G550: Wireless Glassbreak Detector V1.0

P ▲ R △ D O X™

Introduction

The G550 Wireless GlassBreak Detector delivers effective coverage of plate, tempered, wired, and laminated glass without the need for complex sensitivity adjustments. The G550 combines an advanced acoustic sensor* with supervised wireless capabilities (available in 433MHz and 868 MHz).

Using the G550

The G550 is omni-directional, providing 360° coverage. Coverage is measured from the sensor to the point on the glass farthest from the sensor. The sensor can be mounted as closes as 3.3' (1m) from the glass.

1) Mounted on opposite wall or adjoining walls, range is 20' (6m) for plate, tempered, laminated and wired glass.

2) Mounted on the ceiling, maximum range is 20' (6m) for plate, tempered, laminated and wired glass.

3) For armor-coated glass, mount sensor no more than 12' (3.65m) from glass.

Figure 1: Installation
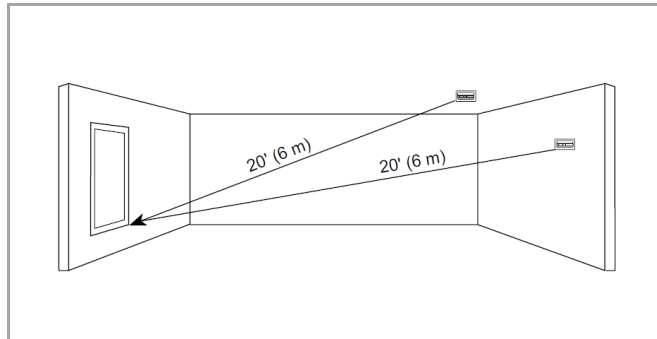
Recommended Glass Size

Minimum 1' x 2' (0.3m x 0.6m) or larger.

Glass Type	Glass Thickness
Plate	3/32" to 1/4" (2.4 mm to 6.4 mm)
Tempered	1/8" to 1/4" (3.2 mm to 6.4 mm)
Wired	1/4" (6.4 mm)
Laminated	1/8" to 1/4" (3.2mm to 6.4mm)

Optimizing Detection and Avoiding False Alarms

For Best Detection, Avoid Installing In:

- Rooms with lined, insulating, or sound deadening drapes
- Rooms with closed wooden window shutters inside
- Corners of a room

For Best False Alarm Immunity:

- Avoid 24-hour loop applications (perimeter loop OK).
- Don't use near white noise or where air blasts may occur.
- Avoid rooms smaller than 10" x 10" (3m x 3m

* Sentrol Inc. ShatterPro™ acoustic sensor with Pattern Recognition Technology™ (protected under U.S. Patent 5,192,931)

Areas to Avoid:

- Glass airlocks and glass vestibule areas
- Noisy kitchens, small bathrooms
- Residential car garages
- Small utility rooms, other small acoustically live rooms
- Stairwells

Do Not Install in Humid Rooms

The wireless G550 is not hermetically sealed. Excess moisture on the circuit board can eventually cause a short and false alarm.

Avoid 24-Hour Loop Applications

Avoid adding (learning) the sensor into 24-hour sensor groups, where the sensor will be armed even when the room is in use. Adding the G550 to a perimeter sensor group, which is armed only when the perimeter doors and windows are armed, will help prevent false alarms. Install the G550 on a perimeter loop which is armed whenever the door and window contacts are armed.

Proper Testing

The G550 is designed to detect the breaking of framed glass mounted in an outside wall. Testing the sensor with unframed glass, broken bottles, etc., may not trip the sensor. The G550 typically does not trip to glass breaking in the middle of the room no burglar breaks glass in the middle of a room, so such breaks are false alarms.

Note: G550 may not consistently detect the cracks in glass, or bullets which break through the glass. Glassbreak sensors should always be backed up by interior protection.

