

#26268 – 02/28/2020

Overview

The Water Leak Detector is designed to sense the presence of water and alert a central monitoring system of the potentially destructive situation. Upon water detection, an alarm relay changes state, and a local red LED illuminates. The transmitter can be set for latching alarm or non-latching alarm with normally energized or de-energized operation. An optional remote water sensor is available for small inaccessible locations such as AHU pans or under floor water detection.

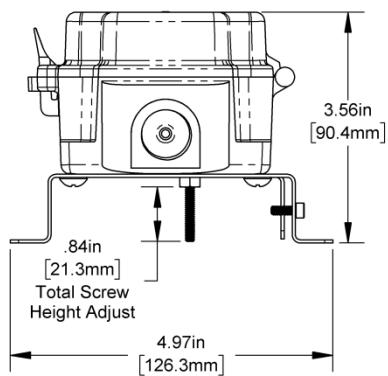
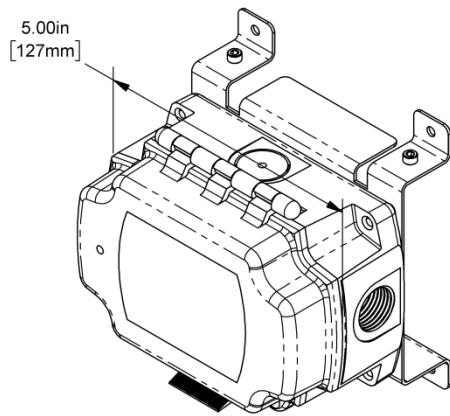


Figure 1:
Water Leak Detector with
Internal Sensor Probe
Part #NSB-LDT4-PS-BB

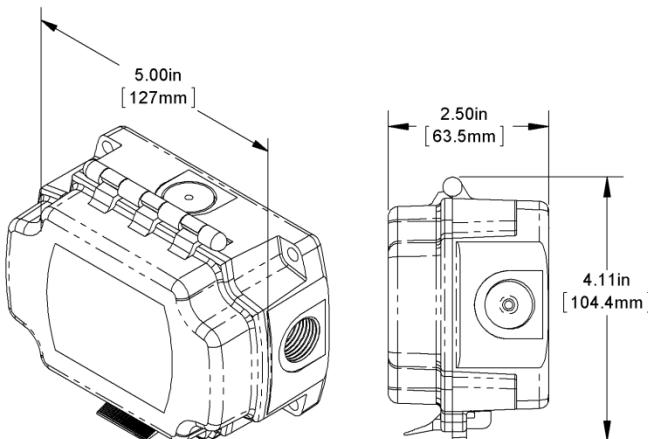
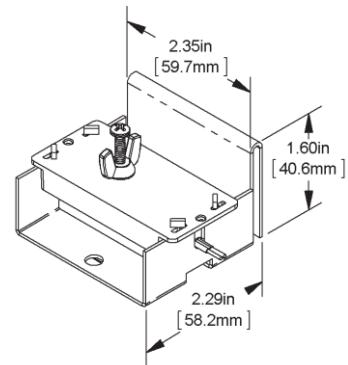
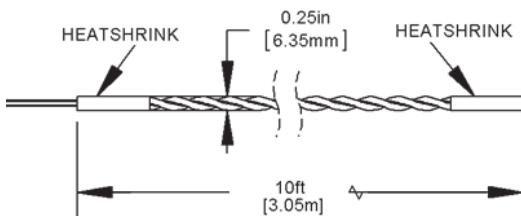


Figure 2:
Water Leak Detector (above) with
Remote Spot Sensor (right) and
10 ft. FEP cable
Part #NSB-LDT4-RS10-BB



Water Leak Detector (above) with
Water Rope Sensor (below)
Part #:s:
NSB-LDT4-RR10-BB (10 ft. rope)
NSB-LDT4-RR25-BB (25 ft. rope)
NSB-LDT4-RR50-BB (50 ft. rope)
NSB-LDT4-RR100-BB (100 ft. rope)



Specifications subject to change without notice.

