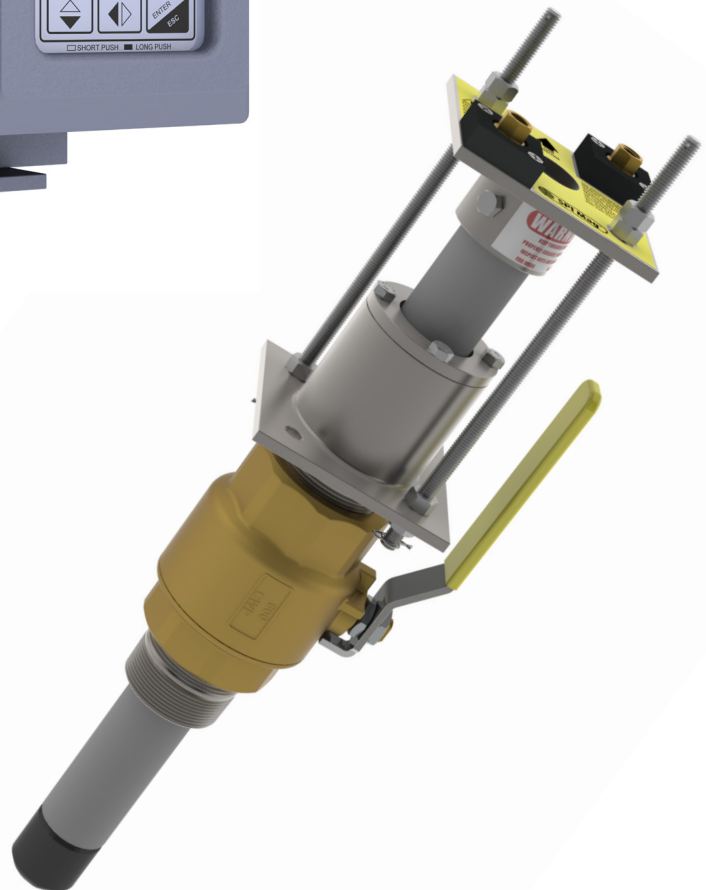




Model 282L Single Point Insertion Electromagnetic Flow Meter 1" and 2" Sensor

Suggested Specifications
24510-79 Rev. 1.6
June, 2016



SPI Mag™ Model 282L 1" and 2" Suggested Specifications

GENERAL

The flow meter shall consist of two components: an electromagnetic sensor and a converter for clean and wastewater. The 1" electromagnetic sensor shall be capable of operating in pipe diameters from 2 to 30 inches in clean water applications. The 2" electromagnetic sensor shall be capable of operating in pipe diameters from 6 to 96 inches in clean or wastewater applications. The flow meter shall determine the volumetric flow rate by means of the Continuity Equation where flow rate "Q" equals mean velocity "V" times cross sectional area "A" ($Q = V \times A$). The velocity measurement must be taken at a known location, then, through empirically established equations, the sensed velocity will be converted to a mean velocity. The meter shall be equivalent to the SPI Mag Model 282L Single Point Insertion Electromagnetic Flow Meter as manufactured by McCrometer, Inc., in Hemet, California.

CONVERTER

The flow meter converter shall be microprocessor based with a keypad for instrument set up and LCD displays for totalized flow, flow rate engineering units and velocity. The converter shall power the flow-sensing element and provide a galvanically isolated Dual 4-20mA output. It shall be possible, in the test mode; to easily set the converter outputs to any desired value within the 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. Four separate fully programmable alarm outputs shall be provided to indicate empty pipe, forward/reverse, polarity (normally open/close), analog over-range, fault conditions, high/low flow rates, % of range, and pulse cutoff. 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 single point type design and factory calibrated to traceable standards, such as NIST. The sensor shall be made of a polyurethane with pure carbon electrodes exposed to flow. Installation of the sensor shall be accomplished under flowing conditions through a 2-inch valve, with final location being located near the inside wall of the flow conduit or 1/8 pipe ID. To eliminate erroneous readings due to pipe wall effects, the sensor must have its electrodes located at least 3/16" from pipe wall and be designed with a curved tip shape, so as not to collect debris while in the operating position. Flat tipped or Doppler sensors shall not be acceptable.

