

GE250A

Elastomer Sealed, Digital Mass Flow Meter
Flow Rates Up to 250 SLM



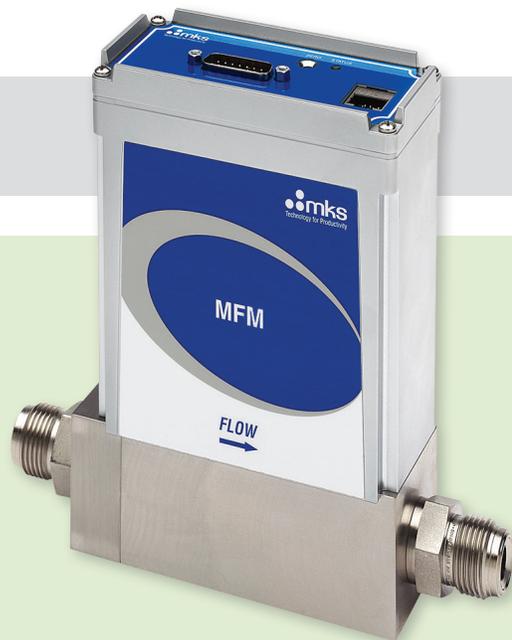
The GE250A is a general purpose, elastomer sealed MFM with flow measurement capability from 250 sccm to 250 slm Full Scale, N₂ equivalent. The GE250A incorporates the latest in digital flow control electronics along with a well proven, patented thermal sensor and mechanical design. This MFM is available with either analog or digital I/O. The digital control electronics utilize the latest in MKS control algorithms providing accurate, and repeatable, flow measurement.

The multi-gas/multi-range capability, along with tight performance specifications for accuracy, allow users to minimize inventory of high flow MFM part numbers. The

multi-gas/multi-range feature (along with other custom controls) is accessed through the MFM embedded diagnostic interface, that 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, and store operating data for off-line analysis.

Product Features

- Embedded user interface provides the ability to
 - Easily change device range and user gas reducing inventory requirements
 - Monitor device functionality and collect performance data in-situ
- 16 micro-inch 316L surface finish enables MFM use for high purity applications
- Wide choice of digital EtherCAT®, DeviceNet™, Profibus®, PROFINET® and RS485) or analog (0 to 5 VDC or 4 to 20 mA) I/O



Key Benefits

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

Specifications

Performance

Full Scale Range (N ₂ equivalent)	100 to 250 slm
Maximum Inlet Pressure	150 psig
Burst Pressure	1500 psig
Control Range	0.1% to 100% of Full Scale (range on mech.)
Typical Accuracy (with N ₂ calibration gas)	±1% of Reading
Repeatability	±0.5% of Reading
Resolution	0.1% of Full Scale
Temperature Coefficients	Zero Span <ul style="list-style-type: none"> • <0.05% of Full Scale/°C • <0.08% of Reading/°C
Inlet Pressure Coefficient	<0.03% of Reading/psi or less
Warm-up Time	1 hour
Operating Temperature Range (Ambient)	10°C to 50°C
Storage Humidity	0 to 95% relative humidity, non-condensing
Storage Temperature	-20° to 65°C (-4° to 149° F)

