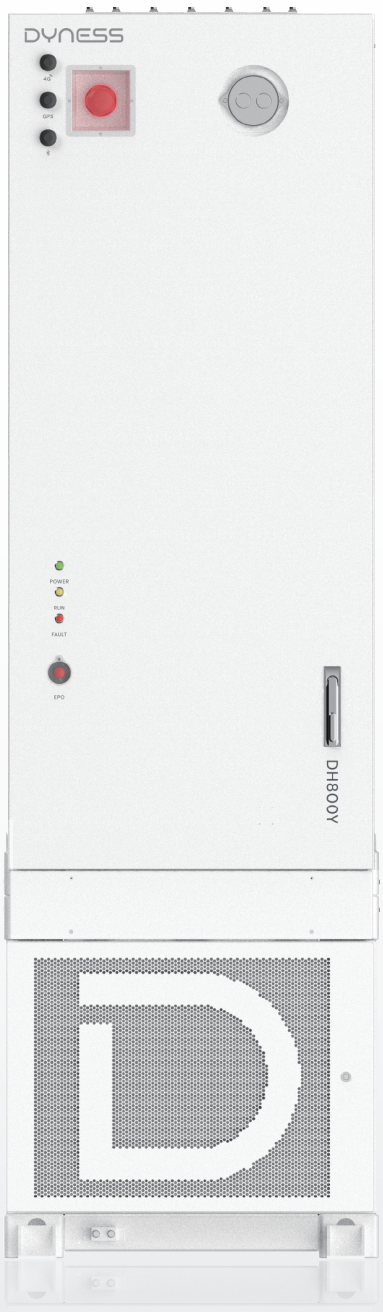
DYNESS



DH800Y

USER MANUAL

EnerCore

Liquid-cooling All-in-one Cabinet

Version: 20260908-V1.6-EN, the version is subject to update without notice.

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Statement of Law

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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	2025.10.31	First publication
1.1	2025.11.25	Add safety signs and their explanations, and update the requirements for forklift transportation and crane transportation.
1.2	2026.03.01	Parameters revised; drawings updated.
1.3	2026.03.15	Add response to different indicators, revise diagram to English version only, and add fire fighting sequence diagram
1.4	2026.04.30	Add product foundation requirements, revise product installation requirements, and supplement the content of water fire protection logic.
1.5	2026.07.03	Update PDU and electrical compartment drawings.
1.6	2026.09.08	Add DH800Y-4H system; update equipment appearance,forklift transportation, requirements,foundation requirements, installation space requirements, installation procedures for battery compartment and electrical compartment, cable specification requirements, wiring procedures, and power-on and power-off sequence

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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 liquid-cooled integrated 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 liquid-cooled 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 Meaning

	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.

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	Recyclable symbol
	Hazardous waste, need professional recycling, do not put in the trash can
	Manual (User Manual) symbol
	The cabinet may still be live within five minutes after power-off. All operations must be initiated at least five minutes after the cabinet is powered off.

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 Pack
PDU	Power 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

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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

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

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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;

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- 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

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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

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- 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.

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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;
- Wear work clothes, goggles, masks, and other protective equipment, when replacing coolant or performing maintenance on liquid cooling pipes.
- Do not open the cabinet doors in inclement weather such as rain or strong winds.

Battery maintenance

- Do not store or operate the unit at low voltage or low SOC for extended periods. Equipment damage arising from any of the following scenarios is excluded from warranty coverage:

a) Discharging cell voltage remains below 2.7 V for 120 consecutive hours;

b) SOC of any battery rack stays at 0% for 120 consecutive hours;

c) Discharging cell voltage drops below 2 V.

- If the system will remain out of service for an extended period (7 days or longer), set the SOC low-limit protection threshold to a minimum of 25%. Monitor system SOC regularly to prevent over-discharge that voids warranty eligibility.
- During maintenance or system shutdown, if any battery rack reaches 0% SOC, recharge it to 30% SOC or higher within 3 calendar days.
- Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
- When replacing batteries, replace with the same type and number of batteries or battery packs.

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- General instructions regarding removal and installation of batteries.

a) CAUTION: Do not dispose of batteries in a fire. The batteries may explode.

b) CAUTION: Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

c) CAUTION: A battery can present a risk of electrical shock and high short-circuit current.

- The following precautions should be observed when working on batteries:

a) Remove watches, rings, or other metal objects.

b) Use tools with insulated handles.

c) Wear rubber gloves and boots.

d) Do not lay tools or metal parts on top of batteries.

e) Disconnect charging source prior to connecting or disconnecting battery terminals.

f) Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground.

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.

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3. Product Description

3.1. Product Overview

DH800Y is a commercial and industrial liquid-cooled integrated cabinet with a system storage capacity of 836 kWh and a rated AC output power of 210/420 kW (power is optional). The system integrates a battery pack, a PCS energy storage converter, a PDU high-voltage control unit (with an integrated EMS energy management system and BMS battery management system), fire protection systems, and a liquid cooling system, etc. It can provide users with functions such as peak-valley arbitrage, peak shaving and valley filling, dynamic capacity expansion, and demand response, and can be widely applied in medium and large-scale commercial and industrial scenarios such as charging stations, commercial buildings, and manufacturing industries.

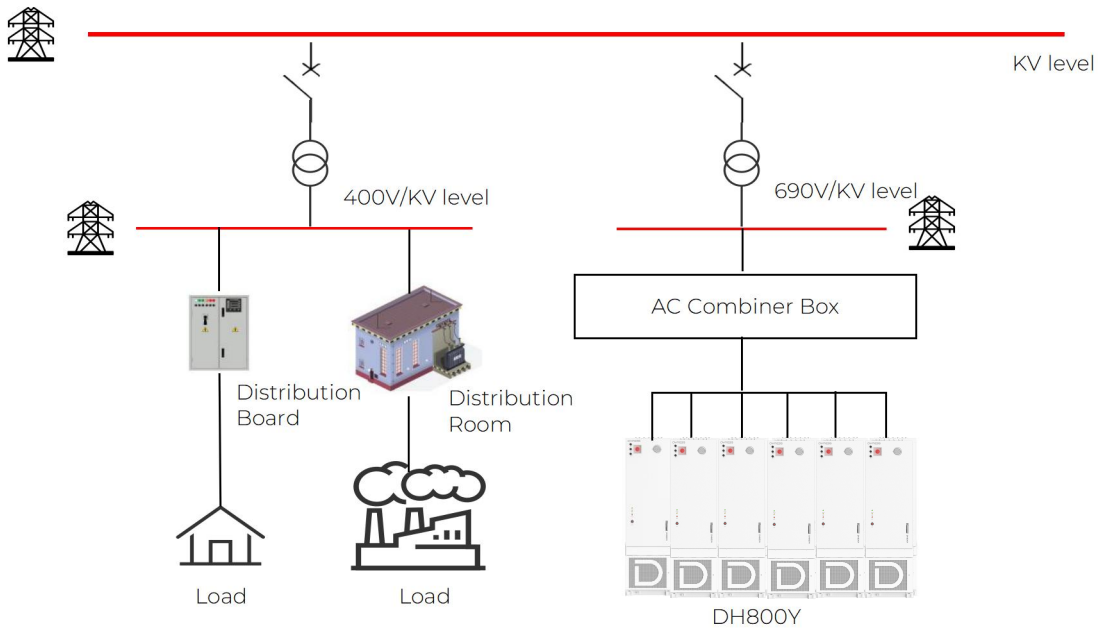


Figure 3-1 System Application Principle

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The product features are as follows:

1) Basic function: 690V medium voltage on-grid application;

2) Optional function: Rated AC power can be selected as 210/420kW;

3) System AC expansion: It can achieve multi-unit parallel expansion. For 2H system on-grid, up to 10 units can be paralleled, with the maximum system total power/total capacity expandable to 4.2MW/8.36MWh; for 4H system on-grid, up to 20 units can be paralleled, with the maximum system total power/total capacity expandable to 4.2MW/16.72MWh.

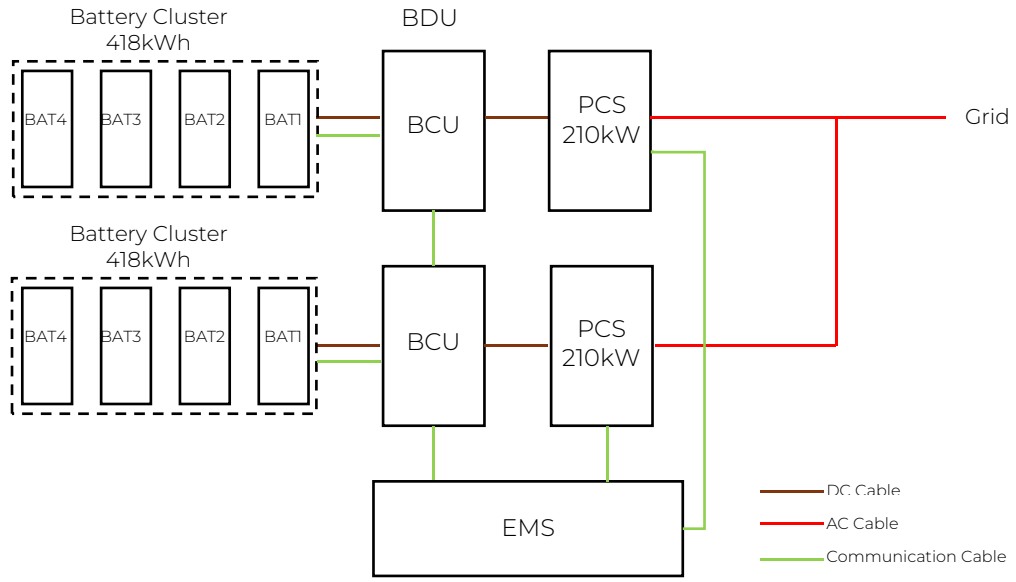


Figure 3-2 DH800Y-2H System Topology Diagram

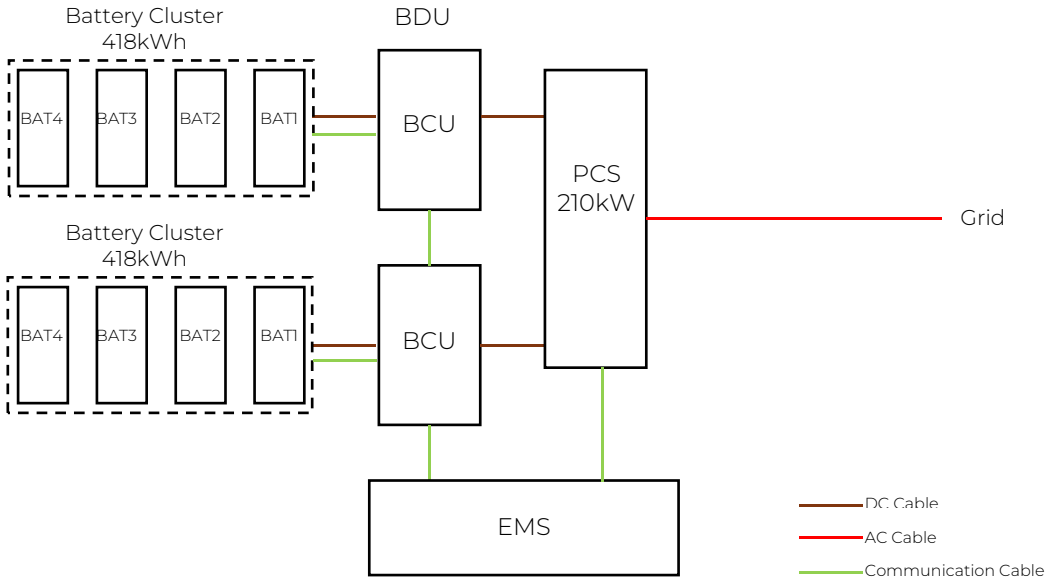
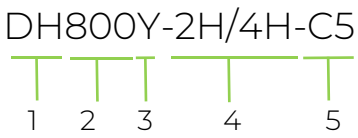


Figure 3-3 DH800Y-4H System Topology Diagram

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3.2. Product Model

This manual is applicable to the DH800Y liquid-cooling model of the EnerCore series of outdoor smart energy storage cabinets. The product name and system model are defined as follows:



1. DH: Dyness high-voltage series products
2. 800: Product battery capacity
3. Y: Liquid cooling system
4. 2H/4H: 2H represents a 2-hour system with 0.5C; 4H represents a 4-hour system with 0.25C
5. C5: Corrosion protection class C5; C3 is the default corrosion protection class if not specified.

Table 3-1 Version Model

No.	Model	Description
1	DH800Y-2H	On-grid liquid-cooling ESS cabinet, 420kW/836kWh, anti corrosion-C3
2	DH800Y-2H-C5	On-grid liquid-cooling ESS cabinet, 420kW/836kWh, anti corrosion-C5
3	DH800Y-4H	On-grid liquid-cooling ESS cabinet, 210kW/836kWh, anti corrosion-C3
4	DH800Y-4H-C5	On-grid liquid-cooling ESS cabinet, 210kW/836kWh, anti corrosion-C5

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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 3-2 Product Configuration List

Module Name	Function	Quantity	Configuration
PACK	Used for electrical energy storage, providing the system with stable and continuous power output	8	Standard
PDU	High-voltage power supply, battery control unit, system energy management, and comprehensive control	1	Standard
Fire Protection System	Intrusion protection for equipment, emergency response, fire prevention, and effective fire extinguishing	1	Standard
Liquid Cooling System	Regulates the operating temperature of the battery and PCS, ensuring the system runs within a suitable temperature range	1	Standard

3.4. Appearance Design

- System dimensions: Width x Depth x Height 1000*2438*3315mm (excluding lifting rings and fixed brackets)
- System net weight: Approximately 8500kg (referring to model DH800Y-2H)
- System protection grade: IP55
- System corrosion resistance grade: C3/C5

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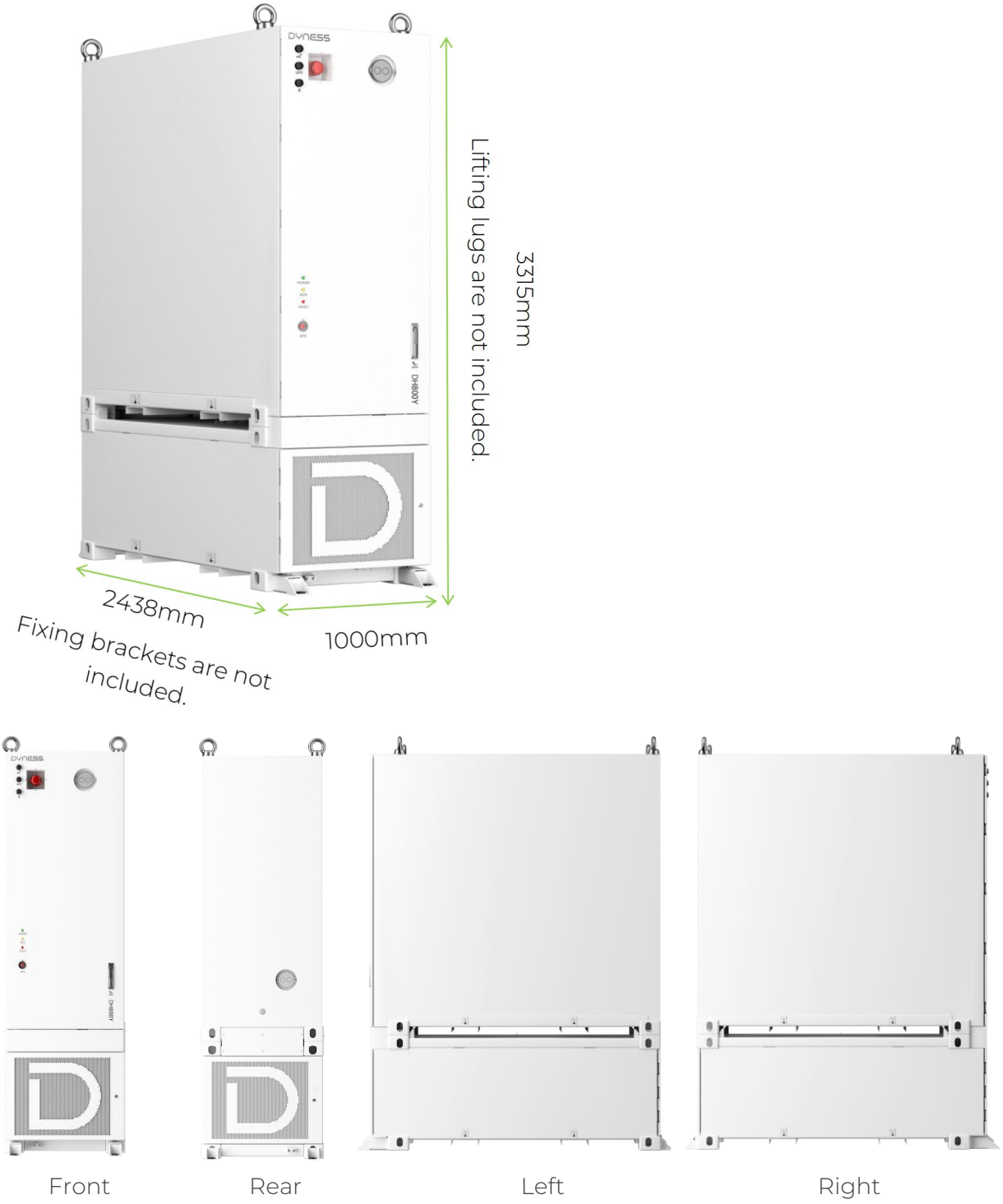


Figure 3-4 Product Appearance Diagram

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The front of the product is equipped with ventilation valve (outlet), antennas, audible and visual alarm, status indicator lights, emergency stop buttons and electrical compartment air inlets. The back of the product is equipped with ventilation valve (inlet), water fire-fighting interfaces and electrical compartment air outlets.

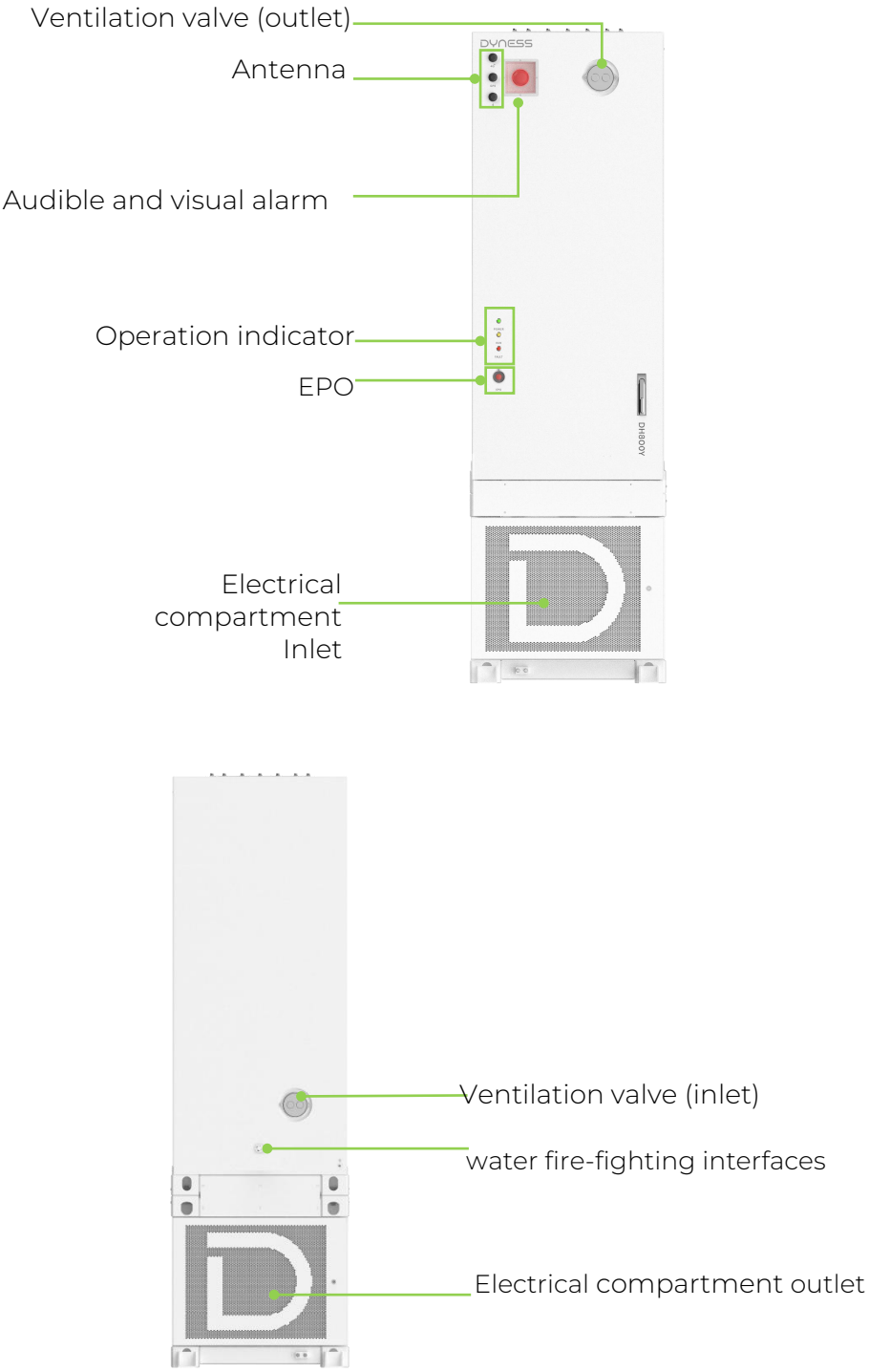


Figure 3-5 Appearance Function Diagram

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Table 3-3 Function Definitions of Indicator Lights and Antennas

No.	Appearance	Name	Function
1	●	4G Antenna (Top)	Receives and transmits 4G signals
2	●	GPS Antenna (Middle)	Receives and transmits positioning signals
3	●	Bluetooth Antenna (Bottom)	Receives and transmits Bluetooth signals
4	●	Fault Indicator	Steady on means the system has a fault.
5	●	Running Indicator	Steady on means the system is operating normally; off means standby mode.
6	●	Power Indicator	Steady on means the power is connected.
7		Emergency Stop Button	Stops system operation when pressed
8		Audible and Visual Alarm	Emits audible and visual alarm signals during a system alarm
9	/	Inlet/Outlet Vent	Draws in external cold air and exhausts hot air for heat dissipation and temperature balance
10	/	Ventilation valve	Vents combustible gases
11	/	Water-based Fire Protection Interface	Manually connect a fire hose in case of thermal runaway

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

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When the fault indicator lights up, the system stops running. In this case, check the fault code or contact our company for assistance. When the alarm indicator lights up, the system continues to operate normally. At this point, check the fault code or contact our company for support. The audible and visual alarm is linked to the fire protection system. If the alarm sounds, for safety reasons, keep away from the equipment, disconnect the AC power remotely, and check the fault code remotely or contact our company.

3.5. Internal Design

This product consists of two parts: the battery compartment and the electrical compartment. The upper part is the battery compartment, which contains the PACK. The lower part is the electrical compartment, which houses the PDU high-voltage control unit, the security and fire protection system, and the liquid cooling system.

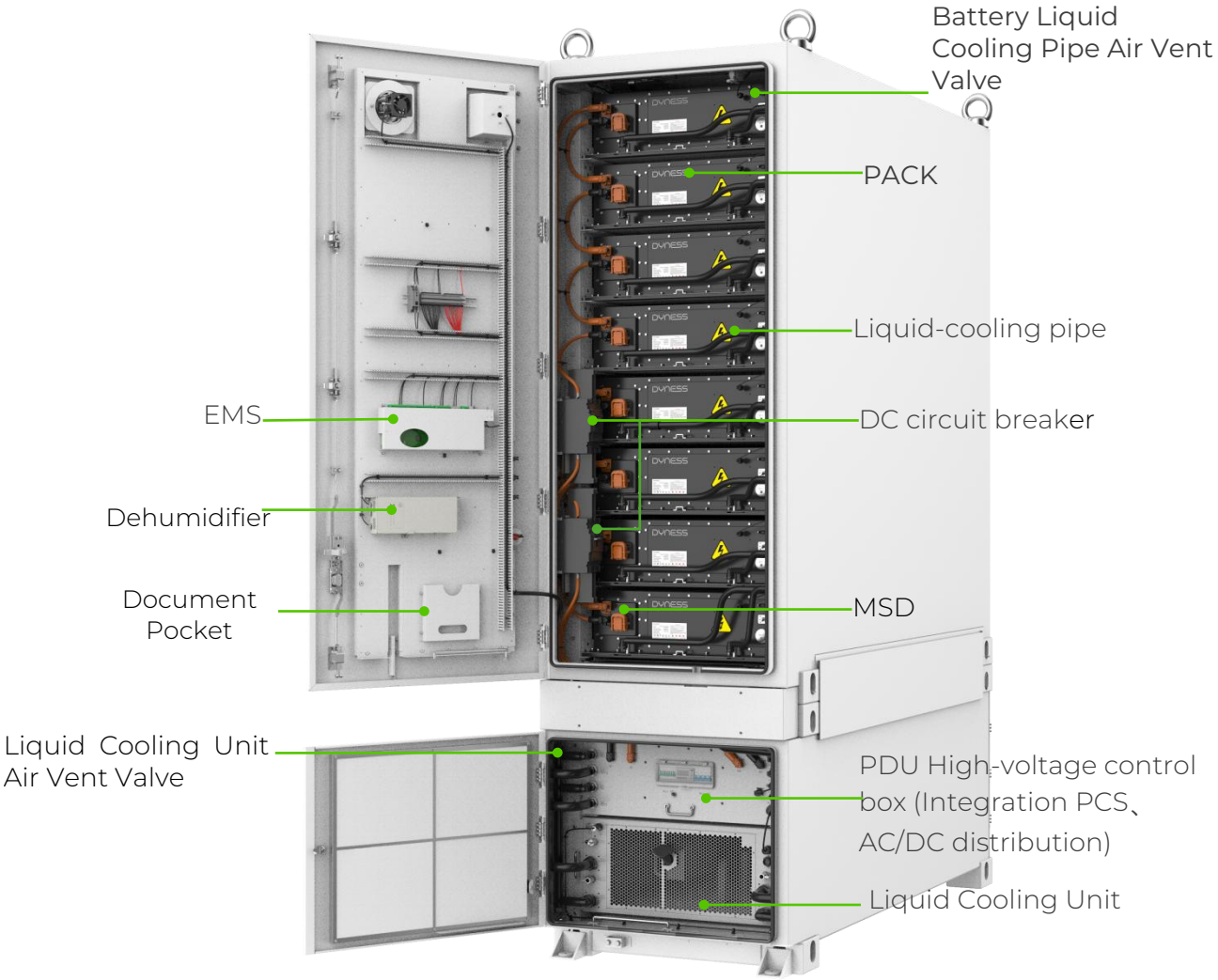


Figure 3-6 Internal View of the Product (for reference only)

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NOTICE: Battery Liquid Cooling Pipe Air Vent Valve has been tightened in accordance with process specifications before equipment delivery.Operators shall conduct regular manual air discharge.

3.6. Main Modules

3.6.1. 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 314Ah cells. The cell string configuration is 1P104S. The nominal capacity of the PACK is 104.499 kWh, and the nominal voltage is 332.8V. Each battery PACK is equipped with one first-level BIC module (slave control), which is used for collecting voltage and temperature parameters of the PACK and has functions such as energy balance and thermal management. The PACK module adopts liquid cooling for heat dissipation, with an IP67 protection level, high structural reliability, and low maintenance cost.



Figure 3-7 PACK Appearance(For Reference Only)

Table 3-4 PACK Parameter

Parameter	Specification
Model	HV332314Y

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Parameter	Specification
Cell Capacity	314 Ah
String Configuration	1P104S
Energy Capacity	104.499 kWh
Charge Limit Voltage	379.6 V
Discharge Protection Voltage	291.2 V
Dimensions (W*D*H)	790*2180*250 mm
IP Rating	IP67
Weight	Approx. 680 kg
Operating Temperature	Charge: 0℃~+50℃ Discharge: -20℃~+50℃
Storage Temperature	-30℃~50℃
Optimal Storage Temperature	0~25℃
Operating Humidity	0%~95% RH (Non-condensing)
Fire Protection	Aerosol

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

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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.

3.6.2. PDU

The PDU integrates the BMS, PCS, high-voltage contactors, high-voltage fuses, circuit breakers, and other control and protection devices. It combines control, protection, and monitoring functions, reduces external cabling and standalone components, and improves system compactness. Efficient power distribution, multiple protection mechanisms, and intelligent management help ensure stable system operation and facilitate operation and maintenance.



