wLSN

wireless Local SecurityNetwork

BOSCH

en System Reference Guide

Table of Contents

1 Using this Manual

This document contains the basic information that a trained installer needs to install the wireless Local SecurityNetwork (wLSN). It supplements the documents listed in *Table 1.1, Page 5*.

This manual contains:

– A description of the wLSN general installation procedure (*Section 2 Installation Considerations, page 6*)

– Device-specific installation procedures (*Section 5.1 wLSN Installation Tool, page 17* through *Section 5.13 wLSN Glass Break Detector, page 49*)

– A description of the icons used in the wLSN documentation (*Section 6.2 Icons and Symbols, page 56*).

Use this manual together with the control panel's documentation and each device's installation instructions to complete the installation process.

Product	wLSN Device	Manual Part Number
ISW-BIT1-HAX, HBX, HCX	Installation Tool	F01U008748
ISW-BHB1-WX	Hub	F01U500915
ISW-BPR1-W13PX	PIR Motion Detector	F01U500908
ISW-BDL1-W11PGX, PHX, PKX	Dual Motion Detector	F01U500901
ISW-BMC1-R135X	Recessed Door-Window Contact	F01U011878
ISW-BMC1-S135X	Door-Window Contact	F01U500909
ISW-BMC1-M82X	Mini Door-Window Contact	F01U011876
ISW-BIN1-S135X	Inertia Detector	F01U011980
ISW-BKF1-H5X	Key Fob	F01U001565
ISW-BRL1-WX	Relay Module	F01U009264
ISW-BSR1-WX	Siren	F01U009265
ISW-BSM1-SX	Smoke Detector	F01U012075
ISW-BGB1-SAX	Glassbreak	F01U027173
ISW-BSR1-WIX	Indoor Siren	F01U132671
ISW-BSR1-WOX	Outdoor Siren	F01U132670
ISW-BWL1-SX	Water Sensor/Low Temperature Sensor	F01U075110

Table 1.1 wLSN Products and Instructions

2 Installation Considerations

NOTICE!
Refer to the control panel's documentation for detailed instructions on wLSN programming and device setup.

- With the exception of the ISW-BSR1-WOX Outdoor Siren, wLSN devices are intended only for indoor, dry applications.
- Avoid mounting wLSN devices in areas with large metallic objects, electrical panels (for example: control panel or fuse box) or electric motors. They might reduce the radio-frequency (RF) range of a wLSN device.
- Avoid installing the devices where excessive humidity or moisture, or temperatures outside of the acceptable operating range exist.
- When installing a wLSN Network, plan your installation based on the control panel and wLSN specifications, and the radio frequency signal strength (RFSS) between remote devices and the wLSN Diversity Hub.

Humidity Range	0% to 95%
Frequency Band	868 to 869 MHz European Security Band

Table 2.1   wLSN General Specifications

Note for Customers in the European Union

As a manufacturer of batteries or devices containing batteries, we are obliged to inform you of the following in accordance with the Battery Ordinance:

– Batteries must not be disposed of in household waste.
– As a consumer, you are legally obliged to take batteries to a suitable collection point.
– You can return used batteries free of charge to the point of sales or to a communal collection point.
– Batteries can contain substances that are hazardous to the environment or health.
– Only dispose of discharged batteries in the container provided and, in the case of lithium batteries, mask the poles.

Batteries are identified with a crossed out trash can symbol.

If the batteries contain specific harmful substances, the chemical symbols are also indicated:

– Cd - Cadmium
– Pb - Lead
– Hg - Mercury

3 RFSS Mode (RF Signal Strength)

⚠️ **CAUTION!**
When testing for RF signal strength, the wLSN Diversity Hub and the control panel must be set to the same EN50131 Security Grade.

⚠️ **CAUTION!**
If you have wLSN devices that you will not immediately install, reinsert the battery tabs or remove the batteries to prevent battery depletion.

ⓘ **NOTICE!**
Do not permanently install the wLSN Diversity Hub or any wLSN devices until you receive acceptable, or better, signal strength readings between the wLSN Diversity Hub and all wLSN device locations.
If you receive unacceptable or marginal readings at several wLSN device locations, move the wLSN Diversity Hub to a different location and re-test for RFSS until you receive at least acceptable readings at all wLSN device locations.

Perform a radio frequency signal strength (RFSS) test to determine the best installation locations for the wLSN Diversity Hub and each wLSN device.
To perform the RFSS test:
1. Prepare the wLSN Diversity Hub for RFSS testing. Refer to *Section 3.1 Page 9*.
2. Conduct an RFSS test using the wLSN Diversity Hub and Installation Tool. Refer to *Section 3.2 Page 10*.

3.1 Prepare the wLSN Diversity Hub for RFSS Testing

1. Unlock the locking mechanisms on the bottom of the hub. Refer to *Figure 3.1*.
2. To remove the hub from the base, push gently down on the hub and slide it off the base. Refer to *Figure 3.1*.
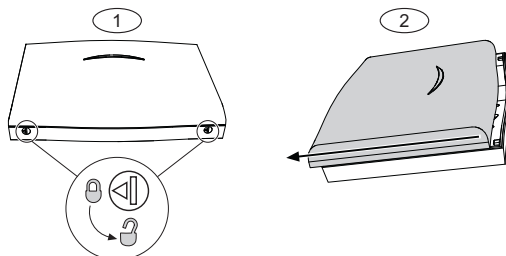
Figure 3.1   Removing the wLSN Diversity Hub from the Base

Callout	Description
1	Unlock hub
2	Slide hub off of base

3. Set the S1 rotary switch to the appropriate position according to the RF power level or EN50131 security grade you wish to use. Refer to *Table 3.1* for RFSS Mode switch settings. Refer to *Figure 5.2, Page 20* for the location of the rotary switches.

Switch Position	Operation
4	RFSS Mode, Antenna 1, full power
5	RFSS Mode, Antenna 1, Grade 2 (6 dB attenuation)
6	RFSS Mode, Antenna 2, full power
7	RFSS Mode, Antenna 2, Grade 2 (6 dB attenuation)

Table 3.1   S1 Switch RFSS Mode Settings

Refer to the individual device's specification for the EN50131 classification.

4. Find a suitable location for the hub base and apply power by connecting it to the control panel (refer to the control panel's installation instructions), or by temporarily connecting a 9 VDC to 12 VDC battery.
5. Insert the wLSN Diversity Hub onto the base.
   The wLSN Diversity Hub is now ready for RFSS testing.

3.2   RFSS Test using the wLSN Diversity Hub and wLSN Installation Tool

CAUTION!
When testing for RF signal strength, the wLSN Diversity Hub and the control panel must be set to the same EN50131 Security Grade.

NOTICE!
When testing RFSS for the wLSN smoke detector, you must use the wLSN Installation Tool. The wLSN smoke detector cannot measure RFSS.

1. Go to the installation location for the first wLSN device.
2. Press any key on the wLSN Installation Tool to turn it on. The screen shows the start-up display.

```
WLSN INSTAL TOOL
V x . x x
```

3. Press and hold the [*] and [#] keys to enter RFSS Mode. Select Mode 3 to test RFSS.
4. Press [3] to select Mode 3.
   Mode 3 determines the signal strength based on the signal-to-noise ratio (SNR).

```
MODE 3: S-xxxdBm
SNRyy    N-xxxdBm
```

SNR is measured in decibels (dB):
– **Unacceptable:** <30 dB
– **Acceptable:** 35 dB
– **Good:** 40 dB
– **Very Good:** 45 dB
– **Excellent:** 50 dB
5. Hold the wLSN Installation Tool at the installation location for at least 10 sec.
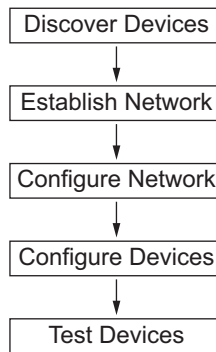
6. If the reading on the wLSN Installation Tool is at least acceptable, mount the base for the wireless device. If the reading on the wLSN Installation Tool is is either unacceptable or marginal, find a better location for the wireless device.

