SOFAR

USER MANUAL

PowerIn

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1 About this manual

This installation and user manual (hereinafter referred to as the manual) describes the installation, electrical connection, commissioning, maintenance and fault elimination procedures of the following products:
CBS8000-64KWH, CBS8000-80KWH, CBS8000-96KWH

- Carefully read this manual before use!
- Treat this manual as an integral part of the device.
- Keep this manual in close proximity to the device, including when it is handed over to another user or moved to a different location.

This manual contains important safety information on installation, operation and maintenance of the device.

- Read and observe all safety information provided.

The products, services or features you purchased shall be subject to the company's commercial contracts and terms. All or part of the products and services described in this document may not be within the scope of your purchase. Unless there are any additional terms and conditions in your contract, the company does not make any statement or guarantee on the contents of this document.

1.1 Copyright declaration

The copyright of this manual is owned by SOFAR. It may not be copied – either partially or completely – by companies or individuals (including software etc.) and must not be reproduced or distributed in any form or with any means.
SOFAR reserves the right to final interpretation. This manual may be amended following feedback from users or customers.
Consult our website at https://www.SOFAR.com for the latest version.

1.2 Presentation of warnings

- Target Group

This manual is intended for professional electrical engineers who install, operate, and maintain this product.

- Symbols used

To ensure the personal and property safety of the user when using the PCS, as well as the efficient use of the product, relevant safety information is provided in the manual and highlighted with the appropriate symbols. This emphasized information must be fully understood and absolutely adhered to before use to avoid personal injury and property damage. The symbols used in this manual are listed below.

- Read through the following symbol explanations carefully in order to prevent injury and property damage.

1.2.1 Warning symbol

	The general danger symbol warns of the risk of serious injury when used with the signal words CAUTION, WARNING and DANGER.

1.2.2 Signal words

DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a danger that will result in damage to or destruction of the inverter.

1.2.3 Sectional warnings

Sectional warnings refer to a complete section and are structured as follows:

⚠ WARNING
Type and source of danger **Consequences of non-observance** ▸ Avoiding the danger

1.2.4 Embedded warnings

Embedded warnings are part of an action sequence and are placed right before the dangerous step.

WARNING Combination of type/source of danger, consequences for non-observance and avoiding the danger.

1.3 Presentation of action instructions

This table shows the sequence of action steps:

Symbol	Function
✓	This describes an action requirement
1. 2. 3.	This is the sequence of action steps that must be followed step by step
▸	This is a single action step
↳	This describes the result of the action

1.4 Note

Notes are presented in a grey bar.

▸ Provides tips essential to the optimal operation of the product.

Version change record

Date	Release version	Change content
2025-08	A00	First Edition Release

2 Safety information

- If you have any questions or problems after reading the following information, please contact SOFAR

This chapter details the safety information pertaining to the installation and operation of the device.

Before starting operation, please read the operating instructions and precautions carefully to minimize the occurrence of accidents.

The Danger, Warning, Caution, Attention and Note statements described in this document do not cover all the safety precautions. Relevant standards and industry practices need also to be followed. The company is not liable for any consequences resulting from violations of safety requirements or safety standards related to the design, production, and usage of the product.

2.1 Operating Instructions

DANGER

- Do not touch the terminals of the product while it is in operation.
- Pay attention to safety instructions related to grid connection.
- Special protective equipment must be used during the operation process, such as wearing protective clothing, insulated footwear, goggles, safety helmets, insulated gloves, etc

2.2 Electrical Safety

⚠ DANGER

- Before installation and maintenance, ensure that the product and the power supply is switched off to protect against fire or electric shock.
- Ensure that the product is well grounded to protect against electric shock or injury to personnel.
- Observe the safety precautions listed in these manual and other documents related to this equipment.
- Observe the relevant safety precautions and protection precautions for lithium batteries.
- During operation, to protect against fire, prevent foreign objects from entering the product.
- For personal safety and to prevent burn injuries during operation, it is strictly prohibited to touch the external surfaces of the product, fans, etc. to test their temperature.

⚠ WARNING

- This product shall not be used in salt mist and sand/dust environments.

NOTICE

- Before power on, ensure that all the connections are intact and that the installation complies with local grid standards and safety requirements.

2.3 Mechanical Safety

⚠ CAUTION

- All tools must be fully prepared and inspected by a professional organization. It is prohibited to use tools that have visible defects, fail an inspection, or exceed their inspection validity period. This is to

ensure that tools are robust and are able to operate within specified load limits.

NOTICE

- When handling the product, pay special attention to workbenches, ramps, stairs, and other areas where there is a risk to personnel of slipping.
- For all work at height, use wooden or insulated ladders. Before using a ladder, please ensure that the ladder is intact and that it complies with its load-bearing specifications. Compliance with its maximum weight limit is mandatory.
- Exercise caution when removing installed products from a cabinet because they may be unwieldy or heavy.

2.4 Personnel Requirements

- Only professional electricians or qualified personnel who understand the various safety precautions and the correct running methods can operate this product.
- Personnel who operate the equipment, including operators, trained personnel, and professionals should have special running qualifications required by the local state, such as high-voltage operation, ascent, and special equipment operation qualifications.
- Operators should be fully familiar with the composition and working principle of the integrated ESS.
- Operators should have training or experience in running the equipment and be aware of the various potential sources and levels of hazard during installation, operation, and maintenance of the equipment.
- Operators should be fully familiar with the relevant standards and regulations of the country/region where the project is located.
- Operators should be fully familiar with the product manuals of outdoor cabinets and internal electrical equipment.

3 Product Introduction

3.1 Product overview

CBS8000 64/80/96KWH energy storage system is mainly used in industrial/ commercial and residential scenarios. This product integrates battery control unit (BCU), battery packs (including BMS), thermal management system, fire extinguishing system and power conversion system (PCS).

3.1.1 Product Appearance

The CBS8000 64/80/96KWH energy storage system can be used with wall-mounted energy storage inverters, providing users with a one-stop solution. Typical application of the CBS8000 64/80/96KWH energy storage system is illustrated below:

- Product Appearance

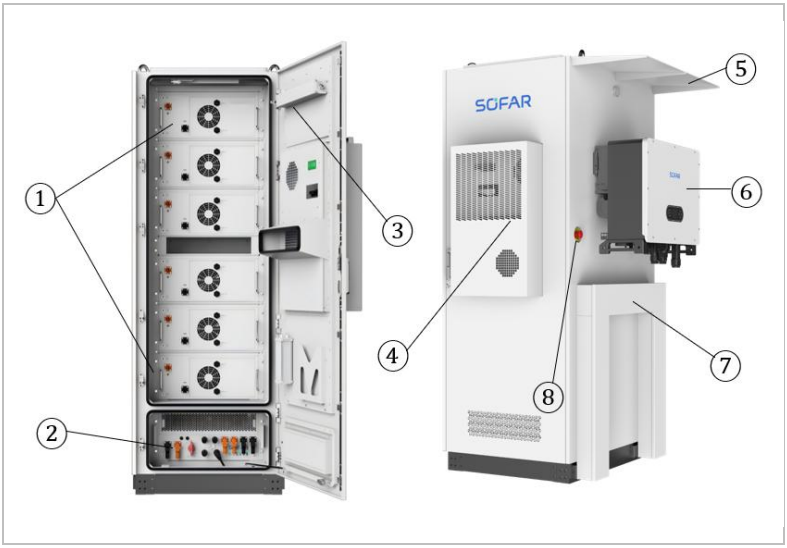


Figure 3-1: Product Appearance

Table 3-1 CBS8000-96KWH component

Identification	Name	Description
①	Battery packs	16kWh battery pack with BMS
②	Battery control unit	Control unit with smart control and protection
③	Fire extinguishing unit	Fire extinguishing equipment with control
④	Air conditioner	Air conditioner with smart thermal management
⑤	Shelter	Shelter for PCS
⑥	PCS	Power Conversion System
⑦	Wire slot	Wire slot for electrical connection
⑧	EPO	EPO button

3.1.2 Overview of the Battery Pack

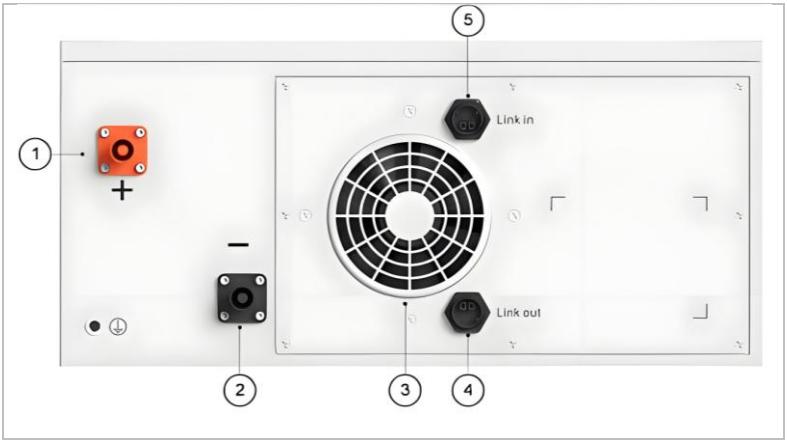


Figure 3-2 CBS8000-BMU Front Overview

Table 3-2 CBS8000-BMU appearance

Identification	Name	Description
①	+	Battery positive port
②	-	Battery negative port
③	FAN	Fan for battery pack
④	Link out	Hand-in-hand Communication to the battery pack below
⑤	Link in	Hand-in-hand Communication from the battery pack above

3.1.3 Overview of the Battery Control Unit

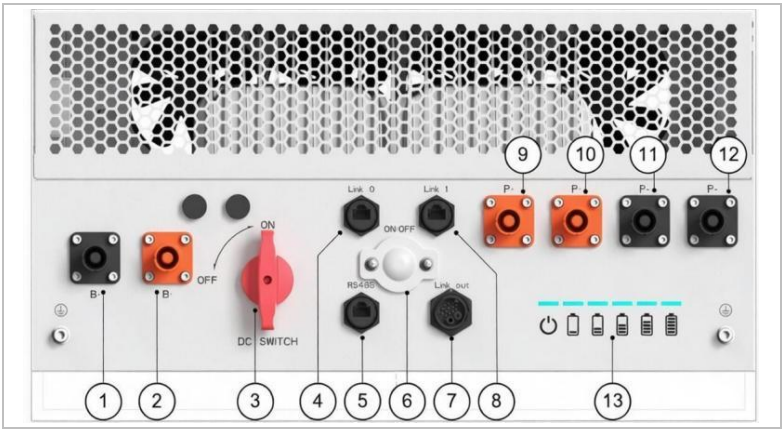


Figure 3-3 Front Overview

Table 3-3 CBS8000-BCU appearance

Identification	Name	Description
①	B-	Battery negative port
②	B+	Battery positive port
③	DC Switch	Battery DC power switch
④	Link 0	BCU hand-in-hand communication port 0

Identification	Name	Description
⑤	RS485	Reserved RS485 port
⑥	ON/OFF	BCU power ON/ power OFF button
⑦	Link out	Communication port from BCU to battery pack
⑧	Link 1	BCU hand-in-hand communication Port 1
⑨⑩	P+	BCU positive output port
⑪⑫	P-	BCU negative output port
⑬	LED	Led indicator

3.2 Product Features

The core product features of the CBS8000-64/80/96KWH energy storage system can be summarized as highly integrated, safe and reliable, intelligent and efficient. It is not merely an energy storage device, but also a modular and standardized energy management solution, aiming to assist users in efficiently utilizing photovoltaic energy and reasonably distributing the power.

The main features are as follows:

- Adjustable capacity: a single cabinet can achieve 64/80/96 kWh options by adjusting the number of battery packs. Supports up to four power cabinets in parallel(Max.768kWh).
- Highly integrated for rapid deployment. PV-storage integration is built into a single cabinet, making installation simple and convenient.
- Safe and reliable. Multi-level battery safety protection, Dynamic temperature regulation.
- Intelligent and efficient. Integrated EMS, suitable for various applications, enables faster monitoring and quicker response.

3.3 Product Model Description

The main product models featured in this manual is: CBS8000 series.

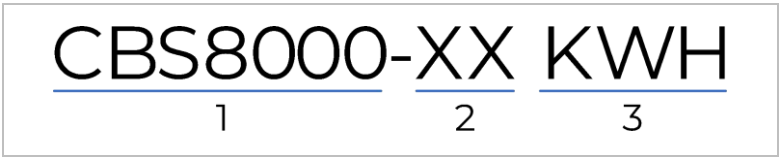


Figure 3-1: Model Identification

Table 3-4 Model Description

Identification	Name	Meaning	Description
1	CBS8000	Product series	Product series name
2	XX	Battery capacity	96 means 96kWh
3	KWH	Unit	kWh

3.4 Application scenarios

This series of products is applied in industrial/ commercial and residential scenarios, providing grid-tied and off-grid functions.

