Installation, Operation & Maintenance Instructions

Model AP/APX
RF Admittance Point Level Sensor

Thank you for purchasing the Model AP/APX RF Admittance Point Level Sensor from BlueLevel Technologies. We sincerely appreciate your business and strive to make your experience with us and our products uniquely positive.

⚠ This document contains information necessary to ensure a safe and successful installation. **PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE PROCEEDING** and comply with the section on page 3 of this document pertaining to SAFETY to ensure proper operation of the equipment and personnel safety.

STOP Before discarding the shipping container, please inspect it thoroughly and verify that all parts are accounted for. If you have any questions please do not hesitate to contact us on our website at www.blueleveltechnologies.com, by email bluelevel@blueleveltechnologies.com or by phone at 330-523-5215 or by fax at 330-523-5212.

Contents

Safety Terms & Symbols

WARNING: Warning statements identify conditions or practices that could result in injury or loss of life. Risk of electrical shock exists.

CAUTION: Caution statements identify conditions or practices that could result in damage to this product or other property.

Safety Summary

General Safety

CAUTION: It is important that all instructions within this manual be followed to ensure proper operation of the equipment and safety of operating personnel. The product should be installed, commissioned and maintained by qualified and authorized personnel only. Install according to installation instructions and comply with all National and Local codes. Use electrical wire that is sized and rated for the maximum voltage and current of the application.

Electrical Shock Caution

All Model AP/APX RF Admittance Point Level Sensors may be powered with HIGH VOLTAGE. No operator serviceable parts are inside. All servicing is to be performed by qualified personnel. Each Model AP/APX is provided with a “protective conductor terminal” ⏚ which shall be terminated to earth ground potential (see Connections). This product’s design complies with EN61010-1 installation category II and pollution degree 2.

Safety Summary Cont'd.

Hazardous Location Caution

The Model APX RF admittance point level sensors can be used in Hazardous Locations (refer to Technical Data). These models shall only be used in applications covered by the stated ratings or those considered non-hazardous. Failure to comply could result in damage to personnel and property. The following must be maintained to assure safe operation:

1. **Enclosure Integrity** – The Model APX is manufactured from aluminum, stainless steel and an insulating material. The user or installer should consider the performance of these materials with regard to attack by aggressive substances that may be present in a hazardous location. The dimensions of the enclosure base and cover shall not be altered.

2. **Maintenance** – Power to all circuits must be disconnected before conducting any investigation, setup or maintenance of the unit.

Electromagnetic Compatibility (EMC):
The Model AP/APX RF admittance point level sensor was tested and found to comply with the standards listed below:

Low Voltage Directive:	73/23/EEC
Standard IEC:	61010-1 (ED.2):2004
EMC Emissions	EN 61326-1:2006
EMC Immunity	EN 61326-1:2006
Models:	Model AP/APX 20-250VAC/VDC, 50/60Hz

All test reports and documentation can be obtained from BlueLevel Technologies, Inc.

Mechanical Installation

The Model AP/APX is designed for installation on grounded metal bins and tanks. When not installed on a grounded metal vessel please make sure that a good suitable earth grounding plate is connected to the external ground screw of the units' housing for best operation.

Mounting Location:

1. **Material Flow:** Avoid mounting the Model AP/APX point level sensor under the filling inlet. Ensure that the mounting location will be such that the probe will NOT be in the path of incoming material flow. (Refer to Figure 1).

2. **Top/Side Mounting:** Mounting of the Model AP/APX level sensor for High Level detection on top of the vessel is recommended if possible. Side mounting is recommended for Intermediate or Low Level detection applications. (Refer to Figure 1).

3. **Side Mounting:** For best performance in side mounted installations mounting the Model AP/APX at a downward angle of 20º is recommended to assist with shedding of material away from the probe. Horizontal side mounting should be avoided if possible. (Refer to Figure 2).

Figure 1

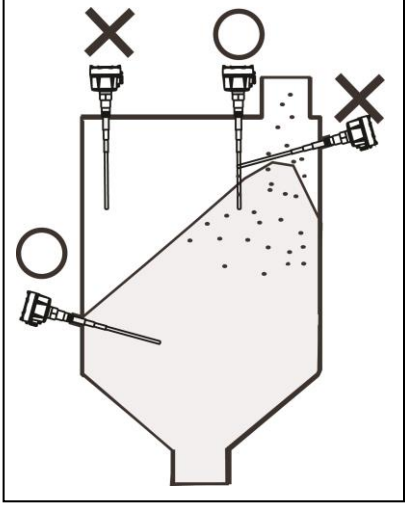
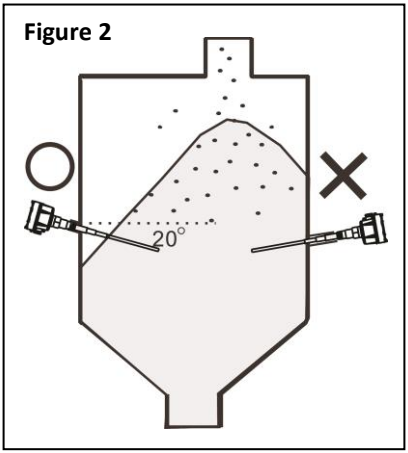


Figure 2

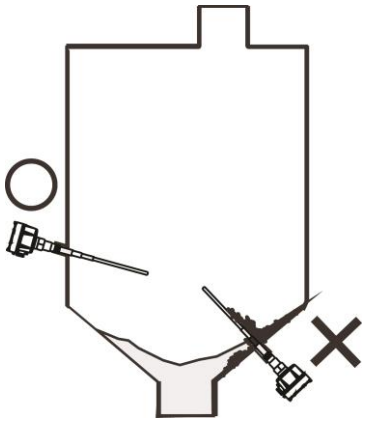


Mechanical Installation Cont'd

Mounting Location Cont'd:

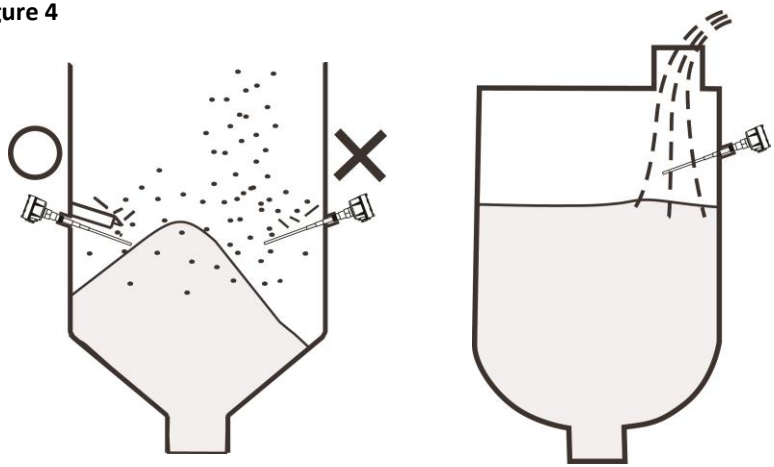
4. **Cone Mounting:** Do not mount the Model AP/APX point level sensor on the sloping wall of a cone section where material can accumulate on the sensor probe. Mount in the straight vertical wall section. (Refer to Figure 3).

Figure 3



5. **Out of Fill Stream:** Avoid mounting the Model AP/APX point level sensor under a fill inlet as the incoming flow can influence the performance of the level sensor. Use a protective baffle as a shield when necessary to protect the mechanical integrity of the probe and deflect material flow. (Refer to Figure 4).

Figure 4



Mechanical Installation Cont'd

Mounting Location Cont'd:

6. **Vessel Contact:** Install the Model AP/APX probe where it will not come in contact with any internal structure of the vessel.

7. **Cable Extended Probe Mounting:** Cable probe units are mounted on top of the vessel roof. Mounting on a sloping roof in a slanting manner can cause damage to the probe. *Mount the cable probe so the cable is plumb. (Refer to Figure 5).*

8. **Cable Extended Probe w/ Agitators:** A bracket may be needed to keep cable probe from becoming tangled with equipment inside the vessel. *Bracket in contact with sensor counterweight MUST be insulated from the counterweight*. *No metal grounded contact is allowed to touch the counterweight.*

Figure 5

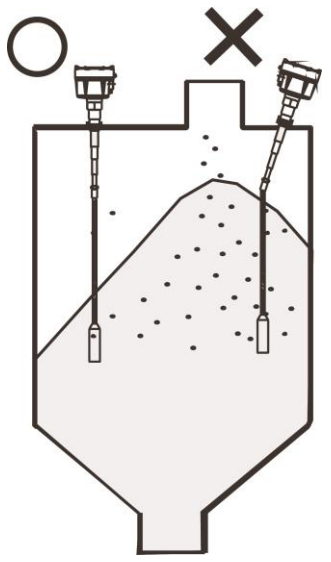
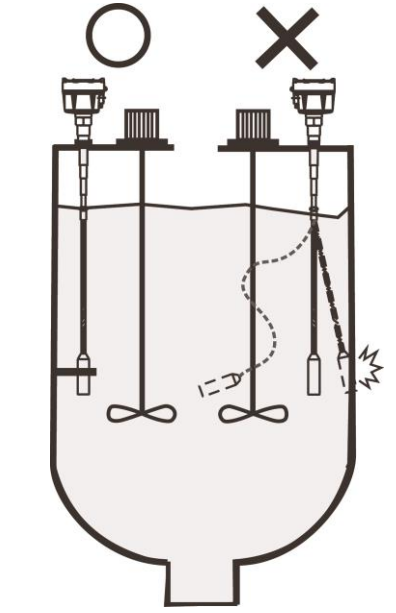


Figure 6



Mechanical Installation Cont'd.

Mounting Location Cont'd:

9. **Driven Shield Penetration:** Select a location that will ensure that the driven shield section of the probe will protrude into the vessel and *is not recessed in the mounting neck*.

10. **Multiple Probe Proximity:** If more than one Model AP/APX sensor is mounted in the vessel, ensure that the sensor locations are ≥ 18" (457mm) away from each other. This is the minimum separation distance that must be observed.

11. **Super High and High Temperature Probes:** When installing the Super High and High Temperature probes you must ensure that the ambient temperature specifications of the unit will not be exceeded. While the maximum internal bin or process temperatures are extended up to 450ºF (232ºC) for the High Temp model and 842ºF (450ºC) for the Super High Temp model, the maximum ambient temperature for the electronics enclosure must be maintained at or below 176ºF (80ºC). NOTE: Maximum internal bin press for Super High Temperature probe is atmospheric (1 bar).

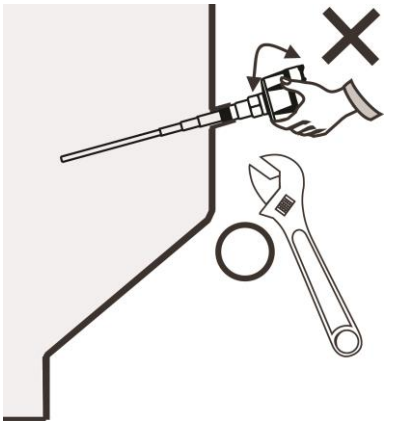
Attaching Using a Coupling Process Connection:

Use a welded coupling of appropriate size for mounting the Model AP/APX onto the vessel.

<u>TOP MOUNT</u> (Figure 2)

1) Locate and cut hole in vessel to fit the outside diameter of a half coupling of appropriate size based on the Model AP/APX unit you have. The standard threaded connection is ¾" NPT.

Figure 7



Mechanical Installation Cont'd.

