

User's Guide



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FMG200 SERIES **Low-Flow Magnetic Flow Meter**



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

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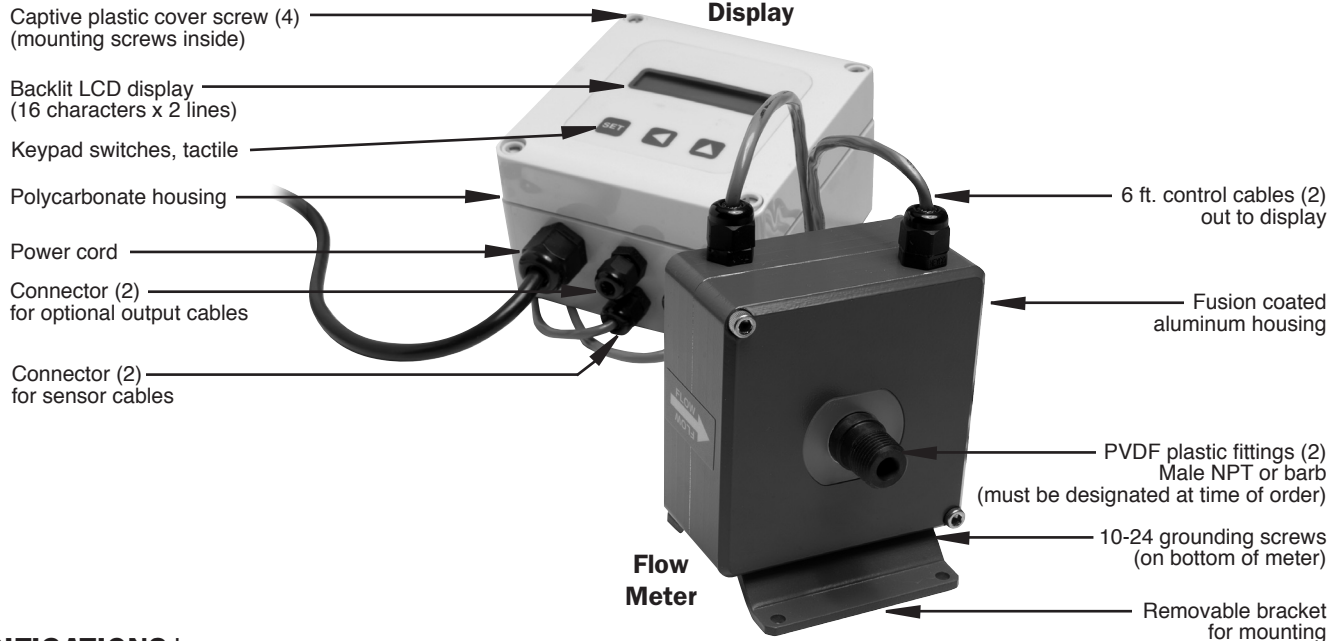
GENERAL INFORMATION

The FMG200 is a small electromagnetic low-flow flowmeter with chemically-resistant plastic wetted parts and platinum electrodes suitable for use with a variety of chemicals. Capable of measuring pulsating flows from diaphragm-type metering pumps, it is designed primarily for electrically-conductive chemical injection applications. The 1/4" and 3/8" sizes monitor maximum flows of 1 and 3 gallons per minute (or 4 and 11 L/min), respectively. Barb or NPT fittings are available, and must be designated at

time of order.

The FMG200 is 115 Vac, 60 Hz powered and includes a rate and total display as well as a variety of outputs. For continuous transmission of a flow signal, there is a 4-20 mA output, a 0-5 volt signal, and a frequency signal proportional to flow. In addition, there are relay alarm outputs for user-set low and high flow levels.

FEATURES



SPECIFICATIONS *

Materials	Meter Housing	Fusion coated aluminum
	Electrodes	Platinum
	O-Ring	FKM (EPDM optional)
	Display Housing	Polycarbonate
Rate Display Units		Gal/Minute, Liters/Second, Gal/Hour
Total Display Units		Gallons, Liters
Power		115 Vac, 60 Hz
Accuracy		+/-1% of reading, plus .005 gpm (0.02 lpm)
Max Fluid Temperature		185° F (85° C)
Maximum Pressure		150 psi (@ 75° F)
Minimum Conductivity		>20 microSiemens/cm
Outputs		<ul style="list-style-type: none"> • 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)

