

| ITEM | QTY | MFR | DESCRIPTION | PART NO. |
|------|------|----------|---|--------------|
| 1 | 1 | RITTAL | ENCLOSURE, 997mm X 1805mm X 405mm (W X H X D), SINGLE DOOR C/W REAR DETACHABLE PANEL, MOUNT PLATE | 8084.500 |
| 2 | 1 | RITTAL | TS SIDE PANELS, 1800 X 400mm, PACKAGE OF 2 | 8184.235 |
| 3 | 1 | RITTAL | FLEX-BLOCK CORNER PIECES BASE/PLINTH SYSTEM, FIBREGLASS-REINFORCED PLASTIC | 8200.000 |
| 4 | 1 | RITTAL | FLEX-BLOCK TRIM PANELS, FOR 1000mm X 200mm (D X H), SOLID | 8200.010 |
| 5 | 1 | RITTAL | FLEX-BLOCK TRIM PANELS, FOR 400mm X 200mm (D X H), SOLID | 8200.400 |
| 6 | 1 | RITTAL | "SHEET STEEL WIRING PLAN POCKETS, 855mm X 210mm (W X H), 90mm DEEP" | 4124.000 |
| 7 | 1 | RITTAL | GROUND BUS, COPPER, 20 GROUNDING CLIPS, 2 ISOLATORS | 7113.000 |
| 8 | | | | |
| 9 | 1 | BY NRCan | LAMACOID LABEL, 250mm X 150mm (W X H), ENGRAVED WITH 15mm HIGH TEXT AS INDICATED, BLACK LETTERING ON WHITE | |
| 10 | 3 | ABB | "CI801-EA PROFIBUS DP-V1 COMMUNICATION INTERFACE INCLUDING: 1 PCE POWER SUPPLY CONNECTOR 1 PCE TB807 MODULEBUS TERMINATOR" | 3BSE022366R2 |
| 11 | 22 | ABB | "TU810V1 COMPACT MODULE TERMINAL-ON UNIT, MTU, 50V 2X8 SIGNAL TERMINALS, RATED ISOL. 50V" | 3BSE013230R1 |
| 12 | 22 | ABB | "AI835A-EA ANALOG INPUT 8 CH. THERMOCOUPLE/MV RATED ISOL. 50V" | 3BSE051306R2 |
| 13 | 1 | ABB | "SD831 POWER SUPPLY DEVICE, G2 COMPLIANT INPUT A.C. 100-240 V OR D.C. 110-300 V. OUTPUT D.C. 24 V 3A." | 3BSC610064R1 |
| 14 | 3 | EASYCONN | PBR PROFIBUS CONNECTOR, 90 DEG [PA003135] | VP972-0DPC1 |
| 15 | | | | |
| 16 | 12 | ENTRELEC | STANDARD TERMINAL BLOCK, M 4/6, WITH TEST 2mm TEST SOCKET | 115 217.14 |
| 17 | 5 | ENTRELEC | FUSED TERMINAL BLOCKM4/8.SF | 115 657.25 |
| 18 | 0 | ENTRELEC | TERMINAL BLOCKS, M 6/8 | 115 118.11 |
| 19 | 3 | ENTRELEC | END SECTION, M4/6 | 118 368.16 |
| 20 | 2 | ENTRELEC | END SECTION, M4/8.SF | 116 951.15 |
| 21 | 5 | ENTRELEC | END STOP (ALL RAILS) | 206 351.16 |
| 22 | 0 | ENTRELEC | SEPARATOR END SECTION, RAIL MOUNT, SCF6 | 118 707.03 |
| 23 | 3.0m | ENTRELEC | ASSEMBLY RAIL, PR30 (TS 35/F6), DIN 3, 35mm, 2 meter | 173 220.05 |
| 24 | 10 | ENTRELEC | RAIL OFFSET MTG BRACKET, TS0441-5M6 40mm HIGH | 101 655.06 |
| 25 | | | | |
| 26 | 3.2m | IBICO | WIRE DUCT, 4.0 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER | T1-4040G |
| 27 | 1.9m | IBICO | WIRE DUCT, 3.0 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER | T1-3040G |
| 28 | .0m | IBICO | WIRE DUCT, 2.25 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER | T1-2240G |
| 29 | .0m | IBICO | WIRE DUCT, 1.5 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER | T1-1540G |
| 30 | 1.6m | IBICO | WIRE DUCT, 1.0 x 4.0 IN., 8/PK, GRY, SLOTTED, 2M, WITH COVER | T1-1040G |
| 31 | | | | |
| 32 | | | | |

NOTES:
 1. CONTRACTOR TO ENSURE SUFFICIENT GROUNDING HARDWARE AVAILABLE. NEW GROUNDING BUS TO BE MOUNTED AS REQUIRED.
 2. LABEL TO BE MOUNTED ON CABINET EXTERIOR. LAMACOID LABEL, 250mm X 150mm (W X H), ENGRAVED WITH 15mm HIGH TEXT AS INDICATED, BLACK LETTERING ON WHITE.
 3. ALL ITEMS IN BILL OF MATERIAL SUPPLIED BY NRCan.

| NO | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD | APPD |
|----|-------------------------|--------------|-------|-----|------|
| 1 | ISSUE FOR TENDER | 2017/03/24 | RCM | | |
| 0 | ISSUE FOR CLIENT REVIEW | 2017/01/09 | RCM | | |
| No | | | | | |

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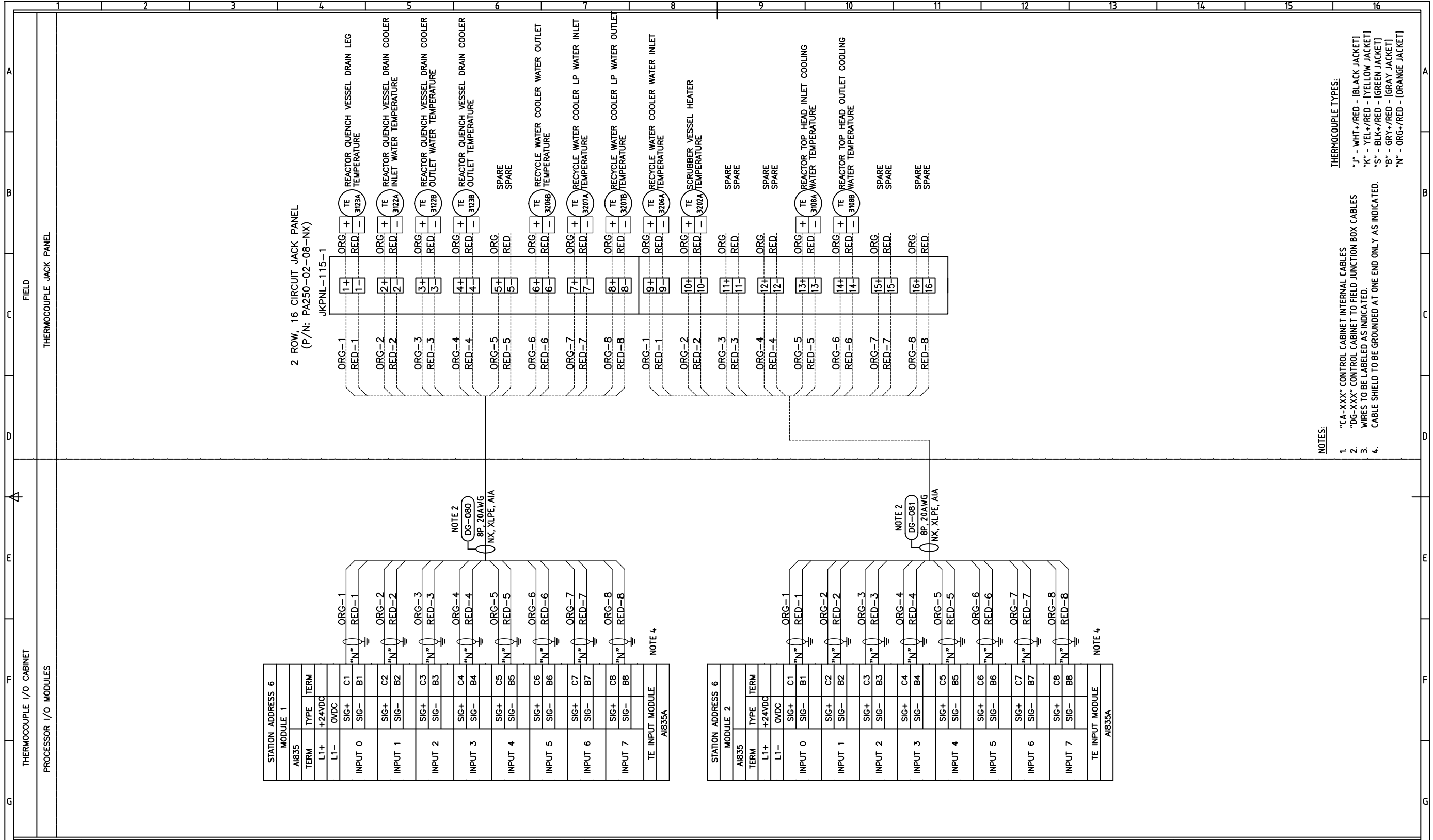
DESIGNED: R. McNAIR
 DRAWN: R. McNAIR
 CHECKED:
 APPROVED:
 DATE: 2016/11/11
 SCALE: NONE