Attaching Using a Coupling Process Connection Cont'd:

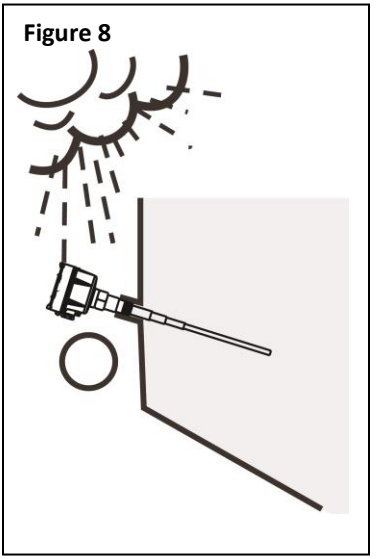
2) Position coupling onto bin and weld.

3) Insert probe through fitting. *Do not use sealant tapes (Teflon tape) or putties.* Screw the Model AP/APX into the coupling by its hexagon neck with a wrench (Refer to Figure 7).

Continuity between sensor mounting point and vessel wall **MUST** be maintained to assure proper probe operation.

4) Ensure that conduit entrances are angled or **pointing downward** by turning them in the correct orientation (Refer to Figure 8).

Figure 8



Instrument Function

Principle of Operation:

In a simple capacitance probe type sensing element, when the material level rises and covers the probe, the capacitance within the circuit between the probe and the medium/material (conductive applications) or the probe and the vessel wall (insulating applications) increases. This is due to the dielectric constant (k) of the material which causes a bridge imbalance. There are drawbacks, however, especially when there is coating on the probe between the active section and the wall of the vessel (grounding point).

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An RF Admittance point level sensor is the next generation of capacitance based level sensors. Although similar to the strict capacitance concept, the Model AP/APX RF admittance point level sensor employs a radio frequency signal and adds a shield circuit within the electronics unit. This shield circuitry enables the sensor to ignore the effect of buildup or material coating on the sensing element.

The sensing element mounted in the vessel will see a change in the admittance of a circuit indicating the presence of material. The driven shield technology of the sensor prevents the transmission of current through the coating on the sensing element. The only path to ground available for the current is through the material being measured.

The result is an accurate detection of the material presence/absence regardless of the amount of coating on the sensing element making it a versatile technology for level detection of a wide range of materials, liquids, solids and slurries.

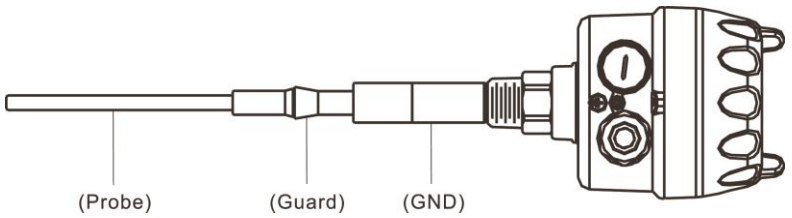
Instrument Function

Principle of Operation Cont'd.:

The Model AP/APX is an RF admittance point level sensor consisting of active probe, guard (driven shield) and grounding section, which are separated by and insulating material as shown in Figure 9.

When the target material (also known as the "medium") reaches the active probe section of the Model AP/APX probe, the material presence can be detected by the increase of admittance in an electronic circuit within the sensor as the target material replaces the air surrounding the active probe section.

Figure 9



The guard or driven shield section of the probe is located between the active section and grounding section of the probe. The guard section provides the Model AP/APX with automatic immunity to build-up of material between active and grounding sections of the probe, thereby eliminating false detection of material presence.

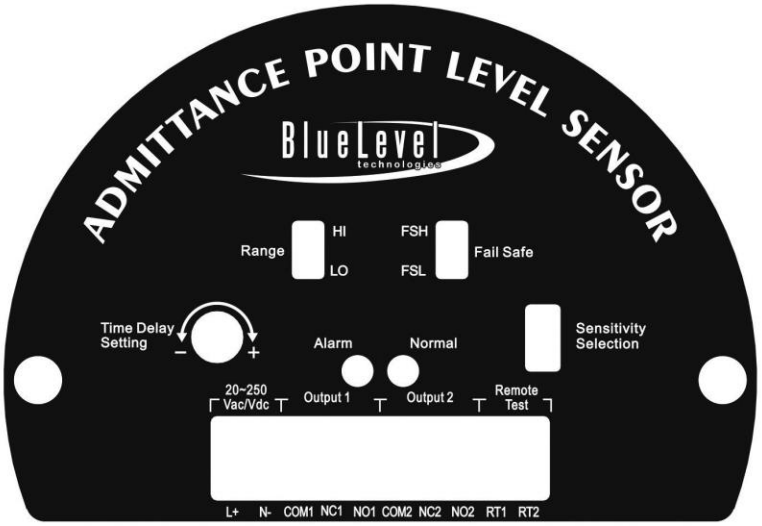
Indicators & Controls:

For proper operation of the Model AP/APX RF admittance point level sensor the unit must be calibrated and tuned to the specific installation and application. Refer to Figure 10 for an illustration of all of the sensor controls and indicators.

Instrument Function Cont'd.

Indicators & Controls:

Figure 10



- **Sensitivity Selection:** This potentiometer adjusts the sensitivity of the sensor. Rotating the adjustment Clockwise will DECREASE the probe sensitivity (increases the amount of circuit admittance change that is required to detect the target material). Rotating the adjustment Counter-Clockwise will INCREASE the sensitivity (decreases the amount of admittance change required to detect the target material).
- **Fail-Safe:** FSH for High Level Applications, FSL for Low Level allows alarm output to occur upon sensor power failure.
- **Normal:** *Blue* LED indicates that the sensor is in its normal and non-alarm condition. (If set to FSH, normal condition is material is absent at probe and relay is energized; if set to FSL, normal condition is material is present at probe and relay is energized).

