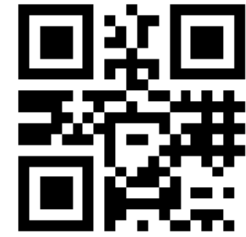




Sun-In-One™
New Electrical Solar Light and Power Products



suninone.com



Sun-In-One™ Foldable Solar Panel

FSP-100

FSP-120

FSP-190

FSP-380

USER MANUAL

SUN-IN-ONE™

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Welcome

Congratulations on becoming an owner of our Sun-In-One™ Foldable Solar Panel. You have made an excellent choice and we hope you will enjoy all its capabilities.

Please read the manual carefully before using the system and keep it for future reference

We provide the manual for your convenience to understand the operation of the product. It covers the parameters, installation, operation, failure recovery and notes.

We attempt to cover all scenarios in this manual. However by the limits of space, the manual cannot cover all the potential uses and problems that might be encountered while using this product. Please forgive us any inconvenience resulted to you should this manual not cover your specific question.

Sun-In-One is committed to providing quality renewable energy products and services.

1. Please read the following carefully before using the product and be sure to keep this manual for future reference
2. This is only a reference document. Product specifications should be studied from the products provided
3. Please follow the instructions strictly to operate the product
4. Please refer to www.suninone.com for more solar products

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Introduction

Functions

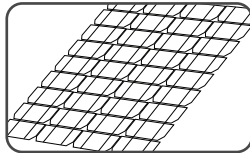
This product is designed to charge car lead-acid battery. Compact in size, this unit folds up easily for simple storage and transportation.

Ideal for all outdoor applications such as Camping, RV, Marine, Fishing, Hunting, Caravanning and more!

Specification Notice

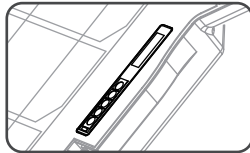
About Solar Panels

PET, the surface material of solar panel is a kind of high polymer material of fire resistance, withstand high temperatures. If you find bubbles, mottles appearing on the surface of solar panels, please consult the professional maintenance staff for repair or replacement.



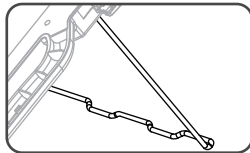
About Indicator

LEDs are used for indicator. The phenomenon that the lights become dark, flashing or not working, shows the LED lights need to be replaced. Please contact with professional maintenance staff for replacement.



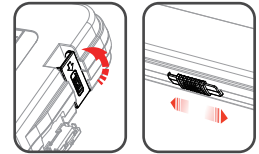
About brackets

The brackets are installed on the shell. Please choose flat ground to place the product.



About Fastener

Four fasteners fix both the up and down parts together; make sure its stability.

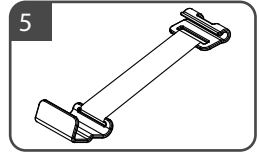
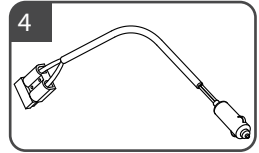
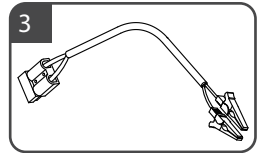
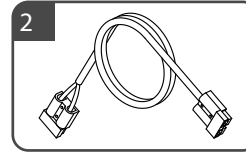
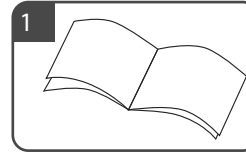


Normal Use conditions

Working temperature: 5 C~60~C
Working Humidity: 20%RH~80%RH
Air Pressure: 86kPa~105kPa

Necessary Accessories

1. Instruction
2. 5m connection line
3. Cigarette lighter extension line
4. Alligator clip extension line
5. Fixing belt



Safety and Cautions

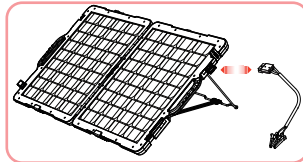
To ensure the correct operation, prolong the service life of the product, please read the following cautions.

Warning:

- ▲ To avoid damaging to product, do not drop or place heavy objects on it.
- ▲ To avoid fire, do not place open flame on the product shell, i.e. lighting candle.
- ▲ If there is any unusual phenomenon (i.e. smell) or drop impurities into the product while using, please stop using immediately, extract the connectors and contact with maintenance staff.

Closing

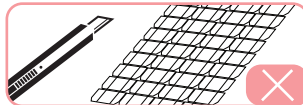
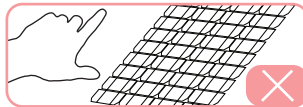
Before clear the products. Please disconnect the connector from product.



