

SECTION 15856 – SPACE PRESSURE MONITORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK INCLUDED

- A. Furnish and install a complete system all space pressure monitoring and control.

1.3 RELATED SECTIONS

- A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.4 REFERENCES

- A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.
- B. Material standards shall be as specified or detailed hereinafter and as follows:
 - 1. NFPA 90A – Installation of Air Conditioning and Ventilating Systems.
 - 2. NFPA 90B – Installation of Warm Air Heating and Air Conditioning Systems.
 - 3. NFPA 96 – Installation of Equipment for the Removal of Smoke and Grease-laden Vapors from Commercial Cooking Equipment.
 - 4. SMACNA (DCS) – HVAC Duct Construction Standards – Metal and Flexible.
 - 5. UL 181 – Factory-Made Air Ducts and Connectors.

1.5 SUBMITTALS

- A. See Section 15050 and General Conditions for Additional Requirements.
- B. Product Data: Provide data for duct materials.
- C. Prepare and submit scaled coordination drawings.

- D. Manufacturer's Installation Instructions.

1.6 QUALITY ASSURANCE

- A. Manufacturer shall have adequate experience of building ductwork of the types required for this project as well as successful experience with projects of similar scope.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Acceptable Manufacturers (Provided they are in compliance with these specifications):

- 1. Space Pressure Monitor & Controller
 - a. Air Monitor Corporation
 - b. Paragon Controls Inc
 - c. TSI

2.2 SPACE PRESSURE MONITOR & CONTROLLER

- A. Space pressure monitor/controller located as follows:

- 1. Operating rooms
- 2. Isolation rooms
 - a. Infectious Isolation rooms
 - b. Protective Environment (Positive Isolation) rooms
- 3. Clean rooms
- 4. Bronchoscopy
- 5. Laboratories
- 6. Autopsy rooms
- 7. As indicated on drawings

- B. The space pressure monitor shall measure the differential pressure between two individual spaces utilizing industrial quality differential pressure transducer technology and shall issue a 0-10VDC or 4-20mA control output signal utilizing a 3-mode (P, I, I/D) controller circuitry to maintain the desired differential pressure between these two areas.

- C. The space pressure monitor shall provide an analog output linear to the space pressure being monitored and a digital output to indicate the alarm status of the space for remote monitoring purposes.

- 1. Remote alarm status shall be via a Form C dry contact.
- 2. Local, high visibility, LED space pressure status lights

3. Audible alarm with alarm acknowledge (silence) button
 4. Local indication shall display the measure differential pressure to the ten thousandth of an inch of water column.
- D. The space pressure monitor shall be factory configured for either positive or negative space pressure monitoring based on its scheduled usage.
- E. The positive/negative pressure alarm activation value, control setpoint value, and alarm activation delay value are to be field adjustable.
- F. Switch selectable control mode values shall allow for an in operation @ adjustment of proportional band, reset (integral), and inverse derivative to match system dynamics. The controller shall also be provided with the following:
1. Auto/ Manual selection of controller output.
 2. Local or remote controller setpoint for control of the space pressure.
 3. Controller output/setpoint display selection switch.
 4. Door interrupt feature to freeze or ramp the controller output to a pre-determined value when the room door is opened.
- G. Differential pressure transducer performance shall be as follows:
1. Accuracy: $\pm 0.5\%$ F.S. Terminal Point / $\pm 0.35\%$ F.S. BFSL
 2. Hysteresis: $\pm 0.05\%$
 3. Linearity: $\pm 0.4\%$
 4. Repeatability: $\pm 0.1\%$
 5. Temperature Effects: $< \pm 0.03\%$ F.S./EF
 6. Over-pressure: 5 PSIG Proof
 7. Response: < 0.25 seconds for full span input
 8. Noise Filtration: Low Pass Filter, factory set @ 3.2Hz
- H. Three mode differential pressure controller performance shall be as follows:
1. Proportional Band: Adjustable from 1% to 100%
 2. Reset: Adjustable from 0.6 to 6 repeats per minute
 3. Inverse derivative: Adjustable from 0.5 to 7 minutes per repeat
 4. Hysteresis and dead band: Within .01% of span
 5. Repeatability: Within .01% of span.
 6. Control accuracy: $\pm 0.1\%$ of span.
 7. Output Signals: 0-10 VDC or 4-20 mA
- I. The space pressure monitor & controller similar to the Guardian Plus as manufactured by Paragon Controls Incorporated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The drawings shall be followed where they are definite and provided such procedures do not cause objectionable conditions for equipment provided installed under this Contract. The drawings are intended to indicate the sizes of ductwork and if certain sizes are omitted or unclear, obtain additional information before proceeding.
- B. The installation shall be done under the direct supervision of the manufacturer.
- C. Duct connections to equipment shall be in no case smaller than the equipment openings.
- D. Primary Elements shall be installed in strict accordance with the manufacturers published requirements, and with ASME guidelines effecting non-standard approach condition. These elements serve as the primary signals for the airflow systems; therefore, it shall be the responsibility of the contractor to verify and installation, to assure that accurate primary signals are obtained.
- E. Install all UL classified devices in accordance with their UL approved installation sheets.

END OF SECTION