USER MANUAL

HS ENERGIZER FOR ELECTRIC FENCE YONUSA BRAND.

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Welcome to a new experience in Yonusa security solutions®.
It is a great pleasure for us to offer new and innovative devices for your service, therefore, we would like to congratulate you on your new acquisition of:

Perimeter security system – YONUSA Energizer

Specs		
Parameter	**Worth**	**Unit**
Supply voltage.	110 - 220	AC Volts ∿
Electrical supply frequency. *	50 - 60	Hertz
Power supply current.	0.02	Amperes
Standby power consumption	2.5	Watts
Consumption in alarm	3.3	Watts
Internal battery support 12 Vdc 7 Amp/hr.	7	days
External battery support 12 Vdc 4 Amp/hr	4	Days
Output voltage.	12,000	Volts
Time between output pulses	2.84	Milliseconds
Max. distance of electric fence to be energized	500	Linear Meters
Output energy	0.5	Joules
Dry Contact Output Capacity	1000	Watts
Operating temperature	- 5 to 50	°C
Chassis insulation factor.	12x10₆/20,000	Ω /V
Weight	0.8	Kg
Maximum humidity factor.	72	%
Operating range.	+/- 15	%
Remote control frequency	433	MHz
Line of sight operating range	80	Meters
Operating range between walls	40	Meters
Remote control battery size	CR2032	
Remote control battery voltage	3	Vcd

INDEX

1YONUSA ENERGIZERS

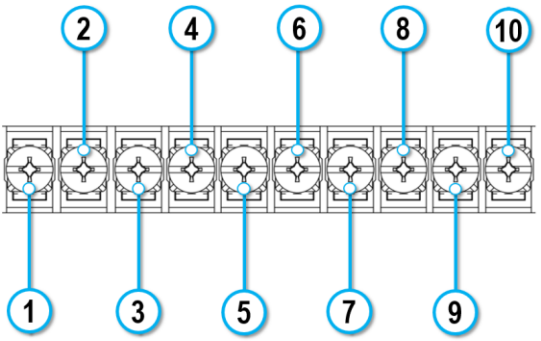
It's a perimeter protection system that can protect homes, condominiums, warehouses, shopping centers, educational institutions, businesses, properties, and livestock enclosures. It's a high-voltage deterrent and repellent system that generates a discharge of over 10,000 volts without harming the intruder. We offer reliable, efficient, and easy-to-install equipment.

2 CONNECTION TERMINALS

YONUSA energizers have a series of different connections that allow for the proper use and operation of the equipment; therefore, it is important to know the different functions corresponding to each of the terminals that make up the energizer.

2.1CONNECTION BOARD - KULKA

The terminal block, also called a KULKA, is a fundamental component of energizers that provides various connection ports. Each port has a specific function in the operation of the equipment and allows for different connections to be made according to the needs of the device.



1. (+) Positive source	6. Normally Open (NO)
2. (-) Negative source	7. Normally Closed (NC)
3. Switch	8. Without Using
4. Switch	9. Voltage AC
5. Common (C)	10. Voltage AC

end user. To do this, it is essential to know the function that each of these terminals performs:

1. ***+Fountain:*** Positive terminal of the energizer's internal power supply corresponding to a 12Vdc 2Amp power supply.

2. ***–Fountain:*** Negative terminal of the energizer's internal power supply corresponding to a 12Vdc 2Amp power supply.

3. ***Switch:*** This corresponds to one of the terminals of the key switch (lock) that allows the energizer to be turned on and off by means of the key designated for the device.

4. ***Switch:*** This corresponds to another terminal of the key switch (lock) that allows the energizer to be turned on and off by means of the key designated for the device.

5. ***Common:*** Common output terminal of the internal relay that the energizer has for the activation of various actuators.

6. ***NA (Normally Open) – Alarm:*** The NO output terminal of the internal relay that the energizer has for the activation of various actuators, this terminal is responsible for sending a signal to activate the actuators when an alert is generated in the energizer.

7. ***NC (Normally Closed):*** NC output terminal of the internal relay that the energizer has for the activation of various actuators

8. No particular use

9. ***V AC:*** Alternating current (AC) power terminal that powers the energizer, corresponding to the conventional voltage supply of 110-220 Vac

10. ***V AC:*** Alternating current (AC) power terminal that powers the energizer, corresponding to the conventional voltage supply of 110-220 Vac

2.2HIGH VOLTAGE CONNECTION TERMINALS

The HS energizer is a perimeter protection system that works by means of high voltage electrical pulses, supplying a voltage of 10,000 to 12,000 volts according to the YONUSA energizer model.

The HS energizer performs its high voltage reading and supply system through 4 terminals corresponding to the following designation:

These terminals allow the passage of high voltage by making connections with the electric fence. These terminals have a wing nut, allowing easy manipulation of the connections to the fence itself.

As shown in the illustration, it's the same order from right to left as on the energizers, starting with:

1.High Voltage Output – High Voltage Output

The "High Voltage Output" terminal (far right) is where the voltage starts, sending electrical pulses to the "High Voltage Return" terminal through the electric fence lines.

2.Physical Ground Output

This terminal allows generating an alternative medium to the high voltage flow whenever an intruder touches or approaches the electric fence, allowing the equipment to have a reference to detect the interruption of the high voltage, ensuring the impact of the same on the intruder, in addition to protecting the energizer from the electrical charges released in each pulse generated by the device.

