LEISTER

Mass Flow Meters and Controllers

a::etris
A Division of Leister

Mass Flow Meter and Controllers

Meters

MFM 2020
MFM 2021

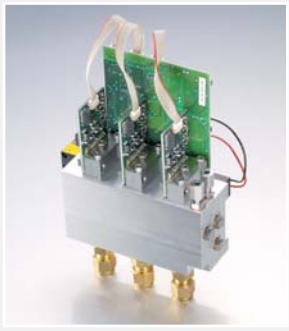
MFM 2100
Series

Controllers

MFC 2022

MFC 2100
Series

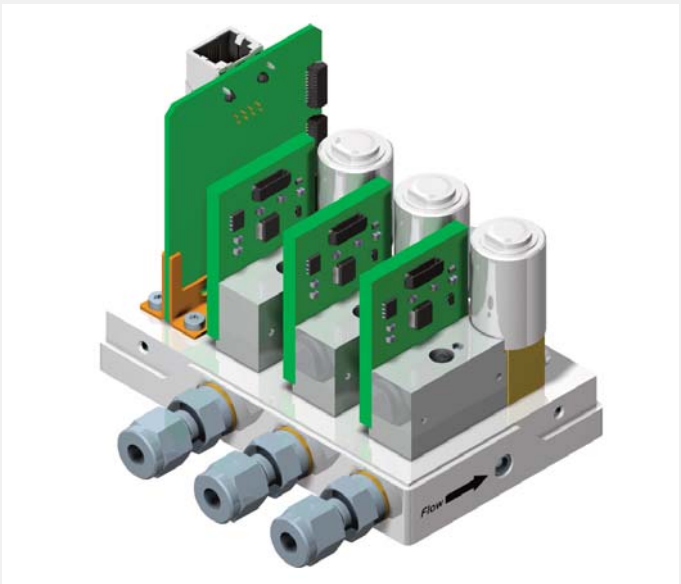
Custom Systems



MFY 20000
Series

MFY 21000
Series

Note: Typical pictures are shown only. For the actual design variant and availability contact Axetris.



Customized gas mixing and blending systems

By integrating several mass flow meter, pressure sensor and controller modules into one common manifold, Axetris can build highly compact, customer specific systems exactly meeting your needs. In contrast to conventional manifolds using standard mass flow controllers an integrated manifold can be build more compact and cost effective.

Standard Product Range

	Type	Output						Input					Functionality				Supply	Main application / Remarks
		Flow			Temp.	PID Control Signal		Set point			Valve override						Voltage	
		0...5 V	4...20 mA	Digital	Digital	Valve driver	0...5 V	0...5 V	4...20 mA	Digital	Analog	Digital	Valve	Compact Module	Stand-Alone	Multi Gas/ Multi Range	DC	
Meter	MFM 2020	•		•	•									•		•	12 V	Compact digital meter module - For system integration - RS232 TTL, 0...5V
	MFM 2120	•		•	•										•	•	24 V	Stand - alone digital meter - RS232, 0...5V
	MFM 2130		•	•	•										•	•	24 V	Stand - alone digital meter - RS232, 4...20mA
	MFM 2140			•	•										•	•	24 V	Stand - alone digital meter - RS485
Meter with PID Output	MFM 2021	•		•	•		•	•		•	•	•		•		•	12 V	Compact digital meter module with additional - PID control output - Set point input - Valve override
Controller	MFC 2022	•		•	•	•	•	•		•	•	•	•	•		•	24 V	Compact digital controller module - For system integration - RS232 TTL, 0...5V
	MFC 2122	•		•	•	•		•		•	•	•	•		•	•	24 V	Stand alone digital controller - RS232, 0...5V
	MFC 2132		•	•	•	•			•	•	•	•	•		•	•	24 V	Stand alone digital controller - RS232, 4...20mA
	MFC 2142			•	•	•				•		•	•		•	•	24 V	Stand alone digital controller - RS485

Modules for system integration

MFM 2020: A compact mass flow meter with a digital interface and 0...5 V analog output. Its small size makes it the ideal choice when space is a limitation. In addition it is the ideal product to build customized multi-channel gas metering units. The MFM 2020 also provides temperature along with meter status, and identity information. The digital interface supports configuration of gas, range and meter output response time.

