

C&I Air-Cooling Outdoor Battery Cabinet BF200 User Manual



Statement of Law

The copyright of this document belongs to Dyness Digital Energy Technology Co., LTD.(the following will be referred to as "Dyness").

No part of this document may be excerpted, translated, annotated or reproduced in any form or by any means without the prior written authorization of Dyness.

It is prohibited to use part or all of the data in the firmware or software developed by the Company for commercial purposes in any way.

It is prohibited to decompile, decrypt or otherwise damage the original program design of the software developed by the Company.

This product complies with the design requirements for environmental protection and personal safety. The storage, use and disposal of the product shall be in accordance with the product manual, relevant contract or relevant laws and regulations.

When products or technologies are updated, customers can check the information on the website of Dyness.

Website: <http://www.dyness.com/>

Please note that products can be modified without prior notice.

Revised History

Revised Version	Revision Date	Revision Reason
1.0	2025.10	First publication

Content

Statement of Law	2
Revised History	2
1. User Guide for the Manual	5
1.1. Contents of the Manual	5
1.2. Target Audience	5
1.3. Symbol and Abbreviation Explanation	5
2. Safety Instructions	7
2.1. Safety Principle	7
2.2. Operator Qualifications	7
2.3. Environmental Safety Requirements	7
2.4. Electrical Safety Requirements	8
2.5. Transportation and Installation Safety Requirements	8
2.6. Daily Operation and Maintenance	9
2.7. Product Obsolescence	10
3. Product Description	11
3.1. Product Overview	11
3.2. Product Model	11
3.3. Product Configuration	11
3.4. System Parameters	12
3.5. Appearance Design	13
3.6. Internal Design	15
3.7. Main Modules	15
6.1.1. PACK	15
6.1.2. BDU	17
6.1.3. Security & Fire Fighting System	18
6.1.4. Air Conditioner	19
4. Delivery, Transportation and Storage	21
4.1. Packaging Marks	21
4.2. Unpacking and Checking	22
4.3. Hoisting and Transportation	23
4.4. Forklift Transportation	24
4.2. Storage Requirement	25
5. Installation and Wiring	26
5.1. Installation Environmental Requirements	26
5.2. Installation Space Requirements	27
5.3.1. Check Before Installation	28
5.3.2. Angle Steel Installation	28
5.3.3. Grounding Installation	29
5.3.4. Door Operating Procedures	29
5.4. Wiring Requirements	30
5.5. Cable Requirements	30
5.6. Terminal Wiring Method	32
5.7. Checking Before Wiring	32
5.8. Wiring Tools	33
5.9. Wiring Diagram	34
6. Power-on and Power-off	37
6.1. Power-on Process	37

6.2. Power-off Process	38
6.3. Emergency Stop	38
7. Fault Description	40
8. System Maintenance	42
9. Quality Assurance	44
10. Appendix	45

1. User Guide for the Manual

Note: Before installing or operating this product, please carefully read this manual. Please properly keep this manual for reference.

1.1. Contents of the Manual

This manual mainly covers safety precautions for outdoor air-cooling battery cabinets, product functions and specifications, delivery and storage, wiring installation, power-on and power-off processes of the product, human-machine interface operation, system maintenance, and quality assurance, etc.

1.2. Target Audience

This manual is applicable to professional technicians who install or repair outdoor air-cooling battery cabinets, as well as users who perform daily operations. Readers should have certain electrical knowledge and understand electrical principles.

1.3. Symbol and Abbreviation Explanation

This manual and the product cabinet may contain the following symbol signs to emphasize important information to ensure the safety of users during installation of this product or to facilitate efficient use of this manual. Please read carefully.

Table 1-1 Symbol Signs

	Indicates that the interior of the body contains high voltage, be careful of electric shock causing personal safety issues
	Indicates electrical danger. Before operating or maintaining the equipment, all external power connections must be disconnected
	Protection grounding symbol, indicating this is the protection grounding (PE) terminal. In case of a fault, it prevents electric shock grounding. It is necessary to firmly ground to ensure the safety of the operator
	Recyclable symbol
	Hazardous waste, need professional recycling, do not put in the trash can
	Manual (User Manual) symbol

When referring to the following products in the manual, for the sake of convenience in expression, their abbreviations are used instead.

Table 1-2 Abbreviation Definitions

Abbreviation	Full Name
ESS	Energy Storage System
EMS	Energy Management System
BMS	Battery Management System
PACK	Battery Module
BDU	Battery Distribution Unit
SPD	Surge Protection Device
SOC	State of Charge
SOH	State of Health
DC	Direct Current
AC	Alternating Current
RCD	Residual Current Device
CT	Current Transformer
PE	Protective Earthing

2. Safety Instructions

2.1. Safety Principle

Related safety precautions need to be strictly followed during installation, operation and maintenance. This product is a combined high-voltage DC and three-phase AC system and should only be operated by authorized personnel.



DANGER

- Deadly high voltages are present inside the product, please observe and comply with the warning labels on the product;
- Do not touch the power grid or the contacts connected to it inside the product to prevent the risk of fatal electric shock!
- Damage to the battery may result in electrolyte leakage. If the electrolyte leaks, do not touch the leaking electrolyte or volatile gases and contact the after-sales service team immediately for assistance.



WARNING

- Transportation, installation, maintenance must comply with local regulations and this user manual;
- Installation work must be assigned to a specialized full-time operator.



PROHIBITION

- Risk of damage to the battery system or personal injury or behavior is prohibited;
- Replacement of the modules by the user is prohibited and the company will not be responsible for any damages caused.

2.2. Operator Qualifications

Only qualified electricians or professional personnel can operate the product. The operator should meet the following requirements.

- Shall be familiar with local standards and relevant electricity safety regulations;
- The operator shall have received professional training related to the installation and commissioning of electrical equipment, and should have the ability to respond to emergencies or unexpected situations that may occur during installation or trial operation.
- The operator shall have certain specialized knowledge of electronics, electrical wiring and machinery, and be familiar with electrical and mechanical schematic diagrams;
- The operator should be fully familiar with equipment protection and standard maintenance, and operations should comply with established safety standards.

2.3. Environmental Safety Requirements

- Do not install and use the product in environments with temperature below

-20°C or above 50°C;

- Do not install and use the product near any heat sources or combustible materials;
- Do not install and use the product in areas with frequent movement of personnel;
- Do not expose the product to corrosive gases or liquids;
- Keep the product installation and use away from children and animals;
- The maximum installation altitude for the product should not exceed 3000m, and it should be derated when above 2000m;
- Sufficient space should be reserved for product installation to ensure adequate ventilation;
- Isolation barriers must be set up during installation to prevent any unrelated personnel from entering the site.

2.4. Electrical Safety Requirements

The operator must ensure that: all basic information and step-by-step instructions are understood before commissioning and switching off the disconnecting circuit-breaker.



DANGER

Battery Protection Safety

Please ensure that during installation and maintenance of the equipment:

- The battery is completely disconnected;
- Have a visible warning sign at the break point to ensure no accidental reconnections.

Ground Fault Protective Safety

- When a ground fault occurs, the original non-electrified part may carry high voltage, and accidental electric shock can lead to personal safety! Ensure that there is no ground fault and take necessary protective measures before operation.

Safety Of Live Line Measurements

- Given the presence of high voltages in this equipment, protective measures (e.g., wear insulated gloves, etc.) must be taken during live line measurements, and the operator must be accompanied by a person to ensure personal safety.

Arc Protection Safety

- Avoid arc, fire and explosion hazards caused by improper operation;
- Prohibit touching uninsulated cables that may be energized;
- When a loose connection occurs in the power cable, or a screw or other component falls out accidentally, do not operate it without authorization, and it must be handled by a qualified professional to avoid causing a larger malfunction.

2.5. Transportation and Installation Safety Requirements

**WARNING****Personnel Operation Regulations**

- Forklifts, cranes and other construction machinery must be operated by qualified operators if required on site;
- The operator must wear insulated protective equipment that complies with safety regulations during installation;
- When connecting the power on-site, a professional guardian must be assigned to protect the switches that need to be turned off;
- Ensure that it has no electrical connections before installation;
- Each completed project must be checked at least once and cross-checked during the installation process;
- The equipment must be installed in sequence without skipping any steps.

Wiring regulations

- Appropriate measuring devices must be used, appropriate standards and directives must be followed;
- The operating manual of the measuring device must be known before any measurement is carried out;
- Only use equipment specified by Dyness. Failure to use equipment specified by Dyness may result in impaired protection as well as injury to personnel.

Test run after installation

- Only after confirmation by professionals and obtaining permission from local electrical authorities can the equipment be put into operation;
- Before operation, please switch off all distribution circuit breakers, and it is strictly prohibited to disconnect them during product running.

**DANGER**

- Do not change fuse size or rating value during installation;
- It is not allowed for two or more operators to connect a single wire simultaneously during the wiring process.

2.6. Daily Operation and Maintenance

All operations of the product should follow the instructions in the User Manual. Damage to the equipment caused by violation of these instructions will void the associated liability and warranty. If necessary, contact Dyness Customer Service for repairs.

**WARNING**

- The software, shell and components of the product may not be changed without Dyness authorization. If changed, the corresponding liability and warranty shall be void;
- Do not remove or alter the nameplate;
- Do not open the cabinet doors in inclement weather such as rain or

strong winds.

2.7. Product Obsolescence

When the product as a whole or individual internal components become aged or damaged and need to be discarded, they cannot be disposed of as regular waste. Some components inside the product can be recycled and reused. Improper disposal of certain components may cause environmental pollution. Please contact a qualified local professional recycling organization for proper disposal of the product and internal components.

3. Product Description

3.1. Product Overview

This product is a commercial and industrial air-cooled battery cabinet with a system storage capacity of 215 kWh. The system integrates a PACK battery pack, a BDU intelligent control unit (with an integrated BMS battery management system and EMS energy management system), a security and fire protection system, an air conditioning system, etc. It can be paired with a hybrid inverter to convert to AC output and is widely used in small commercial and industrial scenarios such as charging stations, commercial buildings, and manufacturing industries.