Instrument Function Cont'd.

Indicators & Controls Cont'd:

- **Alarm:** *Red* LED indicates that the sensor is in its alarm condition. (If set to FSH, alarm condition is material present at probe and relay is de-energized; if set to FSL, alarm condition is material is absent at probe and relay is de-energized).
- **Range:** HI/LO setting for sensor calibration.
- **Time Delay Setting:** Potentiometer for adjusting time delay between material sense and relay output. Maximum delay is 30 seconds.
- **Remote Test Input:** Dry contact closure (short circuit) between terminals RT1 and RT2 will cause sensor to simulate alarm condition and relay output will enter alarm mode (relay will be de-energized).
- **Relay Outputs:** Two (2) SPDT outputs provided. COM1, NC1, NO1; COM2, NC2, NO2 (NO/NC is condition when sensor is in the Alarm mode)
- **Power Supply:** Universal power supply 20-250VAC/VDC

Applications or Use:

The Model AP/APX can function as a High or Low material level indicator.

As a HIGH level indicator the covered condition (material presence) will be the Alarm mode, uncovered is the Normal mode.

In a LOW level application, the covered condition is the Normal mode and the uncovered condition is the Alarm mode.

Relay Output Action:

The Model AP/APX uses a Fail-Safe selector switch: FSH High (**H**) and FSL Low (**L**) as indicated by the FSH and FSL (refer to Electrical Connections).

Instrument Function Cont'd.

Relay Output Action Cont'd.:

The relay coil is always energized in the normal condition of RF admittance point level sensor (refer to Application or Use section above). Upon the occurrence of the material level alarm condition, or a power failure event, the relay will de-energize, the Red LED will be illuminated in the case of a material level alarm condition and the contacts will change state indicating that an alarm condition exists.

FAIL-SAFE HIGH – Fail-Safe HIGH means that the relay will be energized (blue LED will be illuminated) when Model AP/APX probe is uncovered of material (normal condition), and will de-energize (red LED will be illuminated) when the probe is covered (alarm condition).

FAIL-SAFE LOW – Fail-Safe LOW means that the relay will be energized (blue LED will be illuminated) when the material is covering the probe (normal condition), and will de-energize (red LED will be illuminated) when the probe is uncovered of material (alarm condition).

LED Indicator Action:

All Model AP/APX units are provided two LED's on the internal circuit board, Blue (Normal) and Red (Alarm). Model AP units are suitable for use only in Ordinary Locations. Only the Model AP units incorporate a large lens in the instrument cover so the LED illumination is visible locally from outside the enclosure. Refer to Table 1 below.

Table 1: LED Operation

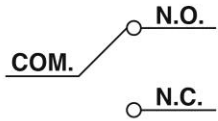
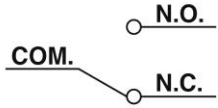
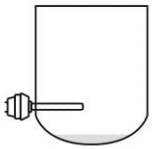
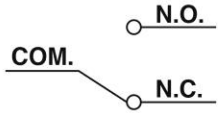
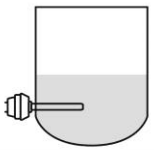
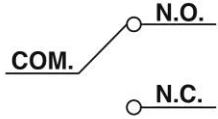
CONDITION	RED	BLUE
Alarm	X	
Normal		X

Instrument Function Cont'd.

The material alarm condition (covered or uncovered) is dependent on the position of Fail-Safe selector switch.

Refer to Table 2 for additional detail regarding setup of the Model AP/APX RF admittance point level sensor.

Table 2: Model AP/APX Setup, Output Action & Circuit Board LED Indication

Operation Mode		Indicator LED	RELAY Output
FSH		blue ☼ red ●	
		blue ● red ☼	
FSL		blue ● red ☼	
		blue ☼ red ●	

Electrical Connections

Hazardous Location Precautions:

Refer to Safety Summary section on pages 3 and 4 of this manual before beginning electrical connections.

Observe all government regulations regarding equipment in hazardous locations. In particular, for Model APX hazardous location units, install a conduit seal fitting within 18 inches (457mm) of the Model APX RF admittance point level sensor for Class I locations.

For all models, ensure that the power source is disconnected before removing the cover, and upon completion ensure that the cover is completely re-attached and the cover lock secured.

Permanently Connected Equipment:

Disconnecting devices shall be included in the system installation. In installations where multiple circuits are used, individual disconnects are required.

Disconnects shall be within close proximity of the equipment, accessible to operators, and marked appropriately as being the disconnect for the associated circuit.

Assure all disconnect ratings are appropriately sized for the circuit protected (Refer to Technical Data section).

Protective Earth Ground:

Each Model AP/APX unit is provided with a “protective conductor terminal” ⏚ which shall be terminated to the local earth ground potential to eliminate shock hazard. Select a wire size that can carry in excess of the sum of the maximum amperage of all circuits.

Electrical Connections Cont'd.

Circuit Separation:

Since the wiring compartment of the Model AP/APX cannot absolutely protect against physical contact between multiple circuits, it is required that all wiring used must have an insulation rating of 300v minimum, and a minimum temperature rating of 194° F (90° C).

1. General:

The Model AP/APX RF admittance point level sensor is equipment with a universal power supply accepting 20-250VAC/VDC supply voltages. Ensure that your supply voltage falls within the acceptable range as shown on the units' data nameplate.

Field wiring should conform to all national and local electrical codes and any other agency or authority having jurisdiction over the installation. Electrical wiring connections and installation shall be done by qualified personnel.

2. Input Power:

Power input to the Model AP/APX is connected to the terminals labeled "L+" and "N-" for AC and DC voltages. Theses terminals are labeled + and – as shown in Figure 10 for DC voltages. Refer to Figure 12.

If one of your AC supply conductors is grounded, it should be connected to the N terminal. The ungrounded conductor should be connected to the L terminal. If neither of your AC supply conductors is grounded, then one of them is connected to the N terminal and the other to the L terminal.

