

Liquid level measurement

Magnetostrictive level sensor		P.81 ▶
Capacitive level sensor		P.89 ▶
Ultrasonic level gauge		P.95 ▶
Input level sensor		P.99 ▶
Floating ball level sensor		P.103 ▶
Floating ball level switch		P.107 ▶

Magnetostrictive level sensor



Magnetostrictive liquid level sensor is a new generation of high precision liquid level sensor, which is independently developed by adoption of the magnetostriction principle and advanced digital and analog circuits. Due to adaption of the non-contact measurement method, the product has long service life and strong adaptability to the surroundings; periodic calibration and maintenance are not required; the product is absolute output, and it does not need to be reset to zero for restart; it has the technical characteristics of high precision, high stability, high reliability and high repeatability; it supports a variety of output modes, such as current, voltage, Modbus, ProfiBus and the like; and it can realize the simultaneous measurement of liquid level and interface. It is widely applied in liquid level measurement and control of petroleum, chemical, water conservancy, environmental protection, pharmaceutical, beverage and other industries.

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Reliable structure: Grade IP65-67 and ExdIICT6 flameproof certification

Anti-corrosion design, can be applied in corrosive environment.

It can measure the interface and liquid level at the same time

Application field



Oil-water interface measurement of oil depot system



Beverage, pharmaceutical and bio-chemical industry



Tar-ammonia water interface measurement of coke industry



Industry Liquid level inspection of chemical container

Product application examples



Double floating ball liquid level sensor

Application fields: oil-Water interface measurement of oil depoy system, mixture control of fluid ration in bio-engineering pharmaceutical and tar-ammonia water interface measurement of coke industry.



Anti-corrosion liquid level sensor

Application fields: chemical process liquid control, industrial field liquid level measurement and displayand food and beverage tank liquid level control.



Digital display liquid level sensor

Application fields: control of large-scale oil depot, food and beverage liquid tank, chemical process liquid level control, dam water level monitoring and other fieldswith liquid level measurement requirements.



Explosion-proof liquid level sensor

Application fields: it is typically applied in various special dangerous fields such as oil depot, oil storage tank, gas station, liquefied gas depot and the like.

Basic performance parameter

	SFM series analog output sensor	SFM series digital output sensor
Power supply	24V DC	9~30VDC
Measuring object	Liquid level or interface (at most one liquid level and one interface can be measured at the same time)	Liquid level or interface (at most one liquid level and two interfaces can be measured at the same time)
Liquid level height	80mm ~ 20000mm	
Output signal	Voltage 0-5V or 0-10V	Modbus
	Current 0-20mA or 4-20mA	
Load capacity	Voltage signal output minimum load $\geq 5K\Omega$	32 sensors can be networked
	Current signal output maximum load resistance 600 Ω	
Linear error	$\leq 0.05\%$ F. S (minimum $\pm 25 \mu m$)	
Repetitiv eerror	$\leq \pm 0.002\%$ F.S	
Resolution	16 bit D/A conversion and 0.015% F. S are adopted	25 μm
Renewal time	1ms (stroke $\leq 1000mm$), 2ms (stroke $\leq 3000mm$)	
Retardation	$\leq 0.002\%$ F.S	
Operating temperature	$-20^{\circ}C \sim +85^{\circ}C$	
Temperature coefficient	$\leq 0.007\%$ F.S/ $^{\circ}C$	
Leve of protection	IP65-IP67(higher level is available for consultation)	

Position detection

Angle measurement

Speed measurement

Displacement measurement

Liquid level measurement

Flow measurement

Pressure measurement

Temperature and humidity measurement

Current measurement

Special sensor

Magnetostrictive level sensor

Capacitive level sensor

Ultrasonic level gauge

Input level sensor

Floating ball level sensor

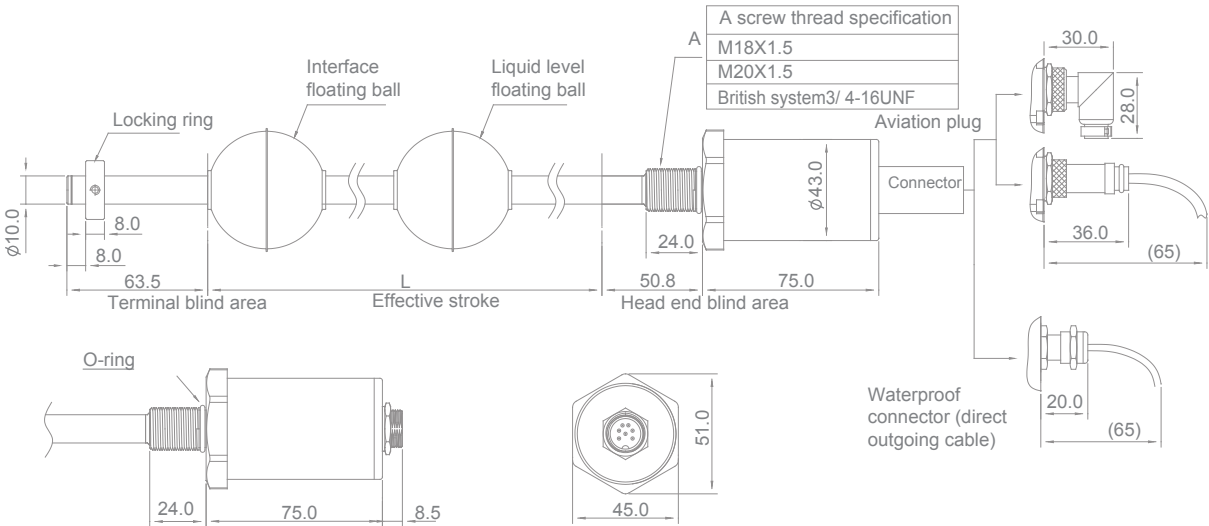
Floating ball level switch



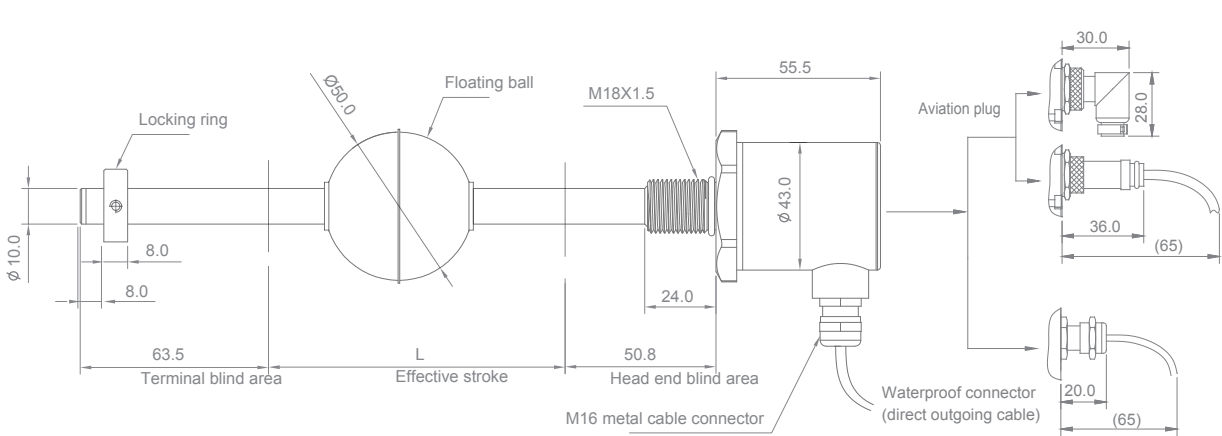
Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Mechanical dimension

SFM20T sensor structure dimensions:

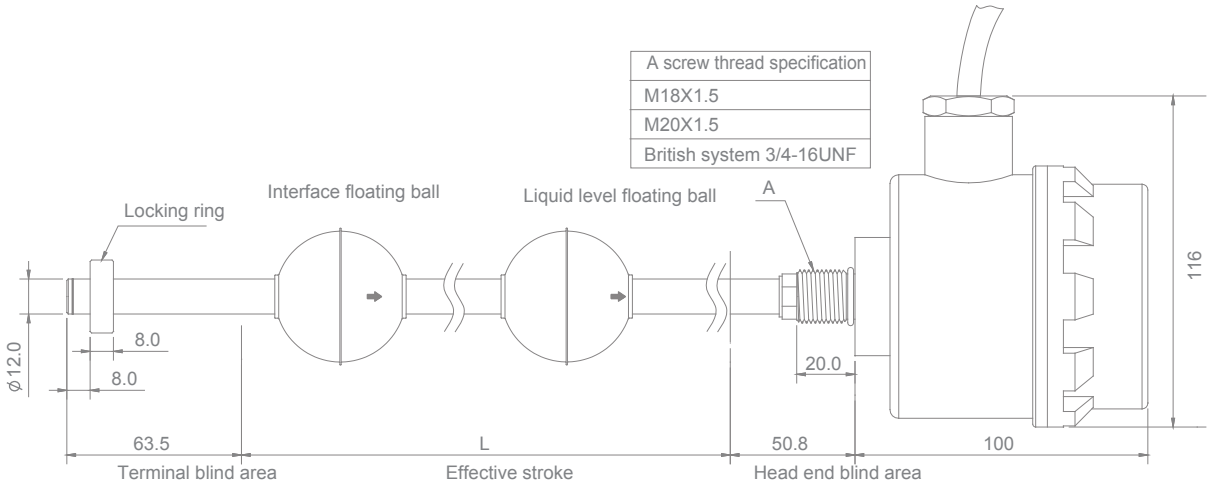


SFM21T sensor structure dimensions:



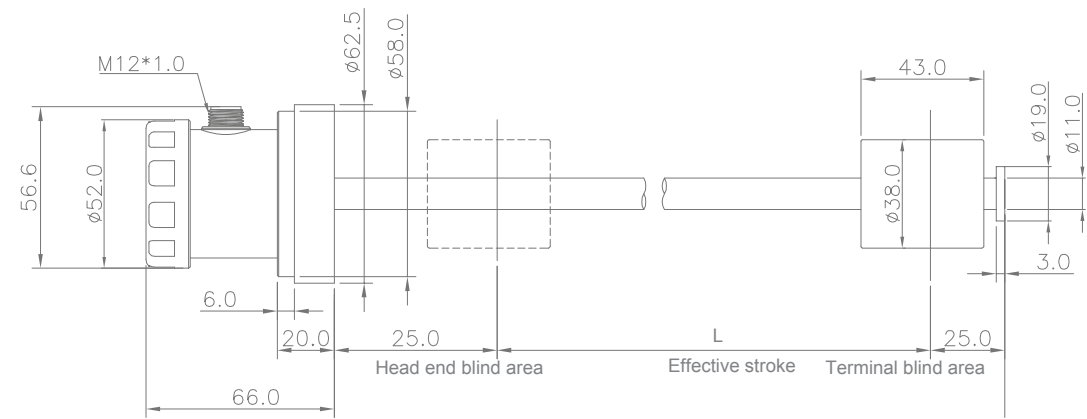
SFM40S sensor structure dimensions:

Explosion-proof Leve: Exd Ⅱ CT6 Gb IP65-IP67 (higher level is available for consultation)

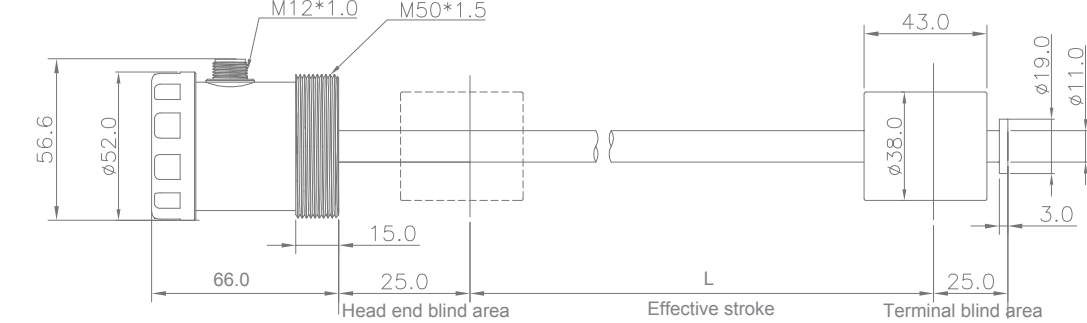


SFM50P sensor structure dimensions:

Structure and dimensions of snap ring installation type:



Structure and dimensions of screw thread installation type:



Wiring method

Wiring definition of SFM series

Electrical connection mode		Pin lead instructions		
Aviation plug	Cable color definition	Analog output	Modbus	SSI output
Male plug (sensor connector)	Pin1	Red	Power supply (+)	Power supply (+)
	Pin2	White	Signal output (-)	NC
	Pin3	Blue	Signal 1 output (+)	NC
	Pin4	Yellow	Signal 2 output (+)	NC
	Pin5	Green	NC	RS485 Signal B
	Pin6	Brown	NC	RS485 Signal A
	Pin7	Bare wire	Shielded wire	Shielded wire
	Pin8	Black	Power supply (-)	Power supply (-)

Notes:

- 1.Sensor power supply requirements:+24VDC ± 10%, the power supply current to each sensor must be greater than 150mA; and+12V DC+5%, the power supply current to each sensor must be greater than 300 mA; Digital output power supply requirements: +8-30 VDC, and the power supply current to each sensor must be greater than 450 mA;
- 2.The shielded cable routing of the sensor must avoid high-power electromechanical equipment, high-voltage cable and places with strong electromagnetic radiation, etc.
- 3.The shielded wire of the cable must be kept intact without breaking and connected to the grounding end of the follow-up equipment.

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

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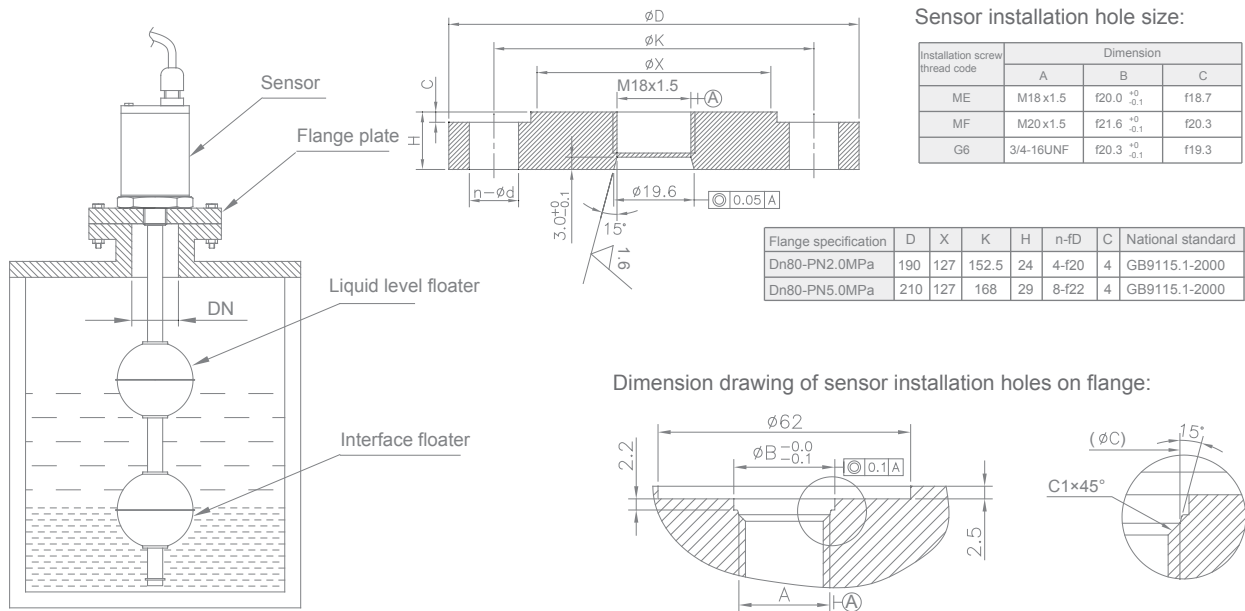


Installation method

Installation method I:

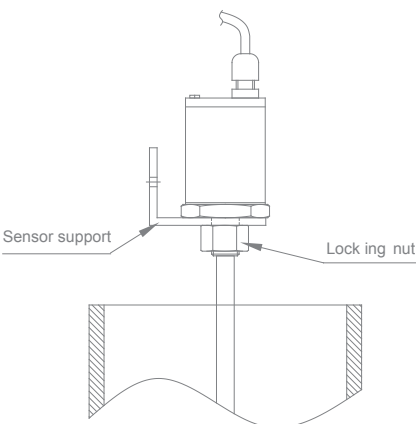
Flange connection

This method is applicable to the measurement of most liquid tank, the connecting flange provided by the manufacturer (or the flange specially customized by the user) can be selected. First screws the liquid level sensor directly into the sensor installation hole on flange plate and tightens it, and then fixes the connecting flange on the tank body.



Installation method II:

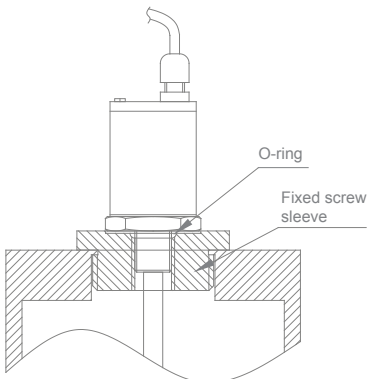
Applicable to tank opening measurement



This method is applicable to the tank opening measurement. The liquid level sensor installation accessory group FJ-1(sensor bracket and lock nut accessories) provided by our company can be selected to fix the liquid level sensor on the tank body at a proper installation position. (as shown in the figure)

Installation method III:

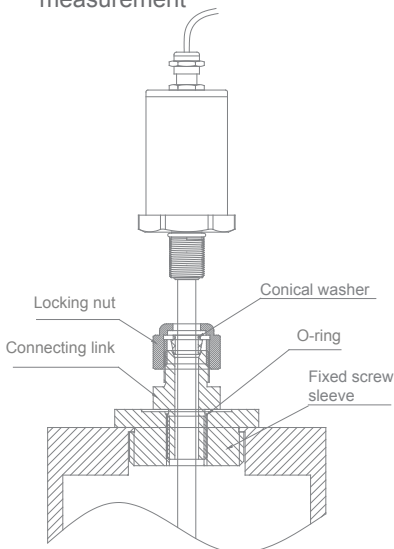
Applicable to sealed tank body measurement



This method is applicable to the direct installation of the sealed cylinder body. The liquid level sensor installation accessory group FJ-2 provided by our company can be selected to install the fixed screw sleeve on the tank body, and then fix the liquid level sensor on the screw sleeve. (as shown in the figure)

Installation method IV:

Applicable to the sealed tank measurement



This method is applicable to the adjustment of the sensor position. The liquid level sensor installation accessory group FJ-3 provided by our company can be selected to install the fixed screw sleeve on the tank body and install the connecting rod on the fixed screw sleeve. After adjusting the height of the liquid level sensor, tighten the locking nut (as shown in the figure)

Product type selection

SFM	☐	☐	☐	☐	—	☐ ☐ ☐ ☐	☐	—	☐ ☐ ☐ ☐ ☐	—	☐ ☐	☐	☐ ☐	—	☐ ☐ ☐ ☐	☐
Electronic bin structure	Measuring rod type	Retention		Range	Retention		Signal output		Body mounting		Cable length		Mounting attachment			
10: Hex aluminum 11: Square aluminum 20: Round stainless steel 21: Small round stainless steel 40: Explosion-proof type 50: Weak corrosion resistance 51: Strong corrosion corrosion	S: ϕ 12 stainless steel T: ϕ 10 stainless steel F: Strong corrosion prevention P: PP Plastic			Unit:mm			The information is as shown in Schedule 1		As shown in Schedule 3		Unit :M Electrical connection identifier mode: D: Connector output P: straight-out cable M: with digital display output		Floating balls and type of installation accessories are shown in Schedule 2			Special customized identifier

Schedule 1: Signal Output Information Selection

Signal output information selection (5 bits)					
	☐	☐	☐	☐	☐
Analog output	Current or voltage output	Output range	Retention	Direction of stroke	Transmission mode
	A: Current	1、4 ~ 20mA 2、0 ~ 20mA	X	P, forward N, reverse	Default : RS485
	V: Voltage	1、0 ~ 10V 2、0 ~ 5V			
Digital output	Output system	Data format	Baud rate		
	M:Modbus	R: RTU format A: ASCII format	1: 4800 4: 38400 2: 9600 5: 57600 3: 19200 6: 115200		
	S:SSI	H: Binary G: Gray code	0: 24 bit binary 1: 25 bit binary 2: 26 bit binary		

Schedule 2: Floating Ball and Type of Installation Accessories

Floating ball type (3 bits)			Installation attachment type (1 bit)
☐	☐	☐	☐
Liquid level floating ball	Interface float ing ball 1	Retention	
A: FBS105G floating ball (as shown in Schedule 5: Floating Ball Selection List) C: FBS105I floating ball (as shown in Schedule 5: Floating Ball Selection List) D: FBS105L floating ball (as shown in Schedule 5: Floating Ball Selection List) E: PP floating ball (as shown in Schedule 5: Floating Ball Selection List) F: Strong anticorrosion floating ball (as shown in Schedule 5: Floating Ball Selection List) X: Floating ball without corresponding liquid level and interface			A: Liquid level sensor mounting attachment group FJ-1(as shown inSchedule 6) B: Liquid level sensor mounting attachment group FJ-2(as shown in Schedule 6) C: Liquid level sensor mounting attachment group FJ-3(as shown in Schedule 6) X: Without installation accessories and only standard accessories are required.

