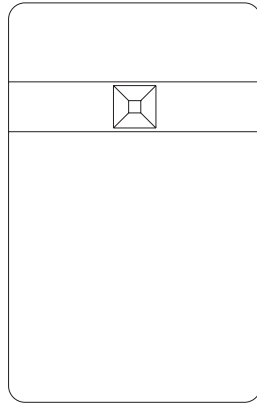# IntelliSense™

INSTALLATION INSTRUCTIONS

Model **FG-1025**

Glass-Break Detector

FEATURES

- Advanced microcontroller with Digital Signal Processing (DSP)
- Continuous self-test
- No adjustments
- No minimum range
- Remote Test Mode activation with FG-701 simulator
- End-of-line / spare terminals
- Cover and wall tamper
- Selectable Alarm Memory
- LED enable
- 8 - 14 VDC operation
- PCB and housing designed to protect against ESD and mechanical damage
- Energized Form C relay
- Watchdog for microcontroller
- Green event LED lights when signals are received

WIRING

1. For surface-wired installation, use optional Wiring Spacer Plate (model number FG-SP1).
2. Route wire through Wire Entry Hole in the center of the printed circuit board (PCB), and strip wire ends 1/4" (6.5 mm).
3. Wire the unit as shown, (use 22 - 18 AWG). Reverse polarity connections will not damage the unit.
4. When wiring is complete, push excess wire back into the wall.

   NOTE: If end-of-line resistors are required, wire as shown in Figures 2c and 2d.
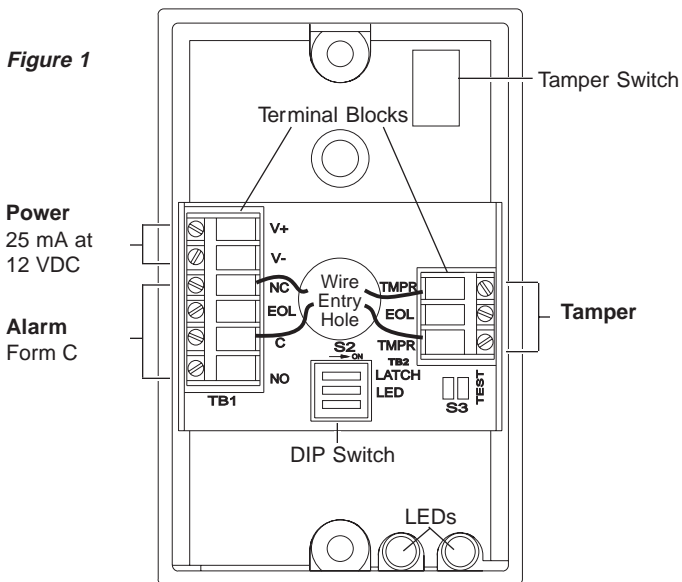

Figure 1

Tamper Switch
Terminal Blocks

Power 25 mA at 12 VDC

Alarm Form C

Wire Entry Hole

Tamper
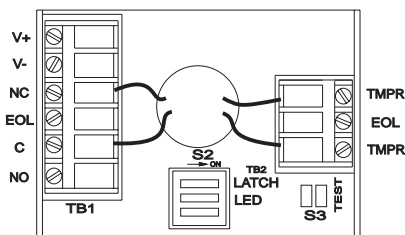
DIP Switch

LEDs

Figure 2 WIRING

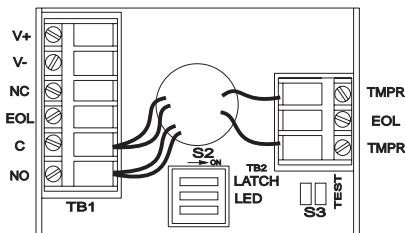*Figure 2a Wiring for a N.C. loop, no EOL resistor*

