

LFC Liquid Flow Controller



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

Type 8718 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 8718 is an instrument for liquid flow control in process technology.

The measured value provided by the sensor will be compared in the digital control electronics with the predefined set point according to the signal; if a control difference is present, the control value output to the proportional valve will be modified using a PI-control algorithm. In this way, the flow can be maintained at a fixed value or a predefined profile can be followed, regardless of pressure variations or other changes in the system. As a control element, a proportional valve working at low friction guarantees a high sensitivity and the good control

characteristics of the unit. MassFlowCommunicator software can be used for parameterisation and diagnosis.

Typical application areas of liquid dosing are:

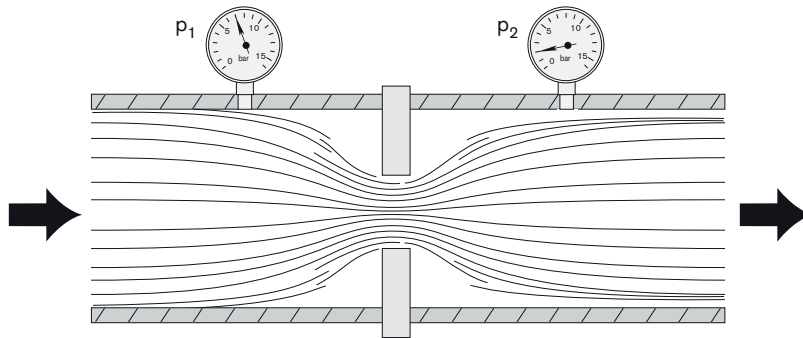
- Heat treatment
- Machine tools
- Fuel cell technology
- Packaging technology,
- Material coating,
- Bio reactors.

The device offers a particularly compact solution.

Technical data			
Full scale range (Q_{nom})	0.9 to 36 l/h (15 to 600 ml/min) re. water	Input signal (set point)	0-5 V, 0-10 V, 0-20 mA or 4-20 mA
Operating medium	Clean and low viscous liquids	Input impedance	>20 k Ω (voltage), <300 Ω (current)
Viscosity	0.4 to 4 cSt	Output signal (actual value)	0-5 V, 0-10 V, 0-20 mA or 4-20 mA
Max. operating pressure (at inlet)	Measurement range : up to max. 10 barg; typical max. 2 barg	Max. current voltage output	10 mA
Calibration medium	Water (conversion to operating medium with correcting function)	Max. burden current output	600 Ω
Medium temperature	10 to + 40 °C	Alternative input and output signal	Digital with fieldbus: ▪ PROFIBUS DP V1 ▪ DeviceNet ▪ CANopen
Ambient temperature	0 to + 55 °C	Type of protection	IP40
Accuracy	± 1.5 % o.R. ± 0.5 % F.S.	Dimensions [mm]	Standard version: 107 x 115.5 x 28 (BxHxT) Sub-base version: 107 x 115.5 x 43 (BxHxT)
Repeatability	± 0.5 % F.S.	Total weight	Approx. 1000 g
Turn-down ratio	1:10	Installation	Horizontal or vertical
Settling time ($t_{95\%}$)	< 500 ms	Light emitting diodes	Indication for: 1. Power 2. Communication (only in fieldbus version) Limit (only in analogue version) 3. Error
Body material	Stainless steel	Binary inputs	Two: 1. Start Autotune 2. Open valve (for purging)
Housing	PC (Polycarbonate)	Binary output	A relay output for: 1. Limit (desired value can not be achieved) Capacity: max. 25 V, 1 A, 25 VA
Sealing material	FKM, EPDM, FFKM		
Port connection	G 1/8, NPT 1/8, G 1/4, NPT 1/4, sub-base		
Control valve	Proportional valve; normally close; depending on flow range and pressure		
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 %		
Power consumption	Max. 7.5 W (10 W with fieldbus version)		

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

For the proper choice of the actuator orifice and differential pressure sensor within the LFC, not only is the maximum flow rate Q_{nom} required, but also the pressure values directly before and after the LFC (p_1 , p_2) at this flow rate Q_{nom} should be known. In general, these pressures are not the same as the overall inlet and outlet pressures of the whole plant, because usually there are additional flow resistors (tubing, additional shut-off valves, nozzles etc.) present both before and after the controller. Please use the specification sheet (p. 5) to indicate the pressures directly before and after the LFC. If these should be unknown or not accessible to a measurement, estimates are to be made by taking into account the approximate pressure drops over the flow resistors before and after the LFC, respectively, at a flow rate of Q_{nom} .

