ISO-9001:2015 certified

SAL Series RF Admittance Point Level Sensor

More than just another level measurement company ….

A⁺Fine

Aplus Finetek Sensor, Inc.

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.
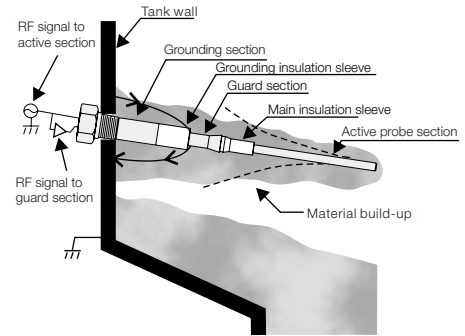
| SAL18	SAL17
Provides the highest degree of performance and reliability over the widest range of applications	Provides high performance and reliability with a lower price point
Setup by setting sensitivity DIP switch and pushbutton calibration in empty vessel only	Setup by 2-step potentiometer adjustment 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)
cULus Approval for Ordinary Locations, CE Mark	cFMus 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 842^0F (450^0C) 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)
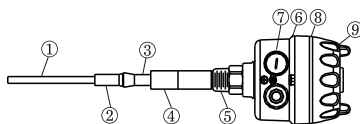
1. Active section: Made of 304SS, 316SS or 316LSS
2. Main insulation sleeve: Low dielectric material, made of PTFE, used to insulate the active probe section from the guard section
3. Guard section: Used to eliminate sensing material build-up
4. Insulation sleeve: low dielectric, made of PTFE, used to 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
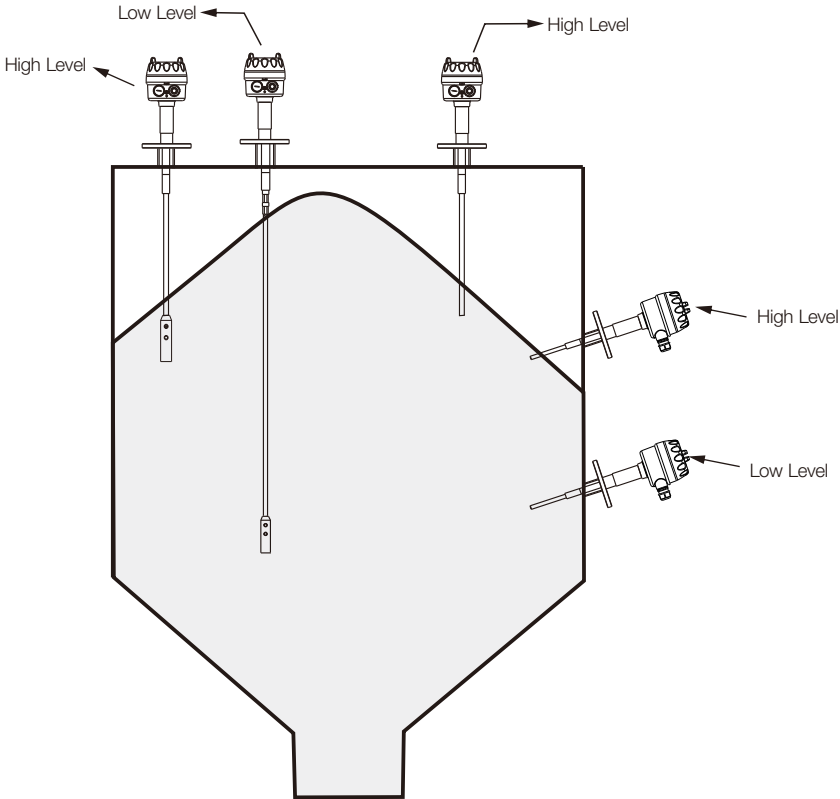
APPLICATIONS

