F-5500

THERMAL MASS FLOW METER

ONICON's F-5500 Series Thermal Mass Flow Meters provide accurate and reliable flow measurement for natural gas, compressed air, and other industrial gas applications.

• Natural Gas • Compressed Air • Industrial Gases •

DESCRIPTION

ONICON's F-5000 Series Thermal Mass Flow Meters provide accurate mass flow measurement of natural gas, compressed air and other industrial gases. The proprietary sensor design measures mass flow directly and does not require additional pressure or temperature compensation to deliver accurate flow rate and total data.

The F-5500 is available as an inline or an insertion style meter and includes an easy to operate user interface/display. The standard version of the meter is provided with a 4-20 mA analog output and an RS485 interface that is field configurable for BACnet® MS/TP or Modbus® RTU. A second output signal configuration is available that includes a 4-20 mA analog output and a programmable pulse output. The pulse output model is also available with HART.

APPLICATIONS

Accurate sub-metering of natural gas & propane for:

- Tenant space usage
- Boiler efficiency
- Campus monitoring

Also ideal for monitoring:

- Compressed Air
- Medical gases
- Other industrial gases

CALIBRATION

Every ONICON flow meter is wet calibrated in a flow laboratory against standards that are directly traceable to NIST*. A certificate of calibration accompanies every meter.

* National Institute of Standards and Technology

** Installations must comply with federal, state and municipal building codes. Review all proposed combustible gas installations with your local code enforcement officials before attempting to install.

FEATURES

BACnet MS/TP or MODBUS RTU - The standard F-5500 includes an RS485 output that provides BACnet MS/TP or Modbus RTU. Data reported to the network includes flow rate and total, temperature and elapsed time since reset.

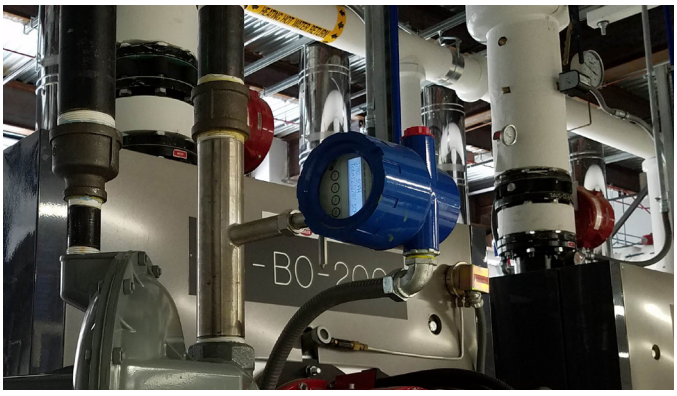
User Friendly Interface / Display - The bright, easy-to-read, backlit display and intuitive menu structure simplify page navigation and allow for field programming. Free utility software is also available for programming and data logging.

Provides for Field Validation of Calibration - F-5500 internal diagnostic functions include a zero flow calibration check. This fast, easy to perform test allows for field validation of the factory zero flow calibration. The utility software provided with the meter allows you to print a certificate validating the test results.

Insertion Meters Can Be Installed Without Interrupting Gas Service ** **-** ONICON's hot tap design allows for installation without interruption to the gas service. The meter can also be removed for service without disrupting flow.

Highly Accurate Over a Wide Operating Range - Our proprietary direct digital control sensing circuitry is very stable yet highly responsive to changes in flow. This design allows for accurate flow measurement over a very wide operating range (over 1000:1 for the inline version). It also makes the meter ideal for measuring low flow rates.

Excellent Value - ONICON insertion style meters are accurate, easy-to-use and reliable. They are also priced independently of pipe size. This makes them an excellent value, particularly in larger diameter pipes.

