SOLINTEG
INTEGRATE SOLAR INTELLIGENTLY

INTEG E STORAGE RACK

Air-cooling Energy Storage Rack

E2BR-S64/80/96/112K-R

User Manual

ENGLISH VERSION


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Declaration

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Scope of Application

This manual mainly introduces the safety instructions, product introduction, transport, storage, installation, electrical connection, operation, maintenance and troubleshooting of Solinteg air-cooling energy storage rack series (hereinafter referred to as "energy storage rack"). Please read this manual carefully before installing the equipment.
This document applies to the following models: E2BR-S64K-R, E2BR-S80K-R, E2BR-S96K-R, E2BR-S112K-R.

Model	E2BR-S64K-R	E2BR-S80K-R	E2BR-S96K-R	E2BR-S112K-R
System energy（kWh）	64.3	80.3	96.4	112.5
System usable energy（kWh）	57.87	72.27	86.76	101.25
Ingress protection	IP20			
Dimensions(W×H×D mm)	1034*1245*827			
Weight(kg)	605	717	830	942

Target Group

This instruction manual is intended for specialised technicians who install, operate and maintain energy storage rack. The following qualifications are required for the operator:

① Some knowledge of electrical and cabling as well as mechanical knowledge and familiarity with energy storage systems and their operating principles.

② Specialised training in the installation and commissioning of electrical equipment.

③ Be familiar with local national/local electrical standards and regulations.

④ Obtain locally recognised installation and operation certificates.

⑤ Only personnel meeting the above requirements may perform installation, maintenance and troubleshooting. Unauthorised personnel must not perform any operations on the equipment.

Explanation of Symbols

This manual contains important safety and operating instructions that must be accurately understood and followed during installation and maintenance of the equipment. To ensure the most accurate use of this manual, please note the following symbol descriptions.

DANGER	Indicates a danger with a high level of risk of death or serious injury if not avoided.
WARNING	Indicates a danger with a medium level of risk of death or serious injury if not avoided.
NOTICE	Indicates a danger with a low level of risk that could result in minor or moderate injury if not avoided.
NOTE	Supplementary explanations to key information in the text to help the user use the equipment more efficiently. "Notice" are not safety warnings and do not relate to personal, equipment or environmental injuries.

CONTENTS

1 Safety Instructions

1.1 Statement

Before transporting, storing, installing, operating, using and maintaining the equipment, please read this manual carefully, fully understand and strictly follow the contents of the manual, and follow the markings on the equipment and all the safety precautions in the manual.

Under any of the following circumstances, Solinteg reserves the right not to assume responsibility for quality assurance:

① Damages caused by improper transportation.

② Damages caused by incorrect storage, installation or use.

③ Damages caused by installation and use of equipment by non-professionals or untrained personnel.

④ Damages caused by failure to comply with the instructions and safety warnings in this document.

⑤ Damages of running in an environment that does not meet the requirements stated in this document.

⑥ Damages caused by operation beyond the parameters specified in applicable technical specifications.

⑦ Damages caused by unauthorized disassembly, alteration of products or modification of software codes.

⑧ Damages caused by unauthorized opening of the equipment's cover and disassembling or replacing internal components.

⑨ Damages caused by abnormal natural environment (force majeure, such as lightning, earthquake, fire, storm, etc.).

⑩ Any damages caused by the process of installation and operation which don't follow the local standards and regulations.

⑪ Products that have exceeded the warranty period.

1.2 Personal Safety

In order to avoid damage to the equipment or personal injury or death caused by improper operation, please read carefully the following instructions on installation precautions before carrying out the relevant work.

① The installer must be professionally trained or obtain electrical related professional qualifications.

② It is strictly prohibited to wear watches, bracelets, bangles, rings, necklaces and other easily conductive objects during installation and operation, so as to avoid being burned by electric shock.

③ It is strictly prohibited to operate with electricity during installation. When removing and installing cables, the sparks and pulling arcs generated by the electrified operation can cause fire or personal injury.
④ During installation and operation, the installer should wear professional protective gear.
⑤ If you need to use a ladder during the installation process, it is prohibited to use a ladder. If electrical operation is involved, a wooden ladder or insulated ladder should be selected.
⑥ Before operation, make sure that the cabinet has been firmly fixed to avoid tilting and collapsing due to unstable centre of gravity of the cabinet, which may lead to injuries and equipment damage.
⑦ Please install the equipment in a place out of reach of children and small animals.
⑧ The equipment must not be used in the following scenarios when in a state of back up:
a. Medical equipment, etc. that is directly related to life.
b. Equipment or precision instruments that may malfunction or be damaged due to power failure or power fluctuation.

1.3 Electrical Safety

① Please regulate the operation strictly in accordance with the contents of the instruction manual.
② Please make electrical connections in strict compliance with local regulatory requirements.
③ When installing the equipment, please disconnect the power supply first and prohibit operation with electricity.
④ Before installing the equipment, install the equipment grounding protection wire. When removing the equipment, remove the grounding wire last.
⑤ Select the cable specification in accordance with local regulations and the instruction manual.
⑥ When installing the equipment, connect the cables securely and tighten the terminal screws.
⑦ If the cable is damaged, it must be replaced by a professional to avoid risks.
⑧ Disconnect the power supply before wiring the power cord and communication cable, and prohibit operation with electricity.
⑨ When installing, do not open the installation cover inside the energy storage cabinet. Except for terminal wiring (as described in this manual), unauthorised opening of the coverand replacement of internal components may result in personal injury, equipment damage, and voiding of warranty.
⑩ When performing lithium battery terminal wiring, disconnect the circuit breaker or air switch first to avoid injury to personnel when the lithium battery is under high voltage.

1.4 Installation Requirements

① Before installation, please carefully check the number of parts of the equipment, as well as the number of tools and materials required to avoid missing, and check the number of installed parts and tools again after installation to ensure that the installation is complete, to avoid tools left inside the equipment. Except for the optional parts, all parts of the equipment should be installed in accordance with the requirements of the completion of the installation.

② Drilling holes in the equipment without permission is prohibited to avoid damaging the performance of the equipment.

③ The equipment should be placed in a well-ventilated area and away from other heat sources to ensure the normal operation of the equipment cooling system.

④ During the operation of the equipment, please ensure that the ventilation openings and the heat dissipation system are kept clear and avoid any obstruction to avoid the accumulation of high temperature which may cause injury to the equipment or lead to fire.

⑤ Please do not open the cabinet door in rainy or high humidity weather, if you have to open the cabinet door in special circumstances, please take protective measures.

⑥ It is strictly prohibited to place the equipment in a low-lying area, and should be kept away from drainage outlets, air-conditioning outlets, vents and other locations that are prone to water leakage, in order to prevent liquids from entering the interior of the equipment and causing equipment failure and damage.

1.5 Battery Safety

① Carefully check the positive and negative poles of the battery, and it is strictly prohibited to short-circuit the positive and negative poles of the battery. Otherwise, it will cause a short circuit of the battery, generate huge current and a lot of heat, and lead to battery leakage, smoke, release of flammable gas, thermal runaway, fire or explosion.

② It is strictly prohibited to maintain the battery under charged condition.

③ It is strictly prohibited to step on the battery, lean on it, and prohibit people or equipment from squeezing the battery.

④ It is strictly prohibited to place the battery in a high temperature and high humidity environment, please ensure good ventilation, unobstructed heat dissipation, and avoid any shielding to avoid high temperature accumulation causing equipment injury or fire.

⑤ It is strictly prohibited to disassemble, modify, vibrate, drop, collide, crush, puncture with sharp objects, pressure shock or damage the battery, otherwise it will result in liquid leakage, smoke, release of flammable gas, thermal runaway, fire or explosion.

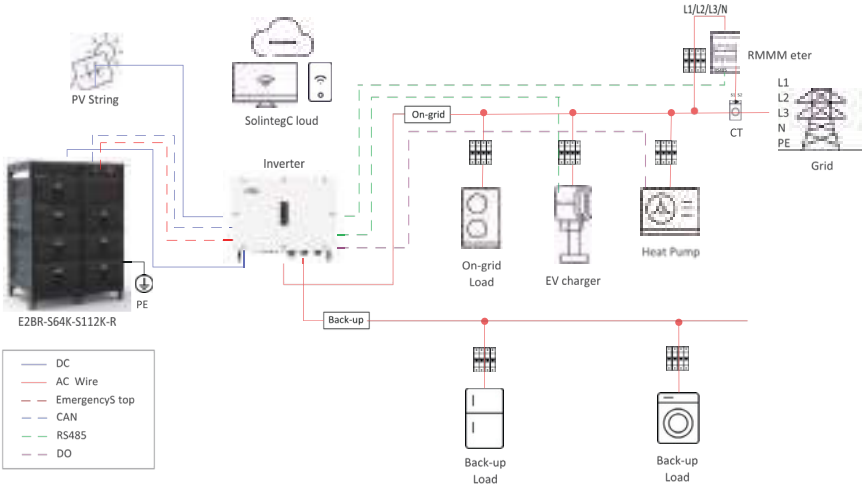
⑥ It is strictly prohibited to carry out welding, grinding and other work around the battery to avoid fire and other disasters caused by electric sparks or arcs generated during the operation.

⑦ It is strictly prohibited to mix different models or brands of batteries.
⑧ It is strictly prohibited to use used or damaged batteries.
⑨ Before operating the battery, please check whether there is irritating, burning and other odours around the battery.
⑩ Batteries must be maintained and handled by professional personnel, and wear safety protective gear (including but not limited to goggles, rubber gloves, gas masks, protective clothing) in accordance with local requirements.
⑪ When the battery is damaged due to puncture, impact, extrusion, external heat, overshooting, etc., it may result in thermal runaway, liquid leakage, or the generation of toxic and flammable gases. To ensure safety, prevent fire, and ensure personal safety and avoid equipment damage, appropriate safety measures must be taken on site in accordance with local requirements.
⑫ When installing and commissioning the battery, it must be in accordance with local laws, regulations and norms, and be equipped with fire protection facilities.
⑬ During the storage and transport of the battery, it must be ensured that the outer packing box is intact and undamaged. When placing or stacking the batteries, they must be placed correctly according to the box markings, and it is strictly prohibited to place them upside down, sideways, standing up, or tilted to avoid damage or scrapping of the batteries due to any impact or fall.
⑭ The equipment should be inspected regularly to avoid loosening, rusting, corrosion, or other foreign objects entering. If any of the above conditions occurs, it must be dealt with in time to avoid excessive connection voltage drop due to false connection of screws, which may lead to large amount of heat generation and burning of the battery when the current is high.
⑮ After the battery is discharged, the battery should be charged in time to avoid damage to the battery due to over-discharge; when the battery is stored for more than six months, it must be inspected and tested by professional personnel.
⑯ Prohibit charging when the ambient temperature is lower than the lower limit of the working temperature.
⑰ When the battery is swollen and bulging, and the shell is dented or broken, please stop using it immediately and contact the installer or professional operation and maintenance personnel to remove and replace it. Damaged batteries should be kept away from other equipment or flammable and explosive materials, and non-professionals should stay away.

2 Products Introduction

2.1 Product Description

This schematic is applicable to Solinteg air-cooling energy storage rack series. The energy storage rack combines a large-capacity battery and a high-voltage box into a complete set of energy storage systems that are easy to install, easy to expand, and intelligent together with the inverter. It can be widely used in different industrial and commercial scenarios.



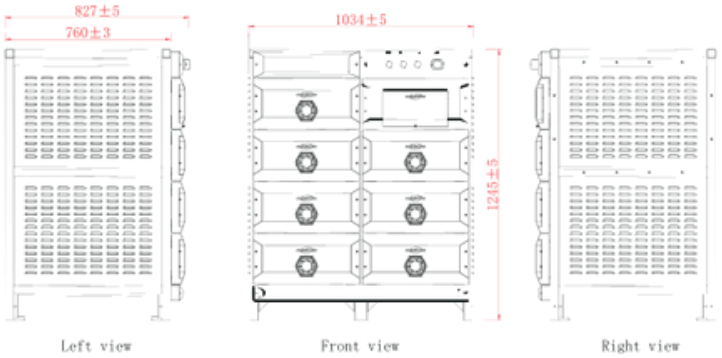
Product system diagram

System main equipment table

Model	Description
Energy storage rack (E2BR-S64/80/96/112k-R)	The energy storage rack can store electrical energy and provide stable backup power.
Hybrd inverter	Solinteg hybrid inverter, which can realise DC-AC electric energy conversion, and electric energy management.
Solinteg cloud	An intelligent, multi-functional monitoring platform that can be accessed remotely. View relevant data at any time.
Load/Heat pump	The system supports intelligent control of SG Ready heat pumps, which can be configured by users according to their own conditions.

