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| 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 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

### 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.

### The following are specific requirements.

#### The mass flow meters (airflow) used in aeration/digester applications are to employ the Thermal Dispersion principal (transducer) method of measurement.

#### There are two typical Thermal Mass Flow installation configurations that can be used in the Region:

##### Insertion Type (preferred)

##### In-Line (or Flanged) Type

### 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, thermal mass flow 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 13230 – Thermal Mass Flow Meters as indicated in the Bid Form.

## Thermal Flow Sensor

### Flanges: 150lb CS ANSI Flanges unless otherwise stated

### Sensor selection/sizing and installation type are to be reviewed with the manufacturer on an application-by-application basis. If the manufacturer suggests a different combination to be superior to what is listed for a particular application, the Region is to be provided with the option to select either the materials listed or those recommended by the manufacturer at no additional cost.

## Transmitter

### Signal Cable: Manufacturer's recommended sensor signal cable connection direct from sensor to instrument without joints or splices via flexible weatherproof conduit.

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

## Compact vs. Remote

### If the environment which the sensor is to be located has any possibility of being submerged or where the application requires it to be mounted above 1.5 m off the floor or is not easily accessible, then the housing type shall be a Remote type, otherwise a Compact version (sensor and transmitter in same mechanical unit/housing) may be used.

# 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.

#### Refer to manufacturers guidelines for specific application Inlet/Outlet runs

#### Thermal Flow sensors to be installed as far away as possible from any flow disturbances

#### If manufacturer Inlet run is not available, install a perforated plate flow conditioner. Flow conditioner must be calibrated in conjunction with meter at factory prior to installation

#### Install meters upstream from control valves

#### Install separate conduits for signal and power wiring to the meter and between the transmitter and control panel

#### Ground the meter in accordance with manufacturer's instructions.

#### Remote version to be installed if flow element is to be installed 1.5 m above finished floor.

#### 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.

#### 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 lighting panel 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 | Kurz Instruments Inc. | 454FT |
| 2 | Endress + Hauser | 65I |
| 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.

## Thermal Mass Flow Meters

First Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Aeration/Digester |
| **Process:** |  |
| Tag name: | xx-xx |
| Installation DWG: | 13230x |
| Fluid: | Air/Gas |
| Velocity min/max: | ??? |
| Temp min/max: | 0 to 25°C |
| Press min/max: | 0 - 300 kPa |
| Flow min/max: | 0 - 14 L/s |
| Up/Down Stream: | Application Specific  (15/2 Min.) |
| Bi-directional Flow: | No |
| **Device Data:** |  |
| Sensor Support Diameter: | ¾” |
| Process Temperature Rating: | Medium Temperature (-40°C – 200°C) |
| Air Purge: | No |
| Safety Approvals: | Non-Incendive, ATEX and CSA Approvals  Flame-Proof/Explosion-Proof, ATEX and CSA Approvals  Canadian Registration Number |
| Manufacturer: | Kurz Instruments Inc. |
| Model Number: | 454FT-12-MT |
| Parent Number | 756003 |
| **Summary of Features:** |  |
| Sensor Type: | FD Sensor, Fast Dual MetalClad Sensor |
| Sensor Material: | Alloy C276 |
| Sensor Support Material: | 316L Stainless Steel |
| Sensor Support Length: | All, 18” |
| Optional Flange Connection: | No Flange |
| Optional Flange U Dimension: | Not Used |
| Electronics Enclosure Configuration: | Electronics Enclosure Remotely Attached to Sensor Support with two ID Tags |
| Input Power: | 115VAC, 50/60 Hz |
| Gas Velocity Calibration Data Range: | 6,000 SFPM (30 SMPS) |
| Specialty Gas Calibration: | Air at 0 PSIG |
| Process Temperature Compensation: | Standard Temperature Compensation (STC) over Process Temperature Range of -40°C to 125°C |
| 4-20 mA Outputs: | Two 4-20 mA Outputs, Loop Powered, Optically Isolated |
| LCD/Keypad: | Includes Back-lit LCD with 20 Button Keypad and Enclosure Lid with Window |
| Alarms, Relays, Pulsed Outputs: | Two Optically Isolated Solid State Alarm Relays |
| Terminal Communication and Data Ports: | RS-232C or RS-485 (Jumper Selected) Serial Port with RS-485 Multi-point Modbus ASCII or RTU Protocol with Read Only Control |
| Safety Approvals: | IP66/NEMA4X/7  ATEX, CSA, CRN |
| Manufacturer: | Kurz Instruments Inc. |
| Part Number: | 756003-I3-20-00-0000-21-14-01-01-21-13-44 |
| **Accessories**: |  |
| Mounting Flange Assemblies: | 759032 |
| Branch Fittings - Thredolets: | 759033 |
| Branch Fittings – Sockolets: | 759034 |
| Pipe Nipples: | 759070 |
| Male Compression Fittings: | 759031 |
|  | *Additional added as necessary* |

Second Named Manufacturer:

|  |  |
| --- | --- |
| **Service:** | Aeration/Digester |
| **Process:** |  |
| Tag name: | xx-xx |
| Installation DWG: | 13230x |
| Fluid: | Air/Gas |
| Velocity min/max: | ??? |
| Temp min/max: | 0 to 25°C |
| Press min/max: | 0 - 300 kPa |
| Flow min/max: | 0 - 14 L/s |
| Up/Down Stream: | Application Specific  (15/2 Min.) |
| Bi-directional Flow: | No |
| **Device Data:** |  |
| Insertion Tube Length: | 9” (235mm) for 3” to 20” (DN 80 to 500) pipe |
| Insertion Tube Material/Sensor Material: | 316L SS/316L SS |
| Process Connection: | 1” MNPT ANSI Thread, Compression Fitting, 316LSS |
| Bonded Seal: | Not Required, MNPT (only for Process Connection A) |
| Surface Finish: | Basic Version |
| Calibration: | Factory Calibration |
| Additional Test, Certificate: | Without Additional Test |
| Approval: | FM XP CL, I, Div.1/CSA CI, I, Div. 1, Grps A-D + Zone 1 |
| Housing: | Compact Aluminum, NEMA 4X |
| Cable Entry: | 1/2 “ NPT |
| Display, Operation: | 85-260 VAC, 2 Line Display Plus Push Buttons |
| Software: | Factory Setup, Air |
| Output, Input: | Fixed I/O Modules, 4-20 mA HART + Frequency |
| Manufacturer: | E+H |
| Part Number: | 65I 20-AA0AD1NABABA |
| **Accessories**: |  |
| Mounting Boss: | DK6MB- |
| Cable Remote Version: | DK6CA- |
| Mounting Set for Transmitter: | DK6WM- |
|  | *Additional added as necessary* |

**END OF SECTION**