P Proteus Industries Inc.

500 Series Metering Flow Switches

This document provides basic information describing the plumbing and electrical connections, and trip point adjustments to install and make operational your 500 Series Metering Flow Switch.
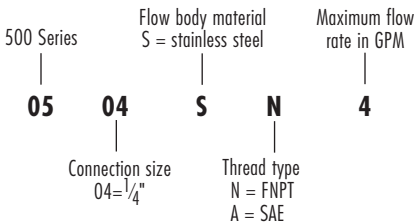
A comprehensive Technical Reference Manual for these devices is available on the Proteus Industries website at **www.proteusind.com/500**.

This manual includes technical descriptions, performance specifications, dimensions, detailed drawings, trip-point tables, flow response graphs and tables, maintenance instructions, product warranty, and part numbers for replacement parts.
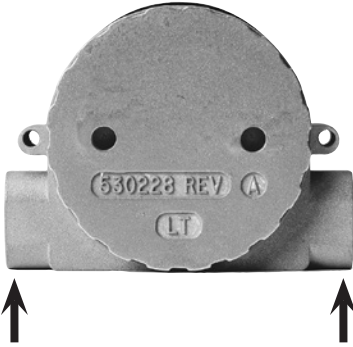
Model No.	Flow Range LPM	Flow Range GPM
0504SN2 0504SA2	0.95 – 9.5	0.25 – 2.5
0504SN4 0504SA4	1.1 – 17	0.3 – 4.5

Model Number Structure

|	Flow body material S = stainless steel		Maximum flow rate in GPM
500 Series			
05 **04**	**S**	**N**	**4**

Connection size
04 = ¼"

Thread type
N = FNPT
A = SAE

1 Connect plumbing

- Do NOT exceed the maximum temperature or pressure limits of the sensor.

- If fluid temperature will exceed 85 °C, the electronics must be isolated from the flow sensor.

1. Identify the type and size of plumbing connections from the Model Number Table on page 1.

   Do NOT exceed the flow limit of your flow sensor!

2. Use Teflon tape or paste to lubricate and seal NPT threads. Use a high-pressure lubricant to lubricate SAE threads.

3. Turn on your liquid flow slowly, and check for leaks at the two connections. Tighten connections as required to eliminate all leaks.

2 Make electrical connections
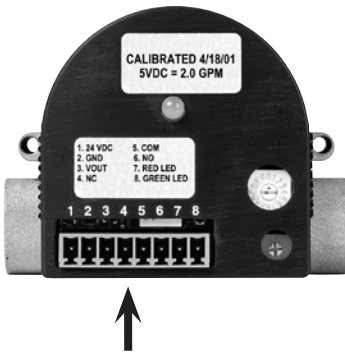
1. Locate the source of 24 VDC power and turn it OFF.

2. Prepare wiring cables of up to #16 gauge to connect power and the required relay and voltage outputs.

3. Connect the flow switch common wire in position 5.

4. For a N.C. relay state, connect the other flow switch wire in position 4.
   For a N.O. relay state, connect in position 6.

5. Connect the power common wire to position 2.

6. Connect the +24 VDC wire to position 1.

7. Connect to the 24 VDC source and turn it ON.

- If liquid is NOT flowing, the LED will show RED, indicating power is on and liquid flow is below the selected trip-point flow rate.

- If liquid is flowing, the LED may show GREEN, AMBER, or RED, depending on flow rate and the selected trip-point flow rate, as described in Table 1 on page 4.

3 Select trip point
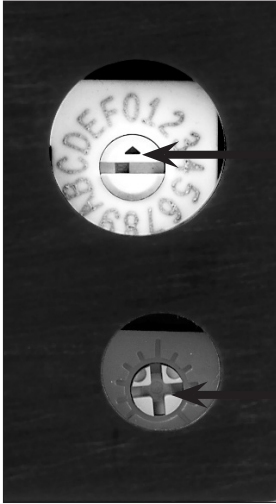
1. From the Trip Point Table (Table 2) on page 4, select the row with the Model Number of your flow sensor.

2. Look ACROSS the table to select your desired trip point.

3. Look UP the table to identify the setting of the 16-position switch for your trip point.

4. Set the 16-position switch so that the arrow points towards the setting you selected in step three.

5. Set the fine-adjustment potentiometer to the 12 o'clock position.

   Refer to the 500 Series Technical Reference Manual for use of the fine trip-point adjustment feature.

4 Measure flow

1. Read the voltage between positions 2 and 3 with a voltmeter.

2. Refer to the calibration certificate provided with your flow sensor or to the Flow Response Curves (Figure 1) on page 4 to identify the actual flow rate.

Table 1: LED Color, Flow Rate and Relay State

LED Color	Flow Rate Status	Example Trip Point 1.0 GPM	Relay State	
			N.O. contact	N.C. contact
Green	Greater than 1.15 x flow rate at selected trip point	Actual Flow > 1.15 GPM	Closed	Open
Amber	Between 1x and 1.15 x flow rate at selected trip point	1.0 < Actual Flow < 1.15 GPM	Closed	Open
Red	Less than flow rate at selected trip point	Actual Flow < 1.0 GPM	Open	Closed

Table 2: Selecting Trip-Point Flow Rate with 16-position Switch Units: US gallons per minute (1 US gallon = 3.785 liters)

Model Number	Switch Position															
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0504SN2 0504SA2	0.15	0.29	0.44	0.59	0.74	0.88	1.03	1.18	1.32	1.47	1.62	1.76	1.91	2.06	2.21	2.35
0504SN4 0504SA4	0.26	0.53	0.79	1.06	1.32	1.59	1.85	2.12	2.38	2.65	2.91	3.18	3.44	3.70	3.97	4.23

Note: The trip-point flow rates in the table above are calculated values. Custom factory trip-point setting is available to achieve stated accuracy.
The presence of elbows or devices other than straight fittings installed at the inlet may affect the actual trip-point settings.

Figure1: Flow Response Curves
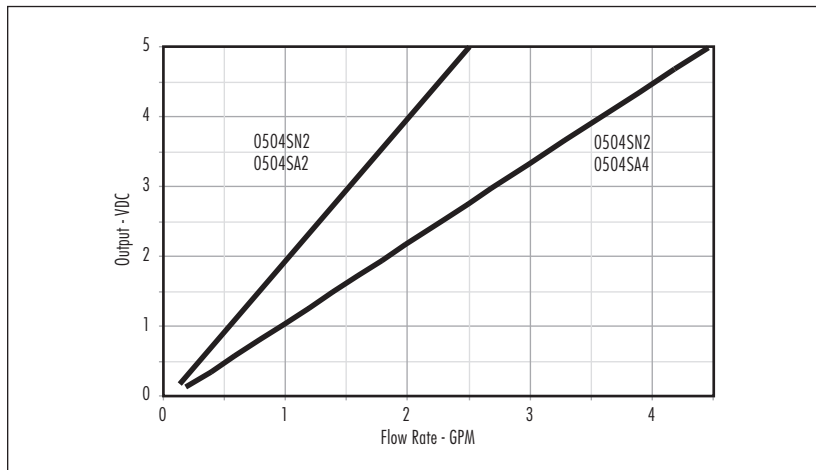
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