



BRE-B2-16K Series
Installation and user manual

Purpose

This document describes the BRE-B2-16K-01/BRE-B2-16K-02 in terms of its installation, electrical connections, commissioning, maintenance, and troubleshooting. Before installing and operating the BRE-B2-16K-01/BRE-B2-16K-02, ensure that you are familiar with the features, functions, and safety precautions provided in this document.

Intended Audience

This document is intended for:

- Installers
- Users

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
 NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, or environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all updates made in previous issues.

Date	Version	Update Notes	Author
2026/1/3	V1.0	First Edition	QiXinghua
2026/3/25	V1.1	Update the content of the	QiXinghua

2026/7/8	V1.2	Update the content of the combiner box; Update installation instructions; Update grounding instructions	QiXinghua
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1. Safety Precautions

General Safety



NOTICE

- Before performing operations, read through this manual and follow all the precautions to prevent accidents. The "DANGER" and "NOTICE" marks in this document do not represent all the safety instructions. They are only supplements to the safety instructions.
- Only certified electricians are allowed to install, connect cables for, commission, maintain, and troubleshoot OLiPower products, and they must understand basic safety precautions to avoid hazards.

When operating OLiPower equipment, in addition to following the general precautions in this document, follow the specific safety instructions given by OLiPower. OLiPower will not be liable for any consequence caused by the violation of the safety operation regulations and design, production, and usage standards.

Disclaimer

OLiPower shall not be liable for any consequence caused by any of the following events:

- Transportation damage
- The storage conditions do not meet the requirements specified in this document.
- Incorrect storage, installation, or use
- Installation or use by unqualified personnel
- Failure to obey the operation instructions and safety precautions in this document
- Operation in extreme environments which are not covered in this document
- Operation beyond specified ranges.
- Unauthorized modifications to the product or software code or removal of the product
- Device damage due to force majeure (such as lightning, earthquake, fire, and storm)
- The warranty expires and the warranty service is not extended.
- Installation or use in environments which are not specified in related international standards

Personnel Requirements

Only certified electricians are allowed to install, connect cables for, commission, maintain, troubleshoot, and replacement the BRE-B2-16K-01/BRE-B2-16K-02.

- Operation personnel should have professional training.
- Operation personnel should read through this document and follow all the precautions.
- Operation personnel should be familiar with the safety specifications about the electrical system.
- Operation personnel must wear proper personal protective equipment (PPE).

Protect Labels

- To protect the labels from UV damage, the BRE-B2-16K-01/BRE-B2-16K-02 shall not be installed in locations with constant direct sunlight
- of constant direct sunlight.
- Do not scrawl or damage any labels on the BRE-B2-16K-01/BRE-B2-16K-02 enclosure because these labels contain important information about safe operation.
- Do not scrawl or damage the nameplate on the BRE-B2-16K-01/BRE-B2-16K-02 enclosure because it contains important product information.

Installation



DANGER

Never operate the BRE-B2-16K-01/BRE-B2-16K-02 while powered on during installation.

- Ensure that the BRE-B2-16K-01/BRE-B2-16K-02 is not powered on before finishing installation.
- Ensure that the BRE-B2-16K-01/BRE-B2-16K-02 is installed in a well-ventilated environment.
- Ensure that the BRE-B2-16K-01/BRE-B2-16K-02 is placed under the canopy.
- Do not open the front panel of the BRE-B2-16K-01/BRE-B2-16K-02.
- Do not remove the terminals and ports at the bottom of the BRE-B2-16K-01/BRE-B2-16K-02.

Electrical Connections



DANGER

Before connecting cables, ensure that the BRE-B2-16K-01/BRE-B2-16K-02 is secured in position and not damaged in any way. Otherwise, electric shocks or fire may occur.

- Ensure that all electrical connections comply with local electrical standards.
- Obtain approval from the local utility company before using the BRE-B2-16K-01/BRE-B2-16K-02 to generate electricity in grid-tied mode.

Operation



DANGER

High voltage may cause an electric shock when the BRE-B2-16K-01/BRE-B2-16K-02 is in operation, which could result in serious injury, death, or significant property damage. Strictly comply with the safety precautions in this document and associated documents when operating the BRE-B2-16K-01/BRE-B2-16K-02.

- When the BRE-B2-16K-01/BRE-B2-16K-02 is powered on for the first time, only certified electricians are allowed to perform quick setting. Incorrect settings may affect the normal BRE-B2-16K-01/BRE-B2-16K-02 operation and cause the BRE-B2-16K-01/BRE-B2-16K-02 to conflict with the country certification.
- When the BRE-B2-16K-01/BRE-B2-16K-02 is operating, do not disconnect under load.
- Do not touch an energized BRE-B2-16K-01/BRE-B2-16K-02 because the enclosure might become extremely hot.
- Follow local laws and regulations when operating the equipment.

Maintenance and Replacement



DANGER

High voltage may cause an electric shock, which results in serious injury, death, or serious property damage from the BRE-B2-16K-01/BRE-B2-16K-02 in operation. Prior to maintenance, power off the BRE-B2-16K-01/BRE-B2-16K-02 and strictly comply with the safety precautions in this document and associated documents to operate the BRE-B2-16K-01/BRE-B2-16K-02.

- Maintain the BRE-B2-16K-01/BRE-B2-16K-02 with sufficient knowledge of this document, proper tools, and testing equipment.
- Before performing maintenance tasks, power off the BRE-B2-16K-01/BRE-B2-16K-02 and wait at least 5 minutes.
- Temporary warning signs or fences must be placed to prevent unauthorized people from entering the site.
- If the BRE-B2-16K-01/BRE-B2-16K-02 is faulty, contact your supplier.

- The BRE-B2-16K-01/BRE-B2-16K-02 can be powered on only after all faults are rectified. Failing to do so may escalate faults or damage the device.
- Observe ESD precautions and wear ESD gloves during maintenance.
- Users are prohibited from disassembling the battery cover on their own, and internal maintenance can only be carried out by professional technicians such as after-sales personnel.

Regular Maintenance

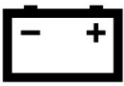
Items	Time
Cleaning case using soft cloth	Once 6 months
Cleaning ventilation hole using soft brush	Once a year
Charge/Discharge to SOC 50% when storage over 3month	On demand
Fully charge discharge to SOC 30%	Once a year

Disposal

The battery energy storage system must not be disposed of with domestic waste to fulfill the regulations and legal enquiry. The user has the responsibility and obligation to send it to the designated organization for recycling and disposal.

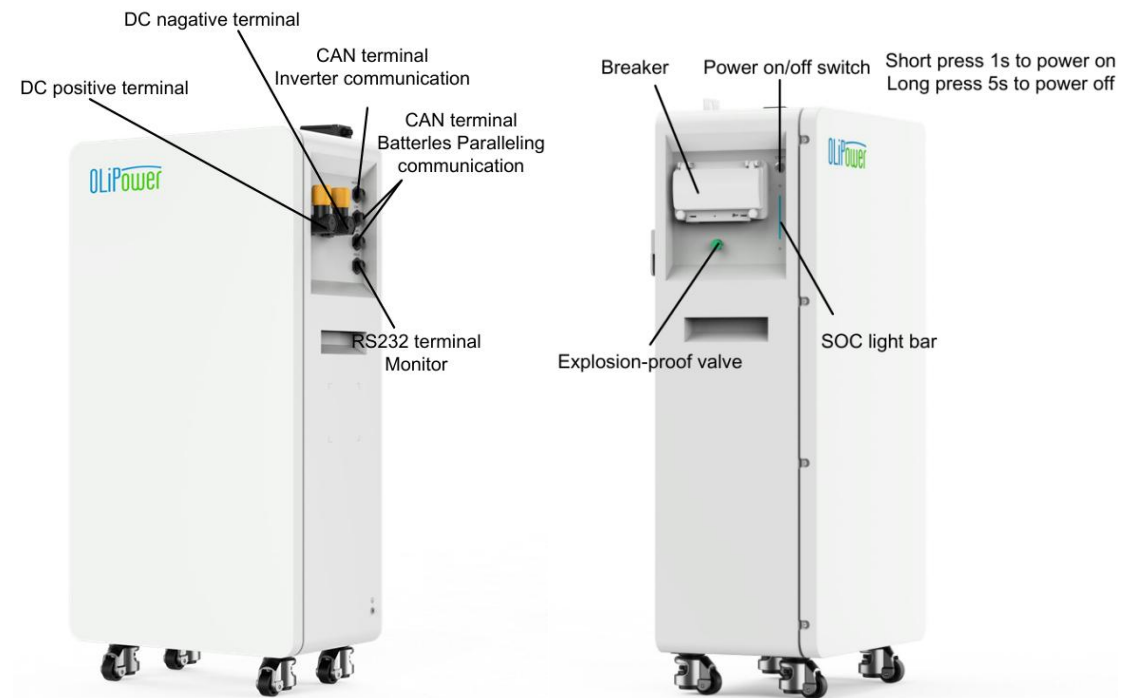
Label Description

	Class 9 dangerous goods refer to substances and items that pose a danger during transportation but do not meet the definitions of Class 1 to Class 8 dangerous goods, and have the characteristics of "diverse hazardous characteristics" and "requiring special control".
	Identification of waste lithium-ion batteries requires professional recycling and disposal
	It is prohibited to dispose of the item or packaging as ordinary garbage, and it must be recycled or disposed of according to specific environmental requirements.
	Items or packaging materials can be recycled for resource reuse and sustainable development