Figure 3-8 PDU Appearance

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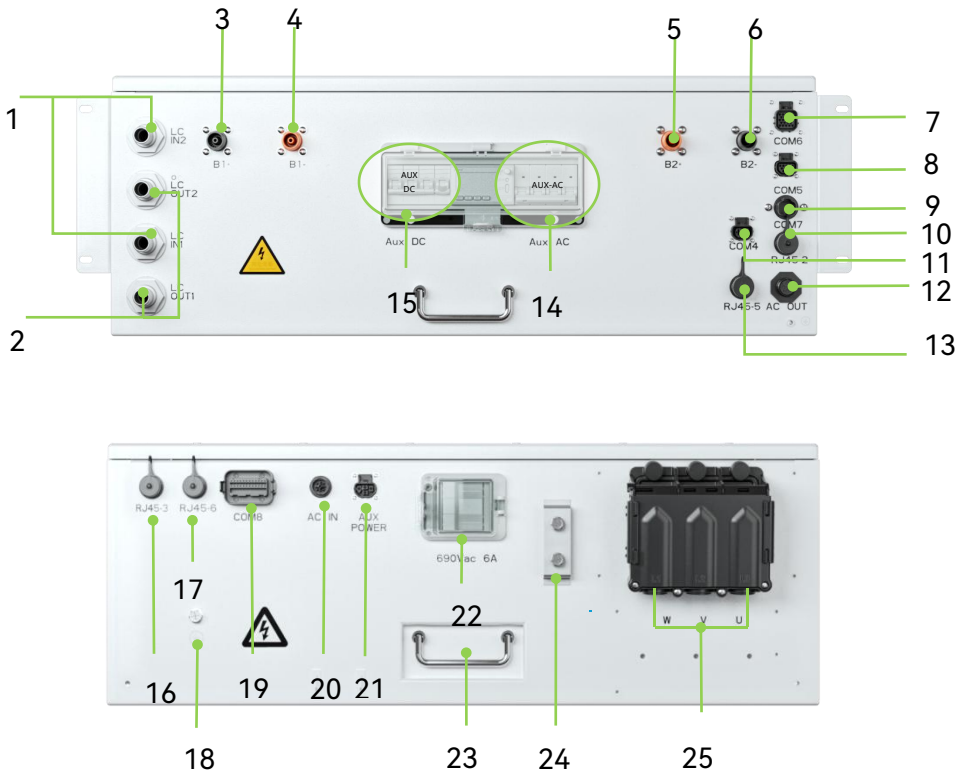


Figure 3-9 PDU Interface (front and back interface)

Table 3-5 Function Definition of PDU Interface

No.	Marking	Function Description
1	IN	Coolant Inlet
2	OUT	Coolant Outlet
3	B1-	Battery Cluster 1 Negative Input
4	B1+	Battery Cluster 1 Positive Input
5	B2+	Battery Cluster 2 Positive Input
6	B2-	Battery Cluster 2 Negative Input
7	COM6	Internal Communication
8	COM5	Daisy-chain Communication
9	COM7	BCU/EMS Upper Computer Communication
10	COM4	DC 24V Signal Output

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11	RJ45-2	Ethernet port for cloud platform connection
12	AC-OUT	400V AC Output to Liquid Cooling Unit
13	RJ45-5	Third-party EMS
14	Aux AC	AC/DC Auxiliary Power Switch,Liquid Cooling Unit Switch
15	Aux DC	DC/DC Auxiliary Power Switch
16	RJ45-3	Ethernet port for cloud platform connection
17	RJ45-6	Third-party EMS
18		Local Protective Grounding
19	COM8	Parallel Communication/Gateway meter Communication
20	AC-IN	400V AC auxiliary power input, power ≥13.9kW
21	AUX POWER	Auxiliary power supply interface, reserved for 690V
22		Fuse Housing (Ceramic Fuse Specification: 690Vac 6A)
23		Pull Handle
24		Grid Grounding
25	W V U	Grid 690V Three-Phase Power Connection

3.6.3. PCS

The PCS function: PCS is a bidirectional current controllable conversion device that connects the energy storage battery system and the power grid. Its main function is to realize the energy exchange between the battery and the power grid, control and manage the charging and discharging of the battery, and can achieve bidirectional conversion from DC to AC and from AC to DC. It can not only convert AC power to DC power to charge the battery but also convert the DC power of the battery to AC power and feed it back to the power grid.

The rated AC output power of the PCS adopted by this system is 215kW, with a protection level of IP65.Note: The PCS is derated to operate at 210kW.

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Figure 3-10 Schematic Diagram of PCS (for reference only)

3.6.4. Liquid-cooling Unit

The liquid cooling unit is used to regulate the temperatures of the PACK and PCS, ensuring they always operate within the appropriate temperature range to maintain the optimal working condition of the system. It has the following functions:

- Accurate measurement and monitoring of the coolant temperature.
- Effective heat dissipation when the temperatures of the PACK and PCS are high to prevent thermal runaway accidents.
- Preheating when the temperatures of the battery or PCS are low to raise their temperatures, ensuring the charging, discharging performance and safety at low temperatures.
- Realizing cooling through the circulation of coolant (50% ethylene glycol water solution, with an ice point of -35℃), achieving a more balanced temperature difference between battery clusters.
- This system adopts a dual-channel liquid cooling unit of 10+9kW, featuring an IPX5 protection rating.

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Figure 3-11: Diagram of Liquid-Cooled Unit (For Reference Only)

Note

The recommended coolant ratio is a 50% ethylene glycol water solution. If the concentration of ethylene glycol is too low, the freezing point of the coolant will increase, and when the temperature is low, it is prone to solidification, which can easily cause damage to the liquid-cooled unit and pipelines. If the concentration of ethylene glycol is too high, the heat dissipation will be affected. The shelf life of the coolant is five years. After five years, it is necessary to replace all of it with new coolant.

3.6.5. Security & Fire Fighting System

DH800Y is equipped with an efficient and reliable fire protection system, which can provide intrusion protection, fire prevention and effective fire extinguishing for the equipment.

Security System

- Limit switch: A limit switch is installed on the battery compartment to prevent accidental door opening during equipment operation. It detects whether the compartment door is fully closed, avoiding degradation of the equipment IP rating caused by an improperly sealed door.
- Water immersion detector: Install a water immersion detector at the bottom of the battery compartment and the inner bottom of the PDU. When liquid is detected inside the battery compartment or PDU. EMS will report a water

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immersion fault and the system will shut down.

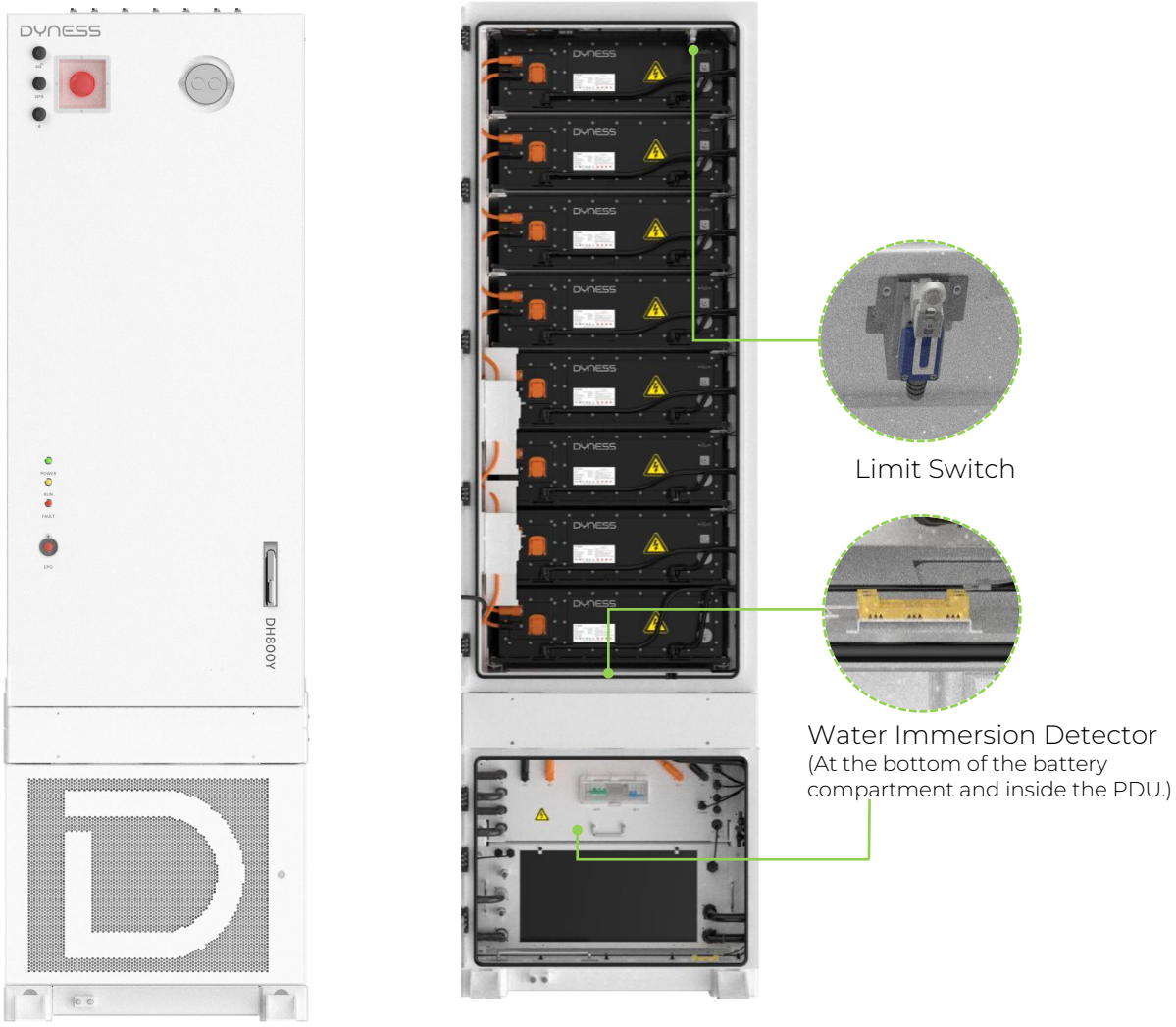


Figure 3-12 Security System Diagram (for reference only)

Fire Fighting System

- **Audible and visual alarm:** When a fire alarm is triggered, the audible and visual alarm will emit a high-decibel audible alarm and a high-frequency flashing red light. The specific control logic is described in the following scenarios.

- **Composite detector:** The system is equipped with composite detectors installed at the top of the battery compartment. The composite detectors support smoke, temperature, and combustible gas detection functions, and transmit the detected data to the EMS in real time.

- **Venting System:** The Venting System is linked with the fire detection system. When the concentration of combustible gas inside the battery compartment reaches the preset threshold, the system will shut down, and the electrically

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controlled exhaust valve and electrically controlled exhaust fan will be activated simultaneously.When the concentration of combustible gas falls below the preset threshold, or when a higher-level fire protection abnormality is detected, the electrically controlled exhaust valve and electrically controlled exhaust fan will be switched off.The control logic is as follows:

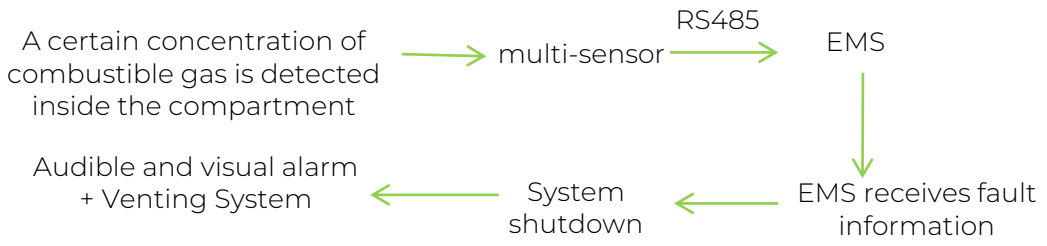


Figure 3-13 Venting System Control Logic

- PACK-level aerosol fire protection:

The PACK-level aerosol fire protection system is installed inside the PACK and is capable of detecting abnormal temperature conditions inside the PACK.The PACK-level aerosol fire protection system supports thermal activation. When the PACK temperature rapidly rises to 160°C–180°C, or when an open flame occurs, the thermal wire is ignited, triggering aerosol discharge to extinguish the fire inside the abnormal PACK area while the other PACKs remain unaffected.If the PACK-level aerosol fire protection system is accidentally activated, immediately stop using the equipment and contact the company for handling.

- System-level aerosol fire protection:

The system-level aerosol fire protection supports two activation methods: thermal activation and electrical activation.For thermal activation, when the temperature inside the battery compartment rapidly rises to 160°C–180°C, or when an open flame is detected, the thermal wire is ignited, which subsequently triggers aerosol discharge.For electrical activation, when the composite detector inside the compartment detects a Level 2 fault alarm, the EMS will immediately trigger the electrical activation signal of the aerosol fire suppression system.If the system-level aerosol fire suppression system is accidentally activated, immediately stop using the equipment and contact Daqin Digital Energy in a timely manner.If the system-level aerosol fire suppression system is triggered while the venting system is operating, the system will automatically shut down the venting system.The control logic of the aerosol fire suppression system is as

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follows:

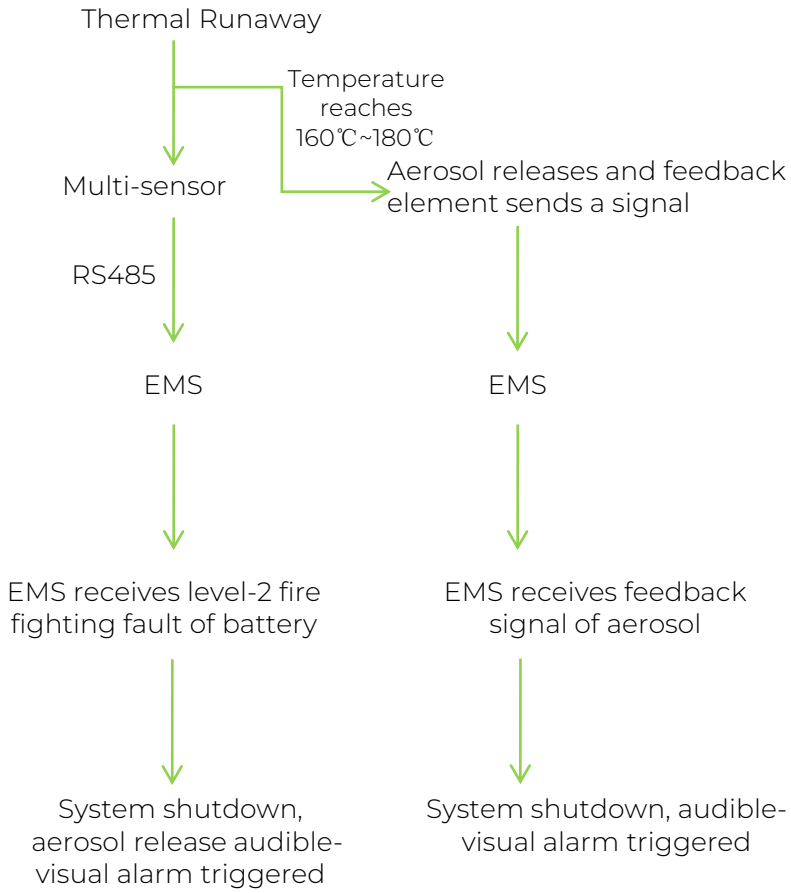


Figure 3-14 Aerosol Fire Suppression System Control Logic

- Water fire protection:

This system serves as a backup emergency fire suppression measure and shall only be activated when a fire occurs in the battery compartment and the aerosol fire suppression system fails to control the fire. Continuous water spraying suppresses the propagation of battery thermal runaway. A DN32 fire connection port is fitted on the rear of the cabinet, with a DN32/DN65 adapter supplied as standard from factory.

During normal equipment operation, it is recommended that the fire-fighting water hose be pre- connected to the cabinet's water fire- fighting port, and the hose's main valve shall remain closed at all times. Opening the main valve or supplying water to the pipeline under non-fire conditions is strictly prohibited, as misoperation may cause water ingress into the battery compartment. The main valve may only be manually opened for fire suppression in the event of a fire.

When the ambient temperature around the sprinkler head reaches 68±3°C, the

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glass bulb of the sprinkler will rupture automatically to open the nozzle. Water flows into the battery compartment via internal and external cabinet piping to submerge the battery packs inside, achieving cooling and fire extinguishing effects.

a. Water injection pressure: Upper limit 1.6 MPa; stable operating pressure 0.8~1.2 MPa

b. Water injection flow rate: Minimum 3 L/s, with safety margin ≥3.5 L/s

c. This system is not part of the automatic fire-protection interlock and must be activated manually.

WARNING

- It is recommended that users equip and pre-connect the fire water hose to the cabinet's water fire-fighting port, and ensure the hose's main valve is closed, to enable prompt activation of the water fire-fighting system in the event of a fire.

- Explosion Relief Panel:

Explosion Relief Panel are mounted on the top of the battery compartment with a rated opening pressure of 10±1 kPa. If battery thermal runaway causes a sharp rise in internal compartment pressure, the explosion relief panel will open upward to relieve pressure and vent high-pressure gases in a timely manner. This prevents flame and shock wave leakage that may cause personal injury, making it a critical physical safety protection component for the energy storage compartment.

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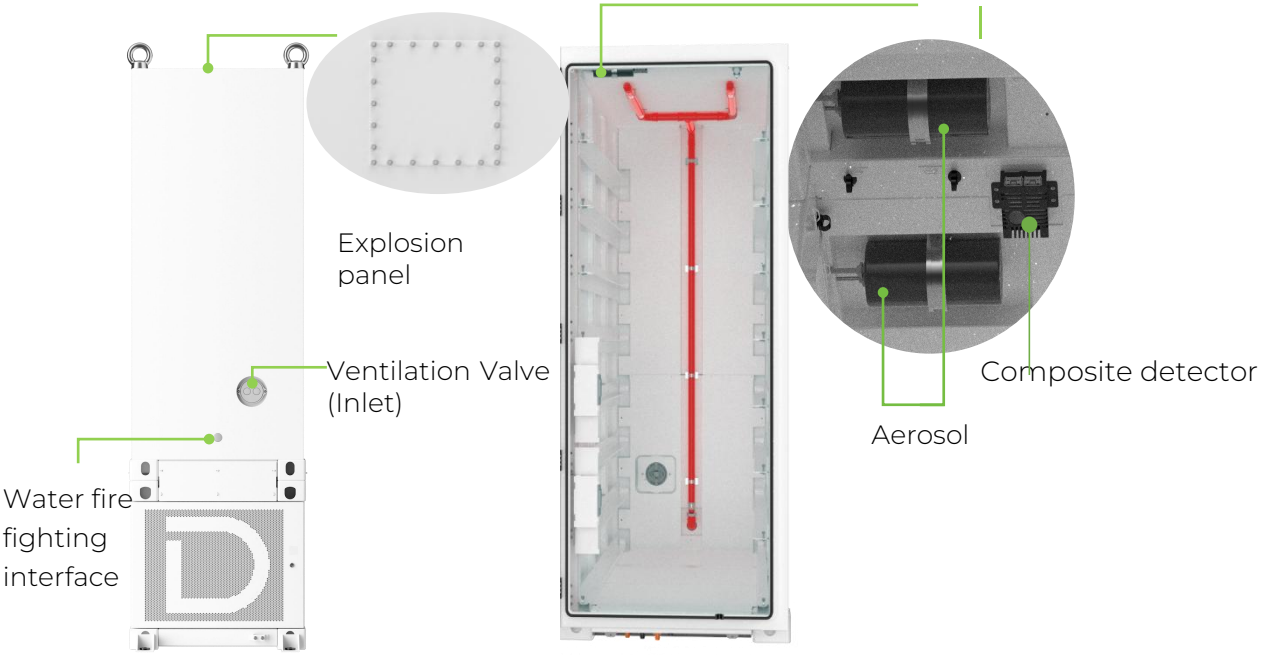


Figure 3-15 Fire Fighting System Diagram 2

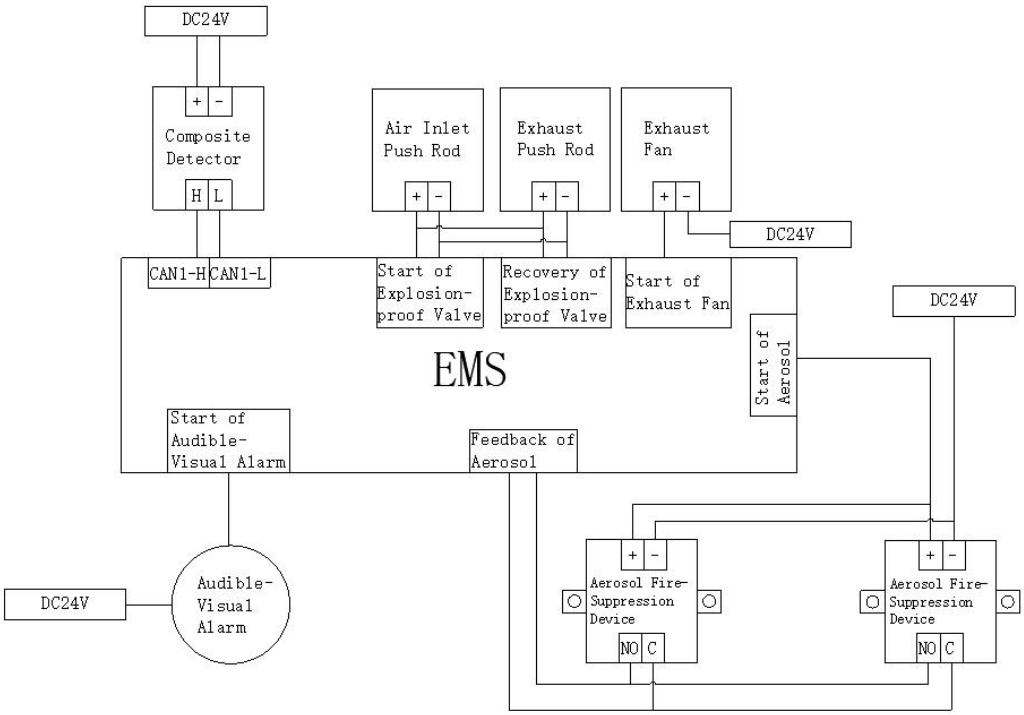


Figure 3-16 Fire Protection Schematic Diagram

The maintenance of the fire protection system should comply with the fire regulations and rules of the country/region where the project is located.

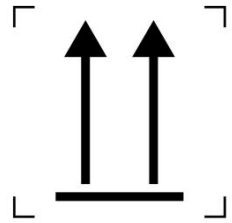
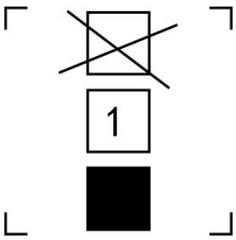
Regular inspections and maintenance of fire equipment should be carried out to ensure that all functional indicators are normal.

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4. Delivery, Transportation and Storage

4.1. Packaging Marks

Table 4-1 Packaging Marks

Mark	Explanation
	Upward: Indicates that the package should be kept upright during transportation and storage.
	Fragile: Indicates that the package contains fragile items and should be handled with care.
	Keep Dry: Indicates that the package should be protected from rain.
	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.

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	Center of Gravity: Indicates the center of gravity of the package to facilitate lifting.
	Forklift Insertion Point: Insert the forklift here for moving the equipment.
	Lithium Battery Mark: Indicates that the device contains lithium-ion batteries or battery packs, which are Class 9 hazardous materials.
	UN3480: A United Nations number indicating that the device contains lithium-ion battery packs.

Caution: Failure to transport, use, maintain, or store the product in accordance with the requirements of this manual may void the warranty.

4.2. Forklift Transportation

Forklift transportation is suitable for the movement and handling of products before they arrive at the site. The following requirements shall be met when using a forklift for handling:

- The transportation site shall be flat with sufficiently hardened ground;
- The forklift shall have adequate load capacity (rated capacity ≥ 8tons);

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- The effective length of the forklift forks shall match the fork insertion depth of the equipment to ensure stable load support and prevent slipping during lifting;
- The thickness of the fork arms shall not exceed 90 mm.
- When transporting with a wooden pallet, insert the forklift forks into the fork openings of the wooden pallet at the bottom of the battery compartment and electrical compartment. When transporting without a wooden pallet, align the forklift forks with the designated forklift positions marked at the bottom of the equipment before insertion.
- Additional traction equipment may be required when moving the product on a slope.
- During product transportation, movement and placement shall be slow and stable;
- Avoid collision, severe vibration and tipping of the product during transportation;
- The product shall be placed on a flat surface free of any obstacles or protrusions.

When loading and unloading into the container, take care to insert the forks from the front of the battery compartment and electrical compartment. The specific forklift transportation method is shown in the figure below.

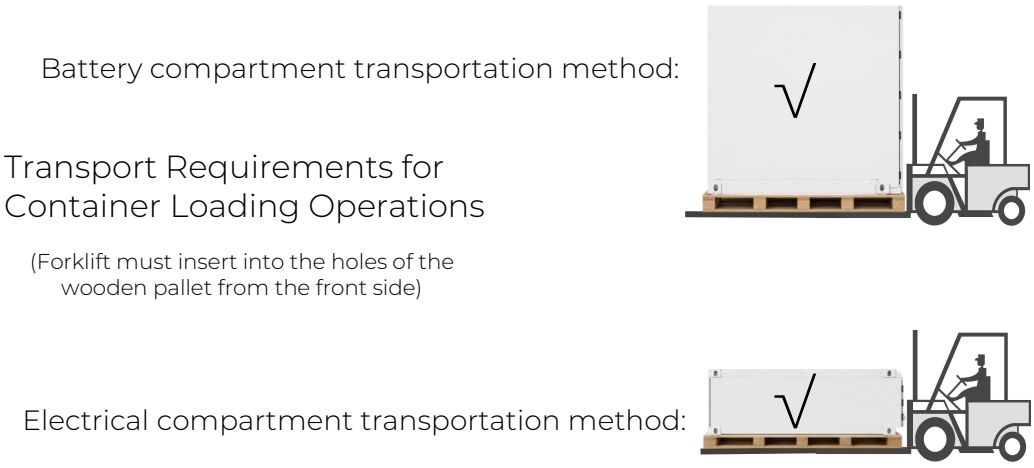


Figure 4-1 Diagram of Container Forklift Transportation

Without wooden pallets, the forklift arms must be inserted into the marked

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positions at the bottom of the battery compartment and electrical compartment, as shown in the figure.

Battery compartment transportation method:



Transport Requirements
Without Wooden Pallets

(Forklift forks shall only be inserted at the marked positions on the equipment for handling)

Electrical compartment transportation method:



Figure 4-2 Diagram of Forklift Transportation

Note: Dedicated marked forklift pockets are provided at the bottom of the equipment. Since the minimum ground- clearance height of standard forklift arms is higher than the pocket height, direct insertion is not feasible. The equipment shall be placed on wooden pallets for elevation before the forklift can align with the marked pockets for operation.

Note: Risk of tipping exists during forklift transportation. Please ensure the forks are inserted within the marked areas. Dyness shall not be liable for any product tipping, personal injury or property damage caused by violation of relevant requirements or other safety regulations during forklift handling.

The electrical compartment and battery compartment of DH800Y are transported separately and loaded in 20ft or 40ft high-cube containers. The specific packing plan are as follows:

- A 20ft high cube container can hold 2 sets of DH800Y units, including 2 battery compartments and 2 electrical compartments.
- A 40ft high cube container can hold 3 sets of DH800Y units, including 3 battery compartments and 3 electrical compartments.

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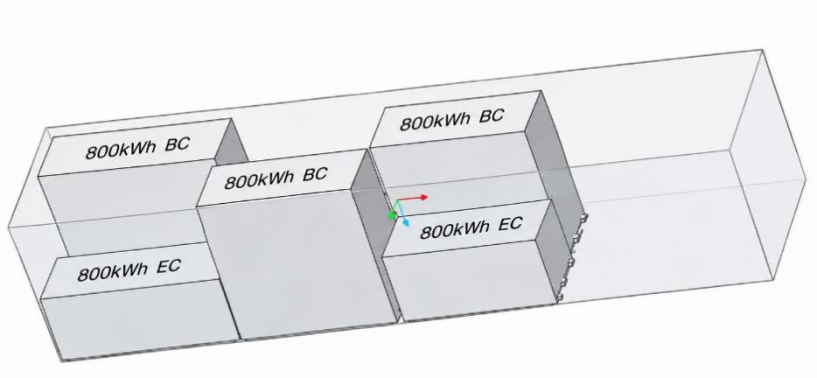


Figure 4-3 Schematic Diagram of Product Packing(40ft)

4.3. 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.

4.4. Hoisting and Transportation

After the product is delivered at the site, a crane shall be used for transportation. The top of the battery cabinet is equipped with four lifting lugs (shipped with the product, to be assembled on site). The top of each electrical cabinet is equipped with four corner fittings (positions shown in the figure below), allowing lifting transportation.

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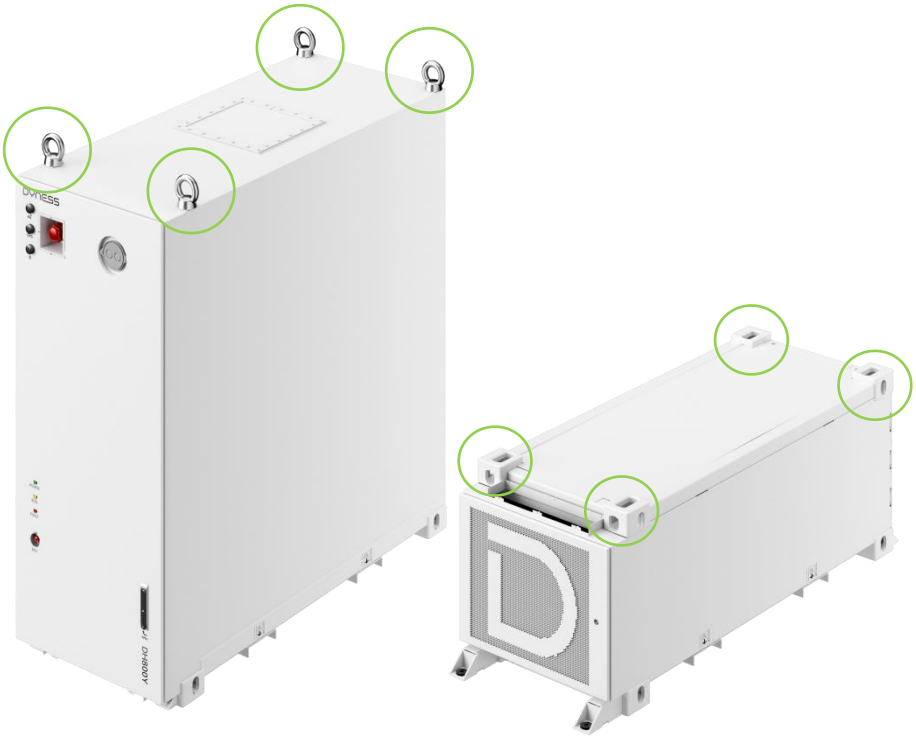


Figure 4-4 Diagram of Angle Piece Position

The following minimum requirements shall be met when lifting the equipment:

- All machinery used for operation must be well maintained.
- All personnel engaged in loading, unloading and fastening shall receive relevant training, especially safety training.
- All cabinet doors of the equipment shall be fully locked.
- The battery compartment shall be lifted only from the designated lifting lugs on the top, and the electrical compartment shall be lifted only from the designated top corner fittings. Do not use the cabinet bottom or any other non-designated position as a lifting point.
- Lift the unit from the top, and ensure full site safety during lifting.
- A professional supervisor shall be present to direct the entire hoisting and installation operation.
- Select a suitable crane according to site conditions. The strength of the slings shall fully accommodate the equipment weight. It is recommended to adopt a crane with a lifting capacity of more than 3 times the equipment weight.

