



Visit www.sierrainstruments.com/micro to see the Micro-Trak™
Controlling gas at an incredible 0.2 sccm (smlm).

SIERRA®
INSTRUMENTS
THE MASS FLOW COMPANY

Micro-Trak™ & Dial-A Gas® are trademarks of Sierra Instruments, Inc. Nylon, Viton, Neoprene, Kalrez are registered trademarks of DuPont®, Windows® is a registered trademark of Microsoft

SIERRA INSTRUMENTS, NORTH AMERICA • 5 Harris Court, Building L • Monterey, California • (800) 866-0200 • (831) 373-0200 • Fax (831) 373-4402 • www.sierrainstruments.com

SIERRA INSTRUMENTS, EUROPE • Bijlmansweid 2 • 1934RE Egmond aan den Hoef • The Netherlands • +31 72 5071400 • Fax: +31 72 5071401

SIERRA INSTRUMENTS, ASIA • Rm.618, Tomson Centre, Bldg. A • 188 Zhang Yang Road • Pu Dong New District • Shanghai, P.R. China 200122 • +8621 5879 8521/22 • Fax: +8621 5879 8586

Micro-Trak™ Model 101

Technical Data Sheet

Ultra Low Flow High Performance Digital Gas Mass Flow Meters and Controllers

Features

- Measure and Control Flow of Gas from 4 sccm (smlm) down to 0.1 sccm (smlm)
- Digital performance
- Includes Dial-A-Gas® multi-gas capability that enables use with 10 different gases
- Unique Pilot Module interface (local or remote) allows control and display of the following functions:
 - Gas
 - Setpoint value
 - Setpoint source
 - Engineering units
 - Output signal
 - Valve state
 - Full Scale value
- All control functions are also available from your PC or workstation
- 316 stainless steel construction suitable for any clean gas, even corrosives and toxics
- Small footprint makes installation easy
- Single-sided power input reduces installation cost and complexity
- Every Micro-Trak Instrument includes:
 - RS-232 Communication
 - Analog communication
 - Software for Windows OS
 - Source code
 - Calibration certificate
 - Electrical Connector or Cable



Description

Micro-Trak™ measures and controls micro mass flows of gas previously thought to be too low for a reliable reading. Micro-Trak™ is specifically designed for flow ranges under 4 sccm (smlm) with a minimum controllable mass flow rate of 0.1 sccm (smlm).

The Model 101 is a specialized and highly engineered instrument for those who need accurate and reliable micro mass flow control of clean gases including corrosives and toxics. Micro-Trak™ is based on Sierra's award-winning family of digital instruments. As a result, ease of operation, field configuration, multi-gas capability and application flexibility are standard features.



Performance Specifications

Accuracy

+/- 1% of Full Scale including linearity at operating conditions

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

Governed by total volume of installation. Contact Sierra for suggestions on optimized installation.

Operating Specifications

Gases

All clean gases including corrosives & toxics; specify when ordering. The following ten gases make up the Dial-A-Gas® feature of every Micro-Trak™ instrument; up to nine alternate gases may be substituted.

DIAL-A-GAS RATES	
Gas	Micro-Trak Flow Range (sccm)
Air	0.10 to 4.0
Argon	0.14 to 5.6
CO ₂	0.074 to 2.95
CO	0.10 to 4.0
Methane	0.075 to 3.0
Helium	0.14 to 5.6
Hydrogen	0.10 to 4.0
Oxygen	0.10 to 4.0
Nitrogen	0.10 to 4.0
N ₂ O	0.072 to 2.9



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., nlpm, scfh, nm³/h, kg/h)

Gas Pressure

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

Pressure Drop Across a Meter

0.36 psi (24.5 mbar)

Differential Pressure Requirement For Controllers

30 psi (2040 mbar) optimum

1 psi (68 mbar) minimum at 21°C with outlet at ambient pressure

Gas & Ambient Temperature

32°F to 122°F (0°C to 50°C)

Leak Integrity

5 X 10⁻⁹ standard cc/sec of helium maximum

Operating Specifications (Continued)

Power Requirements

(Ripple noise not to exceed 100mV peak-to-peak)
For Mass Flow Meters: 15 to 24 VDC +/- 10% (130 mA maximum)
For Mass Flow Controllers: 24 VDC +/- 10% (400 mA, regulated) for C101

