

Instructions

EM 101 Low Flow Electromagnetic Flow Meters



Installation

Mounting

The EM 101 model has a flow meter unit and a separate control unit containing a LCD display. The control unit should be mounted to a secure surface with screws or bolts. To gain access to the mounting holes, remove the front cover. The mounting holes are directly under the front cover screws. The flow meter unit is supplied with a removable mounting bracket, which can be attached to a panel or solid surface. If piping is rigid and is not subject to vibration, the meter may be supported by the piping and the mounting bracket removed.

The flow meter may be connected to metal or plastic pipe or tubing. The -025 (1/4" ID) and -038 (3/8" ID) meters have 3/8" male NPT connections. The -050 (1/2" ID) has 1/2" male NPT connections. For plastic tubing use female NPT x tubing adapters.

A minimum 1" of straight pipe run is recommended on the inlet side of the meter. Straight run on the outlet is not necessary.

CAUTION: Although this meter has an empty pipe detection function, under certain conditions of empty or partially-full pipe the meter may read a flow when there is none. Always mount the meter in such a way that it will always be full of liquid.

Operation

Display

The flow rate is displayed in the time and volume units which have been selected during the setting procedure. The flow rate is displayed up to 4 digits. The total flow is displayed in the same units of up to 8 digits. It then re-sets to zero and beings again.

Output

The analog output, either 4 – 20 mA or 0 to 5 VDC, varies continuously with the flow. If the output is too "jumpy" (changes too frequently), it can be dampened by either increasing the average time (see the "Fast Analog Output" setting) or by selecting "Disabled" under Fast Analog Output and increasing the amount of dampening using the Low Pass Filter setting.

Connections

The unit is supplied with two cables pre-wired between the flow meter and control units. One is for power to the flow meter coil and the other is the flow meter output signal from the electrodes. All customer wiring connections (power, output signals and alarm relays) are made in the control unit. A standard power cord is normally used for the power connection. If conduit connection is required, the strain relief fitting may be replaced with a conduit connector.

Grounding

For proper operation and optimum metering accuracy one or both of the grounding lugs on the flow meter unit must be well connected to a good quality earth ground. The grounding lugs also retain the mounting bracket. All flow meter units are supplied with 12 feet of grounding wire attached. When metallic piping is attached to the flow meter, an additional ground connection clamped to the piping should be made. See the diagram on page 3.

The pulse output will produce a 50% duty cycle pulse at the volume intervals for which it is set - one pulse per liter, for example. Note that since each pulse consists of equal times on and off, if the interval between pulses is large the pulse may remain in the "on" condition for several seconds.

The relay alarm output will only energize if the flow goes above (high) or below (low) the flow alarm setting. The alarm relay will remain energized until the flow exceeds the setpoint by .25% (hysteresis).

Start-up

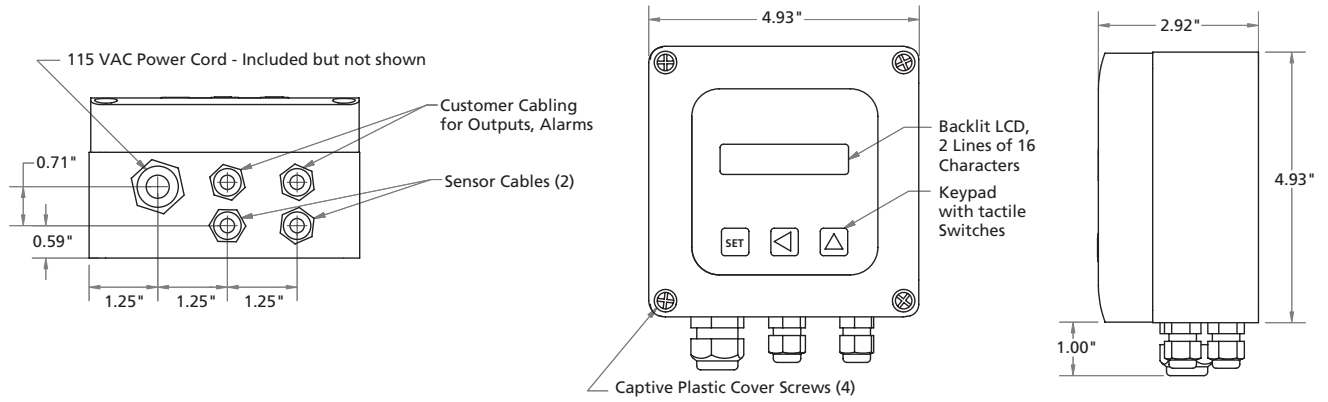
On start up it can take from a few seconds to a minute for the signal to stabilize. Keeping the meter filled with fluid will minimize this delay.

