Select 4	XT1X1 Debit VE-2	0 = Min. / 2000 = Max.
2	ACO5	X5 Temp. 151-1	0%= Min. / 100%= Max.
3	ACO6	XT1X2 Temp. piece 142	0%= Min. / 100%= Max.
4	4 Segment		
5			
6			
7			
8	Select		
9	Select		
10	Select		
11	Comparateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-100	.2	
2	10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	50%	PC Humidite
2	435 cfm	PC debit evacuation 25%
3	870 cfm	PC debit evacuation 50%
4	1305 cfm	PC debit evacuation 75%
5	23 deg C	PC Compresseur refrigeration
6	22 deg C	PC Chauffage piece 142
7	1740 cfm	PC debit evacuation 100%
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission volet 141-1
2	ON	Permission volet 141-2
3	ON	Permission volet 151-1
4	ON	Permission volet 151-2
5	ON	Permission ventilateur alimentation
6		
7		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-91
Système : Système VE-2 A-141 A-151
Adresse du NCM : 2
Adresse du DX-9100 : 45
Adresse du XT : 46

Numero du XP : 1
Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
11	DEBIT D'EVACUATION		
12	TEMP. PIECE		
13	TEMP. ALIMENTATION		
14	INDICATION VITESSE VE-2		
15			
16			

Sorties Analogiques : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
17			
18			

Numero du XP : 2
Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point		Préscaler
19	ALARME UNITE AC	Off = arrêt / On = marche	1
20	ETAT SELECTEUR 151-1	Off = Norma / On = Mode 4dC	1
21	ETAT SELECTEUR 151-2	Off = Norma / On = Mode 4dC	1
22			

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
23	COMM A/D VENT ALIM		Off = arrêt / On = marche
24	COMM A/D COMPRESSEUR		Off = arrêt / On = marche
25	COMM A/D VENT. UNITE CC-1	LRS-22	Off = arrêt / On = marche
26	COMM VANNE SOLENOIDE CC-1	PM4OCM	Off = arrêt / On = marche

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-122.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.0230508

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	215
ADF	164	Occupied Clg Min	OCCCMIN	215
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	120
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	2
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	215

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf VMA-2-122 est fermé.
- Les volets VM-3, VM-5 sont fermés.
- Les volets VM-2, VM-4 sont ouverts.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote A-151 sont sélectionnés à partir des sélecteurs SEL-151-1 et/ou SEL-151-2 localisé dans les bureaux A-152 et A-155.

Usine pilote en mode normal (20°C):

- Le compresseur-condenseur CC-1 et les évaporateurs EV-1 et EV-2 sont à l'arrêts.
- Les contrôleurs numérique positionnent les volets comme suit:
 - VM-2, VM-4 complètement ouvert.
 - VM-3, VM-5 complètement fermé.
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur VMA-2-122 module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-151-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-152 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).

Usine pilote en mode (4°C):

- L'unité AC-22 est utilisé pour alimenté les bureaux A-152 et A-155 pour ce faire les contrôleurs numériques positionnent les volets comme suit:
 - VM-2 ferme complètement.
 - VM-3, VM-5 ouvre complètement.
 - VM-4 partiellement ouvert 150l/s.
- Le contrôleur numérique met en marche les ventilateurs du compresseur-condenseur CC-1 et les évaporateurs EV-1 et EV-2.
- Le ventilateur de l'unité AC-22 est démarré selon un horaire pré-établi, le ventilateur de l'unité AC-23 est à l'arrêt.
- Au départ de l'unité AC-22 le régulateur VMA-2-122 module son volet afin de maintenir le débit d'air neuf à 100 l/s.
- Les sondes de températures de pièce TP-1 dans les bureaux A-152 et A-155 démarre le compresseur de l'unité AC-22 lors d'une demande de refroidissement et module à l'aide d'impulsion le relais triac de leur serpentin de chauffage respectif lors d'une demande de chauffage.

- Le transmetteur TP-151-1 contrôle la vanne solénoïde du groupe compresseur-évaporateur CC-1, EV-1 et EV-2 afin de maintenir la température dans l'usine pilot A-151 à 4°C.
- Les fonctions haute humidité des transmetteurs HP-151-1 et HP-151-2 sont annulés.

Usine pilote en mode 4°C ou 20°C:

- La sonde T_ALL indique la température d'alimentation à la centrale de commandes.

Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-22				VMA	VMA 1410					P-2	Unité AC-22													Alimentation 24VAC
		AC-22				VMA	VMA 1410	1	122			P-2	Unité AC-22													Tronc N2
2-122-AI-1	AI-1	AC-22	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	122	AI-1	AI1 AICM	P-2	Unité AC-22	4068-083	2-122-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1	
	AI-2	AC-22				VMA	VMA 1410	1	122	AI-2		P-2	Unité AC-22		2-122-AI-2											
	BI-1	AC-22				VMA	VMA 1410	1	122	BI-1		P-2	Unité AC-22		2-122-BI-1											
	BI-2	AC-22				VMA	VMA 1410	1	122	BI-2		P-2	Unité AC-22		2-122-BI-2											
	BI-3	AC-22				VMA	VMA 1410	1	122	BI-3		P-2	Unité AC-22		2-122-BI-3											
2-122-AI-5	AI-5	AC-22	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	122	AI-5		P-2	Unité AC-22	4068-083	2-122-AI-5											Air neuf AC-22

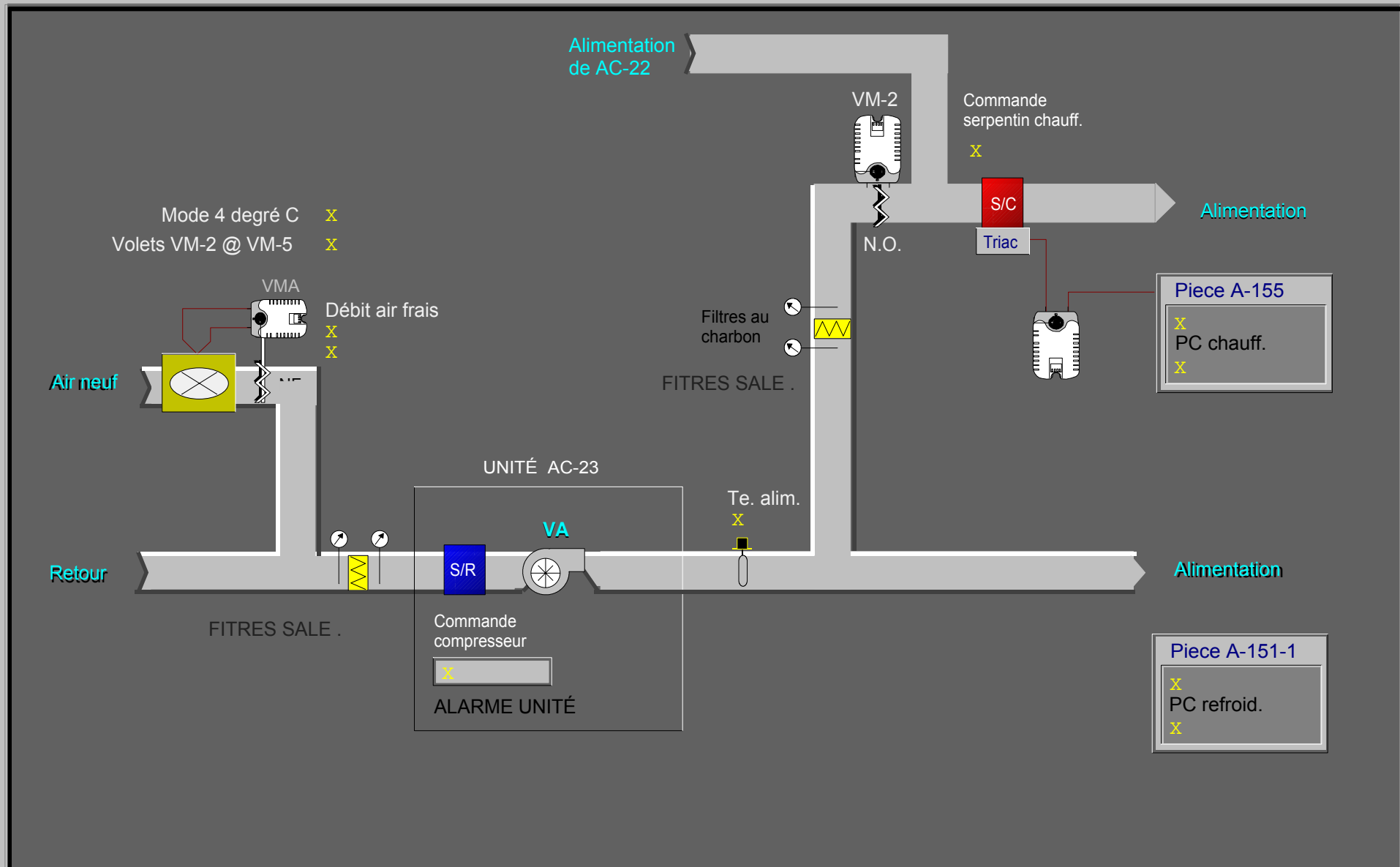
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau				Détail de réf.	Commentaires			
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble tube	Terminaisons entrée			Appareil	Calibration	
						DX9100	DX 9100					P-21	Salle méc. A-212														
21-45-DO-3	DO-3	USINES-2	V. E141-1	Volet évac.pèce A-141#1	Fermé	Ouvrnt	DX9100	DX 9100	1	45	DO-3	DO3.COM	P-21	Salle méc. A-212	4068-091B	21-45-DO-3	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"		DX64	Alimentation 24VAC Tronc N2
21-45-DO-4	DO-4	USINES-2	V. E141-2	Volet évac.pèce A-141#2	Fermé	Ouvrnt	DX9100	DX 9100	1	45	DO-4	DO4.COM	P-21	Salle méc. A-212	4068-091B	21-45-DO-4	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"		DX64	
21-45-DO-5	DO-5	USINES-2	V. E151-1	Volet évac.pèce A-151#1	Fermé	Ouvrnt	DX9100	DX 9100	1	45	DO-5	DO5.COM	P-21	Salle méc. A-212	4068-091B	21-45-DO-5	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"		DX64	
21-45-DO-6	DO-6	USINES-2	V. E151-2	Volet évac.pèce A-151#2	Fermé	Ouvrnt	DX9100	DX 9100	1	45	DO-6	DO6.COM	P-21	Salle méc. A-212	4068-091B	21-45-DO-6	2/18	2,7	RELAIS	1,3		2/18	3,1	M9206-AGx "ON-OFF"		DX64	
21-45-DO-7	DO-7	USINES-2	C. VE-2	Comm.vent évac. VE-2	Arrêt	Marche	DX9100	DX 9100	1	45	DO-7	DO7.COM	P-21	Salle méc. A-212	4068-091B	21-45-DO-7	2/18					2/14	Voir détail déma	Démareur (H-735 mar/arr)		DX49	
21-45-DO-8	DO-8	AC-22	C. SC	Comm serpent. chauffage	Arrêt	Marche	DX9100	DX 9100	1	45	DO-8	DO8.COM	P-21	Salle méc. A-212	4068-083	21-45-DO-8	2/18		(Bobine) +,-	H-735	COM.NO	2/18		Selon dispositif	SOR 24 V Ca	DX51	Serpentin SE-15
21-45-DI-1	DI-1	USINES-2	MI-141-1	Minuterie pièce A-141 #1	Inoccup	Occupé	DX9100	DX 9100	1	45	DI-1	DI1.COM	P-21	Salle méc. A-212	4068-091A	21-45-DI-1					2/18	Selon dispositif	Contact (NO)		DX70		
21-45-DI-2	DI-2	USINES-2	MI-141-2	Minuterie pièce A-141 #2	Inoccup	Occupé	DX9100	DX 9100	1	45	DI-2	DI2.COM	P-21	Salle méc. A-212	4068-091A	21-45-DI-2					2/18	Selon dispositif	Contact (NO)		DX70		
21-45-DI-3	DI-3	USINES-2	MI-151-1	Minuterie pièce A-151 #1	Inoccup	Occupé	DX9100	DX 9100	1	45	DI-3	DI3.COM	P-21	Salle méc. A-212	4068-091A	21-45-DI-3					2/18	Selon dispositif	Contact (NO)		DX70		
21-45-DI-4	DI-4	USINES-2	MI-151-2	Minuterie pièce A-151 #2	Inoccup	Occupé	DX9100	DX 9100	1	45	DI-4	DI4.COM	P-21	Salle méc. A-212	4068-091A	21-45-DI-4					2/18	Selon dispositif	Contact (NO)		DX70		
21-45-DI-5	DI-5						DX9100	DX 9100	1	45	DI-5		P-21	Salle méc. A-212	4068-091B	21-45-DI-5											
21-45-DI-6	DI-6	AC-22	E. VA	État vent alimentation	Arrêt	Marche	DX9100	DX 9100	1	45	DI-6	DI6.COM	P-21	Salle méc. A-212	4068-083	21-45-DI-6					2/18	NO.COM	H-708			DX49	
21-45-DI-7	DI-7	AC-22	E. FILT	État des filtres	Normal	Sales	DX9100	DX 9100	1	45	DI-7	DI7.COM	P-21	Salle méc. A-212	4068-083	21-45-DI-7					2/18	Y.R	P32 (NO)			DX70	
21-45-DI-8	DI-8	AC-22	E. FILT. C	État des filtres charbon	Normal	Sales	DX9100	DX 9100	1	45	DI-8	DI8.COM	P-21	Salle méc. A-212	4068-083	21-45-DI-8					2/18	Y.R	P32 (NO)			DX70	
21-45-AI-1	AI-1	USINES-2	TP-141-1	Temp.pèce A-141 #1			DX9100	DX 9100	1	45	AI-1	AI1.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-1					2/18	2 fils	TE			DX3	
21-45-AI-2	AI-2	USINES-2	HP-141-1	Humidité pièce A-141 #1			DX9100	DX 9100	1	45	AI-2	AI2.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-2					2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)			DX6	
21-45-AI-3	AI-3	USINES-2	TP-141-2	Temp.pèce A-141 #2			DX9100	DX 9100	1	45	AI-3	AI3.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-3					2/18	2 fils	TE			DX3	
21-45-AI-4	AI-4	USINES-2	HP-141-2	Humidité pièce A-141 #2			DX9100	DX 9100	1	45	AI-4	AI4.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-4					2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)			DX6	
21-45-AI-5	AI-5	USINES-2	TP-151-1	Temp.pèce A-151 #1			DX9100	DX 9100	1	45	AI-5	AI5.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-5					2/18	2 fils	TE			DX3	
21-45-AI-6	AI-6	USINES-2	HP-151-1	Humidité pièce A-151 #1			DX9100	DX 9100	1	45	AI-6	AI6.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-6					2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)			DX6	
21-45-AI-7	AI-7	USINES-2	TP-151-2	Temp.pèce A-151 #2			DX9100	DX 9100	1	45	AI-7	AI7.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-7					2/18	2 fils	TE			DX3	
21-45-AI-8	AI-8	USINES-2	HP-151-2	Humidité pièce A-151 #2			DX9100	DX 9100	1	45	AI-8	AI8.AICOM	P-21	Salle méc. A-212	4068-091A	21-45-AI-8					2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)			DX6	
21-45-AO-1	AO-1	USINES-2	VV. VE-2	Variateur vent évac.VE-2			DX9100	DX 9100	1	45	AO-1	AO1.AOCOM	P-21	Salle méc. A-212	4068-091A	21-45-AO-1					2/18	Selon dispositif	SORTIE 0-10 V			DX22	
	AO-2						DX9100	DX 9100	1	45	AO-2		P-21	Salle méc. A-212		21-45-AO-2											
	AO-9						DX9100	DX 9100	1	45	AO-9		P-21	Salle méc. A-212		21-45-AO-9											
	AO-10						DX9100	DX 9100	1	45	AO-10		P-21	Salle méc. A-212		21-45-AO-10											
	AO-11						DX9100	DX 9100	1	45	AO-11		P-21	Salle méc. A-212		21-45-AO-11											
	AO-12						DX9100	DX 9100	1	45	AO-12		P-21	Salle méc. A-212		21-45-AO-12											
	AO-13						DX9100	DX 9100	1	45	AO-13		P-21	Salle méc. A-212		21-45-AO-13											
	AO-14						DX9100	DX 9100	1	45	AO-14		P-21	Salle méc. A-212		21-45-AO-14											
							XT9100	XT (Expansion Module)				P-21	Salle méc. A-212													Alimentation 24VAC Tronc N2	
							XT9100	XT (Expansion Module)				P-21	Salle méc. A-212														
21-46A-AI-1	XT1AI1	USINES-2	DEB. VE-2	Débit évacuation	Is		XP9102	XP 9102 (6A	1	46	AI-1	AI1.AICOM.+15V	P-21	Salle méc. A-212	4068-099	21-46A-AI-1					3/18	OUT.COM.EXC	DPT-2640 (0-5 VDC)			XP9	
21-46A-AI-2	XT1AI2	AC-22	T. PIE	Temp.pèce			XP9102	XP 9102 (6A	1	46	AI-2	AI2.AICOM	P-21	Salle méc. A-212	4068-083	21-46A-AI-2					2/18	2 fils	TE			XP3	Sonde située dans local A-152
21-46A-AI-3	XT1AI3	AC-22	T. ALI	Temp.alimentation			XP9102	XP 9102 (6A	1	46	AI-3	AI3.AICOM	P-21	Salle méc. A-212	4068-083	21-46A-AI-3					2/18	2 fils	TE (Gaine)			XP3	
21-46A-AI-4	XT1AI4	USINES-2	VIT. VE-2	Indication vitesse VE-2			XP9102	XP 9102 (6A	1	46	AI-4	AI4.AICOM	P-21	Salle méc. A-212		21-46A-AI-4					2/18	Device depende	ENT 0-20 mA ALIM EXT			XP2	
	XT1AI5						XP9102	XP 9102 (6A	1	46	AI-5		P-21	Salle méc. A-212		21-46A-AI-5											
	XT1AI6						XP9102	XP 9102 (6A	1	46	AI-6		P-21	Salle méc. A-212		21-46A-AI-6											
	XT1AO7						XP9102	XP 9102 (6A	1	46	AO-7		P-21	Salle méc. A-212		21-46A-AO-7											
	XT1AO8						XP9102	XP 9102 (6A	1	46	AO-8		P-21	Salle méc. A-212		21-46A-AO-8											
21-46B-DI-1	XT2DI1	AC-22	ALM. AC	Alarme unité AC	Normal	Alarme	XP9104	XP 9104 (4C	1	46	DI-1	DI1.COM	P-21	Salle méc. A-212	4068-083	21-46B-DI-1					2/18	Selon dispositif	Contact (NO)			XP40	
SEL-1S1-1	XT2DI2	USINES-2	SEL-151-1	Sélecteur 20°C/4°C	20°C	4°C	XP9104	XP 9104 (4C	1	46	DI-2	DI2.COM	P-21	Salle méc. A-212	4068-091A	21-46B-DI-2					2/18	Selon dispositif	Contact (NO)			XP40	
SEL-1S1-2	XT2DI3	USINES-2	SEL-151-2	Sélecteur 20°C/4°C	20°C	4°C	XP9104	XP 9104 (4C	1	46	DI-3	DI3.COM	P-21	Salle méc. A-212	4068-091A	21-46B-DI-3					2/18	Selon dispositif	Contact (NO)			XP40	
	XT2DI4						XP9104	XP 9104 (4C	1	46	DI-4		P-21	Salle méc. A-212		21-46B-DI-4											
21-46B-DO-1	XT2DO5	AC-22	C. VA	Comm.a/d vent.alim.	Arrêt	Marche	XP9104	XP 9104 (4C	1	46	DO-5	DO5.COM	P-21	Salle méc. A-212	4068-083	21-46B-DO-5	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démareur (NO)		XP51	
21-46B-DO-2	XT2DO6	AC-22	C. COMP	Comm.a/d compresseur	Arrêt	Marche	XP9104	XP 9104 (4C	1	46	DO-6	DO6.COM	P-21	Salle méc. A-212	4068-083	21-46B-DO-6	2/18	2,7	RELAIS	1,3		2/14	Voir détail déma	Démareur (NO)		XP51	
RE-2	XT2DO7	USINES-2	C. VCC1	Comm.a/d ventill. CC-1/EV-1	Arrêt	Marche	XP9104	XP 9104 (4C	1	46	DO-7	DO7.COM	P-21	Salle méc. A-212	4068-083	21-46B-DO-7	2/18	2,7				2/14	Selon dispositif	Démareur (NO)		XP51	
RE-3	XT2DO8	USINES-2	C. VS-CC1	Comm.a/d vanne solénoïde CC-1	Fermé	Ouvrnt	XP9104	XP 9104 (4C	1	46	DO-8	DO8.COM	P-21	Salle méc. A-212	4068-083	21-46B-DO-8	2/18	2,7				2/14	Selon dispositif	Contact (NO)		XP51	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-22

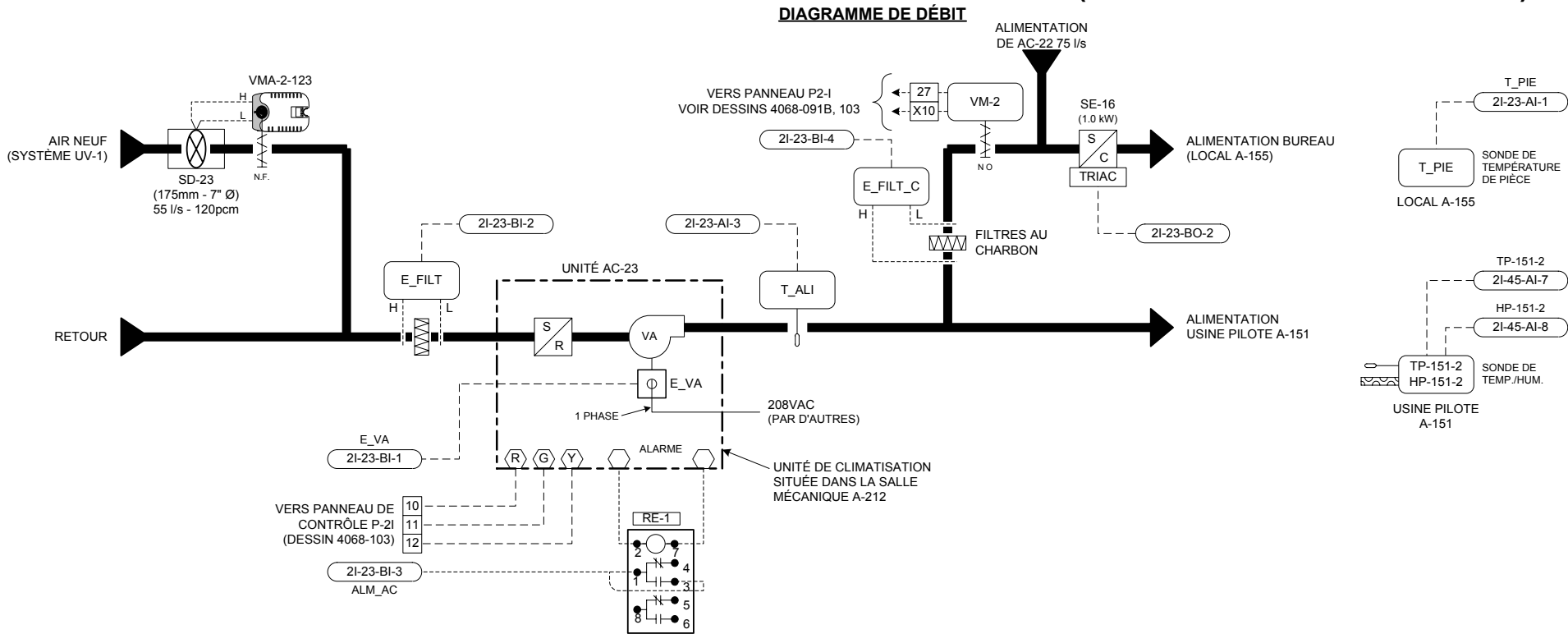
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RE-2, RE-3	RELAIS DE PUISSANCE 1PDT, 24VAC, 15 AMPS	60.32-8024	FINDER
	BASE DE RELAIS	90.32	FINDER
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-22	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-151-1, HP-151-1	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-122	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VM-2,3,4,5	ACTUATEUR DE VOLET 2 POSITIONS c/a RESSORT DE RAPPEL, 24VAC	M9206-AGA-2	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2I

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BA-1	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP.	PS-100-3	GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VOL-4	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_VE-2, VE-3	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%	DPT2640-0R1D-A	JOHNSON CONTROLS
DX-2-45, DX-2-50	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
F-1, F-2, F-3	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-4	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2I	PANNEAU 36"x48"x9.5"	M-8100-3648	JOHNSON CONTROLS
TX-1, TX-2	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
TX-3	TRANSFORMATEUR 120V/24V/100VA	MO200A	MARCUS
TX-4	TRANSFORMATEUR 120V/24V/200VA	MO100A	MARCUS
UNT-2-21, 2-23	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
V_E1x1-x	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
XP-2-46A, 2-51A	MODULE D'EXPENSION 6AI/2AO	XP-9102-8303	JOHNSON CONTROLS
XP-2-46B, 2-51B	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-23 - LOCAUX A-151 ET A-155 (TYPE 4 - USINE PILOTE A-151)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
E_FILT, E_FILT_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	2	FTG18A-600R	TUBE DE PITOT 4" (100mm)
T_ALI	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_PIE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
TP-151-2 / HP-151-2	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-151	1	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VM-2	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	M9206-AGA-2	ACTUATEUR DE VOLET, 2 POSITIONS C/A
RE-1	1	RCPTFU82D1024	RESSORT DE RAPPEL, 24Vac
SD-23	1	S-408	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
	1	RMS-7	RELAIS 2PDT, 24Vac
	1		BASE DE RELAIS 8 BROCHES
	1		STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf VMA-2-123 est fermé.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote sont sélectionnés à partir des sélecteurs SEL-151-1 et /ou SEL-1-151-2 localisé dans les bureaux A-152 et A-155

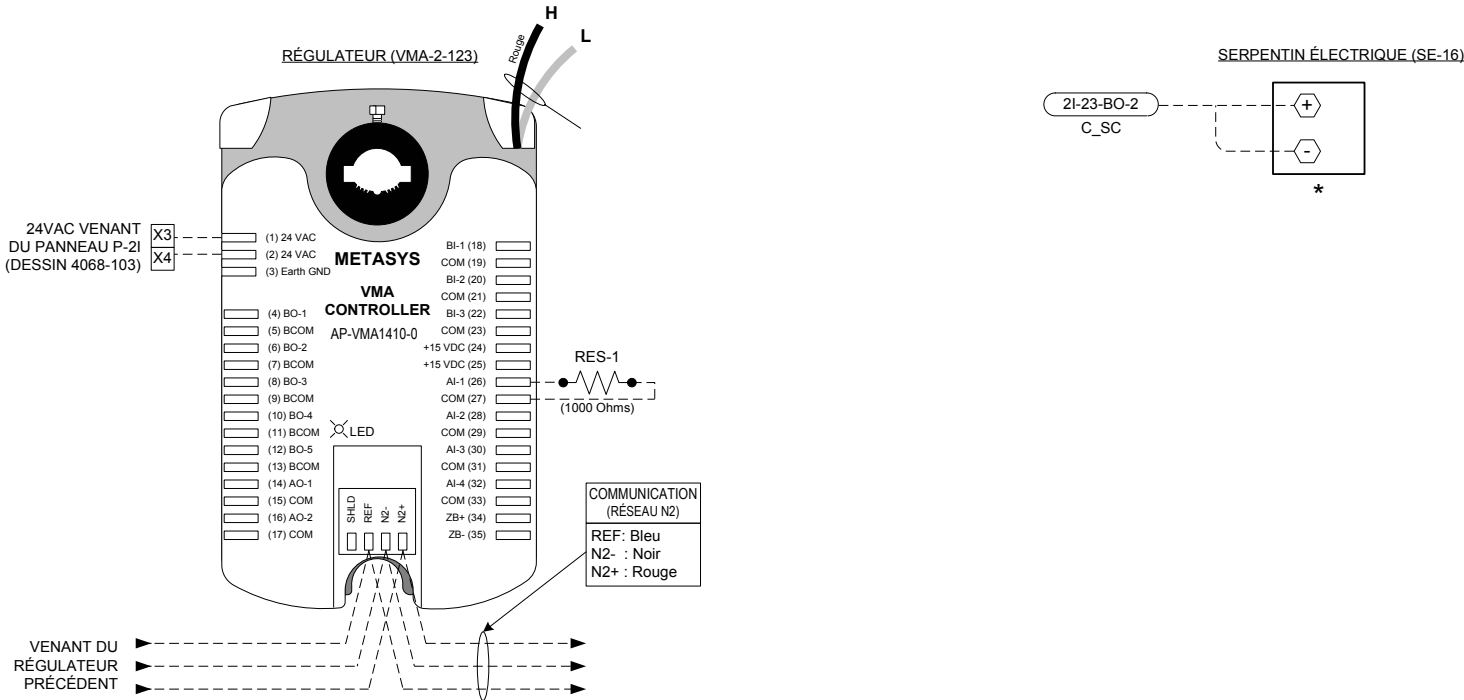
Usine pilote en mode normal (20°C):

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur VMA-2-123 module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-151-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-155 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde T_ALI indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Usine pilote en mode (4°C):

- L'unité AC-23 est à l'arrêt.
- Les volets VMA-2-123 et VM-2 sont complètement fermés.
- La sonde de pièce du local A-155 démarre le compresseur de l'unité AC-22 lors d'une demande de refroidissement et module le relais triac du serpentin de chauffage de la pièce lors d'une demande de chauffage.
- La fonction haute humidité du transmetteur HP-151-2 est annulée.

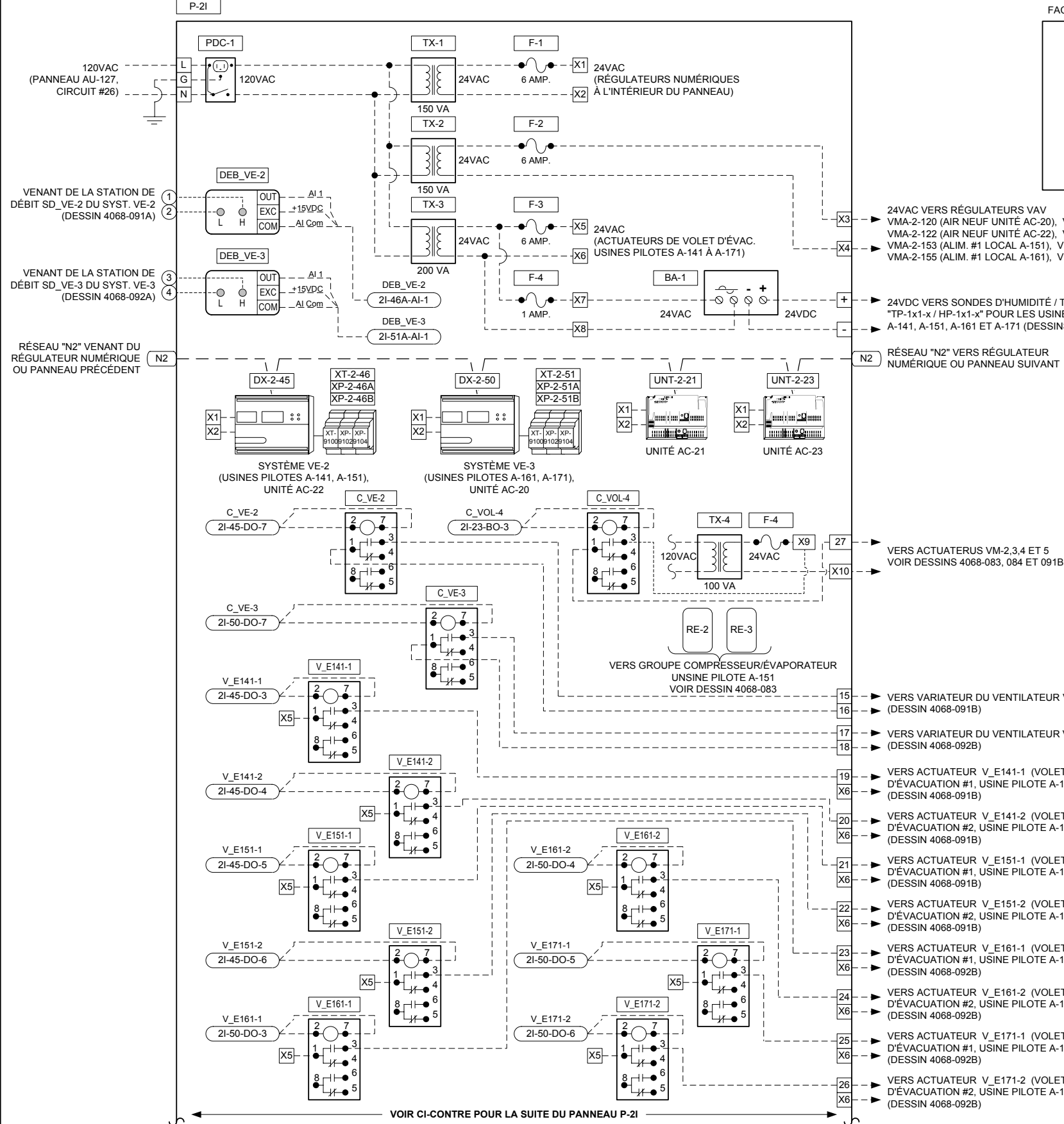
RACCORDEMENT ÉLECTRIQUE



VOIR 4068-091A POUR LE DIAGRAMME DE L'USINE PILOTE A-151

Titre du Dessin	4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Unité de climatisation AC-23 Type 4 (Usine pilote A-151) (Locaux A-151 et A-155)	4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Représentant	Gérant De Projet	Concepteur	NO.	REVISION	ECN	DATE
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/22/2001	PAR	DATE 05/22/2001
Nom du Projet	CRDA ST-HYACINTHE	Projet d'Innovation Technologique	3600, boul. Casavant	St-Hyacinthe (Québec)	NUMÉRO CONTRAT	1096-0093
					NUMÉRO DESSIN	4068-084

PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

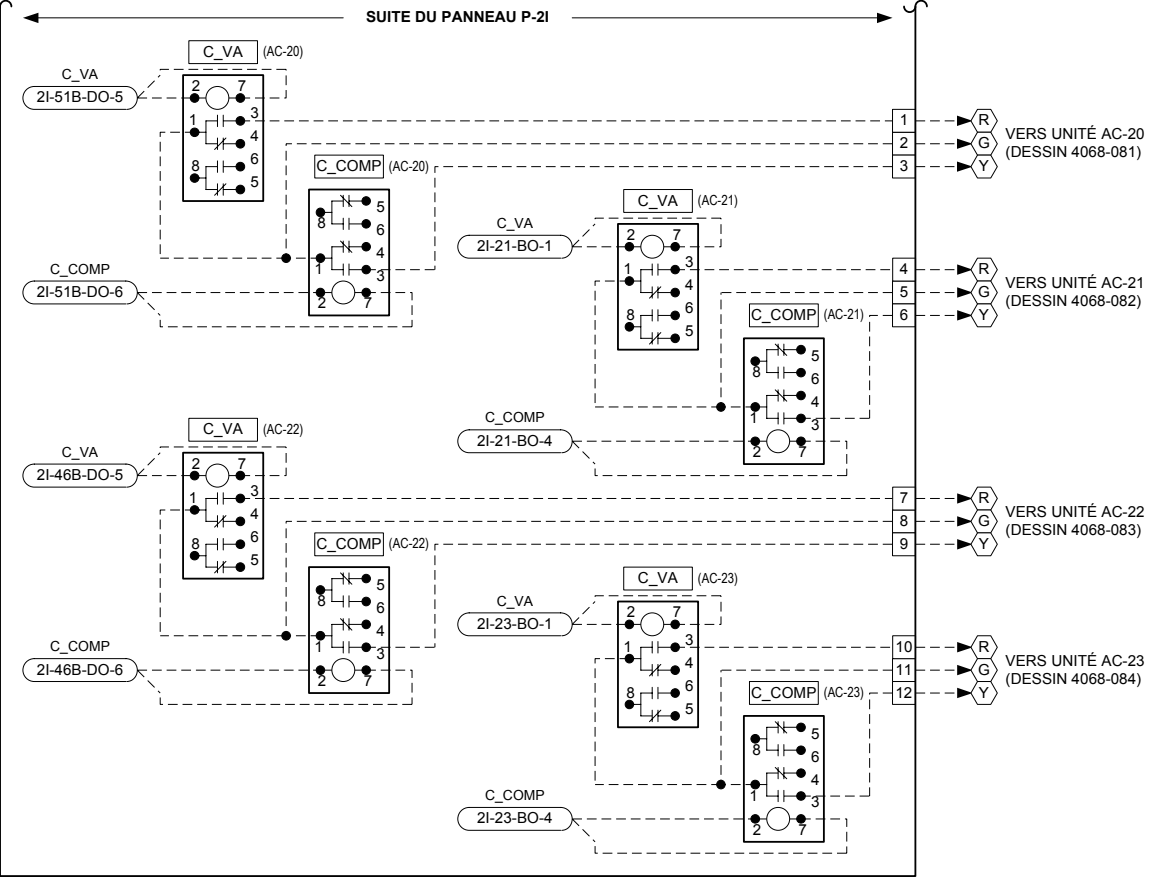
1-

PANNEAU P-2I

LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	10	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
DX-2-45, 2-50	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120/24Vac., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

SUITE DU PANNEAU P-2I



Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
Salle mécanique A-212			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
(Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)							
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE		JOHNSON CONTROLS		Johnson Controls Ltée		1096-0093	
Projet d'Innovation Technologique		Groupe de la régulation		355, boul. Montpellier		NUMÉRO DESSIN	
3600, boul. Casavant				St-Laurent, Qc, H4N 2G6		4068-103	
St-Hyacinthe (Québec)				Tél: (514) 747-2580			
				Fax: (514) 747-9562			

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-23.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Terminal Unit Applications
Application Name : Fan Coil
Configuration History:

QUESTION AND ANSWER SESSION

Select heating type:
None
Select cooling type:
None
Fan cycled during occupied and standby modes?
No
Is lighting required?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
No

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:
AI to BO
Input conditioning:
None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

Yes

Analog Inputs: AI - 1

Binary Inputs: BI - 1

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
* AI	1	AI - 1	AI - 1
AI	3	Zone Temp	ZN-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
* BI	1	BI - 1	BI - 1
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3
* BI	4	BI - 4	BI - 4

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
* BO	3	BO - 3	BO - 3
* BO	4	BO - 4	BO - 4

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00

BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	22.2

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-123.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.022268742

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	120
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf VMA-2-123 est fermé.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote sont sélectionnés à partir des sélecteurs SEL-151-1 et /ou SEL-1-151-2 localisé dans les bureaux A-152 et A-155

Usine pilote en mode normal (20°C):

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur VMA-2-123 module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-151-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-155 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde T_ALI indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

Usine pilote en mode (4°C):

- L'unité AC-23 est à l'arrêt.
- Les volets VMA-2-123 et VM-2 sont complètement fermés.
- La sonde de pièce du local A-155 démarre le compresseur de l'unité AC-22 lors d'une demande de refroidissement et module le relais triac du serpentin de chauffage de la pièce lors d'une demande de chauffage.
- La fonction haute humidité du transmetteur HP-151-2 est annulé.
- Le transmetteur TP-151-1 contrôle la vanne solénoïde du groupe compresseur-évaporateur CC-1, EV-1 et EV-2 afin de maintenir la température dans l'usine pilot A-151 à 4°C.
- Les fonctions haute humidité des transmetteurs HP-151-1 et HP-151-2 sont annulés.

Usine pilote en mode 4°C ou 20°C:

- La sonde T_ALI indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales E_FILT et E_FILT_C, sur non-concordance entre l'état E_VA et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

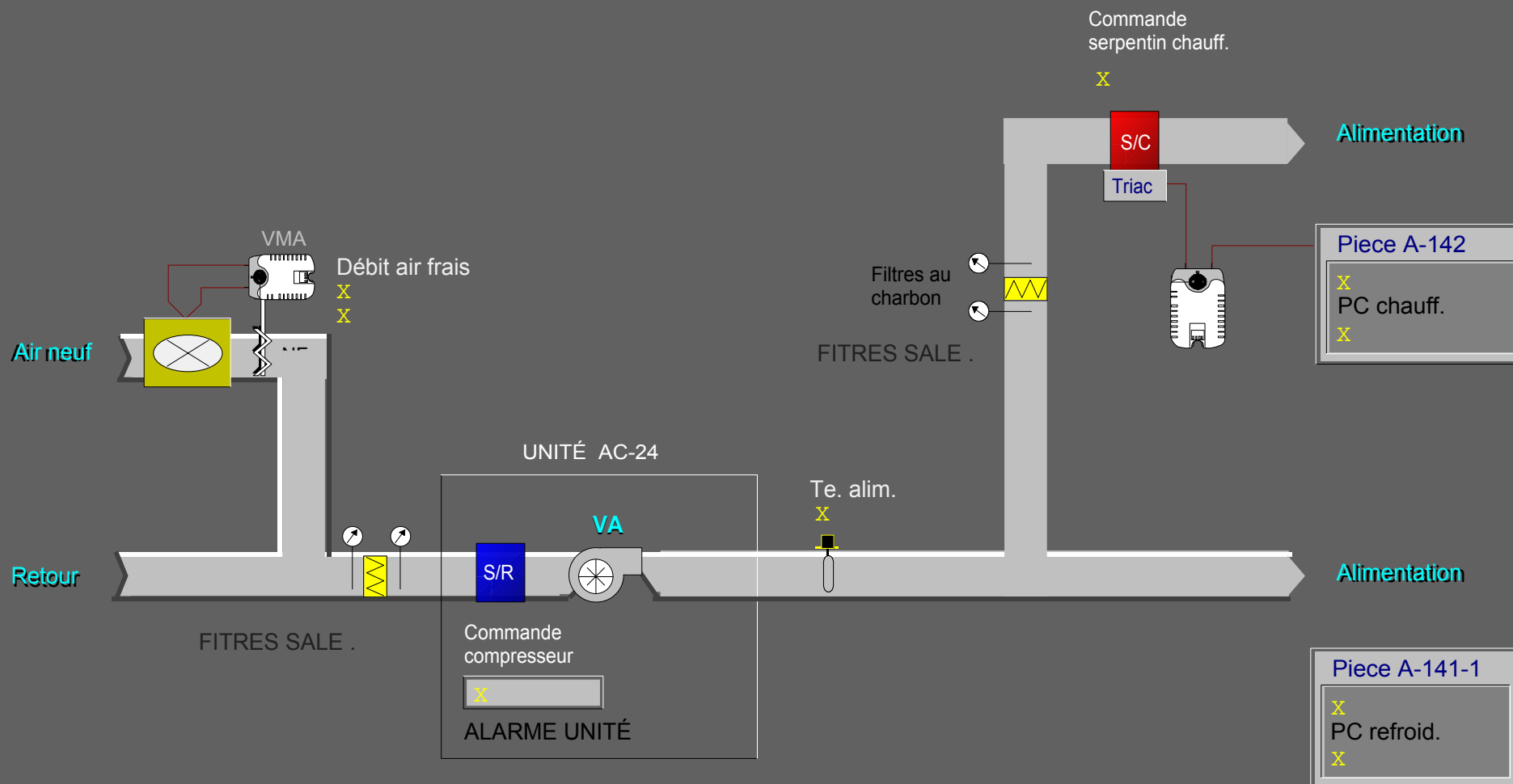
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil			Calibration
		AC-23				UNT	UNT 141					P-2i	Salle méc. A-212													Alimentation 24VAC
2i-23-AI-1	AI-1	AC-23	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	23	AI-1	PHONE JACK	P-2i	Salle méc. A-212	4068-084	2i-23-AI-1		8/24	Prise tél.	Metastat-Prise télep						UV2	Tronc N2 Sonde située dans local A-155
2i-23-AI-3	AI-3	AC-23	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	23	AI-3	AI3,AICM	P-2i	Salle méc. A-212	4068-084	2i-23-AI-3		2/18	2 fils	TE (Gaine)						UV1	
	AI-4	AC-23				UNT	UNT 141	1	23	AI-4		P-2i	Salle méc. A-212		2i-23-AI-4											
	AI-5	AC-23				UNT	UNT 141	1	23	AI-5		P-2i	Salle méc. A-212		2i-23-AI-5											
	AI-6	AC-23				UNT	UNT 141	1	23	AI-6		P-2i	Salle méc. A-212		2i-23-AI-6											
2i-23-BI-1	BI-1	AC-23	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	1	23	BI-1	BI1,24VAC	P-2i	Salle méc. A-212	4068-084	2i-23-BI-1		2/18	Selon dispositif	H-708					UV70	
2i-23-BI-2	BI-2	AC-23	E_FILT	État des filtres	Normal	Salés	UNT	UNT 141	1	23	BI-2	BI2,24VAC	P-2i	Salle méc. A-212	4068-084	2i-23-BI-2		2/18	Y.R	P32 (NO)					UV70	
2i-23-BI-3	BI-3	AC-23	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	23	BI-3	BI3,24VAC	P-2i	Salle méc. A-212	4068-084	2i-23-BI-3		2/18	Selon dispositif	Contact (NO)					UV70	
2i-23-BI-4	BI-4	AC-23	E_FILT_C	État des filtres charbon	Normal	Salés	UNT	UNT 141	1	23	BI-4	BI4,24VAC	P-2i	Salle méc. A-212	4068-084	2i-23-BI-4		2/18	Y.R	P32 (NO)					UV70	
2i-23-BO-1	BO-1	AC-23	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 141	1	23	BO-1	BO1.COM	P-2i	Salle méc. A-212	4068-084	2i-23-BO-1	2/18	Bobine	RELAIS	NO.COM	2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2i-23-BO-2	BO-2	AC-23	C_SC	Comm.serpentin chauffage	%		UNT	UNT 141	1	23	BO-2	BO2.COM	P-2i	Salle méc. A-212	4068-103	2i-23-BO-2	2/18	Bobine	RELAIS	NO.COM	2/14	Selon dispositif	Contact (NO)		UV51	Convert. 0-10VDC à impulsions (Serp. SE-16
2i-23-BO-3	BO-3	AC-23	C_VOL-4	Comm.volet 4°C	20°C	4°C	UNT	UNT 141	1	23	BO-3	BO3.COM	P-2i	Salle méc. A-212	4068-084	2i-23-BO-3	2/18	Bobine	RELAIS	NO.COM	2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2i-23-BO-4	BO-4	AC-23	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	1	23	BO-4	BO4.COM	P-2i	Salle méc. A-212	4068-084	2i-23-BO-4	2/18	Bobine	RELAIS	NO.COM	2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-23					UNT	UNT 141	1	23	BO-5		P-2i	Salle méc. A-212		2i-23-BO-5										
	BO-6	AC-23					UNT	UNT 141	1	23	BO-6		P-2i	Salle méc. A-212		2i-23-BO-6										
	AO-1	AC-23					UNT	UNT 141	1	23	AO-1		P-2i	Salle méc. A-212		2i-23-AO-1										
	AO-2	AC-23					UNT	UNT 141	1	23	AO-2		P-2i	Salle méc. A-212		2i-23-AO-2										
							VMA	VMA 1410				P-2	Unité AC-23													Alimentation 24VAC
		AC-23					VMA	VMA 1410	1	123		P-2	Unité AC-23													Tronc N2
2-123-AI-1	AI-1	AC-23	RES	Résistance 1000 ohms	°C		VMA	VMA 1410	1	123	AI-1	P-2	Unité AC-23	4068-084	2-123-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-23					VMA	VMA 1410	1	123	AI-2	P-2	Unité AC-23		2-123-AI-2											
	BI-1	AC-23					VMA	VMA 1410	1	123	BI-1	P-2	Unité AC-23		2-123-BI-1											
	BI-2	AC-23					VMA	VMA 1410	1	123	BI-2	P-2	Unité AC-23		2-123-BI-2											
	BI-3	AC-23					VMA	VMA 1410	1	123	BI-3	P-2	Unité AC-23		2-123-BI-3											
2-123-AI-5	AI-5	AC-23	P_VEL	Pression de vélocité	Pa		VMA	VMA 1410	1	123	AI-5	P-2	Unité AC-23	4068-084	2-123-AI-5											Air neuf AC-23

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-23

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-23	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-151-2, HP-151-2	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-123	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VM-2	ACTUATEUR DE VOLET 2 POSITIONS c/a RESSORT DE RAPPEL, 24VAC	M9206-AGA-2	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2I

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BA-1	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP.	PS-100-3	GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VOL-4	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_VE-2, VE-3	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%	DPT2640-0R1D-A	JOHNSON CONTROLS
DX-2-45, DX-2-50	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, F-2, F-3	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-4	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2I	PANNEAU 36"x48"x9.5"	M-8100-3648	JOHNSON CONTROLS
TX-1, TX-2	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
TX-3	TRANSFORMATEUR 120V/24V/100VA	MO200A	MARCUS
TX-4	TRANSFORMATEUR 120V/24V/200VA	MO100A	MARCUS
UNT-2-21, 2-23	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
V_E1x1-x	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
XP-2-46A, 2-51A	MODULE D'EXPENSION 6AI/2AO	XP-9102-8303	JOHNSON CONTROLS
XP-2-46B, 2-51B	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-24 - LOCAUX A-141 ET A-142
(TYPE 4 - USINE PILOTE A-141)

Le schéma illustre le circuit de l'unité de climatisation AC-24. L'air neuf (système UV-1) passe par un filtre SD-24 (175mm - 7" Ø, 55 l/s - 120 pcm) et un ventilateur VMA-2-124. Le retour d'air passe par un filtre E_FILT. L'unité AC-24 comprend un compresseur, un condensateur, un évaporateur, un détendeur, un ventilateur VA, un moteur E_VA, un thermostat T_ALI, et un relais SE-17 (1.0 kW). L'unité est alimentée en 208VAC (par d'autres) et en 1 phase. Les filtres au charbon (E_FILT_C) sont situés en aval de l'unité. Les alimentations sont destinées au bureau (local A-142) et à l'usine pilote A-141. Des sondes de température (T_PIE) et d'humidité (TP-141-1, HP-141-1) sont installées dans les locaux A-142 et l'usine pilote A-141. Le schéma inclut également un tableau de connexion pour le panneau de contrôle P-2J (dessin 4068-104) et un relais RE-1.

<u>LISTE DE MATÉRIEL</u>		
IDENT.	QTE MODÈLE	DESCRIPTION
E_FILTER, E_FILTER_C	2 P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
	2 FTG18A-600R	TUBE DE PITOT 4" (100mm)
E_VALVE	1 H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALARM	1 TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIPE	1 TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-141-1 / HP-141-1	1 HE-67N2-0N00P	SONDE DE TEMP / HUMIDITÉ, 1000 OHMS NI, 0-10VDC 0-100%HR, ± 2%HR
VMA-2-124	1 AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1 -----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1 RCPFTU82D1024	RELAIS 2PDT,24Vac.
	1 S-408	BASE DE RELAIS 8 BROCHES
SD-24	1 RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-124) est fermé.

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-124) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-141-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-142 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-124)

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-17)

Titre du Dessin

**Unité de climatisation AC-24
Type 4 (Usine pilote A-141)
(Locaux A-141 et A-142)**

Nom du Projet

**CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)**

24VAC VENANT
DU PANNEAU P-2J
(DESSIN 4068-104)

VERS STATION
DE DÉBIT (SD-24)

RES-1
(1000 Ohms)

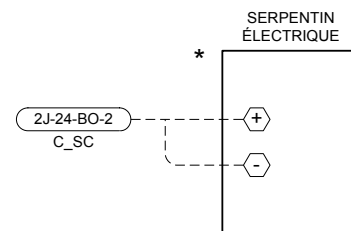
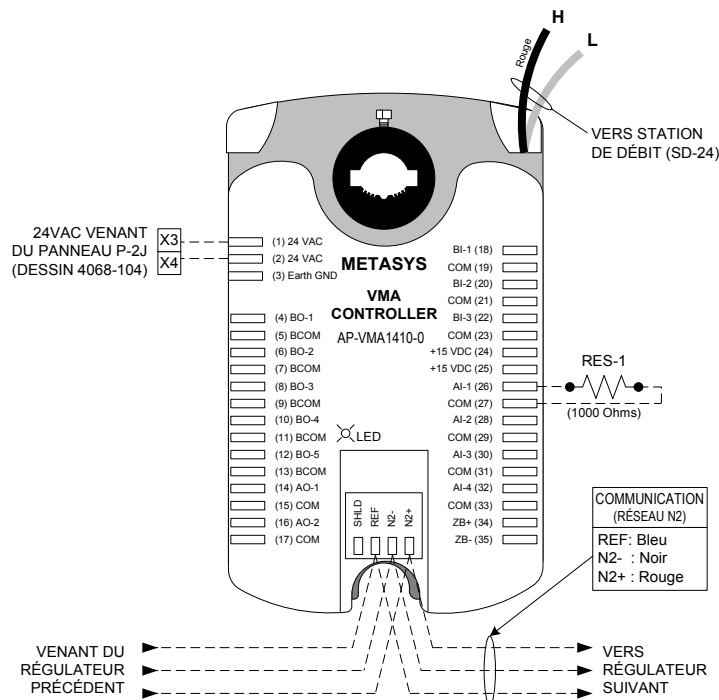
COMMUNICATION
(RÉSEAU N2)

REF: Bleu
N2- : Noir
N2+ : Rouge


VENANT DU
RÉGULATEUR
PRÉCÉDENT

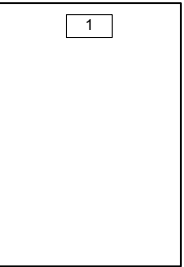
VERS
RÉGULATEUR
SUIVANT

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-17)



VOIR 4068-091A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-141

Titre du Dessin			3	TEL QUE CONSTRUIT	D.B.	02/04/2019	O.P.
Unité de climatisation AC-24 Type 4 (Usine pilote A-141) (Locaux A-141 et A-142)			2	POUR CONSTRUCTION		09/18/2001	D.B.
			1	POUR APPROBATION		06/12/2001	D.B.
	DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE
	Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ	
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/22/2001
Nom du Projet	Information Succursale			NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Yacinthe (Québec)	 Groupe de la réglementation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093	
						NUMÉRO DESSIN	
						4068-085	



1 - PANNEAU P-2J

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-24.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Terminal Unit Applications
Application Name : Fan Coil
Configuration History:

QUESTION AND ANSWER SESSION

Select heating type:
None
Select cooling type:
None
Fan cycled during occupied and standby modes?
No
Is lighting required?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
No

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:
AI to BO
Input conditioning:
None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

Yes

Analog Inputs: AI - 1

Binary Inputs: BI - 1

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
* AI	1	AI - 1	AI - 1
AI	3	Zone Temp	ZN-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
* BI	1	BI - 1	BI - 1
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3
* BI	4	BI - 4	BI - 4

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
* BO	4	BO - 4	BO - 4

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****

BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.1
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	22.2

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-124.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.026695773

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	120
ADF	164	Occupied Clg Min	OCCCMIN	120
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	117
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.35
ADF	25	Pickup Gain	PKUPGAIN	2.5
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	120

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-124) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-124) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-141-1), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-142 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

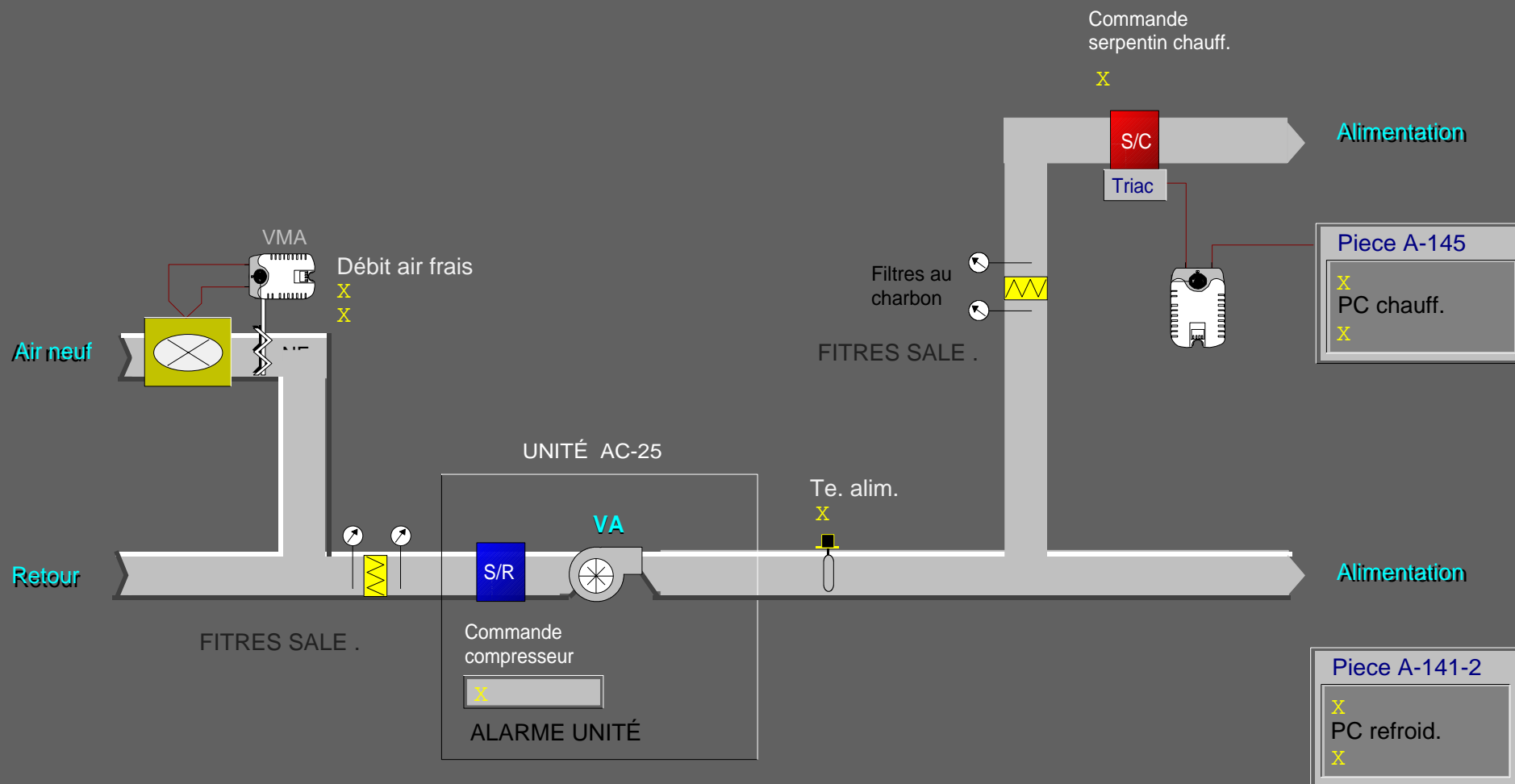
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de réf.	Commentaires	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration			
		AC-24				UNT	UNT 141					P-2J	Salle méc. A-211													Alimentation 24VAC	
2H-24-AI-1	AI-1	AC-24	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	24	AI-1	PHONE JACK	P-2J	Salle méc. A-211	4068-085	2J-24-AI-1						8/24	Prise tél.	Metastat-Prise télép		UV2	Tronc N2 Sonde située dans local A-142	
AI-2	AC-24					UNT	UNT 141	1	24	AI-2		P-2J	Salle méc. A-211		2J-24-AI-2												
2H-24-AI-3	AI-3	AC-24	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	24	AI-3	AI3,AICM	P-2J	Salle méc. A-211	4068-085	2J-24-AI-3						2/18	2 fils	TE (Gaine)		UV1		
AI-4	AC-24					UNT	UNT 141	1	24	AI-4		P-2J	Salle méc. A-211		2J-24-AI-4												
AI-5	AC-24					UNT	UNT 141	1	24	AI-5		P-2J	Salle méc. A-211		2J-24-AI-5												
AI-6	AC-24					UNT	UNT 141	1	24	AI-6		P-2J	Salle méc. A-211		2J-24-AI-6												
2H-24-BI-1	BI-1	AC-24	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 141	1	24	BI-1	BI1,24VAC	P-2J	Salle méc. A-211	4068-085	2J-24-BI-1					2/18	Selon dispositif	H-708		UV70		
2H-24-BI-2	BI-2	AC-24	E_FILT	État des filtres	Normal	Salas	UNT	UNT 141	1	24	BI-2	BI2,24VAC	P-2J	Salle méc. A-211	4068-085	2J-24-BI-2					2/18	Y.R	P32 (NO)		UV70		
2H-24-BI-3	BI-3	AC-24	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 141	1	24	BI-3	BI3,24VAC	P-2J	Salle méc. A-211	4068-085	2J-24-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
2H-24-BI-4	BI-4	AC-24	E_FILT_C	État des filtres charbon	Normal	Salas	UNT	UNT 141	1	24	BI-4	BI4,24VAC	P-2J	Salle méc. A-211	4068-085	2J-24-BI-4					2/18	Y.R	P32 (NO)		UV70		
2H-24-BO-1	BO-1	AC-24	C_VA	Comm.a/d vent.alm.	Arrêt	Marche	UNT	UNT 141	1	24	BO-1	BO1,COM	P-2J	Salle méc. A-211	4068-085	2J-24-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
BO-2	AC-24					UNT	UNT 141	1	24	BO-2		P-2J	Salle méc. A-211		2J-24-BO-2												
BO-3	AC-24					UNT	UNT 141	1	24	BO-3		P-2J	Salle méc. A-211		2J-24-BO-3												
2H-24-BO-4	BO-4	AC-24	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 141	1	24	BO-4	BO4,COM	P-2J	Salle méc. A-211	4068-085	2J-24-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
BO-5	AC-24					UNT	UNT 141	1	24	BO-5		P-2J	Salle méc. A-211		2J-24-BO-5												
BO-6	AC-24					UNT	UNT 141	1	24	BO-6		P-2J	Salle méc. A-211		2J-24-BO-6												
2H-24-AO-1	AO-1	AC-24	C_SC	Comm.serpentin chauffage	%	UNT	UNT 141	1	24	AO-1	AO1,AOCOM	P-2J	Salle méc. A-211	4068-085	2J-24-AO-1	2/18	+-	EP-8000	SUPPLY O		1/4"	Raccord à crans	EP-PNEU		UV27	Convert. 0-10VDC à impulsions (Serp. SE-12)	
AO-2	AC-24					UNT	UNT 141	1	24	AO-2		P-2J	Salle méc. A-211		2J-24-AO-2											Alimentation 24VAC	
						VMA	VMA 1410					P-2	Unité AC-24													Tronc N2	
2-124-AI-1	AI-1	AC-24	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	124	AI-1	AI1,AICM	P-2	Unité AC-24	4068-085	2-124-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1			
AI-2	AC-24					VMA	VMA 1410	1	124	AI-2		P-2	Unité AC-24		2-124-AI-2												
BI-1	AC-24					VMA	VMA 1410	1	124	BI-1		P-2	Unité AC-24		2-124-BI-1												
BI-2	AC-24					VMA	VMA 1410	1	124	BI-2		P-2	Unité AC-24		2-124-BI-2												
BI-3	AC-24					VMA	VMA 1410	1	124	BI-3		P-2	Unité AC-24		2-124-BI-3												
2-124-AI-5	AI-5	AC-24	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	124	AI-5		P-2	Unité AC-24	4068-085	2-124-AI-5											Air neuf AC-24	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-24

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-24	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-141-1, HP-141-1	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-124	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2J

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2J	PANNEAU 24"x30"x9.5"	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-24, 2-25	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS



UNITÉ DE CLIMATISATION AC-25 - LOCAUX A-141 ET A-145 (TYPE 4 - USINE PILOTE A-141)

The diagram illustrates the AC-25 climate unit system for Local A-141 and A-145. It shows the flow of air from the fresh air intake (AIR NEUF) through a UV-1 system, a filter (SD-25), and a fan (VMA-2-125). The air then passes through a series of filters and a fan (E_FILT) before entering the AC-25 unit. The unit is powered by a 1-phase supply and outputs 208VAC. The output is split into two paths: one for the office (ALIMENTATION BUREAU) and one for the pilot plant (ALIMENTATION USINE PILOTE A-141). The diagram also shows various sensors and controls, including temperature and humidity sensors (T_PIE, T_ALI, TP-141-2, HP-141-2), pressure sensors (E_FILT, E_VA), and a control panel (RE-1). A note indicates that the climate unit is located in the mechanical room (SALLE MÉCANIQUE A-211).

<u>LISTE DE MATÉRIEL</u>			
IDENT.	QTE	MODÈLE	DESCRIPTION
E_FILTER, E_FILTER_C	2	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
			TUBE DE PITOT 4" (100mm)
E_VALVE	2	FTG18A-600R	RELAIS DE COURANT, 1-135AMP. - VERIS
T_ALARM	1	H-708	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIPE	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
TP-141-2 / HP-141-2	1	TE-6314P-1	SONDE DE TEMP / HUMIDITÉ, 1000 OHMS NI,
		HE-67N2-0N00P	0-10VDC 0-100%HR, ± 2%HR
VMA-2-125	1	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)
RES-1	1	-----	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT
RE-1	1	RCPTFH82D1024	RELAIS 2PDT,24Vac.
	1	S-408	BASE DE RELAIS 8 BROCHES
SD-25	1	RMS-7	STATION DE MESURE DE VÉLOCITÉ 175mm, 7" Ø - EH PRICE

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-125) est fermé.

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-125) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-141-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-145 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DU RÉGULATEUR (VMA-2-125)

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-18)

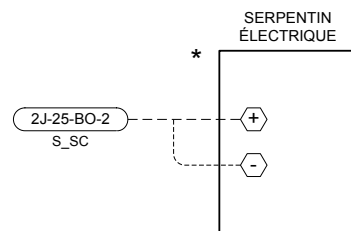
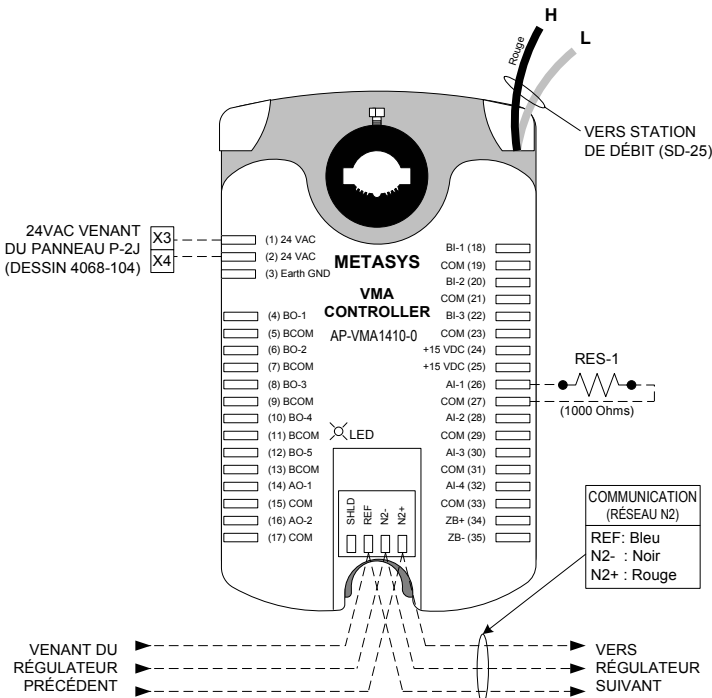
Titre du Dessin

**Unité de climatisation AC-25
Type 4 (Usine pilote A-141)
(Locaux A-141 et A-145)**

Nom du Projet

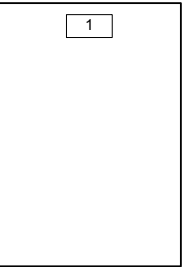
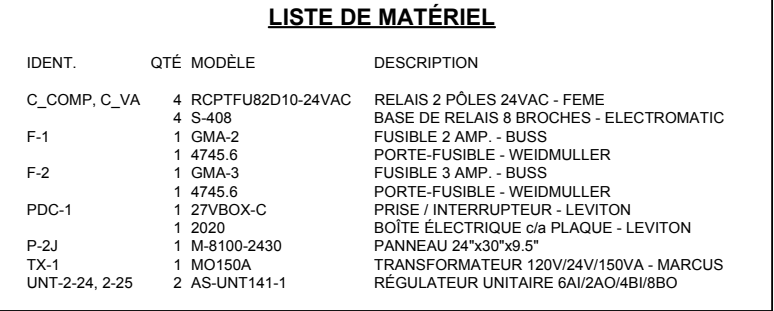
**CRDA ST-HYACINTHE
Projet d'Innovation Technologique
3600, boul. Casavant
St-Hyacinthe (Québec)**

RACCORDEMENTS DU SERPENTIN ÉLECTRIQUE (SE-18)



VOIR 4068-091A POUR
LE DIAGRAMME DE
L'USINE PILOTE A-141

Titre du Dessin Unité de climatisation AC-25 Type 4 (Usine pilote A-141) (Locaux A-141 et A-145)			3	TEL QUE CONSTRUIT	D.B.	02/04/2019	O.P.
			2	POUR CONSTRUCTION		09/18/2001	D.B.
			1	POUR APPROBATION		06/12/2001	D.B.
	DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE
Représentant J.-C. Rouillon	Gérant De Projet S. Bourque	Concepteur D. Bouchard	DESSINE			APPROUVE	
			PAR	D.B.	DATE	05/22/2001	PAR
Nom du Projet	Information Succursale			NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	 Groupe de la réglementation			Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093	
						NUMÉRO DESSIN 4068-086	



1 - PANNEAU P-2J

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-25.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Terminal Unit Applications
Application Name : Fan Coil
Configuration History:

QUESTION AND ANSWER SESSION

Select heating type:
None
Select cooling type:
None
Fan cycled during occupied and standby modes?
No
Is lighting required?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
No

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:
AI to BO
Input conditioning:
None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

Yes

Analog Inputs: AI - 1

Binary Inputs: BI - 1

Analog Outputs: (NONE)

Binary Outputs: BO - 2

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
* AI	1	AI - 1	AI - 1
AI	3	Zone Temp	ZN-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
* BI	1	BI - 1	BI - 1
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3
* BI	4	BI - 4	BI - 4

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	2	BO - 2	BO - 2
* BO	4	BO - 4	BO - 4

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****

BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****

Zone Cooling Setpoints

ADF	129	Occ Clg Setpt	OCCCLGSP	23.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0

Zone Heating Setpoints

ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0

Sideloop-1/Comp Stpt

ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	22.2

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-125.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.03242816

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	120
ADF	164	Occupied Clg Min	OCCCMIN	120
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	117
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	1.3
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	120

VAV Box Mode

ADI

67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 4)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- Le serpentin de chauffage est inopérant.
- Le volet d'air neuf (VMA-2-125) est fermé.

