

MicroTrak™ 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 0.08 sccm (smlm)
- Digital performance
- Includes Dial-A-Gas® multi-gas capability that enables use with 10 different gases
- Digital communications protocols supported
 - MODBUS
 - Profibus DP
 - Foundation Fieldbus (pending)
 - Device Net (pending)
- Optional Compod Control Module for programming of flow systems and process controls
- 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

MicroTrak™ measures and controls micro mass flows of gas previously thought to be too low for a reliable reading. MicroTrak™ is specifically designed for flow ranges under 4 sccm (smlm) with a minimum controllable mass flow rate of 0.08 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. MicroTrak™ 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.



www.sierrainstruments.com

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

Performance Specifications

Accuracy

+/- 1% of Full Scale including linearity under calibration 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

Digital Communications

RS-232 standard, RS-485 optional

Profibus DP

Modbus

Foundation Fieldbus (pending)

DeviceNet (pending)

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

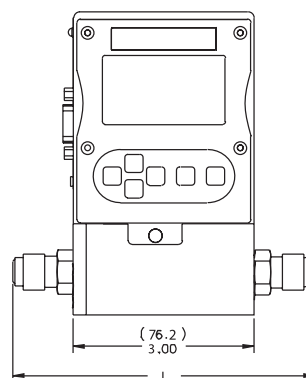
316 stainless steel, 416 stainless steel; synthetic ruby, Viton® "O"-rings and

valve seat standard; other elastomers are available (consult factory)

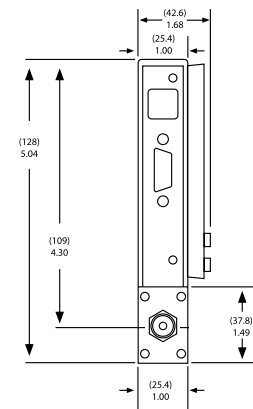
Physical Dimensions

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

101 MicroTrak™ Front View

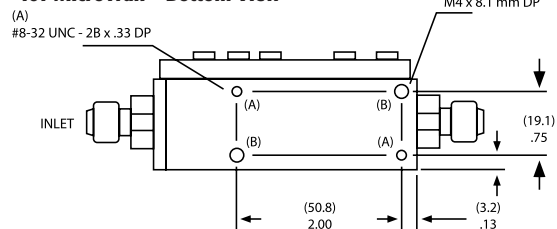


101 MicroTrak™ Inlet View



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

101 MicroTrak™ Bottom View



Ordering the MicroTrak™

PARENT NUMBER

M101 MicroTrak™ Mass Flow Meter
C101 MicroTrak™ Mass Flow Controller

FEATURE 2: PILOT MODULE DISPLAY/INTERFACE

NR No display/interface
DD No display/interface. If option 2 digital communications are selected, NR must be selected.
RD Pilot Module Display/Interface mounted on the enclosure
CMNR Compod with RS-485 Modbus communication mounted on the enclosure
CMDD Compod with RS-485 Modbus communication and Display mounted on the enclosure
CMNRRelays CMNR with 2 analog relays; installed in the Compod
CMDDRelays CMDD with 2 analog relays; installed in the Compod

FEATURE 3: INLET/OUTLET FITTINGS

1 1/8-inch compression. For low flow bodies and 101. (maximum 5 slpm)
2 1/4-inch compression (standard up to 30 slpm). For low flow bodies and 101 (maximum 50 slpm)
5 1/4-inch VCO. For low flow bodies and 101. (maximum 50 slpm)
8 1/4-inch VCR. For low flow bodies and 101. (maximum 50 slpm)
10 6 mm Compression. For low flow bodies and 101. (maximum 50 slpm)

FEATURE 4: FLOW BODY ELASTOMERS

OV1 Viton® (standard)
ON1 Neoprene®

FEATURE 5: VALVE SEAT (MFC)

VX1 (low flow only) ValFlex™ required for CO₂ above 50% concentration or 250 psi on C100L; available for low flow body up to 20 slpm only.
SV1 Viton®
SN1 Neoprene (or equivalent)
SK1 Kalrez® (or equivalent)

FEATURE 6: INPUT POWER

PV1M 15-24 VDC for meters (optional)
PV2 24 VDC for all instruments (standard)

FEATURE 7: OUTPUT SIGNAL

V1 0-5 VDC and 0/4-20 mA linear output signals
V2 1-5 VDC and 0/4-20 mA linear output signals
V3 0-10 VDC and 0/4-20 mA linear output signals

FEATURE 8: EXTERNAL SETPOINT SIGNAL (MFC Only)

S0 Pilot Module/RS-232 (standard for Pilot Module/digital operation)
S1 0-5 VDC, linear, standard for analog operation
S2 1-5 VDC, linear
S3 0-10 VDC, linear
S4 0/4-20 mA, linear
S5 0-20 mA, linear

FEATURE 9: ELECTRICAL CONNECTION

C0 15-pin mating connector with no cable
C1 100-Analog Cable (1 foot): 15 conductor cable with D-connector on one end, fly leads on the other. 1 foot length (300 mm)
C3 100-Analog Cable (3 foot): 15 conductor cable with D-connector on one end, fly leads on the other. 3 foot length (1 m)
C10 100-Analog Cable (10 foot): 15 conductor cable with D-connector on one end, fly leads on the other. 10 foot length (3 m)
C25 100-Analog Cable (25 foot): 15 conductor cable with D-connector on one end, fly leads on the other. 25 foot length (8 m)
C () 100-Analog Cable (): Custom length communication cable. Specify cable length in feet in parenthesis. Maximum length 50 feet (16 meters). Fixed price any length. Note: Longer lengths available for analog models.

OPTION 1: SPECIAL CALS

A1 High accuracy calibration, +/- 0.5% of FS at calibration conditions

GS

Gas substitution: One or more gases or mixtures may be substituted for 9 of the standard Dial-A-Gas gases. See application data sheet for specifics.

OPTION 2: DIGITAL COMMUNICATIONS

MB Modbus RTU (NR only) **FF** Foundation Fieldbus full device description (DD) (NR only)
DP Profibus DP (NR only) **DN** Device Net (pending)

GAS FLOW RATE

FOR ACCESSORIES AND ADDITIONAL CABLES CONSULT SALESPERSON



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



Procon Instrument Technology
1/119 Delta Street Geebung QLD 4034
PO Box 663 Virginia BC QLD 4014
07 3823 1922
sales@proconit.com.au
www.proconit.com.au

ABN: 26 010 529 423