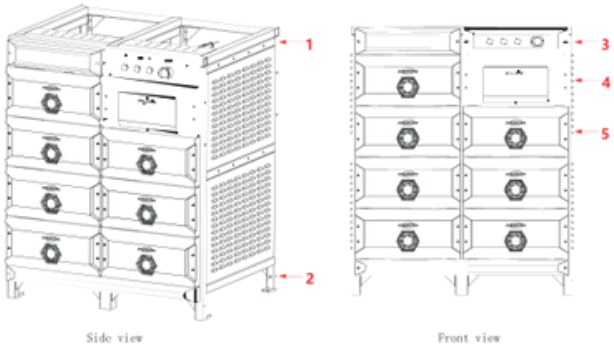
2.2 Appearance Dimensions

Dimensions of the energy storage rack: W*D*H - 1050*1140*2262mm. The rack appearance and dimension drawing are shown below:



Rack appearance and dimension

2.3 Product Components



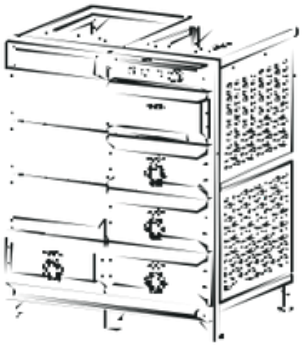
Product components

The part number, name and description are shown in the table below:

No	Name	Description
1	Installation rack	For energy storage rack battery installation and fixing
2	Grounding terminal	For rack enclosure protection grounding
3	Rack panel	Rack operation status display and emergency stop control
4	High voltage box (Main controller)	Battery information collection and energy storage control
5	Battery pack	Electrical energy storage unit

2.3.1 Rack Installation

For energy storage racks, the correspondence between their specification models and battery pack arrangement modes is as follows.



E2BR-S64K-R

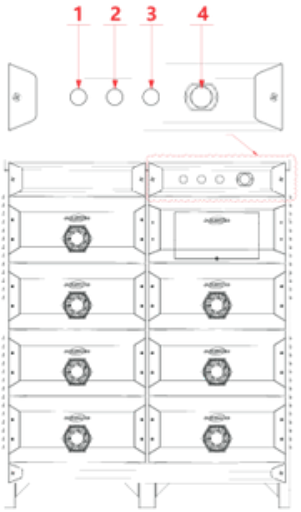
E2BR-S80K-R

E2BR-S96K-R

E2BR-S112K-R

Schematic diagram of the rack

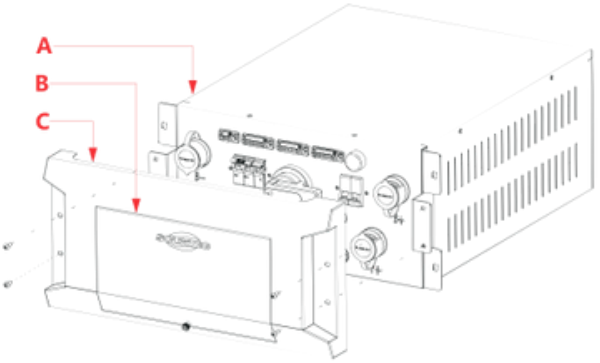
2.3.2 Rack Panel



The part number, name and description are shown in the table below:

No	Name
1	Power indicator (White)
2	Operation indicator (Green)
3	Fault indicator (Red)
4	Emergency stop button

2.3.3 High Voltage Box

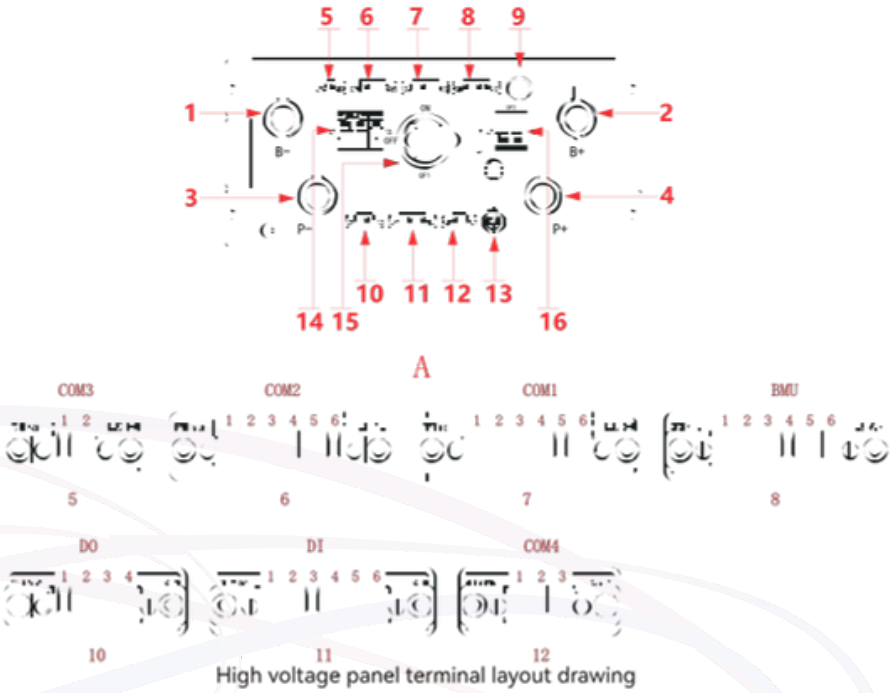


The part number, name and description are shown in the table below:

No	Name
A	High voltage box (Main controller)
B	High voltage operation window
C	Mounting cover

High voltage box Parameters

NO	Item	Technical Specification
1	Power supply voltage	500W AC220V
2	Operating voltage range	DC120~430V
3	Max.Chagre/discharge current	250A
4	Communication	RS485/CAN/LAN
5	Dimension(w*h*d)	420*510*220mm
6	Weight	25kg
7	Protection degree	IP20
8	Operation temp.Range	-30~65° C



High voltage panel terminal layout drawing

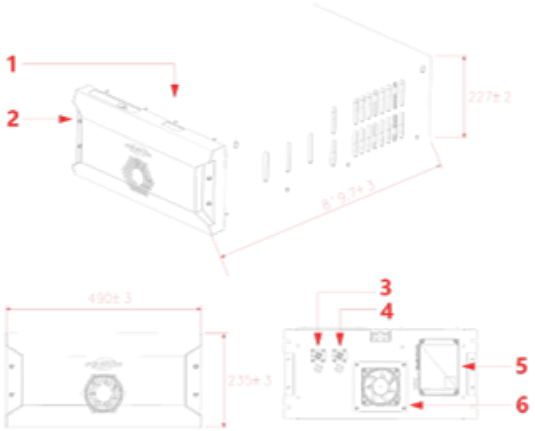
The part numbers, names and functions are listed in the table below:

No	Mark	Definition	Description
1	B-	B-	Connect the negative terminal of the battery pack
2	B+	B+	Connect the positive terminal of the battery pack
3	P-	P-	Connect the negative terminal of the inverter
4	P+	P+	Connect the positive terminal of the inverter
5	COM3	COM3-1: DC24V+	DC24V fan power supply: battery pack fan power supply
		COM3-2: DC24V-	
6	COM2	COM2-1: RS485A	Reserved
		COM2-2: RS485B	
		COM2-3: RS485A	Communication module interface
		COM2-4: RS485B	
		COM2-5: RS485A	Reserved
		COM2-6: RS485B	
7	COM1	COM1-1: DC24V+	DC24V BA power supply
		COM1-2: DC24V-	
		COM1-3: CAN-H	Reserved
		COM1-4: CAN-L	
		COM1-5: CAN-H	Inverter communication CAN port
		COM1-6: CAN-L	
8	BMU	BMU-1: DC24V+	DC24V BMU
		BMU-2: DC24V-	DC24V BMU power supply
		BMU-3: ADD SET	BMU address set
		BMU-4: /	/
		BMU-5: CAN-H	BUM CAN port
		BMU-6: CAN-L	
9	HR		High voltage box fault indicator
10	DO	DO-1: NO1	Operation signal output (Opearation indicator)
		DO-2: COM1	
		DO-3: NO2	Fault signal output (Fault signal indicator)
		DO-4: COM2	
11	DI	DI-1	Signal input common port
		DI-2	Reserved
		DI-3	Reserved

No	Mark	Definition	Description
11	DI	DI-4	Reserved
		DI-5	Reserved
		DI-6	Emergency stop button signal input
13	LAN		Communication between BCU and BAMS
14	QF3		Controller DC power breaker
15	QF1		Controller main control switch
16	QF2		Controller AC power breaker

It can be connected to an external AC 220V 500W AC power supply to provide backup control power for the high voltage box. It is recommended that the backup power supply be taken from the backup side of the inverter to ensure stable power supply.

▼ 2.3.4 Battery Pack



Battery pack appearance

The part number, name and description are shown in the table below:

No	Name
1	Battery pack
2	Mouting cover
3	Battery positive terminal
4	Battery negative terminal
5	BMU
6	Fan

Battery pack parameters

No	Item	Technical specification	Remarks
1	Cell type	MB31	
2	Nominal capacity	314Ah	Cell standard charging and discharging process
3	Nominal voltage	51.2V	Cell 3.2 V
4	Nominal energy	16.076kWh	Standard charging and discharging process of cell
5	Standard charging power	0.5P	
6	Standard discharge power	0.5P	
7	Equalising function	Passive equalisation	
8	Thermal management mode	Forced air cooling	
9	Operating temperature range	Discharge: -20~50℃ Charge: 0 ~ 50℃	
10	Storage temperature	-20~45° C	
11	Fire protection function	Built-in aerosol module	
12	Operating humidity	5%- 95% RH	
13	Storage environment requirements	Short-term less than one month	-30℃ ~+55℃ , 90%RH Max
		More than 3 months	-10℃ ~+45℃ , 90%RH Max
		Recommended storage	10℃ ~+30℃ , 85%RH Max
14	Evel of production	IP20	
15	Weight	114±5kg	Front panel included
16	Size	D791.5±3*w487±2*h227±2mm	Excluding front panel
		D819.7±3*W490±3*H235±3mm	Including front panel
17	Application altitude	3000m	> 3000m It needs to be derated
18	Box	SGCC	
19	Front panel	SPCC	

3 Transport and Storage

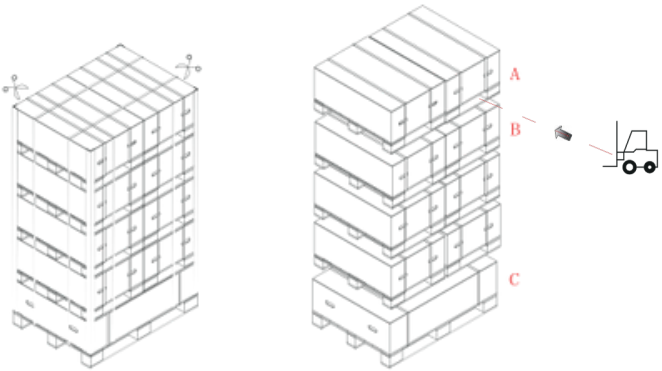
3.1 Unpacking

NOTICE

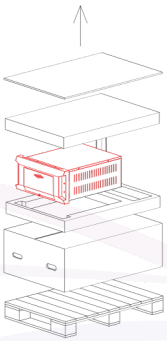
Please carefully inspect the outer packing box before receiving the goods, and then unpack after confirming that the outer packing box is in good condition, if you find that the outer packaging is damaged, please contact the dealer immediately.

Please prepare 1 pair of scissors and gloves and other protective equipment according to the unpacking requirements.

① Use scissors to cut the packing belt then use a forklift to unload the packing boxes.



