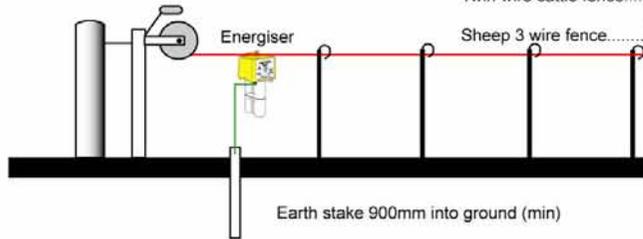


### Strip Grazing



Earth stake 900mm into ground (min)

### Strip Grazing Wire & Post Spacing

Post spacing.....	15 metres approx. (flat Ground)
Single wire cattle fence.....	Wire 800mm off ground
Twin wire cattle fence.....	Wire 1 450mm off ground
.....	Wire 2 900mm off ground
Sheep 3 wire fence.....	Wire 1 250mm off ground
.....	Wire 2 500mm off ground
.....	Wire 3 800mm off ground

### Offset wires

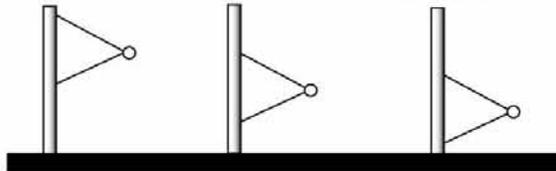
Offset wires are used to upgrade existing fences, extending fence life and reducing damage. Installed on one or both sides of fence, improves stock control.

### Approx. wire height settings

Horses 900mm  
Cattle 750mm

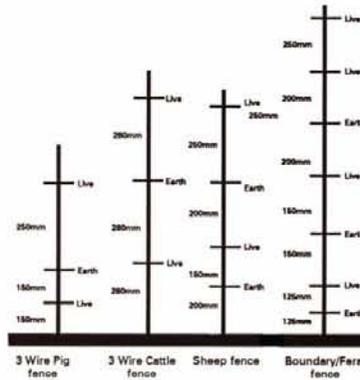
Sheep & Goats  
150 - 250mm

Kangaroos,  
Pigs, Wombats  
& Wild dogs  
150 - 200mm



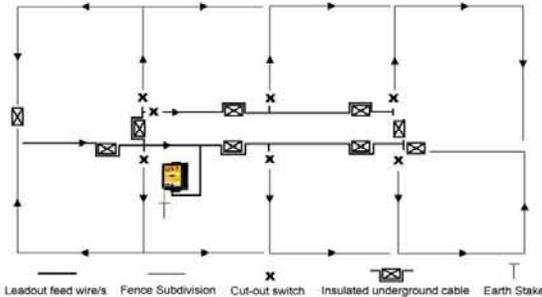
Space offsets approx 15 metres apart (MAX)  
Always earth the existing fence by connecting it to earth stakes.

### Wire Spacing



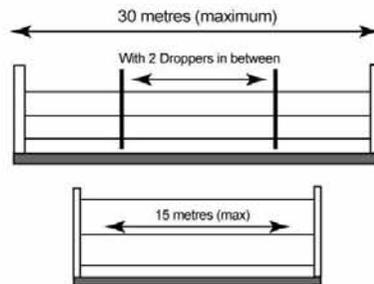
### Layout Design

Suggested basic layout for area of operation.



Leadout feed wire/s Fence Subdivision Cut-out switch Insulated underground cable Earth Stake

### Post Spacing



NSW  
PH: (02) 6372 3600

VIC  
PH: (03) 9796 2319

QLD  
PH: (07) 3285 5711

TAS  
PH: 0417 554 024



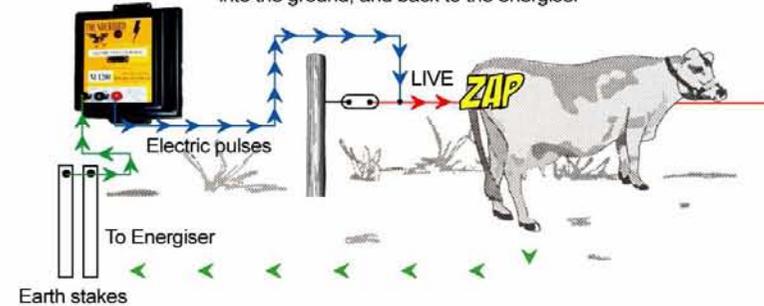
# THUNDERBIRD Electric Fence System

## Helpful Hints

How an electric fence works

### Ground earth return system

The pulse travels from the live wire through the animal into the ground, and back to the energiser