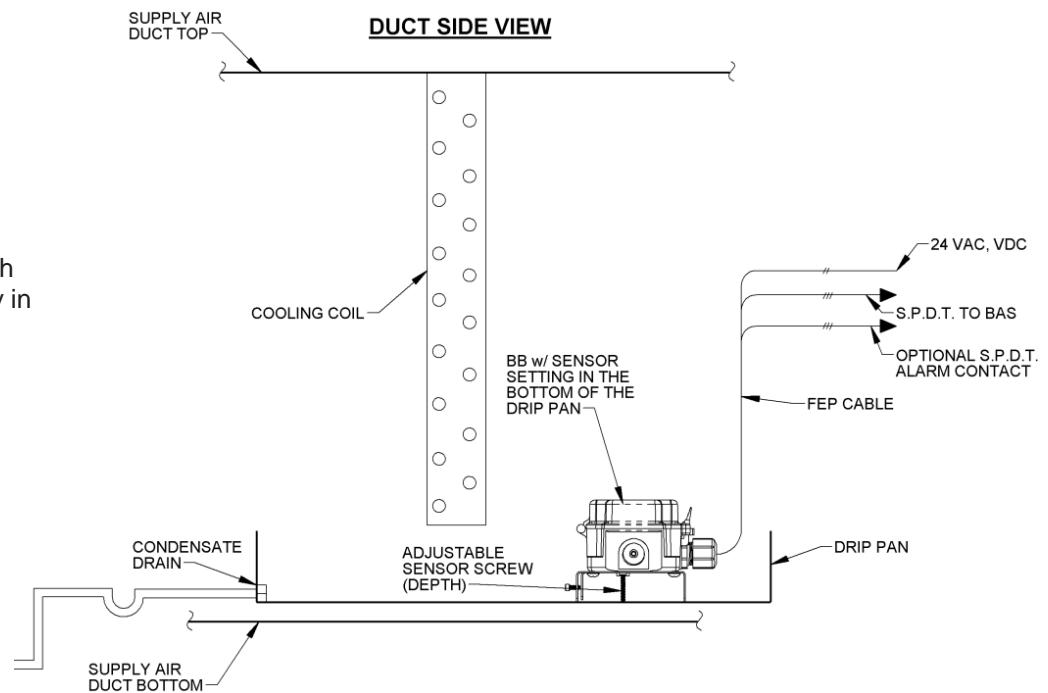


Figure 3: Water Leak Detector with Built-in Sensor and a 5 Amp Relay in a System Diagram (Side View)

