Process Automation Solutions for Food & Beverage Industries

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Sanitary Vibration Fork Level Switch
Sanitary Thermal Dispersion Flow Switch
Sanitary Magnetostrictive Level Transmitter

FineTek

SCS16X SANITARY VIBRATION FORK LEVEL SWITCH

WORKING PRINCIPLE

Piezoelectric element drives the fork and vibrates at its frequency. When medium contacts the fork, a frequency reduction occurs. The change of the frequency is then detected and transferred to the electronics, and is converted into a signal output. There is no electronic amplifier , free of sensitivity adjustment for different media.

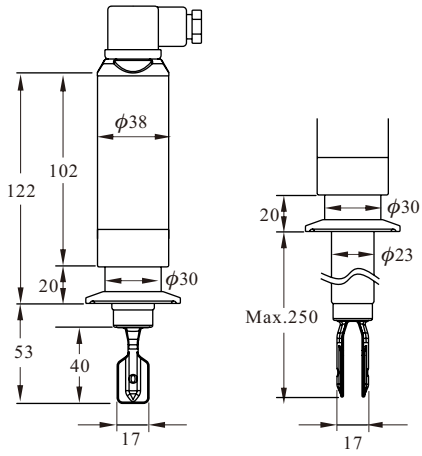
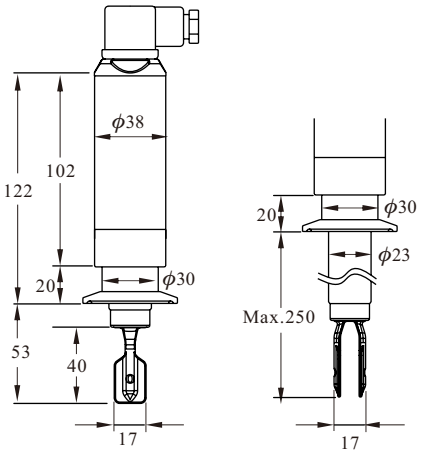
APPLICATION

Solid: Powder, Milk, Sugar, Bean, Coffee, Soda, Salt, etc.
Liquid: Water, Oil, Beverage, Sauce, Alcohol, etc.
Excellent performance at liquid applications with viscosity and foam
Sanitary process connections for CIP cleaning system / SIP disinfection system complied with USA FDA and 3A Standards.

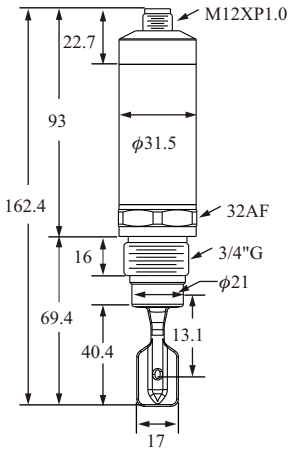
FEATURE

- No calibration required
- Compact design, ideal for any installation
- Durable and maintenance-free
- IP69K Stainless Steel M12 electrical connection provides excellent performance at air-sealed environment, and allows up to 1 hour long submerged under water for intensive cleaning.
- Polishing rate (Ra) on request
- Power 10~35Vdc
- Suitable for liquid S.G. bigger than 0.7g/cm^3; viscosity between 1~10000cst.
- Working temperature up to 150'C
- High / Low Fail-safe mode protection system
- Magnetic testing function to confirm the functions of peripheral equipment and wirings.
- Current overload protection. Output switch is off and LED alarm activated when current overload.
- Durable SUS316L housing
- High / Low level detection of any liquids
- Self-monitored function provides protection mode by switching off output when any abnormality (corrosive) inside the fork detected.(SCS164)

SPECIFICATION

Dimension (unit:mm)		
Model No.	**SCS162**	**SCS163**
Material	316L	316L
Protection Rate	IP65 / IP67	IP65 / IP67
Electrical Connection	DIN43650/Cable Connector/ M12x1	DIN43650/Cable Connector/ M12x1
Process Connection	Clamp	
Fork Length	40mm	
Power Supply	20~250Vac/Vdc,50/60Hz	12~55Vdc
Power Consumption	<750mW	<825mW
Current Consumption	<3mA	<10mA
Overload Current	Min.10mA, Max.350mA	Max.350mA
Fork Vibration Frequency	Air, Approx. 1KHz ± 10%	
Switch Point	Vertical Installation: 12mm ±3mm from the tip of the fork Horizontal Installation: 8mm ±1mm from the crevice centre of the fork	
Failure Safe Protection	Max./Min.	
Display	Green: Power /Red: Switch Function	
Delay Time	Switch function activated in 1~3 sec. after fork covered by medium	
	Switch function activated in 1~3 sec. after uncovered by medium	
Setup Time	<3s	
Contact Form	Contact less Electronic	NPN/PNP
Magnetic Testing	Confirm the function of the product with a magnet.	
Ambient Temp.	-40°C~80°C	
Storage Temp.	-40°C~85°C	
Working Temp.	-40°C~150°C	
Working Humidity	20% ~ 80% RH non-condensed	
Working Press.	Maximum 40 Bar	
Viscosity	1~10000 cst	
Specific Gravity	Solids ϕ: <5mm Liquid:0.7g/cm^3	

