

The FPI Mag™ (Full Profile Insertion) Electromagnetic Flow Meter is the only hot tap full profile forward and reverse flow insertion flowmeter. Multiple electrodes placed across the entire sensor body continuously measure and report the average flow rate over the full diameter of pipe. The FPI Mag Flow Meter's multi-electrode sensor design compensates for variable flow profiles, including swirl and turbulent conditions. With highly stable measurement, the FPI Mag features accuracy of  $\pm 1\%$  of reading  $\pm 0.03$  ft/s ( $\pm 0.009$  m/s) zero stability from 0.3 to 20 ft/s. The electrodes are encased in a heavy-duty 316 stainless steel sensor body for maximum structural integrity. The sensor is coated with a NSF certified 3M™ fusion-bonded epoxy coating for operational longevity.

The FPI Mag's hot tap installation allows for uninterrupted service as it installs without system shut-down, de-watering lines, cutting pipe or welding flanges. Installation costs are reduced by eliminating the need for heavy equipment or extensive manpower. The FPI Mag is the industry's most economical flow metering solution for medium and large line sizes, reducing installed costs by more than 45 percent.

The compact insertion design fits in confined spaces and offers complete accessibility. The flow meter can be removed in pipes under pressure for easy inspection, cleaning, calibrating or verification. It is particularly cost-effective for retrofit applications replacing flow meters or in sites never metered before.

This innovative flowmeter is available for line sizes from 4 to 138 inches. The flow sensor comes pre-calibrated from McCrometer's NIST traceable Calibration Lab and requires no recalibration in the field. With no moving parts and a single-piece design, the FPI Mag's multi-electrode sensor contains nothing to wear or break, and it is generally immune to clogging by sand, grit or other debris.

**Accurate Flow Measurement for:**

## Drinking Water :

- Distribution
- Filter Balancing & Backwash
- Pump Stations
- UV Dosing
- Wells
- Booster Stations

## Waste Water :

- Effluent
- Recycle/Reclaimed

## Industrial:

- Chilled Water
- Cooling Water
- Process Control

**Benefits:**

- Ease of hot-tap installation
- Installs without service interruption
- Insertion design for total accessibility
- Continuous measurement of full profile
- Robust construction for operational longevity
- No moving parts
- Does not require recalibration in the field

## Model 394L

### MEASUREMENT

Volumetric flow in filled flow conduits 4" (100 mm) to 138" (3,500 mm) utilizing insertable electromagnetic averaging sensor. Flow indication in English Std. or Metric units.

### FLOW MEASUREMENT

Method: Electromagnetic

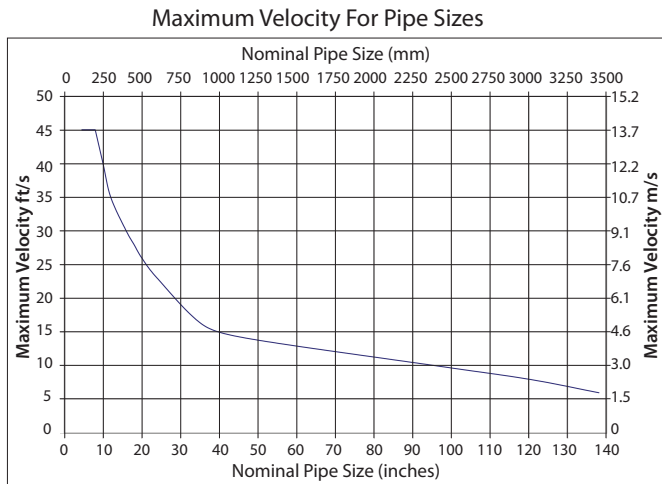
Accuracy:

Forward:  $\pm 1\%$  of reading  $\pm 0.03$  ft/s ( $\pm 0.009$  m/s) zero stability from 0.3 to 20 ft/s (0.09 to 6 m/s) velocity range;

Reverse:  $\pm 1\%$  of reading  $\pm 0.03$  ft/s ( $\pm 0.009$  m/s) zero stability from -0.3 to -20 ft/s (0.09 to 6 m/s) velocity range

Linearity: 0.3% of range

Repeatability: 0.20% of range



### CONDUCTIVITY

Minimum conductivity of  $5\mu\text{S}/\text{cm}$  ( $5\mu\text{mho}/\text{cm}$ )

### POWER REQUIREMENTS

AC: 90-265VAC/44-66 Hz (20W/25VA) or

DC: 10-35VDC (20W)

AC or DC must be specified at time of ordering.

### MATERIALS

Fusion bonded epoxy (NSF 61 approved) coated 316 stainless steel

Insertion Hardware: 316 stainless steel

Compression Seal: Silicone Rubber

Sensor Electrodes: 316 stainless steel

### OUTPUTS

Analog: Galvanically isolated and fully programmable for zero and full scale (0-24mA).

Output Capability  $\leq 20\text{V}$ . (1000 ohm, 4-20 mA). The out is split for forward and reverse flow: 4-12 mA = reverse flow; 12 mA = zero flow; and 12-20 mA = forward flow.

Two Programmable Displays: 1. Real-time display: indicates flow and velocity; 2. Totalizer display: user selectable engineering units.

Pulse/Frequency: One frequency/pulse transistor output for flow rate or for external totalizer. Capable of sinking  $<250$  mA @  $<35\text{V}$ .

### DUAL ALARMS

2 separate outputs: Isolated and protected transistor switch capable of sinking  $<250\text{mA}$  @  $<35\text{V}$ . Note: Not isolated from frequency output. Fully programmable for high/low flow rates, % of range, empty-pipe, fault conditions, forward/reverse, polarity (normally open/close), analog over-range, pulse over-range, pulse cutoff, etc.

### TRANSMITTER ENCLOSURE

IP67 Die cast aluminum

5.75" H x 5.75" W x 6.69" D

(14.6cm H x 14.6cm W x 17cm D)

### ELECTRICAL CONNECTIONS

Compression gland seals for 0.125" to 0.375" Dia. round cable.

### ISOLATION

Galvanic separation to 50VDC between analog, pulse/alarm, and earth/ground.

### STANDARDS

CE Certified: Meets ANSI/ISA-S82.01-1988 (Converter only)

### ENVIRONMENTAL

Pressure/Temperature Limits:

Sensor: Flow Temperature Range

$14^\circ$  to  $170^\circ$  F ( $-10^\circ$  to  $77^\circ$  C) @ 250 psi

Sensor is submersible (IP68)

Electronics: Operating and storage temperature:  $-4^\circ$  to  $140^\circ\text{F}$  ( $-20^\circ$  to  $+60^\circ\text{C}$ )

### KEYPAD AND DISPLAY

Can be used to access and change all set-up parameters using three membrane keys and an LCD display.

### OPTIONS

- DC Power
- Sun shield
- Sensor insertion tool
- Stainless steel ID tag
- Valves
- Additional sensor cable up to 250' (for longer lengths, consult factory)
- Additional stack height (Standard is 15")

### ORDERING REQUIREMENTS

At the time of ordering, please be prepared to provide the following information:

- Model
- Stack height
- Pressure
- Minimum flow
- Maximum flow
- Typical flow
- Fluid
- Pipe I.D.
- Cable length
- Temperature
- Any other chemicals in use