

NEMTEK
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WIZORD 4

Electric Fence Energizer

Installer Manual



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Introduction & Disclaimer

INTRODUCTION

The WIZORD 4 is a battery (12V 7AH nominal) operated energizer suitable for connection to mains (220-240Vac, 50-60Hz).

The batteries to be used are rechargeable lead-acid batteries. Non-rechargeable batteries must not be used. The lead-acid batteries require venting and it is imperative that the energizer be situated in a well-ventilated area.

A new fully charged battery will typically provide in excess of 24 hours backup. Backup time will vary with fence condition though.

Electric fencing can be lethal. Please avoid entanglement\entrapment hazards (See APPENDIX at the end of this manual) and warn the user to avoid head contact with the fence.

DISCLAIMER

NEMTEK Holdings (Pty) Ltd or any of its subsidiary companies does not guarantee that the operation of the product will be uninterrupted or totally error free.

Energizer specifications may be altered without prior notification.

The installer is referred to the definitions and general requirements in the Appendix.

The installer must take into consideration the applicable municipal laws concerning the installation of electric fences. General guidelines are available, or refer to the website: <http://www.nemtek.com>. International standards can be viewed at <http://www.iec.ch> and South African standards on <http://www.sabs.co.za>.

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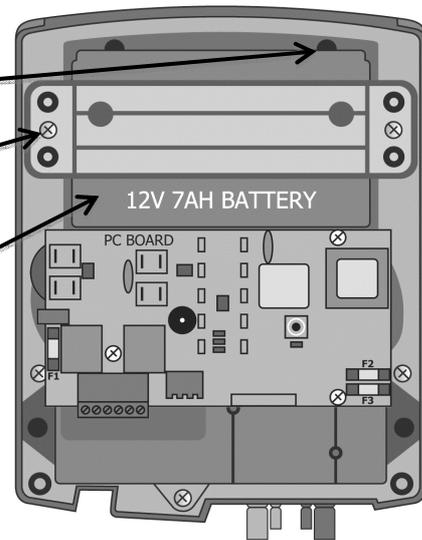
Mounting & Battery Replacement

STEP 1: Disconnect mains. Open the lid after removing the two cap screws. Unplug the battery terminals if connected.

STEP 2: Remove screws and battery bracket

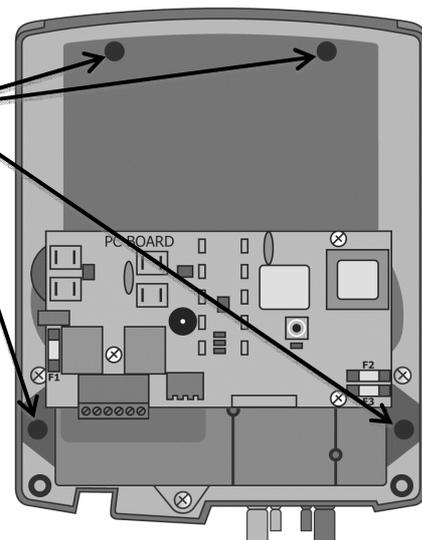
STEP 3: Remove battery

*Dispose of old battery according to legal requirements. Do not replace with a non-rechargeable battery!



STEP 4: Use a drilling template and drill 4 x 8mm holes in the wall for mounting the unit. Four nail-in anchors are supplied with the unit. Insert the plastic sleeve of the nail in anchor into the wall then hammer the screw in with a screwdriver and hammer.

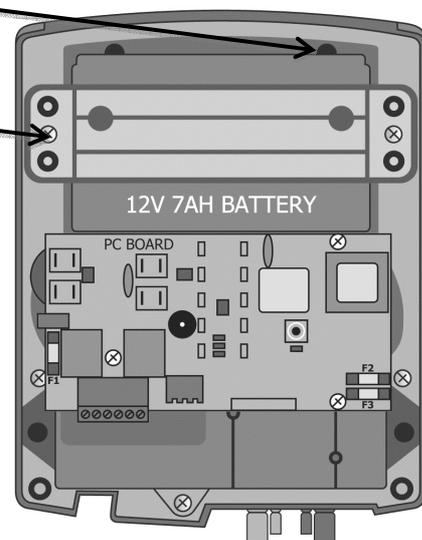
NB: Always insert the plastic sleeve from the inside of the box.



