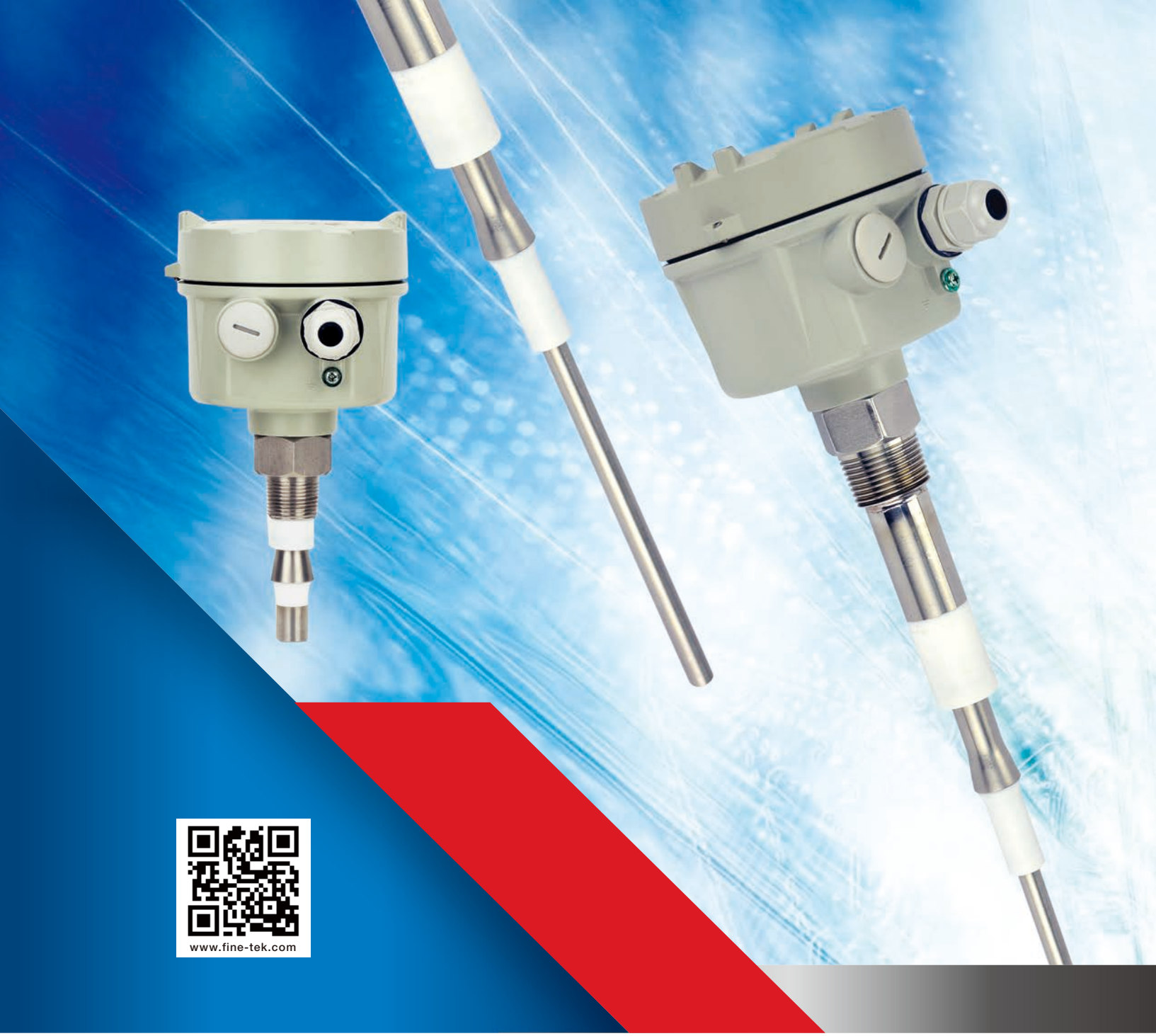


www.fine-tek.com

RF-Capacitance /Admittance Level Switch

FineTek

Innovation · Quality · Sharing

PRODUCT INTRODUCTION

PRODUCT DESCRIPTION

RF-Capacitance /Admittance level switch is appropriate for application in liquid and solid mediums. It is designed to reduce medium attaching to the probe. This product also offers DPDT output, high/low level failsafe, adjustable time delay, and sensitivity adjustment. Various models are available for high temperatureerature,or limited space environments.

