

IMPELLER FLOW SENSOR WITH DISPLAY HEAD



- IMPELLER · DN10 ... DN32 · 3 ... 250 L/MIN
- COLOUR DISPLAY · IO-LINK · RS485
- IP67 · TURNABLE READING · THREE KEYS



IP67



Stainless
Steel

KEY DATA

Property	Value	Property	Value
Flow velocity	0.15 ... 6 m/s	Nominal size	DN10 ... DN32
Flow range	3 ... 250 L/min, by size	Temperature range	0 ... 100 °C
Linear accuracy	± 1.0 % F.S.	Repeatability	± 5 % F.S.
Temperature accuracy	± 1.5 °C	Protection grade	IP67
Output	Switch · analogue · pulse · IO-Link · RS485	Minimum Reynolds number	4500

The medium turns a vaned wheel and the electronics count its revolutions. The head carries a colour display whose reading can be turned by 180°.



MEASUREMENT

Measuring principle	Impeller · the medium turns a vaned wheel, the electronics count its revolutions
Flow velocity	0.15 ... 6 m/s
Flow range	3 ... 250 L/min, depending on the nominal size — see the size table
Linear accuracy	± 1.0 % of full scale
Repeatability	± 5 % of full scale
Temperature range	0 ... 100 °C
Temperature accuracy	± 1.5 °C
Minimum Reynolds number	4500
Nominal size	DN10 ... DN32

MATERIALS AND PROCESS

Head material	Stainless steel with a plastic display window
Body material	POM, aluminium or stainless steel — fifth field of the order code
Wetted material	O-ring FPM or EPDM · impeller PP · bearing and shaft ZrO2 ceramic, titanium alloy or Hastelloy C
Medium temperature	0 ... 100 °C
Pressure	POM body 14 bar at 25 °C · 1.7 bar at 100 °C · aluminium body 25 bar
Process connection	G or Rc thread, internal or external · 1/2" ... 1-1/4"
Protection grade	IP67

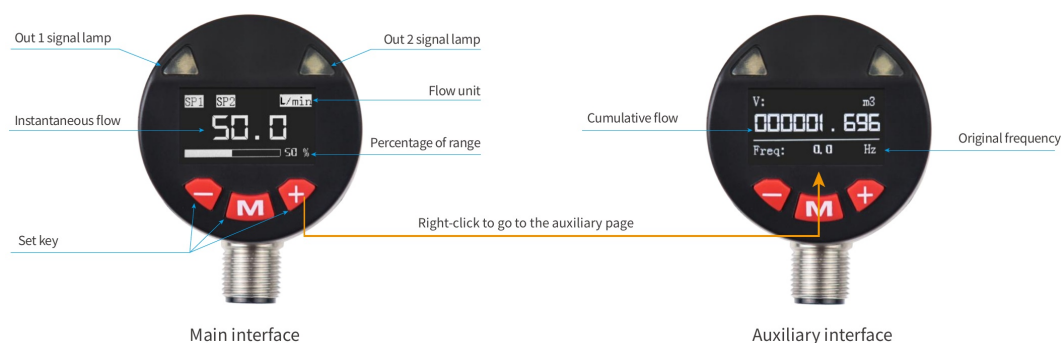
ELECTRICAL PROPERTIES

Switching output	Flow and temperature switch · PNP or NPN
Analogue output	4 ... 20 mA, 1 ... 5 V or 0 ... 10 V · flow and temperature
Pulse output	Linear pulse, 100 Hz at full scale · original pulse · quantitative pulse, full scale x 0.1
Digital interface	IO-Link · RS485
Wiring	M12x1 connector, 5-pin · three outputs OUT1, OUT2, OUT3

