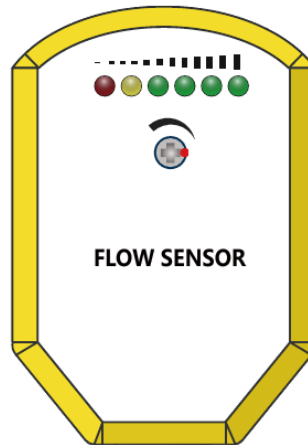


THERMAL FLOW SWITCH FOR WATER, OIL AND AIR



- CALORIMETRIC · NO MOVING PART · IP67
- 1 ... 150 CM/S WATER · 3 ... 300 CM/S OIL · 20 ... 2000 CM/S AIR
- PNP · NPN · RELAY SPDT · 100 BAR · -20 ... +80 °C

KEY DATA

Property	Value	Property	Value
Setting range	1 ... 150 cm/s water · 3 ... 300 cm/s oil · 20 ... 2000 cm/s air	Response time	1 ... 13 s, typically 2 s · 8 s to initialise
Output	PNP · NPN · relay, normally open and closed (SPDT)	Switching current	≤ 400 mA PNP or NPN · ≤ 4 A relay
Supply voltage	24 Vdc ± 20 % or 230 Vac ± 15 %	Pressure range	100 bar
Medium temperature	-20 ... +80 °C · gradient ≤ 4 °C/s	Protection grade	IP67
Materials	Probe stainless steel · housing PBT	Process connection	G1/2 or G1/4 male · R1/2 or R1/4 male · M18 x 1.5 female

A heated and an unheated resistor sit in the same sealed probe; flowing medium carries heat off the heated one, and the difference between the two is the measure of velocity. The setting is a velocity, not a flow.



MEASUREMENT

Measuring principle	Calorimetric — a heated and an unheated resistor in one sealed probe, the difference between them the measure
Setting range	1 ... 150 cm/s water · 3 ... 300 cm/s oil · 20 ... 2000 cm/s air. These are velocities, not flows
Setting	By potentiometer under a protective screw, 3 mm slotted screwdriver
Response time	1 ... 13 s, typically 2 s · 8 s to initialise
Media	Water, cutting fluid, lubricating oil and air · pump dry-running protection

MATERIALS AND PROCESS

Probe	Stainless steel · housing PBT · weight 0.4 kg
Process connection	G1/2 or G1/4 male · R1/2 or R1/4 male · M18 × 1.5 female
Probe length	30 mm for DN32 and below · 50 mm for DN40 and above
Pressure range	100 bar
Medium temperature	-20 ... +80 °C · ambient the same · storage -20 ... +100 °C · temperature gradient ≤ 4 °C/s
Protection grade	IP67

ELECTRICAL PROPERTIES

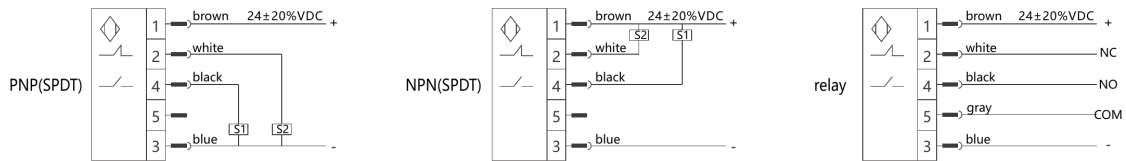
Supply voltage	24 Vdc $\pm$ 20 % or 230 Vac $\pm$ 15 %
No-load current	≤ 80 mA
Output PNP	Terminals 1 brown +, 2 white S1, 4 black S2, 3 blue –
Output NPN	Same terminals, sinking
Output relay	1 brown +, 2 white NC, 4 black NO, 5 grey COM, 3 blue –
Switching current	≤ 400 mA PNP or NPN · ≤ 4 A relay
Protection	Reverse polarity, short circuit and overload
Connection	M12 × 1 plug, standard cable ZL05-PC02G · or 2 m of cable direct