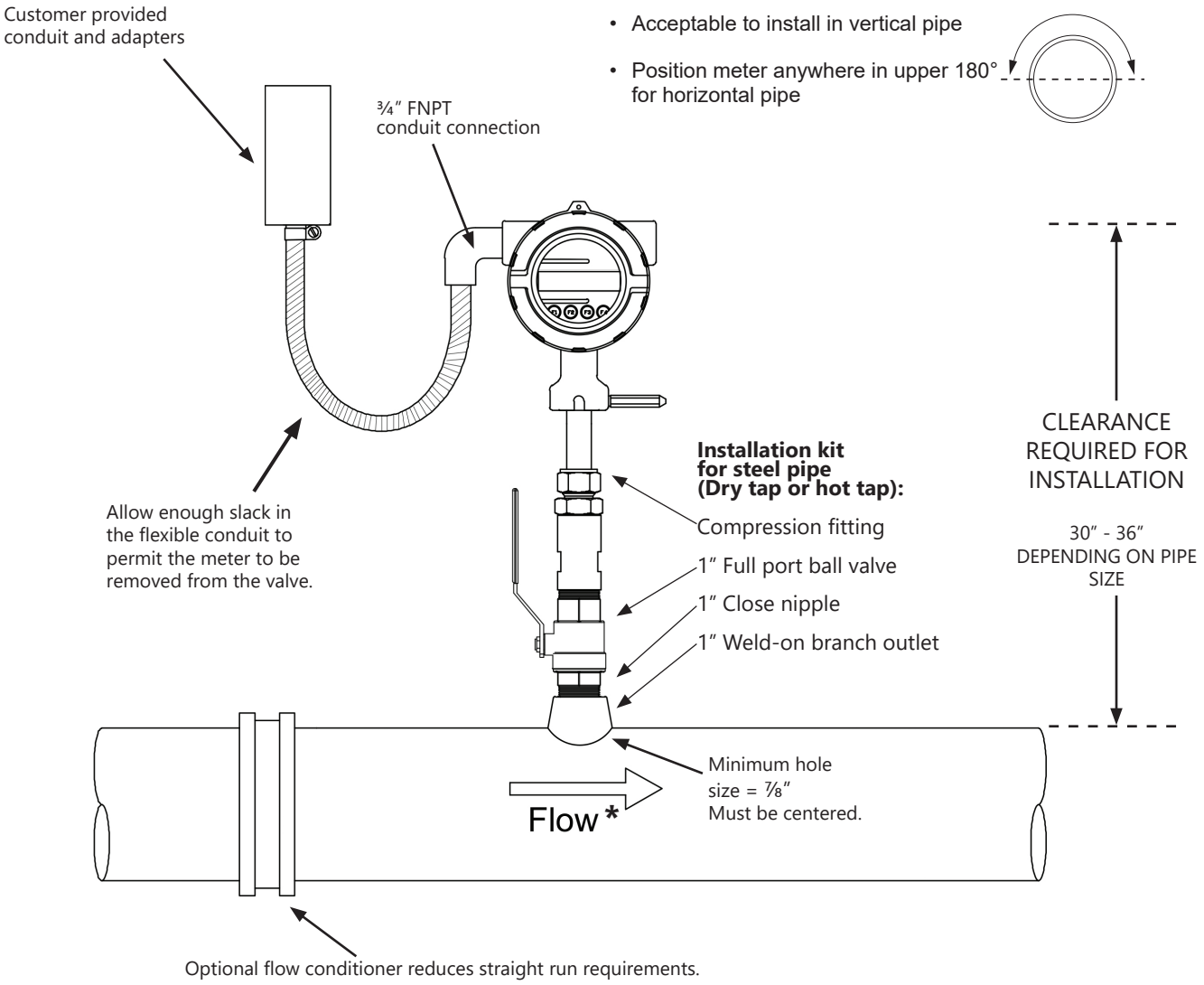


SPECIFICATIONS*

F-5500 THERMAL MASS FLOW METER	
FLOW ACCURACY	NATURAL GAS/PROPANE GAS ±1.0% of reading from 500 – 7,000 SFPM ±2.0% of reading from 100 – 500 SFPM COMPRESSED AIR & OTHER HIGH VELOCITY CALIBRATIONS ±1.0% of reading ± 0.5% of full scale over a 100:1 turdown
TEMPERATURE ACCURACY	±1.0°F over the range of -40°F to 250°F
OVERALL FLOW RANGE	15 - 35,000 SFPM
SENSING METHOD	Thermal mass flow utilizing direct digital control sensing circuitry
PIPE SIZE RANGE	INSERTION STYLE 1½ - 24" nominal diameter INLINE STYLE ¾ - 6" nominal diameter
INPUT POWER	12 - 28 VDC, 6W minimum power
TEMPERATURE RANGE	FLUID -40°F to 250°F AMBIENT -40°F to 158°F
MAXIMUM OPERATING PRESSURE	INSERTION STYLE Process adapter fitting - 60 psig (4.1 barg) max High pressure adapter fitting - 150 psig (10.3 barg) max INLINE STYLE ANSI Class 150 flanges - 230 psig at 100˚F (16 barg) NPT - 300 psig (20.7 barg) All stainless steel ferrules
PRESSURE DROP (at 2500 SFPM, 70°F and 2 PSIG)	INSERTION STYLE Less than ½" W.C. (H20) in 1½" diameter pipes, decreasing in larger pipes INLINE STYLE (with built-in flow conditioner) Less than ½" W.C (H20) in 2" and larger diameter meters Less than 0.9" W.C (H20) in 1" and 1½" diameter meters
