



# 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.



We believe in our products, so should you.

**1 YEAR NO FAULT WARRANTY**  
**3 YEAR MANUFACTURER WARRANTY**



FACTORY CONFIGURED



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** - Programmable for glycol type and % to ensure the most accurate readings. Pre-programmed from the factory for ease of install and field adjustable for serviceability / system flexibility over the life of the install.

**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 <sub>v</sub>
(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\***

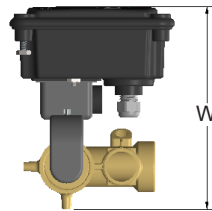
ACCURACY	±1% of reading over 25:1 turndown ±2% of reading over 100:1 turndown Repeatability: ≤ ± 0.2%
OVERALL FLOW RANGE	500:1 turndown
SENSING METHOD	Direct beam path wetted ultrasonic sensors utilizing differential transit time velocity measurement
METER SIZES	½ - 2½" nominal diameter
ELECTRONIC ENCLOSURE	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
ANALOG OUTPUT	Configurable as 4-20mA (non-isolated, active) 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**



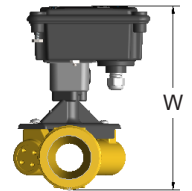
**TOP VIEW**



**SIDE VIEW**



**TOP VIEW**



**SIDE VIEW**

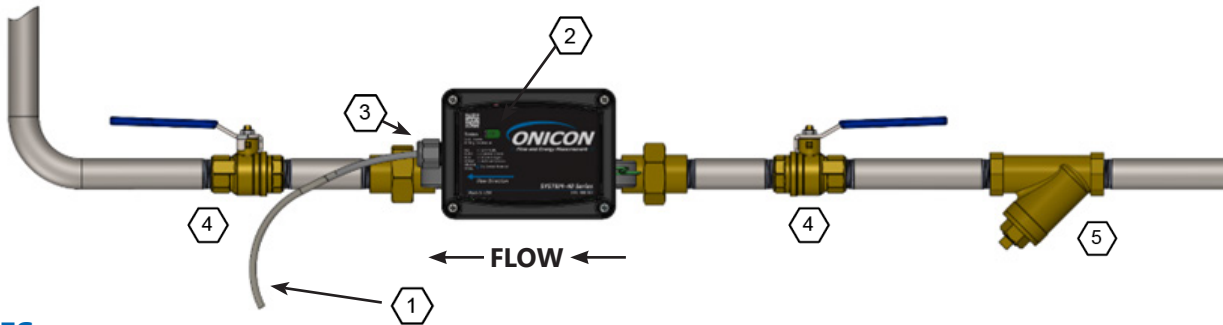
½" - 1" METER DIMENSIONS				
Size	L Total	L	W	H
½"	11.2"	7.48"	5.55"	4.50"
¾"	11.7"	7.48"	5.55"	4.50"
¾" high flow	11.7"	7.48"	5.55"	4.50"
1"	12.3"	7.48"	5.55"	4.50"
1" high flow	15"	10.23"	5.55"	4.65"

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