3.4.1 Single cabinet application

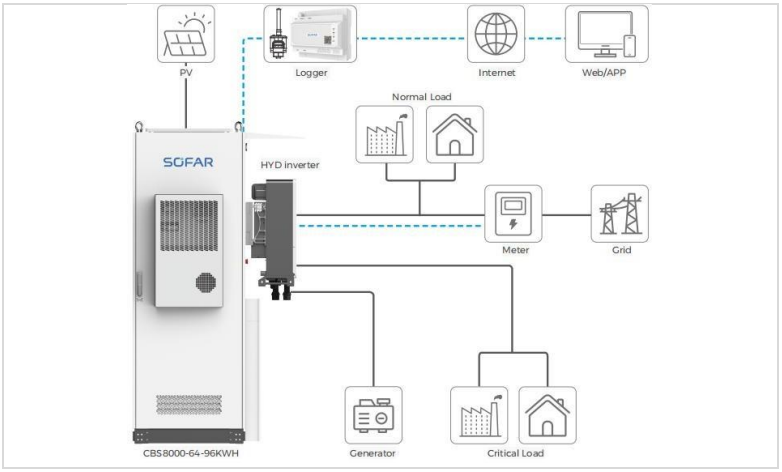


Figure 3-2: Application diagram of ESS with single cabinet

3.4.2 Parallel cabinets application

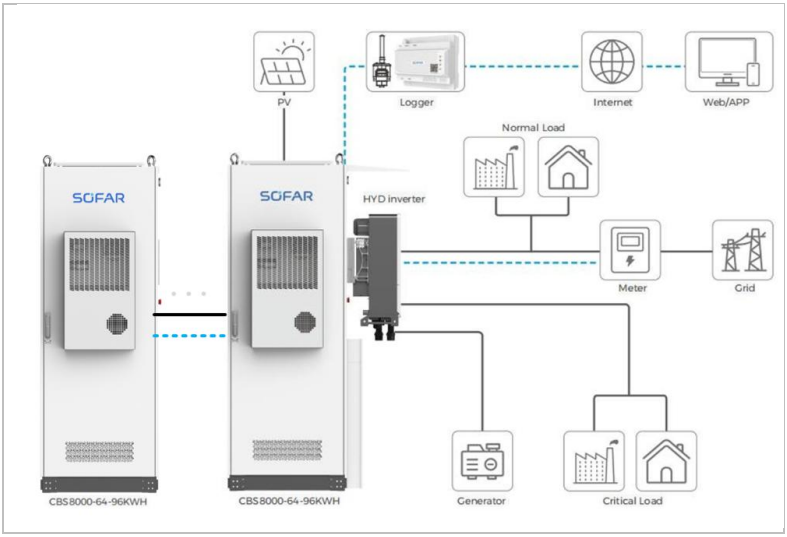


Figure 3-3: Application diagram of ESS with parallel cabinets

3.5 Product Dimensions

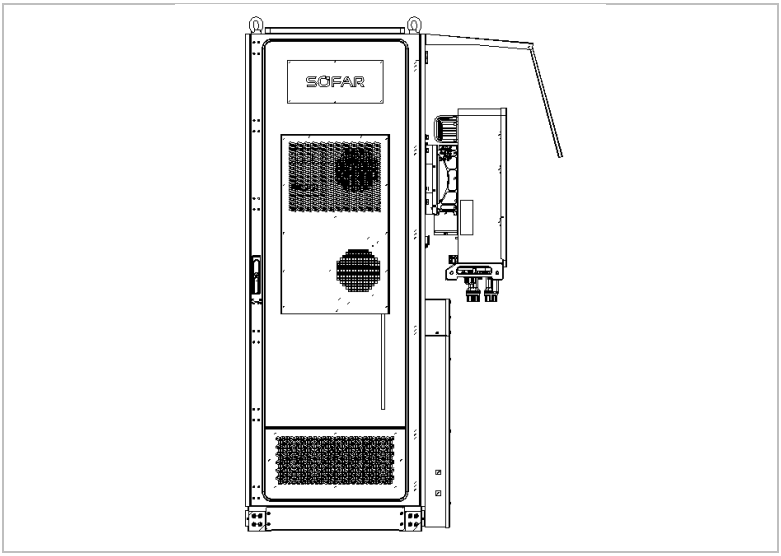


Figure 3-4: Appearance of CBS8000 system

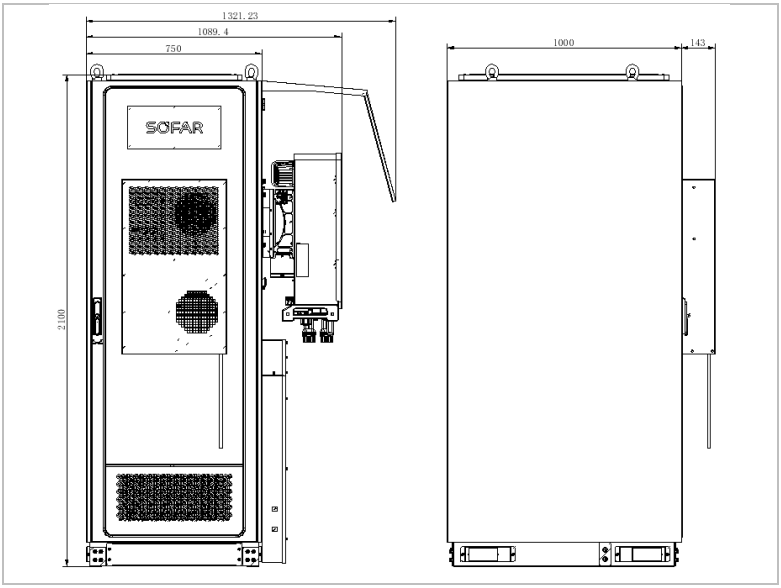


Figure 3-5: CBS8000 System Dimensions

3.6 Label Description

The label description of this product is as follows.

Table 3-5 Label Description

Symbol	Name	Meaning
	Indicates the risk of residual voltage inside the system!	Within a period of power outage on the DC side of this product, the internal capacitor is still charged. After the power outage, it is necessary to wait for 30 minutes to ensure that the capacitor is fully discharged before maintenance work can be carried out.
	Electric shock hazard!	There is a risk of electric shock when operating this product. All operations related to this product must be carried out by trained professional electrical technicians.
	Hazard from hot surfaces!	The surface temperature of this product is high during operation, and it is strictly prohibited to touch it.

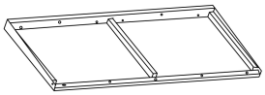
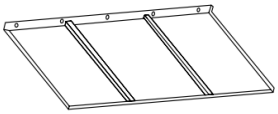
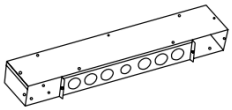
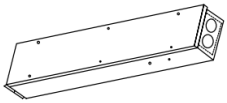
Symbol	Name	Meaning
	Grounding terminal	Connect this product to the grounding bar to achieve grounding protection.
	Refer to documentation	Please read this manual before installing this product.
	Electrical positive and negative polarity identification	Remind users to pay attention to the polarity of the electrical connections.
	WEEE identification	Do not treat this product as household waste.
	No open flames	The use of matches, lighters, or other open flames is prohibited in this area.
	Chasing Arrows Logo	The material can be recycled and reused.

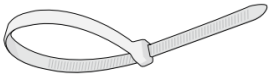
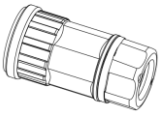
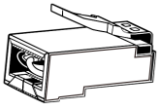
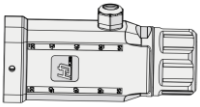
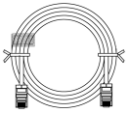
3.7 Scope of Supply

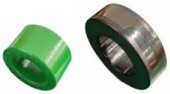
When the system is shipped, the battery cabinet and PCS are packed separately. For single cabinet application, the shipment list is as follows:

Table 3-6 Scope of Description

No.	Picture	Description	Quantity
1		Battery cabinet	1

No.	Picture	Description	Quantity
2		Sun visor	1
3		Protective cover	1
4		Fireproof putty	1
5		M5*12 screw	17
6		M4*12 screw	26
7		M10*30 screw	9
8		M6*30 screw	12
9		Cable Tray Assembly	1
10		Cable Tray Assembly	2
11		Rings	4

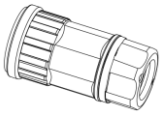
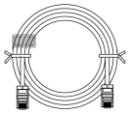
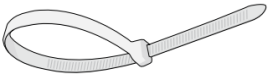
No.	Picture	Description	Quantity
12		Tower-shaped grommet 50(KKTX50)	8
13		Tower-shaped grommet 40(KKTX40)	2
14		Cable tie	45
15		Waterproof connector	2
16		RJ45 end plug	2
17		PE cable	1
18		Parallel shorting cable	1
19		Connection waterproof cover	1
20		Communication cable	1
21		Power cables	1
22		Air conditioning power supply cable	1

No.	Picture	Description	Quantity
23		Emergency stop signal cable	1
24		Quick installation guide	1
25		Quality assurance card	1
26		Factory inspection report	1
27		Packing list	1
28		Certificate of conformity	1
29		Magnetic Ring	1

For parallel cabinets application, you also need to order the parallel accessories.

The delivery list in the parallel accessories is as follows.

Table 3-7 Parallel accessories

No.	Picture	Description	Quantity
1		Fireproof putty	1
2		Waterproof connector	3
3		Communication cable	1
4		Power cables	1
5		Emergency stop signal cable	1
6		Air conditioning power supply cable	1
7		Cable tie	20
8		PE cable	1
10		Rings	4
11		Packing list	1

4 Transportation and Unpacking

4.1 Storage

Table 4-1 Storage requirements

Project	Requirements
Packaging requirements	This product needs to be stored in packaging. Storage without packaging is prohibited. Do not tilt or invert the packaging box.
Foundation requirements	Must be stored on level, firm, and stable ground. Ensure that the foundation can support the weight of this product.
Space requirements	While this product is in storage, it must be protected from collisions. Regular check (recommended every three months). If any insects, rodents, or damaged packaging are found, please replace the packaging promptly.
Time requirements	If storage time reaches two years or more, the chassis needs to be inspected and tested by professional personnel before it can be put into operation.
	Maintain a temperature of between -20℃ and +50℃
	Recommended long-term storage temperature: 20℃~30℃
Environmental requirements Packaging requirements	Relative humidity: 5%~95% (without condensation).
	The ambient air must not contain corrosive or combustible gases.
	Stored in an indoor environment, Prevent erosion by dust, rainwater, or accumulated water on the ground.

4.2 Product Transport

4.2.1 Precautions

⚠ WARNING

- During the whole process of loading, unloading and transportation, the outdoor cabinet operation safety regulations of the country/region where the project is located must be followed!
- All personnel engaged in loading, unloading and bolting should receive appropriate training, especially in safety.

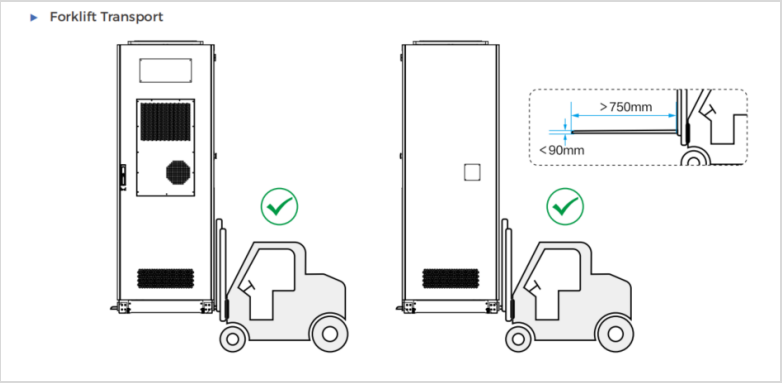
NOTICE

- When handling this product, please ensure it remains balanced to prevent this product from falling and injuring the operator.
- Transport with packaging whenever possible.
- The door of the outdoor battery cabinet is locked during the whole process of loading, unloading and transportation.
- Select a suitable forklift according to site conditions. The selected tool must have sufficient load capacity, arm length and radius of rotation.
- Additional traction may be required if movement on slopes is required.
- Remove all obstacles that exist or may exist during the movement, such as trees, cables, etc.
- The outdoor battery cabinet should be transported and moved under good weather conditions as much as possible.
- Be sure to set up warning signs or warning tapes to prevent non-workers from entering the lifting and transporting area to avoid accidents.

4.2.2 Forklift Transportation

If the installation site is flat, you can use a forklift to move the battery cabinet. The bottom of the battery cabinet is equipped with fork holes specially used for forklift transportation. Move the battery cabinet through the front fork holes. If forklift transportation is used, the following requirements shall be met:

- Forklift load capacity must be greater than 4T. If the field working conditions do not meet the requirements, please contact a professional for assessment.
- The length of the prongs should be at least 1.1m.
- The prongs should fit into the forked sockets on the bottom of the workstation (see the figure below for the location of the pronged sockets).
- The pin depth inserted into the stake should be the depth of the stake, which is 1.1m.
- Transportation, moving and setting down of battery cabinet should be
- slow and steady. It is recommended to take a try.
- Only place the battery cabinet on a stable place. The place should drain well without any snags or bulges. The battery cabinet shall be secured by four bottom corner pieces.



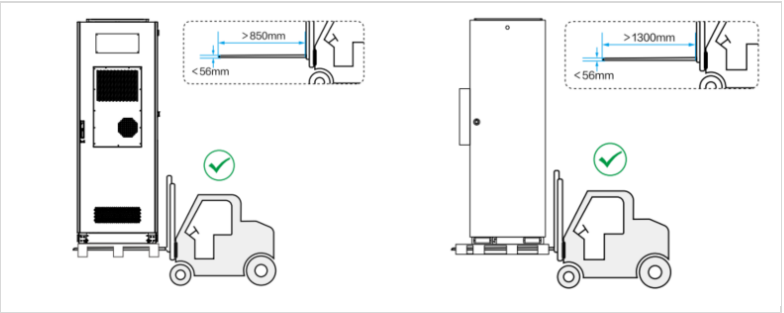


Figure 4-1: Forklift Transportation

4.3 Unpacking the Product

4.3.1 Precautions

NOTICE
▸ Unpacking the product near the installation site. ▸ Unpacking the product carefully and checking to ensure that fasteners, and detachable parts are not loose. If there is any problem, please immediately notify the transporter and supplier. ▸ Check the materials received on site against the Delivery List. If any of the materials are damaged or missing, notify the shipping company immediately.

4.3.2 Precautions

Table 4-2 Precautions

No.	Inspection content	Confirm
1	This product is not visibly damaged, scratched, or dented.	□Yes □No
2	The supporting materials and accessories of this product are complete.	□Yes □No
3	The nameplate information is consistent with the ordered product model	□Yes □No
4	The warning label is not damaged, scratched, or blurred	□Yes □No

- The quantity of delivered items can refer to the Delivery List inside the packaging.

5 Product Installation

5.1 Installation requirements

5.1.1 Installation environment requirements

Table 5-1 Installation requirements

Items	Environmental Requirements
Installation requirements	Must be installed in a dry and well ventilated, away from flammable and explosive area. The climatic environment and geological conditions (such as stress wave emission, groundwater level) and other characteristics of the place where the integrated ESS is installed should be fully considered.
Space requirements	There must be enough space to dissipate heat dissipation on the left and right sides of this product
Altitude	<4000m
Temperature	-20℃~50℃（Derating above 45℃）
Humidity	5%~95% (without condensation)

5.1.2 Installation space requirements

To ensure sufficient airflow at the air inlet and facilitate maintenance, it is needed to reserve adequate space around the cabinet installation area. The minimum required space is shown in the figures below.

