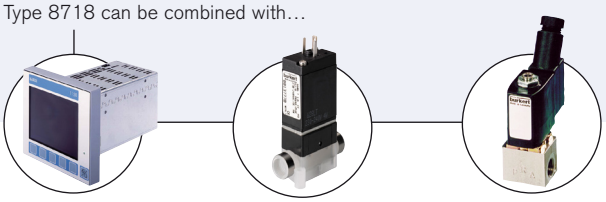
bürkert
FLUID CONTROL SYSTEMS

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
Operating medium	Clean and low viscous liquids
Viscosity	0.4 to 4 cSt
Max. operating pressure (at inlet)	Measurement range : up to max. 10 barg; typical max. 2 barg
Calibration medium	Water (conversion to operating medium with correcting function)
Medium temperature	10 to +40 °C
Ambient temperature	0 to +55 °C
Accuracy	± 1.5 % o.R. ± 0.5 % F.S.
Repeatability	± 0.5 % F.S.
Turn-down ratio	1:10
Settling time($t_{95\%}$)	< 500 ms
Body material	Stainless steel
Housing	PC (Polycarbonate)
Sealing material	FKM, EPDM, FFKM
Port connection	G ⅛, NPT ⅛, G ¼, NPT ¼, sub-base
Control valve Valve orifices	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)

Input signal (set point)	0-5 V, 0-10 V, 0-20 mA *or* 4-20 mA
Input impedence	> 20 kΩ (voltage), < 300 Ω (current)
Output signal (actual value)	0-5 V, 0-10 V, 0-20 mA *or* 4-20 mA
Max. current voltage output	10 mA
Max. burden current output	600 Ω
Alternative input and output signal	Digital with fieldbus: ▪ PROFIBUS DP V1 ▪ DeviceNet ▪ CANopen
Type of protection	IP40
Dimensions [mm] (without compression fittings)	Standard version: 107 × 115.5 × 28 (BxHxT) Sub-base version: 107 × 115.5 × 43 (BxHxT)
Total weight	Approx. 1000 g
Installation	Horizontal or vertical
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
Binary inputs (Default functions, other functions programmable)	Two: 1. Start Autotune 2. Open valve (for purging)
Binary output (Default functions, other functions programmable)	A relay output for: 1. Limit (desired value can not be achieved) Capacity: max. 25 V, 1 A, 25 VA

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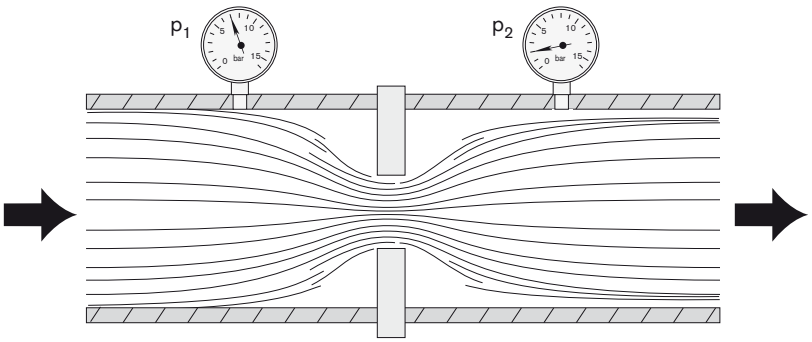
Measurement principle

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.