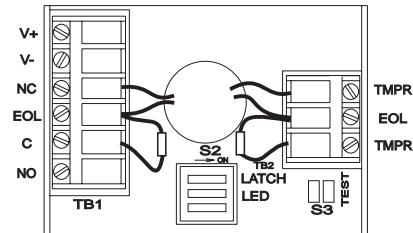*Figure 2b Wiring for a N.O. loop, no EOL resistor*

WIRING (Continued)

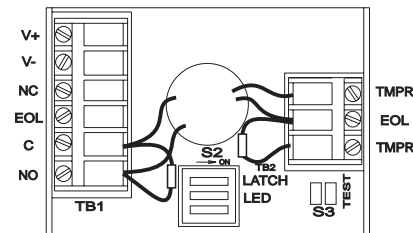*Figure 2c Wiring for a N.C. loop with EOL resistor*

Figure 2d Wiring for a N.O. loop with EOL resistor

MOUNTING LOCATION

The FG-1025 can be mounted in corners, on walls or on ceilings. Refer to the guidelines below when selecting a mounting location:

- Mount the unit within 25' (7.6 m) of the glass.
- There is no minimum range, but the unit must have a clear line-of-sight and a clear view of the protected glass.
- The preferred location is on the wall or ceiling directly opposite the glass.
- When wall mounting, mount the unit at a height of at least 6 feet (1.8 m) to avoid accidental screening if furniture in the room is moved.
- Mounting on free-standing posts and pillars is not recommended.
- Curtains, blinds and other window coverings will absorb energy from breaking glass. Heavy curtains, for example, will effectively block the sound signal. In these cases, mount the unit on the window frame behind the window covering or above the window.
- Do not mount within 3 feet (0.9 m) of forced air ducts, sirens, or bells measuring two inches (5 cm) or more in diameter.
- **Be sure to test the unit for detection in the final mounting location.**

   <u>Tip:</u> It is a good idea to mount the unit temporarily in the intended location and power it with a 9 V battery until testing has established proper detection. If the 9 V battery cannot supply sufficient power, the unit will not operate.
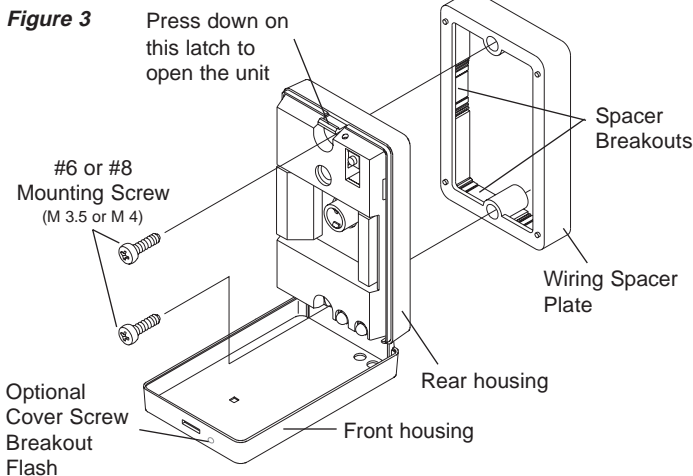
MOUNTING PROCEDURE

NOTE: If you plan to use the wall tamper, locate the position of the wall tamper screw before locating the mounting screws. (Refer to Tamper Switch section.)

IMPORTANT: Test the unit in the desired mounting location **before** drilling mounting holes.

1. To open the sensor, use a screwdriver to push down on the latch at the top of the unit.

   NOTE: The FG-1025 is designed to be mounted without removing the PCB. DO NOT remove the PCB from the protective enclosure.

2. For mounting the FG-1025 sensor, #6 (M 3.5) or #8 (M 4) screws are recommended. (Screws are not provided.)
3. For better access, detach the front housing by opening fully, twisting slightly, and gently pulling the front cover off.
4. If surface wiring is required, use the Wiring Spacer Plate (model number FG-SP3), supplied with the unit. If greater spacer depth is required, use optional spacer FG-SP1.

