

Low Frequency Exciters

Installation Guide

Part Numbers: 5-RLE00125, 5-RLE00125-1, 5-RLE00125-2

Elpas

Active RFID Solutions

General Overview

Elpas Low Frequency (LF) Exciters from Visonic Technologies are supervised*, short-range, wireless emitters that add pin point detection functionality to EIRIS™ based RFID installations.

Elpas Low Frequency (LF) Exciters can be installed surface mounted on walls or on fixed or in dropped (false) ceilings. Elpas LF Exciters are deployable in either a basic stand-alone configuration designed to cover normal size single doorways or in a master-slave configuration (1 master and 1 slave unit) for accurate, synchronized coverage of large indoor, open complex-shaped areas.

Elpas LF Exciters emit harmless, adjustable low power, low frequency; sphere shaped magnetic (125 KHz) fields up to 3m (10ft) in radius. The emitted fields are user tunable so that they can precisely cover any indoor doorway or restricted entrance/exit area. As a result, whenever an active Elpas RFID tag or badge (i.e. ETC, WTA, Baby Tag, Personnel Badge) enters the magnet field; the corresponding LF Exciter automatically triggers the moving RFID device to transmit special data messages (including the Exciter ID code). The messages are immediately received and relayed by strategically located Elpas RF readers for monitoring, alert notification and subsequent event logging.

*** LF Exciters (from hardware Version C) transmit operational RF status messages plus output power trouble alert messages configurable and supervised via EIRIS software.**



CAUTION: It is important that you read, understand, and follow the instructions in this document. If you have questions, call your local Visonic Technologies support representative.

This document is intended for trained system integrators, field service or maintenance engineers that need to troubleshoot problems in the EIRIS system, or configurations and processes.

LF Transmissions

Transmission Rate: Continuous bursts of LF transmissions (each about 12ms in duration).

Supervision RF Transmissions

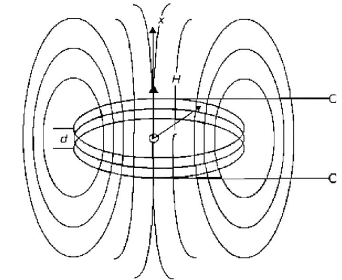
Transmission Rate: 1 RF transmission (about 2ms in duration), 10 seconds apart.

Transmitted Message Type: 433.9 MHz Elpas Tag (badge) protocol including ID LF Exciter code (ID code = OOODXX where XX is ID number of the LF exciter)

Installation Guidelines

LF Exciters generate an omni directional magnetic radiation pattern that is almost spherical in area. As a consequence ceiling mounted Exciters may result in the LF penetration of adjacent floors and rooms.

Each stand alone or master LF Exciter has a detection range up to a 10ft/ 3m radius. For wider area coverage, enhanced detection capability or direction determination a master/slave configuration should be used.



Optimizing Performance

- **General Placement:** Position LF Exciters at least 30cm (12 inches) from any metal barriers (such as signs/pillars/beams) in any direction.
- **Single Doors:** To thoroughly cover an exit without penetrating excess areas, the LF Exciter should be mounted on a wall, at waist height, next to the door. Additionally, the LF field should be adjusted to cover only the width of the door.
- **Double Doors:** A master/slave configuration may be used by mounting the master exciter to the right of the double doors and the slave to the left of the doors.

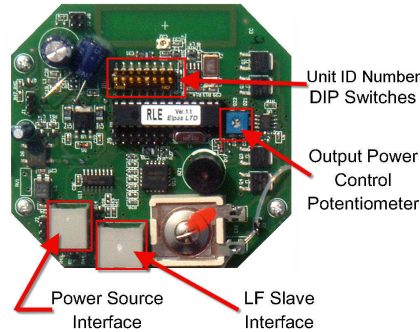
Placement Warning

- LF Exciters may not be mounted on metallic surfaces.
- LF Exciters must be mounted as far away as possible from all other pieces of equipment that may emit magnetic fields (such as large electrical motors, HVAC and refrigeration compressors, etc.).