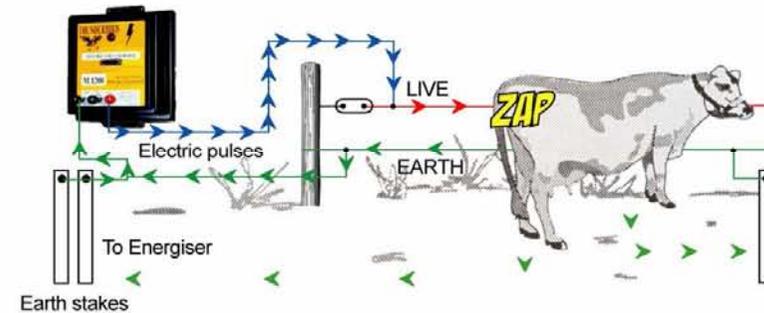


This method requires good soil moisture  
(Recommended for strip grazing only)

### Earth wire return system

(The preferred method)

When the animal pushes against both the live wire and earth return wire a strong pulse is passed directly through the animal. This method overcomes the problem of reduced or no pulse transmission due to poor electrical conductivity in the soil. (Eg. dry weather, drought)



- The pulse must return back to the energiser for a shock to be received
- Use a bentonite earth kit in dry soil areas.
- Earth wires are recommended for long fence or dry soil areas.



## Installing Energisers

Install Mains Energisers inside a shed. Cover Battery Energisers from weather. Use insulated underground cable for connection from energiser to live wire/s. Do not use COPPER WIRE or copper earth stake. USE GALVANISED WIRE/S AND EARTH STAKES.

## Wire Connectors

To achieve a good electrical joint, use a wire Joint Clamp. Twisting wires is not recommended. For joining Earth Return wires, we recommend that a joint clamp be used also.

## Wire

2.5mm high or medium Tensile galvanised wire is recommended.

