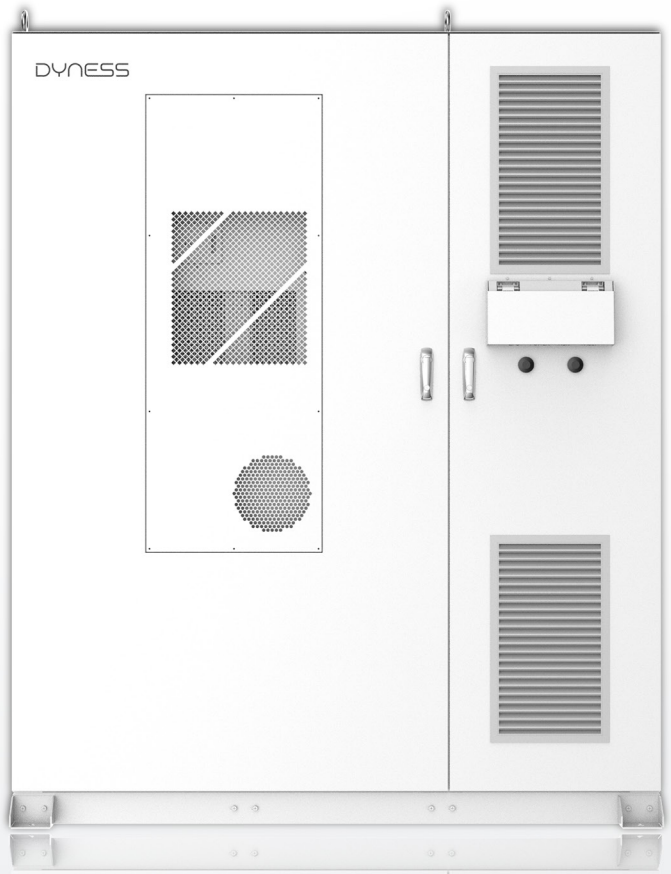
DYNESS



DH200F

USER MANUAL

EnerCore
Smart Outdoor Integrated
Energy Storage Cabinet

File version-20240729-V2-EN Information might be subject to change without notice during product improving.

Contents

Statement of Law

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 Overview
1.0	2023.6.10	First publication
1.1	2023.9.14	1. Chapter 3 Update System parameters and battery module parameters; 2. Update of Chapter 4 Storage SOC Requirements; 3. Chapter 7 HMI interface Update the EMS setting interface;
1.2	2023.11.28	1.The third chapter P9 system working principle diagram update; 2.The third chapter P14 internal design secondary electrical switch update; 3.The third chapter P20 overseas version of fire protection plan update; 4.Chapter 5 P34 Adapter Cable Specifications Update; 5.Chapter 6 P38 operation process drawing update; 6.Chapter 8 Adds lightning arrester maintenance.
2.0	2024.7.5	1 Overall modification. (Other:HMI interface all updated)

1 Guidelines for the operation of the manual

CAUTION: Read this manual carefully before installing or operating this product. Keep this manual in a safe place for your reference.

Use of manuals

- This manual mainly introduces the safety precautions, product functions and specifications, delivery and storage, cable connection and installation, product power-on and power-off process, man-machine interface operation, system maintenance, and quality assurance for the outdoor air-cooled converged cabinet.
- Applicable population: This manual is suitable for professional technicians who install and maintain the smart energy storage outdoor integrated cabinet, as well as users who carry out daily operation. Readers need to have certain electrical knowledge and know the electrical principles very well.

Applicable products

This manual is applicable to DH200F air cooling products of the intelligent energy Storage Outdoor Integrated Cabinet EnerCore series. Product names and system models are explained below:

- Enercore：Product series name
- DH： Dyness high-voltage series products.
- 200：Battery capacity
- F：air cooling system
- S: photovoltaic, the number after S indicates photovoltaic power, 00 indicates that there is no photovoltaic at the initial setting (it can be expanded later), 01 indicates that 1 photovoltaic is connected, 02 indicates that 2 photovoltaic is connected.

Product profile

- Function introduction: This product is an outdoor light storage cabinet that incorporates an energy storage system, providing users with functions such as peak shaving and load shifting, capacity reduction and demand reduction, new energy upgrading and consumption, demand response and backup power and other functional services. It can be widely used in charging stations, commercial buildings, manufacturing industry and other industrial and commercial scenarios.
- Optional models: The outdoor light storage cabinet of this product integrates battery module, BMS, PCS, MPPT (optional), STS (optional), power distribution system, fire protection system, air conditioning system, etc.. Various models can be configured depend on the combination of different modules.

Symbols and abbreviations

This manual and the product cabinet may contain the following symbols to emphasize important information, to ensure the personal and property safety of users when installing the product, or to facilitate the efficient use of this manual. Please read this manual carefully.

Table 1-1 Symbol mark

	Indicates that there is high voltage inside the body, so beware of electrocution resulting in personal safety issues.
	Indicates an electrical hazard, all external power connections must be disconnected prior to performing operational maintenance on the equipment.
	Anti-temperature marking
	Ventilation marking
	Protective grounding symbol: indicates the protective grounding (PE) end to prevent electric shock grounding in the event of a fault. The PE end must be firmly grounded to ensure the safety of operators.
	Recyclable mark
	Harmful garbage, need professional recycling, do not put into the trash
	Manual (user manual) identification

References to the following products in this brochure are replaced by abbreviations for ease of presentation.

Table 1-2 Abbreviation definition

Abbreviation	Full Name
ESS	Energy Storage System
PCS	Power Conversion System
BDU	Smart Control Box
BMS	Battery Management System

MPPT	Maximum Power Tracker
STS	Static Transfer Switch
SOC	Remaining Charge Availability
PV	Photovoltaic
DC	Direct Current
AC	Alternating Current
SPD	Surge Protector
RCD	Leakage Current Protection
CT	Current Transformer
PE	Grounding Protection

2 Security Instructions

General principles of security

This chapter introduces the safety matters that need to be taken care of for our products, and the 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 from Dyness.

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 device 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.

WARNING

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

FORBID

- Do not risk damaging the battery system or causing personal injury；
- Replacement of the modules by the user is prohibited and the company will not be responsible for any damages caused.

Operators qualifications

Only professional electricians and professional qualified personnel can operate this product, the operator should meet the following requirements:

- Familiarize yourself with local standards and safety regulations for electrical systems；
- Have received professional training related to the installation and trial operation of electrical equipment, and have the emergency response ability in the face of dangers or emergencies during the installation or trial operation；
- Must have electronic, electrical wiring and mechanical expertise, familiar with electrical, mechanical schematic;
- The Operator should be fully familiar with equipment protection and standard maintenance, and operations should comply with established safety standards;

Safety requirements for the environment

- 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 the installation of the product to ensure adequate ventilation;
- Isolation barriers must be set up during installation to prevent any unrelated personnel from entering the site;

Electrical safety requirements

The operator must ensure that: All basic information and procedure instructions are understood before commissioning and closing the isolation circuit breaker;

DANGER

Battery protection safety

When installing, maintaining, and repairing the devices, must ensure:

- The storage battery is completely disconnected；
- Set up a clear warning sign at the disconnection point to ensure that accidental re-connection is not possible.

Ground fault protection safety

- When the energy storage integrated system is grounded, the original uncharged part may have high voltage, and accidental electric shock will lead to personal safety! Before performing this operation, ensure that no grounding fault occurs and take necessary protective measures.

Electric measurement safety

- The device has a high voltage. Take protective measures (for example, wear insulation gloves) and accompany the device to ensure personal safety.

Electric arc protection safety

- Avoid electric arc, fire, and explosion hazards caused by improper operations；
- Do not touch uninsulated ends of cables that may be with electric power；
- If the power cable is loose or parts such as screws are dropped, do not perform any operation without authorization. Only qualified professionals can handle the operation to prevent further faults.

Safety requirements for transportation and installation

WARNING

Personnel Code of Conduct

- Forklifts, cranes and other construction machinery must be operated by qualified operators if required on site.;
- During the installation process, the operator must wear insulation protective equipment that meets the safety regulations;
- When the power supply is connected on-site, a guardian must be appointed to protect the switch that needs to be turned off, and the guardian should be a fully competent person with electrical expertise;
- Each completed project must be checked at least once and cross-checked during the installation process;
- The devices must be installed sequentially without skipping any step;
- Before installing product, make sure it is free of any electrical connections.

Wiring equipment specification

- Appropriate measuring devices must be used and 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 running after installation

- Only put into operation after confirmation by a professional and permission from the local power department;
- Turn off all distribution circuit breakers before operation, and strictly prohibit disconnection during machine operation.

DANGER

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

Daily maintenance

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

WARNING

- The software, housing and components of the device may not be changed without Dyness's authorization. If changed, the corresponding warranty shall be void.
- Do not remove or alter the nameplate;
- Do not open the cabinet doors in inclement weather such as rain、snow、ice or strong winds;

Products 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 some components may cause environmental pollution.

Please contact qualified local professional recycling organization for proper disposal of the product and internal components.

3 Product Description

Product system overview

This product can provide industrial and commercial users with a complete solution of outdoor integrated PV& energy storage system（the following will be referred to as "PV+ESS"). The product can realize the management, storage and utilization of electric energy through battery storage technology, which can help balance the energy fluctuation between supply and demand and improve the efficiency of energy utilization. Its main function is to distribute photovoltaic DC power or grid AC power to the storage battery and inverter output. This enables users to benefit from services such as peak shaving & load shifting, capacity & demand reduction, new energy upgrading and consumption, demand response and backup power, etc. It can be widely used in scenarios such as charging stations, factories, industrial parks, and commercial buildings. This product can realize integrated delivery, intelligent operation and maintenance management and all-round security assurance.

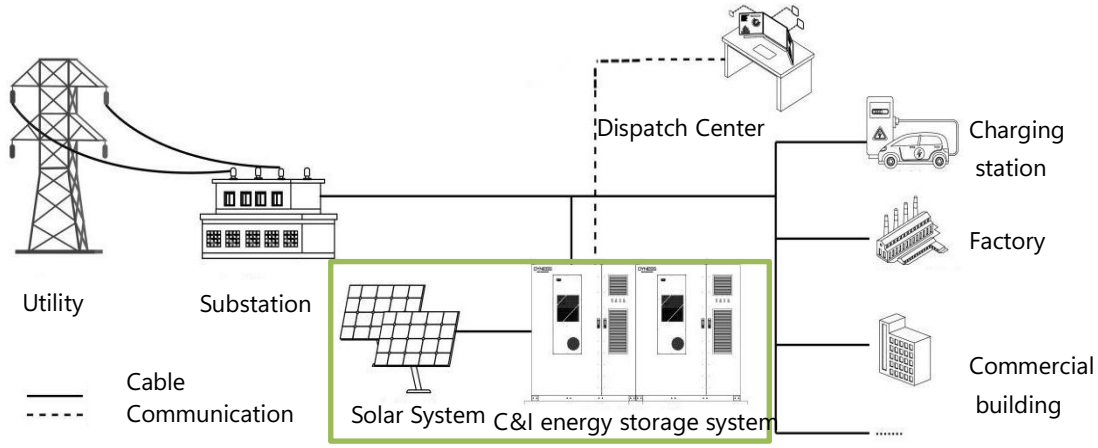


Figure 3-1 Application scenario of the energy storage system

This product is a combination of high-voltage DC and three-phase AC system, the system are modularized design and the capacity can be flexibly configured. The systematic safety design ensures the efficient and long-life operation of the battery. The product can achieve an integrated on-grid and off-grid solution, supporting switching between the two mode（The switching time is less than 20 milliseconds）. The system has a storage capacity of 215 kWh.