Main Circuit Board Components

The key setup and configuration circuitry components used by the standalone or master RF Exciter are detailed below

- Unit ID Number DIP Switches** Used for manually setting the unit ID number of a master or standalone LF Exciter.
- Output Power Control Potentiometer** Used for manually tuning the size of generated output detection field
- Power Source Interface** Female RJ11 connector to external 24 VDC nominal power source via the EJB junction box
- LF Master/Slave Interface** Female RJ45 connector to LF Exciter slave unit (master/slave configuration)



Setting the ID Number of the LF Exciter

Each Stand-alone or Master LF Exciter must be assigned a unique ID number to make it possible for EIRIS to recognize the device. Locate the DIP switches on the circuit board of the exciter and set the switch settings as required. Use a scientific calculator or in EIRIS, the General tab of the reader configuration for to determination the correct switch settings. Refer to the table below for unit numbers to avoid using:

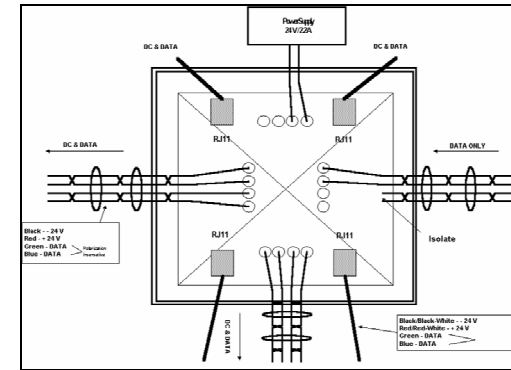
No	INVALID LF EXCITER ID (HEX)	INVALID LF EXCITER ID (BIN)
1	13	00010011
2	35	00110101
3	4B	01001011
4	4D	01001101
5	5C	01011100
6	B8	10111000
7	D5	11010101
8	DC	11011100

CAUTION: Set the DIP switch before powering up the LF Exciter. Never change the DIP switch settings once the LF Exciter is powered up.

Wiring the LF Exciter

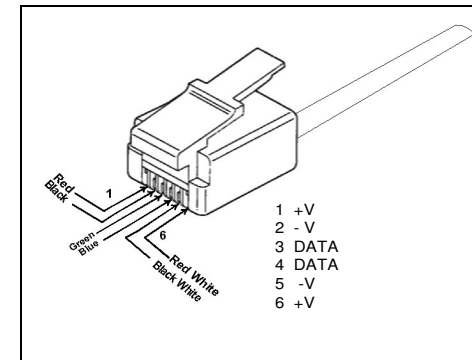
Power from an external source (24 VDC nominal \pm 30%; 200mA) is supplied to a standalone or master LF Exciter via the EJB junction box.

A bus topology network may be branched for LF Exciters by connecting only the power connectors as shown here.

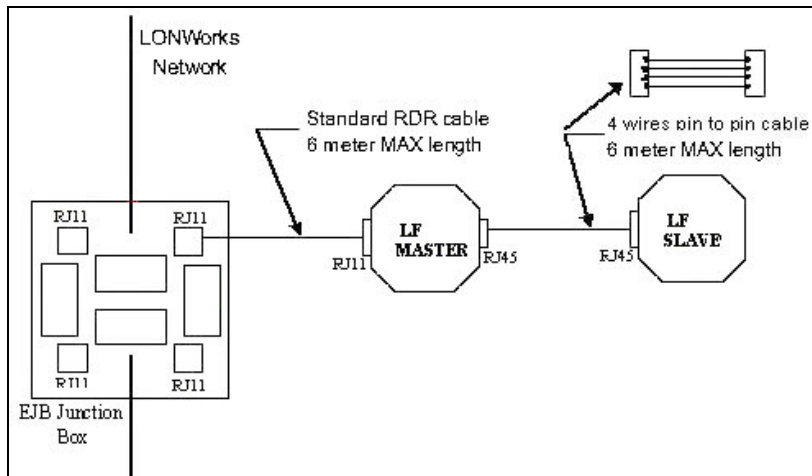


For connecting a standalone or master LF Exciter to a EJB junction box, use an unshielded 6 conductor 26 AWG solid cable crimped at both ends with a RJ11 (6P6C) connector.

