# User Manual

# HopePower 300W/500W

All in one Micro Solar Storage System

V1.0

# 1 Precautions for safe us

## ⚠ Attention!

(1) Before installing or using the battery, it is very important and necessary to read the use manual(accessory) carefully.The safety precautions mentioned in this manual do not represent all the safety matters that should be observed, but are only a supplement to all safety precautions;

(2) Local safety laws and regulations should be followed when installing, operating, and maintaining equipment;

(3) When installing, operating, and maintaining equipment, do not wear any conductive objects, such as watches, bracelets,bracelets, and rings;

(4) If the battery is stored for too long, it needs to be charged and discharged every three months, and the battery charge must not be less than 70%;

(5) After the battery is completely discharged, it needs to be charged within 12 hours;

(6) Before maintenance, the battery and equipment need to be powered off;

(7) Do not use cleaning solvents to clean the battery;

(8) Do not expose batteries to flammable or irritating chemicals or vapors;

(9) Do not directly connect batteries to photovoltaic solar wires;

(10) Our company does not assume any liability for losses caused by violation of general safe operation requirements or violation of safety standards for design, production and use of equipment.

## ⚠ Warning!

### 1.1 Before installation

(1) After unpacking, please check the product and packaging list first. If the product is damaged or missing parts, please contact the local retailer;

(2) Before installation, cut off the power grid and ensure that the battery is turned off;

(3) The wiring must be correct, do not mistake the positive and negative cables, and ensure that there is no short circuit with external devices;

(4) It is prohibited to directly connect the battery and AC power supply;

(5) The internal protection system of the battery is designed for 56VDC, and series connection is prohibited;

(6) Please ensure that the electrical parameters of the battery system are compatible with related equipment;

(7) Keep batteries away from water and fire.

### 1.2 When using

(1) If the battery system needs to be moved or repaired, the power supply must be cut off and the battery will completely stop working;

(2) It is prohibited to connect batteries with batteries of different types;

(3) It is prohibited to connect the battery to faulty or incompatible equipment;

(4) In the event of a fire, only dry powder fire extinguishers can be used, and liquid fire extinguishers are prohibited;

(5) It is prohibited to disassemble the battery without permission;

# 2 Product introduction

This series battery is a new type of energy storage product that can be used to provide reliable power for various devices and systems. It is especially suitable for applications with high power, limited installation space, limited load-bearing capacity and long service life. The intelligent BMS battery management system built into the battery can manage and monitor battery voltage, current, temperature and other information. In addition, the battery pack can balance the charge and discharge of the cells to extend cycle life. Multiple battery packs can be connected in parallel to expand capacity and power, and parallel expansion of capacity and longer power support time requirements are required.

# 3 Product characteristics

As a new energy storage product, The series batteries have the following product characteristics：

- Environmentally friendly and pollution-free: the materials used in the entire module are non-toxic and pollution-free;
- Long safe life: The positive electrode material of the battery module is made of LiFePO4, which has good safety performance and long service life;
- Protection function: The battery management system can protect the battery module from over-discharge,over-charge, over-current and high/low temperature;
- Balancing function: The battery management system comes with passive balancing, which can balance each single string of cells in the battery module;
- Capacity expansion: Flexible configuration, multiple battery modules can be connected in parallel to expand capacity, suitable for different backup time requirements;
- Low power consumption: The battery has an automatic sleep function. When not connected to any powered device, it can enter a low power consumption state to reduce self-loss;
- No memory: no memory effect, excellent shallow charge and discharge performance;
- Wide temperature range: operating temperature range -10°C ~40°C, charging O °C ~40°C, discharging -10°C ~40°C, with good discharge performance and cycle life;
- Portability: small size, light weight, standard embedded modules are more convenient to install and maintain.