CLIENT: Natural Resources Canada / Ressources naturelles Canada
 CANMET Energy Technology Center / Centre de la technologie de l'énergie de CANMET

| | | | | |
|--|---------------|----------------|--------------|--------|
| PROJECT: NRCAN CANMET DCSG/HIPROX | | | | |
| TITLE: ELECTRICAL DCSG-HIPROX THERMOCOUPLE IO CABINET ASSY | | | | |
| USER: E | PROJECT: DCSG | BUILDING: BCC4 | DRAWING: 300 | REV: 1 |

REFERENCE DRAWINGS

REVISION REGISTER



2 ROW, 16 CIRCUIT JACK PANEL
(P/N: PA250-02-08-NX)
JKPNL-115-1

FIELD
THERMOCOUPLE JACK PANEL

THERMOCOUPLE I/O CABINET
PROCESSOR I/O MODULES

NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
- CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

THERMOCOUPLE TYPES:
"J" - WHT+/RED - [BLACK JACKET]
"K" - YEL+/RED - [YELLOW JACKET]
"S" - BLK+/RED - [GREEN JACKET]
"B" - GRAY+/RED - [GRAY JACKET]
"N" - ORG+/RED - [ORANGE JACKET]

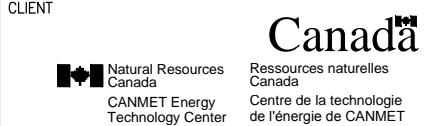
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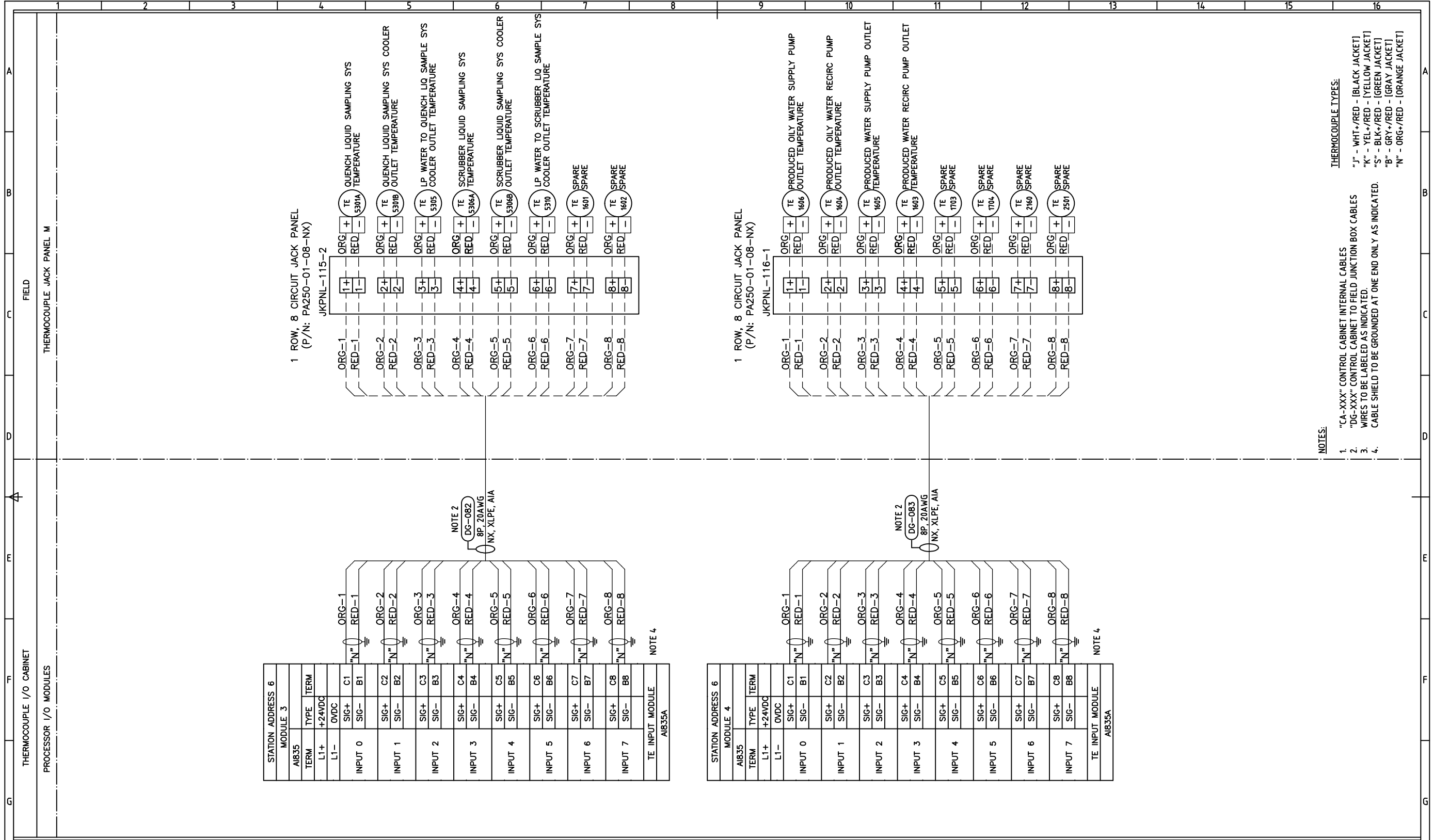
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| |
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| DESIGNED R. McNAIR |
| DRAWN R. McNAIR |
| CHECKED |
| APPROVED |
| DATE 2016/11/11 |
| SCALE NONE |

| | | | | |
|---|-----------------|------------------|----------------|-----------|
| PROJECT NRCAN CANMET DCSG/HIPROX | | | | |
| TITLE ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING NODE ADDRESS 6 - MODULES 1 & 2 | | | | |
| USER E | PROJECT DCSG | BUILDING BCC4 | DRAWING 301 | REV. 1 |



1 ROW, 8 CIRCUIT JACK PANEL
(P/N: PA250-01-08-NX)
JKPNL-115-2

1 ROW, 8 CIRCUIT JACK PANEL
(P/N: PA250-01-08-NX)
JKPNL-116-1

| STATION ADDRESS 6 | |
|------------------------|---------|
| MODULE 3 | |
| TERM | TERM |
| L1+ | +24VDC |
| L1- | 0VDC |
| INPUT 0 | SIG+ C1 |
| | SIG- B1 |
| INPUT 1 | SIG+ C2 |
| | SIG- B2 |
| INPUT 2 | SIG+ C3 |
| | SIG- B3 |
| INPUT 3 | SIG+ C4 |
| | SIG- B4 |
| INPUT 4 | SIG+ C5 |
| | SIG- B5 |
| INPUT 5 | SIG+ C6 |
| | SIG- B6 |
| INPUT 6 | SIG+ C7 |
| | SIG- B7 |
| INPUT 7 | SIG+ C8 |
| | SIG- B8 |
| TE INPUT MODULE AIB35A | |

| STATION ADDRESS 6 | |
|------------------------|---------|
| MODULE 4 | |
| TERM | TERM |
| L1+ | +24VDC |
| L1- | 0VDC |
| INPUT 0 | SIG+ C1 |
| | SIG- B1 |
| INPUT 1 | SIG+ C2 |
| | SIG- B2 |
| INPUT 2 | SIG+ C3 |
| | SIG- B3 |
| INPUT 3 | SIG+ C4 |
| | SIG- B4 |
| INPUT 4 | SIG+ C5 |
| | SIG- B5 |
| INPUT 5 | SIG+ C6 |
| | SIG- B6 |
| INPUT 6 | SIG+ C7 |
| | SIG- B7 |
| INPUT 7 | SIG+ C8 |
| | SIG- B8 |
| TE INPUT MODULE AIB35A | |

NOTE 2
DG-082
8P, 20AWG
NX, XLPE, AIA

NOTE 2
DG-083
8P, 20AWG
NX, XLPE, AIA

NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
- CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

THERMOCOUPLE TYPES:

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- "K" - YEL+/RED - [YELLOW JACKET]
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- "B" - GRAY+/RED - [GRAY JACKET]
- "N" - ORG+/RED - [ORANGE JACKET]

