



# Digital Mass Flow Controller/Meter AFC 202D/AFM 302D

## AFC & AFM Series

### Features

For high flow from 30 slm up to 250 slm, the highest performances of digital P.C.B. combined with elastomeric seals on the **Qualiflow Therm AFC 202D** and **AFM 302D** :

- Full potential of digital technology.
- 100% compatible with analog AFC202 using Sub-D 15 pin adapter (P/N Q2001733-09 or Q2001733-10).
- Special pressure compensated stainless steel valve for ultra fast flow control.

### Accuracy

During calibration, a polynomial curve (fourth degree) calculated from 6 points gives an accuracy of :

± 1% of setpoint.....if setpoint > 30% of F.S.  
± 0.3% of F.S.....if setpoint < 30% 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. A factor of 5 maintains an accuracy less than ± 1%, compatible with analog MFCs.

### 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** : allows to control up to 32 MFCs under MODBUS protocol (RJ11 connector).
- PROFIBUS** high speed fieldbus.

### Calibration

MFCs are calibrated with Nitrogen

Reference Standards..... Temperature □ 273.15K  
..... Pressure □ 101325 Pa

### Options

- External sensor input
- DeviceNet or Profibus fieldbus connection
- RS485 / Modbus with 2 RJ11 connections



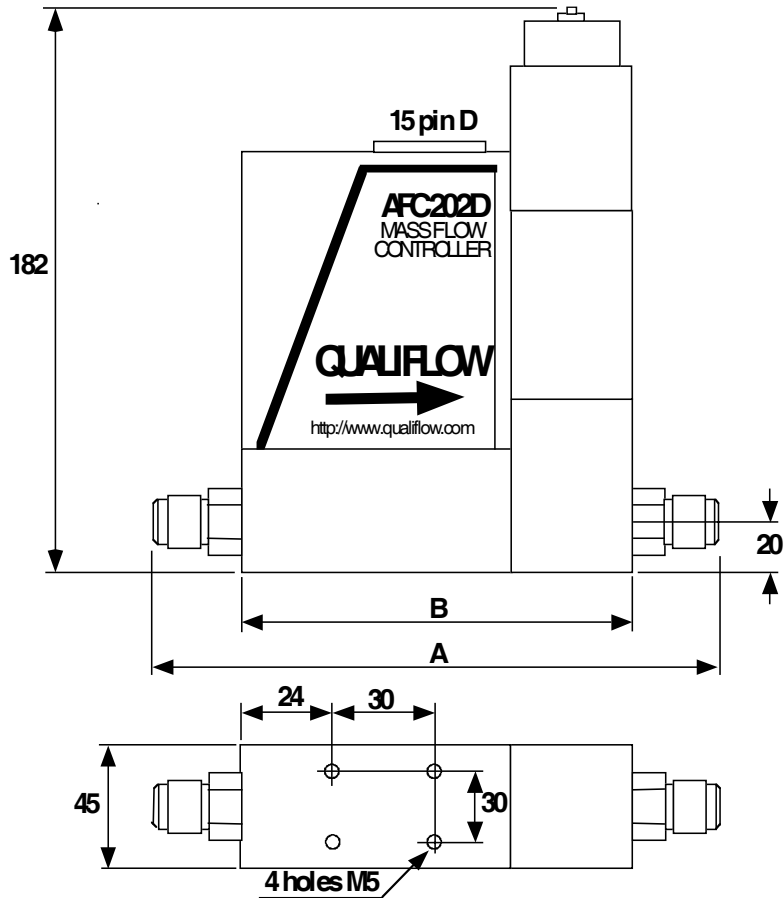
### Specifications

Flow Range (equivalent N <sub>2</sub> ).....	30 slm to 250 slm
.....	up to 400 slm with H <sub>2</sub>
Control Range.....	2 and 100% F.S.
Valve Type.....	Electromagnetic
Valve Rest Position.....	Normally Open or Closed
Linearity.....	± 0.2% of setpoint (per calibration gas)
Repeatability.....	± 0.15% of F.S.
Sensitivity to Mounting Position.....	± 0.1% of F.S.
Step Response Time.....	□ 2.5 sec. typical (SEMI E17-91)
Temperature Range.....	5 – 50°C, non-condensing
Temperature Coefficient.....	< 0.5% F.S./°C
Maximum Inlet Pressure.....	1 MPa (10 bar, 150 psi)
Minimum Differential Pressure.....	150 kPa for 30 slm F.S.
.....	200 kPa for 50 slm F.S.
.....	250 kPa for 100 slm F.S.
.....	300 kPa for 200 slm F.S.
.....	450 kPa for 400 slm F.S.
Pressure Coefficient.....	< 0.1% F.S./10 <sup>5</sup> Pa
Wetted Materials.....	316 L Stainless steel
.....	Kel-F
.....	Seals material
Surface Finish.....	0.4 μm (16 μinch) R <sub>a</sub> max
Leak Integrity.....	< 2.10 <sup>-9</sup> atm.scc/sec (He)
Standard Seals.....	Viton
.....	Neoprene
Fittings.....	3/8" M VCR, Swagelok, other on request
Weight.....	3.7Kg

### Input and Output

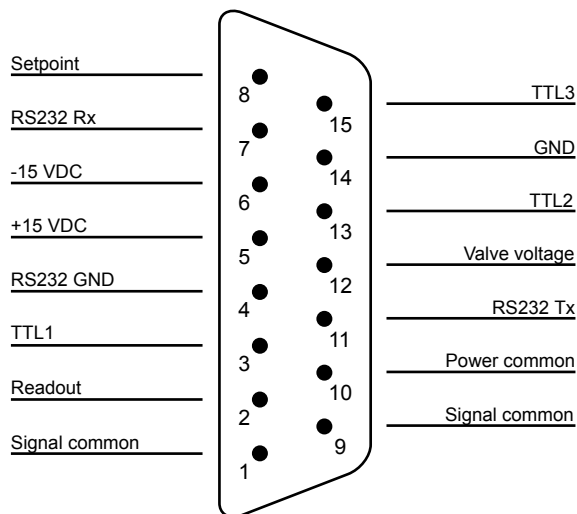
Mass Flow Controller.....	± 15 VDC, 1 A
Mass Flow Meter.....	± 15 VDC, 50 mA
Input and Output Signal.....	from 0 to 5 VDC
Digital Control.....	RS232C, Active full time
Electrical Connector.....	Sub-D 15 pins Male

# Dimensions



	AFC 202		AFM 302	
	VCR 3/8 MM	Swagelok 3/8	VCR 3/8	Swagelok
A (mm)	181,4	183,3 (incl. nuts)	141.9	143.8 (incl. nuts)
B (mm)	123	123	83.5	83.5

# Pinout configuration



Connector 15-pin, type "D", male

**qualiflow therm**