Principle characteristics

Based on the thermal principle, the sealed probe contains two resistors, one of which is heated as the detection resistance, the other is not heated as the reference resistance, when the medium flows, the heat on the heating resistance is taken away, the resistance value is changed, and the difference between the two resistors is used as the basis for judging the flow rate. No moving parts, maintenance-free, easy to install, one model is suitable for a variety of pipe diameter requirements, the switching quantity is continuously adjustable, extremely low pressure loss, compact structure, color crystal display flow trend and switching state, integrated temperature measurement function, support temperature alarm and remote measurement.

- New digital design
- Replace traditional thermal flow switches
- Integrated temperature integration function
- Save installation space
- Color crystal digital visual display window

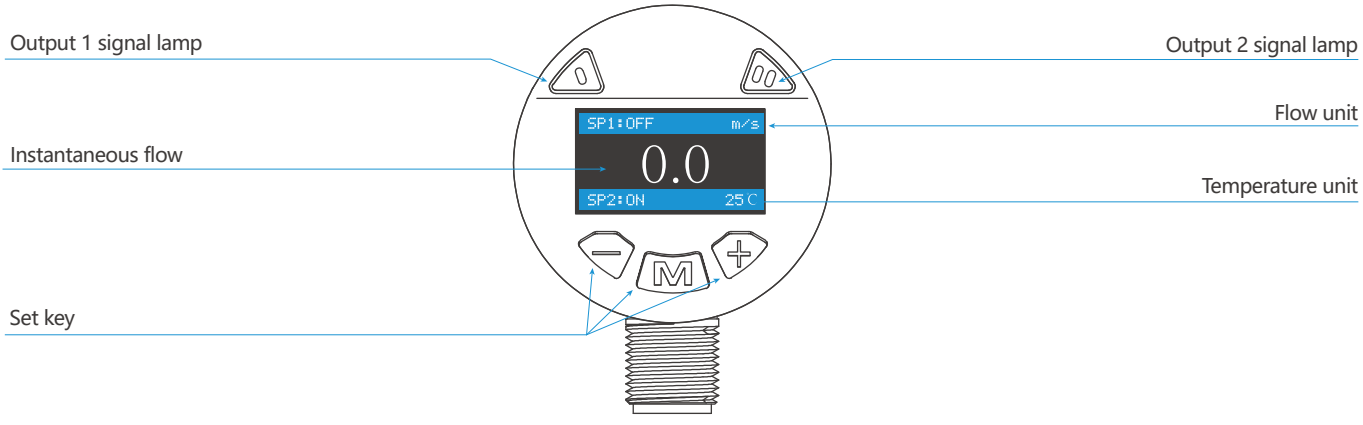
Product application

Low flow rate alarm, can be used for circulating water, cutting fluid cut-off detection, and pump idling protection.

Technical parameter

◇ Flow range: 0... 3m/s (water)	◇ Measuring dead zone: ≤0.01m/s
◇ Measuring accuracy: ≤±6%	◇ Response time: 1-13s, typical value 2s
◇ Temperature range: 0... 100 ℃	◇ Initialization time: < 16s
◇ Temperature accuracy: probe immersed in the medium ±1.5℃	◇ Electrical protection: reverse phase, short circuit, overload protection
◇ Signal output: PNP/NPN/IO-link, analog 4... 20mA,1-5V	◇ Protection grade: IP67
◇ Power supply: 24V±20%DC	◇ Medium temperature: 0... 100°C
◇ Connecting current: Maximum 200mA(PNP or NPN type)	◇ Ambient temperature: -20... 80°C
◇ Current consumption: < 100mA	◇ Storage temperature: -20... 80°C
◇ Flow display: Color crystal display (0.96 inch)	◇ Connection mode: M12 connector
◇ Temperature display: Color crystal display (0.96 inch)	◇ Material:
◇ Setting mode: button setting	Head: stainless steel/engineering plastic
◇ Pressure range: 60bar	Housing: stainless steel
◇ Temperature gradient: ≤4℃/S	Liquid material: Stainless steel 316L/EPDM (EPDM)