FEATURES

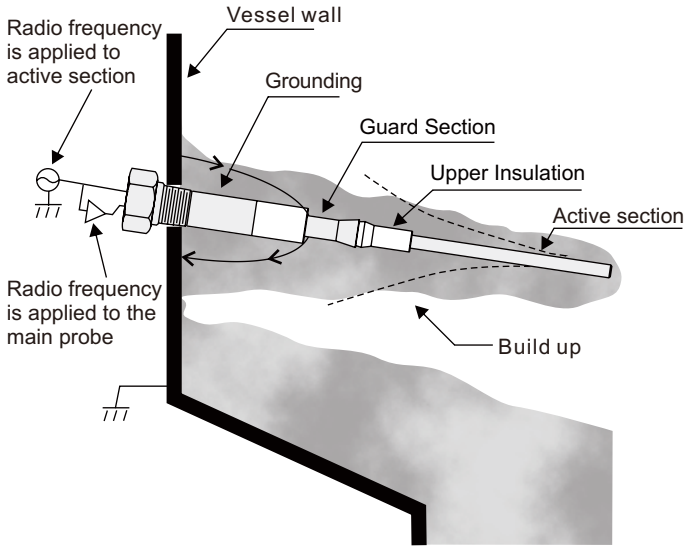
- Time delay function from 0-30 seconds
- IP65 housing protection
- 5 A/250Vac output DPDT
- High/low failsafe
- Alarm testing
- Explosion Proof model available

WORKING PRINCIPLE

RF-Capacitance /Admittance level switch consists of a guard section, upper insulation, main probe and grounding. The guard section is designed to overcome possible medium attachment and to secure signal accuracy. The special structure is suitable for detecting different mediums without being affected by attachments.
The upper main probe, guard, and grounding are all insulated. The level of the medium can be detected by the increasing of admittance when medium reaches the main probe.
The grounding and the main probe are insulated, thus the device will still function accurately and not cause false alarms when the medium attaches the probe.

FEATURES

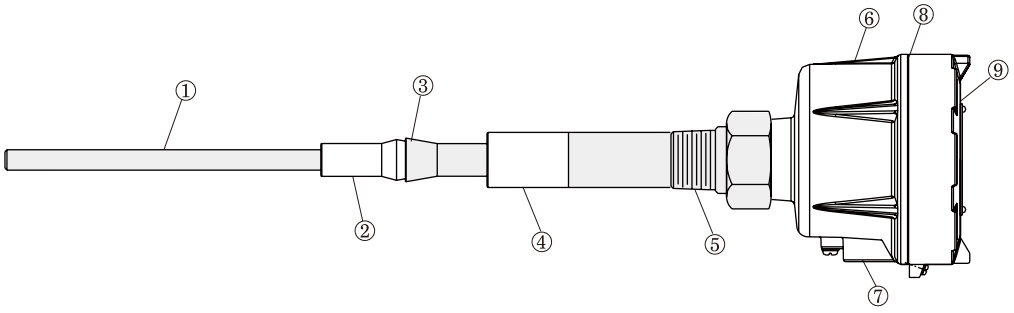
- Anti-Viscosity
- Easy Installation
- Stable; Not affected by temperatureerature
- Highest temperatureerature tolerance of 550°C
- Explosion-proof 450°C
- Applicable in liquid, syrup, solid, powder,and surface level detection



CONSTRUCTION & APPLICATION

CONSTRUCTION

1. Main probe: SUS304 or SUS316
2. Upper Insulation: The upper insulated part of the main probe and guard section have very low k die-electric constants and are made of PTFE or PEEK
3. Guard Section: The conductive metal probe helps to dissipate any possible presence of a false signal.
4. Lower Insulation: Due to the low k die-electric constant nature of the main probe, it is comprised of PTFE
5. Connection: 3/4"NPT(Standard model)
6. Housing: Aluminum Alloy Spray Paint
7. Wiring Point: ½" PT
8. Waterproof O-Ring: Rubber
9. Circuitry: FSH and FSL, Time Delay Adjustable Function

