PGPx945E Door/Window Magnetic Contact with Wired Input Installation Guide

About PGPx945E

The PGPx945E is a two-way wireless PowerG magnetic contact device. The device includes a built-in reed switch that opens when the magnet is removed from the contact. There is a separate auxiliary hard-wired input used with additional sensors, for example, push button detectors, or door contacts.

The device has the following features:

- Dealer lock down
- Two-factor authentication
- Two-way PowerG communication with the control panel
- Front cover and back cover tamper detection
- Periodic supervision message is transmitted automatically to the control panel at regular interval
- Signal strength LED indication during installation
- Discreet transmission of supervision message
- PowerG two-way frequency hopping spread spectrum time-division multiple access (FHSS-TDMA) technology
- Low battery indication
- Battery reporting
- Remote firmware upgrade
- User-selectable operation of auxiliary input as Reed Switch, Normally open, Normally closed, End of Line (EOL), Double EOL, or Triple EOL
- Temperature sensing and reporting

Installation guidelines

The reference to PGPx945E throughout this manual includes the model PGP9945E and PGP8945E.

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

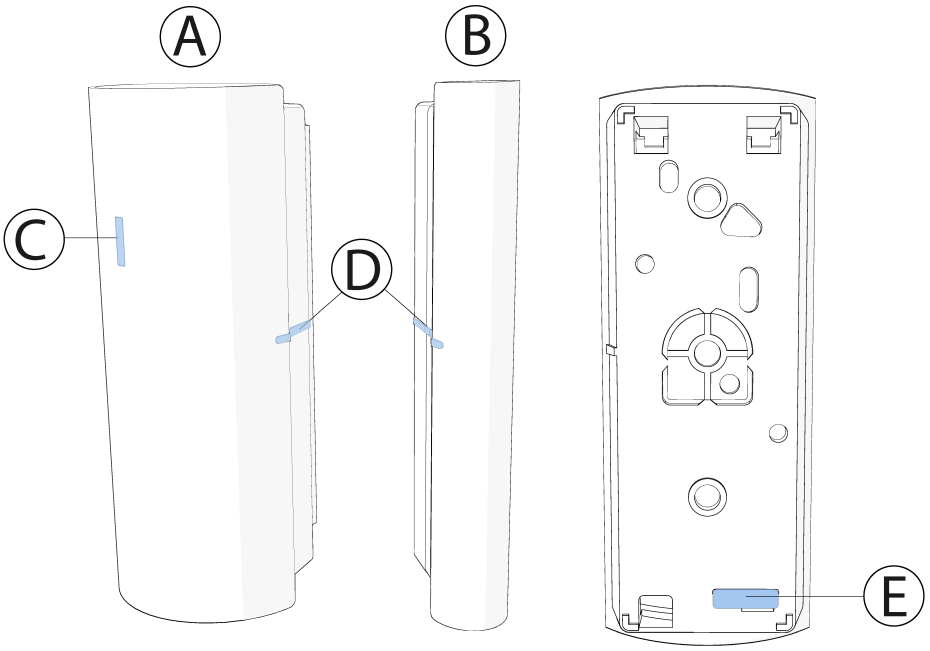
Important: Check the device and the entire alarm system weekly to ensure optimal performance.

Note: Do not co-locate the antennas used for this product, or operate them in conjunction with any other antenna or transmitter. To comply with FCC and ISED Canada RF exposure compliance requirements, locate the device at a distance of at least 20 cm from all persons during normal operation.

Install the UL/ULC listed model PGP9945E in accordance with the Standard for Installation and Classification of Residential Burglar Alarm Systems, UL 1641 and ULC-S302.

D-309336

Figure 1: PGPx945E



Callout	Description	Callout	Description
A	Device	D	Positioning marks
B	Magnet	E	Battery pull-tab
C	Transmission LED		

For more information refer to section About PGPx945E.

Enrolling the device

1. Refer to the control panel installation manual for the complete set of enrollment instructions and testing procedures.
2. From the **Installation** menu, select **Devices** > **Security Sensors** > **Auto Learn Sensor**to add a new device.
3. Remove the battery pull-tab to power on the device and begin the auto-enrollment process. If the battery pull-tab is not available or if the device does not automatically enroll, open and close the device cover to trigger the enrollment. Alternatively, press the enroll button until the orange LED turns on. See Figure 4 G.
4. If requested, enter the PIN code printed on the device label.
5. To manually enroll the device:
   a. Scan the QR Code on the device box, using the IQ4 camera if available, or see step b.
   b. Manually enter the device ID, printed on the product label, in the format 102-XXXX.

   ⓘ **Note:** If the device has been powered up for more than 48 hours it will be identified by the system only after the device has been reset.

   The PGPx945E is enrolled with device ID 102-XXXX. In fall back mode it enrolls as PGx945 with device ID 101-XXXX.
6. Select the required zone.
7. Configure any device parameters that are required.
8. Mount and test the device. See Local diagnostics test for information on testing the device.

