• F-5100 SERIES •
THERMAL MASS FLOW METER

ONICON INCORPORATED

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 data.

The meter is available in inline and insertion type versions. Both versions are provided with a bright, easy-to-read multifunction display, and both include a 4-20 mA output for flow rate, and a separate pulse output for totalizing flow.

APPLICATIONS

- Natural Gas
- Compressed Air
- Other Combustible Gases
- Industrial Gases

GENERAL SPECIFICATIONS

ACCURACY
± 1.0% of reading from 500 – 7000 SFPM
± 2.0 % of reading from 100 – 500 SFPM
OVERALL FLOW RANGE
5 to 35,000 SFPM
SENSING METHOD
Thermal mass flow utilizing hybrid analog/digital sensing circuitry
PIPE SIZE RANGE
Insertion style - 1" through 24" nominal diameter
Inline style - ¼" through 4" nominal diameter
INPUT POWER OPTIONS
24 VDC ±10%, 100 mA maximum current
90-265 VAC 50/60 Hz
12 VDC ±10%, 200 mA maximum current
FLUID TEMPERATURE RANGE
-40° F to 200° F standard (Consult ONICON for other operating ranges.)

CALIBRATION

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

FEATURES

Excellent Long Term Reliability - ONICON thermal mass flow meters employ a low maintenance, non-moving parts technology to sense flow.

Highly Accurate Over A Wide Operating Range - Our proprietary hybrid analog/digital sensing circuitry is very stable and yet highly responsive to changes in flow. This stable yet responsive 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.

Provides For Field Validation Of Calibration - The F-5100 continuously displays a special calibration value that provides a fast, easy way to confirm that the calibration is valid.

Inline Meters are Provided With Built-in Flow Conditioners - Flow conditioners are built in to all ½" through 4" diameter inline meters. The flow conditioner significantly reduces overall straight run requirements for installation.

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.

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.

The D-100 Display provides a local indication of rate and total and a network interface for BACnet, MODBUS, LonWorks, JCI - N2, or Siemens - P1 FLN networks.

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www.onicon.com • sales@onicon.com

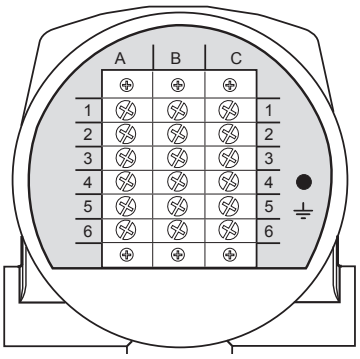
GENERAL SPECIFICATIONS (cont.)

AMBIENT TEMPERATURE RANGE
0° F to 150° F
MAXIMUM OPERATING PRESSURE
Standard: 500 PSI
Optional: 1,000 PSI
OUTPUT SIGNALS PROVIDED
Analog output: 4-20 mA
Scalable pulse output: Active 24 VDC pulse, 500ms duration
Network Interface:
Protocol: MODBUS RTU
Connection: RS485, 2-wire (half-duplex)
Baud Rate: 9600 or 19200
MATERIAL
Wetted metal components: 316 stainless steel
ELECTRONICS ENCLOSURE
Integral mount, weathertight NEMA 4 aluminum enclosure
Approvals (24 VDC only) Class 1, Division 2, Groups B, C, & D, (ATEX: Ex nA IIC T4X)
Optional remote mount version of transmitter available (1000 ft maximum length)
ELECTRICAL CONNECTIONS
Enclosed terminal blocks, cable access through two ½" NPT conduit fittings

NOTE: Specifications are subject to change without notice.

ELECTRICAL CONNECTIONS

Inside Rear Cover



Terminal Wiring Connections

	A	B	C
1	NA	AC1	NA
2	NA	AC2	NA
3	NA	NA	NA
4	NA	NA	Pulse Out (+)
5	NA	+ 24 VDC	4-20mA Out (+)
6	NA	(-)Common	(-)Common

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

Operating range for common pipe sizes 5 to 7000 SFPM in schedule 40 pipe

Pipe Size in inches	Flow Rate in SCFH Min	Max
¼	0.2	304
⅜	0.4	557
½	0.6	886
¾	1.1	2,521
1	1.8	2,521
1¼	3.1	4,362
1½	4.2	5,938
2	7.0	9,740
2½	10	13,964
3	15	21,562
4	27	37,130
5	42	58,350
6	60	84,263
8	104	145,912