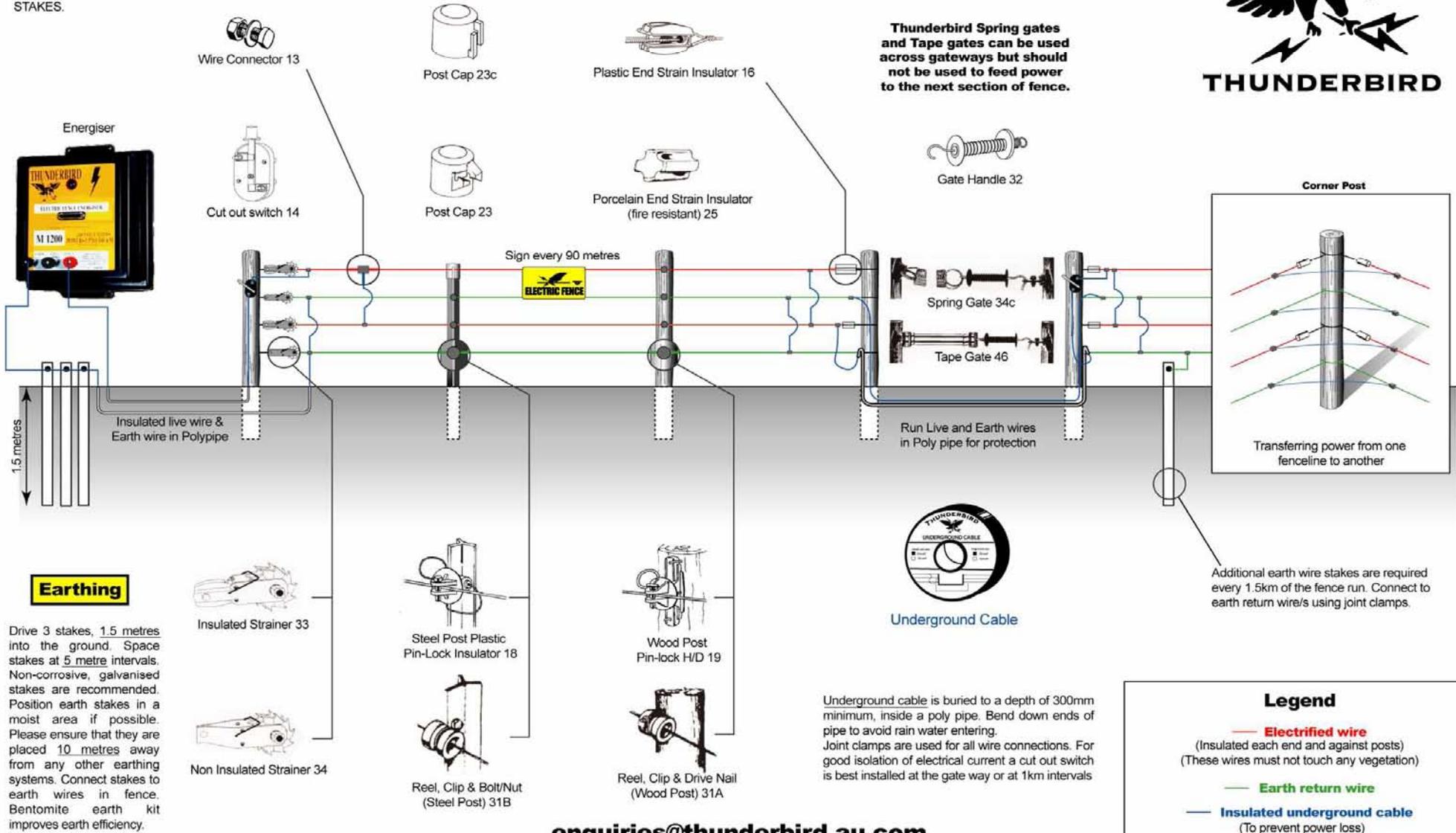
**DO NOT USE BARBED WIRE IN ELECTRIC FENCING**

## Paralleling Common Wire

To reduce voltage loss, join all live wires and earth wires together (live to live, earth to earth). Use underground cables and joint clamps. Parallel wires from start to finish of each strain.



**Thunderbird Spring gates and Tape gates can be used across gateways but should not be used to feed power to the next section of fence.**





# THUNDERBIRD

## Solar Electric Fence Energisers.

### S20 / S20B / S40 / S40B / S79 / S150

Thunderbirds range of small/medium solar energiser come in a range of packages as follows -

- S20 - 2 km system 12 volt battery not supplied
- S20B - 2km system with internal rechargeable battery
- S40 - 5 km system 12 volt battery not supplied
- S40B - 5 km system with internal rechargeable battery
- S70- 10 km system 12 volt battery not supplied
- S150 - 20 km system 12 volt battery not supplied

### Specifications

Power supply -

S20, S40, S70 & S150 external 12 volt wet rechargeable battery

S20B & S40B - internal 12 volt rechargeable battery 7 amp gel.



	S20	S40	S70	S150	S20B	S40B
System voltage	12V	12V	12V	12V	12V	12V
Stored joules	.2	.4	.7	1.5	.2	.4
Km rating	2	5	10	20	2	5
Power consumption	20ma	40ma	70ma	110ma	20ma	40ma
Output voltage	7.5kv	7.5kv	7.5kv	7.5kv	7.5kv	7.5kv
Solar panel	2 watt	5 watt	10 watt	12 watt	2 watt	5 watt

Mounting the energiser.

The enclosure has been designed to slide onto a steel Y or T post, at the rear of case.

Or hammer 2 nails with washers into a wooden post, insert washers up nail shaft, around 125 mm or 5 inches above the first nail, then slide rear of enclosure over to secure to wood posts.

Always face the solar panel to the equator, in a shade free position, out of risk of mechanical damage. Ensure the installation site is away from animals.

