

Aera

Aera[®] FC-R7700 Series

Mass Flow Controllers

Precise, economical, elastomer-sealed design



Aera

Benefits

- ▶ Fast response— < 2 sec flow-settling time between set points
- ▶ Easy integration—standard connectors and dimensions

Features

- ▶ Elastomer 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^{-6} atm-cc/sec of He



As the field-proven standard for a range of applications, Hitachi Metal's Aera[®] FC-R7700 series delivers precise flow control, while offering the economic benefits of elastomer seals.

For process and equipment engineers working in the semiconductor, flat panel display, data storage, industrial vacuum, and industrial coating markets, this series provides high reliability and superior performance for non-corrosive gas applications, including CVD, PVD, etch, ion implantation, sputtering, thermal oxidation, optical glass coating, optical fiber, surface treatment, and other coating processes.

Low Cost

Custom-made for applications that require top performance but not the corrosion resistance or high leak integrity of metal seals, the FC-R7700 series is both cost-effective and precise.

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.

Fast Response

Advances in the FC-R7700 series' technical design delivery enhanced performance compared to competing mass flow controllers (MFCs). These advances include a highly sensitive, rapid-response, small-diameter sensor. With normally-open and normally closed solenoid designs, the FCR7700 series provides a fast response time. These speed enhancements minimize over-shoot and undershoot, and produce an actual-flow settling time of < 2 sec between set points.

Unsurpassed Reliability

With over 40,000 units delivered in FC77X FCR77X series MFCs, < 0.5% are returned within a year of shipment.

Aera[®] FC-R7700 series

Specifications

Operational	FC-R7700CD/FC-R7700D Series	FC-R7710CD/FC-R7710D Series	FC-R7720CD/FC-R7720D Series
Full-Scale Range	10 sccm to 5 slm	N/O: 6 to 20 slm* N/C: 6 to 50 slm**	35 to 200 slm
Response Time	< 2 sec to within $\pm 2\%$ of full scale		< 3 sec to within $\pm 2\%$ of full scale
Accuracy	$\leq \pm 1\%$ of full scale	$\leq \pm 2\%$ of full scale	
Linearity	$\leq \pm 0.5\%$ of full scale	$\leq \pm 0.5\%$ of full scale ^{※1}	$\leq \pm 1\%$ of full scale
Repeatability	$\leq \pm 0.2\%$ of full scale		
Leak Integrity	1×10^{-6} atm-cc/sec (He) max; 1×10^{-7} Pa·m ³ /sec (He) max		
Control Range	2 to 100% of full scale ^{※2}		
Differential Pressure	7 to 40 psiD	10 to 40 psiD 14 to 40 psiD	21 to 40 psiD ^{※3}
Normal Operating Pressure	70 psig		
Maximum Inlet Pressure	140 psig		
Temperature Range	5 to 45°C (41 to 113°F)		

* N/O: Normally Open Valve Model, ** N/C: Normally Closed Valve Model

※1: Less than $\pm 1\%$ for Full Scale Flow greater than 30SLM

※2: 5~100% for Full Scale Flow greater than 150SLM

※3: 28~43 psiD for Full Scale Flow greater than 150SLM

Physical	FC-R7700CD/FC-R7700D Series	FC-R7710CD/FC-R7710D Series	FC-R7720CD/FC-R7720D Series
Control Valve Type	Normally-open or normally-closed solenoid		
Seals	Fluoroelastomer or Chloroprene Rubber		
Materials	Stainless-steel type 316(L), PTFE, Magnetic Stainless, Fluoro Rubber, Chloroprene Rubber		
Standard Fittings	1/4" VCR [®] , 1/4" VCO [®] , 1/4" Swagelok [®] compatible		1/4" VCR [®] , 3/8" VCR [®]
Attitude Sensitivity	May be mounted in any position		Top Connector Position Recommended
Weight	1.0 kg (2.2 lb)		2.27 kg (5.0 lb)