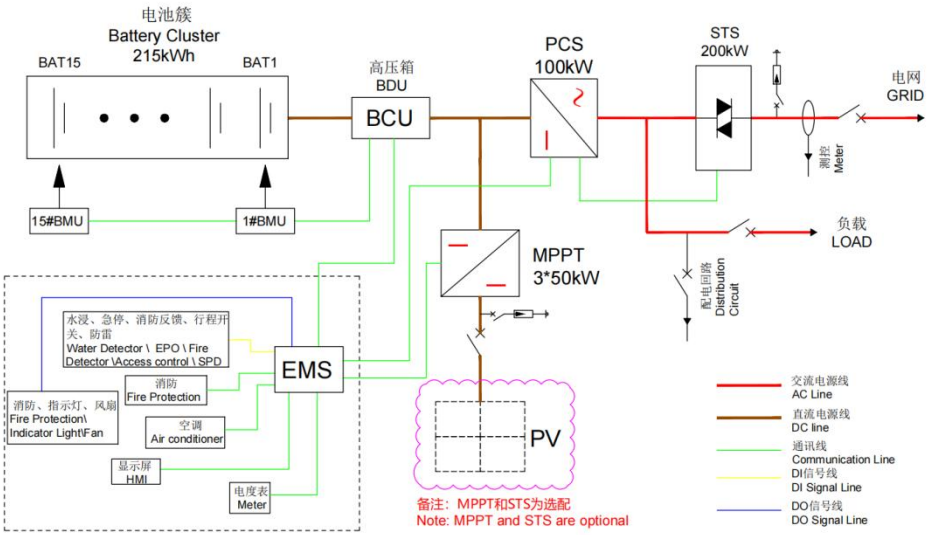


Figure 3-2 System schematic topology diagram

System composition

- This product mainly includes PACK, BDU intelligent control box (integrated BMS and DC power distribution), PCS, STS, MPPT module (optional), power distribution module, fire protection system, air conditioning system, etc. The product model is DH200F.
- The fire fighting system of this product is equipped with detectors (built-in smoke sensor, gas sensor, temperature sensor) and fire protection facilities such as immersion sensors and aerosols make products safer.
- This product is equipped with EMS energy manager to achieve efficient and reliable energy management, and through Ethernet, 4G access network, remote monitoring and program upgrade.
- This product is equipped with circuit breakers, fuses, contactors and other multi-level protection devices, to achieve reliable power off, to ensure personal and equipment safety.

Product key module configuration is as follows：

Table 3-1 Key product modules

Module Name	functionality	Module Selection
PACK	For electrical energy storage	standard configuration
BDU	BMS：Collect battery information and control battery charging and discharging	standard configuration
	Dc power distribution: including circuit breakers, wiring harnesses, fuses, etc	
PCS	AC and DC bi-directional conversion	standard configuration
STS	200kW, can achieve automatic and fast network switching	（optional）
EMS	Energy management and total control of the entire system	standard configuration
power distribution system	Includes circuit breakers, wiring harnesses, fuses, etc.	standard configuration
fire protection system	Timely warning of battery thermal runaway characteristics and making correct instructions	standard configuration
air conditioning system	Regulates the battery operating temperature to ensure that the battery operates at the optimal temperature	standard configuration
MPPT	Transmits the energy generated by the PV panels to the system	0-3 （optional）
HMI screen	User interface	standard configuration

According to the power and system capacity requirements, users can independently choose the number of MPPT modules and PACK options of this product, which can be composed of the following different models：

Table 3-2 Product versions, models and configuration differences

NO.	Model	Description	Optional accessories
1	DH200F-S150L00	PV+ESS, PV: 150KW, On-grid: 100KW, no off-grid	MPPT module: 3 STS module: None
2	DH200F-S100L00	PV+ESS, PV: 100KW, On-grid: 100KW, no off-grid	MPPT module: 2 STS module: None
3	DH200F-S050L00	PV+ESS, PV: 50KW, On-grid: 100KW, no off-grid	MPPT module: 1 STS module: None

4	DH200F-S100L00	PV+ESS, no PV, On-grid: 100KW, no off-grid	MPPT module: None STS module: None
5	DH200F- S150L01	PV+ESS, PV: 150KW, On-grid: 100KW, off-grid: 100KW	MPPT module: 3 STS module: 1
6	DH200F-S100L01	PV+ESS, PV: 100KW, On-grid: 100KW, off-grid: 100KW	MPPT module: 2 STS module: 1
7	DH200F-S050L01	PV+ESS, PV: 50KW, On-grid: 100KW, off-grid: 100KW	MPPT module: 1 STS module: 1
8	DH200F-S100L01	PV+ESS, no PV, On-grid: 100KW, off-grid: 100KW	MPPT module: None STS module: 1

System parameters

DH200F system parameters are as follows (product optimization and upgrade iteration, some parameters will be updated without further notice) :

Table 3-3 ESS parameters

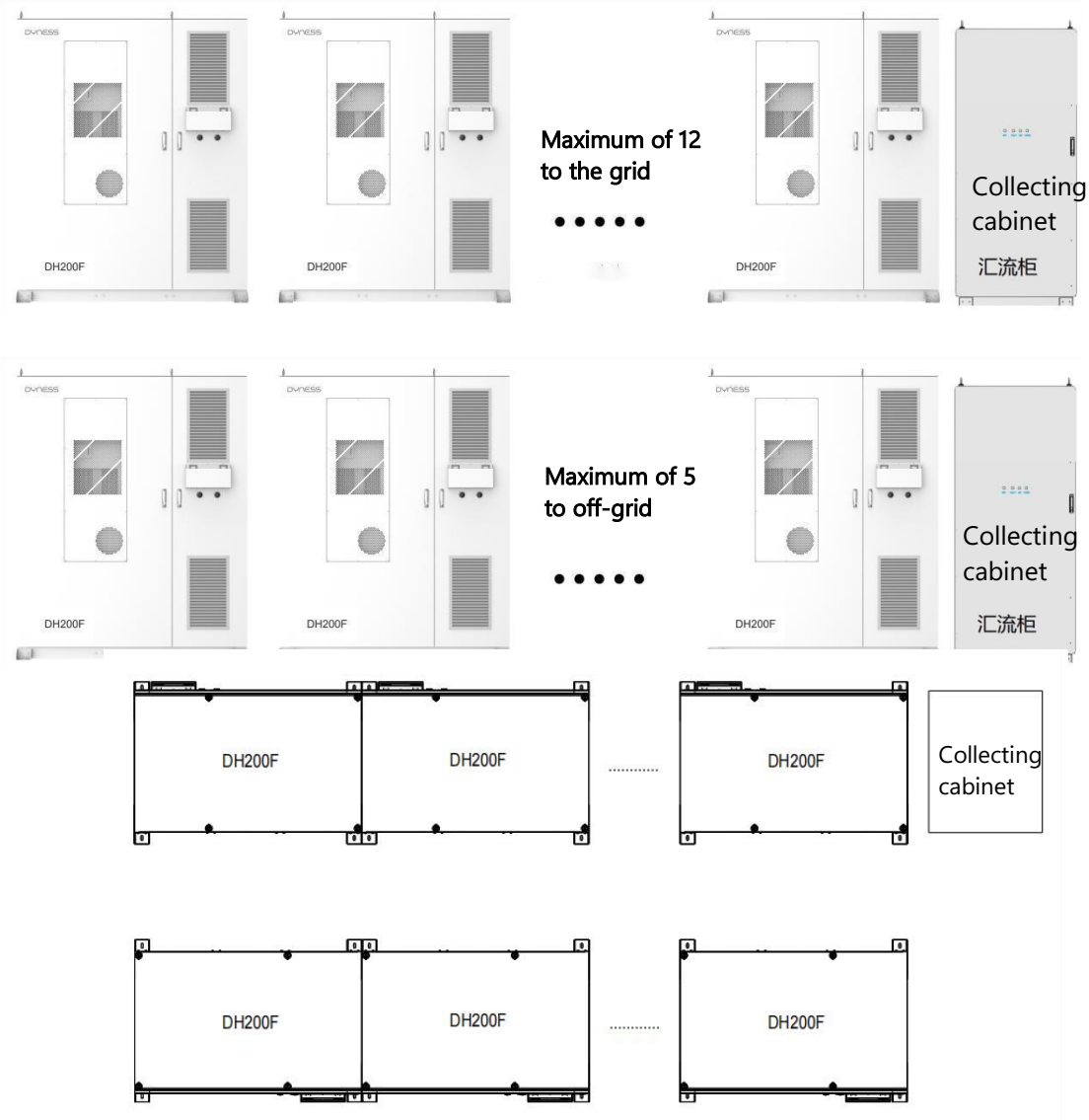
Battery system specification parameters: (Applicable to all models)	
Battery type	lithium iron phosphate (LiFePO4)
Cell capacity	280Ah
PACK configuration	1P16S
PACK quantity	15PACK/cluster
Rated current	140A
Maximum current	160A
Battery voltage range	672~864Vdc
System nominal capacity	215kWh
AC specification parameters (on-grid): (Applicable to all models)	
Rated power	100kW
Maximum alternating current	167A
Rated AC voltage	400Vac
Wiring method	3P4L+PE
Frequency	50Hz/60Hz
Power factor	0.8（lead）~0.8（lag）
THDi	≤3%（Rated power）
Maximum number of units be paralleled	12
AC specification parameters (off-grid): (Applicable only to models S150L01, S100L01, S050L01, S000L01)	
Rated power	100kVA

Rated AC voltage	400Vac
Wiring method	3P4L+PE
Frequency	50Hz/60Hz
Maximum AC current	167A
Three-phase unbalanced load capacity	100%
THDv	＜3%（Linear load）
Maximum number of units be paralleled	5
PV access: (Applicable to all models, the "S" followed by a number represents the PV power. For example, S150L00 indicates a 3-channel MPPT with a power of 150 kW.)	
Maximum input power	50kW（Support 1.1 times overload）
Maximum input current	100A
Short-circuit current	150A
Maximum input voltage	670Vdc
Input voltage range	200-670Vdc
Number of MPPT paths	0~3
System specification parameters: (Applicable to all models)	
Weights	2800±100kg
Dimension (W*D*H)	1850*1265*2250mm
Maximum efficiency	≥87%
Air conditioner power	3kW（cooling capacity），1kW（heating capacity）
Working environment temperature	-20~50℃（＞40℃need to reduce the amount）
Working environment humidity	0~95%RH（no condensing）
Protection level	IP55
Anti-corrosion grade	C3
Cooling method	Intelligent air cooling
Noise	≤75dB
Elevation	3000m（＞2000mneed to reduce the amount）
Demonstrate	Touch screen
Fire-fighting	Aerosol/perfluorohexanone
Communications	Ethernet、4G
Certification	CQC、CE、TUV

System expansion

Ac side expansion

- Up to 12 systems can be connected to the grid, and the total power/capacity of the system can be extended to 1.2MW / 2.58MWh;
- Up to 5 systems can be supported off-grid, and the total power/capacity of the system can be extended to 0.5MW / 1.075MWh;
- Product support side by side seamless splicing installation, cabinet support under and behind the line, more convenient installation, and can reduce the cost of cement base infrastructure investment.
- All the external wiring of the product is collected into collecting cabinet, and then unified external transmission from the collecting cabinet.