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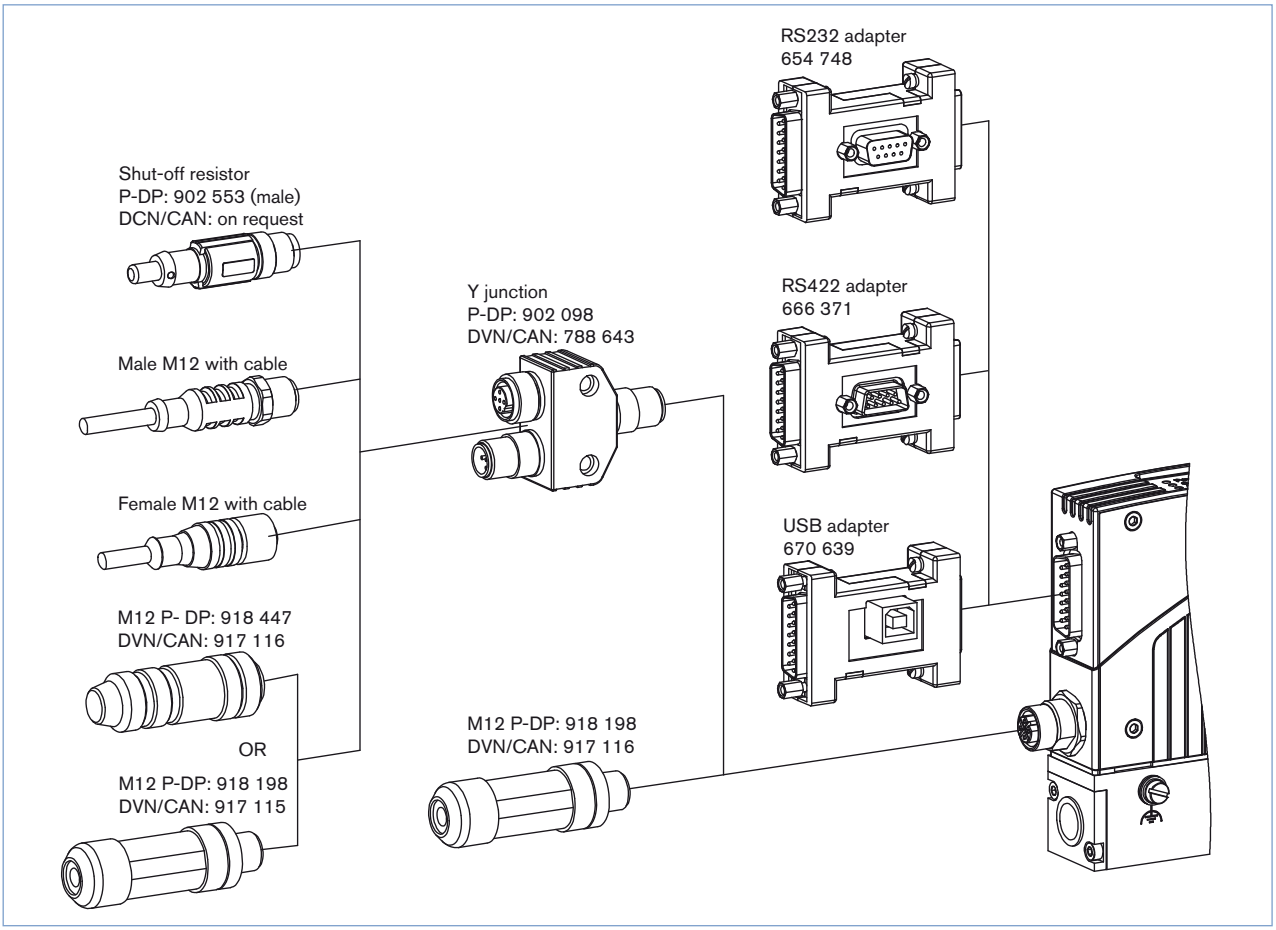
Ordering Chart for Accessories

