

L-Series Liquid Meters and Controllers

MULTIVARIATE LIQUID FLOW MEASUREMENT AND CONTROL IN REAL-TIME



*NIST-traceable accuracy to
±2% of full scale*

*No warm-up
required*

*Steady state control
2–100% of full scale*

*30 millisecond
response times*

L-Series Liquid Meters and Controllers

ULTRA-FAST CONTROL AND MEASUREMENT

Alicat can make a high quantity of custom controllers or meters tailored specifically to your application.



L/C Meter or Controller

Measure or maintain stable control of liquid volumetric flow rate or pressure. Compatible with water, methanol, iso-propanol, ethanol, ammonia, dimethylether, iso-pentane, thiophene, iso-octane, and heptane.



LB Portable

Calibrate, verify, or validate your process on-the-go with an 18 hour rechargeable battery and an intuitive interface.

Quick Specifications:

Available Full Scale Ranges:

0.5 CCM to 10 LPM

Accuracy:

±2% of full scale

Steady State Control Range:

2–100% of full scale

Response Time:

10 ms measurement response;

30ms control response

Repeatability:

±2% of full scale

Analog Outputs:

0–5 Vdc, 0–10 Vdc, 4–20 mA

Digital Communications:

RS–232, RS–485, DeviceNet, EtherCAT, EtherNet/IP, Modbus RTU, TCP/IP, PROFIBUS

Solid stability and responsiveness:

- Instant on, ready in 1 second
- All flow data visible on one screen (flow, pressure, temp)
- Controller PID valve tuning for best speed and stability

Product Dispensing

- Dispense liquid products over a wide range of flow rates with the optional Precision Dispensing Package
- Rapid valve response accommodates changing flow requirements and short dispensing periods
- Digital feedback from PLC or PC allows real-time changes to maintain optimal process conditions



Technical Data for L-Series Liquid Flow Meters

0.5 CCM full scale through 10 LPM full scale



Standard specifications. Consult Alicat for available options.

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alicat.com/liquid

SENSOR PERFORMANCE	
Volumetric Flow Accuracy at Calibration Conditions ¹	±2% of full scale
Repeatability (2σ) ¹	±0.2% of full scale
Flow Measurement Range	2–100% of full scale
Temperature Sensitivity	Volumetric flow zero shift: 0.02% of full scale per °C from tare temperature Volumetric flow span shift: 0.02% of full scale per °C from calibration temperature
Operating Temperature Range	–10–60°C
Temperature Accuracy	±0.75°C
Operating Pressure Full Scale	100 PSIG
Pressure Accuracy	±0.5% of full scale
Totalizer Volume Uncertainty	±0.5% of reading additional uncertainty
Sensor Response Time	<1 ms
Typical Indication Response Time	<10 ms, flow rate dependent
Typical Warm-Up Time	<1 s

¹ Stated accuracy is after tare under equilibrium conditions, includes repeatability and linearity.

MECHANICAL	
Minimum Operating Pressure	Differential pressure must exceed model pressure drop, see below for details
Maximum Operating Pressure	Damage possible above 200 PSIG common mode pressure Damage possible above 75 PSI differential pressure
Ingress Protection	IP40 (consult Alicat for weatherproofing options)
Wetted Materials	302, 303, 304, and 316L stainless steel; FKM (Viton)

COMMUNICATIONS	
Analog I/O Options ²	4–20 mA, 0–5 Vdc, 1–5 Vdc, 0–10 Vdc
Digital I/O Options ²	RS-232 Serial by default RS-485 Serial, Modbus RTU (over RS-232 or RS-485 serial), Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, PROFIBUS Portable devices (LB Series): RS-232 over Micro-USB Type B
Electrical Connection Options	6-pin locking, 8-pin mini-DIN, 8-pin M12, DB-9, DB-15 (contact Alicat for custom pinouts) Portable devices (LB Series): Power over Micro-USB Type B
Power Requirements ³	0–5 Vdc output: 9–28 Vdc, 40 mA 0–10 Vdc output: 12–28 Vdc, 40 mA 4–20 mA output: 12–28 Vdc, 80mA Portable devices (LB Series): 5 Vdc, 1 A recommended via an outlet adapter to USB
Battery Life (LB Series)	Monochrome LCD: 14–18 hours (backlight dependent) Color TFT: 8 hours
Digital Data Update Rate ³	40 Hz at 19200 baud
Analog Data Update Rate ³	1 kHz
Monochrome LCD or Color TFT Display with Integrated Touchpad	Simultaneously displays flow, temperature, and pressure
Display Update Rate	10 Hz
Analog Signal Accuracy	±0.1% of full scale additional uncertainty

² Portable devices (LB Series) only include digital data via Micro-USB Type B.

³ Consult the individual operating bulletins for specific industrial protocol power requirements and data transmission specifications.

