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| Version | Date | Description of Revisions |
| 1 | November 1, 2011 | Standard Specification Release |
| 2 | April 17, 2015 | General formatting |
| 3 | June 13, 2022 | 1.4 Tagging requirement revised (BM) |
|  |  |  |

NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**For each project the Consultants is responsible for the correct application of the specifications and for updating and modifying all highlighted items, as well as updating and modifying those sections that are directly applicable to the project. All updates and modifications to this standard document are to be highlighted to the Region for review and acceptance on each project.**

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GENERAL

## General

### The specifications in this section define additional requirements to those set forth in Section 13105 – Process Control: General Instrumentation Requirements. Where a conflict exists, the more stringent requirement is to be provided.

### The contractor is to clearly identify on the shop drawings any deviation from the specification.

### Contractor required to provide the following O&M documentation: manufacturers’ printed recommendations; installation instructions; specifications; operation manuals, including electrical drawings, and plumbing diagrams; sales literature; materials; and training materials as applicable.

### Contractor is to furnish copies of the manufacturer’s warranties.

### Contractor is to provide, through the Instrumentation Supplier, temperature transmitters, complete and operable, in accordance with the Contract Documents.

## Measurement and Payment

### The work outlined in this section shall be included in the lump sum price for Section 13160 – Temperature Transmitter as indicated in the Bid Form.

## Sensor

### Use dual element, 3-wire RTDs. Use >= 99.99% pure platinum wire wound about a ceramic or glass core and hermetically sealed within a ceramic or glass capsule.

#### Three-wire lead configuration for ambient temperature compensation shall be provided.

#### Insertion type RTDs shall be 100 ohms nominal at 0 degree C, tip-sensitive, three-wire platinum in 0.25-inch Type 316 stainless steel sheath with watertight potting.

### Provide insulation between leads and the probe housing using ceramic oxide insulation.

## Transmitter

### Match the transmitter to the sensor type.

### Unless shown otherwise, provide a temperature transmitter for each temperature sensor.

### Provide RTD break protection to be selectable either up or down scale. Provide accessible zero and span adjustment controls.

### Unless shown otherwise, provide a temperature indicator display integral to the transmitter.

### Equipment tag wired to transmitter in accordance with Section 01080 – Process Equipment Location Tagging.

## Thermowell

### Unless otherwise shown, provide a thermowell conforming to the following requirements matching the sensor:

#### Thermo well construction of 316 stainless steel or Inconel 600.

#### Provide appropriate length for necessary immersion length and mounting requirements. For pipes, provide approximately 1/3 pipe diameter immersion depth plus 75 mm (3 inch) extension.

#### Provide with standard NPT fitting or standard flange at the cold end of the thermo well.

#### Provide a NEMA 7 RTD/thermocouple junction head with a screw termination block to handle necessary connections for sensor lead wires and a ground terminal for shield grounding.

#### Wells to be used with remote-mounted vapour pressure sensor bulbs are to include a 316 stainless steel ½ inch NPT split nut and rubber grommet to hold the sensor bulb in the well.

# INSTALLATION

## General

### The following installation requirements are in addition to or deviations from the requirements set forth for instrumentation in Section 13105 – Process Control: General Instrumentation Standard.

#### Wire to allow easy withdrawal of the sensor assembly for maintenance.

#### Provide suitable armored cable from sensor head to conduit.

#### Provide a thermo well where measuring temperature in a pressurized pipe.

#### Transmitter/Electronics not mounted/installed indoors must be installed within fiberglass enclosure with viewing window, thermostat and heater. Panel heater to be powered from separate circuit than instrument.

# ACCEPTABLE MANUFACTURERS

### Acceptable manufacturers are listed in the following table in order of preference. The design has been completed around the first named supplier. The contractor is responsible for all costs associated with any changes required to the design to accommodate one of the other manufacturers.

|  |  |  |
| --- | --- | --- |
| Preference | Manufacturer | Model |
| 1 | Rosemount | 644 |
| 2 | Endress+Hauser | TH13 |
| 3 |  |  |

### The Contractor is to select the appropriate options to suit the application and the requirements of the specification.

### Where second and third named manufacturers are provided, they are to meet the performance specifications of the first named manufacturer.

## Temperature Transmitters

First Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Liquid |
| **Process:** |  |
| Tag Name: | xxx-xxx |
| Installation DWG: | 13160A |
| Product: | Raw Water |
| Temp min/max: | 0-30 oC |
| Press min/max: | 0 - 300 kPa |
| Flow min/max: | 0 - 150,000 m3/day |
| Line Size: | 900 mm |
| **Sensor Device Data:** |  |
| Model: | Resistance Thermometer, Pt 100 Ohm RTD Standard with Tubular Thermowell |
| Connection Head: | Rosemount Aluminum, ½” NPT |
| Sensor Lead Termination: | Flying Leads – No Springs on DIN Plate |
| Sensor Type: | RTD, Dual Element, 3-wire |
| Extension: | Tubular, No Extension – form GN |
| Extension Length (mm): | No Extension |
| Thermowell Material: | 1.457 (AISI 316Ti) |
| Immersion Length (mm) | 115 mm |
| Mounting Style: | Thread, Tapered, ½” NPT, Stepped NAMUR |
| Options: |  |
| Cover Chain Option | Cover Chain |
| Assemble To Options: | Assemble Sensor to Specific Temperature Transmitter |
| Manufacturer: | Rosemount |
| Part Number: | 0065D02TY0000Y0115G38G3XA |
| **Transmitter Device Data:** |  |
| Model: | 644 Temperature Transmitter |
| Transmitter Type: | DIN A Head Mount |
| Output: | 4-20 mA with Digital Signal Based on HART Protocol |
| Product Certifications: | CSA Intrinsically Safe |
| Options: |  |
| Assemble To Options: | Sensor Specified Separately and Assembled to Transmitter |
| Enclosure Options: | Universal Head (junction box), aluminum alloy with 50.8mm (2”) SST Pipe Bracket (1/2-14NPT Entries) |
| Display: | LCD Display |
| Cover Chain Option: | Cover Chain |
| Transmitter Accessories: | None |
| Model: | Standard Model, North American Region |
| Manufacturer: | Rosemount |
| Part Number: | 644HAI6XAJ6M5G3 |

Second Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Liquid |
| **Process:** |  |
| Tag Name: | xxx-xxx |
| Installation DWG: | 13160A |
| Product: | Raw Water |
| Temp min/max: | 0-30 oC |
| Press min/max: | 0 - 300 kPa |
| Flow min/max: | 0 - 150,000 m3/day |
| Line Size: | 900 mm |
| **Device Data:** |  |
| Model: | RTD Assembly in Themowell, TH13 |
| TW Immersion Length U: | 2 ½” |
| Process Connection, TW Material, 1 Inch: | ½" NPT 316SS |
| Shape of TW: | Tapered, Heavy Duty |
| Lag of TW T: | None |
| Extension: | Hex nipple 316SS, E=1" |
| Class, Type Sensor IEC751; Connection: | 1 Pt100 class B, 3 wire low, -50 to 200 °C (-58 to 392 °F) |
| Enclosure, Communication: | AL Field Housing, 1 Input, Display, HART, ½" NPT |
| Electrical Connection: | HART TMT142, CSA IS, Single Compartment |
| Additional Option: | None |
| Test; Calibration: | None |
| Model: | Standard Model, North American Region |
| Manufacturer: | E+H |
| Part Number: | TH13-1A13A1AIN1AKA |

**END OF SECTION**