

**• F-3100 SERIES •**  
**IN-LINE ELECTROMAGNETIC FLOW METER**  
**THREADED VERSION FOR SMALL DIAMETER PIPES**



*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-3100 series in-line electromagnetic flow meters are suitable for measurement of electrically conductive liquids, in a wide variety of applications. Inherently bi-directional, each F-3100 series meter is equipped with ONICON's standard transmitter that provides a single analog 4-20 mA output for flow rate and two programmable pulse outputs.

**APPLICATIONS**

- Chilled water, hot water, condenser water & water/glycol/brine solutions used in HVAC
- Bi-directional flow for primary/secondary bypass
- Process flow with conductivity greater than 5µS/cm
- Domestic/municipal water

**CALIBRATION**

Every ONICON F-3100 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.



**FEATURES**

**Exceptional Performance & Accuracy** - ONICON F-3100 series meters deliver  $\pm 0.4\%$  of reading accuracy with as little as 3 diameters of straight pipe upstream of the meter, an exceptional level of performance by any standard.

**Easy to Install and Use** - Every ONICON meter is individually calibrated, configured and programmed using customer specific application data. Complex field programming is not required.

**Excellent Long Term Reliability** - ONICON electromagnetic flow meters have no moving parts. In addition, state-of-the-art electronics and proprietary noise filtering algorithms ensure years of accurate, trouble-free performance. This makes them the ideal choice for critical measurement applications or applications where water quality is less than ideal.

**Advanced Design Features** - Each meter is equipped with a multifunction user interface and display. Advanced programming options include an empty pipe detector, auto-zero and auto-calibration capabilities. A number of alarm options are also available.

**Installation Flexibility** - The F-3100 is an ideal choice for difficult installations as it only requires 3 diameters of straight pipe upstream and 2 diameters downstream for proper operation.

**GENERAL SPECIFICATIONS**

**ACCURACY**

Accurate to within:

- $\pm 0.4\%$  of reading from 3.3 to 33 ft/s
- $\pm 0.75\%$  of reading from 1 to 3.3 ft/s
- $\pm 0.0075$  ft/s at flows less than 1 ft/s

(continued on back)



*For energy measurement applications, specify the F-3100 flow meter together with the System-10 BTU Meter to form an energy measurement system with exceptional accuracy and reliability.*

## GENERAL SPECIFICATIONS (cont.)

### SENSING METHOD

- Electromagnetic sensing (no moving parts)

### AMBIENT TEMPERATURE RANGE

- Electronics: 14° to 122° F
- Sensor Body: Refer to Material vs. Temp graph

### METER MATERIAL OPTIONS

#### (Body/Liner/Electrodes)

- Polypropylene/polypropylene/316 SS
- 304 Stainless Steel/PTFE/316 SS

### CONNECTION TYPES AVAILABLE

- Male NPT threads
- Male UNI338 threads

### ELECTRICAL CONNECTIONS

- Use 18-22 AWG shielded cable

### POWER SUPPLY OPTIONS

- 90 to 265 VAC, 44 to 66 Hz, 35 mA maximum
- 18 to 45 VDC or VAC, 44 to 66 Hz, 300 mA maximum

### DISPLAY

16 character, 2-line alphanumeric LCD displays: flow rate and velocity, flow direction and totals and error messages.

### OUTPUT SIGNALS PROVIDED

- Isolated 4 - 20 mA analog output for flow rate
- (2) Programmable digital/pulse outputs (configurable for frequency, pulse or directional flow)
- (Optional) MODBUS RTU (RS485)

### ELECTRONICS ENCLOSURE

- Reinforced Nylon, NEMA 4X (IP65)
- Optional: Epoxy painted aluminum NEMA 6 (IP67)
- Optional: Remote mount transmitter (either version) available, maximum distance from the sensor - up to 164 ft @ conductivities  $\geq 200 \mu\text{S/cm}$ .

### MAXIMUM OPERATING PRESSURE

- 230 psi (Consult ONICON when higher pressure ratings are required)

### MINIMUM CONDUCTIVITY

- $5 \mu\text{S/cm}$

### APPROVALS

## Magmeter Model # Codification for Pipe Diameters Less than 1"

### F-3AXX-CDE

F = Flow Meter

3 = In-line Magmeter

A = Transmitter Type

- 1 = Standard model with display, 4-20 mA output, (2) pulse outputs & display
- 2 = Advanced model with graphic display, 4-20 mA output, (2) pulse outputs & display

XX = Meter in Inches

- AA = 1/4      AB = 3/8      AC = 1/2
- AD = 3/4      AE = 1

C = Body / Liner Material

- 4 = 304 SS / PTFE
- 9 = Polypropylene / Polypropylene

D = Connection Types

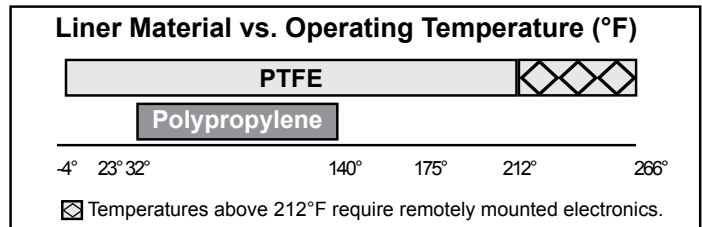
- A = Male NPT Thread
- B = Male UNI338 Thread

E = Compact or Remote Mount (with or w/o Preamplifier)

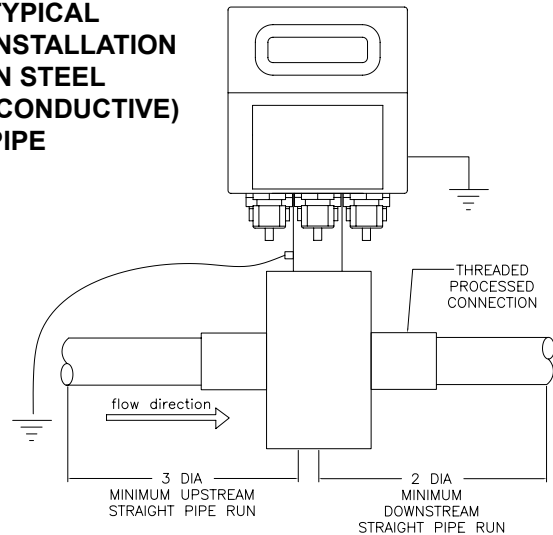
- 1 = Compact Mount
- 2 = Remote Mount w/o Preamplifier
- 3 = Remote Mount with Preamplifier (only with advanced transmitter)

Default configurations include the following options:

- 1 - (2) 316 SS electrodes for 304 SS meter
- 2 - (4) 316 SS electrodes (2 signal, 2 grounding) for polypropylene meter
- 3 - Viton o-rings on Polypropylene lined meters



### TYPICAL INSTALLATION IN STEEL (CONDUCTIVE) PIPE



### OPERATING RANGE

Meter Size (Inches)	Flow Rate (GPM) (0.1 ft/sec* - 33 ft/sec)
1/4"	0.004 - 1.12
3/8"	0.014 - 4.49
1/2"	0.038 - 12.46
3/4"	0.085 - 28.03
1"	0.152 - 49.84

\*Note: The default low flow cut-off is set for 0.1 ft/sec