



# PURE SINE WAVE INVERTER

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## USER MANUAL



**NP260;NP400;  
NP600;NP800;NP1000  
NP1200;NP1500;NP2000  
NP2500;NP3000;NP3500  
NP4000;NP5000**



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# Important Safety Instructions

Please reserve this manual for future review.

This manual contains all the instructions about safety, installation, and operation for the NPower series pure sine wave inverter (in the following referred to as the inverter).

## 1. Explanation of symbols

To enable the user to use the product efficiently and ensure personal and property safety, please read the related words carefully when you encounter the following symbols in the manual.

**TIP:** Indicates any practical advice for reference.



**IMPORTANT:** Indicates a critical tip during the operation, if ignored, may cause the device to run in error.



**CAUTION:** Indicates potential hazards, if not avoided, may cause the device damaged.



**WARNING:** Indicates the danger of electric shock, if not avoided, would cause casualties.



**WARNING HOT SURFACE:** Indicates the risk of high temperature, if not avoided, would cause scalds.



Read the user manual carefully before any operation.



The entire system should be installed by professional and technical personnel.

## 2. Requirements for professional and technical personnel

- Professionally trained;
- Familiar with related safety specification for the electrical system;

- Read the entire user manual to get related safety cautions.

### **3. Professional and technical personnel is allowed to do**

- Install the inverter to the specified location;
- Test-run before installation;
- Operate and maintain the inverter.

### **4. General installation notes**

- When receiving the inverter, please check if there is any damage that occurred in transportation. If you find any problem, please contact the transportation company or our company in time.
- Follow the instructions before placing or moving the inverter.
- Make sure there isn't any arc danger in the operation area before installation.
- Inverter input is recommended to connect to the battery. The minimum capacity of the battery (expressed in AH) should be calculated in the following way: 5 times the inverter/battery voltage's rated power.
- Keep the inverter out of children's touch.
- As an off-grid inverter, connect the AC output terminals to the utility or electrical source is not recommended; otherwise, the inverter may be damaged.
- The inverter can be used singly; a parallel connection or in series will damage the inverters.

### **5. Safety cautions for mechanical installation**

- Before installation, ensure the inverter has no electrical connection.
- Ensure the inverter installation's heat dissipation space. Do not install the inverter in humid, greasy, flammable, explosive, dust accumulative, or other severe environments.

## **6. Safety cautions for electrical connection**

- Check if all the wiring connections are tight to avoid the danger of heat accumulation due to a loose connection.
- The protective grounding must be connected to the ground. The cross-section of the wire should not be less than  $4\text{mm}^2$ .
- Connect the DC input according to the requirement strictly. The power inverter has a relatively wide input range. Still, too high or too low input may cause problems even destroy the inverter.
- The wire connects between the battery and inverter should be shorter than 3m, the current density should be less than  $5\text{A}/\text{mm}^2$ . In contrast, the output of the inverter is fully loaded. If the wire is longer than 3m, the current density should be reduced.
- A fuse or breaker should be used between battery and inverter; the fuse or breaker value should be twice the inverter rated input current.
- DO NOT put the inverter close to the flooded lead-acid battery because the terminals' sparkle may ignite the hydrogen released by the battery.
- The output is forbidden to connect other power sources or utilities; otherwise, the inverter will be damaged. The inverter must be off when connecting the load.
- Do not directly connect the battery charger or similar devices to the input terminal of the inverter.

## **7. Safety cautions for inverter operation**

- Do not touch it when the inverter is working. Its surface may become very hot. Keep away from the material or device which may suffer from high temperature.
- Do not open the inverter to operate when it is working.
- The AC output with high voltage during the inverter operation, so do NOT touch the connection point, it may cause danger.

## **8. The dangerous operations which would cause electric arc, fire or explosion**

- Touch the wire end, which hasn't been insulation treated, may cause electriferous.

- Touch the wiring copper row, terminals, or internal devices, which may cause electriferous.
- The power cable connection is loose.
- Screw or other spare parts inadvertently falls into the inverter.
- Incorrect operation by untrained non-professional or technical personnel.



Once an accident occurs, it must be handled by professional and technical personnel. Any incorrect operation would cause a more serious accident.

## **9. Safety cautions for stopping the inverter**

- After the inverter stop working for ten minutes, the internal conductive devices could be touched.
- The inverter can be restarted after removing the faults, which may affect its safety performance.
- No maintenance parts in the inverter. If any maintenance service is required, please contact our after-sales service personnel.



Do NOT touch or open the case after the device powered off within ten mins.

## **10. Safety cautions for inverter maintenance**

- Testing equipment is recommended to check the inverter without voltage or current;
- When conducting electrical connection and maintenance work, must post temporary warning signs or put up barriers to prevent unrelated personnel from entering the electrical connection or maintenance area.
- Improper maintenance operation to the inverter may cause personal injury or equipment damage.
- To prevent static damage, please wear an anti-static wrist strap, or avoid unnecessary contact with the circuit board.



# 1 Overview

Based on a full-digital intelligent technology, the NPower series is a pure sine wave inverter, which can convert 12/24/48V DC power to 220/230V AC power. With an advanced SPWM technology, voltage-current double closed-loop control, and completely isolated inverter technology, the NPower has high-quality electrical parameters and a stronger ability to resist impact load. The input terminal's surge prevention helps to meet the lithium battery's special requirements and ensure the inverter's safety and reliability.

The cage is designed with a galvanized board of high strength and corrosion resistance.

With high reliability, high efficiency, complete protection function, easy installation and operation, the inverter is suitable for AC loads of household appliances, power tools, industrial equipment, electronic audio and video, and solar PV power generation system(such as vehicle inverter application, solar RV, solar household, solar yacht, and solar power station, etc.)

## Features:

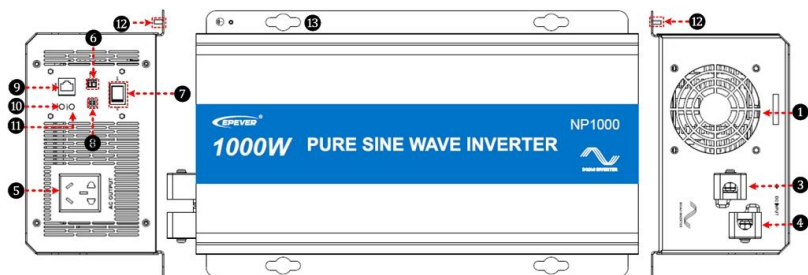
- Advanced SPWM technology and pure sine wave output
- Full digital double closed-loop control to enhance the load capacity
- Completely isolated inverter technology for the input and output
- Anti-surge design to support the lithium battery system perfectly
- Lower output harmonic distortion( $THD \leq 3\%$ )
- Excellent EMC design for the AC output to prevent interference of connected equipment
- Selectable output voltage(220/230VAC) and frequency(50/60Hz) by the DIP switch
- Extensive protection: input reverse polarity, input over voltage, input low voltage, output overload, output short circuit, and overheating
- Remote control and monitor the inverter by APP or PC software
- Configurable input under voltage and input under voltage reconnect voltage via the