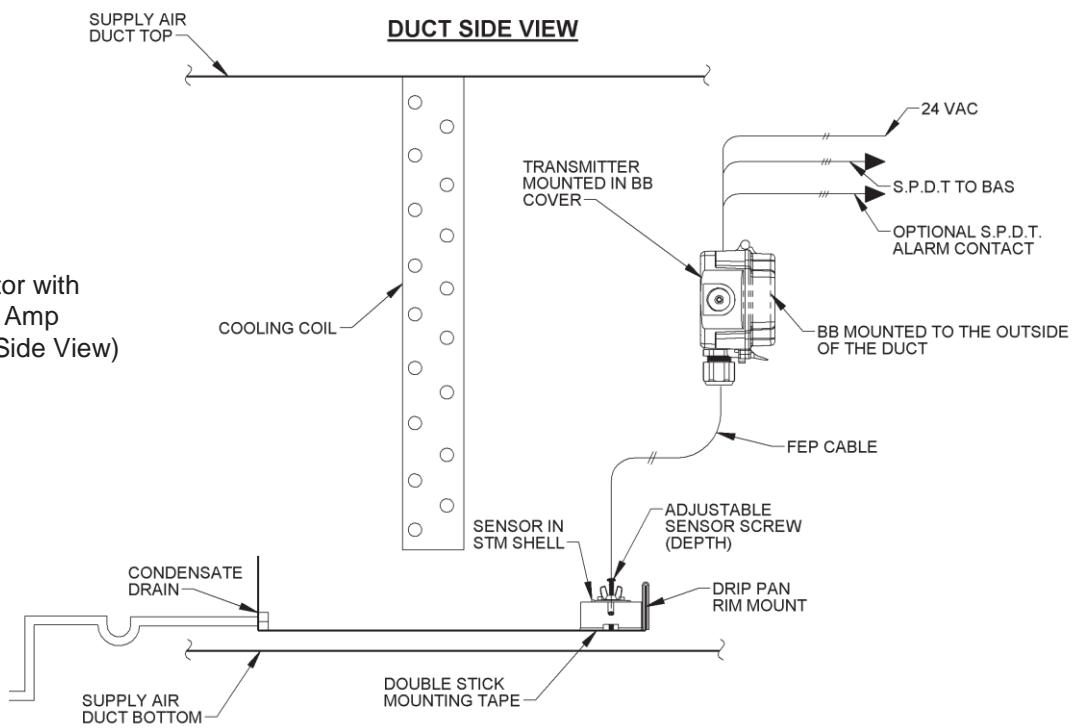


Figure 4: Water Leak Detector with Remote Spot Sensor and a 5 Amp Relay in a System Diagram (Side View)

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Specifications

Power	24VAC +/- 10%	Set Up	
5 Amp Relays	4 VA max	BB Sensor	Adjustable depth from .063" to .84" (≈1/16th" default)
Wiring	Flex connector or liquid-tight fitting	Remote Sensor	Adjustable depth from .063" to .84" (≈1/16th" default)
Relays	Up to 6 wires	Latching Jumper	Latching version - Stays energized after water has dried up
Transmitter	2 wires for Power	Supervision Jumper	Non-latching version (default) - Alarm follows wet or dry surface
Mounting	Lays in the pan or attached with a pan edge hook with screws		Supervised version (default) - De-energized when in alarm.
Sensor			NOTE Relay will drop out on loss of power indicating a water detection alarm.
Standard	Single SS probe from bottom of BB with adjustable depth screw from .063" to .84"		
Optional	Remote spot water sensor with depth screw with adjustable depth from 1/16" to 1/2"		
Optional	Remote rope water sensor Detects water over the full length at depths >0.125". NOTE 100 ft. maximum including non-sensing extension cable.		Unsupervised version - Energized when in alarm.
Detector Transmitter		Enclosure Ratings	
Alarm Contacts	Two SPDT, 5A relay outputs SPDT, 30 VAC/DC max Selectable as normally Energized or De-energized	Transmitter	BB Box, NEMA 4
Indication	1 Green Power LED, 1 Red Alarm LED	Remote Spot Sensor	Submersible, w/ FEP plenum-rated, waterproof cable
Reset Action	If latching, local push button or power interrupt	Rope Sensor	Plenum rated
Sensor Reaction	Responds to presence of water within 5 seconds	Ambient	
Termination	Terminal strip, 4-10 terminals, 12-24 AWG	Transmitter (BB)	-40 to 185°F (-40 to 85°C), 0 to 95%RH, Non-condensing
Agency	RoHS, UL94V-0, UV-rated in Enclosure	Remote Spot Sensor	-40 to 185°F (-40 to 85°C), 0 to 95%RH, Condensing
		Rope Sensor	32 to 167°F (0 to 75°C), 0 to 95%RH, Non-condensing
		Enclosure Materials	
		Transmitter (BB)	Polycarbonate
		Remote Sensor	Aluminum bracket w/ ABS plastic shell

Mounting

Place the transmitter in a location where a water leak is likely to cause damage such as a cooling coil pan, a hot water tank pan, under a sink, under an elevated floor, or in a drop ceiling under pipes. The transmitter can be independently mounted in a visible location by using a remote water sensor and waterproof cable as shown in Figure 4. Terminate the transmitter as shown in the termination section.

1. Set the transmitter where water is most likely to be a problem or in the collection pan under the water coil or heater (Figure 5).
 - Alternatively, a water sensor or remote water sensor can be attached to the pan edge with two set screws (Figure 6). Do not over tighten or puncture the pan.
 - Alternatively, a remote water sensor can be attached to the pan or floor with mounting tape (Figure 7). Clean surface thoroughly before setting the sensor in place and push sensor down firmly. Mount the detector enclosure in a visible location within cable length of the remote water sensor.
 - Alternatively, a remote water sensor can be attached to the floor with screws (Figure 8). Mount the detector enclosure in a more visible location within cable length of the remote water sensor.
 - Alternatively, a rope water sensor can be laid on the floor or under pipes as shown in Figures 10, 11, 12 & 13. Cable clamps can be used to secure the sensor to the floor.
2. Adjust the depth screw on the sensor probe in the middle of the open enclosure to the alarm depth (Figure 5). If using a remote water sensor, adjust the depth screw as shown in Figure 9. The rope sensor detects water 1/8" off the floor and has no adjustment.
3. Run the cable to the transmitter location leaving enough slack to terminate and allow for some repositioning as needed. Use a strain relief on the entering cable so the wires do not tug on the terminals directly.
4. Terminate and configure in accordance with the termination section.