Configuring the device parameters

1. Enter the **DEVICE SETTINGS** menu and select the required configuration as described in the following table.

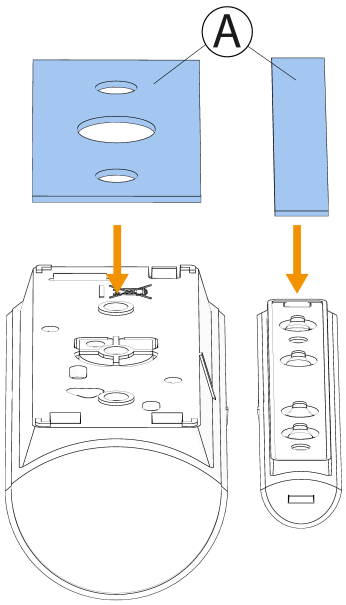
Table 1: Configuration options

Option	Action
Activation LED	Define whether the alarm LED indication will be activated. Optional settings: **LED ON** (default) and **LED OFF**.
Sensor Input	Determine whether to enable or disable the internal reed switch. Optional settings: **Reed Switch** (default), **Auxiliary Normally Closed**, **Auxiliary Normally Open**, **End of Line**, **Double End of Line**, **Triple End of Line**.
Sensor Reports During Disarm	Determine whether to enable or disable sensor reports during disarm Optional settings: **Disabled** or **Enabled** (default).

Mounting the device using tape

1. Peel the release liners off the two strips of double-sided adhesive tape and attach the tape to the back of the device and the magnet. See the following figure.

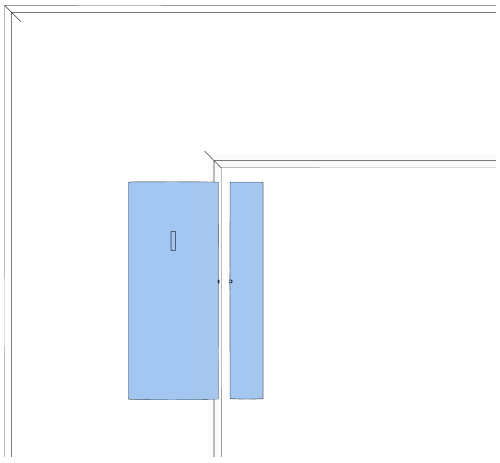
Figure 2: Double-sided adhesive tape placement on the device and magnet



Callout	Description
A	Double-sided adhesive tape

2. Place the device on the frame of a window or door and place the magnet on the moving surface of the window or door itself, directed according to the positioning marks. See the following figure.

Figure 3: Device and magnet position on door and door frame

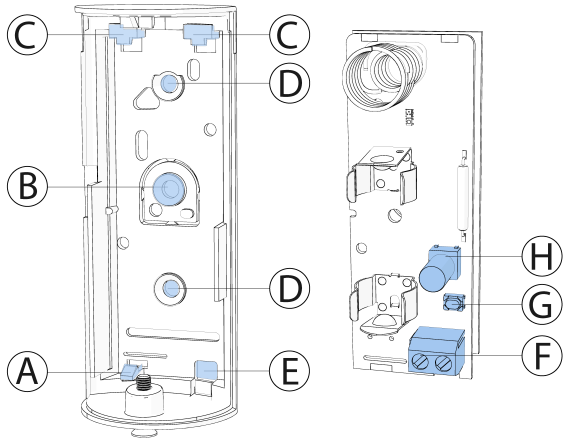


Note: Mounting using adhesive tape is permitted only for UL/ULC residential installations. Use only the adhesive tape that was provided with the device.

Mounting the device using screws

Note: Mounting using screws is required for UL/ULC commercial burglary and residential fire type installations. Wall tamper (break-away segment) shall also be enabled.

Figure 4: Internal view



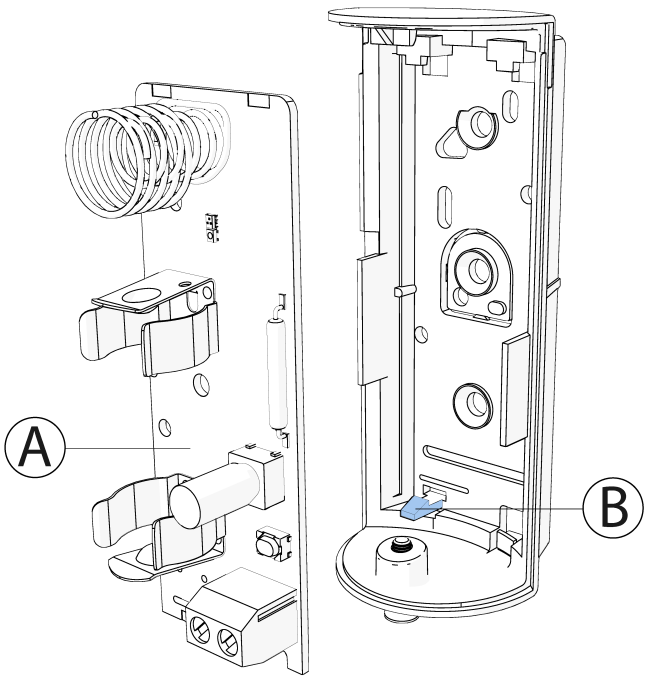
Callout	Description
A	Flexible electronic board retainer
B	Break-away segment
C	Electronic board edge supports
D	Mounting holes
E	Wiring inlet
F	Terminal block
G	Enroll button
H	Tamper switch

