

ECONOMICAL GAS MASS FLOW METERS

For Clean Gases with Optional Integral Display



FMA1700A/1800A Series



Standard

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

The FMA1700A/1800A Series electronic gas mass flow meters provide for monitoring the flow of a wide variety of gases from 10 SCCM up to 1000 SLM. Utilizing heat transfer through a heated tube to measure molecular gas flow rate, the FMA1700A/1800A provides measurement of direct gas mass flow rate, without the need 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 requiring more corrosion resistance. The FMA1700A series without integral display is supplied with a field selectable analog 0 to 5 Vdc or 4 to 20 mA output for remote monitoring; the FMA1800A series has both an integral 3½ digit display and analog output. The display is tiltable over 90 degrees for viewing convenience. The display is calibrated standard to read out directly in SCCM or SLM for nitrogen (other gas calibrations available on special order).

Due to their low cost, digital display, analog output capability, and insensitivity to variations in gas

temperature and pressure, the FMA1700A/1800A Series are ideal substitutes for many variable area flow meter applications. When used with the FMA178BP portable battery pack, the FMA1800A Series are ideal for in-the-field calibration of flow meters or testing of air sampling equipment. The FMA178BP battery pack includes batteries, recharger, and carrying case with shoulder strap and belt loop. With the FMA178BP, the flow meter can operate in excess of 40 hours; the batteries can be recharged at least 200 times.

The FMA1700A/1800A Series require 12 to 26 Vdc power @ 200 mA maximum, which can be supplied by the FMA178PW plug-in socket power supply. The electronics are reverse polarity protected and has externally-accessible fusing. Model number FMA178C (supplied separately) provides a mating 9-pin "D" connector with 3 feet of ribbon cable for accessing the 0 to 5 Vdc output signal and power input connections (use FMA178C-MA for 4 to 20 mA output signal connection).

The LCD supplied with the FMA1800A 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.

FMA1828A, shown smaller than actual size.



SPECIFICATIONS

Accuracy: ±1% of full scale, including linearity over 15 to 25°C and 5 to 60 psia (0.35 to 4.2 kg/cm²)

Repeatability: ±0.5% of full scale and for units ≥100 scm from 0 to 20% of range

Temperature Coefficient: 0.15% of full scale per °C or better

Pressure Coefficient: 0.01% of full scale per psi (0.07 bar)

Maximum Pressure Drop:

SLM	in. W.C.	SLM	in. W.C.
10	1	80	168
20	14	100	227
30	34	200	112
50	90	500	140
60	129	1000	252

Response Time: 800 msec time constant; 2 seconds (typical) to within ±2% of set flow rate over 25 to 100% of full scale

Maximum Gas Pressure: 500 psig (35 kg/cm² gage); 1000 psig (70 kg/cm² gage) for ranges up to 100 SLM; 20 psig optimum

Gas and Ambient Temperature: 0 to 50°C (0 to 122°F)

Leak Integrity: 1 x 10⁻⁹ std cc/sec of helium maximum to outside environment

Materials in Fluid Contact:

Aluminum Models: Anodized aluminum, 316 SS, brass and FKM O-rings

Dimensions: cm (inch)

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 250 Ω loop resistance
Transducer Power: 12 Vdc @ 200 mA maximum
Shipping Weight: 1.1 kg (2.5 lb)
Compliance: EN55011 class 1, class B; EN50082-1

Unit Maximum Flow Rate	Lay Length with Fittings	Maximum Height	Maximum Width	Connection-Compression Fitting
10 SCCM to 10 SLM	12.8 (5.02)	14.2 (5.60)	2.5 (1.00)	1/4"
15 to 50 SLM	15.6 (6.15)	15.2 (5.98)	3.2 (1.25)	1/4"
60 to 100 SLM	15.9 (6.27)	15.2 (5.98)	3.2 (1.25)	3/8"
200 SLM	22.4 (8.83)	16.8 (6.60)	4.4 (1.75)	3/8"
500 SLM	24.6 (9.67)	19.3 (7.60)	7.6 (3.00)	1/2"
1000 SLM	18.5 (7.30)	21.8 (8.60)	10.2 (4.00)	3/4 FNPT

