

# PATRIOT®



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**ELECTRIC FENCE PRODUCT AND REFERENCE GUIDE**

[WWW.PATRIOTGLOBAL.COM](http://WWW.PATRIOTGLOBAL.COM)

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# CONTROL WHEN YOU NEED IT, WHEREVER THE TRAIL MAY TAKE YOU.

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Checking voice mail, responding to e-mail, sitting in meetings, closing business deals, and returning calls on your cell phone while stuck in traffic during the morning commute. This is your life, Monday through Friday—and you thrive in it.

Your strong desire for success shows in your career and devotion to your family. The same can be said about your passion for life out of the office. You enjoy the peace and tranquility of living away from the city, the radiant view of an evening sunset, cattle grazing in the pasture, taking leisurely horseback rides, and having a few head of livestock you can call your own. You take pride in this.

Your animals are of paramount importance to you. After all, they are part of your family and way of life now. In order to relax and truly enjoy all that you have worked for, you need to have peace of mind that your animals are safely contained.



## Why use Electric Fencing

An electric fence energizer (can also be called a charger or controller) 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.

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### Animal safety

A safe and effective option to barbed wire or woven fences, electric fence systems also deter and protect against trespassers and predators.

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### Lower cost

Requires less labor 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.

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### Ease of construction

Relatively simple and easy to build, electric fences can be installed quickly and with minimum tools saving you labor time and costs.

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### Flexibility

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.

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### Long life

Using quality components and materials, electric fences can last a long time with permanent electric fences lasting up to 40 years.

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# PATRIOT® ELECTRIC FENCE PRODUCTS

Patriot® electric fence energizers and accessories are built on the foundation of providing you the flexibility to enjoy your lifestyle with a sleek design that matches your need for simplicity, reliability, and performance - all at an outstanding value.

Patriot electric fence products are the result of nearly 70 years of experience from one of the world's leading electric fence manufacturers—Tru-Test Group. Throughout this brochure you will see our commitment to research and product innovation. You will also see our dedication to providing you with the knowledge, tools and support to help you build the best electric fence for your needs.

**If you have any questions not covered in this brochure, please visit our website [www.patriotglobal.com](http://www.patriotglobal.com) or contact your nearest Patriot dealer.**

## **Patriot Promotes Safety First!**

Before you begin installation of your electric fence, check the local zoning law guidelines for your area. Most importantly, check with your local utility companies to identify any buried cables or natural gas lines on or near your property - before you start any digging.



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# Step One: SELECT THE ELECTRIC FENCE FOR YOUR NEEDS

The best electric fence is the one that is suited to your requirements. The table below outlines the 3 main types of electric fence structures as a starting point to help you identify which fence type best suits your needs.

	Portable/Temporary	Semi-Permanent/ Permanent	Permanent High Tensile
<b>Duration Of Fence Placement</b>	Short—moves frequently	1–20 Years*	20–40 Years*
<b>Ease Of Construction</b>	Simple and fast	Easy to medium	Medium. Requires special tools
<b>Recommended For</b>	Horses, cows, pets, garden and small nuisance animals	Deer, horses, cows, sheep, goats, pigs, exotics (llamas, emus etc.), predators	Deer, cows, sheep, goats, pigs, exotics (llamas, emus etc.), predators
<b>Containment Area</b>	Short/small	Unlimited	Unlimited
<b>Primary Need</b>	Temporary containment, intensive grazing	Pastures and cross fencing	Perimeter fencing
<b>Key Benefits</b>	Easy to install, use and move	Can use any combination of post type and conductive wire	Offers greatest fence life. Requires minimal maintenance
<b>Main Fence Components</b>			
<b>Post Type</b>	Tread-in, rod, steel or fiberglass posts	Wood posts, T-posts, rod posts, metal pipes	Wood posts, T-posts, rod posts, metal pipes
<b>Wire Type</b>	Poliwire, tape, rope or braid	Poliwire, tape or rope, steel/aluminum wire	1 2½ gauge high tensile wire
<b>Energizer Type</b>	Solar, dual-purpose, AC (110 V), battery	Solar, dual-purpose, AC (110 V), battery	Solar, dual-purpose, AC (110 V), battery
* This time frame indicates the expected fence life using quality products and keeping the fence maintained.			

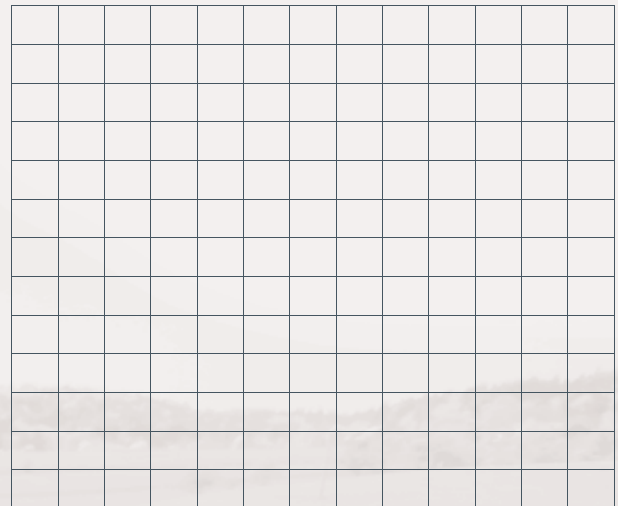
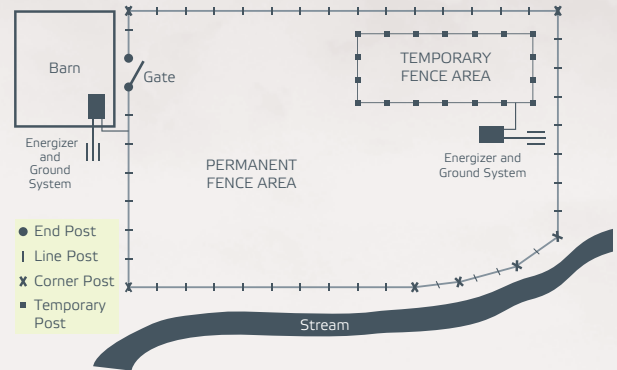


## Step Two: PLAN YOUR ELECTRIC FENCE LAYOUT

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?

Thankfully, there's a good assortment of Patriot products (pages 9–24) to fit most of your electric fence needs. Along with your fence layout diagram, please use our handy checklist (page 5) to put together a list of items required to build your electric fence.



## Step Three:

# SELECT YOUR ENERGIZER AND ACCESSORIES

## Electric Fence Checklist

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. To help you with this we have included a basic electric fence calculation and components list.

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 500 feet and will have four wires, the length of fence wire you require is 2,000 feet. Please also see pages 25–28 for more things to consider when planning a permanent, temporary or solar electric fence.

### Selecting an Energizer

#### Power Source

Select an electric fence energizer power source based on your fencing situation. For example a traditional AC (110 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, Patriot energizers offer a range to suit every need from 0.05 joules output to 4.5 joules. More joules = more power.

Fence Perimeter (ft)	<input type="text"/>
Fence Energizer (model #) <b>pg 9–14</b>	<input type="text"/>
Ground system (Underground cable <b>(pg 19)</b> , joint/ground clamps <b>(pg 21)</b> , ground rods <b>(pg 21)</b> ) Choosing the Right Ground System <b>pg 29</b>	<input type="text"/>

#### Posts

##### Calculations

Spacing (ft) = distance between posts	<input type="text"/>
Number = perimeter feet ÷ spacing	<input type="text"/>
Corners/Gates/End Points = No. of posts required	<input type="text"/>

##### Type

Line (Tread-in <b>(pg 23)</b> , Pigtails <b>(pg 23)</b> , T-post, Metal Pipes, Rod Posts)	<input type="text"/>
Corner* (Wood Post, T-Post, Metal Pipe) *For Semi-permanent/permanent fences only	<input type="text"/>

#### Wire

##### Calculations

Total Length (ft) = perimeter feet x No. of strands	<input type="text"/>
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##### Type

Poliwire, tape, rope, braid <b>pg 23</b>	<input type="text"/>
Steel/aluminum	<input type="text"/>

#### Insulators pg 15–18

##### Calculations

Line = No. of strands x No. of line posts	<input type="text"/>
Corner = No of strands x No. of corner posts	<input type="text"/>