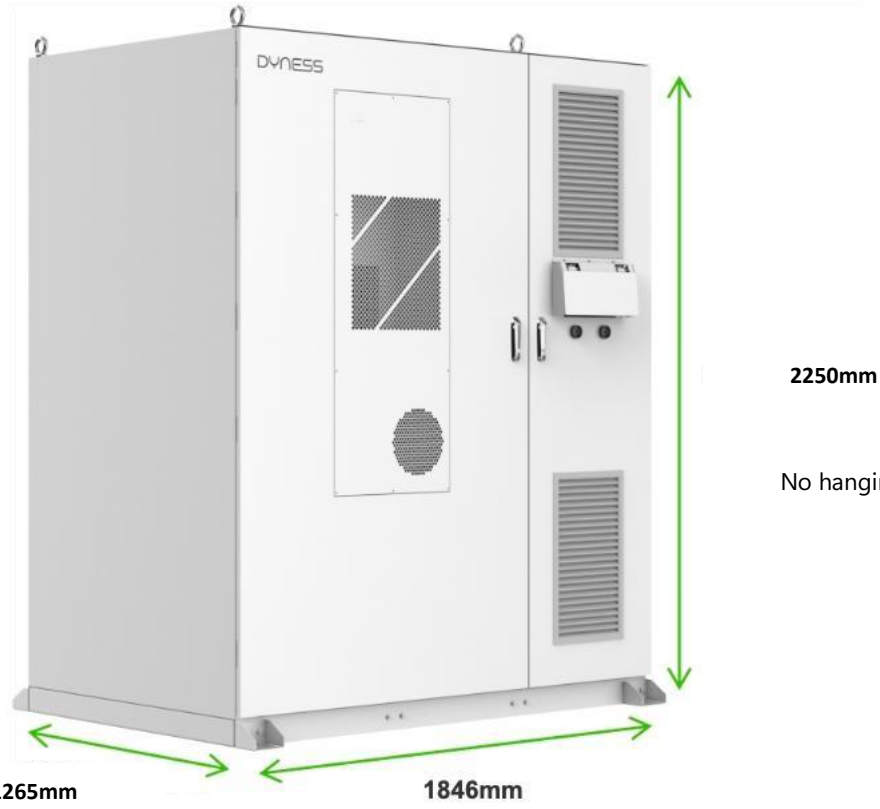


DH200F: A maximum of 12 units can be installed when the system is connected to the grid. In the case of off-grid, a maximum of 5 units are installed, and multiple units are connected to the collecting cabinet for unified cable output.

Figure 3-3 Expansion of system communication

Appearance design

- System size：1846*1265*2250mm（No fixing bracket）
- Net system weight：2800±100kg（Refer the DH200F-S150L01）
- System protection class：IP55
- System corrosion protection class：C3



No fixing bracket

Front　Left　Behind　Right

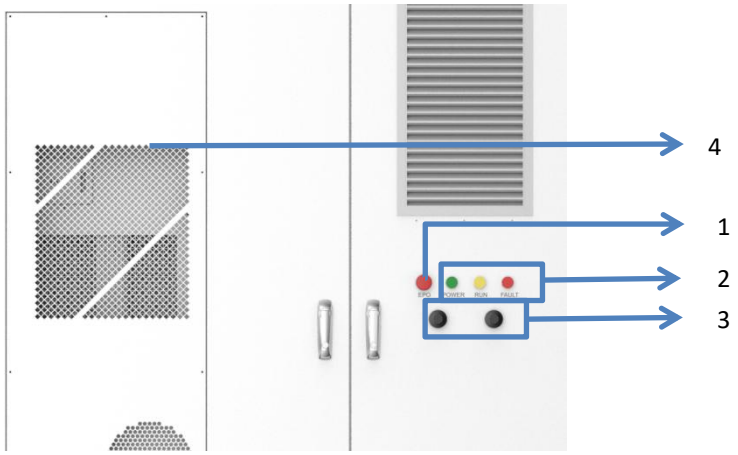


Figure 3-5 Indicators on the product

Table 3-4 Definition of BESS appearance

No.	Name	Functionality
1	Emergency stop button	The system stops when the button is pressed
2	Indicator light	Operation indicator, fault indicator, alarm indicator
3	GPS	Location signal
3	4G	Receive and transmit 4G signals
4	Air conditioner	Regulates the temperature of the battery compartment in the cabinet

* CAUTION: Do not operate the emergency stop button in a non-emergency situation.

On the upper left side of the outdoor integrated cabinet, there are three indicator lights showing the main operating status of the product, namely the power indicator "POWER", the operation indicator "RUN" and the alarm indicator "FAULT".

Table 3-5 Indicators'names and functions

No.	Item	Name	Functionality
1	●	Power indicator	Constant light indicates power is applied and ready for operation.
2	●	Operation Indicator	Constant light indicates normal system operation, off indicates standby.
3	●	Alarm indicator	Constant light indicates a system malfunction

* CAUTION: Do not operate the emergency stop button in a non-emergency situation.

Internal design

This product is divided into two parts: battery compartment and electrical compartment:

Figure 3-6 Internal structure

Table 3-6 Internal system components

No.	Name	Functionality
1	PACK	For electrical energy storage
2	Air conditioner	Regulates the battery operating temperature to ensure that the battery operates at the optimal temperature
3	BMS	Collect battery information and control battery charging and discharging
4	MPPT(optional)	The photovoltaic is boosted to the battery and pcs, and the maximum power tracking is achieved

5	PCS	AC and DC bi-directional conversion
6	STS(optional)	Automatic fast switching between grid and off-grid can be realized
7	EMS	Energy management and total control of the entire system
8	PV disconnect switch (optional)	Breaks the PV side
9	Grid Switch	Breaks and protects the Grid side
10	Load switch (optional)	Breaks and protects the Load side

The BESS secondary electrical switches and external Ethernet ports are as follows:

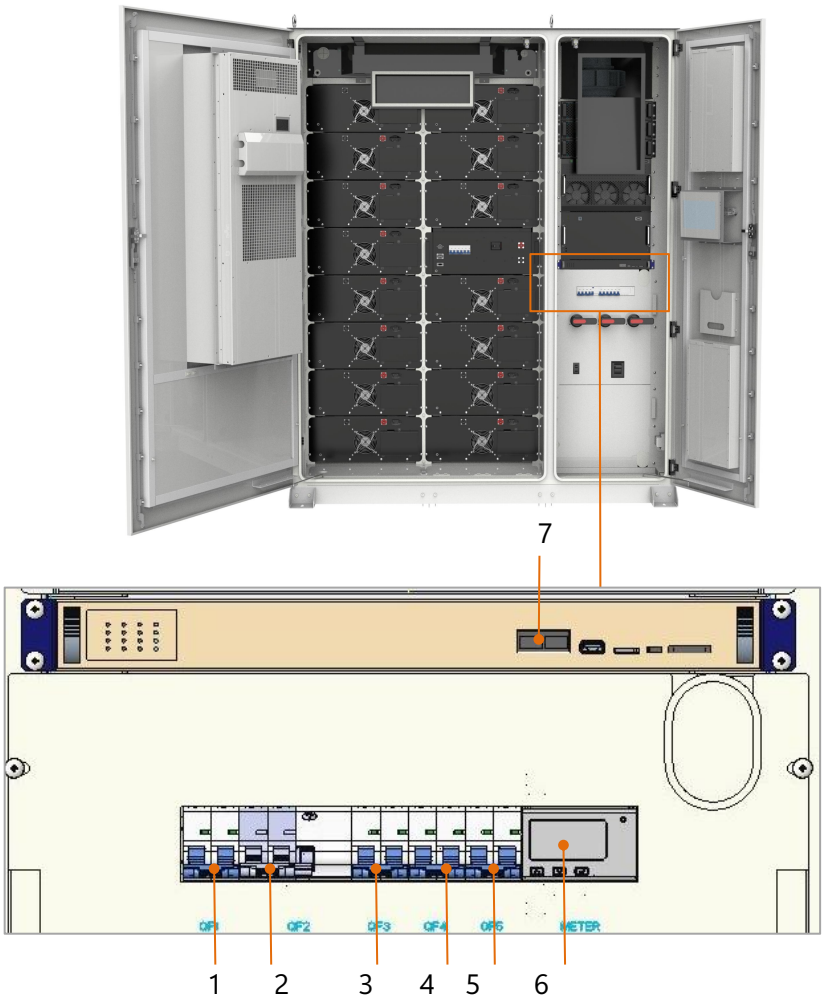


Figure 3-7 Secondary BESS switch

Table 3-7 Functions of Ethernet ports

NO.	Name	Functionality
1	QF1	Auxiliary power main switch
2	QF2	Air conditioner power supply switch
3	QF3	Fan power switch
4	QF4	UPS power switch (with STS) Alternate switch (without STS)
5	QF5	BDU socket switch
6	METER	Three-phase meter
7	LAN1	Ethernet port

Core modules

Battery PACK

DANGER

- Do not touch any batteries while the BESS is running.
- Only authorized operators should handle the batteries.
- End of life (should be decommissioned, disassembled and disposed of in accordance with the recycling program provided).

This system PACK uses LFP battery modules (280Ah), which have excellent safety, long service life, good temperature performance, high energy density, low cost, pollution-free modular assembly, high strength, and high structural reliability with low maintenance costs.

PACK battery group mode is 1P16S, a single PACK can store 14.33kWh of electricity; PACK adopts air-cooled heat dissipation mode, IP20 protection grade, pollution-free modular assembly, high structural reliability and low maintenance cost.

