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Intelligent Level Sensor

FineTek

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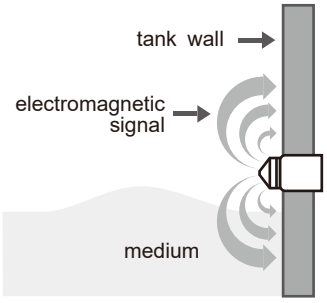
PRODUCT INTRODUCTION

PRINCIPLE

The sensor uses a frequency sweep method which emits an electrical signal at the sensing terminal to detect materials. Different mediums with different characteristics will generate different resonances, which will determine whether the sensor is covered by any materials, causing the switch output signal to light up.



FEATURE

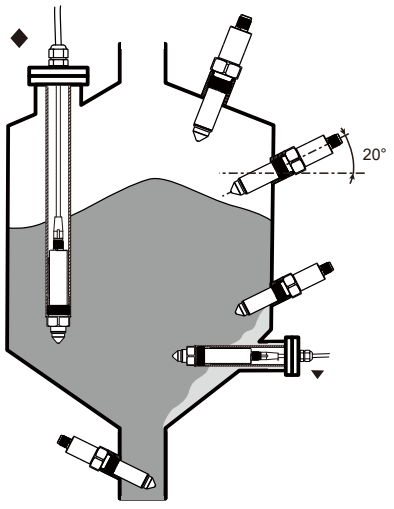
- Easy installation by standard connection with IP67 as protection grade.
- Conforms to NEPSI explosion-proof certification.
- Probe material PEEK surface roughness Ra <0.8 is with good wear resistance.
- With magnetic test function to examine wiring and operation condition in real time.
- Durable stainless housing.
- Real time site-control by LED indicators.
- Overcurrent protection detects over current and shut down the output immediately.
- Workable in CIP cleaning environment.
- Suitable for single-point detection and protection of liquids, viscous mediums, powders, and granular mediums in tanks or pipelines.
- It provides 2 output signals NPN or PNP.

APPLICATION

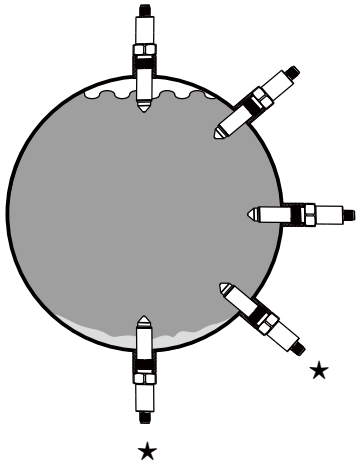
With high/low level of material in the process tank or pipeline, alarm of empty material or switch output is particularly suitable for application in the following industries:

- Food manufacturing
- Beverage manufacturing
- Pharmaceutical manufacturing.

INSTALLATION DIAGRAM



Tank Diagram



Pipeline Example

Top diagram shows the sensors installed in the tank for level detection or dry running protection.

The picture below shows the installation of a pipeline with liquid-level monitoring.

Note!

1. Mounting the probe at a 20° incline will can avoid material bridges from forming. It also won't be damaged by the inflowing material.

2. For top-mounted installation, the rear-mounted type with the extension of the auxiliary rod can be installed at a lower position (◆: the auxiliary rod is not included in the order).

3. The rear-mounted auxiliary rod extends through the sediment can prevent from severe bridging. (▼: auxiliary rod is not included in the order).

4. If the medium is viscous or contains precipitation, installation is not recommended at the location marked ★ as the residue may be mistaken as the measured liquid.

