



Aera® FC-7800
Series MFCs

Precise, reliable,
metal-sealed design

Benefits

Fast response—< 2 sec flow-settling time between set points

Unsurpassed reliability—zero drift < 0.5% of full-scale flow over one year

Easy integration—standard connectors and dimensions

Superior results—high-quality thin-film characteristics

Features

Corrosion-resistant design

Metal seals

VCR®, VCO®, and Swagelok® compatible connections

Full-scale flow ranges from 10 sccm to 200 slm

Normally-closed or normally-open solenoid control valve

Leak integrity of 1×10^{-10} atm-cc/sec of He

Field-proven in the most demanding processes, Advanced Energy®'s Aera® FC-7800 series delivers precise flow control, as well as the superior resistance and ultra-high leak integrity of metal seals, to suit the majority of gas-controlled applications. Convenience-enhancing features, such as a choice of standard or Aera-exclusive electrical connectors, allow quick-and-easy replacement of existing mass flow controllers (MFCs).

Fast Response

Advances in the FC-7800 series' technical design deliver enhanced operation compared to competing mass flow controllers. These advances include a highly sensitive, rapid-response, small-diameter sensor. Further, the FC-7800 series' normally-open or normally-closed solenoid design supplies a faster response than competitive models. These speed enhancements eliminate over-shoot and under-shoot, and produce an actual-flow settling time of < 2 sec between set points—the fastest time of *any* MFC with a standard solenoid control valve.

Unsurpassed Reliability

High-quality electronic components and a robust, minimal-parts design stand up to the effects of strong RF fields and other operational demands, delivering the best long-term zero-drift stability available—< 0.5% of full-scale flow over one year. With over 30,000 units in the field, < 0.5% are returned within a year of shipment.

Easy Integration

Obtain the performance and reliability advantages of Aera MFCs by replacing other brands—with no installation hassles. Certain models feature standard electrical connectors and critical dimensions to easily fit existing systems.

Superior Results

FC-7800 series MFCs produce thin-film characteristics that are not only extremely uniform, but also highly repeatable.

Specifications

Operational	FC-7800, 7800C, 7800CD, 7800CU	FC-7810, 7810C, 7810CD, 7810CU	FC-7820, 7820C
Full-Scale Range	10 sccm to 5 slm	6 to 20 slm* 20 to 50 slm†	35 to 200 slm
Response Time	< 1 sec to within ±2% of set point	< 2 sec to within ±2% of set point	< 3 sec to within ±2% of set point
Accuracy	≤ ±1% of full scale	≤ ±2% of full scale	
Linearity	≤ ±0.5% of full scale	≤ ±0.5% of full scale* ≤ ±1% of full scale†	≤ ±1% of full scale
Repeatability	≤ ±0.2% of full scale		
Leak Integrity	1x10 ⁻¹⁰ atm-cc/sec (He) max; 1x10 ⁻¹¹ Pa-m ³ /sec (He) max		
Control Range	2 to 100% of full scale		
Differential Pressure	7 to 40 psiD (48 to 275 kPa)	10 to 40 psiD (69 to 275 kPa)* 14 to 40 psiD (96 to 275 kPa)†	21 to 40 psiD (145 to 275 kPa)
Normal Operating Pressure	40 psi (276 kPa)		
Maximum Inlet Pressure	140 psi (981 kPa) max		
Temperature Range	5 to 45°C (41 to 113°F)		

* Low-flow model

† High-flow model

Physical	FC-7800, 7800C, 7800CD, 7800CU	FC-7810, 7810C, 7810CD, 7810CU	FC-7820, 7820C
Control Valve Type	Normally-open or normally-closed solenoid		
Seals	Metal—316L		
Materials	Stainless-steel type 316L, Viton®, Teflon®		
Standard Fittings	1/4" VCR®, VCO®, and Swagelok® compatible		1/4" VCR®, 3/8" VCR®
Attitude Sensitivity	May be mounted in any position		
Weight	1.0 kg (2.2 lb)	1.5 kg (3.3 lb)	2.27 kg (5.0 lb)