3.Physical Ground Return

Through this connection, the equipment will be able to detect a break in the physical ground line, which will be the return cable of the corresponding line.

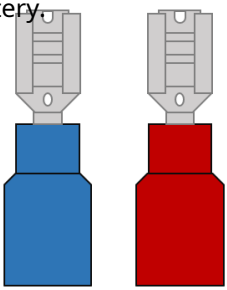
4.High Voltage Return

The "High Voltage Return" terminal (far left) is where the high voltage from the electric fence arrives at the energizer. This terminal detects if there has been an interruption in the voltage flow in the fence.

2.3 BATTERY CONNECTIONS

YONUSA energizers, being a safety device, must always be operational to provide continuous protection. Therefore, our energizers are designed to be externally powered by a battery, providing a backup power source for the devices and ensuring uninterrupted operation.

The energizers provide Faston-type terminals which correspond to the connection of a battery power supply without the need for additional connections. These terminals are color-coded to conventionally designate the positive and negative terminals of a battery power supply, these being positive-red and negative-blue.



Energizers are capable of charging the backup battery and simultaneously powering the entire internal system of the device, so the battery and the internal power supply can work in parallel to keep the energizer functioning optimally.

2.3.1 BACKUP CAPACITY

The power capacity that a battery will provide is related to the amount of current it stores, which will also help us define the power time that the battery will support the energizer.

The energizer has space for a 12V 4Ah battery, providing 3 to 4 days of standby power. It can also accommodate a 12V 30Ah battery, extending backup time to up to 30 days. The actual runtime may vary depending on the energizer's usage, such as the number of alarm activations and any connected accessories.

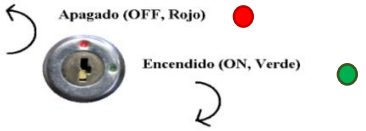
Voltage	Current / Hr	Material	Backup time
12 V	4Ah	Lead-acid	3-4 days

12 V	7.2Ah	Lead-acid	8 days
12 V	9Ah	Lead-acid	10-11 days
12 V	24Ah	Lead-acid	22-24 days
12 V	30Ah	Lead-acid	25-30 days
12 V	65Ah	Lead-acid	60-65 days
12 V	100Ah	Lead-acid	90 days

Note: The battery charging time will depend on the current consumed by the power source; the higher the current from the source, the longer it will take to charge the battery. All batteries must always be 12V.

2.4 IGNITION KEY SWITCH

The energizers have an on/off mechanism using a key-type switch, which allows the entire system to be activated and deactivated with a key. The key has a specific rotation direction, which corresponds to the action depending on how the key is turned.



The switch position is located on the right side of the equipment and has two keys.

3 INTEGRATED REMOTE CONTROL

A. This energizer model features a wireless radio-controlled on/off system

Frequency is controlled via a remote key fob with a range of up to 60 meters line of sight. This remote is pre-paired at the factory.

B. In turn, the controls have an assigned button for the panic function, which will activate the equipment's siren each time said button is pressed and will last for as long as the user desires, deactivating until the corresponding button is pressed again.

4 INDICATORS

A has a front view that offers a series of indicators that allow you to easily read the state in which the device is operating.

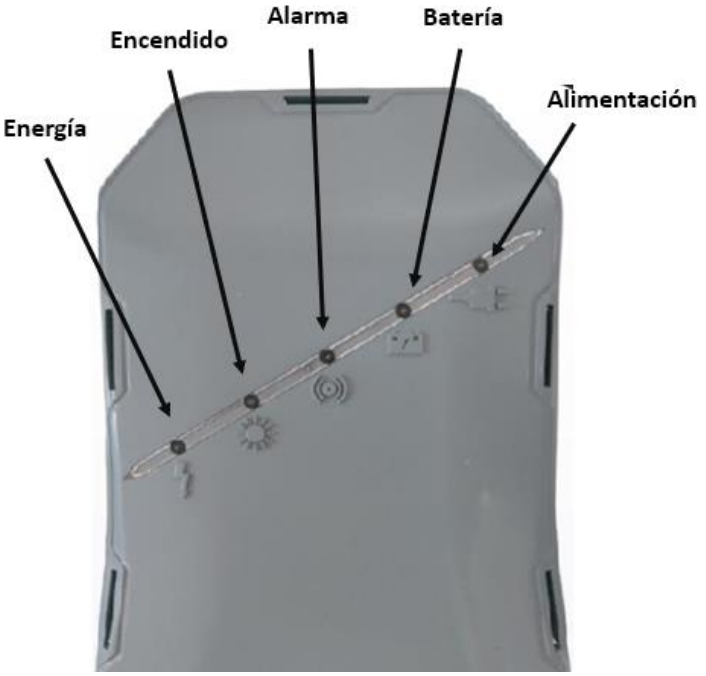
1. ***Energy:*** Power pulse to the electric fence. Pulse duration: 1 second

2. ***On:*** Internal power supply of the device. Active operation of the energizer.

3. ***Alarm:*** Fence alarm sensor activation. Fence cut or grounding.

4. ***Battery:*** Battery status according to LED intensity.

