

## 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

Type 8719 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 8719 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 changes or other disturbances in the system. As a control element, a proportional valve working at low friction guarantees the high sensitivity and good control characteristics of the unit. MassFlowCom-

municator software can be used for parameterisation and diagnosis. Typical application areas of liquid dosing are:

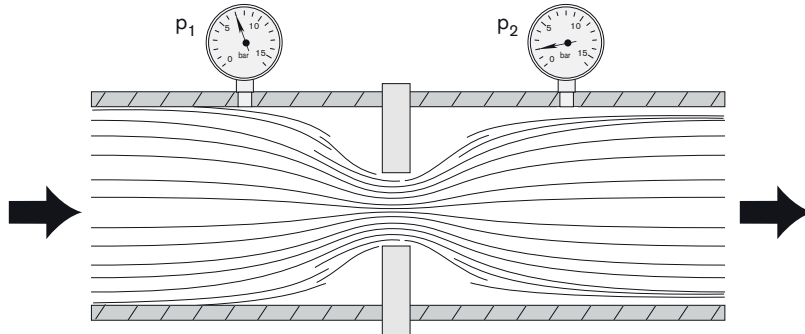
- Heat treatment,
- Machine tools,
- Fuel cell technology,
- Packaging technology,
- Material coating,
- Bio reactors.

In particular, the Type 8719 meets the requirement of IP65.

Technical data			
<b>Full scale range (<math>Q_{nom}</math>)</b>	0.9 to 36 l/h (15 to 600 ml/min) re. water	<b>Input impedance</b>	>20 k $\Omega$ (voltage), <300 $\Omega$ (current)
<b>Operating medium</b>	Clean and low viscous liquids	<b>Output signal</b> (actual value)	0-5 V, 0-10 V, 0-20 mA or 4-20 mA
<b>Viscosity</b>	0.4 to 4 cSt	<b>Max. voltage current output</b>	10 mA
<b>Max. operating pressure</b> (at inlet)	Measurement range: up to max. 10 barg; typical max. 2 barg	<b>Max. burden current output</b>	600 $\Omega$
<b>Calibration medium</b>	Water (conversion to operating medium with correcting function)	<b>Alternative Input and output signal</b>	Digital with fieldbus: ▪ PROFIBUS DP ▪ DeviceNet ▪ CANopen
<b>Medium temperature</b>	10 to + 40 °C	<b>Protection class</b>	IP65
<b>Ambient temperature</b>	0 to + 55 °C	<b>Dimensions [mm]</b> (without compression fittings)	115 x 137.5 x 37 (WxHxD)
<b>Accuracy</b>	$\pm 1.5$ % o.R. $\pm 0.5$ % F.S.	<b>Total weight</b>	Approx. 1200 g
<b>Repeatability</b>	$\pm 0.5$ % F.S.	<b>Mounting position</b>	Horizontal or vertical
<b>Turn-down ratio</b>	1:10	<b>Light emitting diodes</b> (default functions, other functions programmable)	Indication for: 1. Power 2. Communication 3. Limit 4. Error
<b>Settling time (<math>t_{95\%}</math>)</b>	< 500 ms	<b>Binary inputs</b> (default functions, other functions programmable)	Three: 1. Start Autotune 2. Open valve (for purging) 3. Not assigned
<b>Body material</b>	Stainless steel	<b>Binary outputs</b> (default functions, other functions programmable)	Two relay outputs for : 1. Limit (desired value can not be achieved) 2. Error (e.g. sensor failure) Capacity: max. 60 V, 1 A, 60 VA
<b>Housing</b>	PBT		
<b>Sealing material</b>	FKM, EPDM, FFKM		
<b>Port connection</b>	G 1/8, NPT 1/8, G 1/4, NPT 1/4		
<b>Control valve</b> Valve orifices	Proportional valve; normally closed; depending on flow range and pressure		
<b>Electrical Connection</b>	Round socket, 8-pin, Sub-HD socket, 15-pin, M12 plug or socket, 5-pin (with fieldbus)		
<b>Operating voltage</b>	24 V DC $\pm 10$ %		
<b>Residual ripple</b>	< 2 %		
<b>Power consumption</b>	Max. 7.5 W (10 W with fieldbus version)		
<b>Input signal</b> (set point)	0-5 V, 0-10 V, 0-20 mA or 4-20 mA		

## 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 from which the electronics calculate 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.

