

USER MANUAL

YONUSA HS ELECTRIC FENCE ENERGIZER

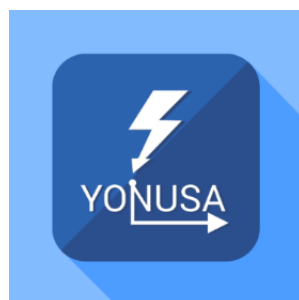
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Welcome to a new experience in Yonusa® security solutions.

It is our pleasure to offer new and innovative devices for your use, and we congratulate you on your new purchase of:

Perimeter Security System - YONUSA Energizer

SPECIFICATIONS

Supply voltage: 110-220 Volts AC

Power-supply frequency*: 50-60 Hertz

Supply current: 0.02 Amperes

Standby power consumption: 2.5 Watts

Alarm power consumption: 3.3 Watts

Internal battery backup, 12 Vdc 7 Ah: 7 days

External battery backup, 12 Vdc 4 Ah: 4 days

Output voltage: 12,000 Volts

Time between output pulses: 2.84 milliseconds

Maximum electric-fence distance to energize: 500 linear meters

Output energy: 0.5 Joules

Output dry-contact capacity: 1000 Watts

Operating temperature: -5 to 50 °C

Chassis insulation factor: 12×10^6 / 20,000 Ohm/V

Weight: 0.8 kg

Maximum humidity: 72%

Operating range: +/-15%

Remote-control frequency: 433 MHz

Line-of-sight operating range: 80 meters

Operating range through walls: 40 meters

Remote-control battery: CR2032

Remote-control battery voltage: 3 Vdc



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1. YONUSA ENERGIZERS

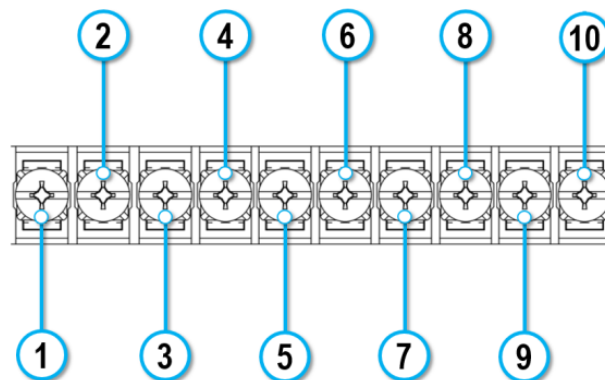
This is a perimeter-protection system that can be used to protect homes, condominiums, warehouses, shopping centers, educational institutions, businesses, properties, and livestock fences. It is a high-voltage deterrent and repelling system because it generates a discharge of more than 10,000 volts without harming the intruder. It provides reliable, efficient equipment that is easy to install.

2. CONNECTION TERMINALS

YONUSA energizers have a series of different connections that allow the equipment to be used and operated properly. For this reason, it is important to know the different functions corresponding to each of the terminals that make up the energizer.

2.1 CONNECTION TERMINAL STRIP - KULKA

The connection terminal strip, also called the KULKA, is a fundamental part of the energizer that provides different connection ports. Each port has a specific function in the operation of the equipment and allows different connections to be made according to the needs of the end user.



- | | |
|------------------------|-------------------------|
| 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 |

To do this, it is essential to know the function performed by each terminal:

1. + Supply: Positive terminal of the energizer's internal power supply, corresponding to a 12 Vdc, 2 A supply.
2. - Supply: Negative terminal of the energizer's internal power supply, corresponding to a 12 Vdc, 2 A supply.
3. Switch: One of the terminals of the key-operated switch that allows the energizer to be turned ON and OFF using the key assigned to the device.
4. Switch: The other terminal of the key-operated switch that allows the energizer to be turned ON and OFF using the key assigned to the device.
5. Common: Common output terminal of the energizer's internal relay used to activate various actuators.
6. NO (Normally Open) - Alarm: Normally-open output terminal of the internal relay. This terminal sends a signal to activate actuators when an alert is generated.
7. NC (Normally Closed): Normally-closed output terminal of the internal relay for actuator activation.
8. No specific use.
9. V AC: AC power-supply terminal used to power the energizer, corresponding to conventional 110-220 Vac supply voltage.
10. V AC: AC power-supply terminal used to power the energizer, corresponding to conventional 110-220 Vac supply voltage.

2.2 CONNECTION TERMINALS - HIGH VOLTAGE

The HS energizer is a perimeter-protection system that operates by means of high-voltage electrical pulses, supplying from 10,000 up to 12,000 volts depending on the YONUSA energizer model.

The HS energizer performs its high-voltage sensing and supply through 4 terminals, as shown in the diagram.

These terminals allow the high voltage to pass through the electric-fence connections. They have wing nuts that make it easy to handle the fence connections.

