

User's Guide



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FP-5060 Series Micro-Flow Sensors



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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.

OMEGA FP-5060 Series Micro-Flow Sensors

WARNING!

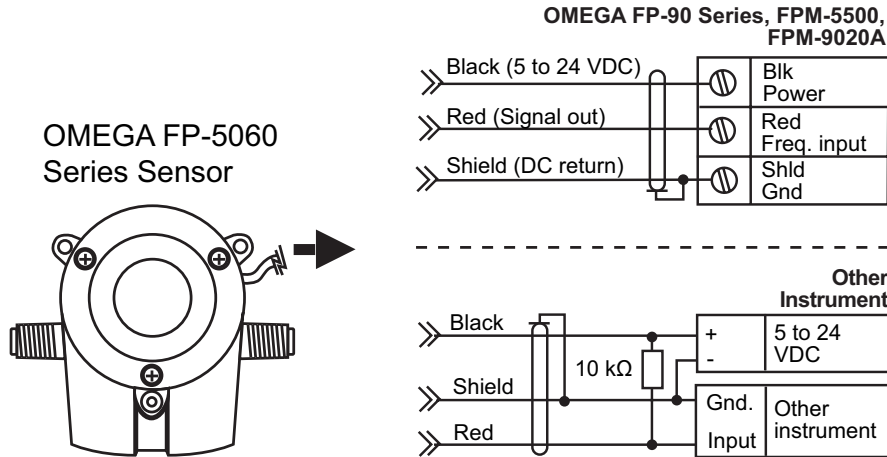


SAFETY INSTRUCTIONS

1. Do not remove from pressurized lines.
2. Do not exceed maximum temperature/pressure specifications.
3. Do not install/service without following installation instructions (see sensor manual).
4. Wear safety goggles and faceshield during installation/service.
5. Do not alter product construction.
6. Failure to follow safety instructions could result in severe personal injury!



1. Instrument Wiring

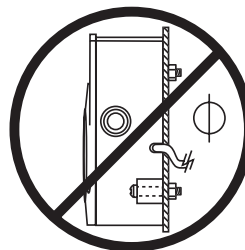
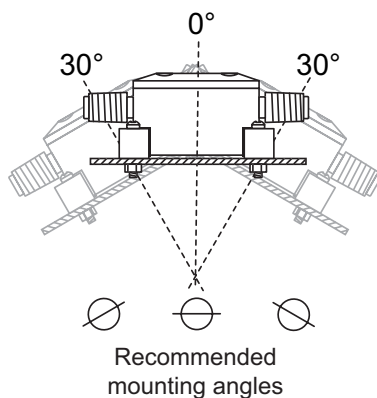


Note: A 10 kΩ pull-up resistor is required as shown, if not provided internal to the instrument. Contact OMEGA Technical Support for assistance.

Technical Notes:

- Use 2-conductor twisted-pair shielded cable for cable splices up to 300 m (1000 ft) max.
- Maintain cable shield through cable splice.
- Route sensor cable away from AC power lines.
- AUX power required when used with any OMEGA FP90 Series Flow Transmitter.

2. Recommended Sensor Position



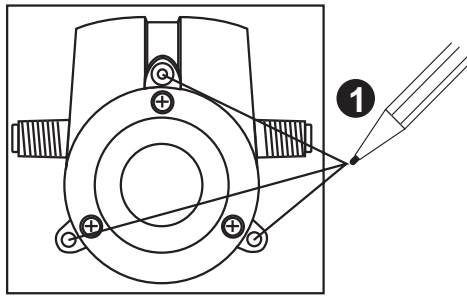
Vertical mounting not recommended

Technical Notes:

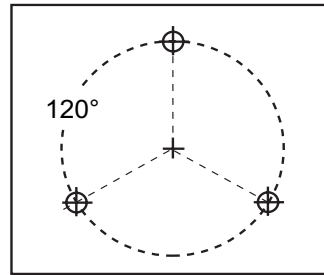
- Horizontal surface mount ($\pm 30^\circ$) recommended for optimum performance.
- Suitable for clean fluids only. Suspended solids will cause mechanical failure.
- ¼ in. NPT or ISO 7/1 - R¼ (male) port connections
- NEMA 4X/IP65 splashproof enclosure

3. Surface Mount Instructions

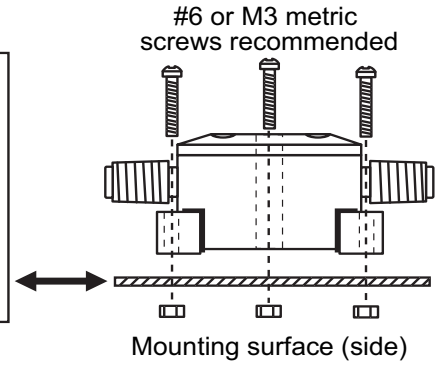
2 Remove sensor then use correct screws for panel material.



Mounting surface



Mounting surface (top),
68 mm (2.68 in.) bolt circle



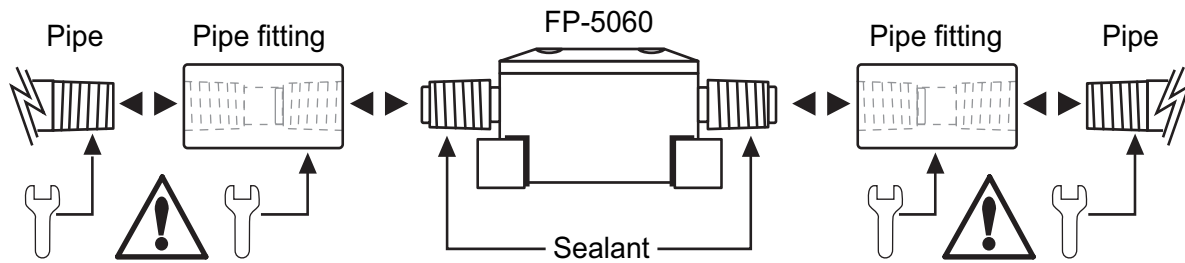
Mounting surface (side)

4. Fitting Installation



CAUTION:

- Maximum pipe fitting torque: 10 ft - lbs (13 N m).
- DO NOT overtighten. Failure to observe torque specification may permanently damage sensor ports.



