# Water Leak Detector
# BA/LDT Accessories
*Termination and Troubleshooting*



## Overview & Identification

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.

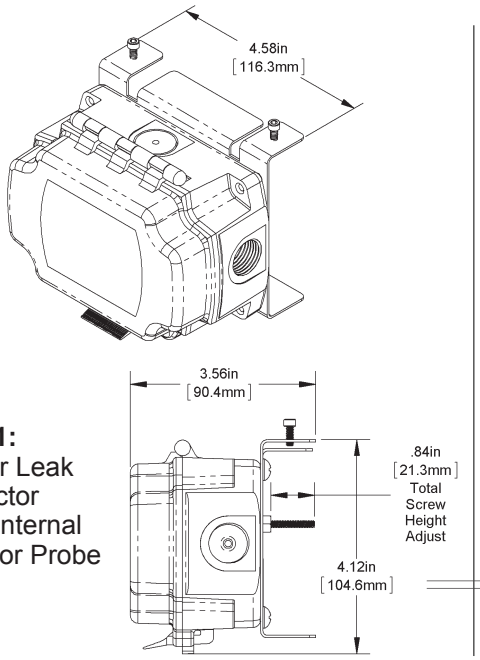



**Fig. 1:**
Water Leak Detector with Internal Sensor Probe

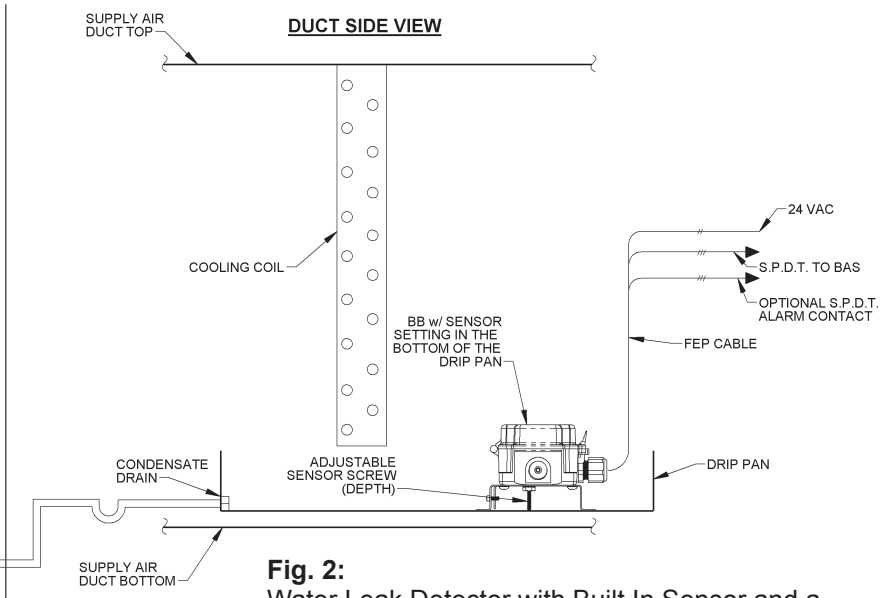



**Fig. 2:**
Water Leak Detector with Built In Sensor and a 5 Amp Relay in a System Diagram (Side View)

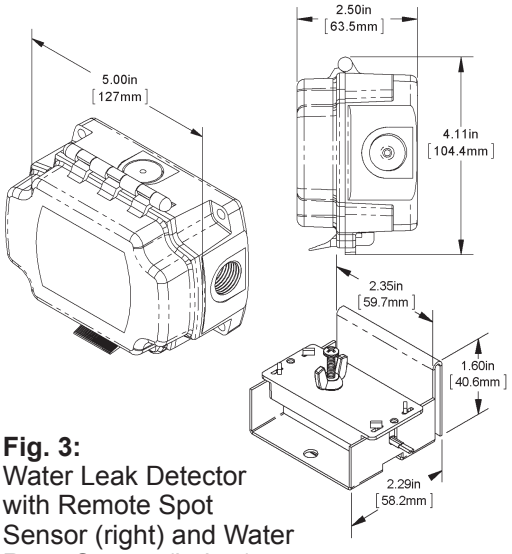
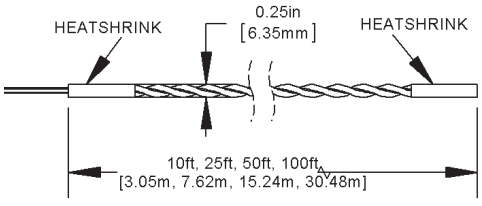



