

SOLAR KIT

A SUSTAINABLE BATTERY CHARGING GEAR

User Manual

WSBC-50



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1. General Information

Please read this user manual carefully before using the product.

Dear Customer,

Thank you for purchasing Ceyone solar kit.

We hope that you get best results from our product which has been manufactured with high quality and state of the art technology. Please read this entire user manual and all its accompanying documents carefully before using the product. Keep this manual and its accompanying documents safe/stored to refer them in the future.

1.1 Key Design Features

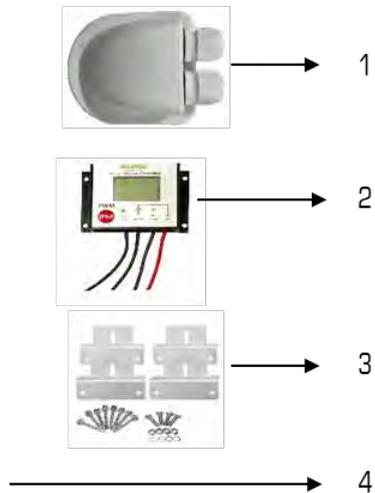
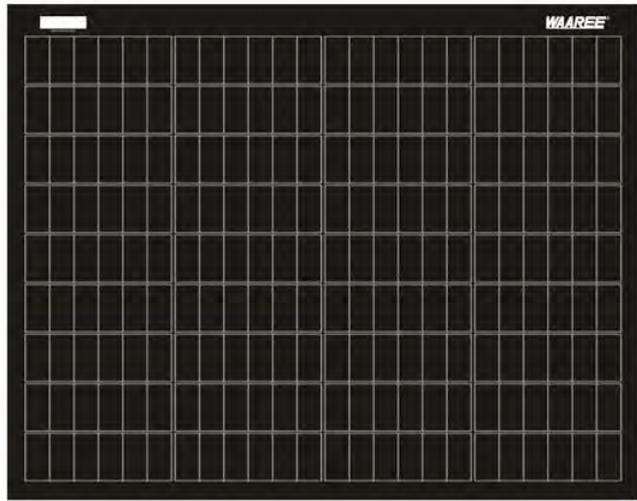
	<p>Superior product efficiencies as per international benchmarks</p>
	<p>Our high quality components are designed for best in class product durability</p>
	<p>Maximizes the state of charge of the battery which ensures that the lifetime of battery is extended</p>
	<p>Adequate protection ensuring hazard free operation</p>
	<p>Designed for off-grid applications</p>

1.2 Warnings

Please read all the warnings carefully before operating the product. It is necessary to understand and keep them in mind when the system is in use. Any negligence may lead to severe damage to you and your surroundings.

IMAGE	DESCRIPTION	DETAILS
	<p>Disconnect all the loads</p>	<p>Appropriate caution needs to be observed while making electrical connections. It is suggested to disconnect all the loads before starting the operations.</p>
	<p>Safety while operating battery</p>	<p>It is recommended to observe all the necessary safety instructions and precautions from battery manufacturer while operating the battery. When in operation, the batteries should be kept in well ventilated space, away from sparks/open flames and children.</p>
	<p>Wiring connections</p>	<p>Any loose wiring may generate spark and cause severe to very severe hazard. It is recommended to check all the wiring interconnection and ensure that they are tight and secure.</p>
	<p>Correct polarity</p>	<p>Interchanging solar panel and/or battery terminals may damage the controller or other components connected to the system. It is recommended to check the polarity of wires before making connection.</p>
	<p>Exceeding current and voltage rating</p>	<p>The product is design for a 12V 10A system. Exceeding the current or voltage rating may be hazardous. Kindly contact the technical sales team if you need any assistance.</p>
	<p>Use in presence of adults only</p>	<p>This product generates electricity when in operation. Please keep away from children when in use.</p>

2. Components and accessories



Sr. No	Components
1	Rooftop box
2	Charge controller
3	Mounting bracket & fixing ancillaries
4	Solar module

