

# FC-7800 SERIES MASS FLOW CONTROLLERS

Metal Seals

Normally-Closed or Normally-Open Solenoid Control Valve



The FC-7800 series MFC's have demonstrated excellent performance in the most demanding applications for a number of years, and these MFC's still surpass the performance of the most advanced models of competitive MFC manufacturers. The FC-7800 series is designed for use in processes where reactive gases may degrade elastomer seals or where superior leak integrity is required. An optional electropolishing and ultracleaning treatment for the base, bypass nut and fittings is available.

## FEATURES

- High-sensitivity, fast response, small diameter sensor
- Leak integrity of  $1 \times 10^{-10}$  atm-cc/second of helium
- A normally-closed or normally-open solenoid control valve
- Excellent performance for those applications where metal seals are preferred

## ADVANTAGES OVER COMPETITIVE MFC's:

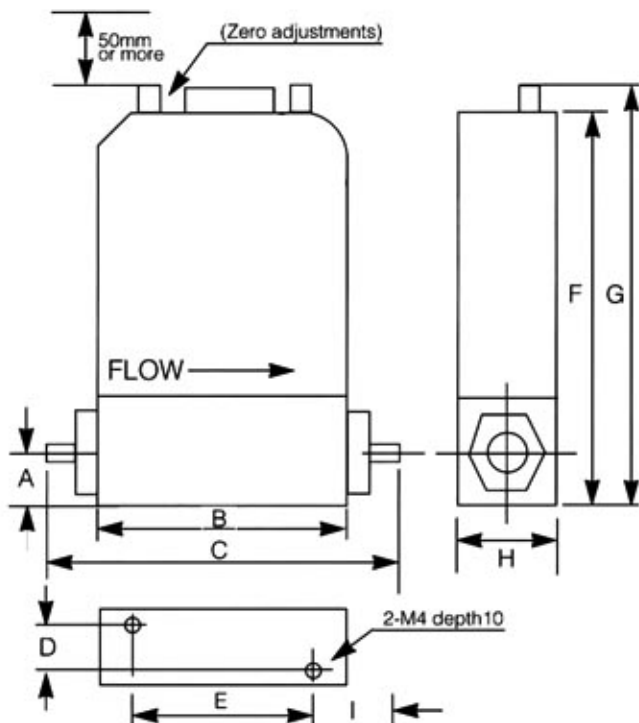
- The fastest actual-flow settling time for an MFC with a solenoid control valve— less than 1 second between setpoints
- The best long-term zero drift stability— less than 0.5% of full-scale flow over a period of one year
- The largest purge-mode flows— up to 100 times the calibrated maximum flow
- The highest reliability— less than 0.5% are returned within one year after shipment
- Highly resistant to effects from strong RF fields
- 3 year warranty



## SPECIFICATIONS

MODEL	FC-7800	FC-7800C	FC-7810	FC-7810C	FC-7820	FC-7820C
FULL-SCALE RANGE	10 sccm - 5 slm		6 slm - 20 slm <sup>(1)</sup> 20 slm - 30 slm <sup>(2)</sup>	6 slm - 20 slm <sup>(1)</sup> 20 slm - 50 slm <sup>(2)</sup>	35 slm - 150 slm	
CONTROL VALVE TYPE	Normally-open solenoid	Normally-closed solenoid	Normally-open solenoid	Normally-closed solenoid	Normally-open solenoid	Normally-closed solenoid
SEALS	Metal					
RESPONSE TIME	Less than 1 second to within $\pm 2\%$ of setpoint		Less than 2 seconds to within $\pm 2\%$ of setpoint		Less than 3 seconds to within $\pm 2\%$ of setpoint	
ACCURACY	Within $\pm 1\%$ of full scale		Within $\pm 1\%$ of full scale <sup>(1)</sup> Within $\pm 2\%$ of full scale <sup>(2)</sup>	Within $\pm 1\%$ of full scale <sup>(1)</sup> Within $\pm 2\%$ of full scale <sup>(2)</sup>	Within $\pm 2\%$ of full scale	
LINEARITY	Within $\pm 0.5\%$ of full scale		Within $\pm 0.5\%$ of full scale <sup>(1)</sup> Within $\pm 1\%$ of full scale <sup>(2)</sup>	Within $\pm 0.5\%$ of full scale <sup>(1)</sup> Within $\pm 1\%$ of full scale <sup>(2)</sup>	Within $\pm 1\%$ of full scale	
REPEATABILITY	Within $\pm 0.2\%$ of full scale					
LEAK INTEGRITY	$1 \times 10^{-10}$ atm-cc/sec (He) max.					
CONTROL RANGE	5 - 100% of full scale					
DIFFERENTIAL PRESSURE	7 - 40 psi		10 - 40 psi <sup>(1)</sup> 21 - 40 psi <sup>(2)</sup>	10 - 40 psi <sup>(1)</sup> 14 - 40 psi <sup>(2)</sup>	21 - 40 psi	
MAX. OPERATING PRESSURE	70 psi					
PROOF PRESSURE	140 psi					
TEMPERATURE RANGE	5 - 45°C					
COMMAND SIGNAL	0 - 5 VDC					
OUTPUT INDICATION	0 - 5 VDC					
INPUT POWER	+15 VDC $\pm 2\%$ @ 25 mA -15 VDC $\pm 2\%$ @ 180 mA			+15 VDC $\pm 2\%$ @ 25 mA -15 VDC $\pm 2\%$ @ 200 mA		
POWER CONSUMPTION	3.1 watts max.			3.5 watts max.		
MATERIALS	Stainless steel type 316L, Teflon™			Stainless steel type 316L, Teflon™, Viton™		
STANDARD FITTINGS	1/4"			1/4" VCR™ 3/8" VCR™		
ATTITUDE SENSITIVITY	May be mounted in any position					
WEIGHT	2.6 lbs.		3.3 lbs		6.2 lbs.	

## DIMENSIONS



	FC-7800 FC-7800C	FC-7810 FC-7810C	FC-7820 FC-7820C
A	12.7	19.0	15.0
B	76.0	87.0	138.7
C	124.0	151.0	183.8
D	18.0	28.0	25.5
E	69.0	46.0	90.0
F	115.0	121.0	148.0
G	122.0	128.0	149.6
H	32.0	38.0	38.0
I	3.5	26.0 inlet end 15.0 outlet end	24.3

All dimensions in mm for 1/4" VCR™

### Electrical Connections Aera Standard 20-pin Card Edge

CASE GND-	1	A	-CONTROL 0-5 VDC
COMMON-	2	B	
OUTPUT 0-5VDC-	3	C	-COMMON
+15VDC-	4	D	-VALVE OPEN/CLOSE
VALVE TEST PT-	5	E	
	6	F	-15 VDC
	8	J	
	9	K	
	10	L	



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Aera warrants all mass flow controllers and mass flow meters to be free from defects in materials and workmanship for a period of 3 years after the date of shipment, when the products are used in accordance with all specifications and are not subjected to physical damage or abuse. The warranty does not cover malfunctions caused by misuse of gases that are corrosive or reactive in the presence of air or moisture.