

## Precision Stainless Steel Gas Mass Flow Meters

### Features

- Direct monitoring of mass flow rate eliminates need for ancillary pressure and temperature sensing
- 316 Stainless-steel flow body accommodates most corrosive and toxic gas applications
- Suitable with pressures up to 500 psig ( 34 barg )
- Digital display of mass flow rate optional on flow body or in remote version for panel mounting
- Electronic output of mass flow rate for control or data-logging
- Large, straight sensor tube reduces pressure drop and permits cleaning
- Platinum sensor minimizes zero drift and ensures long-term repeatability
- Primary standard calibration ensures starting point accuracy and NIST traceability
- CE Approved
- Compact size for easy installation

**SIERRA**  
INSTRUMENTS®  
THE MASS FLOW COMPANY

ISO  
REGISTERED  
9001

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For information online...  
[www.sierrainstruments.com](http://www.sierrainstruments.com)

# Top-Trak® Model 820S



### Description

**S**ierra Instruments' Top-Trak® Model 820S is designed for precise measurement of any process gas in ranges from 0 to 10 sccm to 0 to 500 slpm. Because all wetted materials are 316 stainless steel, the device accommodates most clean gases, including corrosives at pressures up to 500 psig (34 barg).

Top-Trak's outstanding accuracy is a function of a high-stability platinum flow sensor. This sensor has been continuously improved for many years to minimize long-term deviation (drift). The sensor's large internal diameter prevents the clogging and contamination often associated with capillary type thermal mass flow meters and creates minimum insertion pressure loss in your installation.

The Model 820S optional display shows the mass flow rate directly in any user defined gas mass units. The instrument display is tiltable over 180° for easy viewing and can be removed for remote panel mounting. A 0 to 5 VDC or 4 to 20 mA linear output signal proportional to gas mass flow rate is provided for recording, data-logging or control.

Top-Trak's broad range of sizes, electronics, process connections and input/output options provide flexibility, versatility and ultimately, the ideal instrument package for your specific application.

**Dimensions in inches (millimeters)**

**Low Flow Body**

FLOW RANGE		
	0 to 10 sccm	0 to 15 slpm
<b>Process Tubing</b>	.25 (6.4)	.25 (6.4)

FITTING TYPE, .562-18 THREAD (1)			
	Compression .125 or .25	VCO(male) .25	VCR(male) .25
<b>Dim. L</b>	4.84 or 5.0 (122.9 or 127.0)	4.60 (116.8)	4.90 (124.5)

**Medium Flow Body**

FLOW RANGE, slpm		
	0 to 15	0 to 100
<b>Process Tubing</b>	.25 or .375 (6.4 or 9.5)	.25 or .375 (6.4 or 9.5)

FITTING TYPE, .562-18 THREAD (1)			
	Compression .25 or .375	VCO(male) .25 or .375	VCR(male) .25 or .375
<b>Dim. L</b>	6.27 or 6.39 (159.3 or 162.3)	5.81 or 6.25 (147.6 or 158.8)	6.13 or 6.43 (155.7 or 163.3)

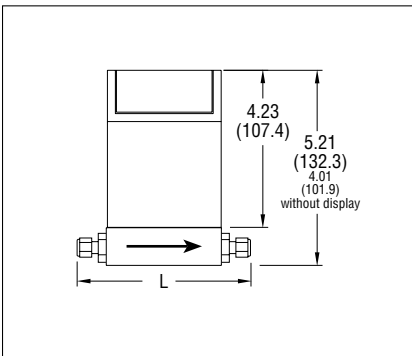
**High Flow Body**

FLOW RANGE, slpm		
	0 to 100	0 to 500
<b>Process Tubing</b>	.375 or .50 (9.5 or 12.7)	.50 (12.7)

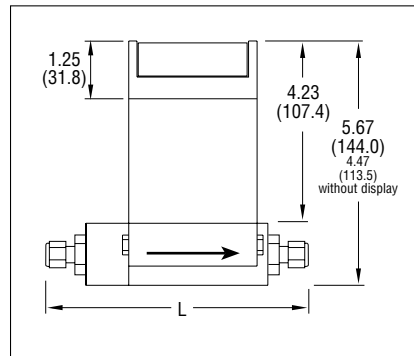
FITTING TYPE, .75-16 THREAD (1)			
	Compression .375 or .50	VCO(male) .375	VCR(male) .375
<b>Dim. L</b>	11.89 or 12.17 (302 or 309.1)	11.75 (298.5)	12.19 (309.6)

Note: (1) Metric fittings are available, consult factory.