STEP 5: Insert battery with the positive terminal to the top.

STEP 6: Place the battery bracket back (with plastic offsets at the top) and fasten the screws into place.

STEP 7: Connect battery wires. Close the lid by hooking the top of the lid in first and then fasten the bottom down with the two cap screws. Apply mains power to the unit.

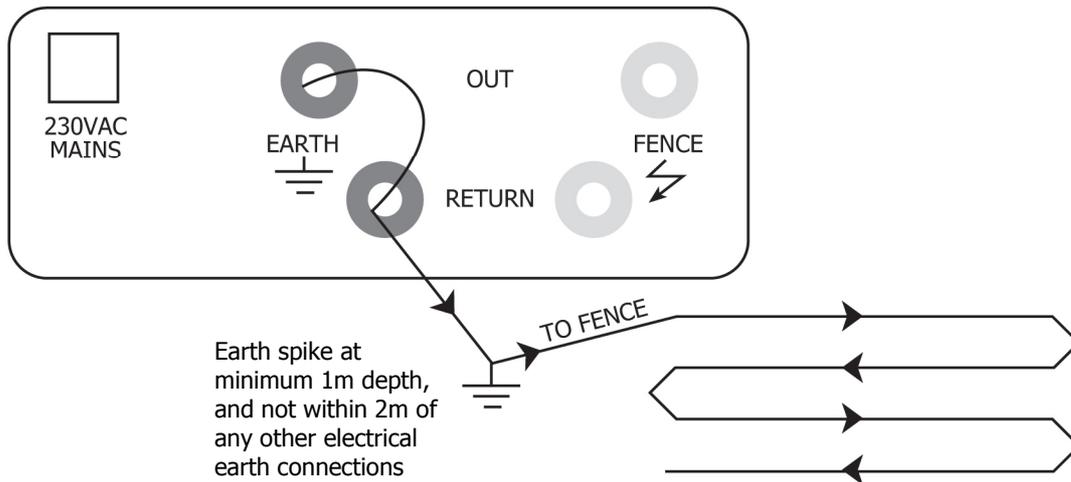


Note: Energizer to be mounted vertically against a flat surface, in a well ventilated area. Avoid prolonged exposure to direct sunlight.

