

SRN-2000 C/PC

Low Current PIR Detector Series



Visonic Ltd

Installation Instructions

1. INTRODUCTION

SRN-2000C/PC PIRs are the ultimate in low current PIR technology (0.004 mA in standby). They are fully compatible with virtually all known R.F. transmitters and can also be incorporated into N.O. and N.C. hardwired systems. The OEM transmitter and a 9 Volt alkaline battery power source can be housed in an optional back box.

Unique, energy saving circuitry is employed to extend battery life up to 3 years (in standby). Upon detection, the RF transmitter connected to the SRN-2000C/PC alarm output is activated for 2-4 seconds, and then the detector disables itself. The detector resets automatically to the ready state 2 minutes after detecting the last movement. For convenience, a unique TEST/NORMAL selector is used to override the 2-minute inhibit timer during walk testing.

Flexibility means a lot more with the SRN-2000C/PC. The unit has a programmable pulse counter for maximum immunity to false alarms, 45 interchangeable lenses, 30° vertical and horizontal adjustment, surface or corner mounting installation from 0 to 17 ft height and visible beam locators. These and other capabilities make the SRN-2000C/PC the only universal, low current battery-operated PIR that you can truly standardize on without compromising!

Other notable features include an LED selector, an anti-tamper switch, a silent relay and an automatic low-battery audible indication (Model SRN-2000C/PC-EB). Special material is provided to allow the installer to mask specific beams for eliminating potential sources of false alarms.

The "SUPER-RED" lens library provides the most extensive selection of coverage patterns and saves you time and money in every installation. Illustrated in the SUPER-RED lens library:

- 9 wide-angle lenses up to 140°
- 3 long-range corridors up to 120 ft
- 6 pet alleys
- 3 finger curtains
- 8 lenses for combined ceiling and room coverage
- 10 unique lenses for multiple 2-3 room and corridor coverage.

1.1 Features

The SUPER-RED SRN-2000C/PC series offers:

Incomparable Flexibility

- 9-Volt battery powered
- Ultra-low current consumption – 0.004 mA
- Unique energy saving circuitry
- Automatic low-battery audible alert (C/PC-EB model only).
- Compatibility with all R.F. transmitters
- Easy-to-change lenses
- Visible pattern locator
- Vertical and horizontal calibration
- Surface and corner mounting
- SMD technology

False Alarm Immunity

- Programmable pulse counter to virtually eliminate environmental disturbances.

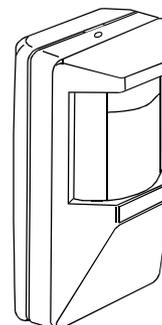
- Unprecedented RFI immunity - up to 1000 MHz.
- Light rejection filter - rejects visible light variations.
- Maskable lens patterns - to block thermal disturbances.
- Dual-element low-noise pyroelectric detector rejects thermal variations with maximum signal-to-noise ratio.

1.2 Models Available

SRN-2000C/PC: 9-volt battery powered PIR, with Normally Open (Form 1A) or changeover (Form 1C) isolated relay contacts. An 18-ohm resistor is connected in series with the contacts. The standby current drain of this model is 0.004 mA.

SRN-2000C/PC-E: Same as SRN-2000C/PC but, instead of the relay, two open-collector transistor alarm outputs (one high and one low on alarm). Each output is capable of switching currents up to 30 mA. The standby current drain of this model is 0.005 mA.

SRN-2000C/PC-EB: Same as SRN-2000C/PC-E, but includes a low-battery buzzer. The low-battery buzzer operates automatically when battery voltage drops below 7.2 VDC, sounding a beep signal every 2 minutes. The standby current drain of this model is 0.008 mA.



1.3 Lens Selection

The standard lens supplied with the SRN-2000C/PC is No. 100 (see detailed specifications below and Fig. 1). Coverage patterns of all other interchangeable lenses are provided in the SUPER-RED lens library catalog.

