



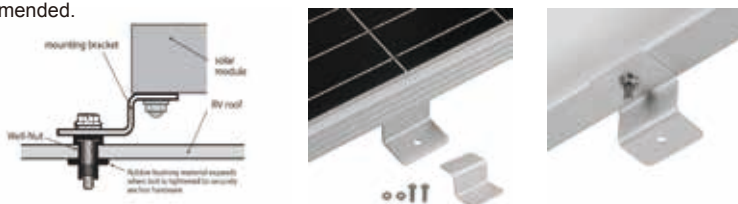
# User Manual

## Crystalline Solar Panel and Charging Kit

Parts List		Specification	
<b>Parts Description</b>	<b>Quantity</b>	<b>Property</b>	<b>180W</b>
Solar panel	1	Solar Cells	Crystalline
SAE to bare end cable	1	Maximum Power(Pmax)	180 W
SAE to battery clamp cable	1	Current at Pmax(Imp)	9.51 A
Z bracket / set	1	Voltage at Pmax(Vmp)	18.94 V
Charge controller	Optional	Short Circuit Current(Isc)	10.34 A
Manual	1		

### Mounting the Solar Panel

Choose a site for mounting the solar panels that is free from shade and located in an area that receives maximum sunlight daily. In the Northern Hemisphere, The best direction to face solar panels is south. However, using your judgment in figuring out which location gets the most sun, would be helpful. For maximum solar power absorption throughout the day, a tilt-mounting is recommended.



The solar panels can be permanently installed level using the Z-brackets. Measure the distance between the mounting site and the battery location. The charge controller should be mounted in close proximity to the battery bank (within 5 feet). Refer to the DC electrical wire guide to choose an appropriate gauge wire for the length of the wire. If you choose to mount your Solar Panel on your RV, be sure you solidly mount your panels to the roof. If you have a rubber roof over thin plywood you may want to use molly fasteners to get a better grip. If you have a fiberglass roof, drill some pilot holes through the fiberglass to reach plywood below. This will prevent cracking or damaging the fiberglass. If your RV is equipped with a metal roof you must mount the solar panel to the joists supporting the roof.

### Installing Instructions

#### Selecting the correct charge controller

Charge Controllers are sold separately and are required for installations of solar systems arrays that are rated 12 Watts and higher. Nature Power Products offers charge controllers from 8Amp-32Amp. One Charge Controller can regulate multiple solar panels.

#### Selecting the correct battery

Nature Power does not offer batteries. However, please choose a 12 Volt rechargeable battery. Do not attempt to recharge non-rechargeable batteries. 6 Volt battery configurations may also be used if connected in series (Negative to Positive). You may choose a Sealed Lead Acid battery, a Gel-Cell or a Deep Cycle 12 Volt battery. Batteries come in all different sizes, please converse with your battery dealer for more information on which type of battery you should use for your system. Note your solar panel amperage rating when selecting your battery size.

### Location of solar module

Please locate your solar module in a position where it can absorb direct sunlight on the solar panel, and generally free from cover and shade. To capture the most sunlight in a day Solar Modules should be facing 20 degrees South if you are in the Northern hemisphere and 20 degrees North if you are in the Southern hemisphere. The Solar Module can become very hot, please keep out of reach of children. Do not place heavy objects on Solar Module.

### Out put power testing

You may use a voltage meter or a digital multi-meter to measure the voltage of your Solar Module before connecting to the battery. Voltage can range between 15-22 volts; Testing will ensure correct charging operation. Testing equipment not included.

### Electrical installation

Please refer to the charge controller section.

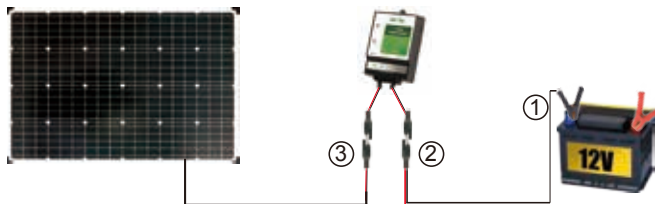
## Charge Controller

Any solar panel that is rated 12 watts or higher requires the use of a charge controller, The Charge controller is designed to protect your 12 Volt batteries from being overcharge and deeply discharge.

LED light indicates a full battery charge "green" at 14.2 Volts, at this time the charge controller will cut out to prevent overcharging.

LED light indicates battery charging "yellow" when battery reaches below 13 Volts, charge controller will cut in and allow solar panel to be charging.

Property	Specification
Battery Voltage System	12V Only
Cut-in Voltage	13V
Cut-out Voltage	14.2V



### Electrical Installation

Please confirm that you have all parts to your system before starting installation.

**\* Charge controller is optional and may not be included. below image just showing how to connect the solar panel to charge your battery. Reverse below steps to uninstall.**

**Step1** Connect the battery with SAE-battery clamp cable, Always connecting the positive to positive, negative to negative.

**Step2** Connect the SAE connector to charge controller (battery side of charge controller)

**Step3** Connect the solar panel to charge controller (solar panel side of charge controller)

## Limited Warranty

Nature Power warrants our products to the original purchaser that this product is free from defects in materials and workmanship for the period of 1 year from date of purchase, 25 year warranted to generate up to 80% of rated power from date of purchase.



#### WARNING

This product can expose you to chemicals, including Di (2-ethylhexyl) phthalate (DEHP) which is known to the State of California to cause cancer, birth defects or other reproductive harm. For more information, go to [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)



#### ADVERTENCIA

Este producto puede exponerlo a productos químicos, incluidos Di (2-etilhexil) ftalato (DEHP) que el estado de California sabe que causa cáncer, defectos de nacimiento u otros daños reproductivos. Para obtener más información, vaya a [www.p65warnings.ca.gov](http://www.p65warnings.ca.gov)

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