GENIXGREEN

Low Voltage Household Energy Storage Battery

User Manual

Content

Preface

Overview

This document introduces energy storage batteries, including product introduction, application scenarios, system maintenance, and related technical data. Please read this manual carefully, understand the safety information, and familiarize yourself with the functions and characteristics of the energy storage product before installing and using it.

Intended Audience

This document is mainly applicable to the following personnel:

- Sales personnel
- System Engineer
- Installation and After-Sales Service Personnel

Battery Symbol Description

	Caution
	Read manual before use
	Do not throw spent batteries into trash bins
	Recycle through certified facilities
	CE Certified
	High voltage danger

01/Safety Precautions

1.1 Declaration

- When installing, operating, and maintaining equipment, it is necessary to first read this manual and follow the markings on the equipment and all safety precautions in the manual. When opening the packaging of a new product for the first time, please check the product and accessories first. If the product is damaged or missing parts, please contact your local distributor.
- The "Caution" and "Prohibited" items in the manual do not represent all safety precautions that should be followed, but are only supplementary to safety precautions. Our company does not assume any responsibility for violating general safety operation requirements or violating design, production, and use equipment safety standards.
- The equipment should be used in an environment that meets the design specifications, otherwise it may cause equipment failure, resulting in abnormal equipment functions or component damage, personal safety accidents, property losses, etc., which are not within the scope of equipment quality assurance.

- When installing, operating, and maintaining equipment, local laws, regulations, and standards should be followed. All safety precautions described in the manual are only supplementary to local laws, regulations, and norms. The company shall not be liable for any of the following situations or their consequences;
- Equipment damage caused by extreme weather or force majeure events such as earthquakes, floods, volcanic eruptions, mudslides, lightning strikes, fires, wars, armed conflicts, typhoons, hurricanes, tornadoes, etc;
- Do not operate outside the specified conditions in this manual;
- The installation and usage environment does not comply with relevant international, national, or regional standards;
- Unauthorized disassembly, modification, or software code alteration is strictly prohibited;
- Not following the operating instructions and safety warnings in the product and documentation;
- Damage caused by you or your authorized third-party transportation;
- Damage caused by non-compliant storage conditions:
- Exceeding the product's service life.

1.2 Precautions

- The battery module should be installed in a cool (between 0 ℃ and 45 ℃), dry, ventilated, and safe environment.
- Please use a dry cloth to wipe the battery and inverter when cleaning.
- If the battery needs to be stored for a long time, it is recommended to charge and discharge the battery every 3 months.
- All maintenance work needs to be completed by professionals.
- The maximum charging and discharging power of the inverter shall not exceed the max charging and discharging power supported by the battery module.
- When installing and disassembling equipment, please turn off all power before performing any related operations.
- Please keep the battery away from heat and water sources during use and storage.
- After the installation of the battery and inverter is completed, please take relevant measures to prevent children from approaching.
- Please carefully read the user manual before use.
- Please dispose of scrapped batteries in accordance with local regulations.
- It is recommended to store the battery in an environment with a temperature range of -20 ℃ -+45 ℃ and charge it regularly according to the following table. The charging temperature should not exceed 0.5C (C is the measured discharge rate of the battery relative to its maximum capacity). After long-term storage, its SOC needs to reach around 50%.

Storage environment/temperature	Relative humidity	Storage time	SOC
Below-20℃	/	Not allowed	/
-20℃-+35℃	5%~70%	Six months	20%<SOC<60%
-20℃-+45℃	5%~70%	Three month	20%<SOC<60%
Above+ 45 ℃	/	Not allowed	/
Attention: Prolonged under-voltage can damage the battery system Charge the over-discharge system within seven days when the temperature exceeds 25 ℃. When the temperature is below 25 ℃, charge the over-discharge system within fifteen days. Regularly check whether the battery and its supporting terminals, connecting cables, and indicator lights are correct.			

1.3 Prohibitions

- Unauthorized disassembly and modification of batteries are prohibited.
- Any violent behavior that damages the battery, such as throwing, hitting, or pounding, is prohibited.
- It is prohibited to use batteries of different models and manufacturers in parallel.
- Do not place the battery in a high temperature environment above 60 ℃.
- It is prohibited to short-circuit battery P+P - with metal conductive materials.
- It is prohibited to install batteries in non specified orientations.
- It is prohibited to connect battery modules in series.
- Smoking or using flames near batteries is prohibited.
- Installation or disassembly work is prohibited when the equipment is live.
- During the installation, maintenance, disassembly and other operations, it is prohibited for the operator to wear metal watches, bracelets, necklaces, rings, rings and other metal accessories on their body.

