



# GE300A

## MULTI-GAS/MULTI-RANGE MASS FLOW CONTROLLER FLOW RATES UP TO 300 SLM

The GE300A is a general purpose, elastomer sealed MFC well suited for a wide variety of applications requiring flow control capability from 150 slm to 300 slm FS,  $N_2$  equivalent. The GE300A incorporates the latest in digital flow control electronics along with a well proven, patented thermal sensor and mechanical design. This MFC is available with either analog or digital I/O. The digital control electronics utilize the latest in MKS control algorithms provide fast and repeatable response to set point.

Settling times of 1 to 2 seconds and set point accuracies below 1% of set point outperform those of other typical high flow MFCs. Precise control is maintained down to 2% of the GE300A configured Full Scale flow range. The multi-gas/multi-range capability, along with tight performance specifications for accuracy, control range, and transient response allow users to minimize inventory of high flow MFC part numbers.

The multi-gas/multi-range feature (along with other custom controls) is accessed through the MFCs embedded diagnostic interface, which requires no special software or hardware to operate. A standard Ethernet cable and JAVA-enabled HTML browser, widely available, are all the tools needed. The critical gas parameters for typical high flow rate gases are already stored on the device. Configuring the device is simply a matter of selecting the gas from a drop down menu and specifying the desired full scale flow range. The diagnostic interface also allows the user to perform routine device health checks, plot flow response, and store operating data for offline analysis.

# **Features & Benefits**

### **Improved Performance**

- Fast response to set point change reduces flow stabilization time for short process steps, enhancing process throughput
- Tightly controlled flow accuracy of process gas enables improved process matching
- Reduced inlet pressure (pressure drop) requirement simplifies gas supply regulation from a single source

### **Reduces Overall Costs**

- Reduces MFC inventory through its multi-gas/multi-range capability
- Accurate flow control over a wide dynamic range, even when down ranged, reduces need for an additional low range MFC

### Easy to Integrate and Operate

- Device configuration and diagnostics made simple through standard Ethernet interface
- Uses a standard web browser with no special software required

# Flow Solutions

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### Performance

Full Scale Flow Ranges (N<sub>2</sub> equivalent) Maximum Inlet Pressure

### Normal Operating Pressure Differential

(with atmospheric pressure at the MFC outlet) Burst Pressure Control Range Typical Accuracy

### Repeatability Resolution

Temperature Coefficients Zero Span Inlet Pressure Coefficient Typical Controller Settling Time Warm-up Time Operating Temperature Range (Ambient) Storage Humidity Storage Temperature

### Mechanical

Fittings (compatible with) Leak Integrity External (scc/sec He) Through closed valve

### Wetted Materials

Standard Seal Options Surface Finish Weight

### **Electrical Analog I/O**

Input Power Required Flow Input/Output Signal Voltage (0 to 5 VDC) Current (4 to 20 mA) Compliance

### **Digital I/O**

Input Power Required Connector

Data Rate Switch/Selection

Comm. Rate(s) MAC ID Switches/Addresses

Network Size Visual Indicators

### Compliance

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# 150 to 300 slm150 psig(cannot exceed pressure differential requirement across MFC)30 to 55 psid (dependent on fitting type)

1500 psig 2% to 100% of F.S. (range on mech.) ± 1% of set point for > 20% to 100% F.S. ± 0.25% of F.S. for 5% to 20% F.S. ± 0.5% of Reading 0.1% of Reading < 0.05% of F.S./°C < 0.08% of Rdg./°C < 0.03% of Rdg./psi or less

< 0.03% of Rdg./psi or less 1 to 2 seconds typical above 10% F.S. @ 50 psi one (1) hour 10°C to 50°C 0 to 95% relative humidity, non-condensing -20° to 65°C (-4° to 149° F)

8 VCO® male,  $1{\!\!}'_2{}''$  NPT female,  $1{\!\!}'_2{}''$  Compression, 8 VCR® male

< 1 x 10<sup>-9</sup> < 1.0% F.S. at 40 psia to vac (<500 mTorr) (To assure no flow-through, a separate positive shut-off valve is required.)