SPECIFICATION

Dimension (unit:mm)	
Model No.	**SCS164**
Material	316L
Protection Rate	IP67 / IP68 / IP69K
Electrical Connection	M12x1
Process Connection	3/4"G
Fork Length	40mm ± 2mm
Power Supply	10~35Vdc
Power Consumption	<825mW
Current Consumption	<15mA
Overload Current	Max.350mA ± 10%
Fork Vibration Frequency	Approx.1KHz ± 10%
Switch Point	Vertical Installation: 13mm ±1mm from the tip of the fork Horizontal Installation: 4mm ±1mm from the crevice centre of the fork
Repeatability	± 0.5mm
Hysteresis	3 ± 0.5mm
Failure Safe Protection	Max./min
Display	Green: Power/Red: Error/Yellow: Switch function
Delay Time	Approx. 0.5sec. after covered by medium Approx. 1sec. after uncovered by medium
Setup Time	<2s
Contact Form	PNP
Magnetic Testing	Confirm the function of the product with a magnet.
Ambient Temp.	-40°C~70°C
Storage Temp.	-40°C~85°C
Working Temp.	-40°C~150°C
Working Humidity	20%～80% RH non-condensed
Working Press.	Maximum 40 Bar
Viscosity	1~10000 cst
Specific Gravity	Solids ϕ: <5mm Liquid:0.7g/cm^3

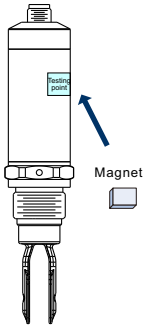
FUNCTION DISCRIPTION

MAGNETIC TESTING：

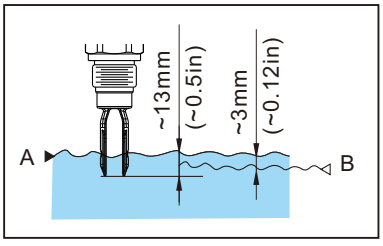
After the switch has been properly installed, introduce corresponding power to activate the vibration of the fork. Approach a magnet to the testing area of the housing (shown below), so that relay output performs the switch function (N/O to N/C; N/C to N/O). It uses the LED indication (yellow LED) to switch the status, and the fork continuously vibrates. Removing the magnet from the testing area, the output and LED indication (yellow LED) will return as default and the fork continuously vibrates. This verification is to confirm the function and wiring of the product.

Example：SCS164

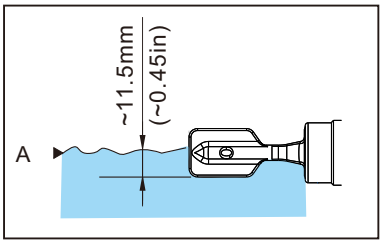
		Cable with LED indicator	
		Magnet Removed	Magnet Approached
ye1 / ye2 / gn	MAX		
	MIN		



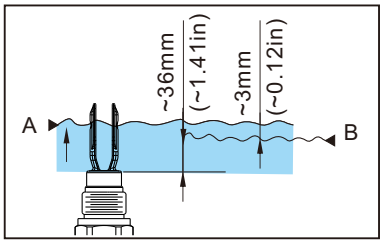
SENSING POINT ：



▲Vertically Top Mounted



▲Horizontally Side Mounted



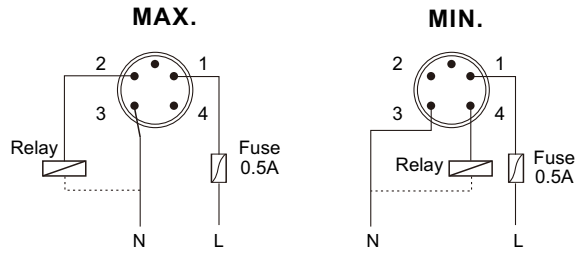
▲Vertically Bottom Mounted

SCS164 WIRING CONNECTION：

Power Supply 10~35Vdc
Wiring connection is divided into MAX and MIN, as shown below.

MAX:
As shown on the figure, connect pin 1 to 0.5A Fuse, and then connect it to L. External overload connects to pin 2, and then connect it to N with pin 3.

MIN:
As shown on the figure, connect pin 1 to 0.5A Fuse, and then connect it to L. External overload connects to pin 4, and then connect it to N with pin 3.



R=external load

NO.	1	2	3	4
Color	brown	white	blue	black

Connenction DC-PNP Plug M12x1

OUTPUT STATUS：

	Max.		Min.		Error Status	
Status					Overload current or fork abnormal	No Power
Switch Function	Switch closed	Switch open	Switch closed	Switch open		
LED						

☼ : Light ON ○ : Light OFF

※ Cable with LED indicator on request (Max. 5M).

