



ONICON

Flow and Energy Measurement

FT-4600 INLINE ULTRASONIC FLOW METER

The FT-4600 series is a family of inline flow meters that provide accurate, reliable flow measurement for a variety of applications.



TAILORED SOLUTION



ON TIME DELIVERY



BEST CUSTOMER SERVICE

- Chilled Water • Hot Water • Steam Condensate •
- Domestic Water • Condenser Water • Water/Glycol Solutions •
- Process Application Water Flow •

DESCRIPTION

The FT-4600 Series Flow Meters provide highly accurate flow measurement in water and water/glycol heating and cooling systems. Each meter includes new integral inline flow sensors and a precision temperature sensor. The modular design also features a LED alarm for meter diagnostics and a centralized board with connections via terminal blocks.

Minimum Straight Run - The FT-4600's compact size and minimum straight run requirements (0 pipe diameters after elbows, expanders, or reducers) allow it to be installed in crowded or hard-to-reach places including mechanical rooms, ceilings, underfloor, and fan coil units.

FEATURES

Reliable No-Moving-Parts Design - Wetted transducers measure the ultrasonic signal transit time differential, which correlates directly to the flow rate. The direct beam path orientation significantly enhances signal strength and long term reliability.

Highly Accurate Over a Wide Flow Range - The flow sensor is accurate to within $\pm 1\%$ of reading over the normal (25:1 turndown) operating range and within $\pm 2\%$ of reading over an extended (100:1 turndown) range.

LED Alarm for Meter Diagnostics - The bright, easy-to-see LED provides meter diagnostics to alert the end user without the need of opening the enclosure. The LED also makes locating the meter easier in dark spaces.

Modular Design - The FT-4600 is the first modular inline ultrasonic meter in the market. Major electric components are now located on a centralized board, connected via terminal blocks. This feature allows the meter to be serviced without removing it from the pipe or causing any impedance to daily operations.

Transient Absorbance Diode - The transient absorbance diode adds protection against high sources of noise such as lighting.

Glycol Compensation - The meter will provide the best accurate reading by auto-compensating for water/glycol mixtures on hydronic systems. Even if the conditions change over time, the FT-4600 will adapt to the new glycol percentage to report the correct flow measurement.

CALIBRATION

Each FT-4600 is calibrated in our ISO 17025 accredited calibration lab. An ISO 17025 accredited calibration facility provides confidence in measurement results, compliance regulations, and improved efficiency. Each FT-4600 comes with an ISO 17025 accredited calibration certificate that includes measurement uncertainty, accuracy checks and provides an extra layer of calibration on top of NIST* traceable procedures.

APPROVALS

- FCC: Part 15, Subpart B
- ANSI/NSF 61 & 372
- EN 61326-1:2003, EN 55011:2009



METER DESIGN DETAILS

Meter Sizes with Flow Ranges in GPM						
Meter Size	Process Connection Type	Typical Design Flow	1% of Rate Range	2% of Rate Range	Min Flow	C _v
(Nominal Size)		(gpm)	(gpm)	(gpm)	(gpm)	(gpm)
1/2"	Male NPT	6.6	0.6 - 15	0.15 - 0.6	0.03	6.08
3/4"	Male NPT	6.6	0.6 - 15	0.15 - 0.6	0.03	6.08
3/4" (high flow)	Male NPT	11	1 - 25	0.25 - 1	0.05	8.81
1"	Male NPT	11	1 - 25	0.25 - 1	0.05	8.81
1" (high flow)	Male NPT	15.4	1.4 - 35	0.35 - 1.4	0.07	12.17
1 1/4"	Male NPT	26.4	2.4 - 60	0.6 - 3	0.12	20.26
1 1/2"	Male NPT	44	4 - 100	1 - 5	0.2	33.85
2"	Male NPT	66	6 - 150	1.5 - 8	0.3	101.2
2 1/2"	Class 150 Flange	110	12 - 225	2.25 - 12	0.5	156.2

*National Institute of Standards and Technology

SPECIFICATIONS*

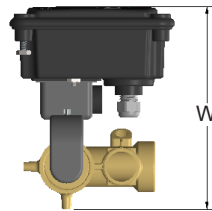
ACCURACY	±1% of reading over 25:1 turndown ±2% of reading over 100:1 turndown Repeatability: ≤ ± 0.2%
OVERALL FLOW RANGE	500:1 turndown
SENSING METHOD	Direct beam path wetted ultrasonic sensors utilizing differential transit time velocity measurement
METER SIZES	½ - 2½" nominal diameter
ELECTRONIC ENCLOSURE	Polycarbonate NEMA4
FLOW BODY AND SENSOR MATERIAL	Lead-free brass flow body, (PPS) with 40% glass-reinforced transducer
PIPING SYSTEM CONNECTIONS	Male NPT threads 2½" meter provided with ANSI Class 150 raised face flanges
TEMPERATURE SENSORS	2-wire 1000Ω platinum RTD
FLUID TEMPERATURE RANGE	0°F to 250°F
AMBIENT TEMPERATURE RANGE	-13°F to 131°F
MAXIMUM OPERATING PRESSURE	400 psi
PRESSURE DROP	Less than 1 psi at 4 ft/s, decreasing at lower velocities
POWER SUPPLY REQUIREMENTS	20-28V AC/DC; 50/60 Hz, 5 VA maximum
ISOLATED ANALOG OUTPUT	Configurable as 4-20mA (non-isolated) Optional 0-5 V or 0-10 V output
ISOLATED TOTALIZING SOLID STATE CONTACT CLOSURE PULSE OUTPUTS	Contact ratings: 50mA, 30 VDC maximum Contact Pulse duration: 1000 ms

