

EM 101

LOW-FLOW MAGNETIC FLOW METER INSTRUCTIONS

EM 101-025

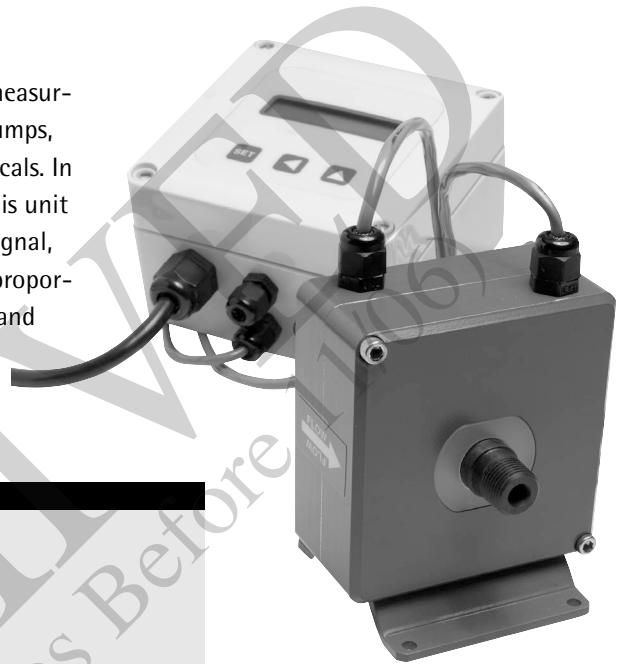
EM 101-038

EM 101-050



GENERAL INFORMATION

The EM101 is a small plastic-bodied electromagnetic flow meter, in nominal maximum flow rates of 1, 3, and 8 gpm. Capable of measuring the pulsating flows from air and solenoid-driven metering pumps, the meter is primarily designed for electrically-conductive chemicals. In addition to measuring and displaying flow rate and total flow, this unit has a variety of outputs. For continuous transmission of a flow signal, there is a 4-20 mA, and 0-5 Volt signal, and a frequency signal proportional to flow. In addition, there are relay alarm outputs for low and high flow with user-set flow levels.



EM101 LOW FLOW
MAGNETIC FLOW METER
INSTRUCTIONS

SPECIFICATIONS

MATERIALS

- Wetted Materials -
- Body: Kynar™ PVDF
 - Electrodes: Platinum coated titanium
 - Internal Seals: Viton™
- Housings -
- Primary Element: Fusion coated aluminum
 - Control / Display: Polycarbonate

POWER

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

ACCURACY

- +/-1% of reading, above 10% of full scale
- +/-3% of reading, below 10% of full scale

MAXIMUM FLUID TEMPERATURE

- 185° F

MAXIMUM PRESSURE

- 150 PSI (@ 75° F)

MINIMUM CONDUCTIVITY

- 20 micro Siemens

OUTPUTS

- 4-20 mA, 0-5 Volts (both isolated)
- Frequency to 9999 pulses per gallon, Isolated 10 mA, 30 VDC
- High alarm, low alarm relay, Isolated (100 mA, 110 VAC/VDC)


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

1-800-975-8153

INSTALLATION

Mounting. Mount the control housing 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 primary element is supplied with a foot bracket, which can be attached to a secure surface. Alternatively, the unit can be supported by the piping and the foot bracket can be removed.



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.

Connections. The unit ships with the coil activation and signal leads already connected to the control housing. To connect output signal or alarm relay leads, remove the front cover. See the "Connections" diagram. Power connection uses a standard power cord. If conduit connection is required, remove the cord and strain relief and use the strain relief hole for a conduit connector.

Grounding. Important: For proper operation, one or both of the ground lugs must be well connected to a good

quality earth ground. (The ground lugs also retain the foot bracket). See the Grounding diagram on page 4. All magmeters come with a 12 feet ground wire attached.

