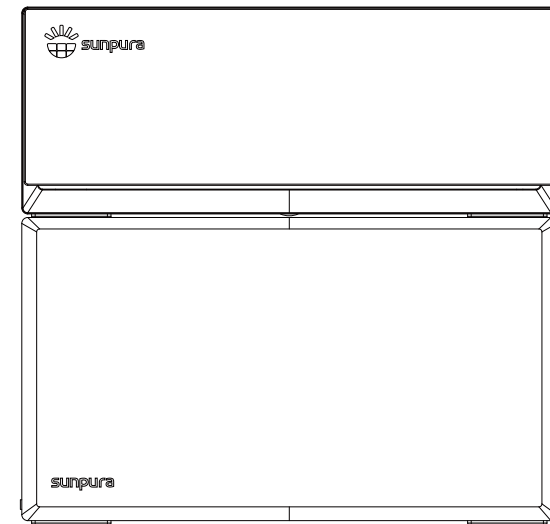


User Manual

All-in-one Plug & Play Energy Storage System



Model: S2400

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*SUNPURA reserves the right of final interpretation. 202501_V1_EN



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1 Introduction

1.1 System Introduction

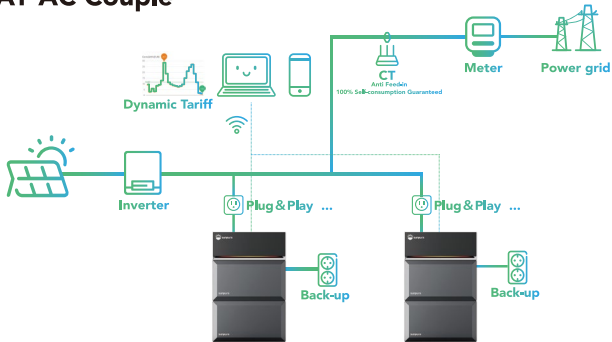
The S2400 is a plug&play photovoltaic energy storage product, consisting of A2400 and B2400. It can be applied in DC-coupled systems, AC-coupled systems, and hybrid-coupled systems, as shown in the following schemes:

S2400					
Battery (B2400)	0	x1	x2	x3	x4
Capacity	0Wh	2400Wh	4800Wh	7200Wh	9600Wh



(Figure 1)

PLUG & PLAY AC Couple



(Figure 2)

1.2 Operating Modes

End users can select work modes through the App.

• Charging Modes:

1. PV Priority: PV charging is prioritized. Grid charging is only activated when PV fails. Make full use of solar power generation during the day and switch to grid charging at night to maintain battery power. It is suitable for areas with relatively stable power grids and expensive electricity prices
2. Grid Priority: The mains charges the battery first. PV charging is only activated when the grid is unavailable
3. Hybrid Charging: PV and grid are charged simultaneously. PV MPPT charging is prioritized. When the PV energy is insufficient, the grid supplements it. When the PV energy is sufficient, the grid stops charging. This method charges the fastest and is suitable for areas with unstable power grids, providing sufficient backup power supply at any time.
4. Only Solar: Only PV charging is enabled, and grid charging is not started. This is the most energy-efficient way, and the battery power comes from solar energy. It is usually used in areas with good lighting conditions.

• Power Supply Modes :

1. PV Priority: When PV is unavailable, switch to grid power supply and charging. This mode maximizes the use of solar energy and can maintain battery power. It is suitable for areas with relatively stable power grids.

The power supply sequence priority is: PV - Grid - Battery.

2. Grid Priority: Only when there is no mains power, switch to battery inverter power supply. When there is mains power, switch to grid charging and power supply. The device is equivalent to a backup UPS and is used in areas with unstable power grids. The switching does not affect PV charging.

The power supply sequence priority is: Grid - PV - Battery.

3. Inverter Priority: Only when the battery voltage is lower than the set point (item 04 setting), switch to grid power supply. When the grid charges the battery and the voltage is higher than the set point (item 05 setting), switch to the battery discharge mode, and cycle the battery charging and discharging. This mode maximizes the use of DC power and is used in areas with stable power grids. The switching does not affect PV charging.

The power supply sequence priority is: PV - Battery - Grid.

4. Hybrid Mode:

Load: The inverter power generation energy is only supplied to the load (power generation power < load power). Note: Hybrid loading, the grid and PV supply the load together. When the PV is insufficient, the grid supplements it.

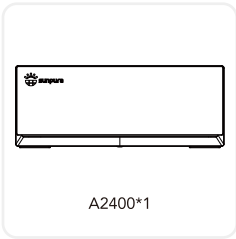
Grid: The inverter power generation energy is directly connected to the grid (power generation power may be greater than the load power).