7. Repeat *Step 5* until all bases are mounted in acceptable locations.
    Do not mount the wireless devices onto the bases at this time.

8. Set the rotary switch on the wLSN Diversity Hub to normal operation:
    – Position 1 for Data Bus Address 50 (default)
    – Position 2 for Data Bus Address 51

9. Configure the wLSN devices as instructed in your control panel documentation.

4 Discovering and Defaulting a wLSN Device

4.1 Discovering a wLSN Device

Discovery is the process by which the wLSN Diversity Hub identifies and includes new devices into a system.

For the wLSN network to operate properly, the following process must occur:

```
┌──────────────────┐
│ Discover Devices │
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Establish Network│
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Configure Network│
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Configure Devices│
└──────────────────┘
         │
         ▼
┌──────────────────┐
│   Test Devices   │
└──────────────────┘
```

For specific information on the discovery process, refer to your control panel documentation.

To default a device that is already enrolled into an existing wLSN network, refer to *Section 4.2 Defaulting a wLSN Device, page 13*.

4.2   Defaulting a wLSN Device

Defaulting a wLSN device returns it to an undiscovered state. After a device is defaulted, it can be enrolled into a wLSN network.

> **NOTICE!**
> When the Inertia Detector is defaulted, its LED briefly turns off and on, and then the detector enters Test Mode. Refer to *Section 5.7.2 Test Mode, page 33* for more information.
> To default a key fob, delete the user from the control panel, and then re-enter the user without the key fob. Refer to the control panel documentation for instructions.

Defaulting a Door-Window Contact, Motion Detector, Siren (ISW-BSR1-WX), Relay Module, or Water Sensor/Low-Temperature Sensor

1. Remove the batteries.
2. Press and hold the tamper switch button.
3. Reinsert the batteries while holding the tamper switch button.
    The LED on the wLSN device turns on.
4. Release the tamper switch button within five sec after the LED on the wLSN device turns on.
    The LED on the wLSN device briefly turns off and then on, indicating that the wLSN device was successfully defaulted.

Defaulting a Glass Break Detector or Siren (ISW-BSR1-WIX and -WOX)

If the wall tamper tab is removed and you must default the Glass Break Detector, Indoor Siren (ISW-BSR1-WIX), or Outdoor Siren (ISW-BSR1-WOX):

1. Remove or disconnect the batteries from the device.
2. Place the device on a flat surface to depress the wall tamper switch. Refer to *Figure 4.1*, and *Figure 4.2* on page *Page 14*.
3. Press and hold the cover tamper switch. Refer to *Figure 4.1*, and *Figure 4.2, Page 14*.

4. While both tamper switches are depressed, reinsert or reconnect the batteries. The RFSS Mode LED turns on. Refer to *Figure 4.1* for the location of the RFSS Mode LED.

5. Release the cover tamper switch within five sec after the RFSS Mode LED turns on. The device is now defaulted.
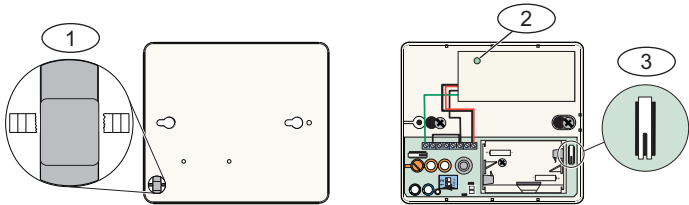
Figure 4.1   wLSN Glass Break Tamper Switches and RFSS Mode LED

Callout	Description
1	Wall tamper switch (back of detector)
2	RFSS LED (inside of detector)
3	Cover tamper switch (inside of detector)
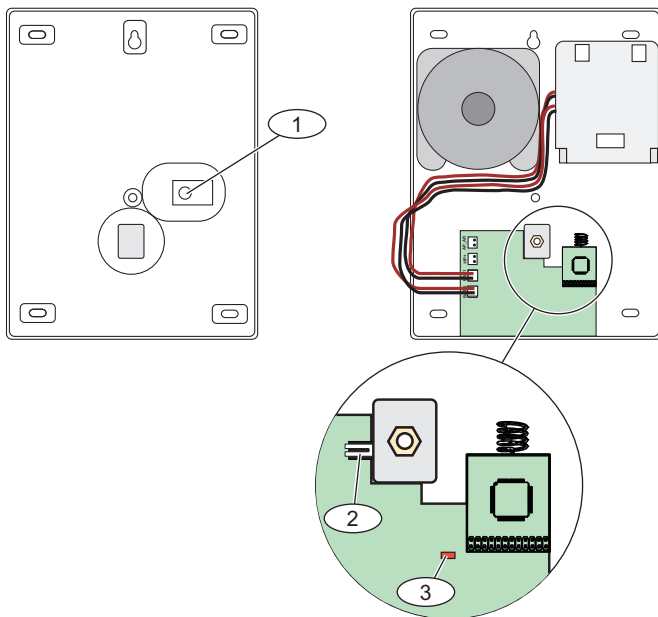
Figure 4.2   ISW-BSR1-WIX, -WOX Tamper Switches and RFSS Mode LED

Callout	Description
1	Wall tamper switch (back of siren)
2	Cover tamper switch (inside of siren)
3	RFSS LED (inside of siren)

Defaulting a Smoke Detector

1. Rotate the detector counter-clockwise to remove it from the mounting base.
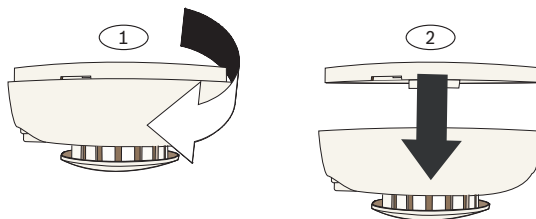

Figure 4.3   Remove Smoke Detector from Base

2. Remove the batteries.
3. Separate the housing cover and base by inserting a flat head screwdriver between the cover and base.

Figure 4.4   Separate Housing Cover and Base

4. Turn the housing base over and locate the transmitter printed circuit board (PCB).
5. Remove the jumper from the transmitter PCB and reinsert it over both pins.
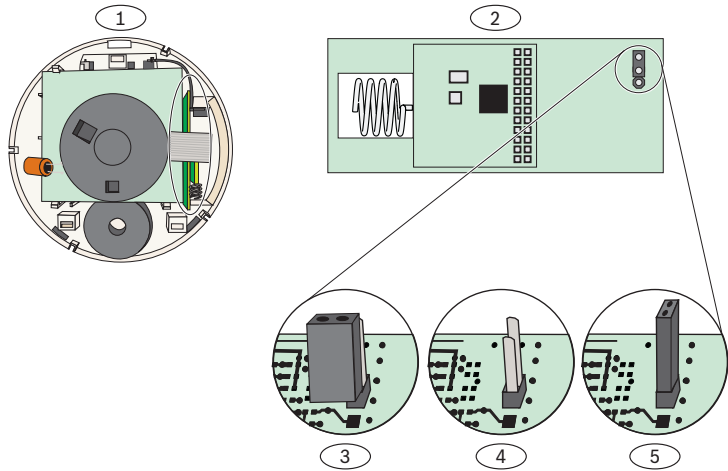
Figure 4.5 Transmitter PCB and Jumper Pins

Callout	Description
1	Housing base
2	Transmitter PCB
3	Jumper plug in normal operating position (plug covers a single pin)
4	Jumper plug removed from pin
5	Jumper plug covering both pins

6. Reinsert the batteries. Do **not** close the housing base. The detector is now defaulted.

7. Remove the jumper and replace it over one pin (normal operating position).

8. Replace the housing cover on the housing base. Align the sounder with the notch on the housing cover and push firmly until the cover and base snap into place.

