

# TRI-GARD 550/552LS *Signature Series*<sup>™</sup>

## AUDIO GLASSBREAK DETECTOR



**550LS**



**552LS**

### TRI-GARD 550/552LS SIGNATURE SERIES

The Signature Series<sup>™</sup> Tri-Gard is the first audio glassbreak detector with microprocessor based, multiple signature analysis. The detector filters amplitude components of sound so that it can process all sounds at the same volume and eliminate the need for sensitivity adjustments. This gives maximum detection accuracy even in muffled (i.e. curtains, shades, blinds, small glass sizes) glassbreak applications. Through advanced signature analysis, common false alarm sources are filtered out, while providing for the best glassbreak detection.

#### TRI-GARD 550/552LS FEATURES

- Specified for plate, wired, tempered & laminated glass
- Microprocessor-based for better discrimination
- Multiple Signature Analysis
- Signature Supervision
- Omnidirectional sensitivity
- No sensitivity adjustments
- Environmental switch feature

#### TRI-GARD 550/552LS APPLICATIONS

- Glassbreak protection in residential, commercial and industrial areas
- Protects plate, wired, tempered & laminated glass
- Omni direction detection to protect multiple windows
- Areas with closed drapes or blinds will reduce range. Test with 515 tester for specific range
- Wall or ceiling mount installations

### SPECIFICATIONS

SENSING: Audio/air, open space (enclosed area)  
 RANGE: The 550/552 is listed for plate, wired, tempered & laminated glass. It is listed with drapes\*, Blinds, curtains & sun film  
 THICKNESS:  $\frac{1}{4}$  Plate,  $\frac{1}{32}$ " to  $\frac{1}{4}$ "  
 Tempered—  $\frac{1}{8}$ " to  $\frac{1}{4}$ "  
 Wired—  $\frac{1}{4}$ " Laminated—  $\frac{1}{4}$ "  
 SENSING FIELD: Omni-directional  
 SENSOR: Electret condenser (F.E.T. pre-amp)  
 OPERATING VOLTAGE: 10–16 VDC filtered and regulated  
 POWER CONSUMPTION: 30 ma @ 13.6 VDC normal.  
 OPERATING TEMPERATURE: 14° to 120° F. (-10° to 49° C)  
 RELAY ACTIVATION TIME: 3 seconds  
 ALARM LED: Latch or auto reset  
 ALARM RELAY: SPDT (Form-C)- contacts .1 Amp @30 VAC/24 VDC  
 TAMPER CIRCUIT: Normally closed switch-contacts 50 milliamps @ 30 VAC/24 VDC.  
 VOLTAGE MONITOR: Low or no voltage causes alarm activation. Low voltage <10 VDC causes red LED to flash slowly  
 INSTALLATION: Hardwire 6 wires including 2 for tamper  
 Testing: Follow instructions & test once a year  
 MOUNTING: Surface— screw and anchors included  
 COLOR: White or Cabin Brown  
 SIZE: 3" x 3" x  $\frac{3}{4}$ "

### GLASS CHART

DIP Switch 1

TABLE 1

position	Glass size	Plate	Tempered	Wired	Laminated
ON	12" x 12" or larger	30'	25'	25'	25'
	6" x 10" to 12" x 12"	15'	(12"x12" minimum size)		
OFF	12" x 12" or larger	30'	25'	n/a	n/a
	6" x 10" to 12" x 12"	15'	(12"x12" min size)	n/a	n/a

**NOTE 1:** The use of mini-blinds, shades, drapes\* and sun film\* can reduce the range of the detector by 50%. Since room acoustics and window coverings can vary considerably, all detector installations should be checked with the 515 tester.

\* Not for sound deadening drapes

\* Tested w/ 3M sun film #SH2CLAR (3M is a trademark of 3M Company)

## MOUNTING LOCATIONS

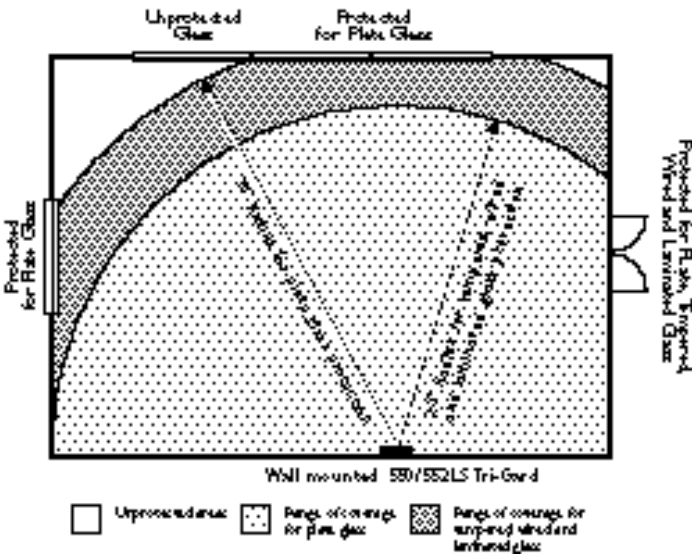
The Tri-Gard can be mounted on any type of ceiling or wall. For best false alarm immunity the detector should be mounted at least 4' from the glass to be protected and from noise sources such as kitchen sinks, stereos, television, etc. For maximum performance install the detector in direct line of sight to all glass that you are protecting.