For Material Presence Detection
- Trigger an alarm or illuminate an indicating light
- Close a valve to shut off vessel filling of material
- Open a valve to discharge material from a temporary storage vessel
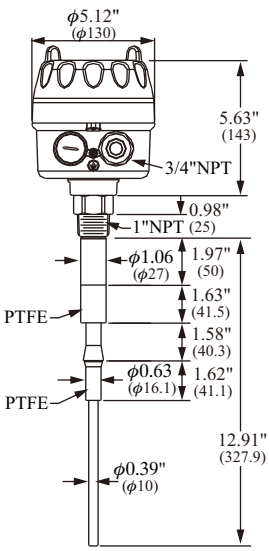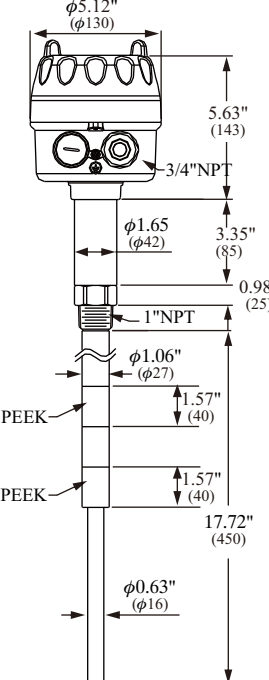
For Material Absence Detection
- Trigger an alarm or illuminate an indicating light
- Close a valve to stop the discharge of material
- Open a valve to begin filling vessel with material
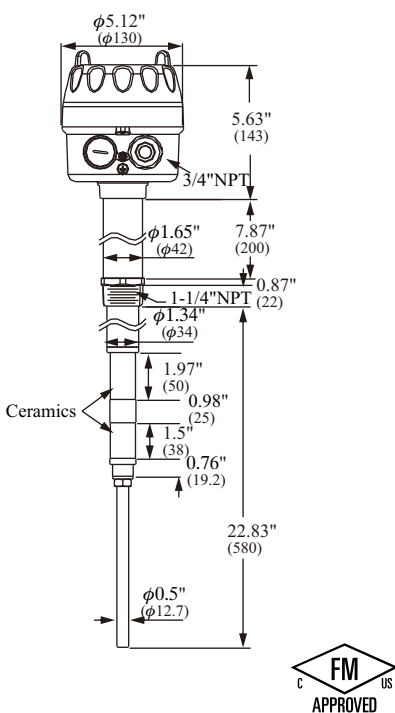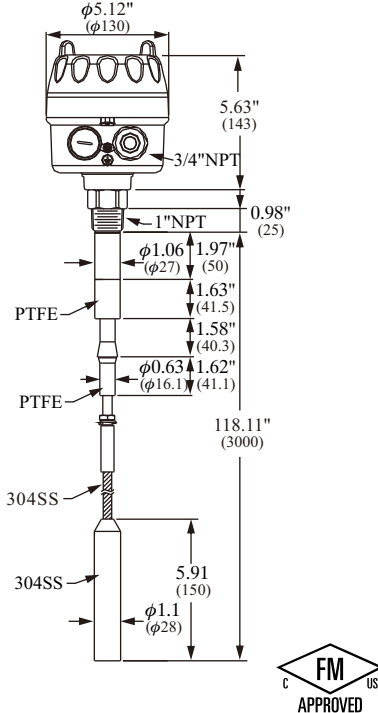
Material and Approximate Dielectric Constant (for reference)