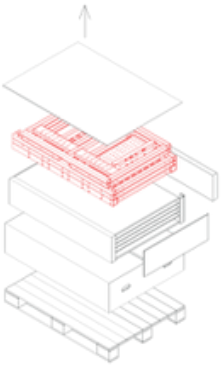
② Open the cover of the carton and take out the installation accessories of the high voltage box.



③ Open the cover of the packaging carton and take out the battery pack and its installation accessories in turn.

B

④ Open the cover of the packaging carton and take out the installation rack in turn.



C

3.2 Transport Requirements

DANGER

When transporting the equipment, appropriate protective measures should be applied to prevent water ingress into the equipment, avoid collisions and prohibit placing the equipment upside down. Otherwise, it may lead to equipment damage or even cause fire and explosion accidents.

Before transport, please check the product packaging carefully, such as damage, odour, liquid leakage and other abnormalities, it is strictly prohibited to transport the goods, otherwise it may lead to equipment damage, or even cause fire and explosion accidents.

NOTICE

Please pay attention to the warning signs on the outer packing box and body, operate strictly according to the requirements and comply with the transport requirements.
During transport and handling, protective measures should be applied to avoid Noticeping of the fuselage, and the tilt angle of the fuselage needs to be ≤10°.
Suitable mode of transport should be selected according to the condition of the equipment, and necessary protective measures should be taken during transport.
The transport service provider must have a dangerous goods transport licence and strictly abide by the regulations of the corresponding region on the transport of dangerous goods.

1. It must be ensured that the forklift meets the load-bearing requirements, and the load-bearing capacity ≥ 1.2t.
2. There must be professionals on hand to supervise the operation to ensure the safety of the operation.
3. When handling, you must pay attention to the position of the center of gravity of the equipment, and use ropes and other tools to fix it to prevent the equipment from tipping.
4. According to the forklift hole operation, please refer to the following figure for the forklift hole position:
Forklift empty space:

3.3 Storage

1. When storing for a long time, do not remove the original packaging, and check the outer packaging regularly.
2. Please store the equipment in strict accordance with the warning signs and other information on the package to avoid damage to the equipment.
3. Equipment storage temperature range: -20~45 ° C.
4. Equipment storage relative humidity range: 5%-95%RH.

Refer to the following table to select an appropriate storage environment based on the storage time of the device:

Storage time	Storage temperature	Storage relative humidity
Short-term less than a month	-20℃~+45℃	90%RH Max
More than 3 months	-10℃~+45℃	90%RH Max
Recommended storage	10℃~+30℃	85%RH Max

NOTICE

As batteries are already installed in the cabinet, battery storage requirements must also be observed when storing the device.

DANGER

Batteries need to be stored indoors. The storage area must meet the following requirements: 1. protected from direct sunlight or rain. 2. dry and ventilated. 3. away from heat and ignition sources. 4. free from radiation. 5. chemically safe. 6. protected from dust and metal-conductive dust. 7. equipped with fire protection facilities.

Battery storage should be in strict accordance with the warning signs and other information on the packaging.

Battery storage should avoid mixing with other electronic equipment, chemicals, or other items that may cause interference or danger.

Reasonable arrangement of the stacking height of the batteries, to avoid the bottom layer of batteries under pressure deformation or damage.

WARNING

Long-term storage of batteries is not recommended. If there are special circumstances that require long term storage, please recharge the batteries regularly to avoid damage to the batteries.

If the battery has been stored for more than six months, it must be inspected and tested by a professional before use.

3.4 Packing List

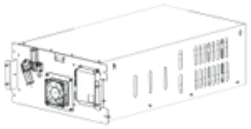
Please make sure that the energy storage rack is in good condition during transportation. In case of any visible damage, please contact the distributor or Solinteg. After unboxing, check all accessories against the checklist below:

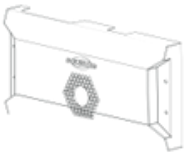
A.High voltage box packing list

 A-01	 A-02	B-03
 B-04	 A-05	 A-06
 1950mm A-07	 260mm A-08	 820mm A-09
 830mm A-10	 A-11	 A-12
 A-13	 A-14	 A-15

No	Item	Specification	Quantity
A-01	High voltage box	E2BR-C16K	1PCS
A-02	High voltage box cover	/	1PCS
B-03	M5*12 cross-recessed screw	M5-12	4PCS
B-04	M6*16 hex screw	M6*16	4PCS
A-05	Battery cable P+	5m	1PCS
A-06	Battery cable P-	5m	1PCS
A-07	Battery cable B+		1PCS
A-08	Battery cable B-		1PCS
A-09	Battery jumper cable		1PCS
A-10	Battery communication jumper cable		1PCS
A-11	Communication cable		1PCS
A-12	Communication terminal wire		1PCS
A-13	PE cable		1PCS
A-14	Fan power cord		1PCS
A-15	Communication module		1PCS

B.Battery pack list


B-01


B-02

B-03

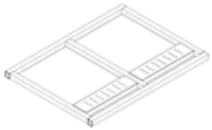

B-04

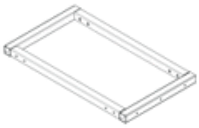
B-05

B-06

No	Item	Specification	Quantity
B-01	Battery pack	E2BR-B16K	1PCS
B-02	Battery pack cover	/	1PCS
B-03	M5*12 cross-recessed screw	M5-12	4PCS
B-04	M6*16 hex Screw	M6*16	4PCS
B-05	Battery cable		1PCS
B-06	Communication cable		1PCS

C.Installation rack packing list


C-01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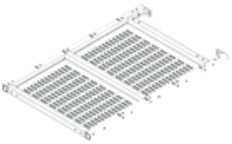
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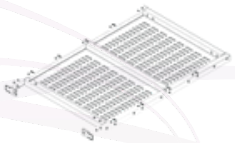
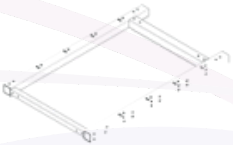
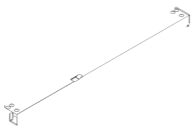
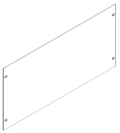
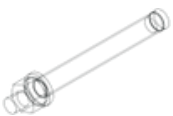
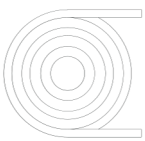

C-04


C-05


C-06

 C-07	 C-08	 C-09
 C-10	 C-11	 C-12
 C-13	 C-14	 C-15
 C-16	 C-17	 C-18
 C-19	 C-20	 C-21
 C-22	 C-23	

No	Item	Specification	Quantity
C-01	Top frame	1020mm*760mm*40mm	1PCS
C-02	Bottom frame	439mm*760mm*40mm	2PCS
C-03	Left frame	1205mm*760mm*40mm	1PCS
C-04	Right frame	1205mm*760mm*40mm	1PCS
C-05	Middle frame	1205mm*760mm*60mm	1PCS
C-06	Corner connection code	80mm*80mm*30mm	12PCS
C-07	Left-hand side rail	756mm*60mm*41mm	8PCS
C-08	Right-hand side rail	756mm*60mm*41mm	8PCS
C-09	Control board cover	490mm*120mm*55mm	1PCS
C-10	Blank space cover	490mm*120mm*55mm	1PCS
C-11	Wire trough cover	990mm*70mm*55mm	1PCS
C-12	Cover plate 01	490mm*235mm	2PCS
C-13	Cover plate 02	490mm*235mm*45mm	1PCS
C-14	M6*16 hex screw	M6*16	64PCS
C-15	M6*25 Hex socket cap screw	M6*25	30PCS
C-16	M6*16 Hex socket countersunk screw	M6-16	96PCS
C-17	M8*100 expansion bolt	M8*100	4PCS
C-18	Pack lifting hook		1PCS
C-19	Inverter emergency stop Cable		1PCS
C-20	Battery communication cable		1PCS
C-21	Mushroom head cable tie		20PCS
C-22	Cable tie		30PCS
C-23	User manual		1PCS

4 Mechanical Installation

4.1 Installation Requirements

▼ 4.1.1 Installation Site Requirements

Please combine the product system requirements, local fire and laws and regulations, choose the installation location that meets the requirements.

1. The installation location of this equipment must meet the following requirements:
2. Local laws and regulations and electric power related standards and regulations should be strictly followed.
3. The installation location should meet the requirements of local fire codes and be equipped with fire-fighting equipment and water fire-fighting system interface.
4. The installation area should avoid bad soil quality such as deformation and settlement easily, and keep away from corrosive pollution areas such as salt and alkali.

▼ 4.1.2 Equipment Basic Requirements

The total weight of the equipment is about 1t, users need to select the site for construction according to the local seismic design code and geological conditions, and the load bearing of the foundation should meet the needs of the equipment and installation personnel. The foundation material should be concrete, solid brick or steel, etc. The bottom of the foundation must be tamped and filled, flat (horizontal error ≤ 3mm, tilt angle ≤ 3°), the installation area is prohibited to have depression, tilting situation.

▼ 4.1.3 Installation Environment Requirenment

1. The distance between the equipment installation area and the residential, densely populated social public places and production buildings should comply with local fire codes and standards, and when the safety distance requirements cannot be met, a firewall in line with local fire protection codes can be added between the equipment and adjacent buildings. It is also advisable to install a locking fence around the area where the equipment is installed to prevent intrusion.
2. The equipment installation area should be away from high-temperature environments such as heat sources and fire sources, from areas with flammable and explosive substances and dust, away from areas with corrosive substances and corrosive gases, away from areas with strong electromagnetic field interference, and away from strong vibration and strong noise sources.
3. The equipment installation area should also meet the following requirements:

Ambient temperature: -20~50° C (Discharge: -20~50° C. Charge: 0~50° C)

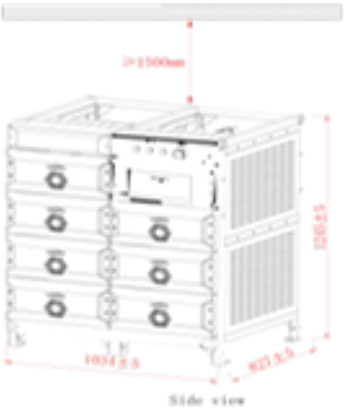
Relative humidity: 5%~95%RH

Altitude requirement: ≤ 3000m

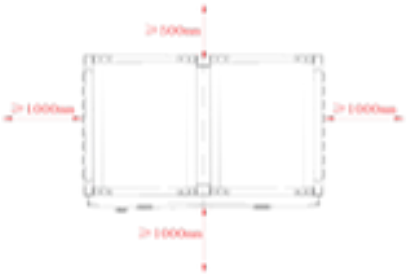
Name	Installation spacing (m)
Distance to coastal area	> 2000
Distance to smelters, coal mines, thermal power plants and other heavy pollution source areas	> 1500
Distance to medium pollution source areas such as chemical industry, rubber, electroplating, etc.	> 1000
Distance from lightly polluted areas such as foodstuffs, leather, heating boilers, slaughterhouses, centralised rubbish dumps, sewage treatment stations, etc.	> 500

▼ 4.1.4 Installation Distance Requirement

When installing the energy storage rack, please follow the spacing requirements below.



Side view



Top view

▼ 4.1.5 Installation Tool Requirements

The tools to be used include but are not limited to the following recommended tools. Please use other auxiliary tools according to the needs of the site. Please note that the tools used must comply with local code requirements.


