

DIFFERENTIAL PRESSURE FLOW METER



- NO MOVING PARTS · MAINTENANCE-FREE
- 0.4 ... 12 500 L/min · DN 15 TO DN 250
- 4 ... 20 mA · 1 ... 5 V · 0 ... 10 V



Stainless
Steel

FLOW RANGE · OVERVIEW

DN (mm)	Q min (L/min)	Q max (L/min)	DN (mm)	Q min (L/min)	Q max (L/min)
15	0.4	50	80	20	1250
20	2	120	100	40	2000
25	2	150	125	100	3000
32	8	250	150	200	5000
40	8	350	200	400	7500
50	20	500	250	600	12500
65	20	800			



MEASUREMENT

Measuring principle	Differential pressure across a fixed restriction · no moving parts · no field calibration
Flow range	0.4 ... 12 500 L/min depending on the pipe size
Repeatability	< 2 % of the actual flow rate
Measured medium	Liquids · organic and inorganic solutions · steam on request
Pressure range	0 ... 1.0 MPa · customisation supported
Pressure rating	1.0 MPa · 1.6 or 2.5 MPa on request

MATERIALS AND TEMPERATURE

Wetted material	Stainless steel SUS 304 · 316L on request
Medium temperature	-20 ... +80 °C standard type
High temperature types	-30 ... +150 °C · -40 ... +200 °C · -40 ... +350 °C by order code
Ambient temperature	-10 ... +65 °C

ELECTRICAL PROPERTIES

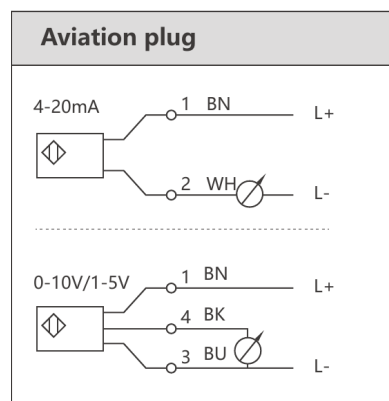
Supply voltage	18 ... 30 Vdc
Output signal	4 ... 20 mA · 1 ... 5 V · 0 ... 10 V
On request	Communication output · LED or colour display
Display	None in the standard type
Electrical interface	M12x1 connector, 4-pin

ELECTRICAL CONNECTION

Pin	4 ... 20 mA	1 ... 5 V · 0 ... 10 V
1 BN	L+	L+
2 WH	L-	—
3 BU	—	L-
4 BK	—	Signal

Pin numbers and wire colours of the M12x1 4-pin connector. The current output uses two pins, the voltage outputs three; pin 2 stays unused on the voltage versions.

WIRING DIAGRAM



FLOW RANGES AND RANGE CODES

RANGE TABLE

DN	Process connection	Range (L/min)	Code	DN	Process connection	Range (L/min)	Code
DN15 · 1/2"	Threaded flange	0.4 ~ 2	04	DN65 · 2 1/2"	Flange	20 ~ 120	20
		1 ~ 5	1			40 ~ 200	40
		2 ~ 15	2			50 ~ 250	50
		4 ~ 30	4			100 ~ 500	100



		8 ~ 40	8			160 ~ 800	160
		10 ~ 50	10	DN80 . 3"	Flange	20 ~ 120	20
DN20 . ¾"	Threaded flange	2 ~ 15	2			40 ~ 200	40
		4 ~ 30	4			80 ~ 400	80
		8 ~ 40	8			100 ~ 500	100
		10 ~ 50	10			150 ~ 750	150
		16 ~ 120	16			250 ~ 1250	250
DN25 . 1"	Threaded flange	2 ~ 15	2	DN100 . 4"	Flange	40 ~ 200	40
		8 ~ 40	8			80 ~ 400	80
		4 ~ 30	4			150 ~ 750	150
		10 ~ 50	10			160 ~ 800	160
		12 ~ 60	12			200 ~ 1000	200
		15 ~ 100	15			250 ~ 1250	250
		20 ~ 120	20			280 ~ 1400	280
		30 ~ 150	30			400 ~ 2000	400
DN32 . 1½"	Flange	8 ~ 40	8	DN125 . 5"	Flange	100 ~ 500	100
		15 ~ 100	15			200 ~ 1000	200
		20 ~ 120	20			400 ~ 2000	400
		30 ~ 150	30			600 ~ 3000	600
		40 ~ 200	40	DN150 . 6"	Flange	200 ~ 1000	200
		50 ~ 250	50			400 ~ 2000	400
DN40 . 1½"	Threaded flange	8 ~ 40	8			600 ~ 3000	600
		15 ~ 100	15			900 ~ 4500	900
		20 ~ 120	20			1000 ~ 5000	1000
		30 ~ 150	30	DN200 . 8"	Flange	400 ~ 2000	400
		40 ~ 200	40			600 ~ 3000	600
		50 ~ 250	50			1000 ~ 5000	1000
		70 ~ 350	70			1500 ~ 7500	1500
DN50 . 2"	Flange	20 ~ 120	20	DN250 . 10"	Flange	600 ~ 3000	600