Note: When the PV power generation is sufficient for the load power, the surplus is connected to the grid for power generation.

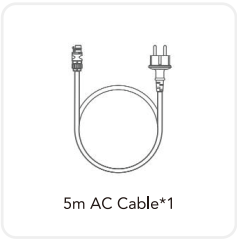
1.3 Bill of Materials

Check the following parts list to ensure that the accessories are complete:

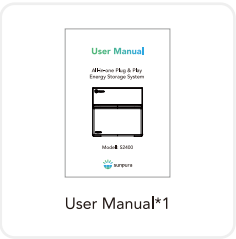
A2400 BOX




A2400*1



5m AC Cable*1

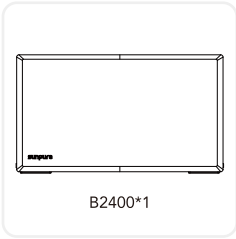


User Manual*1




Certificate of Conformity

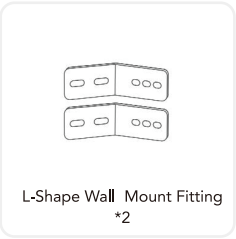
B2400 BOX




B2400*1




Certificate of Conformity



L-Shape Wall Mount Fitting *2



M5x50 Self-Tapping Expansion Screws*4



M5x10 Combined Phillips Screws*4

1.4 System Appearance

- 1

Power Switch
- 2

Solar Input
- 3

Relief Valve
- 4

Off Grid Port
- 5

Grid Port

6

Mast

7

Mast reset switch

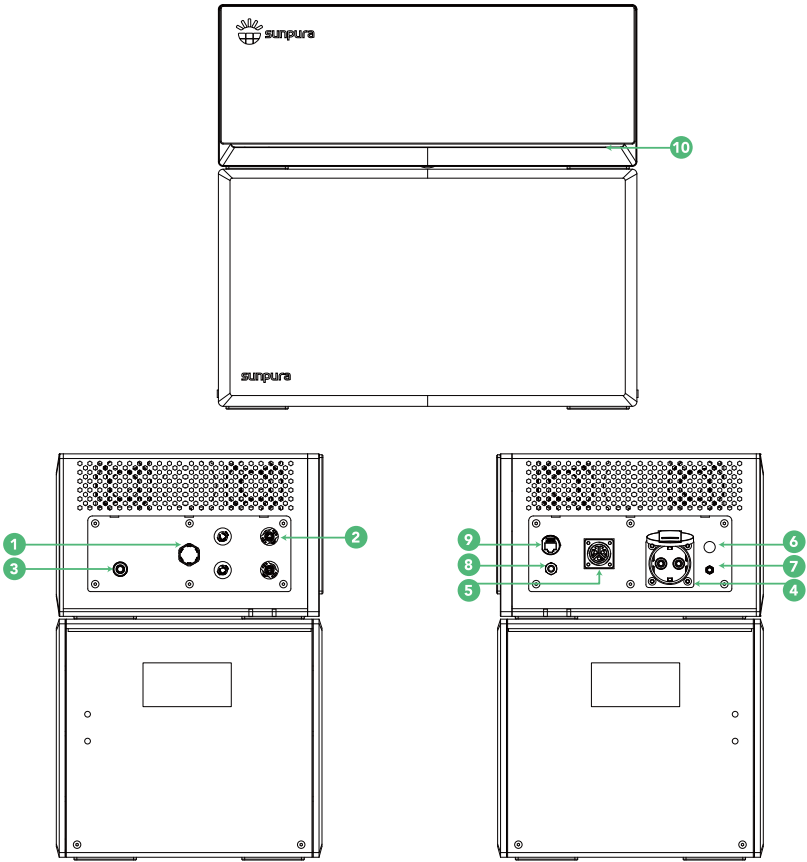
8

CT Port

9

Connection

10

LED strip

(Figure 3 The three-view drawing of the S2400)

2 Installation

This manual describes the basic steps for installing the S2400.



Note:
Please be careful when unpacking A2400 and B2400, otherwise the machine may be damaged

2.1 Installation Location and Environment

2.1.1 General Rules

This S2400 energy storage system is designed for outdoor use and can be installed outdoors or indoors.

When the S2400 is installed indoors, it should not be obstructed by the building structure, room furniture, or equipment.

Natural ventilation should be adopted. Therefore, the installation location should be clean, dry, and well-ventilated. The installation location must allow free access for installation and maintenance and should not block the panel.

