

KCON FENCE ENERGIZER



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# Introduction

Thank you for purchasing this product. KCON SYSTEM has had over 8 years' experience in manufacturing electric fence equipment. All KCON energisers are manufactured in AHMEDABAD INDIA, and we pride ourselves on being 100% Indian owned.

KCON not only manufacture energisers, but a whole range of accessories for electric fencing. Please refer to KCON's product catalogue to see the range of solar fence accessories available

**Please read the warnings, regulations, fence installation, and instructions specific to this model energiser before attempting to install this energiser.**

## **Warnings**

- 1. Read the relevant sections of this instruction manual fully before installing or operating the energiser.**
2. Regular inspections of electric fences must be undertaken to ensure continued operational safety and compliance with Indian Standard IEC 60335-2-76:2008, IEC 60335-1;2013 and BIS 302-2-76.
3. Persons coming into contact with high voltage pulses may have their normal physiological functions interrupted.
4. Young children and infirm persons should not be left unsupervised in the vicinity of an solar fence energiser or fence.
5. Extended periods of sunlight and excessive heat on any liquid crystal display will cause deterioration over time. This is not covered by warranty.
6. When using high power energisers, a power reducer device must be in series with the live wire where young children or infirm persons are likely to contact the fence, such as around house yards.
7. The mains cord on Battery power energisers must be repaired by a qualified electrician if it becomes damaged.
8. Only use the solar panel and battery provided by KCON SYSTEM for energisers. Damage to the energiser may result otherwise.
9. Any energiser that operates from battery power must be installed in a dry, well ventilated location such as a shed or building out of the weather.
10. Do not connect to the mains operated equipment.
11. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
12. 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.
13. Before obtaining access to terminals, all supply circuit must be disconnected.
11. Type A energizer. Battery-operated energizer suitable for connection to the mains consisting of an impulse generating circuit, a battery when the energizer is in operation.

### Regulations Regarding Electric Fence Installations

The following information is taken from the Indian Standard IEC 60335-2-76:2008, IEC 60335-1;2013 and BIS 302-2-76:1999 for the full details on electric fencing.

1. Electric fences must be installed and operated so that they do not cause an electrical hazard to persons, animals or their surroundings.
2. Construction of electric fences that is likely to lead to entanglement of animals or persons is to be avoided.
3. An electric fence must not be supplied from two separate energisers or from independent fence circuits of the same energiser.
4. For any two separate electric fences that are supplied from separate independently timed energisers, the distance between the two wires must be at least 2.5 metres. If this gap is to be closer, it must be effected by means of an electrically non-conductive (insulating) material and/or an isolated metal barrier.
5. Barbed wire or razor wire must not be electrified by an energiser.
6. A non-electrified fence incorporating barbed or razor wire may be used to support one or more offset electrified wires on an electric fence. The supporting devices for the electrified wires must be constructed so as to ensure that these wires are positioned at a minimum distance of 150mm from the vertical plane of the non-electrified wires. The barbed or razor wire must be earthed at regular intervals in accordance with Country Electronics earthing recommendations. (See chapter on earthing)
7. A distance of at least 10 metres must be maintained between the energiser's earth electrode and any other earthing system connected parts - eg, mains power protective earth or telecommunications system earth.
8. Electric fence connecting leads located inside buildings must be effectively insulated from the earthed structural parts of the building - use suitable high voltage insulated cable. Important: always ensure metal parts of the building are effectively earthed.
9. Electric fence connecting leads located underground must be run in a suitable conduit of insulating material, or high voltage insulated cable be used. Care must be taken that the effects of animal hooves or vehicle wheels sinking into the ground cannot damage the connecting leads.
10. Electric fence connecting leads must not be installed in the same conduit as mains supply wiring, communications cables or data cables.
11. Crossing with overhead power lines must be avoided wherever possible. If such a crossing cannot be avoided, it must be made underneath the power line and near as possible right angles to it.
12. If electric fence connecting leads and wires are installed near an overhead power line, the clearances must not be less than indicated in the table below.