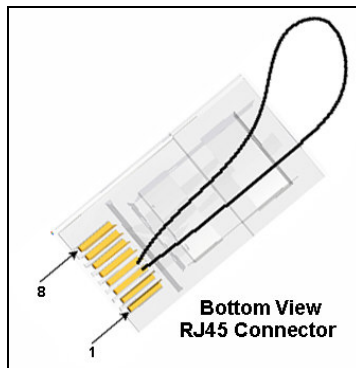
Ensure that the correct order of the wires is maintained as shown here.



To wire a Master/Slave configuration, use an unshielded 4 conductor 26 AWG solid cable crimped at both ends with a RJ45 (8P8C) connector as illustrated below:



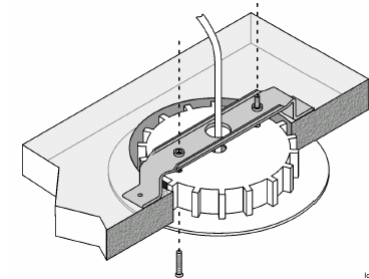
When the Master LF Exciter (from hardware Version C, Revision A-1) senses that the Slave has been disconnected, the Master audibly beeps continuously. To suppress the beeping, every Master is shipped with a dummy RJ45 (8P8C) male plug that shorts pins 3 & 4. The plug is typically found already inserted in the female Master/Slave RJ45 interface socket on the unit's main circuit board.



Should a dummy RJ45 dummy plug need to be made-up on site, ensure that the correct order of the wire used to short pins 3 & 4 is maintained as shown here.

Flush Mounting to Drop Ceilings or Interior Hollow Walls

1. Separate the LF Exciter from its base by pressing one of the snaps (identified by a square hole) using a small screwdriver.
2. Then cut a 5 inch (12.7 cm) diameter mounting hole in the drop ceiling or the hollow wall where the LF Exciter is to be flush mounted.



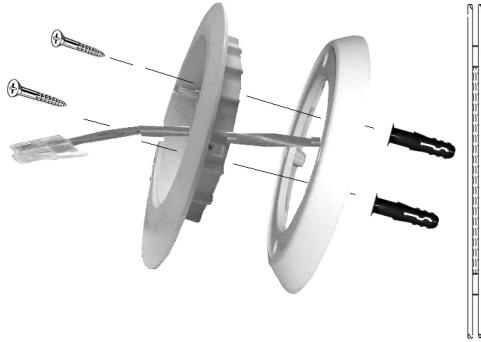
3. Pull the 6P6C power cable (for master slave configurations the additional 8P8C interface cable as well) through the cable entry hole of the RDR1 mounting bracket and the LF exciter base.
4. Insert the RDR1 mounting bracket through the mounting hole and position it carefully so it is firmly supported.
5. Insert the base of the exciter into the mounting hole. Next, screw the base to the RDR1 mounting bracket place using the 2 supplied screws. Ensure that the screw heads are recessed inside the screw holes. If not the LF Exciter will not close properly and damage may occur.
6. Connect the power and interface cables to the LF Exciter; set the DIP switch and adjust the units' output power. Then, insert the LF Exciter back into its base.
7. Finally walk test the LF Exciter using either an Elpas LF Meter or an active Elpas Tag/Badge to verify that the placement and output power of the device is correct.

Surfacing Mounting to Solid Ceilings or Walls

1. Separate the LF Exciter from its base by pressing one of the snaps (identified by a square hole) using a small screwdriver.
2. Using the base of the exciter as a template mark the locations of the two mounting holes and the cable pass through.
3. Drill holes at the marked areas to accommodate the required mounting hardware and the diameter of the power and interface cables.

Low Frequency Exciters - Installation Guide

4. Insert base of the exciter into the surface mounting ring. Orient the mounting ring so it is facing the ceiling or the wall.
5. Pull the 6P6C power cable (for master slave configurations the additional 8P8C interface cable as well) through the cable entry hole of the LF exciter base.
6. Screw the base to the wall or ceiling using the 2 supplied screws. Ensure that the screw heads are recessed inside the screw holes. If not the LF Exciter will not close properly and damage may occur.
7. Connect the power and interface cables to the LF Exciter; set the DIP switch and adjust the units' output power. Then, insert the LF Exciter back into its base.
8. Finally walk test the LF Exciter using either an Elpas LF Meter or an active Elpas Tag/Badge to verify that the placement and output power of the device is correct.



