# Installation Instructions for the DS1109i Glass Breakage Detector with Door/Window Contact

## 1.0 Specifications

- **Coverage**: 10 ft. (3 m) maximum to farthest point of glass being protected. For glass sizes over 12 in. x 12 in. (30 cm x 30 cm); types of 1/4 in. (64 mm) Plate, Tempered, Laminated, and Wired glass; and 1/8 in. (32 mm) Plate glass (DSB).
- **Mounting**: Directly (or using the supplied bracket) to a ceiling, wall, door or window frame.
- **Input Power**: 12 VDC (6 VDC min. to 15 VDC max.), 23 mA nominal @ 12 VDC (29 mA max. in the LED Latch mode).
- **Standby Power**: Connect to power sources capable of supplying standby power of 23 mAh for each hour of required standby time. *Four hour minimum standby time required for UL Listed Requirements.*
- **Alarm Relay**: Normally Closed (NC/C) reed relay contacts rated 3.5 Watts, 125 mA @ 28 VDC for DC resistive loads. Protected by a 10 ohm resistor in the common "C" leg. The contact opens for 3 seconds upon a glassbreak alarm. For a magnetic contact alarm, the contacts remain open as long as the magnet is more than 1 - 2 inches away from the detector.
- **Tamper**: Normally Closed (NC/C) rated 125 mA @ 28 VDC maximum. *For UL Listed Requirements, the tamper switch must be connected to a 24 hour protection circuit.*
- **Operating Temperature**: -20° to +120°F (-29° to +49°C). *For UL Listed Requirements, the temperature range is +32° to +120°F (0° to +49°C).*
- **Enclosure**: ABS high impact plastic. 1.25 in. H x 3.75 in. W x 0.875 in. D (32 mm H x 95 mm W x 23 mm D).
- **Accessories**: DS1110i Glass Breakage Tester.

## 2.0 Installation Considerations

**NOTE: Always pretest the detector's location using the DS1110i Glass Breakage Tester.**

- **Do Not...**
  - Mount the detector on iron or steel surfaces if the magnetic contact will be used. Aluminum and stainless steel frames are acceptable.
  - Mount the detector with obstructions between the glass being protected and the detector.
  - Mount closer than 2 ft. (61 cm) to heating or cooling outlets; mount as far away as possible. If drafts from these outlets blow on the detector, select a different location for the detector. Use the environmental test (see Section 6) to verify good installation locations.
  - Install alarm contacts on 24-hour protection circuits.
- **Remember...**
  - The best mounting location is less than 10 ft. (3 m) from the glass, and in direct line of sight of the glass. Do not exceed the maximum range.
  - Range will be reduced in areas that are acoustically soft. This may be due to carpeting, drapes, plants, or other sound absorbing materials. The DS1110i Glass Breakage Tester should be used to verify range in all installations.
  - Glass breakage detectors are intended only as perimeter protection devices. They should always be backed up with motion sensors.
  - Glass breakage detectors are designed to detect the breakage of framed glass and may not detect such things as bullet holes, spontaneous breakage of glass (with no impact), and removal of glass.
- **Maximum range:**

  The maximum detection range is 10 ft. (3 m) from the farthest corner, for glass sizes 12 in. x 12 in. (30 cm x 30 cm) and larger.

## 3.0 Selecting a Mounting Location

### Opposite Wall Mounting Using the Door Contact

- Mount the detector where there are no objects between itself and the glass.
- Make sure the detector is no farther than 10 ft. (3 m) from any corner of the glass (line A in Figure A).

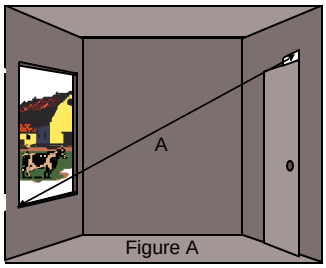
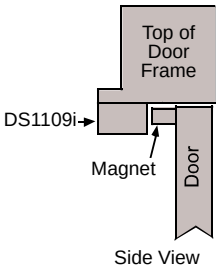


Figure A

### Mounting Above Glass Doors

- Mount the DS1109i at the top of the door frame with the Sensor Aperture pointing downward.
- Mount the magnet to the top of the door. The magnet should be placed so that it aligns with the side of the DS1109i. Do not allow the magnet to cover the front of the detector.
- The detector must be mounted so that the door swings outward from the detector. See Figure B.



