

Solar Lithium Battery Energy Storage System

User Manual

Model No : HV-G2~G12 Pro Series

For On / Off-Grid Solar Storage System



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Version Update Record

Date	Edition	Update Explanation	Author
2025.9.28	V0.1	First edition	
2025.9.28	V0.2	Add wiring instructions and update images	

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Battery Model	 HV-G2 Pro	 HV-G3 Pro	 HV-G4 Pro	 HV-G5 Pro	 HV-G6 Pro	 HV-G7 Pro	 HV-G8 Pro	 HV-G9 Pro	 HV-G10 Pro	 HV-G11 Pro	 HV-G12 Pro
Battery Type	LiFePO4 Battery										
Nominal Energy (kWh)	10.24	15.36	20.48	25.60	30.72	35.84	40.96	46.08	51.20	56.32	61.44
Nominal Voltage (V)	102.4	153.6	204.8	256	307.2	358.4	409.6	460.8	512	563.2	614.4
Nominal Capacity (Ah)	100	100	100	100	100	100	100	100	100	100	100
Charge Way	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV	CC/CV
Working Temp (°C)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)	0~55 (Charge) -20~60 (Discharge)
IP Grade	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20
Protective Class	I	I	I	I	I	I	I	I	I	I	I
Designation of Battery	IFpP54 /150/120 [2S(16S)]M/ -20+50/95	IFpP54 /150/120 [3S(16S)]M/ -20+50/95	IFpP54 /150/120 [4S(16S)]M/ -20+50/95	IFpP54 /150/120 [5S(16S)]M/ -20+50/95	IFpP54 /150/120 [6S(16S)]M/ -20+50/95	IFpP54 /150/120 [7S(16S)]M/ -20+50/95	IFpP54 /150/120 [8S(16S)]M/ -20+50/95	IFpP54 /150/120 [9S(16S)]M/ -20+50/95	IFpP54 /150/120 [10S(16S)]M/ -20+50/95	IFpP54 /150/120 [11S(16S)]M/ -20+50/95	IFpP54 /150/120 [12S(16S)]M/ -20+50/95
Manufacturing Date: YYYY/MM/DD						     					

Battery energy storage system nameplate label

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1. Safety Precautions

This chapter introduces safety notices. Before performing any operation on the device, please carefully read the user manual, follow the operating and installation instructions, and comply with all danger, warning, and safety information to avoid personal injury and equipment damage caused by abnormal operation.

1.1. Safety Notice

This section mainly introduces safety precautions during operation and maintenance. For detailed information, please refer to the safety instructions in the relevant sections.



Caution!

Before operation, please carefully read the announcement and operating instructions in this section to avoid accidents.

The prompts in the user manual, such as "Danger", "Warning", "Caution", etc., do not include all safety notices. They are just supplements to safety notices during operation. Any equipment damage caused by violation of general safety operation requirements or safety standards for design, production, and use will be beyond the scope of product warranty.

1.1.1. Usage Notice



Danger

Do not touch terminals or conductors connected to the power grid to avoid fatal risks!



Warning

There are no operating components inside the device. Please do not open the system casing by yourself, otherwise it may cause electric shock. The system damage caused by illegal operations exceeds the warranty scope.



Danger

Damaged equipment or equipment malfunctions may result in electric shock or fire!



Before performing any operation on the equipment, please visually inspect whether the equipment is damaged or dangerous.



Check if the connections of other external devices or circuits are secure.

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Danger

Before inspection or maintenance, if the Product have just been powered off, it is necessary to wait for 20 minutes to ensure that the equipment is completely discharged before proceeding with the operation.



Warning

When repairing, ensure that all switches are completely disconnected and set warning signs at the disconnected position to avoid accidental connection.



Caution!

No liquids or other objects are allowed to enter the high-pressure tank or the battery.



Warning

If a fire occurs, please use a dry powder fire extinguisher. If a liquid fire extinguisher is used, it may cause electric shock.



Warning

The label on the device contains important information about safe operation. Do not tear or damage them!

1.1.2. Static Electricity Protection



Caution!

To prevent damage to sensitive components (such as circuit boards) caused by human static electricity, Please wear an anti-static wristband with the other end well grounded.

1.1.3. Grounding Requirements



Warning

High risk of leakage! Before making electrical connections, the equipment must be grounded. The grounding terminal must be grounded.



When installing equipment, it must be grounded first. When dismantling the device, the grounding wire must be removed at the end.



Do not damage the grounding wire.



The equipment should be permanently connected to the protective grounding. Before

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operation, the electrical connections should be checked to ensure reliable grounding of the equipment.

1.1.4. Moisture Protection



Caution!

Moisture intrusion may cause system damage!

Observe the following items to ensure that the equipment is functioning properly.

- When the ambient humidity exceeds 95%, do not open the high-voltage control box or the battery of the equipment.
- Do not open the equipment for maintenance or repair in humid or rainy conditions.

1.1.5. Security Warning Label Setting

To avoid accidental personnel approaching the equipment cabinet or improper operation, the following requirements should be followed during installation, daily maintenance, or repair.

- Set warning labels at the switches of the battery input and AC input to avoid improper switching.
- Set up warning signs or safety warning tapes in the operating area to avoid personal injury or equipment damage.
- After maintenance, make sure to remove the key to the equipment cabinet door and store it properly.

1.1.6. Measurement During Equipment Operation

There is high voltage in the device. If accidentally touched, it may cause electric shock. Therefore, when conducting measurement operations during equipment operation, the operator must be accompanied by another qualified personnel and take protective measures (such as wearing insulated gloves).

The measuring device must meet the following requirements:

- The measuring range and operational requirements of the measuring device meet the

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on-site requirements.



The connection of the measuring device should be correct and standardized to avoid arcing.

1.2. Operator Requirements

The operation and wiring of the equipment should be carried out by qualified personnel to ensure that the electrical connections comply with relevant standards.

Before installing, operating, and maintaining the equipment, the operator must understand the safety notice, know the correct operation, and receive strict training.



The operator should be familiar with the structure and working principle of this product.



Operators must be familiar with relevant national and regional standards.

1.3. Operating Environment Requirements

The operating environment may affect the service life and reliability of the equipment. Therefore, please avoid using the device in the following environments:



Places where the temperature and humidity exceed the technical specifications (temperature: Charge: 0~55° C/Discharge: -20~60° C; relative humidity: 0%~95%).



Places with vibration or impact.



Places with dust, corrosive substances, salt, or flammable gases.

Poor ventilation or enclosed areas.

2. Overview

2.1. Product Introduction

2.1.1. Product Model

HV-G2~G12 Pro Series (Series Universal)

2.1.2. Product Specifications

Table 2.1.2 Specification Parameters

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Basic Parameters	HV-G 2 Pro	HV-G 3 Pro	HV-G 4 Pro	HV-G 5 Pro	HV-G 6 Pro	HV-G 7 Pro	HV-G 8 Pro	HV-G 9 Pro	HV-G 10 Pro	HV-G11 Pro	HV-G 12 Pro
Nominal Capacity (KWh)	10.24	15.36	20.48	25.6	30.7	35.84	40.98	46.08	51.2	56.32	61.44
Cell Matchin	32S 1P	48S 1P	64S 1P	80S 1P	96S 1P	112S 1P	128S 1P	144S 1P	160S 1P	176S 1P	192S 1P
Nominal Voltage (V)	102.4	153.6	204.8	256	307.2	358.4	409.6	460.8	512	563.2	614.4
Working Voltage Range (V)	89.6-115.2	134.4-172.8	179.2-230.4	224-288	268.8-345.6	313.6-403.2	358.4-460.8	403.-518.4	448-576	492.8-633.6	537.6-691.2
Weight (kg)	128	176.5	225	273.5	322	370.5	419	467.5	516	564.5	613
Dimension (WxDxH mm)	680x380x553	680x380x703	680x380x835	680x380x985	680x380x1135	680x380x1285	680x380x1435	680x380x1585	680x380x1735	680x380x1885	680x380x2035
Number of battery modules	2	3	4	5	6	7	8	9	10	11	12
Battery Type	LFP(LiFePO4)										
Nominal Working Current	50A										
Communication Port	CAN/TCP/IP										
Working Temperature Range	Charge: 0~55° C/Discharge: -20~60° C										
Waterpr	IP20										

oof	
Installati on Method	Floor-standing
Cycle Life	10 years
Max. Charge/ Discharg e Curren	50A
Discharg e Rate of Module	$\leq 3.5\%$ / month/ @25° C
Parallel Connecti on	5 units in parallel