Surface protection

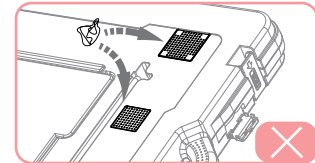
PET, the surface material of solar panel is easy to be scratched, thus to effect the generating efficiency and lifetime.

We suggest you not touching or scratching the solar panels with hard things.

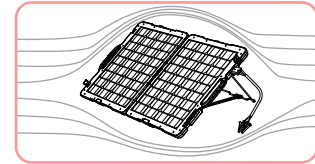


Ventilation

Please do not put any impurities into the product through the ventilation holes. The foreign matters may cause published circuit board (PCB) inside to be short-circuited.

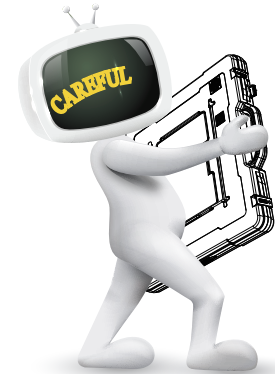


In the strong sunlight, the product will reach a high temperature. An extra-high temperature will cause damage to the product. Make sure the product well ventilated. Do not block the ventilation holes.



Avoid Damage

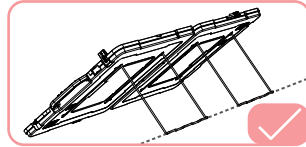
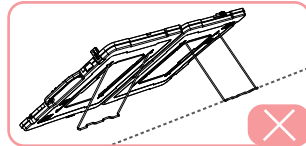
Avoid products (especially the solar panel) from cracking hard things. Be careful when in transportation, loading and unloading. Otherwise, it will cause fracture to solar panel.



Safety and Cautions

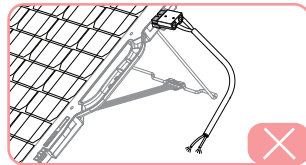
Angle Adjust

This product with two lightweight brackets, can be adjusted the facing angle. Do not adjust the brackets in different angles. We suggest placing product in flat ground.



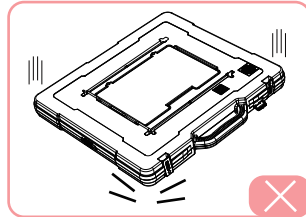
Accessories

Please use the accessories not provided or suggested by manufacture. Improper using will cause damage to products.



Dropping

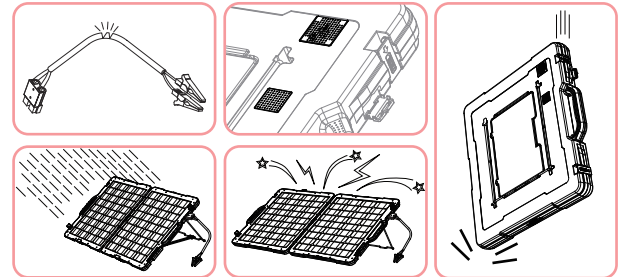
The solar panel is made of thin epoxy board. So any dropping or cracking may cause the fracture to solar panel.



Maintenance and Service

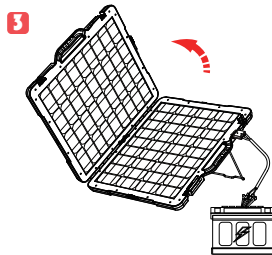
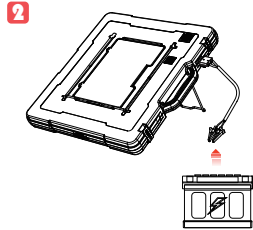
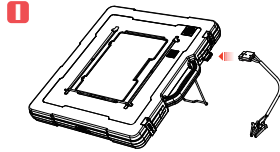
In the following situations, please immediately pulled out the connectors, and refer to professional maintenance staff.

- ▲ Connection line or extension lines are worn out.
- ▲ Any foreign matters go into the product.
- ▲ The product suffers from rain or water.
- ▲ If you operate according to the instructions, but the product is not able to work properly. Please do not touch the controlling units which are not mentioned in the instructions. Any improper operation will cause damage to the product, and increase the maintenance work.
- ▲ Damage by dropping.
- ▲ Any obvious unusual phenomenon shows the product needs to be repaired.

