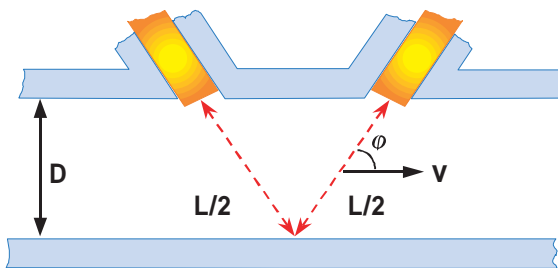


S.Sonic Single Path Ultrasonic Flow Meter



The Instromet S.Sonic Single Path Ultrasonic Flow Meter is a device ideally suited for a variety of gas measurement applications. Sophisticated transducers utilizing a unique bounce path configuration along with digital electronics gives the S.Sonic low uncertainty ($\pm 1.0\%$) with excellent repeatability and linearity characteristics. The S.Sonic is recommended for non-custody applications. It is available in line sizes from 4" and all ANSI ratings. It can be configured for retractable and non-retractable transducers. The absence of moving parts makes it a very low maintenance meter. For optimal performance, the installation of a flow conditioning plate or system is recommended.

Theory of Operation



Travel Time Equations

$$t_D = \frac{L}{c + v \cdot \cos \phi} \quad t_U = \frac{L}{c - v \cdot \cos \phi}$$

Velocity Equation

$$\hat{v} = \frac{2 \cdot \cos \phi}{\left(\frac{1}{t_D} - \frac{1}{t_U} \right)}$$

Using the Absolute Digital Time Travel method (ADTT), the flow meter measures fluid flow by comparing the time taken by an ultrasonic pulse to travel from t_D and t_U . The larger the difference in time taken, the greater the velocity or flow of the fluid.

FEATURES

- ▲ No pressure drop
- ▲ Wide rangeability/turn down ratio 50:1
- ▲ Bi-directional flow
- ▲ No moving parts
- ▲ Very low cost ownership (maintenance)
- ▲ Insensitive to contamination
- ▲ Interfaces with major flow computer mfg.
- ▲ Insensitive to pulsating flows

APPLICATIONS

- ▲ Underground (natural) gas storage
- ▲ Gas compressor control
- ▲ Gas processing plants
- ▲ Measurement and regulation stations
- ▲ In-plant metering
- ▲ Power plants
- ▲ Check measurement
- ▲ Pipeline leak detection
- ▲ System balancing
- ▲ Gas well flowline measurement

STANDARD METER SPECIFICATIONS: **

OUTPUTS: Four pulse outs: 0 to 10,000 Hz; Digital: RS 485/232; Modbus RS 232/485
PERFORMANCE: Rangeability of 2' to 100'/sec, .6m to 30m per sec.
 Accuracy within 1.0%.
 Repeatability equal or <0.2%, Bi-directional flow.
 Velocity Range: -100' to 100' per second, -30m to 30m per second.
 Extended Range of 1' to 120'/sec.; 0.3m to 36m/sec.
RESPONSE TIME: 1 update per second.
APPROVALS: FM Class, Div 1, Group C,D.
POWER: 12/24 VDC, 7 Watts consumption

Included with each meter:

- Frequency Splitter Card
- Telebyte Converter
- Uniform software program for monitoring and configuring flow meter with a laptop computer

STANDARD SPOOL PIECE SPECIFICATIONS:

- ▲ Body design code: CFR 49 Part 192**
- ▲ Flange design code: ANSI B16.5 or MSS SP 44
- ▲ Design temperature: -20°F to 200° F, -28°C to 93° C (meter body only)
- ▲ Design factor: 0.5
- ▲ Design pressure: 1480 PSIG, 100 Bar for 600 ANSI**
- ▲ Testing pressure: Standard; 1.5 x Design Pressure for 8 hours.
- ▲ Transducer ratings: Standard: 220 to 2250 PSIG**, -20°F to 176°F; 15 to 172 Bar, -28°C to 80°C
- ▲ Sandblasting: To near white metal
- ▲ Internal coating: Rust preventative Solvent
- ▲ External coating: Standard; Ameron Amercoat 385, Light Gray, DFT 4 - 6 mils.

** Additional design codes, ANSI or pressures and transducers ratings available, please contact factory for specifications.

METER MATERIAL AND DIMENSIONAL SPECIFICATION

SIZE ANSI 600	ID Inches / mm	Length Inches / mm	Weight Lbs / Kg	Body Materials	Flange Materials
3"	3.068" / 77.93 mm	40" / 1016 mm	156 lbs / 71 Kg	ASTM A 106 Gr. B	ASTM A105
4"	4.026" / 102.10 mm	40" / 1016 mm	203 lbs / 92 Kg	ASTM A 106 Gr. B	ASTM A105
6"	6.065" / 154.05 mm	30" / 1762 mm	283 lbs / 130 Kg	ASTM A 106 Gr. C	ASTM A105
8"	7.981" / 202.72 mm	40" / 1016 mm	400 lbs / 182 Kg	API 5L X42	ASTM A694 F42
10"	10.020" / 254.51 mm	40" / 1016 mm	572 lbs / 260 Kg	API 5L X52	ASTM A694 F52
12"	11.938" / 303.23 mm	40" / 1016 mm	681 lbs / 310 Kg	API 5L X52	ASTM A694 F52
16"	15.000" / 381.0 mm	48" / 1219.2 mm	1109 lbs / 504 Kg	API 5L X52	ASTM A694 F52
20"	19.000" / 482.6 mm	60" / 1524.0 mm	1645 lbs / 747 Kg	API 5L X60	ASTM A694 F60
24"	22.876" / 581.05 mm	72" / 1828.8 mm	2396 lbs / 1087 Kg	API 5L X65	ASTM A694 F65
30"	28.750" / 730.25 mm	72" / 1828.8 mm	3581 lbs / 1625 Kg	API 5L X75	ASTM A694 F75