

# LIQUI-FLOW™ L13

## Digital Thermal Liquid Mass Flow Meter

- Fast and accurate measuring signal
- Insensitive to mounting position
- Very small internal volume
- Suitable for liquids with low boiling points
- Analog, RS232 or fieldbus communication



## Liquid Mass Flow Meters for low flow rates

Bronkhorst® model L13 Liquid Flow Meters (LFMs) are suited for precise measurement of flow ranges between 0,25...5 g/h and 5...100 g/h at operating pressures up to 100 bar. The LFM consists of a thermal mass flow sensor and a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for optional mass flow control by means of a separately mounted control valve.

LIQUI-FLOW™ series are equipped with a digital pc-board, offering high accuracy, excellent temperature stability and fast response. The main digital pc-board contains all of the general functions needed for measurement and control. In addition to the standard RS232 output the instruments also offer analog I/O. As an option, an on-board interface can be mounted to provide DeviceNet™, PROFIBUS DP, Modbus, EtherCAT® or FLOW-BUS protocols.

## Technical specifications

### Measurement system

Flow range, based on H <sub>2</sub> O (intermediate ranges available)	min. 0,25...5 g/h max. 5...100 g/h
Accuracy (incl. linearity) (based on actual calibration)	±1% FS
Turndown	FS <50 g/h : 1:20 (5...100%); FS >50 g/h : 1:50 (2...100%)
Repeatability	< 0,2% FS (typical H <sub>2</sub> O)
Operating temperature	5...50°C
Temperature sensitivity	±0,1% FS/°C
Attitude sensitivity	negligible
Warm-up time	30 min. for optimum accuracy; 2 min for accuracy ± 2% FS

## Mechanical parts

Material (wetted parts)	stainless steel 316L/320; others on request
Pressure rating	100 bar abs
Process connections	compression type or face seal couplings
Seals	Kalrez® -6375; others on request
Ingress protection (housing)	IP40

## Electrical properties

Power supply	+15...24 Vdc +/-10%		
Max. power consumption (meter only)	Supply	at voltage I/O	at current I/O
	15 V	100 mA	120 mA
	24 V	65 mA	85 mA
PROFIBUS DP	add 53 mA (15 V supply) or 30 mA (24 V supply)		
EtherCAT®	add 66 mA (15 V supply) or 41 mA (24 V supply)		
DeviceNet™	add 48 mA (24 V supply)		
Analog output	0...5 (10) Vdc or 0 (4)...20 mA (sourcing output)		
Digital communication	standard: RS232; options: PROFIBUS DP, DeviceNet™, EtherCAT®, Modbus RTU or ASCII, FLOW-BUS		

## Electrical connection

Analog/RS232	9-pin D-connector (male)
PROFIBUS DP	bus: 9-pin D-connector (female); power: 9-pin D-connector (male)
Devicenet™	5-pin M12-connector (male)
EtherCAT®	2 x RJ45 modular jack (in/out)
FLOW-BUS/Modbus-RTU/ASCII	RJ45 modular jack

Technical specifications and dimensions subject to change without notice.

For dimensional drawings and hook-up diagrams please visit the [productpage](#) on our [website](#)

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## Recommended accessories



### E-8000 - DIGITAL READOUT / CONTROL SYSTEMS

Bright, wide angle, 1.8" display (TFT technology)

User friendly operation, menu driven with 4 push buttons



### BRIGHT - COMPACT LOCAL READOUT/CONTROL MODULE

Bright, wide angle, 1.8" display

User friendly operation

Indication/operation/configuration



### PIPS - PLUG-IN POWER SUPPLY

For lab-style or industrial devices

Interchangeable plugs (Euro, UK, USA, Australian, IEC) for mains connection

## Related products



**LIQUI-FLOW™ L13V12**

Min. flow 0,25 ... 5 g/h  
Max. flow 5 ... 100 g/h  
Pressure rating 100 bar  
Compact, IP40 design  
Analog, RS232 or fieldbus I/O



**LIQUI-FLOW™ 'INDUSTRIAL STYLE' L13I**

Min. flow 0,25 ... 5 g/h  
Max. flow 5 ... 100 g/h  
Pressure rating 100 bar  
Compact, IP65 design  
Analog, RS232 or fieldbus I/O



**LIQUI-FLOW™ L23**

Min. flow 2 ... 100 g/h  
Max. flow 20 ... 1000 g/h  
Pressure rating 100 bar  
Compact, IP40 design  
Analog, RS232 or fieldbus I/O



**μ-FLOW L01**

Min. flow 5 ... 100 mg/h  
Max. flow 0,1 ... 2 g/h  
Pressure rating 400 bar  
Small internal volume  
Analog, RS232 or fieldbus I/O



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