

Ultrasonic liquid flow meters

# Ultrasonics<sup>3</sup>



# Liquid Flow Meters

Ultrasonic advantages for process flow measurement



## High-end design

Industrial design is so much more than aesthetics.

### Integrated flow cell

Install and maintain our liquid flow meter more quickly because of its sleek design. Fully enclosed transducers, buffers, junction boxes, and cables not only make the meter better to look at, but make it rugged, compact, and easier to handle.

### Precise design

Optimum locations and exact machining of our liquid flow meter's ports minimize flow disturbance and contribute to its 0.25% accuracy.

### Removable transducers

Our liquid flow meter's transducers can be removed in the field without shutting down production or interfering with your flow measurement.



## Advanced performance

This is ultrasonic flow measurement at its best.

### Three-path technology

Get better accuracy and see more of the flow profile with three-path measurement. An extra path also provides you peace of mind redundancy.

### Engineered for reliability

Put extra-reliable electronics, robust sensors, and a rugged flow cell together, and you get the latest generation of Panametrics flow meters—known for low risk, high accuracy, and thoroughly repeatable measurements.

### State-of-the-art electronics

Communicate seamlessly with the XMT1000's RS485/Modbus® standard digital interfaces or optional HART® 7.0 or Foundation Fieldbus® protocols. Mount the XMT1000 locally or remotely for installation flexibility, and conduct simple software upgrades via a USB connection.



## Low cost of ownership

Ultrasonic performance saves more in the end.

### Optimized process

With no drifting, pressure drop or restriction in the pipe and no moving parts, filters, or strainers, nothing impacts the process or damages the meter.

### Better bottom line

Take care of your assets without the cost common to non-ultrasonic meters. Save on maintenance, installation, and calibration, and make money while your process remains up and running.

### Experience to count on

You know Panametrics for high-end, harsh environment flow measurement. You know Panametrics as a reliable, dependable supplier. Our liquid flow meter brings these together for performance and a cost of ownership competitive with lesser meters.



# Why Z3 ultrasonics?

Ultrasonic technology is the fastest growing flow measurement today. So why is it replacing other technologies?

## The measurement principle

The Z3 uses the transit-time technique for accurate flow measurement. The transducers serve as both signal generators and receivers of an identical number of acoustical pulses. The time between transmission and reception of the signals is measured in both directions.

When liquid is flowing in the pipe, its transit time downstream is less than its transit time upstream. The difference in these times is proportional to the velocity of the flowing liquid and its sign indicates the direction of flow.

## Maintenance-free

Unlike traditional flow technologies, ultrasonic meters do not drift over time so they do not require periodic re-calibration. They do not have moving parts, filters, or strainers that can be damaged by the flowing liquid.

With no calibration or maintenance required, ultrasonic measurement is extremely reliable and cost effective.

## No process interference

Unlike vortex, Coriolis, differential pressure, and turbine flow meters, ultrasonic measurement is non-intrusive. Without restrictions in the pipe, contamination does not damage an ultrasonic meter and pipes can be cleaned without meter removal.

## Better performance

Ultrasonic meters cost less in the long run. They have no pressure drop to waste energy. They measure flow in both directions without the need for more flow meters.

Changes in temperature, pressure, viscosity, and conductivity do not affect ultrasonic meters, which preserves their accuracy and reduces process downtime.

The high turndown ratio of ultrasonic meters avoids the significant cost of requiring additional lengths of piping runs for different flow ranges.

## Easy to install

Wetted flow meter installation is complicated and incorrect setup can impact the reliability and accuracy of the measurement. The Z3 comes fully assembled from the factory and only needs to be bolted into place.