#### APP or PC software

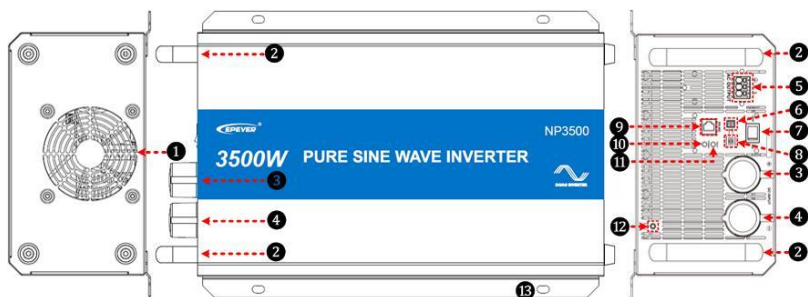
- Set the inverter's ID via the APP or PC software to monitor several inverters.
- Adopt a Galvanized board of high strength and strong corrosion-resistance for the cage
- Selectable output terminal: Chinese dual-socket, Australia/New Zealand, European, Universal, and Terminal
- Display running status by the local device(only NP4000-22(T) and NP5000-42(T)), optional external remote meter
- Easy maintenance and repair

## 2 Characteristics

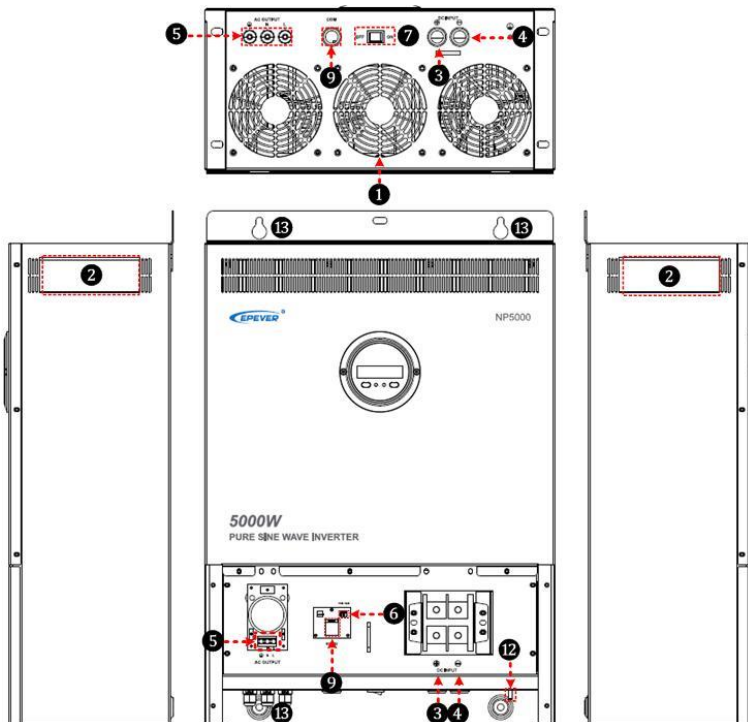
### ➤ NP260~NP1200



### ➤ NP1500~NP3500, NP4000-42(T)



➤ NP4000-22(T), NP5000-42(T)



①	Ventilation fan <sup>(1)</sup>	⑧	Mode switch <sup>(3)</sup>
②	Handle	⑨	RS485 communication port <sup>(4)</sup>
③	DC input terminal positive	⑩	Working indicator(green) <sup>(5)</sup>
④	DC input terminal negative	⑪	Fault indicator(red) <sup>(5)</sup>
⑤	AC outlet <sup>(2)</sup>	⑫	Grounding terminal
⑥	External switch connection point	⑬	Mounting hole size
⑦	AC output switch		

### (1) Ventilation fan

- The cooling fan will be automatically turned on if the inverter could reach any condition down below.

1) Heat sink temperature is higher than 45°C

2) Internal temperature is higher than 45°C

3) The output power is higher than the same power, see the below table:

Models	Instruction
NP260-12(X); NP260-22(X) NP400-12(X); NP400-22(X) NP600-12(X); NP600-22(X) NP800-12(X) NP1000-22(X) NP1200-12(X); NP1200-22(X)	Internal temperature is higher than 10°C, and the output power is higher than half of the continuous output power of 25°C.
NP1500-12(T); NP1500-22(T) NP2000-12(T); NP2000-22(T); NP2000-42(T) NP2500-12(T); NP2500-22(T); NP2500-41(T); NP2500-42(T) NP3000-22(T); NP3000-42(T) NP3500-42(T) NP4000-22(T) NP5000-42(T)	Internal temperature is higher than 10°C, and the output power is higher than 1000W
NP4000-42(T)	Internal temperature is higher than 10°C, and the output power is higher than 2000W

**"X" is C-Chinese dual-socket, A-Australia/New Zealand, E-European, M- Universal.**

- The cooling fan will be automatically turned off when the inverter reaches all the conditions down below.

1) Heat sink temperature is lower than 40°C

2) Internal temperature is lower than 40°C

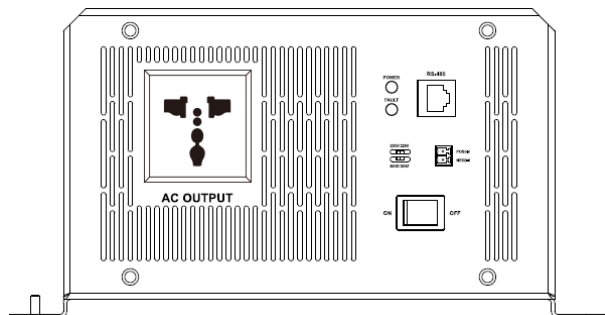
3) The output power is lower than the same power, see the below table:

Models	Instruction
NP260-12(X); NP260-22(X)	The output power is lower than 80W
NP400-12(X); NP400-22(X)	The output power is lower than 150W
NP600-12(X); NP600-22(X)	The output power is lower than 200W
NP800-12(X)	The output power is lower than 300W
NP1000-22(X)	The output power is lower than 400W
NP1200-12(X); NP1200-22(X)	The output power is lower than 500W
NP1500-12(T);NP1500-22(T) NP2000-12(T);NP2000-22(T); NP2000-42(T) NP2500-12(T);NP2500-22(T); NP2500-41(T);NP2500-42(T) NP3000-22(T);NP3000-42(T) NP3500-42(T) NP4000-22(T) NP5000-42(T)	The output power is lower than 800W
NP4000-42(T)	The output power is lower than 1200W

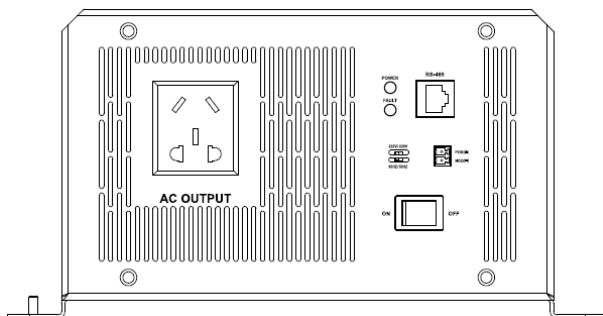
"X" is C-Chinese dual-socket, A-Australia/New Zealand, E-European, M- Universal.

