

## 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

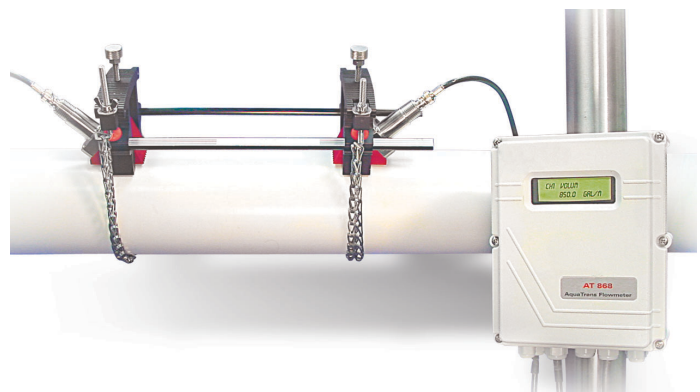
## Features

- Economical non-intrusive 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

# AquaTrans™ AT868

## Panametrics Liquid Flow Ultrasonic Transmitter

AquaTrans AT868 is a Panametrics product. Panametrics has joined other GE high-technology sensing businesses under a new name—GE Industrial, Sensing.



## Liquid Flow Ultrasonic Transmitter

The AquaTrans AT868 liquid flow ultrasonic 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 AquaTrans 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 AquaTrans AT868 measures this time difference and uses programmed pipe parameters to determine flow rate and direction.

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## Wetted or Clamp-On Transducers

Ultrasonic flow transducers are classified as either wetted or non-wetted (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% 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.

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# AT868 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 7.6m) and larger
- Wetted transducers: 1 in 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 for concrete, composite materials, and highly corroded or lined pipes.

### Flow Accuracy (Velocity)

0.5% of reading (achievable with process calibration)

### Typical Clamp-On Flow Accuracy (Velocity)

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

### Typical Wetted Flow Accuracy (Velocity)

±1% of reading

*Accuracy depends on pipe size and installation and whether measurement is one-path or two path.*

### Repeatability

±0.1% to 0.3% of reading

### Range (Bidirectional)

-40 to 40 ft/s (-12.2 to 12.2 m/s)

### Rangeability (Overall)

400:1

*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 Type 4X/IP66

### Dimensions

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

### Channels

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

### Display

2-line x 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

20W maximum

### Operating Temperature

14°F to 131°F (-10°C to 55°C)

### Storage Temperature

-40°F to 158°F (-40°C to 70°C)

### 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, 3A maximum, 100 VDC maximum, 1W maximum, from 0.1 to 10 kHz

# AT868 Specifications

## 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°F to 300°F (-40°C to 150°C)
- Optional: -40°F to 210°F (-40°C to 230°C)

### Mountings

Stainless steel chain or strap, welded or magnetic clamping fixtures

### Area Classifications

- Standard: General purpose
- Optional: Weatherproof Type 4/IP65
- Optional: Submersible IP67/68

## Wetted Ultrasonic Flow Transducers

### Temperature Range

-40°F to 212°F (-40°C to 100°C)

### Pressure Range

0 to 3000 psig (1 to 207 bar)

## Materials

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

*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 Type 4/IP65 submersible

## 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

## Additional Options

### PanaView™ PC-Interface Software

The AquaTrans 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.

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Instructions: Please fill out the fields in      or. Any field with a      block is a required field.

Today's Date:      **GE Sensing Liquid Flowmeter Application Data Sheet**

**Contact Information**

Name:	<span style="background-color: yellow;">    </span>	Phone:	<span style="background-color: yellow;">    </span>
Company:	<span style="background-color: yellow;">    </span>	Fax:	<span style="background-color: yellow;">    </span>
Address:	<span style="background-color: yellow;">    </span>	E-mail:	<span style="background-color: yellow;">    </span>
Installation Address:	<span style="background-color: yellow;">    </span>	Delivery Want	<span style="background-color: yellow;">    </span>
Account Manager/Sales rep (if known)		<span style="background-color: yellow;">    </span>	

