

SA140 CAPACITANCE LEVEL SWITCH OPERATION MANUAL

KEY FEATURES AND BENEFITS

Capacitance switches are simple structures with no moving parts reducing wear and tear. Can be applied to solids, powders, slurries and liquids. A variety of mounting options makes installation simple. Remote capacitance switches are available for tanks with vibrators and prevent circuit board damage.

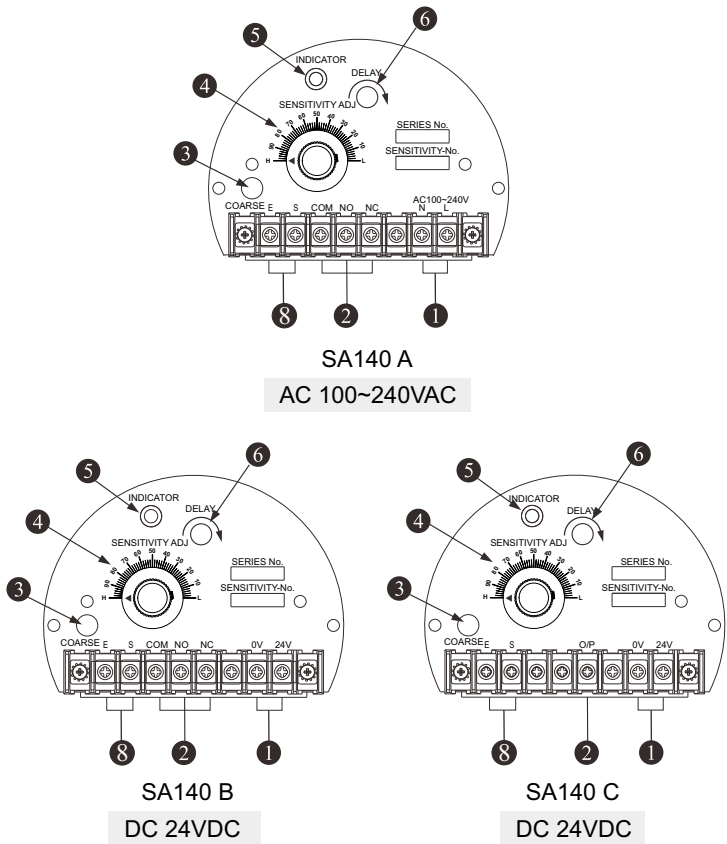
※When there are materials or mixtures with multiple characteristics such as high/low dielectric and conductive characteristics simultaneously (for example; silica sand in the glass industry, etc), it must be tested on the site first, to determine whether the sensor is suitable or not. If there still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

SPECIFICATIONS

Model number	SA140A	SA140B	SA140C
Power supply	100~240Vac	24Vdc±20%	24Vdc±20%
Power consumption	2W		
Output	SPDT 5A/250Vac/30Vdc	SPDT 5A/250Vac/30Vdc	Transistor output
Ambient temp.	-20~60°C		
Operating temp.	-20~80°C		
Operating pressure	20kg/cm ²		
Delay	0~8s±1S		
Sensitivity range	10pF(Rotary knob)		

PANEL INSTRUCTIONS

Rotary knob type



- 1 Power supply
- 2 Output
- 3 Coarse position
- 4 Sensitivity
- 5 Level indicator
- 6 Time delay setting
- 8 Connect with probe connection

