

INSERTION IMPELLER FLOW SENSOR



- INSERTION · ONE DEVICE FOR DN25 ... DN600
- 0.15 ... 6 M/S · SWITCH · ANALOGUE · PULSE
- IO-LINK · RS485 · IP67 · 25 BAR



KEY DATA

Property	Value	Property	Value
Flow velocity	0.15 ... 6 m/s	Nominal size	DN25 ... DN600
Linear accuracy	± 1.0 % F.S.	Repeatability	± 5 % F.S.
Temperature range	0 ... 100 °C	Temperature accuracy	± 1.5 °C
Pressure	25 bar	Protection grade	IP67
Output	Switch · analogue · pulse · IO-Link · RS485	Supply voltage	12 ... 30 Vdc

The device is inserted into the pipe through a welded socket, so one device covers every size from DN25 to DN600 — there is no size to order.



MEASUREMENT

Measuring principle	Impeller, inserted into the pipe · the medium turns a vaned wheel, the electronics count its revolutions
Flow velocity	0.15 ... 6 m/s
Linear accuracy	± 1.0 % of full scale
Repeatability	± 5 % of full scale
Temperature range	0 ... 100 °C
Temperature accuracy	± 1.5 °C
Nominal size	DN25 ... DN600 — one device for all

MATERIALS AND PROCESS

Sensor body	Stainless steel
O-ring	FPM (factory default) or EPDM
Impeller	PP (factory default) or PVDF
Bearing and shaft	ZrO2 ceramic (factory default), 316L stainless steel, titanium alloy or Hastelloy alloy
Medium temperature	0 ... 100 °C
Pressure	25 bar
Process connection	M32x1.5 through a welding socket
Straight pipe run	5 ... 10 x DN before the sensor, 3 ... 5 x DN after it
Protection grade	IP67

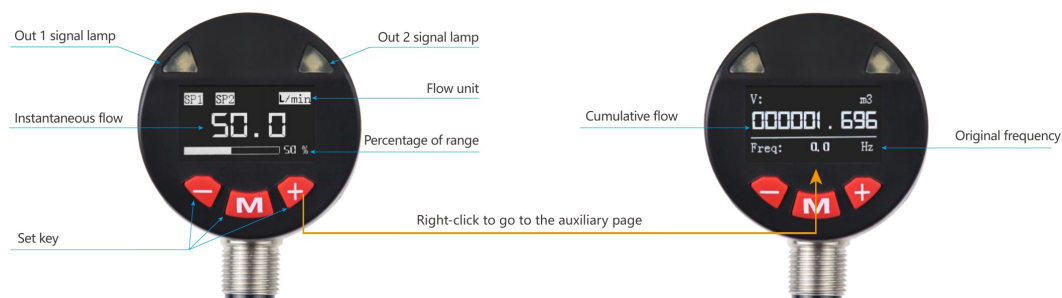
ELECTRICAL PROPERTIES

Supply voltage	12 ... 30 Vdc
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 · four cores on the SA version

DISPLAY AND SETTING

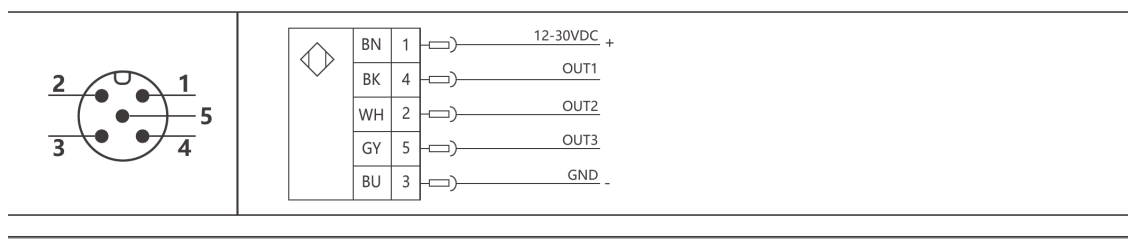
Display	Colour display in the head
Main screen	Instantaneous flow, unit, percentage of range, two switch lamps
Auxiliary screen	Totalized flow and the original frequency
Setting	Three keys —, M and +

