

Technical Data for M-Series Mass Flow Meters

0.5 SCCM full scale through 5 SCCM full scale

Standard specifications. Consult Alicat for available options.



+1 (888) 290-6060
alicat.com/meter

SENSOR PERFORMANCE	
Mass flow accuracy ¹	Standard accuracy: $\pm(0.8\%$ of reading + 0.2% of full scale) High-accuracy option (5 SCCM models): $\pm(0.4\%$ of reading + 0.2% of full scale)
Repeatability (2 σ)	$\pm(0.2\%$ of reading + 0.02% of full scale)
Pressure accuracy ¹	Above 1 atm: $\pm 0.5\%$ of reading Below 1 atm: ± 0.07 PSIA
Flow measurement range	0.01–100% of full scale (10,000:1 turndown ratio)
Operating pressure	11.5–160 PSIA
Pressure sensitivity	Mass flow zero shift and span shift: $\pm(0.08\%$ of reading + 0.02% of full scale) per atmosphere from calibration conditions
Temperature sensitivity	Mass flow zero shift and span shift: 0.02% of full scale per °C from 25°C
Temperature accuracy	$\pm 0.75^\circ\text{C}$
Operating temperature range	-10–60°C (ambient and gas)
Totalizer volume uncertainty	$\pm 0.1\%$ of reading additional uncertainty
Sensor response time	<1 ms
Typical indication response time	<10 ms, flow rate dependent
Typical warm-up time	<1 s

MECHANICAL	
Process connections ²	M5 female (10-32 compatible), shipped with Buna-N O-ring face seal to 1/8" NPT female fittings
Wetted materials	302, 303, 304, and 316L stainless steel; FKM, alumina ceramic, glass, gold, heat-cured epoxy, heat-cured silicone rubber, polyamide, silicon
Maximum pressure	Damage possible above 200 PSIA common mode pressure Damage possible by rapid pressure change above 75 PSI differential pressure
Relative humidity range	0–95%, non-condensing
Ingress protection	IP40 (consult Alicat for weatherproofing options)
Mounting orientation sensitivity	None
Mounting holes	2× 8-32 UNC threaded $\downarrow 0.175"$ [4.45 mm]

POWER AND COMMUNICATION	
Digital output options	RS-232 Serial and Modbus RTU (default), RS-485 Serial and Modbus RTU, Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, PROFINET, PROFIBUS
Digital data update rate	40 Hz at 19200 baud
Analog output options ³	4–20 mA, 0–5 Vdc, 1–5 Vdc, 0–10 Vdc
Analog data update rate	1 kHz
Analog signal accuracy	$\pm 0.1\%$ of full scale additional uncertainty
Interactive display	Monochrome LCD or color TFT display with integrated touchpad; simultaneously displays mass flow, volumetric flow, temperature, and pressure
Display update rate	10 Hz
Electrical connection options ³	6-pin locking, 8-pin mini-DIN, 8-pin M12, 9-pin DB-9, 15-pin DB-15 (contact Alicat for custom pinouts)
Power requirements	0–5 Vdc output: 9–24 Vdc, 40 mA 0–10 Vdc output: 12–28 Vdc, 40 mA 4–20 mA output: 12–28 Vdc, 40 mA

¹ Stated accuracy is after tare (for mass flow), under equilibrium conditions, includes repeatability and linearity.

² Consult Alicat for available process connection options, such as: Compression, face seal, push-to-connect, BSPP, SAE, or Swagelok® (including tube, VCO®, and VCR®).