	Prohibition of illegal handling
	Smoking and the use of open flames are prohibited.
	Battery leakage may release electrolyte (such as acidic/alkaline liquids), which can irritate the skin or eyes and cause burns. Inhaling volatile gases may cause respiratory discomfort, and leaked liquids may corrode equipment, cause short circuits or fires.
	If dropped or crushed, the battery may explode and/or be severely damaged.
	The device or item contains a lithium battery inside, which poses a safety risk of fire or explosion due to overheating, short circuit, impact, etc. Attention should be paid to safe use
	Used to indicate operational guidelines, technical parameters, safety specifications, and other documents related to equipment, products, or systems
	Items need to be stored, used, or monitored within a specific temperature range.
	This item needs to be protected from rain
	Battery icon
	BRE-B2-16K-01/BRE-B2-16K-02 serial number (SN) label

2. Product Overview

Product Introduction



General Data

Model	BRE-B2-16K-01/BRE-B2-16K-02
Nominal Battery Voltage	51.2V
Battery Voltage Range	44.8-57.6V
Battery Capacity	314AH
Total Energy	16 kWh
Cell Type	LFP (LiFePO4)
Standard Charge/Discharge Current	157A/157A
Charge Temperature Range	0-50℃
Discharge Temperature Range	-20~50℃
Discharge of Depth (DoD)	95%
Module Parallel	Up to 15 packs
Mounting	Wall or Floor-mounted installation
Size (Width*Depth *Height)	480*289*960mm
Weight	120±1kg
Communication	CAN/ RS232

IP Grade	IP65
Certification Standard	CEC/ IEC61000/ IEC62619/ IEC62040/ UN38.3
Storage Temperature	-10~45°C

3. Storage

The following requirements should be met when the BRE-B2-16K-01/BRE-B2-16K-02 needs to be stored prior to installation:

- Do not unpack the BRE-B2-16K-01/BRE-B2-16K-02.
- Keep the storage temperature at -10°C to 50°C and the humidity at 5%–95% RH.
- The BRE-B2-16K-01/BRE-B2-16K-02 should be stored in a clean and dry place and be protected from dust and water vapor corrosion.
- Regular inspection is required during the storage. Replace the packing materials when necessary.
- After long-term storage, an inspection and test conducted by qualified persons are necessary before the BRE-B2-16K-01/BRE-B2-16K-02 is put into use.

4. System Installation

Checking Before Installation

Packing List

Before unpacking the BRE-B2-16K-01/BRE-B2-16K-02, check the packing list materials for damage, such as holes and cracks, and check the BRE-B2-16K-01/BRE-B2-16K-02 model. If any damage is found or the BRE-B2-16K-01/BRE-B2-16K-02 model is not what you requested, do not unpack the package and contact your supplier as soon as possible.

Accessories list

Please check if the accessory list is complete.

Serial Number	Accessory Name	Model	Consumption per Unit	Unit	Remarks	Image
1	Assembled Communication Harness 1	BRE-B2-16K-XS015-A01	1	Set	Assembled communication harness, with crystal connectors and waterproof connectors at both ends	
2	Terminal Post	EC-E08-001-02 (250A, Orange, Accessories)	1	Pcs	Plug	
3	Terminal Post	EC-E08-002-02 (250A, Black, Accessories)	1	Pcs	Plug	
5	Male Plug for Ethernet Straight Connector	M19-RJ45 Male Front Panel Mount Type 02	1	Pcs		

6	Category 5 Crystal Connector	Crystal Connector (8- core)	4	Pcs		
7	Network Cable	Cat5e 100Mbps Network Cable	3	M		
8	Hexagon Head Self-Tapping Expansion Triple Combination Screw	M8×60 / with 1050mm Plastic Expansion Tube / Carbon Steel / Environmentally Friendly Color Zinc Plated / 72H	1	Pcs		
9	Desiccant	200g/Bag / Mineral Type	1	Bag		
10	Wall Mount Bracket	BRE-B2-16K-A004-A01	1	Pcs	two more screws	
11	Wall Mount Accessory	BRE-B2-16K-A006-A01	2	Pcs		
12	Wall Mount Bracket A	BRE-B2-16K-A007-A01	1	Pcs		
13	Wall Mount Bracket B	BRE-B2-16K-A008-A01	1	Pcs		
15	Assembled Combiner Box Harness 1	BRE-B2-16K-XS017-A01	1	Set		
16	Assembled Combiner Box Harness 2	BRE-B2-16K-XS018-A01	1	Set		
17	Hexagon head internal expansion bolt	M8×80 / 304 Stainless Steel / Passivated as Original Finish / 72H Salt Spray Test / With Matching Stainless Steel Wall Anchors	5	Pcs		

18	Hexagon head flange screw with washer and serrations	M8×16 / 304 Stainless Steel / Passivated in Natural Finish / 72H Salt Spray Test / Head Thickness: 8mm	5	Pcs		
19	Socket Head Cap Screw Triple Combination Screw	M6×14 / 304 Stainless Steel / Natural Passivation / 72H	4	Pcs		



NOTICE

You are advised to remove the packing materials within 24 hours before installing the BRE-B2-16K-01/BRE-B2-16K-02.

Package Contents

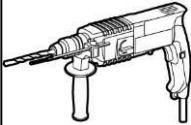
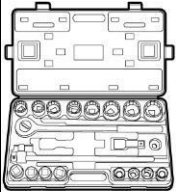
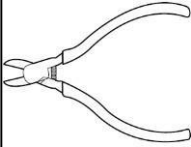
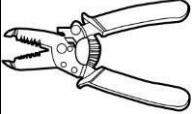
After unpacking the BRE-B2-16K-01/BRE-B2-16K-02, check that the contents are intact and complete. If any damage is found or any component is missing, contact your supplier.

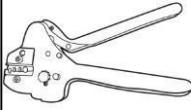
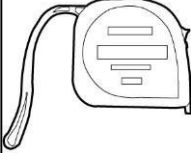
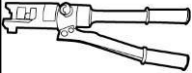
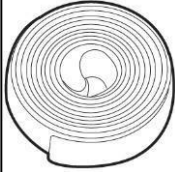
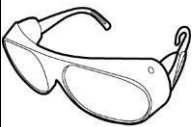


NOTE

For details about the number of contents, see the Packing List in the packing case.