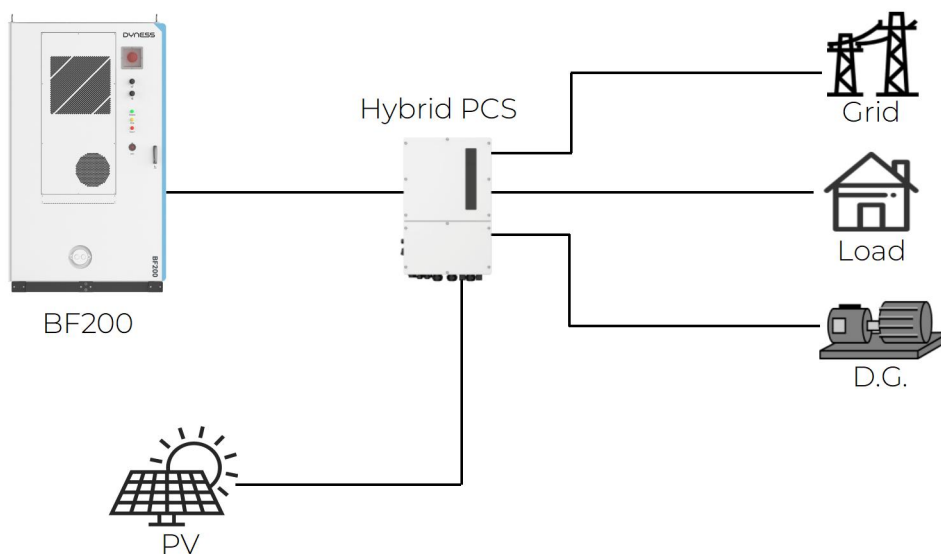


Figure 3-1 System Application Principles

Its system topology is as follows:

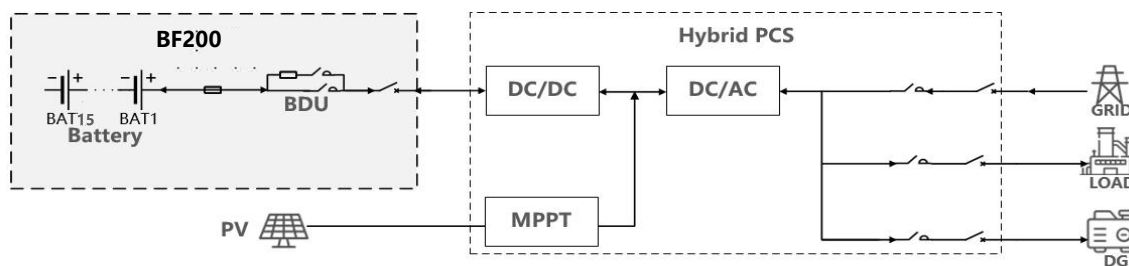


Figure 3-2 System Topology Diagram

3.2. Product Model

This manual is applicable to the BF200 air-cooling EnerCore series of smart energy storage outdoor cabinets. The product name model explanations are as follows:

- EnerCore: Product series name
- B: Battery, battery system product of Dyness
- F: Air-cooling system
- 200: Standard product battery capacity

3.3. Product Configuration

This product adopts a modular design, which is easy to install, operate and

maintain. The configuration list is as follows:

Table 3-1 Product Configuration List

Module Name	Function	Quantity	Module Configuration
PACK	Used for electrical energy storage, providing stable and continuous power output for the system	15	Standard
BDU	System energy management and overall control, battery control unit, and high-voltage power supply	1	Standard
Safety & Fire Protection System	Intrusion protection, fire prevention, and effective fire suppression for the equipment	1	Standard
Air Conditioning System	Regulates battery operating temperature to ensure optimal performance	1	Standard

3.4. System Parameters

The product involves optimization and upgrade. Some parameters may be updated without further notice:

Table 3-3 BF200 Parameters

Model	BF200
Battery	
Battery Type	LFP (LiFePO4)
Battery Capacity	280Ah
PACK Configuration	1P16S*15
Rated Current	140A
Max. Current	160A
Voltage Range	696~864Vdc
Nominal Capacity	215kWh
System	
Weight	Approx. 2500kg (TBD)
Dimension (W*D*H)	1320*1190*2250mm
Max. Efficiency	94%
Air Conditioner Power	5kW (Cooling), 3kW (Heating)
Operating Temperature	-20~50°C (Derating above 45°C)
Operating Humidity	0~95%RH (Non-condensing)
Ingress Protection	IP55
Anti-corrosion Grade	C4
Cooling Method	Air-cooling
Noise	≤75dB
Elevation	3000m (Derating above 2000m)
Display	APP
Fire Protection	Aerosol, Water fire system, Multi-sensor/water ingress detector, Audible&Visual alarm, Explosion-proof ventilation
Communication	Ethernet/4G/RS485/Bluetooth

Certification	UN38.3
Depth of Discharge	95%
Cycle Life*	≥8000 Cycles /10 years
Compatible Inverters	Megarevo

3.5. Appearance Design

- System dimensions: Width x Depth x Height 725*1200*2260mm (excluding lifting rings and fixed brackets)
- System net weight: Approximately 2500kg
- System protection grade: IP55
- System corrosion resistance grade: C4

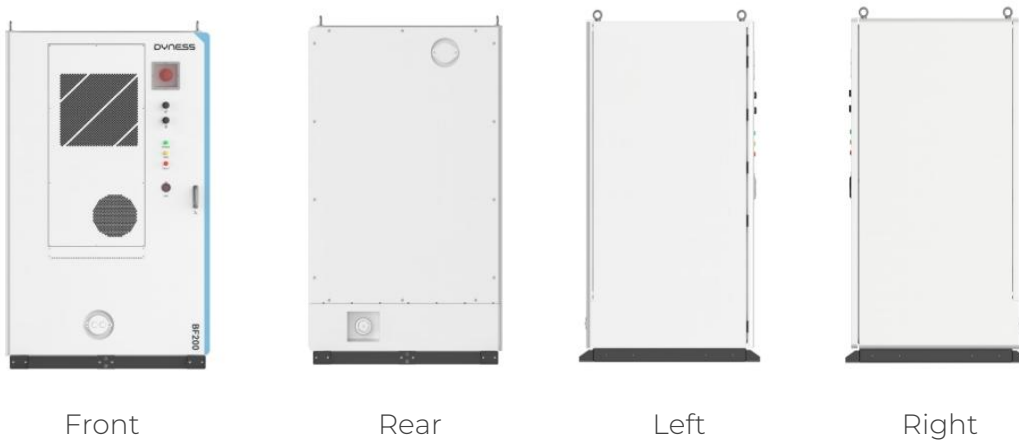


Figure 3-3 Product Appearance Diagram

The front panel of the product is equipped with 1 emergency stop button, 3 indicator lights showing the main operating status of the product, 2 antennas,

and 1 sound and light alarm:

The antennas from top to bottom are: 4G antenna and Bluetooth antenna; The indicator lights from top to bottom are: power indicator light "POWER", operation indicator light "RUN", alarm indicator light "FAULT", and emergency stop button "EPO".

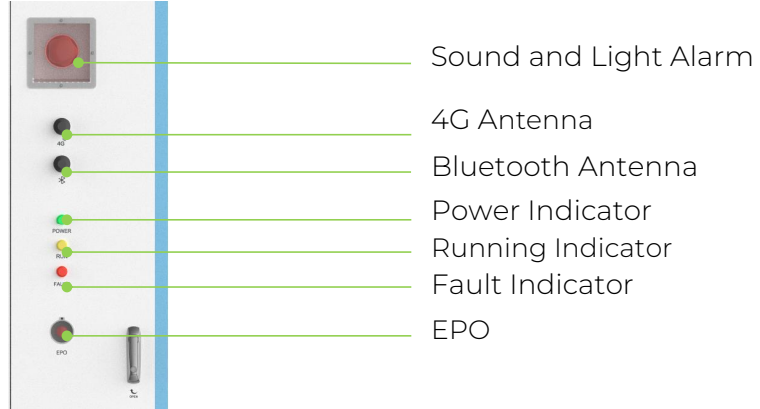









Figure 3-4 Appearance Function Diagram

Table 3-3 Function Definitions of Indicator Lights and Antennas

No.	Appearance Name	Function
1	 Sound and Light Alarm	An alarm sound is emitted and the lights flash when safety hazards or system abnormalities are detected.
2	 4G Antenna (Top)	Receives and transmits 4G signals
3	 Bluetooth Antenna (Bottom)	Receives and transmits Bluetooth signals
4	 Power Indicator	Constantly on indicates that the power is connected and the device can be operated
5	 Running Indicator	Constantly on indicates normal system operation, while off indicates standby mode.
6	 Fault Indicator	Constantly on indicated that there was a fault in the system.
7	 Emergency Stop Button	Stops system operation when pressed

Note: Do not operate the emergency stop button except in an emergency.

3.6. Internal Design

This product is a battery cabinet, which contains a PACK battery pack, a BDU intelligent control unit, an alarm and fire protection system, an air conditioning system.

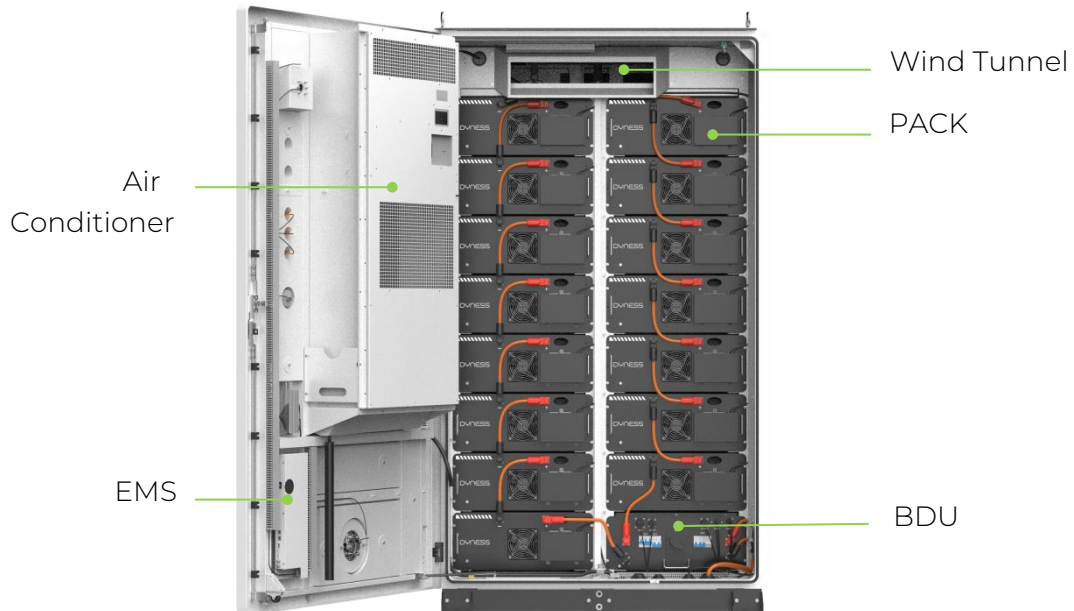


Figure 3-5 Internal View of the Product (for reference only)

3.7. Main Modules

6.1.1. PACK



DANGER

- Do not touch any batteries while the BESS is running;
- Only authorized operators should handle the batteries;
- At the end of the battery's life, it should be decommissioned, disassembled and disposed of in accordance with the recycling program provided.

