



Installation Guide

PowerG + Water Tile
with Freeze Detection

grandalarms.com
416-657-2100

Installation Guide

PowerG + Water Tile with Freeze Detection



Safety instructions

Note: The reference to PGPx986 throughout this document includes the models PGP9986, PGP8986, PGP8986-0, PGP8986-1, and PGP8986-2.
PGP9986 is for DSC / Tyco branded model (915 MHz)
PGP8986 is for DSC / Tyco branded model (868 MHz)
PGP8986-0, PGP8986-1 is for Visonic branded model (868 MHz)
PGP8986-2 is for Bentel branded model (868 MHz)

The PGPx986 shall be installed and used within an environment that provides the pollution degree max 2 and over voltages category II in non-hazardous locations, indoor only. The equipment is designed to be installed by SERVICE PERSONS only; (SERVICE PERSON is defined as a person having the appropriate technical training and experience necessary to be aware of hazards to which that person may be exposed in performing a task and of measures to minimize the risks to that person or other persons).

The PGPx986 PowerG+ Water Tile with Freeze Detection is powered by two CR2450 batteries, rated 3V.

CAUTION: Only qualified personnel may install this equipment. Place this device in non- hazardous indoor locations only.

IMPORTANT: Check the device and the entire alarm system weekly to ensure optimal performance.

WARNING: This product contains a coin battery. If it is swallowed, it can cause severe internal burns in just 2 hours and can lead to death. Keep new and used batteries away from children. If the battery compartment does not close securely, stop using the product, and keep it away from children. Seek immediate medical attention if you think batteries might have been swallowed or placed inside any part of the body.

Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate. Even used batteries may cause severe injury or death. Call a local poison control center for treatment information. Non- rechargeable batteries are not to be recharged.

Do not force discharge, recharge, disassemble, heat above (manufacturer's specified temperature rating) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns. Ensure the batteries are installed correctly according to polarity (+ and -). Do not mix old and new batteries, different brands or types of batteries, such as alkaline, carbon-zinc, or rechargeable batteries.

Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time according to local regulations. Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the batteries, and keep them away from children.

Note: See D-309611 for installation cut sheet.

About PGPx986 PowerG+ Water Tile with Freeze Detection

The PGPx986 PowerG+ Water Tile with Freeze Detection is a water sensor that alerts homeowners to a leak or flood and is compatible with the IQ Panel 4 and IQ Panel 5 . Instructions in this installation guide are based on operation with the IQ Panel 4. The PGPx986 is also compatible with the following panels: IQ4 Hub, IQ4-NS, IQ Pro, IQ5 Hub, IQ5 NS. For device enrollment instructions for each of these panels, refer to the control panel installation guide. The PGPx986 is also compatible with other PG-enabled panels in legacy/fallback mode. In this mode it will only function as a flood sensor (no freeze detection).

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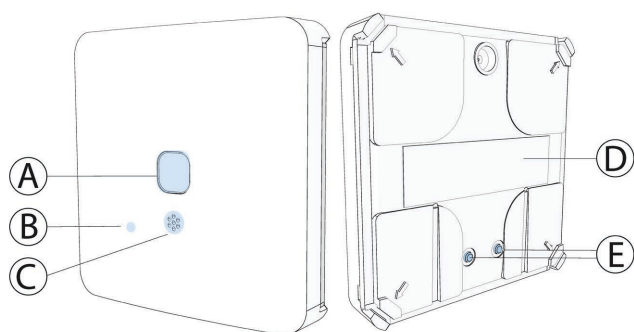
Introduction

The PGPx986 Water Tile with Freeze Detection includes the following features:

- Reliable long-range communication: Features robust two-way PowerG communication with the control panel, utilizing advanced FHSS and TDMA technology for secure and dependable connectivity.
- Sleek, space-saving design: The low-profile design allows for discreet installation in various settings without compromising on performance.
- Enhanced tamper detection: Offers improved detection for cover, mount, and probes, alerting users to any improper installation or connections.
- Clear visual indicators: Equipped with LED indicators that simplify signal strength assessment, ensuring optimal device placement for maximum effectiveness.
- Low battery alerts: Built-in low battery indication provides timely notifications to ensure the device remains operational.
- Over-the-air firmware updates: Effortlessly upgrade device firmware remotely, enhancing functionality and security without the need for physical access.
Note: Firmware update is not used on UL listed applications.
- Multi-function button: A versatile button that facilitates device enrollment, reset, and mute functions, ensuring user-friendly operation.
- Audible water leak alerts: Emits a clear audible alert in the event of a water leak, prompting immediate attention.
- Integrated low temperature alerts: Low temperature reporting to detect freezing conditions and prevent potential damage.
- External probe and sensing cable support: Compatible with external probes and sensing cables (accessories sold separately) to enhance monitoring capabilities.

The PGPx986 Water Tile with Freeze Detection includes the following components:

Figure 1: Device Components



Callout	Description
A	Multi-function button
B	LED
C	Buzzer
D	Nameplate
E	Electrodes

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Optional accessories (ordered separately) are available to enhance the PGPx986 installation, allowing mounting on vertical surfaces (with PGP-WT-PRB), or covering a larger detection area (with PGP-WT-SC6 or PGP-WT-SC12).

Part Number	Model name	Description
PGP-WT-SC6	Accessory – wall mount + 6 ft sensor cable	Accessory kit including wall mount bracket and 6 ft sensor cable for use with PGPx986
PGP-WT-SC12	Accessory – wall mount + 12 ft sensor cable	Accessory kit including wall mount bracket and 12 ft sensor cable for use with PGPx986
PGP-WT-PRB	Accessory – wall mount + sensor probe	Accessory kit including wall mount bracket and external sensor probe for using with PGPx986

Contents of box

- Device
- Manual
- Two-sided tape 13x13 mm

Initially powering up the device or replacing the battery in the device

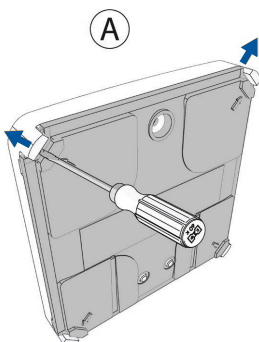
CAUTION: Do not replace the battery with an incorrect battery type. See Specifications for acceptable battery types. Dispose of used batteries according to the manufacturer's instructions and according to local rules and regulations.

Important: The batteries are shipped with reverse polarity, which means they are pre-installed in the device upside down. To power up the device for the first time, reinsert the batteries with the positive (+) symbol facing up.

Note: It is recommended to use a flat screwdriver #2.

1. Carefully insert a flat-head screwdriver to the corner slot shown in the image below (A).
2. Apply gentle pressure to the screwdriver at an angle to lift open the device's inside cover tabs(B). Be cautious not to apply too much force, because this could break the tabs.
3. Repeat steps one and two for each corner tab, and then remove the cover (C).

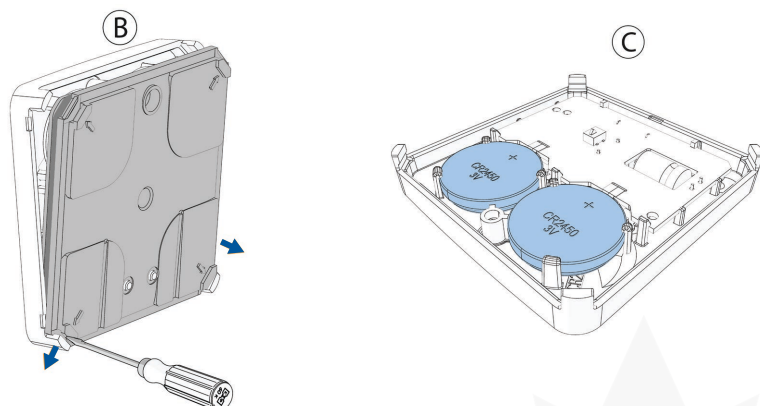
Figure 2: Removing the cover



Note: Do not use an electric screwdriver. This causes damage to the plastic enclosure.