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FUNCTION DISCRIPTION

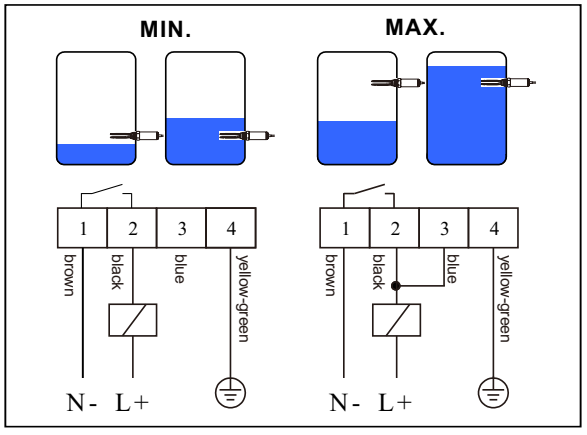
SCS162 WIRING CONNECTION：

Supplied power is AC/DC, so it is 2-wire wiring connection. Relay output connects to 2-wire (L+/N-), as shown below.

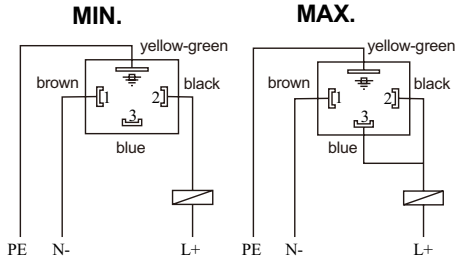
◎ **Low Level (Min.) Operation Mode:** Connect pin 1 (brown) to N- terminal; Connect relay to pin 2 (black). Then, connect it to L+. Pin 4 (yellow-green) connects to ground. ◦

◎ **High Level (Max.) Operation Mode:**

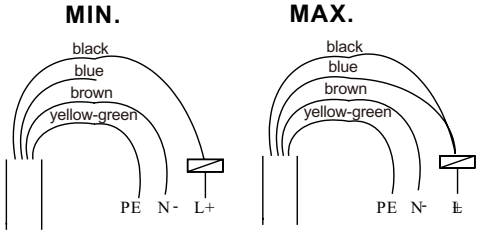
Connect pin 1 (brown) to N- terminal; Connect relay to pin 2 & 3 (black & blue). Then, connect it to L+. Pin 4 (yellow-green) connects to ground.



Connection for two-wire



Connection Diagram for DIN



Connection Diagram for M12x1, Cable

OUTPUT STATUS：

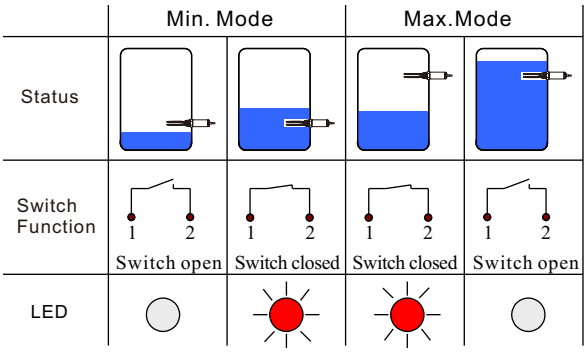
SCS162X series is 2-wire type power supply. Relay output connects to cable wire of power supply (L+/N-). It provides Min. / Max. operation modes: When introduced 20~250, 50/60Hz Vac/Vdc power, the power indicator, green LED, on top of the housing will be activated. Detailed description is shown below.

◎ **Low Level (Min.) Operation Mode:**

After proper installation, the fork vibrates in 3 seconds after power introduced. Relay status is N/O, and the red LED is OFF; when the fork is covered by medium, relay switches to N/C, and red LED turns ON.

◎ **High Level (Max.) Operation Mode:**

After proper installation, the fork vibrates in 3 seconds after power introduced. Relay status is N/C, and the red LED is ON; when the fork is covered by medium, relay switches to N/O, and red LED turns OFF.



Min. / Max. Switch Mode Corresponding Status

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FUNCTION DISCRIPTION

SCS163 WIRING CONNECTION：

DC Power supply, PNP / NPN output. Wiring connection is shown below.

PNP Wiring Connection：

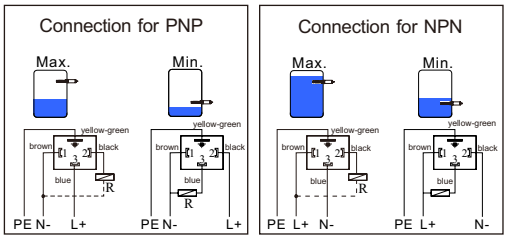
◎ High Level (Max.) Operation Mode:
Pin 1 (brown) connects to N-. Pin 3 (blue) connects to L+. Output load connects to pin 2 (black), and then connect it to N-. Pin 4 (yellow-green) connects to ground.

◎ Low Level (Min.) Operation Mode:
Pin 1 (brown) connects to N-. Pin 2 (black) connects to L+. Output load connects to pin 3 (blue), and then connect it to N-. Pin 4 (yellow-green)connects to ground.

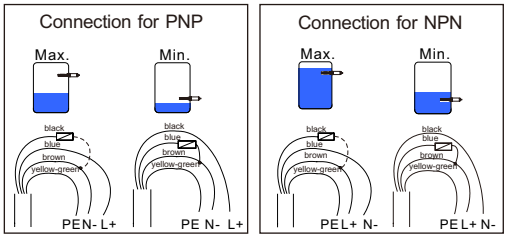
NPN Wiring Connection：

◎ High Level (Max.) Operation Mode:
Pin 1 (brown) connects to L+. Pin 3 (blue) connects to N-. Output load connects to pin 2 (black), and then connect it to L+. Pin 4 (yellow-green) connects to ground.