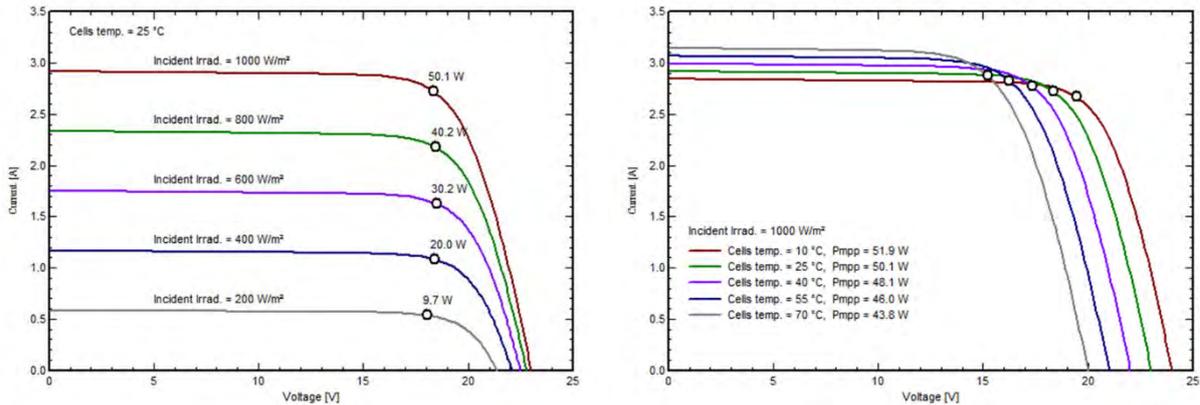
2.1 Accessories

Sr. No	Components	Description
1	Rooftop box	The rooftop box is an anti-UV & ABS based best in class available combiner box which enables power from solar module to be transferred to the battery
2	Charge controller	An IP68 & highly efficient PWM technology based charge controller which enables the power to be seamlessly transferred to the battery
3	Mounting bracket & Fixing ancillaries	A set of all the accessories including mounting bracket, nuts & Washer which enables easy installation of module kit

3. Specifications

3.1 Module electrical specifications

The figure below shows the performance curve of 50Wp module under Standard Test Conditions (STC): 1000 W/m² irradiance, Air Mass 1.5 and 25°C cell temperature.



Model	P _{max} (W)	V _{mp} (V)	I _{mp} (A)	I _{sc} (A)	V _{oc} (V)	Efficiency
WSBC-50	50	17.21	2.91	3.11	21.47	14.25%

3.2 Module mechanical specifications

Description	Value
Length x Width x Thickness (L x W x T)	520 mm (L) x 675 mm (W) x 35 mm (T)
Weight	5 kg
Frame material	Anodized Aluminium Alloy - Black colour
Connector (Protection degree / Type)	IP65 rated / MC4 compatible
Cable Cross - Section & Length	2.5 mm ² & 900 mm

3.3 Charge controller specifications

Description	Value
Battery voltage	12/24 V
Charge current	10 Amps
Max solar input	< 50 V
Float charge	13.7 V
Discharge stop	10.7 V
Discharge reconnect	12.6 V

Ingress Protection Rating	IP68
Self-consumption	< 10 mA
Operating temperature	-35° C to +60° C
Size	150 mm x 78 mm x 35 mm
Weight	150 g