#### Power Line Voltage - V Clearances - Metres

Up to 1000V - 3 Mtr

1000V - 33000V- 4 Mtr

Above 33000V- 8 Mtr




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

- 2 metres for power lines operating at a voltage not exceeding 1000V

- 15 metres for power lines operating at a voltage exceeding 1000V

14. Electric fences intended for deterring birds from roosting on buildings, no electric fence wire shall be connected to an earth electrode. A warning sign must be fitted to every point where a person or persons may gain access to the conductors.
15. Where an electric fence crosses a public pathway, a non-electrified gate must be incorporated into the electric fence at that point, or a crossing by means of stiles must be provided. At any such crossing, the adjacent electrified wires must carry warning signs.
16. Any part of an electric fence that is installed along a public road or pathway must be identified at frequent intervals by warning signs securely fastened to the fence posts or firmly clamped to the fence wires.
17. The size of the warning sign must be at least 100mm x 200mm.
18. The background colour of both sides of the warning sign is to be yellow.
19. The inscription on the sign is to be black and shall be either the symbol shown below, or the words "WARNING - ELECTRIC FENCE".
20. The lettering on the sign must be indelible, be on both sides of the sign and in letters not less than 25mm in height.
21. **This energiser must be installed in accordance with the standard IEC 60335-2-76:2008, IEC 60335-1;2013 and BIS 302-2-76.**

22. Marking plate

 <b>KCON FENCE ENERGIZER</b> AN ISO 9001: 2015 CERTIFIED COMPANY	
<b>MODEL :</b> _____ <b>DATE :</b> _____ <b>SR NO :</b> _____ <b>INPUT :</b> <u>12V DC / 500 mA</u> <b>OUTPUT :</b> <u>4-9 KV / &lt;0.5 mA</u> <b>POWER :</b> <u>2 Joule To 5 Joule</u> <b>INTERVAL :</b> <u>1.2-1.4 Second</u> <b>DURATION:</b> <u>&lt;300 uS Pulse</u> <b>IP RATING :</b> <u>IP 56</u> <b>ENERGIZER :</b> <u>TYPE A</u>	<p style="text-align: center;"><b>WARNING</b></p> <ol style="list-style-type: none"> <li>1:&gt;Battery operated energizer.</li> <li>2:&gt;Do not connect to the mains operated equipment.</li> <li>3:&gt;Before obtaining access to terminals, all supply circuit must be disconnected.</li> <li>4:&gt;Use proper earthing.</li> <li>5:&gt;Solar power operated.</li> </ol> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;">  <span style="margin-left: 10px;"><b>DC</b></span> </div> <div style="margin-left: 20px; color: green;"> <b>MADE IN INDIA</b> </div> </div>

## Why use Electric Fencing

An electric fence energizer takes electric energy from a power source and delivers it to a fence as pulses. These pulses are commonly referred to as the “shock” felt by any animal which touches an electrified fence. Unlike a conventional fence, an electric fence is a psychological barrier such that animals learn to respect the fence.

Electric fencing offers you a number of benefits over conventional fencing.

<b>Animal Safety</b>	A safe and effective option to barbed wire or woven fences, electric fence systems also deter and protect against trespassers and predators.
<b>Lower cost</b>	Requires less labour and material than conventional fences (barbed or woven wire, wood rail, vinyl). Savings can also be achieved through reduced maintenance as animals are less likely to damage an electric fence as they usually don't touch it more than once. It is important to invest in quality components as these will also provide fewer maintenance problems and greater fence life-expectancy, increasing your value for money.
<b>Ease of construction</b>	Relatively simple and easy to build, electric fences can be installed quickly and with minimum tools saving you labour time and costs.
<b>Flexibility</b>	Wire spacing and fence design can be modified to control a variety of animals. Temporary electric fences also offer the benefit of being able to be moved quickly and easily.
<b>Long life</b>	Using quality components and materials, electric fences can last a long time with permanent electric fences lasting up to 20 years.

## Fence Planning

### STEP 1 - Select the Electric Fence for your Needs

The best electric fence is the one that is suited to your requirements. There are 3 types of electric fence structures - portable/temporary, semi-permanent/permanent, and permanent high tensile.

### STEP 2 - Plan the Layout

Sketch a diagram and measure the distance of the area you would like to fence. Grab a pencil and walk around the area you want to fence, measuring and sketching your layout. Also include in your plan:

- Location of buildings/barns enclosed by or sitting adjacent to your fence
- Location of your fence energizer and electrical source (if required)
- Trees, hills, low and/or wet areas or other obstacles. If necessary, it is also a good idea to have your utility company mark any underground cables/lines that may be in the immediate vicinity
- Water supply and feeding locations
- Gate locations
- Fence termination points.