**NOTE : READ ALL INSTRUCTIONS INCLUDING HELPFUL HINTS BROCHURE BEFORE USING FENCE ENERGISER.**

Thunderbird's SOLAR energisers are highly efficient low power electrical appliance. Installed and used correctly these products should provide years of reliable service.

### WARNING

1. Regular inspections of electric fences must be undertaken to ensure continued operational safety and compliance. See - ' INSTRUCTIONS FOR INSTALLATION AND CONNECTION OF ELECTRIC FENCES FOR ANIMALS ' detailed over the page.
2. Persons coming into contact with high voltage pulses on a high output connection may have their normal physiological functions interrupted.
3. Young children and infirm persons should not be left unsupervised in the vicinity of an electric fence energiser or fence.
4. Do not operate with the energiser left lying on the ground. Water may enter the energiser causing it to fail.
5. **DO NOT STORE OUT OF SUNLIGHT.** The battery will go flat, and the energiser will not operate.

### INSTRUCTIONS

#### Installation

Mount the energiser with the solar panel facing the equator, and clear of any potential shadows. The energisers enclosure has been designed to slide over the top of a steel post, for fast, easy set up.

A padlock can be placed through a hole of the post and the H/D plastic lugs can then help deter theft.

The red live connecting wire and the green earth wire (both supplied) are used to connect the energiser to the earth stake and live (hot) wire. The rings on the ends of these wires clamp behind the knobs, while the clips attach to the live ( hot) wire and the earth stake respectively. Drive a galvanized steel (minimum) into the ground.

Models S20B and S40B have internal batteries that power the system throughout the day and night. S20, S40, S70 and S150 models operate with an external 12 volt battery ( not supplied ), connect a battery for these models.

The unit is now ready to operate.

This energiser has built in self testing. If the battery is low, you will see the low battery light glow. If this happens check the unit is receiving direct sunlight the whole day or ensure panel is lined up with the equator and is clean for maximum sunlight collection.

DO NOT use copper wire or copper stakes. Electrolysis will cause poor joints.

Locate the energiser in the middle of the fence line for best results.

In dry, sandy or rocky soil, an earth return wire may be required for the energiser to operate effectively.

## INSTRUCTIONS FOR INSTALLATION AND CONNECTION OF ELECTRIC FENCES FOR ANIMALS.

The following safety information is part of the Australian standard 3350.2.76:1998 amendment 2. Refer to this standard for full details on electric fencing.

- >Electric fences must be installed and operated so that they do not cause an electrical hazard to persons, animals or their surroundings.
- >Construction of electric fences that is likely to lead to the entanglement of animals or persons is to be avoided.
- >An electric fence must not be supplied from two separate energisers or from independent fence circuits of the same energiser.
- >For any two separate electric fences that are each supplied from a separate independently timed energiser, the distance between the wires of the two fences must be at least 2 metres. If this gap is to be closer, it must be effected by means of electrically non-conductive (insulating) material or an isolated metal barrier.
- >Barbed wire or razor wire must not be electrified by an energiser.
- >A non-electrified fence incorporating barbed or razor wire may be used to support one or more off-set electrified wires of 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 barb or razor wire is to be earthed at regular intervals in accordance with Thunderbird's earthing recommendations.
- >A distance of at least 10 metres must be maintained between the energiser's earth electrode and any other earthing system connected parts—for example, mains power protective earth or telecommunication system earth.
- >Electric fence connecting leads located inside buildings must be effectively insulated from the earthed structural parts of the building, for example use suitable high voltage insulated cable.

**Important:** always ensure metal parts of the building are effectively earthed.

- >Electric fence connecting leads located underground must be run in suitable conduit of insulating material or high voltage cable to be used. Care must be taken to ensure that the effects of animal hooves or vehicle wheels (e.g. tractor) sinking into ground cannot damage connecting leads.
- >Electric fence connecting leads must not be installed in the same conduit as the mains power supply wiring, communication cables or data cables.
- >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 as near as possible at right angles to it.
- >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 1,000 V	3
1,000 V - 33,000 V	4
Greater than 33,000 V	8

>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

## INSTRUCTIONS FOR INSTALLATION AND CONNECTION OF ELECTRIC FENCES FOR ANIMALS.

- of the outermost conductors of the power line on the ground surface, for a distance of :-
  - 2 metres for power lines operating at nominal voltage not exceeding 1000V.
  - 15 metres for power lines operating at a nominal voltage exceeding 1000V.