2.1.4 System Schematic Diagram

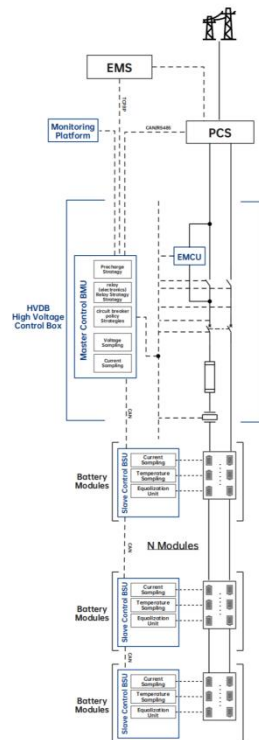


Figure 2.1.4 System schematic diagram

2.2. Appearance Dimensions

2.2.1. Appearance



Figure 2.2.1 Appearance

2.2.2. Dimension



2.2.3. LCD Display Panel

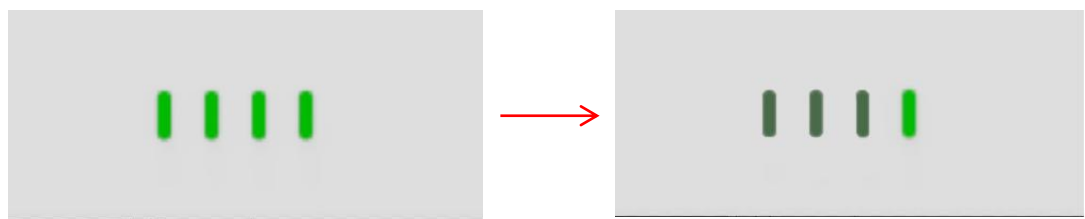


Figure 2.2.3 Display panel

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Table 2.2.3 Display Panel Description

NO.	Project	Explain
1	Current SOC increases to 100% ,then cycles	Charge
2	Drop from current SOC to 10%, then loop	Discharge

DANGER

Ensure ON/OFF switch is turned on before waking up the battery. Otherwise it will affect the auto test process and cause danger.

DO NOT switch off the ON/OFF switch during normal operation, only in emergencies. Otherwise it will cause the battery current to surge.

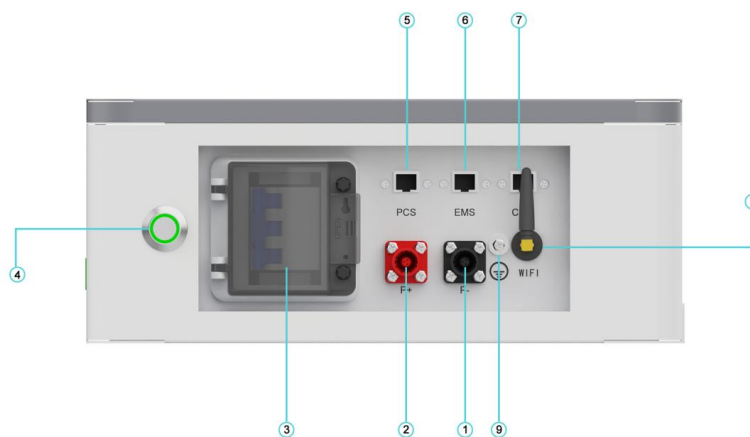
2.3 Component Description

Table 2.3 Component Description Table

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NO	Instructions	No	Instructions
1	Power Negative	6	EMS Communication Cable
2	Power Positive	7	EMS Communication Cable
3	DC Breaker	8	WiFi Signal Stick (optional)
4	Power Switch (Status light)	9	Ground Port
5	PCS Communication Cable		

2.4 Energy Storage System

➤ Battery pack

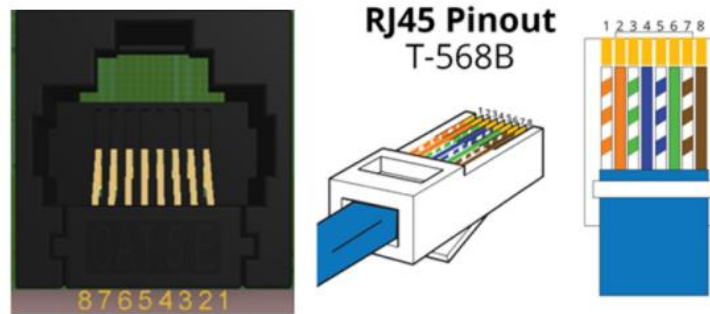
Table 2.4 Technical Parameters of PACK

Illustration	Project	Parameter
	Cell technology	Li-ion (LFP)
	Battery module capacity (kWh)	5.12
	Battery module voltage (V/DC)	51.2
	Battery module capacity (Ah)	100
	Number of battery module cells (PCs)	16
	Battery cell capacity (Wh)	320
	Battery cell voltage (V/DC)	3.2
	Batter cell capacity (Ah)	100
	Dimensions (W*D*H, mm)	378*150*680
	Ambient temperature (°C)	-10 to +55
	IP protection class	IP20
	Weight (kg)	41

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2.5 Thermal Management System

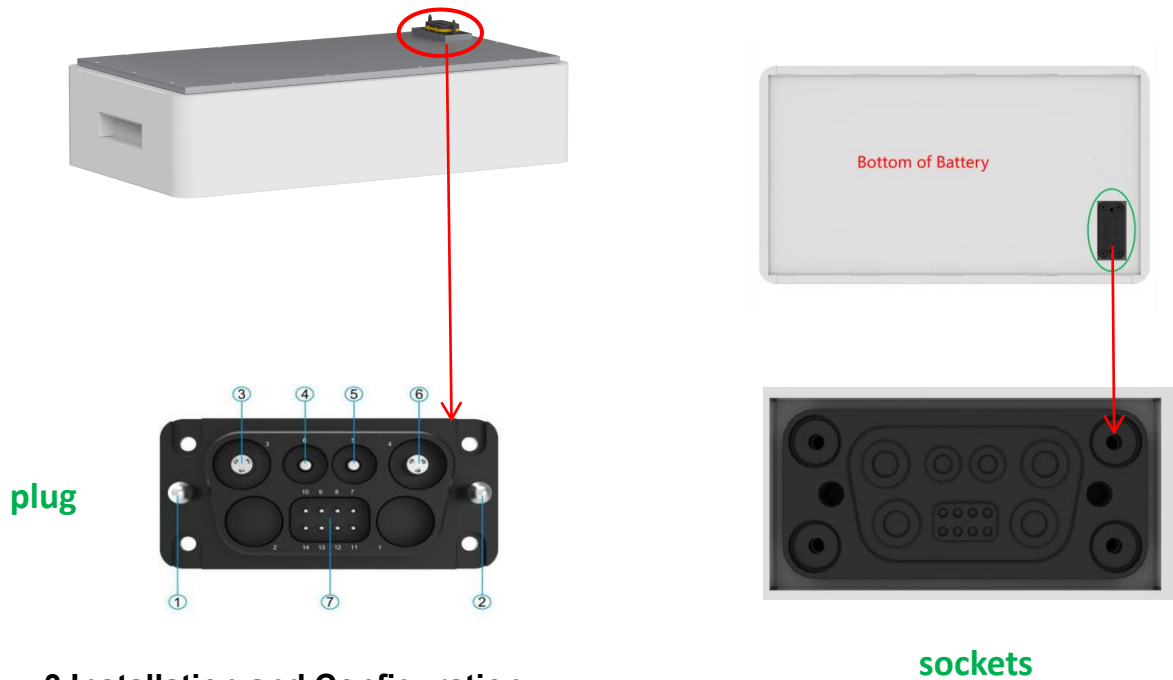
2.5.1 Connect the CAN IN port of the battery to the CAN or RS485 communication interface of the inverter using the RJ45 cable