From right to left:

1. High-Voltage Output

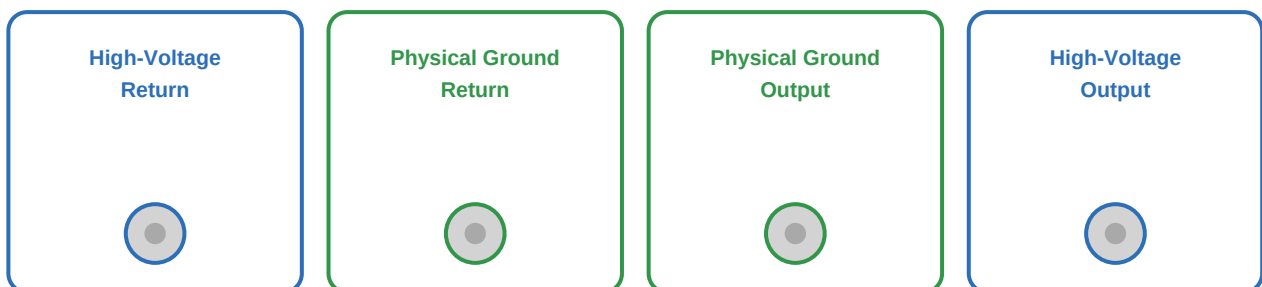
The right-side terminal is where the voltage begins, sending electrical pulses through the electric-fence lines toward the High-Voltage Return terminal.

2. Physical Ground Output

This terminal provides an alternate path for the high-voltage flow whenever an intruder touches or approaches the electric fence. It gives the equipment a reference for detecting an interruption in the high voltage, ensuring its deterrent effect. It also protects the energizer from electrical charges released by each pulse generated by the device.

3. Physical Ground Return

Through this connection, the equipment can detect a cut in the physical-ground line, which serves as the return cable for that line.



4. High-Voltage Return

The High-Voltage Return terminal, at the far left, is where the high voltage from the electric fence returns to the energizer. This terminal detects whether an interruption in the voltage flow has occurred in the fence.

2.3 BATTERY CONNECTIONS

Because YONUSA energizers are security devices, they must remain in operation at all times in order to provide continuous protection. They are therefore designed to be powered externally by a battery, which provides backup power so the equipment can continue operating without interruption.

The energizers provide Faston-type battery terminals, so no additional battery connector is required. Conventional color coding is used: positive = red and negative = blue.

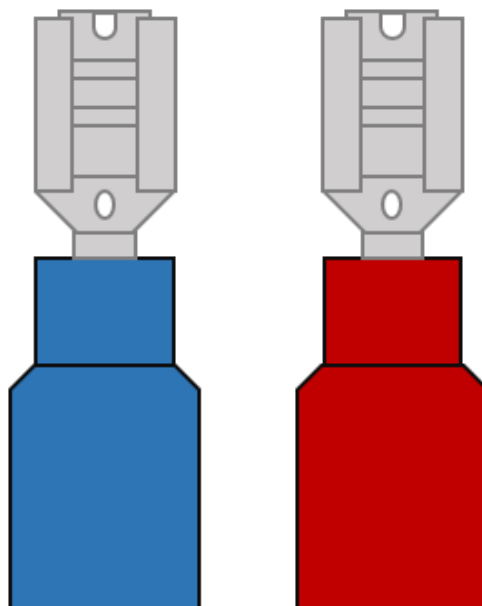
The energizer can charge the backup battery while simultaneously powering its internal system. The battery and internal power supply can therefore operate in parallel.

2.3.1 BACKUP CAPACITY

Backup time depends on the amount of current stored in the battery.

The energizer has space for a 12 V 4 Ah battery, providing approximately 3-4 days of standby backup. A battery up to 12 V 30 Ah can also be used, providing up to 30 days of backup. Actual backup time may vary depending on alarm activations and accessories connected to the device.

12 V - 4 Ah - Lead-acid - 3-4 days



BACKUP CAPACITY (continued)

12 V - 7.2 Ah - Lead-acid - 8 days

12 V - 9 Ah - Lead-acid - 10-11 days

12 V - 24 Ah - Lead-acid - 22-24 days

12 V - 30 Ah - Lead-acid - 25-30 days

12 V - 65 Ah - Lead-acid - 60-65 days

12 V - 100 Ah - Lead-acid - 90 days

Note: Battery charging time depends on the current consumed by the power supply. The higher the current of the power supply, the longer it will take to charge the battery. All batteries must always be 12 V.

2.4 KEY POWER SWITCH

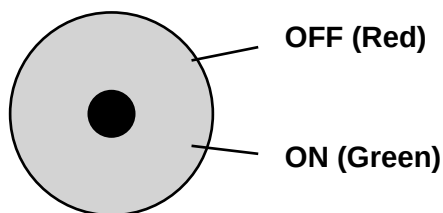
The energizer has an ON/OFF mechanism using a key-operated switch. The key can be used to turn the entire system ON and OFF. The direction in which the key is turned determines the action.

The switch is located on the right side of the equipment and comes with two keys.

3. INTEGRATED REMOTE CONTROL

A. This energizer model includes a wireless radio-frequency ON/OFF system operated through a key-fob remote control with a line-of-sight range of up to 60 meters. The remote controls are factory paired.