**As you are sketching your layout consider these questions:**

- Are you going to use wood posts, steel posts, rod posts, etc.? Or is it just a temporary fence with pigtail or tread-in posts?
- What type of gate(s) do you plan on using?

### STEP 3 - Select Your Energizer and Accessories

Once you have sketched your fence you are ready to create a list of all the components and tools you require to construct your fence.

First, you need to measure the perimeter of the area that will be fenced. Once you have done this you will be able to work out the amount of fence wire you require. You do this by multiplying the length of your fence by the number of wires you plan to use. For example, if your fence perimeter is 150 m and will have four wires, the length of fence wire you require is 600 m.



## ENERGIZER

Forming the heart of your electric fence system, [energizers](#) provide the source for the electric current that flows through the fence wire. The amount of electric current output (size) and power source (230 V) , battery or solar differs across energizer products.

When selecting your fence energizer consider the following key factors:

- Length of your fence
- Number of wires
- Power source
- Type of animal contained or excluded.

### How to select your Energizer

#### Power Source

Select an electric fence energizer power source based on your fencing situation. For example a traditional Mains (230 V) plug-in energizer is great if you need a very powerful energizer or have a very long electric fence.

If you don't have access to an electrical outlet then a portable, battery or solar powered energizer would be best suited.

#### Power Rating

You also need to select an energizer that will give you the power (energy) rating required for your electric fence. Measured as joules, Kcon energizers offer a range to suit every need from 0.05 joules output to 4.5 joules. More joules = more power.





## INSULATORS

An important part of your electric fence system, [insulators](#) are used to fasten electrified wires to your fence posts. An insulator's job is to allow electricity to continue through the wire without any loss of energy to a post. Made from materials that do not conduct electricity (mainly plastic or porcelain), a good quality, long life insulator is necessary for the performance, efficiency and longevity of your electric fence. If you are using a low impedance fence energizer you will also need insulators that provide excellent arcing protection due to the high energy output of these energizers.

### How to select your Insulator

Available in many styles, firstly identify insulators that fit your post type. From these, select the right insulator that works with your selected wire and energizer.

### Insulators

- Able to be used with low impedance energizers. Developed to complement Kcon's full range of energizers (all of which are low impedance)
- Made from quality plastic and porcelain materials that are UV stable and designed for long life
- Designed to be easily attached to compatible fence posts
- Deliver excellent arcing protection, reducing risk of shorts on the fence
- Full range of options to cover most fence post and wire types
- Kcon extender insulators protect existing fences by extending electric fence barrier from existing wires
- All Kcon insulators come with a 5 year warranty.
- Tried and tested to ensure reliability and durability.



## STEP 4 - Installing your Fence

Now that you have selected your energizer and accessories, you need to build your fence. See [Installation Tips](#) for handy tips on building your electric fence.

## STEP 5 - Grounding and Testing

This is one of the most important parts of the fence. Without a proper ground system, your will not be able to achieve the maximum benefits of your electric fence. Please refer to the [Earthing and Testing](#) section for more information on how to properly install and test a good ground system.

## Other Things to Consider in the Planning Process

### Converting a barb Wire or Woven Wire Fence

Do you already have a good barb wire or woven wire fence, but want to make it electric? (Note: You should never try to electrify the existing barb or woven wire as it is too dangerous for your livestock and not very effective.) Kcon Wood Post Extenders and T-Post Extenders, as shown in the pictures below, allow you to maintain your current fence structure while adding high tensile wire, [poliwire](#), [1/2in politape](#), or [polirope](#) to make it electric. This is a safe and highly effective way to convert a barbed or woven wire to an electric fence.





### Where You Should Install Your Energizer?

If you plan to use a Battery(12 V) to power your energizer, it should be placed inside a barn or shed near the power source.

Kcon [Dual-Purpose energizers](#) (FM1,FM2,FM3) offer both a weather- resistant case and a built-in clip-on-wire feature allowing them to be attached directly to the fence wire.

If you are using the Kcon [SolarGuard KC1](#) or [KC3](#), these are most effective if placed along the middle of the fence with the panel facing towards the South.