*Specifications subject to change


FLOW RANGE

SIZE	LOW FLOW CUTOFF			MINIMUM FLOW for spec accuracy			MAXIMUM FLOW		
	L/MIN	GAL/MIN	GAL/HR	L/MIN	GAL/MIN	GAL/HR	L/MIN	GAL/MIN	GAL/HR
-025	.04	.01	.60	.26	.07	4.2	3.8	1	60
-038	.11	.03	1.80	.76	0.2	12	11	3	180

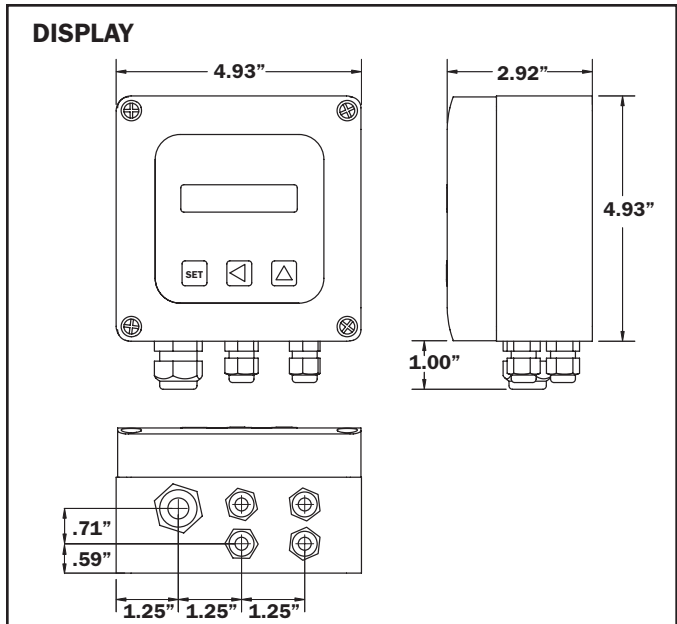
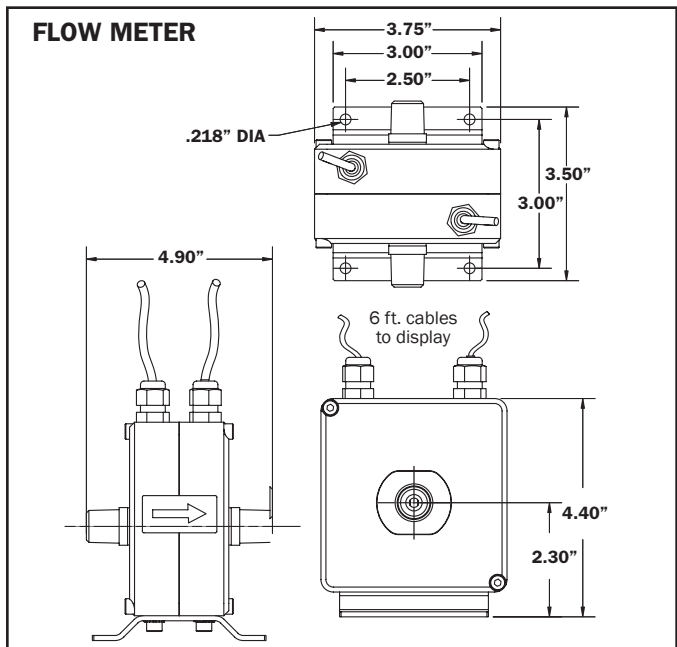
INSTALLATION and OPERATION

INSTALLATION

Mounting. Mount the display housing to a secure surface with screws or bolts. Remove the front cover to gain access to the mounting holes, directly under the front cover screws. Attach the flow meter to a secure surface using the foot bracket. Alternatively, the unit can be supported by the piping and the foot bracket removed. See mounting diagrams below.



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 meter ships with the coil activation and signal leads already connected to the display housing. To connect optional output signal or alarm relay leads, remove the front cover. See the Connections diagram, page 3. 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. 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 diagrams, page 3. The meter comes with a 12 foot ground wire attached.

OPERATION



Display. The flow rate is displayed in the time and volume units that have been selected in Set-Up (page 5) (liters/min, for example). The cumulative total flow is displayed in the chosen units, up to eight digits. When the total reaches its maximum, the display resets to zero and begins again.