MFM 2021: The advanced mass flow meter MFM 2021 includes an additional high precision PID controller with analog output, enabling direct, fast and accurate control of gas flows. The additional valve override functionality allows an immediate setting of the valve to the fully open or close position or any value in between.

MFC 2022: A compact mass flow controller created by integrating a fast acting valve and the driver electronics with the MFM 2021. It is the ideal choice to build up highly compact gas control systems.

Products for stand alone applications

MFM 21x0: A stand-alone mass flow meter with a complete housing that provides environmental and electrical protection to the MFM 2020. It is particular suited to replace conventional mass flow or volume flow meters. Just like the MFM 2020, the full scale mass flow and the gas type can be changed via the digital interface. The following digital/analog interfaces are supported.
MFM 2120: RS232/ 0…5 Volt, MFM 2130: RS232/ 4…20 mA, MFM 2140: RS485.

MFC 21x2: A stand alone mass flow controller MFC 21x2 contains an integrated fast acting solenoid valve. Compared to conventional mass flow controllers it offers a smaller size, higher accuracy, a shorter settling time, along with multi-range and multi-gas capability. The following digital/analog interfaces are supported.
MFC 2122: RS232/ 0…5 Volt, MFC 2132: RS 232/ 4…20 mA, MFC 2142: RS485.

The MFM 2100 and MFC 2100 series is available with D-SUB 9 or M12 electrical connector and with down port or side port gas connector.

Specifications

	Specifications		Standard[1]
Gas	Flow range		20, 50, 250, 3000 sccm (N_2 equivalent)
		Number of ranges	single range, multi range
	Gas	Non corrosive Number of gases	e.g. N_2, O_2, Air, CO_2, Ar, He, H_2 single gas, multi gas
Calibration conditions	Standard cubic centimeter per minute	sccm	Reference conditions: t = 0°C, P = 1013 mbar absolute As an option user defined standard conditions (uccm) are available on request
Performance	Accuracy[2]	N_2, 25°C, 1 bar:	† ± 0.2 % F.S. for 0...10% F.S. † ± 1 % O.R. for 10...100% F.S.
		N_2, 0…50°C, 1 bar:	† ± 0.5 % F.S. for 0...10% F.S. † ± 2 % O.R. for 10...100% F.S.
	Pressure coefficient		± 0.2 % O.R. / bar N_2
	Long term stability		± 0.25 % F.S. / year
	Response time	Sensor	4 ms
	Settling time	Controller	150 ms
Operating Conditions	Temperature	Operating	0…50°C
	Humidity	Non condensing	5…95 % R.H.
	Pressure range	Operating Burst Pressure	0…10 bar 30 bar
	Gas compatibility		Non aggressive gases
Electronic interface	Digital interface	Protocol Input Output Connectors	RS232 (TTL level), RS232, RS485 Set point, gas and range selection, valve override Flow, PID control, temperatur D-SUB9, M12
	Analog input	Set Point Valve Override	0…5 V or 4…20 mA Force valve to open/close/normal position
	Analog output	Flow PID	0…5 V or 4…20 mA 0…5 V
Fluid	Interface	Material Connectors	Aluminium or stainless steel Down port / Side port
	Leak tightness	Meter	$1x10^{-9}$ mbar l/s He
Power	Voltage	MFM 202x, MFC 2022, MFM 21x0, MFC 21x2	12 V ± 10 % 24 V ± 10 % 24 V ± 10 %
Size	L x H x B	MFM 2020, MFM 2021	34 x 48.5 x 16.4 mm
		MFC 2022	50.5 x 48.5 x 25 mm
		MFM 21x0, MFC 21x2	59.5 x 96.6 x 28.8 mm, Side port without fittings and electr. connection 79.5 x 84.6 x 28.8 mm, Down port without electrical connection
Weight		MFM 2020, MFM 2021	34 g
		MFC 2022	106 g
		MFM 21x0	274 g
		MFC 21x2	336 g, Side port without fittings, 3000 sccm F.S.

Technical data and specifications contained herein are subject to change without prior notice.
1) For other options and variants contact Axetris
2) Valid for 250 sccm and 3000 sccm full scale flow range. For other version contact Axetris

F.S.: Full Scale, O.R.: Of Reading