This system's PACK uses lithium iron phosphate batteries, with 280Ah cells. The stringing method is 1P16S, and the nominal capacity of the PACK is 14.33kWh, with a nominal voltage of 51.2V. Each battery PACK is equipped with 1 level 1 BIC module (slave control) for collecting the voltage and temperature parameters of the PACK, and it also has functions such as power balance and thermal management. The PACK module adopts air cooling for heat dissipation, with an IP20 protection level. It has a high structural reliability and low maintenance cost.



Figure 3-6 PACK Appearance
Table 3-5 PACK Parameter

Model	HV51280F
Parameter	Value / Specification
Cell Configuration	1P16S
Energy (kWh)	14.33
Nominal Voltage (Vdc)	51.2
Nominal Capacity (Ah)	280
Standard Charge/Discharge Current (A)	140
Dimensions (WDH)	568*764*231 mm
IP Rating	IP20
Operating Temperature	Charge: 0°C to +60°C Discharge: -20°C to +60°C
Operating Humidity	0% to 95% RH
Storage Temperature	1 Month: -20°C to 45°C 1 Year: 0°C to 35°C



Warning

- When battery leakage occurs or when there is a pungent abnormal smell from the battery and it is impossible to determine whether the electrolyte has leaked, stop using it immediately, isolate the battery and contact Dyness or a professional.
- Do not directly touch the leaked electrolyte. If it accidentally comes into contact with the skin, rinse with plenty of water. Seek medical attention immediately if you feel unwell.
- When dealing with electrolyte leakage, make sure the power supply connected to the battery is turned off to prevent fire and sparks, and ensure good ventilation in the environment.
- When dealing with electrolyte leakage, wear rubber gloves (with an insulation voltage of no less than 10kV).
- Use ordinary medical gauze or other liquid-absorbing solid materials to clean the battery leakage.
- The treated battery should be isolated and not used again.
- All the above operations should be carried out by personnel designated by

Dyness or qualified professionals.

6.1.2. BDU

The BDU is equipped with multiple control and protection devices such as BMS (Battery Management System), high-voltage contactors, high-voltage fuses, and circuit breakers. It integrates control, protection, and monitoring functions into one, reducing external cables and independent components, and enhancing the system's compactness. Through efficient power distribution, multiple protections, and intelligent management, it ensures the stable operation of the system and provides data support and operational convenience for maintenance.



Figure 3-7 BDU Appearance

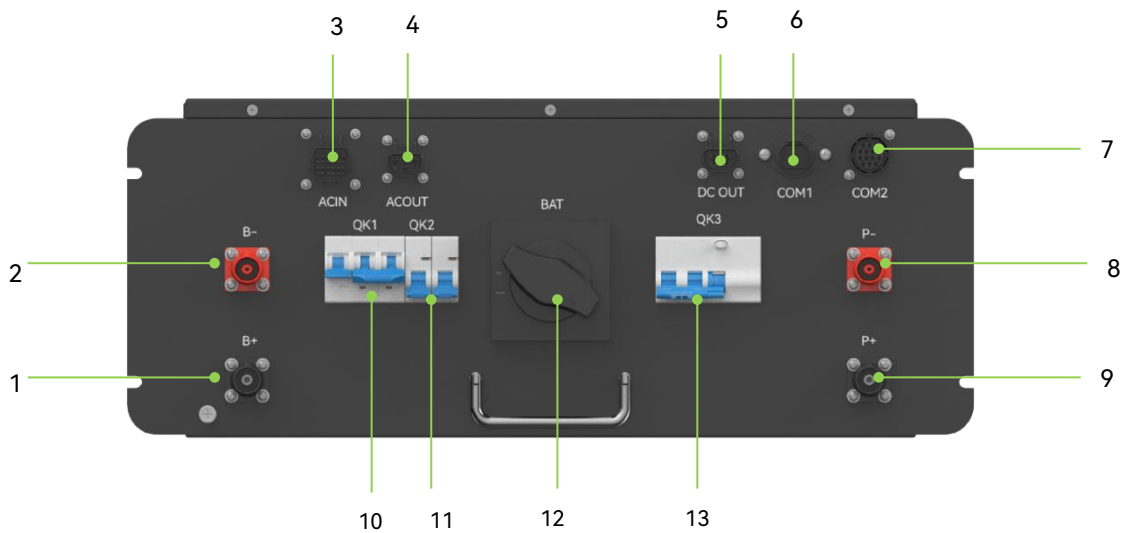


Figure 3-8 BDU Interface

Table 3-6 Function Definition of BDU Interface

No.	Identifier	Function Description
1	B+	Battery Cluster Positive Input
2	B-	Battery Cluster Negative Input
3	AC IN	Air Conditioning & AC/DC Auxiliary Power Input

4	AC OUT	BDU AC Power Output
5	DC OUT	Fan Power Supply Output
6	COM1	Internal Communication
7	COM2	BCU Communication / Secondary Power Output
8	P-	Battery Cluster Negative Output
9	P+	Battery Cluster Positive Output
10	QK1	DC/DC Switch
11	QK2	AC/DC Switch
12	BAT	DC Side Switch
13	QK3	Air Conditioning Switch

6.1.3. Security & Fire Fighting System

BF200 is equipped with an efficient and reliable security system and fire protection system, which can provide intrusion protection, fire prevention and effective fire extinguishing for the equipment.

Security System

- **Limit switch:** Install travel switches in the battery compartment to prevent the door from being opened accidentally during normal machine operation. It can detect whether the door is closed tightly to prevent rainwater from entering.
- **Water immersion detector:** Install a water immersion detector at the bottom of the battery compartment. When it detects water in the cabinet volume, EMS will report a water immersion fault and the system will shut down.



Figure 3-9 Security System Diagram (for reference only)

Fire Fighting System

- **Composite detector:** This system installs a composite detector on the top of the battery compartment. It has the functions of detecting smoke, temperature, CO gas, and VOC, and transmits real-time data to EMS.
- **Aerosol fire protection:** System-level aerosol has two activation methods: thermal activation and electrical activation. Thermal activation occurs when the temperature in the battery compartment rises rapidly to around 185°C or there is a flame. At this time, the thermal-sensitive wire is ignited, triggering the aerosol spray. Electrical activation occurs when the composite detector in the protection area detects a fire, and EMS will immediately trigger the electrical activation signal for the aerosol, providing a 24V power supply for the aerosol electrical activation.
- **Water Fire Extinguishing:** BF200 is equipped with a built-in fire water pipe. In the event of a thermal runaway inside the cabinet, the water valve can be manually opened, and water from the sprinkler on the top of the cabinet will be used to spray and extinguish the fire throughout the energy storage cabinet. No water in water fire protection pipes during normal operation.

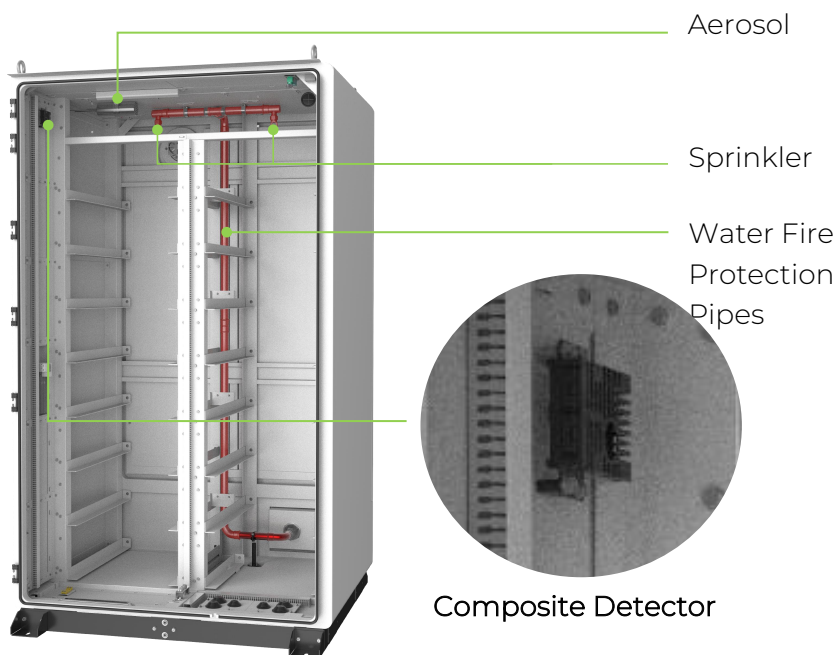


Figure 3-10 Fire Fighting System Diagram

The maintenance of the fire protection system should comply with the fire regulations and rules of the country/region where the project is located. Regular inspections and maintenance of fire equipment should be carried out to ensure that all functional indicators are normal.

6.1.4. Air Conditioner

This system is a wind-cooled system. It is equipped with one industrial air conditioner with a cooling capacity of 5kW and a heating capacity of 3kW.

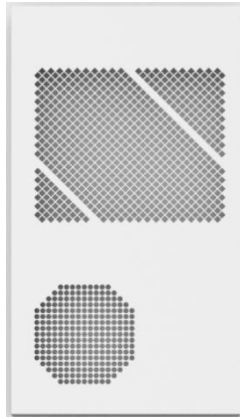
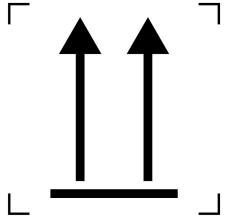


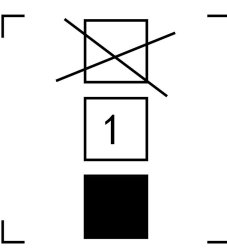
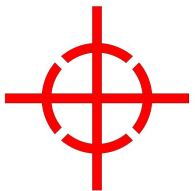


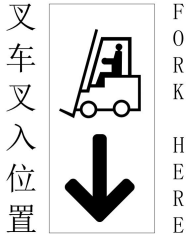


Figure 3-11 Air Conditioning Diagram

4. Delivery, Transportation and Storage

4.1. Packaging Marks

Table 4-1 Packaging Marks

Mark	Explanation
	<p>Upward: Indicates that the package should be kept upright during transportation and storage.</p>
	<p>Fragile: Indicates that the package contains fragile items and should be handled with care.</p>
	<p>Keep Dry: Indicates that the package should be protected from rain.</p>
	<p>Stacking Limit: The number "1" in the illustration indicates the maximum number of identical packages that can be stacked. Refer to the actual illustration for details.</p>
 <p data-bbox="272 1727 499 1789">Center of Gravity 重心</p>	<p>Center of Gravity: Indicates the center of gravity of the package to facilitate lifting.</p>

	<p>Forklift Insertion Point: Insert the forklift here for moving the equipment.</p>
	<p>Lithium Battery Mark: Indicates that the device contains lithium-ion batteries or battery packs, which are Class 9 hazardous materials.</p>
	<p>UN3480: A United Nations number indicating that the device contains lithium-ion battery packs.</p>

Caution: Failure to transport and store in accordance with the requirements of this manual may void the warranty.