1. To open the device cover, use a screwdriver to loosen the cover screw and separate the base from the cover.

Figure 5: Device cover removal

2. Remove the battery.
3. Flex the retainer and remove the electronic board. See the following figure.

Figure 6: Removing the electronic board



Callout	Description
A	Electronic board
B	Retainer

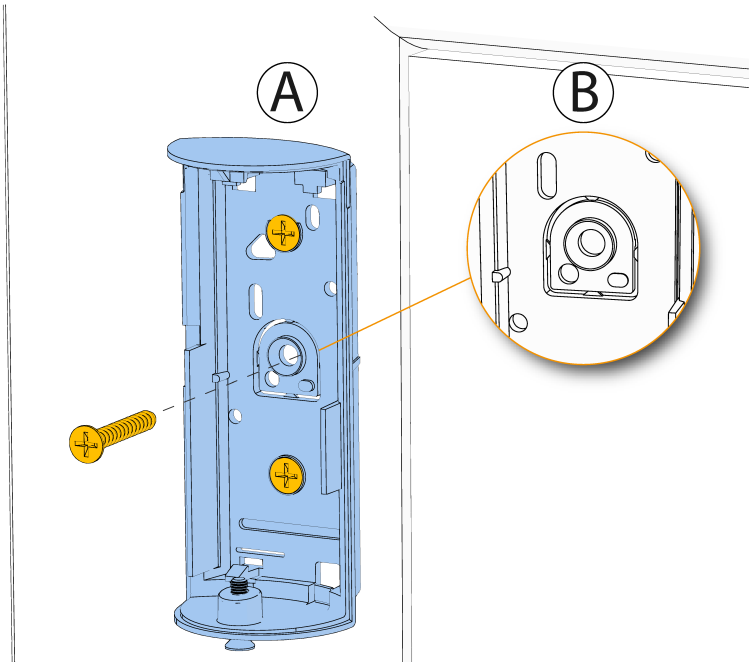
4. Screw the device base on to the door or window frame. See the following figure.

Note:

Make sure to fasten the break-away segment to the frame. If the device is forcibly removed from the wall, this segment will break away from the base, causing the tamper switch to open. See Figure 7 B.

Wall tamper is required for UL/ULC commercial burglary and residential fire installations and EN Grade 2 installations.

Figure 7: Device screw installation



Callout	Description
A	Screwing device base
B	Break-away Segment

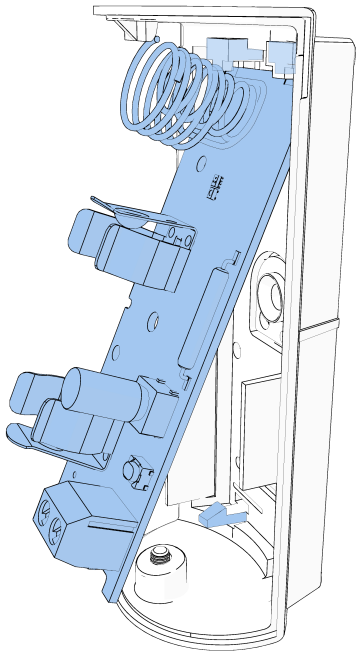
5. Reinsert the battery. See Replacing the battery for more details.
6. To reattach the electronic board to the base, flex the retainer and place the electronic board under the electronic board edge supports. See the following figure.

Figure 8: Reattaching the electronic board

Callout	Description
A	Electronic board edge supports
B	Retainer

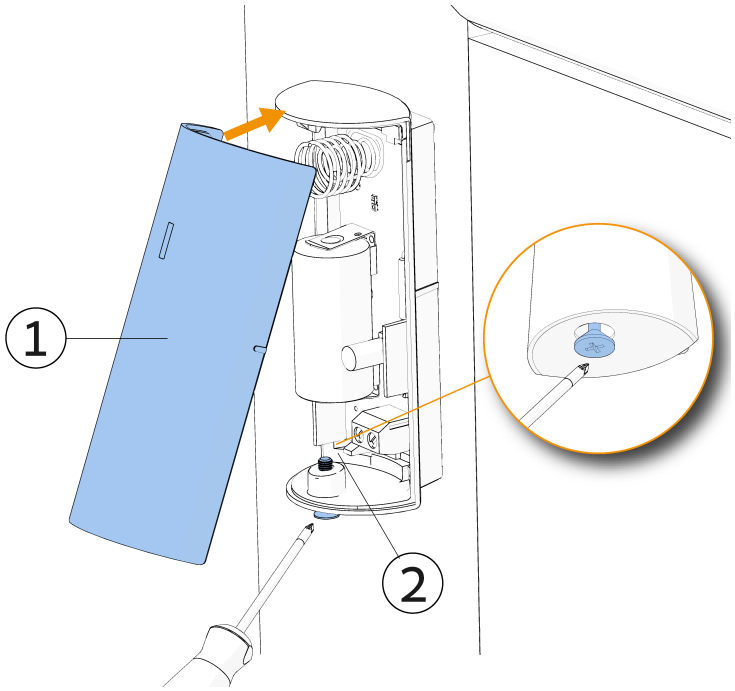
7. Release the retainer back in place to fasten the electronic board. See the following figure.

