digitalYEWFLO (Model DY/DYA, Istec P/N 7150-xxx) Vortex Flowmeter

Typical Specifications

1.0 SCOPE

1.1 This specification covers the requirements for vortex flowmeters as described in the following section.

2.0 GENERAL REQUIREMENTS

2.1 Measure fluid flow using only the Karman vortex shedding principle.

2.2 Detect vortex generation without using pressure detecting ports, holes, or passages which may be blocked by process fouling. The use of shedder bars with integral diaphragms or thin-walled sections for vortex sensing is not acceptable.

2.3 Allow replacement of the shedder bar without unbolting or removing the meter body from the line.

2.4 Have a single element, solid steel shedder bar and non-wetted sensor to resist damage by entrained process debris. The material of construction of the shedder bar shall be duplex stainless steel per ASTM A744-CD4MCU to provide resistance to both corrosion and stress corrosion cracking.

2.5 Utilize a sensor consisting of two piezoelectric crystals coupled together for piping noise suppression. The crystals shall be hermetically sealed within the shedder bar (O-ring seals are not acceptable) to prevent degradation by the ambient or process environment and to maximize weak vortex detection.

2.6 Utilize a 1000 ohm platinum RTD embedded in the shedder bar for process fluid temperature measurement.

2.7 Shall be available with full ANSI pressure rating at operating temperature up to and including 2500#.

2.8 Be a full-bore design to minimize the effects of flow profile variations (insertion designs will not be accepted). The meter shall be available in sizes from 1" through 8” and wafer, flanged and dual-sensor configurations shall be available.

2.9 Use a common amplifier for all line sizes, fluid types, outputs (analog or pulse), and protection types (explosion proof and intrinsically safe).

2.10 Provide a simultaneous 4-20 mA analog signal and a scaleable pulse/frequency output (0-10000 Hz). A status output (flow switch function) or alarm output shall also be available in lieu of the pulse output. The 4-20 mA signal shall be assignable to the mass flow rate, the volumetric flow rate or the temperature.

2.11 Shall be configurable through a local display interface with parallel two-line LCD display (MMI) without the need for a separate handheld terminal. Display options shall include mass flow, volumetric flow, total and temperature.

2.12 Have FM and CSA electrical approvals (explosion proof and intrinsically safe) for Class I, Division I, Groups A-D.

3.0 SOFTWARE FUNCTIONALITY

3.1 Allow remote communications using BRAIN or HART protocol via the 4-20 mA lines and digital communication via Foundation Fieldbus.

3.2 Shall use the Spectral Signal Processing technique to extend the benefits of Digital Signal Processing for stable, accurate flow measurements.

3.3 Shall require no start-up tuning. Shall automatically select optimum settings – even in noisy environments.

3.4 Shall calculate the mass flow of saturated steam based on steam tables embedded in the software and the mass flow of liquids based on a programmed algorithm.

3.5 Provide computational capabilities which include:

- Instrument error correction
- Reynolds number correction
- Expansion correction for compressible fluids

3.6 Provide real-time information which includes:

- Input (vortex) frequency
- Span frequency
- Flowing velocity
- Span velocity

3.7 Shall perform continuous diagnostics and analysis of the process for true condition-based maintenance.

3.8 Shall be DY/DYA Series (Istec 7150 type) with the /MV option as provided by Istec Corporation of Sparta, NJ (Phone Number 973 383 9888 and Fax Number 973 383 9088).