Schedule 3: Installation Information Selection Table

Installation information (2 bits)		
☐	☐	Specifications
M	E	M18x1.5
M	F	M20x1.5
G	6	British system 3/4-16UNF
M	M	M50x1.5
F	X	Customized flange

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

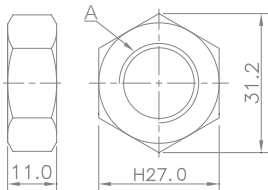
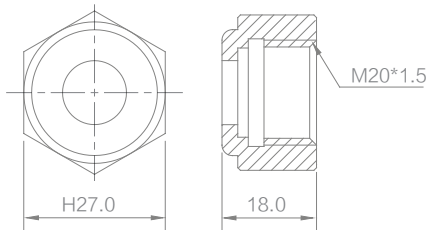
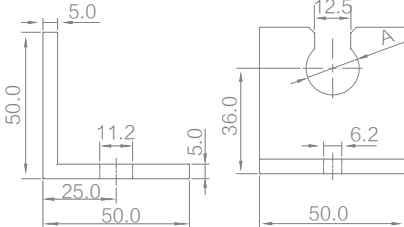
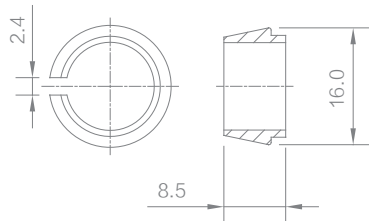
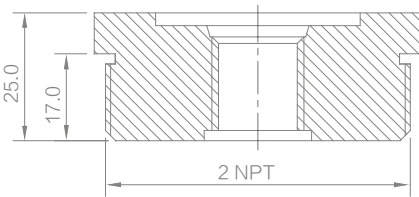
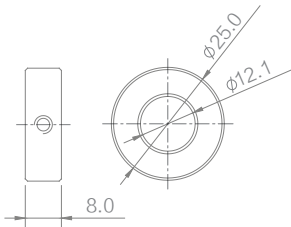
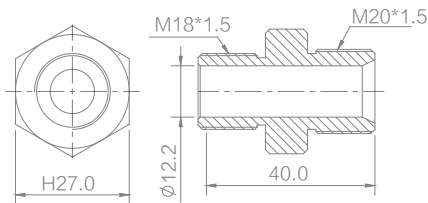


Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch



Schedule 4: Liquid Level Sensor Installation Accessories List

Material object	Structural diagram			Material object	Structural diagram	
Locking nut				Compression nut		
	Number 1	A: M18×1.5	Number 3			A: 3/4-16UNF
	Number 2	A: M20×1.5	Material			stainless steel
Sensor support				Taper sleeve		
	Number 1	A: Ø18.2(M18×1.5)	Number 3			A: Ø20.2(3/4-16UNF)
	Number 2	A: Ø20.2(M20×1.5)	Material			Aluminum alloy
Fixed screw sleeve				Floating ball fixing ring		
	Material: stainless steel					
Connecting link						
	Material: stainless steel					

Schedule 5: Floating Ball Selection List

 Floating ball model: FBS105L Material: SUS316L Density:0.6g/cm³ Proof Pressure:1.5MPa Minimum liquid level height: 55mm	 Floating ball model: FBS105G Material: SUS316L Density:0.6g/cm³ Proof Pressure:2.5MPa Minimum liquid level height: 40mm
 Floating ball model: FBS105I Material: SUS316L Density:0.93g/cm³ Proof Pressure:2.5MPa Minimum liquid level height: 40mm	 Floating ball model: FBP108 Material: PP Density:0.65g/cm³ Proof Pressure:0.6MPa Minimum liquid level height: 23mm

Schedule 6: Minimum Liquid Level Height

Standard accessory list		Optional accessory list			
Name	Quantity	Name	Quantity		
			FJ-1	FJ-2	FJ-3
Floater	N*	Locking nut	1	-	-
Floating ball fixing ring	1	Sensor support	1	-	-
Socket head cap screw	1	Fixed screw sleeve	-	1	1
Hexagon screw wrench	1	Connecting rod	-	-	1
		Compression nut	-	-	1
		Taper sleeve	-	-	1

Note: N*is the number of selected floating ball

Model selection example 1: SFM20T-3500X-A1XN-MEP03-AXXX

It indicates that the ordered product is the SFM20 series high precision liquid level sensor, with stainless steel circular electronic bin, range of 350mm, 4-20mA of current output and single floating ball reverse stroke. Its standard working voltage is 24V, the installation screw thread is M18*1.5, the straight-out 3 meters PVC sheathed cable, and FBS105G is chosen for the floating ball, including standard fitting accessory.

Model selection example 2: SFM50P-0470X-A1XNZ-MMD03-EXXXZ

It indicates that the ordered product is SFM series high precision liquid level sensor, with PP plastic electronic bin, PP plastic measuring rod, range of 470 mm, 4-20mA of current output and single anti-corrosion type floating ball reverse stroke. Its standard working voltage is 24V, installed by M50 screw thread, the connector outlet, the Teflon customized cable length is 3m, and PP plastic floating ball is chosen for the floating ball.

Position detection
Angle measurement
Speed measurement
Displacement measurement
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Temperature and humidity measurement
Current measurement
Special sensor

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Floating ball level sensor
Floating ball level switch



Capacitive level sensor



The capacitance oil level sensor adopts capacitance formed between the internal and external metal tubes to change linearly with the object (oil) level, and transform the change amount of the object (oil) level into a linear 4-20mA, 0-5V, digital RS485 output, which can directly display the liquid level height or be sent to the remote monitoring system via satellite.

The capacitance oil level sensor can be applied to the precise measurement of oil level in fuel tank of automobile, oil tank truck and oil depot, etc., and the whole machine has no movable or elastic parts. It has characteristics of shockproof easy installation, high reliability, high precision and good high performance, and is also suitable for measurement and monitoring of various non-conductive liquid . The core components of the product adopts international advanced highly integrated special IC chip, which can be transformed into standard analog signal or digital signal through precise temperature compensation and linear correction.

The capacitance oil level sensor has on-site calibration function. The user can automatically calibrate the zero point and range to meet the different requirements of various complex locations. It can be widely applied in steel, oil field, chemical industry, cement, thermal power equipment, light industry, sewage treatment and other industries.

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Convenience

It can be installed and fixed through flange or screw thread, with the characteristics of simple and easy to operate.

Independence

The oil consumption value can be obtained directly by measuring the oil volume of the oil tank, without any effect or influence on the oil system or pipeline.

Uniqueness

It has truncation function, the user can re-calibrate by pressing the keys, and the digital output can also be equipped with commissioning software.

Safety

The electronic bin adopts explosion-proof design and has passed Exia IIBT6 Ga explosion-proof certification; and the flange of the sensor is provided with two-layer leak-proof grooves to prevent oil leakage.

Stability

Without any mechanical movable parts, the mature and stable circuit structure and excellent quality components will make the sensor be adopted continuously for years without replacement.

Application fields



Oil tank transportation



Light industrial equipment



Sewage disposal



Chemical experiment

Product application examples



Fuel sensor

Application fields: applied to the automobile fuel tank and light industry production equipment. To cooperate with other equipment to coordinate the operation and complete the liquid material inspection.



Mini type

Application field: aviation hydraulic oil tank.



Hydrometric type

Application field: measurement of water and other conductive liquids.



Anti-interference type

Application fields: mechanical equipment, chemical raw materials, water, viscous liquid and other occasions requiring liquid inspection.



Medical liquid level sensor

Application field: medical equipment liquid level inspection



Oil sensor

Application field: vehicle fuel level measurement.

Position detection
Angle measurement
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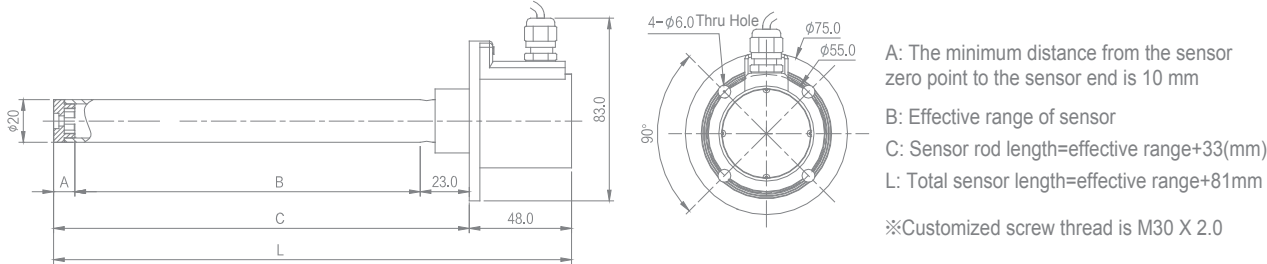
Magnetostriuctive level sensor
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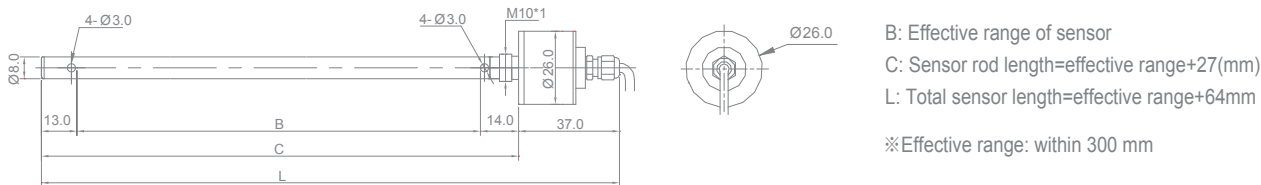
Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Machine dimension

Fuel sensor

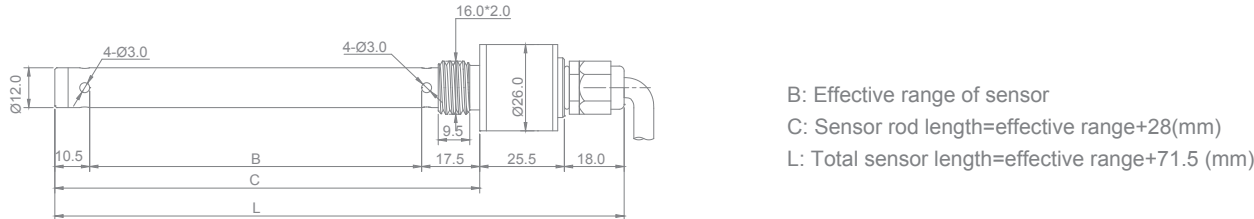


Mini type

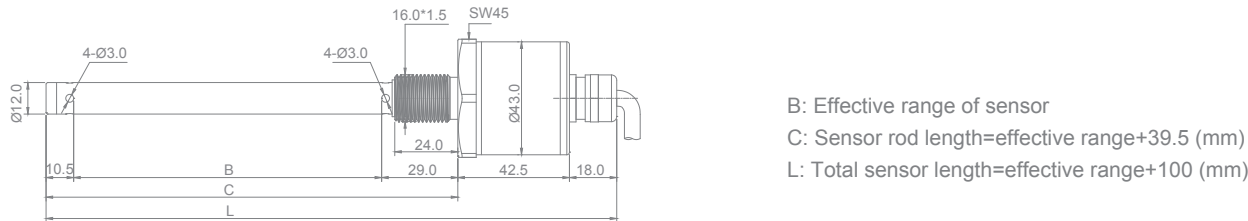


Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

Hydrometric type



Anti-interference type



Performance parameters

	SFC series capacitance liquid level sensor
Power supply	5VDC [1]/12VDC [2]/15 ~28V DC
Displacement range	100 ~ 1500mm (customizable for user)
Outputsignal	0 ~ 5VDC or 0 ~ 10VDC RS485 RS232
Load capacity	
Nonlinear error	±1%F.S or ±2%F.S
Repetitive error	<±0.02%F.S
Temperature coefficient	0.025%/℃
Working temperatu	-40℃ ~ +85℃
Storage temperature	-40℃ ~ +100℃
Rated working pressure	0.63MPa
Measuring rod material	
Installation interface	Flanged connection or screw threaded connection
Outgoing mode	Straight -out cable
Housing protection Leve	IP65

Note: [1] when power is supplied by 5VDC, the output is only digital output (RS485), please confirm in advance if RS232 output is required.
 [2] When power is supplied by 12 VDC, the output cannot be 0-10VDC.

