1

# GBD-II

**SHOCK & BREAKAGE GLASS BREAK DETECTOR**

CROW

*ELECTRONIC ENGINEERING LTD.*

**INSTALLATION INSTRUCTIONS**

**P/N 7101108** Ver. 2.0 A.Y.

2

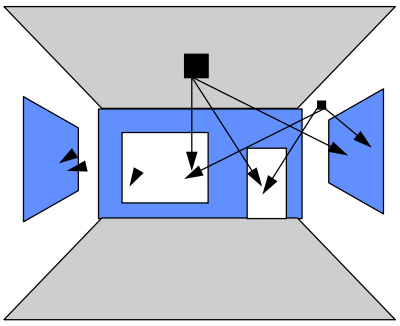
The GBD-II is the ultimate answer for all those tired of false alarms. It listens for sounds of breaking glass, which produce two sequential signals of different frequencies. The unique phased frequency detection circuitry of this detector allows detection of both shock signal and the strong signal of glass breakage creating a “false alarm free” glass break detector.
The detector does not need to be attached to the window, providing volume protection, and allowing you to protect several windows with one detector.

**FEATURES**

- Phased Frequency Detection system, detects low frequency impact sound as well as the glass breakage sound thereby eliminating false alarms.
- Separate sound & shock adjustment.
- Memory function.
- Volume protection.
- Ceiling or wall mounting.

3

**FIG. 1 - MOUNTING**



The detector offers flexible installation. It can be Either ceiling mounted or wall mounted as shown in the figure above.

4

**MOUNTING LOCATION ( See FIG. 1 )**

- If heavy blinds or curtains cover the glass, you must locate the detector behind the blinds on the window frame or above it, otherwise the blinds might block the sound. Make sure to test the unit thoroughly for proper detection.
- Install the detector in a direct line of sight with the protected glass.
- Do not mount the unit in front of air ducts, or close to bells (measuring 0.5m (or larger) in diameter).
- For a few protected glasses in one room, locate the detector in optimal distance from them to achieve the best detection.

**Note:** for symmetrical cover of the detection area it is recommended to place the detector on the ceiling.

5

**MOUNTING THE DETECTOR ( FIG. 2 )**

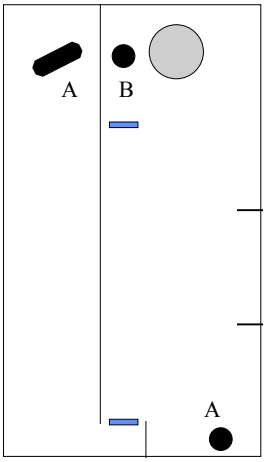
1. Use a small screwdriver to push the prong on top of the case and open the case.
2. There is no need to remove the PCB (Printed Circuit Board) from the case.
3. Insert the wires through the wiring hole (B).
4. Use the mounting holes (A) to mount the detector.
5. Connect the wires to the terminal.(See Terminal Connections)
6. Close the case.

**JUMPERS ( FIG. 4 )**

- **JP1** - Shock / Glass selector for detection calibration.
- **JP2** - Reduces the sensitivity of sound detection by 50%.
- **JP3** - Latch. See The Memory Function.

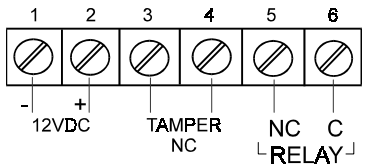
6

**FIG. 2 - THE BACK COVER**




7

**FIG. 3 - TERMINAL BLOCK**




**TERMINAL BLOCK CONNECTIONS**

**Terminal 1 - Marked - ( -12V )**
Connect to the negative Voltage output or ground of the control panel.

**Terminal 2 - Marked + ( +12V )**
Connect to the positive Voltage output of 9-16 Vdc source (usually from the alarm control unit)

**Terminals 3 & 4 - Marked TAMPER**
If a Tamper function is required connect these terminals to a 24hour normally closed protective zone in the control unit. If the front cover of the detector is opened, an immediate alarm signal will be sent to the control unit.