In all cases, refer to this full [manual](#) for specific installation instructions and always mount the energizer where it is out of reach of children and animals.

### Can I use more than one Energizer?

Yes, you can use more than one [energizer](#), but each energizer must be on a separate fence system.

**NEVER** connect more than one charger to the SAME FENCE.

### What Type of Wire Should I Use for the Fence Line

The best permanent electric fences are constructed using 12.5 gauge galvanized high tensile wire. It provides a lower level of resistance than a smaller gauge of wire and has sufficient capacity to carry the electrical current of the fence. Some people use a smaller gauge galvanized wire (i.e., 14 ga., 16 ga., etc.); however, these have higher levels of resistance, do not allow you to achieve the maximum benefits of your energizer, and your fence life may not be as long. (Aluminium wire is not the same as steel galvanized wire. Small aluminium wire also has less resistance than comparable size steel wire.) For temporary fences, good poliwire or politape with at least 6 strands of conductors are the best choice.”

## Installation Tips

### Wire Tension

Electric fencing provides a psychological barrier rather than a physical one, so there is no need to excessively tension wire. Heavy strainer assemblies are not required either, reducing the overall cost of construction. Electric fence wire should be tensioned to 200 lb. By comparison, conventional fence wire should be tensioned to 340 lb. The tension of each wire can be measured using a tension meter.

## Solar Electric Fencing Guide

Harnessing free energy from the sun, a solar powered electric fence requires no grid connection providing an economical choice for fencing small areas and is the ideal solution for remote locations. It can be used in a variety of situations from containing livestock to keeping wildlife out of garden areas and preventing pets from wandering.

### How does it work

A solar panel charges a battery by converting sunlight into electricity which is then used to keep the energizer operating 24 hours per day. Kcon offers a range of energizers that are compatible with solar energy as well as integrated solar systems.

### What you will need

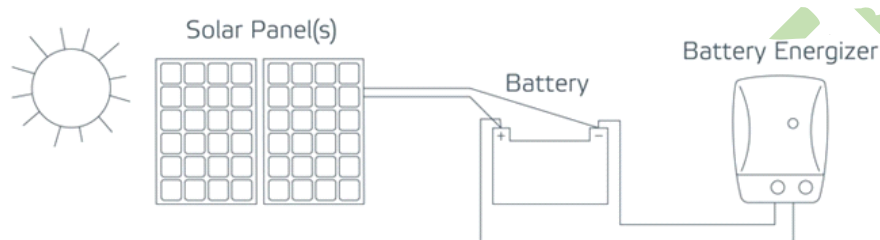
- **Energizer** - Select your energizer based on the area you need to fence. It is important that you have adequate power or you risk weak spots in your fence which could allow animals to escape or enter.
- **Battery** - Stores the energy harnessed by the solar panel. [Kcon Dual-Purpose and Battery energizers](#) are designed to run with 12 V (deep cycle, marine type) batteries (sold separately). The size of the 12 V battery must suit the current consumption (mA) of your chosen energizer. The 12 V battery must also have sufficient storage capacity to power the energizer during periods of reduced sunlight (for example, in cloudy weather).
- **Solar Panel** - Captures and processes light from the sun. Select your panel(s) based on the power of your energizer and battery system. Note: larger energizers and battery systems require larger solar panels.
- **Regulator** - An important component where external solar panels are connected to battery energizers. It limits the voltage to prevent overcharging of the battery.
- **Earthing** - As with other types of electric fence systems it is important to [earth your solar electric fence](#).

Contact your [local Kcon distributor](#) for assistance in selecting the right solar fencing system for your needs.

## Where to place your Solar Energizer

We recommend placing your [solar energizer](#) in the middle of your fence or area with unrestricted access to sunlight. When selecting a suitable location for your solar energizer it is very important to consider the frequency of inspection, ease of access for maintenance, environment and animal damages, security from human intervention, and the proximity of the solar energizer to an appropriate ground system.

NOTE: Face your SOLAR PANEL towards the noontime sun - due south in the northern hemisphere.



## Earthing and Testing

### What is an Earth System?

An earth system is the most important component of any electric fence system. If an electric fence is not properly grounded, it will be much less effective.

An earth system consists of a number of [earth rods \(stakes\)](#) that pass electric current back from the soil to the energizer. The larger the energizer and the longer the fence line, the more earth rods are required.

