100 Series Flow Switches

Active Design Assures Reliability

Cannot Jam in "Flow OK" Position

Models Span 0.08 to 60.0 GPM

Adjustable Trip Point

Fail-safe System Protection

Unlike pressure sensors, the Proteus switch provides a true flow interlock—it will not be fooled by downstream blockages that maintain pressure while stopping flow. The switch also differs from traditional flow switch designs as particle buildup cannot jam it in the "flow OK" position.

How It Works

Fluid flowing through the switch spins a magnetic rotor to induce voltage in a coil. A simple electronic circuit compares the measured voltage to a user-elected trip voltage. When the measured voltage is above the selected trip voltage a relay is held in its active position. If the measured voltage falls below the selected trip voltage or when fluid stops flowing, the relay is switched off. The change of state of the relay contacts is used to trigger your interlock or alarm system.

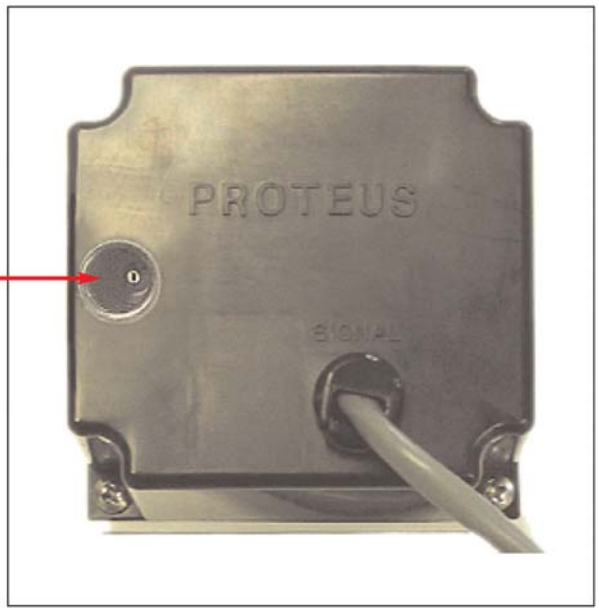
The Proteus active design combats the problem of particle buildup, which can jam many other flow switch types. Because the rotor is constantly spinning, it cleans itself of most buildup. In the very unlikely event that an object in the line interferes with the rotor, the rotor stops turning, and the switch goes to the alarm condition. When the Proteus flow switch shows fluid is flowing, there is **always** flow through the switch.

Proteus Flow Switches monitor cooling fluids or other liquid flows and trip an internal relay if the flow rate falls below an adjustable trip point. The relay may be used to shut down equipment or sound an alarm before damage is done to valuable equipment and products.

Easy Trip Point Adjustments

Turn screw counterclockwise to increase trip point flow

Turn screw clockwise to decrease trip point flow



The potentiometer used to select the trip point is located so that it cannot be turned by accident. The electronics can be mounted remotely if required.

Flow Visibility

The clear polysulfone faceplate allows the rotor to be viewed, telling you at a glance if your cooling fluid is turned on. Optional metal faceplates allow the operating range of brass and stainless steel versions to be increased to 250 psi.

Easy Maintenance

The faceplate may easily be removed to clean the flow chamber if necessary. No other maintenance is required.

Selecting the right flow switch

1. Check operational temperature and pressure limits to identify suitable materials for the flow sensor.
2. Select the material with the best chemical compatibility with your liquid.
3. Select a flow range so that
   a. Your nominal flow rate is around 50-60% of the upper flow limit.
   b. Your maximum flow rate is less than the upper flow limit.
   c. Your trip point flow is not less than the stated low flow value.
4. Choose your power supply. XXX in the following table is 24 for 24V-DC, 110 for 110V~AC versions.

For assistance in selecting the flow switch best suited to your flow control task contact **Technical Support** at **650 964-4163** or **Tech@Proteusind.com**.