For DC voltages be sure to observe proper polarity + and - in order for the Model AP/APX to operate properly.

Electrical Connections Cont'd.

3. Grounding:

⚠ Refer to the "Protective Earth Ground" section on page 16. An equipment grounding connection (earth ground) must be supplied to the unit for safety. Connect the ground conductor to the protective conductor terminal as marked with the ⏚ symbol.

4. DPDT Relay Output Contacts:

Refer to Figure 12 as well as the "Instrument Function" section of this manual.

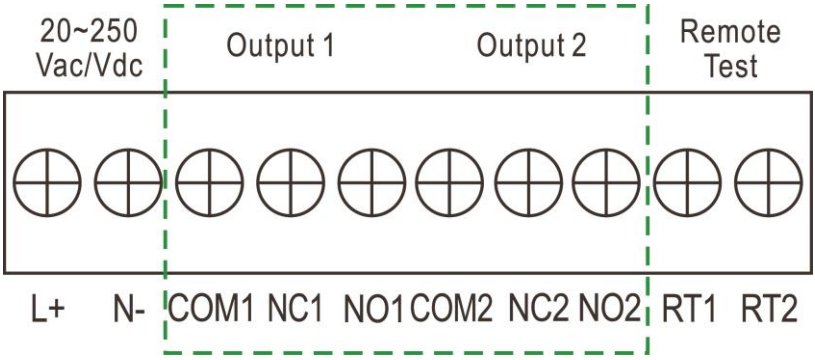


Figure 12: Terminal Block Wiring Connections

The NO and NC contacts shown are the relay contact state during Alarm condition. If you desire to "make" a circuit when an alarm condition occurs, choose wiring to either NC1 or NC2. If you desire to break a circuit upon alarm condition then wire to NO1 or NO2.

Setup

Calibration:

The calibration is set subsequent to mechanical and electrical installation using the Range switch and the multi-turn Sensitivity potentiometer. The *best* calibration can be achieved by adjusting the Model AP/APX probe exposed to FREE AIR and also exposed to the material. An additional method exists that adjusts the calibration with the probe exposed only to FREE AIR. These two methods are described below.

1. 2-Step Calibration (Probe Exposed to FREE AIR and Material):

a. The Range switch is factory set to LO which will permit calibration when the capacitance detected on the probe as a result of contact with the target material is between 0.3 – 50pF. This factory setting will satisfy most applications except very high dielectric materials such as water based solutions. *Unless the material dielectric is > 9.0 leave Range switch in the factory LO position.* If the dielectric constant of the target material is >9.0 set the Range switch to HI.

b. The Fail-Safe switch is factory set to the FSH position. Leave this switch in the FSH factory set position for the calibration process. It will be adjusted to the correct position for your application at the end of the calibration.

c. While the probe is **NOT** covered with material, rotate the sensitivity potentiometer COUNTER-CLOCKWISE just until the Red Alarm LED is illuminated (Blue LED turns off).

d. Permit the target material to cover the active probe section completely.

e. While counting the number of complete revolutions, rotate the sensitivity potentiometer CLOCKWISE until the Blue LED is illuminated (Red LED turns off).

f. Rotate the sensitivity potentiometer COUNTER-CLOCKWISE *one-half the number of rotations counted in step e. above* so that it is at the halfway point between the Red LED being off and on.

Setup Cont'd.

Calibration Cont'd.:

Example: if it takes 2 turns CLOCKWISE for the Red LED to turn off (Blue LED illuminates), then reposition the sensitivity potentiometer 1 full rotation COUNTER-CLOCKWISE).

g. This completes the two-step calibration procedure by exposing the probe to free air AND material. *To place the unit in operation set the Fail-Safe switch to the appropriate position, e.g. FSH for a high level application or FSL for a low level application.*

2. 2-Step Calibration with Probe Exposed to FREE AIR ONLY:

a. After installation, set the Range switch to HI or LO based upon the dielectric constant of the target material – LO (dielectric constant =/<9.0) or HI (dielectric constant > 9.0).

b. The Fail-Safe switch is factory set to the FSH position. Leave this switch in the FSH factory set position for the calibration process. It will be adjusted to the correct position for your application at the end of the calibration.

c. While the probe is **NOT** covered with material, rotate the sensitivity potentiometer COUNTER-CLOCKWISE just until the Red Alarm LED is illuminated (Blue LED turns off).

d. Reposition the sensitivity potentiometer the number of revolutions CLOCKWISE based upon Table 3. The adjustment shown in Table 3 is a range. You can estimate the exact number of turns by prorating it based on the dielectric constant of the material. For example, if the material dielectric constant = 2.0 then the adjustment should be approximately 1/3 revolution (since 2.0 is 1/3 greater than 1.5, 2/3 less than 3.0).

Setup Cont'd.

Calibration Cont'd.:

Table 3: Counter-Clockwise Calibration Adjustment

Sensitivity	Adjustment	Dielectric	Example Materials
High	0 - 1 Turns	1.5 – 3.0	Plastics, Soaps, Oils, Rubber, Cement
Medium	1 – 3 Turns	3.0 – 9.0	Grains, Fertilizers Feed, Salt
Low	> 3 Turns	> 9.0	Wastewater, Slurries, Water Based Solutions

e. Depending on your specific application it may be desirable or necessary to reposition the sensitivity potentiometer according to the procedure for a 2-Step Calibration with the probe exposed to material.

f. Materials with high dielectric constants or conductivity may require further adjustment CLOCKWISE than those with a low dielectric constant or the Range switch may need to be changed from LO to HI if you have attempted calibration with it in the LO position, and the calibrated procedure repeated.

g. This completes the two-step calibration procedure by exposing the probe to free air ONLY. *To place the unit in operation set the Fail-Safe switch to the appropriate position, e.g. FSH for a high level application or FSL for a low level application.*

Delay:

A potentiometer is provided for setting the "on" time delay between 0 – 30 seconds, labeled "-" (minimum) and "+" (maximum). The time delay is the time between when the material is "sensed" by the Model AP/APX sensor and when the relay de-energizes and the red LED is illuminated indicating an alarm condition exists. There is no delay adjustment for "off" delay.

