



**ECO-WORTHY**

# SOLAR TRICKLE CHARGER MANUAL



## **SUPPORT**

Please read these instructions carefully before using this product. Failure to follow the precautions and warnings contained in these instructions may lead to product damage.

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# Safety Caution

## **-Disclaimer**

For the use of this manual and the conditions or methods of installation, operation, use, and maintenance of photovoltaic (PV) product are beyond ECO-WORTHY's control, ECO-WORTHY does not accept responsibility and expressly disclaims liability for any loss, damage, or expense arising out of or in any way connected with such installation, operation, use or maintenance.

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ECO-WORTHY reserves the right to change the manual, the PV products, the specifications, or product information sheets without prior notice.

## **-General safety**

- When connecting with the battery, avoid reverse connection of positive and negative poles and short circuit
- The power generation capacity of the product is related to factors such as sun irradiance, weather conditions, temperature, and installation angle
- Avoid shade during the working process
- Avoid long time sitting in rain
- Avoid pulling the cable forcefully
- Handle with care, avoid falling from a high place, heavy pressure, and poking the product with sharp and hard item
- Please keep the PVC suction cup clean

## Features

- Built-in diode prevents reverse current
- SAE quick connector allows plug and play
- IP64 waterproof junction box
- Low maintenance, portable and lightweight
- 2 large PVC suction cups for easy mounting
- Alligator clips and cigarette lighter plug

## Applications

This product can be used in a variety of daily use to alleviate a host of troubles.

The solar trickle charger can provide trickle charging for your battery, and built-in diode to prevent the reverse current during the night. It will prevent draining out of long sitting vehicle's battery.



## Specification

Rated Maximum Power	2.5W
Solar Cell Type	Monocrystalline
Maximum Working Voltage	16.0V
Maximum Working Current	0.156A
Open Circuit Voltage	19.2V
Short Circuit Current	0.171A
Overcharging Protection Voltage	14.5V
Overcharging Recovery Voltage	13.0V
Working temperature	-20~60 ℃
Connector	SAE
Dimension	7.7*4.9*0.4inch (196*125*12mm)
Weight	0.5lbs (230g)

## Components List

Unit	Length	Quantity
Solar Panel to SAE Connector Cable	59inch(1500mm)	1
Alligator Clip to SAE Connector Cable	22.8inch(580mm)	1
Cigarette Lighter Plug to SAE Connector Cable	22.8inch(580mm)	1
PVC Suction Cup	/	2