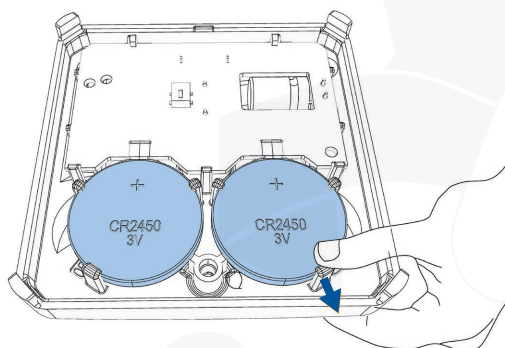
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4. Pull the front clasp back and release the battery. See Figure 3.

Figure 3: Removing the battery



Note: Do not use a screwdriver or other metal tool to remove the battery.

5. Insert the new battery at an angle under the two back clasps (A). See Figure 4.
6. Push the battery down under the front clasp.

Note: When you insert the battery, ensure the (+) symbol is visible.

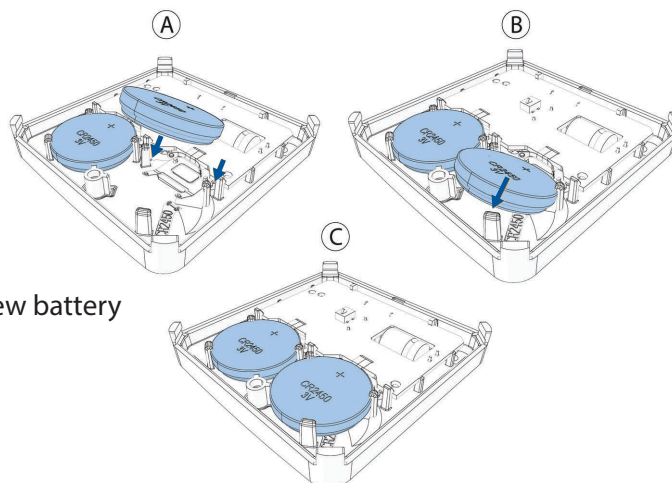


Figure 4: Inserting the new battery

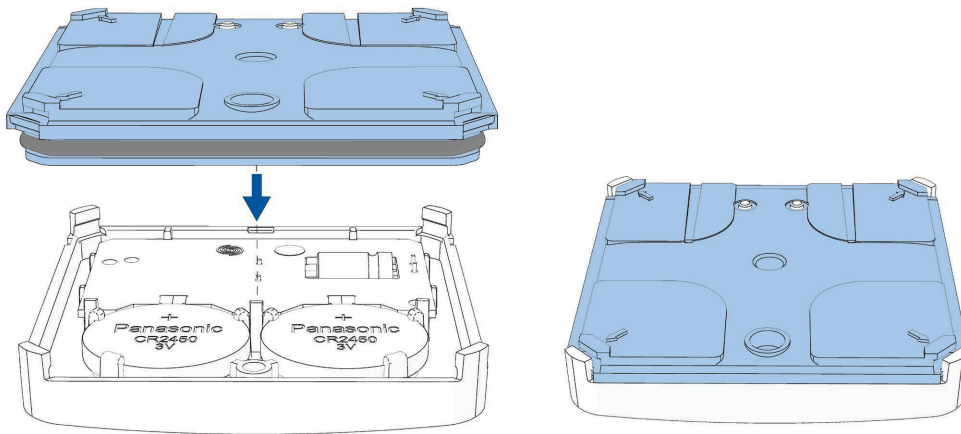
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7. Snap the device cover back into place. See the following figure. Do a visual check to ensure the cover is completely closed. After you restore a low battery, the system takes up to 5 minutes to clear the trouble.

Figure 5: Closing the device cover



Enrolling the device using Auto Learn Sensor

Note that when PGPx986 is enrolled on a compatible panel and firmware, the device will enroll as two separate zones, one for the water sensing function and one for the low temperature detection.

Enroll the PGPx986 device on your panel with the installation menu. Refer to your control panel installation manual for a complete set of enrollment instructions. The following instructions refer to the IQ panel 4.

Ensure the device is powered up.