5. ***Feeding:*** AC power line supply (127-220 Vac)



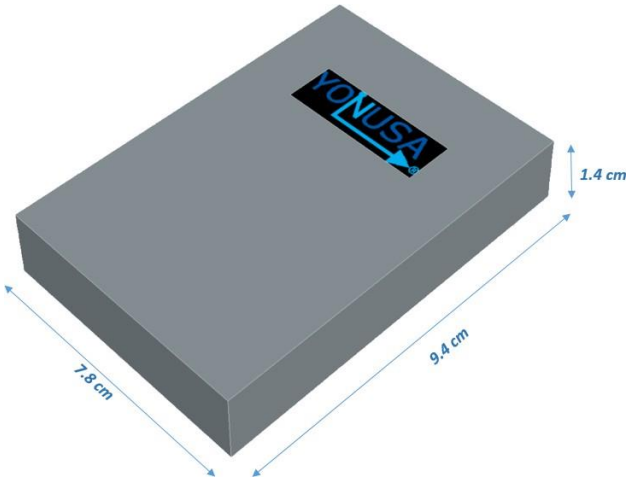
5 ACCESSORIES

YONUSA offers accessories that expand the functionality of its energizers, providing each accessory with specific functions to complement your installations and create an even more complete perimeter security system, compatible with all YONUSA energizers.

5.1 POWER AMPLIFIER MODULE

It is an accessory for electric fence energizers, useful when greater impact power is desired or to protect an additional area already installed.

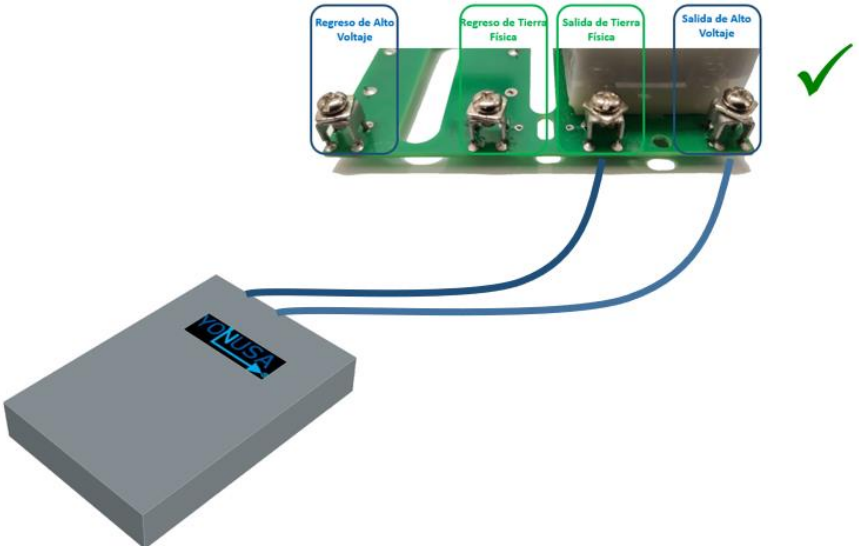
Its electronic design also integrates an anti-induction filter that ensures proper functioning and prolongs the life of the energizer when it powers an electric fence near high-voltage towers.



Technical Specifications:

- Increase in the power of the equipment by 30%.
- Increase of the electric arc to ground of 1 cm.
- Compatible with any type of YONUSA Energizer.
- Filters induction in the Energizer generated by high voltage towers up to 230 KV.
- Circuit insulation level: 20,000V.
- It is powered by the same energy as the electric fence.
- Input voltage: 10,000 V minimum.
- Easy installation. Simply connect to the power return and ground terminals. No polarity required.
- UV-resistant resin.
- Cable length: 20 cm.

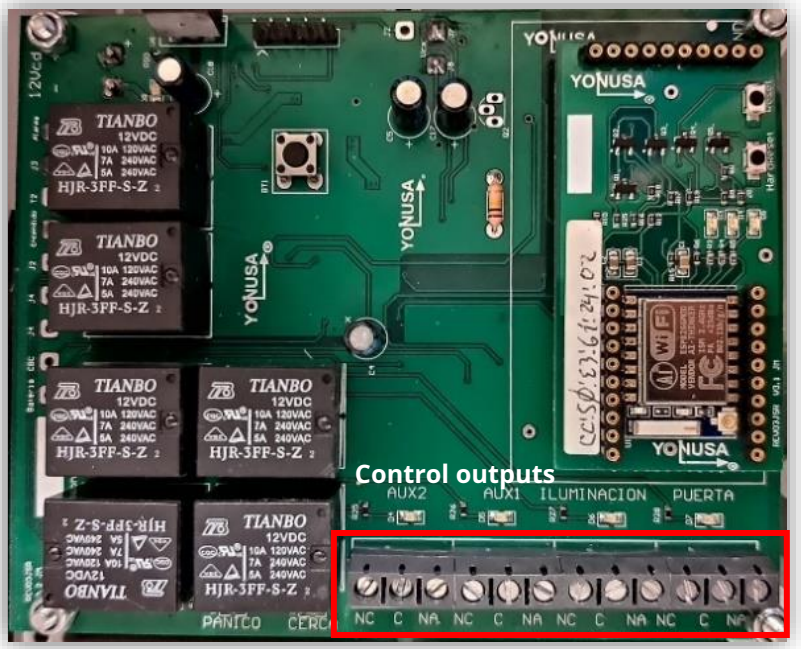
- ***Power amplifier connection to energizer.***



5.2WIFI Module

The WIFI module offers control and monitoring of the electric fence through WIFI communication with your mobile device via our YONUSA 2.0 application

The WIFI card has 6 outputs (FENCE, PANIC, 3 FIXED AUXILIARY) and one pulse output. All outputs have real-time notifications of power on and off via the application. Auxiliary outputs of 12Vdc – 127/220 Vac – 2A.