Article	Article no.	
Connections/Cables		
Socket D-Sub 15 pin solder connection	918274	
Hood for D-Sub socket, with screw locking	918408	
Socket D-Sub 15 pin with 5 m cable	787737	
Socket D-Sub 15 pin with 10 m cable	787738	
Adapters[3]		
RS232 adapter	654748	
PC extension cable for RS232 9 pin socket/plug 2 m	917039	
RS422 adapter (RS485 compatible)	666371	
USB adapter (Version 1.1, USB socket type B)	670639	
USB connection cable 2 m	772299	
Communication software MassFlowCommunicator	Download from www.buerkert.com	
Accessories for Fieldbus	**PROFIBUS DP (B-coded)**	**DeviceNet, CANopen (A-coded)**
Plug M12 [4]	918198	917115
Socket M12 (coupling) [4]	918447	917116
Y-junction[4]	902098	788643
Shut-off resistor	902553	(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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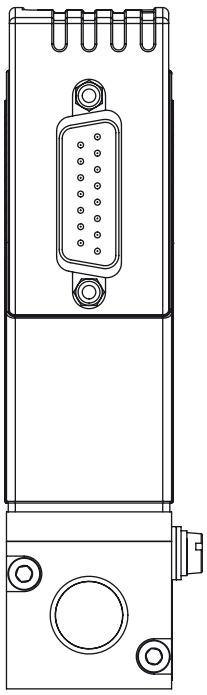
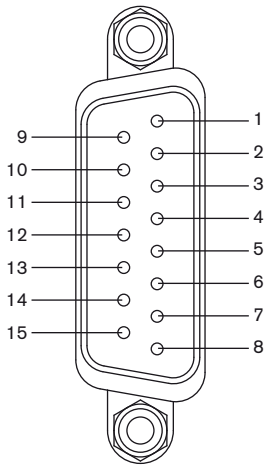
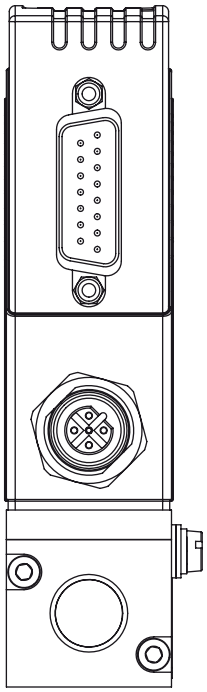
Pin Assignment

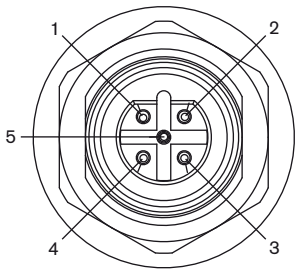


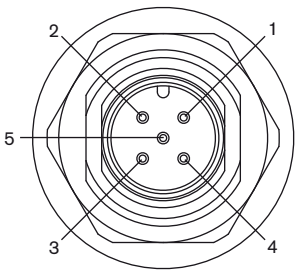
Plug D-Sub, 15 pin	Pin	Assignment	
		Analogue Control	Bus control
	1	Relay – normally closed	
	2	Relay – normally opened	
	3	Relay – middle contact	
	4	GND for 24 V-Supply and Binary inputs	
	5	24 V-Supply +	
	6	12 V-Output (only for internal company use)	
	7	Set value input GND	N.C. [5]
	8	Set value 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