1、Single Cabinet installation space requirements:

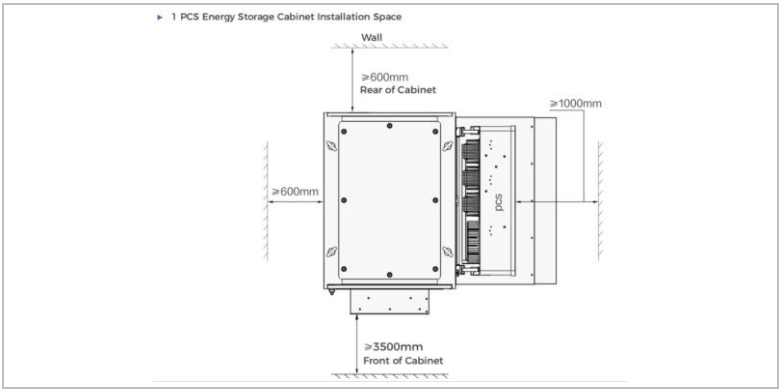
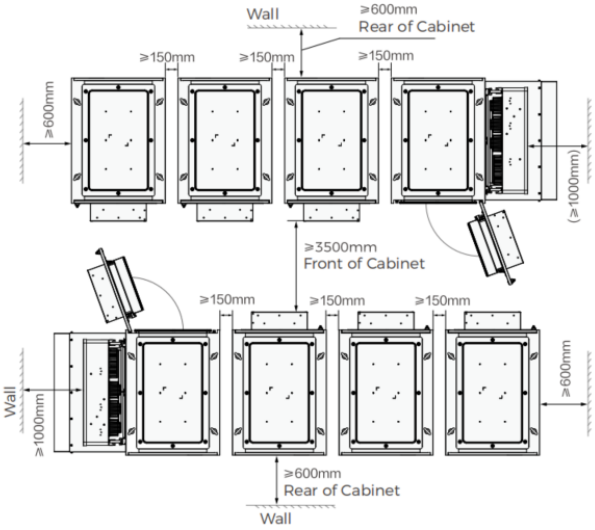


Figure 5-1:Installation space for single-cabinet applications

2、Parallel Cabinets installation space requirements:

- **4PCS Energy Storage Cabinets installed Face to Face**



- **4PCS Energy Storage Cabinets installed Back to Back**

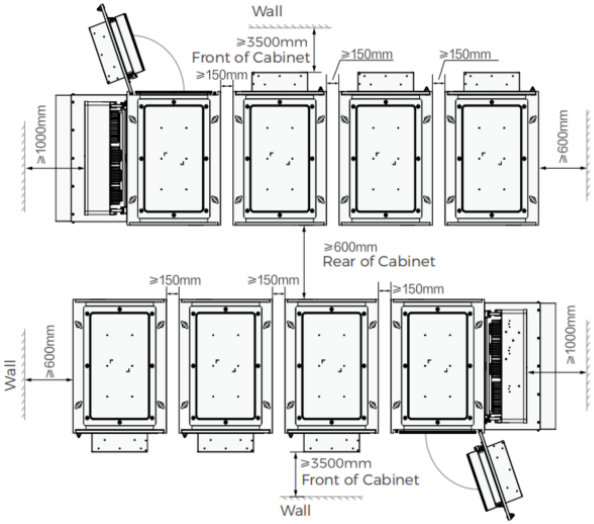


Figure 5-2 Installation space for parallel-cabinet applications

5.1.3 Foundation Requirements

⚠ WARNING

- The integrated ESS is relatively heavy as a whole. Before building the foundation, the conditions of the installation site (mainly referring to geological conditions and environmental climate conditions, etc. should be inspected in detail. Only on this basis can the design and construction of the foundation be started.

NOTICE

- The bottom of the foundation pit for building the foundation must be compacted and filled.
- The foundation should be sufficient to provide effective load-bearing support for the integrated ESS.
- Elevate the integrated ESS to prevent rainwater from eroding the base and interior. It is suggested that the foundation should be about 300mm higher than the horizontal ground of the installation site.
- It is necessary to construct corresponding drainage measures in combination with local geological conditions.
- Construct concrete foundations of sufficient cross-sectional area and height. The foundation height shall be determined by the construction party according to the site geology.
- Cable routing should be considered when constructing the foundation.
- The maintenance platform should be built around the foundation to provide convenience for later maintenance.
- According to the position and size of the cable inlet and outlet on the outdoor battery cabinet, reserve enough space for the AC/DC side cable trough and pre-embed the cable guide in the foundation construction

- Determine the specifications and quantity of perforating tubes according to the cable model and the number of incoming and outgoing lines.
- Both ends of all pre-buried pipes are temporarily sealed to prevent impurities from entering.
- After all cables are connected, cable entries and exits and joints should be sealed with refractory mortar or other suitable material to prevent the entry of rodents.

The installation foundation of the integrated ESS must be designed and constructed in advance according to certain standards to meet the requirements for mechanical support, cable routing, post-maintenance and overhaul, etc.

The detail requirements of battery cabinet installation foundation is shown below.

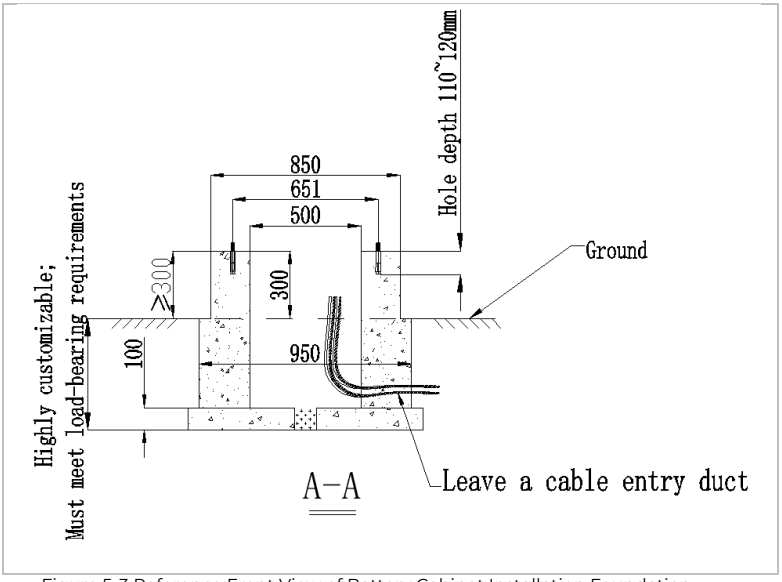


Figure 5-3 Reference Front View of Battery Cabinet Installation Foundation

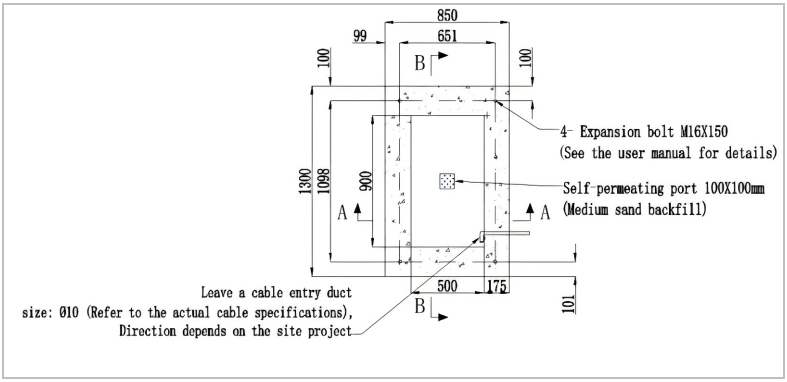


Figure 5-4 Reference Top View of Battery Cabinet Installation Foundation

5.2 Installation Preparation

5.2.1 Installation Tools

The tools that need to be prepared before product installation or debugging are shown in the table below.

Table 5-2 Installation Tools

No.	Name	Purpose	Picture
1	Sleeve	For product installation	
2	Insulated torque socket wrench (Including an extension bar ≥ 50 mm)	For product installation	
3	Screwdriver	For product installation	
4	Adjustable open-end wrench	For product installation	
5	Crimping pliers	For crimping signal wires	
6	Stripping pliers	For stripping wires	

No.	Name	Purpose	Picture
7	Diagonal pliers	For cutting threads	
8	Thread cutting pliers	Power line shears	
9	Digital multimeter DC voltage measurement range ≥ 1100 V DC AC voltage measurement range ≥ 440 V AC	For checking whether the cable wiring is correct, whether the battery polarity is correct, and whether the grounding is reliable	
10	Insulated gloves	Safety protection	
11	Safety helmet	Safety protection	
12	Goggles	Safety protection	

5.2.2 Tightening Torques for Commonly Used Bolts/Screws

Table 5-3 Tightening Torques

Bolt/screw	Strength grade	Maximum torque (N · m)
M4	8.8	1.2
M5	8.8	2.8
M6	8.8	4.8
M8	8.8	20
M10	8.8	40
M12	8.8	70

5.3 Fixed Installation

5.3.1 Single Cabinet Installation

We provide corresponding installation guides based on the specific installation accessory package selected by the user.

1.For Corner Bracket Accessory Kit Installation:

After placing the cabinet in the installation position, take out the accessories. Use M8*25 screws to secure the corner brackets to the front and rear sides of the cabinet, with a total of four mounting points. Secure the cabinet to the concrete floor using the expansion bolts. Complete the installation and perform an inspection. As shown in the figure.

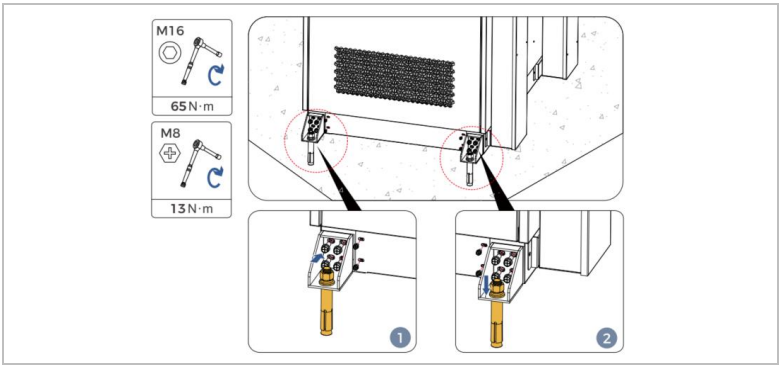


Figure 5-5: For Corner Bracket Accessory Kit Installation

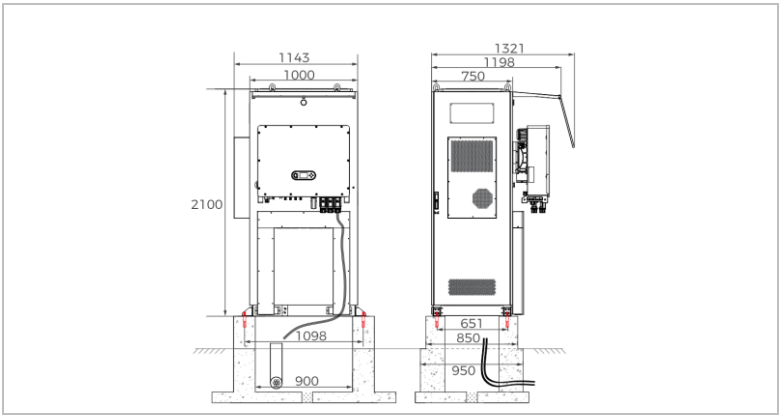


Figure 5-6: For Corner Bracket Accessory Kit Installation 2

2.For Steel Base Installation:

confirming that the foundation construction meets the requirements and is sufficiently dry, firm and flat, use forklift or lifting equipment to place the battery cabinet to the predetermined position.

Step1: Lift or move the steel base to the designated position, ensuring that the "Black" side on the steel base faces the opposite direction of the intended door-opening orientation of the equipment.

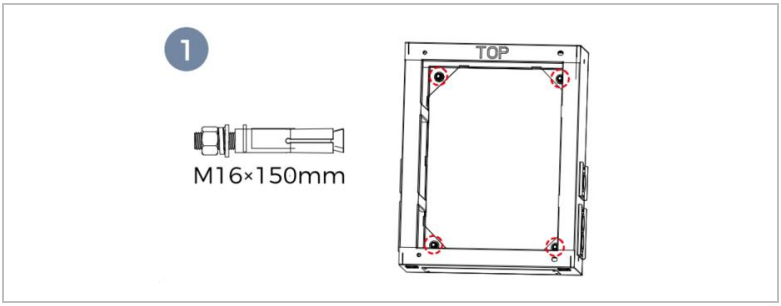
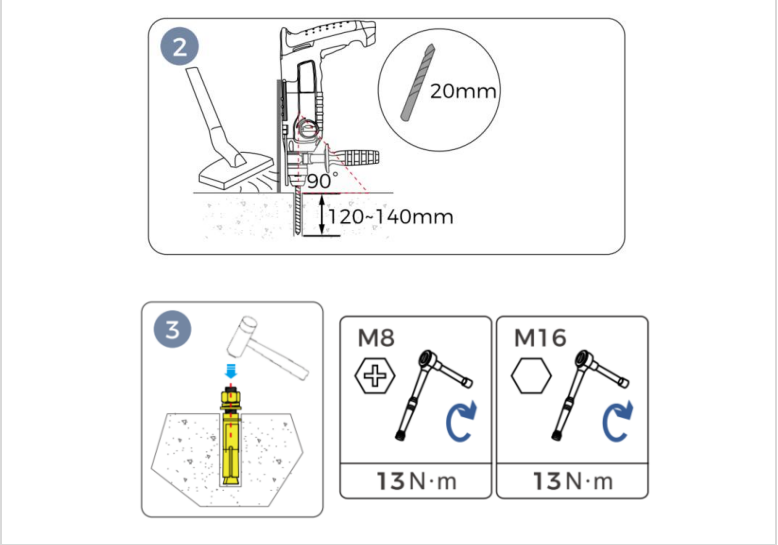


Figure 5-7: Determine the orientation of the steel base.

Step 2: Secure the steel base to the concrete floor using expansion bolts.



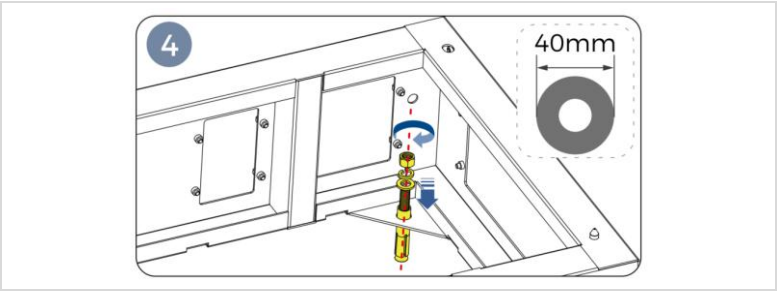


Figure 5-8: Secure the steel base

Step 3: Fasten the energy storage cabinet firmly onto the steel base using bolts.