Figure 3

Press down on this latch to open the unit

Spacer Breakouts

#6 or #8 Mounting Screw (M 3.5 or M 4)

Wiring Spacer Plate

Optional Cover Screw Breakout Flash

Rear housing

Front housing

Note: If required, the front cover can be secured with a screw after installation. Break out the cover screw breakout flash, and secure the front cover with a #4 (M 3) screw.

TAMPER SWITCH

The FG-1025 is equipped with a combination normally-closed (NC) cover and wall tamper. Each unit is shipped with the cover tamper operational and the wall tamper disabled.

To use the wall tamper:

1. Use needle-nose pliers to break out the plastic tab on the back of the unit. (See Figure 4.) The wall tamper arm will then extend through the hole.
2. The wall tamper screw (not provided) should be a flat-head #8 (M 4) or #10 (M 5) screw.
3. Install the wall tamper screw so that it will just make contact with the bottom of the tamper cavity when the unit is mounted. (Refer to Figure 5.)
4. After installing the wall tamper screw, position the unit over it and mark the locations for the mounting screws.

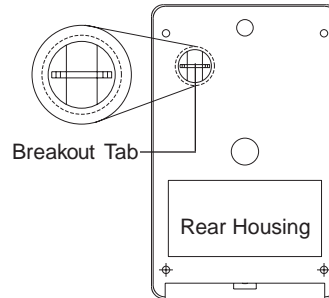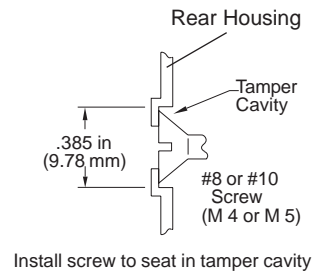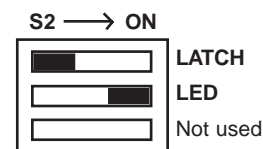## TAMPER SWITCH (Continued)

Figure 4

Breakout Tab

Rear Housing

Figure 5

Rear Housing

Tamper Cavity

.385 in (9.78 mm)

#8 or #10 Screw (M 4 or M 5)

Install screw to seat in tamper cavity

FG-1025 CONFIGURATION

Configure DIP switch S2 to best suit the application:

S2 ⟶ ON

LATCH
LED
Not used

Factory default settings: LATCH switch = OFF; LED switch = ON.

SWITCH	OFF	ON
LATCH	Red alarm LED lights for 5 seconds when unit alarms	Red alarm LED latches ON when unit alarms[1,2]
LED	LEDs are disabled except during power-up test	LEDs are enabled

[1]Latched alarm LED does not affect timing of alarm relay.
[2]Reset the alarm LED by removing and restoring power, or by toggling the S2 LATCH switch off and on.

TESTING

The FG-1025 should be tested at least once each year. Test the unit with the FG-701 Glass-Break Simulator. The model FG-700 Glass-Break Simulator can be used if it is set for the TEMPered glass sound. Other glass-break simulators will not give accurate indication of range.

You must place the FG-1025 in Test Mode before you can test the unit.

To activate Test Mode:

1. Stand within 10 feet (3 m) of the unit.
2. Switch the FG-701 to ACTIVATE and MANual modes.
3. Point the front of the simulator at the unit and press the red start button. (Refer to Figure 6.)

You should hear a short buzz from the simulator, and the green LED on the FG-1025 should begin flashing about once per second to indicate it is in Test Mode.

   NOTE: In Test Mode the LED disable switch is overridden.