B. The remote controls also have a button assigned to the panic function. Pressing this button activates the equipment siren. It remains active until the corresponding button is pressed again.



FACTORY-PAIRED REMOTE

4. INDICATORS

The front of the unit has a series of indicators that make it easy to identify the operating status of the device.

1. Energy: Power pulse sent to the electric fence. One-second interval between pulses.
2. On: Internal power supply to the device. Active operation of the energizer.
3. Alarm: Activation of the fence alarm sensor. Fence cut or grounding condition.
4. Battery: Battery status according to LED intensity.
5. Power: AC line power supply (127-220 Vac).



Energy



On



Alarm



Battery



Power

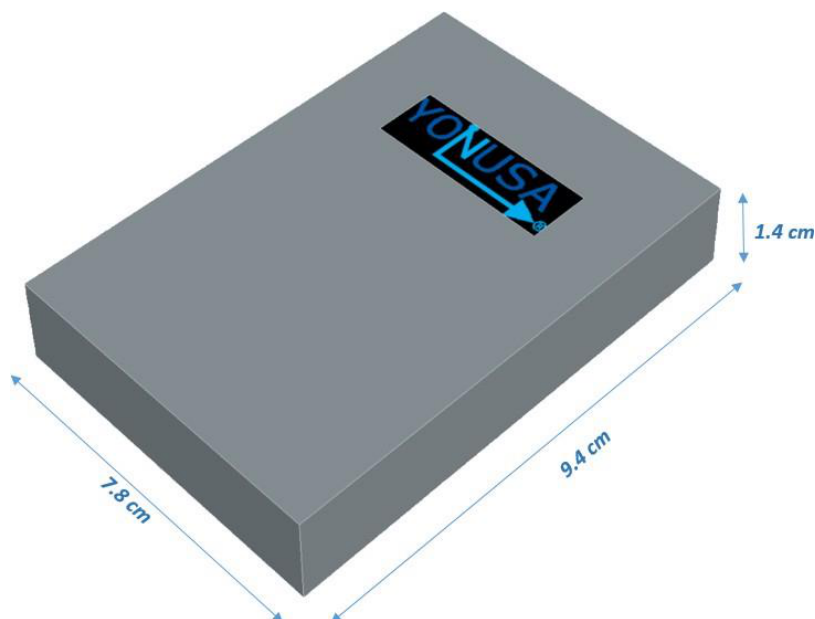
5. ACCESSORIES

YONUSA offers accessories that expand energizer functionality. Each accessory provides specific functions to complement installations and create an even more complete perimeter-security system, compatible with all YONUSA energizers.

5.1 POWER AMPLIFIER MODULE

This is an accessory for an electric-fence energizer, useful when greater impact power is desired or when an additional area already installed needs to be protected.

Its electronic design includes an anti-induction filter that helps ensure proper operation and extends energizer life when the unit powers an electric fence located near high-voltage towers.

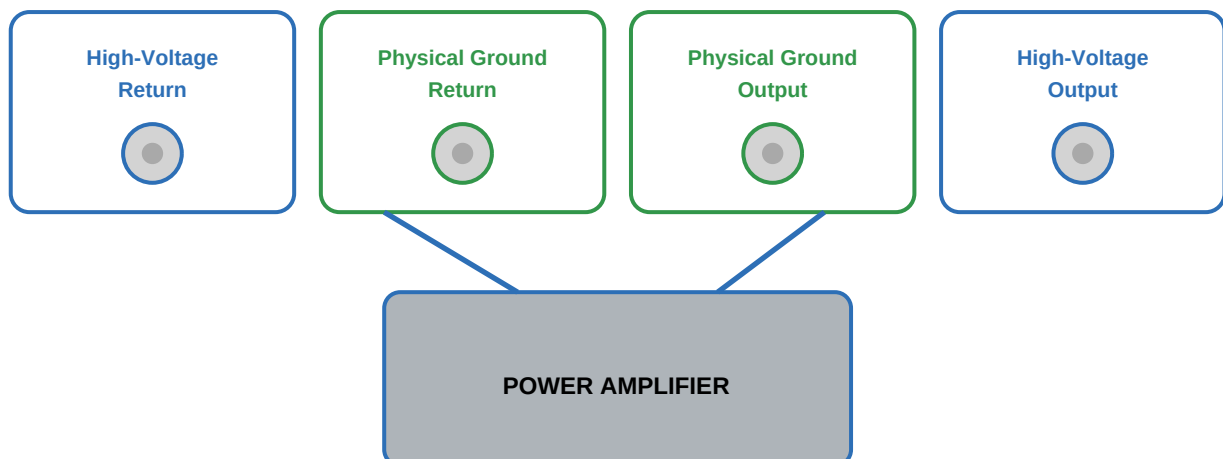


TECHNICAL FEATURES

- Increases equipment power by 30%.
- Increases the electrical arc to ground by 1 cm.
- Compatible with any YONUSA energizer.
- Filters induction in the energizer generated by high-voltage towers up to 230 kV.
- Circuit insulation level: 20,000 V.
- Powered by the same energy as the electric fence.
- Minimum input voltage: 10,000 V.
- Easy installation. Connects only to the current-return and physical-ground terminals. No polarity.
- UV-resistant resin.
- Cable length: 20 cm.

