Product Specifications

Apex Mass Flow Meters
10 SCCM to 20 SLPM Full Scale

SENSOR PERFORMANCE	
Mass Flow Accuracy at Calibration Conditions[1]	±0.6% of reading or ±0.1% of full scale, whichever is greater
High Accuracy Option[1]	±0.5% of reading or ±0.1% of full scale, whichever is greater
Bidirectional Option[1]	No additional uncertainties
Repeatability (2σ)	±(0.1% of reading + 0.02% of full scale)
Flow Measurement Range	0.01–100% of full scale
Temperature Sensitivity	**Mass flow zero shift:** ±0.01% of full scale per °C from tare temperature **Mass flow span shift:** ±0.01% of reading per °C from 25°C
Pressure Sensitivity	**Mass flow zero shift:** ±0.01% of full scale per atm from tare pressure **Mass flow span shift:** ±0.1% of reading per atmosphere from calibration conditions
Operating Temperature Range	−10–60°C
Temperature Accuracy	±0.75°C
Operating Pressure Full Scale	160 PSIA
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]	<10 ms, flow rate dependent
Typical Warm-Up Time	<1 s

1 Stated accuracy is after tare under equilibrium conditions, includes repeatability and linearity.

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

MECHANICAL	
Minimum Operating Pressure	11.5 PSIA common mode pressure (consult Alicat for lower operating pressures) Differential pressure must exceed model pressure drop, see below for details
Maximum Operating Pressure	Damage possible above 200 PSIA common mode pressure Damage possible above 75 PSI differential pressure
Ingress Protection	IP40 (consult Alicat for weatherproofing options)
Humidity Range	0–95%, non-condensing
Wetted Materials	302, 303, 304, and 316L stainless steel; FKM, alumina ceramic, glass, gold, heat-cured epoxy, heat-cured silicone rubber, polyamide, silicon

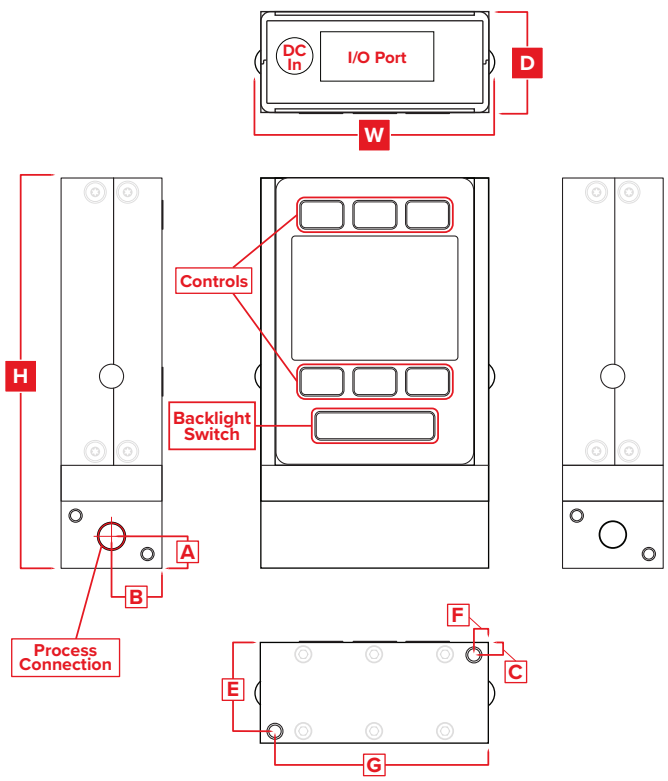
COMMUNICATIONS	
Analog I/O Options[3]	4–20 mA, 0–5 VDC, 1–5 VDC, 0–10 VDC
Digital I/O Options[3]	RS-232 Serial by default RS-485 Serial, Modbus RTU (over RS-232 or RS-485), Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, Profibus **Portable devices (MB models):** Serial over Micro-USB
Electrical Connection Options	6 pin locking, 8 pin mini-DIN, 8 pin M12, DB-9, DB-15 (contact Alicat for custom pinouts) **Portable devices (MB models):** Power over Micro-USB Type B
Power Requirements[4]	9–24 VDC, 40 mA (12–24 VDC, 80 mA if equipped with 4–20 mA or 0–10 VDC output) **Portable devices (MB models):** 5 VDC, 1 A recommended via an outlet adapter to USB.
Battery Life (MB Series)	**Monochrome screen:** 18 hours, user configurable, contrast dependent **Color TFT screen:** 8 hours, user configurable, contrast dependent
Digital Data Update Rate[4]	40 Hz at 19200 baud
Analog Data Update Rate[4]	1 kHz
Display Update Rate	10 Hz
Analog Signal Accuracy	±0.1% of full scale additional uncertainty

3 Analog outputs unavailable on portable devices.

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

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, temperature, and pressure
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 precision.

RANGE-SPECIFIC TECHNICAL DATA			
Full scale flow	Pressure drop at full scale flow venting to atmosphere[5]	Process connections[6]	Mount tap size
10–50 SCCM	1.0 PSID	M5 female thread (10-32 compatible)[7]	2× 8-32 UNC 0.175 in [4.45 mm]
100 SCCM–20 SLPM	1.0 PSID	⅛" NPT female	2× 8-32 UNC 0.350 in [8.89 mm]



DIMENSIONS[8]										WEIGHT
Full scale flow	Height	Width	Depth	A	B	C	E	F	G	
10–50 SCCM	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	≈ 0.8 lb
	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	≈ 0.4 kg
100 SCCM–20 SLPM	4.067 in	2.375 in	1.050 in	0.350 in	0.525 in	0.125 in	0.925 in	0.150 in	2.225 in	≈ 1.0 lb
	103.30 mm	60.33 mm	26.67 mm	8.89 mm	13.34 mm	3.18 mm	23.50 mm	3.81 mm	56.52 mm	≈ 0.5 kg

8 Portable devices (MB Series) add 1.646" [41.81 mm] to height, and 0.2 lb. [90.72 g] to weight.