The appearance of the battery module is shown below:

Figure 3-8 Battery PACK

Table 3-8 Battery PACK configuration

Model	HV51280F
String form	1P16S
Battery energy	14.336kWh
Rated voltage	51.2Vdc
Nominal capacity	280Ah
Rated charging current	140A
Rated discharge current	140A
Maximum continuous charging current	160A
Maximum Continuous Discharge Current	160A
Dimension(W*D*H)	568*764*231mm
IP class	IP20
Operating temperature	Charging 0°C~+50°C
	Discharge -20°C~+50°C
Operating humidity	0%~95% RH
Storage temperature	1 month -20~45°C
	1 year 0~35°C

WARNING

- When battery leakage occurs, or when the battery has pungent abnormal smell, it is impossible to determine whether the electrolyte is leaking, immediately stop using and isolate battery,contact Dyness or professionals;
- Direct contact with electrolyte leakage is prohibited. In case of accidental skin contact, please rinse with plenty of water. If you feel uncomfortable, please seek medical attention immediately.
- When dealing with electrolyte leakage, make sure that the power supply connected to the battery is turned off to prevent fire and sparks, and keep the environment well ventilated;
- When dealing with electrolyte leakage, wear rubber gloves (insulation voltage is not less than 10kV);
- Please use ordinary medical gauze or other liquid absorbent solid to clean the battery leakage;
- The treated battery should be isolated and not used again.
- The above operations should be performed by Dyness designated personnel or qualified professionals.

BDU

The intelligent control box integrates BMS main control and DC power distribution.

BMS master control:

Collect all the information of the battery system, receive the cell information transmitted

by PACK from the controller, and transmit the battery system information to EMS;
Calculate the SOC and SOH of the battery through the collected information, and perform the overall control of the battery system;
Through real-time monitoring of battery status, the battery function is stable and safe;
Extend battery life by monitoring battery consistency.

Figure 3-9 BDU intelligent control box (only for reference)

EMS

The EMS energy management system is an important component of the energy storage system, which is composed of energy storage inverters (PCS), MPPT (optional), STS (optional), battery management system (BMS), environmental monitoring equipment, fire protection system, metering electricity meters, air conditioning and access control systems, etc. to form an energy storage system, controls the entire system. It can realize grid-connected/off-grid control, peak shaving and valley filling, self-consumption, and scheduled mode, etc. The EMS collects data and signals from local equipment and ensures the safe, reliable, efficient, and economical operation of the energy storage system through internal control strategies.

Figure 3-10 Appearance of EMS (only for reference)

EMS parameters and interfaces are as follows:

Table 3-9 EMS Interface Parameters

Program	Specification	clarification
Control Functions	Peak cutting and valley filling, self-use, timing mode	
User interface	10.0" monitor interface	
SD	SD Card Interface	
USB-HOST	USB flash drive interface	Software update
RST	Reset port	local controller reset
Communications interface	2x Ethernet, 8x RS485, 2x CAN, 1x 4G	
Communications protocol	Ethernet: Modbus TCP, IEC61850 MMS RS485: Modbus RTU CAN: Function reservation	
DI input	16 channels, internal self-power supply, support passive dry contact input signals	Passive dry contact signal
DO output	16 channels, support normally open/normally closed	Relay output, relay size: 250Vac/3A or 30Vdc/3A
Indicator	communication indicator	

BMS

BMS module is a high-voltage power circuit management unit specially designed for energy storage system by our company, which is an intermediate unit connecting battery clusters and energy storage converter. The BMS module is equipped with circuit breakers, contactors, fuses, current sensors, battery cluster control management module (HVBCU), switching power supply, etc. It performs functions such as voltage and current acquisition, circuit contactor control, and protection for battery clusters.

The BMS stabilizes and secures the battery function by monitoring the battery status in real time, and prolongs the service life of the battery by monitoring the consistency of the battery.

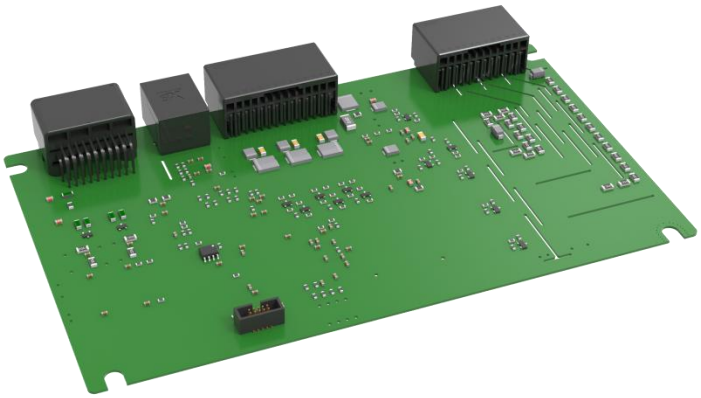


Figure 3-11 BMS module (Figure for reference only)

PCS

PCS Function: The PCS (Power Conversion System) is a bidirectional current-controllable device that connects the energy storage battery system to the grid. Its main functions are to facilitate energy exchange between the battery and the grid, and to control and manage the charging and discharging of the battery. It enables bidirectional conversion between DC and AC, allowing for both AC-to-DC conversion to charge the battery and DC-to-AC conversion to supply power to loads or feed back to the grid.

PCS Model: The PCS used in this system is the EPCS105-AM model, which adopts a three-level topology structure and has a rated output power of 100 kW.

Figure 3-12 Appearance of PCS (Figure for reference only)

Note: After a period of use, if the dust cover is blocked, the temperature inside the machine is abnormally high, and it needs to be replaced regularly.

MPPT

MPPT function: Support MPPT mode access photovoltaic panel to achieve maximum power tracking, improve the conversion efficiency of photovoltaic panel; The module has over current protection, over temperature protection, low voltage side over and under voltage protection, high voltage side over and under voltage protection, over power protection, low voltage side short circuit protection, reverse protection and other protection functions.

The DC input voltage on the PV side must be lower than the minimum voltage of the battery system, that is, the high voltage side of the MPPT module is connected to the battery, and the low voltage side is connected to the PV panel. You can select 0 to 3 PV panels based on the customer's
need.

Figure 3-13 MPPT module (only for reference)

Note: After a period of use, if the dust cover is blocked, the temperature inside the machine is abnormally high, and it needs to be replaced regularly.

Safety system

This system is equipped with efficient and reliable security system and fire protection system, when the fire occurs, it can work automatically and extinguish the fire immediately.

Fire protection systems

- composite detector： The product is equipped with a composite detector (incorporating smoke, temperature, and gas detectors) and fire extinguishing agent on the top of the battery compartment. Optionally, a water immersion sensor is installed at the bottom of the battery compartment. When any of the three detectors in the composite detector detects an anomaly, the system will stop operating and report the anomaly. If two detectors detect anomalies, the fire extinguishing agent will be released to suppress the fire, and a feedback signal will be sent to the EMS which can further relay the information to site monitoring or the user.

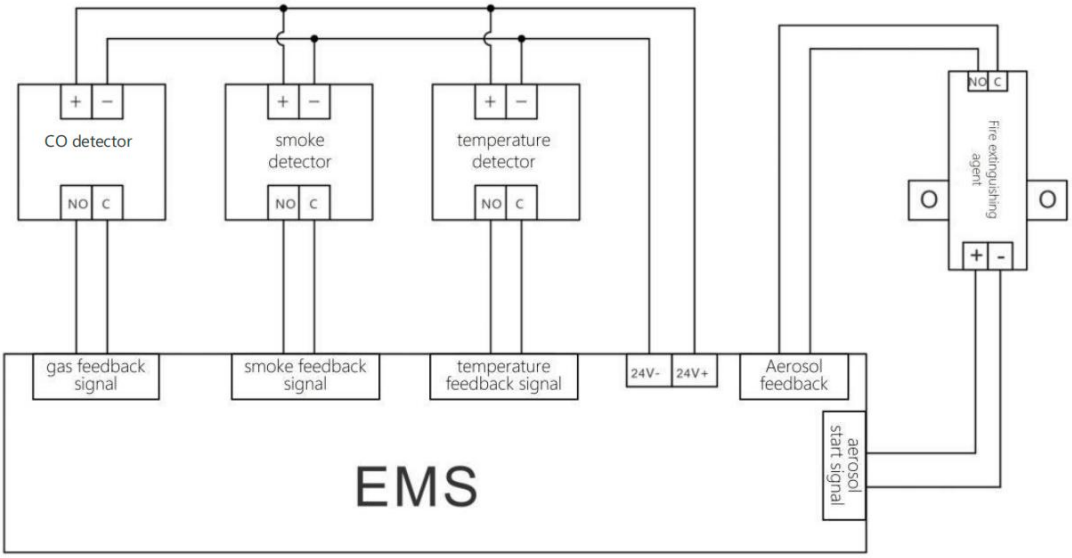


Figure 3-14 Schematic diagram of the fire extinguishing system

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

Fire protection equipment should be inspected and maintained regularly to ensure that all functional indicators are normal.

Security system

- Water sensor: A water sensor is installed at the bottom of the electrical cabin. When the water sensor detects an exception, the system stops working and reports the exception.
- Stroke switch: The stroke switch installed on the top of the battery compartment can detect whether the door is closed and tight to prevent water vapor from entering.

GPS: Locate the installation location of the system to reduce the risk of theft.

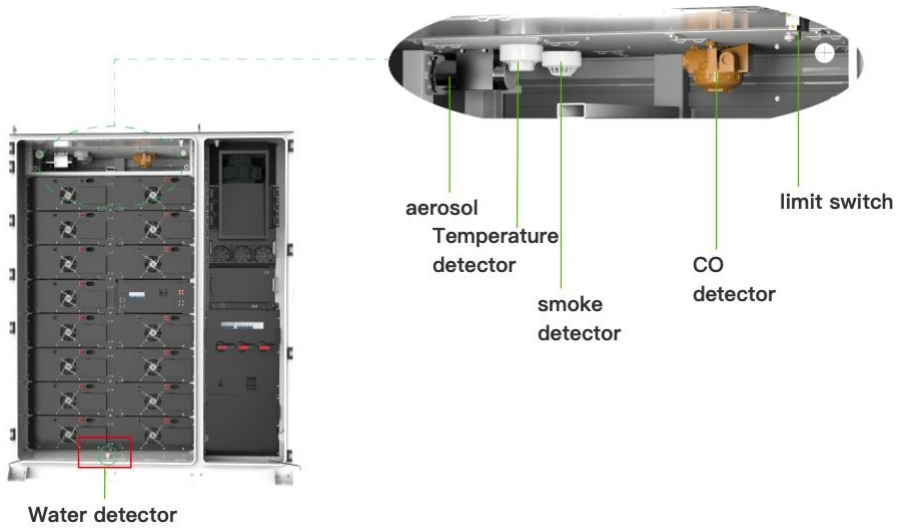


Figure 3-15 Security system diagram

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

Fire protection equipment should be inspected and maintained regularly to ensure that all functional indicators are normal.