Tools and Instruments

Category	Tools and Instruments		
Installation			
	Hammer drill (with a $\Phi 10$ mm drill bit)	Torque socket wrench (open end: 13 mm, applicable for M8 bolts; torque range: 0–15 N•m)	Torque wrench (open end: 13 mm; torque range: 0– 1.5N•m)
			
	Diagonal pliers	Wire stripper	Torque screwdriver (head: M4 or M6; torque range: 0–5 N•m)

		
Rubber mallet	Utility knife	Cable cutter
		
Crimping tool (model: H4TC0001; manufacturer: Amphenol)	Open-end wrench (model: H4TW0001; manufacturer: Amphenol)	Cable tie
		
Vacuum cleaner	Multimeter (DC voltage measurement range ≥ 600 V DC)	Marker
		
Measuring tape	Bubble or digital level	Hydraulic pliers
		N/A
Heat shrink tubing	Heat gun	N/A
		
Safety gloves	Safety goggles	Anti-dust respirator
	N/A	N/A
Safety shoes	N/A	N/A

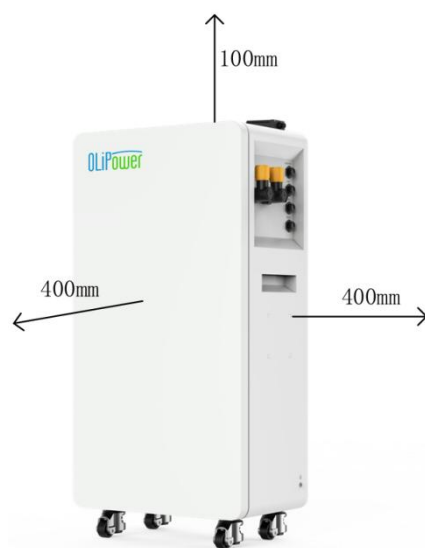
Determining the Installation Position

Basic Requirements

- The BRE-B2-16K-01/BRE-B2-16K-02 enclosure is IP65 and can be installed indoors or outdoors.
- Install the BRE-B2-16K-01/BRE-B2-16K-02 in a sheltered place or install an awning over the BRE-B2-16K-01/BRE-B2-16K-02, if install it outdoor.
- Do not install the BRE-B2-16K-01/BRE-B2-16K-02 in a place where a person can be easy to come into contact with its enclosure and heat sinks, because these parts are extremely hot during operation.
- Do not install the BRE-B2-16K-01/BRE-B2-16K-02 in areas with flammable or explosive materials.
- Do not install the BRE-B2-16K-01/BRE-B2-16K-02 at a place within children's reach.
- The BRE-B2-16K-01/BRE-B2-16K-02 will be corroded in salt areas, and the salt corrosion may cause fire. Do not install the BRE-B2-16K-01/BRE-B2-16K-02 outdoors in salt areas. A salt area refers to the region within 500 meters from the coast or prone to sea breeze. The regions prone to sea breeze vary depending on weather conditions (such as typhoons and monsoons) or terrains (such as dams and hills).

Installation Environment Requirements

- The BRE-B2-16K-01/BRE-B2-16K-02 must be installed in a well-ventilated environment to ensure good heat dissipation.
- To allow proper heat dissipation and installation, maintain appropriate clearances between the BRE-B2-16K-01/BRE-B2-16K-02 and other objects.
- The installation clearance can be referenced in the following diagram.



Mounting Structure Requirements

- The mounting structure where the BRE-B2-16K-01/BRE-B2-16K-02 is installed must be fireproof.
- Do not install the BRE-B2-16K-01/BRE-B2-16K-02 on flammable building materials.
- Ensure that the installation surface is solid enough to bear the weight load.

Installation Angle Requirements

The BRE-B2-16K-01/BRE-B2-16K-02 only can be floor-mounted. The installation angle requirements are as follows:

- Install the BRE-B2-16K-01/BRE-B2-16K-02 vertically.
- Do not install the BRE-B2-16K-01/BRE-B2-16K-02 at forward tilted, back tilted, side tilted, horizontal, or upside-down positions.

Installing the BRE-B2-16K-01/BRE-B2-16K-02

Procedure



DANGER

- To prevent device damage and personal injury, keep balance when moving the BRE-B2-16K-01/BRE-B2-16K-02.
- Do not use the wiring terminals and ports at the bottom to support any weight of the BRE-B2-16K-01/BRE-B2-16K-02.
- When you need to temporally place the BRE-B2-16K-01/BRE-B2-16K-02 on the ground, use foam, paper or other protection material to prevent damage to its cover.

Method 1 (Wall-mounted floor-standing fixed):

Step 1: Make sure the battery box is firmly fixed to the ground. The battery can be fixed by rotating the universal wheel of the battery. Use the supplied M6×14 screws to secure the wall-mounted part ③ to the back of the battery pack.

Mounting battery box



Step 2 Install expansion bolts. (Arrow position)



Method 2(Wall-Mounted):

Step 1: Secure bracket ① to the back of the battery pack using the matching M8x16 screws. Use expansion bolts to secure bracket ② to the wall. Use the supplied M6x14 screws to secure the wall-mounted part ③ to the back of the battery pack.



Step2: Hang the battery on the wall bracket as shown in the picture



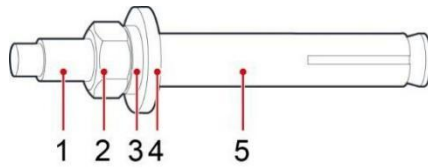
DANGER

Avoid drilling holes in the utility pipes and/or cables attached to back of the wall.



NOTE

Expansion bolt composition



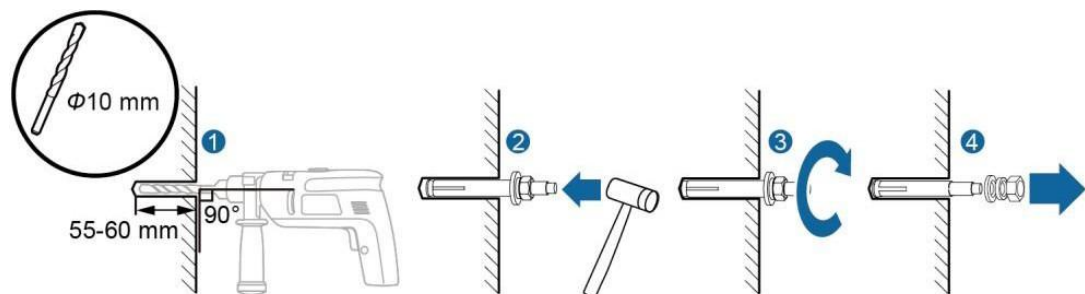
(1) Bolt (2) Nut (3) Spring washer (4) Flat washer (5) Expansion sleeve



NOTICE

- To prevent dust inhalation or contact with eyes, wear safety goggles and an anti-dust respirator when drilling holes.
- Clean up any dust in and around the holes using a vacuum cleaner and measure the distance between holes. If the holes are inaccurately positioned, drill new set of the holes.
- Level the head of the expansion sleeve with the concrete wall after removing the bolt, spring washer, and flat washer. Otherwise, the mounting bracket will not be securely installed on the concrete wall.

Installing an expansion bolt



IS05H00021

5. Electrical Connections

Precautions



DANGER

Before connecting cables, ensure all the switches connecting to the BRE-B2-16K-01/BRE-B2-16K-02 are OFF. Otherwise, the high voltage of the BRE-B2-16K-01/BRE-B2-16K-02 may result in electric shocks.



DANGER

- The equipment damage caused by incorrect cable connections is beyond the warranty scope.
- Only certified electricians are allowed to connect cables.
- Operation personnel must wear proper PPE all the time when connecting cables.

 NOTE

The cable colors shown in the electrical connection diagrams provided in this chapter are for reference only. Select cables in accordance with local cable specifications (green-and-yellow cables are only used for PE).

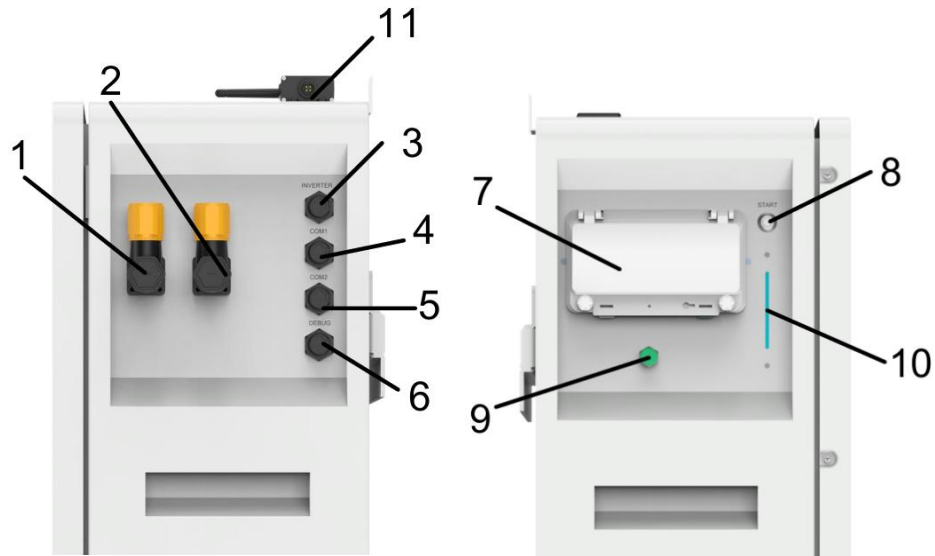
Battery interface instruction



DANGER

- All connections must meet the requirements of relevant national standards, and strictly prevent various forms of arc discharge.
- It is strictly forbidden to have any form of short circuit in the process of connection.
- Operators are strictly forbidden to operate without wearing protective equipment.
- All connections must be carried out under clear guidance, and any form of conjecture or vague attempt is not allowed.
- The key points of connection is that ensure correct and reliable connection (not loosening), good contact (no contact resistance), no short circuit.
- After the wiring harnesses are connected, they must be measured and confirmed point by point.
- All connection points must ensure no contact with the external box or other parts, no short circuit.
- If there are other uncertain factors, please consult professionals before implementation.