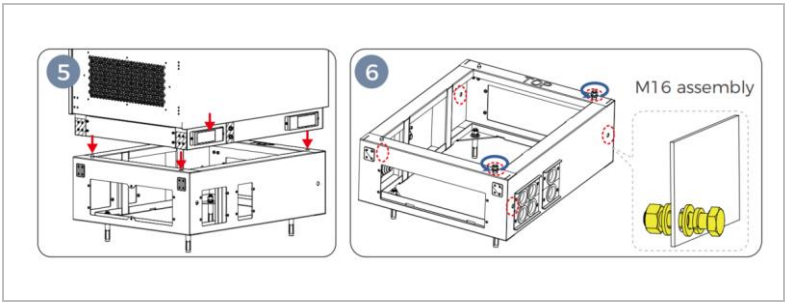


Figure 5-9: Fasten the cabinet

Step 4: Install the cover plates and the parallel connection metal components.

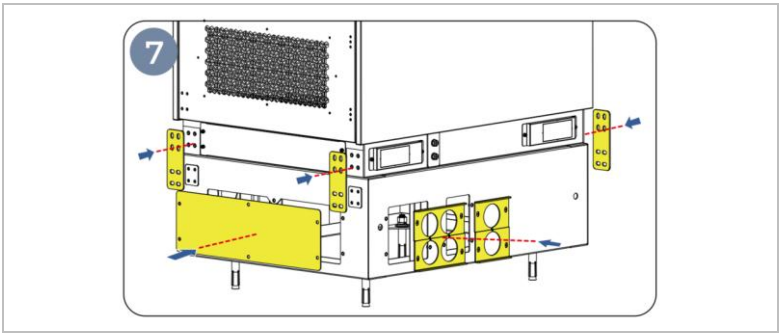


Figure 5-10: Cover plates Installation

Step 5: Complete the installation and carry out an inspection. Confirm that the installation is functioning normally

5.3.2 The energy storage system accessories Installation

To obtain an all-in-one photovoltaic energy storage system, the following accessories need to be installed on the basis of a single cabinet:

1. **Install the energy storage system sunshade**

Take out the sunshade, 11 pieces of M6×30 screws, and 2 pieces of M5×12 screws from the accessory package. Then install the sunshade according to the steps below.

Step1: Install the top sunshade. Align the sunshade with the screw holes on the top of the cabinet, then tighten the screws with the appropriate torque.

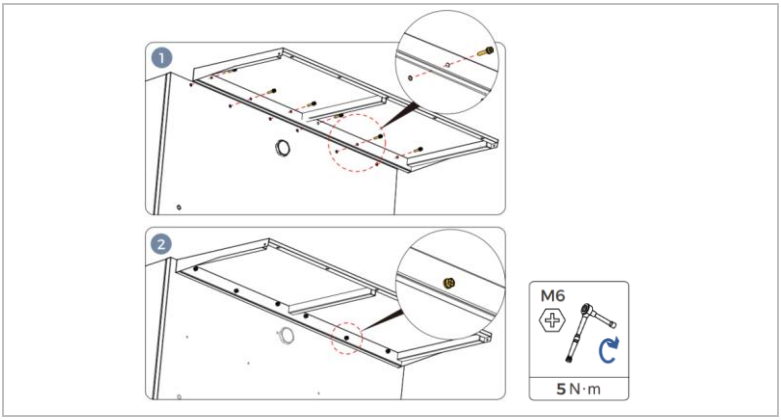


Figure 5-11: Top Cover plates Installation

Step2: Install the side sunshade. Align the screw holes, then tighten the top and side fixing screws respectively.

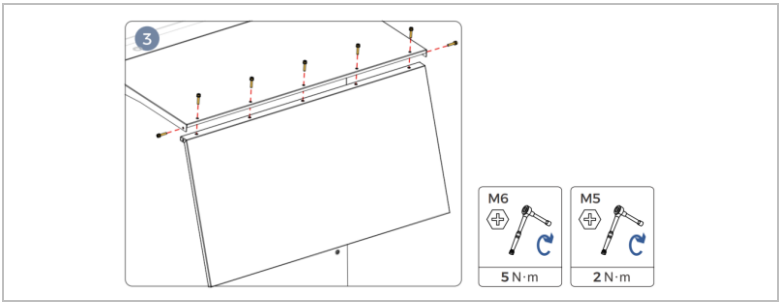


Figure 5-12: Side Cover plates Installation

Step3: Check that the sunshade is properly installed.

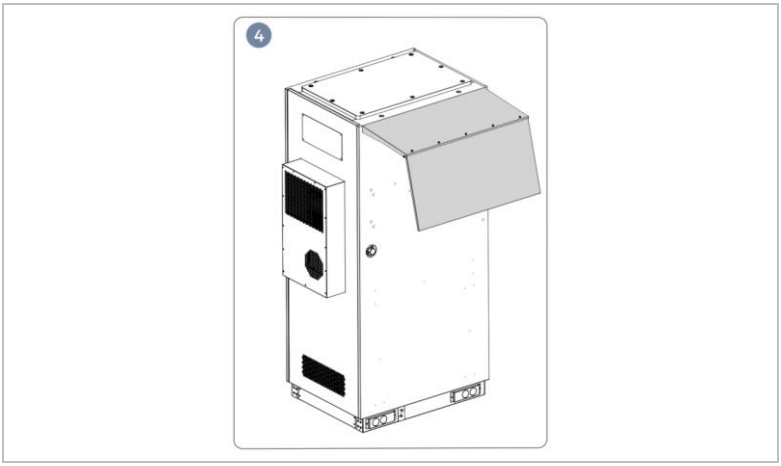


Figure 5-13: Sunshade Installation

1. **Install the energy storage system cable trays**

Take out 23 M4×12 screws, 13 M5×12 screws, 10 Grommet 50 (KKTX50), and 1 Grommet 40 (KKTX40) from the accessory package, then install the cable duct according to the following steps.

Step1: Remove the cable outlet cover at the bottom of the cabinet.

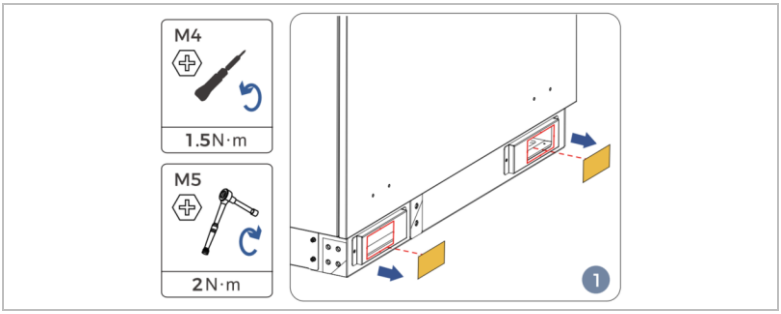


Figure 5-14: Remove the cable outlet cover

Step2: Secure the cable trays to the corresponding positions on the cabinet and tighten the screws, as shown in the figure.

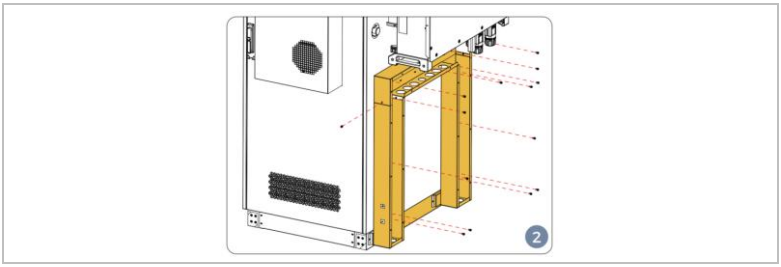


Figure 5-15: Secure the cable trays

Step3: Install the grommets according to the size of the cable outlets on the cable tray.

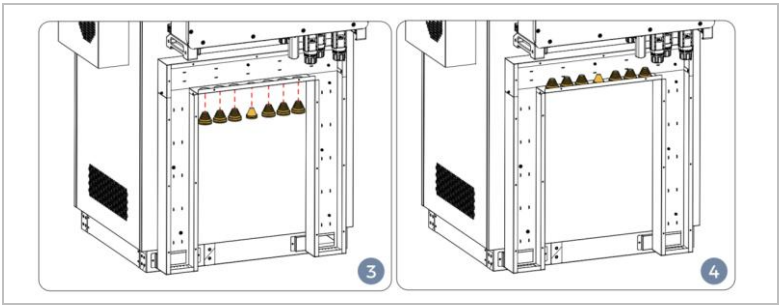


Figure 5-16: Install the grommets

Step4: After cable installation is complete, put on the cable duct cover.

NOTICE
▸ After all cables have been properly installed, install the cover of the cable duct.

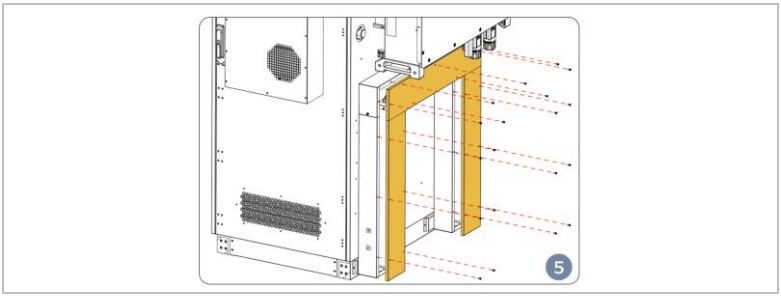


Figure 5-17: Install the grommets

6 Electrical connections

6.1 Precautions

DANGER

- Danger of high voltage! Danger of electric shock!
- Ensure that all the power supply is disconnected before operation to protect against accidents caused by fire or electric shock.
- Make sure the grounding complies with the local standards and regulations.
- Only certified electricians are authorized to connect cables.
- Always wear proper PPE when connecting cables.
- During operation, prevent foreign bodies from entering this product.

WARNING

- All electrical connections must comply with the relevant standards and specifications of the country/region where the project is located.
- During the windy and dusty season, or when the relative humidity in the surrounding environment is greater than 95%, electrical connection should be avoided.
- During electrical connection, bolts must be tightened strictly according to the torque described in this manual.
- When laying cables, ensure electrical insulation and comply with EMC regulations. Power cables, power supply and communication cables should be laid in layers. When necessary, provide protection and support for the cables to reduce the stress them.

6.2 Single Cabinet Connection

6.2.1 Connecting the PE Cable

Use 4 PCS "M10*30" screws from the accessory kit. Ensure the grounding resistance is ≤ 4Ω. Use a 25mm² to 50mm² grounding cable to ensure a reliable connection between the energy storage cabinet and the grounding point of the site grounding grid.

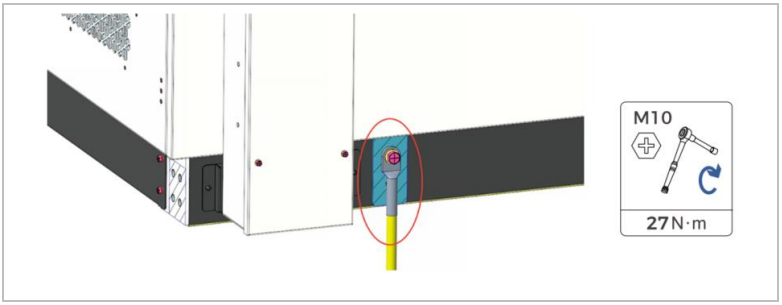


Figure 6-1 Grounding cable connecting

- Mount each grounding screw separately. Overlapping installation is prohibited.
- To enhance the corrosion resistance of a ground terminal, apply silica gel or paint after connecting the ground cable.

6.2.2 Connecting the Link Cable between BCU and Battery Packs

DANGER

- Ensure that all the DC cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that the B+/B- terminals of BCU are not connected to battery packs

NOTICE
▸ When routing communication lines, please separate communication cables and power cables, and connect the shielding layer of communication cables to protective ground to avoid communication faults.

Step 1: Connect the BCU's Link out port to the Link in port of the first battery pack using the link cable in the accessories.

Step 2: Fully insert the cable terminal until an audible click confirms secure engagement.

Figure 6-2 Connect the link cable

6.2.3 Connecting DC Cables between BCU and Battery Packs

DANGER

- Always wear proper PPE when connecting cables.
- Ensure that all the DC cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that the B+/B- terminals of BCU are not connected to battery packs.
- Ensure that the polarities of the cables and labels are correct.

NOTICE

- Ensure that the positive cables and the negative cables are well insulated.

Step 1: Take the B+ power cable (Orange and short) and B- power cable (Black and long) between BCU and battery pack from the accessories. Check the color and length of the cables.

Step 2: Connect the BCU's B+ port to the B+ port of the first battery pack located at the top using the B+ power cable (Orange and short).

Connect the BCU's B- port to the B- port of the last battery pack located at the bottom using the B- power cable (Black and long).

Step 3: Fully insert the cable terminals until an audible click confirms secure engagement.

