



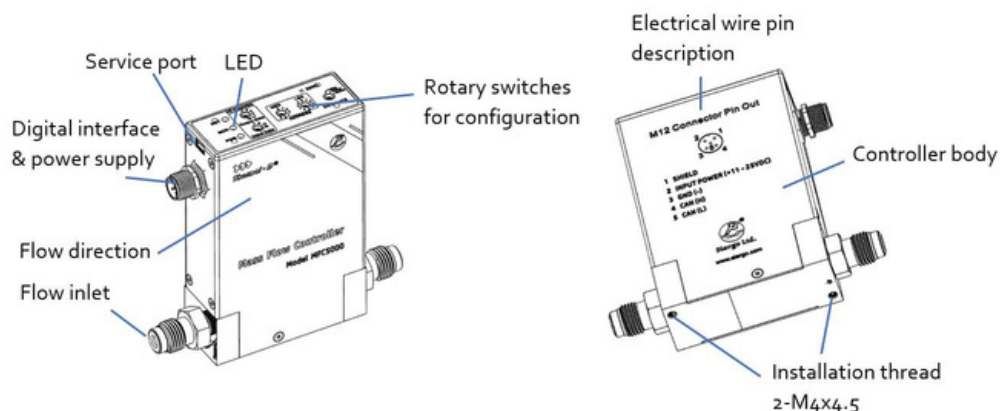
Mass Flow Controllers for Gases

Model MFC5000



Thermal - D®

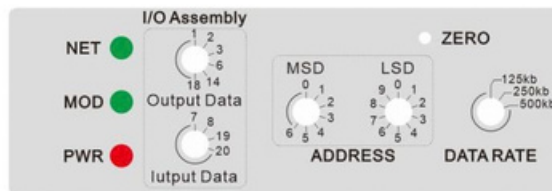
This product is designed for industrial process control, offering precision, fast control times, and a variety of bus interfaces to choose from. It offers standard address and communication parameters dials for offline settings. The mechanical connections can also be fully customized.



The DeviceNet connector is a standard M12 connector with the following pin definitions

Pin	Color	Wire	Usage	Male	Female
1	Bare	Drain	Shield		
2	Red	V+ (24 Vdc)	Power		
3	Black	V- (0 Vdc)	Ground		
4	White	CAN_H (+)	Signal		
5	Blue	CAN_L (-)	Signal		

Rotary switch and status LED



Service port

Pin	Definition	Male
1	Supply, V+	
2	RS485 (A)	
3	RS485 (B)	
4	Ground	

- Carrier gas
- Semi-post process
- Thin film deposition
- Solar cells
- Gas mixing
- Fermentation
- Fuel efficiency
- Glass process
- Packaging process
- Fiber process



Specifications

	Value	Unit
Full-scale range	0 ~ 50 sccm ... 0 ~ 1000 sccm 0 ~ 2 ... 0 ~ 20 SLPM	
Accuracy	± 1.0% r.d. (20 ~ 100% of full scale) ± 0.2% f.s. (<20% of full scale)	
Repeatability	± 0.5% r.d. (20 ~ 100% of full scale) ± 0.1% f.s. (<20% of full scale)	
Turn-down ratio	100:1	
Max control range	1~110	%FS
Control pressure range	0.1 ~ 0.8	MPa
Maximum operating differential pressure	0.4	MPa
Setpoint source (input signal)	Analog: 0 ~ 5 Vdc or 4 ~ 20 mA Digital: DeviceNet, RS485 Modbus	
Control time (typical)	300	msec
Working temperature	0 ~ 55	°C
Humidity	<95, no condensation	%RH
Burst pressure	1.5	MPa
Max pressure loss	20 (20 SLPM models)	kPa
Power supply	(12 ~ 24) Vdc, 1A	
Output signal	Analog: 0 ~ 5 Vdc or 4 ~ 20 mA Digital: DeviceNet, RS485 Modbus	
Max null shift (analog)	±30	mVdc
Control valve	Normally Closed (NC)	
Electrical connector	M12, DB9	
Mechanical connection	VCR; or BSPT 1/8" to 1/2"-female	
Protection	IP40	
Storage temperature	-20 ~ +70	°C
Reference conditions	0 °C, 101.325 kPa, air	
Fluid compatibility	Non-corrosive: SS 316, SiNx	
CE	EN61000-2; -3; -4	
Environmental	RoHS, REACH	