### How does earthing work?

For an electric fence to give an animal an electric shock, electrical current (produced by the energizer) must complete a circuit. The current from the [energizer](#) flows along the wires, through the animal's body, down through the soil to the earth system, then back up to the energizer. If the earth system isn't working properly, the animal won't get an effective shock.



## What factors will affect the Earth System?

Dry, sandy and non-conductive soil types limit the current flow to the earth rods. If you have soil that is not well suited to earthing, use additional [earth rods](#), choose a better location for the earth system, or use an alternate method of earthing such as earth/ground wire return.

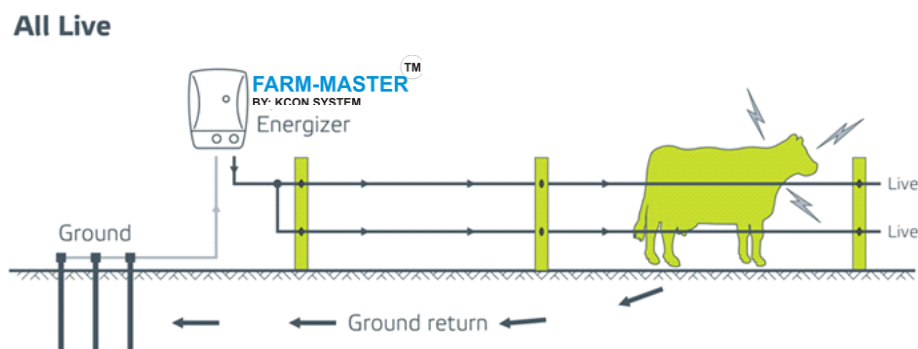
Vegetation touching the live fence wires allows current to leak, causing the fence to “short” and voltage to drop. Check the fence regularly to make sure that long grass and overhanging branches are not touching the live fence wire.

Using a mixture of metals in the earth system will lead to electrolysis. This may cause the parts of the earth system to disintegrate in a short period of time. For example, never use copper wire with galvanised earth rods.

## Choosing the Right Earth System

### Earth Systems - All Live

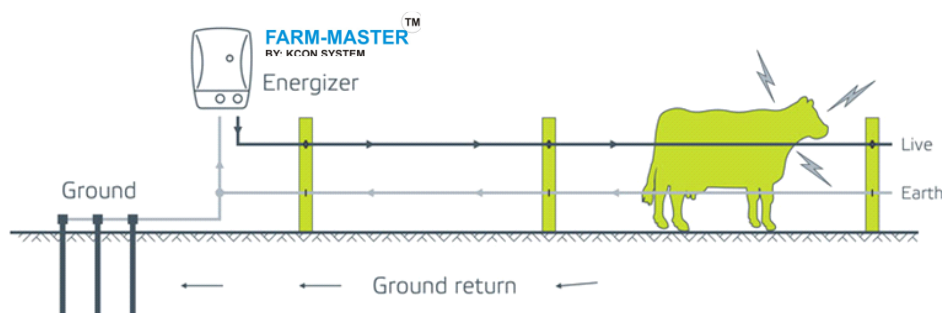
An all live earth system is recommended where soil is conductive (most moist soils are conductive). When an animal standing on the soil touches the fence, the circuit is completed and the animal gets a shock.



### Earth Systems - Earth/Ground Wire Return

An earth wire return system is recommended where soil is not conductive (most dry or sandy soils are not conductive). The fence is constructed using both live and ground wires. When an animal touches a live and a earth wire at the same time, the circuit is completed and the animal gets a shock.

### Ground Wire Return



## Selecting a Site for the Earth System

A suitable place for the earth system is:

- At least 10 m (33 ft) away from any other earth system (i.e. telephone, house power line, etc.)
- Away from livestock or other traffic that could interfere with the installation
- Where the system can easily be accessed for maintenance
- Ideally, where there is damp soil all year round (i.e., a shaded area or under the drip line of a building).

NOTE: If it is not possible to locate the earth system in close proximity to the energizer, you may be able to use the existing fence line to connect to a remote earth system. In dry weather, it may be necessary to water the earth system in order to improve soil conductivity.

## Setting up an Earth System

### Earth Rods

The number of [earth rods](#) required depends on the type of energizer being used to power the fence and soil condition. Refer to information supplied with your [energizer](#) for the correct number of earth rods to use.

