GFM mass flow meters

Thermal mass flow meters with built-in display, from 10 smL/min to 1000 sL/min N_2 full scale

The GFM measures gas mass flow with a heated capillary sensor tube and outputs it as a 0–5 V or 4–20 mA signal. The display on top tilts through 90° and unplugs for remote reading. Aluminium bodies are for non-corrosive gases, 316 stainless steel bodies for corrosive ones. Use it on the bench or screw it down.



1000 sL/min	±1 % FS	±0.25 % FS	about 2 s	69 bar g
Largest full scale in N_2; smallest 10 smL/min	Accuracy of GFM 17, 37 and 47	Repeatability	Response, within ±2 % of flow	Maximum pressure, GFM 17 to 47 (1000 psig)

Performance

Accuracy	GFM 17, 37, 47: ±1.0 % FS GFM 57, 67, 77: ±1.5 % FS
Enhanced accuracy option	GFM 57, 67, 77: ±1.0 % FS
Repeatability	±0.25 % FS
Response time [2]	Time constant 800 ms About 2 s to settle within ±2 %
Temperature coefficient	0.15 % FS/°C
Pressure coefficient	0.01 % FS per psi (0.07 bar)
Calibration conditions	21.1 °C (70 °F) and 1.01 bar (14.7 psia), unless ordered otherwise
Mounting position	Calibrated horizontal; keep within 15° of horizontal

Operating conditions

Maximum gas pressure	GFM 17, 37, 47: 69 bar g (1000 psig) GFM 57, 67, 77: 34.5 bar g (500 psig)
Optimum pressure	1.4 bar g (20 psig)
Pressure drop	By model and flow, see page 3
Temperature	Gas: 0–50 °C (32–122 °F) Ambient: −10 to 50 °C (14–122 °F)
Gas humidity	Up to 70 % relative humidity
Flow medium	Clean, dry gases only; never liquids
Leak integrity	1 × 10⁻⁹ smL/s helium maximum, to the outside

Mechanical

Wetted materials[3]	Aluminium models: anodised aluminium, brass, 316 stainless steel, FKM O-rings Stainless (suffix S): 316 stainless steel, FKM O-rings Optional O-rings: NBR, EPR or FFKM
Process connections	GFM 17, 37: 1/4" compression; options 6 mm or 3/8" compression, 1/4" face seal; GFM 17 also 1/8" GFM 47, 57: 3/8" compression GFM 67: 1/2" compression GFM 77: 3/4" NPT female or 3/4" compression
Installation	On the bench, or screwed down through the base

Electrical and communication

Flow output	0–5 V DC, linear, load 1000 Ω minimum 4–20 mA, self-powered, non-isolated, loop resistance 0–500 Ω Noise: 20 mV peak-to-peak maximum
Supply	12–26 V DC, 200 mA maximum
Circuit protection	Resettable 300 mA fuse on the power input; rectifier diode against reverse polarity
Connector	9-pin D-sub
Cable length	9.5 ft (3 m) maximum for the 0–5 V output and the remote display

Compliance

EMC compliance	Emission EN 55011, group 1, class B; immunity EN 55082-2
Environment (IEC 664)	Installation level II; pollution degree II

Display

Readout	3½-digit LCD, 0.5" digits; engineering units (standard); for 0–100 %, ask Analyt-MTC
Mounting	Tilts through 90°; plugs into the meter; remote or panel mounting as an option
Without display	Version for OEM installations

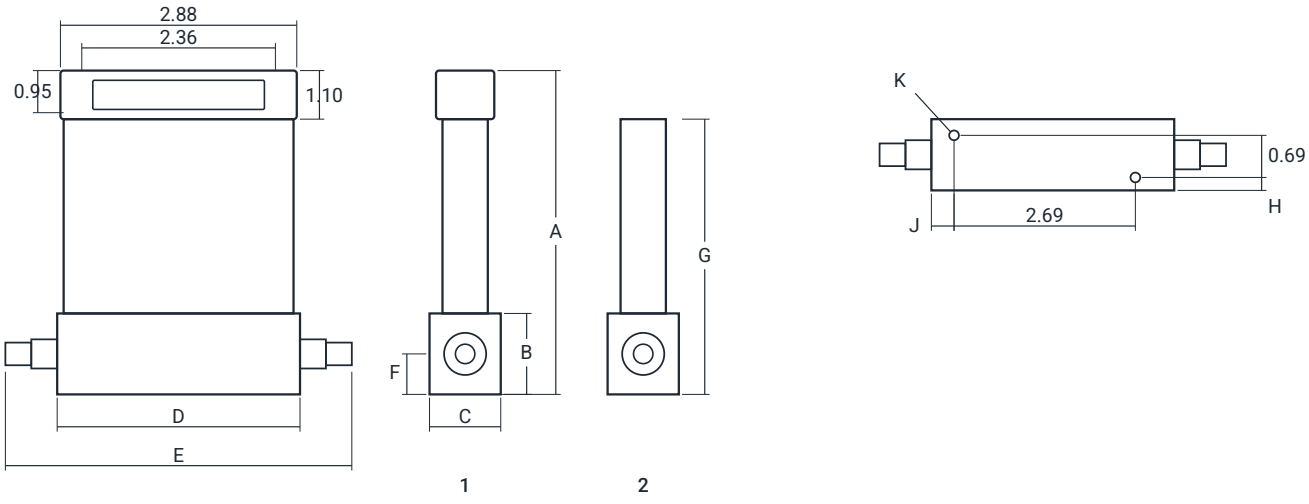
Range codes, N_2 (21.11 °C, 1013.25 mbar)