4 Delivery And Transport Storage

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

Table 4-1 Scope of delivery

No.	Name	Quantity	Note
1	DH200F	1	Please refer to the "Delivery List" for specific product components.
2	User Manual	1	Electronic version
3	Warranty Letter	1	
4	Certificate of Conformity(CoC)	1	

Unpacking and Inspection

- After receiving the product, please check whether all the delivered components are complete against the "supply list".
- Please check the received product model is the same as the ordered model.
- Carefully check whether the product is intact, the transportation process may lead to equipment collision caused by damage, if you find problems, please contact our company or the transportation company in a timely manner.

Shipping Requirements

- All necessary equipment in the product have been installed and fixed in the cabinet before leaving the factory, and the product can be transported as a whole during transportation.
- Please confirm that the cabinet doors of the equipment are tightly locked before transportation.
- The transportation of a single energy storage cabinet requires the design of wooden box packaging and transportation, and the buffer between the wooden box and the energy storage cabinet.
- Be sure to set up warning signs or caution tape to prevent unauthorized personnel from entering the lifting and transportation area to avoid accidents before shipping.
- Remove any existing or potential obstacles during the moving process, such as trees, cables, etc during the shipping.
- Choose favorable weather conditions for transporting the equipment during the shipping.

Requirements for equipment transportation mobility

- Select a suitable lifting tool according to the site conditions. The selected tool must have sufficient sufficient load-bearing capacity, arm length, and rotation radius.
- Additional traction devices may be necessary when moving on the slope.
- When carrying out the vehicle transportation, be sure to use ropes to secure the top lifting ring of the equipment to the transport vehicle to prevent excessive tilting during

transportation.

Lifting and transportation

This product is equipped with a lifting ring at the top, and can be transported by lifting.

When lifting the equipment, at least the following requirements must be met:

- Ensure site safety when lifting;
- When lifting and installing, professional personnel should be in charge of the whole process;
- The strength of the slings used should be able to withstand the weight of the equipment;
- Ensure that all sling connections are safe and reliable, and ensure that each section of the sling connected to the corner piece is of equal length;
- The length of the slings can be adjusted appropriately according to the actual requirements of the site;
- Make sure that the equipment remains stable and does not tilt during the lifting process;
- The equipment shall be suspended after being lifted from the support surface by 300mm, and check that the lifting device is firmly connected before lifting;
- Take all necessary auxiliary measures to ensure the safe and smooth lifting of the equipment.

Figure 4-1 Lifting and Transportation Diagra

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

Forklift transport

The bottom of this product is equipped with fork holes specially designed for forklift

transportation. The product can be moved through the bottom fork holes on the front and back. If the installation site is flat, the product can be moved using a forklift. Forklift transportation methods should meet the following requirements:

- The forklift should be equipped with sufficient load capacity.
- The length of the pins should meet the requirements of the equipment.
- The pins should be inserted into the fork holes at the bottom of the workstation.
- When products are transported, moving and lowering should be slow and steady.
- Only place the product in a smooth place. The place should be well drained and free of any obstacles or bulges.
- Under no circumstances should the unit be moved by inserting the pins into a position other than the fork holes.

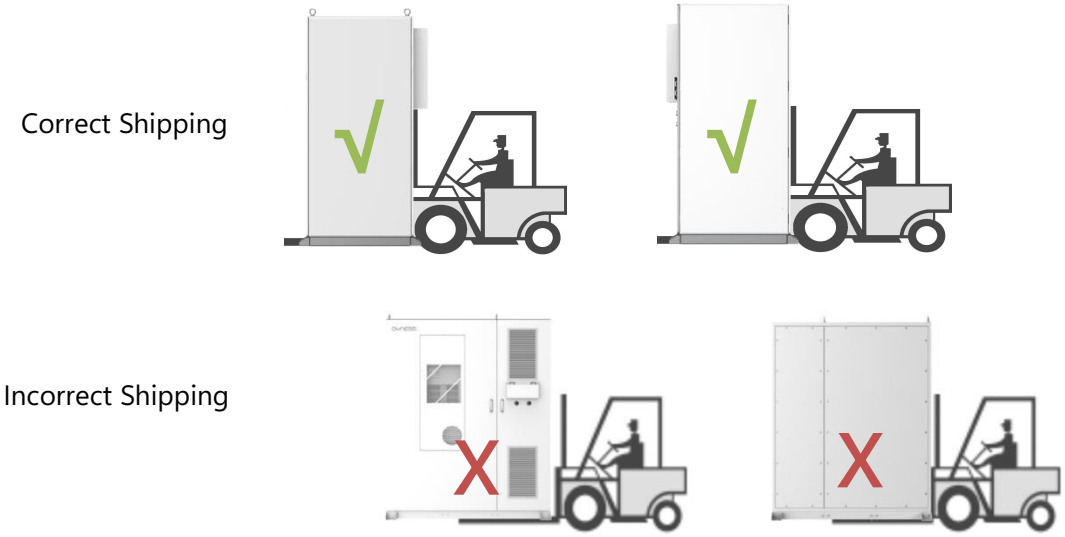


Figure 4-2 Schematic diagram of forklift truck transportation

Storage requirements

Storage environment requirements:

- The product should be stored on dry, flat (flatness shall not be greater than 5mm) ground with sufficient load-bearing capacity and without any vegetation cover.
- To prevent condensation inside the product or soaking of the bottom of the product during the rainy season, the product should be stored on higher ground.
- Must raise the base of the cabinet, the specific height of elevation should be determined reasonably according to the site geology, weather and other conditions.
- Storage environment temperature: 0oC~+35oC, storage environment relative humidity: 0~95%, no condensation.
- Pay attention to cope with the harsh environment around, such as sudden cold, sudden heat, collision, etc., so as not to cause damage to the Pack.

Storage operating requirements:

- Packing boxes should not be tilted or inverted.

- Make sure that the cabinet doors and internal equipment cabinet doors are securely locked before storage.
- Effectively protect the air inlet/outlet of the product to prevent rain, sand and dust from entering the cabinet.
- Since the capacity of the battery will decay after long-term storage, it is not recommended to store the battery for a long time (storage time exceeds half a year).
- For products stored for a long period (more than six months), perform a visual inspection by opening the cabinet doors. Check for any condensation on the exterior of the cabinet and ensure the cabinet and internal equipment are intact. Additionally, perform checks after powering on and starting up. If necessary, professional testing should be conducted before installation.
- Perform regular inspections at least every two weeks to check the cabinet and internal equipment for any damage.

NOTE

Starting from the date of delivery, when stored under the above conditions, the system needs to be recharged every 6 months to achieve the system SOC to 25%~40%.

5 Installation

Only qualified electrical engineers are qualified for electrical connections. Please follow the requirements given in "Safety Instructions" in this manual. We cannot accept liability for personal injury or property damage caused by ignoring these safety instructions.

DANGER

- Do not touch live parts.
- Before installation, please ensure that the AC and DC sides are not powered on. All electrical connections must be made when the equipment is completely unenergized.
- Before wiring, the polarity of all input cables must be checked to ensure that the polarity of each input is correct.
- Do not place the equipment on flammable surfaces.

WARNING

- The entry of sand and moisture may damage the electrical equipment in the energy storage system or affect the performance of the equipment.
- During the sandstorm season, or when the relative humidity in the surrounding environment is greater than 95%, Electrical connection should be avoided.
- The connection can be started when there is no sand, and the weather is clear.
- During the electrical installation, do not pull the cables or wires hard so as not to damage their insulation properties.

CAUTION

- Be sure that all cables and wires should have a certain elasticity.
- Please take necessary auxiliary measures to reduce the pressure on the cables or conductors.
- After each step of wiring, it is necessary to check carefully to ensure that the wiring is correct and firm.
- All electrical connections must be made in strict accordance with the wiring diagram.

Installation environment requirements

Site selection 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 high cables in the vertical upper part of the installation site, no pipelines or other underground facilities in the lower part of the installation site, and a certain safety distance should be maintained between the

equipment and buildings and people, the length of the distance should be subject to the fire safety regulations of the project).

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

Foundation requirements

- The foundation should provide sufficient load-bearing support for the equipment.
- The height of the foundation should be higher than the historical highest flood level.
- The basic bearing capacity is > 3t/㎡, the Basic service life is > 20 years, and the basic level is 3mm/㎡.
- The product cabinet should be raised to against the rain. The recommended mounting height of the base is about 300mm-500mm higher than the ground.
- Drainage measures should be constructed according to local geological conditions.

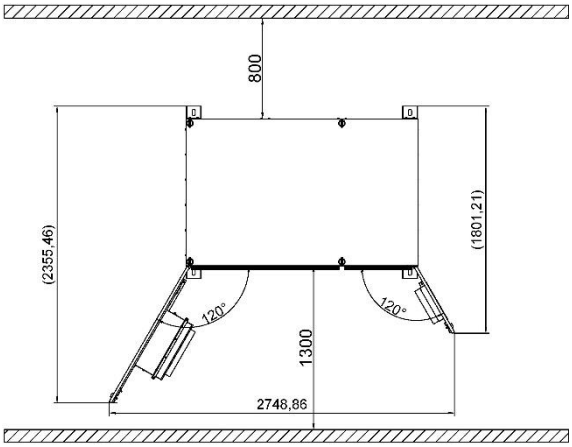
Wiring requirements:

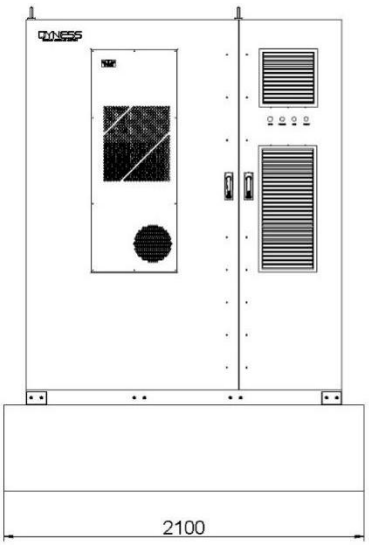
- According to the positions and dimensions of the inlets and egress point of the cable at the bottom of the cabinet, sufficient space should be reserved for the AC side cable trough and the cable guide should be inserted in advance during foundation construction.
- The specifications and quantity of perforated pipes are based on the cable model and quantity of the cable.
- Both ends of all embedded pipes are temporarily sealed to avoid impurities from entering which leads to inconvenient wiring.
- After connecting all the cables, inlets, outlets and connectors of the cable should be sealed with refractory clay or other suitable material to avoid entry of rodents.
- Please comply with local safety regulations and operational rules during the process of ground cables embedding.