Hammer drill (Ø16 mm)


Multimeter
(Range: 1500 V)

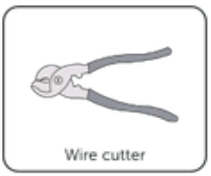

Measuring tape


Utility knife


Marker

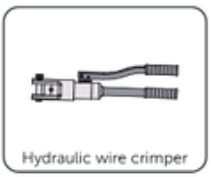

Cross screwdriver

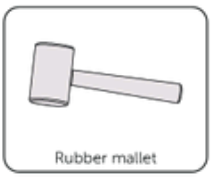

Flat-head screwdriver

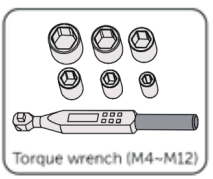

Wire cutter

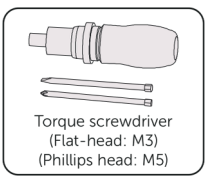

Wire stripper


Crimping tool for RJ45

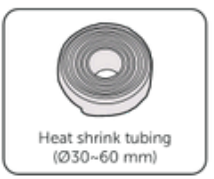

Hydraulic wire crimper

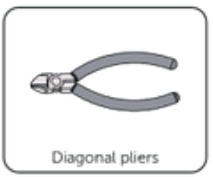

Rubber mallet


Torque wrench (M4~M12)

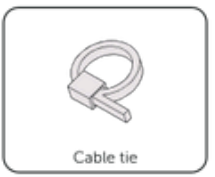

Torque screwdriver
(Flat-head: M3)
(Phillips head: M5)


Heat gun

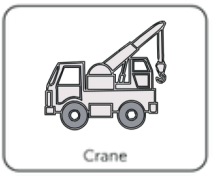

Heat shrink tubing
(Ø30~60 mm)

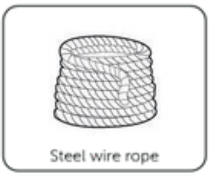

Diagonal pliers

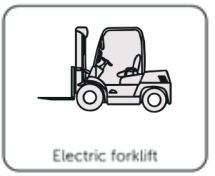

Vacuum cleaner

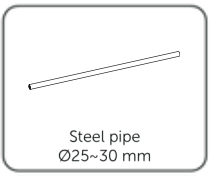

Cable tie


Insulated ladder


Crane


Steel wire rope

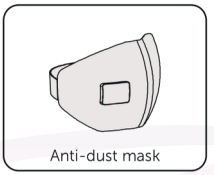

Electric forklift


Steel pipe
Ø25~30 mm


Insulating gloves

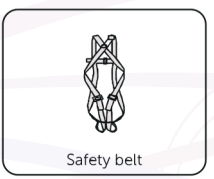

Safety boots


Safety goggles


Anti-dust mask


Safety vest


Safety helmet


Safety belt

▼ 4.1.6 Material Preparation

The following are other materials required for the installation of the energy storage rack, and the user shall provide his own according to the recommended specifications and site conditions.

No	Name	Recommended specification	Description
1	PE cable	Green&yellow PE cable-50mm²	
2	PE OT terminal	SC50-8	
3	AC cable (BMS AC back up power)	3*1.5mm²	Optional
4	Trunking	Users can choose according to the situation of the site	Laying cables
5	Plugging material	Users can choose according to the situation of the site	Plug the threading holes

4.2 Rack Installation

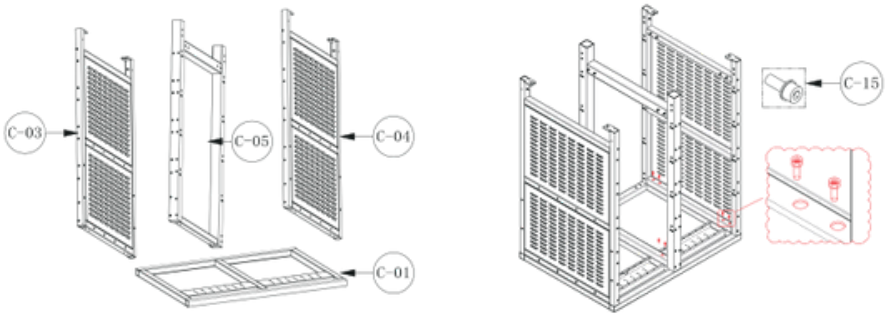
Please take out the mounting accessories and check the number of accessories before installation so that the installation will not be affected by missing accessories.

DANGER

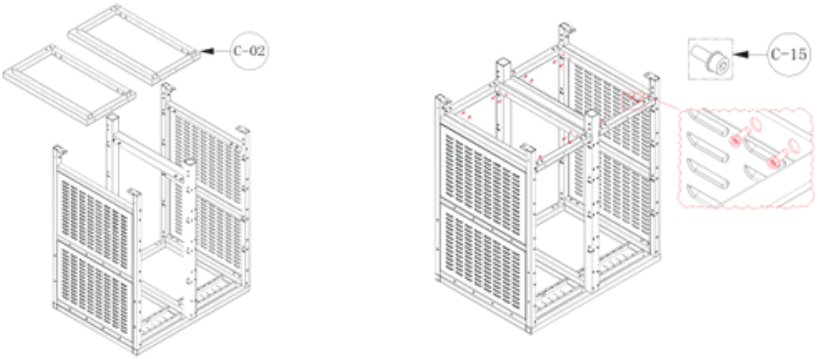
Before installing the equipment, wear personal safety protective equipment in accordance with the regulations.
During installation, the equipment must be shielded and protected to prevent debris from entering the equipment, and the equipment should be cleaned after the installation is completed.
Before connecting the cables, please make sure that all power switches are disconnected, otherwise it may cause casualties or short circuit of the equipment.
The cable terminals must be locked tightly and ensure that they do not loosen after prolonged use, otherwise the equipment may be damaged.
During the commissioning and operation of the equipment, please be sure to keep the rack grounded well, so as to avoid personal safety and equipment damage due to rack grounding failure.
Before connecting the battery terminals, make sure that the positive and negative polarity of the cable is correct.

Unbox the energy storage rack according to "3.1" in this article and place the parts on the cardboard to prevent scratches on the coating. And follow the steps below to install:

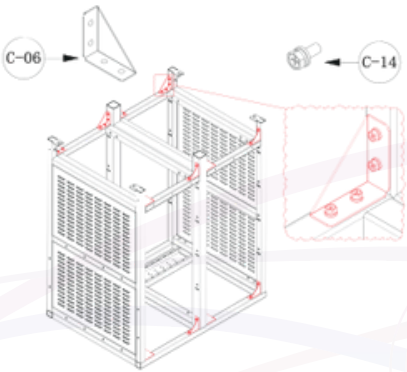
1.Use M6*25 hexagon round head bolts (C-15) to connect and fix the left frame (C-03), right frame (C-04), middle frame (C-05) and the top frame (C-01) respectively.



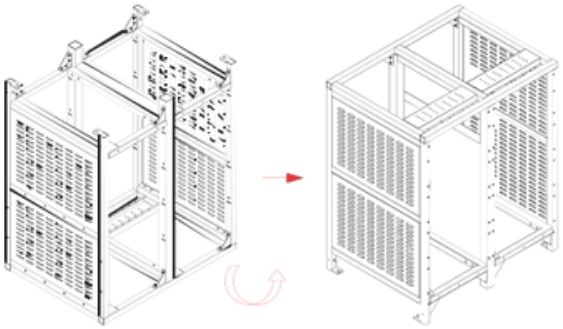
2.Use M6*25 hexagon round head bolts (C-15) to connect and fix the bottom frame (C-02).



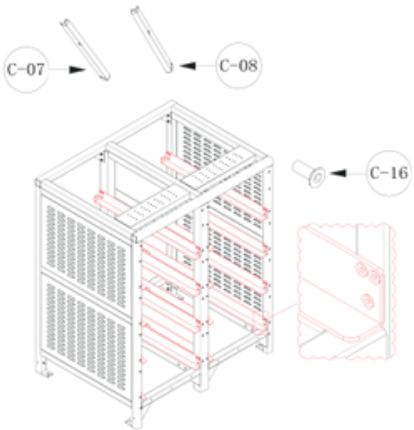
3.Use M6*16 hexagon bolts (C-14) to connect and fix the corner connection code (C-06).



4.Flip the mounting rack upside down.

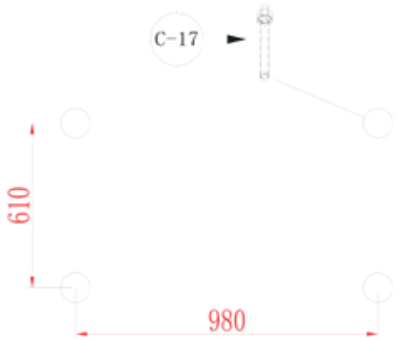


5.Use M6*16 hexagon grub bolt (C-16) to connect and fix the left guide rail (C-07) and the right guide rail (C-08).

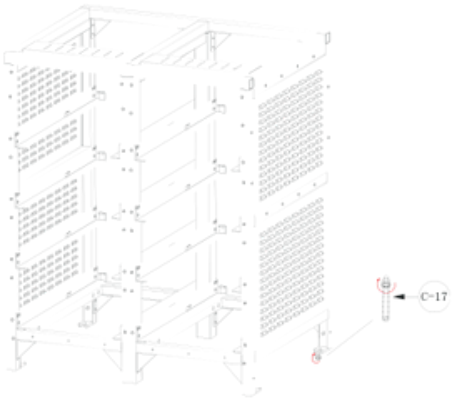


6.Use a level (level) to detect the flatness of the ground, requiring a horizontal error of ≤ 3mm, an inclination angle of ≤ 3° , and when the requirements are not met, the ground should be leveled to prevent the rack from slipping and overturning after installation.

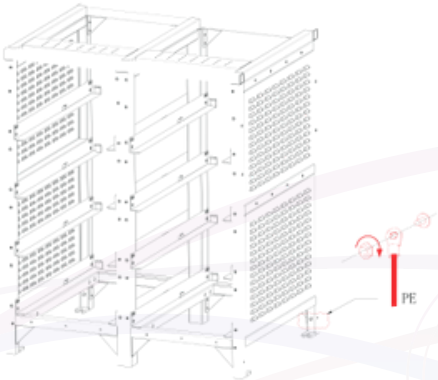
7.According to the fixed hole position of the frame, drive the M8*100 expansion bolt (C-17) into the corresponding position on the ground.



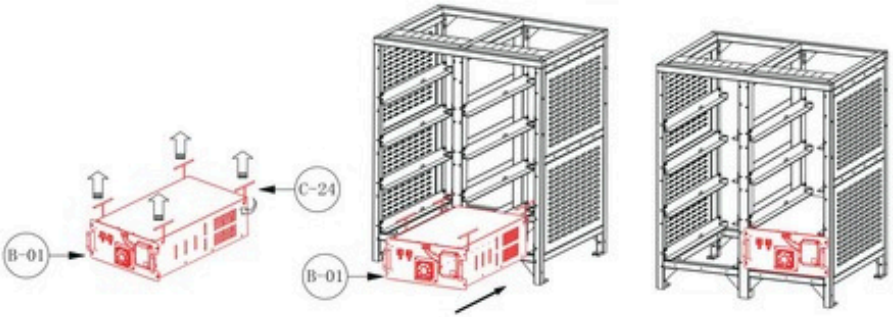
8.Fix the installed rack.



9.Use a 50mm² PE wire to reliably connect the grounding port on the right side of the rack with the user's on-site grounding network through bolts.



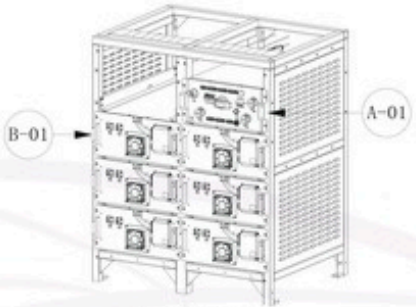
10.First, use the battery pack lifting hook (C-24) to insert the bottom battery pack (B-01) into the energy storage rack.



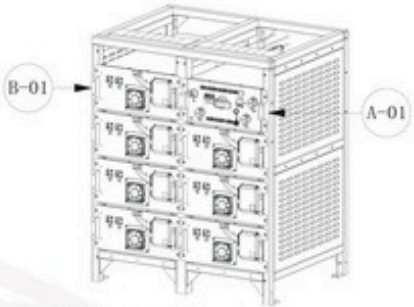
11.Insert the remaining battery pack (B-01) and high-voltage box (A-01) into the energy storage rack in turn.