**Fig. 3:**
Water Leak Detector with Remote Spot Sensor (right) and Water Rope Sensor (below)



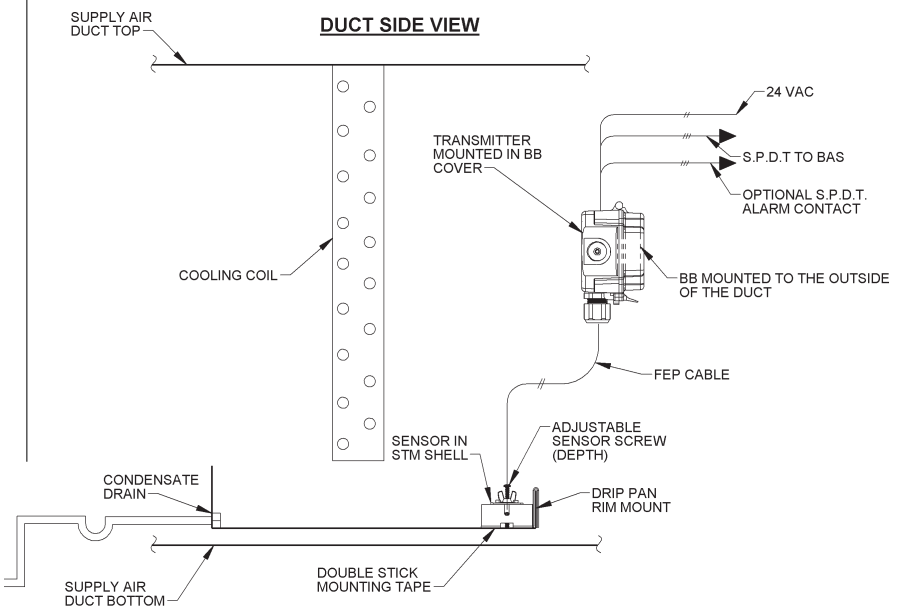




**Fig. 4:**
Water Leak Detector with Remote Spot Sensor or optional Water Rope Sensor (not shown) and a 5 Amp Relay in a System Diagram (Side View)

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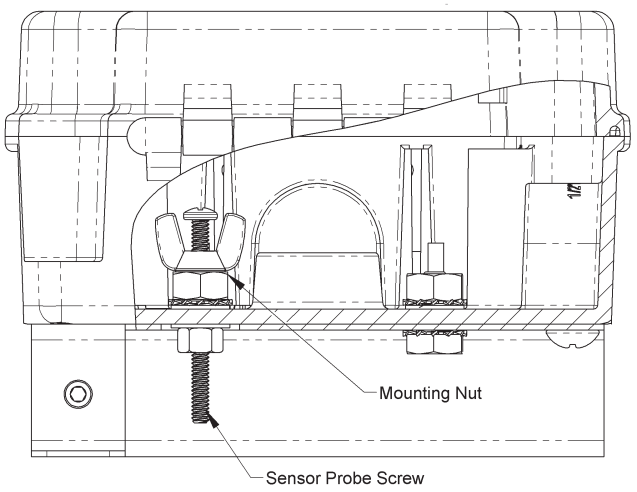
## Mounting

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 Fig. 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 (Fig. 5).
   - Alternatively the water sensor can be attached to the pan edge with two set screws (Fig. 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 (Fig. 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 (Fig. 8). Mount the detector enclosure in a more visible location within cable length of the remote water sensor.
   - Alternatively the rope water sensor can be laid on the floor or under pipes as shown in Figs. 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 (Fig. 5). If using a remote water sensor, adjust the depth screw as shown in Fig. 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.




1. Set the required depth of the sensor probe screw using a #2 phillips screwdriver
2. Hold the sensor probe screw stationary with the screwdriver.
3. Turn the wing nut down the probe screw until it engages the mounting nut.
4. Tighten the wing nut to lock the sensor probe screw in place.