◎ Low Level (Min.) Operation Mode:
Pin 1 (brown) connects to L+. Pin 2 (black) connects to N-. Output load connects to pin 3 (blue), and then connect it to L+. Pin 4 (yellow-green)connects to ground.



Connection Diagram for DIN



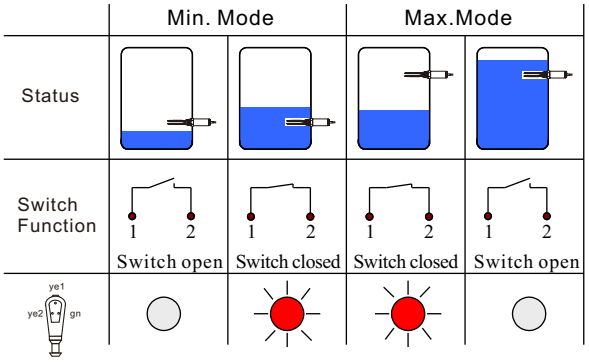
Connection Diagram for M12x1, Cable
Connection for output PNP/NPN

OUTPUT STATUS：

SCS163X series provides Min. / Max. operation modes based on the pin that is connected to ground: When introduced 12~55Vdc, the power indicator, green LED, on top of the housing will be activated. Detailed description is shown below.

◎ **Low Level (Min.) Operation Mode:**
After proper installation, the fork vibrates in 3 seconds after power introduced. Transistor is non-contact, and red LED is OFF; when the fork is covered by medium, transistor switches to contact, and red LED turns ON.

◎ **High Level (Max.) Operation Mode:**
After proper installation, the fork vibrates in 3 seconds after power introduced. Transistor is contact, and red LED is ON; when the fork is covered by medium, transistor switches to non-contact, and red LED turns OFF.



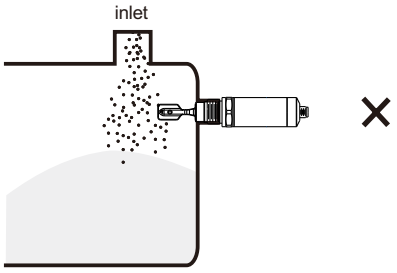
Min. / Max. Switch Mode Corresponding Status

FineTek

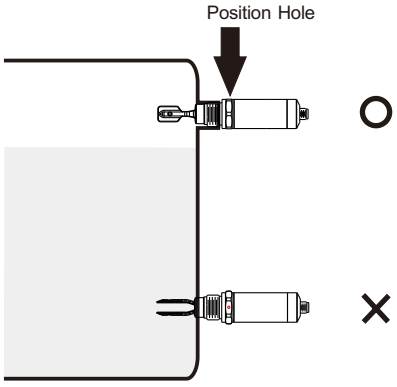
INSTALLATION

HORIZONTAL INSTALLATION:

1. Avoid material inlets

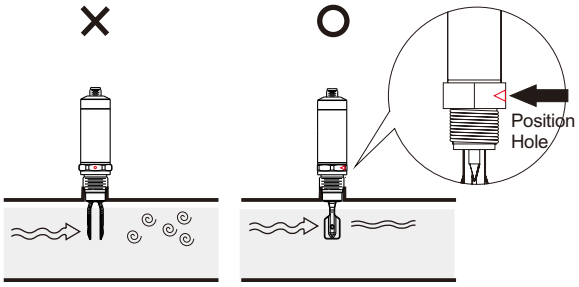


2. The position hole must face upward, otherwise, the flowing medium might press the fork and lead to product failure.

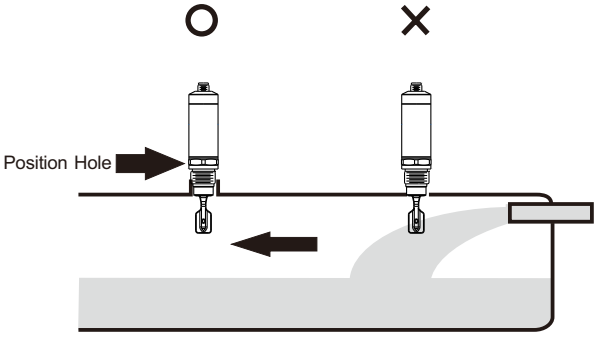


VERTICAL INSTALLATION:

1. When installed in a pipe with flowing liquid, the gap of the two forks shall be in the same direction as the liquid flowing direction.