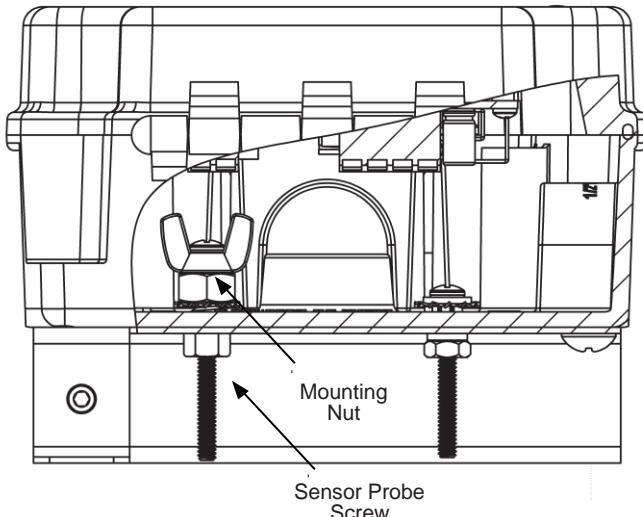


Figure 5: Leak Detector with Sensor in a BB Box

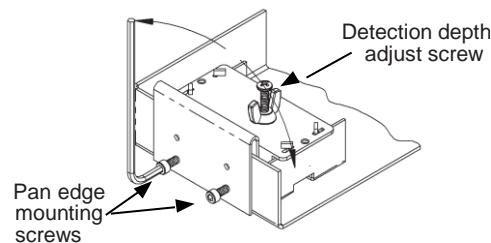


Figure 6: Water Sensor Pan Rim Mounting

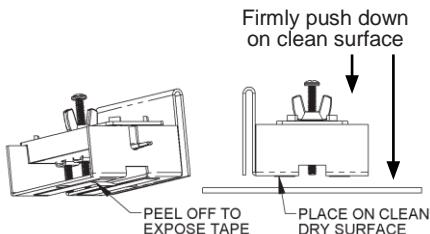


Figure 7: Remote Water Sensor Tape Mount

Figure 8: Remote Water Sensor Floor Mount

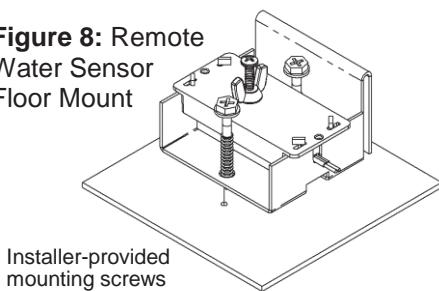
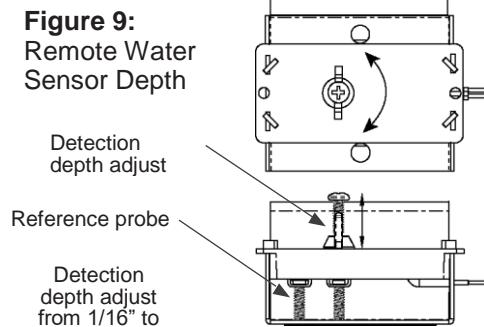


Figure 9:
Remote Water Sensor Depth



1. Loosen wing nut.
2. Set the required depth of the sensor probe screw using a #2 Phillips screwdriver.
3. Hold the sensor probe screw stationary with the screwdriver.
4. Turn the wing nut down the probe screw until it engages the plastic.
5. Tighten the wing nut 1/4 turn into the plastic.

