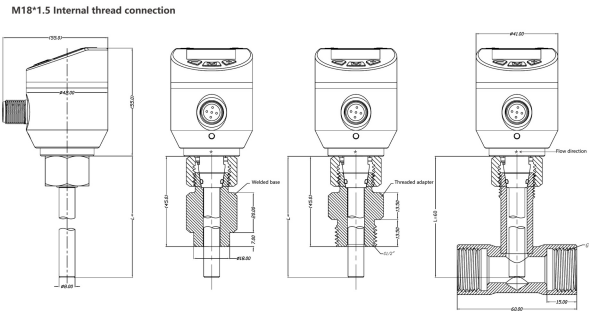


FLOW AND TEMPERATURE SENSOR



- THERMAL PRINCIPLE · NO MOVING PARTS
- FLOW AND TEMPERATURE IN ONE DEVICE
- 100 bar · IP67 · COLOUR DISPLAY · IO-LINK



KEY DATA

Property	Value	Property	Value
Flow range	0.01 ... 2.0 m/s (water)	Pressure range	100 bar
Measuring dead zone	≤ 0.01 m/s	Protection grade	IP67
Temperature range	0 ... 100 °C	Response time	1 ... 13 s, typically 2 s
Temperature accuracy	± 1.5 °C	Display	0.96" colour LCD

The device measures flow velocity, not volume flow — one sensor covers a range of pipe diameters.



MEASUREMENT

Measuring principle	Thermal · a sealed probe with a heated detection resistor and an unheated reference resistor
Flow range	0.01 ... 2.0 m/s, water
Measuring dead zone	≤ 0.01 m/s
Temperature range	0 ... 100 °C
Temperature accuracy	± 1.5 °C, probe immersed in the medium
Response time	1 ... 13 s, typically 2 s
Initialization time	< 16 s
Temperature gradient	≤ 4 °C/s
Pressure range	100 bar

MATERIALS, PROCESS AND TEMPERATURE

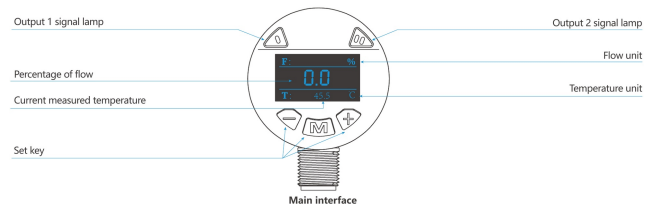
Head	Stainless steel or engineering plastic
Housing	Stainless steel
Wetted material	Stainless steel 316L · EPDM
Protection grade	IP67
Medium temperature	0 ... 100 °C
Ambient temperature	-20 ... +80 °C
Storage temperature	-20 ... +80 °C
Process connection	M18x1.5 internal thread · probe rod · Ø 25.4 mm (1/2") or Ø 50.5 mm (1.5") chuck

ELECTRICAL PROPERTIES

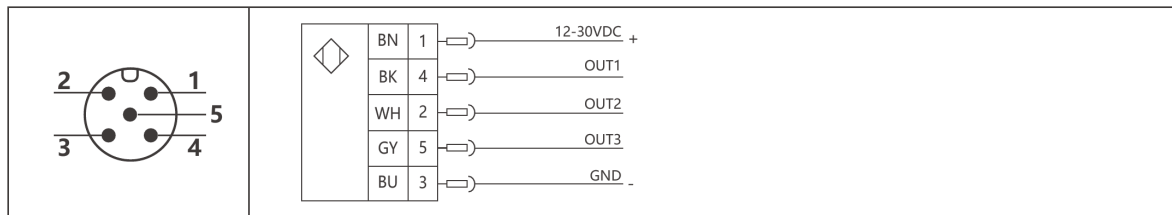
Supply voltage	24 Vdc ± 20 %
Switching output	PNP or NPN · IO-Link · for flow and for temperature
Analogue output	4 ... 20 mA · 1 ... 5 V · for flow and for temperature
Frequency output	Flow · 100 Hz at full scale, on OUT1
Switching current	Max. 200 mA (PNP or NPN)
Current consumption	< 100 mA
Electrical protection	Reverse polarity · short circuit · overload
Wiring	M12x1 connector, 5-pin

DISPLAY AND SETTING

Flow	0.96" colour LCD · percentage of full scale
Temperature	0.96" colour LCD · in °C
Signal lamps	Two, one for each switching output
Setting	By the three keys –, M and +



WIRING



Output codes SA and SV — one switching output and two analogue channels, one for flow and one for temperature.