REFERENCE DRAWINGS

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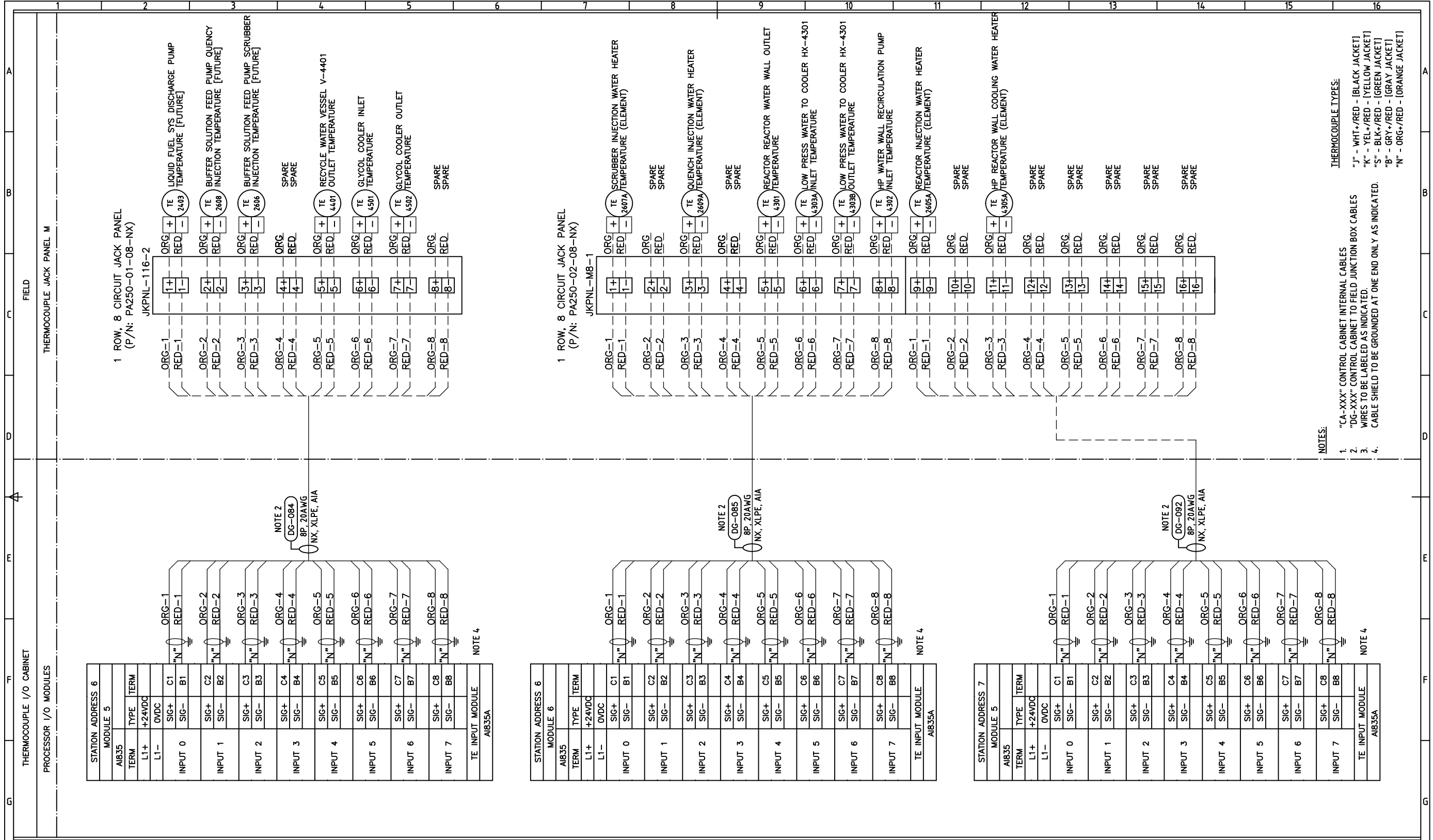
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| | |
|----------|------------|
| DESIGNED | R. McNAIR |
| DRAWN | R. McNAIR |
| CHECKED | |
| APPROVED | |
| DATE | 2016/11/11 |
| SCALE | NONE |

| | | | | |
|--|---------|----------|---------|------|
| PROJECT | | | | |
| NRCAN CANMET DCSG/HIPROX | | | | |
| TITLE | | | | |
| ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING NODE ADDRESS 6 - MODULES 3 & 4 | | | | |
| USER | PROJECT | BUILDING | DRAWING | REV. |
| E | DCSG | BCC4 | 302 | 1 |



NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
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 "K" - YEL*/RED - [YELLOW JACKET]
 "S" - BLK*/RED - [GREEN JACKET]
 "B" - GRY*/RED - [GRAY JACKET]
 "N" - ORG*/RED - [ORANGE JACKET]

| STATION ADDRESS 6 | |
|---------------------------|--------------------|
| MODULE 5 | |
| AB35 | TERM |
| L1+ | +24VDC |
| L1- | OVDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE AIB35A | |

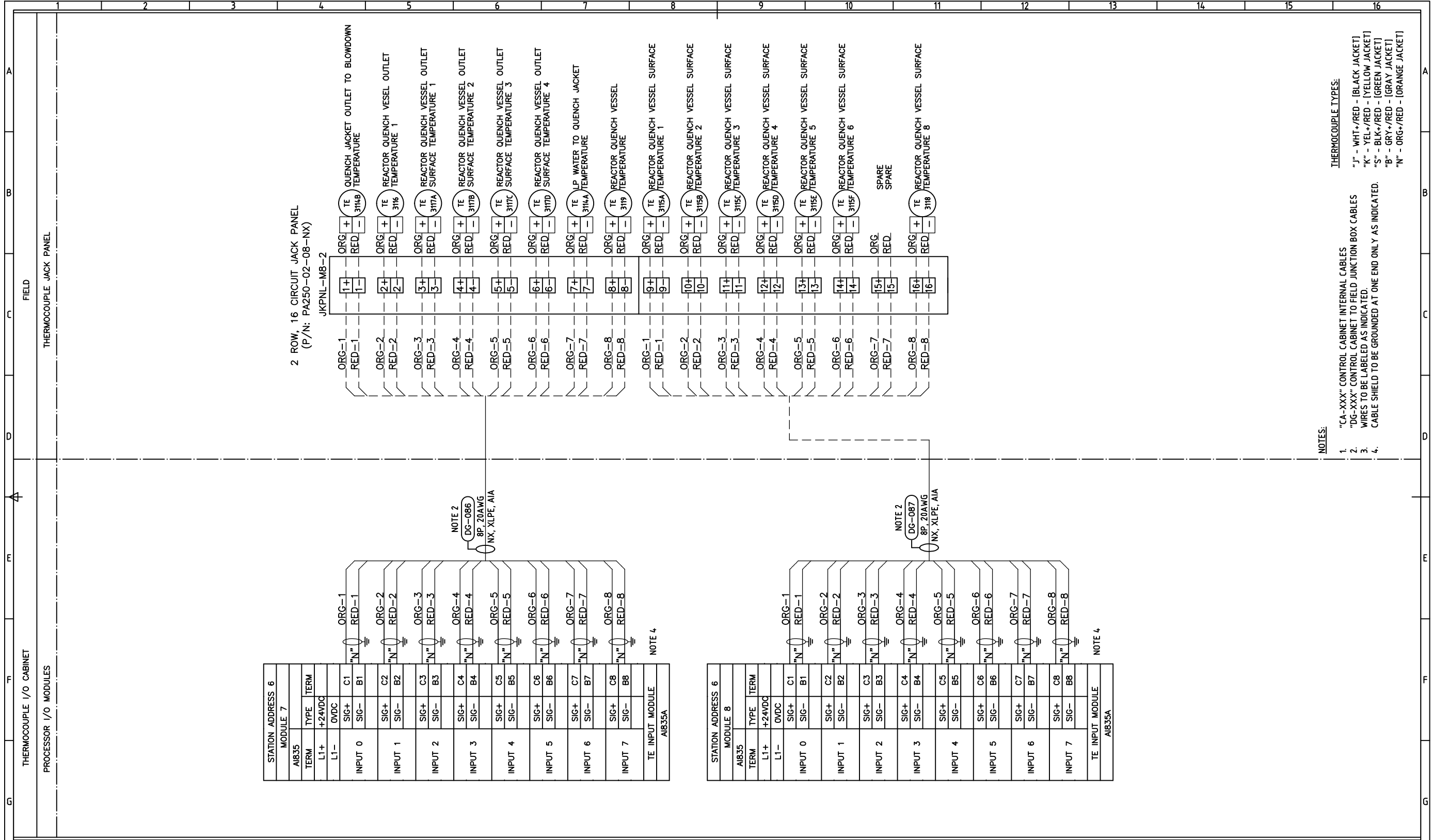
| STATION ADDRESS 6 | |
|---------------------------|--------------------|
| MODULE 6 | |
| AB35 | TERM |
| L1+ | +24VDC |
| L1- | OVDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE AIB35A | |

| STATION ADDRESS 7 | |
|---------------------------|--------------------|
| MODULE 5 | |
| AB35 | TERM |
| L1+ | +24VDC |
| L1- | OVDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE AIB35A | |

| REFERENCE DRAWINGS | |
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| 1 | |
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| REVISION REGISTER | | | | |
|-------------------|-------------------------|--------------|-------|-----|
| No | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD |
| 1 | ISSUE FOR TENDER | 2017/03/24 | RCM | |
| 0 | ISSUE FOR CLIENT REVIEW | 2017/01/09 | RCM | |

| | |
|-----------------------|--|
| DESIGNED R. McNAIR | PROJECT NRCAN CANMET DCSG/HIPROX |
| DRAWN R. McNAIR | |
| CHECKED | |
| APPROVED | TITLE ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING ADD 6-MODS 5&6, ADD 7-MOD 5 |
| DATE 2016/11/11 | USER E |
| SCALE NONE | PROJECT DCSG |
| | BUILDING BCC4 |
| | DRAWING 303 |
| | REV. 1 |