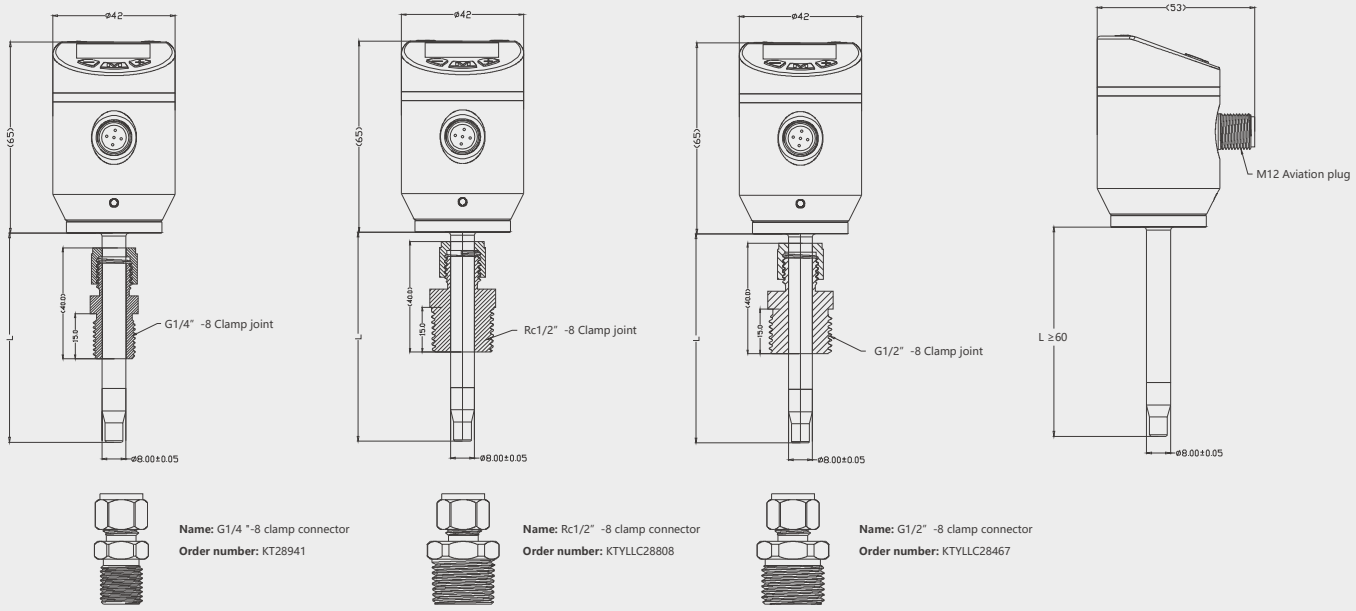
Panel diagram



Main interface

Dimension drawing（mm）

Smooth rod sleeve joint installation dimensions

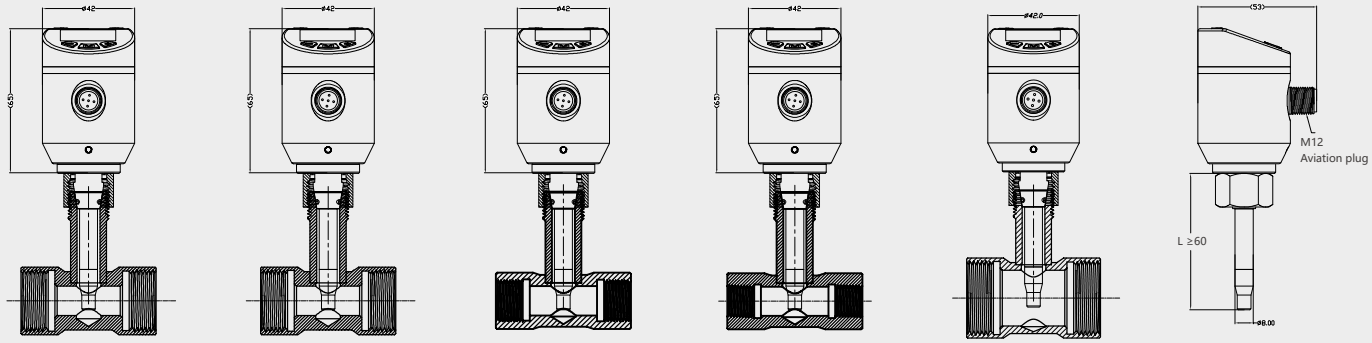


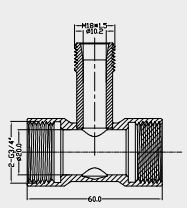
Name: G1/4 "-8 clamp connector
Order number: KT28941

Name: Rc1/2" -8 clamp connector
Order number: KTYLLC28808

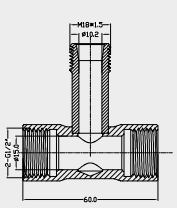
Name: G1/2" -8 clamp connector
Order number: KTYLLC28467

