

Datasheet L13V12

Mass Flow Controllers for Liquids

> Introduction

High-Tech model L13V12 Liquid Flow Controllers (LFCs) are suited for precise measurement and control of low flow ranges. The LFC consists of a thermal mass flow sensor and a microprocessor based pc-board with signal and fieldbus conversion and a PID controller for mass flow control by means of an integrated control valve. The mass flow, expressed in grams per hour, is provided as analog signal or digitally via RS232 or optional fieldbus. The liquid flow controllers are scaled and calibrated according to customer's requirements.

> Technical specifications

Measurement / control system

Accuracy (incl. linearity)	: $\pm 1\%$ FS
(Based on actual calibration)	
Turndown	: 1 : 20 (5...100%)
Repeatability	: $\pm 0,2\%$ FS typical
H ₂ O Operating temperature	: 5...50°C
Temperature sensitivity	: $\pm 0,1\%$ FS/°C
Attitude sensitivity	: negligible
Warm-up time	: 30 min. for optimum accuracy
	: 10 min. for accuracy $\pm 2\%$ FS

Mechanical parts

Material (wetted parts)	: stainless steel 316L/320; others on request
Process connections	: 1/8", 1/4" or 6 mm OD compression
Purge connection	: 1/16" OD compression type
Seals	: Kalrez®-6375; others on request
Ingress protection (housing)	: IP40
Pressure rating	

LIQUI-FLOW™ Mass Flow Controllers model L13V12

Electrical properties

Power supply	: +15...24 Vdc $\pm 10\%$
Power consumption	: max. 350 mA; add 50 mA for PROFIBUS, if applicable
Analog output	: 0...5 (10) Vdc, min. load impedance $> 2\text{ k}\Omega$; 0 (4)...20 mA (sourcing), max. load impedance $< 375\ \Omega$
Analog setpoint (for LFM + control valve)	: 0...5 (10) Vdc, min. load impedance $> 100\text{ k}\Omega$; 0 (4)...20 mA, load impedance $\sim 250\ \Omega$
Digital communication	: standard RS232; options: PROFIBUS-DP, DeviceNet™, Modbus-RTU, EtherCAT®, FLOW-BUS

> Ranges (based on water)

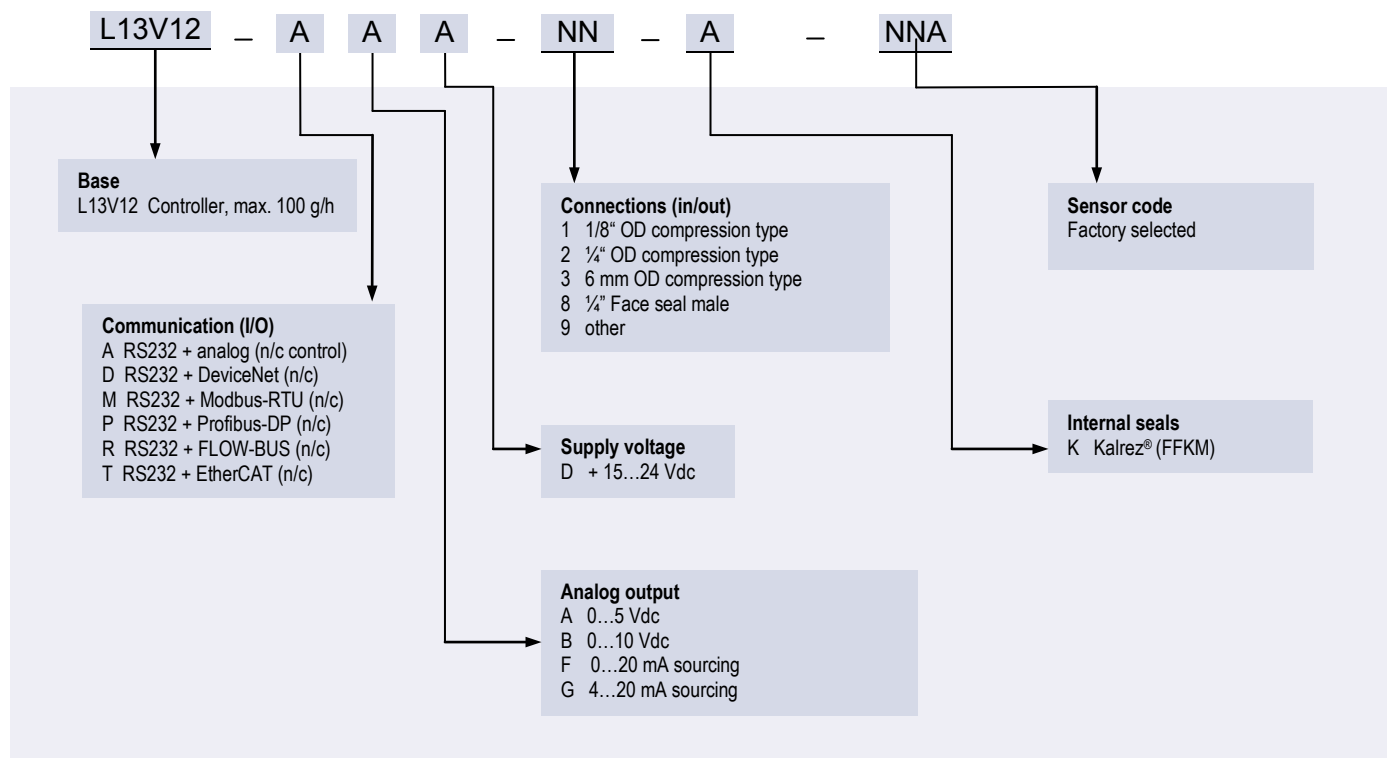
Model	min. flow	max. flow
L13V12	0,25...5 g/h	5...100 g/h