9. Close the battery case and mount the detector onto its mounting base.

5 wLSN Devices

5.1 wLSN Installation Tool

(ISW-BIT1-HAX, ISW-BIT1-HBX, ISW-BIT1-HCX)

Use the wLSN Installation Tool to determine the best installation locations for wLSN device installation.

The Installation Tool communicates signal strength and packet success ratios through an LCD display.

Specification	Value	
Power	Docked	12 VDC nominal, 7 VDC to 14 VDC (12 VDC plug-in power pack supplied)
	Batteries	3 AAA NiMH rechargeable batteries that require an initial charge of at least 7 hours of charging. **Operating Life:** Up to 50 hours of continuous use on a single charge.
EN Classification	EN50131-1 Environmental Class II	

Table 5.1 wLSN Installation Tool Specifications

The status LED indicates charging status when placed in a docking station.

Figure 5.1 wLSN Installation Tool

Callout	Description
1	2 line x 16 character LCD display The display flashes and beeps every four sec to indicate a status change.
2	Power Indicator − **On:** Batteries are fully charged − **Off:** Installation tool is operating on only battery power − **Flashing:** Batteries are charging
3	Status LED LED flashes when battery power is low.

5.2 wLSN Diversity Hub

(ISW-BHB2-WX)

The wLSN Diversity Hub acts as the link between wLSN devices and the control panel. As the wireless network master, the wLSN Diversity Hub provides network timing and synchronization, monitors wLSN devices and network status, and sends configuration data to the wLSN devices as required. Multiple antennas inside the wLSN Diversity Hub provide spatial diversity for improved RF signal quality in transmit and receive modes.

An LED on the front provides device status.

Specification	Value
Wire Gauge	0.14 (24 AWG) to 1.5 mm (18 AWG)
Power	12 VDC nominal, 7 to 14 VDC
Wire Length	300 m (1000 ft)
Current Draw	Maximum 60 mA
Wall and Cover Tamper Switch	Transmits a tamper signal when the detector is removed from its base or pulled away from the wall
EN Classification	EN50131-1 Security Grade 2, Environmental Class II

Table 5.2   wLSN Diversity Hub Specifications

NOTICE!

For more information on wire length and the number of devices, refer to the control panel's documentation.

Rotary Switches

There are three rotary switches on the wLSN Diversity Hub: S1, S2, and S3. Use S1 to make the following settings:

– Set the data bus address for hub-to-control panel communication during normal operation

– Set the antenna strength when the hub is in RFSS Mode

S2 and S3 are reserved for future use.

Refer to *Figure 5.2* for switch location, and *Table 5.3* for switch settings.
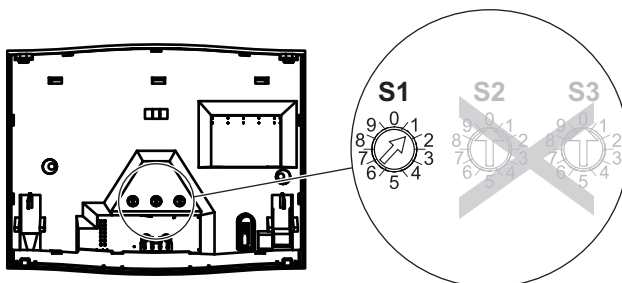
Figure 5.2 wLSN Diversity Hub Rotary Switch

| Switch Position	Operation
1 (Default)	Data Bus Address 50
2	Data Bus Address 51
4	RFSS Mode, Antenna 1, full power
5	RFSS Mode, Antenna 1, Grade 2 (6 dB attenuation)
6	RFSS Mode, Antenna 2, full power
7	RFSS Mode, Antenna 2, Grade 2 (6 dB attenuation)
9	Default the hub
0, 3, 8	Reserved for future use

Table 5.3 S1 Settings

NOTICE!

Assign a different address to each data bus device.

Status LED

The green LED shows the device's status during power-up, self-test, network configuration, and normal operation.
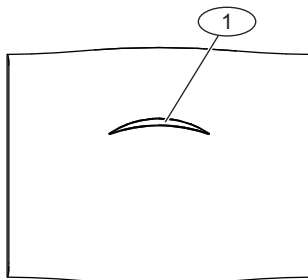
Figure 5.3   wLSN Diversity Hub Status LED

Callout	Description
1	Status LED

Operation	LED Display
Self Test and Hardware Failure	LED flashes twice each sec. This indicates failure. The wLSN Diversity Hub does not operate.
Standard Operation	LED on
Configuring Network	LED flashes once every 2 sec.
RFSS Mode	LED flashes once every 4 sec.

Table 5.4   wLSN Diversity Hub LED Displays

5.3 wLSN PIR and Dual Motion Detectors

(ISW-BPR1-W13PX, ISW-BDL1-W11PGX, ISW-BDL1-W11PHX, ISW-BDL1-W11PKX)

The PIR Motion Detector (ISW-BPR1-W13PX) uses an infrared sensor. The Dual Motion Detectors (ISW-BDL1-W11PGX, ISW-BDL1-W11PHX, and ISW-BDL1-W11PKX) use PIR and microwave technologies.

A cover-and-wall tamper switch transmits a tamper signal when the cover is removed from its base, or when the unit is pulled away from the wall.

An LED provides status for Walk Test, RFSS, and Discovery Modes.

Specification	Value
Power for PIR Motion Detector	Four AA 1.5 V alkaline batteries
Power for Dual Motion Detector	Six AA 1.5 V alkaline batteries
Mounting Height	2.3 m to 2.7 m (7.5 ft to 9.0 ft)

Table 5.5 wLSN PIR and Dual Motion Detector Specifications

5.3.1 Sensitivity Settings

Sensitivity settings are set at the control panel. Refer to the control panel's documentation for detailed information.

Standard Sensitivity (default setting)

Use this setting when pets are present in the area to be monitored. Standard sensitivity provides excellent detection performance and is the least sensitive to false alarms.

Intermediate Sensitivity

Use this setting only in non-pet installations where environmental disturbances are minimal. Intermediate sensitivity provides the highest level of detection performance.

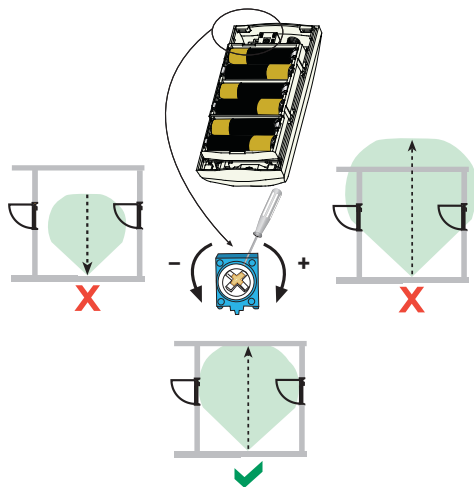### Adjusting the Microwave Range in Dual Motion Detectors

NOTICE!

The microwave sensor in the dual motion detectors is adjusted in the factory to sense motion to a minimum of 11 m (35 ft).

If the detector's red or yellow LED does not light, the microwave coverage requires adjustment:

1. Turn the potentiometer as shown in *Figure 5.4* to increase or decrease the coverage.
2. Repeat the walk test.
   Refer to *Section 5.3.2 Walk Test, page 24*.
3. Repeat *Steps 1* and *2* until the required coverage is met.

Figure 5.4   Adjusting the Dual Motion Detector's Microwage Range

5.3.2   Walk Test

> **(i)**   **NOTICE!**
> To maximize battery life, the LED elements do not activate
> unless the detector is in the Walk Test mode.

