Top-Trak® Model 822/824

Gas Mass Flow Meters with Digital Display

Features

- **Direct monitoring of mass flow rate eliminates need for ancillary pressure and temperature sensing**
- **Digital display of mass flow rate on flow body or remote version for panel mounting**
- **Electronic output of mass flow rate for control or data-logging**
- **Fast response to changes in flow rate**
- **Large, straight sensor tube reduces contamination and maintenance down-time**
- **Platinum sensor eliminates zero drift and ensures long-term repeatability**
- **Primary standard calibration ensures starting point accuracy and NIST traceability**
- **CE Approved**

Description

Sierra Instruments' Top-Trak® Model 820 Mass Flow Meter is designed to replace volumetric flow rate devices at a comparable installed cost. No temperature or pressure corrections are required, as in the case of most other flow monitoring devices, such as rotometers, turbine meters or critical orifices.

Available in flow ranges from 0 to 10 sccm up to 0 to 50 slpm, Top-Trak is suitable for any clean gas flow measurement application. Wetted surfaces are rugged 316 stainless steel, nickel plating, 6/6 reinforced Nylon® and Viton® "O" rings; all are corrosion-resistant.

The Model 820 measures and displays the mass flow rate directly in sccm or slpm. The integral 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 output signal linearly proportional to gas mass flow rate is provided for recording, data-logging or control. This device is widely used in a variety of flow validation and calibration applications-by dozens of instrument OEMs and in a multitude of laboratory, test and analytical operations.

SIERRA® INSTRUMENTS
THE MASS FLOW COMPANY

ISO REGISTERED 9001

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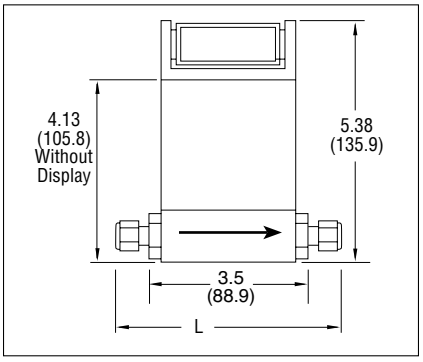
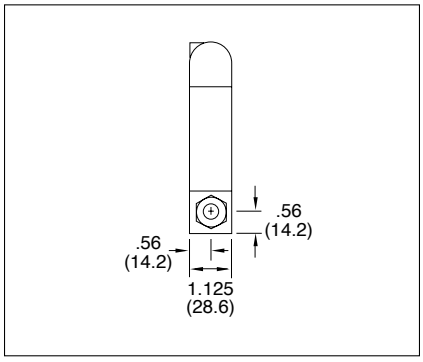
For information online...
www.sierrainstruments.com

Dimensional Specifications

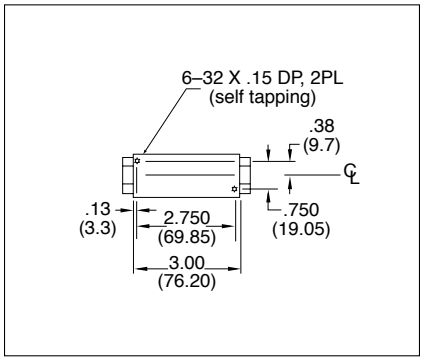
Model 820–Side View



Model 820–Outlet View



Model 820 –Bottom View



All dimensions are inches and in parentheses are millimeters. Certified drawings are available on request.

	FITTING SIZE		
	1/8-inch Compression	1/4-inch Compression	1/4-inch NPT
Dim. L	5.51(140.0)	5.70 (144.8)	3.50 (88.9)

Performance Specifications

Accuracy

+/- 1.5 of Full Scale including linearity over 15° to 25°C and 5 to 60 psia (0.3 to 4 bara).
If the meter is mounted with a vertical (up or down) flow path the folowing accuracy de-rating applies:

	OPERATING PRESSURE		
Inlet Pressure Deviation[2]	50 psig	100 psig	150 psig
+/- 1 psig	+/- 1.5% of Full Scale	+/- 1.5% of Full Scale	+/- 1.5% of Full Scale
+/- 5 psig	+/- 3.8% of Full Scale	+/- 4.5% of Full Scale	+/- 5.3% of Full Scale
+/- 10 psig	+/- 6% of Full Scale	+/- 7.5% of Full Scale	+/- 9% of Full Scale

Notes: (1) Do not exceed 150 psig.
(2) Difference between inlet pressure and calibrated pressure. Do not exceed ± 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; six seconds (typical) within
+/- 2% of final value over 25 to 100% of Full Scale

Operating Specifications

Gases

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

Mass Flow Rates

0 to 10 sccm up to 0 to 50 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^3/h)

® Nylon, Viton, Neoprene, Kal-Rez, and Teflon are registered trademarks of DuPont.