316 S.S., 17-7 S.S., Elgiloy, 430FR Viton<sup>®</sup>, Buna, Neoprene, EPDM 16 μinch average Ra less than 4.5 lbs. (2.05 kg)

### +15 to +24 VDC @ (< 4 watts)

15-pin Type "D" male 15-pin Type "D" male CE

### DeviceNet™

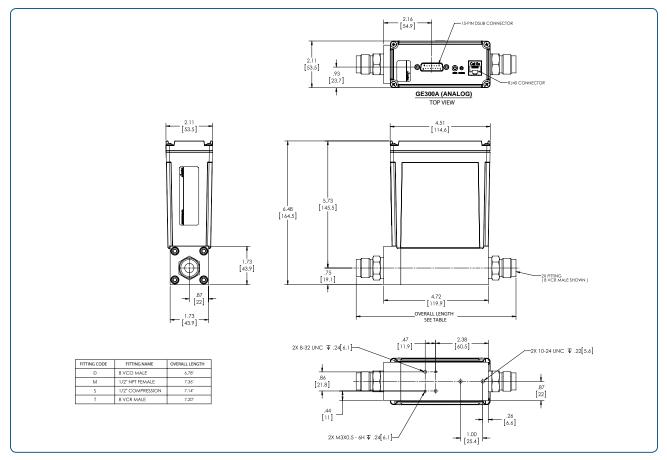
+11 to +25 VDC per (< 4 watts) 5 pin micro connector (power and comm.) 4 positions: 125, 250, 500K, (Default) (programmable over network) 125 Kbps, 250 Kbps, 500 Kbps 2 switches, 10 positions; 0,0 to 6,3 1 to 254 Up to 64 nodes LED Network (green/red) LED Module (green/red) CE

### **Profibus**®

+15 to +24 VDC (< 4 watts) 9 pin Type D male (power) 9 pin Type D female (comm.) No switch Set data rate via Profibus 9.6 Kbps to 12 Mbps 2 switches, 10 positions Up to 99 nodes

LED Comm (green/red) LED Error (green/red) CE

# **Dimensional Drawing**



### **Dimensional Drawing**

Note: Unless specified, dimensions are nominal values in inches (mm referenced).



# **Ordering Information**

Ordering Code Example: GE300A013305TBV0020	Code	Configuration
MFC High Flow Mass Flow Controller (multigas, multi-range) GE300A	GE300A	
Gas*		
For example:		
001 = Helium = He	001	242
004 = Argon = Ar	004	013
007 = Hydrogen = $H_2$ 013 = Nitrogen = $N_2$	007 013	
Flow Range Full Scale**	013	
300 slm (300,000 sccm)	305	305
	303	
Fittings (compatible with)	<del>_</del>	
8 VCR male 8 VCR male (1559 replacement)	T L	
8 VCO male	D	
12 mm tube compression	F	_
1/2" tube compression	S	Т
1/2" tube compression (1559 replacement)	W	
3/8" tube compression	J	
1/2" NPT female	Μ	
Connector (Power & Control I/O)		
15 pin D (Analog 0 to 5 VDC I/O)	В	
15 pin D (4 to 20 mA I/O)	Н	
Profibus	4	В
RS-485 DeviceNet	5 6	
	0	
Seal Materials	V	
Viton Buna-N	V B	
Neoprene	В N	V
EPDM	E	
/alve Type		
Normally closed	0	
Meter	3	0
Reserved for MKS Future Use		
Standard	0	0
Firmware		
Unless otherwise specified, MKS will ship firmware revision current to date	20	20

\* For gases not listed in the standard products gas table, please contact the MKS applications department for assistance.

Gas Table				
Gas Name*	Semi Gas Code	Gas Formula	Min - Max FS (slm)	
Helium	001	He	210 to 300	
Argon	004	Ar	210 to 300	
Hydrogen	007	H <sub>2</sub>	150 to 300	
Air	008	Air	150 to 300	
Nitrogen	013	N <sub>2</sub>	150 to 300	

\*\* The Full Scale flow rate is designated by a 3 digit number. The first two digits represent the significant digits of the Full Scale flow rate separated by a decimal point. The third digit is the exponent of the power of ten.

### Example flow rate code:

255 is 2.5 x  $10^5$  sccm or 250 slm 105 is 1.0 x  $10^5$  sccm or 100 slm



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