The WIFI module connects to the energizer through connections via the kulka of both devices, allowing it to be turned on and off using the control button in the application, notifying the user in real time of the action performed from the application.

The YONUSA 2.0 mobile application has more benefits:

- Notification of disconnection or connection of 127-220 AC power

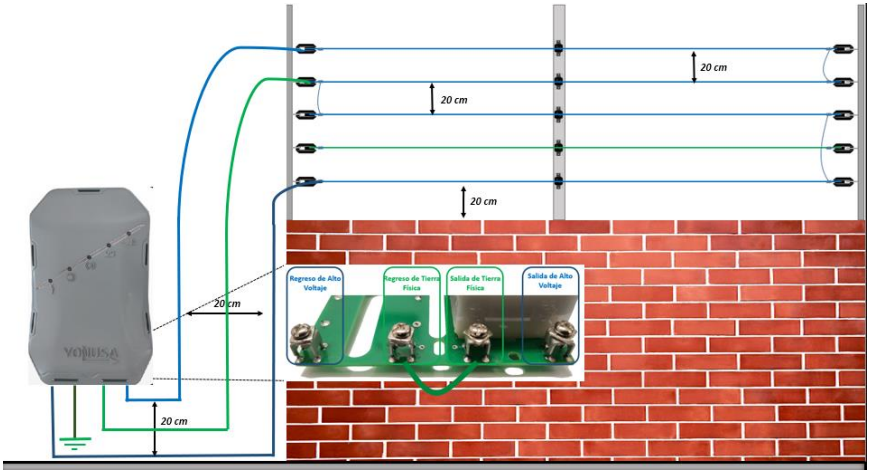
- Low battery notification
- Displays event history by date
- Share controls of your devices with other users
- Permission control for all shared users
- Notifications of every action taken on the fence

6 INSTALLATION AND CONNECTION RECOMMENDATIONS

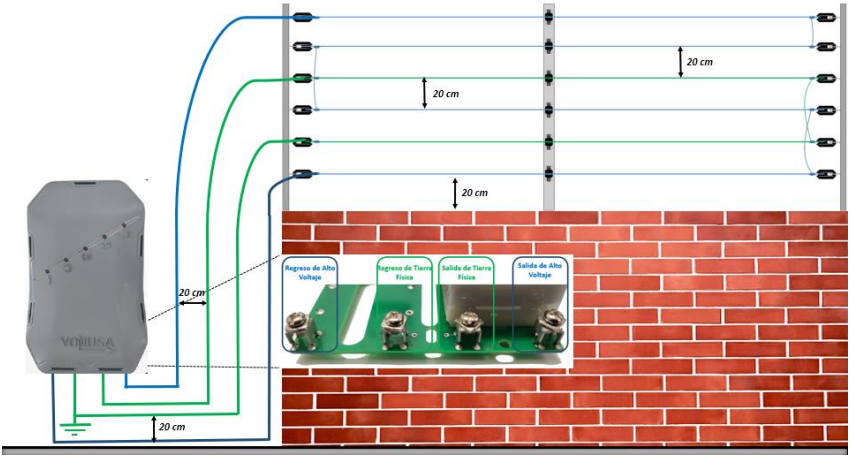
- The connections corresponding to the high voltage, which are the butterfly terminals, the wiring must have a separation of at least 20cm during the route it takes to the installation of the electric fence, in order to avoid induction between the cables and this may generate false alarms in the system and prevent the energizer from working properly.

When using a ground line cut sensor, we need to consider two points:

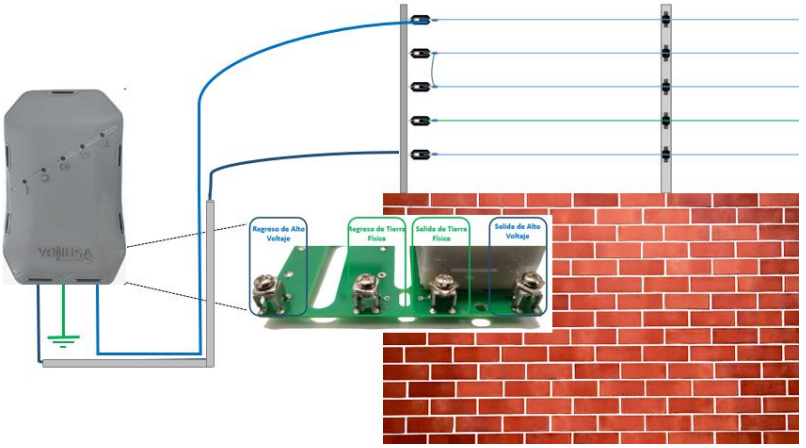
- If you wish to connect only one physical ground line, in order to maintain the standard of 4 lines in an electric fence, you must place a jumper between the ground output and return terminals, as shown in the image (Center Terminals)