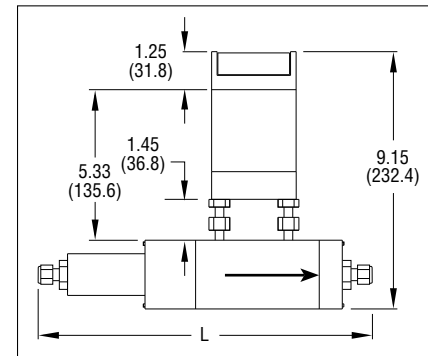
**Model 820S-L – Front View**



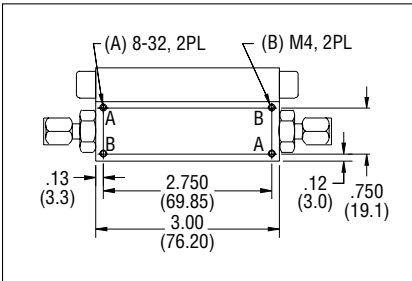
**Model 820S-M – Front View**



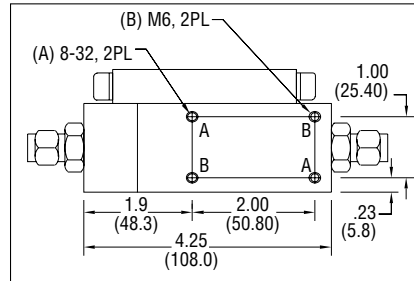
**Model 820S-H – Front View**



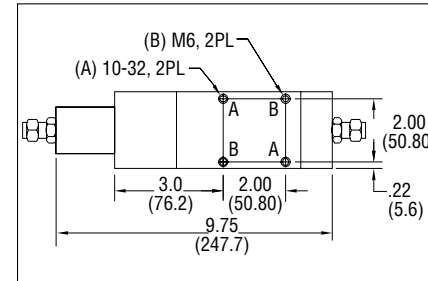
**Model 820S-L – Bottom View**



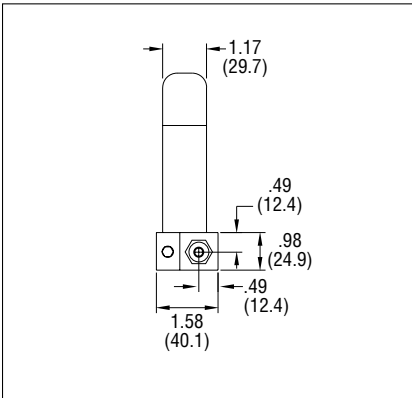
**Model 820S-M – Bottom View**



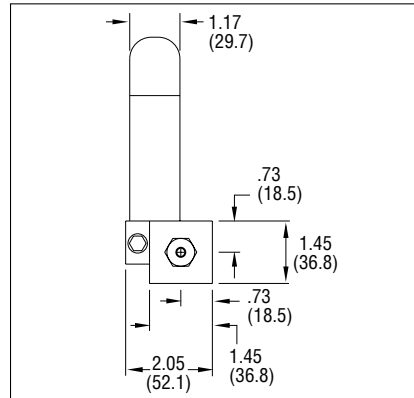
**Model 820S-H – Bottom View**



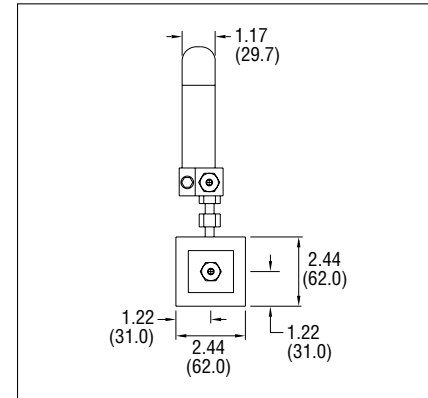
**Model 820S-L – Outlet View**



**Model 820S-M – Outlet View**



**Model 820S-H – Outlet View**



## Performance Specifications

### Accuracy

+/- 1.5 of Full Scale including linearity standard  
 +/- 1% of Full Scale (optional)

If the meter is mounted with a vertical (up or down) flow path the following Full Scale accuracy de-rating applies:

Inlet Pressure Deviation <sup>2</sup>	OPERATING PRESSURE <sup>1</sup>		
	50 psig	100 psig	150 psig
+/- 1 psig	+/- 1.5%	+/- 1.5%	+/- 1.5%
+/- 5 psig	+/- 3.8%	+/- 4.5%	+/- 5.3%
+/- 10 psig	+/- 6%	+/- 7.5%	+/- 9%

Notes: (1) Do not exceed 150 psig.  
 (2) Difference between inlet pressure and calibrated pressure. Do not exceed  $\pm 10$  psig.

### Repeatability

+/- 0.5% of Full Scale