Gas Pressure

150 psig (10 barg) maximum;
20 psig (1.4 barg) optimum

Gas & Ambient Temperature

32 to 122°F (0 to 50°C)

Leak Integrity

1 X 10^{-4} atm cc/sec of helium maximum

Pressure Drop

PRESSURE DROP	
Flow Rate	mbar
100 sccm	0.05
1 slpm	0.54
10 slpm	5.40
20 slpm	23
30 slpm	52
40 slpm	88
50 slpm	122

Power Requirements

12 to 15 VDC, 15 VDC nominal, 100 mA maximum
24 VDC optional

Output Signal

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

Display

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

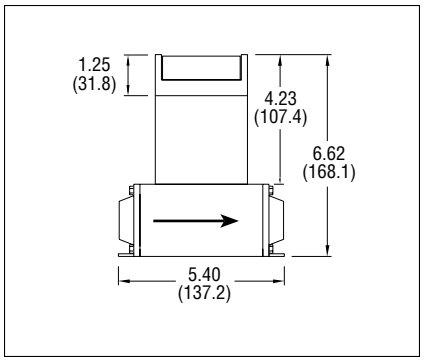
Physical Specifications

Wetted Materials

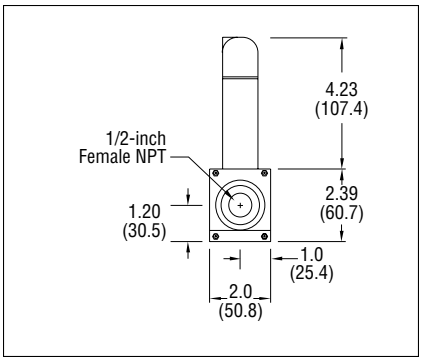
10% glass-filled Nylon® 6/6, 316 stainless steel, nickel plating,
Viton® "O"-rings standard
Neoprene® and 4079 Kalrez® "0"-rings optional

Dimensional Specifications

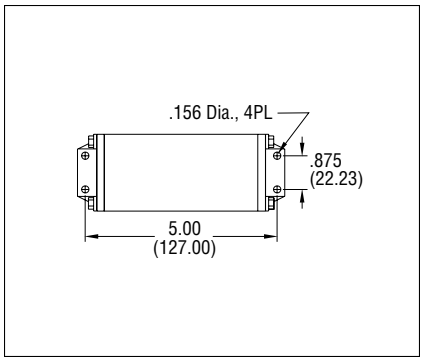
Model 826 – Side View



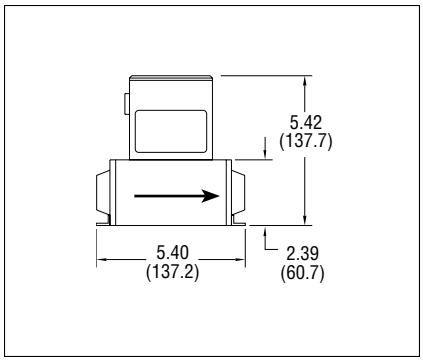
Model 826 – Outlet View



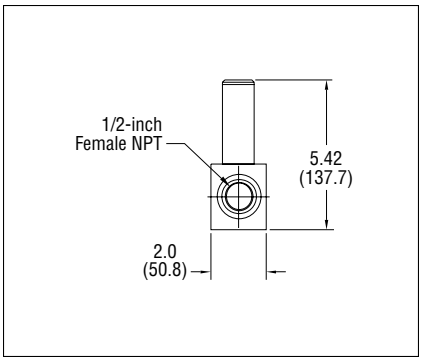
Model 826 – Bottom View



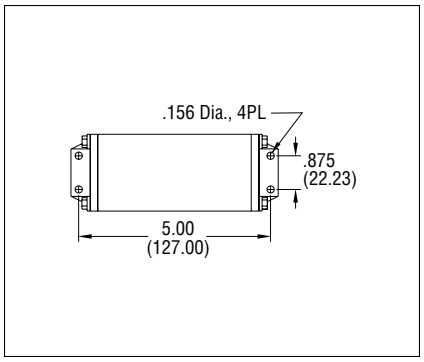
Model 827 – Side View



Model 827 – Outlet View



Model 827 – Bottom View



All dimensions are inches and in parentheses are millimeters. Certified drawings are available on request.