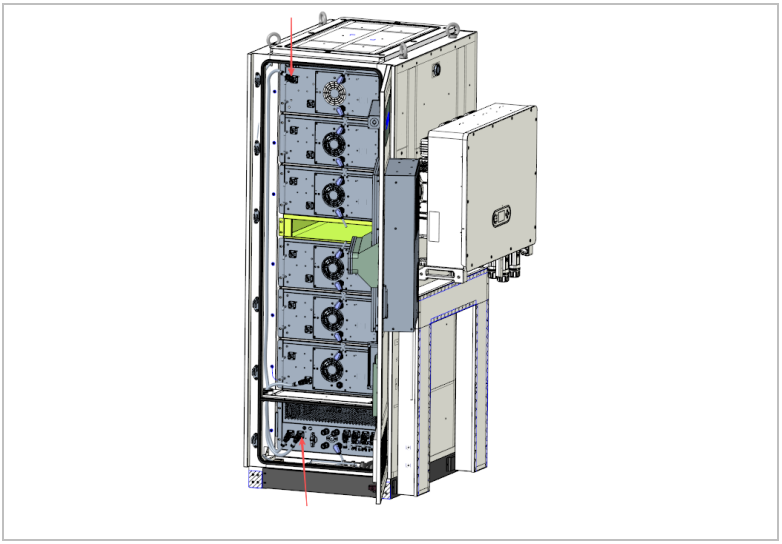


Figure 6-3 Connect the B+ power cable between BCU and battery pack

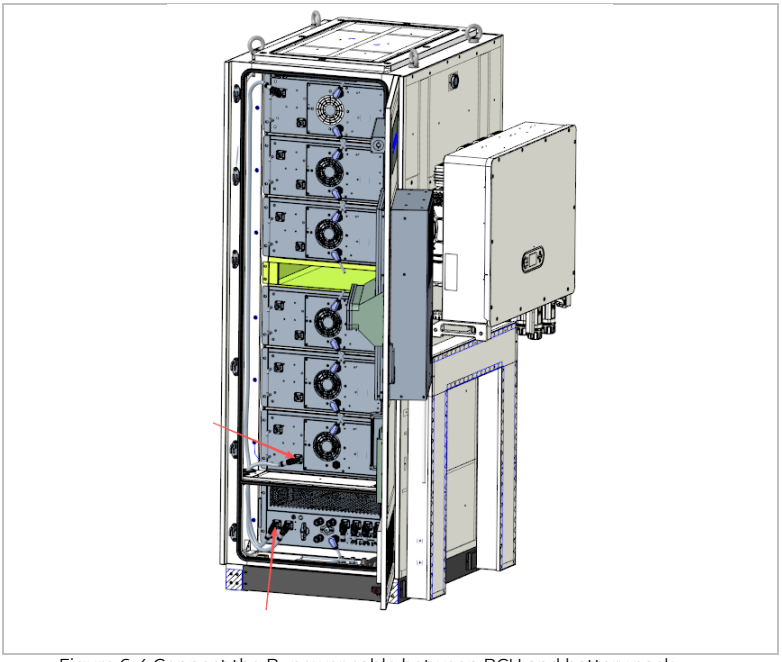


Figure 6-4 Connect the B- power cable between BCU and battery pack

6.3 Parallel Cabinet Connection

CBS8000 supports max. 4 cabinets in parallel and 1 PCS. Finish the cable connection for every single battery cabinet first. Before parallel connection, check if there are parallel accessories in the delivery.

6.3.1 Connecting Parallel PE Cables

DANGER

- Danger of high voltage! Danger of electric shock!
- Ensure that all the cables and terminals are unpowered.
- Ensure that all the DC Switch of single cabinet is turned to OFF position.

Step 1: Take out the parallel PE cables from the accessories.

Step 2: Connect the PE cables from one cabinet PE bar to the next cabinet PE bar, forming hand in hand connection. Tighten the terminals.

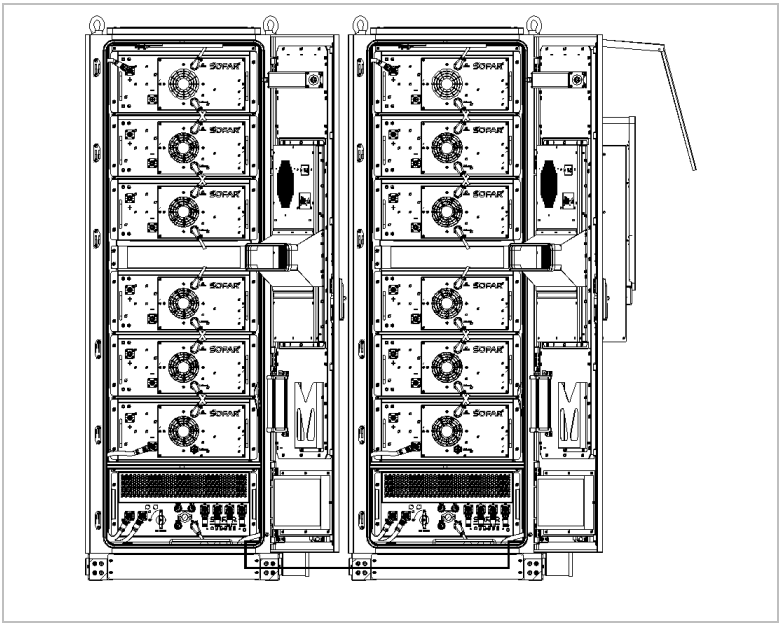


Figure 6-5 Hand in hand connection for PE cables

6.3.2 Connecting Parallel Communication Cables

DANGER ⚠

- Danger of high voltage! Danger of electric shock!
- Ensure that all the cables and terminals are unpowered.
- Ensure that all the DC Switch of single cabinet is turned to OFF position.

Step 1: Take out the parallel communication cables from the accessories.

Step 2: Make the waterproof head for all cable terminals as described in 6.4.1.

Step 3: Connect the communication cables from one cabinet link1 port to the next cabinet link 0 port, forming hand in hand connection. Tighten the terminals.

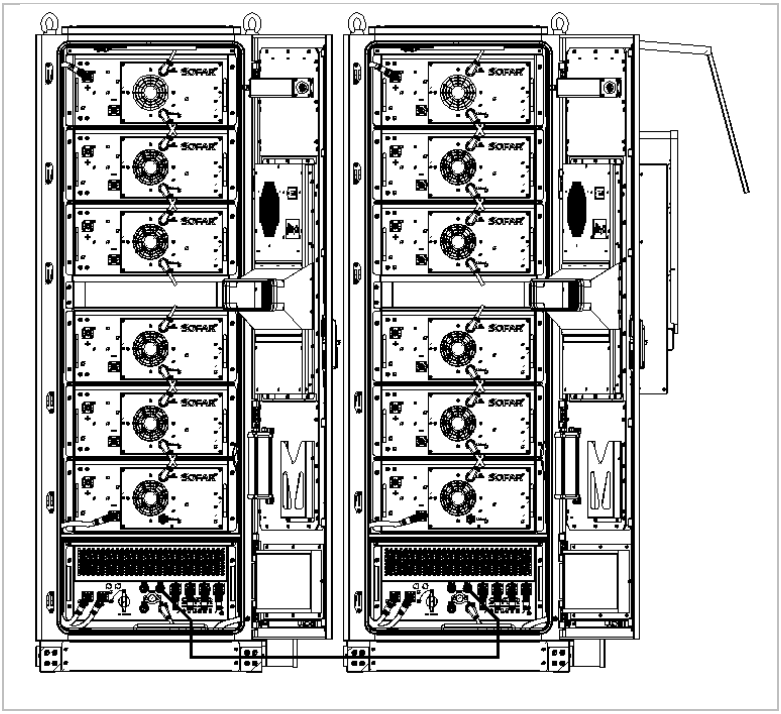


Figure 6-6 Hand in hand connection for communication cables

6.3.3 Connecting Parallel Power Cables

DANGER

- Danger of high voltage! Danger of electric shock!
- Ensure that all the cables and terminals are unpowered.
- Ensure that all the DC Switch of single cabinet is turned to OFF position.

Step 1: Take out the parallel DC power cables from the accessories.

Step 2: Connect the power cables from one cabinet P+/P- port to the next cabinet P+/P- port, forming hand in hand connection. Fully insert the cable terminals until an audible click confirms secure engagement.

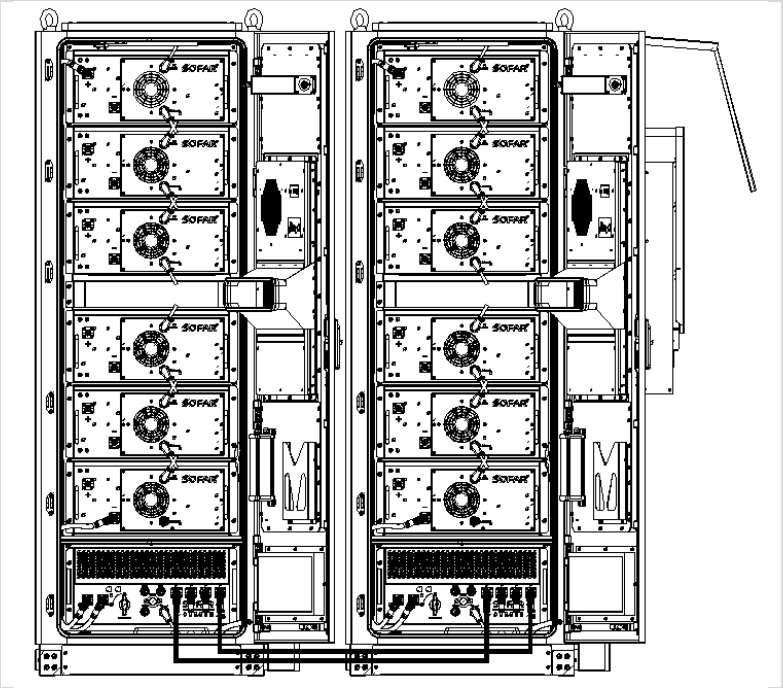


Figure 6-7 Hand in hand connection for power cables

6.3.4 Connecting Parallel Cabinet Power Distribution Cables

DANGER

- Danger of high voltage! Danger of electric shock!
- Ensure that all the cables and terminals are unpowered.
- Ensure that all the DC Switch of single cabinet is turned to OFF position.

Step 1: Take out the parallel cabinet power distribution cables from the accessories.

Step 2: Connect the power distribution cables from one cabinet L/N port to the next cabinet L/N port, forming hand in hand connection. Tighten the terminals.

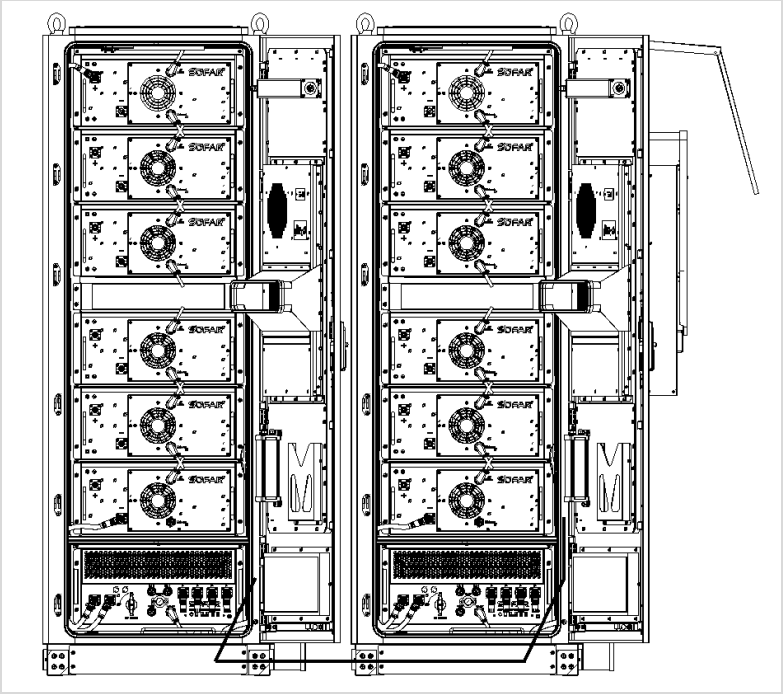


Figure 6-8 Hand in hand connection for distribution cables

6.4 PCS Cable Connection

6.4.1 Connecting the Communication Cable and EPO Cable between BCU and PCS

Step 1: Take out the communication cable between BCU and PCS and waterproof RJ45 head from the accessories.

Step 2: Thread the communication cable into the RJ45 waterproof head, as shown below.

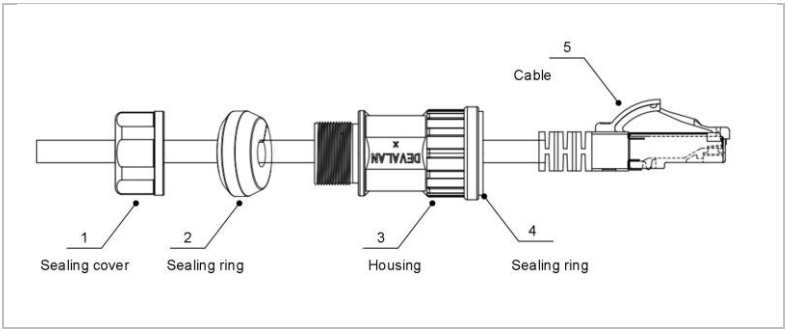


Figure 6-9 Make the waterproof RJ45 head

Step 3: Thread the crystal head of communication cable into the link 1 port.

Step 4: Tighten the part 3 with sealing ring of waterproof head to link 1 port.

Step 5: Flatten part 2 to part 3 and then tighten the part 1 to part 3.

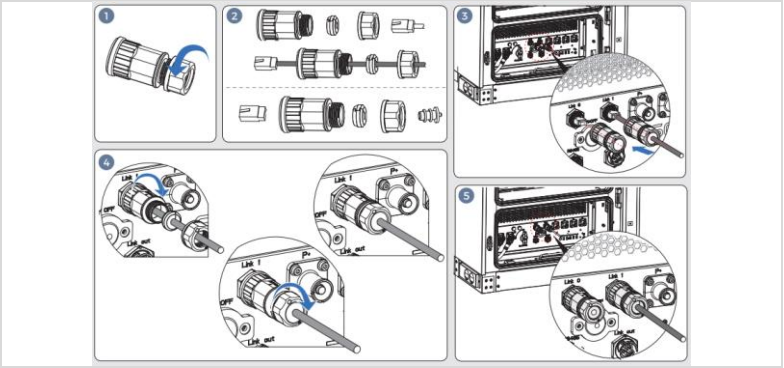


Figure 6-10 BCU communication terminal waterproof cover

Step 6: Check the sealing ring. Ensure the sealing ring forms a tight seal with the communication cable.

Step 7: Take out the EPO cable between BCU and PCS from the accessories.

Step 8: Connect the EPO cable to the EPO+/EPO- of the cabinet signal terminal trip.

Step 9: Wiring the communication cable and EPO cable along the cabinet and wire slot. Thread cables into the corrugated pipe.