# 4 Explanation of symbols

There may be following symbols herein, and their meanings are as follows.

| Symbols | Description |
|---|---|
|  | Indicate a hazard with a high level of risk which, if not avoided, will result in death or serious injuries. |
|  | A hazard with a low level of risk which, if avoided, will result in minor injury, or damage to the device. |
|  | Indicate a hazard with a low level of risk which, if not avoided, could result in minor or moderate injuries. |
|  | Warning information about device or environment safety. If not avoided, equipment damage, data loss, performance degradation or other unanticipated results may be resulted in. The "NOTICE" does not involve any personal injuries. |
|  | In a basic set. |

## 4.2 Safety Precautions

### 4.2.1 Safety Symbols

This product contains the following symbols, please pay attention to identifying.

| Symbols | Description |
|---|---|
|  | Observe enclosed documentation |
|  | Danger.<br>Risk of electric shock! |
|  | Danger of high voltages.<br>Danger to life due to high voltages in the Energy storage system |
|  | Hot surface |
|  | CE certification |
|  | Do not touch the product in 5mins after shutdown |

| | |
|---|---|
| RoHS COMPLIANT | Comply with RoHS standard |
|  | The Energy storage system should not be disposed together with the household waste. |
|  | Indicates additional information on correct use or useful tips. |

# 4.3 System Installation

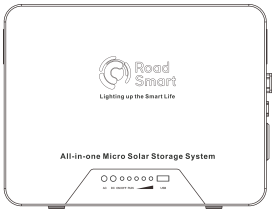
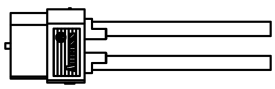
## 4.3.1 Inspections before Installation

**Inspection of outer package**

Before opening outer package of the energy storage, check if there is any visible damage on the outer package, such as holes, cracks or other signs of possible internal damage, and check the type of energy storage. If there is any abnormality on the package or model of the energy storage is inconsistent, do not open it and contact us as soon as possible.

**Inspection of deliverables**

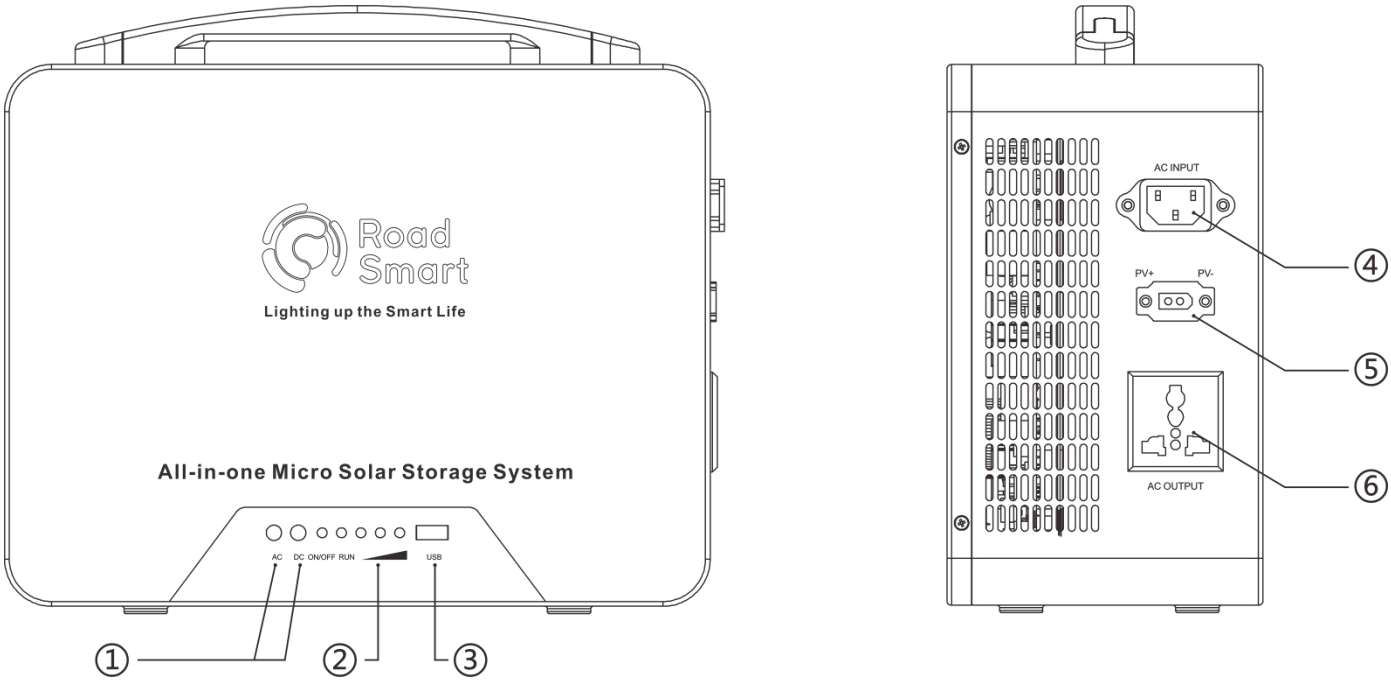
After opening outer package of the energy storage, check if the deliverable is complete and whether there is any visible external damage. If any items are missing or damaged, please contact us.

