

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

1 sccm of Full Scale through 5 sccm of Full Scale

Standard Specifications (Contact Alicat for available options.)

PERFORMANCE	M-SERIES MASS FLOW METER	
Mass Flow Accuracy at calibration conditions ¹	± (0.8% of Reading + 0.2% of Full Scale)	
Accuracy for Bidirectional Meters at calibration conditions after tare	± 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 and Span Shift: 0.02% Full Scale / °C	
Pressure Sensitivity	Mass Flow Zero and Span Shift: ± (0.08% of Reading + 0.02% of Full Scale) / atm	
Operating Temperature Range	-10 to 60°C (consult Alicat for expanded range)	
Temperature Accuracy	± 0.75°C	
Operating Pressure Full Scale	160 PSIA (consult Alicat for additional options)	
Pressure Accuracy	Above 1 atm: ± 0.5% of Reading	Below 1 atm: ± 0.07 PSIA
Typical Sensor Response Time	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.

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 175 PSIA common mode pressure Damage possible above 75 PSID differential pressure
Ingress Protection	IP40 (consult Alicat for weatherproofing options)
Humidity Range	0 to 95% non-condensing
Dimensions, pressure drop, weight, and process connection specifications are listed on mechanical drawing pages	

CONTROL AND COMMUNICATIONS	
Analog I/O	0-5 VDC
Digital I/O Options	DeviceNet, EtherCAT, EtherNet/IP, Modbus RTU over RS-232/Analog, Modbus RTU over RS-485/Analog, Modbus TCP/IP, Profibus, RS-232 Serial, RS-485 Serial
Electrical Connection	8 pin M12 or protocol dependent
Power Requirements ²	9-24 VDC, 40 mA min.
Data Update Rate ²	Serial: 40 Hz at 19200 baud Analog: 1000 Hz
Display Update Rate	10 Hz
Analog Signal Accuracy	± 0.1% of Full Scale additional uncertainty

² 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
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™	Allows 20 user definable gas mixes. Up to 5 constituent gases per mix, down to percentages of 0.01%

Wetted Materials

OPTION	FLOW BODY WETTED MATERIALS	OPTION	SENSOR WETTED MATERIALS
A	316L Stainless Steel, USP VI FDA Certified Viton Elastomers	A	316L Stainless Steel
		B	Polyamide, Alumina, Ceramic, Glass, Gold, Silicon, Nylon, Delrin, Heat Cured Epoxy, RTV, Silicone

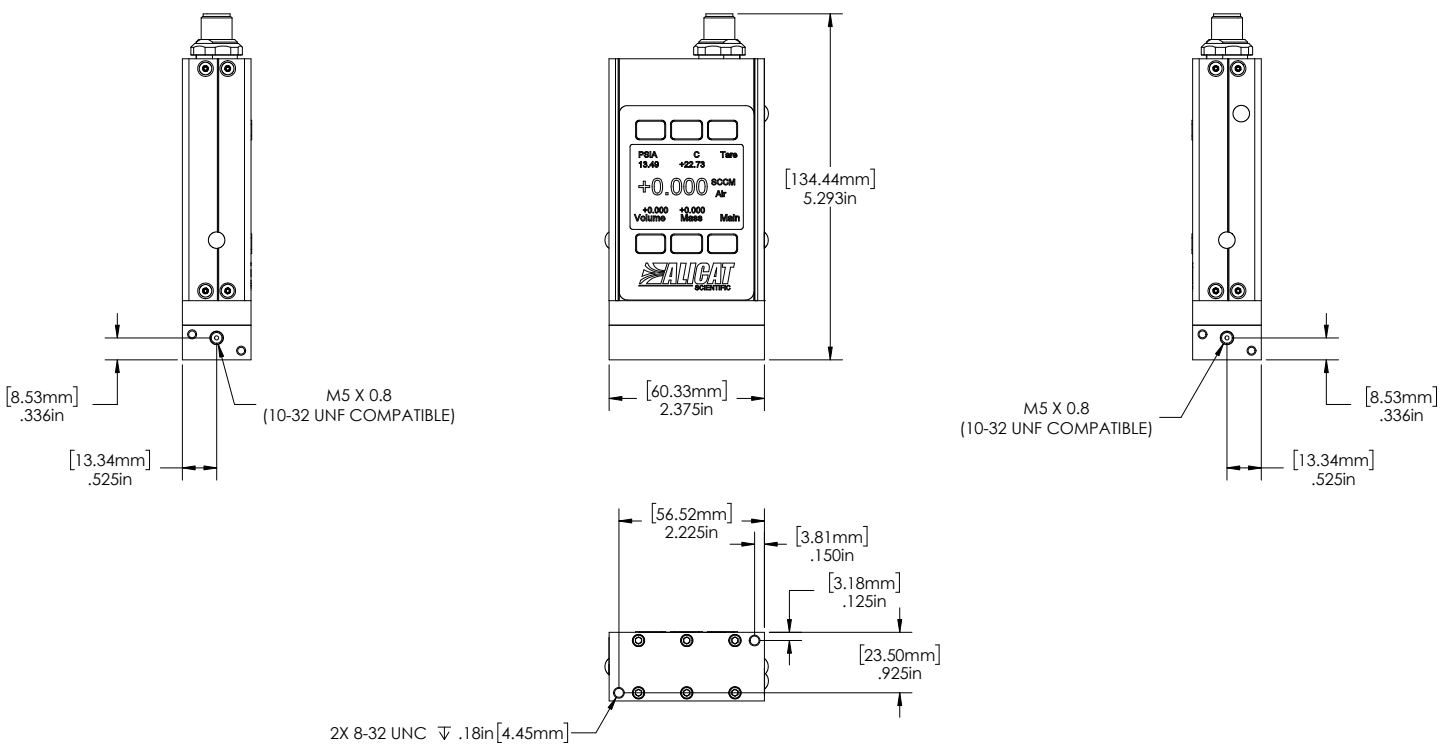
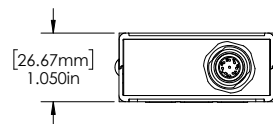
ASME BPE-2016 Compliant Configuration is only available with Sensor A
Each meter has 2 parts: Flow body and Sensor

BIO-Series

0 – 1 sccm

0 – 2 sccm

0 – 5 sccm



Flow Range Specific Specifications

FULL SCALE FLOW MASS METER	PRESSURE DROP AT FS FLOW (PSID) VENTING TO ATMOSPHERE ³	PHYSICAL DIMENSIONS ⁴	APPROXIMATE WEIGHT	PROCESS CONNECTIONS
1 sccm to 5 sccm	1.0	5.3"H x 2.4"W x 1.1"D	0.8 lb	M-5 (10-32) Female Thread ⁵

3 Lower Pressure Drops Available, please see our **WHISPER-Series** mass flow controllers at www.alicat.com/whisper.

4 See drawings for metric equivalents

5 Shipped with M-5 (10-32) Male Buna-N O-ring face seal to 1/8" Female NPT fittings.