4.2. Unpacking and Checking

- After receiving the product, please check whether all the delivered components are complete against the “supply list”;
- Please check whether the actual received cabinet and the received product mode are the same as the ordered model;
- Carefully check whether the product is in good condition. The transportation process may lead to damage due to transportation collision. If any problem is found, please contact Dyness or the transportation company in time.

Shipping Requirement

- All necessary equipment in the product have been installed and fixed in the cabinet before leaving the factory, and the product can be transported as a whole during transportation.
- Please confirm that the cabinet doors of the equipment are tightly locked before transportation.
- Electrical and battery compartment transportation requires wooden pallet + EPE + PE bag packaging for transportation.
- Be sure to set up warning signs or caution tape to prevent unauthorized personnel from entering the lifting and transportation area to avoid accidents.
- Remove any existing or potential obstacles during the moving process, such as trees, cables, etc.
- Whenever possible, choose favorable weather conditions for transporting

the equipment.

Requirements For Equipment Transportation and Mobility

- Select a suitable crane or lifting tool according to the site conditions. The selected tool must have sufficient load-bearing capacity, arm length, and rotation radius.
- If movement on slopes or similar conditions is required, additional traction devices may be necessary.
- When carrying out ground transportation, be sure to use ropes to secure the top lifting ring of the equipment to the transport vehicle to prevent.

4.3. Hoisting and Transportation

The top of this product is equipped with lifting rings, which can be hoisted and transported by crane. When lifting and installing the equipment, the following requirements must be met:

- During lifting, the safety on site must be ensured;
- During the hoisting and installation operation, there should be professional personnel directing the entire process on site;
- The strength of the lifting ropes must be able to withstand the weight of the equipment;
- Ensure that all connection points of the lifting ropes are safe and reliable, and ensure that the sections of the lifting ropes connected to the angle pieces are of equal length;
- The length of the lifting ropes can be adjusted appropriately according to the actual requirements of the site;
- During the entire lifting process, ensure that the equipment is stable and does not tilt;
- After the equipment is lifted 300mm off the support surface, pause, check that the lifting gear is firmly connected to the equipment, and then lift it.
- Take all necessary auxiliary measures to ensure the safe and smooth lifting of the equipment.

Note: The lifting rings need to be installed on site, and ensure that the bolts of the lifting rings are tightened.

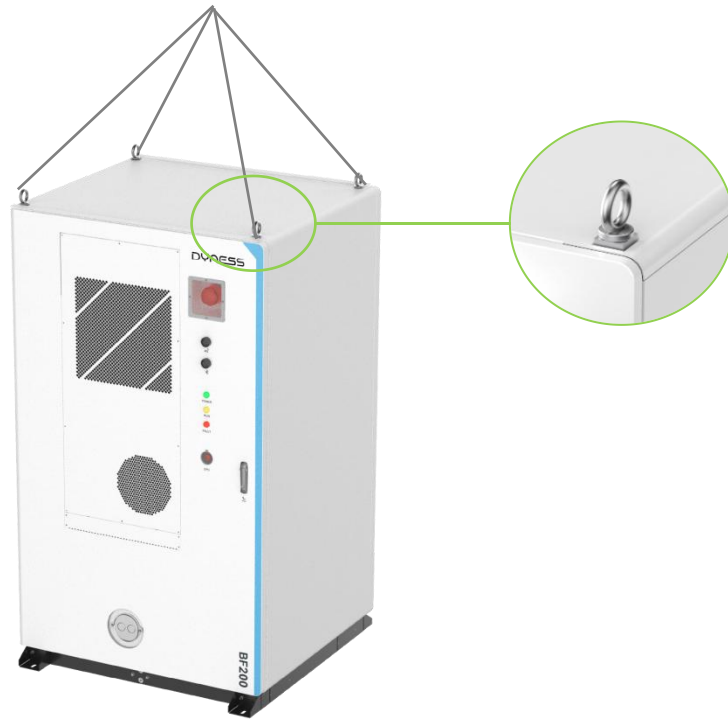


Figure 4-1 Hoisting and Transportation Schematic Diagram

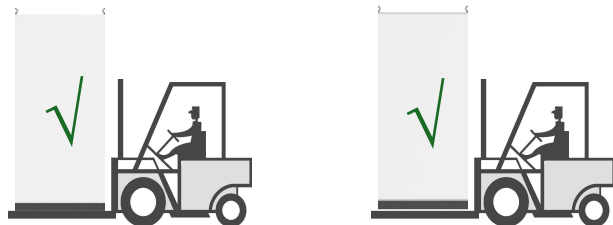
4.4. Forklift Transportation

This product is equipped with special fork holes at the bottom, which are designed for forklift transportation. The product can be moved through these bottom fork holes.

When the installation location is flat, the product can be moved using a forklift. The forklift transportation method should meet the following requirements:

- The forklift should be equipped with sufficient load-bearing capacity;
- The length of the pins should meet the requirements of the equipment;
- The pins should be inserted into the fork holes at the bottom of the workstation;
- During product transportation, the movement and lowering should be slow and stable;
- The products can only be placed on a stable surface. This surface should have good drainage and no obstacles or bulges;
- Under no circumstances can the equipment be moved by inserting the pins into other positions outside the fork holes.

Correct transportation method:



Incorrect transportation method:



Figure 4-2 Diagram of Forklift Transportation

4.2. Storage Requirement

Storage Environment Requirements

- The product should be stored on dry, flat (flatness should be no more than 5mm), solid ground with sufficient load-bearing capacity and without any vegetation cover;
- To prevent condensation inside the product or soaking of the bottom of the product during the rainy season, the product should be stored on higher ground.
- The basement must be raised, and the specific elevation height should be determined according to the site geology, meteorological conditions and other conditions.
- Storage environment temperature: 0~+35°C humidity: 0~95%(no condensation).
- Pay attention to coping with the harsh environment around, such as sudden cold, sudden heat, collision, etc., so as not to cause damage to the PACK.

Storage requirements

- Make sure that the cabinet doors are securely locked before storage.
- Effectively protect the product's air inlet/outlet to prevent rainwater, sand, and dust from entering the interior of the cabinet.
- Due to the capacity decay that occurs during long-term storage, it is not recommended to store batteries exceeding six months.
- For products stored for a long period (more than six months), inspect visually before installation to ensure there is no condensation and verify if the equipment is intact. Additionally, checking after powering on.



NOTE

Starting from the date of delivery, perform one charge and discharge cycle for the PACK every 6 months, to maintain the system SOC of 25~40%.

5. Installation and Wiring

Only qualified electrical engineers may perform electrical connection-related work. Please comply with all requirements specified in the "Safety Precautions" section of this manual. The Company shall not be liable for any personal injury or property damage resulting from failure to observe the safety precautions.



DANGER

- Do not touch the live parts!
- Ensure both AC and DC sides are not energized before installation. All electrical connections must be operated under de-energized condition;
- Check the polarity of all input cables to ensure that each input polarity is correct before wiring;
- Do not place the equipment on surfaces that are flammable.



WARNING

- The ingress of sand and moisture may damage the electrical equipment inside the ESS cabinet or affect the performance of the equipment!
- During sandstorm seasons or when the relative environmental humidity exceeds 95%, electrical connection work should be avoided.
- Wait until there are no sandstorms and the weather is clear and dry before starting any connection work.
- Avoid pulling or tugging on cables or wires forcefully to prevent damage to their insulation performance during electrical installation.



CAUTION

- All cables and wires should be ensured to have a certain amount of bending space.
- Necessary auxiliary measures should be taken to reduce the stress on cables or wires.
- After completing each step of the wiring operation, careful inspection is required to ensure correct and secure connections.
- All electrical connections must be strictly in accordance with the wiring diagram.

5.1. Installation Environmental Requirements

Site Requirements

- When selecting the installation site, full consideration should be given to the surrounding environment (climate and geological conditions, such as stress wave emission, underground water level, no cables in the upper space of the installation site, no pipelines or other underground facilities in the lower part of the installation site, and a certain safety distance should be maintained between the equipment and buildings and people, the length of the distance should be subject to the fire safety regulations of the project).

- The surrounding environment should be dry and well ventilated.
- Please ensure that there are no trees around the installation location to prevent branches or leaves from blocking the doors or air inlets of the energy storage integrated system during strong winds.
- The installation location should be away from toxic and harmful gas and flammable, explosive, corrosive, and dust-intensive materials.
- The installation location should be away from residential areas to avoid noise.

Foundation Requirements

- The foundation should provide sufficient load-bearing support for the equipment, with the foundation's bearing capacity greater than $3t/m^2$, a lifespan of more than 50 years, and a levelness of less than $3mm/m^2$;
- The height of the base should be higher than the historical highest flood water level;
- Drainage facilities should be constructed in accordance with the local geology and municipal drainage requirements to ensure no water accumulation at the equipment foundation. The foundation construction should meet the drainage requirements for the local maximum rainfall, and the discharged water needs to be treated in accordance with local laws and regulations.

5.2. Installation Space Requirements

To ensure better heat dissipation and maintenance of the equipment, it is recommended to leave sufficient space around the cabinet:

- The space in front of the product should be reserved with a distance of no less than 1800mm;
- The space at the rear of the product should be reserved with a distance of no less than 600mm;
- The space on the left side of the product should be reserved with a distance of no less than 1000mm;
- The space on the right side of the product should be reserved with a distance of no less than 100mm;
- The product can be installed side by side, and at least 100mm of space should be reserved between the cabinets.

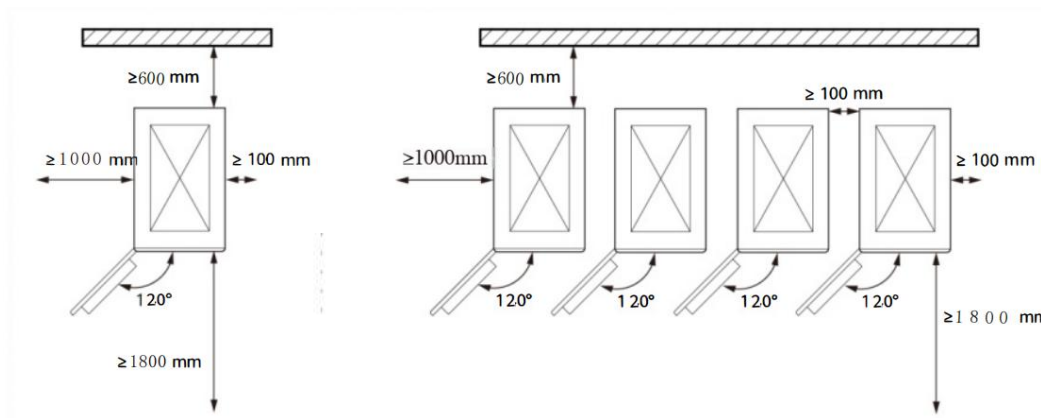


Figure 5-2 Requirements for Product Installation Space

The above-mentioned installation space is the minimum recommended distance. Customers can make adjustments according to local regulations and actual conditions.

