

THERMAL GAS FLOW SENSOR LED



- THERMAL MASS · 5 ... 2000 L/MIN · PUSH-IN OR THREAD
- 4-DIGIT LED · SWITCH PNP OR NPN · IP40
- 1 ... 5 V · 4 ... 20 MA · RS485 · VALVE AND PANEL METER

KEY DATA

Property	Value	Property	Value
Flow range	5 ... 2000 L/min, by size	Media	Dry air · nitrogen
Display accuracy	± 3 % F.S. ± 1 digit	Repeatability	± 3 % F.S. ± 1 digit
Working pressure	-0.09 ... 0.8 MPa	Protection grade	IP40
Output	Switch PNP or NPN · 1 ... 5 V · 4 ... 20 mA · RS485	Supply voltage	12 ... 24 Vdc
Medium temperature	0 ... +50 °C	Ambient temperature	0 ... +50 °C

A thermal mass meter: the sensor is heated and the gas stream carries heat away; how much it carries is the mass flow. Seven sizes: 5, 10, 50, 100, 200, 1000 and 2000 L/min.



MEASUREMENT

Measuring principle	Thermal mass · heat carried away by the gas stream
Media	Dry air, nitrogen (N ₂) · non-corrosive and non-flammable
Direction	Unidirectional
Accuracy range	Linearity
Display accuracy	± 3 % F.S. ± 1 digit (1)
Analogue accuracy	± 3 % F.S. ± 1 digit (1)
Repeatability	± 3 % F.S. ± 1 digit
Linearity	± 3 % F.S.
Response time	≤ 100 ms on the analogue output · 800 ms on the switches, also 50, 80, 120, 200, 400 or 1500 ms

MATERIALS AND PROCESS

Process connection	Push-in Ø 6 or Ø 8 mm · Rc1/8 · G1/8 · Rc1/4 · G1/4 · Rc1/2 · G1/2 · Rc3/4 · G3/4, by size
Working pressure	-0.09 ... 0.8 MPa (2)
Pressure resistance	1 MPa
Protection grade	IP40
Medium temperature	0 ... +50 °C · no dew and no ice
Ambient temperature	0 ... +50 °C · storage -10 ... +60 °C
Humidity	35 ... 85 % RH, no dew
Insulation	≥ 50 MΩ at 500 Vdc between leads and plastic housing
Withstand voltage	1000 Vac for one minute
EMC	IEC 61000-6-2 and IEC 61000-6-4
Weight	109.3 g with the Ø 6 fitting · 112.7 g with Ø 8 · 118 g with Rc1/4 · 128.5 g with Rc1/8, two metres of cable included

ELECTRICAL PROPERTIES

Supply voltage	12 ... 24 Vdc
Consumption	≤ 50 mA without load
Switch output	PNP or NPN · short-circuit protected
Switch modes	Hysteresis, window, pulse — full scale 150 Hz
Return difference	Tunable
Voltage output	1 ... 5 V · output impedance 1 kΩ
Current output	4 ... 20 mA · load ≤ 300 Ω
Communication	RS485
Cable	Ø 4 mm oil-resistant PVC · 0.25 mm ² · four cores · four-pin buckle plug

DISPLAY

Display	Four-digit LED · can be turned by 180°
Shown	Instantaneous flow and totalized flow
Keys	Set key and up/down key

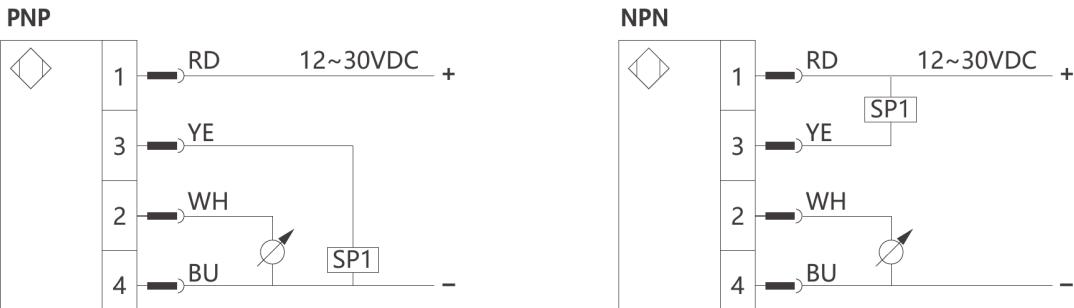
(1) Measured with 300 kPa at the inlet, one atmosphere at the outlet and 25 °C.

(2) Measured over -0.09 ... 0.8 MPa with one atmosphere at the outlet and 25 °C. The lower figure is a vacuum.