Connection method and port description

Wiring port specification

Line Color	Item	Definition
Red	Vin	Power supply positive
Black	GND	Power supply negative
Blue	A/RXD	RS485/RS232 interface
White	B/TXD	
Blue	VOUT	Analog voltage output

marks: the output mode of the product is only one of them,and the Line color shall be determined according to the output mode.

Product model selection

SFC	☐	☐ ☐	☐	☐ ☐ ☐ ☐	☐	☐	☐ ☐ ☐ ☐	☐	☐ ☐	☐	☐
	Product characteristics	Probe diameter		Measuring range	Accuracy		Output signal		Installation information		Electrical connection
	3 Stainless steel series 5 Aluminum alloy series	08 (Stainless steel outer tube) 12 (Stainless steel outer tube) 20 (Aluminum alloy outer tube)		Up to 4 bits, Unit mm, Scope:100-1500mm	A: 1% B: 2%		As shown in Schedule 1		As shown in Schedule 2		P: Sheathed wire output (Stainless steel series) B: Bellows sheath (Aluminum alloy series)

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Ultrasonic liquid level sensor



Ultrasonic liquid level meter sends out ultrasonic pulse by sensor (transducer). The sound wave is received by the same sensor or an ultrasonic receiver after it is reflected by the liquid surface and is converted into electrical signal through a piezoelectric crystal. The transmission time of the sound wave is proportional to the distance from the sound wave to the surface of the object, the distance from the sensor to the surface of the measured liquid (solid) is calculated by the time between the transmission and reception of the sound wave.

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- It has strong anti-interference ability and can be applied to the liquid level measurement in harsh environment
- Built-in temperature sensor can realize real-time temperature automatic compensation function
- Multiple output types can meet different industrial field interface requirements
- Minimum blind area is 6 mm, which has the leading position in the field of measurement in China

Application fileds



Liquid level inspection of tap water and sewage treatment



Liquid level inspection of food processing



Liquid level inspection of collection well and biochemical pool



Liquid level measurement of various slurry

Performance parameters

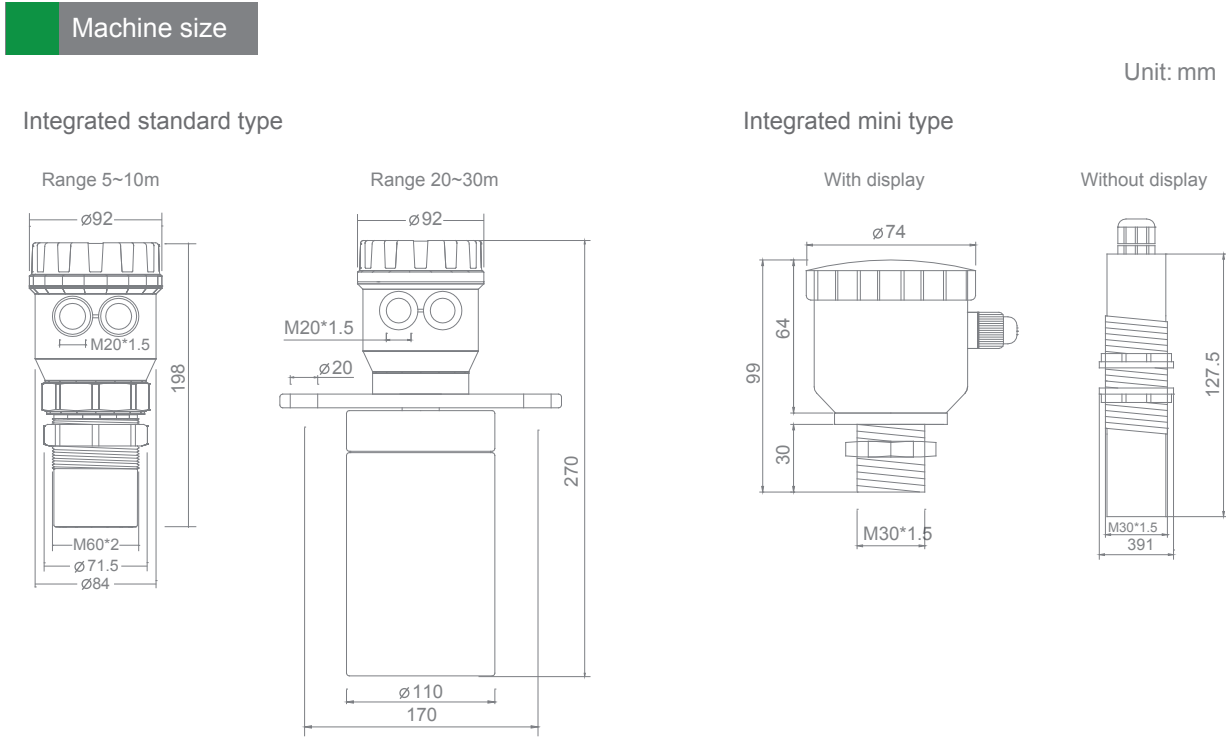
Model category	SFU60A	SFU30B	SFU30M	SFU60R
Product picture				
Measuring range	5m、8m、10m、12m、15m、20m、25m、30m	1m、2m		5m、8m、10m、12m、15m、20m、25m、30m
Measurement blind area	≤0.25~1.5m (change with the range)	≤0.06~0.15m (change with the range)		≤0.3~1.5m (change with the range)
Launching angle (full angle)	Less than 10°	Less than 6°		Less than 12°
Accuracy	±0.3%F.S	±0.1% (±1mm或±1.5mm)		±0.3%F.S
Resolution	1mm	1mm		1mm
Power supply	DC12—24V or AC220V Power consumption: <1.5W	DC12—24V Power consumption: <1.5W		DC12—24V or AC220V Power consumption: <5W
Output signal	Current: 4~20mA, 0~20 mA Voltage: 0~5V, 0~10V Numbers: RS485 (Modbus) , GPRS wireless communication Switch output: Two-way NPN、 Two-way relay (AC:5A/250V, DC:10A/24V)	Current: 4~20mA, 0~20 mA Voltage: 0~5V, 0~10V Numbers: RS485 (Modbus) Switch output: Three-way NPN		Current: 4~20mA, 0~20 mA Voltage: 0~5V, 0~10V Numbers: RS485 (Modbus) , HART, GPRS, MiniSD Data acquisition, USB Switch output: 4-channel relay output (AC:5A/250V, DC:10A/24V)
Connection mode	5~10m: M60*2 20~30m: DN80 Non-standard flange	M30*1.5		5~10m: M60*2 20~30m: DN80Non-standard flange
Leve of protection	Whole machine: IP65 or IP66/67, Sensor IP68	Whole machine: IP65 or IP66/67, Sensor IP68		Complete machine: IP65 or IP66/67, Sensor IP68
Explosion-proof leve	Exia IIB T4 Gb	Exia IIB T4 Gb		Exia IIB T4 GbExd Exd IIB T4
Operating environment	Normal temperature and pressure	Normal temperature and pressure		Normal temperature and pressure
Temperature compensation	Full range automatic	Full range automatic		Full range automatic
Storage humidity	≤80%RH,Free of dew	≤80%RH,Free of dew		≤80%RH,Free of dew

- Position detection
- Angle measurement
- Speed measurement
- Displacement measurement
- Liquid level measurement
- Flow measurement
- Pressure measurement
- Temperature and humidity measurement
- Current measurement
- Special sensor

- Magnetostrictive level sensor
- Capacitive level sensor
- Ultrasonic level gauge
- Input level sensor
- Floating ball level sensor
- Floating ball level switch

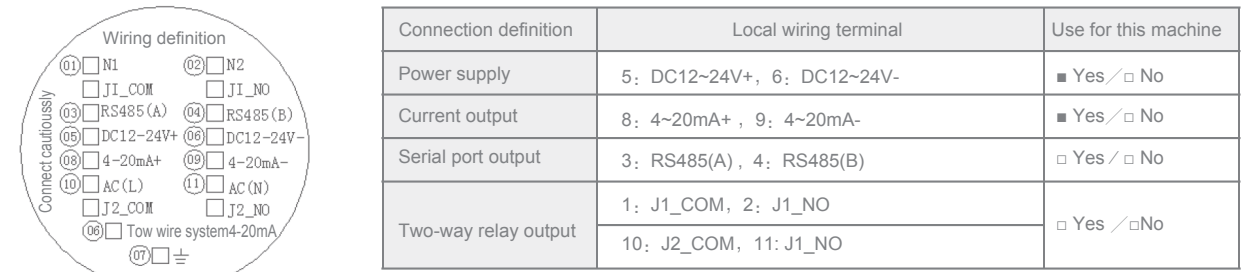


Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor



Connection method and port description

Schematic diagram of connecting panel



✘ The wiring shall correspond with the number marked inside the upper cover of the shell.