STANDARD SPECIFICATIONS

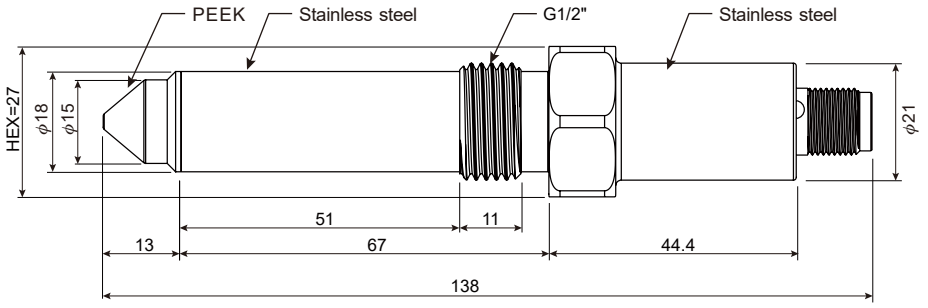
	Standard type	Rear install type
Scope	Liquid, viscous medium, powder, granular medium	
Storage temperature	-40~85°C (-40~185°F)	
Ambient temperature	-40~80°C(-40~176°F) Explosion-proof:-10~70°C(14~158°F)	
Process temperature	-40~100°C(-40~212°F) Explosion-proof: Max 100°C(212°F)	-40~80°C(-40~176°F) Explosion-proof: Max 70°C(158°F)
Process connection	1/2"G	3/4"G
Rated voltage	12VDC~30VDC	
Power consumption	Max. 50mA	
Over voltage protection	Overvoltage category II	
Reversal protection	YES	
Switch output	2 switches: 1st NO mode and 2nd NC mode.	
Output mode	(DC)PNP/NPN(optional)	
Switch delay function	<1 second	
Output load current	Max. 50 mA	
Output voltage drop	Max. 2.5V	
Short-circuit protection	Yes, short-time pulse	
Overload protection	YES	
Electric connection	M12 4PIN connector	
Wetted material (optional)	SUS316、SUS316L	
Process pressure	-1~40 bar	
Probe material/ Surface roughness	PEEK/Ra<0.8	
Enclosure protection rating	IP67	
LED Indicator	Yellow LED for starting, Green LED for resetting	
Simulation output test	Magnetic test(lean a magnet close to the + sing for 3 seconds, there will be switching output)	
Explosion-proof certificate	NEPSI: Ex ta IIIC T_{200}100°C Da	

DIMENSIONS

Standard type

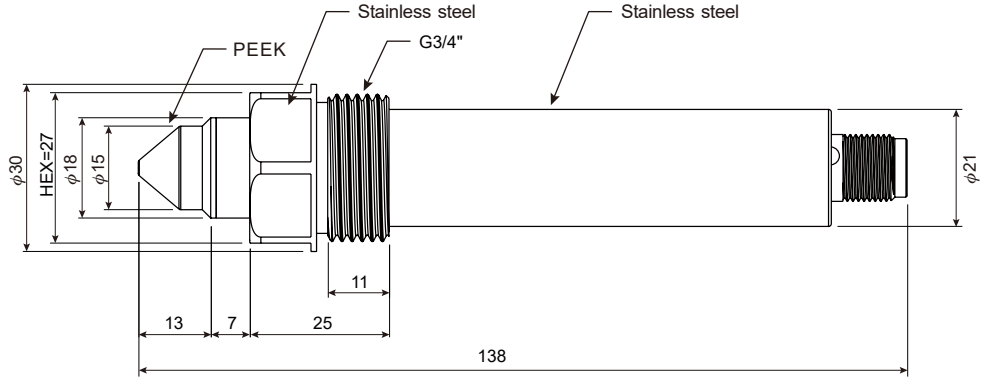
(Unit: mm)

Applied for general medium



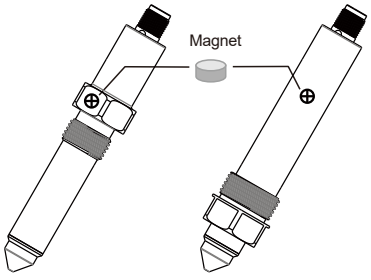
Rear install type

Suitable for no hole on the side or installation extension to prevent from severe bridging.



FUNCTIONS

Transistor output	Alarm	Detected level	Output	Output signal	LED indicator
PNP	MAX		OUT1	<100μA	Green
			OUT2	IL	
			OUT1	IL	Yellow
			OUT2	<100μA	
	MIN		OUT1	IL	Yellow
			OUT2	<100μA	
			OUT1	<100μA	Green
			OUT2	IL	
NPN	MAX		OUT1	<100μA	Green
			OUT2	IL	
			OUT1	IL	Yellow
			OUT2	<100μA	
	MIN		OUT1	IL	Yellow
			OUT2	<100μA	
			OUT1	<100μA	Green
			OUT2	IL	



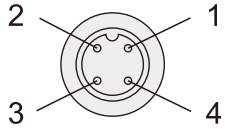
- Correspondence output table: OUT 1 sets as NO; OUT 2 sets as NC.
- IL indicates load enabled.