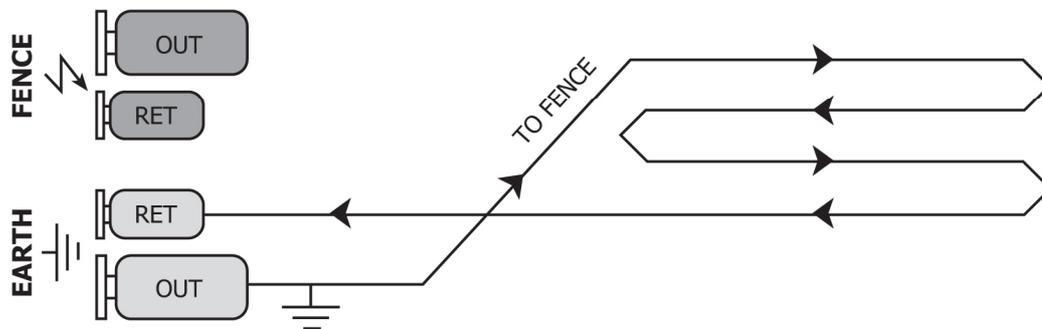
Connection to the Fence

OPTION 1: NO EARTH LOOP MONITORING

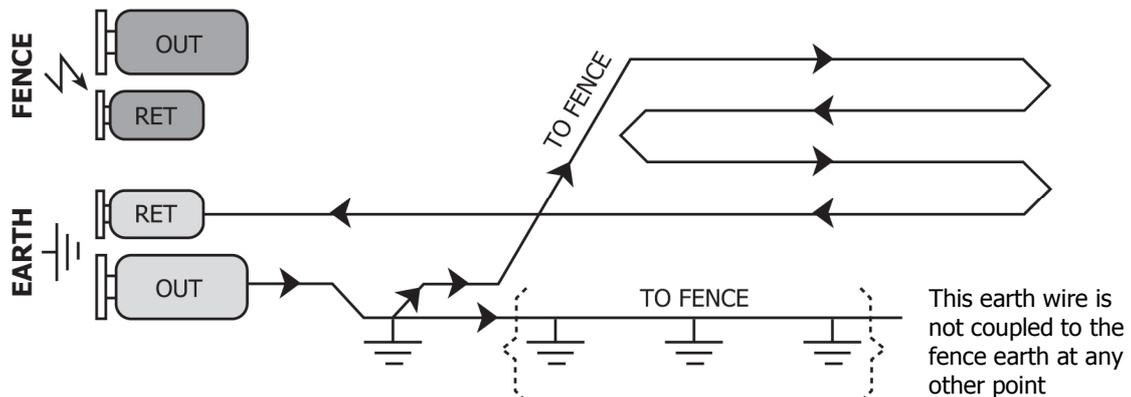
Bridge the earth OUT terminal to earth RETURN terminal.