PROGRAMMING/MEMORY	Factory programmed for specific application. Field programming available through mini-USB interface and utility program. Non-volatile memory retains all program parameters and totalized values in the event of power loss.
OUTPUT SIGNALS PROVIDED	Analog output: 4-20 mA Select from one of the following options as the second output: • RS485 interface: BACnet MS/TP or Modbus RTU (field selectable) • Programmable pulse output: Field selectable as scaled pulse or alarm (Isolated open collector output) • 4-20 mA with HART FSK (Only available with programmable pulse output)
MATERIAL	Wetted metal components: 316 stainless steel
ELECTRICAL CONNECTIONS	Enclosed terminal blocks, cable access through two ¾" NPT conduit fittings
APPROVALS	FM (USA) FMc (CAN): Approved Class 1, Div 1, Groups B, C, D; Class 2, Div 1, Groups E, F, G; Class 3, Div 1; T4, Ta = -40°C to 70°C; Class 1, Zone 1, AEx/Ex db IIB = H2 T4; Gb Ta = -40°C to 70°C; Type 4X, IP66/67 EMC Directive; 2014/30/EU Emissions and Immunity Testing: EN61326-1:2013 Massachusetts Board of State Examiners of Plumbers and Gasfitters CE

***** SPECIFICATIONS subject to change without notice.

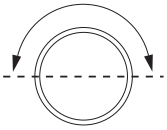
TYPICAL INSERTION METER INSTALLATION



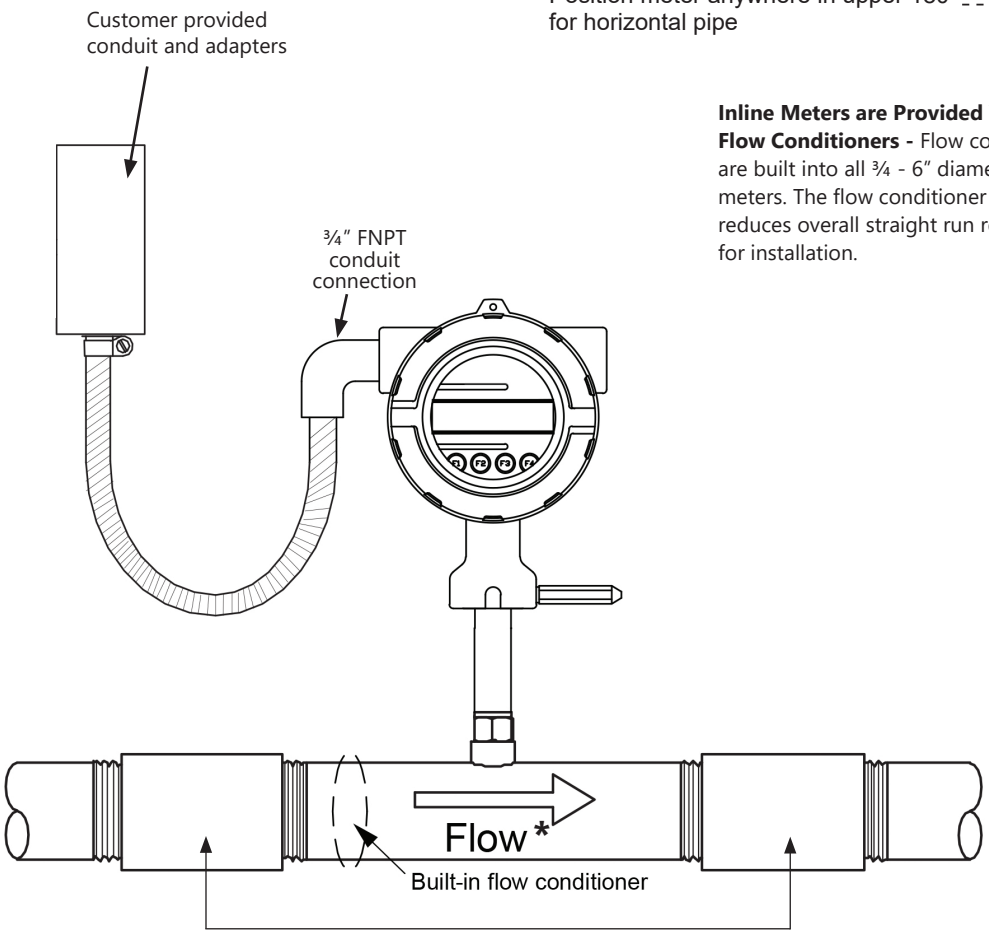
*Standard orientation. Contact ONICON for other options.