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Au départ de l'unité, le régulateur (VMA-2-125) module son volet afin de maintenir le débit d'air neuf à 55 l/s (120 pcm).
- Sur une hausse de température de l'usine pilote (sonde TP-141-2), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 23°C, ajustable).
- Sur une demande de chauffage dans le bureau A-145 (sonde T_PIE), le relais triac du serpentin électrique est modulé à l'aide d'impulsions de façon à maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT et E_FILT_C), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

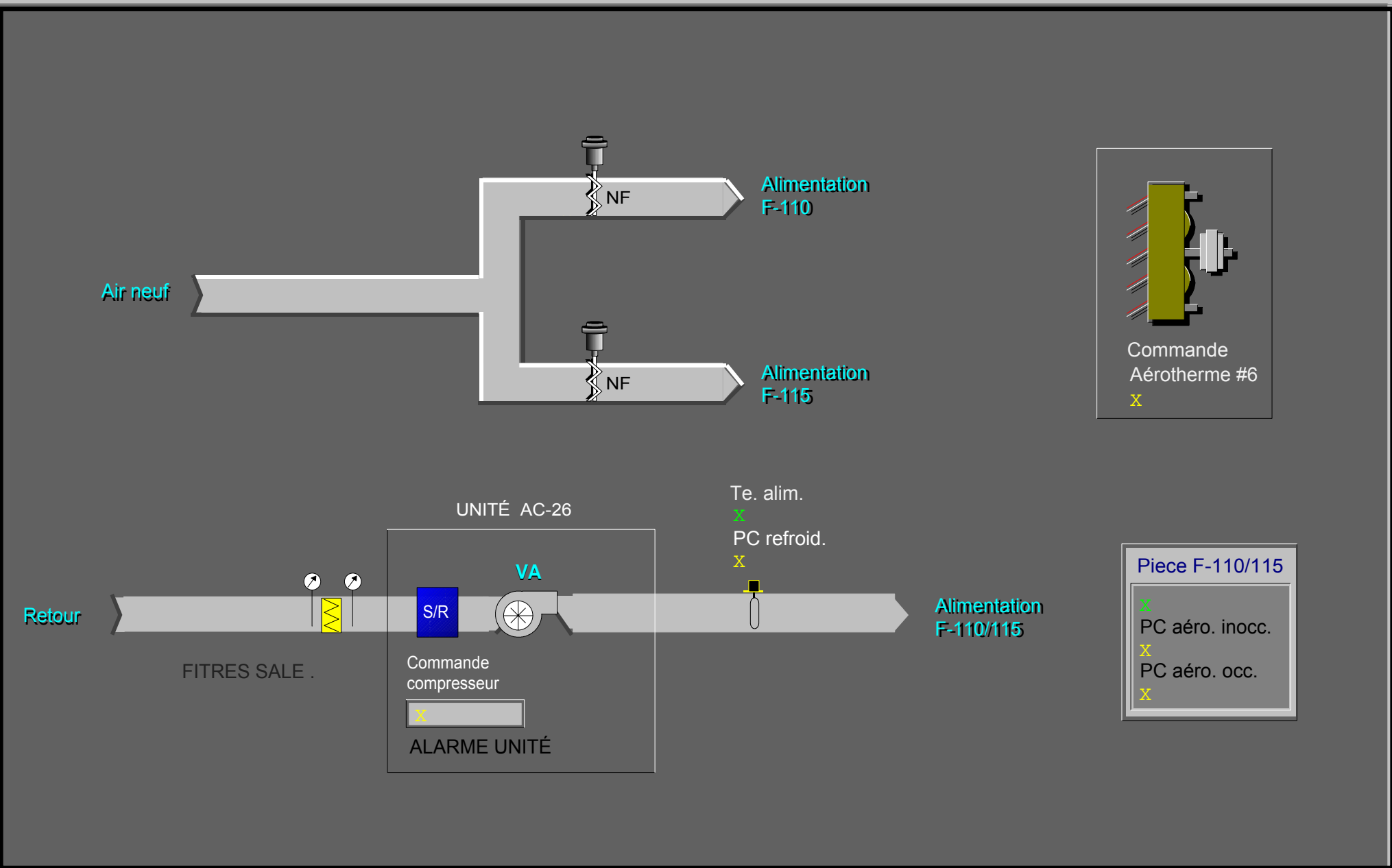
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires
		AC-25				UNT	UNT 141	1	25			P-2J	Salle méc. A-211													Alimentation 24VAC
2H-25-AI-1	AI-1	AC-25	T_PIE	Temp.pieçe	°C	UNT	UNT 141	1	25	AI-1	PHONE JACK	P-2J	Salle méc. A-211	4068-086	2J-25-AI-1						8/25	Prise tél.	Metastat-Prise télep		UV2	Tronc N2
		AC-25				UNT	UNT 141	1	25	AI-2		P-2J	Salle méc. A-211		2J-25-AI-2											Sonde située dans local A-145
2H-25-AI-3	AI-3	AC-25	T_ALI	Temp.alimentation	°C	UNT	UNT 141	1	25	AI-3	AI3,AICM	P-2J	Salle méc. A-211	4068-086	2J-25-AI-3						2/18	2 fils	TE (Gaine)		UV1	
		AC-25				UNT	UNT 141	1	25	AI-4		P-2J	Salle méc. A-211		2J-25-AI-4											
		AC-25				UNT	UNT 141	1	25	AI-5		P-2J	Salle méc. A-211		2J-25-AI-5											
		AC-25				UNT	UNT 141	1	25	AI-6		P-2J	Salle méc. A-211		2J-25-AI-6											
2H-25-BI-1	BI-1	AC-25	E_VA	État vent alimentation	Arrêt Marche	UNT	UNT 141	1	25	BI-1	BI1,25VAC	P-2J	Salle méc. A-211	4068-086	2J-25-BI-1						2/18	Selon dispositif	H-708		UV70	
2H-25-BI-2	BI-2	AC-25	E_FILT	État des filtres	Normal Sales	UNT	UNT 141	1	25	BI-2	BI2,25VAC	P-2J	Salle méc. A-211	4068-086	2J-25-BI-2						2/18	Y.R	P32 (NO)		UV70	
2H-25-BI-3	BI-3	AC-25	ALM_AC	Alarme unité AC	Normal Alarme	UNT	UNT 141	1	25	BI-3	BI3,25VAC	P-2J	Salle méc. A-211	4068-086	2J-25-BI-3						2/18	Selon dispositif	Contact (NO)		UV70	
2H-25-BI-4	BI-4	AC-25	E_FILT_C	État des filtres charbon	Normal Sales	UNT	UNT 141	1	25	BI-4	BI4,25VAC	P-2J	Salle méc. A-211	4068-086	2J-25-BI-4						2/18	Y.R	P32 (NO)		UV70	
2H-25-BO-1	BO-1	AC-25	C_VA	Comm.a/d vent.alm.	Arrêt Marche	UNT	UNT 141	1	25	BO-1	BO1,COM	P-2J	Salle méc. A-211	4068-086	2J-25-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
		AC-25				UNT	UNT 141	1	25	BO-2		P-2J	Salle méc. A-211		2J-25-BO-2											
		AC-25				UNT	UNT 141	1	25	BO-3		P-2J	Salle méc. A-211		2J-25-BO-3											
2H-25-BO-4	BO-4	AC-25	C_COMP	Comm.a/d compresseur	Arrêt Marche	UNT	UNT 141	1	25	BO-4	BO4,COM	P-2J	Salle méc. A-211	4068-086	2J-25-BO-4	2/18	Bobine	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
		AC-25				UNT	UNT 141	1	25	BO-5		P-2J	Salle méc. A-211		2J-25-BO-5											
		AC-25				UNT	UNT 141	1	25	BO-6		P-2J	Salle méc. A-211		2J-25-BO-6											
2H-25-AO-1	AO-1	AC-25	C_SC	Comm.serpentin chauffage	%	UNT	UNT 141	1	25	AO-1	AO1,AOCOM	P-2J	Salle méc. A-211	4068-086	2J-25-AO-1	2/18	+-	EP-8000	SUPPLY_O		1/4"	Raccord à crans	EP-PNEU		UV27	Convert. 0-10VDC à impulsions (Serp. SE-18
AO-2	AC-25					UNT	UNT 141	1	25	AO-2		P-2J	Salle méc. A-211		2J-25-AO-2											Alimentation 24VAC
		AC-25				VMA	VMA 1410	1	125			P-2	Unité AC-25													Tronc N2
2-125-AI-1	AI-1	AC-25	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	125	AI-1	AI1,AICM	P-2	Unité AC-25	4068-086	2-125-AI-1					VMA	2 fils	Résistance 1000 ohms		VMA1		
		AC-25				VMA	VMA 1410	1	125	AI-2		P-2	Unité AC-25		2-125-AI-2											
		AC-25				VMA	VMA 1410	1	125	BI-1		P-2	Unité AC-25		2-125-BI-1											
		AC-25				VMA	VMA 1410	1	125	BI-2		P-2	Unité AC-25		2-125-BI-2											
		AC-25				VMA	VMA 1410	1	125	BI-3		P-2	Unité AC-25		2-125-BI-3											
2-125-AI-5	AI-5	AC-25	P_VEL	Pression de vélocité	Pa	VMA	VMA 1410	1	125	AI-5		P-2	Unité AC-25	4068-086	2-125-AI-5											Air neuf AC-25

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-25

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
E_FILT, E_FILT_C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-25	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
TP-141-2, HP-141-2	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
VMA-2-125	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2J

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 3 AMP	GMA-3	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2J	PANNEAU 24"x30"x9.5"	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
UNT-2-24, 2-25	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS



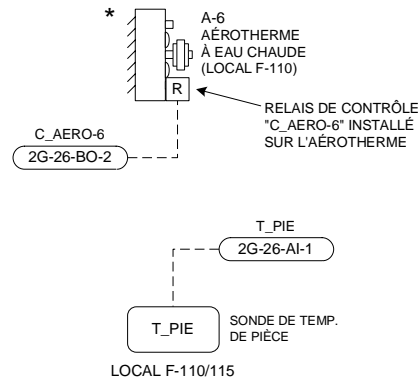
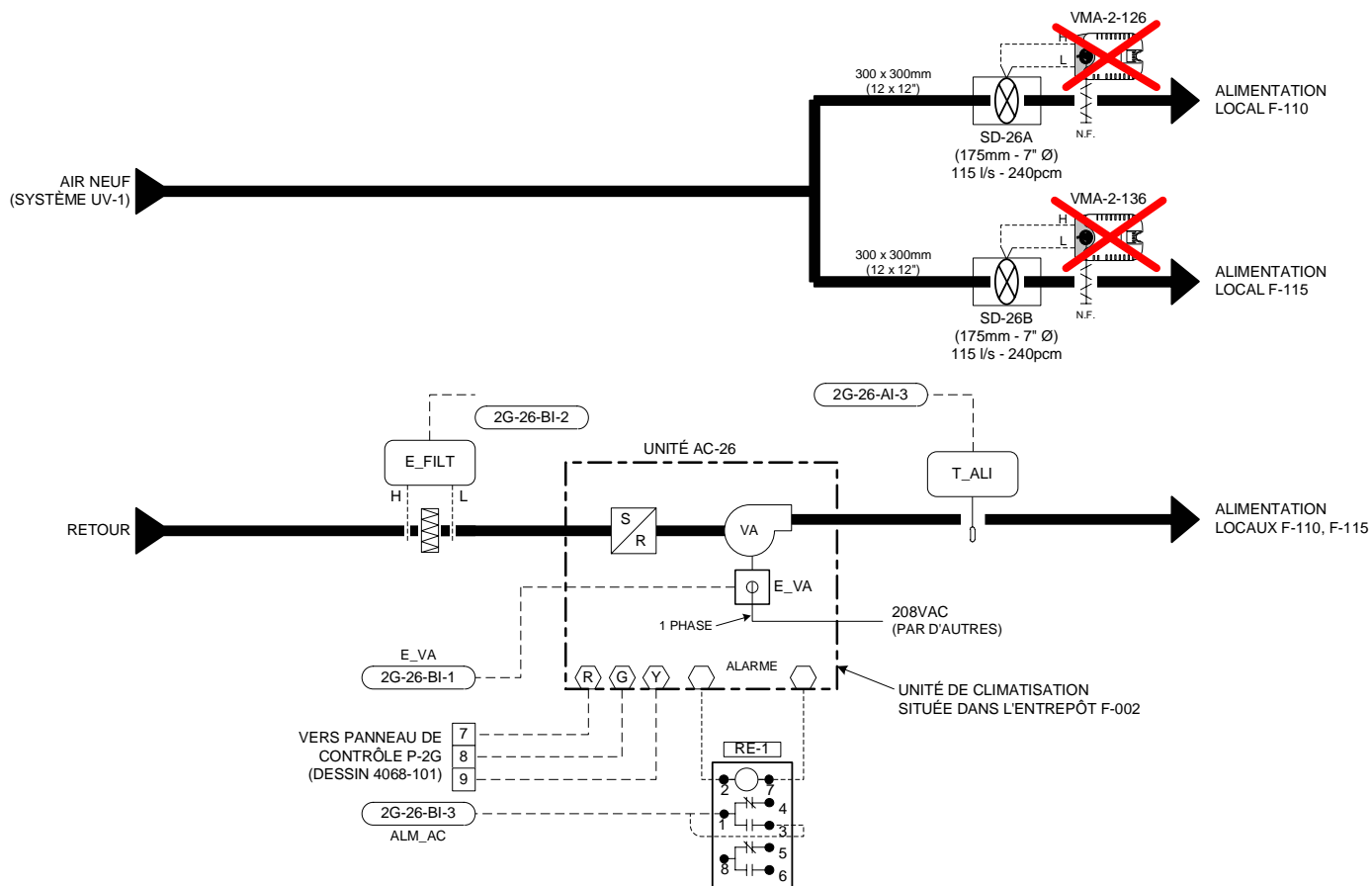
Commande
Aérotherme #6
X

Piece F-110/115

X	PC aéro. inocc.
X	PC aéro. occ.
X	



UNITÉ DE CLIMATISATION AC-26 - LOCAUX F-110, F-115
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC AÉROTHERME)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-6	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
E_FILT	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	1	P32AF-2C	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
E_VA	1	FTG18A-600R	TUBE DE PITOT 4" (100mm)
RE-1	1	H-708	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	RCPTFU82D1024	RELAIS 2PDT, 24Vac.
SD-26A, B	1	S-408	BASE DE RELAIS 8 BROCHES
	2	RMS-8	STATION DE MESURE DE VÉLOCITÉ 175mm,8" Ø - EH PRICE
T_ALI	1	TE-6311P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-126,136	2	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETEUR DE PRESSION DIFF.(DÉBIT)

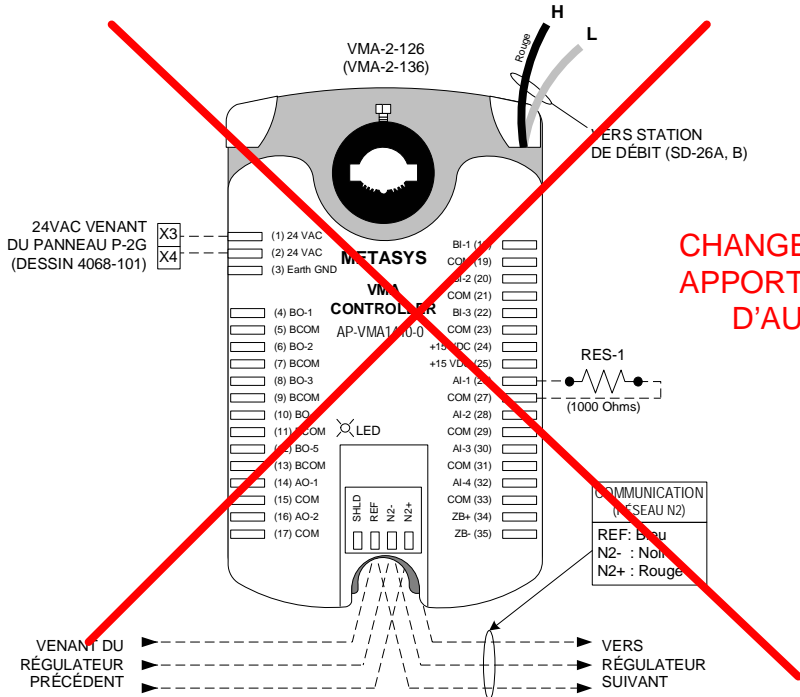
SÉQUENCE D'OPÉRATION (TYPE 1)

- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - La sonde de pièce (T_PIE) contrôle l'aérotherme (A-6) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 24°C, ajustable).
 - Sur une demande de chauffage, l'aérotherme est activé afin de maintenir la température de la pièce au point de consigne (P.C. 21°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

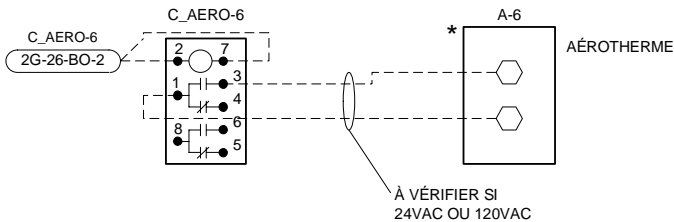
- ALIMENTATION LOCAUX F-110 ET F-115:**
- Les régulateurs (VMA-2-126 et VMA-2-136) modulent leur volet respectif de façon à maintenir un débit d'alimentation d'air constant (115 l/s, 240 pcm pour chaque local).

DIAGRAMME ÉLECTRIQUE

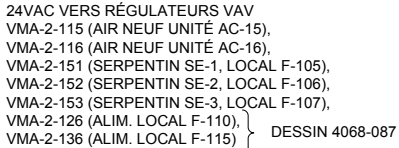
RACCORDEMENTS DES RÉGULATEURS (VMA-2-126 ET VMA-2-136)



RACCORDEMENTS DE L'AÉROTHERME (A-6)



Titre du Dessin											
Unité de climatisation AC-26 Locaux F-110, F-115 Type 1 (Unité avec aérotherme)				2		TEL QUE CONSTRUIT		D.B.		02/04/29 O.P.	
				1		POUR APPROBATION				12/06/01 D.B.	
		DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN		DATE PAR	
Représentant		Gérant De Projet		Concepteur		DESSINÉ		APPROUVÉ			
J.-C. Rouillon		S. Bourque		D. Bouchard		PAR D.B. DATE 05/22/2001		PAR DATE 05/22/2001			
Nom du Projet						Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)						Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093			
				NUMÉRO DESSIN				4068-087			

PAM

**JOHNSON
CONTROLS**
Groupe de la régulation

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-26.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Staged

Heating diagnostics?

No

Select number of heating stages:

1 Stage

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

TMZ Digital room sensor

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
Yes

SIDELoop DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 3

Parameters: Comp Setpoint Differential
Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO) (NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
----	-----	-----	-----
BO	1	Fan	SF-C
BO	2	Htg Stage 1	HTG1-C
* BO	3	BO - 3	BO - 3
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
----	-----	-----	-----	-----
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	24.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	18.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-1.5
ADF	139	Htg Integ Time	HTGIT	0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	185	Heat Stage 1 Percent	HTSTG1	5
ADF	190	Heating Failsoft	HEATFAIL	0
AO	7	Heating Command	HEATCMD	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0

*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****
Sideloop-1/Comp Stpt				
ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-115.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
 Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.026279569

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	75
ADF	164	Occupied Clg Min	OCCCMIN	75
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	75
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.267
ADF	25	Pickup Gain	PKUPGAIN	0.4
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	75

VAV Box Mode
ADI 67

Present Value

BOXMODE

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- La sonde de pièce (T_PIE) contrôle l'aérotherme (A-6) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 24°C, ajustable).
- Sur une demande de chauffage, l'aérotherme est activé afin de maintenir la température de la pièce au point de consigne (P.C. 21°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

ALIMENTATION LOCAUX F-110 ET F-115:

- Les régulateurs (VMA-2-126 et VMA-2-136) modulent leur volet respectif de façon à maintenir un débit d'alimentation d'air constant (115 l/s, 240 pcm pour chaque local).

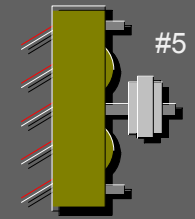
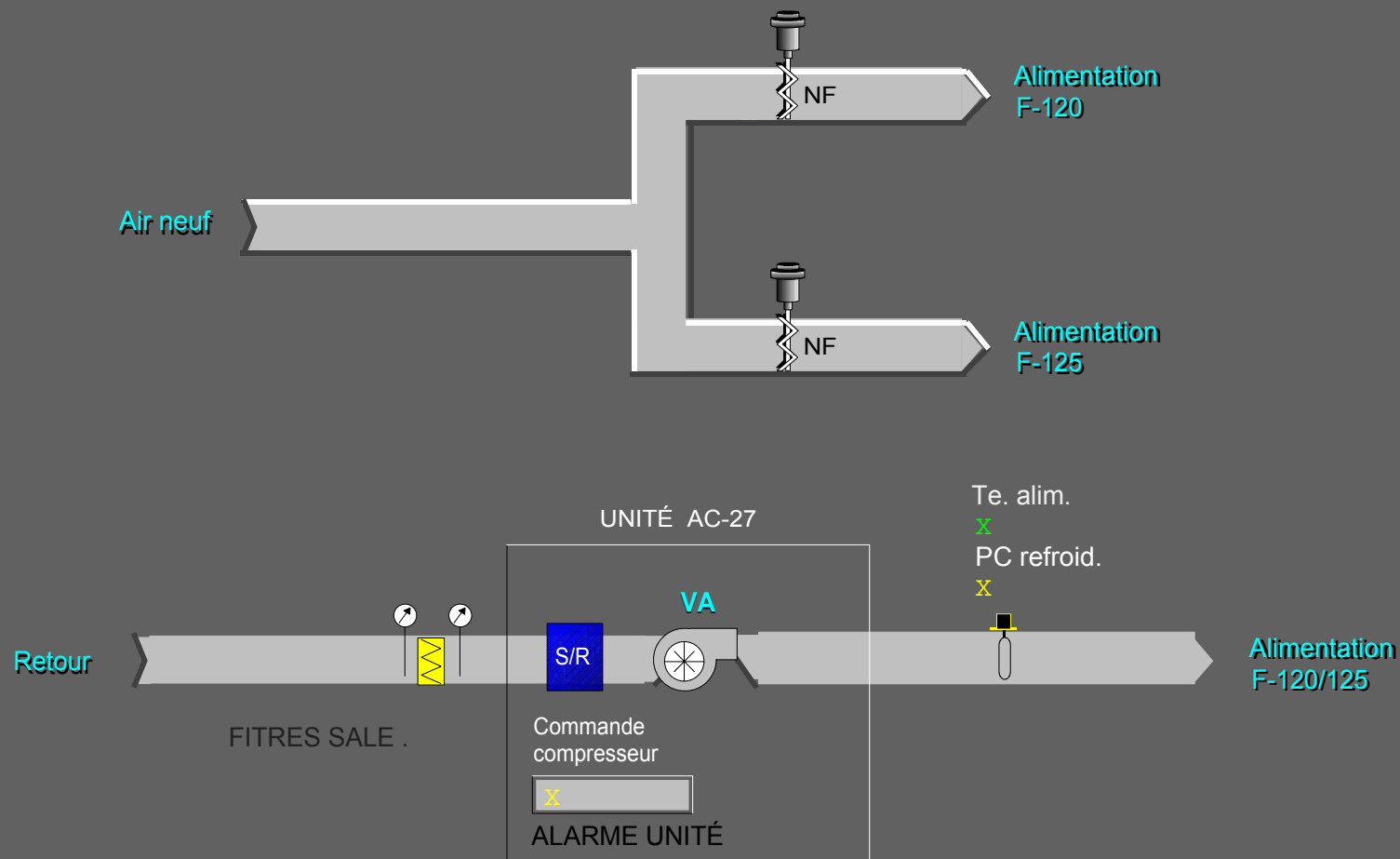
Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de	Commentaires	
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-26				UNT	UNT 140	2	26			P-2G	Local F-002													Alimentation 24VAC	
		AC-26	T_PIE	Temp. pièce	°C	UNT	UNT 140	2	26	AI-1	PHONE JACK	P-2G	Local F-002	4068-087	2G-26-AI-1						8/24	Prise tél.	Metastat-Prise télep			Tronc N2	
2O-26-AI-1	AI-1	AC-26	T_F002-3	Temp. pièce F-002 #3	°C	UNT	UNT 140	2	26	AI-2	AI2 AICM	P-2G	Local F-002	4068-087	2G-26-AI-2						2/18	2 fils	TE		UV2	Sonde située dans local F-110/115	
2O-26-AI-2	AI-2	AC-26	T_ALI	Temp. alimentation	°C	UNT	UNT 140	2	26	AI-3	AI3 AICM	P-2G	Local F-002	4068-087	2G-26-AI-3						2/18	2 fils	TE (Gaine)		UV1	Sonde #3 située dans local F-002	
2O-26-AI-3	AI-3	AC-26				UNT	UNT 140	2	26	AI-4		P-2G	Local F-002		2G-26-AI-4												
		AC-26				UNT	UNT 140	2	26	AI-5		P-2G	Local F-002		2G-26-AI-5												
		AC-26				UNT	UNT 140	2	26	AI-6		P-2G	Local F-002		2G-26-AI-6												
2O-26-BI-1	BI-1	AC-26	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 140	2	26	BI-1	BI1 24VAC	P-2G	Local F-002	4068-087	2G-26-BI-1					2/18	Selon dispositif	H-708		UV70		
2O-26-BI-2	BI-2	AC-26	E_FILT	État des filtres	Normal	Salas	UNT	UNT 140	2	26	BI-2	BI2 24VAC	P-2G	Local F-002	4068-087	2G-26-BI-2					2/18	Y.R	P32 (NO)		UV70		
2O-26-BI-3	BI-3	AC-26	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 140	2	26	BI-3	BI3 24VAC	P-2G	Local F-002	4068-087	2G-26-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
		AC-26				UNT	UNT 140	2	26	BI-4		P-2G	Local F-002		2G-26-BI-4												
2O-26-BO-1	BO-1	AC-26	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 140	2	26	BO-1	BO1.COM	P-2G	Local F-002	4068-087	2G-26-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)sw h		UV51	
2O-26-BO-2	BO-2	AERO	C_AERO-6	Comm.aérotherme A-6	Arrêt	Marche	UNT	UNT 140	2	26	BO-2	BO2.COM	P-2G	Local F-002	4068-087	2G-26-BO-2	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)sw h		UV51	Aéro. A-6 - local F-110 (contrôlé par AI-1)
2O-26-BO-3	BO-3	AERO	C_AERO-3	Comm.aérotherme A-3	Arrêt	Marche	UNT	UNT 140	2	26	BO-3	BO3.COM	P-2G	Local F-002		2G-26-BO-3	2/18	COIL	RELAIS	NO.COM		2/14	See Démarreur	Démarreur (NO)sw h		UV51	Aéro. A-3 - local F-002 (contrôlé par AI-2)
2O-26-BO-4	BO-4	AC-26	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 140	2	26	BO-4	BO4.COM	P-2G	Local F-002	4068-087	2G-26-BO-4	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)sw h		UV51	
		AC-26				UNT	UNT 140	2	26	BO-5		P-2G	Local F-002		2G-26-BO-5												
		AC-26				UNT	UNT 140	2	26	BO-6		P-2G	Local F-002		2G-26-BO-6												
		AC-26				UNT	UNT 140	2	26	BO-7		P-2G	Local F-002		2G-26-BO-7												
		AC-26				UNT	UNT 140	2	26	BO-8		P-2G	Local F-002		2G-26-BO-8												
						VMA	VMA 1410					P-2	Unité AC-26													Alimentation 24VAC	
		AC-26				VMA	VMA 1410	2	126			P-2	-----													Tronc N2	
2-126-AI-1	AI-1	AC-26	RES-110	Résistance 1000 ohms	°C	VMA	VMA 1410	2	126	AI-1	AI1 AICM	P-2	-----	4068-087	2-126-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
		AC-26				VMA	VMA 1410	2	126	AI-2		P-2	-----		2-126-AI-2												
		AC-26				VMA	VMA 1410	2	126	BI-1		P-2	-----		2-126-BI-1												
		AC-26				VMA	VMA 1410	2	126	BI-2		P-2	-----		2-126-BI-2												
		AC-26				VMA	VMA 1410	2	126	BI-3		P-2	-----		2-126-BI-3												
2-126-AI-5	AI-5	AC-26	P_VEL110	Pression de vélocité	Pa	VMA	VMA 1410	2	126	AI-5		P-2	-----	4068-087	2-126-AI-5											Air neuf local F-110	
						VMA	VMA 1410					P-2	-----													Alimentation 24VAC	
		AC-26				VMA	VMA 1410	2	136			P-2	-----													Tronc N2	
2-136-AI-1	AI-1	AC-26	RES-115	Résistance 1000 ohms	°C	VMA	VMA 1410	2	136	AI-1	AI1 AICM	P-2	-----	4068-087	2-136-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
		AC-26				VMA	VMA 1410	2	136	AI-2		P-2	-----		2-136-AI-2												
		AC-26				VMA	VMA 1410	2	136	BI-1		P-2	-----		2-136-BI-1												
		AC-26				VMA	VMA 1410	2	136	BI-2		P-2	-----		2-136-BI-2												
		AC-26				VMA	VMA 1410	2	136	BI-3		P-2	-----		2-136-BI-3												
2-136-AI-5	AI-5	AC-26	P_VEL115	Pression de vélocité	Pa	VMA	VMA 1410	2	136	AI-5		P-2	-----	4068-087	2-136-AI-5											Air neuf local F-115	

LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-26

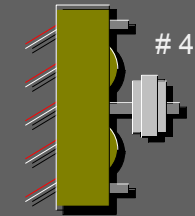
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_AERO-6	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
RES-1	RÉSISTANCE FIXE 1000 OHMS, 1/4 WATT	-----	-----
SD-26A, 26B	STATION DE MESURE DE VÉLOCITÉ 200mm, 8"Ø	RMS-8	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
VMA-2-126, VMA-2-136	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2G

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2G	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-15, UNT-2-16	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-26	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS



#5



#4

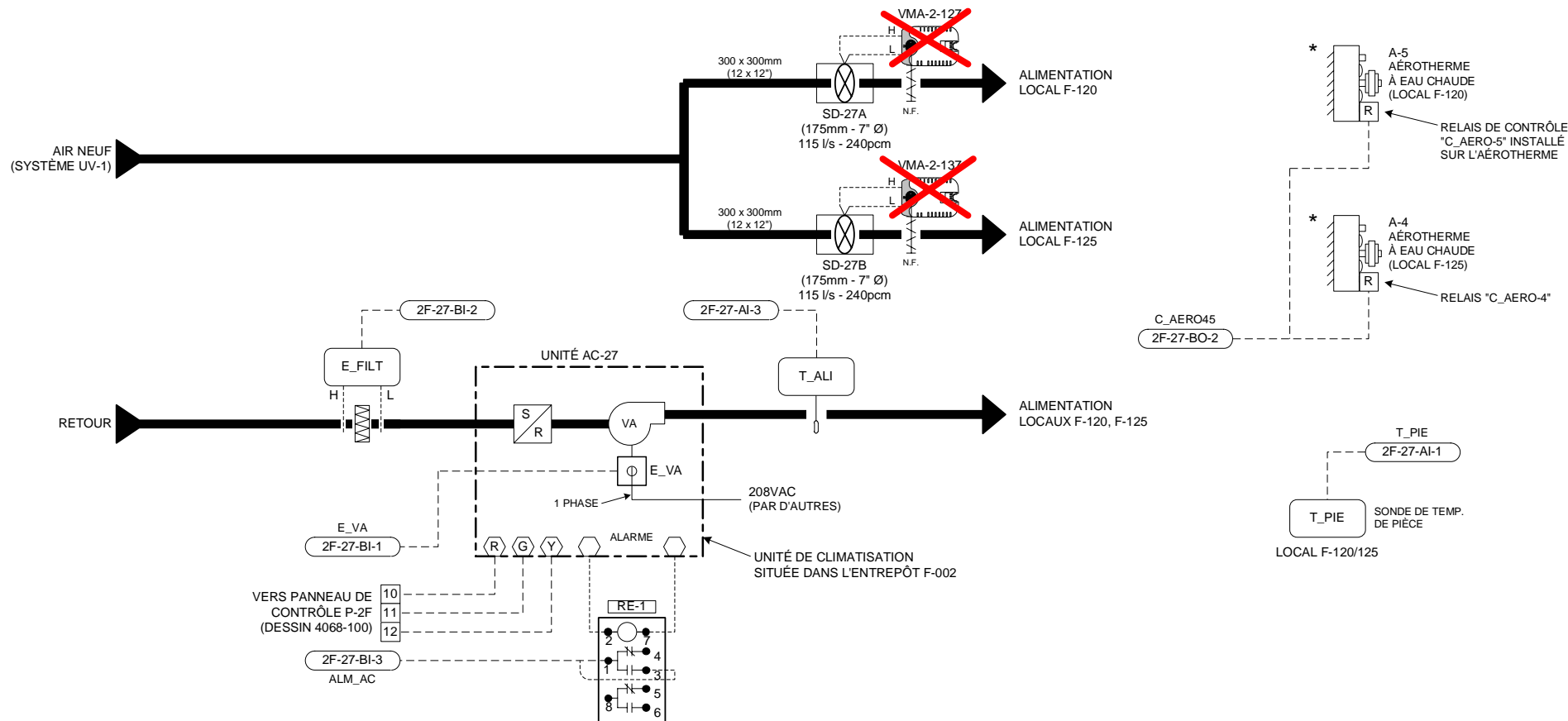
Commande
Aérothermes
X

Piese F-120/125

X
PC aéro. inocc.
X
PC aéro. occ.
X



UNITÉ DE CLIMATISATION AC-27 - LOCAUX F-120, F-125
(TYPE 1 - UNITÉ DE CLIMATISATION AVEC AÉROTHERME)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-4, 5	2	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
E_FILT	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
E_VA	1	FTG18A-600R	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE, 0.05 - 5"WC (0.012 - 1.24 kPa)
RE-1	1	H-708	TUBE DE PITOT 4" (100mm)
SD-27A, B	1	RCPTFU82D1024	RELAIS DE COURANT, 1-135AMP. - VERIS
	1	S-408	RELAIS 2PDT, 24Vac.
	2	RMS-7	BASE DE RELAIS 8 BROCHES
T_ALI	1	TE-6311P-1	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø - EH PRICE
T_PIE	1	TE-6314P-1	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI
VMA-2-127,137	1	AP-VMA1410-0	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
	2		RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF.(DÉBIT)

SÉQUENCE D'OPÉRATION (TYPE 1)

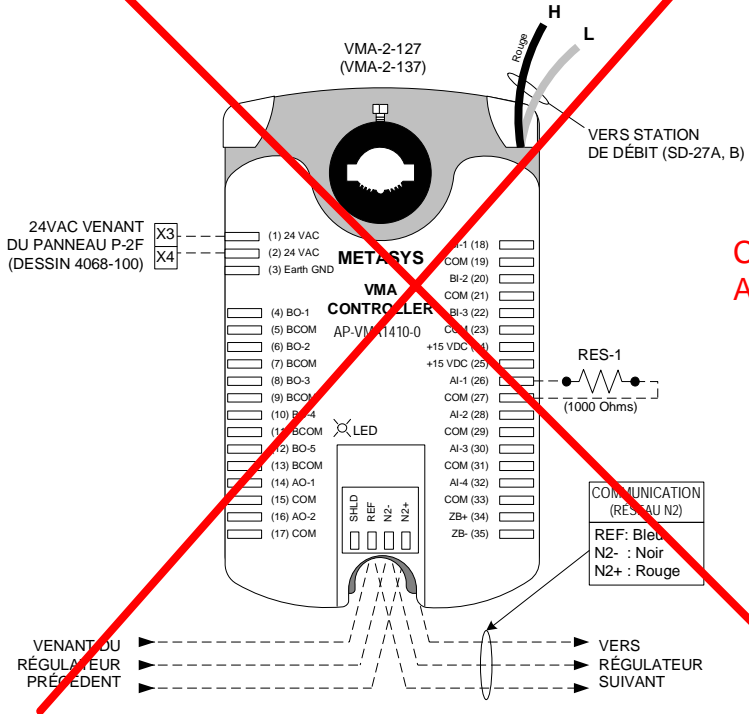
- À L'ARRÊT:**
- L'unité de climatisation est arrêtée.
 - La sonde de pièce (T_PIE) contrôle les aérothermes (A-4 et A-5) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).
- EN MARCHÉ:**
- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
 - Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 24°C, ajustable).
 - Sur une demande de chauffage, les aérothermes sont démarrés de façon à maintenir la température de la pièce au point de consigne (P.C. 21°C, ajustable).
 - La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
 - Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

ALIMENTATION LOCAUX F-120 ET F-125:

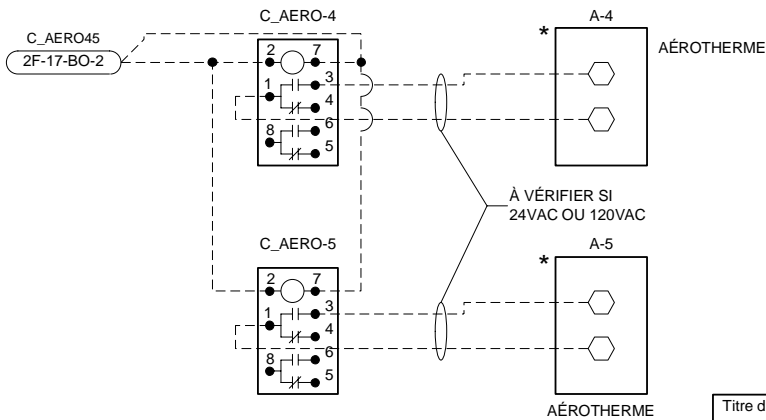
- Les régulateurs (VMA-2-127 et VMA-2-137) modulent leur volet respectif de façon à maintenir un débit d'alimentation d'air constant (115 l/s, 240 pcm pour chaque local).

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES RÉGULATEURS (VMA-2-127 ET VMA-2-137)

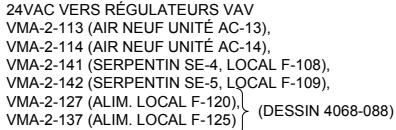


RACCORDEMENTS DE L'AÉROTHERME (A-4 ET A-5)



**CHANGEMENTS
APPORTÉS PAR
D'AUTRE**

Titre du Dessin		2		TEL QUE CONSTRUIT		D.B.	02/04/29	O.P.
Unité de climatisation AC-27 Locaux F-120, F-125 Type 1 (Unité avec aérotherme)		1		POUR APPROBATION			12/06/01	D.B.
DESSIN DE RÉFÉRENCE		NO.		RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ			
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/22/2001	PAR	DATE 05/22/2001
Nom du Projet		Information Succursale		NUMÉRO CONTRAT				
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpeller St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-088		



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4068-100.vsd Page 1 de 1 05/02/21

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-27.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT140-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Staged

Heating diagnostics?

No

Select number of heating stages:

1 Stage

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

TMZ Digital room sensor

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
Yes

SIDELoop DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 3

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO) (NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
----	-----	-----	-----
BO	1	Fan	SF-C
BO	2	Htg Stage 1	HTG1-C
* BO	3	BO - 3	BO - 3
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
----	-----	-----	-----	-----
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	20.7
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	18.1
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-1.5
ADF	139	Htg Integ Time	HTGIT	0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	185	Heat Stage 1 Percent	HTSTG1	5
ADF	190	Heating Failsoft	HEATFAIL	0
AO	7	Heating Command	HEATCMD	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0

*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****
Sideloop-1/Comp Stpt				
ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

SÉQUENCE D'OPÉRATION (TYPE 1)

À L'ARRÊT:

- L'unité de climatisation est arrêtée.
- La sonde de pièce (T_PIE) contrôle les aérothermes (A-4 et A-5) afin de maintenir le point de consigne de nuit (P.C. 18°C, ajustable).

EN MARCHÉ:

- Le ventilateur de l'unité est démarré selon un horaire pré-établi. (Un délai de 10 secondes est programmé entre le départ de chaque unité).
- Sur une hausse de température de pièce (T_PIE), le régulateur numérique démarre le compresseur de l'unité afin de maintenir le point de consigne (P.C. 24°C, ajustable).
- Sur une demande de chauffage, les aérothermes sont démarrés de façon à maintenir la température de la pièce au point de consigne (P.C. 21°C, ajustable).
- La sonde (T_ALI) indique la température d'alimentation à la centrale de commandes.
- Des alarmes seront générées à la centrale sur détection de filtres sales (E_FILT), sur non-concordance entre l'état (E_VA) et la commande du ventilateur d'alimentation et lorsqu'une alarme interne à l'unité survient.

ALIMENTATION LOCAUX F-120 ET F-125:

- Les régulateurs (VMA-2-127 et VMA-2-137) modulent leur volet respectif de façon à maintenir un débit d'alimentation d'air constant (115 l/s, 240 pcm pour chaque local).

Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de	Commentaires		
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-27				UNT	UNT 140	1	27			P-2F	Local F-002													Alimentation 24VAC	
						UNT	UNT 140					P-2F	Local F-002													Tronc N2	
2M-27-AI-1	AI-1	AC-27	T_PIE	Temp.pilce	°C	UNT	UNT 140	1	27	AI-1	PHONE JACK	P-2F	Local F-002	4068-088	2F-27-AI-1						8/24	Prise tél.	Metastat-Prise télep		UV2	Sonde située dans local F-120	
2M-27-AI-2	AI-2	AERO	T_F002-1	Temp.pilce F-002 #1	°C	UNT	UNT 140	1	27	AI-2	AI2,AICM	P-2F	Local F-002	4068-088	2F-27-AI-2						2/18	2 fils	TE		UV1	Sonde #2 située dans local F-002	
2M-27-AI-3	AI-3	AC-27	T_ALI	Temp.alimentation	°C	UNT	UNT 140	1	27	AI-3	AI3,AICM	P-2F	Local F-002	4068-088	2F-27-AI-3						2/18	2 fils	TE (Gaine)		UV1		
	AI-4	AC-27				UNT	UNT 140	1	27	AI-4		P-2F	Local F-002		2F-27-AI-4												
	AI-5	AC-27				UNT	UNT 140	1	27	AI-5		P-2F	Local F-002		2F-27-AI-5												
	AI-6	AC-27				UNT	UNT 140	1	27	AI-6		P-2F	Local F-002		2F-27-AI-6												
2M-27-BI-1	BI-1	AC-27	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 140	1	27	BI-1	BI1,24VAC	P-2F	Local F-002	4068-088	2F-27-BI-1					2/18	Selon dispositif	H-708		UV70		
2M-27-BI-2	BI-2	AC-27	E_FILT	État des filtres	Normal	Sales	UNT	UNT 140	1	27	BI-2	BI2,24VAC	P-2F	Local F-002	4068-088	2F-27-BI-2					2/18	Y.R	P32 (NO)		UV70		
2M-27-BI-3	BI-3	AC-27	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 140	1	27	BI-3	BI3,24VAC	P-2F	Local F-002	4068-088	2F-27-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
	BI-4	AC-27				UNT	UNT 140	1	27	BI-4		P-2F	Local F-002		2F-27-BI-4												
2M-27-BO-1	BO-1	AC-27	C_VA	Comm.a/d vent alim.	Arrêt	Marche	UNT	UNT 140	1	27	BO-1	BO1,COM	P-2F	Local F-002	4068-088	2F-27-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2M-27-BO-2	BO-2	AERO	C_AERO-1	Comm.aérotherme A-1	Arrêt	Marche	UNT	UNT 140	1	27	BO-2	BO2,COM	P-2F	Local F-002	4068-088	2F-27-BO-2	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	Aéro. A-1 - local F-002 (contrôlé par AI-2)
2M-27-BO-3	BO-3	AC-27	C_AERO4S	Comm.aérothermes A-4, 5	Arrêt	Marche	UNT	UNT 140	1	27	BO-3	BO3,COM	P-2F	Local F-002	4068-088	2F-27-BO-3	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	Aéro. A-4, A-5 - local F-120 (contrôlé par AI-1)
2M-27-BO-4	BO-4	AC-27	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 140	1	27	BO-4	BO4,COM	P-2F	Local F-002	4068-088	2F-27-BO-4	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-27				UNT	UNT 140	1	27	BO-5		P-2F	Local F-002		2F-27-BO-5												
	BO-6	AC-27				UNT	UNT 140	1	27	BO-6		P-2F	Local F-002		2F-27-BO-6												
	BO-7	AC-27				UNT	UNT 140	1	27	BO-7		P-2F	Local F-002		2F-27-BO-7												
	BO-8	AC-27				UNT	UNT 140	1	27	BO-8		P-2F	Local F-002		2F-27-BO-8												
						VMA	VMA 1410					P-2	Unité AC-26													Alimentation 24VAC	
		AC-27				VMA	VMA 1410	1	127			P-2	-----													Tronc N2	
2-127-AI-1	AI-1	AC-27	RES-120	Résistance 1000 ohms	°C	VMA	VMA 1410	1	127	AI-1	AI1,AICM	P-2	-----	4068-088	2-127-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-27				VMA	VMA 1410	1	127	AI-2		P-2	-----		2-127-AI-2												
	BI-1	AC-27				VMA	VMA 1410	1	127	BI-1		P-2	-----		2-127-BI-1												
	BI-2	AC-27				VMA	VMA 1410	1	127	BI-2		P-2	-----		2-127-BI-2												
	BI-3	AC-27				VMA	VMA 1410	1	127	BI-3		P-2	-----		2-127-BI-3												
2-127-AI-5	AI-5	AC-27	P_VEL120	Pression de vélocité	Pa		VMA	VMA 1410	1	127	AI-5	P-2	-----	4068-088	2-127-AI-5											Air neuf local F-120	
							VMA	VMA 1410				P-2	-----													Alimentation 24VAC	
		AC-27				VMA	VMA 1410	1	137			P-2	-----													Tronc N2	
2-137-AI-1	AI-1	AC-27	RES-125	Résistance 1000 ohms	°C	VMA	VMA 1410	1	137	AI-1	AI1,AICM	P-2	-----	4068-088	2-137-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-27				VMA	VMA 1410	1	137	AI-2		P-2	-----		2-137-AI-2												
	BI-1	AC-27				VMA	VMA 1410	1	137	BI-1		P-2	-----		2-137-BI-1												
	BI-2	AC-27				VMA	VMA 1410	1	137	BI-2		P-2	-----		2-137-BI-2												
	BI-3	AC-27				VMA	VMA 1410	1	137	BI-3		P-2	-----		2-137-BI-3												
2-137-AI-5	AI-5	AC-27	P_VEL125	Pression de vélocité	Pa		VMA	VMA 1410	1	137	AI-5	P-2	-----	4068-088	2-137-AI-5											Air neuf local F-125	

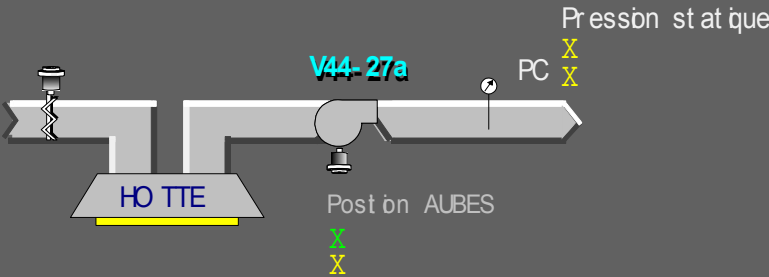
LISTE DE MATÉRIEL POUR L'UNITÉ DE CLIMATISATION AC-27

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_AERO-4, 5	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
E_FILT	INTERRUPTEUR À PRESSION DIFFÉRENTIELLE 0.05-5"WC (0.012-1.24kPa)	P32AF-2C	JOHNSON CONTROLS
	TUBE DE PITOT 4" (100mm)	FTG18A-600R	JOHNSON CONTROLS
E_VA	RELAIS DE COURANT, 1-135 AMP	H-708	VÉRIS
RE-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
SD-27A, B	STATION DE MESURE DE VÉLOCITÉ 175mm, 7"Ø	RMS-7	EH PRICE
T_ALI	SONDE DE TEMPÉRATURE DE GAINÉ, 1000 OHMS NI	TE-6311P-1	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
VMA-2-127, VMA-2-137	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2F

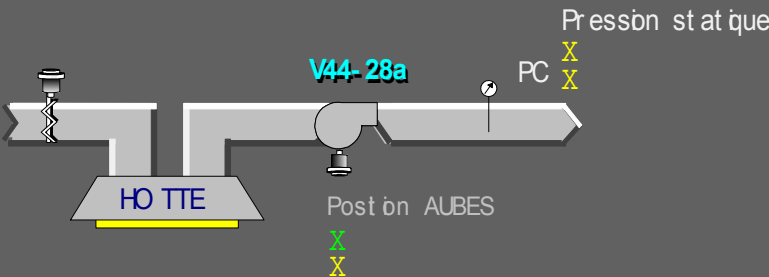
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B, 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2F	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-13, UNT-2-14	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-17, UNT-2-27	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS

ÉVACUATEURS



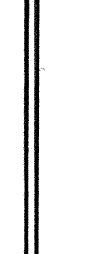
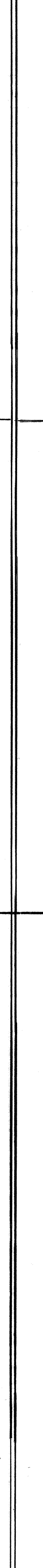
Contrôle pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X



Contrôle pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

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AL[illegible]

SYSTÈME V44-27A ET V44-28A

SEQUENCE D'OPERATION

SYSTEME V44-27A

AU DEPART D'UNE DES HOTTES PAR SA MINUTERIE MX, SON VOLET OUVRE PAR EP-X ET LE SYSTEME D'ALIMENTATION CORRESPONDANT DEMARRE, LE VOLET D'AIR NEUF DA-1 OUVRE A 100%.

LE CONTROLEUR RSU-9 MODULE LE SERPENTIN ELECTRIQUE EN FONCTION DE LA TEMPERATURE D'ALIMENTATION.

LE VOLET DE DERIVATION

POUR LE VENTILATEUR EST MODULE EN FONCTION DE LA PRESSION DANS LA GAINÉ D'ALIMENTATION PAR LE DSC.

LA MEME SEQUENCE S'APPLIQUE POUR LE SYSTEME V44-28A.

SYSTÈME V44-27A, 28A
ET HOTTE

LISTE DE MATERIEL

IDENT	MODELE	Q	DESCRIPTION
PT-2 ET 4	SETRA 261	2	DETECTEUR DE PRESSION STATIQUE
EPX	V11HAA-109	10	RELAIS ELECTRIQUE PNEUMATI- QUE
MX	MARKTIME 90015	10	MINUTERIE MANUELLE C/A L.T.
DAX	D3073-2	10	MOTEUR PNEUMATIQUE
IPD-1 ET 2	2000-50	2	INDICATEUR DE PRESSION 0-50 MM
DA-1 ET 3	M130AGA-1	2	MOTEUR ELECTRIQUE
XFR-1 ET 2		2	TRANSFO 600/24 50 VA
PE-1 ET 2	P80ABA-16	2	INTERFACE PNEUMATIQUE ELECTRIQUE
DA-2,4	M130 JGA-1	2	MOTEUR ELECTRIQUE

ECONOMISEUR

PC X

MODE X

CÉDULE

RETOUR

ALIMENT.

X

X

X

X

EVAC.

NF

DA-4

V43-5R

DF1

Te. retour

X

Retour

He. retour

X

PC X

HL X

Position vol.mél.

X

X

Minimum

X

Minimum sans evac.

X

NO

DA-3

Te. melange

X

BL X

V-3

ALARME DE GEL.

Te. alim.

X

PC X

A/N

NF

DA-2

A/N

NF

DA-2

DA-5

NO

NF

V43-5A

DA-6

Position AUBES

X

X

OCCUPATION VA

X

Alim.

He.alim.

X

Pression piece

X

PC X

FAIRE PAGE DOWN
POUR LA SUITE DU
SYSTEME.

CMD VOILETS EVAC.

X

MODE REFR.

X

MODE CHAUF.

X

V-1

P-1

VLV CHAUF. / REFR.

X

X

HV-1

VLV humid.

X

X

Te.ext. X

DELAI APRES PANNE

X

Parametres et Horaires



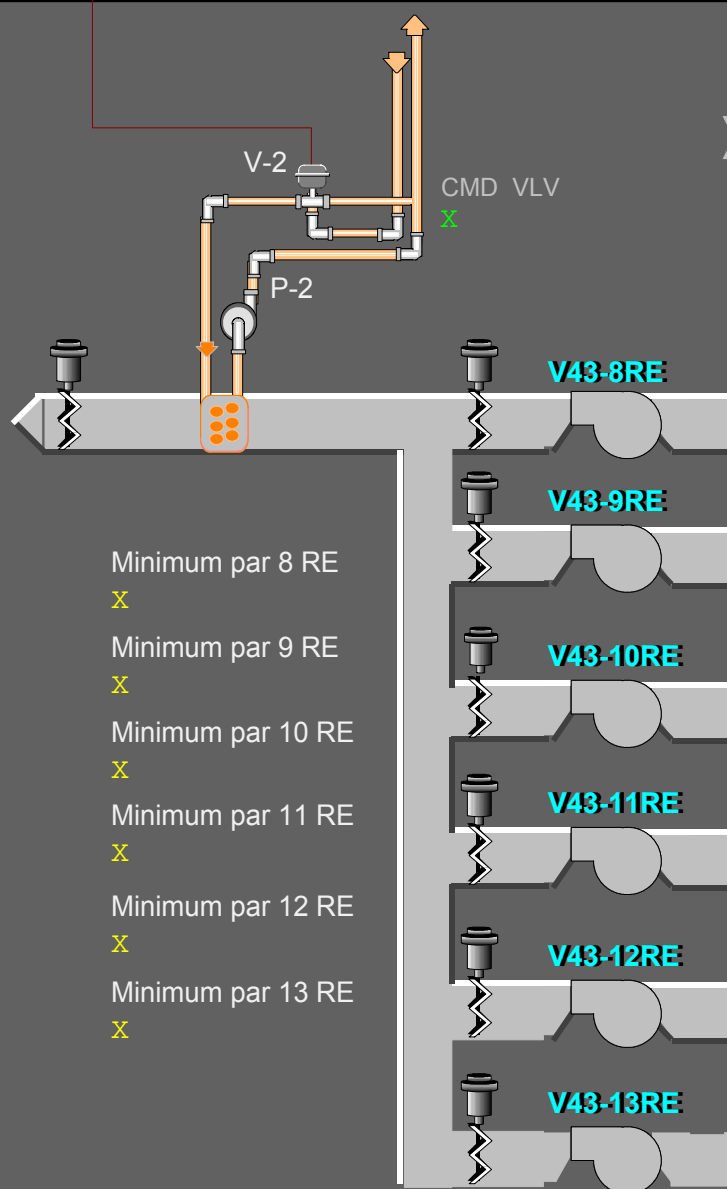
Vacance DSC-5



MENU PRINCIPAL



FAIRE PAGE UP
POUR RETOUR
AU SYSTEME.



Minimum par 8 RE

X

Minimum par 9 RE

X

Minimum par 10 RE

X

Minimum par 11 RE

X

Minimum par 12 RE

X

Minimum par 13 RE

X

V44-33A

V44-33E

ETAT RECUP.

X

RECIRC. GLYCOL

X

ETAT PRE-CH

X

EVITEMENT BL COND.

X

PRESSION SERP.GLY

X

CMD VOLETS EVAC.

X

PARAMETRES

Controle volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Chauffage

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle refroidissement

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

HORAIRE

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

Controle B Limite mel.

Etat CTRL BL	X
Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle HL Humidite

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Pression statique

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle Recuperation

PC recup.	X
Differentiel rec.	X

Controle Volets melange

Resultat PID	X
Interval PID	X
Bande propr.	X
Gain boucle PID	X
Bande morte	X

Controle pre-chauffage

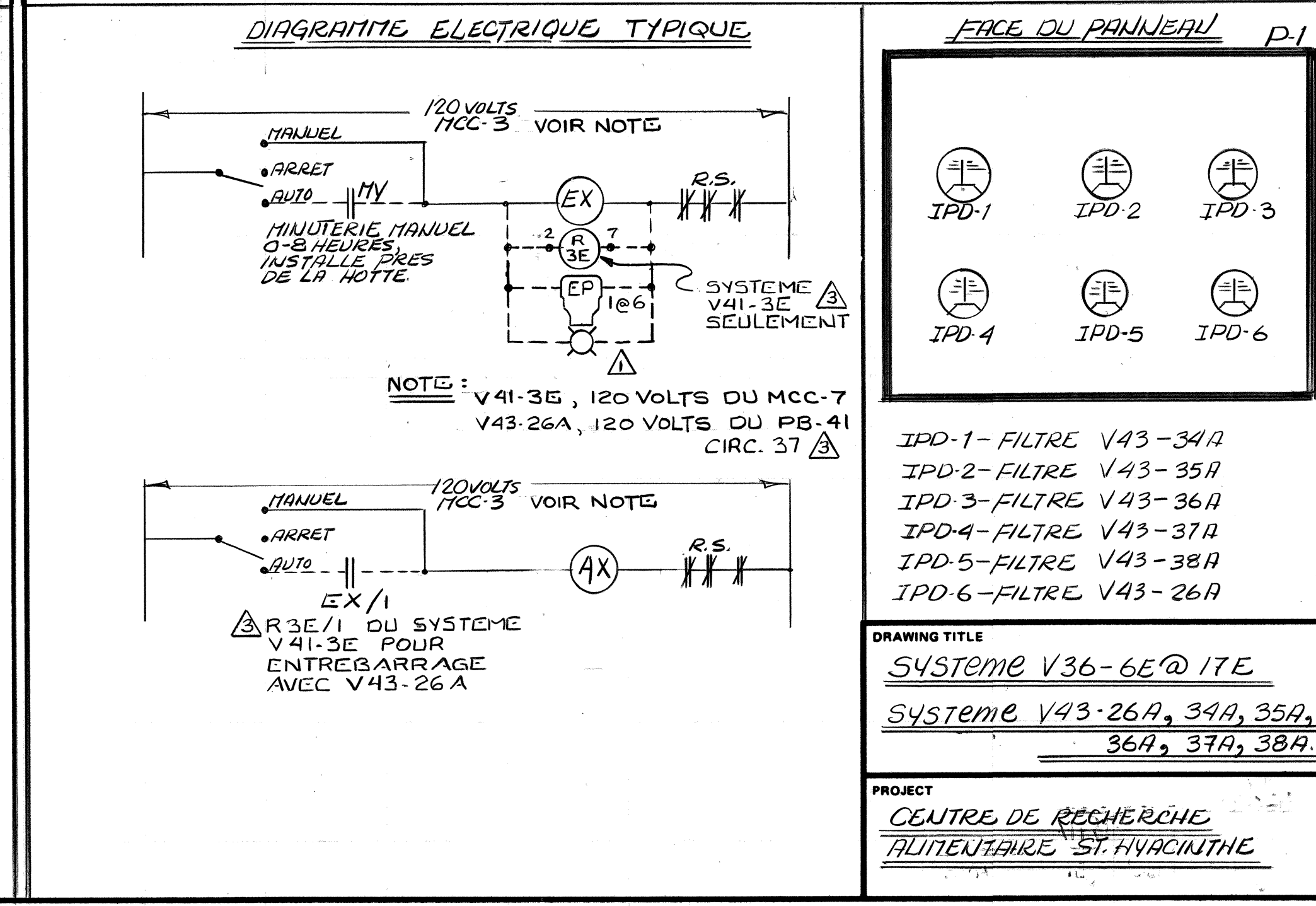
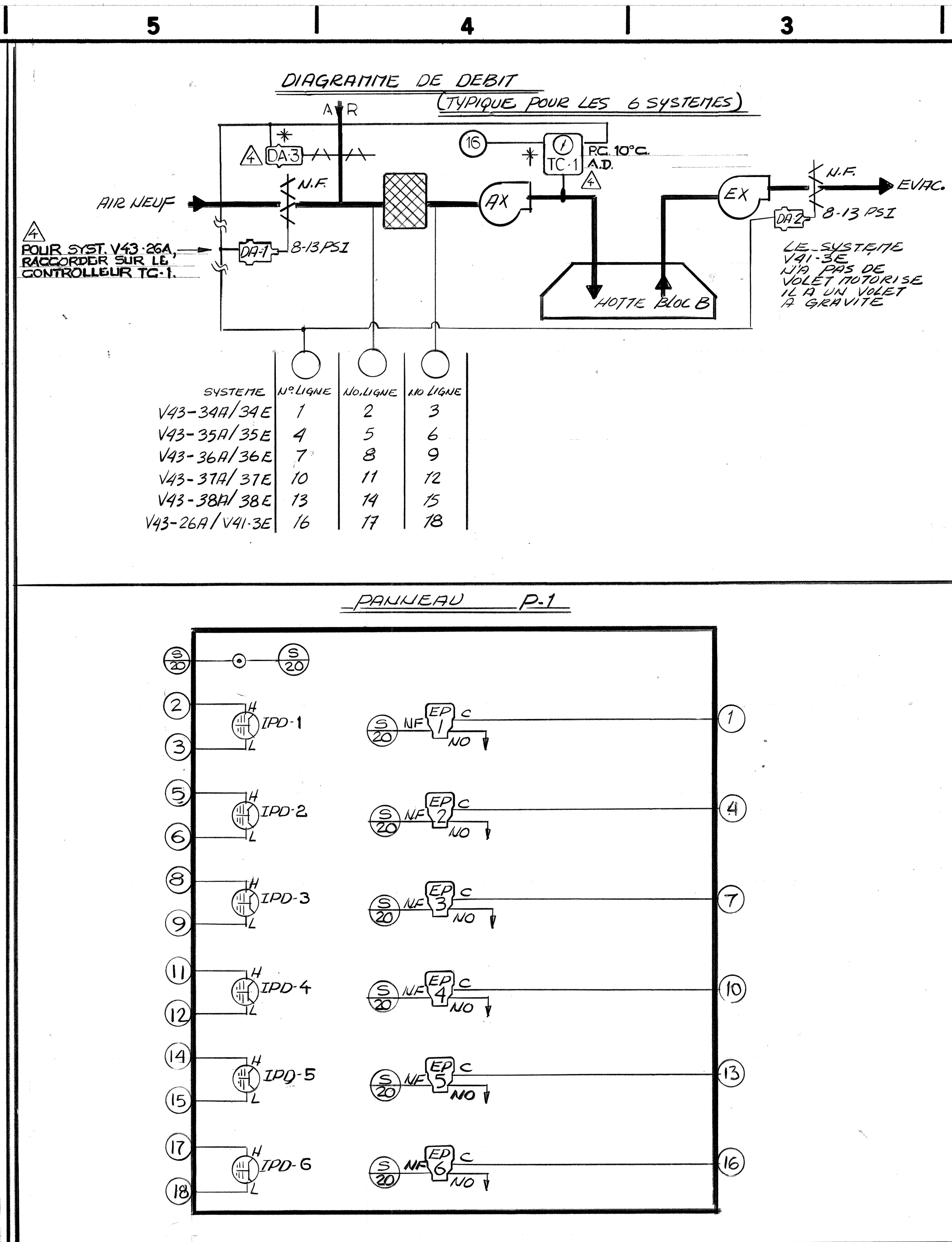
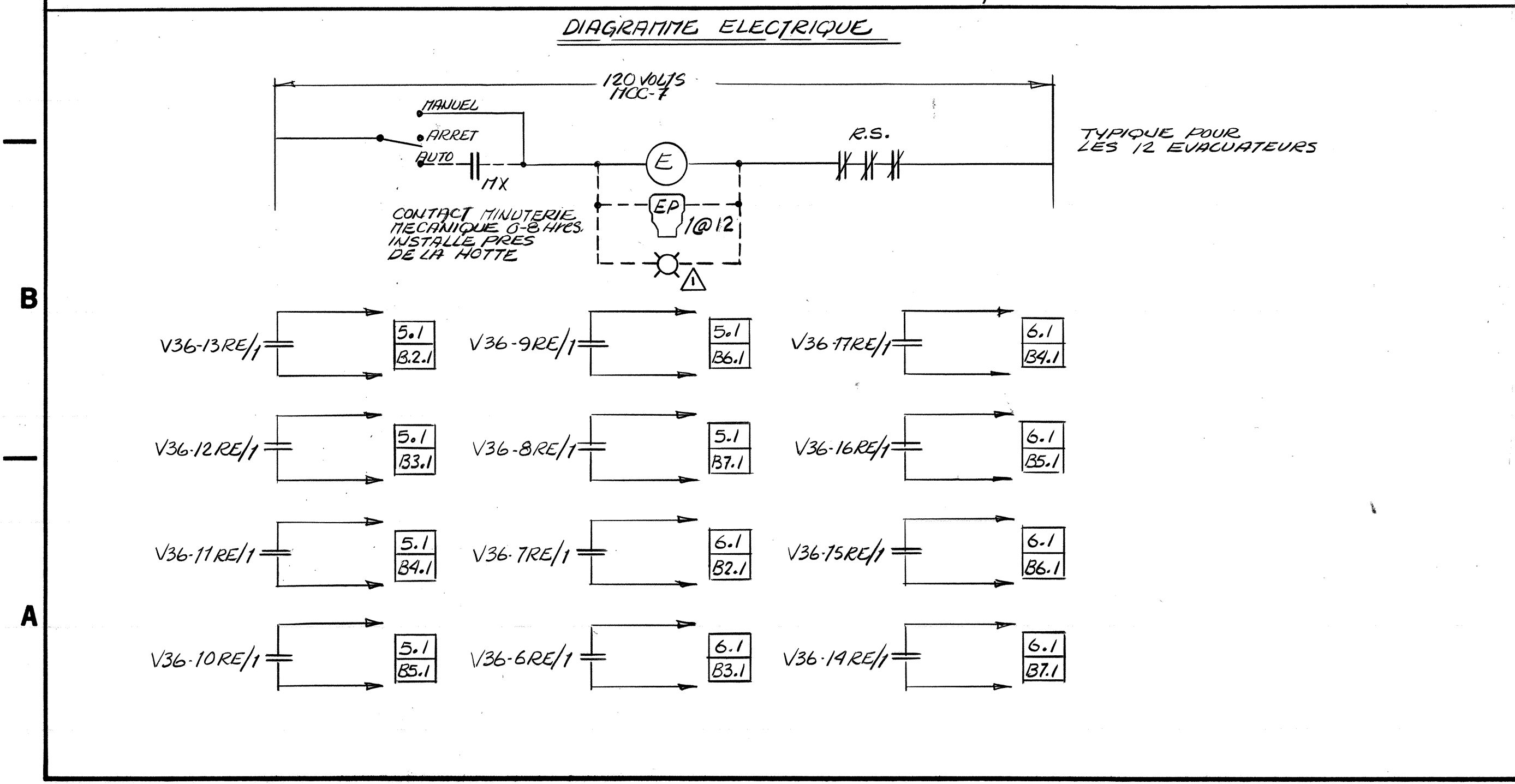
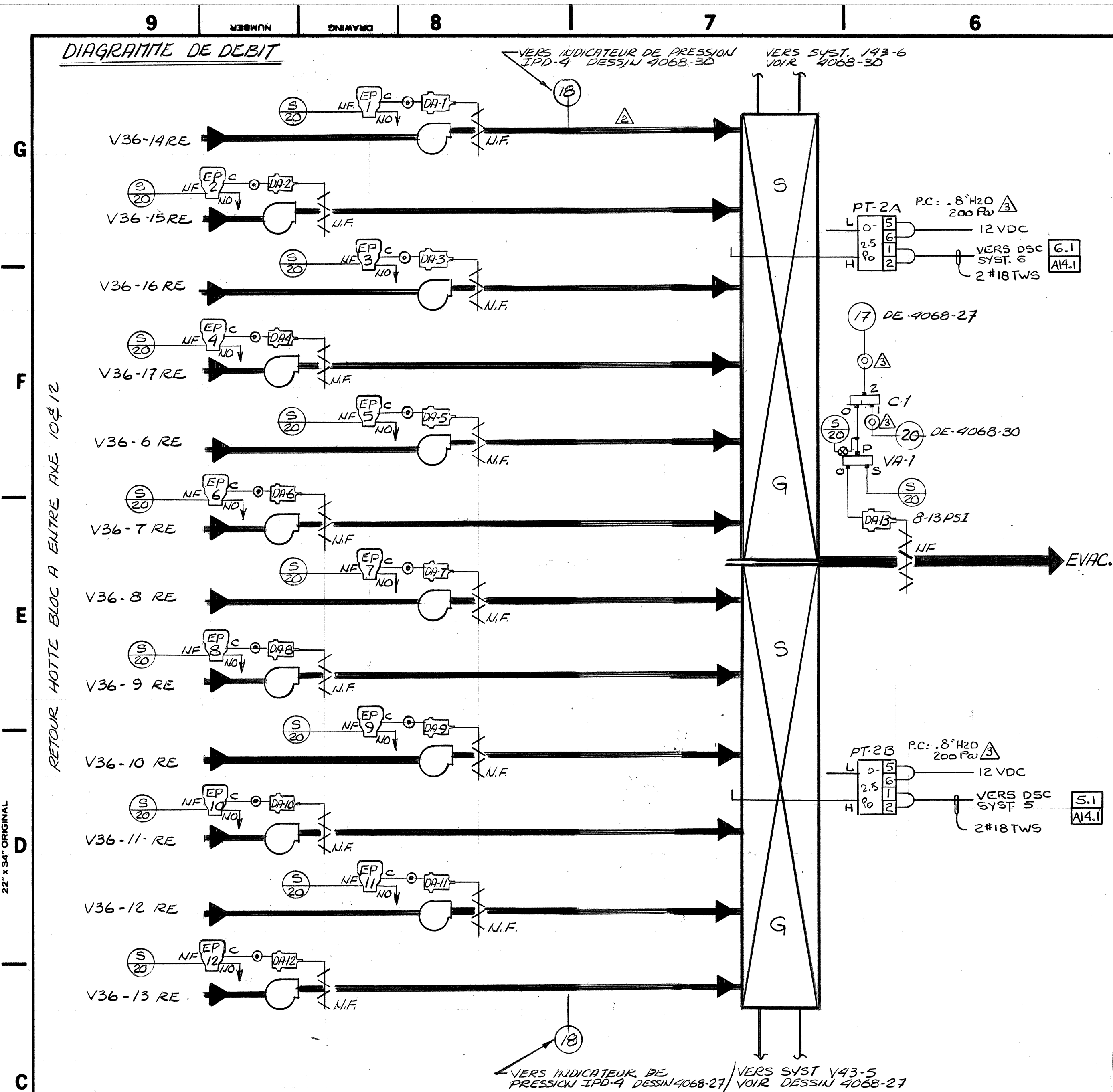
Limite CTRL	X
Differentiel	X
Delais evit.BL	X



VACANCES DSC-5 , V43-5

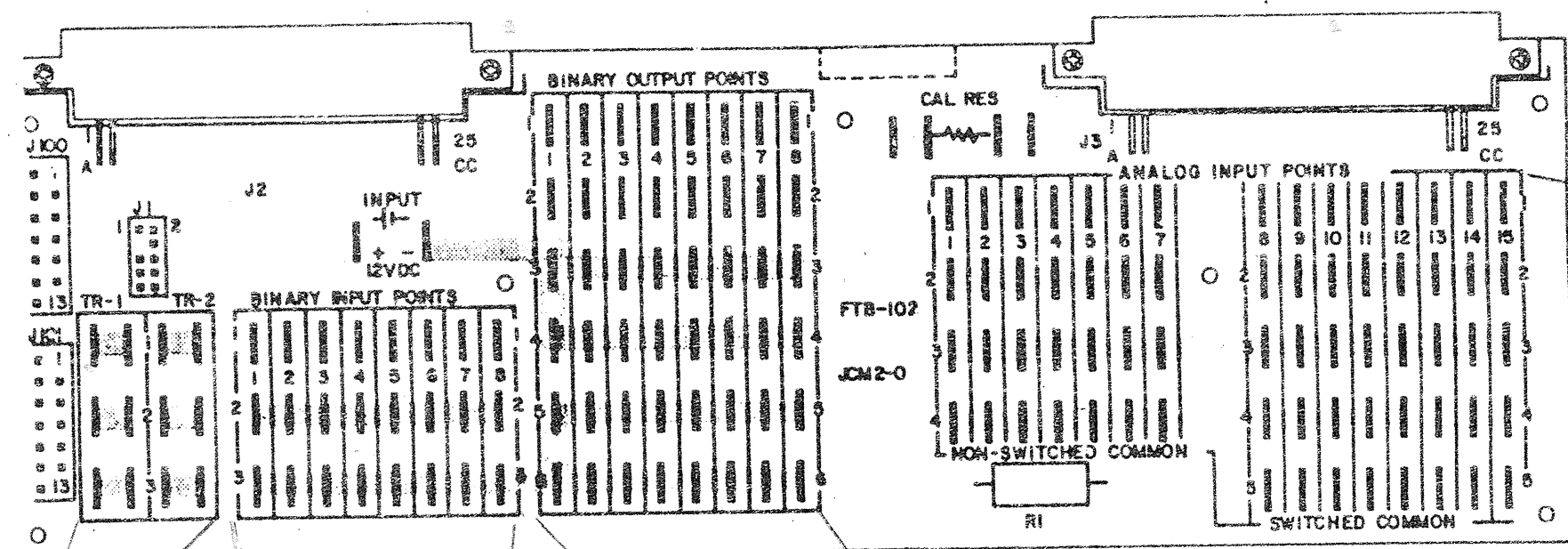
Jour / M ois	VACANCE 1	X
Jour / M ois	VACANCE 2	X
Jour / M ois	VACANCE 3	X
Jour / M ois	VACANCE 4	X
Jour / M ois	VACANCE 5	X
Jour / M ois	VACANCE 6	X





2		1	
LISTE DE MATERIEL			
IDENT.	MODELE	QTE	DESCRIPTION
SYSTEMES V-36-6E A 17-E			
EP-1 A 12 DA-1 A 12 DA-13 C-1 VA-1 MX	V11HAA-109 D-3073-2 D-3153-2 C-5226-3 R-2080-1 MARKTIME 90015	12 12 4 1 1 12	RELAIS ELECTRIQUE/PNEUMATIQUE MOTEURS PNEUMATIQUES MOTEURS PNEUMATIQUES SELECTEUR DE HAUT SIGNAL AMPLIFICATEUR DE VOLUME MINUTERIES MANUELLE 0-12HRES C/A LAMPE TEMOIN
SYSTEMES V43, 26A, 34A, 35A, 36A, 37A, 38A			
EP-1 A 6 IPD-1 A 6 P-1 DA-1 ET 2 DA-3 PT-1 ET 2 MY R3E TC-1	V11HAA-109 2000-50 M-8100-103 D-3073-2 D-3153-2 D3073-2 SETRA 261 MARKTIME 90015 RELAIS T-8000-8014	6 6 1 10 1 2 6 1 1	RELAIS ELECTRIQUE/PNEUMATIQUE INDICATEURS DE PRESSION 0-50 MM PANNEAU 24"x24"x7" MOTEURS PNEUMATIQUES MOTEUR PNEUMATIQUE TRANSMETTEURS DE PRESSION MINUTERIES MANUELLE 0-12 HRES C/A LAMPE TEMOIN 120V AC, 2 PDT CONTROLEUR
SEQUENCES D'OPERATION			
SYSTEMES V36-6E A 17E:			
AU DEPART DES EVACUEURS PAR LEUR MINUTERIE MX, LEUR VOILET OUVRE A 100% PAR LEUR RELAIS ELECTRIQUE/PNEUMATIQUE.			
AU DEPART DE L'UN OU L'AUTRE DES EVACUEURS, LE VOILET D'EVACUATION DA-13 OUVRE A 100%.			
SYSTEMES V43-26A, 34A, 35A, 36A, 37A, 38A:			
AU DEPART DES VENTILATEURS D'EVACUATION PAR LEUR MINUTERIE MY, LES VENTILATEURS D'ALIMENTATION DEMARRENT PAR ENTREBARRAGE ET LES VOILETS D'AIR NEUF ET EVACUE OUVRENT A 100%.			
	3	8096-301	Nov. 11-87. 18
	3	TEL QUE CONSTRUIT	86-07-08 18
A.R. 83	3		DEC. 20-85 18
	3		SEPT 18-85 18
REFERENCE DRAWINGS	NO.	REVISION - LOCATION	ECN DATE BY
SALES ENGR. J.C.R.	APPLICATION ENGR. E.P.	DRAWN BY 1178 DATE 3/7/85	APPROVED BY 1178 DATE 5-8-82
JOHNSON CONTROLS		441 BOUL. LEBEAU MONTRÉAL, QUÉ. H4N 1S2	CONTRACT NUMBER 4096-0008-28/32
Systems & Services Division		TÉL. 1-514-332-6960	DRAWING NUMBER 4068-28

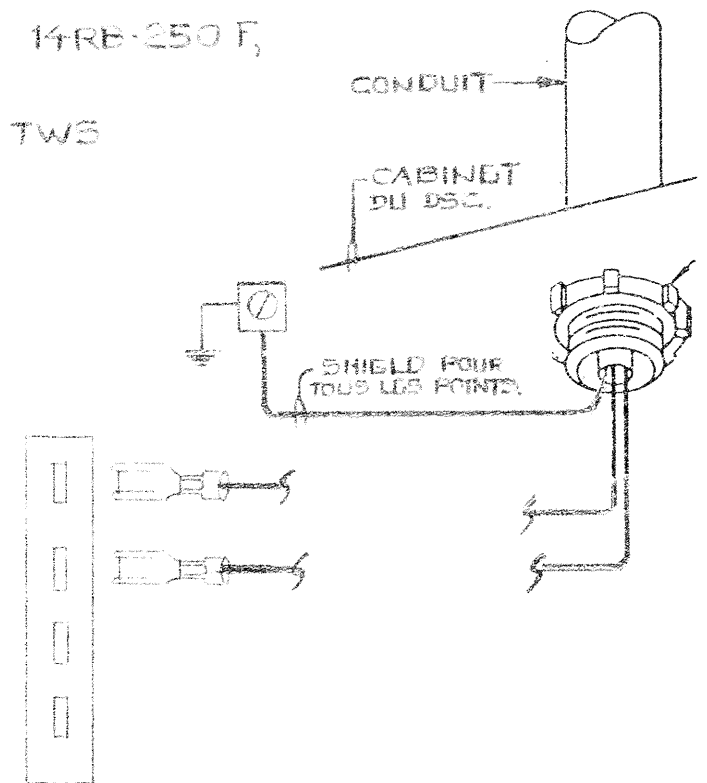
BORNIERS DE RACCORDEMENT (FTB-K2)



VOIR PLUS BAS
POUR COMMUNICATION

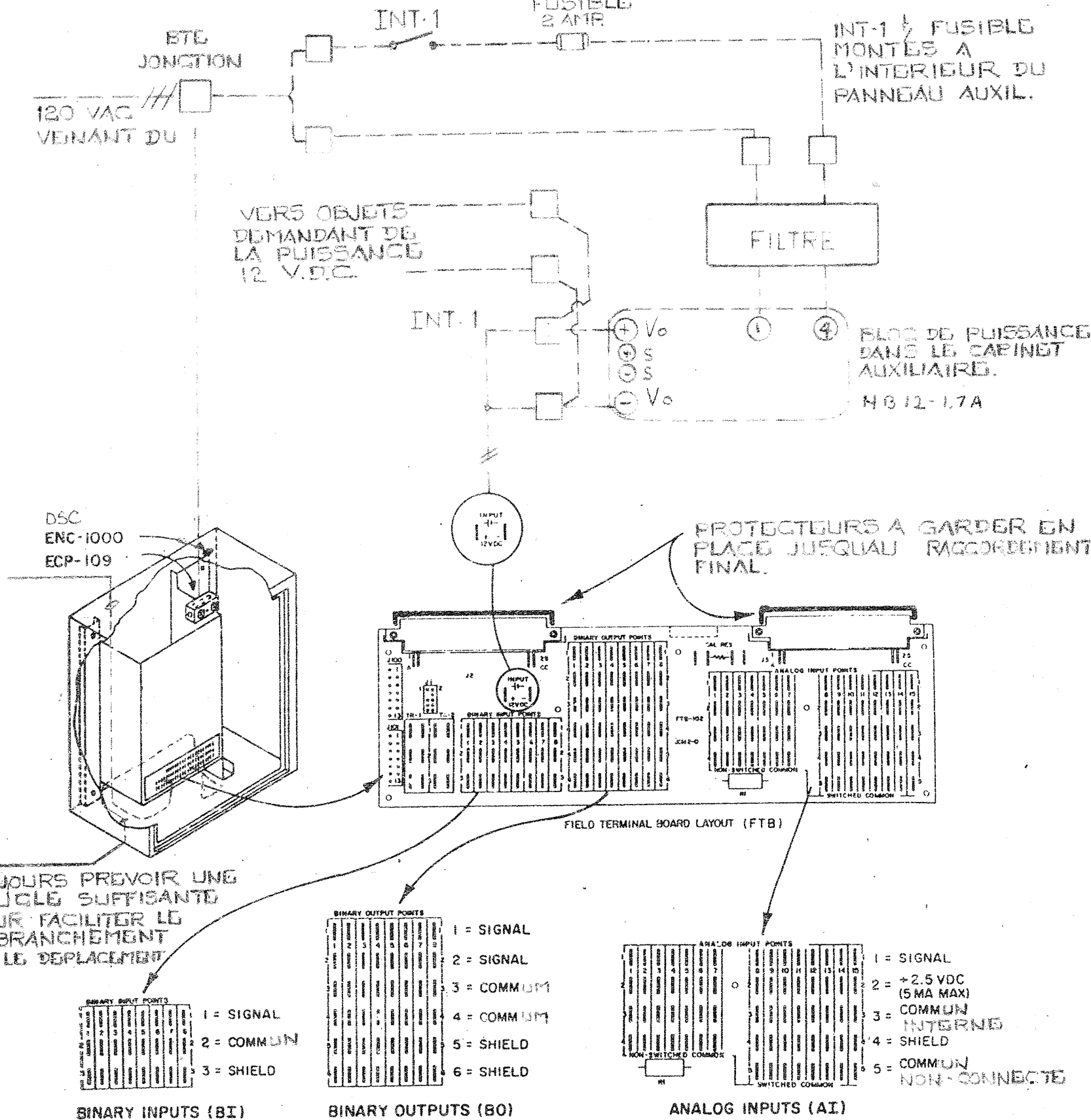
- 1 - TYPE DE RACCORDEMENT
BOBINES T & B TYPE 14RB-250 F,
ISOLUS 250.
- 2 - CABLES EN 2#18 TWS
PARFOUR.