RANGE TABLE . CONTINUED

DN	Process connection	Range (L/min)	Code	DN	Process connection	Range (L/min)	Code
		40 ~ 200	40			1000 ~ 5000	1000
		70 ~ 350	70			1500 ~ 7500	1500
		100 ~ 500	100			1600 ~ 8000	1600
						2000 ~ 10000	2000
						2400 ~ 12000	2400
						2500 ~ 12500	2500

The range code is field 3 of the order code.

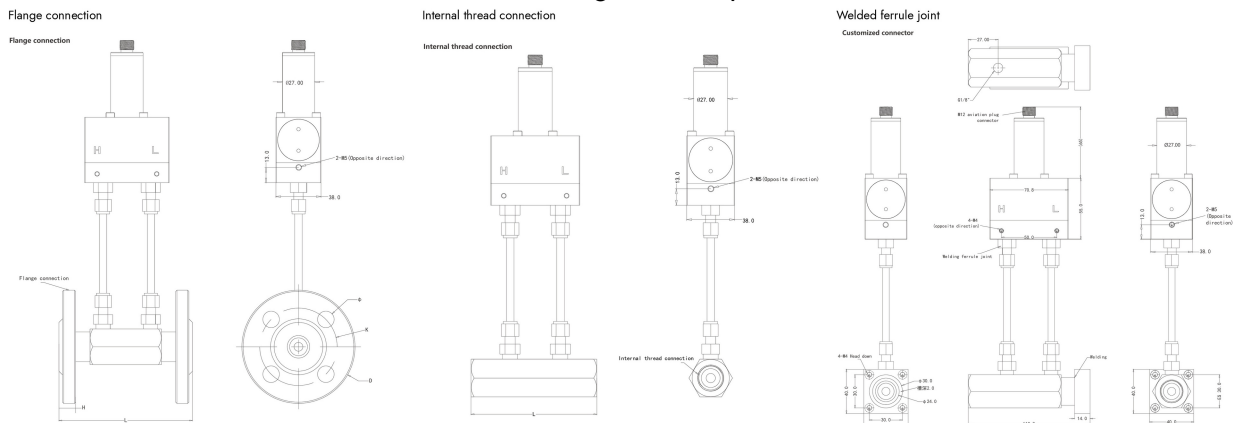


DIMENSIONS (mm)

DIMENSIONS · FLANGE CONNECTION (mm)

Nominal diameter DN	Flange Ø D	Bolt circle K	Hole Ø φ	Holes N	Thickness H	Body length L
15	95	65	14	4	14	75
20	105	75	14	4	16	85
25	115	85	14	4	16	100
32	140	100	18	4	18	120
40	150	110	18	4	18	140
50	165	125	18	4	19	150
65	185	145	18	8	20	175
80	200	160	18	8	20	200
100	220	180	18	8	22	220
125	250	210	18	8	22	250
150	285	240	22	8	24	300
200	340	295	22	12	26	360
250	405	355	26	12	29	400

Flange dimensions in mm, to GB 9119-2000. Head Ø 27 mm · 13 mm from the head to the centre of the 2 × M5 mounting thread · 38 mm across the body. One label in the dimension drawing of the welded ferrule version is in Chinese; it means a groove depth of 2.0 mm.



Left: flange connection, DN15 to DN250. Centre: internal thread connection, G1/2 to G2 up to DN50. Right: welded ferrule joint with the customised G1/8" connector — body 110 x 40 mm, head 70.8 x 55 mm, mounting 4 × M4 and 2 × M5.



