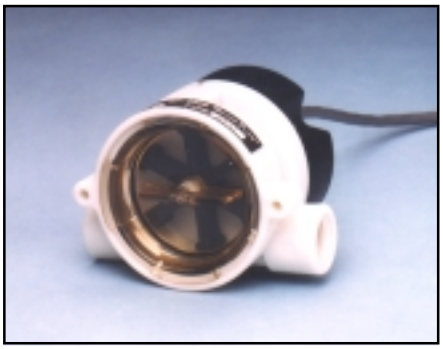
omega.com™
OMEGA®

FPR130 Series

Pulse Output Flow Sensors



INSTRUCTION SHEET

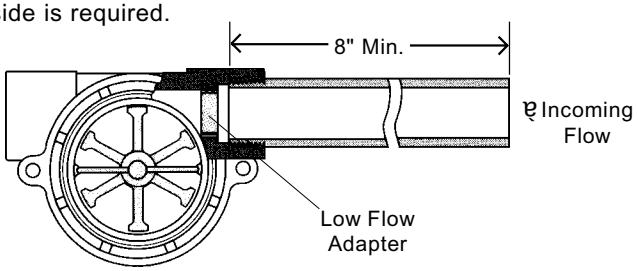
M1982/0999

Unpacking

Remove the Packing List and verify that you have received all equipment. If you have any questions about the shipment, please call the OMEGA Customer Service Department. When you receive the shipment, inspect the container and equipment for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent. **NOTE**: The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing all contents, save packing material in event reshipment is necessary.

Description

The OMEGA® FPR130 Pulse Output Flow Sensors are used for flow rate monitoring or metering applications. The sensors provide a pulsed dc voltage output that is proportional to the rate of flow. The 4.5 to 24 Vdc pulsed output is easily integrated into most pulse input devices. The FPR130 units monitor dynamic fluid flow. The rotor reacts to turbulence, pulsation, entrained air, and other flow anomalies induced in the flow stream by other process hardware. For optimum performance, install FPR130 units where nominal flow conditions exist, with ports located at the top. Incoming flow may be placed to either port. A minimum of 8" of straight pipe on the inlet side is required.



Applications

- Water Purification/Dispensing Systems
- Chemical Metering Equipment
- Water Sampling
- Ice-Making Machinery
- Water Injection Systems
- Proof of Delivery Systems

Low Flow Applications

A low flow adapter is supplied with most FPR130 units. It is used to produce accurate response at low flow rates. Press-fit the adapter as shown above, in the port selected for incoming flow. **See Flow Range chart below:**

			Flow Range - GPM			K-Factor (Pulses/Gal)	
			Standard	Low Flow			
Body Material	Port Size NPT	Part Number	Range	Range	Adapter Part Number	Standard	Low Flow
Polypropylene	.25"	FPR131	0.5 - 5.0	0.1 - 1.0	152147	2196	10,900
	.50"	FPR132	4.0 - 20.0	1.5 - 12.0	151832	611	959
Brass	.25"	FPR133	0.5 - 5.0	0.1 - 1.0	152147	1529	10,080
	.50"	FPR134	4.0 - 20.0	1.5 - 12.0	151832	627	971
	.75"	FPR135	3.0 - 30.0	N/A	N/A	243	N/A

WARNING

When determining chemical compatibility of materials of construction, the flow media and application-associated environmental conditions should be carefully considered.

Installation

FPR130 sensors connect to piping via NPT mating thread forms. The following guidelines are provided to assist with installation for a leak-free seal, without damage to the unit:

1) Apply pipe thread sealant to male pipe threads.
2) Thread FPR130 unit onto male pipe thread until hand-tight.
3) Tighten pipe 1 to 1-1/2 additional turns.
4) If improper seal results, continue turning pipe into unit in 1/4 turn increments.

Do not exceed one additional turn on plastic versions.
Recommended Pipe Sealants: Teflon® Thread Tape.

Electrical Data

Input power and output are connected via a multi-conductor, PVC-jacketed 24" cable. Color codes are shown below:

+Vdc - Power In	Red
Power and Signal Ground	Black
Signal Output - High	White

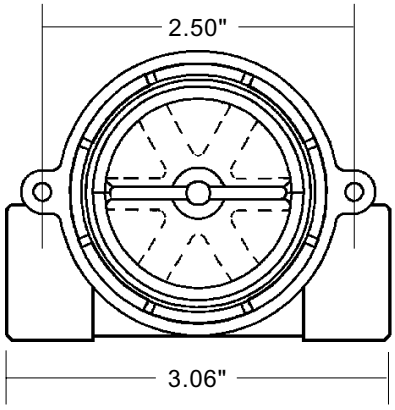
This is a PNP output. A 5-10 K Ω pull-down resistor is needed between black and white wires. For units without a pull-down resistor (such as the DPF70 Series), the DPF700 meter does not require an external pull-down resistor, since it can be set up for PNP output.

Panel Mounting

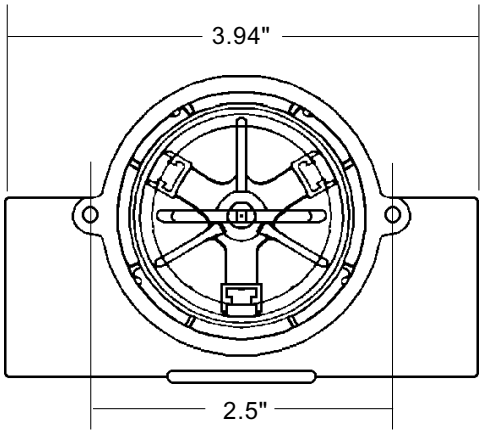
Any FPR130 sensor may be panel mounted using holes integrated into the bodies:

Plastic (Polypropylene) Bodies: Two (2) mounting ears are provided at the body centerline to receive #8 self-tapping screws. **Note:** ANSI T Type 23 self-tapping screws are recommended. They may be replaced with standard machine screws if reinstallation should be required.