Step 10: Thread it through the magnetic ring for 6 turns, fasten it with a cable tie, then connect it to the inverter side. The wiring diagram is shown below:

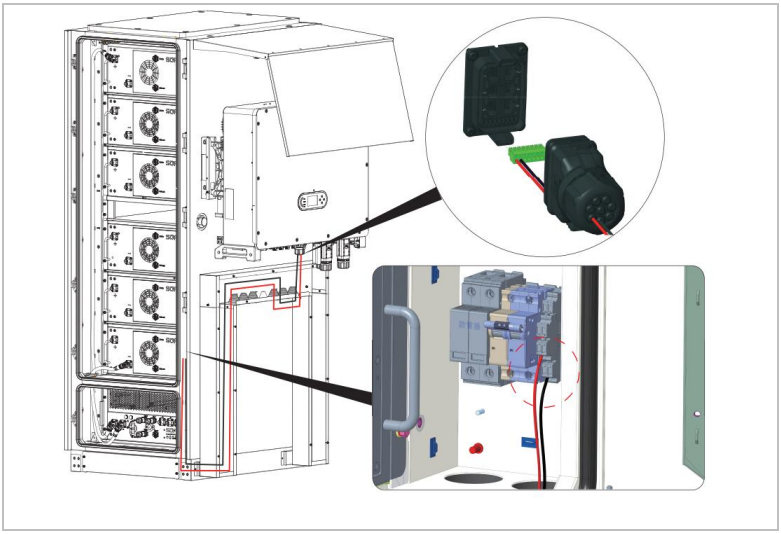


Figure 6-11 Connect the EPO cable to cabinet

Step 11: Thread the communication cable and EPO cable into the communication waterproof head of PCS, through different holes of sealing ring.

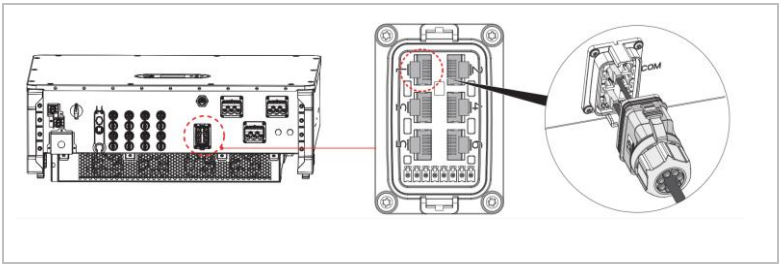


Figure 6-12 Connect the communication cable to cabinet

Figure 6-13 Communication cable wound around magnetic ring

Step 12: Insert the EPO cable terminals into the green terminal head.

Step 13: Connect the communication cable to the Link 0 port of PCS. Step 13: Connect the EPO cable terminal to the EPO port of PCS.

Step 14: Tighten the communication waterproof head of PCS. Ensure the sealing ring forms a tight seal with the communication and EPO cables.

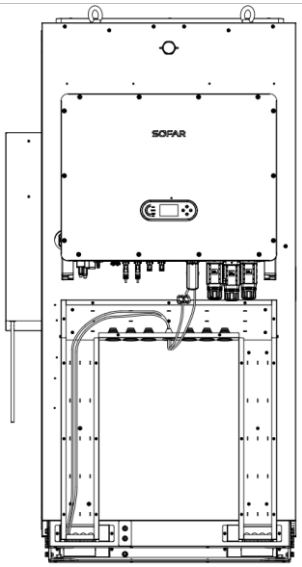


Figure 6-14 Communication cable completion diagram

- **Methods of winding magnetic rings**

Step 1: Magnetic ring winding on the inverter side of the BCU-inverter communication cable.

Serial number	Magnetic ring picture	Applicable wire harness
1		

Step 2: Ensure that the communication cable has been properly installed on the BCU side and routed from the cable trunking to the inverter side.

①	②	③	④

Step 3: Thread the communication cable into the port connector. After connecting all relevant cables to the COM port, insert the port connector. Fasten all communication cables on both ends of the magnetic ring tightly with cable ties.

⑤	⑥	⑦

6.4.2 Connecting DC Cables between the BCU and PCS

DANGER

- Always wear proper PPE when connecting cables.
- Ensure that all the cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that all the switches of PCS are turned to OFF position.

NOTICE

- Ensure that the positive cables and the negative cables are well insulated.

Step 1: Take out the P+ power cable (Orange) and P- power cable (Black) between BCU and PCS from the accessories. Check the color of the cables.

Step 2: Wiring the cables along the cabinet and wire slot. Thread cables into the corrugated pipe.

Step 3: Connect the end with the magnetic ring to the BCU side.

Figure 6-15 Wiring power cables connect BCU side

Step 4: Route the DC power cable through the cable trunking to the inverter side. Before connecting to the inverter, Thread the positive and negative DC power cables through the designated magnetic ring. Start winding at approximately 1 to 1.1 meters, making a total of 2 turns around the magnetic ring.The detailed steps are as shown in the figure below.

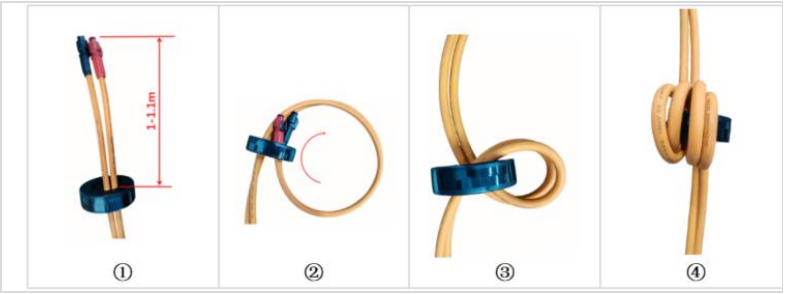


Figure 6-16 Steps for winding a magnetic ring

Step5： Place the DC power cables wound with the magnetic ring into the trunking, and secure the cable harnesses at both the upper and lower ends of the magnetic ring in the trunking using cable ties, as shown in the figure below.

Figure 6-17 Wiring power cables to Inverter

Step 6: Fully insert the cable terminals until an audible click confirms secure engagement.

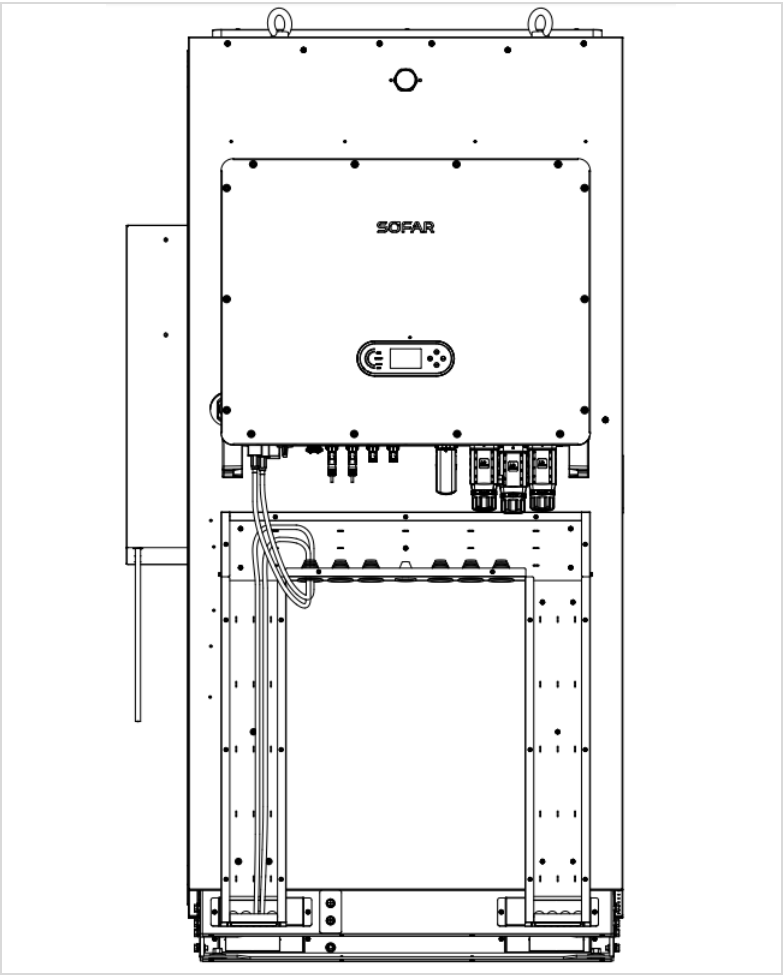


Figure 6-18 BCU to PCS cable completion diagram

6.4.3 Connecting the AC Cables

To prevent accidental disconnection between this product and the power grid due to excessively high AC cable impedance, please select the appropriate AC side cable outer diameter range as recommended in the PCS user manual.

Additionally, an external three-phase AC relay needs to be installed on at the final plant. This external relay, must be approved by Synergrid:

For Belgium, one of the following links is required for external AC relays. download.cfm(synergrid.be)

The PCS may have a standard and integrated residual current monitoring unit (RCMU). For external Residual Current Device (RCD), the rated residual

Additionally, if a three-phase AC switch and protective devices is installed on the external AC side of the PCS, select a proper over-current protection device in compliance with local power distribution regulations.

- **Connecting AC Cables of Back-up Load and Cabinet Power Distribution**

DANGER

- Always wear proper PPE when connecting cables.
- Ensure that all the cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that all the switches of PCS are turned to OFF position.

Step 1: Take the AC cable waterproof head and cabinet power distribution cable from the accessories.

Step 2: Thread the back-up load AC cable and cabinet power distribution cable into the corrugated pipe.

Step 3: Thread the back-up load AC cable and cabinet power distribution cable into the waterproof head, as shown below.

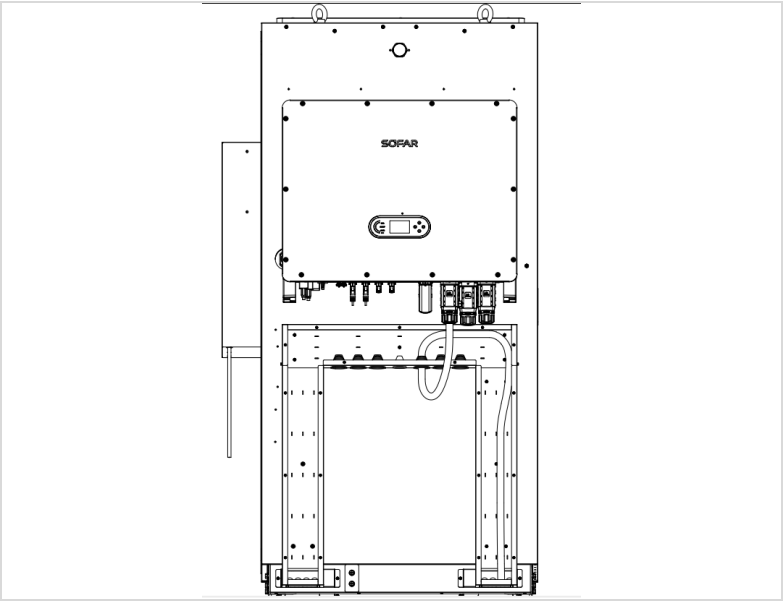


Figure 6-19 Wiring power cables from home load to Inverter

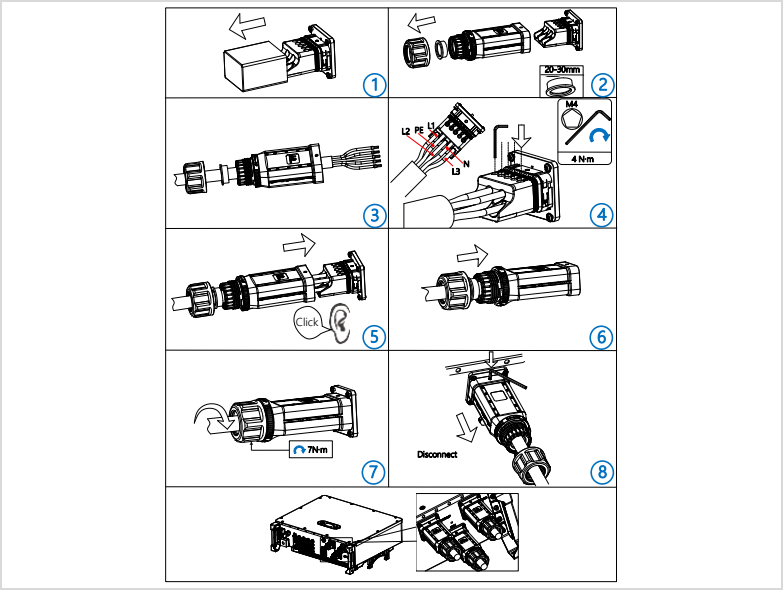


Figure 6-20 Wiring Schematic for Load Ports (Home Load)

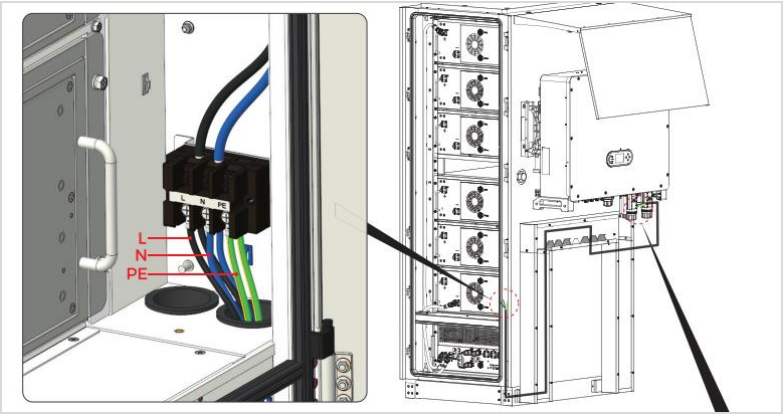


Figure 6-21 Wiring power cables from cabinet to Inverter

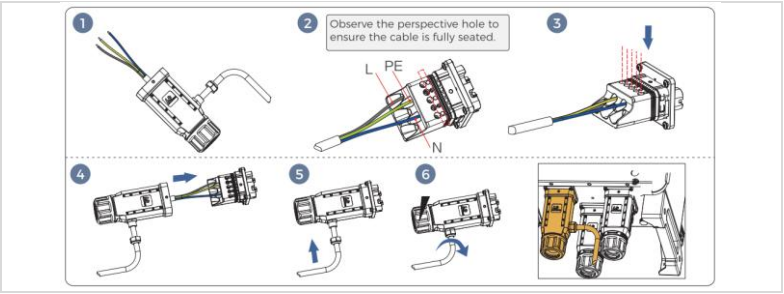


Figure 6-22 Wiring Schematic for Auxiliary Power at backup Port

Step 4: Connect the AC cable and cabinet power distribution cable to the BACKUP port of PCS, as shown below.

Step 5: Ensure that the phase sequence is correct.

Step 6: Tighten the waterproof head. Ensure the sealing ring forms a tight seal with the AC cables.

Step 7: Wiring the cabinet power distribution cable along the wire slot and cabinet.

Step 8: Connect the cabinet power distribution cable to the L/N port of cabinet power terminal strip and PE bar.

- **Connecting AC Cables of Generator (If used)**

DANGER

- Always wear proper PPE when connecting cables.
- Ensure that all the cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that all the switches of PCS are turned to OFF position.

