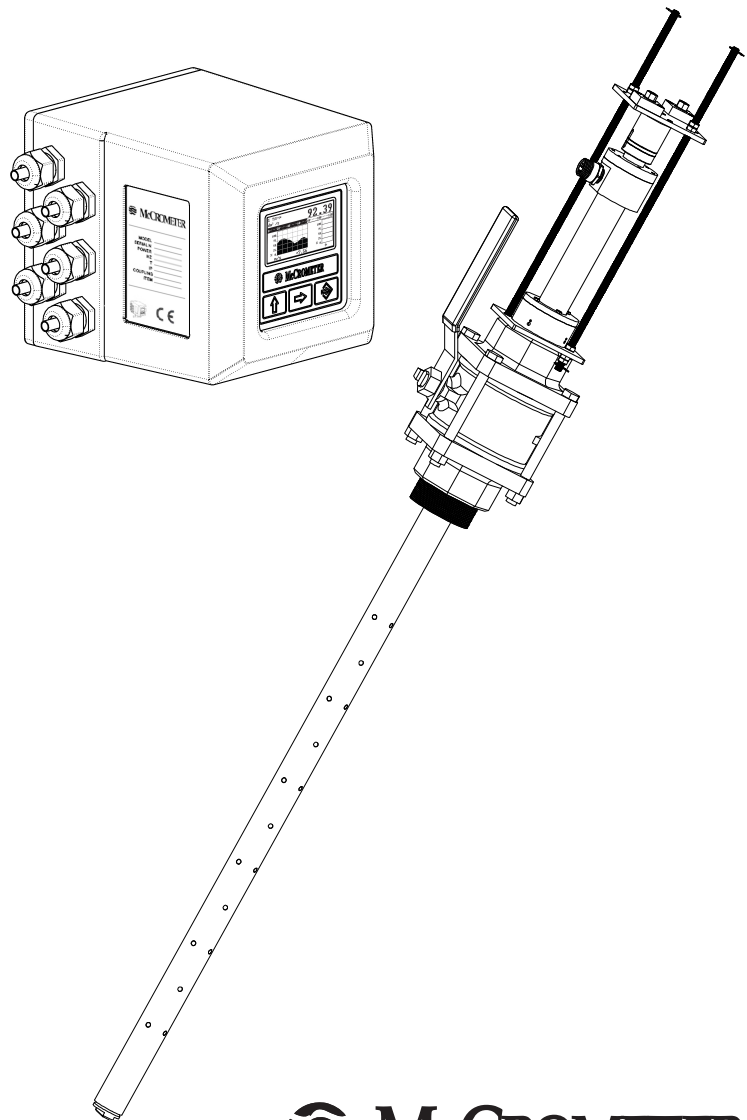




Model 394L Full Profile Insertion Electromagnetic Flow Meter

Suggested Specifications

24511-05 Rev. 1.0
March, 2011



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#24511-05 Rev. 1.0/03-11

FPI Mag™ Model 394L Suggested Specifications

GENERAL

The magmeter shall consist of two components; an electromagnetic averaging sensor and a converter unit. The magmeter shall automatically sense and correct for shifting velocity profiles in the pipe by constantly obtaining an area weighted mean velocity. The sensor shall have reverse flow measurement capability to be shown using three totalizers: positive, negative, and net. The meter shall be equivalent to the Model 394L FPI Mag Full Profile Insertion Electromagnetic Flow Meter as manufactured by McCrometer, Inc. in Hemet, California.

CONVERTER

The flowmeter converter shall be microprocessor based with a keypad for instrument set up and LCD displays for totalized flow, flow rate engineering units and velocity or totalized flow. The converter shall power the flow-sensing element and provide a galvanically isolated 4-20mA output for flow, and a flow proportional output. The output shall be split for forward and reverse flow: 4-12 mA = reverse flow; 12 mA = zero flow; and 12-20 mA = forward flow. It shall be possible, in the test mode; to easily set the converter outputs to any desired value within their range. The 4-20mA scaling, time constants, pipe size, flow proportional output, engineering units and test mode values shall be easily set via the keypad and display. Two separate fully programmable alarm outputs shall be provided to indicate high/low flow rates, empty pipe, fault conditions, reverse flow and over-range conditions. The converter shall periodically perform self-diagnostics and display any resulting error messages. All set up data and totalizer values may be protected by a password.

