CLAMP-ON ULTRASONIC FLOW METER
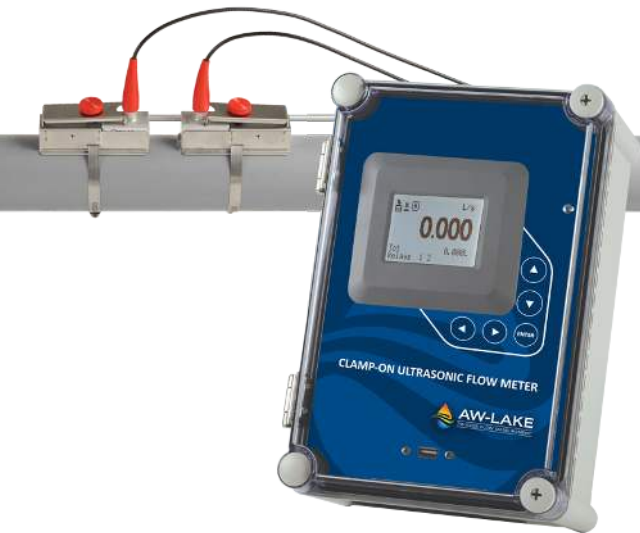*Ideal for measuring the flow rate of clean, non-aerated fluids in full pipes such as water, chemicals and oils.*

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
- 26 Million-Point Data Logger
- Password Protected Backlit LCD Display
- Watertight & Dust Tight NEMA4X (IP66) Polycarbonate Enclosure
- Modbus® RTU or HART® Optional
- CE, UL/EN 61010-1 Approvals

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.

TECHNICAL SPECIFICATIONS

Measuring Accuracy
±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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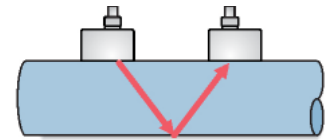
CLAMP-ON ULTRASONIC FLOW METER
Ideal for measuring the flow rate of clean, non-aerated fluids in full pipes such as water, chemicals and oils.

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.

V-Mount

Z-Mount

W-Mount

DIMMENSIONS

7.4" / 188 mm
6.46" / 164 mm
5.12" / 130 mm
10.94" / 278 mm
10" / 254 mm

CLAMP-ON ULTRASONIC FLOW METER
AW-LAKE
PROCESS FLOW MEASUREMENT

Conduit Entry Location

Side View

1.75"
45 mm
1.25"
32 mm
SIDE VIEW
END VIEW
2.1"
54 mm
1.2"
30 mm

SE16B TRANSDUCERS

END VIEW

STAINLESS STEEL MOUNTING BRACKET
TRANSDUCER
ALIGNMENT BAR
TRANSDUCER
ADJUSTABLE STAINLESS STRAP
PIPE

.936"
23.7765mm
.811"
20.590mm
SIDE VIEW
1.25"
32 mm
END VIEW
1.596"
40.538 mm
.750"
19.05 mm

SE16A TRANSDUCERS

TRANSDUCER

END VIEW
ADJUSTABLE STAINLESS STRAP
PIPE

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PART NUMBER GUIDE
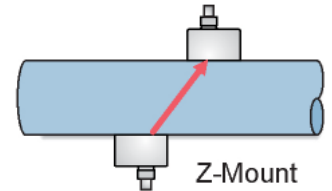
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Power Input
A = Standard: 100-240VAC 50/60Hz, 10VA Max.
B = 9-32VDC, 10W Max.

Enclosure & Electronics Protection
1 = Standard – NEMA4X (IP66) polycarbonate enclosure
2 = NEMA4X polycarbonate enclosure with conformally coated electronics
3 = CXJ8106 – Explosion Proof NEMA7 (non-returnable & non-refundable)∗

∗ Lead Time for this option is 2 weeks.