##### Type

Line Insulators	<input type="text"/>
Corner Insulators	<input type="text"/>
Gate Handles/Accessories <b>pg 19</b>	<input type="text"/>

#### Fence Hardware pg 20

<input type="text"/>
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#### General Accessories pg 21–22

<input type="text"/>
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#### Leads and Hardware pg 24

<input type="text"/>
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#### Management and Fence Tools pg 22

<input type="text"/>
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# Animal Considerations

Keep In	Fence Voltage* (Recommended Minimum)	Characteristics/Tips
<b>Beef Cattle</b>	2,000–3,000 V	Bulls require a higher voltage as more aggressive.
<b>Dairy Cattle</b>	2,000 V	If kept separately, calves and heifers require lower wires and less spacing.
<b>Horses</b>	2,000–3,000 V	Intelligent, learn quickly, easy to control. A fence made of politape, wire or rope is less likely to injure if a spooked horse tries to run through it.
<b>Llamas</b>	4,000–5,000 V	Thick coats insulate from electric shocks so require higher voltage.
<b>Deer and Elk</b>	4,000–5,000V	Spook easily and jump higher than most other animals. Above head height, electric high tensile fence recommended. Space wires close enough to prevent stepping through or heads between wires.
<b>Sheep</b>	4,000–5,000 V	Wool insulates from electric shocks so require higher voltage.
<b>Goats</b>	4,000–5,000 V	Some species have thick insulating coats requiring higher voltage. Tend to test fences—space wires low to ground and high enough to prevent being jumped.
<b>Pigs</b>	2,000 V	Start wires close to ground as rooting animal and finish at nose level.
<b>Pets</b>	700–1,000 V	Start wires close to ground.
<b>Keep Out</b>		
<b>Wild Hogs</b>	5,000 V	Aggressive and persistent. Deter from rooting by starting wires close to ground.
<b>Wolves and Coyotes</b>	4,000–5,000 V	Very thick, insulating fur requires high voltage. Can dig to reach prey so place first wire low to the ground.
<b>Bears</b>	5,000 V	Thick, insulating fur requires high voltage. Bait fences to train avoidance.
<b>Deer and Elk</b>	4,000–5,000 V	Move quickly and often run through fences unseen so make fence highly visible.
<b>Small Nuisance Animals</b>	1,000–2,000 V	Start wires close to ground as small and most species prone to digging.

**NOTES:**

- » Fences enclosing both mothers and offspring require an electrified wire at the nose-level height of each.
- » Please see predator voltage ranges if you want to keep both animals in and predators out. To cover all predators use a minimum voltage of 5,000.
- » \* Voltage levels are impacted by vegetation on the fence line, length of fence and type of wire. To check voltage levels on your fence line use the Patriot Voltage Testers found on page 22.



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# PATRIOT ELECTRIC FENCE PRODUCTS

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## Energizers

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 AC (110 V) ⚡, battery 🔋 or solar ☀️ differs across energizer products.

Your choice of fence energizer depends on the following key factors:

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

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## Things to Consider

### Where should you install your Energizer

If you plan to use a 110 V plug to power your energizer, it should be placed inside a barn or shed near the power source.

Patriot Dual-Purpose energizers (P5, P10, P20, P30) 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 Patriot PS5, SolarGuard 50 or SolarGuard 155, these are most effective if placed along the middle of the fence with the panel facing towards the South.

In all cases, refer to your energizer's user manual for specific installation instructions and always mount out of reach of children and animals.

### Can I use more than one Energizer

Yes, you can use more than one energizer, but each must be on a separate fence system.

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

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# Energizer Selection Chart

Model	Power			Animals Controlled / General Fence Range*
	110 V	BATTERY	SOLAR	
PMX450				<b>250 Acres</b> (80 miles)
PMX350				<b>200 Acres</b> (65 miles)
P30				<b>200 Acres</b> (65 miles)
P20				<b>165 Acres</b> (50 miles)
PBX200				<b>165 Acres</b> (50 miles)
PMX200				<b>165 Acres</b> (50 miles)
P10				<b>100 Acres</b> (30 miles)
PBX120				<b>100 Acres</b> (30 miles)
PMX120				<b>100 Acres</b> (30 miles)
P5				<b>60 Acres</b> (15 miles)
PBX50				<b>60 Acres</b> (15 miles)
PMX50				<b>60 Acres</b> (15 miles)
PB12				<b>40 Acres</b> (10 miles)
PE10B				<b>40 Acres</b> (10 miles)
PE10				<b>40 Acres</b> (10 miles)
SolarGuard™ 155 Integrated Solar Energizer				<b>40 Acres</b> (10 miles)
PE5B				<b>20 Acres</b> (5 miles)
PE5				<b>20 Acres</b> (5 miles)
SolarGuard™ 50 Integrated Solar Energizer				<b>12 Acres</b> (3 miles)
PE2				<b>8 Acres</b> (2 miles)
PS5 Solar				<b>8 Acres</b> (2 miles)

\* NOTE: Range claims are a general guide and based on single-wire, weed-free fences. Actual range claims depend on many factors including fence and farm conditions, livestock type and environment. Solar panel wattage numbers are general recommendations and may vary based on geography. Please consult your local electric fence professional to determine the best solar panel for your farm. All Patriot energizers are low-impedance.

# SMALL ACREAGES

## Features/benefits:

### Low impedance energizer

Designed to deliver power to the end of the fence even under heavy load e.g. foliage, undergrowth.

### Low maintenance design

Simple operation.

### LED indicator

LED indicator pulses when energizer is working.

### Robust covered knob design

Easy installation and good wire connection.

**1 year full replacement warranty (including lightning)**

### AC (110 V)

Powered by 110 V plug

### Battery

Powered by 6 V or 12 V battery\*

### Battery

Battery saving mode maximizes battery life. Battery lead set included.

\*Sold separately



## AC (110 V)

### PE2



Ideal for containing pets and keeping out small nuisance animals.

### PE5



Ideal for fencing small properties up to 20 acres.

### PE10



Ideal for fencing small properties up to 40 acres.

## Battery



### PE5B



Ideal for fencing small properties up to 20 acres where AC (110 V) power is not available.

### PE10B



Ideal for fencing small properties up to 40 acres where AC (110 V) power is not available.

## Quick Comparison Table

	<b>PE2</b> (819957)	<b>PE5</b> (819958)	<b>PE10</b> (819959)	<b>PE5B</b> (819962)	<b>PE10B</b> (819963)
<b>DISTANCE RANGE</b>	2 miles / 8 acres	5 miles / 20 acres	10 miles / 40 acres	5 miles / 20 acres	10 miles / 40 acres
<b>PEAK OUTPUT ENERGY (UP TO)</b>	0.1 J	0.2 J	0.3 J	0.2 J	0.3 J
<b>PEAK STORED ENERGY (UP TO)</b>	0.16 J	0.32 J	0.49 J	0.32 J	0.49 J
<b>OUTPUT VOLTAGE (UP TO)</b>	5 kV MAX, 2.8 kV @ 500 Ω	5 kV MAX, 3.2 kV @ 500 Ω	5 kV MAX, 3.5 kV @ 500 Ω	5 kV MAX, 3.2 kV @ 500 Ω	5 kV MAX, 3.5 kV @ 500 Ω
<b>CURRENT CONSUMPTION (MA)</b>	n/a	n/a	n/a	24 mA	36 mA

## Pet and Garden Kit (820963)



- » All you need to build a quick, basic electric fence
- » Great for yards, flower and vegetable gardens, and other similar areas
- » Safely contains pets and deters small nuisance animals
- » Kit includes: 110 V Patriot PE2 energizer, 10 x 28.5" posts with 4 preset clips on each post for quick installation, 100ft of green polywire, ground rod and fence connectors, step by step instructions and sturdy box to store kit when not in use
- » Can also be used with Patriot SolarGuard 50, PE5B or PE10B Battery energizers (sold separately).



# AC (110 V)



## Features/benefits:

**Powered by 110 V plug**

**Low impedance energizer**

Designed to deliver power to the end of the fence even under heavy load e.g. foliage, undergrowth.

**Low maintenance design**

Simple operation.

**LED indicator**

LED indicator pulses when energizer is working.

**Robust covered knob design**

Easy installation and good wire connection.