Remote Supervision Management

Elpas LF exciters (from hardware Version C) transmit RF messages (as if the devices were badges) for the purpose of supervision.

Supervision alerts include: Operational RF Status & Output Power Trouble

Configuring an Operational RF Status Alert

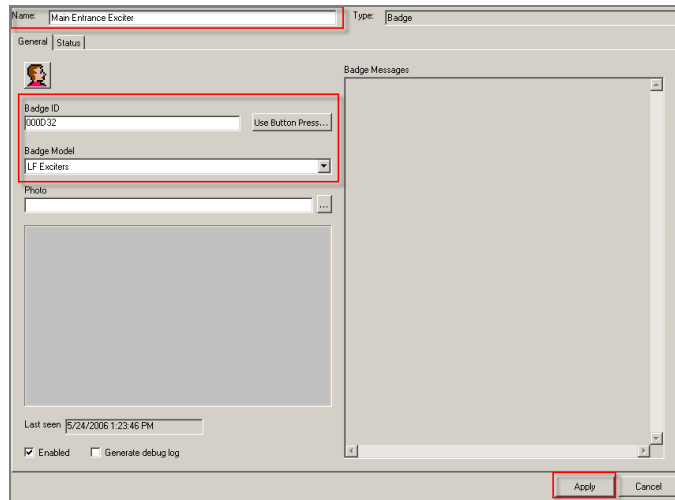
EIRIS can be configured to generate an Operational RF Status alert whenever a LF Exciter has not been seen by EIRIS for a specified period of time.

1. Ensure that the **LF Exciter** to be supervised is correctly defined and configured.
2. Define a new **Badge Model** as detailed in the following steps:
 - Right-click on the **All Badge Models** branch of the Component tree. Select **Add Badge Model**.

The General tab of the corresponding Badge Model Configuration (with default name) form also appears in the EV2 setup pane.

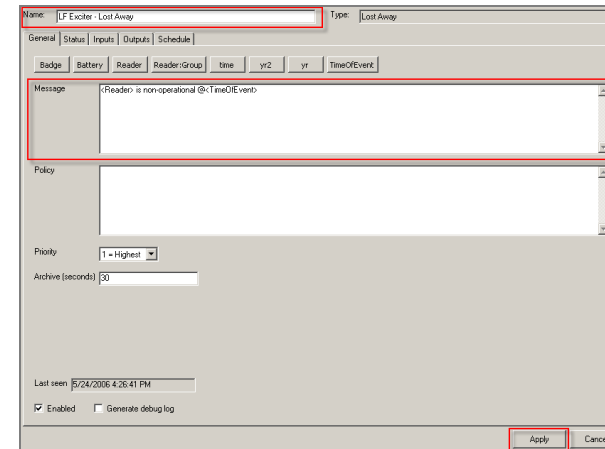
- Update the **Badge Model Name** so that it denotes that it is defined for a LF exciter.
 - Update the **Idle Lost** and the **Motionless Lost** interval values to 35 seconds, respectively.
 - Press **Apply**; the badge model parameters are saved.
3. Define a new **Badge** that will represent the LF Exciter to be supervised as detailed in the following steps:
 - Right-click on the **All Badges** branch of the Component tree. Select **Add By Type**; the Add Object box appears.
 - Select the **Badge** icon by clicking on it. Then press **Add**; a new Badge sub-branch (with default name) appears in the Components tree.