POWER AMPLIFIER CONNECTION TO THE ENERGIZER

See the connection diagram below.



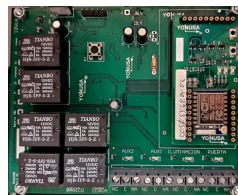
5.2 WI-FI MODULE

The Wi-Fi module provides control and monitoring of the electric fence using Wi-Fi communication with your mobile device through the YONUSA 2.0 application.

The Wi-Fi board has 6 outputs: FENCE, PANIC, 3 FIXED AUXILIARIES, plus one automatic pulsed output: DOOR.

All outputs are controlled through the application, which provides real-time ON/OFF notifications. The auxiliary outputs are rated at 12 Vdc / 127-220 Vac / 2 A.

The Wi-Fi module connects to the energizer through the KULKA terminal strips on both devices, allowing the energizer to be turned ON and OFF using the control button in the application and notifying the user in real time of the action performed.



The YONUSA 2.0 mobile application provides additional benefits:

- Notification when the 127-220 AC power supply is disconnected or restored.
- Low-battery notification.
- Displays event history by date.
- Share control of your devices with other users.
- Permission control for all shared users.
- Notifications for every action performed on the fence.

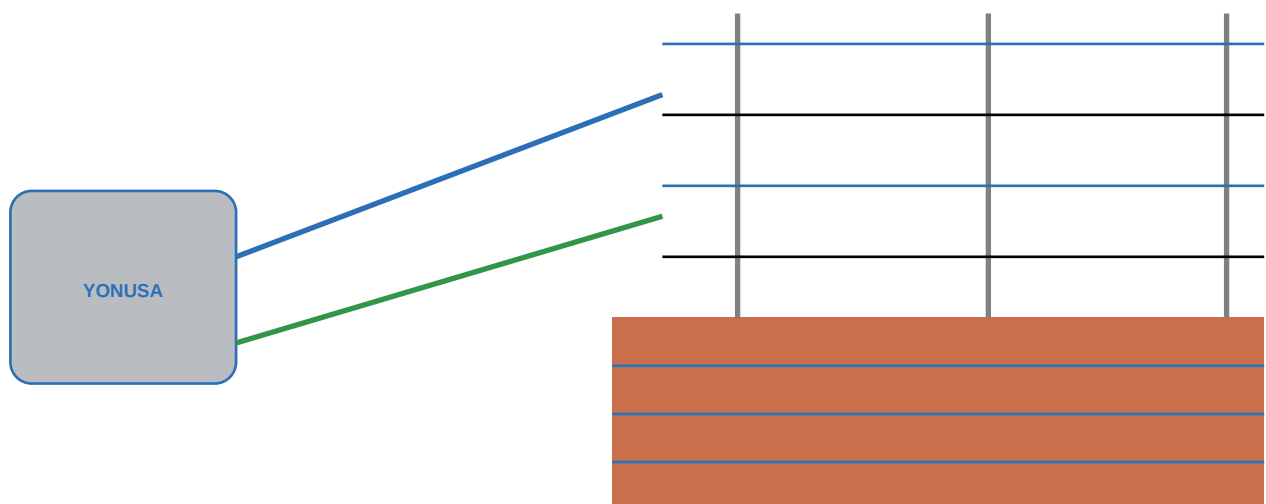


6. INSTALLATION AND CONNECTION RECOMMENDATIONS

- For the high-voltage connections, which use the wing-nut terminals, the wiring must remain separated by at least 20 cm along its route to the electric-fence installation. This helps prevent induction between the cables, which could generate false alarms and prevent the energizer from operating properly.

Because the unit has a physical-ground line cut sensor, consider the following:

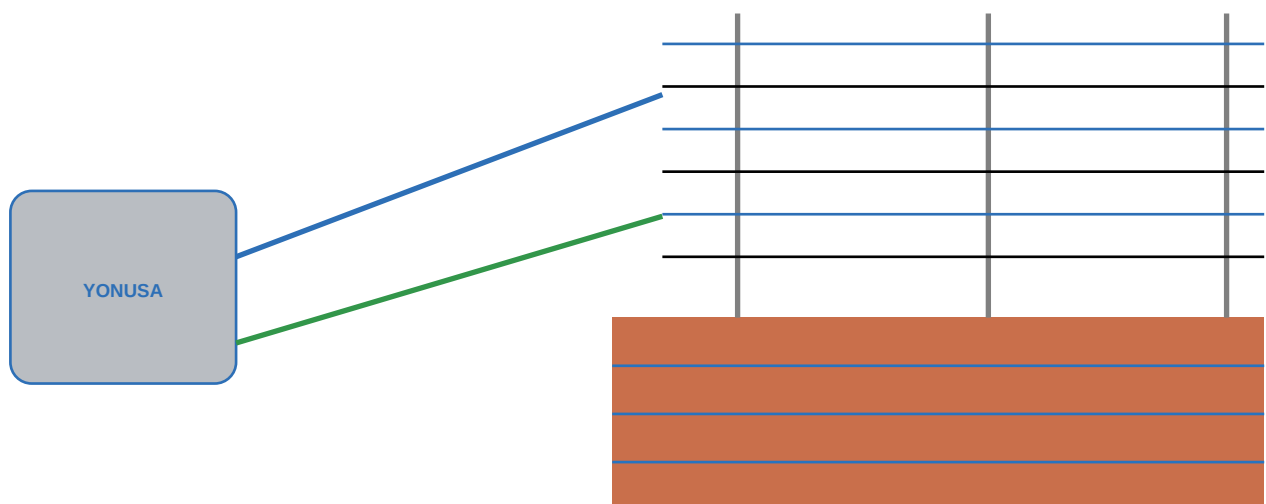
- If only one physical-ground line is to be connected, in order to maintain the standard four-line electric fence, install a jumper between the Physical Ground Output and Physical Ground Return terminals, as shown in the diagram (the two center terminals).



