

HIGH ACCURACY MASS FLOW CONTROLLERS

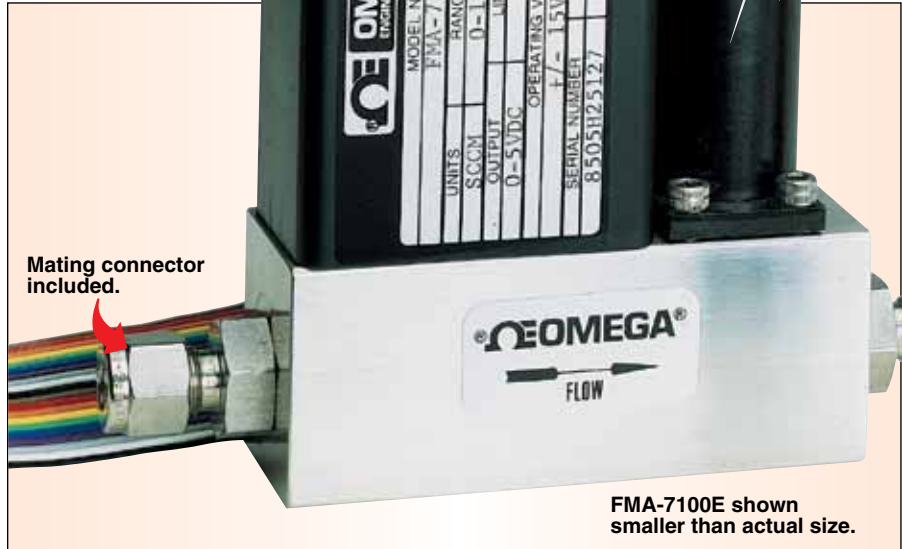
For Clean, Non-Coating Gases

Compatible Meters:
DPF50, DPF60, DPF300,
DP24-E, DPF403,
visit us online for more details.

FMA-7000E Series



- ✓ ±1% Full Scale Accuracy
- ✓ ±0.25% of Rate Repeatability
- ✓ Broad Range in a Single Unit to Fit Most Applications
- ✓ Field Selectable Soft Start Eliminates Spoiled Batches
- ✓ Normally Closed Valve
- ✓ Low Pressure Drop
- ✓ Compact Design
- ✓ For Clean, Non-Coating Gases



OMEGA® FMA-7000E Mass Flow Controllers accurately measure gases on the basis of mass flow. The flow sensor produces an electrical output signal linear with the flow rate used for indicating, recording, and/or control purposes. It eliminates the need for continuous monitoring and readjustment of gas pressures to provide a stable gas flow. This is accomplished automatically by an electromagnetically actuated flow rate control valve.

OPERATING PRINCIPLE

The operating principle of the controller is thermodynamic. A precision power supply directs heat to the midpoint of the sensor tube carrying the flow. On the same tube, equidistant upstream and downstream of the heat input, are resistance temperature measuring elements.

With no flow, the heat reaching each temperature element is equal. With increasing flow, the flow stream carries heat away from the upstream element, and towards the downstream element. An increasing temperature difference develops between the two elements and this difference is proportional to the mass flow rate of the gas. A bridge circuit interprets the temperature difference and an amplifier provides the output to the control circuitry as well as a 0 to 5 Vdc output signal.

SPECIFICATIONS

Accuracy: ±1% FS including linearity at calibration conditions, ±1.5% FS including linearity for flow ranges greater than 20 SLM

Repeatability: ±0.25% of rate

Response Time: <3 second response to within 2% FS final value with a 0 to 100% command step

Set Point Input: 0 to 5 Vdc or 1000Ω potentiometer

Output: 0 to 5 Vdc into 2000Ω minimum load; 3 mV rms max. ripple

Maximum Pressure: 1500 psig, pressure drop 5 to 50 psid

Temperature Range: 4 to 66°C (40 to 150°F) ambient and gas

Temp. Sensitivity:

Zero: < ±0.075% FS per °C

Span: <±1.0% FS shift over 10 to 50°C (50 to 122°F) range

Power Supply Sensitivity: ±0.09% FS per % power supply voltage variation

Mounting Attitude Sensitivity: ±0.5% maximum FS deviation after zeroing

Leak Integrity: 1 x 10⁻⁹ Atm. scc/sec helium

Control Range: 50 to 1

Pressure Sensitivity: ±0.03% per psi up to 200 psig (N₂)

Power: +15 Vdc at 35 mA DC, -15 Vdc at 180 mA dc, 3.5 watts power consumption

Wetted Parts: 316 and 430SS, FKM

Connections: ¼" stainless steel compression fittings

Electrical Connections: Card edge, 20 terminals, gold over low stress nickel-plated copper

Accessories Included: Mating connector with 1.5 m (5') ribbon cable model. Easy connector/cable assemblies available

Model FMA-7EC-(*):

1.5 m (5')

3.0 m (10')

7.6 m (25')

15.2 m (50')

* Specify length: 5, 10, 25 or 50' sections

After Choosing Your Flowmeter, Complete the System to Meet Your Requirements

Display and Alarm DPF64

Setpoint Potentiometer (1000Ω)