### WALL MOUNTING

Mount the 550/552LS on an opposite or adjacent wall from the glass to be protected.

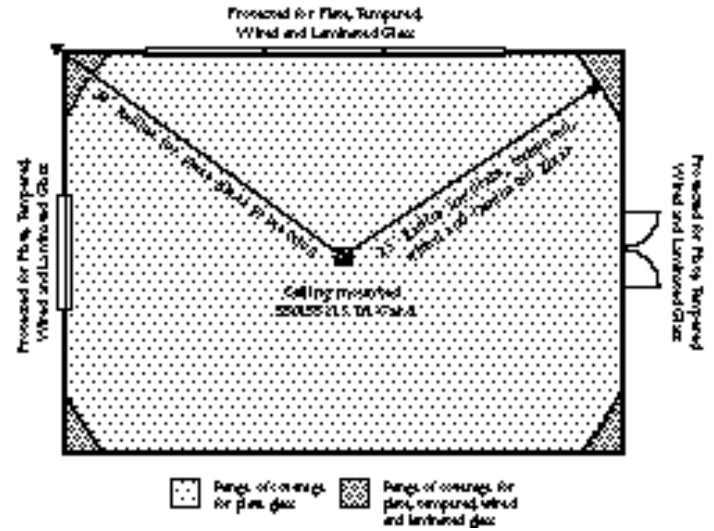
The detector should be no closer than 4 feet from the glass to be protected. Since the sound waves of breaking glass travel directionally out from the broken window the best mounting location is on the opposite wall, assuming the wall is within detection range.

NOTE: The unit should not be mounted on the same wall as the glass to be protected.



### CEILING MOUNTING

Mount the 550/552LS in any location on the ceiling which is in direct line of sight of the glass to be protected. Mount the 550LS on any solid material.



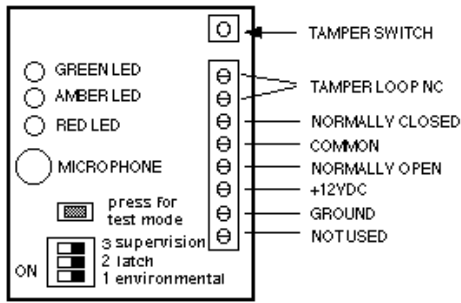
## 550/552LS OPERATIONS AND WIRING

On power-up the microprocessor will momentarily turn on each LED. If Signature Supervision is selected, the amber LED will latch until reset (see signature supervision).

### LEDs

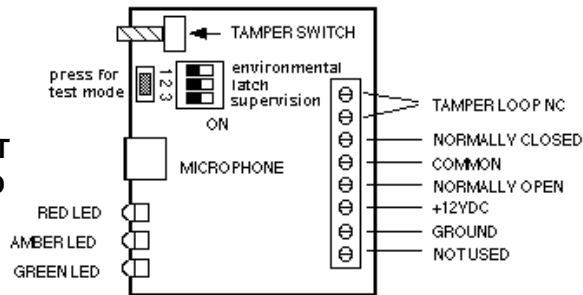
- Green LED ON—solid indicates unit is properly powered.
- Green LED OFF—indicates that the relay has dropped out, due to the detector being tripped or no/low power (<10 VDC).
- Green LED FLASHES—slowly to indicate that the unit is in test mode (see test mode).
- Amber LED FLASHES—when there are background noises present within the detection range.
- Amber LED ON—solid indicates that the “Signature Supervision” has not been able to test all circuits within the last 120 hours.
- Red LED ON—solid indicates that the detector has been tripped and is in a latched alarm memory condition.
- Red LED FLASHES—to indicate that there is an alarm for low power condition, input voltage is (<10 VDC).

## 550LS CIRCUIT BOARD



**NOTE:** Tamper spring is in hardware package with screws

## 552LS CIRCUIT BOARD



## INSTALLATION OPTIONS

DIP SWITCH 1– (Environmental Switch) (Laminated glass/commercial applications)

ENVIRONMENTAL

SWITCH MODE (SEE TABLE 1)

For laminated glass and commercial and industrial applications, put DIP switch 1 in the ON POSITION. Often replacement glass for commercial and industrial applications will be laminated glass. For most residential applications, keep DIP switch 1 in the OFF POSITION.

DIP SWITCH 2– (Alarm LED Latch Mode)

- OFF–Red LED lights for 3 seconds on alarm and then turns off.
- ON– Red LED will latch in memory upon an alarm. Interrupt power or turn off & on dip switch 2 to reset.

DIP SWITCH 3– (Signature Supervision)

- OFF– Normal operation- without "Signature Supervision".
- ON– Enables "Signature Supervision" processing.

