F-3200
INLINE ELECTROMAGNETIC FLOW METER

ONICON's F-3000 Series is a family of inline flow meters that provide accurate, reliable flow measurement for a variety of applications.

• Chilled Water • Hot Water • Domestic Water • Condenser Water •

Faraday's Law states that a voltage will be induced in a conductor (the conductive fluid) when it passes through a magnetic field (generated by the meter), and that voltage will be directly proportional to the velocity of the conductor (the fluid). This voltage is measured by electrodes on opposite sides of the flow tube and used to calculate the flow velocity.

DESCRIPTION

ONICON F-3000 Series Inline Electromagnetic Flow Meters are suitable for measuring electrically conductive liquids in a wide variety of applications. The F-3200 can be configured to provide analog outputs for flow rate, programmable pulse outputs for flow totalization, and serial communications via an RS485 network.

APPLICATIONS

- HVAC hydronic applications including chilled water, heating hot water and condenser water
- Bi-directional flow for primary/secondary bypass and thermal storage applications
- Domestic cold and hot water applications
- Clean process flow applications with conductivities greater than 5 µS/cm

FEATURES

Exceptional Performance & Accuracy – F-3000 series inline meters deliver unmatched accuracy in installations with just three diameters of straight pipe upstream of the meter!

Easy to Install and Use - Every ONICON meter is individually wet calibrated and programmed for the application - saving start-up and commissioning time!

Excellent Long Term Reliability - ONICON electromagnetic flow meters have no moving parts and employ state-of-the-art electronics, ensuring years of accurate, trouble-free performance.

Redundant Outputs – The F-3000 series inline meters can be ordered with an additional redundant analog output. This optional feature can provide a cost-effective alternative in Mission Critical applications which require redundant flow measurements.

CALIBRATION

Every ONICON F-3000 series flow meter is wet calibrated in a flow laboratory against standards that are directly traceable to international standards. A certificate of calibration accompanies every meter.

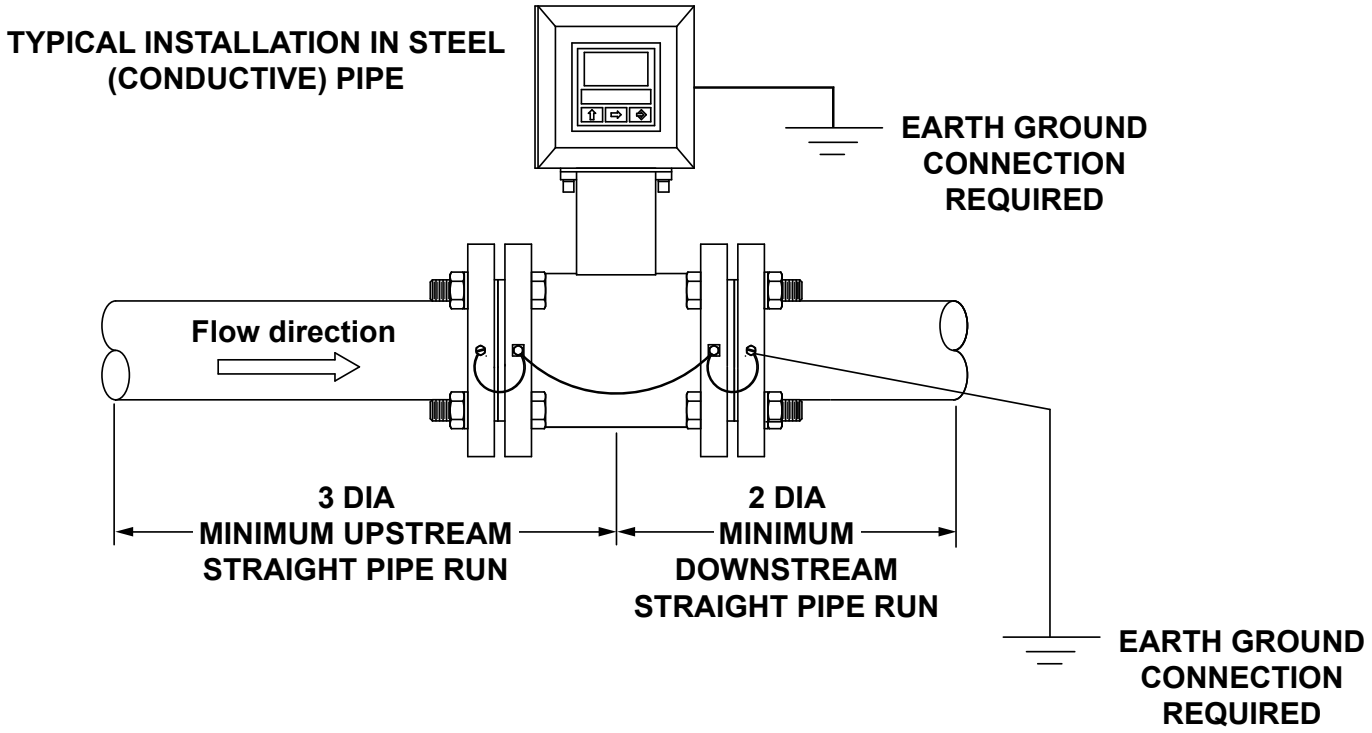
For energy measurement applications, the F-3200 flow meter can be specified together with an ONICON BTU Meter, forming a complete energy measurement system.

