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Find the *Gems Sensors RF-2500* at our website: *Click HERE*

Important Points!

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

For hazardous area applications involving such things as (but not limited to) ignitable mixtures, combustible dust and flammable materials, use an appropriate explosion-proof enclosure or intrinsically safe interface device.

The pressure and temperature limitations shown on the individual catalog pages and drawings for the specified flow switches 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 GEMS flow switches. Take care in the proper selection of materials of construction, particularly wetted materials.

Life expectancy of switch contacts varies with applications. Contact GEMS if life cycle testing is required.

Ambient temperature changes do affect switch set points, since the specific gravity of a liquid can vary with temperature.

Flow switches have been designed to resist shock and vibration; however, shock and vibration should be minimized.

Filter liquid media containing particulate and/or debris to ensure the proper operation of our products.

Electrical entries and mounting points in an enclosed tank may require liquid/vapor sealing.

Flow switches must not be field-repaired.

Physical damage sustained by the product may render it unserviceable.

Gems Sensors Inc.
One Cowles Road
Plainville, CT
06062.1198

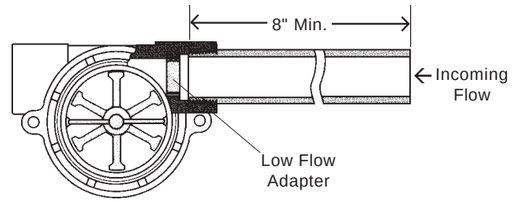
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P/N 157258
Rev. H

RFO/RFA-2500 Series Continuous Output RotorFlow® Sensors

Instruction Bulletin No. 157258

RotorFlow 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 RotorFlow 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 recommended. **Note: Frequency output (RFO) and voltage output (RFA) are determined by the velocity of the monitored fluid acting on the sensor rotor. Input piping with an orifice smaller than that of the sensor input will affect sensor output.**



Low Flow Applications

A low flow adapter is supplied with all RotorFlow units. It is used to produce accurate response at low flow rates. Fit the adapter as shown above, in the port selected for incoming flow. ***See Flow Range Chart below.***

			Flow Range - GPM		
			Standard	Low Flow	
Body Material	Port Size NPT	RFO Part Number	High Range	Low* Range	Adapter Part Number
Polypropylene	.25"	155421	0.5 - 5.0	0.1 - 1.0	152147
	.50"	155481	4.0 - 20.0	1.5 - 12.0	151832
Brass	.25"	156261	0.5 - 5.0	0.1 - 1.0	152147
	.50"	156262	4.0 - 20.0	1.5 - 12.0	151832
	.75"	194761	3.0 - 30.0	N/A	N/A
	1.0"	194762	5.0 - 60.0	N/A	N/A
Stainless Steel	9/16 - 18 J514	165071	0.5 - 5.0	0.1 - 1.0	152147
	1/2" NPT	165075	4.0 - 20.0	1.5 - 12	151832
	.75"	194763	3.0 - 30.0	N/A	N/A
	1.0"	194764	5.0 - 60.0	N/A	N/A

*Note: **Other low flow ranges are available. Please consult the Factory.**

WARNING

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

Installation

RotorFlow 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 RotorFlow 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.

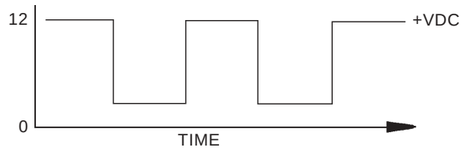
Recommended Pipe Sealants: (a) Permatex® "No More Leaks" (b) Teflon® Thread Tape.

