

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.

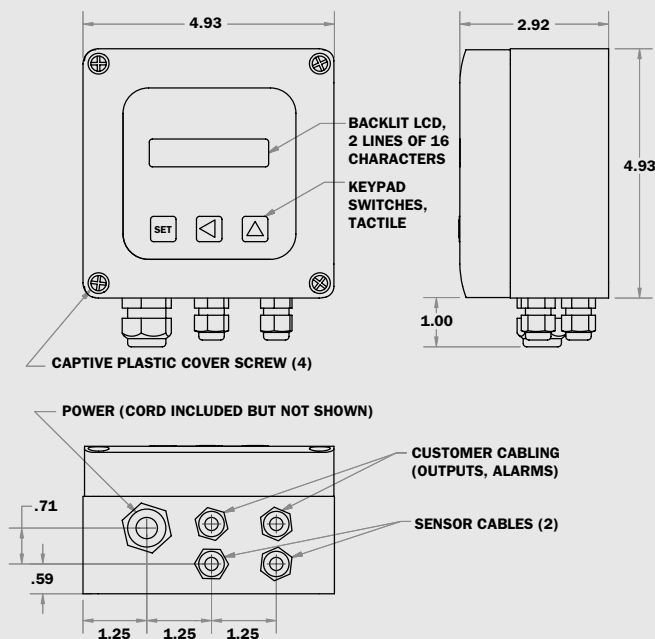
OPERATION

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.

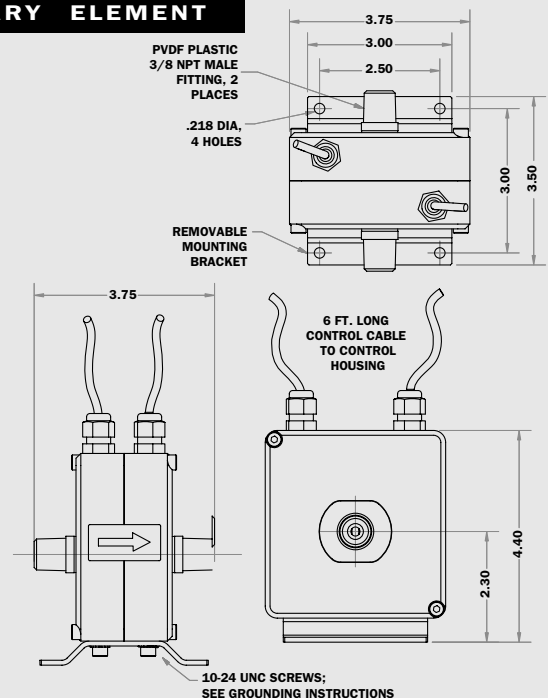
Outputs. The analog output which has been chosen varies continuously with the flow. If the output is too "jumpy" (changes too frequently), it can be damped either by increasing the averaging time (see the "Fast Analog Output" setting) or by selecting "Disabled" under Fast Analog Output and increasing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