Rope Sensor Mounting

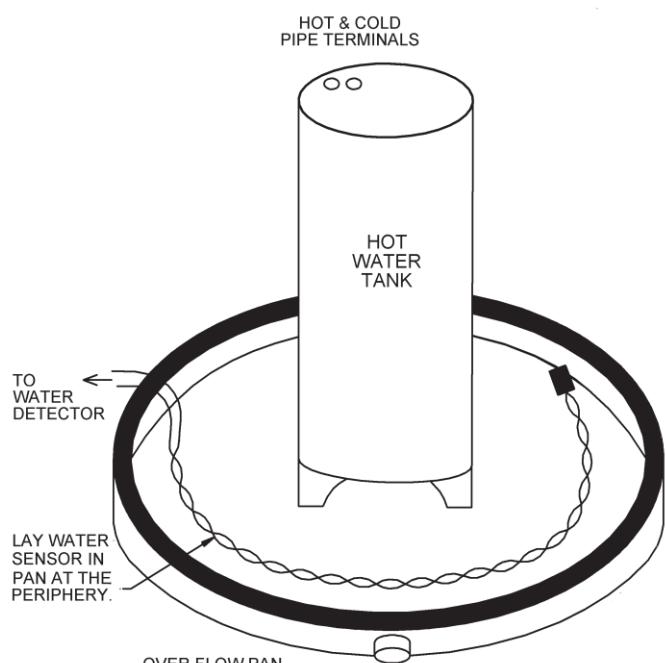


Figure 10: Hot Water Tank Pan Mounting

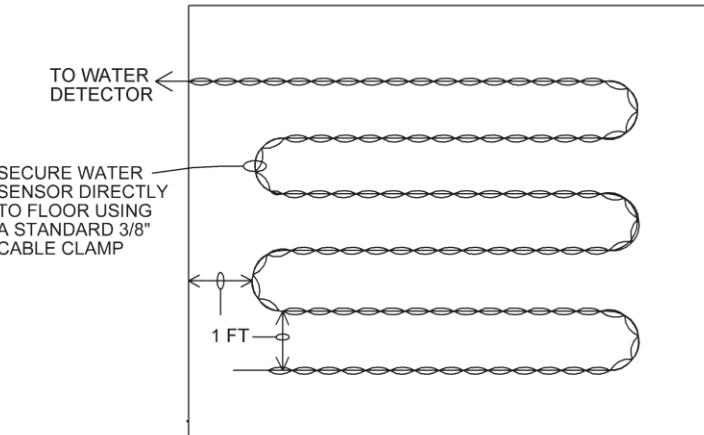


Figure 11: Sub-floor Sensor Mounting

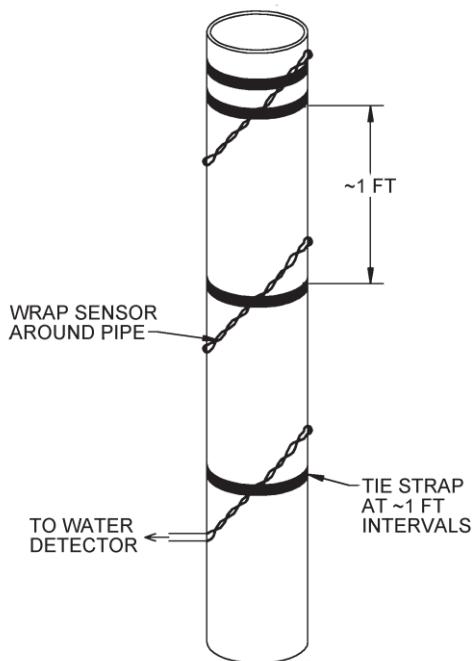


Figure 12: Vertical Pipe Sensor Mounting

The following combinations of sensors can be used:

1. Two rope sensors with a combined length of no more than 100'.
2. Two spot sensors with a combined length of no more than 75'.
3. One spot sensor with a maximum length of 25' and one rope sensor of no more than 50'.

