

# Portable Mass Flow Meter and Calibration Kit



## FMA-PC16 Series



Standard

- ✓ Ranges of 0 to 0.5 SCCM up to 0 to 1500 SLM
- ✓ <10 ms Response Time - Field Adjustable
- ✓ 30+ Gas Calibrations, Including Air, Ar, CH<sub>4</sub>, CO, CO<sub>2</sub>, Ethane, H<sub>2</sub>, He, N<sub>2</sub>, N<sub>2</sub>O, Neon, O<sub>2</sub>, Propane, Butane, Iso-Butane, Acetylene, Ethylene, Krypton, Xenon, and Sulfur Hexafluoride
- ✓ Pressure, Temperature and Volumetric and Mass Flow Simultaneously Displayed
- ✓ NIST 5-Point Certificate Included
- ✓ No Straight Runs of Pipe Required
- ✓ RS232 and USB Standard

FMA-PC16040509 shown closed.



FMA-PC16040509 shown smaller than actual size.

Omega's FMA-PC16 Series portable digital mass flow meters accurately and rapidly measure the mass flow rate, volumetric flow rate, pressure and temperature of process gases.

The FMA-PC16 couples the FMA-1600A Series meter with fittings and tubing to create a portable gas chromatography calibrator.

Omega's FMA-PC16 Series portable calibration units combine up to three FMA-1600A Series or FMA-LP1600A Series mass

flow meters with totalizers and high-accuracy calibration inside a rugged industrial carrying case with its own power supply and battery. FMA-PC16 units include integrated push-connect fittings for each meter and flow software. At the heart of Omega's mass flow meters and calibrators is an internally compensated, laminar differential pressure measurement technology that yields linear results over a very wide flow range. This produces volumetric and mass flow data that is fully compensated for changes in

pressure and temperature and corrected for the user's STP. All portable mass flow meters and calibrators come with NIST-traceable calibration sheets and excellent customer support, including technical phone support.

Omega's FMA-1600A Series and FMA-PC16 Series mass flow meters feature large integrated displays with touchpad accessible gas selection from 30 user-selectable gas calibrations and both analog and RS232 digital communications.

## Specifications

**Accuracy:** Calibration conditions after tare  $\pm(0.8\%$  of reading + 0.2% of full scale

**High Accuracy:** Calibration conditions after tare  $\pm(0.4\%$  of reading + 0.2% of full scale

**High Accuracy:** Option not available for units ranged under 5 SCCM or over 500 SLPM

**Repeatability:**  $\pm 0.2\%$  full scale

**Zero Shift and Span Shift:**

0.02% full scale/ $^{\circ}$ Celsius/Atm

**Operating Range /Turndown Ratio**

**0.5 to 100% Full Scale/200:**

1 turndown

**Maximum Measureable Flow Rate:**

128% full scale

**Typical Response Time:** 10 ms

(adjustable)

**Warm-Up Time:** <1 second

**Mass Reference Conditions (STP):**

25 $^{\circ}$ C (77 $^{\circ}$ F) and 14.696 psia

(standard-others available on request)

**Operating Temperature:** -10 to 50 $^{\circ}$ C

(14 to 122 $^{\circ}$ F)

**Humidity Range:** (Non-Condensing)

0 to 100%

**Maximum Pressure:** 145 psig

[50 psig (-LP option)]

**Ingress Protection:** IP40

**Wetted Materials:** 303 and 302

stainless steel, FKM,

Silicone RTV (Rubber), Glass

Reinforced Nylon, Aluminum.

**Note:** If your application demands a different material, please contact Omega.

Do not subject FMA-LP1600A differential pressure sensor to

upstream-downstream pressure

differentials exceeding 15 psid.

**Programmed Gases:** Acetylene, Air, Argon, Butane, Carbon Dioxide, Carbon Monoxide, Ethane, Ethylene, Helium, Hydrogen, Iso-Butane, Krypton, Methane, Neon, Nitrogen, Nitrous Oxide, Oxygen, Propane, Sulfur Hexafluoride, Xenon, A-25, A-75, A1025, C-2, C-8, C-10, C-25, C-75, P-5, Star29.

**LCD Display:** Monochrome with integrated touchpad simultaneously displays mass flow, volumetric flow, pressure and temperature.

**Digital Output:** RS232 Serial

**Electrical Supply:** Four "AA" batteries, 9 to 20 Vdc wall outlet adaptor minimum 150 mA

**Note:** The digital output signal communicates mass flow, volumetric flow, pressure and temperature.

**Weight:** 5.4 to 9.1 kg (12 to 20 lb), depending on configuration

**Case Dimensions:** 406 L x 330 W x 178 mm D (16 x 13 x 7")

**Process Connections:** 1/8", 1/4", 3/8" or 1/2" push-connect style tubing fittings



Range (-LP option)	Pressure Drop at Full Scale (psid)*
Up to 2 SCCM	0.06
UP to 20 SCCM	0.07
Up to 50 SCCM	0.07
Up to 200 SCCM	0.06
Up to 500 SCCM	0.07
Up to 5 SLPM	0.07
Up to 10 SLPM	0.08
Up to 20 SLPM	0.25
Up to 40 SLPM	0.12
Up to 50 SLPM	0.14
Up to 100 SLPM	0.24
Up to 250 SLPM	0.6

\*Venting to atmosphere

Standard Full Scale Range	Pressure Drop at Full Scale (psid)*
Up to 1 SCCM	1
UP to 50 SCCM	1
Up to 20 SLPM	1
Up to 50 SLPM	2
Up to 100 SLPM	2.5
Up to 250 SLPM	2.1
Up to 500 SLPM	4
Up to 1000 SLPM	6
Up to 1500 SLPM	9

\*Venting to atmosphere

To Order				
Model No.	Description	Full Scale Ranges Included in Kit		
FMA-PC16031908	Portable mass flow calibration kit	10 SCCM	500 SCCM	20 SLM
FMA-PC16040509	Portable mass flow calibration kit	50 SCCM	2 SLM	50 SLM
FMA-PC16190712	Portable mass flow calibration kit	500 SCCM	10 SLM	500 SLM

Comes complete with 4 "AA" batteries, AC AC power adaptor, software, NIST 5-point calibration and operator's manual. For units built with FMA-LP1600A, low pressure drop flow meters add "-LP" to the model number, for an additional charge.

**Ordering Example:** FMA-PC16040509, portable mass flow calibration kit with one each: FMA-1604A, FMA-1605A and FMA-1609A.

Additional combinations available, contact OMEGA flow engineering for details.