Mass Flow Meter (MFM) for Gases

- Direct flow measurement with CMOS-ens® technology for nominal flow rates from 20 mlN/min to 80 lN/min
- High accuracy and quick response time
- Optional fieldbus

The digital mass flow meter, Type 8702, uses a sensor on silicon chip basis located directly in the bypass channel. Due to the fact that the sensor is directly in the bypass channel a very fast response time of the MFM is reached. The actual flow is given as an analog output signal or could be read out over fieldbus communication.

Typical application areas are gas flow measurement in

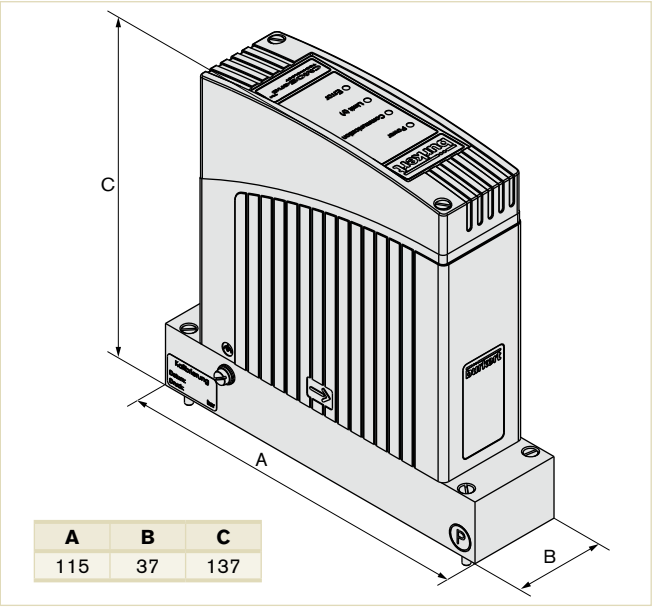
- Test benches
- Packaging and foodstuff industry
- Environmental technology
- Pharmaceutical and Biotechnology

In particular, Type 8702 fulfils the requirements of IP65 protection.

Technical Data

Nominal flow range [1] **(Q_{nom})**	0.01 to 80 l_N/min[2] (ref. to N_2)
Turn-down ratio	1:50, wider span on request
Operating gas	Neutral, non-contaminated gases, others available on request
Calibration gas	Operating gas or air with correcting function
Max. operating pressure (Inlet pressure)	Up to max. 10 bar (145 psi), depending on the orifice of the valve
Gas temperature	-10 to +70°C (-10 to +60°C with oxygen)
Ambient temperature	-10 to +50°C (others on request)
Accuracy (after 1 min warm up time)	±0.8% o.R. ±0.3% F.S. (o.R.: of reading; F.S.: of full scale)
Repeatability	±0.1% F.S.
Settling time ($t_{95\%}$)	<300 ms
Materials	
Body	Stainless steel
Housing	PC (Polycarbonate)
Seals	FKM, EPDM (others on request)
Port connection	G 1/4" (others on request)
Electr. connection	Socket M16, round, 8-pin and socket D-Sub HD15, 15-pin
Additionally with fieldbus:	With PROFIBUS-DP: Socket M12 5-pin (for IP65) or D-Sub 9-pin With DeviceNet/CANopen: Plug M12 5-pin (for IP65) or D-Sub 9-pin
Operating voltage	24V DC
Voltage tolerance	±10%
Residual ripple	<2%
Power consumption	max. 2.5 W (analog communicator) to 5 W (digital communicator)
Output signal (signal output)	0–5 V, 0–10 V, 0–20 mA or 4–20 mA
Max. current, volt. output	10 mA
Max. load, current output	600 Ω

Dimensions [mm] (see datasheet for more details)