DISPLAY AND SETTING

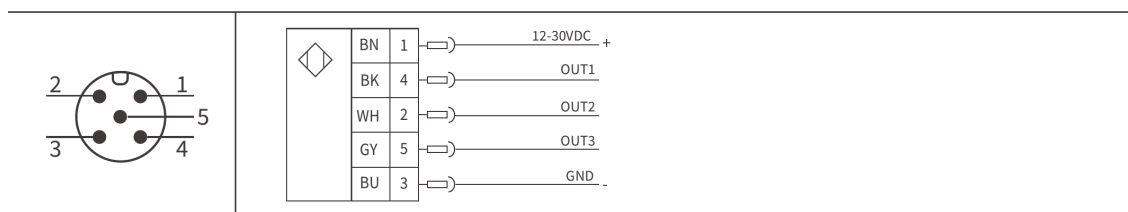
Display	Colour display in the head
Main screen	Instantaneous flow, unit, percentage of range, two switch lamps
Auxiliary screen	Totalized flow and the original frequency
Setting	Three keys — -, M and +
Turning the reading	The screen can be turned by 180°

WIRING



The display: left the main screen with the instantaneous flow, the unit, the percentage of the range and the two switch lamps, right the auxiliary screen with the totalized flow and the original frequency. The right key changes between the two.





The M12x1 connector seen on its pins, and the basic wiring.

PIN ASSIGNMENT

Wire	Pin	Function
BN	1	Supply +
BU	3	Supply -
BK	4 (OUT1)	Output 1 — depends on the output code
WH	2 (OUT2)	Output 2 — depends on the output code
GY	5 (OUT3)	Output 3 — depends on the output code

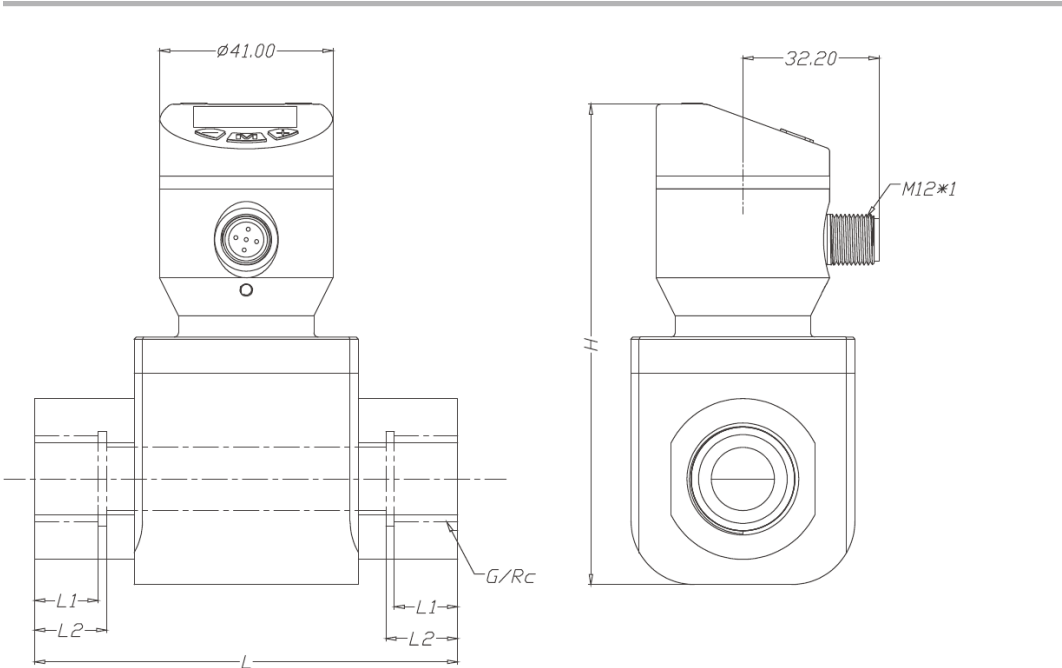
The same five cores carry all three versions; which output is fitted is set by the sixth field of the order code and, within that, by the factory setting. Wire colours to IEC 60757: BN brown, BU blue, BK black, WH white, GY grey.

