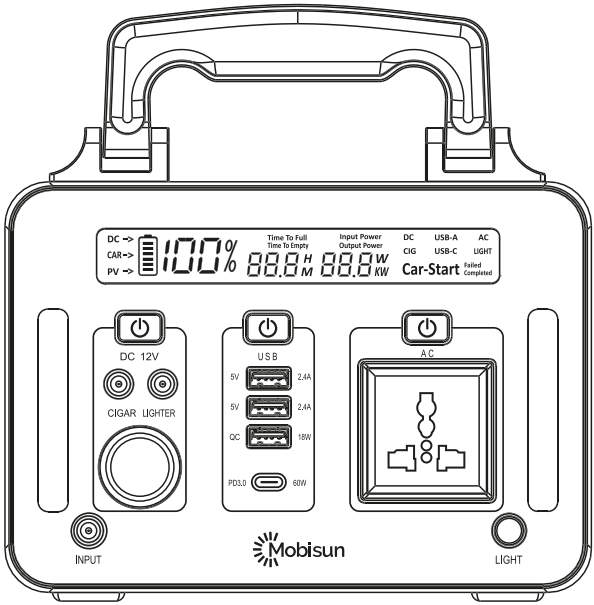
Mobisun
portable solar power

www.mobisun.com

PORTABLE ENERGY STORAGE

PRODUCT MANUAL

(MPSG500W)



- It is a portable energy storage power supply, not a toy, please keep out of reach of children.
- Please read the product instructions carefully before using.
- If it is stored for a long time (more than a month), please charge the product to about 70% of the capacity.
- Do not charge, use or place the product near a source of fire or heating.
- Products and accessories are subject to change without notice.

Mobisun

CATALOG

(1) Spare parts list..... 2

(2) Product introduction..... 2~3

(3) Product diagram..... 4~5

(4) Product parameters..... 6~7

(5) Product Protection Function..... 8

(6) Operating instruction for the product..... 9~13

(7) Precaution.....13~15

(8) Solutions for common problems..... 15~16

(9) Trouble Shooting.....16~17

(10) After-sales Service..... 18

1. Spare parts list

NO.	Name	Accessories description
1	Mainframe	MPSG500W
2	Adapter	Charging products with municipal electricity
3	Power cord	Adapter to connect to city power
4	M to M car charging cable	Charging in the car, car jump starter (Start the car charging cable after charging the car battery)
5	Instructions	Operational Guidance and Warranty Card

2. Product introduction

This product is a portable multi-functional power source that can store energy, is equipped with a high-efficiency lithium-ion battery, safe lithium battery management system (BMS), high-efficiency energy conversion circuit and it is wrapped by high-strength aluminum alloy. After being repeatedly tested and verified for a long time by our R&D team, the product has obtained international certifications such as CE\FCC\ROSH\PSE\UN38.3. Due to the top design and mature production control, the products are safe and reliable, which can be powered by solar power, vehicle power generation and electric supply charging. The product has the characteristics of light weight, small volume and large power, which can provide customers with convenient mobile energy. The main features of the product are:

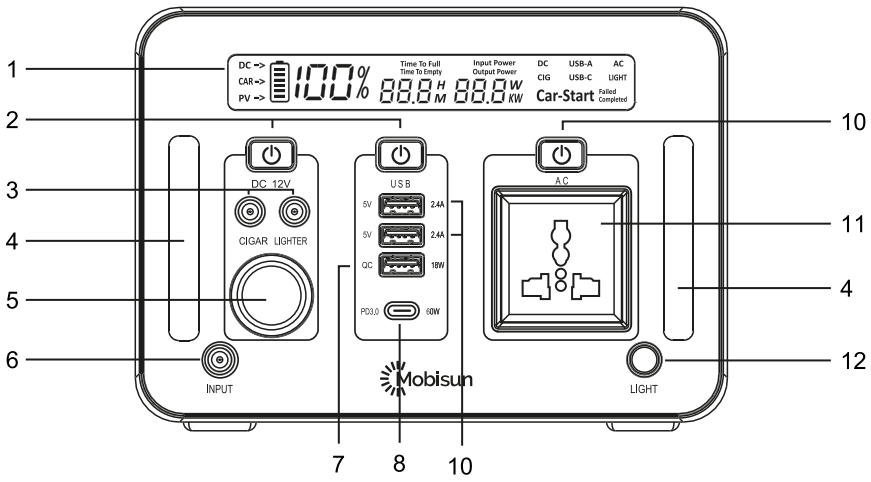
- AC100V~240V/50~60HZ pure sine wave output (setting according to national or regional power standards)

