Série SA

Détecteur de niveau capacitif

Capacitance Level Switch

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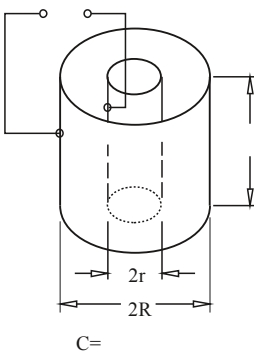
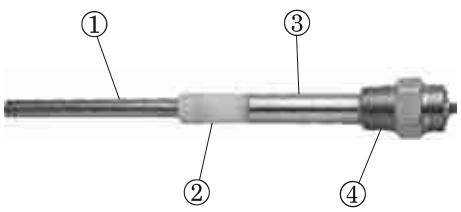
PRODUCT INTRODUCTION

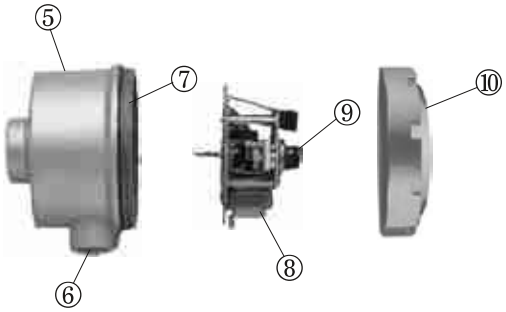
The Fine-tek Capacitance Switch for liquids and solids can be used in mediums such as liquids, pastes, syrups, powders, granules, flakes and chips. It's broad application and rugged build makes it a highly versatile across all industries. Capacitance switches rely on electrical capacitance theory (the ability of a medium to store electrical energy). When an electrical circuit has two separated conductive plates, the space between the plates acts as a capacitor and stores the electrical energy. Mediums have differing conductivity and dielectric constants which affects their energy s storage capability. When the switch comes into contact with the medium, it can detect a change in the surroundings and this actuates the switch accordingly.
Materials with high conductivity or high dielectric constants such as water tend to have high capacitance. The opposite applies for low conductive substances such as popcorn, wax or air. Thus the switch works well in mediums with reasonably high dielectric constants or conductive solutions.



■ FEATURES AND APPLICATIONS

1. Standard Type (SA110 & SA111 A/B/C)
   Suitable for general use.
2. Hi-Temp Type (SA120 & SA128 A/B/C)
   Suitable for high temperature environment.
3. Anti-Corrosion Type (SA130 & SA132 A/B/C)
   Suitable for corrosive environment.
4. Remote Probe Type (SA140 A/B/C)
   For use with vibrator equipped with tank.
5. Wire-Probe Type (SA150 A/B/C)
   Suitable for silo or large-size tank.
6. Plate-Probe Type (SA160 A/B/C)
   Suitable for granules and at lower position of tank side.
7. Explosion-Proof Type (SA270 ~ SA279)
   Ex dia II C T4~T6, DIP A21 T_A,T3~T6
8. Explosion-Proof Type (SA370 ~ SA378)
   Ex ia IIC T3~T6
   Equipped with SA-75U signal conditioner can be used in hazardous areas.
9. Anti-Static Type (SA180 & SA181 A/B/C)
   Suitable for electrostatic environment
   (It won't be damaged by the electrostatic discharge)





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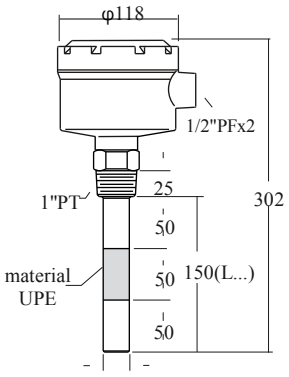
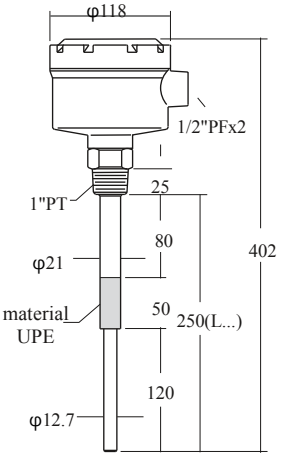
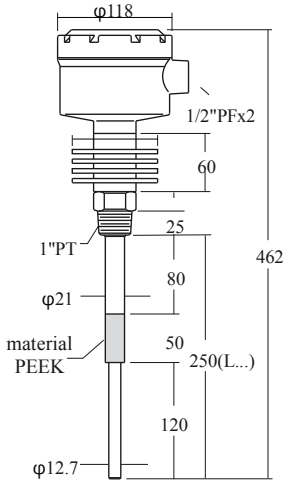
STANDARD MODEL

Dimensions			
Order No.	[STANDARD MODEL] SA110 A/B/C	[STANDARD MODEL] SA111 A/B/C	[HI-TEMP. MODEL] SA120 A/B/C
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~80BX	-20BC~200BX
Operation pressure	20kg/cm2	20kg/cm2	20kg/cm2
Prob material	SUS 304/316	SUS 304/316	SUS 304/316
Insulated material	UPE	UPE	PEEK
Connection	1"PT Screw (SUS)	1"PT Screw (SUS)	1"PT (SUS)
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 1.9kg	Approx. 1.9kg	Approx. 2.4kg
Housing spec.	Aluminum IP65		
Supply voltage			
Delay time	0~6 sec		
consumption	2W		
Output rating	Relay: 5A/250Vac/30Vdc,NPN 100mA		

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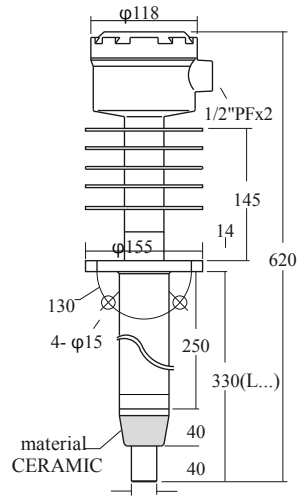
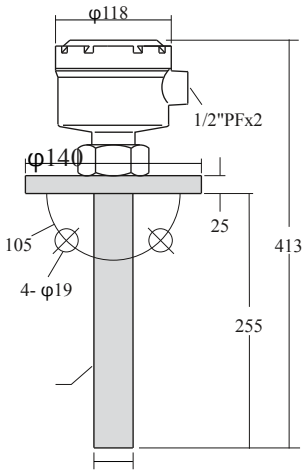
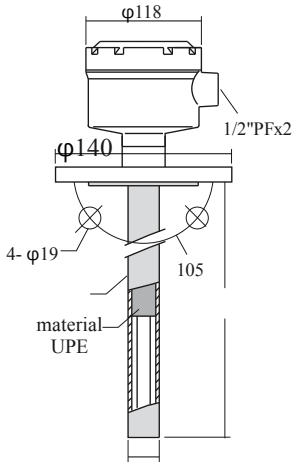
STANDARD TYPE

