ECONOMICAL GAS MASS FLOW **CONTROLLERS AND METERS** For Clean Gases

FMA3206 mass flow controller, \$779, shown actual size.

NIST-Traceable Calibration

MADE IN

1 YEAR

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

FMA3100 Series Starts at

RoHS

NIST

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. An NIST-traceable calibration certificate for air is provided at no extra cost.

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

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:**

FMA3206

0 - 10 L/min

FLOW SN: 10006

Differential Range

Made in USA Patents Pending

CEOMEGA®

FMA3200 SERIES

0

Max. Press. 150psig

15 - 45 psi

F

±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; %" 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: 50:1

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: 5 to 40 psi

Valve Cycle Life: >1 million cycles; valve is normally closed

Leakage Through the Valve: 0.2 SCCM or less than 2% FS, whichever is greater

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 $\pm 0.5\%$ 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



MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)							
Flowmeters							
Model No. Without Display	Price	Model No. With Display	Price	Flow Rates**	Pressure Drop at Max Flow		
FMA3101	\$285	FMA3301	\$475	0 to 20 SCCM	1" H ₂ O		
FMA3102	320	FMA3302	510	0 to 50 SCCM			
FMA3103	345	FMA3303	535	0 to 100 SCCM			
FMA3104	345	FMA3304	535	0 to 200 SCCM	2" H ₂ O		
FMA3105	345	FMA3305	535	0 to 500 SCCM			
FMA3106	345	FMA3306	535	0 to 1 SLM			
FMA3107	345	FMA3307	535	0 to 2 SLM	3" H ₂ O		
FMA3108	345	FMA3308	535	0 to 5 SLM			
FMA3109	405	FMA3309	595	0 to 10 SLM	10" H ₂ O		

Comes complete with operator's manual, 0.6 m (24") signal/power cable (compatible only with power supplies below) and NIST certificate for air. Ordering Example: FMA3307, 0 to 2000 SCCM flowmeter with display, and FMA3115PW, power supply/output cable, \$535 + 105 = \$640.

MADE TO ORDER!

Controller (Without a Display)						
Model No.	Price	Flow Rates**	Pressure Drop at Max Flow			
FMA3202-(*)	\$699	0 to 50 SCCM				
FMA3203-(*)	759	0 to 100 SCCM				
FMA3204-(*)	759	0 to 500 SCCM	15 psi			
FMA3205-(*)	759	759 0 to 5 SLM				
FMA3206-(*)	779	0 to 10 SLM				

* 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 \$125. Ordering Example: FMA3203-(Helium, 20/0 psig, 70°F), 0 to 100 SCCM flow controller, and FMA3215PW, power supply/output cable, \$759 + 140 = \$899.

Accessories

Flowmeters: FMA3100 and FMA3300 Series							
(115 Vac) Model No.	Price	(230 Vac) Model No.	Price	Description			
FMA3115PW	\$105	FMA3230PW	\$105	Power supply/output cable (0 to 5 Vdc)			
Controllers Only: FMA3200 Series							
FMA3215PW	\$140	FMA3223PW	\$140	Power supply/input/output cable (0 to 5 Vdc)			
Cable for FMA3100/3200/3300 Series							
FMA3000C	\$30	1 m (3') cable with mating connector and stripped ends for use with power supplies that have terminal connections					

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