- ◆ Solar energy MPPT Charging system (Maximum Power Point Tracking)
- ◆ Automatic Adaptive Adapter for Electric Charging
- ◆ On-board Charging
- ◆ 12V 12A cigarette lighter output
- ◆ 12V 5A DC5.5 output port*2
- ◆ USB-C PD 60W/5~20V output
- ◆ USB-A QC3.0 18W/5~12V output
- ◆ USB-A 2.4A Intelligent recognition output port*2
- ◆ Charging the Start Battery of a Vehicle, used as an auxiliary vehicle start-up battery
- ◆ 95% High conversion efficiency (reduced heat which increases actual output energy)
- ◆ LED High-brightness Display Screen (Real-time load, charging power, residual time etc.)
- ◆ LED High-brightness Lighting Lamp (Low Bright, High Bright, SOS, Flash)
- ◆ BMS Multilevel protection system
- ◆ Intelligent identification device power, accurate display of remaining usage time
- ◆ Ultra-long cycle life, greater than 800 cycles
- ◆ Fanless Design (product is silent and safer)
- ◆ Sandblasting oxidation treatment of industrial aluminium alloy shell

Product can meet the demand of power supply for most household appliances, such as rice cookers, mini- refrigerators, speakers, televisions, mobile phones, computers, digital cameras, tablet PC, LED lights, emergency lights, outdoor lighting, outdoor construction, electric tools, pumps and medical equipment.

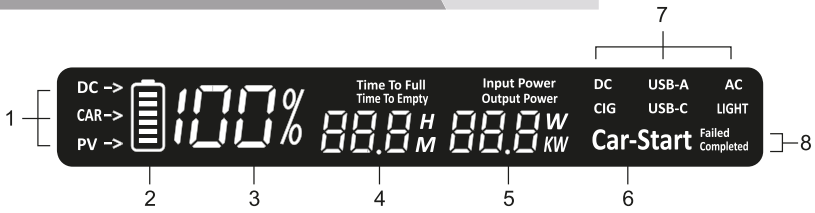
3. Product Diagram

3.1 Introduction of Product Panel Function



NO.	Function description		
1	Display screen	7	QC3.0 output port
2	DC switch	8	USB-C PD3.0 60W output port
3	DC5.5 12V output port	9	USB 5V2.4A output port
4	LED Floodlight	10	AC switch
5	Cigarette lighter port	11	AC output port
6	DC input port	12	LED switch

3.2 Introduction of Display Screen



NO.	Name	Function
1	Charge indicator	Respectively “DC->”/“CAR->”/“PV->”, Represents different charging modes.
2	Electricity Icon	The battery power is displayed in six cells, and the charging will indicate the battery power by running up.
3	Battery indicator	According to the percentage, the battery power is 0%-100%.
4	Remaining time indication	“Time To Full” displays the remaining time to 100% battery charge, “Time To Empty” displays the remaining time of emptying to 0% battery charge. The corresponding numbers represent the remaining hours and minutes.
5	Total power indication & AC Frequency	number+ W combination shows the total power of charging and discharging; “F50”for “50HZ”;“F60”for “60HZ”
6	Car-Start	Constant current output, applicable for charging automobile batteries and high starting current electrical appliances.
7	Interface status indication	DC, CAR, USB-A, USB-C, AC, Light, represents the corresponding interface state.
8	Car Start State Indicator	The three right-most display combinations. Car-Start/Car-Start Failed/Car-Start Completed, represent that the car is starting and charging, starting and charging fails, starting and charging is completed.

