



## Digital Mass Flow Controller / Meter

# AFC 50D / AFM 55D

### AFC & AFM Series



#### Features

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

- Full potential of digital technology.
- Low pressure drop option for TEOS SDC, TiCl<sub>4</sub>, 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 :

- ± 1% of setpoint.....if setpoint > 20% of F.S.
- ± 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. 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).

*DeviceNet* or *PROFIBUS* high speed fieldbus.

#### Calibration

MFCs are calibrated with Nitrogen

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

#### Options

- External sensor input
- Low differential pressure
- DeviceNet fieldbus connection
- RS485 / Modbus with 2 RJ11 connections

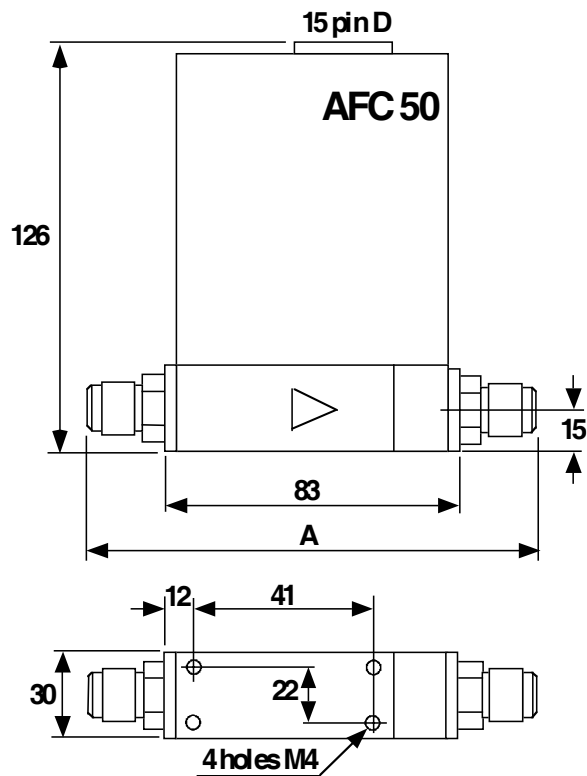
#### Specifications

Flow Range (equivalent N <sub>2</sub> ).....	10 sccm to 25 slm
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 sec. typical (SEMI E17-91)
Temperature Range.....	5 – 50°C, non-condensing
Temperature Coefficient.....	< 0.5% F.S./°C
Maximum Inlet Pressure.....	1 MPa (10bar, 150psi)
Minimum Differential Pressure.....	50 kPa (0.5bar, 7psi)
.....	3 kPa (30mbar, 0.45psi) mini with low DP option
Maximum Differential Pressure.....	300 kPa (3bar, 43psi)
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
.....	Kalrez
Fittings.....	¼" VCR, Swagelok, other on request
Weight.....	0.6Kg

#### Input and Output

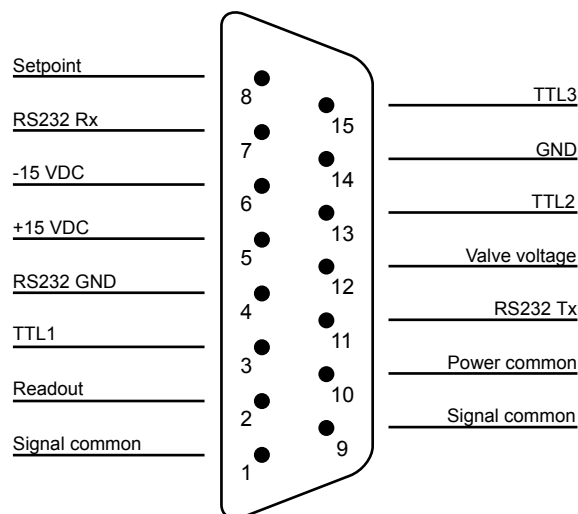
Mass Flow Controller.....	± 15 VDC, 200 mA
Mass Flow Meter.....	± 15 VDC, 50 mA
Input and Output Signal.....	from 0 to 5 VDC
Digital Control.....	RS232C, Active full time
Electrical Connector.....	Sub-D 15 pins Male

# Dimensions



	VCR 1/4" MM	SWAGELOK 1/4"	MODULINE VCR 1/4" FM
A (mm)	124	126,6 (inc Nuts)	141,6

# Pinout configuration



Connector 15-pin, type "D", male