PIN ASSIGNMENT · SA AND SV

Wire	Pin	Function
BN	1	Supply +
BU	3	Supply -
BK	4 (OUT1)	Flow switch PNP (factory setting) · flow switch NPN · IO-Link · flow frequency, 100 Hz at full scale
WH	2 (OUT2)	Flow analogue (factory setting)
GY	5 (OUT3)	Temperature analogue (factory setting)

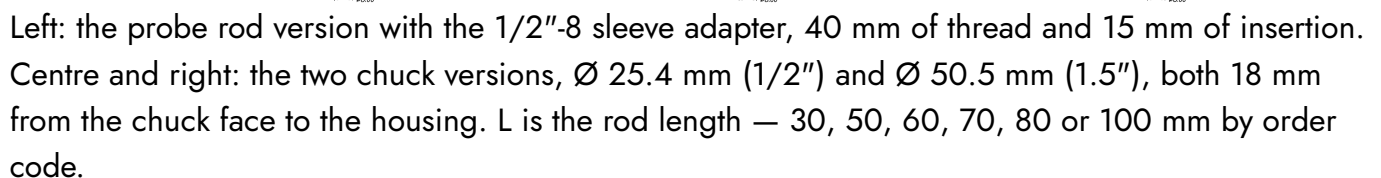
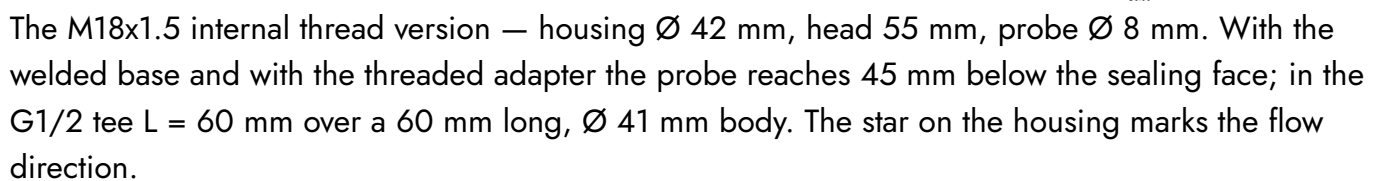
Output codes A3 and V3 — two switching outputs and one analogue channel, each assignable to flow or to temperature.

PIN ASSIGNMENT · A3 AND V3

Wire	Pin	Function
BN	1	Supply +
BU	3	Supply -
BK	4 (OUT1)	Temperature switch PNP (factory setting) · temperature switch NPN · flow switch PNP · flow switch NPN · IO-Link · flow frequency, 100 Hz at full scale
WH	2 (OUT2)	Flow switch PNP (factory setting) · flow switch NPN · temperature switch PNP · temperature switch NPN
GY	5 (OUT3)	Flow analogue (factory setting) · temperature analogue

Wire colours of the M12x1 5-pin connector: 1 BN brown, 2 WH white, 3 BU blue, 4 BK black, 5 GY grey. The function of OUT1, OUT2 and OUT3 is set on the device; the factory setting is marked above.

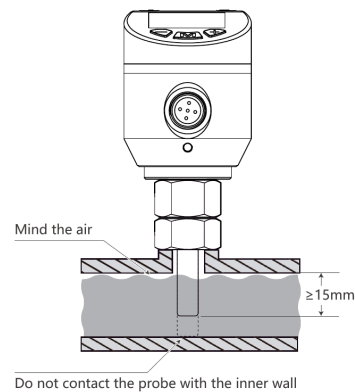
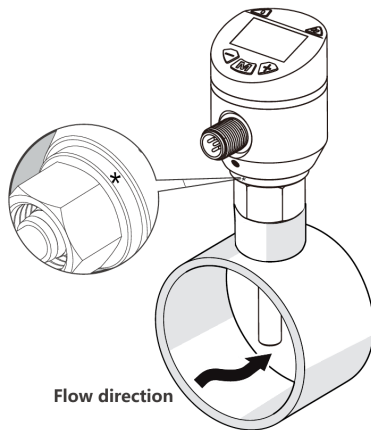
M18*1.5 Internal thread connection



INSTALLATION

When installing the sensor, ensure that the water flow direction is consistent with the direction of the star

The medium must completely surround the sensor probe



The star on the housing has to point in the direction of flow. The probe must be completely surrounded by the medium, must reach at least 15 mm into it and must not touch the pipe wall; a pocket of air at the probe falsifies the reading. With the M18x1.5 internal thread the mounting accessory also lets the housing be turned into the right direction after installation.