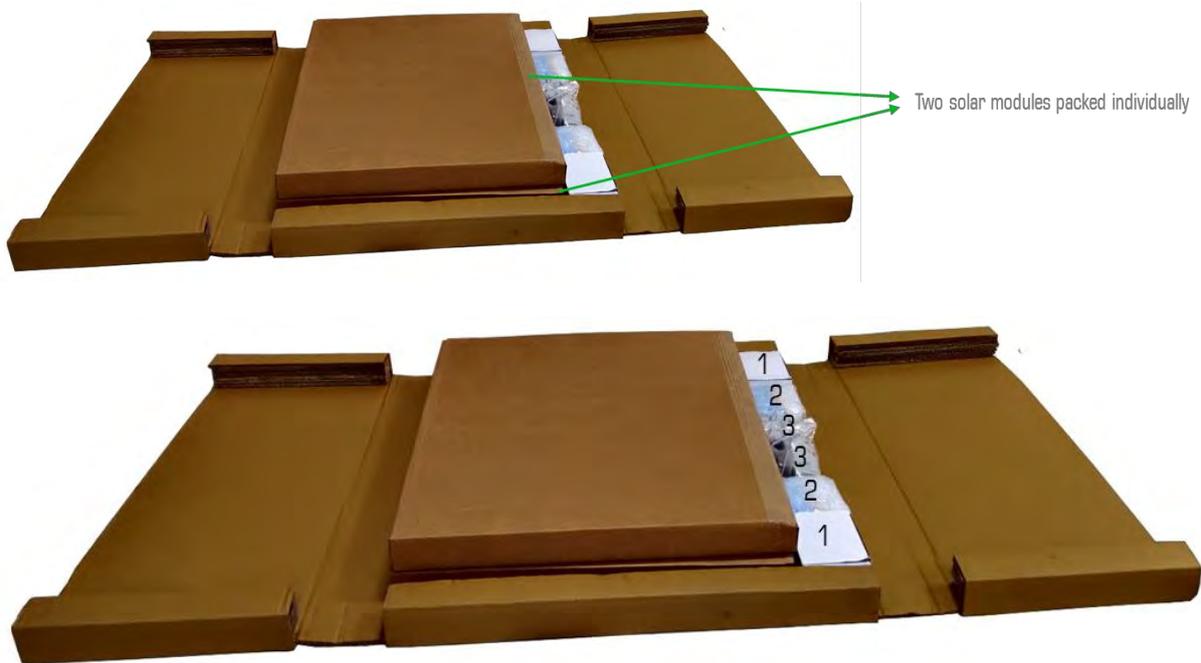
3.4 Rooftop box specifications

Description	Value
Material	ABS with anti-UV agent
Dimension (W x H x D)	5 ¹ / ₈ " x 1 ³ / ₄ " x 3 ⁵ / ₈ " (130 x 43 x 93mm)
IP rating	IP65

3.5 Mounting kit specifications

Description	Value
Material	3 ⁷ / ₁₆ " x 1 ⁵ / ₈ " x 3 ⁷ / ₈ " (88 x 42 x 100 mm)
Dimension (W x H x D)	Aluminium Z-Bracket (x4) M6 SS304 Hex Head Bolt x 20mm (x4) M6 SS304 Locknut (x4) M6 SS304 Split Lock Washer (x4) M6 SS304 Flat Washer (x8)

4. Packaging information



Ceyone kit comprises of 2 solar modules and its associated accessories in a single box. The main packaging box is made up of best in class 5 ply cardboard. The 2 solar modules are packed individually in a 3 ply cardboard ensuring that they do not damage themselves/ each other. The accessories are packed on the edges of module such that there is no internal movement of material when shipped. The following accessories (2 sets each) are included in the kit (numbered as indicated in the figure above):