## (2) AC outlet

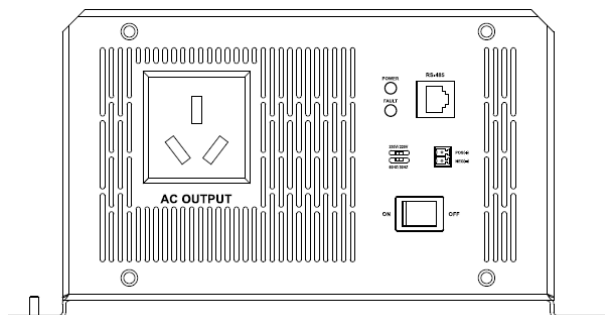
- **Universal:**



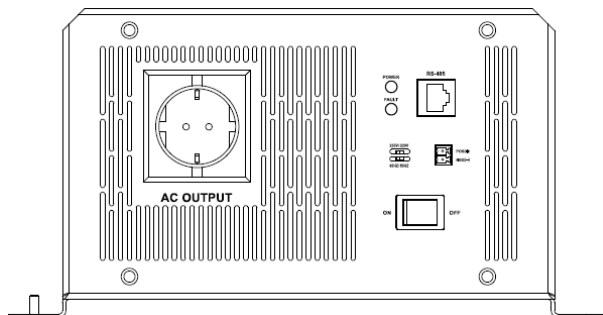
- **Chinese dual-socket:**



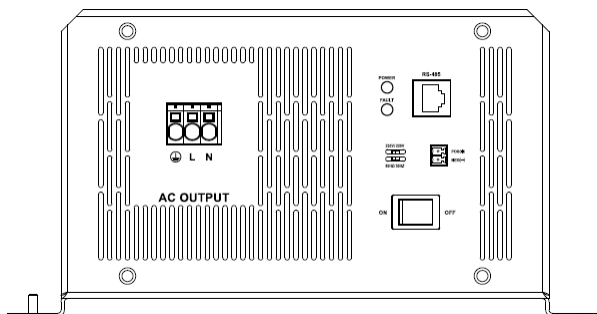
- **Australia/New Zealand:**



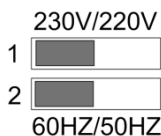
- **European:**



- **Terminal:**



### (3) Mode switch



When the switch of number 1 is on the 230V side, the output voltage is 230VAC; otherwise, it is 220VAC.

When the switch of number 2 is on the 60Hz side, the output frequency is 60Hz; otherwise, it is 50Hz.

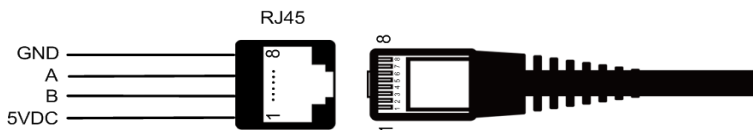


Both the output frequency and voltage change availability after restarting the inverter.



DO NOT turn ON/OFF the mode switch when the inverter is working.

### (4) RS485 communication port





The RJ45 port pin definition is shown below:

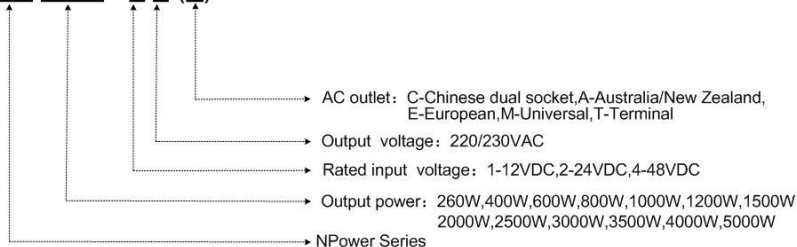
1	5VDC	5	RS-485-A
2	5VDC	6	RS-485-A
3	RS-485-B	7	GND
4	RS-485-B	8	GND

#### (5) LED indicator and buzzer

Working indicator	Fault indicator	Buzzer	Status
Green super flashing	Red off	No beeps	Standby
Green on solid	Red off	No beeps	Output is normal
Green slowly flashing	Red off	Beeps	Input under voltage
Green fast flashing	Red off	Beeps	Input over voltage
Green on solid	Red on solid	Beeps	Over temperature
Green off	Red fast flashing	Beeps	load short circuit
Green on solid	Red slowly flashing	Beeps	Overload
Green off	Red off	Beeps	Output voltage abnormal

### 3 Designations of models

NP 5000 - 4 2 (I)



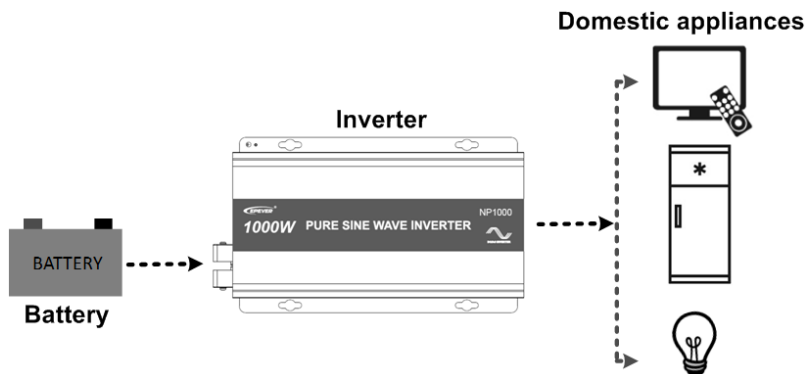
Models	Input rated voltage	Output power	Output rated voltage
NP260-12(X)	12VDC	260W	220/230VAC
NP260-22(X)	24VDC		
NP400-12(X)	12VDC	400W	
NP400-22(X)	24VDC		
NP600-12(X)	12VDC	600W	
NP600-22(X)	24VDC		
NP800-12(X)	12VDC	800W	
NP1000-22(X)	24VDC	1000W	
NP1200-12(X)	12VDC	1200W	
NP1200-22(X)	24VDC		
NP1500-12(T)	12VDC	1500W	
NP1500-22(T)	24VDC		
NP2000-12(T)	12VDC	2000W	
NP2000-22(T)	24VDC		
NP2000-42(T)	48VDC		
NP2500-12(T)	12VDC	2500W	
NP2500-22(T)	24VDC		
NP2500-41(T)	48VDC		
NP2500-42(T)	48VDC		
NP3000-22(T)	24VDC	3000W	

NP3000-42(T)	48VDC		
NP3500-42(T)	48VDC	3500W	
NP4000-22(T)	24VDC	4000W	
NP4000-42(T)	48VDC	4000W	
NP5000-42(T)	48VDC	5000W	

