

EM 100/102

LOW-FLOW MAGNETIC FLOW METER INSTRUCTIONS

EM 100/102 - 025

EM 100/102 - 038

EM 100/102 - 050



GENERAL INFORMATION

The EM100 is a 24 VDC-powered electromagnetic flow meter with chemically-resistant plastic wetted parts, in nominal maximum flow rates of 4, 11, and 30 liters per minute. It uses bipolar DC technology at a frequency high enough to allow for measurement of pulsating flows from diaphragm-type chemical metering pumps. All electronics are contained in a single compact, chemical-resistant housing. This configuration, combined with the standard pulse and analog outputs, makes the EM100 well suited for OEM applications. Other applications include remote monitoring of chemical volume or rate using a computer or PLC.



EM100/102 LOW FLOW
MAGNETIC FLOW METER
INSTRUCTIONS

SPECIFICATIONS

MATERIALS	
Wetted Materials -	<ul style="list-style-type: none">• Body: Kynar™ PVDF• Electrodes: Platinum over titanium• Internal Seals: Viton™
Housing -	<ul style="list-style-type: none">• ABS
POWER	
	<ul style="list-style-type: none">• 12-24 VDC, 180 mA
ACCURACY	
	<ul style="list-style-type: none">• +/-1% of reading, above 10% of full scale• +/-3% of reading, below 10% of full scale
MAXIMUM FLUID TEMPERATURE	
	<ul style="list-style-type: none">• 185° F
MAXIMUM PRESSURE	
	<ul style="list-style-type: none">• 150 PSI (@ 75° F)
MINIMUM CONDUCTIVITY	
	<ul style="list-style-type: none">• 20 microsiemens
OUTPUTS	
	<ul style="list-style-type: none">• Frequency opto isolated 1000 pulse/liter (3785 p/g)• Optional 4-20 mA opto isolated passive

FLOW RANGE

SIZE	NOMINAL FULL SCALE			MIN. FOR 1% ACCURACY			LOW FLOW CUTOFF		
	L/MIN.	GAL./MIN.	GAL./HR.	L/MIN.	GAL./MIN.	GAL./HR.	L/MIN.	GAL./MIN.	GAL./HR.
-025	3.8	1	60	.38	0.1	6	.04	.009	.54
-038	11	3	180	1.1	.3	18	0.1	.025	1.5
-050	30	8	480	3.0	.8	48	.25	.065	3.9