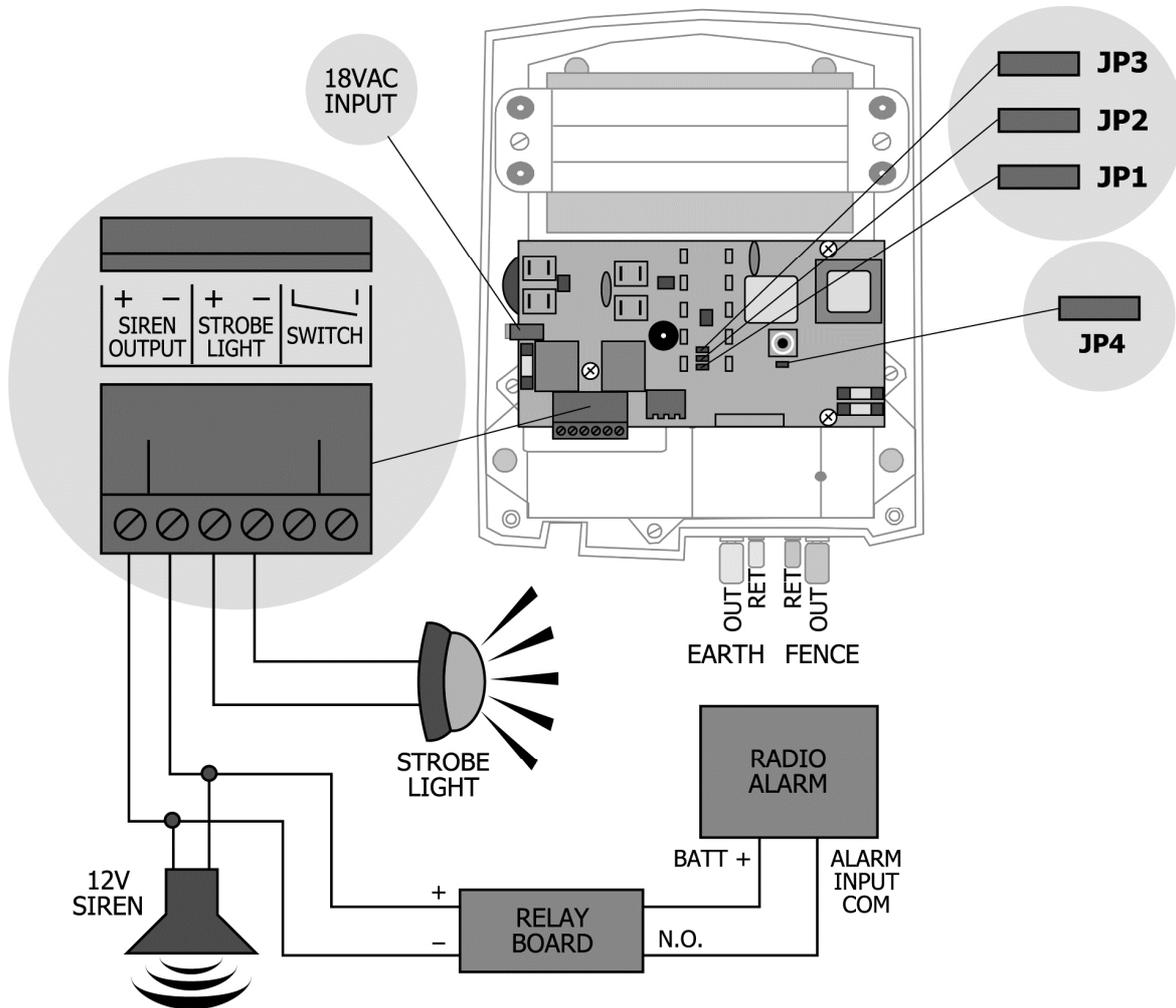
OPTION 2: EARTH LOOP MONITORING; GOOD SOIL EARTHING



OPTION 3: EARTH LOOP MONITORING; POOR SOIL EARTHING



Connection/Configuration Diagram



JUMPER OPERATION:

JP1	JP2	Energizer Operation
Out	Out	Remote On/Off Enabled Plastic Tab Disabled
In	Out	Switch Input Enabled Switch Input Instantaneous
Out	In	Plastic Tab Enabled Remote On/Off Enabled
In	In	Switch Input Enabled Switch Input Delayed (4 min)

* JP3 – Reserved for future use

* JP4 – Bypass safety switch. Not to be installed during normal use

PC Board Replacement Procedures

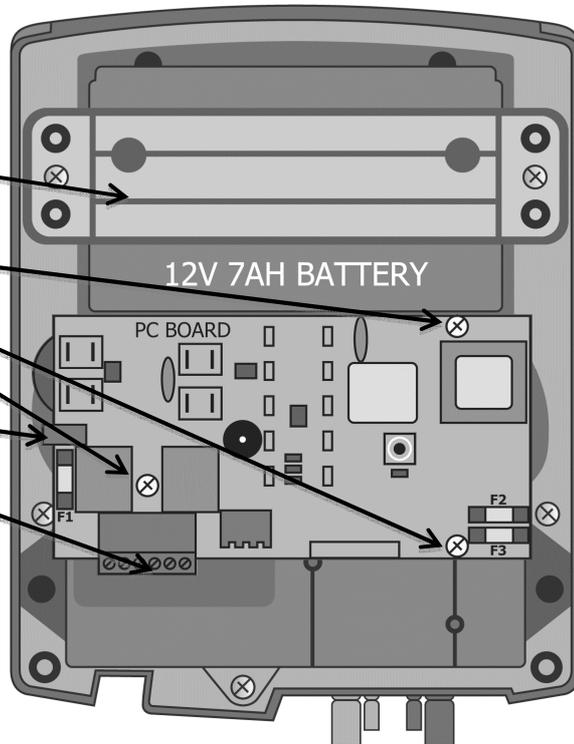
REMOVAL

STEP 1: Disconnect mains power and the battery terminals if connected.

STEP 2: Remove screws.

STEP 3: Remove all connectors from PC Board.

STEP 4: Gently pull PC Board vertically upwards to remove (connections are on the back side of the PC Board).