#### To insert the earth rods:

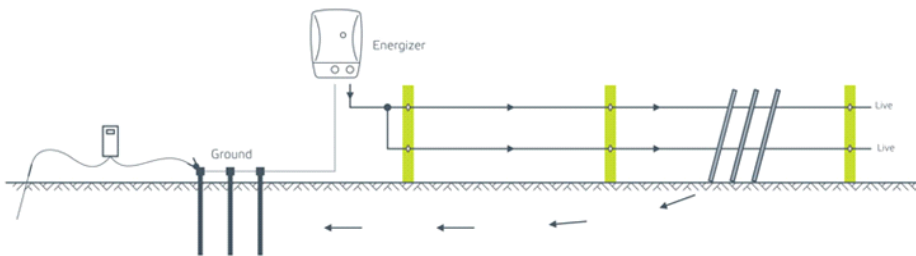
1. Space the required number of 2 m (6 ft) earth rods at least 3 m (10 ft) apart.
2. Drive the earth rods deeply into the soil, at least 3 m (10 ft) apart. Make sure that the earth rods protrude out of the soil at least 10 cm (4 in) so they can be easily connected
3. Join the earth rods in a series using earth clamps and underground cable.



## Testing the Earth System

1. Turn off the energizer.
2. At least 100 m (330 ft) away from the energizer, short circuit the fence by laying several steel rods (or lengths of pipe) against the fence. In dry or sandy soils, drive the rods up to 30 cm (12 in) into the soil.
3. Turn on the energizer.
4. Use a digital voltmeter to measure the fence voltage. It should read 2 kV or less. If not, repeat step 1 to 3.
5. To check the earth system, attach the voltmeter's clip to the last earth rod and insert the earth probe into the soil at the full extent of the lead. The voltmeter reading should be no more than 0.3 kV. If the reading is higher than this, the earth system is insufficient. See the earthing checklist, add more earth rods, or find a better location for your earth system.

## Testing the Ground System



## Earthing Checklist

Check your earth system to make sure:

- All wires are joined securely
- Connections to earth rods are secure
- Earth rods are at least 2 m (6 ft) long and at least 3 m (10 ft) apart
- There are a sufficient number of earth rods.
- All parts of the earth system are made of the same metal
- Earth rods are buried deeply in the soil.

## Handy Hints

### 1. Earthing

Most electric fence problems are caused by poor earthing. Why? An electric fence is an electrical circuit. The electrical current travels from the energizer, down the fence line, through the animal's body, down through the soil to the earth system and back up to the energizer. If the earth system isn't working properly, the animal won't get an effective shock.

#### Tips:

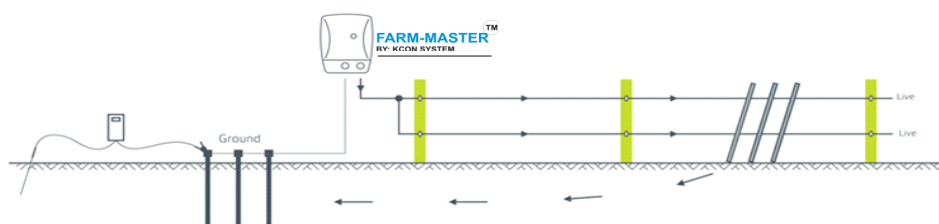
- The earth system should be at least 10 m (33 ft) away from any other earth system (i.e. telephone, house power line etc.) to avoid interference.
- Moist soil conducts electricity much better than dry soil. If possible, locate the earth system in a boggy area. In dry weather, wet the area around the earth system to keep the soil moist.
- Make sure there are a sufficient number of [earth rods](#). See below picture for recommendations. If in doubt, use at least three earth rods. Use more earth rods if your soil conditions are not ideal.
- Ground rods should be at least 2 m (6 ft 6 in) long. One long ground rod works better than several short earth rods.

### 2. Testing your earth system

Test your earth system regularly to ensure you are getting the most out of your electric fence.