Brass and Stainless Steel Bodies: Two (2) mounting holes are provided on the body centerline, as shown below. #8-32UNC-2B screws are required for mounting.



Plastic. Brass, Stainless Steel
1/4", 1/2", 9/16"-18



Brass/Stainless Steel
3/4" & 1"

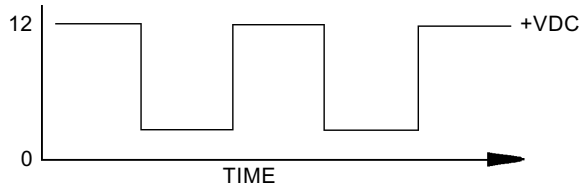
Accuracy/Calibration

The accuracy of the FPR130 Series pulse output flow sensors is ±15% of full scale flow rate for the 4 to 20 GPM and 6 to 30 GPM ranges. All other ranges have an accuracy of ±7% of full scale flow rate. Improved accuracy can be achieved by calibrating the individual flow sensor by counting the number of pulses generated as a known volume of liquid passes through the sensor. Pulses generated, divided by gallons of water collected during the test, equals the specific K-factor for your FPR130 sensor. Nominal K-factors are given in the flow range chart on page 1 of this instruction sheet.

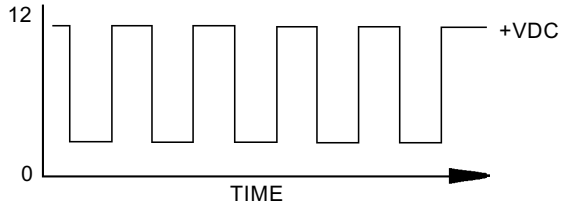
Signal Output

Output signal for the FPR130 series is an on/off pulse of the DC voltage supplied to the unit. It is compatible with most pulse input devices. **Input voltage range** is 4.5 to 24 VDC. Frequency of the output pulse is proportional to the flow rate and ranges from approximately 25 Hz at low flow to 225 Hz at high flow. **See example below:**

Low Flow



High Flow



Filtration and Cleaning

150 micron filtration is recommended. However, should foreign particles enter the FPR130 sensor, accumulation is easily cleared by removing the lens from the body. The lens is removed by turning its center rib 45° counter-clockwise and then pulling it out. To reinstall the lens, simply reverse the process. Pressure must be relieved from the system prior to sensor clean-out.

A Repair Kit is available, including the following replacement parts: lens, O-ring, shaft, and rotor. Consult Sales Department.

Specifications

Wetted Materials	
Body:	Brass or Polypropylene (Hydrolytically Stable, Glass-Reinforced)†
Rotor Pin:	Ceramic
Rotor:	PPS/Teflon Composite; Black
Lens:	Polysulfone
O-Ring:	Buna N or Viton
Operating Pressure, Max.	
Brass Body	200 PSIG at 70°F
Polypropylene Body	100 PSIG at 70°F
Operating Temperature, Max.	
Brass Body	212°F (82.2°C)
Polypropylene Body	180°F (82.2°C)
Electronics (Both Bodies)	150°F (65.5°C) - Ambient
Viscosity, Max.	200 SSU
Input Power	4.5 to 24 Vdc
Output Signal	4.5 to 24 VDC Pulse. Pulse rate dependent on flow rate, port size, and range
Max. Current Source Output	50mA (Max)
Frequency Output Range	25 Hz Low Flow to 225 Hz High Flow
Electrical Termination	22 AWG PVC-Jacketed, 24" Cable Color Coded: Red = +VDC, Black = Ground, White = Signal Output

† Hydrolytically stable, glass-reinforced, Polypropylene is UL-recognized to UL746B at a relative temperature index of 65°C

Important Points!

Product must be maintained and installed in strict accordance with the National Electrical Code and this instruction bulletin. Failure to observe this warning could result in serious injuries or damages.

Do not use in hazardous area applications.

The pressure and temperature limitations in this instruction bulletin must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of these units. Take care in the proper selection of materials of construction, particularly wetted materials.

Life expectancy of switch contacts varies with applications. Contact Omega's Flow Deprtment if life cycle testing is required.

Physical damage sustained by the product may render it unserviceable.

Servicing USA and Canada: Call OMEGA Toll Free

USA
One Omega Drive, Box 4047
Stamford, CT 06907-0047
Telephone: (203) 359-1660
FAX: (203) 359-7700

Canada
976 Bergar
Laval (Quebec) H7L 5A1
Telephone: (514) 856-6928
FAX: (514) 856-6886

Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA℠
Customer Service: 1-800-622-2378 / 1-800-622-BEST℠
Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN℠
TELEX: 996404 EASYLINK: 62968934 CABLE OMEGA

Servicing Europe: United Kingdom Sales and Distribution Center
25 Swannington Road, Broughton Astley, Leicestershire
LE9 6TU, England
Telephone: 44 (0455) 285520 FAX: 44 (0455) 283912

RETURN REQUESTS / INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA ENGINEERING Customer Service Department. Call toll free in the USA and Canada: 1-800-622-2378, FAX: 203-359-7811; International: 203-359-1660, FAX: 203-359-7807.

BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OUR 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.

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

1. P.O. 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 you are having with the product.

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

1. P.O. number to cover the COST of the repair/calibration,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems you are having with 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.