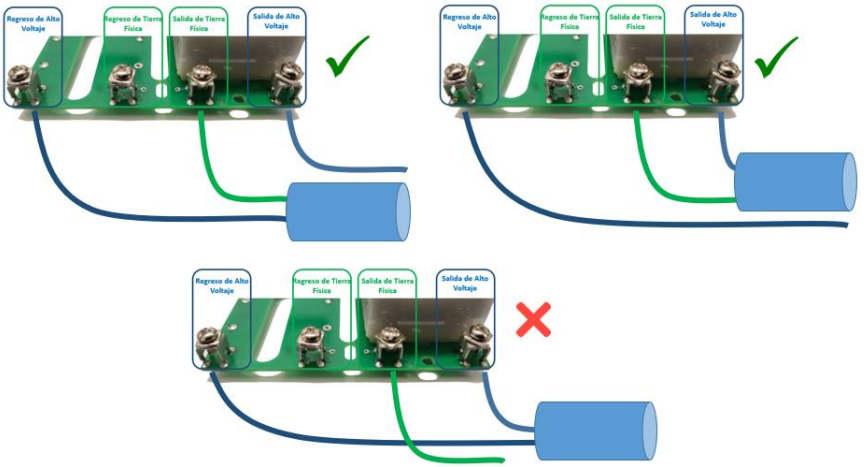
- Conversely, if we wish to use the physical ground cut sensor, we must place an additional line, having a fence with 6 lines, in order to have two physical ground lines and thus have an exit and return of the same.



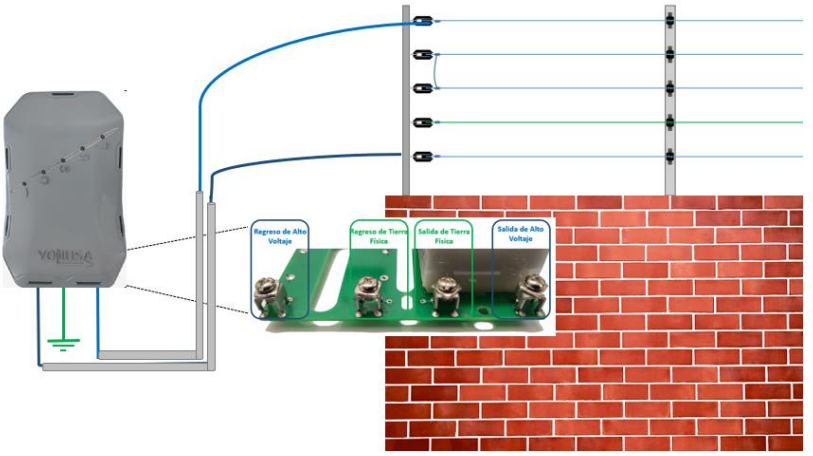
- Sometimes, installations require that the minimum separation distance between high-voltage cables not be maintained, and they are close to each other. In these cases, metal conduit or ducting can be used; it must be metallized material. This will act as a Faraday cage over the cables, preventing the high-voltage current from inducing electrical current in each other.



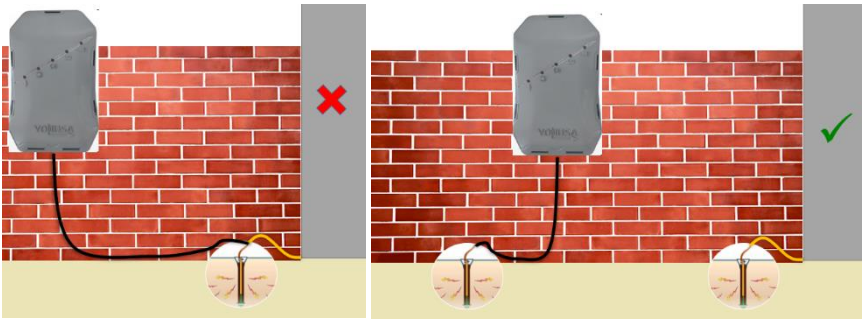
- Only one of the wires, either the high-voltage output or the high-voltage return, should be inside the conduit. Never insert both wires into the conduit while leaving the other wire outside. Even if the installation requires it, the ground wire can be inserted along with either of the two wires.



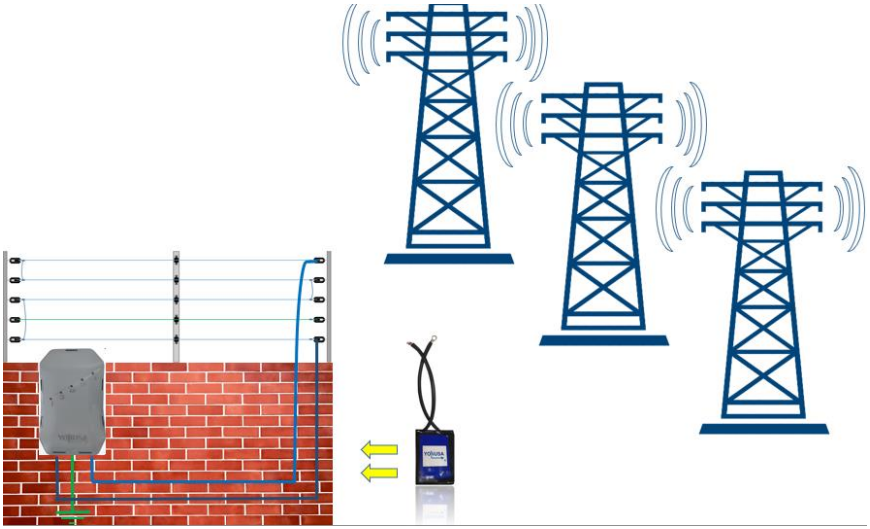
- Similarly, as a protective measure for the cable outside the pipe, we can insert it inside another metal pipe to prevent damage to the exterior, further ensuring that induction between the cables is not generated; this recommendation is optional.