Setup Cont'd.

Fail-Safe:

The term fail-safe refers to the output signal condition which occurs with a loss of power to the Model AP/APX probe. A switch permits selection of either HIGH (FSH) or LOW (FSL) fail-safe. This switch is factory set to HIGH (FSH). Adjust it as needed based upon your application and need.

FSH (High Fail-Safe): The relay will de-energize (Red LED illuminates; Blue LED is off) when the material is detected or sensed at the probe, or upon a loss of sensor power supply.

FSL (Low Fail-Safe): The relay will de-energize (Red LED illuminates; Blue LED is off) when material is NOT detected or sensed at the probe (target material is below the probe sensing location) or upon a power loss to the sensor.

Output Action / LED:

Refer to Table 2 on page 15 for additional detail regarding setup of the Model AP/APX RF admittance point level sensor.

Note the wiring terminal designations (NC1, NO1, NC2, NO2) on the circuit board label refer to the relay contact status when the unit is in the Alarm condition (relay is de-energized; Red LED is illuminated and Blue LED is off).

Simulating Alarm Test

The Model AP/APX RF admittance point level sensor includes an alarm test function that can be used to check the control function of your level control setup. The test function simulates detection of the target material at the probe and uses terminals RT1 and RT2 of the terminal block as shown in Figure 12. To simulate an alarm condition, perform the following procedure:

1. Set the Fail-Safe switch to FSH.
2. Set the Range switch to LO.
3. Set the Time Delay to minimum "-".
4. Adjust the Sensitivity potentiometer CLOCKWISE until the Blue LED is illuminated or turned ON (Red LED is off; relay is energized), then turn the potentiometer one turn COUNTER-CLOCKWISE.
5. Close the contact between terminals RT1 and RT2. Relay contact COM/NC will close.
6. Open the contact between terminals RT1 and RT2. Relay contact COM/NO will close.

Maintenance

No periodic or preventive maintenance is required when the Model AP/APX is installed and operated properly.

No Step:

Refer to Figure 13.

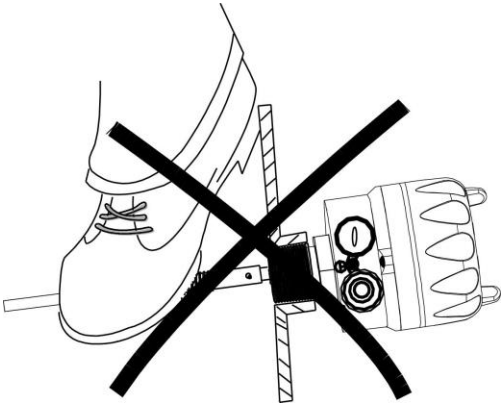


Figure 13: Do Not Use Probe As Step

Removing Material Build-Up:

Refer to Figure 14.

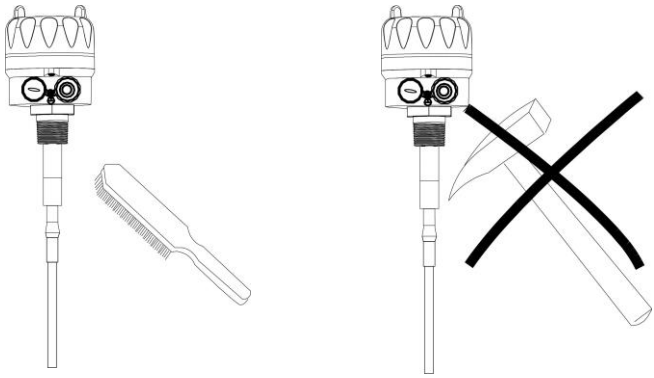


Figure 14: Removing Material Build-Up (if required)