Perform a walk test to determine the boundaries of the
coverage area.
You can start a walk test from from the control panel or from
the detector.

– **Control Panel:** Enter the appropriate command sequence
  at the control panel to start the Walk Test mode (refer to
  the control panel's documentation).
– **Detector:** Slide open and then close the detector cover to
  start a 90-sec walk test.

Detected motion within the detector's coverage area activates
the red LED, transmits a signal to the control panel, and
restarts a 90-sec timer. If no motion occurs within 90 sec, the
red LED flashes for the last 10 sec to indicate that the Walk
Test mode is ending. Detected motion restarts the 90-sec timer.

1. Start at the pattern's expected boundary and walk across
   the pattern, moving closer to the detector at each pass
   while observing the LED. Refer to *Figure 5.5*.
   Refer to *Table 5.6, Page 24* for PIR LED indications, and to
   Table 5.7, Page 25 for dual motion LED indications.
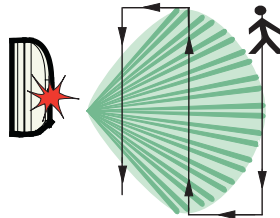
Figure 5.5   Walk Test

LED Color	Function
Red – fast flash	Power-up (Walk Test disabled)
Red – lights for 4 sec	Alarm, motion detected

Table 5.6   PIR Walk Test LED Indications

LED Color	Function
Green to red – fast flash	Power-up (Walk Test disabled)
Green – lights for 3 sec	Motion detected by PIR
Yellow – lights for 3 sec	Motion detected by microwave To adjust the detector's microwave range, refer to *Page 23*.
Red – lights for 4 sec	Alarm, motion detected by both technologies (PIR and microwave)

Table 5.7   Dual Walk Test LED Indications

2. Perform the walk test from the opposite direction to determine the coverage pattern boundaries from both sides.

3. When the walk test is complete:
    –   From the control panel, enter the appropriate command sequence at the control panel to exit from the Walk Test mode.
    –   At the detector, the detector returns to normal operation after 90 sec of inactivity.

5.4 wLSN Door-Window Contact

(ISW-BMC1-S135X)

The wLSN Door-Window Contact is a magnetic reed switch andwireless transceiver used for monitoring doors, windows, and other dry contact devices.

A cover-and-wall tamper switch transmits a tamper signal whenthe cover is removed from its base, or when the unit is pulled away from the wall.

An LED provides status for RFSS and Discovery Modes.

Specification	Value
Maximum Distance between Sensor and Magnet	≤ 12,7 mm (0.5 in.) The magnet can be placed on either side. The base has marks to indicate the magnet position.
Wire Gauge	0.14 mm (22 AWG) to 1.5 mm (16 AWG)
Power	Two AA batteries, 1.5 V alkaline
Terminal Block	For connecting other dry contact devices, such as another magnetic reed switch.

**Table 5.8** wLSN Door-Window Contact Specifications

NOTICE!

For all wiring options, refer to your control panel's documentation to identify the compatible end-of-line (EOL) resistor options.

Single EOL Resistor Option

Use a 1 k-ohm, 2.2 k-ohm, or 3.65 k-ohm EOL resistor.

Use any number of normally-closed (NC) contacts in series with the loop. Use any number of normally-open (NO) contacts across the loop. Refer to *Figure 5.6, Page 27*.

This loop style can be used without an EOL resistor to give a two-state loop when line supervision is not required.
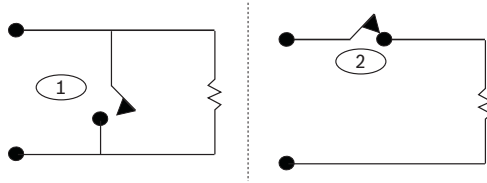
Figure 5.6 Single EOL Resistor Option

Callout	Description
1	Normally-open (NO)
2	Normally-closed (NC)

Alarm Resistor and Tamper Option

 Place a maximum of five normally-closed contacts in series with the 2.2 k-ohm EOL resistor. Each contact has either a 1.5 k-ohm or 2.2 k-ohm resistor across it. Refer to *Figure 5.7*. Do not use contacts across the loop. The zone recognizes that one or more of the contacts is opened, but not which ones or how many.
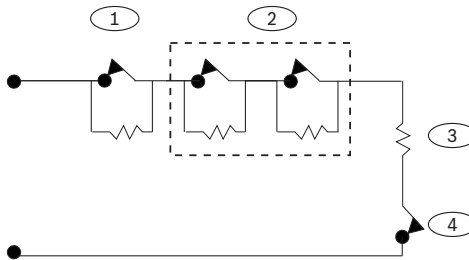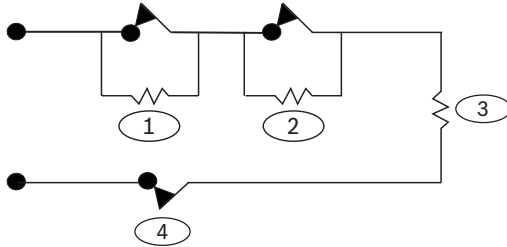

Figure 5.7 Alarm Resistor and Tamper Option

Callout	Description
1	1.5 k-ohm or 2.2 k-ohm alarm resistor
2	1.5 k-ohm or 2.2 k-ohm alarm resistor
	(Optional: up to four additional alarm resistors allowed)
3	2.2 k-ohm EOL resistor
4	Normally-closed tamper switch (optional)

Zone-Doubled or EOL Resistor and Tamper Option

Only two normally-closed contacts can be used in series with the 1 k-ohm resistor across it. The other contact has a 2.2 k-ohm resistor across it. The zone recognizes if one contact, both contacts, or neither contact opened. Refer to *Figure 5.8*.

Figure 5.8   Zone-Doubled or EOL Resistor and Tamper Option

Callout	Description
1	First zone (1 k-ohm resistor)
2	Second zone (2.2 k-ohm resistor)
3	1 k-ohm resistor
4	Normally-closed tamper switch (optional)

5.5   wLSN Recessed Door-Window Contact

(ISW-BMC1-R135X)

The wLSN Recessed Door-Window Contact is a wireless transceiver used for monitoring doors and windows.
A cover tamper switch transmits a tamper signal when the cover is removed from its base.
An LED provides status for RFSS and Discovery Modes.

Specification	Value
Power	One CR2 lithium battery, 3 VDC
Maximum Distance between Reed Switch and Magnet	≤12,7 mm (1/2 in.)
Required Drill Tools	19 mm (3/4 in.) drill bit and 22 mm (7/8 in.) spade bit
Circuit Board Removal	Needle nose pliers are recommended

Table 5.9   wLSN Recessed Door-Window Contact Specifications

NOTICE!
Mounting the wLSN Recessed Door-Window Contact in a metal door or window frame can degrade the RF signal strength.
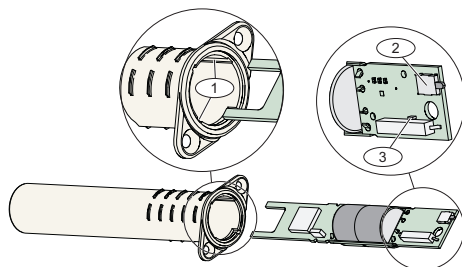
Figure 5.9   wLSN Recessed Door-Window Contact

Callout	Description
1	Mounting slots for printed circuit board
2	Tamper switch
3	LED for RFSS Mode and Discovery Mode

5.6   wLSN Mini Door-Window Contact
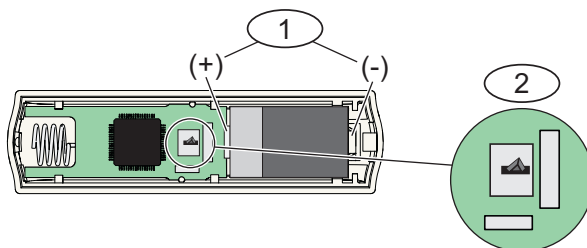
(ISW-BMC1-M82X)

Similar to the wLSN Door-Window Contact, the wLSN Mini Door-Window Contact is a wireless transceiver device used for monitoring doors and windows.