Intermediate ranges are available

Архангельск (8182)63-90-72
Астана +7(7172)727-132
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
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Вологда (8172)26-41-59
Воронеж (473)204-51-73
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Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395) 279-98-46
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Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижегород (831)429-08-12
Казахстан (772)734-952-31

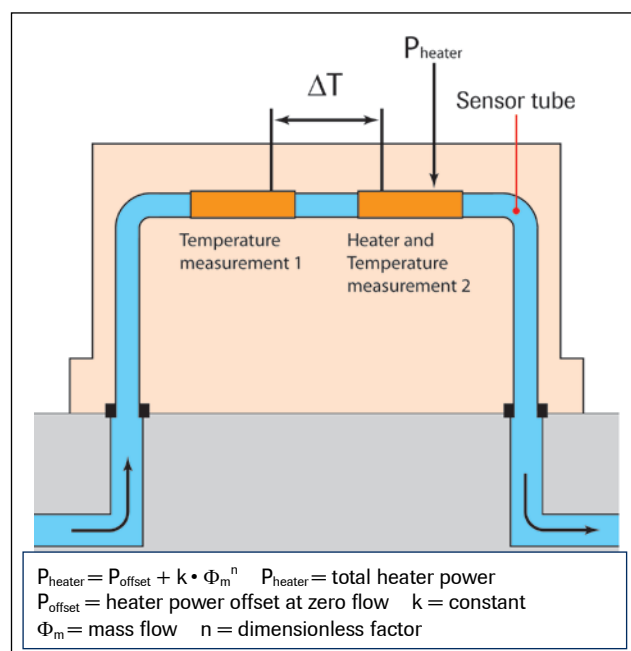
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
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Сочи (862)225-72-31
Ставрополь (8652)20-65-13
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Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

