

Technical Data for Alicat **M-Series** Mass Flow Meters

0.5 sccm full scale through 5 sccm of full scale

Standard Specifications (Consult Alicat for available options.)



Tel: 888-290-6060

www.alicat.com/m

SENSOR PERFORMANCE	
Mass Flow Accuracy at calibration conditions ¹	±0.8% of reading and ±0.2% of full scale
High Accuracy Option ¹	±0.4% of reading and ±0.2% of full scale Available for ≥5 sccm models
Bidirectional option ¹	±0.2% of full scale in addition to base accuracy (above)
Repeatability (2σ)	±(0.2% of reading + 0.02% of full scale)
Flow Measurement Range	0.01–100% of full scale
Temperature Sensitivity	Mass flow zero shift and span shift: 0.02% of full scale per °C from 25°C
Pressure Sensitivity	Mass flow zero shift and span shift: ±(0.08% of reading + 0.02% of full scale) per atmosphere from calibration conditions
Operating Temperature Range	-10–60°C (expanded range available)
Temperature Accuracy	±0.75°C
Operating Pressure full scale	160 PSIA (additional options available)
Pressure Accuracy above 1 ATM	±0.5% of reading
Pressure Accuracy below 1 ATM	±0.07 PSIA
Totalizer Volume Uncertainty	±0.5% of reading additional uncertainty
Sensor Response Time	<1 ms
Typical Indication Response Time ²	100–1000 ms (flow rate dependent)
Typical Warm-Up Time	<1 s

¹ Stated accuracy is after tare under equilibrium conditions. Extreme gas behavior (especially near state boundaries) can introduce additional flow uncertainties.

² Indication response time includes user adjustable averaging up to 255 ms.

MECHANICAL	
Minimum Operating Pressure	11.5 PSIA common mode pressure (lower operating pressures available) Differential pressure must exceed 1 PSID
Maximum Operating Pressure	Damage possible above 175 PSIA common mode pressure Damage possible above 75 PSID differential pressure
Ingress Protection	IP40 (consult Alicat for weatherproofing options)
Humidity Range	0–95%, non-condensing
Wetted Materials	302 / 303 stainless steel, Viton®, polyamide, alumina, ceramic, glass, gold, silicon, heat-cured epoxy, heat-cured silicone rubber

COMMUNICATIONS	
Analog I/O Options	4–20 mA, 0–5 VDC, 1–5 VDC, 0–10 VDC
Digital I/O Options	RS-232 Serial by default RS-485 Serial, Modbus RTU (over RS-232 or RS-485), Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, Profibus
Electrical Connection Options	6 pin locking, 8 pin mini-DIN, 8 pin M12, DB-9, DB-15
Power Requirements ³	9–24 VDC, 40 mA (12–24 VDC, 80 mA if equipped with 4–20 mA or 0–10 VDC output)
Digital Data Update Rate ³	40 Hz at 19200 baud
Data Update Rate Analog	1 kHz
Display Update Rate	10 Hz
Analog Signal Accuracy	±0.1% of full scale additional uncertainty

³ Consult the individual operating bulletins for specific industrial protocol power requirements and data transmission specifications.

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FEATURES	
STP Reference Conditions	25°C and 1 ATM (default), user configurable
NTP Reference Conditions	0°C and 1 ATM (default), user configurable
Monochrome LCD or Color TFT Display with integrated touchpad	Simultaneously displays mass flow, volumetric flow, pressure and temperature
Gas Select™	98 user selectable gases stored internally. Each gas optimized to match NIST's REFPROP 10 gas property calculations across the operating temperature and pressure ranges for highest accuracy.
COMPOSER™	20 user definable gas mixes. Each mix may have up to 5 gases with 0.01% precision.