Battery side view



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No	Item	Logo	Definition	Note
1	Battery power output terminal	+	Positive	1000V125A
2		-	negative	1000V125A
3	RJ45 waterproof connector	COM1	Battery parallel wake-up communication	With battery
4	RJ45 waterproof connector	COM2	Battery parallel wake-up communication	With battery
5	RJ45 waterproof connector	PCS	Communication interaction	With PCS
6	RJ45 waterproof connector	DEBUG	Debug and WIFI	With the upper computer
7	Breaker	/	Control the on/off of the main circuit	125A-4P
8	Wake-up button	START	For waking/sleeping battery packs	
9	Explosion-proof valve	/	Release internal pressure and energy during an accident	
10	SOC light bar		Display battery level status	
11	WIFI module		Upload data to the cloud platform	

Installing the Power Cables

NOTE

Power cables connect

The red power cable, one side connect to positive terminal of Battery, the other sides connect to the positive terminal of Inverter.

The black power cable, one side connect to negative terminal of Battery, the other sides connect to the negative terminal of Inverter.

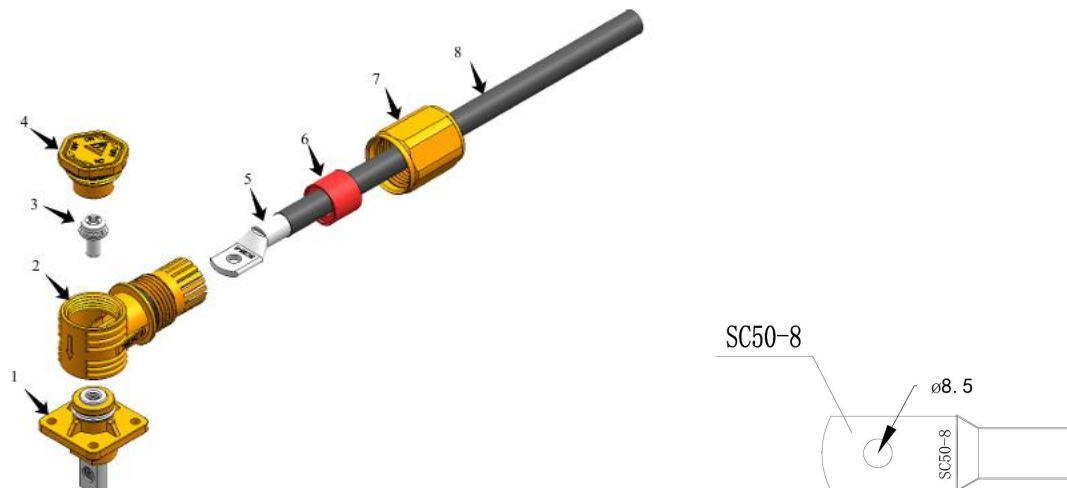


DANGER

Before connecting, please confirm that the circuit breaker is disconnected and check it is correct after connecting.

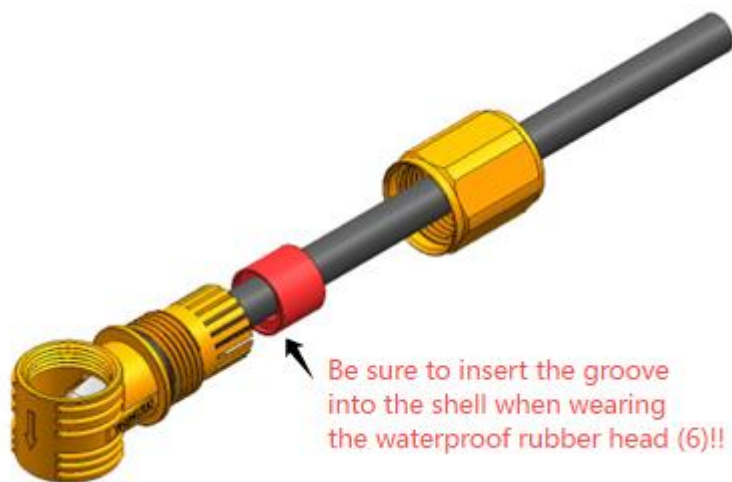
NOTE

Power terminal connect to Battery

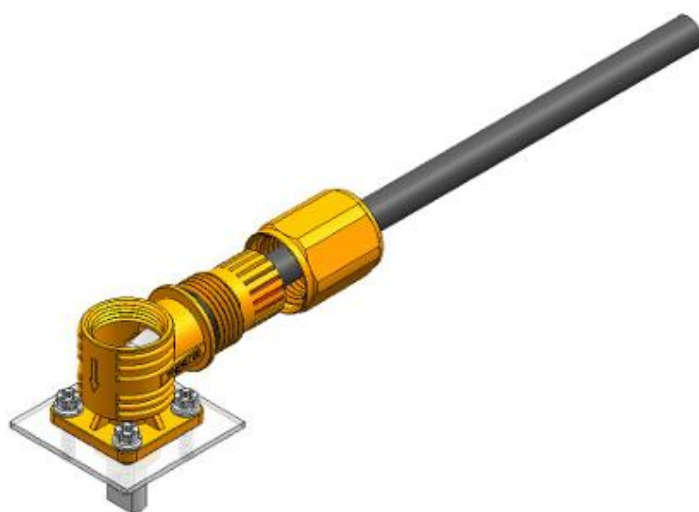


1. Connector 2. Shell 3. Cross three combination screw 4. Waterproof plug
5. OT terminal 6. Waterproof adhesive head 7. Waterproof sleeve 8. Cable

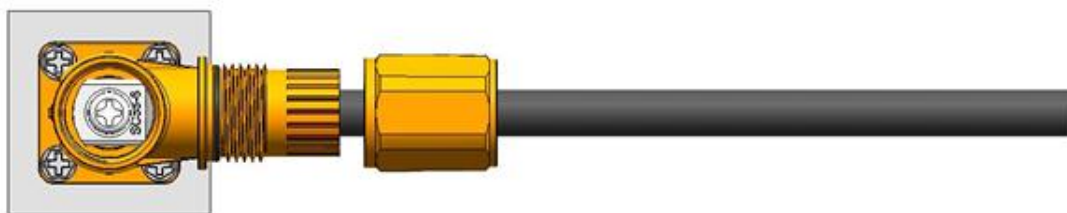
① Peel 16mm off the outer layer of wire (8), press it into the copper nose (5) end, and then sequentially thread it into the waterproof sleeve (7), waterproof rubber head (6) Bend energy storage connector housing (2).



② Insert the pre worn connector(2) into the shell (1)



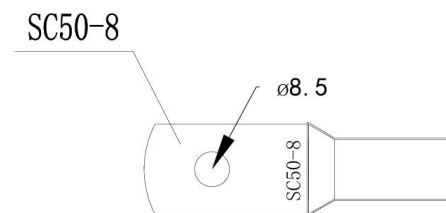
③ Lock the copper nose with a cross three combination screw (3)



④ Finally, tighten the waterproof plug (4) and waterproof sleeve (7)



OT terminal connect to Inverter



Installing the Inverter Communication Cable

NOTE

Inverter communication

One side aviation connector connect to the COM1 terminal of battery, other side RJ45 connects to the Inverter

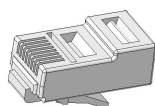


DANGER

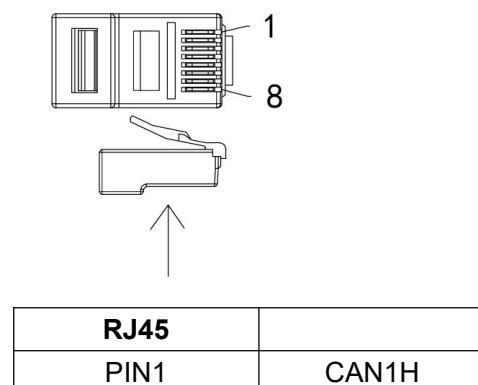
Before connecting, please confirm that the circuit breaker is disconnected and check it is correct after connecting.