TOTAL MAX 15 ENTREES

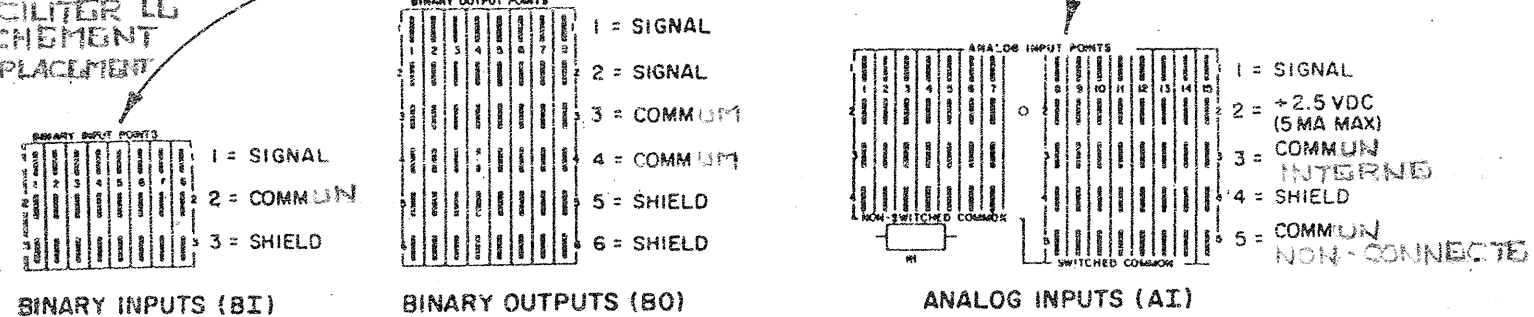


TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3		EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3		EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3		EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3		EPT-102	CABINET AUX.	A8.1		
9										
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-95% HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-95% HR	
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1	0-5 VDC 0-25 PSI	
14	PT-2B	PRESSION SERP. GILKOL.	ANA	1 5	1 2	SONDE DE PRESSION PT-2B	SEKP GILKOL	A14.1	0-5 VDC 0-2.5 PSI	



TOUJOURS PREVOIR UNE
BOUCLE SUFFISANTE
POUR FACILITER LE
DEBRANCHEMENT
ET LE DEPLACEMENT

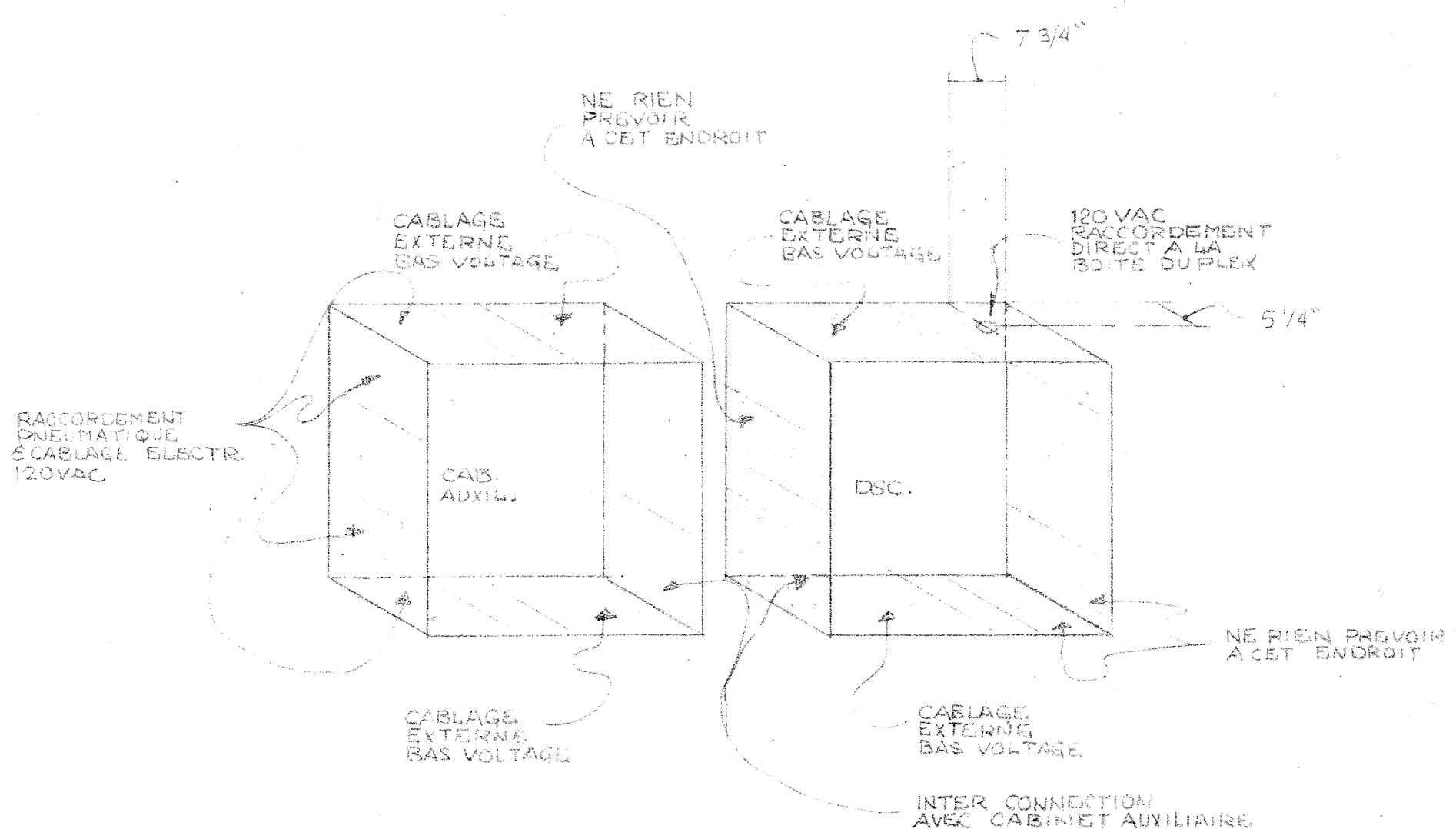


INT-1: INTERRUPTEUR "TOSSOL" CABLE SP-21, MOD 447, MONTÉ
AVEC R-400-101 J.C.L.

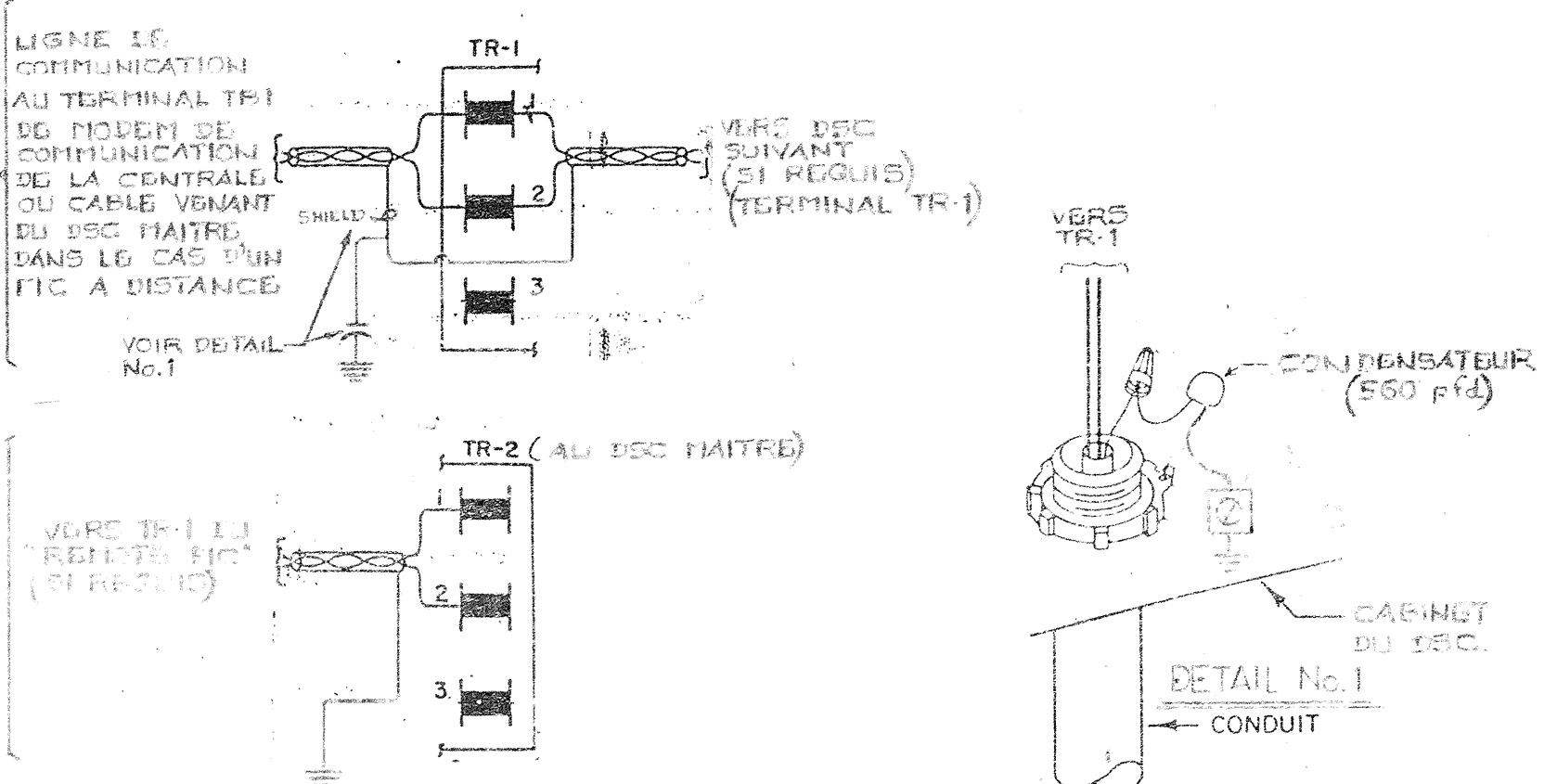
TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-5	BIN	1 2		CONTACT AUX. DEM.	MCC-1	B1.1		
2	STATUS	SYSTEME V36-13RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	STATUS	V36-12RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1		
4	STATUS	V36-11RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B4.1		
5	STATUS	V36-10RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B5.1		
6	STATUS	V36-9RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B6.1		
7	STATUS	V36-8RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B7.1		
8	GEL	SYSTEME V43-5	BIN	1 2		RELAIS RG	CAB AUX.	B8.1		

EMPLACEMENT		ADRESSE							DSC 5	
NOM: C.I.R.A.									FIC 1	
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1	
5A	RQ-1	RELAIS DEVIEMENT DE ILL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	SSA.1		
7A	R-1	ARRET DEPART V43-5	SST	1 3	2 7	RELAIS 12VDC	MCC-1	STA.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	
8A	SP-2	V-1 PRECHAF. OUVERTE	SST	1 3		ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1	
8B	SP-3	VOLET EVAL DA-13	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	S8B.1	



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR
LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES /
ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-8500		DSC-5	
CHANGEMENT #112		4 TEL QUE CONSTRUIT		86-07-08	
REPRESENTANT		TECHNICIEN		DATE	
J.C.R.		R.F.		NOV 27-85	
PROJET		CENTRE DE RECHERCHE ALIMENTAIRE		ST-HYACINTHE, QUE.	
REVISION		DATE		PAR	
1		JUL 16-85		4096-008-29	
APPROUVE		DATE		PAR	
4096-008-29		4068-29		4068-29	

DSC 5 SYSTEME V43-5A

/

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@ DISPLAY PANEL FUNCTIONS:

/

/

1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL

/

11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXT
14	DISPLAY	TE60,A	/TEMP ALIM

/

16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOILETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOILETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOILETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOILETS
30	DISPLAY	ZT10,A	/F.B. VOILETS

/

31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE

/

33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
----	--------	----------	----------------------------

/

34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES

/

37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE

/

45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV
48	DISPLAY	ZT50,A	/F.B. VAV

/

49	ADJUST	STA,T	/HEURE DE DEPART JOUR EN COURS
----	--------	-------	--------------------------------

```

50      ADJUST   STO,T      /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T     /HEURE DEPART SAMEDI
52      ADJUST   STO7,T     /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T     /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T     /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T     /HEURE DEPART SEMAINE
56      ADJUST   STO9,T     /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T       /VACANCE 1
58      ADJUST   H2,T       /VACANCE 2
59      ADJUST   H3,T       /VACANCE 3
60      ADJUST   H4,T       /VACANCE 4
/
61      OVERRIDE ZCP30,A,2  /SOUPAPES
62      OVERRIDE ZCP10,A,2  /VOLETS
63      OVERRIDE ZCP70,A,2  /HUMIDITE
64      OVERRIDE ZCP50,A,2  /VAV
/
/
65      DISPLAY  FSTAXX,B   /ETAT VENTIL. 08RE 09RE
66      DISPLAY  FSTAYY,B   /ETAT VENTIL. 10RE 11RE
67      DISPLAY  FSTAZZ,B   /ETAT VENTIL. 12RE 13RE
68      ADJUST   MINFXX,A   /MINIMUM PAR V 08RE 09RE
69      ADJUST   MINFYY,A   /MINIMUM PAR V 10RE 11RE
70      ADJUST   MINFZZ,A   /MINIMUM PAR V 12RE 13RE
/
72      ADJUST   MDPOS,A    /POSITION MINIMUM SANS EVACUATION

73      DISPLAY  PREHEA,B   /PRE CHAUFFAGE
74      ADJUST   PREALL,A   /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      ADJUST   RECUHL,I   /POINT DE CONSIGNE RECUPERATION
78      DISPLAY  FSP1,I     /PRES STAT SERP GLYCOL
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/ 1000 PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/

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79      ADJUST   CSTXXX,I      /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A      /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I      /GAIN INTEGRAL
82      ADJUST   CMPXXX,A      /COMPENSATION
83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/-----/
/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I      /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-5
/
/      51      ALARME HORAIRE SYSTEME V43-5
/
/-----/

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□

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/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 07-17-:1 08:39:57
/
/TRANSLATION LISTING FOR DSC-5.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 05-31-99 11:23:22
/
/TRANSLATION LISTING FOR DSC-5.CAL
/
/CAL1 TRANSLATOR   VERSION A.43 - JOHNSON CONTROLS REV C 09-24-90 09:54:20
/
/TRANSLATION LISTING FOR CIRA5.CAL
/
/-----
/
/      PROJET                      CENTRE DE RECHERCHE ALIMENTAIRE
/                                  ST-HYACINTHE, QUEBEC
/
/      DSC   5   SYSTEME   V43-5A
/
/      NUMERO DE TELEPHONE
/      NUMERO CONTRAT              4096-0008
/      VENDEUR                     JEAN CLAUDE ROUILLON
/      INGENIERIE                   RICHARD FOREST
/      CONCEPTION PROGRAMME        JEAN MORISSETTE
/      REVISION                     01 SEPT 1987
/                                  25 MAI 1990 MOD. BASSE LIMITE MELANGE JM
/
/-----
/
/-----
/  SELF TEST RESULTS
/-----
/  0  NO FAILURE
/  1  PCR-102 MAIN  PROCESSOR FAILURE
/  2  PCR-102 RAM   FAILURE
/  3  PCR-102 EPROM FAILURE
/-----
/  FIC ERRORS
/-----
/  0  NO ERRORS
/  1  FAILURE OF FIC TO RESPOND
/  2  FAILURE OF CTS FROM CIB
/  3  CHECK DIGIT ERROR IN COMM.
/  4  FRAMING ERROR IN MESSAGE XFER
/  5  INCORRECT DEVICE ID REQUIRED
/  6  RESPONSE MESSAGE HAS A BYTE COUNT OF 0 OR GT 32
/  7  INVALID START BIT
/  8  FAILURE OF 8741 PROCESSOR OF PCR-102
/-----
/
/
@ DSC 8500 ID:  CENTRE DE RECHERCHE ALIMENTAIRE,8897
@ FIC ADDRESSES:  1
@ POINT SUMMARY:
@ BD:  27
@ AD:  106
@ BI:  CON-8,BIT-0,BIR-0

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@ AI:  LTD-2,FUL-10,RAT-0,TOT-0
@ BO:  MOM-0,POS-4,MAN-5
@ CP:  BIP-0,BOF-0,AIP-0,APP-0,PCP-0,INC-4
@ FIC POINT DEFINITION:
@ FIC NO. 1
/
/
BI-1    FSTAT    CON-1    E,E      /ETAT VENTIL. ALIM.
BI-2    FSTA13   CON-2    E,E      /ETAT VENTIL. 13RE
BI-3    FSTA12   CON-3    E,E      /ETAT VENTIL. 12RE
BI-4    FSTA11   CON-4    E,E      /ETAT VENTIL. 11RE
BI-5    FSTA10   CON-5    E,E      /ETAT VENTIL. 10RE
BI-6    FSTA09   CON-6    E,E      /ETAT VENTIL. 9RE
BI-7    FSTA08   CON-7    E,E      /ETAT VENTIL. 8RE
BI-8    FREEZE   CON-8    E,E      /ETAT THERMOSTAT DE GEL
/
/
AI-1    TE80     FUL-1    E,0.5,E,V,T,-45.7,129.9 /TEMP RETOUR
AI-2    TE10     FUL-2    E,0.5,E,V,T,-45.7,129.9 /TEMP MELANGE
AI-3    TE1      FUL-3    E,0.5,E,V,T,-45.8,129.9 /TEMP EXT
AI-4    TE60     FUL-4    E,0.5,E,V,T,-45.8,129.9 /TEMP ALIM
AI-5    ZT10     FUL-5    E,0.5,E,N,O,-12.5,250.0 /F.B. VOLETS
AI-6    ZT30     FUL-6    E,0.5,E,N,O,-12.5,250.0 /F.B. SOUPAPES
AI-7    ZT50     FUL-7    E,0.5,E,N,O,-12.5,250.0 /F.B. VAV
AI-8    ZT70     FUL-8    E,0.5,E,N,O,-12.5,250.0 /F.B. HUMIDITE
AI-11   HT80     LTD-1    E,0.5,E,N,O,-10.0,100.0 /HUMIDITE RETOUR
AI-12   HT60     LTD-2    E,0.5,E,N,O,-10.0,100.0 /HUMIDITE ALIMENT
AI-13   SPT      FUL-9    E,0.1,E,N,O,0,620      /PRESSION STATIQUE EN P
AI-14   SPT1     FUL-10   E,0.1,E,N,O,0,621      /PRES STAT EN P SERP GL
/
/
BO-1    ZC10     POS-1    D,E,0    /VOLETS
BO-2    ZC30     POS-2    D,E,0    /SOUPAPES
BO-3    ZC50     POS-3    D,E,0    /VAV
BO-4    ZC70     POS-4    D,E,0    /HUMIDITE
BO-5A   ZSLL     MAN-1    E,E      /EVITEMENT BASSE LIMIT
BO-7A   ZS50     MAN-2    E,E      /VENTIL ALIM
BO-7B   ZS10     MAN-3    E,E      /RECUPER RECIRCULATION
BO-8A   ZS20     MAN-4    E,E      /SOUPAPE PRECHAUFF
BO-8B   ZS80     MAN-5    E,E      /VOLETS EVACUATION
/
/
CP-1    ZCP10    INC-1    E,E,A,ZT10,ZC10,-100,0,5,0.0 /VOLETS
CP-2    ZCP30    INC-2    E,E,A,ZT30,ZC30,-100,0,5,0.0 /SOUPAPES
CP-3    ZCP50    INC-3    E,E,A,ZT50,ZC50,-100,0,5,0.0 /VAV
CP-4    ZCP70    INC-4    E,E,A,ZT70,ZC70,-100,0,5,0.0 /HUMIDITE
/
/
@ DATA POINT DEFINITION:
/
/
/-----/
/      VARIABLES POUR LE PROG HORAIRE, ARRET DEPART      /
/-----/
/
BD-1    OCCD     E,R      /CYCLE D OCCUPATION
BD-2    FSTRT    E,R      /DEMANDE VENTILATEUR

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BD-3	COMP50	E,R	/RESULTAT DEMARRAGE
BD-4	CONON	E,R	/PERMISSION CONTROLE
/			
/-----/			
/ PARAMETRES ECONOMISEUR D AIR FRAIS /			
/-----/			
/			
BD-5	ECON	E,R	/RESULTAT ECONOMISEUR
/			
/-----/			
/ PARAMETRES CONTROLE DES VOLETS AVEC BASSE LIMITE /			
/-----/			
/			
BD-6	MXD	E,R	/CONTROLE DE JOUR
BD-7	MIXLL	E,R	/CONTROLE PAR BASSE LIMITE
/			
/-----/			
/ PARAMETRES CONTROLE DU PRE CHAUFFAGE /			
/-----/			
/			
BD-8	PREHEA	E,R	/PRE CHAUFFAGE
BD-9	LLBYP	E,R	/RESULTAT TEMPORAIRE
/			
/-----/			
/ PARAMETRES CONTROLE DE CHAUFFAGE /			
/-----/			
/			
BD-10	HTG	E,R	/CHAUFFAGE
/			
/-----/			
/ PARAMETRES CONTROLE DE REFROIDISSEMENT /			
/-----/			
/			
BD-11	CLG	E,R	/REFROIDISSEMENT
/			
/-----/			
/ PARAMETRES CONTROLE DE RECUPERATION /			
/-----/			
/			
BD-12	RECUP	E,R	/RECUPERATION
/			
/-----/			
/ FONCTIONS SPECIALES /			
/-----/			
/			
BD-13	SYSP	D,R	
BD-14	SYS	D,R	
BD-15	SYS1	D,R	
BD-16	SYS2	D,R	
BD-17	SYS3	D,R	
BD-18	SYS4	D,R	
BD-19	SYS5	D,R	
BD-20	SYS6	D,R	
BD-21	SYS7	D,R	
BD-22	SYS8	D,R	
BD-23	SYS9	D,R	
BD-24	SYS10	D,R	

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BD-25   FSTAXX   D,R
BD-26   FSTAYY   D,R
BD-27   FSTAZZ   D,R
/
/-----/
/          VARIABLES POUR LE PROG HORAIRE, ARRET DEPART          /
/-----/
/
AD-1     DOW      E,2
AD-2     H1       E,00:00
AD-3     H2       E,00:00
AD-4     H3       E,00:00
AD-5     H4       E,00:00
AD-6     H5       E,00:00
AD-7     H6       E,00:00
AD-8     STA      E,00:00 /HORAIRE
AD-9     STO      E,00:00
AD-10    STA8     E,18:00
AD-11    STO8     E,18:00
AD-12    STA7     E,07:05
AD-13    STO7     E,17:00
AD-14    STA9     E,07:05
AD-15    STO9     E,18:00
AD-16    DELSST   E,40    /DELAI APRES UNE PANNE
/
/-----/
/          PARAMETRES ECONOMISEUR D AIR FRAIS          /
/-----/
/
AD-17    OASO     E,15.0   /TEMP LIM EXT ECONOMISEUR
/
/-----/
/          REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION          /
/-----/
/
AD-18    RARL     E,20.0   /AIR RET BAS LIM REAJ TEMP ALIM
AD-19    RARH     E,25.0   /AIR RET HAU LIM REAJ TEMP ALIM
AD-20    SAHL     E,25.0   /REAJ TEMP ALIM HAU LIM
AD-21    SALL     E,13.0   /REAJ TEMP ALIM BAS LIM
/
/-----/
/          PARAMETRES CONTROLE DES VOILETS AVEC BASSE LIMITE          /
/-----/
/
AD-22    DSSP     E,0.0    /POINT DE CONSIGNE ALIM
AD-23    MXDSP    E,11.0   /POINT DE CONSIGNE LIMITE MEL.
AD-24    MDP      E,0.0    /POSITION MINIMUM VOILETS
AD-25    CST10A   E,15     /INTERVAL CTL VOILETS LIMITE
AD-26    CPB10A   E,-90.0  /BANDE PROP CTL VOILETS LIMITE
AD-27    CIG10A   E,33     /GAIN CTL VOILETS LIMITE
AD-28    CMP10A   E,0.0    /COMPENSATION CTL VOILETS LIMITE
AD-29    CDS10A   E,2.0    /BANDE MORTE CTL VOILETS LIMITE
AD-30    CST10    E,60     /INTERVAL CTL VOILETS
AD-31    CPB10    E,-60.0  /BANDE PROP CTL VOILETS
AD-32    CIG10    E,33     /GAIN CTL VOILETS
AD-33    CMP10    E,0.0    /COMPENS CTL VOILETS
AD-34    CDS10    E,0.0    /BANDE MORTE CTL VOILETS

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AD-35  ZMXD      E,0.0  /RESULTAT PROPORTION.
AD-36  Z10M      E,100.0 /RESULTAT VOILETS LIMITE
AD-37  Z10C      E,0.0  /RESULTAT VOILETS CTL
AD-38  Z10       E,0.0  /RESULTAT VOILETS
/
/-----/
/      PARAMETRES CALCUL POSITION MINIMUM      /
/-----/
/
AD-39  MDPOS     E,20.0  /MINIMUM SANS EVACUATION
AD-40  MINF1     E,9.0   /MINIMUM VENTIL. 8RE
AD-41  C1        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-42  MINF2     E,2.0   /MINIMUM VENTIL. 9RE
AD-43  C2        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-44  MINF3     E,2.0   /MINIMUM VENTIL. 10RE
AD-45  C3        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-46  MINF4     E,2.0   /MINIMUM VENTIL. 11RE
AD-47  C4        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-48  MINF5     E,2.0   /MINIMUM VENTIL. 12RE
AD-49  C5        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
AD-50  MINF6     E,2.0   /MINIMUM VENTIL. 13RE
AD-51  C6        E,0.0   /RESULTAT TEMPORAIRE DE CALCUL
/
/-----/
/      PARAMETRES CONTROLE DU PRE CHAUFFAGE      /
/-----/
/
AD-52  PREALL    E,5.0   /LIMITE CONTROLE PRE CHAUFFAGE
AD-53  PREADF    E,1.0   /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
AD-54  DELHEA    E,120   /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU FRO
/
/-----/
/      PARAMETRES CONTROLE DE CHAUFFAGE      /
/-----/
/
AD-55  Z40       E,0.0   /RESULTAT CHAUFFAGE
AD-56  CST40     E,40    /INTERVAL CTL CHAUFF
AD-57  CPB40     E,50.0  /BANDE PROP CTL CHAUFF
AD-58  CIG40     E,33    /GAIN CTL CHAUFF
AD-59  CDS40     E,0.0   /BANDE MORTE CTL CHAUFF
AD-60  Z30POS    E,66.0  /POSITION D ARRET SOUPAPES
/
/-----/
/      PARAMETRES CONTROLE DE REFROIDISSEMENT      /
/-----/
/
AD-61  Z30       E,0.0   /RESULTAT REFROIDISSEMENT
AD-62  CST30     E,30    /INTERVAL CTL REFROIDI
AD-63  CPB30     E,-41.2 /BANDE PROP CTL REFROIDI
AD-64  CIG30     E,60    /GAIN CTL REFROIDI
AD-65  CDS30     E,2.0   /BANDE MORTE CTL REFROIDI
/
/-----/
/      VARIABLES POUR LE CONTROLE DE PRESSION STATIQUE      /
/-----/
/
AD-66  SPSP      E,8     /POINT DE CONSIGNE PRESS STAT

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AD-67  CST50      E,6      /INTERVAL CTL VAV
AD-68  CPB50      E,-10.0 /BANDE PROP CTL VAV
AD-69  CIG50      E,30     /GAIN CTL VAV
AD-70  CMP50      E,0.0    /COMPENS CTL VAV
AD-71  CDS50      E,0.4    /BANDE MORTE CTL VAV
AD-72  Z50        E,0.0    /RESULTAT CTL VAV
AD-73  FSP        E,0.0    /PRESS STAT FILTREE
AD-74  AD1        D,0.0    /RESULTAT TEMPORAIRE
AD-75  AD2        D,0.0    /RESULTAT TEMPORAIRE
/
/-----/
/          VARIABLES POUR LE CONTROLE D HUMIDITE          /
/-----/
/
AD-76  RHSP       E,30.0    /POINT DE CONSIGNE HUMIDITE DE RETOUR
AD-77  RHSPA      E,80.0    /POINT DE CONSIGNE HAUTE LIM HUMIDITE
AD-78  CST70      E,60     /INTERVAL CTL HUMIDITE
AD-79  CPB70      E,90.0    /BANDE PROP CTL HUMIDITE
AD-80  CIG70      E,33     /GAIN CTL HUMIDITE
AD-81  CDS70      E,0.0    /BANDE MORTE CTL HUMIDITE
AD-82  CST70A     E,5      /INTERVAL H LIM HUMIDITE
AD-83  CPB70A     E,90.0    /BANDE PROP H LIM HUMIDITE
AD-84  CIG70A     E,33     /GAIN H LIM HUMIDITE
AD-85  CDS70A     E,0.0    /BANDE MORTE H LIM HUMIDITE
AD-86  Z70        E,0.0    /RESULTAT CTL HUMIDITE
AD-87  Z70HL      E,0.0    /RESULTAT CTL HUMIDITE HAUTE LIMITE
AD-88  Z70C       E,0.0    /RESULTAT CTL HUMIDITE CONT RETOUR
/
/-----/
/          PARAMETRES CONTROLE DE RECUPERATION          /
/-----/
/
AD-89  RECUHL     E,200    /POINT DE CONSIGNE RECUPERATION
AD-90  RECUDF     E,50     /DIFFERENTIEL RECUPERATION
AD-91  FSP1       E,0.0    /PRESSION STATIQUE FILTREE
/
/-----/
/          FONCTIONS SPECIALES                          /
/-----/
/
AD-92  SYSDIS     D,0
AD-93  CSTXXX     D,0
AD-94  CPBXXX     D,0.0
AD-95  CIGXXX     D,0
AD-96  CMPXXX     D,0.0
AD-97  CDSXXX     D,0.0
AD-98  MINFXX     D,0.0
AD-99  MINFYY     D,0.0
AD-100 MINFZZ     D,0.0
/
/
/-----/
/          RECORD PANNE DE POUVOIR                      /
/-----/
/
AD-101 UPTIM      E,00:00   /HEURE DE LA RESTAURATION DU POUVOIR
AD-102 UPDAT      E,00:00   /DATE DE LA RESTAURATION DU POUVOIR

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AD-103	DNTIM	E,00:00	/HEURE DE LA DERNIERE PERTE DE POUVOIR
AD-104	DNDAT	E,00:00	/DATE DE LA DERNIERE PERTE DE POUVOIR
AD-105	TOD	E,00:00	/DERNIERE HEURE
AD-106	LDAT	E,00:00	/DERNIERE DATE
/			
/			
@	DISPLAY PANEL FUNCTIONS:		
/			
/			
1	ADJUST	DELSST,I	/DELAI APRES UNE PANNE
2	DISPLAY	OCCD,B	/CYCLE D OCCUPATION
3	ADJUST	FSTRT,B	/DEMANDE VENTILATEUR
4	DISPLAY	FSTAT,B	/ETAT VENTIL. ALIM.
5	DISPLAY	FREEZE,B	/ETAT THERMOSTAT DE GEL
/			
11	DISPLAY	TE80,A	/TEMP RETOUR
12	DISPLAY	TE10,A	/TEMP MELANGE
13	DISPLAY	TE1,A	/TEMP EXT
14	DISPLAY	TE60,A	/TEMP ALIM
/			
16	DISPLAY	MXD,B	/CONTROLE DE JOUR
17	ADJUST	RARL,A	/AIR RET BAS LIM REAJ TEMP ALIM
18	ADJUST	RARH,A	/AIR RET HAU LIM REAJ TEMP ALIM
19	ADJUST	SAHL,A	/REAJ TEMP ALIM HAU LIM
20	ADJUST	SALL,A	/REAJ TEMP ALIM BAS LIM
21	DISPLAY	DSSP,A	/POINT DE CONSIGNE ALIM
22	ADJUST	OASO,A	/TEMP LIM EXT ECONOMISEUR
23	DISPLAY	ECON,B	/RESULTAT ECONOMISEUR
24	DISPLAY	MDP,A	/POSITION MINIMUM VOILETS
25	ADJUST	MXDSP,A	/POINT DE CONSIGNE LIMITE MEL.
26	DISPLAY	ZMXD,A	/RESULTAT PROPORTION.
27	DISPLAY	Z10M,A	/RESULTAT VOILETS LIMITE
28	DISPLAY	Z10C,A	/RESULTAT VOILETS CTL
29	DISPLAY	Z10,A	/RESULTAT VOILETS
30	DISPLAY	ZT10,A	/F.B. VOILETS
/			
31	DISPLAY	HTG,B	/CHAUFFAGE
32	DISPLAY	Z40,A	/RESULTAT CHAUFFAGE
/			
33	ADJUST	Z30POS,A	/POSITION D ARRET SOUPAPES
/			
34	DISPLAY	CLG,B	/REFROIDISSEMENT
35	DISPLAY	Z30,A	/RESULTAT REFROIDISSEMENT
36	DISPLAY	ZT30,A	/F.B. SOUPAPES
/			
37	DISPLAY	HT80,A	/HUMIDITE RETOUR
38	DISPLAY	HT60,A	/HUMIDITE ALIMENT
39	ADJUST	RHSP,A	/POINT DE CONSIGNE HUMIDITE DE RETOUR
40	ADJUST	RHSPA,A	/POINT DE CONSIGNE HAUTE LIM HUMIDITE
41	DISPLAY	Z70HL,A	/RESULTAT CTL HUMIDITE HAUTE LIMITE
42	DISPLAY	Z70C,A	/RESULTAT CTL HUMIDITE CONT RETOUR
43	DISPLAY	Z70,A	/RESULTAT CTL HUMIDITE
44	DISPLAY	ZT70,A	/F.B. HUMIDITE
/			
45	DISPLAY	FSP,I	/PRESSION STATIQUE
46	ADJUST	SPSP,I	/POINT DE CONSIGNE PRESS STAT
47	DISPLAY	Z50,A	/RESULTAT CTL VAV

```

48      DISPLAY  ZT50,A      /F.B. VAV
/
49      ADJUST   STA,T       /HEURE DE DEPART JOUR EN COURS
50      ADJUST   STO,T       /HEURE D ARRET JOUR EN COURS
51      ADJUST   STA7,T      /HEURE DEPART SAMEDI
52      ADJUST   STO7,T      /HEURE D ARRET SAMEDI
53      ADJUST   STA8,T      /HEURE DEPART DIMANCHE
54      ADJUST   STO8,T      /HEURE D ARRET DIMANCHE
55      ADJUST   STA9,T      /HEURE DEPART SEMAINE
56      ADJUST   STO9,T      /HEURE D ARRET SEMAINE
/
57      ADJUST   H1,T        /VACANCE 1
58      ADJUST   H2,T        /VACANCE 2
59      ADJUST   H3,T        /VACANCE 3
60      ADJUST   H4,T        /VACANCE 4
/
61      OVERRIDE ZCP30,A,2    /SOUPAPES
62      OVERRIDE ZCP10,A,2    /VOLETS
63      OVERRIDE ZCP70,A,2    /HUMIDITE
64      OVERRIDE ZCP50,A,2    /VAV
/
/
65      DISPLAY  FSTAXX,B     /FUNCTION 88    900    1000
66      DISPLAY  FSTAYY,B     /ETAT VENTIL.  08RE   09RE
67      DISPLAY  FSTAZZ,B     /ETAT VENTIL.  10RE   11RE
68      ADJUST   MINFXX,A     /ETAT VENTIL.  12RE   13RE
69      ADJUST   MINFYY,A     /MINIMUM PAR V  08RE   09RE
70      ADJUST   MINFZZ,A     /MINIMUM PAR V  10RE   11RE
71      ADJUST   MINFZZ,A     /MINIMUM PAR V  12RE   13RE
/
72      ADJUST   MDPOS,A      /POSITION MINIMUM SANS EVACUATION
/
73      DISPLAY  PREHEA,B     /PRE CHAUFFAGE
74      ADJUST   PREALL,A     /LIMITE CONTROLE PRE CHAUFFAGE
75      ADJUST   PREADF,A     /DIFFERENTIELLE CONTROLE PRE CHAUFFAGE
76      ADJUST   DELHEA,I     /DELAI CONTROLE EVITEMENT BASSE LIMITE EAU
/
77      ADJUST   RECUHL,I     /POINT DE CONSIGNE RECUPERATION
78      DISPLAY  FSP1,I       /PRES STAT SERP GLYCOL
/
/-----/
/          FONCTIONS SPECIALES          /
/-----/
/
/ 100  PARAMETRES CONTROLE HUMIDITE RETOUR
/ 200  PARAMETRES CONTROLE HAUTE LIMITE HUMIDITE
/ 300  PARAMETRES CONTROLE VOLUME VARIABLE
/ 400  PARAMETRES CONTROLE CHAUFFAGE
/ 600  PARAMETRES CONTROLE VOLETS PAR MELANGE
/ 700  PARAMETRES CONTROLE VOLETS PAR ALIMENTATION
/ 800  PARAMETRES CONTROLE REFROIDISSEMENT
/ 900  PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/ 1000 PARAMETRES VENTILATEURS EVACUATION FCT 65-70
/
79      ADJUST   CSTXXX,I     /INTERVAL DE CONTROLE
80      ADJUST   CPBXXX,A     /BANDE PROPORTIONNELLE
81      ADJUST   CIGXXX,I     /GAIN INTEGRAL
82      ADJUST   CMPXXX,A     /COMPENSATION

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83      ADJUST   CDSXXX,A      /BANDE MORTE
/
/-----/
/              RECORD PANNE DE POUVOIR
/-----/
/
84      DISPLAY  UPTIM,T      /HEURE DE LA RESTAURATION DU POUVOIR
85      DISPLAY  UPDAT,T      /DATE DE LA RESTAURATION DU POUVOIR
86      DISPLAY  DNTIM,T      /HEURE DE LA DERNIERE PERTE DE POUVOIR
87      DISPLAY  DNDAT,T      /DATE DE LA DERNIERE PERTE DE POUVOIR
/
88      ADJUST   SYSDIS,I     /SELECTION FONCTIONS SPECIALES
/
89      DISPLAY  FIC1L,B
90      ADJUST   FIC1E,I
91      ADJUST   STEST,I
92      DISPLAY  OCNT,I
93      OVSCAN
94      DISPLAY  ACNT,I
95      ALMSCAN
96      YEAR
97      DATE
98      DAY
99      TIME
/
/
/
/
/-----/
/
/              L I S T E   D E S   A L A R M E S
/
/      ALARME
/      NUMERO              DESCRIPTION
/
/-----/
/
/      10      ALARME THERMOSTAT DE GEL
/
/      50      ALARME ARRET DEPART SYSTEME V43-5
/
/      51      ALARME HORAIRE SYSTEME V43-5
/
/-----/
/
/
@ CONTROL PROCESS CODE:
/
/-----/
/      PROGRAMME HORAIRE ET CONTROLE ARRET DEPART
/-----/
/
/DETERMINE HEURE ARRET DEPART
/SELON JOUR DE LA SEMAINE OU VACANCE
/

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```

1.1      PROG      DOW,0,00:01,23:59
1.2      SET       BPD,SDF,R
1.3      EXIT      C,S
1.4      HOLIDAY   H1,H2,H3,H4,H5,H6
1.5      STORE     DOW,APD,2,U
1.6      COMPARE   DOW,EQ,7,0
1.7      STORE     STA,STA7,STA9,C,S
1.8      STORE     STO,STO7,STO9,C,S
1.9      COMPARE   DOW,EQ,1,0
1.10     ORR       DOW,EQ,8,0
1.11     STORE     STA,STA8,STA9,C,S
1.12     STORE     STO,STO8,STO9,C,S
1.13     COMPARE   DOW,GE,2,0
1.14     ANDR      DOW,LE,6,0
1.15     STORE     STA,STA9,STA9,C,S
1.16     STORE     STO,STO9,STO9,C,S
1.17     SET       BPD,PAF,R
1.18     ALARM     51,C,S
1.19     EXIT      U
/
/A L HEURE DE DEPART:
/          SET      OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/A L HEURE D ARRET:
/          RESET    OCCD      CYCLE D OCCUPATION
/          FSTRT    OPERATION VENTIL.
/
2.1      PROG      DOW,0,STA,STO
2.2      SET       OCCD,SUF,R
2.3      SET       FSTRT,SUF,R
2.4      EXIT      U
/
/DEMARRAGE VENTILATEUR SI FSTRT EST ON
/VERIFICATION D ALARME
/
3.1      RESTART
3.2      SET       AUTO,S,S
3.3      DELAY     25,U
3.4      SET       COMP50,R,R
3.5      INTERVAL  10,U
3.6      XOR       COMP50,FSTAT
3.7      ALARM     50,C,S
3.8      SET       BPD,FSTRT,R
3.9      BOUT      ZS50,3,OFF
3.10     SET       COMP50,BPD,R
3.11     EXIT      U
/
/
/-----/
/          GENERATION D UNE ALARME SI DETECTION BASSE TEMPERATURE
/-----/
/
4.1      RESTART
4.2      DELAY     25,U
4.3      INTERVAL  5,U
4.4      SET       BPD,FREEZE,R
4.5      ALARM     10,C,R

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4.6      EXIT      U
/
/
/-----/
/          CONTROLE D HUMIDITE DE RETOUR  HAUTE LIMITE ALIM.          /
/-----/
/
/LORSQUE LE VENTILATEUR D ALIMENTATION DEMARRE, LA SOUPAPE D HUMIDITE
/EST MODULE POUR MAINTENIR UNE HUMIDITE DE RETOUR CONSTANTE.
/SI L HUMIDITE D ALIMENTATION DEVIENT SUPERIEURE A LA LIMITE LA
/SOUPAPE EST RAMENNE VERS SA POSITION FERME.
/
5.1      EVENT      CONON,S
5.2      SET        BPD,CONON,R
5.3      STORE      APD,0.0,0.0,C,R
5.4      STORE      Z70C,APD,APD,C,R
5.5      STORE      Z70,APD,APD,C,R
5.6      AOUT       ZCP70,3,0.0,C,R
5.7      EXIT       C,R
5.8      DELAY      20,U
5.9      INTERVAL   CST70,U
5.10     PROP       RHSP,HT80,CPB70,CIG70,0.0,CDS70
5.11     STORE      Z70C,APD,APD,U
5.12     EXIT       U
/
6.1      EVENT      CONON,S
6.2      SET        BPD,CONON,R
6.3      EXIT       C,R
6.4      INTERVAL   CST70A,U
6.5      PROP       RHSPA,HT60,CPB70A,CIG70A,100.0,CDS70A
6.6      STORE      Z70HL,APD,APD,U
6.7      SELECT     APD,Z70C,L
6.8      STORE      Z70,APD,APD,U
6.9      AOUT       ZCP70,3,0.0,U
6.10     EXIT       U
/
/
/-----/
/          CONTROLE DE LA PRESSION STATIQUE                          /
/-----/
/
/CE PROCEDE CONTROLE LA PRESSION STATIQUE DE LA PIECE AU POINT DE
/CONSIGNE -SPSP-. LA LECTURE DE PRESSION EST EN PASCALS.
/LE RESULTAT AGIT SUR LES DEUX SYSTEMES 5 ET 6.
/
7.1      RESTART
7.2      DELAY      40,U
7.3      INTERVAL   CST50,U
7.4      FILTER     SPT,63,100
7.5      STORE      AD1,APD,APD,U    /PRESSION AVEC DECIMALE
7.6      CALC       APD,0,1,1,10,R
7.7      STORE      FSP,APD,APD,U    /PRESSION SANS DECIMALE
7.8      CALC       SPSP,0,10,1,1,T
7.9      STORE      AD2,APD,APD,U    /POINT DE CONSIGNE AVEC DECIMALE
7.10     CALC       CPB50,0,10,1,1,T
7.11     PROP       AD2,AD1,APD,CIG50,CMP50,CDS50
7.12     STORE      Z50,APD,APD,U

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7.13      AOUT      ZCP50,3,0,U
7.14      EXIT      U
/
/
/-----/
/      CONTROLE DE TEMPERATURE: CHOIX DU CYCLE DE CONTROLE      /
/-----/
/
/QUAND LE VENTILATEUR D ALIMENTATION EST EN MARCHE, VERIFIE LE MODE
/D OCCUPATION ET INI. LE CONTROLE DE VOLETS-MXD-.
/
8.1        RESTART
8.2        SET      MXD,R,R
8.3        SET      CONON,R,R
8.4        DELAY    25,U
8.5        INTERVAL 5,U
8.6        AND      FSTAT,OCCD
8.7        SET      MXD,BPD,R
8.8        SET      CONON,FSTAT,R
8.9        EXIT      U
/
/
/-----/
/      ECONOMISEUR D AIR FRAIS      /
/-----/
/
/QUAND LA TEMPERATURE EXTERIEURE EST SUPERIEURE A OASO -15 C-,
/LES VOLETS SONT RAMENES A LEURS POSITIONS NORMALES.
/
9.1        EVENT    MXD,S
9.2        SET      ECON,R,R
9.3        SET      BPD,FSTAT,R
9.4        EXIT      C,R
9.5        INTERVAL 300,U
9.6        COMPARE  TE1,GE,OASO,1.0
9.7        SET      ECON,BPD,R
9.8        EXIT      U
/
/-----/
/      REAJUSTEMENT DU POINT DE CONSIGNE ALIMENTATION      /
/-----/
/
/COMME L AIR DE RETOUR CHANGE DE LA BASSE LIMITE DE REAJUSTEMENT, RARL,
/A LA HAUTE LIMITE DE REAJUSTEMENT, RARH, LE POINT DE CONSIGNE SERA
/REAJUSTER ENTRE LES LIMITES, SAHL ET SALL.
/
10.1       EVENT    MXD,S
10.2       INTERVAL 300,U
10.3       STORE    APD,TE80,RARL,U
10.4       SPAN     RARL,RARH,SAHL,SALL
10.5       STORE    DSSP,APD,SAHL,U
10.6       EXIT      U
/
/-----/
/      CONTROLE DES VOLETS AVEC BASSE LIMITE      /
/-----/
/

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/QUAND LE SYSTEME DEMARRE EN CYCLE DE JOUR -OCCD EST ON-, ON CALCUL
/LA POSITION DE CONTROLE. LES VOLETS SONT EN SEQUENCE SAUF SI LE POINT
/ECON EST ON, OU QUE LE CONTROLE CE FASSE PAR LA TEMPERATURE DE
/MELANGE. SI LE RESULTAT EST SUPERIEURE A 85 ON DEMANDE LE
/LE REFROIDISSEMENT MECANIQUE - CLG-. SI LE RESULTAT EST INFERIEURE
/A 15 ON DEMANDE LE CHAUFFAGE -HTG-. LORSQUE LE SYSTEME ARRETE LES VOLETS
/FERMENT AINSI QUE LA SOUPAPE DE REFROIDISSEMENT, LE CHAUFFAGE DEVIENT
/OUVERT.
/
/Z10M RESULTAT PAR TEMP DE MELANGE
/Z10C RESULTAT PAR TEMP D ALIMENTATION
/Z10 RESULTAT VOLETS
/
/
11.1 EVENT MXD,S
11.2 SET MIXLL,R,R
11.3 SET BPD,MXD,R
11.4 EXIT C,R
11.5 INTERVAL 5,U
11.6 COMPARE TE10,LE,MXDSP,3.0 /DETERMINE SI MELANGE INFERIEURE
11.7 SET MIXLL,BPD,R /A LA BASSE LIMITE
11.8 SELECT Z10M,Z10C,L
11.9 STORE Z10,APD,APD,U
11.10 AOUT ZCP10,3,0.0,U
11.11 EXIT U
/
12.1 EVENT MIXLL,S /CONTROLE PAR BASSE LIMITE DE MELANGE
12.2 SET BPD,MIXLL,R
12.3 STORE Z10M,100.0,100.0,C,R
12.4 STORE CMP10A,Z10C,Z10C,U
12.5 EXIT C,R
12.6 INTERVAL CST10A,U
12.7 PROP MXDSP,TE10,CPB10A,CIG10A,CMP10A,CDS10A
12.8 STORE Z10M,APD,APD,U
12.9 EXIT U
/
13.1 EVENT MXD,R /POSITION D ARRET SOUPAPES
13.2 SET BPD,MXD,R
13.3 EXIT C,S
13.4 SET HTG,R,R
13.5 SET CLG,R,R
13.6 DELAY 7,C,R
13.7 STORE APD,0.0,0.0,C,R
13.8 AOUT ZCP30,3,0.0,C,R
13.9 EXIT U
/
14.1 EVENT MXD,S
14.2 SET BPD,MXD,R
14.3 STORE APD,0.0,0.0,C,R
14.4 STORE Z10,APD,APD,C,R
14.5 STORE Z10C,APD,APD,C,R
14.6 STORE Z10M,100.0,100.0,C,R
14.7 STORE ZMXD,APD,APD,C,R
14.8 AOUT ZCP10,3,0.0,C,R
14.9 EXIT C,R
14.10 DELAY 7,U
14.11 STORE APD,TE1,5.0,U

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14.12  SPAN      5.0,20.0,0.0,75.0
14.13  STORE    CMP10,APD,APD,U
14.14  STORE    APD,Z30POS,Z30POS,U
14.15  AOUT     ZCP30,3,0.0,U
14.16  INTERVAL CST10,U
14.17  PROP     DSSP,TE60,CPB10,CIG10,CMP10,CDS10
14.18  STORE    ZMXD,APD,APD,U
14.19  SPAN     MDP,100.0,MDP,100.0
14.20  SET      BPD,ECON,S
14.21  STORE    APD,MDP,MDP,C,S
14.22  STORE    Z10C,APD,APD,U
14.23  ORR      ZMXD,GE,85.0,10.0
14.24  SET      CLG,BPD,R
14.25  COMPARE  ZMXD,LE,15.0,10.0
14.26  SET      HTG,BPD,R
14.27  EXIT     U
/
/
/-----/
/      CALCUL DE LA POSITION MINIMUM DES VOLETS      /
/-----/
/
/LA POSITION MINIMUM DES VOLETS EST REAJUSTE EN FONCTION DES VENTILATEURS
/D EVACUATION. LA FONCTION MINF1 A MINF6 SONT LES POURCENTAGES RAJOUTES
/A LA POSITION MINIMUM QUAND LE VENTILATEUR CORRESPONDANT FONCTIONNE. LE
/RESULTAT S APPLIQUE DANS LA ROUTINE DE CONTROLE DES VOLETS
/
15.1    RESTART
15.2    DELAY    25,U
15.3    INTERVAL 10,U
/
15.4    SET      BPD,FSTA08,R          /CALCUL VENT. 8RE
15.5    STORE    C1,0.0,0.0,C,R
15.6    STORE    C1,MINF1,MINF1,C,S
/
15.7    SET      BPD,FSTA09,R          /CALCUL VENT. 9RE
15.8    STORE    C2,0.0,0.0,C,R
15.9    STORE    C2,MINF2,MINF2,C,S
/
15.10   SET      BPD,FSTA10,R          /CALCUL VENT. 10RE
15.11   STORE    C3,0.0,0.0,C,R
15.12   STORE    C3,MINF3,MINF3,C,S
/
15.13   SET      BPD,FSTA11,R          /CALCUL VENT. 11RE
15.14   STORE    C4,0.0,0.0,C,R
15.15   STORE    C4,MINF4,MINF4,C,S
/
15.16   SET      BPD,FSTA12,R          /CALCUL VENT. 12RE
15.17   STORE    C5,0.0,0.0,C,R
15.18   STORE    C5,MINF5,MINF5,C,S
/
15.19   SET      BPD,FSTA13,R          /CALCUL VENT. 13RE
15.20   STORE    C6,0.0,0.0,C,R
15.21   STORE    C6,MINF6,MINF6,C,S
/
15.22   CALC     C1,C2,1,1,1,T
15.23   CALC     APD,C3,1,1,1,T

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15.24  CALC      APD,C4,1,1,1,T
15.25  CALC      APD,C5,1,1,1,T
15.26  CALC      APD,C6,1,1,1,T
15.27  CALC      APD,MDPOS,1,1,1,T
15.28  STORE     MDP,APD,20.0,U
15.29  EXIT      U
/
/
/-----/
/               CONTROLE DU PRE CHAUFFAGE               /
/-----/
/
/SI LA TEMPERATURE DE MELANGE EST AU DESSOUS DE LA LIMITE, LE SERPENTIN
/DE PRECHAUF EST ALIMENTE ET APRES UN DELAI LA BASSE LIMITE DE MELANGE
/EST DESALIMENTE.
/
16.1    RESTART
16.2    SET       PREHEA,S,S
16.3    DELAY     25,U
16.4    BOUT      ZSLL,3,OFF
16.5    INTERVAL  5,U
16.6    COMPARE   TE10,LE,PREALL,PREADF
16.7    SET       PREHEA,BPD,R
16.8    NEGATE    BPD
16.9    BOUT      ZS20,3,OFF
16.10   SET       BPD,LLBYP,R
16.11   BOUT      ZSLL,3,OFF
16.12   EXIT      U
/
17.1    EVENT     PREHEA,S
17.2    SET       BPD,PREHEA,R
17.3    DELAY     DELHEA,C,S
17.4    NEGATE    PREHEA
17.5    SET       LLBYP,BPD,R
17.6    EXIT      U
/
/
/-----/
/               CONTROLE DE CHAUFFAGE               /
/-----/
/
/QUAND IL Y A DEMANDE DE CHAUFFAGE PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE 0 A Z30POS POUR LE CHAUFFAGE.
/
18.1    EVENT     HTG,S
18.2    SET       BPD,HTG,S
18.3    STORE     Z40,0.0,0.0,C,R
18.4    STORE     APD,Z30POS,Z30POS,C,R
18.5    AOUT      ZCP30,3,0.0,C,R
18.6    EXIT      C,R
18.7    INTERVAL  CST40,U
18.8    CALC      DSSP,0.3,1,-1,1,T
18.9    PROP      APD,TE60,CPB40,CIG40,0.0,CDS40
18.10   STORE     Z40,APD,APD,U
18.11   SPAN      0.0,100.0,Z30POS,0.0

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18.12  AOUT      ZCP30,3,100.0,U
18.13  EXIT      U
/
/-----/
/      CONTROLE DE REFROIDISSEMENT      /
/-----/
/
/QUAND IL Y A DEMANDE DE REFROIDISSEMENT PAR LE PROCEDE DES VOLETS,
/LA SOUPAPE EST CONTROLE AU MEME POINT DE CONSIGNE QUE LES VOLETS.
/S IL Y A QU UN EPT POUR LE CHAUFFAGE ET LE REFROID, ALORS ON AGIT SUR
/LA PLAGE Z30POS A 100 POUR LE REFROIDISSEMENT.
/
19.1    EVENT    CLG,S
19.2    SET      BPD,CLG,R
19.3    STORE    Z30,0.0,0.0,C,R
19.4    STORE    APD,Z30POS,Z30POS,C,R
19.5    AOUT     ZCP30,3,0.0,C,R
19.6    EXIT     C,R
19.7    INTERVAL CST30,U
19.8    CALC     CPB30,0,10,1,1,T
19.9    STORE    AD1,APD,APD,U
19.10   CALC     DSSP,0.3,1,1,1,T
19.11   PROP     APD,TE60,AD1,CIG30,0.0,CDS30
19.12   STORE    Z30,APD,APD,U
19.13   SPAN     0.0,100.0,Z30POS,100.0
19.14   AOUT     ZCP30,3,0.0,U
19.15   EXIT     U
/
/
/-----/
/      CONTROLE RECUPERATION      /
/-----/
/
/SI LE DIFFEREHTIEL DE PRESSION AU SERPENTIN DE RECUPERATION EST
/SUPERIEUR AU POINT DE CONSIGNE, LA SOUPAPE OUVRE AU SERPENTIN AFIN DE LE
/DEGIVRER.
/
20.1    RESTART
20.2    DELAY    25,U
20.3    INTERVAL 7,U
20.4    FILTER   SPT1,63,100
20.5    STORE    FSP1,APD,APD,U
20.6    COMPARE  FSP1,GE,RECUHL,RECUDF
20.7    SET      RECUP,BPD,R
20.8    NEGATE   BPD
20.9    BOUT     ZS10,3,OFF
20.10   EXIT     U
/
/
/-----/
/      CONTROLE VOLETS EVACUATION SYST 08-13      /
/-----/
/
/SI UN DES VENTILATEUR EST EN MARCHE, OUVRE LES VOLETS D EVACUATION
/
21.1    RESTART
21.2    DELAY    25,U

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21.3    INTERVAL 5,U
21.4    OR      FSTA08,FSTA09
21.5    OR      BPD,FSTA10
21.6    OR      BPD,FSTA11
21.7    OR      BPD,FSTA12
21.8    OR      BPD,FSTA13
21.9    BOUT    ZS80,3,OFF
21.10   EXIT    U
/
/
/-----/
/              FONCTIONS SPECIALES              /
/-----/
/
22.1    EVERY                                     /SELECTION DU STSTEME POUR LE
22.2    SET      SYSP,R,R                        /
22.3    COMPARE  SYSDIS,EQ,100,0
22.4    SET      SYS1,BPD,R
22.5    OR      SYSP,BPD
22.6    SET      SYSP,BPD,S
22.7    COMPARE  SYSDIS,EQ,200,0
22.8    SET      SYS2,BPD,R
22.9    OR      SYSP,BPD
22.10   SET      SYSP,BPD,S
22.11   COMPARE  SYSDIS,EQ,300,0
22.12   SET      SYS3,BPD,R
22.13   OR      SYSP,BPD
22.14   SET      SYSP,BPD,S
22.15   COMPARE  SYSDIS,EQ,400,0
22.16   SET      SYS4,BPD,R
22.17   OR      SYSP,BPD
22.18   SET      SYSP,BPD,S
22.19   COMPARE  SYSDIS,EQ,600,0
22.20   SET      SYS6,BPD,R
22.21   OR      SYSP,BPD
22.22   SET      SYSP,BPD,S
22.23   COMPARE  SYSDIS,EQ,700,0
22.24   SET      SYS7,BPD,R
22.25   OR      SYSP,BPD
22.26   SET      SYSP,BPD,S
22.27   COMPARE  SYSDIS,EQ,800,0
22.28   SET      SYS8,BPD,R
22.29   OR      SYSP,BPD
22.30   SET      SYSP,BPD,S
22.31   COMPARE  SYSDIS,EQ,900,0
22.32   SET      SYS9,BPD,R
22.33   OR      SYSP,BPD
22.34   SET      SYSP,BPD,S
22.35   COMPARE  SYSDIS,EQ,1000,0
22.36   SET      SYS10,BPD,R
22.37   OR      SYSP,BPD
22.38   SET      SYSP,BPD,S
22.39   SET      SYS,SYSP,S
22.40   EXIT    U
/
/
23.1    EVENT    SYS,S                        /RESET LES FONCTIONS POUR

```

```

23.2    SET      BPD,SUF,R          /LE CDB SPECIAL
23.3    STORE    SYSDIS,0,0,C,R      /SUR UNE PERIODE DE DISCLR
23.4    EXIT     C,R
23.5    DELAY    3600,U
23.6    STORE    SYSDIS,0,0,U
23.7    EXIT     U
/
/
24.1    EVENT    SYS1,S              /SYS 100
24.2    SET      BPD,SUF,R
24.3    EXIT     C,R
24.4    INTERVAL 5,U
24.5    STORE    CSTXXX,CST70,CST70,U /PERMET DE VOIR LES
24.6    STORE    CPBXXX,CPB70,CPB70,U /VALEURS DU SYSTEME
24.7    STORE    CIGXXX,CIG70,CIG70,U
24.8    STORE    CMPXXX,0.0,0.0,U
24.9    STORE    CDSXXX,CDS70,CDS70,U
24.10   EXIT     U
/
/
25.1    EVENT    SYS1,S
25.2    SET      BPD,SUF,R
25.3    EXIT     C,R
25.4    DELAY    10,U
25.5    INTERVAL 1,U
25.6    STORE    CST70,CSTXXX,CST70,U /PERMET D AJUSTER LES
25.7    STORE    CPB70,CPBXXX,CPB70,U /VALEURS DU SYSTEME
25.8    STORE    CIG70,CIGXXX,CIG70,U
25.9    STORE    CDS70,CDSXXX,CDS70,U
25.10   EXIT     U
/
/
26.1    EVENT    SYS2,S              /SYS 200
26.2    SET      BPD,SUF,R
26.3    EXIT     C,R
26.4    INTERVAL 5,U
26.5    STORE    CSTXXX,CST70A,CST70A,U /PERMET DE VOIR LES
26.6    STORE    CPBXXX,CPB70A,CPB70A,U /VALEURS DU SYSTEME
26.7    STORE    CIGXXX,CIG70A,CIG70A,U
26.8    STORE    CMPXXX,0.0,0.0,U
26.9    STORE    CDSXXX,CDS70A,CDS70A,U
26.10   EXIT     U
/
/
27.1    EVENT    SYS2,S
27.2    SET      BPD,SUF,R
27.3    EXIT     C,R
27.4    DELAY    10,U
27.5    INTERVAL 1,U
27.6    STORE    CST70A,CSTXXX,CST70A,U /PERMET D AJUSTER LES
27.7    STORE    CPB70A,CPBXXX,CPB70A,U /VALEURS DU SYSTEME
27.8    STORE    CIG70A,CIGXXX,CIG70A,U
27.9    STORE    CDS70A,CDSXXX,CDS70A,U
27.10   EXIT     U
/
/
28.1    EVENT    SYS3,S              /SYS 300

```

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28.2    SET      BPD,SUF,R
28.3    EXIT     C,R
28.4    INTERVAL 5,U
28.5    STORE    CSTXXX,CST50,CST50,U      /PERMET DE VOIR LES
28.6    STORE    CPBXXX,CPB50,CPB50,U      /VALEURS DU SYSTEME
28.7    STORE    CIGXXX,CIG50,CIG50,U
28.8    STORE    CMPXXX,CMP50,CMP50,U
28.9    STORE    CDSXXX,CDS50,CDS50,U
28.10   EXIT     U
/
/
29.1    EVENT    SYS3,S
29.2    SET      BPD,SUF,R
29.3    EXIT     C,R
29.4    DELAY    10,U
29.5    INTERVAL 1,U
29.6    STORE    CST50,CSTXXX,CST50,U      /PERMET D AJUSTER LES
29.7    STORE    CPB50,CPBXXX,CPB50,U      /VALEURS DU SYSTEME
29.8    STORE    CIG50,CIGXXX,CIG50,U
29.9    STORE    CMP50,CMPXXX,CMP50,U
29.10   STORE    CDS50,CDSXXX,CDS50,U
29.11   EXIT     U
/
/
30.1    EVENT    SYS4,S                    /SYS 400
30.2    SET      BPD,SUF,R
30.3    EXIT     C,R
30.4    INTERVAL 5,U
30.5    STORE    CSTXXX,CST40,CST40,U      /PERMET DE VOIR LES
30.6    STORE    CPBXXX,CPB40,CPB40,U      /VALEURS DU SYSTEME
30.7    STORE    CIGXXX,CIG40,CIG40,U
30.8    STORE    CMPXXX,0.0,0.0,U
30.9    STORE    CDSXXX,CDS40,CDS40,U
30.10   EXIT     U
/
/
31.1    EVENT    SYS4,S
31.2    SET      BPD,SUF,R
31.3    EXIT     C,R
31.4    DELAY    10,U
31.5    INTERVAL 1,U
31.6    STORE    CST40,CSTXXX,CST40,U      /PERMET D AJUSTER LES
31.7    STORE    CPB40,CPBXXX,CPB40,U      /VALEURS DU SYSTEME
31.8    STORE    CIG40,CIGXXX,CIG40,U
31.9    STORE    CDS40,CDSXXX,CDS40,U
31.10   EXIT     U
/
/
32.1    EVENT    SYS6,S
32.2    SET      BPD,SUF,R
32.3    EXIT     C,R
32.4    INTERVAL 5,U
32.5    STORE    CSTXXX,CST10A,CST10A,U    /PERMET DE VOIR LES
32.6    STORE    CPBXXX,CPB10A,CPB10A,U    /VALEURS DU SYSTEME
32.7    STORE    CIGXXX,CIG10A,CIG10A,U
32.8    STORE    CMPXXX,0.0,0.0,U
32.9    STORE    CDSXXX,CDS10A,CDS10A,U

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32.10  EXIT      U
/
/
33.1    EVENT    SYS6,S
33.2    SET      BPD,SUF,R
33.3    EXIT      C,R
33.4    DELAY     10,U
33.5    INTERVAL  1,U
33.6    STORE     CST10A,CSTXXX,CST10A,U      /PERMET D AJUSTER LES
33.7    STORE     CPB10A,CPBXXX,CPB10A,U      /VALEURS DU SYSTEME
33.8    STORE     CIG10A,CIGXXX,CIG10A,U
33.9    STORE     CDS10A,CDSXXX,CDS10A,U
33.10   EXIT      U
/
/
34.1    EVENT    SYS7,S                      /SYS 700
34.2    SET      BPD,SUF,R
34.3    EXIT      C,R
34.4    INTERVAL  5,U
34.5    STORE     CSTXXX,CST10,CST10,U      /PERMET DE VOIR LES
34.6    STORE     CPBXXX,CPB10,CPB10,U      /VALEURS DU SYSTEME
34.7    STORE     CIGXXX,CIG10,CIG10,U
34.8    STORE     CMPXXX,CMP10,CMP10,U
34.9    STORE     CDSXXX,CDS10,CDS10,U
34.10   EXIT      U
/
/
35.1    EVENT    SYS7,S
35.2    SET      BPD,SUF,R
35.3    EXIT      C,R
35.4    DELAY     10,U
35.5    INTERVAL  1,U
35.6    STORE     CST10,CSTXXX,CST10,U      /PERMET D AJUSTER LES
35.7    STORE     CPB10,CPBXXX,CPB10,U      /VALEURS DU SYSTEME
35.8    STORE     CIG10,CIGXXX,CIG10,U
35.9    STORE     CMP10,CMPXXX,CMP10,U
35.10   STORE     CDS10,CDSXXX,CDS10,U
35.11   EXIT      U
/
/
36.1    EVENT    SYS8,S                      /SYS 800
36.2    SET      BPD,SUF,R
36.3    EXIT      C,R
36.4    INTERVAL  5,U
36.5    STORE     CSTXXX,CST30,CST30,U      /PERMET DE VOIR LES
36.6    STORE     CPBXXX,CPB30,CPB30,U      /VALEURS DU SYSTEME
36.7    STORE     CIGXXX,CIG30,CIG30,U
36.8    STORE     CMPXXX,0.0,0.0,U
36.9    STORE     CDSXXX,CDS30,CDS30,U
36.10   EXIT      U
/
/
37.1    EVENT    SYS8,S
37.2    SET      BPD,SUF,R
37.3    EXIT      C,R
37.4    DELAY     10,U
37.5    INTERVAL  1,U

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37.6      STORE      CST30,CSTXXX,CST30,U          /PERMET D AJUSTER LES
37.7      STORE      CPB30,CPBXXX,CPB30,U          /VALEURS DU SYSTEME
37.8      STORE      CIG30,CIGXXX,CIG30,U
37.9      STORE      CDS30,CDSXXX,CDS30,U
37.10     EXIT      U
/
/
38.1      EVENT      SYS9,S                        /SYS 900
38.2      SET        BPD,SUF,R
38.3      EXIT      C,R
38.4      INTERVAL   5,U
38.5      SET        FSTAXX,FSTA08,R              /PERMET DE VOIR LES
38.6      SET        FSTAYY,FSTA10,R              /VALEURS DU SYSTEME
38.7      SET        FSTAZZ,FSTA12,R
38.8      STORE      MINFXX,MINF1,MINF1,U
38.9      STORE      MINFYY,MINF3,MINF3,U
38.10     STORE      MINFZZ,MINF5,MINF5,U
38.11     EXIT      U
/
/
39.1      EVENT      SYS9,S
39.2      SET        BPD,SUF,R
39.3      EXIT      C,R
39.4      DELAY      10,U
39.5      INTERVAL   1,U
39.6      STORE      MINF1,MINFXX,MINF1,U          /PERMET D AJUSTER LES
39.7      STORE      MINF3,MINFYY,MINF3,U          /VALEURS DU SYSTEME
39.8      STORE      MINF5,MINFZZ,MINF5,U
39.9      EXIT      U
/
/
40.1      EVENT      SYS10,S                       /SYS 1000
40.2      SET        BPD,SUF,R
40.3      EXIT      C,R
40.4      INTERVAL   5,U
40.5      SET        FSTAXX,FSTA09,R              /PERMET DE VOIR LES
40.6      SET        FSTAYY,FSTA11,R              /VALEURS DU SYSTEME
40.7      SET        FSTAZZ,FSTA13,R
40.8      STORE      MINFXX,MINF2,MINF2,U
40.9      STORE      MINFYY,MINF4,MINF4,U
40.10     STORE      MINFZZ,MINF6,MINF6,U
40.11     EXIT      U
/
/
41.1      EVENT      SYS10,S
41.2      SET        BPD,SUF,R
41.3      EXIT      C,R
41.4      DELAY      10,U
41.5      INTERVAL   1,U
41.6      STORE      MINF2,MINFXX,MINF2,U          /PERMET D AJUSTER LES
41.7      STORE      MINF4,MINFYY,MINF4,U          /VALEURS DU SYSTEME
41.8      STORE      MINF6,MINFZZ,MINF6,U
41.9      EXIT      U
/
/
/-----/
/
/
RECORD PANNE DE POUVOIR

```

```

/-----/
/
42.1    RESTART
42.2    TIMDATA    DT
42.3    STORE      UPTIM,APD,APD,U      /SAUVE L HEURE ACTUEL ET
42.4    TIMDATA    MD                  /LA DATE DE LA RESTAURATION
42.5    STORE      UPDAT,APD,APD,U      /DU POUVOIR.
42.6    EXIT       U
/
43.1    RESTART
43.2    STORE      DNTIM,TOD,TOD,U      /RECORD DE LA DERNIERE HEURE
43.3    STORE      DNDAT,LDAT,LDAT,U    /ET DATE AVANT LA PANNE.
43.4    INTERVAL   60,U
43.5    TIMDATA    DT
43.6    STORE      TOD,APD,APD,U        /SAUVE L HEURE ET LA DATE
43.7    TIMDATA    MD                  /ACTUEL A TOUTES LES MINUTES.
43.8    STORE      LDAT,APD,APD,U
43.9    EXIT       U
/
/
@ END
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3765
/   OVERHEAD:  2700
/   TOTAL:     7821    8K DSC MEMORY NEEDED
/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3765
/   OVERHEAD:  2700
/   TOTAL:     7821    8K DSC MEMORY NEEDED

/ NO ERRORS DETECTED
/ MEMORY USAGE IN BYTES:
/   POINTS:    986
/   CDB:       370
/   PROCESSES: 3767
/   OVERHEAD:  2700
/   TOTAL:     7823    8K DSC MEMORY NEEDED

```

SYSTEMES V36-6E A 17E:

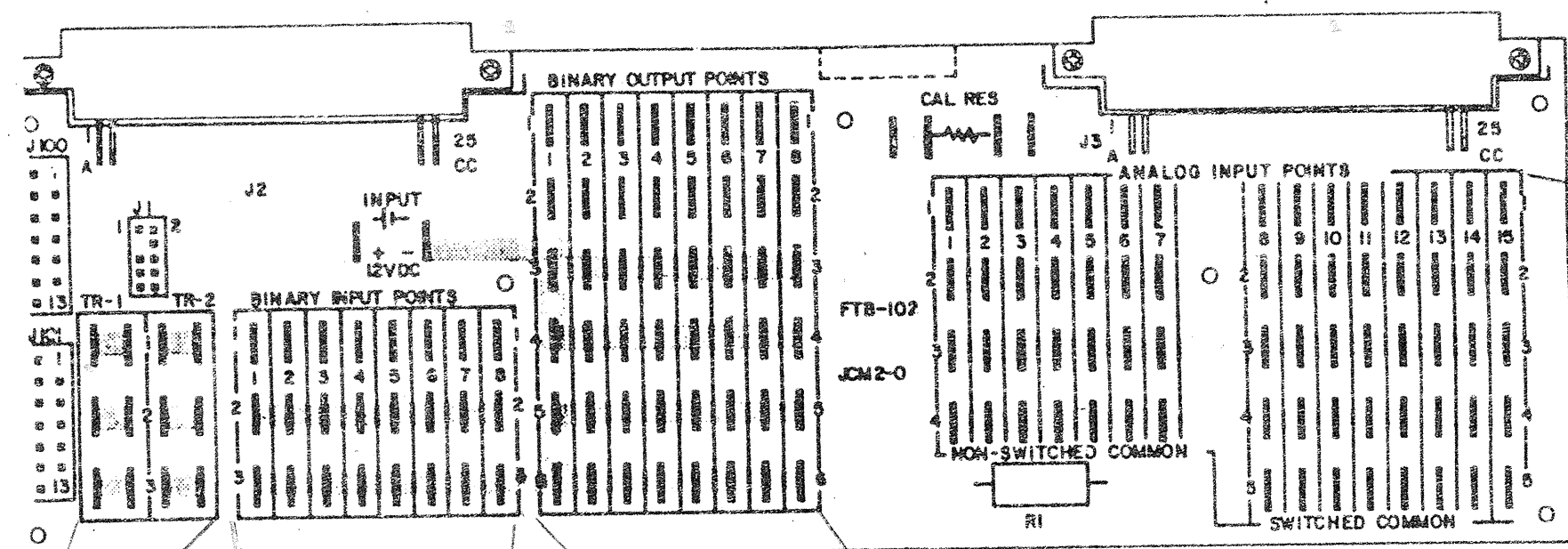
AU DEPART DES EVACUATEURS PAR LEUR MINUTERIE MX, LEUR VOLET OUVRE A 100% PAR LEUR RELAIS ELECTRIQUE/PNEUMATIQUE.

AU DEPART DE L'UN OU L'AUTRE DES EVACUATEURS, LE VOLET D'EVACUATION DA-13 OUVRE A 100%.