Use a jumper between Physical Ground Output and Physical Ground Return when only one ground line is used.

INSTALLATION AND CONNECTION RECOMMENDATIONS (continued)

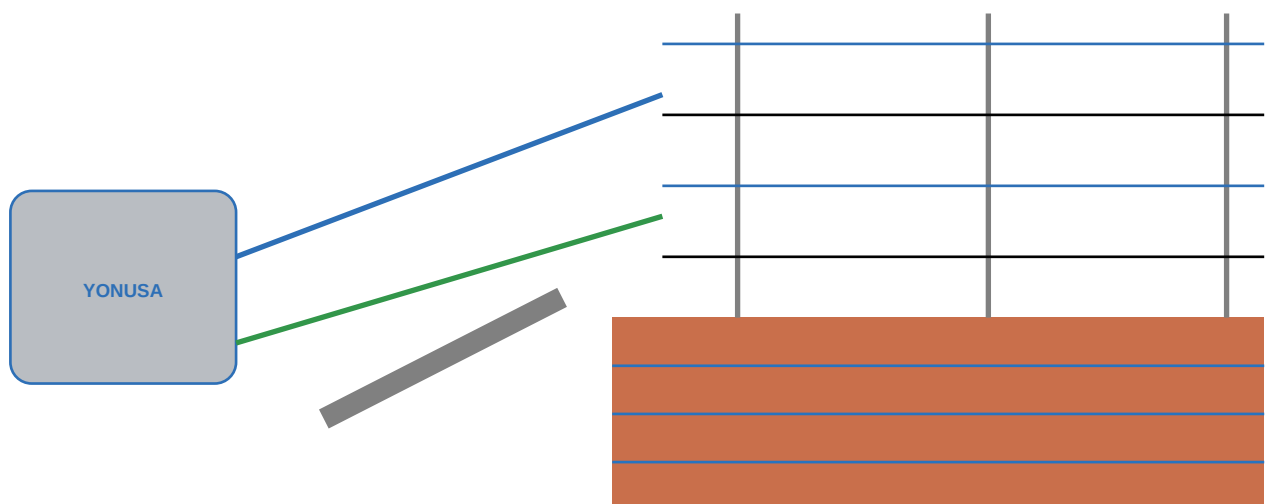
- If the physical-ground cut sensor is to be used, install an additional line, creating a six-line fence. This provides two physical-ground lines so that one can be used as the output and the other as the return.
- In installations where the minimum separation between high-voltage cables cannot be maintained, use metal cable duct or metal conduit. The material must be metallic so it can act as a Faraday cage around the cable, preventing the high-voltage flow from inducing electrical voltage in the other cable.



Six-line arrangement when the physical-ground cut sensor is used.

INSTALLATION AND CONNECTION RECOMMENDATIONS (continued)