2 ROW, 16 CIRCUIT JACK PANEL
(P/N: PA250-02-08-NX)
JKPNL-MB-2

| STATION ADDRESS 6 | | MODULE 7 | |
|-------------------|--------------------|----------------|--|
| TERM | TYPE | TERM | |
| L1+ | +24VDC | | |
| L1- | 0VDC | | |
| INPUT 0 | SIG+ C1 SIG- B1 | ORG-1 RED-1 | TE QUENCH JACKET OUTLET TO BLOWDOWN TEMPERATURE |
| INPUT 1 | SIG+ C2 SIG- B2 | ORG-2 RED-2 | REACTOR QUENCH VESSEL OUTLET TEMPERATURE 1 |
| INPUT 2 | SIG+ C3 SIG- B3 | ORG-3 RED-3 | REACTOR QUENCH VESSEL OUTLET SURFACE TEMPERATURE 1 |
| INPUT 3 | SIG+ C4 SIG- B4 | ORG-4 RED-4 | REACTOR QUENCH VESSEL OUTLET SURFACE TEMPERATURE 2 |
| INPUT 4 | SIG+ C5 SIG- B5 | ORG-5 RED-5 | REACTOR QUENCH VESSEL OUTLET SURFACE TEMPERATURE 3 |
| INPUT 5 | SIG+ C6 SIG- B6 | ORG-6 RED-6 | REACTOR QUENCH VESSEL OUTLET SURFACE TEMPERATURE 4 |
| INPUT 6 | SIG+ C7 SIG- B7 | ORG-7 RED-7 | LP WATER TO QUENCH JACKET TEMPERATURE |
| INPUT 7 | SIG+ C8 SIG- B8 | ORG-8 RED-8 | REACTOR QUENCH VESSEL TEMPERATURE |
| TE INPUT MODULE | | AIB35A | |

| STATION ADDRESS 6 | | MODULE 8 | |
|-------------------|--------------------|----------------|--|
| TERM | TYPE | TERM | |
| L1+ | +24VDC | | |
| L1- | 0VDC | | |
| INPUT 0 | SIG+ C1 SIG- B1 | ORG-1 RED-1 | TE QUENCH VESSEL SURFACE TEMPERATURE 1 |
| INPUT 1 | SIG+ C2 SIG- B2 | ORG-2 RED-2 | TE QUENCH VESSEL SURFACE TEMPERATURE 2 |
| INPUT 2 | SIG+ C3 SIG- B3 | ORG-3 RED-3 | TE QUENCH VESSEL SURFACE TEMPERATURE 3 |
| INPUT 3 | SIG+ C4 SIG- B4 | ORG-4 RED-4 | TE QUENCH VESSEL SURFACE TEMPERATURE 4 |
| INPUT 4 | SIG+ C5 SIG- B5 | ORG-5 RED-5 | TE QUENCH VESSEL SURFACE TEMPERATURE 5 |
| INPUT 5 | SIG+ C6 SIG- B6 | ORG-6 RED-6 | TE QUENCH VESSEL SURFACE TEMPERATURE 6 |
| INPUT 6 | SIG+ C7 SIG- B7 | ORG-7 RED-7 | SPARE |
| INPUT 7 | SIG+ C8 SIG- B8 | ORG-8 RED-8 | TE QUENCH VESSEL SURFACE TEMPERATURE 8 |
| TE INPUT MODULE | | AIB35A | |

- NOTES:**
- "CA-XXX" CONTROL CABINET INTERNAL CABLES
 - "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
 - WIRES TO BE LABELED AS INDICATED.
 - CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.
- THERMOCOUPLE TYPES:**
- "J" - WHT+/RED - [BLACK JACKET]
 - "K" - YEL+/RED - [YELLOW JACKET]
 - "S" - BLK+/RED - [GREEN JACKET]
 - "B" - GRAY+/RED - [GRAY JACKET]
 - "N" - ORG+/RED - [ORANGE JACKET]

| REV | DATE | DESCRIPTION | DRAWN | CKD | APPD | |
|-----|------------|-------------------------|--------------|-------|------|------|
| 1 | 2017/03/24 | ISSUE FOR TENDER | | | RCM | |
| 0 | 2017/01/09 | ISSUE FOR CLIENT REVIEW | | | RCM | |
| No | | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD | APPD |

| REFERENCE DRAWINGS | | REVISION REGISTER | |
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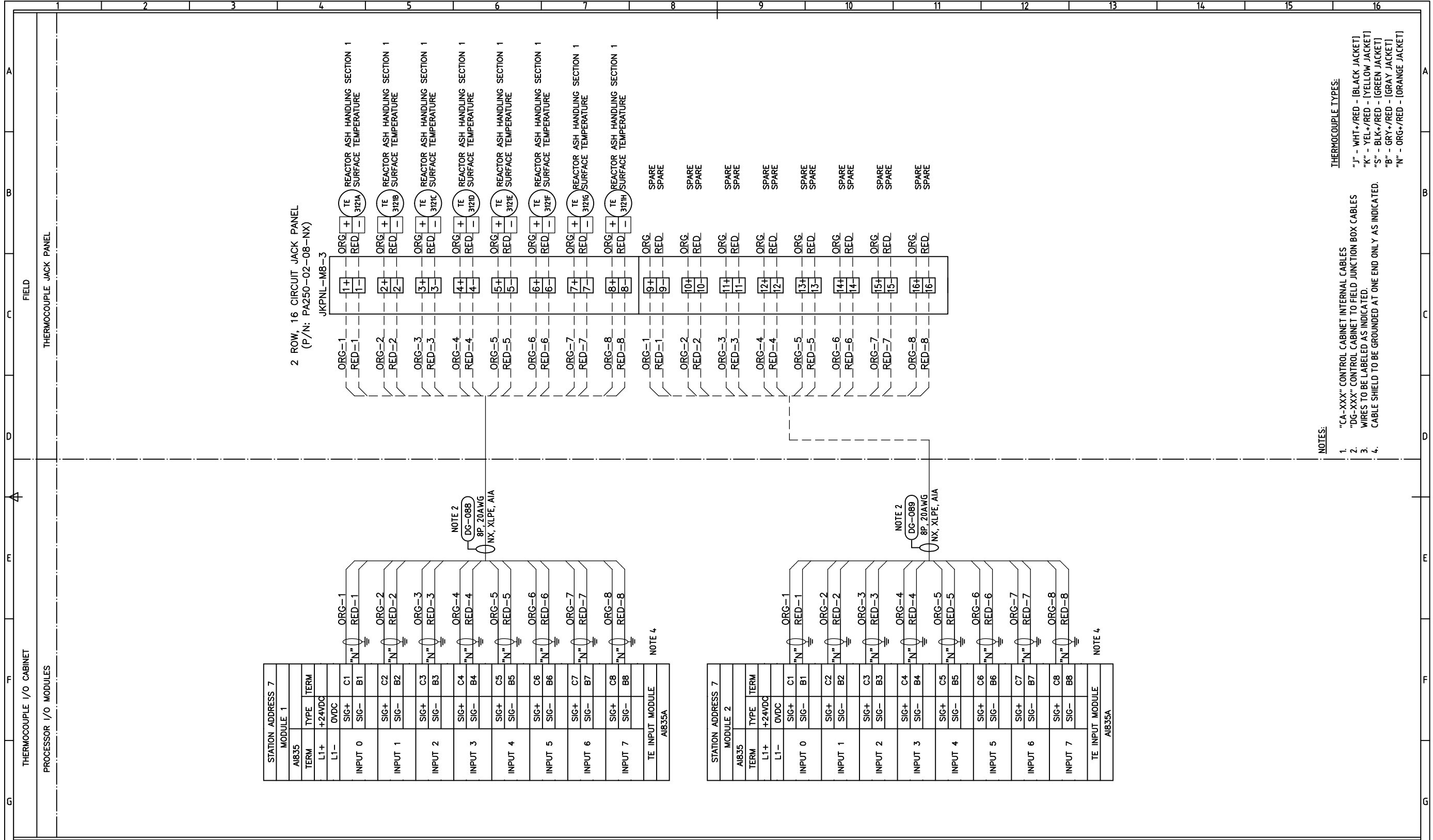
 CANMET Energy Technology Center

 Centre de la technologie de l'énergie de CANMET

CLIENT

DESIGNED: R. McNAIR
 DRAWN: R. McNAIR
 CHECKED:
 APPROVED:
 DATE: 2016/11/11
 SCALE: NONE

| PROJECT | | TITLE | | |
|-----------------------------------|---------|------------------------|---------|------|
| NRCAN CANMET DCSG/HIPROX | | ELECTRICAL DCSG-HIPROX | | |
| THERMOCOUPLE CABINET INPUT WIRING | | | | |
| NODE ADDRESS 6 - MODULES 7 & 8 | | | | |
| USER | PROJECT | BUILDING | DRAWING | REV. |
| E | DCSG | BCC4 | 304 | 1 |



NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
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- "S" - BLK+/RED - [GREEN JACKET]
- "B" - GRAY+/RED - [GRAY JACKET]
- "N" - ORG+/RED - [ORANGE JACKET]

| STATION ADDRESS 7 | MODULE 1 | MODULE 2 |
|-------------------|-----------------|--------------------|
| A1835 | TERM | TERM |
| | L1+ | +24VDC |
| | L1- | 0VDC |
| | INPUT 0 | SIG+ C1 SIG- B1 |
| | INPUT 1 | SIG+ C2 SIG- B2 |
| | INPUT 2 | SIG+ C3 SIG- B3 |
| | INPUT 3 | SIG+ C4 SIG- B4 |
| | INPUT 4 | SIG+ C5 SIG- B5 |
| | INPUT 5 | SIG+ C6 SIG- B6 |
| | INPUT 6 | SIG+ C7 SIG- B7 |
| | INPUT 7 | SIG+ C8 SIG- B8 |
| | TE INPUT MODULE | A1835A |

| STATION ADDRESS 7 | MODULE 1 | MODULE 2 |
|-------------------|-----------------|--------------------|
| A1835 | TERM | TERM |
| | L1+ | +24VDC |
| | L1- | 0VDC |
| | INPUT 0 | SIG+ C1 SIG- B1 |
| | INPUT 1 | SIG+ C2 SIG- B2 |
| | INPUT 2 | SIG+ C3 SIG- B3 |
| | INPUT 3 | SIG+ C4 SIG- B4 |
| | INPUT 4 | SIG+ C5 SIG- B5 |
| | INPUT 5 | SIG+ C6 SIG- B6 |
| | INPUT 6 | SIG+ C7 SIG- B7 |
| | INPUT 7 | SIG+ C8 SIG- B8 |
| | TE INPUT MODULE | A1835A |

| STATION ADDRESS 7 | MODULE 1 | MODULE 2 |
|-------------------|-----------------|--------------------|
| A1835 | TERM | TERM |
| | L1+ | +24VDC |
| | L1- | 0VDC |
| | INPUT 0 | SIG+ C1 SIG- B1 |
| | INPUT 1 | SIG+ C2 SIG- B2 |
| | INPUT 2 | SIG+ C3 SIG- B3 |
| | INPUT 3 | SIG+ C4 SIG- B4 |
| | INPUT 4 | SIG+ C5 SIG- B5 |
| | INPUT 5 | SIG+ C6 SIG- B6 |
| | INPUT 6 | SIG+ C7 SIG- B7 |
| | INPUT 7 | SIG+ C8 SIG- B8 |
| | TE INPUT MODULE | A1835A |