Note: *Shielded or twisted pair wire cannot be used to extend the sensor wires. This applies to both the remote spot sensor as well as the rope sensor.*

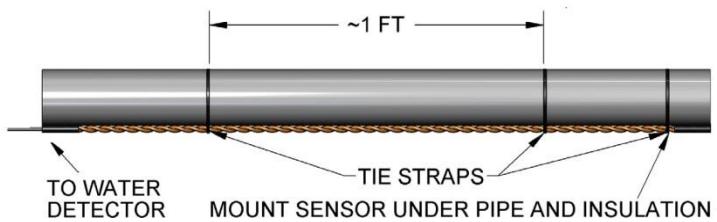


Figure 13: Horizontal Pipe Sensor Mounting

Wiring and Termination

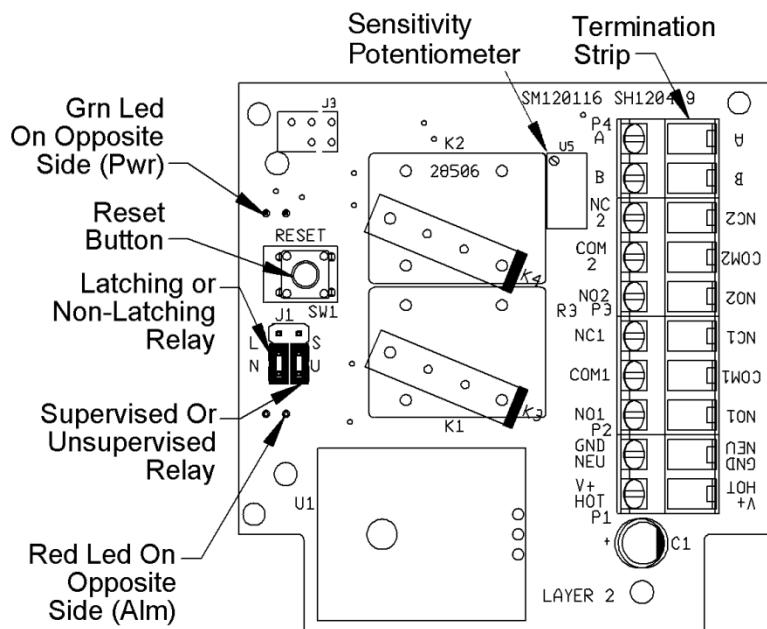


Figure 14: Leak Detector Circuit Board

Terminal	Description
A	Water Sensor (No polarity to water sensor cable)
B	Water Sensor (No polarity to water sensor cable)
NC2*	Alarm Contact 2, Normally Closed to C2 when De-energized
COM2	Alarm Contact 2, Common
NO2	Alarm Contact 2, Normally Open to C2 when De-energized
NC1*	Alarm Contact 1, Normally Closed to C1 when De-energized
COM1	Alarm Contact 1, Common
NO1	Alarm Contact 1, Normally Open to C1 when De-energized
GND/NEU	Power supply ground/neutral
V+/HOT	Power supply input 24VAC +/- 10%

*Not used for low current relay version, SPST, Form A

Sensitivity Adjustment for 10' Remote Rope Sensor

The unit's leak detection sensitivity is set at the factory. However, for the remote rope sensors, the sensitivity may need to be adjusted in the field.

If you are using a 10-foot remote rope and it won't respond, rotate the sensitivity adjustment potentiometer 5 turns counterclockwise.

If you are using a 100' remote rope and it is too sensitive, then rotate the sensitivity adjustment potentiometer 5 turns clockwise.