Product selection list

SFU	☐ ☐ ☐	☐	☐	-	☐ ☐	☐	-	☐ ☐ ☐	-	☐ ☐	☐ ☐
	Dimension	Electronic bin	Explosion-proof type		Range	Accuracy		Signal output		Body mounting	Electrical interface
	Unit:mm	A: Standard type B: Small+display M: mini type R: Split type	Default: Ordinary I: Intrinsic safety explosion-proof D: Intrinsic safety +explosion-proof		Unit: m	A:0.3% S:0.1%		As shown in Schedule 1		MJ:M30 MN:M60 FD:DN80 GC:G1 ½"	D: Aviation plug P: Straight-out cable M: Transmitter head

Schedule 1: signal output information selection table

Signal output information selection (5 bits)					
	☐	☐	☐	☐ ☐	
	Current or voltage output	Output range	Retention	Direction of stroke	Transmission mode
Analog output	A: Current	1、4～20mA	X	P, forward N, reverse	Default: RS485 G:GPRS
	V: Voltage	1、0～10V 2、0～5V			
Digital output	Output system	Data format	Baud rate		
	M:Modbus	R:RTU format A:ASCII format	1: 4800 2: 9600 3: 19200	4: 38400 5: 57600 6: 115200	

Schedule 2: process connection type selection

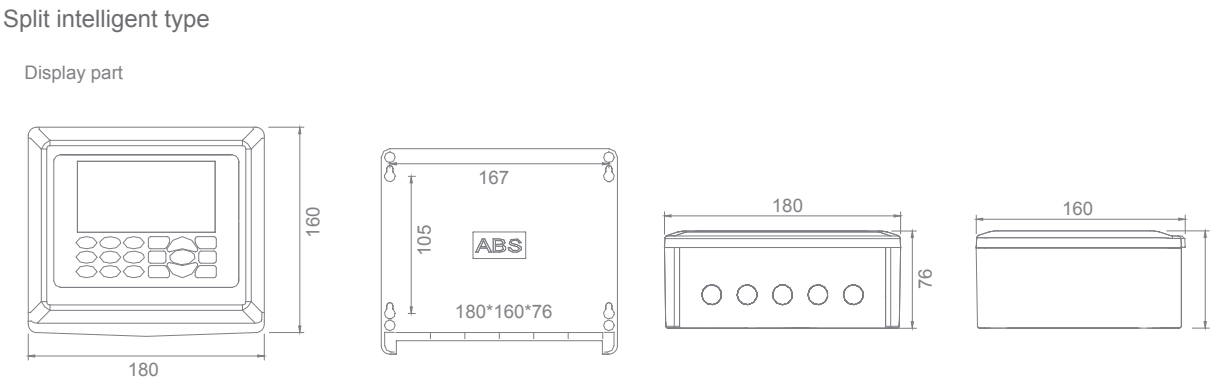
Process connection type selection (2 bits)				
☐	☐			
Code	Dimension code			
M: Standard screw thread	Code	Screw thread/ outside diameter	DN	British system
F: Flange DN	B		50	
G:G screw thread	C		65	1 ½"
N: screw NPT thread	D		80	
	E		100	
	J	30		
	N	60		

For example: SFU60A-08A-A1-GC

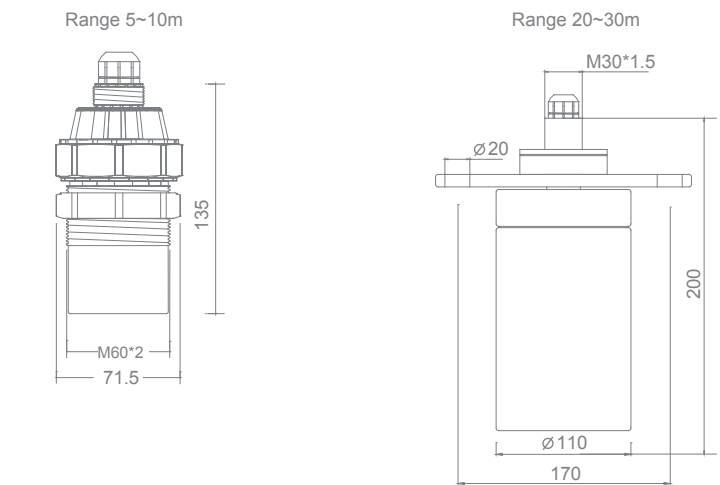
It indicates the ordered products are: integrated ultrasonic level meter; range is 8 meters; accuracy is 0.3%; sensor material is PTFE; the housing of the unit body is cast aluminum; non-explosion-proof type; the signal output is 4-20mA; and the body installation diameter dimension is G1½".

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch



Probe part (sensor)



Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch



Input level sensor



SYP265L series input pressure sensor is specially designed for measuring liquid level directly in the liquid. It adopts high precision pressure sensor assembly, and converts the output millivolt signal which generated by the sensor under pressure to standard current or voltage output signal through the built-in circuit. In order to ensure the stability, reliability and high performance of this product, high-quality sensors and amplifier circuit transmitter are specially selected, with all stainless steel integrated welding process and full sealed structure are adopted to ensure the long-term stable operation of the product under severe conditions. The product has a variety methods of electrical connection options, which is suitable for various field applications.

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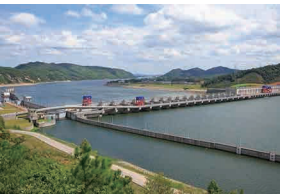
www.sowaysensor.com/product/

- Introduce American technology, and provide brand-new integrated design
- Ultra-low temperature characteristics, and stable operation at -40 degree
- Wide range, anti-RF interference and stable signal
- High overload capacity (4 times), anti-vibration, anti-impact, anti-lightning
- Rich measuring head selection, suitable for high and low temperature, corrosion, and waterproof environment

Application fields



Urban water supply and sewage treatment



Water level inspection of hydraulic engineering

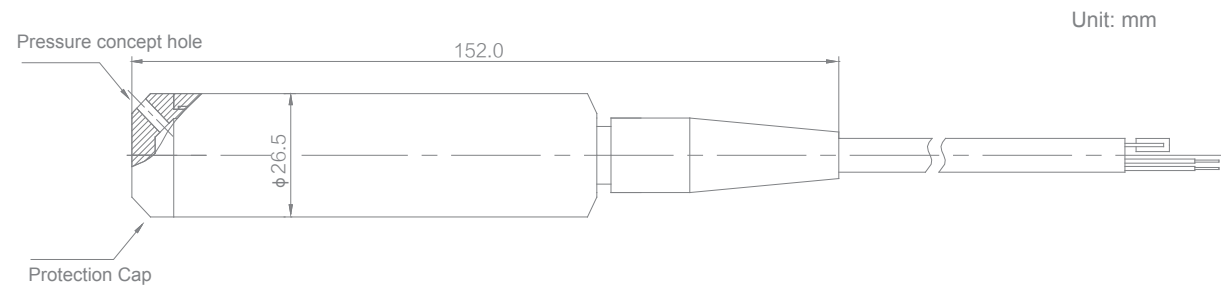


Ship oil level measurement



Liquid level measurement and control in industrial field

Machine dimension



Performance parameters

Measuring medium	Water and general non-corrosive liquid
Measuring range	0~0.01MPa (0~1m water) to 0~1MPa (0~100m water)
Overload pressure	Two times full scale
Output signal	0~5V DC, 0~10V DC, 4~20mA, Modbus (RS485 or RS232)
Supply voltage	9 ~ 36VD (Two-wire system), 24±5VDC (Three-wire system)
Medium temperature	-30 ~ +85℃
Ambient temperature	-20 ~ +85℃
Storage temperature	-40 ~ +90℃
Relative humidity:	≤95%(40℃)
Rise time	≤5 milliseconds up to 90% FS
Accuracy	Class 0.5, and Class 0.25(inclusive of comprehensive errors including nonlinearity, repeatability and hysteresis)
Temperature drift	≤ ±0.05% FS / °C (Temperature range-20-85 °C, including temperature effect of zero point and range)
Temperature compensation range	0 ~ 70℃
Stability	Typical: ± 0.1% FS/year maximum: ± 0.2% FS/year
Medium contact material	304 or 316 Stainless steel
Housing material	304 or 316 Stainless steel
Lead-out line	Φ7.3 Outer diameter waterproof ventilation cable,Texture: PE、PTFE
Leve of protection	IP68

- Position detection
- Angle measurement
- Speed measurement
- Displacement measurement
- Liquid level measurement
- Flow measurement
- Pressure measurement
- Temperature and humidity measurement
- Current measurement
- Special sensor

- Magnetostrictive level sensor
- Capacitive level sensor
- Ultrasonic level gauge
- Input level sensor
- Floating ball level sensor
- Floating ball level switch

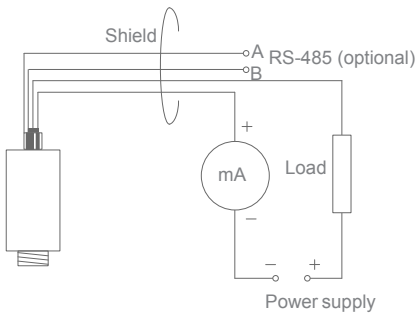


Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

Wiring method and output characteristics

Current-type product wiring diagram



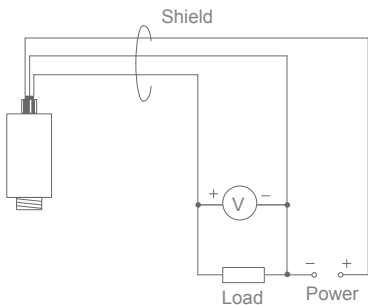
	Cable connection	Industrial type
Power supply positive (V+)	Red wire	OUT +
Signal output positive (OUT+) or power supply (-)	Black wire	OUT -
Grounding (GND)	Bare wire	Grounding pin
Suspension	None	None
Test terminal (I-)	None	TEST +
Test terminal (I-)	None	OUT -
RS485A(Select and match)	White wire	A
RS485B(Select and match)	Yellow wire	B

Current output load characteristic diagram



$$\text{Maximum load resistance (k}\Omega\text{)} = \frac{\text{Excitation voltage} - 13\text{V}}{20\text{mA}}$$

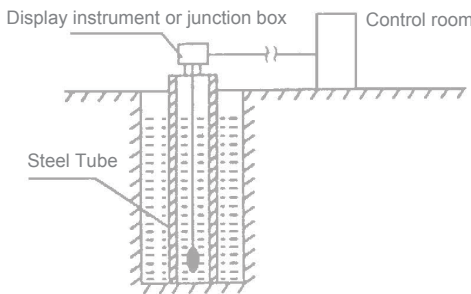
Voltage type product wiring diagram



	Cable connection
Power supply positive (V+)	Red wire
Power supply negative/signal negative (V-/OUT-)	Black wire
Signal output positive (OUT+)	Green wire
Grounding (GND)	Bare wire

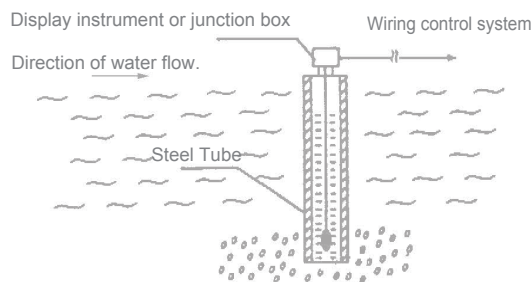
Method of installation

Installation schematic diagram in still water



When installed in wells and pools, it is generally appropriate to use the method of inserting steel pipe, the inner diameter of the steel pipe is about Φ45mm, and a several small holes shall be opened in the different heights of the steel pipe, so that water can enter the steel pipe smoothly.

Installation schematic diagram in dynamic water



Insert the steel pipe into the water channel, the inner diameter of the steel pipe is about Φ45mm, open several small holes at different height of the steel pipe which are in the opposite direction of the water flow, so that the water can flow into the steel pipe, which effectively avoids the influence of the hydrodynamic pressure on the liquid depth measurement.

