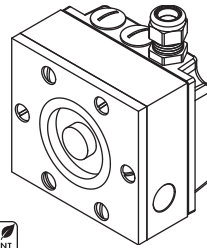


8000 Series Liquid Flow Meter

This document provides basic information describing the plumbing and electrical connections to install and make operational your 8000 Series flow meter.

For complete installation and operating instructions including important CAUTION and WARNING statements, please download the 8000 Series Technical Reference Manual available on the Proteus Industries website at www.proteusind.com/8000.



» Flow Ranges, Materials and Connections

MODEL NUMBER			FLOW RANGE*		CONNECTION
POLYPROPYLENE	BRASS	STAINLESS STEEL	GPM	LPM	
08004PN013	08004BN013	08004SN013	0.02 – 0.13	0.1 – 0.5	1/4" FNPT
	08004BN03	08004SN03	0.05 – 0.3	0.2 – 1.1	1/4" FNPT
08004PN06	08004BN06	08004SN06	0.06 – 0.6	0.2 – 2.2	1/4" FNPT
08004PN1	08004BN1	08004SN1	0.1 – 1.4	0.4 – 5.3	1/4" FNPT
08004PN2	08004BN2	08004SN2	0.2 – 2.5	0.8 – 9.5	1/4" FNPT
		08006SA2	0.2 – 2.5	0.8 – 9.5	9/16-18 SAE
08004PN4	08004BN4	08004SN4	0.3 – 4.5	1.1 – 17	1/4" FNPT
		08006SA4	0.3 – 4.5	1.1 – 17	9/16-18 SAE
	08006BN9	08006SN9	0.6 – 9.0	2.2 – 34	3/8" FNPT
08006PN10			0.6 – 10	2.2 – 38	3/8" FNPT
		08008SA10	0.8 – 10	3.0 – 38	3/4-16 SAE
08008PN14	08008BN14	08008SN14	1.0 – 14	3.8 – 53	1/2" FNPT
	08012BN16	08012SN16	1.2 – 16	4.5 – 60	3/4" FNPT
		08012SA16	1.2 – 16	4.5 – 60	1 1/16-12 SAE
08012PN19			1.5 – 19	5.7 – 72	3/4" FNPT
	08012BN40	08012SN40	3.0 – 40	11 – 151	3/4" FNPT
	08016BN40	08016SN40	4.0 – 40	15 – 151	1" FNPT
		08016SA40	4.0 – 40	15 – 151	1 5/16-12 SAE
08016PN50			4.0 – 50	15 – 189	1" FNPT
	08016BN60	08016SN60	5.0 – 60	19 – 227	1" FNPT

*Listed flow ranges are for water at 25°C / 77°F.

» Temperature and Pressure Operating Limits

FLOW SENSOR MATERIAL	FACEPLATE MATERIAL	TEMPERATURE LIMIT*		PRESSURE LIMIT	
		°C	°F	PSI	kPA
Polypropylene	Clear Polysulfone	70	158	75	517
Brass	Clear Polysulfone	90	194	100	689
	Brass	90	194	250	1723
Stainless Steel	Clear Polysulfone	90	194	100	689
	Stainless Steel	90	194	250	1723

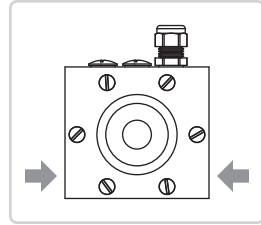
*The fluid temperature that can be sustained with the unit cooled by ambient air up to 30°C / 86°F.

1. Plumbing Connections

- Identify the connection type and size of your 8000 Series instrument from the table on the preceding page.
- Make connections to pipe or other fittings as required.

It is recommended that you use a non-hardening pipe sealant, such as Teflon® (PTFE) tape or paste, on pipe threads to create leak-tight and lubricated junctions at all connection points.

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



CAUTION!



- » Do NOT exceed the maximum flow limit of your instrument.
- » Do NOT exceed the temperature or pressure limits of the flow sensor body or faceplate material of your instrument.
- » Do NOT use anaerobic pipe sealants such as Loctite® or Swak® brand sealants with 8000 Series instruments fitted with polysulfone faceplates.
- » Do NOT install metal fittings into units with polypropylene bodies.

2. Electrical Connections

- Locate the 24 VDC power source and turn it OFF.
- Make all wire connections following the wiring diagram to the right.
- Check all connections to confirm that they are secure.
- Turn the 24 VDC power source ON.

The flow status LED will turn on. The color of the LED is determined by the relationship between the actual flow rate and the selected alarm trip point value. See below.