> Model number identification



> Thermal mass flow measuring principle

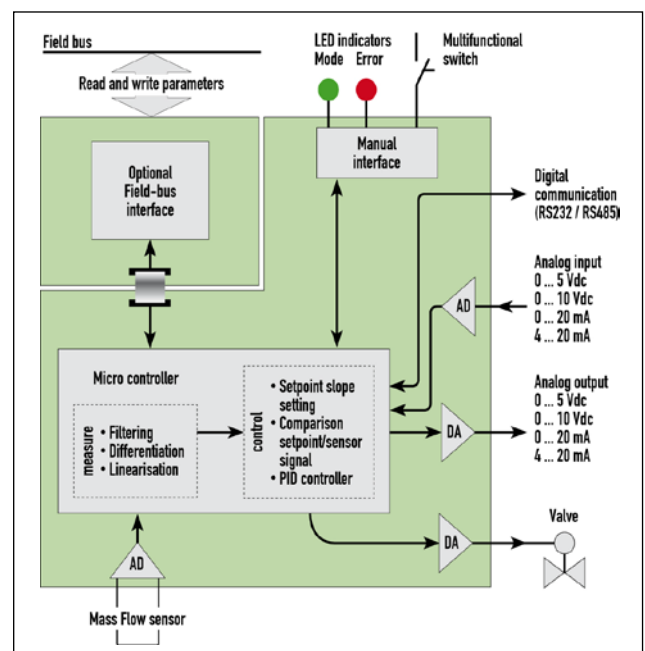
A LIQUI-FLOW™ thermal Mass Flow Meter for liquids is basically a stainless steel tube without any moving parts or built-in obstructions. The heater/sensor assembly is arranged around the tube and, by following the anemometric principle, a constant difference in temperature (ΔT) is created and the energy (P) required to maintain the ΔT is dependent of the mass flow rate. Due to the benefits of the unique patented sensor, the fluid will be warmed to a maximum of 5°C, thereby making the LIQUI-FLOW™ series suitable for fluids with low boiling points.