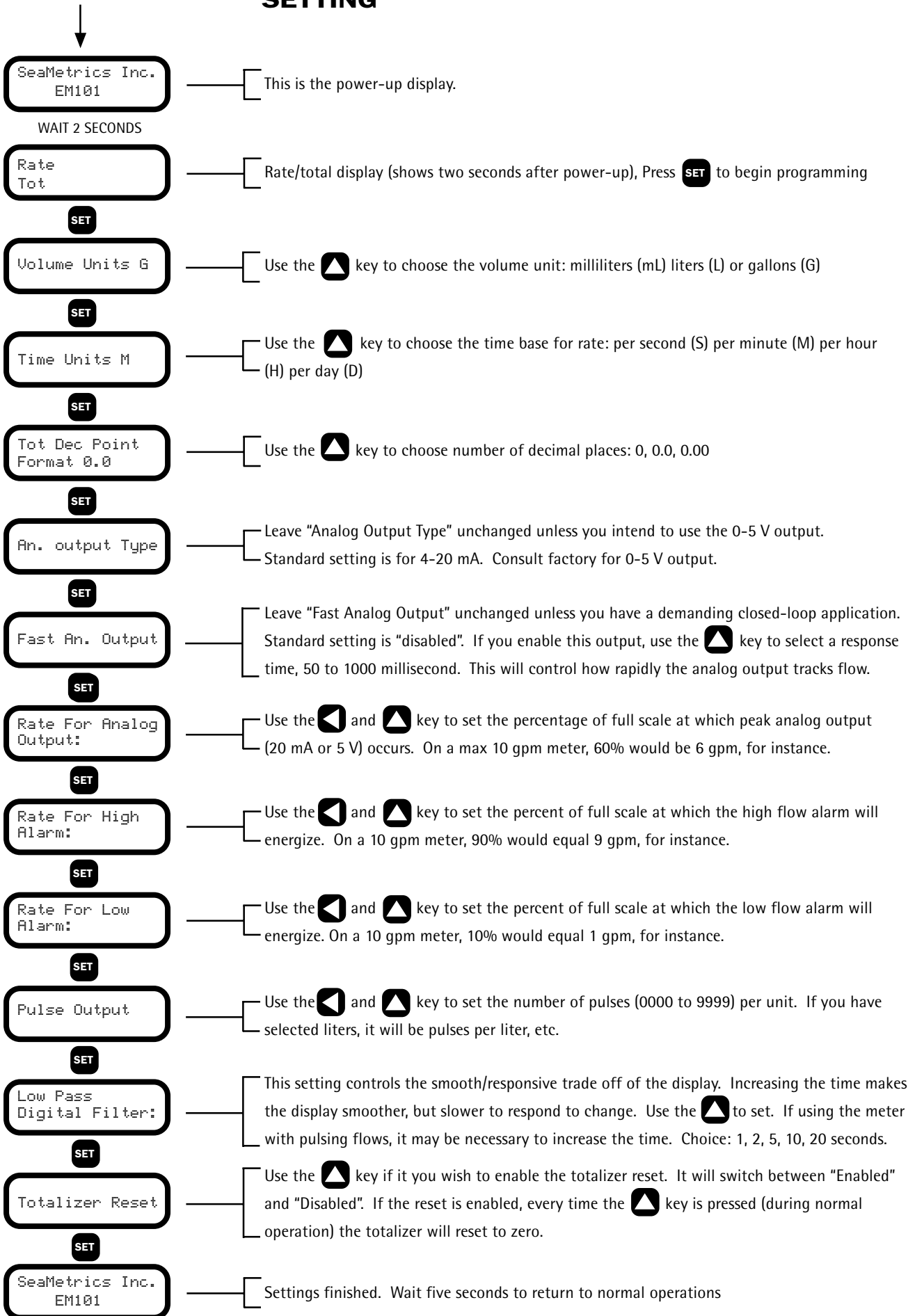


PRIMARY ELEMENT

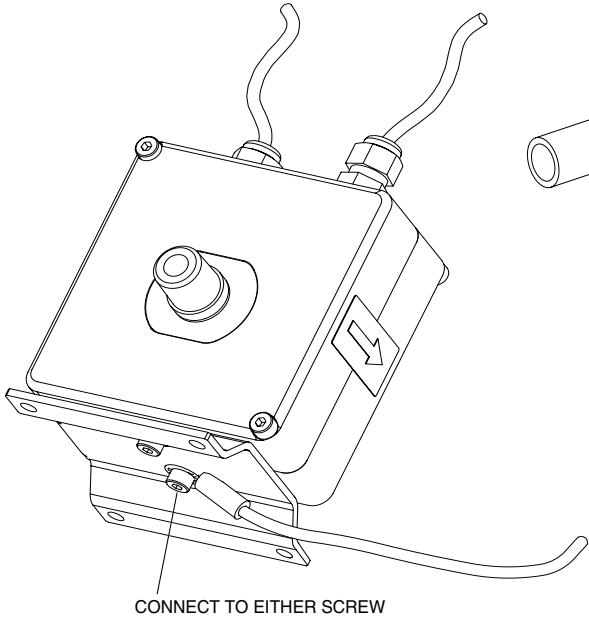


DISPLAYS

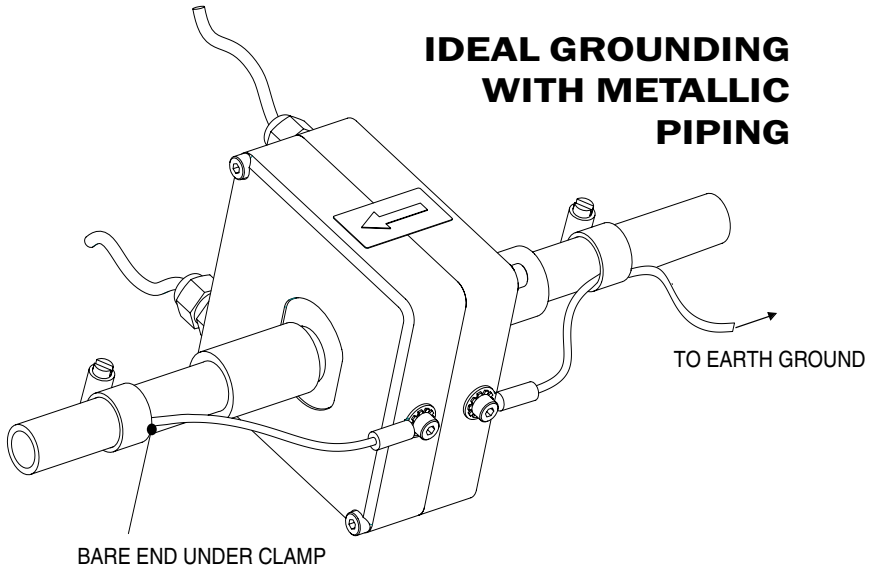
SETTING



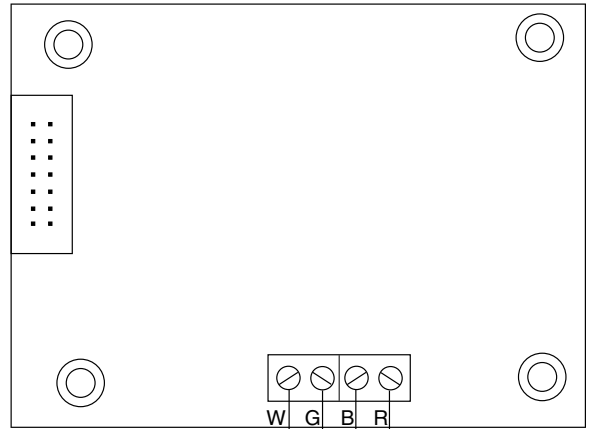
STANDARD GROUNDING



IDEAL GROUNDING WITH METALLIC PIPING

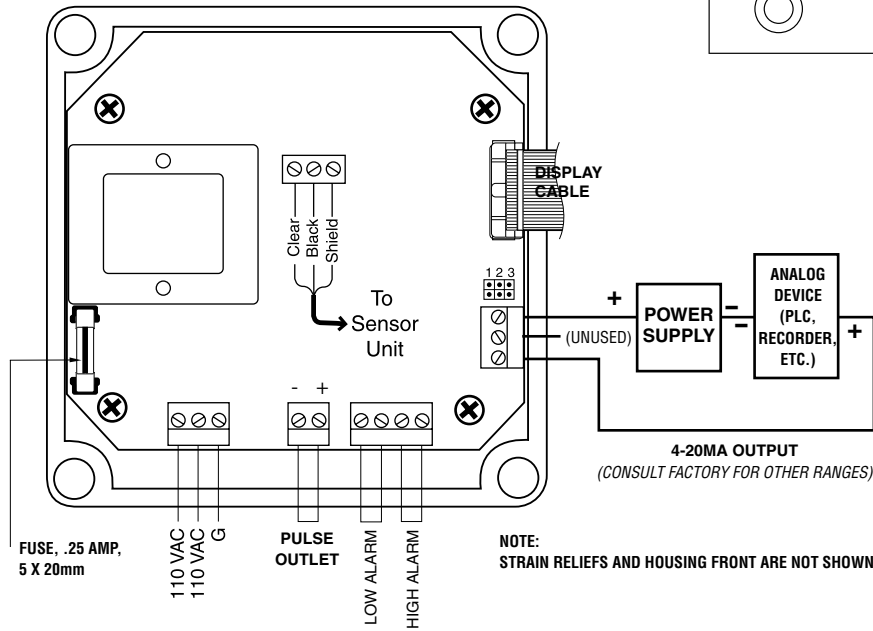