Performance Specifications

Accuracy
+/- 1.5 of Full Scale including linearity over 15° to 25°C and 5 to 60 psia (0.3 to 4 bara)

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; six seconds (typical) to within
+/- 2% of final value over 25 to 100% of Full Scale

Operating Specifications

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

Mass Flow Rates
0 to 75 up to 0 to 175 slpm; flow range is 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^3/h)

Gas Pressure
150 psig (10 barg) maximum;
20 psig (1.4 barg) optimum

Pressure Drop
15.0 mbar at 75 slpm
67.8 mbar at 175 slpm

Gas & Ambient Temperature
32 to 122°F (0 to 50°C)

Leak Integrity
1 X 10^{-4} atm cc/sec of helium maximum

Power Requirements
12 to 18 VDC, 15 VDC nominal, 100 mA maximum
24 VDC optional

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

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

Physical Specifications

Wetted Material
Anodized aluminum, 316 stainless steel, nickel plating, Viton® "O"-rings standard; Neoprene and 4079 Kalrez® "O"-rings optional

STRAIGHT PIPE LENGTH REQUIREMENTS (In Number of Internal Diameters, D)	
1/2 inch Female NPT, minimum, upstream	10 D
1/2 inch Female NPT, minimum, downstream	5 D

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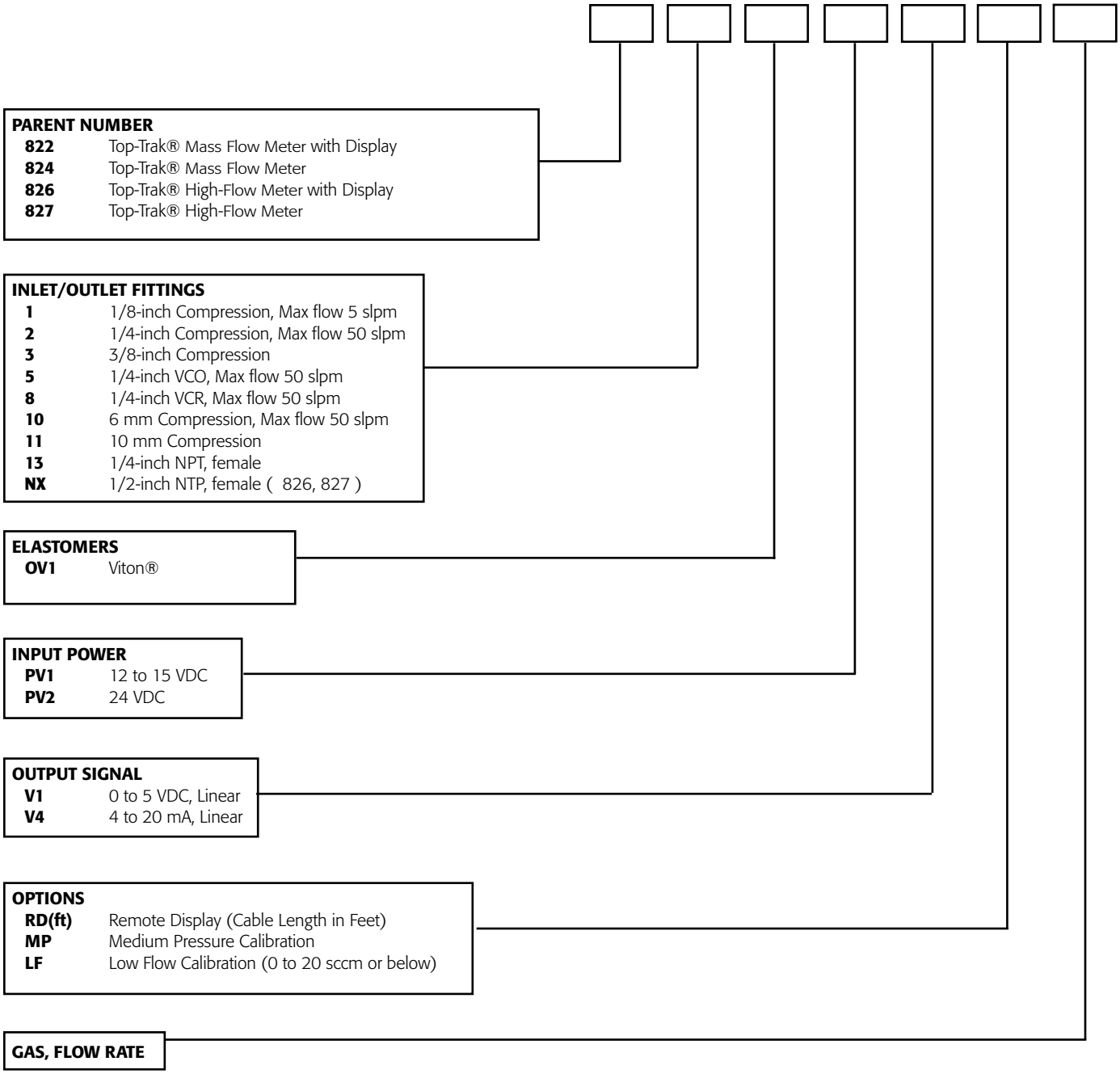
Ordering the Model 822, 824, 826 or 827