Instructions

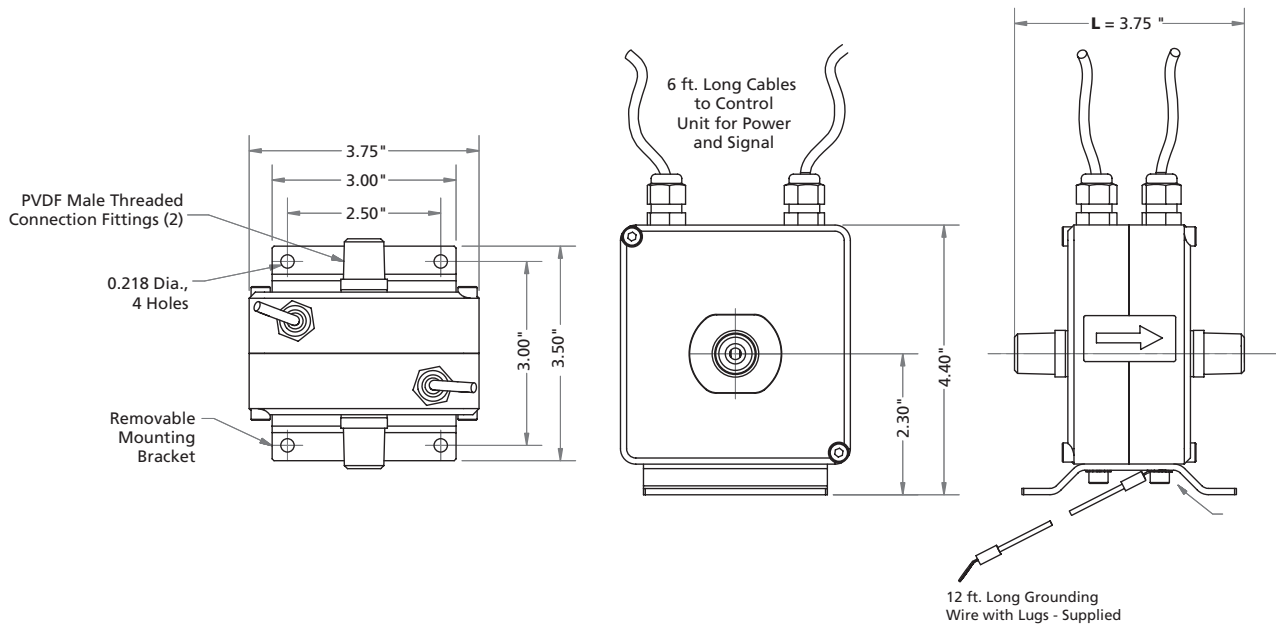


Dimensions

Control Unit



Flow Meter Unit

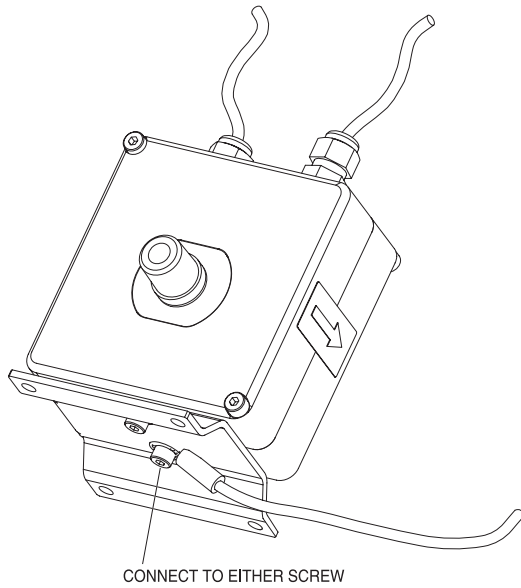


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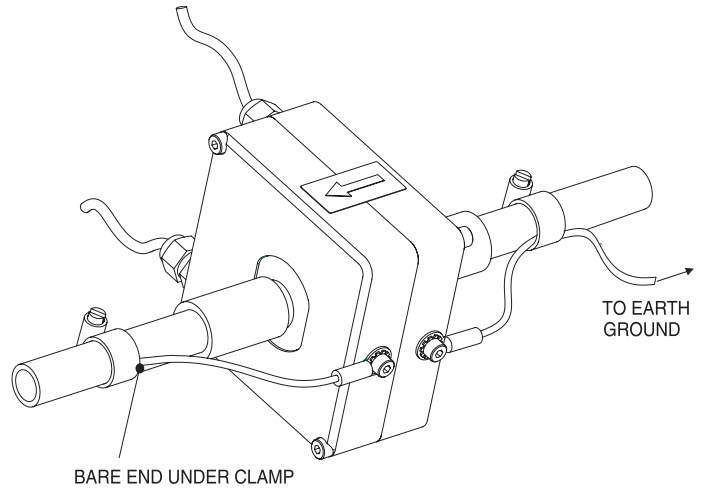