1.4 Handling Measures for Battery Leakage

- Ensure adequate ventilation and remove all ignition sources, and use spark-resistant tools and explosion-proof equipment.
- Quickly evacuate personnel to a safe area, stay away from the leak area and be in the upwind direction.
- Use personal protective equipment. Avoid inhaling steam, smoke, gas, and dust.
- Take measures to prevent further leakage or overflow while ensuring safety.
- Remove all ignition sources and use fire-resistant flower tools and riot control equipment.
- When a leak occurs, avoid contact with the leaked liquid or gas; Electrolyte is corrosive and contact may cause skin irritation and chemical burns; If in contact with battery electrolyte, the following measures need to be taken.

1.Inhalation: Evacuate the contaminated area, immediately move to fresh air, and maintain unobstructed breathing; If breathing is difficult, give oxygen; If the patient ingests or inhales this substance, mouth to mouth resuscitation is not allowed; If breathing stops. Immediately perform cardiopulmonary resuscitation; And immediately seek medical assistance.

2. Skin contact: Immediately remove contaminated clothing, wash the skin contact area with plenty of water and soap, and seek medical assistance immediately.

3. Eye contact: Immediately rinse the eyes with clean water and seek medical assistance immediately.

1.5 Fire Handling Procedures

- If a fire occurs, the system should be powered off while ensuring safety.
- If a small fire occurs and the flames do not spread to the high-voltage battery section, carbon dioxide or ABC dry powder fire extinguishers can be used to extinguish the fire.
- When thoroughly inspecting the fire, do not come into contact with any high-voltage components and always use insulated tools for inspection.
- When extinguishing a fire, one should wear a breathing mask (compliant with MSHA/NIOSH requirements or equivalent) and wear full body protective clothing.
- Prevent fire water from contaminating surface and groundwater systems.

02/Product Introduction

2.1 Product Brief Introduction

2.1.1 Lithium iron phosphate battery system is a standard battery system unit, and customers can choose a certain number of batteries according to their needs, and form a larger capacity battery pack through parallel connection. Up to 64 units can be connected in parallel to meet the long-term power supply needs of users.

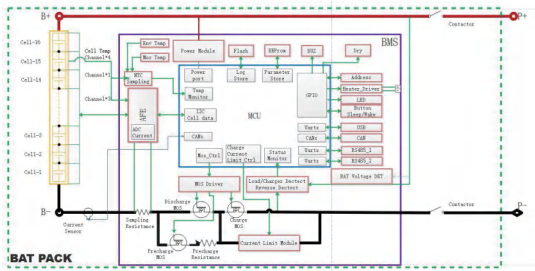
2.1.2 This product is particularly suitable for access network equipment, remote exchange offices, mobile communication devices, household energy storage devices, and hybrid inverter equipment.

2.2 Product Attributes

The positive electrode material of energy storage lithium-ion products is lithium iron phosphate, and BMS can effectively manage the battery with better performance. The characteristics of the system are as follows:

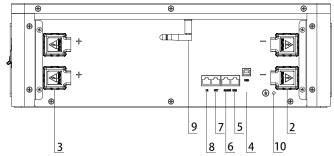
- Compliant with European ROHS and SGS certification, using non-toxic, pollution-free and environmentally friendly batteries.
- The anode material is lithium iron phosphate (LiFePO4), which is safer and has a longer service life.
- A battery management system (BMS) with better performance, equipped with overcharge, over-discharge, over-current, over temperature, under temperature, and short circuit protection functions.
- BMS is equipped with CAN/485 communication interface, which can communicate with computers/inverters, read various parameters of the battery pack, and monitor the status of the battery pack in real time.
- Self management of charging and discharging, no need for on duty personnel to guard.
- Single core balancing function.
- Flexible configuration allows for parallel use of multiple batteries for longer standby time.
- The system noise is relatively low.
- No memory effect, allowing the battery to be lightly charged and discharged.
- The working environment has a wide temperature range of -10 ° C to 45 ° C, with good cycle span and discharge performance.
- High energy density, small size, and lighter weight.

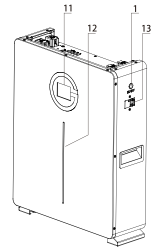
2.3 Functional Block Diagram



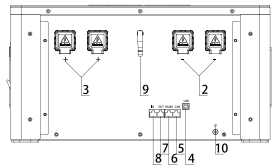
2.4 Appearance Introduction

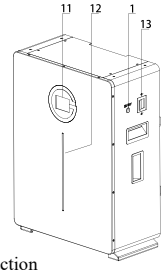
2.4.1 ES-BOX12(LCD) Product Appearance Introduction



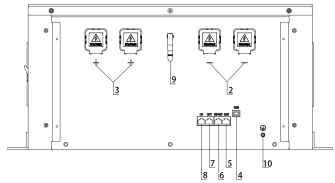


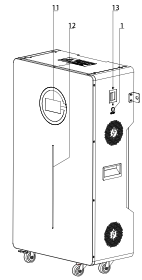
2.4.2 ES-BOX12 PLUS Product Appearance Introduction