Enclosure Temperature Rating
A = Standard – (-5° to 140°F / -20° to 60°C)
B = Heater and Thermostat, 115VAC, 15 VA additional to Power Input (25 VA total)
C = Heater and Thermostat, 230VAC, 15 VA additional to Power Input (25 VA total)

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

Transducers
B = Standard – SE16B pair, clamp-on for 2" to 48" (50 mm to 1200 mm) pipes
A1 = SE16A pair, clamp-on for 0.5" to 4" (15 mm to 100 mm) pipes, BNC connectors and IP65 rating
A2= SE16A pair, clamp-on for 0.5" to 4" (15 mm to 100 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
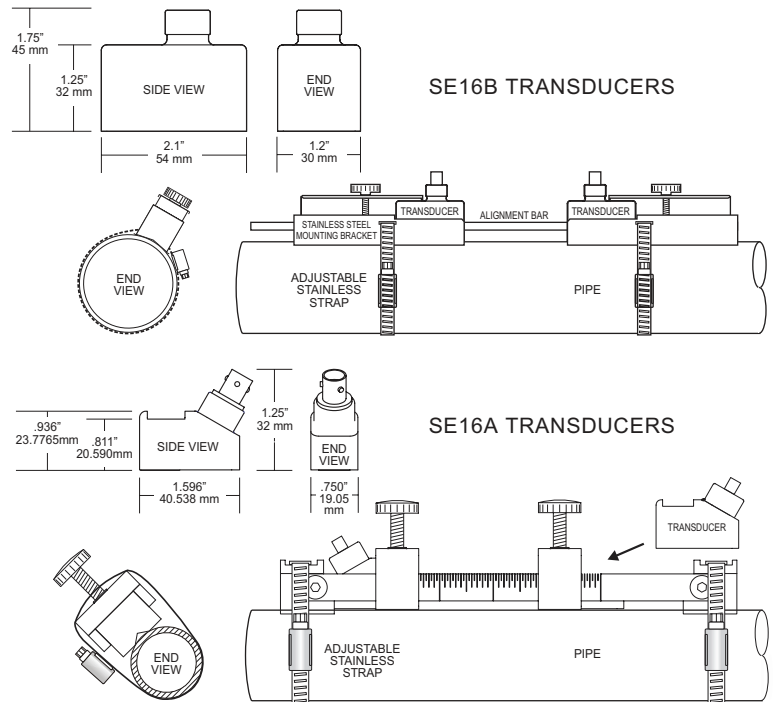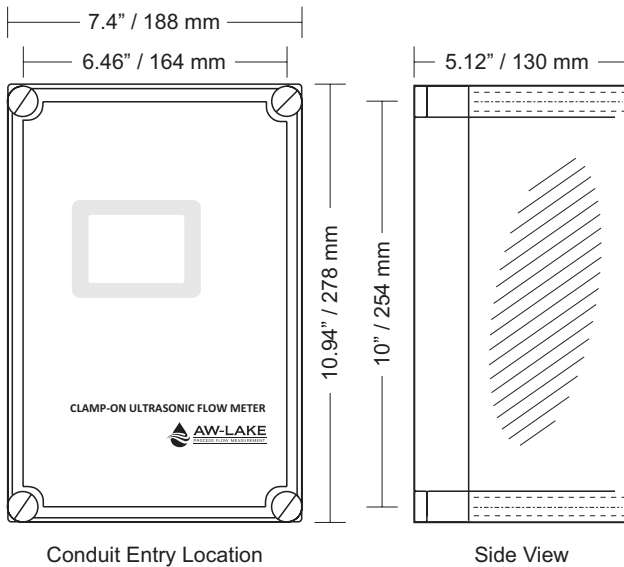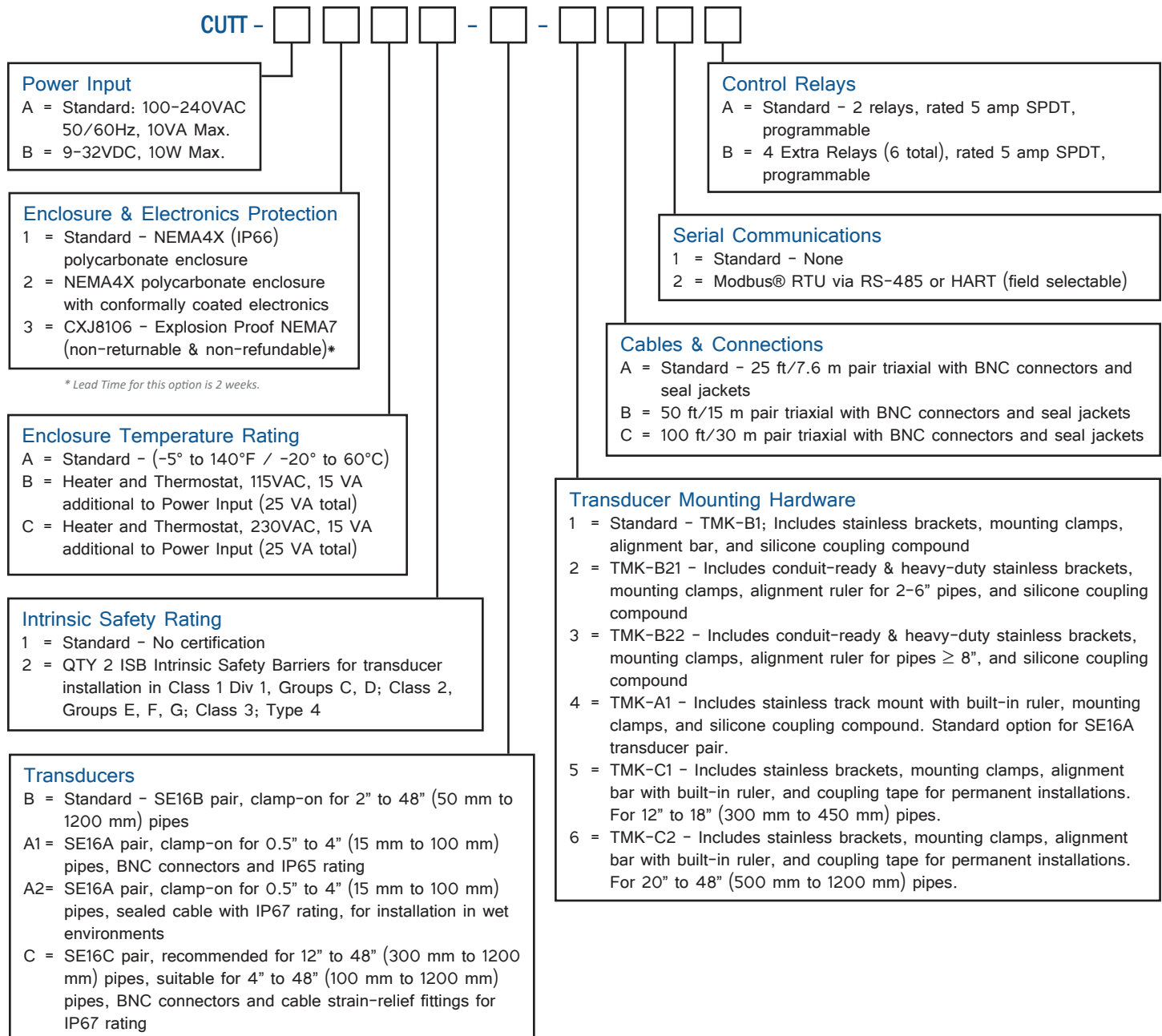
Control Relays
A = Standard – 2 relays, rated 5 amp SPDT, programmable
B = 4 Extra Relays (6 total), rated 5 amp SPDT, programmable

Serial Communications
1 = Standard – None
2 = Modbus® RTU via RS-485 or HART (field selectable)

Cables & Connections
A = Standard – 25 ft/7.6 m pair triaxial with BNC connectors and seal jackets
B = 50 ft/15 m pair triaxial with BNC connectors and seal jackets
C = 100 ft/30 m pair triaxial with BNC connectors and seal jackets

Transducer Mounting Hardware
1 = Standard – TMK-B1; Includes stainless brackets, mounting clamps, alignment bar, and silicone coupling compound
2 = TMK-B21 – Includes conduit-ready & heavy-duty stainless brackets, mounting clamps, alignment ruler for 2-6" pipes, and silicone coupling compound
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.

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