Tee (M18) installation dimensions

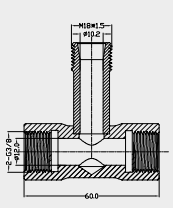




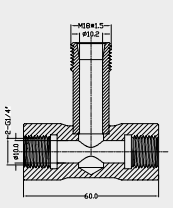
Name: M18*1.5 internal thread with G3/4 tee
Order number: KT7154



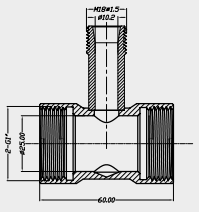
Name: M18*1.5 internal thread with G1/2 tee
Order number: KT7153



Name: M18*1.5 internal thread with G3/8 tee
Order number: KT28810

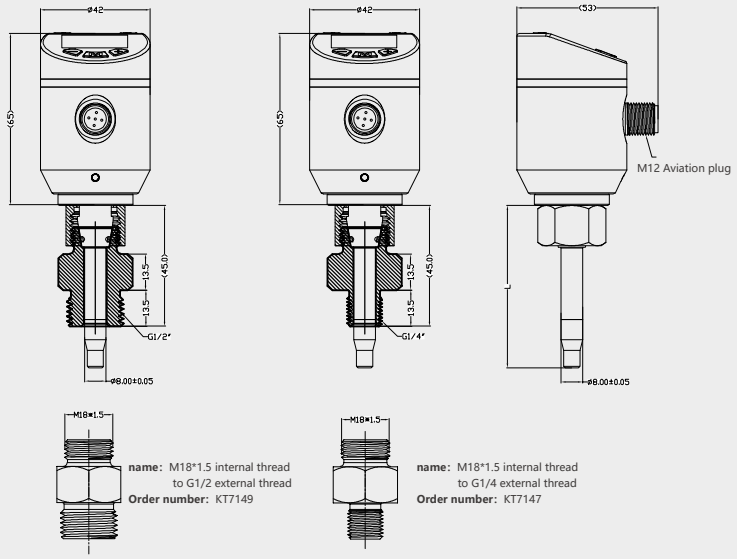


Name: M18*1.5 internal thread with G1/4 tee
Order number: KT7151



Name: M18*1.5 internal thread with G1 tee
Order number: KT32891

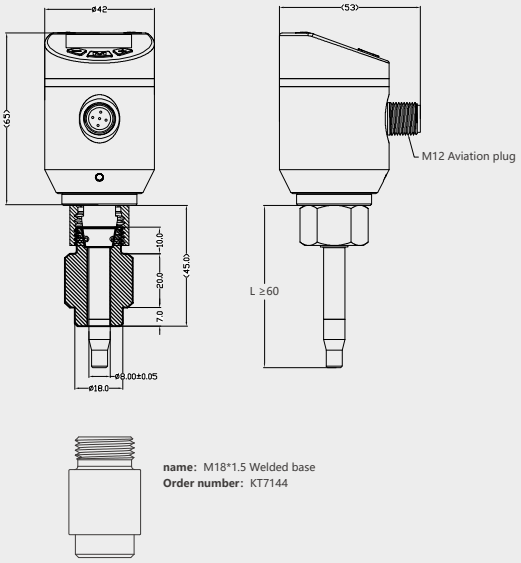
Mounting dimensions of threaded locking joint (M18)



name: M18*1.5 internal thread to G1/2 external thread
Order number: KT7149

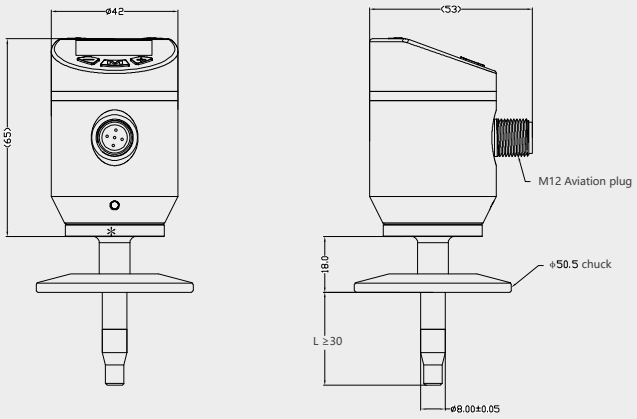
name: M18*1.5 internal thread to G1/4 external thread
Order number: KT7147

