



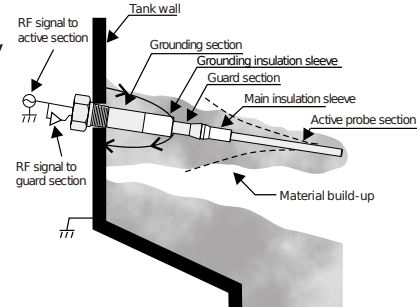
HiTECH TECHNOLOGIES INC  
Goop-proof RF Point Switches

# PRODUCT INTRODUCTION

## OPERATING PRINCIPLE

The SAL Series is an RF admittance point level sensor comprising an active probe section, guard section and grounding section with insulation sleeves between the sections. The SAL is designed to monitor for the presence or absence of a target material by detecting the change of admittance between the active and grounding sections, which is caused by the change from material presence to absence or the reverse.

The SAL Series features automatic build-up immunity which is especially helpful with target materials that are sticky or pack between the vessel wall and the probe. The guard section is used to provide this immunity and is activated with the same RF signal as the active probe section. Since current cannot flow between the same potentials, the guard section effectively blocks the current flow from the active probe through the build-up to the grounding section at the vessel wall. Therefore the guard section eliminates the sensing of the material build-up, ensuring the accuracy and application reliability of the sensor.



SAL18	SAL17
Provides the highest degree of performance and reliability over the widest range of applications	Provides high performance and reliability with a lower price point
Setup by setting sensitivity DIP switch and pushbutton calibration in empty vessel only	Setup by 2-step potentiometer adjustment for sensitivity setting, calibration with potentiometers in empty vessel and also with material present for best results
Time delay adjustable for BOTH material presence and material absence detection conditions; 0-30s	Time delay adjustable for material presence detection condition only; 0-6s
Very wide assortment of probe styles, material and process connections	For use with liquids, slurries and solids, including those that stick or build-up
Includes driven shield feature, automatic material build-up immunity (see illustration)	Includes driven shield feature, automatic material build-up immunity (see illustration)
cUL <sub>us</sub> Approval for Ordinary Locations, CE Mark	cFM <sub>us</sub> Approved for Ordinary Locations (without lens in cover)

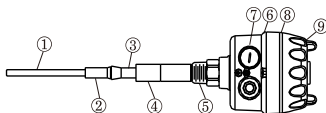
## FEATURES

- ✓ Universal power supply 20-250VAC/VDC
- ✓ Local LED indication (certain versions)
- ✓ Pushbutton calibration (SAL18 model)
- ✓ Guard section provides automatic material build-up immunity
- ✓ Pushbutton test function (SAL18)
- ✓ Independent adjustable time delay, uncovered-to-covered and covered-to-uncovered (SAL18)
- ✓ Remote test function
- ✓ Bin temperature up to 842°F (450°C) available
- ✓ Standard, mini, cable and high temperature probes

## INDUSTRY USE

- ✓ Concrete Production
- ✓ Cement
- ✓ Asphalt
- ✓ Agriculture
- ✓ Feed & Grain Processing
- ✓ Plastic Processing
- ✓ Food
- ✓ Pharmaceutical
- ✓ Chemical
- ✓ Ceramic
- ✓ Water/Wastewater
- ✓ Steel

## STRUCTURE FOR STANDARD PROBE (TYPE A)



1. Active section: Made of 304SS, 316SS or 316LSS
2. Main insulation sleeve: Low dielectric material, made of PTFE, used to insulate the active probe section from the guard section
3. Guard section: Used to eliminate sensing material build-up
4. Insulation sleeve: low dielectric, made of PTFE, used to insulate the guard section against grounding section
5. Connection: 1"NPT (standard)
6. Housing: diecast aluminum, powder coated
7. Conduit entrance: 3/4" NPT
8. Oring: rubber
9. Cap: diecast aluminum, powder coated