The General tab of the corresponding Badge Configuration form appears in the EV2 setup pane

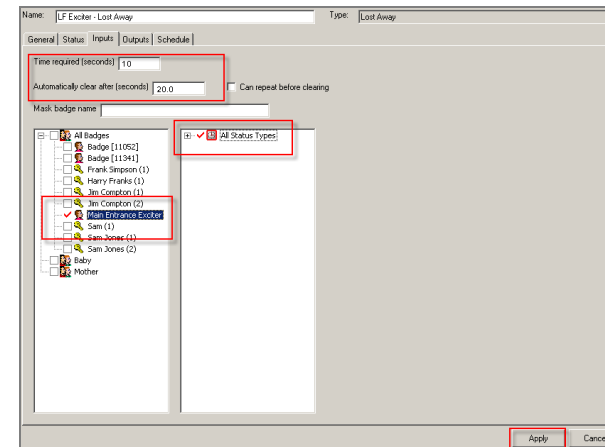


- Update the **Badge Name** so that it will denote a particular LF exciter.
 - Enter an **ID Number** of 000D##, where ## is the LF Exciter ID as set on the DIP switch on the main circuit board of the device during installation.
 - Select the **Badge Model** that was created in the previous step) from the badge model pull-down menu.
 - Press **Apply**; the badge parameters are saved. Then Repeat **Step 2** (in its entirety) for each additional LF Exciter that is to be associated with the new alert.
4. Define a new **Operational RF Status** alert (using the Lost Away alert) that is to supervise the operational RF status of the LF exciters as detailed in the following steps:
- Right-click on the **All Alerts** branch of the component tree. Select **Add By Type**; the Add Object box appears.
 - Select the **Lost Away** icon by clicking on it. Then press **Add**; a new Lost Away alert sub-branch (with default name) appears in the components tree.

The General tab of the corresponding Alert Configuration form also appears in the EV2 setup pane.



- Update the **Name** of the Device Away alert so that the new name will denote the intended usage.
- Enter a **Message** that is to be sent to the designated client machines when the alert is triggered. Then press **Apply**; the general parameters are saved.
- Access the **Inputs** tab. Next expand the **Badges** tree in the Badges Tree pane to show all the of the defined badges including the LF Exciters.



- Select the **LF Exciter(s)** that are to be supervised.

Low Frequency Exciters - Installation Guide

- Enable the **All Status Types** option in the Status Tree pane.
- **(Optional)** Increase/Decrease the **Time Interval** (seconds) after the device has been declared 'Lost/Away' that is to transpire before alert is triggered in the 'Time Required' value field.
- **(Optional)** Increase/Decrease the **Time Interval** (seconds) that is to transpire before the alert is cleared in the 'Automatically clear after' value field.
- Press **Apply**; the input parameters are saved. Complete the **Outputs** and **Schedule** tabs of the Alerts Configuration form as required.

Configuring an Output Power Trouble Alert

EIRIS can be configured to automatically generate an Output Power Trouble alert should a specific LF Exciter stop generating its LF magnetic field.

1. Ensure that the **LF Exciter** to be supervised is correctly defined and configured.
2. Define a **Badge** that will represent the LF Exciter to be supervised as described in Step 3 of 'Configuring an Operational RF Status Alert, page 5 of this document.
3. Define a new **Output Power Trouble Alert** (using the Battery alert) that is to supervise the output LF field of the LF Exciter as detailed in the following steps:
 - Right-click on the **All Alerts** branch of the component tree. **Select Add By Type**; the Add Object box appears.
 - Select the **Battery** icon by clicking on it. Then press the **Add**; a new Battery alert sub-branch (with default name) appears in the components tree. The General tab also appears in the EV2 setup pane.

The screenshot shows the 'General' tab of the 'LF Field Failure' alert configuration. The 'Name' field is 'LF Field Failure' and the 'Type' is 'Battery'. The 'Message' field contains the text: '{Badge}: LF Field has failed @-TimeOfEvent'. The 'Priority' is set to '1 = Highest' and 'Archive (seconds)' is set to '30'. The 'Last seen' field shows '6/25/2006 11:06:46 AM'. There are checkboxes for 'Enabled' (checked) and 'Generate debug log' (unchecked). The 'Apply' and 'Cancel' buttons are at the bottom right.

- Update the **Name** of the Battery alert so that it will denote the intended usage.
- Enter a **Message** to be sent to the designated client machines whenever the alert is triggered.
- Press **Apply**. The general parameters are saved.
- Access the **Inputs** tab. Expand the **Badge Tree** in the left tree pane to show the defined LF Exciters.