Dimensions			
Order No.	[SUPER HI-TEMP.MODEL] SA128 A/B/C	[CORROSION-PROOF MODEL] SA130A/B/C	[CORPOSION-PROOF MODEL] SA132 A/B/C
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~800BX	-20BC~80BX	-20BC~120BX
Operation	ATM	20kg/cm2	20kg/cm2
Prob material	SUS 304/316	SUS 304 Coating PP	SUS304 Coating PVDF
Insulated material	CERAMIC	UPE	UPE
Connection	2-1/ 2"x5kg/cm^{2}Flange(SUS)	1-1/2"x10kg/cm^{2}Flange(PP)	1-1/2"x10kg/cm^{2}Flange(SUS) (5mm PVDF)
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 6.5kg	Approx. 2kg	———
Housing spec.	Aluminum IP65		
Supply voltage	110/220Vac+- 10 % or 16-24 Vdc		
Delay time	0~6 sec		
	2W		
Output rating	Relay: 5A/250Vac/30Vdc,NPN 100mA		

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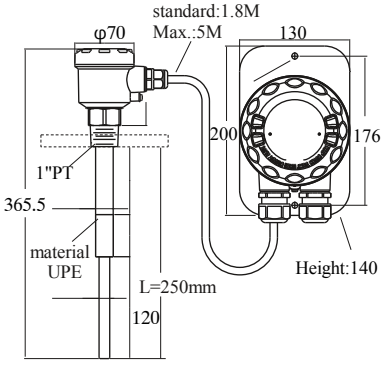
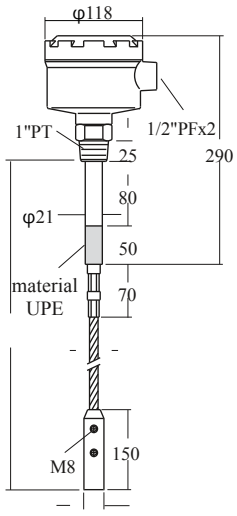
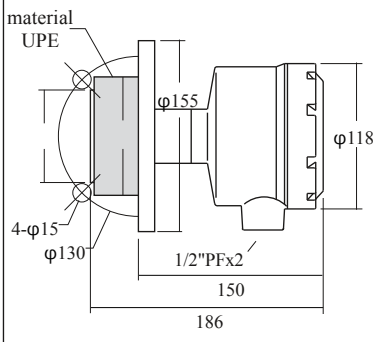
STANDARD TYPE

Dimensions			
Order No.	[REMOTE PROBE MODEL] SA140A/B/C	[WIRE-PROBE MODEL] SA150 A/B/C.	[PLATE MODEL]. SA160 A/B/C
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~80BX	-20BC~80BX
Operation	20kg/cm2	20kg/cm2	20kg/cm2
Probe material	SUS 304/316	SUS 304/316 cable	SUS 304/316
Insulated material	UPE	UPE	UPE
Connection	1"PT Screw (SUS)	1"PT(SUS) Screw	2-1/2"x 5kg/cm² Flange (SUS)
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 3kg	Approx. 4.1kg	Approx. 3.2kg
Housing spec.	Aluminum IP65		
Supply voltage	110/220Vac+- 10 % or 24 Vdc	110/220Vac+- 10 % or 16-24 Vdc	
Delay time	0~6 sec	0~6 sec	
	2W		
Output rating	Relay: 5A/250Vac/30Vdc,NPN 100mA		

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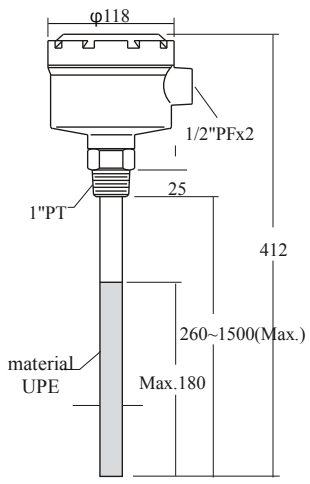
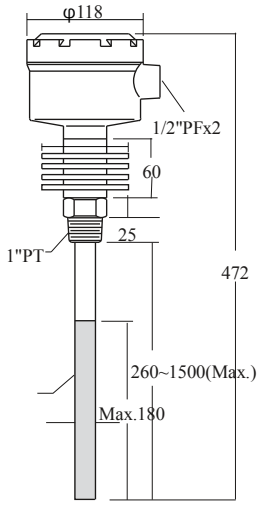
STANDARD MODEL

Dimensions		
Order No.	[ANTI-STATIC MODEL] SA180 A/B/C	[HI-TEMP. ANTI-STATIC MODEL] SA181 A/B/C
Ambient temp.	-20°C~60°	-20°C~60°
Operating temp.	-20°C~80°	-20°C~200°
Operation	20kg/cm2	20kg/cm2
Probe material	UPE Coating	PTFE Coating
Insulated material	UPE	PTFE
Connection	1"P Screw (SUS)	1"PT Screw (SUS)
Sensitivity range	10pF (std.)	10pF (std.)
Weight	Approx. 2kg	Approx. 2.5kg
Housing spec.	Aluminum IP65	
Supply voltage	110/220VacK10% or 19~24Vdc	
Delay time	0~6 sec	
	2W	
Output rating	Relay: 5A/250Vac/30Vdc,NPN 100mA	

