

**Part 1 General**

**1.1 SUMMARY**

- .1 Section Includes:
- .1 Control devices integral to the Building Energy Monitoring and Control System (EMCS): transmitters, sensors, controls, meters, switches, transducers, dampers, damper operators, valves, valve actuators, and low voltage current transformers.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM B148-97(03), Standard Specification for Aluminum-Bronze Sand Castings.
- .2 National Electrical Manufacturer's Association (NEMA).
- .1 NEMA 250-03, Enclosures for Electrical Equipment (1000 Volts Maximum).
- .3 Air Movement and Control Association, Inc. (AMCA).
- .1 AMCA Standard 500-D-98, Laboratory Method of Testing Dampers For Rating.
- .4 Canadian Standards Association (CSA International).
- .1 CSA-C22.1-02, Canadian Electrical Code, Part 1 (19th Edition), Safety Standard for Electrical Installations.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit shop drawings and manufacturer's installation instructions in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Manufacturer's Instructions:
- .1 Submit manufacturer's installation instructions for specified equipment and devices.

**1.4 EXISTING CONDITIONS**

- .1 Repair surfaces damaged during execution of Work. Turn over to Departmental Representative existing materials removed from Work not identified for re-use.

**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, shockproof, vibration-proof, heat resistant, assembly.

- .3 Operating conditions: 0 - 32 degrees C with 10 - 90% RH (non-condensing) unless otherwise specified.
- .4 Devices installed in user occupied space not exceed Noise Criteria (NC) of 35. Noise generated by any device must not be detectable above space ambient conditions.

## 2.2 CONTROL VALVES

- .1 Body: globe style.
  - .1 Flow characteristic as indicated on control valve schedule: linear, equal percentage, quick opening.
  - .2 Flow factor (KV) as indicated on control valve schedule: CV in imperial units.
  - .3 Leakage rate ANSI class IV, 0.01% of full open valve capacity.
  - .4 Packing easily replaceable.
  - .5 Stem, stainless steel.
  - .6 Plug and seat, stainless steel.
  - .7 Disc, replaceable, material to suit application.
  - .8 NPS 2 and under: Screwed National Pipe Thread (NPT) tapered female connections.
    - .1 Valves to ANSI Class 250, valves to bear ANSI mark.

3-Way Valve Schedule						
TAG	Location	Service	Applica- tion	Actuator	Conn Size	Flow Rate
V-1	CSB Mezz	Divert	MAV-1	Pneu	1-1/2 NPS	*1.25 L/s
V-2	CSB Mezz.	Mix	P-3 & 4	Pneu	2 NPS	*1.96 L/s
V-3	ATB Mech Rm 219	Divert	AHU-1	Pneu	1-1/2 NPS	*2.71 L/s
V-4	ATB Mech Rm 219	Divert	AHU-1	Pneu	1-1/2 NPS	*2.52 L/s
*Flowrates shall be site verified.						

## 2.3 PNEUMATIC VALVE ACTUATORS

- .1 Requirements:
  - .1 Construction: steel, cast iron, aluminum.
  - .2 Diaphragm: moulded Buna-N rubber, nylon reinforced.
  - .3 Spring return to normal position.
  - .4 Spring range adjustment and position indicator.
  - .5 Minimum shut-off pressure: refer to control valve schedule.

**Part 3            Execution**

**3.1    INSTALLATION**

- .1    Install equipment, 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    Pneumatic: provide Pneumatic fittings and extend tubing as required to accommodate new control valves.

**3.2    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**