1. Turn off the energizer.
2. At least 100 m (330 ft) away from the energizer, short circuit the fence by laying several steel rods (or lengths of pipe) against the fence. In dry or sandy soils, it may be necessary to drive the rods up to 30 cm (12 in) into the soil.
3. Turn on the energizer. Note: Do not short circuit a fence-return (earth-wire-return) system by connecting the live wire to the earth wire.
4. Use a [digital voltmeter](#) to measure the fence voltage. It should read 2 kV or less. If not, repeat step 1 to 3.
5. To check the earth system, attach the voltmeter's clip to the last earth rod and insert the earth probe into the soil at the full extent of the lead. The voltmeter reading should be no more than 0.3 kV. If the reading is higher than this, the earth system is insufficient. Add more earth rods, or find a better location for your earth system.

### Testing the Ground System

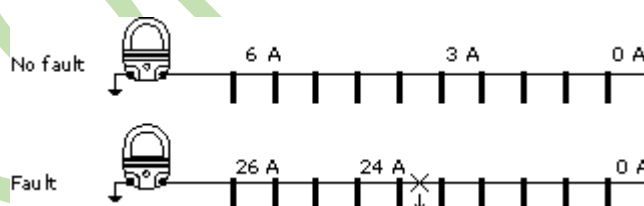


### 3. Faults

Faults are caused when the electric current leaks away from the fence down to the ground. This is often caused by grass, weeds or overhanging branches touching the electric fence. Broken [insulators](#) may cause a fault by allowing the electric fence wire to touch the fence post. Check your fence regularly using one of the procedures below.

### 4. Checking your fence

Using a fault finder is the quickest, most accurate way of locating a fault in the fence. Starting at the leadout wire, work your way along the fence taking readings at regular intervals. A fault will show up as an abnormally high reading. The electrical current flows towards a fault in the same way that water flows towards the plug-hole in a bath tub. A sudden spike in current between one point and the next indicates a fault between the two points.



It is also possible to check for faults using a [digital voltmeter](#). Isolate sections of the fence using cut-out switches and check the voltage in each section.

An AM radio can be used to locate a fault. Tune the radio between stations and drive or walk along of the fence. If the fence is OK, there won't be any sound. When the radio gets near a fault, you will hear clicking on the radio. As you get closer to the fault, the clicking will get louder.

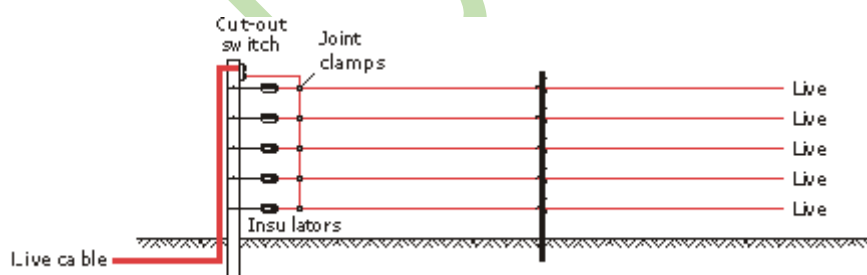
If the fault is caused by a faulty insulator, mark it with non-metallic paint so you can locate it easily after you have turned off the fence.

## 5. Joins

Electric fence wire should be joined using a knot that allows the electrical current to pass through the wires. Here are some recommended knots:



To join broken [poliwire](#) or [politape](#), use a cigarette lighter to burn away the plastic yarn in order to expose the stainless steel wire. Twist and join the wires together, then tie the poliwire or politape in a knot. The electrical current can then pass through the join. When inter-connecting fence wires at the end of a strain, use [joint clamps](#). Using these clamps, instead of twisting wires together prevents arcing and greatly reduces voltage loss.



## 6. Undergate connections

When bypassing gateways, ensure that live wires are protected from damage caused by animal hooves, vehicles etc. Encase high quality, [double insulated underground cable](#) in a polythene pipe and bury at least 30 cm (12 in) deep. Turn the ends of the pipe down to keep water out.

## 7. Animal training

To train animals to respect electric fencing one method is to use a small well-fenced holding paddock. Divide the holding paddock using [politape](#) and a [Kcon energizer](#). Introduce the untrained livestock to the paddock. The animals will quickly learn to avoid the electric fence barrier.

