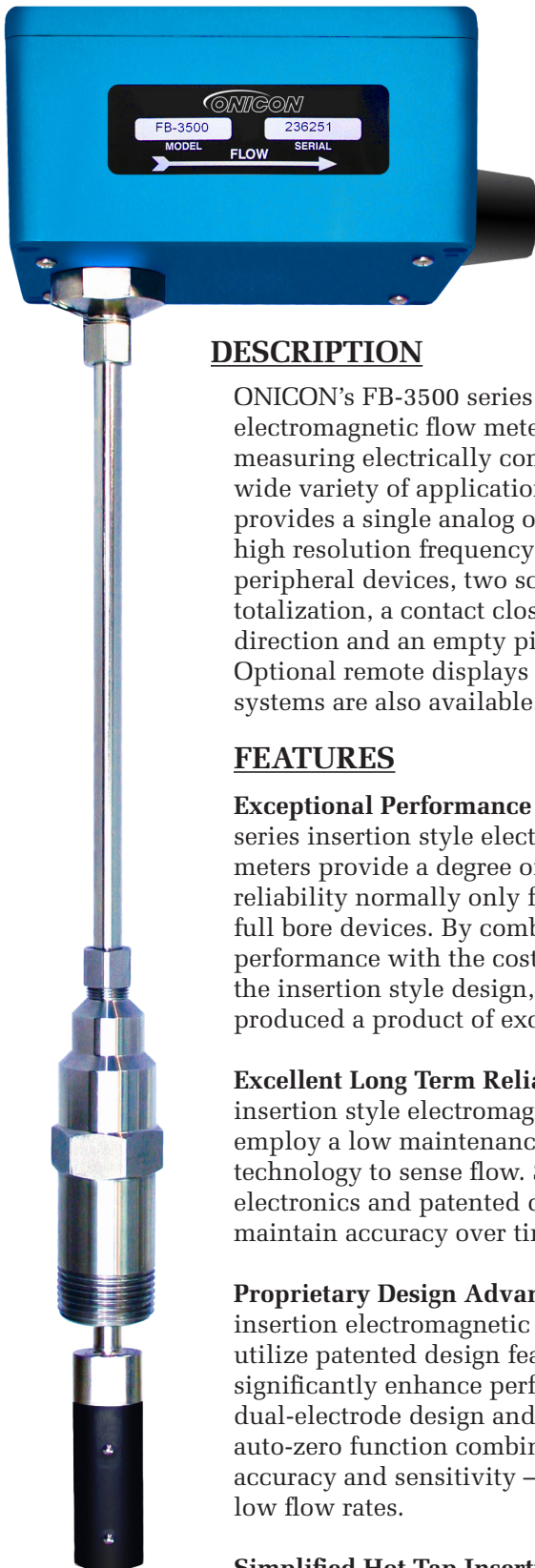


• **FB-3500 SERIES** •
**INSERTION ELECTROMAGNETIC
BI-DIRECTIONAL FLOW METER**



DESCRIPTION

ONICON's FB-3500 series bi-directional insertion electromagnetic flow meters are suitable for measuring electrically conductive liquids in a wide variety of applications. Each FB-3500 provides a single analog output for flow rate, a high resolution frequency output to drive peripheral devices, two scalable pulse outputs for totalization, a contact closure output for flow direction and an empty pipe alarm signal. Optional remote displays and BTU measurement systems are also available.

FEATURES

Exceptional Performance & Value - FB-3500 series insertion style electromagnetic flow meters provide a degree of accuracy and reliability normally only found in expensive full bore devices. By combining this level of performance with the cost effective nature of the insertion style design, ONICON has produced a product of exceptional value.

Excellent Long Term Reliability - ONICON insertion style electromagnetic flow meters employ a low maintenance, non-moving parts technology to sense flow. State-of-the-art electronics and patented design features help maintain accuracy over time.

Proprietary Design Advantage - FB-3500 insertion electromagnetic flow meters utilize patented design features that significantly enhance performance. The dual-electrode design and continuous auto-zero function combine to improve accuracy and sensitivity — particularly at low flow rates.

Simplified Hot Tap Insertion Design - Standard on every insertion flow meter, this feature allows for insertion and removal by hand, without a system shutdown.