EM 100/102 SERIES

MAGNETIC FLOW METER INSTRUCTIONS

INSTALLATION

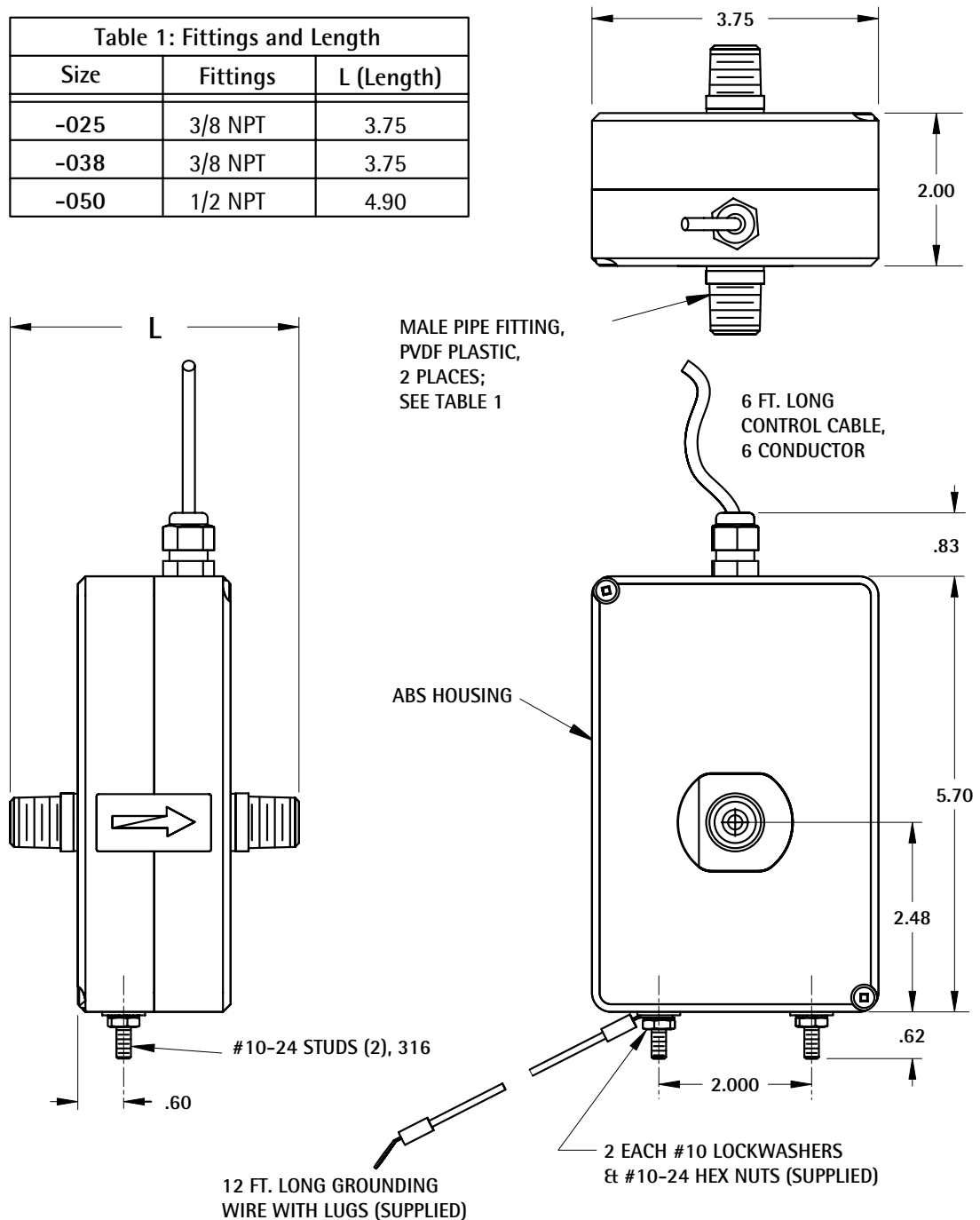
The EM100 can be supported by its piping connections if the piping is rigid and there is no vibration. Alternatively, the grounding studs can be used for mounting by inserting them through pre-drilled holes. Note the centerline distance in the dimensional drawing below.

MOUNTING



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. If this is a hazardous condition, mount the meter in such a way as to ensure the meter will always be full of liquid.