**Multiple mounting options**

Easily mounts on wall, wood post or T-post.

**2 year full replacement warranty (including lightning)**

**PMX50**



Ideal for smaller fence lines.

**PMX120**



Suited for farms with small numbers of livestock.

**PMX200**



Ideal for medium to large farms with a larger number of livestock.

**PMX350**



Provides more power for those slightly larger farm areas.

**PMX450**



Suitable for large farms.

### Quick Comparison Table

	<b>PMX50</b> (816863)	<b>PMX120</b> (816864)	<b>PMX200</b> (816865)	<b>PMX350</b> (816867)	<b>PMX450</b> (816868)
<b>DISTANCE RANGE <sup>1</sup></b>	15 miles / 60 acres	30 miles / 100 acres	50 miles / 165 acres	65 miles / 200 acres	80 miles / 250 acres
<b>PEAK OUTPUT ENERGY (UP TO)</b>	0.5 J	1.2 J	2.0 J	3.5 J	4.5 J
<b>PEAK STORED ENERGY (UP TO)</b>	0.85 J	1.7 J	3.0 J	6.4 J	6.8 J
<b>OUTPUT VOLTAGE (UP TO)</b>	10.0 kV MAX, 4.8 kV @ 500 Ω	10.2 kV MAX, 5.5 kV @ 500 Ω	9.5 kV MAX, 5.7 kV @ 500 Ω	10.2 kV MAX, 6.2 kV @ 500 Ω	9.6 kV MAX, 6.5 kV @ 500 Ω

Table represents typical values. <sup>1</sup> Actual range depends on many factors including fence and farm conditions.

"BETTER"

# BATTERY



## Features/benefits:

### Portable, convenient energizer

#### Low impedance energizer

Designed to deliver power to the end of the fence even under heavy load e.g. foliage, undergrowth.

#### LED indicator

LED indicator pulses when energizer is working.

#### 2 year full replacement warranty (including lightning)

### PBX Range

#### Battery

12 V (deep cycle, marine type) battery\*. Battery saving mode maximizes battery life. Battery and fence lead sets included.

#### Solar compatible

Solar panel\* charges a 12 V battery\* to power the energizer and fence line. Ideal for remote areas where AC (110 V) power is not available.

#### Low maintenance design

Simple operation.

#### Robust covered knob design

Easy installation and good wire connection.

#### Multiple mounting options

Easily mounts on wall, wood post or T-post.

### PB12

#### Simple set up

Clips directly onto fence wire for added convenience.

#### On/Off switch

Turns energizer off for easy relocation and battery saving.

#### Versatile power options

Can be powered externally (6, 9 or 12 V) or internally (4 x 1.5V D size batteries)\*

#### Automatic recharge<sup>†</sup>

Automatically uses excess stored energy to recharge itself thus extending battery life.

#### Optional tread-in stand\*

Allows energizer to be installed securely in any location.



PB12 with stand\*

\* Sold separately

† When operating on fence with low loads

### PB12



Ideal for small remote areas or quick temporary fences.

### PBX50



Ideal for smaller fence lines.

### PBX120



Suited for farms with small numbers of livestock.

### PBX200



Ideal for medium to large farms with a larger number of livestock.

## Quick Comparison Table

	<b>PB12</b> (820947)	<b>PBX50</b> (818350)	<b>PBX120</b> (818351)	<b>PBX200</b> (818352)
<b>DISTANCE RANGE <sup>1</sup></b>	10miles / 40 acres	15 miles / 60 acres	30 miles / 100acres	50 miles / 165 acres
<b>PEAK OUTPUT ENERGY (UP TO)</b>	0.12 J	0.5 J	1.2 J	1.9 J
<b>PEAK STORED ENERGY (UP TO)</b>	0.16 J	0.67 J	1.7 J	2.7 J
<b>OUTPUT VOLTAGE (UP TO)</b>	8.0 kV MAX, 4.5 kV @ 2,000 Ω	8.2 kV MAX, 4.4 kV @ 500 Ω	10.0 kV MAX, 5.5 kV @ 500 Ω	10.4 kV MAX, 5.8 kV @ 500 Ω
<b>CURRENT CONSUMPTION</b>	7-24 mA	50 mA	110 mA	170 mA
<b>RECOMMENDED SOLAR PANEL</b>	n/a	10 watt	10 watt	20 watt

Table represents typical values. <sup>1</sup> Actual range depends on many factors including fence and farm conditions.

"BEST"

# DUAL-PURPOSE



## Features/benefits:

### Multiple power options

Dual-purpose feature allows energizer to run on 110 V plug or 12 V (deep cycle, marine type) battery\*.

### Solar compatible

Solar panel\* charges a 12 V (deep cycle, marine type) battery\* to power the Patriot Dual-Purpose energizer and fence line. Ideal for remote areas where AC (110 V) power is not available.

### Low impedance energizer

Designed to deliver power to the end of the fence even under heavy load e.g. foliage, undergrowth.

### LED indicator

LED indicator pulses when energizer is working.

### Robust design

Easy, safe installation and good wire connection.

### Easy mounting option

Unique, clip-on wire feature allows mounting on fence wire.

### 2 year full replacement warranty (includes lightning)

\*Sold separately

P5



Ideal unit for smaller applications, strip-grazing and portable fencing.

P10



Great choice for fencing a small number of livestock.

P20



Greater range for more acres and a larger number of livestock.

P30



Most powerful energizer in the lineup with the greatest range and livestock control.

## Quick Comparison Table

	P5 (803401)	P10 (803402)	P20 (803403)	P30 (805153)
<b>DISTANCE RANGE <sup>1</sup></b>	15 miles / 60 acres	30 miles / 100 acres	50 miles / 165 acres	65 miles / 200 acres
<b>PEAK OUTPUT ENERGY (UP TO)</b>	0.5 J	1.0 J	2.0 J	3.0 J
<b>PEAK STORED ENERGY (UP TO)</b>	0.7 J	1.4 J	2.7 J	4.5 J
<b>OUTPUT VOLTAGE (UP TO)</b>	8.0 kV MAX, 4.5 kV@500Ω	9.7 kV MAX, 5.4 kV@500Ω	10.5 kV MAX, 6.0 kV@500Ω	11.0 kV MAX, 6.4 kV@500Ω
<b>CURRENT CONSUMPTION</b>	45 mA	90 mA	170 mA	300 mA
<b>RECOMMENDED SOLAR PANEL</b>	10 watt	10 watt	20 watt	30 watt

Table represents typical values. <sup>1</sup> Actual range depends on many factors including fence and farm conditions.

## Replacement parts

### Power Cord (804129)

Replacement power cord for P5, P10, P20 and P30 Dual-Purpose energizers.

### 12 V Leadset (807396)

Replacement battery leads for P5, P10, P20 and P30 Dual-Purpose energizers.

# SOLAR



## Features/benefits:

### Fully portable, 'All in One' compact design

Comes with an internal battery and solar panel, providing a convenient all-in-one energizer.

### Solar powered

Energy efficient solar panel charges the internal battery to power the fence line.

### Internal rechargeable battery

Solar power recharges the battery as required to support long battery life.

### Flashing red light

Indicates at a glance the energizer is working and powering the fence.

### Battery\*

Battery saving mode maximizes battery life.

### Low impedance energizer

Designed to deliver power to the end of the fence even under heavy load e.g. foliage, undergrowth.

### Multiple mounting options\*

T-post and wood post mounting option.

### Optimal voltage for maximum control\*

### Fully weatherproof\*

### Fast set up with no trenches or underground cable

## PS5

1 year warranty (includes lightning)

## SolarGuard™ 50

Large storage capacity

Enables up to 14 days operation without sunlight

2 year warranty (includes lightning)

## SolarGuard™ 155

Large storage capacity

Enables up to 21 days operation without sunlight.

2 year warranty (includes lightning)

\*SolarGuard 50 and SolarGuard 155 only

### PS5



Ideal for keeping small nuisance pests out, or for keeping small animals safely contained.

### SolarGuard 50



Ideal for vegetable or flower gardens, small residential yards.

### SolarGuard 155



Ideal for small range acreage settings.