**Fig. 5:** Leak Detector with Sensor in a BAPI-Box

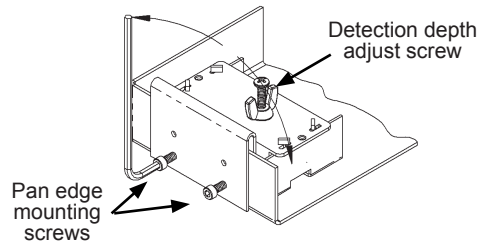



**Fig. 6:** Water Sensor Pan Rim Mounting


**Fig. 7:** Remote Water Sensor Tape Mount

**Fig. 8:** Remote Water Sensor Floor Mount

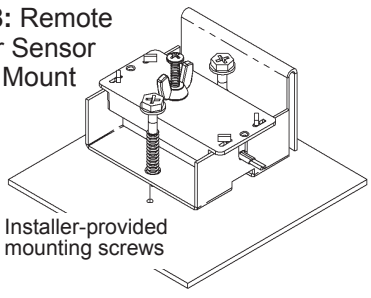
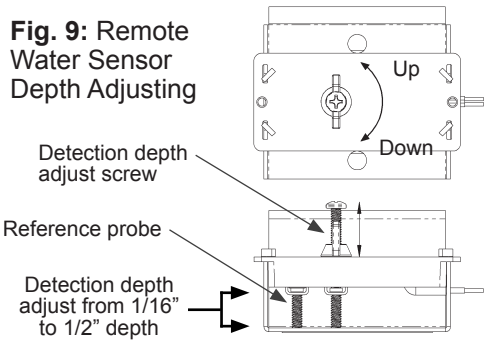



**Fig. 9:** Remote Water Sensor Depth Adjusting




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.

