

SA37(SAX10□7B) Capacitance Level Switch Operation Manual

SA37(SAX10□7B) Series is certified by NEPSI and that it conforms to GB3836.1-2010, Gb3836.4-2010, Gb3836.20-2010, the EX rating is Ex ia IIC T3~T4(Cert. NO.GYB16.1479X).

The approval products model No.: SA370(SAX1007B-A), SA371(SAX1007B-B), SA372(SAX1027B-B), SA373(SAX1007B-D), SA374(SAX1007B-E), SA375(SAX1007B-F), SA376(SAX1007B-G), SA377(SAX1007B-H) and SA378(SAX1027B-H).

The SA37 series must equip with SA-75U Intrinsically Safe Signal Conditioner for Explosion Proof and apply in hazardous area.

※ When there are materials or mixtures with multiple characteristics such as high/low dielectric and conductive characteristics simultaneously (for example; silica sand in the glass industry, etc), it must be tested on the site first, to Determine whether the sensor is suitable or not. If there still exists measuring problems, we suggest using our Tuning Fork Level Switch (SC) or Rotary Paddle Level Switch (SE).

CALIBRATION (ROTARY KNOB)

INITIAL CALIBRATION

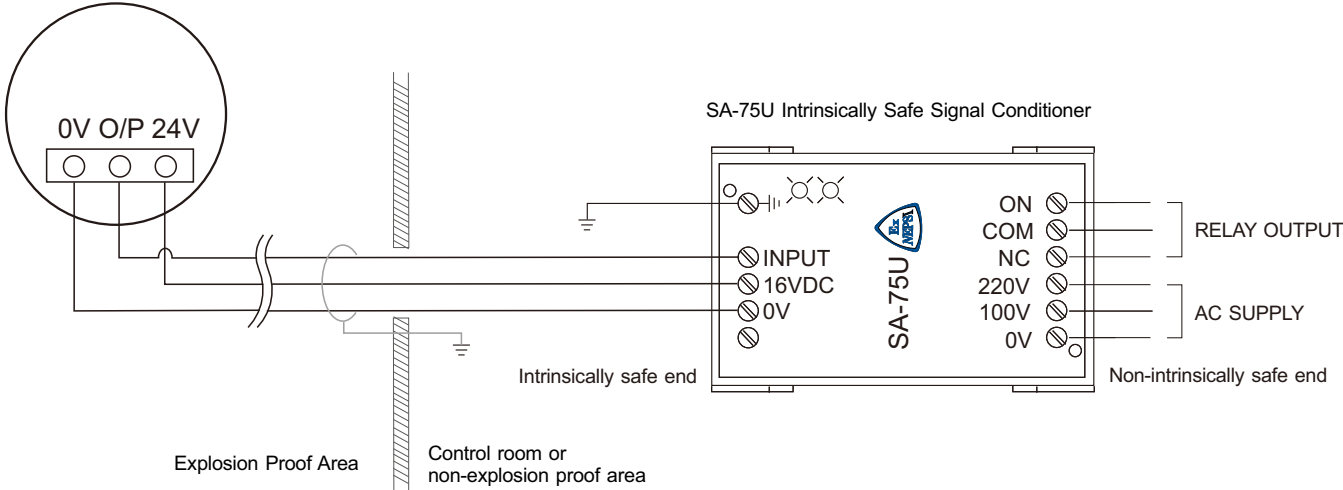
- 1. After installation with power supply, make sure no material within 300 mm around the probe.
- 2. Turn the "SENSITIVITY" to the "H" position (Figure 2).
- 3. Using flat-head screwdriver to turn "Coarse" clockwise for adjustment until LED indicator is on.
- 4. Turn the knob clockwise from H position to 90% position about 1/2 circle (95% position) until LED indicator shut off (Figure 3). Then, Initial calibration is complete. After that, please continue to next step "SENSITIVITY ADJUSTMENT".