## Quick Comparison Table

	PS5 (817369)	SolarGuard 50 (819951)	SolarGuard 155 (819953)
<b>DISTANCE RANGE <sup>1</sup></b>	2 miles / 8 acres	3 miles / 12 acres	10 miles / 40 acres
<b>PEAK OUTPUT ENERGY (UP TO)</b>	0.04 J	0.05 J	0.15 J
<b>PEAK STORED ENERGY (UP TO)</b>	0.06 J	0.07 J	0.21 J
<b>OUTPUT VOLTAGE (UP TO)</b>	7.4 kV MAX 2.6 kV @1,000 Ω	8.5 kV MAX 3.4 kV @1,000 Ω	10 kV MAX 3.7 kV @ 1,000 Ω
<b>INTERNAL RECHARGEABLE BATTERY</b>	4 V	6 V	12 V / 7 Ah

Table represents typical values. <sup>1</sup> Actual range depends on many factors including fence and farm conditions.

## Replacement parts

### PS5 Replacement Battery <sup>(818953)</sup>

Replacement battery for PS5 Solar Energizer.

### SolarGuard 50 Replacement battery <sup>(819777)</sup>

Replacement battery for SolarGuard 50 Solar Energizer.

### SolarGuard 155 Replacement battery <sup>(01020)</sup>

Replacement battery for SolarGuard 155 Solar Energizer.

### Solar Fence Lead set <sup>(812229)</sup>

Lead set for PS5, SolarGuard 50 or SolarGuard 155 Solar Energizer.

# ACCESSORIES

## 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.

### Patriot Insulators

- » Able to be used with low impedance energizers. Developed to complement Patriot'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
- » Patriot extender insulators protect existing fences by extending electric fence barrier from existing wires
- » All Patriot insulators come with a **5 YEAR WARRANTY**.
- » Tried and tested to ensure reliability and durability.

### T-Post Insulators

#### Screw On

Item: 816064 (Black) 819047 (Yellow)

- » Fence wire: Poliwire, politape, poliropo, steel/aluminum wire
- » Secure fit for all T-post sizes
- » Available in: 25 per bag.

Manufactured in USA 



#### Wrap Around T-Post Pinlock

Item: 820017 (Black) 820018 (Yellow)

- » Pinlock design allows easy removal of wires
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Special wrap design secures insulator to post
- » Available in: 25 per bag.

Manufactured in USA 



#### Wrap Around T-Post Claw

Item: 820015 (Black) 820016 (Yellow)

- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Special wrap design secures insulator to post
- » Available in: 25 per bag.


Manufactured in USA 



#### 2in (5cm) Wrap Around T-Post Extender

Item: 820028 (Black) 820029 (Yellow)

- » Protects existing fence by extending electric fence wire 2in (5cm) off the T-post
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Special wrap design secures insulator to post
- » Available in: 25 per bag.

Manufactured in USA 





### 5in (13cm) Wrap Around T-Post Extender

Item: 820021 (Black) 820022 (Yellow)

- » Protects existing fence by extending electric fence wire 5in (13cm) off the T-post
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Special wrap design secures insulator to post
- » Available in: 25 per bag.

Manufactured in USA 

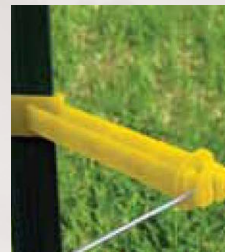


### 5in (13cm) Back Side T-Post Extender

Item: 820035 (Black) 820036 (Yellow)

- » Protects existing fence by extending electric fence wire 5in (13cm) off the back side of the T-post
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Special wrap design secures insulator to post
- » Available in: 25 per bag.

Manufactured in USA 



### T-Post Topper

Item: 814705 (White)

- » Fence wire: Poliwire, poliropo/braid, politape (½in and 1½in), coated/sighter wire
- » Available: 10 per bag.



### 1½in (40mm) Tape

Item: 814717 (White)

- » Fence wire: Politape (½in and 1½in)
- » Available in: 25 per bag.



## Wood Post Insulators

### Wood Post Claw

Item: 820023 (Black) 820024 (Yellow)

- » Can also be used with metal pipes
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Available in: 25 per bag.

Manufactured in USA 



### Wood Post Pinlock

Item: 820033 (Black) 820034 (Yellow)

- » Pinlock design allows easy removal of wires
- » Can also be used with metal pipes
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Available in: 25 per bag.

Manufactured in USA 



### Wood Post Square

Item: 820032 (Black)

- » Fence wire: Poliwire, thin gauge steel/aluminum wire
- » Economical single nail installation
- » Available in: 25 per bag.

Manufactured in USA 



### 4in (10cm) Plastic Insulator Tube

Item: 811411 (Black)

- » Fence wire: steel/aluminum wire
- » Economical way to insulate electric fence wire when using wood posts
- » Available in: 100 per bag.



### 2in (5cm) Wood Post Slant Nail

Item: 820030 (Black) 820031 (Yellow)

- » Protects existing fence by extending electric fence wire 2in (5cm) off the wood post
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Available in: 25 per bag.

Manufactured in USA 



### 5in (13cm) Wood Post Slant Nail

Item: 820026 (Black) 820027 (Yellow)

- » Protects existing fence by extending electric fence wire 5in (13cm) off the wood post
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Available in: 25 per bag.

Manufactured in USA. 



## Wood Post Insulators

### Ring

Item: 810840 (Black)

- » Fence wire: Poliwire, steel/aluminum wire
- » Use with Patriot Ring Insulator Tool
- » Available in: 25 per bag.



### Ring Insulator Tool

Item: 815042

- » Installs and removes Patriot Ring Insulators from fence posts.



### Jumbo Ring

Item: 814590 (White)

- » Fence wire: Poliwire, polirope/braid, steel/aluminum wire
  - » Use with Patriot Ring Insulator Tool
- Available in: 25 per bag.



### Jumbo Wood Post Claw

Item: 814718 (White)

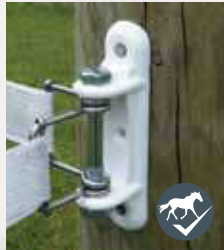
- » Can also be used with metal pipes
- » Fence wire: Poliwire, polirope/braid, steel/aluminum wire
- » Available in: 25 per bag.



### Wide Tape Corner and End Strain

Item: 814593 (White)

- » Can also be used with metal pipes
- » Fence wire: Politape (½in and 1½in)
- » Available in: 2 per bag.



### 1½in (40mm) Tape Wood Post

Item: 814596 (White)

- » Can also be used with metal pipes
- » Fence wire: Politape (½in and 1½in)
- » Available in: 25 per bag.



## End Strain Insulators

### End Strain

Item: 809981 (Black)

- » For use with wood posts, metal pipes and T-posts
- » Fence wire: steel/aluminum wire
- » Effective end strain for termination of electric fence wire
- » Available in: 10 per bag.



### 24in (61cm) Wrap Around

Item: 811413 (Black)

- » For use with wood posts, metal pipes and T-posts
- » Fence wire: steel/aluminum wire
- » Economical solution to create corners in electric fences
- » Available in: 10 per bag.



### Corner Insulator

Item: 814715 (Black) 819054 (Yellow)

- » For use with wood posts, metal pipes and T-posts
- » Fence wire: Poliwire, steel/aluminum wire
- » Economical solution to create corners in electric fences
- » Available in: 10 per bag.



## Porcelain Insulators

### Porcelain Donut

Item: 812511 (White)

- » For use with wood posts, metal pipes and T-posts
- » Fence wire: steel/aluminum wire
- » Creates corners and termination in electric fences. Use on fence ends, curves and corners
- » Fire resistant
- » Available in: 10 per box.



### Bullnose Porcelain

Item: 814206 (White)

- » For use with wood posts, metal pipes and T-posts
- » Fence wire: steel/aluminum wire
- » Effective end strain for termination of electric fences
- » Fire resistant
- » Available in: 10 per box.



### Porcelain Screw-In Large

Item: 814207 (White)

- » For use with wood posts
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Suitable for use as a line or corner post insulator
- » Fire resistant
- » Available in: 25 per box.



### Porcelain Screw-In Small

Item: 814208 (White)

- » For use with wood posts
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Suitable for use as a line or corner post insulator
- » Fire resistant
- » Available in: 25 per box.



### Heavy Duty U Porcelain

Item: 814211 (White)

- » For use with wood posts, metal pipes and T-posts
- » Fence wire: steel/aluminum wire
- » Effective end strain for termination of electric fence wires
- » Fire resistant
- » Available in: 10 per box.