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- The slings shall be strong enough to bear the weight of the ESS unit.
- Ensure all sling connections are secure and reliable, and all sling segments connected to corner brackets are of equal length.
- The sling length can be properly adjusted based on actual site requirements.
- Keep the outdoor cabinet stable and level throughout the lifting process.
- Take all necessary auxiliary measures to ensure safe and smooth lifting of the outdoor cabinet.

The figure below illustrates crane operation during equipment lifting. The inner dashed circle marks the crane working range. No personnel are allowed to stand within the outer solid circle while the crane is in operation.

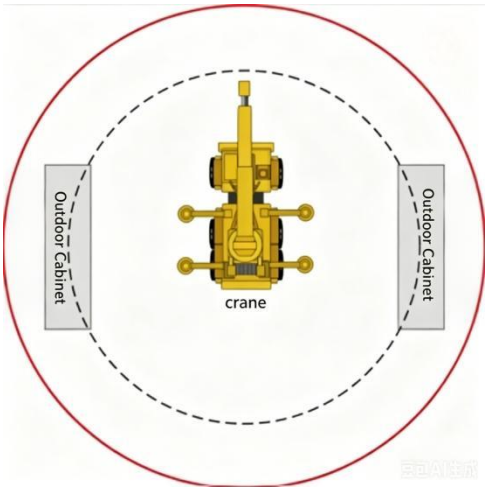


Figure 4-5 Crane Operation Diagram

The picture is for reference only; the actual product shall prevail.

All operation steps during equipment lifting shall comply with the following rules:

- Lift the equipment vertically. Do not drag the unit on the ground or on top of lower cabinets, and avoid pushing the cabinet along any surface.
- Pause lifting once the equipment is hoisted 300 mm off the supporting surface. Inspect all connections between lifting rigging and the equipment, and resume lifting only after confirming all connections are firmly secured.
- Lower the equipment gently and steadily once it reaches the target position. It is prohibited to swing the rigging to land the unit outside the vertical

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landing zone.

- Prevent scratching or abrasion to the product during lifting.
- The equipment placement area must be solid, flat, well-drained, and free of obstacles or protrusions.
- Slings with lifting hooks or U-hooks may be used for top-lifting of the ESS; lifting gear shall be properly connected to the ESS.
- Hoist the electrical compartment first, then the battery compartment. See the figure below for the procedure.

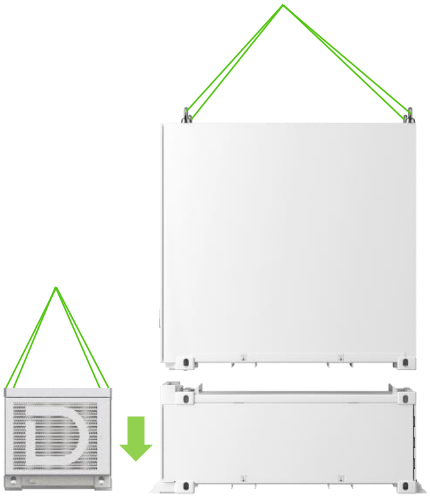


Figure 4-6 Hoisting Diagram

4.5. Storage Requirement

Storage Environment Requirements

- The product shall be stored on dry, flat ground (flatness tolerance less than 5 mm) with good drainage, sufficient load-bearing capacity and no vegetation coverage;
- 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 cabinet base must be elevated. The required elevation shall be determined according to the site geology, climate, drainage conditions, and

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other relevant factors.

- Storage temperature: 0℃~+35℃; Relative humidity: 0%~95% (non-condensing).
- 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.
- Do not store the unit near flammable or explosive materials to eliminate fire hazards.
- Avoid dusty storage areas with heavy powder, smoke or cotton lint. Particulates may accumulate on air outlets and radiators, impair heat dissipation and even cause permanent equipment damage in severe cases.
- Keep away from areas that generate or accumulate corrosive gas and dust. Do not store within a 30 km radius of saline-alkali land or polluted industrial complexes(chemical gas class: 1C1; solid particulate level: 1S2).
- Do not store cabinets in environments contaminated with halogen or sulfur elements.
- Battery cabinets are strictly prohibited from storage in vibrating environments or areas with magnetic field strength exceeding 30 A/m.

Storage requirements

- Packing boxes should not be tilted or inverted.
- 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.
- Conduct regular inspections at least once every half month. Prevent rodent gnawing; inspect the cabinet appearance, packaging, wiring terminals, cables and internal components for damage or aging. Address or replace defective parts promptly if any abnormalities are found.
- Due to the capacity decay that occurs during long-term storage, it is not recommended to store batteries exceeding six months.

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- 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 shipment, when the product is stored under the above conditions, perform a supplementary charge at least once every six months to restore the system SOC to 25%-40%.

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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

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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.

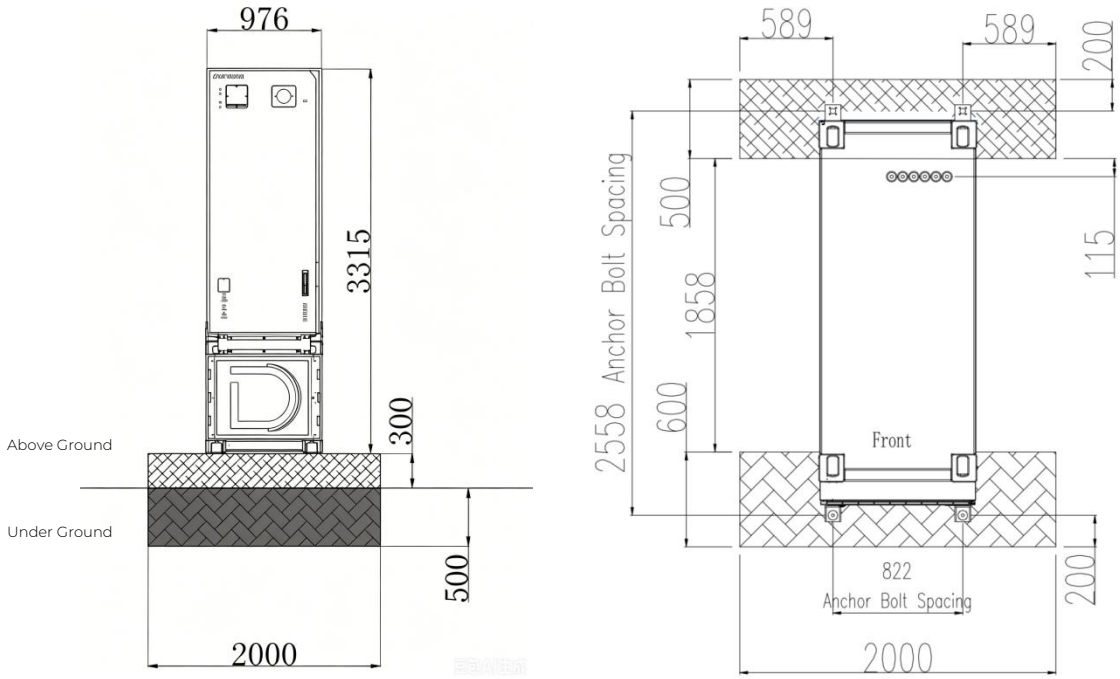
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- The installation location should be away from toxic and harmful gas and flammable, explosive, corrosive, and dust-intensive materials.
- The installation location should be away from residential areas to avoid noise.

Foundation Requirements

- The foundation should provide sufficient load-bearing support for the equipment, with the foundation's bearing capacity greater than 5t/m^2, a lifespan of more than 50 years, and a levelness of less than 5mm/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.
- The equipment's outgoing line method is downward. The base is divided into an above-ground base and an underground base: The above-ground base is recommended to be more than 300mm in height, and the underground base needs to be pre-installed with more than 500mm;
- It is recommended to secure the cabinet to the foundation using M20 bolts. The recommended tightening torque is 440–500 N·m. Embedded studs with a depth of 700 mm are required.

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Front View

Top View

Figure 5-1 Foundation Installation Requirements

The DH800Y features a bottom wiring design. The figure below marks the inner diameter of the bottom wiring holes and the distances from the holes to the three sides of the base. The wire protection sleeve has a minimum diameter of 10 millimeters and a maximum diameter of 35 millimeters.

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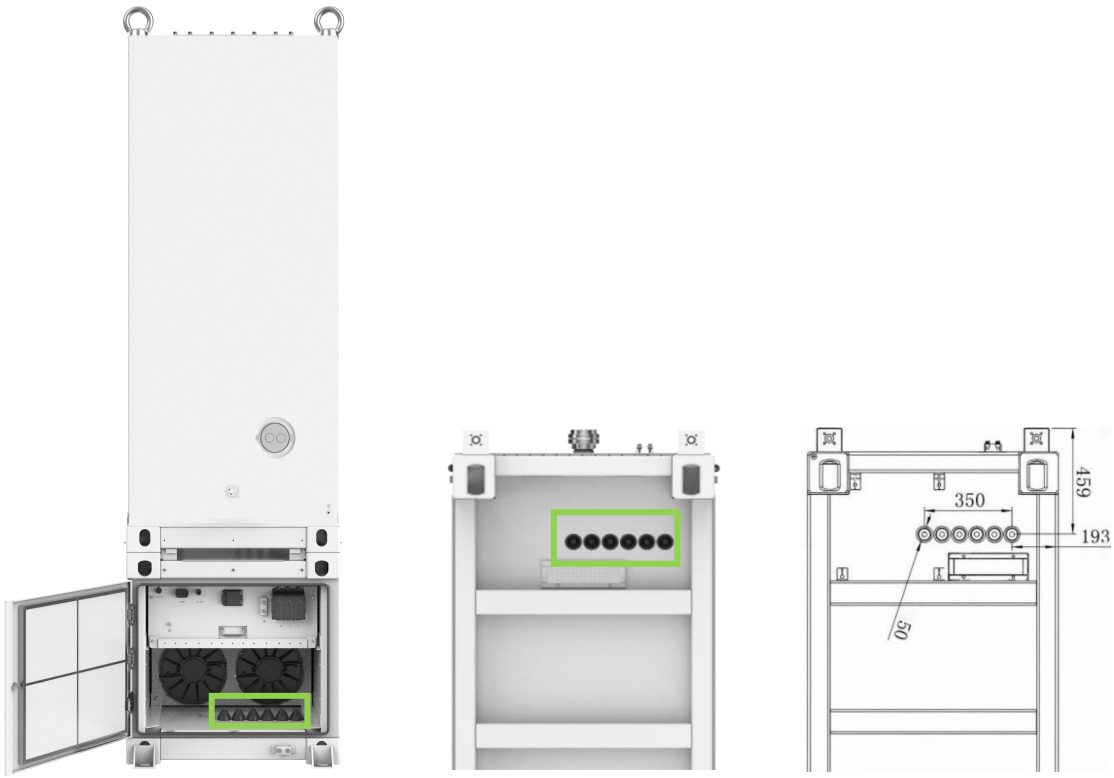
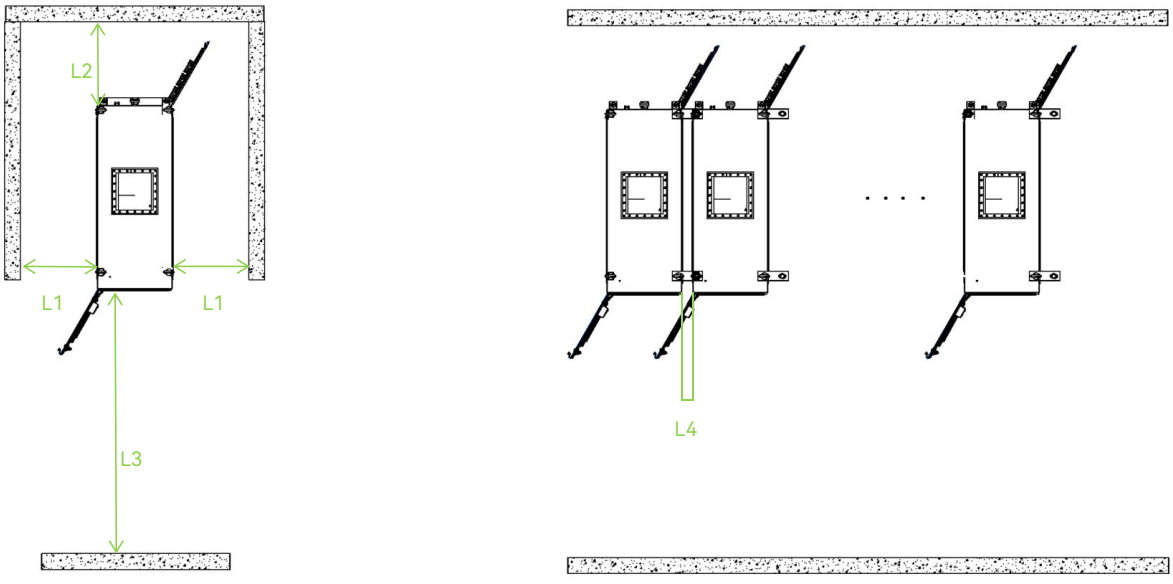


Figure 5-2 Schematic Diagram of Bottom Outlet Holes

5.2. Installation Space Requirements

The product is designed with front and rear ventilation. To ensure better heat dissipation and maintenance of the equipment, it is recommended to leave sufficient space around the cabinet:



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Figure 5-3 Requirements for Product Installation Space

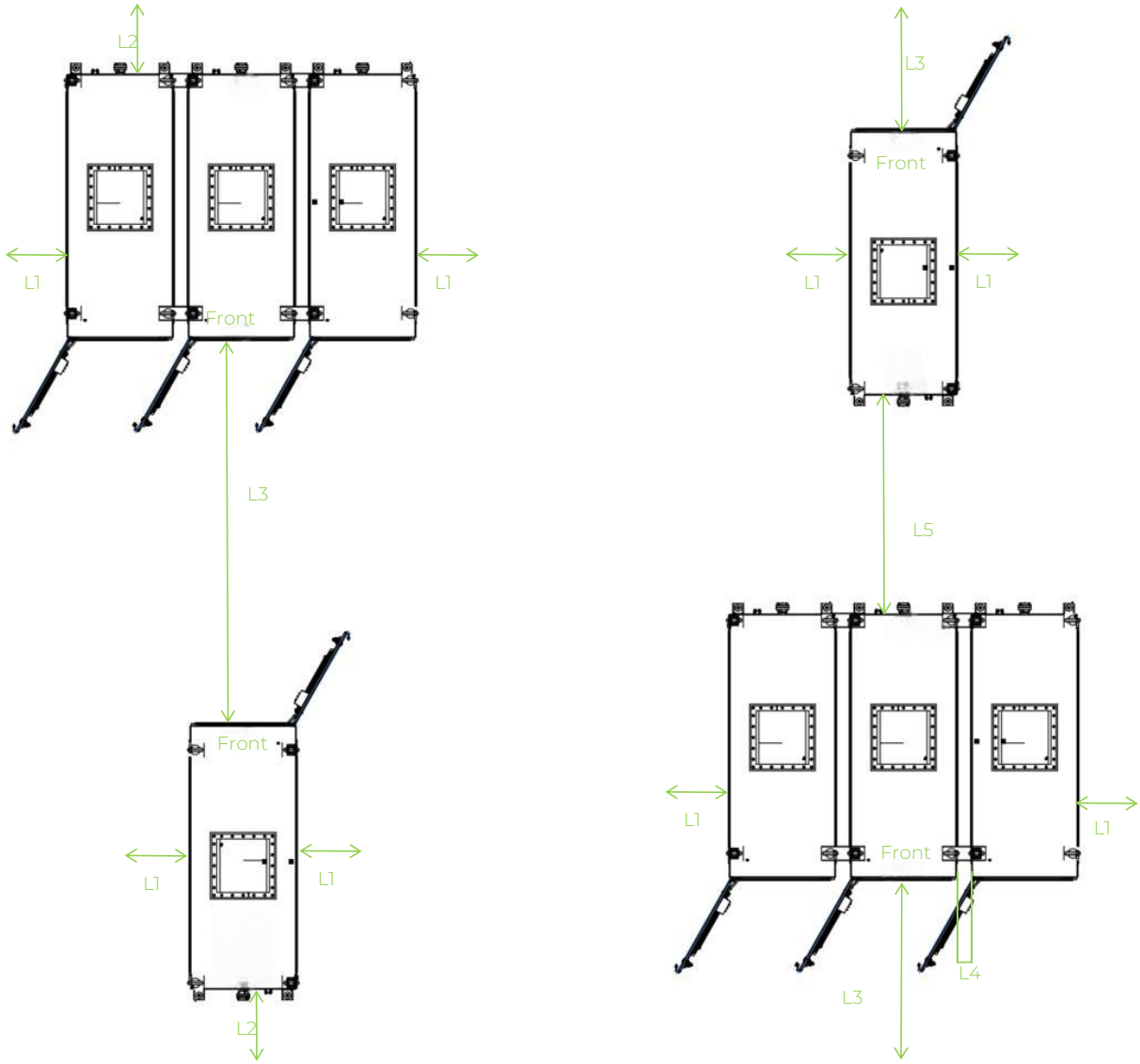


Figure 5-4 Back-to-Back and Door-to-Door Installation Clearances

Table 5-1 Installation Clearance Requirements for DH800Y

Product	Requirements
DH800Y	L1≥1000mm
	L2≥1100mm
	L3≥3500mm
	L4≥150mm
	L5≥2000mm

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

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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. Installation of Battery Compartment and Electrical Compartment

During product transportation, the battery compartment and electrical compartment shall be packed and transported separately. After the product is delivered at the site, the battery compartment and electrical compartment shall be installed respectively. The specific operation steps are as follows:

(1) Place the electrical compartment of the product stably and accurately at the predetermined position on the installation base.

(2) Lift the battery compartment to an appropriate height above the electrical compartment. Align the battery compartment with the four sets of assembly fixtures welded on the top of the electrical compartment to achieve precise alignment in both horizontal and vertical directions. After confirming that the battery compartment is properly positioned by all four sets of assembly fixtures, slowly lower the battery compartment onto the electrical compartment. The arrangement of the assembly fixtures is shown in Figure 5-5.

(3) Install the extension welding components at the front end of the equipment. Insert the connection bolts through the inner holes of the front-end and rear-end components, and tighten them from bottom to top. The specific requirements are as follows:

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- Front-end connection position: Use M16 bolts with a length of 60 mm. The installation position is shown in Figure 5-6.
- Rear-end connection position: Use M16 bolts with a length of 100 mm. The installation position is shown in Figure 5-7.
- Tightening torque: The recommended tightening torque for all bolts is 320–350 N·m.

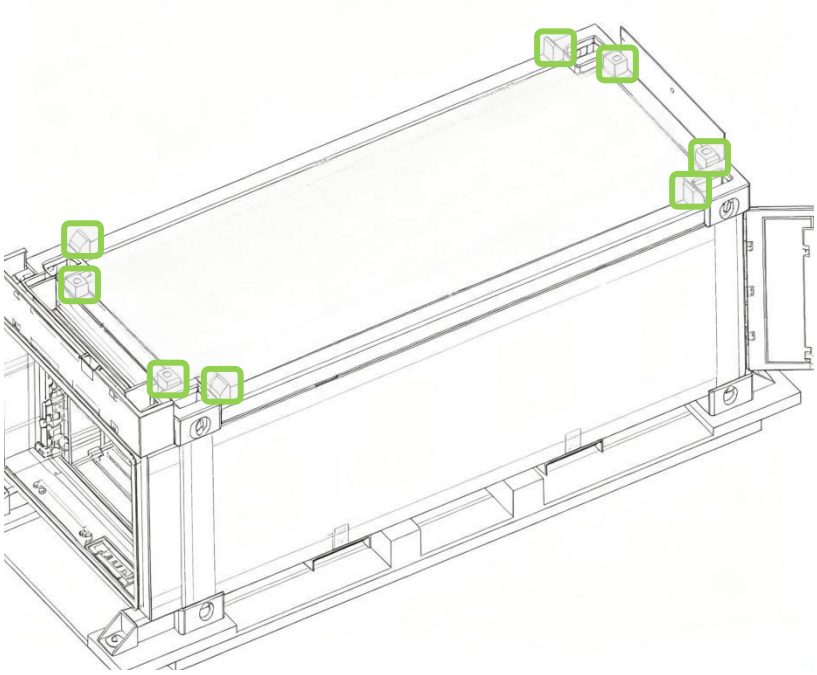


Figure 5-5 Assembly Fixture Arrangement Diagram of the Electrical Compartment

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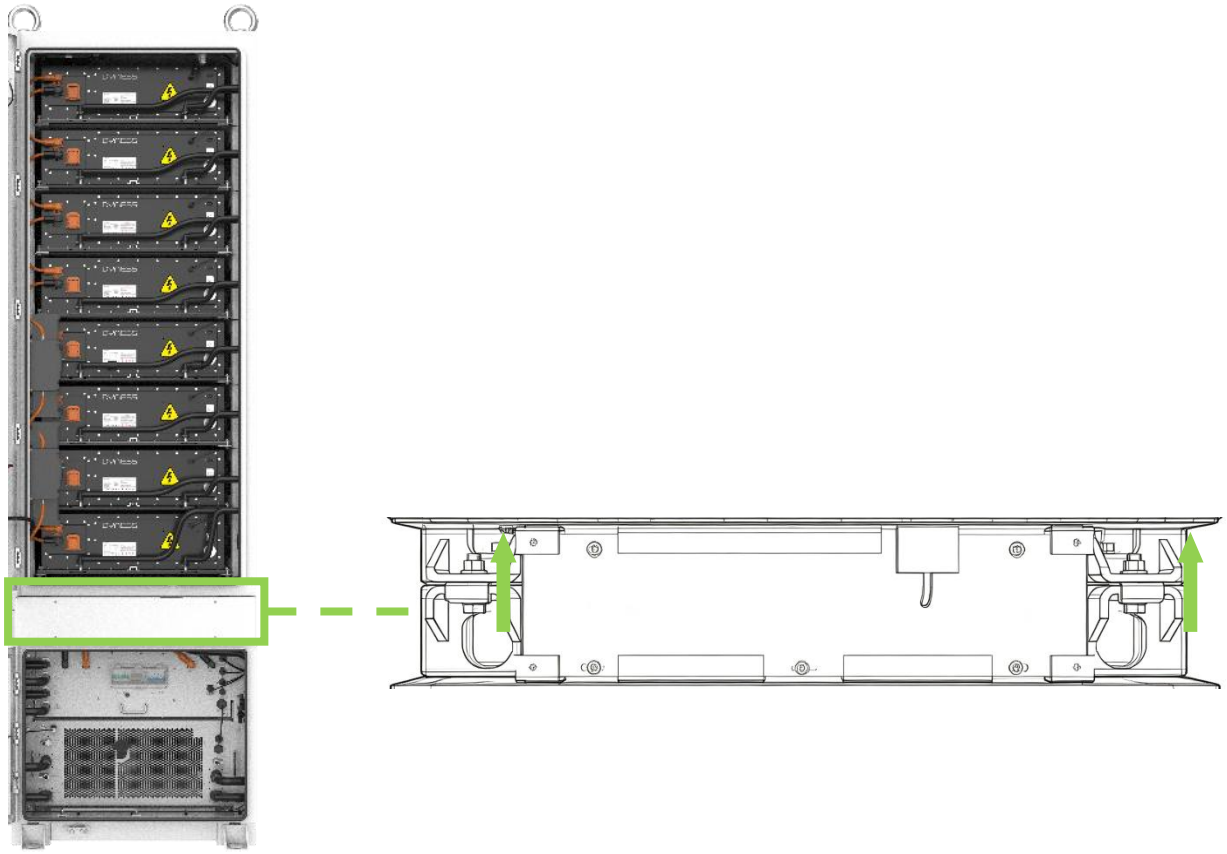


Figure 5-6 Location Diagram of the Front-End Extension Welding Component

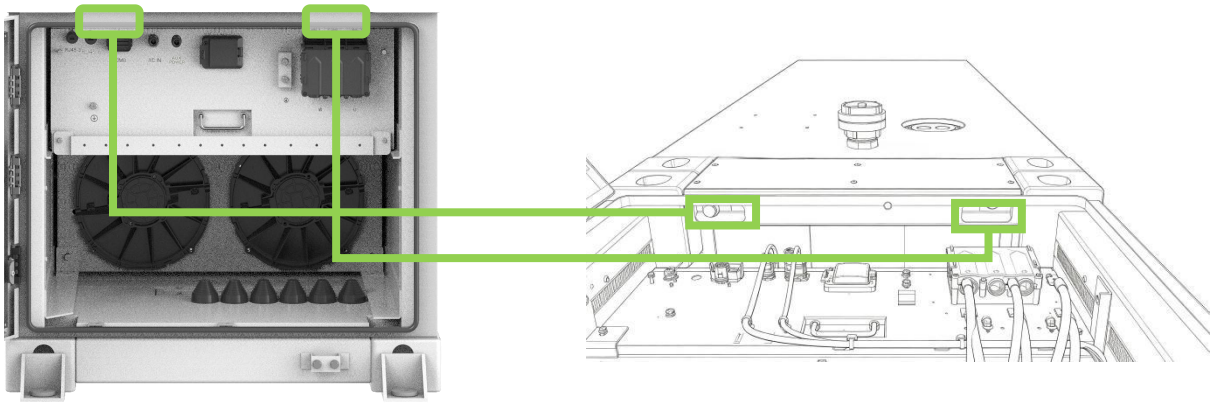


Figure 5-7 Location Diagram of the Rear-End Electrical Compartment Top Inner Cavity Component

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5.3.3. Corner Fitting Installation

After the battery compartment and electrical compartment are securely installed, the entire energy storage cabinet shall be fixed. A total of 4 fixing corner pieces are welded to the front and rear of the cabinet base, and their positions are shown in the figure below.

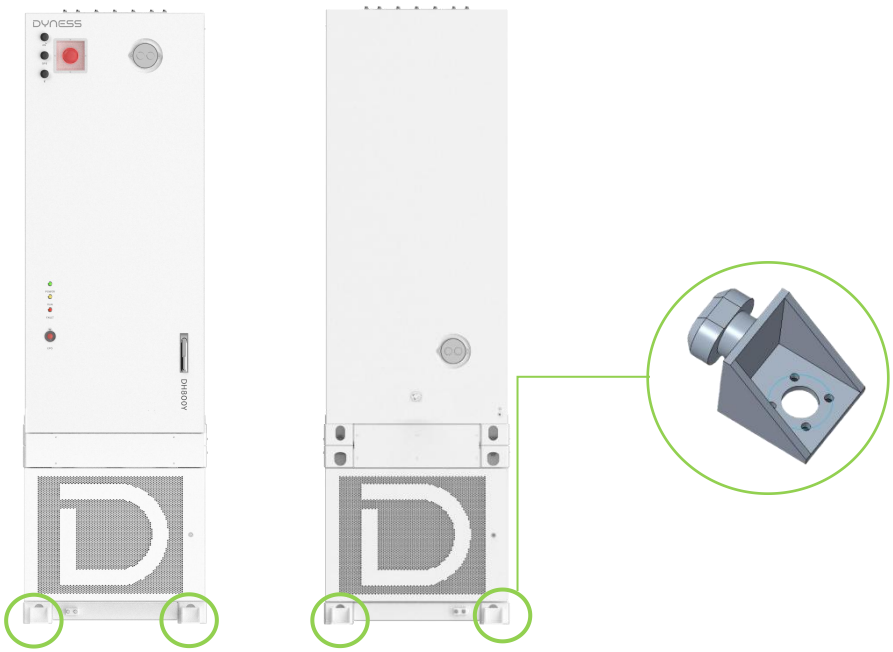


Figure 5-8 Corner Fittings Figure

Corner Fitting Fixing Tools

A wrench is used to fix the corner fittings to the installation base.

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

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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 Slide the cover upward above the locking hole.

③ Insert the key into the door lock and turn it clockwise.

④ Rotate the handle clockwise to the position shown in the figure to open the door.

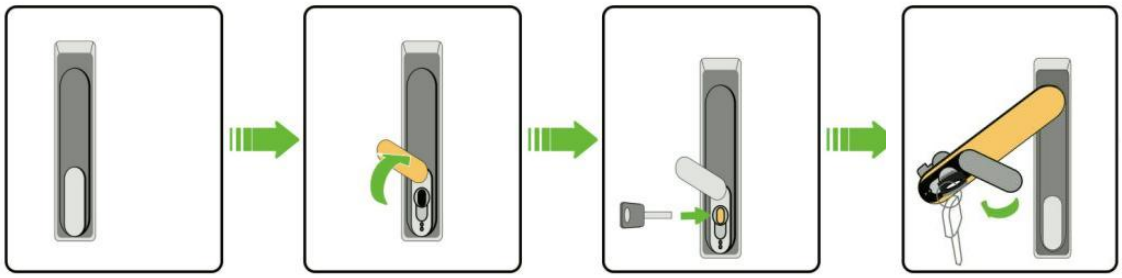


Figure 5-9 Door Open Steps

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.

