

STAINLESS STEEL GAS MASS FLOWMETERS AND CONTROLLERS

For Clean Gases

All units shown smaller than actual size.



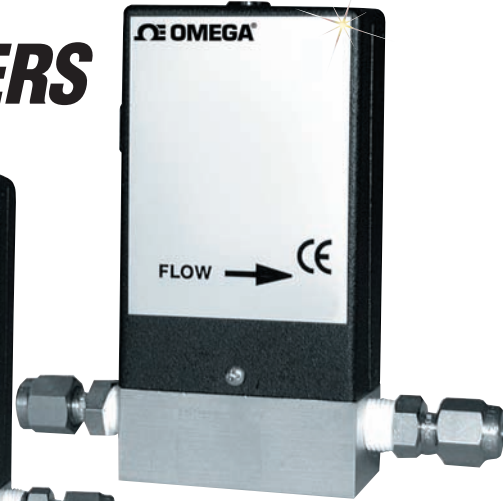
FMA3309ST, \$749



FMA3409ST, \$1119



FMA3204ST, \$885



FMA3103ST, \$485

FMA3100ST Series Starts at

\$425



Optional †

- ✓ **Stainless Steel Construction**
- ✓ **FMA3400ST Series Can be Ordered to Work with Up to 3 Gases**

The FMA3100/3300ST Series will precisely measure flow rates of virtually any clean, dry gas as low as 0.4 to 20 SCCM or as high as 10 to 500 SLM, including hydrogen. Repeatable results are achieved by using a thermal mass flow sensor design. This proven design minimizes zero drift while maintaining fast response and linear outputs. Compression tube fittings provide fast gas connections and integrate well with existing tubing.

† Refer to footnote on page D-24 for NIST calibration ordering information

The FMA3200/3400ST Series flow controllers will precisely measure and control flow rates of virtually any clean, dry gas as low as 0.4 to 20 SCCM or as high as 0.2 to 10 SLM. The FMA3200/3400ST Series feature an integrated 3-digit display for flow-rate monitoring right on the unit. Electrical connections are made via the included 1 m (3') cable. Either a mating cable (FMA3000C) or power adaptor is required. See accessories below. The units are available with or without a display for a wide range of applications.

SPECIFICATIONS

Accuracy/Linearity: ±1.5% FS (10 to 100% of rated flow); ±3% FS (20 to 100% of rated flow) for second and third gas selection on FMA3400ST
Repeatability: ±0.25% FS

Power Requirements:

FMA3100ST: 12 to 15 Vdc @ 100 mA
FMA3300ST: 12 to 15 Vdc @ 150 mA
FMA3200ST: 12 to 15 Vdc @ 230 mA
FMA3400ST: 12 to 15 Vdc @ 250 mA

Pressure Rating: Overpressure limit is 10.2 bar (150 psig)

Operating Temperature: 0 to 55°C (32 to 131°F), non-condensing

Storage Temperature: 0 to 70°C (32 to 158°F)

Temperature Sensitivity: ±0.15% FS or less per °C

Wetted Materials: Stainless steel (303, 304, 316) and FKM O-rings

Recommended Filtration: 10 microns

Turndown Ratio: 50:1

Compatible Gases: Most clean, dry gases that are compatible with the wetted materials

Outputs: Analog voltage output 0 to 5 Vdc; voltage level is proportional to flow rate (zero Vdc at zero flow); load connected to output should not be less than 2500 Ω

Setpoint Input:

FMA3200ST: Analog voltage input, 0 to 5 Vdc; voltage level is proportional to flow rate (zero Vdc at zero flow); input load approx 2 MΩ

FMA3400ST:

User-selectable internal or external

External: Analog voltage input, 0 to 5 Vdc; voltage level is proportional to flow rate (zero Vdc at zero flow); input load approx 2 MΩ

Internal: Front-panel adjustable with 2 trim pots, 1 coarse and 1 fine adjustment

Flow Connections:

Stainless steel fittings

Electrical Connections: Integrated, 1 m (3'), 6-conductor cable, terminated with 6-pin male mini DIN connector (PS/2 style)

Dimensions:

FMA3100ST: 47.4 L x 26.2 W x 90.2 mm H (1.87 x 1.03 x 3.55")

FMA3300ST: 47.4 L x 26.2 W x 127.0 mm H (1.87 x 1.03 x 5.0")

FMA3200ST: 80.5 L x 26.2 W x 96.5 mm H (3.17 x 1.03 x 3.80")

FMA3400ST: 80.5 L x 26.2 W x 133.6 mm H (3.17 x 1.03 x 5.26")

DPI8 1/8 DIN temperature, process, and strain meters and PID controller, shown smaller than actual size. See page M-37 for details.



MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)

Stainless Steel Mass Flowmeters

Model No. (No Display)	Price	Model No. (Display)	Price	Max Flow 50:1 Turndown	Max Pressure Drop	Tube Fitting
FMA3101ST	\$425	FMA3301ST	\$629	20 SCCM	1" H ₂ O	1/8"
FMA3102ST	460	FMA3302ST	664	50 SCCM	1" H ₂ O	1/8"
FMA3103ST	485	FMA3303ST	689	100 SCCM	2" H ₂ O	1/8"
FMA3104ST	485	FMA3304ST	689	200 SCCM	2" H ₂ O	1/8"
FMA3105ST	485	FMA3305ST	689	500 SCCM	2" H ₂ O	1/8"
FMA3106ST	485	FMA3306ST	689	1 SLM	3" H ₂ O	1/8"
FMA3107ST	485	FMA3307ST	689	2 SLM	3" H ₂ O	1/4"
FMA3108ST	485	FMA3308ST	689	5 SLM	3" H ₂ O	1/4"
FMA3109ST	545	FMA3309ST	749	10 SLM	5" H ₂ O	3/8"
FMA3110ST	699	FMA3310ST	899	20 SLM	6" H ₂ O	3/8"
FMA3111ST	820	FMA3311ST	1024	50 SLM	6" H ₂ O	1/2"
FMA3112ST	900	FMA3312ST	1104	100 SLM	6" H ₂ O	1/2"

Stainless Steel Controllers

Model No. (No Display)	Price	Model No. (Display)	Price	Max Flow 50:1 Turndown	Desired Differential Pressure (psi)	Tube Fitting
FMA3202ST	\$825	FMA3402ST	\$1039	50 SCCM	15 to 40	1/8"
FMA3203ST	885	FMA3403ST	1099	100 SCCM	15 to 40	1/8"
FMA3204ST	885	FMA3404ST	1099	200 SCCM	15 to 40	1/8"
FMA3205ST	885	FMA3405ST	1099	500 SCCM	15 to 40	1/8"
FMA3206ST	885	FMA3406ST	1099	1000 SCCM	15 to 40	1/8"
FMA3207ST	885	FMA3407ST	1099	2 SLM	15 to 40	1/4"
FMA3208ST	885	FMA3408ST	1099	5 SLM	15 to 45	1/4"
FMA3209ST	905	FMA3409ST	1119	10 SLM	15 to 45	3/8"

Accessories

Flowmeters: FMA3100ST and FMA3300ST

Model No.	Price	Model No.	Price	Description
FMA3115PW (115 Vac)	\$105	FMA3230PW (230 Vac)	\$105	Power supply/output 0 to 5 Vdc

Controllers Only: FMA3200ST and FMA3400ST

FMA3215PW	\$140	FMA3223PW	\$140	Power supply/input/output cable (0 to 5 Vdc)
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Cable for All Units

FMA3000C*	\$30	1 m (3') cable with mating connector and stripped ends		
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Reference Book

GE-1400	\$130	Reference Book: Flow Measurement		
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† For N₂ or air NIST certificates, add suffix “-NIST” to model number and \$175 to price.

All units are calibrated to air unless specified, 20/0 psig, 21°C (70°F).

Flow ranges are based on dry air or nitrogen as standard.

Other gases available; for ranges up to 10 SLM add \$125; for ranges 20 to 100 SLM add \$225.

To order FMA3400ST Series up to 3 different gases, add \$125 per gas to the cost and specify FMA34**ST-1st

Gas-2nd, Gas-3rd Gas/in/out pressure, temperature.

* For use with power supplies that have terminal connections.

** Specify flow controller. Example: FMA3408ST-N2-H2-O2, 20/0psig, 70°F, \$1099 + 125 + 125 = \$1349.

Comes complete with operator's manual and 1 m (3') signal/power cable. Order power supply with mating cable separately.

Ordering Examples: FMA3408ST, 5 SLM mass flowmeter with display, FMA3215PW, 115 Vac power supply, \$1099 + 140 = \$1239.

FMA3101ST-N2-NIST, 20 SCCM mass flowmeter NIST calibrated for Nitrogen and FMA3215PW, 115 Vac power supply, \$425 + 175 + 105 = \$705.

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