- >Electric fences intended for deterring birds, household pet containment or training animals such as cows need only be supplied from a low output energiser to obtain satisfactory and safe performance.
- >For 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.
- >Where an electric fence crosses a public pathway, a non-electrified gate must be incorporated in 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.
- >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. The size of the warning sign must be at least 100mm x 200mm.
- >The background colour of both sides of the warning sign is to be yellow. The inscription on the sign is to be black and shall be either the symbol shown (Fig. 1 ) or the words - "WARNING - ELECTRIC FENCE"
- >The lettering must be indelible, be on both sides of the sign and in letters not less than 25mm in

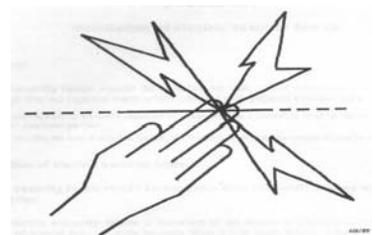


Fig. 1



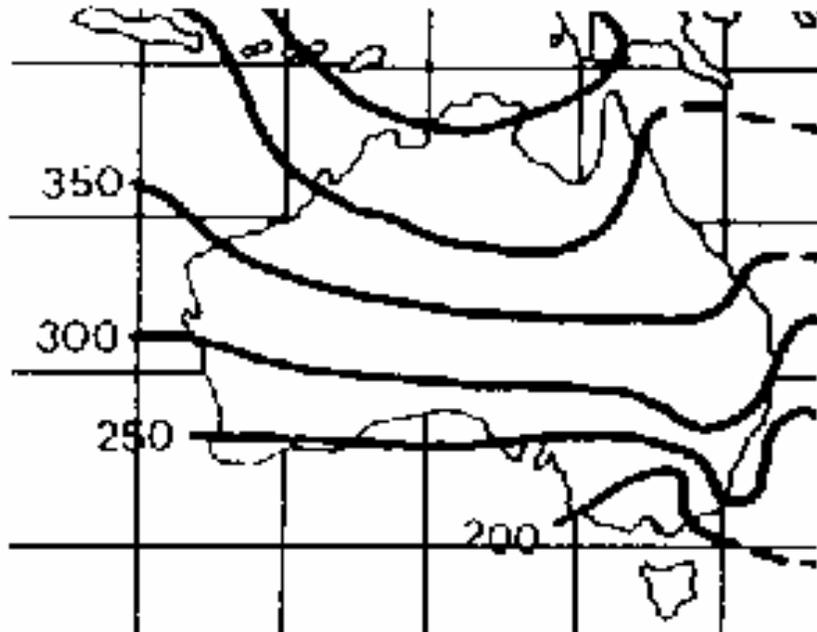
>Ensure at all times that a mains operated, ancillary equipment connected to the electric fence circuit provides a degree of isolation between the fence circuit and the supply mains equivalent to that provided by the fence energiser.

>This energiser must be installed in accordance with the Australian standard.

Install the energiser in the middle of the fence line where possible.

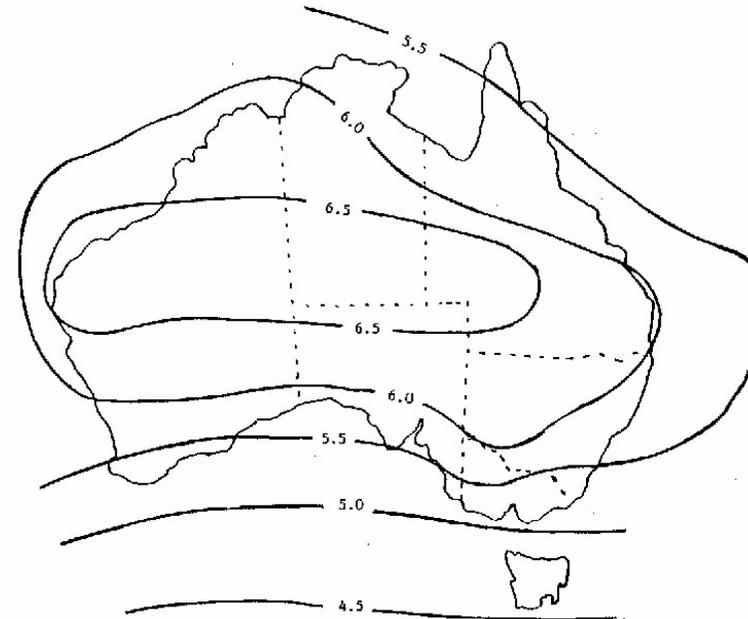
Hot tape and poly wire can be used effectively up to 500 metres. Super hot tape and super polywire can be used on runs up to 1500 metres. For longer runs use gal fencing wire.