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5.4. Wiring Tools

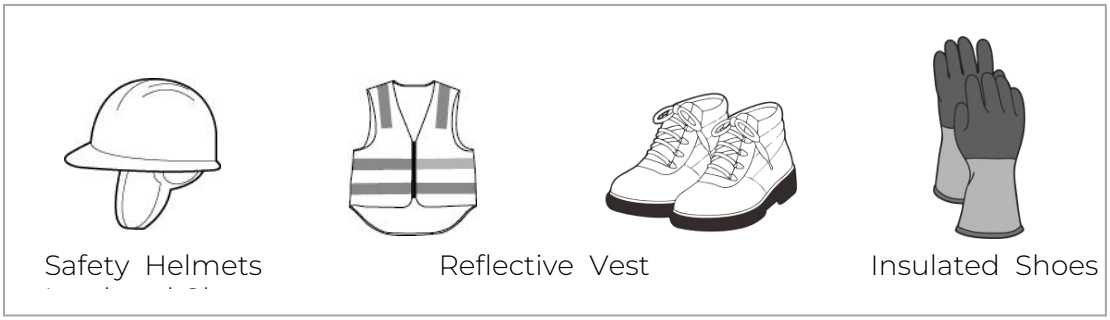


Figure 5-10 Safety Gear

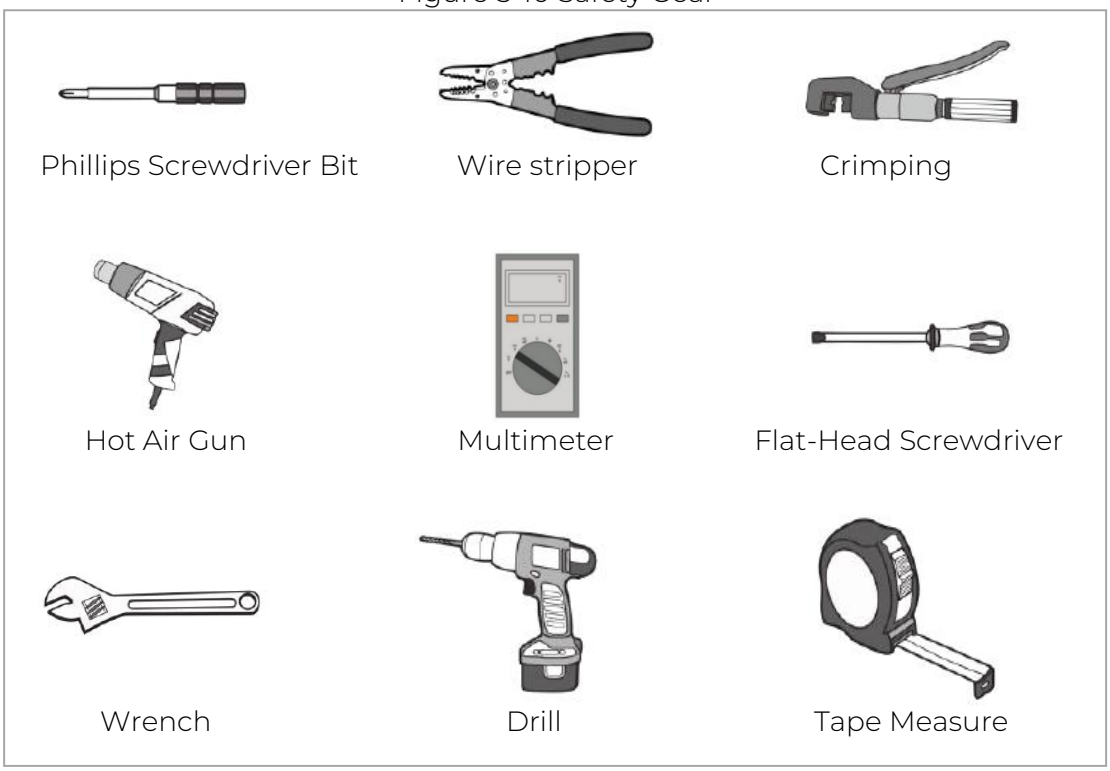


Figure 5-11 Tools

5.5. 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.

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- 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!

5.6. 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 5-2 List of Dyness Provided Cable(DH800Y-2H/4H)

No.	Type	Specification	Quantity	Terminal/Connector Model	Torque
1	B1-Transition Terminal Power Cable 2	UL3932_2/0AWG Orange wire 1Pcs (~70mm^2)	1	Futronics: FSE60180Q-70B4Z FSE80180Q-70B4Z	/

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No.	Type	Specification	Quantity	Terminal/Connector Model	Torque
2	B1+ Transition Terminal Power Cable 2	UL3932_2/0AWG Orange wire 1Pcs（~70mm²）	1	Futronics: FSE60180P-70A4Z FSE80180P-70A4Z	/
3	B2- Transition Terminal Power Cable 2	UL3932_2/0AWG Orange wire 1Pcs（~70mm²）	1	Futronics: FSE60180Q-70B4Z FSE80180Q-70B4Z	/
4	B2+ Transition Terminal Power Cable 2	UL3932_2/0AWG Orange wire 1Pcs（~70mm²）	1	Futronics: FSE60180P-70A4Z FSE80180P-70A4Z	/
5	PDU_Cabinet LAN Port Transition Cable	UL2835/24AWG*4P FTP(Conductor stranding diameter ~0.61 mm²)	4	RJ45 8P Connector	/
6	Battery Compartment-PDU Transition Harness	UL1332/UL2464 22AWG/20AWG/14AWG (Conductor stranding diameter~0.75mm²/~1mm²/~1.85mm²)	1	Futronics: FE60B23NB-11Z FE60A12NB-10Z FE60A04WB-16Z FE60A02WB-29Z Gvtong: GR61208PNHEC02	/

Table 5-3 List of Customer Provided Cable (Single cabinet)(DH800Y-2H/4H)

No.	Type	Specification	Length	Terminal Model	Torque
1	Cabinet Grounding Cable	3/0AWG/95mm² 1 piece yellow-green wire	As Required	SC95-10	30 N.m

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No.	Type	Specification	Length	Terminal Model	Torque
2	690V Grid Grounding Cable	3/0AWG/95mm² 1 piece yellow-green wire	As Required	SC95-10/95-8	30 N.m
3	690V AC Power Cable	DH800Y-2H: 150 mm²~240 mm²,Voltage ＞ 690 Vac ,3 cables, copper conductors, M12 nuts	As Required	SC150-12/SC240-12 (150mm²~240mm²) Copper OT terminals	35-45 N.m
		DH800Y-4H: 95 mm²~120 mm²,Voltage ＞ 690 Vac ,3 cables, copper conductors, M12 nuts		SC95-12/SC120-12 (95mm²~120mm²) Copper OT terminals	
4	400V AC Input Cable (with protective plug, Crimping Tool to be provided by customer)	Four 12 AWG conductors for U/V/W/N, approximately 4 mm² each.	As Required	EVN4009 tubular terminal / ring terminal RVN3.5-5S	10N.m
5	Parallel communication cable (plug shipped with the product)	UL2464 22AWG Twisted Pair Shielded Cable	As Required	/	/
6	Gateway meter Communication Cable (plug shipped with the product)	UL2464 22AWG Twisted Pair Shielded Cable	As Required	/	/
7	Ethernet Cable (with protective plug)	Cat5e or above, 8-core	As Required	/	/
8	Ethernet cable for connecting to third-party EMS (with protective plug)	Cat5e or above, 8-core	As Required	/	/

Note: The final cable specifications shall be selected based on the actual application conditions, including the installation distance at the site.

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Note: If the user provides primary current transformers matching the gateway meter by themselves, the installation distance between the gateway meter and the transformers shall be kept as short as possible. The transformer model shall be properly selected according to the actual operating current of the project, with the recommended ratio specification: XXA/5A.

5.7. Terminal Wiring Method

OT/DT/SC terminals connection steps:

① Peel off the insulation layer 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/SC terminal).

③ Use hydraulic pliers to firmly crimp the copper terminal.

④ Slide the heat-shrink tube onto the copper terminal (OT/DT/SC terminal) to fully cover the wire hole. Use a heat gun to tighten the heat-shrink tube.

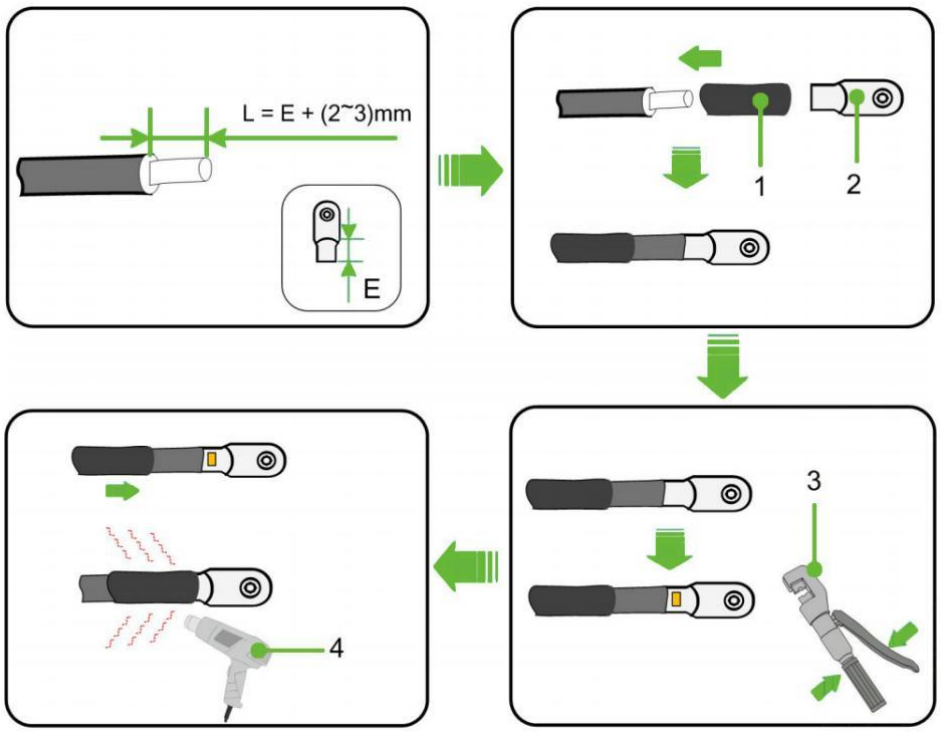


Figure 5-12 The Connection Sequence of Wiring Components

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Table 5-4 List of Wiring Components

NO.	Name
1	Heat-shrink tube
2	OT/DT/SC terminal
3	Crimping Pliers
4	Hot air gun

5.8. 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 Ensure grid is disconnected;

② Inspect the AC-side circuit breakers one by one (see position 1 in the figure);

③ Check the battery circuit breakers (as shown at position 2 in the diagram).

Note: Factory default state: All switches are open, and the MSD is disconnected.

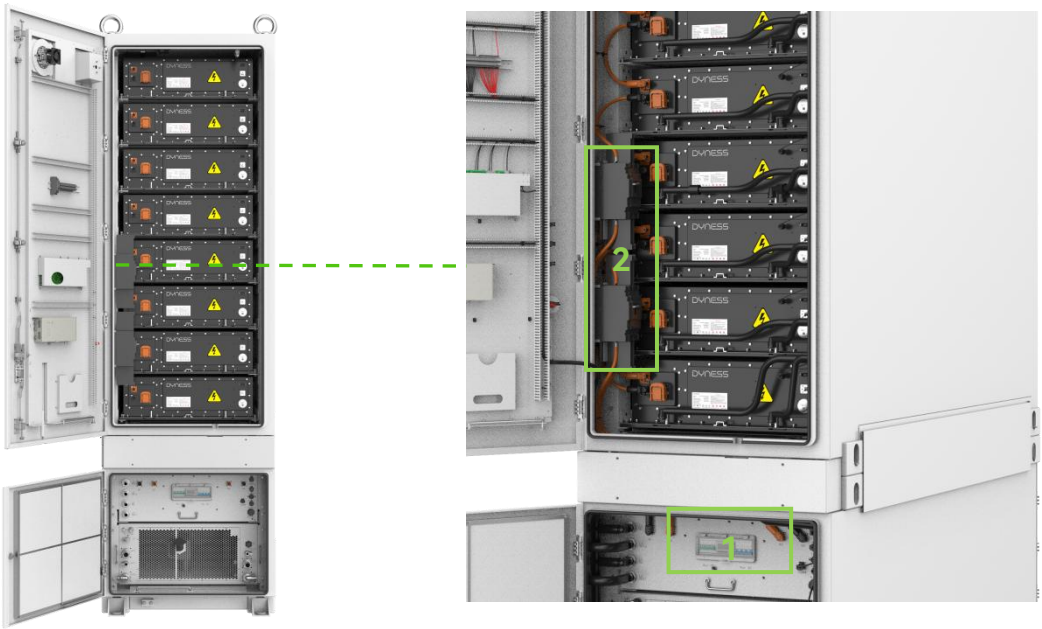


Figure 5-13 Circuit Breaker Position

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2) Checking before wiring

Table 5-5 Checking List Before Wiring

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

5.9. Wiring Diagram

The product wiring is divided into DC wiring and AC wiring:

(1) Grounding Installation

Grounding methods must comply with local regulations at the installation site. Please consider the actual site conditions and follow the instructions of power plant staff when installing external grounding.

Use grounding cables; refer to Section 5.6 of this chapter for grounding cables and terminals.

Multiple grounding points are provided at the rear of the electrical compartment:

- Position 1: 690 V AC power supply grounding
- Position 2: Overall external grounding.

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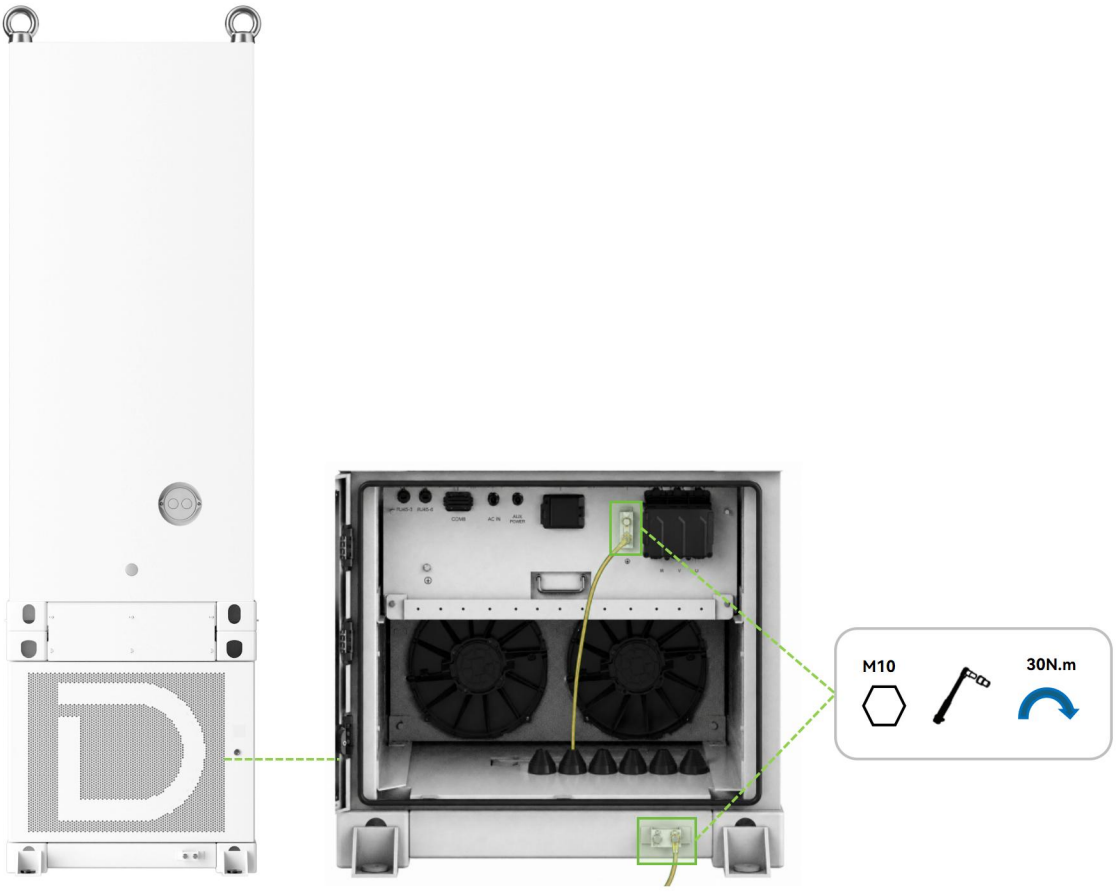


Figure 5-14 Grounding Diagram of the Cabinet (Electrical Compartment Rear)

After the grounding connection, the grounding resistance must be measured, and the specific grounding resistance value must comply with relevant region/local standards and regulations.

Note: The battery compartment does not require a separate grounding cable. The grounding connection between the battery compartment and the electrical compartment is achieved through the bolts at the front fixed connection points of the two compartments.

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Patch Cord Connection

After the electrical compartment and the battery compartment are stacked vertically, patch cords and liquid cooling pipelines (no need for liquid injection) need to be connected. The connection diagram of the battery cabinet and the electrical cabinet is as follows:

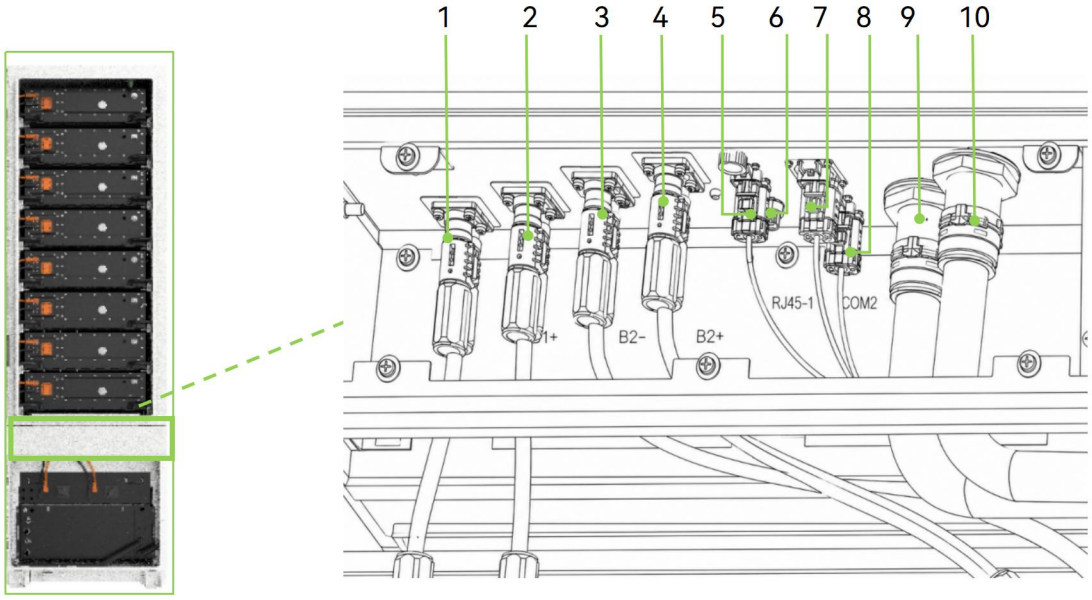


Figure 5-15 Diagram of DC Wiring

Table 5-6 Definition of DC Wiring Function

No.	Marking	Function Definition	The corresponding interface marking on the PDU
1	B1-	Battery Cluster 1 Negative	B1-
2	B1+	Battery Cluster 1 Positive	B1+
3	B2-	Battery Cluster 2 Negative	B2-
4	B2+	Battery Cluster 2 Positive	B2+
5	COM1	Auxiliary Power & EPO Supply (DC24V)	COM4
6	RJ45-1	Cloud Platform Connection	RJ45-3
7	COM3	Internal Cabinet Communication (EMS & PDU)	COM6
8	COM2	BMS Daisy-chain Communication	COM5
9	IN	Liquid Cooling Pipe Inlet	/
10	OUT	Liquid Cooling Pipe Outlet	/

Note: After completing the connection of the liquid cooling pipeline inlet and outlet ports, the liquid cooling pipeline valves of the battery compartment and electrical compartment must be opened. Each compartment is equipped with

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two valves, and all valves must be confirmed to be fully open.

MSD Connection

(1) Keep the handle in a horizontal position and align the MSD with the embedded base of the PACK;

(2) Push the handle upward approximately 90° (to Position 1 shown in the figure) until the MSD fits tightly against the PACK without any looseness;

(3) Push the latch downward (to Position 2 shown in the figure); a "click" sound indicates complete locking;

(4) Gently pull the MSD. If there is no looseness, the latch is fully engaged and the handle does not spring back, the installation is confirmed to be in place.

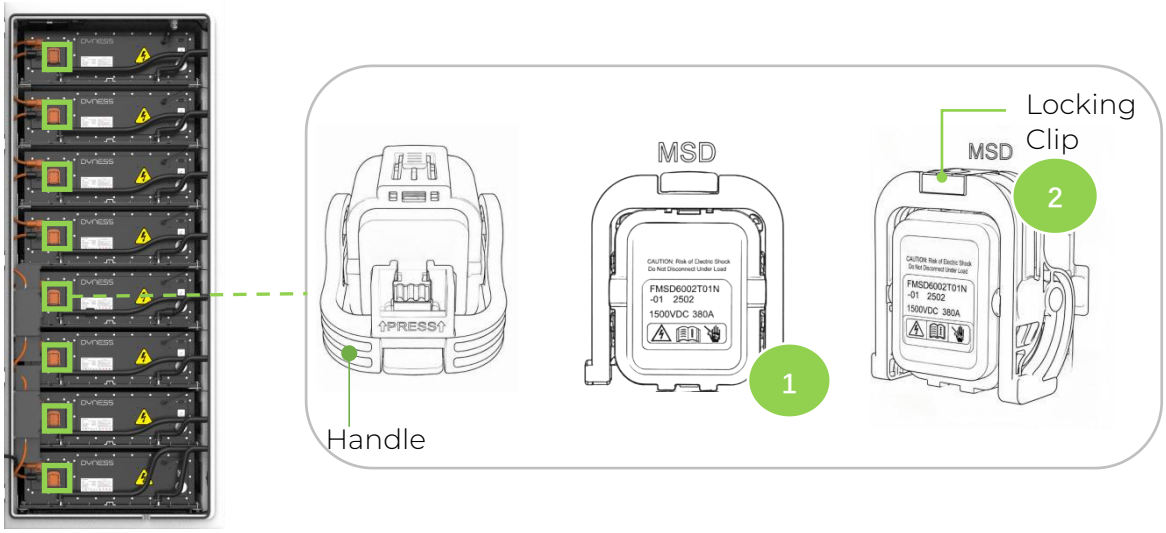


Figure 5-16 MSD Operation Diagram

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(3) AC Wiring

This system uses a 690 V three-phase, three-wire configuration for the main AC connection. The liquid-cooling unit and the AC/DC auxiliary power supply use a 400 V three-phase, four-wire configuration. Ensure the correct phase sequence during wiring. The AC wiring diagram is shown below:

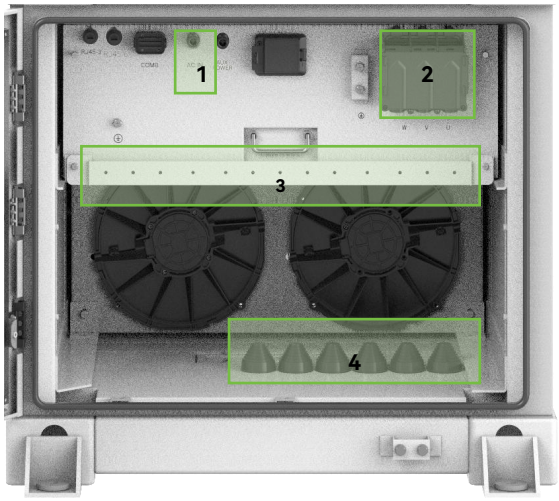


Figure 5-17 Diagram of AC Wiring(Electrical Compartment Rear)

Table 5-7 Definition of AC Wiring Functions

No.	Name	Function Definition
1	400V Three-Phase AC	Powers liquid cooling unit and AC/DC auxiliary power supply
2	690V Three-Phase AC	PCS input power / PCS output
3	Cable Bundle Fixing Bracket	Used for fixing the cable bundle
4	Cable Outlet	Lower cable outlet for cable routing

As shown in Figure 5-17, the cables corresponding to each outlet from left to right are arranged as follows: communication cable, auxiliary power cable, protective grounding cable, L3 phase power cable, L2 phase power cable, and L1 phase power cable.

After cable routing is completed, secure the cables using cable ties through the cable bundle fixing bracket.

The cable outlet holes are made of rubber material. The hole size can be adjusted according to the actual cable diameter. After cutting, ensure that the sealing performance is maintained.

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Step 1: Ensure that the equipment is in a safe state.

Step 2: Refer to the function definitions in Table 5-7 to confirm the wiring positions and corresponding AC cable types and specifications.

Step 3: Prepare the AC cables that meet the requirements and check whether the cable appearance is intact.

1. 690V AC Power Cable Connection

Step 4: Strip the cable insulation layer and crimp the SC terminal.

Step 5: Install the SC terminal into the corresponding wiring position and secure it with an M12 bolt. The recommended tightening torque is 35–45 N·m.

Step 6: After completing the wiring, gently pull the cable in the axial direction to confirm that the cable connection is secure and that sufficient reserved cable length is available.

2. 400V AC Input Cable Connection

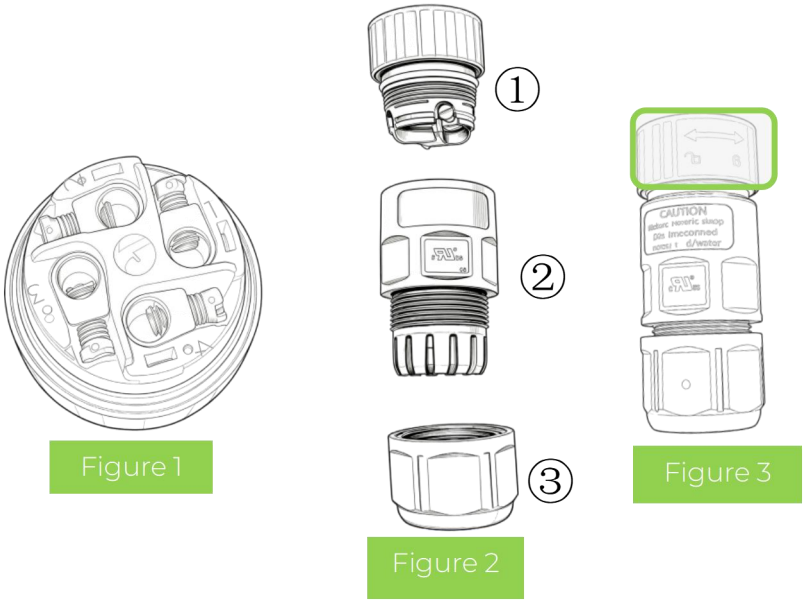


Figure 5-18 AC-IN Plug Diagram

Step 1: Cable Terminal Connection (Figure 1)

Open the connector terminal cover and connect the cables according to the

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terminal markings:1-L1, 2-L2, 3-L3, 4-N.

Insert the corresponding cable cores into the terminals and tighten the terminal screws using a flat-head screwdriver. Ensure that the screws are fully tightened to prevent overheating caused by loose connections.

Step 2: Plug Assembly (Figure 2)

Install the plug components ①, ②, and ③ in sequence according to their positions to complete the pre-assembly of the plug body.

Step 3: Confirm Plug Locking (Figure 3)

Observe the blue locking ring mark:

Rotate clockwise to lock.

Rotate counterclockwise to unlock.

After assembly, rotate the blue locking ring clockwise to confirm that the plug assembly is securely locked.

Disassembly note: Before disconnecting the plug, first rotate the blue locking ring counterclockwise to the unlock position, then separate the plug components.

Step 4: Cabinet Connection Installation

Open the electrical compartment door, align the assembled plug with the AC-IN socket of the PDU compartment, and insert it firmly until a “click” locking sound is heard, indicating that the plug is fully engaged with the socket and installation is complete.

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(4) Communication Wiring

After completing the AC/DC wiring, complete the communication wiring part. The schematic diagram is as follows.