Size	Fittings	L (Length)
-025	3/8 NPT	3.75
-038	3/8 NPT	3.75
-050	1/2 NPT	4.90



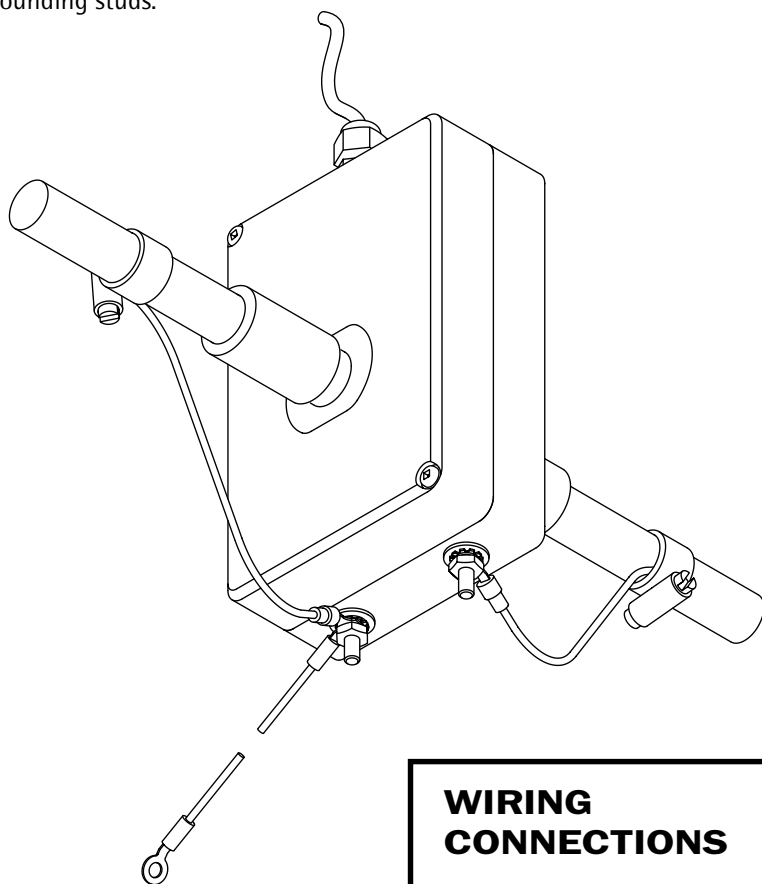
PIPING

Metallic pipe or tube, or plastic tubing can be used with the meter. The -025 and -038 meters have 3/8 NPT male pipe fittings, and the -050 has 1/2 NPT male pipe fittings. For plastic tubing, use female NPT x tubing adaptors. In installations exposed to vibration, using the piping as the sole support for the meter is not recommended, particularly on the smaller sizes.

If metal piping is used, ground connections from the grounding studs on the bottom of the unit to both inlet and outlet pipes provide the best results in metering accuracy. This does not apply to plastic tubing. A minimum of 1" of straight pipe run is recommended on the inlet side of the meter. Straight run is not necessary on the outlet.

CONNECTIONS

Power and signal connections are provided by the single 4 or 6-conductor cable, and are color-coded. See the "wiring connections" chart. In addition, it is necessary for proper operation to ground the unit to a good quality earth ground. Use the 12 ft. grounding wire supplied with the unit, or if necessary, a longer wire attached to one or both of the grounding studs.



WIRING CONNECTIONS

RED	+ 12 to 24 VDC Power	
BLACK	- Power	
GREEN	+ Pulse Output Isolated	
WHITE	- Pulse Output Isolated	
ORANGE	+ 4-20 mA Isolated	} Optional
BLUE	- 4-20 mA Isolated	

OPERATION

When the newly-installed meter is first powered up, particularly if it has been dry prior to start up, it can take from a few seconds to a minute for the signal to stabilize. In normal operation, keeping the meter filled with fluid is recommended to prevent this delay. An empty pipe detection feature will normally respond to lack of liquid in the pipe, and will register zero flow, but under certain rare conditions it is possible for this feature to fail to recognize the empty pipe. See the warning under "Mounting" regarding this possible problem.

The optional 4-20 mA signal outputs 4 mA at zero flow and 20 mA at maximum rated flow. The standard pulse signal is a 50% duty cycle pulse set at 1000 pulses/liter (3785 pulses/gallon).

EM100/102 TROUBLESHOOTING GUIDE

Problem	Possible Causes	Possible Solutions
Analog output at 0 mA	No loop power	4-20 mA loop needs an external power supply - if missing, add it
Analog output is 4 mA with flow	Unit not grounded Flow reversed	Connect to earth ground Note flow direction arrow, reverse direction to match
No pulse output	Reversed output connections Not grounded Reversed flow	Change output connection Connect to earth ground Change flow direction
Flow rate incorrect	Missing or incorrect ground wire Fluid conductivity <20 uS/cm Empty pipe	Check for proper grounding Select other flow meter Install meter in vertical position

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