Product selection list

SYP	□ □ □	□	—	□ □ □ □ □	□	□	—	□ □ □	□	—	□ □	□ □ □	—	□ □
Product series	Main body external diameter	Type		Measuring range	Pressure type	Accuracy		Output signal	Temperature		other information	Electrical interface		Cabel length
	Standard:265 unit: mm	L: liquid leve meter		First four indicate are the numbers The inicate at last are the unit K:kPa M: mH2O Sampel1 : 1000K-Measuring range is 0-1000KPa Sampel2: 10M-Measuring range is 10 metre	S: surface pressure	A:0.25% B:0.50%		A1:4~20mA V1:0~10V V2:0~5V M:Modus As shown in Schedule 1	Lack: no T: Yes		XX	P: Direct outgoing cable M1: Transmitter head without display meter M2: Transmitter head with display meter		Unit:m

Schedule 1 signal output information selection table

Signal output information selection (2 bits)			
	□	□	
Analog output	Current or voltage output	Output range	
	A: Current output	1、 4 ~20mA	
	V: Voltage output	1、 0 ~10V 2、 0 ~5V	
Digital output	M: Modbus output	Data format and baud rate	
		RTU format	ASCII format
		0: 2400 1: 4800 2: 9600 3: 19200	A: 2400 B: 4800 C: 9600 D: 19200 E: 57600

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

Floating ball level sensor



Floating ball type liquid level meter can monitor the liquid level in real time, the minimum measurement precision is 5 mm, the output can be the resistance change value, or can be converted to analog amount (current and voltage) by the transmitter. The floating ball type liquid level meter adopts non-contact working mode, with long service life, can be adopted in severe environment. It adopts non-contact working mode, with long service life and can be adopted in harsh working environment without maintenance, with high stability, high reliability, and high repeatability and other technical characteristics. It is widely used in the fields of liquid level measurement, liquid level monitoring and liquid level safety control.

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- Adopt non-contact working mode
- Long service life, high measurement precision and flexible installation structure
- Measurement range can be customized according to requirements
- With characteristics of high stability, high reliability, high repeatability and no maintenance required
- A variety of standard industrial signal outputs, such as 0-5V or Live display, etc.

Application fields



Coffee machine, water dispenser



Water heater control



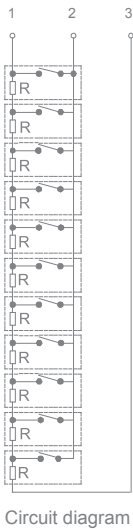
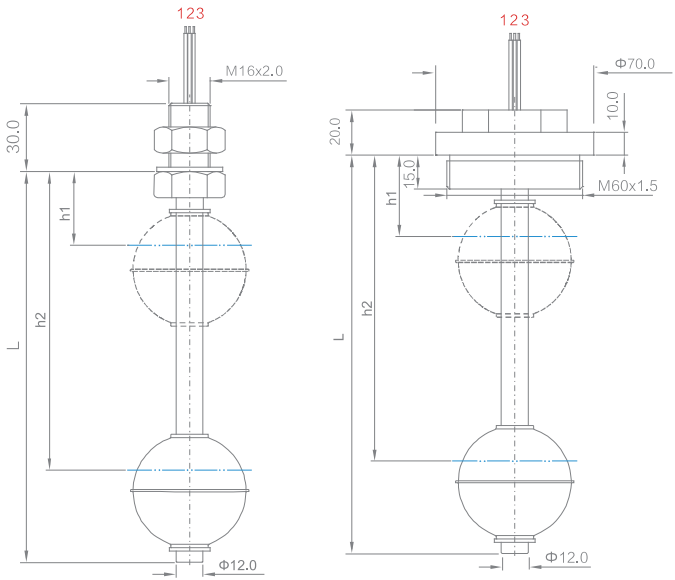
Oil level control of oil tank



Process control

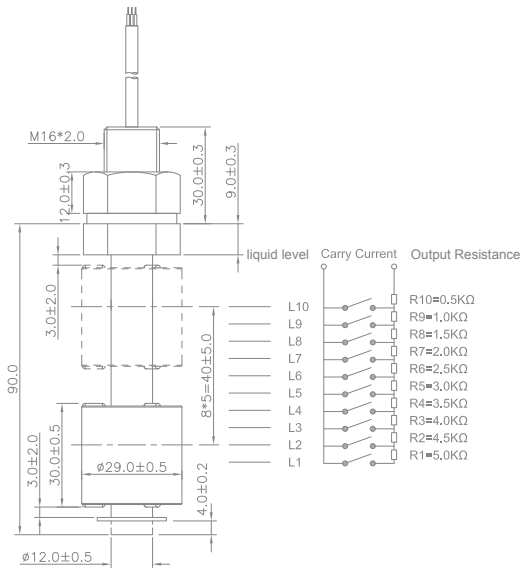
Machine dimension

1. Stainless steel series



Circuit diagram

2. PP series



Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor
Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch



Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

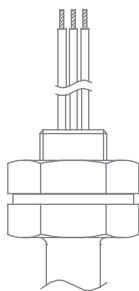
Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

Performance parameters

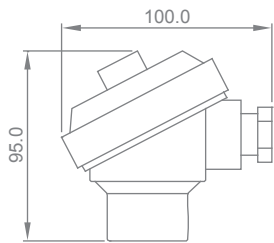
Continuous level switch parameter table									
Output mode	Input/output range	Outgoing mode	Installation method	Material	Action point spacing	Accuracy of measurement	Range	Float ball	Working temperature
Resistance type output (no transmitter)	Input: None Output: kΩ	Outgoing two-wire (junction box can be externally connected)	Screw thread, Flange	SUS304 SUS316	5mm-10mm	±5mm ±10mm	0.1m-1m	FBS105/107	-40℃ ~+1 2 5℃
Voltage type output with transmitter	Output range: 12V(24V) Output range: 0-5V(1-10V) Error range: 0.3V	Outgoing three-wire (junction box can be externally connected)							
Current type output 4-20mA (with transmitters)	Input: 24V Output: 4-20mA	Outgoing three-wire connecting with junction box							

Transmitter (optional):The detailed parameters of the transmitter is shown in the instructions of the transmitter	Model	SMS-100	SMM-260	SMS-320
	Power supply	DC9~28V		
	Input Signal	DC0~5V	Four-wire input DC0~5V	DC0~5V 4~20mA PT1000
	Output signal	RS 485 Modbus RTU	RS232- RS 485 CAN Bus isochronous display	Relay switch output temperature and liquid speed measurement with display
	Resolution	16	12、 16	10、 16
	Working temperature	-20 C ~+85 C		
	Characteristics	It can facilitate the conversion between analog and digital	It can be adopted for multi-channel simultaneous display, rich output system, touch screen adjustment parameters.	Multiple input system, and especially applicable for customers who need to inspect rise and fall rate of liquid level, temperature, liquid level at the same time.

Appearance mode

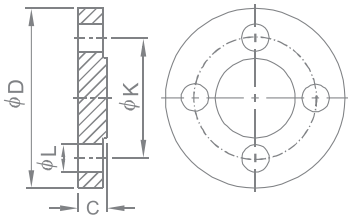
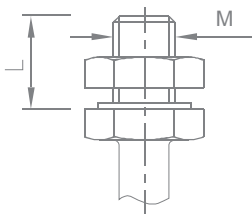


Straight out lead



Electrical connector-1

Installation method



Unit: mm

Thread							
M10.0X1.0 L=15	M12.0X1.25 L=20		M16.0X2.0 L=30		G1/2 BSP L=30	G3/4 BSP L=30	
Flange							
Inside nominal diameter	Inch	Nominal pressure	Flange outer diameter	Bolt hole spacing	Bolt aperture	Bolt hole number	Flange thickness
DN25	1	10kg=1.0MPa	115	85	14	4	16
		16kg=1.6MPa	115	85	14	4	16
DN40	1½	10kg=1.0MPa	150	110	18	4	18
		16kg=1.6MPa	150	110	18	4	18
DN50	2	10kg=1.0MPa	165	125	18	4	20
		16kg=1.6MPa	165	125	18	4	20
DN100	3½	10kg=1.0MPa	220	180	18	8	22
		16kg=1.6MPa	220	180	18	8	22
DN150	5	10kg=1.0MPa	285	240	22	8	24
		16kg=1.6MPa	285	240	22	8	24

Product selection list

SF	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Type	Structural form	Outer pipe diameter	Body length	Resolution	Signal output	Installation information	Electrical connection	Wiring length	Floating ball type	Floating code	Other	
	1: Dry reed type H: Hall, and magneto resistive	1: Plastic housing vertical installation 2: Plastic housing horizontal installation 3: Stainless steel housing vertical installation 4:Stainless steel housing horizontal installation 5: Aluminium outer tube vertical installation	Represented by diameter unit: mm	Represented by number unit: mm	Represented by letter A:5mm B:10mm C: Continuous output	As shown in Schedule 1	As shown in Schedule 2	Direct outgoing cable P: PVC sheath T: Teflon sheath U: PU series sheath S: Silicon rubber sheath D: Aviation connector M: With digital display output J: with connector	Unit: 100mm	P: PP Floating ball N: NBR Floating ball S: Stainless steel floating ball	As shown in floating ball Parameter list	T: Thermal resistance	

Schedule 1- Signal Output Information Selection Table

☐	☐	☐	☐
Output system	Output mode	Power	Output group
Output system	Mechanical switch	1: Normally open 2: Normally close 3: Single-pole double-throw 4: Double-pole double-throw	L: Low power signal H: High power signal
	N: NPN P: PNP T:Silicon controlled		
Analog output	A: Current	1、 4 ~ 20mA	Default: Single group Groups: 32 groups represented by 2-9 and A-W
	V: Voltage	1、 0V ~ 10V 2、 0V ~ 5V	
	R: Resistance		

Schedule 2

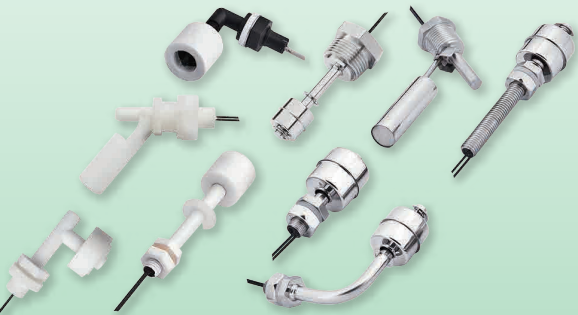
Installation Method and Parameter Table of Liquid Level Switch Body							
Installation method	Parameter						
☐	☐						
C: Cylinder	Code	Screw thread/outside diameter	DN	British system	Code	Screw thread/outside diameter	British system
M: Standard screw thread	1			1/8"	B	12	
T: Fine pitch screw thread	2			1/4"	C	14	
S: Extreme fine pitch screw thread	3		10	3/8"	D	16	
F: Flange DN	4		15	1/2"	E	18	
G: British screw thread	5		20		F	20	
N: NPT screw thread	6	6	25	3/4"	G	22	2"
	7	7	30		H	24	
	8	8	32	1"	I	27	
	9				J	30	
	A	10	40				

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch



Floating ball level switch



The floating ball type liquid level switch adopts non-contact working mode, with long service life, can be adopted in harsh environment, and has no maintenance requirement, with high stability, high reliability, high repeatability and other technical characteristics. It is widely used in the fields of liquid level measurement, liquid level monitoring and liquid level safety control.