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

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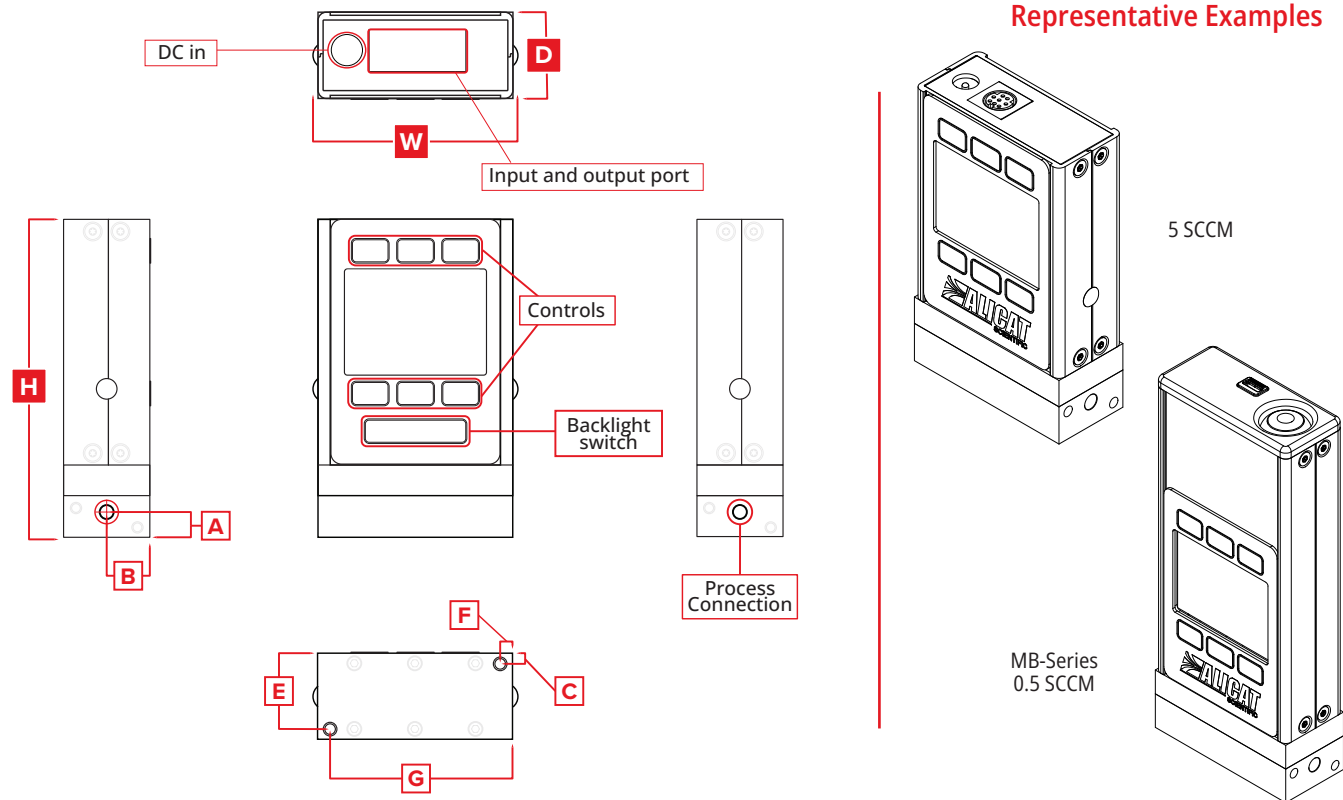
FEATURES	
STP reference conditions	25°C and 1 atm (default), user-configurable
NTP reference conditions	0°C and 1 atm (default), user-configurable
Gas Select™	98 user-selectable gases stored internally. Each gas optimized to match NIST's REFPROP 10 gas property calculations across the operating temperature and pressure ranges for highest accuracy.
COMPOSER™	20 user-definable gas mixes. Each mix may have up to 5 gases with 0.01% composition resolution.

FLOW AND PROCESS DATA	
Full scale flow	Pressure drop at full scale flow venting to atmosphere ⁴
0.5 – 5 SCCM	1.0 PSID

PORTABLE DEVICES (MB SERIES)	
Power requirements	5 Vdc, 1 A recommended via an outlet adapter to USB
Battery life	Monochrome screen: 18 hours, user-configurable, contrast dependent Color TFT screen: 8 hours, user-configurable, contrast dependent
Electrical connections	Serial communication and power over Micro-USB Bluetooth® Low Energy (requires the Alicat Connect app and a compatible Android or iOS mobile device)
Charging temperature	0–45°C
Dimensions	Add 1.646" [41.81 mm] to height, and 0.2 lb. [90.72 g] to weight

⁴ Lower pressure drops available, including the WHISPER™ series mass flow meters at alicat.com/mw.

Representative Examples



DIMENSIONS										WEIGHT
Full scale flow	Height	Width	Depth	A	B	C	E	F	G	
0.5–5 SCCM	3.90"	2.38"	1.05"	0.34"	0.53"	0.13"	0.93"	0.15"	2.23"	≈ 0.8 lb
	99.0 mm	60.3 mm	26.7 mm	8.5 mm	13.3 mm	3.2 mm	23.5 mm	3.8 mm	56.5 mm	≈ 0.4 kg