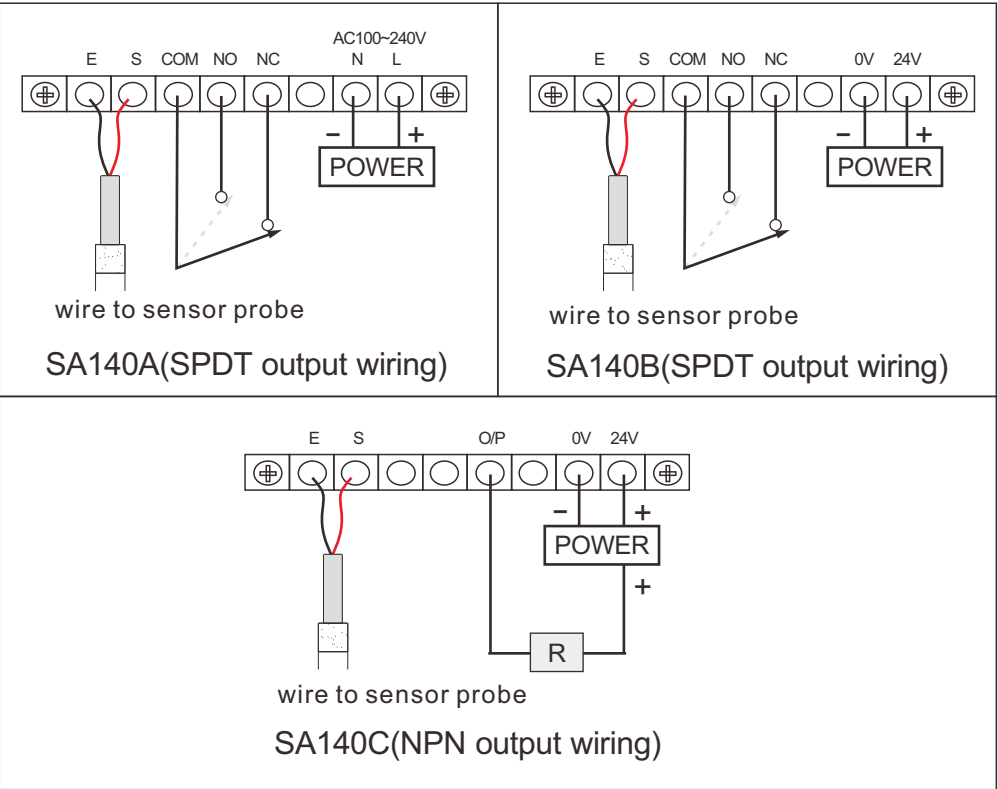
WIRING INSTRUCTIONS

- Probe has not come into contact with medium – LED off NC and COM terminals are connected (usually referred to as B)
- Probe contacts medium: LED turns on without delay NO and COM terminals are connected (referred to as A)

Operation mode	Indicator LED	NPN output	RELAY output
	Red		
	Red		

WIRING PRECAUTIONS

- Turn off power before wiring.
- If working on live circuits, wear insulated gloves and insulated shoes.
- Use insulating tape when appropriate.
- Check for the presence of water within the junction box cover, cable connectors and take good waterproofing measures.



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".

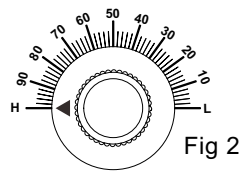


Fig 2

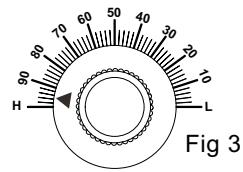


Fig 3

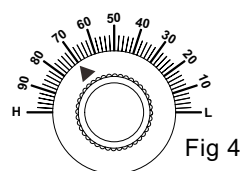


Fig 4

SENSITIVITY ADJUSTMENT

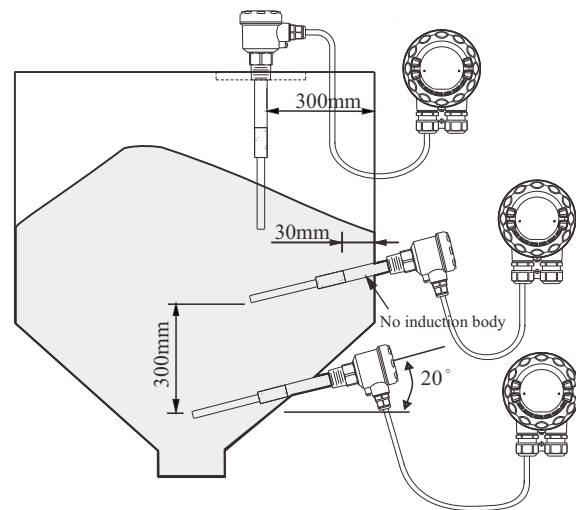
- 1. Make sure the "Indicator" sign does not light up, when the medium does not contact with the probe, and vice versa, when the medium contacts or covers the probe, then the "Indicator" sign lights up.
- 2. Gradually, adjust the capacitance value (turn the knob clockwise to the "L" direction) until "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).

DELAY ADJUSTMENT

- (1) When delay time is "0" second, the LED and the relay signals will be activated simultaneously. The user can set the delay according to his or her requirements.
- (2) After delay set-up, the circuit functions as following: when LED of switch is on after time set-up, relay functions or NPN signal outputs.
- (3) To increase the delay time, use a screwdriver to turn the "delay" trimmer clockwise. To decrease the delay time, turn the "delay" trimmer counterclockwise.

INSTALLATION (SEE THE SKETCH BELOW)

- 1. Top mounted: Minimum distance should be 300mm between the probe and wall.
- 2. The insulated probe should protrude at least 30mm from the tank wall.
- 3. Side mounting angle: roughly 20 degrees.
- 4. The conduit and wiring should face downward.



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 $\phi 8\text{mm} \sim \phi 10\text{mm}$
Level up & down but switch / relay no response	Sensitivity Adjustment knob is activated by mistake	Position of Sensitivity Adjustment knob is abnormal	Re-adjust sensitivity
	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	Rough and fine adjustment remain non-active	Please contact your distributor or FineTek directly
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	Rough and fine adjustment remain active	Please contact your distributor or FineTek directly
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



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