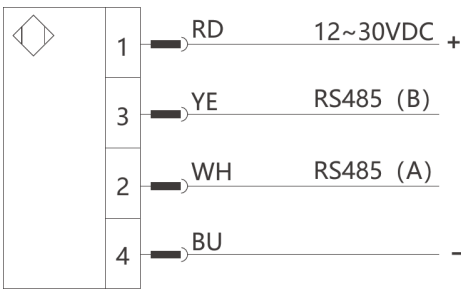


WIRING

One switch + One analog



The switch versions: left PNP, right NPN.



The RS485 version: the yellow and the white core carry the pair.

Wire colours to IEC 60757: RD red, BU blue, YE yellow, WH white. Four cores in every version; what the yellow and the white core carry is set by the third field of the order code. The plug is a four-pin buckle connector, moulded onto two or ten metres of cable — see the accessories.

WIRING

Core	Pin	Switch and analogue version	RS485 version
RD	1	Supply +	Supply +
BU	4	Supply -	Supply -
YE	3	Switch SP1 · PNP or NPN by order code	RS485 (B)
WH	2	Analogue 1 ... 5 V or 4 ... 20 mA by order code	RS485 (A)

The resolution is the smallest step of the display in litres per minute; in cubic feet it is 0.1 ft³/min throughout. The connection column is not a field of its own — it follows from the fourth field of the order code, which binds every nozzle to a flow range.



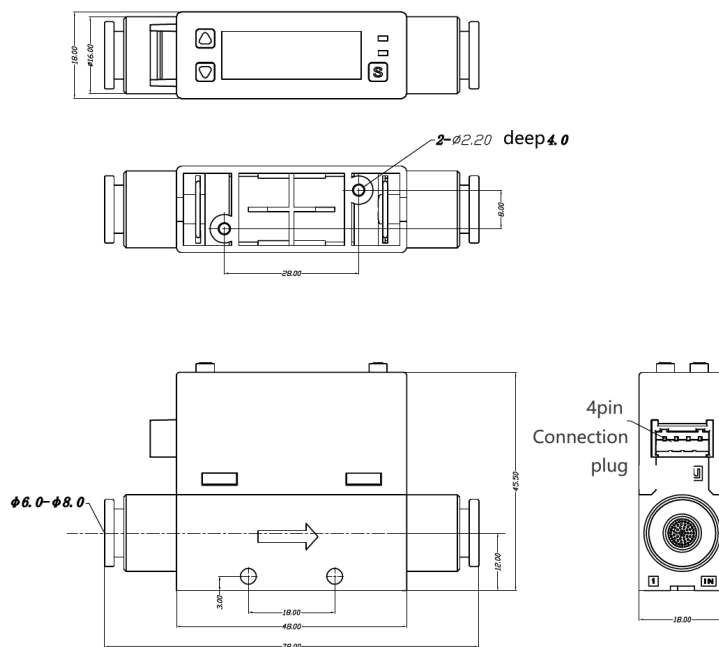
VERSIONS

Code	Rated flow (L/min)	Display range (L/min)	Resolution	Connection
0005	0 ... 5	0 ... 5.25	0.01	Ø 6 push-in · Rc1/8 · G1/8
0010	0 ... 10	0 ... 10.50	0.01	Ø 6 push-in · Rc1/8 · G1/8
0050	0 ... 50	0 ... 52.5	0.1	Ø 6 push-in · Rc1/8 · G1/8
0100	0 ... 100	0 ... 105.0	0.1	Ø 8 push-in · Rc1/4 · G1/4
0200	0 ... 200	0 ... 210	1	Ø 8 push-in · Rc1/4 · G1/4
1000	0 ... 1000	0 ... 1050	1	Rc1/2 · G1/2
2000	0 ... 2000	0 ... 2100	1	Rc3/4 · G3/4



DIMENSIONS (mm)