4. Product parameters

project	parameter	MPSG500W
Battery	Battery class	Lithium-ion battery
	Battery power	500Wh
	Total capacity	135200mAh
	Voltage	14.8V
	Ampere-hour	33.8Ah
	Cycle life	800 cycles
	BMS	Overvoltage, undervoltage, high and low temperature, three-stage overcurrent, short circuit protection.
AC output	Output voltage	100-240V (Depending on the factory settings in different countries and regions)
	Output frequency	50-60HZ (Manual switching)
	Output power	AC500W about 30 Minutes
		AC400W about 65 Minutes
		AC300W about 85 Minutes
		AC200W about 130 Minutes
		AC100W about 270 minutes
	Waveform	Pure sine wave
	Efficiency	70% load: > 90%
DC output	DC5.5 port	DC12V5A
	Cigarette lighter port	DC12V12A
	Efficiency	70% load : > 93%
USB output	USB1	5V2.4A
	USB2	5V2.4A
	USB3	QC3.0,5-12V, 18W (MAX)
USB-C output	PD3.0	5-20V, 60W (MAX)

LED lighting	Low Bright	5W (MAX)
	High Bright	10W (MAX)
	SOS	NA
	Flash	NA
Charge	Adapter	19V5A about 6h
	car	13V8A about 6h
	PV	24V5A about 7h
Power consumption	Quiescent current	100uA
Product weight	Net weight	5.9kg
	Gross weight	7.6kg
Product volume	Host	200*176*146
	Packing	340*295*250mm
temperature	Charge	0 ~ 40℃ (32 ~ 104℉)
	Discharge	-20 ~ 50℃ (-4 ~ 122℉)
	Storage	-20 ~ 45℃ (-4 ~ 113℉)

5. Product Protection Function

NO.	Model / Protection project	MPSG500W
1.	Overvoltage Protection	16.8V ± 0.2V
2.	Undervoltage Protection	12V ± 0.5V
3.	Battery Cryogenic protection	Charge: 0℃ discharge: -10℃
4.	Battery High Temperature Protection 1	Charge: 45℃
5.	Battery High Temperature Protection 2	discharge: 60°C
6.	Battery Overcurrent Protection 1	60A, 2S
7.	Battery Overcurrent Protection 2	100A, 30ms
8.	Battery Short Circuit Protection	<1ms
9.	AC Short circuit	<50ms
10.	AC overload	600W, 510S
11.	USB-C Over current	3.3 ± 0.2A
12.	USB-AOver current	2.6 ± 0.15A
13.	cigarette lighter Over current	12A ± 1A
14.	DC5.5 Over current	6A ± 0.5A

6. Operating instruction for the Products

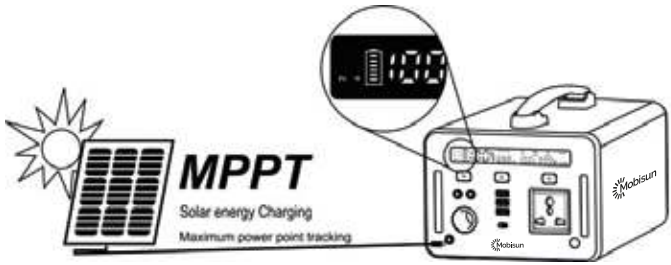
6.1 How to Charge

The product has a charging protection function and it will automatically stop charging after the product is fully charged according to the normal charging operation. In order to avoid other unexpected events, it is recommended to disconnect the charging connection in time after the product shows it is fully charged. While it is used, it needs to be charged, if the output power is less than 100W, the product will be fully charged gradually according to the internal battery cell capacity. If the output power is greater than 100W, the product will slowly run out internal battery capacity.

