

IMPELLER FLOW AND TEMPERATURE SENSOR



- IMPELLER · DN10 ... DN32 · 3 ... 250 L/MIN
- UP TO FOUR SWITCHING POINTS · 2 x 4 ... 20 mA · PULSE
- IP67 · POM, ALUMINIUM OR STAINLESS STEEL



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	Up to 4 switches · 2 x 4 ... 20 mA · pulse	Supply voltage	16 ... 30 Vdc

The medium turns a vaned wheel and the electronics count its revolutions.



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

Wetted material	Sensor body POM, aluminium or stainless steel · 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
Process connection	G or Rc thread, internal or external · 1/2" ... 1-1/4"
Protection grade	IP67
Installation	The lower limit follows the Reynolds number, not the flow alone

ELECTRICAL PROPERTIES

Supply voltage	16 ... 30 Vdc
Switching output	Two or four switching points · PNP or NPN · upper and lower alarm value freely settable
Analogue output	Flow and temperature · 4 ... 20 mA
Pulse output	Flow
Wiring	M12x1 connector · 8-pin with analogue output, 5-pin without

DISPLAY AND SETTING

Display	LCD
Setting	Three keys on the front
Alarm values	Upper and lower flow alarm, freely settable on site
Remote monitoring	The flow can be monitored remotely

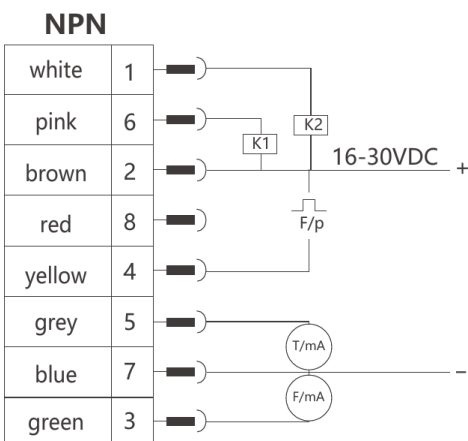
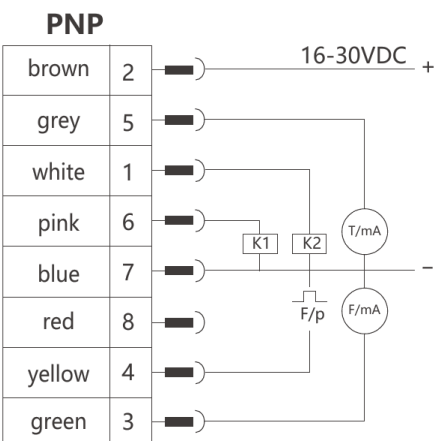
WIRING

Seven wiring versions, set by the sixth field of the order code. The versions with an analogue output are wired through eight cores, the others through five.

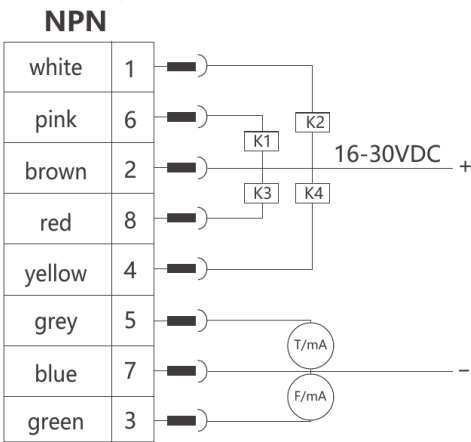
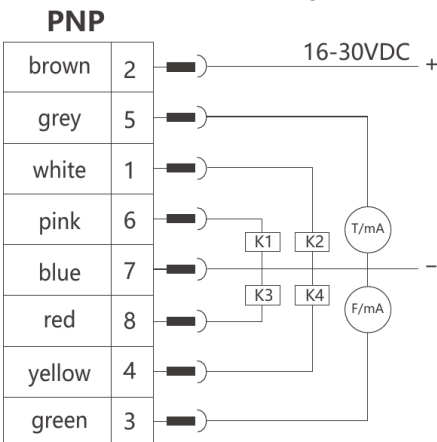
PIN ASSIGNMENT · EIGHT CORES

