



DigitalFlow™ XGM868i

Panametrics Gas Flow Ultrasonic Transmitter

The DigitalFlow XGM868i gas ultrasonic flow transmitter is designed to measure the flow rate of virtually any gas. The DigitalFlow XGM868i flow transmitter offers a unique combination of rangeability, ease of installation, low maintenance and accuracy in a low-cost transmitter. The state-of-the-art XGM868i shares the many advantages offered by the other products in the Panametrics line of innovative ultrasonic flowmeters. The all-digital XGM868i creates no pressure drop; has no moving parts or parts that foul or collect debris; seldom requires maintenance; and provides reliable, drift-free operation. The flow rate can be displayed locally or transmitted to a remote system via an analog or digital communications link.

Compact housing

All of the DigitalFlow XGM868i's electronic components are housed in a compact transmitter package that can be installed right at the flow measurement point. This greatly simplifies wiring of the transducers and results in trouble-free operation.

Dual-channel model

In addition to the standard single-channel model, an optional two-channel model provides enhanced accuracy when measuring two paths on a single pipe. It can also be used to measure a single path on two pipes.

Low operational costs

Because the DigitalFlow XGM868i installation produces no flow obstruction, the energy-robbing pressure drops and high maintenance requirements characteristic of other flowmeters are eliminated. The special sealed metal transducers supplied with a DigitalFlow XGM868i system are immune to the erosion and stress caused by thermal expansion cycles.

Works under wide range of flow conditions

Unlike limited conventional flowmeters, the DigitalFlow XGM868i transmitter can be used over a wide range of flow rates with any gas at pressures up to 3,480 psig (240 bar). Turndown ratio is 1500 to 1.

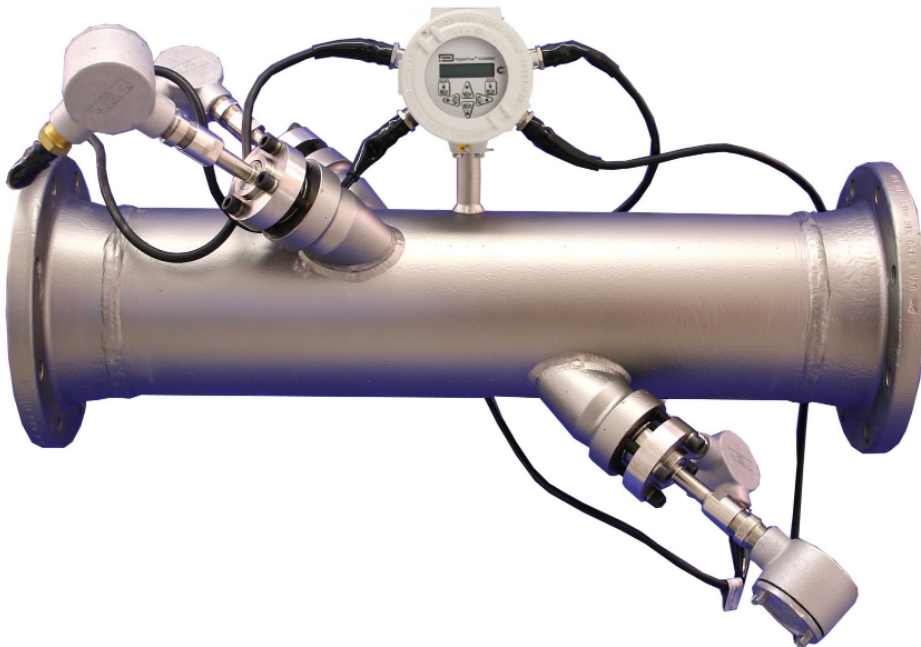
Features

- Economical flow measurement in a compact transmitter
- No moving parts
- No pressure drop
- Wide rangeability with 1500 to 1 turndown ratio
- Non-obstructive flow measurement
- Tolerance to dirty streams
- Low maintenance
- Suitable for high temperatures
- Two-path measurement available for maximum accuracy

Applications

The DigitalFlow XGM868i gas flow transmitter is a complete ultrasonic flow metering system for measurement of most gases including:

- Hydrocarbon gases
- Vent gases
- Biogases
- Digester gases
- Fuel gases
- Waste gases
- Incinerator air flow
- Vapor recovery
- Stack gases
- Other gases