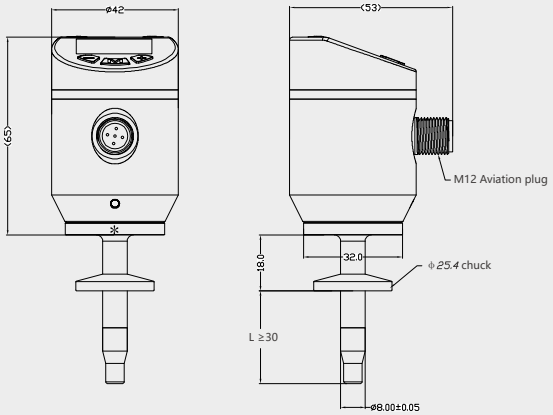
Solder lock joint (M18) installation dimensions



name: M18*1.5 Welded base
Order number: KT7144

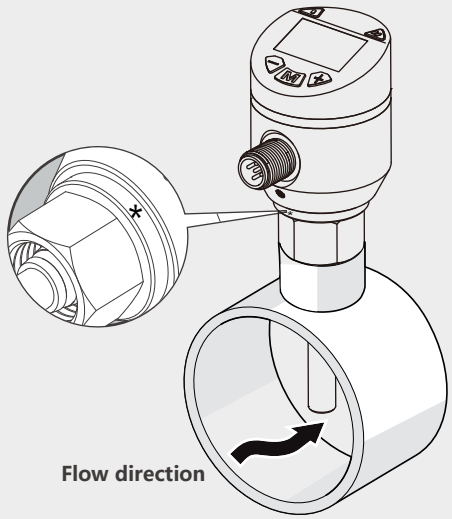
Chuck mounting dimensions



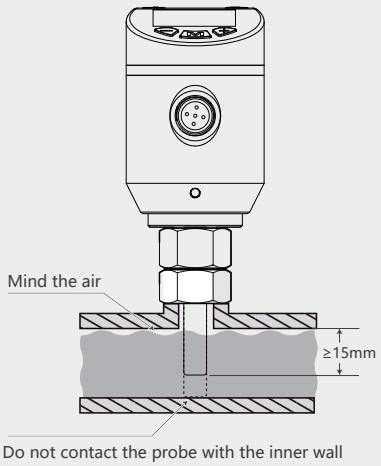


Installation precautions

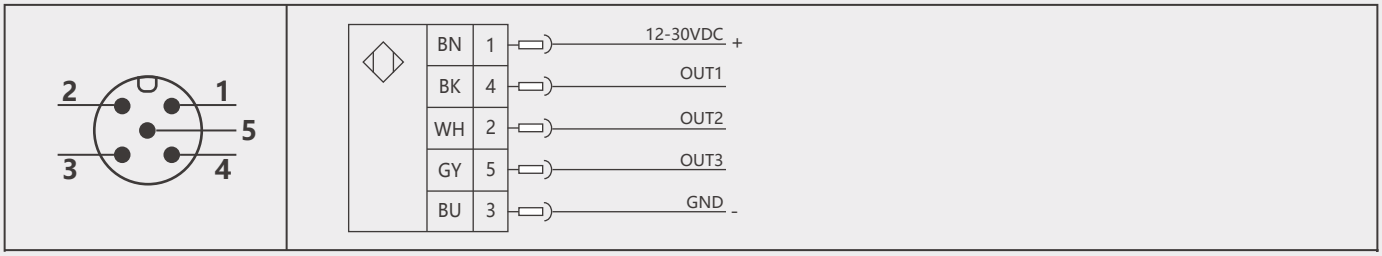
When installing the sensor, ensure that the water flow direction is consistent with the direction of the star



The medium must completely surround the sensor probe



Wiring diagram



Two switches + one analog								
color	stitch	Instructions	color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply (+)	BU	3	power supply (-)	GY	5 (OUT3)	Flow Analog (factory default) Temperature Analog
BK	4 (OUT1)	Temperature switch PNP (factory default) Temperature switch NPN Flow switch PNP Flow switch NPN IO-link Flow frequency (200Hz full scale)	WH	2 (OUT2)	Flow switch PNP (Factory default) Flow switch NPN Temperature switch PNP Temperature switch NPN			

one switch + two analog channels (flow/temperature)								
color	stitch	Instructions	color	stitch	Instructions	color	stitch	Instructions
BN	1	power supply (+)	BU	3	power supply (-)	GY	5 (OUT3)	Temperature Analog (factory default)
BK	4 (OUT1)	Flow switch PNP (Factory default) Flow switch NPN IO-link Flow frequency (200Hz full scale)	WH	2 (OUT2)	Flow Analog (factory default)			

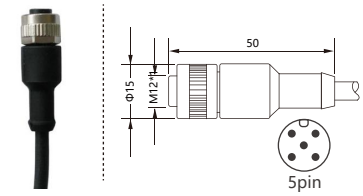
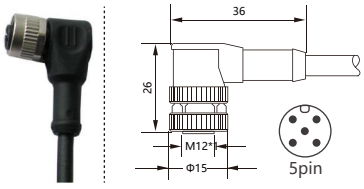
Flow relation table