SYSTEMES V43-26A, 34A, 35A, 36A, 37A, 38A:

AU DEPART DES VENTILATEURS D'EVACUATION PAR LEUR MINUTERIE MY, LES VENTILATEURS D'ALIMENTATION DEMARRENT PAR ENTREBARRAGE ET LES VOLETS D'AIR NEUF ET EVACUE OUVRENT A 100%.

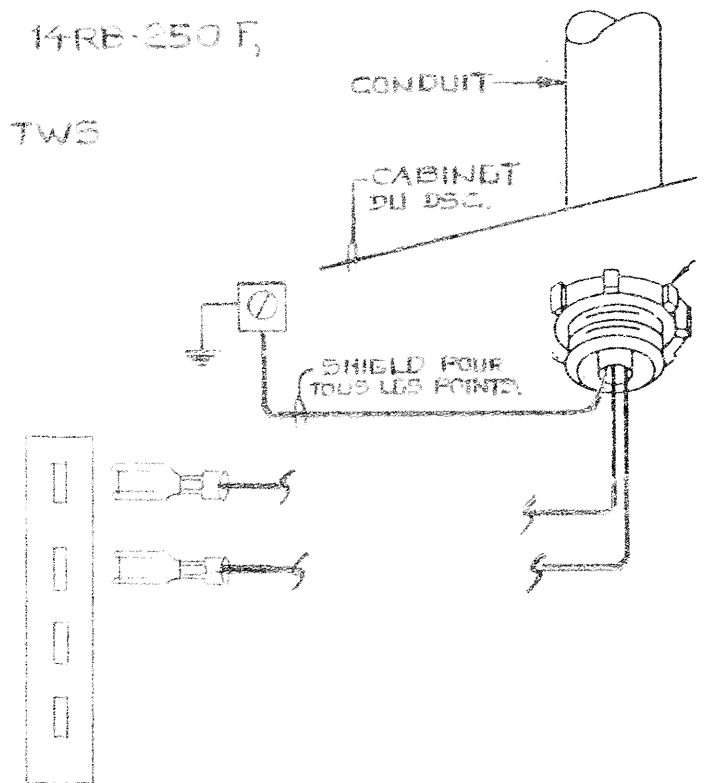
BORNIERS DE RACCORDEMENT (FTB-K2)



VOIR PLUS BAS
POUR COMMUNICATION

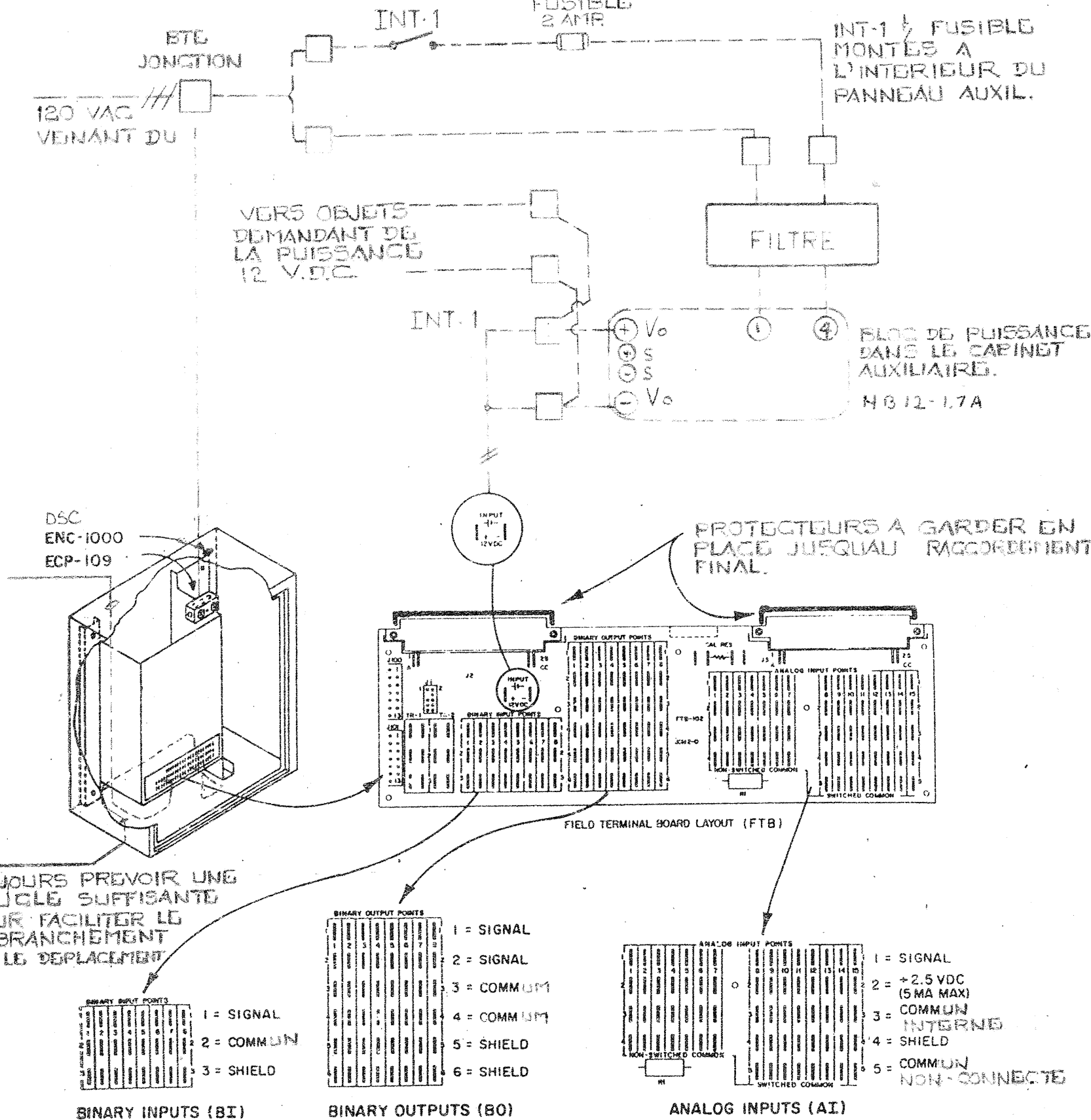
- 1 - TYPE DE RACCORDEMENT
BOBINES T & B TYPE 14RB-250 F,
ISOLUS 250.
- 2 - CABLES EN 2#18 TWS
FABRIQUÉ.

TOTAL MAX 15 ENTREES

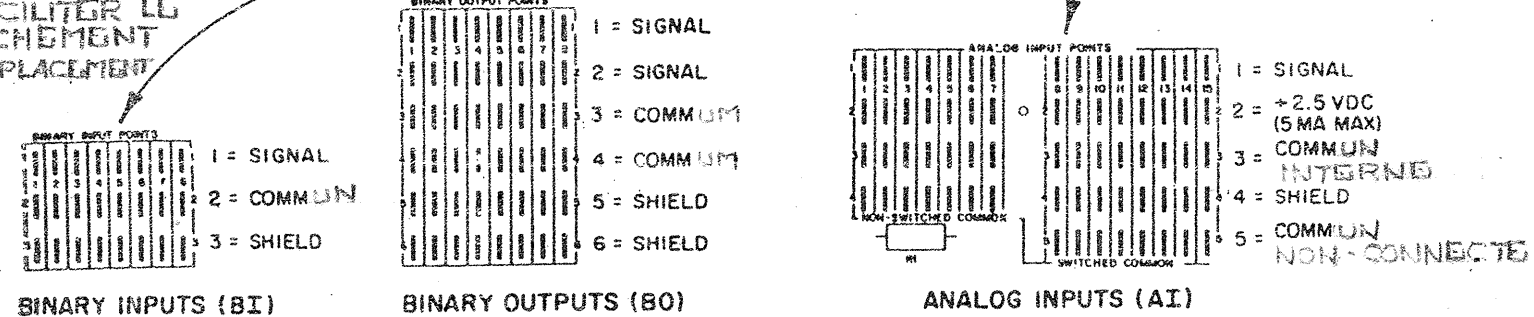


TOTAL MAX 8 SORTIES

EMPLACEMENT		ADRESSE						DSC 5		
NOM: C.I.R.A.								FIC 1		
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	TE-1	TEMPERATURE RETOUR	ANA	1 3		TE1101-100	RETOUR	A1.1		
2	TE-2	TEMPERATURE MELANGE	ANA	1 3		TE1100-17	MELANGE	A2.1		
3	TE-3	AIR NEUF	ANA	1 3		TE1101-100	AIR NEUF	A3.1		
4	TE-4	ALIMENTATION	ANA	1 3		TE1100-17	ALIM.	A4.1		
5	EPT-1	VOLET MELANGE	ANA	1 2 3		EPT-102	CABINET AUX.	A5.1		
6	EPT-2	CHAUFFAGE	ANA	1 2 3		EPT-102	CABINET AUX.	A6.1		
7	EPT-3	VOLUME VARIABLE	ANA	1 2 3		EPT-102	CABINET AUX.	A7.1		
8	EPT-4	HUMIDIFIC.	ANA	1 2 3		EPT-102	CABINET AUX.	A8.1		
9										
10										
11	HE-1	HUMIDITE RETOUR	ANA	1 5	4 5	HUMIDISTAT HE-1	CONDUIT RETOUR	A11.1	4-20 MA 10-95% HR	
12	HE-2	HUMIDITE ALIMENTATION	ANA	1 5	4 5	HUMIDISTAT HE-2	CONDUIT ALIM.	A12.1	4-20 MA 10-95% HR	
13	PT-1	PRESSION PIECE	ANA	1 5	1 2	SONDE DE PRESSION PT-1	USINE	A13.1	0-5 VDC 0-25 PSI	
14	PT-2B	PRESSION SERP. GILKOL.	ANA	1 5	1 2	SONDE DE PRESSION PT-2B	SEKP GILKOL	A14.1	0-5 VDC 0-2.5 PSI	



TOUJOURS PREVOIR UNE
BOUCLE SUFFISANTE
POUR FACILITER LE
DEBRANCHEMENT
ET LE DEPLACEMENT

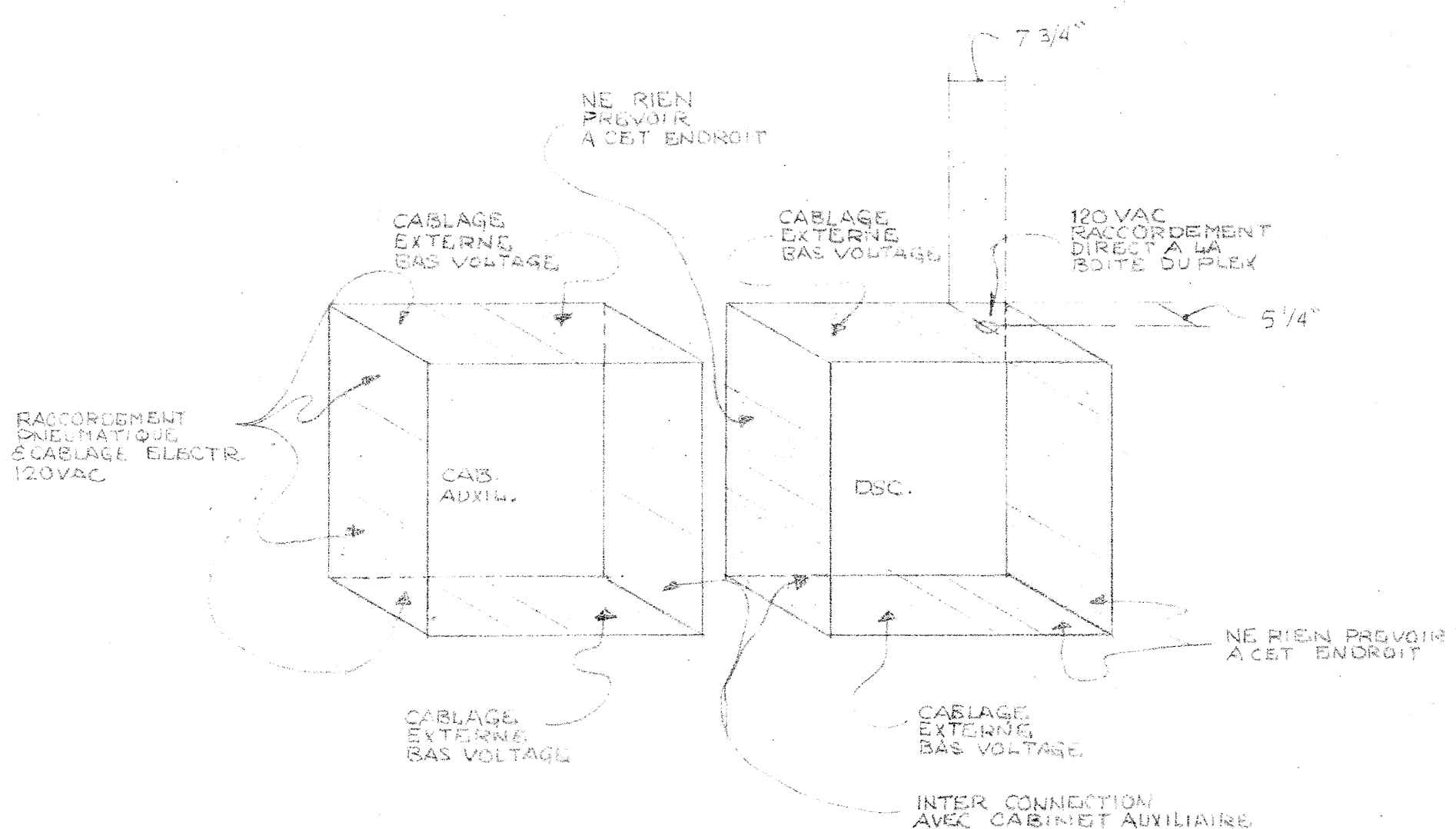


INT-1: INTERRUPTEUR "TOSSOL" CABLE SP-21, MOD 447, MONTÉ
AVEC R-400-101 J.C.L.

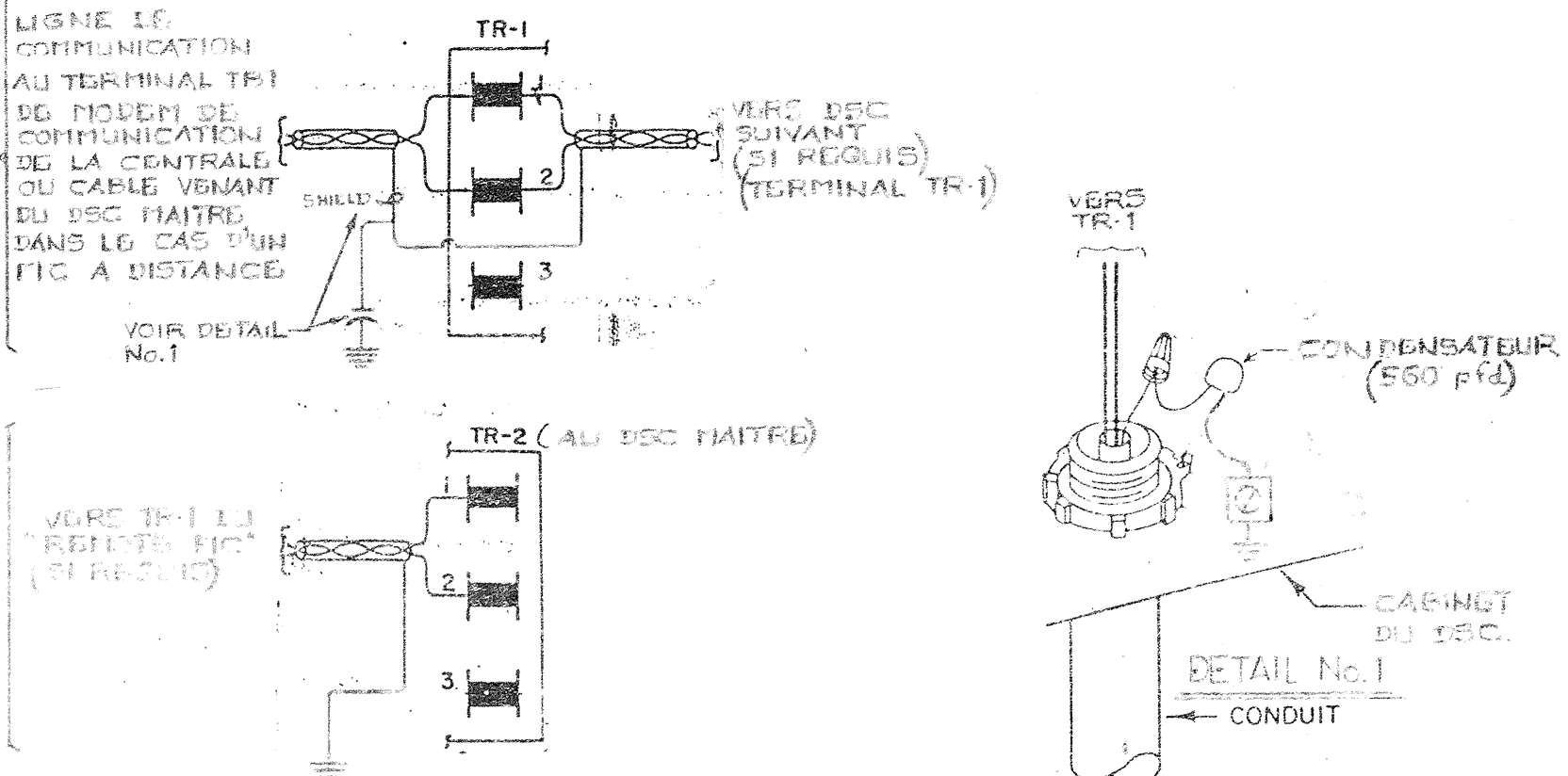
TERMINAUX DANS LE CABINET AUXILIAIRE

EMPLACEMENT		ADRESSE						DSC 5		
NOM: C.I.R.A.								FIC 1		
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	STATUS	SYSTEME V43-5	BIN	1 2		CONTACT AUX. DEM.	MCC-1	B1.1		
2	STATUS	SYSTEME V36-13RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B2.1		
3	STATUS	V36-12RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B3.1		
4	STATUS	V36-11RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B4.1		
5	STATUS	V36-10RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B5.1		
6	STATUS	V36-9RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B6.1		
7	STATUS	V36-8RE	BIN	1 2		CONTACT AUX. DEM.	MCC-7	B7.1		
8	GEL	SYSTEME V43-5	BIN	1 2		RELAIS RG	CAB AUX.	B8.1		

EMPLACEMENT		ADRESSE						DSC 5		
NOM: C.I.R.A.								FIC 1		
EMPLACEMENT: DU DSC										
TB	ID	SYSTEME	PM	DU TERM	AU TERM	DE L'APPAREIL	SITUE SUR	IDENT. CABLE	CDB	REM
1	EPT-1	VOLET MELANGE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P1.1	
2	EPT-2	CHAUFFAGE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P2.1	
3	EPT-3	VOLUME VARIABLE	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P3.1	
4	EPT-4	HUMIDIF.	POS	1 2		ROUGE ROUGE/ BLANC	EPT-102	CABINET AUX.	P4.1	
5A	RQ-1	RELAIS DEVIEMENT DE ILL-2	SST	1 3	2 7	RELAIS 12VDC	CABINET AUX.	SSA.1		
7A	R-1	ARRET DEPART V43-5	SST	1 3	2 7	RELAIS 12VDC	MCC-1	STA.1		
7B	SP-1	RECUPERAT. RECIRCUL.	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	STB.1	
8A	SP-2	V-1 PRECHUF OUVERTE	SST	1 3		ROUGE NOIR	V9011-1	CABINET AUX.	S8A.1	
8B	SP-3	VOLET EVAL DA-13	SST	2 4		ROUGE NOIR	V9011-1	CABINET AUX.	S8B.1	



- 1 - VOIR DESSINS STD. DE RACCORDEMENT POUR
LES COMPOSANTES AUXILIAIRES.
- 2 - VOIR LES DESSINS DE CONTROLES POUR LES
RACCORDEMENTS PNEUMATIQUES /
ELECTRIQUES LOCAUX.



TITRE		IMPLANTATION DSC-8500		DSC-5	
CHANGEMENT #112		4 TEL QUE CONSTRUIT		86-07-08	
		3 ADDITION RG-1		NOV 27-85	
				SEP 27-85	
				SEP 18-85	
REPRESENTANT	J.C.R.	TECHNICIEN	R.F.	REVISION	AVIS
PROJET	CENTRE DE RECHERCHE ALIMENTAIRE ST-HYACINTHE, QUE.	DATE	JUL 16-85	DATE	SEP 7-85
JOHNSON CONTROLS Division Des Systemes Et Services		Société de Contrôle Johnson Ltee 441 boulevard Lebeau Montreal, QC H4N 1S2 Tel. 514-332-6860		CONTRAT 4096-008/52 4068-29	

ÉVACUATEURS ET HOTTES

LISTE DE MATERIEL

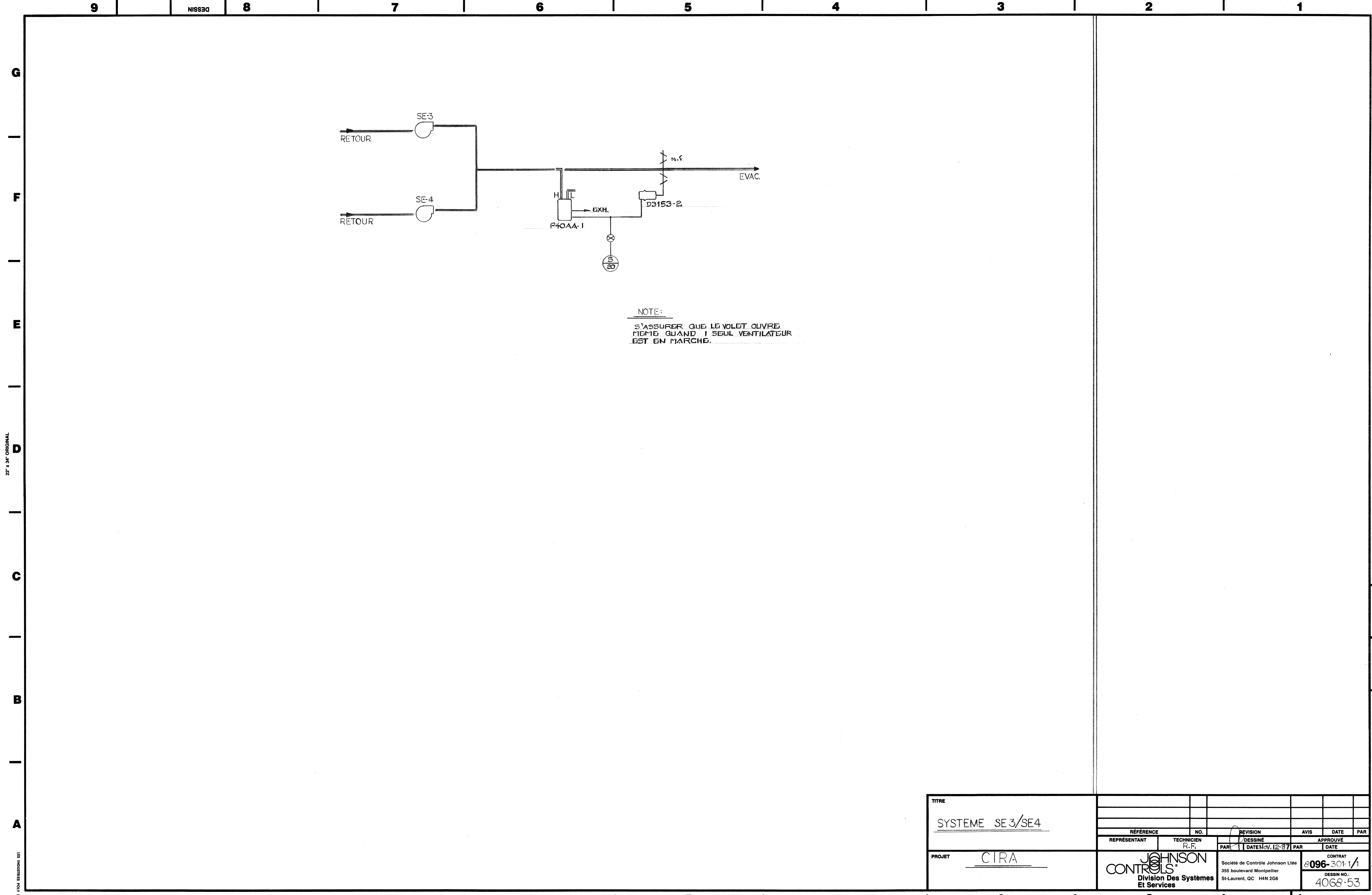
IDENT.	MODELE	QTE	DESCRIPTION

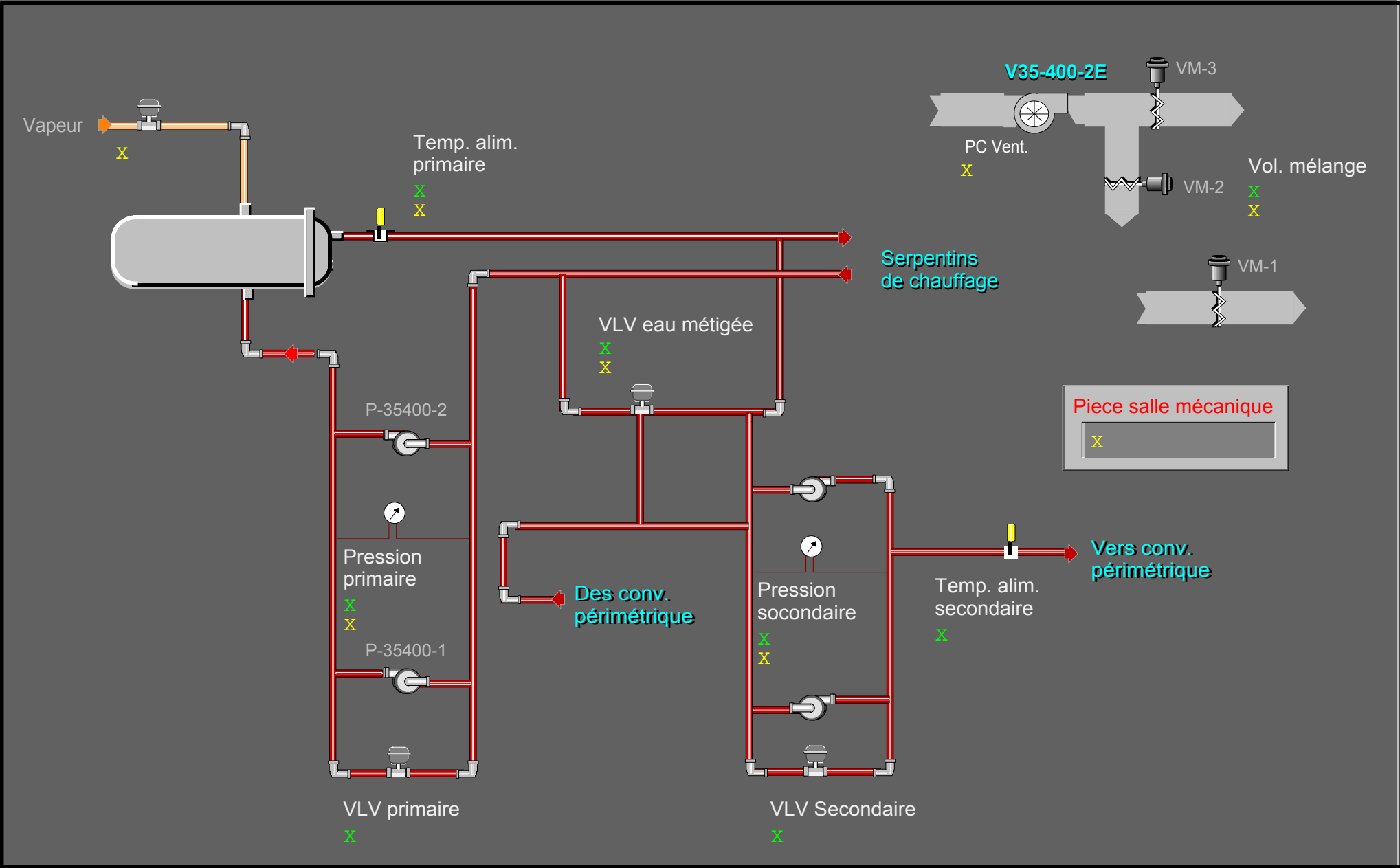
SYSTEMES V-36-6E A 17-E

EP-1 A 12	V11HAA-109	12	RELAIS ELECTRIQUE/PNEUMATIQUE
DA-1 A 12	D-3073-2	12	MOTEURS PNEUMATIQUES
DA-13	D-3153-2	4	MOTEURS PNEUMATIQUES
C-1	C-5226-3	1	SELECTEUR DE HAUT SIGNAL
VA-1	R-2080-1	1	AMPLIFICATEUR DE VOLUME
MX	△ MARKTIME 90015	12	MINUTERIES MANUELLE 0-12HRES C/A LAMPE TEMOIN

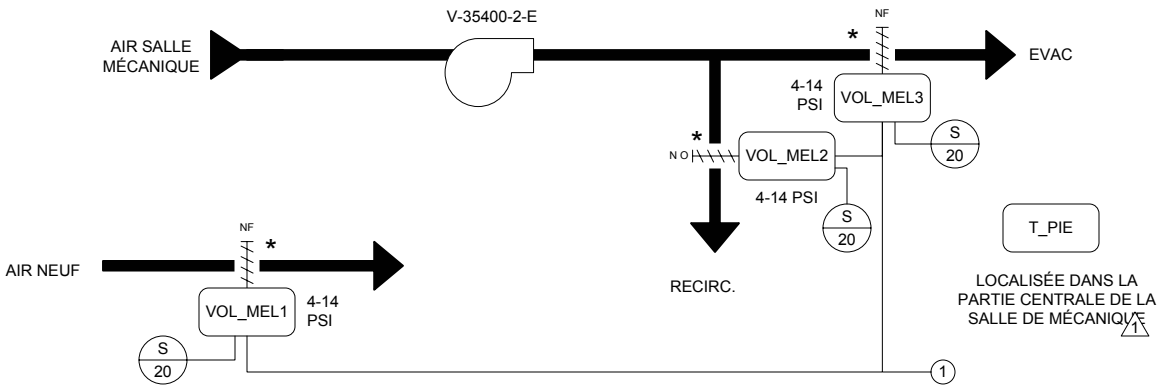
SYSTEMES V43, 26A, 34A, 35A, 36A, 37A, 38A

EP-1 A 6	V11HAA-109	6	RELAIS ELECTRIQUE/PNEUMATIQUE
IPD-1 A 6	2000-50	6	INDICATEURS DE PRESSION 0-50 MM
P-1	M-8100-103	1	PANNEAU 24"X24"X7"
DA-1 ET 2	D-3073-2	10	MOTEURS PNEUMATIQUES
DA-3	D-3153-2	1	
PT-1 ET 2	△ D3073-2	1	MOTEUR PNEUMATIQUE
MY	SETRA 261	2	TRANSMETTEURS DE PRESSION
	△ MARKTIME 90015	6	MINUTERIES MANUELLE 0-12 HRES C/A LAMPE TEMOIN
R3E	RELAIS	1	120V.AC, 2 PDT
TC-1	△ T-8000-8014	1	CONTROLEUR

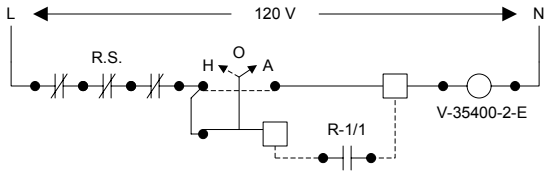




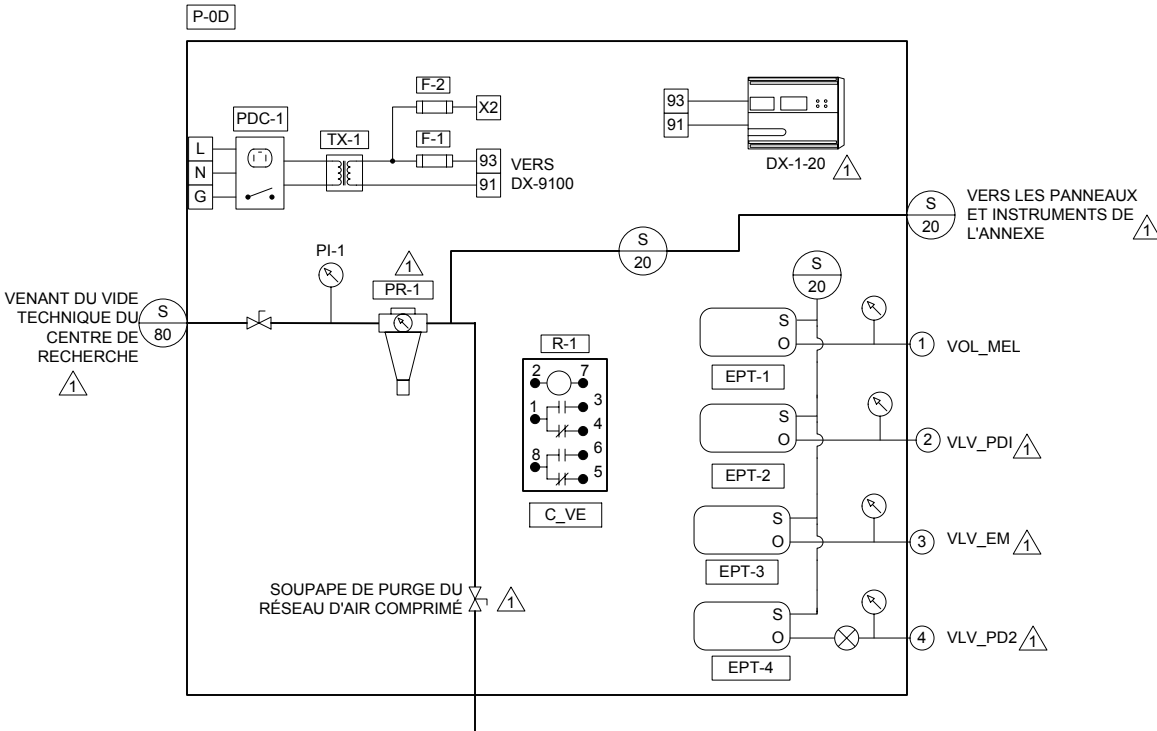
SYSTÈME V-35400-2-E



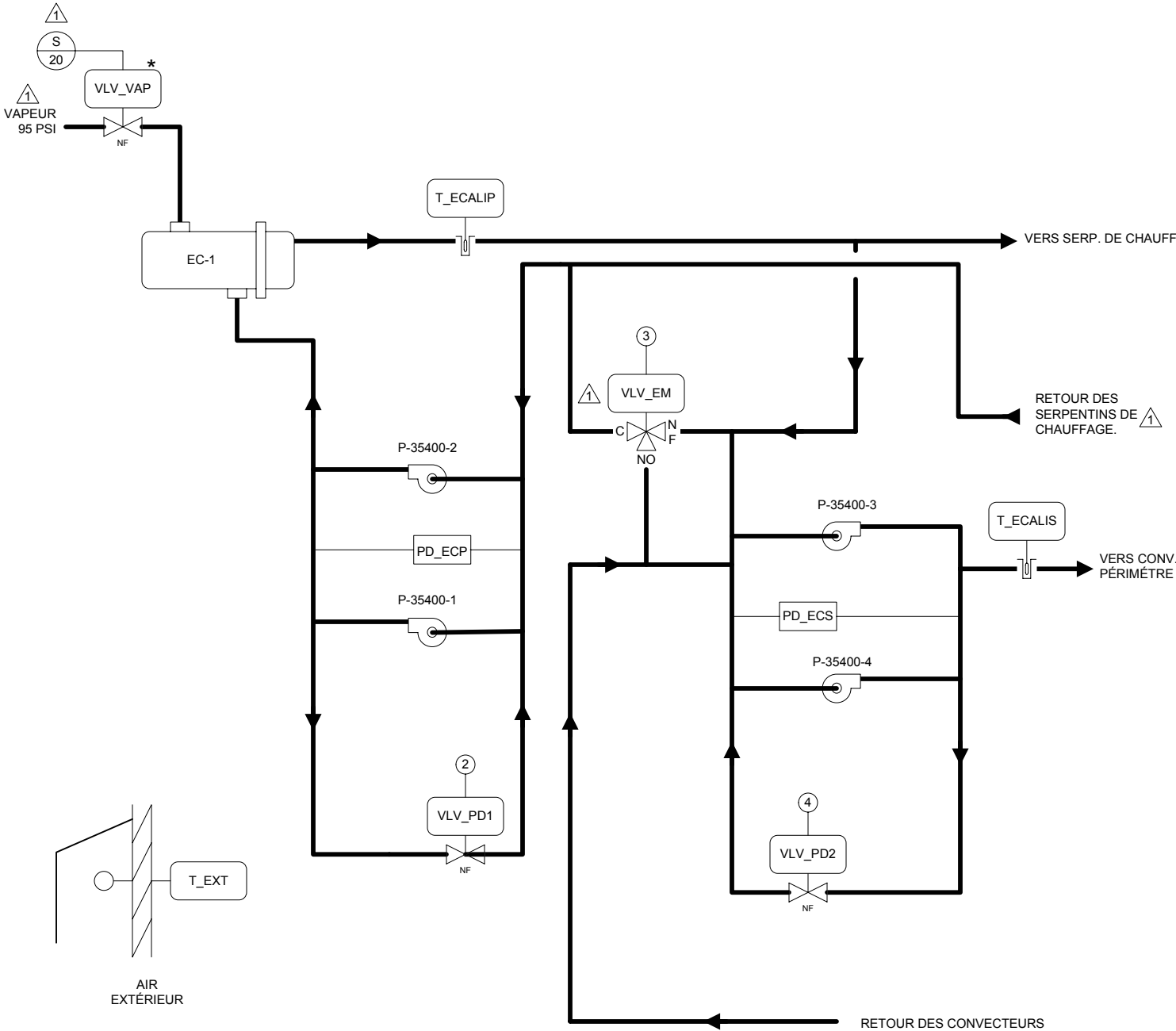
VENTILATEUR DE RETOUR PB60-26



PANNEAU DE CONTRÔLE

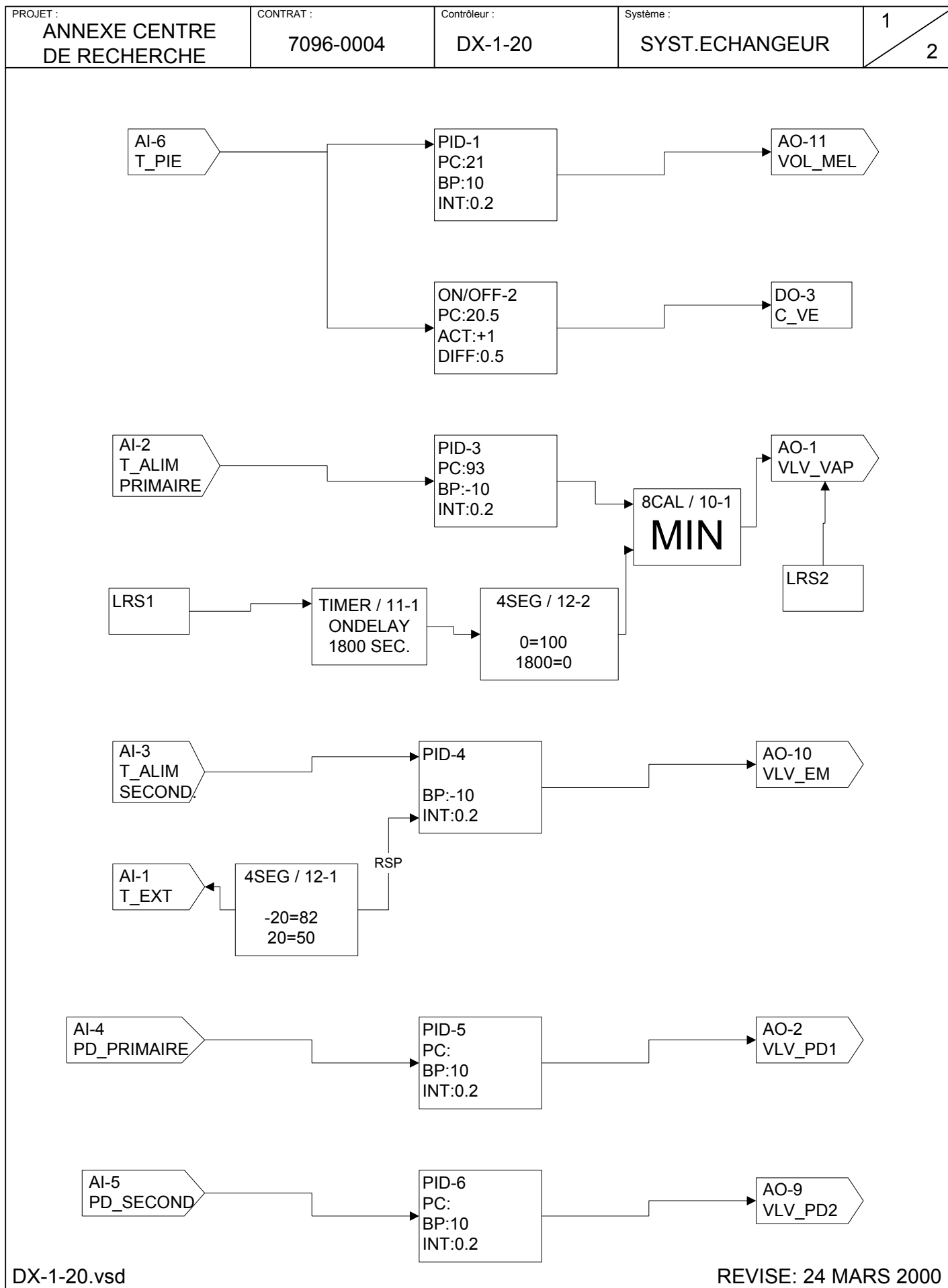


CIRCUIT EAU CHAUDE PRIMAIRE ET SECONDAIRE



NOTE: SÉQUENCE D'OPÉRATION ET LISTE DE MATÉRIEL; VOIR DESSIN 4068-59S

TITRE DU DESSIN					
SYSTÈME V-35400-2-E SALLE MÉCANIQUE CIRCUIT EAU CHAUDE PRIMAIRE ET SECONDAIRE		2	TEL QUE CONSTRUIT	97/09/17	A.B.
		1	CONSTRUCTION	97/05/29	A.B.
		DESSIN DE RÉFÉRENCE	NO.	RÉVISION	ECN
Représentant	Gérant De Projet	Concepteur	Dessin	APPROUVÉ	PAR
J.C.R.	G.S.	M.C.D.	Par I.M. DATE 96/12/11	Par	DATE
NOM DU PROJET		Information Succursale		SLW: 000000	
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)		JOHNSON CONTROLS Groupe de la régulation		355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	
				NUMÉRO DE CONTRAT 7096-0004	
				NUMÉRO DE DESSIN 4068-059	



FEUILLE DE L'UTILISATEUR

Nom du projet: ANNEXE CRASH
Numéro du projet : 7096-0004
Date de révision : 22-08-97
Adresse du DX-9100 : 20
Numéro du dessin : 4068-059
Système : ECHANGEUR

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
1	TEMP.AIR NEUF	-45°C	121°C
2	TEMP.ALIM.PRIMAIRE	-45°C	121°C
3	TEMP.ALIM.SECONDA	-45°C	121°C
4	PRESS.DIFF.PRIMAIRE	0	30 KPA
5	PRESS.DIFF.PRIMAIRE	0	30 KPA
6	TEMP.PIECE	-45°C	121°C
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point	Préscaler
1		1
2		1
3		1
4		1
5		1
6		1
7		1
8		1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
1	VALVE VAPEUR	MIN : RAMPE & PM3OCM	0% = Min. / 100% = Max.
2	VALVE EVITEMENT PR	PM5OCM	0% = Min. / 100% = Max.
3	COMM.VENT.EVAC.	PM2OCM	Off = arrêt / On = marche
4			Off = arrêt / On = marche
5			Off = arrêt / On = marche
6			Off = arrêt / On = marche
7			Off = arrêt / On = marche
8			Off = arrêt / On = marche
9	VALVE EVITEMENT SE	PM6OCM	0% = Min. / 100% = Max.
10	VALVE EAU MITIGEE	PM4OCM	0% = Min. / 100% = Max.
11	VOLETS MELANGE	PM1OCM	0% = Min. / 100% = Max.
12			0% = Min. / 100% = Max.
13			0% = Min. / 100% = Max.
14			0% = Min. / 100% = Max.

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	21°C	X6 TEMP.PIECE	0% = Min. / 100% = Max.
2	20.5°C	X6 TEMP.PIECE	0% = Min. / 100% = Max.
3	93°C	X2 TEMP.ALIM.PRIM.	0% = Min. / 100% = Max.
4	SECON TEMP.AIR NEUF	X3 TEMP.ALIM.SEC.	0% = Min. / 100% = Max.
5		X4 PRESS.DIFF.PRIM.	0% = Min. / 100% = Max.
6		X4 PRESS.DIFF.SEC.	0% = Min. / 100% = Max.
7			
8			
9			
10			
11			
12	4 SEGMENTS		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-10	0.2	
2	+1	0.5	
3			
4	-10	0.2	
5	10	0.2	
6	10	0.2	
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1		
2		
3		
4		
5		
6		
7		
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut (0 = off / 1 = on)	Description des points
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
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22		
23		
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25		
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27		
28		
29		
30		
31		
32		

SYSTÈME V-35400-2-E (SALLE MÉCANIQUE)

SÉQUENCE D'OPÉRATION

- La température de la salle est maintenue par le régulateur numérique opérant en séquence.
 1. Le départ du système de ventilation.
 2. Les volets d'air frais, d'évacuation et de recirculation

Liste de points		Logiciel					Info sur régulateurs					Info sur panneaux					Appareil intermédiaire					Appareil hors panneau					
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unité d'affichage	Type régul.	Tronc N2	Adr. N2	Destination câble	Type de module	Terminaison	Pann.	Emplacement du panneau	No de logem.	Dessin de référence	No de câble	Câble/tube	Entrée terminaison	Appareil	Sortie terminaison	Emplac.	Câble/tube	Terminaison	Appareil	Emplac.	Détail réf.	Commentaire
		EAU CH				DX9100						P-0D	SALLE MECANIQUE		4068-59												Power to Controller
		EAU CH				DX9100	1	20				P-0D	SALLE MECANIQUE		04068-59												N2 Trunk
	DI-1	EAU CH				DX9100	1	20	DI-1			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-1										
	DI-2	EAU CH				DX9100	1	20	DI-2			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-2										
	DI-3	EAU CH				DX9100	1	20	DI-3			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-3										
	DI-4	EAU CH				DX9100	1	20	DI-4			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-4										
	DI-5	EAU CH				DX9100	1	20	DI-5			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-5										
	DI-6	EAU CH				DX9100	1	20	DI-6			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-6										
	DI-7	EAU CH				DX9100	1	20	DI-7			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-7										
	DI-8	EAU CH				DX9100	1	20	DI-8			P-0D	SALLE MECANIQUE		04068-59		0D-20-DI-8										
	AO-1	EAU CH	VLV VAP	Valve échangeur chaleur	%	DX9100	1	20	AO-1		AO#AOCOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AO-1					2/18	Device depend	EP3 4-20mA OUT		D21	
	AO-2	EAU CH	VLV PD1	Valve évitement (primaire)	%	DX9100	1	20	AO-2		AO#AOCOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-9	EAU CH	VLV PD2	Valve évitement (secondaire)	%	DX9100	1	20	AO-9		AO#AOCOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-10	EAU CH	VLV EM	Valve eau mitoyne (secondaire)	%	DX9100	1	20	AO-10		AO#AOCOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-11	V-354002E	VOI MEL	Volets air mélange	%	DX9100	1	20	AO-11		AO#AOCOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AC2/18	+-	EP-8000	SUPPLY O		1/4"	Barb Fitting	EP-PNEU		D22	
	AO-12	EAU CH				DX9100	1	20	AO-12			P-0D	SALLE MECANIQUE		04068-59		0D-20-AO-12										
	AO-13	EAU CH				DX9100	1	20	AO-13			P-0D	SALLE MECANIQUE		04068-59		0D-20-AO-13										
	AO-14	EAU CH				DX9100	1	20	AO-14			P-0D	SALLE MECANIQUE		04068-59		0D-20-AO-14										
	DO-3	V-354002E	C VE	Comm. vent. évac.	Arret Marche	DX9100	1	20	DO-3		DO#24V	P-0D	SALLE MECANIQUE		04068-59		0D-20-DC2/18		COIL	RELAY	COM.NO	2/14	See starter detail	Starter (NO)		D51	
	DO-4	EAU CH				DX9100	1	20	DO-4			P-0D	SALLE MECANIQUE		04068-59		0D-20-DO-4										
	DO-5	EAU CH				DX9100	1	20	DO-5			P-0D	SALLE MECANIQUE		04068-59		0D-20-DO-5										
	DO-6	EAU CH				DX9100	1	20	DO-6			P-0D	SALLE MECANIQUE		04068-59		0D-20-DO-6										
	DO-7	EAU CH				DX9100	1	20	DO-7			P-0D	SALLE MECANIQUE		04068-59		0D-20-DO-7										
	DO-8	EAU CH				DX9100	1	20	DO-8			P-0D	SALLE MECANIQUE		04068-59		0D-20-DO-8										
	AI-1	EAU CH	T EXT	Temp. air extérieur	Deg C	DX9100	1	20	AI-1		AI#AICOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-1					2/18	2-Wire	TE		D3	
	AI-2	EAU CH	T EC ALIP	Temp. alim. eau chaude prim.	Deg C	DX9100	1	20	AI-2		AI#AICOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-2					2/18	2-Wire	TE		D3	
	AI-3	EAU CH	T EC ALIS	Temp alim eau chaude second.	Deg C	DX9100	1	20	AI-3		AI#AICOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-3					2/18	2-Wire	TE		D3	
	AI-4	EAU CH	PD ECP	Press. diff. eau chaude (primaire)	kPa	DX9100	1	20	AI-4		AI#AICOM.15V	P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-4					3/18	OUT.COM.EXC			D7	
	AI-5	EAU CH	PD ECS	Press. diff. eau chaude (secondaire)	kPa	DX9100	1	20	AI-5		AI#AICOM.15V	P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-5					3/18	OUT.COM.EXC			D7	
	AI-6	V-354002E	T PIE	Temperature piece	Deg C	DX9100	1	20	AI-6		AI#AICOM	P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-6					2/18	2-Wire	TE		D3	
	AI-7	EAU CH				DX9100	1	20	AI-7			P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-7										
	AI-8	EAU CH				DX9100	1	20	AI-8			P-0D	SALLE MECANIQUE		04068-59		0D-20-AI-8										

LISTE DE MATÉRIEL POUR LE SYSTÈME EC PRIMAIRE ET SECONDAIRE

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
PD_ECP, PD_ECS	TRANSMETTEUR DE PRESSION DIFFÉRENTIELLE	152CP030	JOHNSON CONTROLS
T_ECALIP, T_ECALIS	SONDE DE TEMP. NI POUR PUIITS	TE-6312P-1	JOHNSON CONTROLS
T_EXT	SONDE DE TEMP. EXT NI	TE-6313P-1	JOHNSON CONTROLS
T_PIE	SONDE TEMP. PIÈCE NI	TE-6314P-1	JOHNSON CONTROLS
VLV_EM	SOUPAPE 3 VOIES 1", C.V. 11.6	VG7844NT+V400B	JOHNSON CONTROLS
VLV_PD1	SOUPAPE 2 VOIES 1¼", C.V. 18.5	VG7443PT+V400B	JOHNSON CONTROLS
VLV_PD2	SOUPAPE 2 VOIES ¾", C.V. 7.3	VG7443LT+3008B	JOHNSON CONTROLS
VOLMEL1, 2, 3	ACTUATEURS VOLETS 8-13 PSI	D-3153-1	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-0D

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
DX-1-20	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	COUVERT	DX-9100-8991	JOHNSON CONTROLS
EP-1, 2	VALVE SOLÉNOÏDE 3 VOIES 110/120V.	V11HAA-115	JOHNSON CONTROLS
EPT-1 à 4	CONVERTISSEUR ÉLECT/PNEUM.	EP-8000-2	JOHNSON CONTROLS
F-1,2	FUSIBLE 2 AMPÈRES	AGC-2	JOHNSON CONTROLS
P-0A	PANNEAU DE CONTRÔLE 24" X 36" X 9"	M8100-2436	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	274VBOX	LEVITON
---	BOÎTE 2020 C/A COUVERT	2020	JOHNSON CONTROLS
PI-1	INDICATEUR PRESSION DIFF.	PD-505-4	JOHNSON CONTROLS
R-1	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
---	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
TX-1	TRANSFO 120/24 40VA	Y65AS-1	JOHNSON CONTROLS
⊗	MANOMÈTRE 0-30 PSI	G2010-5	JOHNSON CONTROLS

Évacuation

Point consigne
Débit évac.

X

Débit évac.

X

Variateur

X

Vitesse

X

Mode 4 degré C

PC temp. A-151 X

Cmd. vent. CC-1 X

Valve solénoïde CC-1 X

VE 141-1
XVE 141-2
XVE 151-1
XVE 151-2
X

Pièce A-141

Pièce A-151

Pièce A-142

Pièce A-145

Pièce A-141-1

X

X

minuterie

X

Débit air neuf

X

Pièce A-141-2

X

X

minuterie

X

Débit air neuf

X

Pièce A-151-1

X

X

minuterie

X

Débit air neuf

X

Pièce A-151-2

X

X

minuterie

X

Débit air neuf

X

Sélecteur 151-1

X

Pièce A-152

Pièce A-155

Sélecteur 151-2

X

VMA-2-201

VMA-2-202

VMA-2-203

VMA-2-204



SD-141-1

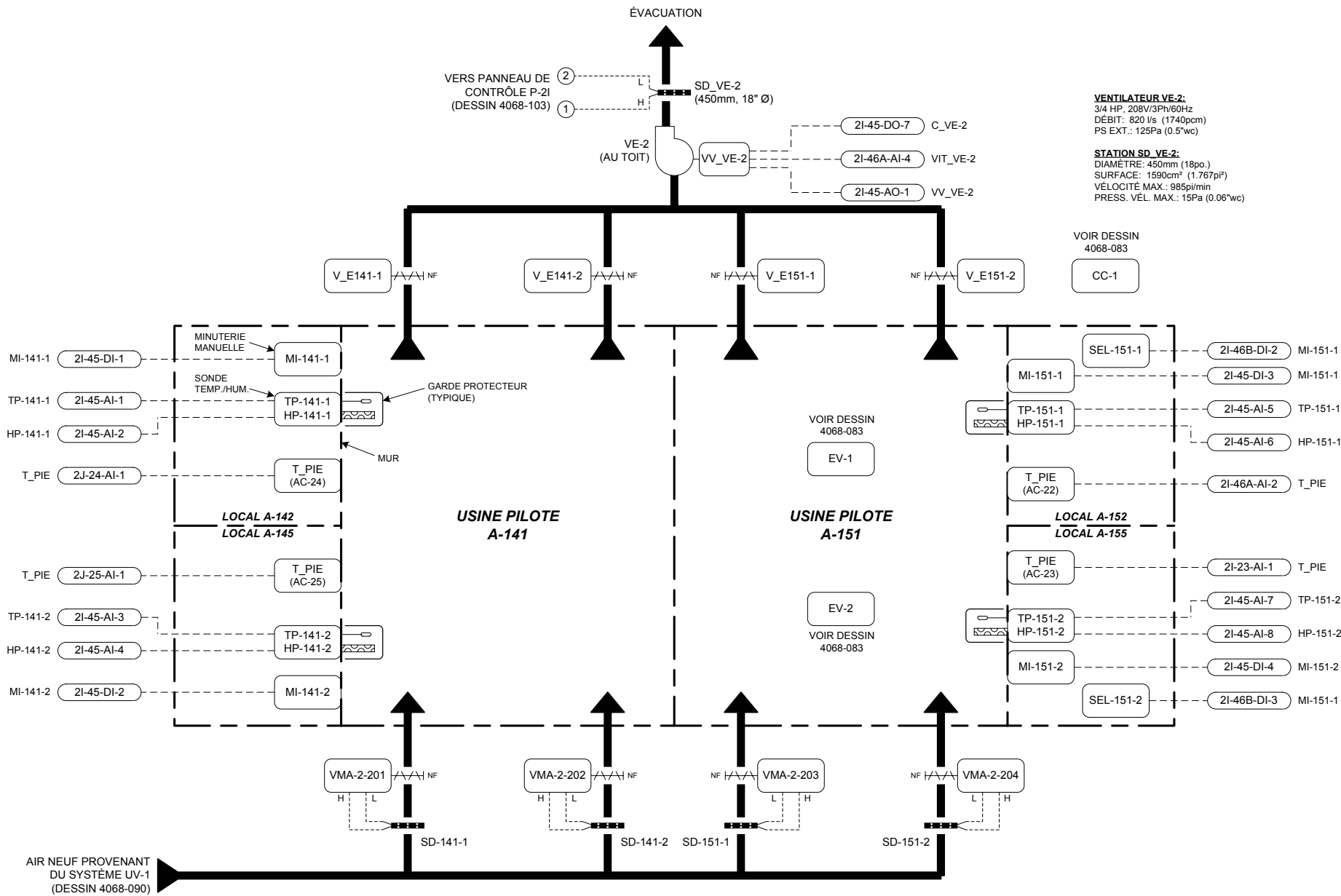
SD-141-2

SD-151-1

SD-151-2

Air neuf
du syst. UV-1

SYSTÈME VE-2 (USINES PILOTES A-141 ET A-151)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)



VENTILATEUR VE-2:
3/4 HP, 208V/3Ph/50Hz
DÉBIT: 820 l/s (1740pcm)
PS EXT.: 125Pa (0.5"wc)

STATION SD_VE-2:
DIAMÈTRE: 450mm (18po.)
SURFACE: 1590cm² (1.767pi²)
VÉLOCITÉ MAX.: 985pi/min
PRESS. VEL. MAX.: 15Pa (0.06"wc)

LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
MI-1x1-x	4	KLT 2H	MINUTERIE À REBOURS À RESSORT, 0 - 2 HEURES - GRASSLIN
SD-1x1-x	4	AYR1400	STATION DE DÉBIT, 350mm (14"), ALUMINIUM - PRESO
SD-VE-2	1	AYR1800	STATION DE DÉBIT, 450mm (18"), ALUMINIUM - PRESO
SEL-151-1,2	2	ZB2BD2	SÉLECTEUR C/A PALQUE EN ACIER INOXYDABLE INSCRIT(MODE 20°C/MODE 4°C)ET(USINE PILOTE A-151) CORPS
	2	ZB2BZ103	CONTACT NO
	2	ZB2BE101	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC, 0-100%HR, ± 2%HR
TP-1x1-x / HP-1x1-x	4	HE-67N2-0N00P	GARDE PROTECTEUR VERROUILLABLE, PLASTIQUE
	4	GRD10A-606	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
T_PIE	4	TE-6314P-1	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
V_E141-1 à 151-2	4	M9206-AGA-2	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
VMA-2-201 à 204	4	AP-VMA1410-0	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM
VV_VE-2	1	VLT6000C4.6	

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation est inopérant.
- Les volets d'air neuf VMA-2-201 à 204 et d'évacuation V_E141-1 à 151-2 sont fermés.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote A-151 sont sélectionnés à partir des sélecteurs SEL-151-1 et/ou SEL-151-2 localisé dans les bureaux A-152 et A-155.
- Usine pilote en mode normal (20°C):**
 - Sur une hausse d'humidité à l'une des sondes HP-141-1, 141-2, 151-1 ou 151-2 ou sur un signal provenant d'une minuterie à rebours MI-141-1, 141-2, 151-1 ou 151-2, la séquence suivante se produit :
 - Le volet d'évacuation correspondant V_E1x1-x ouvre.
 - Le régulateur de débit VMA-2-20x associé à cette zone module son volet d'air neuf afin de maintenir un débit de 150 l/s (320 pcm).
 - Le ventilateur d'évacuation VE-2 démarre et sa vitesse est modulée à 25% du total du débit d'air évacué, soit 205 l/s (435 pcm) par l'intermédiaire du variateur VV_VE-2. La station de débit SD_VE-2 est utilisée pour maintenir le débit d'évacuation à son point de consigne.
- Lorsqu'il y a une demande dans une autre pièce, les séquences 1 et 2 sont répétées et le débit d'air évacué passe à 50% du total (410 l/s, 870 pcm).
- À la troisième demande, les séquences 1 et 2 se répètent et le débit d'air évacué augmente à 75% du total (615 l/s, 1305 pcm).
- Lorsque les 4 zones sont en demande, tous les volets d'évacuation sont ouverts, les débits d'air neuf sont maintenus à leur point de consigne et le débit d'air évacué est à son maximum (820 l/s, 1740 pcm).
- Usine pilote en mode normal (4°C):**
 - Même séquence que pour le mode normale avec les différences suivantes :
 - VMA-2-203 et V_E151-1 sont fermés.
 - VMA-2-204 module pour maintenir le débit à 100 l/s et le volet V_E151-2 est balance à 100l/s (215 cfm).
 - L'opération sur hausse d'humidité de la pièce HP-151-1 et HP-151-2 (A-151) est annulée.

VOIR 4068-091B
POUR LE DIAGRAMME ÉLECTRIQUE

POUR LES DIAGRAMMES DES UNITÉS DE CLIMATISATION QUI DÉSERVENT LES LOCAUX A-142, 145, 152 ET 155, VOIR :
DESSIN 4068-083 : LOCAL A-152 - UNITÉ AC-22
DESSIN 4068-084 : LOCAL A-155 - UNITÉ AC-23
DESSIN 4068-085 : LOCAL A-142 - UNITÉ AC-24
DESSIN 4068-086 : LOCAL A-145 - UNITÉ AC-25

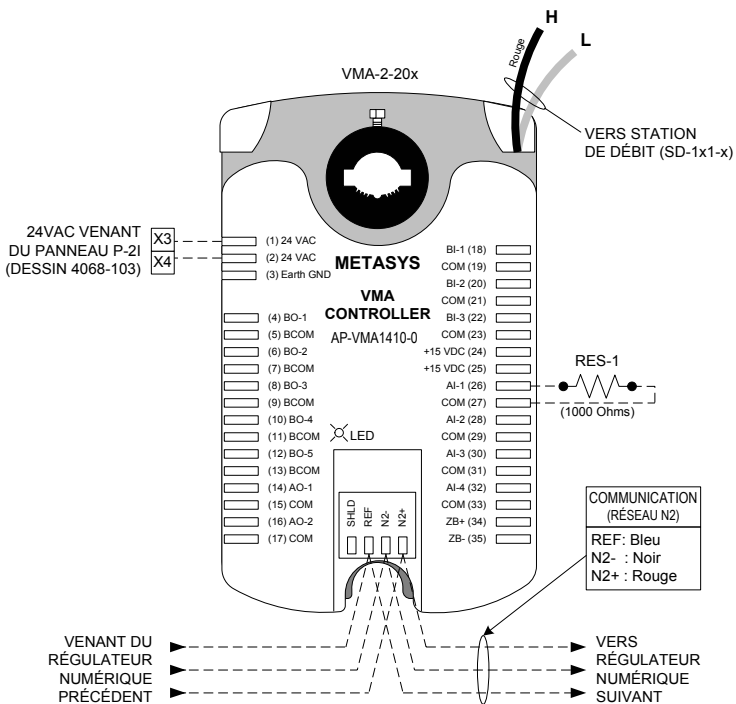
Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Système VE-2 Usines pilotes A-141 et A-151		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	05/08/2001	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-091A	

SYSTÈME VE-2 (USINES PILOTES A-141 ET A-151)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)

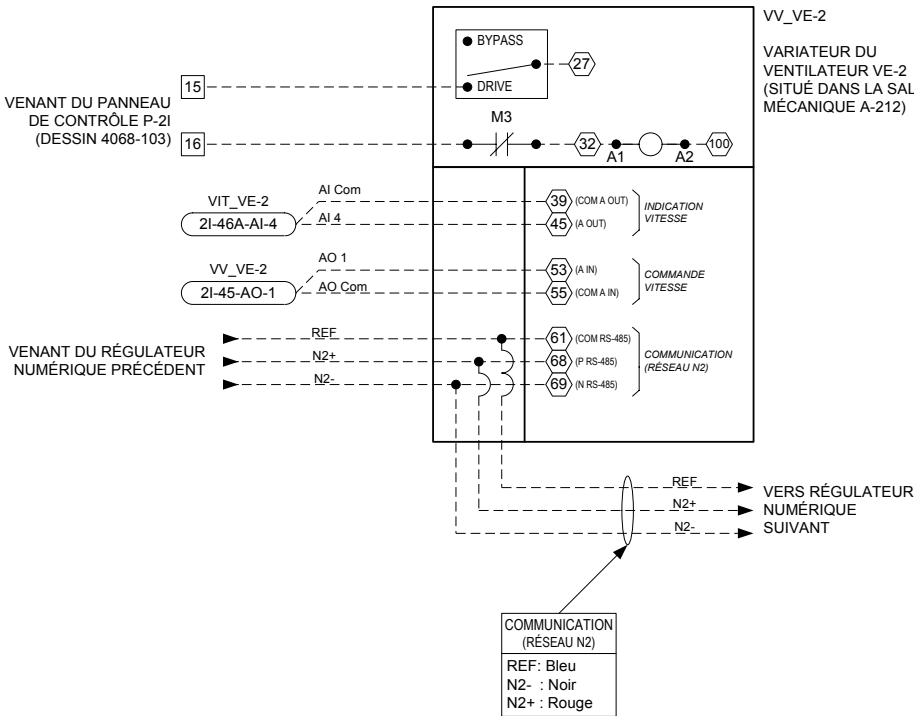
LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
V_E141-1 à 151-2	2	VOIR 4068-091A	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VMA-2-201 à 204	4	VOIR 4068-091A	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
VM-2..5	5	VOIR 4068-083	ACTUATEUR 2 POSITIONS
VV_VE-2	1	VOIR 4068-091A	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

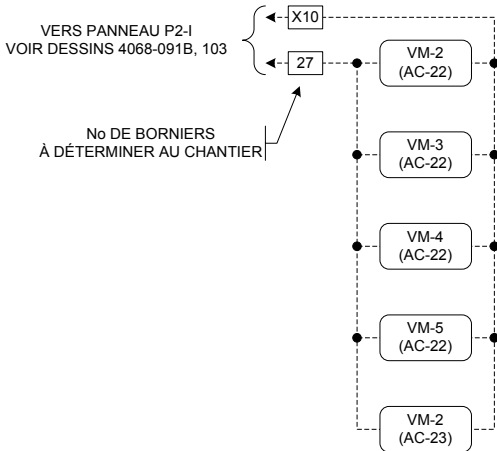
RACCORDEMENTS DES RÉGULATEURS (VMA-2-201 À 204)
(TYPIQUE POUR 4)



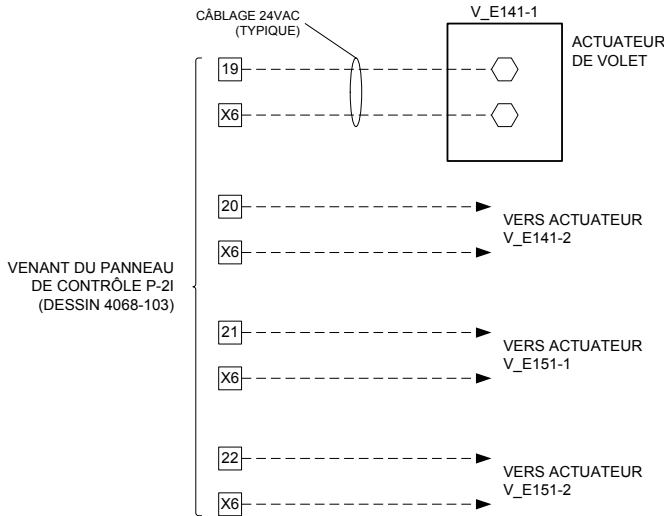
RACCORDEMENTS DU VARIATEUR DE VITESSE VV_VE-2



RACCORDEMENTS DES ACTUATEURS DE VOLET D'ÉVACUATION (VM-2, VM-3, VM-4 ET VM-5)

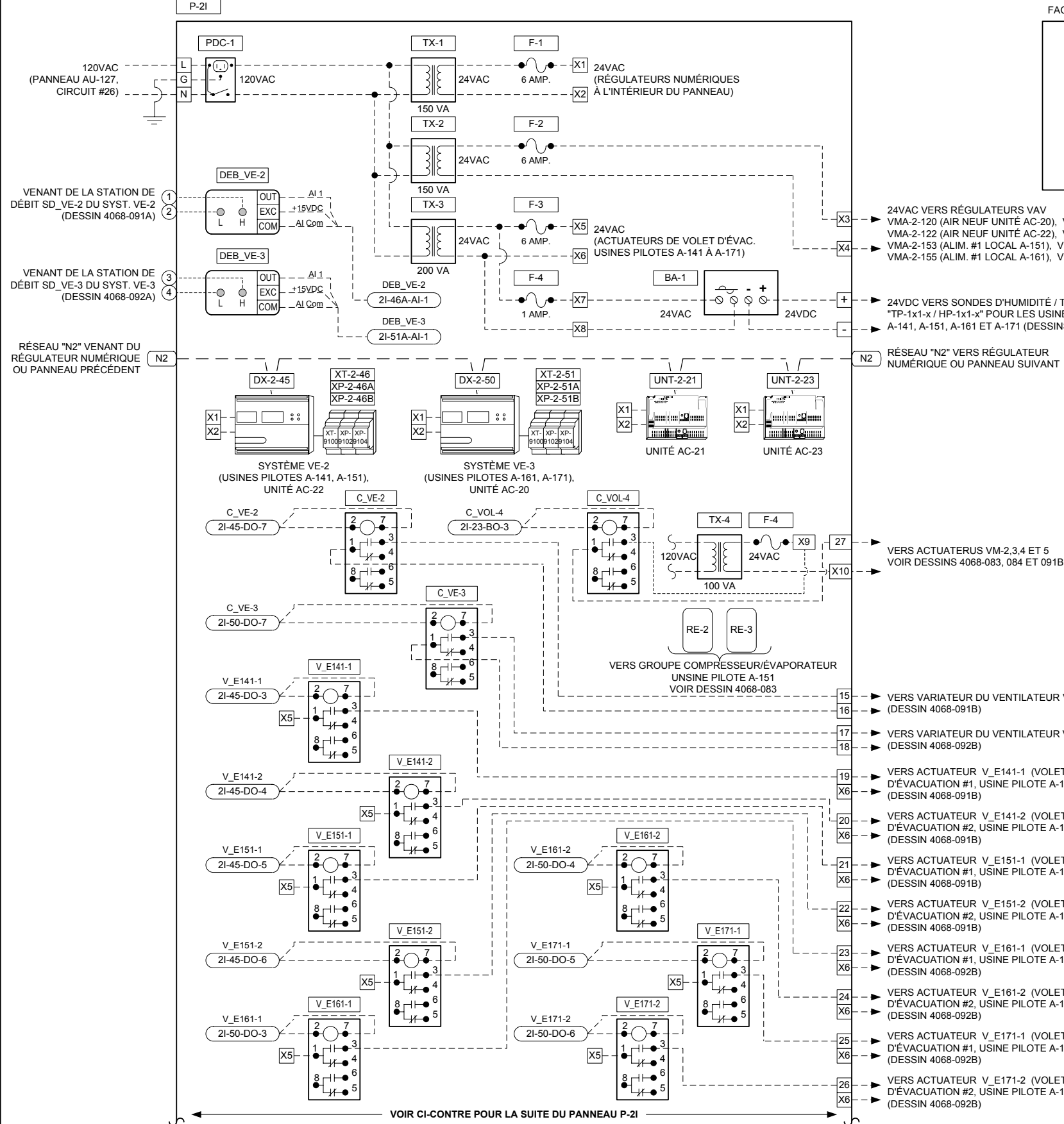


RACCORDEMENTS DES ACTUATEURS DE VOLET D'ÉVACUATION (V_E141-1 À 151-2)



Titre du Dessin Système VE-2 Usines pilotes A-141 et A-151	4096-0019	6	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
	4096-0019	5	AJOUT 4°C	C.D.	03/11/21	O.P.
		4	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
	DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN
Nom du Projet CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)	Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVE
	J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B.	DATE 05/08/2001	PAR DATE 05/08/2001
Information Succursale			NUMÉRO CONTRAT		NUMÉRO DESSIN	
			1096-0093		4068-091B	

PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

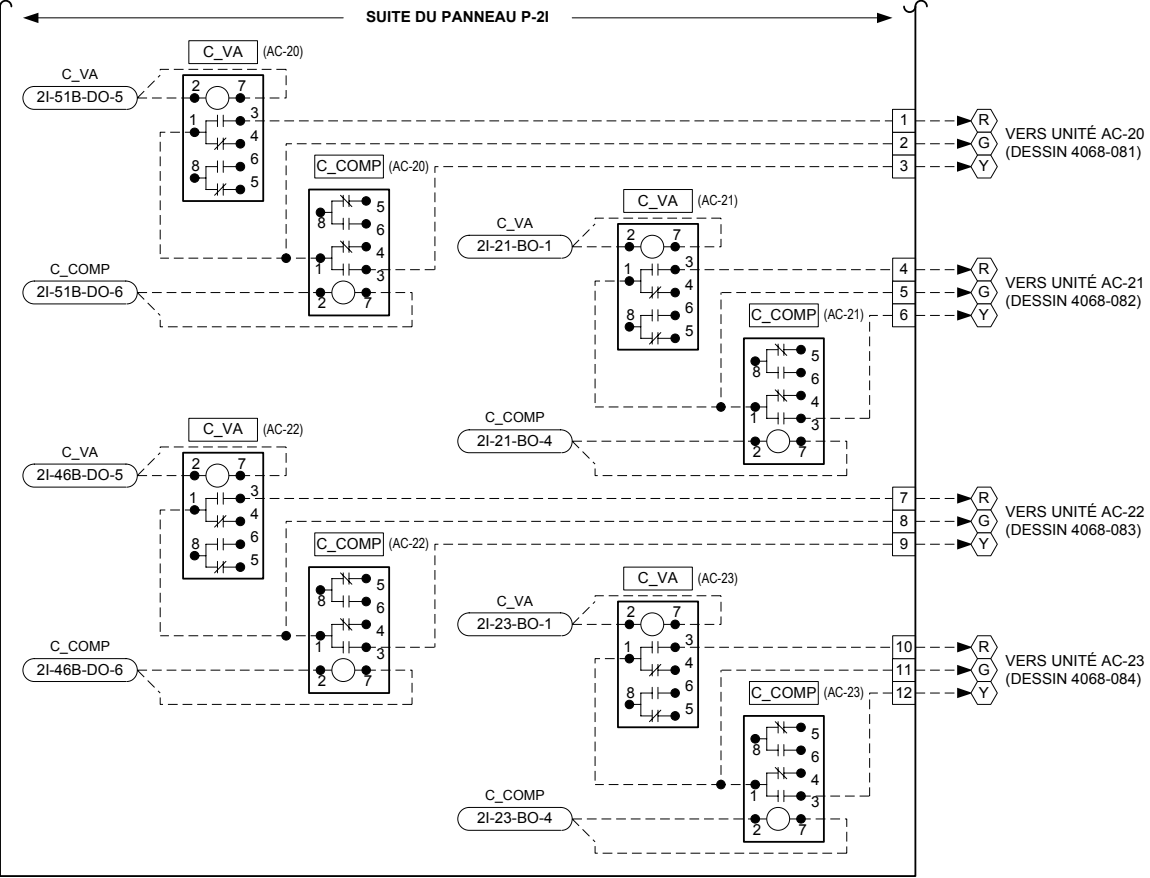
1-

PANNEAU P-2I

LISTE DE MATÉRIEL

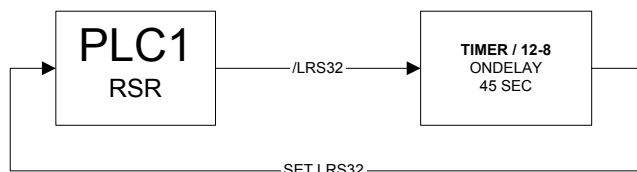
IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	10	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
DX-2-45, 2-50	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120/24Vac., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