The following map shows the average winter solar intensity at mid day in watts per square metre. No solar panel is 100% efficient, allowances should be made due to this. Therefore be aware that if your location is in a southern part of Australia, or you live in a deep valley, and you want to run your energizer at full power all the time, you may need to purchase an extra solar panel to maintain the charge in the battery. Generally our solar panel systems designed to operate in 5 hours of full sun per day.



Thunderbird have designed this solar range of fence energisers to operate effectively from the sun collection in most areas. The available power collected from the sun can vary however due to geographical areas, times of the year, terrain and many other reasons. This range of energisers constantly measures the solar collection level and if required slows the pulse down to conserve battery usage, to avoid battery voltages dropping to a level that will not operate the energiser. This is indicated by the low battery light on the front panel of the enclosure. The S20B AND S40B units are supplied with a mains power re charger, in the rear event that the battery voltage dose drop, this allows fast re charging to minimise down-time. The S20,S40,S70 and S150 operate on an external battery which can be re charged. The internal rechargeable battery supplied in models S20B and S40B have a 3 to 5 year life.

The following map indicates the yearly average of the number of hours per day of sunlight that can be collected, throughout different areas of Australia. A difference of 1 1/2 hours of sunlight per day between Tasmania and northern NSW is a 33 % difference, this means that a battery in Tasmania will receive a minimum of 33 % less current than one in northern NSW. This indication is if the panel is facing directly to the sun.



#### INSTRUCTIONS con't

##### Models S20B and S40B.

These two models use an internal 12V rechargeable gel battery.

A special gel cell charger to charge the internal battery, is supplied with these models, in the unlikely event of low battery voltage occurs. This enables fast charging to get the system back operating quickly. Overnight charging is generally all that is required.

**DO NOT** attempt to charge the battery with a normal battery charger. It will destroy the battery and void the warranty on the battery.

If cared for these batteries generally have a life of around 4 to 5 years, a replacement battery may be required after this period. The batteries have a 12 month pro rata warranty.

Do not left stored out of sunlight for extended periods without charging, as this will degrade the quality of the battery and shorten it's life.

**WARRANTY  
THUNDERBIRD  
Electric Fence Systems.**

Thunderbird warrants the fence energiser against defective workmanship and faulty materials for 2 years from the date of purchase. The solar panel also is covered for a 2 year period, the battery has a 12 month pro rata warranty.

We undertake, at our option to replace or repair free of charge each product, or part thereof, on condition that it is returned to our factory freight pre paid, and found on examination to be suffering from material or constructional defect.

We can not be held responsible for any repair other than those carried out by us or our authorised agents.

**A photocopy of this page or similar must also be returned with the goods showing the filled in details set out below.**

No warranty claim will be accepted without this information.

This warranty is void if the product is subjected to improper use or handling, incorrect power input voltage, damage through contact with chemicals, flooding, fire, explosion, excessive heat, lightning strikes, insect damage, mechanical or impact damage or damage to external wiring.

Country Electronics Pty Ltd  
ABN 38 003 806 040

11 Industrial Avenue  
Mudgee NSW 2850  
PHONE 02 63723600  
FAX 02 63722597

P.O. Box 391,  
Mudgee NSW 2850

Email : [enquiries@thunderbird.au.com](mailto:enquiries@thunderbird.au.com)

**For your records.**

**Model** .....

**Serial No** .....

**Date of purchase**.....

**Place of purchase** .....

**Receipt No** .....