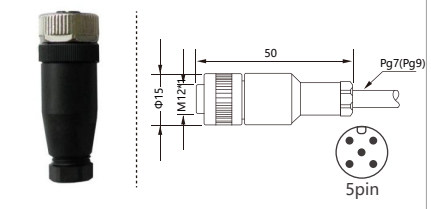
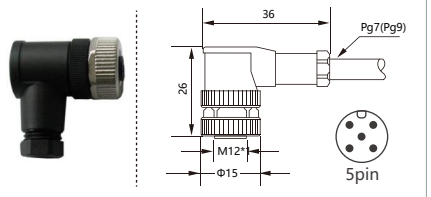
flow / caliber (DN) / Velocit	m³/h			
	0.3m/s	0.6m/s	1m/s	3m/s
10	0.085	0.17	0.28	0.85
15	0.19	0.38	0.64	1.9
20	0.34	0.68	1.13	3.4
25	0.53	1.06	1.76	5.3
32	0.87	1.74	2.9	8.7
40	1.36	2.71	4.52	13.55
50	2.12	4.24	7.07	21.2
65	3.58	7.17	11.95	35.85
80	5.43	10.86	18.1	54.3
100	8.48	16.96	28.27	84.8
125	13.25	26.5	44.18	132.5
150	19.09	38.17	63.62	190.85
200	33.93	67.86	113.1	339.3
250	53.01	106.03	176.71	530.15
300	76.34	152.68	254.47	763.4
350	103.9	207.82	346.36	1039.1
400	135.72	271.43	452.39	1357.15
450	171.77	343.53	572.56	1717.65
500	212.06	424.12	706.86	2120.6

Selection list

FTS220-	M18K	L30	SA	expatiate	
FTS220-				FTS220 electronic water flow sensor	
	M18K			Process connection: M18×1.5 internal thread	
	G			Process connection: probing rod	
	H25			Process connection: Outer diameter 25.4mm,	
	H50			Process connection: Outer diameter 50.5mm,	
		L30		Rod length L=30mm	You are advised to select only the chuck type
		L50		Rod length L=50mm	
		L60		Rod length L=60mm	It is recommended that M18K internal thread type ≤DN32 be selected
		L70		Rod length L=70mm	It is recommended that M18K internal thread type ≥DN40 be selected
		L80		Rod length L=80mm	It is recommended that M18K internal thread type ≥DN50 be selected
		L100		Rod length L=100mm	It is recommended that M18K internal thread type ≥DN80 be selected
			SA	Output signal: one switch + two analog channels (4-20mA)	
			SV	Output signal: one switch + two analog channels (1-5V)	
			A3	Output signal: two switches + one analog (4-20mA)	
			V3	Output signal: two switches + one analog (1-5V)	

Optional accessories - electrical accessories Factory standard:ZL05-PC02G

name	Outline drawing/dimension drawing (mm)	material	model
M12*1-5Pin (2m cable)		PUR	ZL05-PU02G
M12*1-5Pin (5m cable)			ZL05-PU05G
M12*1-5Pin (10m cable)			ZL05-PU010G
M12*1-5Pin (2m cable)		PVC	ZL05-PC02G
M12*1-5Pin (5m cable)			ZL05-PC05G
M12*1-5Pin (10m cable)			ZL05-PC010G
M12*1-5Pin (2m cable)		PUR	ZL05-PU02W
M12*1-5Pin (5m cable)			ZL05-PU05W
M12*1-5Pin (10m cable)			ZL05-PU010W
		PVC	ZL05-PC02W
			ZL05-PC05W
			ZL05-PC010W

