Datasheet

PanaFlow LZ System

Panametrics ultrasonic liquid flow meter

The PanaFlow LZ is a complete ultrasonic flow meter system for liquid applications, leveraging the state-of-the-art XMT1000 electronics platform. It can be used in applications such as:

- Hydrocarbon liquids
- Crude oils
- Internal allocation metering
- Loading/unloading
- Pipeline metering
- Fuel oils
- Water/cooling water/wastewater
- Chemicals
- Blending
- Solvents
- Weak acid solutions

PANA028DS Rev. 7

Reliable flow measurement is easy on your budget

The PanaFlow LZ is offered as a one- or two-path wetted, ultrasonic flow meter that brings all of the advantages of ultrasonic technology at a very affordable value.
Unlike other flow measurement technologies, the PanaFlow LZ does not require maintenance because it does not have any obstruction in the flow path that could clog the line nor does it have any moving parts that could be damaged by the flowing fluid. Also, due to the inherent nature of ultrasonic flow measurement, PanaFlow LZ measurements are not affected by changing process conditions, such as temperature, pressure and conductivity variations. In addition, because the measurements do not drift over time, no periodic calibration is required. Thus, the PanaFlow LZ is a very attractive flow meter, providing a lower overall total cost of ownership along with the superb reliability and performance expected from a Panametrics ultrasonic flow meter.

Local or remote electronics

Panametrics offers several electronics packages that can be mated with the PanaFlow meter system. For local electronics that are factory installed on the meter body, select the PanaFlow XMT1000 for liquid applications. Local electronics are not recommended on applications above 149°F (65°C). Electronics platforms other than PanaFlow XMT1000 are also available for remote locations. (Please see flow meter electronics datasheets for instrument specifications and ordering information.)
All electronics packages ordered with PanaFlow LZ meter systems are programmed with setup information based on your application, so the system is ready to use as soon as the meter body is installed. When remote electronics are used, transducer cabling must be run between the PanaFlow meter system and the flow meter electronics. When local electronics are integrated with the system the transducer wiring is already complete, further simplifying the field installation.

Reliable field-proven ultrasonic technology

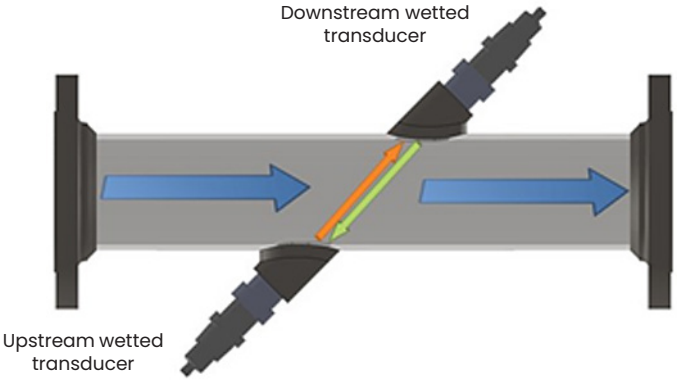
PanaFlow LZ leverages Panametrics' long heritage of ultrasonic transducer technology, which is proven in thousands of successful installations in liquid, gas, steam, and flare applications. In addition to standard wetted transducers, the PanaFlow LZ offers the option of Bundle Waveguide Technology to expand the range of possible applications. The BWT system consists of buffer assemblies and transducers. The buffer assemblies use waveguide bundles to efficiently concentrate a greater amount of the transducer ultrasonic signal into the process, providing better signal integrity. At the same time, the bundles act as buffers to protect the transducers from extreme temperatures to maximize the transducer life cycle and to allow transducer replacement under operating conditions.

