



Digital Mass Flow Controller AFC 50 D & Meter AFM 55 D

Features

The highest performances of the digital P.C.B. combined with elastomeric seals on the Qualiflow AFC 50 D and AFM 55 D:

- Full potential of digital technology.
- Low pressure drop option for TEOS SDC, TiCl4 etc...
- 100% compatible with analog AFC50 by using the D 15 pin adapter (P/N Q2001733-09 or Q2001733-10)

Accuracy :

During calibration, a polynomial curve (fourth degree) calculated from 6 points gives an accuracy of $\pm 1\%$ of setpoint if setpoint $> 20\%$ of F.S., $\pm 0.2\%$ of F.S. if setpoint $< 20\%$ of F.S.

Less inventory :

Up to 10 calibration curves of different gases can be stored into the memory, easily changeable by user. To keep the benefit of accuracy, the maximum factor between the full scales is 3.

Optimized numerical control :

The control of gas flow is done by a numerical algorithm assuming a control without overshoot at any setpoint and improving the response time. Each calibration curve is stored with its own regulation parameters.

Communication modes :

- Analog mode : the MFC is 100% compatible with analog series, with the advantage to communicate via serial RS232C for maintenance, calibration
- RS485 option : permits to control up to 32 MFC's under MODBUS protocol (RJ12 connector).
- Devicenet or PROFIBUS high speed fieldbus.



Ratings

Flow Range (equivalent N2) : from 10 sccm to 30 slm
 Control Range : between 2 and 100% F.S.
 Valve Type : Electromagnetic
 Valve Rest Position : Normally Open or Closed
 Accuracy : $\pm 1\%$ of setpoint. if setpoint is higher than 20% of F.S.
 $\pm 0.2\%$ of F.S. if setpoint is lower than 20% of F.S.
 Linearity : $\pm 0.2\%$ of F.S.
 Repeatability : $\pm 0.15\%$ of F.S.
 Sensibility to Mounting Position : $\pm 0.1\%$ of F.S.
 Step Response Time : ≤ 2 sec. (SEMI E17-91)
 Temperature Range : between 5 and 50°C
 Up to 80°C with separated electronic option
 Temperature Coefficient : $< 0.05\%$ F.S. /°C
 Maximum Inlet Pressure : 10 bar
 Minimum Differential Pressure : 0.5 bar
 30 mbar minimum with low DP option
 Maximum Differential Pressure : 3 bar
 Pressure Coefficient : $< 0.1\%$ F.S./bar
 Wetted Materials : 316 L Stainless steel, Kel-F, seals material
 Surface finish : 0,4 μ (16 μ inch) Ra max
 Leak Integrity : $< 2 \cdot 10^{-8}$ sec/sec (He)
 Standard Seals : Viton, Neoprene
 Fittings : 1/4" VCR, Swagelok, other on request

Power Input Requirement :

