

LFM Liquid Flow Meter



- High dynamic flow measurement
- Applicable for liquid flow measurement up to 600 ml/min (36 l/h)
- No moving parts in medium
- Fieldbus optional
- Compact version

Type 8708 can be combined with...



Type 1150

Multi-channel
program controller



Type 6606

2/2-way
Solenoid Valve



Type 6011

2/2-way
Solenoid Valve

Type 8708 is an instrument for liquid flow control in process technology.

The actual value supplied by the sensor is transmitted through the digital electronics and over a standard signal output or a field bus interface.

In the device two calibration curves can be stored, which the user is able to switch between. The device offers a particularly compact solution. MassFlow-Communicator software can be used for parameterisation and diagnosis.

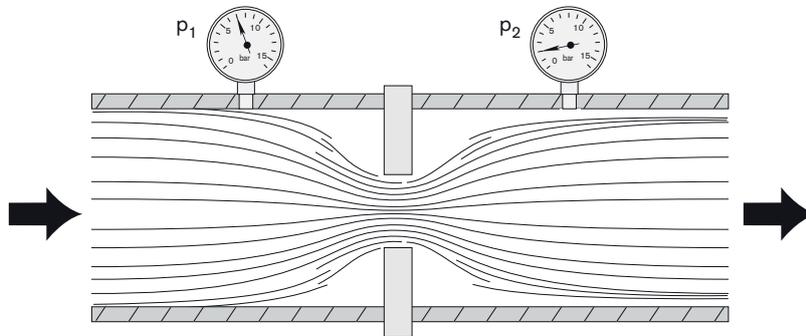
Typical application areas of liquid measurement are:

- Heat treatment,
- Machine tools,
- Fuel cell technology,
- Packaging technology,
- Material coating,
- Bio reactors.

Technical data			
Full scale range (Q_{nom})	0.9 to 36 l/h (15 to 600 ml/min) re. water	Power consumption	Max. 2.5 W (5 W with fieldbus version)
Operating medium	Clean and low viscous liquids	Output signal (actual value)	0-5 V, 0-10 V, 0-20 mA or 4-20 mA
Viscosity	0.4 to 4 cSt	Max. current (voltage output)	10 mA
Max. operating pressure (at inlet)	Up to max. 10 barg; typical max. 2 barg	Max. burden (current output)	600 Ω
Calibration medium	Water (conversion to operating medium with correcting function)	Alternative output signal	Digital with fieldbus: ▪ PROFIBUS DP V1 ▪ DeviceNet ▪ CANopen
Medium temperature	10 to + 40 °C	Type of protection	IP40
Ambient temperature	0 to + 55 °C	Dimensions [mm] (without compression fittings)	Standard version: 107 x 115.5 x 28 (BxHxT) Sub-base version: 107 x 115.5 x 43 (BxHxT)
Accuracy	± 1.5 % o.R. ± 0.5 % F.S.	Total weight	Approx. 900 g
Repeatability	± 0.5 % F.S.	Installation	Horizontal or vertical
Turn-down ratio	1:10	Light emitting diodes (Default functions, other functions programmable)	Indication for: 1. Power 2. Communication (only in fieldbus version) Limit (only in analogue version) 3. Error
Response time ($t_{95\%}$)	< 500 ms	Binary inputs (Default functions, other functions programmable)	Two: 1. not assigned 2. not assigned
Body material	Stainless steel	Binary output (Default functions, other functions programmable)	One relay output for: Limit (Q_{nom} almost reached) Capacity: max. 25 V, 1 A, 25 VA
Housing	PC (Polycarbonate)		
Sealing material	FKM, EPDM, FFKM		
Port connection	G 1/8, NPT 1/8, G 1/4, NPT 1/4, sub-base		
Electrical Connection	Sub-D 15-pin plug M12 (PROFIBUS) 5-pin socket M12 (DeviceNet, CANopen) 5-pin plug		
Operating voltage	24 V DC ± 10 %		
Residual ripple	< 2 %		

Measurement principle

The sensor measures the flow by means of differential pressure. An orifice in the main channel causes pressure loss at liquid flow which is measured by the differential pressure sensor. The sensor feedbacks a precise and temperature compensated signal out of which the electronics calculates the corresponding flow.