E2BR-S64K-R

E2BR-S80K-R

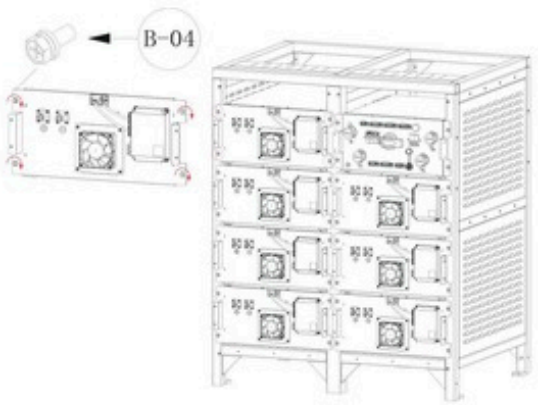


E2BR-S96K-R

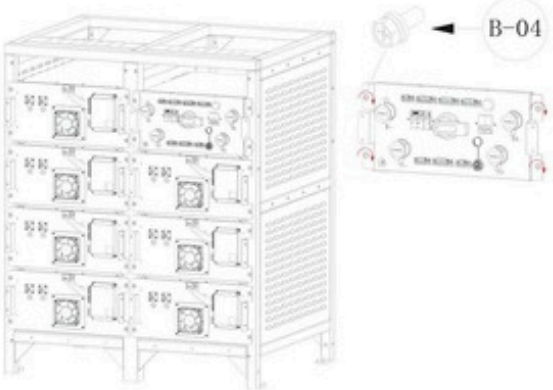


E2BR-S112K-R

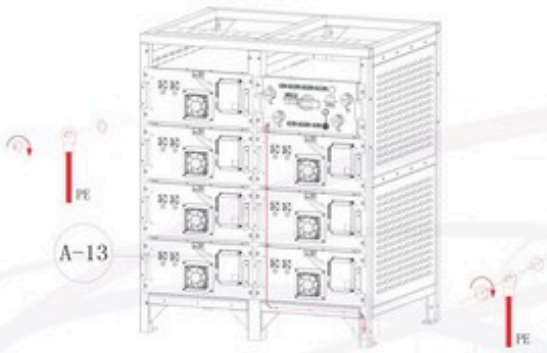
12.Use M6*16 hexagon screws (B-04) to fix the battery pack on the mounting rack.



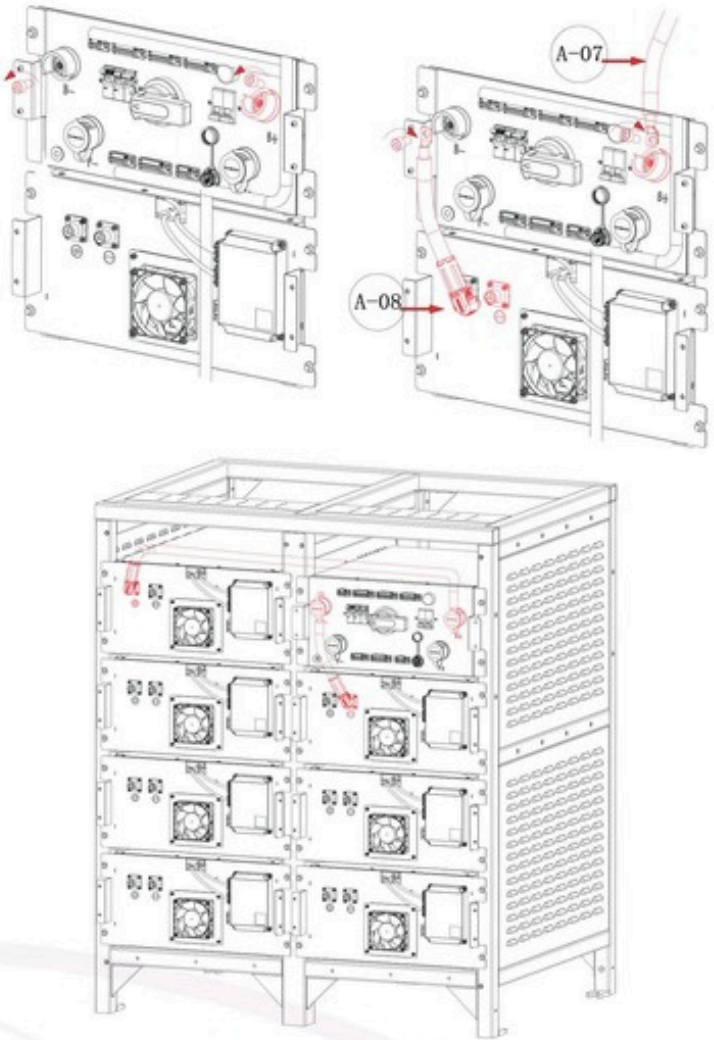
13.Use M6*16 hexagon screws (B-04) to fix the high-voltage box on the mounting frame.



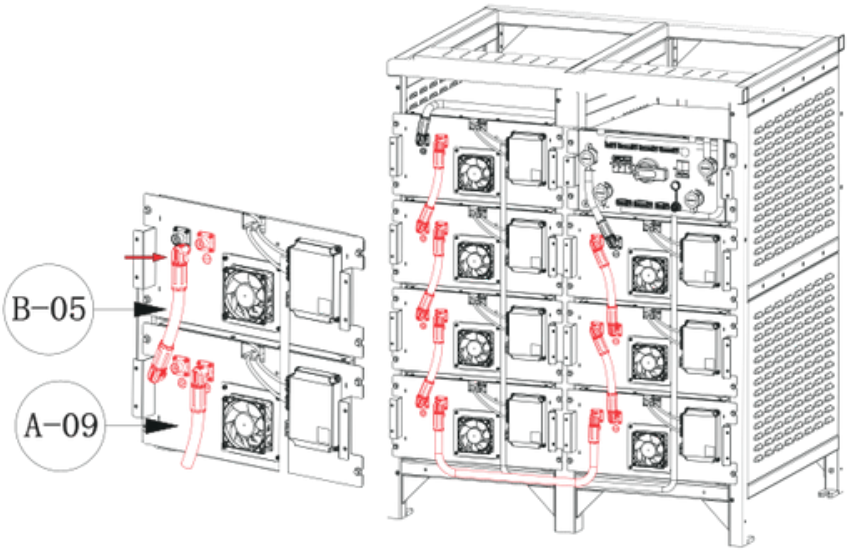
14.Use a PE wire (A-13) to connect the high-voltage box to the grounding point in the lower right corner of the rack.



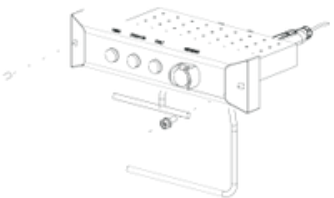
15.Connect the total positive electrode of the battery of the high-voltage box B+ (A-07) and the total negative electrode of the battery B- (A-08) in turn.

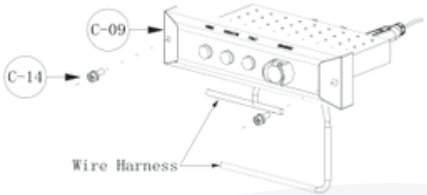


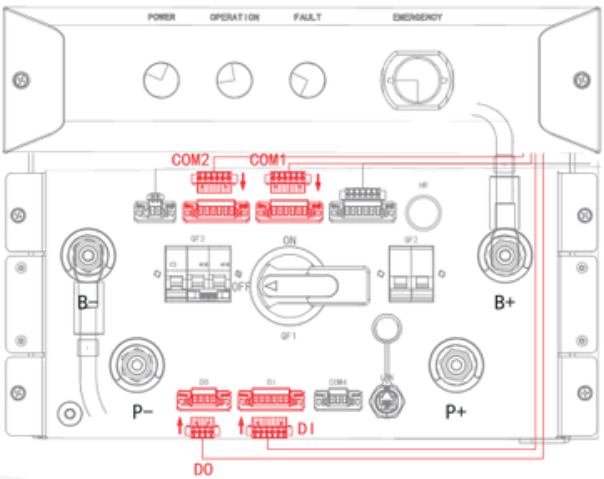
16.Connect the battery cable (B-05) and the battery jumper cable (A-09) in turn.



17.Use M6*16 hexagon screws (C-14) to fasten and install the control board mask (C-09), and connect the wire harnesses COM1, COM2, DO, and DI to the corresponding interfaces of the high-voltage box (A-01).



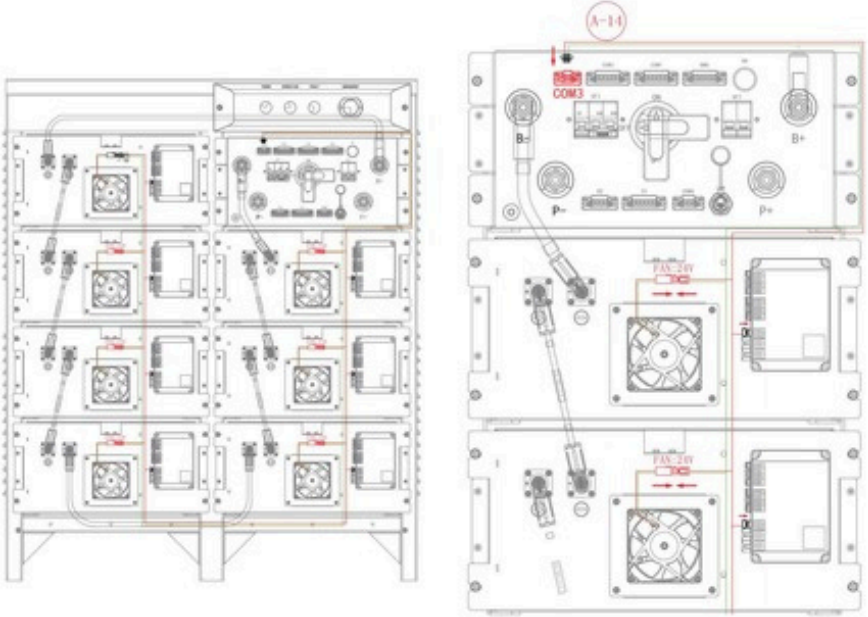




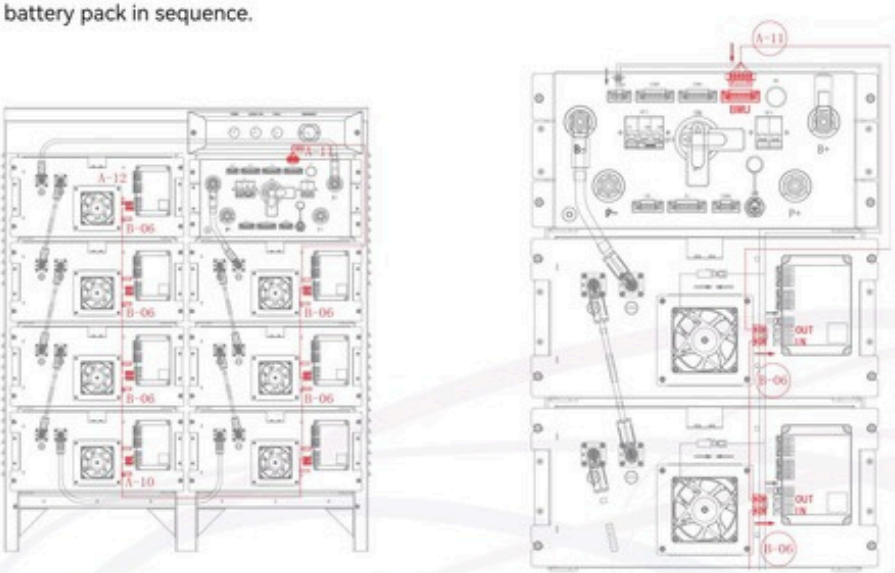
18.Connect the fan power cord (A-14) to the high-voltage box and the battery pack sequentially.

NOTICE

The unconnected fan power cords of the E2BR-S64K-R, E2BR-S80K-R, and E2BR-S96K-R energy storage racks need to be insulated to prevent short circuits.

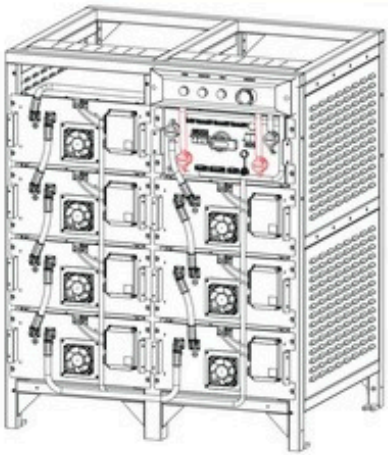


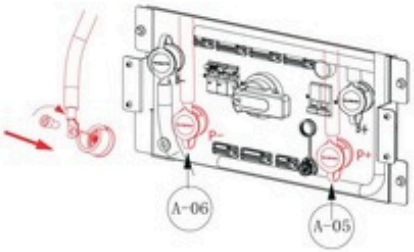
19.Connect the communication cable (A-11), (B-06), the battery communication jumper cable (A-10), and the communication terminal wire (A-12) to the high-voltage box and the battery pack in sequence.