PIN Definition

RJ45 Connector Definition (Type B Crimping Method)	Pin	Wire Color	interface definition	Description
	1	White Orange	A1	
	2	Orange	B1	
	3	White Green	/	/
	4	Blue	CAN-H	CAN communication
	5	White Blue	CAN-L	
	6	Green		
	7	White Brown		
	8	Brown		

2.6 Internal Socket introduction



3 Installation and Configuration

NO	Instructions
1	Battery fixed coarse pin
2	Battery fixed coarse pin
3	Power negative
4	Reserve
5	Ground terminal
6	Power positive
7	CAT5e Double-shielded network cable

NOTE

The positive terminal of a single battery pack is located at the plug pin 6 on the top of the battery, and the negative terminal is located at the socket pin 6 on the bottom of the battery

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3.1 Environmental Requirements

3.1.1 Cleanliness

- 1.The battery system has high voltage connectors. The environmental conditions will affect the isolation of the system
- 2.Before installation and switch-on, dust and debris must be removed to keep the system clean. The environment must be dust-proof to a certain extent
- 3.Dust and humidity must be regularly checked during continuous operation of the system.

Fire Protection System

- 4.The room must be equipped with a fire protection system or fire extinguishers (Recommended: water-based extinguisher). The fire protection system needs to be regularly checked to ensure its normal condition. Please refer to your local fire protection equipment for use and maintenance requirements

3.1.2 Grounding System

Make sure that the grounding point for the battery system is stable and reliable before installation. If the battery system is installed in an independent equipment cabin (e.g. container), ensure that the grounding of the cabin is stable and reliable.

The resistance of the grounding system must be $\leq 100\text{m}\Omega$.

3.1.3 Temperature

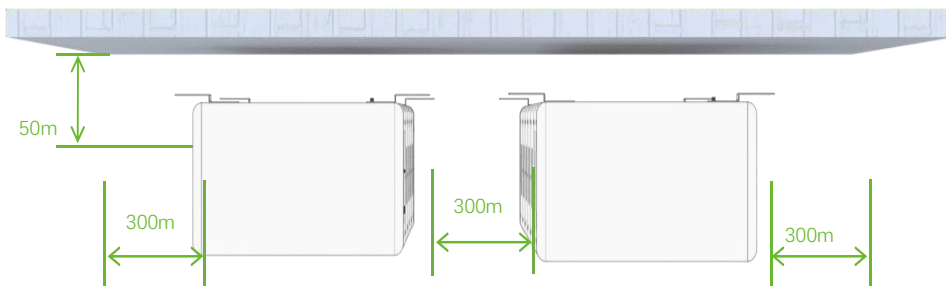
Tower Pro system working temperature range: -20°C to $+55^{\circ}\text{C}$; Optimum temperature: 18°C to 30°C ; Exceeding the working temperature range will cause over-temperature/under-temperature alarms or protection of the battery system which may lead to the reduction of cycle lives

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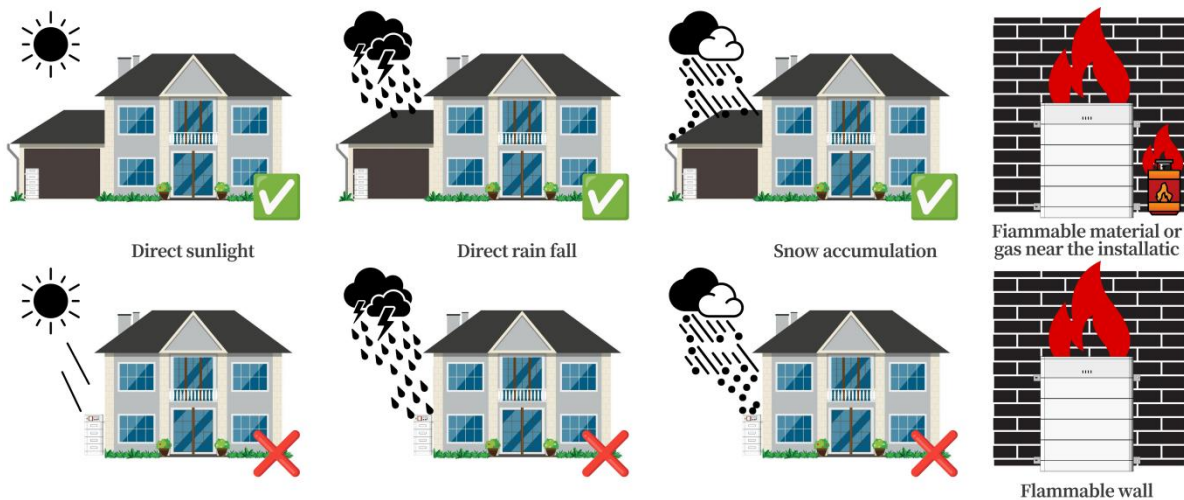
3.1.4 Installation location precautions

DANGER

Please note that the battery should be installed with a minimum safe clearance from the surrounding equipment or battery. Please refer to the minimum clearance diagram below.



Minimum clearance



Installation location precautions: This product is suitable for indoor installation and use

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3.2 Installation Preparation

3.2.1 Installation Tools

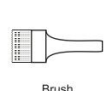
 Clamp meter	 Multi-meter	 Label paper	 Phillips screwdriver
 Flat-head screwdriver	 Socket wrench	 Adjustable wrench	 Torque wrench
 COAX crimping tool	 Diagonal pliers	 Wire stripper	 Claw hammer
 Hammer drill	 Insulation tape	 Cotton cloth	 Brush
 Heat shrink tubing	 Heat gun	 Electrician's knife	 Protective gloves
 ESD gloves	 Insulated gloves	 Hydraulic pliers	 Cable tie

Figure 3.2.1 Installation Tools Table



Caution!

The installation tools must be insulated to avoid electric shock.

3.2.2 Installation Environment

The installation environment of energy storage cabinets should meet the following requirements:

- The battery is suitable for indoor installation, complies with the IP20 protection rating, and should be installed in a dry and dust-free environment
- The venue must maintain a good ventilation environment, avoid direct sunlight as much as possible, and have necessary fire prevention, waterproofing, and rodent and insect prevention measures.
- The site should be kept away from areas where toxic and harmful gases are concentrated, as well as from flammable, explosive, and corrosive materials.
-

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The installation surface of the site must be flat and dry, and there must be no standing water. The ground must be higher than the highest level of standing water in previous years

- The site ground shall be level and non-shaking, capable of bearing the weight of the battery, and any depression or inclination is prohibited.
- Sufficient space must be reserved around (front, rear, left, right) and above the battery for heat dissipation, maintenance, and emergency evacuation.
- Avoid opening cabinet doors and installing in rainy or humid weather conditions.
- The temperature should be within the range of -20 °C to +55 °C to ensure that the energy storage cabinet operates in good.

3.2.3 Handling



Caution!

Precautions for long-distance transportation:

- Please strictly package the product before transportation by vehicle. Closed boxes must be used for long-distance transportation!
- It is strictly prohibited to mix and transport this product with equipment or items that may affect or damage it!