## Advanced XMT1000 electronics

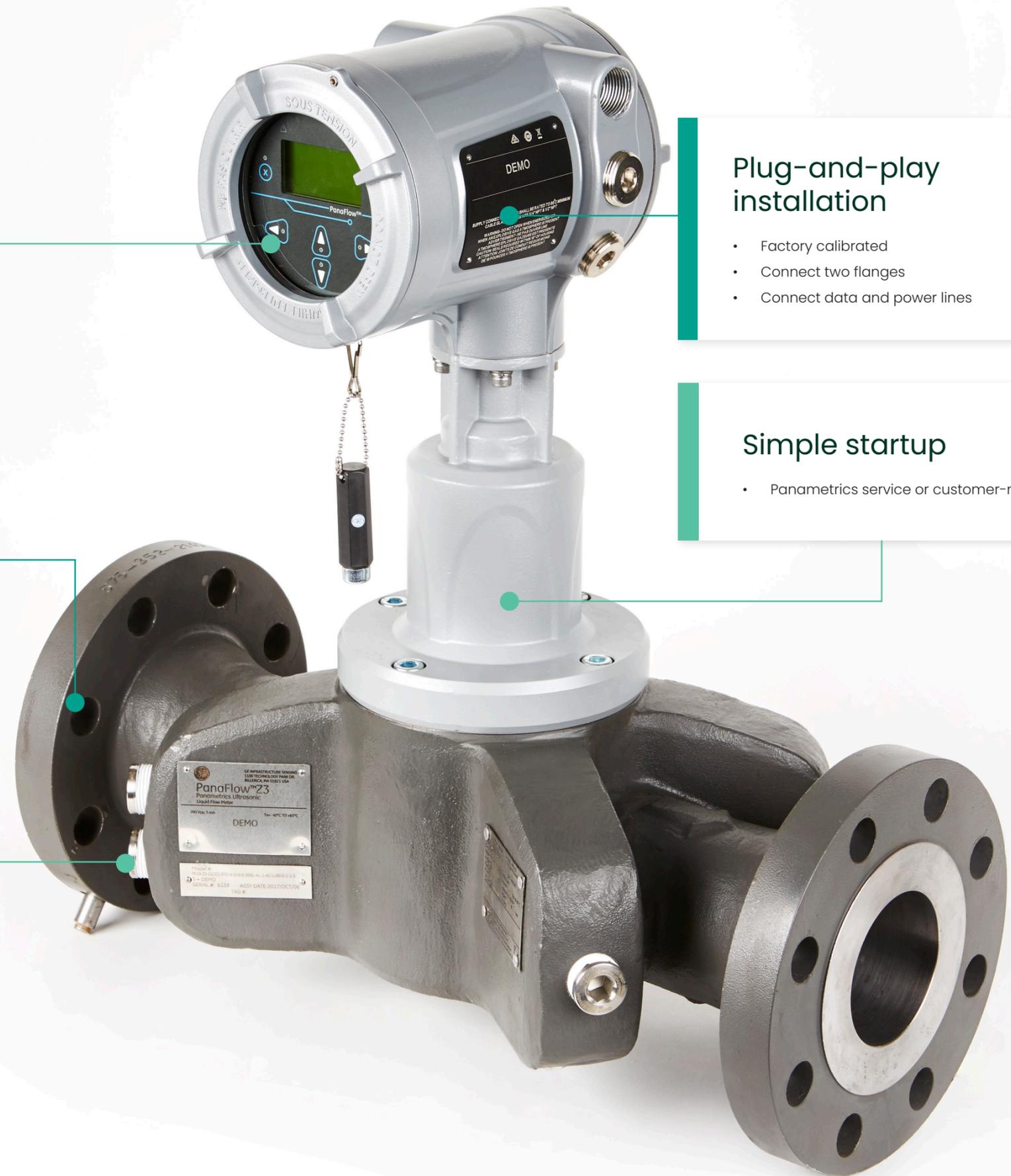
- Local mount with no visible wiring
- Remote mount to expand operating range
- Advanced diagnostics and communications
- Explosion-proof design for robust performance

## Industrially-designed flow cell

- Precision machined ports minimize flow disturbance
- Optimum port locations for accuracy
- Three-path design with 0.25% accuracy

## Patented-technology transducers

- Replaceable at line pressure with no special tools
- No calibration or pressure testing required
- Three independent measurements



## Plug-and-play installation

- Factory calibrated
- Connect two flanges
- Connect data and power lines

## Simple startup

- Panametrics service or customer-managed

# Ready to work for process applications

Designed specifically for low-risk, accurate, and repeatable measurement of process liquids, the capabilities of our liquid flow meter make it the right meter for a number of industries and applications.

## Customers

- Upstream, midstream, and downstream oil and gas
- Chemical
- Petrochemical
- Refining
- Power generation
- District energy/HVAC
- Water/wastewater

## Applications

- Process control and monitoring
- Allocation measurement
- Batching and blending
- Transfer lines
- Cooling water lines
- Pipeline metering
- Loading/unloading
- Plant utilities
- Tank farms
- Irrigation
- Crude refined products

# Our liquid flow meter family



## PanaFlow Z3

Advanced, three-path ultrasonic transducer technology built for a wide variety of applications requiring precise measurements.

- **0.25% accuracy**
- General and hazardous areas
- Field replaceable LX sensors



## PanaFlow LZ

Reliable, cost-effective technology for higher temperature process applications

- **0.5% accuracy**
- General and hazardous areas
- Field replaceable BWT sensors



## PanaFlow HT

Ultra-reliable measurement for extreme temperature conditions and safety-critical applications

- **0.5% accuracy**
- SIL2 and SIL3 certified by design
- Field replaceable BWT sensors



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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