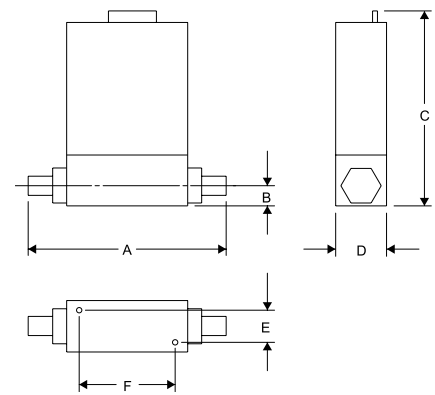
Electrical	FC-7800, 7800C, 7800CD, 7800CU	FC-7810, 7810C, 7810CD, 7810CU	FC-7820, 7820C
Input Power	+15 VDC ±2% at 25 mA -15 VDC ±2% at 180 mA		+15 VDC ±2% at 25 mA -15 VDC ±2% at 200 mA
Power Consumption	3.1 W max		3.5 W max
Command Signal	0 to 5 VDC		
Output Indication	0 to 5 VDC		

Model and Suffix Codes

Category	Description	Suffix Codes							
Product Type	Mass flow controller	FC-	...	...	...	...	...	...	...
RoHS Compliance	Compliant with RoHS directives	...	R	...	...	...	...	...	...
Full-Scale Flow Range	10 sccm to 5 slm	...	...	780	...	...	...	...	...
		...	...	7800	...	...	...	...	...
	6 to 50 slm	...	...	781	...	...	...	...	...
		...	...	7810	...	...	...	...	...
	51 to 200 slm	...	...	782	...	...	...	...	...
...		...	7820	...	...	...	...	...
Control Valve	Normally-closed	...	...	...	C	...	...	...	...
	Normally-open	...	...	...	(Blank)	...	...	...	...
Electronics	Aera® 20-pin Cardedge	...	...	...	...	(Blank)	...	...	...
	Aera® 9-Pin D	...	...	...	...	D	...	...	...
	UNIT 20-pin Cardedge compatible	...	...	...	...	U	...	...	...
Fittings	1/4" VCR® compatible	...	...	...	...	...	4V	...	...
	3/8" VCR® compatible (782x series only)	...	...	...	...	...	6V	...	...
	1/4" VCO® compatible	...	...	...	...	...	4O	...	...
	3/8" VCO® compatible (782x series only)	...	...	...	...	...	6O	...	...
	1/4" Swagelok® compatible	...	...	...	...	...	4S	...	...
	3/8" Swagelok® compatible (782x series only)	...	...	...	...	...	6S	...	...
Gas	Type of gas	...	...	...	...	...	...	N ₂	...
Flow	Flow range of gas (sccm or slm)	...	...	...	...	...	...	...	200
Single-Gas Example		FC-	R	7800	C	D	4V	N₂	200 sccm
(MFC, RoHS compliant, with 9-pin D connector, normally-closed valve, 1/4" VCR® fittings, N ₂ gas, 200 sccm full-scale range)									

Dimensions

	FC-7800, 7800C, 7800CD	FC-7800CU, 7800CD	FC-7810, 7810C	FC-7810CU, 7810CD	FC-7820, 7820C
A	124 mm (4.88")		151 mm (5.94")	124 mm (4.88")	¼" VCR® fittings: 183.8 mm (7.2") ¾" VCR® fittings: 192.3 mm (7.6")
B	12.7 mm (0.50")		19 mm (0.75")	12.7 mm (0.50")	15 mm (0.59")
C	122 mm (4.80")	125 mm (4.92")	128 mm (5.04")	131 mm (5.16")	152 mm (5.98")
D	32 mm (1.26")		38 mm (1.50")		
E	18 mm (0.71")		28 mm (1.10")	18.3 mm (0.72")	25.5 mm (1.00")
F	69 mm (2.72")		46 mm (1.81")	69 mm (2.72")	90 mm (3.54")



For more information on Aera FC-7800 MFCs, visit:
www.advanced-energy.com/en/Aera_FC_7800_Series_MFCs.html

To view AE's comprehensive flow management portfolio, visit:
http://www.advanced-energy.com/en/Flow_Management.html

To view AE's complete product portfolio, visit:
www.advanced-energy.com/en/Products.html

Specifications are subject to change without notice.



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