Your nearest VISONIC LTD. distributor will be glad to supply you with the lens that suits your particular requirements.

LENS NO. 100 DATA

Total Number of Beams: 36

Layers: Upper, Intermediate and Downward.

Upper Layer - 9 twin beams, optically split to 18 beams.

Intermediate Layer - 5 twin beams (split), angled 10° below Upper Layer.

Downward Layer - 4 twin beams (split), angled 25° below Upper Layer.

Field of View: 90° Wide Angle.

Coverage range: maximum 18 x 18 m (60 x 60 ft).

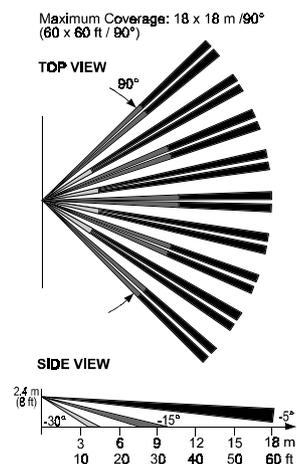


Figure 1. Coverage Pattern - Lens No. 100

2. SPECIFICATIONS

OPTICAL

Standard Lens: Lens No. 100

Interchangeable Lenses: See SUPER-RED Lens Library

Adjustment: Vertical +10° to -20° calibrated scale.

Horizontal up to 30°.

ELECTRICAL

Voltage: 9 Volt alkaline or lithium battery.

Standby Current:

SRN-2000C/PC – 0.004 mA

SRN-2000C/PC-E – 0.005 mA

SRN-2000C/PC-EB – 0.008 mA

Relay Output (SRN-2000C/PC): Form 1A or 1C contacts. 18 Ω resistor in series with contacts. Rating – 0.1A resistive/24 VDC.

Alarm Outputs (SRN-2000C/PC-E and -EB): Two open-collector transistor outputs with 30 mA current switching capability.

Alarm Period: 2-4 seconds.
Tamper Contacts: Normally Closed, 0.5 A resistive/24 VDC
LED: Walk Test - (switchable).
Detector: Dual-element low-noise pyroelectric detector.
Pulse Counter: Programmable to 1, 2, 3 or 5 pulses.

MOUNTING

Wall or corner mounting.

ENVIRONMENTAL

Operating Temperature -10°C to 50°C (14°F to 122°F).

Storage Temperature: -20° to 60°C (-4°F to 140°F).
RFI Protection: Greater than 20V/m up to 1000 MHz.

PHYSICAL

Dimensions (H x W x D)

Detector: 12 x 7 x 4.8 cm (4-3/4 x 2-3/4 x 1-7/8 in.)

Detector with SRC-203AV Back Box: 12.7 x 7.4 x 7.7 cm (5 x 2-1/16 x 3-1/16 in.)

Weight (detector unit): 95 g (3.4 oz).

Color: White.

3. INSTALLATION

3.1 Changing Lenses

To change or adjust a lens, remove the front cover of the detector, as explained in Para. 3.3A. Release and remove the lens retainers located on both sides of the lens by pushing them from the inner side of the cover (Fig. 2).

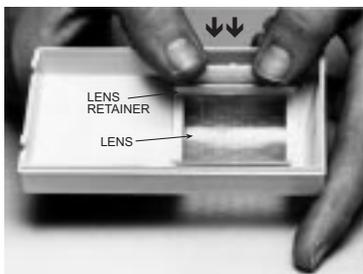


Figure 2. Lens Retainer Removal

Insert a new lens with the grooved surface facing out and the lens number in the upper right corner. From within the cover, carefully center the lens by sliding it right or left, until it edges protrude equally at both sides.