SUITE DU PANNEAU P-2I

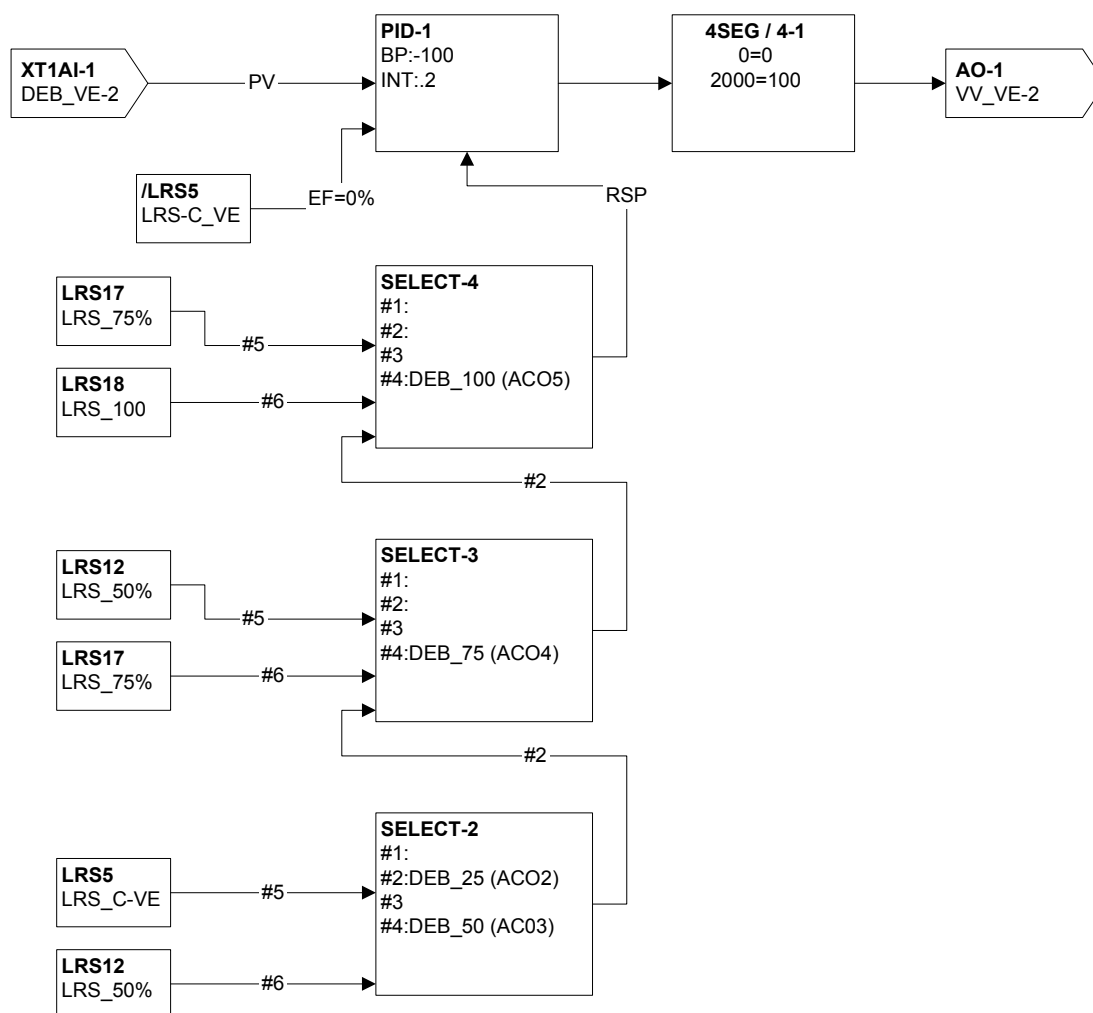


Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
Salle mécanique A-212			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
(Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)							
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE		JOHNSON CONTROLS		1096-0093			
Projet d'Innovation Technologique		Johnson Controls Ltée		NUMÉRO DESSIN			
3600, boul. Casavant		355, boul. Montpellier		4068-103			
St-Hyacinthe (Québec)		St-Laurent, Qc, H4N 2G6					
		Tél: (514) 747-2580					
		Fax: (514) 747-9562					

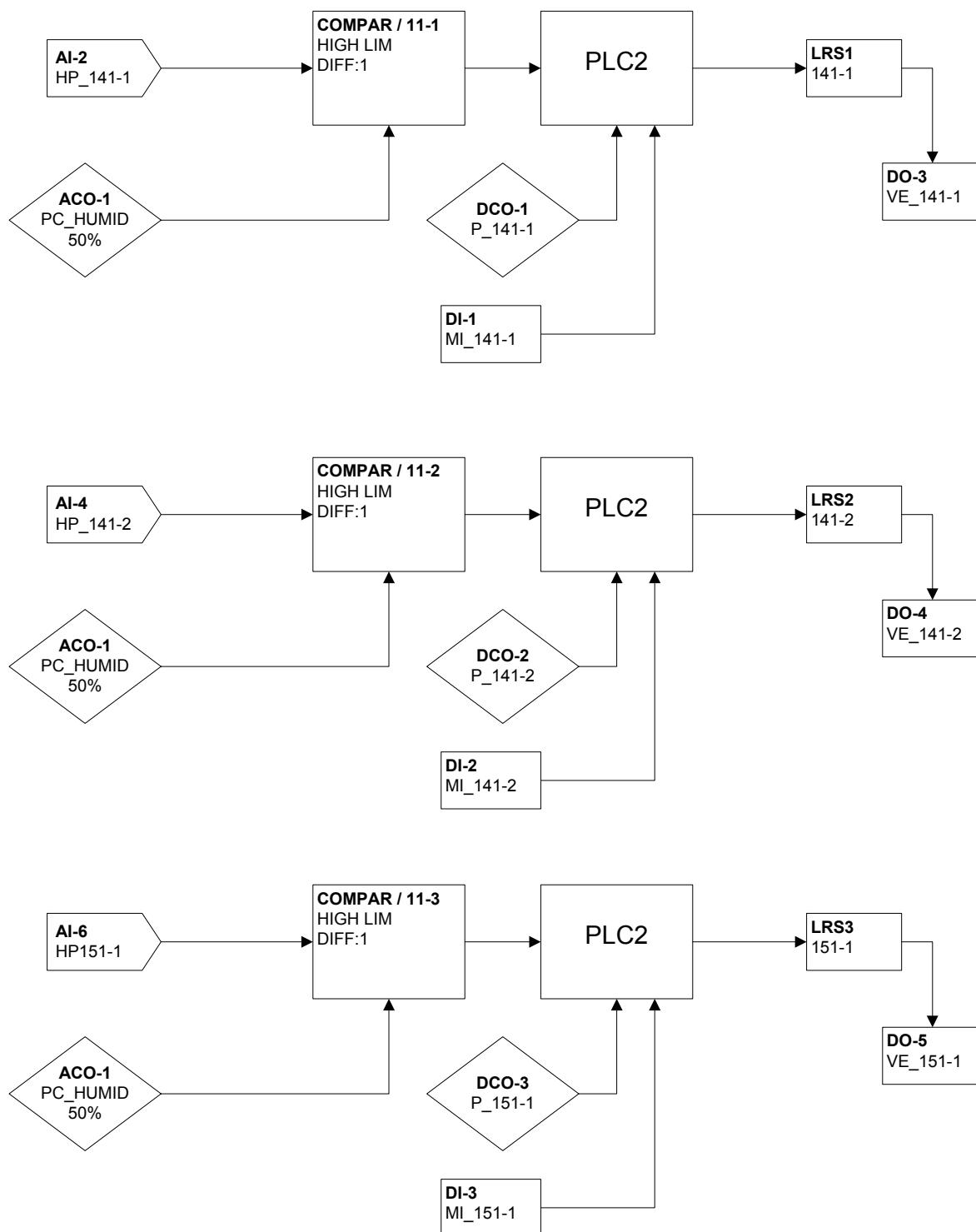
REDEMARRAGE APRES PANNE (DX-2-45)



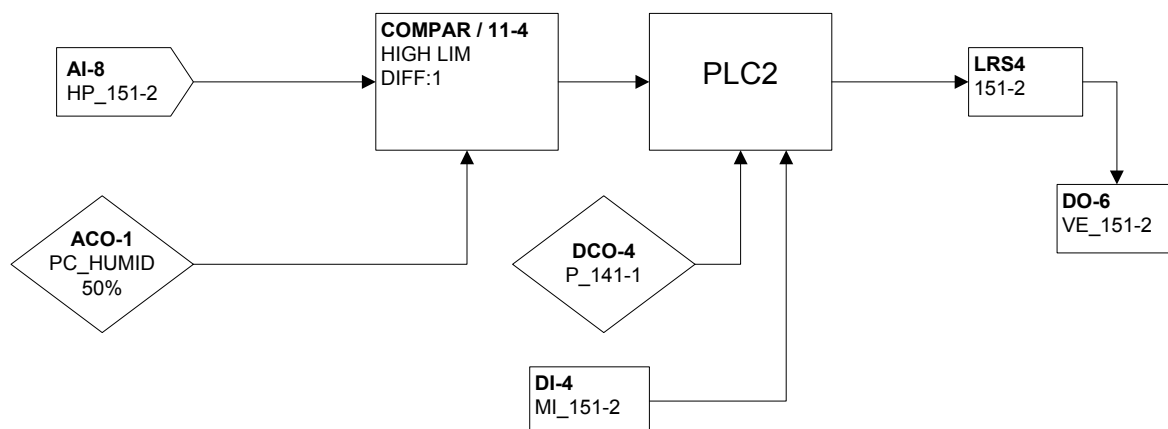
COMMANDE VENTILATEUR EVACUATION



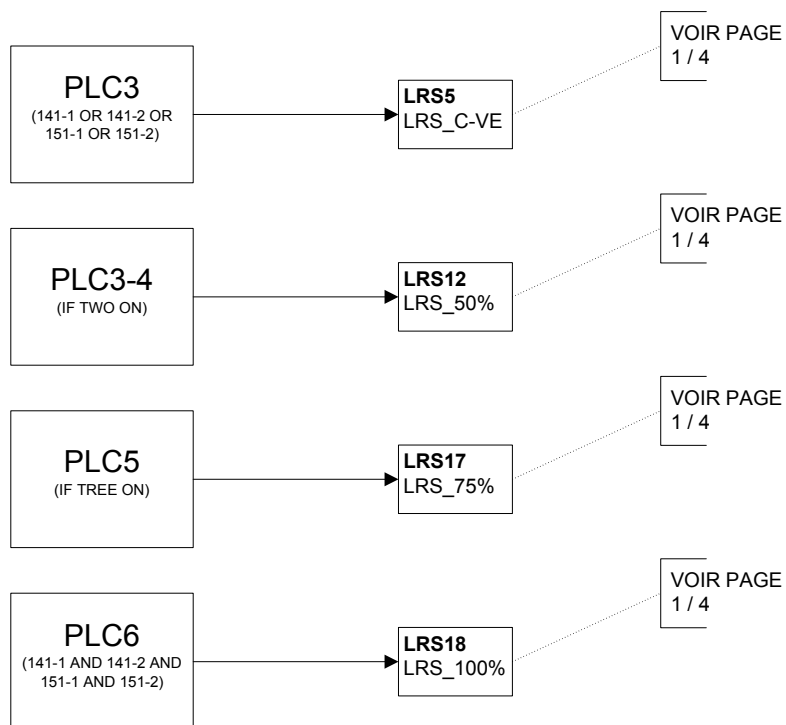
VITESSE VENTILATEUR EVACUATION



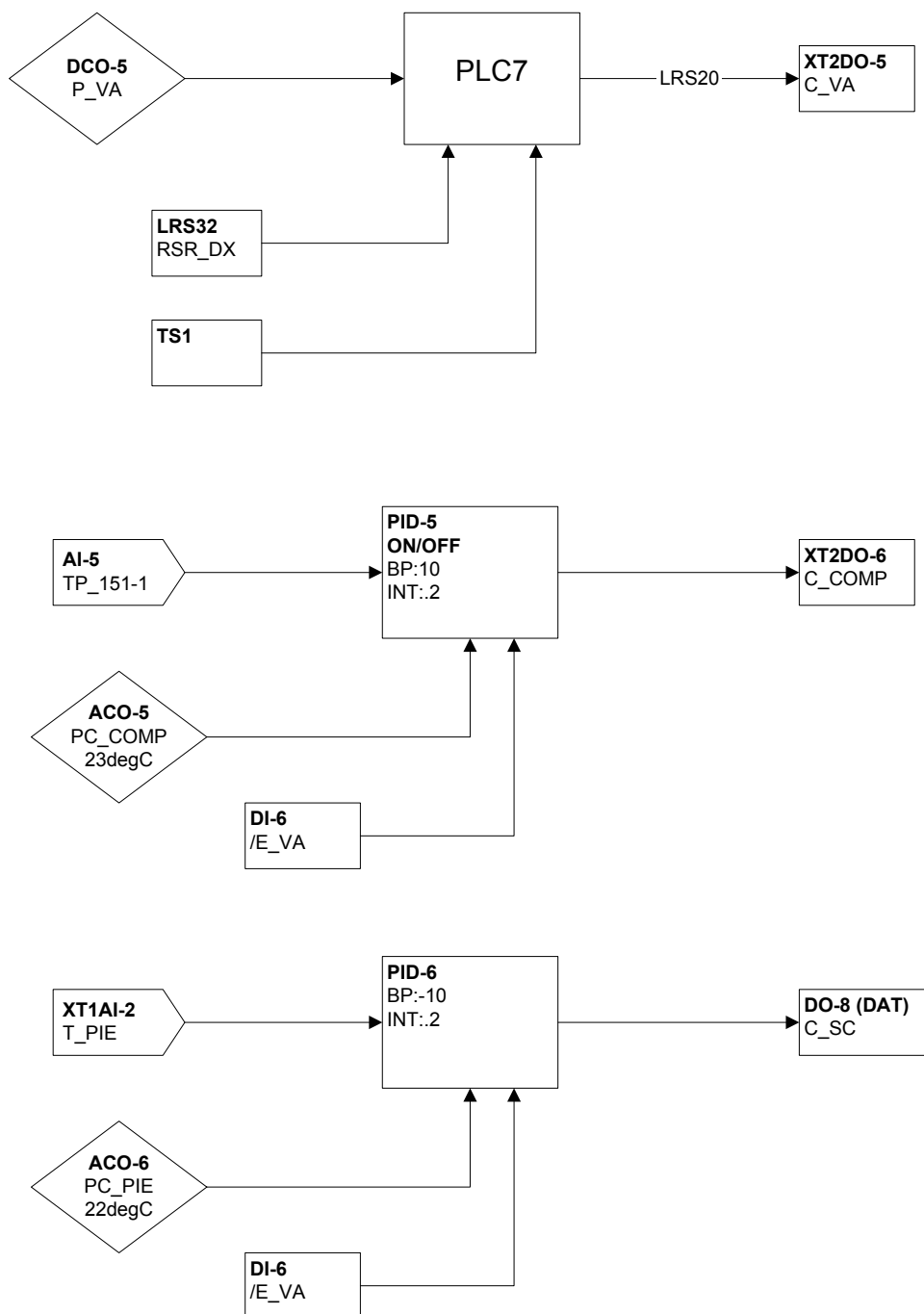
VITESSE VENTILATEUR EVACUATION (SUITE)



LOGIQUE OUVERTURE VOLETS



CONTROLE UNITE CLIMATISATION AC-22



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 45
Numéro du dessin : 4068-91
Système : Système VE-2 A-141 A-151

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE A-141 #1		
2	HUMIDITE PIECE A-141 #1		
3	TEMP. PIECE A-141 #2		
4	HUMIDITE PIECE A-141 #2		
5	TEMP. PIECE A-151 #1		
6	HUMIDITE PIECE A-151 #1		
7	TEMP. PIECE A-151 #2		
8	HUMIDITE PIECE A-151 #2		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	MINUTERIE PIECE A-141 #1	Off =arrêt / On marche	1
2	MINUTERIE PIECE A-141 #2	Off =arrêt / On marche	1
3	MINUTERIE PIECE A-151 #1	Off =arrêt / On marche	1
4	MINUTERIE PIECE A-151 #2	Off =arrêt / On marche	1
5			
6	ETAT VENT. ALIMENTATION	Off =arrêt / On marche	1
7	ETAT FILTRES	Off = normal / On = sale	1
8	ETAT FILTRES CHARBON	Off = normal / On = sale	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VARIATEUR VENT EVAC VE2	Z1	0% = Min. / 100% = Max.
2			
3	VOLET EVAC PIECE A-141 #1	LRS1	Off = ferme / On = ouvert
4	VOLET EVAC PIECE A-141 #2	LRS2	Off = ferme / On = ouvert
5	VOLET EVAC PIECE A-151 #1	LRS3	Off = ferme / On = ouvert
6	VOLET EVAC PIECE A-151 #2	LRS4	Off = ferme / On = ouvert
7	COMM VENT EVAC VE-2	DCO5	Off = arrêt / On = depart
8	COMM SERPENTIN CHAUFF.	Z6	Off = arrêt / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	Select 4	XT1X1 Debit VE-2	0 = Min. / 2000 = Max.
2	ACO5	X5 Temp. 151-1	0%= Min. / 100%= Max.
3	ACO6	XT1X2 Temp. piece 142	0%= Min. / 100%= Max.
4	4 Segment		
5			
6			
7			
8	Select		
9	Select		
10	Select		
11	Comparateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-100	.2	
2	10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	50%	PC Humidite
2	435 cfm	PC debit evacuation 25%
3	870 cfm	PC debit evacuation 50%
4	1305 cfm	PC debit evacuation 75%
5	23 deg C	PC Compresseur refrigeration
6	22 deg C	PC Chauffage piece 142
7	1740 cfm	PC debit evacuation 100%
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission volet 141-1
2	ON	Permission volet 141-2
3	ON	Permission volet 151-1
4	ON	Permission volet 151-2
5	ON	Permission ventilateur alimentation
6		
7		
8		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-91
Système : Système VE-2 A-141 A-151
Adresse du NCM : 2
Adresse du DX-9100 : 45
Adresse du XT : 46

Numero du XP : 1
Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
11	DEBIT D'EVACUATION		
12	TEMP. PIECE		
13	TEMP. ALIMENTATION		
14	INDICATION VITESSE VE-2		
15			
16			

Sorties Analogiques : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
17			
18			

Numero du XP : 2
Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point		Préscaler
19	ALARME UNITE AC	Off = arrêt / On = marche	1
20	ETAT SELECTEUR 151-1	Off = Norma / On = Mode 4dC	1
21	ETAT SELECTEUR 151-2	Off = Norma / On = Mode 4dC	1
22			

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
23	COMM A/D VENT ALIM		Off = arrêt / On = marche
24	COMM A/D COMPRESSEUR		Off = arrêt / On = marche
25	COMM A/D VENT. UNITE CC-1	LRS-22	Off = arrêt / On = marche
26	COMM VANNE SOLENOIDE CC-1	PM4OCM	Off = arrêt / On = marche

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-203.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.021421775

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-202.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.020904958

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	320
ADF	164	Occupied Clg Min	OCCCMIN	320
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	0.5
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	320

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-201.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.025748536

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	320
ADF	164	Occupied Clg Min	OCCCMIN	320
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	0.7
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	320

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-204.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.023388848

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	0
ADF	164	Occupied Clg Min	OCCCMIN	0
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode
ADI 67

Present Value

BOXMODE

ÉVACUATEUR VE-2 (USINES PILOTES A-141 ET A-151)

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation est inopérant.
- Les volets d'air neuf VMA-2-201 à 204 et d'évacuation V_E141-1 à 151-2 sont fermés.

EN MARCHÉ:

- Les modes d'opération (4°C) et (20°C) pour l'usine pilote A-151 sont sélectionnés à partir des sélecteurs SEL-151-1 et/ou SEL-151-2 localisés dans les bureaux A-152 et A-155.

Usine pilote en mode normal (20°C):

- Sur une hausse d'humidité à l'une des sondes HP-141-1, 141-2, 151-1 ou 151-2 ou sur un signal provenant d'une minuterie à rebours MI-141-1, 141-2, 151-1 ou 151-2, la séquence suivante se produit :
 - 1- Le volet d'évacuation correspondant V_E1x1-x ouvre.
 - 2- Le régulateur de débit VMA-2-20x associé à cette zone module son volet d'air neuf afin de maintenir un débit de 150 l/s (320 pcm).
 - 3- Le ventilateur d'évacuation VE-2 démarre et sa vitesse est modulée à 25% du total du débit d'air évacué, soit 205 l/s (435 pcm) par l'intermédiaire du variateur VV_VE-2. La station de débit SD_VE-2 est utilisée pour maintenir le débit d'évacuation à son point de consigne.
- Lorsqu'il y a une demande dans une autre pièce, les séquences 1 et 2 sont répétées et le débit d'air évacué passe à 50% du total (410 l/s, 870 pcm).
- À la troisième demande, les séquences 1 et 2 se répètent et le débit d'air évacué augmente à 75% du total (615 l/s, 1305 pcm).
- Lorsque les 4 zones sont en demande, tous les volets d'évacuation sont ouverts, les débits d'air neuf sont maintenus à leur point de consigne et le débit d'air évacué est à son maximum (820 l/s, 1740 pcm).

Usine pilote en mode normal (4°C):

- Même séquence que pour le mode normale avec les différences suivantes:
 - VMA-2-203 et V_E151-1 sont fermés.
 - VMA-2-204 module pour maintenir le débit à 100 l/s et le volet V_E151-2 est balance à 100l/s (215 cfm).
- L'opération sur hausse d'humidité de la pièce HP-151-1 et HP-151-2 (A-151) est annulée.

Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube	Terminaisons entrée	Appareil	Détail de réf.	Commentaires	
						DX9100	DX 9100	1	45			P-21	Salle méc. A-212											Alimentation 24VAC	
						DX9100	DX 9100	1	45			P-21	Salle méc. A-212											Tronc N2	
2145-DO-3	DO-3	USINES-2	V_E141-1	Volet évac.pèce A-141#1	Fermé	Ouvert	DX9100	DX 9100	1	45	DO-3	DO3.COM	P-21	Salle méc. A-212	4068-091B	2145-DO-3	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2145-DO-4	DO-4	USINES-2	V_E141-2	Volet évac.pèce A-141#2	Fermé	Ouvert	DX9100	DX 9100	1	45	DO-4	DO4.COM	P-21	Salle méc. A-212	4068-091B	2145-DO-4	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2145-DO-5	DO-5	USINES-2	V_E151-1	Volet évac.pèce A-151#1	Fermé	Ouvert	DX9100	DX 9100	1	45	DO-5	DO5.COM	P-21	Salle méc. A-212	4068-091B	2145-DO-5	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2145-DO-6	DO-6	USINES-2	V_E151-2	Volet évac.pèce A-151#2	Fermé	Ouvert	DX9100	DX 9100	1	45	DO-6	DO6.COM	P-21	Salle méc. A-212	4068-091B	2145-DO-6	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2145-DO-7	DO-7	USINES-2	C_VE-2	Comm vent évac. VE-2	Arrêt	Marche	DX9100	DX 9100	1	45	DO-7	DO7.COM	P-21	Salle méc. A-212	4068-091B	2145-DO-7	2/18	(Bobine) +,-	H-735	COM.NO	2/14		Voir détail démar	DX49	
2145-DO-8	DO-8	AC-22	C_SC	Comm serpent in chauffage	Arrêt	Marche	DX9100	DX 9100	1	45	DO-8	DO8.COM	P-21	Salle méc. A-212	4068-083	2145-DO-8					2/18		Selon dispositi	SOR 24 V c.a	DX51
2145-DI-1	DI-1	USINES-2	MI-141-1	Minuterie pièce A-141 #1	Inoccupé	Occupé	DX9100	DX 9100	1	45	DI-1	DI1.COM	P-21	Salle méc. A-212	4068-091A	2145-DI-1					2/18		Selon dispositi	Contact (NO)	DX70
2145-DI-2	DI-2	USINES-2	MI-141-2	Minuterie pièce A-141 #2	Inoccupé	Occupé	DX9100	DX 9100	1	45	DI-2	DI2.COM	P-21	Salle méc. A-212	4068-091A	2145-DI-2					2/18		Selon dispositi	Contact (NO)	DX70
2145-DI-3	DI-3	USINES-2	MI-151-1	Minuterie pièce A-151 #1	Inoccupé	Occupé	DX9100	DX 9100	1	45	DI-3	DI3.COM	P-21	Salle méc. A-212	4068-091A	2145-DI-3					2/18		Selon dispositi	Contact (NO)	DX70
2145-DI-4	DI-4	USINES-2	MI-151-2	Minuterie pièce A-151 #2	Inoccupé	Occupé	DX9100	DX 9100	1	45	DI-4	DI4.COM	P-21	Salle méc. A-212	4068-091A	2145-DI-4					2/18		Selon dispositi	Contact (NO)	DX70
						DX9100	DX 9100	1	45	DI-5		P-21	Salle méc. A-212	4068-091B	2145-DI-5										
2145-DI-6	DI-6	AC-22	E_VA	Etat vent alimentation	Arrêt	Marche	DX9100	DX 9100	1	45	DI-6	DI6.COM	P-21	Salle méc. A-212	4068-083	2145-DI-6					2/18		NO.COM	H-708	DX49
2145-DI-7	DI-7	AC-22	E_FILT	Etat des filtres	Normal	Sales	DX9100	DX 9100	1	45	DI-7	DI7.COM	P-21	Salle méc. A-212	4068-083	2145-DI-7					2/18		Y.R	P32 (NO)	DX70
2145-DI-8	DI-8	AC-22	E_FILT_C	Etat des filtres charbon	Normal	Sales	DX9100	DX 9100	1	45	DI-8	DI8.COM	P-21	Salle méc. A-212	4068-083	2145-DI-8					2/18		Y.R	P32 (NO)	DX70
2145-AI-1	AI-1	USINES-2	ITP-141-1	Temp.pèce A-141 #1			DX9100	DX 9100	1	45	AI-1	AI1.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-1					2/18		2 fils	TE	DX3
2145-AI-2	AI-2	USINES-2	HP-141-1	Humidité pièce A-141 #1	%HR		DX9100	DX 9100	1	45	AI-2	AI2.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-2					2/18		Selon dispositi	ENT 0-10 V ALIM EXT (HR)	DX6
2145-AI-3	AI-3	USINES-2	ITP-141-2	Temp.pèce A-141 #2	%C		DX9100	DX 9100	1	45	AI-3	AI3.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-3					2/18		2 fils	TE	DX3
2145-AI-4	AI-4	USINES-2	HP-141-2	Humidité pièce A-141 #2	%HR		DX9100	DX 9100	1	45	AI-4	AI4.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-4					2/18		Selon dispositi	ENT 0-10 V ALIM EXT (HR)	DX6
2145-AI-5	AI-5	USINES-2	ITP-151-1	Temp.pèce A-151 #1	%C		DX9100	DX 9100	1	45	AI-5	AI5.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-5					2/18		2 fils	TE	DX3
2145-AI-6	AI-6	USINES-2	HP-151-1	Humidité pièce A-151 #1	%HR		DX9100	DX 9100	1	45	AI-6	AI6.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-6					2/18		Selon dispositi	ENT 0-10 V ALIM EXT (HR)	DX6
2145-AI-7	AI-7	USINES-2	ITP-151-2	Temp.pèce A-151 #2	%C		DX9100	DX 9100	1	45	AI-7	AI7.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-7					2/18		2 fils	TE	DX3
2145-AI-8	AI-8	USINES-2	HP-151-2	Humidité pièce A-151 #2	%HR		DX9100	DX 9100	1	45	AI-8	AI8.AICOM	P-21	Salle méc. A-212	4068-091A	2145-AI-8					2/18		Selon dispositi	ENT 0-10 V ALIM EXT (HR)	DX6
2145-AO-1	AO-1	USINES-2	VV_VE-2	Variateur vent évac.VE-2	%		DX9100	DX 9100	1	45	AO-1	AO1.AOCOM	P-21	Salle méc. A-212	4068-091A	2145-AO-1					2/18		Selon dispositi	SORTIE 0-10 V	DX22
	AO-2						DX9100	DX 9100	1	45	AO-2		P-21	Salle méc. A-212		2145-AO-2									
	AO-9						DX9100	DX 9100	1	45	AO-9		P-21	Salle méc. A-212		2145-AO-9									
	AO-10						DX9100	DX 9100	1	45	AO-10		P-21	Salle méc. A-212		2145-AO-10									
	AO-11						DX9100	DX 9100	1	45	AO-11		P-21	Salle méc. A-212		2145-AO-11									
	AO-12						DX9100	DX 9100	1	45	AO-12		P-21	Salle méc. A-212		2145-AO-12									
	AO-13						DX9100	DX 9100	1	45	AO-13		P-21	Salle méc. A-212		2145-AO-13									
	AO-14						DX9100	DX 9100	1	45	AO-14		P-21	Salle méc. A-212		2145-AO-14									

		Informations sur points			Informations sur régulateurs							Informations sur panneaux					Appareils intermédiaires			Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube	Terminaisons entrée	Appareil	Détail de réf.	Commentaires		
						XT9100	XT (Expansion Module)	1	46			P-21	Salle méc. A-212											Alimentation 24VAC		
						XT9100	XT (Expansion Module)	1	46			P-21	Salle méc. A-212											Tronc N2		
2I-46A-AI-1	XT1A1	USINES-2	DEB_VE-2	Débit évacuation	l/s	XP9102	XP 9102 (6A)	1	46	AI-1	AI1.AICOM+15V	P-21	Salle méc. A-212	4068-099	2I-46A-AI-1					3/18	OUT.COM.EXC	DPT-2640 (0-5 VDC)	XP9			
2I-46A-AI-2	XT1A2	AC-22	T_PIE	Temp.pieçe	°C	XP9102	XP 9102 (6A)	1	46	AI-2	AI2.AICOM	P-21	Salle méc. A-212	4068-083	2I-46A-AI-2					2/18	2 fils	TE	XP3		Sonde située dans local A-152	
2I-46A-AI-3	XT1A3	AC-22	T_ALI	Temp.alimentation	°C	XP9102	XP 9102 (6A)	1	46	AI-3	AI3.AICOM	P-21	Salle méc. A-212	4068-083	2I-46A-AI-3					2/18	2 fils	TE (Gaine)	XP3			
2I-46A-AI-4	XT1A4	USINES-2	VIT_VE-2	Indication vitesse VE-2	%	XP9102	XP 9102 (6A)	1	46	AI-4	AI4.AICOM	P-21	Salle méc. A-212		2I-46A-AI-4					2/18	Device depende	ENT 0-20 mA ALIM EXT	XP2			
	XT1A5					XP9102	XP 9102 (6A)	1	46	AI-5		P-21	Salle méc. A-212		2I-46A-AI-5											
	XT1A6					XP9102	XP 9102 (6A)	1	46	AI-6		P-21	Salle méc. A-212		2I-46A-AI-6											
	XT1A07					XP9102	XP 9102 (6A)	1	46	AO-7		P-21	Salle méc. A-212		2I-46A-AO-7											
	XT1A08					XP9102	XP 9102 (6A)	1	46	AO-8		P-21	Salle méc. A-212		2I-46A-AO-8											
2I-46B-DI-1	XT2D11	AC-22	ALM_AC	Alarme unité AC	Normal	Alarme	XP9104	XP 9104 (4D)	1	46	DI-1	DI1.COM	P-21	Salle méc. A-212	4068-083	2I-46B-DI-1				2/18	Selon dispositif	Contact (NO)	XP40			
SEL-1S1-1	XT2D12	USINES-2	SEL-1S1-1	Sélecteur 20°C/4°C	20°C	4°C	XP9104	XP 9104 (4D)	1	46	DI-2	DI2.COM	P-21	Salle méc. A-212	4068-091A	2I-46B-DI-2				2/18	Selon dispositif	Contact (NO)	XP40			
SEL-1S1-2	XT2D13	USINES-2	SEL-1S1-2	Sélecteur 20°C/4°C	20°C	4°C	XP9104	XP 9104 (4D)	1	46	DI-3	DI3.COM	P-21	Salle méc. A-212	4068-091A	2I-46B-DI-3				2/18	Selon dispositif	Contact (NO)	XP40			
	XT2D14					XP9104	XP 9104 (4D)	1	46	DI-4		P-21	Salle méc. A-212		2I-46B-DI-4											
2I-46B-DO-1	XT2D05	AC-22	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	XP9104	XP 9104 (4D)	1	46	DO-5	DO5.COM	P-21	Salle méc. A-212	4068-083	2I-46B-DO-5	2/18	2,7	RELAIS	1,3	2/14	Voir détail déma	Démarreur (NO)	XP51		
2I-46B-DO-4	XT2D06	AC-22	C_COMP	Comm.a/d compresseur	Arrêt	Marche	XP9104	XP 9104 (4D)	1	46	DO-6	DO6.COM	P-21	Salle méc. A-212	4068-083	2I-46B-DO-6	2/18	2,7	RELAIS	1,3	2/14	Voir détail déma	Démarreur (NO)	XP51		
RE-2	XT2D07	USINES-2	C_VCC1	Comm.a/d ventil. CC-1/ÉV-1	Arrêt	Marche	XP9104	XP 9104 (4D)	1	46	DO-7	DO7.COM	P-21	Salle méc. A-212	4068-083	2I-46B-DO-7	2/18	2,7	60.32-8024	1,3	2/14	Selon dispositif	Contact (NO)	XP51		
RE-3	XT2D08	USINES-2	C_VS-CC1	Comm.a/d vanne solénoïde CC-1	Fermé	Ouvert	XP9104	XP 9104 (4D)	1	46	DO-8	DO8.COM	P-21	Salle méc. A-212	4068-083	2I-46B-DO-8	2/18	2,7	60.32-8024	1,3	2/14	Selon dispositif	Contact (NO)	XP51		
		USINES-2				VMA	VMA 1410	1	201			P-2	Salle méc. A-211											Tronc N2		
2-151-AI-1	AI-1	USINES-2	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	201	AI-1	AI1.AICM	P-2	Salle méc. A-211	4068-091B	2-201-AI-1											
	AI-2	USINES-2				VMA	VMA 1410	1	201	AI-2		P-2	Salle méc. A-211		2-201-AI-2						2 fils	Résistance 1000 ohms	VMA1			
	BI-1	USINES-2				VMA	VMA 1410	1	201	BI-1		P-2	Salle méc. A-211		2-201-BI-1											
	BI-2	USINES-2				VMA	VMA 1410	1	201	BI-2		P-2	Salle méc. A-211		2-201-BI-2											
	BI-3	USINES-2				VMA	VMA 1410	1	201	BI-3		P-2	Salle méc. A-211		2-201-BI-3											
2-151-AI-5	AI-5	USINES-2	PV-141-1	Press.vélocité #1 A-141	Pa	VMA	VMA 1410	1	201	AI-5		P-2	Salle méc. A-211	4068-091B	2-201-AI-5										Air neuf #1 usine pilote A-141	
						VMA	VMA 1410	1	202			P-2	Salle méc. A-211												Alimentation 24VAC	
		USINES-2				VMA	VMA 1410	1	202			P-2	Salle méc. A-211												Tronc N2	
2-152-AI-1	AI-1	USINES-2	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	202	AI-1	AI1.AICM	P-2	Salle méc. A-211	4068-091B	2-202-AI-1					2 fils		Résistance 1000 ohms	VMA1			
	AI-2	USINES-2				VMA	VMA 1410	1	202	AI-2		P-2	Salle méc. A-211		2-202-AI-2											
	BI-1	USINES-2				VMA	VMA 1410	1	202	BI-1		P-2	Salle méc. A-211		2-202-BI-1											
	BI-2	USINES-2				VMA	VMA 1410	1	202	BI-2		P-2	Salle méc. A-211		2-202-BI-2											
	BI-3	USINES-2				VMA	VMA 1410	1	202	BI-3		P-2	Salle méc. A-211		2-202-BI-3											
2-152-AI-5	AI-5	USINES-2	PV-141-2	Press.vélocité #2 A-141	Pa	VMA	VMA 1410	1	202	AI-5		P-2	Salle méc. A-211	4068-091B	2-202-AI-5										Air neuf #2 usine pilote A-141	

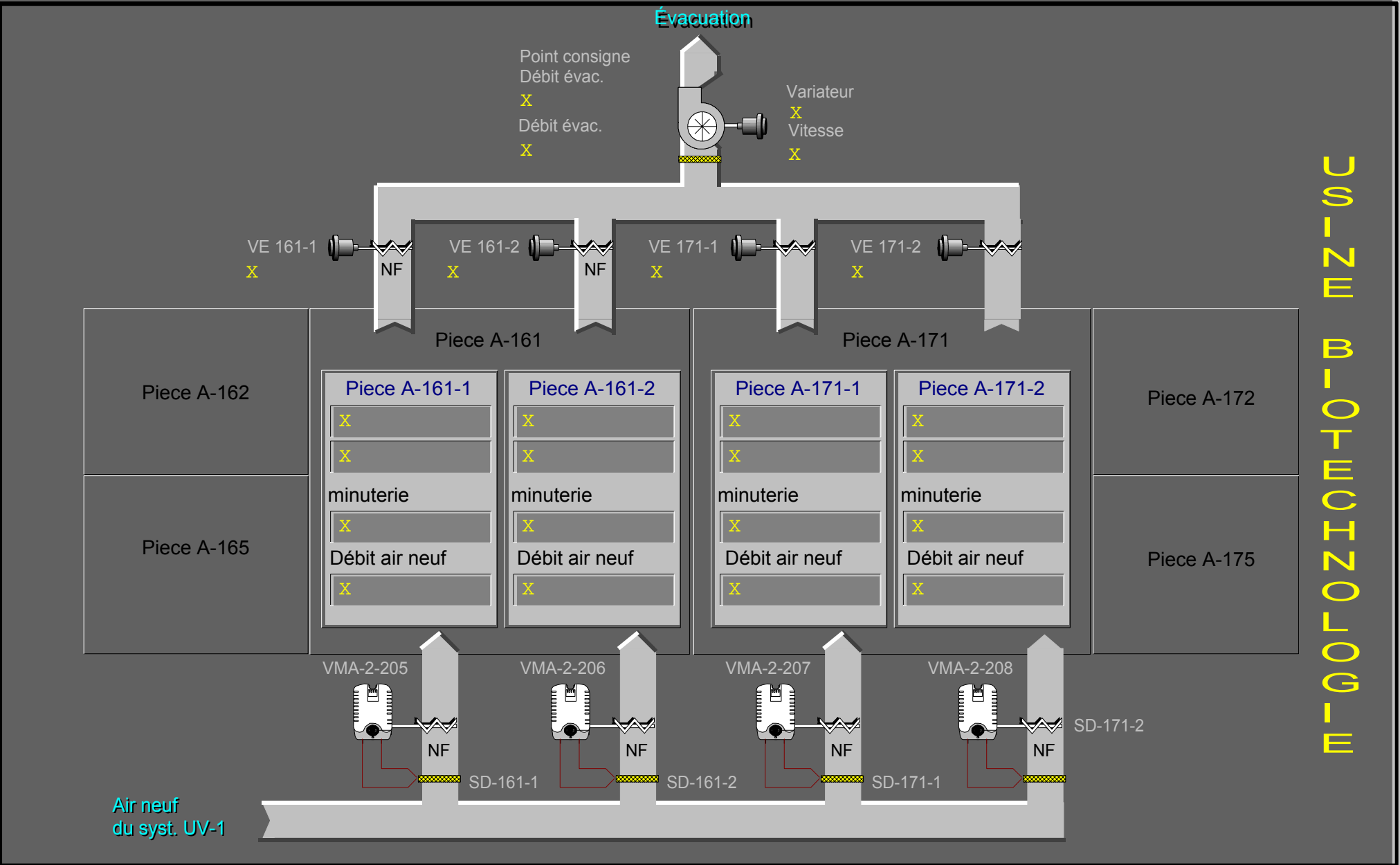
		Informations sur points			Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires			Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube	Terminaisons entrée	Appareil	Détail de réf.	Commentaires	
2-153-AI-1	AI-1	USINES-2	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	203	AI-1	AI1 AICM	P-2	Salle méc. A-212											Alimentation 24VAC	
		USINES-2				VMA	VMA 1410	1	203			P-2	Salle méc. A-212											Tronc N2	
	AI-2	USINES-2				VMA	VMA 1410	1	203	AI-2		P-2	Salle méc. A-212	4068-091B	2-203-AI-1					2 fils		Résistance 1000 ohms	VMA1		
	BI-1	USINES-2				VMA	VMA 1410	1	203	BI-1		P-2	Salle méc. A-212		2-203-BI-1										
	BI-2	USINES-2				VMA	VMA 1410	1	203	BI-2		P-2	Salle méc. A-212		2-203-BI-2										
2-153-AI-5	BI-3	USINES-2				VMA	VMA 1410	1	203	BI-3		P-2	Salle méc. A-212		2-203-BI-3										
	AI-5	USINES-2	PV-151-1	Press.vélocité #1 A-151	Pa	VMA	VMA 1410	1	203	AI-5		P-2	Salle méc. A-212	4068-091B	2-203-AI-5									Air neuf #1 usine pilote A-151	
		USINES-2				VMA	VMA 1410					P-2	Salle méc. A-212											Alimentation 24VAC	
2-154-AI-1	AI-1	USINES-2	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	204	AI-1	AI1 AICM	P-2	Salle méc. A-212	4068-091B	2-204-AI-1						2 fils		Résistance 1000 ohms	VMA1	
		USINES-2				VMA	VMA 1410	1	204	AI-2		P-2	Salle méc. A-212		2-204-AI-2										
	BI-1	USINES-2				VMA	VMA 1410	1	204	BI-1		P-2	Salle méc. A-212		2-204-BI-1										
	BI-2	USINES-2				VMA	VMA 1410	1	204	BI-2		P-2	Salle méc. A-212		2-204-BI-2										
	BI-3	USINES-2				VMA	VMA 1410	1	204	BI-3		P-2	Salle méc. A-212		2-204-BI-3										
2-154-AI-5	AI-5	USINES-2	PV-151-2	Press.vélocité #2 A-151	Pa	VMA	VMA 1410	1	204	AI-5		P-2	Salle méc. A-212	4068-091B	2-204-AI-5									Air neuf #2 usine pilote A-151	

LISTE DE MATÉRIEL POUR L'ÉVACUATEUR VE-2

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
M1-1x1-x	MINUTERIE À REBOURS À RESSORT, 0 - 2 HEURES	KLT2H	GRASSLIN
SD-1x1-x	STATION DE DÉBIT, 350mm (14"), ALUMINIUM	AYR1400	PRESSO
SD_VE-2	STATION DE DÉBIT, 450mm (18"), ALUMINIUM	AYR1800	PRESSO
SEL-151-1.2	SÉLECTEUR C/A PALQUE EN ACIER INOXYDABLE	ZB2BD2	TELEMECANIQUE
	CORPS	ZB2BZ103	TELEMECANIQUE
	CONTACT NO	ZB2BE101	TELEMECANIQUE
TP-1x1-x / HP-1x1-x	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
	GARDE PROTECTEUR VERROUILLABLE, PLASTIQUE	GRD10A-606	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
V_E141-1 à 151-2	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC	M9206-AGA-2	JOHNSON CONTROLS
VMA-2-201 à 204	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VV_VE-2	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS	VLT6000C4.6	DANFOSS GRAHAM

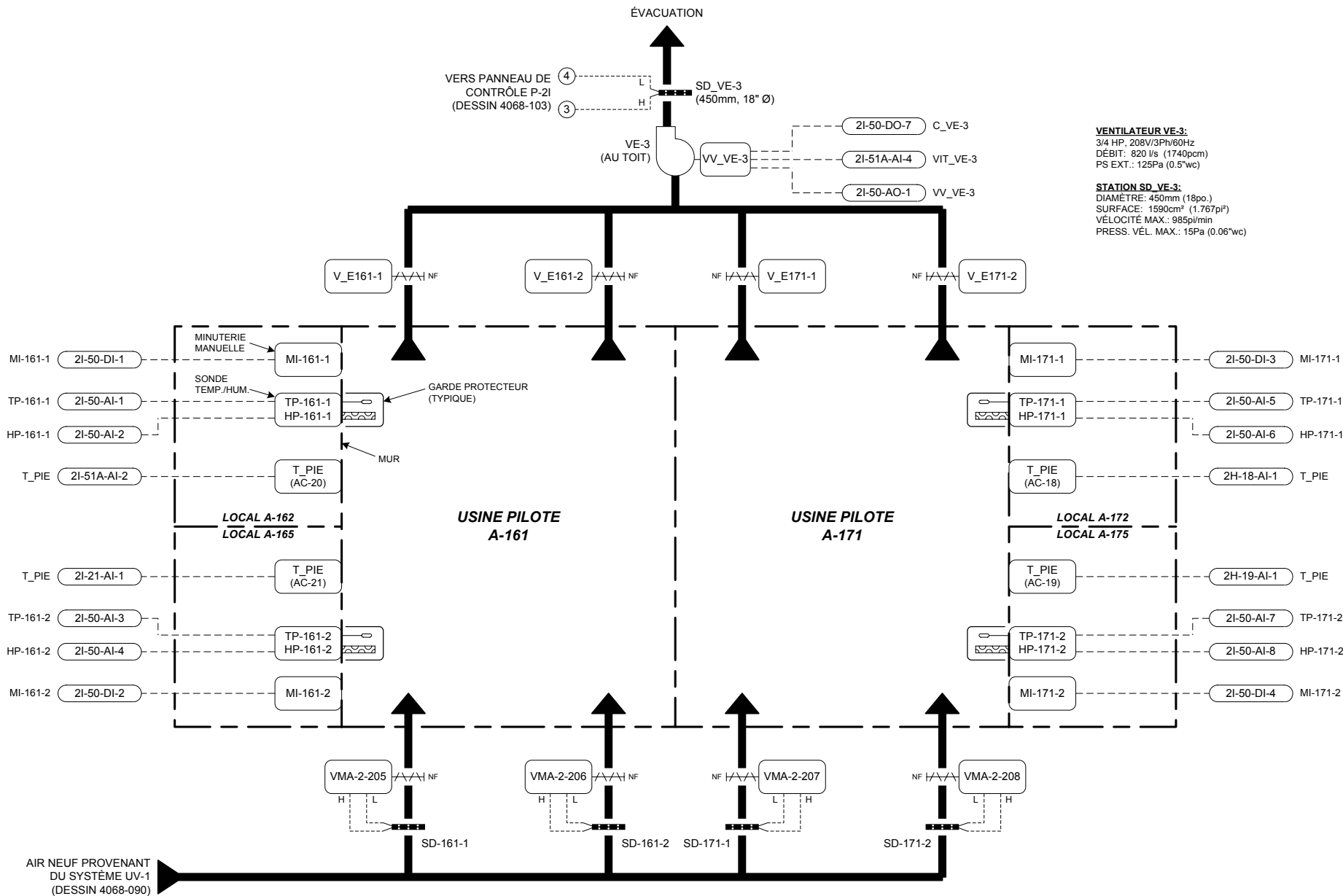
LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2I

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BA-1	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP.	PS-100-3	GREYSTONE
C_COMP, C_VA,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VE-2, C_VE-3	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VOL-4	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_VE-2, VE-3	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%	DPT2640-0R1D-A	JOHNSON CONTROLS
DX-2-45, DX-2-50	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, F-2, F-3	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-4	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2I	PANNEAU 36"x48"x9.5"	M-8100-3648	JOHNSON CONTROLS
TX-1, TX-2	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
TX-3	TRANSFORMATEUR 120V/24V/100VA	MO200A	MARCUS
TX-4	TRANSFORMATEUR 120V/24V/200VA	MO100A	MARCUS
UNT-2-21, 2-23	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
V_E1x1-x	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
XP-2-46A, 2-51A	MODULE D'EXPENSION 6AI/2AO	XP-9102-8303	JOHNSON CONTROLS
XP-2-46B, 2-51B	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



US-NE-B-04-01-02-03-04-05-06-07-08-09-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100

SYSTÈME VE-3 (USINES PILOTES A-161 ET A-171)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)



VENTILATEUR VE-3:
3/4 HP, 208V/3Ph/60Hz
DÉBIT: 820 l/s (1740pcm)
PS EXT.: 125Pa (0.5"wc)

STATION SD_VE-3:
DIAMÈTRE: 450mm (18po.)
SURFACE: 1590cm² (1.767p²)
VELOCITÉ MAX.: 985p/min
PRESS. VEL. MAX.: 15Pa (0.06"wc)

LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
MI-1x1-x	4	KLT 2H	MINUTERIE À REBOURS À RESSORT, 0 - 2 HEURES - GRASSLIN
SD-1x1-x	4	AYR1400	STATION DE DÉBIT, 350mm (14"), ALUMINIUM - PRESO
SD_VE-3	1	AYR1800	STATION DE DÉBIT, 450mm (18"), ALUMINIUM - PRESO
TP-1x1-x / HP-1x1-x	4	HE-67N2-0N00P	SONDE DE TEMP./ HUMIDITÉ, 1000 OHMS NI, 0-10VDC, 0-100%HR, ± 2%HR
T_PIE	4	GRD10A-606	GARDE PROTECTEUR VERROUILLABLE, PLASTIQUE
V_E161-1 à 171-2	4	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI
VMA-2-205 à 208	4	M9206-AGA-2	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VV_VE-3	4	AP-VMA1410-0	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
	1	VLT6000C4.6	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation est inopérant.
- Les volets d'air neuf (VMA-2-205 à 208) et d'évacuation (V_E161-1 à 171-2) sont fermés.

EN MARCHÉ:

- Sur une hausse d'humidité à l'une des sondes (HP-161-1, 161-2, 171-1 ou 171-2) ou sur un signal provenant d'une minuterie à rebours (MI-161-1, 161-2, 171-1 ou 171-2), la séquence suivante se produit :
 - Le volet d'évacuation correspondant (V_E1x1-x) ouvre.
 - Le régulateur de débit (VMA-2-20x) associé à cette zone module son volet d'air neuf afin de maintenir un débit de 150 l/s (320 pcm).
 - Le ventilateur d'évacuation (VE-3) démarre et sa vitesse est modulée à 25% du total du débit d'air évacué, soit 205 l/s (435 pcm) par l'intermédiaire du variateur (VV_VE-3). La station de débit (SD_VE-3) est utilisée pour maintenir le débit d'évacuation à son point de consigne.
- Lorsqu'il y a une demande dans une autre pièce, les séquences 1 et 2 sont répétées et le débit d'air évacué passe à 50% du total (410 l/s, 870 pcm).
- À la troisième demande, les séquences 1 et 2 se répètent et le débit d'air évacué augmente à 75% du total (615 l/s, 1305 pcm).
- Lorsque les 4 zones sont en demande, tous les volets d'évacuation sont ouverts, les débits d'air neuf sont maintenus à leur point de consigne et le débit d'air évacué est à son maximum (820 l/s, 1740 pcm).

VOIR DESSIN 4068-092B POUR LE DIAGRAMME ÉLECTRIQUE.

POUR LES DIAGRAMMES DES UNITÉS DE CLIMATISATION QUI DÉSERVENT LES LOCAUX A-162, 165, 172 ET 175, VOIR :
DESSIN 4068-079 : LOCAL A-172 - UNITÉ AC-18
DESSIN 4068-080 : LOCAL A-175 - UNITÉ AC-19
DESSIN 4068-081 : LOCAL A-162 - UNITÉ AC-20
DESSIN 4068-082 : LOCAL A-165 - UNITÉ AC-21

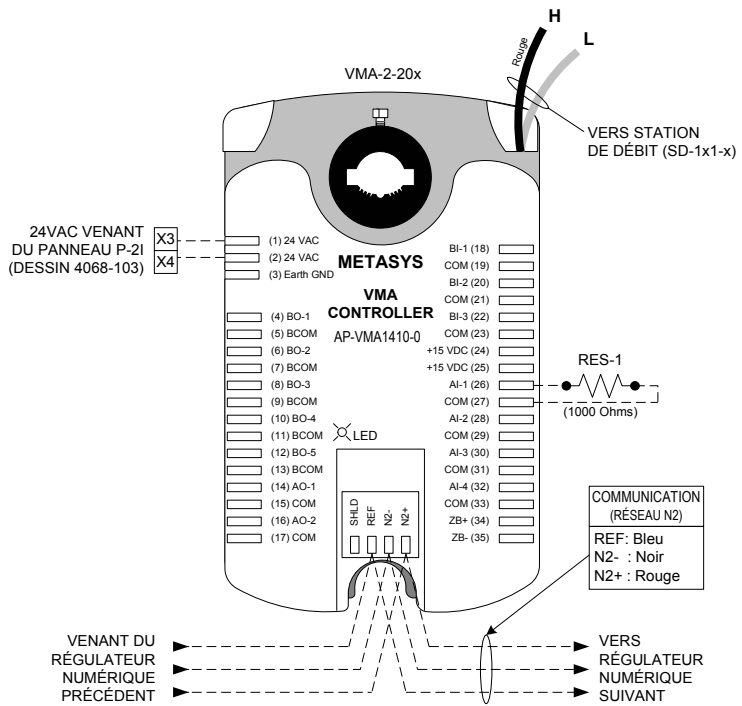
Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Système VE-3 Usines pilotes A-161 et A-171		2	POUR CONSTRUCTION		09/18/2001	D.B.
		1	POUR APPROBATION		06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVE		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/08/2001	PAR	DATE 05/08/2001	
Nom du Projet		Information Succursale		NUMÉRO CONTRAT		
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093 NUMÉRO DESSIN 4068-092A

SYSTÈME VE-3 (USINES PILOTES A-161 ET A-171)
(REZ-DE-CHAUSSÉE, PARTIE "A" EXISTANTE)

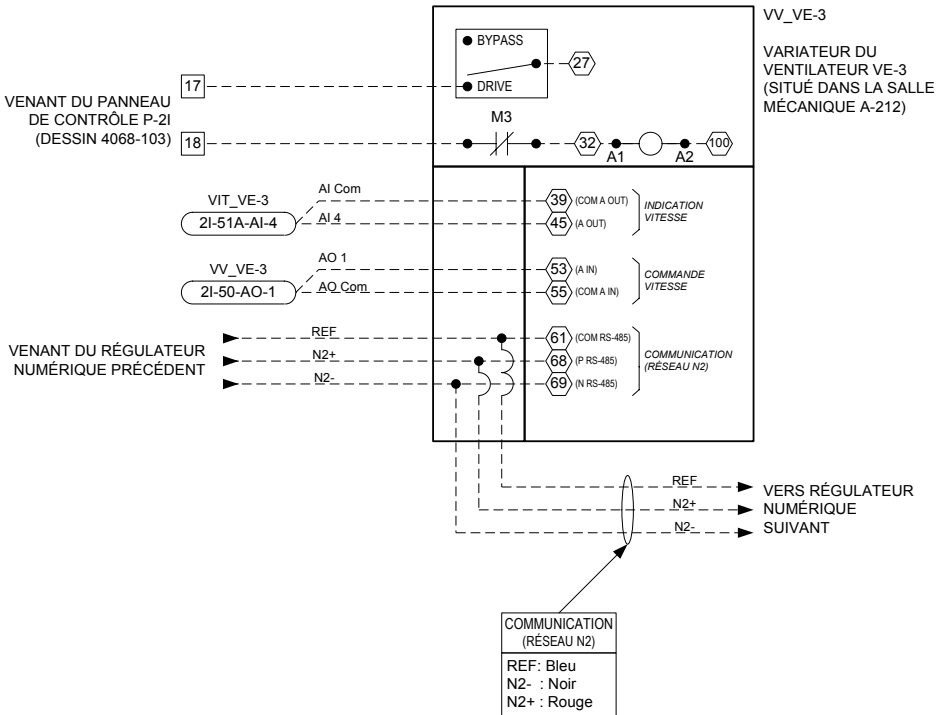
LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
V_E161-1 à 171-2	2	VOIR 4068-092A	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC
VMA-2-205 à 208	4	VOIR 4068-092A	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESSION DIFF. (DÉBIT)
VV_VE-2	1	VOIR 4068-092A	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS - DANFOSS GRAHAM

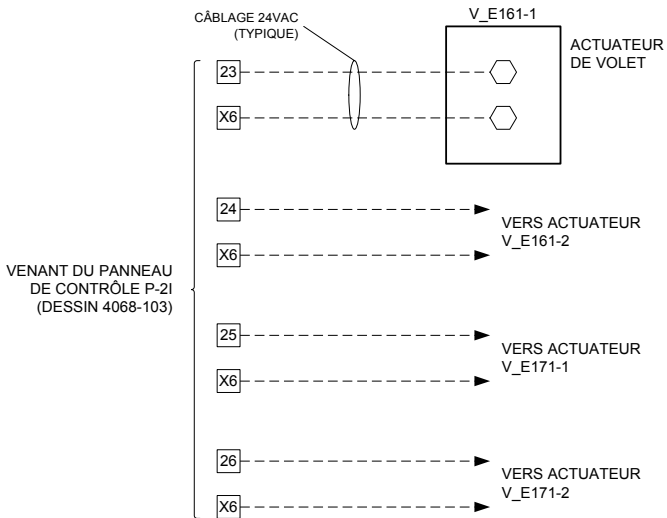
RACCORDEMENTS DES RÉGULATEURS (VMA-2-205 À 208)
(TYPIQUE POUR 4)



RACCORDEMENTS DU VARIATEUR DE VITESSE VV_VE-3

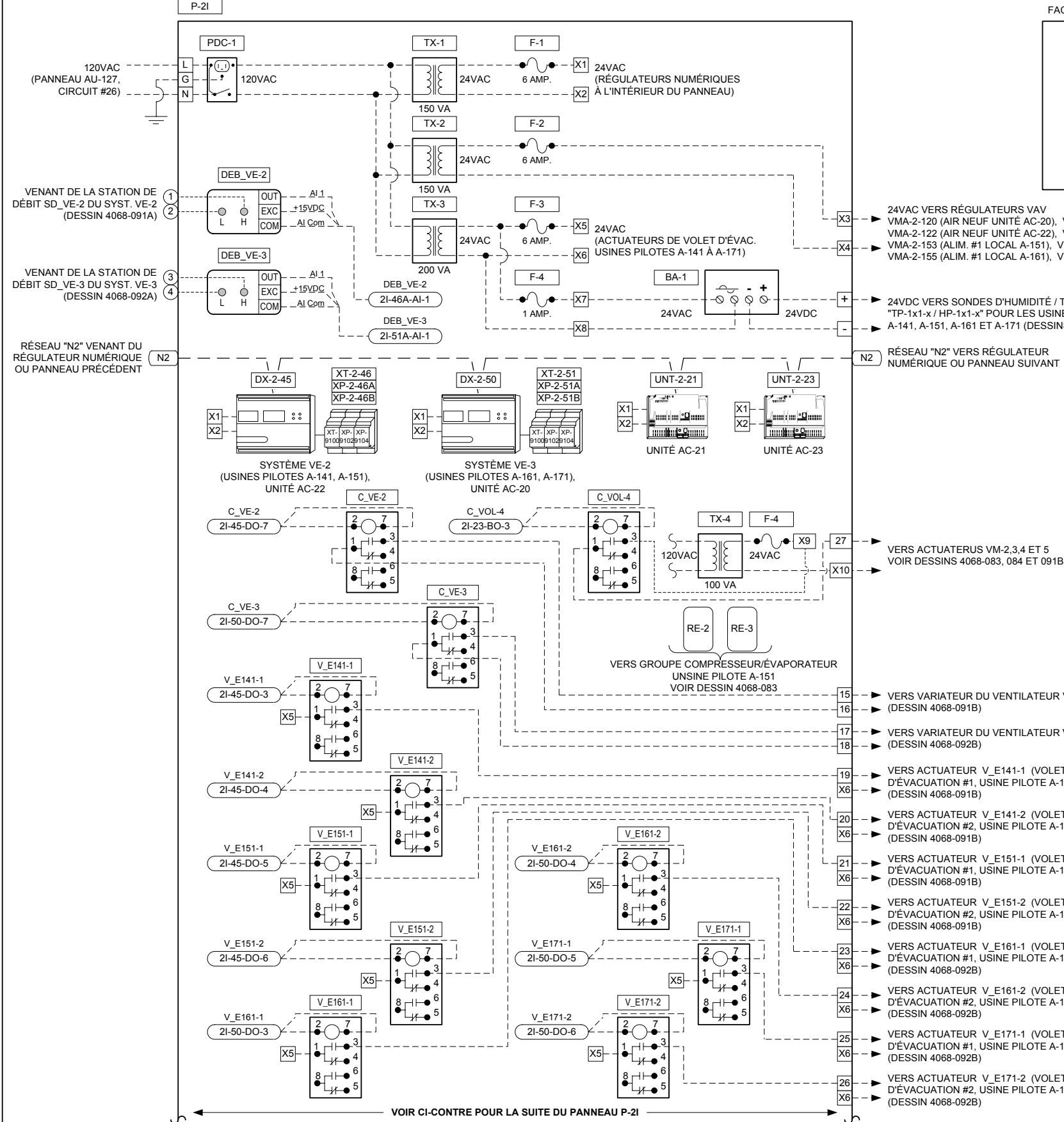


RACCORDEMENTS DES ACTUATEURS DE VOLET D'ÉVACUATION (V_E161-1 À 171-2)



Titre du Dessin		4	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
Système VE-3		3	BORNIERS VV_VE-3 AJOUTÉS		10/26/2001	D.B.
Usines pilotes A-161 et A-171		2	POUR CONSTRUCTION		09/18/2001	D.B.
		1	POUR APPROBATION		06/12/2001	D.B.
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	PAR	DATE	APPROUVE
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR D.B. DATE 05/08/2001	PAR	DATE 05/08/2001	
Nom du Projet		Information Succursale		NUMÉRO CONTRAT		
CRDA ST-HYACINTHE		Johnson Controls Ltée		1096-0093		
Projet d'Innovation Technologique		355, boul. Montpellier		NUMÉRO DESSIN		
3600, boul. Casavant		St-Laurent, Qc, H4N 2G6		4068-092B		
St-Hyacinthe (Québec)		Tél: (514) 747-2580				
		Fax: (514) 747-9562				

PANNEAU DE CONTRÔLE P-2I



FACADE DU PANNEAU

1

LISTE DES PLAQUETTES:

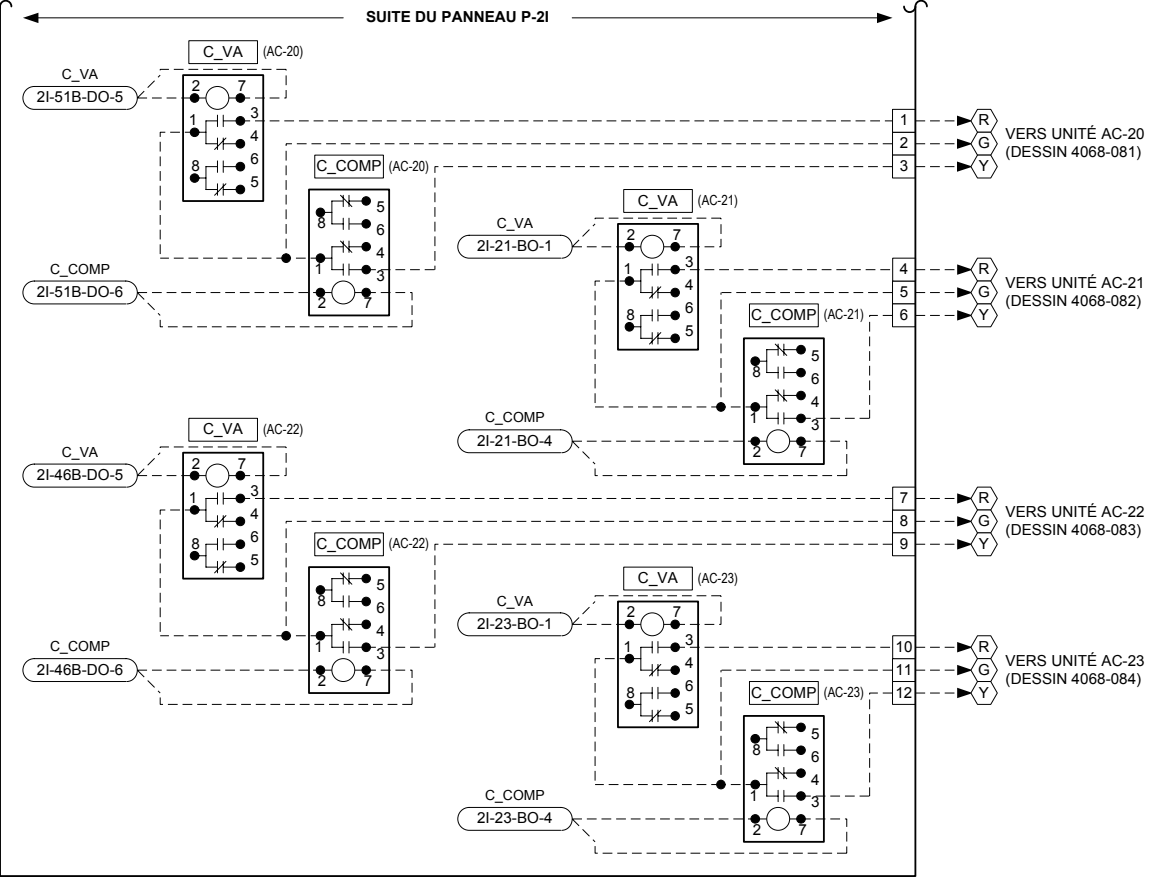
1-

PANNEAU P-2I

LISTE DE MATÉRIEL

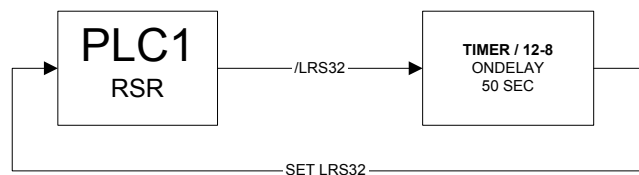
IDENT.	QTÉ	MODÈLE	DESCRIPTION
BA-1	1	PS-100-3	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP. - GREYSTONE
C_COMP, C_VA, C_VE-2, C_VE-3,	10	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
C_VOL-4	10	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
DEB_VE-2, VE-3	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
	2	DPT2640-0R1D-A	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%
DX-2-45, 2-50	2	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	2	DX-9100-8990	BASE DE MONTAGE
	2	DX-9100-8991	PROTÈGE BORNIER
F-1, F-2, F-3	3	GMA-6	FUSIBLE 6 AMP. - BUSS
	3	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-4	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2I	1	M-8100-3648	PANNEAU 36"x48"x9.5"
TX-1, TX-2	2	MO150A	TRANSFORMATEUR 120V/24V/150VA - MARCUS
TX-3	1	MO200A	TRANSFORMATEUR 120V/24V/200VA - MARCUS
UNT-2-21, 2-23	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
V_E1x1-x	8	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	8	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
TX-4	1	MO-100	TRANSFO., 120/24Vac., 100VA
XP-2-46A, 2-51A	2	XP-9102-8304	MODULE D'EXPANSION 6AI/2AO
XP-2-46B, 2-51B	2	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-46, 2-51	2	XT-9100-8304	MODULE D'EXTENSION

SUITE DU PANNEAU P-2I

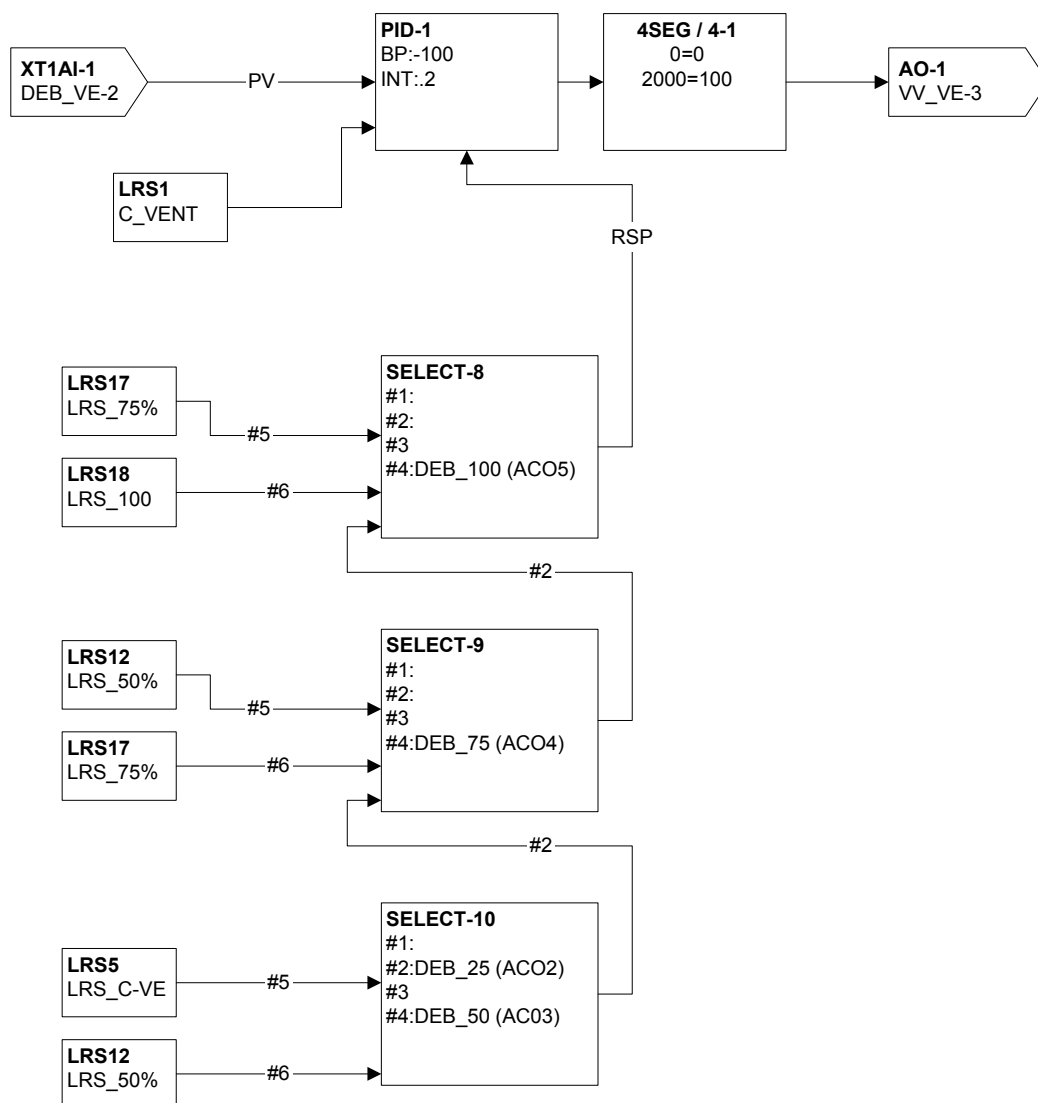


Titre du Dessin		4096-0019	5	TEL QUE CONSTRUIT	C.D.	04/02/12	O.P.
Panneau P-2I		4096-0019	4	AJOUT 4°C	C.D.	03/11/21	O.P.
Salle mécanique A-212			3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
(Systèmes VE-2, VE-3 - usines pilotes, unités AC-20, 21, 22, 23)							
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ		APPROUVÉ		
J.-C. Rouillon	S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE		JOHNSON CONTROLS		Johnson Controls Ltée		1096-0093	
Projet d'Innovation Technologique		Groupe de la régulation		355, boul. Montpellier		NUMÉRO DESSIN	
3600, boul. Casavant				St-Laurent, Qc, H4N 2G6		4068-103	
St-Hyacinthe (Québec)				Tél: (514) 747-2580			
				Fax: (514) 747-9562			

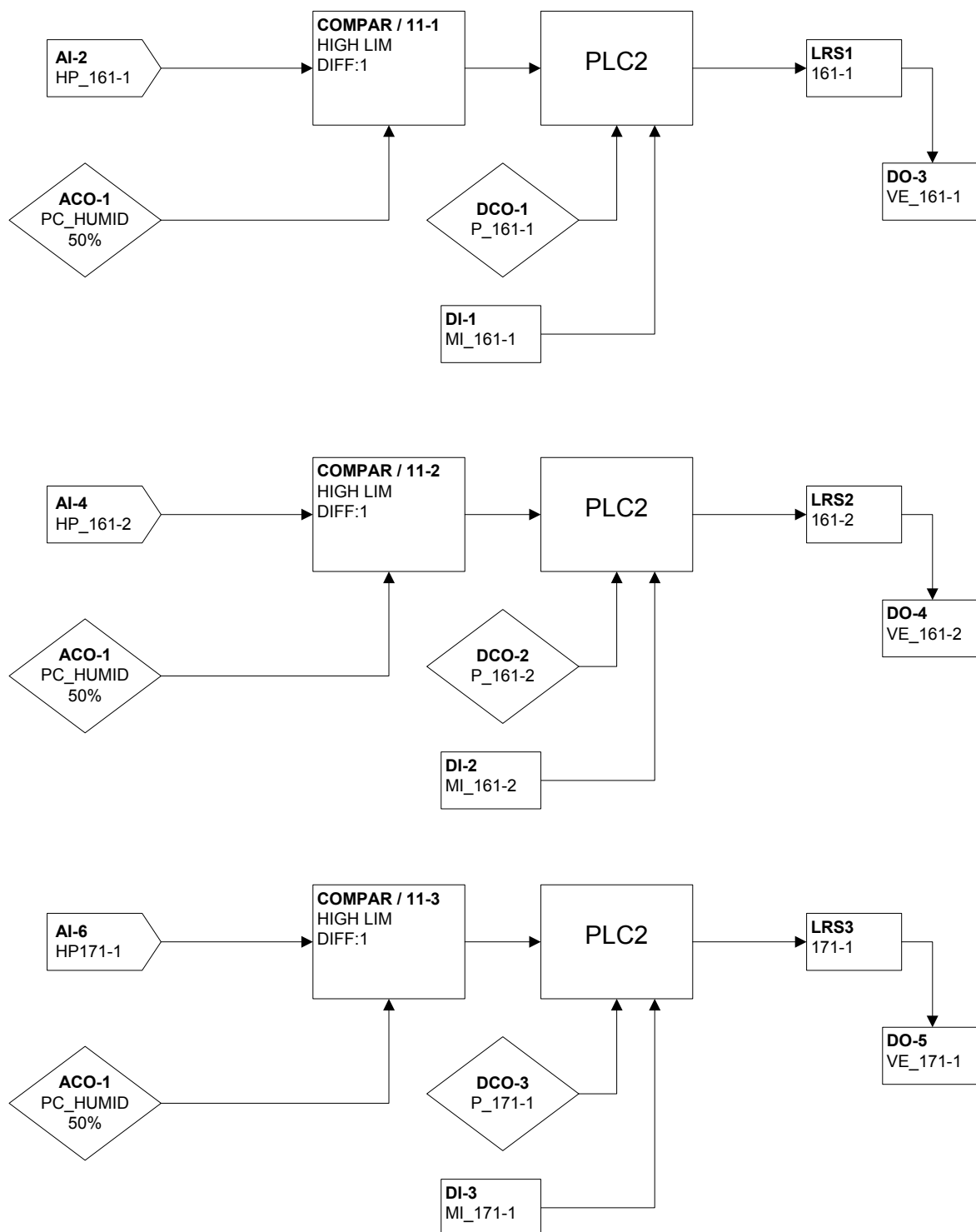
REDEMARRAGE APRES PANNE (DX-2-50)



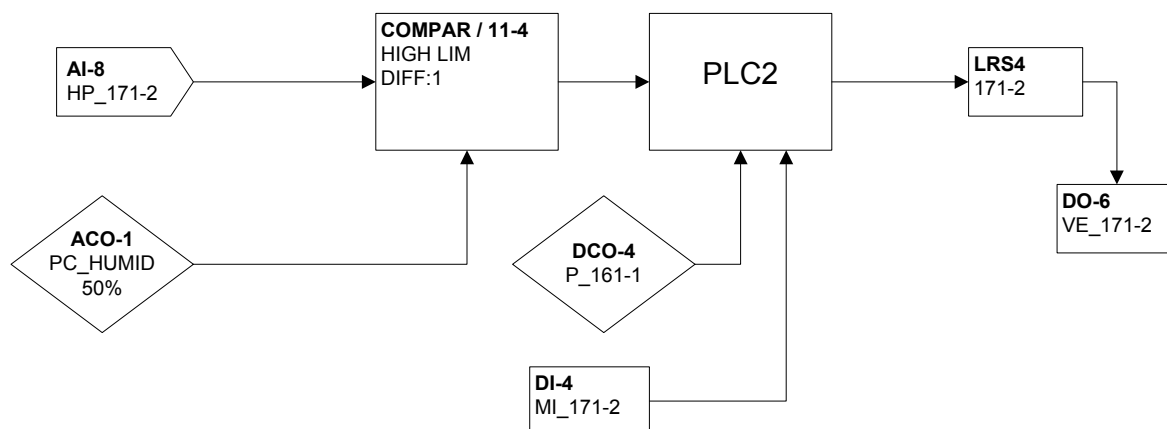
COMMANDE VENTILATEUR EVACUATION



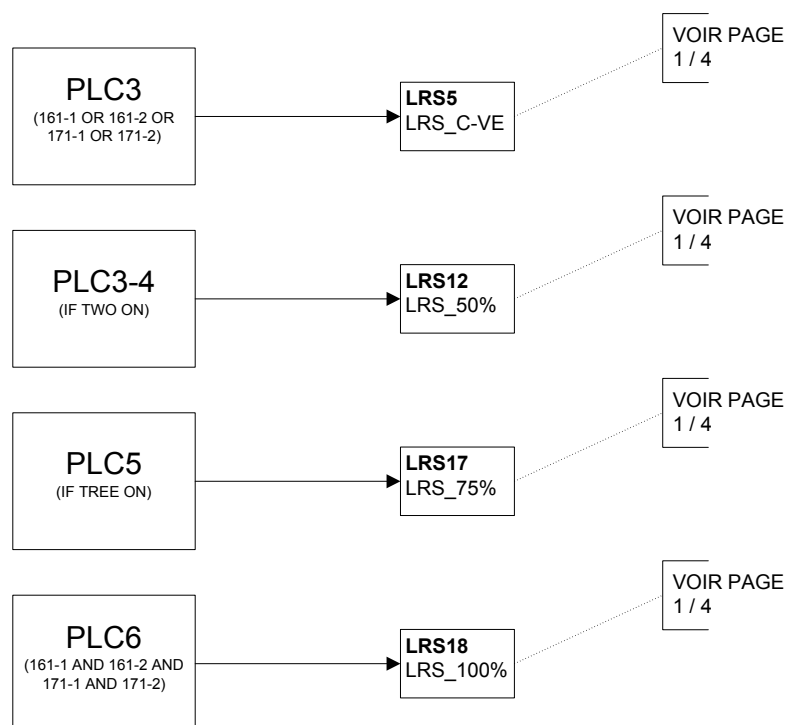
VITESSE VENTILATEUR EVACUATION



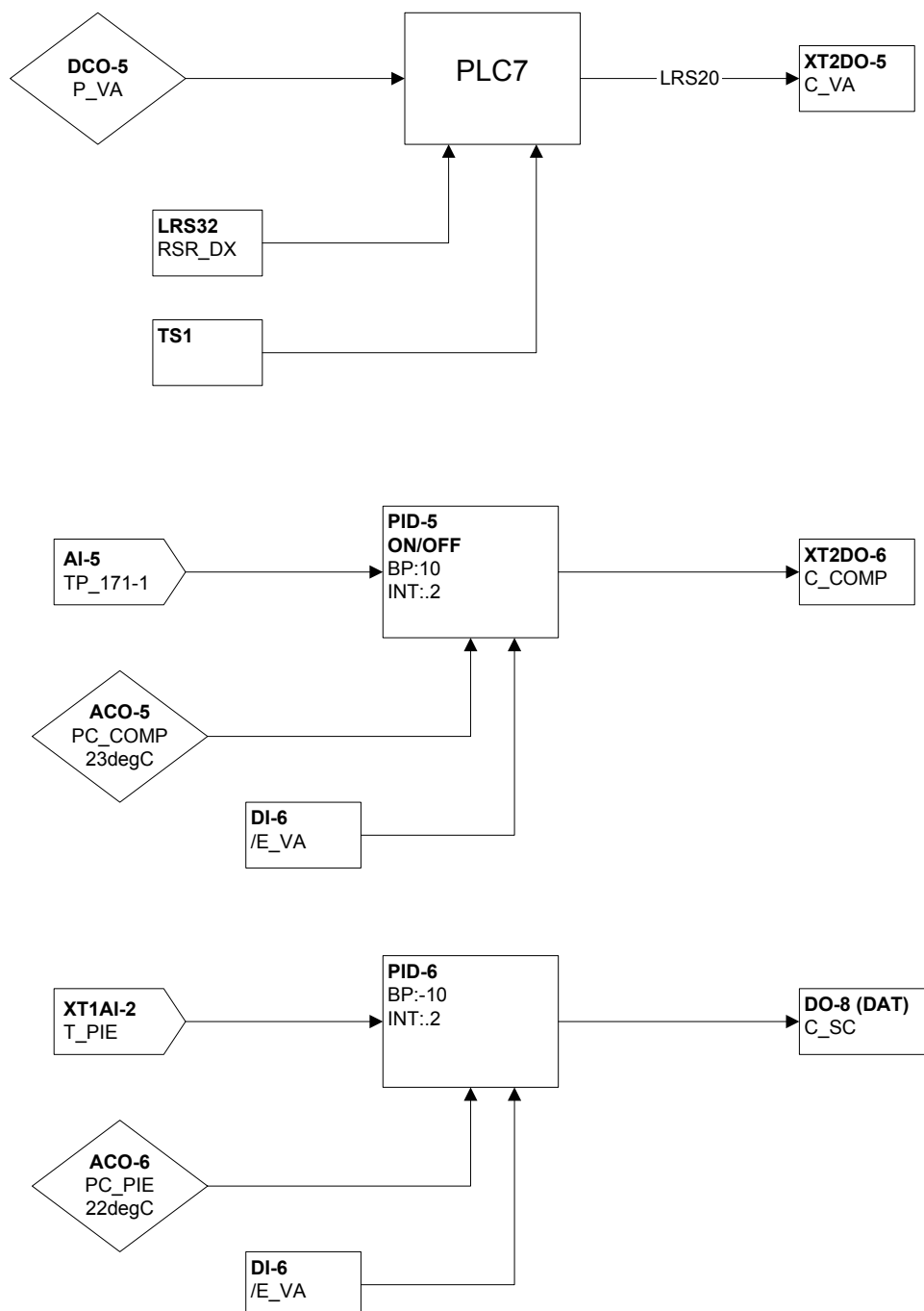
VITESSE VENTILATEUR EVACUATION (SUITE)



LOGIQUE OUVERTURE VOLETS



CONTROLE UNITE CLIMATISATION AC-20



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 50
Numéro du dessin : 4068-91
Système : Système VE-3 A-161 A-171

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP. PIECE A-161 #1		
2	HUMIDITE PIECE A-161 #1		
3	TEMP. PIECE A-161 #2		
4	HUMIDITE PIECE A-161 #2		
5	TEMP. PIECE A-171 #1		
6	HUMIDITE PIECE A-171 #1		
7	TEMP. PIECE A-171 #2		
8	HUMIDITE PIECE A-171 #2		

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Préscaler
1	MINUTERIE PIECE A-161 #1	Off =arrêt / On marche	1
2	MINUTERIE PIECE A-161 #2	Off =arrêt / On marche	1
3	MINUTERIE PIECE A-171 #1	Off =arrêt / On marche	1
4	MINUTERIE PIECE A-171 #2	Off =arrêt / On marche	1
5			
6	ETAT VENT. ALIMENTATION	Off =arrêt / On marche	1
7	ETAT FILTRES	Off = normal / On = sale	1
8	ETAT FILTRES CHARBON	Off = normal / On = sale	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	VARIATEUR VENT EVAC VE2	Z1	0% = Min. / 100% = Max.
2			
3	VOLET EVAC PIECE A-161 #1	LRS1	Off = ferme / On = ouvert
4	VOLET EVAC PIECE A-161 #2	LRS2	Off = ferme / On = ouvert
5	VOLET EVAC PIECE A-171 #1	LRS3	Off = ferme / On = ouvert
6	VOLET EVAC PIECE A-171 #2	LRS4	Off = ferme / On = ouvert
7	COMM VENT EVAC VE-3	DCO5	Off = arrêt / On = depart
8	COMM SERPENTIN CHAUFF.	Z6	Off = arrêt / On = depart
9			
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	Select - 4	XT1X1 Debit VE-3	0 = Min. / 2000 = Max.
2	ACO5	X5 Temp. 171-1	0%= Min. / 100%= Max.
3	ACO6	XT1X2 Temp. piece 162	0%= Min. / 100%= Max.
4	4 Segment		
5			
6			
7			
8	Select		
9	Select		
10	Select		
11	Comparateur		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	-100	.2	
2	10	.2	
3	-10	.2	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	50%	PC Humidité
2	435 cfm	Debit evacuation 25%
3	870 cfm	Debit evacuation 50%
4	1305 cfm	Debit evacuation 75%
5	23 deg C	PC Compresseur refrigeration
6	22 deg C	PC Chauffage piece 162
7	1740 cfm	Debit evacuation 100%
8		

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission volet 161-1
2	ON	Permission volet 161-2
3	ON	Permission volet 171-1
4	ON	Permission volet 171-2
5	ON	Permission ventilateur alimentation
6		
7		
8		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068-91
Système : Système VE-3 A-161 A-171
Adresse du NCM : 2
Adresse du DX-9100 : 50
Adresse du XT : 51

Numero du XP : 1

Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
11	DEBIT D'EVACUATION		
12	TEMP. PIECE		
13	TEMP. ALIMENTATION		
14	INDICATION VITESSE VE-3		
15			
16			

Sorties Analogiques : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
17			
18			

Numero du XP : 2

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point		Précaler
19	ALARME UNITE AC	Off = arrêt / On = marche	1
20			
21			
22			

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
23	COMM A/D VENT ALIM		Off = arrêt / On = marche
24	COMM A/D COMPRESSEUR		Off = arrêt / On = marche
25			
26			

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-207.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:

Pressure independent

Actuator for the VAV box damper:

VMA integrated actuator

Fan type and output type:

No fan

Exhaust box actuator type:

No exhaust box

Heating configuration:

None (cooling only)

Thermostat type:

No remote adjustment

Button for occupancy mode, and its action when pressed:

No occupancy button

Sensor for occupancy mode, and its action:

No occupancy sensor

Initiate warmup mode if supply air is much warmer than zone temperature?