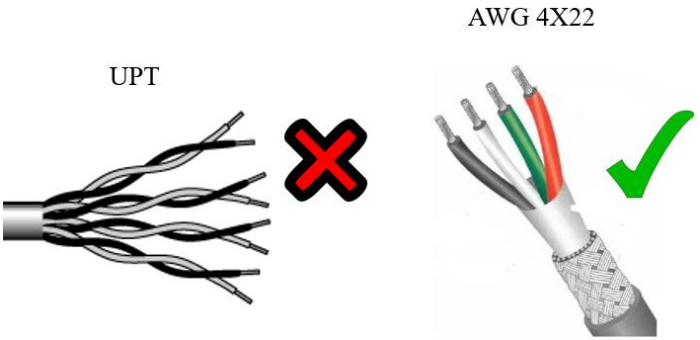
- The ground connection must be solely and exclusively for the energizer; it should not be shared with the ground connection of any other device, nor should it use the ground connection of the home or property where the energizer will be installed. High voltage can damage devices within the property that are using that ground connection, and the energizer may experience false alarms due to an improper ground connection and installation.



- Care must be taken when installing energizers near high-voltage power lines, as the high voltage carried by these lines is so great that it can cause induction and affect the energizer's operation, generating false alarms. Therefore, installing electric fences in areas with high-voltage power lines is not recommended. In these cases, using a power amplifier is very useful, as it helps maintain the energizer's stability and prevents the induction from the power lines from affecting it.



- Use 20 or 22 gauge wire for connections between devices. The wire's resistivity ensures good conduction without voltage drops. There are wire types that facilitate connections and result in clean, organized wiring, such as 4x20 and 4x22.**USING UTP CABLE IS NOT FUNCTIONAL.**

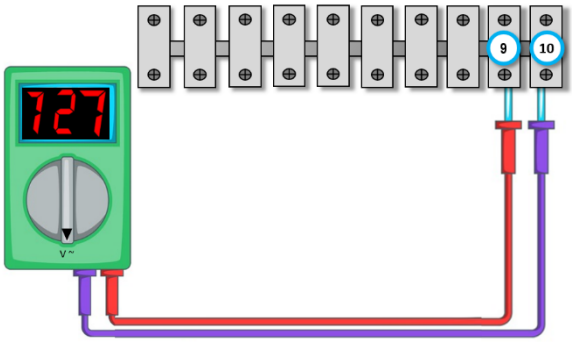


6.1FUNCTIONAL TESTS

To determine if the equipment is functioning correctly, there is a quick test method, which helps you determine if the equipment is working correctly and detect an existing fault caused by the energizer or by the installation of the electric fence.

1- Alternating Current Voltage

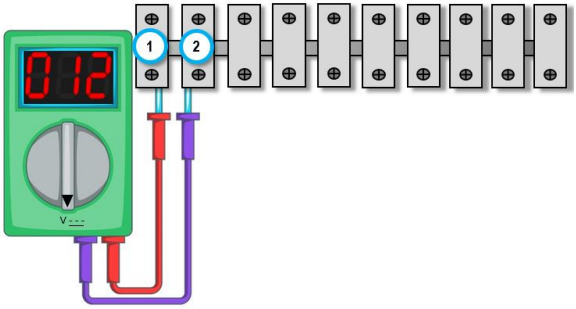
Using a conventional multimeter, take a measurement between the terminals corresponding to the AC power supply on the energizer's KULKA, specifically terminals 9 and 10. This measurement should give a result of 110-220 Vac, which corresponds to the conventional power supply in a building. To perform this measurement, ensure that the multimeter is set to AC voltage (V~).



2- Direct Current Voltage

Using a standard multimeter, measure the voltage between terminals 1 and 2 of the energizer's DC power supply. This measurement should read 12-14 VDC, which corresponds to the device's internal power supply.

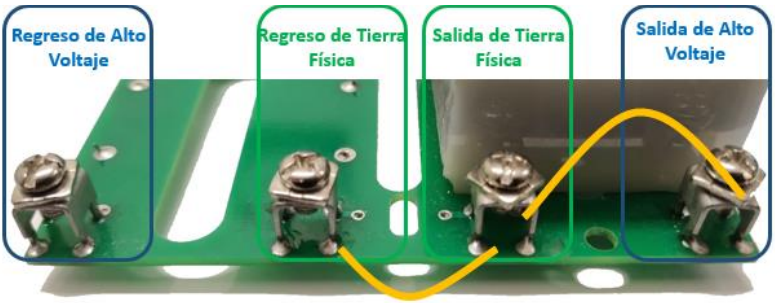
To perform this measurement, we must ensure that the multimeter is in AC reading mode (V---), keeping in mind that terminal 1 corresponds to the positive and terminal 2 to the negative of the power supply.