TYPICAL INLINE METER INSTALLATION

- Acceptable to install in vertical pipe
- Position meter anywhere in upper 180° for horizontal pipe



Inline Meters are Provided With Built-in Flow Conditioners - Flow conditioners are built into all ¾ - 6" diameter inline meters. The flow conditioner significantly reduces overall straight run requirements for installation.



NOTE: Flanged version also available.

*Standard orientation. Contact ONICON for other options.

METER ORDERING INFORMATION
Meter Model Number Coding = F-55AA-BCDE-FGGH

F-55 = Thermal Mass Flow Meter with Display

AA = Pipe Diameter

00 = Insertion	02 = 2″
34 = ¾″	25 = 2½″
01 = 1″	03 = 3″
13 = 1¼″	04 = 4″
15 = 1½″	06 = 6″

B = Output Signals
- 2 = Loop powered 4-20 mA & scaled pulse
- 3 = Loop powered 4-20 mA & RS485
- 4 = Loop powered 4-20 mA with HART & scaled pulse

C = Input Power
- 1 = 12 - 28 VDC

D = Electronics Enclosure Mounting Configuration
- 1 = Integral enclosure with LCD

E = Process Connection
- 4 = Insertion
- 5 = Threaded MNPT (¾ - 3″ pipe sizes only)
- 6 = ANSI Class 150 flanges

F = Flow Conditioner
- 1 = Insertion without flow conditioner
- 2 = Insertion with flow conditioner
- 3 = Inline with flow conditioner

GG = Pipe Size Range
- 00 = Inline Meter
- 15 = 1½ - 6″ nominal diameter
- 18 = >6″ nominal diameter

H = Process Adapter Fitting
- 0 = Standard (0-60 psig)
- 1 = High pressure (0-150 psig)
- 9 = Inline meter

GAS TYPE

NG = Natural Gas	HE = Helium Gas
ME = Methane Gas	NI = Nitrogen Gas
PG = Propane Gas	AR = Argon Gas
AI = Air	CD = Carbon Dioxide
O2 = Oxygen Gas	BU = Butane
HY = Hydrogen	

ACCESSORY ORDERING INFORMATION

Install Kits for Carbon Steel Piping Systems	
Model Number	**Description**
INSTL0094-FMH	Inertion flow meter hot tap installation kit, wetted materials are bronze, brass and steel

OPERATING RANGE FOR COMMON PIPE SIZES
15 to 7,000 SFPM in schedule 40 pipe

Pipe Size (Inches)	Flow Rate (SCFH) Min	Max
¾	3.3	1,560
1	5.4	2,521
1¼	9.3	4,362
1½	13	5,938
2	21	9,740
2½	30	13,964
3	46	21,562
4	80	37,130
5	125	58,350
6	181	84,263
8	313	145,912