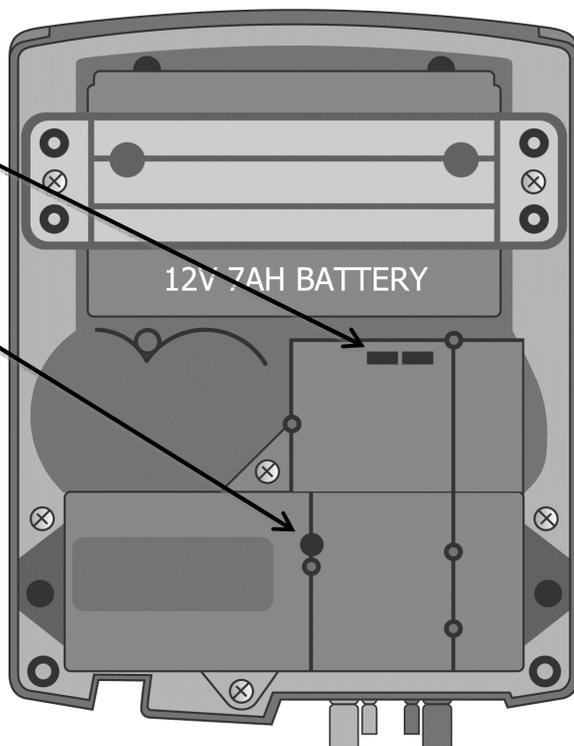


REPLACEMENT

STEP 5: Gently push PC Board back into place. Take care that the spade connectors are correctly positioned before pushing the PC Board into place. Also ensure that the opto-coupler (looks like LED) is correctly positioned before pushing the PC Board into place.

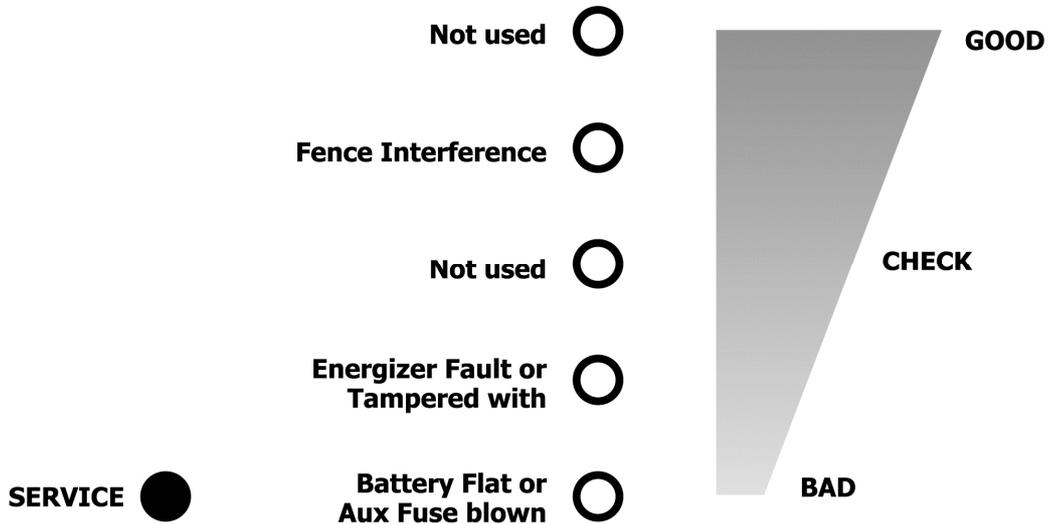
STEP 6: Reconnect all connectors to the PC Board.

STEP 8: Reconnect the battery terminals and apply mains power.