NOTE

RJ45 connect to the COM1 of Battery.

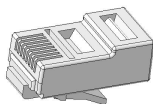


RJ45 pin definition

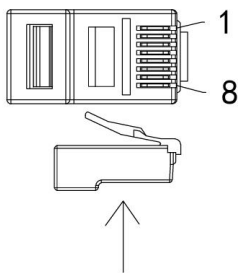


PIN2	CAN1L
PIN3	
PIN4	
PIN5	
PIN6	
PIN7	WIN+
PIN8	WIN-

RJ45 connect to the COM2 of Battery.

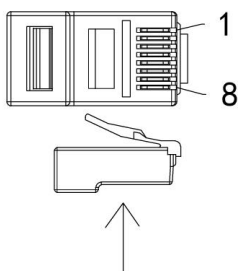


RJ45 pin definition



RJ45	
PIN1	CAN1H
PIN2	CAN1L
PIN3	
PIN4	
PIN5	
PIN6	
PIN7	WDO+
PIN8	WDO-

RJ45 connects to the Inverter



RJ45 pin definition

RJ45	
PIN1	
PIN2	
PIN3	
PIN4	CAN-H
PIN5	CAN-L
PIN6	
PIN7	RS485A
PIN8	RS485B

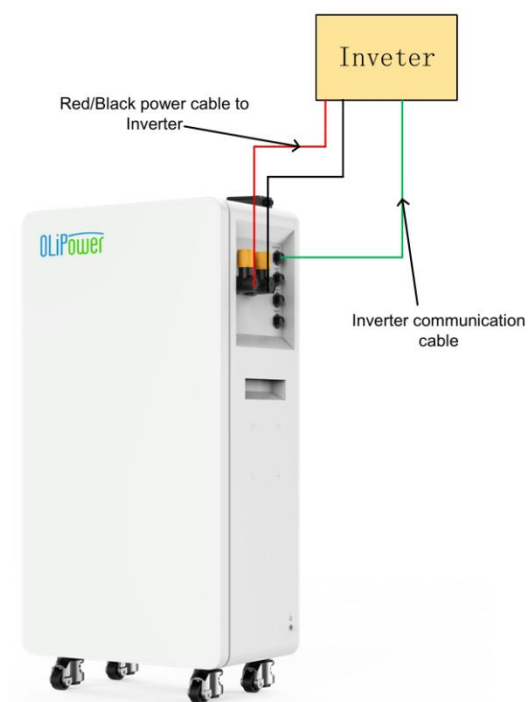
Single Battery connection diagram



DANGER

Before connecting, please confirm that the circuit breaker is disconnected and check it is correct after connecting.

The installation is shown below.



Parallel installation of batteries



DANGER

- Before connecting, please confirm that the circuit breaker is disconnected and check it is correct after connecting.
- Please use Combiner for parallel application, and the combiner is not in BRE-B2-16K-01/BRE-B2-16K-02 packing list.
- Operations must be carried out according to regulations or installed by professional personnel



NOTE

Parallel communication cable installation

RJ45 connect to the COM2 of first battery, other side RJ45 connect to the COM1 of second battery.

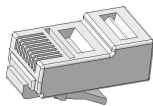
The COM2 of second battery to COM1 of third battery.



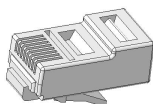
NOTE

Parallel communication cable

RJ45 connect to the COM2



RJ45 connect to the COM1 of Battery



NOTE

Inverter communication

The Inverter of the first battery connect to Inverter.

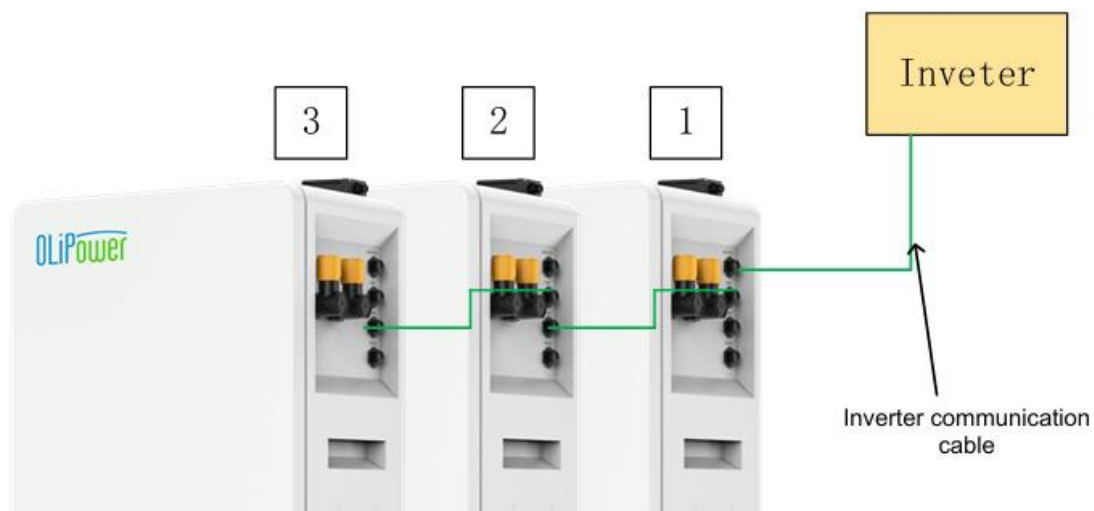
RJ45 connect to the COM1 of battery, other side RJ45 connect to the Inverter



NOTICE

Please check the communication cables are correct after connecting.

The connection diagram is as follows:



Parallel power cable installation



DANGER

• Before connecting, please confirm that the circuit breaker is disconnected and check it is correct after connecting.



NOTE

Battery power to Combiner

The red power cable for battery connect to positive terminal of Combiner

The black power cable for battery connect to negative terminal of Combiner



NOTE

Combiner power to Inverter

- Recommend the power cable diameter 95mm^2 for Combiner connect to Inverter.
- This power cables diameter 95mm^2 are not in accessory of BRE-B2-16K-01/BRE-B2-16K-02 or Combiner



NOTE

Recommend the PE cable diameter 6mm^2 for Combiner



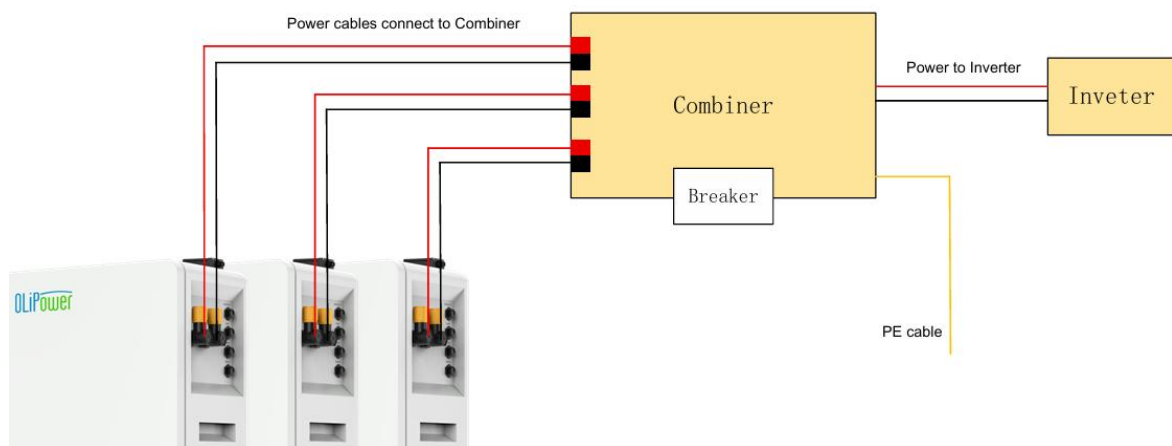
DANGER

- If the cables are not properly connected and locked, it will cause danger.
- Note: Maximum output current limit after parallel connection: 350A.

- Suggest installing a circuit breaker inside the combiner box, with a current of at least 400A.
- Before manually opening the Breaker (please check the electrical condition of the system before opening the circuit breaker, identify safety hazards, and open the switch only after confirming safety)

Operations must be carried out according to regulations or installed by professional personnel.