| NO. | Picture | Item | Specification | Quantity |
|---|---|---|---|---|
| A |  | Battery | 3.2V，300W | 1 |
| B |  | AC input cable<br>(Optional according to different country and region) | 1.2m | 1 |
| C |  | XT60 solar charging port | Male head | 1 |
| D |  | User Manual | | 1 |

| | |
|---|---|
| B | Used for the AC input cable connection between the Alpha ESS, the grid and AC input. See "Connecting to the grid" for details. |
| B C | Used for the XT60 terminal kit connection between the Alpha ESS, the solar panel and PV input. See "Connecting solar panel" for details. |

- The images of the product and components may differ from the actual product.
- If there are missing or defective components, please contact customer service.

# 5 Features introduction




| | |
|---|---|
| ① | On & Off Button |
| ② | Status Indicators |
| ③ | USB |
| ④ | AC Input port (230V,50Hz) |
| ⑤ | PV Input port (10-55V,300W) |
| ⑥ | AC Output port (230V,50Hz) AC outlets comply with regulatory requirements in different regions |

# 6 Buttons & Display

LED Light:

| Indicator Lights | Function | Color | Remark |
|---|---|---|---|
| LED 1 | Battery 100% indicator | Green | |
| LED 2 | Battery 75% indicator | Green | |
| LED 3 | Battery 50% indicator | Green | |
| FAULT 2 | Battery 25% indicator | Green | |
| FAULT 1 | Inverter operation & fault | Blue | Use blue and yellow dual color lights |
| DC_EN | DC operation indication | Yellow | |

Button:

| Button | Short press | Function | Remark |
|---|---|---|---|
| AC button | Short press | Indicator power | Function |
| | Long press | Inverter on/off | More than 2 seconds |
| DC button | Short press | Indicator power | |
| | Long press | USS On/USS Off | Inverter on, USB follows the inverter on,cannot be controlled separately |

USB:

| Rated voltage | Rated current | Other Features | Remark |
|---|---|---|---|
| 5V | 1A | Serial communication & upgrade | USBDM is RX |

Working status display:

| Slate | Function | Color | Remark |
|---|---|---|---|
| Open the inverter separately | Blue | According to the power | The USB port follows the opening, and after the inverter Is closed, the USB follows the closing |
| Open DC separately | Yellow | According to the power | |
| DC & AC are turned on at the same time | Blue and yellow (pink) | According to the power | After the inverter is turned off, USB maintains output |
| Abnormal alarm | Blue (flashing) | According to the power | |