The following locations are not allowed for installation:

- Habitable rooms;
- Ceiling holes or wall holes;
- On roofs not specifically considered suitable;
- Entrance/exit areas or below stairs/passages;
- Places where the temperature can reach the freezing point, such as garages, parking lots, or other places, and damp rooms (environmental category 2);
- Locations where the humidity and condensation exceed 90%;
- Places where salty and humid air can penetrate;
- Seismic areas - additional safety measures are required;
- Sites above 2,000 meters above sea level;
- Places with explosive environments;
- Locations with direct sunlight or large changes in environmental temperature;
- Places with flammable materials, gases, or explosive environments.

2.1.2 Restricted Locations

The S2400 should not be installed:

- (a) Within 600 mm of any heat source (such as a water heater, gas heater, air conditioner, or any other equipment);
- (b) Within 600 mm of any outlet;
- (c) Within 600 mm of any window or ventilation hole;
- (d) Within 900 mm of the 240V AC voltage connection;
- (e) Within 600 mm of the side of other devices;
- (f) Avoid direct sunlight exposure to the product as much as possible.

When S2400 is installed in any corridor, hallway, lobby, or similar place leading to an emergency exit, ensure sufficient clearance for the emergency exit of at least 1 meter.

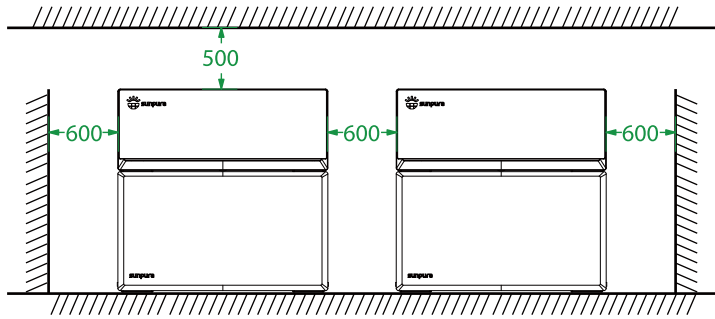
2.1.3 Residential Barrier

To prevent the spread of fire in the space where the S2400 is installed, or on the wall or structural surface with the S2400 on the other side, a non-combustible barrier should be set up. If the installation surface is not made of non-combustible materials, a non-combustible barrier can be set up between the S2400 and the wall or structural surface.

If the S2400 is installed on the wall or 300 mm away from the wall to separate it from the living space, the distance from other structures or objects must be increased. The following distances must be maintained:

- (1) At least 600 mm on both sides of the S2400;
- (2) At least 500 mm above the S2400;
- (3) At least 600 mm installation gap between multiple units.

If the distance between the S2400 and the ceiling or any object above is less than 500 mm, the ceiling or structural surface above must be made of non-combustible materials, and its radius should be within 600 mm around. The highest installation point of the S2400 should not exceed 2.2 meters above the ground or platform. (Figure 4)

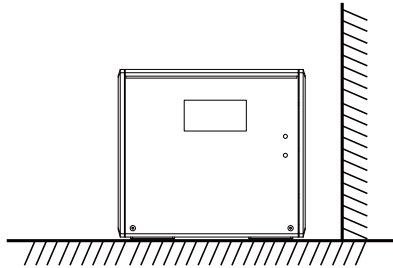


(Figure 4 Installation distance from adjacent objects)

2.2 Equipment Installation

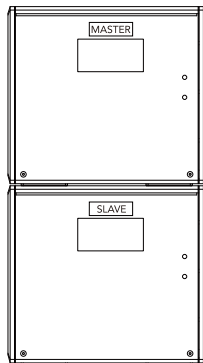
***The following steps describe the installation of a A2400 and two B2400 as an example.**

Step 1: Place the battery on a horizontal surface and keep the back of the battery parallel to the wall. (Figure 5)



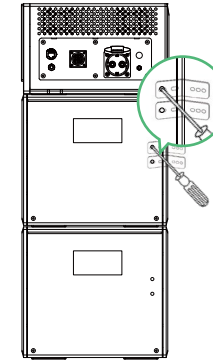
(Figure 5)

Step 2: The battery pack is divided into a master unit and a slave unit, with "MASTER" and "SLAVE" labels on the side of the battery pack for distinction. (Figure 6)



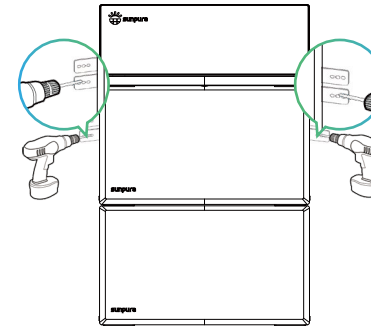
(Figure 6)

