

FINE CONTROLS (UK) LTD



Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product range representing leading technologies & brands:

Flow: Flow Meters & Transmitters, Flow Switches, Flow Control Valves & Batch Control Systems

Temperature: Temperature Probes & Thermowells, Temperature transmitters, Temperature Regulators & Temperature Displays

Level: Level Transmitters & Switches

Pressure: Pressure Gauges & Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

Precision Pneumatics: Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

Valves: Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

Services: Repair, Calibration, Panel Build, System Design & Commissioning

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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

Type 8709 can be combined with...



Type 1150

Multi-channel
program controller



Type 6606

2/2-way
Solenoid Valve



Type 6011

2/2-way
Solenoid Valve



MassFlowCommunicator

Communications
Software

Type 8709 is an instrument for liquid flow measurement 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.

Typical application areas of liquid measurements are:

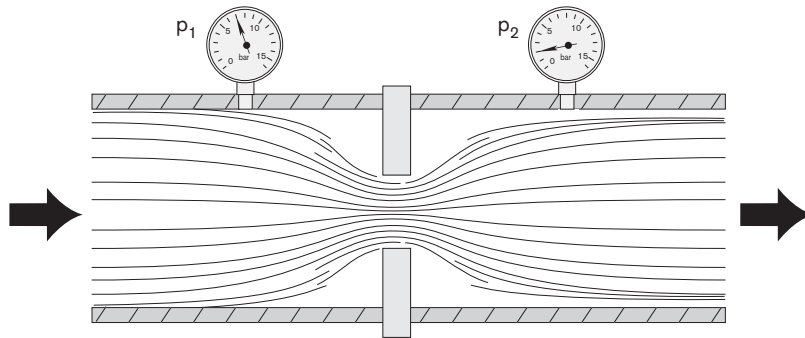
- Heat treatment,
- Machine tools,
- Fuel cell technology,
- Packaging technology,
- Material coating,
- Bio reactors.

In particular, the Type 8709 meets the requirement of IP65.

| Technical data | | | |
|--|---|---|---|
| Full scale range (Q_{nom}) | 0.6 to 36 l/h (10 to 600 ml/min) re. water | Output signal (actual value) | 0-5 V, 0-10 V, 0-20 mA or 4-20 mA |
| Operating medium | Clean and low viscous liquids | Max. current (voltage output) | 10 mA |
| Viscosity | 0.4 to 4 cSt | Max. burden (current output) | 600 Ω |
| Max. operating pressure (at inlet) | Up to max. 10 barg; typical max. 2 barg | Alternative output signal | Digital with fieldbus: ▪ PROFIBUS DP V1 ▪ DeviceNet ▪ CANopen |
| Calibration medium | Water (conversion to operating medium with correcting function) | Type of protection | IP65 |
| Medium temperature | 10 to + 40 °C | Dimensions [mm] (without compression fittings) | 115 x 137.5 x 37 (BxHxT) |
| Ambient temperature | 0 to + 55 °C | Total weight | ca. 1100 g |
| Accuracy | ± 1.5 % o.R. ± 0.5 % F.S. | Installation | Horizontal or vertical |
| Repeatability | ± 0.5 % F.S. | Light emitting diodes (Default function, other functions programmable) | Indication for: 1. Power 2. Communication 3. Limit 4. Error |
| Turn-down ratio | 1:10 | Binary inputs (Default function, other functions programmable) | Three: 1. not assigned 2. not assigned 3. not assigned |
| Response time ($t_{95\%}$) | < 500 ms | Binary outputs (Default function, other functions programmable) | Two relay outputs for: 1. Limit (Q_{nom} almost reached) 2. Error (e.g. sensor failure) Capacity: max. 60 V, 1 A, 60 VA |
| Body material | Stainless steel | | |
| Housing | PBT | | |
| Sealing material | FKM, EPDM, FFKM | | |
| Port connection | G1/8, NPT 1/8, G1/4, NPT 1/4 | | |
| Electrical Connection | Round socket, 8-pin, Sub-HD socket, 15-pin, M12 plug or socket, 5-pin (with fieldbus) | | |
| Operating voltage | 24 V DC ± 10 % | | |
| Residual ripple | < 2 % | | |
| Power consumption | Max. 2.5 W (5 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 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

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.