In addition, please quote the maximum inlet pressure p_{1max} to be encountered. This data is needed to make sure the actuator is able to provide a close-tight function within all the specified modes of operation. The knowledge of the maximum inlet pressure is also necessary to select an adequate differential pressure sensor

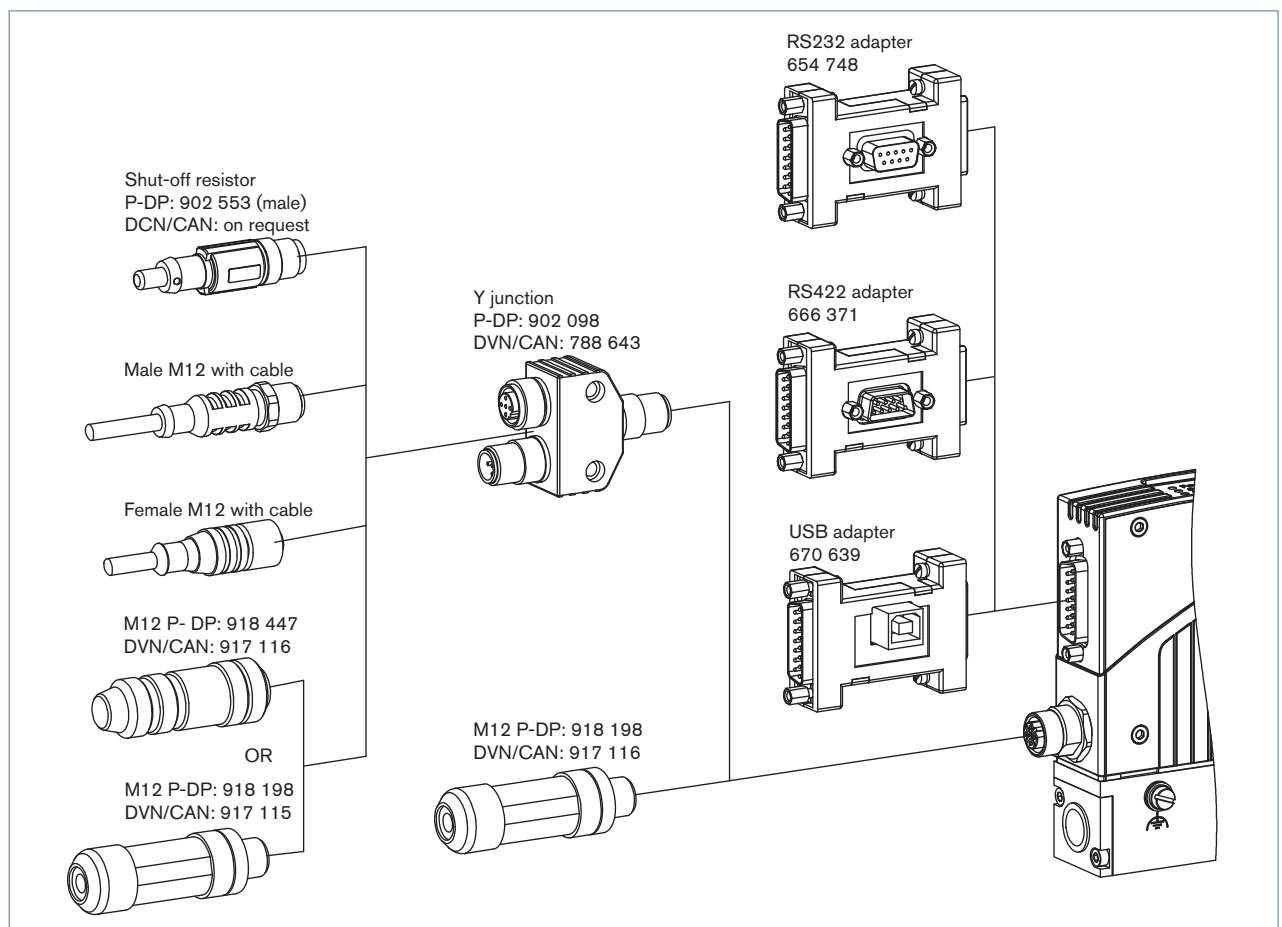
- ▶ The request form on page 6 contains the relevant fluid specification. Please use the experience of Bürkert engineers already in the design phase and provide us with a copy of your request containing the necessary data together with your inquiry or order.