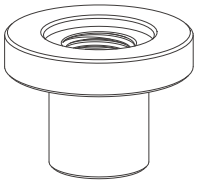
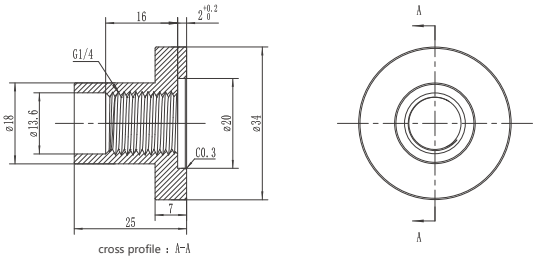
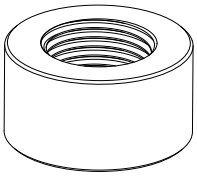
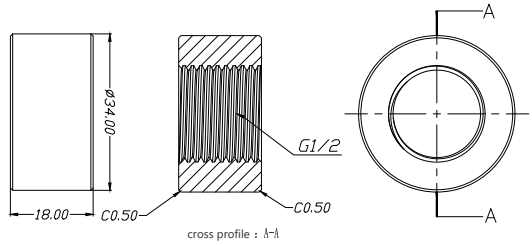
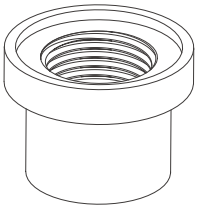
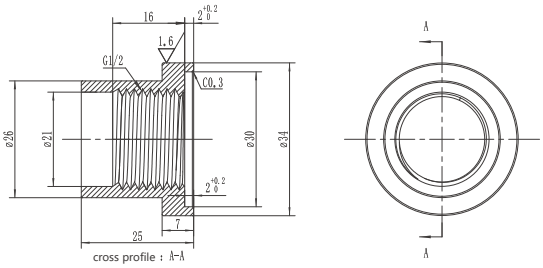
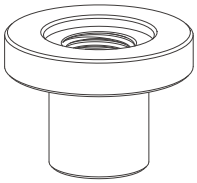
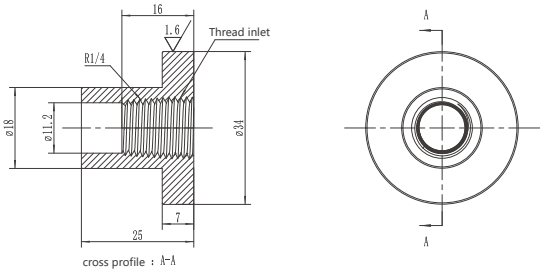
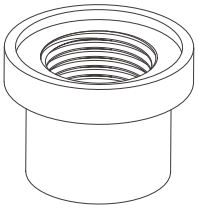
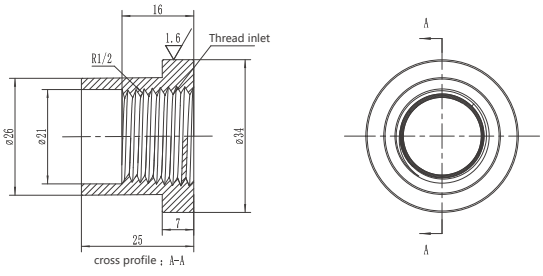
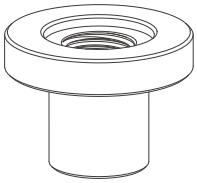
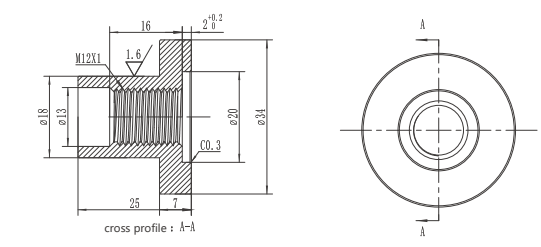
M12* 1-5Pin self-connector/size drawing (mm)	model
	GL05 (5Pin joint)
	WL05 (5Pin joint)

Optional accessories - Protective cover

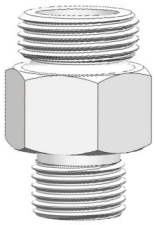
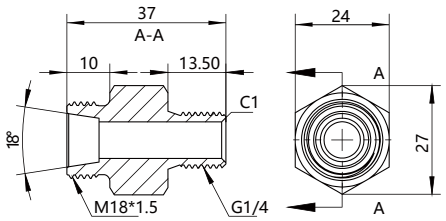
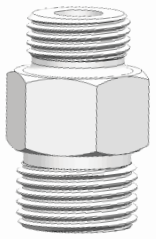
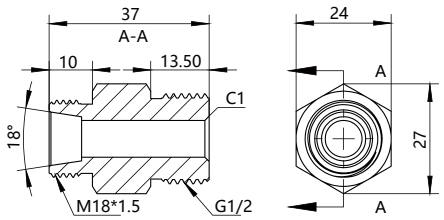
Color crystal screen series (switch) sensor