Battery level display:

| Slate | Battery level | LED 4 | LED 3 | LED 2 | LED 1 |
|---|---|---|---|---|---|
| Charge | Battery level <25% | Flash | Flash | Flash | Flash |
| | 25%<Battery<50% | On | Flash | Flash | Flash |
| | 50%<Battery<75% | On | On | Flash | Flash |
| | 75%<Battery<100% | On | On | On | Flash |
| | 100% = battery level | On | On | On | On |

| | | | | | |
|---|---|---|---|---|---|
| Discharge | Battery level <25% | On | OFF | OFF | OFF |
| | 25%<Battery<50% | On | On | OFF | OFF |
| | 50%<Battery<75% | On | On | On | OFF |
| | Battery>75% | On | On | On | On |

## 6.2 AC output port

**HP-300 300W-800WH**

The product can supply 230V AC power for devices like TVs, fans, desk lamps, laptops and mobile phone chargers etc. Before using the product to power a device,please make sure to carefully read the device manual and ensure that the device's rated power does not exceed 300W.

**HP-500 500W-1KWH**

The product can supply 230V AC power for devices like TVs, fans, desk lamps, laptops and mobile phone chargers etc. Before using the product to power a device,please make sure to carefully read the device manual and ensure that the device's rated power does not exceed 500W.

## 6.3 PV input port

**HP-300 300W-800WH / HP-500 500W-1KWH**

The product can handle solar input ranging from 10-55V with a maximum power of 300W.You have the option to connect two 150W solar panels in series, or a single 300W solar panel. It's also feasible to connect solar panels with a power greater than 300W, but it's important to ensure that the input voltage of the solar panel falls within the 10-55V range.

## 6.4 AC input port

You can charge the product using your local grid, which supports 90-280V AC input.

## 6.5 Ventilation holes

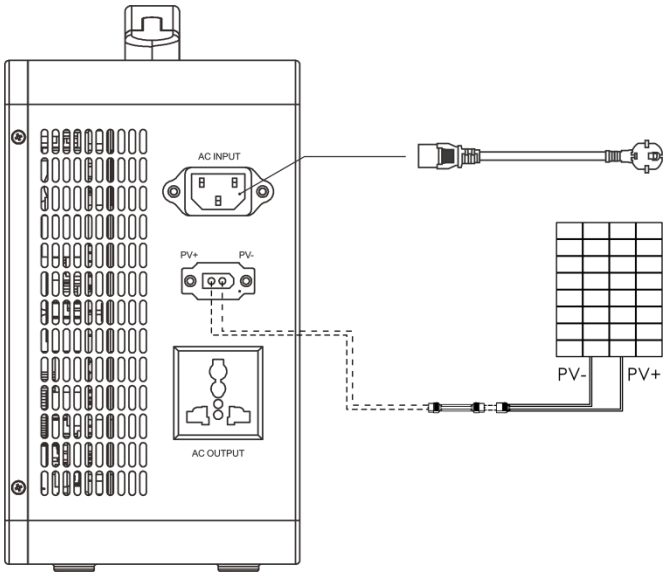
The ventilation holes help prevent the product 1 from overheating,so please make sure not to block them.

## 6.6 How to use the product

**HP-300 300W-800WH**

The product comes with a charging interface that includes an AC charging port and an XT60 solar charging port, allowing it to be charged using your local grid or solar panels.It has a maximum charging power of 300W / 500W.