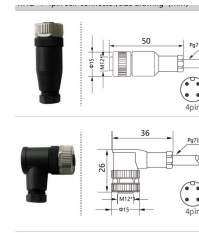
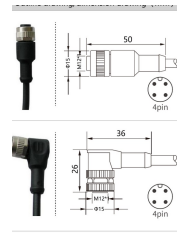
COMPLIANCE AND CERTIFICATION

Flange standard	GB 9119-2000 · the standard flange is offered as PN16
Wetted materials	Stainless steel SUS 304 · 316L on request
Pressure rating	1.0 MPa · 1.6 or 2.5 MPa on request

ORDER CODE AND ACCESSORIES

M12x1 cable sockets and connectors

- All versions are wired through an M12x1 4-pin connector. Two families of cable sockets are offered: moulded sockets with 2, 5 or 10 m of polyurethane or PVC cable, straight or angled, and connectors that are wired on site through a Pg7 or Pg9 gland. The factory standard is the straight PVC socket with 2 m of cable.



Connector
M12x1 · 4-pin

Cable
2 · 5 · 10 m

ORDER CODE

Field	Code	Meaning
1 Series	QBKB	QBKB differential pressure flow meter
2 Caliber	015 · 020 · 025 · 032 · 040 · 050 · 065 · 080 · 100 · 125 · 150 · 200 · 250	Measuring caliber DN15 ... DN250 · 015 is DN15, 025 is DN25
3 Range	04 · 1 · 2 · 4 · 8 · 10 · 12 · 15 · 16 · 20 · 30 · 40 · 50 · 70 · 80 · 100 · 150 · 160 · 200 · 250 · 280 · 400 · 600 · 900 · 1000 · 1500 · 1600 · 2000 · 2400 · 2500	Range code from the range table · only the codes listed for the caliber are available
4 Process	GK	Internal thread, G thread · up to DN50
	RK	Internal thread, R thread · up to DN50
	GM	External thread, G thread · up to DN50
	RM	External thread, R thread · up to DN50

ORDER CODE · CONTINUED

Field	Code	Meaning
	F	National standard flange · PN16, pressure resistance 1.6 MPa



5 Temperature	—	Standard type · medium temperature -20 ... +80 °C
	G	High temperature type · -30 ... +150 °C
	G2	High temperature type · -40 ... +200 °C
	G3	High temperature type · -40 ... +350 °C
6 Output	A	4 ... 20 mA analogue signal
	V15	1 ... 5 V analogue signal
	V010	0 ... 10 V analogue signal
7 Cold end	—	One-piece welding · up to 200 °C
	KT03	Ferrule joint up to 200 °C · 6 mm outer diameter metal capillary, 30 cm long
	KT10	Ferrule joint up to 350 °C · 6 mm outer diameter metal capillary, 100 cm long

Example: QBKB-015-10-GK—A—.

ACCESSORIES

Item	Order code	Data
Cable socket M12x1, 4-pin, straight, moulded cable	ZL02-PU02G-P · PU05G-P · PU010G-P · ZL02-PC02G-P · PC05G-P · PC010G-P	2, 5 or 10 m · PU is polyurethane, PC is PVC · ZL02-PC02G-P is the factory standard
Cable socket M12x1, 4-pin, angled, moulded cable	ZL02-PU02W-P · PU05W-P · PU010W-P · ZL02-PC02W-P · PC05W-P · PC010W-P	2, 5 or 10 m · body 36 x 26 mm
Cable socket M12x1, 4-pin, straight, second series	ZL03-PU02G · PU05G · PU010G · ZL03-PC02G · PC05G · PC010G	2, 5 or 10 m · ZL03-PC02G is the factory standard of the second series
Cable socket M12x1, 4-pin, angled, second series	ZL03-PU02W · PU05W · PU010W · ZL03-PC02W · PC05W · PC010W	2, 5 or 10 m
Field-wireable connector M12x1, 4-pin, straight	GL04	Pg7 or Pg9 cable gland · wired on site
Field-wireable connector M12x1, 4-pin, angled	WL04	Pg7 or Pg9 cable gland · wired on site

These are the order numbers of the manufacturer. Left: moulded cable, straight and angled. Right: field-wireable connectors.

