

Low-Cost Mass Flow Controllers for Gas with Digital Display

FEATURES

- All the performance features of a standard MFC at an affordable price!
- On-board display and local set point control eliminates need for external electronics
- Switch-selectable remote set point interfaces easily with PLC or workstation
- Large, straight sensor tube reduces contamination and maintenance down-time
- Platinum sensor eliminates zero-drift and ensures long-term repeatability
- Fast-response control valve provides quick response to set point changes
- Primary standard calibration ensures starting point accuracy and NIST traceability

MassTrakTM 810C
SIERRA



DESCRIPTION

Sierra Instruments' MassTrak[®] 810C offers exceptional mass flow control capabilities at an attractive price. Available in any range from 0 to 10 sccm to 0 to 50 slpm, the 810C is suitable for any clean, non-corrosive gas flow control application.

MassTrak's on-board display and local set point potentiometer allows for adjustment of the command signal from the face of the instrument enclosure and eliminates the need for external readout/set point electronics.

The instrument also offers a switch-selectable remote set point capability from either a 4 to 20 mA or 0 to 5 VDC command signal, which can be easily interfaced with a process control system or workstation.

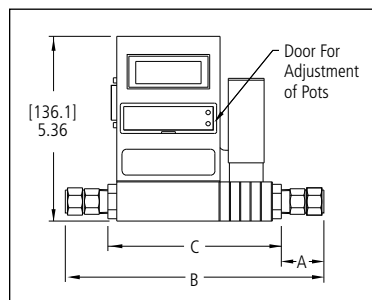
The instruments' built-in, electromagnetic, servo-control valve offers both a purge mode and a valve-close command from an external contact, a fast response to set point changes and a 0.25% repeatability specification.

Designed to reduce costs in analytical, laboratory and OEM instrument applications, MassTrak provides all the performance features of a standard mass flow controller at an affordable price!

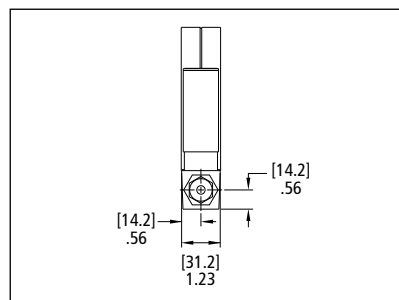


DIMENSIONAL SPECIFICATIONS

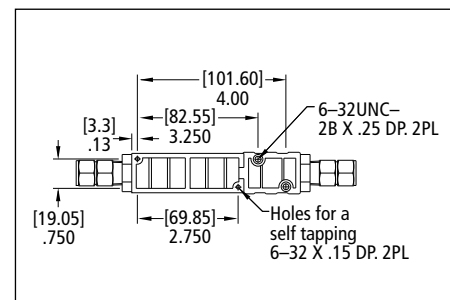
810C — Front View



810C — Outlet View



810C — Bottom View



Note: 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. A	1.01 (25.7)	1.09 (27.7)	—
Dim. B	7.01 (178.1)	7.19 (182.6)	—
Dim. C	5.00 (127.00)	5.00 (127.00)	5.00 (127.00)

Mass Flow Rates

0 to 10 sccm 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 nm³/h)

Gas Pressure

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

Differential Pressure Requirements (psid)

Flowrate (slpm)	Minimum	Maximum
0.01	0.186031	50
0.5	0.72252	50
1	2	50
5	5	50
10	7	50
15	8	50
50	9.1	50

Command Signal

Local Potentiometer
Remote Switch selectable 0 to 5 VDC or 4 to 20 mA

Controls

Local set point potentiometer
Zero potentiometer
Valve is closed when power is off

Display

3.5 digit LCD

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

24 VDC +/-10%, 350 mA, regulated

Control Range

Calibrated for 2 to 100% of full scale flow
Automatic shut-off at 0.5 to 3.0% of full scale

Output Signal

Linear 0 to 5 VDC, 2000 ohms minimum load resistance
Linear 4 to 20 mA, 1000 ohms maximum loop resistance for 24 VDC supply

PERFORMANCE SPECIFICATIONS

Accuracy

+/- 1.5% of full scale under calibration conditions including linearity over 60° to 80°F (15° to 26°C) and 5 to 60 psia (0.3 to 4 bara) if the instrument is mounted with a vertical (up or down) flow path the following accuracy de-rating applies:

Inlet Pressure Deviation ²	Operating Pressure		
	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

+/- 0.25% of full scale

Temperature Coefficient

0.08% of full scale per °F (0.15% of full scale per °C), or better

Response Time

800 ms time constant; six seconds (typical) to within

OPERATION SPECIFICATIONS

Gases

Most gases (e.g., air, nitrogen, carbon dioxide, argon, methane, hydrogen, helium); check compatibility with wetted materials; specify when ordering. +/- 2% of final value over 25 to 100% of full scale

Pressure Coefficient

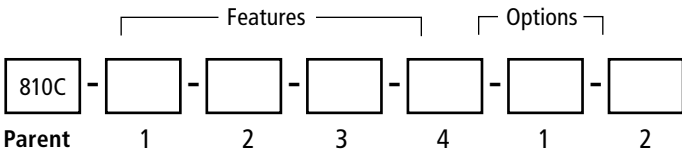
0.01% of full scale per psi (0.15% of full scale per bar), or better

OPERATION SPECIFICATIONS

Wetted Material

10% glass-filled Nylon® 6/6; 316 stainless steel; 430 °F (221°C) stainless steel; nickel plating; Viton® "O"-rings

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Instructions: To order the 810C please fill in each number block by selecting the codes from the corresponding features below and following pages.

Parent Number	
810C	MassTrak™ Mass Flow Controller Standard configuration includes: 0-5 VDC and 4-20 mA output signals; 24 VDC input power; choice of inlet/outlet fittings. Viton® "O" rings with nylon body; 15-pin "D" mating connector. Calibrated for any flow range from 0-10 sccm up to 50 slpm equivalent nitrogen flow; 1.5% full scale accuracy; maximum temperature 122°F (50°C); maximum pressure 150 psig (10.3 barg). Plus integral flow control valve. Standard model requires 24 VDC regulated input power; switchable 0-5 VDC and 4-20 mA command signal.

Note: All slpm flow ranges also available in nlpm

Feature 1: Display	
NR	No readout
DR	Digital display. 3.5 digit, LCD display indicates: flow rate in engineering units.

Option 1: Special Calibration	
MP	Medium pressure calibration. 40-150 psig (2.8-10.3 barg)
LF	Low flow calibration. Required for 0-20 sccm full scale flow range or less

Feature 2 : Fittings	
1	1/8-inch compression (maximum flow 5 slpm)
2	1/4-inch compression (maximum flow 50 slpm)
3	3/8-inch compression
5	1/4-inch VCO (maximum flow 50 slpm)
8	1/4-inch VCR (maximum flow 50 slpm)
10	6 mm compression (maximum flow 50 slpm)
11	10 mm compression
13	1/4-inch Female NPT

Options 2: Certificates	
CC	Certificate of conformance

Feature 3 : Output Signal	
V1	0-5 VDC, linear
V4	4-20 mA, linear

Feature 4: Command Signal	
S0	Local set point potentiometer
S1	External 0-5 VDC signal
S4	External 4-20 mA signal



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