Ordering Chart for Accessories

Article	Item No.
Connections/Cables	
Socket D-Sub 15-pin solder connection	918 274
Hood for D-Sub socket, with screw locking	918 408
Socket D-Sub 15-pin with 5m cable	787 737
Socket D-Sub 15-pin with 10m cable	787 738
Adapters ³⁾	
RS232 adapter	654 748
PC extension cable for RS232 9-pin socket/plug 2 m	917 039
RS422 adapter (RS485 compatible)	666 371
USB adapter (Version 1.1, USB socket type B)	670 639
USB connection cable 2 m	772 299
Communication software MassFlowCommunicator	Download from www.buerkert.com
Accessories for Fieldbus	PROFIBUS DP (B-coded) DeviceNet, CANopen (A-coded)
Plug M12 ⁴⁾	918 198 917 115
Socket M12 (coupling) ⁴⁾	918 447 917 116
Y-junction ⁴⁾	902 098 788 643
Shut-off resistor	902 553 (on request)
GSD-File (PROFIBUS), EDS-File (DeviceNet, CANopen)	Download from www.buerkert.com

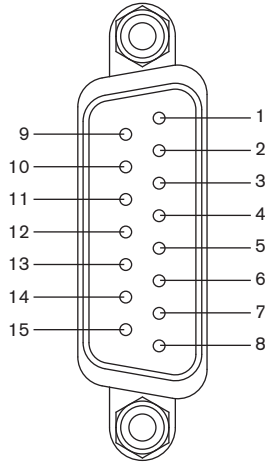
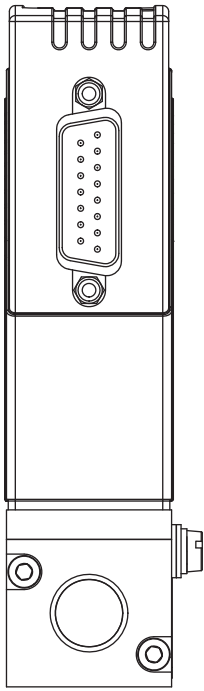
³⁾ The adapters serve mainly for initial operation or diagnosis. Those are not obligatory for continuous operation.

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.



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Pin Assignment



Plug D-Sub, 15-pin

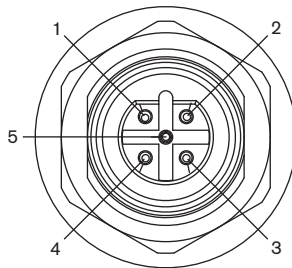
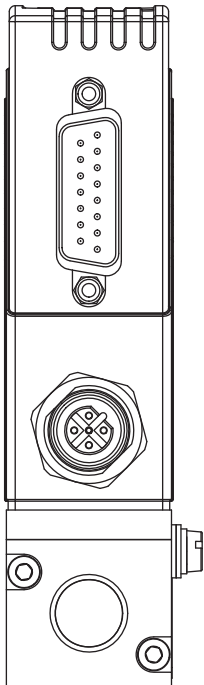
Pin	Assignment	
	Analogue Control	Bus control
1	Relay – normally closed	
2	Relay – normally opened	
3	Relay – middle contact	
4	GND for 24V-Supply and Binary inputs	
5	24V-Supply +	
6	12V-Output (only for internal company use)	
7	Set value input GND	N.C. ⁵⁾
8	Set value input +	N.C.
9	Actual value output 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

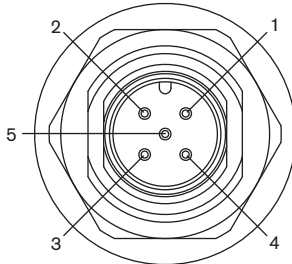


With Fieldbus Version:

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	C (4)

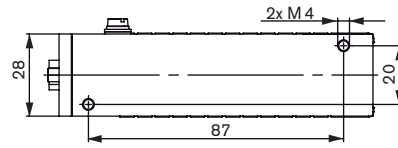
DeviceNet, CANopen – Plug M12



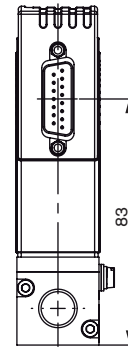
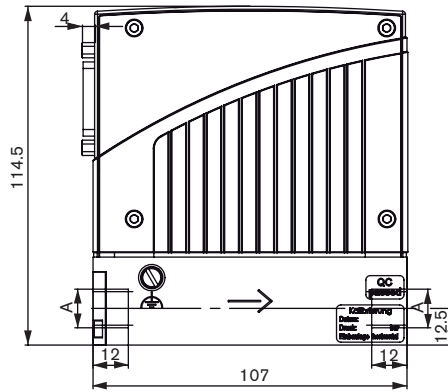
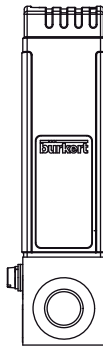
Pin	Assignment
1	Shield
2	N.C. ⁷⁾
3	DGND
4	CAN_H
5	CAN_L