The power cables connect as below



Combiner introduction



NOTICE

- In Parallel application, the maximum power of the Inverter shall not exceed 20kw.
- The power cables from the Combiner to the inverter are not included in the accessory list.



NOTICE

- All connections must meet the requirements of relevant national standards, and strictly prevent various forms of arc discharge.
- It is strictly forbidden to have any form of short circuit in the process of connection.
- Operators are strictly forbidden to operate without wearing protective equipment.
- All connections must be carried out under clear guidance, and any form of conjecture or vague attempt is not allowed.
- The key points of connection is that ensure correct and reliable connection (not loosening), good contact (no contact resistance), no short circuit.
- After the wiring harnesses are connected, they must be measured and confirmed point by point.

- All connection points must ensure no contact with the external box or other parts, no short circuit.
- If there are other uncertain factors, please consult professionals before implementation.

Prerequisites



DANGER

- BRE-B2-16K-01/BRE-B2-16K-02 doesn't contain an integrated overcurrent and isolation device that operates all live conductors (positive and negative conductors).
- For Australian market an overcurrent protection and isolation device is required between the battery system and inverter. The recommend rating is 400A for overcurrent protection device.
- Before connecting the DC input power cable, ensure that the battery is power off.
- When the BRE-B2-16K-01/BRE-B2-16K-02 is operating, it is not allowed to work on DC circuit. Failing to do so may cause electric shocks.
- If no inverter connects to the DC input terminals, do not remove the watertight cap from the DC input terminals. Otherwise, the BRE-B2-16K-01/BRE-B2-16K-02 will not comply with its Ingress Protection Rating.



DANGER

- Ensure that the following conditions are met. Otherwise, the BRE-B2-16K-01/BRE-B2-16K-02 will be damaged, or even become a fire hazard.
- If polarity of the DC input power cable is reversed and the external DC isolating device is ON, do not turn off the external DC isolating device immediately or unplug positive and negative connectors.

Connect the PE cable

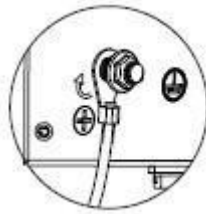


NOTICE

Ensure that the PE cable is connected securely.

The grounding position of the battery is indicated by the arrow in the following figure.

Please use the matching screws to secure it. Specification :M6*18 Cup head hexagonal three combination screw. Minimum torque requirement is 3.5 N.m.



6. System Commissioning

Checking Before Power-On

No.	Check Item	Acceptance Criteria
1	BRE-B2-16K-01/BRE-B2-16K-02 installation	The BRE-B2-16K-01/BRE-B2-16K-02 is installed correctly, securely, and reliably.
3	Cable layout	Cables are routed properly as required by the customer.
4	Cable tie	Cable ties are secured evenly, and no burr exists.
5	Grounding	The ground cable is connected correctly, securely, and reliably.
6	DC power OFF	The DC power button is switched OFF.
7	Cable connections	PE cable, CAN communication cable and DC power cables are connected correctly, securely, and reliably.
8	Unused terminals and ports	Unused terminals and ports are locked by watertight caps.

9	Installation environment	The installation space is proper, and the installation environment is clean and tidy, without foreign matter.
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Powering on the System

Power on standalone machine

- Turn on the circuit breaker at the inverter end (refer to the inverter user manual)
- Turn on the battery circuit breaker switch
- Press and hold the start-stop button for more than 1 second until the start-stop button light flashes, indicating that the device is entering self-check mode. Observe that the battery button light remains constantly on and the light bar displays no alarms, indicating that the battery is operating normally
- Observe the status of the LED indicator to confirm whether it is operating normally

Parallel startup

- Ensure that the electrical installation of the parallel-connected batteries is correct and error-free.
- Turn on the circuit breaker switches for all parallel-connected batteries
- Press and hold the start-stop button of the parallel battery host for more than 1 second, and the green light of the battery start-stop button will flash. The parallel battery host will automatically wake up the parallel battery slaves one by one,
- Upon startup, all lights will turn blue for 500ms. If there is no fault, the current SOC will be displayed normally. If there is a fault, the corresponding fault light will turn red.



Powering Off the System

Single machine shutdown

After confirming that it is safe to shut down, follow the steps below to perform the shutdown operation:

- Disconnect the circuit breaker at the inverter end
- Disconnect the battery circuit breaker switch to OFF
- Press and hold the start-stop button for 5 seconds until the green light on the battery start-stop button goes out.

And shut down the machine

- Turn off the inverter (see the inverter user manual).
- To shut down all batteries, press the start-stop button for each battery until the indicator light goes off. Alternatively, press the start-stop button for the parallel battery host, and the parallel battery slave will automatically enter sleep mode after 10 minutes.
- Turn all battery circuit breaker switches to OFF

Context



DANGER

After the BRE-B2-16K-01/BRE-B2-16K-02 powers off, the remaining electricity and heat may still cause electric shocks and body burns. Therefore, put on protective gloves and begin servicing the BRE-B2-16K-01/BRE-B2-16K-02 5 minutes after the power-off.



NOTICE

System charging request current strategy

Battery in parallel	Current limit
Single battery	200A
Two batteries	300A
Three batteries	350A
Four batteries	350A

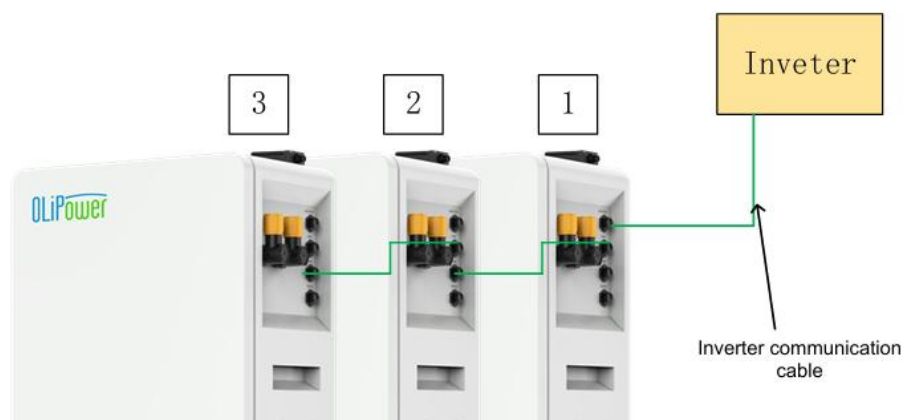
Five ~ Fifteen batteries	350A
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The maximum current of a single battery system is 200A

The maximum current of the two battery system is 300A

The maximum current for a system with three or more batteries is 350A

Automatically identify the number of batteries in the battery system through Battery 1, and send the limited current corresponding to the number of batteries to the inverter through communication for execution.



DANGER

Please use a Combiner for battery in parallel, the Max. output current is 350A.

Inverter matching



NOTICE

- The communication between BMS and inverter currently supports DEYE inverter by default.
- When using other inverters, it is necessary to set the communication protocol of BMS, otherwise BRE-B2-16K-01/BRE-B2-16K-02 may not work properly.
- Battery monitoring is achieved via the inverter only.

• The light bar display logic

Power-on Display

The LED board LED1-LED5 displays blue for 7 seconds

Light	Status	Power-on
LED1		Blue
LED2		Blue
LED3		Blue

LED4	Blue
LED5	Blue

SOC Display

SOC Light	98%~100%	80%~98%	60%~80%	40%~60%	20%~40%	0%~20%
LED1	Green					
LED2	Green	Green				
LED3	Green	Green	Green			
LED4	Green	Green	Green	Green		
LED5	Green	Green	Green	Green	Green	Yellow

Alarm Display

Please search based on the alarm number and the displayed LED effect in the chart

- ① MOS transistor malfunction;
- ② Charge discharge overcurrent;
- ③ Charge discharge high temperature
- ④ Low temperature charging and discharging
- ⑤ Individual undervoltage/Total undervoltage
- ⑥ Individual overvoltage/Total overvoltage
- ⑦ The battery serves as a slave and is controlled to be in a cut-off state
- ⑧ Internal fault

NO Light	①	②	③	④	⑤	⑥	⑦	⑧
LED1								
LED2	Red	Red				Red		
LED3	Red	Red		Red				Red
LED4	Red		Red				Red	Red
LED5	Red				Red		Red	Red

Firmware Update

When the firmware is updated, the light displays the status. Battery firmware upgrade

Status Light	Firmware Update
LED1	
LED2	Blue
LED3	
LED4	

7. Fault Handling



Caution!