### Woodpost Porcelain with Nail

Item: 814213 (White)

- » For use with wood posts
- » Fence wire: steel/aluminum wire
- » Effective as a line insulator
- » Fire resistant
- » Available in: 25 per box.



## Rod Post Insulators

### 1½in (40mm) Tape

Item: 816066 (White)

- » Fence wire: Politape (½in and 1½in)
- » Fits posts ¼in (6mm) to ¾in (19mm) in diameter
- » Available in: 25 per bag.




### Screw On

Item: 820019 (Black) 820020 (Yellow)

- » Fence wire: Poliwire, politape (½in), poliropo, steel/aluminum wire
- » Fits posts ¼in (6mm) to 9/16in (14mm) in diameter
- » Available in: 25 per bag.




Manufactured in USA 

## Chain Link Insulators

### 3½in (90mm) Chain Link

Item: 816065 (Black) 819056 (Yellow)

- » Fence wire: Poliwire, steel/aluminum wire
- » Extends electric fence wire 3½in (90mm) from chain link fence
- » Available in: 25 per bag.

Manufactured in USA 



AVAILABLE IN YELLOW



# Underground Cable

Use as a lead out wire to connect your fence energizer with your electric fence wires. Depending on location it may also be required underneath both electric gates and non-electrified metal gates to maintain electric circuit connection.

## Underground Cable 50ft (15m)

Item: 809731 (Black)

- » Double insulated with 10 gauge galvanized wire
- » UV stable for long life
- » Available in: 50ft roll.



# Gate Planning

When planning your electric fence layout, give thought to the location of your gates. Ideally, place where animals, people and equipment need easy access to pasture or farm buildings such as stables and barns.

Patriot Gate Handles and Gate Accessories are fully insulated and designed for long life and ease of use. UV stable, they all come with a 1 year warranty.

## Gate Handles and Gate Accessories

### 16ft (5m) Spring Gate

Item: 809983 (Yellow)

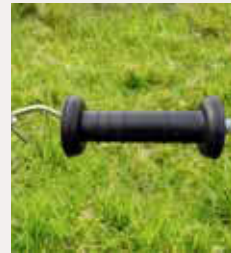
- » Fence wire: Poliwire, poliropo, steel/aluminum wire, politape (1/2in)
- » For use with electric fence energizers, creates a quick and easy gate
- » Spring and activator included
- » Sold individually.



### Gate Handle

Item: 817217 (Black)

- » Fence wire: Poliwire, poliropo, steel/aluminum wire, politape (1/2in)
- » Fully insulated handle with non slip grip and galvanized spring used to electrify gate ways
- » Sold individually.



### Rubber Handle

Item: 809925

- » Fence wire: Poliwire, poliropo, steel/aluminum wire, politape (1/2in)
- » Convenient solution to electrify gate ways
- » Sold individually.



### No Kick Handle

Item: 810838

- » Fence wire: Poliwire, poliropo, politape, steel/aluminum wire
- » Fully insulated handle, used to safely hold electrified wires.



### T-Post Gate Anchor Insulator

Item: 814210

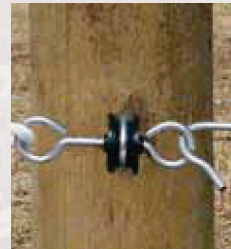
- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Economical option for building a gate between T-posts
- » Available in: 2 per bag.



### Wood Post Gate Anchor Insulator

Item: 814212 (Black)

- » Fence wire: Poliwire, poliropo, steel/aluminum wire
- » Economical option for building a gate between wood posts
- » Available in: 2 per bag.



# Fence Hardware

## Strainers

Patriot Strainers are used to increase tension on medium to high strain fences. Patriot Strainers can be added to your electric fence without cutting wire or used to join wire. Rust resistant and easy to use, Patriot strainers are designed for long life and come with a 1 year warranty.

### In Line Strainer

Item: 815453

- » Fence wire: steel/aluminum wire
- » Tighten with drive ratchet.



### Spring Clip Strainer

Item: 809813

- » Fence wire: steel/aluminum wire.



### Strainer Tensioner Handle

Item: 814209

- » For use with Patriot Spring Clip Strainer.



## Crimping Sleeves

Joins high tensile wire strands together. Use Patriot 4 Slot Crimp Tool to crimp.

### 1-2 Crimp Sleeve

Item: 814231 (25)

- » Joins 14 or 16 gauge high tensile wire.



### 2-3 Crimp Sleeve

Item: 814232 (25) 814233 (100)

- » Joins 12.5 gauge high tensile wire.



### 3-4 Crimp Sleeve

Item: 814234 (10)

- » Joins 10 or 11 gauge wire as well as 14 or 15 gauge barbed wire.



### 4-5 Crimp Sleeve

Item: 814235 (10)

- » Joins 9 to 12.5 gauge wire as well as 12.5 gauge barbed wire.



### 3-4 Crimp Line Tap

Item: 814236 (10)

- » Joins 9 to 12.5 gauge wire as well as 12.5 gauge barbed wire.



### 4 Slot Crimp Tool

Item: 814220

- » For use with Patriot Crimp Sleeves.



### Hi Tensile Wire Cutter

Item: 814237

- » Fence wire: steel/aluminum wire.



# Clamps and Rods

## Ground Rod Clamp

Item: SA112

- » Fence wire: Underground cable
- » Secures underground cable to ground rod
- » Suitable for most ground rods
- » Available in: 2 per bag.



## 6ft Ground Rod

Item: SA110

- » Fence wire: Underground cable
- » Galvanized steel for long life
- » Sold individually.



\*Rod clamp not included

## Joint Clamp

Item: 809984

- » Fence wire: Underground cable, steel/ aluminum wire
- » Holds multiple fence wires or underground cables to provide electrical connection
- » Solid zinc for long life and excellent conductivity
- » Available in: 5 per bag.



# General Accessories

## Brace Pins

Secures horizontal brace post to upright brace posts in corner and brace post assemblies. Galvanized for rust resistance and long life, Patriot Brace Pins come with a 5 year warranty.

5in use with anchor posts. 10in use with vertical brace posts.

## 5in (13cm) Brace Pin

Item: 814218

- » For use with wood posts
- » Available in: 5 per box.



## 10in (26cm) Brace Pin

Item: 814219

- » For use with wood posts
- » Available in: 5 per box.



### Warning Sign

Item: 809700 (Yellow)

- » Clips onto electric fence wire to create clear warning for safety
- » Installs on most electric fence wires
- » Sold individually.



### Lightning Arrestor

Item: 814630 (White)

- » Helps to protect fence energizer in the event of lightning strike to the fence line
- » Strong porcelain frame with steel connection points
- » Sold individually.



### Cut-out Switch

Item: 817216 (Black)

- » Can be used with wood posts and metal pipes
- » Use to isolate sections of fence
- » Stainless steel fittings for positive non-corrosive contact
- » Sold individually.



## Management Tools

### 5 Light Fence Tester

Item: 814217

- » Measures and displays approximate fence voltage
- » Bright voltage lights, easy to read voltage indicator.



### Digital Voltmeter

Item: 806217

- » Essential for accurate testing of fence and energizer ground system
- » Robust design
- » Reads from 200 V to 9,900 V.



### FenceAlert

Item: 804565

- » Fence wire: Poliwire, poliropo/ braid, politape (1/2in and 1 1/2in), steel/ aluminum wire
- » Light flashes if fence voltage is too low or there is a loss of power
- » Can be seen up to a mile away
- » Replaceable lithium battery can power up to 5 years on standby or 2 weeks of continuous flashing
- » Sold individually.



## Tread-Ins

### Sentinel Heavy Duty Tread-In

Item: 820013 (White) 820014 (Black)

- » Fence wire: Poliwire, poliropo, politape (½in and 1½in)
- » Up to 8 positions for poliwire, politape (½in and 1½in) or poliropo
- » UV stable for long life
- » Measures 49in in total height (39in height above ground).

Manufactured in USA 



### Pigtail Tread-In

Item: 806445 (Red)

- » Fence wire: Poliwire, politape (½in)
- » Easy to move, steel step-in post with large foot and insulated top
- » Measures 41in in total height (34in height above ground).