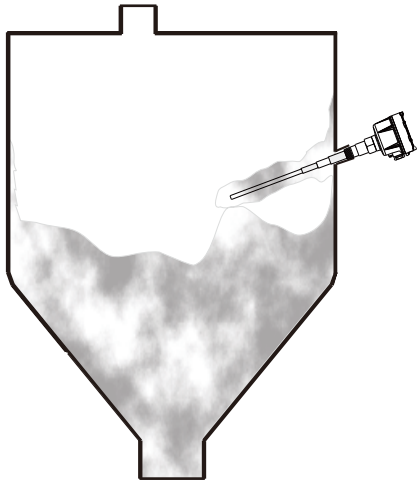


APPLICATION

Storage Tanks, Containers, Wells, Reservoirs and bins containing any liquids, powders or pellets that require precise level detection and control. Key industries include:

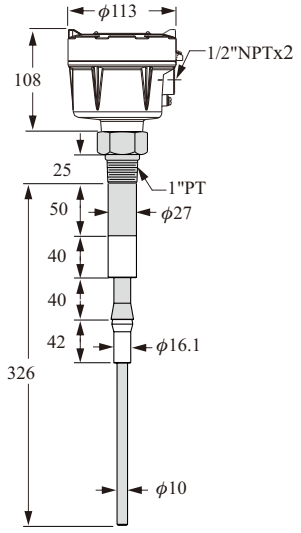
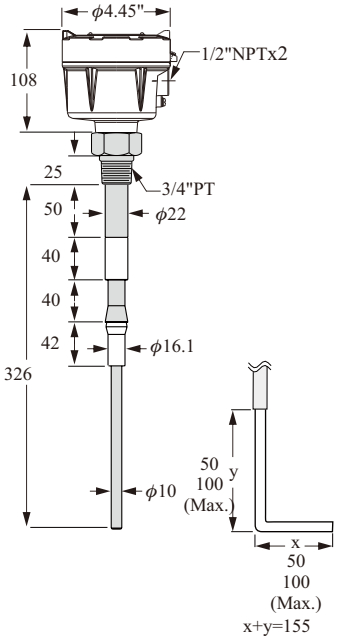
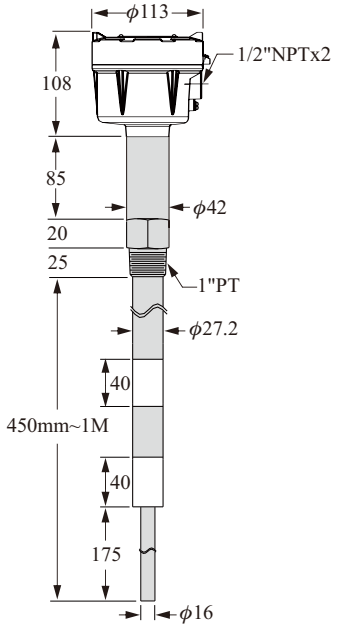
- ■ Breweries
- ■ Mining
- ■ Paint Manufacturing Cement
- ■ Coalt
- ■ Food Processing
- ■ Flour Mills
- ■ Glass Industry
- ■ Plastics Engineering, Polymers and synthetics
- ■ Paper Manufacturing Power Plants
- ■ Water Treatment and Waste
- ■ Tar
- ■ Food and beverages industries

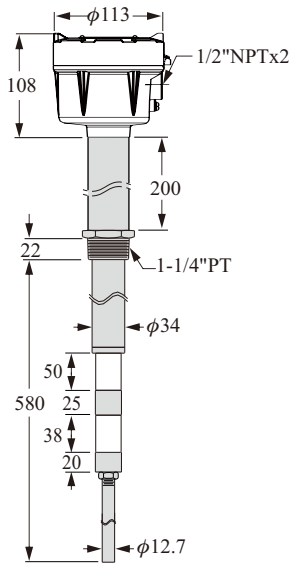
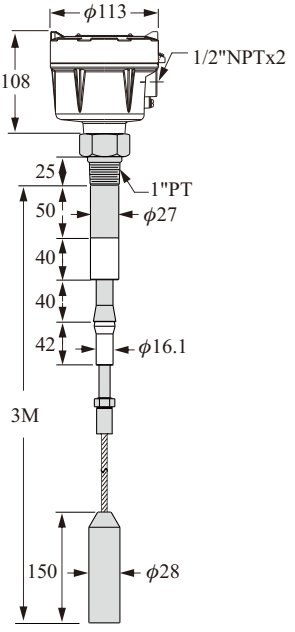
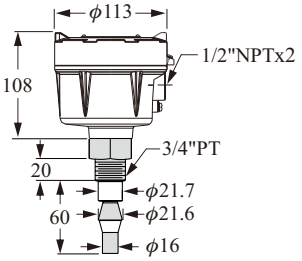
EXAMPLE