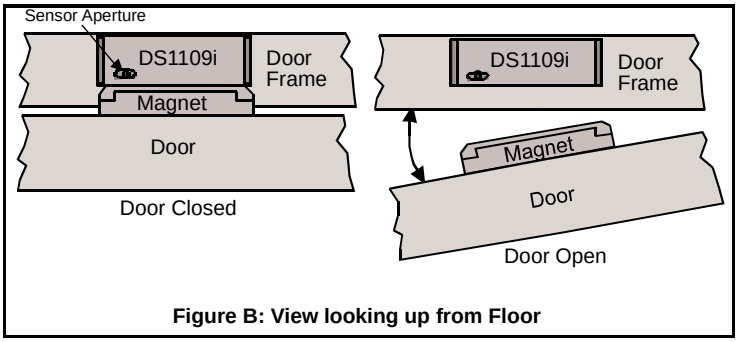




**Figure B: View looking up from Floor**

### Single Window Coverage Using the Magnetic Contact

- Mount the detector where there are no objects between itself and the glass.
- Make sure the detector is no farther than 10 ft. (3 m) from the farthest corner of the glass (line A in Figure C).
- Do not mount the unit with the Sensor Aperture facing away from the window.

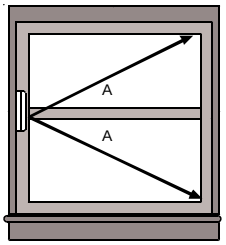
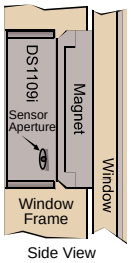


Figure C



Side View

### Ceiling Mounting Without the Magnetic Contact

- The recommended location is half the distance between the glass and the opposite wall or 7 ft. (2.1 m) whichever is smaller.
- Mount the detector where there are no objects between the glass and itself.
- Make sure the detector is no further than 10 ft. (3 m) from any corner of the glass (line A in figure D).
- The detector should be within ±30° of the center of the glass to be protected (line B in figure D).

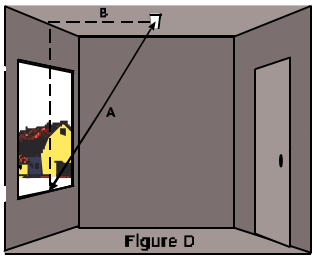


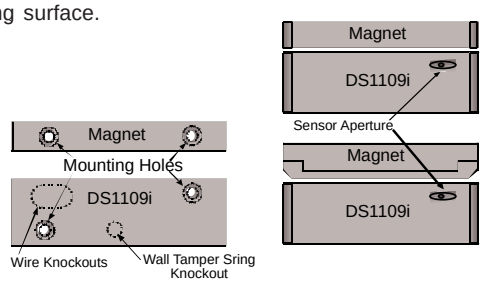
Figure D

- Jumper P3 must be installed to disable the magnetic contact. See Section 5.

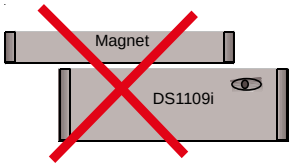
**NOTE: Adjacent wall mounting is not recommended for this detector.**

## Mounting the Detector

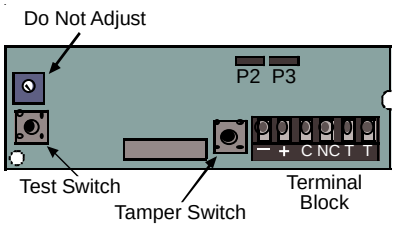
- After verifying an acceptable location, permanently mount the detector.
  - Use the two mounting holes in the enclosure to secure it to the mounting surface.




- Mount the detector and the Contact Magnet within 1 in. (2.5 cm) of each other. The Contact Magnet must be mounted facing the side of the detector with the Sensor Aperture (see diagram). Do not mount the magnet so it covers the Sensor Aperture.
- Avoid misaligning the detector and the magnet.