Step 3: Attach the L-shaped wall bracket to both sides of the first expansion battery under the Solarbank using M5×10 combination Phillips screws. (Figure 7)



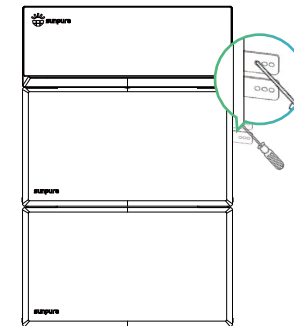
(Figure 7)

Step 4: Use a drill to drill holes in the wall for fixing the mounting plate. (Figure 8)



(Figure 8)

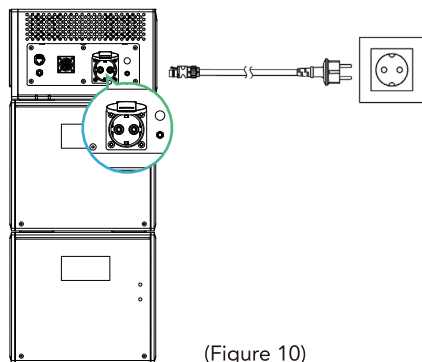
Step 5: Use a Phillips screwdriver to secure the bracket to the extended battery to complete the installation. (Figure 9)



(Figure 9)

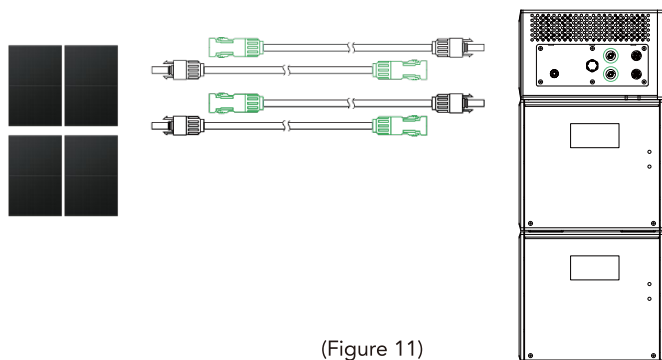
2.3 Cable Connection

Step 6: Grid connection: Connect the AC charging cable to the power socket on the wall to charge the power station. (Figure 10)



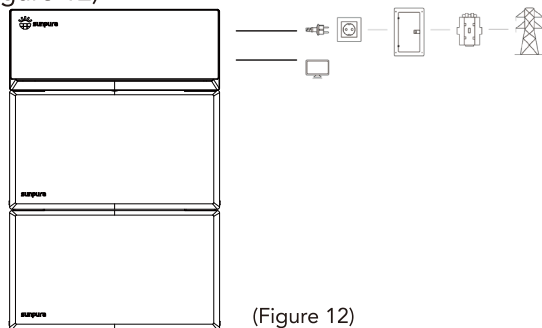
(Figure 10)

Step 7: PV connection: Connect the PV module cables to PV1 and PV2 respectively. (Figure 11)



(Figure 11)

Step 8: Off-grid load connection: Connect AC loads less than 2400 W to the off-grid socket. You can also connect a power strip, but ensure that for all AC connections, 4 - 10 mm² 105XJ cables are used. Make sure the resistance of the cable is less than 1 ohm. If the wire length exceeds 20 m, it is recommended to use 10 mm² cable. (Figure 12)

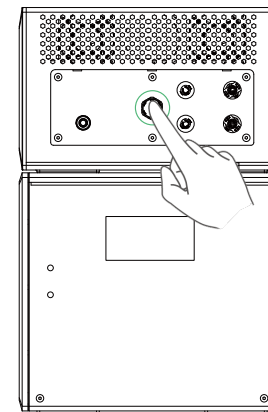


(Figure 12)

3. System Operation & Commission

3.1 Startup

When turning on the inverter, be sure to follow the following steps to prevent damage to the inverter. (Figure 13)



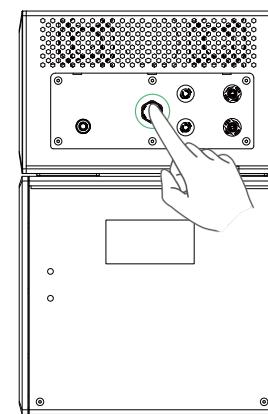
(Figure 13)



Warning: Please check the installation again before turning on the inverter.