1. Rooftop box
2. Charge controller
3. Mounting bracket & fixing ancillaries

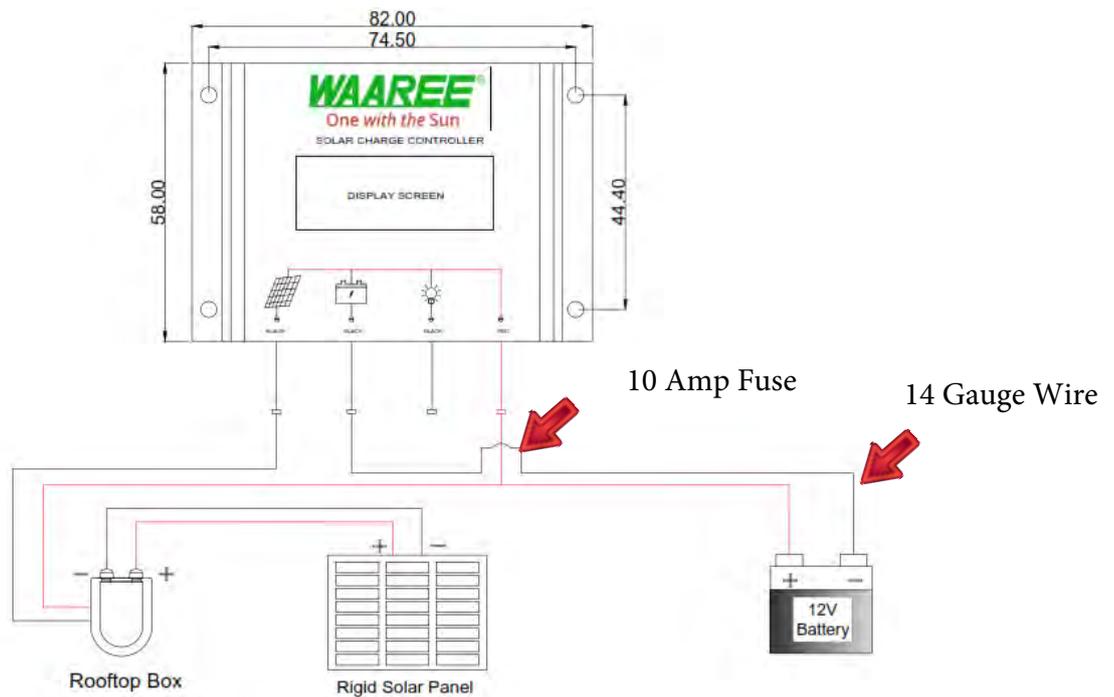
Note: These additional inclusions are kept in position by utilizing double sided tape. Exercise caution when removing/ detaching the accessories.

5. Installation

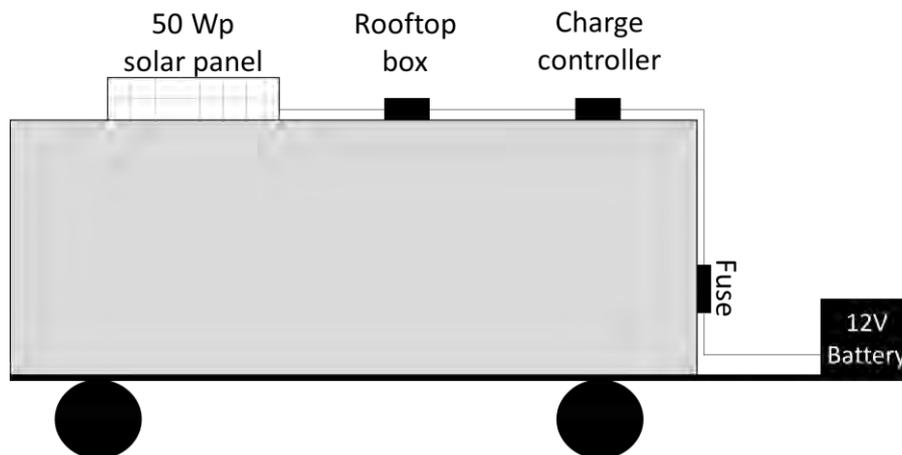
5.1 Wiring guidelines

In order to achieve optimized output, it is recommended to that the electrical connections are made in the correct manner using 14 gauge wire. Verify that the connections are secure to ensure safe operation of the kit. It is recommended to use a 10 amp rated fuse before the battery for enhanced safety. As a precaution use properly insulated tools & appropriate PPE's.

