MISURA & AUTOMAZIONE

DigitalFlow™ GM868

Panametrics general-purpose gas ultrasonic flowmeter

Applications

The DigitalFlow GM868 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

Features

- Full-featured flowmeter package
- Transducer removable under line pressure
- 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

Panametrics
a Baker Hughes business

Panametrics ultrasonic general purpose gas flowmeter

The DigitalFlow GM868 flowmeter uses the patented Correlation Transit-Time™ method of ultrasonic flow measurement to provide accurate, drift-free measurements, without impeding or obstructing the flowt.

Wide range of pipe sizes and flow conditions

With its broad range of measurement velocities, and its ability to measure flow in any pipe from small to very large, one DigitalFlow GM868 meter does the job of several conventional meters. It handles pipes from 1 to 120 inches in diameter (2.5 cm to 3 m), and velocities from 0.1 to 150 ft/s (0.03 to 46 m/s)—in either direction, in steady or pulsating flow.

For maximum accuracy, use a two-channel meter to measure along two different paths at the same location. A two-channel meter can also measure the flow in two separate pipes or at two different places in the same pipe.

No pressure drop, low maintenance

Since the DigitalFlow GM868's transducers do not obstruct the flow, they generally do not cause any pressure drop as other types of flowmeters do. The DigitalFlow GM868 has no parts that foul or collect debris, and no moving parts to wear out. As a result, it requires no lubrication, cleaning or other routine maintenance.

Digital and analog output options

The DigitalFlow GM868 flowmeter makes it easy to send the data where it needs to go, through the standard digital output, standard or optional analog outputs or optional alarms. All outputs are conveniently set up and calibrated from the keypad or from a computer using the PanaView program.

Transducer 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 and 2				Not applicable			
Design velocity accuracy from 1 to 150 ft/s (0.3 to 50 m/s)								
Transducer 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								
Transducer 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)	+-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. (250 mm)	±0.12 in/s (±0.004 m/s)		±0.08 in/s (±0.003 m/s)		NA		NA	
Pipe dia. = 14 in. (250 mm)	±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. (500 mm)	±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)	

Note 1 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)

Note 2 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

Note 3 Stated accuracy may be achieved with total straight run as little as 10D using flow profile correction - contact factory for details

GM868 specifications

Operation and performance

Fluid types
All acoustically conductive gases

Pipe sizes
2 in to 120 in (50 mm to 3,000 mm) NB and larger

Pipe materials
All metals. Consult GE for other materials.

Flow accuracy (velocity)
±1% to 2% of reading typical

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 to 150 ft/s (–46 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 volumetric flow, totalized flow, and flow velocity

Electronics

Flow measurement
Transit time

Enclosures
- 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
- 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 infrared, six-button keypad for full functionality operation

Power supplies
- Standard: 100-240 VAC
- Optional: 12 to 28 VDC, ±5%

Note: For DC-powered meters, Class 2 rated supplies must be used for the line power

Power consumption

20 W maximum

Operating temperature

–4° to 131°F (–20° to 55°C)

Storage temperature

–67° to 167°F (–55° to 75°C)

Standard inputs/outputs

Two 0/4 to 20 mA isolated outputs, 550 S maximum load Namur NE043 compliant

Optional inputs/outputs

There are six additional slots available for any combination of the following I/O boards:

- Analog inputs: Select up to three boards of one of the following types:
  - Analog input board with two isolated 4 to 20 mAinputs and 24V loop power
  - RTD input board with two isolated, three-wire, RTD inputs; span –100° to 350°C (–148° to 662°F); 100 S
- Totalizer/frequency outputs: Select up to three totalizer/frequency output boards, each with four outputs per board, 10 kHz maximum
- Alarm relays: Select up to two boards of one of the following types:
  - General purpose: Relay board with three Form C relays
  - Hermetically sealed: Relay board with three hermetically sealed Form C relays

Digital interfaces
- Standard: RS232
- Optional: RS485 (multiuser)
- Optional: Modbus® RS485 or TCP protocol
- Optional: Ethernet
- Optional: OPC server
- Optional: Foundation fieldbus

Data logging
- 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 2004/108/EC, 2006/95/EC 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 (–50C° 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 enclosure Class I, Division 1, Groups B, C, and D
- Optional: Flameproof enclosure Class I, II 2 GD EEx dIIC 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.

Per avere più informazioni
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Panametrics, a Baker Hughes Business, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement. Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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