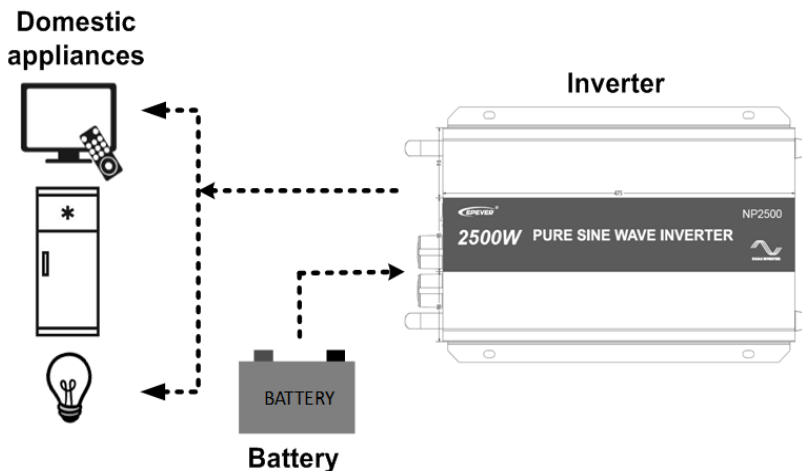
**"X" is C-Chinese dual-socket, A-Australia/New Zealand, E-European, M- Universal.**

## 4 Schematic diagram for connections

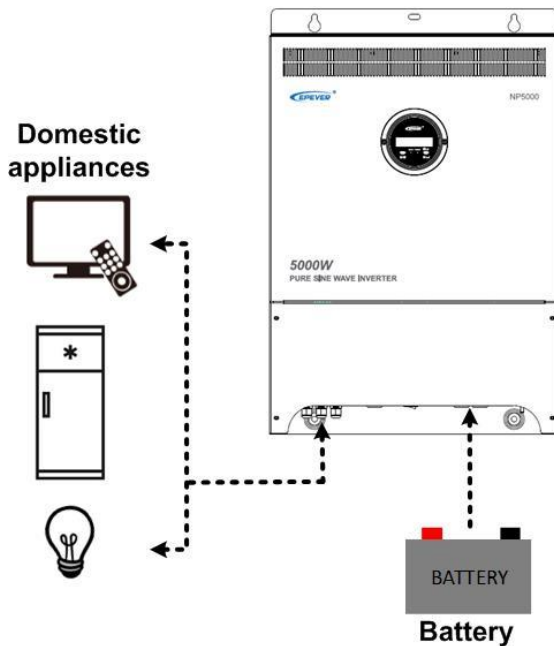
➤ NP260~NP1200



➤ NP1500~NP3500, NP4000-42(T)



➤ NP4000-22(T), NP5000-42(T)



Connect the DC input directly to the battery port is recommended. DO NOT connect to the battery terminal of the controller. Otherwise, the charging frequency spikes of the controller may lead to over-voltage protection of the inverter.

# 5 Installation instructions

## 5.1 General installation notes

- Please read the manual carefully to get familiar with the installation steps before installation.
- Be very careful when installing the batteries, especially flooded lead-acid batteries. Please wear eye protection, and have fresh water available to rinse if any contact with battery acid.
- Keep the battery away from any metal objects, which may cause a short circuit of the battery.
- Loose connections and corroded wires may result in high heat that can melt wire insulation, burn surrounding materials, or even cause a fire. Ensure tight connections and use cable clamps to secure cables and prevent them from swaying in motion.
- Please follow the parameter list to connect the DC input, even though the inverter has a high range of DC input voltages. Too high or too low may cause the inverter to stop working, even damage the inverter (Surge voltage less than 20V for 12V system, 40V for 24V system, 80V for 48V system)
- Select the system connection cables according to the current density no higher than 5A/mm<sup>2</sup>. (Following the National Electrical Code Article 690, NFPA70).
- For outdoor installation, keep out of the direct sunshine and rain infiltration.
- High voltage still exists inside the inverter after turning off the switch. Do not open or touch the internal devices, and wait ten minutes before conducting related operations.
- Please do not install the inverter in humid, greasy, flammable, explosive, dust accumulative, or other severe environments.
- AC output is a high voltage; please do not touch the wiring connection.
- When the fan is working, please do not touch it to avoid injury.

## 5.2 Wire size & breaker

Wiring and installation mode should comply with national and local electrical code requirements.

➤ **Wire, terminals, and breaker selection for battery**

<b>Models</b>	<b>Battery wire size</b>	<b>Terminal</b>	<b>Breaker</b>
NP260-12(X)	6mm <sup>2</sup> /9AWG	RNB5.5-6	DC/2P—40A
NP260-22(X)	4mm <sup>2</sup> /11AWG	RNB5.5-6	DC/2P—20A
NP400-12(X)	10mm <sup>2</sup> /7AWG	RNB8-6S	DC/2P—63A
NP400-22(X)	6mm <sup>2</sup> /9AWG	RNB5.5-6	DC/2P—32A
NP600-12(X)	16mm <sup>2</sup> /5AWG	RNB14-8	DC/2P—80A
NP600-22(X)	6mm <sup>2</sup> /9AWG	RNB8-8	DC/2P—40A
NP800-12(X)	25mm <sup>2</sup> /3AWG	RNB22-6L	DC/2P—125A
NP1000-22(X)	16mm <sup>2</sup> /5AWG	RNB14-6L	DC/2P—63A
NP1200-12(X)	25mm <sup>2</sup> /3AWG	RNB22-6L	DC/2P—125A
NP1200-22(X)	16mm <sup>2</sup> /5AWG	RNB14-6L	DC/2P—63A
NP1500-12(T)	50mm <sup>2</sup> /1/0AWG	RNB60-10	DC—80A (2P in parallel)
NP1500-22(T)	25mm <sup>2</sup> /3AWG	RNB22-10	DC/2P—80A
NP2000-12(T)	50mm <sup>2</sup> /1/0AWG	RNB60-10	DC—100A (2P in parallel)
NP2000-22(T)	25mm <sup>2</sup> /3AWG	RNB22-10	DC/2P—100A
NP2000-42(T)	16mm <sup>2</sup> /5AWG	RNB14-10	DC/2P—63A
NP2500-12(T)	2×35mm <sup>2</sup> / 2×1AWG	RNB60-10	DC—125A (2P in parallel)
NP2500-22(T)	35mm <sup>2</sup> /1AWG	RNB38-10	DC—100A (2P in parallel)
NP2500-41(T)	16mm <sup>2</sup> /5AWG	RNB14-10	DC/2P—63A
NP2500-42(T)	16mm <sup>2</sup> /5AWG	RNB14-10	DC/2P—63A
NP3000-22(T)	50mm <sup>2</sup> /1/0AWG	RNB60-10	DC—100A (2P in parallel)
NP3000-42(T)	25mm <sup>2</sup> /3AWG	RNB22-10	DC/2P—100A
NP3500-42(T)	25mm <sup>2</sup> /3AWG	RNB22-10	DC/2P—125A
NP4000-22(T)	2×25mm <sup>2</sup> / 2×3AWG	RNB22-8(4 pcs)	DC/4P—125A or DC/2P—125A(2pcs)
NP4000-42(T)	25mm <sup>2</sup> /3AWG	RNB22-10(2 pcs)	DC/2P—125A
NP5000-42(T)	35mm <sup>2</sup> /1AWG	RNB38-8(2 pcs)	DC/2P—160A