2. Avoid material inlets



ORDER INFORMATION

SCS 16 □ − □ 0 − □□□ (□□□□)

Sanitary

Power & Output

2: 20~250 Vac/dc, Two-wire AC/DC connection
3: 12~55 Vdc, Three-wire connection PNP /NPN

Material & Polishing

0: SUS316L / Ra<0.3 1: SUS316L / Ra<0.8
2: SUS316L / Ra<1.5

Version

0:Standard 1:Extended

Electrical Connection

A: M12x1(180°) B: M12x1(90°) C: CABLE D: DIN接頭43650

Process Connection

AD: 1" (3A)	DD: 1" (DIN)	FD: 1" (IDF)	SD: 1" (ISO)
AE: 1-1/2" (3A)	DE: 1-1/2" (DIN)	FE: 1-1/2" (IDF)	SE: 1-1/2" (ISO))
AF: 2" (3A)	DF: 2" (DIN)	FF: 2" (IDF)	SF: 2" (ISO))

RC:3/4"PF(G) SS: Special

Fork Length(unit:mm)

Length Max:250mm ex:0250:250mm

SCS 16 4 − □ 0 − □□□

Sanitary

Power & Output

4: 10~35Vdc Three-wire DC connection PNP

Material & Polishing

0: SUS316L / Ra<0.3 1: SUS316L / Ra<0.8 2: SUS316L / Ra<1.5

Version

0: Standard Type

Electrical Connection

A: M12(90°) with LED B: M12(90°) N: None Cable
(Cable Material: PVC 24AWG, Cable length 5 Meter)

Process Connection

AD: 1" (3A)	DD: DN25(DIN)	RC: 3/4" PF(G)
AE: 1-1/2"(3A)	DE: DN32(DIN)	DR: 1" PF(G)
AF: 2" (3A)	DF: DN40(DIN)	SS: Special

EGS SANITARY MAGNETOSTRICTIVE LEVEL TRANSMITTER

WORKING PRINCIPLE

Magnetostrictive Level Transmitter is based on the principle that two different magnetic fields intersect create a torsion wave. Computing the time cycle that is needed to detect this signal will get the exact distance (D).

The two magnetic fields, one comes from dynamic magnet outside the transmitter, and the other is from current pulse on the metal wire inside the transmitter. The current pulse is generated by current of the transmitter. When the two magnetic fields intersect, a torsion wave is generated. This signal travels back at a fixed speed to the sensor of the transmitter in the way of ultrasound. The time cycle from the time when a current pulse is generated to the pulse travels back the sensor multiples fixed speed will get the exact distance of the dynamic magnet. The process is non-stop. Whenever the magnet moves, new location will be detected immediately. Output signal is absolute output.

FEATURE

High resolution and high accuracy, easy installation, free of maintenance and calibration, stable and reliable Anti-pollution, anti-dust, resistant to high pressure

Housing is made of corrosive resistance seamless Stainless Steel.

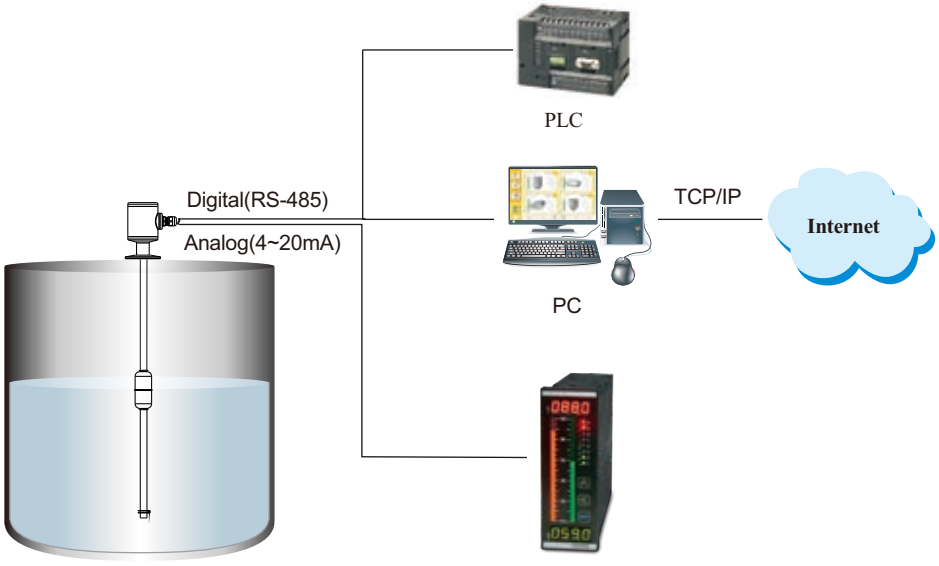
Remote control via PC

Working temperature -40~ +125'C

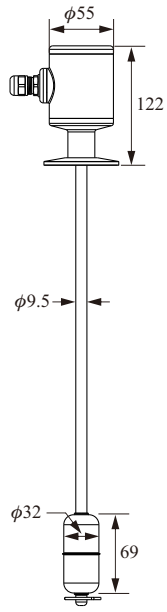
Oil/Water interface detection

APPLICATION

- High temperature disinfection (125°C)
- High pressure cleaning
- CIP cleaning system
- SIP disinfection system
- Pasteurization system
- Pharmaceutical equipment
- Beverage, drinking water, edible oil
- Food filling and level control
- Temperature measurement