LED INDICATOR

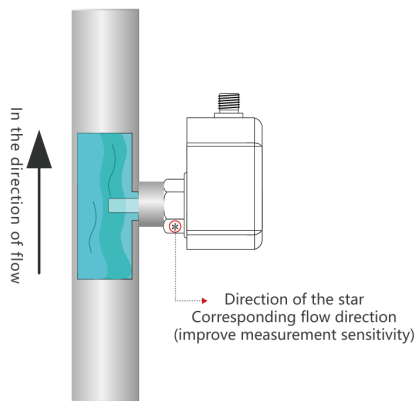
LED row	Six LEDs, one red, one yellow, four green
Red	No flow, or flow below the set value — the switch has released
Yellow	The flow is at the set value
Green	Above the set value; the more green lamps, the higher the velocity



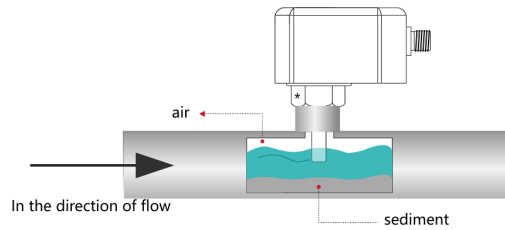
WIRING, SETTING AND INSTALLATION



The three output versions on the M12 plug: PNP and NPN on terminals 1, 2, 4 and 3, the relay with 5 grey as the common contact, 2 white the break contact and 4 black the make contact.



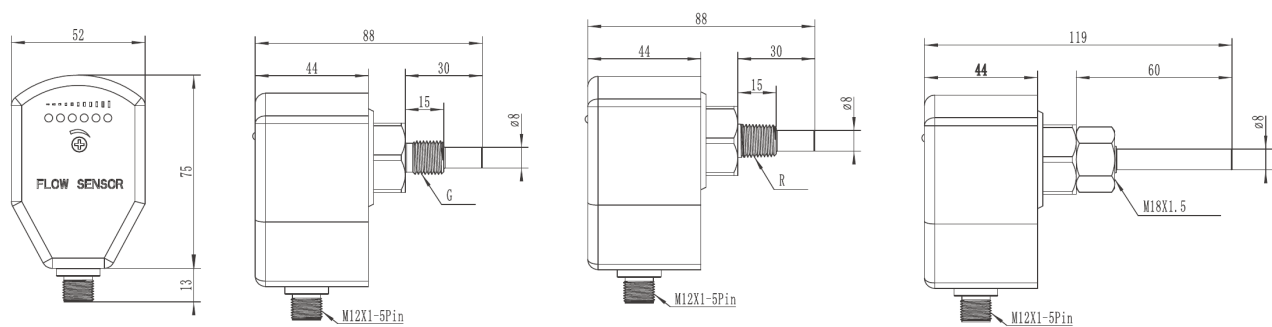
When mounted vertically, it shall be mounted on a pipe segment flowing from bottom to top. When mounted horizontally, the probe should avoid air and sediment.



Mounting. Vertically the pipe must flow upward; horizontally the probe has to sit clear of the air above and the sediment below. The star marked on the probe points downstream.



DIMENSIONS (mm)



Front view and the three connection versions: G male, R male and M18 × 1.5 female.

The housing is 52 mm wide and 75 mm high, with 13 mm more for the M12 connector underneath; those three figures are the same for every version. The table below gives the length along the probe axis: the overall length from the housing face to the probe tip, the 44 mm of housing, the stem beyond it and the threaded part of that stem.

OVERALL DIMENSIONS (mm)

Connection	Overall	Housing	Stem	Thread	Probe Ø
G1/2 · G1/4 male	88	44	30	15	8
R1/2 · R1/4 male	88	44	30	15	8
M18 × 1.5 female	119	44	60	—	8



COMPLIANCE AND CERTIFICATION

Measuring principle	Calorimetric, heated and unheated resistor
Protection grade	IP67
Pressure rating	100 bar
Wetted materials	Stainless steel probe · accessories 304 stainless, brass or PP
Relay rating	4 A

ZL05-PC02G, two metres of PVC, is the factory standard.