**"X" is C-Chinese dual-socket, A-Australia/New Zealand, E-European, M- Universal.**

➤ **Wire and breaker selection for AC output**

Models	Wire size	Breaker
NP1500-*2(T)	1mm <sup>2</sup> /17AWG	AC/2P—10A
NP2000-*2(T)	1.5mm <sup>2</sup> /15AWG	AC/2P—10A
NP2500-*1(T)	4mm <sup>2</sup> /11AWG	AC/2P—32A
NP2500-*2(T)	2.5mm <sup>2</sup> /13AWG	AC/2P—10A
NP3000-*2(T)	2.5mm <sup>2</sup> /13AWG	AC/2P—16A
NP3500-*2(T)	2.5mm <sup>2</sup> /13AWG	AC/2P—16A
NP4000-*2(T)	4mm <sup>2</sup> /11AWG	AC/2P—25A
NP5000-*2(T)	4mm <sup>2</sup> /11AWG	AC/2P—32A



- The wire size and terminal are for reference only. Use thicker wires to reduce the voltage drop and improve the system performance when the inverter and battery distance is further.
- The above wire size and circuit breaker size are for recommendation only. Please choose a suitable wire and circuit breaker according to the practical situation.

## 5.3 Mounting

### Installation steps:

**Step1:** Professional personnel read this manual carefully.

**Step2:** Determination of installation location and heat-dissipation space.



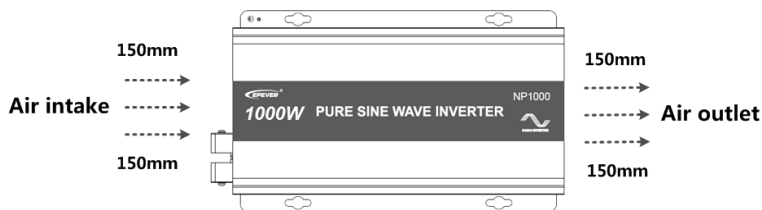
The inverter shall be installed in a place with sufficient air-flow and a minimum clearance of 150mm from the upper and lower edges of the inverter to ensure natural thermal convection.



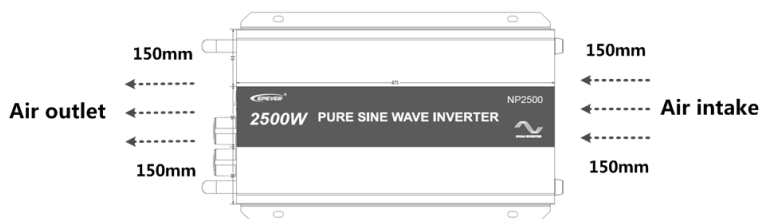
The inverter shall be cooling through housing if installed in a closed box.



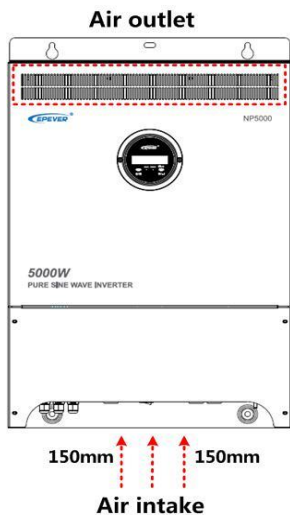
➤ NP260~NP1200



➤ NP1500~NP3500, NP4000-42(T)



➤ NP4000-22(T), NP5000-42(T)



### Step3: Wiring



The AC equipment shall be determined by the continuous output power of the inverter. Still, the surge power must be lower than the instantaneous surge power of the inverter.

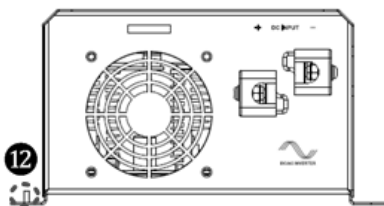


- The switch of the inverter is off before wiring.
- DO NOT close the circuit breaker or fuse and make sure that the leads of "+" and "-" poles are correctly connected while wiring the inverter.
- A fuse, which current is 1.25 to 2 times the inverter's rated current, must be installed on the battery side with a distance from the battery not greater than 150mm.

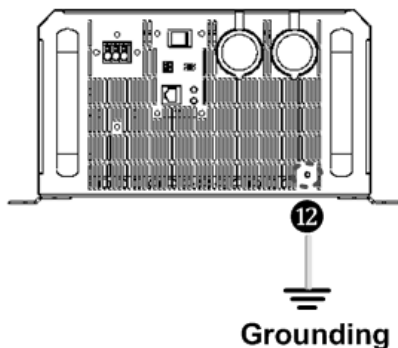
#### Wiring order:

##### ① Ground

- NP260~NP1200,



- NP1500~NP3500, NP4000-42(T)



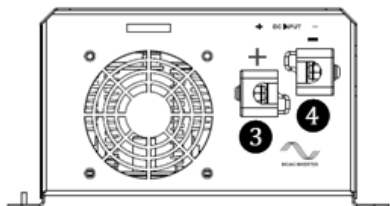
- NP4000-22(T), NP5000-42(T)



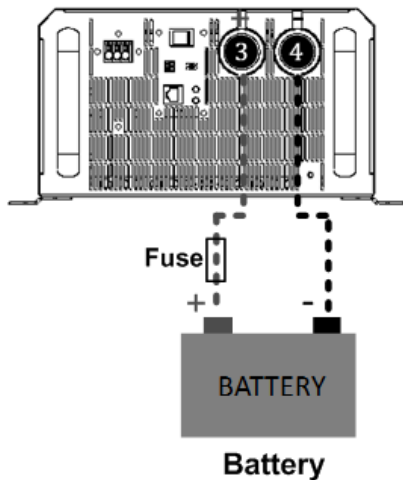
**Grounding**

## ② Battery

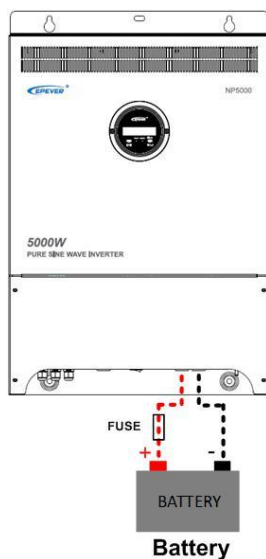
- NP260~NP1200,



- NP1500~NP3500, NP4000-42(T)

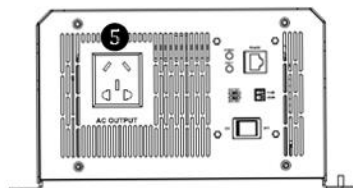


- NP4000-22(T), NP5000-42(T)

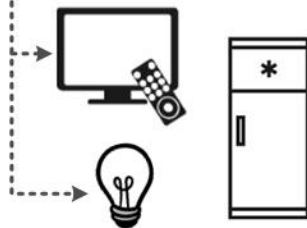
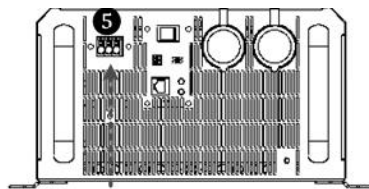