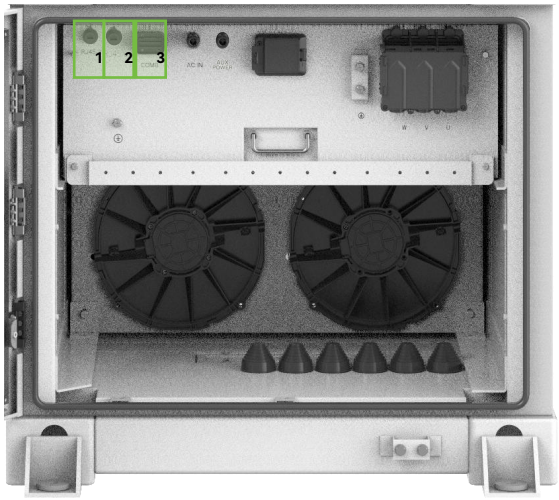


Figure 5-19 Diagram of Communication Wiring(Electrical Compartment Rear)

Table 5-8 Definition of Communication Port Functions

No.	Name	Function Definition
1	RJ45-3	Ethernet port for cloud platform connection
2	RJ45-6	Third-party EMS
3	COM8	Communication interface for Gateway meter and parallel cabinets (Required only for parallel operation or Gateway meter communication)

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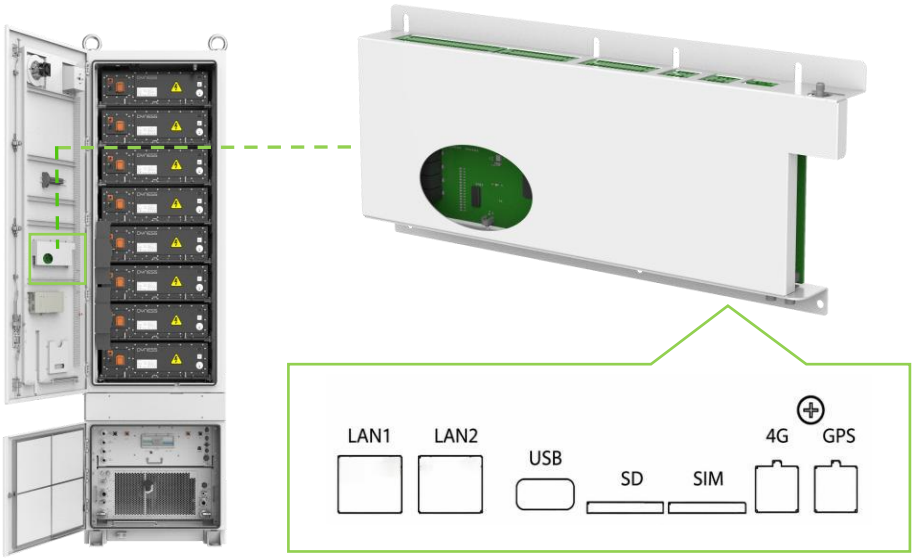


Figure 5-20 Schematic Diagram of EMS Communication Interface

Table 5-9 Definition of EMS Communication Interface

NO,	Name	Function Definition
1	LAN1	Third-party EMS communication interface
2	LAN2	Cloud platform communication interface
3	USB	USB communication interface
4	SD	SD card communication interface
5	SIM	SIM card communication interface
6	4G	4G module communication interface
7	GPS	GPS module communication interface

① Cloud Platform Communication Connection

Use a Cat5e or higher Ethernet cable. Connect the battery cabinet door control EMS LAN2 port to the RJ45-1 port at the bottom of the battery cabinet equipment.

② Third-Party EMS Communication Connection

The third-party EMS communication interface is located on the local EMS LAN1 port.

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The communication cable is routed out through the cable routing channel at the bottom of the battery cabinet, enters the electrical cabinet, and connects to the RJ45-5 port on the front panel of the PCS. Then connect the RJ45-6 port on the rear panel of the PCS to the external EMS system.

Table 5-10 COM8 Communication Interface Definition

Identification	Function Description
4	Gateway meter communication
5	Gateway meter communication

③ Parallel Operation and Gateway meter Communication

When multiple devices operate in parallel, parallel communication connection is required.

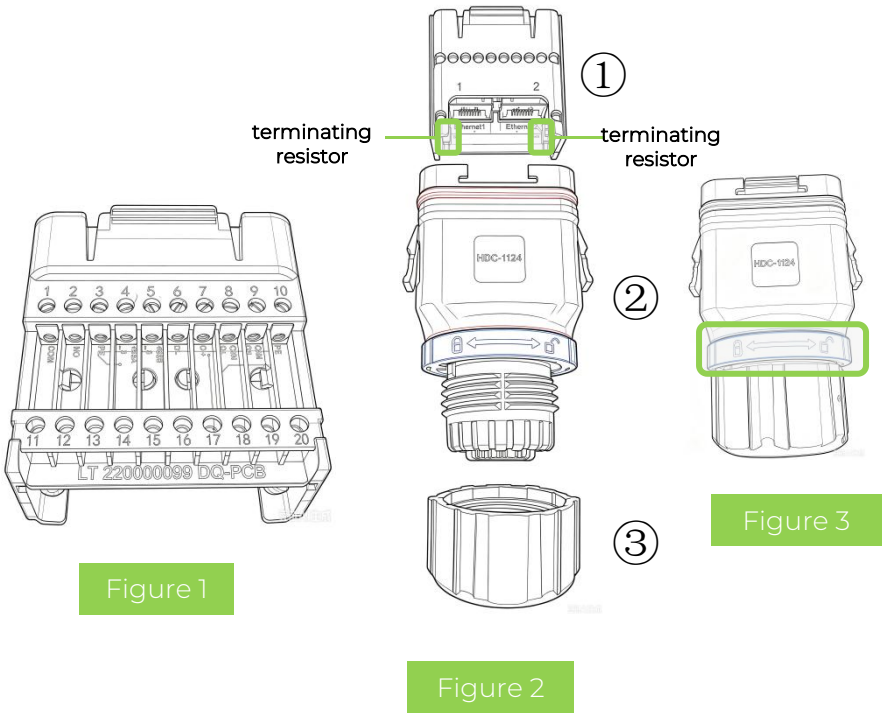


Figure 1

Figure 2

Figure 3

Figure 5-21 COM8 Plug Diagram

Step 1: RS485 Communication Cable (Figure 1, Optional)

If the Gateway meter RS485 communication is required, connect the cable to the terminal:4-RS485-A, 5-RS485-B, and tighten the terminal screws.

(If gateway meter communication is not required, skip this step.)

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Step 2: Communication-Port Cascading Connection (Figure 2)

The plug assembly ① is equipped with two communication ports (left and right). For parallel connection of multiple cabinets, connect the ports in a cascading manner: connect the left port to the right port of the previous cabinet and the right port to the left port of the next cabinet. During parallel wiring, set the terminal resistance switch inside the plug assembly ① of the first and last cabinets to the ON position, and set that of all intermediate cabinets to the OFF position.

Step 3: Plug Component Assembly (Figure 2)

After completing the cable connection, install the plug components ② and ③ in sequence to complete the plug body assembly.

Step 4: Confirm Plug Locking (Figure 3)

Observe the blue locking ring mark:Rotate counterclockwise to lock.Rotate clockwise to unlock.After assembly, rotate the blue locking ring counterclockwise to confirm that the plug assembly is securely locked.

Disassembly note: Rotate the blue locking ring clockwise to the unlock position before separating the plug components.

Step 5: Cabinet Connection Installation

Open the electrical compartment door, align the assembled plug with the COM8 socket of the PDU compartment, and insert it until a “click” locking sound is heard, indicating that the plug is fully engaged with the socket and installation is complete.

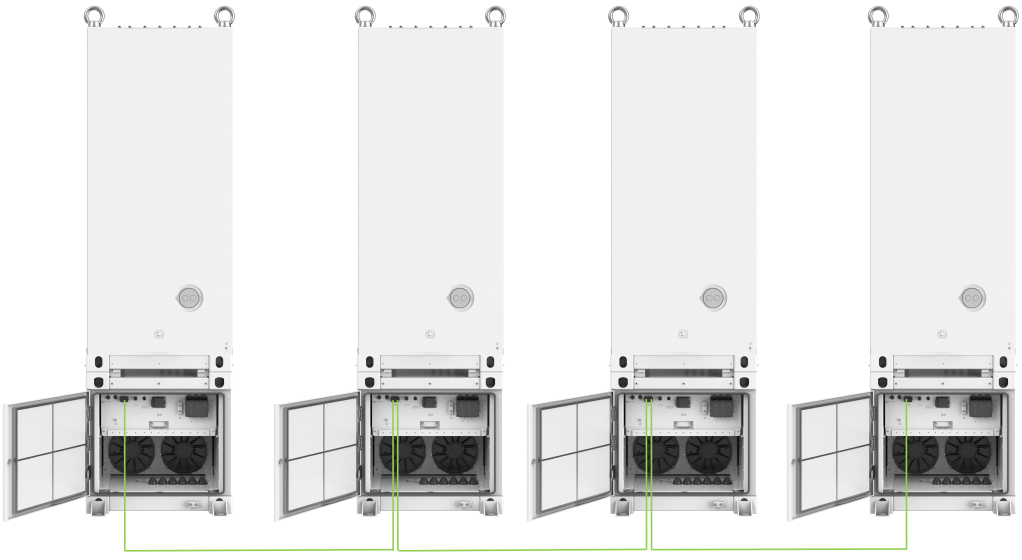


Figure 5-22 Parallel Communication Wiring Diagram

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5.10.Checking After Wiring

After the wiring is completed, in order to prevent equipment damage and property loss, the following items must be checked again:

Table 5-11 Checklist After Wiring

NO.	Checklist	Confirm
1	Disconnect the user's grid-side circuit breaker and the DC-side circuit breaker of the battery cabinet. Ensure that both the AC and DC sides of the PCS are de-energized.	☐
2	Check that the connection cables between the battery clusters are secure.	☐
3	Please check if the negative and positive connections between battery-PCS, the AC phase of PCS are connected correctly. Measure the resistance between the three phases, which should be in the MΩ level. If it is in kΩ level or smaller, please check the circuit.	☐
4	Check if MSD connection on each PACK is good.	☐
5	Check if external cables, PE cables and communication cables are well connected.	☐
6	Check if all cable wiring meets torque requirements	☐
7	The PE cable resistance should be less than 4Ω.	☐
8	Clean the installation area and ensure that there are no tools or other irrelevant objects left inside the ESS cabinet.	☐
9	Use fireproof and waterproof materials to tightly seal the cable entry holes and surrounding gaps of outdoor cabinets.	☐
10	Confirm that all liquid cooling pipeline valves of the battery compartment and electrical compartment (two valves for each compartment) are fully open.	☐

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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;	☐
2	Check if MSD connection on each PACK is good.	☐
3	Check if the emergency stop button is not triggered;	☐
4	Check if the SPD switch is in closed state;	☐
5	Check PE cable connection to make sure there are no ground faults;	☐
6	Check if the AC and DC voltages meet the start-up conditions and there is no risk of over-voltage with a multimeter;	☐
7	Check to make sure no tools or parts are left inside the device;	☐
8	Check if there is condensation. If so, open the dehumidifier for ventilation until the condensation disappears;	☐
9	Check if there are no wire ends, metal shavings and other objects that may cause short circuits in signal or power cables.	☐

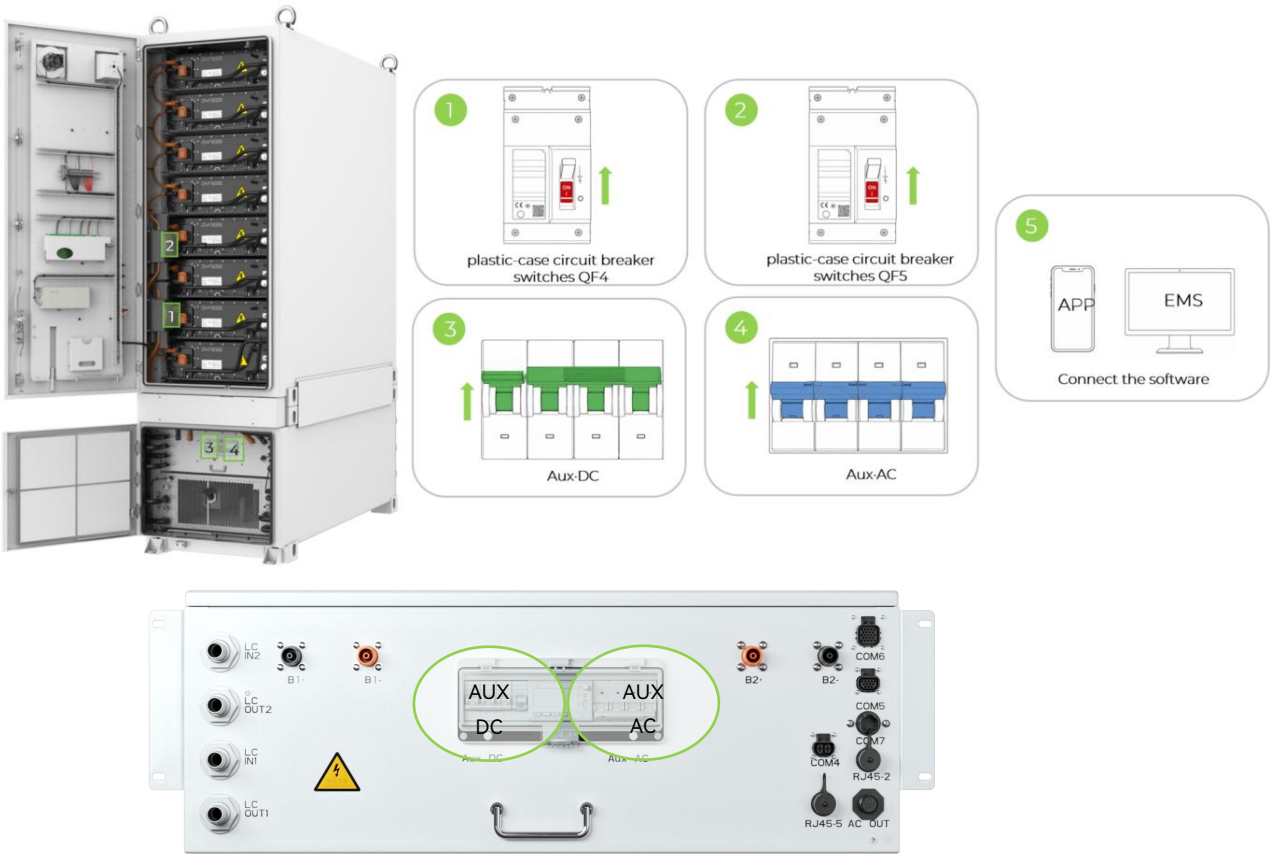
Power-on steps

- Step 1: Close the grid-side AC circuit breaker;
- Step 2: Sequentially close the plastic-case circuit breaker switches QF4 and

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QF5 on the DC battery side.

- Step 3: Close the Aux·DC switch on the DC side of the PDU (DC/DC switch);
- Step 4: Close the Aux·AC switch on the AC side of the PDU (liquid-cooling units and AC/DC switches);



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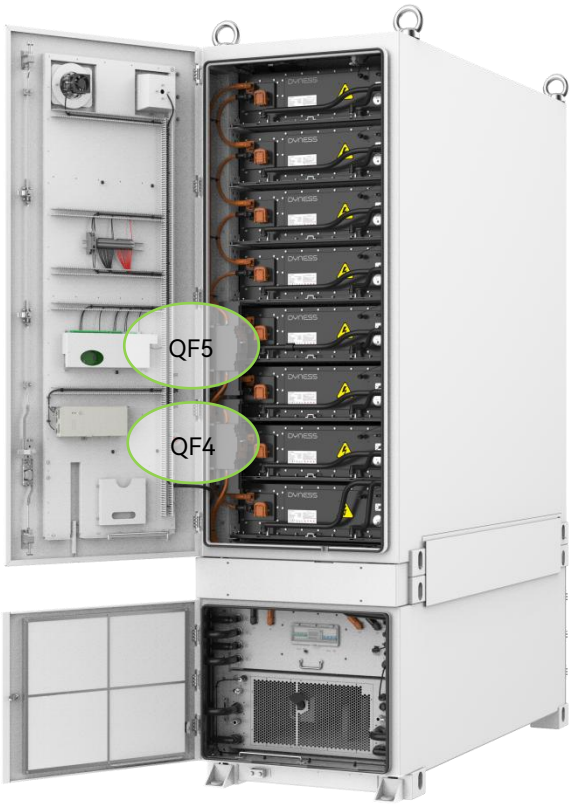


Figure 6-1 Diagram of Power-Up Process

After following the steps above, check if the product indicator lights are on and if the screen is displaying. If the product is in normal condition, the power indicator "POWER" and the operation indicator "RUN" will be on, while the fault indicator light "FAULT" will be off. The screen will start to display the system operation status and parameters.

6.2. Power-off Process

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

- Step 1: Shut down the system via local connection (only supported in remote mode) or via the host computer;
- Step 2: Disconnect the AC side switch Aux AC of the PDU (liquid cooling unit and AC/DC switch);
- Step 3: Disconnect the DC side switch Aux DC the PDU (DC/DC switch);

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- Step 4: Sequentially disconnect the plastic circuit breaker switches QF4 and QF5 on the DC battery side;

- Step 5: Disconnect the AC switch on grid side.

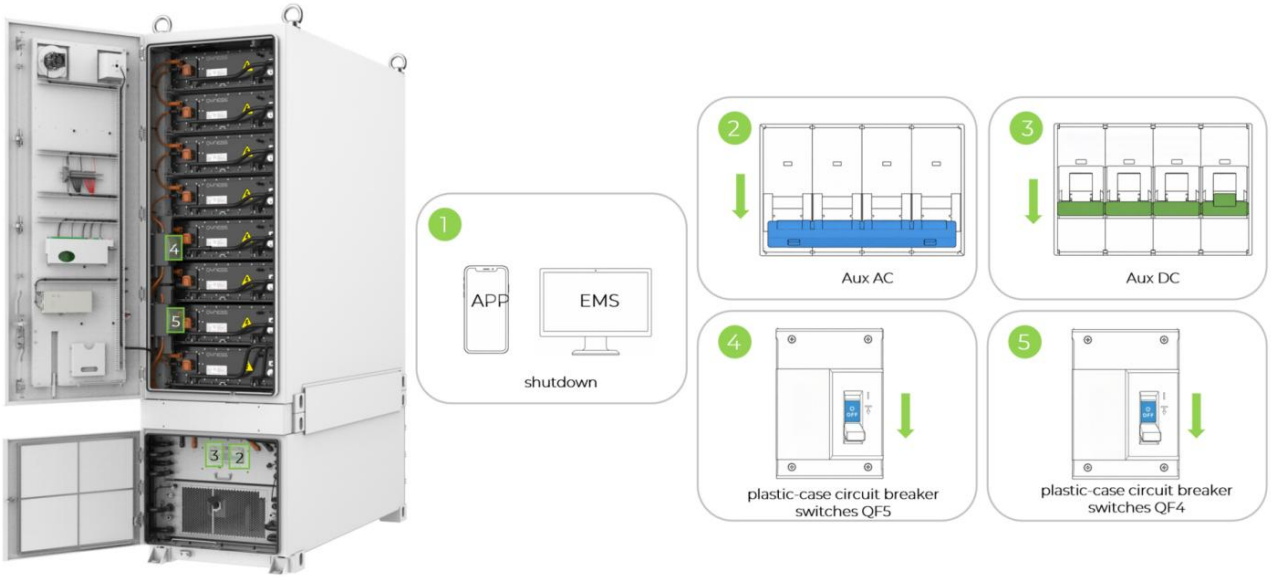


Figure 6-2 Diagram of Power-Off Process

WARNING

After completing the above power-off procedure, confirm that all product indicators and displays are off. Wait for at least five minutes and verify the absence of residual voltage before performing any maintenance or inspection.

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6.3. Emergency Stop

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



Figure 6-3 Diagram of EPO Position

WARNING

Under normal circumstances, please use the normal shutdown 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!

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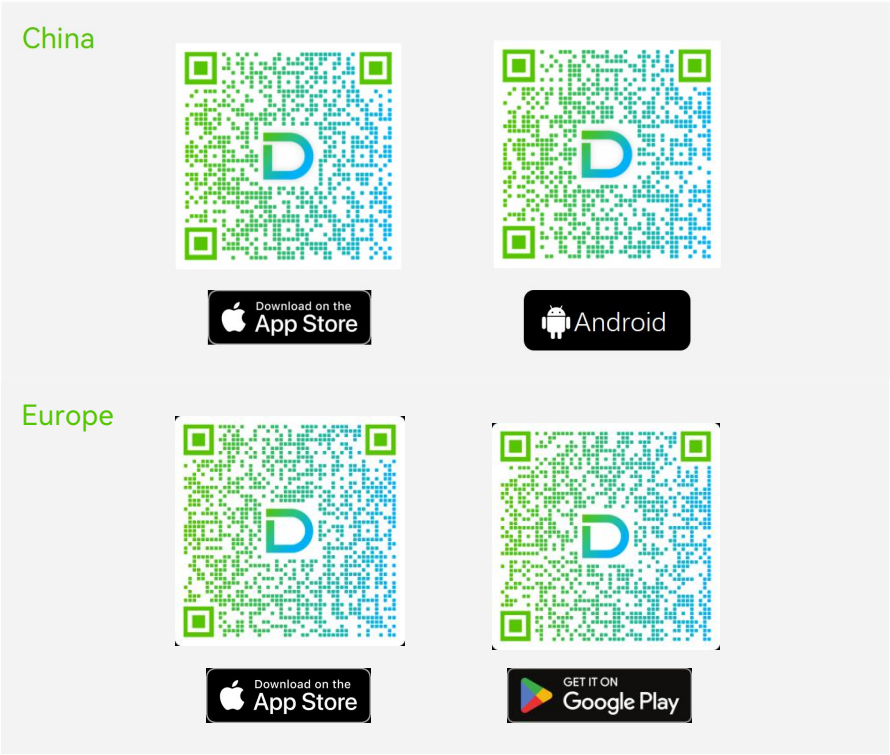
7. Bluetooth Proximity Debugging Guide

7.1. Introduction to Proximity Debugging

Bluetooth proximity debugging refers to the operation where users can establish a local connection with the device within approximately 10 meters through the Bluetooth function of the "Dyness" APP, and then perform operations such as device overview viewing, real-time data reception, alarm notification checking, and device parameter settings.

7.2. APP Download Navigation

Proximity debugging needs to be operated through the "Dyness" APP. You can download this application by scanning the QR code below.



7.3. User Login

The home page of the APP has a login entry for the cloud platform and a local connection entry. Bluetooth near-end debugging enters the user login interface through the local connection entry. The login interface for iOS is different from that for Android. The login steps for iOS and Android interfaces are listed separately below.

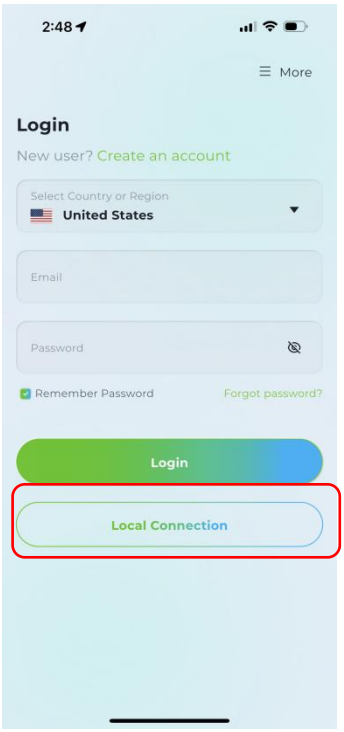
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iOS Login Steps

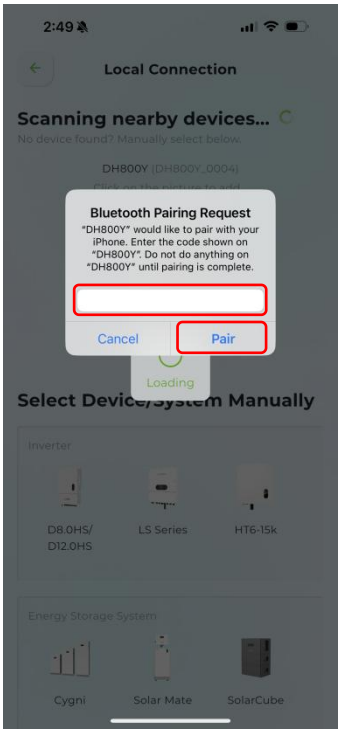
- Step 1: Tap on **"Local Connection"** on the **[login]** interface;
- Step 2: After the phone finishes scanning nearby devices, tap the DH800Y picture of the nearby device on the **[local connection]** interface;
- Step 3: Enter the code displayed on the "DH800Y" device in the Bluetooth pairing request box. The default code is **"111444"**. After entering, tap **"Pair"**;
- Step 4: On the login interface, select **"Owner"** from the identity tab, then enter the password (default: **"12345678"**), and finally tap **"Confirm";**
- Step 5: If you only want to select the identity and enter the password for the first login, check the "Remember Password" option box and tap "Confirm".

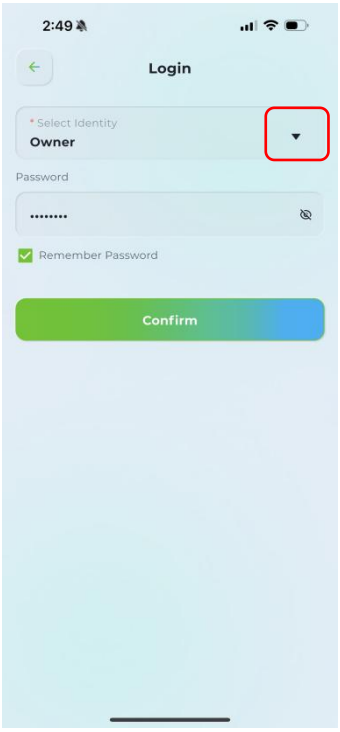
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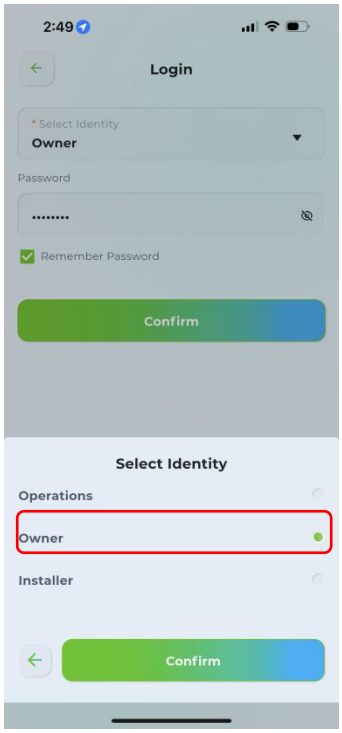
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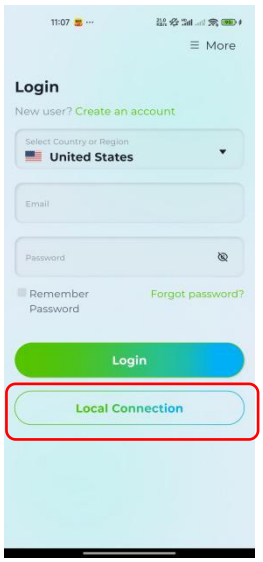
Android login steps

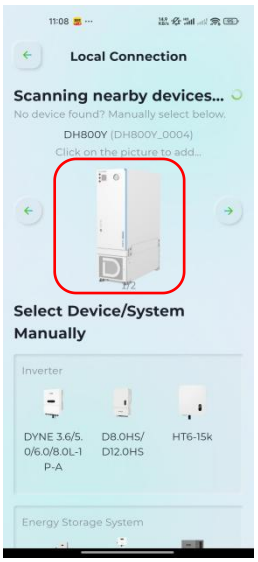
- Step 1: Tap on **"Local Connection"** on the **[login]** interface;
- Step 2: After the phone completes scanning nearby devices, tap on the picture of the nearby device DH800Y on the **[local connection]** interface;
- Step 3: In the pop-up pairing request box above, tap **"Pair & Connect"**;

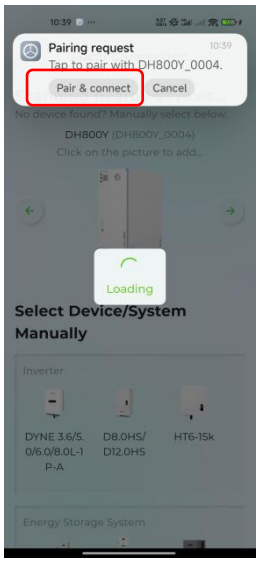
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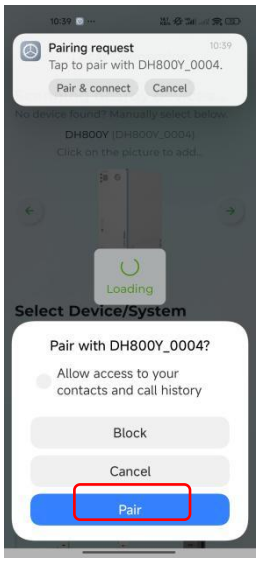
- Step 4: In the pop-up window below, tap **"Pair"** (if this step fails, repeat Step 3);
- Step 5: In the pop-up window, enter the **pairing code.** The default code is **"111444"**, then tap **"OK"**;
- Step 6: On the **[Login]** interface, tap **"drop-down list"** from the select identity tab , tap" Owner", then enter the password (default: **"12345678"**), and finally tap "Confirm";
- Step 7: If you only want to select the identity and enter the password for the first login, tap the **"Remember Password"** option box, then tap **"Confirm".**

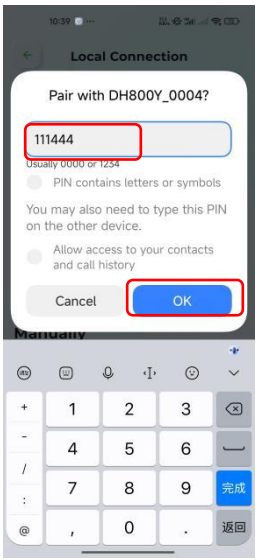
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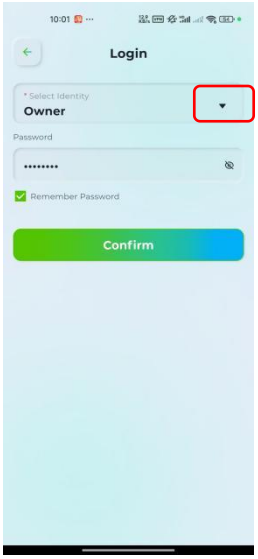


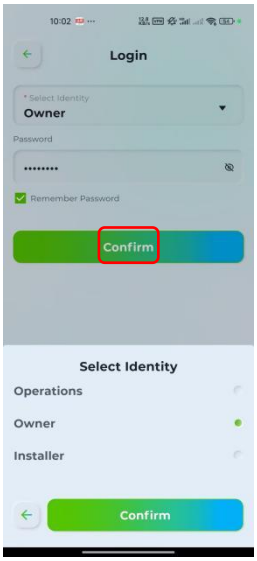










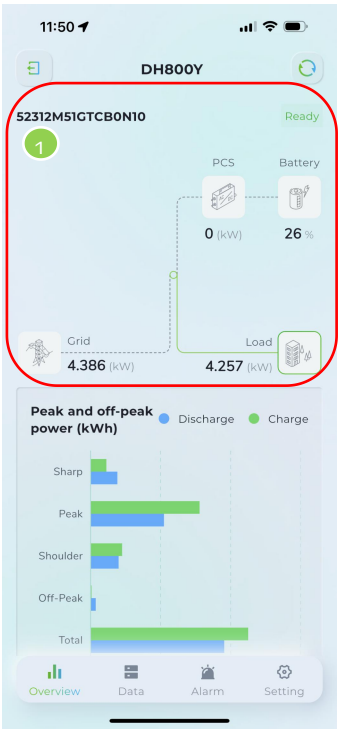


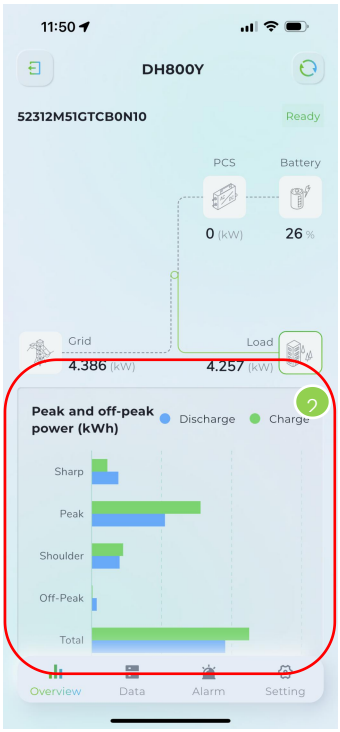
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7.4. Operating Information

After successful login, the APP will automatically show **the [Overview]** page, and the code in the upper left corner represents the equipment's serial number. If the equipment is operating normally, the right upper corner will display **"Ready"**, as shown by **"1"**; if the equipment is not charging or discharging, the right upper corner will display **"Off"**, as shown by **"2"**; if the equipment malfunctions for some reason, the right upper corner will display "**Fault**", as shown by **"3"**.