CLIENT

| | |
|----------|------------|
| DESIGNED | R. McNAIR |
| DRAWN | R. McNAIR |
| CHECKED | |
| APPROVED | |
| DATE | 2016/11/11 |
| SCALE | NONE |

| | | | | |
|--|---------|----------|---------|------|
| PROJECT | | | | |
| NRCAN CANMET DCSG/HIPROX | | | | |
| TITLE | | | | |
| ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING NODE ADDRESS 7 - MODULES 1 & 2 | | | | |
| USER | PROJECT | BUILDING | DRAWING | REV. |
| E | DCSG | BCC4 | 305 | 1 |

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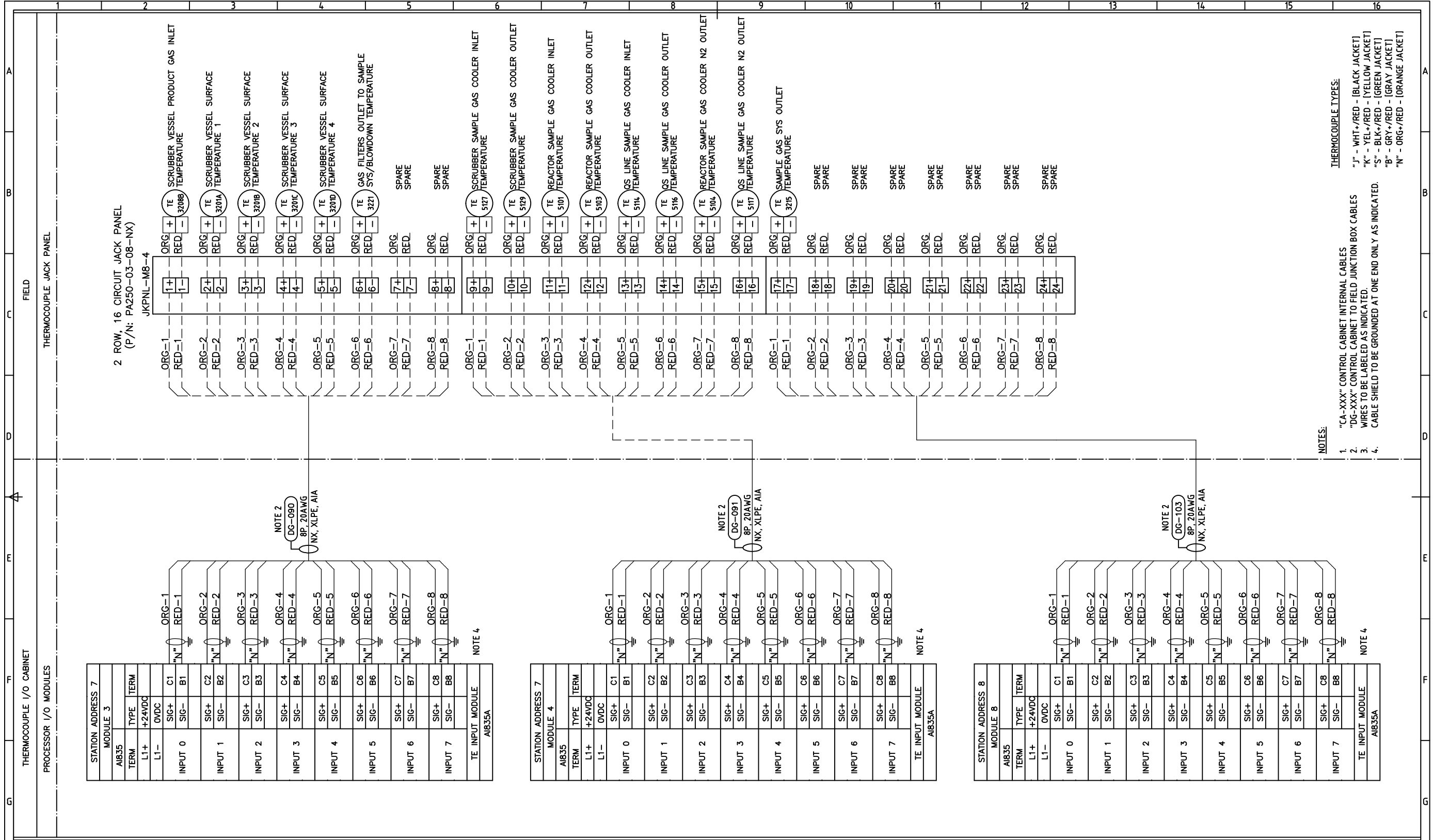
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| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | | | | | | |



- NOTES:**
- "CA-XXX" CONTROL CABINET INTERNAL CABLES
 - "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
 - WIRES TO BE LABELED AS INDICATED.
 - CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.
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REFERENCE DRAWINGS

| STATION ADDRESS | MODULE | TERM | TYPE | TERM |
|-----------------|----------|-----------------|---------|-------|
| AB35 | MODULE 3 | L1+ | +24VDC | |
| | | L1- | OVDG | |
| | | INPUT 0 | SIG+ C1 | RED-1 |
| | | | SIG- B1 | RED-1 |
| | | INPUT 1 | SIG+ C2 | RED-2 |
| | | | SIG- B2 | RED-2 |
| | | INPUT 2 | SIG+ C3 | RED-3 |
| | | | SIG- B3 | RED-3 |
| | | INPUT 3 | SIG+ C4 | RED-4 |
| | | | SIG- B4 | RED-4 |
| | | INPUT 4 | SIG+ C5 | RED-5 |
| | | | SIG- B5 | RED-5 |
| | | INPUT 5 | SIG+ C6 | RED-6 |
| | | | SIG- B6 | RED-6 |
| | | INPUT 6 | SIG+ C7 | RED-7 |
| | | | SIG- B7 | RED-7 |
| | | INPUT 7 | SIG+ C8 | RED-8 |
| | | | SIG- B8 | RED-8 |
| | | TE INPUT MODULE | | |
| | | | | AB35A |

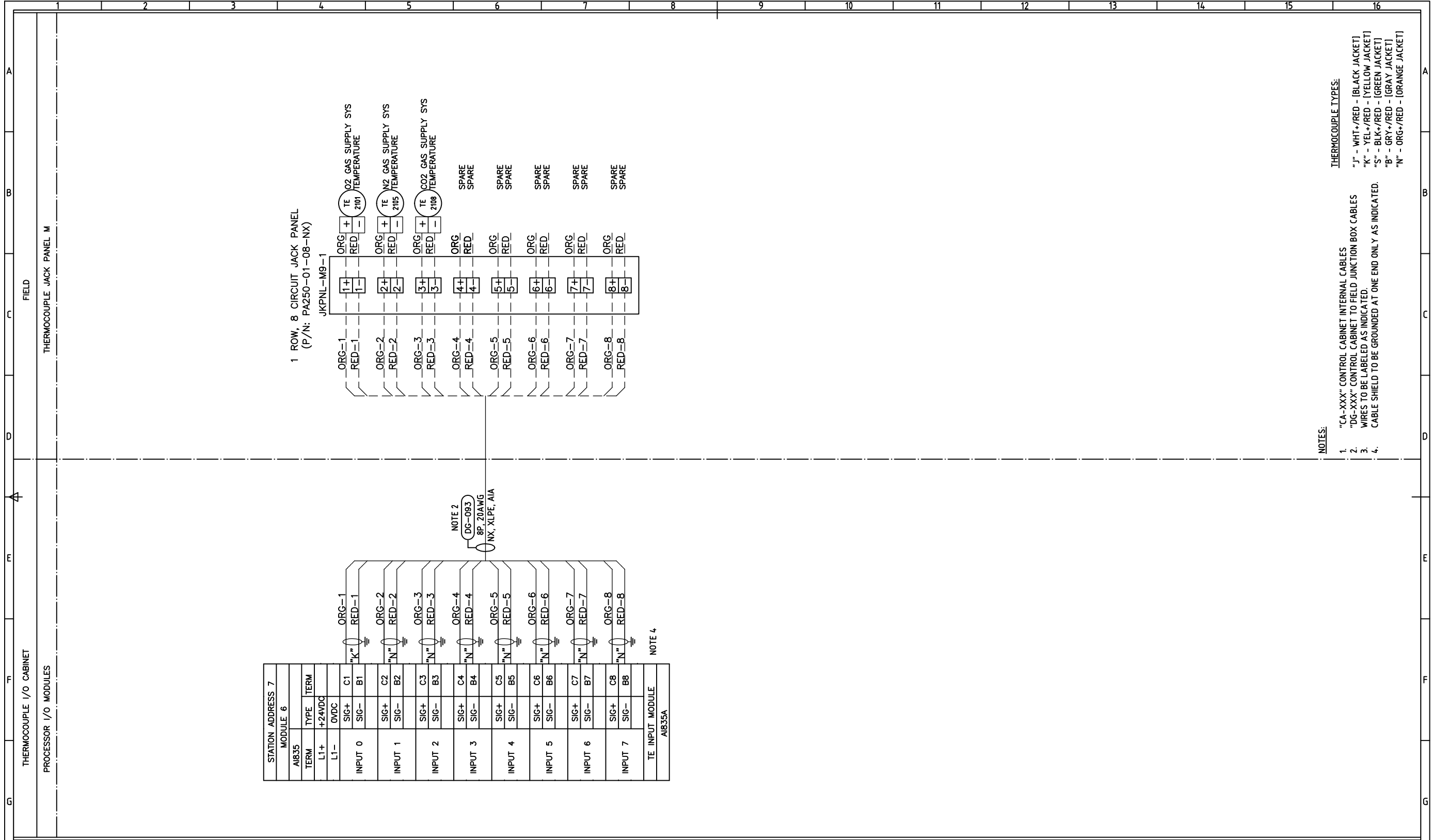
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CANMET Energy Technology Center