2100/2110: Standard Model ----- Applicable to normal environments.
2200: Hi-Temperature Model -----Applicable to high temperatureerature environments.
2280: Super Hi-Temperature Model -----Applicable to super high temperatureerature environments.
2500: Cable Model -----Applicable to big tank and top installation environments.
2600: Mini Model -----Applicable to space constraint and small tanks.
17□□: Explosion Proof Type ----- Ex d IIB T6~T1

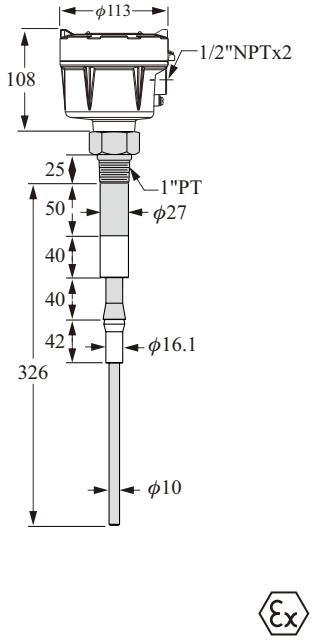
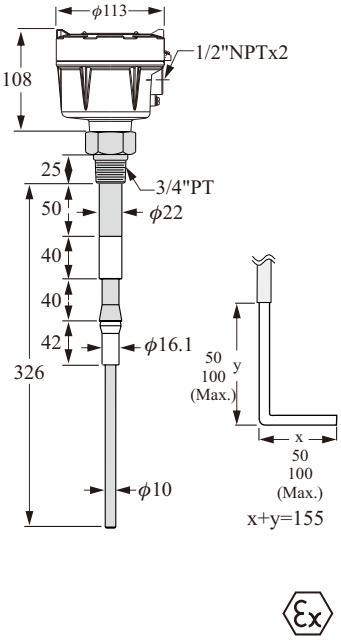
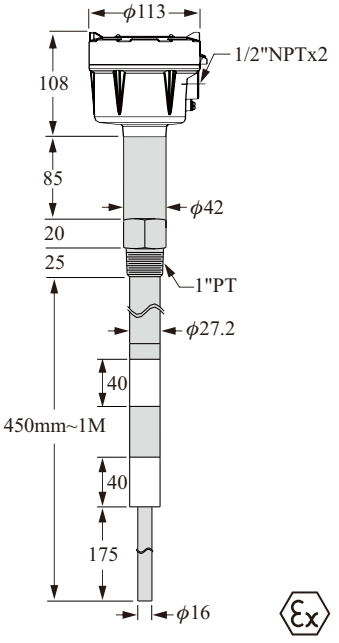
SPECIFICATIONS

Dimension (Unit:mm)			
Order No.	**SB2100 [Standard Model]**	**SB2110 [Standard Model]** **SB2120 [Standard L Model]**	**SB2200 [Hi-Temp Model]**
Operating temp.	-40°C~150°C	-40°C~150°C	-40°C~232°C
Ambient temp.	-40°C~70°C	-40°C~70°C	-40°C~70°C
Housing	Aluminum (IP65)	Aluminum (IP65)	Aluminum (IP65)
Probe material	SUS304 or 316	SUS304 or 316	SUS304 or 316
Insulated material	PTFE	PTFE	PEEK
Connection	1" PT	3/4" PT	1" PT
Sensitivity	0.3PF	0.3PF	0.3PF
Supply voltage	24Vdc ± 20% or 115/230Vac ± 10%, 50/60Hz	24Vdc ± 20% or 115/230Vac ± 10%, 50/60Hz	24Vdc ± 20% or 115/230Vac ± 10%, 50/60Hz
Power consumption	Max.2W	Max.2W	Max.2W
Contact rating	5A/250Vac, DPDT	5A/250Vac, DPDT	5A/250Vac, DPDT
Delay time	0~30 sec	0~30 sec	0~30 sec
Fail safe mode	High / low Fail safe mode	High / low Fail safe mode	High / low Fail safe mode
Conduit	1/2" NPT x2 hole	1/2" NPT x2 hole	1/2" NPT x2 hole
Operation pressure	20kg/cm^2	20kg/cm^2	20kg/cm^2