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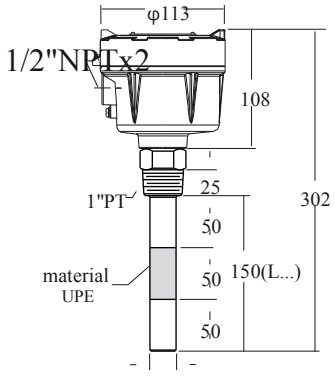
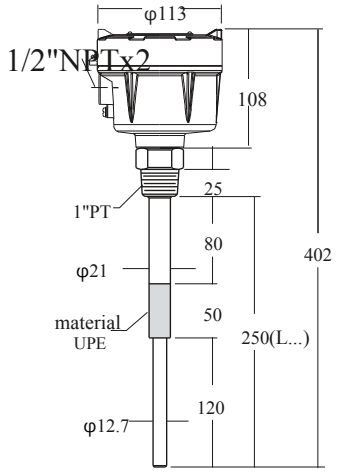
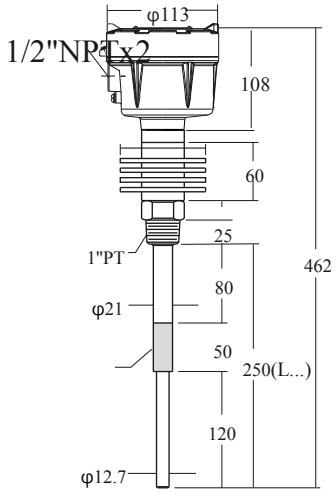
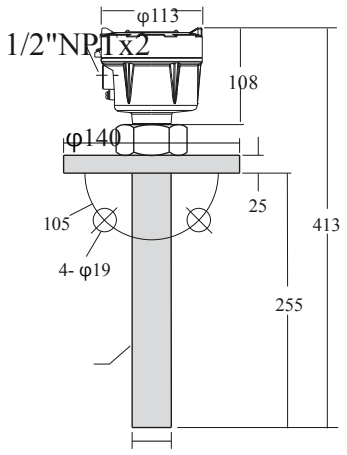
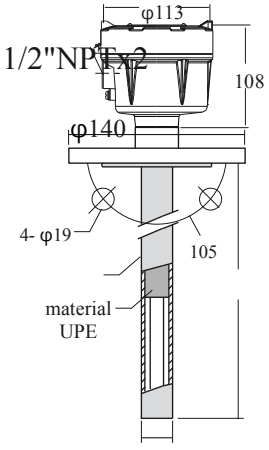
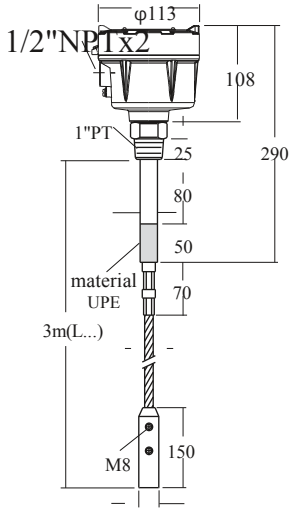
EXPLOSION PROOF MODEL

Dimensions			
Order No.	[STANDARD MODEL] SA270	[STANDARD MODEL] SA271	[STANDARD MODEL] SA272
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~80BX	-20BC~200BX
Operating pressure	20kg/cm2	20kg/cm2	20kg/cm2
Probe material	SU 304/316	SUS 304/316	SUS 304/316
Insulated material	UPE	UPE	PEEK
Connection	1"PT Screw (SUS)	1"PT(SUS) Screw	1"PT (SUS) Screw
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 1.9kg	Approx. 2.4kg	Approx. 4.1kg
Housing spec.	Aluminum IP65		
Supply voltage	110/220VacK10% or 24VdcK20%		
Enclosure protection	Ex dia II C T4~T6, DIP A21 T_A T3~T6		
	2W		
Output contact rating	Relay: 6A/250Vac/28Vdc		
	3 wire NPN output, max. lond current 400mA		
	3 wire PNP output, max. lond current 400mA		
	4 wire NPN/PNP output, max. 400mA/60Vdc		

EXPLOSION PROOF MODEL

Dimensions			
Order No.	[CORROSION-PROOF MODEL] SA273	[CORROSION-PROOF MODEL] SA274	[WIRE-PROBE MODEL] SA275
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~120BX	-20BC~80BX
Operating pressure	ATM	20kg/cm2	20kg/cm2
Probe material	SU 304/316(PP Coating)	SUS 304/316	SU 304/316 Cable
Insulated material	UPE	UPE	UPE
Connection	1-1/2"10kg/cm (PP)	1-1/2"x10kg/cm (SUS) W / 5mm PVDF Cushion	1"PT Screw (SUS)
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 1.9kg	————————	Approx. 4.1kg
Housing spec.	Aluminum IP65		
Supply voltage	110/220VacK10% or 24VdcK20%		
Enclosure protection	Ex dia II C T4~T6, DIP A21 T_A T3~T6		
	2W		
Output contact rating	Relay: 6A/250Vac/28Vdc		
	3 wire NPN output, max. lond current 400mA		
	3 wire PNP output, max. lond current 400mA		
	4 wire NPN/PNP output, max. 400mA/60Vdc		

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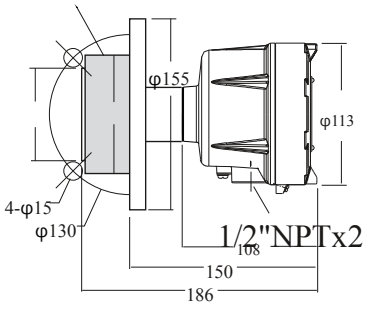
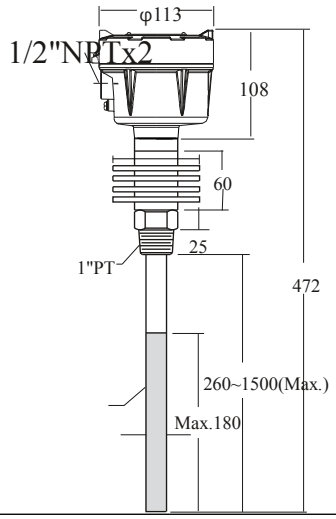
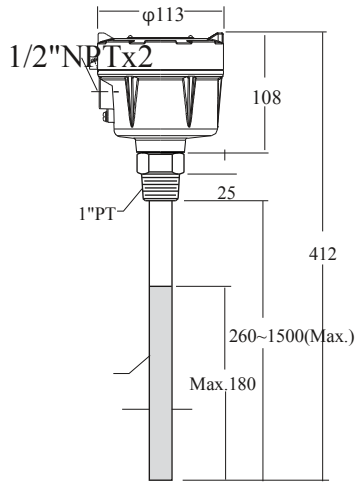
EXPLOSION PROOF MODEL

