

# Industrial Mass Flow Meters & Controllers

## Features

- Industry's only NEMA 6/IP67 rated MFC stands up to dirty applications without the need for secondary enclosures
- Measure & Control gas mass flow rates from 100 to 1000 SLPM (3 to 35 SCFM); higher flows available upon request.
- Both ANSI and DIN flanges available in various sizes and pressure ratings
- 316 stainless steel construction & flanges are suitable for any clean gas, even corrosives & toxics
- Accuracy: +/- 1% of Full Scale for your critical process
- Repeatability: +/- 0.2% Full Scale ensures a stable process even under changing conditions
- Dial-A-Gas<sup>®</sup> lets you select from up to 10 gases in one instrument, creating great flexibility and reducing spares inventory.
- Operation at low differential pressures easy due to Sierra's powerful valve design.
- Both digital and analog communication included

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**INSTRUMENTS**  
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ISO  
REGISTERED  
9001:2000

# Max-Trak<sup>™</sup> Model 180 + Flanges



## Description

**S**ierra Instruments' Max-Trak<sup>™</sup> Industrial Flow Meters and Controllers are now available with 316 SS flanges for your most demanding applications.

Winner of numerous awards, the Model 180 gas mass flow meters and controllers are now even easier to install in rugged industrial environments. Because these devices conform to the rigorous water-proof requirements of NEMA 6 and IP67, you can feel confident they will continue to perform for years, even when frequent wash-down / hose-down is required.

Excellent accuracy coupled with unsurpassed instrument stability result from our patented, inherently-linear internal design, our advanced platinum sensor technology and a valve that is strong and forgiving. Based upon Sierra's successful Smart-Trak<sup>®</sup> line of digital instruments, Max-Trak<sup>™</sup> offers Dial-A-Gas<sup>®</sup> multi-gas capability, both analog and digital communication and a wide variety of field adjustable parameters.

Max-Trak<sup>™</sup> controls gas mass flow from 100 to 1000 SLPM, with higher flows available upon request. In addition to flanged connections, a wide variety of pipe and fitting connections are also available.

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

The information contained herein is subject to change without notice.

## Performance Specifications

### Accuracy

Standard: +/- 1% of full scale including linearity at operating conditions

High Accuracy Calibration: Contact Sierra

### Dial-A-Gas

+/- 1% of full scale in all 10 standard gases

### Repeatability

+/- 0.2% of full scale

### Temperature Coefficient

+/- 0.025% of full scale per °F (0.05% 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

300 millisecond time constant; 2 seconds typical to within +/-2% of final value (includes settling time). Faster or slower available upon request.

## Operating Specifications

### Gases

All clean gases including toxics and corrosives; specify when ordering

### Mass Flow Rates

The following 10 gases make up the Dial-A-Gas<sup>®</sup> feature of every Max-Trak<sup>™</sup> instrument; up to 9 alternate gases may be substituted. Flow range specified is for an equivalent flow of nitrogen at 760 mm Hg and 21°C (70°F); other ranges in other units are available.

Dial-A-Gas <sup>®</sup>	
Gas	Maximum Flow (slpm)
Air	1000
Argon (Ar)	1450
Carbon Dioxide (CO <sub>2</sub> )	740
Carbon Monoxide (CO)	1000
Methane (CH <sub>4</sub> )	720
Helium (He)	1454
Hydrogen (H <sub>2</sub> )	1000
Oxygen (O <sub>2</sub> )	1000
Nitrogen (N <sub>2</sub> )	1000
Nitrous Oxide (N <sub>2</sub> O)	710

### Output Signals - Analog:

Linear 4–20 mA, 500 ohms maximum loop resistance and one of the following (user selectable):

Linear 0–5 VDC, 1000 ohms minimum load resistance

Linear 0–10 VDC, 1000 ohms minimum load resistance

Linear 1–5 VDC, 1000 ohms minimum load resistance

### Output Signals - Digital:

RS-232 standard

RS-485 MODBUS optional

### Command Signal - Analog (choice of one):

Linear 4–20 mA, 0–5, 0–10, 1–5 VDC

### Command Signal - Digital

RS-232

RS-485 MODBUS optional

## Operating Specifications (continued)

### Gas & Ambient Temperature

Gas: 32 to 122°F (0 to 50°C)

Ambient: -5 to 122°F (-20 to 50°C)

### Gas Pressure

**Maximum:** 500 psig (34.5 barg) maximum, burst tested to 750 psig (52 barg)

### Pressure Drop Across a Meter

Pressure must be above the values in the table below. Note that pressure increases with flow rate.

