



3" MULTI-MAG™ MODEL 287L
INSERTABLE ELECTROMAGNETIC AVERAGING
MAGMETER SPECIFICATION



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MULTI-MAG™ MODEL 287L SPECIFICATION

A. MAGMETER

General

The magmeter shall consist of two components: an electromagnetic averaging sensor and a transmitter unit. The magmeter shall automatically sense and correct for shifting velocity profiles in the pipe by constantly obtaining an area-weighted mean velocity. The meter shall be equivalent to the Model 287L Electromagnetic Averaging Magmeter as manufactured by McCrometer, Inc., in Hemet, California, or approved equal.

Electronics

The magmeter electronic unit shall be microprocessor-based with a 3-key numeric/control keypad for instrument setup and one graphical LCD backlit display. The displayed information is user selectable in English or metric units, and will reflect flow rate, totalized flow, and mean velocity. The flow totalizer shall be user selectable in either non-resettable or resettable format. The electronic unit shall power the flow-sensing element and provide an isolated 4-20mA output for flow, and programmable open-collector pulse output. An optional 4-20mA output is available. The 4-20mA scaling, time constants, pipe size, open-collector pulse output, engineering units, and test mode values shall be easily set via the keypad and display.

The magmeter electronics shall have password protection of site setup information, and battery backup to preserve site setup information from power loss. Magmeter electronics shall retain the last totalized flow information prior to power loss until normal AC power is restored. Power requirements shall be: AC :90-265VAC/44-66 Hz. (20W/25VA) or DC: DC: 10-35VDC (20W). The magmeter electronics must have on-site system test/diagnostics features, low velocity cutout, and conductivity detection of flow.

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 3-inch valve into the pipe. Profiling or site calibration shall not be required. Electrodes shall be constructed of a material such that no corrosion occurs by the passing fluid. Sensor shall be suitable for clean, potable, raw, 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, jacketed cable flexible to -40°F. The sensor cable shall be permanently bonded to the sensor. Additional sensor cable of up to 300 feet shall be available as an option. For longer lengths, consult factory.

B. SPECIFICATIONS

Measurement

Volumetric flow in filled flow conduits 24" (60.96 cm) to 120" (3 m) utilizing insertable electromagnetic averaging sensor. Flow indication in English Standard or Metric units. (Contact factory for larger pipe sizes.)

Velocity Measurement

Method: Electromagnetic

Zero Stability: ± 0.03 feet per second (± 0.009 m/s)

Accuracy: $\pm 1\%$ of reading from +0.3 ft/s to +20 ft/s + zero stability

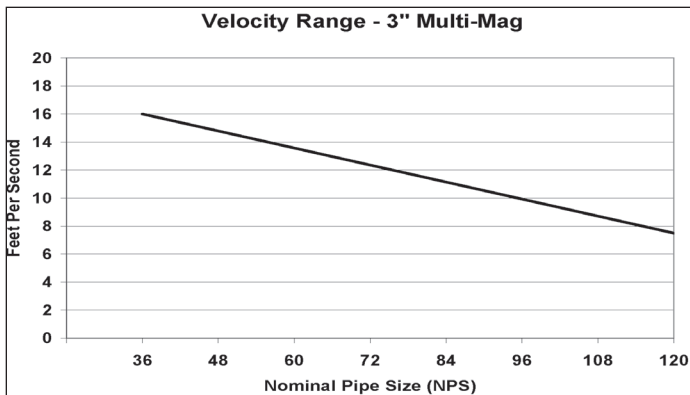
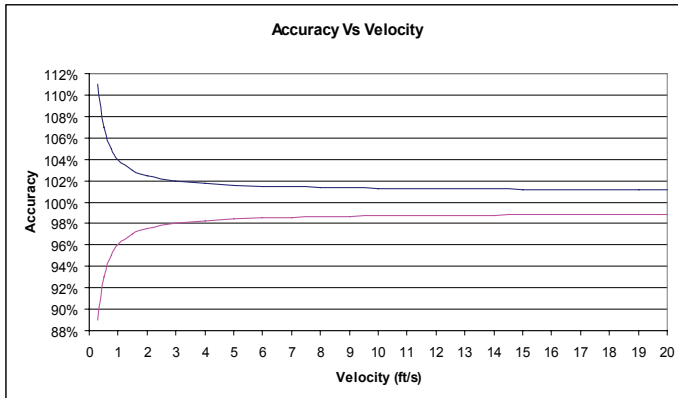
Has reverse flow indication (Contact factory for models with reverse flow measurement)

Range: Nominal pipe size availability

Linearity: 0.3% of range

Repeatability: 0.20% of range

Sensor Size-Velocity Range for Pipe Sizes



(Contact factory for information on models with bi-directional flow capability or velocities in excess of above specifications.)

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

Sensor: Fiberglass

Insertion Hardware: 316 stainless steel exposed to flow.

Compression Seal: Silicone RTV

Sensor electrodes: Carbon

5 electrode pairs and 5 grounding pairs

Outputs

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

Output Capability $\leq 20V$. (1000 ohm, 4-20 mA) Second output available as an option.

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

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

Dual Alarms

2 separate outputs: Isolated and protected transistor switch capable of sinking $<250\text{mA @ } <35V$.

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

NEMA 6/IP67

5.75" H x 5.75" W x 6.69" D

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

Electrical Connections

Compression seals for 0.125" to 0.375" diameter round cable.

Isolation

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

Standards

CE Certified

Electrical: Meets ANSI/ISA-S82.10-1988 and S82.03-1988

Vibration: Meets BS 2011: Part 2.1Fc: 1983

Environmental

Pressure/Temperature Limits:

Sensor: Flow Temperature Range

32° to 110° F (0° to 44° 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.

C. MOUNTING HARDWARE

Stainless steel restraining rods of sufficient length shall be provided for the smooth installation of the electromagnetic averaging sensor. Shorter stainless steel restraining rods shall also be provided for the continuous operation of the electromagnetic averaging sensor. In order to provide stable and secure sensor placement, the inserted sensor must seat against the far wall of the pipe. The sensor shall be capable of pressures against the far wall of the pipe of up to 300 PSI for use in plastic pipes and 600 PSI for use in metal pipes.

D. AVAILABLE OPTIONS

The unit shall have the ability to be upgraded to include the following options as required by the user.

Sensor Cable:

Standard: 20 feet (6 m)

Optional: up to 300 ft (91 m) (For longer lengths, consult factory.)

Output: Additional 4-20mA output