To avoid a blockage of the aperture by contaminated mediums an upstream filter is recommended.

Notes regarding the selection of the unit

The decisive factors for the perfect functioning of an LFM within the application are the fluid compatibility, the pressure range and the correct choice of the flow meter range. The pressure loss over the LFM averages in typical applications approx. 500 mbar, with up to 2 barg inlet pressure.

The specification of the inlet pressure, p_{1max} , which can be expected is necessary for the selection of the suitable differential pressure sensor.

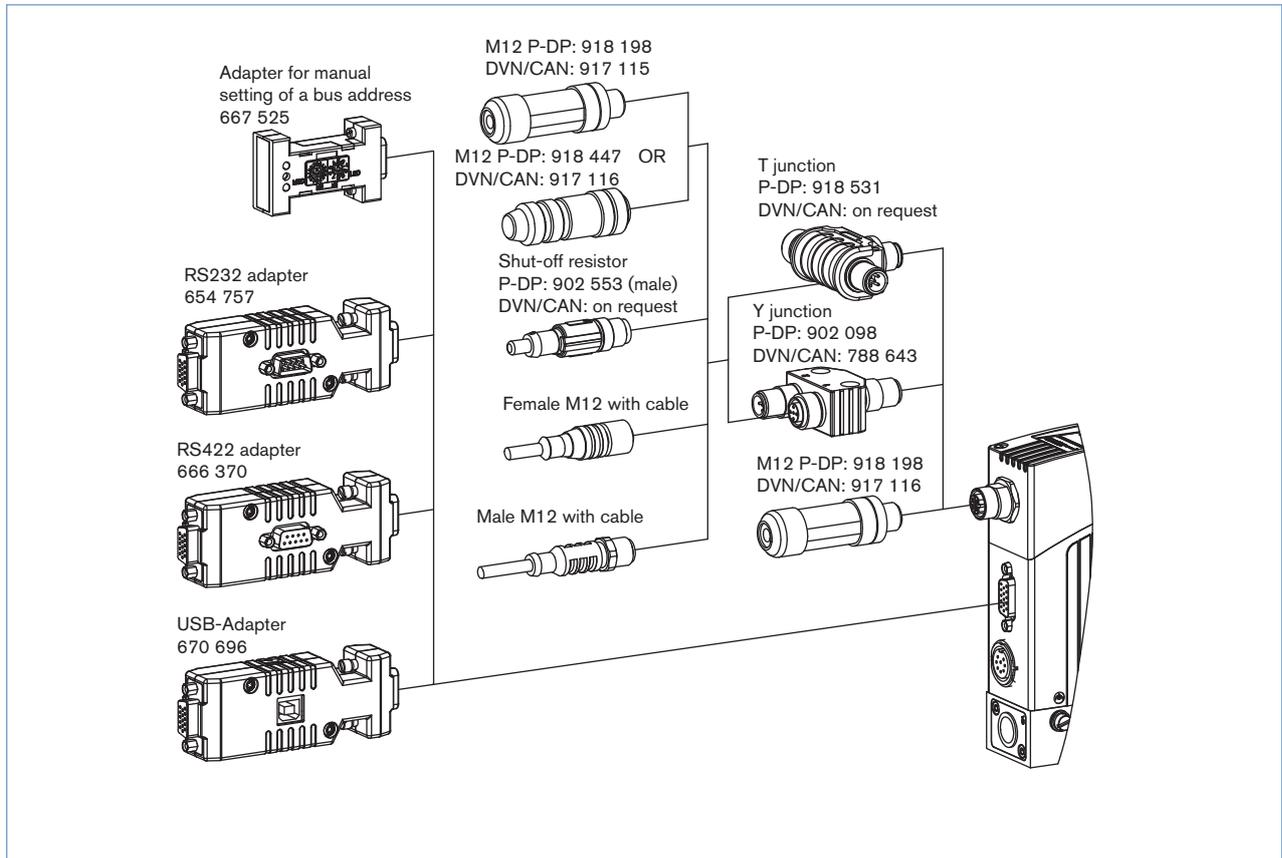
- ▶ The request form on page 6 contains the relevant fluid specification. Please use the experience of Bürkert engineers already in the design phase and provide us with a copy of your request containing the necessary data together with your inquiry or order.