1. On the IQ panel menu, select Settings > Advanced Settings.
2. Enter your 4-digit installer code.
3. Select Installation > Devices > Security Sensors > Auto Learn Sensor.
4. Press the multi-function button for three seconds until the yellow LED turns ON, or insert the batteries.
5. Release the multi-function button. The LED turns off. The device enters enrollment mode, and the panel is notified of the device initiating enrollment. The PGPx986 is enrolled with device ID 242-XXXX. Use the 7-digit ID on the back of the device to enroll the device to the control panel.
6. When the device is recognized, select OK when the pop-up window appears.
7. Configure the required device parameters.
8. Optional on the IQ4 panel: Enter the PIN code on the device product label for increased security during enrollment. The device does not pair with the panel if you enter an incorrect PIN code.
9. Select Add New. The device shows up in the devices tab as the device name selected, and a second zone that uses the same name (-Freeze).
10. Mount (when using with accessories) or fix the device to desired location (water tile only). See Local diagnostics test for information about testing the device.

Note: If the device does not automatically enroll, perform a factory reset as described in Resetting to factory default settings.

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Enrolling the device manually or with a QR code

Enroll the device in the IQ panel using the Add Sensor feature or scan the QR code on the box label using IQ4 camera. To enroll the device in the IQ panel using the Add PowerG feature, complete the following steps

1. On the IQ panel menu, select Settings > Advanced Settings.
2. Enter your 4-digit installer code.
3. Select Installation > Devices > Security Sensors > Add Sensor (for manual enrollment) or Scan QR Code for QR code enrollment.
4. Enter the sensor ID in the Sensor ID field or scan the QR code on the box label to enroll the device.
5. Optional: Enter the PIN code on the product label for increased security during enrollment. The device does not pair with the panel if you enter an incorrect PIN code.
6. Select Add New. In a few minutes, the device should automatically enroll. The device shows up in the devices tab as the device name selected, and a second zone that uses the same name (-Freeze). To speed up this process, open the battery cover.
7. Mount (when using with accessories) or fix the device to desired location (water tile only). See Local diagnostics test for information about testing the device.

Note: If the device does not automatically enroll, perform a factory reset as described in Resetting to factory default settings.

Enrolling the device using Fallback Mode

To enroll the PGPx986 in fallback mode on the panels listed in the Table 1, use the device ID indicated in the Fallback device ID column: the panel enrolls the PGPx986 as indicated in the Fallback device column.

Table 1: Device ID in fallback mode

Brand	Panel	Fallback device ID	Fallback device
IQ	IQ Panel 4 – firmware at 4.5.1	240-XXXX	FLD-550 PG2
IQ	IQ Panel 2 – firmware at 2.8.1	240-XXXX	FLD-550 PG2
IQ	IQ Hub – firmware at least 3.1.2	240-XXXX	FLD-550 PG2
DSC	IQ Pro – firmware at 4.3.0	240-XXXX	PGx985
DSC	Power Series Neo (EMEA) – firmware at 1.37*	240-XXXX	PGx985
DSC	Power Series Neo (NA) – firmware at 1.5*	240-XXXX	PGx985
DSC	PGPHOST9	240-XXXX	PGx985
DSC	Power Series Pro – firmware at 1.4	240-XXXX	FLD-550 PG2
Visonic	PowerMaster-30 G2 – firmware at 18, 19.412 and 20.2	240-XXXX	FLD-550 PG2
Visonic	PowerMaster-360R – firmware at 18, 19.412 and 20.2	240-XXXX	FLD-550 PG2
Visonic	PowerMaster-10 G2 – firmware at 18, 19.412 and 20.2	240-XXXX	FLD-550 PG2

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Brand	Panel	Fallback device ID	Fallback device
Bentel	BW64 – firmware at 18, 19.412 and 20.2	241-XXXX	BW-FLD
Bentel	BW30 – firmware at 18, 19.412 and 20.2	241-XXXX	BW-FLD
Bentel	Absoluta Plus – firmware at least 4.0	241-XXXX	BW-FLD
Bentel	Absoluta 630 – firmware at least 4.0	241-XXXX	BW-FLD

*) With PG Keypad built-in transceiver HS2LCDRFx, HS2LCDRFPx, HS2ICNRFx, or HS2ICNRFPx, with firmware at 1.33, or with HSM2HOST9 with firmware at 1.33

Note that the fallback system has the following limitations:

- No alerts for probe disconnect
- No configuration for the LED
- No configuration for the buzzer
- No alerts for low temperature/ freeze
- No over-the-air update
- No QR code enrollment

Configuring device parameters

If the option is available on your panel, configure device parameters on your control panel when you enroll your device.