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| | |
|----------|------------|
| DESIGNED | R. McNAIR |
| DRAWN | R. McNAIR |
| CHECKED | |
| APPROVED | |
| DATE | 2016/11/11 |
| SCALE | NONE |

| | | | | |
|---|---------|----------|---------|------|
| PROJECT | | | | |
| NRCAN CANMET DCSG/HIPROX | | | | |
| TITLE | | | | |
| ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING ADDS 7-MODS 3&4, ADDS 8-MOD 8 | | | | |
| USER | PROJECT | BUILDING | DRAWING | REV. |
| E | DCSG | BCC4 | 306 | 1 |



1 ROW, 8 CIRCUIT JACK PANEL
(P/N: PA250-01-08-NX)
JKPNL-M9-1

| STATION ADDRESS 7 | |
|------------------------|--------------------|
| MODULE 6 | |
| TERM | TYPE TERM |
| L1+ | +24VDC |
| L1- | 0VDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE A1835A | |

NOTE 2
DG-093
8P 20AWG
NX, XLPE, AIA

NOTE 4

NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
- CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

- THERMOCOUPLE TYPES:
- "J" - WHT+/RED - [BLACK JACKET]
 - "K" - YEL+/RED - [YELLOW JACKET]
 - "S" - BLK+/RED - [GREEN JACKET]
 - "B" - GRY+/RED - [GRAY JACKET]
 - "N" - ORG+/RED - [ORANGE JACKET]

| REV | DATE (Y/M/D) | DESCRIPTION | BY | CHKD | APPD |
|-----|--------------|-------------------------|--------------|-------|------|
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| No | | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD |

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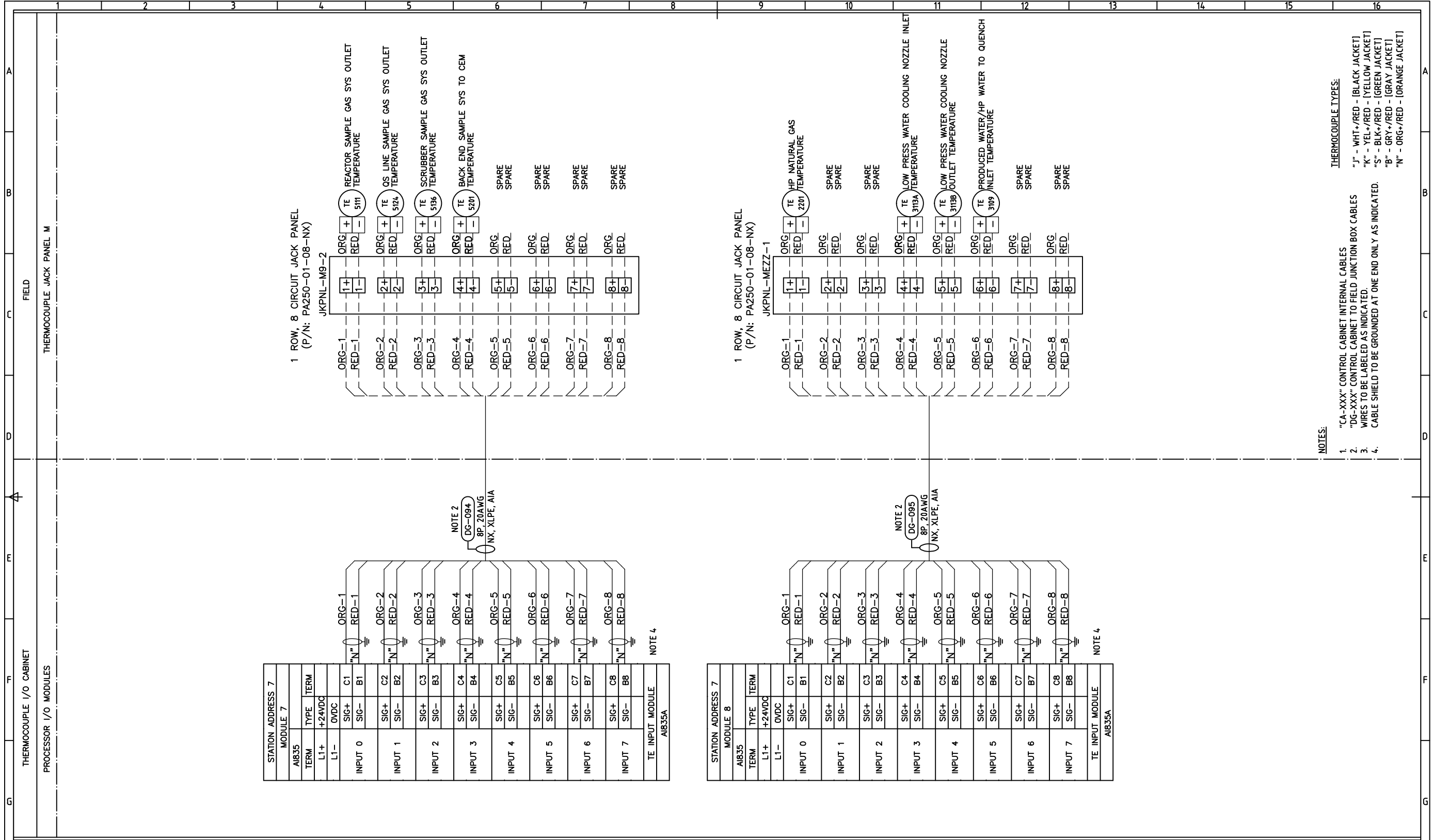
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CANMET Energy Technology Center

Ressources naturelles Canada
Centre de la technologie de l'énergie de CANMET

| | | | | | |
|-----------------------|--|--------------------|---------------|------------------|-----------------|
| DESIGNED R. McNAIR | PROJECT NRCAN CANMET DCSG/HIPROX | | | | |
| DRAWN R. McNAIR | TITLE ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING NODE ADDRESS 7 - MODULE 6 | | | | |
| CHECKED | APPROVED | DATE 2016/11/11 | SCALE NONE | USER E | PROJECT DCSG |
| | | | | BUILDING BCC4 | DRAWING 307 |
| | | | | REV. 1 | |

REFERENCE DRAWINGS

REVISION REGISTER



NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
- CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

THERMOCOUPLE TYPES:
 "J" - WHT*/RED - [BLACK JACKET]
 "K" - YEL*/RED - [YELLOW JACKET]
 "S" - BLK*/RED - [GREEN JACKET]
 "B" - GRY*/RED - [GRAY JACKET]
 "N" - ORG*/RED - [ORANGE JACKET]

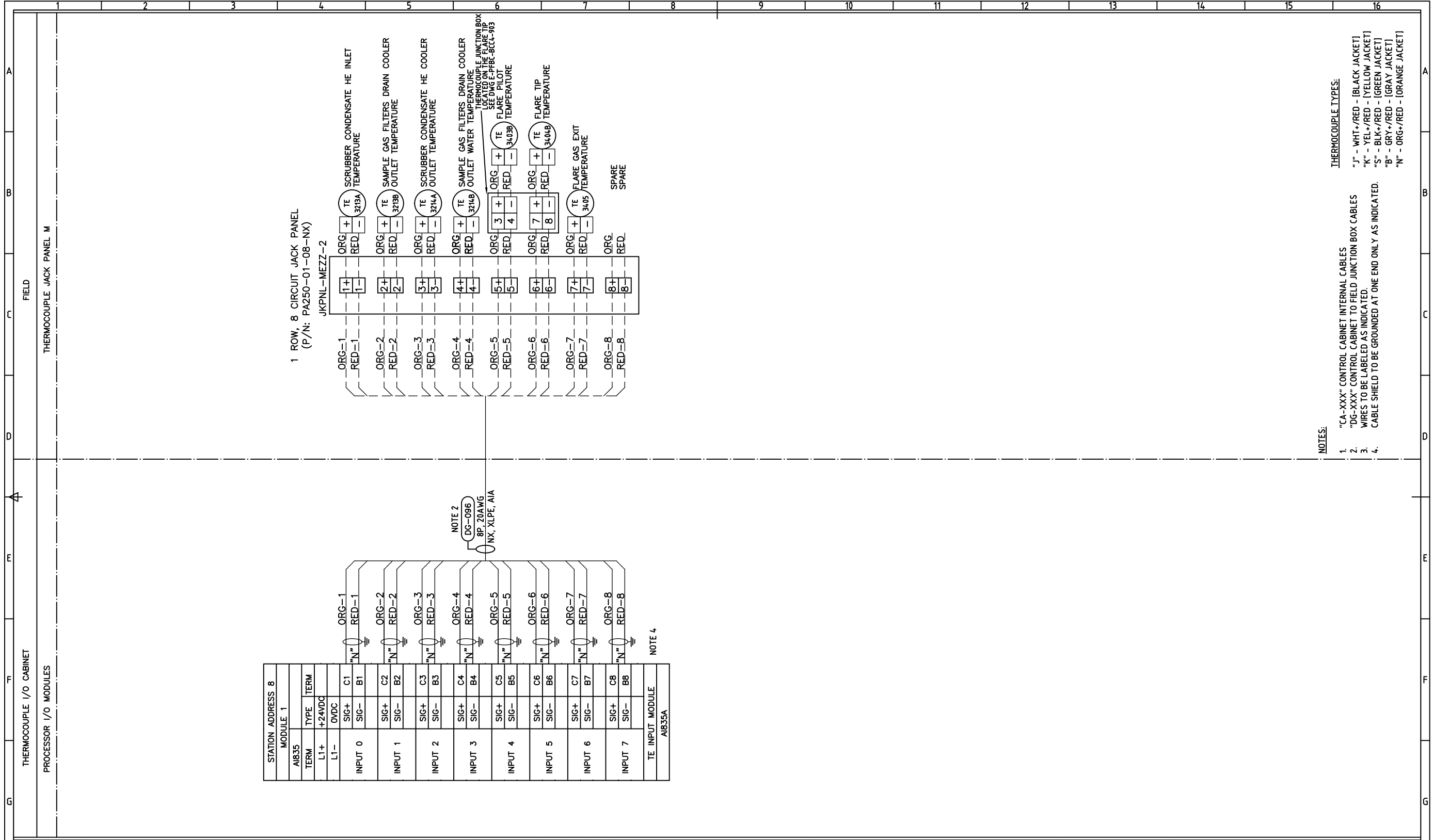
| REFERENCE DRAWINGS | | REVISION REGISTER | | | |
|--------------------|-------------------------|-------------------|-------|-----|------|
| No | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD | APPD |
| 1 | ISSUE FOR TENDER | 2017/03/24 | RCM | | |
| 0 | ISSUE FOR CLIENT REVIEW | 2017/01/09 | RCM | | |