TESTING (Continued)

IMPORTANT: Some environmental factors may reduce the sensor activation range. If you do not see the green LED flashing after pressing the red start button, move closer to the unit and try again.
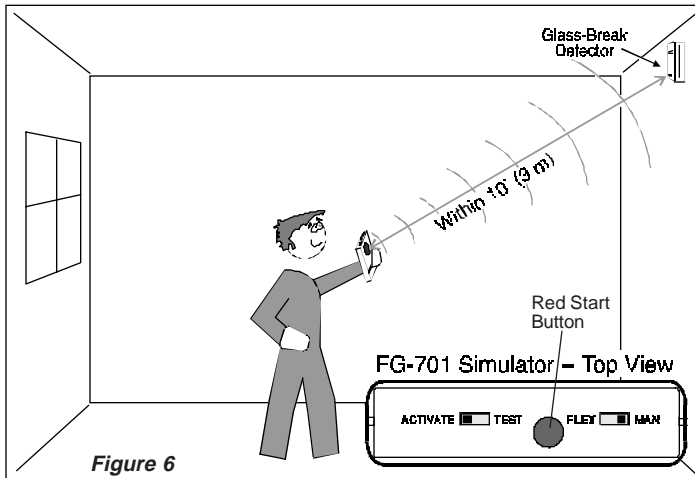

Figure 6

If an FG-701 is not available, or if for any reason remote activation cannot be used, use a screwdriver to short the test pads at location S3 on the PCB (see Figure 1). This will activate Test Mode. Make sure to close the front cover of the FG-1025 before beginning test.

To test the FG-1025:

1. Place the unit in Test Mode as described above.
2. Set the FG-701 switches to the TEST and FLEX positions.
3. Press the red start button. The simulator will "click" on and start an eight second armed period.
4. Position the FG-701 near the farthest point of the protected glass and point it directly at the FG-1025.
5. Generate a flex signal by carefully striking the glass with a cushioned tool. The FG-701 will respond by producing a burst of glass-break audio. (Refer to Figure 7.)

If both the flex and audio are received properly, the red alarm LED on the FG-1025 will light.

IMPORTANT: If window coverings are present, close them fully and hold the FG-701 behind the window coverings for testing.

> **NOTE:** You can also use the simulator in the MANual mode to test audio alone. The blinking green LED on the unit will flicker when the simulator audio is received correctly. (See the FG-701 Operating Instructions for additional information.)
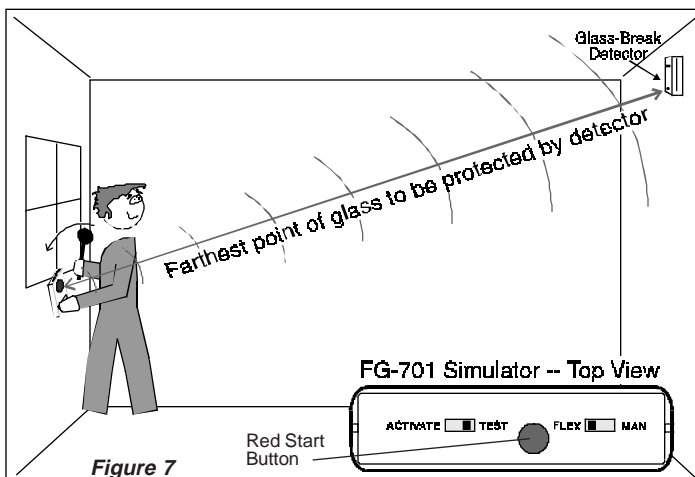

Figure 7

After testing, exit the Test Mode using the same procedure for activating the Test Mode. The FG-1025 also will automatically exit Test Mode after ten minutes.

LED Indicators:

The two LED's on the front cover are used to indicate the sensor's operational status. The following table summarizes the LED operation when the LED's are enabled.

Condition	Green LED	Red LED
Normal, no event	OFF	OFF
Normal, event detected	Flicker	OFF
Normal, break detected	OFF	ON
Power-up self-test	ON, one second	ON, one second
Trouble detected	Flash ON/OFF	Flash OFF/ON
Test mode, no alarm	Flash once per second	OFF
Test mode, event detected	Flicker	OFF
Test mode, alarm	Flash once per second	ON

APPLICATIONS INFORMATION

The FG-1025 is designed to detect framed glass broken by an impact sufficient to make a hole.