Caution!

Precautions for forklift handling:

- At least two people are required for carrying, or a forklift can be used for a test lift. If the forklift tines are not properly positioned, a crane may be used instead for carrying
- During the transportation process, the equipment tilt angle should be less than 8 ° and the height of the undulations should be as low as possible!
- Do not use hydraulic trucks for long-distance transportation or on sloping roads!
- When taking off and landing, handle with care to avoid impact or vibration of the

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forklift. When descending, be careful not to press your feet!

- When moving, someone needs to support you left and right, and pay attention to the flatness of the ground!
- Considering that the equipment may be stacked relatively high, which could block the driver's view, it is recommended to arrange personnel to guide the driver as appropriate
- In the scenario where the cabinet is filled with batteries, be sure to pay attention to the center of gravity of the cabinet. It is strictly prohibited to use a crane to lift only from the top of the cabinet, as it may cause damage to the Sabine

3.3.System Installation



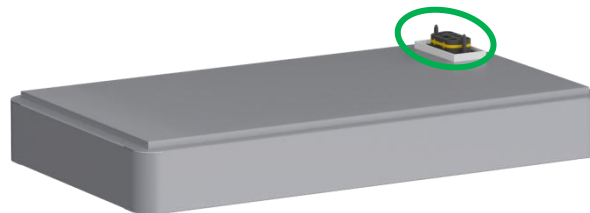
Caution!

Precautions for cabinet installation:

- When installing, it is necessary to strictly follow the safety instructions, otherwise it may cause equipment damage, personal injury or serious injury accidents. Please strictly follow the safety instructions!
- The installation must be carried out correctly by professionals while following all warning prompts!
- Please ensure that the mechanical strength of the installation location is sufficient to support the weight of the equipment, otherwise it may cause mechanical danger!
- Do not wear loose clothing or accessories, as there may be a risk of electric shock!

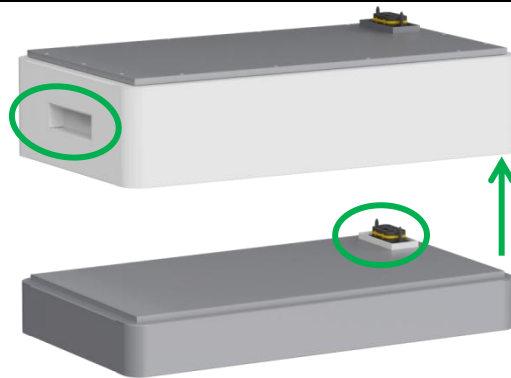
3.4 Installation Steps

Step1: Place the base on a smooth ground with the adapter side up



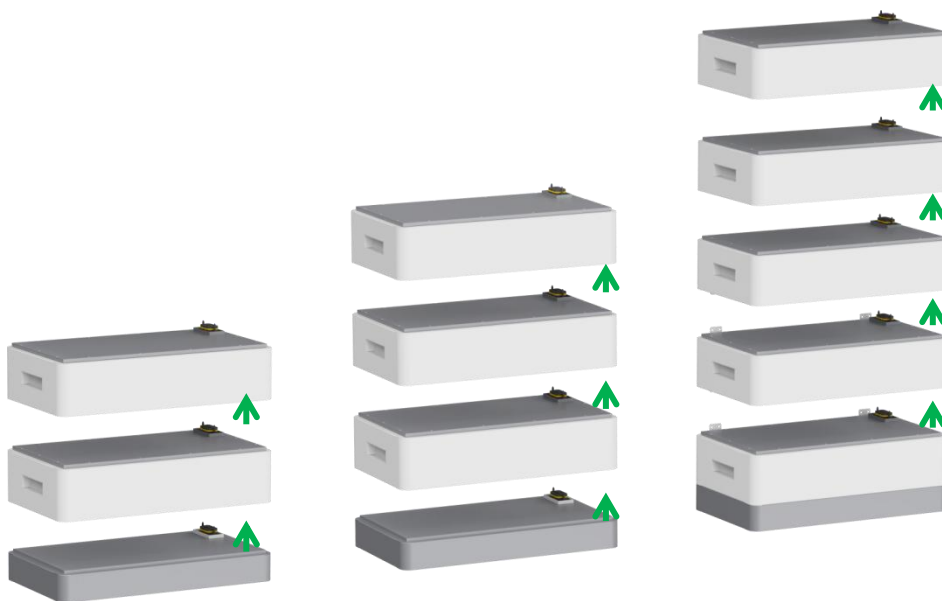
Step2: Put the hands on the handle on the side of the battery module to lift the battery, two persons are required to do this. Slowly put the battery on the base, and make sure that each connector is properly connected

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**NOTE**

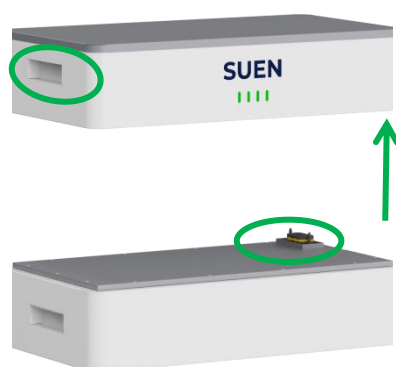
when battery is connected together with the base the internal socket still have high voltage DC power from serial connected battery modules (battery module can't be turned off).

Step3: Stack the battery modules you need according to the method of step2. Ensure the center of gravity is balanced during stacking to prevent tipping.

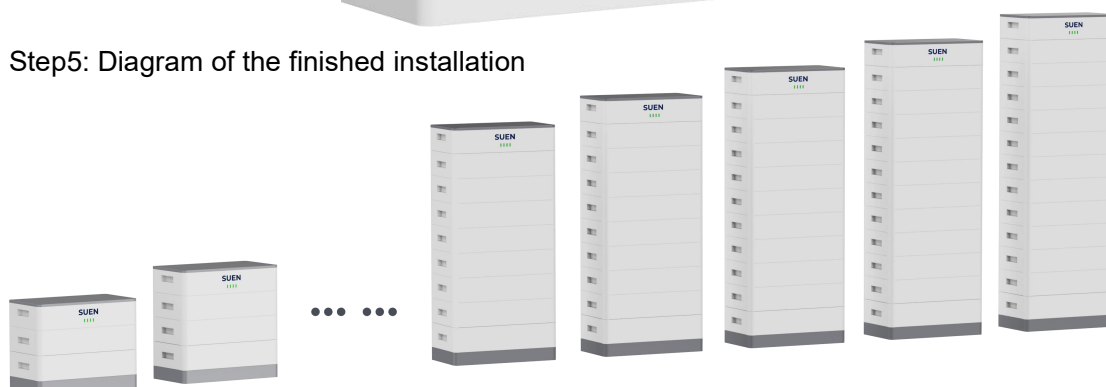


Step4: Stack the main control modules on top of the last battery module.

