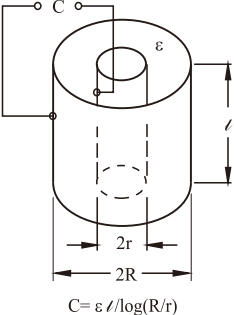


SA19 Multi-functional Static Capacitance Level Switch

Operation Manual

WORKING PRINCIPLE

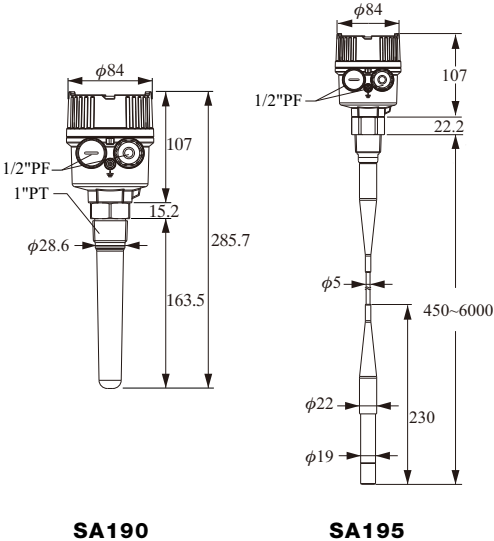
Taking the measured target as the medium, it detects the capacitance between the sensor bar and the bucket wall (grounding electrode) using the sensor bar. When the sensor bar is covered by the material, the capacitance will be increased. Once it matches the value set on the internal circuit of the switch, it will generate high frequency resonance and detect resonance signal, which will be then converted into switching action for the user in application.



FEATURES

- Built-in compact junction box doesn't consume much installation space.
- 19~30Vdc power supply is equipped with green LED indicator.
- Probe made of PPS material can be used in both acid and alkaline environments.
- SPDT relay output mode.
- 0~6 sec delay adjustment and status shown by red LED signal
- 4-stage DIP switch is used to adjust sensitivity.
- Failure safe low/high mode (FSL/FSH).

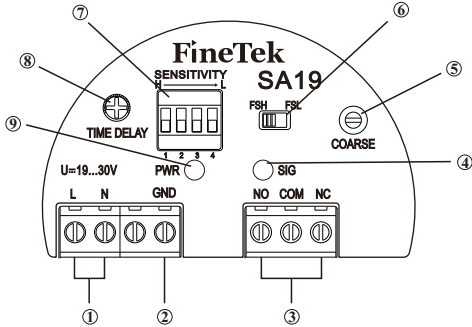
WORKING PRINCIPLE



SPECIFICATION

Power supply	19~30Vdc
Measuring range	ϵ :(dielectric constant) ≥ 2.5
Sensitivity	10 stages, 1~10pF
Storage temp.	-40~85°C
Operating temp. in ambient air	-40~85°C
Operating temp. in bin	SA190: -40~120°C(PPS) SA195: -40~85°C
Working pressure	SA190: 25 Bar SA195: 6 Bar
Signal output	SPDT Relay: 5A/250Vac 5A/28Vdc PNP transistor: 300mA
Protection level	IP67(Aluminum housing)
External diameter of cable applicable to conduit	$\phi 6 \sim 10\text{mm}$

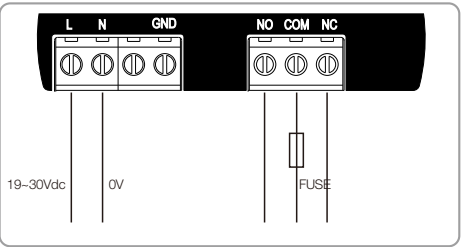
DESCRIPTION OF FEATURES



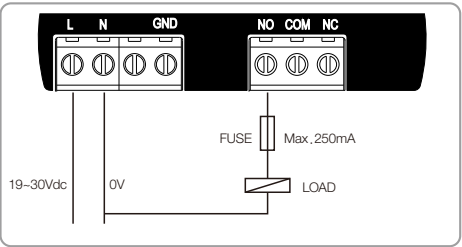
Failure Mode	Material Level	Output Signal	LED Indicator	
			Power Green	SIG Red
FSH				
FSL				
Power supply failure				

: ON : OFF

- ① : Power supply input terminal
- ② : Grounding terminal
- ③ : Output contact terminal
- ④ : Alarm signal
- ⑤ : Calibration knob
- ⑥ : Failure mode switch
- ⑦ : Sensitivity adjustment switch
- ⑧ : Delay output adjustment knob
- ⑨ : Power supply indicator

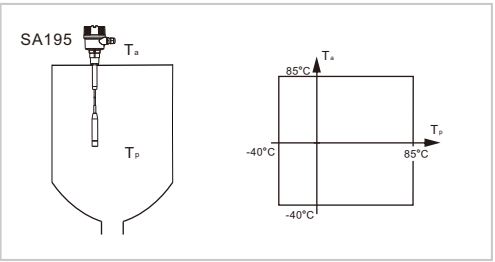
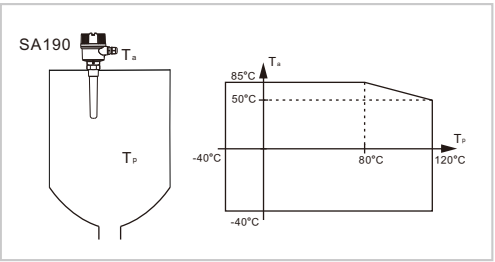