Please do not disassemble machine components during self-inspection.

Fault list

Name of protection	Level of protection	Parameter of protection	Parameter of recovery	Action of protection
Cell voltage over-voltage	Level 1	Maximum cell voltage $\geq 3.570V$ 2s	Maximum cell voltage $< 3.450V$, 60s	1. Request charging current = 0 2. In low voltage battery mode, charging MOS is disconnected
	Level 2	Maximum Cell voltage $\geq 3.620V$ 1s	Maximum Cell voltage $< 3.40V$, 2s	1. Request charging current = 0 2. In low voltage battery mode, charge MOS disconnected
	Level 3	Maximum Cell voltage $\geq 3.700V$ 2s	Trigger for the first time, check the maximum voltage of the unit again 4 hours later. If the maximum voltage of the unit is less than 3.4V (with a new time of 2 seconds), clear level 2 (the customer mentioned clearing level 2, which may be because the 3.4V and level 2 here are the same) and level 3 alarms. Single unit overvoltage level 3 alarm overvoltage frequency processing:	1. Request charging current = 0, Request discharging current = 0 2. In low voltage battery mode, charge MOS disconnected, discharge MOS disconnected

			When a level 3 overvoltage occurs, record the first time and start counting from the recovery of this overvoltage. If no overvoltage occurs again within 30 days, clear the overvoltage count. If a level 3 overvoltage occurs within 30 days, record the second occurrence. Starting from the current overvoltage recovery, if no overvoltage occurs again within 30 days, clear the overvoltage frequency. If a level 3 overvoltage occurs within 30 days, record the third occurrence and do not restore, and the system will be locked. (Restarting the battery can restore)	
Cell voltage under-voltage	Level 1	Minimum cell voltage $\leq$ 2.80V 3s	Minimum cell voltage $>$ 2.90V, 3s	1. Request discharge current = 0
	Level 2	Minimum cell voltage $\leq$ 2.70V 3s	Minimum cell voltage $>$ 2.80V , 3s	1. Request discharge current = 0
	Level 3	Minimum cell voltage $\leq$ 2.50V 3s	Minimum cell voltage $>$ 2.60V, 3s	1. Request discharge current = 0 2. In low voltage battery mode, charge MOS is disconnected and discharge MOS is disconnected 3. When entering sleep mode, the upper computer will not display "1" or "2".
Battery voltage under-voltage	Level 1	Battery voltage $\leq$ 45.3V(2.80V * Cell quantity +0.5V), s	Battery voltage $>$ 46.9V (2.90V * Cell quantity 0.5V) 3s	1. Request discharge current = 0
	Level 2	Battery voltage $\leq$ 42.9V(2.65V * Cell quantity +0.5V) 3s	Battery voltage $>$ 44.5V (2.75V * Cell quantity 0.5V) 3s	1. Request discharge current = 0
	Level 3	Battery voltage $\leq$	Battery voltage $>$ 42.1V	1. Request discharge current = 0

		40.5V(2.50V * Cell quantity +0.5V) 3s	(2.60V * Cell quantity 0.5V) 3s	2. In low voltage battery mode, charge MOS is disconnected and discharge MOS is disconnected 3. When entering sleep mode, the upper computer will not display "1" or "2".
	Level 4	<32V, 3s		1. Within 6min of charging and discharging MOS connect, trigger this alarm and battery discharge current greater than 2A for 2S, immediate hibernation. 2. 6min after power-on, trigger this alarm, immediate hibernation.
Battery voltage over-voltage	Level 1	Battery voltage >= 3.57V * Cell quantity +0.5V 3s	Battery voltage < 3.55V * Cell quantity +0.5V, 60s	1. Request charging current = 0 2. In low voltage battery mode, charging MOS is disconnected
	Level 2	Battery voltage >= 3.62V * Cell quantity +0.5V 3s	Battery voltage < 3.60V * Cell quantity +0.5V, 3s	1. Request charging current = 0 2. In low voltage battery mode, charge MOS disconnected
	Level 3	Battery voltage >= 3.70V * Cell quantity +0.5V 3s	Battery voltage < 3.65V * Cell quantity +0.5V, 3s	1. Request charging current = 0 2. In low voltage battery mode, charge MOS disconnected, discharge MOS disconnected
High temperature alarm during Charging	Level 1	Charging state Maximum battery temperature >= 55°C 5s	Maximum battery temperature <= 52°C 5s	1. Request charging current = 0
	Level 2	Charging state Maximum battery temperature >= 60°C 5s	Maximum battery temperature <= 57°C 5s	1. Request charging current = 0 2. In low voltage battery mode, charge MOS is disconnected and discharge MOS is disconnected
Low temperature alarm during Charging	Level 1	Charging state Minimum battery temperature <= -3°C 5s	Minimum battery temperature >= 0°C 5s	1. Request charging current = 0
	Level 2	Charging state Minimum battery temperature <= -4°C 5s	Minimum battery temperature >= 0°C 5s	1. Request charging current = 0 2. In low voltage battery mode, charge MOS is disconnected and discharge MOS is disconnected
High temperature	Level 1	Discharged or	Maximum battery temperature <= 52°C 5s	1. Request discharge current = 0

ure alarm during Discharging		Idle Maximum battery temperature $\geq 55^{\circ}\text{C}$ 5s		
	Level 2	Discharged or Idle Maximum battery temperature $\geq 60^{\circ}\text{C}$ 5s	Maximum battery temperature $\leq 57^{\circ}\text{C}$ 5s	1. Request discharge current = 0 2. In low voltage battery mode, charge MOS disconnected, discharge MOS disconnected
Low temperature alarm during Discharging	Level 1	Discharged or Idle Minimum battery temperature $\leq -18^{\circ}\text{C}$ 5s	Minimum battery temperature $\geq -17^{\circ}\text{C}$ 5s	1. Request discharge current = 0
	Level 2	Discharged or Idle Minimum battery temperature $\leq -20^{\circ}\text{C}$ 5s	Minimum battery temperature $\geq -18^{\circ}\text{C}$ 5s	1. Request discharge current = 0 2. In low voltage battery mode, charge MOS disconnected, discharge MOS disconnected
Charging overcurrent alarm, in low voltage battery mode	current limit	$\geq 200\text{A} \times 1.05$, 3s	$< 100\text{A} \times 1.0$, 3s	1. Request charge current = 0
	Level 1	$\geq 200\text{A} \times 1.1$, 10s	Automatically recovered after three minutes, allowed four times, no more automatic recovery after four times. After recovery, discharging will reset the number of times to zero.	1. Request charge current = 0 2. In low voltage battery mode, charging MOS is disconnected and discharging MOS is disconnected
	Level 2	$\geq 200\text{A} \times 1.2$, 5s		
	Level 3	$\geq 200\text{A} \times 1.25$, 2s		
Discharge overcurrent alarm, in low voltage battery mode	current limit	$\geq 200\text{A} \times 1.05$, 3s	$< 100\text{A} \times 1.0$, 3s	1. Request discharge current = 0
	Level 1	$\geq 200\text{A} \times 1.1$, 10s	Automatically recovered after three minutes, allowed four times, no more automatic recovery after four times. After recovery, charging will reset the number of times to zero.	1. Request discharge current = 0 2. In low voltage battery mode, charging MOS is disconnected and discharging MOS is disconnected
	Level 2	$\geq 200\text{A} \times 1.2$, 5s		
	Level 3	$\geq 200\text{A} \times 1.25$, 2s		
PCB over Temperature Alarm		PCB temperature $\geq 90^{\circ}\text{C}$ 5s	PCB temperature $\leq 80^{\circ}\text{C}$ 5s	1. Request discharge current = 0 2. Request charging current = 0 3. In low voltage battery mode, charge MOS disconnected, discharge MOS disconnected
Low-capacity alarms		SOC $\leq 2.8\%$, 10s	SOC $> 4\%$, 10s	

8. Handling the BRE-B2-16K-01/BRE-B2-16K-02

Packaging

- Packaging scheme: One 16kWh rechargeable li-ion battery system product and one maintenance control box are placed in one box. The whole system is packaged to ensure that the product is free from any harmful gases, chemical pollution, static electricity, moisture and mechanical damage during handling, transportation and storage. The outer packing of the product uses corrugated carton and the inner part uses Cellular card pin as cushioning protection, which can reduce the vibration during transportation, etc.
- Label on package: According to the standard requirements of GB/T 191-2008 packaging labeling, the signs on the outer packing box includes “Handle with Care”, “Up”, “Rain Proof”, “Sunscreen”, “Center of gravity”, “Stack Limit”, “No Turning Over” and “Class 9 Dangerous Goods”.
- Information on the package includes: name, model, date of production, quantity, address, zip code, executive standard number, net weight and gross weight.
- Accompanying documents in the packing box include: packing list, product qualification certificate, product user manual and factory inspection report.