No

Binary input for Low Limit mode?

No

Summer/winter compensation of zone setpt based on outdoor air temp:

None

Lighting control:

No lighting control

Separate control loop:

None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)

Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.025896162

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	320
ADF	164	Occupied Clg Min	OCCCMIN	320
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	1.4
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	320

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-206.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.02281639

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	320
ADF	164	Occupied Clg Min	OCCCMIN	320
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	320

VAV Box Mode

ADI

67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-205.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.02205959

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	320
ADF	164	Occupied Clg Min	OCCCMIN	320
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	0

VAV Box Mode
ADI 67

Present Value

BOXMODE

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\VMA-208.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : VMA
Device Name : VMA1410
Application Group : VAV Applications
Application Name : VMA Single Duct
Configuration History:

QUESTION AND ANSWER SESSION

Select the single duct VAV box control strategy:
 Pressure independent
Actuator for the VAV box damper:
 VMA integrated actuator
Fan type and output type:
 No fan
Exhaust box actuator type:
 No exhaust box
Heating configuration:
 None (cooling only)
Thermostat type:
 No remote adjustment
Button for occupancy mode, and its action when pressed:
 No occupancy button
Sensor for occupancy mode, and its action:
 No occupancy sensor
Initiate warmup mode if supply air is much warmer than zone temperature?
 No
Binary input for Low Limit mode?
 No
Summer/winter compensation of zone setpt based on outdoor air temp:
 None
Lighting control:
 No lighting control
Separate control loop:
 None

SIDELOOP DEFINITION

(NONE)

ANALOG INPUTS (* Denotes MONITOR ONLY Points)
Point Point

Type	Address	Long Name	Short Name	Value
Zone Temperature				
AI	1	Present Value	ZN-T	*****
ADI	20	Reliability	ZTREL	*****
Supply Delta P				
AI	5	Present Value	S-VP	*****
ADI	23	Reliability	DPREL	*****
ADF	39	Offset	DPOFFSET	0.027023867

BINARY INPUTS (* Denotes MONITOR ONLY Points)

(NONE)

ANALOG OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

BINARY OUTPUTS (* Denotes MONITOR ONLY Points)

(NONE)

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
VAV Box				
XXX	XXX	Flush Position	FLUSHPOS	100
XXX	XXX	Temp Loop Failsoft	TLFSOFT	0
XXX	XXX	Calibrate Supply Dpr	CALSPLYD	*****
VAV Box - Contrllr Diagnostics				
*ADF	2	Controller Run Time	CTLRRUNT	*****
*ADF	3	Actuator Run Time	DMPRUNT	*****
*ADF	4	Actuator Duty Cycle	ACTDTCYC	*****
VAV Box - Temp Diagnostics				
*XXX	XXX	Temp Diag Enable	TDIAGENA	*****
ADF	6	MovAvg ZT Err	TMPERROR	*****
ADF	7	MovAvg ABS ZT Err	TMPERABS	*****
*BD	3	Inadequate Cooling	NOCOOL	*****
VAV Box - Flow Diagnostics				
*BD	55	Starved Box	STARVBOX	*****
*XXX	XXX	Flow Diag Enable	FDIAGENA	*****
ADF	8	MovAvg Flow Err	FLOERR	*****
ADF	9	MovAvg ABS Flow Err	FLOERABS	*****
VAV Box - Mode Request				
BD	167	Water System Flush	WTRFLUSH	0

VAV Box - Temperature Setpoint

*ADF	13	Actual Cooling Setpt	ACTCLGSP	*****
ADF	198	Low Limit Temp Setpt	LLTSTPT	4
ADF	197	Common Setpoint	COMMONSP	21
ADF	189	Cooling Setpoint	CSP	0
VAV Box - Indoor Air Quality				
*XXX	XXX	IAQ Min Flow	IAQMIN	*****
ADF	80	OA Fraction	OAFRACTN	*****
ADF	185	Occupancy Level	OCCLEVEL	0
XXX	XXX	Ventilation Reqmnt	VNTRQMNT	34
Occupancy Mode				
ADI	165	Input	OCCINPUT	2
ADI	68	Present Value	OCCPRESV	*****
Occupancy Mode Outpt - Temp Setpoint Bias				
*ADF	15	Actual Cooling Bias	CLGBIAS	*****
ADF	190	Occupied Clg Bias	OCCCBIAS	1
ADF	191	Standby Clg Bias	STBYCBIA	3
ADF	192	Unoccupied Clg Bias	UNOCCBIA	4
Occupancy Mode Outpt - Flow Setpoint				
*XXX	XXX	Cooling Minimum Flow	CMINFLO	*****
ADF	163	Cooling Max Flow	CMAXFLO	320
ADF	164	Occupied Clg Min	OCCCMIN	320
ADF	166	Unoccupied Clg Min	UNCCMIN	0
ADF	200	Warmup Min Flow	WMUPMIN	170
Cooling PID				
ADF	70	Present Value	CPIDPV	*****
ADF	30	Proportional Band	CPIDPB	5
ADF	31	Integral Time	CPIDIT	300
Autocalibration				
XXX	XXX	Autocal Period	CALPD	336
*XXX	XXX	Autocal Time	CALTIME	*****
BD	168	Autocal Req	ACREQ	*****
*XXX	XXX	Autocal Duration	ACDUR	*****
*BD	66	Autocal Active	ACACT	*****
Flow Control.Actuator Diagnostics				
ADF	46	MovAvg Sply Reversal	SPLYREVS	*****
ADF	47	MovAvg Sply Duty Cyc	SPLYDTCY	*****
Flow Control.Damper Command				
ADF	152	Present Value	DPR-C	*****
ADI	19	Reliability	DMPREL	*****
*ADF	54	Output	DMPRPOS	*****
ADF	36	Reversals	DPRVRSL	*****
Flow Control.Flow Controller				
ADF	24	Area	FLOWAREA	0.44
ADF	25	Pickup Gain	PKUPGAIN	1
ADF	26	Flow Coefficient	FLOWCOEF	4005
ADF	58	Process Variable	SUPFLOW	*****
ADF	150	Setpoint	SUPFLOSP	320

VAV Box Mode
ADI 67

Present Value

BOXMODE

ÉVACUATEUR VE-3 (USINES PILOTES A-161 ET A-171)

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation est inopérant.
- Les volets d'air neuf (VMA-2-205 à 208) et d'évacuation (V_E161-1 à 171-2) sont fermés.

EN MARCHE:

- Sur une hausse d'humidité à l'une des sondes (HP-161-1, 161-2, 171-1 ou 171-2) ou sur un signal provenant d'une minuterie à rebours (MI-161-1, 161-2, 171-1 ou 171-2), la séquence suivante se produit :
 - 1- Le volet d'évacuation correspondant (V_E1x1-x) ouvre.
 - 2- Le régulateur de débit (VMA-2-20x) associé à cette zone module son volet d'air neuf afin de maintenir un débit de 150 l/s (320 pcm).
 - 3- Le ventilateur d'évacuation (VE-3) démarre et sa vitesse est modulée à 25% du total du débit d'air évacué, soit 205 l/s (435 pcm) par l'intermédiaire du variateur (VV_VE-3). La station de débit (SD_VE-3) est utilisée pour maintenir le débit d'évacuation à son point de consigne.
- Lorsqu'il y a une demande dans une autre pièce, les séquences 1 et 2 sont répétées et le débit d'air évacué passe à 50% du total (410 l/s, 870 pcm).
- À la troisième demande, les séquences 1 et 2 se répètent et le débit d'air évacué augmente à 75% du total (615 l/s, 1305 pcm).
- Lorsque les 4 zones sont en demande, tous les volets d'évacuation sont ouverts, les débits d'air neuf sont maintenus à leur point de consigne et le débit d'air évacué est à son maximum (820 l/s, 1740 pcm).

Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinat° n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube	Terminaisons entrée	Appareil	Détail de réf.	Commentaires	
							DX9100	DX 9100	1	50		P-2I	Salle méc. A-212											Alimentation 24VAC	
							DX9100	DX 9100																Tronc N2	
2I-50-DO-3	DO-3	USINES-3	V. E161-1	Volet évac.pèce A-141#1	Fermé	Ouvvert	DX9100	DX 9100	1	50	DO-3	DO3.COM	P-2I	Salle méc. A-212	4068-092B	2I-50-DO-3	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2I-50-DO-4	DO-4	USINES-3	V. E161-2	Volet évac.pèce A-141#2	Fermé	Ouvvert	DX9100	DX 9100	1	50	DO-4	DO4.COM	P-2I	Salle méc. A-212	4068-092B	2I-50-DO-4	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2I-50-DO-5	DO-5	USINES-3	V. E171-1	Volet évac.pèce A-151#1	Fermé	Ouvvert	DX9100	DX 9100	1	50	DO-5	DO5.COM	P-2I	Salle méc. A-212	4068-092B	2I-50-DO-5	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2I-50-DO-6	DO-6	USINES-3	V. E171-2	Volet évac.pèce A-151#2	Fermé	Ouvvert	DX9100	DX 9100	1	50	DO-6	DO6.COM	P-2I	Salle méc. A-212	4068-092B	2I-50-DO-6	2/18	2,7	RELAIS	1,3	2/18	3,1	M9206-AGx "ON-OFF"	DX64	
2I-50-DO-7	DO-7	USINES-3	C. VE-3	Comm.vent.évac. VE-3	Arrêt	Marche	DX9100	DX 9100	1	50	DO-7	DO7.COM	P-2I	Salle méc. A-212	4068-092B	2I-50-DO-7	2/18	(Bobine) +,-	H-735	COM.NO	2/14	Voir détail déma	Démarrneur (H-735 mar/arr)	DX49	
2I-50-DO-8	DO-8	AC-20	C. SC	Comm.serpentin chauffage	Arrêt	Marche	DX9100	DX 9100	1	50	DO-8	DO8.COM	P-2I	Salle méc. A-212	4068-081	2I-50-DO-8				2/18	Selon dispositif	SOR 24 V c.a.	DX51	Serpentin SE-13	
2I-50-DI-1	DI-1	USINES-3	MI-161-1	Minuterie pièce A-141 #1	Inoccupé	Occupé	DX9100	DX 9100	1	50	DI-1	DI1.COM	P-2I	Salle méc. A-212	4068-092A	2I-50-DI-1				2/18	Selon dispositif	Contact (NO)	DX70		
2I-50-DI-2	DI-2	USINES-3	MI-161-2	Minuterie pièce A-141 #2	Inoccupé	Occupé	DX9100	DX 9100	1	50	DI-2	DI2.COM	P-2I	Salle méc. A-212	4068-092A	2I-50-DI-2				2/18	Selon dispositif	Contact (NO)	DX70		
2I-50-DI-3	DI-3	USINES-3	MI-171-1	Minuterie pièce A-151 #1	Inoccupé	Occupé	DX9100	DX 9100	1	50	DI-3	DI3.COM	P-2I	Salle méc. A-212	4068-092A	2I-50-DI-3				2/18	Selon dispositif	Contact (NO)	DX70		
2I-50-DI-4	DI-4	USINES-3	MI-171-2	Minuterie pièce A-151 #2	Inoccupé	Occupé	DX9100	DX 9100	1	50	DI-4	DI4.COM	P-2I	Salle méc. A-212	4068-092A	2I-50-DI-4				2/18	Selon dispositif	Contact (NO)	DX70		
2I-50-DI-5	DI-5						DX9100	DX 9100	1	50	DI-5		P-2I	Salle méc. A-212	4068-092B	2I-50-DI-5									
2I-50-DI-6	DI-6	AC-20	E. VA	État vent.alimentation	Arrêt	Marche	DX9100	DX 9100	1	50	DI-6	DI6.COM	P-2I	Salle méc. A-212	4068-081	2I-50-DI-6				2/18	NO.COM	H-708	DX49		
2I-50-DI-7	DI-7	AC-20	E. FILT	État des filtres	Normal	Sales	DX9100	DX 9100	1	50	DI-7	DI7.COM	P-2I	Salle méc. A-212	4068-081	2I-50-DI-7				2/18	Y.R	P32 (NO)	DX70		
2I-50-DI-8	DI-8	AC-20	E. FILT. C	État des filtres charbon	Normal	Sales	DX9100	DX 9100	1	50	DI-8	DI8.COM	P-2I	Salle méc. A-212	4068-081	2I-50-DI-8				2/18	Y.R	P32 (NO)	DX70		
2I-50-AI-1	AI-1	USINES-3	ITP-161-1	Temp.pèce A-141 #1			DX9100	DX 9100	1	50	AI-1	AI1.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-1				2/18	2 fils	TE	DX3		
2I-50-AI-2	AI-2	USINES-3	HP-161-1	Humidité pièce A-141 #1	%HR		DX9100	DX 9100	1	50	AI-2	AI2.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-2				2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)	DX6		
2I-50-AI-3	AI-3	USINES-3	ITP-161-2	Temp.pèce A-141 #2	%C		DX9100	DX 9100	1	50	AI-3	AI3.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-3				2/18	2 fils	TE	DX3		
2I-50-AI-4	AI-4	USINES-3	HP-161-2	Humidité pièce A-141 #2	%HR		DX9100	DX 9100	1	50	AI-4	AI4.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-4				2/18	Selon dispositif	ENT 0-10 V ALIM EXT (HR)	DX6		
2I-50-AI-5	AI-5	USINES-3	ITP-171-1	Temp.pèce A-151 #1	%C		DX9100	DX 9100	1	50	AI-5	AI5.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-5				2/18	2 fils	TE	DX3		
2I-50-AI-6	AI-6	USINES-3	HP-171-1	Humidité pièce A-151 #1	%HR		DX9100	DX 9100	1	50	AI-6	AI6.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-6				2/18	Selon dispositi	ENT 0-10 V ALIM EXT (HR)	DX6		
2I-50-AI-7	AI-7	USINES-3	ITP-171-2	Temp.pèce A-151 #2	%C		DX9100	DX 9100	1	50	AI-7	AI7.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-7				2/18	2 fils	TE	DX3		
2I-50-AI-8	AI-8	USINES-3	HP-171-2	Humidité pièce A-151 #2	%HR		DX9100	DX 9100	1	50	AI-8	AI8.AICOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AI-8				2/18	Selon dispositi	ENT 0-10 V ALIM EXT (HR)	DX6		
2I-50-AO-1	AO-1	USINES-3	VV. VE-3	Variateur vent.évac.VE-3	%		DX9100	DX 9100	1	50	AO-1	AO1.AOCOM	P-2I	Salle méc. A-212	4068-092A	2I-50-AO-1				2/18	Selon dispositif	SORTIE 0-10 V	DX22		
AO-2							DX9100	DX 9100	1	50	AO-2		P-2I	Salle méc. A-212		2I-50-AO-2									
AO-9							DX9100	DX 9100	1	50	AO-9		P-2I	Salle méc. A-212		2I-50-AO-9									
AO-10							DX9100	DX 9100	1	50	AO-10		P-2I	Salle méc. A-212		2I-50-AO-10									
AO-11							DX9100	DX 9100	1	50	AO-11		P-2I	Salle méc. A-212		2I-50-AO-11									
AO-12							DX9100	DX 9100	1	50	AO-12		P-2I	Salle méc. A-212		2I-50-AO-12									
AO-13							DX9100	DX 9100	1	50	AO-13		P-2I	Salle méc. A-212		2I-50-AO-13									
AO-14							DX9100	DX 9100	1	50	AO-14		P-2I	Salle méc. A-212		2I-50-AO-14									
							XT9100	XT (Expansion Module)					P-2I	Salle méc. A-212										Alimentation 24VAC	
																								Tronc N2	
2I-51A-AI-1	XT1AI1	USINES-3	DEB. VE-3	Débit évacuation	Is		XP9102	XP 9102 (6A)	1	51	AI-1	AI1.AICOM,+15V	P-2I	Salle méc. A-212	4068-099	2I-51A-AI-1				3/18	OUT.COM,EXC	DPT-2640 (0-5 VDC)	XP9		
2I-51A-AI-2	XT1AI2	AC-20	T. PIE	Temp.pèce	%C		XP9102	XP 9102 (6A)	1	51	AI-2	AI2.AICOM	P-2I	Salle méc. A-212	4068-081	2I-51A-AI-2				2/18	2 fils	TE	XP3	Sonde située dans local A-162	
2I-51A-AI-3	XT1AI3	AC-20	T. ALI	Temp.alimentation	%C		XP9102	XP 9102 (6A)	1	51	AI-3	AI3.AICOM	P-2I	Salle méc. A-212	4068-081	2I-51A-AI-3				2/18	2 fils	TE (Gaine)	XP3		
2I-51A-AI-4	XT1AI4	USINES-3	VIT. VE-3	Indication vitesse VE-3	%		XP9102	XP 9102 (6A)	1	51	AI-4	AI4.AICOM	P-2I	Salle méc. A-212		2I-51A-AI-4				2/18	Device depende	ENT 0-20 mA ALIM EXT	XP2		
XT1AI5							XP9102	XP 9102 (6A)	1	51	AI-5		P-2I	Salle méc. A-212		2I-51A-AI-5									
XT1AI6							XP9102	XP 9102 (6A)	1	51	AI-6		P-2I	Salle méc. A-212		2I-51A-AI-6									
XT1AO7							XP9102	XP 9102 (6A)	1	51	AO-7		P-2I	Salle méc. A-212		2I-51A-AO-7									
XT1AO8							XP9102	XP 9102 (6A)	1	51	AO-8		P-2I	Salle méc. A-212		2I-51A-AO-8									
2I-51B-DI-1	XT2DI1	AC-20	ALM. AC	Alarme unité AC	Normal	Alarme	XP9104	XP 9104 (4C)	1	51	DI-1	DI1.COM	P-2I	Salle méc. A-212	4068-081	2I-51B-DI-1				2/18	Selon dispositi	Contact (NO)	XP40		
XT2DI2							XP9104	XP 9104 (4C)	1	51	DI-2		P-2I	Salle méc. A-212		2I-51B-DI-2									
XT2DI3							XP9104	XP 9104 (4C)	1	51	DI-3		P-2I	Salle méc. A-212		2I-51B-DI-3									
XT2DI4							XP9104	XP 9104 (4C)	1	51	DI-4		P-2I	Salle méc. A-212		2I-51B-DI-4									
2I-51B-DO-1	XT2DO5	AC-20	C. VA	Comm.a/d vent.alim.	Arrêt	Marche	XP9104	XP 9104 (4C)	1	51	DO-5	DO5.COM	P-2I	Salle méc. A-212	4068-081	2I-51B-DO-3	2/18	2,7	RELAIS	1,3	2/14	Voir détail déma	Démarrneur (NO)	XP51	
2I-51B-DO-2	XT2DO6	AC-20	C. COMP	Comm.a/d compresseur	Arrêt	Marche	XP9104	XP 9104 (4C)	1	51	DO-6	DO6.COM	P-2I	Salle méc. A-212	4068-081	2I-51B-DO-4	2/18	2,7	RELAIS	1,3	2/14	Voir détail déma	Démarrneur (NO)	XP51	
XT2DO7							XP9104	XP 9104 (4C)	1	51	DO-7		P-2I	Salle méc. A-212		2I-51B-DO-7									
XT2DO8							XP9104	XP 9104 (4C)	1	51	DO-8		P-2I	Salle méc. A-212		2I-51B-DO-8									

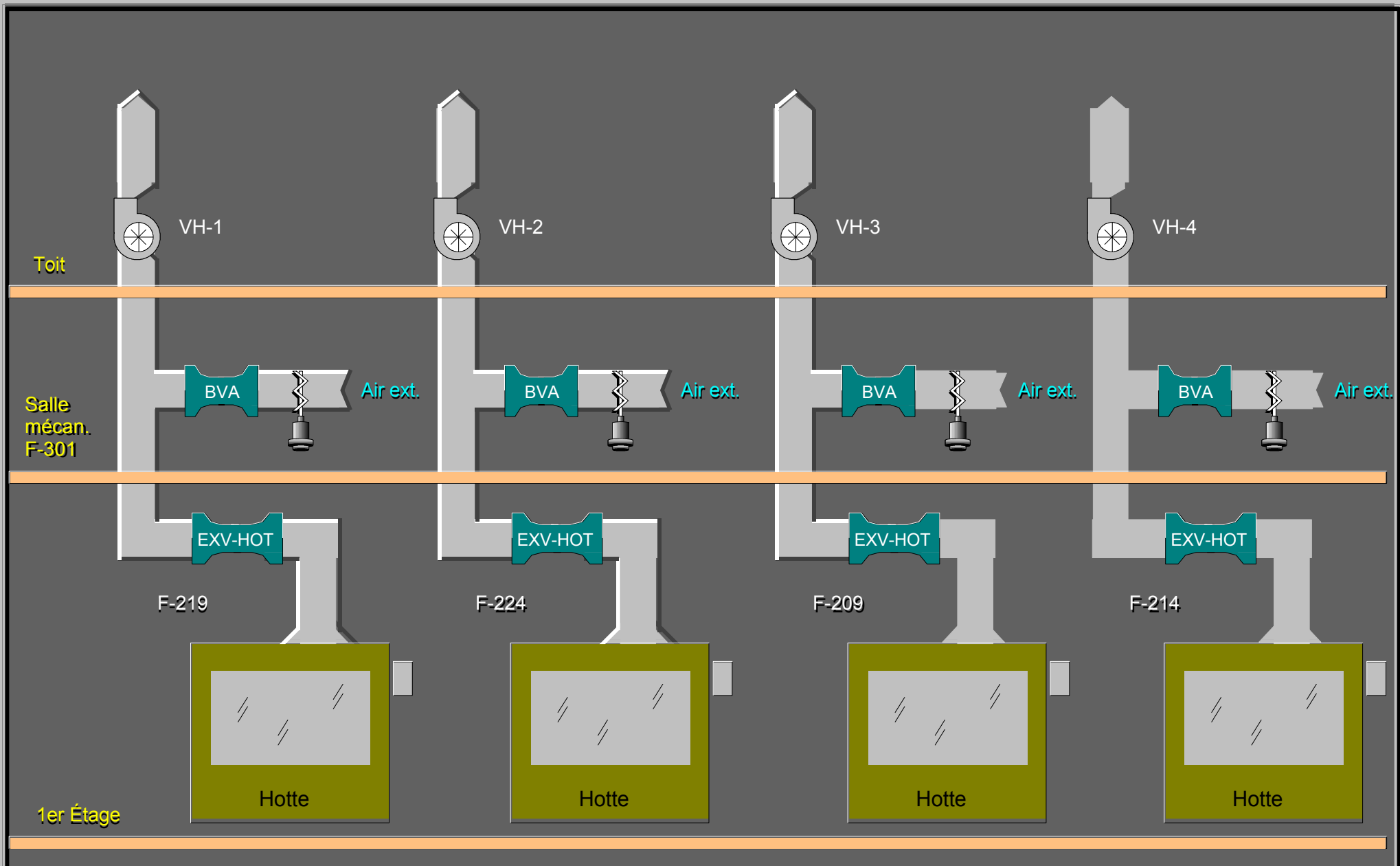
Informations sur points				Informations sur régulateurs							Informations sur panneaux				Appareils intermédiaires			Appareils hors panneau			Détail de réf.	Commentaires		
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube			Terminaisons entrée	Appareil
		USINES-3				VMA	VMA 1410	1	205			P-2	Salle méc. A-212											Alimentation 24VAC
2-155-AI-1	AI-1	USINES-3	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	205 AI-1	AI1,AICM		P-2	Salle méc. A-212	4068-092B	2-205-AI-1		2 fils					Résistance 1000 ohms	VMA1	Tronc N2
	AI-2	USINES-3				VMA	VMA 1410	1	205 AI-2			P-2	Salle méc. A-212		2-205-AI-2									
	BI-1	USINES-3				VMA	VMA 1410	1	205 BI-1			P-2	Salle méc. A-212		2-205-BI-1									
	BI-2	USINES-3				VMA	VMA 1410	1	205 BI-2			P-2	Salle méc. A-212		2-205-BI-2									
	BI-3	USINES-3				VMA	VMA 1410	1	205 BI-3			P-2	Salle méc. A-212		2-205-BI-3									
2-155-AI-5	AI-5	USINES-3	PV-161-1	Press.vélocité #1 A-161	Pa	VMA	VMA 1410	1	205 AI-5			P-2	Salle méc. A-212	4068-092B	2-205-AI-5									Air neuf #1 usine pilote A-161
		USINES-3				VMA	VMA 1410	1	206			P-2	Salle méc. A-212											Alimentation 24VAC
2-156-AI-1	AI-1	USINES-3	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	206 AI-1	AI1,AICM		P-2	Salle méc. A-212	4068-092B	2-206-AI-1		2 fils					Résistance 1000 ohms	VMA1	Tronc N2
	AI-2	USINES-3				VMA	VMA 1410	1	206 AI-2			P-2	Salle méc. A-212		2-206-AI-2									
	BI-1	USINES-3				VMA	VMA 1410	1	206 BI-1			P-2	Salle méc. A-212		2-206-BI-1									
	BI-2	USINES-3				VMA	VMA 1410	1	206 BI-2			P-2	Salle méc. A-212		2-206-BI-2									
	BI-3	USINES-3				VMA	VMA 1410	1	206 BI-3			P-2	Salle méc. A-212		2-206-BI-3									
2-156-AI-5	AI-5	USINES-3	PV-161-2	Press.vélocité #2 A-161	Pa	VMA	VMA 1410	1	206 AI-5			P-2	Salle méc. A-212	4068-092B	2-206-AI-5									Air neuf #2 usine pilote A-161
		USINES-3				VMA	VMA 1410	1	207			P-2	Salle méc. A-213											Alimentation 24VAC
2-157-AI-1	AI-1	USINES-3	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	207 AI-1	AI1,AICM		P-2	Salle méc. A-213	4068-092B	2-207-AI-1		2 fils					Résistance 1000 ohms	VMA1	Tronc N2
	AI-2	USINES-3				VMA	VMA 1410	1	207 AI-2			P-2	Salle méc. A-213		2-207-AI-2									
	BI-1	USINES-3				VMA	VMA 1410	1	207 BI-1			P-2	Salle méc. A-213		2-207-BI-1									
	BI-2	USINES-3				VMA	VMA 1410	1	207 BI-2			P-2	Salle méc. A-213		2-207-BI-2									
	BI-3	USINES-3				VMA	VMA 1410	1	207 BI-3			P-2	Salle méc. A-213		2-207-BI-3									
2-157-AI-5	AI-5	USINES-3	PV-171-1	Press.vélocité #1 A-171	Pa	VMA	VMA 1410	1	207 AI-5			P-2	Salle méc. A-213	4068-092B	2-207-AI-5									Air neuf #1 usine pilote A-171
		USINES-3				VMA	VMA 1410	1	208			P-2	Salle méc. A-213											Alimentation 24VAC
2-158-AI-1	AI-1	USINES-3	RES	Résistance 1000 ohms	°C	VMA	VMA 1410	1	208 AI-1	AI1,AICM		P-2	Salle méc. A-213	4068-092B	2-208-AI-1		2 fils					Résistance 1000 ohms	VMA1	Tronc N2
	AI-2	USINES-3				VMA	VMA 1410	1	208 AI-2			P-2	Salle méc. A-213		2-208-AI-2									
	BI-1	USINES-3				VMA	VMA 1410	1	208 BI-1			P-2	Salle méc. A-213		2-208-BI-1									
	BI-2	USINES-3				VMA	VMA 1410	1	208 BI-2			P-2	Salle méc. A-213		2-208-BI-2									
	BI-3	USINES-3				VMA	VMA 1410	1	208 BI-3			P-2	Salle méc. A-213		2-208-BI-3									
2-158-AI-5	AI-5	USINES-3	PV-171-2	Press.vélocité #2 A-171	Pa	VMA	VMA 1410	1	208 AI-5			P-2	Salle méc. A-213	4068-092B	2-208-AI-5									Air neuf #2 usine pilote A-171

LISTE DE MATÉRIEL POUR L'ÉVACUATEUR VE-3

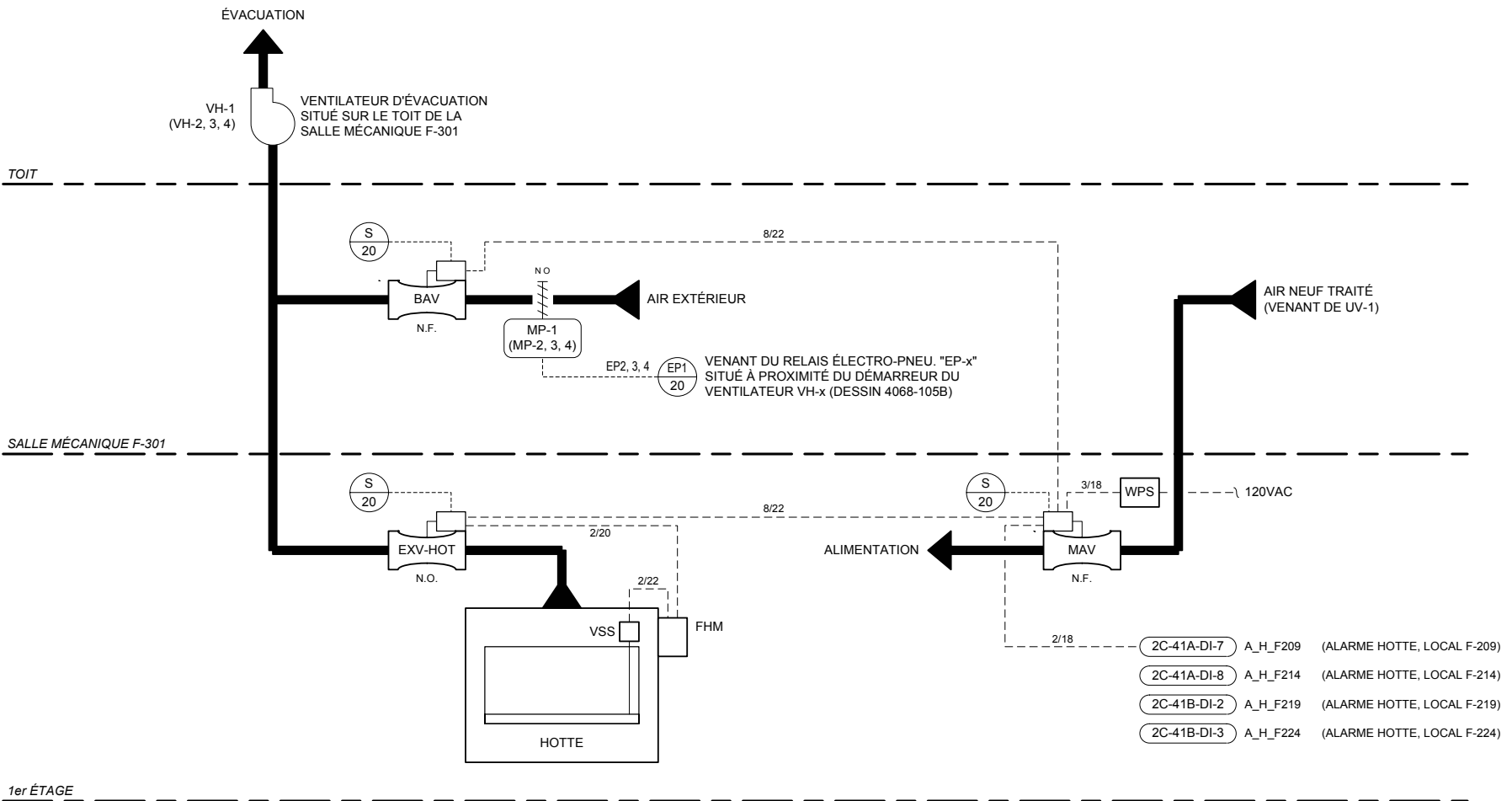
NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
M1-1x1-x	MINUTERIE À REBOURS À RESSORT, 0 - 2 HEURES	KLT2H	GRASSLIN
SD-1x1-x	STATION DE DÉBIT, 350mm (14"), ALUMINIUM	AYR1400	PRESSO
SD_VE-3	STATION DE DÉBIT, 450mm (18"), ALUMINIUM	AYR1800	PRESSO
SEL-151-1.2	SÉLECTEUR C/A PALQUE EN ACIER INOXYDABLE	ZB2BD2	TELEMECANIQUE
	CORPS	ZB2BZ103	TELEMECANIQUE
	CONTACT NO	ZB2BE101	TELEMECANIQUE
TP-1x1-x / HP-1x1-x	SONDE TEMP./HUMIDITÉ, 1000 OHMS NI, 0-10 VDC, 0-100%HR, ±2%HR	HE-67N2-0N00P	JOHNSON CONTROLS
	GARDE PROTECTEUR VERROUILLABLE, PLASTIQUE	GRD10A-606	JOHNSON CONTROLS
T_PIE	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS
V_E141-1 à 151-2	ACTUATEUR DE VOLET, 2 POSITIONS AVEC RESSORT DE RAPPEL, 24VAC	M9206-AGA-2	JOHNSON CONTROLS
VMA-2-205 à 208	RÉGULATEUR VAV c/a ACTUATEUR INTÉGRÉ ET TRANSMETTEUR DE PRESS. DIFF. (DÉBIT)	AP-VMA1410-0	JOHNSON CONTROLS
VV_VE-3	VARIATEUR DE VITESSE, 4.6HP, 208V/3PH, COMPATIBLE JOHNSON METASYS	VLT6000C4.6	DANFOSS GRAHAM

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2I

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BA-1	BLOC D'ALIMENTATION 24VAC/24VDC, 3 AMP.	PS-100-3	GREYSTONE
C_COMP, C_VA,	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
C_VE-2, C_VE-3	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_VOL-4	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_VE-2, VE-3	TRANSMETTEUR DE PRESSION DIFF., 0-0.1"WC (0-25Pa), 0-5VDC, ±0.25%	DPT2640-0R1D-A	JOHNSON CONTROLS
DX-2-45, DX-2-50	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNISERS	DX-9100-8991	JOHNSON CONTROLS
F-1, F-2, F-3	FUSIBLE 6 AMP	GMA-6	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-4	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2I	PANNEAU 36"x48"x9.5"	M-8100-3648	JOHNSON CONTROLS
TX-1, TX-2	TRANSFORMATEUR 120V/24V/150VA	MO150A	MARCUS
TX-3	TRANSFORMATEUR 120V/24V/100VA	MO200A	MARCUS
TX-4	TRANSFORMATEUR 120V/24V/200VA	MO100A	MARCUS
UNT-2-21, 2-23	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
V_E1x1-x	RELAIS 2 PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
XP-2-46A, 2-51A	MODULE D'EXPENSION 6AI/2AO	XP-9102-8303	JOHNSON CONTROLS
XP-2-46B, 2-51B	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-36	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS



SYSTÈMES VH-1 À VH-4 (LABORATOIRES F-209, F-214, F-219 ET F-224)
(TYPIQUE POUR 4)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BAV	4	MAVA112M-AAEHC-M	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
EXV-HOT	4	EXVB112M-AAHHO	VANNE D'ÉVACUATION "VENTURI", 30cm 12"Ø, N.O., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
FHM	4	FHM610-FRC	MONITEUR DE HOTTE - PHOENIX CONTROLS
MAV	4	MAVA112M-AAEHC	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
MP-1 à MP-4	4	MAC311V	CONTRÔLEUR DE DÉBIT - PHOENIX CONTROLS
	4	D-3062-3	ACTUATEUR DE VOLET PNEUMATIQUE
VSS	4	D-3062-103	BASE POUR ACTUATEUR
	4	VSS110	SENSEUR DE POSITION (OUVERTURE) - PHOENIX CONTROLS
WPS	4	WPS108	BLOC D'ALIMENTATION, 120VAC/+15VDC/-15VDC, 0.8A - PHOENIX CONTROLS

SÉQUENCE D'OPÉRATION

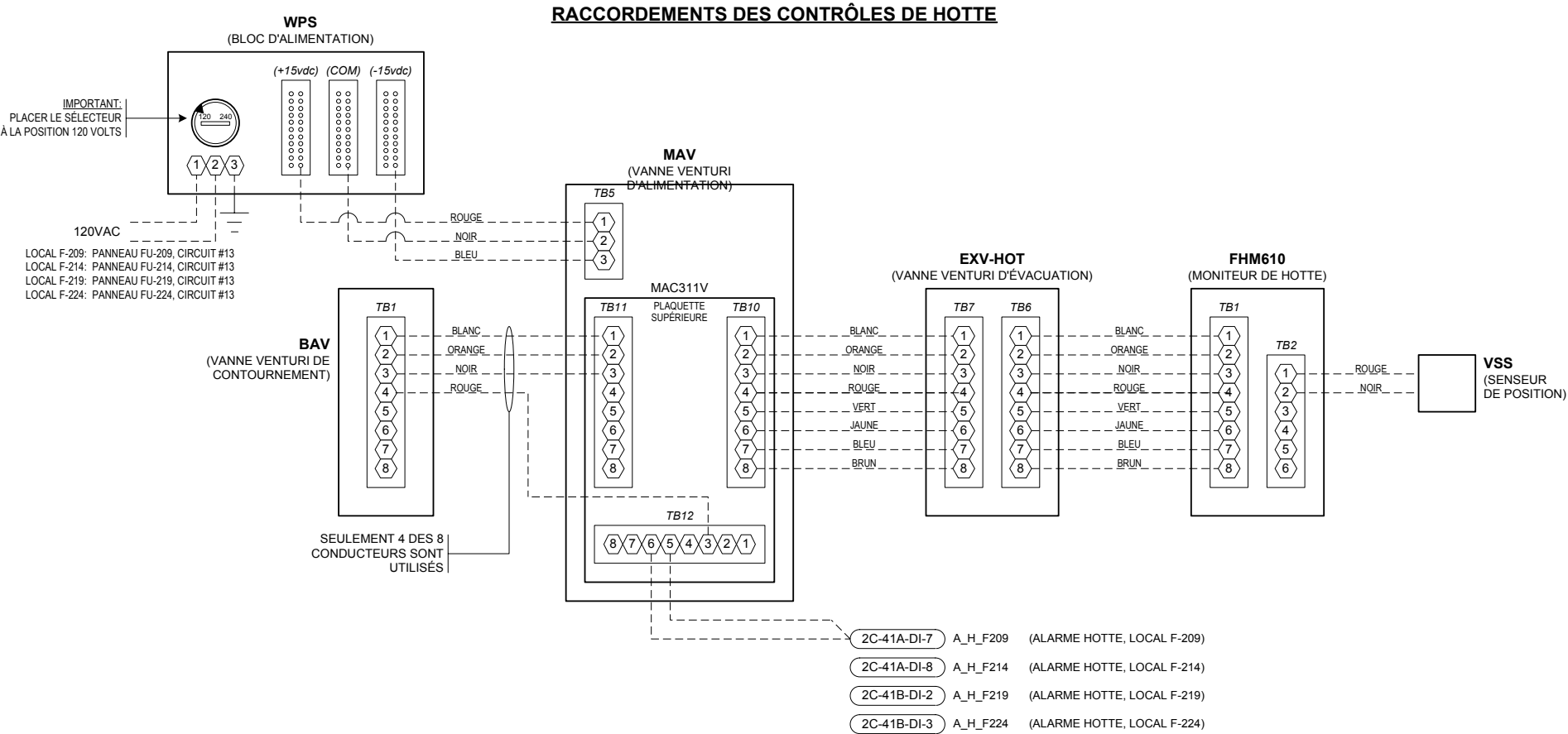
- À L'ARRÊT:
- Le ventilateur d'évacuation (VH-x) est à l'arrêt.
 - Les vannes Venturi sont à leur position normale.

- EN MARCHÉ:
- Le ventilateur d'évacuation est en marche de façon continue. Au départ du ventilateur (VH-x), le volet d'air extérieur (MP-x) ouvre à 100%.
 - Lorsque le volet de la hotte est levé par l'utilisateur, la vanne Venturi d'évacuation (EXV-HOT) est modulée vers la position ouverte, la vanne de contournement (BAV) est modulée vers la position fermée et la vanne d'alimentation (MAV) module afin de maintenir une vitesse constante à la face de la hotte.
 - Une alarme commune sera transmise à la centrale Metasys.

VOIR DESSIN 4068-105B POUR LE DIAGRAMME ÉLECTRIQUE.

Titre du Dessin Systèmes VH-1 à VH-4 Hottes de laboratoire (Locaux F-209, F-214, F-219 et F-224)		3	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.
		2	MP1 À MP-4 AJOUTÉS		03/08/01	D.B.
		1	POUR APPROBATION		25/07/01	D.B.
		NO.	REVISION	ECN	DATE	PAR
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR
Représentant	Gérant De Projet	Concepteur	DESSINÉ	APPROUVÉ		
Nom du Projet		Information Succursale	PAR D.B.	DATE 05/08/2001	PAR	DATE 05/08/2001
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		JOHNSON CONTROLS Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO CONTRAT 1096-0093 NUMÉRO DESSIN 4068-105A

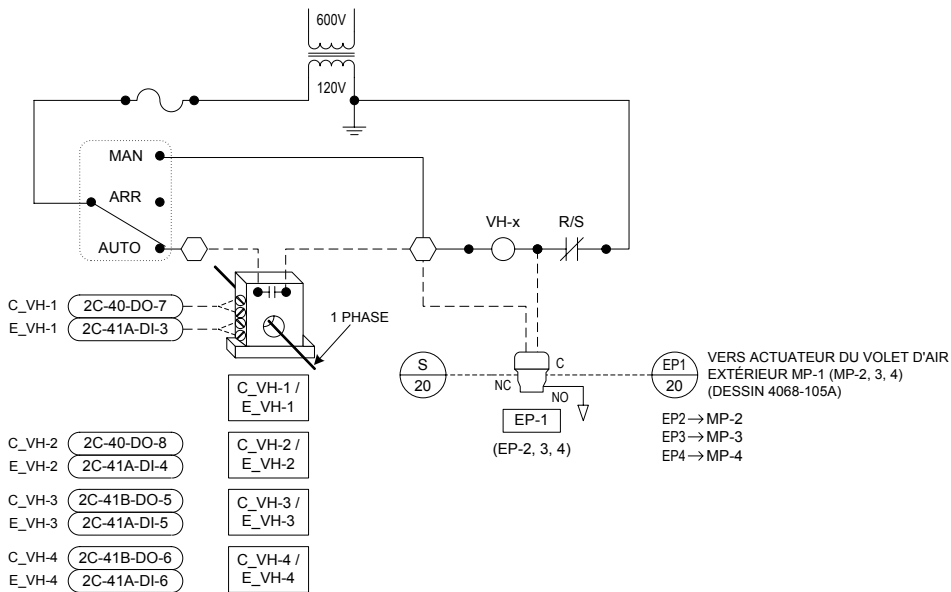
SYSTÈMES VH-1 À VH-4 (LABORATOIRES F-209, F-214, F-219 ET F-224)
(TYPIQUE POUR 4)



LISTE DE MATÉRIEL

IDENT.	QTÉ	MODÈLE	DESCRIPTION
BAV	4	MAVA112M-AAEHC-M	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
C_VH-x / E_VH-x	4	H-735	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT), 1-135AMP. - VERIS
EP-1, 2, 3, 4	4	V11HAA-115	RELAIS ÉLECTRO-PNEUMATIQUE 120VAC
EXV-HOT	4	EXVB112M-AAHHO	VANNE D'ÉVACUATION "VENTURI", 30cm 12"Ø, N.O., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
FHM	4	FHM610-FRC	MONITEUR DE HOTTE - PHOENIX CONTROLS
MAV	4	MAVA112M-AAEHC	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE - PHOENIX CONTROLS
VSS	4	MAC311V	CONTRÔLEUR DE DÉBIT - PHOENIX CONTROLS
	4	VSS110	SENSEUR DE POSITION (OUVERTURE) - PHOENIX CONTROLS
WPS	4	WPS108	BLOC D'ALIMENTATION, 120VAC/+15VDC/-15VDC, 0.8A - PHOENIX CONTROLS

DÉMARREUR DES VENTILATEURS D'ÉVACUATION VH-1 À VH-4



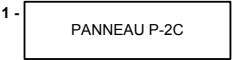
Titre du Dessin		3	TEL QUE CONSTRUIT	D.B.	03/08/01	O.P.
Systèmes VH-1 à VH-4 Hottes de laboratoire		2	EP-1 À EP-4 AJOUTÉS		03/08/01	D.B.
		1	POUR APPROBATION		25/07/01	D.B.
Diagramme électrique		NO.	REVISION	ECN	DATE	PAR
Représentant		Gérant De Projet	Concepteur	PAR	D.B.	DATE 05/08/2001
Nom du Projet		Information Succursale	NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		Johnson Controls 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562	1096-0093			
			NUMÉRO DESSIN			
			4068-105B			



IDENT.	QTE	MODÈLE	DESCRIPTION
C_COMP, C_VA	4	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	4	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
C_REF	1	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
DEB_ER	1	RCPFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	1	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATI
DX-2-40	1	DX-9100-8454	RÉGULATEUR NUMÉRIQUE
	1	DX-9100-8990	BASE DE MONTAGE
	1	DX-9100-8991	PROTÈGE BORNIER
F-1	1	GMA-3	FUSIBLE 3 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-1A,B	2	GMA-2	FUSIBLE 2 AMP. - BUSS
	2	4745.6	PORTE-FUSIBLE - WEIDMULLER
F-2	1	GMA-1	FUSIBLE 1 AMP. - BUSS
	1	4745.6	PORTE-FUSIBLE - WEIDMULLER
G-0 À G-3	4	G-2010-5	MANOMÈTRE 0 - 30 psi, 1-1/2"
PDC-1	1	27VBOX-C	PRISE / INTERRUPTEUR - LEVITON
	1	2020	BOÎTE ÉLECTRIQUE c/a PLAQUE - LEVITON
P-2C	1	M-8100-3042	PANNEAU 30"x42"x9.5"
TX-1	1	MO100A	TRANSFORMATEUR 120V/24V/100VA - MARCUS
UNT-2-1, UNT-2-2	2	AS-UNT141-1	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO
VLV_CHA,			
VOL_M_E	3	EP-8000-2	CONVERTISSEUR ÉLECTRO-PNEU., 0 - 10VDC
XP-2-41A	1	XP-9105-8304	MODULE D'EXPANSION 8DI
XP-2-41B	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-41	1	XT-9100-8304	MODULE D'EXTENSION
XP-2-42A	1	XP-9104-8304	MODULE D'EXPANSION 4DI/4DO
XT-2-42	1	XT-9100-8304	MODULE D'EXTENSION

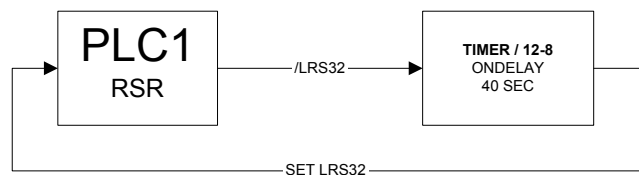


LISTE DES PLAQUETTES:

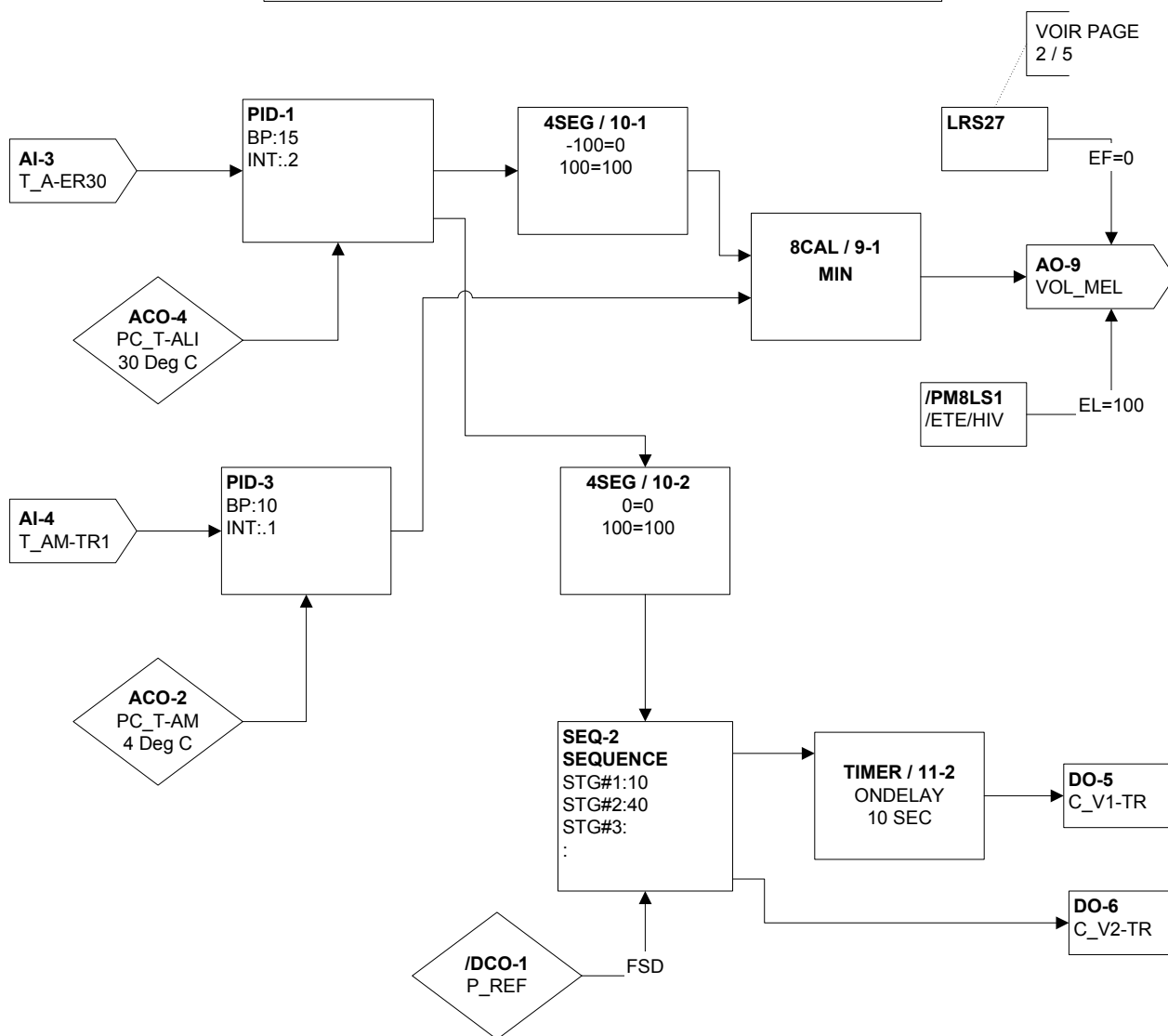


				4	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.		
Titre du Dessin				3	MODULES XT-2-42, XP-2-42A		03/14/2002	D.B.		
Panneau P-2C Salle mécanique F-301 (Refroid. CC-1, tour d'eau TR-1, vent. laboratoires VH-1, 2, 3, 4)				2	RELAIS "DEB_ER" AJOUTÉ		07/30/2001	D.B.		
				1	POUR APPROBATION		06/12/2001	D.B.		
		DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE	PAR	
		Représentant		Gérant De Projet	Concepteur	DESSINE		APPROUVE		
J.-C. Rouillon		S. Bourque	D. Bouchard	PAR	D.B.	DATE	15/03/01	PAR	DATE	15/03/01
Nom du Projet					Information Succursale		NUMERO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)					Johnson Controls Ltée 355, boul. Montpellier St-Laurent, Qc, H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		1096-0093			
							NUMERO DESSIN 4068-097			

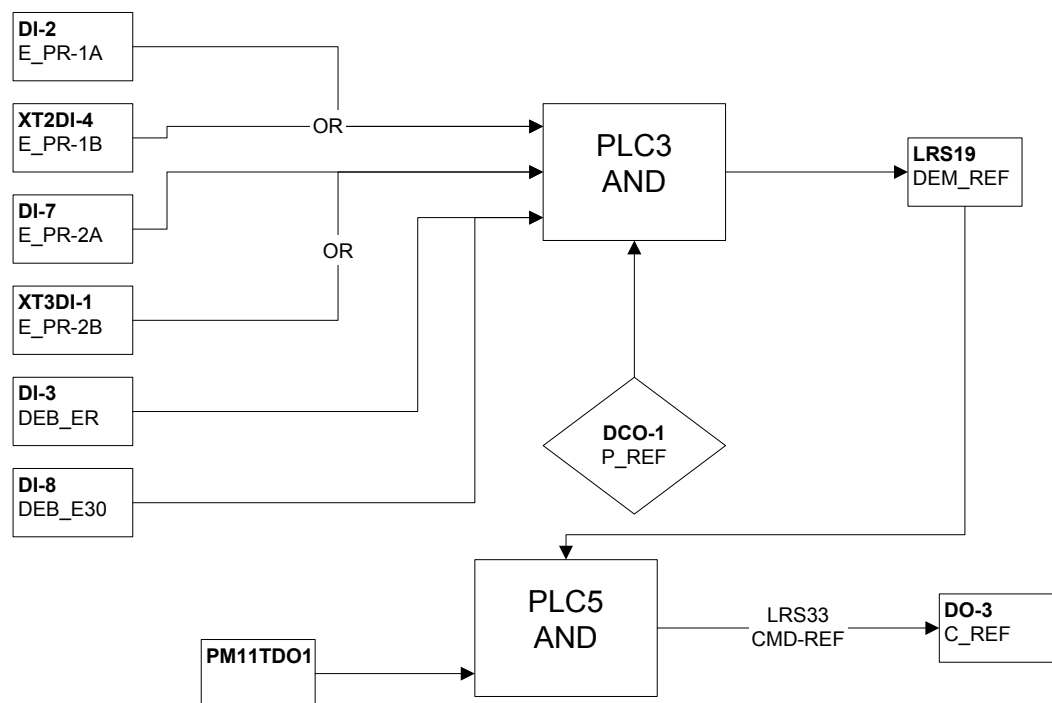
REDEMARRAGE APRES PANNE (DX-2-40)



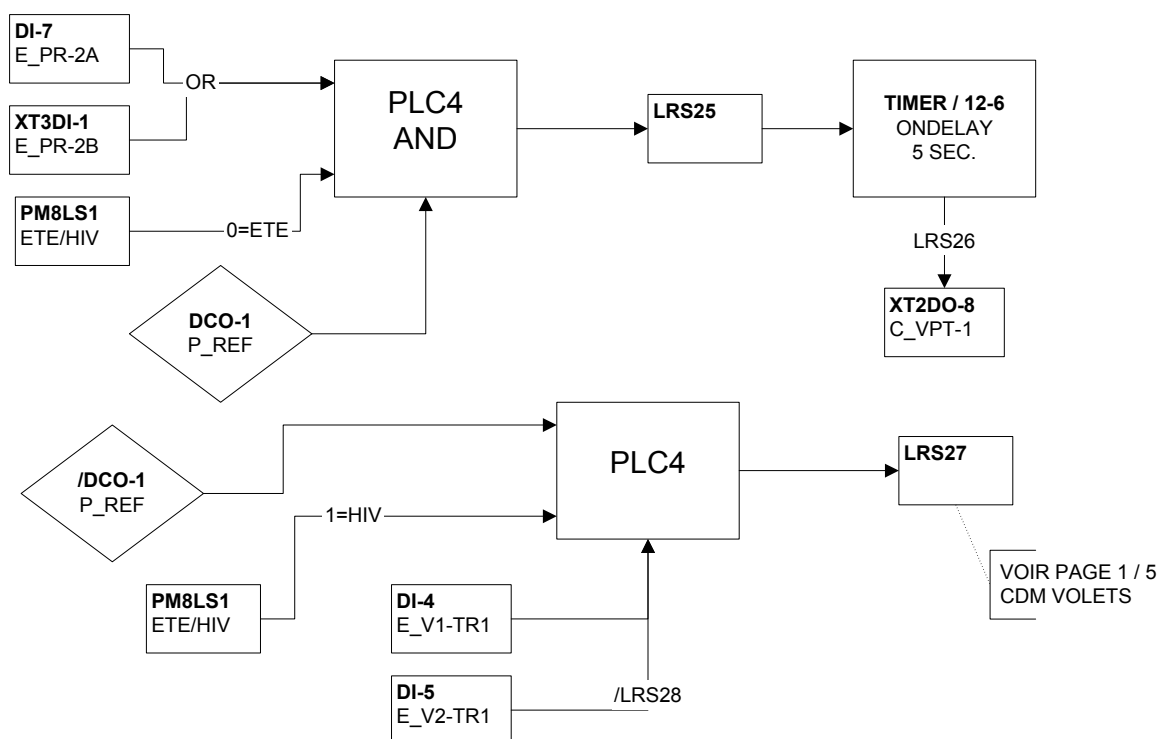
CONTROLE DES VENTILATEURS ET VOLETS TOUR D'EAU

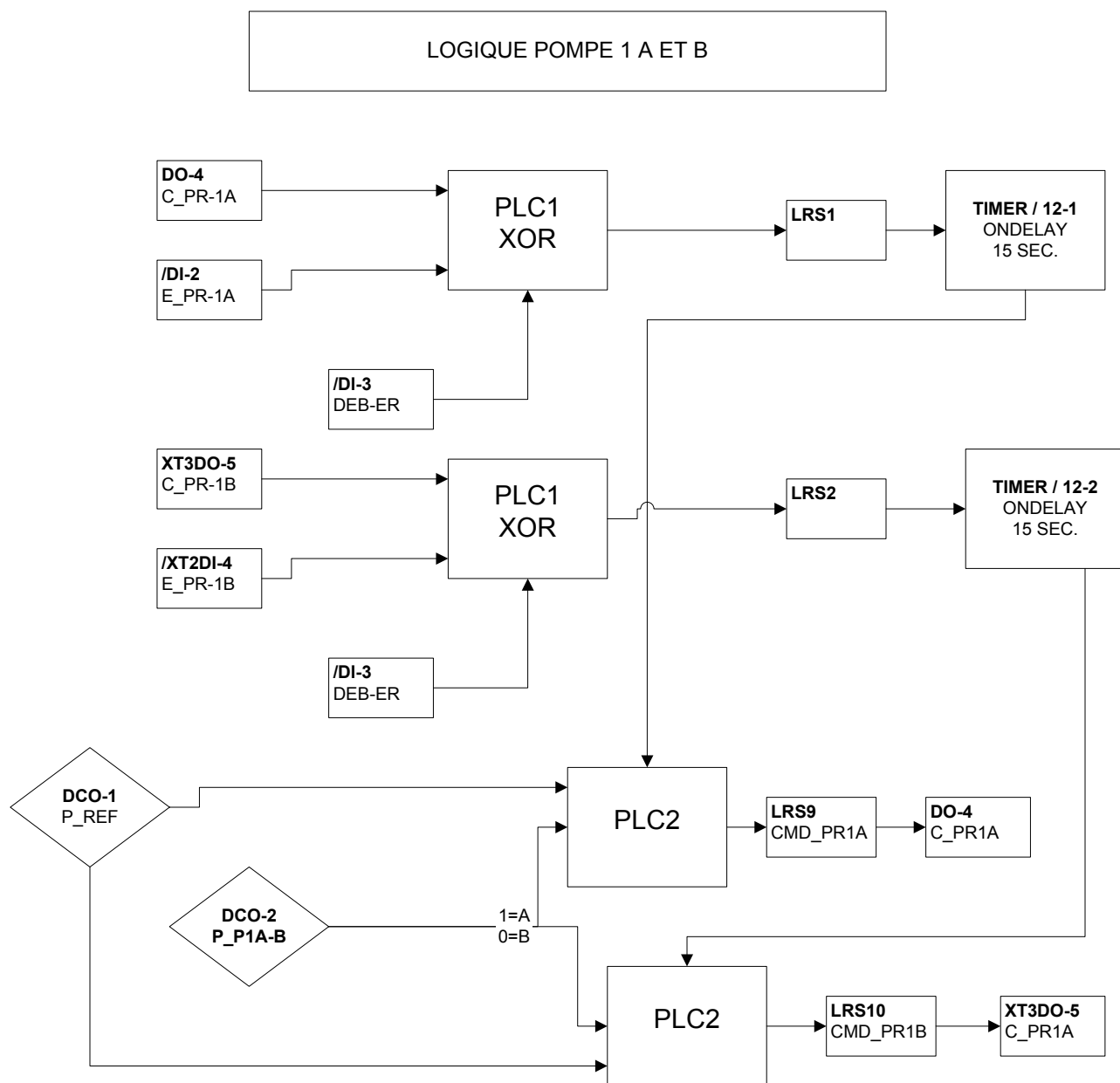


COMMANDE DU REFROIDISSEUR

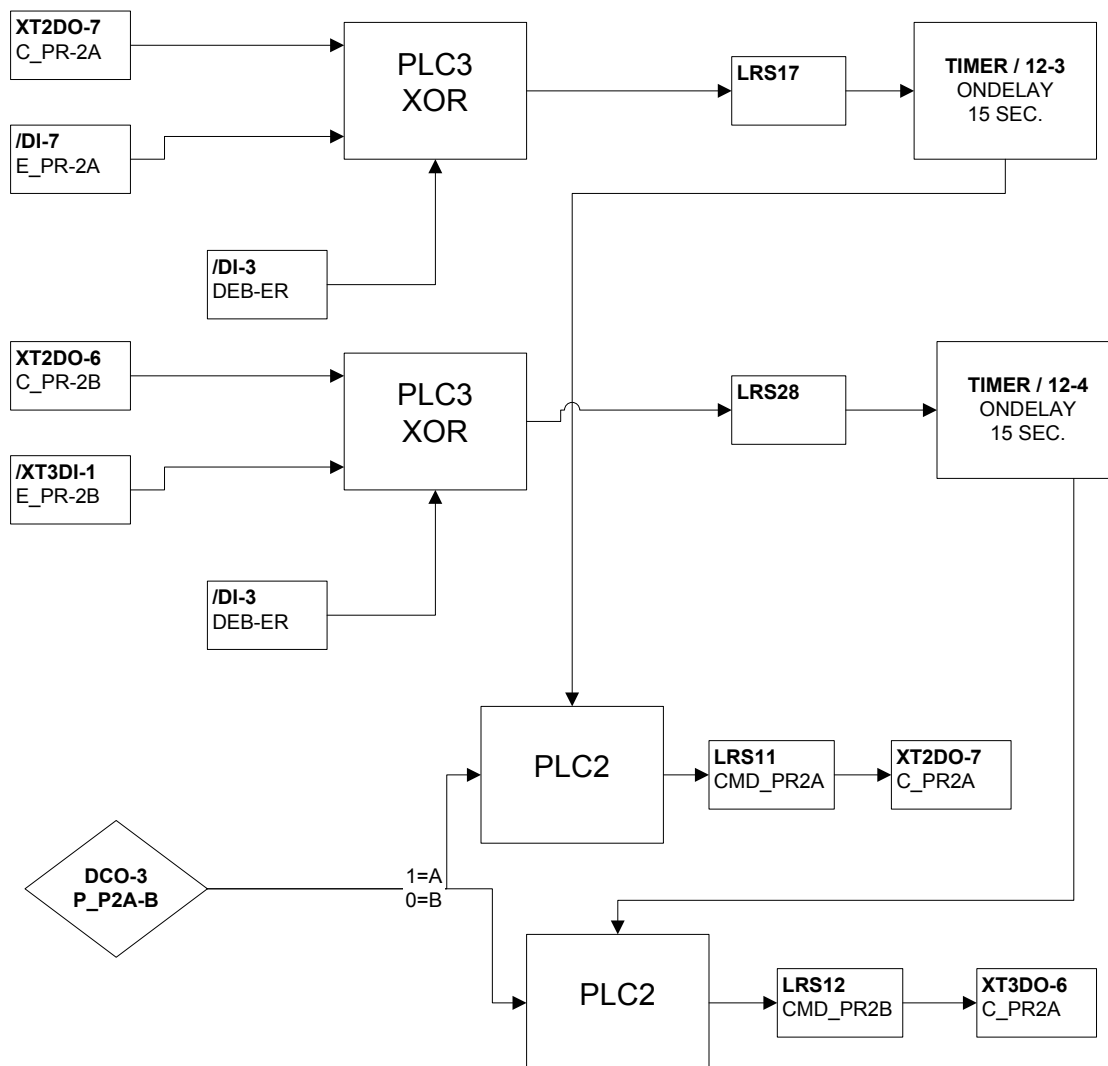


COMMANDE POMPE EAU TOUR





LOGIQUE POMPE 1 A ET B



POINT DE CONSIGNE ALIM. EAU REF.



