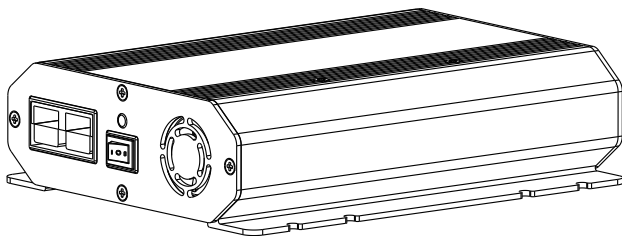


# DC-DC Power Converters

## User Manual



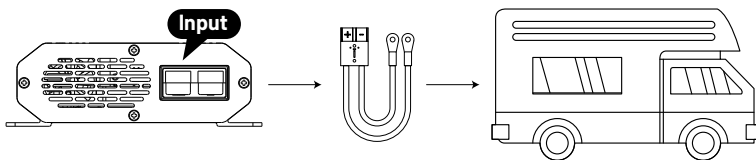
This manual contains important safety, installation and operating instructions for the DC-DC energy storage battery charger. Do not operate the battery charger unless you have read and understood this manual and installed it according to the installation instructions. It is recommended that the charger should be installed by a qualified professional.

Store it in a safe place. The following symbols are used throughout the manual to indicate any dangerous situations or important safety information.

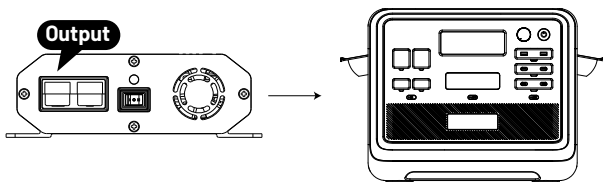
# Technical Parameters

Item	Specification
Charging Input Voltage Range	12-33V
Charging Input Current	45A max
Under-voltage Protection	12V
Under-voltage Recovery	12.5V
Over-voltage Protection	35V
Over-voltage Recovery	31V
Output power	500W
Output No-load Voltage	45-48V
Output Current	15A max
Conversion Efficiency	92%
Reverse Polarity Protection (Input)	Supported
Short Circuit Protection (Output)	Supported
Operating Temperature Range	-10-45°C
Standby Power Consumption	2-10W

## Connect to the vehicle alternator



## Connect to the portable energy storage product



# Packing



DC-DC power converter



Instructions



Screws x 10



Anderson to O-type Terminal Adapter x 1



Anderson to XT90 x 1



XT90 to XT60 x 1

## Connection and Usage

### Installation Location Guidelines:

1. The battery charger must be installed in a moisture-proof area and never in locations containing explosive materials.
2. Do not install the battery charger in dusty environments.
3. The installation site must be well-ventilated. For optimal DC-DC converter performance, ensure airflow is available.
4. Maintain a minimum clearance of at least 5 cm around the battery charger.
5. The device must be mounted on an elevated, flat plane and a sturdy surface.
6. When selecting the DC-DC converter's location, ensure it is as close as possible to the energy storage product (auxiliary battery) requiring charging.
7. The converter can be installed in the vehicle cabin, along chassis rails, behind interior protective covers, grilles, headlights, or even on the radiator side. However, ensure the area is not prone to moisture, foreign substances, or excessive heat exposure.

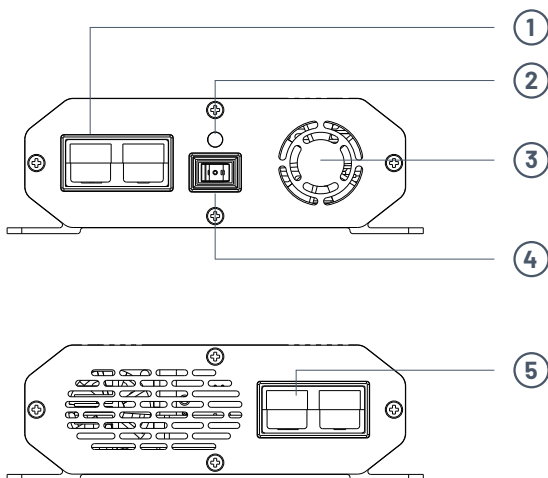
## Gear Description:

The product has two gears: Gear I and Gear II.