Ordering Chart for Accessories

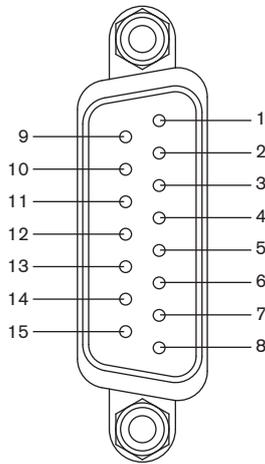
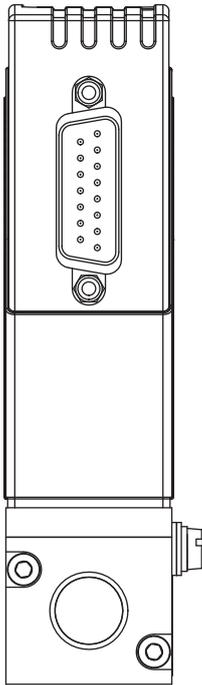
Article	Item No.	
Connectors/Cables		
Round plug M16 8-pin (solder connection)	918 299	
Round plug M16 8-pin with 5m cable	787 733	
Round plug M16 8-pin with 10m cable	787 734	
Plug D-Sub HD15 15-pin with 5m cable	787 735	
Plug D-Sub HD15 15-pin with 10m cable	787 736	
Adapters ³⁾		
RS232 adapter for connection to a computer, connection with an extension cable (item no. 917 039)	654 757	
USB-Adapter (Version 1.1, USB socket type B)	670 696	
USB connection cable 2 m	772 299	
Adapter for manual setting of bus address	667 525	
Software MassFlowCommunicator	Download unter www.buerkert.com	
Accessories for Fieldbus	PROFIBUS DP (B-codiert)	DeviceNet/ CANopen (A-codiert)
M12-Plug ⁴⁾	918 198	917 115
M12-socket (coupling) ⁴⁾	918 447	917 116
Y-junction ⁴⁾	902 098	788 643
T-junction	918 531	(auf Anfrage)
Shut-off resistor	902 553	(auf Anfrage)
GSD-Datei (PROFIBUS), EDS-Datei (DeviceNet, CANopen)	Download unter www.buerkert.com	

³⁾ The adapters serve mainly for initial operation or diagnosis. Those are not obligatory for continuous operation.

⁴⁾ 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 typically a thinner connector.



Pin Assignment



Plug D-Sub, 15-pin

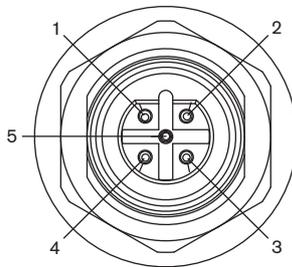
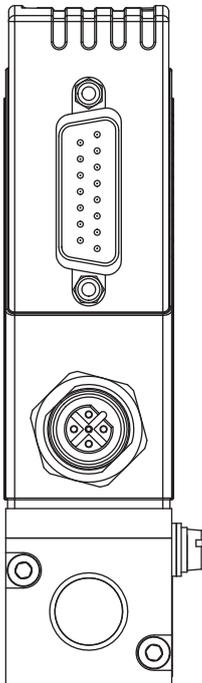
Pin	Assignment	
	Analogue Control	Bus control
1	Relay – normally closed contact	
2	Relay – normally open contact	
3	Relay – reference	
4	GND for 24V Supply and binary inputs	
5	24V supply +	
6	12V output (only for factory use)	
7	N.C.	N.C. ⁵⁾
8	N.C.	N.C.
9	Actual value output GND	N.C.
10	Actual value output +	N.C.
11	DGND (for RS232) ⁶⁾	
12	Binary input 1	
13	Binary input 2	
14	RS232 RxD (without driver) ⁶⁾	
15	RS232 TxD (without driver) ⁶⁾	

⁵⁾ N.C.: not connected (not used)

Note:

– Optional Pin 7 and 8 with bus version as transmitter input possible
 – The cable length for RS232/ Setpoint and actual value signal is limited to 30 meters.