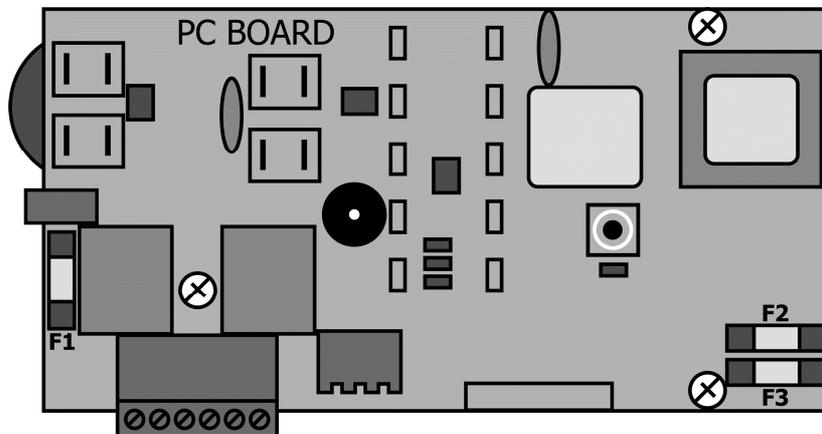


Service Conditions

On removing the energizer lid and disconnecting JP4, one or more of the following service conditions may be displayed (lit LED):



FUSE DESCRIPTION & FAULT SYMPTOMS



HOW TO CHECK: (ALL FUSES ARE 2 AMPERE FAST BLOW)

18Vac Supply Fuse

F1: Power light is not lit, even when mains present

Battery Protection Fuse

F2: Energizer does not operate when mains is switched off

Auxiliary Output Fuse

F3: Siren or strobe light does not operate

Basic definitions

- **Electric Fence:**
A barrier which includes one or more electric conductors, insulated from earth, to which electric pulses are applied by an energizer
- **Connecting Lead:**
An electric conductor, used to connect the energizer to the electric fence or the earth electrode
- **Electric Security Fence:**
A fence used for security purposes which comprises an electric fence and a physical barrier electrically isolated from the electric fence
- **Public Access Area:**
Any area where persons are protected from inadvertent contact with pulsed conductors by a physical barrier
- **Pulsed Conductors:**
Conductors which are subjected to high voltage pulses by the energizer
- **Secure Area:**
An area where a person is not separated from pulse conductors below 1,5m by a physical barrier

General requirements for electric security fences

Electric fences shall be installed and operated so that they cause no electrical hazard to persons, animals or their surroundings.

Electric fence constructions which are likely to lead to the entanglement of animals or persons shall be avoided, as entrapment can be lethal.

An electric fence shall not be supplied from two different energizers or from independent fence circuits of the same energizer.

For any two different electric fences, each supplied from a different energizer with independent timing, the distance between the wires of the two electric fences shall be at least 2.5m. If this gap is to be closed, this shall be affected by means of electrically non-conductive material or an isolated metal barrier.

Barbed wire or razor wire shall not be electrified by an energizer.

Appendix (continued)

Any part of an electric fence which is installed along a public road or pathway shall be identified at frequent intervals by prominently placed warning signs securely fastened to the fence posts or firmly clamped to the fence wires. The size of the warning signs shall be at least 100mm x 200mm. The background colour of both sides of the warning plate shall be yellow. The inscription on the plate shall be in black.

The warning sign shall typically appear as depicted in the figure below. The inscription shall be indelible, inscribed on both sides of the warning plate and have a height of at least 25mm.

Warning signs shall be placed at;

- each gate
- each access point
- intervals not exceeding 10m
- adjacent to each sign relating to chemical hazards for the information of emergency services.



Gates in electric security fences shall be capable of being opened without the person receiving an electric shock.

The energizer earth electrode shall penetrate the ground to a depth of at least 1m. The distance between any electric security fence earth electrode and other earth systems shall not be less than 2m.

Connecting leads that are run inside buildings shall be effectively insulated from the earthed structural parts of the building. This may be achieved by using insulated high voltage cable.

Connecting leads that are run underground shall be run in a conduit of insulating material or else insulated high voltage cable shall be used. Care shall be taken to avoid damage to the connecting leads due to external factors.

Connecting leads shall not be installed in the same conduit as the mains supply wiring, communication cables or data cables.

Connecting leads and electric fence wires shall not cross above overhead power or communication lines.

Mains supply wiring shall not be installed in the same conduit as signalling leads associated with the electric security fence installation.

Crossings with overhead power lines shall be avoided wherever possible. If such a crossing cannot be avoided, it shall be made underneath the power line and as nearly as possible at right angles to it.

Appendix (continued)

If connecting leads and electric fence wires are installed near an overhead power line, the clearances shall not be less than those shown in the table below.