The product has two charging interfaces, the leftmost Input interface and the Cigar Lighter interface of the DC area. The Input interface supports adapter charging or solar panel charging that meets the voltage requirements of 17-25V. The interface of the cigar lighter on the left side supports vehicle power supply charging with 12.5-16V (this interface is also the discharging interface of the Cigar Lighter in the DC area). After any charging mode is activated, the display area of charging mode in the display screen will flash the icon corresponding to the charging mode and they are “DC->”, “CAR->”, “PV->”, which means the adapter charging, vehicle power supply charging, and the solar panel charging. At the same time, the power of the battery will be indicated in the form of the power running display.

6.1.1 Solar Power Charging

Insert the plug of the unfolded solar panel into the “input” interface. The screen displays “PV->” flashing, the icon of the battery loading displays and the remaining time to full battery charge is displayed. The solar panel power is greatly affected by the light, and the generated power will change, so it can be that the remaining time dynamically changes, which is normal.

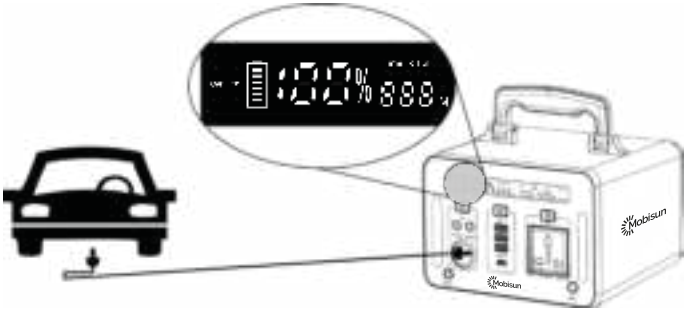


6.1.2 Adaptor Charging

STEP1. Insert the adapter AC input plug into the electric supply, STEP2. Insert the adapter DC output plug into the “input” interface. The screen displays “DC->” flashing, the icon of battery loading is displayed, and the remaining time to a full battery charge is displayed. When charging starts, the system will automatically detect the input power. The remaining time will change dynamically, which is normal.

6.1.3 Vehicle Power Supply Charging

STEP1. Start the car, STEP2. Insert the accessory "car to the male to the male line" into the car cigar lighter, STEP3. Insert the other end to the "Cigar Lighter" interface of the product, the screen displays "Car->" flashing. The icon of the battery loading is displayed and the remaining time to a full battery charge is displayed.



6.1.3 Waiting state of charging

When the product temperature is outside the safe temperature range (0~45°C) the product enters a charging wait stage. If the internal temperature of the product is within the safe range, the charging will start automatically. In the waiting state the display screen shows "SUS".

6.2 Product Output (electricity consumption)

The product has high low voltage-, high low temperature-, multiple over-current- and short circuit-protection.
If the output is suddenly interrupted, first check whether the peripheral electrical equipment exceeds the power or there's a short circuit and then restart the machine to check whether there is power. After the end of power consumption, in order to save the power, please manually shut down the machine after use. If there is any abnormal phenomenon, please contact the manufacturer or dealer. This product is designed with 4 regional function outputs, which are DC area, USB area, AC area and Light area. Each area is provided with a corresponding button for turning on or off the function output and all interfaces of the corresponding area. Press and hold the button of the corresponding area for about 1 second to open all the interfaces of the corresponding area, and the corresponding button will be lit and it is blue, and press the button again for about 1 second to close all interfaces in the corresponding area. If the button is pressed for more than 3 seconds during the shutdown process, the entire system will be shut down.

6.2.1 AC Output

Press and hold the AC button in the AC area for about 1 second, the AC output will be turned on, and the AC icon will be displayed on the interface showing a discharging icon on the display. Long press the AC button for about 1 second and the AC output will be turned off. If the button is pressed for more than 3S during the shutdown process, the whole system will be shut down.

6.2.1 AC Output frequency switching

After the AC output function is turned on, continuously 3-click the AC switch and the screen displays the corresponding frequency. Switch to power display interface after 2 seconds ”F50”for 50Hz, ”F60”for 60Hz. Automatic memory of last frequency after shutdown. As shown below:

6.2.2 DC area output

Press and hold the USB button in the USB area for about 1 second to turn on the USB-A and USB-C output. The interface discharging icon will display the USB-A and USB-C icons on the display. Long press the USB button for about 1 second and the USB-A and USB-C output will be turned off. If the button is pressed for more than 3S during the shutdown process, the whole system will be shut down.