### Temperature Coefficient

+/- 0.08% of Full Scale per °F (0.15% of Full Scale per °C), or better

### Pressure Coefficient

+/- 0.01% of Full Scale per psi (0.15% of Full Scale per bar) or better

### Response Time

800 ms time constant; two seconds (typical) to within  
 +/- 2% of final value over 25 to 100% of Full Scale

### Gas & Ambient Temperature

32 to 122°F (0 to 50°C)

### Leak Integrity

$5 \times 10^{-9}$  atm cc/sec of helium maximum

### Power Requirements

12 to 15 VDC, (15 VDC nominal), 100 mA maximum  
 24 VDC optional, specify when ordering

### Output Signal

Linear 0 to 5 VDC, 1000 ohms minimum load resistance  
 Linear 4 to 20 mA, 500 ohms maximum loop resistance

### Display (optional)

3.5 digit LCD (0.6 in H); removable for remote mounting

## Physical Specifications

### Wetted Materials

316 stainless steel, Viton® "O"-rings standard  
 Neoprene® and 4079 Kalrez® "O"-rings optional

## Operating Specifications

### Gases

Most gases; check compatibility with wetted materials; specify when ordering

### Mass Flow Rates


0 to 10 sccm to 0 to 500 slpm; flow ranges specified are for an equivalent flow of nitrogen at 760 mm Hg and 21°C (70°F); other ranges in other units are available (e.g., scfh or nm<sup>3</sup>/h)