### ③ AC loads

- NP260~NP1200,



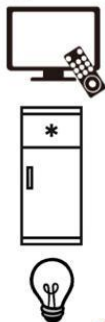
- NP1500~NP3500, NP4000-42(T)



Domestic appliances

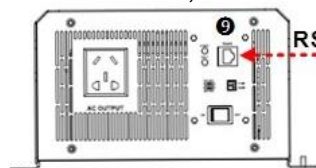
- NP4000-22(T), NP5000-42(T)

Domestic appliances



#### 4 Accessories

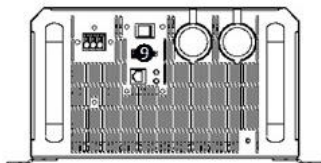
- NP260~NP1200,



Accessories



- NP1500~NP3500, NP4000-42(T)

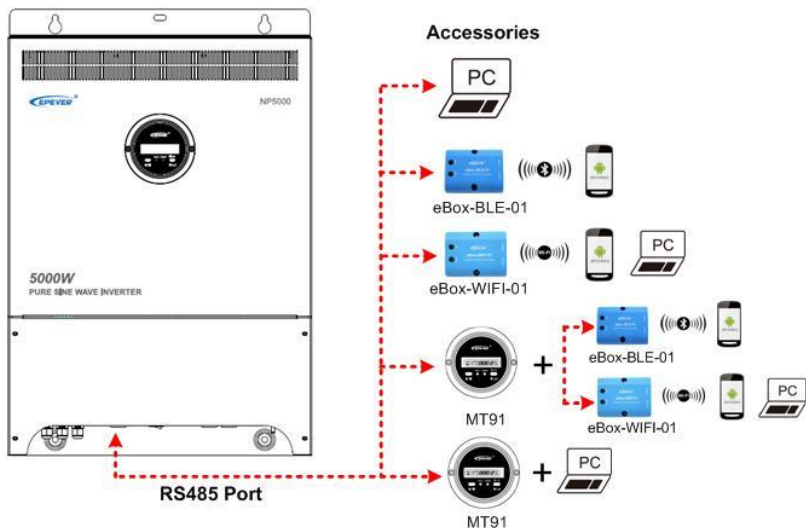


MT91



MT91

- NP4000-22(T), NP5000-42(T)



Disconnect the system in the reverse order ④ ③ ② ①.

#### Step4: Power on the inverter

- (1) Switch on the input breaker or the fuse between the inverter and battery.
- (2) Turn on the power switch to start the inverter; the green indicator will be on state, and the AC output is normal.
- (3) Turn on the load one by one, and check the operation status of both inverter and load.



If there are different types of loads, it is suggested to turn on the loads with higher startup currents, such as television. After the loads work stably, turn on the loads with a lower startup current, such as an incandescent lamp.

- (4) If the fault indicator is red and the buzzer alarms when turning on the inverter, please immediately switch off the loads and inverter. Refer to [chapter 7 Troubleshooting](#). After troubleshooting, please follow the above steps and operate again.

## 6 Protection

### 1) Input reverse polarity protection

The electronic circuit works to protect the inverter from damage during input reverse polarity. And the inverter will get right while the input is right.

### 2) Input overvoltage protection

- Input overvoltage protection

Models	Protection value	Default	User-defined	Phenomenon
NP***-1*	$16V < U_i < 16.2V$	16V	15.5~16.2V	The output is OFF after 5s Green indicator fast flashing Buzzer sounds
NP***-2*	$32V < U_i < 32.2V$	32V	31~32.2V	
NP***-4*	$64V < U_i < 64.4V$	64V	62~64.4V	
NP***-1*	$U_i \geq 16.2V^*$	—	—	The output is OFF immediately Green indicator fast flashing Buzzer sounds
NP***-2*	$U_i \geq 32.2V^*$	—	—	
NP***-4*	$U_i \geq 64.4V^*$	—	—	

★ The inverter has the input over voltage protection, but the surge voltage less than 20V for 12V system, 40V for 24V system, 80V for 48V system)

- Input over voltage recovery protection

Models	Recovery value	Default	User-defined	Phenomenon
NP***-1*	$U_i \leq 14.5V$	14.5V	14~15V	Green indicator on solid
NP***-2*	$U_i \leq 29V$	29V	28~30V	
NP***-4*	$U_i \leq 58V$	58V	56~60V	Output is ON

### 3) Low voltage protection

- Low voltage protection

Models	Protection value	Default	User-defined	Phenomenon
NP***-1*	$10.5V < U_i < 10.8V$	10.8V	10.5~11.3V	The output is OFF after 5s Green indicator slowly flashing Buzzer sounds
NP***-2*	$21V < U_i < 21.6V$	21.6V	21~22.6V	
NP***-4*	$42V < U_i < 43.2V$	43.2V	42~45.2V	
NP***-1*	$U_i \leq 10.5V$	—	—	The output is OFF immediately Green indicator slowly flashing Buzzer sounds
NP***-2*	$U_i \leq 21.0V$	—	—	
NP***-4*	$U_i \leq 42.0V$	—	—	

- Low voltage recovery protection

Models	Recovery value	Default	User-defined	Phenomenon
NP***-1*	$U_i \geq 12.5V$	12.5V	12~13V	Green indicator on solid
NP***-2*	$U_i \geq 25V$	25V	24~26V	
NP***-4*	$U_i \geq 50V$	50V	48~52V	Output is ON

### 4) Overload protection

$S = 1.25P_e$ <sup>①</sup> (S: Output power; $P_e$ : Rated power)	The output is OFF after the 60s Red indicator slowly flashing Buzzer sounds
$S = 1.5P_e$ <sup>①</sup> (S: Output power; $P_e$ : Rated power)	The output is OFF after 10s Red indicator slowly flashing Buzzer sounds
$S = 1.8P_e$ <sup>①</sup> (S: Output power; $P_e$ : Rated power)	The output is OFF after 3s Red indicator slowly flashing Buzzer sounds

① When the overload protection is activated, the AC output will recover three times automatically (the first time delay 5s, the second time delays for 10s, and the third time delays for 15s). After then the AC output will not recover automatically after restarting the inverter.



### 5) Load short circuit protection

Phenomenon	Instruction
The output is OFF immediately Red indicator slowly flashing Buzzer sounds	When the load short circuit protection is activated, the AC output will auto-recovery three times(the first time delay 5s, the second time delays for 10s, and the third time delays for 15s). After then the AC output would not auto-recovery after restarting the inverter.

### 6) OverTemperture Protection

Phenomenon	Instruction
Inverter turns OFF	The heat sink or internal temperature is higher than some value.
Inverter turns ON	The heat sink or internal temperature is lower than some value.

## 7 Troubleshooting



DO NOT try to repair or maintain the inverter by yourself; it may cause danger.

