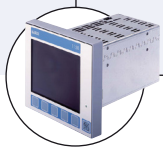


## LFC Liquid Flow Controller



- 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:

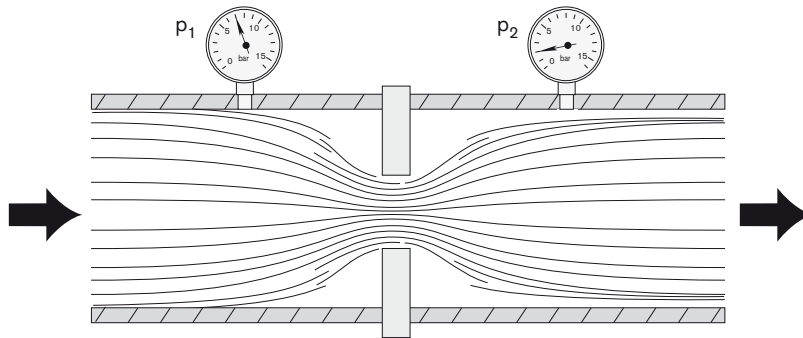
- Heat treatment
- Machine tools
- Fuel cell technology
- Packaging technology,
- Material coating,
- Bio reactors.

The device offers a particularly compact solution.

| Technical data                                 |   |  |  |
|--|---|--|--|
| <b>Full scale range (<math>Q_{nom}</math>)</b> | 0.9 to 36 l/h (15 to 600 ml/min) re. water  | <b>Input signal (set point)</b>            | 0-5 V, 0-10 V, 0-20 mA or 4-20 mA  |
| <b>Operating medium</b>                        | Clean and low viscous liquids   | <b>Input impedance</b>                     | > 20 k $\Omega$ (voltage),<br>< 300 $\Omega$ (current)   |
| <b>Viscosity</b>                               | 0.4 to 4 cSt  | <b>Output signal (actual value)</b>        | 0-5 V, 0-10 V, 0-20 mA or 4-20 mA  |
| <b>Max. operating pressure (at inlet)</b>      | Measurement range :<br>up to max. 10 barg; typical max. 2 barg                          | <b>Max. current voltage output</b>         | 10 mA  |
| <b>Calibration medium</b>                      | Water (conversion to operating medium with correcting function)                         | <b>Max. burden current output</b>          | 600 $\Omega$   |
| <b>Medium temperature</b>                      | 10 to +40 °C  | <b>Alternative input and output signal</b> | Digital with fieldbus:<br>▪ PROFIBUS DP V1<br>▪ DeviceNet<br>▪ CANopen   |
| <b>Ambient temperature</b>                     | 0 to +55 °C   | <b>Type of protection</b>                  | IP40   |
| <b>Accuracy</b>                                | $\pm 1.5\%$ o.R. $\pm 0.5\%$ F.S.   | <b>Dimensions [mm]</b>                     | Standard version: 107 x 115.5 x 28 (BxHxT)<br>Sub-base version: 107 x 115.5 x 43 (BxHxT)                                   |
| <b>Repeatability</b>                           | $\pm 0.5\%$ F.S.  | <b>Total weight</b>                        | Approx. 1000 g   |
| <b>Turn-down ratio</b>                         | 1:10  | <b>Installation</b>                        | Horizontal or vertical   |
| <b>Settling time (<math>t_{95\%}</math>)</b>   | < 500 ms  | <b>Light emitting diodes</b>               | Indication for:<br>1. Power<br>2. Communication (only in fieldbus version)<br>Limit (only in analogue version)<br>3. Error |
| <b>Body material</b>                           | Stainless steel   | <b>Binary inputs</b>                       | Two:<br>1. Start Autotune<br>2. Open valve (for purging)   |
| <b>Housing</b>                                 | PC (Polycarbonate)  | <b>Binary output</b>                       | A relay output for:<br>1. Limit (desired value can not be achieved)<br>Capacity: max. 25 V, 1 A, 25 VA                     |
| <b>Sealing material</b>                        | FKM, EPDM, FFKM   |  |  |
| <b>Port connection</b>                         | G 1/8, NPT 1/8, G 1/4, NPT 1/4, sub-base  |  |  |
| <b>Control valve</b>                           | Proportional valve; normally close;<br>depending on flow range and pressure             |  |  |
| <b>Electrical Connection</b>                   | Sub-D 15 pin plug<br>M12 (PROFIBUS) 5 pin socket<br>M12 (DeviceNet, CANopen) 5 pin plug |  |  |
| <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)   |  |  |

