358 Series MLW mass flow meters

Low-pressure-drop multi-gas laminar mass flow meters from 0.5 smL/min to 5 smL/min full scale

The MLW meter measures gas mass flow and also reports volumetric flow, pressure and temperature on its display. Pressure drop at full scale is 4.8 mbar. It stores 98 gases and 20 user mixes. RS-232 and Modbus RTU are standard; analogue outputs and fieldbus interfaces are options.



5 smL/min	0.01–100 %	±0.8 % rd	4.8 mbar	98
Largest full scale; the smallest is 0.5 smL/min	Measurement range of full scale	Accuracy, plus 0.2 % of full scale	Pressure drop at full scale	Stored gases, plus 20 user-defined mixes

Performance

Reference conditions	Standard 21.11 °C, normal 0 °C, at 1013.25 mbar; configurable
Accuracy [1]	±(0.8 % rd + 0.2 % FS)
Repeatability (2σ)	±(0.2 % rd + 0.02 % FS)
Measurement range	0.01–100 % FS
Indication response	Typically 127 ms, user adjustable
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, each ±(0.08 % rd + 0.02 % FS)/atm from tare pressure
Pressure accuracy [1]	Pressure reading on models from 5 smL/min
Temperature accuracy	±0.75 °C
Totaliser	±0.5 % rd additional uncertainty

Operating conditions

Operating pressure	0.79–4.1 bar a (11.5–60 psia)
Damage limits	Line: above 5.5 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 PPS, alumina, glass, gold, silicon, heat-cured epoxy and silicone rubber
Ingress protection	IP40
Orientation sensitivity	None
Mounting taps	2× 8-32 UNC, 4.45 mm deep
Adapter seal	Buna-N O-ring, face seal

Electrical and communication

Analogue outputs	4–20 mA, 0–5 V DC, 1–5 V DC or 0–10 V DC; adds ±0.1 % FS uncertainty
Digital I/O	Standard: RS-232 and Modbus RTU Options: RS-485, Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, PROFIBUS, PROFINET, IO-Link
Connector	6-pin locking, 8-pin mini-DIN, 8-pin M12, DB-9 or DB-15
Supply [2]	0–5 V DC output: 9–24 V DC, 40 mA 0–10 V DC output: 12–28 V DC, 40 mA 4–20 mA output: 12–28 V DC, 80 mA
Update rates [2]	Digital: 40 Hz at 19 200 baud Analogue: 1 kHz; 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)

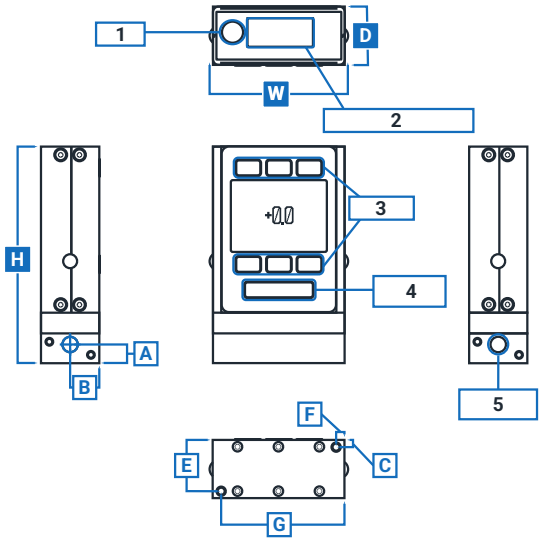
Full scale	Δp, mbar	psid	Process connection
0.5–5 smL/min	4.8	0.07	M5 female

Δp at full scale, air venting to atmosphere. M5 ports are 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	35800MLW
1 smL/min	35801MLW
2 smL/min	35802MLW
5 smL/min	35803MLW

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 DC power input
2 Input and output port
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

Weatherproof housing	
Compression, face-seal, push-to-connect, BSPP, SAE or Swagelok-compatible connections	
Universal benchtop baseplate	35780
RS-232 cable, 8-pin mini-DIN to DB-9, 1.8 m	35754
USB to RS-232 adapter	35782
Inline filter, 1/8" NPT, 20 µm	ILF-1/8-20
Rugged transport case	1200-000-110E

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

Full scale	W	D	H	A	B	C	E	F	G	kg
0.5–5 smL/min	60.3	26.7	99.0	8.5	13.3	3.2	23.5	3.8	56.5	≈ 0.4

Notes

1. rd = of reading, FS = of full scale. Accuracy holds after tare at equilibrium and includes repeatability and linearity. sL/min and smL/min at 21.11 °C, 1013.25 mbar.
2. Fieldbus versions differ in supply and data rates; ask Analyt-MTC for their documentation.

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