CLAMP-ON ULTRASONIC FLOW METER

Ideal for measuring the flow rate of clean, non-aerated fluids in full pipes such as water, chemicals and oils.



FEATURES

- · Transit Time Ultrasonic Principle of Measurement
- 1/2" through 48" Pipe Size Range
- Simple 5-Key Configuration (English, French, Spanish selectable)
- 4-20mA/0-5V Analog Output (not available on portable unit)
- 26 Million-Point Data Logger
- Password Protected Backlit LCD Display
- Watertight & Dust Tight NEMA4X (IP66) Polycarbonate Enclosure
- Modbus® RTU or HART® Optional (not available on portable unit)
- CE, UL/EN 61010-1 Approvals

TECHNICAL SPECIFICATIONS

BENEFITS

Non-Contacting Flow Measurement

Ultrasonic transducers clamp on the outside of pipes, allowing for installation without system shutdown, and produces no pressure drop.

User-Friendly Operating System

Built-in keypad and simple menu system for fast and easy programming of pipe diameter, pipe material, liquid type, and measurement units. All settings, calibration values, and totalizer are retained during power interruptions.

Industrial Automation Protocols

Modbus RTU and HART communications allow for instantaneous flow rate, volumentotal, run hours, and diagnostic information.

Wide Range of Applications

Compatible with a wide range of pipe materials and fluids, including treated, raw, cooling and low-conductivity water, water/glycol solutions, chemicals, and hydraulic, diesel and fuel oils.

Safe in Wet Locations

IP67 (NEMA 6) rating allows for safe operation during temporary periods of submergence.

Measuring Accuracy

 $\pm 1.0\%$ of reading from 1.5 to 40 ft/sec (0.5 to 12.0 m/sec) and ± 0.015 ft/sec (± 0.0046 m/sec) for velocity below 1.5 ft/sec (0.46 m/sec).

Repeatability & Linearity

±0.25%

Flow Measuring Range

±0.07-40 ft/sec (±0.02-12 m/sec)

Pipe Diameter

SE16A: 0.5" to 4" (15 mm to 100 mm) SE16B: 2" to 48" (50 mm to 1200 mm)

Pipe Materials

Any metal or plastic sonic conducting materials, including carbon steel, stainless steel, ductile iron, concrete lined ductile iron, cast iron, PVC, HDPE, PVDF, fiberglass, copper, brass, aluminum, and pipes with bonded liners, including epoxy, rubber, and PTFE.

Operating Frequency

SE16A: 2.56 MHz SE16B: 1.28 MHz

Operating Temperature Range

Transducer:

-40°F to 300°F (-40 to 150°C) Electronics:

-5°F to 140°F (-20 to 60°C)

Power Input

100-240VAC 50-60Hz, 10 VA max. Optional: 9-32VDC, 10 Watts max.

Analog Output

Isolated 4-20mA/0-5V, 1000 ohm load max., programmable offset

Control Relays

2 Relays, form C dry contacts rated 5 amp SPDT; progammable flow alarm an/or flow proportional pulse Optional: 4 additional (6 total), rated 5 amp SPDT

Hazardous Area Certifications

Non-Incendive for Class I Division 2, Groups A,B,C,D Optional: Intrinsically safe for Class I Division 1, Groups A,B,C,D

Approximate Shipping Weight

12 lbs. (5.5kg)



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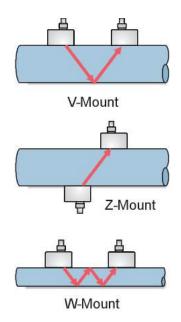
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MEASUREMENT OPERATION

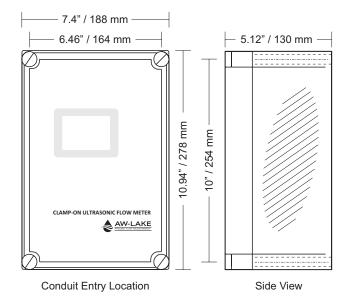
The Transit Time Flow Meter measures flow from the outside of pipes. It works by measuring the time of flight difference for ultrasonic sound pulses transmitted from one transducer to another. Depending on the mounting configuration, the signal may cross the pipe once, twice, or four times. The time between transmitted and received signals is precisely measured by the flow meter. Ultrasonic signals are sent upstream and then downstream with the transducers alternating their functions as transmitters/receivers.