SPECIFICATION

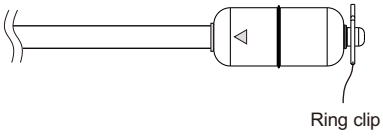
Dimension (Unit:mm)	
Model No.	**EGS15**
Housing	SUS316
Wetted Parts	SUS316/SUS316L
Polishing (um)	Ra<0.3 or Ra<0.5 or Ra<0.8
Measuring Range	25mm~2500mm
Temperature Sensor	PT100
Temperature Accuracy	±1°C
Ambient Temp.	-40~85°C
Working Temp.	-40~125°C
Power Supply	12~30Vdc
Output Current Mode	4~20mA/20~4mA
Output Current Resistance	<500(ohm)
Output Voltage Mode	0~10V,10~0V,0~5V,5~0V,±10V,±5V
Output Voltage Ripple	<10mV
Output Voltage Resistance	2KΩ
Sampling Rate	500 time / sec.
Linearity	±100um@500mm or±0.02% FS
Repeatability	±0.002% F.S.
Hysteresis	±0.004% F.S.
Communication Output	RS485
Protection Rate	IP67(Housing)/IP69K(Probe)
Connection	1-1/2”~2”(Sanitary)
Working Press.	10bar(Max)

INSTALLATION

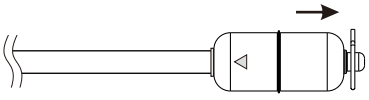
- 12Vdc~30Vdc
- The product is calibrated by the manufacturer. Users shall not change the measuring ranges by themselves.
- Do not bend the stem as it will destroy the measurement accuracy of the product.
- Do not change the float of the product as it will affect the measurement accuracy of the product.
- The product can be installed directly without taking off the float if the diameter of the process connection hole is bigger than the float.
- If the diameter of the float is bigger than the diameter of the process connection hole,it is necessary to take off the float before installing. While re-installing the float, mark on the float has to be pointing at the direction of the product housing.
- The stopper must be fixed well on the stem core.
- Please keep the float from dropping down as attack on the float might result in magnet breaking inside the float which will lead to product failure.
- The product should be well packed by vibration-absorbed packing material, such as, bubble or foam bags, to ensure safety during delivery.
- Due to accuracy concern, do not open then cover of the housing.

INTALLATION METHOD IF THE FLOAT HAS TO BE TAKEN OFF BEFORE INSTALLATION

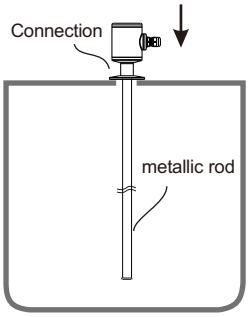
STEP 1:
Remove the ring clip from the stem.



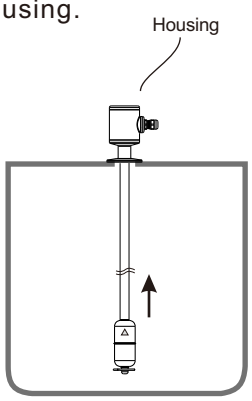
STEP 2:
Take off the float.



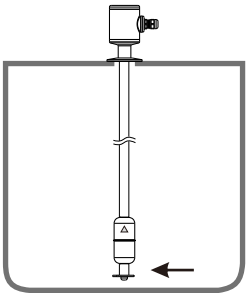
STEP 3:
Install the product into the tank and screw tight the process connection.



STEP 4:
Install back the float to the stem, and the mark on the float should be pointing at the direction of the product housing.



STEP 5:
Screw the ring clip well on the core of the stem.



ORDERING INFORMATION

EGS1 5 2 – □□ □□ □□ □□ – □ □□

Model No

5: Stainless Steel (Probe Type)

Electrical Connection

2: Side Conduit

Process Connection

AE---1-1/2" (3A) SE---1-1/2" (ISO)
AF---2" (3A) SF---2" (ISO)
SS—Special

Float

Code	Dimension	Material	S.G.
1	ϕ32x69xID10.9	SUS316L	0.75
2	ϕ32x69xID10.9	SUS316L	0.9

※Second code is for special requirement only please choose “0”