SENSITIVITY ADJUSTMENT

- 1. Make sure the "Indicator" sign does not light up, when the medium does not contact with the probe, and vice versa, when the medium contacts or covers the probe, then the "Indicator" sign lights up.
- 2. Gradually, adjust the capacitance value (turn the knob clockwise to the "L" direction) until "Indicator" light turns off.
- 3. Record the turning angle from "Indicator" sign lights up status to turn off status, then reset "SENSITIVITY ADJ" by turning the knob counterclockwise back for half of the recorded turning angle.
- 4. Based on the previous experience, 70% (Figure 4) adjustment position can be used to most of mediums (Need to do INITIAL CALIBRATION first).

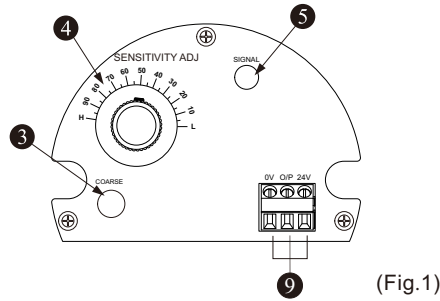
WIRING

SA37□ Series

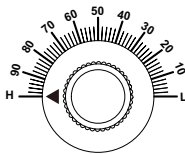


PANEL FUNCTION

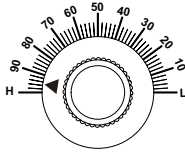
Rotary knob type



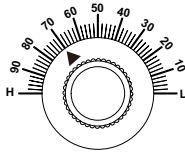
- ③ :Coarse calibration
- ④ :Sensitivity adjustment
- ⑤ :Material indicator
- ⑨ :Connect with the Intrinsically safe end of SA-75U



(Fig.2)



(Fig.3)



(Fig.4)



NEPSI Ex ia IIC T3/T4 Ga

The special condition for the safety use of the product

- 1. If the housing material is Aluminum, the installation method needs to have the measure to avoid the danger of ignition caused by the impact or friction.
- 2. If the probe material is non-metal or coating with non-metal, the measure to avoid the danger of static ignition has to be taken.

Warning & Cautions

- 1. This product needs to comply with safety barrier SA-75U of EX ia rating which is placed on the safe zone is essential for using in hazardous areas
- 2. This wiring of this system has to comply with the instruction on the operation manual of the safety barrier, make sure the wiring is correct. The parameter for Ex ia rating:

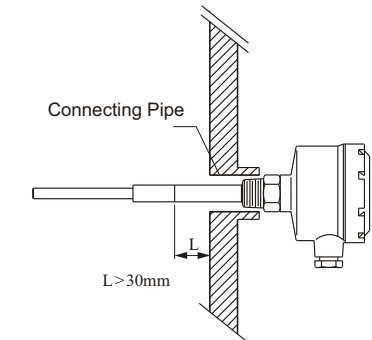
Max. lupt voltage Ui(V)	Max. input current Ii(mA)	Max. input power Pi(W)	Max. internal equivalent parameter	
			Ci(μF)	Li(mH)
28	100	0.7	0	0

- 3. This product to connect with the safe zone of the safety barrier is proposed to use 0.5mm2X3C shielded cable. The shielding layer should be grounded in a safe place and insulated from the housing of this product.
- 4. In the explosion-proof mark, the correspondence between temperature rating, environment temperature and medium temperature is as below table.