Technical Notes:

- Compatible fittings (customer supplied): Female union (shown), reducer, or hose barb type.
- Always apply thread sealant to sensor port threads to prevent leakage.

5. Calibration

The K-Factors listed below represent the number of pulses the sensor will generate for each engineering unit of fluid which passes. They are listed in U.S. gallons, liters and mL by sensor model:

Sensor Model	PULSES PER U.S. GAL	PULSES PER LITER	PULSES PER mL
FP-5061	9950	2629	2.629
FP-5062	9950	2629	2.629
FP-5063	3160	834.9	0.835
FP-5064	3160	834.9	0.835

6. Specifications

General

Flow range:
 5061 and 5062: 0.11 to 2.6 lpm (0.03 to 0.7 gpm)
 5063 and 5064: 1.13 to 12.11 lpm (0.3 to 3.2 gpm)

Linearity: $\pm 1.2\%$ of full range
 Repeatability: $\pm 0.5\%$ of full range
 Connections: 1/4 in. NPT (male) or ISO 7/1 - R1/4 (male)
 Cable length: 8 m (25 ft.), can splice up to 300 m (1000 ft.) max.
 Cable type: 2-conductor twisted pair w/shield (Belden 8451)
 Weight: 250 g (9.6 oz.)

Wetted Materials

- Sensor body and cover: 40% glass filled Polyphenylene Sulfide
- Rotor: PEEK, natural, unfilled
- Rotor O-ring: Viton®
- Cover O-ring: Viton®

Electrical

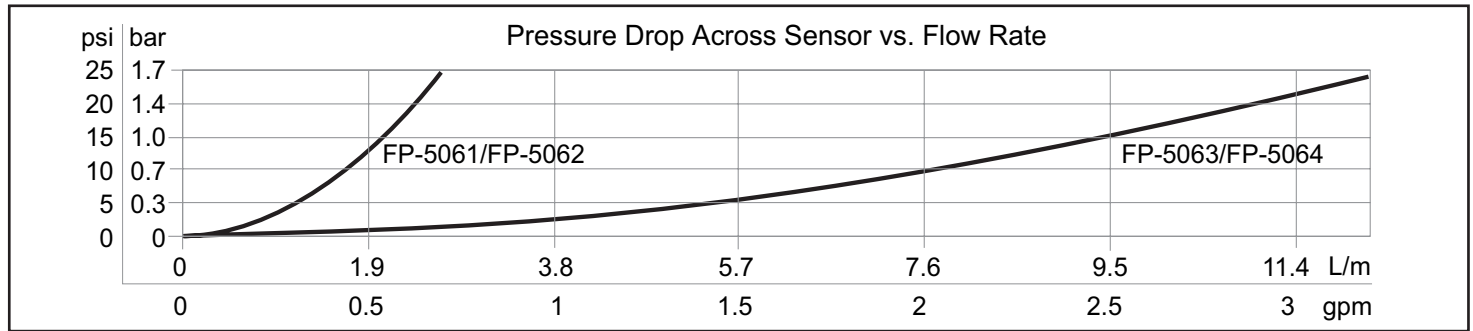
Supply voltage: 5 to 24 VDC, regulated
 Supply current: 10 mA max.
 Output type: Open-collector NPN transistor, 10 mA max sink

Quality Standard

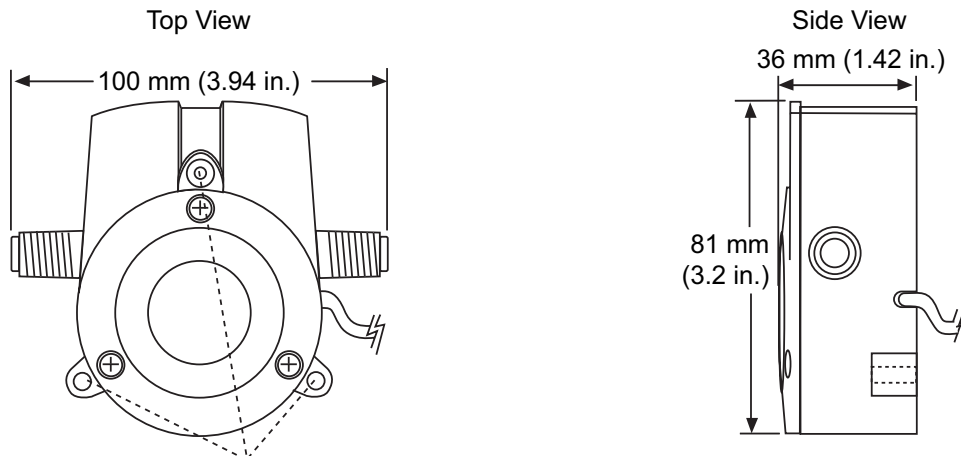
- Manufactured under ISO 9001 and ISO 14001

Fluid Conditions

Max. pressure/temperature:
 0 to 80°C (32 to 176°F) @ 5.5 bar (80 psi) max



Dimensions



Mounting tabs for metric M3 or standard #6 screws on 68 mm (2.68 in.) bolt circle

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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