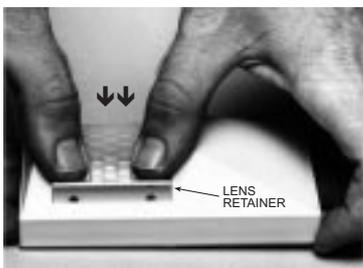


Figure 3. Locking the Lens in Place

Holding the lens firmly, insert the lens retainers from the front (ridges pointed outward) and firmly push them into place until a click is heard (Fig. 3).

3.2 Selecting Mounting Location

Detectors of the **SRN-2000C/PC** series can be mounted directly onto the wall (surface mounted) or in a corner. Always mount the unit on a firm and stable surface.

- A. Select the mounting location so that the expected motion of an intruder will cross the beams of the selected pattern.

NOTE: Passive infrared detectors are sensitive to changes in infrared energy radiated by an object moving across the unit's field of view.

Since the changes in infrared energy detected by a PIR depend on the amount of infrared energy transmitted by the moving object and the temperature difference between the object and the background, the PIR may fail to respond under certain temperature and background conditions, in which the temperature difference is too small. It is therefore recommended that the PIR be aimed toward the coolest place in the protected area, in order to obtain the maximum sensitivity in installations where high ambient temperatures are expected.

- B. Select the most convenient mounting height.

NOTE: **SRN-2000C/PC** series detectors have the broadest pattern selection and the greatest flexibility of vertical and horizontal pattern adjustments on the market. These features enable you to mount the unit anywhere from ground level up to 5 m (17 ft). An accurate adjustment table determines the recommended angle for any combination of range and mounting height (see Table 1). Take into consideration that installations at increased height result in shorter range and larger blind areas close to the detector.

- C. Where a single-layer pattern has been selected because pets are present, it is recommended that the sensor be installed as low as possible while still allowing the beams to be directed above the level of the pet's activity.

- D. **SRN-2000C/PC** series detectors are extremely immune to air turbulence and RF interference. However, to minimize false alarms, it is highly recommended to avoid aiming the detector at heaters, sources of bright light, or windows subjected to direct sunlight.

3.3 Mounting without a Back Box

- A. To open the cover, insert a small screwdriver into the slot on top of the unit and lever backwards. The cover (equipped with the lens) hinges outward and removes easily.

- B. Mount the base (equipped with the printed circuit board) in the location and height selected for optimum coverage.

For surface mounting use the two knockouts at the back of the base; for corner mounting, use the knockouts on the angled sides (Fig. 9 & 10).

The unit must be fastened tightly to the mounting surface to avoid possible vibrations.

Note: The RF transmitter and a 9 Volt alkaline or lithium battery power source can be housed together, in an optional back box.

- C. To close the front cover, insert the legs located at the bottom of the base into their respective slots in the bottom of the cover and close by exerting slight upward pressure (Fig. 5).

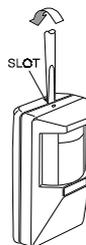


Figure 4. Removing the Cover

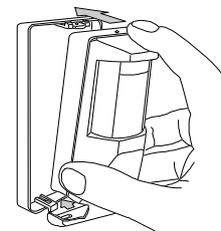


Figure 5. Replacing the Cover

3.4 Installation with a Back Box

- A. Prepare the SRC-203AV back box for mounting by drilling out the appropriate mounting holes.

- B. Install the R.F. transmitter and 9 Volt alkaline battery inside the back box. It is also possible to install the battery within the detector housing.

- C. Mount the box on the wall.

- D. Make the connections from the detector to the transmitter in the back box, as instructed in Para. 3.5

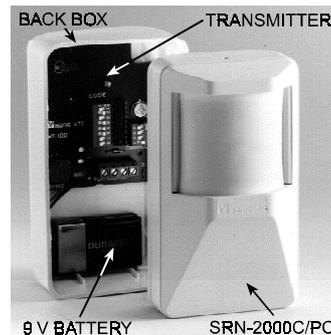


Figure 6. Back Box with Detector

- E. Press the assembled SRN-2000C/PC unit straight into the back box, until it snaps into place.