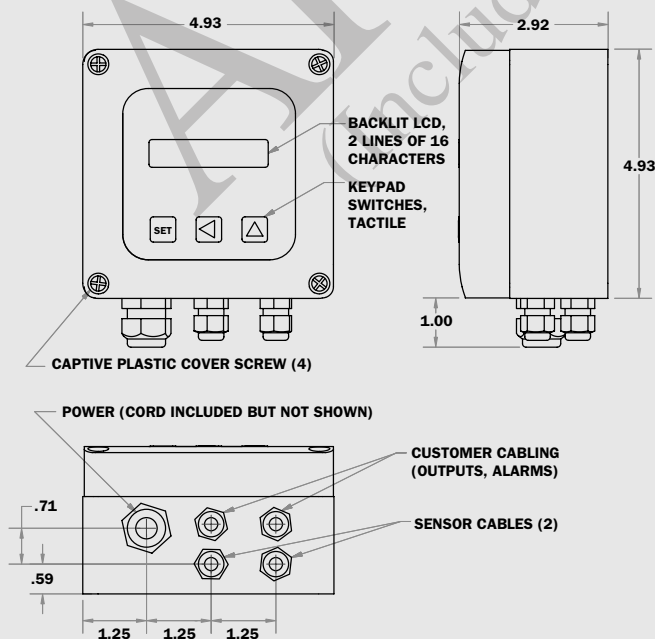
OPERATION

Display. The flow rate is displayed in the time and volume units which have been selected (liters/min, for example). The cumulative total flow is displayed in the chosen units, up to eight digits. It then resets to zero and begins again.

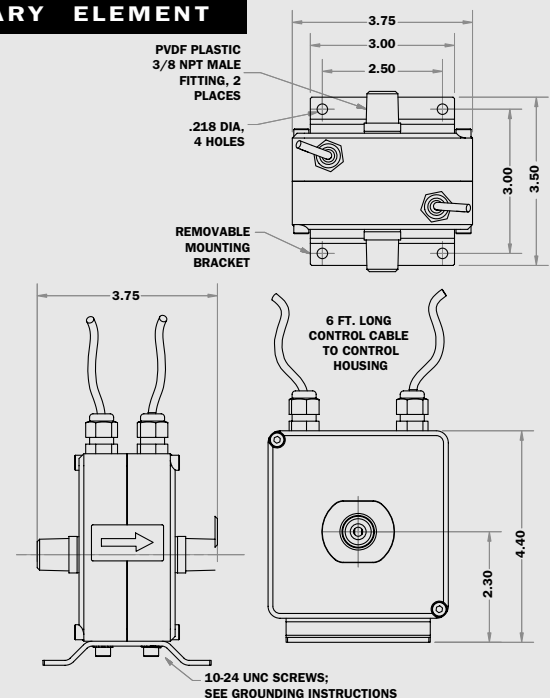
Outputs. The analog output which has been chosen varies continuously with the flow. If the output is too "jumpy" (changes too frequently), it can be damped either by increasing the averaging time (see the "Fast Analog Output" setting) or by selecting "Disabled" under Fast Analog Output and increasing the amount of damping using the Low Pass Filter setting. 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).

MOUNTING PATTERN

CONTROL HOUSING



PRIMARY ELEMENT



DISPLAYS

SETTING

SeaMetrics Inc.
EM101

— This is the power-up display.

WAIT 2 SECONDS

Rate
Tot

— Rate/total display (shows two seconds after power-up), Press **SET** to begin programming

SET

Volume Units G

— Use the **▲** key to choose the volume unit: milliliters (mL) liters (L) or gallons (G)

SET

Time Units M

— Use the **▲** key to choose the time base for rate: per second (S) per minute (M) per hour (H) per day (D)

SET

Tot Dec Point
Format 0.0

— Use the **▲** key to choose number of decimal places: 0, 0.0, 0.00

SET

An. output Type

— Leave "Analog Output Type" unchanged unless you intend to use the 0-5 V output. Standard setting is for 4-20 mA. Consult factory for 0-5 V output.

SET

Fast An. Output

— Leave "Fast Analog Output" unchanged unless you have a demanding closed-loop application. Standard setting is "disabled". If you enable this output, use the **▲** key to select a response time, 50 to 1000 millisecond. This will control how rapidly the analog output tracks flow.

SET

Rate For Analog
Output:

— Use the **◀** and **▲** key to set the percentage of full scale at which peak analog output (20 mA or 5 V) occurs. On a max 10 gpm meter, 60% would be 6 gpm, for instance.

SET

Rate For High
Alarm:

— Use the **◀** and **▲** key to set the percent of full scale at which the high flow alarm will energize. On a 10 gpm meter, 90% would equal 9 gpm, for instance.

SET

Rate For Low
Alarm:

— Use the **◀** and **▲** key to set the percent of full scale at which the low flow alarm will energize. On a 10 gpm meter, 10% would equal 1 gpm, for instance.

SET

Pulse Output

— Use the **◀** and **▲** key to set the number of pulses (0000 to 9999) per unit. If you have selected liters, it will be pulses per liter, etc.