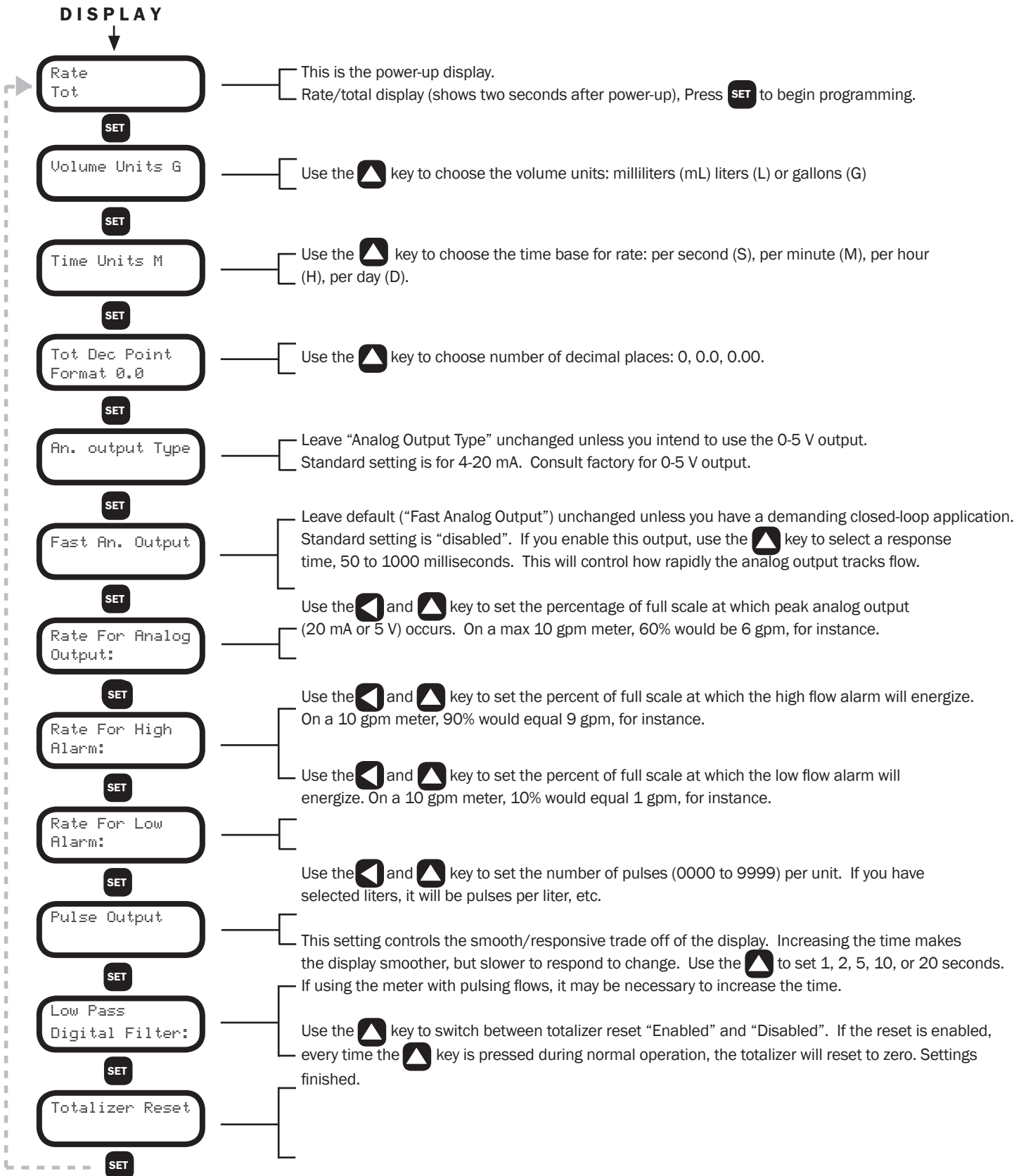
Outputs. The **analog output** varies continuously with the flow. If the output is too "jumpy" (changes too frequently), it can be damped in one of two ways: 1) increase the averaging time (under the Fast Analog Output setting); **or** 2) select "Disabled" (the default condition) under Fast Analog Output and increase 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: 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).

SETTINGS

SET-UP. Use the instructions below to set up your control. Use the **SET** key to move from one operation to the next, and use the  and  keys as described to change settings within operations.



TROUBLESHOOTING

Problem	Probable Causes	Try...
No Display	No power Blown fuse Loose ribbon cable	Check for 110 Vac 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 microSiemens/cm	Reverse flow connections Install ground wire Install meter in vertical position Use next smaller flow meter Check connections on display board Select another flow meter
Flow rate incorrect	Missing or incorrect ground wire Fluid conductivity <20 microSiemens/cm Empty pipe	Check for proper grounding Select another flow meter Install meter in vertical position



WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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