SECTION 17200

field-mounted water instruments

# GENERAL

## DESCRIPTION

### This section includes materials and installation of the following calibrated field-mounted instruments:

#### Pressure transmitters.

#### Level transmitters.

#### Tubing, valves, fittings, and manifolds.

#### Pressure switches.

#### Tank Overflow Switches

## RELATED WORK SPECIFIED ELSEWHERE

### Section 17000: General Requirements for Instrumentation and Control System

### Section 13422: Magnetic Flowmeters

## SUBMITTALS

### Submit shop drawings in accordance with Section 17000.

## MEASUREMENT AND PAYMENT

### Payment for the work in this section shall be included as part of the lump-sum bid amount stated in the Proposal.

# MATERIALS

## PRESSURE TRANSMITTER

### The pressure transmitter shall be of the microprocessor-based type 2-wire system. The transmitter shall operate from a 12-24 V dc source. The output signal shall be 4 mA to 20 mA dc. The transmitter shall be housed in a NEMA 4 enclosure and shall be FM approved explosion-proof.

### Configuration data shall be stored in nonvolatile EEPROM memory in the sensor. This data shall be retained when power is interrupted, so the transmitter shall be functional immediately upon power up or if the transmitter electronics module should be changed for upgrade or repair. The transmitter shall perform continuous self-tests. In the event of a problem, the transmitter shall activate the user-selected analog output warning.

### The pressure transmitter shall provide an electronic signal proportional to the calibrated pressure range. The pressure-sensing element shall be silicone oil filled with a process media operating temperature range of -40 °F to 250 °F.

*Select the option below for differential pressure applications only.*

### provide either an integral stainless steel block/bleed manifold (pre-assembled to the transmitter and leak checked) shall be provided for each transmitter. The manifold shall have a block and a vent/test valves or provide isolation, test and drain ball valves.

### Provide the pressure transmitter with the following features:

#### Independent pushbutton zero and span adjustments.

#### Overrange protection.

#### Vent/drain valve.

#### Integral digital indicator, calibrated in engineering units.

#### Panel mounting bracket.

#### Two electrical conduit connections, 1/2-inch NPT female.

#### Select the option below for all applications, except differential pressure.

#### 1/2-inch NPT connection.

### Accuracy of the pressure transmitter shall be ±0.2% of calibrated span.

### The pressure transmitter shall be manufactured by Schneider Electric., Foxboro Model IGP10-A22D1F for discharge and suction pressure transmitters, and IGP10-A22C1F for level transmitter, Rosemount 2051C series or equal.

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| --- | --- | --- | --- |
| **PRESSURE TRANSMITTER** | | | |
| **GENERAL** | | | |
| 1. Tag No. | LT | PT1 | PT2 |
| 2. Service | Reservoir Level | Discharge Pressure | Suction Pressure |
| **TRANSMITTER** | | | |
| 3. Diaphragm Mate. | 316 SS | 316 SS | 316SS |
| 4. Output Signal | 4-20 ma d-c | 4-20 ma d-c | 4-20 ma d-c |
| 5. Output Signal To | Reservoir RTU | Pumping Station RTU | Pumping Station RTU |
| 6. Static Press. Rating | 2,000 psig | 2,000 psig | 2,000 psig |
| 7. Press. Element Range | 0-10/300 psig | 0-10/300 psig | 0-10/300 psig |
| 8. Press. Element Calibrated Range | 0 to 40 feet of water | 0 to 300 psig | 0 to 300 psig |
| 9. Elect. Class | NEMA 4 | NEMA 4 | NEMA 4 |
| **SERVICE CONDITIONS** | | | |
| 10. Process Media | Potable Water | Potable Water | Potable Water |
| 11. Specific Gravity | 1.0 | 1.0 | 1.0 |
| 12. Oper. Press. psig (min./max.) | 0 to 17.3 | 0 to 300 | 0 to 300 |

## TUBING, VALVES, FITTINGS, AND MANIFOLDS

### Instrument tubing connections between process lines and instruments shall be 1/2 inch in diameter with 0.035-inch seamless wall, annealed ASTM A 269, Type 316 stainless steel.

### Fittings shall be 316 stainless-steel double ferrule design. Fittings shall be Swagelok, Parker CPI, or equal.

### Valves shall be full port ball valves with 316 stainless-steel body and Teflon seats and packing. Valves shall be Parker CPI, Whitey, or equal.

## WELL LEVEL TRANSMITTER

### The submersible titanium hydrostatic pressure transmitter shall provide an electrical 2-wire d-c current signal proportional to the pressure applied to the unit’s diaphragm sensing element. The electronics shall be moisture protected. Provide the level transmitter with the following features:

#### Waterproof cable.

#### Cable mounting hardware.

#### Reference port shall be sealed, and the unit shall measure absolute pressure.

#### Sensor termination enclosure with desiccant.

### Accuracy of the level transmitter shall be ±0.25% of calibrated span.

### The level transmitter shall be that manufactured by KPSI Series 320 or equal.

|  |  |  |
| --- | --- | --- |
| **LEVEL TRANSMITTER—SUBMERSIBLE** | | |
| **TRANSMITTER** | | |
| 1. | Location | Well |
| 2. | Diaphragm Material | Titanium |
| 3. | Output Signal | 4 to 20 ma |
| 4. | Output Signal To | RTU |
| 5. | Range | 0 to [500] [\_\_\_\_\_] feet |
| 6. | Mounting | Well |
| 7. | Cable Length | [\_\_\_\_\_\_\_] feet |
| **SERVICE CONDITIONS** | | |
| 8. | Process Media | Water |
| 9. | Specific Gravity | 1.0 |
| 10. | Temperature (°F) | 40 to 80 |
| 11. | Power | 9- to 32-volt d-c |

## PRESSURE SWITCHES

### Pressure switches shall be Type 316 stainless steel bourdon tube actuating an enclosed, metal contact snap-action switch. Switch shall have separate set point and reset point adjustments. Contact shall be connectable as normally open or normally closed. Adjustment of the switch set points shall be accomplished without having to gain access to the interior of the unit. Pressure switch range shall be as directed in the field. Enclosure shall be NEMA 4X. Provide Ashcroft B-series, or equal.

## TANK OVERFLOW SWITCHES

### Tank overflow switches shall be Gems (Warrick) Sensor Series 3G2E1 corrosion resistant PVC for 2-inch NPT tank fitting mounting. Provide with two 12-inch Type 316 stainless steel rods. Provide with direct current control module Model DC2BD01010.

## MAGNETIC FLOWMETERS

### See Section 13422.

END OF SECTION