SIMULATION OUTPUT TEST

1. Finished the installation and supply the sensor with 12~30Vdc.
2. Lean a magnet close to the + sing for 3 seconds or more, there will be switching output with corresponding LED light display.
3. Remove the magnet from the + sign, the switching output and corresponding LED light display will return to normal status.
4. Magnetic(min 100 GS@10mm)is in use.

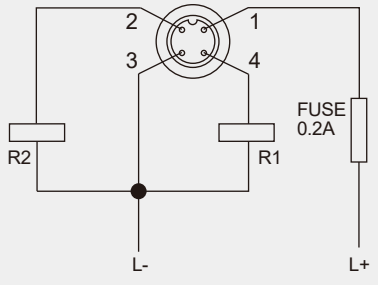
WIRING DIAGRAM

M12 Connector

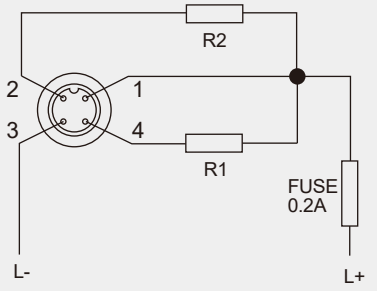


PIN	Connection	wire color
1	Power supply+	Brown
2	OUT2	White
3	Power supply-	Blue
4	OUT1	Black

PNP Wiring



NPN Wiring



- R1 and R2 indicate the load of OUT1 and OUT2.
- To protect the sensor from abnormal condition, we strongly recommend to adopt FUSE 0.2A on the power supply circuit.
- This wire color only represents the property. The actual wire color depends on the connector purchased.

Note: The accuracy and efficiency can not be guaranteed if using NON-FineTek connector.

APPLICABLE MEDIUM FORM

Following form, please kindly choose the medium and corresponded default setting.

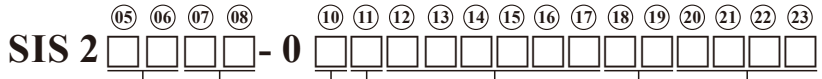
Always ensure the correct setting and corresponded medium.

Attention!! It may cause failure result or unstable operation condition if the application NOT follow the operation range.

● Means you can measure the medium based on FineTek default setting.

	Item	Water Based	Oil Based/ Powder
1	Tap water	●	
2	Seawater	●	
3	Pure water	●	
4	Beer	●	
5	Wine	●	
6	Liquor(40%)	●	
7	Juice (Stock)	●	
8	Juice (Distillate)	●	
9	Milk	●	
10	Yoghurt Drink	●	
11	Vinegar	●	
12	Condensed Milk 7.5%	●	
13	Chocolate(40°C)		●
14	Syrup		●
15	Honey		●
16	Fructose	●	
17	Albumen	●	
18	Yolk	●	
19	Egg(Liquid)	●	
20	Jam(Almond)	●	
21	Jam(Strawberry)	●	
22	Barbecue Sauce	●	
23	Soy Sauce	●	
24	Flour		●
25	Starch		●
26	Cocoa Powder		●
27	Coffee Powder		●
28	Hazelnut Powder(40°C)		●
29	Pepper(Ground)		●
30	Mashed Potatoes		●
31	Creamer(Powder)		●
32	Salt		●
33	Caster Sugar		●
34	Crystal Sugar(Ground)		●
35	Mayonnaise		●
36	Olive Oil		●
37	Palm Oil		●
38	Canola Oil		●
39	Sunflower Oil		●
40	Linseed oil		●
41	Glycerin	●	
42	Mineral Oil(15W40)		●
43	Methanol	●	
44	Ethanol	●	

ORDER INFORMATION



⑤⑥ Rod type

00:Standard type
B2:Rear install type

⑦⑧ Certification

00:N/A
7D:NEPSI-Protection by enclosures

⑩ Dielectric constant

P: ε > 2(Oli/Powder as the medium)
L: ε > 15(Water as the medium)

⑪ Output

P:PNP
N:NPN

Connection

⑫⑬
AA: JIS

⑭⑮
A5: 1/2"(Standard type)
A7: 3/4"(Rear install type)