Phenomenon	Possible reasons	Troubleshooting
Green indicator slowly flashing Buzzer sounds	DC input voltage under voltage	Measure the DC input voltage if the voltage is lower than 10.8/21.6/43.2V. Adjust the input voltage to restore normally.
Green indicator fast flashing Buzzer sounds	DC input voltage overvoltage	Measure the DC input voltage if the voltage is lower than 16/32/64V. Adjust the input voltage to restore normally.
Red indicator slowly flashing Buzzer sounds	Overload	<ul style="list-style-type: none"><li>• Reduce the number of the AC load</li><li>• Restart the inverter</li></ul>
Red indicator fast flashing Buzzer sounds	Short circuit	<ul style="list-style-type: none"><li>• Check carefully loads connection, clear the fault.</li><li>• Restart the inverter</li></ul>
Red and green indicator on solid Buzzer sounds	Over temperature	Improve the ventilation quality, do NOT block the vent, cool the temperature around the power supply, and restart the inverter after the temperature drops. If still not working, please derate the power for use.

## 8 Maintenance

**The following inspections and maintenance tasks are recommended at least two times per year for the best performance.**

- Make sure no block on air-flow around the inverter. Clear up any dirt and fragments on the radiator.
- Check all the naked wires to make sure insulation is not damaged for serious solarization. Frictional wear, dryness, insects or rats, etc. Repair or replace some wires if necessary.
- Check and confirm that indicator and display is consistent with required. Pay attention to any troubleshooting or error indication. Take corrective action if necessary.
- Confirm that all the terminals have no corrosion, insulation damaged, high temperature, or burnt/discolored sign. Tighten terminal screws to the suggested torque.
- Check for dirt, nesting insects, and corrosion. If so, clear up in time.
- Check and confirm that the lightning arrester is in good condition. Replace a new one in time to avoid damaging the inverter/charger and even other equipment.



Risk of electric shock!

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Risk of electric shock! Before the above operations, ensure that all the power is turned off. The electricity in the capacitances is completely discharged, then follows the corresponding inspections and operations.

## 9 Technical Specifications

Item	NP260-12	NP260-22
Output continuous power	260W@25°C, 260W@45°C	
Surge power	400W	
Output voltage	220/230VAC(-8%~+3%)	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	12VDC	24VDC
Input voltage range	10.8~16VDC	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	81%	84%
Max. rated efficiency <sup>②</sup>	79%	82%
Max. efficiency	89%(80W)	90%(100W)
No-load current	<0.4A	<0.3A
RS485 com. port	5VDC/200mA	
<b>Mechanical parameters</b>		
Binding post	M6	
Overall dimension (L×W×H)	365×212×97mm	
Mounting dimension	220×193mm	
Mounting hole size	Φ7mm	
Weight	6.4kg	6.3kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP400-12	NP400-22
Output continuous power	400W@25°C, 350W@45°C	
Surge power	700W	
Output voltage	220/230VAC(-8%~+3%)	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	12VDC	24VDC
Input voltage range	10.8~16VDC	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	81%	85%
Max. rated efficiency <sup>②</sup>	79%	84%
Max. efficiency	90%(100W)	91%(100W)
No-load current	<0.5A	<0.3A
RS485 com. port	5VDC/200mA	
<b>Mechanical parameters</b>		
Binding post	M6	
Overall dimension (LxWxH)	386x215x99mm	
Mounting dimension	230x196mm	
Mounting hole size	Φ7mm	
Weight	8.1kg	7.9kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP600-12	NP600-22
Output continuous power	600W@25°C, 500W@45°C	
Surge power	1000W	
Output voltage	220/230VAC(-8%~+3%)	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	12VDC	24VDC
Input voltage range	10.8~16VDC	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	81%	85%
Max. rated efficiency <sup>②</sup>	80%	83%
Max. efficiency	89%(200W)	92%(160W)
No-load current	<0.6A	<0.4A
RS485 com. port	5VDC/200mA	
<b>Mechanical parameters</b>		
Binding post	M8	
Overall dimension (LxWxH)	428x243x121mm	
Mounting dimension	260x220mm	
Mounting hole size	Φ9mm	
Weight	10.4kg	10.1kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP800-12
Output continuous power	800W @25°C, 800W @45°C
Surge power	1600W
Output voltage	220/230VAC (-8%~+3%)
Output frequency	50/60Hz±0.2%
Output wave	Pure Sine Wave
Output distortion THD	THD≤3%(Resistive load)
Load power factor	0.2~1(VA≤Continuous output power)
Rated input voltage	12VDC
Input voltage range	10.8~16VDC
Output efficiency of 80% rated power <sup>①</sup>	83%
Max. rated efficiency <sup>②</sup>	81%
Max. efficiency	92%(100W)
No-load current	<0.6A
RS485 com. port	5VDC/200mA
<b>Mechanical parameters</b>	
Binding post	M6
Overall dimension (LxWxH)	475×268×139mm
Mounting dimension	270×245mm
Mounting hole size	Φ9mm
Weight	13.3kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP1000-22
Output continuous power	1000W@25°C, 800W@45°C
Surge power	1600W
Output voltage	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%
Output wave	Pure Sine Wave
Output distortion THD	THD≤3%(Resistive load)
Load power factor	0.2~1(VA≤Continuous output power)
Rated input voltage	24VDC
Input voltage range	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	85%
Max. rated efficiency <sup>②</sup>	82%
Max. efficiency	92%(200W)
No-load current	<0.4A
RS485 com. port	5VDC/200mA
<b>Mechanical parameters</b>	
Binding post	M6
Overall dimension (LxWxH)	475×268×139mm
Mounting dimension	270×245mm
Mounting hole size	Φ9mm
Weight	12.7kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)