Output Type

Code	Current Output
1	4~20mA
2	20~4mA
3	0~20mA
4	20~0mA

Code	Voltage Output
E	0~5V
F	5~0V
G	0~10V
H	10~0V
I	±5V
J	±10V

Digital Output

0: RS485 Communication 1: RS485 Communication + Temperature Sensor

Probe Material / Polishing

0: SUS316L/Ra<0.3A: SUS316/Ra<0.3
1: SUS316L/Ra<0.8B: SUS316/Ra<0.8
2: SUS316L/Ra<1.5C: SUS316/Ra<1.5

Measuring Range

05: 25~500mm
10: 501~1000mm
15: 1001~1500mm
20: 1501~2000mm
25: 2001~2500mm

※Total length (beneath process connection) = measuring range + 77mm

SPS SANITARY THERMAL DISPERSION FLOW SWITCH

WORKING PRINCIPLE

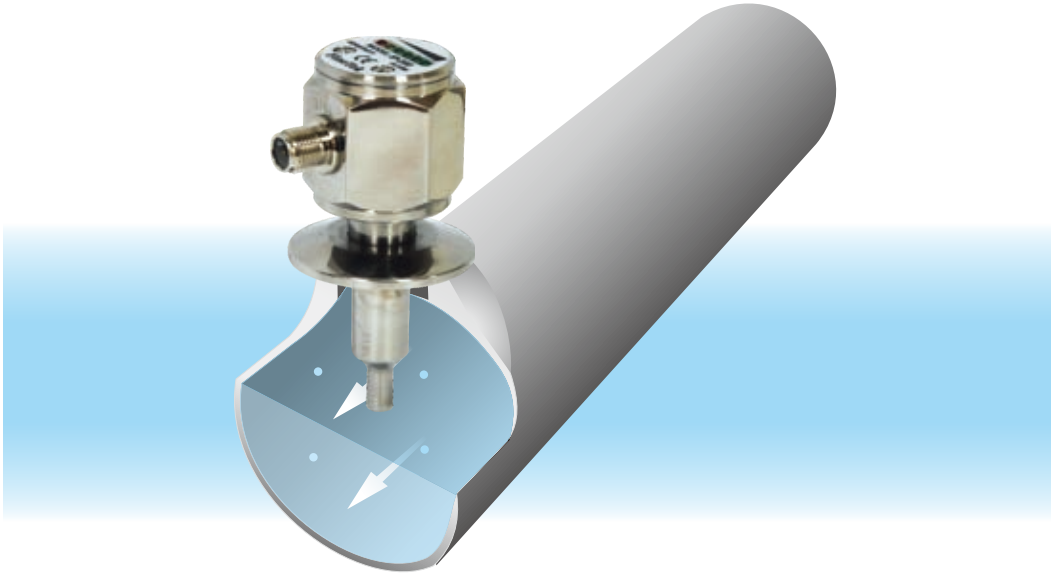
Thermal Dispersion Flow Switch is a reliable and accurate flow switch based on thermal dispersion principle. Two temperature sensors are built inside the probe of the product. One sensor is heated, and the other is used as a reference to detect the temperature of the medium. This creates a temperature difference between two sensors, and switch changes state once it reaches the set point. Temperature difference is an inverse ratio to the flow velocity. Material of the probe and housing are stainless steel or engineering plastic. Since the device is without moving parts, there is no wear and tear problem.

FEATURE

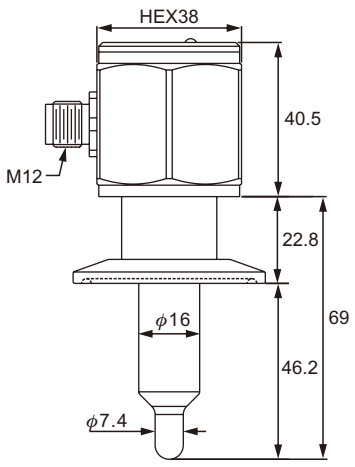
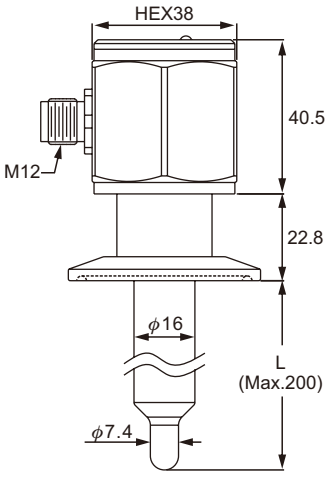
Compared to the traditional paddle type flow switch, thermal dispersion flow switch offers high sensitivity, no limitation on installing location, and no moving parts tear and wear. Suitable for liquid application with impurities. Different materials on request for food / food additives application. Probe lengths are customized to meet any application. Three different signal outputs are available for selection.

APPLICATION

Food, Beverage, Drinking Water, Edible Oil, Food Process Filling, Pharmaceutical, High Temperature Disinfection, etc. Any pipes flow control.



SPECIFICATION

Dimension (Unit:mm)		
Model No.	**SPS200-□□□-□-□** Compact Type	**SPS201-□□□-□-□** Extension Probe Type
Measuring Range (Velocity)	Water: 1~150 cm/s Oil:3~300 cm/s	
Measuring Range (Velocity)	-20 ~ 80°C	
Working Temp.	-20 ~ 80°C	
Alarm	Transistor: NPN / PNP (<400mA) Relay: 1A/30Vdc, 0.3A/125Vac (N/O or N/C)	
Working Press	100 bar (max.)	
LED Display (Velocity below set point)	Red LED ON, Open Yellow LED ON, Close	
Housing	SUS316L	
Wetted Parts	SUS 316L	
Protection Rate	IP67	
Warm-Up	Approx. 15 seconds	
Process Connection	3A	
Power Supply	19 ~ 30Vdc	
Power Consumption	50mA (max.)	
Electrical Connection	3-wire NPN / PNP: Power-Brown; GND-Blue; Output-Black 4-wire Relay: Power-Brown; GND-Blue; Relay contact-Green, Black	
Accessory	Waterproof Cable Conduit	

INSTALLATION

(1). “a” has to be 4 times bigger than the internal diameter of the pipe, “d”. (See Fig. 1).

(2). Liquid inside the pipe must be bubble-free to ensure alarm working properly. (See Fig. 2).

(3). When the pipe is not fully filled with liquid, SPS must be installed underneath the pipe,and liquid level has to be higher than the sensing probe. (See. Fig. 3)

(4). SPS must be screwed tightly at installation to avoid liquid leakage from the pipe and cause danger. SPS can be installed at any angle. For best sensitivity and response speed, please refer to the installation in Fig. 4.

(5). For liquid that contains impurities or particle, please install a filter upstream to protect SPS from being crashed by impurities.