Installation space requirements

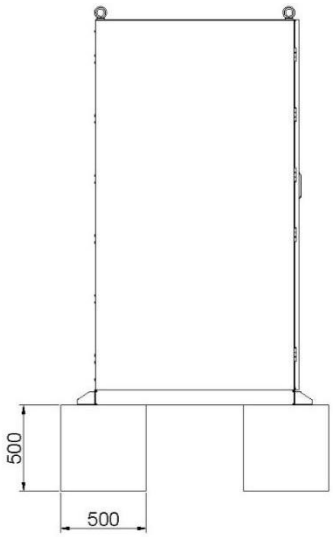
Make sure that the equipment has enough space for better cooling and maintenance, you are advised to reserve enough space around the cabinet installation position.

- The reserved space in front of a single product should not be less than 1300mm.
- The reserved space behind a single product should not be less than 800mm.

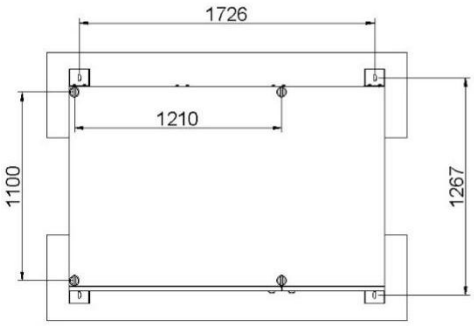




The front view



The side view



The top view

Figure 5-1 Requirements for single product

The capacity of BESS integrated cabinet can be freely configured according to demand and can be expanded to MW level. The parallel installation has different layout according to on-grid and off-grid schemes, and the installation space requirements are as follows:

In the on-grid solution, the space requirements for parallel installation are as follows:

- Up to 12 units of the BESS integrated cabinet can be parallelly installed, expandable up to 2.58 MWh.
- The BESS integrated cabinet can be seamlessly interconnected on both sides.
- When arranged in a single row, the reserved space in front of the parallel BESS integrated cabinets should not be less than 1300mm, and the rear space should be no less than 800mm.
- When arranged in two rows, the reserved space in front of the parallel BESS integrated cabinets should not be less than 1300mm for each row, and a minimum of 800mm space should be reserved between the two rows for maintenance and inspection by technicians.

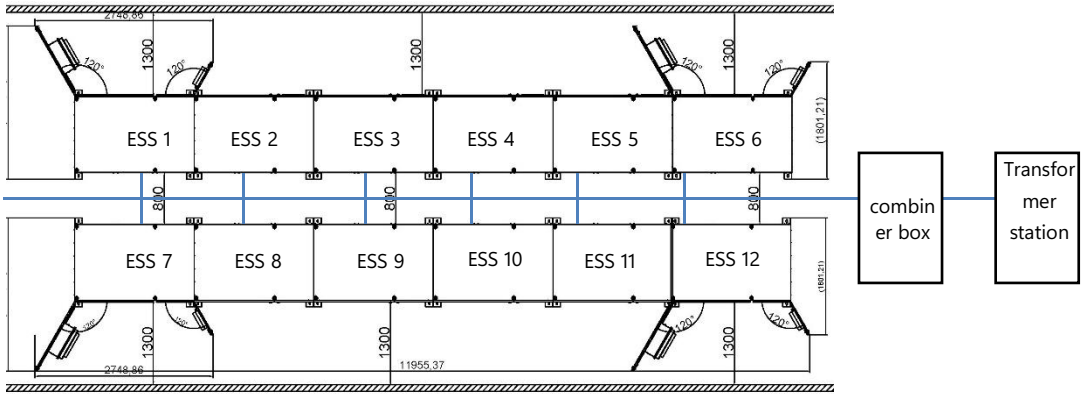


Figure 5-2 BESS parallel installation space requirements (on-grid scheme)

In the off-grid solution, the space requirements for parallel installation are as follows:

- Up to 5 units of the BESS integrated cabinet can be parallelly installed, expandable up to 1.075 MWh.
- The BESS integrated cabinet can be seamlessly interconnected on both sides.
- There should be a minimum clearance of 1300mm at the front of the BESS integrated cabinet where the cabinet doors open.
- There should be a minimum clearance of 800mm at the back of the BESS integrated cabinet for proper spacing.

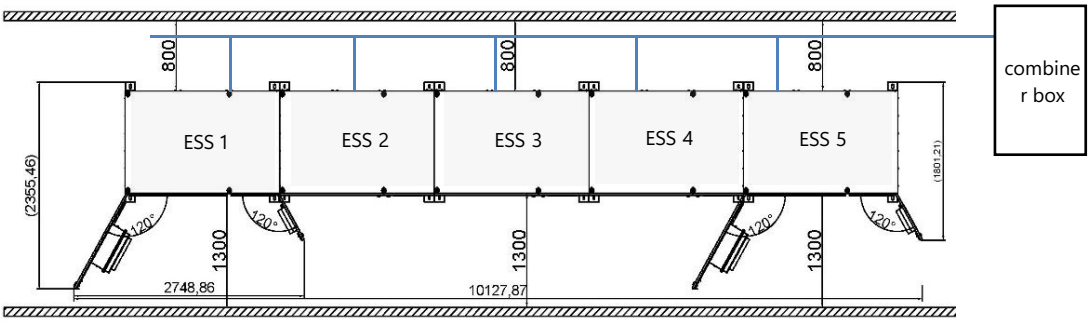


Figure 5-3 BESS parallel installation space requirements (off-grid scheme)

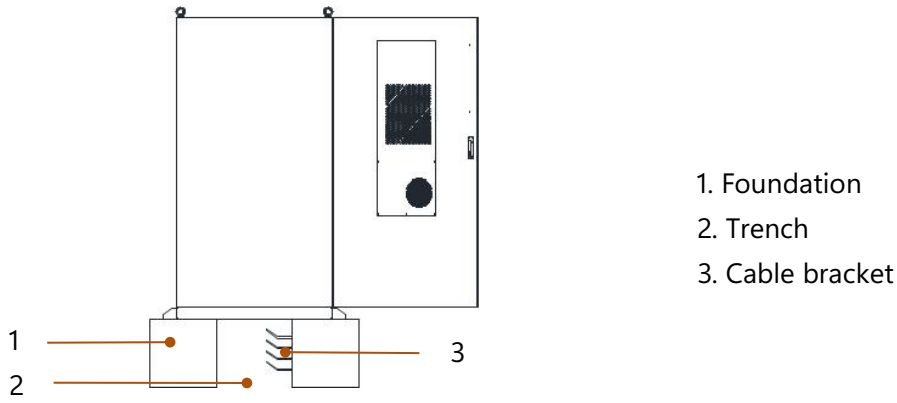


Figure 5-4 Illustration and description of the trench interface

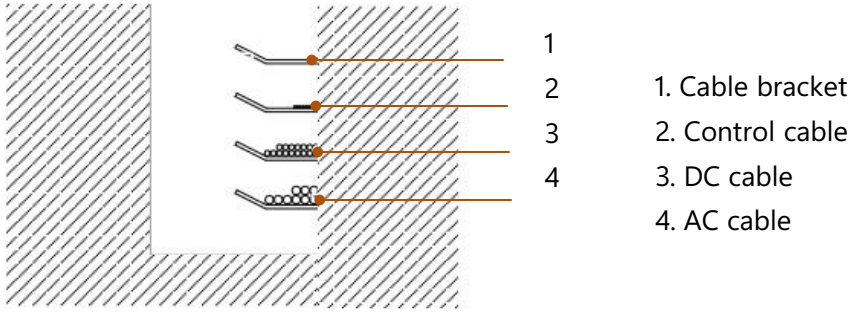
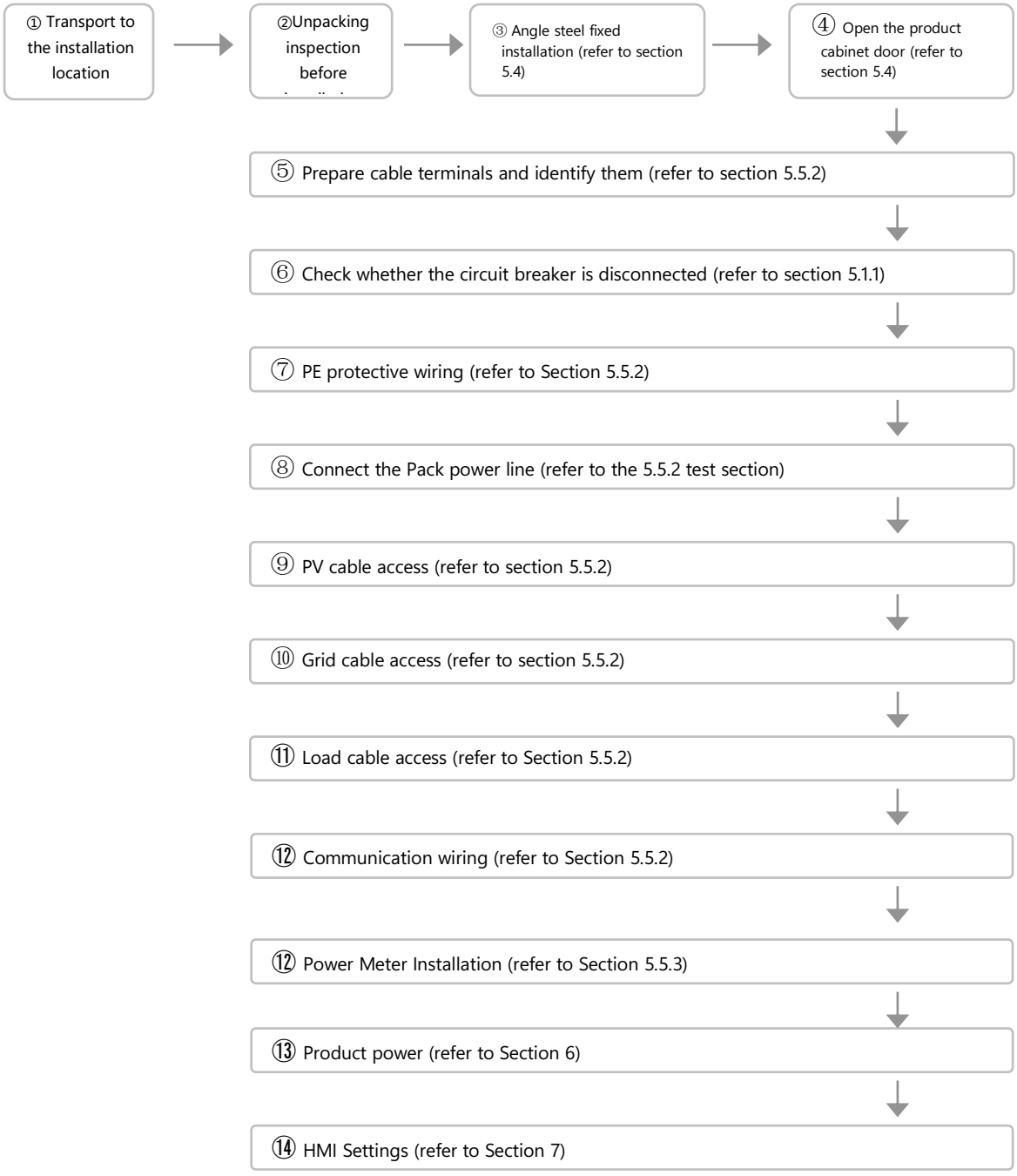


Figure 5-5 Schematic and description of cable bracket

Installation process



Fixed installation

Check before installation

WARNING

In the whole process of mechanical installation, the relevant standards and requirements of the project location must be strictly followed.