# APPLICATIONS

For Material Presence Detection

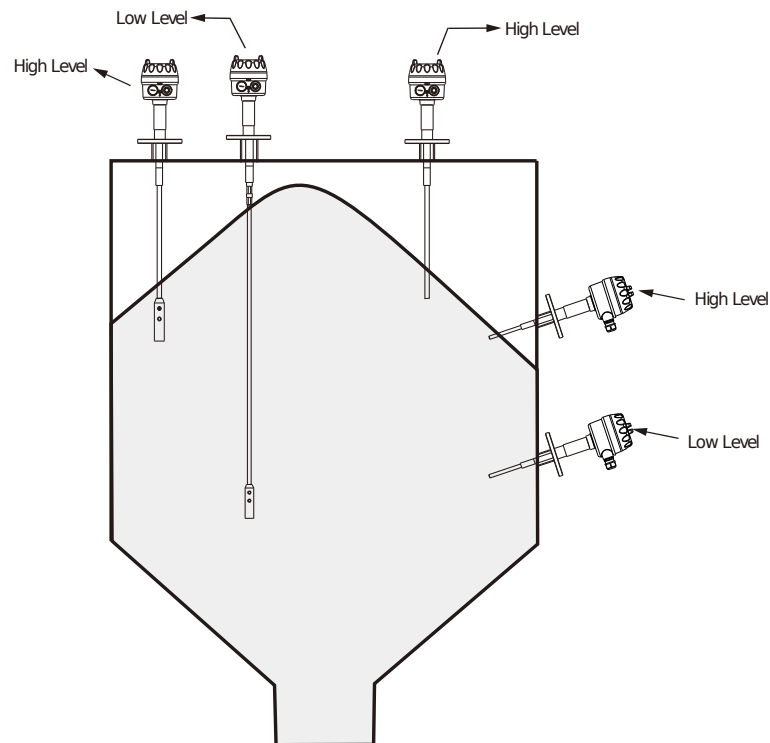
- ÿ Trigger an alarm or illuminate an indicating light
- ÿ Close a valve to shut off vessel filling of material
- ÿ Open a valve to discharge material from a temporary storage vessel

For Material Absence Detection

- ÿ Trigger an alarm or illuminate an indicating light
- ÿ Close a valve to stop the discharge of material
- ÿ Open a valve to begin filling vessel with material

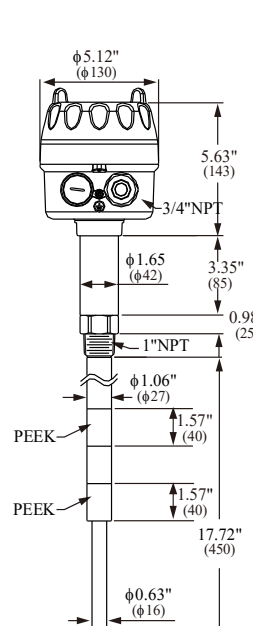
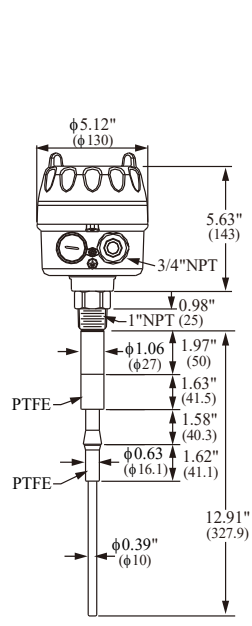
Material and Approximate Dielectric Constant (for reference)

LIQUID	APPROX. DIELECTRIC CONSTANT	POWDER BULK SOLID	APPROX. DIELECTRIC CONSTANT
Water	81	Flour	2.4
Vitriol	37	Styrofoam	2
Methanol	30	Whole Corn	1.8
Butanol	11	Milk Powder	1.8
Ethanol	2.5	Talc	1.8
Cooking Oil	2~4	Rice bran	1.7
Diesel Oil	2.1	Plastic Pellet	1.5~1.8



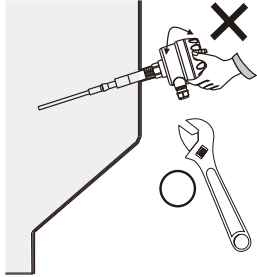
# TYPES & SPECIFICATIONS – SAL17 SERIES

Dimensions	Inch (mm)	Inch (mm)
Type	Type A: Standard	Type B: High Temperature
Model no.	SAL1700	SAL1700
Ambient temp.	-40°F~176°F (-40°C~80°C)	
Process temp.	-40°F~302°F (-40°C~150°C)	-40°F~450°F (-40°C~232°C)
Pressure	290psi (20bar)	
Probe material	304SS/316SS/316LSS	
Housing material	Diecast Aluminum (powder coated)	
Housing protection	NEMA Type 4, 4X; IP65	
Insulator material	PTFE	PEEK
Supply voltage	20~250Vac/Vdc, 50/60Hz	
Output rating	ONE Relay Output 5A @ 240Vac, 5A @ 28Vdc (Option: Two Relay Output) ONE NPN/PNP Output 400mA @ 60Vac/Vdc (Option: Two NPN/PNP Output)	
Calibration	2-Step Calibration w/ Potentiometer Adjustment	
Fail safe mode	FSH/FSL	
Delay time	0~30s (On Material Detection Only)	
Normal indicator	Green LED	
Alarm indicator	Red LED	
Power consumption	Max.:15VA	
Remote test	Jumper RT1/RT2 for Test	