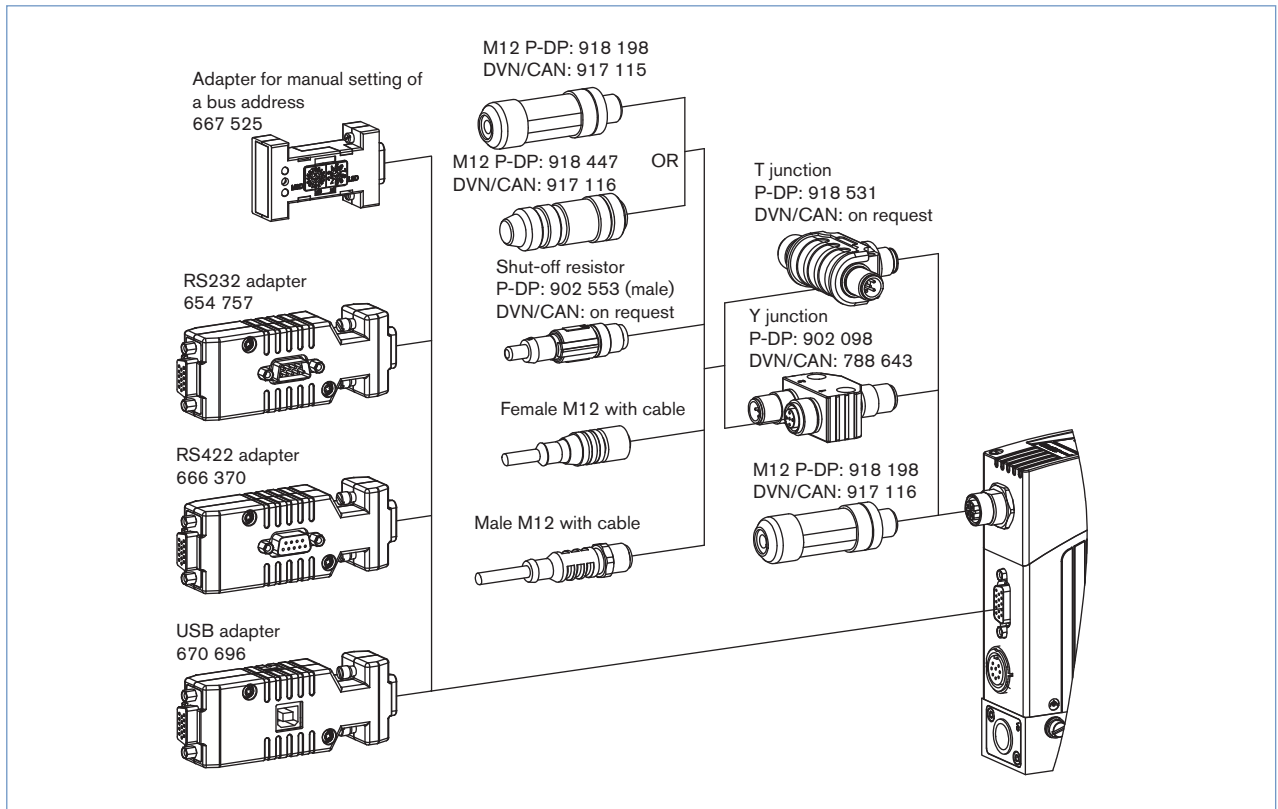
▶ **The request form on page 7 contains the relevant fluid specification. Please use the experience of Bürkert engineers already in the design phase and provide us with a copy of your request containing the necessary data together with your inquiry or order.**