Line Diagram Of Connection



Exterior Wiring Guide

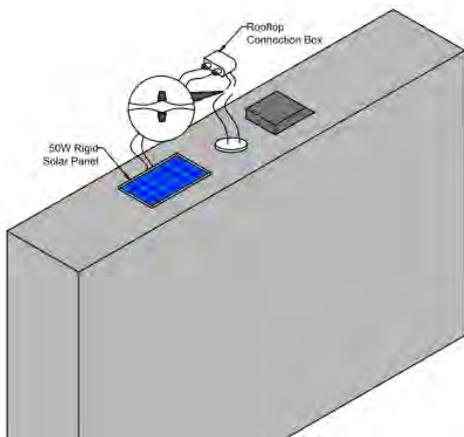


5.2 Kit fixation guidelines

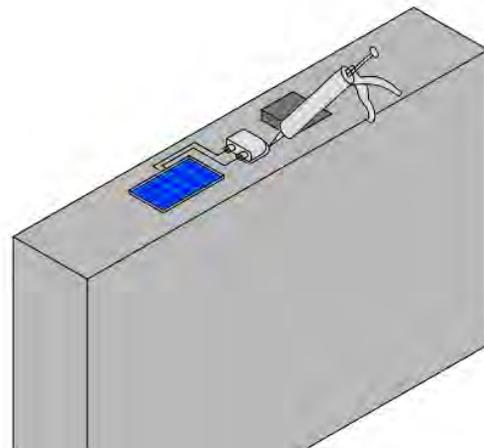
The following steps should be adhered to for kit installation/ fixation.

1. Connecting the rooftop box: The solar panel need to be connected to the rooftop box as shown in wiring diagram. Please use appropriate mating connectors between the inter-connecting wire(s) to ensure safe operation.
2. Fixing rooftop box atop vehicle: The rooftop box should be fixed atop the vehicle. It is recommended to use appropriate sealant & dispenser for this operation. Kindly allow the sealant to dry for minimum of 6~8 hours in a moisture free environment to obtain a permanent bond.
3. Fixing the mounting structure on solar module: Use the 4 mounting clamps and fix each of them alongside the mounting hole as provided in the rear side of the module.
4. Fixing ancillaries: Follow the mounting process by utilizing M6 bolt, M6 split lock washer, M6 flat washer on one side of the mounting clamp Lock the bolt by in position by utilizing M6 flat washer and M6 nut on the other side. Use appropriate tools like Spanner, Plier, etc. for obtaining a perfect fit.

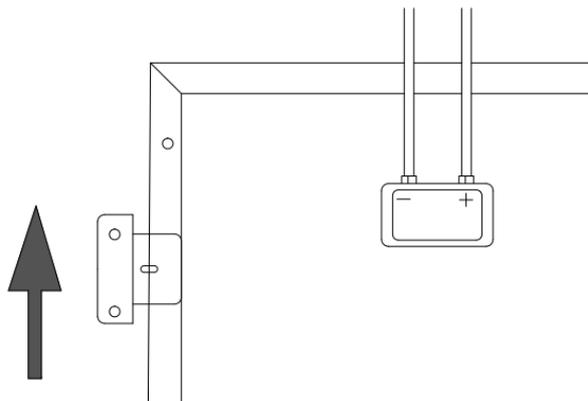
Connecting the rooftop box



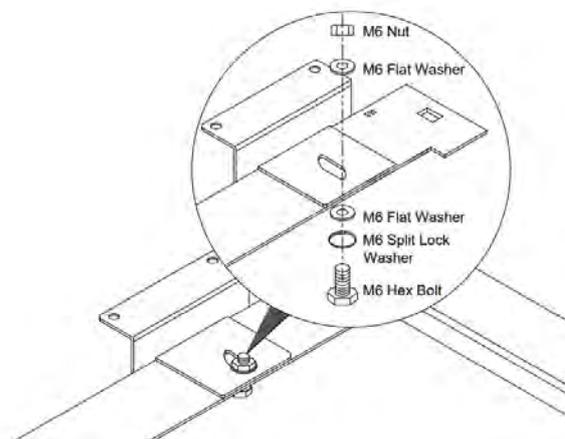
Fixing rooftop box atop vehicle



Module fixation guide



Mounting kit fixation guide



6. Operating Instructions

6.1 Charge controller

Before making initial connections, please ensure that the battery has enough charge or is at adequate voltage level such that the controller can sense the battery.

The controller is only suitable for **LEAD ACID BATTERIES**: OPEN, AGM, and GEL type. It is not suited for nickel metal hydride, lithium ions or other batteries. Charge controller is only suitable of controlling solar PV modules as input. Never connect another charging source to the charge controller.



