



Turbine Flow Rate Sensor FT-110 Series

Instruction Bulletin No. 173926

Operating and Installation Instructions

Prior to installation, confirm system versus sensor specifications and media compatibility of sensor. The system needs to be filtered to 50 microns prior to the sensor, and pulses/water hammer effects should be minimized to prevent unit damage. Observe arrow on bottom of unit for correct inlet and outlet port. Sensor can be mounted in any horizontal, vertical, or skewed orientation. Correctly installed, the sensor works maintenance-free.

Installation

3/8" NPT Units:

Apply a sparse amount of thread sealant (*Permatex "No More Leaks"®*) or Teflon® tape to male threads. Insure that sealant does not enter into the turbine and bearing internal area. Hand-tighten unit in place. Turn an additional 1/4 turn to provide seal. If seal leaks, turn an additional 1/4 turn until leak stops.

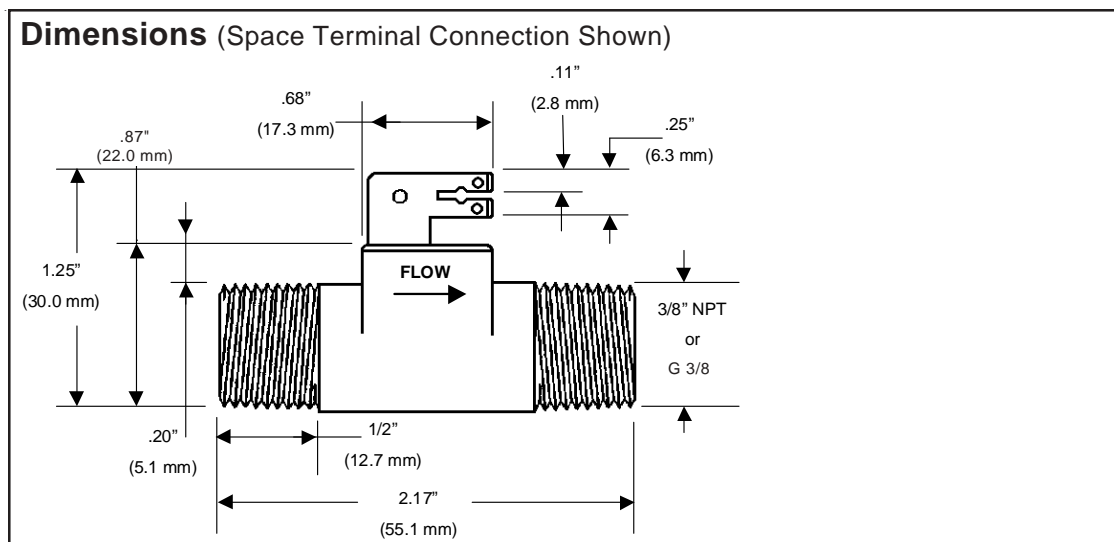
Do not exceed one additional turn total.

G 3/8 Units:

G 3/8 units mate with a flat face seal washer (90 shore EPDM, 0, 5 mm ID, 14, 5 mm OD, 2, 0 mm thick) similar to a garden hose arrangement. This arrangement requires no sealants; hand-tightening should be sufficient for sealing.

Specifications

Wetted Parts	Body: Nylon 12/ Turbine: Nylon 12 Composite/ Bearings: PTFE/ 15% Graphite
Operating Pressure	200 psi
Burst Pressure	2500 psi
Operating Temperature	-4° to 212°F (-20° to 100°C)
Viscosity	32 to 81 SSU (.8 - 16 Centistokes)
Filter	< 50 Microns
Input Power	5-24 VDC @ 8 mA
Output	NPN Sinking Open Collector @ 50 mA, Max.
Accuracy	± 3% of Rdg. Normal Range
Repeatability	0.5% FS Normal Range
Electrical Connection	Spade Terminals .110/.248 X .031" (2.8/6.3 X .8 mm) or 1 Meter Cable



Electrical/Output Signal (□)