Grounding

Standard Grounding with Thermoplastic Piping

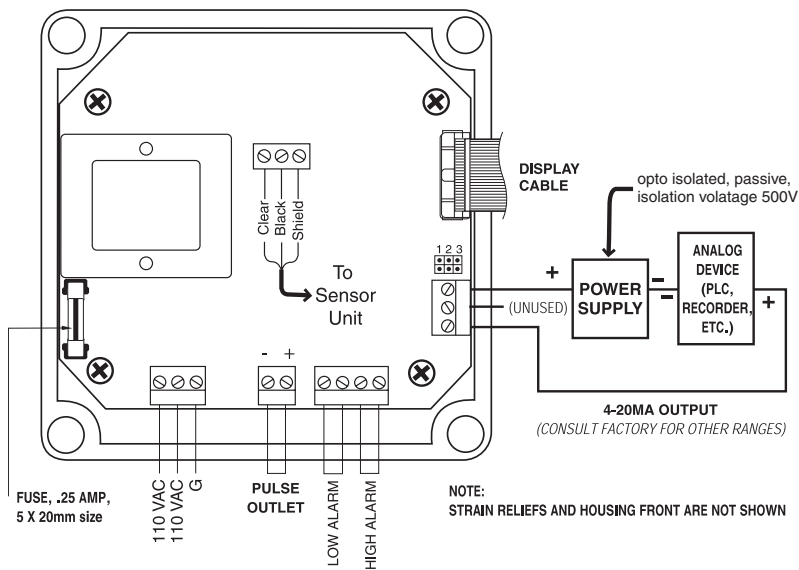


Grounding with Metallic Piping

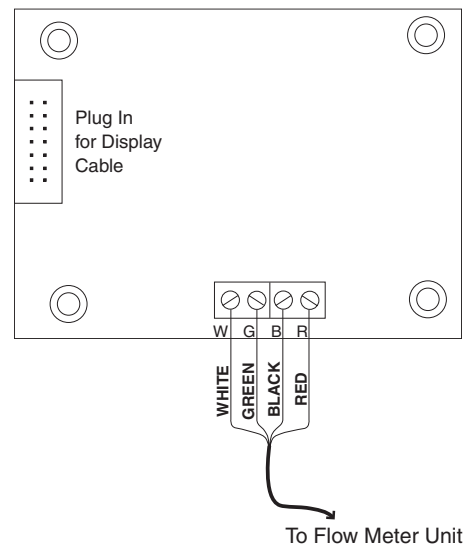


Electrical Connections

Control Unit Housing



Control Unit Display Board



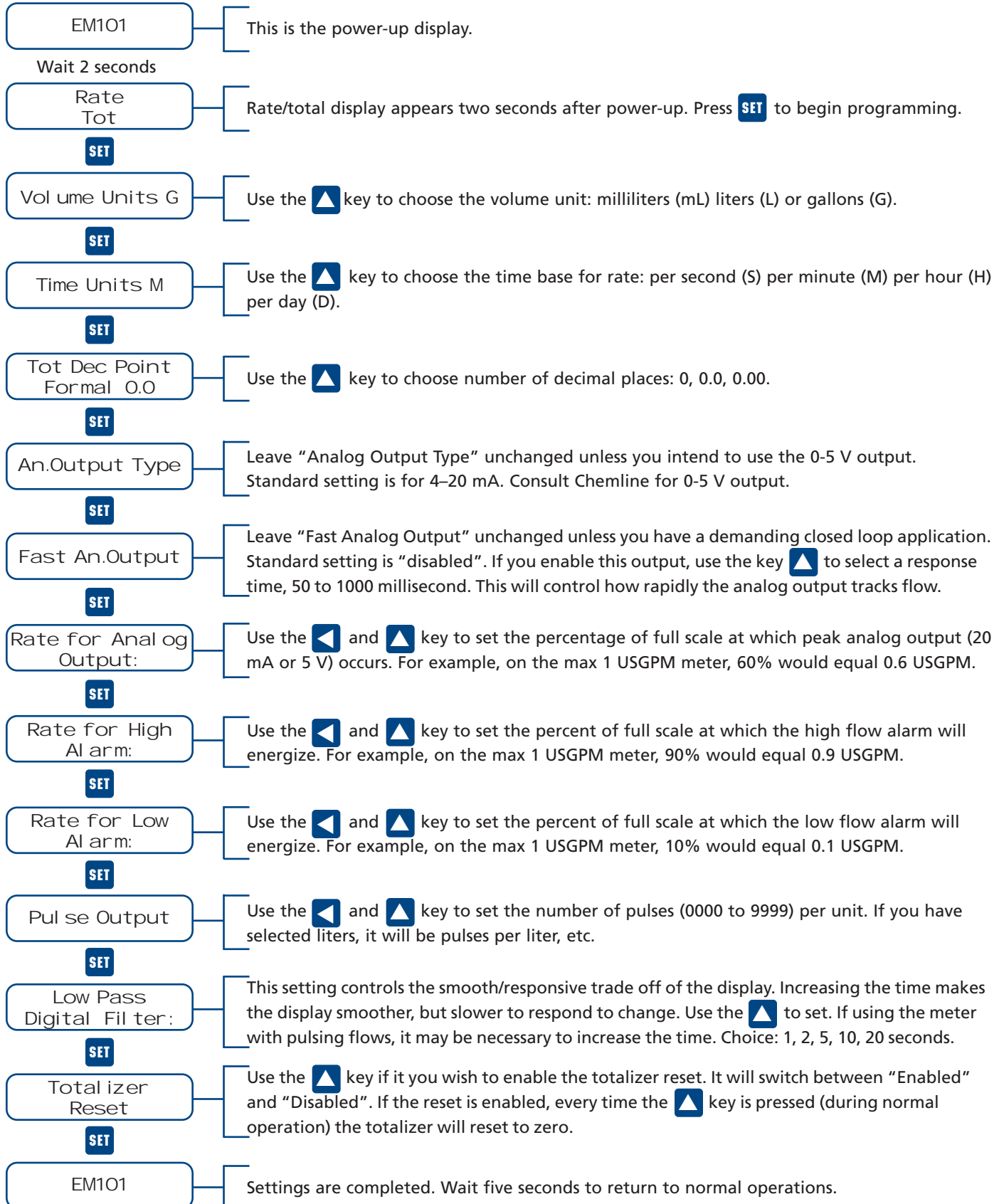
Instructions



Setting Procedure

DISPLAYS

SETTING



Instructions



Specifications

MATERIALS

Flow Tube: PVDF
Electrodes: Platinum coated Titanium
O-Ring Seal: EPDM or Viton
Housing: Flow Meter: Aluminum coated with heat fused acrylic enamel
Control Unit: Polycarbonate

POWER SUPPLY

- 115 VAC, 60 Hz, optional 220 VAC/50Hz

ACCURACY

- $\pm 1\%$ of reading above 10% of full scale
- $\pm 3\%$ of reading below 10% of full scale

OUTPUTS

- 4 – 20 mA or 0 – 5 VDC, both opto isolated, passive (500 Volt isolation)
- Frequency to 9999 pulses per gallon, opto isolated, open collector NPN, max. 10 mH inductance, 30 VDC
- LCD backlit display with 16 characters, 4 digits flow rate, 8 digits total flow
- High and low flow alarm relays, isolated, rated 100 mA at 110 Volts

FLUID MEDIA

Maximum Temperature: 85°C (185°F)
Maximum Pressure: 150 psi at 20°C
Minimum Conductivity: 20 microsiemens per cm

Trouble Shooting

Problem	Possible Causes	Possible Solutions
No Display.	No power. Blown fuse. Loose ribbon cable.	Check for 110 VAC. Test fuse, replace if blown. Check ribbon cable connections.
Flow rate always reads "0".	Reversed flow direction. Missing ground wire. Empty pipe. Flow rate below minimum. Loose wiring or incorrect wiring. Fluid conductivity <20 uS/cm.	Reverse flow connections. Install ground wire. See page 1. Install meter in vertical position. Use next smaller flow meter. Check connections on display board. Select another flow meter. Consult Chemline.
Flow rate incorrect.	Missing or incorrect ground wire. Fluid conductivity <20 uS/cm. Empty pipe.	Check for proper grounding. See page 1. Select another flow meter. Consult Chemline. Install meter in vertical position.