See Table 2 for configuration options.

Table 2: Configuration options

Brand	Panel
Activation LED	Define whether the alarm LED indication will be activated. Optional settings: Enable (default) and Disable.
Buzzer	Define whether the alarm buzzer sound will be audible. Optional settings: Enable (default) and Disable.
External tamper	Define the settings for external tamper alerts. Note that internal tamper alerts are always enabled. • Disabled: No external tamper alerts. • Wall and Probe: External alerts are sent for both wall tamper and probe tamper events.

Local diagnostics test

After you power up or close the cover on the device, it automatically enters test mode for 15 minutes.

Note: To manually enter devices into test mode, refer to your control panel installation guide.

1. Before you start the test, remove the device cover from the base. See Figure 2.
2. Close the cover to return the tamper switch to its normal position. The red LED blinks.
3. Wait for a few seconds until the red LED stops blinking.
4. Test the flood function. See Testing the flood function.

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Table 3: Signal strength indication

LED Response	Reception
Green LED Blinks	Strong
Yellow LED Blinks	Good
Red LED Blinks	Poor
No Blink	No communication

Important: Ensure you have reliable reception. Poor signal strength is not acceptable. If you receive poor signal from the device, relocate it and re-test until you get good or strong signal strength. Verify the signal strength with the control panel diagnostic test. For detailed diagnostics test instructions, refer to the control panel installation guide for your control panel. For UL/ULC installations, only strong signal levels are acceptable.

Checking the signal strength on the panel

1. On the IQ panel 4, select Settings > Advanced Settings.
2. Enter the installer code.
3. Select System tests > PowerG Test > Run.
The panel displays the signal strength strong, good, poor, or no signal.

Testing the flood function

For the internal sensor or sensor probe, the water should make contact with both sensors. For the sensing cable, the water should make contact with any portion of the cable.

1. Choose option a or b.
 - a. For the internal sensor, place the device in a small container. Make sure it is stable.
 - b. For extension probe or sensing cable, place the sensing probe or the sensing cable in a small container. Make sure it is stable. Please make sure the sensor probe or sensor cable is connected properly with the wall mount and device before the test starts.
2. Slowly run water into the container until it reaches the extension probe or sensing cable. Monitor the water level to ensure it makes contact with the sensor. Wait for the water tile to trigger the alarm on the control panel.
3. Once the alarm on the control panel is activated, carefully remove the immersed portion of the water tile from the container.
4. Gently wipe off any excess water to remove moisture.
5. Dry the parts thoroughly. Use a soft, dry towel to wipe down the device, and extension probe or sensing cables.
6. Allow the device, and extension probe or sensing cables to air dry completely. After the device, and extension probe or sensing cables are completely dry, carefully place it back in its designated location.

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Testing the freeze detection function

If the freeze feature is available, perform the following steps to test the freeze detection function.

1. Place the water tile in a dry area of the freezer.
2. Wait for the temperature reading of the water tile to drop below 5°C (41°F) for low temperature to trigger the freeze alarm on the control panel.
3. Once the alarm on the control panel is activated, carefully remove the sensor from the freezer.
4. Gently wipe off any excess water to prevent moisture from lingering.
5. Dry the sensor thoroughly. Use a soft, dry towel to wipe down the sensor. Ensure all surfaces, including connectors and openings, are free from moisture.
6. Allow the sensor to air dry completely. After the sensor is completely dry, carefully place it back in its designated location.

Mounting the device

- Do not install near high-voltage electrical lines.
- Do not install outdoors.
- Place the device on the floor or mount it on the wall with a bracket at any height. Ensure the device is in the correct location, ideally near potential flood sources.

Note: The bracket is not intended to be submerged in water.