Wire · 8 cores	Pin	P · N	PS4 · NS4
BN	2	Supply +	Supply +
BU	7	Supply -	Supply -
WH	1	Switch K2	Switch K2
PK	6	Switch K1	Switch K1
YE	4	Flow pulse	Switch K4
RD	8	Not used	Switch K3
GN	3	Flow · 4 ... 20 mA	Flow · 4 ... 20 mA
GY	5	Temperature · 4 ... 20 mA	Temperature · 4 ... 20 mA





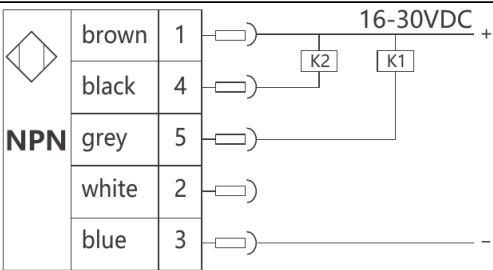
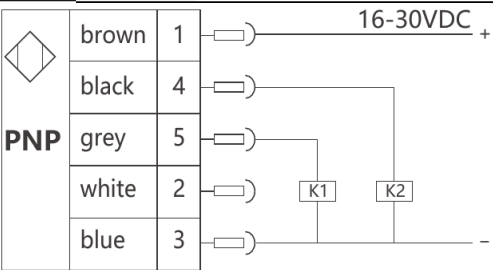
P and N — two switches, two analogue channels and the flow pulse, PNP left and NPN right.



PS4 and NS4 — four switches and two analogue channels. The pulse output of P and N gives way to the third and the fourth switching point.

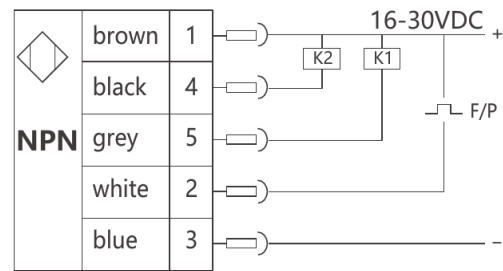
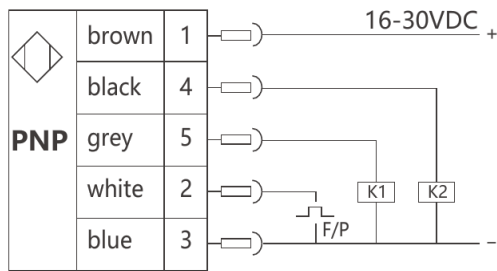
PIN ASSIGNMENT · FIVE CORES

Wire · 5 cores	Pin	PS2 · NS2	PSP · NSP	A2
BN	1	Supply +	Supply +	Supply +
BU	3	Supply -	Supply -	Supply -
BK	4	Switch K2	Switch K2	Temperature · 4 ... 20 mA
GY	5	Switch K1	Switch K1	Flow · 4 ... 20 mA
WH	2	Not used	Flow pulse	Not used

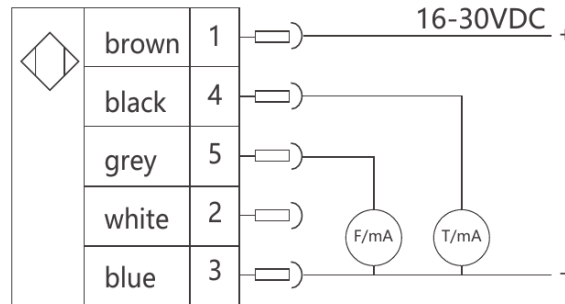


PS2 and NS2 — two switches, nothing else.





PSP and NSP — two switches and the flow pulse.