Figure 9: Releasing the retainer



8. Clip the cover onto the device base and tighten the cover screw. See the following figure.

Figure 10: Closing the device cover

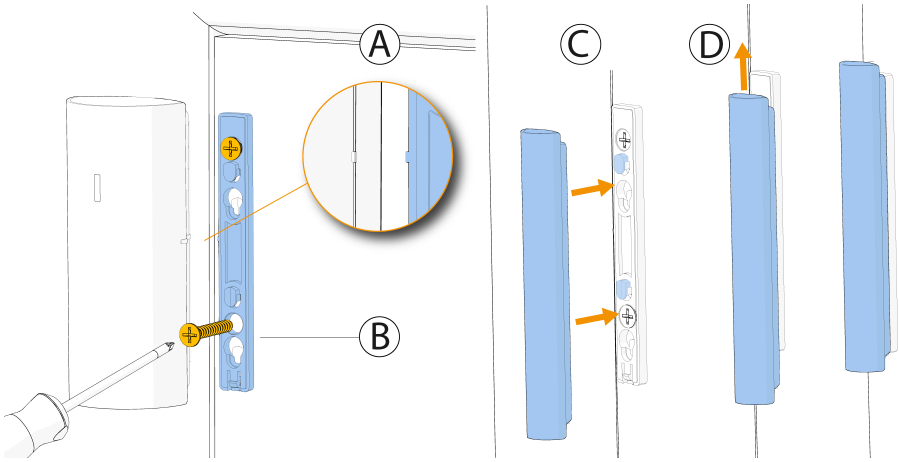


9. Using a 3 mm or 7 mm bracket only, align the magnet bracket to the device according to the positioning marks. See Figure 11 A.
10. Screw the magnet bracket onto the door or window frame. See Figure 11 B.

ⓘ **Note:** Double-sided adhesive tape can also be used.

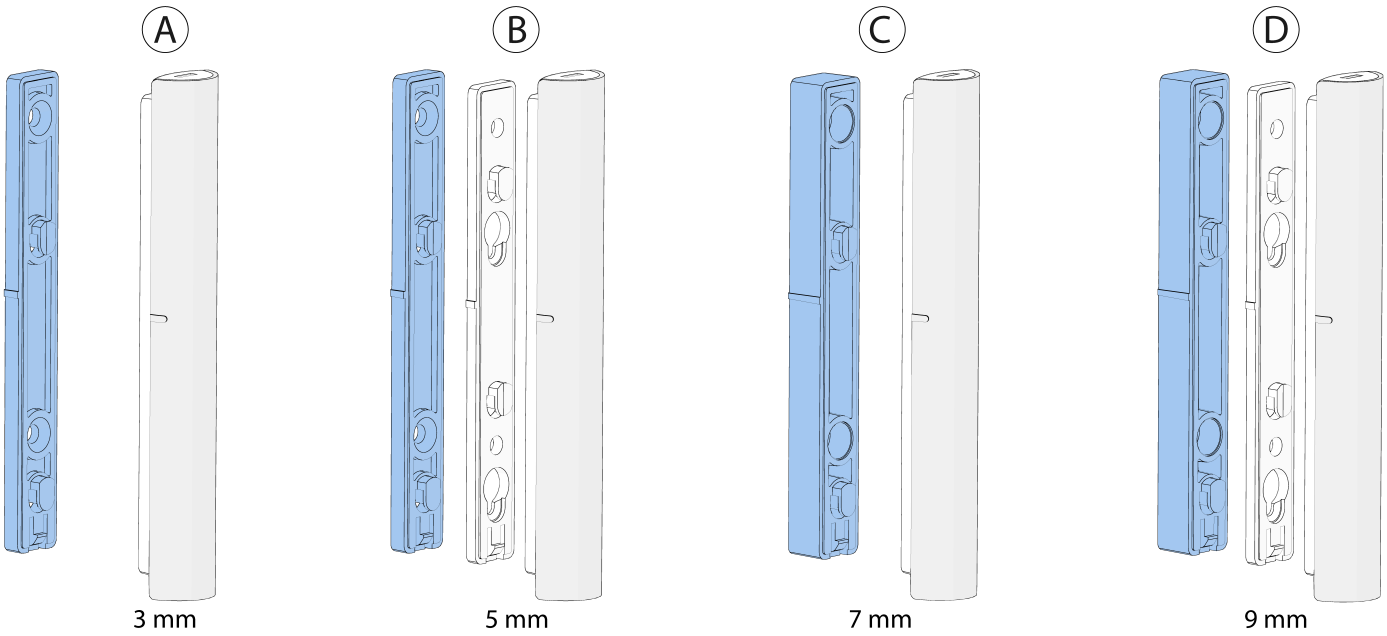
11. Attach the magnet to the bracket. See Figure 11 C.
12. Slide the magnet up along the bracket to secure it in place. See Figure 11 D.