Dimensions [mm]

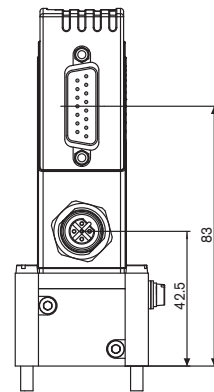
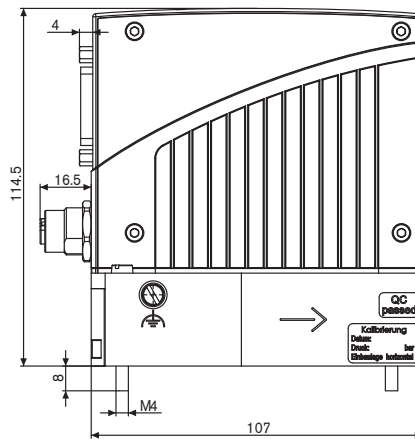
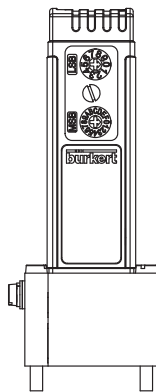
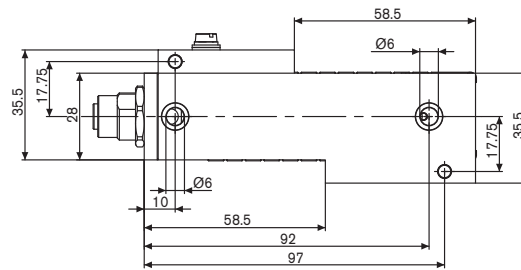
Standard Version



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.

Note
You can fill out the fields directly in the PDF file before printing out the form.

LFC/LFM applications - Request for quotation

▶ Please fill out and send to your nearest Bürkert facility with your inquiry or order

Company	Contact person
Customer no.	Department
Street	Tel./Fax
Postcode/Town	E-Mail

LFC applications LFM applications Quantity Required delivery date

Medium data

Fluids

Density [kg/m³] at 20°C at 40°C

Viscosity [cSt] at 5°C at 20°C at 40°C

Medium temperature [°C or °F] °C °F

Abrasive components/solid particles no yes, as follows:

Fluidic data

Maximum flow Q_{nom} l/h l/min
 kg/h kg/min
 ml/h ml/min

Minimum flow Q_{min} l/h l/min
 kg/h kg/min
 ml/h ml/min

Inlet pressure at Q_{nom} p₁ = barg ■

Outlet pressure at Q_{nom} p₂ = barg ■

Max. inlet pressure p_{1max} barg ■

Pipeline (external-Ø) mm inch

LFC/LFM Port connection
 without screw-in fitting
 1/8 G-thread 1/4 G-thread (DIN ISO 228/1)
 1/8 NPT-thread 1/4 NPT-thread (ANSI B1.2)
 with screw-in fitting
 Sub-base

Installation of LFC/LFM
 horizontal, valve upright (standard) horizontal, valve to the side
 vertical, flow upwards vertical, flow downwards

Ambient temperature °C

Material data

Body material Stainless steel

Seal material FKM EPDM Other:

Electrical data

Output/Input Signal	with standard signal		with fieldbus
	Output	Input	
<input type="checkbox"/> 0-5 V	<input type="checkbox"/> 0-5 V	<input type="checkbox"/> PROFIBUS DP	
<input type="checkbox"/> 0-10 V	<input type="checkbox"/> 0-10 V	<input type="checkbox"/> DeviceNet	
<input type="checkbox"/> 0-20 mA	<input type="checkbox"/> 0-20 mA	<input type="checkbox"/> CANopen	
<input type="checkbox"/> 4-20 mA	<input type="checkbox"/> 4-20 mA		

■ Please quote all pressure values as overpressure with respect to atmospheric pressure [barg]