



# 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

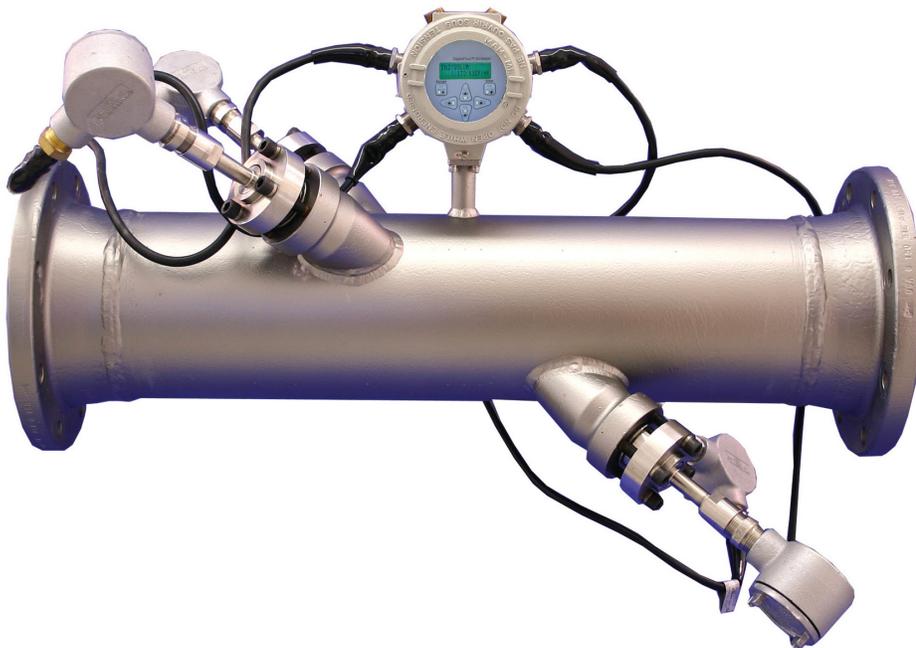
In addition to the standard single-channel model, an optional two-channel model provides enhanced accuracy when measuring two paths on a single pipe. It can also be used to measure a single path on two pipes.

## 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			
<b>Flow Measurement Range</b>								
Standard Range	-150 to 150 ft/s (-50 to 50 m/s) - bidirectional							
<b>Applicable Pipe Sizes</b>								
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			
<b>Design Velocity Accuracy from 1 to 150 ft/s (0.3 to 50 m/s)</b>								
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%
<b>Calibrated Velocity Accuracy from 1 to 150 ft/s (0.3 to 50 m/s) - see notes below</b>								
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%
<b>Flow Velocity Sensitivity from .1 to 1 ft/s (0.03 to .3 m/s)</b>								
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

<b>Fluid Types</b>	Acoustically conductive gases
<b>Pipe Sizes</b>	2 to 120 in. NB (50 to 3,000 mm) and larger
<b>Pipe Materials</b>	All metals. Consult Panametrics for other materials.
<b>Flow Accuracy (Velocity)</b>	+/-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.
<b>Repeatability</b>	±0.2% to 0.5% of reading
<b>Range (Bidirectional)</b>	-150 ft/s to 150 ft/s (-46 m/s to 46 m/s)
<b>Rangeability (Overall)</b>	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).
<b>Measurement Parameters</b>	Mass flow, standard and actual flow, totalized flow, and flow velocity

## Electronics

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

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