POINT DE CONSIGNE AMPERAGE



COMMANDE DES HOTTES



FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Adresse du NCM : 2
Adresse du DX-9100 : 40
Numéro du dessin : 4068
Système : REFROIDISSEUR ET TOUR D'EAU

Entrées Analogiques : (Touche X)

	Définition du point	'A' (L) Alarme basse (flèches pour ajustement)	'A' (H) Alarme haute (flèches pour ajustement)
1	TEMP ALIM EAU REFROI		
2	TEMP RETOUR EAU 30C		
3	TEMP. ALIM EAU 30C		
4	TEMP RETOUR EAU TOUR		
5	TEMP ALIM AIR TOUR		
6			
7			
8			

Entrées Binaires : (Touche D)

Compteur : (Touche #)

	Définition du point		Précaler
1	ETAT REFROIDISSEUR	Off =arrêt / On marche	1
2	ETAT POMPE PR-1A	Off =arrêt / On marche	1
3	ETAT DEBIT EAU REF.	Off =arrêt / On marche	1
4	ETAT BASSE VIT VENT.	Off =arrêt / On marche	1
5	ETAT HAUTE VIT VENT	Off =arrêt / On marche	1
6	ETAT POMPE TOUR	Off =arrêt / On marche	1
7	ETAT POMPE PR-2A	Off =arrêt / On marche	1
8	ETAT DEBIT EAU 30C	Off =arrêt / On marche	1

Sorties Analogiques et Binaires : (Touche Y)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (flèches pour ajustement)
1	PC ALIM EAU REFROI.	ACO1	0% = Min. / 100% = Max.
2	PC AMPERAGE	ACO5	0% = Min. / 100% = Max.
3	COMM. A/D REFROIDISSEUR	LRS33	Off = arrêt / On = marche
4	COMM. POMPE PR-1A	LRS9	Off = arrêt / On = marche
5	COMM. BASSE VIT. VENT.	PM2STO1	Off = arrêt / On = marche
6	COMM. HAUTE VIT. VENT.	PM2STO2	Off = arrêt / On = marche
7	COMM. VENT HOTTE 1	DCO4	Off = arrêt / On = marche
8	COMM. VENT. HOTTE 2	DCO5	Off = arrêt / On = marche
9	COMM VOLET MELANGE	Z3	0% = Min. / 100% = Max.
10			
11			
12			
13			
14			

Module de controle programmable : (Touche Z)

	Point de consigne (± pour ajustement)	'A' (x) valeur de la variable controlée	'A' (y) résultat du calcul (± pour ajustement)
1	ACO4	X3 Temp. alim. Eau 30C	0% = Min. / 100% = Max.
2	PM10NCM2	X3 Temp. alim. Eau 30C	0% = Min. / 100% = Max.
3	ACO2	X5 Temp. air mel tour	0%= Min. / 100% = Max.
4			
5			
6			
7			
8	Comparateur		
9	8 Calcul		
10	4- Segment		
11	Timer		
12	Timer		

(Touche 'Z' : Information supplémentaire)

	A' (p) bande prop. Action direct (+) , inverse (-)	'A' (i) intégral pour 'PID' ou différentiel pour 'ON/OFF'	'A' (d) dérivé
1	15	.2	
2			
3	10	.1	
4			
5			
6			
7			
8			
9			
10			
11			
12			

(Touche 'Z' : Information supplémentaire)

	A' (b) standby bias (addition au PC)	'A' (o) off bias (addition au PC)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Constantes analogiques 'ACO' : (Touche K)

	Valeur par défaut	Description des points
1	9 degC	PC Alimentation refroidissement
2	4 degC	PC temperature air melange
3	4 degC	PC mode ete / hiver
4	30 deg C	PC temp alimentation eau 30
5	100 Amp	PC limite amperage
6		
7		
8	18 deg C	Temperature exterieure

Constantes binaires 'DCO' : (Touche K)

	Valeur par défaut	Description des points
1	ON	Permission refroidisseur
2	ON	Permission pompe 1a ou b
3	ON	Permission pompe 2a ou b
4	ON	Permission ventilateur hotte 1
5	ON	Permission ventilateur hotte 2
6	ON	Permission ventilateur hotte 3
7	ON	Permission ventilateur hotte 4
8	OFF	Mode ete/hiver
9		
10		
11		
12		
13		
14		
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FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068
Système : REFROIDISSEUR ET TOUR D'EAU
Adresse du NCM : 2
Adresse du DX-9100 : 40
Adresse du XT : 41

Numero du XP : 1

Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
11	BAS NIVEAU TOUR		
12	ETAT ELEMENT CHAUFF.		
13	ETAT VENT. HOTTE 1		
14	ETAT VENT. HOTTE 2		
15	ETAT VENT. HOTTE 3		
16	ETAT VENT. HOTTE 4		
17	ALARME HOTTE F-209		
18	ALARME HOTTE F-214		

Numero du XP : 2

Entrées Binaires : (Touche D + XT)

Compteur : (Touche #+XT)

	Définition du point	Précaler
19	ALARME REFROIDISSEUR	
20	ALARME HOTTE F-219	
21	ALARME HOTTE F-224	
22	ETAT POMPE PR-1B	

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
23	COMM POMPE PR-1B		Off = arrêt / On = marche
24	COMM POMPE PR-2B		Off = arrêt / On = marche
25			
26			

FEUILLE DE L'UTILISATEUR

Nom du projet: CRDA ST-HYACINTHE
Numéro du projet : 1096-0093
Date de révision : 26-Apr-02
Numéro du dessin : 4068
Système : REFROIDISSEUR ET TOUR D'EAU
Adresse du NCM : 2
Adresse du DX-9100 : 40
Adresse du XT : 42

Numero du XP : 4

Entrées Analogiques : (Touche X + XT)

	Définition du point	'A' (L) Alarme basse (± pour ajustement)	'A' (H) Alarme haute (± pour ajustement)
41	ETAT POMPE PR-2B		
42			
43			
44			

Sorties Binaires : (Touche Y + XT)

	Définition du point	Sortie en fonction du résultat de :	'A/M' = Auto / Manuel (± pour ajustement)
45	COMM POMPE PR-1B		Off = arrêt / On = marche
46	COMM POMPE PR-2B		Off = arrêt / On = marche
47			
48			

HOTTES VH-1 À VH-4

SÉQUENCE D'OPÉRATION

À L'ARRÊT:

- Le ventilateur d'évacuation (VH-x) est à l'arrêt.
- Les vannes Venturi sont à leur position normale.

EN MARCHÉ:

- Le ventilateur d'évacuation est en marche de façon continue. Au départ du ventilateur (VH-x), le volet d'air extérieur (MP-x) ouvre à 100%.
- Lorsque le volet de la hotte est levé par l'utilisateur, la vanne Venturi d'évacuation (EXV-HOT) est modulée vers la position ouverte, la vanne de contournement (BAV) est modulée vers la position fermée et la vanne d'alimentation (MAV) module afin de maintenir une vitesse constante à la face de la hotte.
- Une alarme commune sera transmise à la centrale Metasys.

Electricien/Filire	Type de point		Nom du système	Nom de l'objet	Description	Informations sur régulateurs						Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau					
	Étq.	Type de point				Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube	Terminaisons entrée	Appareil	Détail de réf.	Commentaires
							DX9100	DX 9100					P-2A	Salle méc. F-301										Alimentation 24VAC	
							DX9100	DX 9100	1	30			P-2A	Salle méc. F-301										Tronc N2	
2A-30-DO-3	DO-3	VA-1	C VA		Comm.aid vent.alm.	Arrêt Marche	DX9100	DX 9100		30 DO-3	DO3.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DO-3	2/18	(Bobine) + -	H-735	COM NO	2/14	Voir détail démarreur	Démarreur (H-735 mar/lar)	DX49	
2A-30-DI-4	DI-4	VA-1	C AERO		Comm.aérothermes	Arrêt Marche	DX9100	DX 9100	1	30 DO-4	DO4.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DO-4	2/18	2,7	RELAIS	1,3	2/14	Voir détail démarreur	Démarreur (NO)	DX51	Aérothermes A-7, A-8
2A-30-DO-5	DO-5	AC-07	C VA		Comm.aid vent.alm.	Arrêt Marche	DX9100	DX 9100		30 DO-5	DO5.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DO-5	2/18	2,7	RELAIS	1,3	2/14	Voir détail démarreur	Démarreur (NO)	DX51	
2A-30-DO-6	DO-6	AC-07	C COMP		Comm.aid compresseur	Arrêt Marche	DX9100	DX 9100		30 DO-6	DO6.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DO-6	2/18	2,7	RELAIS	1,3	2/14	Voir détail démarreur	Démarreur (NO)	DX51	
2A-30-DO-7	DO-7	AC-07	C SC		Comm.serpentin chauffage	Arrêt Marche	DX9100	DX 9100	1	30 DO-7	DO7.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DO-7								Serpentin SE-20	DX51
2A-30-DO-8	DO-8	AC-07	C PLIN		Comm.pompe chauff.	Arrêt Marche	DX9100	DX 9100	1	30 DO-8	DO8.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DO-8								SCOR 24 V.c.a.	DX51
2A-30-DI-1	DI-1	VA-1	E VA		État vent.alimentation	Arrêt Marche	DX9100	DX 9100	1	30 DI-1	DI1.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DI-1								SCOR 24 V.c.a.	DX51
2A-30-DI-2	DI-2	AC-07	E VA		État vent.alimentation	Arrêt Marche	DX9100	DX 9100	1	30 DI-2	DI2.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DI-2								Vers H-735 état	DX49
2A-30-DI-3	DI-3	AC-07	E FILT		État des filtres	Normal	Sales	DX9100	1	30 DI-3	DI3.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DI-3								Y-R	DX70
2A-30-DI-4	DI-4	AC-07	ALM AC		Alarme unité AC	Normal	Alarme	DX9100	1	30 DI-4	DI4.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DI-4								Contact (NO)	DX70
2A-30-DI-5	DI-5	ECH EC-1	E PC-1A		État pompe chauff. PC-1A	Arrêt Marche	DX9100	DX 9100	1	30 DI-5	DI5.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DI-5								Vers H-735 état	DX49
2A-30-DI-6	DI-6	ECH EC-1	DEB EC		Preuve débit eau chauff.	Non	Oui	DX9100	1	30 DI-6	DI6.COM	P-2A	Salle méc. F-301	4068-089		2A-30-DI-6								Contact (NO)	DX70
2A-30-DI-7	DI-7	LABO	A H F219		Alarme hotte (F-219)	Normal	Alarme	DX9100	1	30 DI-7	DI7.COM	P-2A	Salle méc. F-301			2A-30-DI-7								FE1KB-11	DX70
2A-30-DI-8	DI-8	LABO	A H F224		Alarme hotte (F-224)	Normal	Alarme	DX9100	1	30 DI-8	DI8.COM	P-2A	Salle méc. F-301			2A-30-DI-8								Contact (NO)	DX70
2A-30-AI-1	AI-1	VA-1	T PIE		Temp.pieze			DX9100	1	30 AI-1	AI1.AICOM	P-2A	Salle méc. F-301	4068-089		2A-30-AI-1								TE	DX3
2A-30-AI-2	AI-2	VA-1	T ALJ		Temp.alimentation			DX9100	1	30 AI-2	AI2.AICOM	P-2A	Salle méc. F-301	4068-089		2A-30-AI-2								TE (Gaine)	DX3
2A-30-AI-3	AI-3	AC-07	T PIE		Temp.pieze			DX9100	1	30 AI-3	AI3.AICOM	P-2A	Salle méc. F-301	4068-089		2A-30-AI-3								TE	DX3
2A-30-AI-4	AI-4	AC-07	T ALJ		Temp.alimentation			DX9100	1	30 AI-4	AI4.AICOM	P-2A	Salle méc. F-301	4068-089		2A-30-AI-4								TE (Gaine)	DX3
2A-30-AI-5	AI-5	ECH EC-1	T ALJ EC		Temp.alm.eau chaude			DX9100	1	30 AI-5	AI5.AICOM	P-2A	Salle méc. F-301	4068-089		2A-30-AI-5								TE (immersion)	DX3
								DX9100	1	30 AI-6		P-2A	Salle méc. F-301			2A-30-AI-6									
								DX9100	1	30 AI-7		P-2A	Salle méc. F-301			2A-30-AI-7									
								DX9100	1	30 AI-8		P-2A	Salle méc. F-301			2A-30-AI-8									
2A-30-AO-1	AO-1	VA-1	VOL MEL		Volets mélange	%		DX9100	1	30 AO-1	AO1.AOCCOM.COM	P-2A	Salle méc. F-301	4068-089		2A-30-AO-1	2/18	+		EP-8000	SUPPLY.O	3/18	1,2,5	M9216-HGA-2 0-10VDC	DX34
2A-30-AO-2	AO-2	ECH EC-1	VLV EC-1		Vanne échangeur EC-1	%		DX9100	1	30 AO-2	AO2.AOCCOM	P-2A	Salle méc. F-301	4068-089		2A-30-AO-2	2/18	+		EP-8000	SUPPLY.O	1/4"	Raccord à crans	EP-PNEU	DX27
								DX9100	1	30 AO-9		P-2A	Salle méc. F-301			2A-30-AO-9									
								DX9100	1	30 AO-10		P-2A	Salle méc. F-301			2A-30-AO-10									
								DX9100	1	30 AO-11		P-2A	Salle méc. F-301			2A-30-AO-11									
								DX9100	1	30 AO-12		P-2A	Salle méc. F-301			2A-30-AO-12									
								DX9100	1	30 AO-13		P-2A	Salle méc. F-301			2A-30-AO-13									
								DX9100	1	30 AO-14		P-2A	Salle méc. F-301			2A-30-AO-14									
								XT9100				P-2A	Salle méc. F-301												Alimentation 24VAC
								XT (Expansion)	1	31		P-2A	Salle méc. F-301												Tronc N2
2A-31A-DI-1	DI1001	ECH EC-1	E PC-1B		État pompe chauff. PC-1B	Arrêt Marche	XP9104	XP 9104 (4DL)	1	31 DI-1	DI1.COM	P-2A	Salle méc. F-301			2A-31A-DI-1									Nouveau point (14 mars 2002)
								XP9104	1	31 DI-2		P-2A	Salle méc. F-301			2A-31A-DI-2									
								XP9104	1	31 DI-3		P-2A	Salle méc. F-301			2A-31A-DI-3									
								XP9104	1	31 DI-4		P-2A	Salle méc. F-301			2A-31A-DI-4									
2A-31A-DO-5	DI1005	ECH EC-1	C PC-1A		Comm.pompe chauff. PC-1A	Arrêt Marche	XP9104	XP 9104 (4DL)	1	31 DO-5	DO5.COM	P-2A	Salle méc. F-301	4068-089		2A-31A-DO-5	2/18	(Bobine)+ -	H-735	COM NO	2/14	Voir détail démarreur	Démarreur (H-735 mar/lar)	XP49	Nom et description du point modifiés (14 mars 2002)
2A-31A-DO-6	DI1006	ECH EC-1	C PC-1B		Comm.pompe chauff. PC-1B	Arrêt Marche	XP9104	XP 9104 (4DL)	1	31 DO-6	DO6.COM	P-2A	Salle méc. F-301			2A-31A-DO-6	2/18	(COIL)+ -	H-735	COM NO	2/14	Voir détail démarreur	Démarreur (H-735 mar/lar)	XP49	Nouveau point (14 mars 2002)
								XP9104	1	31 DO-7		P-2A	Salle méc. F-301			2A-31A-DO-7									
								XP9104	1	31 DO-8		P-2A	Salle méc. F-301			2A-31A-DO-8									

Informations sur régulateurs										Informations sur panneaux										Appareils intermédiaires										Appareils hors panneau									
Étiquette	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. de tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Câble / tube	Terminaisons entrée	Appareil	Détail de réf.	Commentaires															
						DX9100	DX 9100					P-2C	Salle mec. F-301										Alimentation 24VAC																
						DX9100	DX 9100		2	40		P-2C	Salle mec. F-301										Tronc N2																
2C-40-DO-3	DO-3	REF	CC-1	C-REF	Comm.aid refroidisseur	Anrêl	Marche	DX9100	DX 9100	2	40 DO-3	DO3COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DO-3	2/18	2.7	RELAIS	1.3	2/14	Voir détail démarreur	Démareur (NO)	DX51															
2C-40-DO-4	DO-4	REF	CC-1	C-PR-1A	Comm.pompe eau ref PR-1A	Anrêl	Marche	DX9100	DX 9100	2	40 DO-4	DO4COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DO-4	2/18		(Bistone) +	H-735	COM NO	2/14	Voir détail démarreur	Démareur (H-735 mar/arr)	DX48	Nom et description du point modifiés (14 mars 2002)													
2C-40-DO-5	DO-5	TOUR	TR1	E-V1 TR1	Comm.aid vent #1 tour	Anrêl	Marche	DX9100	DX 9100	2	40 DO-5	DO5COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DO-5	2/18	2.7	RELAIS	1.3	2/14	Voir détail démarreur	Démareur (NO)	DX51															
2C-40-DO-6	DO-6	TOUR	TR1	C-V2 TR1	Comm.aid vent #2 tour	Anrêl	Marche	DX9100	DX 9100	2	40 DO-6	DO6COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DO-6	2/18	2.7	RELAIS	1.3	2/14	Voir détail démarreur	Démareur (NO)	DX51															
2C-40-DO-7	DO-7	LABO		C-VH1	Comm.vent VH-1 (F-219)	Anrêl	Marche	DX9100	DX 9100	2	40 DO-7	DO7COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DO-7	2/18	COIL+.	H-735	COM NO	2/14	Voir détail démarreur	Démareur (H-735 mar/arr)	DX48															
2C-40-DO-8	DO-8	LABO		C-VH2	Comm.vent VH-2 (F-224)	Anrêl	Marche	DX9100	DX 9100	2	40 DO-8	DO8COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DO-8	2/18	COIL+.	H-735	COM NO	2/14	Voir détail démarreur	Démareur (H-735 mar/arr)	DX49															
2C-40-DI-1	DI-1	REF	CC-1	E-REF	Etat refroidisseur	Anrêl	Marche	DX9100	DX 9100	2	40 DI-1	D11 COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DI-1					2/18	Selon dispositif	Contact (NO)	DX70															
2C-40-DI-2	DI-2	REF	CC-1	E-PR-1A	Etat pompe eau ref PR-1A	Anrêl	Marche	DX9100	DX 9100	2	40 DI-2	D12 COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DI-2					2/18	NO.COM	Veris H-735 état	DX48	Nom et description du point modifiés (14 mars 2002)														
2C-40-DI-3	DI-3	REF	CC-1	DEB. ER	Presure débit eau ref.	Non	Out	DX9100	DX 9100	2	40 DI-3	D13 COM	P-2C	Salle mec. F-301	4058-094A	2C-40-DI-3					2/18	Selon dispositif	Contact (NO)	DX70															
2C-40-DI-4	DI-4	TOUR	TR1	E-V1 TR1	Etat vent #1 tour d'eau	Anrêl	Marche	DX9100	DX 9100	2	40 DI-4	D14 COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DI-4					2/18	Selon dispositif	Contact (NO)	DX70															
2C-40-DI-5	DI-5	TOUR	TR1	E-V2 TR1	Etat vent #2 tour d'eau	Anrêl	Marche	DX9100	DX 9100	2	40 DI-5	D15 COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DI-5					2/18	Selon dispositif	Contact (NO)	DX70															
2C-40-DI-6	DI-6	TOUR	TR1	E-PT-1	Etat pompe tour d'eau	Anrêl	Marche	DX9100	DX 9100	2	40 DI-6	D16 COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DI-6					2/18	Selon dispositif	Contact (NO)	DX70															
2C-40-DI-7	DI-7	TOUR	TR1	E-PR-2A	Etat pompe eau 30C PR-2A	Anrêl	Marche	DX9100	DX 9100	2	40 DI-7	D17 COM	P-2C	Salle mec. F-301	4058-094B	2C-40-DI-7					2/18	NO.COM	Veris H-735 état	DX49	Nom et description du point modifiés (14 mars 2002)														
2C-40-DI-8	DI-8	TOUR	TR1	DEB. ER30	Presure débit eau ref.30C	Non	Out	DX9100	DX 9100	2	40 DI-8	D18 COM	P-2C	Salle mec. F-301	4058-094A	2C-40-DI-8					2/18	Selon dispositif	Contact (NO)	DX70															
2C-40-AI-1	AI-1	REF	CC-1	T-AI. ER	Temp.alm eau ref.			DX9100	DX 9100	2	40 AI-1	A11 AICOM	P-2C	Salle mec. F-301	4058-094A	2C-40-AI-1					2/18	2 fils	TE (Immersion)	DX3															
2C-40-AI-2	AI-2	TOUR	TR1	T-B. ER30	Temp.retour eau ref.30C			DX9100	DX 9100	2	40 AI-2	A12 AICOM	P-2C	Salle mec. F-301	4058-094A	2C-40-AI-2					2/18	2 fils	TE (Immersion)	DX3															
2C-40-AI-3	AI-3	TOUR	TR1	T-A. ER30	Temp.alm eau ref.30C			DX9100	DX 9100	2	40 AI-3	A13 AICOM	P-2C	Salle mec. F-301	4058-094A	2C-40-AI-3					2/18	2 fils	TE (Immersion)	DX3															
2C-40-AI-4	AI-4	TOUR	TR1	T-B. ET	Temp.retour eau tour			DX9100	DX 9100	2	40 AI-4	A14 AICOM	P-2C	Salle mec. F-301	4058-094A	2C-40-AI-4					2/18	2 fils	TE (Immersion)	DX3															
2C-40-AI-5	AI-5	TOUR	TR1	T-AM. TR1	Temp.air mélange tour			DX9100	DX 9100	2	40 AI-5	A15 AICOM	P-2C	Salle mec. F-301	4058-094A	2C-40-AI-5					2/18	2 fils	TE (Gain)	DX3															
						DX9100	DX 9100		2	40 AI-6		P-2C	Salle mec. F-301		2C-40-AI-6																								
						DX9100	DX 9100		2	40 AI-7		P-2C	Salle mec. F-301		2C-40-AI-7																								
						DX9100	DX 9100		2	40 AI-8		P-2C	Salle mec. F-301		2C-40-AI-8																								
2C-40-AO-1	AO-1	REF	CC-1	PC. A. ER	P.C. alm eau refroid.			DX9100	DX 9100	2	40 AO-1	AO1 AOCOM	P-2C	Salle mec. F-301	4058-094B	2C-40-AO-1					2/18	Selon dispositif	SORTIE 0.20 mA	DX21	Signal exact à être vérifié sur place														
2C-40-AO-2	AO-2	REF	CC-1	PC. AMP	P.C. amp refroidisseur	Ampl		DX9100	DX 9100	2	40 AO-2	AO2 AOCOM	P-2C	Salle mec. F-301	4058-094B	2C-40-AO-2					2/18	Selon dispositif	SORTIE 0.20 mA	DX21	Signal exact à être vérifié sur place														
2C-40-AO-9	AO-9	TOUR	TR1	VOL. MEL	Volets de mélange tour			DX9100	DX 9100	2	40 AO-9	AO9 AOCOM	P-2C	Salle mec. F-301	4058-094B	2C-40-AO-9	2/18	+	EP-8000	SUPPLY O	1/4"	Raccord à crans	EP-PNEU	DX27															
						DX9100	DX 9100		2	40 AO-10		P-2C	Salle mec. F-301	4058-094B	2C-40-AO-10																								
						DX9100	DX 9100		2	40 AO-11		P-2C	Salle mec. F-301	4058-094B	2C-40-AO-11																								
						DX9100	DX 9100		2	40 AO-12		P-2C	Salle mec. F-301		2C-40-AO-12																								
						DX9100	DX 9100		2	40 AO-13		P-2C	Salle mec. F-301		2C-40-AO-13																								
						DX9100	DX 9100		2	40 AO-14		P-2C	Salle mec. F-301		2C-40-AO-14																								
						XT9100	XT (Expansion Module)					P-2C	Salle mec. F-301											Alimentation 24VAC															
						XT9100	XT (Expansion)					P-2C	Salle mec. F-301											Tronc N2															
2C-41A-DI-1	DI-1	TOUR	TR1	BN. TR1	Bas niveau eau tour	Normal	Alarme	XP9105CO	XP 9105CO (8)	2	41 DI-1	D11 COM	P-2C	Salle mec. F-301	4058-096A	2C-41A-DI-1					2/18	Selon dispositif	Contact (NO)	XP40															
2C-41A-DI-2	DI-2	TOUR	TR1	E_EL. TR	Etat élément chaut. tour	Anrêl	Marche	XP9105CO	XP 9105CO (8)	2	41 DI-2	D12 COM	P-2C	Salle mec. F-301	4058-094A	2C-41A-DI-2					2/18	Selon dispositif	Contact (NO)	XP40															
2C-41A-DI-3	DI-3	LABO		E-VH-1	Etat vent VH-1 (F-219)	Anrêl	Marche	XP9105CO	XP 9105CO (8)	2	41 DI-3	D13 COM	P-2C	Salle mec. F-301		2C-41A-DI-3					2/18	NO.COM	Veris H-735 état	XP48															
2C-41A-DI-4	DI-4	LABO		E-VH-2	Etat vent VH-2 (F-224)	Anrêl	Marche	XP9105CO	XP 9105CO (8)	2	41 DI-4	D14 COM	P-2C	Salle mec. F-301		2C-41A-DI-4					2/18	NO.COM	Veris H-735 état	XP48															
2C-41A-DI-5	DI-5	LABO		E-VH-3	Etat vent VH-3 (F-209)	Anrêl	Marche	XP9105CO	XP 9105CO (8)	2	41 DI-5	D15 COM	P-2C	Salle mec. F-301		2C-41A-DI-5					2/18	NO.COM	Veris H-735 état	XP49															
2C-41A-DI-6	DI-6	LABO		E-VH-4	Etat vent VH-4 (F-214)	Anrêl	Marche	XP9105CO	XP 9105CO (8)	2	41 DI-6	D16 COM	P-2C	Salle mec. F-301		2C-41A-DI-6					2/18	NO.COM	Veris H-735 état	XP49															
2C-41A-DI-7	DI-7	LABO		A-H. F209	Alarme hotte (F-209)	Normal	Alarme	XP9105CO	XP 9105CO (8)	2	41 DI-7	D17 COM	P-2C	Salle mec. F-301		2C-41A-DI-7					2/18	Selon dispositif	Contact (NO)	XP40	Hotte associée au vent. d'évac. VH-3														
2C-41A-DI-8	DI-8	LABO		A-H. F214	Alarme hotte (F-214)	Normal	Alarme	XP9105CO	XP 9105CO (8)	2	41 DI-8	D18 COM	P-2C	Salle mec. F-301		2C-41A-DI-8					2/18	Selon dispositif	Contact (NO)	XP40	Hotte associée au vent. d'évac. VH-4														
2C-41B-DI-1	DI-1	REF	CC-1	A-REF	Alarme refroidisseur	Normal	Alarme	XP9104	XP 9104 (4DI)	2	41 DI-1	D11 COM	P-2C	Salle mec. F-301		2C-41B-DI-1					2/18	Selon dispositif	Contact (NO)	XP40															
2C-41B-DI-2	DI-2	LABO		A-H. F219	Alarme hotte (F-219)	Normal	Alarme	XP9104	XP 9104 (4DI)	2	41 DI-2	D12 COM	P-2C	Salle mec. F-301		2C-41B-DI-2					2/18	Device dependent	Contact (NO)	XP40															
2C-41B-DI-3	DI-3	LABO		A-H. F224	Alarme hotte (F-224)	Normal	Alarme	XP9104	XP 9104 (4DI)	2	41 DI-3	D13 COM	P-2C	Salle mec. F-301		2C-41B-DI-3					2/18	Device dependent	Contact (NO)	XP40															
2C-41B-DI-4	DI-4	REF	CC-1	E-PR-1B	Etat pompe eau ref PR-1B	Anrêl	Marche	XP9104	XP 9104 (4DI)	2	41 DI-4	D14 COM	P-2C	Salle mec. F-301		2C-41B-DI-4					2/18	NO.COM	Veris H-735 état	XP49	Point ajouté (14 juin 2001)														
2C-41B-DI-5	DI-5	LABO		C-VH-3	Comm.vent VH-3 (F-209)	Anrêl	Marche	XP9104	XP 9104 (4DI)	2	41 DI-5	DO5.COM	P-2C	Salle mec. F-301		2C-41B-DI-5	2/18	COIL+.	H-735	COM NO	2/14	Voir détail démarreur	Démareur (H-735 mar/arr)	XP49															
2C-41B-DI-6	DI-6	LABO		C-VH-4	Comm.vent VH-4 (F-214)	Anrêl	Marche	XP9104	XP 9104 (4DI)	2	41 DI-6	DO6.COM	P-2C	Salle mec. F-301		2C-41B-DI-6	2/18	COIL+.	H-735	COM NO	2/14	Voir détail démarreur	Démareur (H-735 mar/arr)	XP49															
2C-41B-DI-7	DI-7	TOUR	TR1	C-PR-2A	Comm.pompe eau 30C PR-2A	Anrêl	Marche	XP9104	XP 9104 (4DI)	2	41 DI-7	DO7.COM	P-2C	Salle mec. F-301		2C-41B-DI-7	2/18	COIL+.	H-735	COM NO	2/14	Voir détail démarreur	Démareur (H-735 mar/arr)	XP49	Nom et description du point modifiés (14 mars 2002)														
2C-41B-DI-8	DI-8	TOUR	TR1	C-PT-1	Comm.pompe eau tour	Anrêl	Marche	XP9104	XP 9104 (4DI)	2	41 DI-8	DO8.COM	P-2C	Salle mec. F-301		2C-41B-DI-8	2/18	2.7	RELAIS	1.3	2/14	Voir détail démarreur	Démareur (NO)	XP51															
						XT9100	XT (Expansion Module)					P-2C	Salle mec. F-301																										
						XT9100	XT (Expansion)					P-2C	Salle mec. F-301																										
2C-42A-DI-1	DI-1	TOUR	TR1	E-PR-2B	Etat pompe eau 30C PR-2B	Anrêl	Marche	XP9104	XP 9104 (4DI)	2	42 DI-1	D11 COM	P-2C	Salle mec. F-301		2C-42A-DI-1					2/18	NO.COM	Veris H-735 état	XP															

LISTE DE MATÉRIEL POUR LES ÉVACUEURS DE HOTTE VH-1, 2, 3, 4

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
BAV	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE	MAVA112M-AAEHC-M	PHOENIX CONTROLS
C_VH-x, E_VH-x	RELAIS DE COURANT COMBINÉ (COMMANDE ET ÉTAT) 1-135 AMP	H-735	VÉRIS
EP-1, 2, 3, 4	RELAIS ÉLECTRO-PNEUMATIQUE 120VAC	V11HAA-115	JOHNSON CONTROLS
EXV-HOT	VANNE D'ÉVACUATION "VENTURI", 30cm 12"Ø, N.O., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE	EXVB112M-AAHHO	PHOENIX CONTROLS
FHM	MONITEUR DE HOTTE	FHM610-FRC	PHOENIX CONTROLS
MAV	VANNE D'ALIMENTATION "VENTURI", 30cm 12"Ø, N.F., AVEC CONTRÔLEUR ÉLECTRONIQUE ET ACTUATEUR PNEUMATIQUE	MAVA112M-AAEHC	PHOENIX CONTROLS
	CONTRÔLEUR DE DÉBIT	MAC311V	PHOENIX CONTROLS
VSS	SENSEUR DE POSITION (OUVERTURE)	VSS110	PHOENIX CONTROLS
WPS	BLOC D'ALIMENTATION, 120VAC/+15VDC/-15VDC, 0.8A	WPS108	PHOENIX CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2C

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
C_REF	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DEB_ER	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
DX-2-40	RÉGULATEUR NUMÉRIQUE	DX-9100-8454	JOHNSON CONTROLS
	BASE DE MONTAGE	DX-9100-8990	JOHNSON CONTROLS
	PROTÈGE BORNIER	DX-9100-8991	JOHNSON CONTROLS
F-1	FUSIBLE 3 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-1A, B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 1 AMP	GMA-1	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
G-0 à G-3	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2C	PANNEAU 30"x42"x9.5"	M-8100-3042	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/100VA	MO100A	MARCUS
UNT-2-1, 2-2	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
VLV_CHA, VOL_M_E	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS
XP-2-42B	MODULE D'EXPENSION 8DI	XP-9105-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-41	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS
XP-2-42A	MODULE D'EXPENSION 4DI/4DO	XP-9104-8304	JOHNSON CONTROLS
XT-2-42	MODULE D'EXTENSION	XT-9100-8304	JOHNSON CONTROLS

SYSTÈMES SPÉCIAUX

Système divers sur d'autres dessins

Dessins de contrôle - Section	Description	Local
049 - Système CVCA	Génératrice d'urgence	Salle mécanique
056 - Système CVCA	Aérotherme 7	F-301
056 - Système CVCA	Aérotherme 8	F-301
117 - Unité de climatisation	Aérotherme 6	F-110
118 - Unité de climatisation	Aérotherme 4	F-125
118 - Unité de climatisation	Aérotherme 5	F-120

ADMINISTRATION

OCCUPATION

X

COMMANDE JOUR / NUIT

X

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X

LABORATOIRES

OCCUPATION

X

COMMANDE JOUR / NUIT

X

Depart jour cour.

X

Arret jour cour.

X

Depart semaine

X

Arret semaine

X

Depart samedi

X

Arret samedi

X

Depart dimanche

X

Arret dimanche

X



300 - Systèmes spéciaux - Contrôle pour Aérotherme

Dessins de contrôle - Section	Système	Pièce	Bloc/étage
047 - Sytème CVCA	V33-4	Stationnement	B / Vide sanitaire
		Garage	A / RDC
		Quais	B / RDC
		B-163 (entrée)	B / RDC
048 - Sytème CVCA	V43-18	Local technique	A / Mezz
048 - Sytème CVCA	V43-17	Local technique	B / Mezz
048 - Sytème CVCA	V43-19	Central d'énergie	A / Niv 3300
047 - Sytème CVCA	V37-1	Central d'énergie	A / Niv 37250
048 - Sytème CVCA	V43-18	Central d'énergie	A / Niv 43000
048 - Sytème CVCA	V43-17	Local technique	A / Mezz

SEQUENCES D'OPERATION

RESEAU JOUR/NUIT:

LA NUIT LES RELAIS ELECTRIQUE/PNEUMATIQUE EP-1 ET 2 SONT ALIMENTES ET PERMETTENT AUX THERMOSTATS DE PIECE DE PASSER AU POINT DE CONSIGNE DE NUIT.

CONTROLE DE PIECE

LES THERMOSTATS DE PIECE MODULENT EN SEQUENCE LES BOITES A DEBIT D'AIR VARIABLE ET LE CHAUFFAGE AFIN DE MAINTENIR LES PIECES A LEUR POINT DE CONSIGNE.

SALLE INFORMATIQUE



3 SEQUENCE D'OPERATION

EN OPERATION NORMALE LE VOLET EST OUVERT
PAR MEV-1 QUI EST ALIMENTE VIA LE CONTACT
N.F. DU PANNEAU DE CONTROLE AU HALON.
EN CAS DE DECHARGE DE HALON, LE
CONTACT OUVRE ET MEV-1 PREND SA POSITION
NORMALE, SOIT NORMALEMENT FERMEE.

LISTE DE MATERIEL

IDENT.	MODELE	QTE	DESCRIPTION

RESEAU DE THERMOSTAT JOUR/NUIT

PRV-1&2	A-4000-129	2	STATIONS DE REDUCTION DE PRESSION
EP-1&2	V-9011-1	2	RELAIS ELECTRIQUE/PNEUMATIQUE
G-1&2	G-2010-11	2	INDICATEURS 0-30PSI
ASV-1&2	V-4324-1004	2	VALVES A AIR 3 VOIES

CONTROLE DE PIECE

TP-X	T-4506-201		THERMOSTATS JOUR/NUIT AVEC BOUTON DE RAPPEL
	T-4506-203		THERMOSTATS JOUR/NUIT SANS BOUTON POUR ENDROIT OU ILS DOIVENT ETRE ENCASTRES
TPY	T-4002-201		THERMOSTAT DE PIECE
BE-X	T-4000-110		BOITE ASPIRANTE
	T-4000-111		COUVERCLE BEIGE
V-1	V-3754-1019		VALVE 2 VOIES Ø 1/2" C.V. 1.2
PE-1			RELAIS PNEUMATIQUE/ELECTRIQUE PAR D'AUTRES

CONTROLE AEROTHERME

TE-X	T265-22	3 2	THERMOSTAT DE PIECE ELECTRIQUE
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△ LISTE DE MATERIEL

IDENT.

MODELE

QTE

DESCRIPTION

SALLE INFORMATIQUE

T-1

TRANSFO.

1

120 / 24 V , 30 VA

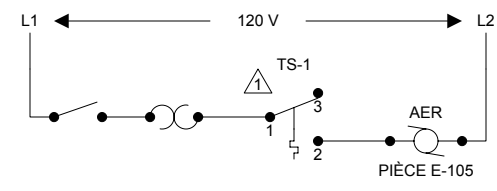
MEV-1

FM. 24

1

ACTUATEUR ELECTRIQUE

AÉROTHERME PB60-24



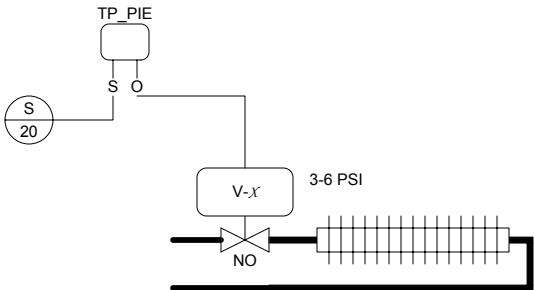
LISTE DE MATÉRIEL CHANTIER

IDENT.	QTÉ	MODÈLE	DESCRIPTION
TP_PIE	3	T-4002-201	THERMOSTAT PNEUMATIQUE
TS-1	1	T26S-18C	THERMOSTAT ÉLECTRIQUE
V-X	3	VG7241CT+3008B	SOUPAPE 2 VOIES N.O. C.V. 0.7 1/2" Ø
	1	VG7241ET+3008B	SOUPAPE 2 VOIES N.O. C.V. 1.8, 1/2"Ø

SÉQUENCE DE FONCTIONNEMENT

- CONTRÔLE DES CONVECTEURS**
- La température de pièce est maintenue par un thermostat pneumatique opérant la soupape de chauffage du convecteur.
- CONTRÔLE DES UNITÉS À AIR FORCÉ (AÉROTHERMES)**
- La température est maintenue par un thermostat de ligne opérant le ventilateur.

CHAUFFAGE PÉRIMÉTRIQUE



PIÈCES: E-102
E-110
E-118
E-100

TITRE DU DESSIN						
CHAUFFAGE PÉRIMÉTRIQUE ET AÉROTHERME		2	TEL QUE CONSTRUIT		97/09/17	A.B.
		1	CONSTRUCTION		97/05/29	A.B.
DESSIN DE RÉFÉRENCE		NO.	RÉVISION		ECN	DATE
Représentant	Gérant De Projet	Concepteur	Dessin		APPROUVÉ	
J.C.R.	G.S.	M.C.D.	Par A.B.	DATE 97/01/28	Par	DATE
NOM DU PROJET		Information Succursale		SLW: 000000		
ANNEXE DU CENTRE DE RECHERCHE 3600 BOUL.CASAVANT STE-HYACINTHE (QC)		JOHNSON CONTROLS Groupe de la régulation		355, boul. Montpellier St-Laurent (Québec) H4N 2G6 Tél: (514) 747-2580 Fax: (514) 747-9562		NUMÉRO DE CONTRAT 7096-0004
						NUMÉRO DE DESSIN 4068-060

AÉROTHERME PB60-24 ET CHAUFFAGE PÉRIMÉTRIQUE

SÉQUENCE D'OPÉRATION

CONTRÔLE DES CONVECTEURS

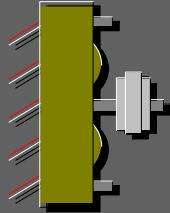
- La température de pièce est maintenue par un thermostat pneumatique opérant la soupape de chauffage du convecteur.

CONTRÔLE DES UNITÉS À AIR FORCÉ (AÉROTHERMES)

- La température est maintenue par un thermostat de ligne opérant le ventilateur.

LISTE DE MATÉRIEL POUR L'AÉROTHERME PB60-24 ET CHAUFFAGE PÉRIMÉTRIQUE

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
TP_PIE	THERMOSTAT PNEUMATIQUE	T-4002-201	JOHNSON CONTROLS
TS-1	THERMOSTAT ÉLECTRIQUE	T26S-18C	JOHNSON CONTROLS
V-X	SOUPAPE 2 VOIES N.O. C.V. 0.7 ½" Ø	VG7241CT+3008B	JOHNSON CONTROLS
	SOUPAPE 2 VOIES N.O. C.V. 1.8, ½"Ø	VG7241ET+3008B	JOHNSON CONTROLS



Commande
Aérotherme #1

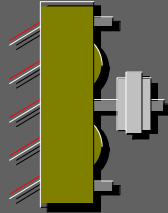
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PC TEMP. #1

X

TEMP. F-002 #1

X



Commande
Aérotherme #2

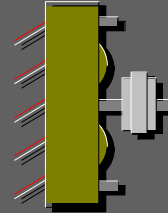
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PC TEMP. #2

X

TEMP. F-002 #2

X



Commande
Aérotherme #3

X

PC TEMP. #3

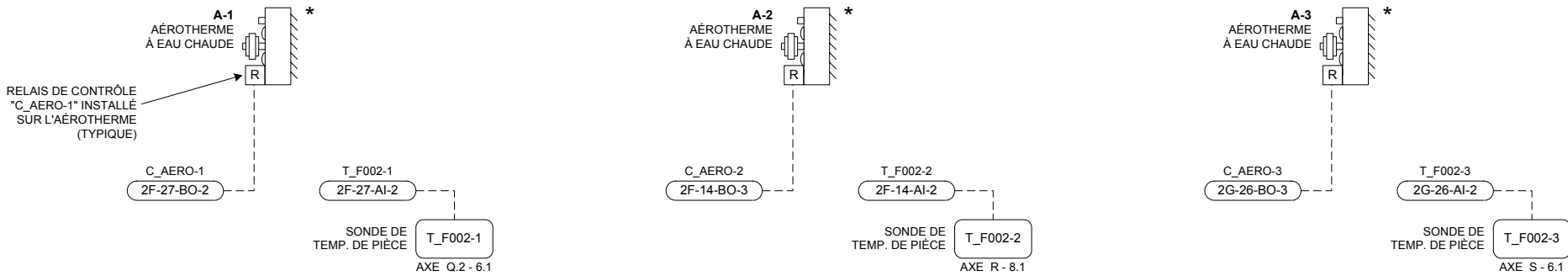
X

TEMP. F-002 #3

X



AÉROTHERMES A-1, A-2 ET A-3
(LOCAL F-002)



LISTE DE MATÉRIEL

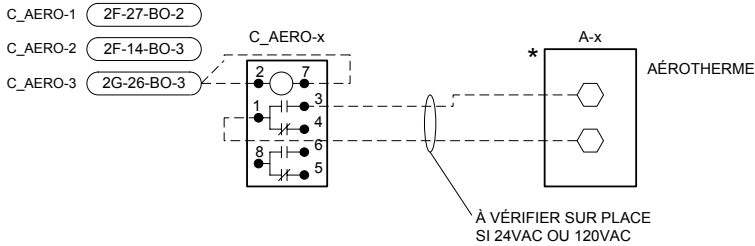
IDENT.	QTÉ	MODÈLE	DESCRIPTION
C_AERO-1, 2, 3	3	RCPTFU82D10-24VAC	RELAIS 2 PÔLES 24VAC - FEME
	3	S-408	BASE DE RELAIS 8 BROCHES - ELECTROMATIC
T_F002-1, 2, 3	3	TE-6314P-1	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI

SÉQUENCE D'OPÉRATION (TYPE 1)

- Sur une demande de chauffage provenant de la sonde (T_F002-x), l'aérotherme est activé afin de maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).

DIAGRAMME ÉLECTRIQUE

RACCORDEMENTS DES AÉROTHERMES (A-1 à A-3)



AÉROTHERMES A-4 ET A-5: VOIR DESSIN 4068-088
AÉROTHERME A-6: VOIR DESSIN 4068-087
AÉROTHERMES A-7 ET A-8: VOIR DESSIN 4068-089

Titre du Dessin							
Aérotthermes		2	TEL QUE CONSTRUIT	D.B.	02/04/29	O.P.	
		1	POUR CONSTRUCTION		06/09/01	D.B.	
		NO.	REVISION	ECN	DATE	PAR	
DESSIN DE RÉFÉRENCE		NO.	REVISION	ECN	DATE	PAR	
Représentant	Gérant De Projet	Concepteur	PAR	D.B.	DATE	09/06/2001	PAR
Nom du Projet		Information Succursale		NUMÉRO CONTRAT			
CRDA ST-HYACINTHE Projet d'Innovation Technologique 3600, boul. Casavant St-Hyacinthe (Québec)		 Groupe de la régulation		Johnson Controls Ltée 355, boul. Montpellier St-Laurent Qc H4N 2G6 Phone: (514) 747-2556 Fax: (514) 747-9562		1096-0093	
						NUMÉRO DESSIN 4068-106	

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-14.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:
None
Select heating type:
None
Select cooling type:
Staged
Cooling diagnostics?
No
Select number of cooling stages:
1 Stage
Cooling setpoint reset from zone humidity?
No
Fan cycled during occupied and standby modes?
No
Air flow interlock logic?
Yes
Shut the fan off upon loss of air flow?
No
Lighting interface?
No
Power fail restart logic?
No
Define remote AI points.
None (unused)
Define "Occupied" mode.
Software (N2) command
Define "Standby" mode.
Software (N2) command
Define "Shutdown" mode.
Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?

Yes

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 3

Parameters: Comp Setpoint Differential
 Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO)

(NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
BO	1	Fan	SF-C
* BO	3	BO - 3	BO - 3

BO 4 Clg Stage 1 DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
-----	-----	-----	-----	-----
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	21.5
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	1.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	21.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0
*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****
Sideloop-1/Comp Stpt				
ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	0.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-27.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT140-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Staged

Heating diagnostics?

No

Select number of heating stages:

1 Stage

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

TMZ Digital room sensor

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
Yes

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 3

Parameters: Comp Setpoint Differential
Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO) (NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
----	-----	-----	-----
BO	1	Fan	SF-C
BO	2	Htg Stage 1	HTG1-C
* BO	3	BO - 3	BO - 3
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
----	-----	-----	-----	-----
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	20.7
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	18.1
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-1.5
ADF	139	Htg Integ Time	HTGIT	0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	185	Heat Stage 1 Percent	HTSTG1	5
ADF	190	Heating Failsoft	HEATFAIL	0
AO	7	Heating Command	HEATCMD	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0

*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****
Sideloop-1/Comp Stpt				
ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

STANDARD CONFIGURATION PRINT - SHORT FORM

PROJECT INFORMATION

HVAC PRO Version : 8.03
Configuration File : C:\PROJECT\90965018\HVACPRO\UNT\UNT-2-26.cfg
Configuration date : 05-02-23
Operator Name :
Job Name :
Contract Number :
Frequency : 60 Hz
Engineering Units : Metric (Degrees C)
Device Group : UNT
Device Name : UNT141-1
Application Group : Rooftop Applications
Application Name : Packaged Rooftop
Configuration History:

QUESTION AND ANSWER SESSION

Select the economizer output type:

None

Select heating type:

Staged

Heating diagnostics?

No

Select number of heating stages:

1 Stage

Heating lockout from outdoor air?

No

Select cooling type:

Staged

Cooling diagnostics?

No

Select number of cooling stages:

1 Stage

Cooling setpoint reset from zone humidity?

No

Fan cycled during occupied and standby modes?

No

Air flow interlock logic?

Yes

Shut the fan off upon loss of air flow?

No

Lighting interface?

No

Power fail restart logic?

No

Define remote AI points.

TMZ Digital room sensor

Define "Occupied" mode.

Software (N2) command

Define "Standby" mode.

Software (N2) command

Define "Shutdown" mode.

Software (N2) command
Do you want the temporary occupied feature?
No
Do you want boost mode?
No
Include diagnostics?
Yes

SIDELOOP DEFINITION

Sideloop #01: Sideloop-1

Choose the sideloop type:

AI to BO

Input conditioning:

None

Choose control logic:

Compare (less than)

Is occupied / unoccupied control needed?

No

Is shutdown control needed?

No

Define a BI point as a binary interlock?

No

Analog Inputs: AI - 2

Binary Inputs: (NONE)

Analog Outputs: (NONE)

Binary Outputs: BO - 3

Parameters: Comp Setpoint Differential
Comp Failsoft Input

ANALOG INPUTS (* Denotes OPERATOR-DEFINED AI)

Point Type	Point Address	Long Name	Short Name
AI	1	Zone Temp	ZN-T
* AI	2	AI - 2	AI - 2
* AI	3	AI - 3	AI - 3
AI	5	Outdoor Air Temp	OA-T

BINARY INPUTS (* Denotes OPERATOR-DEFINED BI)

Point Type	Point Address	Long Name	Short Name
BI	1	Air Flow Interlk	SF-S
* BI	2	BI - 2	BI - 2
* BI	3	BI - 3	BI - 3

ANALOG OUTPUTS (* Denotes OPERATOR-DEFINED AO) (NONE)

BINARY OUTPUTS (* Denotes OPERATOR-DEFINED BO)

Point Type	Point Address	Long Name	Short Name
----	-----	-----	-----
BO	1	Fan	SF-C
BO	2	Htg Stage 1	HTG1-C
* BO	3	BO - 3	BO - 3
BO	4	Clg Stage 1	DX1-C

PARAMETERS (* Denotes MONITOR ONLY Parameters)

Point Type	Point Address	Long Name	Short Name	Value
----	-----	-----	-----	-----
Modes				
*BD	22	Occupied Status	OCCSTS	****
BD	227	Occupied Command	OCCCMD	****
*ADI	225	Occ Start Time	OCCSTART	00:00
*ADI	226	Occ Stop Time	OCCSTOP	00:00
BD	228	Standby Command	STBYCMD	****
BD	229	Shutdown Command	SHUTDOWN	****
*BD	23	Shutdown Status	SHUTSTS	****
Zone Cooling Setpoints				
ADF	129	Occ Clg Setpt	OCCCLGSP	24.0
ADF	130	Stby Clg Setpt	STBYCLG	25.0
ADF	131	Unocc Clg Setpt	UNOCCLG	26.0
ADF	142	Clg Deadband	CLGDB	0.5
ADF	143	Alt Clg Deadband	ALTCLGDB	0.0
ADF	132	Clg Prop Band	CLGPB	1.5
ADF	133	Clg Integ Time	CLGINT	0
*ADF	21	Actual Clg Setpt	ACTCLGSP	****
Zone Heating Setpoints				
ADF	134	Occ Htg Setpt	OCCHTGSP	18.0
ADF	135	Stby Htg Setpt	STBYHTG	18.0
ADF	136	Unocc Htg Setpt	UNOCHTG	16.0
ADF	137	Htg Prop Band	HTGPB	-1.5
ADF	139	Htg Integ Time	HTGIT	0
*ADF	20	Actual Htg Setpt	ACTHTGSP	****
Heating Output				
ADF	185	Heat Stage 1 Percent	HTSTG1	5
ADF	190	Heating Failsoft	HEATFAIL	0
AO	7	Heating Command	HEATCMD	****
Cooling Output				
ADF	186	Cool Stage 1 Percent	CLGSTG1	5
ADF	189	Cooling Failsoft	COOLFAIL	0
AO	8	Compressor Command	COMP CMD	****
OA Cooling Lockout				
ADF	155	OA Clg Lockout	OACLGLOK	15.0
*BD	17	Clg Lockout Stat	CLGLOKST	****
Fan Operation				
ADF	163	Fan Purge Time	FANPURGE	2.0

*BD	19	Fan Alarm	FANALRM	****
ADF	188	Fan Alarm Delay	FALMDLY	0.5
TMZ Setpoint Range				
ADF	127	Low Setpoint Limit	TMZLSL	18
ADF	128	High Setpoint Limit	TMZHSL	26
Rooftop Diagnostics				
*ADF	30	Controller Run Time	CTLRRUNT	****
*ADF	32	Moving Avg Zone Temp err	TEMPERR	****
Sideloop-1/Comp Stpt				
ADF	252	Comp Setpoint	COMPSP	21.0
ADF	251	Differential	DIFF	1.0
ADF	253	Comp Failsoft Input	FSINPT	0.0

AÉROTHERMES 1, 2, 3

SÉQUENCE D'OPÉRATION (TYPE 1)

- Sur une demande de chauffage provenant de la sonde (T_F002-x), l'aérotherme est activé afin de maintenir la température de la pièce au point de consigne (P.C. 22°C, ajustable).

Informations sur points				Informations sur régulateurs								Informations sur panneaux				Appareils intermédiaires					Appareils hors panneau				Détail de		
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destination câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	réf.	Commentaires	
		AC-27				UNT	UNT 140	1	27			P-2F	Local F-002													Alimentation 24VAC	
2M-27-AI-1	AI-1	AC-27	T_PIE	Temp.pieçe	°C	UNT	UNT 140	1	27	AI-1	PHONE JACK	P-2F	Local F-002	4068-088	2F-27-AI-1						8/24	Prise tél.	Metastat-Prise télep			Tronc N2	
2M-27-AI-2	AI-2	AERO	T_F002-1	Temp.pieçe F-002 #1	°C	UNT	UNT 140	1	27	AI-2	AI2,AICM	P-2F	Local F-002	4068-088	2F-27-AI-2						2/18	2 fils	TE		UV2	Sonde située dans local F-120	
2M-27-AI-3	AI-3	AC-27	T_ALI	Temp.alimentation	°C	UNT	UNT 140	1	27	AI-3	AI3,AICM	P-2F	Local F-002	4068-088	2F-27-AI-3						2/18	2 fils	TE (Gaine)		UV1	Sonde #2 située dans local F-002	
	AI-4	AC-27				UNT	UNT 140	1	27	AI-4		P-2F	Local F-002		2F-27-AI-4												
	AI-5	AC-27				UNT	UNT 140	1	27	AI-5		P-2F	Local F-002		2F-27-AI-5												
	AI-6	AC-27				UNT	UNT 140	1	27	AI-6		P-2F	Local F-002		2F-27-AI-6												
2M-27-BI-1	BI-1	AC-27	E_VA	État vent alimentation	Arrêt	Marche	UNT	UNT 140	1	27	BI-1	BI1,24VAC	P-2F	Local F-002	4068-088	2F-27-BI-1					2/18	Selon dispositif	H-708		UV70		
2M-27-BI-2	BI-2	AC-27	E_FILT	État des filtres	Normal	Alarme	UNT	UNT 140	1	27	BI-2	BI2,24VAC	P-2F	Local F-002	4068-088	2F-27-BI-2					2/18	Y.R	P32 (NO)		UV70		
2M-27-BI-3	BI-3	AC-27	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 140	1	27	BI-3	BI3,24VAC	P-2F	Local F-002	4068-088	2F-27-BI-3					2/18	Selon dispositif	Contact (NO)		UV70		
	BI-4	AC-27				UNT	UNT 140	1	27	BI-4		P-2F	Local F-002		2F-27-BI-4												
2M-27-BO-1	BO-1	AC-27	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 140	1	27	BO-1	BO1,COM	P-2F	Local F-002	4068-088	2F-27-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2M-27-BO-2	BO-2	AERO	C_AERO-1	Comm.aérotherme A-1	Arrêt	Marche	UNT	UNT 140	1	27	BO-2	BO2,COM	P-2F	Local F-002	4068-088	2F-27-BO-2	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	Aéro. A-1 - local F-002 (contrôlé par AI-2)
2M-27-BO-3	BO-3	AC-27	C_AERO4S	Comm.aérothermes A-4, 5	Arrêt	Marche	UNT	UNT 140	1	27	BO-3	BO3,COM	P-2F	Local F-002	4068-088	2F-27-BO-3	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	Aéro. A-4, A-5 - local F-120 (contrôlé par AI-1)
2M-27-BO-4	BO-4	AC-27	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 140	1	27	BO-4	BO4,COM	P-2F	Local F-002	4068-088	2F-27-BO-4	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-27				UNT	UNT 140	1	27	BO-5		P-2F	Local F-002		2F-27-BO-5												
	BO-6	AC-27				UNT	UNT 140	1	27	BO-6		P-2F	Local F-002		2F-27-BO-6												
	BO-7	AC-27				UNT	UNT 140	1	27	BO-7		P-2F	Local F-002		2F-27-BO-7												
	BO-8	AC-27				UNT	UNT 140	1	27	BO-8		P-2F	Local F-002		2F-27-BO-8												
						VMA	VMA 1410	1	127			P-2	Unité AC-26													Alimentation 24VAC	
		AC-27				VMA	VMA 1410	1	127			P-2	*****													Tronc N2	
2-127-AI-1	AI-1	AC-27	RES-120	Résistance 1000 ohms	°C	VMA	VMA 1410	1	127	AI-1	AI1,AICM	P-2	*****	4068-088	2-127-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-27				VMA	VMA 1410	1	127	AI-2		P-2	*****		2-127-AI-2												
	BI-1	AC-27				VMA	VMA 1410	1	127	BI-1		P-2	*****		2-127-BI-1												
	BI-2	AC-27				VMA	VMA 1410	1	127	BI-2		P-2	*****		2-127-BI-2												
	BI-3	AC-27				VMA	VMA 1410	1	127	BI-3		P-2	*****		2-127-BI-3												
2-127-AI-5	AI-5	AC-27	P_VEL120	Pression de vélocité	Pa	VMA	VMA 1410	1	127	AI-5		P-2	*****	4068-088	2-127-AI-5											Air neuf local F-120	
						VMA	VMA 1410	1	137			P-2	*****													Alimentation 24VAC	
		AC-27				VMA	VMA 1410	1	137			P-2	*****													Tronc N2	
2-137-AI-1	AI-1	AC-27	RES-125	Résistance 1000 ohms	°C	VMA	VMA 1410	1	137	AI-1	AI1,AICM	P-2	*****	4068-088	2-137-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-27				VMA	VMA 1410	1	137	AI-2		P-2	*****		2-137-AI-2												
	BI-1	AC-27				VMA	VMA 1410	1	137	BI-1		P-2	*****		2-137-BI-1												
	BI-2	AC-27				VMA	VMA 1410	1	137	BI-2		P-2	*****		2-137-BI-2												
	BI-3	AC-27				VMA	VMA 1410	1	137	BI-3		P-2	*****		2-137-BI-3												
2-137-AI-5	AI-5	AC-27	P_VEL125	Pression de vélocité	Pa	VMA	VMA 1410	1	137	AI-5		P-2	*****	4068-088	2-137-AI-5											Air neuf local F-125	

Étiq.		Type de point		Informations sur points		Informations sur régulateurs						Informations sur panneaux				Appareils intermédiaires				Appareils hors panneau				Détail de réf.		Commentaires																											
				Nom du système		Nom de l'objet		Description		Unités		Type de régulateur		Détails du régulateur		No. du tronc		Adr. sur tronc		Destinatio n câble		Terminaisons sortie		Panneau		Emplacement du panneau		Dessin de référence		Numéro de câble		Câble / tube		Terminaisons entrée		Appareil		Terminaisons sortie		Emplac.		Câble tube		Terminaisons entrée		Appareil		Calibration		Détail de réf.			
				AC-14								UNT		UNT 141		1		14						P-2F		Local F-002																						Alimentation 24VAC					
				AC-14								UNT		UNT 141		1		14		AI-1				P-2F		Local F-002																						Tronc N2					
2L-14-AI-2		AI-2		AERO		T_F002-2		Temp.pieçe F-002 #2		°C		UNT		UNT 141		1		14		AI-2		AI2,AICM		P-2F		Local F-002		4068-075A		2F-14-AI-2																		Sonde #2 située dans local F-002					
2L-14-AI-3		AI-3		AC-14		T_ALI		Temp.alimentation		°C		UNT		UNT 141		1		14		AI-3		AI3,AICM		P-2F		Local F-002		4068-075A		2F-14-AI-3																		UV1					
		AI-4		AC-14								UNT		UNT 141		1		14		AI-4				P-2F		Local F-002				2F-14-AI-4																							
		AI-5		AC-14								UNT		UNT 141		1		14		AI-5				P-2F		Local F-002				2F-14-AI-5																							
		AI-6		AC-14								UNT		UNT 141		1		14		AI-6				P-2F		Local F-002				2F-14-AI-6																							
2L-14-BI-1		BI-1		AC-14		E_VA		État vent.alimentation		Arrêt		Marche		UNT		UNT 141		1		14		BI-1		BI1,24VAC		P-2F		Local F-002		4068-075A		2F-14-BI-1																UV70					
2L-14-BI-2		BI-2		AC-14		E_FILT		État des filtres		Normal		Alarme		UNT		UNT 141		1		14		BI-2		BI2,24VAC		P-2F		Local F-002		4068-075A		2F-14-BI-2																UV70					
2L-14-BI-3		BI-3		AC-14		ALM_AC		Alarme unité AC		Normal		Alarme		UNT		UNT 141		1		14		BI-3		BI3,24VAC		P-2F		Local F-002		4068-075A		2F-14-BI-3																UV70					
		BI-4		AC-14								UNT		UNT 141		1		14		BI-4				P-2F		Local F-002				2F-14-BI-4																							
2L-14-BO-1		BO-1		AC-14		C_VA		Comm.a/d vent.alim.		Arrêt		Marche		UNT		UNT 141		1		14		BO-1		BO1,COM		P-2F		Local F-002		2F-14-BO-1		2/18		COIL		RELAIS		NO,COM				2/14		Voir détail déma		Démarreur (NO)-(sw h)				UV51			
		BO-2		AC-14								UNT		UNT 141		1		14		BO-2				P-2F		Local F-002				2F-14-BO-2																							
2L-14-BO-3		BO-3		AERO		C_AERO-2		Comm.aérotherme A-2		Arrêt		Marche		UNT		UNT 141		1		14		BO-3		BO3,COM		P-2F		Local F-002		4068-075A		2F-14-BO-3		2/18		Bobine		RELAIS		NO,COM		2/14		Voir détail déma		Démarreur (NO)-(sw h)				UV51			
2L-14-BO-4		BO-4		AC-14		C_COMP		Comm.a/d compresseur		Arrêt		Marche		UNT		UNT 141		1		14		BO-4		BO4,COM		P-2F		Local F-002		4068-075A		2F-14-BO-4		2/18		Bobine		RELAIS		NO,COM		2/14		Voir détail déma		Démarreur (NO)-(sw h)				UV51			
		BO-5		AC-14								UNT		UNT 141		1		14		BO-5				P-2F		Local F-002				2F-14-BO-5																							
		BO-6		AC-14								UNT		UNT 141		1		14		BO-6				P-2F		Local F-002				2F-14-BO-6																							
		AO-1		AC-14								UNT		UNT 141		1		14		AO-1				P-2F		Local F-002		4068-075A		2F-14-AO-1																							
		AO-2		AC-14								UNT		UNT 141		1		14		AO-2				P-2F		Local F-002				2F-14-AO-2																							
				AC-14								VMA		VMA 1410		1		114						P-2		Unité AC-14																						Alimentation 24VAC					
				AC-14		RES		Résistance 1000 ohms		°C		VMA		VMA 1410		1		114		AI-1		AI1,AICM		P-2		Unité AC-14		4068-075A		2-114-AI-1																VMA1							
		AI-2		AC-14								VMA		VMA 1410		1		114		AI-2				P-2		Unité AC-14				2-114-AI-2																							
		BI-1		AC-14								VMA		VMA 1410		1		114		BI-1				P-2		Unité AC-14				2-114-BI-1																							
		BI-2		AC-14								VMA		VMA 1410		1		114		BI-2				P-2		Unité AC-14				2-114-BI-2																							
		BI-3		AC-14								VMA		VMA 1410		1		114		BI-3				P-2		Unité AC-14				2-114-BI-3																							
2-114-AI-5		AI-5		AC-14		P_VEL		Pression de vélocité		Pa		VMA		VMA 1410		1		114		AI-5				P-2		Unité AC-14		4068-075A		2-114-AI-5																Air neuf AC-14							
				AC-14								VMA		VMA 1430		1		141						P-2		Serp. SE-4 (F-108)																						Alimentation 24VAC					
				AC-14								VMA		VMA 1430		1		141						P-2		Serp. SE-4 (F-108)																						Tronc N2					
2-141-AI-1		AI-1		AC-14		T_PIE108		Temp.pieçe F-108		°C		VMA		VMA 1430		1		141		AI-1		PHONE JACK		P-2		Serp. SE-4 (F-108)		4068-075B		2-141-AI-1		8/24		Prise tél.		Metastat-Prise télép								VMA2									
		AI-2		AC-14								VMA		VMA 1430		1		141		AI-2				P-2		Serp. SE-4 (F-108)				2-141-AI-2																							
		AI-3		AC-14								VMA		VMA 1430		1		141		AI-3				P-2		Serp. SE-4 (F-108)				2-141-AI-3																							
		AI-4		AC-14								VMA		VMA 1430		1		141		AI-4				P-2		Serp. SE-4 (F-108)				2-141-AI-4																							
		AI-5		AC-14								VMA		VMA 1430		1		141		AI-5				P-2		Serp. SE-4 (F-108)				2-141-AI-5																							
		BI-1		AC-14								VMA		VMA 1430		1		141		BI-1				P-2		Serp. SE-4 (F-108)				2-141-BI-1																							
		BI-2		AC-14								VMA		VMA 1430		1		141		BI-2				P-2		Serp. SE-4 (F-108)				2-141-BI-2																							
		BI-3		AC-14								VMA		VMA 1430		1		141		BI-3				P-2		Serp. SE-4 (F-108)				2-141-BI-3																							
		BO-1		AC-14								VMA		VMA 1430		1		141		BO-1				P-2		Serp. SE-4 (F-108)				2-141-BO-1																							
		BO-2		AC-14								VMA		VMA 1430		1		141		BO-2				P-2		Serp. SE-4 (F-108)				2-141-BO-2																							
2-141-BO-3		BO-3		AC-14		C_SC		Comm.serpentin chauffage		Arrêt		Marche		VMA		VMA 1430		1		141		BO-3		BO3,24VAC		P-2		Serp. SE-4 (F-108)		4068-075B		2-141-BO-3		2/18		Selon dispositif		SOR 24 V c.a.						VMA51		Serp. avec relais TRIAC							
		BO-4		AC-14								VMA		VMA 1430		1		141		BO-4				P-2		Serp. SE-4 (F-108)				2-141-BO-4																							
		BO-5		AC-14								VMA		VMA 1430		1		141		BO-5				P-2		Serp. SE-4 (F-108)				2-141-BO-5																							
		AO-1		AC-14								VMA		VMA 1430		1		141		AO-1				P-2		Serp. SE-4 (F-108)				2-141-AO-1																							
		AO-2		AC-14								VMA		VMA 1430		1		141		AO-2				P-2		Serp. SE-4 (F-108)				2-141-AO-2																							
				AC-14								VMA		VMA 1430		1		142						P-2		Serp. SE-5 (F-109)																				Alimentation 24VAC							
2-142-AI-1		AI-1		AC-14		T_PIE109		Temp.pieçe F-109		°C		VMA		VMA 1430		1		142		AI-1		PHONE JACK		P-2		Serp. SE-5 (F-109)		4068-075B		2-142-AI-1		8/24		Prise tél.		Metastat-Prise télép								VMA2									
		AI-2		AC-14								VMA		VMA 1430		1		142		AI-2				P-2		Serp. SE-5 (F-109)				2-142-AI-2																							
		AI-3		AC-14								VMA		VMA 1430																																							

Informations sur points				Informations sur régulateurs							Informations sur panneaux					Appareils intermédiaires					Appareils hors panneau						
Étiq.	Type de point	Nom du système	Nom de l'objet	Description	Unités	Type de régulateur	Détails du régulateur	No. du tronc	Adr. sur tronc	Destinatio n câble	Terminaisons sortie	Panneau	Emplacement du panneau	Dessin de référence	Numéro de câble	Câble / tube	Terminaisons entrée	Appareil	Terminaisons sortie	Emplac.	Câble / tube	Terminaisons entrée	Appareil	Calibration	Détail de réf.	Commentaires	
		AC-26				UNT	UNT 140					P-2G	Local F-002													Alimentation 24VAC	
		AC-26	T_PIE	Temp.pieçe	°C	UNT	UNT 140	2	26			P-2G	Local F-002													Tronc N2	
2O-26-AI-1	AI-1	AC-26	T_PIE	Temp.pieçe	°C	UNT	UNT 140	2	26	AI-1	PHONE JACK	P-2G	Local F-002	4068-087	2G-26-AI-1						8/24	Prise tél.	Metastat-Prise télep		UV2	Sonde située dans local F-110/115	
2O-26-AI-2	AI-2	AERO	T_F002-3	Temp.pieçe F-002 #3	°C	UNT	UNT 140	2	26	AI-2	AI2,AICM	P-2G	Local F-002	4068-087	2G-26-AI-2						2/18	2 fils	TE		UV1	Sonde #3 située dans local F-002	
2O-26-AI-3	AI-3	AC-26	T_ALI	Temp.alimentation	°C	UNT	UNT 140	2	26	AI-3	AI3,AICM	P-2G	Local F-002	4068-087	2G-26-AI-3						2/18	2 fils	TE (Gaine)		UV1		
	AI-4	AC-26				UNT	UNT 140	2	26	AI-4		P-2G	Local F-002		2G-26-AI-4												
	AI-5	AC-26				UNT	UNT 140	2	26	AI-5		P-2G	Local F-002		2G-26-AI-5												
	AI-6	AC-26				UNT	UNT 140	2	26	AI-6		P-2G	Local F-002		2G-26-AI-6												
2O-26-BI-1	BI-1	AC-26	E_VA	État vent.alimentation	Arrêt	Marche	UNT	UNT 140	2	26	BI-1	BI1,24VAC	P-2G	Local F-002	4068-087	2G-26-BI-1					2/18	Selon dispositi	H-708		UV70		
2O-26-BI-2	BI-2	AC-26	E_FILT	État des filtres	Normal	Salas	UNT	UNT 140	2	26	BI-2	BI2,24VAC	P-2G	Local F-002	4068-087	2G-26-BI-2					2/18	Y.R	P32 (NO)		UV70		
2O-26-BI-3	BI-3	AC-26	ALM_AC	Alarme unité AC	Normal	Alarme	UNT	UNT 140	2	26	BI-3	BI3,24VAC	P-2G	Local F-002	4068-087	2G-26-BI-3					2/18	Selon dispositi	Contact (NO)		UV70		
	BI-4	AC-26				UNT	UNT 140	2	26	BI-4		P-2G	Local F-002		2G-26-BI-4												
2O-26-BO-1	BO-1	AC-26	C_VA	Comm.a/d vent.alim.	Arrêt	Marche	UNT	UNT 140	2	26	BO-1	BO1,COM	P-2G	Local F-002	4068-087	2G-26-BO-1	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
2O-26-BO-2	BO-2	AERO	C_AERO-6	Comm.aérotherme A-6	Arrêt	Marche	UNT	UNT 140	2	26	BO-2	BO2,COM	P-2G	Local F-002	4068-087	2G-26-BO-2	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	Aéro. A-6 - local F-110 (contrôlé par AI-1)
2O-26-BO-3	BO-3	AERO	C_AERO-3	Comm.aérotherme A-3	Arrêt	Marche	UNT	UNT 140	2	26	BO-3	BO3,COM	P-2G	Local F-002		2G-26-BO-3	2/18	COIL	RELAIS	NO.COM		2/14	See Démarreur	Démarreur (NO)-(sw h)		UV51	Aéro. A-3 - local F-002 (contrôlé par AI-2)
2O-26-BO-4	BO-4	AC-26	C_COMP	Comm.a/d compresseur	Arrêt	Marche	UNT	UNT 140	2	26	BO-4	BO4,COM	P-2G	Local F-002	4068-087	2G-26-BO-4	2/18	COIL	RELAIS	NO.COM		2/14	Voir détail déma	Démarreur (NO)-(sw h)		UV51	
	BO-5	AC-26				UNT	UNT 140	2	26	BO-5		P-2G	Local F-002		2G-26-BO-5												
	BO-6	AC-26				UNT	UNT 140	2	26	BO-6		P-2G	Local F-002		2G-26-BO-6												
	BO-7	AC-26				UNT	UNT 140	2	26	BO-7		P-2G	Local F-002		2G-26-BO-7												
	BO-8	AC-26				UNT	UNT 140	2	26	BO-8		P-2G	Local F-002		2G-26-BO-8												
						VMA	VMA 1410					P-2	Unité AC-26													Alimentation 24VAC	
		AC-26				VMA	VMA 1410	2	126			P-2	*****													Tronc N2	
2-126-AI-1	AI-1	AC-26	RES-110	Résistance 1000 ohms	°C	VMA	VMA 1410	2	126	AI-1	AI1,AICM	P-2	*****	4068-087	2-126-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-26				VMA	VMA 1410	2	126	AI-2		P-2	*****		2-126-AI-2												
	BI-1	AC-26				VMA	VMA 1410	2	126	BI-1		P-2	*****		2-126-BI-1												
	BI-2	AC-26				VMA	VMA 1410	2	126	BI-2		P-2	*****		2-126-BI-2												
	BI-3	AC-26				VMA	VMA 1410	2	126	BI-3		P-2	*****		2-126-BI-3												
2-126-AI-5	AI-5	AC-26	P_VEL110	Pression de vélocité	Pa	VMA	VMA 1410	2	126	AI-5		P-2	*****	4068-087	2-126-AI-5											Air neuf local F-110	
						VMA	VMA 1410					P-2	*****													Alimentation 24VAC	
		AC-26				VMA	VMA 1410	2	136			P-2	*****													Tronc N2	
2-136-AI-1	AI-1	AC-26	RES-115	Résistance 1000 ohms	°C	VMA	VMA 1410	2	136	AI-1	AI1,AICM	P-2	*****	4068-087	2-136-AI-1					VMA		2 fils	Résistance 1000 ohms		VMA1		
	AI-2	AC-26				VMA	VMA 1410	2	136	AI-2		P-2	*****		2-136-AI-2												
	BI-1	AC-26				VMA	VMA 1410	2	136	BI-1		P-2	*****		2-136-BI-1												
	BI-2	AC-26				VMA	VMA 1410	2	136	BI-2		P-2	*****		2-136-BI-2												
	BI-3	AC-26				VMA	VMA 1410	2	136	BI-3		P-2	*****		2-136-BI-3												
2-136-AI-5	AI-5	AC-26	P_VEL115	Pression de vélocité	Pa	VMA	VMA 1410	2	136	AI-5		P-2	*****	4068-087	2-136-AI-5											Air neuf local F-115	

LISTE DE MATÉRIEL POUR LES AÉROTHERMES A-1, A-2 ET A-3

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_AERO-1, 2, 3	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
T_F002-1, 2, 3	SONDE DE TEMPÉRATURE DE PIÈCE, 1000 OHMS NI	TE-6314P-1	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2F

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B, 1C	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2F	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-13, UNT-2-14	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-17, UNT-2-27	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS

LISTE DE MATÉRIEL POUR LE PANNEAU DE CONTRÔLE P-2G

NOM POINT	DESCRIPTION	MODÈLE	MANUFACTURIER
C_COMP, C_VA	RELAIS 2PDT, 24 VAC	RCP8002 24VAC	CARLO GAVAZZI
	BASE DE RELAIS 8 BROCHES	ZPD8	CARLO GAVAZZI
F-1, 1A, 1B	FUSIBLE 2 AMP	GMA-2	BUSS
	PORTE-FUSIBLE	4745.6	WEIDMULLER
F-2	FUSIBLE 4 AMP	GMA-4	BUSS
	PORTE-FUSIBLE	4746.6	WEIDMULLER
G-0, G-1	MANOMÈTRE 0-30 psi, 1-1/2"	G-2010-5	JOHNSON CONTROLS
PDC-1	PRISE/INTERRUPTEUR	27VBOX-C	LEVITON
	BOÎTE ÉLECTRIQUE c/a PLAQUE	2020	LEVITON
P-2G	PANNEAU 24"x30"x9.5	M-8100-2430	JOHNSON CONTROLS
TX-1	TRANSFORMATEUR 120V/24V/200VA	MO200A	MARCUS
UNT-2-15, UNT-2-16	RÉGULATEUR UNITAIRE 6AI/2AO/4BI/6BO	AS-UNT141-1	JOHNSON CONTROLS
UNT-2-26	RÉGULATEUR UNITAIRE 6AI/4BI/8BO	AS-UNT140-1	JOHNSON CONTROLS
VLV_CHA	CONVERTISSEUR ÉLECTRO.-PNEU. 0-10VDC	EP-8000-2	JOHNSON CONTROLS

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 25 90 01 - SGE - Site Requirements, Applications and Systems Sequences of Operation.

