Turbine Low Flow Rate Sensor
FT-210 Series - TurboFlow®

Instruction Bulletin No. 217952

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

1/4" 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 1/4 Units:

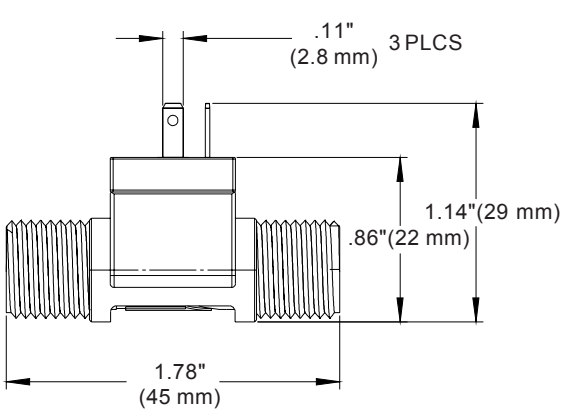
G 1/4 units mate with a flat face seal washer (70 shore, 7 mm ID, 13 mm OD, 2, 0 mm thick) similar to a garden hose arrangement. This arrangement requires no sealants; hand-tightening should be sufficient for sealing.

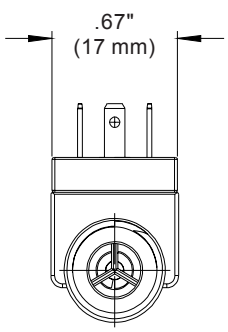
Specifications

Wetted Parts	**Body:** Nylon 12/**Turbine:** Nylon 12 Composite/**Bearings:** PTFE/ 15% Graphite
Operating Pressure	350 psi (24 Bar)
Burst Pressure	1400 psi (100 Bar)
Operating Temperature	-4° to 212°F (-20° to 100°C)
Viscosity	32 to 80 SSU (1-15 Centistokes)
Filter	< 50 Microns
Input Power	5-24 VDC @ 8 mA
Output	NPN Sinking Open Collector @ 20 mA, Max.
Accuracy	± 3% of Rdg. Normal Range
Repeatability	0.5% FS Normal Range
Electrical Connection	Spade Terminals .110/.275 X .020" (2.8/7 X .5 mm) or Din Connector (2 Poles + Ground)

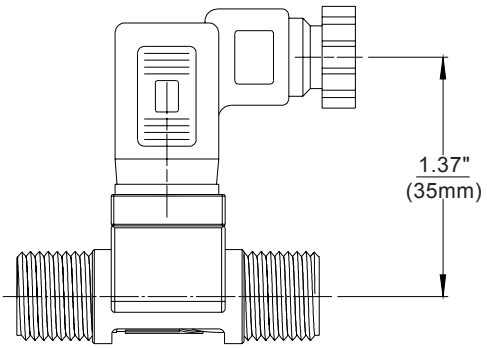
Dimensions

Spade Terminal Connection





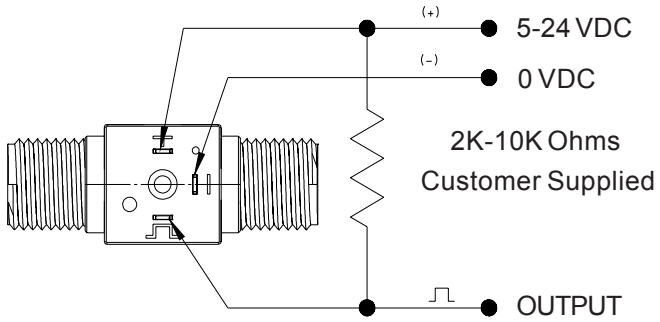
With optional Din Connector



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 20 mA.

Wiring Diagram



W/ Optional Din Connector	
Function	Din Termination
V+	1
-	⏚
Output	2

Part Number	Port	Flow Ranges		Pulses		Frequency	Electrical Termination
		GPM	LPM	Per Gallons	Per Liters	Output	
212460	G 1/4	0.03-.66	0.1-2.5	83200	22000	37 - 917 Hz	Spade Terminals
212465	1/4" NPT	0.03-.66	0.1-2.5	83200	22000	37 - 917 Hz	Spade Terminals
212460E	G 1/4	0.03-.66	0.1-2.5	83200	22000	37 - 917 Hz	Din Connector
212465E	1/4" NPT	0.03-.66	0.1-2.5	83200	22000	37 - 917 Hz	Din Connector

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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