Order number: KTCS33661

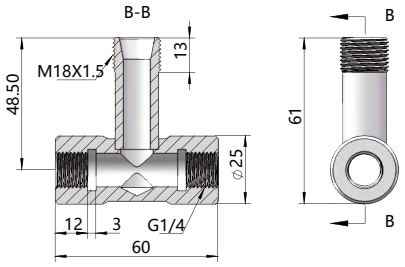
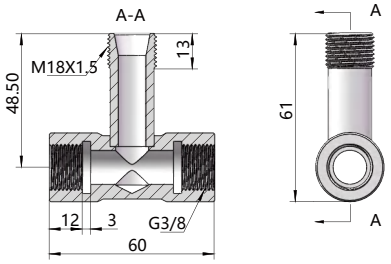
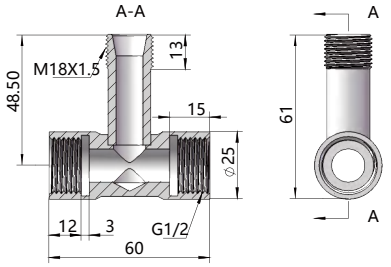
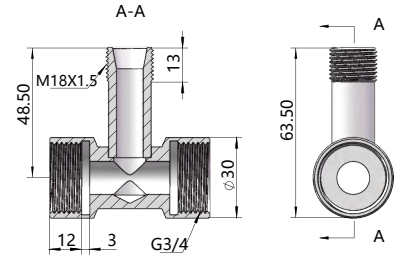
Welded base (optional external thread only)

name	External drawing	Size drawing (unit :mm)	model
G1/4 Welded base			FA002-G14 (Material: 304 stainless steel)
G1/2 High pressure welded base			FA002-G12H (Material: 304 stainless steel)
G1/2 Welded base			FA002-G12 (Material: 304 stainless steel)
Rc1/4 Welded base			FA002-R14 (Material: 304 stainless steel)
Rc1/2 Welded base			FA002-R12 (Material: 304 stainless steel)
M12*1 Welded base			FA002-M12 (Material: 304 stainless steel)

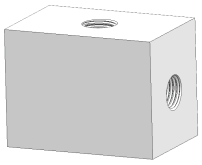
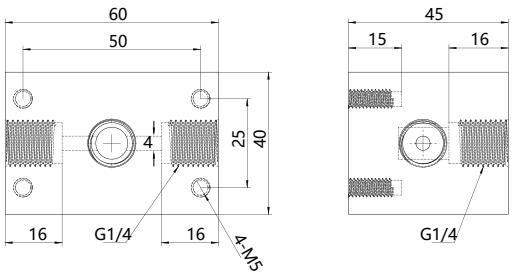
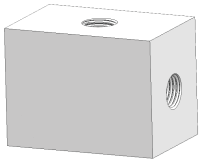
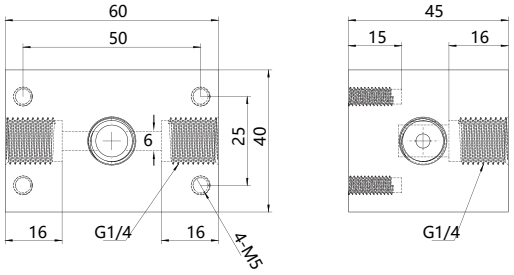
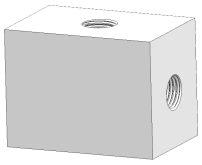
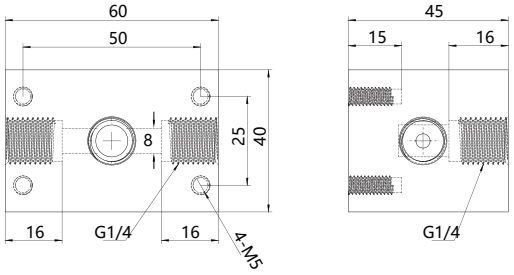
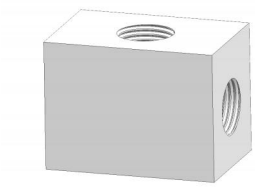
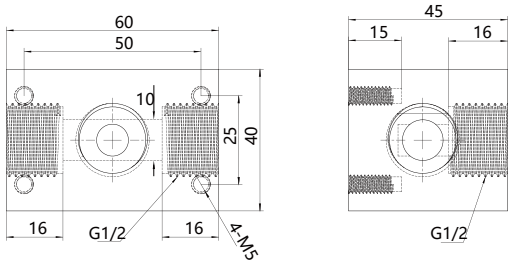
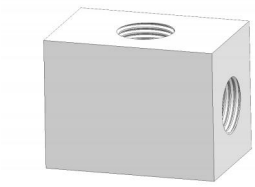
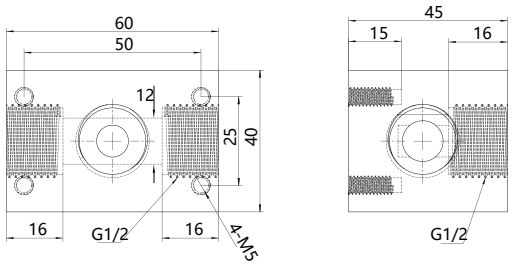
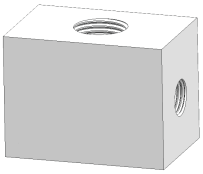
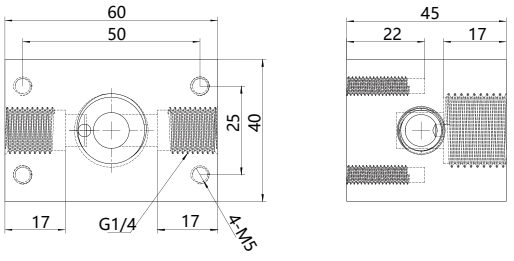
Adapter (M18 internal thread only optional)