DISPLAY BOARD

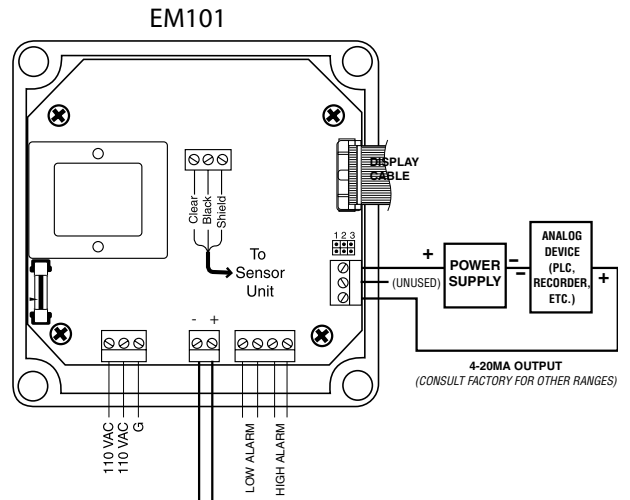
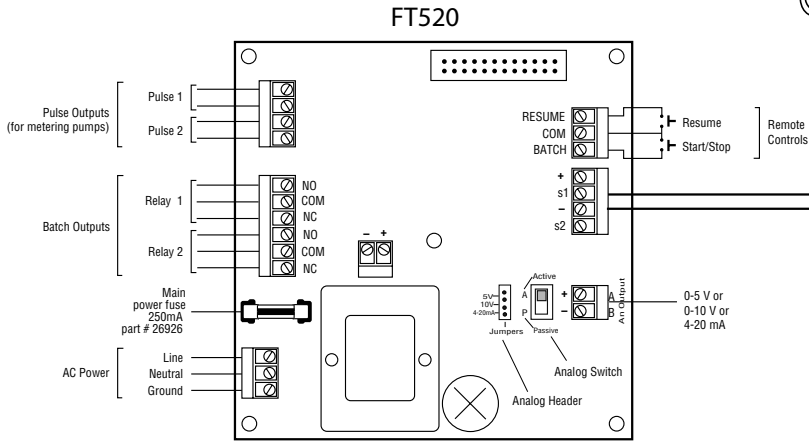


To Sensor Unit

CONNECTIONS



FT520 - EM101 BATCH CONTROL CONNECTIONS DIAGRAM



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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