3.5 Wiring

- A. Model **SRN-2000C/PC** (see Figure 7)

Route the wires into the detector, using either the wiring knockouts or one of the lower mounting holes.

- (1) Connect the red wire of the supplied battery clip to the **9V (+)** terminal and the black wire of that same clip to the **9V (-)** terminal on the **SRN-2000C/PC** terminal block.

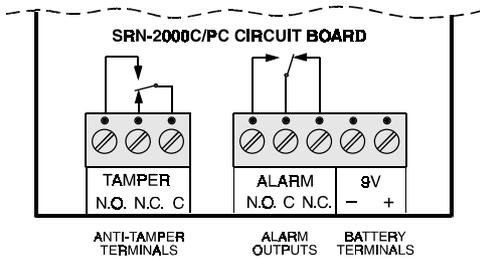


Figure 7. SRN-2000C/PC Wiring

- (2) Snap the battery clip onto a 9 Volt alkaline or lithium battery. The battery can be located in either the **SRN-2000C/PC** housing or the SRC-203AV back box.
- (3) Connect either the **N.C.** or **N.O. ALARM** contacts to the RF transmitter, according to the trigger signal required for transmitter activation.
- (4) Connect the anti-tamper terminals to the RF transmitter tamper input terminals (if available).
- (5) Seal all openings in the base with RTV to prevent insects and air currents from entering the unit.

B. Models SRN-2000C/PC-E and -EB (see Figure 8)

Route the wires into the sensor, using either the wiring knockouts or one of the lower mounting holes.

- (1) Connect the red wire of the supplied battery clip to the **9V (+)** terminal and the black wire of that same clip to the **9V (-)** terminal on the SRN-2000C/PC terminal block.

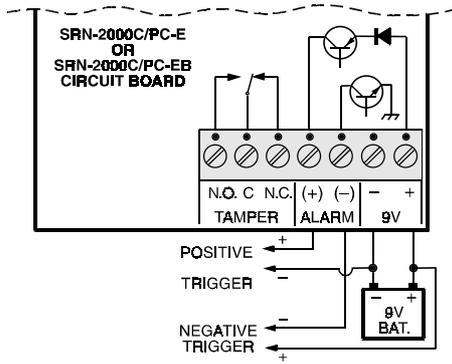


Figure 8. SRN-2000C/PC-E & -EB Wiring

- (2) Snap the battery clip onto a 9 Volt alkaline or lithium battery. The battery can be located in either the detector housing or the SRC-203AV back box.
- (3) The **SRN-2000C/PC-E** and **-EB** have two open collector transistor alarm outputs (see Fig. 8). The **ALARM (-)** terminal provides switched negative voltage on alarm and can be used to trigger transmitters activated by a negative pulse. The **Alarm (+)** terminal provides switched positive voltage on alarm and can be used to trigger transmitters activated by a positive pulse. Connect the transmitter trigger input to either: **ALARM (+)** and **9V (-)** terminals (positive trigger), or **ALARM (-)** and **9V (+)** terminals (negative trigger).
- (4) Connect the detector's anti-tamper contacts to the RF transmitter tamper input terminals (if available).
- (5) Seal all openings in the base with RTV to prevent insects and air currents from entering the unit.

3.6 Adjusting the Coverage Area

A. LED selector

The LED selector consists of a 3-pin connector and jumper to switch the walk-test LED either ON or OFF.

B. Horizontal Adjustment

The coverage pattern can be adjusted horizontally about $\pm 15^\circ$ by rotating the lens left or right. To adjust the lens, remove the lens retainers, shift the lens carefully to the desired position and re-lock it. The **SRN-2000C/PC** series provides you with powerful tools for easy and accurate pattern adjustments (Fig. 9 & 10).

The LED selector, horizontal adjustment, vertical calibrated scale adjustment, vertical adjustment table and beam masking material are all unique features which enable precise pattern positioning, both vertically and horizontally.