name	External drawing	Size chart（mm）	model
M18 * 1.5 internal thread To g1/4 male thread, Probe insertion depth 15mm			FA004-M18G14S (Material: 304 stainless steel) FA004-M18G14T (Material: brass)
M18 * 1.5 internal thread To g1/2 male thread			FA004-M18G12S (Material: 304 stainless steel) FA004-M18G12T (Material: brass)

Tee (stainless steel) (M18 internal thread only optional)

name	External drawing	Size chart（mm）	model
M18 * 1.5 internal thread Equipped with G1/4 tee			FA003-M18G14 (Material: 304 stainless steel)
M18 * 1.5 internal thread With G3/8 tee			FA003-M18G38 (Material: 304 stainless steel)
M18 * 1.5 internal thread Equipped with G1/2 tee			FA003-M18G12 (Material: 304 stainless steel)
M18 * 1.5 internal thread With G3/4 tee			FA003-M18G34 (Material: 304 stainless steel)

Tee (PP) (external thread only optional)

name	External drawing	Size chart（mm）	model
Type G1/4 small flow tee			FA010-04G14 (material: PP)
Type G1/4 straight hole tee			FA010-06G14 (material: PP)
Type G1/4 small flow tee			FA010-08G14 (material: PP)
Type G1/2 straight hole tee			FA010-10G12 (material: PP)
Type G1/2 straight hole tee			FA010-12G12 (material: PP)
G1/4 gas only Tee adapter			FA012-01 (material: PP)

Tee (conventional stainless steel :40bar) (external thread only optional)

External drawing	Size table

Conventional tee

Diameter of thread	Inch code	Pipe thread (R)	Model number
DN15	4 points	1/2	FA013-R12K

Reducing tee

Diameter of thread	Inch code	Pipe thread left (R)	Pipe thread center (R)	Pipe thread right (R)	Model number
DN20	6 points×4 points	3/4 ″	1/2″	3/4 ″	FA013-R12KR34K
DN25	1 inch x 4 points	1″	1/2″	1″	FA013-R12KR1K
DN32	1.2 inches x 4 points	1.2 ″	1/2″	1.2 ″	FA013-R12KR1.2K

Tee (high pressure stainless steel :200bar) (external thread only optional)

External drawing	Size table

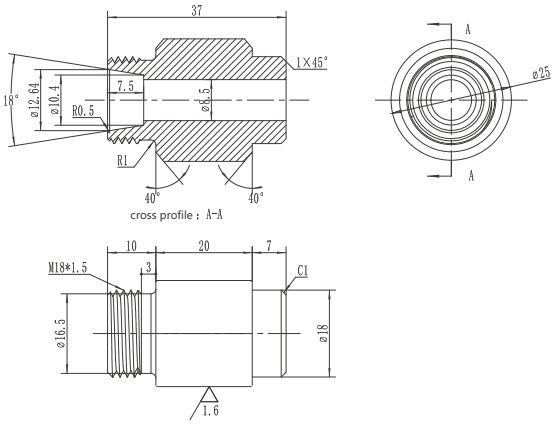
Conventional tee

Diameter of thread	Inch code	Pipe thread (G)	Model number
DN15	Four points	1/2	FA014-G12K

Reducing tee

Diameter of thread	Inch code	Pipe thread left	Pipe thread center	Pipe thread right	Model number
DN20	6 points x 4 points	G 3/4 ″	G 1/2″	G 3/4 ″	FA014-G12KG34K
DN25	1 inch x 4 points	G 1"	G 1/2″	G 1"	FA014-G12KG1K

Welded base (M18 internal thread only optional)

name	External drawing	Size drawing (unit :mm)	model
M18*1.5 Welded base			FA002-M18 (Material: 304 stainless steel)