Ordering chart for accessories

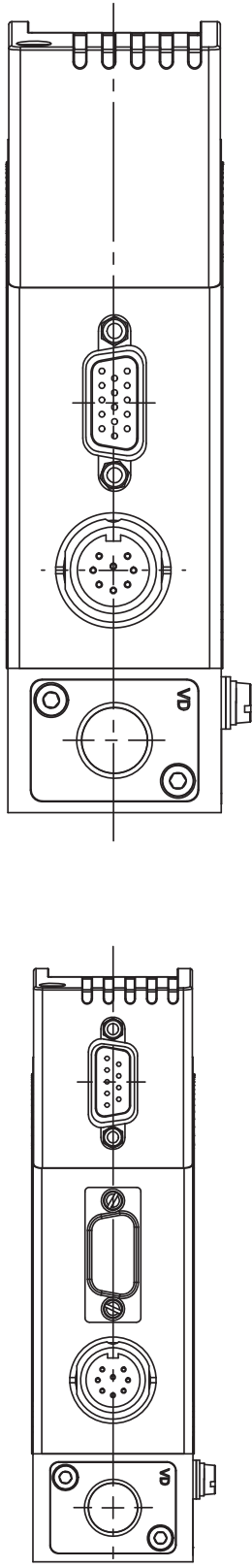
Article	Item no.	
<b>Electrical. Connection</b>		
Round 8-pin binder plug (solder connection)	918 299	
Round 8-pin plug with prefabricated 5m cable on one side	787 733	
Round 8-pin plug with prefabricated 10m cable on one side	787 734	
SUB-HD 15-pin plug with prefabricated 5m cable on one side	787 735	
SUB-HD 15-pin plug with prefabricated 10m cable on one side	787 736	
<b>Adapters <sup>3)</sup></b>		
RS232 adapter for connection to a computer, connection with an extension cable (item no. 917039)	654 757	
PC extension cable for RS232 9-pin socket/plug 2 m	917 039	
RS422 adapter (RS485 compatible)	666 370	
USB adapter	670 696	
USB connection cable 2 m	772 299	
Adapter for manual bus adresse settings (instad of SW)	667 525	
Communication software MassFlowCommunicator	Download from <a href="http://www.buerkert.com">www.buerkert.com</a>	
<b>Accessories for Fieldbus</b>	<b>PROFIBUS DP (B-coded)</b>	<b>DeviceNet/ CANopen (A-coded)</b>
Plug M12 <sup>4)</sup>	918 198	917 115
Socket M12 (coupling) <sup>4)</sup>	918 447	917 116
Y-junction <sup>4)</sup>	902 098	788 643
T-junction	918 531	(on request)
Shut-off resistor	902 553	(on request)
GSD-File (PROFIBUS), EDS-File (DeviceNet, CANopen)	Download from <a href="http://www.buerkert.com">www.buerkert.com</a>	

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

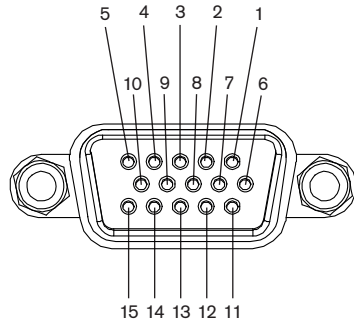
<sup>4)</sup> The two M12 connectors as listed above cannot be used together on the same side of the Y-junction. At least one of the two M12 connection needs to be a prefabricated cable which uses typically a thinner connector.



Pin Assignment



Socket D-Sub HD15



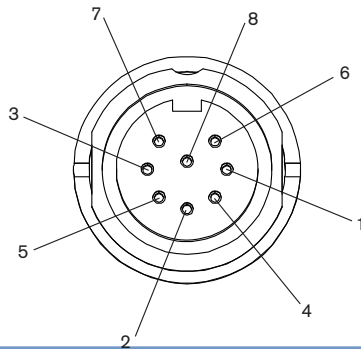
Pin	Assignment	
	Analogue Control	Bus control
1	Set value input +	N.C. <sup>5)</sup>
2	Set value input GND	N.C.
3	Actual value output +	N.C.
4	Binary input 2	
5	12V-Output (only for internal company use)	
6	RS232 TxD (direct connection to computer)	
7	Binary input 1	
8	GND (for binary inputs)	
9	only company internal use (do not connect!)	
10	12V-Output (only for internal company use)	
11	12V-Output (only for internal company use)	
12	Binary input 3	
13	Actual value output GND	N.C.
14	RS232 RxD (direct connection to computer)	
15	DGND (for RS232-interface)	

<sup>5)</sup>N.C.: not connected (not used)

Note:

- Optional Pin 1 and 2 with bus version as transmitter input possible
- The cable length for RS232/ Setpoint and flow value signal is limited to 30 meters.

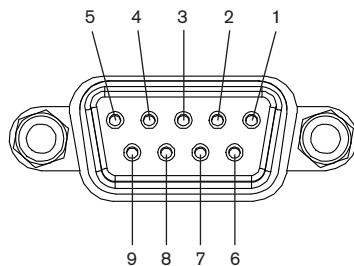
Socket M16, round, 8-pin



Pin	Assignment
1	24V-Supply +
2	Relay 1 – reference contact
3	Relay 2 – reference contact
4	Relay 1 – normally closed
5	Relay 1 – normally opened
6	24V-Supply GND
7	Relay 2 – normally opened
8	Relay 2 – normally closed

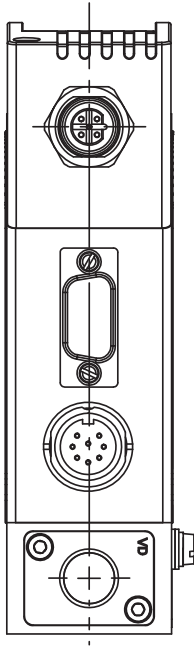
Socket D-Sub 9-pin

(only with fieldbus version)