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
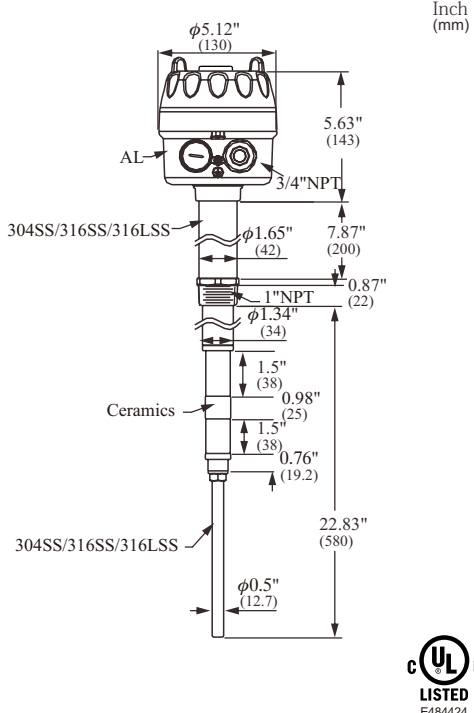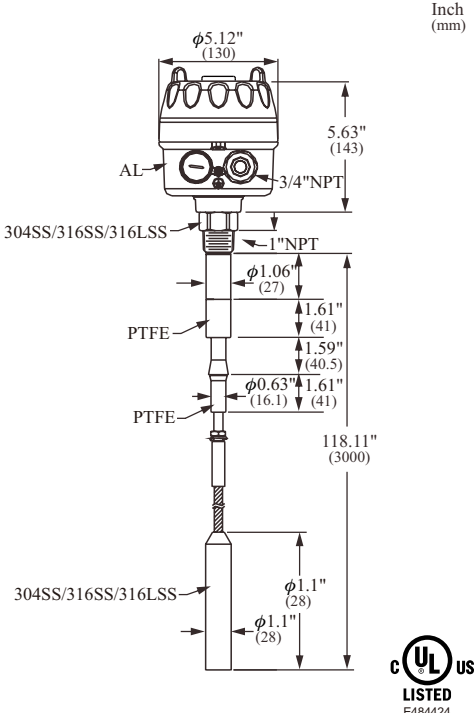
Dimensions		
	Inch (mm)	Inch (mm)
	φ5.12" (φ130), 5.63" (143), 3/4"NPT, 0.98" (25), 1"NPT, φ1.06" (φ27), 1.97" (50), 1.63" (41.5), PTFE, 1.58" (40.3), φ0.63" (φ16.1), 1.62" (41.1), PTFE, 12.91" (327.9), φ0.39" (φ10), FM APPROVED C US	φ5.12" (φ130), 5.63" (143), 3/4"NPT, φ1.65 (φ42), 3.35" (85), 0.98" (25), 1"NPT, φ1.06" (φ27), PEEK, 1.57" (40), PEEK, 1.57" (40), 17.72" (450), φ0.63" (φ16), FM APPROVED C US
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	

	Inch (mm)	Inch (mm)
Dimensions	φ5.12" (φ130); 5.63" (143); 3/4"NPT; φ1.65" (φ42); 7.87" (200); 1-1/4"NPT; 0.87" (22); φ1.34" (φ34); Ceramics; 1.97" (50); 0.98" (25); 1.5" (38); 0.76" (19.2); 22.83" (580); φ0.5" (φ12.7); FM APPROVED	φ5.12" (φ130); 5.63" (143); 3/4"NPT; 1"NPT; 0.98" (25); φ1.06" (φ27); 1.97" (50); PTFE; 1.63" (41.5); 1.58" (40.3); φ0.63" (φ16.1); 1.62" (41.1); PTFE; 118.11" (3000); 304SS; 304SS; 5.91" (150); φ1.1 (φ28); FM APPROVED

