

# SHARD

## Microcontroller based Dual Technology Glass Break Detector

The SHARD microcontroller based glass break detector truly detects the sound pattern of glass breakage. It utilizes Electronics Line's Noise Averaging technique for continuously monitoring the environmental background noise, and distinguishing glass break sounds from that background noise, without lowering the sensitivity or range of the detector. **No sensitivity adjustment is required.** The detection algorithm of the SHARD provides high immunity for false alarms, as well as rejection against jamming or blocking of glass break detection. The SHARD has microphone and electronic circuits supervision, and upon 17 hours of not "hearing" any sound (not necessarily glass break sound) - it will give a visual and communicator trouble indication. The model XF25 has a tone generator incorporated, and after 17 hours a short beep will be generated to test the microphone and electronic detection circuits. If this signal is detected - no trouble indication will appear. If this signal was not detected, only then will the trouble indication appear. In the XF25 - the visual trouble indication will be accompanied with a communicator output.

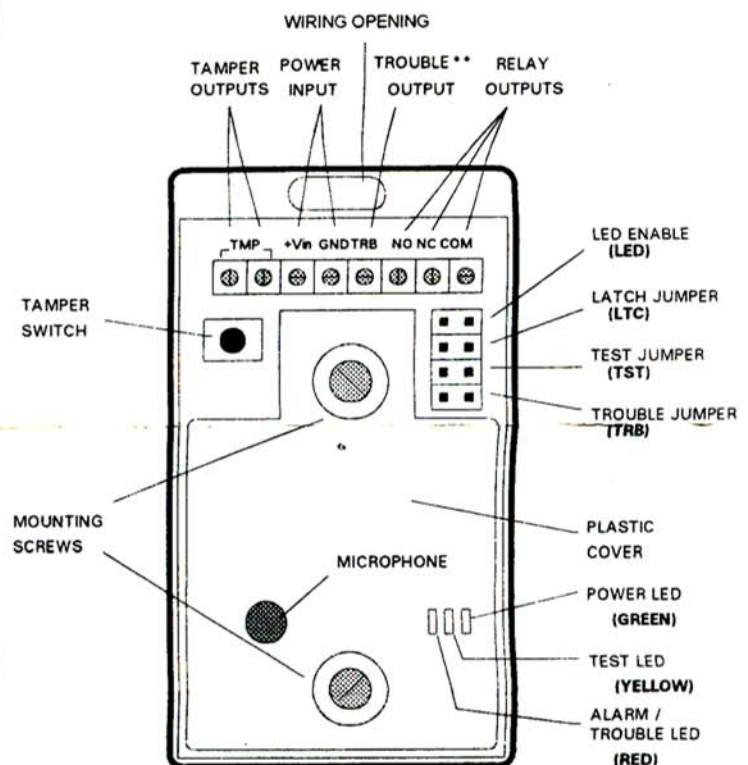
### Location of Detector:

Consider the following before mounting the PIR:

- The detector should be mounted across from or next to the window, making sure that there is no acoustic interference between the detector and the protected glass. **Note: Curtains and window coverings may affect detection.**
- Do not place bulky objects between the detector and the protected glass.
- The detector should be mounted at a minimum of 4 feet from the protected glass. The maximum installation distance is in accordance with the maximum detection range for the protected glass. Please refer to the distances listed in the technical specification located on the other side of this instruction sheet.
- The detector should be mounted at a height between 3.6 to 5.4 feet.
- To avoid false alarm detection by the SHARD, avoid mounting the detector within 4 feet of doorbells, cooling/heating vents, fans and any other noise emitting devices.

### Installation Instructions:

1. Remove the front cover by unscrewing the enclosure screw located at the bottom of the detector.
2. Remove the PCB from the rear detector cover.
3. Drill two holes into the surface on which the detector will be mounted.
4. Punch out the wiring opening located at the top of the detector's rear cover.
5. Place the connection wires through the wiring opening.
6. Attach the PCB to the base and mount the rear cover at the desired location using the two long screws provided. **Note: The detector can be either wall or ceiling mounted.**
7. Attach the wires according to Figure 1. To do so, place the wire into the desired terminal on the PCB's terminal block and tighten the terminal block screw so that the wire is held in place. If the loop(s) are to be supervised by the control panel, install the appropriate End-Of-Line Resistors in series with the Tamper and/or Alarm relay outputs. Refer to the installation manual of the control panel you are using. The alarm output can be connected as either Normally Closed (use terminals C,NC) or Normally Open contacts (use terminals C,NC,NO - on XF25 only). **It is not recommended that the detector be connected to a 24 hours loop/zone, except for the tamper switch which is connected to a 24 hour zone.**
8. Test the detector (see next section) and make sure a good detection is achieved by it.
9. To disable "power" (green) indication (and lower current consumption of the detector during standby mode), remove the LED jumper. The LED jumper will not disable the RED or YELLOW indicators of Alarm / Trouble or Test mode.