### Gas Pressure

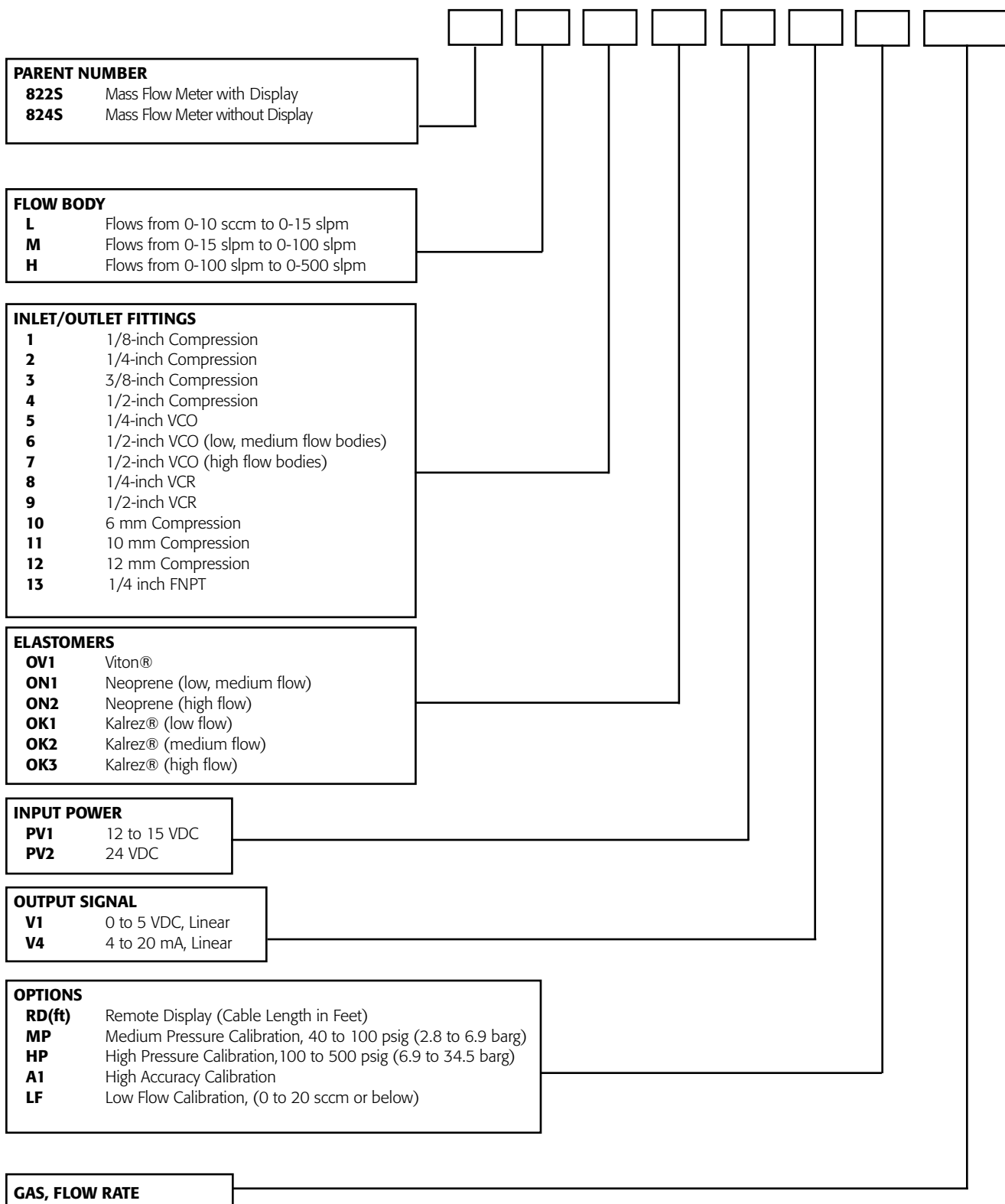
500 psig (34 barg) maximum  
 30 psig (2 barg) optimum

## Operating Specifications

### PRESSURE DROP ACROSS THE 820S

Flow Meter	Flow Rate	psi			Mbar		
		1/4	3/8	1/2	1/4	3/8	1/2
	Meter Fittings (inch): 						
820S-L	100 sccm	.005	n/a	n/a	.309	n/a	n/a
820S-L	500 sccm	.006	n/a	n/a	.440	n/a	n/a
820S-L	1 slpm	.006	n/a	n/a	.475	n/a	n/a
820S-L	15 slpm	.11	.06	n/a	7.59	4.0	n/a
820S-M	20 slpm	.08	.03	n/a	5.50	2.0	n/a
820S-M	50 slpm	n/a	.3	.10	n/a	20.4	6.8
820S-M	100 slpm	2.0	.85	.30	136	58	20.4
820S-H	200 slpm	n/a	2.50	2.00	n/a	170	136
820S-H	500 slpm	n/a	n/a	8.5	n/a	n/a	578

## Ordering the Model 820S



**ACCESSORIES (Consult Factory)**



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