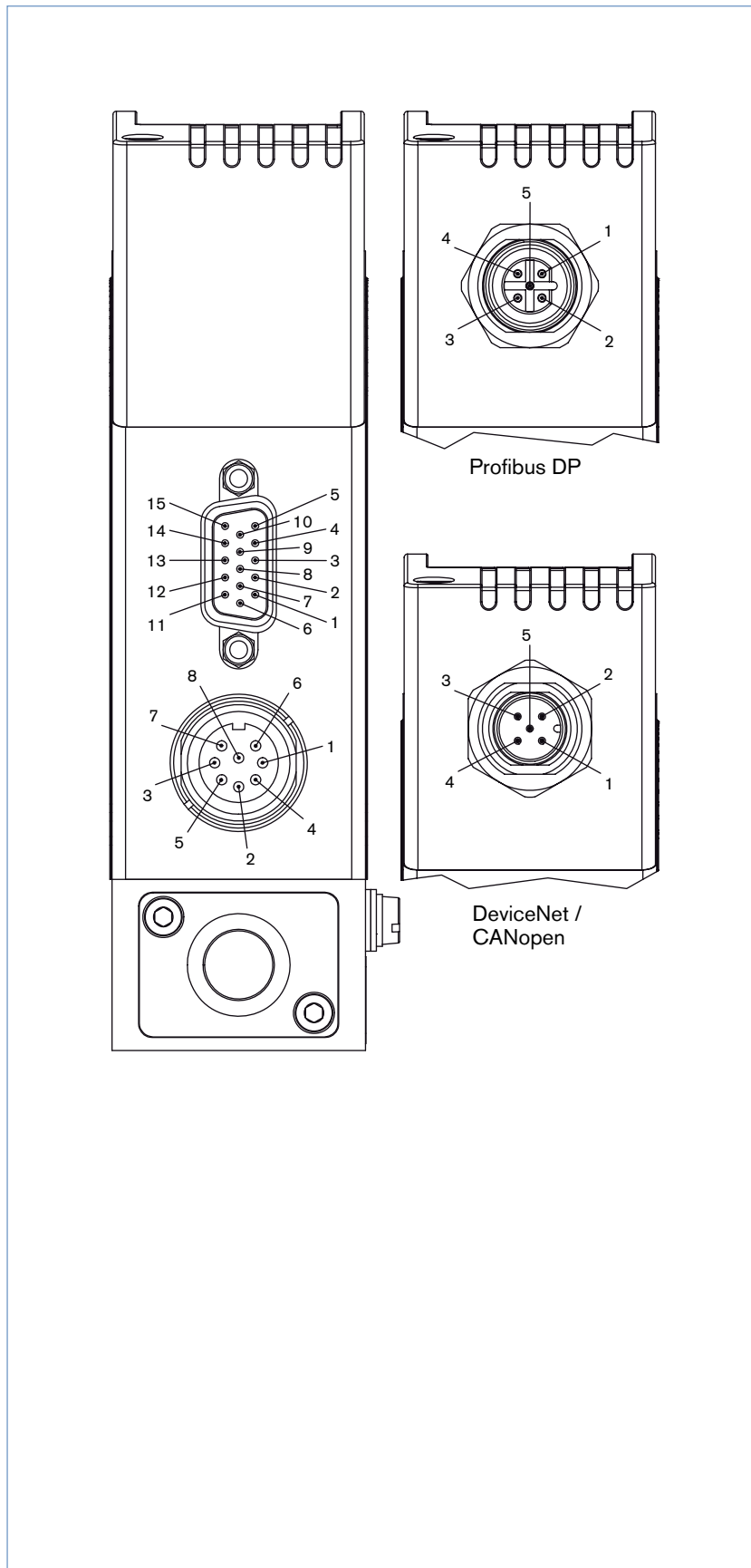
The specification of the inlet pressure, $p_{1,max}$, which can be expected is necessary for the selection of the suitable differential pressure sensor.

- ▶ The request form on page 5 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 (Connectors are not included in the delivery)

| Article | Item no. |
|---|--|
| Electrical connection | |
| 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-D 15-pin plug with prefabricated 5m cable on one side | 787 735 |
| Sub-D 15-pin plug with prefabricated 10m cable on one side | 787 736 |
| PROFIBUS DP | |
| M12 plug | 918 198 |
| M12 socket (coupling) | 918 447 |
| PROFIBUS Y-Connector | 902 098 |
| Adapter | |
| RS232-Adapter with extension cable to connect to PC (Item no. 917039) | 654 757 |
| RS485-Adapter | 658 499 |
| PC 2m extension cable for RS232, with 9-pin socket/plug | 917 039 |
| USB-Adapter | 670 696 |
| Communications software MassFlowCommunicator | Download at www.burkert.com |

Pin Assignment



Fieldbus version

PROFIBUS DP - M12 socket , B-coded (DPV1 max. 12 Mbaud)

| Pin | Connection |
|-----|--------------------------|
| 1 | VDD |
| 2 | RxD/ TxD – N (A-circuit) |
| 3 | DGND |
| 4 | RxD/ TxD – P (B-circuit) |
| 5 | not configured |

CANopen resp., DeviceNet - M12 Plug

| Pin | Connection |
|-----|----------------|
| 1 | Shield |
| 2 | not configured |
| 3 | DGND |
| 4 | CAN_H |
| 5 | CAN_L |