WIRING

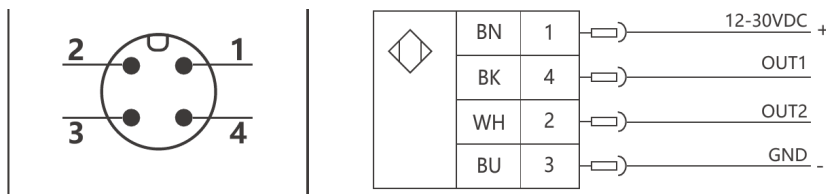


The display: left the main screen with the instantaneous flow, the unit, the percentage of the range and the two switch lamps, right the auxiliary screen with the totalized flow and the original frequency. The right key changes between the two.





The M12x1 connector seen on its pins, and the basic wiring of the A3 and the AR version — five cores, three outputs.



The SA version uses four cores: the grey one stays free.

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 · not used on SA

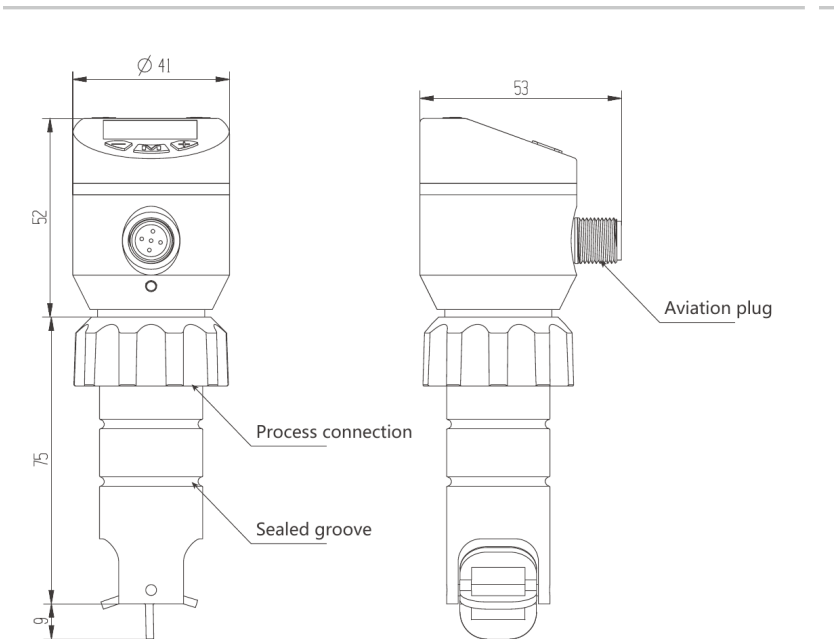
The same connector carries all three versions; which output is fitted is set by the second field of the order code and, within that, by the factory setting. Wire colours to IEC 60757: BN brown, BU blue, BK black, WH white, GY grey. The SA version uses four cores — the grey one stays free.

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
AR	RS485 (B)	RS485 (A)	Flow · 4 ... 20 mA (default), 1 ... 5 V or 0 ... 10 V
SA	Temperature · 4 ... 20 mA (default), 1 ... 5 V or 0 ... 10 V · 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, 1 ... 5 V or 0 ... 10 V	Not used



DIMENSIONS (mm)

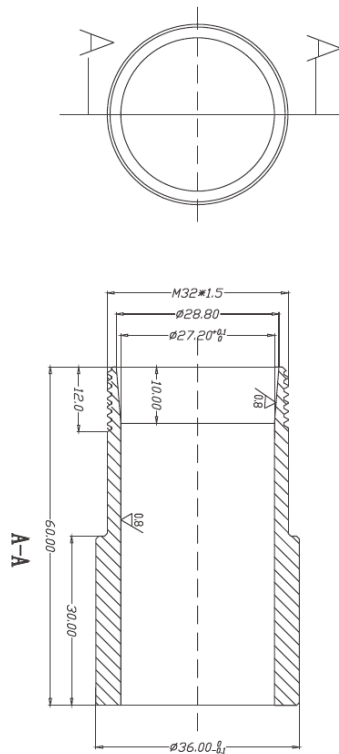


The sensor: the head with the display, below it the M32x1.5 process connection, the shaft with the two sealing grooves and the impeller at its end.