SET

Low Pass
Digital Filter:

— This setting controls the smooth/responsive trade off of the display. Increasing the time makes the display smoother, but slower to respond to change. Use the **▲** to set. If using the meter with pulsing flows, it may be necessary to increase the time. Choice: 1, 2, 5, 10, 20 seconds.

SET

Totalizer Reset

— Use the **▲** key if you wish to enable the totalizer reset. It will switch between "Enabled" and "Disabled". If the reset is enabled, every time the **▲** key is pressed (during normal operation) the totalizer will reset to zero.

SET

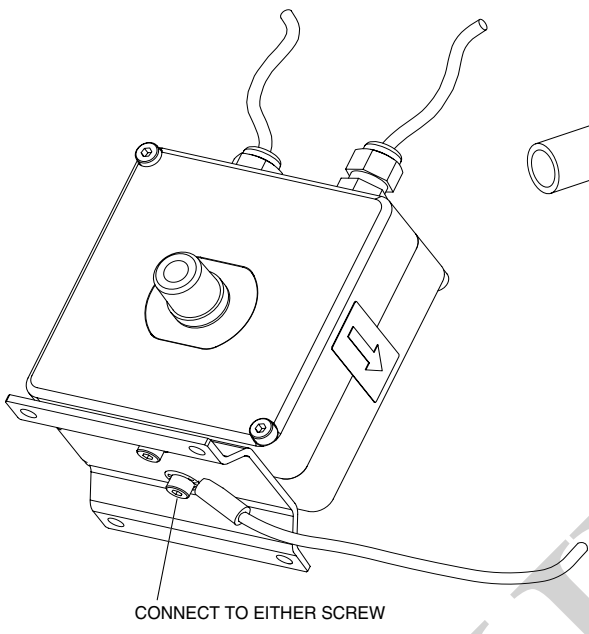
SeaMetrics Inc.
EM101

— Settings finished. Wait five seconds to return to normal operations

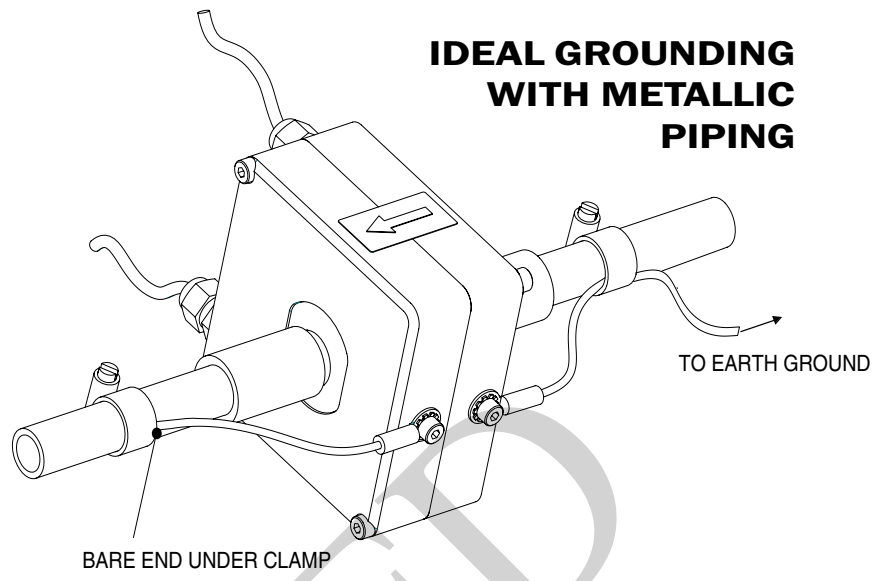
EM SERIES

101 MAGNETIC FLOW METER INSTRUMENTS