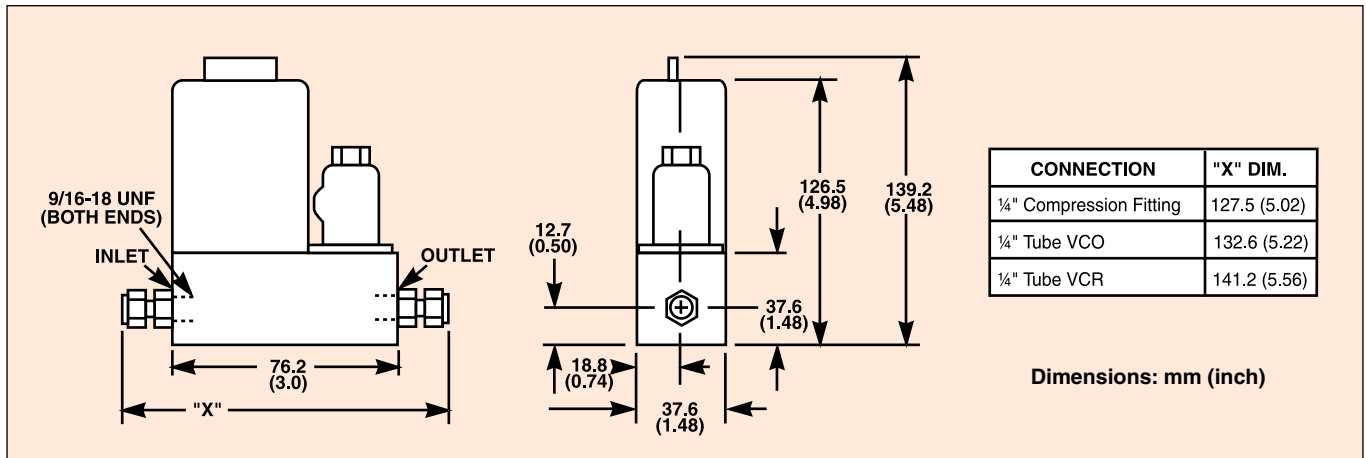
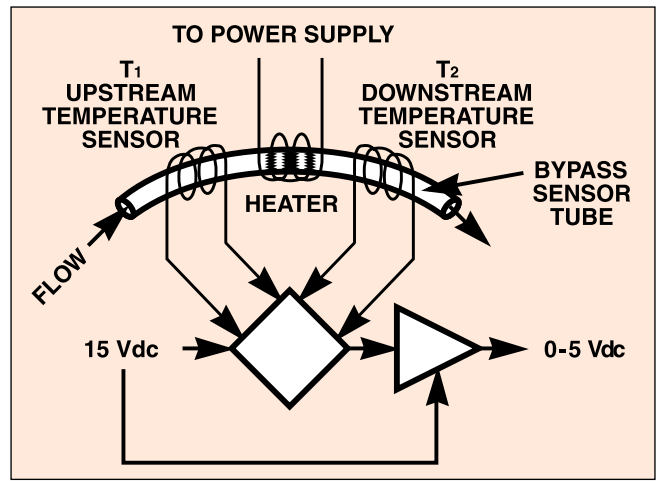
Computer Interface
FC-21 Basic Unit
FC-22 Basic Unit

Power Supply FPW-15

In addition to your mass flowmeter, select a complete flow measurement system to meet your requirements.



FMA-7100E shown smaller than actual size.



CUSTOM BUILT TO ORDER!

To Order			
Model No. ¼" Compression Fitting	Model No. ¼" VCO	Model No. ¼" VCR	Max Range
FMA-7100E-(*)	FMA-7200E-(*)	FMA-7300E-(*)	to 10 SCCM
FMA-7101E-(*)	FMA-7201E-(*)	FMA-7301E-(*)	to 20 SCCM
FMA-7102E-(*)	FMA-7202E-(*)	FMA-7302E-(*)	to 50 SCCM
FMA-7103E-(*)	FMA-7203E-(*)	FMA-7303E-(*)	to 100 SCCM
FMA-7104E-(*)	FMA-7204E-(*)	FMA-7304E-(*)	to 200 SCCM
FMA-7105E-(*)	FMA-7205E-(*)	FMA-7305E-(*)	to 500 SCCM
FMA-7106E-(*)	FMA-7206E-(*)	FMA-7306E-(*)	to 1 SLM
FMA-7107E-(*)	FMA-7207E-(*)	FMA-7307E-(*)	to 2 SLM
FMA-7108E-(*)	FMA-7208E-(*)	FMA-7308E-(*)	to 5 SLM
FMA-7109E-(*)	FMA-7209E-(*)	FMA-7309E-(*)	to 10 SLM
FMA-7110E-(*)	FMA-7210E-(*)	FMA-7310E-(*)	to 20 SLM

Comes complete with mating connector and operator's manual.

Calibrations done at ambient temperature only, 20°C (70°F).

* Please specify gas, inlet and outlet pressure when ordering.

For calibration between 201 and 999 psig, additional cost. For calibrations between 1000 and 1500 psig for additional cost.

For NIST certificate add suffix "-NIST" to the model number for additional cost. NIST certificate does not include points.

Ordering Examples: FMA-7100E-(Argon, 150/100 psig), mass flow controller for argon, 0 to 10 SCCM, 150 psig inlet/100 psig outlet.

FMA-7102E-(O2, 20/PSIG), mass flow controller for oxygen, 0 to 50 SCCM, 20 psig inlet/0 psig outlet.