Transportation

- The product is packed in a box and then transported. During the transportation, the charge state of the battery is 30%~50% or meets the specified requirements.
- Avoid violent vibration, impact, extrusion and mechanical impact during transportation, prevent direct attack of sunshine, rain and snow, and do not invert.
- In the process of loading and unloading, loading and unloading in a civilized manner, lifting and releasing gently, strictly prevent throwing, tumbling and pressure.

Storage

- The charge state of the product should be no less than 30%, the storage environment temperature is -10~45℃ and the relative humidity is 5%~95%.
- Do not store the product upside down, and avoid mechanical impact and pressure.
- The product should not be exposed to direct sunlight, avoid contact with corrosive media and keep away from fire and heat sources during storage. The system should be stored in a dry warehouse and not exposed to sunshine or rain. Harmful gases, inflammable and explosive products and corrosive chemicals are not allowed in the warehouse. Avoid mechanical impact, heavy pressure and strong magnetic field effects, as well as direct sunlight. The distance from the heat source shall be no less than 2m. The packing box shall be at least 20cm above the ground and at least 50cm from the window.
- Under these conditions, the products with a storage period of more than 3 months shall be subjected to a supplementary power supply; the products with a storage period of more than 6 months shall be subjected to full-charge and full-discharge test; the products with a storage period of more than 1 year shall be notified to the manufacturer for re-inspection before use.

Safety precautions

The installation and maintenance of battery system must be operated by professional technicians. The use of battery system must strictly abide by relevant safety regulations. Non-professional and improper operation may cause serious consequences such as electric shock, combustion and explosion. It is strictly forbidden for non-professionals to install, repair the battery system and abuse beyond the scope.

Moisture-proof and water-proof

The battery system is an energy storage device, including many control circuits and single cells. Liquid entering the battery system may lead to short circuit, leakage, and corrosion of single cells, electronic circuits and connectors. Therefore, it is necessary to ensure that the battery system will not be immersed in various liquids and moist air will not enter the battery system.

Environmental insulation

The battery system must work within the optimal operating temperature range, which can greatly extend the service life of the battery and improve the safety performance of the battery. The temperature limit should fully meet the various definitions in the specification. The space where the battery system is installed shall be kept ventilated and insulated and shall not be exposed to direct sunlight.

Insulation

All power supply connections in the battery system must ensure that there are adequate insulation protection measures to ensure that the positive and negative poles of the battery will not contact the outer box under any circumstances, resulting in power leakage and short circuit. It is absolutely necessary to ensure that the positive and negative poles of the battery system will not be short-circuit directly at any time, otherwise major safety and electric shock accidents may occur.

Unimpeded air channel

In the process of high current charging and discharging, the battery will generate certain heat. Therefore, in the process of installation of the battery pack, it is necessary to fully consider the unimpeded intake and outlet of the battery pack meets the design requirements, so as to ensure the heat dissipation effect of the battery pack. Otherwise, it may seriously damage the performance of the battery, cause the battery not to work, and even cause the thermal runaway accident of the battery.

Accident disposal

The battery system should take correct and effective measures to deal with the abnormalities and accidents in time to avoid further damage and loss:

Overheating

Normally, when the battery is overheating, the cooling system will automatically dissipate heat, so that the temperature of the battery system can cool down to the optimum operating temperature range. When the temperature of the battery system exceeds the safe use limit, the management system will give a warning and needs to stop using immediately. In this case, the use of batteries should be stopped immediately and relevant technical personnel should be notified for a comprehensive inspection.

Electric leakage

In the process of using, if electric leakage is found in the battery system, you must immediately evacuate the personnel, and notify the relevant technical personnel to deal with the scene. It is strictly prohibited to operate while the battery has problems or continue to be used by force.

Over-discharge

When the battery system runs out of power and the total voltage or single voltage is too low, the management system will give a warning. At this time, the discharge of the battery should be stopped immediately and the battery should be charged. At this time, it is strictly prohibited to continue discharging the battery by force, otherwise it will damage the battery performance and may lead to permanent damage of the battery in serious cases, so it cannot be used any more.

Short circuit

When a short circuit occurs in the battery system, the personnel must be evacuated immediately, the relevant power supply and electrical equipment should be cut off (if possible), the connection between the battery and the system should be disconnected immediately, and the relevant technical personnel should be notified to repair and troubleshoot on the spot. Shortened battery system must be fully tested by the manufacturer before deciding whether it can continue to be used after partial maintenance.

Combustion

In case of a combustion accident in the battery system, the personnel must be evacuated immediately, and a security cordon must be set up. Irrelevant personnel shall not be allowed to approach the battery system (because there may be an explosion danger). Special fire extinguishers should be used to extinguish the fire by professionals. After the fire extinguishing is completed, the personnel wearing the necessary protective equipment shall first cut off the power supply connection harness, and the battery system shall apply resistance to fully discharge (voltage to zero volts) before removing the battery pack for subsequent operation analysis.

Collisions of battery system

When the battery system is impacted, deformed or punctured by foreign bodies, disconnect the power connection of the battery immediately and inform the professionals to deal with it on the spot. If it is necessary to remove the battery, the battery should be fully discharged by the personnel wearing necessary protective equipment before disassembly.

Insulation

All power supply connections in the battery system must ensure that there are adequate insulation protection measures to ensure that the positive and negative poles

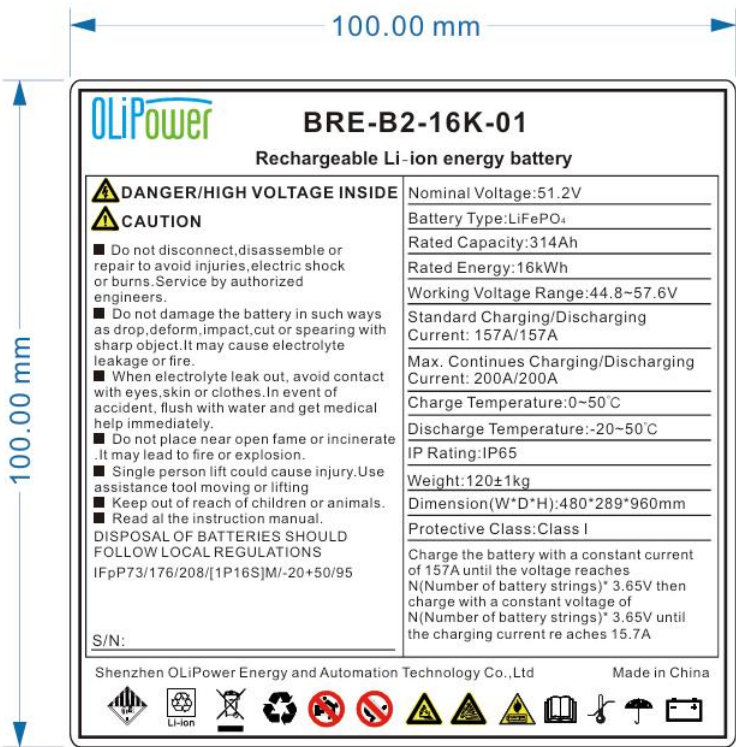
of the battery will not contact the outer box under any circumstances, resulting in power leakage and short circuit. It is absolutely necessary to ensure that the positive and negative poles of the battery system will not be short-circuit directly at any time, otherwise major safety and electric shock accidents may occur.

Other accidents

When the rechargeable li-ion battery system needs to be repaired or removed due to other accidents, the battery cable should be disconnected first to ensure that the personnel do not get electric shock. In the case that the battery will not be short-circuited, remove the battery pack to ensure that the battery pack will not be damaged in collision, fall, inversion and other circumstances. If this happens, please refer to the above provisions for handling.

9. Appendix

Nameplate



BRE-B2-16K-01 Nameplate



BRE-B2-16K-02 Nameplate