## 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

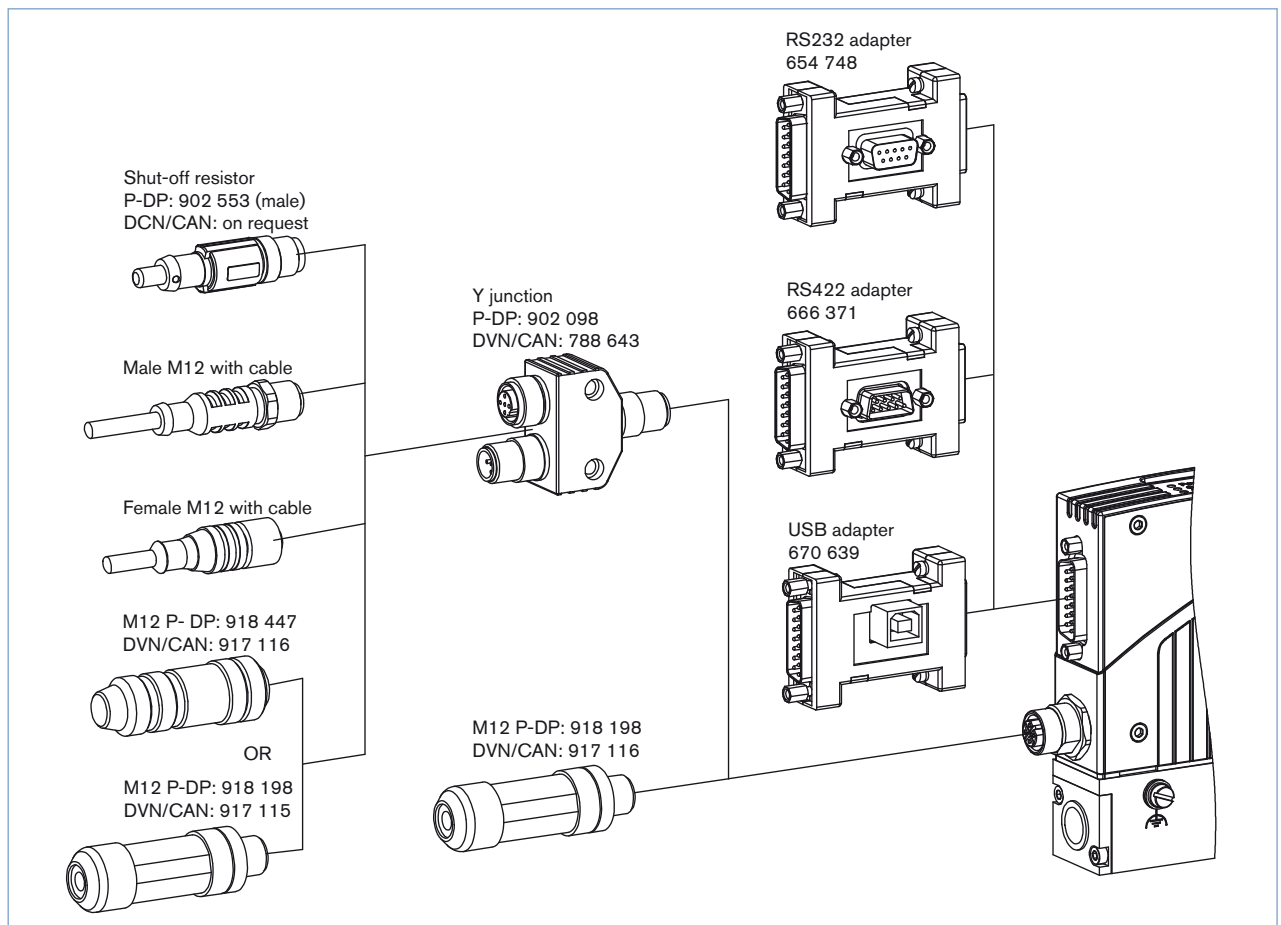
- ▶ **The request form on page 6 contains the relevant fluid specification. Please use the experience of Bürkert engineers already in the design phase and provide us with a copy of your request containing the necessary data together with your inquiry or order.**