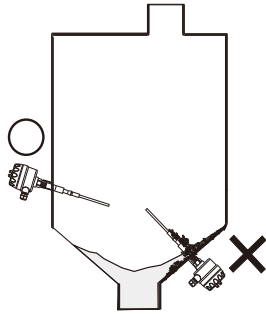


Dimensions		
Type	Type E: Cable Extended High Temperature	Type F: Mini
Model no.	SAL1701	SAL1702
Ambient temp.	-40°F~176°F (-40°C~80°C)	
Process temp.	-40°F~450°F (-40°C~232°C)	-40°F~302°F (-40°C~150°C)
Pressure	290psi (20bar)	
Probe material	304SS	304SS/316SS/316LSS
Housing material	Diecast Aluminum (powder coated)	
Housing protection	NEMA Type 4, 4X; IP65	
Insulator material	PTFE	
Supply voltage	20~250Vac/Vdc, 50/60Hz	
Output rating	ONE Relay Output 5A @ 240Vac, 5A @ 28Vdc (Option: Two Relay Output) ONE NPN/PNP Output 400mA @ 60Vac/Vdc (Option: Two NPN/PNP Output)	
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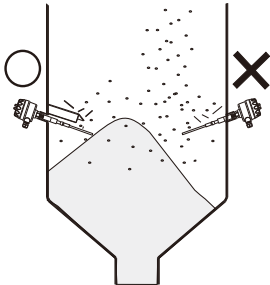
## PRE-INSTALLATION



- X: Do NOT use enclosure to thread probe into its process connection
- O: Thread probe into process connection by the hexagon neck using a wrench

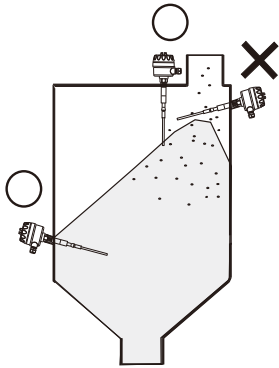


- X: Do NOT mount the sensor on a slanting wall like a bin cone section as shown
- O: For best performance in low level installations mount the probe in verticle bin walls

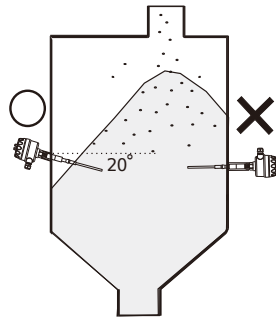


- X: Avoid mounting the probe in the direct path of falling material
- O: Installation of a protective baffle above the probe is recommended, especially with heavy material or when material might come in contact with the probe from above

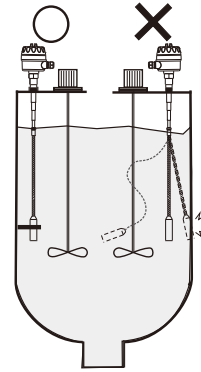
# INSTALLATION



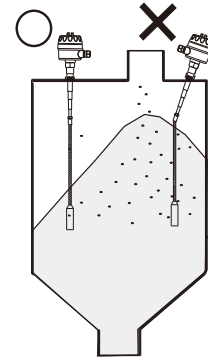
- X: Do NOT mount the sensor probe in the path of the incoming material flow
- O: For best performance it is recommended to use top mounting for high level and side mounting for low level applications



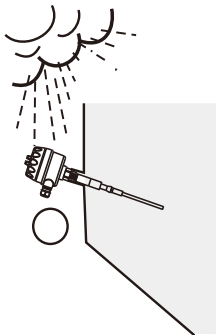
- X: Do NOT mount the sensor probe horizontally
- O: For best performance it is recommended to mount side mounted probes at 20° downward angle



- X: Cable extended probes can become tangled with mixing equipment, exercise caution when choosing a mounting location
- O: For best performance it is recommended to secure cable extended probes using an insulated bracket



- X: In top mounted installations, do not install at any angle as this can damage the cable extended probe
- O: In top mounted installations mount the cable extended probe plumb



- O: When installing any probe make sure the conduit entrances are pointing down to eliminate potential damage to sensor from conduit draining into enclosure or in case conduit is loose