Features and benefits

No drifting, no periodic calibration required	No loss of process control, optimization of assets and efficiency, no downtime or expense from calibration
No pressure drop	No wasted energy from running a pump or purchase of a larger size pump
No restriction in the pipe	Contamination will not affect meter's measurement (drifting) or any damage to meter
No filters or strainers	No maintenance cost
Bi-directional measurement	No additional meters required
No moving parts	No loss of process control, optimization of assets and efficiency, no downtime or expense from calibration
Field replaceable transducers	No risk in measurement, no shutdown costs for transducer maintenance
All-welded design	No risk of leaks through o-rings not seated correctly or risk of material corrosion
Explosion-proof transducer design	More power to transducer at higher voltages, less risk of attenuation in fluid
Full ultrasonic product line	Meet more needs with full product portfolio; one source for all ultrasonic liquid flow meters
SIL Certification	Optional SIL certified configuration for safety criticall applications

Transit time flow measurement

In this method, two transducers serve as both ultrasonic signal generators and receivers. They are in acoustic communication with each other, meaning the second transducer can receive ultrasonic signals transmitted by the first transducer and vice versa.
In operation, each transducer functions as a transmitter, generating a certain number of acoustic pulses, and then as a receiver for an identical number of pulses. The time interval between transmission and reception of the ultrasonic signals is measured in both directions. When the liquid in the pipe is not flowing, the transit time downstream equals the transit time upstream. When the liquid is flowing, the transit time downstream is less than the transit time upstream.
The difference between the downstream and upstream transit times is proportional to the velocity of the flowing liquid, and its sign indicates the direction of flow.



Fast and easy installation

The integrated PanaFlow meter system is fast and easy to install because components are already installed in the meter body. A PanaFlow meter body is composed of a length of carbon steel or stainless steel pipe with flanged ends and transducer ports rated to the application's pressure requirements, and either one or two pairs of pre-installed ultrasonic transducers. The system is factory assembled and tested to ensure that it meets strict quality control standards

PanaFlow LZ part number

LZ - B - C - D E F G H I - J - K L M - Z

Model

PanaFlow LZ liquid ultrasonic flow meter system

Paths

- 1 Single path meter body
- 2 Dual path meter body

Meter body size

- 002 2 in. (50 mm) meter body
- 003 3 in. (80 mm) meter body
- 004 4 in. (100 mm) meter body
- 006 6 in. (150 mm) meter body
- 008 8 in. (200 mm) meter body
- 010 10 in. (250 mm) meter body
- 012 12 in. (300 mm) meter body
- 014 14 in. (350 mm) meter body
- 016 16 in. (400 mm) meter body
- 018 18 in. (450 mm) meter body
- 020 20 in. (500 mm) meter body
- 024 24 in. (600 mm) meter body

Pipe schedule

- A STD Schedule meter body (CS system)
- B XS Schedule meter body (CS system)
- C 40S Schedule meter body (SS system)
- D 80S Schedule meter body (SS system)

Process flange rating

- A ANSI 150# RF (SO) process flange
- B ANSI 300# RF (SO) process flange
- C ANSI 600# RF (SO) process flange

Meter body material

- 1 Carbon steel (ASTM A106 Gr. B/A105) meter body material
- 2 Stainless steel (A312 Gr. 316/316L or A358 316/316L Cl.2 EFW) meter body material

System design

- A System designed ASME B31.3 & NACE MR0175/MR0103
- C System designed ASME B31.3, CRN & NACE MR0175/MR0103
- P System designed PED & NACE MR0175/MR0103

Meter body paint

- A No paint (SS systems only)
- B System B high-temperature primer (400°C/750°F)
- C System C epoxy paint (230°C/450°F)

Meter body testing

- 1 Standard NDE (hydrostatic testing, radiography (if applicable), and LPI)

Electronic mounting

- L1000 Local mount: XMT1000 (Max 65°C)
- L868I Local mount: XMT868i (Max 65°C)
- RM Remote mount: cable must be ordered separately

Transducer/butter system

- 1 Pair of WT wetted transducers (SS) with BNC connector and 316SS Panadapta buffers (-40 to 175°C or -40 to 347°F operating temperature)
- 2 Pair of WT wetted transducers (SS) with submersible connector and 316SS Panadapta buffers (-40 to 175°C or -40 to 347°F operating temperature), no junction box option and remote cable required
- 3 Pair of BWT1 wetted transducers (SS) with BNC connector and 316SS FWPA buffers (-40 to 100°C or -40 to 212°F operating temperature)
- 4 Pair of BWT1 wetted transducers (SS) with BNC connector and 316SS FWPA buffers (-40 to 250°C or -40 to 482° F operating temperature)