SENSOR

The flow-sensing element shall be of an electromagnetic multi point averaging type design and factory calibrated to traceable standards, such as NIST. Single point insertion or pressure port sensors shall not be acceptable. Installation of the averaging sensor shall be accomplished under flowing conditions through a 2-inch tap via a full port ball valve or corporation stop into the pipe. Profiling or site calibration shall not be required. Measuring electrodes and reference ground electrodes shall be constructed of 316 stainless steel to ensure no corrosion occurs by the passing fluid. Sensor shall have epoxy coating over stainless steel to help from attack of UV, chemical resistance and excess buildup. Sensor shall be suitable for clean, potable, raw (check algae content) or other debris-free water applications. The sensor shall not be damaged by extended operation at partially full or empty pipe conditions.

SENSOR CABLE

The sensor cable is 20 feet of multi-conductor; abrasive resistant, PVC jacketed cable flexible to -40°F. The sensor cable shall be permanently bonded to the sensor. Additional sensor cable, up to 250 feet shall be available as an option.

MOUNTING HARDWARE

Stainless steel retaining rods, of sufficient length, shall be provided for the smooth installation of the electromagnetic averaging sensor. Shorter stainless steel retaining rods shall also be provided for the continuous operation of the electromagnetic averaging sensor. In order to provide stable and secure sensor placement, the sensor shall be capable of compression up to 300 lbs. for use in low pressure PVC pipes and 450 lbs. for use in low pressure metal pipes. For applications other than low pressure, contact factory for compression instructions.

SPECIFICATIONS

MEASUREMENT

Volumetric flow in filled flow conduits 4" (100 mm) to 138" (3500 mm) utilizing insertable electromagnetic averaging sensor. Flow indication in English Std. or Metric units.

FLOW MEASUREMENT

Method: Electromagnetic

Accuracy:

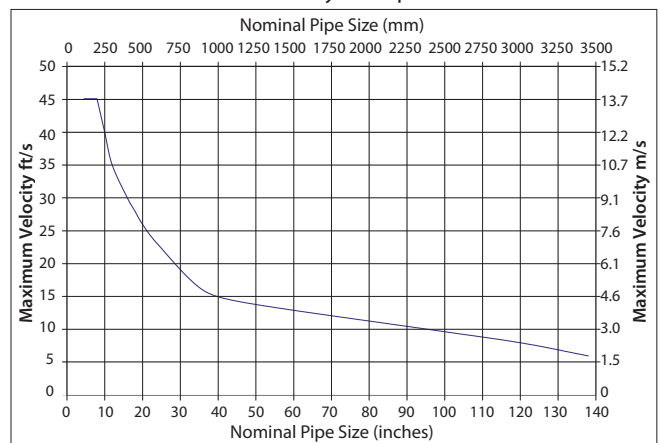
Forward: ±1% of reading ±0.03 ft/s (±0.009 m/s) zero stability from 0.3 to 20 ft/s (0.09 to 6 m/s) velocity range;

Reverse: ±1% of reading ±0.03 ft/s (±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

Maximum Velocity For Pipe Sizes



CONDUCTIVITY

Minimum conductivity of 5 μ S/cm (5 μ mho/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 20V. (1000 ohm, 4-20 mA)

4-20mA output is split for 4-12mA = reverse flow; 12mA = zero flow; 12-20mA = 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 @ <35V.

DUAL ALARMS

2 separate outputs: Isolated and protected transistor switch capable of sinking <250mA @ <35V. 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° to 170° F (-10° to 77° C) @ 250 psi

Sensor is submersible (IP68)

Electronics: Operating and storage temperature: -4° to 140°F (-20° to +60°C)

KEYPAD AND DISPLAY

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