Ordering Chart for Accessories

| Article  | Article no.  |                                     |
|--|--|-------------------------------------|
| <b>Connections/Cables</b>                          |  |                                     |
| 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   |                                     |
| <b>Adapters<sup>3)</sup></b>                       |  |                                     |
| 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 <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>                             | 918198   | 917115                              |
| Socket M12 (coupling) <sup>4)</sup>                | 918447   | 917116                              |
| Y-junction <sup>4)</sup>                           | 902098   | 788643                              |
| Shut-off resistor                                  | 902553   | (on request)                        |
| GSD-File (PROFIBUS), EDS-File (DeviceNet, CANopen) | Download from <a href="http://www.buerkert.com">www.buerkert.com</a> |                                     |

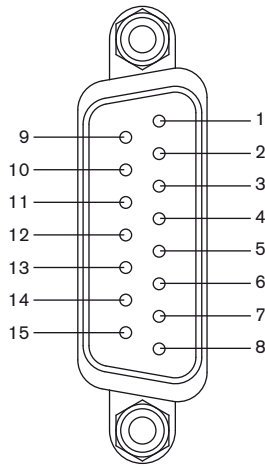
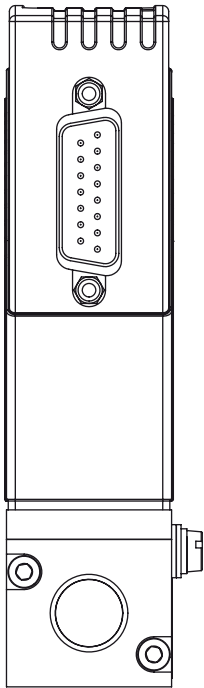
<sup>3)</sup> The adapters serve mainly for initial operation or diagnosis. Those are not obligatory for continuous operation.

<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.



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Pin Assignment



Plug D-Sub, 15 pin

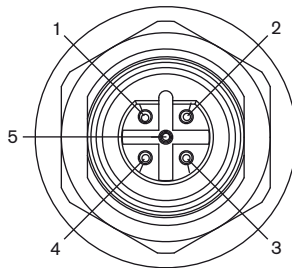
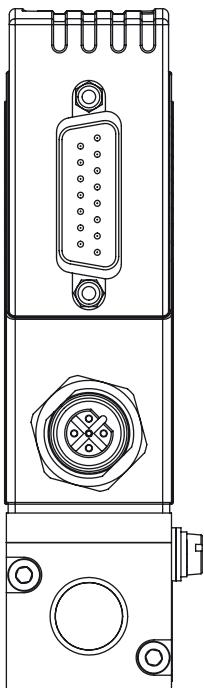
| Pin | Assignment                                     |                    |
|-----|--|--------------------|
|     | Analogue Control                               | Bus control        |
| 1   | Relay – normally closed                        |                    |
| 2   | Relay – normally opened                        |                    |
| 3   | Relay – middle contact                         |                    |
| 4   | GND for 24 V-Supply and Binary inputs          |                    |
| 5   | 24 V-Supply +                                  |                    |
| 6   | 12 V-Output<br>(only for internal company use) |                    |
| 7   | Set value input GND                            | N.C. <sup>5)</sup> |
| 8   | Set value input +                              | N.C.               |
| 9   | Actual value output GND                        | N.C.               |
| 10  | Actual value output +                          | N.C.               |
| 11  | DGND (for RS232) <sup>6)</sup>                 |                    |
| 12  | Binary input 1                                 |                    |
| 13  | Binary input 2                                 |                    |
| 14  | RS232 RxD (without driver) <sup>6)</sup>       |                    |
| 15  | RS232 TxD (without driver) <sup>6)</sup>       |                    |

<sup>5)</sup> 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.