OUTPUTS

Output code	OUT1 · BK · pin 4	OUT2 · WH · pin 2	OUT3 · GY · pin 5
A3	Flow switch PNP (default) or NPN · linear pulse (100 Hz F.S.), original pulse or quantitative pulse (F.S. x 0.1)	Flow switch PNP (default) or NPN	Flow · 4 ... 20 mA (default), 1 ... 5 V or 0 ... 10 V
SA	Flow or temperature switch PNP or NPN · linear, original or quantitative pulse · IO-Link	Flow · 4 ... 20 mA (default), 1 ... 5 V or 0 ... 10 V	Temperature · 4 ... 20 mA (default), 1 ... 5 V or 0 ... 10 V
AR	RS485 (B)	RS485 (A)	Flow · 4 ... 20 mA (default), 1 ... 5 V or 0 ... 10 V



DIMENSIONS (mm)



Left the view across the pipe, right the view along it. H is the body height including the head, L the body length, L1 the effective and L2 the whole thread length.

SIZES AND DIMENSIONS

Nominal size	Order code	Connection G/Rc	Body H (mm)	Body L (mm)	Thread L1 (mm)	Thread L2 (mm)	Range (L/min)
DN10	010	1/2"	113	100	12	15	3 ... 20
DN15	015	1/2"	113	100	12	15	10 ... 100
DN20	020	3/4"	113	100	16	19	12 ... 130
DN25	025	1"	113	100	18	21	16 ... 160
DN32	032	1-1/4"	113	120	20	23	25 ... 250

L1 is the effective thread length, L2 the whole thread length; H is the body height including the head, L the body length. The head is Ø 41.00 mm and 32.20 mm deep on every size, and the M12x1 connector sits on its side.



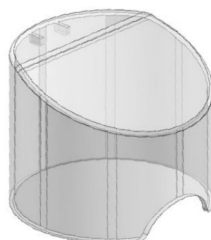
COMPLIANCE AND CERTIFICATION

Protection grade	IP67
Measuring principle	Impeller
Linear accuracy	± 1.0 % of full scale
Repeatability	± 5 % of full scale
Temperature accuracy	± 1.5 °C
Minimum Reynolds number	4500
Wetted materials	POM, aluminium or stainless steel · FPM or EPDM · PP · ZrO ₂ , titanium alloy or Hastelloy C
Pressure rating	POM body 14 bar at 25 °C · 1.7 bar at 100 °C · aluminium body 25 bar

ORDER CODE AND ACCESSORIES

Cable sockets and protective cover

- The device is wired through an M12x1 5-pin connector; sockets are offered with 2, 5 or 10 m of polyurethane or PVC cable, straight or angled, and as connectors wired on site through a Pg7 or Pg9 gland. The factory default is ZL05-PC02G. A transparent protective cover for the display head is available separately; it fits over the head and the three keys and leaves the reading visible.



Order n

Connector
M12x1 · 5-pinCable
2 · 5 · 10 m

ORDER CODE

Field	Code	Meaning
1 Series	QFKB	QFKB impeller flow sensor with display head
2 Size	010 ... 050	DN10, DN15, DN20, DN25, DN32, DN40, DN50
3 Thread	GK	G thread, internal
	RK	Rc thread, internal
	GM	G thread, external
	RM	Rc thread, external
4 Case	PS	Stainless steel with a plastic display window
5 Body	BM · BL · BS	Body material POM · aluminium · stainless steel

ORDER CODE · CONTINUED

Field	Code	Meaning
6 Output	A3	Two-way switch / pulse / frequency + analogue
	SA	Analogue (flow or temperature) / switch / pulse / frequency / IO-Link
	AR	RS485 + analogue

Example: QFKB-015-GK-PS-BM-A3.



ACCESSORIES

Item	Order code	Data
Cable socket M12x1, 5-pin, straight, moulded cable	ZL05-PU02G · PU05G · PU010G · ZL05-PC02G · PC05G · PC010G	2, 5 or 10 m · ZL05-PC02G is the factory default
Cable socket M12x1, 5-pin, angled, moulded cable	ZL05-PU02W · PU05W · PU010W · ZL05-PC02W · PC05W · PC010W	2, 5 or 10 m
Field-wireable connector M12x1, straight	GL04 (4-pin) · GL05 (5-pin)	Pg7 or Pg9 cable gland · wired on site
Field-wireable connector M12x1, angled	WL04 (4-pin) · WL05 (5-pin)	Pg7 or Pg9 cable gland · wired on site
Protective cover for the display head	KTCS33661	Transparent hood over the head and the keys

The factory default is the moulded socket ZL05-PC02G with 2 m of PVC cable.