**Terminals 5 & 6 - Marked RELAY**
These are the output relay contacts of the detector. Connect to the control at zone input.

8

**THE CALIBRATION TOOL ( * )**

The Simulator/Tester & Calibration tool is especially designed to check phased frequency glass break detectors.
Since the detector will react to the high frequency breakage sound only when it comes sequentially after a low frequency SHOCK sound, this device is necessary to check for proper operation of the GBD-II without actually breaking the glass.

**Manual mode**:
In this mode, the Simulator will emit the high frequency sound of breaking glass for "Glass" adjustment.

**Automatic mode**:
In order to simulate breaking glass, place the Simulator on the surface of the protected glass, and gently hit it with your hand. The Simulator will then emit the sound of breaking glass. Be careful not to break the glass while testing the detector.

* It is recommended to use simulator CROW P/N: 0040011

9

**TESTING THE DETECTOR**

First use the Simulator in manual mode to simulate the noise of glass breaking. Check that the yellow LED is ON. If it does not light, the sensitivity calibration is necessary (See Sound Calibration).
Now use your hand or a padded object to carefully strike the glass. If the green LED does not light, adjust as necessary (See Shock Calibration).
Now use the Simulator in automatic mode and check that the red LED lights. If the red LED is ON, your detector is working properly. Otherwise try adjusting the sound and shock setting until the red LED lights.

10

## GLASS BREAK ADJUSTMENT

To adjust the glass break setting (increase/decrease sensitivity) place the jumper JP1 below the GLASS marking (connecting the middle pin with the left pin) - (See Fig. 4) Green LED is constantly ON.
Now you can adjust the sensitivity by rotating the right potentiometer (marked as GLASS CALIB. - see Fig. 4).
Operate the Sound Break Simulator and rotate the potentiometer clock-wise to increase sensitivity, and counter-clock-wise to decrease sensitivity until the Yellow and Red LED's are illuminating for each glass break sound. Remember that rotating the potentiometer will have no effect upon the settings if the middle pin of JP1 is not connected to the left pin.

**Note**

- When the jumper is set for GLASS adjustment, only the high frequency sound of breaking glass is detected.

11

## SHOCK ADJUSTMENT

To adjust the shock setting (increase/decrease sensitivity) place the jumper JP1 below the SHOCK marking (connecting the middle pin with the right pin) - (See Fig. 4) Yellow LED is constantly ON.
Now you can adjust the sensitivity by rotating the left potentiometer (marked as SHOCK CALIB. - see Fig. 4).
Hit gently on the protected glass and rotate the potentiometer clock-wise to increase sensitivity, and counter-clock-wise to decrease sensitivity until the Green and Red LED's are illuminating for each hit.
Remember that rotating the potentiometer will have no effect upon the settings if the middle pin of JP1 is not connected to the right pin.

**Note**

- When the jumper is set for SHOCK adjustment, only the low frequency of the shock signal prior to glass breakage is detected.

12

## SENSITIVITY SETTING

For some installations you may find that GBD-II is too sensitive. Use JUMPER JP2 to decrease sensitivity to 50%.

JP2 OPEN - 100% sensitivity

JP2 CONNECTED - 50% sensitivity

## FINAL TESTING

- Make sure to disconnect the jumper at JP1. When the jumper is disconnected, the detector will detect both shock and sound frequencies.
- To ensure maximum protection against false alarms, activate any device in the area, which might automatically cycle pumps, generators, heating/air conditioning units, etc. If the cycling devices trigger an alarm, mount the unit in a different location.