Step 1: Take the AC cable waterproof head of generator port from the accessories of PCS.

Step 2: Thread the generator AC cable into the corrugated pipe.

Step 3: Thread the generator AC cable into the waterproof head, as shown below.

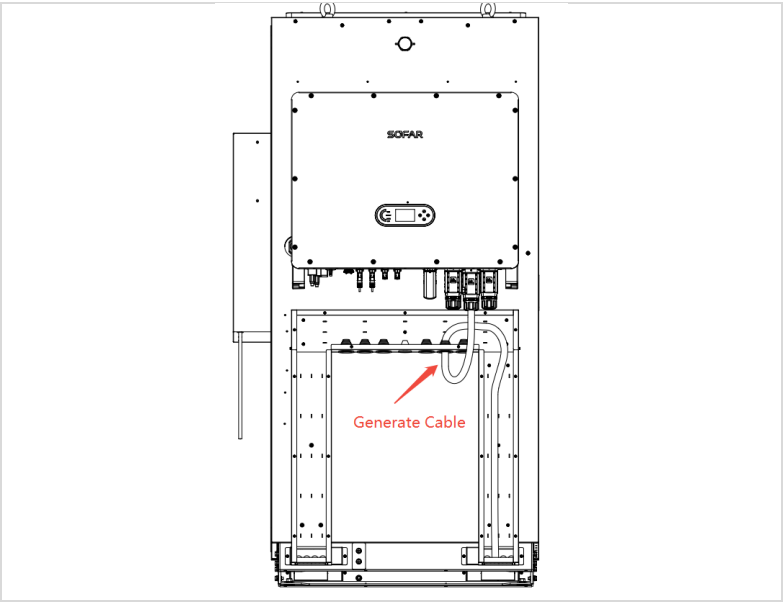


Figure 6-23 Wiring power cables from generator to Inverter

Step 4: Connect the AC cable to the GEN port of PCS, as shown below.

Step 5: Ensure that the phase sequence is correct.

Step 6: Tighten the waterproof head. Ensure the sealing ring forms a tight seal with the AC cables.

- **Connecting AC Cables of Grid**

DANGER

- Always wear proper PPE when connecting cables.
- Ensure that all the cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that all the switches of PCS are turned to OFF position.

Step 1: Take the AC cable waterproof head of grid port from the accessories of PCS.

Step 2: Thread the grid AC cable into the corrugated pipe.

Step 3: Thread the grid AC cable into the waterproof head, as shown below.

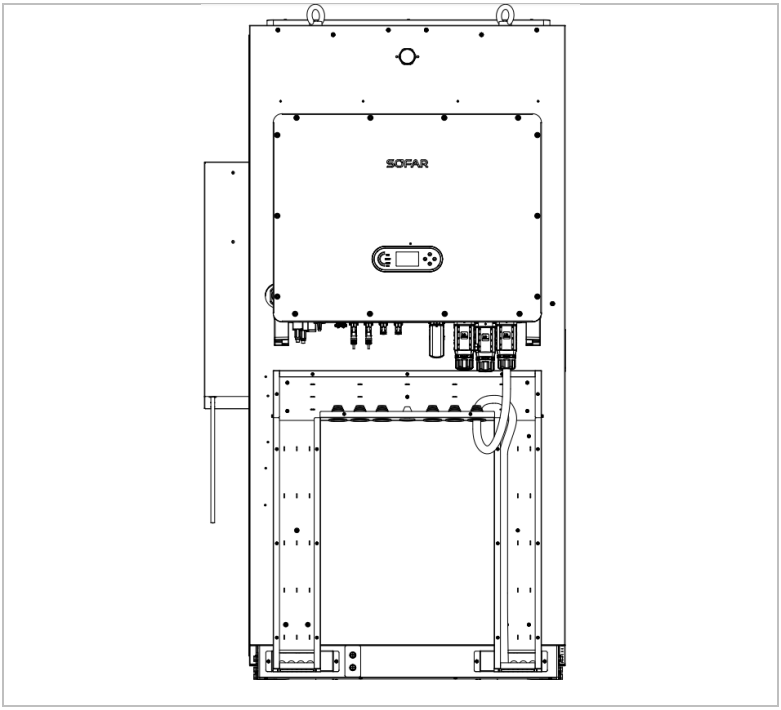


Figure 6-24 Thread the grid AC cable into the waterproof head

Step 4: Connect the grid AC cable to the GRID port of PCS, as shown below.

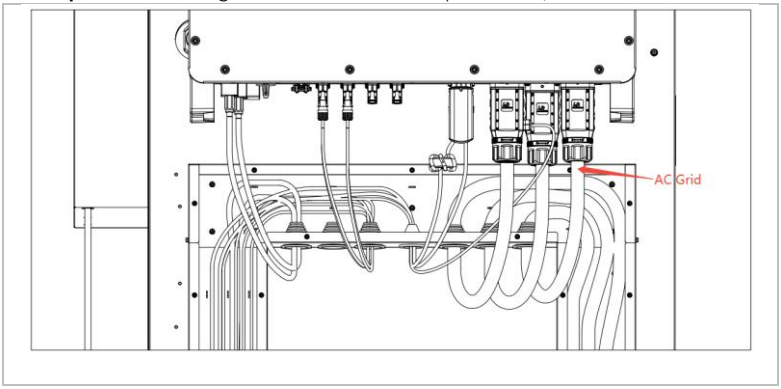


Figure 6-25 Connect the grid AC cable to PCS

Step 5: Ensure that the phase sequence is correct.

Step 6: Tighten the waterproof head. Ensure the sealing ring forms a tight seal with the AC cables.

6.4.4 Connecting the PV cables

DANGER

- Always wear proper PPE when connecting cables.
- Ensure that all the cables and terminals are unpowered.
- Ensure that the DC Switch of BCU is turned to OFF position.
- Ensure that all the switches of PCS are turned to OFF position.

Step 1: Thread the PV cables into the corrugated pipe.

Step 2: Connect the PV cables to the PV ports of PCS, Tighten the terminals. (This diagram shows only a portion of the PV1 port connections; the actual connections depend on the number of PV panels installed by the user.)

Step 3: Check the polarities of the cables and labels.

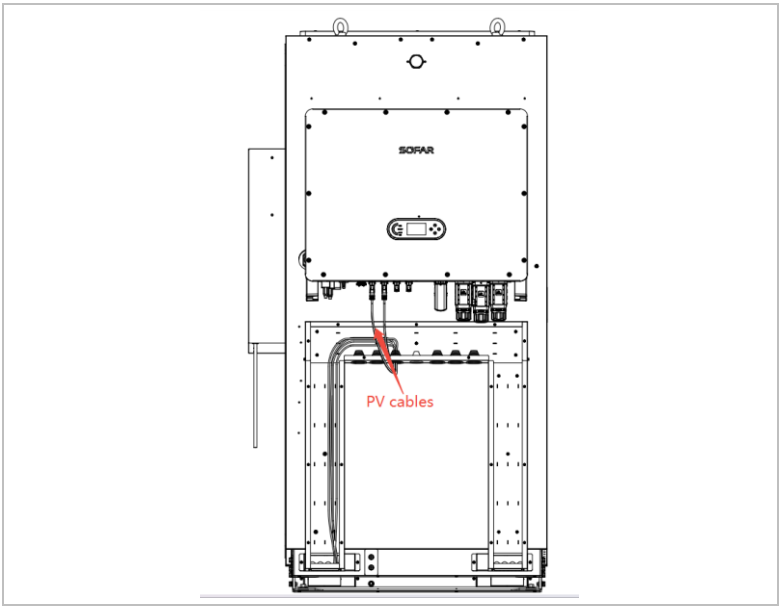


Figure 6-26 Connect the PV cables to the PV ports

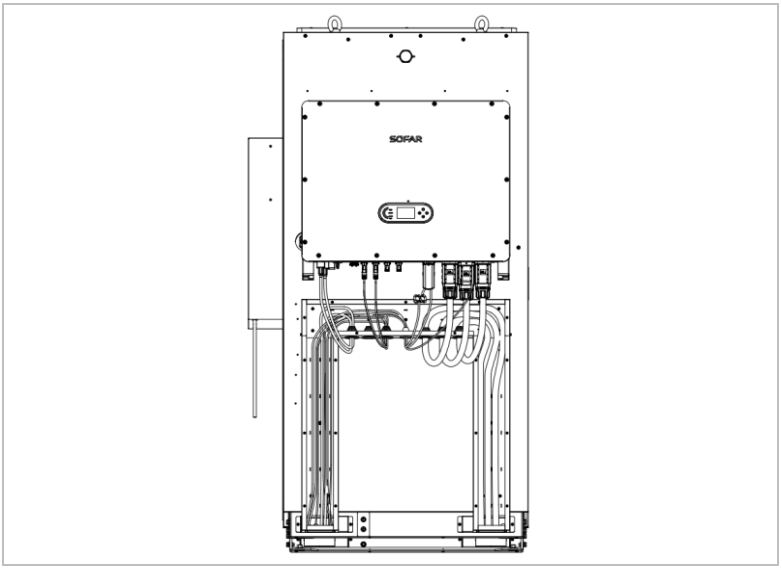


Figure 6-27 All cables completion diagram

7 Power On and Operation

7.1 Checking Before Power-On

Check the items listed in the following table. In case of any nonconforming items, rectify the fault and reinstall the parts. Then check the items in the table again until they all pass the check.

No.	Check items	Confirm
1	This product is not distorted or damaged.	□Yes □No
2	This product is installed properly and securely.	□Yes □No
3	This product is properly grounded.	□Yes □No
4	Check if the battery switches, PV switches and all the AC grid switches are disconnected.	□Yes □No
5	Check if all the DC switches, PV switches and AC switches on the product are in OFF position.	□Yes □No
6	All cables are intact and free from any damage or cracks.	□Yes □No

No.	Check items	Confirm
7	All the DC and AC cables are correctly and tightly connected.	□Yes □No
8	All the DC and AC cable diameters meet the maximum current requirements of this product.	□Yes □No
9	The communication cables is connected securely and reliably.	□Yes □No
10	Check the surface of this product and the surrounding area for unexpected objects, if any, please clean up promptly.	□Yes □No
11	The cooling environment of this product is good.	□Yes □No
12	The battery, PV and AC grid voltage meet the requirements of this product.	□Yes □No
13	Before closing the AC switch between this product and the power grid, it is necessary to use a multimeter to measure whether the AC voltage is within the allowable range (please refer to the local power grid standard for the actual voltage).	□Yes □No
14	Before the first power on operation, set the parameters correctly. Incorrect settings may cause an unexpected fault.	□Yes □No

No.	Check items	Confirm
15	If this product has not been used for six months or longer after being installed, it must be checked and tested by professionals before operation.	□Yes □No

7.2 Power-On Steps

DANGER

- Danger of high voltage! Danger of electric shock!
- Wear personal protective equipment and use dedicated insulated tools to avoid electric shocks or short circuits.

NOTICE

- The start-up of this product must strictly follow the above steps, otherwise it may cause damage or faults.

7.2.1 Power-On the Battery Cabinet

Step 1: Switch the DC SWITCH to ON position.

Step 2: Press the ON/OFF switch in. Wait for 10 seconds, the POWER indicator will remain steady green and the battery indicator will remain steady red. Then turn the Aux switch back to OFF position. Then turn the Aux switch back to OFF position.

NOTICE

- The start-up of this product must strictly follow the above steps, otherwise it may cause damage or faults.

7.2.2 Power-On the PCS

Please refer to the user manual of PCS.

7.3 Power-Off Steps

7.3.1 Normal Shutdown

- **Shutdown the PCS**

The PCS can be shut down by communication. Please refer to the user manual of PCS.

- **Shutdown the Battery Cabinet**

Step 1: Press the ON/OFF switch in and hold for 5 seconds. Wait until the LED indicator turns off.

Step 2: Switch the DC SWITCH to OFF position.

7.3.2 Emergency Shutdown

Logic interface for some national grid codes, is to cease active power output within five seconds. This product achieves this function through emergency shutdown of PCS.

- **A. Connection interfaces**

DI NO and DI COM are used for Emergency STOP

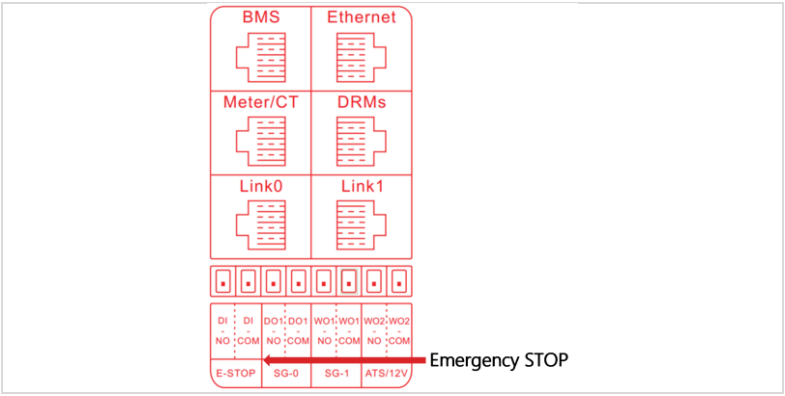
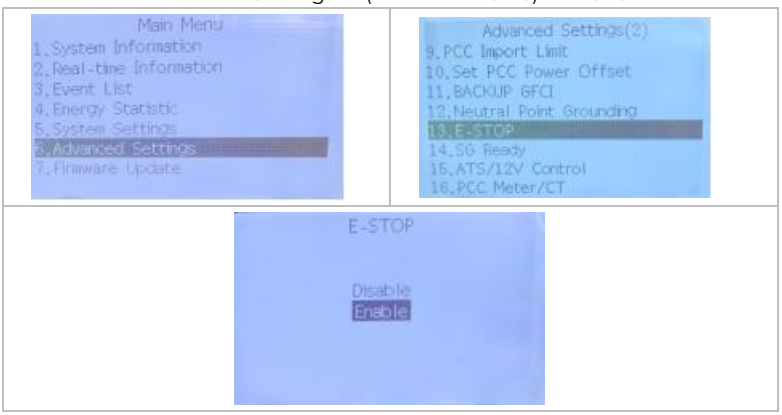


Figure 7-1 HYD-40...60K-T1 Emergency STOP connection

- **B. Function setting**

Enable the function via LCD:

Main Menu → Advanced Settings → (Passwords: 0715) → E-STOP → Enable



DI NO connects with DI GND: RUN

DI NO disconnects with DI GND: STOP

- **C. Application example**

Normal work:

Pin1(DI NO) is connected with Pin2(DI COM) by the button.