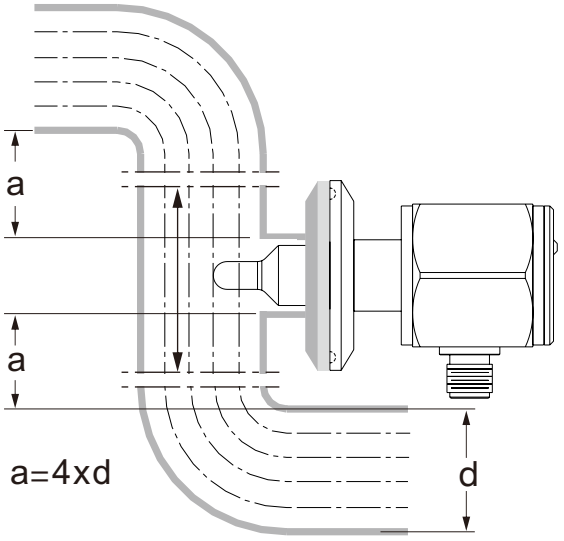


Fig. 1

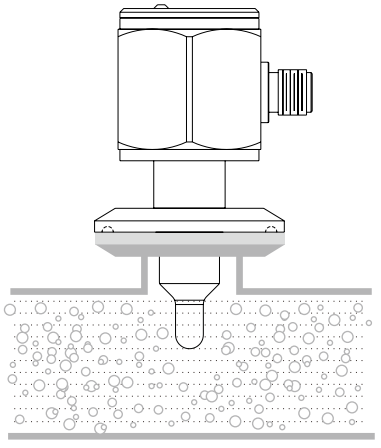


Fig. 2

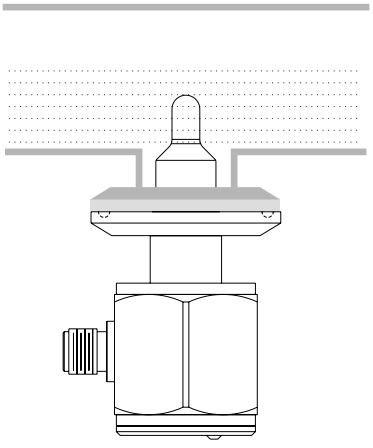


Fig. 3

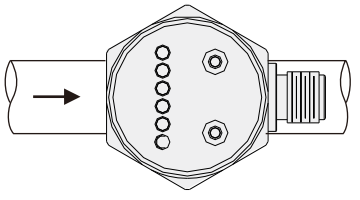


Fig. 4

CONNECTOR DIAGRAM

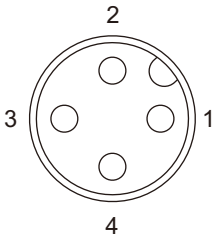


Fig. 5. Electrical Connection Diagram
(NPN & PNP Output)

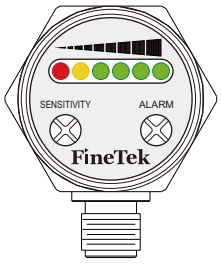


Fig.6

WIRING

3-wire

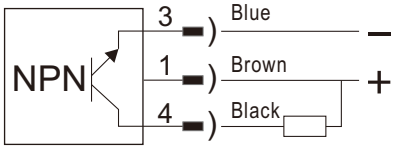


Fig. 7, NPN Output

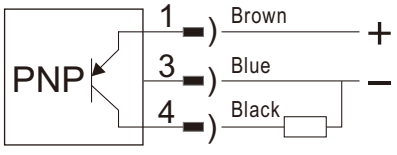


Fig. 8, PNP Output

4-wire

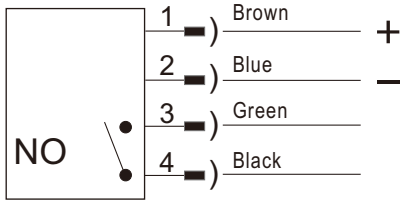


Fig. 10, Relay Output (NO)

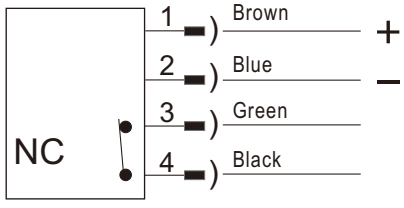


Fig. 11, Relay Output (NC)

ORDERING INFORMATION

SPS 20 □–□ □ □– □– □–(□□□□)

Sanitary

Probe Type

0: Standard Type
1: Probe Extension Type

Material & Polishing

0: SUS316L / Ra<0.3
1: SUS316L / Ra<0.8
2: SUS316L / Ra<1.5

Process Connection

AD: 1" (3A)
AE: 1-1/2" (3A)
AF: 2" (3A)

Output

N: NPN (current limit: 400mA)
P: PNP (current limit: 400mA)
A: Relay 1A/30Vdc, 0.3A/125Vac (NO)
B: Relay 1A/30Vdc, 0.3A/125Vac (NC)

Cable Length (Unit: m)

0: None
2: 2m
5: 5m

Probe Length (Unit: mm)

※Customized probe length on request.
※Tolerance of the product is ±5mm.
※Max. Length: 200mm
※Product features, specs and dimensions are subject to changes without notice.