2.4.3 ES-BOX12 MAX/MAX+ Product Appearance Introduction





External Interface Port Descriptions			
1	Battery Switch	2	P- Terminal
3	P+ Terminal	4	Upper computer USB communication port
5	Inverter CAN communication Network port	6	Inverter 485 Communication Network Port
7	Parallel Battery CAN Communication Network Port OUT	8	Parallel Battery CAN Communication Network Port IN
9	Wi-Fi Antenna (optional)	10	Grounding port
11	LCD Touch Screen	12	LED Power Display
13	Circuit Breaker (optional)	14	/

2.5 Product Parameter Description

Battery Model	ES-BOX12(LCD)	ES-BOX12 PLUS	ES-BOX12 MAX	ES-BOX12 MAX+
Cell Series-Parallel Method	16S1P			
Battery Rated Voltage	51.2V			
Battery Rated Capacity	100Ah	202Ah	280Ah	314Ah
Battery Rated Energy	5.12kWh	10342Wh	14.3kWh	16.07kWh
Suggested Working Voltage Range	44.8V～56.8V			
Suggested Charging Voltage	56.8V			
Rated Charging And Discharging Current	50A	100A		
Maximum Charging Current	100A	150A	200A	
Maximum Discharge Current	100A	150A	200A	
Charging Temperature Range	0℃～55℃			
Discharge Temperature Range	-20℃～55℃			
Protection Rating	IP20			
Dimension(mm)	600*480*155mm（Excluding Bracket）	650*480*245mm（Excluding Bracket）	840*490*247mm（Excluding Mounting lug/Caster）	
Weight (kg)	Net weight≈52kg	Net weight≈98kg	Net weight≈126kg	Net weight≈126kg
Supported communication method	USB/RS485/CAN			
Recommended depth of discharge	80%			
Maximum parallel units	16			

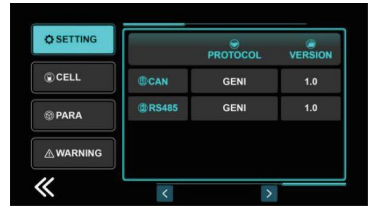
2.6 LCD Touch Screen Function Description

2.6.1 Main Interface Display

After the product is turned on, the touch screen will display the home page. Press the "》" key to enter the main menu page, The main menu features two icons (optional). As shown in the figure below:

2.6.2 SETTING Protocol Option Settings

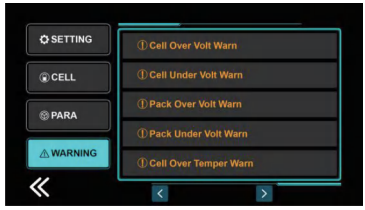
The user can select the correct communication protocol version through the settings. After selecting the protocol, click "Confirm" to complete the selection. As shown in the figure below:

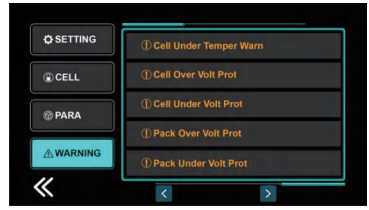


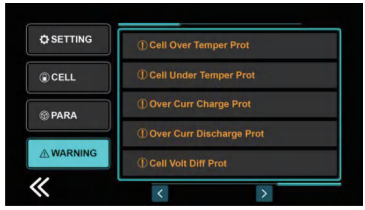
2.6.3 CELL Data Display, as shown in the figure below:

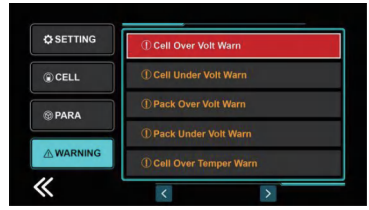
2.6.4 PARA Data Display, as shown in the figure below:

2.6.5 WARNING Data Display, as shown in the figure below:









Click the "《" key to return to the main interface.

2.7 LED Indicator Instructions

2.7.1 Basic Definitions

This document defines the functions of the LED strip. The default number of LED beads is 20, and other quantities of LED beads are displayed proportionally.

Each LED represents an SOC of 100/20 = 5%. The corresponding relationship between the number of lit LEDs and SOC is shown in the following table:

Number of Lit LEDs	Minimum SOC Range (Exclusive)	Maximum SOC Range (Inclusive)
1	0	5
2	5	10
3	10	15
4	15	20
5	20	25
6	25	30
7	30	35
8	35	40
9	40	45
10	45	50
11	50	55
12	55	60
13	60	65
14	65	70
15	70	75
16	75	80
17	80	85
18	85	90
19	90	95
20	95	100

Note: For other quantities of LED beads, map proportionally, and the SOC represented by each

LED bead is 100/N.

Example:

SOC = 10%: 1 lit LED for 10 beads, 2 lit LEDs for 20 beads, 3 lit LEDs for 30 beads, and so on;

SOC = 50%: 5 lit LEDs for 10 beads, 8 lit LEDs for 20 beads, 16 lit LEDs for 30 beads, and so on.

In the absence of alarms, protections, faults or other abnormal conditions, the LED color is associated with the SOC.

