

MEMS GAS MASS FLOWMETER



- THERMAL MEMS · 2 ... 40 SLPM · DN3 AND DN8
- NO TEMPERATURE OR PRESSURE COMPENSATION · 100:1
- LED DISPLAY · RS485 · RS232 · 0.5 ... 4.5 V

KEY DATA

Property	Value	Property	Value
Flow range	2 ... 40 SLPM full scale, by size	Nominal size	DN3 · DN8
Turndown	100:1	Accuracy	$\pm (1.5 + 0.2 \text{ F.S.}) \%$
Repeatability	0.25 %	Response time	10 ms (20 ... 1000 ms optional)
Working pressure	0.5 MPa maximum	Operating temperature	-10 ... +55 °C
Output	RS485 · RS232 · 0.5 ... 4.5 V	Supply voltage	8 ... 24 Vdc · 50 mA

A thermal MEMS meter: the chip heats the gas a little and measures how much heat the stream carries away. That is a mass flow, so no temperature or pressure compensation is needed — and the meter is calibrated for one gas, chosen in the last field of the order code. The full scale is chosen with the order code: 2, 3, 4 or 5 SLPM for DN3, and 10, 20, 30 or 40 SLPM for DN8.



MEASUREMENT

Measuring principle	Thermal MEMS chip · the gas carries heat away from the sensor, which gives the mass flow directly
Compensation	None needed — the principle measures mass, not volume
Nominal size	3 mm or 8 mm
Full scale	DN3 2 · 3 · 4 · 5 SLPM · DN8 10 · 20 · 30 · 40 SLPM
Turndown	100:1 or better
Accuracy	± (1.5 + 0.2 F.S.) %
Repeatability	0.25 %
Zero drift	± 30 mV
Output drift	± 0.12 % per °C
Response time	10 ms by default · 20, 50, 100, 200, 500 or 1000 ms on request
Calibration gas	Air at 20 °C and 101.325 kPa

MATERIALS AND PROCESS

Media	Clean and dry gas · air, nitrogen, carbon dioxide, oxygen, helium, hydrogen or argon — one of them, chosen in the order code
Process connection	BSPT 1/4 (R1/4), or a 4, 6 or 8 mm push-in fitting on DN3
Working pressure	0.5 MPa maximum
Pressure loss	100 Pa on DN3 · 600 Pa on DN8, at full scale
Operating temperature	-10 ... +55 °C
Storage temperature	-20 ... +65 °C
Humidity	Below 95 % RH, no icing and no condensation
Weight	55 g with R1/4 · 71 g with the 6 mm fitting · 77 g with the 4 or 8 mm fitting

ELECTRICAL PROPERTIES

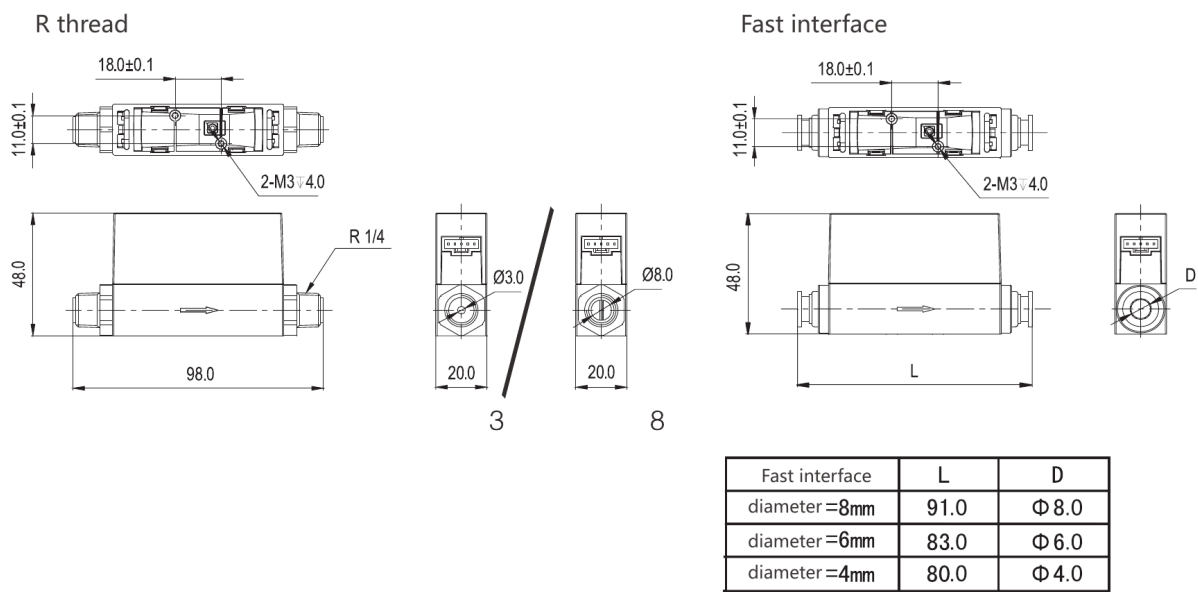
Supply voltage	8 ... 24 Vdc · 50 mA
Digital output	RS485 or RS232 — the fourth field of the order code
Analogue output	Linear voltage 0.5 ... 4.5 Vdc
Electrical interface	Five-pin socket