| STATION ADDRESS | MODULE | TERM | TYPE | TERM |
|-----------------|-----------------|------|--------|--------|
| AIB35 | MODULE 7 | L1+ | +24VDC | |
| | | L1- | 0VDC | |
| | INPUT 0 | SIG+ | C1 | |
| | | SIG- | B1 | |
| | INPUT 1 | SIG+ | C2 | |
| | | SIG- | B2 | |
| | INPUT 2 | SIG+ | C3 | |
| | | SIG- | B3 | |
| | INPUT 3 | SIG+ | C4 | |
| | | SIG- | B4 | |
| | INPUT 4 | SIG+ | C5 | |
| | | SIG- | B5 | |
| | INPUT 5 | SIG+ | C6 | |
| | | SIG- | B6 | |
| | INPUT 6 | SIG+ | C7 | |
| | | SIG- | B7 | |
| | INPUT 7 | SIG+ | C8 | |
| | | SIG- | B8 | |
| | TE INPUT MODULE | | | AIB35A |

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| | |
|----------|------------|
| DESIGNED | R. McNAIR |
| DRAWN | R. McNAIR |
| CHECKED | |
| APPROVED | |
| DATE | 2016/11/11 |
| SCALE | NONE |

| | | | | | |
|---------|---|----------|---------|------|--|
| PROJECT | NRCAN CANMET DCSG/HIPROX | | | | |
| TITLE | ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING NODE ADDRESS 7 - MODULES 7 & 8 | | | | |
| USER | PROJECT | BUILDING | DRAWING | REV. | |
| E | DCSG | BCC4 | 308 | 1 | |



1 ROW, 8 CIRCUIT JACK PANEL
(P/N: PA250-01-08-NX)
JKPNL-MEZZ-2

NOTE 2
DG-096
8P 20AWG
/NX, XLPE, AIA

NOTE 4

NOTES:

- "CA-XXX" CONTROL CABINET INTERNAL CABLES
- "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
- WIRES TO BE LABELED AS INDICATED.
- CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

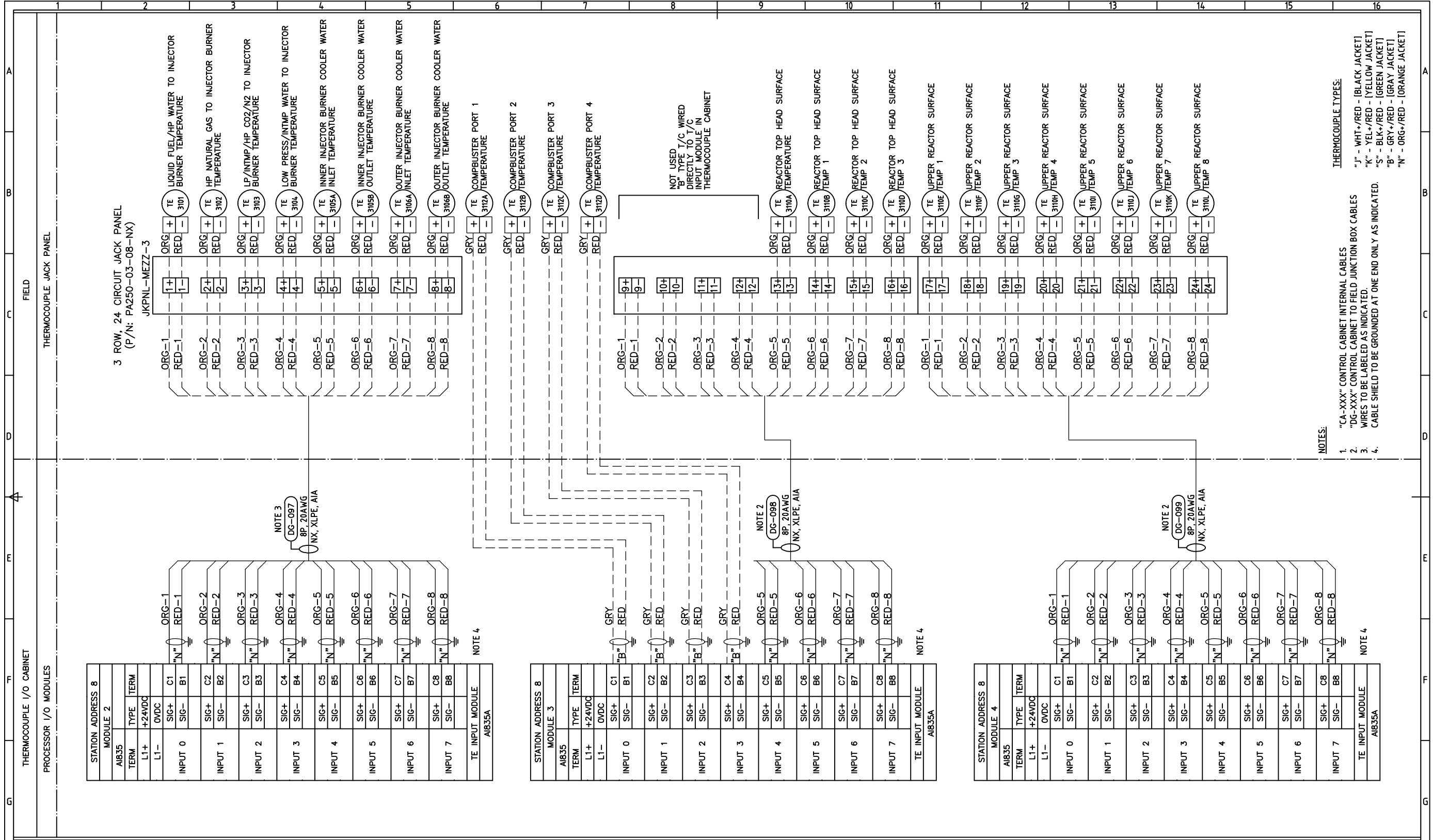
THERMOCOUPLE TYPES:

- "J" - WHT+/RED - [BLACK JACKET]
- "K" - YEL+/RED - [YELLOW JACKET]
- "S" - BLK+/RED - [GRAY JACKET]
- "B" - GRY+/RED - [GRAY JACKET]
- "N" - ORG+/RED - [ORANGE JACKET]

| STATION ADDRESS 8 | |
|------------------------|--------------------|
| MODULE 1 | |
| TERM | TERM |
| L1+ | +24VDC |
| L1- | 0VDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE A1835A | |

| REFERENCE DRAWINGS | | REVISION REGISTER | | | |
|--------------------|-------------------------|-------------------|-------|-----|------|
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| <p>excellence by design www.miron.com</p> | DESIGNED R. McNAIR | PROJECT NRCAN CANMET DCSG/HIPROX | | | | | | | | | | |
|---|-----------------------|--|--|----------|----------|---------|------|---|------|------|-----|---|
| | DRAWN R. McNAIR | | TITLE ELECTRICAL DCSG-HIPROX THERMOCOUPLE CABINET INPUT WIRING NODE ADDRESS 8 - MODULE 1 | | | | | | | | | |
| <p>Natural Resources Canada CANMET Energy Technology Center</p> <p>Ressources naturelles Canada Centre de la technologie de l'énergie de CANMET</p> | CHECKED | <table border="1"> <tr> <th>USER</th> <th>PROJECT</th> <th>BUILDING</th> <th>DRAWING</th> <th>REV.</th> </tr> <tr> <td>E</td> <td>DCSG</td> <td>BCC4</td> <td>309</td> <td>1</td> </tr> </table> | USER | PROJECT | BUILDING | DRAWING | REV. | E | DCSG | BCC4 | 309 | 1 |
| | USER | | PROJECT | BUILDING | DRAWING | REV. | | | | | | |
| | E | | DCSG | BCC4 | 309 | 1 | | | | | | |
| APPROVED | DATE 2016/11/11 | | | | | | | | | | | |
| SCALE NONE | | | | | | | | | | | | |