Only complete and without any damage of the equipment, can be installed! Make sure that before installation:

The product cabinet itself is intact and without any damage.

All the equipment in the product cabinet is intact without any damage.

Angle steel fixed installation

This product adopts the bottom inlet and rear outlet method, which does not require the pouring of cement columns, and can reduce the investment in installation infrastructure. After the outdoor cabinet is transported to the installation location, it needs to be fixed. Four L-shaped angle steel fixing brackets are reserved at the front and back of the cabinet base.

The position is shown in the figure below:

Preparation before wiring

Wiring Tools

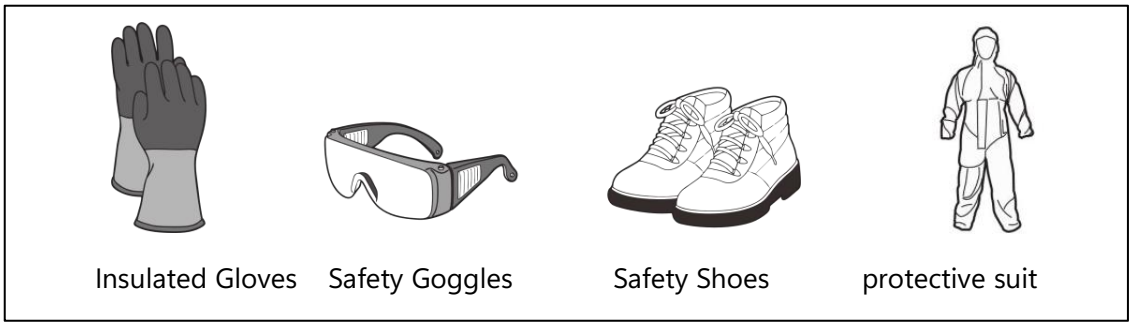


Figure 5-1 Safety protection device

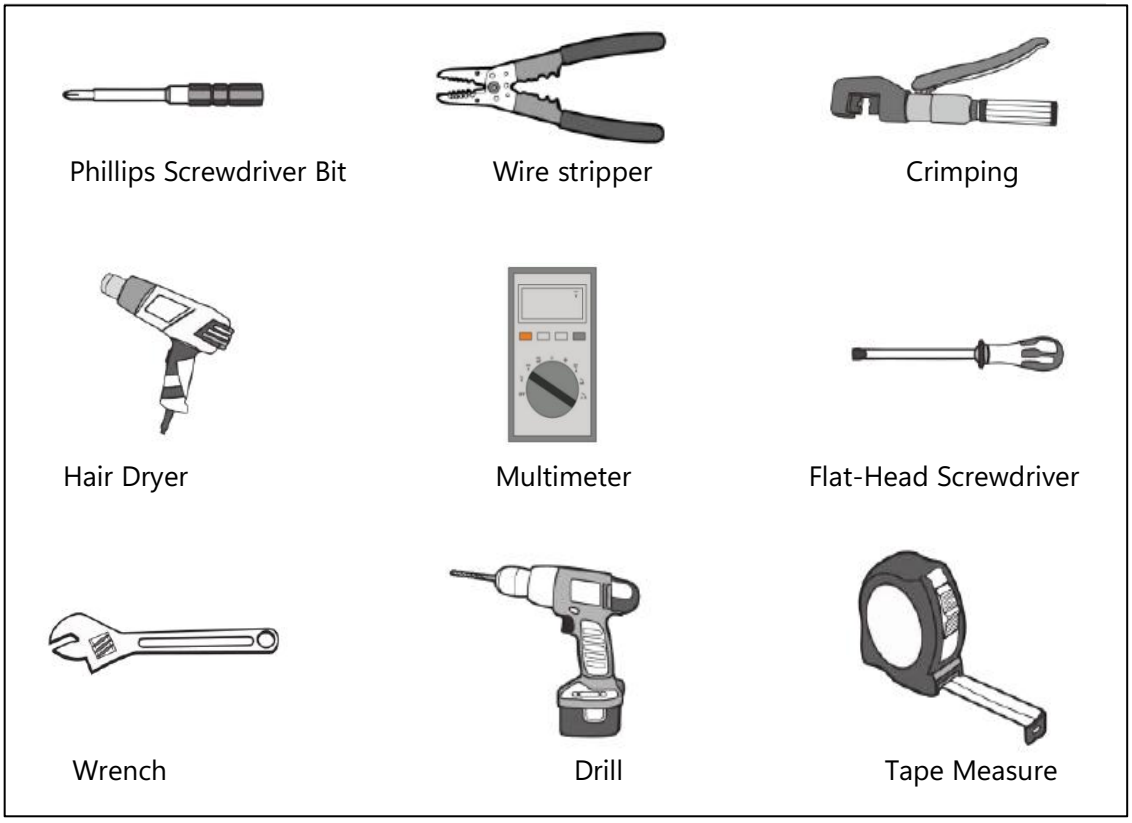


Figure 5-2 Installation tool

Specification requirements for wiring accessories

Wiring Wire Instructions

Upon receipt of this product, open the lowest panel on the right side of the cabinet and will see the wiring area in the electrical compartment as shown below:：

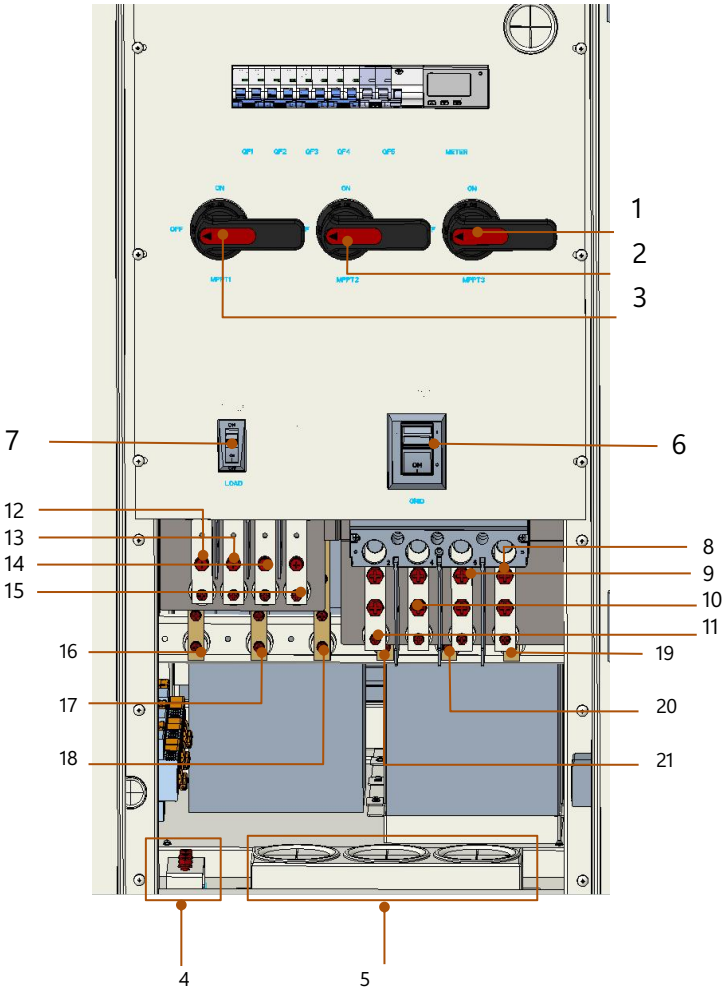


Figure 5-3 Schematic diagram of the wiring area

1: PV1 disconnecting switch
2：PV2 disconnecting switch
3：PV3 disconnecting switch
4：Grounding copper row
5: Outlet holes

6: GRID: Grid-side circuit breaker
7: LOAD: Load side circuit breaker
8: Grid side neutral line
9: Power grid side fire line L3
10: Power grid side fire line L2
11: Power grid side fire line L1
12: Load side fire line L1
13: Load side fire line L2
14: Load side fire line L3
15: Load side neutral line
16: P V 1 access to the positive pole
17: PV 1 access to the negative electrode
18: P V 2 access to the positive pole
19: PV3 access to the negative level
20: PV3 access to the positive pole
21: PV2 access to the negative electrode

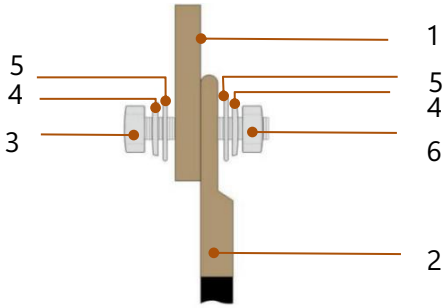


Figure 5-4 Schematic diagram of the copper end

1.Copper row
2.Terminal block
3.Bolt
4.Spring pads
5.Flat washers
6.Nut

The cable and terminal requirements are as follows:

Table 5-1 Adapted cable/terminal table

No.	Typology	Wiring specifications	Terminal Specifications
1	LOAD(Optional)	1AWG	DT50-8
2	GRID	3/0AWG	DT95-10
3	PV1(Optional)	4AWG	DT25-8
4	PV2(Optional)	4AWG	DT25-8
5	PV3(Optional)	4AWG	DT25-8
6	PE	1AWG	DT50-8

Description of installation procedures

Step 1: Open the cabinet door before connecting the cables

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

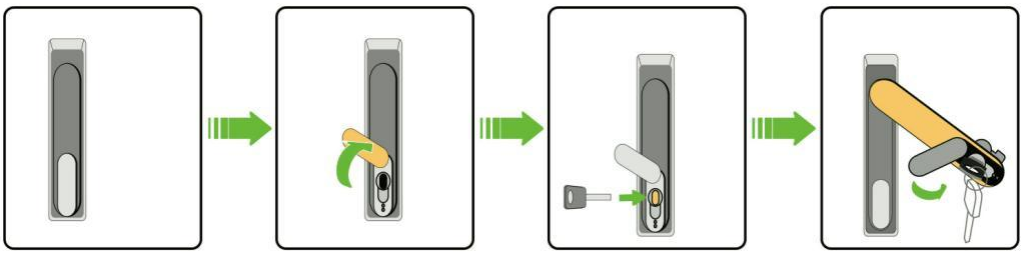


Figure 5-5 steps before opening the door

Step2: Cables Preparation

The selected cables must meet the following requirements:

- Having sufficient current carrying capacity. The current carrying capacity of a conductor include the main but are not limited to the following factors:
  Environmental conditions
  Type of conductor insulation material
  The way of cable laying
  Material and cross-sectional area of cables
- The wire diameter of the cable must be selected according to the maximum current carrying capacity, and the length must have an allowance.
- The specifications and materials of three-phase AC output cables should be consistent.
- Be sure to choose flame-retardant cables.
- The cables used must comply with local laws and regulations.