The **[Overview]** interface features an energy flow diagram corresponding to the power station, as shown in **"1"**. Below the energy flow diagram are statistics for charging and discharging power corresponding to sharp, peak, shoulder and off-peak time as well as total charging and discharging power, as shown in **"2"**.



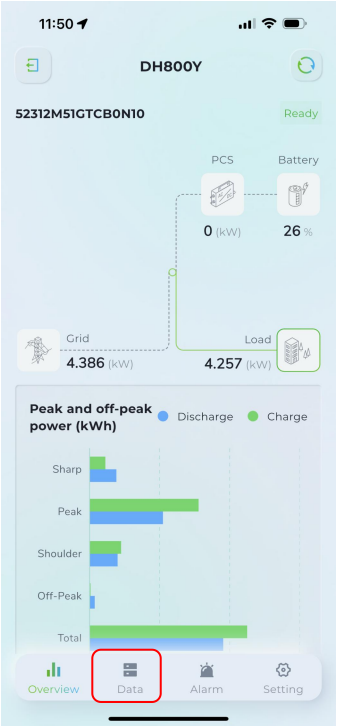


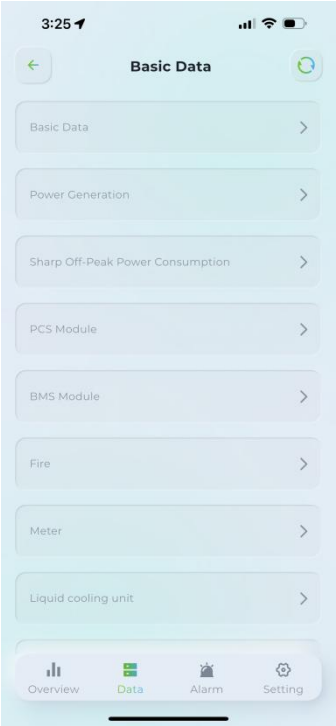
7.5. Query Data

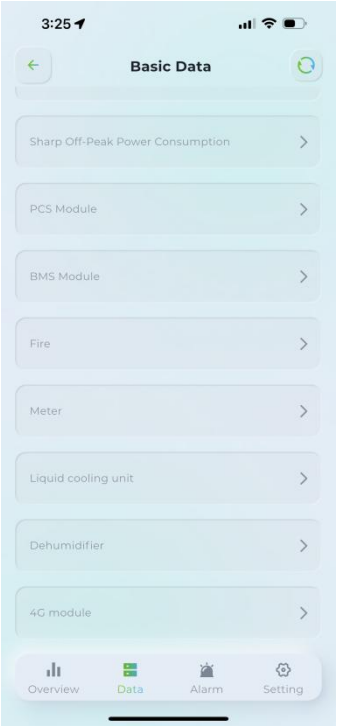
- Step 1: On the **[DH800Y] interface**, tap **"Data"** ;
- Step 2: In the **[Basic Data]** interface, by tapping on different tabs, you can view the corresponding data. Currently, the option tabs include **"Basic Data", "Power Generation", "Sharp Off-Peak Power Consumption", "PCS Module", "BMS Module", "Fire", "Meter", "Liquid Cooling Unit", "Dehumidifier",** and **"4G Module"**.

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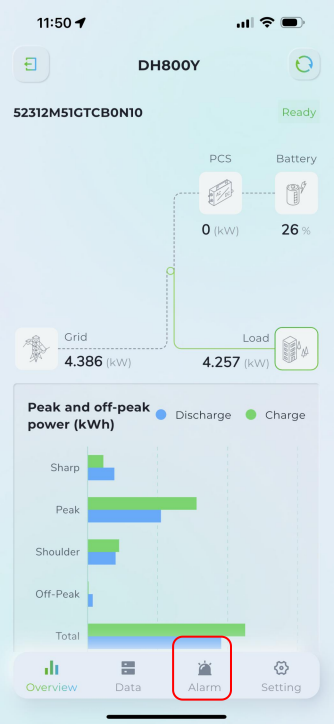


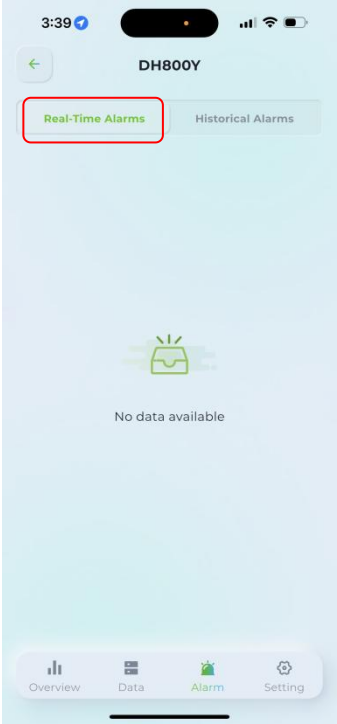
7.6. Alarm Information

- Step 1: Tap **"Alarm"** on the **[DH800Y]** interface;
- Step 2: Tap **"Real-time Alarms"** on the **[DH800Y]** interface to view the real-time alarm information of the device. If there is no alarm, the page will display **"No data available",** as shown in the following figure;
- Step 3: Tap **"Historical Alarm"** on the **[DH800Y]** interface to view the historical alarm information of the device. If you need to view the detailed information of a certain alarm, tap the alarm information column (as shown in **"1"**), enter the detail page (as shown in **"2"**).

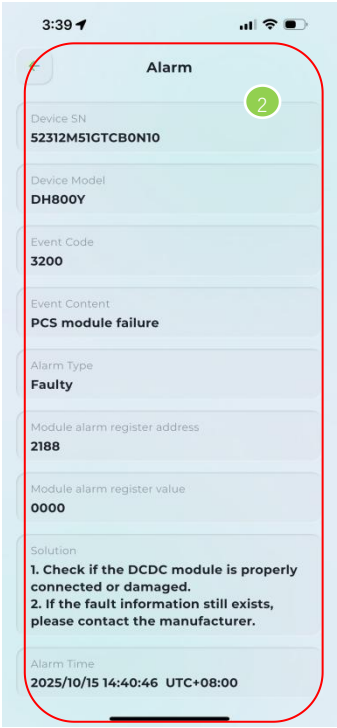
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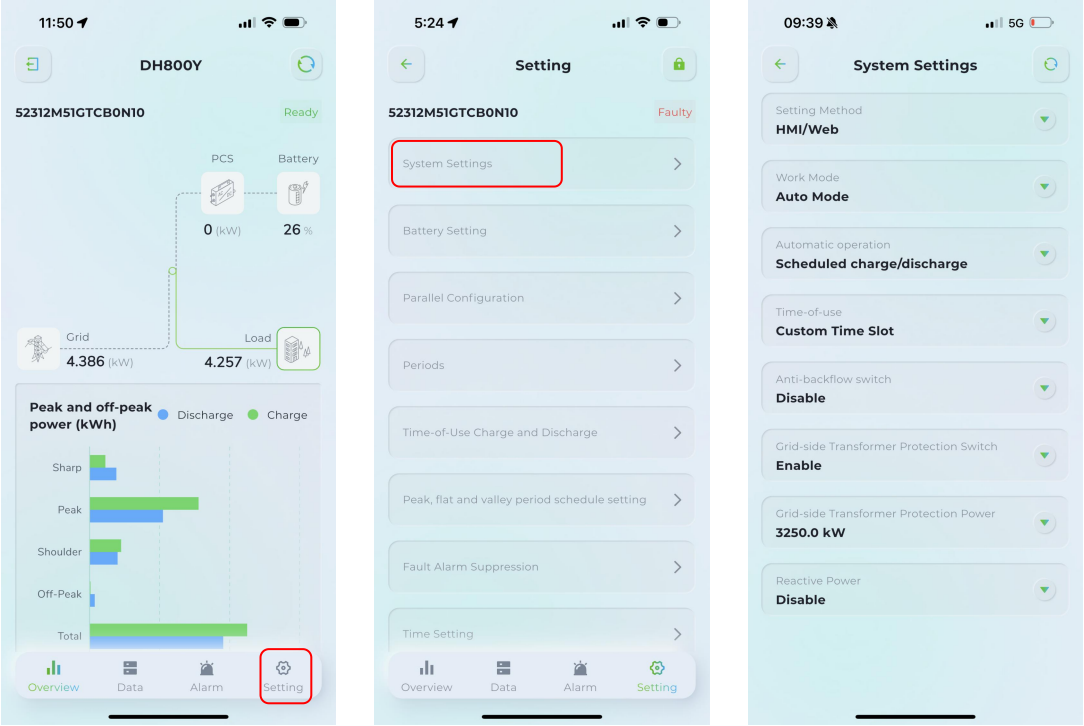
7.7. System Setting

- Step 1: At [DH800Y] interface, tap the "Setting" to set system, battery, parallel configuration, charging and discharging, and networking, etc.;
- Step 2: At [Setting] interface, tap the top "System Settings" to set the setting method, work mode,function, grid-side transformer protection, and reactive

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power.

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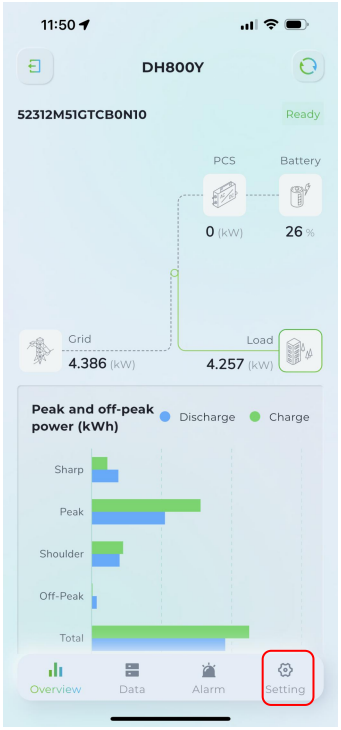


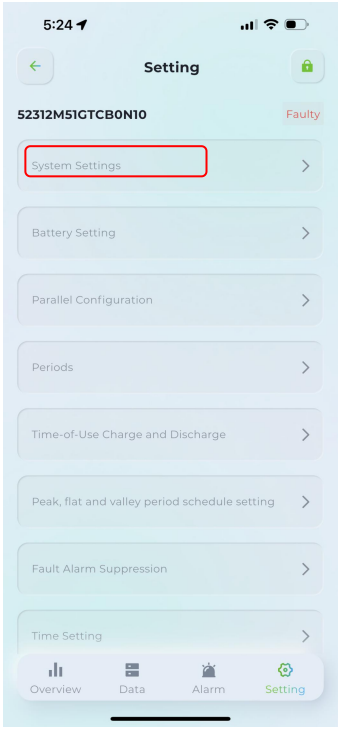
7.7.1. Setting Method

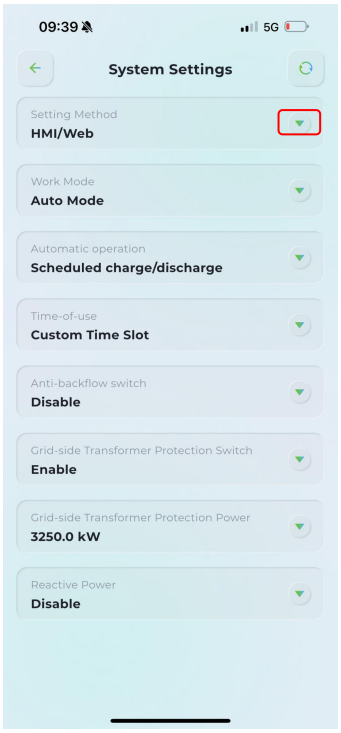
- Step 1: At **[DH800Y]** interface, tap the **"Setting"** ;
- Step 2: At **[Setting]** interface, tap the **"System Settings";**
- Step 3: At **[Setting Settings]** interface, tap **"drop-down list"** of **"Setting Method"** tab;
- Step 4: choose setting method as needed. If **"Web"** is selected, proceed with further operations on the Dyness Cloud Platform. If **"HMI/Web"** or **"HMI"** is selected, tap "Confirm".

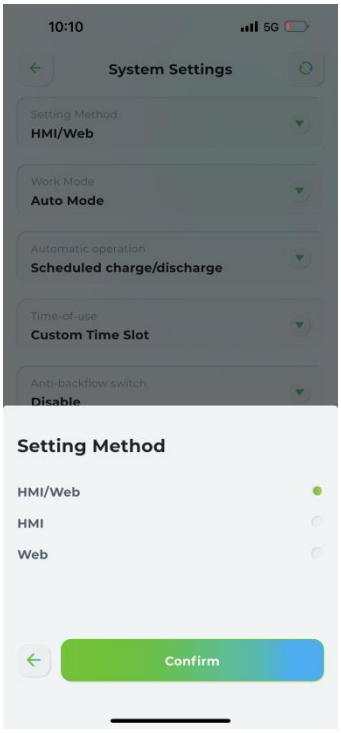
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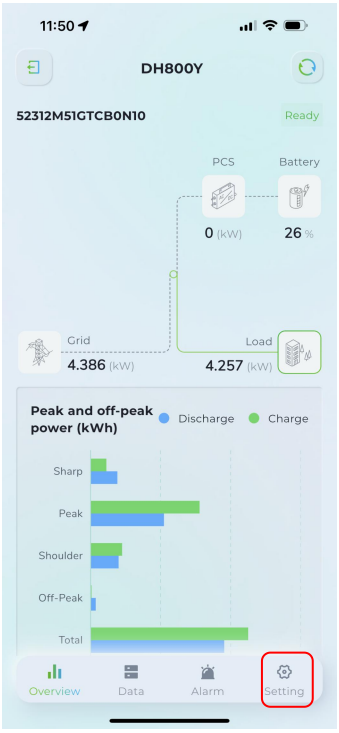
7.7.2. Work Mode

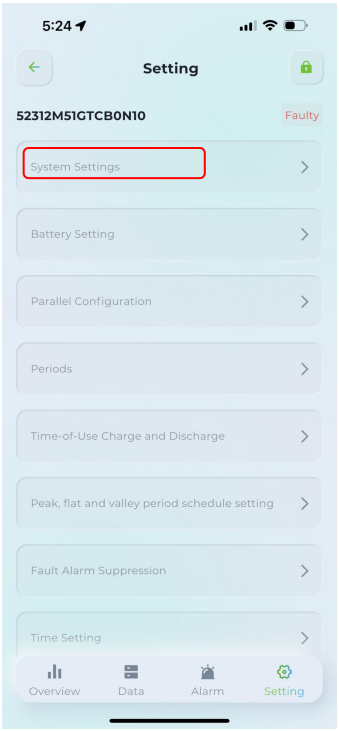
- Step 1: At **[DH800Y]** interface, tap the **"Setting"**;
- Step 2: At **[Setting]** interface, tap the **"System Settings"**;
- Step 3: At **[Setting Settings]** interface, tap **"drop-down list"** of **"work mode"** tab;

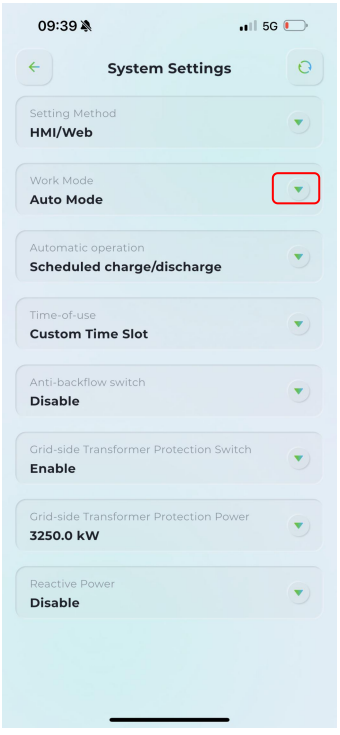
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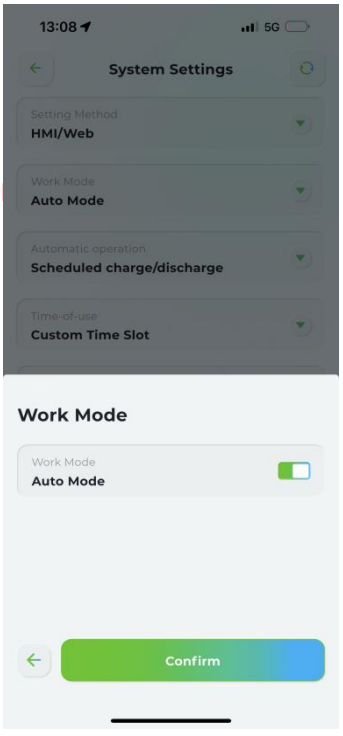
- Step 4: choose work method as needed. Tap "" to switch the system to Remote Mode, or tap "" to switch the system to Auto Mode, tap "Confirm".

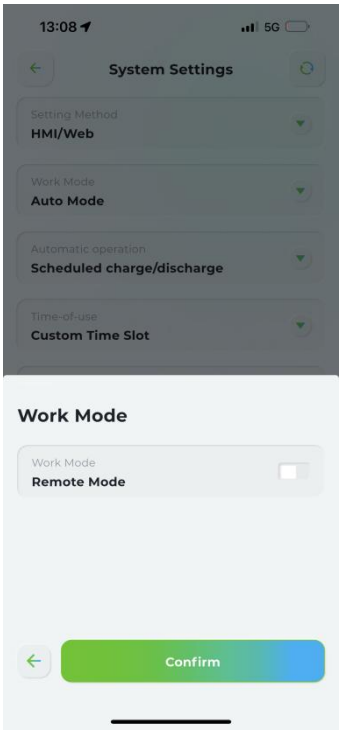
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Auto Mode-Scheduled charge/discharge

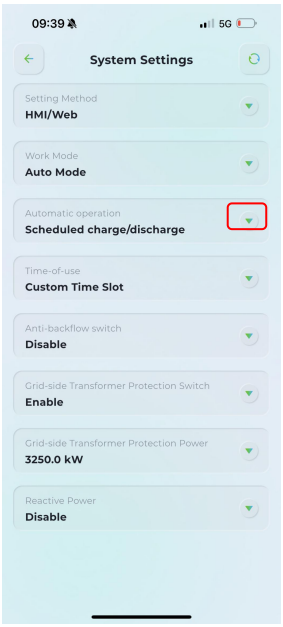
- Step 1: At **[System Settings]** interface, tap **"drop-down list"** of **"Automatic**

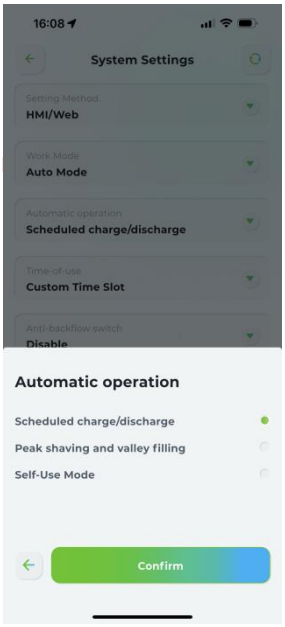
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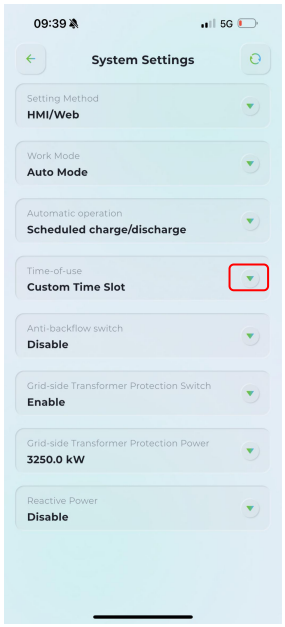
operation" tab;

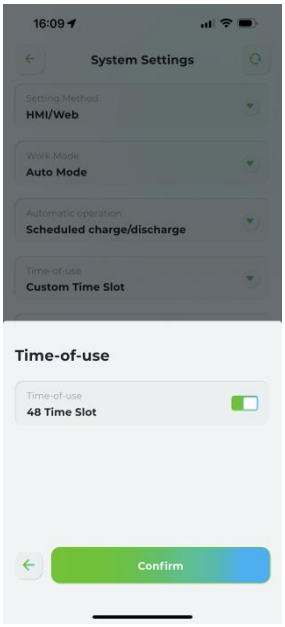
- Step 2: choose "**Scheduled charge/discharge**" and tap "**Confirm**";
- Step 3: Tap **"drop-down list"** of **"Time-of-use"** tab;
- Step 4: choose Time-of-use as needed. Tap "" to switch the system to" Customer **Time Slot**", or tap "" to switch the system to **"48 Time Slot"**, tap **"Confirm"**;
- Step 5: On the **[System Settings]** interface, tap the **"←"** in the upper left corner to enter the **[Setting]** interface;
- Step 6: On the **[Setting]** interface, tap the **"periods"** tab;
- Step 7: On the **[periods]** interface, tap **"drop-down list"** of **month** tab, choose the corresponding group for the month as needed, tap **"Confirm".**(For each of the 12 months, the system enables individual selection from one of four preset time period sets);

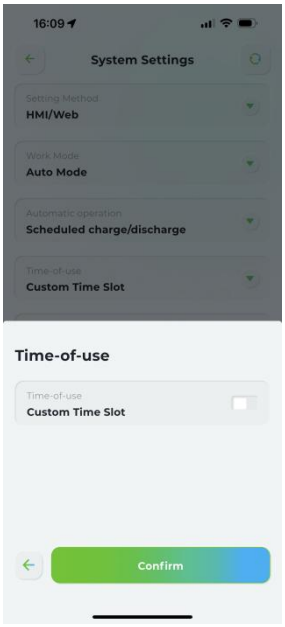
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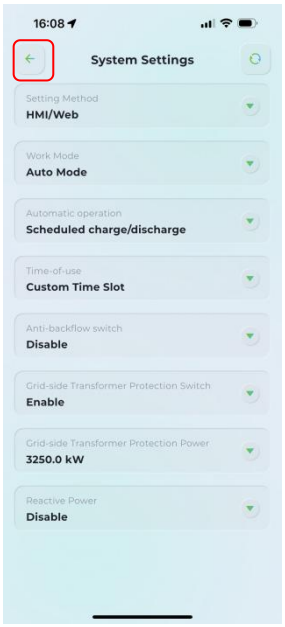


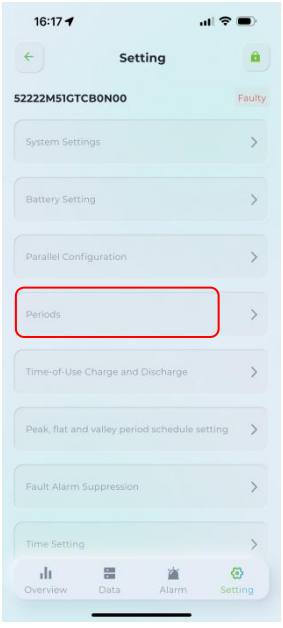


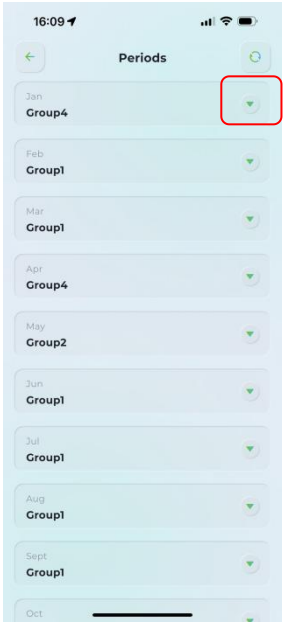


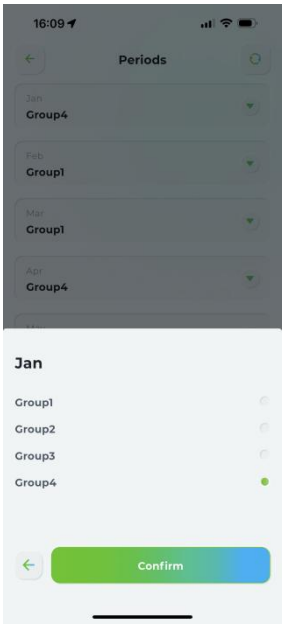












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On the following page, "Customer Time Slot" and "48 Time Periods" are displayed differently. Refer to the below for details.

Customer Time Slot Step 8: On the [Customer Time Slot] interface, tap the "drop-down list" in week tab. Select the fixed operating days for the system in group 1 according to actual needs. If "All" is selected, the system will operate daily based on these periods by default. Then, tap "Confirm";

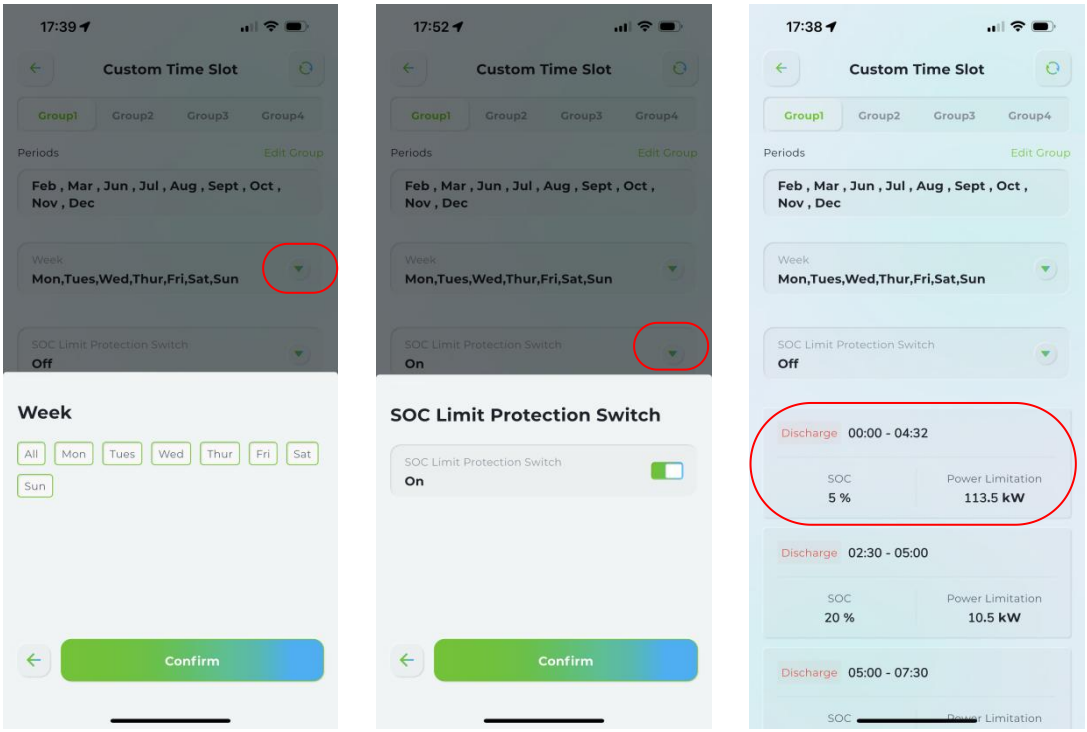
Customer Time Slot Step 9: Turn on the "SOC Limit Protection Switch";

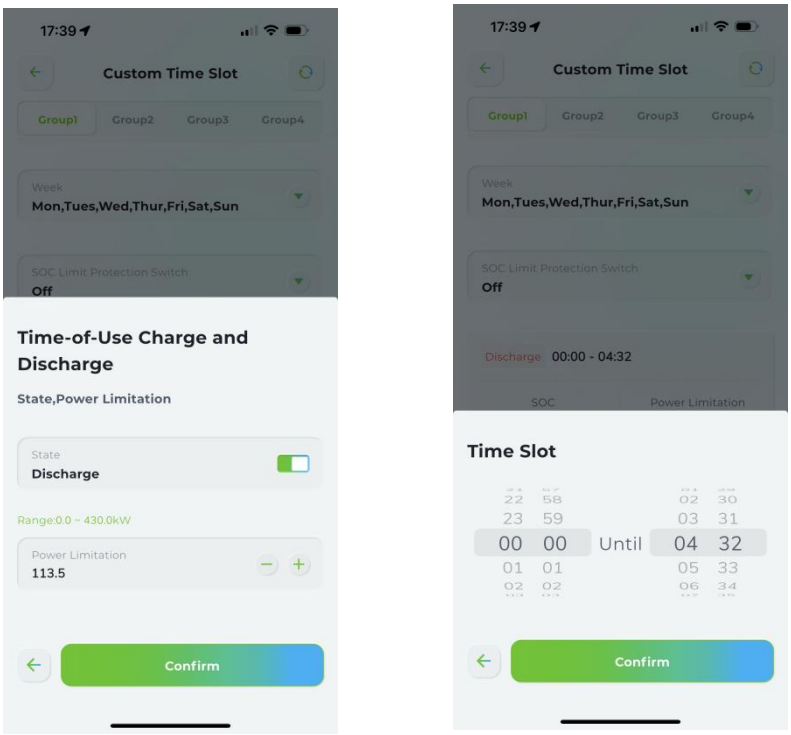
Customer Time Slot Step 10: Select different time slot tab to divide the 24-hour day into multiple periods. Set different charging or discharging power for each period. Tap "Discharge" or "Charge" in the upper left corner or tap "Power Limitation" to set the system to "Discharge" or "Charge" mode. Enter the discharge or charging power, then tap "Confirm";

Customer Time Slot Step 11: Tap the time displayed above the selected time slot tab. Slide to set the start and end times for the charging or discharging period, then tap "Confirm".