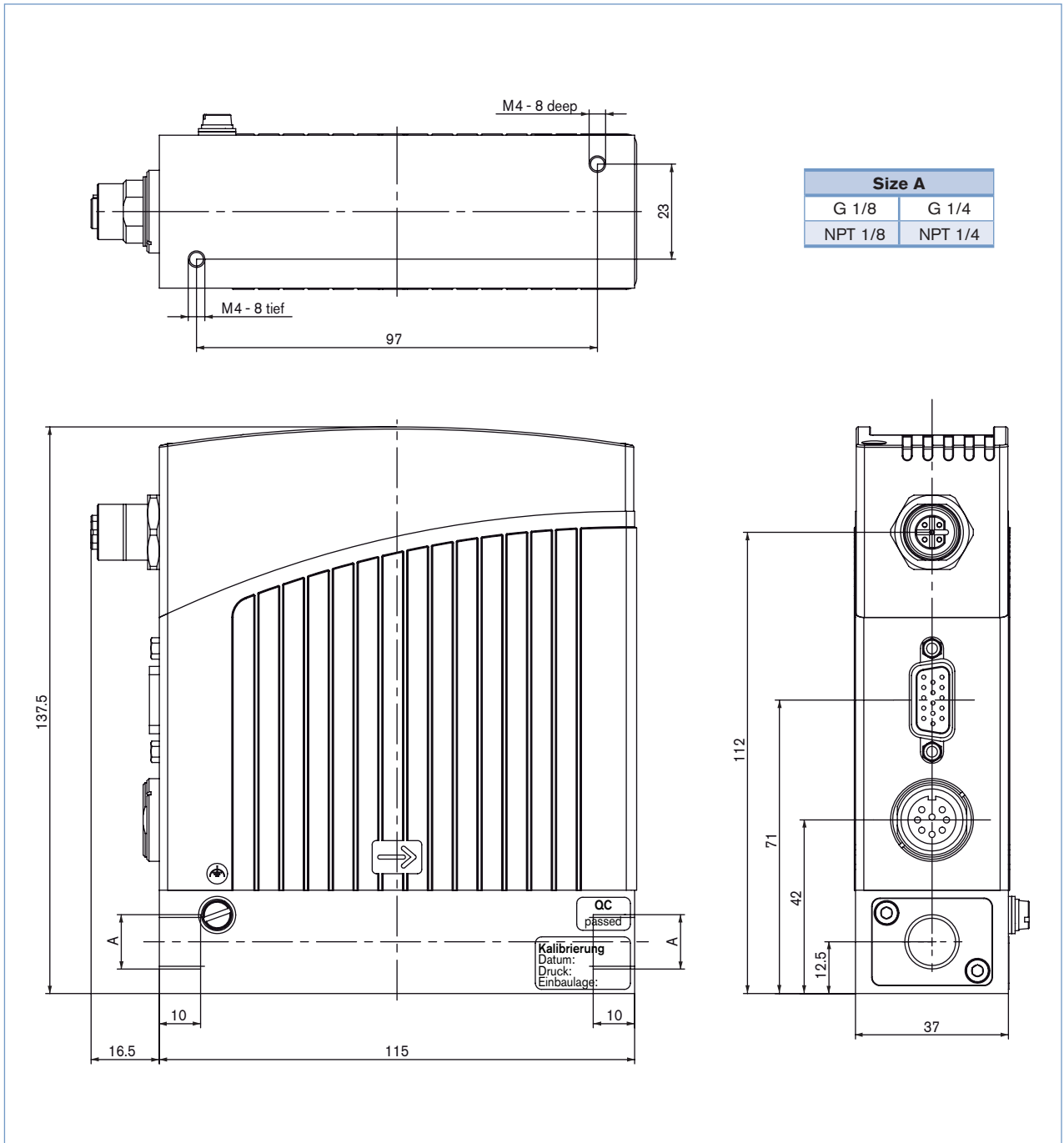
Pin	Assignment	
	PROFIBUS DP	DeviceNet/ CANopen
1	Shield	Shield
2	N.C.	CAN-L data line
3	RxD/TxD - P (B-line)	GND
4	RTS (control signal for repeater)	N.C.
5	GND	N.C.
6	VDD (only for termination resistor)	N.C.
7	N.C.	CAN-H data line
8	RxD/TxD - N (A-line)	N.C.
9	N.C.	N.C.

Pin Assignment (continued)



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 A-coded M12	Pin	Assignment
	1	Shield
	2	N.C. <sup>6)</sup>
	3	DGND
	4	CAN_H
	5	CAN_L
<sup>6)</sup> Optional configuration with 24V DC possible for power supply via fieldbus connector. With this no power supply connection on round M16 plug needed.		

Dimensions [mm]



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