Dimensions			
Order No.	[PLATE MODEL] SA276	[HI-TEMP ANTI-STATIC MODEL] SA277	[ANTI-STATIC MODEL] SA278
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~200BX	-20BC~80BX
Operating pressure	20kg/cm2	20kg/cm2	20kg/cm2
Probe material	SUS 304/316	PTFE Coating	UPE Coating
Insulated material	UPE	PTFE	
Connection	2-1/2"x 5kg/cm^2 Flange (SUS)	1"PT(SUS) Screw	1"PT(SUS) Screw
Sensitivity range	10pF (std.)	10pF (std.)	10pF(std.)
Weight	Approx. 3.2kg	Approx. 3.1kg	Approx. 2kg
Housing spec.	Aluminum IP65		
Supply voltage	110/220VacK10% or 24VdcK20%		
Enclosure protection	Ex dia II C T4~T6, DIP A21 T_A T3~T6		
	2W		
Output contact rating	Relay: 6A/250Vac/28Vdc		
	3 wire NPN output, max. lond current 400mA		
	3 wire PNP output, max. lond current 400mA		
	4 wire NPN/PNP output, max. 400mA/60Vdc		

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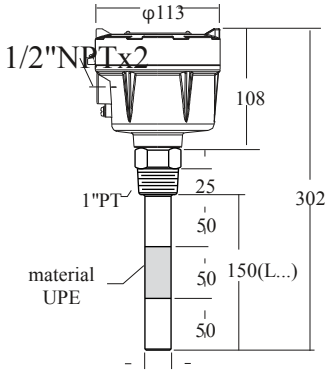
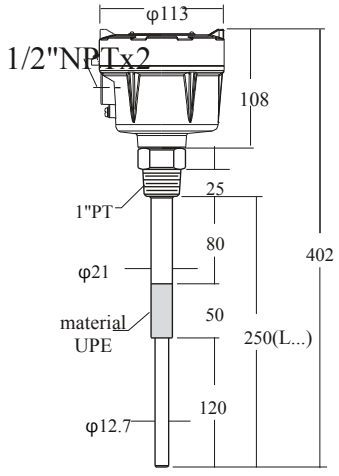
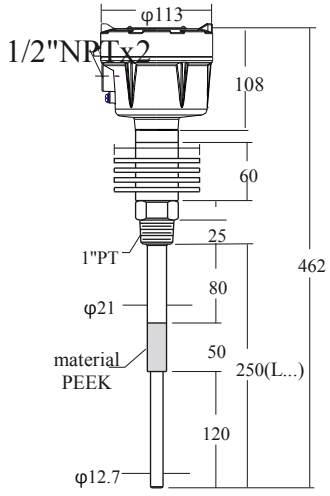
INTRINSICALLY SAFE MODEL

Dimensions			
Order No.	SA370(WITH SA-75U)	SA371(WITH SA-75U)	SA372(WITH SA-75U)
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~80BX	-20BC~200BX
Operation pressure	20kg/cm2	20kg/cm2	20kg/cm2
Probe material	SU 304/316	SUS 304/316	SU 304/316
Insulated material	UPE	UPE	PEEK
Connection	1"PT(SUS)screw	1"PT(SUS)screw	1"PT(SUS)screw
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx 1.9kg	Approx. 2.4kg	Approx 2.4kg
Housing spec.	Aluminum IP65		
Supply voltage			
Enclosure protection	Ex ia IIC T3~T6		
	2W		
Output rating	NPN 100mA		

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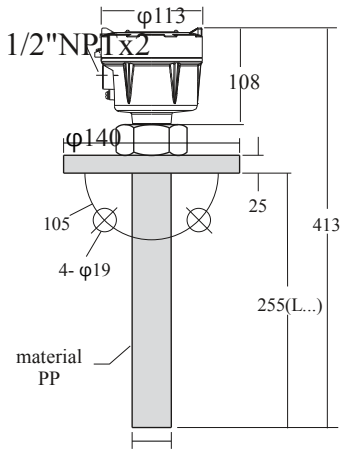
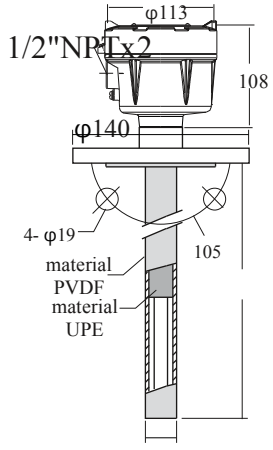
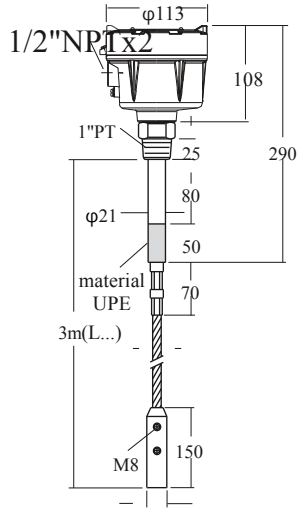
INTRINSICALLY SAFE MODEL

Dimensions			
Order No.	SA373(WITH SA-75U)	[CORROSION-PROOF MODEL] SA374(WITH SA-75U)	[WIRE-PROBE MODEL] SA375(WITH SA-75U)
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~120BX	-20BC~80BX
Operation pressure	20kg/cm2	20kg/cm2	20kg/cm2
Probe material	SU 304/316(PP Coating)	SUS 304/316	SUS 304/316 Cable
Insulated material	PTF or UPE	UPE	UPE
Connection	1-1/2"10kg/cm (PP)	1-1/2"x10kg/cm (SUS) W / 5 mm PVDF Cushion	1"PT Screw
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 1.9kg	———————	Approx. 4.1kg
Housing spec.	Aluminum IP65		
Supply voltage	16~24Vdc		
Delay time	E ia IIC T3~T6		
	2W		
Output rating	NPN 100mA		