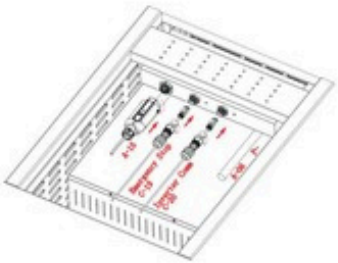


20.Connect the battery power cable P+ (A-05) and battery power cable P- (A-06) to the high-voltage box. Connect the communication module (A-15), inverter battery communication cable (C-20), and Inverter emergency stop Cable (C-19) respectively to the wiring area at the rear of the rack panel.

NOTICE	When the energy storage rack is powered only, the battery power line P+ (A-05) and battery power line P- (A-06) need to be connected after the power-on and commissioning is completed to prevent the equipment from short circuit.

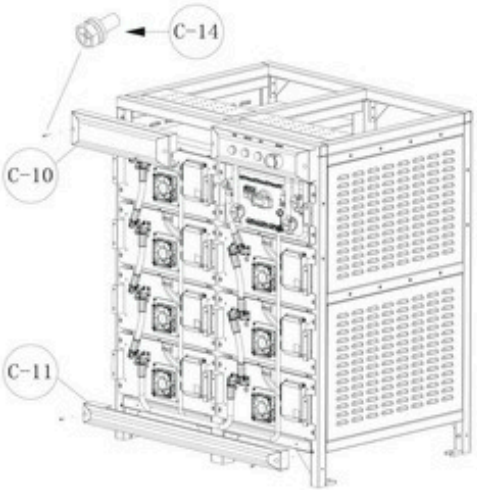




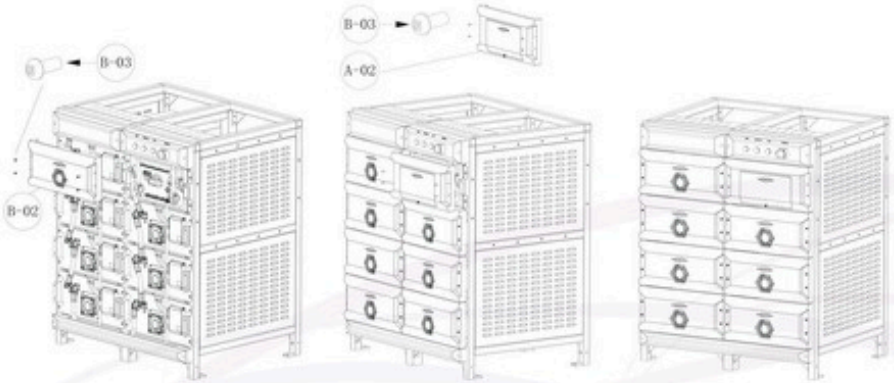


21.Install the space mask (C-10) and the trunking mask (C-11) on the rack in turn by M6*16 hexagon bolts (C-14).

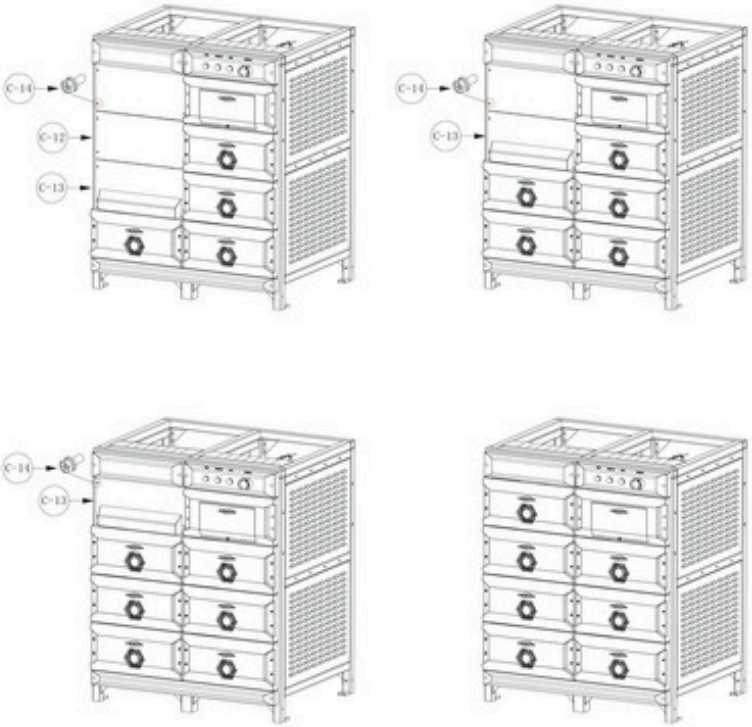
NOTICE	Before installing the mask, it is necessary to check that the wiring is correct, and it is recommended to install the mask after the installation and commissioning is completed.



22.Install the high-voltage box mask (A-02) and battery pack mask (B-02) on the rack in turn by M5*12 Phillips screw bolts (B-03).



23.According to the specifications and models of the energy storage rack, Install the sealing plate 01 (C-12) and sealing plate 02 (C-13) at the position of the free battery pack by M6*16 hexagon bolts (C-14). Installation finished.



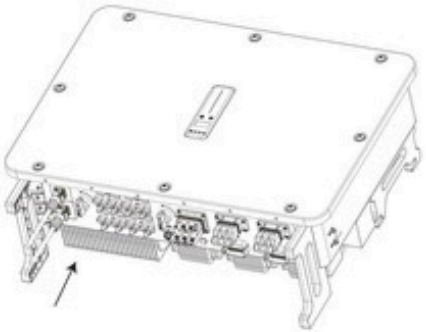
4.3 Inverter Side Wiring

Battery wiring

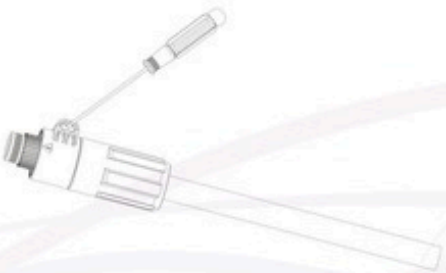
Before connecting the battery, disconnect the AC circuit breaker on the grid side, the battery side circuit breaker, and turn the inverter DC switch to the "OFF" position.

> **NOTICE**
>
> Before connecting to the inverter, please use a multimeter to measure the voltage at the battery end to ensure that it is within 840V before connecting it.
> Before connecting the battery terminals, make sure positive and negative polarity right.

① Insert the positive and negative connectors into the inverter battery terminals respectively, and make a "click" sound to indicate that the connection is in place.



> **NOTE**
>
> To pull out the plug, you need to press the switch button with a screwdriver before pulling out the plug.



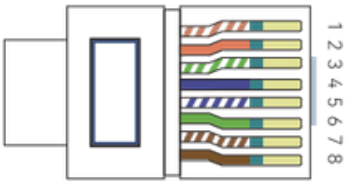
Communication wiring between inverter and battery

NOTICE	Do not connect cables that are not used in the battery communication cable to ground or connect to other devices.

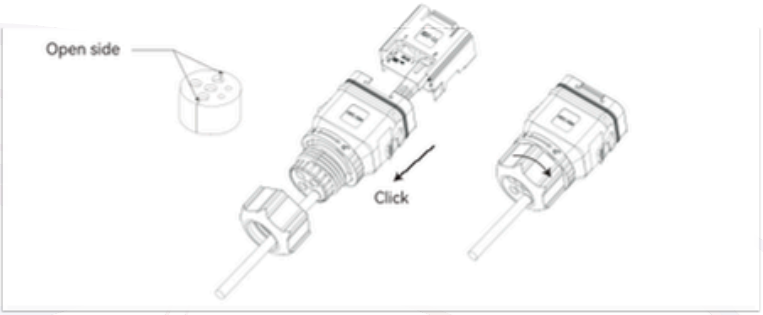
NOTICE	Please use the BMS 1 port for battery communication, the BMS 2 port is invalid.

① Use RJ45 crimping pliers as defined by BMS 1 RJ45 port and crimp the RJ45 plug at one end of the inverter.

The BMS 1 RJ45 port definition is shown below:

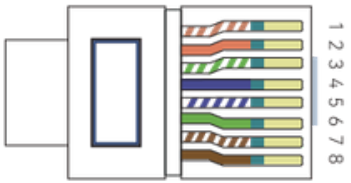
RJ45	No	Color	Meter
	1	Orange & White	RS485_A3
	2	Orange	RS485_B3
	3	Green & White	/
	4	Green & White	CANH_B1
	5	Blue & White	CANL_B1
	6	Green	/
	7	Brown & White	CANL_Debug
	8	Brown & White	CANH_Debug

② Thread the appropriate length of RJ45 plug through the inverter COM3 swivel nut and insert it into the open side of the rubber washer. Insert the RJ45 plug into the corresponding RJ45 terminal in the connector, and connect the RJ45 plug at one end of the inverter to the COM3 interface of the inverter.



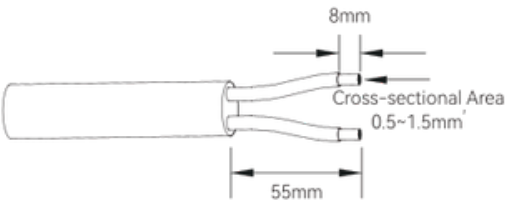
Emergency stop

The emergency stop port is defined as follows:

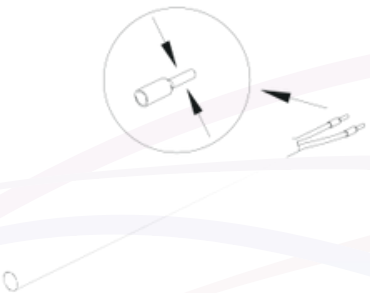
RJ45	No	Color	Meter
	1	Orange & White	Stop+
	2	Orange	
	3	Green & White	Stop-
	4	Blue	
	5	Blue & White	/
	6	Green	/
	7	Brown & White	/
	8	Brown	/

In the COM2 connector of the inverter, there are push-in (snap-in/screw-free) terminal blocks and RJ45 terminals, and the following steps are the wiring steps of the push-in terminal blocks.

① Thread the appropriate length of cable at the other end through the inverter COM2 swivel nut and housing. Strip the cable jacket and strip the cable insulation.

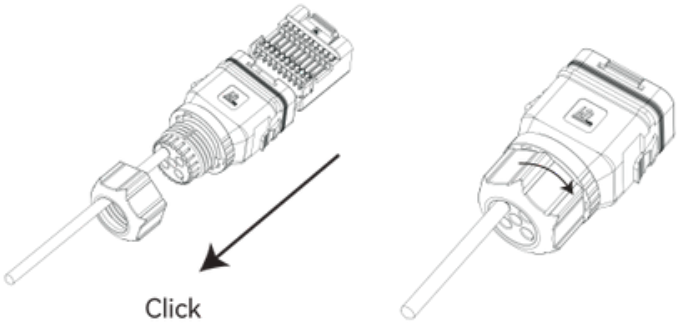


② The multi-core cable is twisted into a cluster by hand and crimped onto the pinhole terminal.

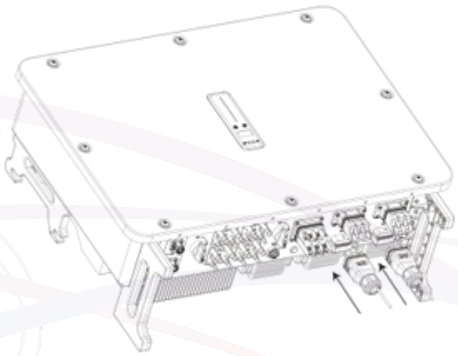


③ According to the definition of COM2 terminal of the inverter, use a flathead screwdriver to press and hold the briquette on the terminal block, insert the cable into the hole of the terminal block, and loosen the briquette.

④ Pull the cables outward and check that they are securely connected. Insert the terminal block into the connector until it clicks into place and clicks.



⑤ Plug the COM2 and COM3 connectors into the corresponding ports of the inverter.