Flow accuracy

| Tranducer Type | T5 Wetted Transducer | | | | T17 Wetted Transducer | | | |
|--------------------------------|--|--------|----------------------------------|---------|-------------------------------------|--------|----------------------------------|---------|
| | Flow Measurement Range | | | | | | | |
| Standard Range | -150 to 150 ft/s (-50 to 50 m/s) - bidirectional | | | | | | | |
| | Applicable Pipe Sizes | | | | | | | |
| Diagonal 45 | 3 in to 14 in (50 to 350 mm) OD | | | | 14 in to 120 in (350 to 3000 mm) OD | | | |
| Bias 90 | Note 1 & 2 | | | | Not Applicable | | | |
| | Design Velocity Accuracy from 1 to 150 ft/s (0.3 to 50 m/s) | | | | | | | |
| Tranducer Type | T5 Wetted Transducer | | | | T17 Wetted Transducer | | | |
| Number of Paths | One Path | | Two Paths | | One Path | | Two Paths | |
| | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | |
| Pipe Dia. < / = 6 in. (150mm) | +-2.5% | +-2.0% | +-2.0% | +-1.5% | NA | NA | NA | NA |
| Pipe Dia. > / = 6 in (150mm) | +-2.0% | +-2.0% | +-1.5% | +-1.5% | +-2.0% | +-2.0 | +-1.5% | +-1.5% |
| | Calibrated Velocity Accuracy from 1 to 150 ft/s (0.3 to 50 m/s) - see notes below | | | | | | | |
| Tranducer Type | T5 Wetted Transducer | | | | T17 Wetted Transducer | | | |
| | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | | 1 ft/s (0.3 m/s) >3 ft/s (1 m/s) | |
| Pipe Dia. < / = 6 in. (150mm) | +-1.5% | +-1.0% | +-1.0% | +-0.75% | NA | NA | NA | NA |
| Pipe Dia. > / = 6 in (150mm) | +-1.0% | +-1.0% | +-0.75% | +-0.75% | +-1.0% | +-1.0% | +-0.75% | +-0.75% |
| | Flow Velocity Sensitivity from .1 to 1 ft/s (0.03 to .3 m/s) | | | | | | | |
| Pipe Dia. = 10 in. (250mm) | ±0.12 in/s(±0.004 m/s) | | ±0.08 in/s(±0.003 m/s) | | NA | | NA | |
| Pipe Dia. = 14 in. (250mm) | ±0.12 in/s(±0.004 m/s) | | ±0.08 in/s(±0.003 m/s) | | ±0.08 in/s(±0.003 m/s) | | ±0.06 in/s(±0.002 m/s) | |
| Pipe Dia. > / = 20 in. (500mm) | ±0.12 in/s(±0.004 m/s) | | ±0.08 in/s(±0.003 m/s) | | ±0.06 in/s(±0.002 m/s) | | ±0.04 in/s(±0.0015 m/s) | |

Notes:


- Accuracy and sensitivity are dependent on pipe diameter, molecular weight and temperature. All accuracy specs assume molecular weights greater than 24 kg/kmole and temperatures less than 100 °F (38 °C)
- Accuracy is dependent on straight run. All accuracy specs assume a fully developed flow profile or a minimum straight run of 20D upstream and 10D downstream
- Stated accuracy may be achieved with total straight run as little as 10D using flow profile correction - contact factory for details

Technical Specifications

Operation and performance

| | |
|---------------------------------|---|
| Fluid Types | Acoustically conductive gases |
| Pipe Sizes | 2 to 120 in. NB (50 to 3,000 mm) and larger |
| Pipe Materials | All metals. Consult Panametrics for other materials. |
| Flow Accuracy (Velocity) | +/-1.5% Typical two path meter +/-2.0% Typical one path meter Accuracy depends on pipe size and whether measurement is one-path or two-path. Accuracy to ±0.5% of reading may be achievable with process calibration. |
| Repeatability | ±0.2% to 0.5% of reading |
| Range (Bidirectional) | -150 ft/s to 150 ft/s (-46 m/s to 46 m/s) |
| Rangeability (Overall) | 1500:1 Specifications assume a fully developed flow profile (typically 20 diameters upstream and 10 diameters downstream of straight pipe run) and flow velocity greater than 3 ft/s (1 m/s). |
| Measurement Parameters | Mass flow, standard and actual flow, totalized flow, and flow velocity |