Type	Type C: Super High Temperature	Type D: Cable Extended
Model no.	SAL1700	SAL1701
Ambient temp.	-40°F~176°F (-40°C~80°C)	
Process temp.	-40°F~842°F (-40°C~450°C)	-40°F~302°F (-40°C~150°C)
Pressure	ATM	290psi (20bar)
Probe material	304SS/316SS/316LSS	304SS
Housing material	Diecast Aluminum (powder coated)	
Housing protection	NEMA Type 4, 4X; IP65	
Insulator material	Ceramics	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)	
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	 Inch (mm) φ5.12" (φ130) 5.63" (143) 3/4"NPT φ1.65" (φ42) 3.35" (85) 304SS/316SS/316LSS 0.98" (25) 1"NPT φ1.06" (φ27) 1.97" (50) 1.63" (41.5) PTFE 1.58" (40.3) φ0.63" (φ16.1) 1.62" (41.1) 118.11" (3000) 304SS 304SS 5.91" (150) φ1.1" (φ28) FM APPROVED	 Inch (mm) φ5.12" (φ130) 5.63" (143) 3/4"NPT 0.87" (22) 1"NPT 2.42" (61.5) PTFE FM APPROVED
Type	Type E: Cable Extended High Temperature	Type F: Mini
Model no.	SAL1701	SAL1702
Ambient temp.	-40^{0}F~176^{0}F (-40^{0}C~80^{0}C)	
Process temp.	-40^{0}F~450^{0}F (-40^{0}C~232^{0}C)	-40^{0}F~302^{0}F (-40^{0}C~150^{0}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)	
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	Inch (mm) φ5.12" (130) 5.63" (143) AL — 3/4"NPT 0.98" 1"NPT (25) 304SS/316SS/316LSS — φ1.06" (27) 1.97" (50) PTFE — 1.57" (40) 1.57" (40) PTFE — φ0.63 (16.4) 1.65" (42) 12.83" (326) φ0.39" (10) 304SS/316SS/316LSS c UL us LISTED E484424	Inch (mm) φ5.12" (130) 5.63" (143) AL — 304SS/316SS/316LSS — 3/4"NPT φ1.65 (42) 3.35" (85) 0.79" (25) 1"NPT φ1.06" (27) PEEK — 1.57" (40) PEEK — 1.57" (40) 17.72" (450) φ0.5" (12.7) 304SS/316SS/316LSS c UL us LISTED E484424
Type	Type A: Standard	Type B: High Temperature
Model no.	SAL1810	SAL1810
Ambient temp.	-40°F~140°F(-40°C~60°C); UL file number E484424 -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 24Vdc(Option:Two Relay)	
	ONE NPN/PNP Output:400mA/60Vac/Vdc(Option:Two NPN/PNP)	
Calibration	Pushbutton	
Fail safe mode	FSH/FSL	
Delay time	0~30s (Each for Material Presence Detection AND Material Absence Detection)	
Normal indicator	Green LED	
Alarm indicator	Red LED	
Power consumption	Max.:15VA	
Test function	Internal Pushbutton Test / Jumper RT1/RT2 for Remote Test	

| Dimensions		
Type	Type C: Super High Temperature	Type D: Cable Extended
Model no.	SAL1810	SAL1811
Ambient temp.	-40⁰F~140⁰F(-40⁰C~60⁰C); UL file number E484424 -40⁰F~176⁰F(-40⁰C~80⁰C)	
Process temp.	-40⁰F~842⁰F(-40⁰C~450⁰C)	-40⁰F~302⁰F(-40⁰C~150⁰C)
Pressure	ATM	290psi(20bar)
Probe material	304SS/316SS/316LSS	
Housing material	Diecast Aluminum (powder coated)	
Housing protection	NEMA Type 4, 4X; IP65	
Insulator material	Ceramics	PTFE
Supply voltage	20~250Vac/Vdc,50/60Hz	
Output rating	ONE Relay Output: 5A 240Vac/5A 24Vdc(Option:Two Relay) ONE NPN/PNP Output:400mA/60Vac/Vdc(Option:Two NPN/PNP)	
Calibration	Pushbutton	
Fail safe mode	FSH/FSL	
Delay time	0~30s (Each for Material Presence Detection AND Material Absence Detection)	
Normal indicator	Green LED	
Alarm indicator	Red LED	
Power consumption	Max.:15VA	
Test function	Internal Pushbutton Test / Jumper RT1/RT2 for Remote Test	

Dimensions	Inch (mm)	Inch (mm)
Type	Type E: Cable Extemded High Temperature	Type F:Mini
Model no.	SAL1811	SAL1812
Ambient temp.	-40⁰F~140⁰F(-40⁰C~60⁰C); UL file number E484424 -40⁰F~176⁰F(-40⁰C~80⁰C)	
Process temp.	-40⁰F~450⁰F(-40⁰C~232⁰C)	-40⁰F~302⁰F(-40⁰C~150⁰C)
Pressure	290psi(20ar)	
Probe material	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 24Vdc(Option:Two Relay) ONE NPN/PNP Output:400mA/60Vac/Vdc(Option:Two NPN/PNP)	
Calibration	Pushbutton	
Fail safe mode	FSH/FSL	
Delay time	0~30s (Each for Material Presence Detection AND Material Absence Detection)	
Normal indicator	Green LED	
Alarm indicator	Red LED	
Power consumption	Max.:15VA	
Test function	Internal Pushbutton Test / Jumper RT1/RT2 for Remote Test	