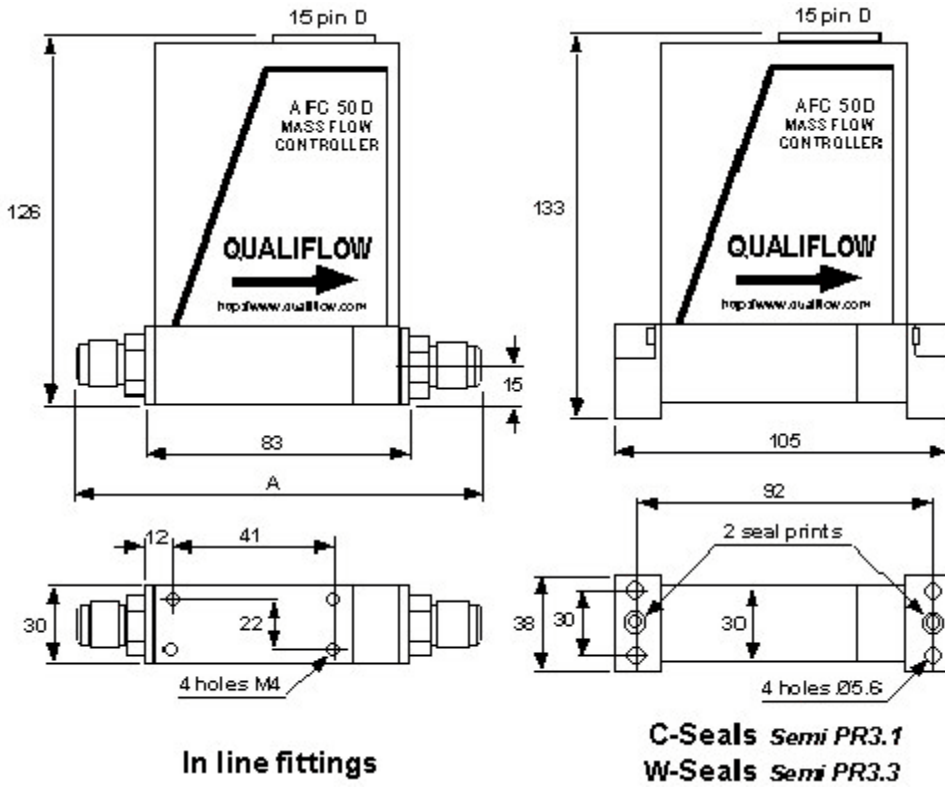
Mass Flow Controller : ± 15 VDC, 150 mA
 Mass Flow Meter : ± 15 VDC, 25 mA
 Analog Set Point Signal : from 0 to 5 VDC
 Analog Flow Output Signal : from 0 to 5 VDC
 Digital control : RS232C, active full time
 Electrical Connector : Sub-D 15 pins Male

Options :

- Separated electronics
- External Readout
- Low differential pressure
- Devicenet fieldbus connection
- RS485/Modbus with 2 RJ11 connections
- Kalrez seals

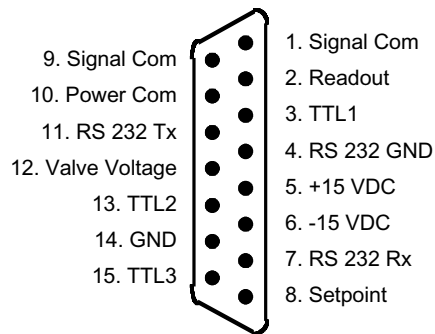


Table of Dimension (mm)



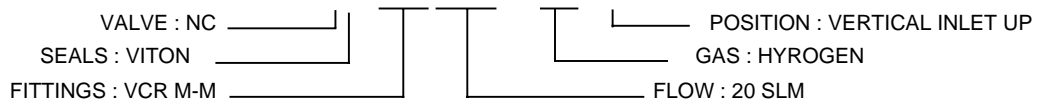
	VCR 1/4" MM	SWAGELOK 1/4"	MODULINE pitch
A (mm)	124	126.6 (incl. Nuts)	141.6

Connections



Example of ordering information

500 C V MM 020L 007 U - D



Gas Process Number

Symbol	Gas Name	Number	Density SEMI E52-0298	Sp. Heat [g / l]	C [cal/g/°C]
	Air	8	1.2929	0.2401	1.000
NH3	Ammonia	29	0.7710	0.519	0.68
Ar	Argon	4	1.7842	0.1246	1.453
AsH3	Arsine	35	3.481	0.1178	0.666
BCl3	Boron Trichloride	70	5.26	0.130	0.40
CO	Carbon Monoxide	9	1.2500	0.495	1.000
CCl4	Carbon Tetrafluoride	101	6.86	0.141	0.309
Cl2	Chlorine	19	3.209	0.116	0.83
B2H6	Dibirane	58	1.24	0.495	0.44
SiH2Cl2	Dichlorosilane	67	4.54	0.141	0.43
CHF3	Fluoroform	49	3.125	0.173	0.506
CCl2F2	Freon-12	84	5.5	0.149	0.34
CF4	Freon-14	63	3.96	0.167	0.41
GeH4	Germane	43	3.423	0.138	0.58
He	Helium	1	0.1788	1.242	1.454
H2	Hydrogen	7	0.0899	3.400	1.016
HCl	Hydrogen Chloride	11	1.635	0.1937	0.981
C2F6	Hexafluoroethane	118	6.16	0.185	0.24
Kr	Krypton	5	3.73	0.0596	1.45
CH4	Methane	28	0.7166	0.528	0.722
CH3SiCl3	Methyltrichlorosilane	183	6.670	0.164	0.250
N2	Nitrogen	13	1.2503	0.2484	1.000
NO2	Nitrogen Dioxide	26	6.675	0.194	0.41
NF3	Nitrogen Trifluoride	53	3.173	0.178	0.434
N2O	Nitrous Oxide	27	1.98	0.206	0.206
O2	Oxygen	15	1.429	0.2183	0.996
O3	Ozone	30			
PH3	Phosphine	31	1.523	0.2607	0.688
C3H8	Propane	89	1.98	0.392	0.35
SiH4	Silane	39	1.438	0.3188	0.596
SiF4	Silicon Tetrafluoride	88	4.68	0.168	0.35
Si2H6	Disilane	97			
SO2	Sulphur Dioxide	32	2.91	0.149	0.67
SF6	Sulphur Hexafluoride	110	6.5	0.1590	0.27
TiCl4	Titanium Tetrachloride	114	8.465	0.22	0.30
C4F8	Octafluorocyclohexane	129			
SiHCl3	Trichlorosilane	147	6.047	0.130	0.348