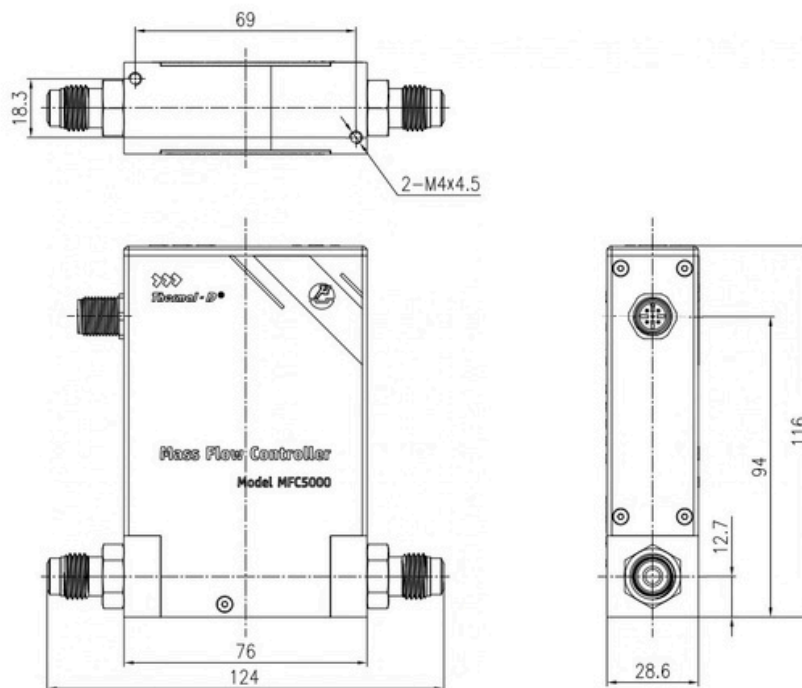
*All specifications listed in the following table, unless otherwise noted, apply for calibration conditions at 0 °C and 101.325 kPa absolute pressure with air. The product is horizontally mounted during calibration.

**For other options, please contact the manufacturer.

- Carrier gas
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Mechanical dimensions



Recommended: Inline Particle filter

If there is any suspicion of particulates or related contamination, it is recommended to install an inline particle filter to prevent product malfunctions caused by particulates in the fluidic stream.

A typical inline particle filter supplied by Swagelok can work well for this purpose. For a detailed installation procedure for this filter, please consult the manufacturer's product instructions.



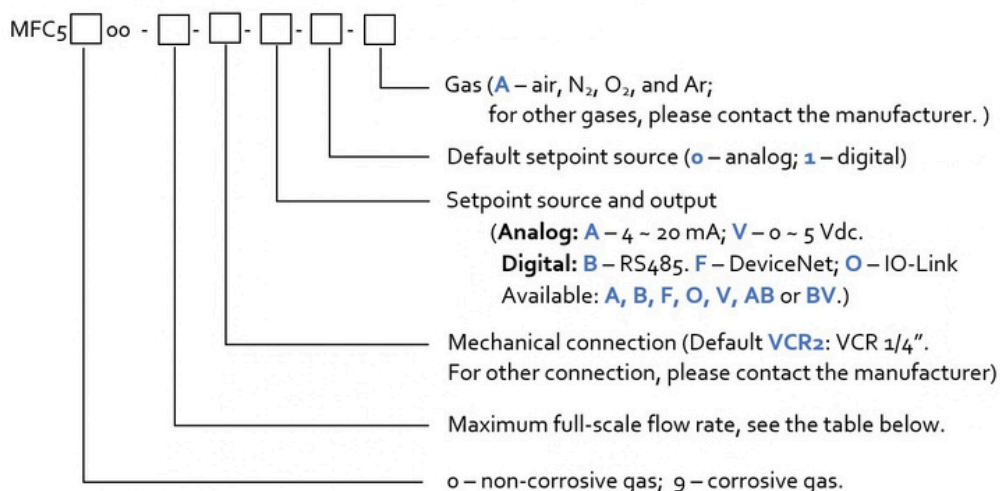
Available bus interfaces:

DeviceNet, EtherCAT, ProfiNet, Profibus
EtherNet ...



Product selection and order

The product part number consists of the product model number and suffixes indicating the full-scale flow rate, as well as other parameters. Refer to the following for details.



MFC5x00 is the model number. The default reference condition is 0°C, 101.325kPa.

The default unit is sccm or SLPM, depending on the order code.

Maximum Full-scale Flowrate and Mechanical Connection.

Maximum full-scale flow rate		Mechanical connection
0005	0...5 sccm	U7 - 7/16-20UNF VCR2 - VCR 1/4" The default connection is VCR2.
0010	0...10 sccm	
0020	0...20 sccm	
0050	0...50 sccm	
0100	0...100 sccm	
0200	0...200 sccm	
0500	0...500 sccm	
1000 / 001	0...1000 sccm / 0...1 SLPM	
2000 / 002	0...2000 sccm / 0...2 SLPM	
5000 / 005	0...5000 sccm / 0...5 SLPM	
010	0...10 SLPM	
020	0...20 SLPM	

* The four-digit number is for sccm, while a three-digit number is for SLPM.

For example, **MFC5000-0100-VCR2-F-1-A** is a model for 0...100 sccm, with a VCR connector and a DeviceNet digital interface, and is applicable for air, nitrogen, oxygen, or argon.

MFC5000-2000-U7-BV-1-A is a model for 0...2000 sccm, featuring a 7/16-20UNF female connector. It outputs analog 0~5 Vdc and digital RS485 Modbus, with the default setpoint source set to digital (RS485 Modbus). It is applicable for air, nitrogen, oxygen, or argon.

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