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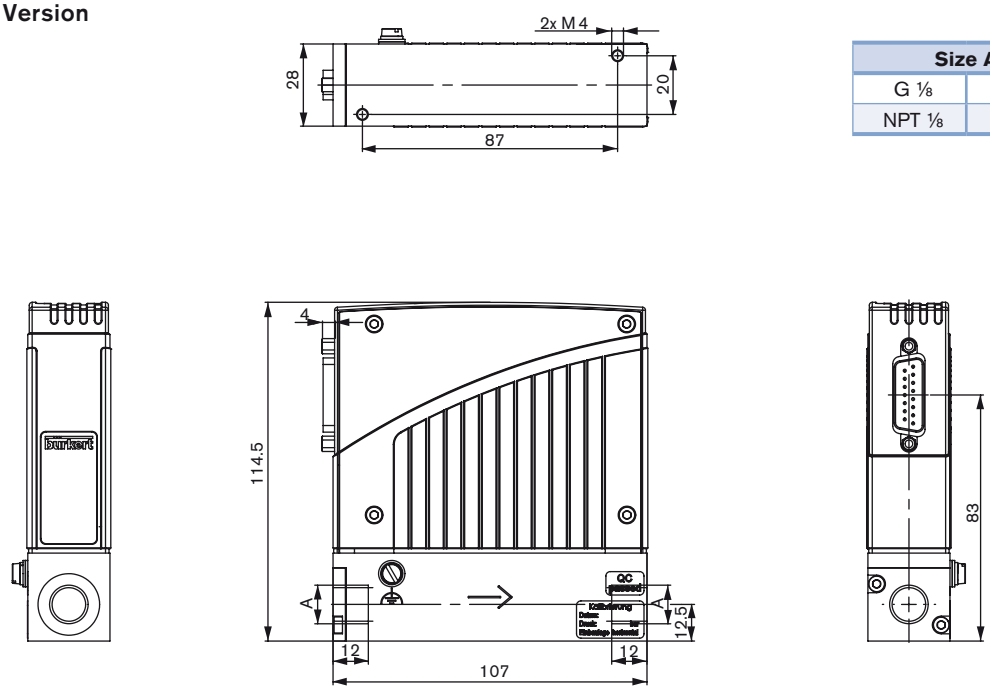
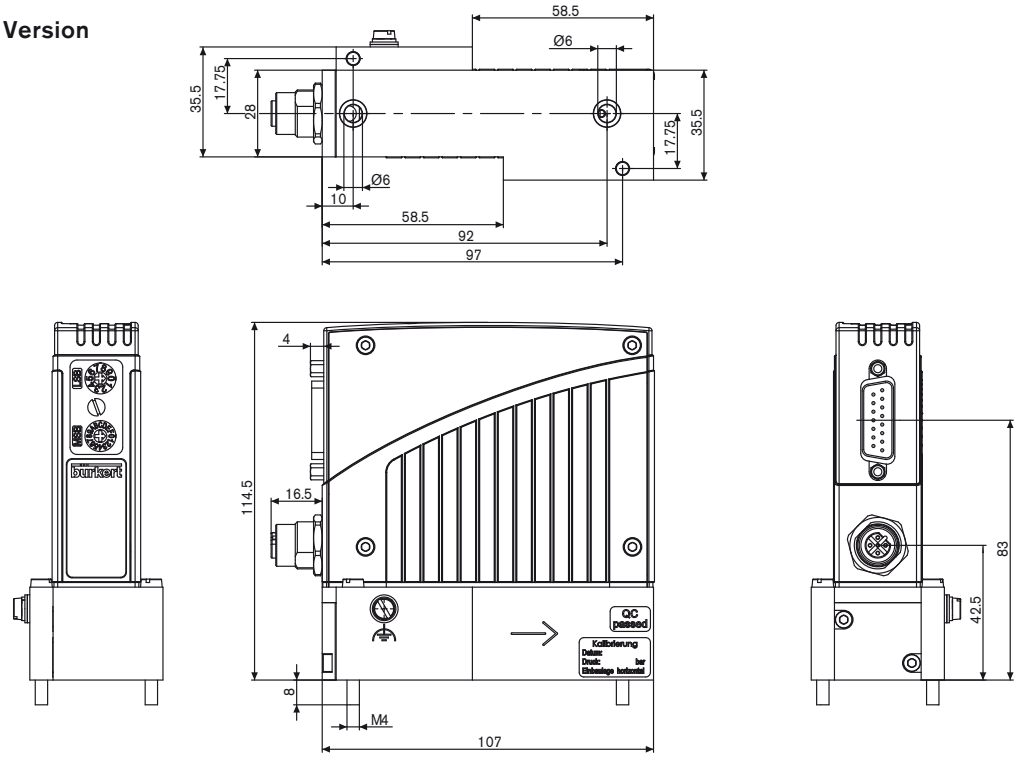
Dimensions [mm]

Standard Version



Size A	
G ⅛	G ¼
NPT ⅛	NPT ¼

Sub-base Version



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

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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}	p_1= ☐ barg ■		
Outlet pressure at Q_{nom}	p_2= ☐ barg ■		
Max. inlet pressure p_{1max}	☐ barg ■		
Pipeline (external-Ø)	☐ mm	☐ inch	

LFC/LFM Port connection

☐ without screw-in fitting
- ☐ ⅛ G-thread
- ☐ ⅛ NPT-thread
- ☐ ¼ G-thread (DIN ISO 228/1)
- ☐ ¼ 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 ☐

Material data

Body material ☐ Stainless steel

Seal material ☐ FKM ☐ EPDM ☐ Other: _____

Electrical data

Output/Input Signal

with standard signal		with fieldbus
Output	Input	
☐ 0-5 V	☐ 0-5 V	☐ PROFIBUS DP
☐ 0-10 V	☐ 0-10 V	☐ DeviceNet
☐ 0-20 mA	☐ 0-20 mA	☐ CANopen
☐ 4-20 mA	☐ 4-20 mA	

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

reset

To find your nearest Bürkert facility, click on the orange box → www.burkert.com

In case of special application conditions, please consult for advice

Subject to alterations.

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