Pressure Drop Across Meter, psi (mbar)	
Flow Rate (slpm)	Insertion Pressure Drop
100	0.5 (34)
200	0.5 (34)
300	0.6 (41)
400	0.9 (61)
500	1.3 (88)
750	3.0 (204)
1000	5.0 (340)

### Differential Pressure Requirement for Controllers

**Optimum:** 30-60 psid (2-4 barg)

**Minimum:** See chart below.

Minimum Differential Pressure for Controllers, Air	
Flow Rate (slpm)	Minimum Pressure, psi (mbar)
100	1.0 (68)
200	1.0 (68)
300	2.0 (136)
400	4.0 (272)
500	6.0 (408)
750	15 (1020)
1000	20 (1360)

Tested at 21 °C, outlet at 14.7 psia

### Leak Integrity

Flanges mounted via 1 inch Swagelok<sup>®</sup> compression fittings, for convenience.

5 X 10<sup>-9</sup> atm cc/sec of helium maximum

**Power Requirements** (ripple should not exceed 100 mV peak-to-peak)

For Mass Flow Meters (M180): 15 to 24 VDC +/- 10%, (130 mA, regulated).

For Mass Flow Controllers (C180):

C180H: 24 VDC +/- 10%, (1260 mA, regulated)

**Control Range** (Mass Flow Controllers)

2 to 100% of full scale flow; automatic shut-off at 1.9%.

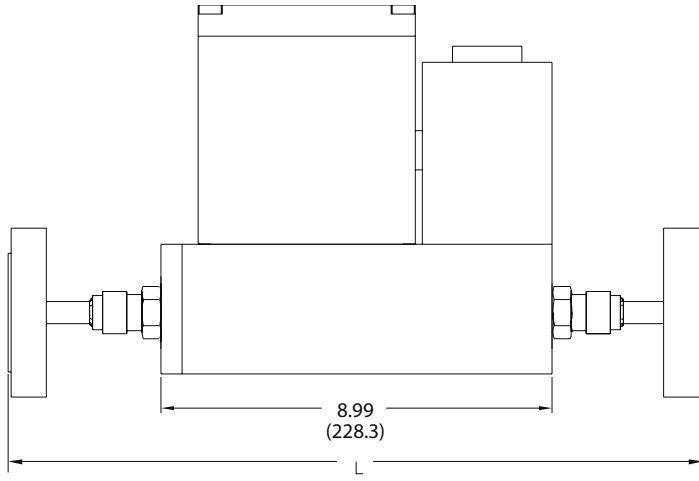
## Physical Specifications

### Wetted Material

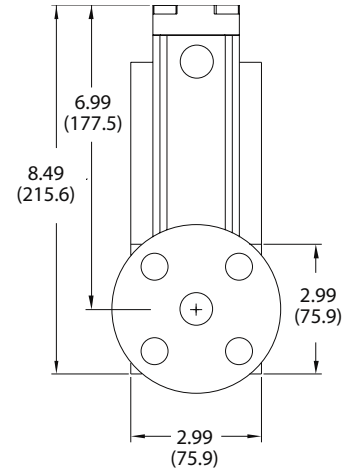
316 stainless steel; 416 stainless steel; Viton<sup>®</sup> "O"-rings and valve seat standard

Other elastomers are available (consult factory).