Minimum SOC Range (Exclusive)	Maximum SOC Range (Inclusive)	RGB LED Color
0	10	Red
10	20	Yellow
20	100	Green

2.7.2 Alarm

All LEDs are yellow and flash slowly.

Fault/Protection

All LEDs are red and flash slowly.

2.7.3 Normal Standby

Display the corresponding number of LEDs according to SOC.

2.7.4 Normal Charging (LEDs flash slowly)

According to the actual power, LEDs light up sequentially from the 1st LED to the Nth LED (corresponding to SOC) with a running light effect, cycling continuously.When N=1, set N=2, so the minimum number of running LEDs is 2.

Examples:

SOC=10%: LEDs 1 → 2 light up red sequentially, cycling continuously;

SOC=20%: LEDs 1 → 2 light up yellow sequentially, cycling continuously;

SOC=50%: LEDs 1 → 5 light up green sequentially, cycling continuously.

2.7.5 Normal Discharging

According to the actual power, LEDs light up sequentially from the Nth LED (corresponding to SOC) to the 1st LED with a running light effect, cycling continuously.When N=1, set N=2, so the minimum number of running LEDs is 2.

Examples:

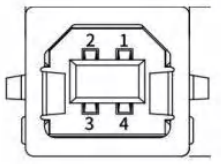
SOC=10%: LEDs 2 → 1 light up red sequentially, cycling continuously;

SOC=20%: LEDs 2 → 1 light up yellow sequentially, cycling continuously;

SOC=50%: LEDs 5 → 1 light up blue sequentially, cycling continuously.

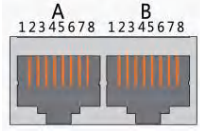
2.8 BMS Communication Port Definition

USB Interface Definition: (Upper Computer Side)



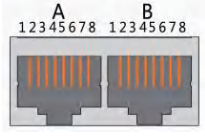
Interface	Definition Description	
X7 Communication Port Definition	PIN 1	VBUS
	PIN 2	D-
	PIN 3	D+
	PIN 4	GND

RS485/CAN Interface Definition: (Inverter Side)



Interface	Definition Description			Definition Description		
X1 Communication Port Definition	Part B CAN Interface	PIN1	NC(No Connection)	Part A RS485 Interface	PIN1	RS485-1B
		PIN2	CGND		PIN2	RS485-1A
		PIN3	NC(No Connection)		PIN3	GND
		PIN4	CAN-H		PIN4	RS485-1B
		PIN5	CAN-L		PIN5	RS485-1A
		PIN6	NC(No Connection)		PIN6	GND
		PIN7	NC(No Connection)		PIN7	NC(No Connection)
		PIN8	NC(No Connection)		PIN8	NC(No Connection)

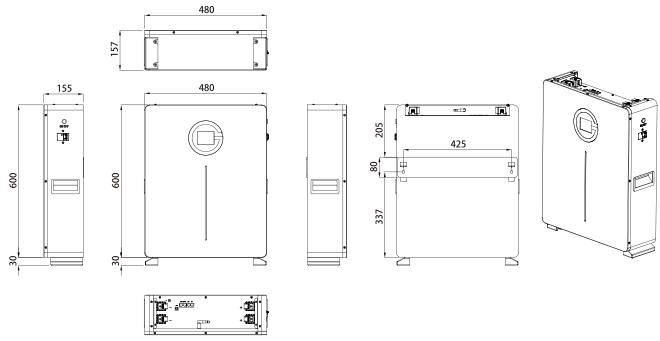
CAN Communication Interface Definition:(Parallel Battery Side)



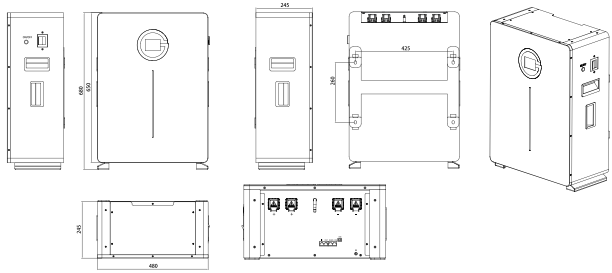
Interface	Definition Description			Definition Description		
X2 Communication Port Definition	Part B CAN-2 Interface	PIN1	CAN-2L	Part A CAN-2 Interface	PIN1	CAN-2L
		PIN2	CAN-2H		PIN2	CAN-2H
		PIN3	NC(No Connection)		PIN3	NC(No Connection)
		PIN4	NC(No Connection)		PIN4	NC(No Connection)
		PIN5	Auto-addressing OUT-P		PIN5	Auto-addressing IN-P
		PIN6	Auto-addressing OUT-N		PIN6	Auto-addressing IN-N
		PIN7	NC(No Connection)		PIN7	NC(No Connection)
		PIN8	NC(No Connection)		PIN8	NC(No Connection)