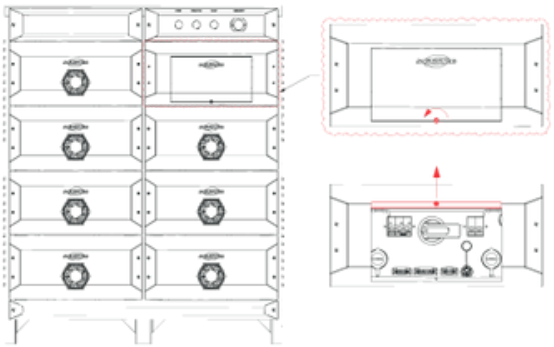
5 Commissioning

NOTE

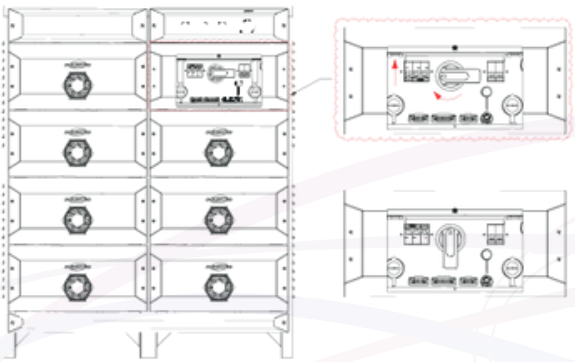
Before the equipment is powered on and debugged, it is necessary to ensure thatthe equipment has been installed.
When the energy storage rack is powered on alone, the battery power line P+ (A-05) and battery power line P- (A-06) should be connected after the power-on and commissioning is completed to prevent the equipment from short circuit.

5.1 Storage Rack Power On

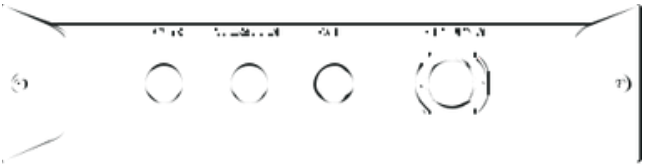
1.Unscrew the operating window fixing bolt on the high-pressure box mask and pull the operating window up.



2.Close the high-voltage box master control switch QF1 and the high-voltage box DC power supply switch QF3 according to the figure.

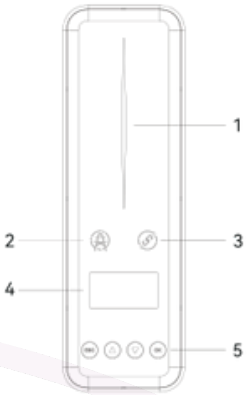


3.Check the running status of the device according to the following table, and when the device is normal, the device is powered on.



Item	Indicator	Status		Description
1	Power indicator	Off		No power.
		White	Always on	The power supply of the energy storage rack is turned on.
2	Operation indicator	Off		Grid lost.
		Green	Always on	No fault
3	Fault indicator	Off		The inverter communication is running normally.
		Red	Always on	The energy storage rack fault alarm. Abnormal communication with the inverter.

5.2 Inverter Indicator



Item	Indicator	Status		Description
1	Power and alarm indicator	Off		No power.
		Blue	Quick flashing	Inverter entered self-test status.
			Slow flashing	Inverter entered waiting status.
			Breathe flashing	Inverter works normal.
		Orange	Breathe flashing	Low battery warning, the battery power is about to reach the SOC protection value.
		Red	Always on	An alarm or fault is detected, view the fault info on the display.
2	Grid indicator	Off		Grid lost.
		Slow flashing		Inverter detected grid but not running in on-grid mode.
		Always on		Inverter works in on-grid mode.
3	Communication indicator	Green	Always on	The inverter communication is running normally.
			Flashing	The inverter communicates with EMS or Master inverter through RS485 or CAN.
		Orange	Always on	The inverter isn't communicating with Solinteg smart meter.
		Red	Always on	The inverter isn't communicating with the BMS.
4	Display	Display the inverter's operational status, parameter settings, etc. Display off to save power, press the button to wake up the display.		
5	Button	Switch display information and set parameters.		

5.3 Device Addition and Network Configuration In IntegHub APP

① After logging into the APP, follow the on-screen guidance to create a power plant.

② On the <Plants> interface, select the plant which you need to add new devices and enter it.

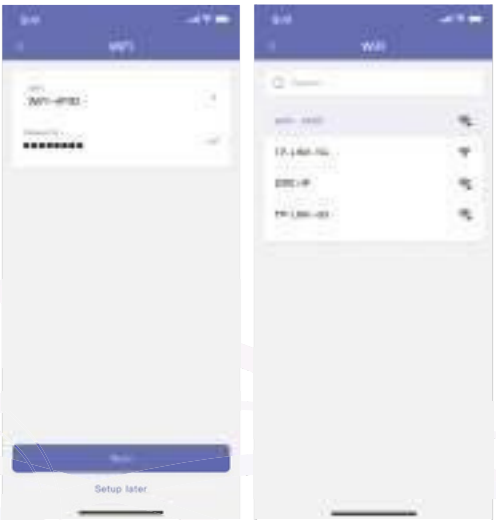
③ After entering the <Plants> section, click on <Devices>, then click the <+> in the upper right corner to add devices.

④ Tap <Enable Bluetooth > to turn on your phone's Bluetooth. The APP will automatically scan for Bluetooth of nearby devices.

⑤ After scanning, APP will display the devices you want to add. Select the device you want to add.

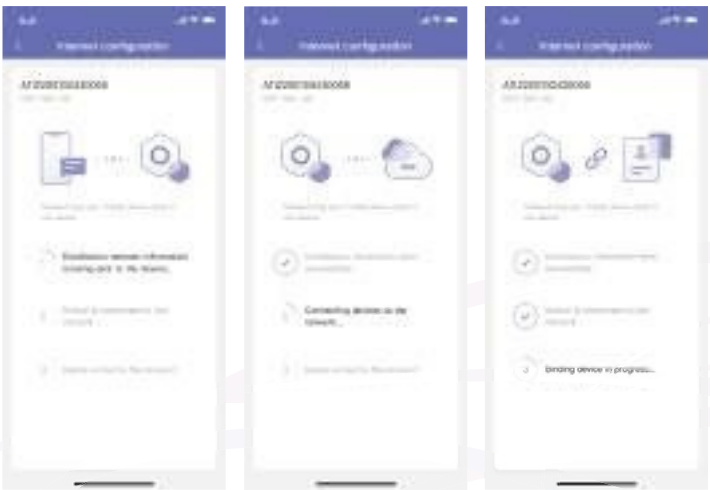
⑥ Enter the device networking method selection has two kinds of networking methods WIFI and LAN.

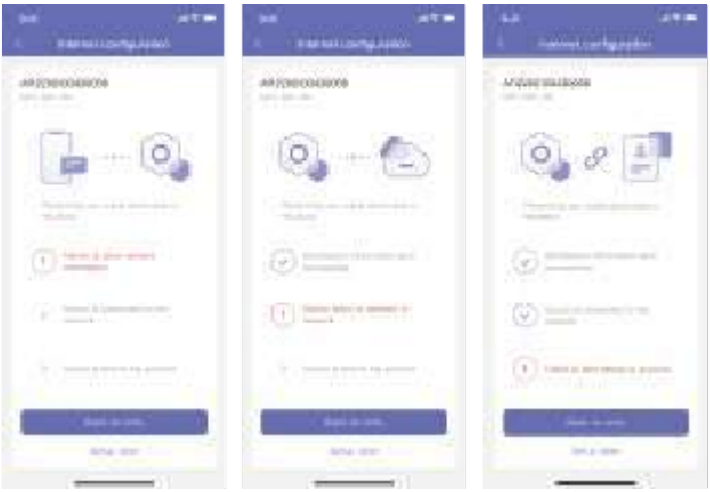
⑦ After selecting Wi-Fi networking, enter the Wi-Fi configuration interface. Select the connected Wi-Fi and enter the password. Click< Next> to enter the next step, click <Setup later> to setup later.



⑧ After selecting LAN, enter LAN configuration interface, DHCP function is turned on by default, after DHCP is turned off, users can set IP address, subnet mask, default gateway, domain name server. Click< Next> to enter the next step, click <Setup later> slightly after setting.

⑨ After configuring Wi-FI or LAN information, APP follows the following three steps to enter network configuration. When each step fails, the failure reason will be displayed.





⑩ After completing the configuration, click <Complete> to complete the network configuration.

⑪ After completing the network allocation, you can add devices. Click the Edit button to rename the device, and click <Confirm> to finish adding the device.

Inverter

E2BR-S64K/80K/96K/112k-R

⑫ Enter the device details, you can view the device name, SN, device type, device model, communication mode (Wi-Fi or LAN), device IP address, device MAC address, inverter sub-firmware version number, connection date.

Inverter

E2BR-S64K/80K/96K/112k-R

6 Device Maintenance

6.1 Maintence Requirements

To ensure the normal operation of the equipment and prevent damage, please inspect and maintain the equipment regularly. When the environment or operating conditions of the equipment are poor, users should also increase the frequency of maintenance according to the site conditions. Equipment maintenance must be carried out by professionals.

Item	Requirements	Period
Device operating environment	1. Check the temperature and humidity, corrosion and dust conditions around the equipment. 2. Check the ventilation and water accumulation around the equipment.	3 months
Device operating status	1. Use a thermal imager or other monitoring device to detect signs of heat in the device. 2. Check whether the equipment is damaged, abnormal noise, deformation and other abnormalities. 3. Check the exhaust of the equipment fan. 4. Check whether the equipment has any abnormalities such as fault alarms.	1 month
System cleaning	1. Check the dust condition in the equipment. 2. Check the dust accumulation of the battery pack fan.	3 months
Device appearance	1. Whether the equipment shell is damaged. 2. Whether there is corrosion in the structural parts.	3 months
Electrical connection	1. Check whether the cable connection is reliable. 2. Check whether the components are installed reliably. 3. Check whether there is any discharge phenomenon on the surface of the component.	6 months
Battery pack	1. Check the battery pack for abnormal noise, deformation, leakage and other abnormalities. 2. Long-term storage, the time shall not exceed six months, and the battery shall be replenished according to the remaining battery power (SOC shall not be less than 10%).	1 month
Fighting Equipment	In accordance with local fire protection requirements, please ask professionals to perform maintenance and replacement.	According to local requirements
Cable replacement	Ask a professional for maintenance and replacement.	According to local requirements

Bumps and other situations may occur during equipment handling, transportation and installation, resulting in damage to the surface coating of the rack. The user must repair the damaged area.

1. Please choose the corresponding paint or self-spray paint according to the color number, and prepare tools and materials such as brushes, sandpaper, anhydrous ethanol, cotton cloth, tape, plastic sheeting, etc.
2. Use tape to cover the area around the damaged area with plastic sheeting or other materials to prevent color contamination.
3. Gently sand the damaged area with sandpaper to remove surface rust and dirt.
4. After soaking the cotton cloth with anhydrous ethanol, wipe the repaired area to remove surface dust and dirt, and then wipe it with a dry cotton cloth.
5. Apply paint evenly over the damaged area with a bristle brush or self-spray until it is completely covered.

NOTE

When the damaged area is too large, please contact professional maintenance personnel for treatment.

6.2 Alarm and Troubleshooting

Troubleshooting and processing should be carried out by professional personnel according to local requirements.