APPLICATIONS

- Primary/secondary decoupling loop (bypass)
- HVAC thermal storage tank
- Domestic water charge/discharge (NSF/ANSI 61/372 version*)
- Bi-directional process flow

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.

GENERAL SPECIFICATIONS

ACCURACY

- ± 1.0% of reading from 2 to 20 ft/sec
- ± 0.02 ft/sec below 2 ft/sec

FLOW RANGE

- 0.1 ft/s to 20 ft/s (200:1 turndown)

SENSING METHOD

- Electromagnetic sensing (no moving parts)

CONDUCTIVITY RANGE

- 20 to 60,000 μ Siemens/cm

PIPE SIZE RANGE

- 3" through 72" nominal diameter

INPUT POWER

- 20 – 28 VDC, 250 mA @ 24 VDC
- 20 – 28 VAC 60 Hz, 6 VA

LIQUID TEMPERATURE RANGE

- 15° to 250° F

AMBIENT TEMPERATURE RANGE

- 20° to 150° F

OPERATING PRESSURE

- 400 PSI maximum

PRESSURE DROP

- Less than 0.1 psi at 12 ft/s velocity in 3" and larger pipes

OUTPUT SIGNALS PROVIDED

Analog Output (Isolated)

- Selectable: 4-20 mA, 0-10 V or 0-5 V

Frequency Output

- 0 – 15 Volt peak pulse, 0 – 500 Hz

Pulse/Contact Closure Outputs (four)

- Isolated solid state dry contact

- Contact maximum ratings: 100 mA, 50 VDC

Scalable Pulse Outputs (two)

- Forward & Reverse Flow Totalization

- Pulse Duration: 0.5, 1, 2 or 6 seconds

Directional Contact Output:

- Switch closed when flow is in direction of flow arrow on enclosure

- Latches at 0.2 ft/s

- Switches within 20 seconds of direction change

Master Alarm Output:

- Switch closed indicates alarm condition

This product is covered by one or more of the following patents: 6,431,011 and 6,463,807.

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FB-3500 SPECIFICATIONS (cont.)

MATERIAL

Wetted metal components: 316 stainless steel
 Sensor head: Xarec
 Optional: NSF/ANSI 61/372 version*

ELECTRONICS ENCLOSURE

Weathertight NEMA 4 aluminum enclosure

ELECTRICAL CONNECTIONS

10' of PVC jacketed cable with 1/2" NPT conduit connection

Dedicated earth wire required

6-wire minimum for power, analog output and flow direction output


Additional wires required for pulse, frequency and alarm outputs

OPERATING RANGE FOR COMMON PIPE SIZES 0.1 to 20 ft/sec	
Pipe Size (inches)	Flow Rate (GPM)
3	2.4 - 460
4	4 - 800
6	9 - 1,800
8	16 - 3,100
10	24 - 4,900
12	35 - 7,050
14	42 - 8,600
16	55 - 11,400
18	70 - 14,600
20	86 - 18,100
24	125 - 26,500
30	223 - 41,900
36	304 - 60,900

