SECTION 25 3517
AIR AND GAS PRESSURE AND FLOW MEASUREMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes instrumentation for air and gas pressure and flow measurement for building control systems. See section 25 3313 for utility metering devices.

B. Related Sections:
   1. 25 0553 Identification

1.2 REFERENCES

A. Refer to 25 0000 Integrated Automation

1.3 DEFINITIONS

A. Refer to 25 0000 Integrated Automation

1.4 SYSTEM DESCRIPTION

A. Systems includes flow, static pressure, and differential pressure measurement instruments for air and gas processes associated with monitoring and control of HVAC and other various systems as specified or shown on drawings.

1.5 SUBMITTALS

A. Submit on supplementary or miscellaneous items (such as sensors and probes) and products incidental to or necessary for a complete and operable installation.

B. Include manufacturer’s recommended number of probes for the proper traverse of the air duct, and required mounting hardware.

1.6 QUALITY ASSURANCE

A. Coordinate installation and calibration of instrumentation, including but not limited to:
   1. Power requirements
   2. Panel locations
   3. Probe installation and locations
   4. Test, Adjust & Balance

B. Install pressure and flow sensors per manufactures recommendations to ensure accurate measurement at all flow rates.

C. Coordinate installation activities of instrumentation with appropriate trades.

D. Wiring shall be done in accordance with all local and national codes. Install control devices in appropriate enclosure and in an accessible location.

E. Provide access doors where removal of instrument is not possible or practical for maintenance.

F. A calibration tag shall be provided with each instrument, indicating its calibrated range and associated output.

G. Identify devices per section 25 0553.
PART 2 - PRODUCTS

2.1 AIR FLOW MEASURING STATION (LOW TURNDOWN)
A. Manufacturer: Air Monitor VOLU-probe or approved equal
B. Maximum turndown ration of 5:1.
C. For most systems where the turn down ratio is less than five-to-one, airflow can be measured with a multipoint pitot traverse probe. The Air Monitor VOLU-probe is the University’s preferred choice.

2.2 AIR FLOW MEASURING STATION (HIGH TURNDOWN)
A. Manufacturer: Kurz Instrument EVA 4000, Ebtron TAMCO, Ruskin, Greenheck or approved equal
B. Minimum turndown ration of 6:1.

2.3 DIFFERENTIAL PRESSURE TRANSMITTERS
A. Manufacturers: Dwyer, Setra, Ashcroft or approved equal.
B. Transmitter shall convert velocity pressure differential or static duct pressure relative to sensor location into electronic signal.
C. Unit shall be capable of transmitting linear signal proportional to differential (total minus static or static minus ambient) pressure input signals with the following minimum performance and application criteria:
   1. Span: Range as needed by application
   2. Accuracy +1.0 percent of full scale
   3. Output Signal 4-20 mA or 0-10VDC

2.4 SPACE STATIC PRESSURE PROBE
A. Manufacturers: Kele (RPS), Dwyer
B. Probe shall be plate mounted with filtered screen

2.5 DUCT STATIC PRESSURE PROBE
A. Manufacturers: Kele (A300 series), Dwyer
B. Probe shall be designed to pickup static pressure only.

2.6 OUTDOOR STATIC PRESSURE PROBE
A. Manufacturers: Dwyer (Model A306), Kele or approved equal
B. Probe shall be designed to provide accurate pressure when subject to radial wind velocities up to 40 mph.

PART 3 - EXECUTION

3.1 AIR FLOW MEASURING STATION (LOW TURNDOWN)
A. Provide flow measuring station where turn down ratio requirements are less than 5:1.
B. Provide the appropriate upstream and downstream straight runs of duct for the instrument installations based on the manufacturer's requirements.

C. Provide all tubing required for connection to probe assemblies and transmitter electronics. Install tubing per manufactures instructions.

3.2 AIR FLOW MEASURING STATION (HIGH TURNDOWN)

A. Provide flow measuring station where turn down ratio requirements are more than 6:1.

B. Provide the appropriate upstream and downstream straight runs of duct for the instrument installations based on the manufacturer's requirements.

C. Provide transmitter as part of air flow sensor, and shall include integral diagnostics with on-line zeroing and sensor operation verification.

D. Provide all cabling required for connection to probe assemblies and transmitter electronics.

3.3 STATIC AND DIFFERENTIAL PRESSURE TRANSMITTERS

A. Provide Differential Pressure Transmitters according to contract documents or to accomplish sequences.

B. Select instrument and probe for intended usage range, maximum pressure/temperature.

C. For indicating type instruments, locate indicating element with 6 ft of floor with readout easily visible from floor level, or install in Field terminal or control panel.

END OF SECTION