Figure 11: Installing the magnet with a bracket



13. **Optional:** You can add a 2 mm spacer to the magnet.
    Clip the spacer onto the bracket in the required combination.

Figure 12: Spacer mounting combinations



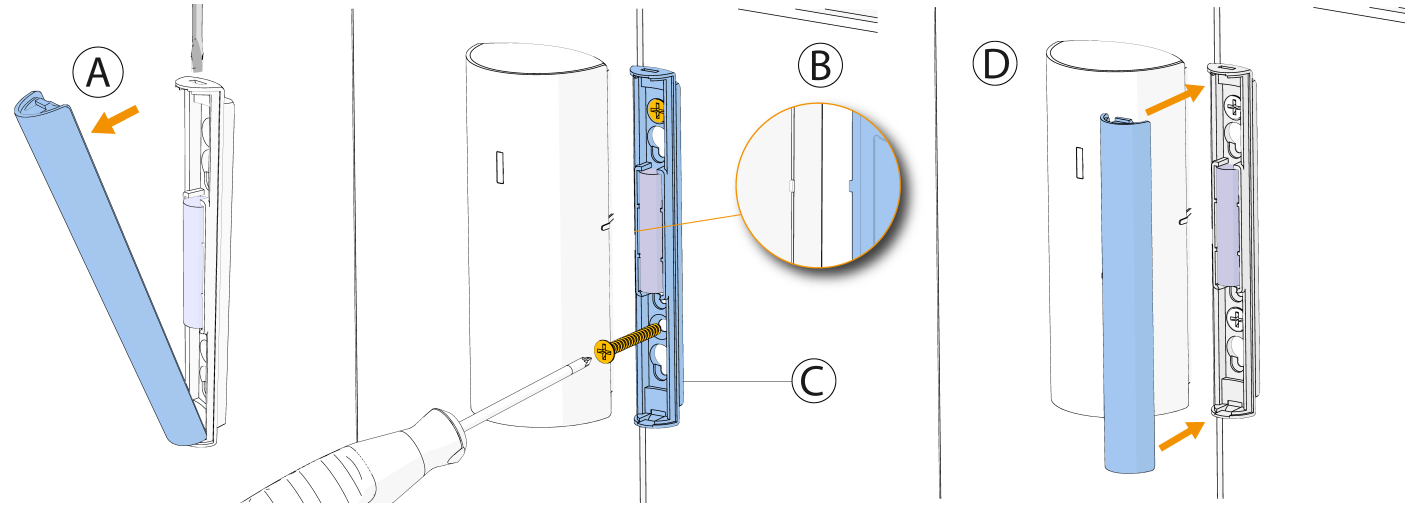
Callout	Description
A	3 mm bracket
B	3 mm bracket and 2 mm spacer
C	7 mm bracket
D	7 mm bracket and 2 mm spacer

Mounting the magnet base using screws

Note: For VdS installation, use the following procedure to mount the magnet.

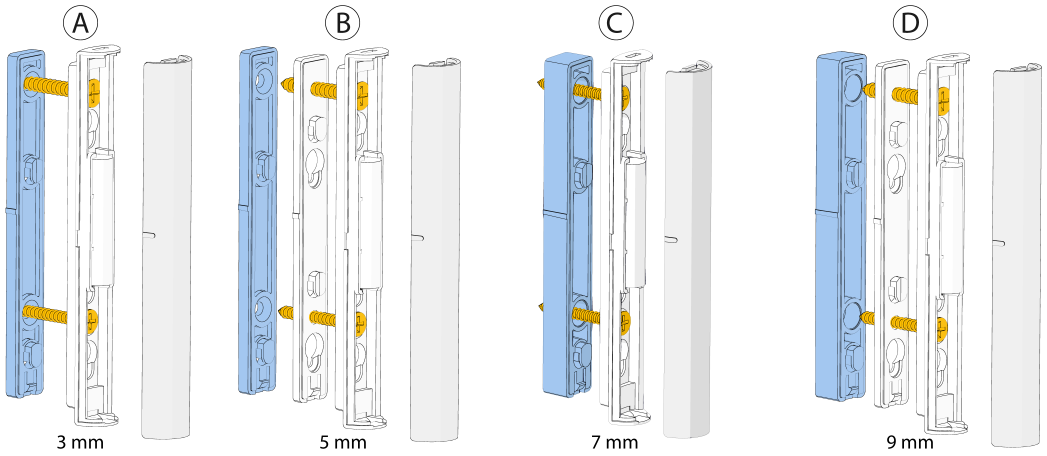
1. To open the magnet cover, use a screwdriver to depress the plastic ledge at both sides of the magnet. See Figure 13 A.
2. Align the magnet base to the device according to the positioning marks. See Figure 13 B.
3. Screw the magnet base onto the door or window frame. See Figure 13 C.

Figure 13: Magnet screw installation



4. Alternatively, screw the magnet base through the spacer and required bracket, and to the door or window frame. See Figure 14.

Figure 14: Spacer mounting combinations



Callout	Description
A	3 mm bracket
B	3 mm bracket and 2 mm spacer
C	7 mm bracket
D	7 mm bracket and 2 mm spacer

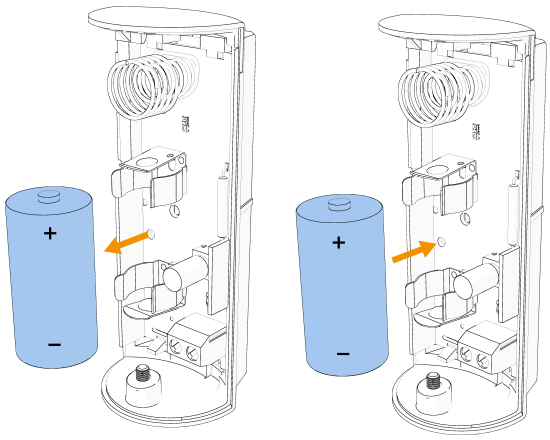
5. Close the magnet cover. See Figure 13 D.

Replacing the battery

⚠ **CAUTION:** Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions and according to local rules and regulations.

1. Remove the device cover. See Figure 5.
2. Remove the battery. See Figure 15.
3. Insert the new battery while observing battery polarity. See Figure 15.

Figure 15: Battery removal and insertion



4. Press down on the battery until it fits into place.
5. Close the device cover and fasten the cover screw. See Figure 10.

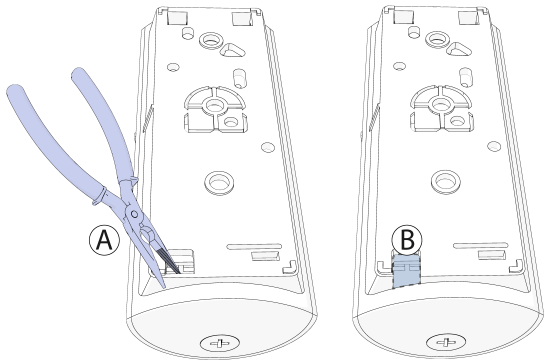
ⓘ **Note:** After restoring a low battery, the system may take up to 5 minutes to clear the trouble.

Wiring the auxiliary input

The auxiliary input is programmable as either Normally Open (NO), Normally Closed (NC), End Of Line (EOL), Double End of Line (DEOL), and Triple End of Line (TEOL).

1. Remove the device cover. See Figure 5.
2. Use a long nose pliers to remove the wiring inlet. See Figure 16.

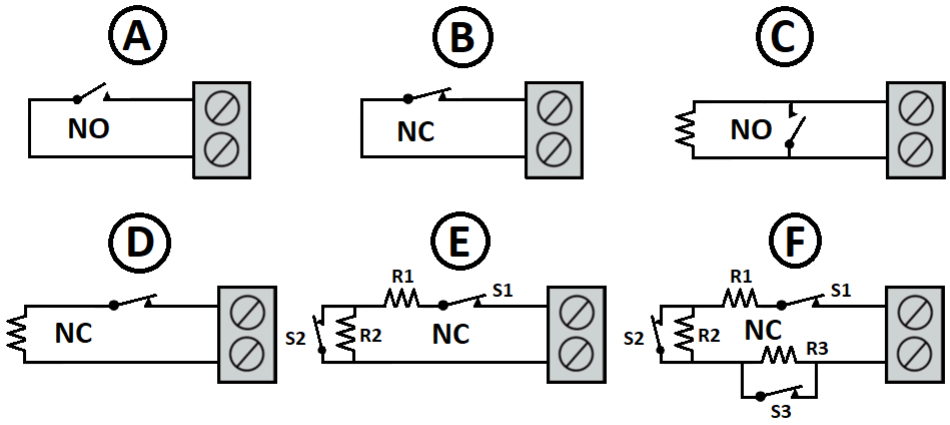
Figure 16: Removing the wiring inlet



3. Connect the auxiliary sensor contacts across the auxiliary input terminals. See the following figure and table for wiring options.

   Note: For UL/ULC listed installations use Model EOLR-2.

Figure 17: Auxiliary input wiring diagrams



Callout	Description
A	NO switch
B	NC switch
C	EOL: NO switch; 5.6 kΩ resistor
D	EOL: NC switch; 5.6 kΩ resistor
E	DEOL: NC switch only; R1=5.6 kΩ resistor; S1=tamper R2=5.6 kΩ resistor; S2=alarm
F	TEOL: NC switch only; R1=5.6 kΩ resistor; S1=tamper R2=5.6 kΩ resistor; S2=alarm R3=10 kΩ resistor; S3=fault; S2 + S3=masking

Notes: For UL/ULC installations, the burglary initiating device connected to the initiating circuit must be located within 3 ft, in the same room, as the transmitter if the AUX input is not configured as EOL. For UL/ULC installations, connect only UL/ULC listed devices to the auxiliary wiring input. An alarm message is transmitted once the loop is opened or short circuited.