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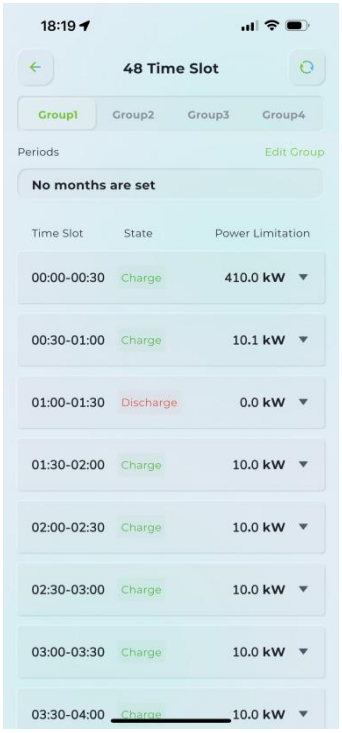


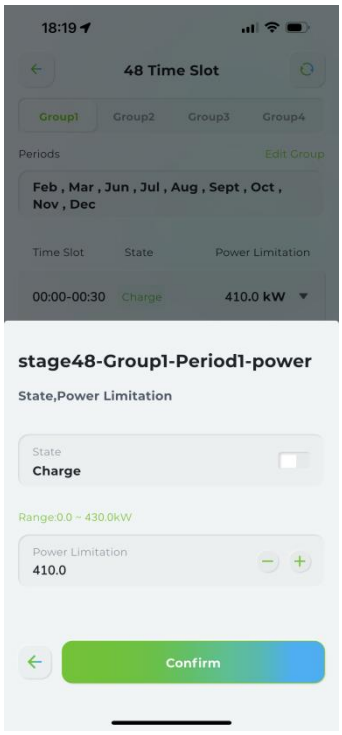
The setup process for other groups follows the same procedure. Please refer to Steps 8-11 above.

- 48 Time Slot Step 8: On the [48 Time Slot] interface, the system divides a 24-hour day into 48 time slots, each lasting 30 minutes. Tap any time slot to set it to "Discharge" or "Charge" mode, configure the "Power Limitation", and then tap "Confirm".

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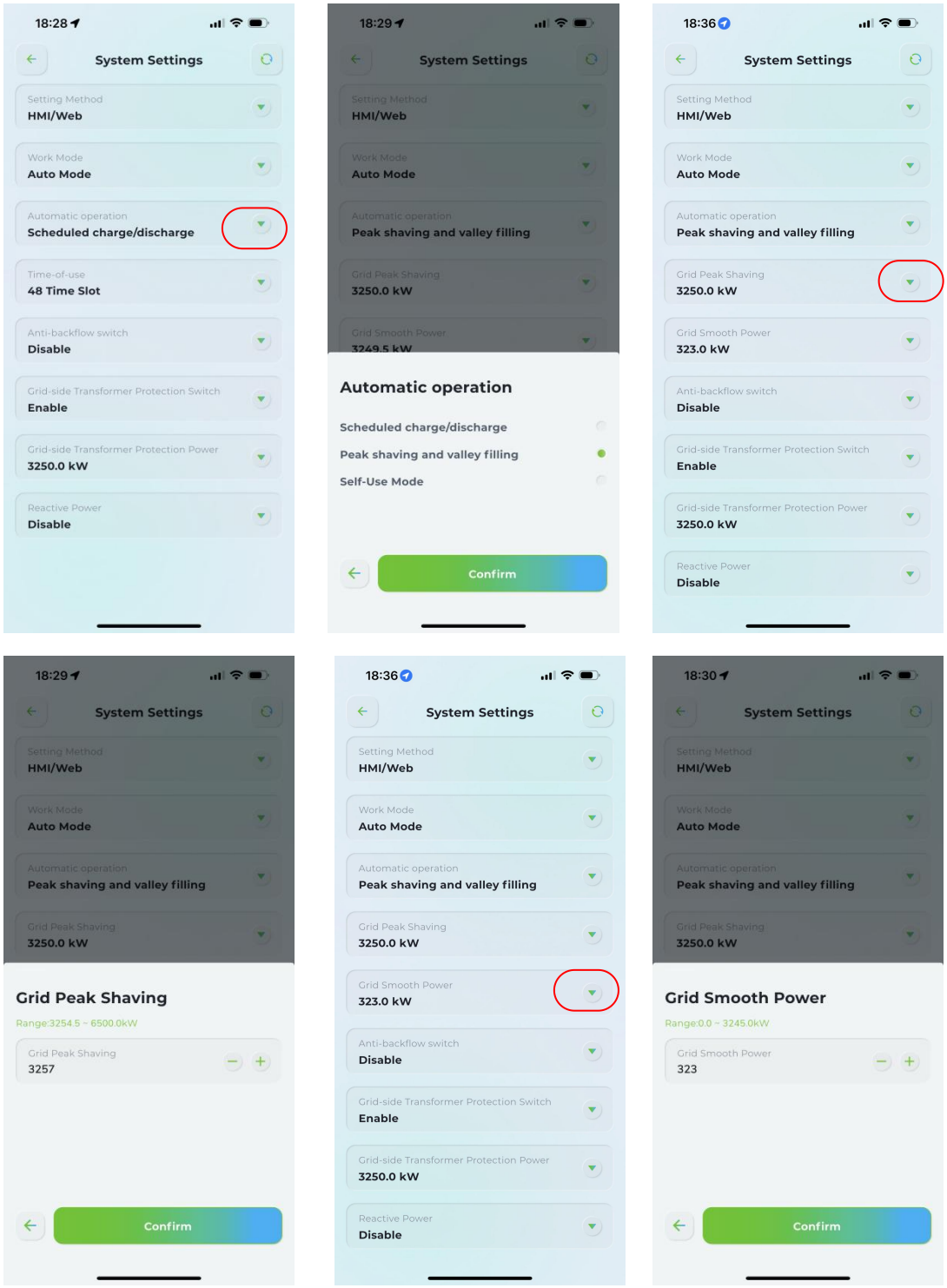


Auto Mode-Peak shaving and valley filling

- Step1: On [System Settings] interface, tap drop-down list of "Automatic Operation" ;
- Step 2: Select "Peak shaving and valley filling", then tap "Confirm";
- Step 3: On [System Settings] interface, tap drop-down list" of "Grid Peak Shaving" , enter a value within the range as required, then tap "Confirm";
- Step 4: Tap drop-down list" of "Grid Smooth Power " , enter a value within the range as required, then tap "Confirm".

——End

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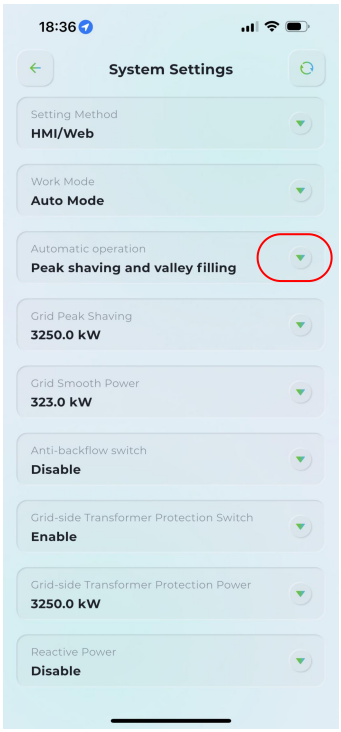


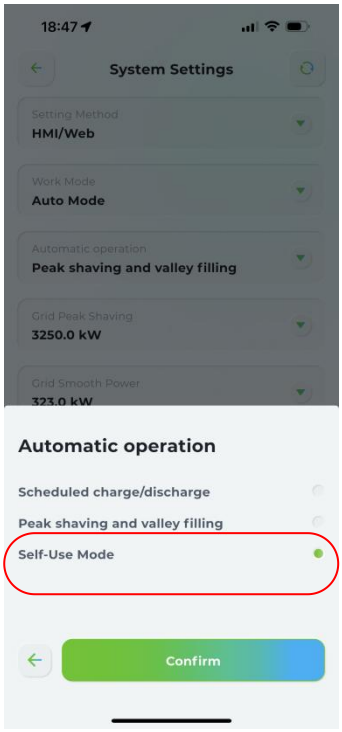
Auto Mode-Self-use Mode

- Step1: On **[System Settings]** interface, tap **“drop-down list"** of **“Automatic Operation”** ;
- Step 2: Select **"Self-use Mode"**, then tap **"Confirm"**.

——End

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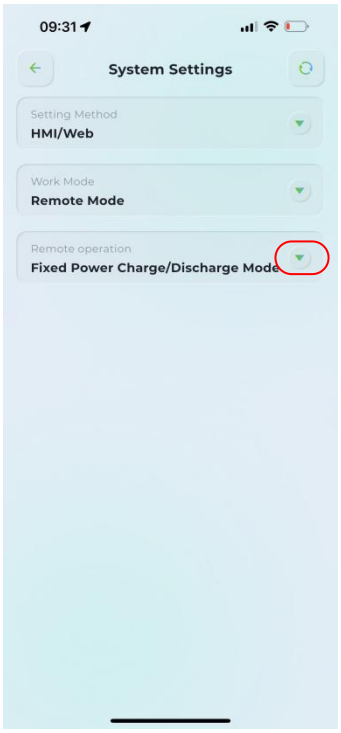


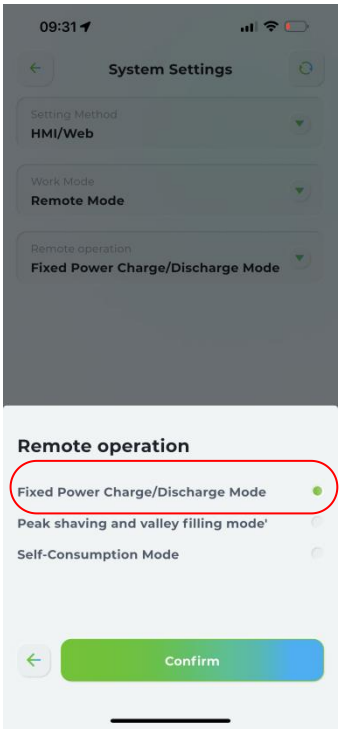


Remote Mode-Fixed Power Charge/Discharge Mode

- Step1: On **[System Settings]** interface, tap **"drop-down list"** of **"Remote Operation"** tab;
- Step 2: Select **"Fixed Power Charge/Discharge Mode"**, then tap **"Confirm"**.

——End





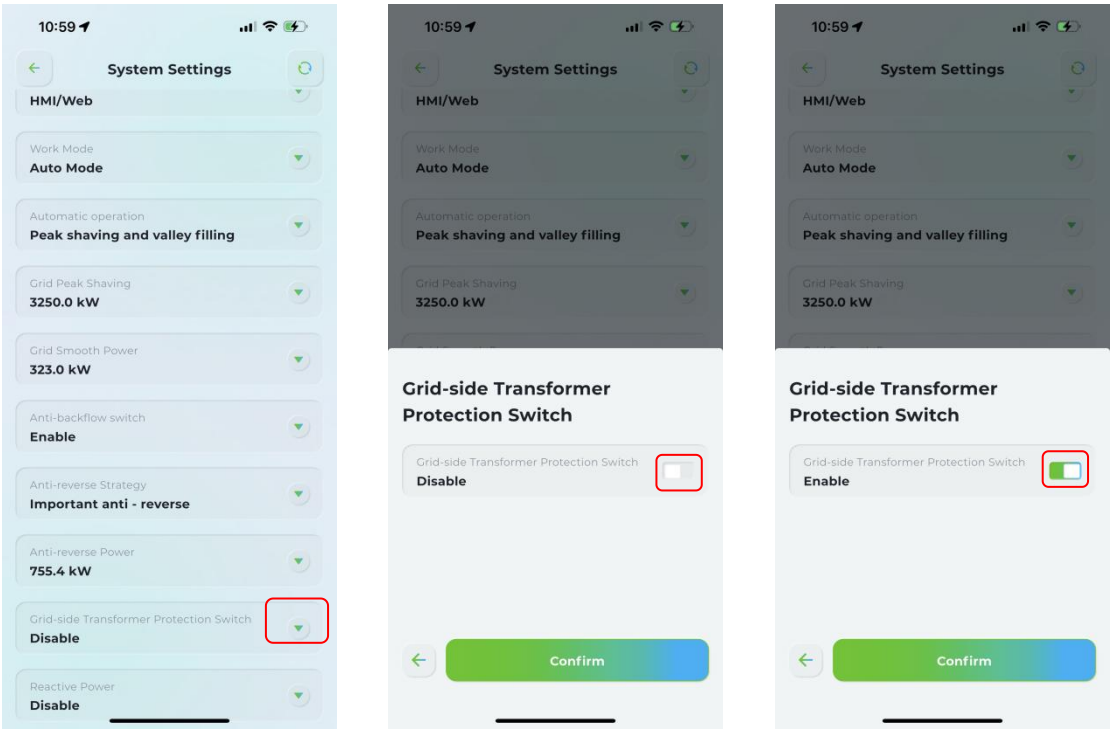
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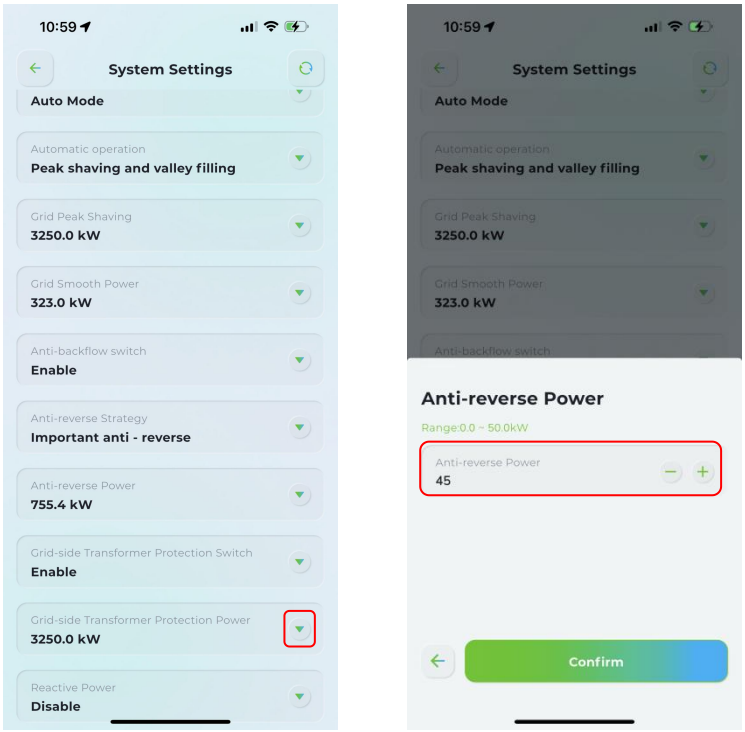
7.7.3. Transformer Protection Setting

- Step 1: On **[System Settings]** interface, tap **“drop-down list"** of **“Grid-side Transformer Protection Switch”** tab ;
- Step 2: Tap the switch button according to your requirements. The button turns green when **enabled** and gray when **disabled**. If disabled, the grid-side transformer protection setup is complete. If enabled, proceed to the next step;
- Step 3: On **[System Settings]** interface, tap **“drop-down list"** of **“Grid-side Transformer Protection Power”** ;
- Step 4: Enter power within the range required, then then tap **"Confirm"**.

——End

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Note: Transformer protection setting are only supported in Automatic Mode.

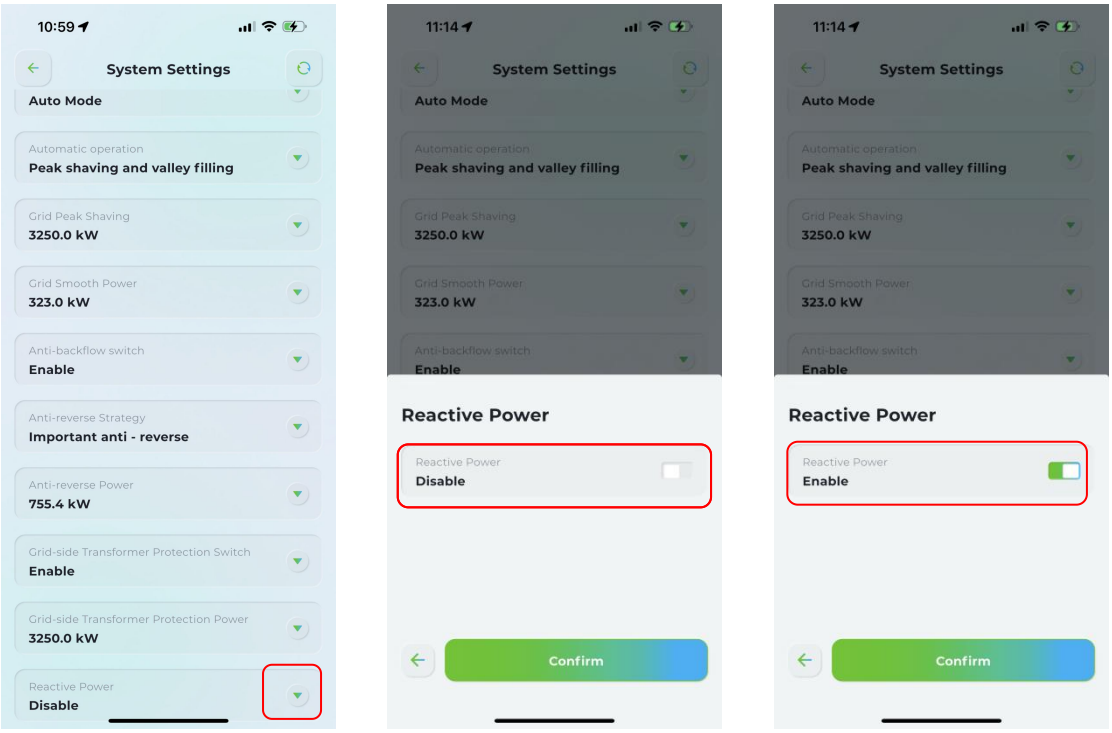
7.7.4. Reactive Power Setting

- Step 1: On **[System Settings]** interface, tap **"drop-down list"** of **"Reactive Power "** tab;
- Step 2: Tap the switch button according to your requirements. The button

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turns green when **enabled** and gray when **disabled.** Tap **“Confirm”.**

——End



Note: Reactive power setting is only supported in Automatic Mode.

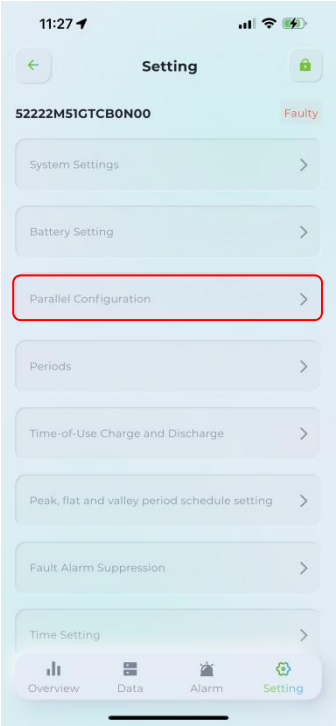
7.8. Parallel Configuration

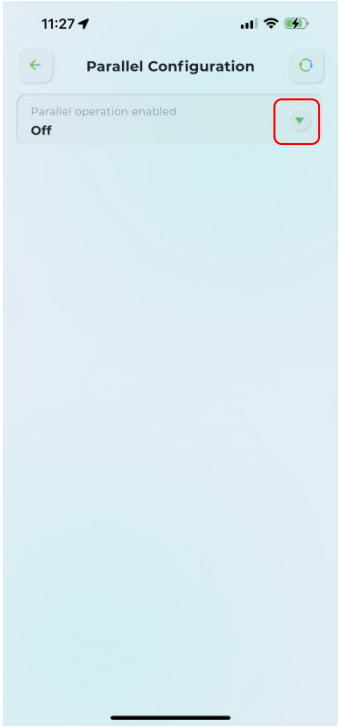
- Step 1: On the **[Setting]** interface, tap **"Parallel Configuration";**
- Step 2: On the **[Parallel Configuration]** interface, tap **“drop-down list"**  of **“Reactive Power ”**tab;
- Step 3: In the pop-up window, tap the "Parallel operation enabled" switch as required. The switch turns green if select **“On”** and gray if select **“Off”**. Then tap **"Confirm".** If set to Off, the parallel configuration is complete. If set to ON, proceed to the next step;
- Step 4: On the **[Parallel Configuration]** interface, sequentially configure the following parameters within their valid ranges: **"Parallel Address"**, **"Number of Parallel Units"**, **"Parallel peak shaving power"**, **"Parallel Valley-Filling Power"**, **"Target power demand for parallel operation"** (system protection power for the grid-side transformer). Tap "Confirm" upon completion.

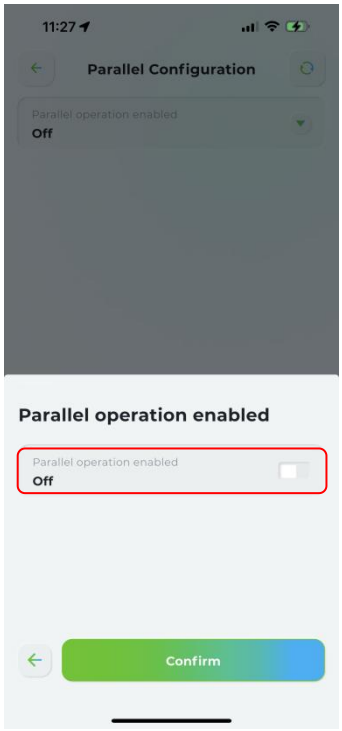
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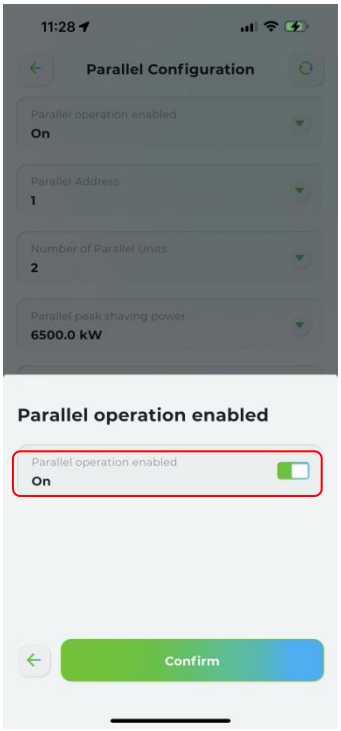
—End—

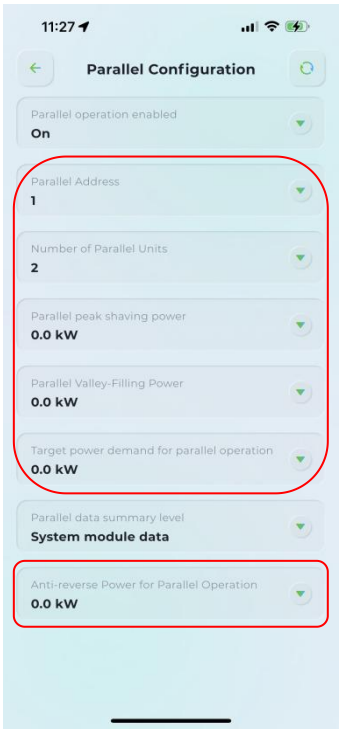
Note: The **“Parallel data summary level”** in Step 5 defaults to “System data” and requires no configuration.











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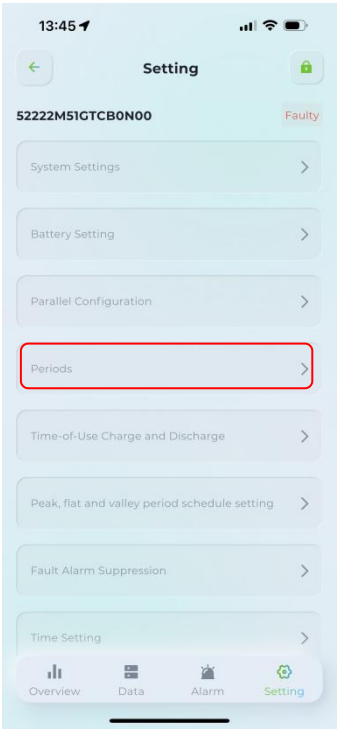
7.9. Electricity Price Setting

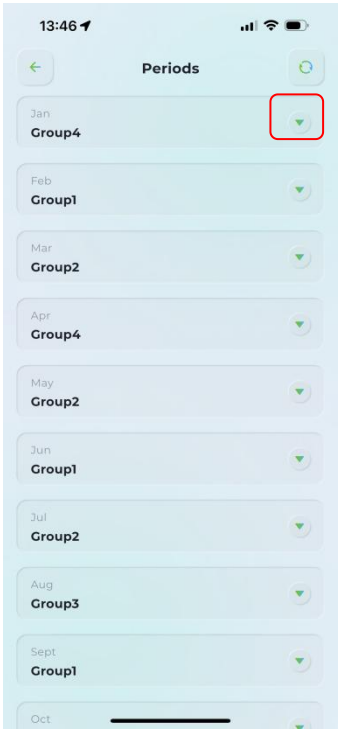
System Configuration: The system supports configuration of four distinct electricity price groups. The whole setup steps are divided into "Periods" and "On-Peak/Mid-Peak/Off-Peak/Valley Period Schedule Setup".

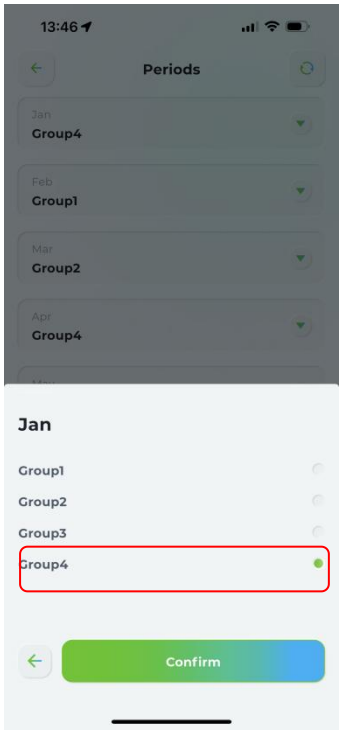
Periods

- Step 1: On the **[Setting]** interface, tap **"Peak & Valley Periods";**
- Step 2: On the **[Periods]** interface, tap **"drop-down list"** of **"Jan"**tab; (Follow the same steps to configure the remaining months)
- Step 3: In the pop-up window, assign **"Group 1", "Group 2" , "Group 3"** or **"Group 4"** to January as required, then tap **"Confirm"**.
  —End—

Note: The "Periods" setting (Steps 1-3 above) can also be completed via **Step 3** in the **"Peak, Flat and Valley Period Schedule Setting"** setting below.







Peak, Flat and Valley Period Schedule Setting

- Step 1: On the **[Setting]** interface, tap **"Peak, flat and valley period schedule setting"**;

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- Step 2: On the **[Peak, flat and valley period schedule setting]** interface, tap **“Group1"** to configure the electricity prices for its assigned months.(Follow the same steps to configure the remaining groups.);

- Step 3: If modification is needed, tap **"Edit Group"** to enter the **[Group by Month]** interface. After configuration, tap the "←" or swipe left to return. This step is optional and can also be performed via the "Periods" setting in Section 7.9;

- Step 4: On the **[Peak, flat and valley period schedule setting]** interface, select a time slot and tap its **"Start Time",** then tap "√";

- Step 5: On the **[Peak, flat and valley period schedule setting]** interface, select a time slot and tap its **"Tariff Type"** . In the pop-up window, slide to select the type: "Sharp", ”Peak”, "Shoulder", "Off-Peak", "Valley", or "No Rate", then tap "√";

- Step 6: On the **[Peak, flat and valley period schedule setting]** interface, select a time slot and tap its **"Time-of-Use Pricing"** . Enter the electricity rate in the pop-up window, then tap "√".