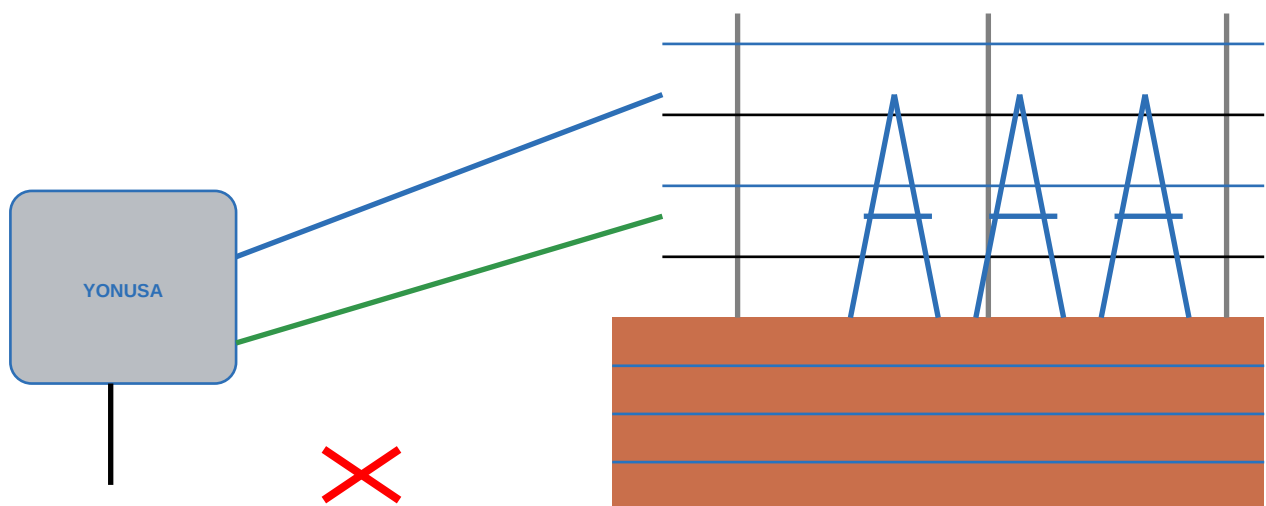
- Only one of the high-voltage cables - either the high-voltage output cable or the high-voltage return cable - should be placed inside a given conduit. Never place both high-voltage cables in the same conduit. If required, the physical-ground cable may be routed together with either one of the two high-voltage cables.
- As an optional protection measure, the cable left outside the first conduit may be placed inside a second metal conduit. This protects it from external damage and further reduces the possibility of induction between the cables.



Route only one high-voltage conductor per metal conduit.

INSTALLATION AND CONNECTION RECOMMENDATIONS (continued)

- The physical ground must be dedicated exclusively to the energizer. Do not share it with the ground of another device and do not use the building or household electrical ground. High voltage could damage other devices using that ground, and improper grounding could also cause false alarms.
- Take special care when installing energizers near high-voltage transmission towers. Electromagnetic induction from the towers can affect energizer operation and cause false alarms. Electric fences are not recommended in areas near high-voltage towers. In these cases, the power amplifier can be useful because it helps keep the energizer stable and reduces the effect of induction from the towers.



Use a dedicated physical ground. Avoid high-voltage tower areas when possible.

- Use 20 or 22 gauge cable for connections between devices. These gauges provide good conduction without significant voltage drop. Cable types such as 4x20 and 4x22 make installation easier and help keep wiring clean and organized.

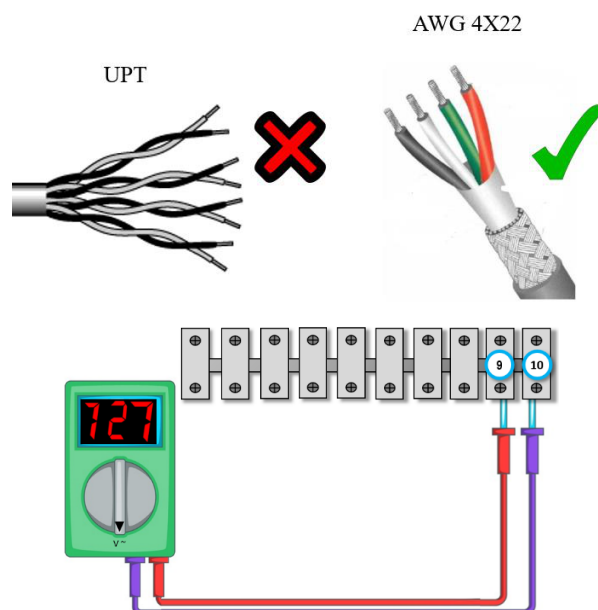
UTP CABLE IS NOT SUITABLE.

6.1 OPERATING TESTS

A quick-test method can help verify correct energizer operation and determine whether a fault comes from the energizer or from the electric-fence installation.

1. AC VOLTAGE

Using a conventional multimeter, measure across KULKA terminals 9 and 10, which correspond to the AC power input. The reading should be 110-220 Vac, corresponding to conventional building power. Make sure the multimeter is set to AC-voltage measurement mode (V~).



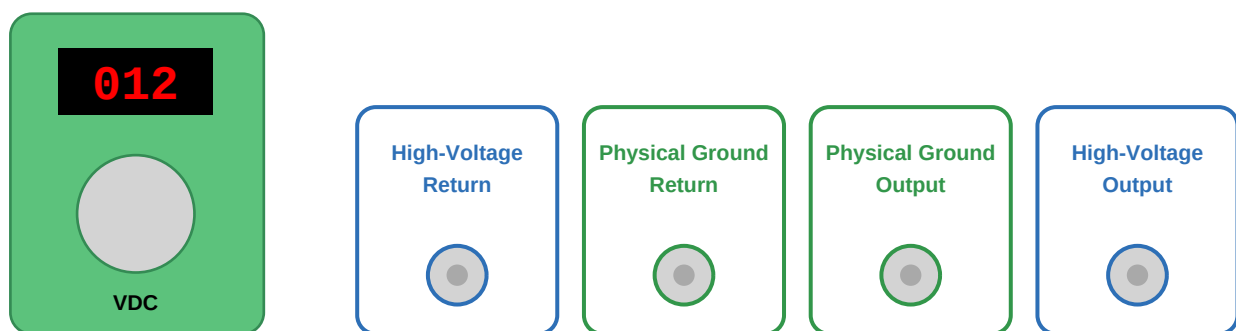
2. DC VOLTAGE

Using a conventional multimeter, measure between KULKA terminals 1 and 2. The reading should be 12-14 Vdc, corresponding to the device's internal power supply. Terminal 1 is positive and terminal 2 is negative.