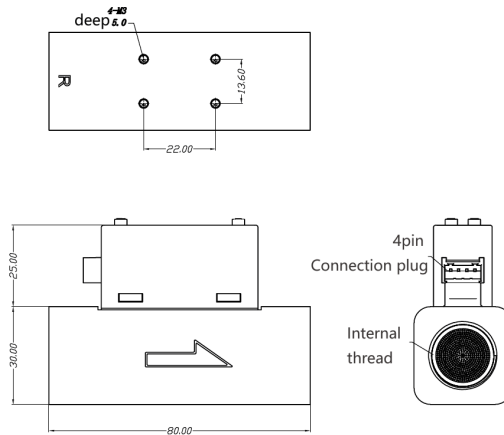
Piping type



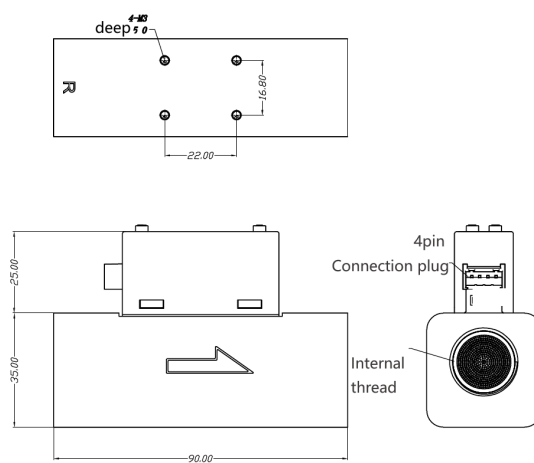
The two small versions: above the push-in type, below the internal thread type.



Flow range: 1000L



Flow range: 2000L



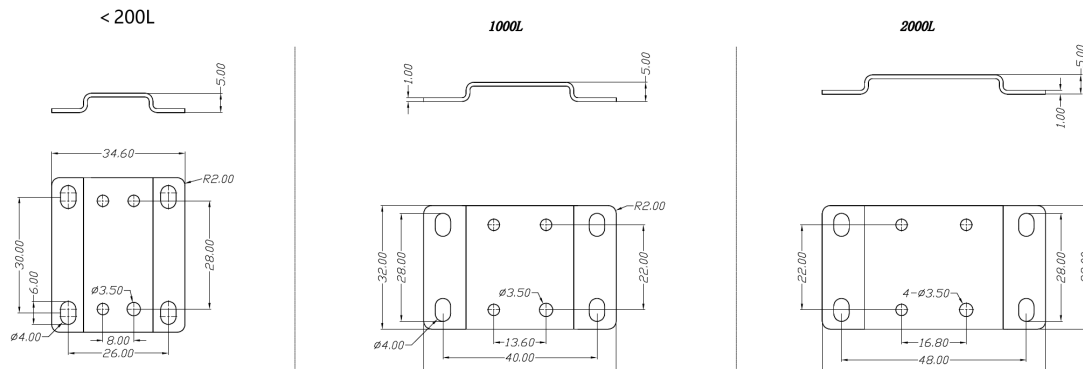
The two large versions, 1000 and 2000 L/min.

The length is measured over the fittings, the width over the body and the height over the head with the display; for the 1000 and the 2000 L/min version the height is 25.00 mm over the body, 30.00 or 35.00 mm over the flow channel. The two small versions share one drawing, the 1000 and the 2000 L/min version have one each.

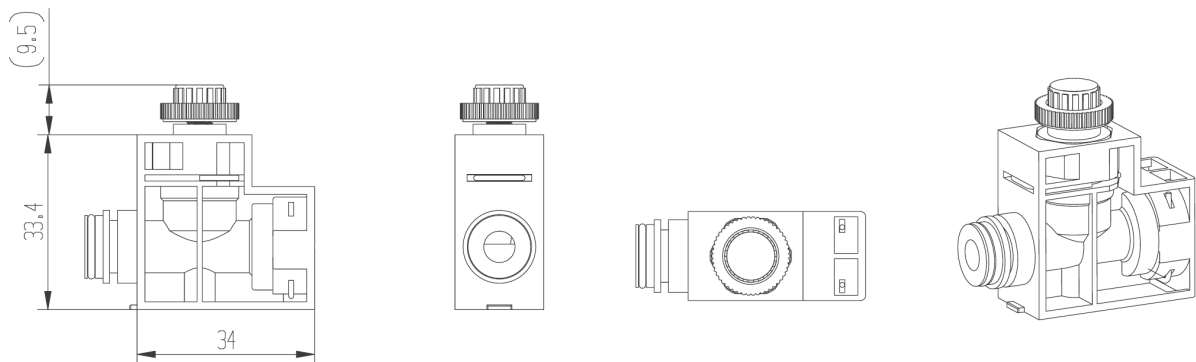
OVERALL DIMENSIONS (mm)

Version	Length	Width	Height	Mounting holes	Connection
Push-in, up to 200 L/min	78.00	18.00	45.50	2 x Ø 2.20, 4.0 deep · 28.00 apart	Ø 6.0 ... Ø 8.0
Thread, up to 200 L/min	70.05	18.00	45.50	2 x Ø 2.20, 4.0 deep · 28.00 apart	Rc or G, internal
1000 L/min	80.00	30.00	25.00	4 x M3, 5.0 deep · 22.00 x 13.60	Rc1/2 or G1/2
2000 L/min	90.00	35.00	25.00	4 x M3, 5.0 deep · 22.00 x 16.80	Rc3/4 or G3/4





The three mounting brackets: up to 200, for 1000 and for 2000 L/min.