⁶⁾ Driving RS232 interface only by RS232 adapter including an adaption of TTL levels

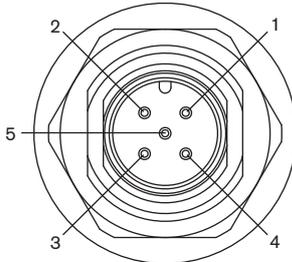


With Fieldbus Version:

PROFIBUS DP – Socket B-coded M12 (DPV1 max. 12 Mbaud)

Pin	Assignment
1	VDD (only for termination resistor)
2	RxD/ TxD – N (A-Line)
3	DGND
4	RxD/ TxD – P (B-Line)
5	N.C.

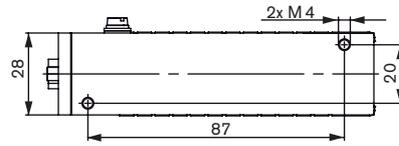
DeviceNet, CANopen – Plug M12



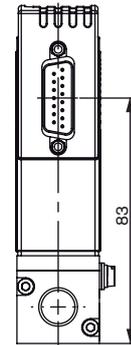
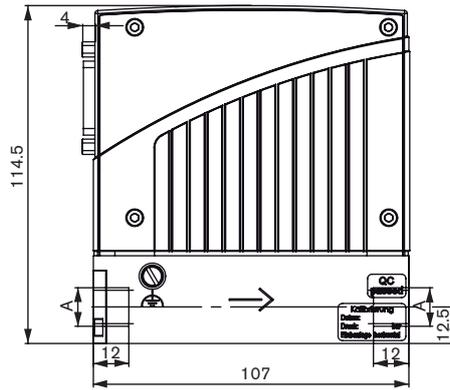
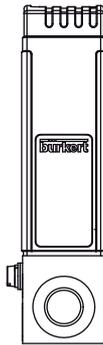
Pin	Assignment
1	Shield
2	N.C.
3	DGND
4	CAN_H
5	CAN_L

Dimensions [mm]

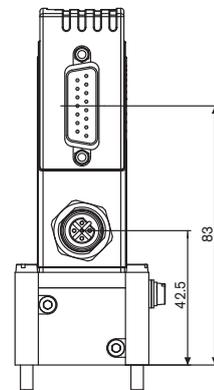
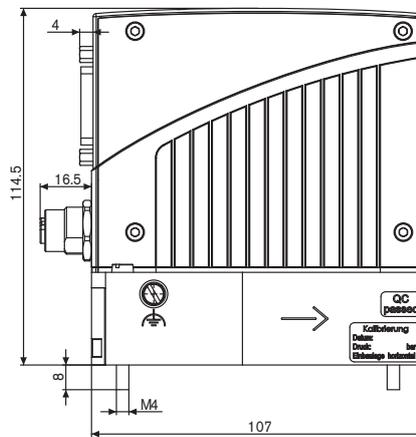
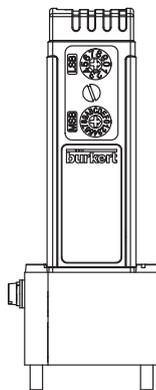
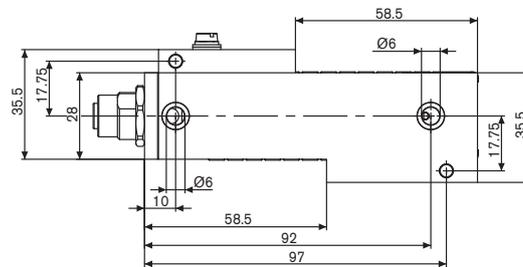
Standard Version



Size A	
G 1/8	G 1/4
NPT 1/8	NPT 1/4



Sub-base Version



In devices without fieldbus communication there is no electrical M12 connector in the upper housing part.