A cover-and-wall tamper switch transmits a tamper signal when the cover is removed from its base, or when the unit is pulled away from the wall.

An LED provides status for RFSS, and Discovery Modes.

Specification	Value
Power	One CR2 lithium battery, 3 VDC
Maximum Distance between Reed Switch and Magnet	≤ 12,7 mm (0.5 in.) Place the magnet on either side of the detector.

Table 5.10   wLSN Mini Door-Window Contact Specifications

Figure 5.10   wLSN Mini Door-Window Contact

Callout	Description
1	Battery polarity
2	Tamper switch

5.7   wLSN Inertia Detector

(ISW-BIN1-S135X)

The wLSN Inertia Detector is a vibration detector combined with a wireless transceiver used for monitoring doors or windows.

A cover-and-wall tamper switch transmits a tamper signal when the cover is removed from its base, or when the unit is pulled away from the wall.

An LED provides status for Test, RFSS, and Discovery Modes.

Specification	Value
Maximum Distance between Detector and Magnet	≤ 12,7 mm (1/2 in.) Place the magnet on either side of the detector.
Power	2 AA batteries, 1.5 V alkaline

Table 5.11   wLSN Inertia Detector Specifications

NOTICE!

Sensor element orientation is critical to the proper operation of the device. The arrow that is embossed on the body of this sensor must point up. Refer to *Figure 5.11, Page 32*.
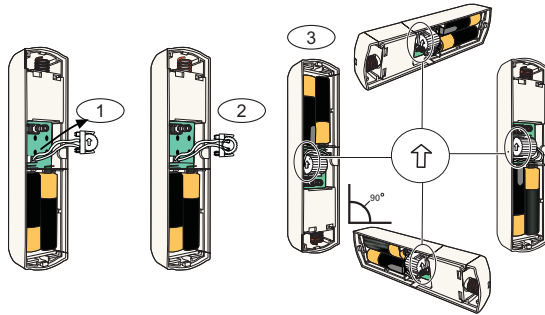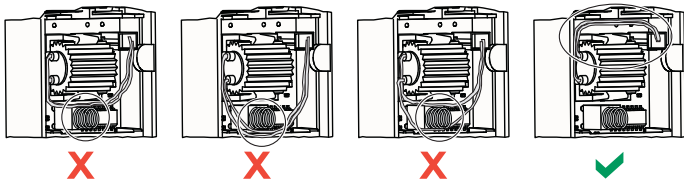
Figure 5.11 Adjusting the wLSN Inertia Detector

Callout	Description
1	Remove the sensor element.
2	Turn the sensor element as needed.
3	Ensure that the arrow on the sensor element points up.

NOTICE!

Route the wiring from the sensor element so it does not make contact with the tamper spring. Refer to *Figure 5.12*.

Figure 5.12 Routing the Wiring in the wLSN Inertia Detector

5.7.1 Sensitivity Settings

All sensitivity settings are programmed at the control panel (refer to your control panel's documentation for more information).

The sensor element has two types of detection:

– Gross Attack
– Minor Attack

Gross Attack is always enabled. Minor Attack is very sensitive and can be disabled.

Gross Attack

Gross Attack measures vibration activity for a specified length of time.

Gross Attack consists of four settings:

– Low (default)
– Low to Medium
– Medium to High
– High

The settings determine the time duration measurement of the vibration activity.

Minor Attack

Programming at the control panel determines how many repetitive taps (single vibrations) detected by the sensor indicate a minor attack.

By default, Minor Attack is disabled.

When enabled, Minor Attack has two settings:

– Four taps
– Eight taps

When a tap occurs, a 90-sec timer starts. If the tap count exceeds the four or eight count threshold within 90 sec, the sensor transmits an alarm signal.

NOTICE!

A single tap, such as a branch in the wind lightly brushing a window, can start the minor attack timer and tap count. To avoid false alarms, do not use the Minor Attack setting where any possibility exists for stray vibrations.

5.7.2 Test Mode

The unit is automatically in Test mode for the first 10 minutes after power-up.

The green LED flashes:

– One time to indicate that initialization is complete and the unit is in Test mode
– Two times to indicate a Minor Attack activation
– Three times to indicate a Gross Attack activation

5.8 wLSN Relay Module

(ISW-BRL1-WX)

The wLSN Relay Module allows the control panel to control external devices through a Form C relay. This module also provides a supervised point for monitoring external devices. Refer to *Section 5.4 wLSN Door-Window Contact, page 26* for device wiring options.

Auxiliary power input terminals are also provided to supplement battery power when relay use is high.

A cover-and-wall tamper switch transmits a tamper signal when the cover is removed from its base, or when the unit is pulled away from the wall.

An LED provides status for RFSS and Discovery Modes.

Specification	Value
Wire Gauge	0.14 mm (22 AWG) to 1.5 mm (14 AWG)
Power	Four AA batteries, 1.5 V alkaline
Auxiliary Power Input	– 12 VDC nominal (6 VDC to 14 VDC) – 50 mA current draw – Compatible with any 12 VDC nominal power supply
Terminal Blocks	– **DC+ and DC –:** External power source, 12 VDC nominal, 6 VDC to 14 VDC – **PT + and PT – (input):** Input, supervised sensor loop – **NO, C, NC (output):** Relay output for control of external devices
Relay Output	2A at 30 VDC maximum (resistive load)

Table 5.12 wLSN Relay Module Specifications

NOTICE!

The external power option is intended as a supplemental (secondary) source of power only. Do not operate the Relay Module without the batteries.

5.9   wLSN Sirens

5.9.1   wLSN Indoor Sirens

(ISW-BSR1-WX)

The wLSN Indoor Siren (ISW-BSR1-WX) is a wireless sounding
device that provides audible notification of 85 dB at 3 m (10 ft).
It also provides auxiliary power input terminals to supplement
battery power when siren use is high.

A cover-and-wall tamper switch transmits a tamper signal when
the cover is removed from its base, or when the unit is pulled
away from the wall.

An LED provides status for RFSS and Discovery Modes.

Specification	Value
Wire Gauge	0.14 mm (22 AWG) to 1.5 mm (14 AWG)
Power	Four AA batteries, 1.5 V alkaline
Auxiliary Power Input	− 12 VDC nominal (6 VDC to 14 VDC) − 50 mA current draw − Compatible with any 12 VDC nominal power supply
Terminal Blocks	DC+ and DC − (input) External power source, 12 VDC nominal, 6 VDC to 14 VDC
Sounder	85 dB at 3 m (10 ft)

Table 5.13   ISW-BSR1-WX Specifications

NOTICE!

The external power option is intended as a supplemental
(secondary) source of power only. Do not operate the siren
without the batteries.

(ISW-BSR1-WIX)

The wLSN Indoor Siren (ISW-BSR1-WIX) is a wireless sounding device that provides audible notificaton of >90 dB at 1 m (3 ft).

WARNING!
The siren is loud. When the siren is sounding, wear ear protection or remain a reasonable distance from the device.

Specification	Value
Battery Pack	– **Life:** Up to 3 years with normal usage – **Voltage:** Battery pack contains two lithium-thionyl chloride batteries, each rated at 3.6 VDC, 13 Ah
Current	– **Alarm:** 500 mA – **Standby:** 0.05 mA
Acoustic Sound Level	>90 dB measured at 1 m (3 ft)

Table 5.14   ISW-BSR1-WIX Specifications

5.9.2   wLSN Outdoor Siren

(ISW-BSR1-WOX)

The wLSN Outdoor Siren provides audible and visual
notification from a loud siren (>90 dB when measured at 1 m)
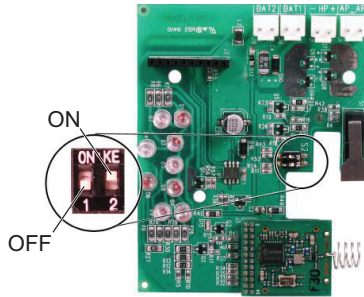and an array of ultra-bright LEDs.