***Mounting continued...***

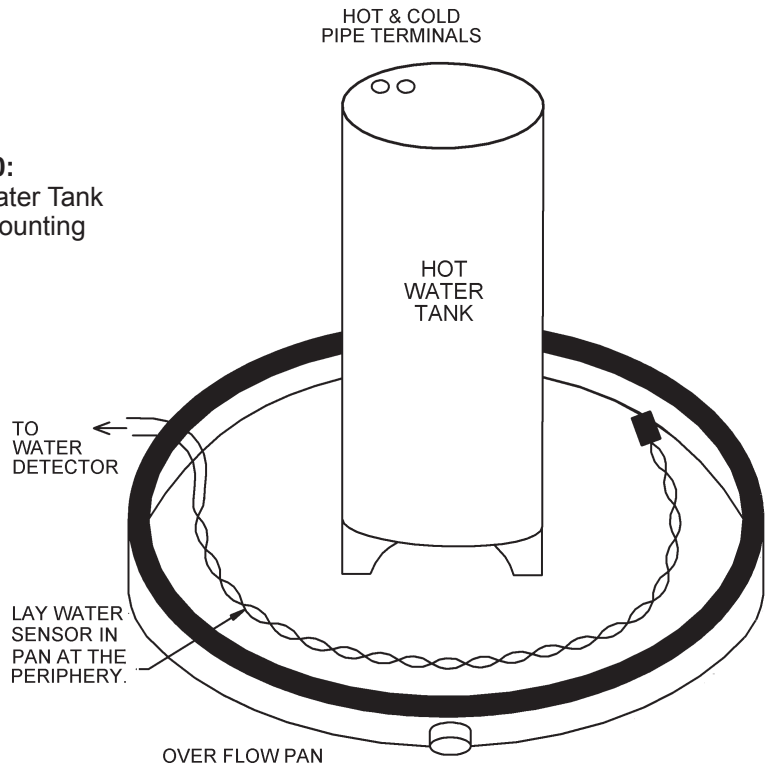



**Fig. 10:**
Hot Water Tank
Pan Mounting

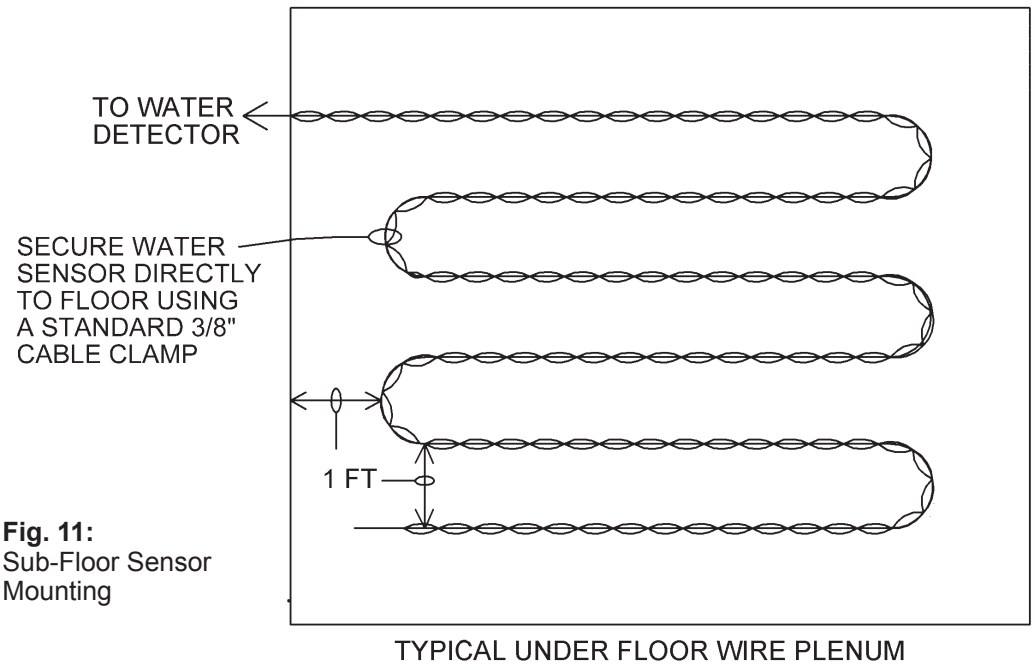



**Fig. 11:**
Sub-Floor Sensor
Mounting

## *Mounting continued...*

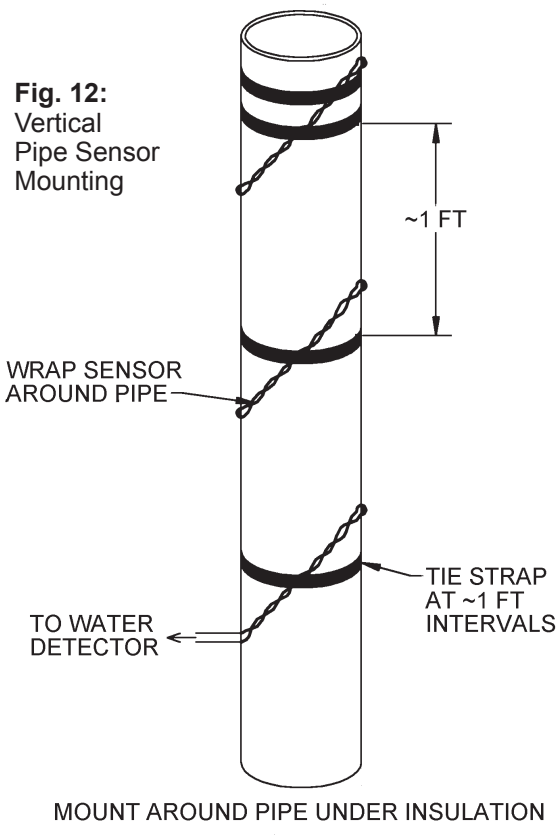



**Fig. 12:** Vertical Pipe Sensor Mounting

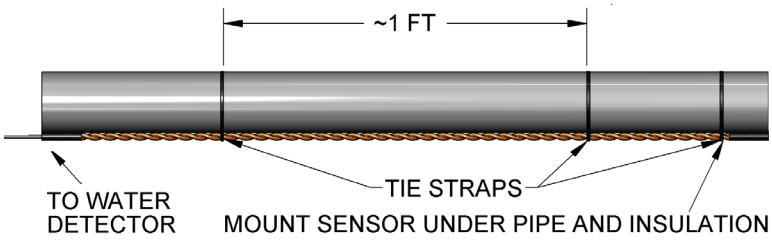



**Fig. 13:** Horizontal Pipe Sensor Mounting

## *Wiring and Termination*

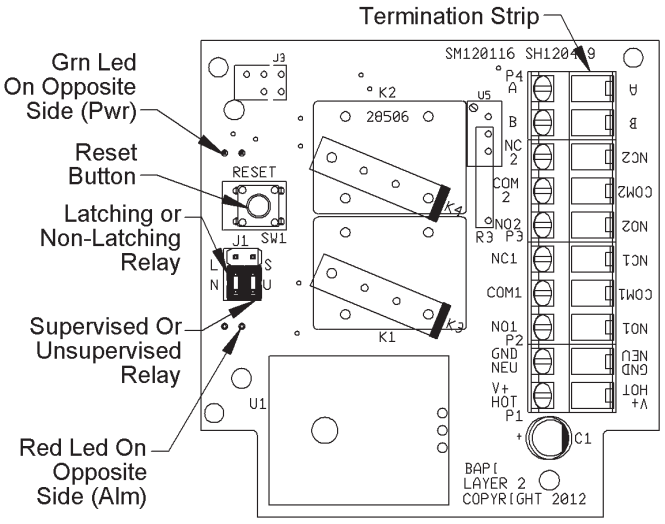



**Fig. 14:** Leak Detector Circuit Board

| 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 |
| C2 | 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 |
| C1 | 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 18 to 30VAC |

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



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## *Set Up and Commissioning*

| Indication/Controls | Description |
|---|---|
| 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. (18 to 30VAC)
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 an unsupervised relay. (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 a 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 screw (see Mounting Section) to be sure it’s at the appropriate water depth for alarm.