4. Close the device cover and fasten the cover screw. See Figure 10.

UL985 and ULC-S545 short range RF transmitter application

Model PGP9945E is also UL/ULC listed as a short range RF transmitter for use in Residential fire applications in conjunction with UL/ULC listed fire alarm initiating devices (for example mechanical heat detectors, manual pull stations, sprinkler system flow sensors, etc.). The transmitter shall be installed using provided screws and the back tamper shall be enabled. The heat detector shall be connected to the wired input of the RF transmitter device and the maximum wire length shall not exceed 30 ft (10m). The Reed switch operation shall be disabled. When enrolling the device in the compatible receiver/control panel combination set the AUX input as Smoke/Heat device with EOL supervision in order to transmit a fire alarm when the external input in activated. When the input circuit is open a trouble condition is generated. An example of compatible

initiating devices that could be used in this type of application is the System Sensor UL listed 5600 Series Mechanical Heat Detectors (only models that have self restoring rate of rise sensors 5601P, 5602, 5621, 5622). Refer to the compatible devices installation, testing, and maintenance instructions. Test the self-restoring rate of rise models using a hair dryer or heat gun. Detectors shall be installed as per NFPA72 and/or the local authority having jurisdiction. When testing the ROR element, to prevent the activation of the fixed temperature element, the heat source must not exceed the fixed temperature rating of the detector.

ⓘ **Note:** For UL/ULC applications when the external contact is used it is to serve one initiating device only.

Wiring the auxiliary input in fallback mode

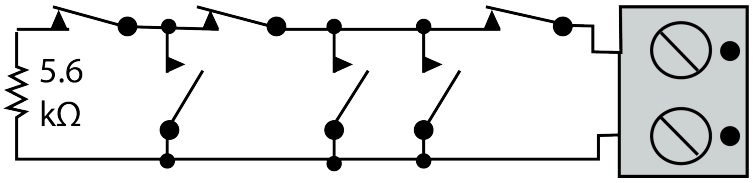
This section is relevant only for devices enrolled in fallback mode as PGx945.

1. Connect the auxiliary sensor contacts across the auxiliary input terminals.
2. If the auxiliary input is defined as NC, series connected NC sensor contacts must be used exclusively. An EOL resistor is not required.
3. If the auxiliary input is defined as NO, parallel connected NO sensor contacts must be used exclusively. A 5.6 kΩ EOL resistor must be wired at the far end of the zone loop.
4. For EOL supervision: NC sensor contacts can be used, as shown in Figure 17 D. Wire a 5.6 kΩ EOL resistor at the far end of the zone loop.

   The following figure illustrates an NO and NC alarm circuit with EOL resistor.

   ⓘ **Note:** An alarm message is transmitted once the loop is opened or short circuited.

Figure 18: EOL wiring example



Directional magnet distances for event triggers

The following figure and table display the directional magnet distances that trigger open or close events.

Figure 19: Range coverage directions

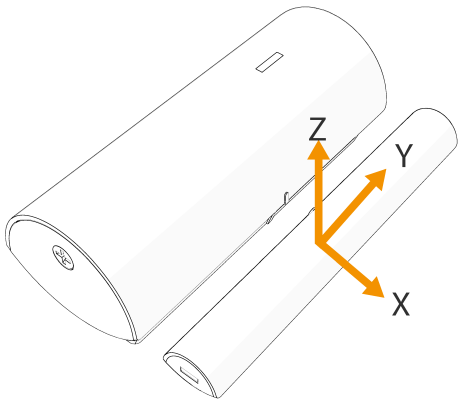


Table 2: Directional magnet distances for event triggers

Non-metallic surface		Supports	Metallic surface	
Opening	Closing	Direction	Opening	Closing
24 mm (0.94 in.)	20 mm (0.79 in.)	X	9 mm (0.35 in.)	7 mm (0.27 in.)
15 mm (0.59 in.)	12 mm (0.47 in.)	Y	12 mm (0.47 in.)	9 mm (0.35 in.)
30 mm (1.18 in.)	17 mm (0.67 in.)	Z	18 mm (0.71 in.)	14 mm (0.55 in.)

Local diagnostics test

After power-up or closing the cover, the device automatically enters Test Mode for 15 minutes. To manually enter the devices into Test Mode refer to the Control Panel Installer Guide.

1. Before you start the test, remove the device cover from the base. See Figure 5.
2. Close the cover to return the tamper switch to its normal position.
3. Momentarily open the door or window and verify the red LED blinks, indicating detection. After 2 seconds the transmission LED blinks three times.

   The following table indicates received signal strength indication.

   Table 3: Signal strength indication

LED response	Reception
Green LED blinks	Strong
Yellow LED blinks	Good
Red LED blinks	Poor
No blinks	No communication

Important: Reliable reception must be assured. Therefore, poor signal strength is not acceptable. If you receive a poor signal from the device, relocate it and re-test until a good or strong signal strength is received.

Note: It is recommended to have a strong signal strength and you must verify the signal strength using the control panel's diagnostic test. For detailed Diagnostics Test instructions, refer to the control panel installer guide.