Flow ranges, materials and connections

Connection Size FNPT	Flow Range		Celcon	Polypropylene	Brass	Stainless Steel
	GPM	LPM				
1/4"	Selectable		100CXXX	100PXXX	100BXXX	100SSXXX
1/4"	0.1 – 1.0	0.4 – 4.0	101CXXX	101PXXX	101BXXX	101SSXXX
1/4"	0.5 – 2.5	1.9 – 9.5	105CXXX	105PXXX	105BXXX	105SSXXX
1/4"	0.8 – 6.0	3 – 27	103CXXX	103PXXX	103BXXX	103SSXXX
1/4"	0.06 – 0.6	0.2 – 1.9	104LXXX	104PXXX	104BXXX	104SSXXX
1/2"	1.5 – 12	6 – 45	150CXXX	150PXXX	150BXXX	150SSXXX
1/2"	4 – 20	15 – 75	155CXXX	155PXXX	155BXXX	155SSXXX
3/4"	6 – 30	22 – 110	Not Available	160PXXX	160BXXX	160SSXXX
1"	10 – 60	35 – 225	Not Available	170PXXX	170BXXX	170SSXXX

Temperature & Pressure Operating Limits

Temperature of electronics should not exceed 50°C (122°F). For fluid temperatures greater than 85°C (185°F) the electronics should be mounted remotely from the flow sensor unit.

Flow Sensor Material	Faceplate Material	Temperature Range		Pressure Range	
		°C	°F	PSI	kPA
Celcon	Clear polysulfone	75	165	75	510
Brass	Clear polysulfone	100	212	100	690
Brass	Brass	100	212	250	1720
Stainless Steel	Clear polysulfone	100	212	100	690
Stainless Steel	Stainless Steel	100	284	250	1720
Polypropylene	Clear polysulfone	70	167	75	515

Wetted Materials

Component	Available Materials	
	Standard	**Optional**
Rotor	Nylon composite	PPS, Kynar®
O-ring	Buna-N	Viton®, silicone rubber
Rotor Shaft	316 Stainless Steel	alumina, sapphire

Pressure Drop

Pressure drop across the flow switch is typically less than 6 psi (0.4 bar) at the maximum flow rate. For pressure response curves, contact **Technical Support** at **650.963.4163** or **Tech@Proteusind.com**.

Hysteresis

Typically 15% of selected trip flow rate. Hysteresis is the difference in the flow at which the switch is tripped by rising and falling flows. Some hysteresis is desirable to inhibit cycling if flow is near the trip point.

Weight

2 to 6 lbs (1 to 3 Kg.) depending on model and materials.

SPECIFICATIONS

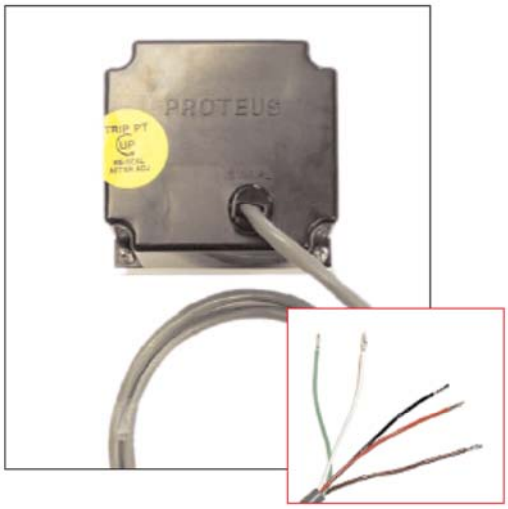
Power Requirements: 24 ± 10% V-DC, 30 mA or 110 ± 10% V~AC, 30 mA

Switch type: Relay Closure, Normally Open and Normally Closed contacts

Relay rating: SPDT, 3 A at 30 V-DC for a non-inductive load
Mechanical rating: > 10^6 cycles

Electrical Connection:
24 V-DC version: 5 core conductor for relay and power
110 V~AC version: 3 core for relay, 2 pin plug for 110 VAC

Electrical Connections and Wiring Diagrams



24V-DC Wiring Diagram

Color	Function
Brown	+ 24 VDC
White	Ground or - VDC
Red	Normally Open NO contact
Green	Normally Closed NC contact
Black	Relay common contact

110 V~AC Wiring Diagram

Color	Function
Red	Normally Open NO contact
Green	Normally Closed NC contact
Black	Relay common contact

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