The regulating valve, offered up to 200 L/min.

The S10 is a separate device: a panel meter for the cabinet that takes the analogue signal of the sensor, shows it and switches on it. It is the same panel meter as in the QEKJ sheet.

PANEL METER S10

Property	Value
Input	Analogue (pulse) · PT100 on request
Display range	-199.9 ... 999.9
Temperature drift	$\leq \pm 0.015$ % F.S. per °C · typically about ± 75 ppm/°C
EMC	IEC 61000-4-4 ± 4 kV / 5 kHz · IEC 61000-4-5 surge 4 kV
Output	Switch or analogue
Supply voltage	24 Vdc ± 20 %
Consumption	≤ 3 W
Ambient temperature	-10 ... +60 °C · humidity ≤ 90 % RH
Front size	40 × 40 mm · 44.2 mm deep, 37.7 mm behind the panel
Panel cut-out	36 +0.5 × 36 +0.5 mm · at least 43 mm pitch · panel 1 ... 3.2 mm thick · corner radius below R3.5
Terminals	Eight screw terminals · two switch outputs, supply in, supply out, analogue in
Order model	S10-21 · analogue input, two switch outputs, reading in L/min



COMPLIANCE AND CERTIFICATION

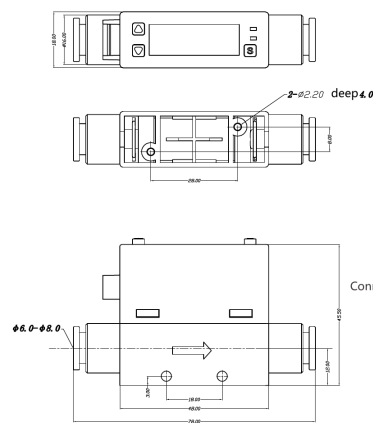
Protection grade	IP40
EMC	IEC 61000-6-2 and IEC 61000-6-4
Measuring principle	Thermal mass
Accuracy	$\pm 3\%$ F.S. ± 1 digit on the display and on the analogue output (1)
Repeatability	$\pm 3\%$ F.S. ± 1 digit
Pressure rating	-0.09 ... 0.8 MPa working, 1 MPa resistance

ORDER CODE

Accessories

- Three accessories are available, and two of them are fields of the order code. The MOUNTING BRACKET comes in three sizes: 34.60 × 30.00 mm with a 26.00 mm hole spacing up to 200 L/min, 50.00 × 32.00 with 40.00 for the 1000 L/min version and 58.00 × 32.00 with 48.00 for the 2000, each 1 mm thick. The REGULATING VALVE is screwed between the fittings and adds 34 mm of width and 33.4 mm of height; with it the device is 104.00 mm long in the thread version and 112.00 mm in the push-in version. It is available up to 200 L/min only. The CABLE is a four-pin buckle plug moulded onto two or ten metres of PVC lead, order numbers XH4PC02G and XH4PC10G.

Piping type



Cable

XH4PC02G ·
XH4PC10G

Valve

up to 200 L/min

Example: QGKK-0005-NV-D6. The fourth field is bound to the second: every nozzle belongs to a flow range, so the range decides the thread. The regulating valve is offered for the five small sizes only.

ORDER CODE

Field	Code	Meaning
1 Series	QGKK	QGKK thermal gas flow sensor
2 Range	0005 · 0010 · 0050	5 · 10 · 50 L/min
	0100 · 0200	100 · 200 L/min
	1000 · 2000	1000 · 2000 L/min
3 Output	NV · NA	NPN switch + analogue 1 ... 5 V · + analogue 4 ... 20 mA
	PV · PA	PNP switch + analogue 1 ... 5 V · + analogue 4 ... 20 mA
	R	RS485



ORDER CODE · CONTINUED

Field	Code	Meaning
4 Nozzle	D6 · D8	Ø 6 mm push-in, up to 50 L/min · Ø 8 mm push-in, 100 and 200 L/min
	R18K · G18K	Rc1/8 · G1/8, up to 50 L/min
	R14K · G14K	Rc1/4 · G1/4, 100 and 200 L/min
	R12K · G12K	Rc1/2 · G1/2, 1000 L/min
	R34K · G34K	Rc3/4 · G3/4, 2000 L/min
5 Bracket	—	None
	T	Tape carrier · the mounting bracket
6 Valve	—	None
	F	Regulating valve — only up to 200 L/min