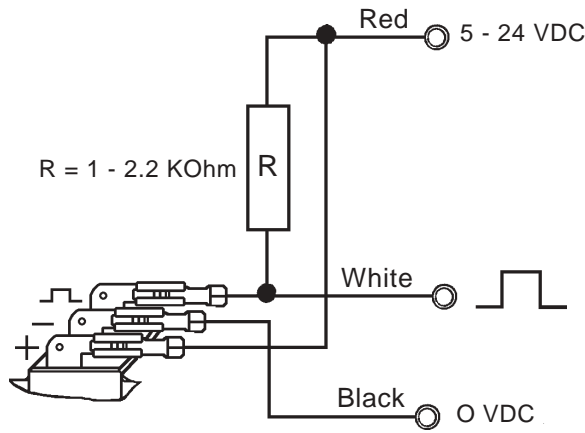
The output signal is a square wave signal, whose frequency varies linearly with flow rate. An external pull-up resistor (**user-supplied**) is required to insure that the open collector will sink less than 50 mA.

Gems' cable and connector can be ordered as follows:

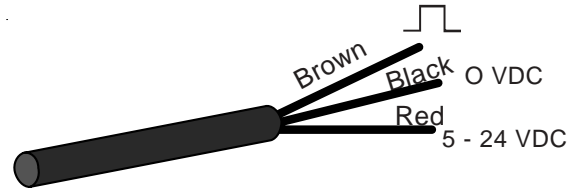
Part #173941: 3 Ft. Cable Assembly

Part #173942: 10 Ft. Cable Assembly

Wiring Diagrams



Cable Connection



Part Numbers		Flow Ranges				Pulses		Frequency
		Normal		Extended				
3/8" NPT	G 3/8 Port	GPM	LPM	GPM	LPM	Per Gallons	Per Liters	Output
173931	173936	.13 - 1.3	.5 - 5	.07 - 2.6	.25 - 10	26100	6900	58 - 575 Hz
173932	173937	.26 - 2.6	1 - 10	.07 - 2.6	.25 - 10	12500	3300	55 - 550 Hz
173933	173938	.26 - 4	1 - 15	.07 - 4	.25 - 15	17400	4600	76 - 1150 Hz
173934	173939	.26 - 4	1 - 15	.07 - 5.3	.25 - 20	8300	2200	37 - 550 Hz
173935	173940	.53 - 7.9	2 - 30	.13 - 7.9	.5 - 30	3800	1000	33 - 500 Hz
173931-C	173936-C	.13 - 1.3	.5 - 5	.07 - 2.6	.25 - 10	26100	6900	58 - 575 Hz
173932-C	173937-C	.26 - 2.6	1 - 10	.07 - 2.6	.25 - 10	12500	3300	55 - 550 Hz
173933-C	173938-C	.26 - 4	1 - 15	.07 - 4	.25 - 15	17400	4600	76 - 1150 Hz
173934-C	173939-C	.26 - 4	1 - 15	.07 - 5.3	.25 - 20	8300	2200	37 - 550 Hz
173935-C	173940-C	.53 - 7.9	2 - 30	.13 - 7.9	.5 - 30	3800	1000	33 - 500 Hz

The product is designed and manufactured in accordance with Sound Engineering Practice as defined by the Pressure Equipment Directive 97/23/EC. This product must not be used as a "safety accessory" as defined by the Pressure Equipment Directive, Article 1, Paragraph 2.1.3. The presence of a CE Mark on the unit does not relate to the Pressure Equipment Directive.

Important Points!

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

Pressure and temperature limitations shown on individual catalog pages and drawings for the specified flow sensors must not be exceeded.

Selection of materials for compatibility with the media is critical to the life and operation of GEMS flow sensors. Take

care in the proper selection of materials of construction; particularly wetted materials.

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

Liquid media containing particulate and/or debris should be filtered to ensure proper operation of GEMS products.

Flow sensors must not be field repaired.

Physical damage sustained by the product may render it unserviceable.



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