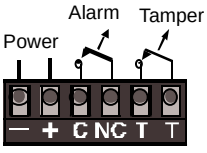



## 4.0 Wiring the Detector

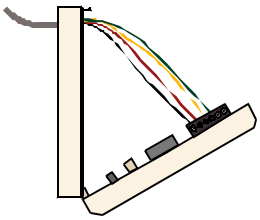



**Board Layout**

- Wire the detector as shown. Leave extra wire so the case can be opened for testing.



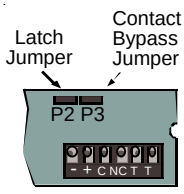

Contacts shown with power on, no alarm and Tamper Switch closed (cover on).



## 5.0 Setting the Jumpers

The DS1109i has two jumpers located on the main board. P2 is used to allow the LED to latch on to a glass breakage alarm. P3 is used to determine if the magnetic contact is used.

- Remove the jumper from P2 if you **do not** want the LED to latch into alarm when a glass breakage occurs. **The relay contacts will only change state for approximately 3 seconds upon a glass breakage alarm**. The LED may be reset by a momentary interruption of the power.
- Remove the jumper from P3 if you want to use the magnetic contact.




## 6.0 Install the Tamper Screw

- Install the Tamper Screw.

## 7.0 Testing

### Testing the Location

- Temporarily mount the detector using 2-sided tape.
- Power the detector using a 9 Volt battery.
- The detector will enter the test mode, for five minutes, as soon as power is applied. The detector will indicate that it is in the test mode by flashing the LED for 10 seconds. At the end of five minutes the detector will flash the LED again for 10 seconds to indicate the test period is over. The test mode can be restarted at any time by powering the unit off and then on or by pressing the Test Switch (see the Board Layout drawing). Pressing the Test Switch when the unit is in the test mode will terminate the test.

**NOTE: All testing should be done with the detector's cover in place.**

### TEST #1: ENVIRONMENTAL TEST

Remember: The detector must be in test mode to perform this test.

During the 5 minute test mode, the LED will indicate low or high frequency disturbances by flashing at specific rates. **Occasional (random) flashes of the LED are normal.** To rule out random flashes affecting this test, observe the LED for the full five minutes.

- Turn on all sources of noise (e.g. forced air blowers, air conditioners, compressor motors, etc.).
- The LED will flash 5 times per second each time a low frequency disturbance is detected. If the 5 flashes per second occur more than once every 15 seconds or if the unit alarms, then do not mount in this location.
- The LED will flash once each time a high frequency disturbance is detected. If any flashes occur more than once every 15 seconds, do not mount in this location.

Remember: If the detector happens to alarm during this test, the alarm relay **will** activate as well.

### TEST #2: RESPONSE TEST

Remember: The detector must be in test mode to perform this test.

This test should be performed using the DS1110i Glass Breakage Tester. The DS1110i produces a high frequency tone designed to alarm the unit to further verify proper location.

CAUTION

**Don't point the tester directly at your or anyone's ear. Doing so could damage hearing.**

- Hold the DS1110i Glass Breakage Tester against the window being tested and point it at the detector.
  - If there are curtains or blinds covering the window, close them over the Tester.
- Activate the tester.
  - Setting the Tester to automatic mode causes it to activate every 6 seconds. This will allow you to better observe the detector's LED.
  - For large windows, perform this test at different placements along the window.
- **The alarm/test LED and the alarm relay will activate for three seconds if this is an acceptable detector placement.**

**NOTE: The low frequency response of the detector can be tested (while still in the test mode) by opening a door about 1 inch and slamming it shut. The detector should indicate an alarm.**

- During the last 10 seconds of the detector's test mode, its LED will pulse. To end the test mode before the 5 minute time-out period, press the Test Switch.

### Automatic Sound Check

- This detector features Automatic Sound Check, to allow the end user to test the unit on a periodic basis. To perform the test, simply clap your hands or create some other loud sound. When the detector hears this sound the LED (but not the alarm relay) will activate. This feature works in the normal operating mode and does not require that the detector be in the test mode.

It is recommended that a full Response Test (as outlined above) and magnetic contact test (if used) be performed on an annual basis.

The DS1109i is protected by patent #5,450,061.

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