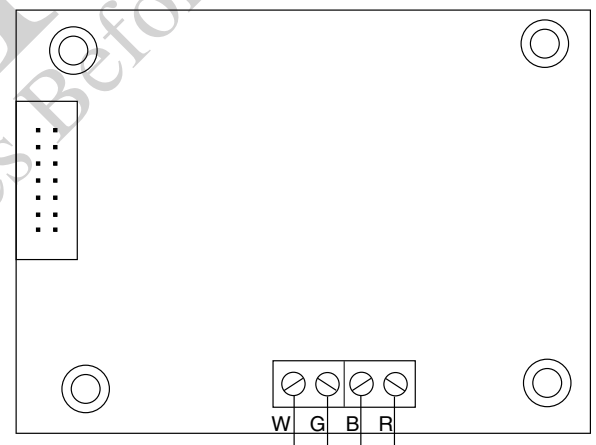
STANDARD GROUNDING



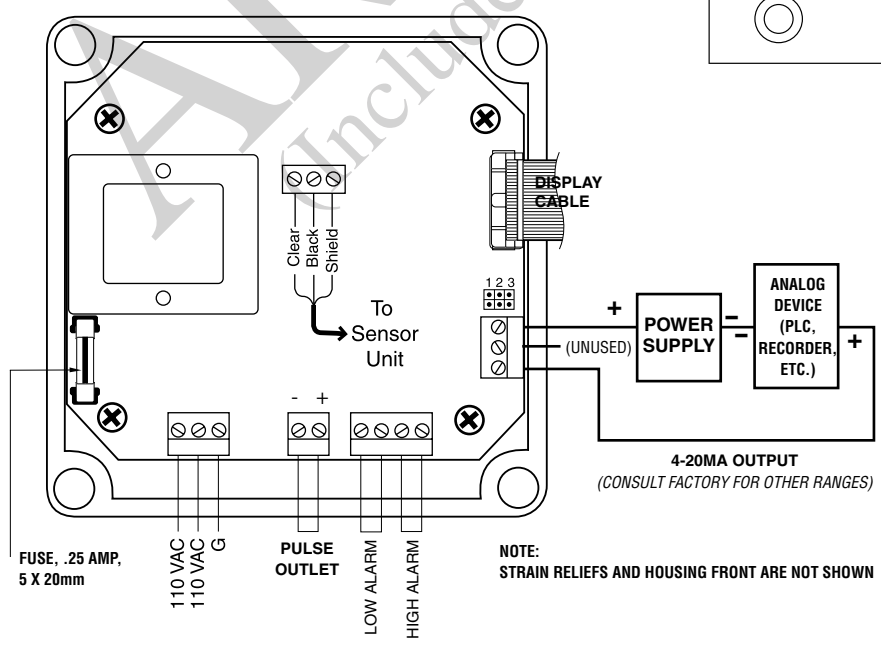
IDEAL GROUNDING WITH METALLIC PIPING



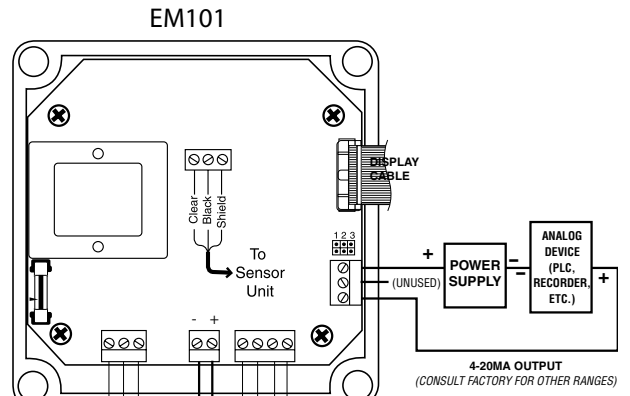
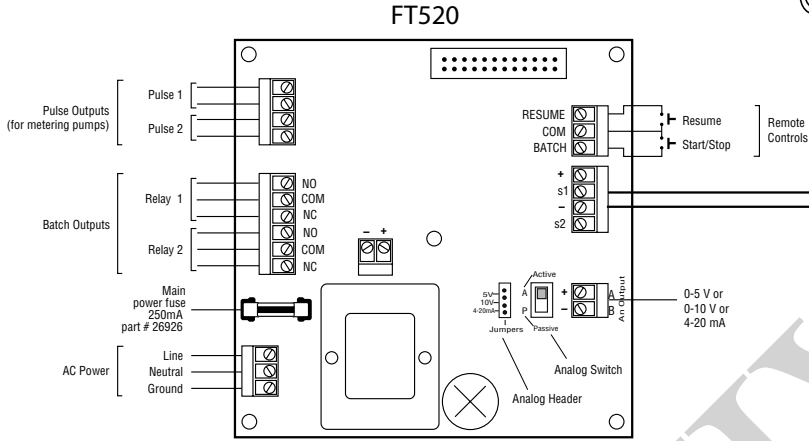
DISPLAY BOARD



CONNECTIONS



FT520 - EM101 BATCH CONTROL CONNECTIONS DIAGRAM



ARCHIVED
 (Includes Dates Before 11/06)

EM101 TROUBLESHOOTING GUIDE

Problem	Possible Causes	Possible Solutions
No Display	No power Blown Fuse Loose ribbon cable	Check for 110vac Test fuse, replace if bad 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 Install meter in vertical position Use next smaller flow meter Check connections on display board Select other flow meter
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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