⑯⑰
17: Male G

⑱⑲ Wetted material

MB: SUS316
MC: SUS316L

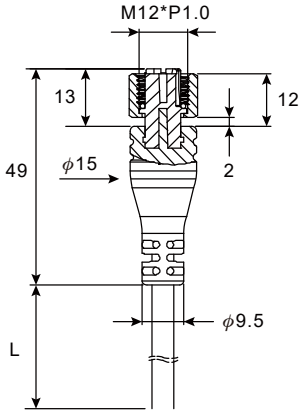
⑳㉑㉒㉓ Rod length

Code	Length
0080	80mm(Standard type)
0020	20mm(Rear install type)

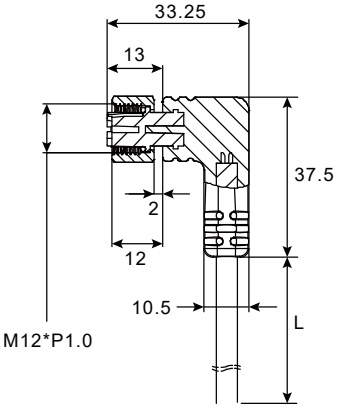
THE ACCESSORIES FOR SIS INTELLIGENT LEVEL SENSOR (OPTIONAL)

M12 ELECTRICAL CABLE CONNECTOR

Order Code: PCL10100-67AA232204C5000



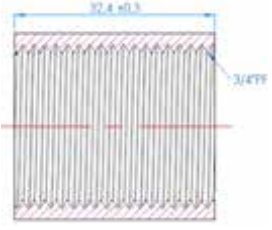
Order Code: PCL10000-67AA232204C5000



Rear-mounted accessories(optional)

Order Code: MT101-53D703MA02

Specification: Inner diameter, 3/4PF, SUS304



Order Code: MT415-A123000902

Specification
Waterproof connector, 3/4”PF,Nylon, light grey,
Suitable for 4-6.4mm(diameter)wire, (without nut)

M12 CONNECTOR SPECIFICATIONS

Order Code	Connector type	Cable length	Voltage rating	Current rating	Protection grade
PCL10100-67AA232204C5000	Straight 180°	5m	250Vac	Max.4A	IP67
PCL10000-67AA232204C5000	Elbow 90°	5m	250Vac	Max.4A	IP67
PC312- (Note1) 2221415M02	Straight 180°	5m	220Vdc	Max.4A	IP67
PC312- (Note 2) 1221415M03	Elbow 90°	5m	220Vdc	Max.4A	IP67

Note 1: SIS2 explosion-proof type, must use M12 cable that complies with NEPSI certification.
Note 2: If SIS2 explosion-proof type is chosen,only (Note 1) & (Note 2)cables can be selected.

ACCESSORIES - PROGRAMMER BOX (OPTIONAL)

PROGRAMMER BOX

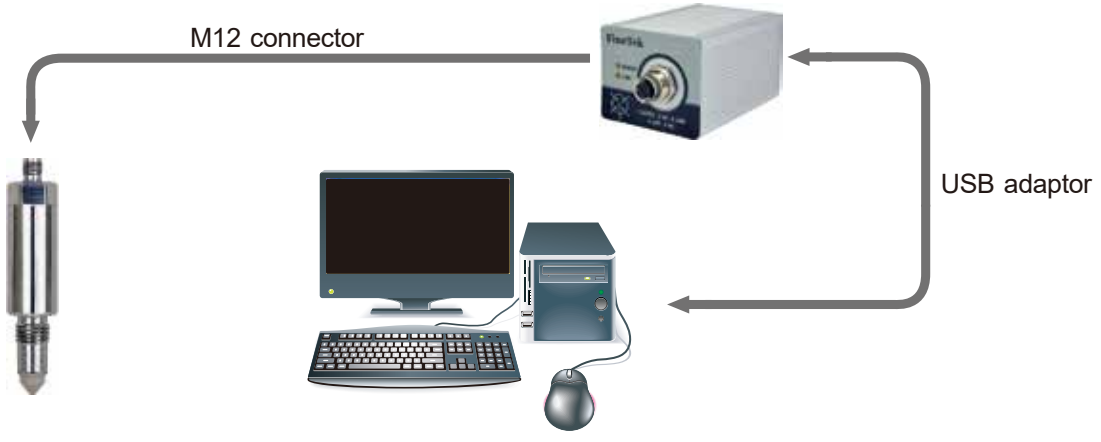
Order Code	SISBA1X-0004
Exterior dimension(mm)	87X61X50(L XW XH)
Voltage rating	5Vdc(from USB)
Current consumption	Max.500mA
Input interface	Mini USB
Output interface	M12-5C A-Coded
Ambient temperature	-20°C~45°C(-4°F~113°F)
Protection grade	IP20

The programmer box function is to transmit sensor data to PC for reading and editing. Mainly supports calibration and parameter setting for SIS2 Intelligent Level Sensor.