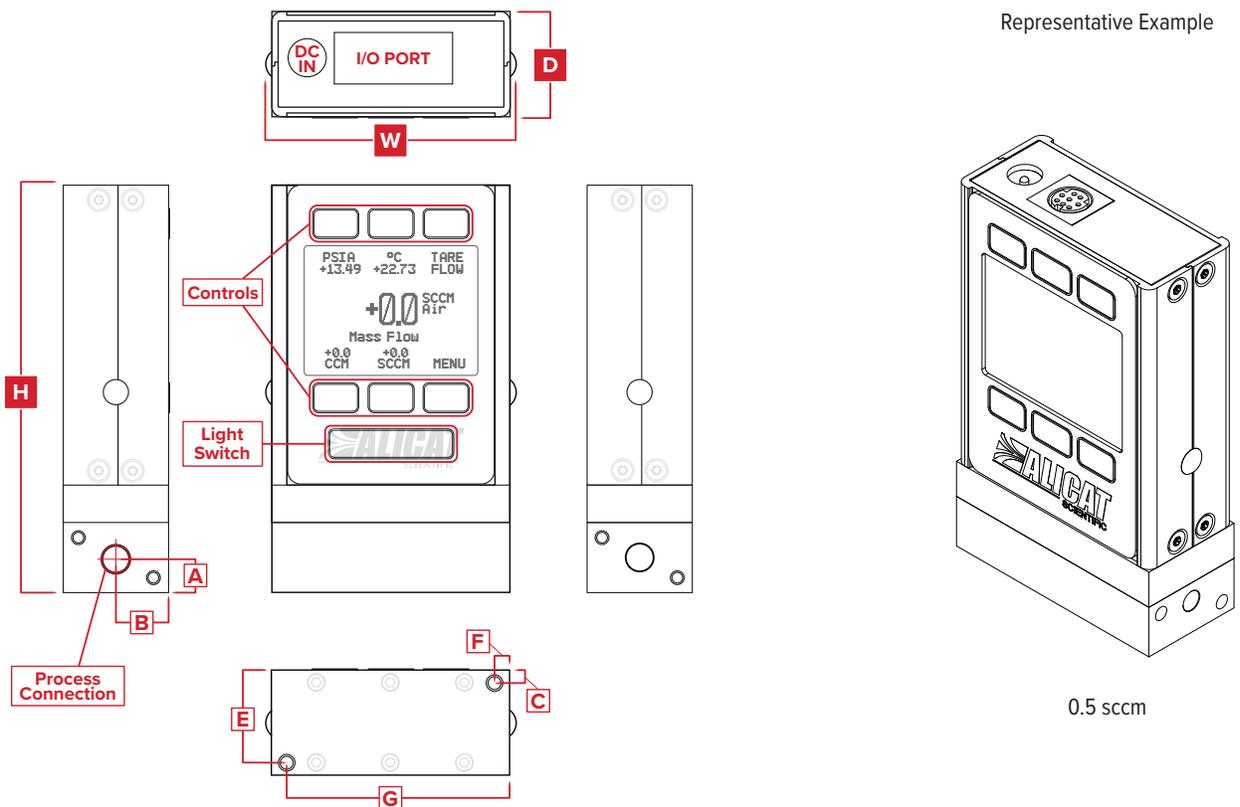
RANGE-SPECIFIC TECHNICAL DATA			
Meter's full scale flow	Pressure drop at full scale flow venting to atmosphere ⁴	Process connections ⁵	Mount tap size
0.5–5 sccm	1.0 PSID	M5 female thread (10-32 compatible) ⁶	2× 8-32 UNC 0.175 in [4.45 mm]

⁴ Lower pressure drops available, please see our WHISPER-Series mass flow controllers at www.alicat.com/whisper.

⁵ Consult Alicat for available process connection options, such as: compression, face seal, push-to-connect, BSPP, SAE, or Swagelok (including tube, VCO, and VCR).

⁶ Shipped with Buna-N O-Ring face seal to 1/8" female NPT fittings.

Range-Specific Technical Data & Dimensions



DIMENSIONS										
Meter's full scale flow	Weight	Height	Width	Depth	A	B	C	E	F	G
0.5–5 sccm	≈ 0.8 lb	3.897 in	2.375 in	1.050 in	0.336 in	0.525 in	0.125 in	0.925 in	0.150 in	2.225 in
	≈ 0.4 kg	98.98 mm	60.33 mm	26.67 mm	8.53 mm	13.34 mm	3.18 mm	23.50 mm	3.81 mm	56.52 mm