## *Operation Sequence*

When power is applied, the green LED will illuminate and 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*

| Possible Problem | Possible Solution |
|---|---|
| Green LED Not On | 1. Check for proper power to the unit (see power specs below). |
| Red LED Not Working Or Relay Not Energizing. | 1. Check for proper power to the unit (see power specs below).<br>2. Check if water is touching the sensor probe and reference probe.<br>3. Adjust sensor probe depth. |
| Unit Will Not Reset | 1. Check for the presence of water or debris touching the two sensor probes.<br>2. Be sure the sensor wires are not shorted.<br>3. If the L pins on J1 are shorted, push the reset button or cycle power. |



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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.

## *Cautions/Warnings*

This unit is not intended to be a safety device. In no event shall BAPI or its officers, directors, employees or agents be liable to any company or individual for any indirect, incidental, special, exemplary, punitive or consequential damages including, without limitation, economic or commercial losses, arising out of or resulting from the misuse of this water detector as a safety device.

## *Specifications*

| | |
|---|---|
| **Power:** | 18 to 30VAC |
| 5 Amp Relays | 4 VA max |
| 0.5 Amp Relays | 2 VA max (not intended to switch a load) |
| **Wiring:** | Flex Connector or Liquid Tight Fitting |
| Relays | Up to 6 wires |
| Transmitter | 2 wires for Power |
| **Mounting:** | Lays in the pan or attached with a pan edge hook with screws |
| **Sensor:** | |
| Standard | Single SS probe from bottom of BB with adjustable depth screw from .063” to .84” |
| Optional | Remote water sensor with depth screw with adjustable depth from 1/16” to 1/2” |
| Optional | Remote long line water sensor (Rope) Detects water over the full length at depths >0.125”. Note: 100 ft maximum including non-sensing extension cable. |
| **Detector Transmitter:** | |
| Alarm Contacts | LDT1: One SPST, 0.5A relay output, 10W max<br>LDT2: Two SPST, 0.5A relay outputs, 10W max<br>LDT3: One SPDT, 5A relay output<br>LDT4: Two SPDT, 5A relay outputs |
| | SPST or SPDT, 30 VAC/DC max |
| | Selectable as normally Energized or De-energized |
| Indication | 1 Green Power LED, 1 Red Alarm LED |
| Reset Action | If latching, local push button or power interrupt |
| Sensor Reaction | Responds to presence of water within 5 seconds |
| **Termination:** | Terminal strip, 4-10 terminals, 12-24AWG |
| **Agency:** | RoHS, UL94V-0, UV-rated in Enclosure |
| **Set Up:** | |
| BB Sensor | Adjustable depth from .063” to .84” (≈1/16th” default) |
| Remote Sensor | Adjustment depth from 1/16” to 1/2” (≈1/16th” default) |
| Latching Jumper | Latching Version - Stays energized after water has dried up |
| | Non-Latching Version (default) - Alarm follows wet or dry surface |
| Supervision Jumper | Supervised Version (default) - De-energized when in alarm. **Note:** Relay will drop out on loss of power indicating a water detection alarm. |
| | Unsupervised Version - Energized when in alarm. |
| **Enclosure Ratings:** | |
| Remote Sensor | Submersible, w/FEP plenum-rated, waterproof cable |
| Rope Sensor | Plenum rated |
| Transmitter | BAPI-Box, NEMA 4 |
| **Ambient:** | |
| Remote Sensor | -40 to 185ºF (-40 to 85ºC), 0 to 100%RH, Condensing |
| Transmitter (BB) | -40 to 185ºF (-40 to 85ºC), 0 to 95%RH, Non-condensing |
| Rope Sensor | 32 to 167ºF (0 to 75ºC), 0 to 95%RH, Non-condensing |
| **Enclosure Materials:** | |
| Remote Sensor | Aluminum bracket w/ABS plastic shell |
| Transmitter (BB) | Polycarbonate |
| **Note:** | This unit is not intended to be a safety device. |



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