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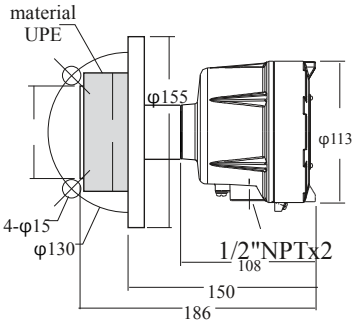
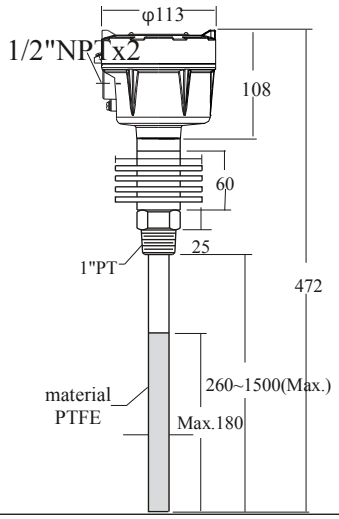
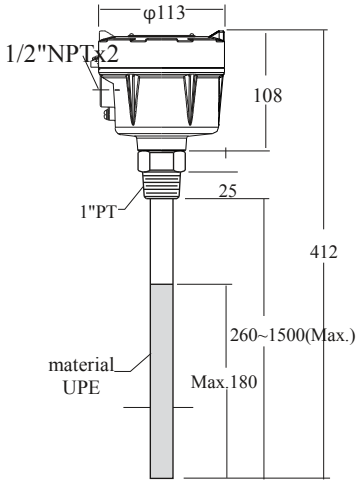
INTRINSICALLY SAFE MODEL

Dimensions			
Order No.	[PLATE MODEL] SA376(WITH SA-75U)	[HI-TEMP. ANSI-STATIC MODEL] SA377(WITH SA-75U)	[ANTI-STATIC MODEL] SA378(WITH SA-75U)
Ambient temp.	-20BC~60BX	-20BC~60BX	-20BC~60BX
Operating temp.	-20BC~80BX	-20BC~200BX	-20BC~80BX
Operation pressure	20kg/cm2	20kg/cm2	20kg/cm2
material	SUS 304/316	PTFE	UPE Coating
Insulated material	UPE	PTFE	UPE
Connection	2-1/2"x 5kg/cm^{2}Flange (SUS)	1"PT(SUS)Screw	1"PT(SUS)Screw
Sensitivity range	10pF (std.)	10pF (std.)	10pF (std.)
Weight	Approx. 3.2kg	Approx. 3.1kg	Approx. 2kg
Housing spec.	Aluminum IP65		
Supply voltage	16~24Vdc		
Delay time	Ex ia IIC T3~T6		
	2W		
Output rating	NPN 100mA		

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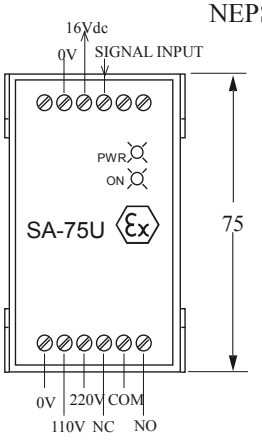
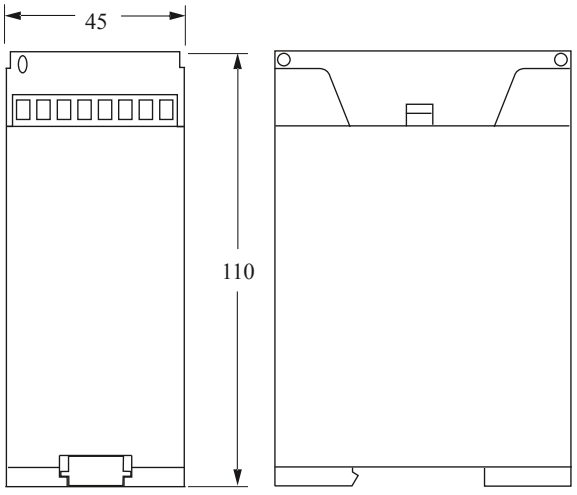
NEPSI PROOF NO. GYB111594

SA-75U Zener barriers inside provide intrinsic safety to SA37□ molel level switch. The unit works uses a current-limiting feature protecting the device from power surges, sparks and other electrical damage.





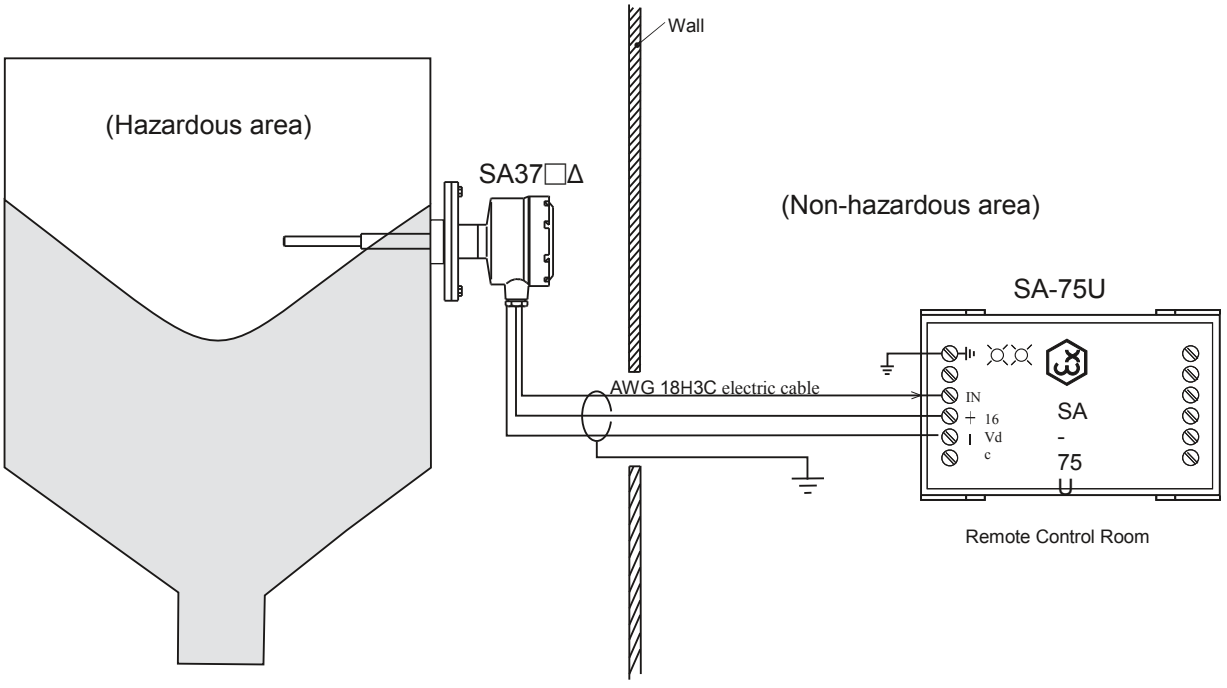
2. Power consumption : 2W
3. Input signal : NPN transistor

4. Output voltage : 16 Vdc
5. Short circuit current : 25mA max.
6. Relay output : SPDT

10A /30Vdc
10A /220Vac

8. Weight : 0.3 kg

WIRING CONFIGURATION



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QUICK CALIBRATION

1. Turn the "SENSITIVITY" to the "H" position.
2. Place a flat screw driver in the "Coarse" coarse hole, turn clockwise until INDICATOR turns on. Check whether "Indicator" light is on or not by turning the "Sensitivity Adj" knob again.
3. If not, repeat procedure.