2.9 Product Dimensions

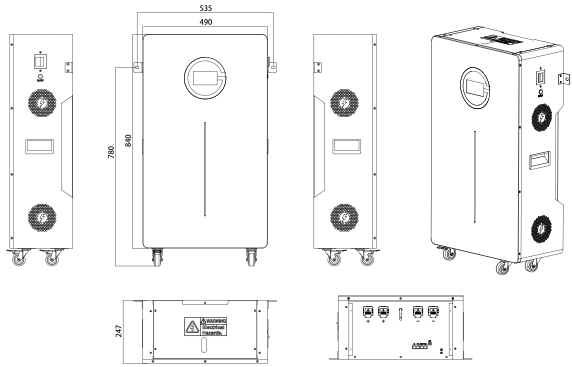
2.9.1 ES-BOXl2(LCD) Product Dimensions



2.9.2 ES-BOX12 PLUS Product Dimensions

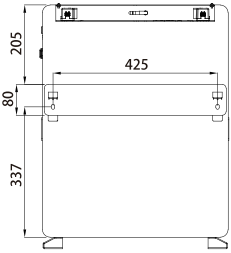


2.9.3 ES-BOX12 MAX/MAX+ Product Dimensions

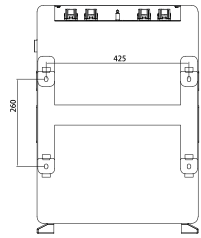


2.10 Mounting Hole Dimensions Diagram

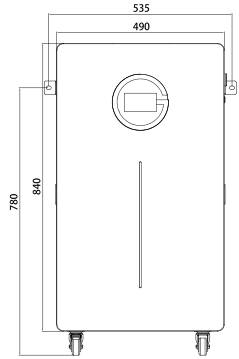
2.10.1 ES-BOX12(LCD) Mounting Hole Dimensions Diagram



2.10.2 ES-BOX12 PLUS Mounting Hole Dimensions Diagram



2.10.3 ES-BOX12 MAX/MAX+ Mounting Hole Dimensions Diagram



ES-BOX12(LCD) Delivered Materials are as follows:
Expansion Screws: 235 color-zinc plated M8*80mm, Quantity: 2 PCS;
Screws: 304 stainless steel / M6*12mm hexagon head with cross recess three-piece combination, Quantity: 4 PCS;
Screws: 304 stainless steel / M6*12mm Flat Head Screw with Cross Recess, (Head Diameter: 7mm) Quantity: 4 PCS;
Power Cable: 4#AWG, L=1.5M (black), each end connected to one SC35-8, Quantity: 1 PCS;
Power Cable: 4#AWG, L=1.5M (red), each end connected to one SC35-8, Quantity: 1 PCS.
Network Cable: Regular network cable, Length=1.5M, Quantity: 1 PCS.

ES-BOX12 PLUS Delivered Materials are as follows:
Expansion Screws: 235 color-zinc plated M10*80mm, Quantity: 4 PCS;
Screws: 304 stainless steel / M8*16mm hexagon head with cross recess three-piece combination, Quantity: 4 PCS;
Screws: 304 stainless steel / M6*12mm Flat Head Screw with Cross Recess, (Head Diameter: 7mm)

Quantity: 4 PCS;
Power Cable: 4#AWG, L=1.5M (black), each end connected to one SC35-8, Quantity: 1 PCS;
Power Cable: 4#AWG, L=1.5M (red), each end connected to one SC35-8, Quantity: 1 PCS.
Network Cable: Regular network cable, Length=1.5M, Quantity: 1 PCS.

ES-BOX12 MAX/MAX+ Delivered Materials are as follows:
Expansion Screws: 235 color-zinc plated M10*80mm, Quantity: 2 PCS;
Screws: 304 stainless steel / M8*16mm hexagon head with cross recess three-piece combination, Quantity: 4 PCS;
Power Cable: 2#AWG, L=1.5M (red), each end connected to one SC35-8, Quantity: 1 PCS;
Power Cable: 2#AWG, L=1.5M (black), each end connected to one SC35-8, Quantity: 1 PCS.
Network Cable: Regular network cable, Length=2M, Quantity: 1 PCS.

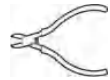
03/Product Installation

3.1 Pre-Installation Inspection

Before signing and installing the product, please carefully check the following:
● Check the outer packaging for any damage, such as holes, deformations, cracks, or other signs that may cause damage to the equipment inside the packaging box. If there is any damage, do not open the packaging and contact your distributor.
● Check if the battery model is correct. If there is any discrepancy, do not open the packaging and contact your distributor.
● Please verify the types and quantities of delivered items, and check for any physical damage. If any damage is found, please contact your distributor immediately.

3.2 Installation Tool Preparation

The illustration tool is for reference only, please refer to the actual product.