6.2.3 USB area output

Press and hold the USB button in the USB area for about 1 second to turn on the USB-A and USB-C output. The interface discharging icon will display the USB-A and USB-C icons on the display. In this case, long press the USB button for about 1 second, the USB-A and USB-C output will be turned off. If the button is pressed for more than 3S during the shutdown process, the whole system will be shut down.

6.2.4 LED Lighting

Press and hold the Light button in the Light area for about 1 second to turn on the light in low light-level mode. The interface discharging icon on the display will display the light icon. Successively clicking the button will enter the high light-level mode, SOS mode and flash mode. When the Light is working, press and hold the Light button for about 1 second, the Light will be turned off. If the button is pressed for more than 3S during the shutdown process, the whole system will be shut down.

6.2.5 The function of car starting

STEP1. For the key-started car, first rotate gear of the key to the ON position. For the one-key starting car, press the start button until the Cigar Lighter power is turned on. (There are individual vehicle models that do not support the Cigar Lighter interface input and cannot use this starting function, please use other professional starting power supply).

STEP2. Use a male-to-male car cigarette lighter to connect the Cigar lighter interface of the product or the Cigar Lighter interface of the started car.

STEP3. Double-click the leftmost button on the panel to activate the car starting function. This product charges the starting battery of the car and the display will flash Car-Start for 5-30 minutes (depending on the vehicle models and the degree of consuming power). The display shows Car-Start Completed, indicating that charging is complete and the car can be started with a key or button. If the display shows Car-Start Failed, the charging has failed and may not be activated this time. The cause of the failure may be due to insufficient power of product, improper operation, poor contact or failure of the auxiliary car battery.

7. Precaution

Please read the precaution that is divided into “Danger”, “Warning” and “Caution” levels.

“Danger” means will cause the personal injury.

“Warning” means dangerous things can happen.

“Caution” means will cause damage to the product or shorten the service life.

- The product outputs high-voltage AC. Please do not insert the hand or hand-held metal conductor into the AC socket.
- Non-professionals should not open the product without permission to avoid dangerous things such as electric shock or short circuit.
- Do not place the product in a high temperature environment (over 50 degrees Celsius) or near a fire source.
- The product is not a toy, please do not let children play with it.
- Do not use it in a humid environment.
- Do not hit or strike the product.

- Please read the specific battery charger manual before use.
- Do not disassemble the product
- Do not use a broken product
- Please use the original adapter to charge or an adaptor that meets the manufacturer's specified electrical parameters.
- Please select the solar panel according to the electrical parameters specified by the manufacturer. It is forbidden to charge with solar panels that are higher than 25V.
- Charge the battery cell within the temperature range of 0 to 45 °C, under too low temperature conditions, it will shorten the cycle life of the battery cell.
- On the condition of long-term storage (more than 3 months), it should be stored in a low-humidity environment without corrosive gas in a half-electrical state at a temperature of -10 to 35 °C.
- If the product emits off-flavor and heating during charging or storage, stop charging immediately and place it in an open place for long-distance observation. After confirming the safety, contact the manufacturer or dealer.

- This product is a power supply. Please select the corresponding model according to the power equipment. It is forbidden to use this product with over power and over load.

- Do not short circuit the output.
- This product is set at the factory according to the voltage standards of different countries.
- Before purchasing and using, please consult the dealer or use the product operating guide book.
- When the power of the product is run out, please charge it in time.
- Product parts are environmentally friendly and recyclable. Please recycle it according to local regulations.
- In order to save the power of the product, please turn off the power when the product is used up and turn it on again when you use it next time.
- If the battery is stored for more than 6 months, please charge and discharge the product 1-2 times in order to extend the service life of the battery.