SENSITIVITY ADJUSTMENT

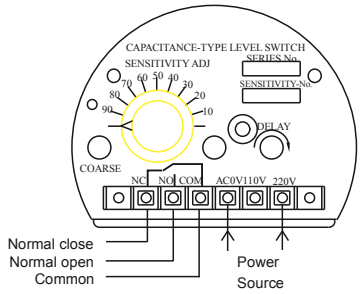
1. Initially, the "Indicator" LED will turn off when the tank's material doesn't contact the probe.
2. When making contact with the probe, it will turn on. As soon as LED turns on, adjust the " SENSITIVITY " until the light turns off. Turn the knob " SENSITIVITY " to the middle position between where it turned off and "H"

DELAY FUNCTION CALIBRATION

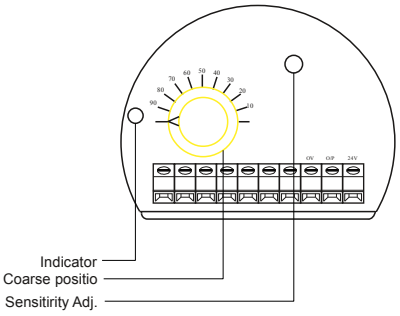
The default setting is 0 second when material comes into contact with the probe (Indicator ON)
For setting the delay function, turn the screw clockwise. The further clockwise, the longer the delay. The delay function is suitable for mediums with agitators, splashing or level turbulence in the tank.

PANEL DESCRIPTION

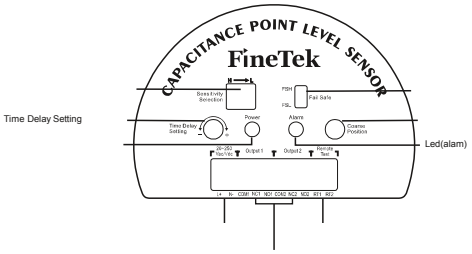
SA110,120,130,150,160,180

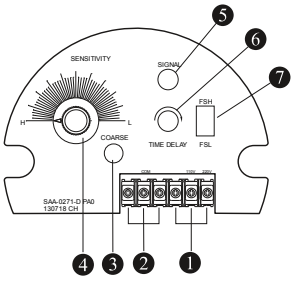


370 A/B/C/D

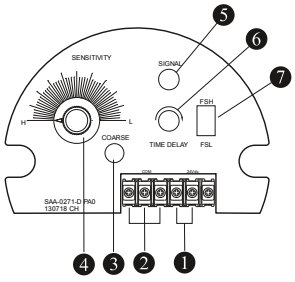


Remote probe model
SA140 A/B/C/D

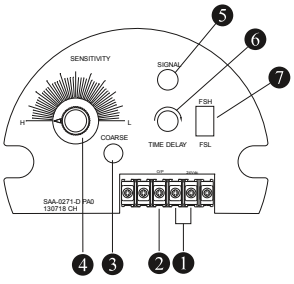




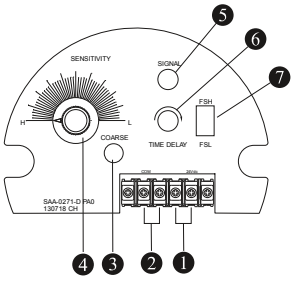
SA27□A



SA27□B

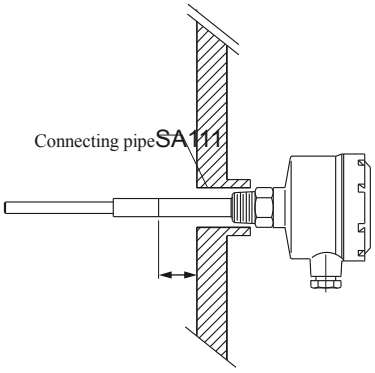


SA27□C/E

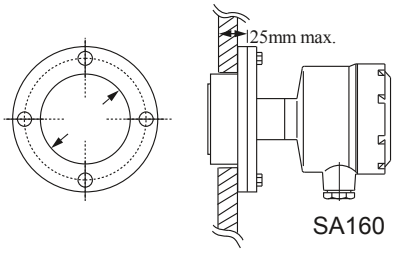


SA27□Φ

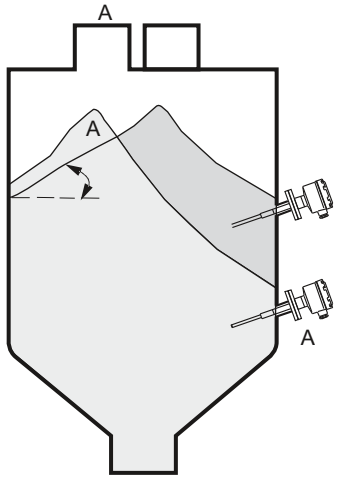
①
②
③
④
⑤
⑥ :Level indicator
⑦ :Time delay setting
:Fail-safe switch



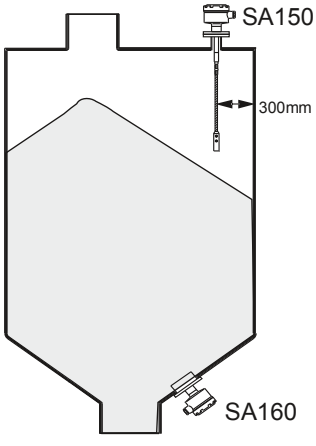
The insulation part should be mounted to protrude 30mm from the vessel wall.