The screenshot shows the 'Inputs' tab of the 'LF Field Failure' alert configuration. The 'Time required (seconds)' is set to '35' and 'Automatically clear after (seconds)' is set to '45'. The 'Mask badge name' field is empty. The 'Badge Tree' on the left shows a list of badges, with 'Jim Compton (2)' selected. The 'All Status Types' checkbox is checked. The 'Lost/Away - Must NOT be lost' dropdown menu is visible at the bottom left. The 'Apply' and 'Cancel' buttons are at the bottom right.

- Select the **LF Exciter(s)** that are to be supervised.
- **(Optional)** Increase/Decrease the **Time Interval** (seconds) that is to transpire before the alert is triggered in the 'Time required' value field.
- **(Optional)** Increase/Decrease the **Time Interval** (seconds) that is to transpire before the alert is cleared in the 'Automatically cleared after' value field.
- Select the **Lost/Away – Must NOT be Lost** option from the pull-down list of lost away choices.
- Press **Apply**. The input parameters are saved.
- Complete the **Outputs** and **Schedule** tabs of the Alert Configuration form as required.

Specifications

ELECTRICAL	
Power Requirements	24 VDC nominal \pm 30%; 200mA. (500mA at start-up)
Power Consumption	Approx 2W (power consumption is a function of address (per DIP switch settings, where FF=max and 00=min)
Status Indications	Power On: Red LED pulses 5 times upon power on; then remains constant. Invalid ID Code: Red LED pulses continuously; Buzzer beeps repetitively
Frequency Output & Format	LF: 125KHz; 3 byte messages (Preamble, Exciter ID and CRC) RF (supervision): 433.9MHz; Elpas Tag Format (see tag documentation)
Output Bit Rate	2,000 bits per second
Output Power	Adjustable, using on-board trim control potentiometer
Magnetic Field - Effective Range	Up to up to 3m (10ft) radius
Device Interfaces	RJ11 (6P6C) connector to power source via EJB box; RJ45 (8P8C) to slave (master-slave configuration)
LF Power Transmission Output	Less than 60 db μ v at 30 meters (100 feet)
Supervisory Transmission Rate	1 RF transmission, 10 seconds apart
LF Transmission Rate	Continuous bursts of LF transmissions (each about 12ms in duration)
Supervision Management	Using EIRIS software
Exciter ID code	Set by on-board 8 position DIP-switch
GENERAL	
Construction	Polymer plastic
Dimensions	17cm x 4 cm (6.6 inches x 1.6 inches)
Weight	200 grams (0.45 lbs) approximate
Temperature & Humidity	-10 $^{\circ}$ to 70 $^{\circ}$ C (14 $^{\circ}$ to 159 $^{\circ}$ F); 20% to 80% non-condensing
Fire Resistance	Using optional fire proof cover (5-RDT09101)
Warranty	One year limited warranty
FCC Compliance	FCC Part 15.209 and 15.231e
FCC ID	GSA5-RLE00125B

Ordering Details

PART INFORMATION	
5-RLE00125	LF Exciter
5-RLE00125-1	LF Exciter, Master
5-RLE00125-2	LF Exciter, Slave
5-RLE00125-W	LF Exciter, WHT
5-RLE00125-1W	LF Exciter, Master WHT
5-RLE00125-2W	LF Exciter, Slave WHT
OPERATIONAL ACCESSORIES	
5-RDT09103	RDR surface mount ring (5 units)
5-RDT09100	RDR1 mounting bracket (5units)
5-RDT09101	RDR1 fire proof cover (5units)

Standards Compliance

This device complies with Part 15 of the FCC Rules; and its operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and 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.

Warning!

Changes or modifications to this equipment not expressly approved by the party responsible for compliance (Visonic Technologies Ltd.) could void the user's authority to operate the equipment.

Product Warranty

Visonic Technologies Ltd., and its affiliates, (hereinafter collectively referred to as "the Manufacturer") warrants its products (hereinafter referred to as "the Product") to be free of defects in materials and workmanship under normal operating conditions and use for a period of one year 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 to replace the defective Product or any defective component or part thereof. To exercise this warranty, the product must be returned to the manufacturer freight prepaid and insured.