Tools and illustration			
 Hammer Drill (with Drill Bit Set)	 Insulated Torque Socket Wrench	 Diagonal Cutting Pliers	 Insulated Torque Screwdriver (Phillips/Slotted)
 Multi-meter	 Steel Tape Measure	 Spirit Level	 Cable Tie
 Manual Forklift	 Electric Forklift	/	/

Personal protective equipment			
 Insulating Gloves	 Protective Gloves	 Goggles	 Dust Mask
 Insulating Shoes	 Reflective Vest	 Safety Hat	/

3.3 Installation Requirement

3.3.1 Installation environment requirements

- Batteries should not be installed in environments with high temperature, humidity, or susceptibility to corrosion.
- Please avoid installing water pipes, cables, etc. inside the wall to prevent danger during drilling.
- The installation location should avoid areas that children can come into contact with, and avoid installing in easily accessible areas.
- The installation of batteries should avoid direct sunlight, rain, snow, and other installation environments. It is recommended to install them in a sheltered location.
- The battery protection level meets the requirements for indoor installation, and the installation environment temperature and humidity should be within a suitable range.
- Please ensure that the device indicator lights and all labels are easy to view, and that the wiring terminals are easy to operate.
- Stay away from strong magnetic fields and avoid electromagnetic interference.

3.3.2 Installation Substrate Requirements

- The installation substrate must be made of non-flammable material with fire-resistant properties.
- Please ensure that the installation carrier is sturdy and reliable, capable of carrying the weight of the battery.

3.3.3 Requirements for installation and lifting angles

- Recommended battery installation angles: vertical (feet facing down) and horizontal (display screen facing up).
- Do not invert, tilt, or tilt the battery beyond the angle.
- Requirements and prohibitions for product packaging, handling, and placement
- **ES-BOX12 & ES-BOX12 PLUS** Product Packaging Method

● **ES-BOX12 MAX/MAX+** Product Packaging Method

● Battery lifting requirements

A. During transportation and handling, battery modules and their components should be protected from damage:

B. During transportation, consider the weight of the battery module system and carefully lift the battery modules and components;

C. Do not collide, pull, drag or step on the battery module, and do not touch any part of the battery module with unrelated objects;

< 18 kg (< 40 lbs) | 18-32 kg (40-70 lbs) | 32-55 kg (70-121 lbs) | 55-68 kg (121-150 lbs) | > 68 kg (> 150 lbs)

● The battery installation angle is as follows:

ES-BOX12(LCD) & ES-BOX12 PLUS installation angle:

ES-BOX12 MAX/MAX+ installation angle：

3.4 Product Terminal Wiring

Please wire according to the terminal wire accessories. The red wire is the positive pole, and the black wire is the negative pole. (The size and length of the connecting wires are described in the material delivery list.)

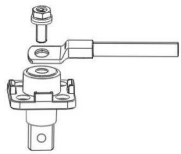
Step 1: Lock the terminal wires into the lock holes of the corresponding positive and negative terminals according to their polarities, and fasten the screws with an open-end wrench or a box-end wrench, as shown in Figure 1 below.

Note: The positive and negative poles must not be reversed.

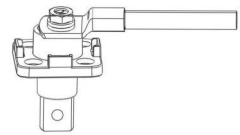
Step 2: Tighten the screws of the positive and negative terminals clockwise. There shall be no signs of looseness. Shake the locked terminal wires by hand—if there is no movement at the screw fixing position, the terminal wires are securely connected, as shown in Figure 2 below.

Note: Pay attention to the direction and method of locking the terminal wires. Do not reverse the wire connectors of the terminal wires when wiring, as shown in Figure 3.

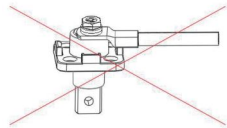
Remarks: For M6 bolts, the torque value is 9N·m; for M8 bolts, the torque value is 23N·m.



（Figure 1）



（Figure 2）



（Figure 3）

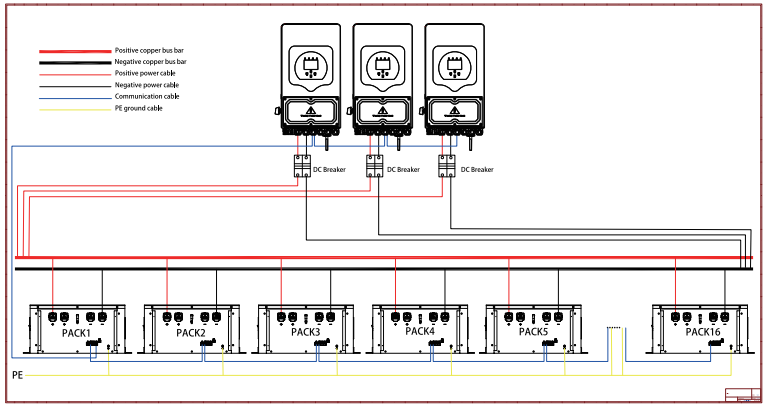
04/Battery Parallel Connection

4.1 Battery Parallel Connection

4.1.1 The parallel connection method of multiple batteries is relatively special. The P+/P- wiring must adopt the circulating current wiring method, and the communication shall be realized through CAN parallel communication (as shown in the following figure).