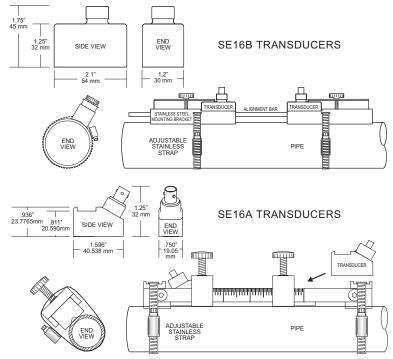
The transit time in the direction of flow is always faster than the transit time against the flow. By comparing these differences with precision timing circuits, the meter is able to accurately calculate the flow rate. Because the ultrasonic signal is transmitted across the pipe, an average of the flow profile is calculated.

The transducers can be mounted on vertical or horizontal pipes, and the pipe must be full. Choice of V, Z, or W mounting method depends on the application and pipe diameter.



DIMMENSIONS



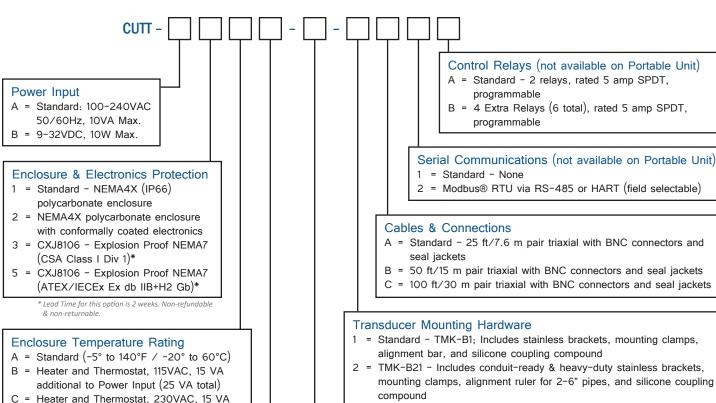




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PART NUMBER GUIDE



Intrinsic Safety Rating

- 1 = Standard No certification
- 2 = QTY 2 ISB Intrinsic Safety Barriers for transducer installation in Class 1 Div 1, Groups C, D; Class 2, Groups E, F, G; Class 3; Type 4

additional to Power Input (25 VA total)

3 = QTY 2 ISB Intrinsic Safety Barriers for transducer installation in ATEX/IECEx Zone 0, Ex ia IIB T4 Ga

Transducers

- = Standard SE16B pair, clamp-on for 2" to 10" (50 mm to 250 mm) pipes
- A1 = SE16A pair, clamp-on for 0.5" to 2" (15 mm to 50 mm) pipes, BNC connectors and IP65 rating
- A2 = SE16A pair, clamp-on for 0.5" to 2" (15 mm to 50 mm) pipes, sealed cable with IP67 rating, for installation in wet environments
- C = SE16C pair, recommended for 12" to 48" (300 mm to 1200 mm) pipes, suitable for 4" to 48" (100 mm to 1200 mm) pipes, BNC connectors and cable strain-relief fittings for IP67 rating

- mounting clamps, alignment ruler for 2-6" pipes, and silicone coupling
- 3 = TMK-B22 Includes conduit-ready & heavy-duty stainless brackets, mounting clamps, alignment ruler for pipes ≥ 8", and silicone coupling compound
- 4 = TMK-A1 Includes stainless track mount with built-in ruler, mounting clamps, and silicone coupling compound. Standard option for SE16A transducer pair.
- 5 = TMK-C1 Includes stainless brackets, mounting clamps, alignment bar with built-in ruler, and coupling tape for permanent installations. For 12" to 18" (300 mm to 450 mm) pipes.
- 6 = TMK-C2 Includes stainless brackets, mounting clamps, alignment bar with built-in ruler, and coupling tape for permanent installations. For 20" to 48" (500 mm to 1200 mm) pipes.

Products may be subject to change without notice - Contact factory for the most up-to-date product information.