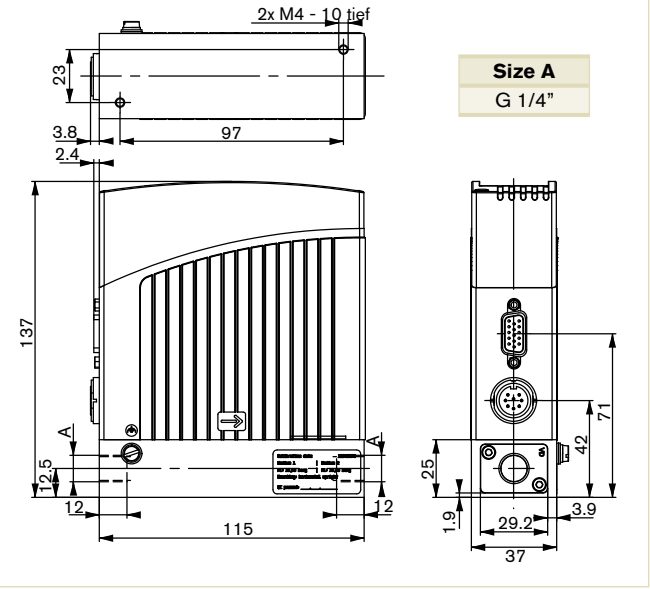


A	B	C
115	37	137

Digital communication via adapter possible:	RS232, Modbus RTU (via RS interface) RS485, RS422 or USB (see accessories table)
Fieldbus option	Profibus-DP, DeviceNet, CANopen (D-Sub HD15 covered with sealed plate with fieldbus MFC)
Type of protection (with connected cables)	IP65
Total weight	1000 g
Mounting position	Horizontal or vertical
Light emitting diodes (Default, other functions programmable)	Indication for Power, Communication, Limit, Error
Binary inputs (Default, other functions programmable)	Three various functions programmable
Binary outputs (Default, other functions programmable)	Two relay outputs 1. Limit (Qnom almost reached) 2. Error (i.e. sensor fault) Load capacity: max. 60 V, 1 A, 60 VA

[1] The nominal flow value is the max. flow value calibrated which can be controlled. The nominal flow range defines the range of nominal flow rate possible.
[2] Index N: Flow rates referred to 1.013 bar(a) and 0 °C, alternatively also Index S: Flow rates referred to 1.013 bar(a) and +20 °C.

Dimensions [mm] (see datasheet for more details)



Ordering chart

Operating gas	Flow rate - Full scale	Base block Stainless steel	Seal material	Operating pressure [bar(g)]	Signal actual value output	Item no.
Type 8702						
Air	10 lN/min	yes	FKM	6	4 - 20 mA	214 514
Air	25 lN/min	yes	FKM	6	4 - 20 mA	168 115
Air	50 lN/min	yes	FKM	6	4 - 20 mA	202 678

Accessories

Article	Item No.	
Connectors/Cables		
Round plug M16 8-pin (solder connection)		918 299
Round plug M16 8-pin with 5 m cable		787 733
Round plug M16 8-pin with 10 m cable		787 734
Plug D-Sub HD15 15-pin with 5 m cable		787 735
Plug D-Sub HD15 15-pin with 10 m cable		787 736
Adapters [1]		
RS232 adapter for connection to a computer, connection with an extension cable (item no. 917 039)		654 757
Extension cable for RS232 9-pin socket/plug 2 m		917 039
RS422-Adapter (RS485 compatible)		666 370
USB-Adapter (Version 1.1, USB socket type B)		670 696
USB cable 2 m, connection type A to connection type B		772 299
Adapter for manual setting of bus address		667 525
Software MassFlowCommunicator		Download at www.buerkert.com
Accessories for Fieldbus	**PROFIBUS DP (B-codiert)**	**DeviceNet/CANopen (A-codiert)**
M12-Plug [2]	918 198	917 115
M12-socket (coupling) [2]	918 447	917 116
Y-junction [2]	902 098	788 643
T-junction	918 531	(on request)
Shut-off resistor	902 553	(on request)
GSD-Datei (PROFIBUS), EDS-Datei (DeviceNet, CANopen)	Download at www.buerkert.com	

[1] The adapters serve mainly for initial operation or diagnosis. Those are not obligatory for continuous operation.

[2] The two M12 connectors as listed above cannot be used together on the same side of the Y-junction. At least one of the two M12 connection needs to be a prefabricated cable which uses typiclly a thinner connector..

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