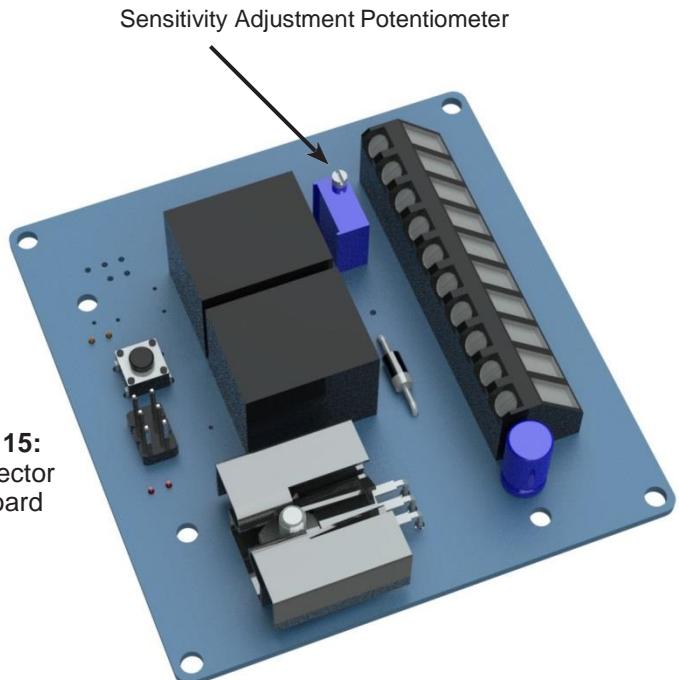


Figure 15:
Leak Detector
Circuit Board

Set Up and Commissioning

<u>Indication/Controls</u>	<u>Description</u>
Red LED	LED illuminates when water is detected
Green LED	LED illuminates when normal power is applied
Reset Button	Resets latching alarm contact (only if water is no longer present)
Latching Relay	Left side of J1 set to top two pins listed as "L"
Non-Latching Relay	Left side of J1 set to bottom two pins listed as "N" (Default)
Supervised Relay***	Right side of J1 set to top two pins listed as "S" (Default)
Unsupervised Relay	Right side of J1 set to bottom two pins listed as "U"

*** Supervised means the relay is energized when not in alarm and the relay de-energizes on a power failure or alarm.

1. After the unit is installed and wired, turn on the power. (24VAC +/- 10%)
2. Check that the green LED is on. If it is not on, check the power source.
3. Dampen a cloth or sponge and touch both the sensor probe tip and the sensor base. An alarm should occur within 5 seconds.
4. The red LED should illuminate and the relay(s) should de-energize, or energize if set up as unsupervised. (To check relay status, measure the resistance at the relay contacts or monitor the status from the BAS screen.)
5. Remove the dampened rag or sponge to clear the alarm. If the unit is set up for a non-latching relay (J1 jumper across the "N" pins), the red LED and relay(s) will energize, or de-energize if set up as an unsupervised relay. If the unit is set up for a latching relay (J1 jumper across the "L" pins), the operator must push the reset switch on the detector board or interrupt power to clear the alarm.
6. Check the depth of the sensor probe screw (see Mounting) to be sure it's at the appropriate water depth for alarm.

Operation Sequence

When power is applied, the green LED will illuminate and the unit will start to detect for water at the sensor probe. When there is no detection of water (normal condition), the relays are not in an alarm state and the red LED remains off. For units set up in the unsupervised relay mode, the relays are de-energized. For units set up in the supervised relay mode (default), the relays will be energized. (NOTE When there is a loss of power, a supervised relay will drop out indicating a water detection alarm.)

Within 5 seconds of water detection, the relays go into an alarm state and the red LED illuminates. For units set up in the unsupervised relay mode, the relays are energized. For units set up in the supervised relay mode (default), the relays are de-energized.

If the unit is in non-latching or auto-reset (default) operation, then the alarm state will automatically reset when the water has dried up. If the unit is in latching or manual-reset operation, then the unit will stay in an alarm state until the reset button is pressed or power is cycled. If there is still water detected during a reset button push, the unit will not reset. If there is still water detected after a power interrupt, the unit will initiate another alarm within 5 seconds.

Diagnostics

<u>Possible Problem</u>	<u>Possible Solution</u>
Green LED not on	Check for proper power to the unit (see Power spec on page 6).
Red LED not working not energizing	<ol style="list-style-type: none">1. Check for proper power to the unit (see Power spec on page 6). or relay2. Check if water is touching the sensor probe and reference probe.3. Adjust sensor probe depth.4. For rope sensor units, check the sensitivity adjustment as described on page 4.
Unit will not reset	<ol style="list-style-type: none">1. Check for the presence of water or debris touching the two sensor probes.2. Be sure the sensor wires are not shorted.3. If the L pins on J1 are shorted, push the reset button or cycle power.4. For rope sensor units, check the sensitivity adjustment as described on page 4.

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Maintenance

Check the water sensor probe once a year to be sure there is no dirt or debris collected around the probes. Dirt or debris around the probes may cause nuisance alarms in moist situations. Change the service intervals depending on environmental conditions. In very clean conditions the probe may never need maintenance. Rope sensor may be wiped down with isopropyl alcohol, warm soapy water on a cotton cloth, or placed in a dishwasher.

Caution

This unit is not intended to be a safety device.

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