3.2 Shutdown

When shutting down S2400, be sure to follow the following steps to prevent damage to the inverter. (Figure 14)



(Figure 14)



Warning: Please ensure that all external loads are turned off before shutting down S2400.

3.3 Emergency Procedures

When the S2400 energy storage inverter operates abnormally, you can turn off the grid-connected main switch directly supplying power to the S2400, turn off all load switches in the S2400, and turn off the battery switch at the same time. To prevent possible fatal personal injuries, if you want to repair or open the machine after the power is turned off, use a properly calibrated voltage tester to measure the voltage at the input terminals.

Before operating this device, please confirm that the S2400 has no grid power supply! The DC connection capacitor in the battery module can be fully discharged after about 15 minutes before opening the upper cover.

3.3.1 Emergency Response Plan

Disconnect the main switch.

Check the control power supply. If it is normal, return the power supply to find out the cause.

Please record every detail related to the fault for fault analysis and resolution. It is strictly prohibited to operate the equipment during the fault. Please contact Sunpura as soon as possible.

Since the battery contains a small amount of oxygen and all batteries have explosion-proof valves, explosions are almost impossible. When the indicator shows a red fault, check the fault type through the communication protocol and contact our after-sales personnel for consultation.

When the indicator shows a red fault, check the fault type through the communication protocol and contact our after-sales personnel for consultation.

3.3.2 Hazards

If the battery pack leaks electrolyte, avoid contact with the leaked liquid or gas.

If you come into contact with the leaked substance, take the following measures immediately:

Inhalation: Evacuate the contaminated area and seek medical attention.

Eye contact: Flush the eyes with tap water for 5 minutes and then seek medical attention.

Skin contact: Wash the affected area thoroughly with soap and water and then seek medical attention.

Ingestion: Seek medical attention if vomiting occurs.

3.3.3 Effective methods for handling accidents:

Batteries in a dry environment: Place the damaged battery in an isolated place and notify the local fire department or service engineer.

Batteries in a wet environment: If any part of the battery, inverter, or circuit is flooded, do not touch anything.

Do not reuse the wet or flooded battery. Please contact the maintenance engineer in time.

3.4 Indicator Light Description

Figure A2400 Front View of Illuminated Lights

STATE	COLOR
FAULT	Red Flashing
CHARGE	Yellow (Flashing: Fast Charging, Always On: Slow Charging)
OUTPUT	Green (Flashing: Off-grid Output, Constant: Grid-connected Output)

3.5 APP usage & commission

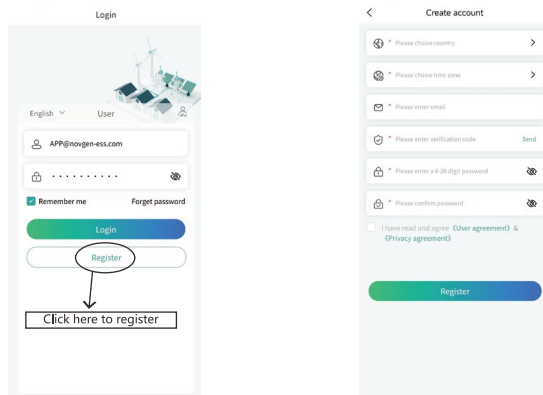
3.5.1 Download SUNPURA APP



3.5.2 Registration

Run the SUNPURE APP and enter the registration page.

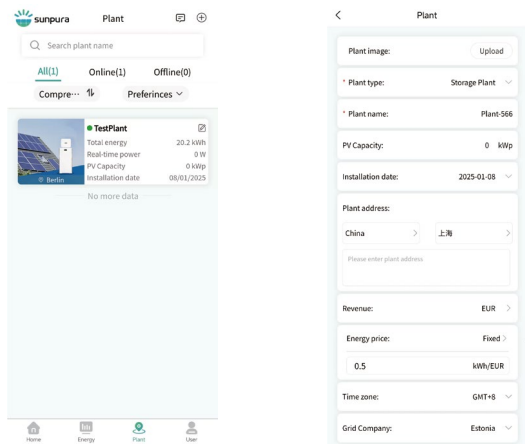
Fill in the registration information according to the page prompts and click Register. (Figure 15)



(Figure 15)

3.5.3 Add Power Station

Enter the App, click on the power station to enter the add power station page, click the add button, enter the power station information filling page, fill in the power station information according to the prompts, and click Save Power Station to add successfully. (Figure 16)

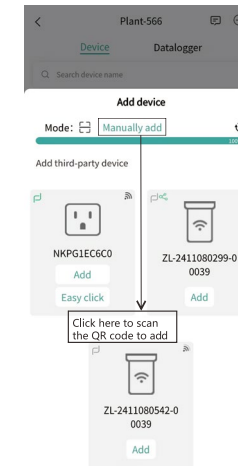


(Figure 16)

3.5.4 Add S2400

Please ensure that the location permission and Bluetooth permission of the mobile phone and SUNPURA APP are turned on!

