

ECONOMICAL GAS MASS FLOW CONTROLLERS AND METERS

For Clean Gases

FMA3100 Series



Optional

- ✓ For Flow Rates Up to 10 SLM
- ✓ 0 to 5 Vdc Linear Output
- ✓ Cost Effective

FMA3100 Series mass flow sensors represent a breakthrough in mass flow sensor technology. State-of-the-art electronics, a compact mechanical design, and mass production tooling concepts are combined into one high-performance, cost effective product. The gas flow sensor is suitable for many OEM applications. A 0 to 5 Vdc linear output is standard.

Using the basic FMA3100 thermal mass flow sensor, the FMA3200 mass flow controllers offer accurate, stable control of gas flows in a compact package. In power-off mode, the flow control valve is closed with a minimal leak rate. This cost-effective controller is ideal for many OEM applications, with a 0 to 5 Vdc linear output and a 0 to 5 Vdc control input.

The FMA3300s combine the features of the FMA3100 with an adjustable 3½ digit LCD digital display meter for viewing flow rate in engineering units (i.e., mL/min or L/min). These compact flowmeters have proved effective in many laboratory applications.

GENERAL SPECIFICATIONS

Output: 0 to 5 Vdc (2500 Ω minimum)

Input Setpoint Voltage (FMA3200 Only): 0 to 5 Vdc

Accuracy: ±1.5% FS*

Repeatability: ±0.5% FS

Response Time: 2 seconds (typical) to within ±2% of actual flow rate from 25 to 100% of full scale



FMA3206 mass flow controller, shown actual size.

Operating Ambient:

10 to 50°C (50 to 122°F), non-condensing atmosphere

Operating Pressure Range:

To 150 psi maximum at 25°C (77°F)

Temperature Coefficient:

±0.2% per °C

Pressure Coefficient:

±0.02% per psi

Leak Integrity:

1x10⁻⁴ SCCS

He maximum to outside environments

Input Power:

FMA3100 and FMA3300:

12 to 15 Vdc, 100 mA (1.5 W)

FMA3200: 12 to 15 Vdc,

250 mA (3.75 W)

Connections:

1/8" compression fittings, flow ranges up to 1 L/min;

1/4" compression fitting for up to 5 L/min;

3/8" compression fitting for 10 L/min

Wetted Materials:

Anodized aluminum, FKM O-rings,

304 and 316 SS, epoxy, acetal

compression tube fittings standard

Turndown Ratio:

10:1

Gases:

Most clean, dry gases (e.g., air,

nitrogen, carbon dioxide, argon,

hydrogen, helium, methane, oxygen)

Filtration:

Requires 20-micron filter if gas contains any particulate matter

SPECIFICATIONS

(FMA3200 Flow Controllers)

Differential Pressure: 15 to 40 psi

Valve Cycle Life:

>1 million cycles;

valve is normally closed

Control Range:

50:1

Remote Setpoint Voltage:

0 to 5 Vdc

Weight:

FMA3100: 199 g (0.44 lb)

FMA3300: 249 g (0.55 lb)

FMA3200: 386 g (0.85 lb)

Size Without Fittings (Approx.):

FMA3100: 47 L x 26 W x 90 mm H

(1.87 x 1.03 x 3.55")

FMA3300: 47 L x 26 W x 127 mm H

(1.87 x 1.03 x 5.0")

FMA3200: 81 L x 26 W x 97 mm H

(3.17 x 1.03 x 3.80")

* Stated accuracy under general specifications valid for the following conditions:

1. Temperature between 18 and 25°C (64 and 77°F)
2. Warm-up time: at least 10 min
3. Power input voltage stable (12V ±0.1V) typical
4. Linearity: Add ±0.5% for ranges up to 500 SCCM, ±1.0% over 500 SCCM
5. Accuracy range: 10 to 100%
6. Line pressure of 1 to 30 psi for FMA3100 and FMA3300, and at factory-specified settings for FMA3200
7. Factory gas (specified) is used

FMA3303
flow sensor



FMA3101
flow sensor



Models shown
smaller than
actual size.

To Order

Flow Meters

Model No. Without Display	Model No. P With Display	Flow Rates**	Pressure Drop at Max Flow
FMA3101	FMA3301	0 to 20 SCCM	1" H ₂ O
FMA3102	FMA3302	0 to 50 SCCM	
FMA3103	FMA3303	0 to 100 SCCM	
FMA3104	FMA3304	0 to 200 SCCM	2" H ₂ O
FMA3105	FMA3305	0 to 500 SCCM	
FMA3106	FMA3306	0 to 1 SLM	3" H ₂ O
FMA3107	FMA3307	0 to 2 SLM	
FMA3108	FMA3308	0 to 5 SLM	
FMA3109	FMA3309	0 to 10 SLM	10" H ₂ O

Comes complete with operator's manual, and 0.6 m (24") signal/power cable (compatible only with power supplies below).

For optional 4-point NIST calibration certificate add suffix "-NISTAIR" to model number for additional cost.

Ordering Example: FMA3307, 0 to 2000 SCCM flow meter with display, and FMA3115PW, power supply/output cable.

* Specify gas, inlet/outlet pressure and temperature.

** Flow ranges are based on dry air or nitrogen as a standard; other gases available (carbon dioxide, helium, argon, hydrogen, methane, oxygen) for an additional cost.

For optional 4-point NIST calibration certificate add suffix "-NISTAIR" to model number, for additional cost.

Ordering Example: FMA3203-(Helium, 20/0 psig, 70°F), 0 to 100 SCCM flow controller, and FMA3215PW, power supply/output cable.

Made to Order

Controller (Without a Display)		
Model No.	Flow Rates** P	Pressure Drop at Max Flow
FMA3202-(*)	0 to 50 SCCM	15 psi
FMA3203-(*)	0 to 100 SCCM	
FMA3204-(*)	0 to 500 SCCM	
FMA3205-(*)	0 to 5 SLM	
FMA3206-(*)	0 to 10 SLM	

Accessories

Flow Meters: FMA3100 and FMA3300 Series

Model No.	Description
FMA3115PW	Power supply/output cable (0 to 5 Vdc), 115 Vac
FMA3230PW	Power supply/output cable (0 to 5 Vdc), 230 Vac

Controllers Only: FMA3200 Series

FMA3215PW	Power supply/input/output cable (0 to 5 Vdc), 115 Vac
FMA3223PW	Power supply/input/output cable (0 to 5 Vdc), 230 Vac

Cable for FMA3100/3200/3300 Series

FMA3000C	1 m (3') cable with mating connector and stripped ends for use with power supplies that have terminal connections
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