

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

50 slpm of Full Scale through 500 slpm of Full Scale

## Standard Specifications (Contact Alicat for available options.)

SENSOR PERFORMANCE	
Mass Flow Accuracy at calibration conditions <sup>1</sup>	± (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% of 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	65 - 255 ms (Adjustable)
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. Consult Alicat if higher accuracy is required.

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 (IP66 option available)
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 Serial and Modbus RTU
Digital I/O Options	DeviceNet, EtherCAT, EtherNet/IP, Modbus RTU over RS-232, Modbus RTU over RS-485, Modbus TCP/IP, Profibus, RS-232 Serial, RS-485 Serial
Electrical Connection	8 pin M12 or Protocol Dependent
Power Requirements <sup>2</sup>	12-24 VDC, 325 mA min.
Data Update Rate <sup>2</sup>	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

### FLOW BODY WETTED MATERIALS

316L Stainless Steel, USP VI FDA Certified Viton Elastomers

ASME BPE-2016 Compliance Requires Sensor A  
Each meter has 2 parts: Flow body and Sensor

### OPTION

### SENSOR WETTED MATERIALS

A

316L Stainless Steel

B

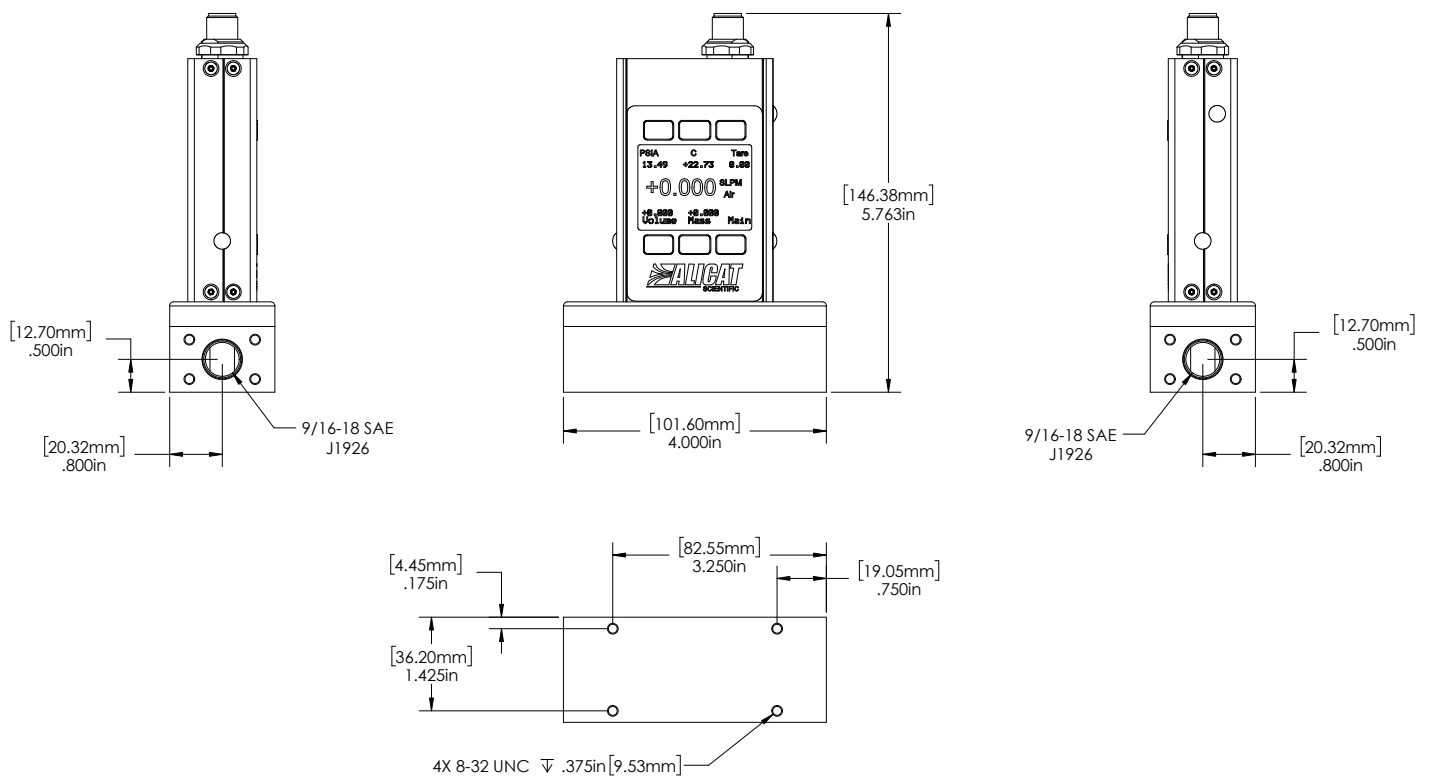
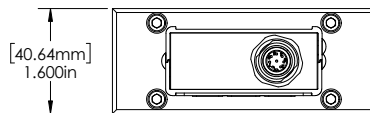
Polyamide, Alumina, Ceramic, Glass, Gold, Silicon, Nylon, Delrin, Heat Cured Epoxy, RTV, Silicone

# Product Mechanical Drawings and Dimensions

## BIO-Series

0 – 50 slpm

0 – 100 slpm



## Flow Range Specific Specifications

FULL SCALE FLOW MASS METER	PRESSURE DROP AT FS FLOW (PSID) VENTING TO ATMOSPHERE <sup>3</sup>	APPROXIMATE WEIGHT	MECHANICAL DIMENSIONS <sup>4</sup>	PROCESS CONNECTIONS <sup>5</sup>
50 slpm	2.0	2.4 lb	5.8"H x 4.0"W x 1.6"D	¼"-18 SAE6 Female
100 slpm	2.5			

3 Lower Pressure Drops Available, please see our WHISPER-Series mass flow controllers at [www.alicat.com/whisper](http://www.alicat.com/whisper).