Fault code	Name	System action	Handling measures
E400	BMS Comm	Abnormal communication between Controller and Inverter	1. Check if correct selection of battery ID 2. Check the working status of battery 3. Check the quality of comm. connection between invertererter and BMS 4. Check whether the line sequence of the communication line is correct
E431	Abnormal Battery Voltage	Battery voltage deviatio n >100V (measured value by inverter and value reported by BMS)	1. Check if power cable is connected correctly 2. Check if any leakage or damage of the power cable 3. Check if any alarm and/or protection of battery 4. Reboot battery after removing anomalies and re-installation. If problem remains, contact manufacturer after-sales for solution"

Fault code	Name	System action	Handling measures
E432	Abnormal BAT Parallel No.	Actual paralleled cluster No. is different from configured target No.	1.Check if the target parallel no. is set correctly. If incorrect, revise the target No. into correct value. 2.Check if any communication malfunctions between batteries/clusters and inverter. If any malfunction, resolve it and re-excute the parallel process. 3.Check if each cluster is powered on. If any cluster without power, turn on the DC breaker of each battery/cluster and re-excute the parallel process. 4.Check if there is any alarm or protection in any cluster. If any alarm or protection, resolve it and re-excute the parallel process. 5.Check if the voltage deviation between batteries/clusters is ≤ 2.5V. If anything abnormal, charge or discharge the batteries/cluster to ensure the voltage deviation ≤ 2.5V and then re-excute the parallel process.
E401	Low SOC	Battery is overdischarged (SOC<5% or value set)	1. Check comm. and power connection between battery and inverter. 2. Check if connection between inverter, PV, grid and diesel generator. 3. Check if load is oversized
E402	Low SOH	Battery healthy is too bad	1. Check if no compelete charge/discharge cycles during long-term period 2. Check if there is performance deviation between cells 3. Check if there is performance deviation between batteryteries
E403	BMS Sleeping	Threshold is triggered, which lead to sleep mode	1. Check if grid and/or PV can be stable and contineous for enough time. 2. Check if power connection between battery and inverter.
E404	BAT Voltage Sensor Fault	There might be something wrong with battery voltage sensor	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E405	BAT Temp. Sensor Fault	There might be something wrong with battery temperature sensor	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E406	BAT Internal Comm Fault	There might be something wrong with battery internal comm. circuit	1. Check comm. cable between battery module and controller. 2.Reboot the battery. If problem remains, contact manufacturer after-sales for solution
E407	Input OV Fault	Input voltage on battery is too high	1. Check if power cables are incorrectly connected to other source 2. Check if there is malfunction of invertererter

Fault code	Name	System action	Handling measures
E408	Input Reversed Fault	Input polarity is reversed	1. Check if power cables are reversely connected 2. Check if there is malfunction of invertererter
E409	BAT Relay Checking Fault	There might be something wrong with battery relay	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E410	Cell Damaged Fault	Cell voltage < 2.0V	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E411	Shutdown Circuit Fault	Can not completely switch off the system	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E412	BMIC Fault	Sensor chip is abnormal	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E413	BAT Internal Bus Fault	Battery internal bus is abnormal	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E414	Self-checking Fault	Self-checking failed	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E415	Safety Function Fault	Chip self-checking failed	1. Reboot the battery 2. If problem remains, contact manufacturer after-sales for solution
E416	ISO Fault	Isolation is too low	1. Turn off the whole system 2. Check if any damage or breakage in devices, cables, terminals, etc. 3. Check if any circuit shorted by foreign matters. 4. Reboot battery after removing anomalies. If problem remains, contact manufacturer after-sales for solution
E417	Cell UV	Cell votage is too high, which triggers the protection	1. Check if there is any malfunction of invertererter, which leads to inexecution of forced-charging 2. Check if the external source (PV, utility grid, diesel generator, etc.) stop working, which leads to inexecution of forced-charging 3. Reboot and then charge the battery immediately.
E418	Cell OV	Cell votage is too low, which triggers the protection	1. Check if there is any malfunction of invertererter, which leads to inexecution of forced-discharging 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Reboot and then discharge the battery immediately.

Fault code	Name	System action	Handling measures
E419	Cluster UV	Cluster votage is too high, which triggers the protection	1. Check if there is any malfunction of invertererter, which leads to inexecution of forced-charging 2. Check if the external source (PV, utility grid, diesel generator, etc.) stop working, which leads to inexecution of forced-charging 3. Reboot and then charge the battery immediately.
E420	Cluster OV	Cluster votage is too low, which triggers the protection	1. Check if there is any malfunction of invertererter, which leads to inexecution of forced-discharging 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Reboot and then discharge the battery immediately.
E421	Charge UT	Cluster votage is too high, which triggers the protection	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Increase the enviroment temp. to warm up battery and then reboot the battery.
E422	Charge OT	Cluster votage is too low, which triggers the protection	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down battery and then reboot the battery.
E423	Discharge UT	Temperature is too low for discharge, which triggers the protection.	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Increase the enviroment temp. to warm up battery and then reboot the battery.
E424	Discharge OT	Temperature is too high for discharge, which triggers the protection.	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down battery and then reboot the battery.
E425	Charge OC	Temperature is too low for charge, which triggers the protection.	1. Check if current limitation of battery decreases cause of temp, SOC, etc. 2. Check if invertererter does not charge according to current limitation 3. Reboot battery after checking or adjusting configuration of invertererter
E426	Discharge OC	Temperature is too high for charge, which triggers the protection.	1. Check if current limitation of battery decreases cause of temp, SOC, etc. 2. Check if invertererter does not discharge according to current limitation 3. Reboot battery after checking or adjusting configuration of invertererter

Fault code	Name	System action	Handling measures
E427	Battery Module UV	Battery module votage is too high, which triggers the protection	1. Check if there is any malfunction of invertererter, which leads to inexecution of forced-charging 2. Check if the external source (PV, utility grid, diesel generator, etc.) stop working, which leads to inexecution of forced-charging 3. Reboot and then charge the battery immediately.
E428	Battery Module OV	Battery module votage is too low, which triggers the protection	1. Check if there is any malfunction of invertererter, which leads to inexecution of forced-discharging 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Reboot and then discharge the battery immediately.
E429	Terminal OT	Termianl temperature is too high, which triggers the protection.	1. Check if terminal temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down terminal and then reboot the battery.
E430	Abnormal Leakage	Leakage current is too high, which triggers the protection.	1. Turn off the whole system 2. Check if any damage or breakage in devices, cables, terminals, etc. 3. Check if any circuit shorted by foreign matters. 4. Reboot battery after removing anomalies.
I400	Cell UV	Cell votage is too high, which triggers the alarm	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to unstopped discharging. 2. Check if there is obvious cell voltage deviation. 3. Charge the battery immediately. 4. If there is cell volatge deviation, fully charge and discharge the battery for several times (>10 cycles). If unsolved, contact manufacturer after-sales for solution.
I401	Cell OV	Cell votage is too low, which triggers the alarm	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to inexecution protection according to charging voltage limitation. 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Discharge the battery immediately 4. If there is cell volatge deviation, fully charge and discharge the battery for several times (>10 cycles). If unsolved, contact manufacturer after-sales for solution.
I402	Cluster UV	Cluster votage is too high, which triggers the alarm	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to unstopped discharging. 2. Check if load power is oversized. 3. Charge the battery immediately.

Fault code	Name	System action	Handling measures
1403	Cluster OV	Cluster votage is too low, which triggers the alarm	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to inexecution protection according to charging voltage limitation. 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Discharge the battery immediately.
1404	Charge UT	Cluster votage is too high, which triggers the alarm	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Increase the enviroment temp. to warm up battery.
1405	Charge OT	Cluster votage is too low, which triggers the alarm	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down battery or reduce the charging current.
1406	Discharge UT	Temperature is too low for discharge, which triggers the alarm.	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Increase the enviroment temp. to warm up battery.
1407	Discharge OT	Temperature is too high for discharge, which triggers the alarm.	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down battery or reduce the discharging current.
1408	Charge OC	Temperature is too low for charge, which triggers the alarm.	1. Check if current limitation of battery decreases cause of temp, SOC, etc. 2. Check if invertererter does not charge according to current limitation 3. Reboot battery after checking or adjusting configuration of invertererter
1409	Discharge OC	Temperature is too high for charge, which triggers the alarm.	1. Check if current limitation of battery decreases cause of temp, SOC, etc. 2. Check if invertererter does not discharge according to current limitation 3. Reboot battery after checking or adjusting configuration of invertererter
1410	Battery Module UV	Battery module votage is too high, which triggers the alarm	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to unstopped discharging. 2. Check if load power is oversized. 3. Charge the battery immediately.

Fault code	Name	System action	Handling measures
I411	Battery Module OV	Battery module votage is too low, which triggers the alarm	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to inexecution protection according to charging voltage limitation. 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Discharge the battery immediately.
I412	Terminal OT	Termianl temperature is too high, which triggers the alarm.	1. Check if terminal temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down terminal and then reboot the battery.
I413	Abnormal Fan	Fan of battery module is abnormal	1. Turn off the battery and check if power cable of fan is connected correctly 2. Contact manufacturer after-sales for solution
I414	Abnormal Leakage	Leakage current is too high, which triggers the alarm.	1. Turn off the whole system 2. Check if any damage or breakage in devices, cables, terminals, etc. 3. Check if any circuit shorted by foreign matters. 4. Reboot battery after removing anomalies.
W400	Cell UV	Cell votage is too high, which triggers the warning	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to unstopped discharging. 2. Check if there is obvious cell voltage deviation. 3. Charge the battery immediately. 4. If there is cell volatge deviation, fully charge and discharge the battery for several times (>10 cycles). If unsolved, contact manufacturer after-sales for solution.
W401	Cell OV	Cell votage is too low, which triggers the warning	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to inexecution protection according to charging voltage limitation. 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Discharge the battery immediately 4. If there is cell volatge deviation, fully charge and discharge the battery for several times (>10 cycles). If unsolved, contact manufacturer after-sales for solution.
W402	Cluster UV	Cluster votage is too high, which triggers the warning	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to unstopped discharging. 2. Check if load power is oversized. 3. Charge the battery immediately.

Fault code	Name	System action	Handling measures
W403	Cluster OV	Cluster votage is too low, which triggers the warning	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to inexecution protection according to charging voltage limitation. 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Discharge the battery immediately.
W404	Charge UT	Cluster votage is too high, which triggers the warning	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Increase the enviroment temp. to warm up battery.
W405	Charge OT	Cluster votage is too low, which triggers the warning	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down battery or reduce the charging current.
W406	Discharge UT	Temperature is too low for discharge, which triggers the warning.	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Increase the enviroment temp. to warm up battery.
W407	Discharge OT	Temperature is too high for discharge, which triggers the warning.	1. Check if battery temp. is reasonable 2. Check if any malfunction of temp. sensors 3. Reduce the enviroment temp. to cool down battery or reduce the discharging current.
W408	Charge OC	Temperature is too low for charge, which triggers the warning.	1. Check if current limitation of battery decreases cause of temp, SOC, etc. 2. Check if invertererter does not charge according to current limitation 3. Reboot battery after checking or adjusting configuration of invertererter
W409	Discharge OC	Temperature is too high for charge, which triggers the warning.	1. Check if current limitation of battery decreases cause of temp, SOC, etc. 2. Check if invertererter does not discharge according to current limitation 3. Reboot battery after checking or adjusting configuration of invertererter
W410	Battery Module UV	Battery module votage is too high, which triggers the warning	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to unstopped discharging. 2. Check if load power is oversized. 3. Charge the battery immediately.
W411	Battery Module OV	Battery module votage is too low, which triggers the warning	1. Check if there is any malfunction or incorrect configuration of invertererter, which leads to inexecution protection according to charging voltage limitation. 2. Check if any unsuitable setting and/or configuration , which leads to inexecution of forced-discharging 3. Discharge the battery immediately.

Fault code	Name	System action	Handling measures
W412	BMU Offline	BMU in battery module is offline	Turn off battery and contact manufacturer after-sales for solution.
W413	BMCU Offline	BMCU in controller is offline	Turn off battery and contact manufacturer after-sales for solution.
W414	SN Change of Module	Battery module(s) changed	1. Check if any battery module is removed or added 2. Check if SOC and voltage of all the battery modules are the same when added 3. Contact installer, distributro or manufacturer after-sales for confirmation and elimination.
W415	Abnormal Change of Cluster Voltage	Cluster voltage changes too much in 2s	1. Check if power cable is connected correctly. 2. Check if abnormal change of voltage and SOC. 3. Reboot battery after removing anomalies. If problem remains, contact manufacturer after-sales for solution
W416	Abnormal Cluster △ V	There is visible voltage deviation between clusters	1. Check if power cable is connected correctly. 2. Check if abnormal change of voltage and SOC. 3. Check if battery mode and number in each cluster is the same. 4. Reboot battery after removing anomalies. If problem remains, contact manufacturer after-sales for solution
W417	Abnormal Module △ V	There is visible voltage deviation between battery modules	1. Check if power cable is connected correctly. 2. Check if abnormal change of voltage and SOC. 3. Reboot battery after removing anomalies. If problem remains, contact manufacturer after-sales for solution

7 Disposal

The energy storage cabinet contains batteries, please dispose of the equipment according to local requirements.

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