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- Without standby power consumption, normally open, normally closed and SPDT is optional
- Customer can customize measurement range, and connection mode
- High cost performance, high stability and long service life
- Housing materials are stainless steel or engineering plastics, etc

Application area



Coffee machine, water dispenser



Water heater control

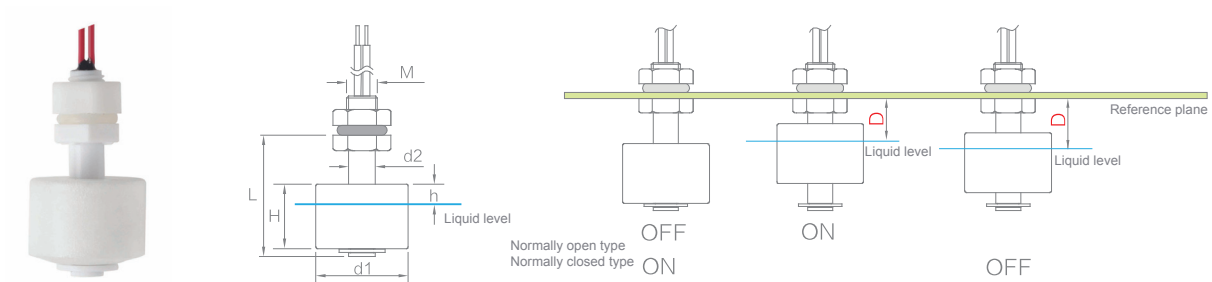


Oil level control of oil tank



Process control

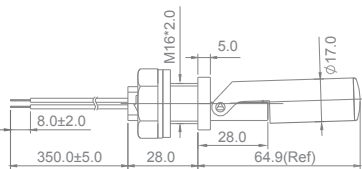
Outline dimension and operation schematic diagram-direct installation



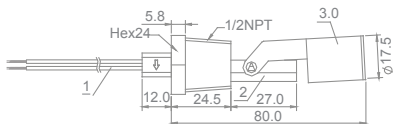
Model	Outline dimension (material)							Unit: mm	
	L	d1	H	d2	M	h	C.L (Wire Length)	D (Liquid level height)	
SF112	31.0	Φ24.0	17.0	Φ7.0	M8.0×1.25	6.0	As per customer's requirements	To meet customer's requirements	
SF112S	31.0	Φ19.0	16.5	Φ7.0	M8.0×1.25	3.0			
SF113	24.5	Φ18.0	8.0	Φ7.0	M8.0×1.25	2.5			
SF119	42.0	Φ24.0	17.0	Φ7.0	M8.0×1.25	6.0			
SF11G	Customer customization	Φ24.0	17.0	Φ8.0	M10.0x1.5	6.0			

Outline dimensions-side installation

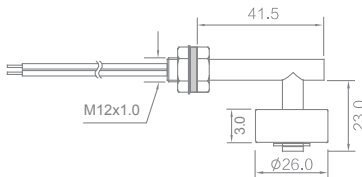
SF121



SF122



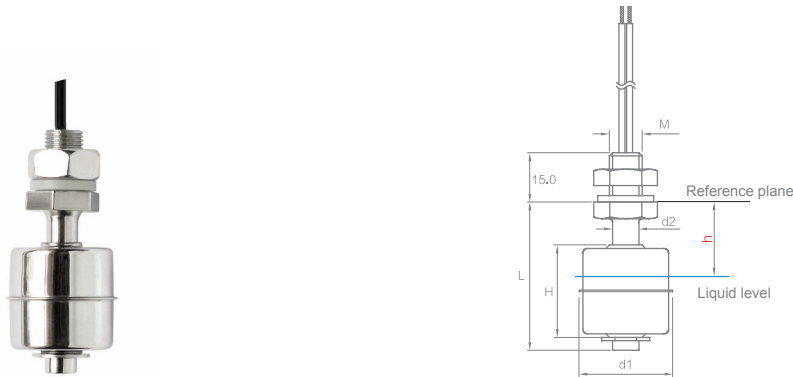
SF126



- Position detection
- Angle measurement
- Speed measurement
- Displacement measurement
- Liquid level measurement
- Flow measurement
- Pressure measurement
- Temperature and humidity measurement
- Current measurement
- Special sensor
- Magnetostrictive level sensor
- Capacitive level sensor
- Ultrasonic level gauge
- Input level sensor
- Floating ball level sensor
- Floating ball level switch

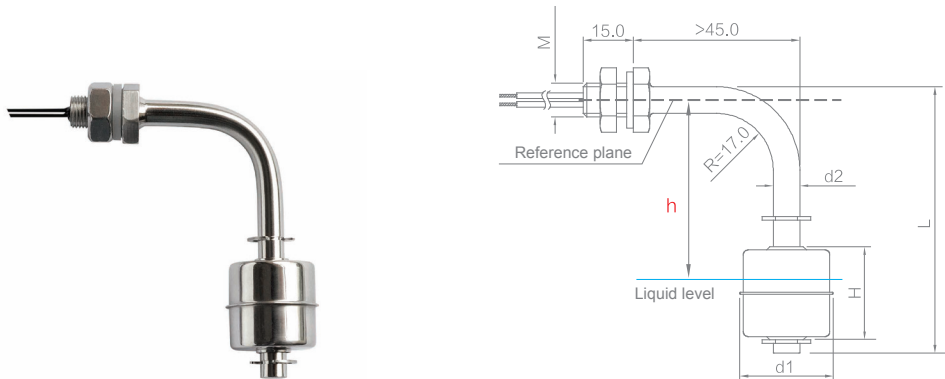
Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Outline dimension and position inspection of stainless steel single point liquid level switch



Unit : mm

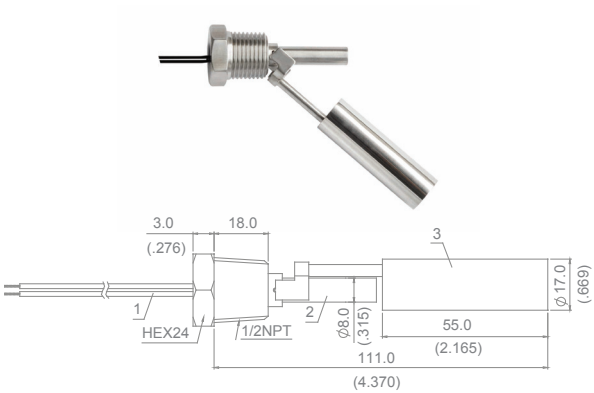
Model	Outline dimensions (material: stainless steel)						
	L	d1	H	d2	M	h	Wire length
SF131	46.0	Φ28.6	28.0	Φ8.0	M10×1.0	26.0	As per customer's requirements



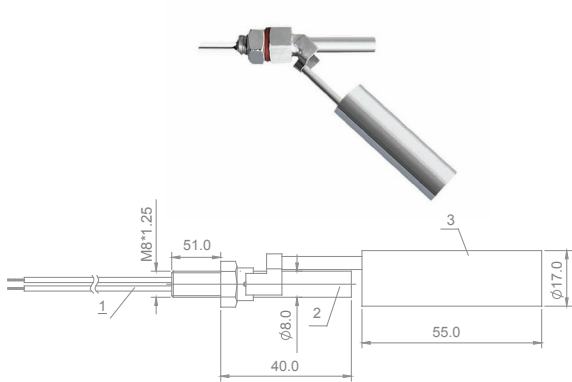
Unit : mm

Model	Outline dimensions (material: stainless steel)						
	L	d1	H	d2	M	h	Wire length
SF132	81.0	Φ28.6	28.0	Φ8.0	M10×1.0	50.0	As per customer's requirements

SF141

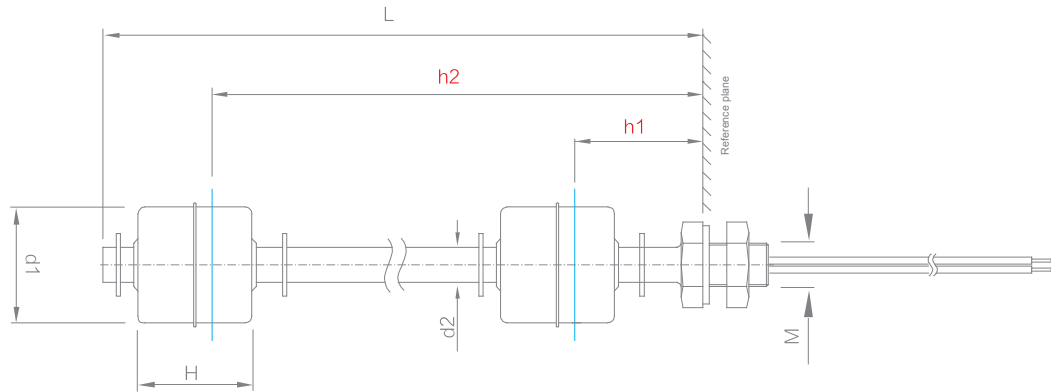


SF142



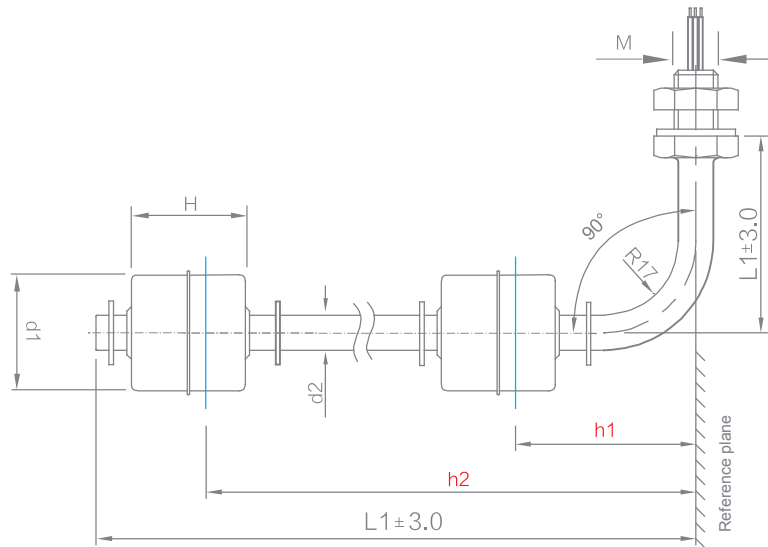
Stainless steel double-point liquid level switch

External dimension:



Unit : mm

Model	Outline dimensions (material: stainless steel)							
	L	d1	H	d2	M	h1	h2	Wire length
SF131	187.0	Φ24.0	22.0	Φ8.0	M10×1.0	71.0	170	As per customer's requirements



Unit : mm

Model	Outline dimensions (material: stainless steel)								
	L	L1	d1	H	d2	M	h1	h2	Wire length
SF132	131.0	50.0	Φ 28.6	28.0	Φ 8.0	M10.0x1.0	42.0	102.0	As per customer's requirements

