CFT50 Transmitter

Digital Coriolis Mass Flow Transmitter

Description

The CFT50 digital Coriolis mass flow transmitter introduces a new product family based on patented dual digital signal processing technology.

With conventional Coriolis meters, even small bubbles of gas entrained in a liquid can seriously interrupt or even stall measurement. But when paired with any Foxboro mass flowtube, this innovative transmitter digitally controls the flowtube during two-phase flow (gas/liquid). Dual digital processing simultaneously controls the meter's drive sequence without interruption; while precisely processing the measurement.

Result: no interruption or stalling, plus improved precision for the most demanding applications. This transmitter even allows the flowmeter to start and stop batching with flowtubes empty of liquid. Unsurpassed dynamic response is ideal for even the smallest volume prover in oil & gas custody transfer applications.

The CFT50 offers multiple analog outputs, two-line displays, HART communications, multi-measurement, and enclosures to meet any area classifications. Its user-friendly, menu-driven design allows easy configuration for flow signals, analog/pulse outputs, and display units. And its open architecture enables software flash upgrades in the field.

Features/Benefits

- Precise mass, density, and temperature measurement
- Accurate two-phase flow measurement with no interruption or stalls
- Gas measurements
- Empty-tube startup capability
- HART communications
- Three analog outputs
- Scalable pulse/frequency
- FM, CSA, CE approvals, NEMA 4X and Flameproof
- Four programming keys
- Remote mounting to 1000 ft
- Backwards compatibility
- User-friendly menus
- Open architecture
- Suitability for applications including:
  - Tanker unloading
  - Centrifuge bottoms
  - Ethylene oxide
  - Sanitary batching
  - Pharmaceuticals batching
  - Food, dairy, beverage
  - Small volume proving

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Accuracy

Mass Flow Rate

Liquids: ±0.1% of Flow Rate (plus flowtube effects)
Gas: ±0.5% of Flow Rate (plus flowtube effects)

Process Density

Liquids: as low as ±0.0005 g/cc

Functional Specifications

Transmitter Capabilities

- Direct Mass Flow Rate
- Volumetric Flow Rate
- Totalized Mass Flow Rate
- Totalized Volumetric Flow Rate
- Process Fluid Density
- Temperature
- Bidirectional Flow
- Percent Solids/Concentration
- Brix and Baume Scales

Totalization

The transmitter has nonvolatile RAM for the following:

- Forward Total
- Reverse Total
- Net Total
- Grand Total

Diagnostics/Help/Alarms

Diagnostic, help, and alarm functions are provided. These can be configured to be visual via the local display/keypad, as a signal output via the 4 to 20 mA outputs, or as a contact output.

Transmitter Outputs (also see paragraphs that follow)

- Selectable Frequency Output
- Scaled Pulse
- Quadrature Pulse Output
- Analog Current Output Alarm
- Analog Current Outputs
- Contact Outputs

Frequency/Pulse Output

This output is an optically isolated transmitter switch which can be configured as a frequency or pulse output signal. These outputs must be powered externally to the transmitter to allow maximum flexibility without causing earth (ground) loops.

Frequency Output Signal

This output configuration can be assigned to mass or volume flow rate, density, temperature, or percent solids measurements. The frequency can be configured to as high as 10 kHz.

Scaled Pulse Output Signal

This output is used to drive low-speed totalizers. A pulse is sent for every user-configured mass total that has accumulated.

Analog Current Outputs

Three externally powered, 4 to 20 mA analog outputs are provided. This allows maximum flexibility for output earthing (grounding) without causing ground loops.

Contact Output

An isolated contact output is provided and configurable as either

- A Flow Direction Indicator
- A Range Indicator
- Or an Alarm

Contact Inputs

An isolated contact input is provided and configurable as either

- A 4 to 20 mA Output Lock
- An External Totalizer Reset
- An Alarm Reset
- Or Zero Flow Calibration

HART Remote Communications

Available in either 4 to 20 mA or multidrop (fixed current) mode. Digital communication is provided using the FSK (frequency shift key) technique. This alternately superimposes one of two different frequencies on the uninterrupted current carried by the two signal/power wires. A genuine, simultaneous (digital and analog) communication is produced with a response time of approximately 500 ms for each device. The analog signal transmission is not disturbed.

Local Interrogation/ Configuration

In addition to HART remote communications, a local LCD Indicator with four multifunction pushbuttons is offered. This allows the transmitter to be a stand-alone unit for local interrogation and full configuration capability. The electronics enclosure cover must be removed to access the pushbuttons.

For additional information, see PSS 1-2B7 A.

For assistance in meter selection, please visit www.flowexpertpro.com

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