

Technical Data for M/MB-Series Mass Flow Meters

10 SCCM full scale through 20 SLPM full scale

Standard specifications. Consult Alicat for available options.



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

SENSOR PERFORMANCE	
Mass flow accuracy ¹	Standard accuracy: $\pm 0.6\%$ of reading or $\pm 0.1\%$ of full scale, whichever is greater High-accuracy option: $\pm 0.5\%$ of reading or $\pm 0.1\%$ of full scale, whichever is greater
Flow repeatability (2σ)	$\pm (0.1\% \text{ of reading} + 0.02\% \text{ of full scale})$
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: $\pm 0.01\%$ of full scale per atm from tare pressure Mass flow span shift: $\pm 0.1\%$ of reading per atmosphere from calibration conditions
Temperature sensitivity	Mass flow zero shift: $\pm 0.01\%$ of full scale per $^{\circ}\text{C}$ from tare temperature Mass flow span shift: $\pm 0.01\%$ of reading per $^{\circ}\text{C}$ from 25°C
Temperature accuracy	$\pm 0.75^{\circ}\text{C}$
Operating temperature range	$-10 - 60^{\circ}\text{C}$ (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

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

MECHANICAL	
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	10 – 50 sccm: $2 \times 8\text{-}32$ UNC threaded $\nabla 0.175''$ [4.45 mm] 100 sccm – 20 SLPM: $2 \times 8\text{-}32$ UNC threaded $\nabla 0.350''$ [8.89 mm]

POWER AND COMMUNICATION	
Digital output options ²	RS-232 Serial and Modbus RTU (default), RS-485 Serial and Modbus RTU, Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, PROFINET, PROFIBUS, IO-Link
Digital data update rate	40 Hz at 19200 baud
Analog output options ^{2,3}	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 ³	10 Hz
Electrical connection options	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 ^{2,3}	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

² Consult the individual operating bulletins for specific industrial protocol power requirements and data transmission specifications.

³ Analog outputs unavailable for MB-Series. See Portable Devices table for MB-Series specifications and options.

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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.

RANGE-SPECIFIC TECHNICAL DATA		
Full scale flow	Pressure drop at full scale flow venting to atmosphere ³	Default process connections ⁴
10 – 50 SCCM	1.0 PSID	M5 female (10-32 compatible) ⁵
100 SCCM – 20 SLPM	1.0 PSID	1/8" NPT female

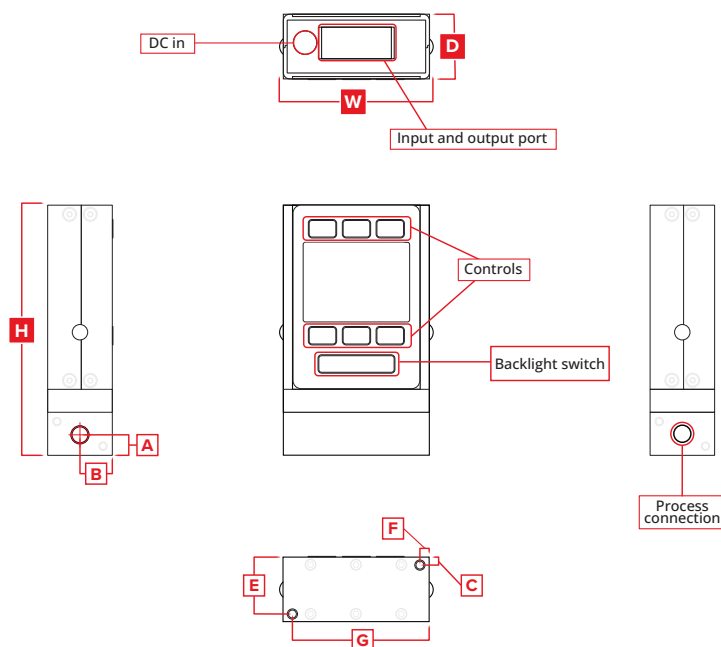
³ Lower pressure drops available, including the WHISPER™ series mass meters at alicat.com/mw.

⁴ Consult Alicat for available process connection options, such as: Compression, face seal, push-to-connect, BSPP, SAE, or Swagelok®-compatible (including tube, VCO®, and VCR®).

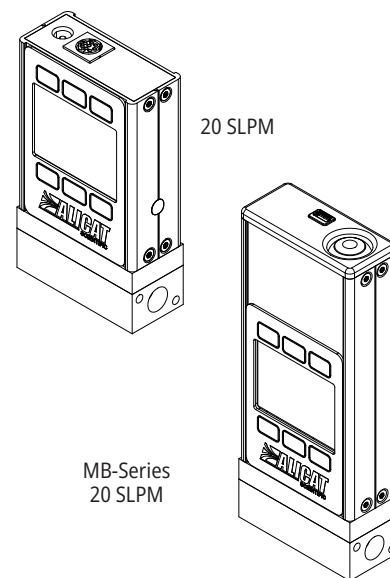
⁵ Shipped with Buna-N O-ring face seal to 1/8" female NPT fittings. (including tube, VCO, and VCR).

PORTABLE DEVICES (MB SERIES) ⁶	
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 connection	Serial over Micro-USB Type B 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

⁶ More information about our MB-Series portable mass flow meters at alicat.com/mb.



Representative Examples



DIMENSIONS										WEIGHT
Full scale flow	Width	Depth	Height	A	B	C	E	F	G	
10 – 50 SCCM	2.38"	1.05"	3.90"	0.34"	0.53"	0.13"	0.93"	0.15"	2.23"	≈ 0.8 lb
	60.3 mm	26.7 mm	99.0 mm	8.5 mm	13.3 mm	3.2 mm	23.5 mm	3.8 mm	56.5 mm	≈ 0.4 kg
100 SCCM – 20 SLPM	2.38"	1.05"	4.07"	0.35"	0.53"	0.13"	0.93"	0.15"	2.23"	≈ 1.0 lb
	60.3 mm	26.7 mm	103.3 mm	8.9 mm	13.3 mm	3.2 mm	23.5 mm	3.8 mm	56.5 mm	≈ 0.5 kg