Sub-HD socket, 15-pin

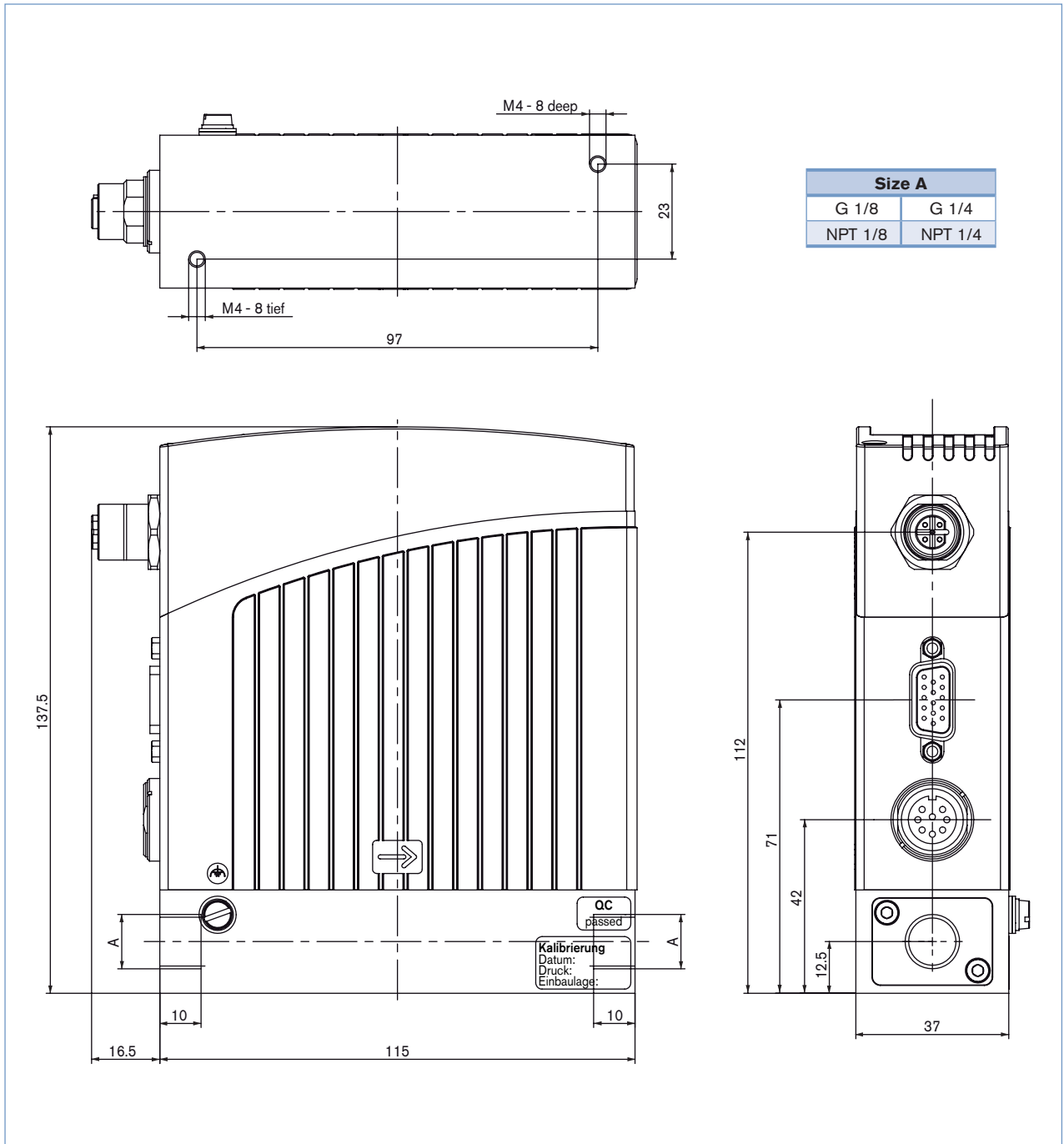
| Pin | Connection |
|-----|--|
| 1 | not configured |
| 2 | not configured |
| 3 | Actual value output + ¹⁾ |
| 4 | Binary input 2 |
| 5 | 12V-Output (only for internal company use) |
| 6 | RS232 TxD (direct connection to PC) |
| 7 | Binary input 1 |
| 8 | DGND (for binary input) |
| 9 | only for internal company 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 ¹⁾ |
| 14 | RS232 RxD (direct connection to PC) |
| 15 | DGND (for RS232-interface) |

¹⁾ not applicable for fieldbus version

Round socket, 8-pin,

| Pin | Connection |
|-----|--------------------------|
| 1 | 24V Supply + |
| 2 | Relay 1 - middle contact |
| 3 | Relay 2 - middle contact |
| 4 | Relay 1 - NC contact |
| 5 | Relay 1 - NO contact |
| 6 | 24V-Supply GND |
| 7 | Relay 2 - NO contact |
| 8 | Relay 2 - NC contact |

Dimensions [mm]



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
 1/4 G-thread 1/4 G-thread (DIN ISO 228/1)
 1/4 NPT-thread 1/4 NPT-thread (ANSI B1.2)
 with screw-in fitting

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

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

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In case of special application conditions, please consult for advice

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