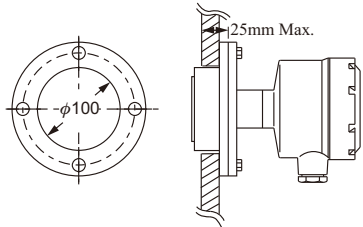
Series	Ambient temperature (°C)	Media temperature (°C)
T3	-40~60	-40~190
T4	-40~60	-40~130

- ※The actual tolerable temperature of this product is subject to the latest catalogue issue by our company and accordance with the explosion-proof mark.
- 5. The user is not allowed to change the parts of the products in person. It should consult with the product manufacturer to resolve the fault found in operation, so as to avoid damage.
- 6. The product installation, operation and maintenance shall follow the product manual and the following standards: GB3836.13 (IEC 60079-19) "Electric Apparatus for Explosive Gas Atmospheres Part 13: Repair and Overhaul for Explosive Gas Atmospheres", GB3836.15(IEC 60079-14) "Electric Apparatus for Explosive Gas Atmospheres Part 14: Electrical Installation in Hazardous Area (Other than Coal Mine)", GB3836.16(IEC60079-17) "Electric Apparatus for Explosive Gas Atmospheres Part 16: Electric Apparatus Inspection and Maintenance(Other than Coal Mine)", GB3836.18(IEC60079-25)"Explosive atmospheres - Part 18: Intrinsically safe electrical systems", and GB50257 "Electric Equipment Installation Engineering Code for Construction and Acceptance of Electric Device within Explosion and Fire Hazard Environments".

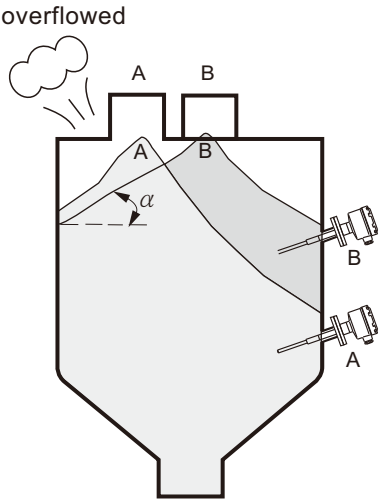
INSTALLATION



The insulation part must be 30cm inside the tank at least to ensure sensitivity is adjustable and to avoid false action when medium build up.



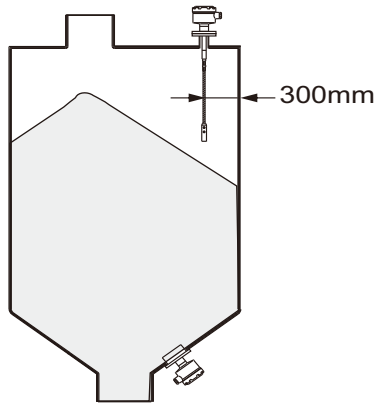
For SA27 Plate Model installation, thickness including tank wall & connection flange must be less than 25mm to avoid false action.



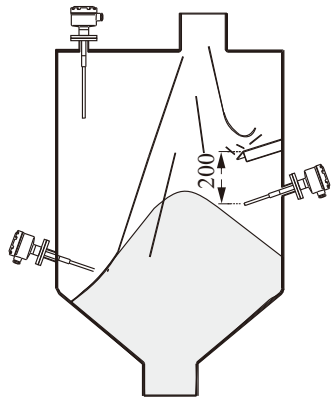
Be cautious with installation location. Angle of repose must be considered if inlet is not located in center top of the tank.