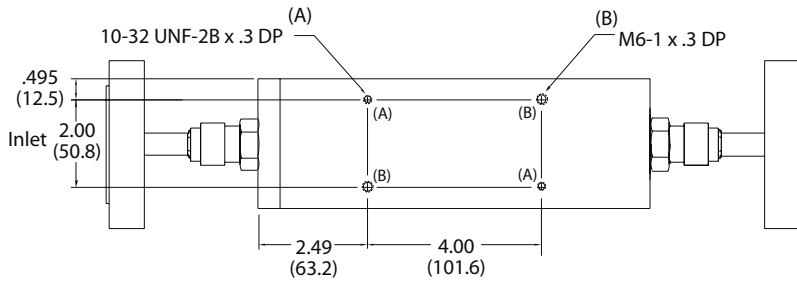
Max-Trak™ Flanged - Front View



Max-Trak™ Flanged - Side View



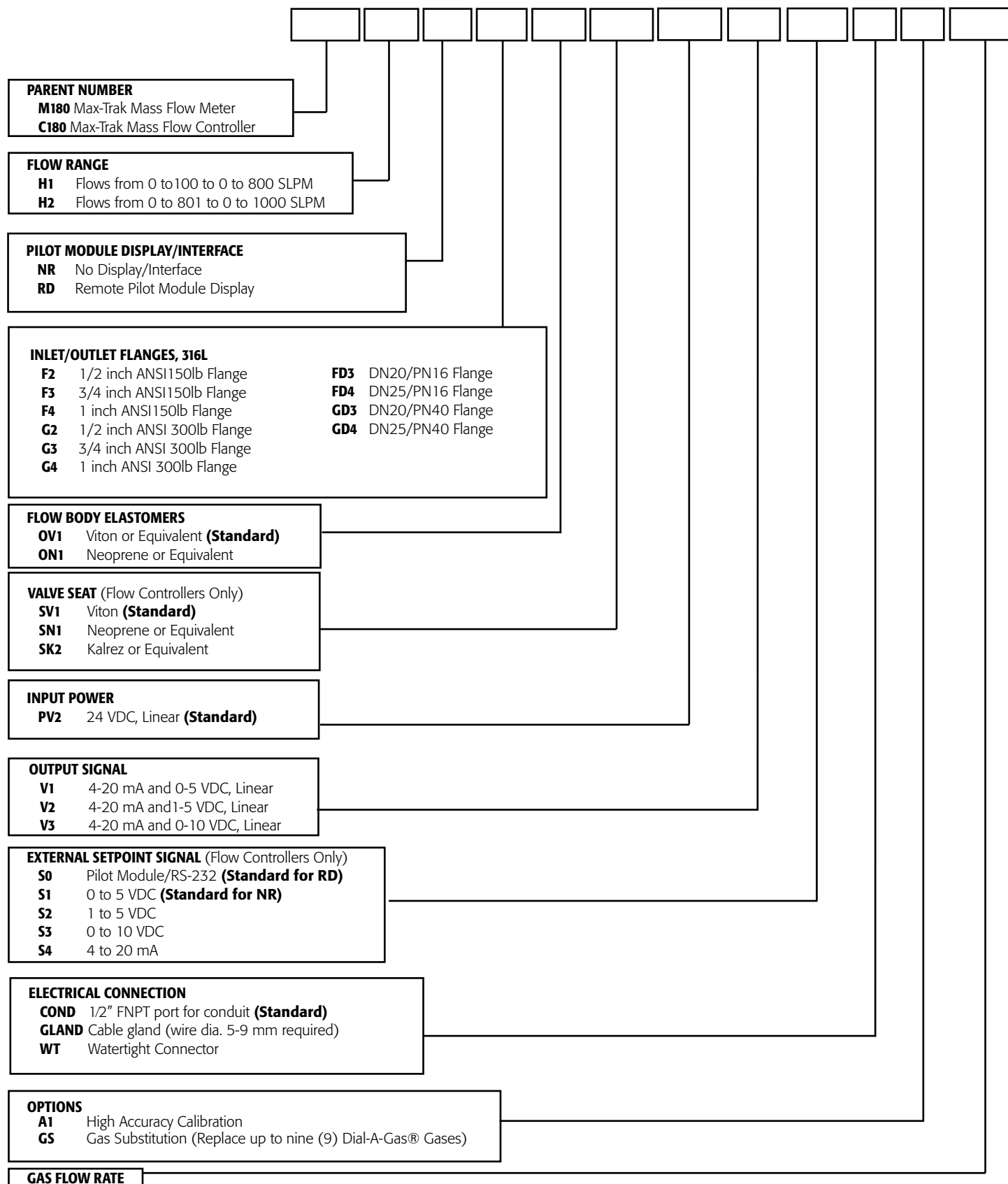
Max-Trak™ Flanged - Bottom View



Dimension (L)	
Flange Option	Inches (mm)
1/2" 150#	14.87 (377.6)
3/4" 150#	14.75 (374.6)
1" 150	14.55 (369.5)
1/2" 300#	14.87 (377.6)
3/4" 300#	14.75 (374.6)
1" 300#	14.55 (369.5)
DN20/PN16	14.75 (374.6)
DN25/PN40	14.55 (369.5)
DN20/PN40	14.75 (374.6)
DN25/PN40	14.55 (369.5)



## Ordering the Model 180 + Flanges



**FOR ACCESSORIES AND ADDITIONAL CABLES CONSULT SALESPERSON**

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