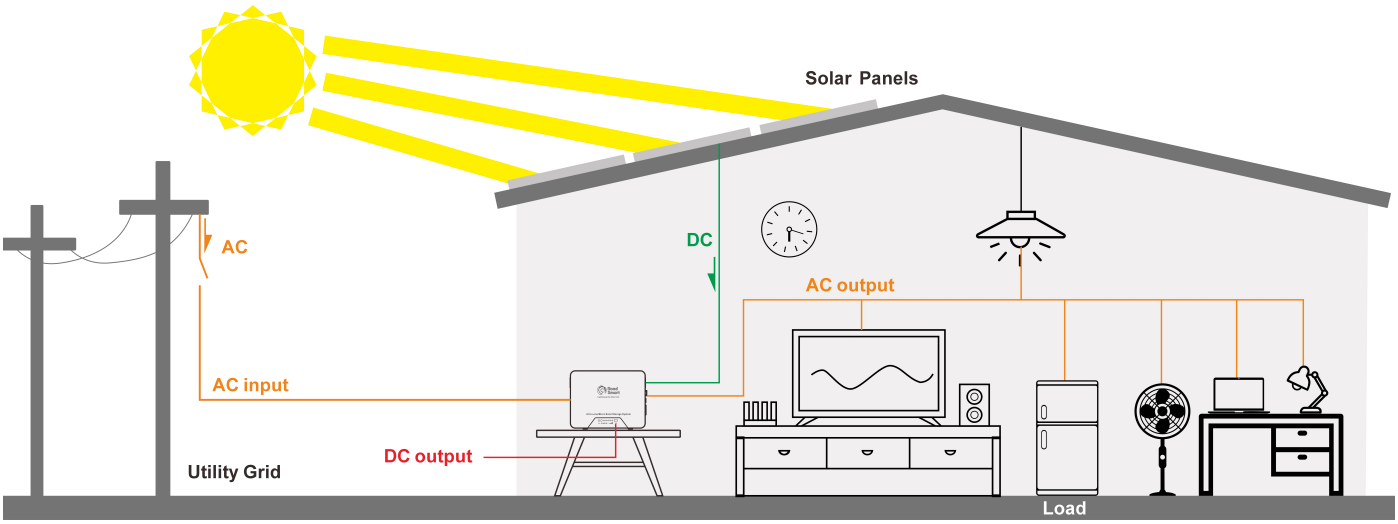
When the product is turned off, insert AC charging or photovoltaic charging to automatically activate the product charging.




- Users have the option to use the 200W/150W solar panels specifically for RoadSmart or other separately purchased solar panels to charge the device. When using non-RoadSmart specifically designed solar panels, it's important to carefully read the solar panel user manual to ensure that the solar panel voltage does not exceed 56V. Exceeding this voltage will trigger protection, and may cause damage to the product. Please note that does not provide free repairs for damage caused by the use of non-RoadSmart solar panels or improper connection.
- To charge the product, connect the MC4 connector of the photovoltaic panel to the XT60 interface using an adapter cable, and then insert it into the PV input port of Hero EE 1. When there is sufficient sunlight, the product will begin charging.
- Hours to fully charge the device.

The product operates in PV priority mode, meaning that when mains electricity and photovoltaic power are connected simultaneously, PV power takes priority for charging.

Upon startup,the product defaults to PV priority mode. If the solar power generation.Is too low and falls below the set value (60W), it will automatically switch to grid.Power input for charging. During mains charging,the PV charging power is checked at regular intervals. If the PV power generation exceeds the set value (60W), it will switch to PV charging; otherwise, it will continue to charge from grid power until the product is full.




# 7 EPS feature

The product can provide backup power by following the connection diagram: the AC charging cable is plugged into the main grid for charging,and the electrical devices are connected to the AC output port.

When the grid power is working normally, the electrical devices are powered directly by the grid power through an internal bypass, without using the system power. in the event of a grid power outage / load shedding, the product automatically switches to takeover the power supply within 15ms. This feature ensures that electrical devices such as fans and televisions continue to operate smoothly, seamlessly transitioning to the product system power when the grid power is off. When the grid power is restored, it can seamlessly switch from system power supply to grid power supply.

Please be aware that this feature is an EPS function and does not regulate gridwaveform. The product stops outputting power when grid power is available, and the switching time is approximately 15ms, typically used for emergency backup power.This function is not a professional-grade UPS function and does not support 0msswitching. Please refrain from using it to supply power to servers, workstations, and other equipment. RoadSmart is not liable for any equipment malfunctions or data loss resulting from improper use.