Technical Data

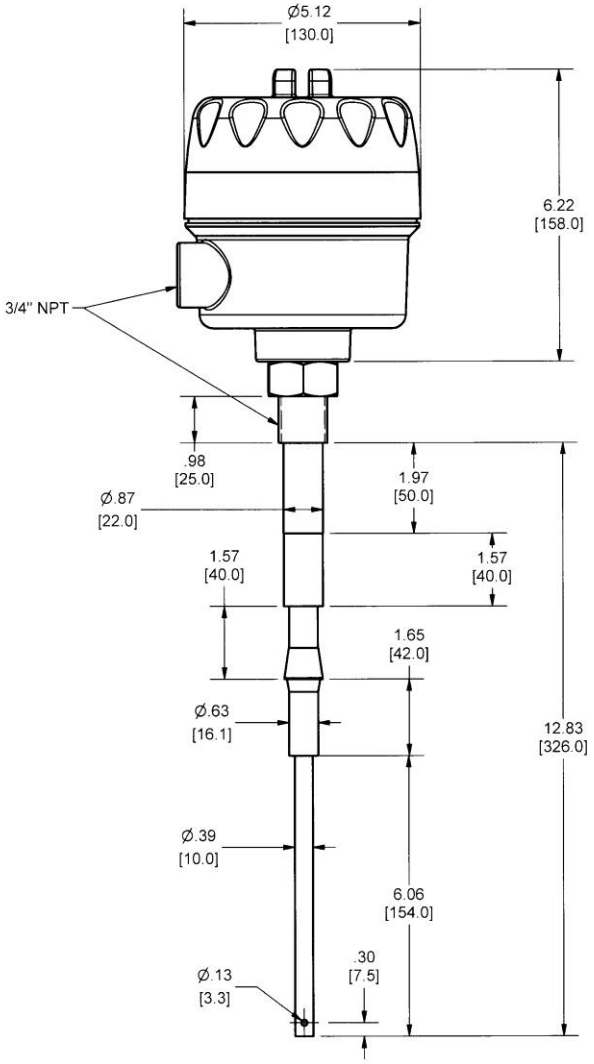
Power Supply:	20-255VAC/VDC; 50/60Hz
Power Consumption:	25VA Max.
Ambient Temp:	-40°F to +176°F (-40°C to +80°C)
Operating Temp:	
Standard Probe	-40ºF to +302°F (-40ºC to +150°C)
Mini	-40ºF to +302°F (-40ºC to +150°C)
Cable Extended	-40ºF to +302°F (-40ºC to +150°C)
High Temp	-40ºF to +450°F (-40ºC to +232°C)
Super High Temp	-40ºF to +842°F (-40ºC to +450°C)
Pressure:	
Standard Probe	284psi (20bar)
Mini	284psi (20bar)
Cable Extended	284psi (20bar)
High Temp	284psi (20bar)
Super High Temp	Atmospheric (1bar)
Relay Output:	DPDT, 5A @ 240VAC; 5A @ 28VDC
Fail-Safe:	Selectable FSH “High” or FSL “Low”
Time Delay:	0-30 seconds (on-delay only)
LED Indicators:	Red – Alarm Blue – Normal
Enclosure:	Type 4X, IP65, Die-Cast Aluminum, Powder Coating
Process Connection:	
Standard Probe	¾” NPT Standard (stainless steel)
Mini	¾” NPT Standard (stainless steel)
Cable Extended	¾” NPT Standard (stainless steel)
High Temp	1” NPT Standard (stainless steel)
Super High Temp	1-1/4” NPT Standard (stainless steel)

Technical Data Cont'd.

Conduit Entry:	Two (2) - ¾" NPT; (Use Watertight Conduit/Fittings); Cable Gland Provided
Probe Materials:	
Standard	304SS Process Connection, Guard and Active Probe Sections; PTFE Insulators
Mini	304SS Process Connection, Guard and Active Probe Sections; PTFE Insulators
Cable Extended	304SS Process Connection, Guard and Active Probe Sections; PTFE Insulators
High Temp	304SS Process Connection, Guard and Active Probe Sections; PEEK Insulators
Super High Temp	304SS Process Connection, Guard and Active Probe Sections; Ceramic Insulators
Listings/Certification:	
Model AP	CE Mark
Model APX	$_{c}FM_{u}$ Approved Hazardous Locations (PENDING AGENCY APPROVAL)

Dimensions

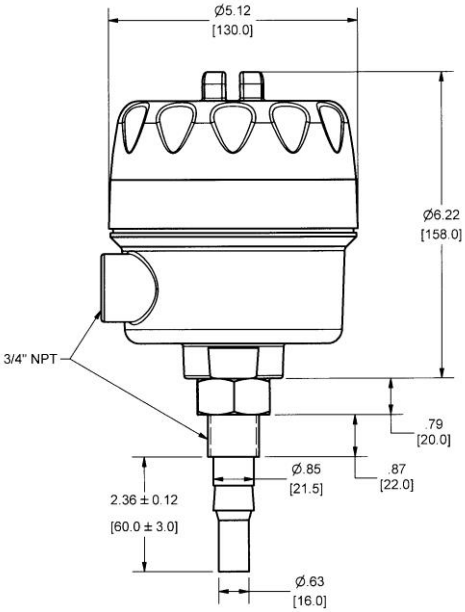
Standard Probe



Note: All dimensions are in inches with milimeters in [].

Dimensions

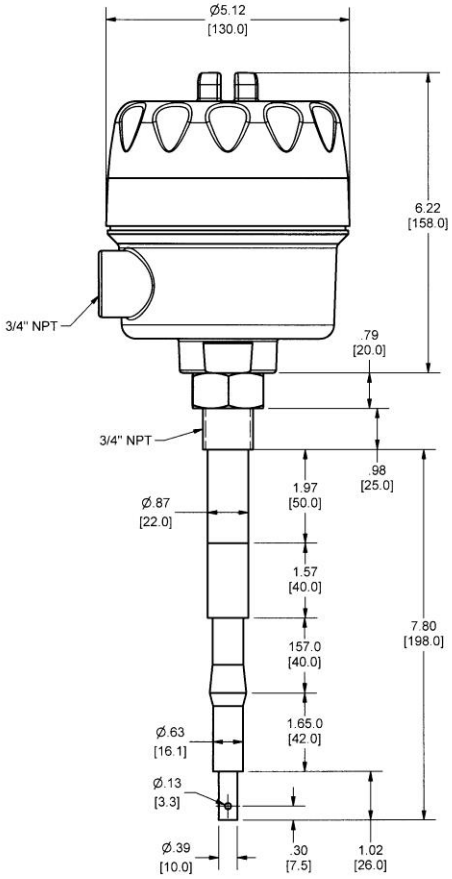
Mini Probe



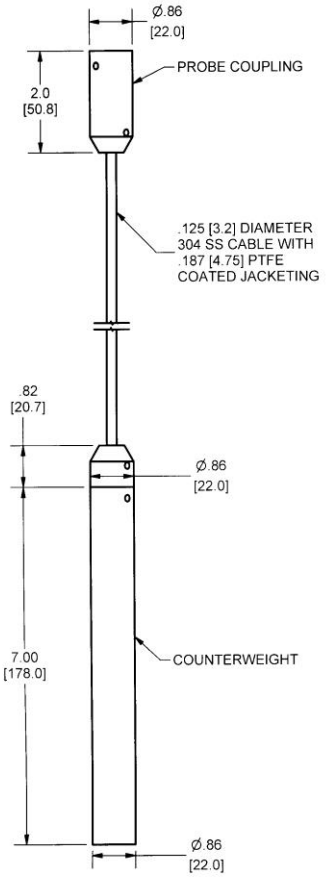
Note: All dimensions are in inchs with milimeters in [].

