358 Series MLWB mass flow meters

Portable low-pressure-drop laminar mass flow meters from 0.5 smL/min to 5 smL/min full scale



The MLWB is a portable laminar mass flow meter with low pressure drop. It measures mass flow, volumetric flow, pressure and temperature, runs on its battery for up to 18 hours and needs no warm-up, which suits field verification and sampling-pump checks. It stores 98 gases and 20 user mixes and connects over Micro-USB.

5 smL/min	±0.8 % rd	18 h	98	4.8 mbar
Largest full scale; the smallest is 0.5 smL/min	Accuracy, plus 0.2 % of full scale	Battery life, monochrome display	Stored gases, plus 20 user-defined mixes	Pressure drop at full scale

Performance

Reference conditions	Standard 21.11 °C, normal 0 °C, at 1013.25 mbar; configurable
Accuracy [1]	±(0.8 % rd + 0.2 % FS)
High-accuracy option [1]	5 smL/min: ±(0.4 % rd + 0.2 % FS)
Bidirectional option [1]	±0.2 % FS in addition to the base accuracy
Repeatability (2σ)	±(0.2 % rd + 0.02 % FS)
Measuring range	0.01–100 % of full scale
Indication response	127 ms typical, user adjustable; includes averaging up to 255 ms
Sensor response	< 1 ms
Warm-up time	< 1 s
Temperature sensitivity	Zero and span 0.03 % FS/°C from 25 °C
Pressure sensitivity	Zero and span ±(0.08 % rd + 0.02 % FS)/atm from calibration conditions
Pressure accuracy	Above 1 atm: ±0.75 % rd Below 1 atm: ±6.9 mbar (±0.1 psia)
Temperature accuracy	±0.75 °C
Totaliser	±0.5 % rd additional uncertainty

Operating conditions

Operating pressure	0.79–4.14 bar a (11.5–60 psia) Differential pressure must exceed the range's Δp
Damage limits	Line: above 5.52 bar a (80 psia) Differential: above 690 mbar (10 psid)
Temperature	−10 to 60 °C
Humidity	0–95 % non-condensing

Mechanical

Wetted materials	Stainless steel 302 and 303, FKM, glass-reinforced polyphenylene sulfide, alumina, glass, gold, silicon, heat-cured epoxy and silicone rubber
Ingress protection	IP40

Electrical and communication

Digital I/O [2]	Serial over Micro-USB B
Power	Internal battery; the Micro-USB port also supplies power
Supply and charging	5 V DC via USB, 1 A recommended, from a mains adapter
Charging temperature	0–45 °C
Wireless	Bluetooth Low Energy, with a mobile app on a compatible Android or iOS device (ask Analyt-MTC)
Battery life	Monochrome screen: 18 h, 14 h backlit Colour TFT: 8 h; depends on contrast
Update rates	Digital: 40 Hz at 19 200 baud Display: 10 Hz

Display and gases

Display	Monochrome LCD or colour TFT, touchpad; shows mass and volumetric flow, pressure, temperature
Gas library	98 gases, properties matched to NIST REFPROP 10 across the operating range
Gas mixes	20 user mixes of up to 5 gases, 0.01 % resolution

Ranges, pressure drop, connections (21.11 °C, 1013.25 mbar)

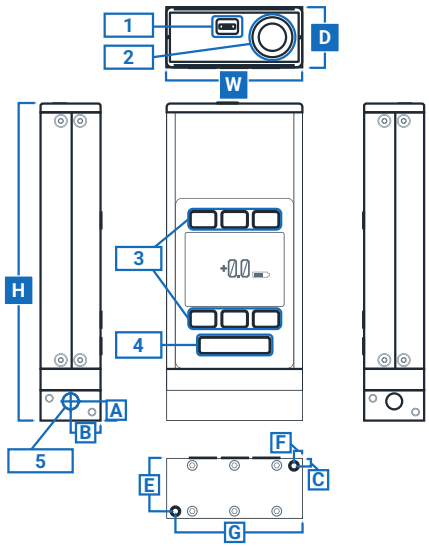
Full scale	Δp, mbar	psid	Process connection	Mounting taps
0.5–5 smL/min	4.8	0.07	M5 female	2× 8-32 UNC, 4.45 mm deep

Δp at full scale, venting to atmosphere. M5 ports: 10-32 compatible, shipped with Buna-N O-ring face-seal adapters to 1/8" female NPT.

Standard versions, air (21.11 °C, 1013.25 mbar)

Full scale	Order code
0.5 smL/min	35800MLWB
1 smL/min	35801MLWB
2 smL/min	35802MLWB
5 smL/min	35803MLWB

Order from Analyt-MTC with the order codes. Calibrated for air; another gas or a gas mix is selected on the meter. For any other version, contact Analyt-MTC.



1 Micro-USB port
2 Power switch
3 Controls
4 Backlight switch
5 Process connection

Top view: W, D; side and front views: H, A, B; bottom view: C, E, F, G. Values in the dimension table.

Options and accessories

High-accuracy calibration, 5 smL/min (see Accuracy)	
Weatherproof housing	
Expanded operating temperature range	
Other operating pressures, including lower ones	
Compression, face-seal, push-to-connect, BSPP, SAE, tube, VCO or VCR connections	
Universal benchtop baseplate	35780
Rugged transport case	1200-000-110E
Inline filter, 1/8" NPT, 20 µm	ILF-1/8-20

Dimensions, mm and kg (21.11 °C, 1013.25 mbar)

Full scale	kg	H	W	D	A	B	C	E	F	G
0.5–5 smL/min	≈ 0.5	140.79	60.33	26.67	8.53	13.34	3.18	23.50	3.81	56.52

Notes

1. rd = of reading, FS = of full scale. Accuracy holds after tare at equilibrium; extreme gas behaviour, especially near state boundaries, can add uncertainty.
2. The MLWB has no analogue outputs and no fieldbus interfaces; the 358 Series MLW provides them.
3. sL/min and smL/min at 21.11 °C, 1013.25 mbar.

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