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# 1000 Series
# RoHS Compliant Flow Switches
## Installation and Operating Instructions

This document provides basic information describing the plumbing and electrical connections to install and make operational your 1000 Series Flow Switch.

A comprehensive Technical Reference Manual for these devices can be downloaded from the Proteus Industries Website at www.proteusind.com/1000/1000TRM.pdf.

This manual includes technical descriptions, performance specifications, dimensions, mounting instructions, pressure drop curves, maintenance instructions, product warranty information and part numbers for replacement parts.

If you are unable to access the Internet to obtain this manual, a printed copy can be mailed to you. Please write, call or fax us with your request.

### Flow Ranges

| Flow Range | | Connection | Part Number | | |
|---|---|---|---|---|---|
| GPM | LPM | | Polypropylene | Brass | 316 Stainless Steel |
| 0.05 – 0.3 | 0.2 – 1.5 | ¼" FNPT | | 01004BN03 | 01004SN03 |
| 0.06 – 0.6 | 0.3 – 2.3 | ¼" FNPT | 01004PN06 | | |
| 0.1 – 1.0 | 0.4 – 3.8 | ¼" FNPT | 01004PN1 | 01004BN1 | 01004SN1 |
| 0.2 – 2.5 | 0.75 – 9.5 | ¼" FNPT | 01004PN2 | 01004BN2 | 01004SN2 |
| 0.2 – 2.5 | 0.75 – 9.5 | 9/16-18 SAE | | | 01006SA2 |
| 0.3 – 4.5 | 1.1 – 17 | ¼" FNPT | 01004PN4 | 01004BN4 | 01004SN4 |
| 0.3 – 4.5 | 1.1 – 17 | 9/16-18 SAE | | | 01006SA4 |
| 0.6 – 9.0 | 2.3 – 34 | ⅜" FNPT | | 01006BN9 | 01006SN9 |
| 0.6 – 10.0 | 2.3 – 38 | ⅜" FNPT | 01006PN10 | | |
| 0.8 – 10 | 3 – 38 | ¾-16 SAE | | | 01008SA10 |
| 1.0 – 14 | 3.8 – 53 | ½" FNPT | 01008PN14 | 01008BN14 | 01008SN14 |
| 1.2 – 16 | 4.5 – 60 | ¾" FNPT | | 01012BN16 | 01012SN16 |
| 1.2 – 16 | 4.5 – 60 | 1 1/16-12 SAE | | | 01012SA16 |
| 1.5 – 19 | 6 – 72 | ¾" FNPT | 01012PN19 | | |
| 3 – 40 | 11 – 150 | ¾" FNPT | | 01012BN40 | 01012SN40 |
| 4 – 40 | 15 – 150 | 1" FNPT | | 01016BN40 | 01016SN40 |
| 4 – 40 | 15 – 150 | 1 5/16-12 SAE | | | 01016SA40 |
| 4 – 50 | 15 – 190 | 1" FNPT | 01016PN50 | | |
| 5 – 60 | 18 – 225 | 1" FNPT | | 01016BN60 | 01016SN60 |

### Temperature & Pressure Operating Limits

| Flow Sensor Material | Faceplate Material | Temperature Limit* | | Pressure Limit | |
|---|---|---|---|---|---|
| | | °C | °F | PSI | kPA |
| Brass | Clear polysulfone | 90 | 194 | 100 | 690 |
| Polypropylene | Clear polysulfone | 70 | 158 | 75 | 515 |
| Stainless Steel | Clear polysulfone | 90 | 194 | 100 | 690 |
| Brass | Brass | 100 | 212 | 250 | 1720 |
| Stainless Steel | Stainless Steel | 100 | 212 | 250 | 1720 |

**** This is the fluid temperature that can be sustained with the flow meter cooled by ambient air at 20°C.***

# 1. Connect Plumbing


***01004BN03, 01004SN03, 01004PN06***
***01004BN1, 01004SN1 and 01004PN1***

***Liquid flow MUST enter at the arrowed port D to achieve the rated flow ranges.***

- Do NOT exceed the pressure limit of the faceplate.
- Do NOT use SWAK®, Loctite® or other anaerobic pipe sealants with devices with a clear plastic faceplate.
  ***Vapor from these materials cause the faceplate to crack!***
- Do NOT install metal fittings into polypropylene units. Excessive torque can cause the sensor to crack.

1. Identify the type and size of connections from the Model Number Table above.

   ***Do NOT exceed the flow limit of your flow sensor!***

2. For units 01004BN03, 01004SN03, 01004PN06, 01004BN1, 01004SN1 and 01004PN1, the liquid flow MUST enter the flow sensor at the port with the SMALLER orifice.

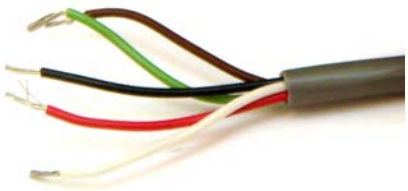
   For all other units, orifices are identical at both ports and the liquid flow can enter at either of the available ports.

3. Use PTFE tape or paste to lubricate and seal NPT threads, or PTFE paste to lubricate SAE straight threads.

4. Turn on your liquid flow slowly and check for leaks at the connections. Tighten connections as required to eliminate leaks.

# 2. Make Electrical Connections

| Color | Function | |
|---|---|---|
| **Brown** | Supply Voltage | 24 VDC |
| **White** | 24 V Return | 0 VDC |
| **Black** | Relay Common | |
| **Red** | Relay NO Contact | |
| **Green** | Relay NC Contact | |



1. Locate the 24VDC power source and turn it OFF.
2. Connect the WHITE wire to the Return or -VDC power connection.
3. *The relay is energized with the relay common contact connecting to the relay NO contact when the flow rate is above the trip point setting.*
   *The relay is not energized with the relay common contact connecting to the relay NC contact when the flow rate is below the trip point setting.*

   ✯ To monitor the NC relay state, connect your external device to the BLACK and GREEN wires.
   ✯ To monitor the NO relay state, connect your external device to the BLACK and RED wires.
4. Connect the BROWN wire to the +24VDC source connection.
5. Turn the 24VDC power source ON.

# 3. Adjust Trip Point *If a label on the back cover shows a factory-set trip point, no adjustment is needed.*


1. Remove the green label on the back of the unit to access the trip point adjustment screw.
2. Install the flow switch in your actual circuit or calibration bench.
   ***If a calibration bench is used, ensure that the inlet fitting is of the same form as that used in your actual circuit.***
3. Adjust the actual flow rate to the minimum flow rate at which the trip point is to be set.
   ***Ensure that all air is removed from the flow switch BEFORE adjusting the trip point.***
4. Connect an ohmmeter between the black and green or black and red wires.
5. With a small insulated screwdriver, adjust the potentiometer until the ohmmeter shows that the relay has changed state.
   ***Turn the potentiometer clockwise to INCREASE the trip point flow rate.***
   ***Turn the potentiometer counter-clockwise to DECREASE the trip point flow rate.***
6. The trip point is slightly different for rising and falling flow rates.
   ***It is recommended that the trip point be set on a falling flow rate.***