Economical OEM Digital Mass Flow Controller (up to 200 slpm)

Features

- All the performance features of a digital mass flow controller at an OEM price
- Control gas mass flow rates to 200 slpm (nlpm)
- Stability and reliability optimized for long-term process control
- Ideal for control of carrier gases used in wafer cleaning and polishing operations
- Wide utility in chamber purge operations for Physical Vapor Deposition (PVD) and other semiconductor process applications
- Accuracy: +/- 1.0% full scale for common gases (Air, Ar, CO2, CO, CH4, He, H2, O2, N2)
- Repeatability: +/- 0.25% full scale
- Advanced 316L SS platinum sensor technology and patented LFE provide excellent linear performance
- Aluminum or 316 SS flow bodies with Viton® elastomers
- Local display and digital setpoint control with optional analog setpoint/output signals
- RS-232 interfaces easily with PLC or workstation (user software and communication cables available)
- Field adjustable zero and span
- RS-485 (addressable) enables networking within complex semiconductor tools
- Dual I/O DB9 comm ports for installation flexibility
- Powerful direct-acting control valve minimizes leak-by
- CE Approved

Smart-Trak® 50 Series Medium Flow

Description

Optimized to feature the stability, reliability and simplicity of operation required in long-term process control applications, Sierra's SmartTrak® 50 Series Medium Flow Controller offers high accuracy and reliable gas mass flow control at an economical price. This makes it an ideal choice for OEMs who require exceptional performance at a price point that meets their budgetary constraints.

Sierra's new medium flow controller increases the maximum flow range of the award-winning SmartTrak 50 Series from 50 slpm to 200 slpm. This makes it a perfect fit for controlling the carrier gases used in wafer cleaning and polishing operations or for purge control in PVD and other semiconductor operations. It also excels in the mass flow control of common gases in general applications.

The 50 Series builds on the same core sensor, LFE and valve technology found in Sierra's flagship Smart-Trak 100 Series, all backed by Sierra's trademark personalized customer support. A flexible and powerful direct-acting frictionless-hovering control valve sets it apart from the competition by minimizing leak-by, while offering +/- 0.25% repeatability.

It is Sierra's philosophy that only the highest performing core sensor technology can produce an excellent MFC. In contrast to the many wetted parts of CMOS and MEMS flow sensors, Sierra uses its advanced 316L stainless steel platinum-wound capillary sensor technology to deliver the highest reliability, repeatability and stable accuracy.

The SmartTrak 50 Series offers flexibility and simplicity of operation. Both analog and digital inputs and outputs are available, enabling the 50 Series to work with older analog systems or the newest multi-drop digital tools. Field adjustment of zero and span enable small adjustments in calibration to align with on-site process conditions.

Experience our passion for flow with the SmartTrak 50 Series Medium Flow Controller and enjoy the peace of mind gained from unparalleled stability, reliability and simplicity in your next application.

SIERRA®
EXPERIENCE OUR PASSION FOR FLOW!

ISO REGISTERED 9001

www.sierrainstruments.com

Performance Specifications

Accuracy
+/- 1.0% of full scale including linearity under calibration conditions over 32° to 122°F (0° to 50°C) and 5 to 145 psig (0.3 to 10 barg) for common gases: Air, Ar, CO2, CO, CH4, He, H2, O2, N2.

Repeatability
+/- 0.25% 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
Two seconds (typical) to within +/- 2% of final value including setting time. 50 Series may be tuned to be faster or slower (consult factory)

Operating Specifications

Gases
All neutral, non-contaminated dry and clean gases compatible with wetted materials aluminum, stainless steel and Viton®

Mass Flow Rates
The 50 Series can be calibrated for any gas compatible with Viton®, aluminum and stainless steel, using any units, to either normal or standard conditions, for flow rates up to 200 slpm air equivalent.

Gas Pressure
Max 145 psig (10 barg) maximum, burst tested to 225 psig (15 barg)

Minimum Differential Pressure Requirement
See Table

Pressure Requirement
145 Psi (specify Delta P at time of order)

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

Leak Integrity
5 X 10^{-9} atm cc/sec of helium maximum

Power Requirements
24 VDC (+/-10%), 850 mA, regulated, RS-485 option adds 130 mA

Control Range
5 to 100% of full scale flow (20:1) at published accuracy. Automatic valve shut-off with setpoints below 4.9% of full scale.

