

# Aera

## **Aera<sup>®</sup> FC-R7800 Series**

Mass Flow Controller

Simple, analog control, metal -sealed model



# Aera

## Benefits

- ▶ Fast response— $\leq 1$  s flow-settling time
- ▶ Outstanding reliability
- ▶ Easy integration—standard connectors and dimensions
- ▶ Superior results—high-quality thin-film characteristics

## Features

- ▶ Corrosion-resistant design
- ▶ Metal seals
- ▶ VCR<sup>®</sup> compatible connections
- ▶ Full-scale flow ranges from 10 SCCM to 50 SLM
- ▶ Normally-closed or normally-open solenoid control valve
- ▶ Leak integrity of  $1 \times 10^{-10}$  atm-cc/s of He



Proterial Aera<sup>®</sup> FC-R7800 Series delivers simple, analog flow control, as well as the corrosion resistance and high leak integrity of metal seals, to suit the majority of gas-control applications.

This product is compliant with the EU-RoHS Directive.

## Fast Response

Advances in the FC-R7800 Series' technical design deliver enhanced operation. These advances include a highly sensitive, rapid-response, small-diameter sensor. Further, the FC-R7800 Series' normally-open or normally-closed solenoid designs supply flexibility for many applicable needs, and provide a settling time of  $\leq 1$  s.

## Superior Reliability

The usage of fewer electronic devices than are used in digital models, and no DC-DC converter, result in highly-reliable long-term performance.

## Easy Integration

This model features standard electrical connectors and critical dimensions to easily fit existing systems with lower noise and lower power consumption than digital models.

# Aera<sup>®</sup> FC-R7800 Series

## Specifications

Operational	FC-R7800CD/FC-R7800D Series	FC-R7810CD/FC-R7810D Series
Full-Scale Range	10 SCCM to 5 SLM	5 to 50 SLM
Response Time	≤ 1 s to within ±2% of full scale, 0→100%, Typical, SEMI E17-91	
Flow Accuracy with Calibration Gas @22°C±3°C, Zero <±0.1% of full-scale	≤ ±1% of full scale	≤ ±1% of full-scale flow (< ±2% of full-scale flow greater than ≤ 20SLM)
Linearity	≤ ± 0.5% of full scale	≤ ± 0.5% of full scale <sup>※1</sup>
Repeatability	≤ ± 0.2% of full scale	
Leak Integrity	1x10 <sup>-10</sup> atm-cc/s (He) max; 1x10 <sup>-11</sup> Pa·m <sup>3</sup> /s (He) max	
Flow Control Range	2 to 100% of full scale	
Normal operating Pressure	49 to 275kPaD	69 to 275 kPaD <sup>※2</sup>
Maximum Operating Pressure	490kPaG	
Proof Pressure	1MPaG	
Operating Temperature Range	5 to 45°C (41 to 113°F) Gas temperature needs to be the same as atmospheric temperature.	

※1: Less than ±1% for Full Scale Flow greater than 20SLM

※2: Normally open valve model

[20SLM < N<sub>2</sub> density flow ≤ 30SLM] 147 to 275kPaD

[30SLM < N<sub>2</sub> density flow ≤ 50SLM] 196 to 275kPaD

Normally close valve model

[20SLM < N<sub>2</sub> density flow ≤ 50SLM] 147 to 275kPaD

These specifications are valid only in lab conditions used in factory testing, with standard configuration. Pperformance in the field may not be compliant with this document.

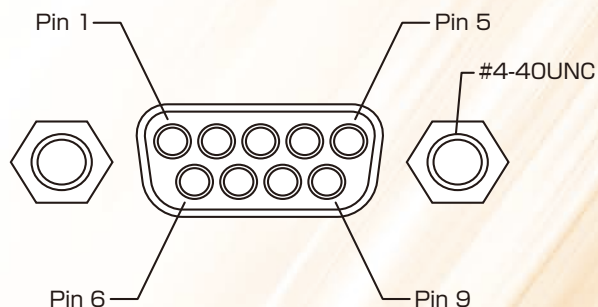
Physical	FC-R7800CD/FC-R7800D Series	FC-R7810CD/FC-R7810D Series
Control Valve Type	Normally-open or normally-closed solenoid	
External seals	Metal—316L	
Materials	Stainless-steel type 316L, 316, PTFE, Magnetic Stainless(Fluoro Rubber, Chloroprene Rubber)*	
Standard Fittings	1/4" VCR <sup>®</sup> compatible	
Orientation	May be mounted in any position	
Mass	1.0 kg (2.2 lb)	

\* Fluoro Rubber or Chloroprene Rubber is when N<sub>2</sub> density flow is 11.096 SLM or greater, and also depending on the gas. Contact factory for information on what material is used.

Electrical	FC-R7800CD/FC-R7800D Series	FC-R7810CD/FC-R7810D Series
Input Power	+15 VDC ±2% , 25 mA -15 VDC ±2% , 180 mA	
Power Consumption	3.1 W max	
Command Signal	0 to 5 VDC Input impedance > 1MΩ	
Output signal	0 to 5 VDC Load impedance > 2kΩ	

## Electrical Connections

9-Pin D-sub, pin contact connector	
1	VALVE OPEN/CLOSE*
2	OUTPUT(DC 0~5V/0-100%)
3	POWER DC +15V
4	COMMON
5	POWER DC -15V
6	CONTROL (DC 0~5V/0-100%)
7	COMMON
8	COMMON
9	VALVE TEST PT.(DC 0~-13V)



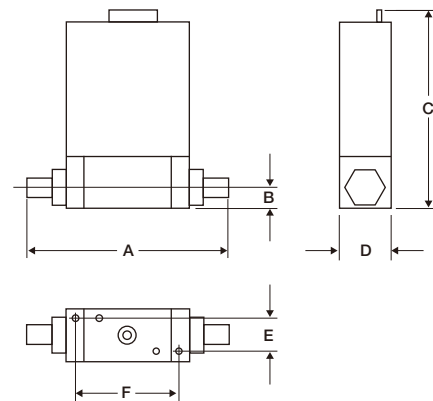
\* Connection to +15V OPEN, Connection to -15V : CLOSE (Normally closed valve model)  
Connection to +15V CLOSE, Connection to -15V : OPEN (Normally open valve model)

## 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	...	...	7800	...	...	...	...	...
	5 to 50 SLM	...	...	7810	...	...	...	...	...
Control Valve	Normally-closed	...	...	...	C	...	...	...	...
	Normally-open	...	...	...	(Blank)	...	...	...	...
Connector	Aera® 9-Pin D	...	...	...	...	D	...	...	...
Fittings	1/4" VCR® compatible	...	...	...	...	...	4V	...	...
Gas	Type of gas	...	...	...	...	...	...	N <sub>2</sub>	...
Flow	Flow range of gas (SCCM or SLM)	...	...	...	...	...	...	...	200
Single-Gas Example		FC-	R	7800	C	D	4V	N <sub>2</sub>	200 SCCM
(MFC, RoHS compliant, with 9-pin D connector, normally-closed valve, 1/4" VCR® fittings, N <sub>2</sub> gas, 200 SCCM full-scale range)									

## Dimensions

	FC-R7800CD/ FC-R7800D Series	FC-R7810CD/ FC-R7810D Series
A	124.0 mm (4.88")	
B	12.7 mm (0.50")	
C	132.0 mm (5.20")	
D	28.6 mm (1.13")	
E	18 mm (0.71")	
F	69.0 mm (2.72")	



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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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