4.1.2 When multiple parallel batteries communicate with the inverter, only the PACK1 battery is responsible for communicating with the inverter. Therefore, the inverter's communication network port must be connected to the corresponding network port of the PACK1 battery; otherwise, communication with the inverter cannot be achieved.

4.1.3 PACK1 battery serves as the main control unit, while the other batteries achieve parallel operation communication via CAN to ensure data synchronization and stable system operation; during wiring, parallel routing of strong and weak current circuits should be avoided to prevent signal interference. After completing the connections, it is necessary to check whether each interface is securely connected. Only after confirmation of no errors can the power supply be turned on: switch on the lithium battery switch and the circuit breaker switch in sequence to start the system.



Note: It is recommended to match the busbar according to the maximum power of the inverter module.

4.2 Power Cable Specifications

The specifications and lengths of the P+P- parallel power cable wires need to be consistent, and the power cable model needs to be matched according to the maximum power of the inverter.

5KW Inverter	10KW Inverter	15KW Inverter
4AWG	2AWG	2AWG

4.3 Interface Communication Instructions

4.3.1 USB Communication

The USB interface adopts a TYPE B port. The BMS can communicate with the upper computer through this interface, so that various battery information can be monitored on the upper computer side, including battery voltage, current, temperature, status, SOC, SOH and battery production information, etc. The default baud rate is 115200bps.

4.3.2 RS485 Communication

All RS485 interfaces of the BMS are RJ45 network ports. Among them, the single-port RS485 is mainly used for data exchange between the battery pack and the inverter. (Note: If there is a dual-port RS485, it is for parallel communication between battery packs.)

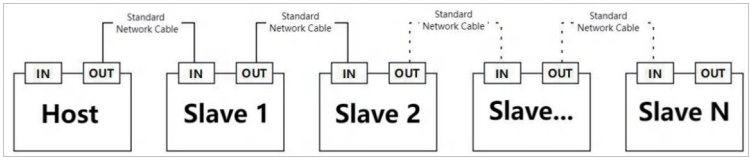
4.3.3 CAN Communication

The CAN communication interface of the BMS has the capability of data exchange between the battery pack and the inverter. The default baud rate is 500K, and the communication interface is an RJ45 network port. (Note: If there are dual ports IN/OUT, they are for CAN parallel communication between battery packs.)

4.3.4 Parallel Connection Wiring Installation

When connecting in parallel, it should be noted that only battery packs of the same type and number of series can be connected in parallel. Otherwise, if battery packs with different numbers of series are connected in parallel, the voltage difference between the battery packs will cause mutual discharge between the battery packs, making them unable to function normally.

This product uses CAN for parallel connection and communication, as shown in the following figure:



Parallel Connection Wiring Diagram

After the parallel connection wiring is completed, it is recommended to power on all devices together. If they cannot be powered on at the same time, the host should be turned on first, and then all slaves should be turned on in cascade order (the power-on order will affect the continuity of slave address binding, so try to power on the slaves close to the host first in cascade order). The maximum number of parallel units is 64.

05/Battery-to-Inverter Connection

5.1 Battery Module-to-Inverter Connection

5.1.1 Connect the battery module P+/P - to the inverter BAT+/BAT -, and reverse connection is strictly prohibited.

5.1.2 Connect the battery and inverter communication network port with the correct communication network cable.

5.1.3 First turn on the battery switch until all batteries are successfully turned on, then turn on the inverter switch.

Note: If a circuit breaker is installed, you should first turn on the circuit breaker, then the battery switch, and finally the inverter switch.

5.2 Inverter Settings

5.2.1 Complete the battery type, operating mode, and other settings according to the inverter user manual.

If the inverter displays correct battery information and there are no alarms regarding BMS communication failures, it indicates that the battery module has successfully communicated with the inverter.

5.2.2 Other settings can be set according to the inverter manual and actual needs.

Note: If circuit breakers are installed, they should be turned on first, followed by the battery switch, and finally the inverter switch.

5.3 Protocol Selection Between Battery Module and Inverter

5.3.1 Method 1: Default Inverter for Battery Module at Factory.

Step 1: Select the cable used by the default inverter according to the label on the communication cable. Connect the RJ45 port (CAN/RS485) on the battery end to the RJ45 (CAN/RS485) port on the inverter end with a cable.

Step 2: Turn on the battery module and inverter, and wait for normal operation. The battery is pre-configured at the factory to communicate with the RS485 ports of Voltronics, MecerKodak, Phocos, and Axpert inverters, and the CAN ports of DEYE, Sunsynk, SMK (Hybrid), Luxpower, Sofar, and TBB inverters. The battery will automatically select the default inverter communication.

Step 3: After the battery successfully communicates with the inverter, the battery status will be displayed on the inverter: voltage, current, SOC, temperature, etc.