6.2 Features of charge controller

1. The PMW charge controller is IP 68 with built-in open circuit and reverse protection
2. It is equipped with dual mosfet for reverse current and low heat protection
3. It has enhanced size of display for clearly observing and recording the data

6.3 Display symbols

12.3 ^v	Display the battery voltage
	Indication that the solar panel is charging the battery
	Displays the battery state of charge

	Indication that the battery voltage is below threshold limit. The battery shall only deliver power once its voltage is above 12.6V
	Indication that the power output is good

6.4 Special Instructions

3. To obtain maximum output it is suggested that the panel's direction is adjusted such that it faces the sun.
4. Locate a clear sunlit area, free from overhanging branches, wires or obstructions to ensure maximum generation
5. Broken modules cannot be repaired and contact with any module surface or frame can lead to electrical shock. Do NOT use a module with broken glass or torn substrate
6. Do not disassemble the modules or remove any part of the module
7. Do not drop Module or allow objects to fall on the Module. Do not stand or step on the Module
8. Ensure the battery clamps/ connectors do not come in contact with one another to avoid short circuiting
9. Ensure that all the electrical connections are secured before using the kit. Verify that the battery is being charged by the kit
10. Verify the tightness of mechanical connections before using the kit
11. Please connect any type of load via the battery only

7. Troubleshooting

The common problems are listed below. For any additional technical support, please get in touch with the local sales coordinator.

1) PV Array Short Circuit

In case of array short circuit, check all the interconnections. In case of fault, immediately disconnect the faulty connection. Please take help of local sales coordinator if you find it difficult to repair the fault.

2) Load Short Circuit

Check the continuity of fuse placed before battery. If blown, replace the faulty fuse and the faulty wire as necessary.

3) Battery Reverse Polarity

The controller has protection against battery reverse polarity. It is however suggested to immediately correct the wiring to prevent any mishap.

4) Overheating Protection

If the temperature of the controller heat sink exceeds 85 °C, the controller will automatically start overheating protection. However in case the system temperature rises, please keep in cool place such that its temperature drops before re-using it.

5) High Voltage Transients

If you are using this system in lightning prone areas, it is suggested that additional external suppression (such as using the system in range of lightning arrestor, etc.) is used.

8. Frequently Asked Questions

Question 1: Can the kit charge two or more 12 V batteries connected in parallel?

Answer: Yes, it is possible if the batteries have the same type & capacity and are wired in parallel as a single 12V battery bank.

Question 2: Is there any risk that the solar kit will over charge my battery?

Answer: One of the functions of the solar charge controller is to ensure that your battery is not over charged.

Question 3: Do I need to clean the solar panels?

Answer: Yes, it is recommended for better performance. Dust and dirt should first be swept off the panel surface using a soft brush. When the sweeping is complete, use a wet cloth to wipe the panel surface to remove remaining dirt and/or stains.

Question 4: Can I place my solar panels anywhere?

Answer: To maximize generation, ensure that the tilt angle of system resembles the latitude of the place. If this is not possible, kindly ensure that the module is facing the sun and receives maximum irradiation. Further the solar module should not be operated under shadow.

9. Limited Warranty

The solar module of the kit has a 5 years of limited warranty and 10 years of power output warranty. The controller & rooftop box comes with a 1 year limited warranty. This warranty is valid against defects in materials and workmanship. It is not valid against defects resulting from, but not limited to:

- Misuse and/or abuse, neglect or accident.
- Improper installation, including but not limited to, improper environmental protection and improper hook-up
- Damage in handling, including damage encountered during shipment or installation
- Acts of God, including lightning, floods, earthquakes, fire, high winds, etc.
- Exceeding the unit's design limit

Note:

1. Warranty would stand void for module(s) whose type or serial numbers appears to be changed, erased, removed, illegible or in any manner altered or tampered.
2. This warranty does not cover any cost associate with on-site labour and any cost associated with the installation, removal, reinstallation, shipping or transportation of the kit(s), any customs clearance or any other cost of return or re-shipment of kit(s).
3. Any damages caused by abrasion, artificial damage or animals are exempt from this warranty.
4. Defects and/or failures caused by unauthorized maintenance, operation or modification regardless of whether such act is wilful misconduct or negligence are exempted from warranty