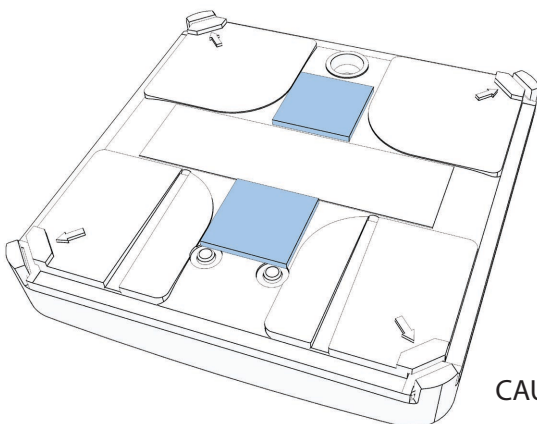
CAUTION: The included double-sided tape may damage your flooring finish. Johnson Controls will not be held liable for any damages incurred. If you choose to use the double-sided tape for mounting the device, we strongly recommend consulting your flooring manufacturer for appropriate adhesive options.

Important: Insert the batteries before mounting the device. See Initially powering up the device or replacing the battery in the device.

Using the optional double-sided tape

1. Peel the release liners off the two adhesive tape pads.
2. Attach the two tape pads to the back of the device.

Figure 6: Optional: Attaching Tape



CAUTION: Do not cover the electrodes.

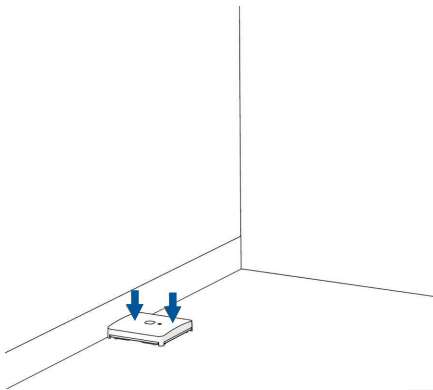
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3. Attach the device to the floor, in an area that is likely to experience flooding.
4. Hold the device in place for one minute to ensure it is attached.

Figure 7: Attaching to the floor

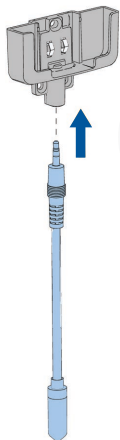


Optional: Mounting the device with PGP-WT-SC6 or PGP-WTSC12

Perform the following steps to mount the device with a sensing cable.

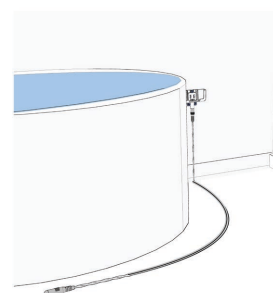
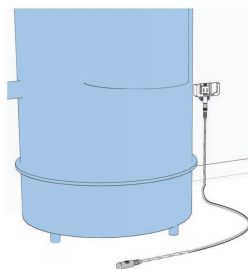
1. Connect the sensing cable to the bracket.

Figure 8: Connecting the cable to the bracket



2. Lie the sensing cable on the floor.

Figure 9: Lie the sensing cable on the floor



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- Optional: Use the supplied clips to fix the cable to the floor or surface. Keep approximately 40 cm (16 in.) distance between each clip.
- Attach the bracket to the wall with three screws. Recommended screw size is Philips #6 x 1 in. long. Do not use electrical screwdriver.

Note: When choosing a mounting location, ensure there is sufficient height left below the bracket for the connector of sensing cable.

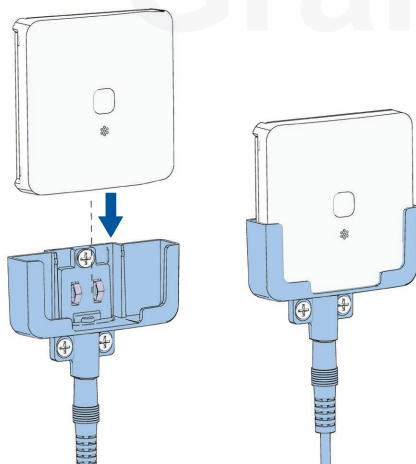
Note: For UL-2017 compliance, screws must be installed.

