

ECONOMICAL GAS MASS FLOW CONTROLLERS

For Clean Gases

With Optional Integral Display

FMA5400 Series Starts at
\$695

FMA5512, \$775 with optional FMA-TOTAL-12, \$195, shown smaller than actual size.



- ✓ NIST-Traceable Calibration
- ✓ Reads and Controls Gas Mass Flow Without Temperature or Pressure Compensation
- ✓ Available in Economical Aluminum or Corrosion-Resistant 316 SS
- ✓ Tiltable LCD for Easy Reading

The FMA5400/5500 Series electronic gas mass flow controllers can control the flow of a wide variety of gases from 10 SCCM up to 1000 SLM. Utilizing heat transfer through a heated tube, the FMA5400/5500 measures gas mass flow rate directly, without needing to compensate for variations in gas temperature or pressure (within stated limits). They are available in an economical aluminum/brass construction for typical gas flows and a 316 SS construction for applications that require more corrosion resistance. The FMA5400 Series without integral display is supplied with both an analog 0 to 5 Vdc and 4 to 20 mA output for remote monitoring; the FMA5500 Series features an integral 3½ digit display and an analog output. The display is tiltable over 90 degrees for viewing convenience and is calibrated to read out directly in SCCM or SLM for nitrogen (other gas calibrations available by special order).

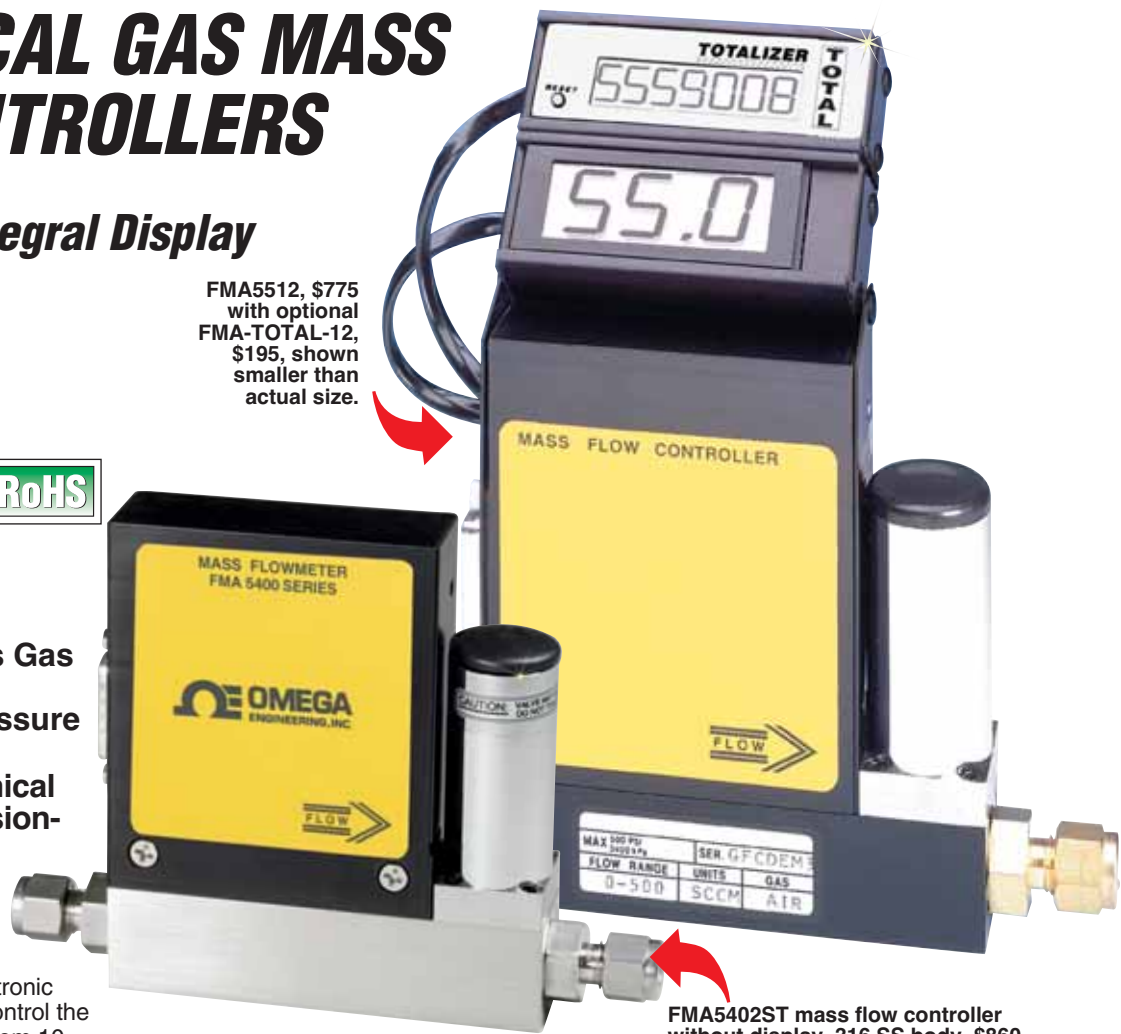
The FMA5400/5500 mass flow controllers feature a built-in electromagnetic valve for maintaining a constant flow rate regardless of variations in inlet or outlet pressures. The setpoint is controlled either locally via a potentiometer accessible through a window in the case or remotely via an analog 0 to 5 Vdc or 4 to 20 mA signal (field selectable).