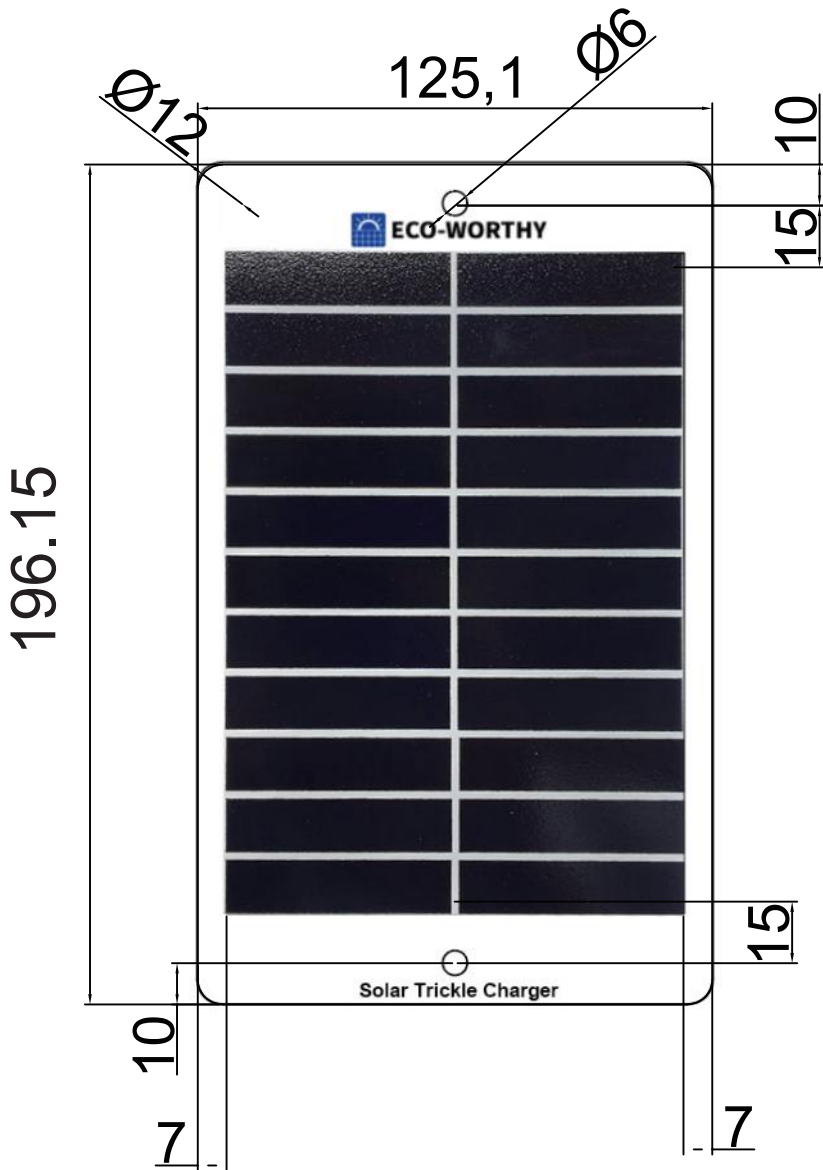


## Components List

Green Light Sustains	Charging
Green Light Flickers	Charging is over
Green Light Off	No PV Input

# Module Mounting

-Mounting holes



## ***-Suction cups using***

There are 2 PVC suction cups included in the solar panel package. Use them to attach the panel to the inside of the car's windshield or to anywhere on the car's exterior.



## **General Wiring**

This product can be connected to the car battery in two different ways.

### **(1)Cigarette lighter Connection**

Connect the cigarette lighter + SAE cable to the solar panel's SAE plug and plug the cigarette lighter connector into the vehicle's cigarette lighter port to charge the vehicle. (This works with the majority of vehicles).



# Testing and Troubleshooting

## *Testing*

Check the open-circuit voltage (Voc) of every module, using a digital multimeter. The measured Voc should correspond close to the Vocs of the module parameter. You will find the rated voltage in the technical specifications of the specific module. If the measured value is significantly lower than the expected value, proceed as described under “Troubleshooting an low voltage”.

## *Troubleshooting a low voltage*

To identify the commonly low voltage and excessively low voltage, the commonly low voltage mentioned here is the decrease of open-circuit voltage of the module, which is caused by the temperature rising of solar cells or lower irradiance. Excessively low voltage is typically caused by improper connections of the terminals or defective bypass diodes.

·Check the open-circuit voltage with multimeter

·If the measured voltage is only half of the rate, this indicates a defective bypass diode. By replacing or remove the diode, the issue may be sorted. Removing the bypass diodes should only be done by a competent PV technician and the module has to be disconnected from the system.

## FAQ

1. Why is the indicator light still on after I disconnected the panel?

The indicator light will be on as long as there is a power supply, when the panel is still receiving sunlight and converting it into electricity even after disconnecting the connection to the cigarette lighter. After the panel stops receiving sunlight or is placed in a dark place, the indicator light will slowly turn off.

## 2. Why can't I charge the car battery by the cigarette lighter?

For some brands and models of vehicles, the circuit between the cigarette lighter and the battery is disconnected when the ignition is off, such vehicles are not suitable to be charged by cigarette lighter port.

## 3. Why does the vehicle's battery voltage keep dropping?

Put the panel in the sun and use a multimeter to test the output voltage and current of the panel respectively. The normal panel output should be 12V, 0.3A (5W)/ 0.5A ( 10W). The panel will not produce much output without directly sunlight, so make sure that the vehicle or panel is placed in a sunny place.

# Maintenance

The following maintenance is recommended to ensure optimum performance and longevity of the solar panel:

- Clean the glass surface of the solar panel when necessary. Always use water and a soft sponge or cloth for cleaning. A mild, non-abrasive cleaning agent can be used to remove dirt.
- Check the electrical and mechanical connections every six months to verify that they are clean, secure and undamaged.
- Inspect the solar panels and make sure the surfaces are free from dust, dirt, and other debris; clean with a wet cloth or glass cleaner if necessary.
- Check to make sure all structural components, mechanical fasteners, and electrical connections are secure, clean, and corrosion-free.
- Check and replace damaged components if necessary



## Support

This product is covered by a 1 year warranty provided by ECO-WORTHY Ltd. We will refund or partial refund or replace any products with defects due to our imprudence.

If you are experiencing technical problems and cannot find a solution in this manual, please contact ECO-WORTHY for further assistance.

***Contact number:***

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