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 Micro-Trak 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.

DIAL-A-GAS® ISO REGISTERED 9001:2000 CE

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The content contained herein is subject to change without notice.
For the most up to date information visit, www.sierrainstruments.com/downloads

www.litremeter.com

Performance Specifications

Accuracy
± 1.0% of full scale including linearity at operating conditions

Dial-A-Gas
± 1.0% 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 - 4.0
Argon	0.14 - 5.6
CO_2	0.074 - 2.95
CO	0.10 - 4.0
Methane	0.075 - 3.0
Helium	0.14 - 5.6
Hydrogen	0.10 - 4.0
Oxygen	0.10 - 4.0
Nitrogen	0.10 - 4.0
N_2O	0.072 - 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, NM^3/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:15-24 VDC +/- 10% (130 mA MAX)
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 4–20 mA, 500 ohms maximum loop resistance and one of the following: Linear 0–5 VDC, 0–10 VDC, 1–5 VDC, 1000 ohms minimum load resistance
Digital:
RS-232; Pilot Module Display optional

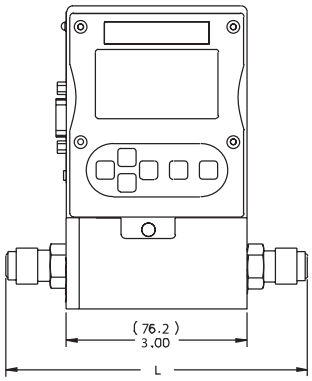
Command Signal
Analog (choice of one):
Linear 4–20 mA, 0–5 VDC, 0–10 VDC, 1–5 VDC
Digital:
RS-232; Pilot Module Display optional

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

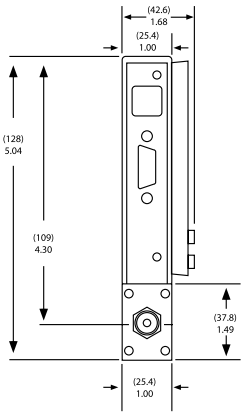
Physical Dimensions

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

101 Micro-Trak™ Front View

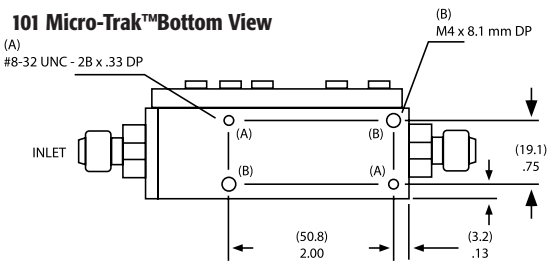


101 Micro-Trak™ Inlet View



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

101 Micro-Trak™Bottom View



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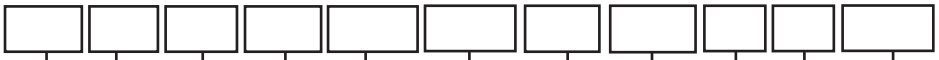
Ordering the Micro-Trak™



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** 12-15 VDC, Linear (Flow Meters)
- **PV1C** 15-22 VDC, Linear (Flow Controllers)
- **PV2** 24 VDC, Linear **(Standard)**

OUTPUT SIGNAL
- **V1** 4-20 mA and 0-5 VDC, Linear
- **V2** 4-20 mA and1-5 VDC, Linear
- **V3** 4-20 mA and 0-10 VDC, Linear

EXTERNAL SETPOINT SIGNAL (Flow Controllers Only)
- **S0** Pilot Module/RS-232 **(Standard for DD, RD)**
- **S1** 0-5 VDC **(Standard for NR)**
- **S2** 1-5 VDC
- **S3** 0-10 VDC
- **S4** 4-20 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

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

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