PARENT NUMBER

822	Top-Trak® Mass Flow Meter with Display
824	Top-Trak® Mass Flow Meter
826	Top-Trak® High-Flow Meter with Display
827	Top-Trak® High-Flow Meter

INLET/OUTLET FITTINGS

1	1/8-inch Compression, Max flow 5 slpm
2	1/4-inch Compression, Max flow 50 slpm
3	3/8-inch Compression
5	1/4-inch VCO, Max flow 50 slpm
8	1/4-inch VCR, Max flow 50 slpm
10	6 mm Compression, Max flow 50 slpm
11	10 mm Compression
13	1/4-inch NPT, female
NX	1/2-inch NTP, female (826, 827)

ELASTOMERS

OV1	Viton®

INPUT POWER

PV1	12 to 15 VDC
PV2	24 VDC

OUTPUT SIGNAL

V1	0 to 5 VDC, Linear
V4	4 to 20 mA, Linear

OPTIONS

RD(ft)	Remote Display (Cable Length in Feet)
MP	Medium Pressure Calibration
LF	Low Flow Calibration (0 to 20 sccm or below)

GAS, FLOW RATE

ACCESSORIES (Consult Factory)
CONNECTORS AND CABLES (Consult Factory)

High-Flow Gas Mass Flow Meters with Digital Display

Top-Trak® Model 826/827

Features

- **Direct monitoring of mass flow rate eliminates need for ancillary pressure and temperature sensing**
- **Digital display of mass flow rate on flow body or remote version for panel mounting**
- **Aluminum flow body accommodates most gases in flow rates up to 175 slpm**
- **Electronic output of mass flow rate available for control or data-logging**
- **Large, straight sensor tube reduces contamination and maintenance down-time**
- **Platinum sensor eliminates zero-drift and ensures long-term repeatability**
- **Primary standard calibration ensures starting point accuracy and NIST traceability**
- **CE Approved**

Description

Sierra Instruments' Model 826/827 High-Flow Top-Trak® accurately measures the mass flow rate of most clean gases. Available in flow ranges from 0 to 75 slpm up to 0 to 175 slpm. Wetted surfaces are anodized aluminum with Viton® "O" rings, and all are corrosion-resistant.

The Model 826/827 measures and displays the mass flow rate directly in sccm or slpm. The instrument is available with our without a digital display, which is tilt-able over 180° for easy viewing and can be removed for remote panel mounting. A 0 to 5 VDC or 4 to 20 mA output signal linearly proportional to gas mass flow rate is provided for recording, data-logging or control. A 9-pin "D" connector for the output signal, input power, and remote display drive is standard.

Top-Trak's performance is unsurpassed: accuracy is 1.5% of Full Scale over a wide temperature and pressure range, and time response is two seconds to within 2% of final flow. This device is widely used in a variety of flow validation and calibration applications, by dozens of instrument OEMs, and in a multitude of laboratory, test and analytical operations.

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