Dimensions

Cable Extended Probe



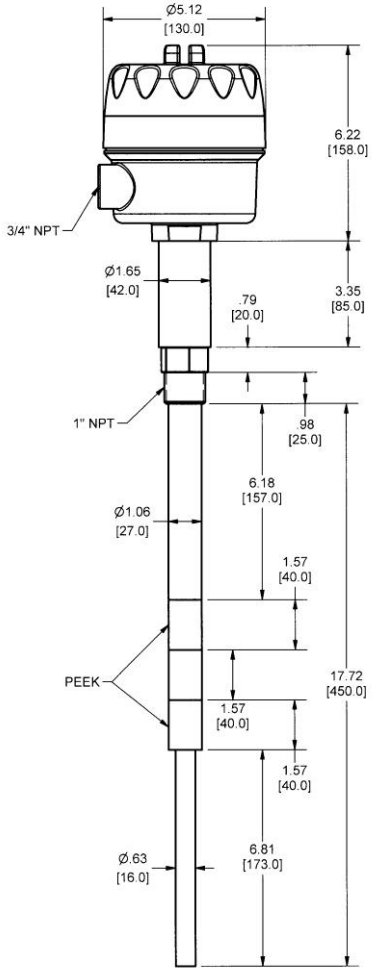
Note: All dimensions are in inches with milimeters in [].



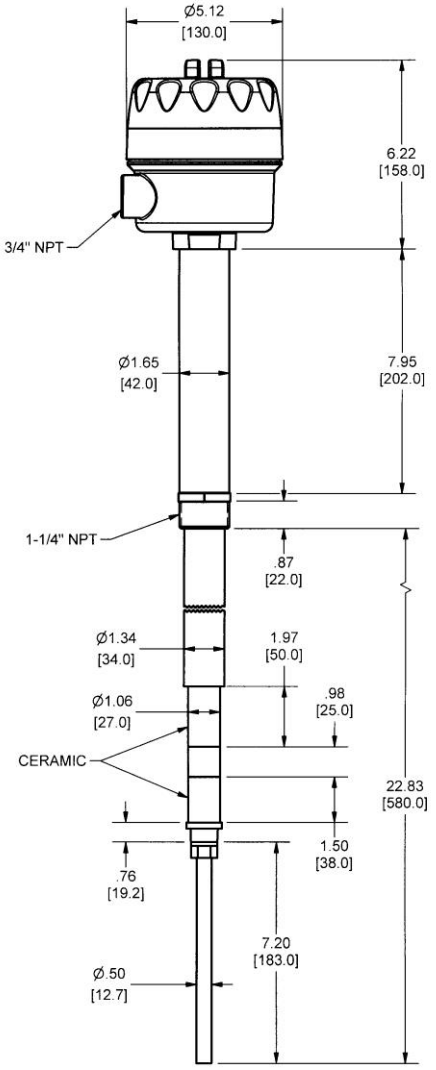
Note: All dimensions are in inches with milimeters in [].

Dimensions

High / Super High Temp Probes



Note: All dimensions are in inchs with milimeters in [].



Note: All dimensions are in inchs with milimeters in [].

Our Commitment Stands

Golden Parachute:

Each BlueLevel Technologies Model AP/APX RF admittance point level sensor is backed by our **Golden Parachute** support program. If you are the initial purchaser and purchased the product directly from BlueLevel Technologies, this provides you with the assurance that we will support you and stand behind products that we sell.

The Golden Parachute support program gives the initial purchaser **90 days to evaluate the product**. Within this time frame if you are not satisfied for any reason, call us and request a "Golden RMA", providing your order details and serial number on the unit, and then return the unit and request a replacement or a credit to your account for the cost of the equipment as shown on your invoice from BlueLevel Technologies. In addition, Model AP/APX products are covered by our industry-leading 2-year limited warranty. Consult our Warranty statement for details.

Standard Warranty

Each BlueLevel Technologies Model AP/APX RF admittance point level sensor product is backed by our industry-leading 2-year limited warranty. Should you experience a problem with one of our products deemed by our factory to be a product failure covered by our warranty, for a period of 2-years from the date of shipment we will repair the unit at our factory or provide you with a replacement unit or sub-assembly at our discretion.

A return authorization number must be obtained from a BlueLevel Technologies customer service technician BEFORE returning any unit. Refer to the below details for more information.

Details:
We warrant BlueLevel Technologies products to be free from defects in workmanship and materials when operated under normal conditions and in accordance with nameplate characteristic limits. Products must be installed and maintained in accordance with BlueLevel Technologies installation, operation and maintenance instructions. Users are responsible for the suitability of the products to their application. There is no warranty against damage resulting from misapplication, improper specifications, or other operating conditions beyond our control. Claims against carriers for damage in transit must be filed by the buyer.

This warranty shall be in effect for a period of twenty-four months from the date of shipment. THIS WARRANTY SHALL BE LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. BlueLevel Technologies will repair or replace, at its option, any product which has been found to be defective and is within the warranty period, provided that the product is shipped, with previous factory authorization, freight prepaid, to the factory in Rock Falls, Illinois, U.S.A., or to the nearest service station. BlueLevel Technologies is not responsible for removal, installation, or any other incidental expenses incurred in shipping the products to or from BlueLevel Technologies.

BlueLevel Technologies' liability under this warranty shall be solely limited to repair or replacement of the products within the warranty period, and BlueLevel Technologies shall not be liable, under any circumstances, for consequential or incidental damages, including, but not limited to, personal injury or labor costs.

Under no circumstances will BlueLevel Technologies be responsible for any expense in connection with any repairs made by anyone other than the factory or an authorized service station, unless such repairs have been specifically authorized in writing.

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