ELECTRICAL ACCESSORIES

Electrical accessory	Material	Straight (G)	Angled (W)
M12 × 1, 5-pin, 2 m	PUR	ZL05-PU02G	ZL05-PU02W
M12 × 1, 5-pin, 5 m	PUR	ZL05-PU05G	ZL05-PU05W
M12 × 1, 5-pin, 10 m	PUR	ZL05-PU010G	ZL05-PU010W
M12 × 1, 5-pin, 2 m	PVC	ZL05-PC02G	ZL05-PC02W
M12 × 1, 5-pin, 5 m	PVC	ZL05-PC05G	ZL05-PC05W
M12 × 1, 5-pin, 10 m	PVC	ZL05-PC010G	ZL05-PC010W
Self-wiring socket, 5-pin	Pg7 / Pg9 gland	GL05	WL05

The welded bases and the M18 tees are tied to one thread family: the M18 parts serve the female version only, the others the male versions only.

MOUNTING ACCESSORIES

Mounting accessory	Note	Material	Order number
Welded base, M18 × 1.5 female	For the M18 version only	304 stainless	FA002-M18
Welded base, G1/4	For a male-thread version	304 stainless	FA002-G14
Welded base, G1/2	For a male-thread version	304 stainless	FA002-G12
Welded base, G1/2 high pressure	For a male-thread version	304 stainless	FA002-G12H
Welded base, Rc1/4	For a male-thread version	304 stainless	FA002-R14
Welded base, Rc1/2	For a male-thread version	304 stainless	FA002-R12
Welded base, M12 × 1	For a male-thread version	304 stainless	FA002-M12
Adapter M18 female to G1/4 male	Probe insertion 15 mm	304 stainless	FA004-M18G14S
Adapter M18 female to G1/4 male	Probe insertion 15 mm	Brass	FA004-M18G14T
Adapter M18 female to G1/2 male	Probe insertion 15 mm	304 stainless	FA004-M18G12S
Adapter M18 female to G1/2 male	Probe insertion 15 mm	Brass	FA004-M18G12T
Tee, M18 female with G1/4 branch	For the M18 version only	304 stainless	FA003-M18G14
Tee, M18 female with G3/8 branch	For the M18 version only	304 stainless	FA003-M18G38
Tee, M18 female with G1/2 branch	For the M18 version only	304 stainless	FA003-M18G12
Tee, M18 female with G3/4 branch	For the M18 version only	304 stainless	FA003-M18G34



The conventional stainless tees are rated 40 bar and the high-pressure stainless tees 200 bar; the switch itself is rated 100 bar.

MOUNTING ACCESSORIES · TEES

Mounting accessory	Note	Material	Order number
Tee G1/4, small bore 4 mm	—	PP	FA010-04G14
Tee G1/4, straight bore 6 mm	—	PP	FA010-06G14
Tee G1/4, small bore 8 mm	—	PP	FA010-08G14
Tee G1/2, straight bore 10 mm	—	PP	FA010-10G12
Tee G1/2, straight bore 12 mm	—	PP	FA010-12G12
Tee adapter G1/4, gas only	—	PP	FA012-01
Tee R1/2, DN15	40 bar	Stainless steel	FA013-R12K
Reducing tee R3/4 – R1/2 – R3/4, DN20	40 bar	Stainless steel	FA013-R12KR34K
Reducing tee R1 – R1/2 – R1, DN25	40 bar	Stainless steel	FA013-R12KR1K
Reducing tee R1.2 – R1/2 – R1.2, DN32	40 bar	Stainless steel	FA013-R12KR1.2K
Tee G1/2, DN15	200 bar	Stainless steel	FA014-G12K
Reducing tee G3/4 – G1/2 – G3/4, DN20	200 bar	Stainless steel	FA014-G12KG34K
Reducing tee G1 – G1/2 – G1, DN25	200 bar	Stainless steel	FA014-G12KG1K

Example: QSKA-G12M-DC-C-M. The M18 version takes no probe-length field.

ORDER CODE

Field	Code	Meaning
1 Series	QSKA	QSKA electronic flow switch
2 Connection	G12M · G14M	G1/2 male thread · G1/4 male thread
	R12M · R14M	R1/2 male thread · R1/4 male thread
	M18K	M18 × 1.5 female thread, for use with the mounting accessories
3 Supply	DC · AC	24 Vdc ± 20 % · 230 Vac ± 15 %
4 Output	P · N · C	PNP · NPN · relay
5 Connection	M · Z	M12 × 1 plug, standard ZL05-PC02G · 2 m of cable direct
6 Probe length	—	30 mm of thread, for DN32 and below
	50	50 mm including the thread, for DN40 and above

