

CE



User's Guide



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**FLD100 and FLD100-FL SERIES
Industrial Mass Flow Meter**



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Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN®
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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA Engineering, Inc. 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, patient-connected applications.

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(a) UNPACKING THE FLOW METER

a.1 Inspect Package for External damage

Your new flow meter was carefully packed in a sturdy cardboard carton, with cushioning materials to withstand shipping shocks. Upon receipt, please inspect the package for possible external damage. In case of external damage to the package contact the shipping company immediately.

a.2 Returning Merchandise for Repair

If you require service or calibration, please contact Customer Service Department at 1-800-872-9436 extension 2208.

(b) INSTALLATION INSTRUCTIONS

Handle the flow meter carefully during installation. Prior to connecting the flow meter, shut the flow upstream and ensure that pressure and temperature conditions are within the limitations listed for this model. Do not install in a line carrying gases or liquids that are not compatible with the wetted construction materials and O-ring seals of the meter.

Selection of Site of Installation:

In selecting the site for installing FLD100 and FLD100-FL Series flow meters, ensure properly aligned piping and avoid stresses due to the weight of unsupported connecting piping.

Install in lines sufficiently remote from hot gas or liquid passages.

Connections:

Inlet and outlet ports for: FLD100 are: 1/2", 1" or 2" FNPT (see appendix).

Inlet and outlet ports for: FLD100-FL are: 3/4" nominal, 1-1/2", 2-1/2" flanges (see appendix).

Use only PTFE tape to seal threaded pipe connections or appropriate gasket for flange connection.

Install meter vertically and connect the inlet flow at the bottom port.

To prevent damage to installed meters, fasten the meter housing to bulkhead, panel or stanchion.

Protect from possible "water hammer" effects usually associated with sudden opening or shutting of flow, such as with solenoid-operated valves.

After connecting meter vertically in-line, open the "throttling" valve at the inlet gradually to prevent pressure surges resulting in undue stress on the glass flow tube.

Flow Meters to be Used for Gas Service.

Appropriately selected valves must be installed at the inlet and outlet of each FLD100 and FLD100-FL Series flow meters used for metering gases. Valves are to be installed at a distance not exceeding 1-1/2 times the pipe diameters of the meter measured from the inlet and outlet ports respectively.

To prevent bouncing, or unstable float conditions, the valve installed at the outlet port of the flow meter is adjusted to suitable back pressure. Before starting up, both valves must be closed. Next, open the inlet valve approximately a ¼ turn and then the outlet valve a full turn. Adjust the combination of the two valves to the desired flow rate by opening both valves very slowly. When bouncing of the float occurs close both valves and start the procedure again.

The inlet and outlet valves should be adjusted to the minimal setting necessary to achieve the desired flow. Repeat this procedure carefully for each subsequent startup.

Calibrations

Important Note: Flow meters are calibrated at 14.7 psia, which is equal to 0 psig. To be able to use standard calibrations, a pressure gauge is installed between the outlet port and the "back pressure" related valve to verify standard or near standard pressure conditions. For applications at higher pressures, calculate the correction factor as shown below or request quotations for discretely calibrated meters.

$$K = \text{Pressure correction coefficient} = \{ (14.7 + \text{gauge pressure}) / 14.7 \}^{-1/2}$$
$$\text{Actual Flow at non-standard pressure} = K \times \text{Indicated Flow.}$$