This warranty does not apply to repairs or replacement caused by improper installation, Product misuse, failure to follow installation or operating instructions, alteration, abuse, accident, tampering, repair by anyone other than the Manufacturer, external causes, and failure to perform required preventive maintenance. This warranty also does not apply to any products, accessories, or attachments used in conjunction with the Product, including batteries, which shall be covered solely by their own warranties, if any. The Manufacturer shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, resulting from a malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Product.

THE MANUFACTURER MAKES NO EXPRESS WARRANTIES EXCEPT THOSE STATED IN THIS STATEMENT. THE MANUFACTURER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE MANUFACTURER'S SOLE RESPONSIBILITY FOR WARRANTY CLAIMS IS LIMITED TO REPAIR OR TO REPLACE AS SET FORTH IN THIS STATEMENT.

The Manufacturer shall have no liability for any death, personal injury, property damage, 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 be limited to 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 liability of the Manufacturer.

The Manufacturer shall not, under any circumstances whatsoever, be liable for any inaccuracy, error of judgment, default, or negligence of the Manufacturer, its employees, officers, agents, or any other party, or of the purchaser or user, arising from any assistance or communication of any kind regarding the configuration, design, installation, or creation of security system involving the Product, that being the responsibility of the purchaser or user.

If the Manufacturer is unable to make such repair or replacement, the Manufacturer's entire liability shall be limited to the cost of a reasonable substitute product. The Manufacturer shall not be responsible for any dismantling, installation, reinstallation, purchasing, shipping, insurance, or any similar charges.

The Manufacturer shall have no liability for any damages, including without limitation, any direct, indirect, incidental, special, or consequential damages, expenses, costs, profits, lost savings or earnings, or other damages arising out of the use of the Product or the removal, installation, reinstallation, repair or replacement of the Product or any related events. In the event that there is any liability against the Manufacturer, such liability shall be limited to the purchase price of the Product which amount shall be fixed as liquidated damages.

The purchaser and user understand that this Product may be compromised or circumvented by intentional acts; that the Product will not in all cases prevent death, personal injury, property damage, or other loss resulting from burglary, robbery, fire or other causes; and that the Product will not in all cases provide adequate warning or protection. The purchaser and user also understand that a properly installed and maintained alarm may reduce the risk of events such as burglary, robbery, and fire without warning, but it is not insurance or a guarantee that such events will not occur or that there will be no death, personal injury, property damage, or other loss as a result of such events.

By purchasing the Product, the purchaser and user shall defend, indemnify and hold the Manufacturer, its officers, directors, affiliates, subsidiaries, agents, servants, employees, and authorized representatives harmless from and against any and all claims, suits, costs, damages, and judgments incurred, claimed, or sustained whether for death, personal injury, property damage, or otherwise, because of or in any way related to the configuration, design, installation, or creation of a security system involving the Product, and the use, sale, distribution, and installation of the Product, including payment of any and all attorney's fees, costs, and expenses incurred as a result of any such events.

The purchaser or user should follow the Product installation and operation instructions and test the Product and the entire system at least once each week. For various reasons, including but not limited to changes in environmental conditions, electric, electronic, or electromagnetic disruptions, and tampering, the Product may not perform as expected. The purchaser and user are advised to take all necessary precautions for the protection and safety of persons and property.

This statement provides certain legal rights. Other rights may vary by state or country. Under certain circumstances, some states or countries may not allow exclusion or limitation of incidental or consequential damages or implied warranties, so the above exclusions may not apply under those circumstances and in those states or countries. The Manufacturer reserves the right to modify this statement at any time, in its sole discretion without notice to any purchaser or user. However, this statement shall not be modified or varied except by the Manufacturer in writing, and the Manufacturer does not authorize any single individual to act on its behalf to modify or vary this statement

VT World Headquarters

Tel Aviv Israel
Tel: +972 3 7681400 *
marketing@visonictch.com

VT Americas

Bloomfield, CT (USA)
Tel: 860-242-0191
vta_marketing@visonictch.com

Visonic UK

Beckenham Kent, BR3 9BF, United Kingdom
Tel: +44-870-730-0840 *
vtuk_marketing@visonictch.com

Visonic D-A-CH

D-40215 D'sseldorf Germany
Tel: +49-(0)-221-600-696-0 *
support@visonictch.de



Manufactured In Israel