Dimension (Unit:mm)			
Order No.	**SB2280 [Super Hi-Temp Model]**	**SB2500 [Cable Model]**	**SB2600 [Mini Model]**
Operating temp.	-40°C~550°C	-40°C~150°C	-40°C~150°C
Ambient temp.	-40°C~70°C	-40°C~70°C	-40°C~70°C
Housing	Aluminum (IP65)	Aluminum (IP65)	Aluminum (IP65)
Probe material	SUS304 or 316	SUS304 or 316	SUS304 or 316
Insulated material	Ceramic	PTFE	PTFE
Connection	1-1/4" PT	1" PT	3/4" PT
Sensitivity	0.3PF	0.3PF	0.3PF
Supply voltage	24Vdc±20% or 115/230Vac±10%, 50/60Hz	24Vdc±20% or 115/230Vac±10%, 50/60Hz	24Vdc±20% or 115/230Vac±10%, 50/60Hz
Power Consumption	Max.2W	Max.2W	Max.2W
Contact rating	5A/250Vac, DPDT	5A/250Vac, DPDT	5A/250Vac, DPDT
Delay time	0~30 sec	0~30 sec	0~30 sec
Fail safe mode	High / low Fail safe mode	High / low Fail safe mode	High / low Fail safe mode
Conduit	1/2" NPT x2 hole	1/2" NPT x2 hole	1/2" NPT x2 hole
Operation pressure	ATM	20kg/cm^2	20kg/cm^2

SPECIFICATION

PTB PROOF NO. 09 ATEX 1057 Ⓔx II 2G Ex d IIB T6~T1
Ⓔx II 2D Ex tD A21 IP65 T445°C~T80°C

Dimension (Unit:mm)			
Order No.	**SB1710 [Standard Model]**	**SB1711 [Standard Model]** **SB1712 [Standard L Model]**	**SB1720 [Hi-Temp Model]**
Operating temp.	-40°C~150°C	-40°C~150°C	-40°C~232°C
Ambient temp.	-20°C~70°C	-20°C~70°C	-20°C~70°C
Housing	Aluminum (IP65)	Aluminum (IP65)	Aluminum (IP65)
Probe material	SUS304 or 316	SUS304 or 316	SUS304 or 316
Insulated material	PTFE	PTFE	PEEK
Connection	1" PT	3/4" PT	1" PT
Sensitivity	0.3PF	0.3PF	0.3PF
Supply voltage	24Vdc ± 20% or 115/230Vac ± 10%, 50/60Hz	24Vdc ± 20% or 115/230Vac ± 10%, 50/60Hz	24Vdc ± 20% or 115/230Vac ± 10%, 50/60Hz
Power consumption	Max.2W	Max.2W	Max.2W
Contact rating	3A/250Vac, DPDT	3A/250Vac, DPDT	3A/250Vac, DPDT
Delay time	0~30 sec	0~30 sec	0~30 sec
Fail safe mode	High / low Fail safe mode	High / low Fail safe mode	High / low Fail safe mode
Conduit	1/2" NPT x2 hole	1/2" NPT x2 hole	1/2" NPT x2 hole
Operation pressure	20kg/cm^2	20kg/cm^2	20kg/cm^2