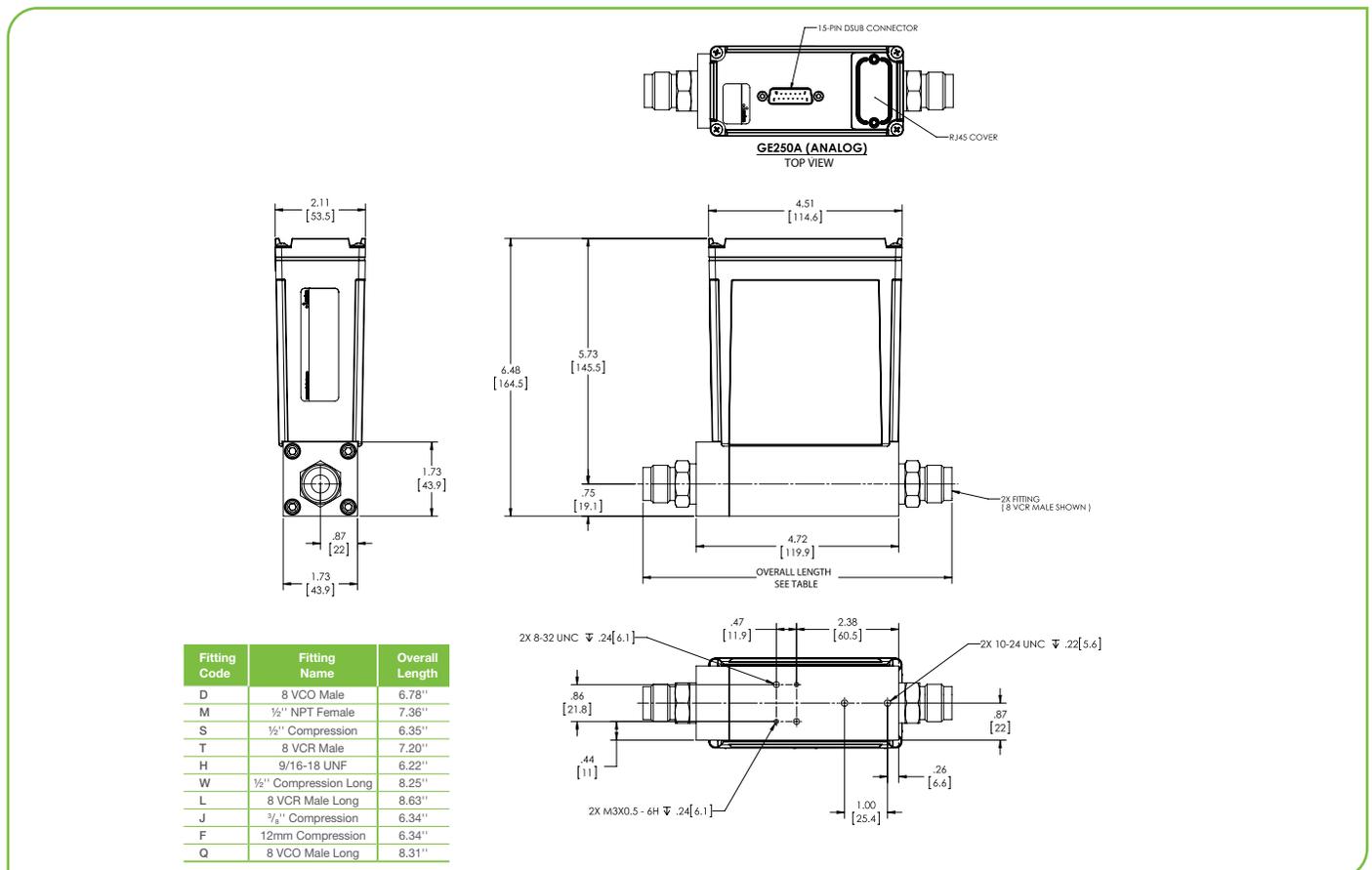
Mechanical

Fittings (compatible with)	8 VCO® male, ½" NPT female, ½" Compression, 8 VCR® male, 12 mm Swagelok, ⅜" Swagelok, W-seal, ½" Compression Long, 8 VCR Male Long, 8 VCO Male Long
Leak Integrity	External (scc/sec He) <1 x 10 ⁻⁹
Wetted Materials	316L S.S.
Seal Options	<ul style="list-style-type: none"> • Viton® • Buna • Neoprene® • EPDM • Viton (USP Class VI Compliant)
Surface Finish	16µ inch average Ra
Weight	<3.4 lbs (1.54 kg)