SPECIFICATIONS*

F-3200 TRANSMITTER		
PERFORMANCE	ACCURACY	± 0.2% of reading from 1.6 to 33 ft/s ± 0.0033 ft/s at flow rates < 1.6 ft/s
	MINIMUM CONDUCTIVITY	5 µS/cm
INPUT POWER**	AVAILABLE OPTIONS	• Low Power, 24 VAC/DC, 50/60 Hz, 12 VA • High Power, 110 - 240 VAC, 50/60 Hz, 12 VA
I/O SIGNALS**	AVAILABLE OPTIONS	• Two (2) digital outputs, one (1) digital input and one (1) analog output • Four (4) digital outputs, one (1) digital input and two (2) analog outputs • MODBUS RTU (RS485)
ELECTRONICS ENCLOSURE**	IP67 (NEMA 4X) enclosure with display	
	AVAILABLE OPTIONS	• Integral mount • Remote (wall) mount with kit, up to 325 ft in fluids with conductivity ≥ 200 µS/cm
	DISPLAY	16-character, 8 - line, 128x64 graphic LCD with back light
	AMBIENT CONDITIONS	Transmitter: -4 °F to 140 °F
PROGRAMMING	Menu driven user interface via three (3) programming keys	
ELECTRICAL CONNECTIONS	INPUT POWER	Removable terminal blocks for use with 14 - 22 gauge wire
	I/O SIGNALS	Removable terminal blocks for use with 18 - 24 gauge wire
	COIL & ELECTRODES	Removable terminal blocks for use with sensor cable provided
APPROVALS	CE	2014/30/EU EMC Directive
		2014/35/EU LVD Directive
F-3000 SERIES FLOW SENSOR		
PERFORMANCE	SENSING METHOD	Electromagnetic sensing (no moving parts)
OPERATING CONDITIONS	FLUID TEMPERATURE RANGE	See Liner Selection Table on back page
	FLUID PRESSURE RANGE	See Liner Selection Table on back page
FLOW SENSOR DESIGN**	FLOW TUBE	304 SS
	ELECTRODES	Qty: Three (3), round, 316 SS
FLOW BODY**	AVAILABLE OPTIONS***	• Carbon Steel • Polypropylene • Stainless Steel
FLOW LINER**	AVAILABLE OPTIONS***	• PTFE • Ebonite • Polypropylene
PROCESS CONNECTIONS**	AVAILABLE OPTIONS	• Flanged connections ANSI Class 150 or ANSI Class 300 • Wafer mount
APPROVALS	NSF/ANSI CE	61 E97/23/CE PED Directive

* SPECIFICATIONS subject to change without notice.
** See model codification for additional information regarding option selections.
*** Selection based on application.

TYPICAL INSTALLATION



FLANGED AND WAFER MODELS OPERATING RANGE					
PIPE SIZE (Inches)	FLOW RATE (GPM) (0.1 ft/sec - 33 ft/sec)	PIPE SIZE (Inches)	FLOW RATE (GPM) (0.1 ft/sec - 33 ft/sec)	PIPE SIZE (Inches)	FLOW RATE (GPM) (0.1 ft/sec - 33 ft/sec)
1	0.2 - 79	5	5.9 - 1,981	16	61 - 20,288
1½	0.6 - 203	6	8.5 - 2,853	18	77 - 25,678
2	0.9 - 317	8	15 - 5,072	20	95 - 31,701
2½	1.6 - 536	10	24 - 7,925	24	137 - 45,649
3	2.4 - 812	12	34 - 11,412	42	417 - 139,800
4	3.8 - 1,268	14	47 - 15,533	48	547 - 182,596

METER ORDERING INFORMATION

Meter Model Number Coding = F-32BB-CDEF(-SPC)

F-32BB = Inline Electromagnetic Flow Meter

BB = Meter Size

01 = 1″ 04 = 4″
15 = 1.5″ 05 = 5″
02 = 2″ 06 = 6″
25 = 2.5″ 08 = 8″
03 = 3″ 10 = 10″
nn = meter size, 12″ - 48″

C = Body Material, Liner and Electrode Configuration

1 = Carbon Steel, PTFE Liner and 3 SS Electrodes
2 = Carbon Steel, Polypropylene Liner, 3 SS Electrodes and Viton O-rings
3 = Carbon Steel, Ebonite Liner and 3 SS Electrodes

D = Process Connection

0 = Wafer Connection
1 = ANSI 150 Flanges
3 = ANSI 300 Flanges

E = Input Power

1 = Low Power, 24 VAC/DC
2 = High Power, 120 - 240 VAC

F = Electronics Enclosure Mounting Configuration

4 = Integral IP67 enclosure
5 = Remote IP67 enclosure

SPC = Special Configuration

101 = Aux outputs, redundant analog and pulse signals
102 = MODBUS RTU (RS485) serial communication

LINER SELECTION TABLE

Material	Line Size Flanged and Wafer	Grade	Color	Temperature Range	Pressure Range Based on Liner	Abrasion Resistance (Carbon Steel = 100)
Ebonite	8 - 48″	Food	Amber	32°F - 175°F	580 psi [1]	90 - 118
Polypropylene	1 - 6″	Food	Gray	32°F - 140°F	232 psi	122
PTFE	1 - 48″	Food	White	0 - 266°F [3]	580 psi [1] [2]	78

Notes	Description
1	Flanged meter pressure rating is the lesser of 580 psi or the flange rating.
2	Wafer style meters above 6″ are limited to 232 psi.
3	Remote mount electronics option required for application temperature above 212°F.