PRE-INSTALLATION
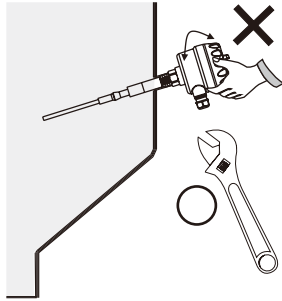
X: Do NOT use enclosure to thread probe into its process connection
O: Thread probe into process connection by the hexagon neck using a wrench
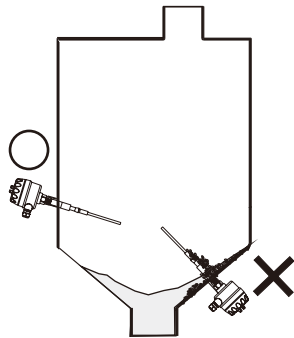
X: Do NOT mount the sensor on a slanting wall like a bin cone section as shown
O: For best performance in low level installations mount the probe in verticle bin walls
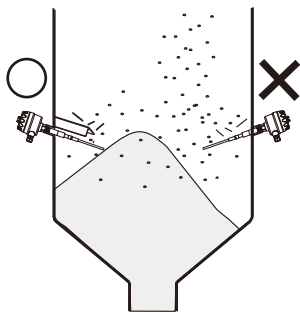
X: Avoid mounting the probe in the direct path of falling material
O: Installation of a protective baffle above the probe is recommended, especially with heavy material or when material might come in contact with the probe from above
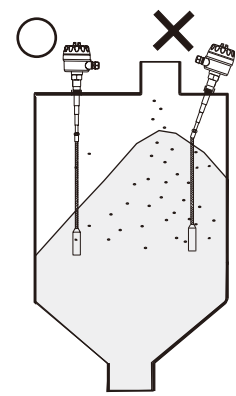
INSTALLATION
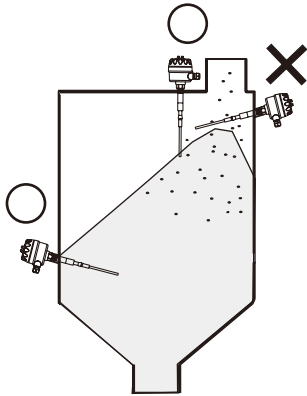
X: Do NOT mount the sensor probe in the path of the incoming material flow

O: For best performance it is recommended to use top mounting for high level and side mounting for low level applications
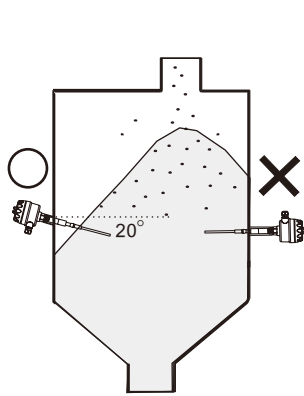
X: Do NOT mount the sensor probe horizontally

O: For best performance it is recommended to mount side mounted probes at 20^0 downward angle
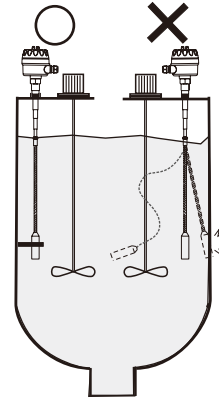
X: Cable extended probes can become tangled with mixing equipment, exercise caution when choosing a mounting location

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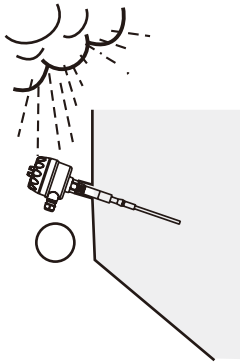
O: When installing any probe make sure the conduit entrances are pointing down to eliminate potential damage to sensor from conduit draining into enclosure or in case conduit is loose

ORDER INFORMATION

SAL17 1 0 0 0 0 C A 0 X C U ☐

Enclosure Type
- 0: Without LED Lens (must select if cFMus approval is required)
- 1: With LED Lens (cFMus approval is NOT available)

Model
- 0: Probe   1: Cable   2: Mini

Certification
- 0: Ordinary Locations *
- * If Enclosure type selection is 0, cFMu Approved for Ordinary Locations
- If Enclosure type selection is 1, Self-Certified for Ordinary Locations

