SECTION 15129

METERS AND GAGES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flow meters.

B. Pressure gages and pressure gage taps.

C. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

A. ASME B40.100 - Pressure Gauges and Gauge Attachments; The American Society of Mechanical Engineers; 2005.

B. ASTM E 1 - Standard Specification for ASTM Thermometers; 2007.

C. ASTM E 77 - Standard Test Method for Inspection and Verification of Thermometers; 2007.

D. UL 393 - Indicating Pressure Gauges for Fire-Protection Service; Underwriters Laboratories Inc.; 2005.

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

PART 2 PRODUCTS

2.01 HEAT CONSUMPTION METERS

A. Manufacturers:
   1. Yokagawa. Meter furnished by Owner, installed by this contractor.

B. Meter: Brass body turbine meter with magnetic drive register, platinum temperature sensors.
   1. Maximum Service Temperature: 250 degrees.
   2. Nominal Flow: .5 to 55 gpm.
   3. Pressure Drop at Nominal Flow:.5 psi.
   4. Maximum Flow: 60 gpm.
   5. Accuracy: 1/2 percent.
   6. Maximum Counter Reading: 1 million btuh.
   7. Size: 2 1/2 inch.
   8. Power: 24 Volt convertor.

2.02 PRESSURE GAGES

A. Pressure Gages: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.
   1. Case: Steel with brass bourdon tube.
   2. Size: 4-1/2 inch diameter.
   3. Mid-Scale Accuracy: One percent.
   4. Scale: Psi.

2.03 PRESSURE GAGE TAPPINGS

A. Needle Valve: Brass, 1/4 inch NPT for minimum 150 psi.

2.04 STEM TYPE THERMOMETERS

A. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E 1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
   1. Size: 7 inch scale.
   2. Window: Clear glass.
   3. Stem: 3/4 inch NPT brass.
   4. Accuracy: 2 percent, per ASTM E 77.
   5. Calibration: Degrees F.

2.05 THERMOMETER SUPPORTS

A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install Owner furnished heat consumption meter in piping. Maintain required straight run of piping before and after flow meter as required.

B. Install in accordance with manufacturer's instructions.

C. Install pressure gages with pulsation dampers. Provide gage cock to isolate each gage. Extend nipples and siphons to allow clearance from insulation.

D. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch for installation of thermometer sockets. Ensure sockets allow clearance from insulation.

E. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

F. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.

3.02 SCHEDULE

A. Flow Meters, Location:
   1. Chilled water system.

B. Pressure Gages, Location and Scale Range:
   1. Heat Exchangers

C. Stem Type Thermometers, Location and Scale Range:
   1. Heat exchangers - inlets and outlets, 0 to 120 degrees F.

END OF SECTION