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Step5: Diagram of the finished installation



4.Open Box Inspection

After opening the box, the following items must be inspected:

Inspection Checklist after Unboxing

NO.	Inspection items	Confirm
1	The appearance is undamaged, scratch free, and the paint is normal	
2	The outer packaging of the product is intact, without damage, moisture, or deformation	
3	The connecting bolts inside the equipment are not loose, and there is no displacement or tilt of the components	

4.1 Installation Hole Position

4.1.1 Fixed steps:

- The high-voltage cabinet is connected in parallel and fixed together with the back of

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each underlying battery pack to prevent tipping. Additionally, the left, right, top, and bottom ends are fixed with M4 screws

- Mark the central points of the slotted holes at both sides on the wall
- Dismantle the brackets on both sides. Aligning the central points, drill two holes ($\geq 60\text{mm}$ depth) in the wall with a drilling tool, and clean the holes
- Embed the two M8 expansion bolts into the holes respectively
- Fit the brackets across the M8 expansion bolts on both sides, then fix the brackets on the BMS with M4 screws

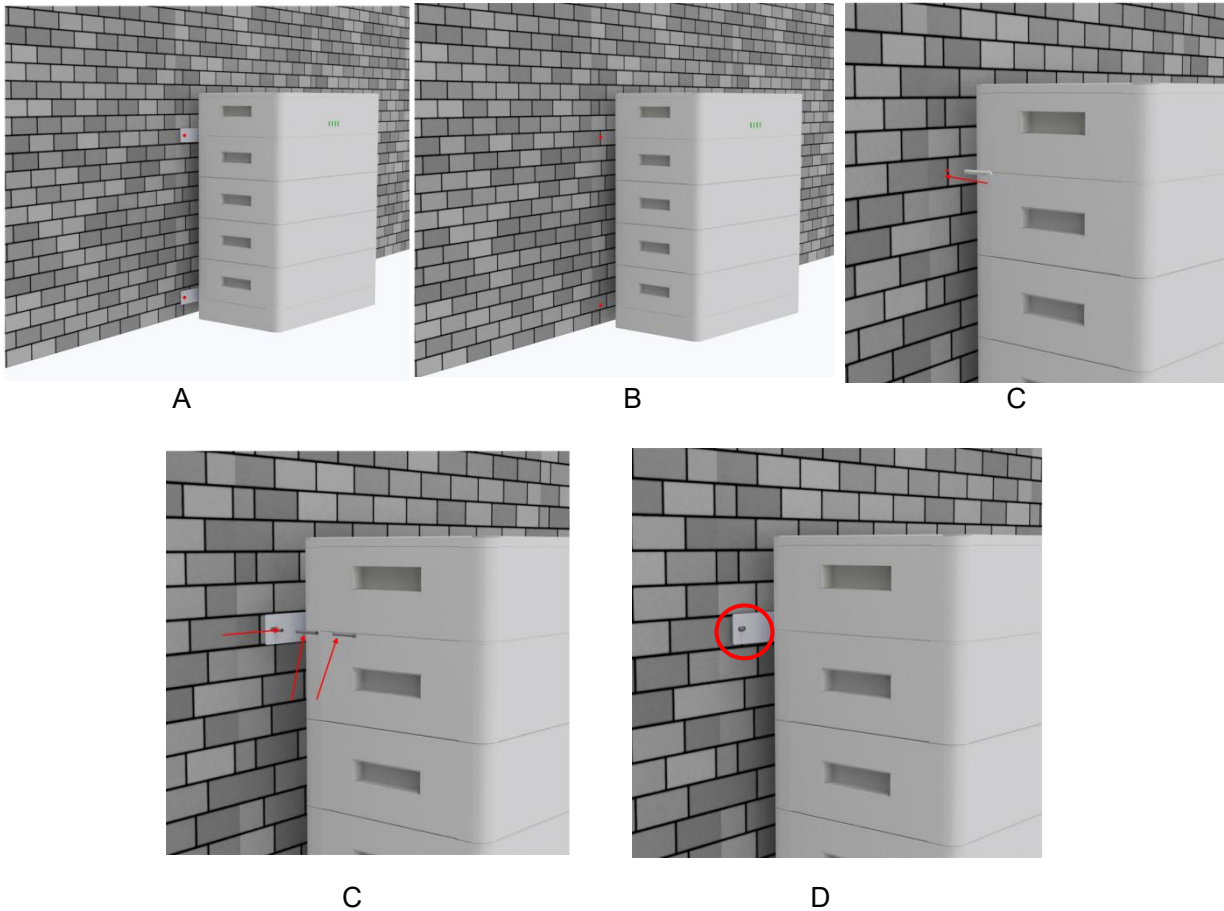


Figure 4.1.1 Schematic diagram of fixed hole size for cabinet installation

4.2 Wiring Inspection

4.2.1 Before wiring operations, ensure that the following checks are completed:



The cables used for wiring have met the corresponding requirements for wire

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diameter and shielding.

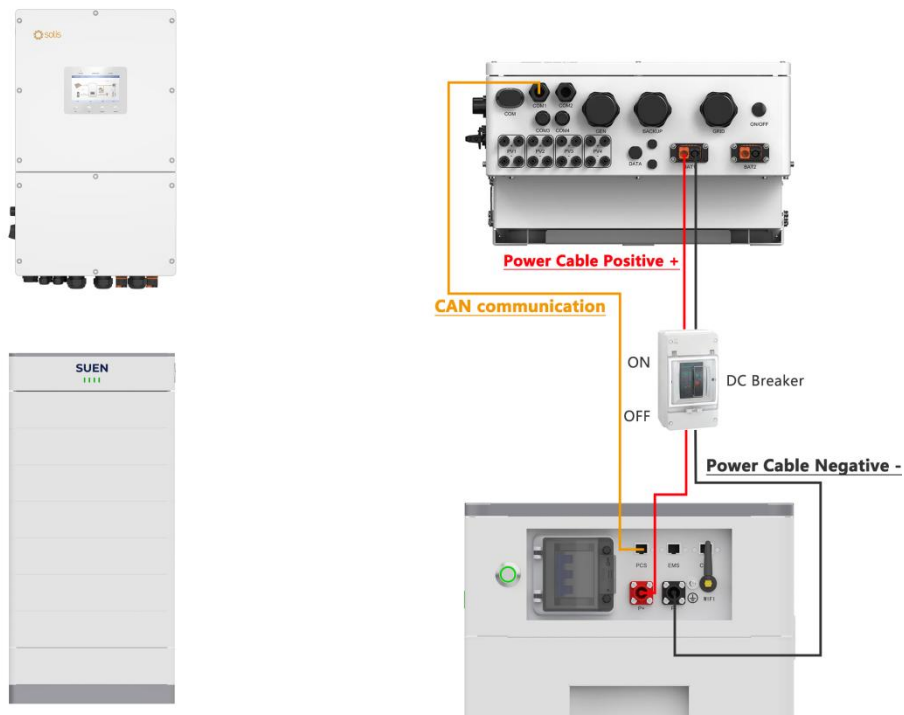
- Ensure good grounding of equipment and products.
- The relevant accessories for wiring are ready.
- The cable needs to meet the voltage insulation level and have necessary protection to avoid scratching the insulation skin of the cable.

After the wiring operation, ensure that the following checks are completed:

- Measure whether the voltage on the incoming side is within the specified range and confirm that there are no faults such as phase loss or short circuit.
- The power input terminal has been correctly connected and securely fastened.
- The grounding wire has been reliably grounded.