Electrical Analog I/O

Input Power Required	+15 to +24 VDC @ (<2 watts)
Flow Input/Output Signal	Voltage (0 to 5 VDC) Current (4 to 20 mA) <ul style="list-style-type: none"> • 15 pin Type "D" male • 15 pin Type "D" male
Compliance	CE

Digital I/O	DeviceNet™	RS485	Profibus®	EtherCAT®	PROFINET®
Input Power Required	+11 to +25 VDC per (<2 watts)	+15 to +24 VDC (<2 watts)	+15 to +24 VDC (<2 watts)	+24 VDC (<3 watts)	+24 VDC (<3 watts)
Connector	5 pin micro connector (power and comm.)	9 pin Type D male (power and comm.)	9 pin Type D male (power) 9 pin Type D female (comm.)	2 x RJ-45 (comm.) male, M8 male, 5 pin (power)	2 x RJ-45 (comm.) male, M8 male, 5 pin (power)
Data Rate Switch/Selection	4 positions: 125, 250, 500K (Default), (programmable over network)	No switch Set data rate via RS485	No switch Set data rate via Profibus	No switch	No switch
Comm. Rate(s)	125 Kbps; 250 Kbps; 500 Kbps	9.6 Kbps; 19.2 Kbps 38.4 Kbps	9.6 Kbps to 12 Mbps	100 Mbps	100 Mbps
MAC ID Switches/Addresses	2 switches, 10 positions; 0,0 to 6,3 1 to 254	Set address over RS485 Station Addresses 0,0 to 9,9	2 switches, 10 positions	3 switches, 16 positions	N/A
Network Size	Up to 64 nodes	Up to 32 nodes	Up to 99 nodes	Up to 4095 nodes	N/A
Visual Indicators	LED Network (green/red) LED Module (green/red)	LED Comm (yellow) LED Error (red)	LED Comm (green/red) LED Error (green/red)	LED Power (green) LED Run (green) LED Error (red) LED Comm (green)	LED Maint (amber) LED BUS Fault (red) LED Ready (green) LED Sys Fault (red)
Compliance	CE	CE	CE	CE	CE



Unless otherwise specified, dimensions are nominal values in inches (mm referenced). *See manual for additional I/O and fitting types.

Ordering Information

Ordering Code Example: GE250A013255TBV3020				Code	Configuration
Model					
MFM High Flow Mass Flow Meter (multi-gas, multi-range)				GE250A	GE250A
Gas*					
Name	Code	Formula	Min/Max Full Scale (slm)		
Helium	001	He	140 to 350	001	013
Argon	004	Ar	140 to 250	004	
Hydrogen	007	H ₂	100 to 250	007	
Air	008	Air	100 to 250	008	
Nitrogen	013	N ₂	100 to 250	013	
Flow Range Full Scale**					
250 slm (250,000 sccm)				255	255
Fittings (compatible with)					
12 mm Swagelok				F	T
3/8" Swagelok				J	
1/2" tube compression				S	
1/2" Compression Long				W	
1/2" NPT female				M	
8 VCR Male				T	
8 VCO Male				D	
8 VCR Male Long				L	
8 VCO Male Long				Q	
W-Seal				H	
Connector (Power & Control I/O)					
Profibus (1179B Compatible)				3	B
Profibus (1480 Compatible)				4	
RS485				5	
DeviceNet				6	
EtherCAT				8	
PROFINET				9	
15 pin D (Analog 0 to 5 VDC I/O)				B	
15 pin D (4 to 20 mA I/O)				H	
Seal Material					
Viton				V	V
Buna				B	
Neoprene				N	
EPDM				E	
Viton (USP Class VI Compliant)				W	
Valve/Device Type					
Mass Flow Meter				3	3
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.

** 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 10⁵ sccm or 250 slm; 105 is 1.0 x 10⁵ sccm or 100 slm