8. Solution for the common problems

- Q: If the product has no fan for cooling, will it be safe?
  A: The products are designed by top designers and use high-performance components. The products without fan are quieter and safer.
- Q: How long can the product be stored?
  A: With 50% or more of the battery charged, it can be generally stored for 6-12 months. It is recommended to charge it every three months.
- Q: How long does it take to fully charge the product?
- A: The product can be charged to 80% in 4 hours with the standard adapter and it can be fully charged in about 6 hours.
- Q: Can it be charged with both solar energy and vehicle power supply at the same time?
  A: It can be charged together at the same time and the charging time will be greatly shortened.
- Q: Can the product be discharged while being charged (output used)?
  A: This product supports discharging while charging and it can be used at the same time. When the output power is greater than the input power, the battery power is slowly reduced and when it is reduced to the low battery state, the output is turned off.

- Q: Does the product have temperature protection?
  A: When it is used in a high temperature environment, if the internal temperature is higher than 50 °C, the circuit will be turned off for battery safety.
- Q: Will the product automatically shut down?
  A: After the product is deeply discharged, it will automatically shut down, but under normal circumstances, after turning it on, it will not automatically sleep for continuous power supply.
- Q: How much discharging capacity for the car can this product generate?
  A: The product is used to charge the car battery, and then use the original car battery to start the car. If the car battery is broken or the circuit is faulty, the car starting function cannot be used.

9. Trouble shooting

9.1 There is no response when the product is turned on, and output is non-available for DC, USB, AC, and Light.

Solution:

(1) Remove the product load, then charge it for 5-10 minutes and re-turn it on.

(2) Please ensure that the product is currently used in the normal temperature range.

9.2 The product can be turned on, but the corresponding output interface has no output (DC, USB, AC).

Solution:

1) Check if the power of product is too low, if so, please charge it in time.
2) Check if the power equipment is higher than the output power of the product, which results in the protection, please remove the load, and turn it on again.
3) Confirm whether the output of this product meets the power requirements of the electric device.
4) Check if there is a short circuit between the output port and the electric device, and then restart the device after removing the device.
5) Check if the device is used normally on other power sources, if it is used abnormally,

9.3 Accidentally shutdown during product use.

Solution:

This product has a built-in real-time monitoring system, which may cause the shut down of the product due to the internal protection system. The events that may cause the protection system to start may be overcharge, over discharge, high temperature, low temperature, over current and short circuit. In order to solve the problem quickly, please remove all the electrical equipment, keep the temperature of the product standing within the normal temperature range and charge the product for 5-10 minutes, also check if there is any fault in the electrical equipment. Then re-start the product.

9.4 The product cannot be charged.

Solution:

(1) Check if the electrical parameters of charging are within the charging range of this product.

(2) Check if the current device has started temperature protection because the temperature is too high or too low.

10. After-sales Service

The guideline for the warranty:

In the case of product failure, please follow the instructions. If you still can't solve the problem, please contact our after-sales service personnel. When contacting the after-sales service personnel, please provide the following information: product model, date of purchasing, contact number, detailed address, description for product failure. Please cooperate with and answer the detailed inquiries from our after-sales service engineers, including on-site conditions, fault performance status, frequent/incidental accidents, and incorrect operation procedures, so that our company's after-sales engineers can find out the reasons and then reply (or guide) the users how to solve product failures. If the problem still cannot be solved, please contact your dealer.

- The warranty period is 12 months from the date of sale;
- During the warranty period, the defects in materials and workmanship and damage caused by non-artificial reasons will freely be solved by our company
- During the warranty period, the following conditions cannot be used for free maintenance services:
- Open the product privately;
- Damage to the surface coating and appearance is not covered by the warranty.
- The user did not follow the instructions.
- Failure or damage caused by accidents, man-made, environmental and other factors (misoperation, collision, unreasonable voltages, dampness.).
- The outer packing and accessories of the product are not covered by the warranty.

After-sales Service Guarantee Card

Product model	
Date of purchase	
Buying merchant	
Customer address	
Contact number	
Brief Introduction of Fault Problems	