358 Series MQ mass flow meters

Laminar mass flow meters for line pressures to 22.1 bar a, 10 smL/min to 20 sL/min full scale

The MQ meter measures gas mass flow and also reports volumetric flow, pressure and temperature. It operates at line pressures up to 22.1 bar a. It stores 98 gases and 20 user mixes. RS-232 is standard; analogue outputs, RS-485, Modbus and fieldbus interfaces are options.



20 sL/min	0.1–100 %	< 1 ms	98	22.1 bar a
Largest full scale; the smallest is 10 smL/min	Flow measurement range of full scale	Sensor response time	Stored gases, plus 20 user-defined mixes	Operating pressure, full scale (320 psia)

Performance

Reference conditions	Standard 21.11 °C, normal 0 °C, at 1013.25 mbar; configurable
Accuracy [1]	±0.6 % rd or ±0.1 % FS, whichever is greater
Bidirectional option [1]	No additional uncertainty
Repeatability	±0.1 % FS
Flow measurement range	0.1–100 % FS
Indication response	Typically < 10 ms, flow rate dependent
Sensor response	< 1 ms
Warm-up time	Typically < 1 s
Temperature sensitivity	Zero: ±0.01 % FS/°C from tare temperature, per atm Span: ±0.01 % rd/°C from 25 °C, per atm
Pressure sensitivity	Zero: ±0.01 % FS/atm from tare pressure Span: ±0.1 % rd/atm from calibration conditions
Pressure accuracy	Above 1 atm: ±0.5 % rd Below 1 atm: ±4.8 mbar (±0.07 psia)
Temperature accuracy	±0.75 °C
Totaliser	±0.5 % rd additional uncertainty

Operating conditions

Operating pressure	Minimum: 0.79 bar a (11.5 psia), common mode Full scale: 22.1 bar a (320 psia) The differential pressure must exceed the meter's pressure drop
Damage limits	Line: above 27.6 bar a (400 psia) Differential: above 5.17 bar (75 psid)
Temperature	−10 to 60 °C
Humidity	0–95 % non-condensing

Mechanical

Wetted materials	Stainless steel 302, 303, 304, 316L; FKM, alumina ceramic, glass, gold, silicon, polyamide Heat-cured epoxy and silicone rubber
Ingress protection	IP40
Mounting taps	10–50 smL/min: 2× 8-32 UNC, 4.45 mm 100 smL/min–20 sL/min: 2× 8-32 UNC, 8.89 mm

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 Options: RS-485, Modbus RTU (over RS-232 or RS-485), Modbus TCP/IP, DeviceNet, EtherCAT, EtherNet/IP, PROFIBUS
Connector	6-pin locking, 8-pin mini-DIN, 8-pin M12, DB-9 or DB-15
Supply [2]	9–24 V DC, 40 mA With 4–20 mA or 0–10 V DC output: 12–24 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
10–50 smL/min	69	1.0	M5 female
100 smL/min–20 sL/min	69	1.0	1/8" NPT female

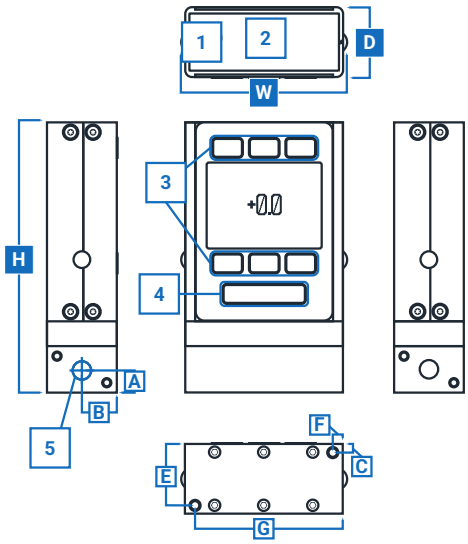
Δp at full scale, outlet venting to atmosphere. M5 ports: 10-32 compatible, shipped with Buna-N O-ring face-seal adapters to 1/8" female NPT.

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

Full scale	Order code
10 smL/min	35804Q
20 smL/min	35805Q
50 smL/min	35806Q
100 smL/min	35807Q
200 smL/min	35808Q
500 smL/min	35809Q

Full scale	Order code
1 sL/min	35810Q
2 sL/min	35811Q
5 sL/min	35812Q
10 sL/min	35813Q
20 sL/min	35814Q

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; two side views and the front view; bottom view with mounting taps. The table gives the dimensions.

Options

- Bidirectional calibration (see Performance)
- Weatherproof housing
- Operation below 0.79 bar a
- Compression, face-seal, push-to-connect, BSPP or SAE connections
- Swagelok® tube, VCO® or VCR® connections

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

Full scale	W	D	H	A	B	C	E	F	G	kg
10–50 smL/min	60.33	26.67	98.98	8.53	13.34	3.18	23.50	3.81	56.52	≈ 0.4
100 smL/min–20 sL/min	60.33	26.67	103.30	8.89	13.34	3.18	23.50	3.81	56.52	≈ 0.5

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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