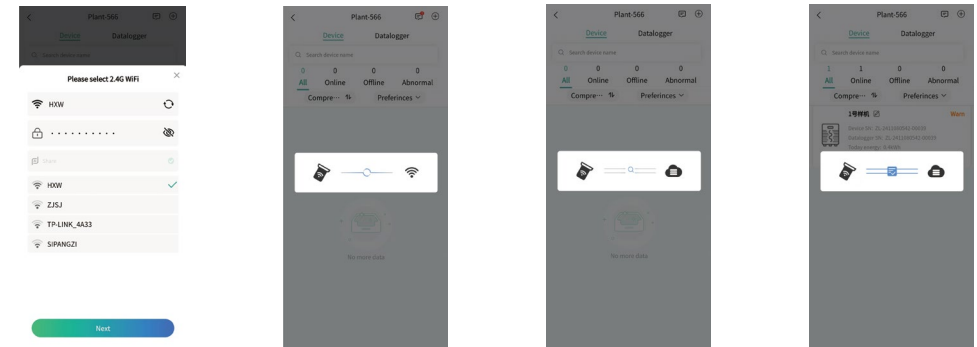
Click the add button in the upper right corner of the 'Home' page to enter the add page. Add the device through Bluetooth scanning. (Figure 17)



(Figure 17)

3.5.5 Network Configuration

Select or enter the Wi-Fi name and password to connect. Click Next on the network connection page and wait patiently for a few seconds to complete the network configuration successfully. If the network configuration is not successful, check whether the mobile phone location permission and Bluetooth permission are turned on. If they are correct, please follow the prompts to operate again. (Figure 18)



(Figure 18)

4 Safety Introduction

4.1 Manual Storage

This manual contains important information about operating the equipment. Please read it carefully before operation and operate strictly in accordance with the instructions in the manual. Otherwise, damage or loss to the equipment, personnel, and property may occur. This manual should be properly stored for maintenance and repair.

4.2 Operator Requirements





- Operators should be familiar with the entire storage system, including the composition and working principle of the equipment.
- Operators should be familiar with the product manual.
- Before maintenance, the maintenance personnel should not operate any equipment until all equipment is turned off and powered off.

4.3 Warning Sign

Warning signs contain important information for safe operation. It is strictly prohibited to tear or damage them.

Ensure that the warning signs are always properly placed.

When the signs are damaged, they must be replaced immediately.

	This sign indicates a dangerous situation that may lead to death or serious injury if not avoided!
	To prevent electric shock or personal injury, do not touch or use it until 5 minutes after turning off or disconnecting the inverter.
	This sign indicates that the surface is hot and there is a risk of scalding!
	Refer to the operation instructions for execution.

4.4 Safety Warning Signs

During guidance, maintenance, and repair, please follow the following instructions to prevent misuse by non-professionals or accidents:

Obvious signs should be placed at the front and rear switches to prevent

accidents caused by incorrect switching.

Warning signs or warning lines should be set up near the operation area.

They must be reinstalled after system maintenance or operation.

4.5 Measuring Equipment

To ensure that the electrical parameters match the requirements, relevant measuring equipment is needed when connecting or testing the system. Ensure that the connection and use are of matching specifications to prevent arcs or impacts.

4.6 Moisture

Moisture is likely to damage the inverter. Operations should be avoided or prevented during repair or maintenance in humid weather.

4.7 Operations After Power Off

The battery system is part of the energy storage system and can store life-threatening high voltage even when the direct current is turned off. It is strictly prohibited to touch the battery socket. Even after the direct current or alternating current is disconnected, the inverter can still maintain a life-threatening voltage. Therefore, for safety reasons, the installer must use a calibrated voltage tester to test before operating the equipment.

4.8 Routine Precautions

	Danger
---	--------

The high voltages of photovoltaic power generation, batteries, and electric shock are dangerous to life. When exposed to sunlight, photovoltaic power generation will generate dangerous direct current voltages, which will appear in the direct current wires and live parts of the inverter. Contacting the direct current wires or live parts can cause fatal electric shock. If the direct current connector is disconnected from the inverter under load, an electric arc may be generated, resulting in electric shock and burns.