# 7.2 This product can be connected to what kinds of devices?

The product can power everyday devices like fans, TVs, monitors, laptops, phone chargers.desk lamps, small refrigerators, and other similar appliances. Before connecting any device to the product, please make sure to carefully read the device's manual to ensure that the total power of all devices connected to the product.

1.The total power of all electrical appliances connected to HP-300 is less than 300W;

2.The total power of all electrical appliances connected to HP-500 is less than 500w;

# 8 Datasheet

| Model | HP-300 | HP-500 |
|---|---|---|
| **Inverter/charger** | | |
| Rated AC Output Power | 300W | 500W |
| Output Voltage Waveform | Pure Sine Wave | |
| Output Voltage | 185~230VAC 50Hz | |
| Low DC Warning Point | ≤19% | |
| Low DC Cut-off Voltage | 2.9Vdc | |
| Low DC Warning Return Voltage | > 20% | |
| Charging Power(Utility and solar together) | 300W Max. | 500W Max. |
| Bulk Charging Voltage | 3.6Vdc | |
| Float Charging Voltage | 3.5Vdc | |
| **AC Input** | | |
| Nominal Input Voltage | 230Vac | |
| Min. AC Input Voltage | 90Vac ±5 | |
| Max. AC Input Voltage | 280Vac ±5 | |
| Nominal Input Frequency | 45~65Hz | |
| AC Charging Power | 300W max. | 500W max. |
| **Solar Input** | | |
| Nominal PV Voltage | 30Vdc | |
| PV Array MPPT Voltage Range | 10Vdc~55Vdc | |
| Max. PV Array Open Circuit Voltage | 56Vdc | |
| Solar Charging Power | 300W max. | |
| **Lithium Iron Battery** | | |
| Capacity | 800Wh | 1000Wh |
| Nominal Battery Voltage | 3.2Vdc | |
| Max.Charge Current | 100A | 140A |
| Max.Discharge Current | 100A | 170A |
| Operation Voltage Range | 2.9Vdc~3.6Vdc | |
| Operation Temperature | -10°C~+50°C | |
| **DC Output** | | |
| DC Output Socket | 1 pcs 5V1A USB charger | |

| Model | HP-300 | HP-500 |
|---|---|---|
| **Display Function** | | |
| LED Indicator | 4 pcs SOC indicators,1pcs working status indicator | |
| **Protection** | | |
| Protection | Overcharge protection,Over Discharge protection,Overcurrent protection、Shortcircuit protection、Overtemperature protection | |
| **Ambient** | | |
| Noise（dB） | <40dB (1 meter) | |
| Working Temperature | -10°C~+50°C | |
| Humidity | 5~95%(no condensation) | |
| Sea Level(m) | ≤2000 | |
| **Dimension** | | |
| LxWxH(products size) | 300×134.7×258mm | 300×149.7×258mm |
| LxWxH (package size) | 362×322×190mm | 362X322X205mm |
| Weight(NW Kg) | 9.9Kg | 10.8Kg |
| Weight(GW Kg) | 11.1Kg | 12.0Kg |

# 9 Maintenance service guarantee

If there is any problem with the product, please contact our company's authorized maintenance outlet or customer service center.

1.The starting date of the warranty period is based on the product invoice date.

2.One of the following situations does not fall within the scope of maintenance:

1) Damage caused by consumers due to improper use, storage and maintenance.

2) Damage caused by self-assembly, disassembly and repair by someone other than the company's designated maintenance department.

3) No valid invoice.

4) Damage caused by force majeure.

3. Only issue an invoice and warranty card at the same time to guarantee the warranty.

4. For products that are not within the scope of repair, our customer service center will still serve you.

# 10 Package Dimensions

The packaging size of a HP-300 is 362×322×190mm.

The packaging size of a HP-500 is 362×322×205mm.