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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 Consultant 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

### This specification defines the requirements for differential pressure transmitters for absolute pressure, gauge pressure, differential pressure and liquid level applications.

### 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, differential pressure 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 13140 – Differential Pressure Transmitter as indicated in the Bid Form.

## Sensor

### Dual sensing ports connect to pressure source and atmosphere for pressure, and to two pressure sources (high - low) for differential pressure.

### Electrical connections: 1/2 inch - 14 NPT weather proof conduit

### Process connections: 1/4 inch - 18 NPT on flanges, 1/2 inch NPT on adapters

## Transmitter

### Provide operating range between 40 percent and 80 percent of maximum adjustable range.

### Explosion proof (hazardous area) rated instrument enclosure may be required depending upon installation location.

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

# 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 universal mounting bracket for handrail, vertical surface, for 50 mm (2 inch) pipe.

#### Provide stainless steel valve manifold assembly with line shutoff valves for pressure, c/w calibration port.

#### Provide stainless steel valve manifold assembly with line shutoff valves and line drain/vent valve for differential pressure, c/w calibration port.

#### For direct mount to process, stainless steel valve manifold to be provided for mounting to the orifice flanges.

#### For flange mounting, manufacturer flange mounted diaphragm to be used.

#### Differential pressure transmitters for surge tanks are to always be flange mounted.

#### When routing conduit avoid areas subject to chemical o physical abuse and areas with high EMI/RFI conditions.

#### 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.

#### Locate transmitter with adequate clearance and accessibility for service.

#### Locate transmitter as close as possible to the process connection.

#### Ground the transmitter through a 16AWG or larger copper wire from transmitter grounding screw to a low resistance ground.

#### Any zero shift due to mounting position to be calibrated out.

#### Connect unit to liquid process lines horizontally. Slope lines 8 cm/meter (1 in/foot) downward to allow gas bubbles to bleed back to the process line.

#### Connect unit to gaseous process lines at the top of pipes or tanks to minimize moisture or solids entry to sensing line.

#### Provide for air or water flushing lines where contaminant fouling may occur.

#### Provide filled diaphragm seals for severe process fluids where contamination or fouling will occur.

#### 5-way block and bleed manifold to be utilized for installation.

#### Provide a local pressure gauge for gauge pressure and absolute pressure applications.

#### Provide a local pressure gauge at the high-pressure tap and a local pressure gauge at the low-pressure tap on differential pressure applications.

# 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 | Endress+Hauser | Deltabar S |
| 2 | Siemens | 7MF4433 |
| 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.

## Differential Pressure Transmitter

First Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Water |
| **Process:** |  |
| Tag Name: | xxx-xxx |
| Installation DWG: | 13140x |
| Fluid: | Raw Water |
| Temp min/max: | 0-25 °C |
| Press min/max: | 0 - 500 kPa |
| **Device Data:** |  |
| Approval: | Combined Certificates: CSA IS and XP Class I Division 1, Groups A-D |
| Output; Operation: | 4 to 20 mA HART, SIL Operation Outside, LCD |
| Housing; Cable Entry; Protection: | Aluminum T14 Housing, Optional Display on the Side, IP 66/67/NEMA 4X/6P, Thread ½ NPT |
| Nominal Range; PN: | 3bar/300kPa/45psi |
| Calibration; Unit: | Customer Specified |
| Process Isolating Diaphragm Material: | Alloy C |
| Process Connection; Material: | ¼ - 18 NPT IEC 61518, Mounting; 7/16 – 20 UNF, AISI 316L (CRN), Including 2 Vent Valves (AISI 316L) |
| Seal: | PTFE |
| Additional Option 1: | Not Selected |
| Additional Option 2: | Mounting Bracket for Wall/Pipe, AISI 304 |
| Manufacturer: | E+H |
| Part Number: | PMD75-DAC7HB2DCAU |
| **Accessories:** |  |
| 3-Way Manifold: | 4201439 |

Second Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Water |
| **Process:** |  |
| Tag name: | xxx-xxx |
| Installation DWG: | 13140x |
| Fluid: | Water |
| Temp min/max: | 0 - 25 °C |
| Press min/max: | 0 - 100 kPa |
| Diff. Range: | 10 kPa max. |
| **Device Data:** |  |
| Measuring Cell Filling: | Silicone Oil |
| Measuring Cell Cleaning: | Normal |
| Span: | 6.4 to 640 inH2O |
| Wetted Parts: Process Diaphragm Material: | Stainless Steel |
| Wetted Parts: Parts of the Measuring Cell Material: | Stainless Steel |
| Process Connection: | Female thread, ¼ -18 NPT and flange Connection acc to DIN 19 213; Venting Opposite Process Connection: Mounting Thread M10 |
| Non Wetted Parts: Process Flange Screws: | Stainless Steel |
| Non Wetted Parts: Electronics Housing: | Diecast Aluminum |
| Version: | Standard Version |
| Explosion Protection: | With Explosion Protection (FM + CSA for IS + XP) |
| Electrical Connection/Cable Inlet: | Female Thread ½ - 14 NPT |
| Housing Cover/Display: | With Window (Digital Display Visible, Setting: mA) |
| Other Versions: |  |
| Transmitter with Mounting Bracket of: | Stainless Steel |
|  | *Additional added as necessary* |
| Manufacturer: | Siemens |
| Part Number: | 7MF4433-1FA02-1NC6-Z-A02 –K36 |
| **Accessories:** |  |
| 3-Way Manifold: | 7MF9411-5BA-Z-K36 |

**END OF SECTION**