WARNING!
The siren is loud and the LED array is bright. When the siren is
sounding, wear ear protection or remain a reasonable distance
from the device. When the LED is on, do not look directly at it.

Specification	Value
Battery Pack	− **Life:** Up to 3 years with normal usage − **Voltage:** Battery pack contains two lithium-thionyl chloride batteries, each rated at 3.6 VDC, 13 Ah

Current	− **Alarm:**
	  − **Siren and Flash:** 500 mA
	  − **Flash only:** 50 mA
	− **Standby:** 0.05 mA

Acoustic Sound Level	>90 dB measured at 1 m (3 ft)

Table 5.15   wLSN Outdoor Siren Specifications

DIP Switch Settings

Use the DIP switches on the outdoor siren to configure it to comply with the installation laws of the locale.

Figure 5.13 wLSN Outdoor Siren DIP Switches

Switch 1	Switch 2	Configuration
OFF	OFF	Default configuration − Siren is limited to 90 sec. − Flashes every 1.5 sec from 0-90 sec of the alarm − Flashes every 3 sec from 90 sec to 30 min of the alarm − Flash stops after 30 min
ON	OFF	− Siren activates for 60 sec followed by 30 sec of silence, then activates again for 60 sec − Flashes every 1.5 sec from 0 to 150 sec of the alarm − Flashes every 3 sec from 150 sec to 30 min of the alarm − Flash stops after 30 min
ON	ON	− Siren is limited to 90 sec − Flashes every 1.5 sec from 0 to 90 sec of the alarm − Flashes every 3 sec from 90 sec to 30 min of the alarm − Flashes every 20 sec from 30 min of the alarm until the siren is turned off
OFF	ON	Reserved for future use.

Table 5.16 DIP Switch Settings for wLSN Outdoor Siren

5.10   wLSN Water Sensor/Low Temperature Sensor

(ISW-BWL1-SX)

The wLSN Water Sensor/Low-temperature Sensor detects water spilled or leaking onto a solid surface. This sensor has 2 m (6 ft) leads to permit monitoring of hot water heaters, clothes washers, basement water (sump pump failures), and refrigerator water leaks. The sensor can also be used to monitor temperature to warn of water pipe freezing.

If the air temperature at the transceiver module housing (not at the water probe) goes below +7°C (+45°F) for more than 30 sec, the sensor transmits a signal to the wLSN Diversity Hub.

5.10.1   Installation Considerations

The wLSN Water Sensor/Low-temperature Sensor is **not** intended to:

–   monitor water levels in storage tanks or other liquids,
–   be permanently submerged in water, or
–   detect the absence of water.

To ensure proper operation, avoid mounting the device on or near a large metallic object. Also avoid locations where a large metallic object might interfere with communication between the device and the wLSN Diversity Hub.

Mount the water sensor:

–   on interior walls or other hard surfaces, or
–   where a risk of puddling is anticipated.

5.10.2 Testing and Enabling the Sensor

Test each newly discovered device during the Point Test to enable the device. If specific point numbers are preferred, test devices in the appropriate order.

To enable and test the water sensor and low-temperature sensor functions, test them as described in the following sections.

Testing and Enabling When Both Sensors are Required

1. During the Point Test, test the low-temperature sensor **first**. Refer to *Table 5.17* for instructions.
   The system announces "Point xx was tested."
2. Test the water sensor. Refer to *Table 5.17* for instructions.

Testing and Enabling When Only the Water Sensor is Required

During the Point Test, test the water sensor. Refer to *Table 5.17* for instructions.

The system announces "Point xx was tested."

### Testing and Enabling When Only the Low-temperature Sensor is Required

During the Point Test, test the low-temperature sensor. Refer to *Table 5.17* for instructions.

The system announces "Point xx was tested."

Do not connect the water sensor probe.

Sensor	To test and enable:
Water	Select one of the following methods: − Short the water probe pins for at least 5 sec. Refer to *Figure 5.14*. − Submerge the water probe in water for at least 5 sec.
Low-temperature	Short the "T" pads for at least 5 sec. Refer to *Figure 5.14*.

Table 5.17   Testing and Enabling Procedures
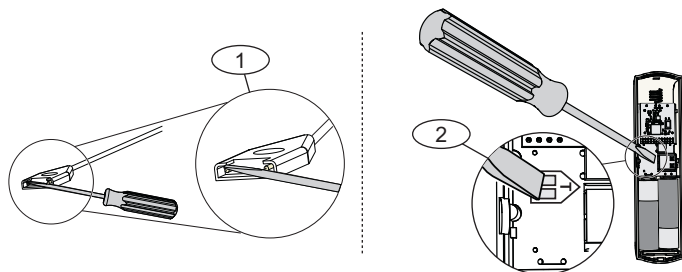
Figure 5.14   Enabling the Water Probe and Low-Temperature Functions

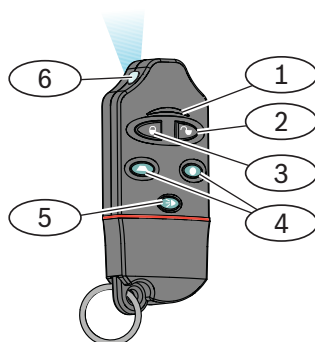| Callout	Description
1	Probes for water sensor
2	"T" pads for low-temperature sensor

5.11 wLSN Key Fob

(ISW-BKF1-H5X)

The wLSN Key Fob is a two-way personal transceiver carried by the user. Use it to remotely arm or disarm a security area.

Specification	Value
Power	Two CR2032 lithium batteries, 3 VDC
Gaskets	Interchangeable; for multiple users, different colors available

Table 5.18 wLSN Key Fob Specifications

Features include:

– **Five buttons:**
    – Two buttons for arming and disarming the system
    – Two programmable buttons for controlling lights, garage doors, and so on
      To operate the intended output, press and hold the appropriate button for at least one sec.
    – One button for operating the high intensity LED
– **Two LEDs:**
    – Status LED
    – High intensity LED suitable for use as a flashlight

Figure 5.15 Key Fob Buttons and LEDs

Callout	Description
1	Status LED
2	Disarm button
3	Arm button
4	Programmable buttons
5	Button for High intensity LED
6	High intensity LED

Key Fob Buttons

Refer to your control panel's documentation to program the functions of the programmable buttons.

Pressing any button causes the status LED to flash alternately red and green for about 15 sec. This indicates that commands were transmitted to the control panel.

Pressing and holding both the arm and disarm buttons together for 1 sec transmits a panic signal to the control panel.

LED

A flashing red status LED during key fob inactivity is an indication to replace the batteries.

For specific information regarding the various LED states, refer to your control panel's documentation.

5.12 wLSN Smoke Detector

(ISW-BSM1-SX)

Under normal conditions, the red LED on the wLSN Smoke Detector flashes once every 8 sec while the sensor monitors the surrounding environment. When the sensor detects smoke, the LED changes from flashing to steady and the sounder produces a loud continuous tone. Refer to *Table 5.20, Page 46*, and *Table 5.21, Page 46*.

A self-diagnostic feature monitors detector sensitivity and operational status.

A cover tamper switch transmits a tamper signal when the cover is removed from its base.

The optical chamber is removable for easy maintenance.

The detector complies with EN14604.