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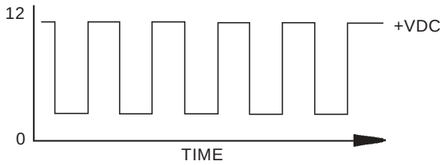
Filtration and Cleaning: 150 micron filtration is recommended. However, should foreign particles enter the RotorFlow sensor, accumulation is easily cleared by removing the lens from the body. The lens is removed by turning its center rib 45° counter-clockwise and then pulling it out. To reinstall the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

Signal Output (RFO): Output signal for RFO types is an on/off pulse of the DC voltage supplied to the unit. It is compatible with all digital logic families. Input voltage range is 4.5 to 24 VDC. Frequency of the output pulse is proportional to the flow rate and ranges from approximately 15 Hz at low flow to 225 Hz at high flow. See example below:

Low Flow



High Flow



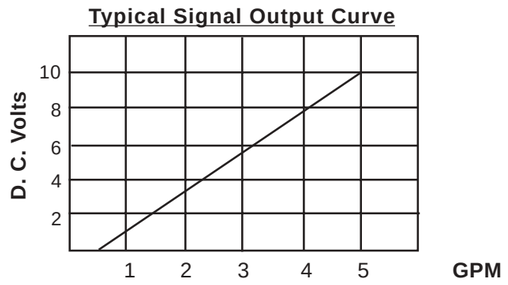
Note: Consult Factory for flow rate/frequency curves.

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

RFO: 4.5 VDC to24 VDC (Max)
RFA: 24 VDC ± 10%

+VDC	Red
Ground	Black
Signal Output	White

Typical Signal Output Curve



Signal Output (RFA)
Output signal for RFA types is a voltage output from 0-10 VDC and is proportional to the flow rate.

Specifications

Wetted Materials		
Body	Stainless Steel, 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/Stainless Steel Body	200 PSIG at 70°F/80 PSIG @ 212°F	
Polypropylene Body	100 PSIG at 70°F/40 PSIG @ 212°F	
Operating Temperature, Max.		
Brass Body	212°F (82.2°C)	
Stainless Steel Body	212°F (100°C)	
Polypropylene Body	180°F (82.2°C)	
Electronics (All Bodies)	150°F (65.5°C) - Ambient	
Viscosity, Max.	200 SSU	
Input Power	RFO: 4.5 to 24 VDC/12mA	RFA: 24 VDC (±10%)/22mA
Output Signal	RFO: Frequency Pulses - Proportional to Flow Rate	RFA: 0 - 10 VDC. Proportional to Flow Rate
Current Source Output, Max.	RFO: 70mA (Max)	RFA: 10mA (Max)
Frequency Output Range	RFO: ~15 Hz to 225 Hz	
Electrical Termination	Red (+) VDC, Black (-) Ground, White - Signal Output	

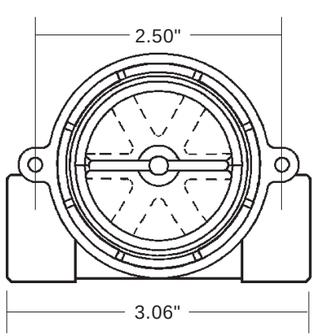
† Hydrolytically stable, glass-reinforced, Polypropylene is UL-recognized to UL746B at a relative temperature index of 65°C

Panel Mounting

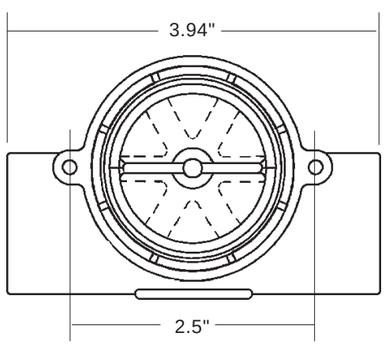
Any RotorFlow sensor may be panel mounted using holes integrated into the bodies:

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"

A RotorFlow Repair Kit is available, including the following replacement parts: lens, O-ring, shaft, and rotor. Consult Factory to order.

CE

This product is suitable for Class I and Class II applications only, per the requirements of standard EN60730 and any additional specific requirements for a particular application or medium being sensed. Class I compliance of metal bodied units requires a ground connection between the metal body and the earthing system of the installation. Class I compliance of plastic bodied units in contact with a conductive medium requires that the medium be effectively earthed so as to provide an earthed barrier between the unit and accessible areas. For Class III compliance, a supply at safety extra-low voltage (SELV) must be provided. Please consult the Factory for compliance information on specific part numbers.

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