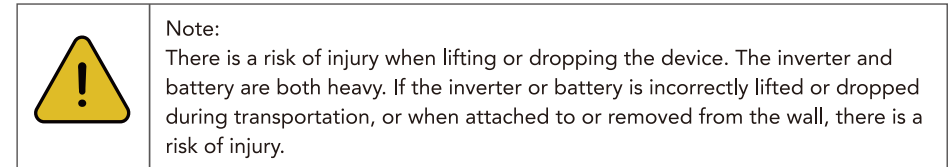
- Do not touch the uninsulated cable ends.
- Do not touch the direct current wires.
- Do not open the inverter and battery.
- Do not wipe the equipment with a wet cloth.
- Only qualified personnel with corresponding skills can install and commission the inverter.
- Before any operation on the inverter or battery pack, disconnect the inverter from all power sources as described in this document.



There is a risk of chemical burns from electrolyte or toxic gas. During standard operation, there will be no electrolyte leakage or toxic gas formation in the battery pack. If the battery pack is damaged or fails, electrolyte leakage or toxic gas formation may occur.

- Do not touch the inverter with wet hands.
- Do not place any heavy objects on the inverter.
- Do not damage the inverter with sharp objects.
- Do not install or operate the inverter in a potentially explosive environment or a high-humidity area.
- Do not install the inverter and battery pack in an area containing highly flammable materials or gases
- If moisture penetrates the inverter (for example, due to damage to the housing), do not install or operate the inverter.
- Do not move the device when it is already connected to the battery module. Fix the device to prevent tilting.
- Do not install the inverter in an environment with a temperature lower than -20°C or higher than 55°C and a humidity higher than 90%.
- The inverter must be transported by the manufacturer or a designated person. These instructions should be recorded and filed.
- When transporting, a certified ABC fire extinguisher with a minimum capacity of 2 kilograms must be carried.

- It is strictly prohibited to smoke in the vehicle and near the vehicle during loading and unloading.
- When replacing the battery module, if necessary, request a new dangerous goods package and hand it over to the supplier after packaging.
- If in contact with the electrolyte, rinse with clean water immediately and seek medical attention.



Lifting and transporting the inverter and battery pack must be carried out by more than 2 people.

4.9 Limitation of Liability

We shall not assume any direct or indirect liability for product damage or property loss caused by the following circumstances:

Unauthorized modification of the product, alteration of the design, or replacement of parts without SUNPURA's authorization;

Alteration, repair, and erasure of the serial number or seal by non-SUNPURA technicians;

Inverter design and installation that do not comply with standards and regulations;

Non-compliance with local safety regulations (VDE in Germany, SAA in Australia);

Transportation damage (including paint scratches caused by internal friction in the packaging during transportation). In such cases, a claim should be immediately filed with the shipping company or insurance company after the container/packaging is unloaded and the damage is confirmed;

Non-compliance with any/all user manuals, installation guides, and maintenance regulations;

Improper use or misuse of the equipment;

Insufficient ventilation of the equipment;

Failure to perform maintenance in accordance with the standard maintenance procedures;

Force majeure (storms, lightning, overvoltage, fire, etc.);

Damage caused by any external factors.

5 Technical Parameters

MODEL	S2400
PV INPUT	
MPPT Voltage Range	10-100V
Max Input Voltage	100V
Max Input Current	16A x 2
Min Input Voltage	10V
Max Input Power	1000W x 2
MPPT Efficiency	>99.5%
Peak Conversion Efficiency	98%
AC Output	
AC Output (On/Off Grid)	On Grid:800W / Off Grid:2400W
Frequency	50Hz
Rated Voltage	230V
Peak Output power (5s)	3600W
BATTERY DATA	
Battery Type	LiFePO ₄
Cycles	8000
Battery Voltage	42-54V
Max Charging / Discharging Current	65/52A
Nominal Voltage	48V
Capacity	2400Wh
GENERAL DATA	
Charging / Discharging Temperature	-20~55°C/-20~60°C
Weight (Power Box/Battery Box)	43.1kg (A2400: 15kg/B2400: 28.1kg)
Ingress Protection	IP65
Dimensions (WxHxD)	450x431x273mm (Height: A2400: 176mm/B2400: 255mm)
Overvoltage / Overcurrent / Short Circuit	Integrated
/ Temperature Protection	
Communication Method	WIFI/Bluetooth
Relative Humidity Range	0-100%
Certificates	CE/EMC, RF, LVD, CB, ROHS, REACH, UN38.3, MSDS, Transportation of Goods, IP65, WEEE,VDE4105, EN50549 CEI 0-21, VDE0126, OVE R25, C10/11

6 Daily Maintenance

6.1 Maintenance Plan

- Check whether the wire connections are loose.
- Check whether the cables are aged/damaged.
- Check whether the cable insulation tape has fallen off.
- Check whether the cable terminal screws are loose and whether there are signs of overheating.
- Check whether the ground connection is good.

