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Instructions

CHEMLINE Plastics Limited

EM 100/102 Low Flow Electromagnetic Flow Meters

Installation

Mounting

The EM 100 and EM102 model flow meters may be supported by the piping if the piping is rigid and there is no vibration. If the piping is subject to vibration it is not recommended to us the piping as the sole method of supporting the meter, particularly on the smaller sizes. In this case, the flow meter housing may be anchored on a panel by inserting the grounding studs through pre-drilled holes. Note stud dimensions on the dimensional drawing.

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.

Connections

Power and signal connections use a single 4 or 6 conductor cable. The wires are colour coded. A 12 foot length of cable is provided pre-wired to the flow meter unit.

Grounding

Proper grounding is essential. If metal piping is used, connect the grounding studs on the bottom of the unit to both inlet and outlet pipes using metal clamps. See the diagram on page 2. This will ensure optimum metering accuracy. On plastic pipe or tubing installations it is also necessary to ground the unit to a good quality earth ground. Use the 12 foot grounding wire supplied with the unit or if necessary a longer wire attached to one or both of the grounding studs.

Operation

Output

Pulse Output – The pulse signal is a 50% duty cycle pulse set at 1000 pulses/litre (3782/gallon).

4–20 mA Signal (with EM102 only) – The signal is set at 4 mA for zero flow and 20 mA at maximum rated flow.

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.

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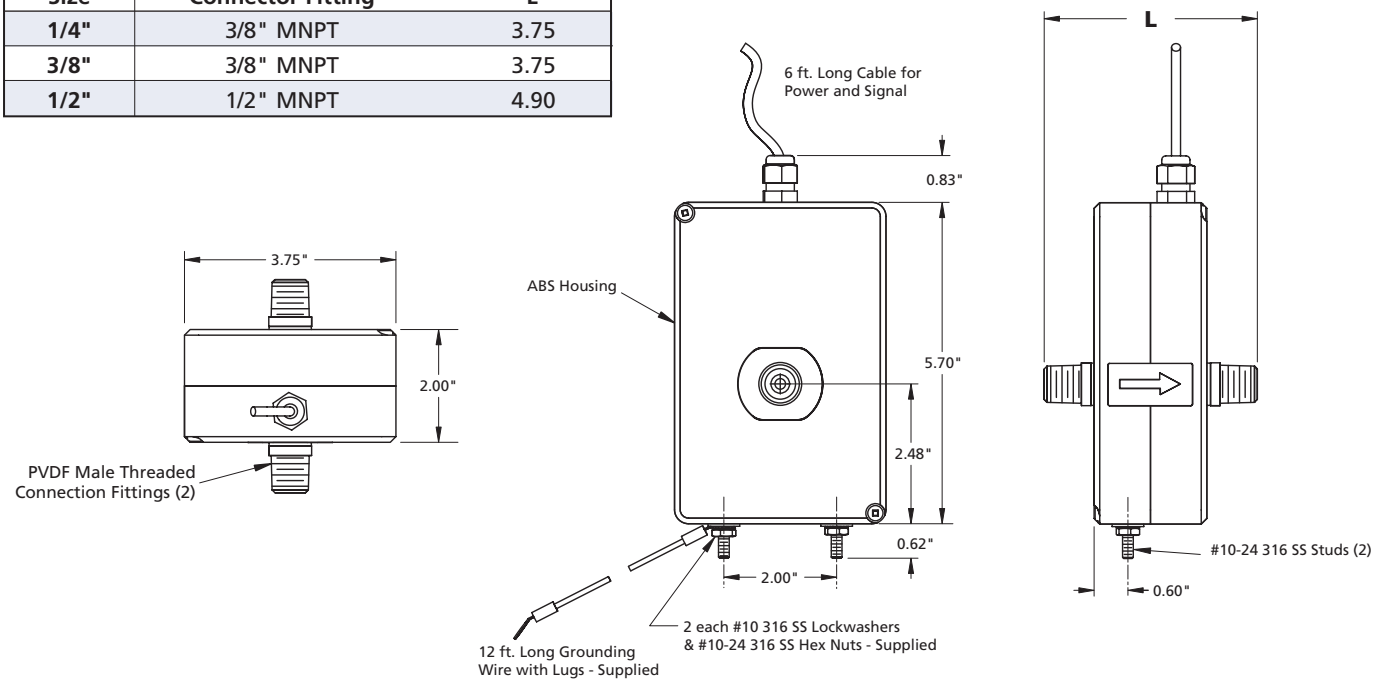
Dimensions

