

GE Infrastructure Sensing

Applications

The AquaTrans AT868 liquid flow transmitter is a complete ultrasonic flow metering system for measurement of:

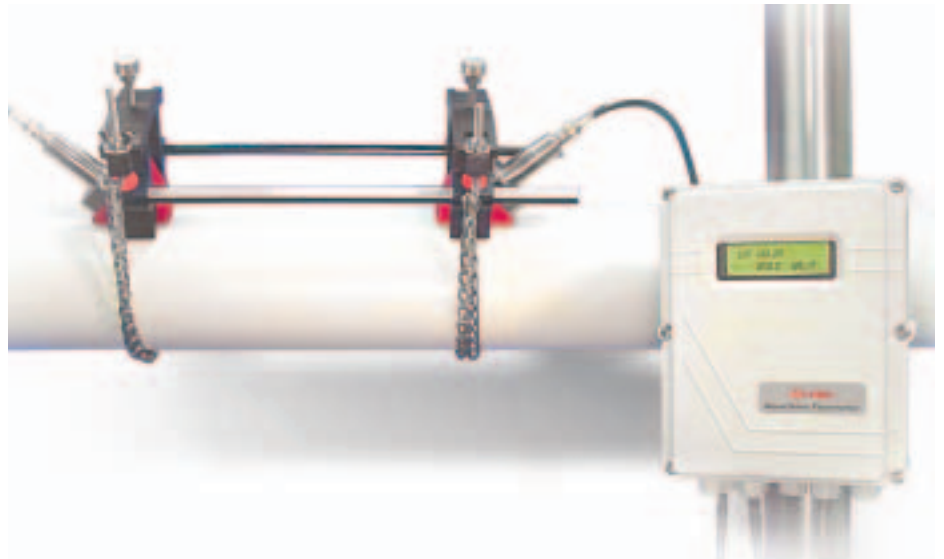
- Potable water
- Wastewater
- Sewage
- Discharge water
- Treated water
- Cooling and heating water
- Other liquids

Features

- Economical nonintrusive flow measurement
- Simple setup and installation
- Suitable for wide range of pipe sizes and materials
- Suitable for lined pipes
- Two-channel/two-path version available
- Velocity, volumetric and totalized flow
- Internal keypad for field programming

GE Panametrics has joined other GE high-technology sensing businesses under a new name —

GE Infrastructure Sensing



AquaTrans™ AT868 Ultrasonic Liquid Flow Transmitter

GE Infrastructure Sensing's AT868 ultrasonic flow transmitter combines state-of-the-art flow measurement capability with a low-cost transmitter package that can be installed right at the process measurement point. It's designed specifically for water and wastewater applications in full pipes.

The all-digital AT868 has no moving parts and requires minimal maintenance. An onboard microprocessor uses patented Correlation Transit-Time™ technology for long-term, drift-free operation. Automatic adjustment to changing fluid properties and dynamically configured operating software simplify programming.

Transit-Time Flow Measurement Technique

The transit-time technique uses a pair of transducers with each transducer sending and receiving coded ultrasonic signals through the fluid. When the fluid is flowing, signal transit-time in the downstream direction is shorter than in the upstream direction; the difference between these transit times

is proportional to the flow velocity. The AT868 measures this time difference and uses programmed pipe parameters to determine flow rate and direction.

Wetted or Clamp-On Transducers

Ultrasonic flow transducers are classified as either wetted or nonwetted (clamp-on). Clamp-on transducers are clamped onto the outside of the pipe and never come into contact with the process fluid. Wetted transducers are mounted into the pipe or flowcell in direct contact with the process fluid.

Clamp-on transducers offer maximum convenience, flexibility and a low installation cost compared to traditional flow metering technologies. With proper installation, wetted transducers provide maximum accuracy (better than 1 percent of reading) in most applications.

Two-Channel Model

An optional second channel provides the capability to measure flow in two pipes or average two paths on the same pipe for increased accuracy.

imagination at work 

Specifications

Operation and Performance

Fluid Types

Acoustically conductive fluids, including most clean liquids, and many liquids with entrained solids or gas bubbles. Maximum void fraction depends on transducer, interrogation carrier frequency, path length and pipe configuration.

