

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

FEATURES

- Measure and control flow of gas from 4 mln/min down to 0.08 mln/min
- Digital performance
- Includes Dial-A-Gas® multi-gas capability that enables use with 10 different gases
- 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
- Add Vogtlin's Compod™ expansion module to run small-scale pilot plants or control high pressure reactors and autoclave processes without the expense of DCS or PLC systems.
- Proprietary high pressure calibration facility, directly traceable to NIST
- 24 VDC input power reduces installation cost and complexity
- Unique Pilot Module (mounted or hand-held) lets you view and change critical control functions
- Choose from multiple analog or digital signals
- Supports Modbus and Profibus DP
- CE approved
- All functions are also available from your pc or workstation via the free SmartTrak100 software

MicroTrak 101™



DESCRIPTION

MicroTrak™ is specifically designed for flow ranges under 4 mln/min with a minimum controllable mass flow rate of 0.08 mln/min.

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 award-winning family of digital instruments. As a result, ease of operation, field configuration, multi-gas capability and application flexibility are standard features.

The MicroTrak comes standard with all kinds of analog in and setpoint abilities and RS232. Optionally you can add the pilot module (as shown in above picture) mounted on the unit or up to 3 meter remote. The pilot module adds a clear backlit LCD display and the ability to change all kind of setting like setpoint and the type of gas used. Alternatively you can add the Compod on the unit that will add Modbus, Advanced alarms, totalizer, analog input, pulse output and a lot more. See separate Compod datasheet for more detail.



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

0.05% of Full Scale per °C, or better

Pressure Coefficient

0.15% of Full Scale per bar, or better

Response Time

Governed by total volume of installation. Contact Vogtlin 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 MicroTrak™ instrument; up to nine alternate gases may be substituted.

Dial-A-Gas Rates	
Gas	Micro-Trak Flow Range (mln/min)
Air	0.10 to 4.0
Argon (Ar)	0.14 to 5.6
Carbon Dioxide (CO ₂)	0.14 to 5.6
Carbon Monoxide (CO)	0.10 to 4.0
Methane (CH ₄)	0.075 to 3.0
Helium (He)	0.14 to 5.6
Hydrogen (H ₂)	0.10 to 4.0
Oxygen (O ₂)	0.10 to 4.0
Nitrogen (N ₂)	0.10 to 4.0
Nitrous Oxide (N ₂ O)	0.072 to 2.9



Flow ranges specified are for an equivalent flow of nitrogen at 1013.25 mbar a and 0°C; other ranges in other units are available

Gas Pressure

35 barg maximum, burst tested to 52 barg

Pressure Drop Across a Meter

25 mbar (or contact factory for other gases)

Differential Pressure Requirement For Controllers

2 bar optimum

68 mbar minimum at 21°C with outlet at ambient pressure

Gas & Ambient Temperature

0°C to 50°C

Leak Integrity

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

Wetted Material

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

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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 %

COMMUNICATIONS

Analog 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:

Standard RS232; Pilot Module Display optional

Analogue setpoint Signal

Analog (choice of one):

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

Digital:

Standard RS232; Pilot Module Display optional

Optional:

Compod module:

The compod is an addition to the 100 series MFC/MFM that can be added to a new or already supplied unit (upgrade).

Ex.: Modbus communications, Totalizer, Alarm functions, 2 digital i/o outputs, 2 analogue inputs, pulse output

Profibus module:

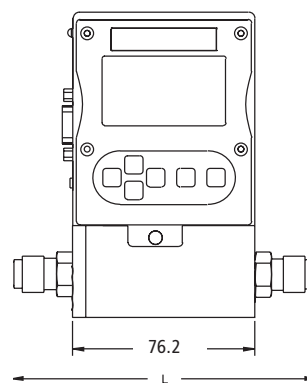
The Profibus module adds full Profibus communication to the 100 series MFC/MFM that can be added to a new or already supplied unit (upgrade).

PHYSICAL DIMENSIONS

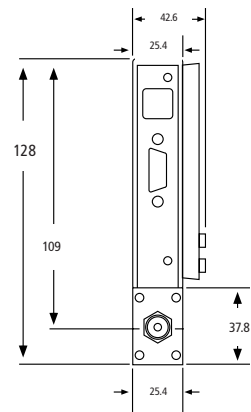
All dimensions are in mm. Certified drawings are available on request.

The dimensions below are shown for a units with the optional pilot module included

101 MicroTrak™ Front View

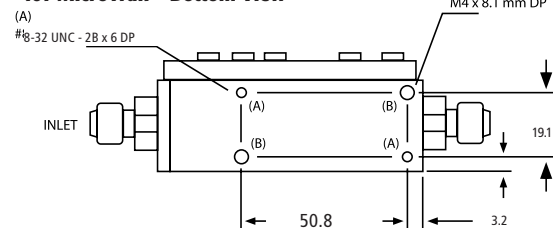


101 MicroTrak™ Inlet View

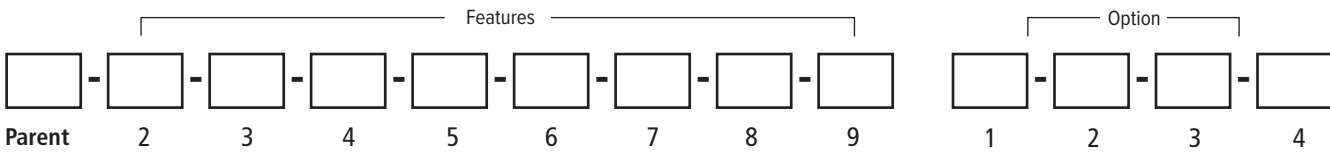


L dimension ranges from 117 to 132 depending on fittings used.