1.2 APPROVAL

- .1 Submit the graphics menu as well as graphic types to illustrate proposed final work.

1.3 REPORT OF OPERATION

- .1 Submit a final report including:
 - .1 Programming;
 - .2 Graphics;
 - .3 A certificate of compliance to this Section.

Part 2 Requirements for Programming Mode**2.1 GENERAL SEQUENCES**

- .1 Program each sequence in the controllers in a logical order, which refers to the sequence described in the specifications.
- .2 Document the different programming sections indicating modes, summer and winter sequences, as well as special programming (e.g. Free Cooling).
- .3 In programming, describe usage of variables (e.g. PC-CH-MAX-CO1: Maximum Heating Setpoint Controller #1).

2.2 PASSWORD ACCESS

- .1 Create at least two passwords:
 - .1 A **Viewing** password allowing to change setpoints only.
 - .2 A **Change** password allowing total access to the system.

2.3 VARIABLES

- .1 All setpoints that could be modified by an operator must be programmed in variables. This includes setpoints, indoor-outdoor curve-fitting, and operation modes (summer-winter).
- .2 Use acronyms of variables describing the use for which they are intended.

- .3 Except where otherwise specified, these values must be shown on graphic screens.

2.4 SCHEDULES

- .1 Program a master time schedule for the building or a time schedule for each sector, according to the application.
- .2 Time schedules must be available on each system they control.
- .3 Program the holiday schedule.
- .4 Ensure that time changes are automatically made.

2.5 CONTROL LOOPS

- .1 Program different control loops, each having their own proportional band, integral and derivative parameter values for all loops with change of mode (e.g. Heating-Cooling and Humidification-Dehumidification).
- .2 Slow down output updating, when required for loop stabilization, instead of using proportional bands out of standards.
- .3 Program a dead band between both modes.
- .4 Provide, if required, necessary interlocks to avoid overlapping output between both modes.
- .5 Adjust PID parameters to obtain a stable operation, without cycling, with setpoint reached in less than 10 minutes.
- .6 In anticipation of the acceptance of the work, program trends containing values at 15-second intervals for the control of outdoor air dampers, heating loops, control of water and air pressure, as well as any loop considered potentially unstable. These historicals may be deleted after acceptance of the work if they are no longer considered useful.

2.6 ROOM CONTROLS

- .1 Set limits to room setpoints between 20 and 25°C in heating.
- .2 Program a minimum dead band of 1°C between heating and cooling.
- .3 Provide, if required, necessary interlocks to avoid overlapping output between both modes.

2.7 ENERGY

- .1 For each energy measuring instrument, program values allowing an adequate energy monitoring of each meter, each energy source, as well as the total energy consumption.

- .2 Electric Meters:
 - .1 Instantaneous power value.
 - .2 15-minute integrated power value.
 - .3 Cumulative consumption (Daily, monthly, and annual).
- .3 Gas and Oil Meters:
 - .1 Instantaneous consumption value (rate).
 - .2 Cumulative consumption (Daily, monthly, and annual).
- .4 Total Energy:
 - .1 Program a display of energy balance, including the total energy consumption.
 - .2 The display should include the total energy consumed in kWh equivalent. Show rates, total daily value, total monthly value of the last 3 months, and total annual value. Keep monthly values to allow viewing on a graph of the last 3 years.
 - .3 Schedule alarms when a monthly-total deviates from expected values by more than 10%, or related to the average.

2.8 EQUIPEMENT INTEGRATED BY COMMUNICATION

- .1 Program time schedules into the master controller, not in the integrated equipment itself.
- .2 Integrate alarms to the general alarms monitoring system.
- .3 Create alarms for all points considered as critical.
- .4 Create histories for all main points of the equipment, such as:
 - .1 Input temperature;
 - .2 Output temperature;
 - .3 Start-stop of compressor.

2.9 ALARMS

- .1 Program alarms for all input points. Select switch points away from setpoints when no alarm is desired for the moment.
- .2 Program alarms for following cases:
 - .1 Inconsistency between a command and the corresponding status of operation;
 - .2 Room temperature off by more than 2°C (3.6°F) of the effective setpoint;
 - .3 Ventilation temperature by more 2°C (3.6°F) of the effective setpoint during 30 minutes;
 - .4 Water system temperature by more than 1°C (1.8°F) of the effective setpoint during 30 minutes;
 - .5 Other values: 5% difference compared to the setpoint.

.3 Program in the master controller alarms for system faults:

.1 Controller stopped or communication malfunction.

.4 Alarm Destinations:

.1 Unless otherwise specified, alarms must be directed to the following peripherals, when these are part of planned network on drawings:

POINTS	ALARM	HOURS OF OPERATION	TRENDS	ALARM DESTINATION	NOTES
ANALOG INPUTS	X		X	F,P,S	
ANALOG OUTPUTS	X		X	F,P,S	
DIGITAL INPUTS	X	X		F,P,S	Related to corresponding output
DIGITAL OUTPUTS		X		F,P,S	
SETPOINTS	X		X	F,P,S	
VARIABLES	X			F,P,S	
SYSTEM MANAGEMENT	X			F,P,M	

F: File

P: Printer

M: Network

S: Screen

.5 Establish with the Client the list of critical alarms and how they must be directed, by e-mail, by pager, or by telephone.

.6 In the absence of such a list, the following alarms are generally considered as critical:

- .1 Loss of communication of a controller;
- .2 Power outage (Phase detector);
- .3 High level of water at sump (Or high level on the ground);
- .4 Low room temperature;
- .5 Low main collector temperature (Heating water);
- .6 Heating equipment general alarms;
- .7 Freeze alarms (Ventilation);
- .8 High level of CO, natural gas, or refrigerant.
- .9 Heating pump alarm.

.7 Alarm messages must indicate:

- .1 Name of the building;
- .2 System name;
- .3 Point name;
- .4 Alarm status.

2.10 TOTALIZATIONS

- .1 When there is an information entry as proof of operation, a totalization of the hours of operation of the mechanical equipment must be automatically performed with reset by an operator command.

2.11 TREND LOGS

- .1 Create trend logs for all systems modulating inputs and outputs, and significant variables, like calculated setpoints. These historical values will store 200 values at 15-minute intervals.
- .2 Create trend logs for all binary inputs and outputs, and significant variables, as modes and alarms. These historical values will store 200 values at 15-minute intervals. Each value is registered as status change.
- .3 The Contractor must choose the controllers with sufficient capacity to create the requested history without affecting their operating performance.
- .4 A long-term trend log is requested; accumulate data on a permanent digital format to be viewed later. These historical values will store values at 15-minute intervals for a minimum of 10 years.

Part 3 Requirements related to graphics

3.1 GENERAL PRESENTATION

- .1 All graphics should constitute a coherent package, easy to read, representing the entire project.
- .2 Graphics added to an existing system must be consistent with those existing and respect installed standards.
- .3 Choose colors and sizes of text that allow easy viewing without overloading the diagram.
- .4 Avoid graphics overloading diagrams without adding relevant information.
- .5 Use animated graphics to represent the **states** of pumps and fans, not the commands.

- .6 A set of graphics to include:
 - .1 A start page containing general information, general plan of the building, accesses to all systems or groups of systems, access to the alarms management page, and access to the controllers' architecture network.
 - .2 A page showing the controllers' architecture network.
 - .3 A page representing each floor or area of the building, with representation and access to the zone controllers, and a link to access the ventilation and heating supplying the area. Indicate the position of digital controllers on the floors with the name of the systems they control. Program a link from controller to the monitored systems.
 - .4 A page for each room control indicating all relevant values, inputs, setpoints, and outputs.
 - .5 Summary pages of terminal boxes for each ventilation system, including flows, temperature, pressure, cooling, and heating outputs.
 - .6 A page for each special room control, including the relevant values, inputs, setpoints, outputs, alarms, and trend logs.
 - .7 A page representing each main system.
 - .8 A summary screen values of energy consumption, including power or consumption rate as well as the cumulative consumption values for all meters.

3.2 PRESENTATION OF A GRAPHIC

- .1 Include in the graph of a system including all the following items:
 - .1 General information, such as:
 - .1 System's name;
 - .2 Outdoor temperature and outdoor humidity;
 - .3 Time and date;
 - .4 System mode (occupied, unoccupied, etc.).
 - .2 All the points specific to the system, including inputs, outputs, time, alarms, and trend logs.
 - .3 A link towards zoning controls related to this system.
 - .4 A link towards associated systems.
 - .5 A link towards control sequence and drawing in .pdf format.
 - .6 An area for writing memos.
- .2 Use symbols and colors different to represent the different mechanical elements, such as filters, flow stations, coils, boxes, etc., to easily identify all items.
- .3 If a graph contains too many elements, create the diagram on two (2) more graphics including a quick link between the different sections.
- .4 Include in the room zones graphics, setpoints, temperature, and humidity of the zones.

- .5 Use different background colors to represent areas supplied by different systems or major ducts.
- .6 Points in manual mode should be clearly indicated in graphs.

END OF SECTION

DIVISION 26

Electrical

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 CSA Group.
 - .1 CAN3-C235-83(R2010), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
 - .2 CAN/CSA-C22.3 No.7-F10, Underground Systems.
 - .3 CSA C22.1-F18, Canadian Electrical Code, Part 1 (24th Edition), Safety Standard for Electrical Installations.
 - .4 CSA C22.2 No. 0.3-06(R2014), Test Methods for Electrical Wires and Cables.
 - .5 CSA 282-15, Emergency Electrical Power Supply for Buildings.
 - .6 CSA-Z462-18, Electrical Safety.
- .2 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC).
 - .1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.

1.2 DEFINITIONS

- .1 Electrical and Electronic Terms: Unless otherwise specified or indicated, terms used in these specifications and on drawings are those defined by IEEE SP1122.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec.
 - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure coordinated installation.
 - .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
 - .4 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
 - .5 If changes are required, notify Departmental Representative of these changes before they are made.
- .3 Short-Circuit and Coordination Study:
 - .1 Using the commutation cabinet shop drawings, provide the short-circuit protection device coordination, including the main breaker. The study must be conducted by an employee of the manufacturer and must be signed by a certified

- engineer of the province of Quebec. The coordination study must be submitted for approval in the same way as the shop drawings. The final corrected copies must accompany the O&M Manuals.
- .2 The coordination study shall be conducted and presented as described in IEEE 242-2001.
 - .3 Supply a short-circuit study of the protection devices, in the same fashion as the coordination study. The study must be signed by an engineer registered and licensed in the Province of Quebec. The short-circuit study must be submitted for approval in the same way as the shop drawings. The final corrected copies must accompany the O&M Manuals.
- .4 Electrical Arc-Flash Danger:
- .1 Supply the arc-flash report. The study must be signed by a certified engineer from the province of Quebec.
 - .2 Supply and install a label on each electrical equipment (excepted those who comply to article 4.3.3.1 of the CSA Z462-18 Standard), as requested by CCQ-E and types "Figures Q.2 and Q.3" as indicated in Appendix Q of the CSA Z462-18 Standard. The manufacturer must affix the labels on the equipment according to the study results figure Q3 and prepare in both official languages (French and English). Labels must be approved on all electrical equipment such as distribution panels, transformers, switches, contactors, starters, etc.
- .5 Certificates.
- .1 Provide CSA certified material and equipment.
 - .2 Where CSA certified equipment and material is not available, submit such equipment and material to an Authority Having Jurisdiction for approval before delivery to site.
 - .3 Submit test results of installed electrical systems and instrumentation.
 - .4 Permits and fees: In accordance with General Conditions of Contract.
 - .5 Submit, upon completion of Work, load balance report as described in PART 3 - LOAD BALANCE.
 - .6 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Departmental Representative.
- .6 Manufacturer's Field Reports: Submit to Departmental Representative manufacturer, a written report, within three (3) days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in PART 3 - FIELD QUALITY CONTROL, a written report from the manufacturer stating that the work is compliant to the criteria is required.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data:
 - .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.

- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment;
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures;
 - .3 Safety precautions;
 - .4 Procedures to be followed in event of equipment failure;
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Print or engrave operating instructions and frame under glass or in approved laminated plastic.
- .4 Post instructions where directed by Departmental Representative. For operating instructions exposed to weather, provide weather-resistant materials or weatherproof enclosures.
- .5 Ensure operating instructions will not fade when exposed to sunlight.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written requirements.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials, indoor, off ground, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse as specified in Waste Reduction Workplan in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 DESIGN REQUIREMENTS

- .1 Operating Voltages: To CAN3-C235.
- .2 Motors, electric heating, control, and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above Standard.
 - .1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.
- .3 Language Operating Requirements: Provide identification nameplates for control items in French and English.
- .4 Use one nameplate for each language.

2.2 MATERIALS AND EQUIPMENT

- .1 Provide material and equipment in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Equipment and material to be CSA certified. Where CSA certified are equipment and material is not available, obtain special approval from Authority Having Jurisdiction before delivery to site and submit such approval as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
- .3 Factory-assembled control panels and component assemblies.

2.3 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

- .1 Verify installation and co-ordination responsibilities related to motors, equipment, and controls, as indicated.
- .2 Conduit, wiring, and connections below 50 V which are related to control systems specified in Sections of Division 23, related to mechanical installations.

2.4 WARNING SIGNS

- .1 Warning Signs: In accordance with requirements of Departmental Representative.
- .2 Porcelain enamel signs, minimum size 175 x 250 mm.

2.5 WIRING TERMINATIONS

- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.6 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates as follows:
 - .1 Nameplates: 3 mm thick Lamicoid, matt white finish face, black core, glued to the equipment.
 - .2 Sizes as follows:

NAMEPLATE SIZES	DIMENSIONS	NB. OF LINES	HEIGHT
Size 1	10 x 50 mm	1 line	3 mm
Size 2	12 x 70 mm	1 line	5 mm
Size 3	12 x 70 mm	2 lines	3 mm
Size 4	20 x 90 mm	1 line	8 mm
Size 5	20 x 90 mm	2 lines	5 mm
Size 6	25 x 100 mm	1 line	12 mm
Size 7	25 x 100 mm	2 lines	6 mm

- .2 For fire alarm systems, plates must be red face with black inscription.
- .3 Labels:
 - .1 Embossed plastic labels with 6 mm high letters, unless specified otherwise.

- .4 Wording on nameplates to be approved by Departmental Representative prior to manufacture.
- .5 Allow for minimum of 25 letters per nameplate.
- .6 Registrations must be in English / French.
- .7 Use a plaque or label for each language (French and English).
- .8 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
- .9 Identify equipment with Size 3 labels engraved "ASSET INVENTORY NO. ____" of Departmental Representative.
- .10 Indicator plates for disconnectors, starters and contactors shall indicate the controlled device, the disconnector / contactor or starter number, the panel number from which the supply originates with the circuit(s) used and the voltage.
- .11 Transformers: Indicate capacity, primary, and secondary voltages.
- .12 Repeat circuit identification with typewritten cards for modified panels during the work.
- .13 Identify outlets and switches with a self-adhesive plastic label (Brother "P-Touch") indicating the panel number and power circuit. The labels must be white with black letters and be installed inside the plates. Indicate the number of the panel and the supply circuit on the inside of the plates with an indelible ink pencil.

2.7 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, numbered, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour Coding: To CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

2.8 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes, and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

Type	Prime	Auxiliary
Up to 250 V	Yellow	---
Up to 600 V	Yellow	Green
Up to 5 kV	Yellow	Blue
Up to 15 kV	Yellow	Red
Telephone	Green	---
Other Communication Systems	Green	Blue
Fire Alarm	Red	---
Emergency Voice	Red	Blue
Other Security Systems	Red	Yellow

2.9 MAINTENANCE, COMMISSIONING, AND OPERATION

- .1 Instruct Departmental Representative of operation and maintenance procedures for facilities, equipment, and components.
- .2 Retain and pay for the services of an engineer seconded from the manufacturer's plant to supervise the start-up of the installation, to check, adjust, balance, and calibrate the various elements and to instruct the operating personnel.
- .3 Provide these services for enough period of time, including the number of visits necessary to start the installation and ensure that operating personnel are familiar with all aspects of the maintenance and operation of the facility equipment.

2.10 IDENTIFICATION OF JUNCTION BOXES

- .1 Paint all around junction boxes according to Code, but not covers
- .2 Using a large indelible ink marker, identify the source (panel) and circuit number(s) of all wiring passing through the boxes.

2.11 CONDUIT AND CABLE INSTALLATION

- .1 When using plastic sleeves for penetrations of walls or floors with a fire-resistance rating, remove them before installing the conduits.
- .2 Install cables, conduits, and fittings that are to be plastered in a neat manner against structural framing to minimize furring thickness.

2.12 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two (2) coats of finish enamel.
- .2 Paint outdoor electrical equipment "equipment green" finish as per the AMEEECY1-1-1195 Standard.
- .3 Paint indoor switchgear and distribution enclosures light gray as per the AMEEECY1-1-1958 Standard.

- .4 Clean and retouch painted workshop surfaces that have been scratched or damaged during shipment and installation; use a paint of type and color identical to the original paint.
- .5 Clean non-galvanized hooks, brackets, fasteners, and other fasteners and apply primer to protect them against rust.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Prior to proceed with installation:
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after received of written approval to proceed from the Departmental Representative.

3.2 INSTALLATION

- .1 Do complete installation in accordance with CSA C22.1, except where specified otherwise.
- .2 Do overhead and underground systems in accordance with CAN/CSA-C22.3 No.7, except otherwise indicated.

3.3 NAMEPLATES AND LABELS

- .1 Ensure manufacturer's nameplates, CSA labels, and identification nameplates are visible and legible once equipment installed.

3.4 CONDUIT AND CABLE INSTALLATION

- .1 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .2 Install cables, conduits, and fittings plastered over, close to building structure so furring can be kept to minimum.

3.5 PROOFING

- .1 Where cables or ducts pass through floors and firewalls or premises with halon systems, fire and smoke protection will be provided using such products as 3M, CP25, 303, FS195, CS195, and 7902 and 7904 sealing kits. All will be installed according to the manufacturer's recommendations and CAN2 19.13 and modification.

3.6 OPENINGS

- .1 All required penetrations in slabs and walls (new and existing) are the responsibility of Division 26. The Contractor must first carry out a slab scan before making any holes.

- .2 Make penetrations fireproof, as prescribed in this Section.

3.7 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centerline of equipment, unless otherwise specified or indicated.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 Install electrical equipment at following heights, unless indicated otherwise.
 - .1 Panelboards or switchboard (MCC): As required by Code or as indicated.

3.8 COORDINATION OF PROTECTIVE DEVICES

- .1 Ensure circuit protective devices, such as overcurrent trips, relays, and fuses, are installed to required values and settings.

3.9 WORK IN AN EXISTING BUILDING

- .1 Coordinate with Departmental Representative, work to be performed.
- .2 Any work that requires a complete or partial shutdown of any system to make connections or changes that affect other buildings, can only be performed during periods of downtime established by the Department Representative and upon prior his written authorization.
- .3 Any request for a cut-off must be sent to the various parties at least one week in advance.
- .4 Provide a schedule of work to be done for coordination with the Departmental Representative and other Divisions to establish these shutdown periods.
- .5 Coordinate the receipt and handling of materials with the Departmental Representative or his representatives.
- .6 Minimize inconveniences caused by noise and dust.
- .7 Always comply with Departmental Representative's regulations and requirements for security or other rules.
- .8 All personnel, including subcontractors, must wear a badge or identification card when on site.
- .9 Remove and transport off-site all obsolete equipment as a result of new developments, including wiring, conduit, boxes, receptacles, switches, lighting fixtures, dispensing equipment, all ancillary systems, signaling or communications equipment, all accessories forming part of the electrical installations.
- .10 In general, remove wiring, conduits, panels, and boxes. However, casings and ducts embedded in the concrete shall be closed by means of lightweight concrete at the ends to a depth of not less than 200 mm. Some boxes (for smoke detectors in cells) and some ducts (existing arterial and branch lines) can be reused.
- .11 Restore power, control, signaling, or communications circuits, where continuity of these circuits is broken due to the demolition of existing facilities.

3.10 FIELD QUALITY CONTROL

- .1 All electrical work must be performed by licensed, qualified electricians or apprentices, as required by provincial law and the qualification of labor. Employees enrolled in a provincial apprenticeship program will be able to perform specific tasks, depending on their level of training and demonstrated ability to perform specific tasks, provided they are under the direct supervision of a qualified licensed electrician.
- .2 The work covered by this division must be carried out by a master electrician or an electrical contractor licensed by the "Régie du bâtiment du Québec".
- .3 Conduct following tests in accordance with Section 01 45 00 - Quality Control, in the presence of the Departmental Representative, and pay the fees.
 - .1 Power distribution system including phasing, voltage, grounding, and load balancing.
 - .2 Circuits originating from branch distribution panels.
 - .3 Control devices.
 - .4 Fire alarm system.
 - .5 Any other system: As indicated in drawings and specifications.
 - .6 Provide a certificate or letter from the manufacturer stating that the entire installation of each network has been done to his complete satisfaction.
 - .7 Insulation resistance testing:
 - .1 Megger circuits, feeders, and equipment up to 350 V with a 500-V instrument.
 - .2 Megger 350-600 V circuits, feeders, and equipment with a 1,000-V instrument.
 - .3 Check resistance to ground before energizing.
- .4 Carry out tests in presence of Departmental Representative, as required in Division 26 requirements and as per Section 01 91 00 - General Commissioning (Cx) Requirements.
- .5 Provide instruments, meters, equipment, and personnel required to conduct tests during and at conclusion of Project.
- .6 Submit test results to Departmental Representative.
- .7 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting, and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.11 SYSTEM START-UP

- .1 Instruct Departmental Representative in operation, care, and maintenance of systems, system equipment, and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance, and calibrate components, and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation and ensure that operating personnel are conversant with aspects of its care and operation.

3.12 COMMISSIONING

- .1 Commissioning equipment provided by Division 26 in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements.

3.13 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CAN/CSA-C22.2 No.18-98(R2003), Outlet Boxes, Conduit Boxes and Fittings.
 - .2 CAN/CSA-C22.2 No.65-03(R2008), Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).
 - .3 CSA C22.2 No. 41, Equipment for Application and Pouring.
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC).
 - .1 EEMAC 1Y-2-1961, Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3 National Electrical Manufacturers Association (NEMA).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wire and box connectors, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Submittals for Sustainable Design Submittals.
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for wire and box connectors for incorporation into manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with the manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wire and box connectors from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Pressure Type Wire Connectors: To CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors, as required.
- .2 Fixture Type Splicing Connectors: To CAN/CSA-C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
- .3 Bushing Stud Connectors: To NEMA and consisting of:
 - .1 Connector body and stud clamp for round copper conductor.
 - .2 Clamp for stranded copper conductors.
 - .3 Stud clamp bolts.
 - .4 Bolts for copper conductors.
 - .5 Sized for conductors as indicated.
- .4 Clamps or connectors for TECK cable, armored cable, aluminum sheathed cable, mineral insulated cable, as required, to CAN/CSA-C22.2 No.18.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wire and box connectors installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after received of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Remove insulation carefully from ends of conductors and cables, depending on case:
 - .1 Apply a layer of zinc-based joint compound on splices of aluminum cables before installing connectors
 - .2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 No.65.
 - .3 Install bushing stud connectors for lighting devices and tighten. Replace the insulating cap.
 - .4 Install bushing terminal connectors in accordance with EEMAC 1Y 2.
 - .5 Install stress cones and terminations and make splices according to manufacturer's instructions.
 - .6 As required, proceed with earth grounding according to CSA C22.2 No. 41 Standard.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 05 20 - Wire and Box Connectors (0-1000V).

1.2 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)/ CSA International.
 - .1 CSA C22.2 No. 0.3, Testing Methods for Electrical Cables and Wires.
 - .2 CAN/CSA-C22.2 No. 131, TECK 90 Cables.
- .2 ULC Laboratories.
 - .1 ULS-S139-00, Method of Fire Test for Evaluation of Integrity of Electrical Cables.

1.3 PRODUCT DATA

- .1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

1.5 TERMS OF REFERENCE

- .1 In general, use insulated copper conductors with 98% conductivity installed in EMT (steel) conduit.
- .2 "Daisy Chain" type connection is not permitted.
- .3 Aluminum conductors are not authorized.
- .4 Teak Cables may be used when specifically indicated on plans or specifications. Where permitted, multi-core, 1,000 V insulated Teak cables must be FT-4 PVC sheathed and must be shielded.
- .5 Use of cables with nonmetallic sheath is not permitted.

Part 2 Products**2.1 BUILDING WIRES**

- .1 Conductors: Stranded for 10 AWG and larger. Minimum size: 12 AWG.
- .2 Conductors: Copper with 600 V RW90XLPE "X Link" insulation for building wiring generally installed under conduit.

- .3 Main supplies must be made with insulated copper conductors under conduit. Provide a conductor of continuity of the masses (green wire) in all the conduits. Increase the size of the ducts as needed.
- .4 Provide color code for conductors. Conductors (size 10 and under) must be color sheathed at the time of manufacture at the factory. Conductors (size 8 and up) can be color coded, but only when the conductors are insulated with black insulation. Neutral conductors must be white. Where color coding is used, color strips shall be applied at a minimum distance of 50 mm from terminations, junction boxes, pull boxes, and conduit type connectors. Painted conductors will not be accepted.
- .5 Copper Conductors: According to the size indicated, under cross-linked thermosetting polyethylene insulation, for voltage 600 V or 1,000 V, and type RWU90 XLPE or RW90 XLPE as indicated in drawings.

2.2 EFV CABLES

- .1 Cables specially designed for powering motor speed controllers. The conductors of these cables must be screened. These cables must be inserted in conduits. The diameters of these conduits must be according to the manufacturer's recommendations.
- .2 These cables must have VFD and FT4 inscription on their outer sheath.

2.3 CONTROL CABLES

- .1 Type: LVT: Two (2) soft annealed copper conductors, sized as indicated:
 - .1 Insulation: Thermoplastic.
 - .2 Sheath: Thermoplastic jacket, and armor of closely wound aluminum wire.
- .2 Type: Low energy 300-V control cable: Solid annealed copper conductors sized as indicated:
 - .1 Insulation: Polyethylene.
 - .2 Overall covering: Interlocked armor of aluminum strip or FT-4 rated PVC jackets.

2.4 ACCEPTED PRODUCTS

- .1 Prysmian.
- .2 Alcatel.
- .3 Southwire.
- .4 General Cable.
- .5 Materials or replacement products approved by addendum, compliant with instructions given to bidders.

2.5 CONDUCTORS, CONNECTION BOXES, AND MISCELLANEOUS MATERIALS

- .1 For connectors, wire splices and cables as well as for joints: unless indicated, use 3M products; Scotchlok; Thomas & Betts, PT Series; Buchanan "B", Electric IDI "Super Nut" or approved equivalent.
- .2 Use cable glands or connectors, cable boxes, and flexible conduits, as required.
- .3 Lugs, terminals, and screws used for terminating wiring must be suitable for copper conductor.

Part 3 Execution**3.1 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform the tests according to the methods approved by the local Authority Having Jurisdiction over installation.
- .3 Perform tests before energizing electrical system.

3.2 GENERAL CABLE INSTALLATION

- .1 Unless otherwise specified, all conductors shall be installed in conduit. Use flexible conduits (or AC90 cables) for final connections to vibrating equipment.
- .2 Do not use a wire smaller than 12 AWG.
- .3 Control circuit conductors for motors and automation of mechanical equipment shall not be less than 14 AWG, except where specifically indicated.
- .4 Before pulling conductors into conduit, ensure conduit is clean and dry. If there is moisture, dry the ducts. To facilitate traction, the recognized lubricants specially manufactured for electrical conductors can be used. Do not use grease. Use appropriate techniques to prevent damage to the conductors when the ambient temperature is below the minimum allowed for each type of insulation. The installation of the ducts must be completed before installing the conductors.
- .5 There shall be no break in the conductors. Before energizing, measure the insulation resistance and comply with the Quebec Construction Code, Chapter V - Electricity - Canadian Electrical Code 2018, Submit a test report to the Departmental Representative showing the measured values.
- .6 Reduce number of splices in a circuit minimum and respect permissible cable lengths and installation conditions.
- .7 Conductors must not be damaged when they need to be stripped.
- .8 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .9 Cable Color Coding: To Section 26 05 00 - Common Work Results for Electrical.

- .10 Conductor length for parallel feeders to be identical.
- .11 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .12 Wiring in Walls: Typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided, unless indicated.
- .13 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.

3.3 INSTALLATION OF BUILDING WIRES

- .1 Install wiring:
 - .1 In conduits, in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

3.4 INSTALLATION OF CONTROL CABLES

- .1 Install control cables in conduit.
- .2 Ground metal armor of control cables.

3.5 INSTALLATION OF CABLES SUPPLIED WITH EQUIPMENT

- .1 Install cables supplied with the equipment, instrument or component in conduits, flexible or rigid, metallic or non-metallic, according to the application.
- .2 Install straps and box connectors to cables, as required.
- .3 No gland connectors will be accepted for the cabling installed directly to an equipment, an instrument, or a component.

3.6 IDENTIFICATION

- .1 For branch circuit wiring, follow the number identification system, Section 26 05 00 - Common Work Results for Electrical.
- .2 Connect single-phase equipment to minimize phase unbalance. Balancing loads on the phases is a place. Indicate all changes to drawings.
- .3 Place all color strips at cable feeders, at all cable ends, at all junction points, at all distribution panels and at all motor control centers. Use two (2) rounds of tape, plastic film, 48 mm wide.
- .4 Color code must be assigned to size-10 conductors and under.

3.7 TEST

- .1 All insulation of power and control cables must be tested with a 1,000 V megohmmeter. Resistance values must be those recommended by the cable manufacturer.

- .2 All test results on conductors must be properly compiled, signed, dated, and submitted to the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 American National Standards Institute /Institute of Electrical and Electronics Engineers (ANSI/IEEE).
 - .1 ANSI/IEEE 837-02, IEEE Standard for Qualifying Permanent Connections Used in Substation Grounding.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions to install the grounding products. The submittal shall also include the printed product literature and data sheets for grounding equipment, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for grounding equipment for incorporation into manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with the manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoor, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wire and box connectors from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products**2.1 EQUIPMENT**

- .1 Ground equipment according to the requirements of CSA C22.2 No. 41-M87 (R99).
- .2 Grounding Clamps: Appropriate size, to connect conductors to an underground water line of good electrical conductivity.
- .3 Grounding Conductors: Bare stranded copper, tinned, soft annealed, size as indicated.
- .4 Insulated Grounding Conductors: Green, copper conductors, stranded, size as indicated.
- .5 Ground Bus: Copper, size as indicated, complete with insulated supports, fastenings, and connectors.
- .6 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including, but not necessarily limited to:
 - .1 Grounding and bonding bushings.
 - .2 Protective type clamps.
 - .3 Bolted type connectors.
 - .4 Thermit welded type connectors.
 - .5 Bonding jumpers, flexible braided connectors, and straps.
 - .6 Pressure-wire connectors.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for grounding equipment installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate/supports.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied, as specified in drawings and subsequent items of the same section.

3.2 INSTALLATION - GENERAL

- .1 Install complete permanent, continuous grounding system, including, conductors, connectors, and accessories.
- .2 Provide an insulated copper ground conductor in each conduit used for power, , all low voltage systems required by the building. When conductor size is not indicated, provide the minimum size specified in the Canadian Electrical Code 2018.
- .3 Install connectors to manufacturer's instructions.
- .4 Protect exposed grounding conductors.

- .5 Use mechanical connectors for grounding connections to equipment provided with lugs.
- .6 Use buried connections and connections to conductive electrodes, using permanent mechanical connectors or inspected forged copper compression connectors, in accordance with ANSI / IEEE 837.
- .7 Soldered joints not permitted.
- .8 Install bonding wire for flexible conduit, connected at both ends to grounding bushing, solderless lug, clamp or screw with washer. Provide a grounding conductor in all flexible conduits and connect it to grounding terminals at the equipment and source.
- .9 Install flexible ground straps for bus duct enclosure joints, where such bonding is not inherently provided with equipment.
- .10 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.

3.3 EQUIPMENT GROUNDING

- .1 Provide a grounding conductor for all main electrical equipment and connect to the secondary grounding system. Conductors must be of a size that complies with the Canadian Electrical Code 2018 and the equipment manufacturer's requirements.

3.4 GROUNDING BUS

- .1 Use copper grounding terminals to connect grounding conductors to ground busbars.

3.5 MECHANICAL EQUIPMENT GROUNDING

- .1 Install a grounding conductor in all conduits serving the motor supply circuits. Connect the conductor to grounding screw of junction boxes and to output boxes.

3.6 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform ground continuity and resistance tests using method appropriate to site conditions.
- .3 Measure resistance of grounding system with a megohmmeter for a ground test. Install additional ground rods and grounding conductors as required until the grounding resistance meets the requirements of the Canadian Electrical Code 2018 and less than 10 ohms. Transmit the test results to the Departmental Representative.
- .4 Ensure that test results are satisfactory before energizing electrical system.
- .5 Disconnect ground fault indicator during tests.

3.7 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 05 30 - Fasteners and Seismic Devices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wire and box connectors, and include product characteristics, performance criteria, physical size, finish, and limitations.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location, off ground, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect hangers and supports from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products**2.1 FASTENERS AND SUPPORT SYSTEM**

- .1 Materials:
 - .1 Structures for heavy loads shall be fabricated and welded from structural steel members. Apply a primer paint before installing these structures. Structure must be approved by a structural engineer.
- .2 Finishes:
 - .1 Outdoor, for wet locations: Hot-dip galvanized finish.
 - .2 Indoor, for dry locations: Galvanized finish, if not available, apply primer.
 - .3 Nuts, bolts, and screws: Cadmium plated.

2.2 ANCHORS FOR CONCRETE AND MASONRY

- .1 Materials: Hardened steel anchors, galvanized to resist corrosion. All anchor bolts must be galvanized.
- .2 Components: Anchors for use in pre-drilled holes, sized to safely support the applied load, with a minimum safety factor of 4.

2.3 NON-METALLIC ANCHORAGE

- .1 Materials: Plastic dowels for sheet metal screws.

2.4 CONDUIT SUPPORTS

- .1 Malleable two-hole cast-iron ducts, weather resistant. Two-hole steel straps when used indoors.
- .2 Masonry, concrete, and stone: Anchors.
- .3 Metal uprights and ceiling hangers.

2.5 CABLE SUPPORTS AND ATTACHES

- .1 As for conduit, except for single-conductor cables, use non-ferrous fasteners or approved fasteners made of stainless steel or aluminum to support the cables.
- .2 Supports and fasteners must come from a recognized manufacturer and be CSA approved.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wire and box connectors installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after received of written approval to proceed from the Departmental Representative.

3.2 GENERAL

- .1 Do not cut or drill beams, joists or structural steel, except with the written permission of the Departmental Representative.
- .2 Distance between conduit and cable supports must not exceed Code requirements.
- .3 Supports to be adapted to actual equipment loads.

- .4 Supports must be securely fastened, free from vibration and excessive sagging or rotations. The maximum deflections are 4 mm over a length of 1 m and 8 mm over a length of 2 m.
- .5 Install fasteners and supports in sufficient quantity for each type of cable, equipment, and conduit, in accordance with manufacturer's installation recommendations.
- .6 Provide conduit supports including 25% spare capacity for future cable pulling.
- .7 Provide profiles with fittings for vertical sections of conduits and cables.

3.3 INSTALLATION

- .1 Secure equipment to masonry, ceramic, and plaster surfaces using lead anchors.
- .2 Secure equipment to poured concrete surfaces using expansion plugs.
- .3 Support conduits or cables with clips, spring bolts, or cable ties designed as accessories for "U" profiles.
- .4 The use of ligation wire or perforated strip to secure pipes or cables is prohibited.
- .5 Suspended Support Systems:
 - .1 Support each cable or conduit with 6 mm diameter threaded rods and spring clips.
 - .2 Support two or more cables or conduits on "U"-shaped sections supported by 6 mm diameter threaded suspension rods, when it is impossible to attach directly to the frame of the building.
- .6 Fixings with duct mounting gun may be used only with the written authorization of the Departmental Representative.
- .7 Use round or cylindrical head screws to attach fastening straps for boxes, conduits, and other equipment.
- .8 Do not support heavy loads from the lower chords of open steel joists.
- .9 Do not use conduits entering exit boxes, junction boxes, panels, and other electrical equipment to support this equipment. Support ducts at 600 mm outlet boxes. Support surface mounted electrical panels with a minimum of four (4) 6-mm clips.
- .10 For two or more stand out ducts, use "U" profiles installed at 1.5 m centers.
- .11 Install terminals, brackets, hooks, clamps, and any other type of metal bracket where indicated and where required, to support conduits and cables.
- .12 Provide suitable support for piping and cables installed vertically, without wall mounting, to equipment.
- .13 Do not use supports and equipment installed by other trades as conduit or cable support, except with the approval of both tradespeople and the Departmental Representative.
- .14 Fix devices, conduits, and equipment to structural members of the building. Use the appropriate media.

3.4 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE).
 - .1 ASHRAE, Applications Handbook (SI).
- .2 American Society for Testing and Materials International (ASTM).
 - .1 ASTM E488-10, Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .5 National Research Council Canada (NRC-CNRC).
 - .1 National Building Code of Canada (NBC) - 2015.
- .6 Sheet Metal and Air-Conditioning Contractors' National Association (SMACNA).
 - .1 SMACNA, Addendum No. 1, September 2000 to Seismic Restraint Manual, Guidelines for Mechanical Systems.
 - .2 SMACNA, Seismic Restraint Manual, Guidelines for Mechanical Systems.

1.3 DEFINITIONS

- .1 SRS: Acronym for Seismic Restraint System.

1.4 DESCRIPTION

- .1 SRS fully integrated into, and compatible with:
 - .1 Noise and vibration controls specified.
 - .2 Structural, mechanical, and electrical design of project.
- .2 Systems and equipment not required to be operational during and after seismic event.
- .3 During seismic event, SRS to prevent systems and equipment from causing personal injury and from moving from normal position.
- .4 Designed by a professional engineer specializing in design of SRS and registered in Province of Quebec.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.
 - .2 Submit design data including:
 - .1 Full details of design criteria.
 - .2 Design calculations (including restraint loads resulting from seismic forces in accordance with National Building Code, detailed work sheets, tables).
 - .3 Separate shop drawings for each SRS and devices for each system, equipment.
 - .4 Identification of location of devices.
 - .5 Lists of types of SRS equipment and devices.
 - .6 Details of fasteners and attachments to structure, anchorage loadings, attachment methods.
 - .7 Installation procedures and instructions.
 - .8 Design calculations, including restraint loads to NBC and Supplement.
 - .3 Quality Assurance Submittals:
 - .1 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .2 Instructions: Submit manufacturer's installation instructions.

1.6 RESPONSABILITIES

- .1 Each contractor is responsible for the seismic measures required by his trade.
- .2 The conception of each seismic device must be designed by an engineer that is registered to practice in the Province of Quebec, Canada, mandated by the Contractor. The specialized engineer must sign and seal the design drawings.

1.7 ANCHORING DEVICES

- .1 Install the anchoring devices and the seismic stabilizers for the conduits and equipment according to the prescriptions in the "ASHRAE, A Practical Guide to Seismic Restraint" book, the ANSI-SMACNA 001 Standard and according to the building classification.

Part 2 Products**2.1 GENERAL**

- .1 All electrical equipment mounted on suspended ceilings must be attached directly to the building structure.

- .2 Seismic devices must prevent permanent displacement and damage caused by the horizontal and vertical movements, and overturning.
- .3 Seismic devices must be compatible with the electromechanical design. They should not interfere with normal operation of electromechanical systems.
- .4 SRS to provide gentle and steady cushioning action and avoid high impact loads. The latter must not interfere with any sound or vibration treatment elements.
- .5 Fasteners and attachment points to resist same load as seismic restraints.
- .6 Fasteners installed with a nail gun or in holes made to this effect are prohibited.
- .7 No device or related support nor any plot should yield before the structure or the structure breaks.
- .8 SRS utilizing cast-iron or threaded pipes not permitted.
- .9 Seismic control measures not to interfere with integrity of firestopping.
- .10 Accessories, such as speakers and lighting fixtures installed in suspended ceilings, do not have to be stabilized, except in exit corridors or if the ceiling is specifically designed to withstand earthquakes.

2.2 SRS DEVICES

- .1 The supports must be complete with longitudinal and transverse bracings. They can be rigid or cable types.
- .2 Do not stabilize material if the length of the suspension rods is less than 300 mm.
- .3 Stabilize channels and electrical conduits of 35 mm nominal diameter and more, located inside a mechanical room.
- .4 Stabilize channels and electrical conduits of 63 mm nominal diameter and more, located outside a mechanical room.
- .5 Install mechanical restraint devices at the following frequency:
 - .1 For transversal restraint:
 - .1 SHL-A: Every 6.1 m linear meters;
 - .2 SHL-B: Every 10 linear meters;
 - .3 SHL-C: Every 12.2 linear meters.
 - .2 For longitudinal restraint:
 - .1 SHL-A: Every 12 linear meters;
 - .2 SHL-B: Every 20 linear meters;
 - .3 SHL-C: Every 24.4 linear meters.
- .6 A transversal bracing can serve as a longitudinal brace, if the latter is installed 600 mm away from a channel/conduit direction change.

2.3 STATIC EQUIPMENT

- .1 The material must be fixed to the suspension supports that must be installed to the structure.
- .2 Use one or many of the following methods below or as per indications on drawings:
 - .1 Anchor equipment supports to structure;
 - .2 Stabilize the equipment mechanically in all directions;
 - .3 Brace suspensions in each plane;
 - .4 Brace the suspensions to the structure using cables.
- .3 SCS to prevent sway in horizontal plan, “rocking” in vertical plane, sliding and buckling in axial direction.
- .4 Hanger rods to withstand compressive loading and buckling.

2.4 EQUIPMENT HUNG WITH ISOLATORS

- .1 The material must be fixed to suspension supports that in turn, must be fixed to the structure using cables.
- .2 The devices must act continuously and in a supple manner.
- .3 The SRS must not constrain the soundproofing and antivibration properties of any element. In normal exploitation, a 6 to 12 mm gap between the equipment and the SRS must be maintained.

2.5 EQUIPMENT SUPPORTED WITH ISOLATORS

- .1 In case SRS are used, the latter must be designed and installed to resist minimal acceleration forces.
- .2 Devices must never be compressed to the point of losing their efficiency.
- .3 In case standard isolators are used, SRS must be incorporated to the antivibration elements to resist “toppling” of the latter.
- .4 SRS must not constrain the soundproofing and antivibration properties of any element. In normal exploitation, a 6- to 12-mm gap between the equipment and the SRS must be maintained.

Part 3 Execution**3.1 INSTALLATION**

- .1 To withstand same maximum load that seismic restraint is to resist same maximum charges.
- .2 Ensure that the connection to the conduits and channels will not diminish the flexibility of the antivibration elements, and the conduits and channels will not transmit vibrations.
- .3 For equipment with no integrated attach points, provide attach points with “belt” systems.

- .4 The structural base of any equipment must be stabilized to prevent toppling.
- .5 A 25-mm clearance must be respected between an SRS and any service element.

3.2 ANCHORS

- .1 Check that anchor bolts, diameters of the ankles, depth of the indentations in the concrete and length of the welds are done according to the drawings submitted for approval.
- .2 Bolt all the material that is not insulated to vibration transmission to the structure.
- .3 Oblong openings for adjustment bolts are prohibited.
- .4 To improve seismic resistance, smaller conduits and channels can be attached to larger conduits and channels that will retain them. The inverse practice is prohibited.
- .5 Anchors in the concrete slabs should be removed from the edges following ASTM E488 Standard and recommendations of the manufacturer of the anchors.

3.3 SLACK CABLE SYSTEMS (SCS)

- .1 Connect to suspended equipment so that axial projection of wire passes through centre of gravity of equipment.
- .2 Use appropriate grommets, shackles, other hardware to ensure alignment of restraints and to avoid bending of cables at connection points.
- .3 Orient restraint wires on ceiling hung equipment at approximately 90° to each other, tie back to structure at maximum of 90° to structure.
- .4 Tighten cable to reduce slack to 19 mm under thumb pressure. Cable not to support weight during normal operation.

3.4 INSTALLATION VERIFICATION FROM MANUFACTURER

- .1 The engineer designing the SRS must be on-site to verify the compliance of the installation. Then, he must supply to the Departmental Representative a report containing deficiency resolving recommendations.
- .2 If applicable, the Contractor must make the necessary corrections and adjustments based on the written report submitted by the supplier.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.1-F-18, Canadian Electrical Code, Part 1, 24th Edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications, and data sheets, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Provide Shop Drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Waste Management and Disposal:
 - .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products**2.1 SPLITTERS**

- .1 Construction: Sheet metal enclosure, welded corners, and formed hinged cover suitable for locking in closed position.
- .2 Terminations: Connection blocks or main and branch lugs to match required size and number of incoming and outgoing conductors, as indicated.
- .3 Spare Terminals: Minimum three (3) spare terminals spare or lugs on each connection or lug block sized less than 400 A.

2.2 JUNCTION AND PULL BOXES FOR INDOOR INSTALLATION IN DRY LOCATIONS

- .1 Construction:
 - .1 Welded steel enclosure, phosphate, or galvanized construction.

- .2 Components:
 - .1 Recessed mounting: Cover with edge protruding by at least 25 mm and retaining screw.
 - .2 Lid, for surface mounting: Lid with turned edge.
 - .3 Dimensions of the boxes must comply with the Canadian Electrical Code 2018, for a given number and diameter of pipes. The dimensions of the boxes must be in accordance with the Canadian Electrical Code 2018, for the layout, the number of conductors and the number of splices inside the boxes.
 - .4 Surface or recessed box with hinged door, lock, latch, and two (2) keys identical to those of electrical panels.
 - .5 Back panel: 19-mm plywood.
- .3 Junction boxes installed in exterior walls to be installed with vapor barrier.
- .4 Flush Mounted Covers: 25 mm minimum extension all around.
- .5 Surface Mounted Covers: Screw-on flat covers.

2.3 CABINETS

- .1 Construction:
 - .1 Cabinets: Sheet steel, welded construction, phosphate and factory-painted, suitable for painting in the field.
 - .2 Lock: Same as distribution panels.
 - .3 Back panel: 19-mm plywood, one plywood to display back of cabinet. The plywood is supplied and installed by the Architecture Section.
- .2 Components:
 - .1 Surface or recessed cabinet with hinged door, lock, latch, and two (2) wrenches, surface mounting frame, dimensions shown or to be determined on site.
 - .2 Surface or recessed cabinet with surround and hinged door, lock, and two (2) keys, dimensions as indicated or in accordance with Canadian Electrical Code 2018, for a given number and diameter of ducts. The cabinet dimensions are in accordance with the Canadian Electrical Code for coiling, number of conductors, and number of splices inside cabinets. Keys must be identical to those of the electrical panels.

Part 3 Execution

3.1 SPLITTER INSTALLATION

- .1 Mount plumb, true, and square to building lines.
- .2 Extend splitters full length of equipment arrangement, except otherwise indicated.

3.2 CABINETS, JUNCTION AND PULL BOXES INSTALLATION

- .1 Junction Boxes and Pull Boxes:
 - .1 Provide all pull and junction boxes indicated on drawings or required for installation.
 - .2 Boxes installed between studs in walls must be installed with minimal space.
 - .3 Install junction and pull boxes in concealed spaces, but easy access, overhead of accessible ceilings, in electrical rooms, utility rooms, or storage areas.
 - .4 Identify boxes with system name and circuit designation.
 - .5 Dimensions must be, at a minimum, in accordance with the Canadian Electrical Code 2018.
 - .6 All the junction or pull boxes must be of appropriate size, according to the number of conductors and the associated conduit diameter.
 - .7 Installer of draw boxes after a total bend of 270° between boxes.
 - .8 Only main junction and pull boxes are indicated. Install additional pull boxes in order to ensure the conduits between each box have a length inferior to 30 m and in such a way to not have more than three 90° bends, or the equivalent between distribution boxes and two 90° bends, or the equivalent for other empty network conduits
 - .9 All junction boxes and pull boxes must be correctly identified according to the number of conductors and the associated pipe diameters.
- .2 Cabinets:
 - .1 Mount cabinets with top not higher than 1,980 mm above finished floor except where indicated otherwise. Coordinate the installation of panels, fire cabinets, and similar elements with masonry. Securely fix bottom plates inside cabinets.
 - .2 Install terminal blocks when indicated.

3.3 IDENTIFICATION

- .1 Equipment Identification: To Section 26 05 00 - Common Work Results for Electrical.
- .2 Identification Labels: Size 2, indicating the name of the network, the power source, the allowable current, the tension, and the number of phases.
 - .1 Paint in red cabinets and fire alarm systems.
 - .2 Paint in blue cabinets and enclosures of telecommunications systems.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.1-F15, Canadian Electrical Code, Part 1, 23rd Edition.
 - .2 CSA C22.2 No.40 (R2009), Short Circuit, Junction and Pull Boxes.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit samples for floor box in accordance with Section 01 33 00 - Submittal Procedures.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products**2.1 OUTLET AND CONDUIT BOXES - GENERAL**

- .1 Size boxes in accordance with CSA C22.1.
- .2 Square 102-mm or larger outlet boxes as required for special devices.
- .3 Gang boxes where wiring devices are grouped in same location.
- .4 For appliances inside cells, lids must have "safety screws".

2.2 OUTLET BOXES FOR METAL CONDUIT

- .1 Materials.
 - .1 One-piece electro-galvanized construction.
 - .2 Concealed surface or concealed installation: Die-cast steel, hot-dip galvanized, minimum zinc coating 350 g/m².
 - .3 Exposed surface mounting: With fixing brackets, cast metal for threaded conduit, covered with two corrosion-resistant topcoats.

- .2 Electro-galvanized steel sheet boxes for flush mounting in walls with matching extension frame and plaster frame as required.
- .3 Install pull boxes in concealed, but accessible locations.
- .4 The security access box shall be fitted with a tamper-resistant 1.9-mm 304 stainless steel tamper-proof type cover.
- .5 The frame shall be 0.90-mm galvanized steel with a rear mounting flange and a reinforced flange at the front.
- .6 Single or gang boxes for flush installation, minimum size 76 x 50 x 38 mm or as indicated. 102-mm square outlet boxes when more than one conduit enters one side, with extension and plaster rings, as required.
- .7 Distribution boxes for outlets connected to surface mounted EMT conduit, minimum size 102 x 54 x 48 mm.

2.3 FITTINGS - GENERAL

- .1 Bushing and connectors with nylon insulated throats.
- .2 Knock-out fillers to prevent entry of debris.
- .3 Conduit outlet bodies for conduit up to 35 mm and pull boxes for larger conduits.
- .4 Double locknuts and insulated bushings on sheet metal boxes.

Part 3 Execution

3.1 INSTALLATION

- .1 Support boxes independently of connecting conduits.
- .2 Fill boxes with paper, sponges, foam, or similar approved material to prevent entry of debris during construction. Remove upon completion of work.
- .3 Provide correct size of openings in boxes for conduit, mineral insulated and armored cable connections. Do not install reducing washers.
- .4 Install all outlets flush or surface mounted, depending on installation.
- .5 Do not use severed boxes.
- .6 Provide boxes of dimensions in accordance with the Canadian Electrical Code 2018.
- .7 Install a ring in the termination box for cable connection.
- .8 Install a ring in the termination box for connection in a gutter.
- .9 The boxes of the fire alarm system must be painted red on their outside surfaces.

- .10 Vacuum clean interior of outlet boxes before installation of wiring devices.
- .11 Identify systems for outlet boxes as required.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CAN/CSA C22.2 No. 18-98(R2003), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.
 - .2 CSA C22.2 No. 45-M1981(R2003), Rigid Metal Conduit.
 - .3 CSA C22.2 No. 56-04, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No. 83-M1985(R2003), Electrical Metallic Tubing.
 - .5 CSA C22.2 No. 211.2-M1984(R2003), Rigid PVC (Unplasticized) Conduit.
 - .6 CAN/CSA C22.2 No. 227.3-05, Nonmetallic Mechanical Protection Tubing (NMPT), A National Standard of Canada (February 2006).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Submit manufacturer's printed product literature, specifications, and data sheets.
 - .1 Submit cable manufacturing data.

1.4 QUALITY INSURANCE

- .1 Test Report: Submit the testing reports delivered by independent and well-known laboratories.
- .2 Certification: Submit the signed documents from the manufacturer, certifying that the products and materials satisfy the required physical characteristics and performance criteria.
- .3 Instructions: Submit installation instructions supplied by the manufacturer.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.6 GENERAL

- .1 All the conduits, tubes, and their paths are not necessarily on the drawings. Those that are present are represented schematically.
- .2 For fire alarm, the entire length of all the cables must be painted in the factory. The color required per cable is as specified in Section 26 05 00 - Common Work Results for Electrical.
- .3 Conceal all conduits installed in finished areas. Conduits may be surface mounted only, at locations indicated or in service areas accessible only to authorized personnel.
- .4 Note special requirements for conduit routing.
- .5 Provide a polypropylene pull rope in all empty conduits.
- .6 All conduits required for Division 28 to be supplied and installed by Division 26 - Electrical.

Part 2 Products**2.1 CABLES AND REELS**

- .1 Provide cables on reels or coils.
 - .1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.
- .2 Each coil or reel of cable to contain only one continuous cable without splices.
- .3 Identify cables for exclusively DC applications.

2.2 CONDUITS

- .1 Rigid Metal Conduit: To CSA C22.2 No. 45, hot dipped galvanized steel.
- .2 Epoxy Coated Conduit: To CSA C22.2 No. 45, with zinc coating and corrosion-resistant epoxy finish, inside and outside.
- .3 Electrical Metallic Tubing (EMT): To CSA C22.2 No. 83, with couplings.
- .4 PVC Rigid Conduit: To CSA C22.2 No. 211.2.
- .5 Flexible Metal Conduit: To CSA C22.2 No. 56, liquid-tight flexible metal.
- .6 Conduits and tubes of minimal nominal diameter of 21 mm, unless otherwise indicated.

2.3 CONDUIT FASTENINGS

- .1 One-hole galvanized steel straps to secure surface conduits 27 mm and smaller.
 - .1 Two-hole steel straps for conduits larger than 27 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 "U"-Channel type supports for two or more conduits at 1.5 m intervals.
- .4 10-mm threaded rods, to support suspended channels.

- .5 Metallic Fasteners. Plastic fasteners are strictly prohibited.

2.4 CONDUIT FITTINGS

- .1 Fittings: To CAN/CSA C22.2 No. 18, manufactured for use with conduit specified.
- .2 Ensure factory "ells" where 90° bends for 25 mm and larger conduits.
- .3 EMT conduit fittings and connectors shall be of galvanized steel or die-cast zinc alloy. Fittings used for conduits containing fire-resistant cables shall be made of steel. Standard die-cast fittings and sleeves are not acceptable. Provide plastic sockets (isolated groove) for all connectors. All connectors will be waterproof type. Pressure screw connectors are prohibited.

2.5 EXPANSION FITTINGS FOR RIGID CONDUIT

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 mm linear expansion.
- .2 Watertight expansion fittings able to withstand a linear expansion of 19 mm and ensuring the continuity of the grounding network.
- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

2.6 FISH CORD

- .1 Polypropylene, length in accordance with each conduit and exceeding each conduit by 3 m.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Use electrical metallic tubing (EMT) when not subjected to mechanical damage, except in cast concrete or otherwise indicated.
- .2 It is prohibited to use EMT conduits in dangerous locations where corrosive vapors can form.
- .3 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .4 Unless otherwise indicated on drawings, conceal conduits, except in unfinished areas, in mechanical and electrical service rooms. Do not conceal conduits in columns without permission, unless otherwise indicated.
- .5 Install the dissimulated conduits in the apparent concrete.

- .6 Use rigid galvanized steel threaded conduit, in explosion proof locations or when they risk undergoing mechanical damage. Rigid galvanized steel pipe is required for surface installations up to 1.5 m above the floor.
- .7 Use epoxy coated conduit in corrosive areas.
- .8 Use rigid PVC conduits when the latter are installed under poured concrete or underground installations, outside of the building's foundation line.
- .9 Use flexible metal conduit for connection to motors in dry areas, connection to recessed incandescent fixtures without prewired outlet box, connection to LED lighting devices, connection to surface or recessed fluorescent fixtures, and fixtures or parts mounted in removable metal partitions.
 - .1 Unless otherwise indicated, the maximum length of this type of conduit is 1,000 mm.
- .10 Use liquid-tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet, or corrosive locations, and for connection to transformers.
- .11 Use explosion proof flexible connection for connection to explosion proof motors.
- .12 Install conduit sealing fittings in hazardous areas.
 - .1 Fill with compound.
- .13 Minimum conduit size for lighting and power circuits: 21 mm.
- .14 Bend conduit cold:
 - .1 Replace conduit if kinked or flattened more than $\frac{1}{10}$ th of its original diameter.
- .15 Mechanically bend steel conduit over 21-mm diameter.
- .16 Damaged conduits shall be repaired or replaced.
- .17 Field threads on rigid conduit, execution onsite, must be of enough length to draw conduits up tight.
- .18 Provide a polypropylene pull cord in empty conduits to facilitate installation of future wiring.
- .19 Seal openings with approved sealer where conduits, cables, or cable troughs are crossing fire separation.
- .20 Provide required seals when ducts pass through roof or waterproof membranes. Apply an approved sealant to maintain the integrity of the membrane
- .21 From each recessed panel, install from ceiling void and to floor space, four (4) 27-mm supply conduits for future use. Finish conduits in junction boxes, dimensions 152 mm x 152 mm x 102 mm, housed in ceiling; in case of an apparent concrete slab. They must end in boxes mounted onto the slab.
- .22 Remove and replace blocked conduit sections.
 - .1 Do not use liquids to clean out conduits.
- .23 Completely dry out conduits before installing cabling. Clean exterior of conduits and carefully clean the interior of conduits before pulling wires and cables.

- .24 Install conduits to avoid interference with other work. Maintain a minimum 150-mm clearance with steam lines or hot-water and vent piping.
- .25 Install ducts to maintain maximum clearance in exposed locations while causing the least possible interference in the spaces they pass through. Schedule and coordinate work with other services before installation of conduits. Maintain the access to junction and pull boxes.
- .26 All conduits installed in finished areas must be free of labels and trademarks.
- .27 All conduits must be bored to ensure a smooth interior finish so as not to damage the wiring installation.
- .28 Provide continuity to earth in all conduit systems.
- .29 It is forbidden to imbed conduits in terrazzo structure or in concrete screeds, unless otherwise indicated.
- .30 Protect conduits to prevent entry of dirt and moisture during construction.
- .31 In case of conduits installed parallel to steam or hot-water pipes, provide a lateral clearance of at least 75 mm; also provide a clearance of at least 25 mm in case of crossings.
- .32 Conduits shall not pass through structural members, unless otherwise indicated and authorized by Departmental Representative.
- .33 Diameters of conduits indicated on drawings are minimal. Increase the diameter of the conduits for the use of alternative types of wiring or to comply with the Canadian Electrical Code 2018.
- .34 Conduits and sheath passing through building expansion joints shall have expansion joints approved for the type of conduit used.
- .35 Seal conduits with approved sealant where conduits are installed between heated and unheated areas.
- .36 When conduits are crossing walls, they shall be grouped and passed in the same opening. When conduits are installed, opening shall be closed with material compatible with the composition of the wall or to meet any fire-separation integrity.
- .37 When conduits designation is indicated on drawings, these conduits must be identified at each endpoint with labels.

3.3 SURFACE CONDUITS

- .1 Exposed conduits accepted in mechanical and electrical service rooms and in service space.
- .2 Run parallel or perpendicular to building lines.
- .3 Route conduits through steel frame members, if required.
- .4 Group conduits wherever possible on suspended or surface channels.
- .5 Surface conduits not accepted in finished premises.

- .6 In the service space, install the ducts to the ceiling in the ribs of the steel deck over the transverse beams. Space is 30 m high x 100 wide for each rib.

3.4 CLEANING

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools, and equipment.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 28 16.02 - Moulded Case Circuit Breakers

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.2 No.29-11, Panelboards and Enclosed Panelboards.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for panelboards, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada.
 - .2 Include on drawings:
 - .1 Electrical detail of panel, branch breaker type, quantity, ampacity, and enclosure dimension.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance (O&M) data for panelboards for incorporation into O&M Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect panelboard from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

- .4 Packaging Waste Management: Remove for reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 FACTORY ASSEMBLY

- .1 Install circuit breakers in switchboards before sending.
- .2 In addition to the CSA nameplate, the nameplate must be corrected for failure to be supported by the switchboard and circuit breakers.
- .3 All boards must come from one manufacturer.

1.7 FINISH

- .1 Apply the final of table to the section 26 05 00 - Common Work Results for Electrical.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 PANELBOARDS - GENERAL

- .1 Panelboards: Product of one manufacturer.
 - .1 Install circuit breakers in panelboards before shipment.
 - .2 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.
- .2 Panels raised and installed in sprayed areas shall be provided with water baffles. These deflectors must prevent water from entering the tables when triggering sprinklers. Seal all conduit outlets from distribution boards using waterproof connectors.
- .3 Arrange busbars in phase order so circuit breakers energize numbered circuits. Each circuit breaker must identify the circuit number indelibly.
- .4 Provide two keys for each panelboard.
- .5 Use copper sector busbars with neutral bars of same rated current as phase bars.
- .6 Gray enamel paint door and door frame baked in four, except in public areas where doors and door frames are coated with a layer of approval only. The interior of all switchboards must be painted white.
- .7 600 V panelboards: Bus and breakers rated for 35 kA (symmetrical) minimally for the 600 V panelboards, unless otherwise indicated.
- .8 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.
- .9 Panelboards: Mains, number of circuits, and number and size of branch circuit breakers, as indicated.

- .10 Minimum of two (2) flush locks for each panelboard.
- .11 Copper bus with neutral of same ampere rating of mains.
- .12 Suitable for bolt-on breakers.
- .13 Trim with concealed front bolts and hinges.
- .14 Trim and door finish, grey color baked enamel, type to be "door-in-door" to ease maintenance.
- .15 Ground bus.
- .16 Where the word "Espace" (Space) is used to denominate a circuit, no breaker should be installed. The word "Libre" (Vacant) is used to denominate a circuit, the Contractor should supply and install a breaker.

2.2 DISTRIBUTION PANELS

- .1 Voltage and capacity of the panels, capacity of the circuit breakers, number of taps, and cut-off capacity of the panel shall be as shown in drawings.
- .2 Where more than one section is required, the distribution panel shall consist of individual sections bolted together to form a complete table. All distribution panels must be completely closed. Distribution panels must be constructed of galvanized steel sheet of a code-compliant size. All panel fronts must be bolted.
- .3 Distribution panels must be accessible frontage and dimensions, as indicated. If required, distribution boards must be shipped in sections compatible with the available access routes.
- .4 The main busbars must be tinned copper and equipped with seamless type terminals. Copper bars should be thoroughly cleaned and pre-plated before final tinning. Busbars and mounting frames must be arranged in such a way that any other standard circuit breaker can be easily installed and connected. The width of the grommets and the wiring space must be sufficient to allow for the installation and connection of the branch conductors and the panel supply conductors for all intended breakers.
- .5 Circuit breakers must be bolted.

2.3 BREAKERS

- .1 Breakers: To Section 26 28 16.02 - Moulded Case Circuit Breakers.
- .2 Breakers with thermal and magnetic tripping in panelboards, unless otherwise indicated.
- .3 Additional Locking Devices: Ten (10) for each circuit breaker rating, to be provided to the Departmental Representative.

2.4 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Nameplate for each panelboard, size 5 (2 lines) engraved as indicated and including the designation of the table and of the voltage/phase.

- .3 Complete circuit directory with typewritten legend showing location and load of each circuit, mounted in plastic envelope at inside of panel door. The nomenclature must indicate the table designation, the panel capacity, the voltage, the number of phases, the location and the load supplied by each circuit. Include in the maintenance manual a hard copy of each project table schedule.
- .4 Provide a plastified circuit board indicating the responsibility of each circuit and securing the card to the back of the panel door. The board must be designated by panel, panel capacity, voltage, number of phases, location, and fed load per circuit. Include, in the maintenance manual, a copy of each card of project.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for panelboards installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Locate panelboards as indicated and mount securely, plumb, true, and square, to adjoining surfaces.
- .2 Mount panelboards to height specified in Section 26 05 00 - Common Work Results for Electrical or as indicated.
- .3 Connect loads to circuits as indicated.
- .4 Connect neutral conductors to common neutral bus with respective neutral identified.
- .5 For each panel, installer of empty supply lines. Refer to Section 26 05 34 - Conduits, Fasteners and Conduit Fittings.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by panelboard installations.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.

1.2 REFERENCE STANDARDS

- .1 CSA Group (CSA).
 - .1 CSA C22.2 No. 5-09, Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures (Tri-national Standard with UL 489, and NMX-J-266-ANCE-2010).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature, and data sheets for circuit breakers, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Include time-current characteristic curves for breakers with interrupting capacity of 22,000 A symmetrical (rms) and over at system voltage and with an allowable ampacity of 200 A and more.
- .4 Certificates:
 - .1 Prior to installation of circuit breakers in either new or existing installation, Contractor must submit three copies of a production certificate of origin from the manufacturer. Production certificate of origin must be duly signed by factory and local manufacturer's representative certifying that circuit breakers come from this manufacturer and are new and meet Standards and Regulations.
 - .1 Production certificate of origin must be submitted to Departmental Representative for approval.
 - .2 Delay in submitting production of certificate of origin will not justify any extension of contract and additional compensation.
 - .3 Any work of manufacturing, assembly or installation to begin only after acceptance of production certificate of origin by Departmental Representative. Unless complying with this requirement, Departmental Representative reserves the right to mandate manufacturer listed on circuit breakers to authenticate new circuit breakers under the Contract, and to Contractor's expense.
 - .4 Production certificate of origin must contain:
 - .1 Manufacturer's name and address and person responsible for authentication. Person responsible must sign and date certificate.
 - .2 Licensed dealer's name and address and person of distributor responsible for Contractor's account.

- .3 Contractor's name and address and person responsible for project.
- .4 Local manufacturer's representative name and address. Local manufacturer's representative must sign and date certificate.
- .5 Name and address of building where circuit breakers will be installed:
 - .1 Project title.
 - .2 End user's reference number.
 - .3 List of circuit breakers.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store circuit breakers in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect circuit breaker from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: Remove for reuse as specified in Section 01 74 19 - Waste Management and Disposal.

1.5 SUBMITTALS

- .1 Before proceeding with any installation of circuit breakers, the Contractor must submit in three copies a certificate of origin of the manufacturer, signed by the factory and the local representative of the manufacturer, certifying that all circuit breakers are from the manufacturer. ci, that they are new and that they meet the standards and regulations in force. These certificates must be submitted to the Departmental Representative for acceptance.
- .2 A delay in the production of the certificate of origin will not justify an extension of the contract or any additional compensation.
- .3 Any fabrication, erection or installation work shall commence only upon acceptance of the Certificate of Origin by the Departmental Representative. Failure to comply with this requirement, the Departmental Representative reserves the right to mandate the manufacturer registered on the circuit breakers to authenticate all new circuit breakers specified in the contract, at the expense of the Contractor.
- .4 In general, the certificate of origin must contain:
 - .1 The name and contact information of the manufacturer and the person responsible for authentication. The responsible person must date and sign the certificate.
 - .2 The name and contact information of the authorized distributor and the person of the distributor responsible for the Contractor's account.

- .3 The name and contact information of the Contractor and the person responsible for the project.
- .4 The name and contact information of the local representative of the manufacturer. The local representative must date and sign the certificate.
- .5 The name and address of the building where the circuit breakers will be installed:
 - .1 The title of the project.
 - .2 Customer User Reference Number.
 - .3 The list of breakers in form of schedules.

Part 2 Products

2.1 GENERAL REQUIREMENTS

- .1 Molded-case circuit breakers, circuit breakers, accessory high-fault protectors and ground-fault circuit-interrupters: To CSA C22.2 No. 5
- .2 Bolt-on Moulded Case Circuit Breaker: Quick-make, quick-break type, for manual and automatic operation with temperature compensation for 40°C ambient.
- .3 Common-trip Breakers: With single handle for multi-pole applications.
- .4 Circuit breakers with interchangeable trip units as indicated.
- .5 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.
 - .1 Trip settings on breakers with adjustable trips to range from 3-8 times current rating.
- .6 Circuit breakers to have minimally the same current interruption capacity as the panel it is installed in.
- .7 Circuit breakers over 100 A will be microprocessor trip type.
- .8 At locations indicated on drawings, provide circuit breakers approved for 100% continuous use.

2.2 THERMAL MAGNETIC BREAKERS (DESIGN A)

- .1 Molded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short-circuit protection.

2.3 OPTIONAL FEATURES

- .1 Include:
 - .1 "On-Off" locking device for each breaker.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Install circuit breakers as indicated.
- .2 Circuit breakers must be factory installed by the manufacturer.

3.3 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools, and equipment, in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: Separate waste materials in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

DIVISION 28

Electronic Safety and Security

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 26 05 00 - Common Work Results for Electrical.
- .2 Section 26 05 21 - Wires and Cables (0 - 1000 V).
- .3 Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

1.2 REFERENCE STANDARDS

- .1 National Research Council Canada (NRC).
 - .1 National Building Code of Canada 2015 (NBC).
- .2 Treasury Board of Canada (TBS), Occupational Safety and Health (OSH).
 - .1 Fire Protection Standard-10.
- .3 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC-S524-14, Standard for the Installation of Fire Alarm Systems.
 - .2 CAN/ULC-S525-1999, Audible Signal Devices for Fire Alarm.
 - .3 CAN/ULC-S526-07, Visible Signal Devices for Fire Alarm Systems, Including Accessories.
 - .4 CAN/ULC-S527-99, Standard for Control Units for Fire Alarm Systems.
 - .5 CAN/ULC-S528-05, Manual Stations for Fire Alarm Systems, Including Accessories.
 - .6 CAN/ULC-S529-09, Smoke Detectors for Fire Alarm Systems.
 - .7 CAN/ULC-S530-91 (R1999), Heat Actuated Fire Detectors for Fire Alarm Systems.
 - .8 CAN/ULC-S531-02, Standard for Smoke Alarms.
 - .9 CAN/ULC-S536-2006, Inspection and Testing Of Fire Alarm Systems
 - .10 CAN/ULC-S537-04, Standard for the Verification of Fire Alarm Systems.
 - .11 CAN/ULC-S541-1999, Speakers for Fire Alarm Systems.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer s instructions, printed product literature, and data sheets for multiplex fire alarm system, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec, Canada.

- .2 Indicate on shop drawings:
 - .1 Detail assembly and internal wiring diagrams for control units. Auxiliary cabinets.
 - .2 Overall system riser wiring diagram identifying control equipment, initiating zones and signaling circuits; identifying terminations, terminal numbers, conductors, and raceways.
 - .3 Details for diverse devices.
 - .4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.
 - .5 Step-by-step operating sequence, cross referenced to logic flow diagram.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: Submit operation and maintenance data for fire alarm system for incorporation into manual.
- .3 Include:
 - .1 Instructions for complete fire alarm system to permit effective operation and maintenance.
 - .2 Technical data - illustrated parts lists with parts catalogue numbers.
 - .3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.
 - .4 List of recommended spare parts for system.

Part 2 Products

2.1 DESCRIPTION

- .1 Fully supervised, microprocessor-based, existing IFC-3030, from Johnson Control, fire alarm system, utilizing digital techniques for data control and digital, and multiplexing techniques for data transmission.

2.2 WIRING

- .1 Copper, twisted conductors; rated voltage of 300 V, FAS105 type installed in concealed galvanized conduits.
- .2 Alarm Trip Circuits: Conductors of at least 14 AWG, and as per manufacturer's requirements.
- .3 Signaling Circuits: Conductors of at least 14 AWG, and as per manufacturer's requirements.
- .4 Control Circuits: Conductors not less than 14 AWG, and as per manufacturer's requirements.

- .5 Outdoor link circuits must be pair-pair # -16 twisted-shielded pair/pair type XLPE - ISOS - FAS105 from Shaflex, with properties according to usage or approved equivalent.

2.3 AUXILIARY DEVICES

- .1 Module serving as an interface between alarm contact devices (N.O.) or (N.F.) and an addressable detection loop.
 - .1 Monitored interface module, including 2-zone model HTRI-D circuit-breaker contact or 1-zone Johnson Control HTRI-S circuit breaker contact circuit.
 - .2 Supervised relay for control of auxiliary functions, model HTRI-R with 1 detection area & 1 alarm relay from Johnson Control. Relay contact at 120 VAC/30 VDC of 3 A.
- .2 Isolator module on detection and signal loops installed so that a fault in one zone does not prevent the normal operation of other input or output devices in another zone. Model: HLIM from Johnson Control.
- .3 Provide an isolator module for each detection loop serving more than one floor or more of a sector separated by a fire wall or more than 2,000 m² (maximum) of floor area to be served or area described in article 3.2.4.9 of the CCQ Code (amended CNB-2015).

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for fire alarm installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

- .1 Connect fire alarm circuits to main control board.
- .2 Install remote relays used to shutdown fans.
- .3 Before testing the system and submitting it to the Departmental Representative, make sure that the wiring does not have any open circuit, short circuit, or earth leakage.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Electrical - General Requirements for Work Results and CAN/ULC-S537.
- .2 Fire Alarm System.
 - .1 Test all alarm devices and circuits to ensure that manual alarms, system, smoke detectors transmit alarm signal to master control board and trigger auxiliary devices, a first-stage alarm and a general alarm.
 - .1 Verify that each conductor of all addressable DCLA links can transmit at
- .3 Provide Departmental Representative with final reprogramming of PROM, including any changes made to program during system completion.

3.4 CLEANING

- .1 Cleaning during work: Perform cleaning according to section 01 74 00 - Cleaning.
 - .1 Leave the premises clean at the end of each working day.
- .2 Final Cleaning: Evacuate surplus materials/equipment, waste, tools, and equipment from site, in accordance with Section 01 74 00 - Cleaning.

3.5 PROTECTION

- .1 Protect installed equipment and components from damage during construction.
- .2 Repair damage to adjacent materials and equipment by installation of the fire alarm system.

3.6 ACTIVITIES RELATED TO THE COMPLETION OF WORK

- .1 Arrange for the manufacturer of fire alarm equipment to give on-site training and demonstrations to the operations personnel on the operation and maintenance of the system.

3.7 DEMONSTRATION AND TRAINING

- .1 Arrange for the manufacturer of the fire alarm equipment to give on-site training and operational demonstrations to operating personnel within one month of the operation and maintenance of the system. Upon receipt with reserve of work after the complete installation of all system components:
 - .1 The programming of these trainings must be established at least one month in advance with the Departmental Representative.
 - .2 During the training, each participant must have documentation in French language.
 - .3 Operation and maintenance supervision manuals will be provided in French and English.
 - .4 The Contractor must include in the cost of its bid 24 hours of on-site training by engineers of the system manufacturer.
- .2 The training must include a complete demonstration and practice system including an alarm centralizer (NCC), an annunciator (such as booths) and the various detection and signaling components.

END OF SECTION