Emergency STOP:

PUSH the button. Pin1(DI NO) disconnects with Pin2(DI COM). The inverter will stop working.

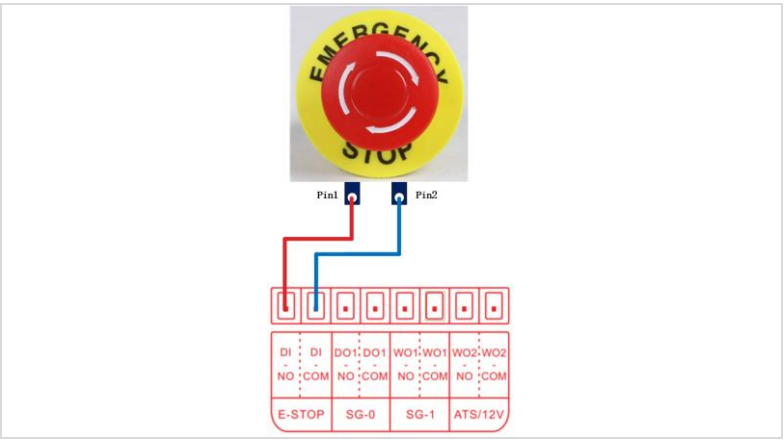


Figure 7-2 Emergency STOP connection(b)

- Normally open effective, refers to the emergency shutdown occurs when the emergency stop button (S1) is open; Normally closed effective, refers to the emergency shutdown occurs when the emergency stop button (S1) is closed.

When an emergency occurs, please follow the following steps to proceed:

Step 1: Press the emergency stop button (S1) to force this product to shut down.

Step 2: After remedying the emergency, restart this product by following the Power On procedure in 7.2.

7.4 LED Lights and Status

Type	Indicator light status	Meaning	Remarks
POWER	Steady green	The DC side is power on	Vdc>450V
	Steady red	Faults occurred on the DC side	Leakage current, reverse connection on the DC side, bus overvoltage, etc.
	Not lit	No fault and no power on the DC side	

Type	Indicator light status	Meaning	Remarks
RUN	Steady green	Normal operation	
	Flashing green	Standby mode	1s on, 1s off
	Steady red	Faults on the grid side	Abnormalities in grid phase, frequency, amplitude, etc.
	Not lit	Faults on somewhere else except the grid side	Include the grid power off
ALARM	Steady red	Product alarm	
	Flashing red	Communication alarm	1s on, 1s off
	Not lit	No alarm	
POWER, RUN, ALARM	Flashing 3 red lights	Master-slave disconnection	1s on, 1s off
	Not lit	The AC/DC port voltage is abnormal or faults on the internal auxiliary circuits	

DC side faults: leakage current, reverse connection on the DC side, bus overvoltage and undervoltage, etc.

Grid side faults: Abnormalities in grid phase, frequency, amplitude; phase loss, imbalance, etc.

Product alarms: DC side faults, grid side faults, and alarms generated by this product.

Communication alarm: Abnormal communication with external devices. Master-slave disconnection: Abnormal communication inside this product. Normal operation: Product power on and operation normally. Standby mode: No fault and no power on this product.

8 Routine Maintenance & Troubleshooting

Due to the influence of environmental temperature, humidity, vibration, and dust, the internal components of this product may experience aging. This may affect the operating condition and service life of this product. Therefore, daily and regular maintenance must be carried out on this product.

The scope of maintenance work includes all measures and methods that help this product to be in good working condition.

8.1 Precautions

NOTICE
▸ Personnel conducting maintenance and other operations on products must hold relevant qualifications or have undergone professional training and authorization. ▸ All maintenance work of this product must be carried out using insulated tools. ▸ Before maintenance, all external connections to this product and the connection to the internal power supply of this product must be disconnected. Use a multimeter to ensure that the internal power supply of this product is completely Off. ▸ After this product is powered off, wait for more than 15 minutes to confirm that the internal power of this product is in an Off state before maintenance can be carried out. ▸ After the power supply is disconnected, display a warning sign at the disconnection point to prevent anyone from restoring power while maintenance work is in progress. ▸ To prevent damage, when carrying out maintenance work, never leave any screws, spring pads, and other metal parts inside this product

8.2 Maintenance Items

To enable this product to operate well over a long-term period, routine maintenance work is recommended, in accordance with the description in this chapter.

No.	Inspection items	Inspection method	Maintenance cycle
1	Operating status and environment	Visually inspect this product for damage or distortion.	Daily inspection
2		Use an infrared device to check whether the terminal and surface temperature of this product are normal, and check for abnormal odors.	
3		Check this product for abnormal sounds during operation.	
4		Check for normal inlet and outlet air of this is normal during operation.	
5		Check whether the temperature and humidity of the surrounding environment of this product meet the requirements.	
6		Check the input, output voltage, current, and operating status of this product, conduct real-time monitoring, and confirm if there are any abnormalities.	
7	Product cleaning	Check whether there is dust accumulation at the inlet and outlet of this product.	Once every six months

No.	Inspection items	Inspection method	Maintenance cycle
8	Cable	Check if the skin of each cable is damaged.	Six months after the first debugging, and once every year thereafter
9		When this product is running, check whether the temperature of each cable terminal is normal, whether the connection of each cable terminal is loose, and confirm whether it is in a tightened state.	
10	Identification	Check for any damage to the warning signs and other equipment markings of this product. If any ambiguity or damage is found, please replace them in a timely manner.	Once every year

- The items in the product maintenance cycle table are only recommended. The actual maintenance cycle and inspection items should be reasonably determined based on the specific installation environment of the product.

8.3 Alarm Fault Handling

All fault and alarm codes are transmitted to the client via the PCS. For fault and alarm handling, refer to the PCS User Manual.

8.3.1 BCU error list

NO	Name	Solution
1	Battery cluster overvoltage alarm	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
2	Battery cluster overvoltage protection	
3	Battery cluster undervoltage alarm	
4	Battery cluster undervoltage protection	
5	The total pressure difference is too large	
6	Battery cell overvoltage lockout	
7	Charging current overrun alarm	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
8	Over-limit protection for charging current	
9	Discharge current overrun alarm	
10	Discharge current over-limit protection	
11	Charging overcurrent alarm	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
12	Charging overcurrent protection	
13	The charging system has been locked due to severe overcurrent	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
14	Discharge overcurrent alarm 1	

NO	Name	Solution
15	Discharge overcurrent alarm 2	
16	Discharge overcurrent protection	
17	Severe overcurrent lockout during discharge	
18	Overcurrent protection incapacitation	
19	Abnormal zero offset calibration for high charging current	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
20	Abnormal zero bias calibration under high discharge current	
21	Abnormal zero bias calibration of small charging current	
22	Abnormal zero bias calibration of low discharge current	
23	BCU connector overtemperature protection	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
24	BCU connector temperature sampling anomaly	
25	BMU connector over-temperature protection	
26	Abnormal temperature sampling of BMU connector	

NO	Name	Solution
27	BCU and BMU internal CAN communication alarm	Check the communication line or the connection of the BMU and the BCU for errors.
28	CAN communication fault between BCU and BMU	
29	BCU and PCS external CAN communication prompt	Check the communication line or the connection of the BCU and the inverter for errors.
30	BCU and PCS external CAN communication fault	
31	BCU-PWR SCI communication fault	Restart the BCU and wait for minutes. If the problem is not resolved, please contact technical support.
32	BCU-PWR heartbeat IO abnormality	
33	Contactor failure	Restart the BCU and wait for minutes. If the problem is not resolved, please contact technical support.
34	Circuit breaker tripped	
35	circuit breaker failure	
36	Fuse blown	
37	External FLASH read-write exception	
38	Fan abnormality	
39	CC detection protection	Check the communication line or the connection of the BMU and the BCU for errors.Check whether the LINK OUT port of the last BMU is properly connected to the end matching resistor plug.
40	CC detection fault	
41	Abnormal number of battery packs	

NO	Name	Solution
42	Internal CAN addressing exception	Check the communication line or the connection of the BMU and the BCU for errors.
43	Abnormal insulation detection prompt	Restart the battery and wait for minutes, Check if the power line is short circuited, If the problem is not resolved, please contact technical support.
44	Battery cluster overvoltage alarm	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
45	Instantaneous overvoltage protection for battery voltage	Restart the BCU and wait for minutes. If the problem is not resolved, please contact technical support.
46	Instantaneous overvoltage protection for busbar voltage	
47	Overvoltage protection for average bus voltage	
48	Busbar reverse polarity protection	Check whether the positive and negative power lines of the BCU B+B- port are connected reversely.
49	Inductive current instantaneous overcurrent protection	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
50	Discharge current CBC overcurrent protection	
51	Instantaneous overcurrent protection for discharge current	
52	Instantaneous overcurrent protection for charging current	

NO	Name	Solution
53	Average overload protection 1	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
54	Average overload protection 2	
55	Average overload protection 3	
56	Error in zero-bias calibration for high charging current	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
57	Error in zero-bias calibration of high discharge current	
58	Inductive current zero offset calibration error	
59	Abnormal consistency in current sampling	
60	Over-temperature protection for the environment	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
61	Abnormal sampling of ambient temperature	
62	Over-temperature protection for radiator	
63	Abnormal temperature sampling of the radiator	
64	PCS CAN communication is abnormal	Restart the BCU and wait for minutes. If the problem is not resolved, please contact technical support.
65	BCU-COM heartbeat anomaly	Internal error of the BCU. Switch off the BCU, wait 5 minutes and then switch the unit on again.
66	Relay failure	

NO	Name	Solution
67	Contactor failure	If the error persists, contact technical support.
68	Main circuit MOS fault	
69	Main circuit shutdown fault	
70	BCU-COM overvoltage and overcurrent protection	

8.3.2 BMU error list

NO	Name	Solution
1	Overvoltage alarm of single cell	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
2	Overvoltage protection for single cell	
3	Single cell undervoltage alarm	
4	Undervoltage protection for single cell	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
5	Total voltage overvoltage alarm	
6	Total voltage overvoltage protection	
7	Total voltage undervoltage alarm	
8	Total voltage undervoltage protection	
9	Charging high temperature warning	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then

NO	Name	Solution
10	Charging high temperature alarm	switch the unit on again. If the error persists, contact technical support.
11	Low temperature charging reminder	
12	Charging low temperature alarm	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
13	High temperature warning during discharge	
14	Discharge high temperature alarm	
15	Low temperature indication during discharge	
16	Low temperature alarm during discharge	
17	Battery over-temperature protection	
18	Passive equalization high temperature alarm	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
19	Severe overvoltage fault of battery cell	
20	Severe undervoltage fault of battery cell	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
21	Severe imbalance fault in cell voltage	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then

NO	Name	Solution
22	Battery cell over-temperature fault	switch the unit on again. If the error persists, contact technical support.
23	Battery cell overtemperature fault	
24	Battery overvoltage protection malfunction	
25	Battery undervoltage protection disabled	
26	Battery protection failure at high and low temperatures	
27	The temperature of the battery cell rises too quickly	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
28	Total pressure sampling anomaly	
29	The battery cell is severely over-voltage locked	
30	Ambient temperature NTC abnormal	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
31	DCDC temperature NTC abnormality	
32	Abnormal auxiliary source voltage	
33	Storage exception	
34	Abnormal acquisition device	
35	CAN communication anomaly	Check the communication line or the connection of the BMU and the BCU for errors.
36	CAN address conflict	

NO	Name	Solution
37	MOS high temperature alarm	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
38	MOS high-temperature incapacitation	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
39	Active equalization current anomaly	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
40	Abnormal cell voltage sampling	
41	Power terminal high temperature protection failure	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
42	Connection failure	
43	Environment high temperature alarm	
44	Environmental low temperature alarm	
45	Active equalization current anomaly	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
46	Actively balanced zero-point current anomaly	
47	Active balancing of battery discharge current with an average value exceeding the current limit	

NO	Name	Solution
48	Active balancing of battery charging current with an average value overcurrent	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
49	Active equalizing discharge CBC overcurrent	
50	Active equalizing charging CBC overcurrent	
51	Actively balance battery over-discharge energy loss	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
52	Active equalization of battery voltage average value overvoltage	
53	Actively balance the battery to prevent overvoltage	
54	Active balancing of hardware overvoltage and overcurrent	
55	Active balancing of battery voltage CBC overvoltage	Internal error of the BMU. Switch off the BMU, wait 5 minutes and then switch the unit on again. If the error persists, contact technical support.
56	Connection protection	
57	Abnormal voltage of busbar	
58	Fan abnormality	
59	Abnormal active equalizing discharge	

9 Technical Parameters

Series	**CBS8000**		
Model	**CBS8000-64 KWH**	**CBS8000-80 KWH**	**CBS8000-96 KWH**
System Parameters			
Battery Distribution Unit	CBS8000-BCU		
Number of Battery Distribution Unit	1		
Battery Module	CBS8000-BMU		
Number of Battery Modules	4	5	6
Battery Total Energy [1]	64kWh	80kWh	96kWh
Rated Capacity	64kWh	80kWh	96kWh
Rated Power	30.72kW	38.4kW	46.08kW
Nominal Voltage	600Vd.c		
Operating Voltage Range	600-1000Vd.c		
Max. Charging Current	150A		
Max. Discharging Current	200A		
Peak Output Power	187.5kW, 10s		
General Parameters			
Display	LED		
Communication	CAN		
Dimensions (W × H × D)	750 ×2100×1000mm		
Weight	900 kg	1000 kg	1100 kg
IP Rating	IP55		
Cooling Mode	Intelligent Airflow		

Operating Temperature[2]	-20℃~55 ℃
Relative Humidity	5-95% (without condensation)
Battery Type	LiFePO4 - lithium iron phosphate battery
Noise index	<50dB
Maximum Operating Altitude[3]	4000m
Scalability	Max.4 systems in parallel operation
Ordering and Deliverable Part	
Available for Ordering[4]	CBS8000-64 KWH/CBS8000-80 KWH/CBS8000-96 KWH

[1] Test conditions: 0.2C charging/discharging at 25°C,100%DOD

[2] Refer to the curve of temperature VS charging/discharging current.

[3] Derating above 2000m.

[4] Storage system is ordered and delivered in the form of power module and battery module separately with corresponding quantity.

*All specifications are subject to change without notice.

Version 1.0

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