## Reels

### Fence Reel

Item: 809711

- » Fence wire: Poliwire, poliropo, politape (½in)
- » Holds 1650ft (500m) poliwire, 660ft (200m) ½in politape or 400ft (120m) poliropo
- » Use with carry handle or on a mounting post
- » High quality, UV stabilized bobbin for long life
- » Corrosion resistant galvanized steel frame and winding handle
- » Sold individually.



\*Politape not included

## Poli-Products

Patriot Poli-Products are compatible with Sentinel Heavy Duty Tread-In or Pigtail Tread-In posts (above) and made from long life UV stabilized yarn colored white for greater visibility. All come with a 1 year UV guarantee.

### Poliwire

Item: 821449 (White 660ft/200m)  
821448 (White 1650ft/500m)

- » For use with Sentinel Tread-In or Pigtail Tread-In posts
- » 6 stainless steel conductors, flexible, woven for strength and easy handling.



### Politape ½in

Item: 821451 (White 660ft/200m)  
821452 (White 1320ft/400m)

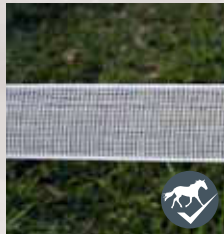
- » For use with Sentinel Tread-In or Pigtail Tread-In posts
- » 6 stainless steel conductors, flexible, woven for strength and easy handling.



### Politape 1½in

Item: 821453 (White 660ft/200m)

- » For use with Sentinel Tread-In or Pigtail Tread-In posts and Equine Range insulators
- » 6 stainless steel conductors, flexible, woven for strength and easy handling.



### Poliropo

Item: 821450 (White 660ft/200m)

- » For use with Sentinel Tread-In or Pigtail Tread-In posts and Equine Range insulators
- » 6 strands of durable stainless steel conductors, tightly woven for superior strength.



### Poliwire Tensioner

Item: 820150

- » For tensioning poli electric fences
- » Fence wire: Poliwire, politape (½in)
- » Non conductive and easy to use
- » UV stable for long life.





# Leads and Hardware

## Jumper Leads

Item: 810836

- » Fence wire: Poliwire, poliropo/braid, politape (½in)
- » Needed to ensure quality connections in temporary fencing
- » Sold individually.



## Wide Tape Joiner

Item: 814602

- » Fence wire: Politape (½in and 1½in)
- » Connects sections of politape together
- » Sold individually.



## Energizer to Wide Tape Connector

Item: 814702

- » Fence wire: Politape (½in and 1½in)
- » Easily connects energizer to politape
- » Sold individually.



## Tape to Tape Connector

Item: 814822

- » Fence wire: Politape (½in and 1½in)
- » Allows the electricity from one politape strand to be transmitted vertically to the politape strand below
- » Sold individually.



## Energizer to Rope/Braid Connector

Item: 814709

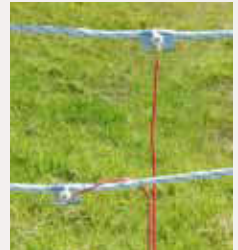
- » Fence wire: Poliropo/braid
- » Easily connects energizer to poliropo or braid
- » Sold individually.



## Rope to Rope Connector

Item: 814708

- » Fence wire: Poliropo/braid
- » Allows the electricity from one poliropo or braid strand to be transmitted vertically to the poliropo or braid strand below
- » Sold individually.



## Step Four:

# INSTALLING YOUR FENCE

Now that you have selected your energizer and accessories, you need to build your fence.

## 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.

### RFI (Radio Frequency Interference)

Many farms suffer from RFI. This often results in poor radio reception and an annoying ticking noise on the telephone line. Most Patriot energizers are fitted with special components and advanced circuitry that significantly reduces the levels of electrical emissions that might otherwise affect adjacent electrical equipment.

### Animal training

One method to train animals to respect electric fencing is to use a small, well-fenced holding paddock. Divide the holding paddock using your Patriot energizer and polywire. Introduce the untrained livestock to the paddock. The animals will quickly learn to avoid the electric fence barrier.

### 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 ground rods and aluminum lead out wire will cause problems. In a short space of time, the aluminum 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. Using identical metals in your electric fence will avoid problems with electrolysis altogether.



# PERMANENT ELECTRIC FENCING GUIDE

A permanent electric fence is a great choice that, if built properly, can last up to 40 years with only limited, routine maintenance. It is the most common type of electric fence and works exceptionally well to contain all types of livestock and keep out most predators.

## Things to Consider

### Converting a barbed wire or woven wire fence

Do you already have a good barbed wire or woven wire fence, but want to make it electric?

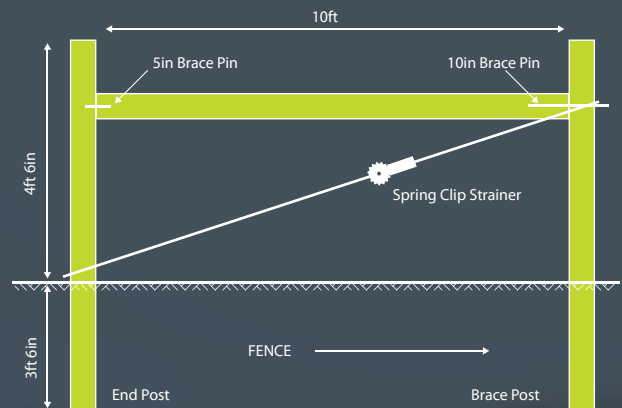
**Note: You should never try to electrify the existing barbed or woven wire as it is too dangerous for your livestock and not very effective.**

Patriot Wood Post Extenders (pages 16–17) and T-Post Extenders (page 15) allow you to maintain your current fence structure while adding high tensile wire, poliwire, 1/2in politape, or poliropo to make it electric. This is a safe and highly effective way to convert a barbed or woven wire fence to electric.



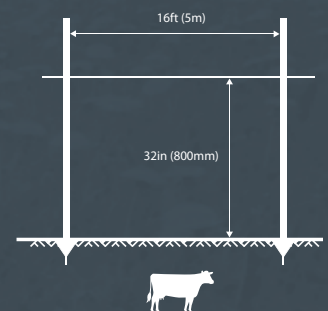
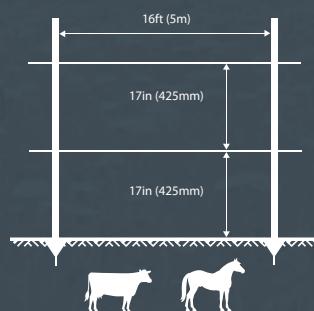
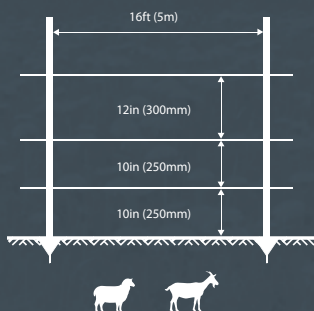
### Corner/End braces

Corner and end braces are most commonly made of wood posts with a metal pipe between them. (You can also use metal pipe posts instead of wood posts.) The most common braces are made of at least two posts spaced at least 10 feet apart or 2.5 times the height of the finished fence. These H braces serve as the foundation of the fence line and help to maintain the tension, very important for high tensile fences. For more information on brace construction, please consult your local Patriot dealer or a fence construction company.



