



## Performance

<b>Full Scale Flow Ranges</b> ( <i>N<sub>2</sub> equivalent</i> )	100 to 250 slm
<b>Maximum Inlet Pressure</b>	150 psig (can not exceed pressure differential requirement across MFC)
<b>Normal Operating Pressure Differential</b> ( <i>with atmospheric pressure at the MFC outlet</i> )	25 to 45 psid
<b>Proof Pressure</b>	1000 psig
<b>Burst Pressure</b>	1500 psig
<b>Control Range</b>	2% to 100% of F.S. (range on mech.)
<b>Typical Accuracy</b>	± 1% of set point for > 20% to 100% F.S. ± 0.2% of F.S. for 2% to 20% F.S.
<b>Repeatability</b>	± 0.3% of Reading
<b>Resolution</b>	0.1% of Reading
<b>Temperature Coefficients</b>	
Zero	< 0.05% of F.S./°C
Span	< 0.08% of Rdg./°C
<b>Inlet Pressure Coefficient</b>	< 0.02% of Rdg./psi
<b>Typical Controller Settling Time</b> ( <i>per SEMI Guideline E-17-0600</i> )	< 3 sec typical above 10% F.S. @ 50 psi
<b>Warm-up Time</b> ( <i>to within 0.2% of F.S. of steady state performance</i> )	< 30 min
<b>Operating Temperature Range (Ambient)</b>	10°C to 50°C
<b>Storage Humidity</b>	0 to 95% relative humidity, non-condensing
<b>Storage Temperature</b>	-20° to 80°C (-4° to 149° F)
<b>Temperature Display</b>	0 to 85°C
<b>Temperature Readout Units</b>	°C
<b>Temperature Accuracy</b>	± 2°C
<b>Temperature Resolution</b>	0.1°C

## Mechanical

<b>Fittings</b> ( <i>compatible with</i> )	Swagelok® 8 VCR®
<b>Display</b>	4 digits for value, 4 characters for unit
<b>Leak Integrity</b>	
External (scc/sec He)	< 1 x 10 <sup>-10</sup>
Through closed valve	< 1.0% of configured F.S. at 40 psia to vac (<500 mTorr) (To assure no flow-through, a separate positive shut-off valve is required.)
<b>Wetted Materials</b>	
Standard	316L S.S. VAR (equivalent to 316 S.S. SCQ for semiconductor quality), 316 S.S., Elgiloy, 430FR, Buna-N, Nickel, Polyimide
<b>Surface Finish</b>	10 µinch average Ra
<b>Weight</b>	less than 3 lbs (1.4kg)