SENSOR CABLE

The sensor cable is 20 feet of multi-conductor, abrasive resistant, PVC jacketed submersible cable flexible to -40°F. The sensor cable shall be permanently bonded to the sensor. Additional sensor cable, up to 200 feet, shall be available as an option.

MOUNTING HARDWARE

The insertion tube and restraining rods assembly shall be provided for the smooth installation and operation of the velocity sensor and shall be of sufficient length to allow a full profile of the flow conduit. The optional stainless steel insertion tube shall be rated for 250 PSI @ 160° F and the PVC insertion tube shall be rated for 150 PSI @ 105° F. Hardware must allow sensor to be secured by bolts when sensor is being inserted and retracted. A stainless steel compression seal assembly shall also be supplied.

MEASUREMENT

Volumetric flow in filled flow conduits 2" (50mm) to 96" (2,440 mm) diameter utilizing insertable velocity sensor. 1" meter = 2" to 30" pipe I.D.; 2" meter = 6" to 96" pipe I.D.
Flow indication in English Standard or Metric units.

FLOW MEASUREMENT

Method: Electromagnetic
Accuracy: $\pm 2\%$ 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
Velocity Range: +0.3 to +30 ft/s (+0.09 to +9 m/s)
Has reverse flow indication

CONDUCTIVITY

Minimum conductivity of 5 μ S/cm

POWER REQUIREMENTS

AC: 90-265V 45-66 Hz (20W/25VA) or

DC: 10-35V (21W)

AC or DC must be specified at time of ordering.

MATERIALS

Sensor: Polyurethane exposed to flow
2" Sensor Mounting: PVC and Stainless Steel exposed to flow. (Stainless Steel Insertion Tube Optional)
Compression Seal: Buna "N" O-Ring seal exposed to flow.

OUTPUTS

Dual 4-20mA Outputs: Galvanically isolated and fully programmable for zero and full scale (0-21mA)

Four separate digital programmable outputs: open collector transistor usable for pulse, frequency, or alarm settings.

- Volumetric Pulse
- Flow Rate (Frequency)
- Hardware Alarm
- High/Low Flow Alarms
- Empty Pipe
- Directional Indication
- Range Indication

CONVERTER ENCLOSURE

IP67 Die cast aluminum
5.75" H x 5.75" W x 6.69" D
(14.6 cm H x 14.6 cm W x 17 cm 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

RATINGS

IP67 Die Cast Aluminum Converter
CE Certified (Converter Only)

ENVIRONMENTAL

Pressure/Temperature Limits:

PVC Insertion Tube: Up to 105°F (41°C) at 150 PSI

Stainless Steel Insertion Tube: Up to 160°F (71°C) at 250 PSI (McCrometer recommends the use of Stainless Steel)

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

INSERTION TUBE

- To determine insertion tube length for typical near wall installations, divide the pipe I.D. by 8 and add 18".
- To achieve specified accuracy, McCrometer recommends completing a full profile analysis. To do this, you must request an insertion tube that is 18" longer than pipe I.D.
- Tube assemblies include rods and mounting hardware.

1"	Stainless steel tube, 12" length. Will profile 4" pipe I.D.
	Stainless steel tube, 24" length. Will profile 16" pipe I.D.
	Stainless steel tube, 36" length. Will profile 28" pipe I.D.
2"	PVC tube, 18" length. Will profile a 10" pipe I.D.
	PVC tube, 24" length. Will profile a 16" pipe I.D.
	PVC tube, 30" length. Will profile a 22" pipe I.D.
	Opt.: stainless steel tube. Specify length - 65" maximum

KEYPAD AND DISPLAY

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

OPTIONS

- DC Power
- Sun Shield
- Stainless Steel ID Tag
- Valves
- Additional Sensor Cable up to 200' (for longer lengths consult factory)
- Sensor Insertion Tool

ORDERING REQUIREMENTS

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

- Model and tap size
- Insertion tube length
- Pressure
- Minimum flow
- Maximum flow
- Typical flow
- Fluid
- Pipe I.D.
- Cable length
- Temperature
- Any other chemicals in use
- Indicator and totalizer units

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