Electronics

| | |
|---------------------------|--|
| Flow Measurement | Transit time |
| Enclosures | <ul style="list-style-type: none"> Standard: Epoxy-coated aluminum Type 4X/IP66 Class I, Division 1, Groups B,C&D Flameproof ISSeP 02ATEX008  II 2 GD EEx d IIC T5 IP66 T95°C Optional: Stainless steel |
| Dimensions (h x d) | Standard: Size 8.2 in x 6.6 in (208 mm x 168 mm), weight 10 lb (4.5 kg) |
| Channels | <ul style="list-style-type: none"> Standard: One channel Optional: Two channels (for two pipes or two-path averaging) |
| Display | Optional: 2 line x 16 character backlit LCD display, configurable to display up to four measurement parameters in sequence |

| | |
|--------------------------------|--|
| Keypad | Built-in six-button keypad for full functionality operation |
| Power Supplies | <ul style="list-style-type: none"> Standard: 100-240 VAC ±10% Optional: 12 to 28 VDC, ±5% <p>Note: For DC-powered meters, Class 2 rated supplies must be used for the line power</p> |
| Power Consumption | 20 W maximum |
| Operating Temperature | -40°F to 140°F (-40°C to 60°C) |
| Storage Temperature | -67°F to 167°F (-55°C to 75°C) |
| Standard Inputs/Outputs | Two 0/4 to 20 mA isolated outputs, 600 Ω maximum load Namur NE043 compliant |
| Optional Inputs/Outputs | <p>All analog and digital I/O are available in specific combinations. Consult Panametrics for available option cards.</p> <ul style="list-style-type: none"> Two additional 0/4 to 20 mA isolated outputs, 1000 Ω maximum load Two 4 to 20 mA isolated inputs, 24 VDC loop power Two or four isolated, three-wire RTD (temperature) inputs, -148°F to 662°F (-100°C to 350°C), 100 Ω platinum Two or four pulse or frequency outputs, optically isolated, 3 A maximum, 100 VDC maximum, 1 W maximum, from DC to 10 KHz maximum Alarm relays: Two or four Form C relays; 120 VAC, 28 VDC maximum, 5 A maximum; DC 30 W maximum, AC 60 VA maximum |
| Digital Interfaces | <ul style="list-style-type: none"> Standard: RS232 Optional: RS485 (multiuser) Optional: Modbus® RS485 or TCP protocol Optional: Ethernet Optional: OPC server Optional: Foundation Fieldbus® |
| Data Logging | <ul style="list-style-type: none"> Standard: None Optional: Memory capacity (linear and/or circular type) to log over 150,000 flow data points |
| European Compliance | System complies with EMC Directive 89/336/EEC, 73/23/EEC LVD (Installation Category II, Pollution Degree 2) and transducers comply with PED 97/23/EC for DN<25 |

Wetted Ultrasonic Flow Transducers

- Temperature Range**
- Standard: -58°F to 302°F (-50°C to 150°C)
 - Optional (overall): -310°F to 842°F (-190°C to 450°C)

- Pressure Range**
- Standard: 0 psig to 2700 psig (1 bar to 187 bar)
 - Optional: 3480 psig (240 bar) maximum

- Materials**
- Standard: Titanium
 - Optional: Monel® or Hastelloy® alloys

Process Connections Flanged and compression fittings

Mountings Flowcell or cold tap

- Area Classifications**
- Standard: General purpose
 - Optional: Weatherproof Type 4X/IP66
 - Optional: Explosion-proof Class I, Division 1, Groups B,C,&D
 - Optional: Flameproof (Ex) II 2 GD EEx d IIC T6
- Transducers and flowcells for specific applications are available. Consult Panametrics for details.

Transducer cables

- Standard: One pair of coaxial cables, type RG62 AU, or as specified for transducer type
- Optional: Lengths up to 1000 ft (330 m) maximum

High-temperature and high-pressure ultrasonic flow transducers

Bundle Waveguide Technology™ (BWT) System transducer and holder (see BWT System specifications) are available.



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