3. ALARM ACTIVATION WITHOUT THE FENCE CONNECTED

Perform two tests with the fence disconnected:

- Siren activation: To activate the energizer alarm and trigger the siren, install a jumper between the Physical Ground and High-Voltage Output terminals. This simulates a line cut. After approximately 10 seconds, the siren and alarm indicator should activate.
- Siren deactivation: To deactivate the alarm and disable the siren, install a jumper between the High-Voltage Return and High-Voltage Output terminals. This simulates continuity in the line.



When the continuity jumper is installed, the siren and alarm indicator should deactivate immediately.

This confirms that the energizer alarm function is working and that the high-voltage output terminals do not have a fault.

4. ALARM ACTIVATION WITH THE FENCE CONNECTED

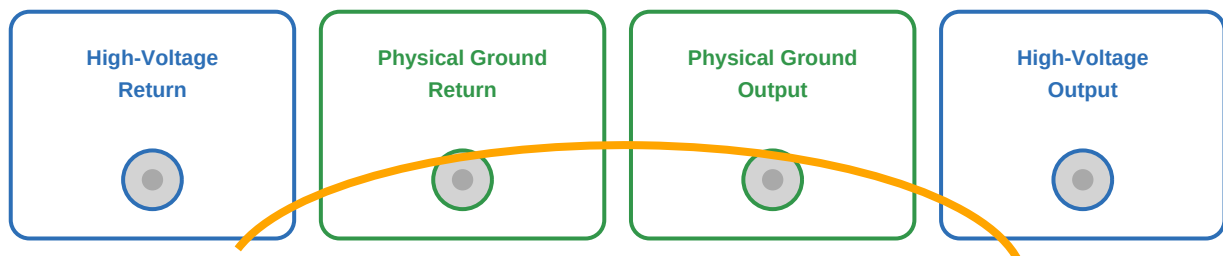
The previous tests confirm correct energizer operation and proper AC and DC power.

With the fence connected, the system should produce the same result as test #3. If the alarm activates even though the fence is connected and no test jumper is present, the problem is likely in the electric-fence installation. Inspect the entire fence for conditions on the fence lines or electrical arcing between posts and conductors.

5. ELECTRICAL ARC VISUALIZATION

An electrical arc can be generated between the physical-ground and high-voltage output lines or terminals. With one end of a jumper fixed to either terminal, position the other end approximately 1 cm from the opposite wing-nut terminal. The electrical arc generated by the energizer should be visible, confirming correct operation.

The same test can be performed through the electric-fence lines and the same phenomenon should be observed throughout the perimeter.



Jumper / arc test

ELECTRICAL ARC TEST (continued)

When the arc is generated for approximately 10 seconds, the energizer alarm should activate and enable the siren.

As soon as the arc stops, the alarm should deactivate because the fence remains connected and the system normally has a closed circuit.



Generate the arc for approximately 10 seconds.

7. SPECIAL CONNECTIONS

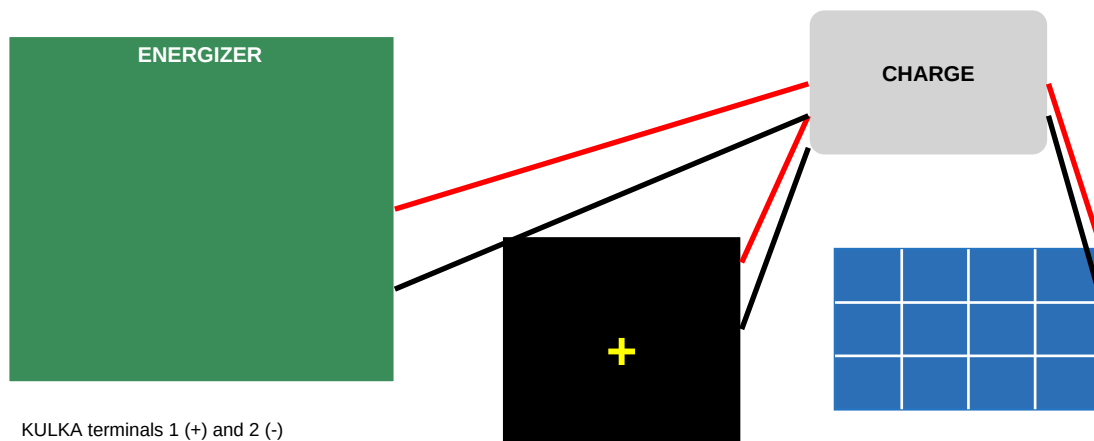
7.1 SOLAR PANEL

The energizer has battery connections and is also compatible with solar-panel power as an alternative power source. This is especially useful in installations where AC power is not available near the energizer and also avoids conventional energy consumption.