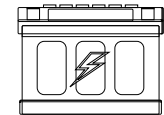
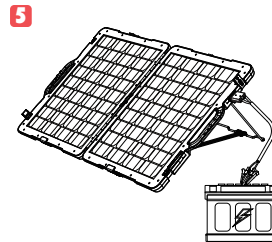
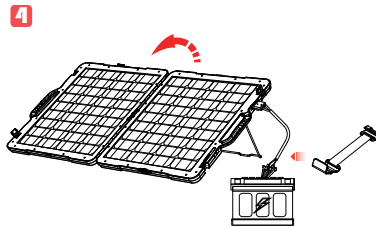


After repair or maintenance, please ask the maintenance staff to check the product working properly.

Connection



- 1 Connect the connection line
- 2 Connect the battery
- 3 Unfold the product
- 4 Connect the support belt
Adjust the tilt angle
- 5 Observe the indicator status
Make sure system is operating normally



12V Lead-acid battery
12V Gel battery

Correct Usage

Using Steps

1 → 2 → 3 → 4 → 5

Shutdown Steps

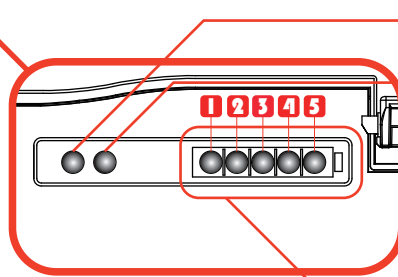
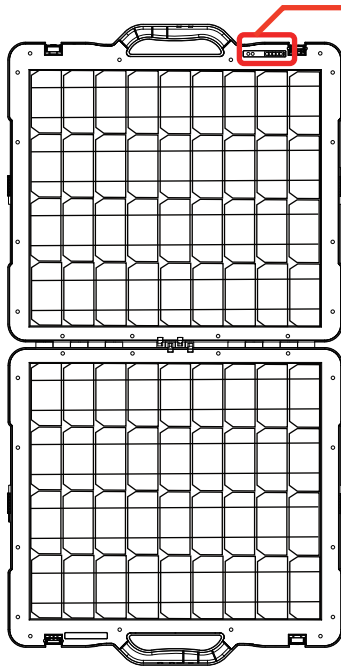
5 → 4 → 3 → 2 → 1



Notice:

Make sure to shut it down according to the following steps. Any mistake may cause damage to it.

Indicator



Temperature sensor



Charging Indicator



	constant lighting	charging properly
	fast flashing	battery over-voltage

Battery State Indicator

- I am very hungry
- I am hungry
- I feel hungry
- I am OK
- I feel a little full
- I am full
- I am very full

Before referring to maintenance or service, please check the following items.

Breakdown	Possible Reason	Solution
Solar panel exposed in sunlight, charging indicator is not lit	Solar panel is not connected	Check whether the connector is connected correctly, tightly.
Battery indicator 1 shows constant orange	Battery low-voltage	No affect to load output. The indicator will turn green after been charged.
Battery indicator 1 shows constant red and no load output	Battery over-discharged	The output will be automatically cut off. Charge the battery, the indicator will turn into green.
Battery Indicator Indicator 2,3,4,5 fast-flashing on the same time	Over-loaded, or load short-circuited	If over-load: Decrease the load power. If short-circuited, find what caused the short-circuited.
Battery indicator 4,5 fast-flashing at the same time	Controller overheated	Try to decrease the environment temperature.

Regular Check and Maintenance

To maintain the best long-term performance, it is recommended you check the following items before use.

- ▲ Check to ensure the unit appears to be in good condition.
No cracks or broken connectors.
- ▲ Make sure nothing is blocking the ventilation holes, and the fan is working.
- ▲ Make sure there are no cracks or blistering of the solar panel.
Clean the solar panel surface regularly.
- ▲ Make sure the connection line or extension lines are not twisted or frayed.
Change the lines if necessary.
- ▲ Check the connectors for corrosion or damage.

Product Parameters

Item	Parameters
Size	664mm*668mm*70mm
Weight	9.5kg
Material	ABS+PC , steel bracket
Solar Panel Power	100W, 18V/5.55A
Controller	12V/10A
Output	12V
Connectors	Anderson Plug
Max Charge Current Allowed	10A
Charge Voltage Drop	$\leq 0.26V$
Discharge Voltage Drop	$\leq 0.15V$
Self-consumption	$\leq 6mA$

Battery Charge Control Parameters

Control Voltage Set Value	Parameters for Sealed lead-acid battery
Over-voltage Disconnect	16V
Charge Maximum Voltage	15.5V
Equalizing Charging Voltage	14.6V
Boost Charging	14.4V
Float Charging	13.8V
Under-voltage Warning	12V
Under-voltage Disconnect	11.1V
Discharge Minimum Voltage	10.8V