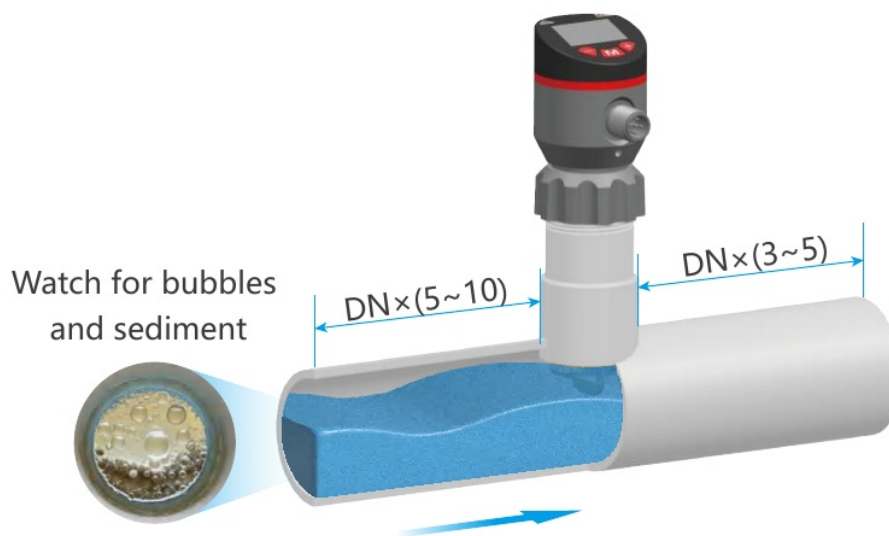
PROCESS CONNECTION

Part	Order code	Data
Welding socket M32x1.5	KTYLLC21105	$\varnothing 36.0$ mm outside · $\varnothing 27.2$ mm bore · welded into the pipe wall





The welding socket M32x1.5 seen from above and in section.



The straight pipe run: 5 to 10 times the nominal diameter before the sensor and 3 to 5 times after it. The sensor is not fitted at the highest or the lowest point of the line, where bubbles or sediment collect.

The head is $\varnothing 41$ mm across, 52 mm high and 53 mm deep, and the M12x1 connector sits on its side. From the process connection to the lower end of the shaft are 75 mm, and the impeller cage at its end is 9 mm — about 136 mm over all. The device is screwed into the welding socket through the M32x1.5 thread and sealed by two O-rings in the grooves of the shaft; the insertion depth is fixed by the socket. The welding socket is welded into the pipe wall and stays there when the sensor is taken out.



ORDER CODE AND ACCESSORIES

Welding socket and cable sockets

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Cable
2 · 5 · 10 m

Example: QFKE-SA-PV-C-EP, or QFKE-A3----- for the standard device. A dash means the factory default. There is no size field: one device covers DN25 to DN600.

ACCESSORIES

Item	Order code	Data
Welding socket M32x1.5	KTYLLC21105	The process connection · welded into the pipe wall
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
Cable socket M12x1, 4-pin, straight or angled	ZL04-PU02G ... PC010G · ZL04-PU02W ... PC010W	2, 5 or 10 m · ZL04-PC02G is the factory default for the SA version
Field-wireable connector M12x1, straight or angled	GL04 · GL05 · WL04 · WL05	Pg7 or Pg9 cable gland · wired on site

The welding socket is not an option but the process connection: without it the device cannot be fitted.