3- Alarm activation without fence

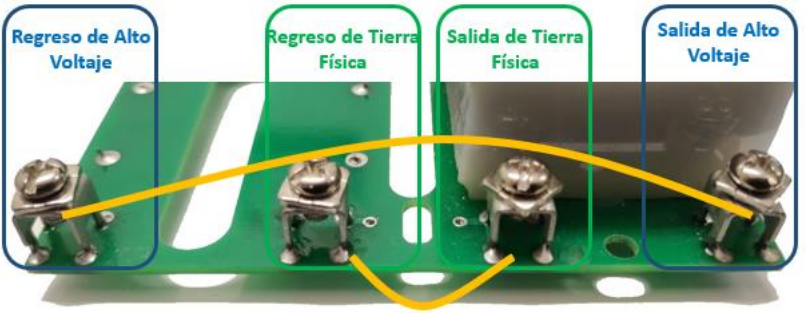
To determine that the equipment is generating the alarm correctly, two tests must be performed without the fence connected:

- ***Siren activation***: To activate the energizer alarm and trigger the siren, a jumper must be made between the ground terminal and the high-voltage output of the energizer. This simulates a break in the line. After making this jumper, the siren and alarm indicator should activate after 10 seconds.



- ***Siren activation.*** To deactivate the energizer alarm and disable the siren, a jumper must be made between the return and output terminals of the energizer's high voltage supply; this simulates that

There is continuity in the line. Upon making this jumper, the siren and alarm indicator must be deactivated immediately.



This indicates that the energizer is functioning as an alarm and that there are no faults in the high voltage output terminals of the energizer.

4- Alarm activation with fence

With the tests performed previously we determined that the energizer is working correctly and is being powered by the AC and DC voltage sources.

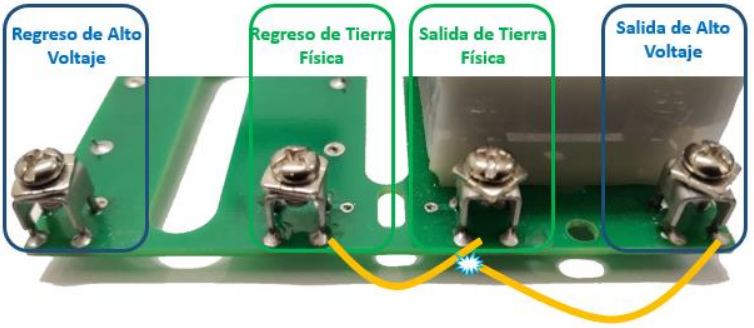
With the fence connected to the energizer, it should produce the same result as test #3. If, despite having the fence connected and without any bridging, the alarm is activated, the problem lies in the electric fence installation. It is recommended to inspect the entire electric fence for any electrical activity affecting the fence lines or any arcing between the posts and the lines.

5- Visualization of electric arc.

The electric arc is generated between the ground and high-voltage output terminals of the energizer. Similarly, a jumper wire connecting these terminals can also generate the arc. By connecting one terminal of the jumper wire to either of the energizer's two wing nuts (ground or high-voltage output) and the other terminal 1 cm away from the other wing nut, the electric arc generated by the energizer can be observed, verifying its correct operation.

Similarly, this test can be performed with the bridge across the electric fence lines, and the same phenomenon should be observed around the entire perimeter.

This test, by generating the arc for 10 seconds, should activate the energizer alarm by enabling the siren, and as soon as the arc stops being generated, the alarm will be deactivated since the fence is connected and there is a closed circuit in the system at all times.

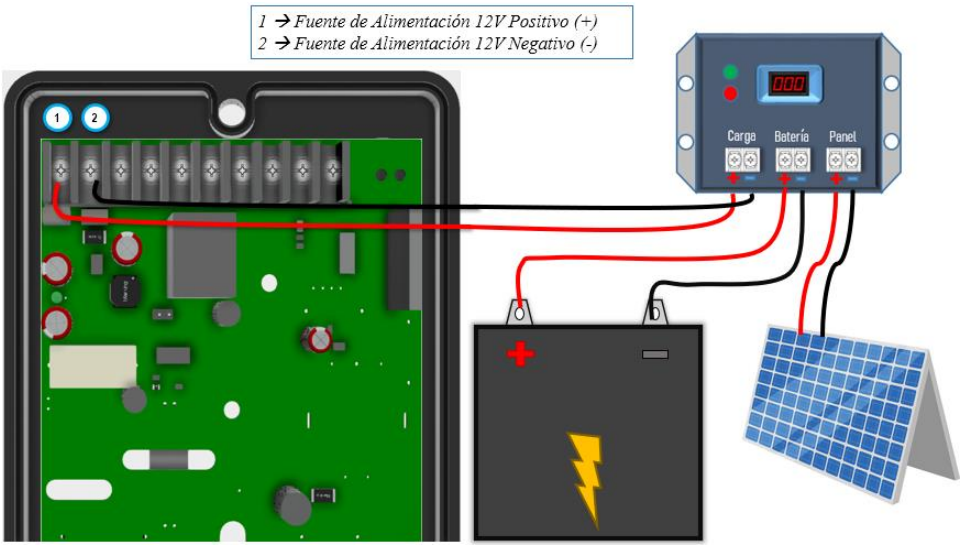


7 SPECIAL CONNECTIONS

7.1 Solar panel

The energizers have battery connections, but they are also compatible with solar panel power. This is very helpful in installations that do not have access to AC power near the energizer, and it also prevents the unit from consuming energy. A charge controller is used to regulate the voltage between the battery and the solar panel.