* SPECIFICATIONS subject to change without notice.

DIMENSIONS



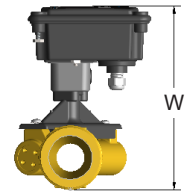
TOP VIEW



SIDE VIEW



TOP VIEW



SIDE VIEW

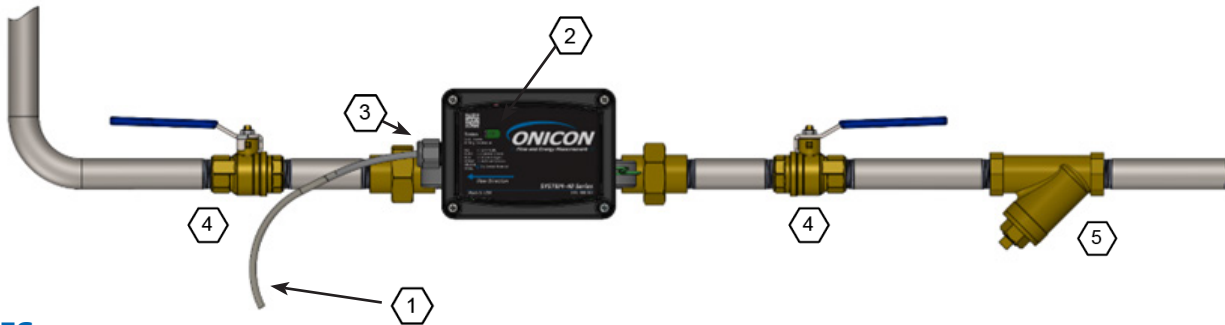
½" - 1" METER DIMENSIONS				
Size	L Total	L	W	H
½"	11.2"	7.48"	5.55"	4.50"
¾"	11.7"	7.48"	5.55"	4.50"
¾" high flow	11.7"	7.48"	5.55"	4.50"
1"	12.3"	7.48"	5.55"	4.50"
1" high flow	15"	10.23"	5.55"	4.65"

1 ¼" - 2 ½" METER DIMENSIONS				
Size	L Total	L	W	H
1 ¼"	15.25"	10.20"	6.42"	4.92"
1 ½"	17.00"	11.80"	6.68"	5.00"
2"	17.60"	11.80"	7.09"	5.14"
2 ½"*	11.81"	10.23"	9.25"	7.00"

*2 ½" meter provided with flanged connections.

TYPICAL FT-4600 INSTALLATION

(Meter may be installed in either supply or return line)



NOTES

- ① **Input Power**
20-28V AC/DC, 50/60 Hz VA maximum
- ② **LED Indicator**
Provides easier commissioning and troubleshooting
- ③ **Output Signals**
The meter provides an analog and pulse output. Analog signal can be configured for 4-20mA, 0-10V, or 0-5V
- ④ **Isolation valves**
Not provided by ONICON
- ⑤ **Y strainer upstream of flow meter**
Not provided by ONICON

METER ORDERING INFORMATION

Meter Model Number Coding = FT-4600-AAA-BCD-EF-(SPC)

FT-4600 = Inline Ultrasonic Flow Meter

AAA = Nominal Meter Size in Inches

- 050 = 1/2"
- 340 = 3/4"
- 341 = 3/4" High Flow
- 010 = 1"
- 011 = 1" High Flow
- 130 = 1 1/4"
- 150 = 1 1/2"
- 020 = 2"
- 250* = 2 1/2"

B = Process Connection Type

- 0 = NPT Threads
- 1 = ANSI Class 150 Flange (Required for 2 1/2" meter. NOT available on 1/2" to 2" meters)

C = Display / Interface**

- 0 = NEMA4 Enclosure with 1/2" NPT Conduit Adapter, Without Display (Default)
- 2 = NEMA4 Enclosure with Strain Relief Cord Grip, Without Display

D = Input Power

- 0 = 24 V AC/DC

E = Serial Communications

- 0 = None

F = Analog & Pulse Input/Output Configuration

- 9 = One (1) Pulse Output & One (1) Analog Output

SPC = Special Configuration

*If AAA = 250, Process Connection type MUST = 1 (ANSI 150)

**If C = 0 or 2, E MUST = 0 and F MUST=9