

# Mass Flow Controllers



## Features:

- Mass flow controllers designed to indicate and control flow rates of gases
- Advanced straight tube sensor combined with flow passage elements constructed of aluminum and brass for non-corrosive gases
- Zero and span adjustments are accessible from the outside of transmitters
- Metered gases are divided into two laminar flow paths, one through the primary flow conduit, and the other through a capillary sensor tube
- Both conduits are designed to ensure laminar flows and therefore the ratio of their flow rates is constant
- Two precision temperature sensing windings on the sensor tube are heated, and when flow takes place, gas carries heat from the upstream to the downstream windings
- Resultant temperature differential is proportional to the change in resistance of the sensor windings
- Wheatstone bridge design is used to monitor the temperature dependent resistance gradient on the sensor windings which is inearly proportional to the instantaneous rate of flow
- Output signals of 0 to 5Vdc and 4 to 20mA are generated indicating mass molecular based flow rates of the metered gas
- The combined gas streams flow through a proportionating

- electromagnetic valve with an appropriately selected orifice
- The closed loop control circuit continuously monitors the mass flow output and maintains it at the set flow rate
- Flow setpoints are controlled either locally or remotely
- LCD readout built into the top of the transmitters is tiltable over 90° to provide optimal reading comfort
- LCD readout is connected to the transducer by a standard modular plug, and is readily removable for remote reading installations
- Transducers without LCD readout are also available
- Available with flow ranges from 10 sccm to 1000 l/min
- Gases are connected by means of 1/4", 3/8" or optional 1/8" compression fittings and 3/4" FNPT fittings
- Transducer power supply ports are fuse and polarity protected

## Specifications:

Accuracy:	±1.5% f.s. incl. linearity for gas temps. of 59 to 77°F (15 to 25°C) & pressures of 5 to 60 psia (0.4 to 4.1 bar)
Repeatability:	±0.5% f.s.
Response Time:	Generally 2s to within ±2% of actual flow rate over 25 to 100% f.s.
Temp. Coefficient:	0.15% f.s./°C
Pressure Coefficient:	0.01% f.s./psi (0.07 bar)
Optimum Gas Press.:	25 psig (1.73 bar)
Max. Gas Pressure:	1000 psig (70 bar)
Max. Pressure Diff.:	<b>GFC17, GFC37:</b> 50 psi (3.4 bar); <b>GFC47:</b> 40 psi (2.7 bar)
Gas Temperature:	41 to 122°F (5 to 50°C)
Leak Integrity:	1 x 10 <sup>-7</sup> ml/sec of helium maximum to the outside environment
Materials Fluid Contact:	Anodized aluminum, 316 stainless steel, brass & Viton O-rings
Attitude Sensitivity:	No greater than ±15° rotation from horizontal to vertical
Output Signals:	Linear 0-5 Vdc (1000Ω min. load impedance); 4-20 mA (0-500Ω loop resistance); max. noise ±20mV
Command Signals:	Analog 0-5 Vdc or 4-20 mA for remote set point mode; NPN compatible purge/valve off
Input Power:	+12 Vdc, 800mA; +24 Vdc, 650mA option
Connections:	<b>GFC17 &amp; 37:</b> 1/4" compression fittings; <b>GFC47:</b> 3/8" compression fittings; <b>GFC67:</b> 1/2" compression fittings
Display:	3-1/2 digit LCD, 0.5" high characters

Model	Description	Price
GFC17A-VADL2-E0-01-N2	Aluminum Flow Controller, 0 to 10 ml/min N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC17A-VADL2-E0-03-N2	Aluminum Flow Controller, 0 to 50 ml/min N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC17A-VADL2-E0-04-N2	Aluminum Flow Controller, 0 to 100 ml/min N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC17A-VADL2-E0-06-N2	Aluminum Flow Controller, 0 to 500 ml/min N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC17A-VADL2-E0-07-N2	Aluminum Flow Controller, 0 to 1 lpm N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC17A-VADL2-E0-09-N2	Aluminum Flow Controller, 0 to 5 lpm N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC17A-VADL2-E0-10-N2	Aluminum Flow Controller, 0 to 10 lpm N <sub>2</sub> , 1/4" compression fittings	\$1110
GFC37A-VADL2-E0-30-N2	Aluminum Flow Controller, 0 to 20 lpm N <sub>2</sub> , 1/4" compression fittings	\$1346
GFC37A-VADL2-E0-33-N2	Aluminum Flow Controller, 0 to 50 lpm N <sub>2</sub> , 1/4" compression fittings	\$1346
GFC47A-VDDL2-E0-42-N2	Aluminum Flow Controller, 0 to 100 lpm N <sub>2</sub> , 3/8" compression fittings	\$1560
GFC67A-VELDL2-E0-60-N2	Aluminum Flow Controller, 0 to 500 lpm N <sub>2</sub> , 1/2" compression fittings	\$2047
PS-GFC-110NA-2	Power Supply	\$86

Standard models: Aluminum housing, Viton seals, D connector, LCD display, 12 Vdc power, 4-20mA output. Other options available.