The charge controller has its respective terminals for each device; battery, solar panel and power outputs which are the terminals that must be connected to the energizer corresponding to terminal 1 and 2 of the Kulka.

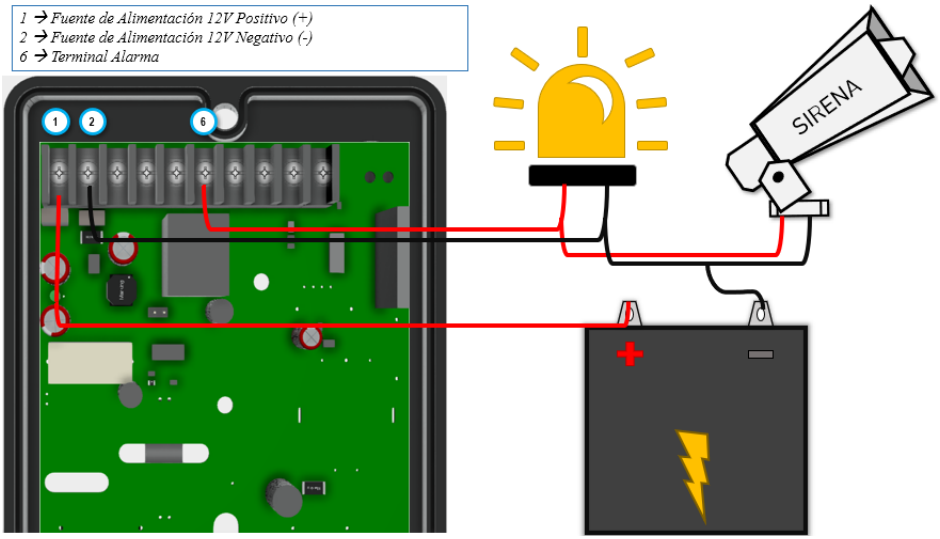


Note: *A 50 Watt solar panel is recommended to quickly and efficiently charge the battery and have enough power to run the energizer, along with its corresponding siren and strobe light.*

7.2Siren and Strobe

The energizer has an auxiliary 12Vdc – 2A output for powering peripherals, which, through the energizer's relay output, provides power for one 30 Watt 120dB siren and one 12Vdc strobe lamp of up to 20 Watts.

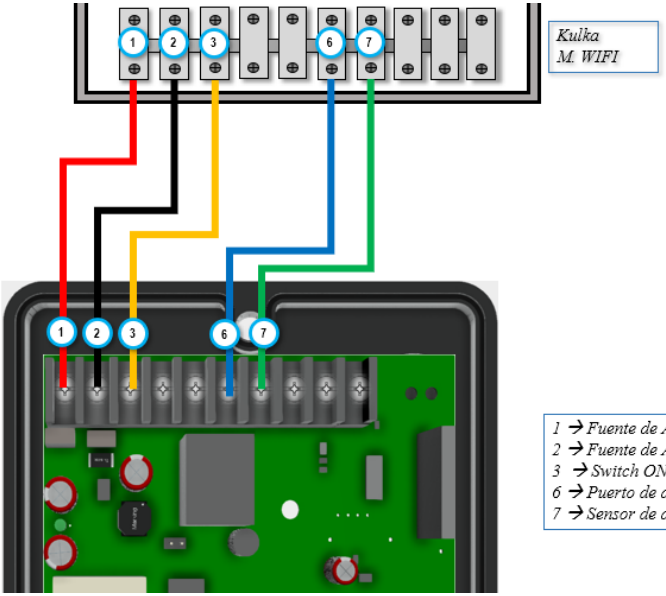
This output corresponds to terminal 6 of the Kulka (see point 2.1) where the positive terminals of the actuators will be placed, while the negative terminals will be placed on terminal 6 of the Kulka.



Note: *If you want to connect more than one siren or actuator, you will need to attach a more robust power supply to the equipment, maintaining the same voltage, but with a current greater than 2 Amperes.*

7.5 Wifi Module

To make the connections between the WIFI module and the Energizer, you need to identify the connection board known as KULKA, as well as the numbering of each port, in order to make a proper connection.



1 → Fuente de Alimentación 12V Positivo (+)
2 → Fuente de Alimentación 12V Negativo (-)
3 → Switch ON/OFF del energizador
6 → Puerto de activación de Sirena – Alarma
7 → Sensor de activación de Alarma

Each connection has a function that will allow the control and monitoring of the energizer through the WIFI module in conjunction with the YONUSA application.

7.5.1 Lite Wifi Module

We have a LITE version of the WIFI module, which performs the same function but reduces the number of control ports.

With the WIFI LITE module you can control the power on/off of:

- Electric Fence Energizer.
- Panic Button.
- Dry contact labeled as Auxiliary 1.
- Dry contact labeled as Auxiliary 2.

It has the same features as the YONUSA 2.0 mobile application:

- Notification of disconnection or connection of 127-220 AC power

- Low battery notification
- Displays event history by date
- Notifications of every action taken on the fence

Contact your authorized YONUSA equipment distributor for more information and to purchase this device.

www.yonusa.com

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