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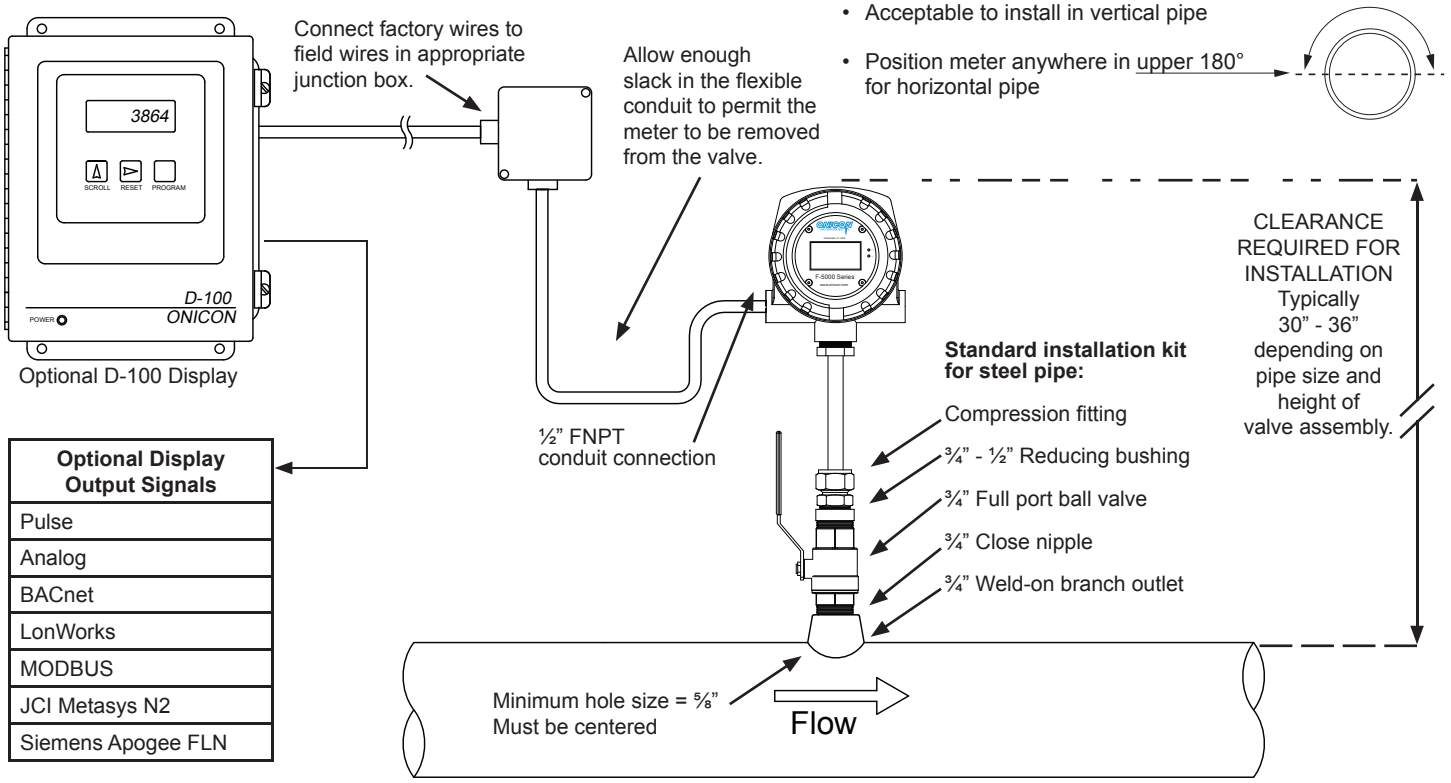
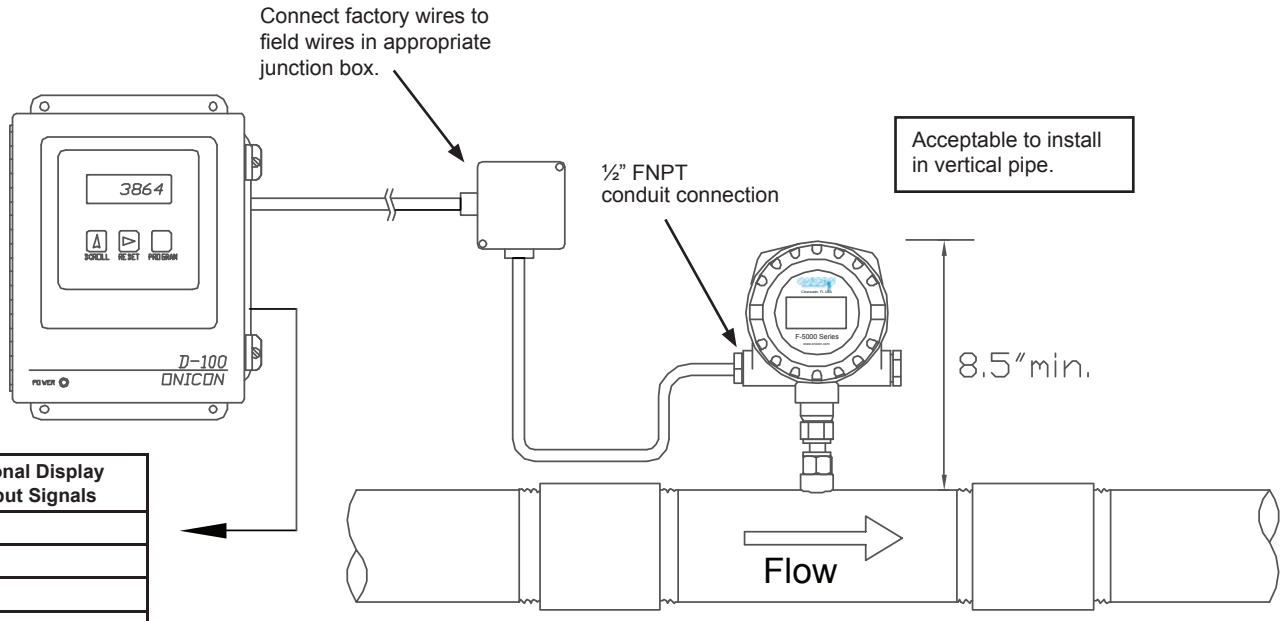
TYPICAL INSERTION METER INSTALLATION