MAINTENANCE & TROUBLE SHOOTING

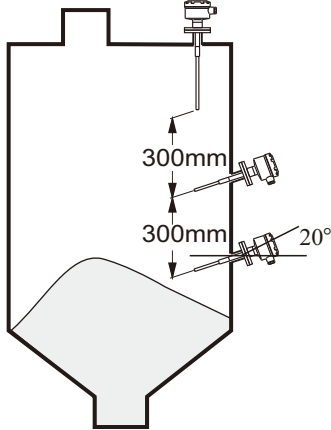
Circumstance	Possibility Cause	Inspection / Evidence	Trouble Shooting
Water get into housing	Enclosure is not firmly locked	Enclosure is loose	Lock the enclosure firmly
	Seal ring aged & failed	Seal ring aged	Replace seal ring
	Cable entry is not firmly locked	Cable entry is not firmly locked	Lock the cable entry firmly
	Cable entry does not face down	Cable entry faces up	Turn the cable entry & face down
	Cable wire does not connected downward	Cable wire is connected upward	Connect the cable downward
	Diameter of cable wire does not fit	Cable wire is loose	Replace cable with diameter 8mm~10mm
Level up & down but switch / relay no response	Sensivity Adjustment knob is activated by mistake	Position of Sensivity Adjustment knob is abnormal	Re-adjust sensivity
	False wiring of power & signal cable	False wiring of power & signal cable	Re-wiring according to wiring guide
	Circuit damaged by EMI	Dry powder or high speed friction	Replace with anti-static model
	Dielectric constant of medium is too small.	Continuous action when coarse or fine adjustment	Contact your local business representative.
Level up & down but switch on/off continuously non-stop or relay can't be reset	Humidity inside tank is over limit	Probe with water or dew	Replace probe with coating
	Probe contacts with tank wall	Probe contacts with tank wall	Re-install and avoid grounding
	Circuit damaged by EMI	Dry powder or high speed friction	Replace with anti-static model
	Dielectric constant is over limit	Continuous action when coarse or fine adjustment	Contact your local business representative.
Unstable switch signal.	Wiring terminals are loose	Loose screw bolt	Lock screw bolt firmly
	Process connection is not firmly locked	Loose thread	Lock thread or flange firmly
	Short-circuit due to aging	Idle loop, resistance abnormal	Revise external layout
	Abnormal of supply voltage	Supply voltage over limit	Restore power supply
	Loose structure due to vibration	Obvious vibration environment	Replace with remote model



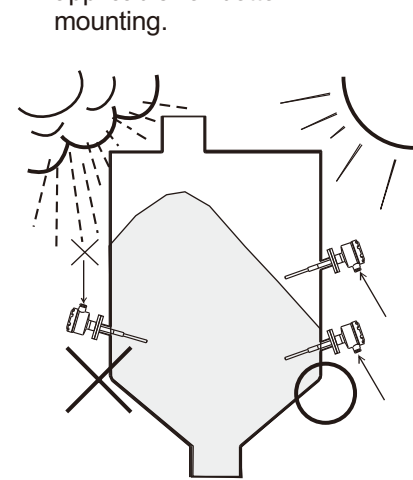
For top mounting, angle of repose must be considered when installation. SA37 Wire Probe Model must be installed min. 300mm from tank wall. SA37 Plate Model is applicable for bottom mounting.



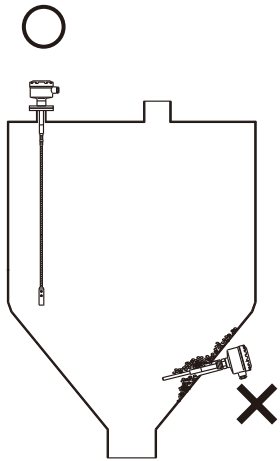
It's recommended to install the switch away from material inlet to avoid damage. If switch must be installed near inlet area, a protective cover must be placed 200mm on top of the switch.



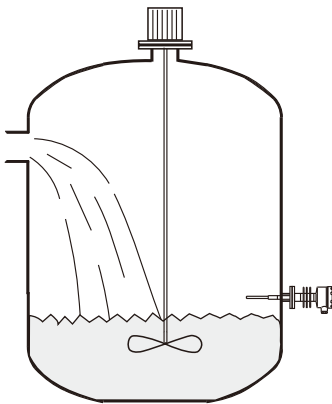
When multiple switches are installed, keep at least 300mm distance for each switch. Mounting the probe at a 20° incline will optimize the results and increase sensitivity. It also won't be damaged by the inflowing material



Cable entry must face down firmly locked to avoid rain damage.



Top mounting is recommended for medium with poor flowability to avoid medium build up.



Switches with delay time function is recommended for tank with agitator to avoid false action.



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