Functional scheme of the thermal mass flow sensor

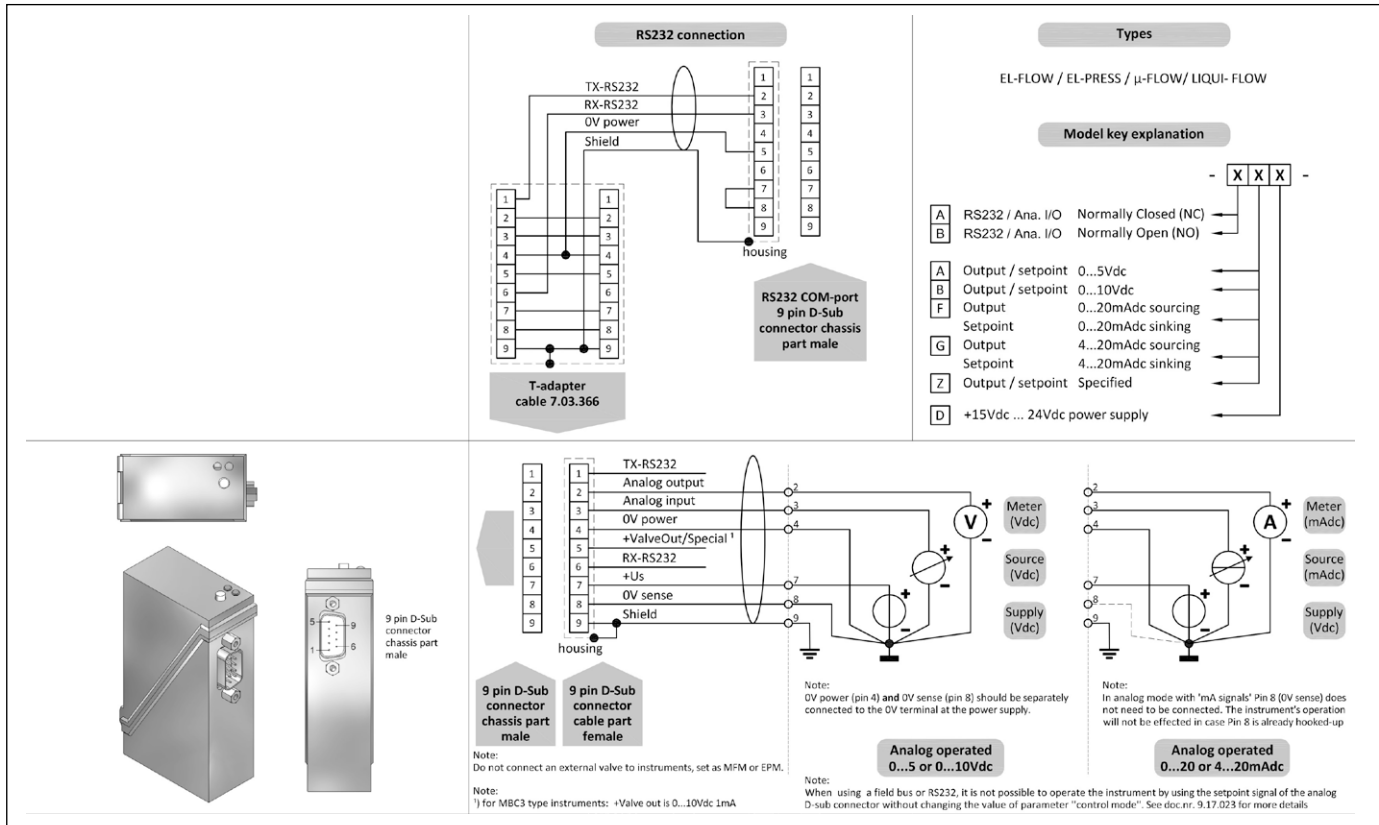
> State of the art digital design

Today's LIQUI-FLOW™ series are equipped with a digital pc-board, offering high accuracy, excellent temperature stability and fast response. The basic 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. Furthermore, an integrated interface board provides DeviceNet™, Profibus-DP®, Modbus-RTU, EtherCAT® or FLOW-BUS protocols.

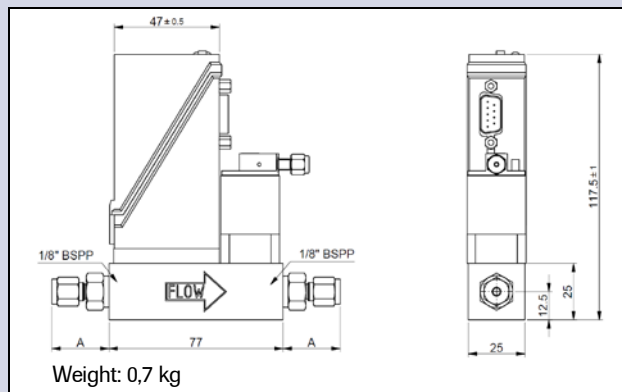


Functional scheme of the digital PC-board

> Hook-up diagram for analog or RS232 communication



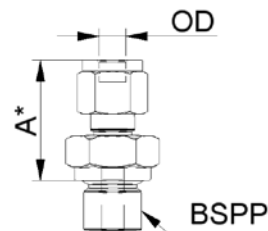
> Dimensions (mm) and weight (kg)



Dimension table adapters (RS-type)

Compression type		1/8" BSPP	Size A
adapter	3 mm OD		25.3
adapter	6 mm OD		27.6
adapter	8 mm OD		28.6
adapter	1/16" OD		20.6
adapter	1/8" OD		25.3
adapter	1/4" OD		27.6
adapter	3/8" OD		29.5
Face-seal male		A	
adapter	1/8" inlet		17.8
adapter	1/4" inlet		23.7

Compression type



*) Dimension A is typical finger-tight.

> Options and accessories

- Free software support for operation, monitoring, optimizing or to interface between digital instruments and windows software.	
- BRIGHT compact local Readout/Control module - E-5700 / E-7000 Power Supply	
- Interconnecting cables for power and analog/digital communication - PiPS Plug-in Power Supply	

> Alternatives

- µ-FLOW series Liquid Flow Controller for ultra low flow rates (100 mg/h...2 g/h FS)	
- LIQUI-FLOW™ Liquid Flow Controller model L23V12 (100...1000 g/h FS)	
- LIQUI-FLOW™ Liquid Flow Meter model L13 (5...100 g/h FS)	
- LIQUI-FLOW™ Industrial Style Liquid Flow Meter model L13I with close coupled control valve (5...100 g/h FS)	

По вопросам продаж и поддержки обращайтесь:

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