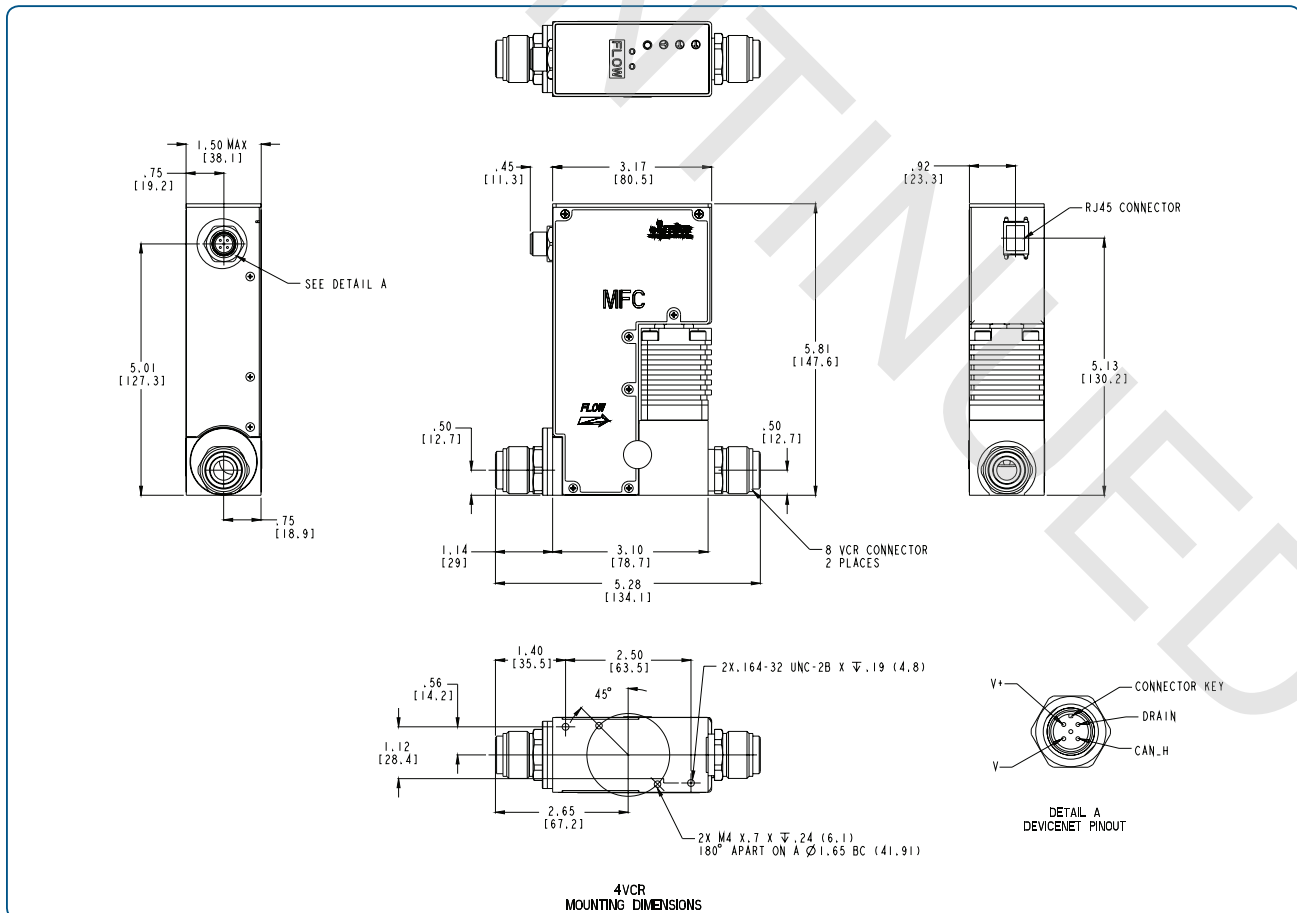


# Specifications (cont'd)

## Digital I/O

<b>Digital I/O</b>	<b>DeviceNet™</b>
<b>Input Power Required</b>	+11 to +25 VDC per DeviceNet specification (@ < 9 watts)
<b>Connector</b>	5 pin microconnector (DeviceNet)
<b>Data Rate Switch</b>	4 positions: 125, 250, 500K (Default), GM (programmable over the network)
<b>Data Rate/Network Length</b>	Data rate (user selectable) 125 Kbps, 500 meters (1,640 feet) 250 Kbps, 250 meters (820 feet) 500 Kbps, 100 meters (328 feet)
<b>MAC ID Switches</b>	2 switches, 10 positions; 0,0 to 6,3 are hardware ID numbers; 7,0 to 9,9 are software ID numbers; (6,4 to 6,9 are unused and, if selected will default to hardware ID number 6,3)
<b>Network Size</b>	Up to 64 nodes
<b>Network Topology</b>	Linear (trunkline/dropline) power and signal on same network cable
<b>Visual Communication Indicators</b>	LED network status (green/red) LED module status (green/red) Scrolling LED displays (MFC Type, Flow Full Scale, Gas Type, IP address, Instance Number (1 to 31))

## Dimensional Drawing



### Dimensional Drawing — DeviceNet™

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



# Ordering Information

Gas Table 1.5			
Gas Name	Semi Gas Code	Gas Formula	Min - Max FS (slm)
Helium	001	He	140-350
Neon	002	Ne	138-345
Argon	004	Ar	090-222
Hydrogen	007	H <sub>2</sub>	100-250
Nitrogen	013	N <sub>2</sub>	100-250
Arsine	035	AsH <sub>3</sub>	032-080
Germane	043	GeH <sub>4</sub>	033-083
Tetrafluoromethane	063	CF <sub>4</sub>	031-077
Sulfur Hexafluoride	110	SF <sub>6</sub>	016-040
Octafluorocyclobutane (R-c318)	129	C <sub>4</sub> F <sub>8</sub>	009-023

## Ordering Code Example: P250A013255T6M010

MFC High Flow Mass Flow Controller (multigas, multi-range) P250A

Code

Configuration

	Code	Configuration
<b>Gas*</b>		P250A
For example: 001 = Helium = He 004 = Argon = Ar 007 = Hydrogen = H <sub>2</sub> 013 = Nitrogen = N <sub>2</sub>	001 004 007 013	013
<b>Flow Range Full Scale**</b>		
100 slm (100,000 sccm)	105	255
150 slm (150,000 sccm)	155	
200 slm (200,000 sccm)	205	
250 slm (250,000 sccm)	255	
<b>Fittings (compatible with)</b>		
Swagelok 8 VCR	T	T
<b>Connector (Power &amp; Control I/O)</b>		
DeviceNet	6	6
15 pin D (Analog I/O)	B	
<b>Valve</b>		
Normally Closed	M	M
<b>Reserved for MKS Future Use</b>		
Standard	0	0
<b>Firmware</b>		
Unless otherwise specified, MKS will ship firmware revision current to date (DeviceNet only) Alpha characters designates prerelease product versions	10	10

\* 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 FS 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<sup>5</sup> sccm or 250 slm

105 is 1.0 x 10<sup>5</sup> sccm or 100 slm



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