G550 Mounting Location

For best false alarm immunity the sensor should be located at least 4' (1.2m) away from noise sources (televisions, speakers, sinks, doors, etc.). The sensor must always be in direct line of sight of all windows to be protected. It cannot consistently detect glass breaking around corners in other rooms, etc. there is no front or back, up or down, orientation of the sensor required.

Wall Mounting

Since the sound of breaking glass travels directionally out from the broken window, the best location for mounting the sensor is on the opposite wall, assuming the glass to be protected is within the sensor's range and line of sight. The ceiling and adjoining (side) walls are also good sensor locations.

Ceiling Mounting

Mount the sensor in any type of ceiling in a location which is in direct line of sight of the windows to be protected. However, since sound travels directionally out from the broken window, a position 6 - 10' (2 - 3m) into the room provides better detection.

G550 Pre-Testing

Use the Sentrol 5709C hand-held tester to set the sensor into test mode. Set the tester to tempered glass, hold the tester speaker directly on top of the sensor and activate the tester. The sensor will alarm, then it will go into test mode for one minute. When in test mode the LED on the sensor will blink continuously. Extend the test mode time by firing the tester at the sensor at least once a minute.
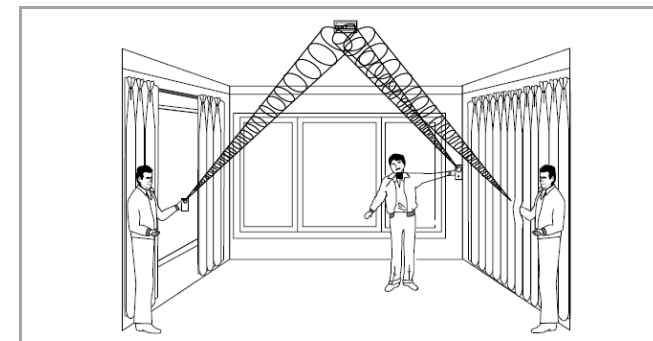
Test the Sensor

1) Holding the tester near the surface of the glass, aim the tester at the G550 and hold down the test button. If drapes or blinds are present, test with the hand-held tester behind the closed drapes or blinds (do not use sensor with heavy or lined drapes).

2) The 5709C tester has a different setting for each type of glass. The tester should always be set for tempered or laminated glass (either is correct and both have the same range) unless the installer is certain that all the glass to be protected is plate glass.

When the LED on the sensor goes solid momentarily while the tester is triggered, the glass is within detection range.

If the LED does not go solid, but simply continues blinking, re-position the sensor closer to the protected windows and retest. This may require adding additional sensors in order to achieve adequate coverage. It is very rare that the sensor will not activate within its stated range of coverage. Double check adequate battery strength in the hand-held tester. A new tester battery will likely restore range. The sensor will automatically change from test mode to normal mode approximately one minute after it last hears the hand-held tester.

IMPORTANT: Room acoustics can artificially extend the range of a glassbreak sensor. The specified range of the G550 has been established for worst-case conditions. While the sensor will likely function at additional range, it may miss a minimum output break, or room acoustics may be changed at some future time, brining sensor range back into normal 20' (6m) conditions. **Do not exceed the rated range of the sensor, regardless of what the tester shows.**

How Test Mode Works

The Pattern Recognition Technology of the Sentrol ShatterPro (584503-W) ignores most false alarm sounds, including glassbreak testers. In order to test the G550, a test mode is used. With the sensor in test mode, processing of the glassbreak pattern in the upper and lower frequencies is disabled. The G550 is then listening only for the mid-range frequencies, which the 5709C tester reproduces. It's the mid-range frequencies that determine sensor range. In Normal Mode, the LED does not blink unless it hears a loud sound. In Normal Mode, the G550 will not trip the tester, unless the tester is held next to the sensor.

Note: Each time the sensor alarms it also goes into test mode for one minute.