Pipe Sizes

- Clamp-on transducers: 0.5 to 300 in. (12.7 mm to 7.6 m) and larger
- Wetted transducers: 1 to 200 in. (25.4 mm to 5 m) and larger

Pipe-Wall Thickness

Up to 3 in. (76.2 mm)

Pipe Materials

All metals and most plastics. Consult GE Infrastructure Sensing for concrete, composite materials, and highly corroded or lined pipes.

Clamp-On Flow Accuracy (Velocity)

- Pipe ID > 6 in. (150 mm):
±1% to 2% of reading typical
- Pipe ID ≤ 6 in. (150 mm):
±2% to 5% of reading typical

Wetted Flow Accuracy (Velocity)

±1% of reading typical

Note: 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

±0.1% to 3% of reading

Range (Bidirectional)

–40 to 40 ft/s (–12.2 to 12.2 m/s)

Rangeability (Overall)

400:1

Note: Specifications assume a fully developed flow profile (typically 10 diameters upstream and 5 diameters downstream of straight pipe run) and flow velocity greater than 1 ft/s (0.3 m/s).

Measurement Parameters

Volumetric flow, totalized flow and flow velocity

Electronics

Flow Measurement

Patented Correlation Transit-Time mode

Enclosure

Epoxy-coated aluminum weatherproof NEMA 4X IP66

Dimensions

Standard: Weight 2 lb (0.9 kg), size (h × w × d) 7.25 × 5.9 × 3.5 in. (184 × 150 × 89 mm)

Channels

- Standard: One channel
- Optional: Two channels (for two pipes or two-path averaging)

Display

2-line × 16-character backlit LCD display, configurable to display up to four measurement parameters in sequence

Keypad

Six-button internal keypad

Power Supplies

- Standard: 85 to 265 VAC, 50/60 Hz
- Optional: 12 to 28 VDC, ± 5%

Power Consumption

20-W maximum

Operating Temperature

–10° to 55°C (14° to 131°F)

Storage Temperature

–40° to 70°C (–40° to 158°F)

Standard Inputs/Outputs

- One 0/4- to 20-mA isolated output per channel, 600-Ω maximum load
- One frequency/pulse rate/totalizer output per channel, optically isolated, 3-A maximum, 100-VDC maximum, 1-W maximum, from 0.1 to 10 kHz

Digital Interfaces

- Standard: RS232
- Optional: RS485 (multiuser)

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

Clamp-On Ultrasonic Flow Transducers

Temperature Ranges

- Standard: –40° to 60°C (–40° to 140°F)
- Optional: –40° to 230°C (–40° to 210°F)

Mountings

Stainless steel chain or strap, welded or magnetic clamping fixtures

Area Classifications

- Standard: General purpose
- Optional: Weatherproof NEMA 4 IP65 submersible

Wetted Ultrasonic Flow Transducers

Temperature Range

–40° to 100°C (–40° to 212°F)

Pressure Range

0 to 3,000 psig (1 to 207 bar)

Materials

- Standard: Stainless steel
- Optional (for Pan-Adapta® Plugs): Titanium, Hastelloy® alloy, Monel® alloy, duplex, CPVC, PVDF and others

Note: Pan-Adapta plugs allow installation and removal of wetted transducers without interrupting the process or emptying the pipe.

Process Connections

- Standard: 1-in. or 3/8-in. NPTM
- Optional: RF flanged, socket weld, fuse bond and others

Mountings

Flanged flowcell, hot tap or cold tap

Area Classifications

- Standard: General purpose
- Optional: Weatherproof NEMA 4 IP65 submersible

Transducer Cables

- Standard: One pair of coaxial cables, type RG62 AU, or as specified for transducer type
- Optional: Lengths up to 1,000 ft (330 m) maximum

Additional Options

PanaView™ PC-Interface Software

The AT868 communicates with a PC through a serial interface and Windows® operating systems. Consult the manual for details on sites, logs, and other operations with a PC.