101 MicroTrak™ Bottom View



ORDERING THE MICROTRAK 101



Instructions: To order a 101 please fill in each number block by selecting the codes from the corresponding features below and the following page.

Parent Number	
M101	MicroTrak mass flow meter. Ultra Low-Flow Gas Mass Flow Meters & Controllers: Full scale flow = 4 mln/min, range = 0.08 to 4.0 mln/min
C101	MicroTrak mass flow controller. Ultra Low-Flow Gas Mass Flow Meters & Controllers: Full scale flow = 4 mln/min, range = 0.1 to 4.0 mln/min

Feature 2: Pilot Module Display	
NR	No display/interface. If option 2 digital communications are selected, NR must be selected.
DD	Pilot Module Display/Interface mounted on the enclosure
RD	Remote Display Pilot Module Display/Interface. Includes 3 meter CAT 5 cable. Optional cables up to 15 meter may be used. May be used with digicomms but not simultaneously
CMNR	Compod with RS-485 Modbus communication mounted on the enclosure
CMDD	Compod with RS-485 Modbus communication and Display mounted on the enclosure

Note: For Digital communication options, See option 2 below.
Only one option may be selected for Feature 2.

Feature 3: Inlet / Outlet Fittings			
1	1/8-inch compression.	8	1/4-inch VCR.
2	1/4-inch compression (standard up to 30 ln/min).	10	6 mm Compression.
5	1/4-inch VCO.	13	1/4-FNPT adapter bushing (maximum 200 ln/min).

Feature 4: Flow Body Elastomers	
OV1	Viton® or equivalent (standard)
OV1-F	Viton® (For phosphine only)
ON1	Neoprene®
90D-L	90D Viton® for CO ₂ only

Note: Consult factory for other elastomers.

Feature 6: Input Power	
PV1M	15-24 VDC for meters (optional)
PV2	24 VDC for all instruments (standard)

Feature 5: Valve Seat (MFC only)	
SV1	Viton®
SN1	Neoprene® (or equivalent)
SK1	Kalrez® (or equivalent for low flow bodies)
VX1 (low flow only)	ValFlex™ required for CO ₂

Note: VX1, VX2, VX3; Consult factory, use CO₂ Elastomer Compatibility Concentration vs. Pressure application tool to determine required elastomers for MFC valve seat.

Feature 7: Output Signal	
V1	0-5 VDC and 4-20 mA linear output signals
V2	1-5 VDC and 4-20 mA linear output signals
V3	0-10 VDC and 4-20 mA linear output signals

Note: Alternate among V1, V2, V3 with Pilot Module display/interface or Smart-Trak Software

Feature 8: External Setpoint Signal (MFC only)			
S0	Pilot Module/RS-232 (standard for Pilot Module/digital operation)	S3	0-10 VDC , linear
S1	0-5 VDC, linear, standard for analog operation	S4	4-20 mA , linear
S2	1-5 VDC, linear	S5	0-20 mA , linear

Note: Alternate among S0, S1, S2, S3, S4 with Pilot Module display/interface or Smart-Trak Software

ORDERING THE MICROTRAK 101 (CONTINUED)

Feature 9: Electrical Connection			
C0	15-pin mating connector with no cable	C10	100-Analog Cable (3 m): 15 conductor cable with D-connector on one end, fly leads on the other. 3 m length
C1	100-Analog Cable (300 mm): 15 conductor cable with D-connector on one end, fly leads on the other. 300 mm length	C 25	100-Analog Cable (8 m): 15 conductor cable with D-connector on one end, fly leads on the other. 8 m length
C3	100-Analog Cable (1 m): 15 conductor cable with D-connector on one end, fly leads on the other. 1 m length	C ()	100-Analog Cable (): Custom length communication cable. Specify cable length in feet in parenthesis. Maximum length 16 meters. Fixed price any length. Note: Longer lengths available for analog models.

NOTE: All communications, both analog and digital, go through the cable on Smart-Trak 2 instruments

Option 1: Special Cals	
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: Profibus	
DP	Profibus DP (NR Only)

Note: Pilot Module and Compod are not available with Digital Communications

Option 3: Certificates	
MC	Material Certificates--US Mill certs on all wetted flow body parts
CC	Certificate of Conformance

Option 4: O2 Cleaning	
O2C	O2 Cleaning. Includes certification. Product cleaned for O2 service. Inspected with Ultra-Violet light and double-bagged prior to shipment