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch



Product selection list

SF	☐	☐	☐ ☐	☐ ☐ ☐ ☐	☐	☐ ☐ ☐ ☐	☐ ☐	☐	☐ ☐	☐ ☐	☐ ☐	☐
	Type	Structural form	Outside pipe diameter	Body length	Resolution	Signal output	Installation information	Electrical connection	Wiring length	Floating ball type	Float code	Others
	1: Dry reed type H: Hall, magnetoresistive type	1: Plastic housing vertical installation 2: Plastic housing horizontal installation 3: Stainless steel housing vertical installation 4: Stainless steel housing horizontal installation 5: Aluminium outer tube horizontal installation	Represented by diameter unit: mm	Represented by number Unit: mm	Represented by letter A:5mm B:10mm	As shown in Schedule 1	As shown in Schedule 2	Direct outgoing cable P: PVC sheath T: Teflon sheath U: PU series sheath S: Silicon rubber sheath D: Aviation connector M: With digital display output J: with connector	Unit: 100mm	P: PP Floating ball N: NBR Floating ball S: Stainless steel floating ball	As shown in floating ball Parameter list	T:Thermal resistance

Schedule 1

Signal Output Information Selection Table					
☐		☐	☐	☐	
Output system		Output mode	Power	Output group	
Output system	K: Mechanical switch	1: Normally open 2:Normally close 3: Single-pole double-throw 4: Double-pole double-throw	L: Low power signal H: High power signal	Default: Single group Groups: 32 groups represented by 2-9 and A-W	
	N: NPN				
	P: PNP				
	T:Silicon Controlled				
Analog output	A: Current	1、 4 ~ 20mA	Default: Single floating ball		
	V: Voltage	1、 0V ~ 10V 2、 0V ~ 5V			
	R: Resistance				

Schedule 2

Installation Method and Parameter Table of Liquid Level Switch Body								
Installation method	Parameter							
☐	☐							
C: Cylinder	Code	Screw thread/outside diameter	DN	British system	Code	Screw thread/outside diameter	British system	
M: Standard screw thread	1			1/8"	B	12		
T: Fine thread	2			1/4"	C	14		
S: Extreme fine thread	3		10	3/8"	D	16		
F: Flange DN	4		15	1/2"	E	18		
G:British thread	5		20		F	20		
N: NPT Thread	6	6	25	3/4"	G	22	2"	
	7	7	30		H	24		
	8	8	32	1"	I	27		
	9				J	30		
	A	10	40					

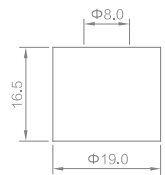
Example: SF13A0-1000-K1H3-MAP-S02

It refers to the liquid level sensor vertically installed with the stainless steel housing. The length of the rod is 1000 mm, the output system is switching output, normally open type, and the output group is 3 groups, and the installation screw thread is M10, Standard PVC cable output, and the floating ball is FBS102 floating ball

Level switch accessories-floating ball



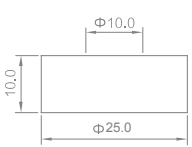
FBP102



DIMENSIONS Unit: mm



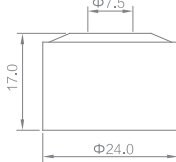
FBP103



DIMENSIONS Unit: mm



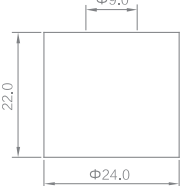
FBP104



DIMENSIONS Unit: mm



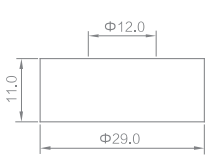
FBP105



DIMENSIONS Unit: mm



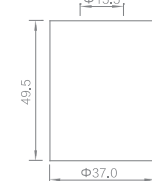
FBP107



DIMENSIONS Unit: mm



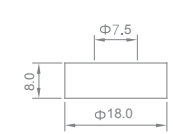
FBP110



DIMENSIONS Unit: mm



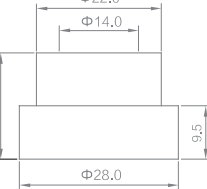
FBP112



DIMENSIONS Unit: mm



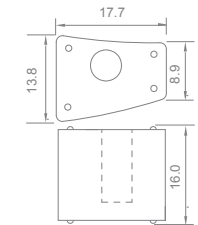
FBP201



DIMENSIONS Unit: mm



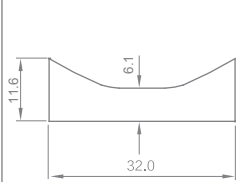
FBP307



DIMENSIONS Unit: mm



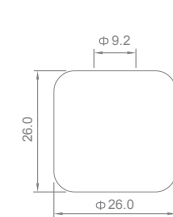
FBPC02



DIMENSIONS Unit: mm



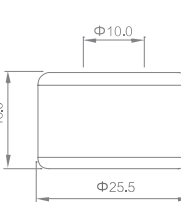
FBP501



DIMENSIONS Unit: mm



FBN107



DIMENSIONS Unit: mm

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

Magnetostrictive level sensor
Capacitive level sensor
Ultrasonic level gauge
Input level sensor
Floating ball level sensor
Floating ball level switch

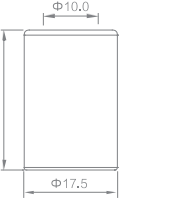
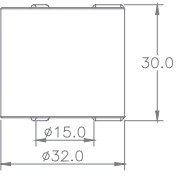
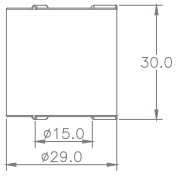
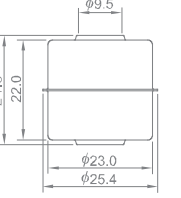
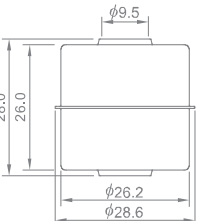
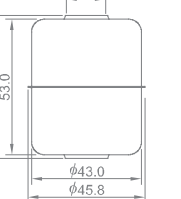
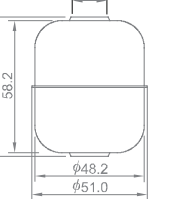
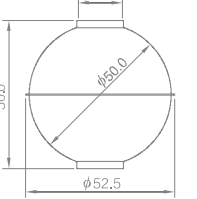
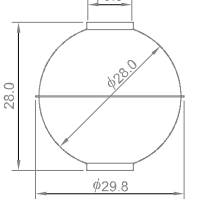
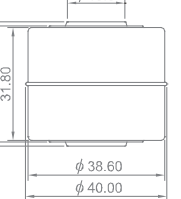
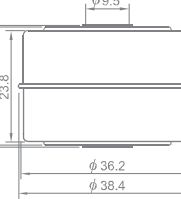
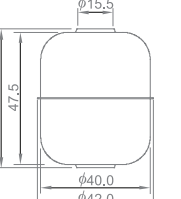


Position detection
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Floating ball level switch



Level switch accessories-floating ball

 FBN109  DIMENSIONS Unit: mm	 FBN115  DIMENSIONS Unit: mm	 FBN117  DIMENSIONS Unit: mm	 FBS101  DIMENSIONS Unit: mm
 FBS102  DIMENSIONS Unit: mm	 FBS103  DIMENSIONS Unit: mm	 FBS104  DIMENSIONS Unit: mm	 FBS105  DIMENSIONS Unit: mm
 FBS106  DIMENSIONS Unit: mm	 FBS107  DIMENSIONS Unit: mm	 FBS109  DIMENSIONS Unit: mm	 FBS111  DIMENSIONS Unit: mm

Floating ball parameter table

Unit : mm

Model	Specification (outer diameter height inner diameter)	Material	Weight	Proportion(g/cm³)	Service temperature	Pressure(kg/cm³)	Applicable liquid
FBP102	Φ19.0x16.5xΦ8.0	PP	3.0	0.80	−40~ +80℃	5	Water
FBP103	Φ25.0x10.0xΦ10.0	PP	3.3	0.75	−40~ +80℃	5	Water
FBP104	Φ24.0x17.0xΦ7.5	PP	4.2	0.65	−40~ +80℃	5	Water
FBP105	Φ24.0x22.0xΦ9.0	PP	5.0	0.60	−40~ +80℃	5	Water
FBP107	Φ29.0x11.0xΦ12.0	PP	4.4	0.74	−40~ +80℃	5	Water
FBP110	Φ37.0x49.5xΦ15.5	PP	29	0.67	−40~ +80℃	5	Water
FBP112	Φ18.0x8.0xΦ7.5	PP	1.15	0.68	−40~ +80℃	5	Water
FBP201	Φ28.0x19.0xΦ14.0	PP	4.8	0.74	−40~ +80℃	5	Water
FBP307	17.7x13.8x16.0	PP (Food grade)	2.7	0.85	−40~ +80℃	5	Water
FBPC02	32.0x21.0x11.5	PP	3.5	0.90	−40~ +80℃	5	Water
FBP501	Φ26.0x26.0xΦ9.2	PP	5.8	0.50	−40~+110℃	8	Water
FBN107	Φ25.5x16.0xΦ10.0	NBR	4.4	0.65	−20~ +110℃	8	Water, gasoline, kerosene
FBN109	Φ17.5x26.0xΦ10.0	NBR	2.6	0.65	−20~ +110℃	8	Water, gasoline, kerosene
FBN115	Φ32.0x30.0xΦ15.0	NBR	9.5	0.6	−20~+80℃	8	Water, gasoline, kerosene
FBN117	Φ29.0x30.0xΦ15.0	NBR	9.0	0.65	−20~+80℃	8	Water, gasoline, kerosene
FBS101	Φ25.4x24.5xΦ9.5	SUS304	6.2	0.82	−40~ +200℃	10	Water, oil, weak acid, weak base
FBS102	Φ28.6x28.0xΦ9.5	SUS316L	8.4	0.70	−40~ +200℃	15	Water, oil, weak acid, weak base
FBS103	Φ45.8x56.5xΦ15.5	SUS316L	40.0	0.60	−40~ +200℃	10	Water, oil, weak acid, weak base
FBS104	Φ51.0x61.2xΦ15.5	SUS316L	43.0	0.47	−40~ +200℃	10	Water, oil, weak acid, weak base
FBS105	Φ52.5x50.0xΦ15.5	SUS316L	33.5	0.60	−40~ +200℃	10	Water, oil, weak acid, weak base
FBS106	Φ29.8x28.0xΦ9.5	SUS316L	7.6	0.75	−40~ +200℃	15	Water, oil, weak acid, weak base
FBS107	Φ40.0x35.0xΦ15.5	SUS316L	24.5	0.80	−40~ +200℃	15	Water, oil, weak acid, weak base
FBS109	Φ38.4x26.2xΦ 9.5	SUS316L	12.8	0.54	−40~ +200℃	10	Water, oil, weak acid, weak base
FBS110	Φ75.0x75.0xΦ23.0	SUS316L	102.5	0.70	−40~ +200℃	15	Water, oil, weak acid, weak base
FBS111	Φ42.0x50.0xΦ15.5	SUS316L	28.3	0.58	−40~ +200℃	10	Water, oil, weak acid, weak base

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