- Reading current sensor parameter setting.
- Changing sensor parameter setting.
- Adjusting sensor sensitivity of current medium in real time.
- Calibrating current measuring value and do necessary adjustment promptly..

Note: The programmer box is only working while sensor data requiring transmit to PC for reading and editing, not a permanent connection automatic device.

SYSTEM DIAGRAM

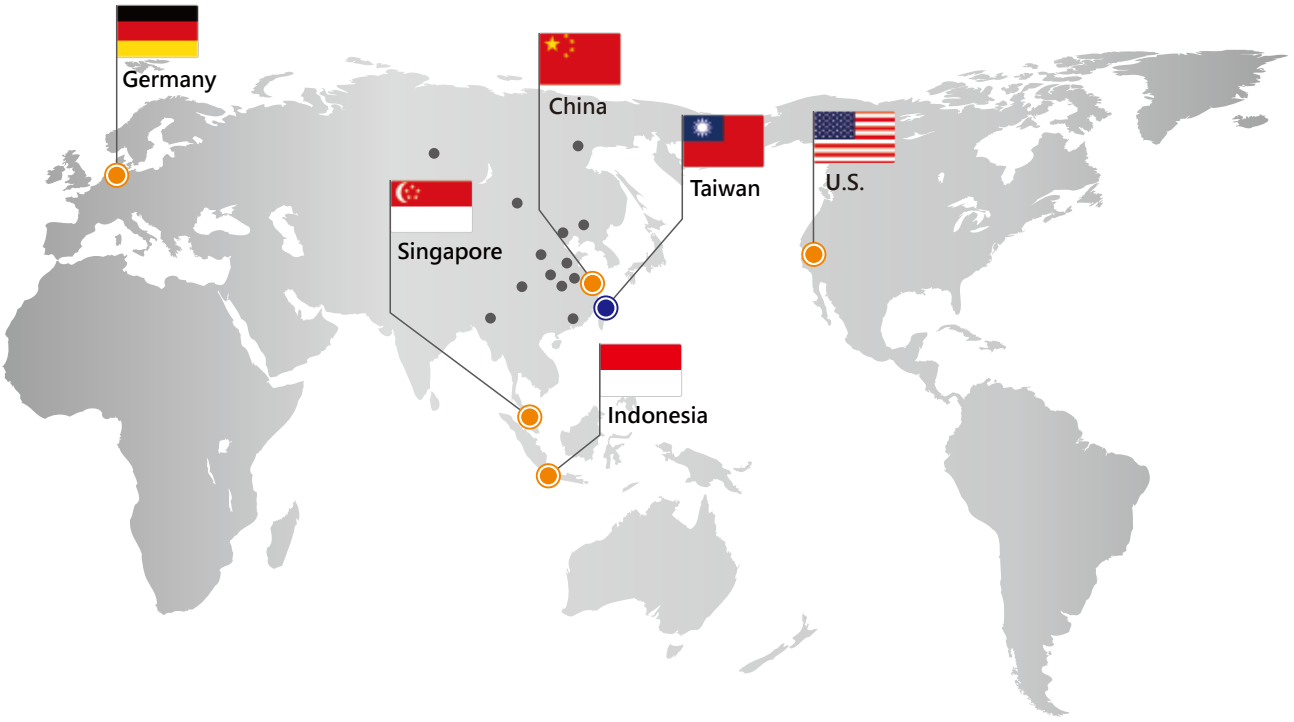


Using M12 connector to link SIS2 Impedance Spectroscopy Sensor" with programmer box.

Transmitting the sensor data by USB cable from programmer box to PC.

Note: The accuracy and efficiency can not be guaranteed if using NON-FineTek connector.

Global Network



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