To Order

Model No. Aluminum/Brass Body with Display	Model No. Stainless Steel Body with Display	Model No. Aluminum/Brass Body without Display	Model No. Stainless Steel Body without Display	Range Code**	Maximum Flow Rate
FMA1802A	FMA1802A-ST	FMA1702A	FMA1702A-ST	02	10 sccm
FMA1804A	FMA1804A-ST	FMA1704A	FMA1704A-ST	04	20 sccm
FMA1806A	FMA1806A-ST	FMA1706A	FMA1706A-ST	06	50 sccm
FMA1808A	FMA1808A-ST	FMA1708A	FMA1708A-ST	08	100 sccm
FMA1810A	FMA1810A-ST	FMA1710A	FMA1710A-ST	10	200 sccm
FMA1812A	FMA1812A-ST	FMA1712A	FMA1712A-ST	12	500 sccm
FMA1814A	FMA1814A-ST	FMA1714A	FMA1714A-ST	14	1 SLM
FMA1816A	FMA1816A-ST	FMA1716A	FMA1716A-ST	16	2 SLM
FMA1818A	FMA1818A-ST	FMA1718A	FMA1718A-ST	18	5 SLM
FMA1820A	FMA1820A-ST	FMA1720A	FMA1720A-ST	20	10 SLM
FMA1823A	FMA1823A-ST	FMA1723A	FMA1723A-ST	23	15 SLM
FMA1824A	FMA1824A-ST	FMA1724A	FMA1724A-ST	24	20 SLM
FMA1826A	FMA1826A-ST	FMA1726A	FMA1726A-ST	26	30 SLM
FMA1827A	FMA1827A-ST	FMA1727A	FMA1727A-ST	27	40 SLM
FMA1828A	FMA1828A-ST	FMA1728A	FMA1728A-ST	28	50 SLM
FMA1840A	FMA1840A-ST	FMA1740A	FMA1740A-ST	40	60 SLM
FMA1841A	FMA1841A-ST	FMA1741A	FMA1741A-ST	41	80 SLM
FMA1842A	FMA1842A-ST	FMA1742A	FMA1742A-ST	42	100 SLM
FMA1843A	FMA1843A-ST	FMA1743A	FMA1743A-ST	43	200 SLM
FMA1844A	FMA1844A-ST	FMA1744A	FMA1744A-ST	44	500 SLM
FMA1845A	FMA1845A-ST	FMA1745A	FMA1745A-ST	45	1000 SLM*

* Comes with dual 3/4 FNPT connections instead of compression fittings.

** Insert range code, see table above.

Flow ranges specified are for nitrogen or air at 20 psig. When used for other gases, a multiplication factor is used to determine the flow rate, and the digital display must be rescaled in the field. To request a custom calibration add the gas abbreviation and pressure as a suffix to the model number.

Accessories

Model No.	Description
FMA178PW	Socket plug-in power supply for 115 Vac (recommended)
FMA178C	Female 9-pin D-connector with 1 m (3') of ribbon cable, 0 to 5 Vdc output
FMA178C-MA	Female 9-pin D-connector with 1 m (3') of ribbon cable, 4 to 20 mA output
FMA178PW-220VAC	Socket plug-in power supply for 220 Vac, VDE plug type
FMA178BP	Portable battery pack, with recharger for 115 Vac
FMA178BP-220VAC	Portable battery pack, with recharger for 220 Vac
FMA18RC10	3 m (10') cable for remotely locating LCD of FMA1800
FMA18RC25	7.6 m (25') cable for remotely locating LCD of FMA1800

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

For oxygen cleaned units, add suffix "-02CLEAN" to model number for additional cost.

Ordering Examples: FMA1712A, AL/BR body flow meter without an integral display, calibrated for nitrogen at 20 psig, ambient temperature from 0 to 500 SCCM.

FMA1810A, AL/BR body with display and FMA178PW, power supply.