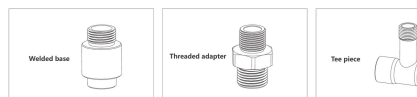
COMPLIANCE AND CERTIFICATION

Protection grade	IP67
Temperature accuracy	$\pm 1.5\text{ }^{\circ}\text{C}$ with the probe immersed in the medium
IO-Link	The switching outputs are IO-Link capable
Electrical protection	Reverse polarity, short circuit and overload protection
Wetted materials	Stainless steel 316L · EPDM · head stainless steel or engineering plastic
Pressure rating	100 bar

ORDER CODE AND ACCESSORIES

Cable sockets and mounting parts

- The sensor is wired through an M12x1 5-pin connector; the factory standard is the moulded socket ZL05-PC02G with 2 m of PVC cable. 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. On the process side the M18x1.5 version needs one of the mounting parts — a welded base, a threaded adapter or a tee; the probe rod version is clamped with a ferrule joint, and the two chuck versions need no adapter at all.



Connector
M12x1 · 5-pin

Cable
2 · 5 · 10 m

ORDER CODE

Field	Code	Meaning
1 Series	QEKD	QEKD integrated flow and temperature sensor
2 Process	M18K	M18x1.5 internal thread · mounting accessories are mandatory
	G	Probe rod, for the 1/2"-8 sleeve adapter
	H25	Ø 25.4 mm chuck, 1/2" to GB / ISO 2852-1993
	H50	Ø 50.5 mm chuck, 1.5" to GB / ISO 2852-1993
3 Rod length	L30	L = 30 mm · recommended with the chuck versions only
	L50	L = 50 mm · recommended with the chuck versions only
	L60	L = 60 mm · recommended with M18x1.5 for $\leq$ DN32
	L70	L = 70 mm · recommended with M18x1.5 for $\geq$ DN40
	L80	L = 80 mm · recommended with M18x1.5 for $\geq$ DN50
	L100	L = 100 mm · recommended with M18x1.5 for $\geq$ DN80
4 Output	SA	One switch + two analogue channels, 4 ... 20 mA
	SV	One switch + two analogue channels, 1 ... 5 V
	A3	Two switches + one analogue channel, 4 ... 20 mA
	V3	Two switches + one analogue channel, 1 ... 5 V

Example: QEKD-M18K-L60-SA. The factory standard is the cable socket ZL05-PC02G, that is 2 m of PVC cable on an M12x1 5-pin socket. With the M18x1.5 internal thread a mounting accessory is mandatory — order a welded base, a threaded adapter or a tee with the device.



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 · PU is polyurethane, PC is PVC · ZL05-PC02G is the factory standard
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, 5-pin	GL05 straight · WL05 angled	Pg7 or Pg9 cable gland · wired on site
Welded base M18x1.5 · for the M18x1.5 version	FA002-M18 · KT7144	Stainless steel 304 · welded into the pipe, the sensor screws in
Threaded adapter M18x1.5 female to male	FA004-M18G14S · KT7147 · FA004-M18G12S · KT7149 · FA004-M18G14T · FA004-M18G12T	S is stainless steel 304, T is brass · probe insertion depth 15 mm · G1/4 or G1/2 male
Tee M18x1.5 female	FA003-M18G14 · KT7151 · FA003-M18G38 · KT28810 · FA003-M18G12 · KT7153 · FA003-M18G34 · KT7154	Stainless steel 304 · with a G1/4, G3/8, G1/2 or G3/4 branch
Ferrule joint · for the probe rod version	KTYLLC28467 (G1/2-8) · KTYLLC28808 (R1/2-8)	Used with the 1/2"-8 sleeve adapter of the probe rod version

These are the order numbers of the manufacturer; the KT numbers are the manufacturer's own article numbers.