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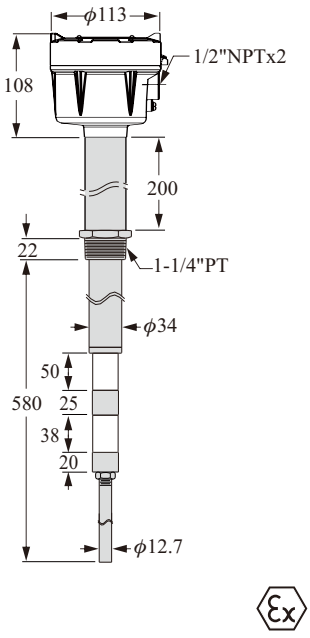
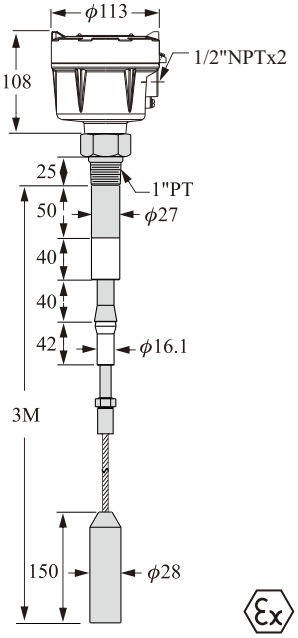
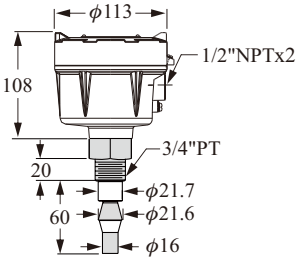
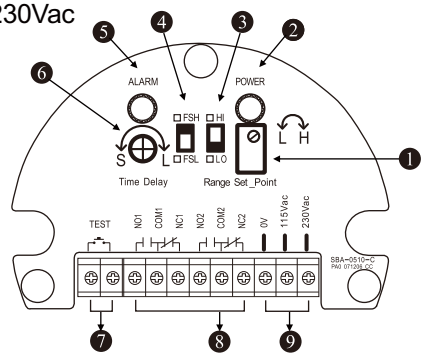
Dimension (Unit:mm)			
Order No.	**SB1728 [Super Hi-Temp Model]**	**SB1750 [Cable Model]**	**SB1760 [Mini Model]**
Operating temp.	-40°C~450°C	-40°C~150°C	-40°C~150°C
Ambient temp.	-20°C~70°C	-20°C~70°C	-20°C~70°C
Housing	Aluminum (IP65)	Aluminum (IP65)	Aluminum (IP65)
Probe material	SUS304 or 316	SUS304 or 316	SUS304 or 316
Insulated material	Ceramic	PTFE	PTFE
Connection	1-1/4" PT	1" PT	3/4" PT
Sensitivity	0.3PF	0.3PF	0.3PF
Supply voltage	24Vdc±20% or 115/230Vac±10%, 50/60Hz	24Vdc±20% or 115/230Vac±10%, 50/60Hz	24Vdc±20% or 115/230Vac±10%, 50/60Hz
Power consumption	Max.2W	Max.2W	Max.2W
Contact rating	3A/250Vac, DPDT	3A/250Vac, DPDT	3A/250Vac, DPDT
Delay time	0~30 sec	0~30 sec	0~30 sec
Fail safe mode	High / low Fail safe mode	High / low Fail safe mode	High / low Fail safe mode
Conduit	1/2" NPT x2 hole	1/2" NPT x2 hole	1/2" NPT x2 hole
Operation pressure	ATM	20kg/cm^2	20kg/cm^2

WIRING DIAGRAMS

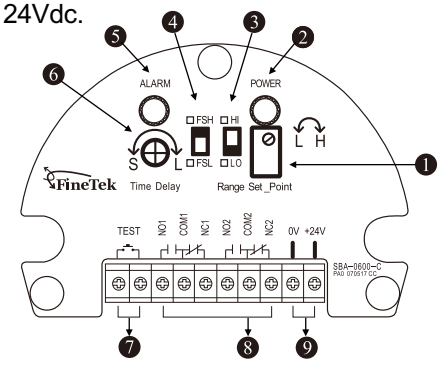
DESCRIPTION OF PANEL FUNCTION

❶ Set Point: Clockwise, capacitance increases.
❷ Red LED: Power indicator.
❸ Range: Alarm setting- HI/LOW
❹ FSH/FSL switch (High/Low level failsafe)
❺ Green LED: Alarm indicator for FSH and FSL.
Green LED turns off when alarm goes off.
❻ Time Delay: Alarm time delay setting up to 30 seconds.
❼ Alarm simulation testing.(SB2□□□Aseries)
❽ Relay output.
❾ Power: 115/230Vac



DESCRIPTION OF PANEL FUNCTION

❶ Set Point: Clockwise, capacitance increases.
❷ Red LED: Power indicator.
❸ Range: Alarm setting- HI/LOW
❹ FSH/FSL switch (High/Low level failsafe)
❺ Green LED: Alarm indicator for FSH and FSL.
Green LED turns off when alarm goes off.
❻ Time Delay: Alarm time delay setting up to 30 seconds.
❼ Alarm simulation testing.(SB2□□□B series)
❽ Relay output.
❾ Power: 24Vdc.