5.3.2 Method 2: Battery Module (Protocol Selection) - When communicating with inverters of other brands, such as: Growatt, Megarevo, INVT, Victron, SOLAX, MUST, SMA, etc.

Step 1: Turn on the battery, ensure the BMS is powered on normally (not in sleep mode), insert the provided USB-B communication cable into the battery's communication port, and connect the USB-A end to the computer;

Step 2: Extract the BMS monitoring software package to the current computer (requires .NET Framework 2.0 or higher). This software does not require separate installation; simply double-click the main program icon (BMS.exe file) to run it when the environment is ready. Enter the password: vking (note: the space is part of the password, and it must be entered correctly).

Step 3: Click "Parameter Information" at the top of the system page, then click the "Read" button to retrieve battery parameters. Select the inverter protocol under "Protocol Type" and click the "Write" button to set the protocol. Once the system displays a successful operation message, the protocol selection is complete (please refer to the following images).

Step 4: Select the cable used by the inverter according to the label on the communication cable. Insert the RJ45 connector (CAN/RS485) from the battery side and the RJ45 connector from the inverter side into the interfaces on both sides. Restart both the battery and the inverter. The battery will automatically communicate with the inverter according to the selected protocol.

5.3.3 Method 3: The battery module is optionally equipped with a WiFi module, and the inverter protocol is selected through the APP. For specific operations, refer to the APP operation manual.

06/Communication Protocol Comparison Table

No	Inverter	Protocol	Abbreviation	NAME	Module	Version
1	GENIXGREEN	GENIXGREEN	"GENI"		RS485	1.0
2	PYLON	PYLON	"PYLN"	PYLON	RS485	1.0
3	Voltronic Power	VOLTRONIC	"VLTC"	VOLTRONIC	RS485	1.0
4	Growatt	GROWATT	"GRWT"	GROWATT	RS485	2.1
5	SRNE	SRNE	"SRNE"	SRNE	RS485	1.0
6	Afore	AFORE	"AFOR"	AFORE	RS485	1.0
7	SOLAX	SOLAX	"SOLX"	SOLAX	RS485	1.2
8	VKINGNER	VKING	"VKIN"	VKING	RS485	1.0
9	PACEEX	PACE	"PACE"	PACE	RS485	1.3
10	MUST	MUST	"MUST"	MUST	RS485	1.1
11		BAYKEE	"BYKE"	BAYKEE	RS485	1.0
12	SMK SOLAR	SMK	"SMK"	SMK	RS485	
13	BIWATT	BITTA	"BITA"	BITTA	RS485	1.1
14	STONE	STONE	"STON"	STONE	RS485	2.1
15	EPEVER	EVEPER	"EVPR"	EVEPER	RS485	1.5

16	KSTAR	KSTAR	"KSTR"	KSTAR	RS485	5.0
17	SUNFLY TECH	SUNFLY	"SNFL"	SUNFLY	RS485	1.2
18		NONE	NONE		RS485	

No	Inverter	Protocol	Abbreviation	NAME	Module	Version
1	GENIXGREEN®	GENIXGREEN	"GENI"		CAN	1.0, 3.0
2	PYLONTECH	PYLON	"PYLN"	PYLON	CAN	1.2, 2.0
3	victron energy	VICTRON	"VICT"		CAN	1.0
4	Growatt	GROWATT	"GRWT"	GROWATT	CAN	1.5
5	Afore	AFORE	"AFOR"	AFORE	CAN	2.1
6	SOLAX	SOLAX	"SOLX"	SOLAX	CAN	1.2
7	VKINGNER	VKING	"VKIN"	VKING	CAN	1.0
8	MUST	MUST	"MUST"	MUST	CAN	1.0
9	GOODWE	GOODWE	"GDWE"	GOODWE	CAN	1.5
10	SOFAR	SOFAR	"SOFA"	SOFAR	CAN	1.0
11	LUXPOWER TEK	LUXPOWER	"LXPR"	LUXPOWER	CAN	1.0
12	KSTAR	KSTAR	"KSTR"	KSTAR	CAN	1.18
13	SOROTEC Power Solutions Expert	SOROTEC	"SRTC"	SOROTEC	CAN	1.0
14	SMA	SMA	"SMA "		CAN	1.0
15	solis	GINLONG	"GNLG"	GINLONG	CAN	1.0
16	DONNERGY	DONNERGY	"DONN"	DONNERGY	CAN	1.0
17	IMEON ENERGY	IMEON	"IMON"		CAN	1.0

18		SCHNEIDER	"SHDR"	SCHNEIDER	CAN	2.0
19		INVT	"INVT"	INVT	CAN	1.2
20		INHENERGY	"INHE"	INHENERGY	CAN	1.0
21		SENERGY	"SENR"	SENERGY	CAN	1.2
22		SUNWAYS	"SNWY"	SUNWAYS	CAN	2.0
23		STUDER	"STDR"		CAN	1.0
24		DEYE	"DEYE"	DEYE	CAN	1.0, 3.0
25		NONE	NONE		CAN	