Figure 10: Attach the bracket to the wall



- Slide the device into the bracket until it clicks into place.

Figure 11: Inserting the device into the bracket



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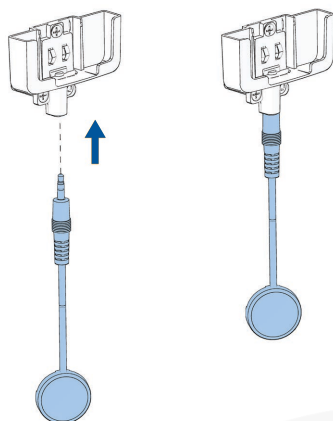


Optional: Mounting the device with PGP-WT-PRB

Perform the following steps to mount the device with an external probe.

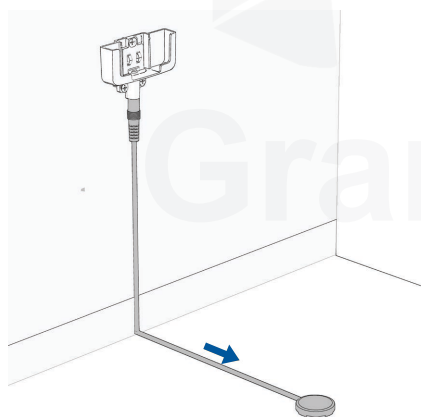
1. Connect the external probe to the bracket.

Figure 12: Connecting the external probe to the bracket



2. To place, lay the external probe on the floor.

Figure 13: Placing the external probe on the floor



3. Secure with tape.
4. Attach the bracket to the wall with the three screws provided in the kit.
Note: Use only the screws supplied in the mounting kit.
5. Insert the device into the bracket.

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Flood alarm events

- The PGPx986 can detect leaks from all water-based liquids, except for distilled water.
- When a flood alarm is triggered, the PGPx986 indicates the event on the control panel, and the device LED blinks red while the buzzer emits an audible beep.
- To silence the PGPx986 buzzer during a flood alarm, press and hold the multi-function button until you hear two beeps. The PGPx986 buzzer remains muted until the device's status returns to normal, then the buzzer reactivates.
- After a flood alarm event, please refer to Testing the flood function for instructions on how to reset the PGPx986.

Maintenance

To ensure optimum performance, complete the following maintenance tasks periodically.

- Wipe the water tile and its sensors with a soft, dry cloth to remove dust and debris.
- Avoid harsh chemicals when cleaning. Do not use abrasive cleaners or solvents that may damage the device
- After each flood detection, the device, sensing cable, and external probe should be cleaned and dried. Otherwise, the unit may not operate as intended due to the nature of different liquids
- Check the battery levels regularly to ensure the detector remains operational.

Troubleshooting

Problem	Solution
Not powering on	Check battery installation: Ensure that the batteries are installed correctly. Remove the batteries and reinsert them in the correct orientation. Inspect batteries: Check if the batteries are old or depleted, and replace them with new recommended batteries if necessary.
Low battery notification	Promptly replace: Replace the battery as soon as possible to maintain device functionality. Delaying battery replacement could result in loss of detection capabilities.
Connectivity issues to the control panel	Signal strength: If you receive a Low Signal or No Signal alert during panel signal tests, try relocating the water tile to a different position where it may receive a stronger signal. Consider repeaters: If connectivity issues persist, consider using a PowerG or PowerG+ repeater to enhance the signal strength between the water tile and the control panel.