FAILSAFE ALARM

FSH high level failsafe alarm:
SB2□□□ series switch is installed at the high level point the FSH switch mode is “on”.
When the medium has no contact with the probe, the green LED lights up and relay output COM/NC is in an open state.
When the medium level reaches high level and it touches the probe (or in the case of blackout), the green LED turns off and the relay output COM/NC is closed. When the relay output COM/NC is closed, it implies the FSH alarm has been activated.

FSL low level failsafe alarm:
SB2□□□ series switch is installed at the low level, the FSL mode is “on”.
When the medium touches the probe the green LED lights up and the relay output COM/NC is in an open state.
When the medium level drops below the low level and the medium does not have contact with the probe (or in the case of blackouts), the green LED turns off and relay output COM/NC is closed.
When relay output COM/NC is closed, it implies the FSL alarm has been activated.

ALARM CALIBRATION

Setting for High Level Alarm
1.Switch the FSH/FSL Knob to FSH
2.Switch the Range Knob to LO.
3.Switch the Time Delay Knob to S (Minimum).
4.Decreasing the level of the medium to below the measuring probe.
5.Spinning the Set Point Knob till the Alarm LED (green light) lights up.
6.Firstly, increasing the level of the medium till it covers half of he measuring probe and the Alarm LED (green light) shut off. Secondly, spinning the Set Point Knob clockwise till Alarm LED (green light) lights up. If the Alarm LED (green light) still not lights up after spinning it till the end, please adjust the Range Switch to HI and repeat procedure 5. Thirdly, recording the numbers of turns and its angle, then switching the knob counterclockwise back for 1/2 circle and angle.
7.Adjusting the delay time for alarm (0~30 seconds): If turning the Time Delay Knob clockwise, the delay time is postponed, while turning the Time delay Knob counterclockwise, the delay time is shorten.

Setting for Low Level Alarm
1. Move the FSH/FSL button to FSL.
2. Move the ‘range’ button to LO.
3. Turn the ‘time delay’ knob to S (Minimum).
4. Lower the level of the medium to cover half of the measuring probe.
5. Turn the ‘set point’ screw counterclockwise till the Alarm LED lights up. If the LED hasn’t lit up after turning it fully to the end, please adjust the ‘range’ button to HI and repeat procedure 5.
6. Now, decrease the level of the medium until it is below the measuring probe and the Alarm LED has turned off.
Next, turn the ‘set point’ screw counterclockwise until the Alarm LED (green light) lights up [Recording the numbers of turns you make]. Finally, turn back the‘set point’ screw clockwise for 1/2 circle.
7. Adjust the delay time for the alarm (0~30 seconds):
When turning the ‘time delay’ knob clockwise, the delay time is postponed. Turning the ‘time delay’ knob counterclockwise, the delay time will be shortened.

MODEL NUMBER / ORDER CODE COMPARISON TABLE

Model Number	Order Code
SB2100	SBX10000-A
SB2110	SBX10000-B
SB2120	SBX10000-D
SB2200	SBX10200-A
SB2180	SBX10800-C
SB2500	SBX10000-E
SB2600	SBX10000-F

Model Number	Order Code
SB1710	SBX1001C-A
SB1711	SBX1001C-B
SB1712	SBX1001C-D
SB1720	SBX1021C-A
SB1728	SBX1081C-C
SB1750	SBX1001C-E
SB1760	SBX1001C-F

ORDER INFORMATION

⑤⑥ Model

00：Standard
02：Hi-temperation
08：Suppr Hi-temperation

⑦⑧ Certification

00：None
1C：ATEX-Exd

(Next page)

⑨ Type

A：ϕ27 + 1"PT Standard type
B：ϕ22 + 3/4"PT Standard type
C：Hi-temperation type
D：Standard L type
E：Wire probe type
F：Mini type