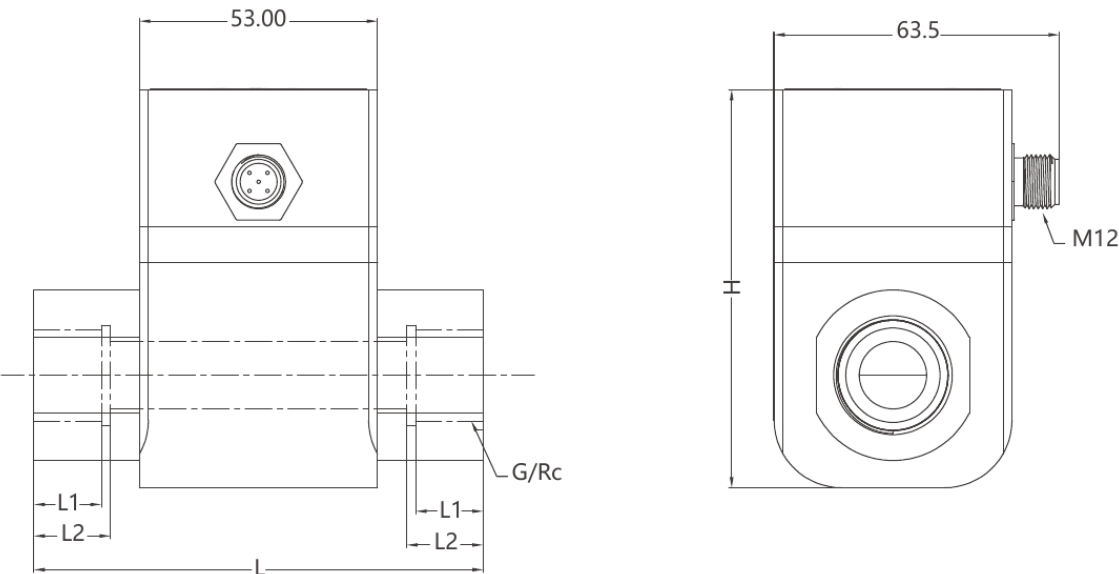


A2 — two analogue channels, flow and temperature, without switches.

Wire colours to IEC 60757: BN brown, BU blue, WH white, YE yellow, GY grey, GN green, PK pink, RD red, BK black. PNP and NPN are the same device with the switching transistor the other way round. K1 to K4 are the switching points.



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; all four depend on the nominal size.

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"	89	100	12	15	3 ... 20
DN15	015	1/2"	89	100	12	15	10 ... 100
DN20	020	3/4"	89	100	16	19	12 ... 130
DN25	025	1"	89	100	18	21	16 ... 160
DN32	032	1-1/4"	89	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 53 mm wide and 63.5 mm deep on every size, and the M12x1 connector sits on its side.



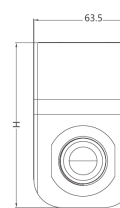
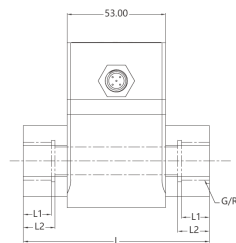
COMPLIANCE AND CERTIFICATION

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

ORDER CODE AND ACCESSORIES

Cable sockets

- The device is wired through an M12x1 connector: eight cores on the versions with an analogue output, five on the others. 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.



Connector
M12x1

Cable
2 · 5 · 10 m

ORDER CODE

Field	Code	Meaning
1 Series	QFKA	QFKA impeller flow and temperature sensor
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	PM · PL · PS	Case material POM · aluminium · stainless steel
5 Body	BM · BL · BS	Body material POM · aluminium · stainless steel
6 Output	P · N	Two switches + two analogue channels + pulse · PNP · NPN
	PS4 · NS4	Four switches + two analogue channels · PNP · NPN
	PS2 · NS2	Two switches · PNP · NPN
	PSP · NSP	Two switches + pulse · PNP · NPN
	A2	Two analogue channels, flow and temperature

Example: QFKA-015-GK-PM-BM-P. The fourth and the fifth field are separate: the case is the head, the body is the part in the pipe. The pressure figures apply to the POM body only.



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
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