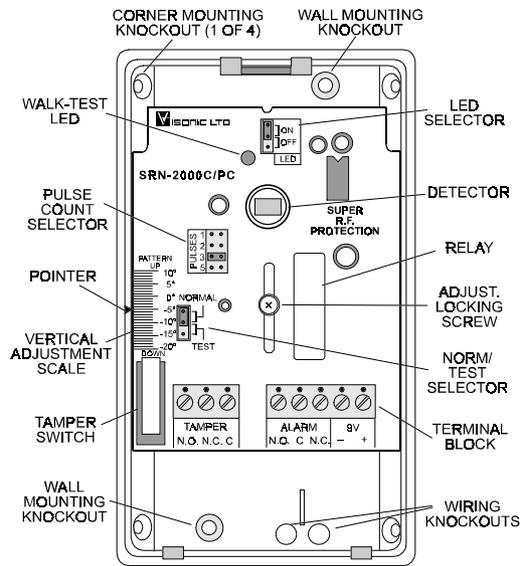


Figure 9. SRN-2000C/PC, Inside View

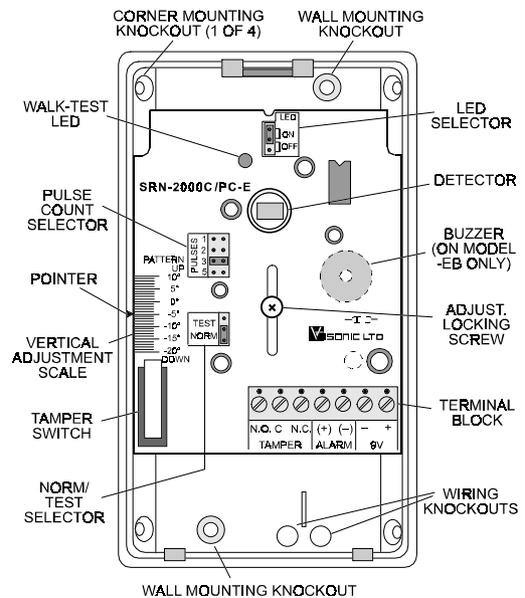


Figure 10. SRN-2000C/PC-E and -EB, Inside View

C. Vertical Adjusting Scale

The vertical scale adjustment (printed on the left side of the p.c. board) and the plastic pointer on the base indicate (in degrees) the vertical angle between the upper layer of the coverage pattern and the horizontal line of the unit.

Table 1 gives the optimal vertical scale adjustment for various combinations of mounting height and coverage range (indicated in feet and meters). The scale enables pattern adjustment from $+10^\circ$ upward to -20° downward, according to the installation height and the required coverage range.

Table 1 - Vertical Adjustment Scale

Mounting Height	Coverage Range																
	ft \Rightarrow	7	10	13	17	20	23	26	30	33	40	50	60	80	100		
	m	2	3	4	5	6	7	8	9	10	12	15	18	24	30		
2	0.6	+8°	+6°	+5°	+4°	+3°	+2°	+2°	+2°	+2°	+1°	+1°	+1°	0°	0°		
3	1	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°		
4	1.2	-8°	-6°	-5°	-4°	-3°	-2°	-2°	-2°	-2°	-1°	-1°	-1°	0°	0°		
5	1.5	-16°	-12°	-9°	-7°	-6°	-5°	-5°	-4°	-4°	-3°	-2°	-2°	-1°	-1°		
6	1.8	-	-18°	-14°	-11°	-9°	-8°	-7°	-6°	-5°	-5°	-4°	-3°	-2°	-2°		
7	2	-	-	-18°	-13°	-12°	-10°	-9°	-8°	-7°	-6°	-5°	-4°	-3°	-2°		
8	2.5	-	-	-20°	-17°	-15°	-13°	-11°	-10°	-9°	-7°	-6°	-5°	-4°	-3°		
10	3	-	-	-	-	-20°	-18°	-16°	-14°	+2°	-10°	-9°	-7°	-5°	-4°		
12	3.6	-	-	-	-	-	-	-19°	-17°	-15°	-12°	-10°	-8°	-7°	-5°		
14	4.2	-	-	-	-	-	-	-	-20°	-18°	-15°	-13°	-10°	-8°	-6°		
17	5	-	-	-	-	-	-	-	-	-	-20°	-17°	-14°	10°	-8°		