DISPLAY

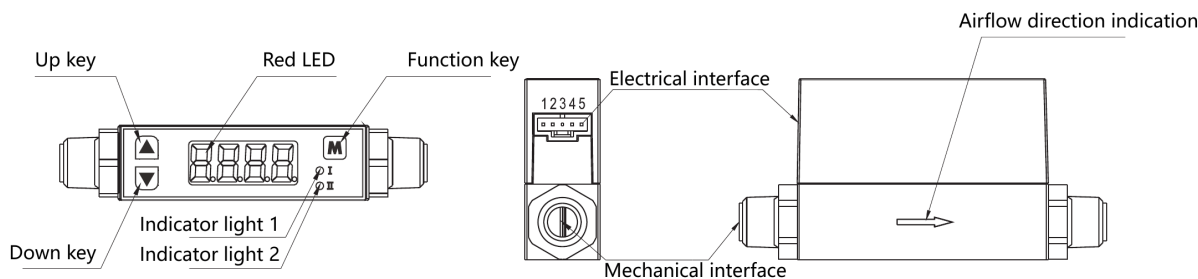
Display	Four-digit seven-segment LED · two indicator lamps
Units	SLPM instantaneous · SL totalized
Resolution	DN3 0.001, 0.01 or 0.1 · DN8 0.01 or 0.1 SLPM
Keys	Three · up, down and function
Recorded	Highest and lowest instantaneous flow since power-up · over-range indication



DRAWINGS



Left the version with the R1/4 thread, right the version with a push-in fitting; between them the two bores, 3 and 8 mm. The table below the drawing belongs to the push-in version.



The controls: up, down and function key, the four-digit display, the two indicator lamps, the five-pin socket and the arrow for the flow direction.

VERSIONS

Version	Bore	Full scale (SLPM)	Pressure loss	Resolution (SLPM)
QGKC-3	3 mm	2 · 3 · 4 · 5	100 Pa	0.001 · 0.01 · 0.1
QGKC-8	8 mm	10 · 20 · 30 · 40	600 Pa	0.01 · 0.1



DIMENSIONS (mm)

L is the overall length over the fittings, the height is measured over the display housing, and 18.0×11.0 mm is the sensor body itself. The push-in fittings are offered on the DN3 version only; the DN8 version carries the R1/4 thread. The bore $\varnothing$ of the threaded version is 3.0 mm on DN3 and 8.0 mm on DN8.

OVERALL DIMENSIONS (mm)

Version	Length L	Height	Body	Bore $\varnothing$	Across flats	Mounting
R1/4 thread · both sizes	98.0	48.0	$18.0 \pm 0.1 \times 11.0 \pm 0.1$	3.0 · 8.0	20.0	2 × M3, 4.0 deep
Push-in 4 mm	80.0	48.0	$18.0 \pm 0.1 \times 11.0 \pm 0.1$	4.0	20.0	2 × M3, 4.0 deep
Push-in 6 mm	83.0	48.0	$18.0 \pm 0.1 \times 11.0 \pm 0.1$	6.0	20.0	2 × M3, 4.0 deep
Push-in 8 mm	91.0	48.0	$18.0 \pm 0.1 \times 11.0 \pm 0.1$	8.0	20.0	2 × M3, 4.0 deep



COMPLIANCE AND CERTIFICATION

Measuring principle	Thermal MEMS
Accuracy	$\pm (1.5 + 0.2 \text{ F.S.}) \%$
Repeatability	0.25 %
Pressure rating	0.5 MPa maximum working pressure

Example: QGKC-3-2-R-R4-0. The second and the third field depend on the first: the push-in fittings belong to the 3 mm version, the R1/4 thread is the only connection of the 8 mm version. The gas field is not an accessory — the meter is calibrated for the gas chosen there.

ORDER CODE

Field	Code	Meaning
1 Series	QGKC-3	3 mm bore
	QGKC-8	8 mm bore
2 Full scale	2 · 3 · 4 · 5	SLPM · for QGKC-3
	10 · 20 · 30 · 40	SLPM · for QGKC-8
3 Connection	R	BSPT 1/4 (R1/4) · the only connection of QGKC-8
	04 · 06 · 08	Push-in fitting 4, 6 or 8 mm · for QGKC-3 only
4 Output	R4	RS485
	R2	RS232
	V	Analogue voltage
5 Gas	0 · 1 · 2 · 3	Air · nitrogen · carbon dioxide · oxygen
	4 · 5 · 6	Helium · hydrogen · argon