A charge controller is used to regulate voltage between the battery and solar panel.

The charge controller has dedicated terminals for the battery, solar panel, and power outputs. The output terminals must be connected to KULKA terminals 1 and 2 on the energizer.

Note: A 50 W solar panel is recommended to charge the battery quickly and efficiently and provide enough capacity to power the energizer together with its siren and a strobe lamp.

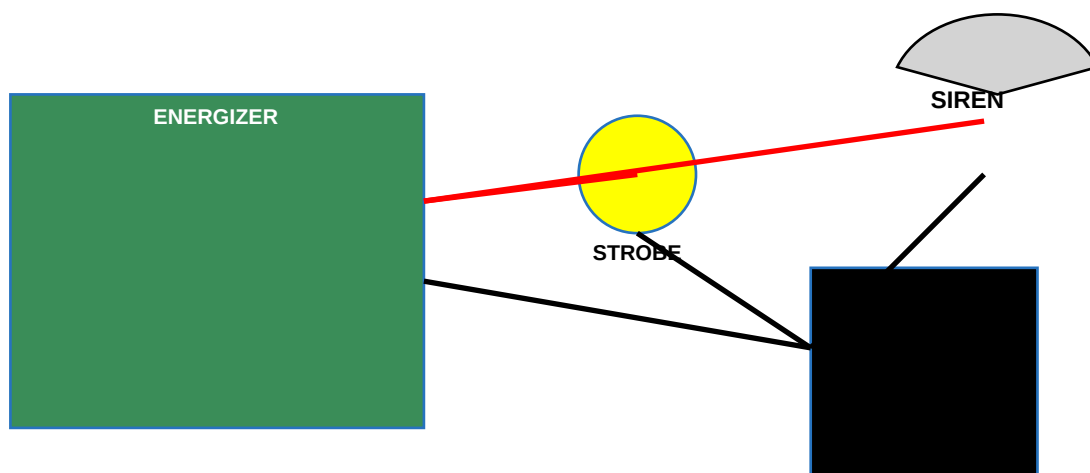


7.2 SIREN AND STROBE

The energizer has a 12 Vdc / 2 A auxiliary output for powering peripherals. Through the energizer relay output, it can provide power for one 30 W, 120 dB siren and one 12 Vdc strobe lamp up to 20 W.

According to the source manual, this output corresponds to KULKA terminal 6 (see section 2.1), where the positive terminals of the actuators are connected. The source manual also states that the negative terminals are connected to KULKA terminal 6.

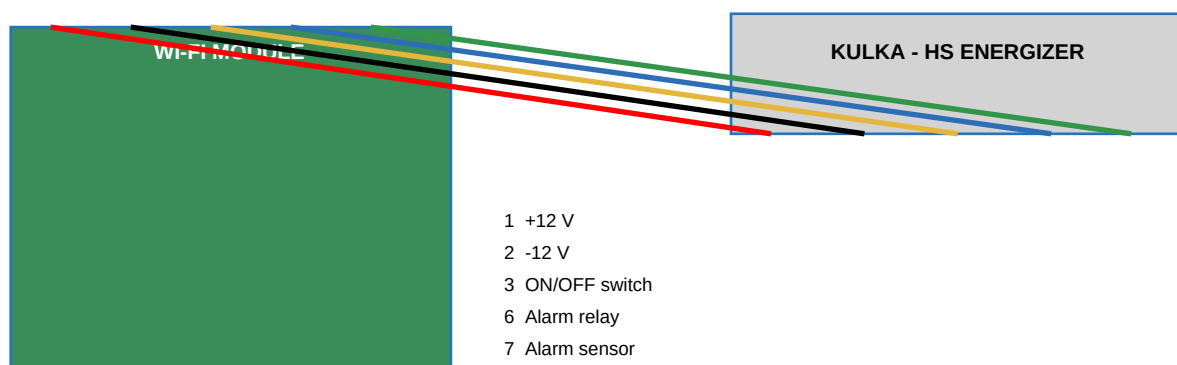
Note: If more than one siren or actuator is connected, use a more robust power supply while maintaining the same voltage and increasing current above 2 A.



7.5 WI-FI MODULE

To connect the Wi-Fi module to the energizer, identify the connection terminal strip known as KULKA and the number assigned to each port so the wiring can be completed correctly.

Each connection has a specific function that allows the energizer to be controlled and monitored through the Wi-Fi module together with the YONUSA application.



7.5.1 WI-FI LITE MODULE

A LITE version of the Wi-Fi module is available. It performs the same function but has fewer control ports.

The WI-FI LITE module can control ON/OFF for:

- Electric-fence energizer
- Panic button
- Dry contact labeled Auxiliary 1
- Dry contact labeled Auxiliary 2

It includes the same YONUSA 2.0 mobile-application functions:

- Notification when the 127-220 AC power supply is disconnected or restored
- Low-battery notification
- Event history by date
- Notifications for every action performed on the fence

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



YONUSA HS ENERGIZER - USER MANUAL

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