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Problem	Solution
Device does not trigger during an alarm	Placement verification: Ensure the water tile is installed in a suitable location where flooding is likely to occur, avoiding areas with minimal water exposure. Clean sensor, probes and cables: Check that the sensor, and if applicable the probes, or any sensing cables are clean and devoid of debris. Use a soft, dry cloth to wipe them down. Conduct Function Tests: Follow the testing procedures outlined in this user manual to verify water tile functionality. Tampering Test: To test the sensor's responsiveness, remove the battery cover to simulate a tamper condition.
Flood false alarms	Humidity check: Confirm that the water tile is not situated in an excessively humid environment, which could trigger false alarms. If residual humidity or water droplets are present, clean the sensor, probes, and sensing cables, then relocate the sensor to a drier area. Dry sensor and probes: Ensure that the sensor, probes, and sensing cables are completely dry and not in contact with water because this will trigger an alarm. Check probes and cables: inspect if the external probes and/or cables are cut or crushed.
Buzzer does not sound when water is detected	Mute settings: Verify that the buzzer is not set to mute. If it has a mute function, ensure it is disabled. Perform buzzer test: If your control panel has a buzzer test feature, use it to ensure the buzzer is functioning properly.
Control panel indicates tamper	Secure battery cover: Ensure that the battery cover on the sensor is properly closed and secured. Check probes and cables: Confirm that the probes and sensing cables are correctly attached and not loose, because this can trigger a tamper alert. Check if the external probes and/or cables are cut or crushed.
Leak alarm triggered after resetting the water tile	Investigate leak cause: The cause of the leak alarm may still be present. Inspect the area for ongoing leaks or sources of water. Check for moisture: Ensure that the sensor, probes, and sensing cables are completely dry. If they are still wet, the alarm will continue to trigger. Inspect for damage: Examine the sensor and its components for any signs of damage. If any part is damaged, it may need to be replaced.
Cannot locate the device	If your control panel has the feature, use TEST LED and TEST BUZZER to locate the device.

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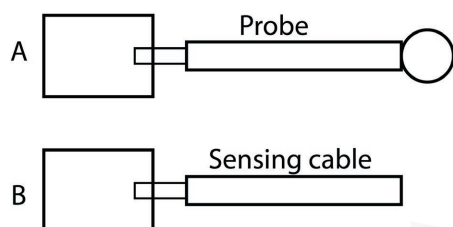


Event trouble notification for external sensors connection options

See the following image and table for external sensor connection options.

Important: It is not recommended to connect the external sensor probe to sensor cable. It is not recommended to use the sensor cable from a third party to connect to the wall mount bracket. The connection is considered out of warranty.

Figure 14: External sensor options



Event	Connection Option	
	A	B
	Probe	Sensing Cable
Cut	Probe Disconnect	
Shorted	Flood alarm	

Resetting to factory default settings

1. Press and hold the multi-function button for at least 2 seconds until the LED shows a steady orange light.
2. Briefly release the multi-function button, then press and hold the button again for 16 seconds until the LED turns red and flashes three times to indicate a reset to factory default.

Note: After a device is reset back to factory default, delete it from the panel and re-enroll the device.

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Specifications

Product specifications for PGPx986 PowerG+ Water Tile with Freeze Detection are outlined in the specifications table.

Table 4: Specifications

Specifications	Description
Frequency Band	PGP9986: 912 to 919 MHz PGP8986, PGP8986-0, PGP8986-1, and PGP8986-2: 868 MHz to 869 MHz
Maximum Tx power	+14 dBm @ 868 MHz, +18 dBm @ 915MHz
Modulation	GFSK
Communication Protocol	PowerG, PowerG+
Power Supply	Battery
Battery Type	2 X 3V Lithium CR2450 Panasonic, Duracell and GP battery
Battery Life	5 years with typical use at room temperature 77°F (25°C)
Low Battery Threshold	4.3 V at room temperature 77°F (25°C)
Nominal operating voltage	6 V
Current Consumption	Maximum current: 100 mA Minimum current: 2 uA
	Quiescent current: 7.5 uA (after a minimum 1 hour of inactivity)
Ingress Protection (IP) rating	IP65
Operating temperature	14°F (-10°C) to 131°F (55°C) Note: UL evaluated 32°F (0°C) to 120°F (49°C)
Storage temperature	-4°F (-20°C) to 158°F (70°C)
Relative humidity	Up to 93% non-condensing
Dimensions (LxWxD)	2.6 in. (L) x 2.6 in. (W) x 0.43 in. (H) / 65 mm (L) x 65 mm (W) x 11 mm (H)
Weight (including battery)	1.7 oz (48 g)
Color	White