5.3 Fix and Install

5.3.1. Check Before Installation

WARNING

Please comply with local safety regulations and operational rules during installation.

Only complete and undamaged equipment can be installed! Please ensure that before installation:

- The product cabinet itself should be complete and intact.
- All equipment in the cabinet should be complete and intact.

5.3.2. Angle Steel Installation

After transporting the outdoor cabinet to the installation location, it needs to be fixed. Four L-shaped angle steel brackets are reserved at the front and rear of the product cabinet base, and the positions are as shown in the following figure.

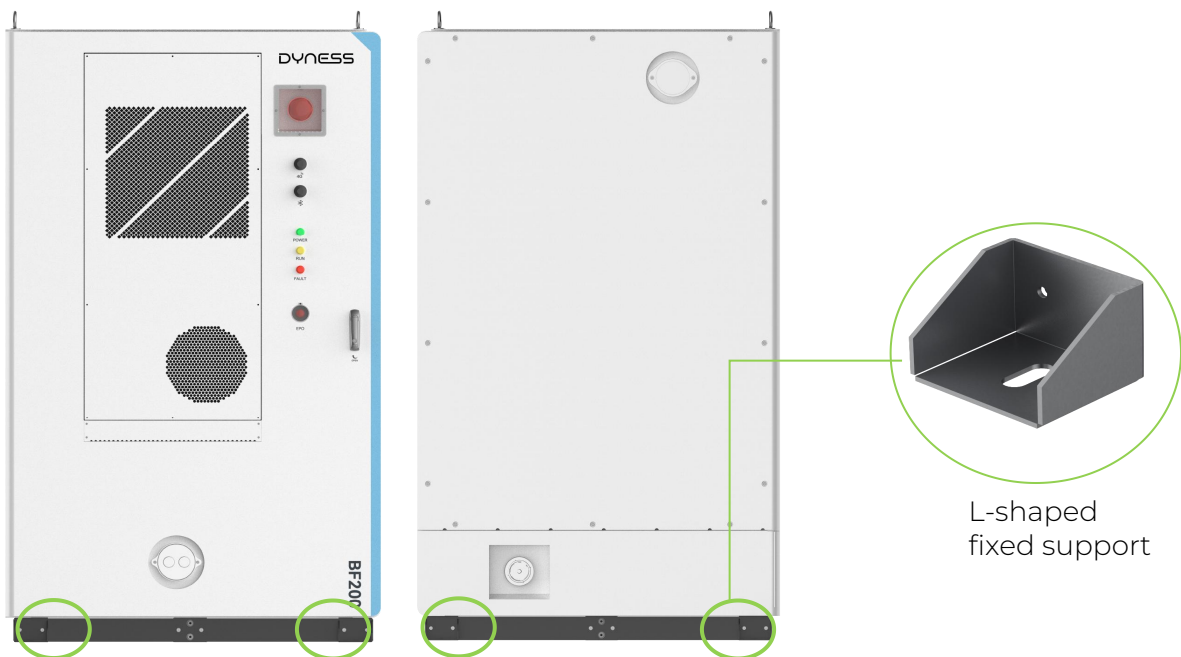


Figure 5-2 Illustration of Fixed Support

Angle Steel Fixing Tools

The following tools may be needed for installing the brackets: marker, electric drill, angle steel, M12 expansion bolts:

The tools are not included in the supply scope and need to be equipped by the customer themselves.

Angle Steel Fixing Steps

- ① Use a marker pen to mark the drilling positions.
- ② Choose an electric drill with a diameter matching the bolt's outer diameter, drill holes according to the bolt's length (hole depth slightly greater than the bolt length) until reaching the desired depth for installation.

- ③ Insert the bolt and expansion sleeve into the hole, tighten the nut to the end of the bolt, and use a wrench to tighten it.

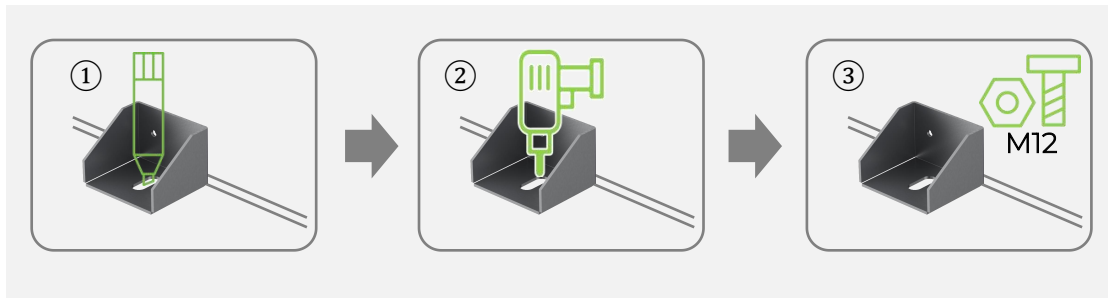


Figure 5-3 Angle Steel Fixing Steps

5.3.3. Grounding Installation

The grounding method should comply with the regulations of the installation location. Please take into account the actual situation on site and follow the instructions of the power station staff when installing the external grounding.

- ① Reserve grounding points, which can be implemented using cables or flat steel grounding;
- ② Use 25mm² grounding cables. Refer to Section 5.6 "Cable Specification Requirements" of this chapter for grounding cables;
- ③ The upper figure shows grid grounding, and the lower figure shows equipment protective grounding.

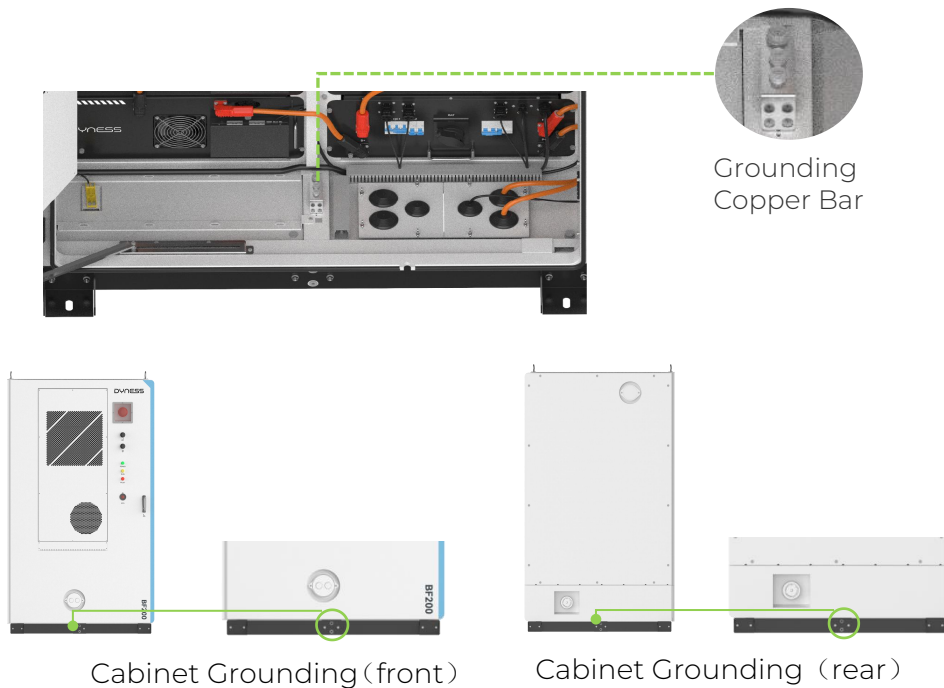


Figure 5-4 Equipment Grounding Diagram

After the grounding connection is completed, the grounding resistance must be measured. The specific grounding resistance value should comply with the relevant national/local standards and regulations.

5.3.4. Door Operating Procedures

The product cabinet door can only be opened after the product has been

securely installed. The steps for opening the cabinet door are as follows:

- ① Make sure that the equipment is under lock state.
- ② Moving the lid up above the locking hole.
- ③ Getting the key in the door and revolve it clockwise.
- ④ Rotating the handle clockwise to the position shown in the figure to open the door.

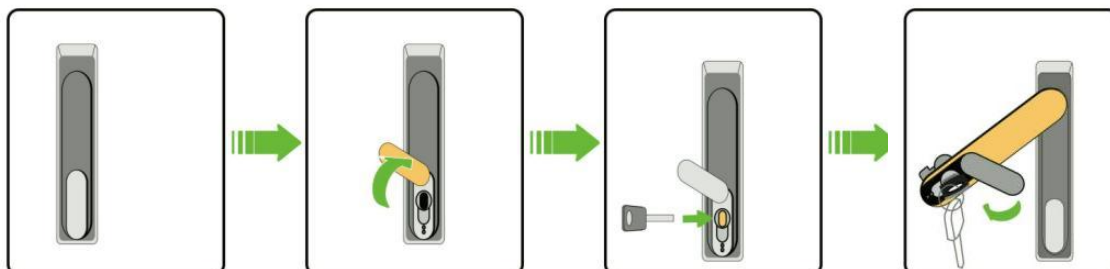


Figure 5-7 Door Open Steps

To close the cabinet door, please refer to the above opening steps (in reverse order) and pay attention to the following warning information!



WARNING

- Before closing the cabinet door, please ensure that there are no foreign objects obstructing it!
- When closing the cabinet door, ensure that both the top and bottom ends are fully closed, otherwise there is a risk of water leakage and rusting inside the cabinet.

5.4. Wiring Requirements

- Based on the location and dimensions of the cable entry and exit points at the bottom of the product cabinet, sufficient space must be reserved for the AC-side cable tray during foundation construction, and cable conduits must be pre-embedded.
- Determine the specifications and quantity of perforated pipes based on the cable type and the number of incoming and outgoing cables.
- Both ends of all embedded pipes are temporarily sealed to prevent debris from entering and causing inconvenience during subsequent wiring.
- After connecting all cables, the cable entry and exit points, as well as the joints, are sealed with fire-resistant mortar or other suitable materials to prevent rodents from entering.



WARNING

After completing the wiring, all wiring entry and exit points must be sealed!

5.5. Cable Requirements

- The conductor must have sufficient current-carrying capacity, which includes but is not limited to: environmental conditions, conductor insulation material type, cable laying method, cable material, and cross-sectional area;

- The cable diameter must be selected according to the maximum current-carrying capacity, and the length must allow for a margin;
- The specifications and materials of three-phase AC output cables must be consistent;
- Flame-retardant cables must be selected;
- The cables used must comply with local laws and regulations.

Please note: When installing, please pay attention to the torque. The power cables, LAN port adapter cables and other accessories listed below are provided by Dyness, while other cables need to be equipped by the customer.