Technical Data for L-Series Liquid Flow Meters

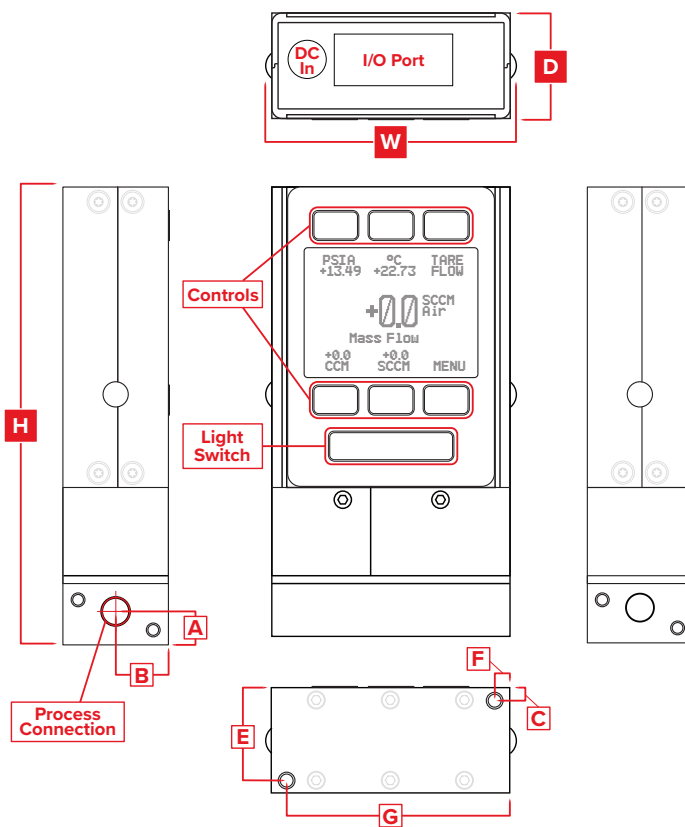
0.5 CCM full scale through 10 LPM full scale

Standard specifications. Consult Alicat for available options.

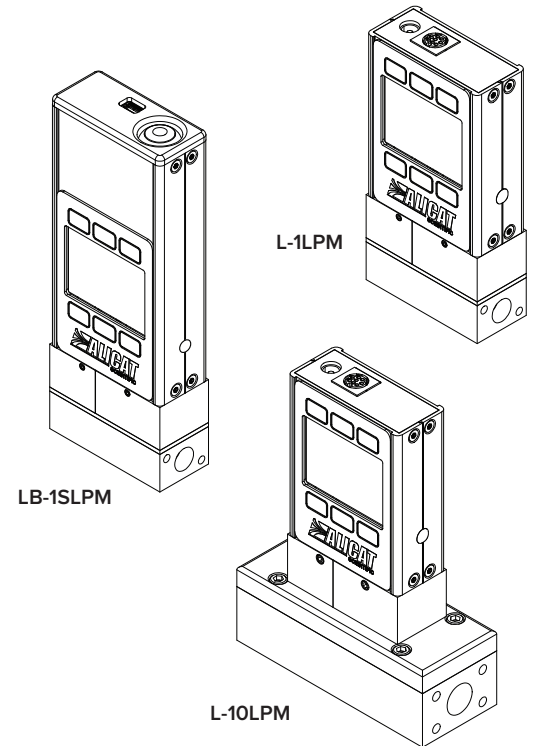
RANGE-SPECIFIC TECHNICAL DATA			
Full scale flow	Pressure drop at full scale flow	Process connections ⁴	Mount tap size
0.5–1 CCM	2.0 PSID	M5 female (10-32 compatible) ⁵	2× 8-32 UNC 0.175 in [4.45 mm]
2–500 CCM	2.0 PSID	1/8" NPT female	2× 8-32 UNC 0.325 in [4.45 mm]
1 LPM	4.0 PSID	1/8" NPT female	2× 8-32 UNC 0.325 in [9.53 mm]
2 LPM	4.0 PSID	1/4" NPT female	2× 8-32 UNC 0.350 in [8.38 mm]
5 LPM	10.0 PSID	1/4" NPT female	4× 8-32 UNC 0.375 in [8.38 mm]
10 LPM	20.0 PSID	1/4" NPT female	4× 8-32 UNC 0.375 in [8.38 mm]

⁴ Consult Alicat for available process connection options, such as: Compression, face seal, push-to-connect, BSPP, SAE, or Swagelok® (including tube, VCO®, and VCR®-compatible).

⁵ Shipped with Buna-N O-ring face seal to 1/8" female NPT fittings.



Representative Examples



Full scale flow	DIMENSIONS ⁶									WEIGHT
	Height	Width	Depth	A	B	C	E	F	G	
0.5–1 CCM	4.488 in	2.375 in	1.050 in	0.336 in	0.525 in	0.125 in	0.925 in	0.150 in	2.225 in	≈ 0.8 lb
	114.00 mm	60.33 mm	26.67 mm	8.53 mm	13.34 mm	3.18 mm	23.50 mm	3.81 mm	56.52 mm	≈ 0.4 kg
2 CCM–1 LPM	4.658 in	2.375 in	1.050 in	0.336 in	0.525 in	0.125 in	0.925 in	0.150 in	2.225 in	≈ 0.8 lb
	118.31 mm	60.33 mm	26.67 mm	8.53 mm	13.34 mm	3.18 mm	23.50 mm	3.81 mm	56.52 mm	≈ 0.4 kg
2 LPM	4.742 in	2.625 in	1.050 in	0.350 in	0.525 in	0.125 in	0.925 in	0.275 in	2.350 in	≈ 1.4 lb
	120.45 mm	66.68 mm	26.67 mm	8.89 mm	13.34 mm	3.18 mm	23.50 mm	6.99 mm	59.69 mm	≈ 0.6 kg
5 LPM–20 LPM	5.192 in	4.000 in	1.600 in	0.500 in	0.800 in	0.175 in	1.425 in	0.750 in	3.250 in	≈ 2.4 lb
	131.88 mm	101.60 mm	40.64 mm	12.70 mm	20.32 mm	4.45 mm	36.20 mm	19.05 mm	82.55 mm	≈ 1.1 kg

⁶ Portable devices (LB Series) add 1.646" [41.81 mm] to height, and 0.2 lb. [90.72 g] to weight