<u>Power Line Voltage (V)</u>	<u>Clearance (m)</u>
Equal to or less than 1 000	3
Greater than 1 000 and equal or less than 33 000	4
Greater than 33 000	8

If connecting leads and electric fence wires are installed near an overhead power line, their height above the ground shall not exceed 3m.

Where an electric security fence passes below bare power line conductors, the highest metallic element shall be effectively earthed for a distance of not less than 5m on either side of the crossing point.

This height applies either side of the orthogonal projection of the outermost conductors of the power line on the ground surface, for a distance of:

- 2m for power lines operating at a nominal voltage not exceeding 1 000 Volts
- 15m for power lines operating at a nominal voltage exceeding 1 000 Volts

Electric security fences and their ancillary equipment shall be installed, operated and maintained in a manner that minimizes danger to persons, and reduces the risk of persons receiving an electric shock unless they attempt to penetrate the physical barrier, or are in a secure area without authority. Exposed conductive parts of the physical barrier shall be effectively earthed.

A spacing of 2.5 m shall be maintained between uninsulated electric fence conductors or uninsulated connecting leads supplied from different energizers. This spacing may be less where conductors or connecting leads are covered by insulating sleeving, or consist of insulated cables, rated to at least 10kV.

This requirement need not apply where the separately energized conductors are separated by a physical barrier, which does not have any openings greater than 50mm.

A vertical separation of not less than 2m shall be maintained between pulsed conductors fed from different energizers.

Ensure that all ancillary equipment connected to the electric security fence circuit provides a degree of isolation between the fence circuit and the supply mains equivalent to that provided by the energizer. Protection from the weather shall be provided from the ancillary equipment unless this equipment is certified by the manufacturer as being suitable for use outdoors, and is of a type with a minimum degree of protection IPX4.

Installation Notes

- Keep the wires to the fence separate from the keypad, gate, siren, strobe and mains wiring.
- Do not try and modify the energizer. Any unauthorized modifications will null and void the warranty and possibly render the unit illegal.
- If the external On/Off facility is used, the wire between the remote switch and the energizer can be up to a 100m in length. The switch contact must be open for the fence to be energized.
- A remote receiver can obtain 12VDC from the keypad bus. Current consumption must not exceed 0.1 Amps. This is not sufficient to supply power for an armed response transmitter.
- The siren and strobe lights together must not draw more than 1.8Amps.
- Never use the energizer battery to power a radio alarm transmitter or alarm panel.
- The wire between the magnetic gate switch and the energizer can be up to a 100m in length, but must not run parallel with any fence wires. The gate switch must be open circuit if the gate is open.
- Use HT (high voltage) wire between the fence and energizer, including the earth wire. Never run these wires in the same conduit or through the same hole as the low voltage wiring.
- Always use ferrules or line clamps to connect two high voltage wires together. Avoid using dissimilar materials for connections like copper on steel.
- The fence must be earthed properly with three earth electrodes close to the energizer. The distance between the fence earth electrode and any other earth systems shall be not less than 2m for a security fence installation (typically a suburban property installation) and 10m for an agricultural fence installation (typically a rural property installation).
- When replacing the front of the energizer, hook the top in first while holding it an angle and then push it closed at the bottom. Fasten the lid down with the two cap screws.
- Always test the fence after installation for correct short and open-circuit alarming at various points along the fence.
- Do not use the energizer with non-rechargeable batteries.
- The energizer contains a sealed lead-acid battery that will vent to the atmosphere under certain conditions. For this reason it is imperative that the energizer be installed in a well ventilated area.
- Refer to the applicable laws and regulations concerning the installation of electric fences in your country and area.

IEC Safety Information

- There are no user serviceable parts inside the energizer.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similar qualified persons in order to avoid a hazard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Electric fencing can be lethal. Avoid head contact with the fence. Ask the installer to explain the options of current limiting resistors.

Rev 1.3, 9 February 2016

Updated for Wizord 4i