The FMA5400/5500 Series controllers require 12 to 15 Vdc power @ 800 mA maximum, which can be supplied by the FMA545PW wall plug-in socket power

supply (24 Vdc power input @ 650 mA is available as an option). The electronics are reverse-polarity protected and have a resettable fuse. Model number FMA545C (supplied separately) provides a mating 15-pin "D" connector with 2.4 m (8') of shielded cable for accessing the analog output signals and power input connections. The LCD for the FMA5500 Series is connected to the lower electronics via a modular plug. The LCD can be remotely located by purchasing an FMA18RC remote cable assembly—you must then build your own assembly for panel mounting the LCD.

SPECIFICATIONS

Accuracy: ±1.5% FS, including linearity over 15 to 25°C (59 to 77°F) and 0.7 to 4.2 kg/cm² (10 to 60 psia)
Repeatability: ±0.5% of full scale
Temp Coefficient: 0.15% FS/°C
Pressure Coefficient: 0.01% FS per psi (0.07 bar)
Maximum Pressure Drop: 50 psid
Response Time: 5 seconds to within ±2% of set flow rate over 25 to 100% FS
Max Gas Pressure: 35 kg/cm² gage (500 psig); 1.76 kg/cm (25 psig) optimum
Gas and Ambient Temp: 5 to 50°C (41 to 122°F)



FMA5402ST mass flow controller without display, 316 SS body, \$860, shown smaller than actual size.

Leak Integrity: 1 x 10⁻⁷ cc/sec of helium max to outside environment

Materials in Fluid Contact:

Aluminum Models:

Anodized aluminum, 316 SS, brass and FKM O-rings

Stainless Steel Models:

316 SS and FKM O-rings

Output Signal:

Linear 0 to 5 Vdc: 1000 Ω minimum load

4 to 20 mA: 50 to 500 Ω loop resistance, ±20 mV max noise

Transducer Power: 12 Vdc @ 800 mA standard; 24 Vdc @ 650 mA optional

Turndown Ratio: 50:1

Shipping Weight: 1.8 kg (4 lb)

Compliance: EN55011 class 1, class B; EN50082-1

Minimum Pressure Drop:

SLM	psid	SLM	psid
Up to 9	1.1	200	10
10 to 30	3.9	500	12
50	8	1000	15
60 to 100	18.9		

Attitude Sensitivity: With horizontal flow path, no shift in calibration up to +20 degree pitch

Gas Relative Humidity: 0 to 70% RH

Dimensions: cm (in)

Unit Max Flow Rate	Lay Length with Fittings	Max Height	Max Width	Connection-Compression Fitting
10 SCCM to 10 SLM	16.0 (6.29)	14.2 (5.60)	2.5 (1.00)	¼"
15 to 50 SLM	18.3 (7.21)	15.2 (5.98)	3.2 (1.25)	¼"
60 to 100 SLM	18.6 (7.33)	15.2 (5.98)	3.2 (1.25)	⅜"
200 SLM	31.2 (12.30)	16.8 (6.60)	4.4 (1.75)	⅜"
500 SLM	31.5 (12.40)	19.2 (7.55)	7.6 (3.00)	½"
1000 SLM	26.7 (10.53)	21.7 (8.56)	10.2 (4.00)	¾ FNPT

MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)