Relay Wiring



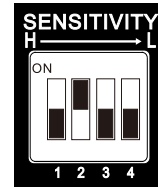
PNP Wiring

RESTRICTION ON OPERATING TEMP. IN AMBIENT AIR/BIN

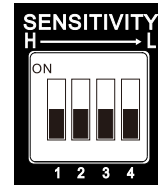


ADJUSTMENT INSTRUCTIONS

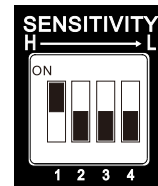
1. If it is already on the equipment tank, please make sure the tank is empty before calibration.
2. Connect with 19~30Vdc power supply, then the green power LED indicator will turn ON.
3. The company product provides the following factory settings:
The sensitivity adjustment switch 2 is ON (Figure 1), output delay is about 2~3 seconds, and the failure mode is FSL.
4. Confirm whether it needs to be calibrated:
Turn OFF all sensitivity adjustment switches (Figure 2)
 - (1) When the red LED indicator is OFF, the relay output contact COM/NO is in conducting status, and the sensitivity adjustment switch 1 is ON (Figure 3), if the red LED indicator is OFF, and the relay output contact COM/NO is in conducting status, it indicates the switch needs re-calibration. In this case, please follow step 5.
 - (2) If the red LED indicator is ON, and the relay output contact COM/NC is in conducting status, it indicates the switch needs re-calibration. In this case, please follow step 5.
5. Calibration instructions:
 - (1) Adjust the failure mode as FSL, and turn OFF all sensitivity adjustment switches (Figure 2).
 - (2) Use a flathead screwdriver to rotate the COARSE knob until the red LED indicator is turned OFF.
 - (3) Turn ON the sensitivity adjustment switch 1 (Figure 3), then the red LED indicator will turn ON and the relay output contact COM/NC is in conducting status.
 - (4) Turn OFF all sensitivity adjustment switches (Figure 2), then the red LED indicator will turn OFF, and the relay output contact COM/NO is in conducting status. Repeat step 3~4 to test. It indicates the switch calibration is finished.
 - (5) The user should control the sensitivity setting based on the material requirements.
6. Sensitivity adjustment:
Toggle up numbers 1, 2, 3 and 4 to adjust the sensitivity level at stages 1~10.



(Figure 1)

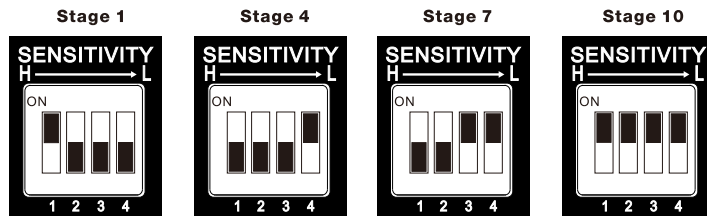


(Figure 2)



(Figure 3)

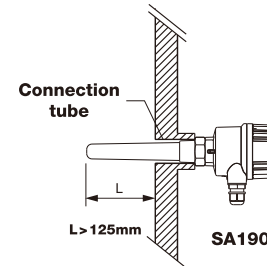
Instance:



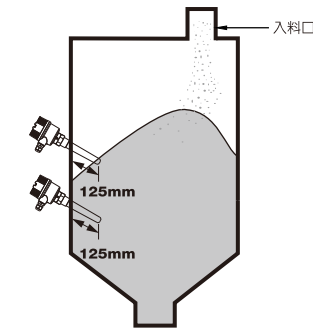
7. Sensitivity adjustment recommendation:

Model	Measured Media Constant	Tank Material	Recommended Sensitivity Setting
SA190	>2.5	Metal	
		Non-metal	
SA195	>2.5	Metal	
		Non-metal	

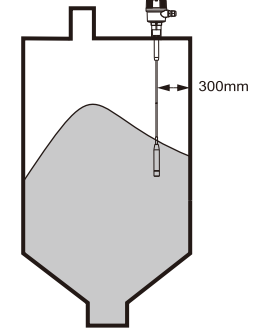
INSTALLATION INSTRUCTIONS



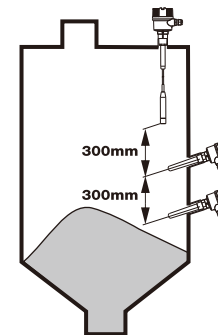
When installing SA190 horizontally, the probe should be extended into the tank for more than 125mm. Incorrect operation may be avoided if the connection tube contains some material residuals. The sensitivity level can't be adjusted if the connection tube is too close to the sensor bar.



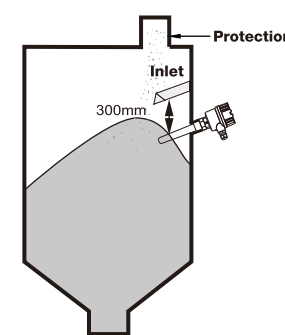
When installing SA190 with an inclined angle, the probe should be extended into the tank for more than 125mm.



When installing upwards, the position of the angle of repose should be taken into consideration, and the probe must come into contact with the target material. When installing the SA195 steel rope type, please note that the minimum distance between the sensor bar and the tank wall should be 300mm.

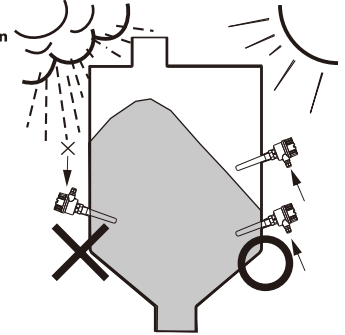


When installing multiple switches simultaneously, the spacing between the switches should be 300mm or above.



Avoid installing the switch near the inlet, so as to reduce the damage on the probe when feeding material.

If the switch must be installed near the inlet, please add the protection board 300mm above the switch.



The wire outlet of the junction box must face downwards, and the cable connector must be fastened. It prevents rain from leaking into the junction box, which may damage the internal structure and circuit.



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