Hand Clap Test

The G550 can be checked by the installer or end user while in Normal Mode, simply by clapping hands loudly under the sensor. The LED will blink twice, but the sensor will not trip. This verifies visually that there is power to the sensor, and that the microphone and circuit board are functioning. The hand clap activation is only momentary, so there is no appreciable effect on battery life.

To disable the custom test function, remove the circuit board from the housing and clip one of the wires on the LED. The LED will no longer be operational, but the sensor can still be tested using the transmitter and the control panel.

Installation Tips

1) The G550 is designed to detect the shattering of framed glass mounted in an outside wall. "Testing" the sensor with unframed glass, broken bottles, etc. may not trip the sensor. The G550 typically does not trip to glass break tests in the middle of a room as such breaks are false alarms.

2) False alarms are mostly likely to occur when installed on a 24-hour loop in glass airlocks and glass vestibule areas, when mounted above sinks, when used in residential car garages and in other small, acoustically live rooms and rooms where multiple sounds can reflect and eventually duplicate the glass break frequency pattern. For occupied area glass break protection in such applications, use Sentrol shock sensors.

3) Installing the G550 on 24-hour loops will increase false alarms. The G550 is recommended for perimeter loops and is designed to function without false alarms in occupied areas. On a 24-hour loop, which is armed all day/all night every day, the false alarm technology will be pushed to its limit since some sounds in some conditions can duplicate the points on the glass break pattern that the G550 detects. Install the G550 on a perimeter loop, which is armed whenever the door and window contacts are armed. For occupied are installations, G550's false alarm immunity is best in rooms with only moderate noise.

4) The G550 detects the shattering of glass only. Glassbreak sensors should always be backed up by the interior protection.

Enrollment

To enroll the G550 to the system, please refer to your respective panel's/receiver's Programming Guide.

RF Signal Strength Test

In order to verify the receiver's reception of the motion detector's signal, perform a signal strength test before finalizing the installation of the G550. Prior to performing the test, make sure that the batteries have been inserted into the battery holder to power the detector. Also verify that the motion detector has been assigned to a zone. For more information on signal strength tests and zone programming, refer to the appropriate security panel / wireless receiver's *Reference & Installation Manual*. If the transmission is weak, just moving the detector by a few inches can greatly improve the reception. If the signal is still weak, it is recommended that the detector be moved to another location.

Replacing the Battery

Make sure the batteries are installed respecting the correct polarity (see Figure 2).

Figure 2: Battery Orientation
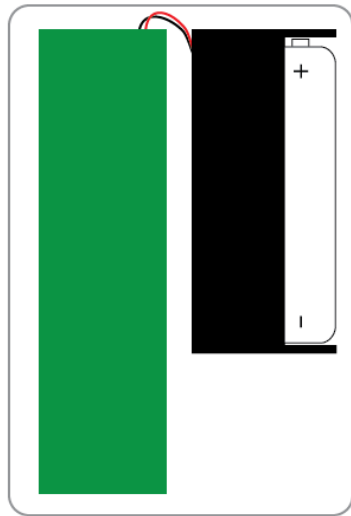
G550 PCB Top View   Battery Pack View
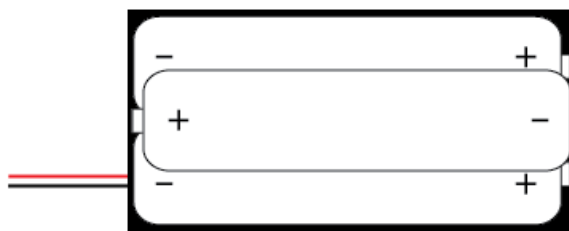
Specifications

Housing material	Flame retardant ABS
Power	3 x "AAA" alkaline batteries
Battery life	2 years
Alarm Duration	4 seconds
RF immunity	20 V/meter, 1 MHz to 1000 MHz
Microphone	Omni-directional electret
Temperature Range	32° to 120° F (0° to 50° C)