SECTION 25 35 18
LIQUID PRESSURE AND FLOW MEASUREMENT

PART 1 - GENERAL

1.1 SUMMARY
   A. Section includes liquid pressure and flow measurement for applications not specified in 25 3313 Utility Metering Interface.
   B. Related Sections:
      1. 23 21 20 Piping Specialties
      2. 25 05 53 Identification

1.2 REFERENCES
   A. Refer to 25 00 00 Integrated Automation

1.3 DEFINITIONS
   A. Refer to 25 00 00 Integrated Automation

1.4 SYSTEM DESCRIPTION
   A. Liquid pressure and flow measurement instrumentation.

1.5 SUBMITTALS
   A. Refer to Division 26 for submittal requirements

1.6 QUALITY ASSURANCE
   A. Coordinate timely delivery of materials.
   B. Coordinate installation activities of devices such as pressure taps, shut-off valves, flow meters, etc.
   C. Label pressure and flow measurement instrumentation per section 25 0553.

Note: Section specific quality requirements should be defined here but not repeated from other sections.

PART 2 - PRODUCTS

2.1 DIFFERENTIAL PRESSURE TRANSMITTERS
   A. Manufacturers: Setra, Ashcroft, Dwyer
   B. Include pressure sensor and integral transmitter.
   C. Include 3-valve manifold for servicing.
   D. Performance:
      1. Output Linear, 4-20 mA (2-wire loop)
      2. Accuracy ± 0.25 percent of calibrated span
      3. Linearity ± 0.1 percent of calibrated span
      4. Hysteresis ± 0.05 percent of calibrated span
2.2 PRESSURE TRANSMITTERS

A. Manufacturers: Setra, Ashcroft, Dwyer

B. Include pressure sensor and integral transmitter. Transmitters shall use capacitance sensing element.

C. Performance:
   1. Power 24VDC loop powered (2-wire)
   2. Output Linear, 4-20 mA (2-wire loop)
   3. Accuracy (PSIG) ± 0.25 percent of calibrated span
   4. Linearity ± 0.1 percent of calibrated span
   5. Hysteresis ± 0.05 percent of calibrated span

2.3 WATER FLOW TRANSMITTER

A. Manufacturers: Onicon, Badger, Neptune

B. Include flow meter and transmitter.

C. Performance:
   1. Output Linear, 4-20 mA (2-wire loop)
   2. Accuracy ± 2 percent of actual reading

2.4 BTU SUB-METER

A. Manufacturer: Onicon (System 10), Kamstrup

B. Include flow meter and remote transmitter with NIST Traceable Calibration with Certifications.

C. Include communications card (BACnet, Lonworks, or Modbus as required to integrate to control system).

D. Minimum Performance:
   1. Output Linear, 4-20 mA (2-wire loop)
   2. Temperature Accuracy ± .15 percent from 32-200 Deg F.
   3. Water Flow Accuracy ± 1.0 percent of reading

PART 3 - EXECUTION

3.1 PROCESS PIPING

A. All wet side piping, valves & taps shall be coordinated with the piping contractor.

B. Process tubing from piping system to transmitter shall be hard drawn type L copper tubing or stainless steel, minimum size of 3/8”.

3.2 DIFFERENTIAL PRESSURE TRANSMITTERS

A. Furnish differential pressure transmitters as shown in construction documents or as required to implement sequences.
   1. Span flow transmitter for 130% of design pressure.
   2. Provide wiring, pathways, terminations, etc.

B. Transmitter shall be mounted in accessible location and in mechanical rooms shall be installed 4’ to 5’ above floor level.
3.3 Pressure Transmitters
   A. Furnish differential pressure transmitters as shown in construction documents or as required to implement sequences.
      1. Span flow transmitter for 130% of design pressure.
      2. Provide wiring, pathways, terminations, etc.
   B. Transmitter shall be mounted in accessible location and in mechanical rooms shall be installed 4’ to 5’ above floor level. Include isolation valve for servicing at transmitter location.

3.4 WATER FLOW TRANSMITTER
      1. Span flow meter for 130% of design flow.
      2. Provide wiring, pathways, terminations, etc.
   B. Remote Transmitter shall be mounted in accessible location and in mechanical rooms shall be installed 4’ to 5’ above floor level

3.5 BTU SUB-METER
   A. Furnish BTU Sub-Meter for Water Systems.
      1. Span flow meter for 130% of design flow.
      2. Provide wiring, pathways, terminations, etc.
   B. Display shall be mounted in accessible location and in mechanical rooms shall be installed 4’ to 5’ above floor level

END OF SECTION