### Wire spacing

Most permanent electric fences have between 2–6 wires. Cattle and horses can generally get by with 2 or 3 wires, while sheep and goats should have at least 5 or 6 wires. To maintain the best control, you must maintain proper spacing between each wire. Below are some samples (additional wire spacing diagrams can be found on the Patriot web site [www.patriotglobal.com](http://www.patriotglobal.com)):



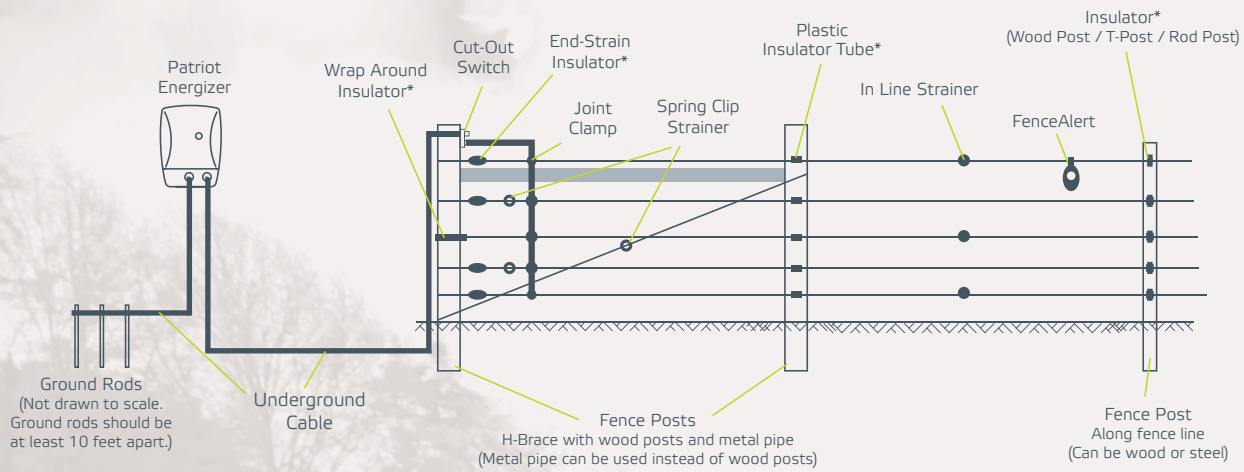
## Fence posts

Permanent electric fences can be adequately constructed with wood posts, T-posts, rod posts, or metal posts. Typically the type of post chosen is determined by local availability and price.

Our accessory product information (page 15–24) indicates which accessories are suitable for the different post types.

## Fence wire

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 (ga) 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. (Aluminum wire is not the same as steel galvanized wire. Small aluminum wire also has less resistance than comparable size steel wire.)



\* Insulator style and type may vary depending on individual need and type of post. See pages 15–24 for a complete range of Patriot Insulators.



1. H brace for the start of a 5-wire fence. 2. T-Post along the line of a 5-wire fence. 3. Wood post along the line of a 5-wire fence.

# TEMPORARY ELECTRIC FENCING GUIDE

A temporary electric fence works well for maintaining a small number of livestock for relatively short periods of time. The fence can be quickly constructed and moved as often as needed. Temporary electric fences are terrific choices for cattle and horses. They are sufficient for sheep and goats, but require more work and greater attention to detail (i.e., wire spacing, available posts, line tension, etc.). Temporary electric fences are also excellent for overnight trail rides to control horses and on camping trips to keep unwanted animals away from your camp site.

## Fence posts

Temporary electric fences are generally constructed with either Sentinel Tread-In or Pigtail Tread-In posts (page 23). For more information on these products, contact your nearest Patriot dealer.

## Fence wire

For temporary fences, good poliwire, poliropo, or politape (page 23) with at least 6 strands of conductors are the best choice.

All Patriot temporary fencing wire contains 6 stainless steel conductors and white UV stabilized yarn for greater visibility and longevity. The biggest difference is the thickness and visibility of the different products i.e. politape is larger and therefore more visible than poliwire.

## How do you join Poliwire or Politape

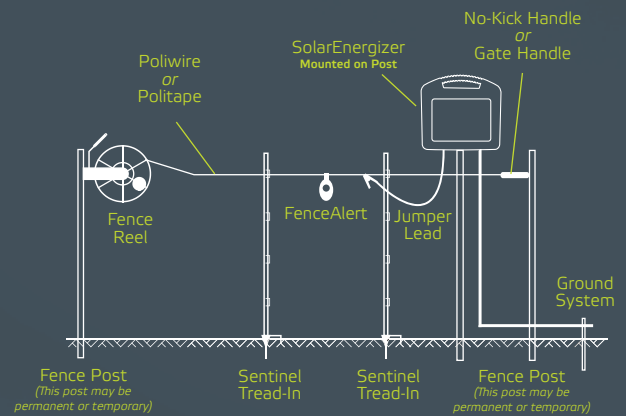
To join broken (or separate ends) of poliwire or politape, use a cigarette lighter to burn away the plastic yarn in order to expose the stainless steel wires. Twist and join the wires together, then tie the

poliwire in a knot. The electrical current can then pass through wires.

For 1/2in politape or 1 1/2in politape, you can also use the Patriot Wide Tape Joiner (page 24).

## Can a temporary fence be used as a boundary fence

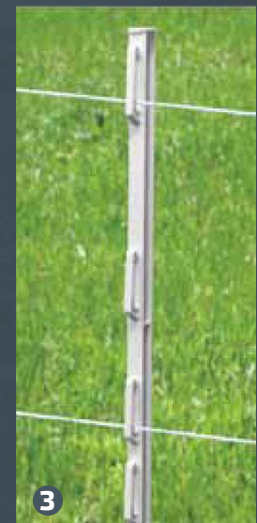
No, a temporary fence is not suitable for a boundary fence. A permanent fence is a much better choice.



1. Fence Reel with Politape.



2. Section of temporary fence using Pigtail Tread-In Posts and Politape.



3. Section of temporary fence using the Sentinel Tread-In Post and Poliwire.

# SOLAR 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. Patriot offers a range of energizers that are compatible with solar energy (pages 12,13) as well as integrated solar systems (page 14).

## What you will need\*

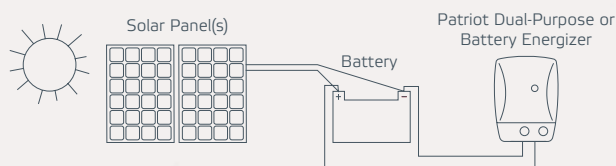
- » **Energizer**—Select your energizer based on the area you need to fence. It is important that you have adequate power or you risk weak spots in your fence which could allow animals to escape or enter.
- » **Battery**—Stores the energy harnessed by the solar panel. Patriot Dual-Purpose and Battery 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. See the quick comparison tables (pages 10,12 and 13) for 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). *Consult energizer user manual for recommended battery type.*
- » **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.
- » **Grounding**—As with other types of electric fence systems it is important to ground your solar electric fence (pages 30-31).

\*Contact your local Patriot dealer 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.**



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## Step Five:

# GROUNDING AND TESTING

This is one of the most important parts of the fence. Without a proper ground system, you will not be able to achieve the maximum benefits of your electric fence.

### What is a Ground System

A ground 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.

A ground system consists of a number of ground 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 ground rods are required.

### How does grounding 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 ground system, then back up to the energizer. If the ground system isn't working properly, the animal won't get an effective shock.

### What factors will affect the Ground System

Dry, sandy and non-conductive soil types limit the current flow to the ground rods. If you have soil that is not well suited to grounding, use additional ground rods, choose a better location for the ground system, or use an alternate method of grounding such as a 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 ground system will lead to electrolysis. This may cause the parts of the ground system to disintegrate in a short period of time. For example, never use copper wire with galvanized ground rods.

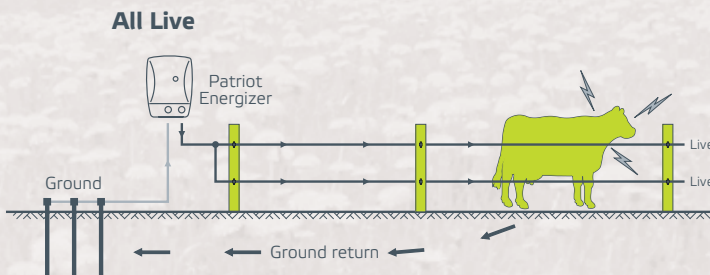
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## Choosing the Right Ground System

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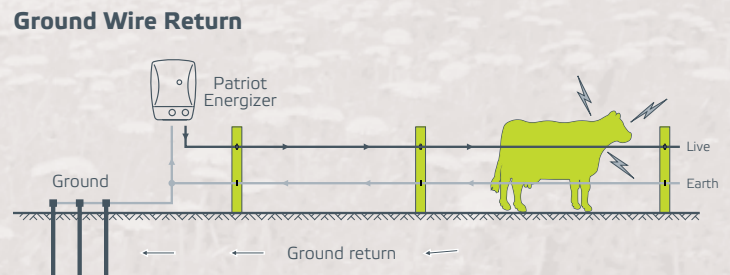
### Ground Systems – all live

An all live ground 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.



### Ground Systems – ground wire return

A ground 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 ground wire at the same time, the circuit is completed and the animal gets a shock.