Housing
- 0: Standard   1: With Cover Chain

Conduit Entrance
- 0: 3/4"NPT

Power & Output
- C: 20-250Vac/Vdc, 50/60Hz; TWO Relay Output; 5A @ 250Vac / 30Vdc
- D: 20-250Vac/Vdc, 50/60Hz; TWO NPN/PNP Output; 400mA @ 60Vac/Vdc
- E: 20-250Vac/Vdc, 50/60Hz; ONE Relay Output; 5A @ 250Vac / 30Vdc
- F: 20-250Vac/Vdc, 50/60Hz; ONE NPN/PNP Output; 400mA @ 60Vac/Vdc

Probe Type
- A: Standard Probe
- B: High Temperature Probe
- C: Super High Temperature Probe
- D: Cable Extended
- E: Cable Extended High Temperature
- F: Mini

Probe Material
- 0: 304SS*
- 1: 316SS*
- 2: 316LSS*

* 316SS and 316LSS material available ONLY with
  Types A, B, C and F. Types D and E MUST select 304SS.

Probe Length

Type A, B and C can select X, 0-4 (use below table)
Type D and E can select X, 1-A (use below table)
Type F can select X only
X: Standard

0: Below 19" (500mm)	6: Range from 119" to 138"
1: Range from 20" to 39"	7: Range from 139" to 157"
2: Range from 40" to 59"	8: Range from 158" to 177"
3: Range from 60" to 79"	9: Range from 178" to 197"
4: Range from 80" to 98"	A: Range from 198" to 217"
5: Range from 99" to 118"	S: Special

Process Connection

Threaded*:
CU: 3/4" NPT	3U: 1-1/4" NPT
DU: 1" NPT	EU: 1-1/2" NPT

* Smallest threaded process connection for Type A, D and F is 3/4"
  Smallest threaded process connection for Type B and E is 1"
  Smallest threaded process connection for Type C is 1–1/4"

Remarks
Specify exact length required

SAL18 `1` `0` `0` `0` `0` `C` `A` `0` `X` `CU` ` `

Enclosure Type

    0 : Without LED Lens
    1 : With LED Lens

Model

    0: Probe   1: Cable   2: Mini

Certification

    0 : N/A   1 : General Location for UL/$_c$UL$_{us}$

Housing

    0 : Standard   1 : With Cover Chain

Conduit Entrance

    0 : 3/4"NPT

Power & Output

    C : 20~250Vdc/Vac, 50/60Hz; TWO Relay Output; 5A @ 240Vac / 24Vdc
    D : 20~250Vdc/Vac, 50/60Hz; TWO NPN/PNP Output; 400mA @ 60Vac/Vdc
    E : 20~250Vdc/Vac, 50/60Hz; ONE Relay Output; 5A @ 240Vac / 24Vdc
    F : 20~250Vdc/Vac, 50/60Hz; ONE NPN/PNP Output; 400mA @ 60Vac/Vdc

Probe Type

    A: Standard Probe   D: Cable Extended
    B: High Temperature Probe   E: Cable Extended High Temperature
    C: Super High Temperature Probe   F: Mini

Probe Material

    0: 304SS*   1: 316SS*   2: 316LSS*

    * 316SS and 316LSS material available ONLY with
      Types A, B, C and F. Types D and E MUST select 304SS.