Note: For UL/ULC installations, only strong signal levels are acceptable.

Note: After installation, verify the product functionality in conjunction with the compatible receivers.

Specifications

Table 4: Specifications

Frequency Band	868 to 869 MHz, 912 to 919 MHz
Maximum Tx Power	+14 dBm @ 868 MHz
Modulation	GFSK
Communication Protocol	PowerG
Battery Type	3 V Lithium CR123A GP battery only
Battery Life	8 years with typical use at room temperature 25°C (77°F) not evaluated by UL/ULC.
Low Battery Threshold	2.5 V at room temperature 25°C (77°F)
Nominal operating voltage	3 V
Operating Temperature	-10ºC (14°F) to 55ºC (131°F) UL/ULC only verified range: 0 ºC (32 ° F) to 49 ºC (120°F)
Storage Temperature	-20°C (-4°F) to 70°C (158°F)
Relative Humidity	Up to 93% non-condensing
Dimensions (LxWxD)	89 mm x 37 mm x 30 mm (3.5 in. x 1.5 in. x 1.2 in.)
Weight (including battery)	53 g (1.9 oz)
Color	White
Auxiliary Input Cable Length	10 m max, 0.4 mm^2 (AWG22)
Auxiliary Input EOL Resistor	5.6 KΩ

Compliance with standards

PGPx945E complies with the following standards:

PGP9945E	**FCC (912 to 919 MHz):** 47CFR part 15.427 **ISED (912 to 919 MHz):** RSS-247 **UL/ULC:** UL 634, ULC/ORD-C634, UL 985, ULC-S545
PGP8945E	EN 300220, EN 301489, EN 50130-4, EN 50130-5, EN 61000-6-3, EN 62368-1, EN 50131-1, EN 50131-5-3, EN 50131-2-6 Grade2, Class II and EN 50131-6 Type C
	UK: is suitable for use in systems installed to conform to PD6662 at Grade 2 and environmental class II, DD243 and BS8243

PGP8945E is certified by Applica Test & Certification AS in accordance with EN 50131-2-6, EN 50131-5-3, EN 50131-6, EN 50130-4, EN 50130-5. Security Grade 2 and Environmental Class II.

Simplified EU declaration of conformity

Hereby, Tyco Safety Products Canada Ltd. Declares that the radio equipment type PGP8945E is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: http://dsc.com/pdf/2208002

FCC and ISED Canada Compliance Statement

This device complies with FCC Rules Part 15 and with ISED Canada license-exempt RSS standard(s).

Operation is subject to two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference that may be received or that may cause undesired operation.

Le présent appareil est conforme aux CNR d'ISED Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

To comply with FCC Section 1.1310 for human exposure to radio frequency electromagnetic fields and ISED Canada requirements, implement the following instruction:

A distance of at least 20cm. between the equipment and all persons should be maintained during the operation of the equipment.

Le dispositif doit être placé à une distance d'au moins 20 cm à partir de toutes les personnes au cours de son fonctionnement normal. Les antennes utilisées pour ce produit ne doivent pas être situés ou exploités conjointement avec une autre antenne ou transmetteur.

ⓘ **Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numerique de la classe B est conforme a la norme NMB-003 du Canada.

⚠ **WARNING:** Changes or modifications to this equipment not expressly approved by the party responsible for compliance (DSC.) could void the user's authority to operate the equipment.

UL/ULC notes

Only model PGP9945E operating in the frequency band 912-919MHz is UL/cUL listed. The PGP9945E has been listed by UL/ULC for commercial and residential burglary applications in accordance with the requirements in the Standards UL 634 and ULC/ORD-C634 for contacts and switches, and in accordance with UL985 and ULC-S545 as a residential fire RF transmitter (short range). For UL/ULC installations use these device only in conjunction with compatible DSC wireless receivers: HSM2HOST9, HS2LCDRF(P)9, HS2ICNRF(P) 9, HS2LCDRFPRO9, PG9920, and Qolsys IQPanel2, IQHub, IQPanel4, IQ4 Hub, IQ4 NS and Tyco IQ Pro, and IQ Pro P. After installation verify the product functionality in conjunction with the compatible receiver used.

Safety Instructions

Read the safety information before you install the equipment.

The detector 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 detector is to be installed in an indoor dry location. Exposure to weather or corrosive conditions may damage the unit.

WEEE Product recycling declaration

	For information regarding the recycling of this product you must contact the company from which you originally purchased it. If you are discarding this product and not returning it for repair then you must ensure that it is returned as identified by your supplier. This product is not to be thrown away with everyday waste. Directive 2012/19/EU Waste Electrical and Electronic Equipment.

Limited Warranty

Digital Security Controls ("DSC"), a division of Tyco Safety Products Canada Ltd, a part of the Johnson Controls group of companies ("JCI"), warrants that for a period of 12 months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use and that in fulfilment of any breach of such warranty, JCI shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of JCI such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of JCI. JCI neither assumes responsibility for, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

In no event shall JCI be liable for any direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

Warning: JCI recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

Important Information: Changes or modifications not expressly approved by JCI could void the user's authority to operate this equipment.

EULA

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