## 8. Choosing an electric fence energizer

Make sure your electric fence energizer meets the requirements of your electric fence, refer to your [Kcon fence energizer](#) for guidance. This will vary depending on the type of fence, the number of fence wires, how much vegetation is growing around the fence and the climate. Remember, if you extend the length of the fence by adding to the fence or subdividing it with temporary fences, you need to make sure your energizer is powerful enough. If you use a more powerful energizer, make sure you increase the number of earth rods in the [earth system](#).

## 9. RFI (Radio Frequency Interference)

Many farms suffer from RFI (Radio Frequency Interference). This often results in poor radio reception and an annoying ticking noise on the telephone line. [Kcon energizers](#) are fitted with special components and advanced circuitry that significantly reduces the levels of electrical emissions that might otherwise affect adjacent electrical equipment.

## 10. Mixing metals

Avoid using different metals in your electric fence. In damp conditions, when an electric current passes through the differing metals, electrolysis will occur. For example, using stainless steel earth rods and an aluminium leadout wire will cause problems. In a short space of time, the aluminium will disintegrate. If possible, keep the wire joints above the soil to improve airflow and reduce electrolysis. Seal the wire joints with thick paint, epoxy or tar to keep moisture away from the joint area. Use identical metals in your electric fence will avoid problems with electrolysis altogether.

## 11. Getting a shock from a fence post or gate?

Sometimes, induction causes a strainer post or metal gate, giving whoever touches it a nasty shock. To overcome this problem, staple a piece of wire onto the strainer post to interconnect all the fence wires. Bury the wire 10 cm (3 in) into the ground. This will carry the unwanted current down to the ground. Because the interconnecting wire is positioned after the insulators, you will not be compromising the quality of the fence in any way.





## Gate Accessories

Cut-out switch



Gate Handle



## Key Terminology

<b>AC</b>	alternating current, AC (mains) power supply 110 – 120 V or 220 – 240 V.
<b>Amp</b>	unit of current. Short for Ampere.
<b>Capacitors</b>	used to store energy in the energizer (charger).
<b>Current</b>	duration and magnitude of current causes the shock of the electric fence. Increasing the voltage increases current, while increasing resistance decreases current.
<b>DC</b>	direct current, battery power supply (e.g. 12 V battery input).
<b>Fault / Short</b>	energy loss from the fence (i.e., live wire lying on the ground, vegetation growing over the fence, etc.).
<b>Ground System</b>	the rod(s) in the ground connected to the ground terminal on the energizer (charger).
<b>Joule</b>	unit of energy. One joule is one watt of power for one second.
<b>Lead out Wire</b>	section of underground cable or wire that carries the electrical current from the energizer (charger) to the fence.
<b>Live</b>	the current-carrying wire connected to the charger fence output terminal.
<b>Ohm</b>	unit of resistance.
<b>Output Energy</b>	effective energy delivered by the energizer (charger).
<b>Pulse</b>	brief electrical current given by an energizer (charger), approximately 0.0003 seconds per pulse.
<b>Resistance</b>	what causes loss of power and voltage on the fence.
<b>Stored Energy</b>	energy accumulated in the storage capacitor(s) in between output pulses.
<b>Watt</b>	unit of power. One watt is one joule per second.
<b>Volt</b>	unit of electrical pressure. Sometimes it is stated as “kV” or kilovolts which is equal to 1,000 volts.
<b>Voltage</b>	electrical pressure causing current to flow



## Warranty

### KCON SYSTEM

#### Solar Fence Systems

KCON warrant all electric fence systems against defective workmanship and faulty materials for 2 years, **plus** a warranty for 6 months against lightning damage, from the date of purchase. A 12 month warranty applies to batteries in solar energisers. We undertake, at our option, to replace or repair free of charge each product, or part thereof, on condition that it is returned to an authorised agent or our factory freight prepaid, and found on examination to be suffering from material or constructional defect. We cannot be held responsible for any repair other than those carried out by us or our authorised agent.

**A photocopy of your proof of purchase and a request for warranty must also be returned with the item.**

This warranty is void if the product is subject to improper use or handling, incorrect power input voltage, damage through contact with chemicals, flooding, fire, explosion, excessive heat, lightning strikes outside the lightning warranty period, insect damage and moisture damage. Damage to external wiring and wear and tear are excluded from warranty.

#### For your records:

Model No.: .....

Serial No.: .....

Date of Purchase: .....

Place of Purchase: .....

Receipt No.: .....

Invoice No.: .....

Dealer's Stamp: .....