## SIGNATURE SUPERVISION™

Using a microprocessor enables the detector to process more data to make better decisions in determining a glass break event and also provide more information back to the user regarding the operating status of the device. A glass break event occurs over a broad frequency range. There are frequencies present from 10 to 10,000 cycles during a glass break event. Signature Supervision monitors the input from the microphone and the associated circuitry to insure that the unit continues to "hear" across the frequency spectrum. If, after 120 hours (5 days), the sensor has not heard the individual frequency elements associated with the signature frequencies within glass break the amber LED will come on and stay latched to indicate a potential trouble situation (**NOTE:** this does not trip the alarm relay). When the detector has heard those particular frequencies associated with glass break, the amber LED will reset. Clapping, for example, will often produce the range of frequencies that are present in glass break and can be used to reset the unit. Notice that while clapping will reset the Signature Supervision, it will not cause an alarm because it does not meet other criteria that the microprocessor is using to determine a true glass break event. This feature is dip switch selectable.

**NOTE:** If the amber LED is lit and is unable to be reset by clapping, the customer should contact the installing dealer.

## MOMENTARY TEST SWITCH– (Test Mode)

- Test mode is disabled upon power up, but may be enabled by momentarily depressing the test switch.

## TEST MODE

Test mode allows the installer to properly test the Tri-Gard with the IEI 515 GLASS BREAK SIMULATOR. Upon power up the unit will be in normal operating glass break mode indicated by solid green LED.

To enable the test mode momentarily depress the test switch. This will start the green LED flashing slowly. You now have two minutes to test the detector. Every time you trip the detector, indicated by the green LED turning off and the red LED turning on for four seconds, you will re-start the two minute test time (**NOTE: the red LED will not latch during test mode even if you have DIP switch 2 alarm memory on**). If you do not trip the detector within the two minutes test period then the detector will return to normal glass break mode, indicated by the solid green LED. To immediately return to normal glass break mode after the detector is tested correctly, simply interrupt power for one second.

**NOTE:** Test mode does not prevent the 550/552LS from detecting breaking glass.

## PRE-TESTING THE TRI-GARD 550/552LS FOR DESIRED LOCATION

Pre-testing of the detector prior to final installation can be performed to ensure that the detector is installed in the proper location with respect to all glass being protected. The IEI 515 Glass Break Simulator is required to perform this test.

### WARNING:

The 550/552LS detector has been designed to detect glass break within a specified range from the glass—(30' for plate glass and 25' for tempered, laminated and wired glass). You should not extend past these rated ranges for any reason. Acoustics of different areas can artificially extend the range of the 515 tester.

1) Before you test the unit in the desired location, close all curtains, drapes and blinds to ensure that the detector will be tested for worst case environmental conditions.

2) Remove the cover from the Tri-Gard

3) Connect a 9 Volt DC alkaline battery.

**NOTE:** the red LED will flash slowly indicating low voltage (input voltage <10 VDC) and also the relay will not be energized (common and normally closed will be open). These battery clips are available at Radio Shack Part # 270-325

4) Momentarily depress the test switch to enable test mode.

**NOTE:** the green LED will flash while in test mode.

5) Replace the cover

6) Set the 515 tester in auto mode and place it near the window

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in

accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

that you are protecting. Place tester behind any curtains, drapes or blinds. NOTE: the 515 will trip every 8 seconds in auto mode.

7) Position the unit in the desired mounting location and hold in place and observe the following response:

If the green LED goes out and the red LED turns on for three seconds then the glass is within range. **Note:** Test several times with the 515 tester to ensure consistent detection. If the green LED continues to flash then the detector is out of range and should be repositioned closer to the glass being protected. If the 550/552LS still does not trip then it is possible that the battery being used for the detector is low and should be replaced or the 515 battery is low and should be replaced.

### CAUTIONS

• To improve false alarm rejection do not use for 24 hour applications in occupied areas, areas where white noise, such as air compressors or machinery may be present or within 4 feet of the glass being protected.

• Performance of any audio detection device depends upon an audible signal and may be compromised when detecting glassbreak if little or no sound is generated. For example, avoid installations with sound insulating window coverings.

• To learn more about detecting glass break, call IEI at 1-800-343-9502 for further information on audio detectors and other devices that provide glassbreak detection.

### IEI Limited Warranty:

Because the manufacturer does not install or connect this security device the manufacturer cannot guarantee its performance. Therefore, there are no warranties, expressed or implied (except as stated below), attached to the sale or use of this product.

The manufacturer warrants against defects in material and workmanship in this device for 3 years from the date of manufacture. During the warranty period the manufacturer, at its sole option, will repair or replace free of charge any defective unit returned freight prepaid. This warranty shall remain in force and effect for 3 years provided the unit was properly installed and operated, has not been subject to misuse and has not been repaired or altered other than by the original manufacturer.

The foregoing states the buyer's sole and exclusive remedy for any breach of warranty or for any claim, whether sounding in contract, tort, strict liability, or negligence, based upon any defect in this security device.

The manufacturer shall in no event be responsible for any incidental or consequential damages incurred by the buyer.

This warranty supercedes all previous warranties.



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