Specification	Value
Power	Two lithium batteries; 3 VDC
Sensitivity	0.14 ± 0.04 dB/m
Drift Compensation Adjustment	1.64%/m (0.5%/ft) maximum
Average Alarm Current	70 mA
Sounder	85 dBA at 3 m

Table 5.19 wLSN Smoke Detector Specifications
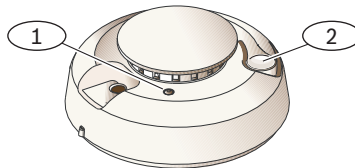
Figure 5.16 wLSN Smoke Detector Overview

Callout	Description
1	High Intensity LED
2	Test/Silence Button

Battery Replacement

Replace the batteries when the LED stops flashing and the sounder chirps every 45 sec.

Press the Test/Silence button to silence the low battery chirps for 24 hours. Refer to *Figure 5.16, Page 44* for the location of the Test/Silence button.

Smoke Test

i   **NOTICE!**
To avoid a fire department dispatch, contact the central monitoring station or put the control panel into Test mode before activating the detector for a smoke test.

Test smoke detectors annually using an approved aerosol smoke tester to simulate an alarm. Follow the instructions on the can.

The LED should remain on while the detector provides a continuous tone. The detector automatically resets when smoke is no longer present. A detector that fails to activate with the smoke test might require cleaning or replacement.

Sensitivity Test

i   **NOTICE!**
The control panel recognizes the Test mode as a test. It does not transmit an alarm.

The detector includes a Sensitivity Level Test mode for determining the detector's sensitivity:

1.   Press and hold the Test/Silence button for 4 sec. The LED flashes 1 to 9 times. Refer to *Figure 5.16, Page 44*.
2.   Count the number of LED flashes and use Table 19 to determine the status of the detector's sensitivity and the action to take.

Flashes	Recommended Action
1	Self-diagnostics failure. Return the device for service or replacement.
2 to 3	The device is becoming insensitive. Clean the detector and retest. If the error continues, replace the detector.
4 to 7	The detector is within the normal sensitivity range.
8 to 9	The device is becoming too sensitive. Confirm that the smoke chamber is snapped down securely. Clean the sensor and retest.

Table 5.20 Smoke Detector Sensitivity Conditions

Silencing an Alarm

Press the Test/Silence button (refer to *Figure 5.16, Page 44*) to silence the sounder during an alarm. If smoke is still present after a few minutes, the sounder and alarm resume.

LED

| LED	Status
Flashing	Flashes every 8 sec during normal operation.
On	Detects smoke, transmitting an alarm.
Off	Malfunction Replace the batteries, clean the detector, or replace the optical chamber as required.

Table 5.21 LED Status

Cleaning the Detector and Replacing the Optical Chamber

Clean the detector cover with a dry or damp cloth as needed to keep it free from dust and dirt. Clean the detector interior annually, or as needed.

To clean the detector:

1. Rotate the detector counter clockwise to remove it from the mounting base.
2. Remove the batteries.
3. Slide a flat-head screwdriver into the slot on the detector cap and gently push down to pry the cap off. Refer to *Figure 5.17, Page 47*.
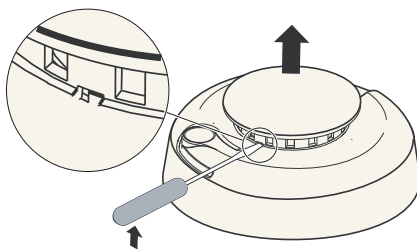
Figure 5.17 Remove the Detector Cap

4. Squeeze the optical chamber where indicated and pull it up and away from the detector. Refer to *Figure 5.18*.
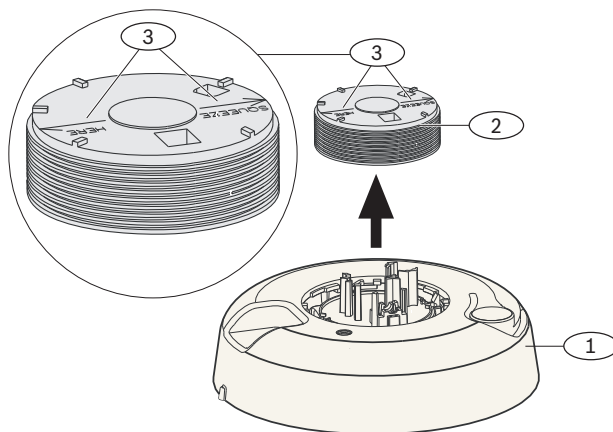
Figure 5.18 Remove the Chamber

Callout	Description
1	Smoke chamber base
2	Optical chamber
3	Alignment arrows

5. Use compressed air or a soft-bristled brush to remove dust and dirt from the smoke chamber base.

6. Align the new optical chamber with the base and snap into place.

7. To attach the detector cap, align the cap with the detector, press the cap onto the detector, and turn the cap clockwise to snap it firmly into place.

8. Observing the proper polarity, install the batteries and the battery cover. If the batteries are not installed, the detector does not fit properly onto the mounting base.

9. Mount the detector onto the mounting base.

10. Test the detector's sensitivity.
Refer to *Section Sensitivity Test, page 45*.

5.13   wLSN Glass Break Detector

(ISW-BGB1-SAX)

The wLSN Glass Break Detector is a wireless transmitter used for detecting breaking glass.

A cover-and-wall tamper switch transmits a tamper signal when the cover is removed from its base, or when the unit is pulled away from the wall.

Specification	Value
Power	2 AA batteries, 1.5 V alkaline
Minimum pane size for all types of glass	28 cm x 28 cm (11 in. x 11 in.) Refer to *Table 5.23* for glass types and thicknesses.
Laminated*	0.32 cm to 1.43 cm (0.1 in. to 0.6 in.)
Range	− **Minimum:** No minimum range − **Maximum:** 7.6 m (25 ft)

Table 5.22   wLSN Glass Break Detector Specifications

Glass Type	Glass Thickness
Plate	0.24 cm to 0.95 cm (0.1 in. to 0.4 in.)
Tempered	0.32 cm to 0.95 cm (0.1 in. to 0.4 in.)
Laminated*	0.32 cm to 1.43 cm (0.1 in. to 0.6 in.)
Wired	0.64 cm (0.25 in.)
* Protected only if both panes of glass are broken.	

Table 5.23   wLSN Glass Break Detector Acoustic Capabilities
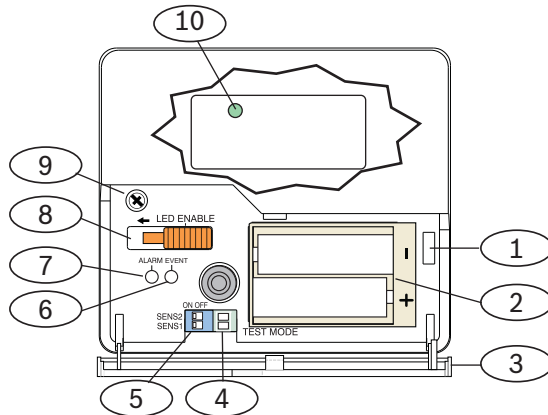
Figure 5.19 wLSN Glass Break Detector Layout

Callout	Description
1	Cover tamper switch
2	AA batteries
3	Service door
4	Test Mode pads
5	Sensitivity DIP switches
6	EVENT LED (green)
7	ALARM LED (red)
8	LED ENABLE switch (off position)
9	Housing screw
10	RFSS Mode LED (remove housing screw and cover piece)

5.13.1   Installation Considerations

NOTICE!
Glass break detectors are intended only as a component of a perimeter protection system. You should always use a motion detector together with a glass break detector.