4 See drawings for metric equivalents.

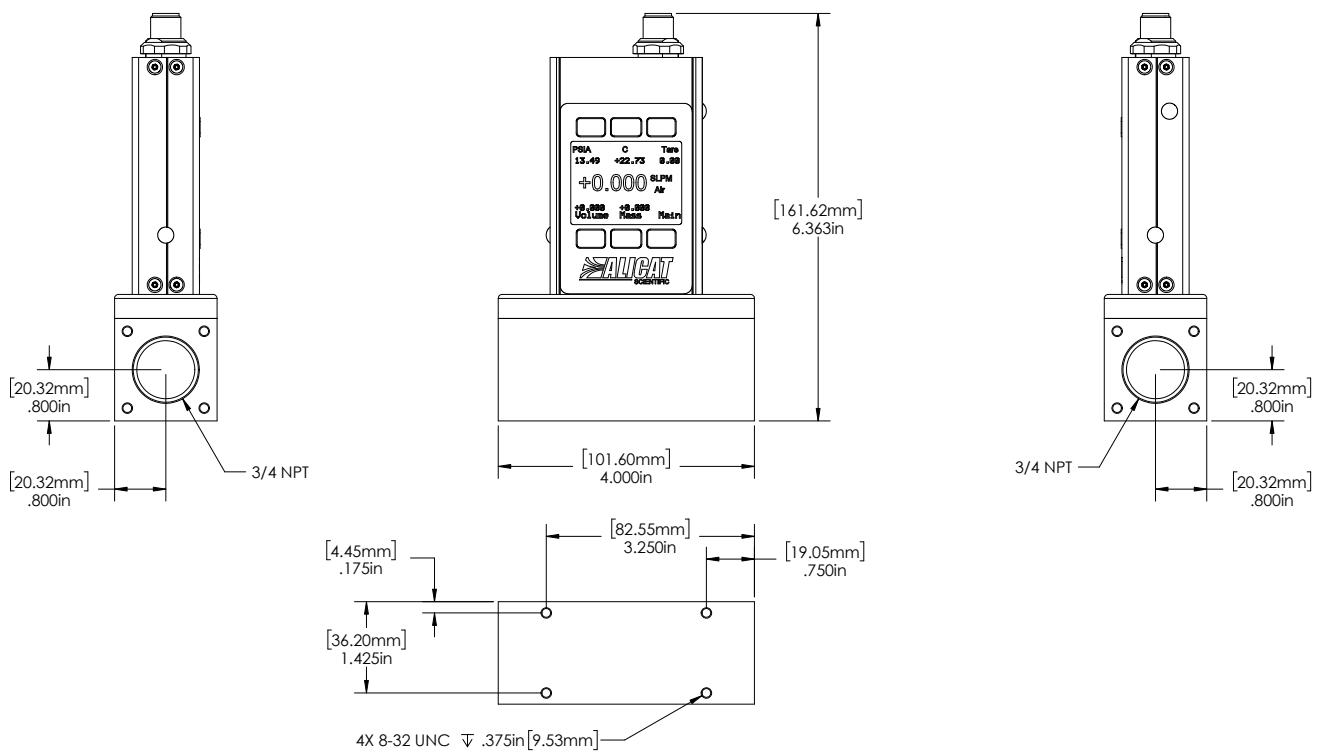
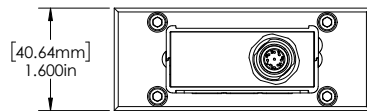
5 Compatible with Swagelok® tube, Parker®, face seal, push connect and compression adapter fittings. VCR and SAE connections upon request.

# Product Mechanical Drawings and Dimensions

## BIO-Series

0 – 250 slpm

0 – 500 slpm



## Flow Range Specific Specifications

FULL SCALE FLOW MASS METER	PRESSURE DROP AT FS FLOW (PSID) VENTING TO ATMOSPHERE <sup>3</sup>	APPROXIMATE WEIGHT	MECHANICAL DIMENSIONS <sup>4</sup>	PROCESS CONNECTIONS <sup>5</sup>
200 slpm	2.1	3.5 lb	6.4"H x 4.0"W x 1.6"D	7/8"-14 SAE10 Female
500 slpm	4.0			

3 Lower pressure drops available, please see our WHISPER-Series mass flow controllers at [www.alicat.com/whisper](http://www.alicat.com/whisper).

4 See drawings for metric equivalents.

5 Additional process connections available on request. Consult Alicat for more information.

# Product Model Number Configuration