**Gear I** Input voltage range: 13.2-33V; Standby voltage: 13.2V.

**Gear II** Input voltage range: 12-33V; Standby voltage: 12V.

## Product Display



Order number	name	function
①	Anderson Output	Connect to load for charging
②	Power light	Display product status
③	Fan	Manage product heat dissipation
④	Switch button	Control power on/off and gear selection
⑤	Anderson Input port	Connect to power supply devices

# General Information

## Primary Function:

Designed to charge portable energy storage products during vehicle operation, converting the RV battery's 12V voltage to the required charging voltage for portable energy storage products.

Smart Protection Features: Over-voltage protection, battery temperature protection, over-current protection, overheating protection, reverse current protection, reverse connection protection.

## Fault Diagnosis:

1. Under-voltage during charging: Automatically shuts off output. Indicator light flashes red once each time, buzzer alerts. Resumes charging when voltage normalizes.
2. Over-voltage during charging: Automatically shuts off output. Indicator light flashes red once each time, buzzer alerts. Resumes charging when voltage normalizes.
3. Output over-current: Automatically shuts off output. Indicator light flashes red three times continuously, buzzer alerts. Press the power button to restore after fault resolution.
4. Output short circuit: Automatically shuts off output. Indicator light flashes red three times continuously, buzzer alerts. Press the power button to restore after fault resolution.
5. Temperature above 90°C: Output power is halved. Indicator light flashes green three times continuously. Temperature above 95°C: Automatically shuts off output. Indicator light turns solid red, buzzer alerts.
6. Temperature below threshold: Automatically shuts off output. Indicator light turns solid red, buzzer alerts.

# **Safety precautions when electrically connecting products (to prevent fatal electric shock hazards)**

## **Charger safety**

Do not connect the RV power supply to the charger without a maintenance connection. Energy storage products must be connected first to ensure the vehicle generator input voltage does not exceed 33 Vdc, preventing permanent damage.

## **Risk of Explosion!**

Do not attempt to charge frozen or defective energy storage products. In such cases, place the energy storage product in a frost-free area, allow it to adjust to ambient temperature, and then initiate the charging process.

1. Use only rechargeable batteries.
2. Ensure sufficient cable cross-section.
3. Protect the positive conductor with a fuse.
4. Prevent any metal parts from falling onto the battery. This may cause sparks or short circuits to the battery and other electrical components.
5. Verify the polarity is correct during connections.
6. Follow instructions from both the battery manufacturer and the system/ vehicle manufacturer using the battery.
7. If battery removal is required, first disconnect it from the ground connection. Disconnect all battery terminals before removal.

## **Under the following circumstances, the manufacturer shall not be liable for any damages:**

- ※ Assembly or connection errors.
- ※ Damage to the product's insulation caused by mechanical impacts or overvoltage; unauthorized modifications made without the manufacturer's explicit permission.
- ※ Use for purposes other than those described in the operating manual.

## **For safety precautions, the following fundamental safety information must be strictly observed when operating electrical equipment:**

### **General safety**

1. In the event of a fire, use a fire extinguisher suitable for electrical fires.
2. Use the product only as intended.
3. Ensure all connections between the product and external devices are secure.
4. Disconnect the product from the battery before cleaning, maintenance, or fuse replacement (to be performed by qualified personnel only).
5. Prevent water from entering the product (disconnect all cables).
6. Do not use the product if it or its connecting cables are visibly damaged.
7. Repairs may only be carried out by qualified personnel; do not disassemble or attempt to repair the device. Improper repairs may result in serious hazards.
8. Electronic devices are not toys. Always keep and use the product out of children's reach.
9. Children must be supervised to ensure they do not play with the product.

### **Caution**

1. Before startup, the voltage specification on the inspection board is the same as the power supply.
2. Make sure that the other objects do not short-circuit the product contact, and store the product in a dry and cool place.