Model No. AL/BR Body w/Display	Price	Model No. SS Body w/Display	Price	Model No. AL/BR Body w/o Display	Price	Model No. SS Body w/o Display	Price	Range Code*	Maximum Flow Rate
FMA5502	\$775	FMA5502ST	\$940	FMA5402	\$695	FMA5402ST	\$860	02	10 SCCM
FMA5504	775	FMA5504ST	940	FMA5404	695	FMA5404ST	860	04	20 SCCM
FMA5506	775	FMA5506ST	940	FMA5406	695	FMA5406ST	860	06	50 SCCM
FMA5508	775	FMA5508ST	940	FMA5408	695	FMA5408ST	860	08	100 SCCM
FMA5510	775	FMA5510ST	940	FMA5410	695	FMA5410ST	860	10	200 SCCM
FMA5512	775	FMA5512ST	940	FMA5412	695	FMA5412ST	860	12	500 SCCM
FMA5514	775	FMA5514ST	940	FMA5414	695	FMA5414ST	860	14	1 SLM
FMA5516	775	FMA5516ST	940	FMA5416	695	FMA5416ST	860	16	2 SLM
FMA5518	775	FMA5518ST	940	FMA5418	695	FMA5418ST	860	18	5 SLM
FMA5520	775	FMA5520ST	940	FMA5420	695	FMA5420ST	860	20	10 SLM
FMA5523	940	FMA5523ST	1140	FMA5423	860	FMA5423ST	1060	23	15 SLM
FMA5524	940	FMA5524ST	1140	FMA5424	860	FMA5424ST	1060	24	20 SLM
FMA5526	940	FMA5526ST	1140	FMA5426	860	FMA5426ST	1060	26	30 SLM
FMA5527	940	FMA5527ST	1140	FMA5427	860	FMA5427ST	1060	27	40 SLM
FMA5528	940	FMA5528ST	1140	FMA5428	860	FMA5428ST	1060	28	50 SLM
FMA5540	1090	FMA5540ST	1290	FMA5440	1010	FMA5440ST	1210	40	60 SLM
FMA5541	1090	FMA5541ST	1290	FMA5441	1010	FMA5441ST	1210	41	80 SLM
FMA5542	1090	FMA5542ST	1290	FMA5442	1010	FMA5442ST	1210	42	100 SLM
FMA5543	1235	FMA5543ST	1900	FMA5443	1155	FMA5443ST	1820	43	200 SLM
FMA5544	1430	FMA5544ST	2200	FMA5444	1350	FMA5444ST	2120	44	500 SLM
FMA5545**	1820	FMA5545ST**	2800	FMA5445**	1740	FMA5445ST**	2720	45**	1000 SLM

** Comes with ¾ FNPT connections instead of compression fittings.

Accessories

Model No.	Price	Description
FMA545C	\$45	Female 15-pin D-connector, 2.4 m (8') of shielded cable
FMA545PW	60	Socket plug-in power supply for 100 to 240 Vac
FMA545PW-220VAC	70	Socket plug-in power supply for 220 Vac, European plug type
FMA18RC10	27	3.0 m (10') cable for remote LCD mounting
FMA18RC25	42	7.6 m (25') cable for remote LCD mounting
FMA-TOTAL-(*)	195	Totalizer display with cable and splitter, not scaled, requires calibration to flow range
FW-347	115	Reference Book: Flow Equations for Sizing Control Valves

Comes complete with operator's manual, NIST certificate and compression fittings. Power supplies sold separately.

For units powered by 24 Vdc, add suffix "-24VDC" to model number, no additional charge.

For oxygen cleaned units, add suffix "-O2CLEAN" to model number and \$125 to price.

* Specify range code. Flow ranges specified are for nitrogen or air at 20 psig inlet (up to 50 SLM) or 25 psig inlet (60 to 100 SLM units) and 0 psig outlet. When used with other gases, a multiplication factor is used to determine the flow rate, and the digital display must be rescaled in the field. Or specify gas name, inlet and outlet pressure, and gas temperature for special calibrations.

Ordering Examples: FMA5410-Argon, 50/0 psig, 70°F calls for an AL/BR body flow controller without an integral display, calibrated for Argon at 50 psig inlet pressure, 0 psig outlet pressure, 70°F gas temperature, powered by 12 Vdc, \$695.

FMA5516, N₂ controller with display, FMA545PW, power supply, \$775 + 60 = \$835.



FMA5512, \$775 with optional FMA-TOTAL-12, \$195, shown smaller than actual size.

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