Table 5-1 List of Dyness Provided Cable

Item No.	Type	Specification	Length	Quantity	Terminal Model Number	Torque
1	Power Cable	BF200-PACK-Adapter Harness 50mm ²	240 mm	13	Futronics: FSE80180Q-50B4Z FSE80180P-50A4Z	/

Table 5-2 List of Customer Provided Cable

Item No.	Type	Specification	Length	Quantity	Terminal Model	Torque
1	BDU Power Cable: P+	Single-Core Outdoor Copper Cable, 50mm ²	As Required	1	Futronics: FSE80180P-50A4Z	/
2	BDU Power Cable: P-	Single-Core Outdoor Copper Cable, 50mm ²	As Required	1	Futronics: FSE80180Q-50B4Z	/
3	Three-Phase AC Input	Single-Core Outdoor Copper Cable, 14AWG (≈2mm ²) UL2835 4P 24AWG (≈0.2mm ²)	As Required	1	RV3.5-6	5 N.m
4	Cloud Platform Connection	FTP Cat5e Shielded Cable, Black	As Required	1	RJ45 Plug	/
5	Grounding Cable	25mm ²	As Required	1	SC25-8	25 N.m
1	BDU Power	Single-Core Outdoor	As Required	1	Futronics: FSE80180P-50A	/

	Cable: P+	Copper Cable, 50mm ²	d		4Z	
--	-----------	---------------------------------	---	--	----	--

5.6. Terminal Wiring Method

OT/DT/SC terminals connection steps:

- ① Peel off the insulation skin from the cable terminal, and the length of which should be the depth of the wire hole on the copper terminal, plus an additional 2-3mm.
- ② Install the heat-shrink sleeve at the cable terminal and insert the exposed copper core part of the stripped wire into the wire hole of the copper terminal (OT/DT terminal).
- ③ Use hydraulic pliers to firmly crimp the copper terminally.
- ④ Slide the heat-shrink tube onto the copper terminal (OT/DT terminal) to fully cover the wire hole. Use a heat gun to tighten the heat-shrink tube.

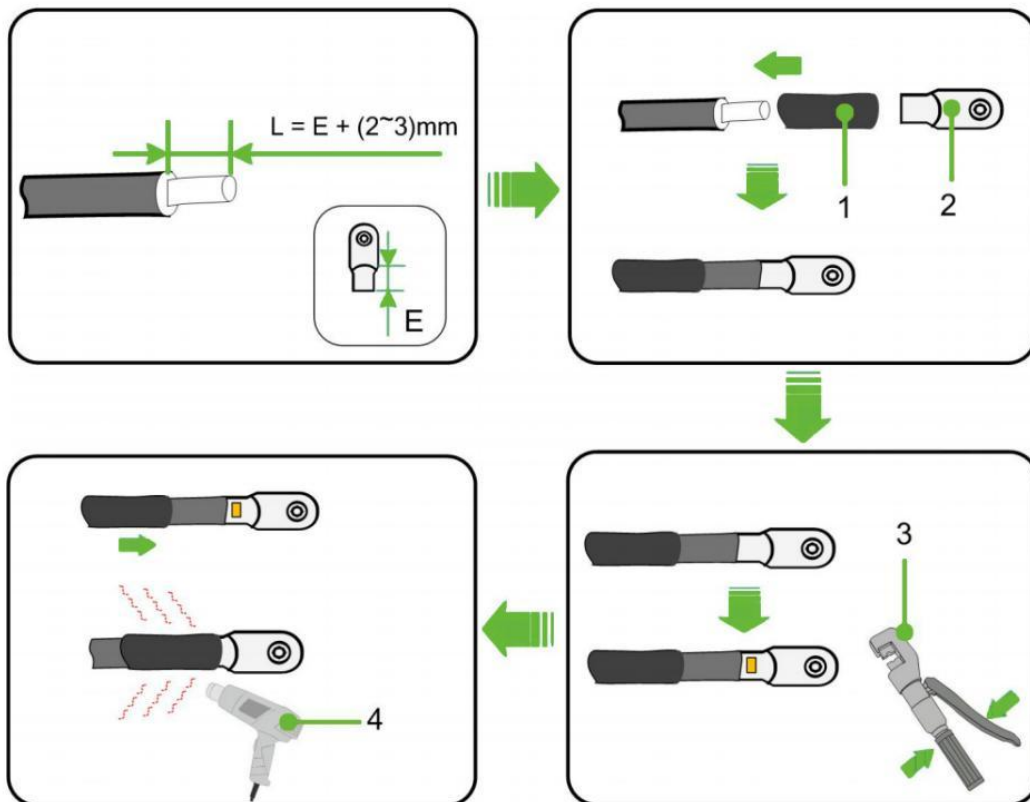


Figure 5-8 The Connection Sequence of Wiring Components

1:Heat-shrink tube, 2:OT/DT/SC terminal, 3:Crimping Pliers, 4:Hot air gun

5.7. Checking Before Wiring

1) Checking breakers

Please check whether the circuit breakers and other equipment in the following modules are in the OFF position:

- ① Check the battery circuit breaker (“BAT”) (as shown at position 1 in the diagram);
- ② Check switches (“QK1”、“QK2”、“QK3”) (as shown at position 1 in the diagram).

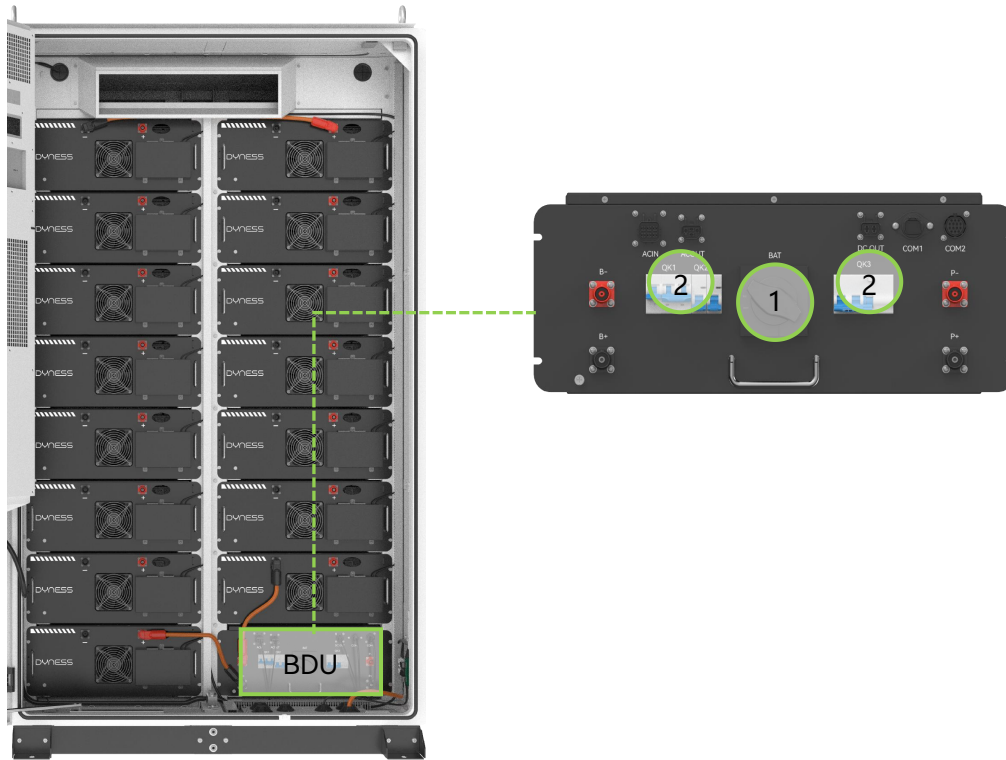


Figure 5-9 Circuit Breaker Position Diagram

2) Checking before wiring

Table 5-2 Checking List Before Wiring

No.	Checklist	Confirm
1	The cables and terminals used should meet the requirements of wire diameter and shielding.	<input type="checkbox"/>
2	The cable is labeled correctly.	<input type="checkbox"/>
3	The related wiring accessories are ready.	<input type="checkbox"/>
4	The wiring operator must wear protective devices.	<input type="checkbox"/>
5	Checking if all the breakers are in disconnected position	<input type="checkbox"/>