6.1.1 Operating Environment (Every six months)

Carefully observe whether the battery system equipment fails or is damaged.

Listen for abnormal noises in each part of the inverter when it is running.

During the operation of the inverter, check whether the battery voltage, temperature and other parameters and other equipment parameters are normal.

6.1.2 Equipment Cleaning

(Every six months to one year, depending on the site environment and dust content, etc.)

Ensure the ground is clean, the maintenance passage is unobstructed, and the warning and guide signs are clear and intact.

Monitor the temperature of the battery module and clean the battery module if necessary.

6.1.3 Cable, Terminal and Equipment Inspection

*Every half year to one year

- Check whether the cable connections are loose.
- Check whether the cables are aged/damaged.
- Check whether the cable ties have fallen off.
- Check whether the cable terminal screws are loose and whether there are signs of overheating at the terminal position.

- Check whether the management systems of the inverter equipment, monitoring system and other related equipment fail or are damaged.
- Check that the equipment is properly grounded and the ground resistance is less than 10 ohms.

6.2 Precautions

After the S2400 stops running, please pay attention to the following items during maintenance:

Operation and maintenance should comply with relevant safety standards and specifications.

Disconnect all electrical connections to prevent the equipment from being powered on.

Appropriate protective measures should be taken during maintenance, such as insulated gloves, shoes, anti-noise earplugs, etc.

Life is priceless. Ensure that no one will be injured first.

In the case of deep discharge, if the entire inverter is at rest (that is, the battery has not been charged for two weeks or more), the battery must be charged to 30% - 50% of the state of charge.

Wait at least 5 minutes after disconnection to allow the residual voltage of the capacitor to drop to a safe voltage. Use a multimeter to ensure that the equipment is completely discharged.

Equipment maintenance can only be carried out by professionals. It is strictly prohibited for maintenance personnel to open the equipment module by themselves.

7 Warranty Disclaimer

This Limited Warranty will not apply if the purchaser is in default under the General

Terms and Conditions of other Agreement governing the purchase of the Product, or the Product or any part thereof is:

1. The official warranty period of the equipment has expired (unless an extension of the warranty period agreement has been signed between them);
2. The device has been used offline for more than 6 months or is damaged or malfunctioned due to the use of parts or firmware other than the Company;
3. Damage or malfunction caused by operation, repair, disassembly, or modification by unauthorized persons;
4. Damage or failure caused by operation or use beyond the relevant national standards or industry standards, as well as any installation in violation of the company's regulations;
5. Damaged or rendered non-functional as a result of power surges, lightning, fire, flood, pest damage, accident, action of third parties, direct exposure to sea water or other events beyond NOVGEN's reasonable control or not arising from normal operating conditions;
6. Damage or losses caused by unpredictable factors or force majeure such as earthquakes, storms, floods, over-voltages, lightning, fires, insect pests, etc.;
7. Other quality loss not caused by the company's products;
8. Purchased from a person who is not the original purchaser or the first customer, or not from a direct or officially authorized retailer will loss warranty;
9. Damage that occurs during transportation or improper installation and unpacking;
10. Normal wear or age, surface defects, dents or scratches, performance deterioration;
11. Product defects caused by the update of national or regional laws or regulations;
13. Gifts, premiums and informal sales items, including accessories and consumables, including but not limited to cables, connectors and tools, are not covered by the warranty and service;



Note:

This limited warranty are only apply for the SUNPURA products sold within Europe SUNPURA sales countries, and the warranty must claims from the original purchased country. For products ordered outside the country of original purchase or purchased directly from an authorized online cross-regional provider, the Limited Warranty will not be covered by the warranty due to being out of service.

8 Service Acceptance Channel

1. Service Hotline: +49(0)151-706-917-04, Available provide sales service support (fault declaration, product repair, etc.), sales and purchase consulting, service policy consultation, complaints and suggestions and other service request processing;
2. Online Support Website: www.novgen-ess.com;
3. Service Mail: service.EMEA@novgen-ess.com;
4. Please note that we only accept service claim for products purchased directly from SUNPURA. Customers who have purchased our products from authorized retailers should contact the retailer directly for warranty claim.