Item	NP1200-12	NP1200-22
Output continuous power	1200W@25°C, 1000W@45°C	
Surge power	2000W	
Output voltage	220/230VAC(-8%~+3%)	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	12VDC	24VDC
Input voltage range	10.8~16VDC	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	81%	85%
Max. rated efficiency <sup>②</sup>	78%	84%
Max. efficiency	92%(200W)	93%(300W)
No-load current	<0.6A	<0.4A
RS485 com. port	5VDC/200mA	
<b>Mechanical parameters</b>		
Binding post	M6	
Overall dimension (LxWxH)	511×268×139mm	
Mounting dimension	300×245mm	
Mounting hole size	Φ9mm	
Weight	15.7kg	15.3kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP1500-12	NP1500-22
Output continuous power	1500W@25°C 1300W@45°C	1500W@25°C 1500W@45°C
Surge power	3000W	
Output voltage	220/230VAC (-5%~+3%)	220/230VAC (±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤5% (Resistive load)	THD≤3% (Resistive load)
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	12VDC	24VDC
Input voltage range	10.8~16VDC	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	84%	88.5%
Max. rated efficiency <sup>②</sup>	82%	87%
Max. efficiency	90%(400W)	92%(500W)
No-load current	<2.0A	<0.5A
RS485 com. port	5VDC/200mA	
<b>Mechanical parameters</b>		
Binding post	M10	
Overall dimension (LxWxH)	566x313x145mm	
Mounting dimension	350x292mm	
Mounting hole size	Φ9mm	
Weight	20.3kg	20.2kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP2000-12	NP2000-22	NP2000-42
Output continuous power	2000W@25°C, 2000W@45°C		
Surge power	4000W		
Output voltage	220/230VAC (-5%~+3%)	220/230VAC(±3%)	
Output frequency	50/60Hz±0.2%		
Output wave	Pure Sine Wave		
Output distortion THD	THD≤5% (Resistive load)	THD≤3% (Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)		
Rated input voltage	12VDC	24VDC	48VDC
Input voltage range	10.8~16VDC	21.6~32VDC	43.2~64VDC
Output efficiency of 80% rated power <sup>①</sup>	84.5%	88%	89%
Max. rated efficiency <sup>②</sup>	82%	86%	87%
Max. efficiency	90%(600W)	93%(500W)	93%(500W)
No-load current	<2.5A	<0.6A	<0.3A
RS485 com. port	5VDC/200mA		5VDC/200mA (Isolation)
<b>Mechanical parameters</b>			
Binding post	M10		
Overall dimension (L×W×H)	554×393×175mm		486×313×145mm
Mounting dimension	350×372mm		350×292mm
Mounting hole size	Φ9mm		
Weight	29.8kg	27.6kg	20.7kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP2500-12	NP2500-22
Output continuous power	2500W@25°C, 2500W@45°C	
Surge power	5000W	
Output voltage	220/230VAC (-8%~+3%)	220/230VAC (-6%~+3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤5% (Resistive load)	THD≤3% (Resistive load)
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	12VDC	24VDC
Input voltage range	10.8~16VDC	21.6~32VDC
Output efficiency of 80% rated power <sup>①</sup>	87%	89%
Max. rated efficiency <sup>②</sup>	85%	87%
Max. efficiency	90%(700W)	93%(500W)
No-load current	<3.0A	<0.8A
RS485 com. port	5VDC/200mA	
<b>Mechanical parameters</b>		
Binding post	M10	
Overall dimension (LxWxH)	584x393x175mm	604x393x175mm
Mounting dimension	350x372mm	
Mounting hole size	Φ9mm	
Weight	32kg	32.2kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP2500-41	NP2500-42
Output continuous power	2500W@25°C, 2500W@45°C	
Surge power	5000W	
Output voltage	110/120VAC(±5%)	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	48VDC	
Input voltage range	43.2~64VDC	
Output efficiency of 80% rated power <sup>①</sup>	91.1%	91.5%
Max. rated efficiency <sup>②</sup>	89.7%	90%
Max. efficiency	94%(800W)	
No-load current	<0.5A	
RS485 com. port	5VDC/200mA(Isolation)	
<b>Mechanical parameters</b>		
Binding post	M10	
Overall dimension (LxWxH)	549x328x175mm	
Mounting dimension	350x307mm	
Mounting hole size	Φ9mm	
Weight	26.5kg	25.5kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP3000-22	NP3000-42
Output continuous power	3000W @25°C, 3000W @45°C	
Surge power	6000W	
Output voltage	220/230VAC(-5%~+3%)	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	24VDC	48VDC
Input voltage range	21.6~32VDC	43.2~64VDC
Output efficiency of 80% rated power <sup>①</sup>	88%	90%
Max. rated efficiency <sup>②</sup>	86%	89%
Max. efficiency	94%(500W)	94%(900W)
No-load current	<0.8A	<0.5A
RS485 com. port	5VDC/200mA	5VDC/200mA(Isolation)
<b>Mechanical parameters</b>		
Binding post	M10	
Overall dimension (LxWxH)	639x393x175.5mm	584x328x170mm
Mounting dimension	350x372mm	350x307mm
Mounting hole size	Φ9mm	
Weight	36.4kg	28.4kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP3500-42
Output continuous power	3500W@25°C, 3500W@45°C
Surge power	7000W
Output voltage	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%
Output wave	Pure Sine Wave
Output distortion THD	THD≤3%(Resistive load)
Load power factor	0.2~1(VA≤Continuous output power)
Rated input voltage	48VDC
Input voltage range	43.2~64VDC
Output efficiency of 80% rated power <sup>①</sup>	90%
Max. rated efficiency <sup>②</sup>	89%
Max. efficiency	93%(900W)
No-load current	<0.5A
RS485 com. port	5VDC/200mA(Isolation)
<b>Mechanical parameters</b>	
Binding post	M10
Overall dimension (LxWxH)	564x353x175mm
Mounting dimension	350x332mm
Mounting hole size	Φ9mm
Weight	32.2kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

Item	NP4000-22	NP4000-42
Output continuous power	4000W@25°C, 4000W@45°C	
Surge power	8000W	
Output voltage	220/230VAC(±3%)	
Output frequency	50/60Hz±0.2%	
Output wave	Pure Sine Wave	
Output distortion THD	THD≤3%(Resistive load)	
Load power factor	0.2~1(VA≤Continuous output power)	
Rated input voltage	24VDC	48VDC
Input voltage range	21.6~32VDC	43.2~64VDC
Output efficiency of 80% rated power <sup>①</sup>	89%	91.5%
Max. rated efficiency <sup>②</sup>	86%	90%
Max. efficiency	93%(1400W)	94%(1000W)
No-load current	<2.5A	<0.5A
RS485 com. port	5VDC/200mA(Isolation)	
<b>Mechanical parameters</b>		
Binding post	M8(4P)	M10
Overall dimension (LxWxH)	660x435x210mm	604x393x175mm
Mounting dimension	625x300mm	350x340mm
Mounting hole size	Φ8.5mm	Φ9mm
Weight	43.2kg	37kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)



Item	NP5000-42
Output continuous power	5000W@25°C, 5000W@45°C
Surge power	10000W
Output voltage	220/230VAC(±3%)
Output frequency	50/60Hz±0.2%
Output wave	Pure Sine Wave
Output distortion THD	THD≤3%(Resistive load)
Load power factor	0.2~1(VA≤Continuous output power)
Rated input voltage	48VDC
Input voltage range	43.2~64VDC
Output efficiency of 80% rated power <sup>①</sup>	91.5%
Max. rated efficiency <sup>②</sup>	90%
Max. efficiency	94%(1400W)
No-load current	<0.5A
RS485 com. port	5VDC/200mA(Isolation)
<b>Mechanical parameters</b>	
Binding post	M8(2P)
Overall dimension (LxWxH)	640x435x210mm
Mounting dimension	605x300mm
Mounting hole size	Φ8.5mm
Weight	50kg

① Load power is 80% continuous output power(25°C)

② Load power is continuous output power (25°C)

**Environmental parameters**

Working temperature	-20°C~+45°C(Full load)
Storage temperature	-35°C~ +70°C
Humidity	< 95%(N.C.)
Enclosure	IP20
Altitude	<5000m (Derating to operate according to IEC62040 at a height exceeding 1000m)

# Annex I Disclaimer

**The warranty does not apply under the following conditions:**

- Damage caused by improper use or use in an inappropriate environment.
- Battery voltage exceeds the input voltage limit of the inverter.
- Damage caused by the working environment temperature exceeds the rated range.
- Unauthorized dismantling or attempted repair.
- Damage occurred during transportation or handling.
- Damage caused by force majeure.

**Any changes without prior notice! Version number: V2.3**

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