\* The SF25 has Form A (Normally Closed) contacts  
The XF25 has Form C, (N.C. and N.O.) contacts

\*\* Only in the

Note: Electronics Line recommends using 20-22 AWG connection cable



10. Replace the plastic cover. Make sure that the LED indicators are visible from their holes.

#### Testing

Insert the test jumper in the TST position in the detector. The Yellow LED will turn on, indicating that the detector is in test mode. To exit test mode, remove the jumper (Power Up Testing: If the TST jumper is inserted prior to the 12V applied to the detector, the Yellow LED will turn on, indicating that the detector entered test mode). **The detector will automatically exit test mode after 5 minutes (even if the jumper is left installed).**

Use a commercial glass break simulator, located near each protected window, aimed at the detector. Make sure the detector detects all simulations (Note: the simulators will activate the detector only during test mode. However, in normal operating mode the detector will test when using a dual technology glass break simulator). Both RED and GREEN indicators will turn on for 3 seconds after a detection in test mode. **No range adjustment is required for the SHARD detector!**

#### Operation and Indicators

The detector will be connected to the auxiliary, uninterrupted power output of the control panel. Power input to the detector must not be interrupted for proper operation (Except for resetting the memory latch). In order for an installation to comply with UL 639, the Standard for Intrusion Detection Units, the detector must be connected to a control panel capable of supplying 4 hours worth of power upon an ac loss.

After the 90 second power up, the GREEN indicator will light to indicate that the detector is ready for operation. Voltage level lower than 9V will result in turning off the green indicator, and by an alarm. The green indicator will turn off during alarm (for 3 seconds).

The YELLOW indicator indicates that the detector is in either manual or Power Up test mode (see TESTING).

The RED indicator will light to give alarm indication (for 3 seconds). If the LTC (latch) jumper is installed, the alarm indication will remain lit until the power supply is interrupted. If no sound (any sound) was detected by the detector within 17 hours, then the red indicator will start blinking to indicate that trouble condition exists. This indication will override alarm memory indication. In addition, the open collector, normally closed, TRB output will be opened. To reset the indication, a sound must be created (any sound, voice, tone, etc.). To eliminate trouble indication of the red LED, remove the TRB jumper. In the XF25 the detector will perform a self test and if circuits are responding - the indication will disappear automatically.

#### Automated Microphone and Circuit Test

The SHARD detector is sensing all sounds during normal operation. Although it does not create an alarm, this can be used to learn that the microphone and electronics circuits are working well. If the detector will not "hear" any sound within 17 hours, it will start indicating trouble condition by blinking of the red indicator, and deactivating the normally activated (grounded), open collector, TRB output. The detector will still remain ready for detection. If it detects any sound - it will clear the trouble indication. In the XF25, a short beep will be generated by an onboard speaker, to test the microphone and electronics (and distinguish a microphone problem from silent environment). If the test failed, and nothing was sensed after activating the speaker, only then will the detector indicate a trouble.

#### Technical Specifications

General		SHARD Models		
		SF25	XF25	
Dimensions	4.1" x 2.3" x 1.1"			
Operating Temp. range	0°C to +55°C			
Voltage Supply	10 to 16V			
Low voltage indication	at 9V			
Glass types	Plate (1/4" and 1/8") Laminated, tempered, wired (1/4")			
Sensitivity adjustment	Automatic, Noise averaging			
Indicators	RED - Alarm / Trouble GREEN - Power YELLOW - Test Mode			
Relay contact rating	N.C. 10W max. (N.O. in XF model)			
Max. Switching Voltage	30Vdc not to exceed 10W			
Max. Switching Current	0.5A not to exceed 10W			
Alarm duration	3 seconds			
Microphone & Circuit Supervision	Trouble indication after 17 silent hours			
		Detection Ranges		
		(by glass type):		
		plate - 3mm	23'	23'
		plate 6mm	25'	25'
		wired 6mm	25'	25'
		laminated	25'	25'
		tempered	25'	25'
		Current consumption 12Vdc (standby)	50mA	60mA
		Alarm relay output	Form A NC	Form C NC&NO
		Alarm Latch	•	•
		Trouble Output Terminal (50mA limit)	-	•
		Low voltage indication	•	•
		Tamper Switch	•	•
		Visual trouble indication	•	•
		Audible microphone and circuits test	-	•
Tamper Switch	N.C. contact rating 12Vdc, 50mA max.			
Reverse Polarity Protection	Diode			
Fire Protection	ABS			