Example: If you require coverage range of 40 ft (12 m) and wish to install the sensor at a height of 6 ft (1.8 m) from the ground, set the Vertical Adjustment Scale to -5° .

All SRN-2000C/PC series sensors are shipped pre-set to -5° (downward). To re-adjust the vertical pattern, loosen the screw which fastens the printed circuit board to the base. Slide the p.c. board up / down to the desired angle and tighten the screw firmly.

D. Beam Masking Material

A special material supplied with each unit can be used to mask individual segments of the lens array which are exposed to potential sources of false alarms (heaters, blowers, pets, etc). The sheet is transparent to visible light but blocks infrared energy. To block individual beam(s), locate the corresponding segment(s) in the array (the Beam Locator BL-1 may be used for this purpose). Cut the masking material to the exact dimensions of the segment(s) to be blocked, remove the backing paper and apply the masking material accurately to the inside (smooth) surface of the appropriate segment(s).

In some cases, more than one layer of the lens masking material may be required to completely block the infrared energy.

3.7. Setting the Pulse Counter

The programmable pulse counter can be set to count 1, 2, 3 or 5 pulses, before activating the alarm relay. To set the pulse counter, place the jumper on the desired setting (1, 2, 3 or 5).

5 Pulses: Used in very hostile environments with frequent and repeated false alarms, that could be caused by rats or flying birds. This setting should not be used under normal conditions.

3 Pulses: This setting provides the maximum protection against false alarms caused by all types of environmental disturbances.

Three pulses may be selected for all applications where wide-angle, multi beam lenses are used - such as illustrated in Sections 1, 2, 3, 6 and 7 of the SUPER-RED Lens Library (except for lens No. 53). When the pulse counter is set to 3, no alarm will sound unless the unit registers three pulses within approximately one minute. This ordinarily requires crossing more than one beam: each dual-beam produces two pulses - one additional beam element has to be entered to provide the third pulse.

Note: Three pulses should never be used with lens No. 53 or with long-range lenses shown in Sections 4 and 5 of the Lens Library.

2 Pulses: This setting can be selected to increase the sensor's immunity to false alarms when using long-range or low-density lenses (which normally require one-pulse setting). However, for long-range applications, remember to select 2 pulses only in temperature-controlled locations, and where the actual room size is significantly less than the range specified for the lens in use.

1 Pulse: This setting actually disables the pulse counter. It should be used when it is necessary to activate an alarm on the first detected pulse, such as with long-range lenses illustrated in Sections 4 and 5 of the Lens Library. Also select 1 pulse when using lens No. 53, or in high-security installations when fast "catch" performance is of highest importance.

3.8 Final Testing

A. Overriding the Inhibit Timer

Since battery saving is of utmost importance in normal use of the detector unit, an automatic timer inhibits the detector for approximately 2 minutes after each alarm. During this period, the alarm cannot be triggered again by subsequent motion within the protected area. The detector is automatically enabled 2 minutes after the last motion was detected.

To speed up testing, it is necessary to permit walk testing of each beam in the coverage pattern, without having to wait 2 minutes between successive alarms. The NORM/TEST selector (Fig. 9 and 10), when set to the TEST position, overrides the above-mentioned 2-minute inhibit timer. When the selector is reset to NORM, the automatic inhibit timer resumes its normal function.