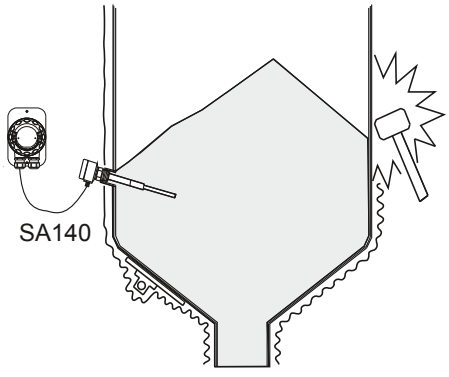
SA160 should be mounted as above.



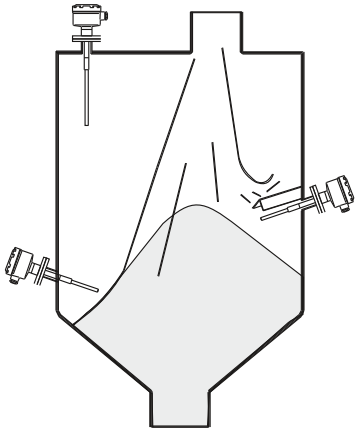
To prevent false readings,check the flow pattern (angle a) of the material and place the probe in the appro-priate location.



If the probe is mounted on the top, make sure the length of probe long enough to touch the highest level of medium.
The SA160 MODEL is usually installed at the lower wall of the tank.



For Non-Stationary or vibrating environment, a separate control unit such as the SA140 is suggested.



It is suggested to install the probe away from the inlet to reduce the risk of inflowing material damaging the probe. If the probe is near an inlet, it is recommended to place a protective cover 200mm above the probe. The cover should be parallel to the probe and the same length.

Série SA Détecteur capacitif

TeleMetrix

ORDER INFORMATION

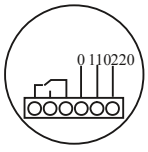
SA [ ][ ][ ] [ ] [ ][ ] ([ ][ ][ ][ ])

MODEL

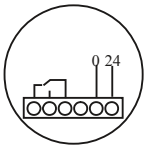
110	Standard type (150mm)	150	Wire probe type
111	Special lenght	160	Plate type
120	Hi-temp. type	18x	Anti-static type
13x	Corrosion prof type	27x	Explosion ADF prof type
140	Remote probe type	37x	Explosion intrisec prof type

POWER SUPPLY AND TERMINAL CONNECTIONS

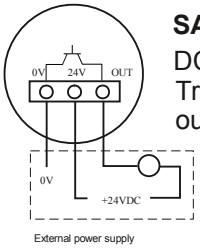
A 110/220 VAC
B DC24V, relay output *
C DC24V, 3-wires NPN out.
D must use with SA-75U
E DC24V, 3 wire NPN output (SA27x only)
F DC24V, 4-wire PNP/NPN out (SA27x only)



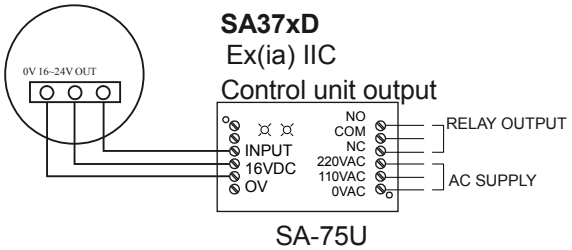
SAxxxA
110V/220VAC
Relay output



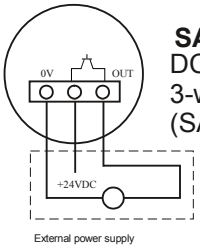
SAxxxB
DC 24V
Relay output



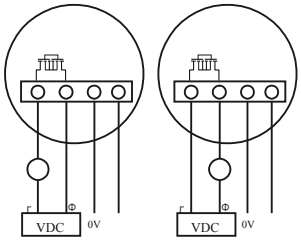
SAxxxC
DC 24V
Transistor npn output



SA37xD
Ex(ia) IIC
Control unit output
SA-75U



SA27xE
DC24V
3-wire NPN out.
(SA27X Only)



SA27xF
DC24V
4-wire PNP/NPN
(SA27x Only)

* For SA140(Remote Series), please refer to the operation manual.

MECANICAL CONNECTIONS

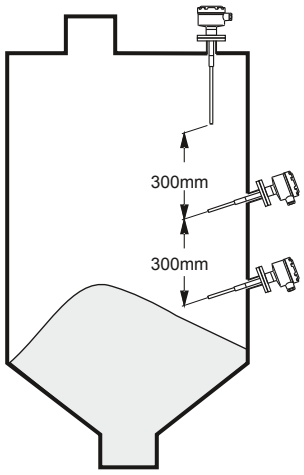
C 3/4" (20A)	i 4"(100A)	O 150 Lbs	S Other
D 1"(25A) *	J 5"(125A)	P 300 Lbs	W PN10
E 1 1/2" (40A)	K 6"(150A)	**Q PT ***	X PN16
F 2"(50A)	S Other	R PF(G)	Y PN25
G 2 1/2"(65A)	M 5kg/cm²	T BSP	Z PN40
H 3"(80A)	N 10kg/cm²	U NPT	

SPECIAL PROBE LENGHT (mm)

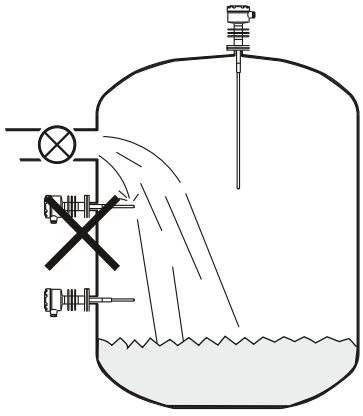
0500: 500mm (Below~500mm)
1000: 1000mm (501~1000mm)
1500: 1500mm (1001~1500mm)

※ 500mm per Unit

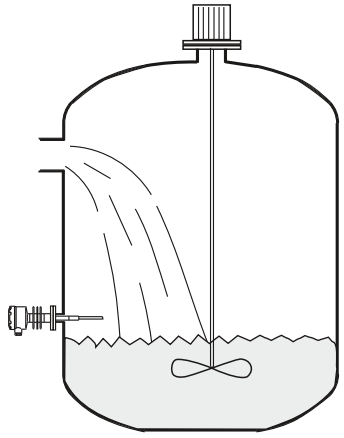
Characteristics, specifications and dimensions are subject to change without notice.
Please contact DIRECT-MESURE TELEMETRIX office for further informations.