FB-3500 WIRING TABLE

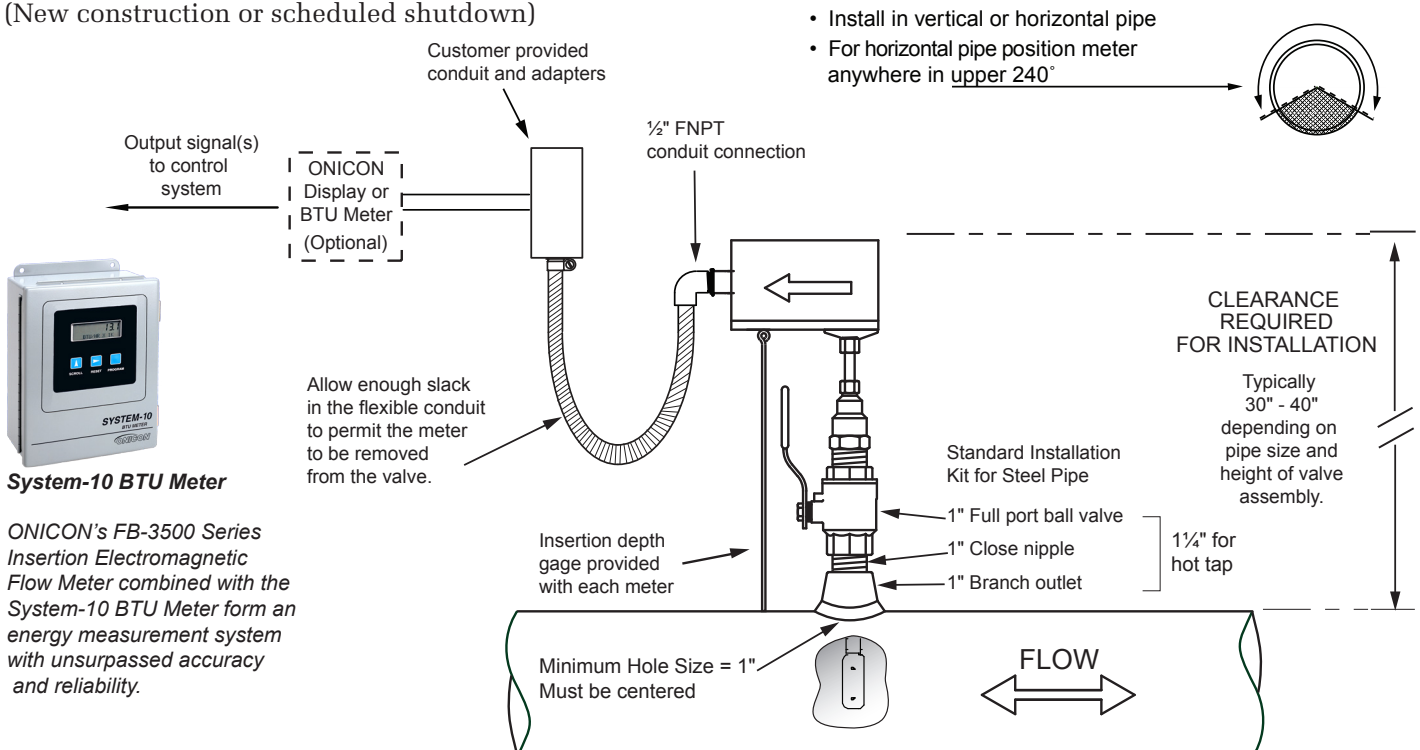
WIRE COLOR	DESCRIPTION	NOTES
RED	(+) Supply Voltage: 24 VDC, 250 mA or 24 VAC, 60 Hz, 6 VA	Connect to power supply (+): DC (+) or AC (line)
BLACK	(-) Isolated Supply Voltage Common	Connect to power supply (-): DC (-) or AC (neutral)
GREEN/YELLOW	Earth ground connection	Required to operate the meter
GREEN	(+) Isolated Frequency Output	Required when connecting to ONICON display or BTU meter
YELLOW	(-) Frequency Output Common	
BLUE	(+) Isolated Analog Output	Configurable as a 4-20 mA, 0-10 Volt or 0-5 Volt Output
BROWN	(-) Isolated Analog Output Common	
GRAY	Forward Flow Scaled Output Isolated Dry Contact	Scalable dry contact pulse output for forward flow totalization
VIOLET		
GRAY/BLACK	Reverse Flow Scaled Output Isolated Dry Contact	Scalable dry contact pulse output for reverse flow totalization
VIOLET/BLACK		
ORANGE/BLACK	Flow Direction Indicator Isolated Dry Contact	Contact closed when flow is in direction of arrow on meter
WHITE/BLACK		
DIAGNOSTIC SIGNALS		
ORANGE	Master Alarm Isolated Dry Contact	Dry contact closure signal indicating fault condition
WHITE		

NOTE: Specifications are subject to change without notice.

*  ELECTROMAGNETIC INSERTION FLOW METER
 NSF/ANSI 61 <MH60590>
 ALSO CLASSIFIED IN ACCORDANCE WITH NSF/ANSI 372

TYPICAL METER INSTALLATION

(New construction or scheduled shutdown)



ONICON's FB-3500 Series Insertion Electromagnetic Flow Meter combined with the System-10 BTU Meter form an energy measurement system with unsurpassed accuracy and reliability.

Note: Installation kits vary based on pipe material and application. For installations in pressurized (live) systems, use "Hot tap" 1 1/4 inch installation kit and drill hole using a 1 inch wet tap drill.

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