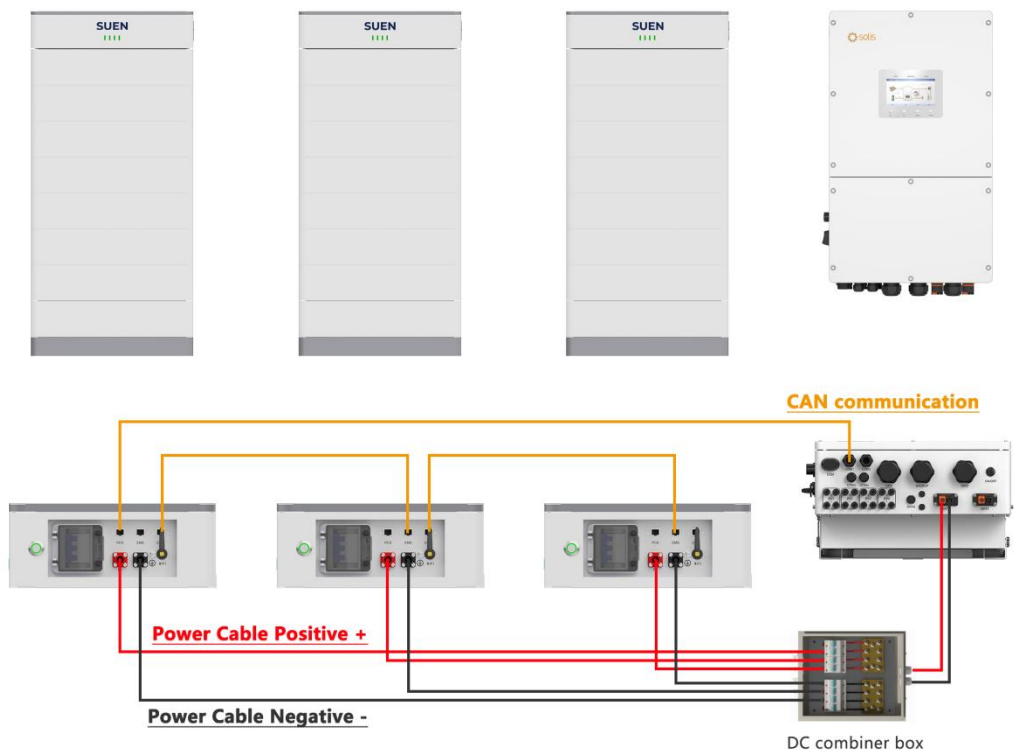
4.3 Operation of Connecting the Inverter to the Battery

4.3.1 Connect the CAN import of the battery to the CAN or RS485 communication interface of the inverter using the RJ45 cable



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4.3.2 When the system is used in parallel, it supports up to 5 groups of batteries in parallel. According to the number of parallel system (Take 3 batteries in parallel as an example), it needs to use: Power cable × 3 pairs, Battery-Inverter communication cable × 1PCS, Battery-Battery communication cable × 2PCS, Distribution box × 1PCS). The over-current capacity of the distribution box should be much higher than the maximum nominal current value when the load is running.



NOTE

- 1.For multiple parallel systems, connect the slave ENS port to the master COM port, and so on to ensure the normal communication connection
2. parallel must be of the same model and same capacity
- 3.Power-on sequence of multiple systems Start the Slave first, then start the Host last

Table 4.3.2 System Wiring List

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Definition	Function	Cable	Remarks
A	Connect to the power grid Three-phase five-wire system	3-5AWG	inverter 30K~50K
B		3-5AWG	
C		3-5AWG	
N		3-5AWG	
PE		5AWG	

5. Debugging And Operation

5.1 Inspection

Before starting up and running, the following items need to be checked:

Table 5.1 ore startup Inspection Checklist

NO.	Check items before startup and operation
1	Check whether there is condensation phenomenon (water film or water droplets on the surface) in various parts of the equipment .If there is any, it must be cleared, and the vent must be opened until the phenomenon is eliminated.
2	Check if there are any foreign objects inside the equipment; if there are, they must be cleaned up thoroughly.
3	The terminal on the side connected to the power grid must be correctly connected and firmly secured to ensure that the voltage is within the specified range and there are no faults such as short circuits.
4	The wiring of each control signal cable is correct.
5	There are no foreign objects at the connection points between the equipment and various power circuits. (Wire heads, metal shavings, etc.)
6	The system equipment must be connected to the ground wire

5.2 Operating Instructions

5.2.1 Startup

After confirming the correctness of the ore boot check, perform the boot operation in sequence:

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- (1) Turn on the circuit breaker of the high-voltage control box and set it to ON



- (2) Press the start button of the high-voltage cabinet (the button status shall be ON)



- (3) Press the switch button of the inverter (the button status shall be ON)



- (4) Turn the AC main circuit breaker switch to ON.



- (5) The system startup is complete

5.2.2 Shutdown

- (1) Stop charging and discharging;
- (2) Turn the AC main circuit breaker switch to ON.



- (3) Press the start button of the high-voltage cabinet (the button status shall be ON)



- (4) Turn the circuit breaker switch of the high-voltage cabinet to OFF.



- (5) Press the start button of the inverter (the button status is OFF)



- (6) The system shutdown is complete

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5.3 Connection Preparation

5.3.1 Download the App to get full functionality of your battery from the App Store (iOS devices) or Google Play(Android devices) or scan below QR code



5.3.2 Register after the APP is installed, click " Create Account" , enter the registration page as below

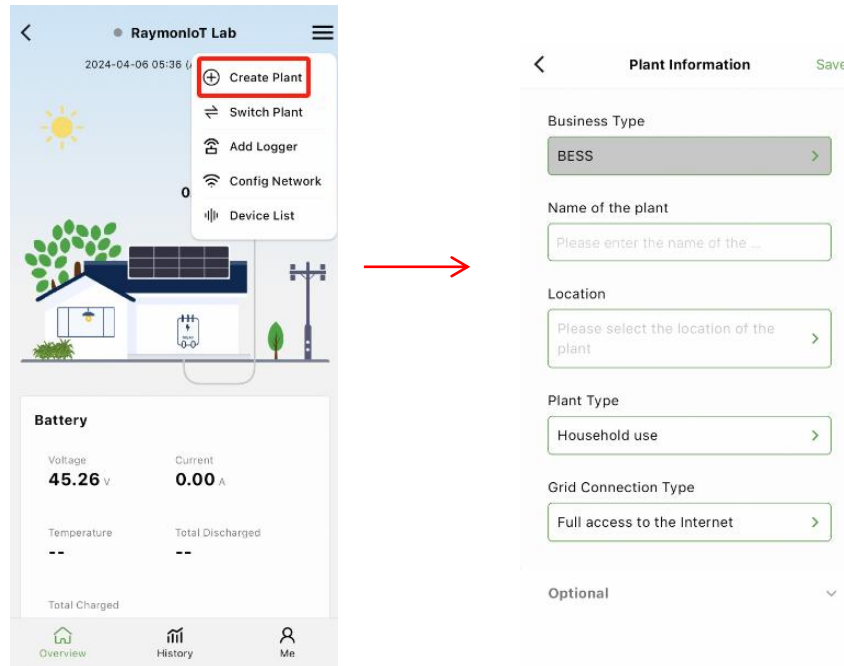
- 1) Select "Create Account" on the GSL App login interface
- 2) Select the current country or region.
- 3) Select the identity "user type" for registering the account,Owner or Partner;
If you are a partner of GSL, you can contact the platform business to obtain your exclusive invitation code to complete account registration
- 4) Click "Next"
- 5) Follow the prompts on the "Create Account" interface to complete the account registration process

The screenshot shows the 'Register' page of the 'GSL Smart ESS' app. The page is divided into two main sections. The left section, titled 'Welcome' and 'GSL Smart ESS', contains a 'Login' form with fields for 'Username/Email' (demo@abc.com), 'Password', and a checkbox for 'I have read and agree to the User Agreement and Privacy Policy.' Below these is a green 'Login' button and links for 'Forgot Password?' and 'Register'. The right section, titled 'Register', contains a form for creating a new account. It includes fields for 'E-mail' (demo@abc.com), 'Security Code' (039400) with a 'Send' button, 'Username' (abc), 'Password', 'Timezone' (set to '(+08:00) Asia/Shanghai'), and an 'Installer Information' dropdown. At the bottom of the right section is a checkbox for 'I have read and agree to the User Agreement and Privacy Policy.' A red arrow points from the 'Register' link in the left section to the 'Register' form on the right.