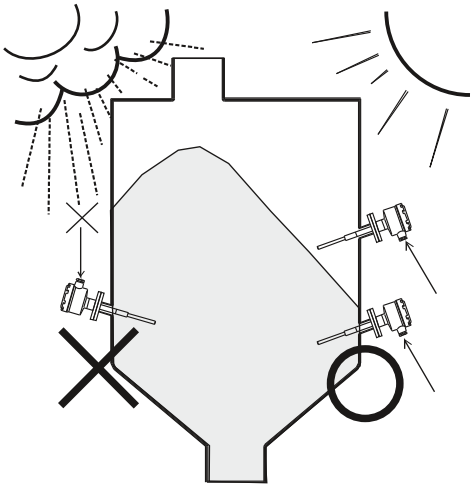
If two parallel probes are mounted, they must be installed separately at least 300 mm to minimize interference .



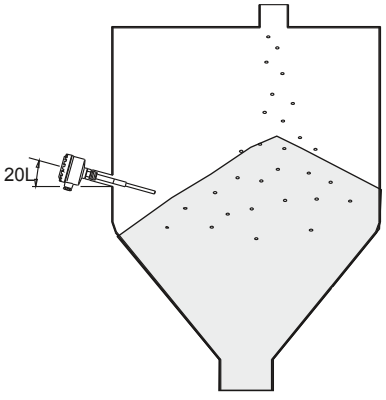
The probe should not be mounted underneath a liquid inlet, otherwise it will switch on erroneously.



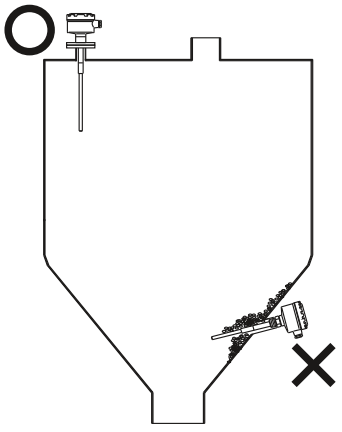
If the tank equips with agitator, please use the time-delay type to prevent fault level detection.



The cable inlet should face downward to avoid rain damage. Tighten the cable with the connecting part.



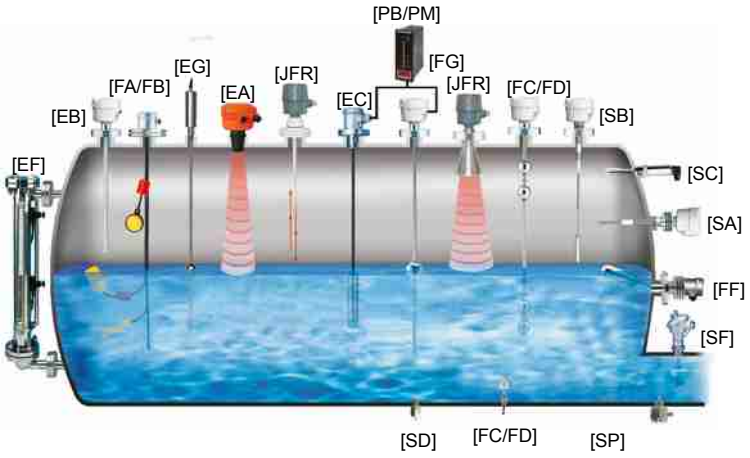
Mounting the probe at a 20B incline will optimize the results and increase sensitivity. It also won't be damaged by the inflowing material.

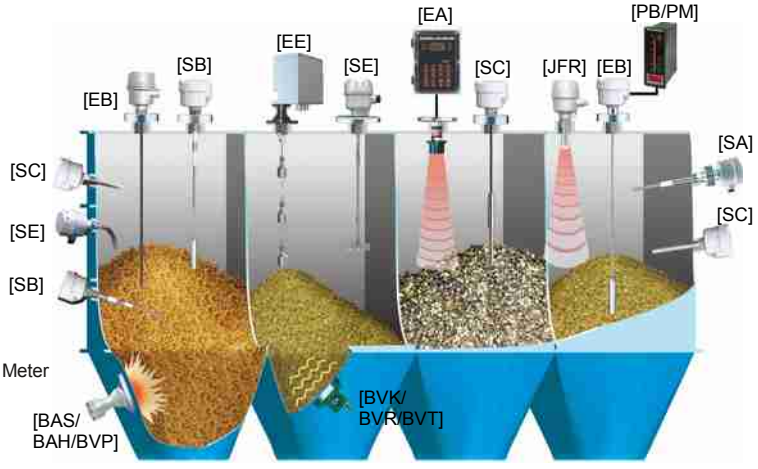


Mounting the probe at top of tank can avoid material bridges from forming. It's helpful to record accurate measurements.

EXAMPLES OF TANK MOUNTING

[FC/FD] [FG]	Mini Float/Magnetic Float Level Switch Magnetic Float Level Transmitter
[FF]	Side Mounting Float Switch
[FA/FB]	Cable Float Level Switch
[SP]	Thermal Dispersion Flow Switch
[SF]	Paddle Flow Switch
[SD]	Optical Level Switch
[SE]	Rotary Paddle Level Switch
[SA]	Capacitance Level Switch
[EC]	Pressure Level Transmitter
[SC]	Vibrating Probe Level Switch
[SC]	Tuning Fork Level Switch
[EB]	RF-Capacitance Level Transmitter
[SB]	RF-Capacitance / Admittance Level Switch
[EG]	Magnetostrictive Level Transmitter
[EF]	By-Pass Level Transmitter
[MEF]	Mini By-Pass Level Transmitter
[EA]	Ultrasonic Level Transmitter
[JFR]	FMCW Radar Level Transmitter
[EE]	Electromechanical Level Measuring System
[ED]	Speed Monitor
[SRT/SRS]	Conveyer Belt Misalignment Switch & Safety Cable Pull Switch
[PB/PM]	Microprocessor Based Bargraphic Display Scaling Meter
[BRD/AE]	Valve and Controller for Dust Collector System
[BAS/BAH/BVP]	Air Hammer
[BVK/BVR/BVT]	Pneumatic Vibrator





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