5.8. Wiring Tools



Figure 5-8 Safety Gear

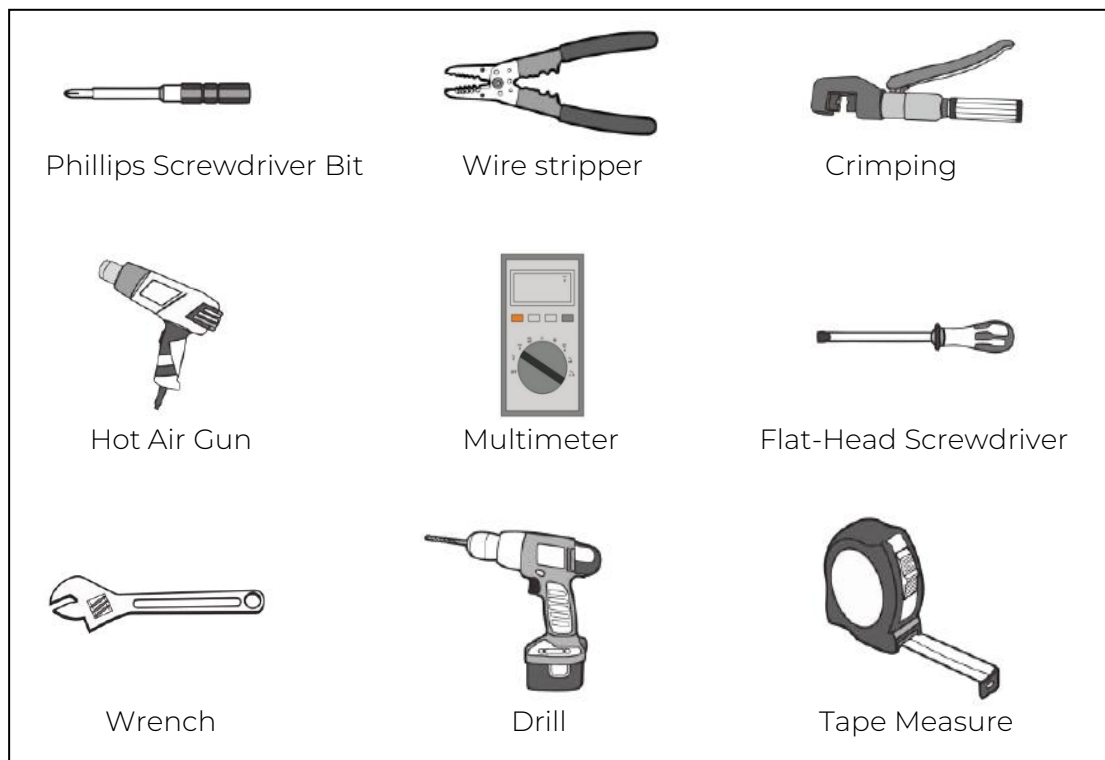


Figure 5-9 Tools

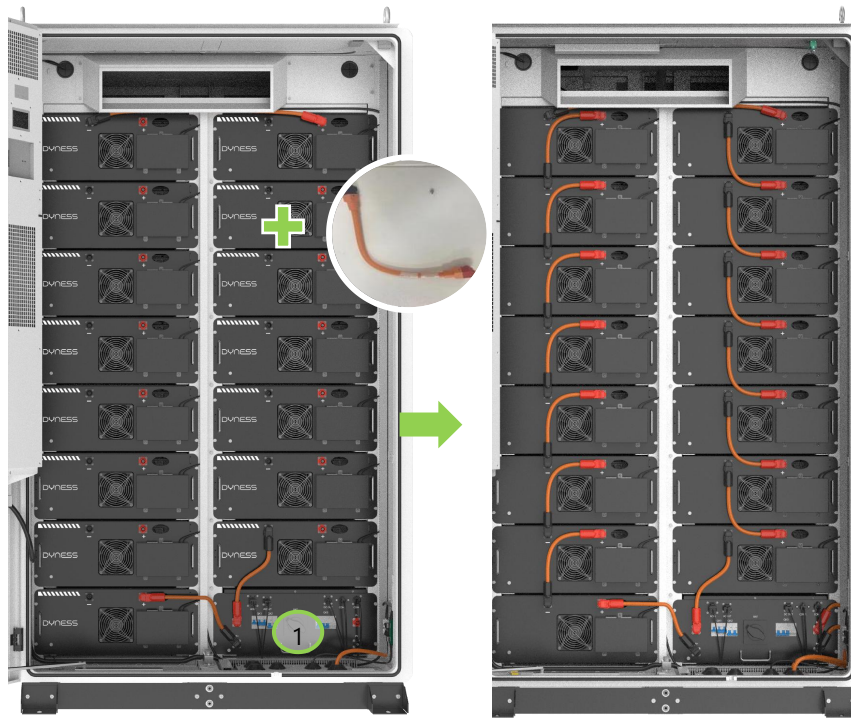
5.9. Wiring Diagram

Step 1 Internal Wiring

To ensure the safety of the product, when the product is shipped, the power cable of the battery is sent along with the goods and needs to be installed on-site:

- (1) Confirm that the battery switch on the BDU is in the off position, as shown in position 1 in the diagram;
- (2) Battery power connection: Connect the power cables between PACKs in series. The negative terminal of the previous PACK is connected to the positive terminal of the next PACK. The black terminal of the power cable should be connected to the negative terminal of the previous PACK (black), and the red terminal should be connected to the positive terminal of the PACK (red). Ensure the connection sequence is correct.

Note: The color meanings of the terminals of PACK and BDU are as follows: red indicates the positive pole, and black indicates the negative pole.



Before wiring

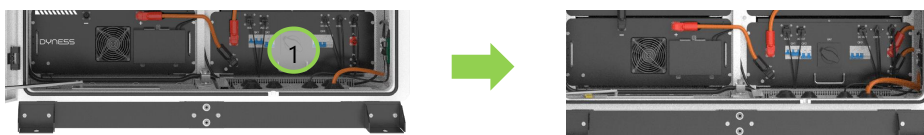
After wiring

Figure 5-10 Diagram of Series Connection of Battery Power Lines

Step 2 External Wiring

This device supports external connection to the PCS. The following are the steps for connecting the battery power line to the PCS:

- (1) Ensure that the battery switch on the BDU is in the off position, as shown in position 1 in the diagram;
- (2) Connection of the battery cluster to the PCS power line: At position 2 in the diagram, follow the cables specification in "5.6 Cable Requirements". The power line connected to the red terminal should be connected to the positive terminal of the battery input port on the PCS, and the power line connected to the black terminal should be connected to the negative terminal of the battery input port on the PCS. Ensure the connection sequence is correct.



Before wiring

After wiring

Figure 5-11 Diagram of Battery-PCS Power Line Connection

After all the power lines are connected, connect the communication lines between the battery cabinet and the PCS, as well as lines to the cloud platform. The following are the steps and diagrams for connecting the communication lines:

- (1) On the right side of the battery cabinet, reserve the communication ports between the battery cabinet and the PCS on the DZ terminal. Use the cables specified in "5.6 Cable Requirements" to connect from the "3" and "4" ports on

the DZ terminal to the PCS, as shown in position 1 in the diagram.
 (2) Use the cables specified in “5.6 Cable Requirements” at the LAN port inside the right side of the battery cabinet to connect to the cloud platform interface, as shown in position 2 in the diagram.

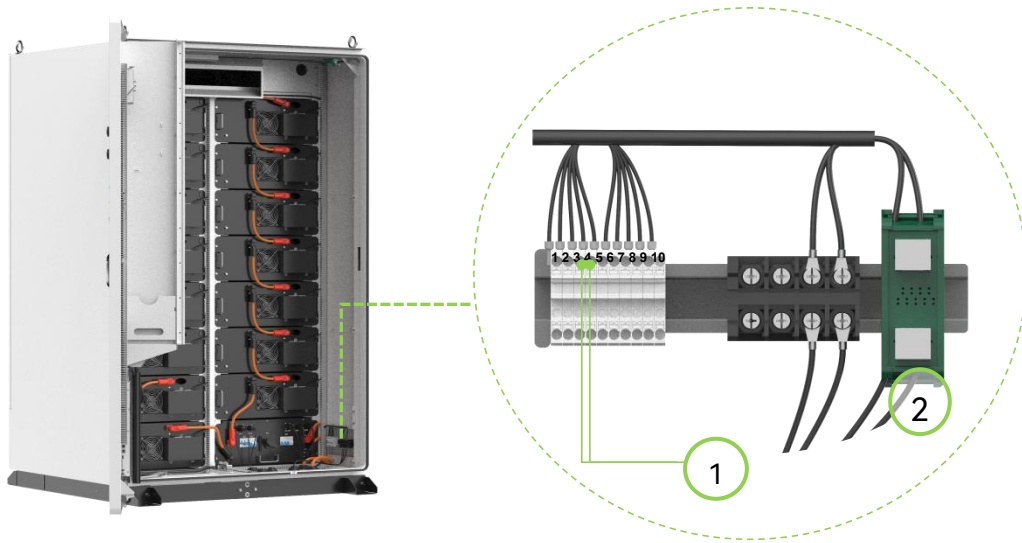


Figure 5-12 Diagram of External Communication Wiring
 Table 5-4 Definition of External Communication Wiring Ports

DZ Terminal		
No.	Label	Function Description
1	EMS: CAN2_H	PCS communication
2	EMS: CAN2_L	PCS communication
Ethernet Conversion Terminal		
No.	Label	Function Description
1	LAN	connection to the cloud platform

Note: For specific wiring procedures and methods, please refer to the *“Quick Installation Manual”*.

6. Power-on and Power-off

6.1. Power-on Process

Precautions:

- The product can only be put into operation after being confirmed by professionals and approved by the local power department.
- For products with a long shutdown time, before powering on, a comprehensive and detailed inspection must be carried out on the equipment to ensure that all indicators meet the requirements before powering on.

Check before power-on:

Table 6-1 Checklist Before Power-on

NO.	Checklist	Confirm
1	Check if the wiring is correct;	<input type="checkbox"/>
2	Check if MSD connection on each PACK is good.	<input type="checkbox"/>
3	Check if the emergency stop button is released;	<input type="checkbox"/>
4	Check if the SPD switch is in closed state;	<input type="checkbox"/>
5	Check PE cable connection to make sure there are no ground faults;	<input type="checkbox"/>
6	Check if the AC and DC voltages meet the start-up conditions and there is no risk of over-voltage with a multimeter;	<input type="checkbox"/>
7	Check to make sure no tools or parts are left inside the device;	<input type="checkbox"/>
8	Check if there is condensation. If so, open the ESS cabinet for ventilation until the condensation disappears;	<input type="checkbox"/>
9	Check if the air conditioner is in normal state and there is no abnormal sound;	<input type="checkbox"/>
10	Check if there are no wire ends, metal shavings and other objects that may cause short circuits in signal or power cables.	<input type="checkbox"/>

Power-on steps

- Step 1: Turn on the battery circuit breaker ("BAT") on the BDU;
- Step 2: Sequentially turn on the switches (circuit breakers) labeled "QK1", "QK2", and "QK3" on the BDU.

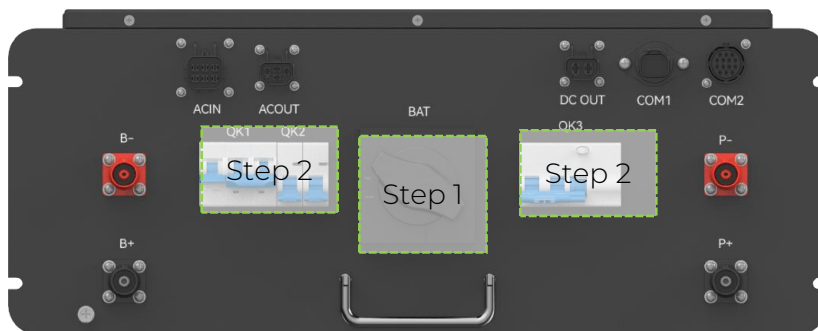


Figure 6-1 Circuit Breakers Location

After following the above steps in sequence, check if the product indicator lights are on. If the product is in normal condition, the power indicator light "POWER" and the operation indicator light "RUN" will be on, while the fault indicator light "FAULT" will be off.

6.2. Power-off Process

Power-off steps (the operation process can be referenced in the product power-on process diagram)

- Step 1: Disconnect the battery circuit breaker ("BAT") on the BDU;
- Step 2: Sequentially disconnect the switches (circuit breakers) labeled "QK1", "QK2", and "QK3" on the BDU.



WARNING

After operating step by step, the system will stop running, and the product indicators and screen will go out. After the inspection is completed, wait for five minutes to perform maintenance and inspection operations.

6.3. Emergency Stop

Press the "EPO" red button on the front door when there is an emergency.

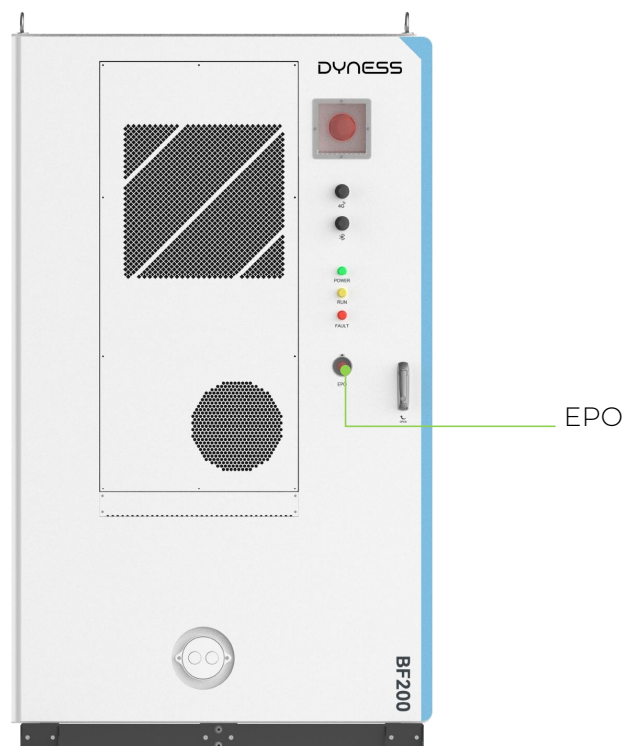


Figure 6-2 EPO Location



WARNING

Under normal circumstances, please use the normal shut-down procedure to power off the product!

