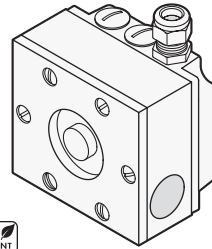


8000 Series Liquid Flow Meters

This document provides the basic steps necessary to install and make operational your 8000 Series flow meter.

For complete installation and operating instructions, including important CAUTION and WARNING statements, please see 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*		CONNECTIONS
POLYPROPYLENE	BRASS	STAINLESS STEEL	LPM	GPM	
	08004BN03	08004SN03	0.2-1.1	0.05-0.3	1/4" FNPT
08004PN06	08004BN06	08004SN06	0.2-2.2	0.06-0.6	1/4" FNPT
08004PN1	08004BN1	08004SN1	0.4-5.3	0.1-1.4	1/4" FNPT
08004PN2	08004BN2	08004SN2	0.95-9.5	0.25-2.5	1/4" FNPT
		08006SA2	0.95-9.5	0.25-2.5	9/16-18 SAE
08004PN4	08004BN4	08004SN4	1.1-17	0.3-4.5	1/4" FNPT
		08006SA4	1.1-17	0.3-4.5	9/16-18 SAE
	08006BN9	08006SN9	2.2-34	0.6-9.0	3/8" FNPT
08006PN10			2.2-38	0.6-10	3/8" FNPT
		08008SA10	3.0-38	0.8-10	3/4-16 SAE
08008PN14	08008BN14	08008SN14	5.3-53	1.4-14	1/2" FNPT
		08012SA16	4.5-60	1.2-16	1 1/16-12 SAE
	08012BN16	08012SN16	4.5-60	1.2-16	3/4" FNPT
08012PN19			5.7-72	1.5-19	3/4" FNPT
	08012BN40	08012SN40	11-151	3.0-40	3/4" FNPT
		08016SA40	15-151	4.0-40	1 5/16-12 SAE
	08016BN40	08016SN40	15-151	4.0-40	1" FNPT
08016PN50			15-189	4.0-50	1" FNPT
	08016BN60	08016SN60	19-227	5.0-60	1" FNPT

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



Temperature and Pressure Operating Limits


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

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

NOTE	
	Instruments with upper flow limits below 1.0 GPM / 3.8 LPM (model nos. ending in N03 or N06) are sensitive to flow direction. Liquid should only be introduced from the orifice labeled "IN". 

CAUTION!	
	<ul style="list-style-type: none"> » Do NOT install metal fittings into units with polypropylene bodies. » Do NOT use anaerobic pipe sealants with instruments fitted with polysulfone faceplates. Anaerobic sealants will crack the faceplate. » Do NOT exceed the maximum flow, temperature, or pressure limits of your instrument.

2. Electrical Connections

- Locate the 24 VDC power source and turn it OFF.
- Make all wire connections following the wiring assignments shown in the table to the right.
- Confirm that all connections 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

Flow Status, LED Color and Relay State

Flow status is determined by the relationship between the actual **Flow Rate**, the **Alarm Trip Point** value and the **Warning Limit**, which is a calculated value equal to the trip point value plus a specified percentage of the instrument's upper flow limit. (The default percentage for standard products is 10%.)

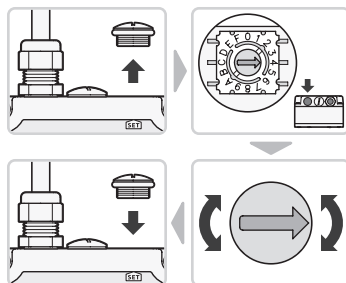
FLOW STATUS	FLOW RATE CONDITION	LED COLOR	RELAY STATE	
			N.O.	N.C.
Flow OK	Flow Rate > Warning Limit	Green	Closed	Open
Warning	Warning Limit ≥ Flow Rate > Alarm Trip Point	Amber	Closed	Open
Alarm	Alarm Trip Point ≥ Flow Rate	Red	Open	Closed

- > 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.

3. Alarm Trip Point Selection

The alarm trip point value of an 8000 Series flow meter is user-selectable by means of a 16-position rotary switch housed under the screw closure labeled **SET** located on the top of the instrument.

- Remove the screw closure labeled **SET** using a flat-head screwdriver. Retain the closure and the O-ring.
- Turn the switch to the position that best matches the desired trip point according to the table below. The new trip point will take effect immediately when the switch position is changed.
- 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	PERCENTAGE OF UPPER LIMIT OF FLOW RANGE
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	Factory-programmed custom trip point value -OR- 80%

AutoAlarm™ Automatic Alarm Trip Point Setting Feature

AutoAlarm allows the operator to set the alarm trip point to a calculated value equal to the current flow rate minus 20% of the instrument's upper flow limit. It is activated by moving the rotary switch to the **0** (zero) position.

- > When activated, the LED will turn GREEN and flash for five (5) seconds to indicate that the calculated trip point value has been successfully stored.
- > 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



While AutoAlarm is activated, an error condition—indicated by the LED status indicator flashing AMBER continuously—will occur if:


- » there is no liquid flowing through the device, or
- » the calculated trip point value is outside the instrument's flow range.

The error can be cleared by moving the switch to a non-zero position. Refer to the 8000 Series Technical Reference Manual for information.

4. Output Selection

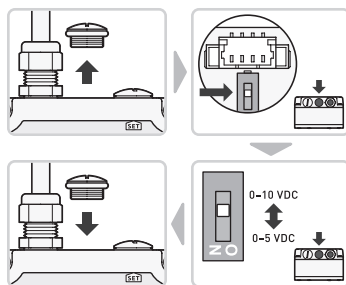
Standard 8000 Series instruments provide both current and voltage outputs. Refer to the Electrical Connections section for output wiring assignments.

For voltage output, user-selectable 0–5 VDC and 0–10 VDC options are available.

NOTE	
	Unless otherwise specified on your purchase order, all 8000 Series flow meters are shipped with a default voltage output setting of 0–10 VDC.

The slide switch for changing the voltage output setting is housed under the screw closure located beside the power cable on the top of the instrument.

- Remove the screw closure beside the power cable using a flat-head screwdriver. Retain the closure and the O-ring.
- Slide the switch to the position corresponding to the desired output voltage, as shown to the right. The change will take effect immediately.
- Replace the screw closure and O-ring and tighten sufficiently to ensure that a leak-tight seal is created.



5. Flow Measurement

The analog output of an 8000 Series instrument is directly proportional to the flow rate of the liquid passing through the device. Flow response curves for standard products are available in the 8000 Series Technical Reference Manual.

- Connect the COM or negative (–) terminal of a digital multimeter or equivalent device to the GREEN analog ground wire.
- Connect the positive (+) terminal of the multimeter to the ORANGE wire for current output -OR- the BROWN wire for voltage output.
- Measure the current or voltage output.
- Estimate the flow rate according to the flow response curves for your specific model number as shown in the 8000 Series Technical Reference Manual.

NEED MORE INFORMATION?

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

www.proteusind.com/8000



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Information in this document was correct at the time of printing; however, specifications are subject to change as Proteus Industries' continuous improvement processes establish new capabilities.

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