Electrical	FC-R7700CD/FC-R7700D Series	FC-R7710CD/FC-R7710D Series	FC-R7720CD/FC-R7720D Series
Input Power	+15 VDC $\pm 2\%$ at 25 mA -15 VDC $\pm 2\%$ at 180 mA		+15 VDC $\pm 2\%$ at 25 mA -15 VDC $\pm 2\%$ at 200 mA
Power Consumption	3.1 W max		3.5 W max
Input Command Signal	0 to 5 VDC		
Output Indication	0 to 5 VDC		

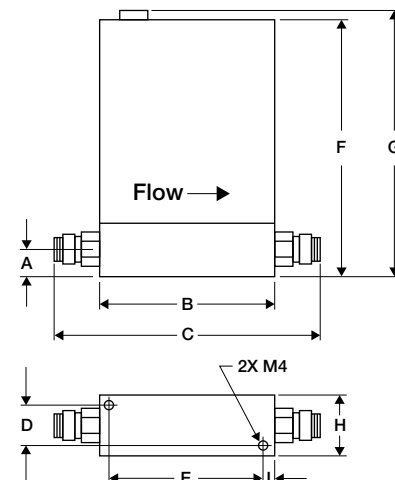
Model and Suffix Codes

Category	Description	Suffix Codes							
Product Type	Mass flow controller	FC-	...	...	...	...	...	...	...
RoHS Compliance	Compliant with RoHS directives	...	R	...	...	...	...	...	...
Full-Scale Range	10 sccm to 5 slm	...	...	7700	...	...	...	...	...
	6 to 50 slm	...	...	7710	...	...	...	...	...
	51 to 200 slm	...	...	7720	...	...	...	...	...
Control Valve	Normally-closed	...	...	...	C	...	...	...	...
	Normally-open	...	...	...	(Blank)	...	...	...	...
Connector	Aera® 9-Pin D	...	...	...	...	D	...	...	...
Fittings	1/4" VCR® compatible	...	...	...	...	...	4V	...	...
	3/8" VCR® compatible (772x series only)	...	...	...	...	...	6V	...	...
	1/4" VCO® compatible (770, 771 series only)	...	...	...	...	...	4O	...	...
	1/4" Swagelok® compatible	...	...	...	...	...	4S	...	...
	3/8" Swagelok® compatible (772x series only)	...	...	...	...	...	6S	...	...
Gas	Type of gas	...	...	...	...	...	...	N ₂	...
Flow	Flow range of gas (sccm or slm)	...	...	...	...	...	...	...	200
Single-Gas Example		FC-	R	7700	C	D	4V	N ₂	200 sccm

(MFC, RoHS compliant, 9-pin D connector, normally-closed valve, 1/4" VCR® fittings, N2 gas, 200 sccm full-scale range)

Dimensions

	FC-R7700CD/ FC-R7700D Series	FC-R7710CD/ FC-R7710D Series	FC-R7720CD/ FC-R7720D Series
A	12.7 mm (0.5")	12.7 mm (0.5")	15.0 mm (0.6")
B	76.0 mm (3.0")	78.5 mm (3.09")	133.5 mm (5.3")
C	124.0 mm (4.9")	124.0 mm (4.9")	1/4" VCR fittings: 183.8 mm (7.2")
			3/8" VCR fittings: 192.3 mm (7.6")
D	18.3 mm (0.72")	18.3 mm (0.72")	25.5 mm (1.0")
E	69.0 mm (2.7")	69.0 mm (2.7")	101.5 mm (4.0")
F	119.0 mm (4.7")	119.0 mm (4.7")	151.0 mm (4.0")
G	125.0 mm (4.92")	125.0 mm (4.92")	152.6 mm (6.0")
H	32.0 mm (1.3")	32.0 mm (1.3")	37.5 mm (1.5")
I	5.0 mm (0.2")	3.5 mm (0.14")	15.0 mm (0.6")



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⚠ Safety Precaution

Before using any of the products introduced in this catalog, please read the respective user manuals thoroughly.

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