For the best detector performance, select a mounting location that is:
– within 7.6 m (25 ft) of the protected glass
– within clear view of the protected glass
– at least 2 m (6.5 ft) from the floor
– at least 1 m (3 ft) from forced-air ducts
– at least 1 m (3 ft) from sirens or bells greater than 5 cm (2 in.) in diameter
– on a window frame if any heavy window covering is present

Avoid mounting the detector:
– in a corner
– on the same wall as the protected glass
– on free-standing posts or pillars
– in rooms with noisy equipment such as air compressors, bells, and power tools

5.13.2   Sensitivity Settings
1. If the front housing is attached, carefully open the service door (*Item 3*, *Figure 5.19, Page 50*).
2. Enable the EVENT and ALARM LEDs for test purposes by sliding the LED ENABLE switch (*Item 8*, *Figure 5.19, Page 50* in the direction of the arrow (above the switch). An orange flag protrudes from the side of the detector.
3. Use *Table 5.24* to determine the appropriate sensitivity setting for your application.

Sensitivity	SENS1	SENS2	Approximate Range
Maximum	OFF	OFF	7.6 m (25 ft)
Medium	ON	OFF	4.6 m (15 ft)
Low	OFF	ON	3 m (10 ft)
Lowest	ON	ON	1.5 m (5 ft)

Table 5.24 Glass Break Sensitivity Settings

4. Use a screwdriver to move the sensitivity switches.
    Refer to *Figure 5.20*.
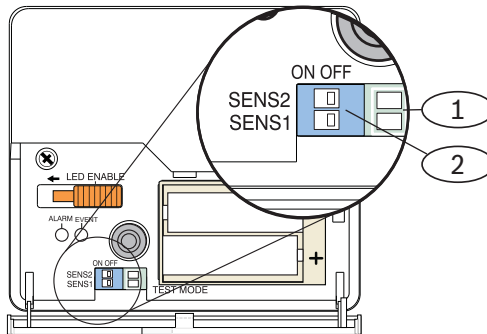
Figure 5.20 Glass Break Sensitivity Switches

Callout	Description
1	Test pads
2	Sensitivity switches

5. Turn on any sources of noise (such as machinery, office, or audio equipment) in the area.

6. Observe the green EVENT LED (*Item 6*, *Figure 5.19, Page 50*) for approximately one min. If the green LED flashes, relocate the unit or adjust the sensitivity DIP switches to decrease the sensitivity.

7. Repeat *Steps 3* through *6* until you achieve the best sensitivity level.

8. After setting the sensitivity, slide the LED ENABLE switch (*Item 8*, *Figure 5.19, Page 50*) to the OFF position.

5.13.3   Testing

Test the detector at least once each year. Test the detector with the 13-332 Sound Sensor Tester.
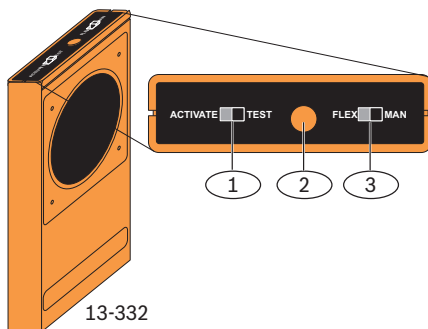
Figure 5.21   13-332 Sound Sensor Tester

Callout	Description
1	ACTIVATE/TEST switch
2	Start button
3	FLEX/MAN switch

Entering Test Mode

Place the detector in Test Mode. In Test Mode, the detector's LED ENABLE switch (*Item 8*, *Figure 5.19, Page 50*) is overridden. You can enter the Test Mode locally or remotely.

To enter the Test Mode locally:

1.   Carefully open the service door of the detector.
2.   Insert a screwdriver into the slot next to the sensitivity switches (*Item 1*, *Figure 5.20, Page 52*).
3.   Touch both test pads at the same time with the tip of the screwdriver.
      The EVENT LED (green) (*Item 6*, *Figure 5.19, Page 50*) flashes once each second. If the green LED does not flash, repeat *Steps 2* and *3*.

⚠ **WARNING!**

The 13-332 Sound Sensor Tester produces extremely loud sounds and can be hazardous to hearing when used at close range. Do not point the 13-332 toward someone's head.

Testing the Detector (Flex and Audio Signals)

1. Set the 13-332 Tester switches to the TEST and FLEX positions (*Items 1* and *3*, *Figure 5.21, Page 53*).
2. Press the red Start button (*Item 2*, *Figure 5.21, Page 53*). The tester activates and starts an 8-sec armed period.
3. If window coverings are present, close them completely.
4. Hold the 13-332 Tester near the point on the glass farthest from the detector. If window coverings are present, hold the tester between the glass and window coverings.
5. Carefully strike the glass with a cushioned tool. The 13-332 Tester responds by producing a burst of glass break audio. If the detector receives the flex and audio signals properly, its red ALARM LED lights for 3 sec.
   If the red ALARM LED does not light, return to *Section 3 RFSS Mode (RF Signal Strength), page 8* to reposition the detector.

Exiting from Test Mode
To exit from the Test Mode locally:

1. Carefully open the service door of the detector.
2. Insert a screwdriver into the slot next to the sensitivity DIP switches (*Item 5*, *Figure 5.19, Page 50*).
3. Touch both test pads at the same time with the tip of the screwdriver.
   When the detector exits from the Test Mode, the green EVENT LED (*Item 6*, *Figure 5.19, Page 50*) stops flashing. If the EVENT LED continues to flash, repeat *Steps 2* and *3*.

To exit from the Test Mode remotely:

1. Stand within 3 m (10 ft) of the detector.
2. Move the switches on top of the 13-332 Tester to the ACTIVATE and MAN positions (*Items 1* and *3*, *Figure 5.21, Page 53*).
3. Point the front of the tester toward the detector and press the red Start button on top (*Item 2*, *Figure 5.21, Page 53*). The tester buzzes.

5.13.4   Low Battery Indication

The detector indicates a low battery condition in two ways:

–   If the EVENT and ALARM LEDs are enabled, both LEDs flash simultaneously every second.

–   A battery status indication is transmitted from the glass break detector to the wLSN Diversity Hub, and then transmitted from the hub to the control panel.

The flashing LEDs and a low battery indication at the control panel are independent of each other and do not necessarily occur at the same time. Receiving either condition indicates a low battery.

5.13.5   Entering RFSS Mode

To enter RFSS Mode if the wall tamper tab is removed:

1.   Take the detector to its planned mounting location.
2.   Remove and reinsert the batteries.
3.   Press and hold the wall tamper switch. Refer to *Figure 5.22*.
4.   Quickly press and release the cover tamper switch four times within 10 sec of reinserting the batteries. Refer to *Figure 5.22*. The detector enters RFSS Mode.
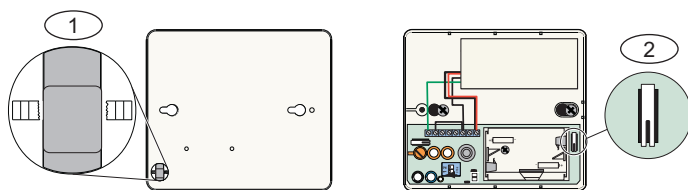
Figure 5.22   Wall and Cover Tamper Switches

Callout	Description
1	Wall tamper switch (back of detector)
2	Cover tamper switch (inside of detector)

6 Trademarks, Icons, and Symbols

6.1 Trademarks

Pet Friendly® is a registered trademark of Bosch Security Systems, Inc. in the United States.

6.2 Icons and Symbols

Refer to *Table 6.1* for descriptions of the icons and symbols used in the wLSN documentation.

Icon/Symbol	Description
	Not Pet Friendly®
≥45 kg (100 lb)	Pet Friendly (appropriate weights below graphic)
	Point away from rotating machines.
	Point away from objects that rapidly change temperature.
	Do not mount in sunlight.
	Do not point toward window.
	Do not mount outside.
	Device has a wall or cover tamper.
	Not pet friendly when look-down zone is enabled.

Table 6.1 Icons and Symbols