**Process Data**

Tag Number(s):	<span style="background-color: yellow;">    </span>							
Stream composition and %:	<span style="background-color: yellow;">    </span>							
Flow Rate:	Units:	<span style="background-color: yellow;">    </span>	Minimum:	<span style="background-color: yellow;">    </span>	Nominal:	<span style="background-color: yellow;">    </span>	Maximum	<span style="background-color: yellow;">    </span>
Viscosity:	Units:	<span style="background-color: yellow;">    </span>	Minimum:	<span style="background-color: yellow;">    </span>	Nominal:	<span style="background-color: yellow;">    </span>	Maximum	<span style="background-color: yellow;">    </span>
Density:	Units:	<span style="background-color: yellow;">    </span>	Minimum:	<span style="background-color: yellow;">    </span>	Nominal:	<span style="background-color: yellow;">    </span>	Maximum	<span style="background-color: yellow;">    </span>
Pressure:	Units:	<span style="background-color: yellow;">    </span>	Minimum:	<span style="background-color: yellow;">    </span>	Nominal:	<span style="background-color: yellow;">    </span>	Maximum	<span style="background-color: yellow;">    </span>
Temperature:	Units:	<span style="background-color: yellow;">    </span>	Minimum:	<span style="background-color: yellow;">    </span>	Nominal:	<span style="background-color: yellow;">    </span>	Maximum	<span style="background-color: yellow;">    </span>
Air or Gas bubbles:	<input type="checkbox"/> NO	<input type="checkbox"/> YES	If yes, please specify % by volume:			<span style="background-color: yellow;">    </span>		
Suspended Solids:	<input type="checkbox"/> NO	<input type="checkbox"/> YES	If yes, please specify % by volume:			<span style="background-color: yellow;">    </span>		
Pipe Orientation:	<input type="checkbox"/> Horizontal Flow		<input type="checkbox"/> Vertical Flow Up		<input type="checkbox"/> Vertical Flow Down			
Approx. Stright run of pipe:	Upstream: <span style="background-color: yellow;">    </span>		Downstream: <span style="background-color: yellow;">    </span>		10 Upstream, 5 Downstream Recommended			
Pipe Details	Pipe Material:	<span style="background-color: yellow;">    </span>	Pipe Size:	<span style="background-color: yellow;">    </span>	Wall Thickness/Pipe Schedule: <span style="background-color: yellow;">    </span>			
	Pipe Lining:	<span style="background-color: yellow;">    </span>	Flange Rating:	<span style="background-color: yellow;">    </span>	<span style="background-color: yellow;">    </span>			
Transducer Connection:	<input type="checkbox"/> Wetted Transducers		<input type="checkbox"/> Clamp-On					
Transducer Location:	<input type="checkbox"/> Indoors		<input type="checkbox"/> Outdoors		<span style="background-color: yellow;">    </span>			
	<input type="checkbox"/> Hazardous		<input type="checkbox"/> Nonhazardous		<input type="checkbox"/> Submersible			
Flowcell Required:	<input type="checkbox"/> NO	<input type="checkbox"/> YES	(If Yes, complete FLOWCELL APPLICATION DATA SHEET)					

**Measurement Parameters**

Outputs:	<input type="checkbox"/> 0 to 20 mA	<input type="checkbox"/> 4 to 20 mA	<input type="checkbox"/> 4 to 20 mA (loop)	<input type="checkbox"/> Other	Type other output <span style="background-color: yellow;">    </span>			
	<input type="checkbox"/> Foundation Fieldbus		<input type="checkbox"/> HART		<input type="checkbox"/> Modbus/RS485		<input type="checkbox"/> Modbus/TCP	
	<input type="checkbox"/> Ethernet	<input type="checkbox"/> OPC Server	<input type="checkbox"/> PanaView/RS232	<input type="checkbox"/> PanaView/RS485	<input type="checkbox"/> Pulse/ Frequency			
Analog Inputs:	<input type="checkbox"/> 4 to 20 mA		<input type="checkbox"/> Direct RTD					
Alarms:	<input type="checkbox"/> None		<input type="checkbox"/> High/low/Fault		<input type="checkbox"/> Other			
Quantities of Each I/O:	<span style="background-color: yellow;">    </span>							

**Electronics Requirements**

Area Classification:	<input type="checkbox"/> Non Hazardous		<input type="checkbox"/> Hazardous					
	If Hazardous, specify area rating: <span style="background-color: yellow;">    </span>							
Housing Requirements:	<input type="checkbox"/> Weatherproof, corrosion-resistant NEMA 4X				<input type="checkbox"/> Explosionproof NEMA 7			
	<input type="checkbox"/> Portable		<input type="checkbox"/> Intrinsically Safe		<input type="checkbox"/> Other <i>List Requirements for Other</i>			
Ambient Conditions (Corrosive gas, temperature, humidity): <span style="background-color: yellow;">    </span>								
Cable Distance from electronics to transducers (1,000 ft maximum): <span style="background-color: yellow;">    </span>								
Power Available:	<input type="checkbox"/> 100/120 VAC	<input type="checkbox"/> 220/240 VAC	<input type="checkbox"/> 12 to 24 VDC	<input type="checkbox"/> Loop Powered				
Desired Accuracy (% of reading):	<span style="background-color: yellow;">    </span>							
Desired Repeatability (% of reading):	<span style="background-color: yellow;">    </span>							
Special Requirements:	<span style="background-color: yellow;">    </span>							

**Insert Nonproprietary Isometric or Sketch of Installation below or Attach PDF of Isometric as a separate file**