Code	GFM 17 (smL/min)	Code	GFM 17 (sL/min)	Code	GFM 37 (sL/min)	Code	GFM 47 to 77 (sL/min)
01	10 smL/min	07	1 sL/min	11	15 sL/min	40	60 sL/min (GFM 47)
02	20 smL/min	08	2 sL/min	30	20 sL/min	41	80 sL/min (GFM 47)
03	50 smL/min	09	5 sL/min	31	30 sL/min	42	100 sL/min (GFM 47)
04	100 smL/min	10	10 sL/min	32	40 sL/min	50	200 sL/min (GFM 57)
05	200 smL/min			33	50 sL/min	60	500 sL/min (GFM 67)
06	500 smL/min					70	1000 sL/min (GFM 77)

Maximum pressure drop (21.11 °C, 1013.25 mbar)

Model	Full scale (N_2)	mm H_2O	psid	mbar
GFM 17	up to 10 sL/min	58	0.083	5.7
GFM 37	15 sL/min	63	0.09	6.4
GFM 37	20 sL/min	300	0.44	30
GFM 37	30 sL/min	800	1.18	81
GFM 37	40 sL/min	1480	2.18	150
GFM 37	50 sL/min	2200	3.23	223

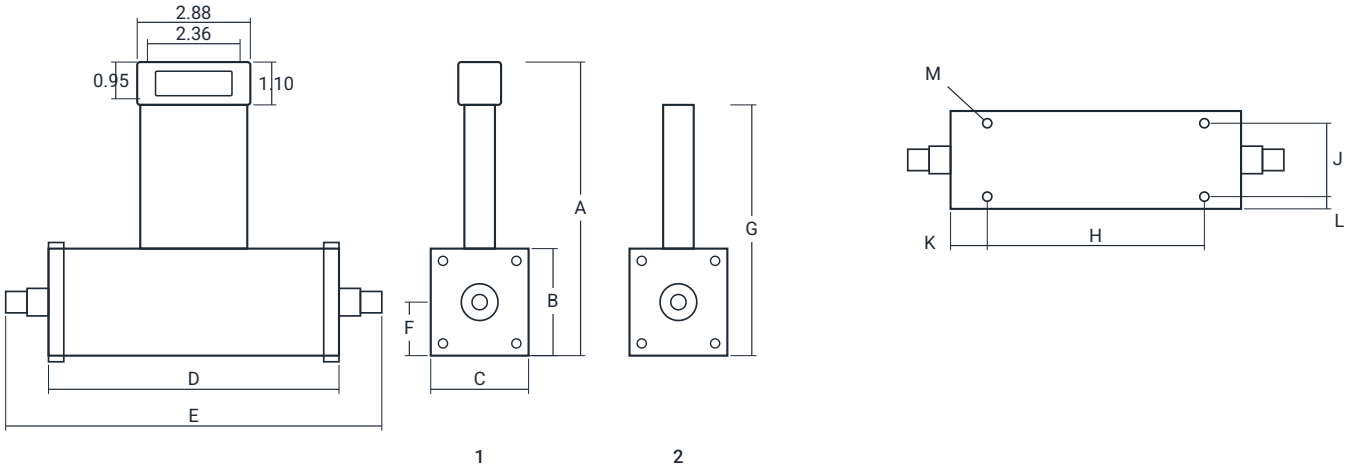
Model	Full scale (N_2)	mm H_2O	psid	mbar
GFM 47	60 sL/min	3100	4.56	314
GFM 47	80 sL/min	4422	6.5	448
GFM 47	100 sL/min	5500	8.08	557
GFM 57	200 sL/min	2720	4.0	280
GFM 67	500 sL/min	3400	5.0	340
GFM 77	1000 sL/min	6120	9.0	620



1 Side view with display

2 Side view without display

GFM 17, 37 and 47: front view, side views and bottom view. Display window and hole spacing in inches; the table gives A to K.