# Selecting a Site for the Ground System

A suitable place for the ground system is:

- » At least 33ft (10m) away from any other ground 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 ground system in close proximity to the energizer, you may be able to use the existing fence line to connect to a remote ground system. In dry weather, it may be necessary to water the ground system in order to improve soil conductivity.

# Setting up a Ground System

## Ground rods

The number of ground 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 ground rods to use.

### To insert the ground rods:

- » Space the required number of 6ft (2m) ground rods (page 21) at least 10ft (3m) apart.
- » Drive the ground rods deeply into the soil, at least 10ft (3m) apart. Make sure that the ground rods protrude out of the soil at least 4in (10cm) so they can be easily connected.
- » Join the ground rods in a series using ground clamp (page 21) and underground cable (page 19).

## Testing the Ground System

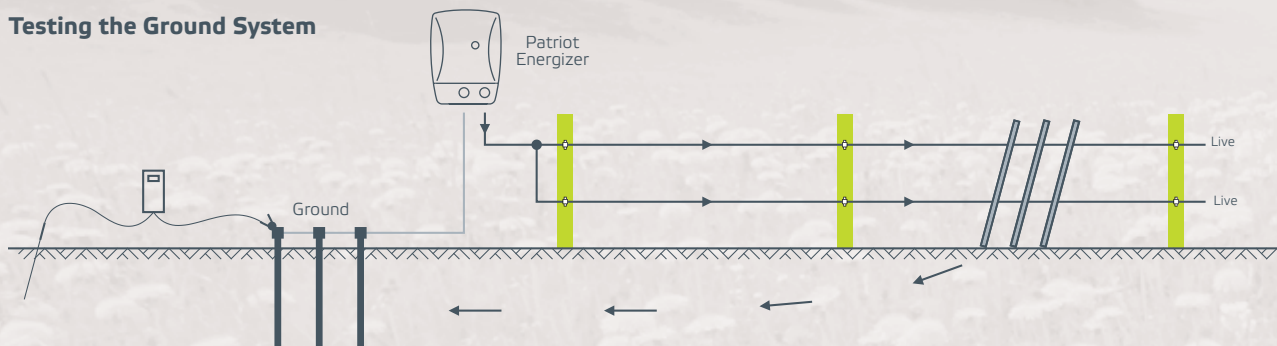
1. Turn off the energizer.
2. At least 330ft (100m) away from the energizer, short circuit the fence by laying several steel rods (or lengths of pipe) against the fence. In dry or sandy soils, drive the rods up to 12in (30cm) into the soil.
3. Turn on the energizer.

4. Use a digital voltmeter to measure the fence voltage. It should read 2 kV or less. If not, repeat steps 1 to 3.
5. To check the ground system, attach the voltmeter's clip to the last ground rod and insert the ground 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 ground system is insufficient. See the grounding checklist, add more ground rods, or find a better location for your ground system.

### GROUNDING CHECKLIST

- All wires are joined securely.
- Connections to ground rods are secure.
- Ground rods are at least 6ft long and at least 10ft apart.
- There are a sufficient number of ground rods.
- All parts of the ground system are made of the same metal.
- Ground rods are buried deeply in the soil.

## Testing the Ground System





# TROUBLESHOOTING

## Finding a Fault Using the Patriot Digital Voltmeter

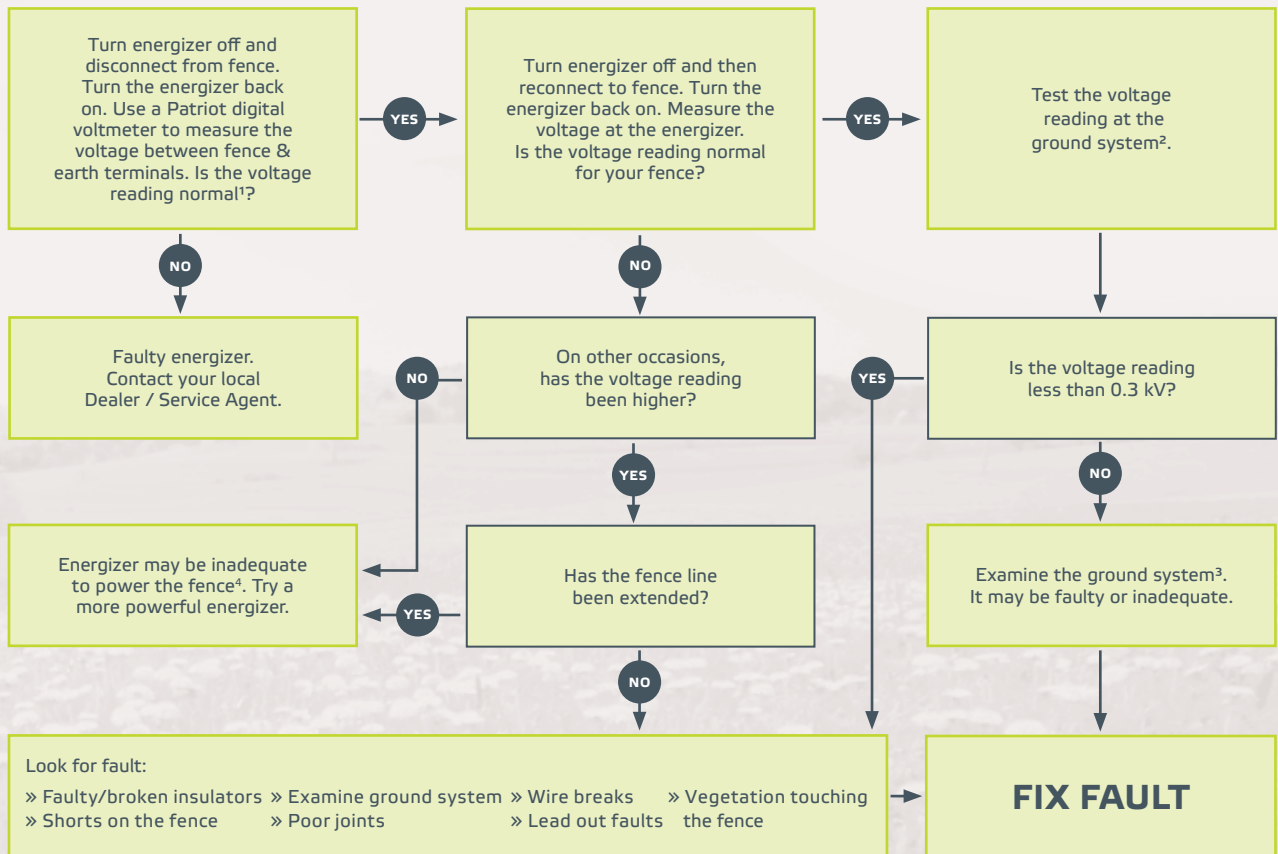
Electrical current flows toward a fault (short) in the same way that water flows towards the plug-hole in a bath tub. A digital voltmeter allows you to follow the direction of the current towards the fault.

- » Check the energizer and the ground system.
- » At the first cut-out switch, disconnect the rest of the fence and take a voltage reading. The voltage should be normal.
- » Move along the fence line stopping at each cut-out switch. Take a voltage reading with the cut-out switch closed and again with the cut-out switch open. A spike in the voltage reading with the cut-out switch open indicates a fault in the section of the fence which has been disconnected.
- » If you are still having trouble, follow the troubleshooting flow chart below.

When using the Digital Voltmeter to find faults, isolate sections of the fence line with Patriot Cut-out Switch (page 22).



### START



1. Compare this voltage reading to the voltage output on the user manual or Energizers section of this brochure (pages 9–14).  
 2. There are different ways a ground system can be set up. To find out the best way to test the voltage reading of your ground system see pages 29–30, or contact your local Patriot dealer for assistance.  
 3. Refer to the Grounding and Testing section of this brochure (pages 30–31).  
 4. Refer to Animal Considerations section (page 6) for more information on recommended minimum fence voltage for animal containment.  
 Always check that the fault has been fixed correctly. If fault is still present, return to start.  
 For further assistance, contact your local Patriot dealer, visit [www.patriotglobal.com](http://www.patriotglobal.com), or call Tru-Test customer service at 800-874-8494.

# ADDITIONAL INFORMATION

## Key Terminology

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







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