B. Testing Procedure

- (1) Connect the battery clip onto the 9 Volt alkaline or lithium battery and allow ten minutes for the unit to stabilize before testing.
- (2) Adjust the vertical calibration angle per Table 1.
- (3) Set the LED selector to ON.
- (4) Set the Normal/Test selector to TEST.
- (5) MASK beams which look at potential sources of false alarms (Para. 3.6D)
- (6) Replace the cover.
- (7) Walk-test the entire protected area by walking slowly across the coverage-pattern beams while observing the LED. The LED lights up whenever you cross a protective beam. Allow 5 seconds between each test for the unit to restabilize. To test each and every beam, it is advisable to set the pulse counter selector to 1 pulse.
- (8) Set the pulse counter according to Para. 3.7.
- (9) Set the NORMAL/TEST selector to NORM position and walk outside the coverage pattern. After five minutes, reenter the coverage area and verify that the LED lights and that the transmitter output operates immediately upon your entrance into the coverage pattern. If you continue moving within the coverage pattern the LED will turn OFF and the unit will remain disabled as long as movement continues, due to the 2-minute battery saving timer. The unit will reset if no motion is detected for approximately 2 minutes, and will again be ready to detect and signal.
- (10) If desired, disable the LED by setting the LED selector to OFF.

Note: The range and the coverage area of the unit should be checked at least once a year. To assure proper continuous functioning, the end user should be instructed to perform a walk test at the far end of the coverage pattern to assure an alarm signal prior to each time the alarm system is armed.

WARRANTY

Visonic Ltd. and/or its subsidiaries and its affiliates ("the Manufacturer") warrants its products hereinafter referred to as "the Product" or "Products" to be in conformance with its own plans and specifications and to be free of defects in materials and workmanship under normal use and service for a period of twelve months from the date of shipment by the Manufacturer. The Manufacturer's obligations shall be limited within the warranty period, at its option, to repair or replace the product or any part thereof. The Manufacturer shall not be responsible for dismantling and/or reinstallation charges. To exercise the warranty the product must be returned to the Manufacturer freight prepaid and insured.

This warranty does not apply in the following cases: improper installation, misuse, failure to follow installation and operating instructions, alteration, abuse, accident or tampering, and repair by anyone other than the Manufacturer.

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities, whether written, oral, express or implied, including any warranty of merchantability or fitness for a particular purpose, or otherwise. In no case shall the Manufacturer be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties whatsoever, as aforesaid.

This warranty shall not be modified, varied or extended, and the Manufacturer does not authorize any person to act on its behalf in the modification, variation or extension of this warranty. This warranty shall apply to the Product only. All products, accessories or attachments of others used in conjunction with the Product, including batteries, shall be covered solely by their own warranty, if any. The Manufacturer shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, caused by the malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Products.

The Manufacturer does not represent that its Product may not be compromised and/or circumvented, or that the Product will prevent any death, personal and/or bodily injury and/or damage to property resulting from burglary, robbery, fire or otherwise, or that the Product will in all cases provide adequate warning or protection. User understands that a properly installed and maintained alarm may only reduce the risk of events such as burglary, robbery, and fire without warning, but it is not insurance or a guarantee that such will not occur or that there will be no death, personal damage and/or damage to property as a result.

The Manufacturer shall have no liability for any death, personal and/or bodily injury and/or damage to property or other loss whether direct, indirect, incidental, consequential or otherwise, based on a claim that the Product failed to function. However, if the Manufacturer is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, the Manufacturer's maximum liability shall not in any case exceed the purchase price of the Product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive remedy against the Manufacturer.

Warning: The user should follow the installation and operation instructions and among other things test the Product and the whole system at least once a week. For various reasons, including, but not limited to, changes in environmental conditions, electric or electronic disruptions and tampering, the Product may not perform as expected. The user is advised to take all necessary precautions for his /her safety and the protection of his/her property.

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