3 ROW, 24 CIRCUIT JACK PANEL
(P/N: PA250-03-08-NX)
JKPNL-MEZZ-3

NOTE 3
DG-097
8P, 20AWG
NX, XLPE, AIA

NOTE 2
DG-098
8P, 20AWG
NX, XLPE, AIA

NOTE 2
DG-099
8P, 20AWG
NX, XLPE, AIA

| STATION ADDRESS 8 | |
|------------------------|--------------------|
| MODULE 2 | |
| AB35 | TERM |
| L1+ | +24VDC |
| L1- | OVDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE AIB35A | |

| STATION ADDRESS 8 | |
|------------------------|--------------------|
| MODULE 3 | |
| AB35 | TERM |
| L1+ | +24VDC |
| L1- | OVDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE AIB35A | |

| STATION ADDRESS 8 | |
|------------------------|--------------------|
| MODULE 4 | |
| AB35 | TERM |
| L1+ | +24VDC |
| L1- | OVDC |
| INPUT 0 | SIG+ C1 SIG- B1 |
| INPUT 1 | SIG+ C2 SIG- B2 |
| INPUT 2 | SIG+ C3 SIG- B3 |
| INPUT 3 | SIG+ C4 SIG- B4 |
| INPUT 4 | SIG+ C5 SIG- B5 |
| INPUT 5 | SIG+ C6 SIG- B6 |
| INPUT 6 | SIG+ C7 SIG- B7 |
| INPUT 7 | SIG+ C8 SIG- B8 |
| TE INPUT MODULE AIB35A | |

NOTES:
1. "CA-XXX" CONTROL CABINET INTERNAL CABLES
2. "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES
3. WIRES TO BE LABELED AS INDICATED.
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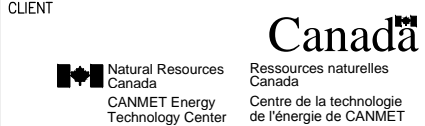
REFERENCE DRAWINGS

REVISION REGISTER

| No | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD | APPD |
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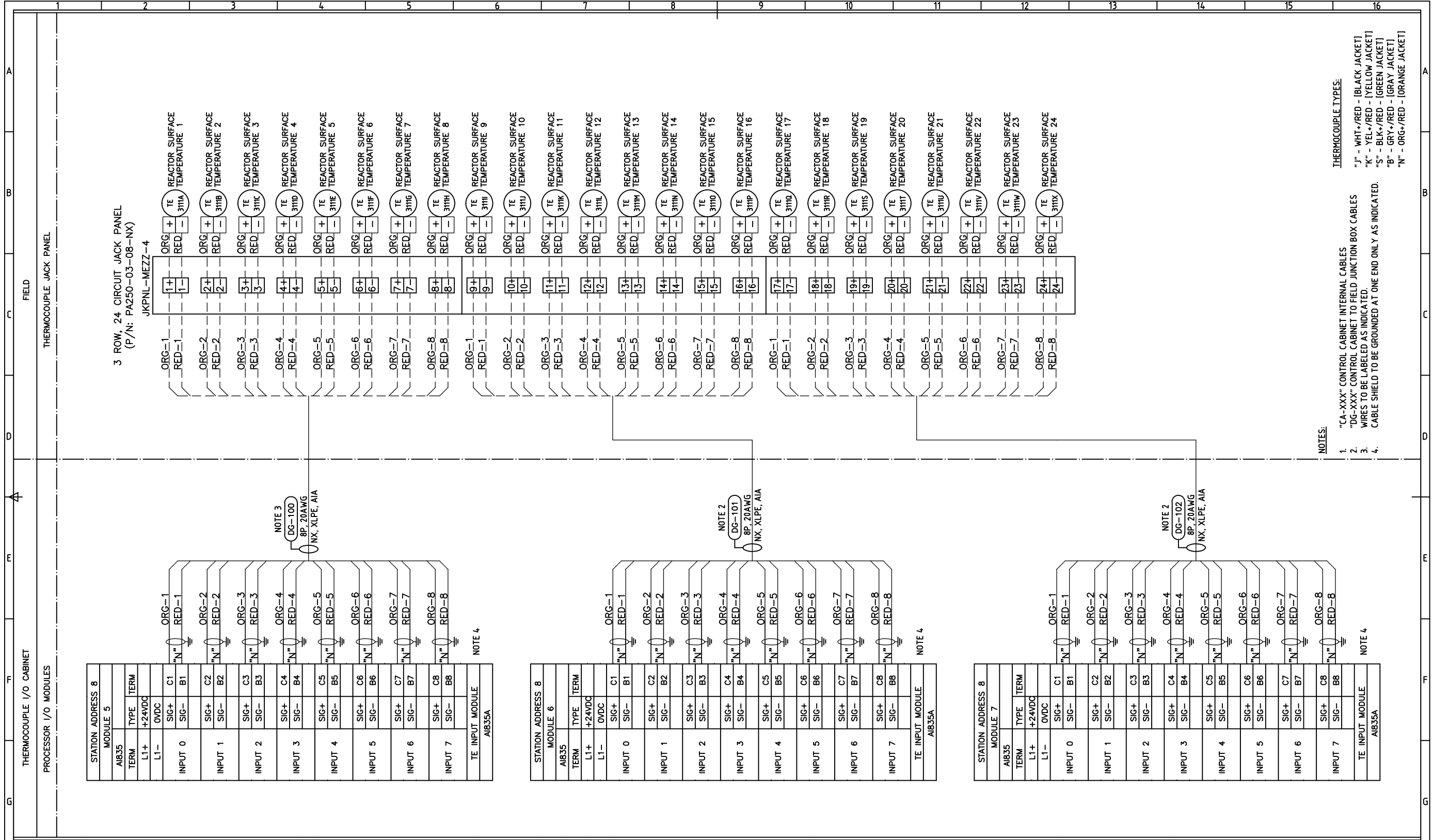
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DESIGNED
R. McNAIR
DRAWN
R. McNAIR
CHECKED
APPROVED
DATE
2016/11/11
SCALE
NONE

PROJECT
NRCAN CANMET DCSG/HIPROX
TITLE
ELECTRICAL
DCSG-HIPROX
THERMOCOUPLE CABINET INPUT WIRING
NODE ADDRESS 8 - MODULES 2&3&4
USER
E
PROJECT
DCSG
BUILDING
BCC4
DRAWING
310
REV.
1



THERMOCOUPLE TYPES:
 "J" - WHT+/RED - [BLACK JACKET]
 "K" - YEL+/RED - [YELLOW JACKET]
 "S" - BLK+/RED - [GREEN JACKET]
 "B" - GRV+/RED - [GRAY JACKET]
 "N" - ORG+/RED - [ORANGE JACKET]

- NOTES:**
- "CA-XXX" CONTROL CABINET INTERNAL CABLES
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| NO | REVISION DESCRIPTION | DATE (Y/M/D) | DRAWN | CKD | APPD |
|----|-------------------------|--------------|-------|-----|------|
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| 0 | ISSUE FOR CLIENT REVIEW | 2017/01/09 | RCM | | |

REFERENCE DRAWINGS

| STATION ADDRESS 8 | MODULE 5 | MODULE 6 | MODULE 7 | MODULE 8 |
|-------------------|----------|----------|----------|----------|
| A835 | TERM | TYPE | TERM | |
| L1+ | +24VDC | | | |
| L1- | OVDC | | | |
| INPUT 0 | SIG+ C1 | SIG+ C1 | SIG+ C1 | SIG+ C1 |
| | SIG- B1 | SIG- B1 | SIG- B1 | SIG- B1 |
| INPUT 1 | SIG+ C2 | SIG+ C2 | SIG+ C2 | SIG+ C2 |
| | SIG- B2 | SIG- B2 | SIG- B2 | SIG- B2 |
| INPUT 2 | SIG+ C3 | SIG+ C3 | SIG+ C3 | SIG+ C3 |
| | SIG- B3 | SIG- B3 | SIG- B3 | SIG- B3 |
| INPUT 3 | SIG+ C4 | SIG+ C4 | SIG+ C4 | SIG+ C4 |
| | SIG- B4 | SIG- B4 | SIG- B4 | SIG- B4 |
| INPUT 4 | SIG+ C5 | SIG+ C5 | SIG+ C5 | SIG+ C5 |
| | SIG- B5 | SIG- B5 | SIG- B5 | SIG- B5 |
| INPUT 5 | SIG+ C6 | SIG+ C6 | SIG+ C6 | SIG+ C6 |
| | SIG- B6 | SIG- B6 | SIG- B6 | SIG- B6 |
| INPUT 6 | SIG+ C7 | SIG+ C7 | SIG+ C7 | SIG+ C7 |
| | SIG- B7 | SIG- B7 | SIG- B7 | SIG- B7 |
| INPUT 7 | SIG+ C8 | SIG+ C8 | SIG+ C8 | SIG+ C8 |
| | SIG- B8 | SIG- B8 | SIG- B8 | SIG- B8 |
| TE INPUT MODULE | A835A | | | |

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CANMET Energy Technology Center

DESIGNED
R. McNAIR

DRAWN
R. McNAIR

CHECKED

APPROVED

DATE
2016/11/11

SCALE
NONE

PROJECT
NRCAN CANMET DCSG/HIPROX

TITLE
ELECTRICAL
DCSG-HIPROX
THERMOCOUPLE CABINET INPUT WIRING
NODE ADDRESS 8 - MODULES 5&6&7

| USER | PROJECT | BUILDING | DRAWING | REV. |
|------|---------|----------|---------|------|
| E | DCSG | BCC4 | 311 | 1 |