⑩ Power supply

A：AC115V/230VAC ±10%, 50/60 Hz(Analog alarm function)
B：24VDC ±20%, 50/60 Hz(Analog alarm function)
C：AC115/230VAC ±10%, 50/60 Hz
D：24VDC ±20%

Connection

⑪⑫

Flang item
AK：JIS-FF
AN：ANSI-RF
AS：DIN-FF

Thread item
AC：ANSI
AA：JIS

⑬⑭

A7：3/4"
A8：1"
B1：1-1/2"
B2：2"
B4：2-1/2"
D7：DN20
D8：DN25
D9：DN32
E1：DN40
E2：DN50
E3：DN65

⑮⑯

01：PT male
03：PF male
07：NPT male
40：5 kg/cm^2
42：10 kg/cm^2
48：150 Lbs
49：300 Lbs
57：PN10
58：PN16

ORDER INFORMATION

⑰⑱ Probe material

MA: SUS 304
MB: SUS 316
MC: SUS 316L

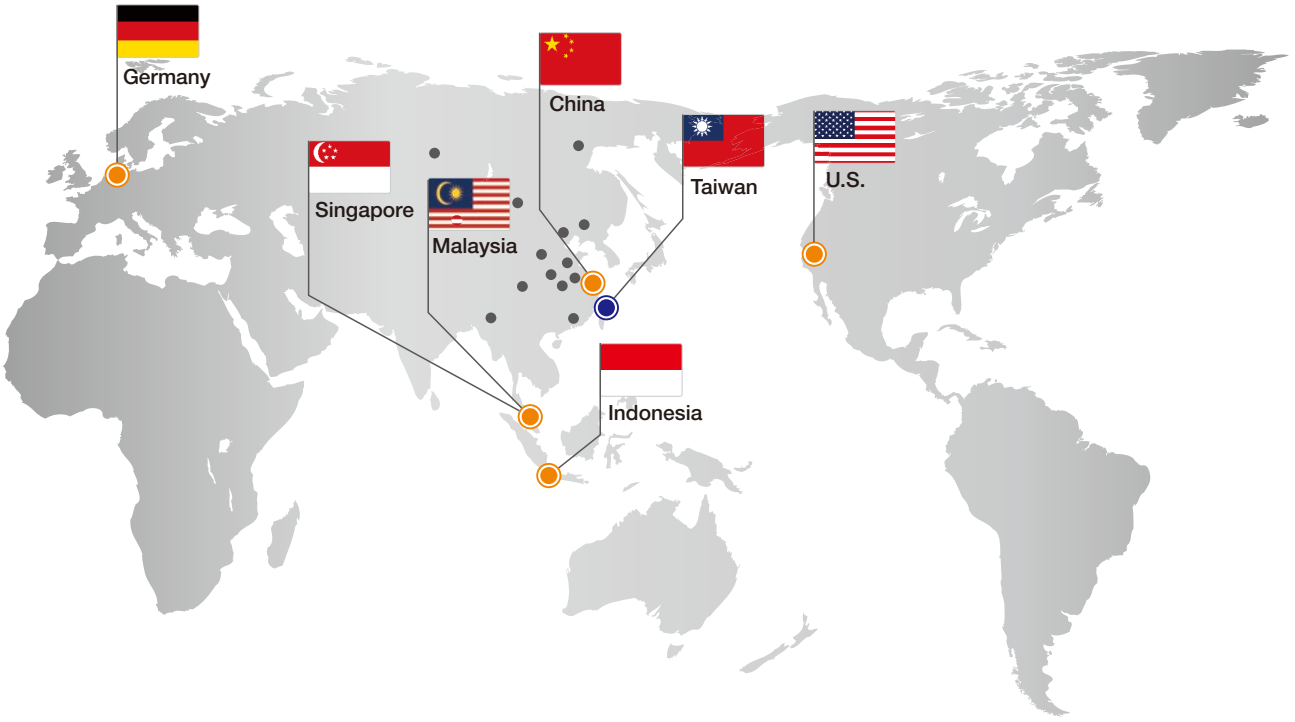
⑲⑳ Insulated material

13: PEEK
21: PTFE
32: Ceramics

㉑㉒㉓㉔ Length

Code	Probe Length
0060~3000	0060~3000mm

Global Network



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