COLOR	FUNCTION
(BARE)	Shield
RED	+24 VDC
BLACK	Ground
BROWN	Voltage Output
ORANGE	Current Output
YELLOW	Relay Common
BLUE	Relay N.O.
WHITE	Relay N.C.
GREEN	Analog Ground

» LED Color, Flow Rate and Relay State

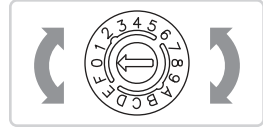
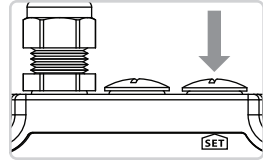
LED COLOR	STATUS	FLOW RATE CONDITION	EXAMPLE TRIP POINT: 10 GPM	RELAY STATE	
				N.O.	N.C.
GREEN	Flow OK	Greater than $1.1 \times$ flow rate at selected trip point	Actual Flow > 11 GPM	Closed	Open
AMBER	Warning	Between 1 and $1.1 \times$ flow rate at selected trip point	$10 \text{ GPM} < \text{Actual Flow} \leq 11 \text{ GPM}$	Closed	Open
RED	Alarm	Less than flow rate at selected trip point	Actual Flow ≤ 10 GPM	Open	Closed

- > If liquid is NOT flowing, the LED will be RED, indicating that power is on and liquid flow is below the selected alarm trip point value.
- > If liquid is flowing, the LED may be GREEN, AMBER or RED depending on the actual rate of flow and the selected alarm trip point value as shown in the table on the opposite page.

3. Alarm Trip Point Selection

The trip point of an 8000 Series flow meter can be easily adjusted using a 16-position rotary switch. When the switch position is changed, the new trip point value will immediately take effect.

- Using a flathead screwdriver, remove the screw closure labeled **SET** to access the 16-position rotary switch. Retain the closure and the O-ring.
- Rotate the switch to the position that best matches your desired alarm trip point according to the table below.
- Replace the screw closure and O-ring and tighten sufficiently to ensure that a leak-tight seal is created.



» Switch Position and Alarm Trip Point Value

POSITION	% OF MAXIMUM FLOW RATE
0	AutoAlarm™ » Sets alarm trip point value based on reference flow rate
1	10%
2	15%
3	20%
4	25% » Default setting for standard 8000 Series products
5	30%
6	35%
7	40%
8	45%
9	50%
A	55%
B	60%
C	65%
D	70%
E	75%
F	80%

» AutoAlarm™ Automatic Alarm Trip Point Setting Feature

- > Moving the switch from a non-zero position to the zero position sets the alarm trip point to a calculated value equal to the current flow rate minus 20% of the upper limit of the sensor's flow range.
- > The calculated alarm value is stored in the device's memory and will NOT be lost if input power is removed from the unit. The stored value is cleared automatically when the switch is moved from zero to a non-zero position.

NOTE



The LED will flash RED continuously when AutoAlarm is activated if:

- » The calculated alarm trip point value is outside of the sensor's flow range
- » The device is powered up with the switch in the zero position, but no valid trip point value has been previously stored in memory

If this occurs, move the switch to a non-zero position and set a new alarm trip point value based on the desired reference flow rate.

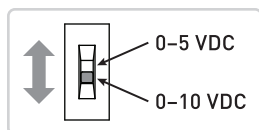
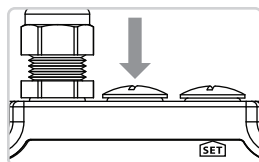
- > For more information, see the 8000 Series Technical Reference Manual.

4. Output Selection

Refer to the Electrical Connections section of these instructions for voltage and current output wiring assignments.

For voltage output, 8000 Series flow meters provide switch-selectable 0-5 VDC and 0-10 VDC options. **The default voltage output setting is 0-10 VDC.**

- Using a flathead screwdriver, remove the screw closure beside the power cable to access the voltage output selection switch. Retain the closure and the O-ring.
- Move the switch to the position corresponding to the desired output voltage, as illustrated in the diagram to the right.
- Replace the screw closure and O-ring and tighten sufficiently to ensure that a leak-tight seal is created.



5. Flow Measurement

- Connect a wire from the COM or negative (-) terminal of a voltmeter to the same connection point as the GREEN wire.
- Connect the BROWN wire to the positive (+) terminal of the voltmeter.
- Select a DC measurement range of 0-5 VDC or 0-10 VDC on the voltmeter.
- Measure the output voltage.
- Estimate the flow rate according to the flow response curves for your specific model number available in the 8000 Series Technical Reference Manual.

» Need More Information?

A comprehensive 8000 Series Technical Reference Manual containing technical descriptions, performance specifications, flow response and pressure drop curves, installation and mounting instructions, maintenance guidelines and other valuable information is available on the Proteus Industries website at:

www.proteusind.com/8000

» Need Assistance?

Contact Proteus Technical Support at tech@proteusind.com or (650) 964-4163.



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