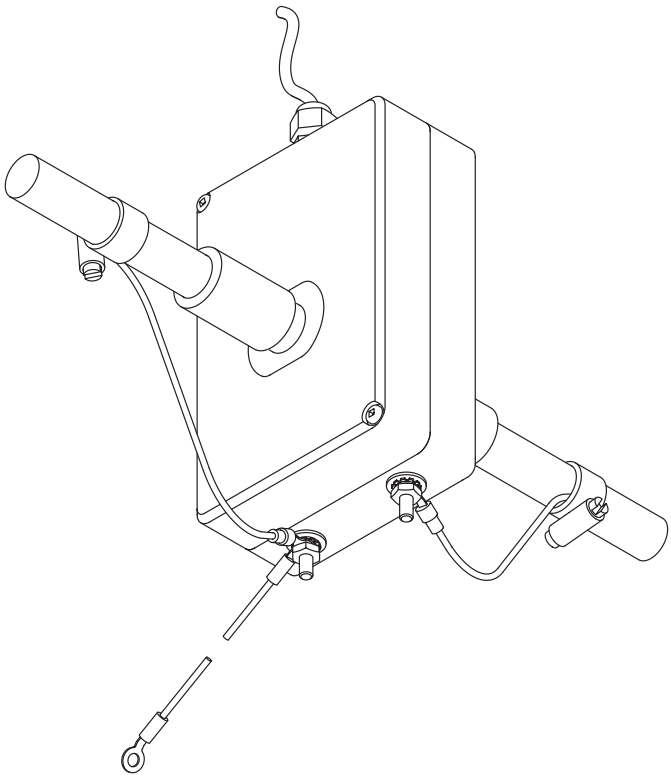
DIMENSIONS INCHES

Size	Connector Fitting	L
1/4"	3/8" MNPT	3.75
3/8"	3/8" MNPT	3.75
1/2"	1/2" MNPT	4.90



Grounding

Grounding with Metallic Piping



Wiring Colour Coding

RED	+	12 – 24 VDC
BLACK	-	power
GREEN	+	pulse output isolated
WHITE	-	pulse output isolated
ORANGE	+	4 – 20 mA, isolated } EM 102
BLUE	-	4 – 20 mA, isolated } model only

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Specifications

MATERIALS

Flow Tube: PVDF
Electrodes: Platinum coated Titanium
O-Ring Seal: EPDM or Viton
Housing: ABS

POWER SUPPLY

- 12 – 24 VDC, 180 mA

ACCURACY

- ± 1% of reading above 10% of full scale
- ± 3% of reading below 10% of full scale

OUTPUTS

EM 100:
- Frequency opto isolated, open collector output, 1,000 pulses per litre, 3,785 pulses per gallon

EM102:
- 4 – 20 mA opto isolated, passive (500 Volt isolation)
- Frequency output, same as EM 100

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
Analog output at 0 mA.	No loop power.	4 – 20 mA loop requires an external power supply between 12 and 24 VDC. If missing, add it.
Analog output is 4 mA with flow.	Unit not grounded. Flow reversed.	Connect to earth ground. See Page 1. Reverse meter so flow matches flow direction arrow.
No pulse output.	Reversed output connections. Not grounded. Reversed flow.	Change output connections. Connect to earth ground. See page 1. Change flow direction.
Flow rate is incorrect.	Reversed output connections. 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.