Mass Flow Controller & Meter Part Number Description

IMPORTANT : Please refer to the product datasheet for available specification and option

[t, t, t] [v] [s] [f, f] [r, r, r, r] [g, g, g] [m] - [o, o]

[t]- Type

- [100] for AFM 10
- [260] for AFC 260 or AFM 360
- [261] for AFC 261 or AFM 361
- [202] for AFC 202 or AFM 302
- [500] for AFC 50 or AFM 55
- [800] for AFC 80 or AFM 85
- [810] for INFLUX
- [900] for AFC 90 or AFM 95
- [300] for HELOTIS
- [310] for AFC310

[v]- Valve Configuration

- [N] for No valve (only for AFM)
- [O] for Advanced Flow Controller Normally Open
- [C] for Advanced Flow Controller Normally Close

[s]- Seals

- [V] for Viton
- [N] for Neoprene
- [K] for Kalrez
- [M] for Metal

[f, f] Inlet and Outlet Fittings

- [SB] for B-SEAL
 - [SW] for W-SEAL
 - [SC] for C-SEAL
 - [BW] for Butt Weld
- Or specify first Inlet, then Outlet.
- [F] for 1/4" VCR Female
 - [M] for 1/4" VCR Male
 - [L] for 1/4" VCR High Flow Male
 - [N] for 1/4" VCR High Flow Female
 - [D] for 3/8" VCR Female
 - [E] for 3/8" VCR Male
 - [B] for Swagelok 1/8"
 - [C] for Swagelok 1/4"
 - [G] for Swagelok 6mm
 - [H] for Swagelok 3/8"
 - [K] for 1/8" BSPP (AFM 10 only)

[r, r, r, r]- Flow rate

Specify C for sccm, L for slm.
Example :
- 200C for 200 sccm
- 030L for 30 slm

[g, g, g]- Gas Process

See chart on the left page

[m]- Mounting Position

- [H] for Horizontal

	AFC260 AFM360	AFC261 AFM361	AFC202 AFM302	AFC50 AFM55	AFC80/90 AFM85/95	Helotis/AFC310	INFLUX	AFM10
[D] for Digital Card			X	X	Standard	Standard	Standard	
If Digital [N] for DeviceNet			X	X	X	X		
[R] for RS485 / MODBUS			X	X	X	X		
[x] for nb of calibr. curves			AFC	AFC	AFC	AFC		
[E] for External Readout	AFC	AFC	AFC	AFC	AFC	AFC		
[L] for Low Delta Pressure				X	X	X		
[S] for Separated Electronics	*	*	*	X	*	*		
[H] for High Temperature (>35°C)	X	X	X	X	X	X	X	
[61] for AFC size compatible AFC 261				X	X			
[P] for Special Pitch	X	X	X	X	X	X		
[C] for Signal 4 to 20 mA								X
[M] for Power Supply +24 VDC								X

" * on request "