Probe Length

    Type A, B and C can select X, 0-4 (use below table)
    Type D and E can select X, 1-A (use below table)
    Type F can select X only
    X: Standard
    0: Below 19" (500mm)
    1: Range from 20" to 39"   6: Range from 119" to 138"
    2: Range from 40" to 59"   7: Range from 139" to 157"
    3: Range from 60" to 79"   8: Range from 158" to 177"
    4: Range from 80" to 98"   9: Range from 178" to 197"
    5: Range from 99" to 118"   A: Range from 198" to 217"
                                     S: Special
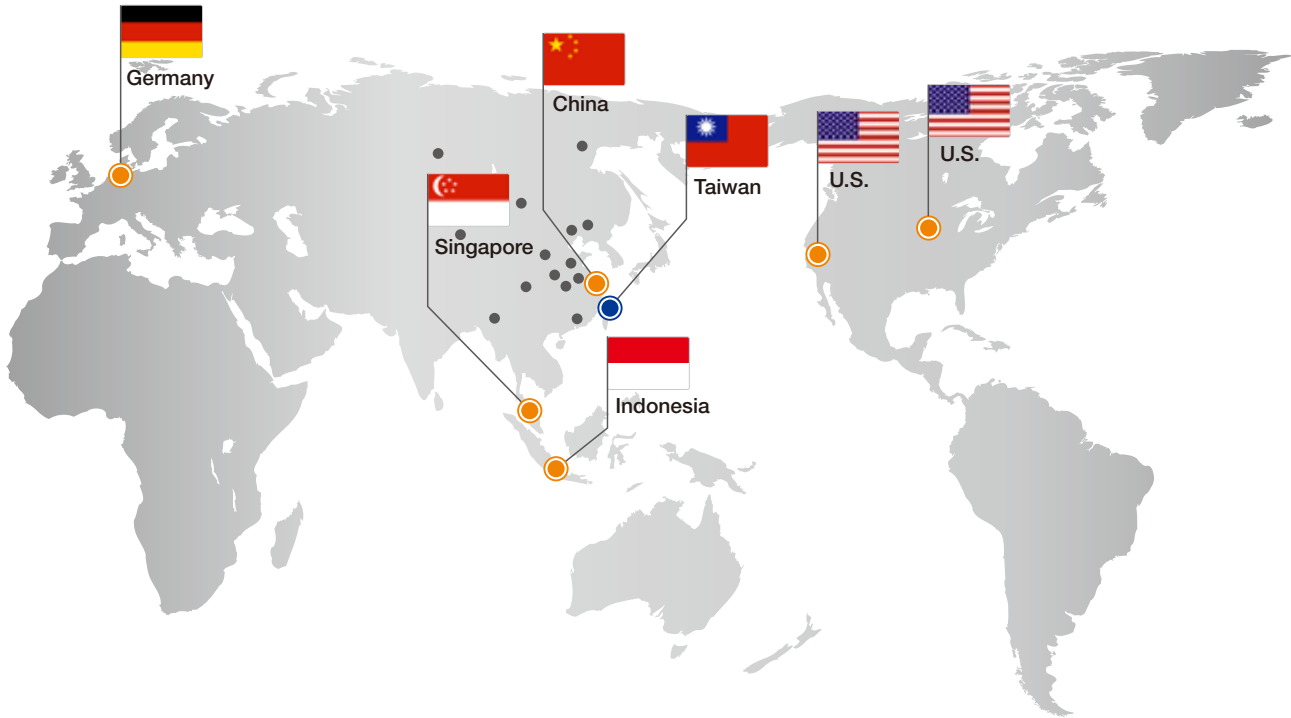
Process Connection

    Threaded*:
    CU: 3/4" NPT   3U: 1-1/4" NPT
    DU: 1" NPT   EU: 1-1/2" NPT

    * Smallest threaded process connection for Type A, D and F is 3/4"
      Smallest threaded process connection for Type B and E is 1"
      Smallest threaded process connection for Type C is 1–1/4"

Remarks

  Specify exact length required

Global Network

■ Asia

Taiwan
FineTek Co., Ltd.
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FAX: 886-2-2268-6682
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FineTek Pte Ltd.
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FAX: 65-6734-1878
EMAIL: info.sg@fine-tek.com

Indonesia
FineTek Co., Ltd
TEL: 62-(021)-2923-1688
FAX: 62-(021)-2923-1988
EMAIL: info.id@fine-tek.com

■ North Amerca

California, U.S.
Aplus Finetek Sensor Inc.
TEL: 1-909-598-2488
FAX: 1-909 598-3188
EMAIL: info@aplusfine.com

Illinois, U.S.
Aplus Finetek Sensor Inc.
TEL: 1-815-632-3132
FAX: 1-815-716-8464
EMAIL: info@aplusfine.com

■ Europe

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FineTek GmbH
Frankfurter Str. 62, OG D-65428
Ruesselsheim, Germany
TEL: 49-(0)6142-17608-0
FAX: 49-(0)6142-17608-20
EMAIL: info@fine-tek.de

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Aplus Finetek Sensor, Inc.

Represented by: