

THERMAL GAS MASS FLOWMETER



- THERMAL MASS · DN15 ... DN50 · 5 ... 705 M³/H
- STAINLESS STEEL 304 · 316 FOR HYDROGEN · IP65
- PULSE · 4 ... 20 MA · 1 ... 5 V · RS485

KEY DATA

Property	Value	Property	Value
Flow range	5 ... 705 m ³ /h, by size and gas	Nominal size	DN15 ... DN50
Accuracy	≤ 1.5 %	Lower limit	≤ 0.1 m/s dead band
Working pressure	≤ 2.5 MPa external thread · ≤ 4.0 MPa internal thread	Protection grade	IP65
Output	Pulse · 4 ... 20 mA · 1 ... 5 V · RS485	Supply voltage	18 ... 30 Vdc
Medium temperature	-20 ... +80 °C	Body	Stainless steel 304 · 316 by order code

A thermal mass meter: two resistance thermometers sit in the gas, one heated above the gas temperature and one measuring it; the faster the gas, the more heat it carries away. The range table gives three ranges per size — for nitrogen and air, for oxygen and for hydrogen.



MEASUREMENT

Measuring principle	Thermal diffusion · a heated and an unheated resistance thermometer
Velocity range	Up to 100 m/s
Dead band	≤ 0.1 m/s
Nominal size	DN15 ... DN50
Accuracy	≤ 1.5 %
Response time	1 s, adjustable
Calibration	Air at 20 °C
Display	Colour LCD on the device

MATERIALS AND PROCESS

Body	Stainless steel 304 · stainless steel 316 as the fifth field of the order code, named there for hydrogen
Display housing	Engineering plastic
Process connection	G1/2 ... G2, external or internal thread, by size
Working pressure	≤ 2.5 MPa with the external thread · ≤ 4.0 MPa with the internal thread
Medium temperature	-20 ... +80 °C
Storage temperature	-20 ... +65 °C
Protection grade	IP65

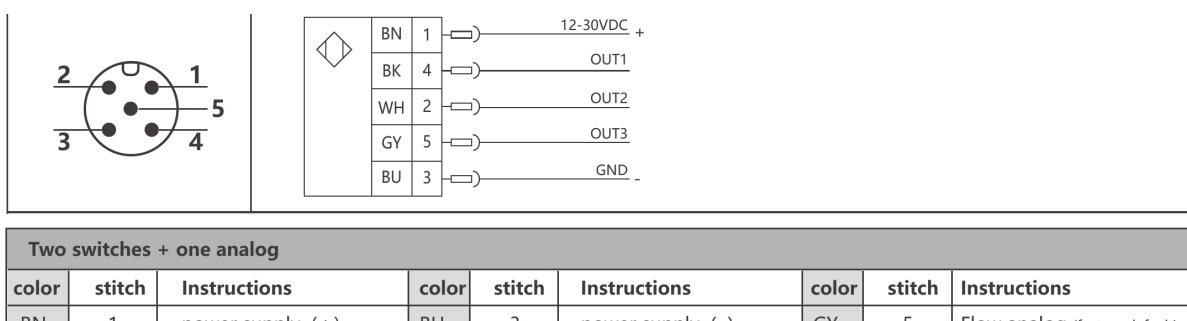
ELECTRICAL PROPERTIES

Supply voltage	18 ... 30 Vdc
Outputs	Pulse · 4 ... 20 mA · 1 ... 5 V · RS485 — the fourth field of the order code
Switch outputs	Two, PNP by factory default, or NPN · linear pulse 100 Hz full scale
Wiring	M12 aviation plug · five cores on SA and SV, four on the RS485 version

DISPLAY

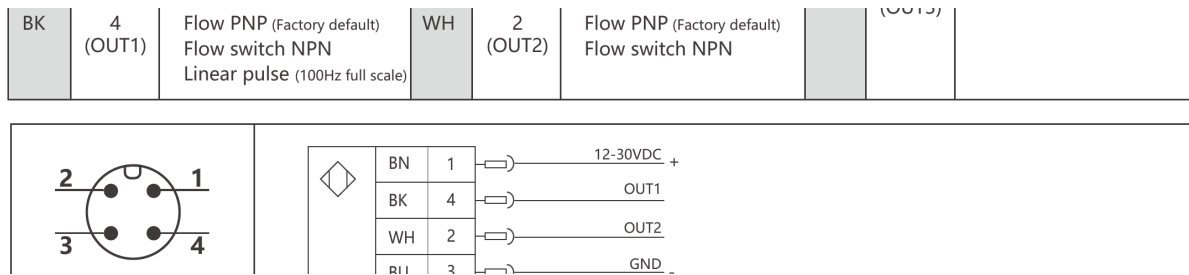
Display	Colour LCD
Shown	Instantaneous flow, velocity, totalized flow and the unit

WIRING



The SA and SV versions: five cores, two switches and one analogue output.





The RS485 version: four cores, the grey one is not used.

Wire colours to IEC 60757: BN brown, BU blue, BK black, WH white, GY grey.

WIRING

Core	Pin	SA and SV · two switches + analogue	R · RS485
BN	1	Supply +	Supply +
BU	3	Supply –	Supply –
BK	4 (OUT1)	Flow switch PNP by factory default, or NPN · linear pulse, 100 Hz full scale	RS485 (B)
WH	2 (OUT2)	Flow switch PNP by factory default, or NPN	RS485 (A)
GY	5 (OUT3)	Flow, analogue — 4 ... 20 mA on SA, 1 ... 5 V on SV	Not used

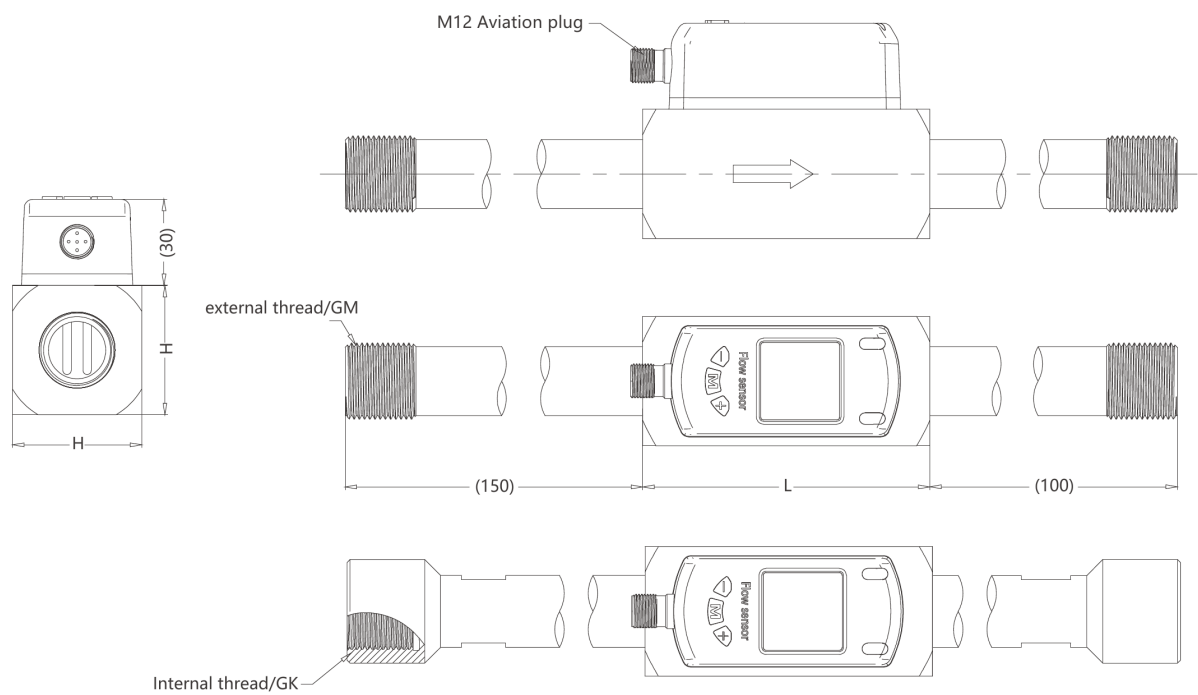
The three flow columns are in m³/h and they are the upper limits; the factory calibration is air at 20 °C. For oxygen the meter reaches half the range of air, for hydrogen less than a tenth. Body length and section are in millimetres. External and internal thread carry the same size and differ only in the pressure rating, 2.5 against 4.0 MPa.

VERSIONS

Nominal size	Nitrogen and air	Oxygen	Hydrogen	Thread	Body length	Width x height
DN15	60	30	5	G1/2 (1/2 inch)	100	45 x 45
DN20	110	55	15	G3/4 (3/4 inch)	100	45 x 45
DN25	175	85	25	G1 (1 inch)	100	45 x 45
DN32	285	140	45	G1-1/4 (1.2 inch)	100	45 x 45
DN40	450	225	70	G1-1/2 (1.5 inch)	120	55 x 55
DN50	705	350	110	G2 (2 inch)	120	65 x 65



DIMENSIONS (mm)



Left the head seen from the front, right the external and the internal thread version. L is the body length, H the width and the height.

The drawing gives three further figures that are the same for every size: the display head is 30 mm deep, the straight run drawn before the meter 150 mm and after it 100 mm. The electrical connection is an M12 aviation plug on the side of the head.

OVERALL DIMENSIONS (mm)

Nominal size	Body length L	Width x height H x H	Thread
DN15 · DN20 · DN25 · DN32	100	45 x 45	G1/2 · G3/4 · G1 · G1-1/4
DN40	120	55 x 55	G1-1/2
DN50	120	65 x 65	G2



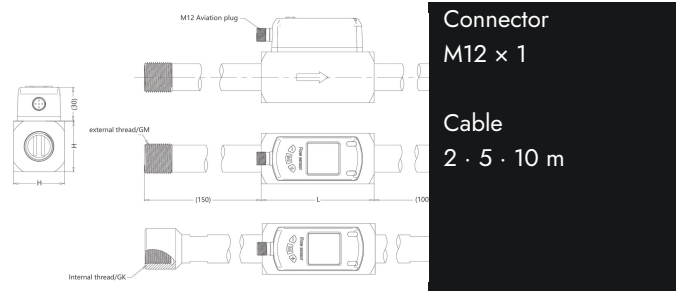
COMPLIANCE AND CERTIFICATION

Protection grade	IP65
Measuring principle	Thermal diffusion
Accuracy	≤ 1.5 %
Wetted materials	Stainless steel 304, or 316 by order code
Pressure rating	2.5 MPa with the external and 4.0 MPa with the internal thread

ORDER CODE

Accessories

- Cable sockets for the M12 × 1 plug: moulded onto 2, 5 or 10 metres of polyurethane (ZL05-PU02G, PU05G, PU010G) or PVC (ZL05-PC02G, PC05G, PC010G), and field-wireable connectors with a Pg7 or Pg9 gland, GL04 with four pins and GL05 with five. All the moulded sockets are five-pin.



Example: QGKL-015-GM-SA. The third field decides the pressure rating: the external thread is rated to 2.5 MPa, the internal to 4.0 MPa.

ORDER CODE

Field	Code	Meaning
1 Series	QGKL	QGKL thermal gas mass flowmeter
2 Size	015 ... 050	DN15 ... DN50 — 015 is DN15
3 Connection	GM	External thread · up to 2.5 MPa
	GK	Internal thread · up to 4.0 MPa
4 Output	SA	Two switches / pulse + analogue 4 ... 20 mA · five-core cable
	SV	Two switches / pulse + analogue 1 ... 5 V · five-core cable
	R	RS485 · four-core cable
5 Body	—	Stainless steel 304
	S	Stainless steel 316 — named for hydrogen and comparable duties