13

## THE MEMORY FUNCTION

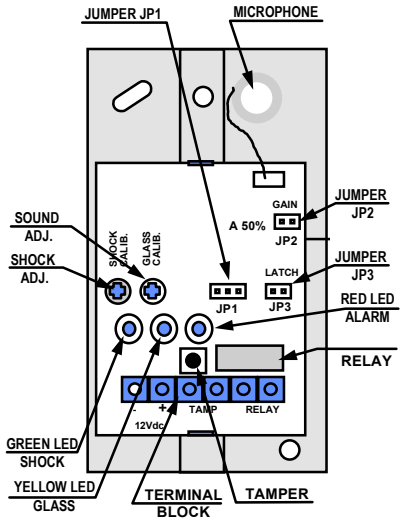
The alarm memory function allows the identification of an alerting detector out of multiple detectors connected to one (or the same) zone of the control panel.
To enable this function, Set on jumper JP3 (connected on both pins - See Fig. 4)

- In case of an alarm, the red LED will stay ON until until memory function is reset.

To reset the memory function, switch off (disconnect) the voltage wire (+12V) from the TERMINAL BLOCK (See Fig. 4) for minimum 15 seconds then switch on (reconnect) voltage wire (+12V).
(The control panel key ON/OFF can be used for this application if it control the voltage (+12V).

14

## FIG. 4 - PCB Layout




15

## WIRE SIZE REQUIREMENTS

Use #22 AWG (0.5mm) or wires with a larger diameter. Use the following table to determine required wire gauge (diameter) and length of wire between the detector and the control panel.

| Wire Length | m | 200 | 300 | 400 | 800 |
|---|---|---|---|---|---|
| Wire Diameter | mm | .5 | .75 | 1.0 | 1.5 |
| Wire Length | ft | 800 | 1200 | 2000 | 3400 |
| Wire Gauge | # | 22 | 20 | 18 | 16 |

16

## TECHNICAL SPECIFICATIONS

| | |
|---|---|
| Power Input | 9 - 16 Vdc |
| Current Consumption | Standby: 22mA at 12Vdc<br>Active: 25mA at 12Vdc |
| Detection Range | 10m (33ft), Adjustable |
| Dimensions | 93mm x 55mm x 24mm |
| Mounting | Ceiling or Wall |
| Alarm Output Relay | N.C 50mA/24Vdc with 10 Ohm in line resistor |
| Tamper Switch | N.C 50mA 24Vdc with 10 Ohm in line resistor |
| Operating Temperature Range | -20°C to 50°C (-4°F to 122°F) |
| Operating Humidity Range | 95% max relative humidity non condensing |
| Storage Temperature Range | -30°C to 70°C (-22°F to 158°F) |
| Electro condenser microphone | |
| RFI Protection | 30V/m 10 -1000MHz |
| EMI Protection | 50,000V electrical interference from lightning |

***CROW reserves the rights to change specifications without prior notice***

17

## CROW LIMITED WARRANTY

(Crow) warrants this product to be free from defects in materials and workmanship under normal use and service for a period of one year from the last day of the week and year whose numbers are printed on the printed circuit board inside this product. Crow's obligation is limited to repairing or replacing this product, at its option, free of charge for materials or labor, if it is proved to be defective in materials or workmanship under normal use and service. Crow shall have no obligation under this Limited Warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other then Crow.
There are no warranties, expressed or implied, of merchantability or fitness for a particular purpose or otherwise, which extend beyond the description on the face hereof. In no case shall Crow be liable to anyone for any consequential or incidental damages for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever, even if the loss or damage is caused by Crow's own negligence or fault.
Crow does not represent that this product can not be compromised or circumvented; that this product will prevent any person injury or property loss or damage by burglary, robbery, fire or otherwise; or that this product will in all cases provide adequate warning or protection. Purchaser understands that a properly installed and maintained product can only reduce the risk of burglary, robbery or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss or damage as a result. Consequently, Crow shall have no liability for any personal injury; property damage or any other loss based on claim that this product failed to give any warning. However, if Crow is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, Crow's maximum liability shall not in any case exceed the purchase price of this product, which shall be the complete and exclusive remedy against Crow.

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18


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These instructions supersede all previous issues in circulation prior to May 2000.

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