(Follow the same operation of steps 4-6 to configure the remaining slots.)

——End

Note: The start time of a subsequent slot automatically inherits the end time of the previous slot.

7.10.Fault & Alarm Blocking

- Step 1: On the **[Setting]** interface, tap **“Fault Alarm Suppression"**;

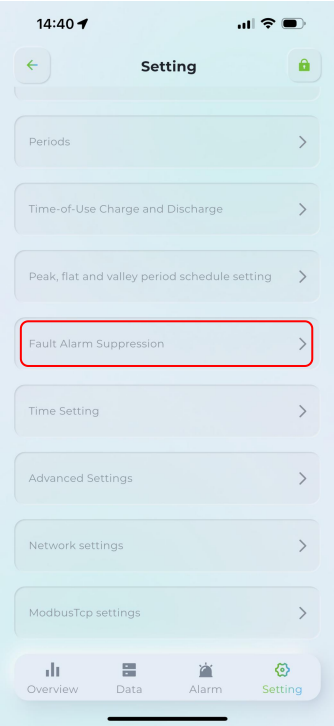
- Step 2: On the **[Fault Alarm Suppression]** interface, tap **"Alarm"**, then select any group from **"Group 1"** to **"Group 4"** to view its alarm messages;

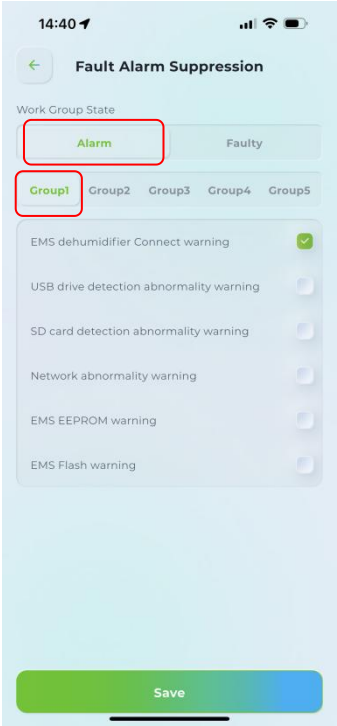
- Step 3: On the **[Fault Alarm Suppression]** interface, tap **"Faulty"**, then select any group from **"Group 1"** to **"Group 4"** to view its alarm messages;

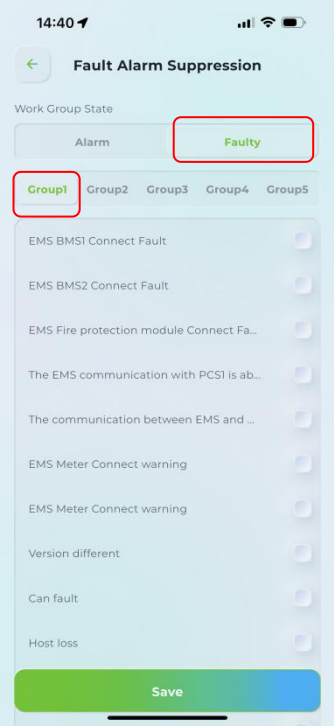
- Step 4: If blocking fault or alarm is needed, enter the respective group list and check the items to be blocked.

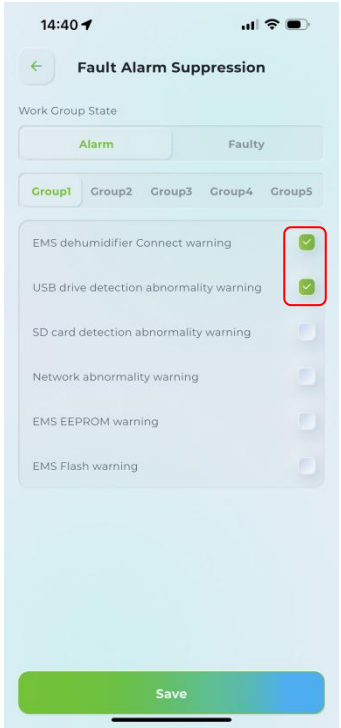
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——End









7.11. Advanced Setting

- Step 1: On the **[Setting]** interface, tap **“Advanced Settings"**;
- Step 2: On the **[Advanced Settings]** interface, tap **"System Parameters";**

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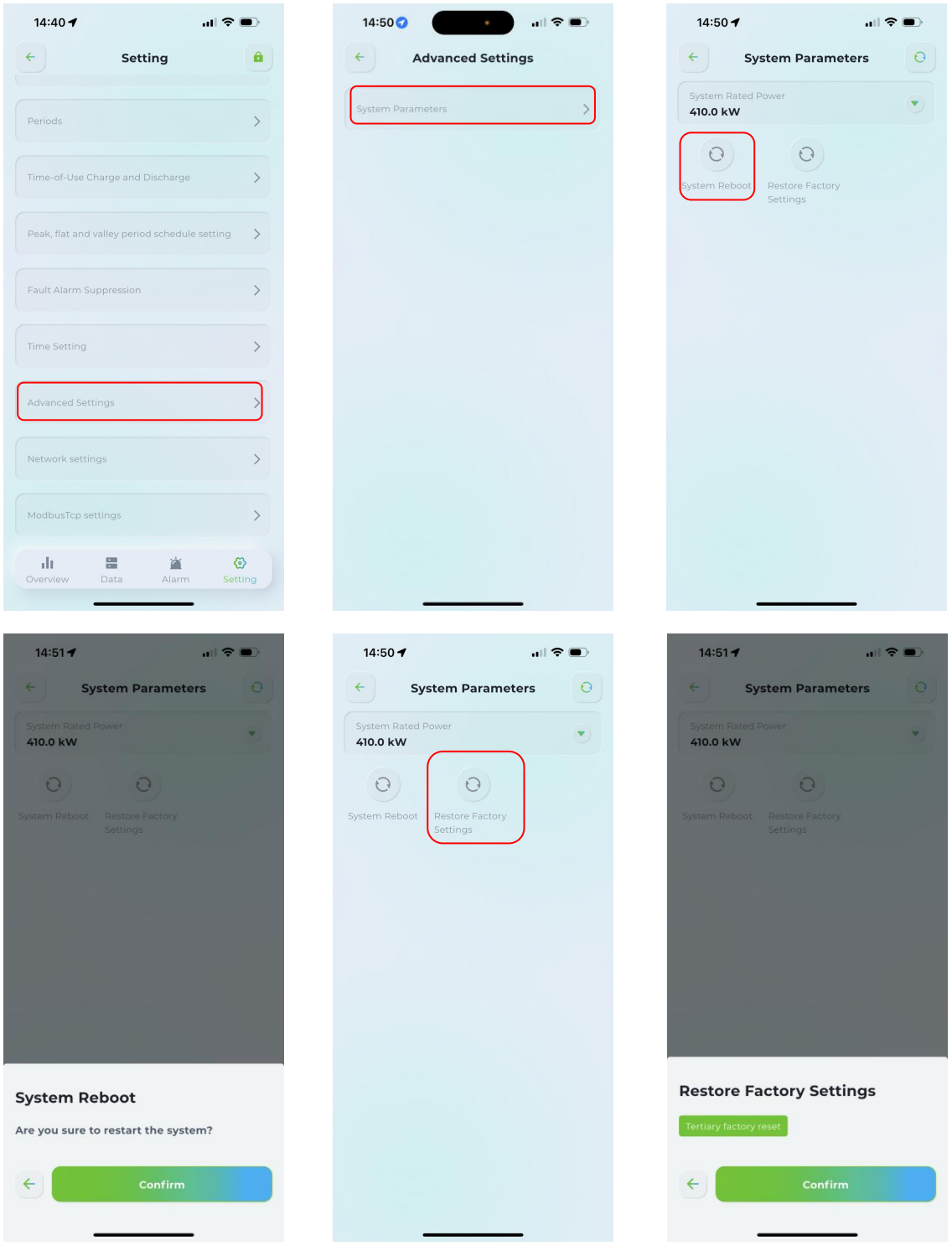
- Step 3: On the [System Parameters] interface, if restarting the EMS is required, tap "System Reboot" and then tap "Confirm" in the pop-up window;

- Step 4: On the [System Parameters] interface, if clearing current user configurations is needed, tap "Restore Factory Settings" and then tap "Confirm" in the pop-up window.

  ——End

Note: "System Reboot" should not be selected during normal system operation.

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7.12. Network Setting

- Step 1: On the **[Setting]** interface, tap **“Network Settings"**;
- Step 2: On the **[Network Settings]** interface, tap **"Server environment ", and the tap “Confirm”;**

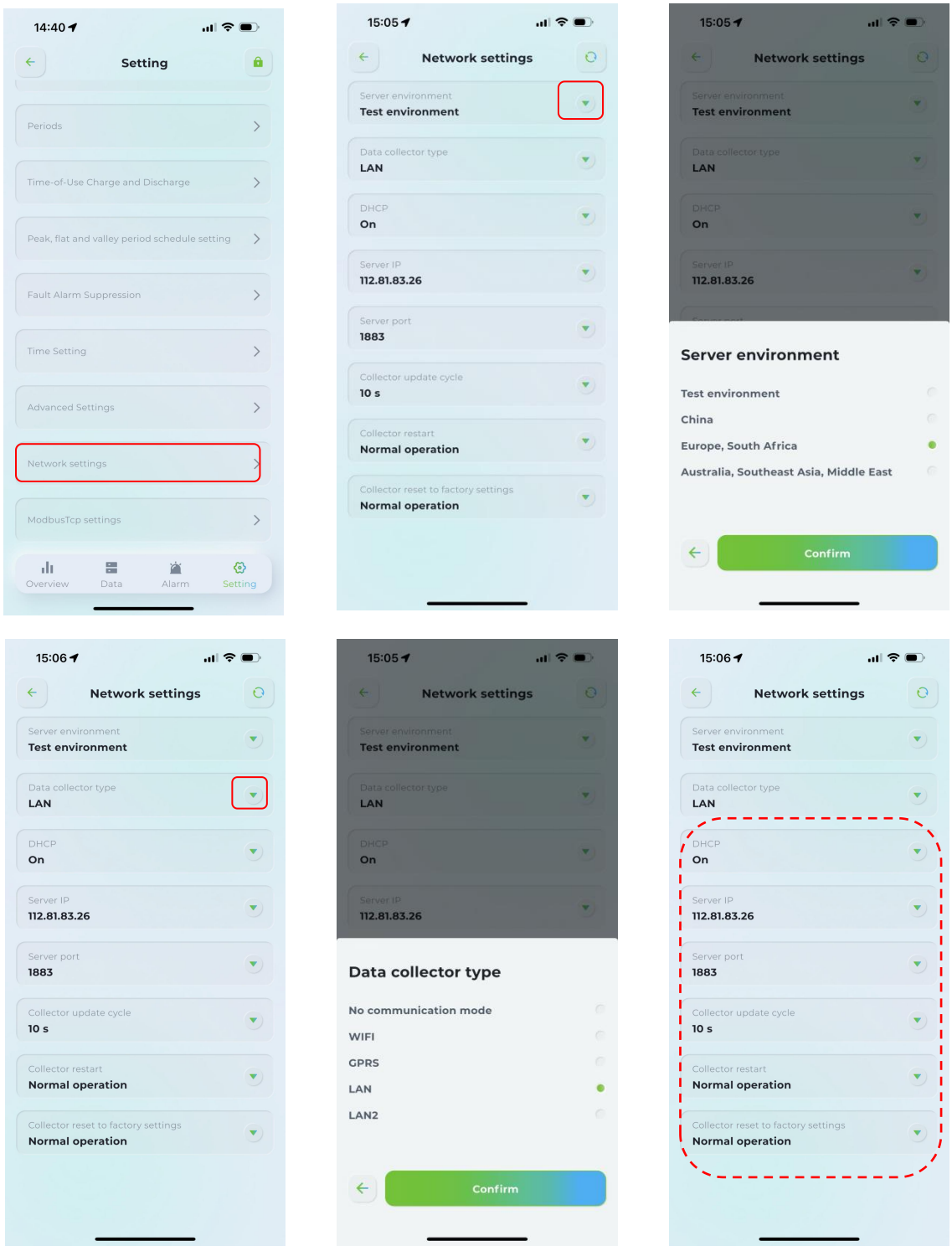
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- Step 3: In the pop-up window, select the "Server environment" based on actual conditions, then tap "Confirm";
- Step 4: On the [Network Settings] interface, tap **“drop-down list"**  of **“Data collector type”;**
- Step 5: In the pop-up window, select the appropriate **"Data Collector Type"** based on actual conditions, then tap **"Confirm".**

——End

Note: Items within the dashed box in the following diagram are default settings and require no user configuration.

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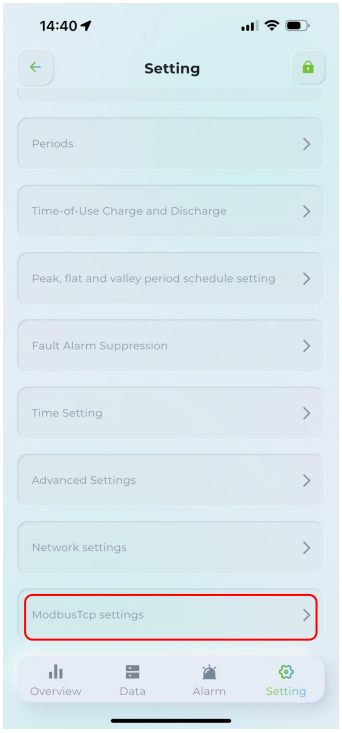
7.13. Modbus Tcp Setting

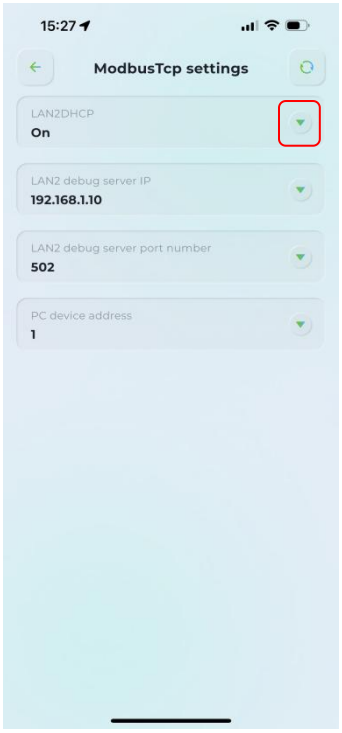
- Step 1: On the **[Setting]** interface, tap **"Modbus Tcp settings"**;
- Step 2: On the **[Modbus Tcp settings]** interface, tap **"drop-down list"** of **"LAN2DHCP";**

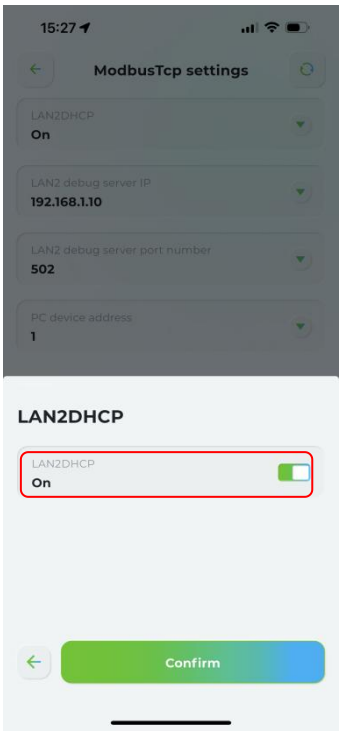
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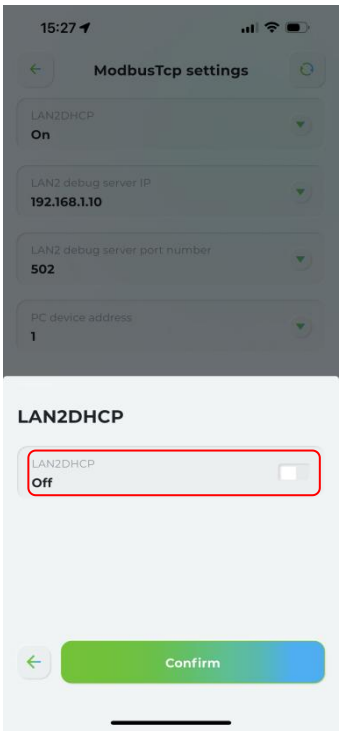
- Step 3: In the pop-up window, enable or disable the "LAN2 DHCP" switch based on whether connection to a third-party EMS is required, then tap "Confirm".

——End









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8. 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	• Check that each circuit breaker is closed.
Running light off	• Check if EMS is in running state.
Alarm light on	• Check whether there is any alarm through the screen or the web, whether it is caused by improper operation. If not, please contact supplier.
Abnormal System Noise	• Check whether the system air inlets or outlets are blocked or contain foreign objects. If the abnormal noise originates from inside the system, contact the supplier.
Cabinet Door Status Alarm	• Check if the door is closed.
Show flood alarm	• Check whether the system is flooded, or whether the water sensor line is disconnected or damaged.
Show emergency stop Alarm	• Check whether the emergency stop switch is in the released state.
Show SPD alarm	• 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	• Stop using immediately and contact the supplier.
Show temperature detector alarm	• Stop using immediately and contact the supplier.
Show smoke detector alarm	• Stop using immediately and contact the supplier.
Show other alarm	• Except for grid-side abnormalities, contact the supplier for other cases.
Gateway Meter Reading Abnormal	• Check 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	• Shutdown to check if the communication cable is firmly connected and correct; • Restart the EMS and check if it functions normally;

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	• If the error message still exists, please contact the supplier.
Abnormal communication between EMS and fire protection module	• 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	• Shutdown to check if the communication cable is firmly connected and correct; • Restart the EMS and check if it functions normally; • If error message still exists, please contact supplier.
Abnormal communication between EMS and DC/DC	• 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 meter	• 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 liquid -cooling unit	• 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 dehumidifier	• Check if dehumidifier module is properly connected or damaged; • If alarm message persists, contact supplier
SD card detect abnormality	• 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)	• Check the 4G/WIFI/LAN antenna; • If the error message still exists, please contact the supplier.
Data loss due to EMS no power supplied	• If the error message still exists, please contact the supplier.

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EMS external Flash abnormality	• If the error message still exists, please contact the supplier.
System version inconsistency abnormality	• Update software to consistent version; • If the error message persists, contact the vendor.
Parallel communication loss	• 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	• 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 input inconsistency	• If the error message still exists, please contact the supplier.
Parallel input phase sequence error	• If the error message still exists, please contact the supplier.
Parallel output phase deficiency	• If the error message still exists, please contact the supplier.
Incompatible software versions prevent parallel operation	• If the error message still exists, please contact the supplier.
Inconsistent capacities prevent parallel operation	• If the error message still exists, please contact the supplier.

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9. System Maintenance

9.1. 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/half 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;	
	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 there is any oxidation or rust inside the ESS	

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	cabinet;	
	Check if the grounding copper bar is properly fixed;	
Wiring and cable arrangement	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 is any damage to power cables and control cables, especially check for cuts on the insulation where they contact metal surfaces;	
	Check if the insulation wrapping of cable terminals is falling off;	
	Check if the PE cable connection is correct, the grounding resistance value should not exceed 4Ω;	
	Check if the equipotential connections inside the ESS cabinet are correct.	
System cleanliness	Check if the inlet/outlet of ESS cabinet are blocked. Please clean them if needed;	
	Check if the humidity inside the ESS cabinet is within the normal range. Please clean them if needed;	
	check if there are foreign objects, dust, dirt and condensation inside the ESS cabinet;	
	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.	
System function	Check if there is abnormal noise inside the ESS cabinet during operation;	
	Check if the temperature is too high inside the ESS cabinet;	
	Check if the system operates normally for startup and shutdown.	
Safety function	Check the stop function of EPO and screen, and simulate shutdown for test;	
	Check the warning signs and other labels, please replace them if there is any damage or blur.	

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Device maintenance	Perform a regular inspection for rust condition of all metal components (once every half year);	
	Annual inspection of the contactor (auxiliary switch and micro-switch) to ensure that the product runs well;	
	Check the operating parameters (especially voltage and insulation parameter).	
	Manually open the exhaust valve of the liquid cooling pipe in the battery compartment to remove accumulated air inside the compartment and ensure the normal operation of pressure relief and ventilation functions.	

Table 9-2 Liquid cooling unit checklist

Items	Checklist	Frequency
cooling pipes	• Check if the cooling pipes are well connected	irregularly
	• Check if there are any leakage of liquid cooling unit	
	• Manually open the air vent valve of the battery-compartment liquid-cooling circuit to discharge trapped air and prevent air blockage from affecting coolant circulation and heat-transfer efficiency.(Increase venting frequency appropriately for areas with heavy dust.)	Once/half year-
fan	• Check if the fan blade is rotating normally or damaged. Please replace them if needed.	irregularly
	Check if the fan is blocked;	
	Check if there is abnormal noise during fan operation.	

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pump	• Check if the pump runs smoothly and check if there are no abnormal noises.	
	• Check if there are any leakage of pumps, please replace the pump seal ring if needed.	
Hydraulic pressure	• Check for abnormal hydraulic pressure	

9.2. Fluid Replenishment Operation

9.2.1. Battery Side Fluid Replenishment Operation

The battery-side pipeline of the dual-channel liquid-cooled 10+9kW unit has an automatic refilling function. When the system runs low on coolant, it will automatically replenish the coolant from the coolant refill tank into the system. If the refilling liquid tank runs out of coolant, there will be an alarm. After the liquid tank alarm occurs, coolant will be injected into the coolant refill tank through the filling port below the maximum scale line.

9.2.2. PCS Side Fluid Replenishment Operation

- Step 1: Connect the outlet of the liquid refilling pump to the PCS liquid replenishment port of the liquid cooling unit via pipeline, and connect the inlet of the liquid refilling pump to the external liquid storage tank.
- Step 2: Open the ball valve at the PCS liquid replenishment port on the left side of the unit.
- Step 3: Start the liquid refilling pump to inject a certain amount of cooling liquid; the static pressure shall not exceed 2.5 bar(absolute pressure).
- Step 4: Set the PCS side on the touch screen to self-circulation mode (PCS Request – tap option 1 on the screen), and activate the internal PCS-side water pump of the unit for pump self-circulation. At this time, the PCS-side water pump runs at full speed.

(Note: During liquid refilling, adopt the procedure of "small-volume filling → self-

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circulation air venting → refilling" to ensure complete evacuation of residual air in the system.)

- Step 5: Observe the supply water pressure(TMSOutP) and return water pressure(TMSInP) displayed on the liquid cooling touch screen:

  a.If the pressure is lower than 1.5 Bar (gauge pressure), continue refilling to raise pressure.

  b.If the pressure is higher than 3.3 Bar (gauge pressure), release part of the coolant through the replenishment port to reduce pressure.

  c.If the operating pressure falls within the range of 1.5~3.3 Bar (gauge pressure), the liquid filling is completed.

(Note: All water pressure values displayed on the liquid cooling unit are absolute pressure; Absolute Pressure ≈ Gauge Pressure + 1 Bar.)

- Step 6: After liquid filling is finished, disable the PCS-side self-circulation mode on the touch screen (PCS Request – tap option 0 on the screen), then remove the liquid refilling pump and filling pipelines.

Note:

- During fluid replenishment, continuously monitor changes in system pressure to avoid excessively high or low pressure.
- Ensure reliable pipeline connections during fluid replenishment to prevent air from entering the system.
- Upon completion of fluid replenishment, check whether the PCS liquid replenishment port is well-sealed and confirm there is no coolant leakage.

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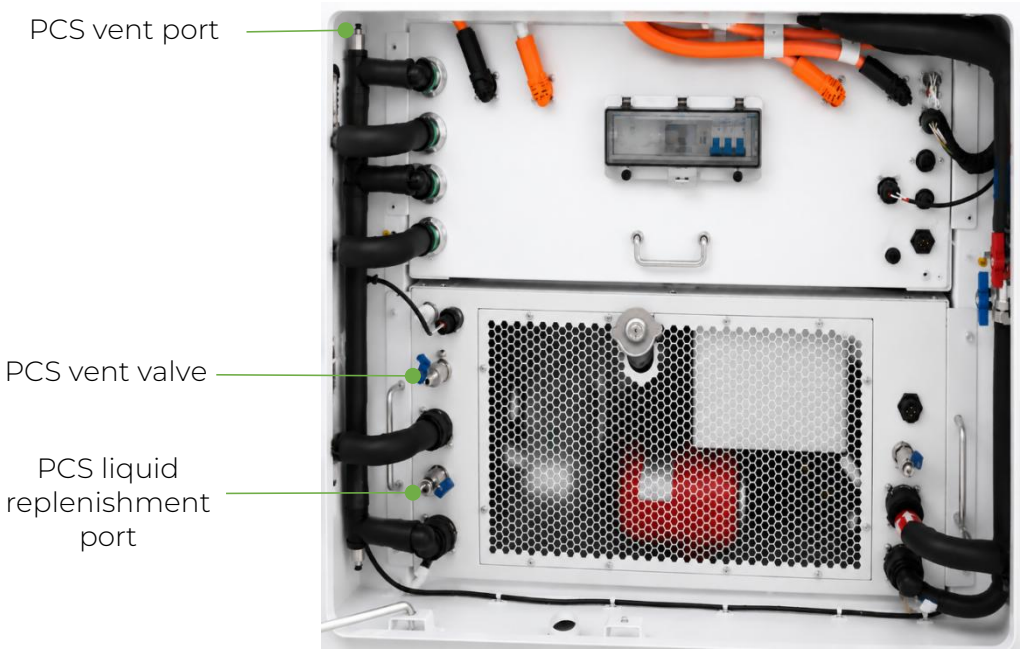


Figure 9-1 Diagram of PCS Fluid Replenishment Ports

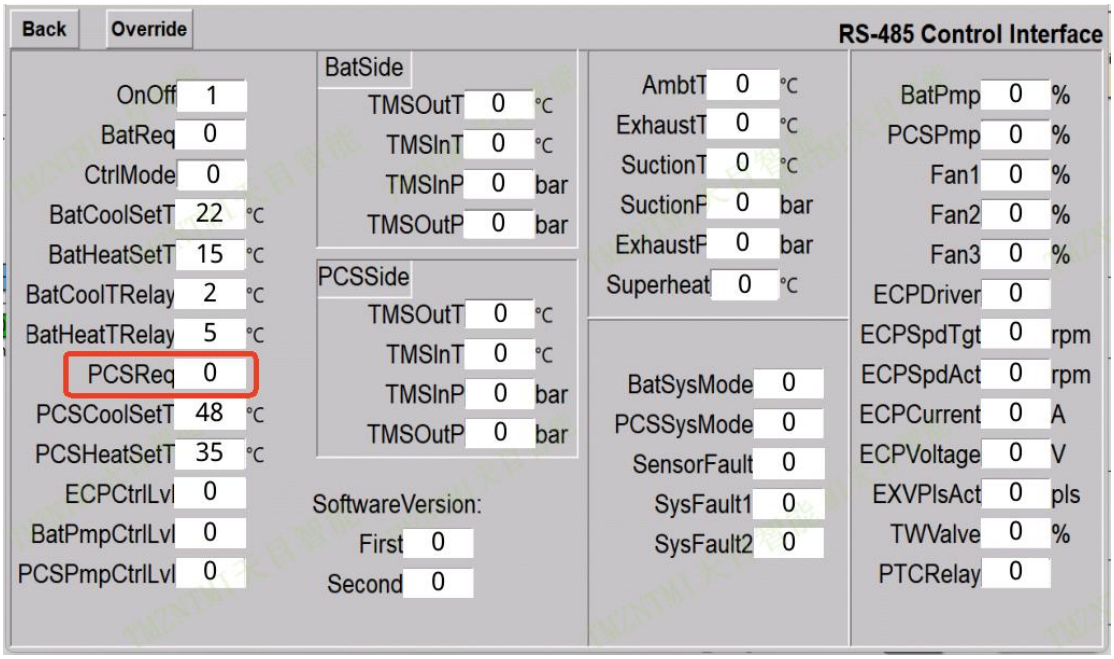


Figure 9-2 Schematic Diagram of Debug Screen (For Reference Only)

Note: Mixing coolants of different types, specifications, or brands is strictly prohibited!

The coolant service life is five years. Once it expires, the entire coolant needs to be replaced by the user. Please refer to the *"Operation and Maintenance Manual"* for detailed replacement procedures.

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10. Quality Assurance

Please refer to the *Warranty Agreement* for the warranty period.

Service within warranty period: for Dyness ESS products that fail within warranty period, we will be responsible for handling and providing a proper replacement or repair solution, offering free services or replacement of failed 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.

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11. 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;	☐
2	Check if the assembly is firm;	☐
3	Check that the cabinet logo and all component labels are clear, complete, and undamaged;	☐
4	Check whether the GRID connection cables have been properly connected in accordance with the correct phase sequence of AC cables.	☐
5	Check whether the MSD connections on each PACK are in good condition.	☐
6	Check if the communication cable connection is completed;	☐
7	Check that the grounding cable is correctly and securely connected and is free from damage;	☐
8	Check if the liquid cooling pipes are well connected and check if there are any leakage;	☐
9	Check if the meter reads correctly;	☐
10	Check if all the connection points are correct and have good contact;	☐
11	Check that all manually operated components function normally;	☐
12	Check if the circuit breakers are functioning normally;	☐
13	Check if all the buttons and indicators are functioning normally;	☐
14	Check if the power indicator is normal;	☐
15	Check if the running indicator is normal;	☐
16	Check if there are any tools or components left inside the ESS cabinet;	☐
17	Check if the door of ESS cabinet can open and close smoothly;	☐

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