Transducer junction box/hazardous area rating

- 00 No junction box on the transducer
- AX USA/CAN for Div 1, Class 1 areas (WT: Groups C&D, BWT1: Group B)
- EX ATEX II 2 G (KEMA 01ATEX2045 X) Ex d IIc T6
- UX IECEx (IECEx KEM09.0009X) Ex d IIc T6

Calibration

- 1 3 points as found, 2 points as left
- 2 3 points as found, 2 points as left (ISO 17025)
- SL1 3 points as found, 2 points as left (SIL - requires XMT1000 with SIL configuration)
- SL2 3 points as found, 2 points as left (ISO 17025; SIL - requires XMT1000 with SIL configuration)
- S Special calibration

Specials

- 0 None
- S Special

LZ	-	2	-	008	-	A	A	2	C	A	1	-	RM	-	1	AX	1	-	0	**(example part number string)**

Technical **Specifications**

Operation and performance

Fluid types	Liquids: acoustically conductive fluids, including most clean liquids, and many liquids with small amounts of entrained solids or gas bubbles
Flow measurement	Correlation transit time model
Paths	• 1 Path: 2 in. to 24 in. (50 mm to 600 mm) pipe • 2 Path: 3 in. to 24 in. (80 mm to 600 mm) pipe
Pipe sizes	2 in. to 24 in. (50 mm to 600 mm)
Pipe material	• Carbon steel • Stainless steel (316/316L)
Accuracy	±0.5% of reading for velocity above 2 ft/s (0.6 m/s) up to 40 ft/s (12.2 m/s) with a resolution of ± 2 mm/s Accuracy statement assumes measurement of a single phase homogenous liquid with a fully developed symmetrical flow profile passing through the meter. Applications with piping arrangements that create an asymmetrical flow profile may require extended piping straight runs and/or flow conditioning for the meter to perform to this specification.
Repeatability	±0.3% of reading typical
Range (bidirectional)	±0.1 to 40 ft/s (0.03 to 12.19 m/s)
Measurement parameters	Dependent upon meter electronics used. Please refer to individual flow meter electronics product data sheet.

Electronics/transmitter

See electronics for specifications.
Note: For SIL application, SIL flow meter must be ordered with proper configuration.

Per avere più informazioni
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Meter body and transducer

Pressure rating	Up to maximum allowable flange operating pressure at temperature, per ASME B16.5
Temperature range	• WT Transducers: -40 to 175°C (-40 to 347°F) • BWT Transducers: -40 to 100°C (-40 to 212°F) -40 to 250°C (-40 to 482°F) Temperature rating of -20°C if used with carbon steel meter body.
Transducer material	316L Stainless steel (buffers)
Meter body materials	• Carbon steel • Stainless steel (316/316L)
Certification	Electronics/Transducers: Explosionproof Class I, Division 1, Groups B,C&D ATEX Flameproof II 2 G Ex d IIC T6 IECEx Flameproof II 2 G Ex d IIC T6 Other certifications available upon request based on BWT transducer.
Flowcell	• NACE MR0175 and MR0103 • PED 2014/68/EU

Transducer cables

Integral cables	• Mineral insulated cables with potted cable glands (for North America and Canada hazardous locations) • Armored flame retardant coaxial cables with ATEX/IECEx certified cable glands (for European hazardous locations)
Remote cables	• ATEX/IECEx: Armored RG62 for ATEX/IECEx • US/CAN: Non-armored RG62, conduit not included • Remote cables are not included and must be ordered separately. Maximum cable length is 1000 ft (300 m).
Weights and dimensions	(Refer to drawings 712-2122 to 712-2125)

Drawing	Drawing description
712-2122	General arrangement drawing, PanaFlow LZ, 2 in. and 3 in., 1 path, 2 traverse, tilted diameter
712-2123	General arrangement drawing, PanaFlow LZ, 4 in. to 24 in., 1 path, 1 traverse, tilted diameter
712-2124	General arrangement drawing, PanaFlow LZ, 3 in. and 4 in., 2 path, 1 traverse, tilted diameter
712-2125	General arrangement drawing, PanaFlow LZ, 6 in. to 24 in., 2 path, 1 traverse, mid-radius

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