Control Range For Controllers

2–100% of Full Scale flow; automatic shut-off at 1.9%

Output Signal

Analog:

Linear 4 to 20 mA, 500 ohms maximum loop resistance and one of the following: Linear 0 to 5 VDC, 0 to 10 VDC, 1 to 5 VDC, 1000 ohms minimum load resistance

Digital:

RS-232; Pilot Module Display optional

Command Signal

Analog (choice of one):

Linear 4 to 20 mA, 0 to 5 VDC, 0 to 10 VDC, 1 to 5 VDC

Digital:

RS-232; Pilot Module Display optional

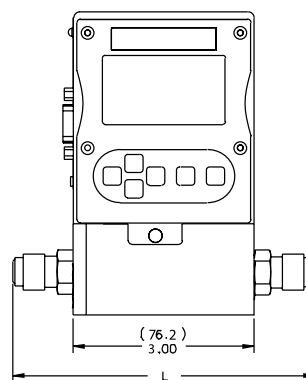
Wetted Material

316 stainless steel, 416 stainless steel; synthetic ruby, Viton® "O"-rings and valve seat standard; other elastomers are available (consult factory)

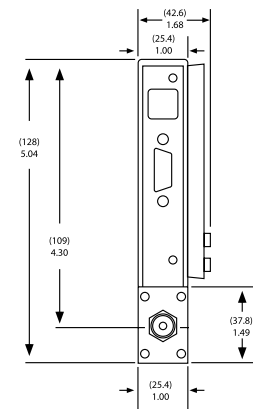
Physical Dimensions

All dimensions are in inches with mm in brackets. Certified drawings are available on request.

101 Micro-Trak™ Front View

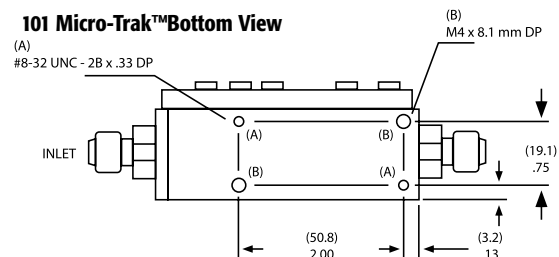


101 Micro-Trak™ Inlet View



L dimension ranges from 4.6" [117] to 5.2" [132] depending on fittings used.

101 Micro-Trak™ Bottom View



Ordering the Micro-Trak™

PARENT NUMBER M101 Micro-Trak™ Mass Flow Meter C101 Micro-Trak™ Mass Flow Controller											
PILOT MODULE DISPLAY/INTERFACE NR No Display/Interface DD Pilot Module Display/Interface RD Remote Pilot Module Display/Interface											
INLET/OUTLET FITTINGS 1 1/8 compression (STD) 2 1/4 compression 5 1/4 VCO 8 1/4 VCR 10 6 mm compression											
FLOW BODY ELASTOMERS OV1 Viton or equivalent ON1 Neoprene or equivalent											
VALVE SEAT (C101 Flow Controllers Only) SV1 Viton® or equivalent SN1 Neoprene or equivalent SK1 Kalrez® or equivalent											
INPUT POWER PV1M 12 to 15 VDC, Linear (Flow Meters Only) PV2 24 VDC, Linear (Standard)											
OUTPUT SIGNAL V1 4 to 20 mA and 0 to 5 VDC, Linear V2 4 to 20 mA and 1 to 5 VDC, Linear V3 4 to 20 mA and 0 to 10 VDC, Linear											
EXTERNAL SETPOINT SIGNAL (Flow Controllers Only) S0 Pilot Module/RS-232 (Standard for DD, RD) S1 0 to 5 VDC (Standard for NR) S2 1 to 5 VDC S3 0 to 10 VDC S4 4 to 20 mA											
ELECTRICAL CONNECTION C0 15 Pin Mating Connector with No Cable (Standard) C1 6-inch (150 mm) Communications Cable C3 3-foot (1 m) Communications Cable C10 10-foot (3 m) Communications Cable C () Custom Length Communication Cable											
OPTIONS GS Gas Substitution (Replace up to 9 Dial-A-Gas® Gases)											
GAS FLOW RATE											

FOR ACCESSORIES AND ADDITIONAL CABLES CONSULT SALESPERSON