<sup>6)</sup> Driving RS232 interface only by RS232 adapter including an adaption of TTL levels

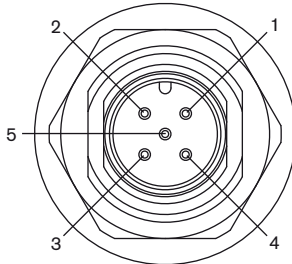


With Fieldbus Version:

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)                               |

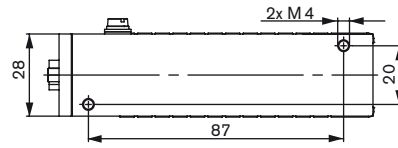
DeviceNet, CANopen – Plug M12



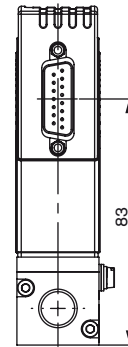
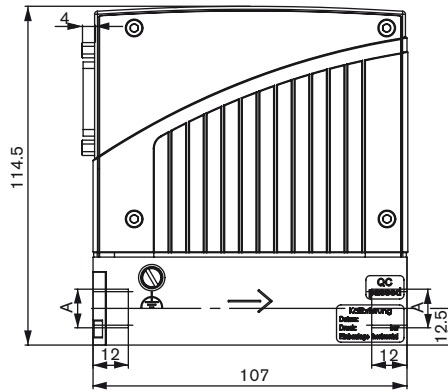
| Pin | Assignment         |
|-----|--------------------|
| 1   | Shield             |
| 2   | N.C. <sup>7)</sup> |
| 3   | DGND               |
| 4   | CAN_H              |
| 5   | CAN_L              |

Dimensions [mm]

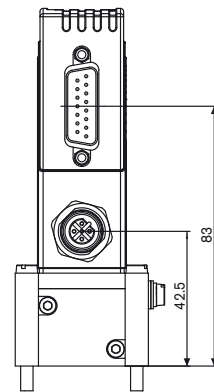
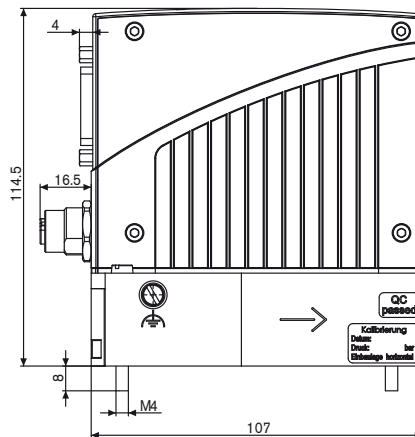
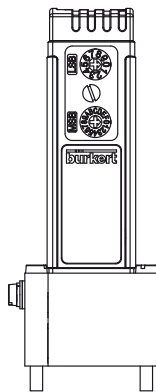
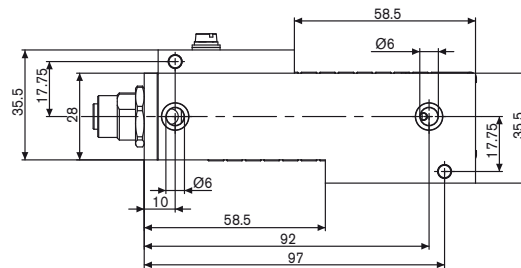
Standard Version



| 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/m<sup>3</sup>] 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<sub>nom</sub>  l/h  l/min  
 kg/h  kg/min  
 ml/h  ml/min

Minimum flow Q<sub>min</sub>  l/h  l/min  
 kg/h  kg/min  
 ml/h  ml/min

Inlet pressure at Q<sub>nom</sub> p<sub>1</sub> =  barg ■

Outlet pressure at Q<sub>nom</sub> p<sub>2</sub> =  barg ■

Max. inlet pressure p<sub>1max</sub>  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

**Material data**

Body material  Stainless steel

Seal material  FKM  EPDM  Other:

**Electrical data**

|                     |                                  |                                  |                                      |
|---------------------|----------------------------------|----------------------------------|--------------------------------------|
| Output/Input Signal | <b>with standard signal</b>      |                                  | <b>with fieldbus</b>                 |
|                     | 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]

To find your nearest Bürkert facility, click on the orange box → [www.burkert.com](http://www.burkert.com)

In case of special application conditions, please consult for advice

Subject to alterations.  
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