Output and Command (Setpoint) Signal
• RS-232

Optional:
• Linear 4 -20 mA, 500 ohms maximum load resistance
• Linear 0 -5 VDC
• RS -485 Addressable (no analog outputs)
• Zero, span, and setpoint are field adjustable via supplied user software and optional RS -232 communications cable

Display
Flow rate, units, full scale, and setpoint

Pressure Drop

Minimum Pressure Drop for Air, Mass Flow Controller

Flow Rate (slpm)	Medium Flow 3/8 or ½ inch fittings Pressure Drop in PSI (mbar)
20	1 (68)
30	1.2 (82)
40	1.6 (110)
50	2 (136)
100	5 (340)
150	10 (680)
200	15 (1020)

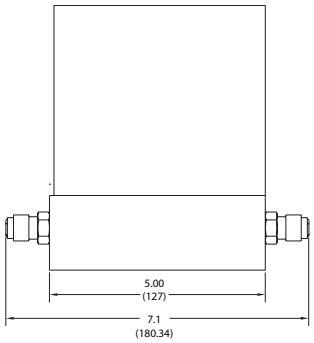
Physical Specifications & Dimensions

Wetted Material

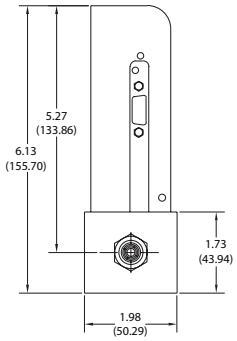
Anodized aluminum or 316 stainless steel flow body. 316L stainless steel sensor tubes; Viton® O-rings and valve seats.

Note: All dimensions are in inches with mm in brackets. Certified drawings are availabe upon request.

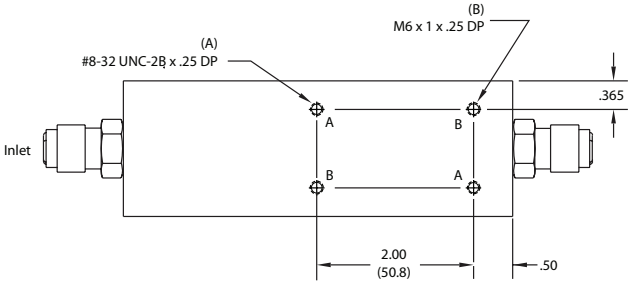
50 Series - Front View



50 Series - Side View



50 Series - Bottom View



Ordering the 50 Series

PARENT NUMBER
C50M AL Aluminum MFC
C50M SS Stainless steel MFC

PILOT MODULE DISPLAY
NR No display
DD Digital display (front mounted)

INLET/OUTLET FITTINGS
3 3/8-inch compression
4 1/2-inch compression
6 1/2-inch VCO
9 1/2-inch VCR
11 10 mm compression
12 12 mm compression
14 3/8-inch female NPT

INPUT POWER
PV2 24 VDC for all instruments

NOTE: Power supplies are not Included. See accessories to order.

OUTPUT SIGNAL/SETPOINT
V0 RS-232 (no analog output)
V1 0 to 5 VDC linear output signal and setpoint*
V4 4 to 20 mA linear output signal and setpoint*
V6 RS-485 addressable (no analog output)

OPTIONAL CABLES (10, 25, 50ft, custom; length in parenthesis)
50-C9 ( ) communication cable. Includes cable with D9 mating connector, fly leads. (length in parenthesis)
50-CRN D9 ( ) Serial (no analog connections) (length in parenthesis)
50-C9232 ( ) Cable with D9 mating connector + D9 serial (length in parenthesis)

CERTIFICATES
5PC 5 Point calibration certificate with data (standard certificate has no test result mentioned)
MC Material certificates--US Mill certs on all wetted parts
CC Certificate of conformance
O2C Oxygen cleaning (only available for stainless steel flow body)
LT Leak test certificate
PT Pressure test certificate

ACCESSORIES & OPTIONS
50 T8D ( ) 24 VDC Power Supply with D-connector, 110-230 VAC, CE approved. Specify AC plug below: (US) for USA plug, (EU) for Euro plug, (UK) for Great Britain plug.
50 T8F ( ) 24 VDC Power Supply with fly leads, 110-230 VAC, CE approved. Specify AC plug below: (US) for USA plug, (EU) for Euro plug, (UK) for Great Britain plug.
50 T10F ( ) 24 VDC power supply for C50M and C50H controlles. Supplied with fly leads, 1.25 Amps, 110-230 VAC, CE approved. Specify AC plug preference in parentheses: (US) for USA plug, (EU) for Euro plug, (UK) for Great Britain plug.
50 T10D ( ) 24 VDC power supply for C50M and C50H controlles. Supplied with D-connector, 1.25 Amps, 110-230 VAC, CE approved. Specify AC plug preference in parentheses: (US) for USA plug, (EU) for Euro plug, (UK) for Great Britain plug.
IM-50 Printed Instruction Manual (Digital version always included on CD)

* Includes RS-232

Email your questions or request for quote to 50series@sierrainstruments.com TODAY!

Note: CE and ISO certificates are available for download from **www.sierrainstruments.com/downloads**

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