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5.3.3 Create Plants

- 1) To create a new power station, click on the "+" icon in the upper right corner of the list to enter the new power station interface
- 2) Complete the input of power station name, address, and type information according to the prompts
- 3) Click "Next" to enter the system information interface settings:
- 4) After completing the information input, click the "Confirm" button to complete the operation of creating a new power stat



5.3.4 Add Device and connect the network

Click "Add Device" to enter the device selection interface, and select the corresponding device type and model

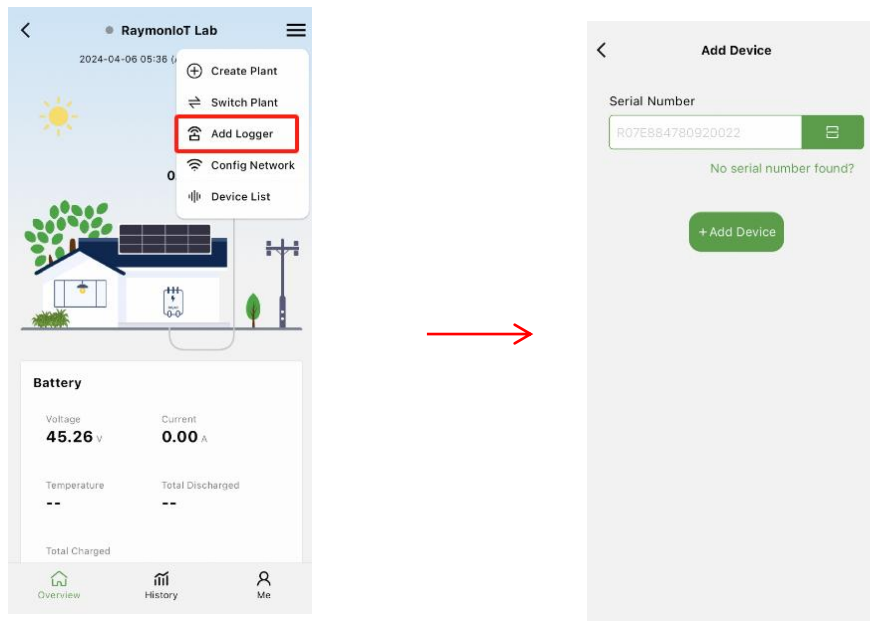
There are three Methods:

Method1 :Add via Bluetooth

- 1) Ensure that the phone is connected to WIFI and Bluetooth is turned on.
- 2) Bluetooth will automatically scan attachment devices for result display.
- 3) Select the device to be connected and click on the device name.

Method 2: Add by scanning. This method supports devices with QR codes. If you do not have a QR code, please choose another method

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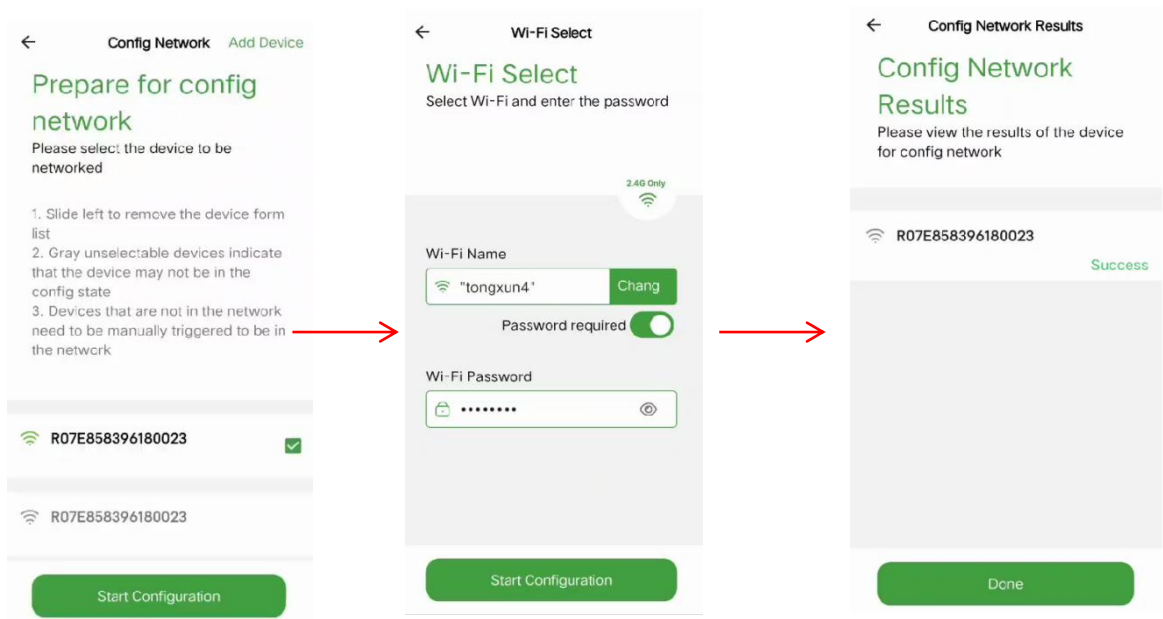


5.3.5 Click on 'Scan'

- 1) Align the device QR code with the mobile phone scan focus, and the results will be displayed in a list.
- 2) Select the device to be connected based on the result list, and click on the device name.
- Method 3: Add by entering SN [If only one device is connected at a time, this method is recommended
- 3) Click on 'Enter SN'.
- 4) Enter the device SN code.
- 5) After entering the device SN code, click "Next".

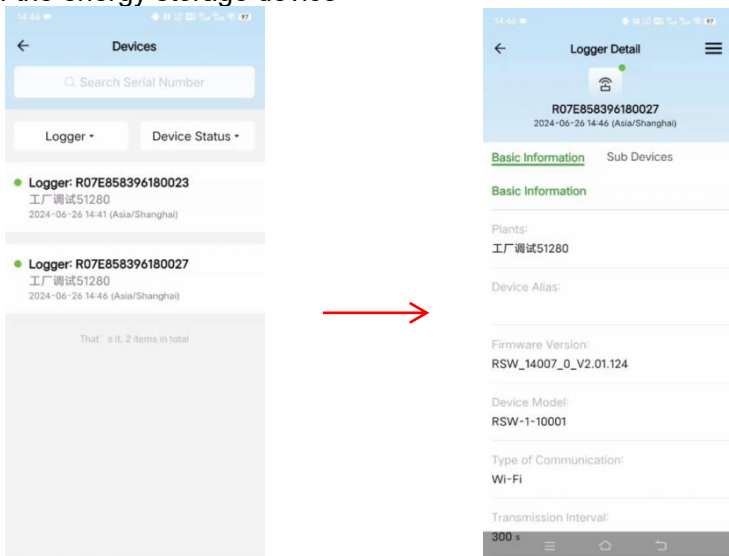
After adding, enter the distribution network, Enter WiFi account and password, Click "Start Provisioning".

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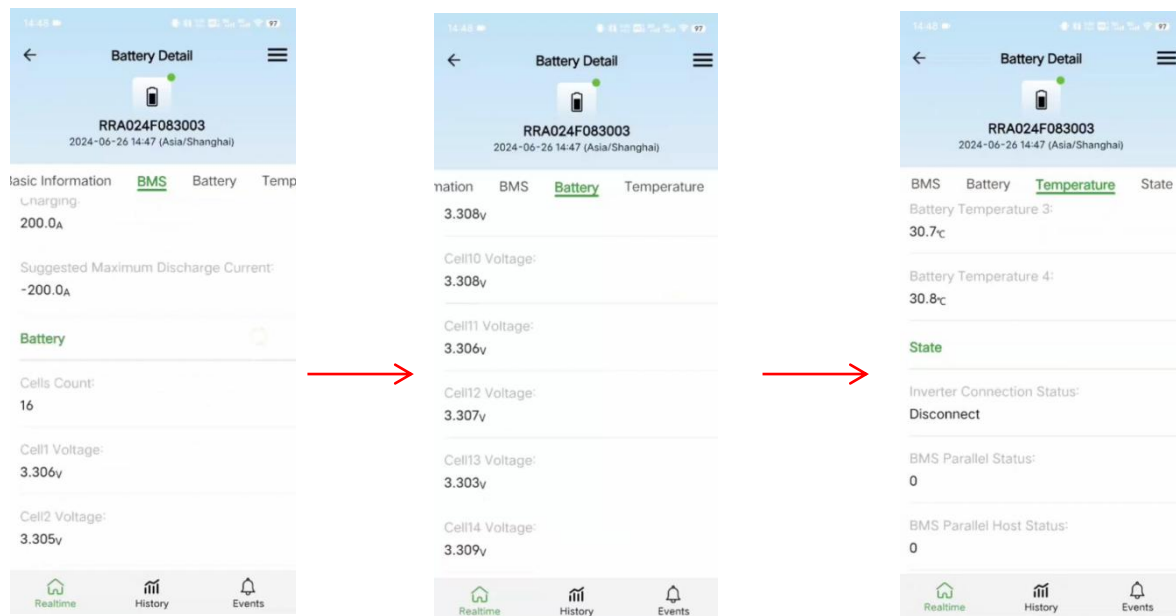