To minimize the chance of false alarms:

- Do not use outside.
- Avoid installing in rooms with high-level noise sources, such as air compressors, bells, power tools, etc., if those sources can be active when the detector can signal an alarm.
- Test false alarm immunity by activating any known noise sources in the room.

To maximize detection:

- Mount the unit on a wall or ceiling directly opposite the glass if possible. The least desirable mounting location is on the same wall as the glass.
- Minimize range to the glass. Do not install beyond the maximum specified range even if testing indicates greater range.
- Verify all installations back to the panel to be sure that the protection loop is intact.

SELF-TESTS

The FG-1025 automatically performs a series of self-tests during power-up, and continuously (when the sensor is not detecting a trouble or alarm condition).

If any self-test fails, the unit will signal trouble by flashing the LED's alternately about once per second. Protection will continue if possible. If the trouble condition clears, the LED's will return to the normal state. Always return the unit for repair if there is any indication of trouble, even if the trouble is temporary.

SPECIFICATIONS

Range:
25' (7.6 m) maximum
No minimum range

Alarm Relay:
Form C
125 mA maximum
25 VDC maximum

Alarm Duration:
5 seconds (unaffected by
alarm LED latching)

Tamper Switch:
Combination cover and
wall tamper
25 mA maximum
24 VDC maximum

Power Requirements:
8 - 14 VDC; 25 mA typical at
12 VDC, 35 mA max
AC Ripple: 4 Volts peak to peak
    at Nominal 12 VDC

Note: This sensor must be connected to a UL Listed power supply or UL Listed control unit capable of supplying a minimum of four hours of standby power.

Operating Temperature:
32º to 120º F (0º to 49º C)
Storage: -4º to 122º F
(-20º to 50º C)

RF Immunity:
30 V/m, 10 MHz - 1000 MHz

ESD Immunity:
10 kV,
Discharges of either polarity to
    exposed surfaces

Dimensions:
3.86" H x 2.44" W x 0.86" D
(98 mm x 62 mm x 21.8 mm)

Weight:
3.2 oz., (90 g)
Packaged Product: 4.1 oz, (116 g)

Protected Glass:
Minimum size for all types is 11" (28 cm) square; Glass must be framed in the wall of the room or mounted in a barrier of 36" (0.9 m) minimum width.

| Thickness | | |
Type	Minimum	Maximum
Plate	3/32" (2.4 mm)	1/4" (6.4 mm)
Tempered	1/8" (3.2 mm)	1/4" (6.4 mm)
Laminated[1]	1/8" (3.2 mm)	9/16" (14.3 mm)
Wired	1/4" (6.4 mm)	1/4" (6.4 mm)
Coated[2]	1/8" (3.2 mm)	1/4" (6.4 mm)
Sealed Insulating[1]	1/8" (3.2 mm)	1/4" (6.4 mm)

[1]Laminated and sealed insulating glass types are protected only if both plates of the unit are broken.

[2]For glass coated on the inner surface with 3M scotchshield type RE35NEARL or Hard Glass Security Film, reduce maximum range to 15 feet (4.6 m).

Accessories:
FG-701 Glass-Break Simulator
FG-SP1 Spacer Plate -
        depth 0.6" (15.2 mm)

Approvals/Listings:
FCC Verified
UL Listed

Note: The FG-1025 Glass-Break Detector is designed for primary perimeter security. For a complete security system, additional interior protection devices are recommended.

FCC Notice: 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: 1) Reorient or relocate the receiving antenna, 2) Increase the separation between the equipment and receiver, 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. The installer can also consult an experienced radio/television technician for additional suggestions, if necessary.

In addition, a booklet on interference, prepared by the Federal Communications Commission, is also available for reference. Order "Interference Handbook" from the U.S. Government Printing Office, Washington D.C. 20402, stock no. 0004-000-00450-7.

IntelliSense™

IntelliSense is a trademark of IntelliSense Systems, Inc.