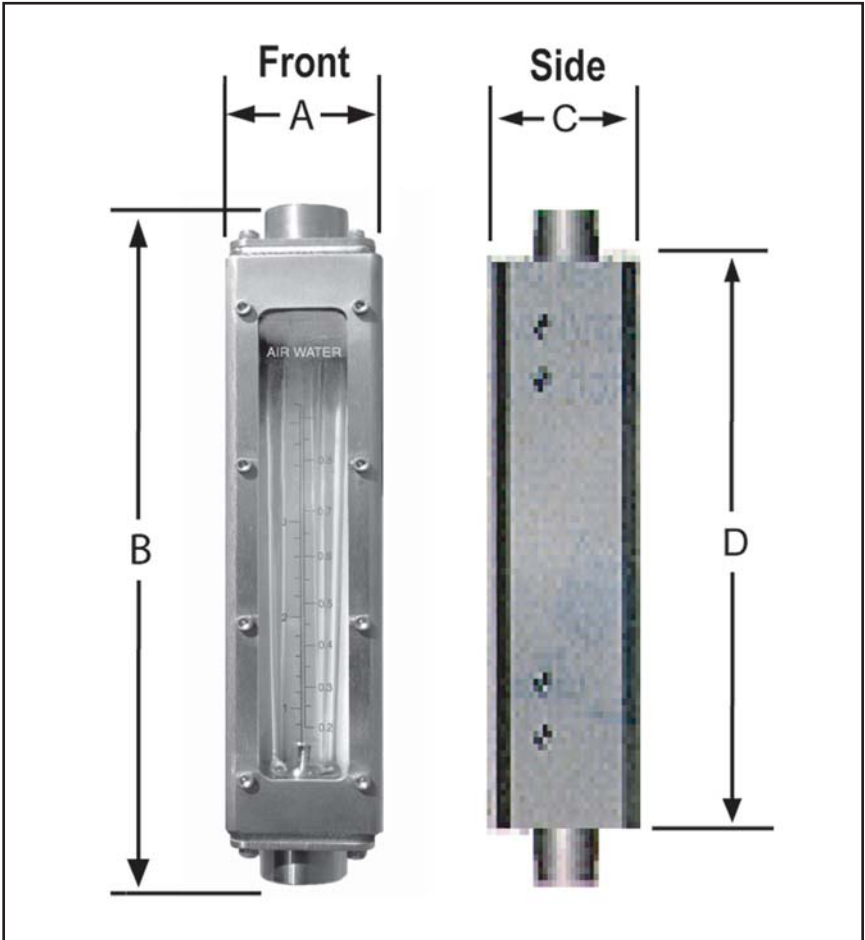


CAUTION

1. Do not use plastic fittings for gas applications.
2. Do not use FLD100 and FLD100-FL Series meters with strong or hot alkalis, fluorine, hydrofluoric acid, steam, or air or water service above 200°F (93°C).
3. When meters are used in conjunction with high-pressure gas cylinders, it is MANDATORY to install properly selected pressure regulators both at the cylinder and at the inlet connection of the flow meter.
4. FLD100 and FLD100-FL Series Flow meters are supplied with two layers of 1/8" thick clear plastic front shields. For the safety of the operator and the installation it is MANDATORY to operate meters only with both shields in place!
5. It is the responsibility of the user to determine whether the gases or liquids used in conjunction with the flow meter are suitable and safe when in contact with wetted construction materials and seals or O-rings of the instrument!
6. Excessive vibration, thermal or other stress inducing conditions could create conditions that render the pressure and temperature limitations invalid, and must always be guarded against. Installations should include appropriately selected relief valves, and/or rupture discs to avoid unsafe conditions and damage to equipment due to inadvertent over pressurization and other undesirable stress inducing conditions.
7. Users must use safety gear, including OSHA certified eye protection when operating or servicing flow meters.

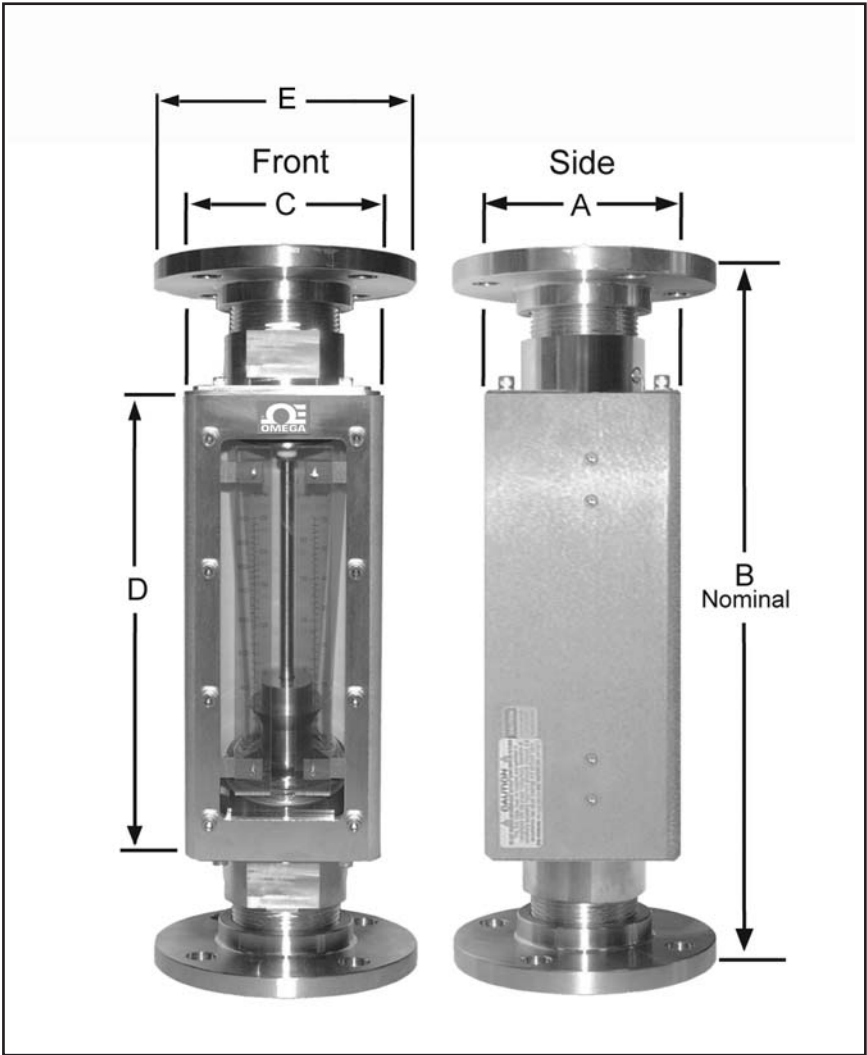
APPENDIX

DIMENSIONAL DRAWING



DIMENSIONS FOR FLD100 SERIES

TUBE SIZE	CONNECTIONS NPT (F)	DIMENSIONS			
		A	B	C	D
3 and 4	1/2"	2	9.54	2.25	8.04
5 and 6	1"	3.5	13.69	3.75	10.50
8 and 9	2"	5	15.59	5.25	11.55



DIMENSIONS FOR FLD100-FL STYLE METERS ANSI 16.5 #150

FLANGE SIZE	A	B (NOMINAL)	C	D	E	BOLT CIRCLE DIAMETER
3/4"	2	9.58	2.25	8.04	3.88	2.75
1.5"	3.5	14.15	3.75	10.50	5.00	3.88
2.5"	5	17.98	5.25	11.55	7.00	5.50

NOTES:



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 which wear are not warranted, including but not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

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.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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