|  |  |  |
| --- | --- | --- |
| Version | Date | Description of Revisions |
| 1 | November 1, 2011 | Standard Specification Release |
| 2 | April 20, 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 consulting engineer 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 O&M documentation; 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, ultrasonic level meters, 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 13110 – Ultrasonic Level Transmitter as indicated in the Bid Form.

## Transducer

### Ultrasonic pulse transceiver with temperature compensation approved by FM and CSA for Class I and Class II Division 1 hazardous locations.

### Encapsulated enclosure housing of PVC, Kynar or other durable corrosion resistive material. Provide submersible option.

### Provide signal cable of required length with sealed watertight attachment to field mounted junction box to allow for sensor removal and replacement.

### Provide manufacturer's recommended model sensor appropriate for mounting location, depth, and media application.

## Transmitter / Controller

### NEMA 4X polycarbonate housing, unless otherwise noted.

### Equipment tag for instrument identification to be provided for both transmitter and sensor in accordance with Section 01080 – Process Equipment Location Tagging.

### One configurator / interface unit per transmitter unless multiple transmitters are mounted in one location in which case supply one per unit mounted in same location up to a maximum of three (3).

# 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.

### Provide all stainless steel mounting hardware for surface, panel or handrail mounting as required by location

### Provide front mounted visible data display behind clear, shatterproof viewing cover

### Mount the sensor away from sidewalls to avoid signal interference

### Mount transducer on 76mm W x 51mm H x 6 mm aluminum channel, length to suit, welded to a 152mm x 152mm x 10mm back plate with 4 x 13mm hole, 10mm from corners. Transducer cable to be in flexible metal conduit. Allow adequate clearance for conical beam ultrasonic signal over total measurement range.

### When located outdoors, provide protection from wind interference, snow, and direct sun by means of shield or enclosure for sensor

### Provide PVC coated rigid steel conduit for cable between sensor and transmitter

### Where used to measure dry solids level, provide a vibrator on the tank to remove solids from the tank walls.

### If transmitter is to be panel mounted, use panel mount transmitter only complete with mounting kit.

### Transmitter unit is to be mounted at 1.8m off the floor in a readily accessible location for ease of reading and to facilitate maintenance and calibration.

# 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 | Siemens | MultiRanger 100/200 |
| 2 | Endress + Hauser | FMU-90 |

### 

### 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.

## Ultrasonic Level Transmitters

First Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Reservoir Level |
| **Process:** |  |
| Tag Name: | xxxx-xxx |
| Installation DWG: | 13110x |
| Fluid: | Finished Water |
| Temp min/max: | 0 to 25 °C |
| Press min/max: | Ambient |
| **Transducer Device Data:** |  |
| Transducer Model: | Echomax XPS-10 |
| Mounting Thread and Facing: | 1” NPT [(Taper), ANSI/ASME B1.20.1] |
| Cable Length: | 30m (98.43 ft) |
| Mounting Flange: | None |
| Approvals: | CSA Class 1 Div. 1 |
| Manufacturer: | Siemens |
| Part Number: | 7ML1115-0EA40 |
| **Accessories:** |  |
| Submergence Shield Kit | 7ML1830-1BH |
| Channel Bracket, Wall Mount | 7ML1830-1BL |
|  | *Additional added as necessary* |
| **Transmitter Device Data:** |  |
| Transmitter Model: | MultiRanger 100/200 |
| Version: | Multiranger 200 |
| Mounting, Enclosure Design: | Wall Mount, Standard Enclosure |
| Power Supply: | 100 – 230 VAC |
| Number of Measuring Point: | Single Point Version |
| Communication: | Without Module |
| Output Relays: | 6 Relays (4 Form A, 2 Form C), 250 VAC |
| Approvals: | General Purpose CE, FM, CSAUS/C, UL Listed |
| Manufacturer: | Siemens |
| Part Number: | 7ML5033-2AA00-2A |
| **Accessories:** |  |
| Handheld Programmer | 7ML1830-2AK |
|  | *Additional added as necessary* |

Second Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Reservoir Level |
| **Process:** |  |
| Tag Name: | xxxx-xxx |
| Installation DWG: | 13110x |
| Fluid: | Finished Water |
| Temp min/max: | 0 to 25 °C |
| Press min/max: | Ambient |
| **Transducer Device Data:** |  |
| Transducer Model: | FDU90 |
| Approval: | CSA General Purpose |
| Process Connection (Threaded Boss): | Thread ANSI PVDF; Rear Side NPT1, Front Side NPT1-1/2 |
| Cable Length: | 30m (98ft) |
| Heater: | W/O Heater |
| Additional Option: | Flooding Protection Tube |
| Manufacturer: | E+H |
| Part Number: | FDU90-UN6AB |
| **Accessories:** |  |
| Cantilever, 585mm (23”), 316Ti (1.4571) | 919790-0001 |
| Mounting Frame, 700mm (27.6”), 316Ti (1.4571) | 91979-0001 |
|  | *Additional added as necessary* |
| **Transmitter Device Data:** |  |
| Transmitter Model: | Prosonic S FMU90 |
| Approval: | CSA General Purpose |
| Application: | Level + Pump Control, Alternating |
| Housing, Material: | Field Mounting PC, IP66 NEMA 4X |
| Operation: | Illuminated Display + Keypad |
| Power Supply: | 90 – 253 VAC |
| Level Input: | 1 x Sensor FDU9x/8x |
| Switch Output: | 6 x Relay, SPDT |
| Output: | 1 x 0/4-20mA HART |
| Additional Input: | W/O Additional Input |
| Datalog Function: | Basic Version |
| Languages: | DE, EN, FR, ES, IT, PT |
| Addition Option: | Basic Version |
| Manufacturer: | E+H |
| Part Number: | FMU90-N11CA161AA1A |
| **Accessories:** |  |
|  | *Additional added as necessary* |

**END OF SECTION**