1 Side view with display

2 Side view without display

GFM 57, 67 and 77: front view, side views and bottom view. Display window in inches; the table gives A to M.

Dimensions in mm, GFM 17, 37 and 47

Model	Connection	A	B	C	D	E	F	G	H	J	K, thread × depth (in)
GFM 17	1/4" tube OD	145.3	25.4	28.6	78.6	129.6	12.7	117.1	4.0	4.0	6-32 × 0.13
GFM 37	1/4" tube OD	154.9	34.9	31.8	104.8	155.8	15.9	126.7	7.1	27.3	6-32 × 0.10
GFM 47	3/8" tube OD	154.9	34.9	31.8	104.8	158.7	15.9	126.7	7.1	27.3	6-32 × 0.10

A to F with display; G without display; H to K mounting holes. Compression fittings.

Dimensions in mm, GFM 57, 67 and 77

Model	Connection	A	B	C	D	E	F	G	H	J	K	L	M, thread × depth (in)
GFM 57	3/8" tube OD	170.8	2.00 in	44.5	169.8	223.7	22.2	142.6	119.0	35.3	25.4	4.6	10-24 × 0.25
GFM 67	1/2" tube OD	194.0	76.2	76.2	184.2	245.1	38.1	165.8	171.5	57.2	6.4	9.5	1/4-20 × 0.35
GFM 77	3/4" NPT female	220.0	101.6	101.6	185.4	–	50.8	191.8	172.7	76.2	6.4	12.7	1/4-20 × 0.35

A to F with display; G without display; H to M mounting holes. Compression fittings except on the GFM 77. B of the GFM 57 in inches.

Model code: model, body and seals

Position	Code	Meaning
Model	17	Maximum flow 10 sL/min (N_2, 21.11 °C, 1013.25 mbar)
Model	37	Maximum flow 50 sL/min
Model	47	Maximum flow 100 sL/min
Model	57	Maximum flow 200 sL/min
Model	67	Maximum flow 500 sL/min
Model	77	Maximum flow 1000 sL/min

Position	Code	Meaning
Material	A	Aluminium
Material	S	Stainless steel
Seals	V	FKM
Seals	B	NBR
Seals	E	EPR
Seals	T	FFKM

Order from Analyt-MTC with the order codes. State flow range, gas and pressure. Model code: GFM, model, material, seals, fitting, display, power, output, interface. Other versions: ask Analyt-MTC.

Model code: fittings

Code	Fitting	Models
A	1/4" compression	GFM 17, 37
B	1/8" compression	GFM 17
C	1/4" face seal	GFM 17, 37
D	3/8" compression	GFM 17, 37, 47, 57

Code	Fitting	Models
E	1/2" compression	GFM 67
F	3/4" NPT female	GFM 77
G	3/4" compression	GFM 77
H	6 mm compression	GFM 17, 37

Model code: display, power and signals

Position	Code	Meaning
Display	N	No display
Display	L	LCD readout
Power	6	Universal 12–26 V DC

Position	Code	Meaning
Output signal	A	0–5 V DC
Output signal	B	4–20 mA
Digital interface	0	None

Example: GFM17S-VAL6-A0 is a GFM 17 in stainless steel with FKM seals, 1/4" compression fittings, display, 12–26 V DC power, 0–5 V DC output and no digital interface.

Options and accessories

Enhanced accuracy, GFM 57, 67, 77	
Other fittings; NBR, EPR or FFKM O-rings	
Remote LCD readout with 3 ft cable	17/R
Remote cable, 3 ft	
Cables with 9-pin D-sub, for 4–20 mA or 0–5 V DC	CBL-D4, CBL-D5
Power supply 240 V AC/12 V DC, United Kingdom	PS-GFM-240UK-2
Other power supplies: 110, 220, 240 V AC; 12, 24 V DC	
Battery pack, 110 V or 220 V, with case	
Totaliser I/O monitor (TIO), RS-232 or RS-485 interface	TIO-LAA2, TIO-LAA5
Mounting kit for the TIO, two 9-pin D-sub connectors	KIT-TM-DD
Universal baseplate, a bench-top stand	35780
Rugged transport case	1200-000-110E

Notes

1. FS = full scale. Full-scale flows are given for nitrogen.
2. Response time is the time to settle within ±2 % of the actual flow, for flows from 25 to 100 % FS.
3. You are responsible for choosing wetted materials that suit your gas. If in doubt, ask Analyt-MTC before you order.
4. Dimensions may change without notice; ask Analyt-MTC for a certified drawing.
5. Accessories listed without an order code: ask Analyt-MTC.
6. Other power supplies: North America (110 V AC, 12 V DC) PS-USA; North America (24 V DC), Europe (220 V AC), United Kingdom (240 V AC, 24 V DC) and Australia (240 V AC): ask Analyt-MTC.

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