5.3.6 View battery information

- 1) After successful network configuration, wait for 5~10 minutes, Click “Plants”.
- The default display of device real-time data is detailed, BMS information and historical data and basic information can be viewed by switching tabs
- 2) By switching tabs to enter the real-time data information page, you can view the data information of energy storage devices
- 3.By switching tabs to enter the historical data page, you can view the historical data of energy storage devices
- 4.By switching tabs to enter the basic information page, you can view the basic information of the energy storage device



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6. Fault Handling



Caution!

When the system alarm light is on or the system is not working, check the following fault list

6.1 Fault List

When the system alarm indicator is illuminated or the system is not working, check the following fault list

Table 6.1 Fault List

NO.	Fault name	Possible reasons	Fault handling
1	Battery cell over voltage fault	Overcharging	Stop charging
2	Battery cell under voltage fault	Long term non charging	Timely charging
3	Battery total voltage over voltage fault	Overcharging	Stop charging

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4	Battery total voltage under voltage fault	Long term non charging	Timely charging
5	Battery charging over current fault	Charging current exceeds the maximum current of the battery	Reduce charging power
6	Battery discharge over current fault	Discharge current exceeds the maximum current of the battery	Reduce discharge power
7	Low insulation fault	Not grounded & Rainwater or liquids entering the equipment	Check if the grounding circuit is installed correctly Check if the equipment is wet
8	BMS communication failure	BMS communication line disconnected	Check the BMS communication cable
9	Module A/B/C phase over current alarms	overload	load reduction
10	AC Output Short Circuit Fault	AC side wiring short circuit	Check terminal wiring
11	Grid Phase Sequence Alarm	Incorrect wiring sequence on AC side	Adjusting the wire sequence
12	Battery under voltage alarm	DC input voltage too low	Check that the DC input voltage does not exceed the limit value
13	Battery over voltage alarm	DC input voltage too high	Check that the DC input voltage does not exceed the limit value
14	Low bus bar voltage alarm	Bus voltage exceeds the limit value during equipment operation	Check equipment parameters, bus bar voltage given for exceeding limits
15	Alarm for high bus bar voltage	Bus voltage exceeds the limit value during equipment operation	Check equipment parameters, bus bar voltage given for exceeding limits
16	Grid frequency low alarm	Grid frequency too low	Automatic recovery when grid frequency returns to normal
17	Grid Frequency High Alarm	Grid frequency too low	Automatic recovery when grid frequency returns to normal
18	Low grid voltage alarm	Grid voltage too low	Automatic recovery when grid voltage returns to normal
19	High grid voltage alarm	High grid voltage	Automatic recovery when grid voltage returns to normal
20	Module A1/B1/C1 Over Temperature Alarm	1、The ambient temperature is too high 2、Serious accumulation of dust net	1、Lower the ambient temperature 2、Clean or replace the dust net
21	Lightning Protector Trigger Fault	Lightning Protector Trigger	Replacement of lightning protectors

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22	BMS communication failure	Disconnection of communication lines between EMS and BMS	Check communication lines between EMS and BMS
23	PCS communication failure	Disconnection of communication line between EMS and PCS	Check the communication line between EMS and PCS
24	Meter communication failure	Disconnection of communication lines between EMS and metering meter	Inspection of communication lines between EMS and metering meters
25	Measuring Meter Communication Faults	Disconnection of the communication line between the EMS and the measuring meter	Checking the communication line between the EMS and the measuring meter
26	Emergency Stop Trigger Fault	Artificially tapping the emergency stop button	Detection of the integrated cabinet, manual recovery after no faults

7. Daily Maintenance And Upkeep

7.1 Due to the influence of temperature, humidity, dust, and vibration in the environment, the components inside the energy storage cabinet may age, which may cause potential failures or reduce the service life of the cabinet. Therefore, it is necessary to carry out daily and regular maintenance work on the energy storage cabinet



Caution!

- Personnel with professional qualifications are required to maintain the energy storage cabinet.
- The cabinet is equipped with strong electricity, and necessary safety precautions must be taken before starting maintenance.
- Before maintenance, it is necessary to ensure that all power sources have been disconnected.
- During maintenance, it is necessary to strictly follow the correct operating procedures.
- There are energy storage capacitors inside the energy storage cabinet. After power off, it is necessary to wait for more than 20 minutes to confirm that the inverter is in a dead state before maintenance can be carried out.
- After the power is disconnected, a warning sign should be hung at the disconnection

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location to prevent someone from powering on during maintenance.



To avoid accidental danger, maintenance personnel should wear insulation protective equipment during the maintenance process.

7.2 Daily Inspection Items

Daily inspection items should be implemented according to the following key points:

Table 7.2 List of Daily Inspection Items

NO.	Daily inspection items	Remarks
1	Real-time monitoring of the input and output voltage, current, and operating status of the energy storage battery is required. Additionally, designated personnel should be assigned to conduct on-site inspections at specific locations. In case of abnormal operation or anomalies in voltage/current, timely maintenance must be performed	
2	Are there any abnormal noises inside the battery?	
3	Is there any unusual odor inside the battery?	
4	The internal temperature displayed on the upper computer screen can be used to check whether it is within the normal range	
5	Check the exterior surface of the chassis for any damage, clean any dirty areas with water or alcohol, and touch up any damaged paint on the surface.	

7.3 Regular Inspection Items

Regular inspections mainly target areas that are difficult to detect during daily inspections and operations:

Table 7.3 Regular Inspection Item List

NO.	Regular inspection items	Remarks
1	Check the appearance of the energy storage cabinet for any damage or rust.	
2	Use a temperature measuring instrument to check the internal temperature of the equipment without any abnormalities.	
3	Check that the ventilation, ambient temperature, humidity, dust, and other environmental conditions around the equipment meet the requirements.	
4	Check for any signs of aging or damage to the cable insulation layer. If any issues arise, additional insulation measures should be taken or the cable should be replaced.	
5	Check that there are no signs of aging or burning at the wiring bolts,	

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	and shake them by hand to confirm that they are tightened.	
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Attention: It is recommended to check every three months

8. Equipment List

Table 8.1.1 Equipment List

NO.	Item	Quantity	Specification
1	Battery Pack 	The number of stacks you want	5.12kWh/1 PCs
2	Control Module 	1 PC	
3	Battery Base 	1 PC	
4	Power Cable 	1 SET	8AWG Black, Red L: 2 meter Plug-In Standard
5	Communication Cable 	1 PC	Battery PCs port to Inverter Can bus port L: 2 meter

6	Parallel Com Cable 	1 PC	Battery com port to Battery com port L: 2 meter
7	Ground Cable 	1 PC	Connect to the grounding point of the modules 6mm ² L:2 meter
8		1	Packing list
9		1	User Manual
10		2	Cylindrical Head Inner Hexagonal three combinationscrew M5*14