

ECO-WORTHY
— Reliable Solar Expert —



USER MANUAL
SOLAR TRICKLE CHARGER-
BATTERY MAINTAINER



Retain these instructions



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

Important Safety Information

Thank you for choosing our product! Before using this product, please carefully read this manual and familiarize yourself with the product details.

This product is designed for use under specific conditions. If you are unsure of whether or not the product can be used in a certain way, please contact us at our email address, info@eco-worthy.com. We strongly discourage the alteration or modification of this product. If you need to alter or modify the product, please contact us for further information. We will not assume responsibility for any consequences that result from modification of the product.

WARNING

·Read and ensure that you understand all the contents of this manual. Failure to follow the instructions may lead to severe injury or property damage.

·The warnings, precautions, and instructions contained in this manual do not cover every possible scenario. When using this

product, you should exercise common sense and take necessary precautions. Remain aware of your environment and ensure that you use this product in a safe and responsible manner.

·Users should not operate or assemble this product before reading the manual and becoming familiar with how the product operates.

·Please do not modify this product in any way. Unauthorized modification of this product may impact the product's functionality or safety, and could reduce the product's service life.

·Use an appropriate electrical load (less power than this product's power output). Do not attempt to forcefully increase this product's load. This product is designed for certain conventional uses. Following these conventions will enable the product to function safely and in accordance with expectations. Do not use this product in ways that fall beyond the scope of product design.

This product is a portable solar-powered charger that is light and easy to carry. It utilizes high-efficiency solar panels, and ultra-translucent PET materials are used for the outer layer of the panels.

Features:

- Keep your battery topped off in all seasons with free solar energy
- A built-in diode prevents reverse charging, so there's no drain on your battery
- SAE quick connector allows plug and play
- Waterproof & Anti-ultraviolet fabric for long lifetime
- Low maintenance, portable and light weight

- 4 suction cups enable easy mounting;
- 2 interchangeable clamps and cigarette lighter cables allow further applications

Application

This product can be used in a variety of everyday scenarios to alleviate a host of troubles. For example, if you worried that your car's battery will drain while you are away on a trip or if you want to install a small outdoor fountain without connecting it to your home's electrical system, our product offers a quick and convenient solution.

In addition, this product can be used in trucks, yachts, small boats, or with small water pumps, LED lights, small batteries, micro DC fans, surveillance equipment, and all sorts of other devices.

If you would like to use this product for another scenario but are not sure whether it will work for you, please contact us.

Technology Parameters

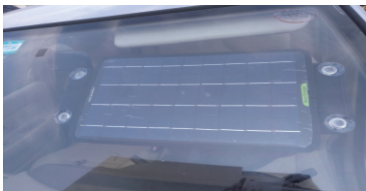
Maximum Power (Pmax)	5W	10W
Open-circuit Voltage (Voc)	22.41V	22.41V
Short-circuit Current (Isc)	0.3A	0.61A
Maximum Working Voltage (Vpm)	17.9V	17.9V
Maximum Working Current (Ipm)	0.28A	0.56A
Weight	345g	450g

1. Solar power standard testing conditions: solar radiation $1000\text{W}/\text{m}^2$, temperature 25°C , air mass AM1.5.
2. If used in conditions that fall outside of the standard testing conditions, the solar panel's electrical output capacity may change in a non-linear way.
3. Because of the scattered nature of the silicone crystal's parameters, electrical properties may change under weak light conditions.
4. The solar panel's ability to produce electricity is closely connected to the strength of the sunlight, temperature of the environment, installation angle, and other factors.

Product Installation Method

This product can be installed using two methods:

- 1: Use the 4 suction cups that come with the product to attach it to the inside of the car's windshield or to anywhere on the car's exterior.
- 2: The solar panel's rear straps can also be used to secure it to your vehicle's sun visor.



Securing the solar panel to the windshield



Securing the solar panel to a sun visor
Wiring the Solar Panel

Wiring the Solar Panel

This product can be connected using two methods.

Cigarette lighter connection method

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

Crocodile clip connection method

Connect the crocodile clip + SAE cable to the solar panel's SAE plug and clamp the crocodile clips onto the positive and negative poles of the car battery or another battery (the red crocodile clip is positive and the black crocodile clip is negative)



SAE connector



Cigarette lighter plug



Crocodile clamps connected

Tips for use

- In certain brands of vehicle, the cigarette lighter socket may be unable to operate if it has been turned off. If you encounter this scenario, you can connect directly to the battery with the crocodile clips and cable, using the second method.

- Before starting the motor, remove the cigarette lighter plug from the socket and do not use this charging method while driving. The vehicle's motor may produce an electrical surge that could damage the solar panel.
- While connected, do not create a short circuit between the positive and negative poles, or connect to them in reverse. Use the red and black crocodile clips to charge and maintain the 12v battery. The red clip is positive (+) and the black clip is negative (-).
- This product's internal soldering has two anti-reversal diodes to prevent reverse charging.
- To show operating status, this product's cigarette lighter accessory is equipped with an indicator light. The indicator light will show if the solar panel is producing an electrical flow and charging the battery.
- If there is a rainy or cloudy day, if the cigarette lighter connection is plugged in to the car's cigarette lighter socket, the indicator light will remain illuminated. The indicator light's electricity is being generated from natural light that is shining on the solar panel, and not the car's battery.
- In the evening, if the cigarette lighter connection is plugged in to car's cigarette lighter socket and the indicator light remains illuminated but it consumes about 2mA of electricity, this is much less than the car system's operating current (the system will continue working when the car is shut off). You can ignore the indicator light.
- Before using this solar panel, remove its protective wrapping.
- When using this product, avoid scratching the surface with hard objects, do not allow the product to come into contact with corrosive chemicals, and do not subject the solar panel to uneven pressure that may cause the panel to crack and affect its performance.

Product Testing

After receiving the product, you can use the following methods to test the product's performance.

Required tools: multi meter;

1. Connect a crocodile clip cable to the solar panel's output cable and adjust the multimeter's setting to 200V. Connect the red probe to the red crocodile clip and the black probe to the black crocodile clip. Check the value that is displayed on the multimeter. The value should fall between $20 \pm 2V$ (this may vary according to weather conditions).

2. Connect a cable with a crocodile clip to the solar panel's output line and set the multimeter to electrical current testing mode. Collect the red probe to the red crocodile clip and the black probe to the black crocodile clip. Check the value that is displayed on the multimeter and compare it with the short-circuit current value printed on the label attached to the rear of the solar panel. Under good lighting and temperature conditions, these two values should be close.



Voltage test Electrical current test

Accessories List

NO	Part	Cable Length	Qty
1	Solar panel to SAE connector cable	1450mm	1
2	Crocodile clip to SAE connector cable	580mm	1
3	Cigarette lighter plug to SAE connector cable	580mm	1
4	Suction cup		4