Optional Display Output Signals
Pulse
Analog
BACnet
LonWorks
MODBUS
JCI Metasys N2
Siemens Apogee FLN

TYPICAL INLINE METER INSTALLATION



Optional Display Output Signals
Pulse
Analog
BACnet
LonWorks
MODBUS
JCI Metasys N2
Siemens Apogee FLN

ORDERING INFORMATION

F-5100 Thermal Mass Model # Codification *F-51AA-1BCD-EFF*

F-51 = Thermal Mass Flow Meter With Display, 4 - 20 mA & Scaled Pulse Outputs

AA = Pipe Diameter

00 = Insertion	13 = 1.25”
14 = ¼”	15 = 1.5”
38 = ⅜”	02 = 2”
12 = ½”	25 = 2.5”
34 = ¾”	03 = 3”
01 = 1”	04 = 4”

B = Line Voltage

1 = 24 VDC
2 = 90 - 265 VAC 50/60 Hz
3 = 12 VDC

C = Integral or Remote Mount

1 = Integral
2 = Remote

D = Process Connections

0 = Insertion
1 = Threaded MNPT Connections
2 = ANSI Class 150 Flange
3 = ANSI Class 300 Flange

E = Flow Conditioner

1 = Insertion meter without conditioner
2 = Insertion meter with conditioner
3 = Inline meter

FF = Gas Type

NG = Natural Gas
ME = Methane Gas
LP = Propane Gas
CA = Compressed Air
O2 = Oxygen Gas
DA = Duct / Flue Air
HE = Helium Gas
NI = Nitrogen Gas
XX = Other Gases

F-5100 Thermal Mass Meter Accessory Ordering Information

Item #	Accessory Item Description
INSTL64	Installation kit for welded steel pipe, 50 PSIG, 200°F max
INSTL69	Stainless steel installation kit for welded steel pipe, 50 PSIG, 200°F max
INSTL73	Installation kit for welded steel pipe, 50 PSIG, 140°F max (Bronze, Brass and Steel components)
INSTL70	Installation kit for welded steel pipe, 125 PSIG, 200°F max
INSTL71	Installation kit for welded steel pipe, 500 PSIG, 140°F max
INSTL72	Stainless steel installation kit for welded steel pipe, 600 PSIG, 600°F max
17350	25 ft of additional remote mount cable
17351	50 ft of additional remote mount cable
17352	100 ft of additional remote mount cable

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