In emergency situations, it is necessary to use EPO to ensure quick response and protect personal and equipment safety!

7. Fault Description

If the solution provided below still does not solve the problem, please contact Dyness.

Table 8-1 Fault Description and Solution

Fault Phenomenon	Solution
Power light off	<ul style="list-style-type: none"> • Check that each circuit breaker is closed.
Running light off	<ul style="list-style-type: none"> • Check if EMS is in running state.
Alarm light on	<ul style="list-style-type: none"> • Check whether there is any alarm through the screen or the web, whether it is caused by improper operation. If not, please contact supplier.
Show access alarm	<ul style="list-style-type: none"> • Check if the door is closed.
Show flood alarm	<ul style="list-style-type: none"> • Check whether the system is flooded, or whether the water sensor line is disconnected or damaged.
Show emergency stop Alarm	<ul style="list-style-type: none"> • Check whether the emergency stop switch is in the released state.
Show SPD alarm	<ul style="list-style-type: none"> • Check whether the surge protector is damaged and whether the fault light is on. If damaged, contact the supplier for replacement.
Show gas detector alarm	<ul style="list-style-type: none"> • Stop using immediately and contact the supplier.
Show temperature detector alarm	<ul style="list-style-type: none"> • Stop using immediately and contact the supplier.
Show smoke detector alarm	<ul style="list-style-type: none"> • Stop using immediately and contact the supplier.
Show other alarm	<ul style="list-style-type: none"> • Except for grid-side abnormalities, contact the supplier for other cases.
Abnormal anti-backflow	<ul style="list-style-type: none"> • Check whether the anti-backflow meter is set correctly and whether the meter is correctly installed; • Check whether the PE cable of the EMS is grounded; • If the fault information still exists, please contact the supplier.
Abnormal communication between EMS and BMS	<ul style="list-style-type: none"> • Shutdown to check if the communication cable is firmly connected and correct; • Restart the EMS and check if it functions normally; • If the error message still exists, please contact the supplier.
Abnormal communication between EMS and fire protection module	<ul style="list-style-type: none"> • Shutdown to check if the communication cable is firmly connected and correct; • Restart the EMS and check if it functions normally; • If the error message still exists, please contact the supplier.
Abnormal communication between EMS and PCS	<ul style="list-style-type: none"> • Shutdown to check if the communication cable is firmly connected and correct; • Restart the EMS and check if it functions normally; • If the error message still exists, please contact the supplier.
Abnormal communication between EMS and DC/DC	<ul style="list-style-type: none"> • Shutdown to check if the communication cable is

			<ul style="list-style-type: none"> firmly connected and correct; Restart the EMS and check if it functions normally; If the error message still exists, please contact the supplier.
Abnormal communication between EMS and meter			<ul style="list-style-type: none"> Shutdown to check if the communication cable is firmly connected and correct; Restart the EMS and check if it functions normally; If the error message still exists, please contact the supplier.
SD card abnormality		detect	<ul style="list-style-type: none"> Check if the SD card is normal. If not please replace the SD card; If the error message still exists, please contact the supplier.
Network abnormality (default blocked)			<ul style="list-style-type: none"> Check the 4G/WIFI/LAN antenna; If the error message still exists, please contact the supplier.
Data loss due to EMS no power supplied			<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.
EMS external abnormality		Flash	<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.
System inconsistency abnormality		version	<ul style="list-style-type: none"> Update software to consistent version; If the error message persists, contact the vendor.
Parallel communication loss			<ul style="list-style-type: none"> Turn off the power to check whether the parallel communication cable is firmly and correctly connected; If the fault message persists, contact the supplier.
Parallel host loss			<ul style="list-style-type: none"> Check that the host address is not the same; Turn off the power to check whether the parallel communication cable is firmly and correctly connected; If the fault message persists, contact the supplier.
Parallel grid inconsistency		input	<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.
Parallel input sequence error		phase	<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.
Parallel output deficiency		phase	<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.
Incompatible software versions prevent parallel operation			<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.
Inconsistent capacities prevent parallel operation			<ul style="list-style-type: none"> If the error message still exists, please contact the supplier.

8. System Maintenance

System Maintenance Items

WARNING

- Operation and maintenance work must comply with local laws and regulations and the precautions in this manual.
- System maintenance work must be performed by professionals with electrical and power engineering knowledge and relevant qualifications.
- When performing system maintenance, wait until the outdoor cabinet's internal equipment is completely powered down before beginning inspection work. If any non-conformities are found during inspection, correct them immediately.

The system needs to be checked regularly. Here are some items to check and frequency specified. For more details, check out the *Operating and Maintenance Manual*.

Table 9-1 System maintenance checklist

Items	Checklist	Frequency
Cabinet exterior	Check if there are any flammable materials on the ESS cabinet;	Once/year
	Check if the ESS cabinet and expansion bolts are secure and free from rust;	
	Check if there is any damage, peeling paint, and oxidation on the ESS cabinet casing;	
	Check if the cabinet door locks can open smoothly; Check if the sealing strips are securely fixed.	
System status	Check if the ESS cabinet and internal equipment are damaged or deformed;	Once/year
	Check if the warning signs and labels are clear and visible. Replace them if necessary;	
	Check if there are any loose or missing screws inside the ESS cabinet;	
	Check if the cable shielding layer is in good contact with the insulation sleeve;	
	Check if the grounding copper bar is securely fixed in place.	
Wiring and cable arrangement	Check if there is any oxidation or rust inside the ESS cabinet;	Once/year
	Check if the ESS cabinet and internal equipment are damaged or deformed.	
	Check if all the inlet/outlet of the ESS cabinet are sealed properly;	
	Check if there is any water leakage inside the ESS cabinet;	
	Check if the power cables are loose, tighten them according to previously specified torque;	
	Check if there are any damage to power cables and control cables, especially check for cuts on the insulation	

	<p>where they contact metal surfaces;</p> <p>Check if the insulation wrapping of cable terminals is falling off;</p> <p>Check if the PE cable connection is correct, the grounding resistance value should not exceed 4Ω;</p> <p>Check if the equipotential connections inside the ESS cabinet are correct.</p>	
System cleanliness	<p>Check if the inlet/outlet of ESS cabinet are blocked. Please clean them if needed;</p> <p>Check if the humidity inside the ESS cabinet is within the normal range. Please clean them if needed;</p> <p>check if there are foreign objects, dust, dirt and condensation inside the ESS cabinet;</p> <p>Check if there is condensation inside the ESS cabinet regularly: Once a year for areas with low relative humidity; One half year for areas with medium relative humidity; Once every one to three months for areas with high relative humidity.</p>	Once/ half year
System function	<p>Check if there is abnormal noise inside the ESS cabinet during operation;</p> <p>Check if the temperature is too high inside the ESS cabinet;</p> <p>Check if the system operates normally for startup and shutdown.</p>	Once / two years
Fan	<p>Check the operation status of fan;</p> <p>Check if the fan is blocked;</p> <p>Check if there is abnormal noise during fan operation.</p>	Once/year
Air conditioner	<p>Check the operation status of air conditioner;</p> <p>Check if the air conditioner is blocked;</p> <p>Check if there are abnormal noises during air conditioner operation.</p>	Once/year
Safety function	<p>Check the stop function of EPO and screen, and simulate shutdown for test;</p> <p>Check the warning signs and other labels, please replace them if there is any damage or blur.</p>	Once/half year
Device maintenance	<p>Perform a regular inspection for rust condition of all metal components (once every half year);</p> <p>Annual inspection of the contactor (auxiliary switch and micro-switch) to ensure that the product runs well;</p> <p>Check the operating parameters (especially voltage and insulation parameter).</p>	Once/half year

9. Quality Assurance

Warranty period please refer to *Warranty Agreement*.

Service within warranty period: for Dyness ESS products that fail within warranty period, we will be responsible for handling and providing proper replacement or repair solution, offering free services or replacement of failure products. We will require valid invoices and receipts of purchase for warranty. Meanwhile, the Dyness trademark should be visible to ensure the validity of assurance.

We reserve the right not to provide warranty in the following situations:

- The ESS products exceed the free warranty period;
- Improper installation, modification or usage;
- Operation under harsh environments beyond those specified in this document or “Warranty Agreement” or “Technical Agreement”, or damage caused by abnormal natural environmental factors;
- Damage or failure caused by installation, modification and disassembly by unauthorized agencies or individuals;
- Damage or failure caused by the use of non-standard products or unauthorized components and software.

For failures caused by the above situations, Dyness could provide paid maintenance services if customer requires.

If you have any problems with this product, please contact us. In order to solve your problem more quickly, please provide the following information:

- Original purchase receipt or invoice;
- Contact information, including name, phone number, email address and shipping address.
- Product information, including product model, product serial number, installation date and location, fault date and fault description, etc.

10. Appendix

Please check if the following checklist has been completed before product runs.

Table 11-1 Checklist before operation

Items	Checklist	Confirm
1	Check if the appearance is damaged and if the internal equipment is intact;	<input type="checkbox"/>
2	Check if the assembly is firm;	<input type="checkbox"/>
3	Check if the logo and labels of ESS cabinet and components are clear or damaged;	<input type="checkbox"/>
4	Check if the communication cable connection is completed;	<input type="checkbox"/>
5	Check if there are any faults of PE cable;	<input type="checkbox"/>
6	Check if the meter reads correctly;	<input type="checkbox"/>
7	Check if all the connection points are correct and have good contact;	<input type="checkbox"/>
8	Check if there are normal situations of manual components;	<input type="checkbox"/>
9	Check if the circuit breakers are functioning normally;	<input type="checkbox"/>
10	Check if all the buttons and indicators are functioning normally;	<input type="checkbox"/>
11	Check if the power indicator is normal;	<input type="checkbox"/>
12	Check if the running indicator is normal;	<input type="checkbox"/>
13	Check if fan and air conditioner are running well and there is no abnormal sound;	
14	Check if there are any tools or components left inside the ESS cabinet;	<input type="checkbox"/>
15	Check if the door of ESS cabinet can open and close smoothly;	<input type="checkbox"/>