The color of the cables shown in this manual are only suggestions. Please select the cables according to local cable standards.

Step 3: Cable Entry

If copper cable is selected, the connection sequence of wiring components is shown as follows：

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

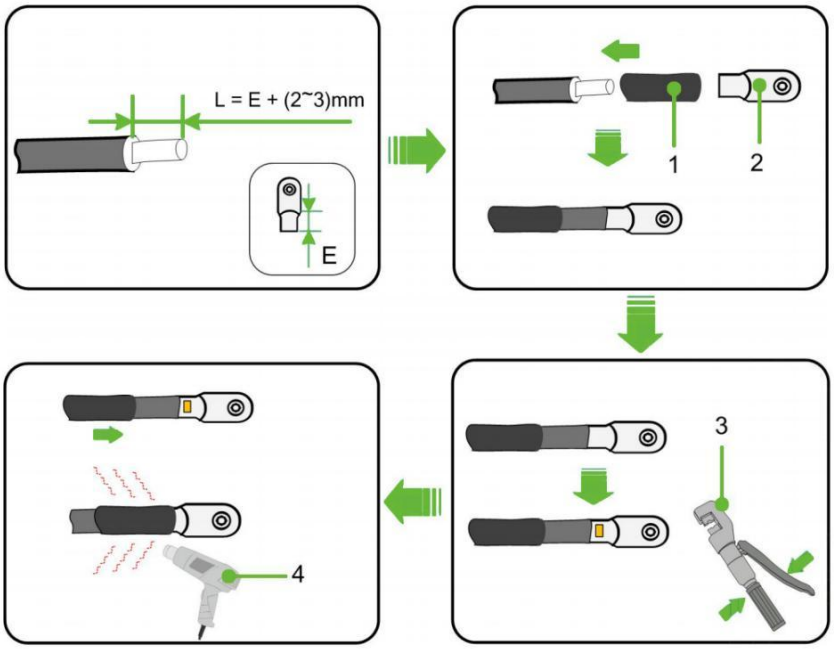


Figure 5-6 The connection sequence of wiring components

1：Heat-shrink tube

2：OT/DT terminal

3：Crimping Pliers

4：Hot air gun

Step 4: Grounding protection

The grounding method must comply with local standards and regulatory require requirements.

Please consider the actual situation at project site and follow the instructions of the power station staff during the process of ground connection. 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.

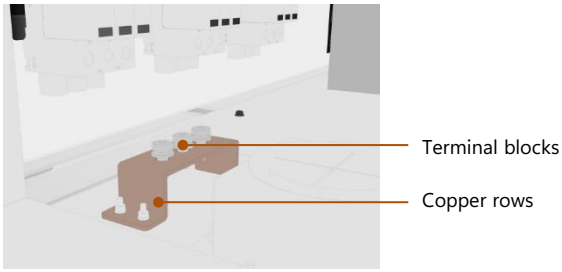


Figure 5-7 Illustration of ground cables

Cable wiring

Table 5-2 Installation steps for different wiring methods

Wiring methods	Wiring steps
GRID wiring	1. Turn the GRID AC circuit breaker "GRID" to OFF and measure with a multimeter to ensure that there is no voltage at the terminals. 2. Bring the cable into the inlet hole and enter the AC wiring area of the electrical cabinet. 3. Ensure that the AC cable connections L1, L2, L3 and N are in the correct order. 4. Use wire strippers to strip the protective layer of the cable to expose the copper core. 5. Crimp the OT terminals, refer to "Cable and Terminal Requirements" in this chapter. 6. Use M10 bolts to fasten the OT terminal to the wiring hole, with a tightening torque of 21N.m. 7. After the wiring is completed, gently tug the cable to ensure that there is a margin.
LOAD Wiring (Optional)	1. Turn the LOAD AC circuit breaker “LOAD” to OFF and measure with a multimeter to ensure there is no voltage at the terminals. 2. Bring the cable into the inlet hole and into the electrical cabinet AC wiring area. 3. Ensure that the AC cable connections L1, L2, L3 and N are in the correct order. 4. Use wire strippers to strip the protective layer of the cable to expose the copper core. 5. Crimp the cable using the OT terminals, refer to "Preparing the Cable" in this chapter. 6. Use M8 bolt to fasten OT terminal to the wiring hole with a tightening torque of 13N.m. 7. After the wiring is completed, gently tug the cable to make sure there is a margin.
PV wiring (Optional)	1. Turn the PV DC circuit breaker “MPPT” to OFF and measure with DC of a multimeter to ensure there is no voltage at the terminals. 2. Bring the cable into the inlet hole and into the PV DC wiring area of the electrical cabinet. 3. Make sure the DC cables are connected to the P+ and P- terminals in the correct order. 4. Use wire strippers to strip the protective layer of the cable to expose the copper core portion. 5. Crimp the cable using the OT terminal, refer to "Preparing the Cable"

in this chapter.

6. Use M8 bolt to fasten the OT terminal to the wiring hole with a tightening torque of 13N.m.
7. After the wiring is completed, gently tug the cable to make sure there is a margin.

Be sure to strictly follow the terminal phase sequence wiring. After all electrical connections are completed, the wiring should be thoroughly and carefully checked. At the same time, the following operations are also required:

WARNING

- Use fireproof and waterproof materials to tightly seal the outdoor cabinet inlet and outlet holes and the gaps around them.
- Lock the cabinet door and box door: follow the opposite steps of the "Open the cabinet door before connecting the cables" method, lock the cabinet door and pull out the key.
- Make sure that the sealing strip around the door is not curled after the door is closed!

Communication interface wiring

LAN1 and LAN2: Connection to Ethernet or user's local host computer
SD card: data storage and export
SIM card: insert SIM card when connecting to the cloud platform via 4G.

In addition, according to different application scenarios of customers, this system may have dry contact signals and RS485 communication to connect with other devices of customers, these interfaces are non-standard, if necessary, the system will lead the corresponding interface near the front panel for easy wiring.

Electricity meter installation

The system meter is divided into system meter and anticountercurrent meter.

System meter:

Read the charge and discharge power data of the system, located in the distribution module, the customer does not need to install;

Anti-reflux meter:

Anti-countercurrent function: detect whether the current flows to the grid and communicate with the system EMS. When the current is detected flowing to the grid, the information will be fed back to EMS. EMS will give feedback to control the charging of the energy storage system and reduce the photovoltaic output.

The anti-countercurrent meter needs to be installed on the power grid side, the anti-countercurrent meter is divided into primary meter or secondary meter, provided by Dyness, the customer can only choose one based on the usage: the transformer is equipped by the customer, the transformer specifications please refer to "5.5.2 wiring accessories specifications".

- Primary electricity meter model: ADL400-C
- Secondary electricity meter model: DTSD1352

Anticountercurrent electricity meter connection steps:

- Connecting direction of the transformer: the wiring direction of the transformer is P1 P2, that is, the current from the grid load;
- Voltage sampling connection of electricity meter: Ua, Ub, Uc and Un connect to the incoming end of transformer; A / B / C / N phase sequence connection shall be correct; line diameter of voltage sampling line shall meet 16 AWG; voltage resistance level of the line shall meet AC450V;
- External transformer: two red / black lines, red instrument IA *, IB *, IC *, black instrument IA, IB, IC, and the current connection is as follows:

  Ia* ⟷ Ta（S1），Ia ⟷ Ta（S2）

  Ib* ⟷ Tb（S1），Ib ⟷ Tb（S2）

  Ic* ⟷ Tc（S1），Ic ⟷ Tc（S2）
- The external transformer shall be grounded;
- Meter and system connection: anti-countercurrent meter and DH100F communication through RS485, should be connected to the COM6 mark "3A / 3B" interface on the system distribution module;

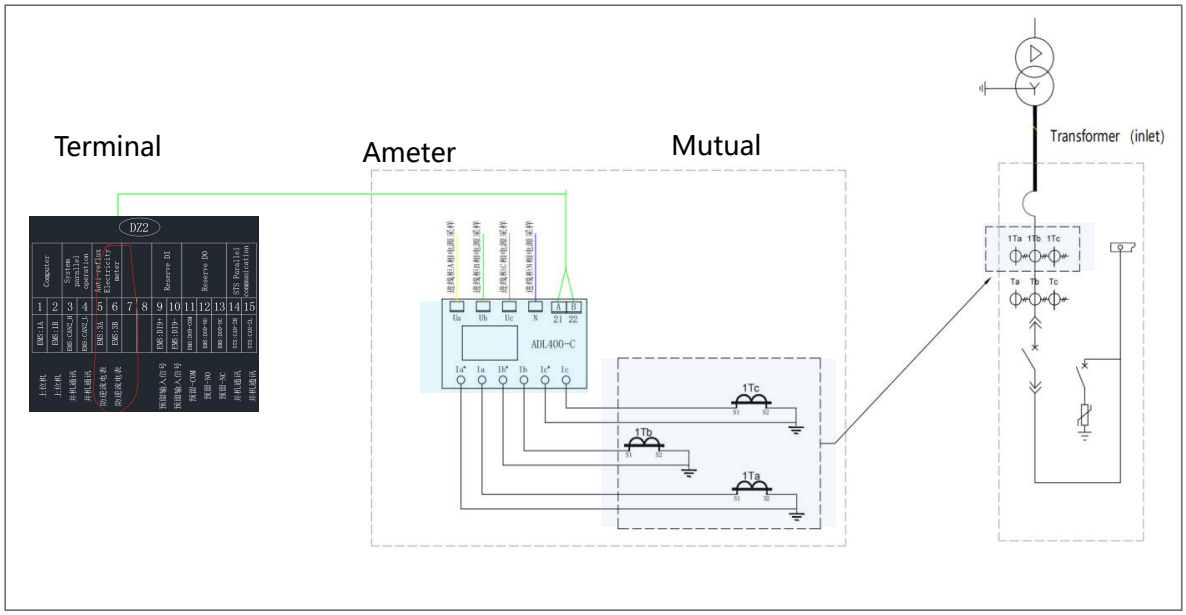


Figure 5-8 Wiring diagram of the primary electricity meter

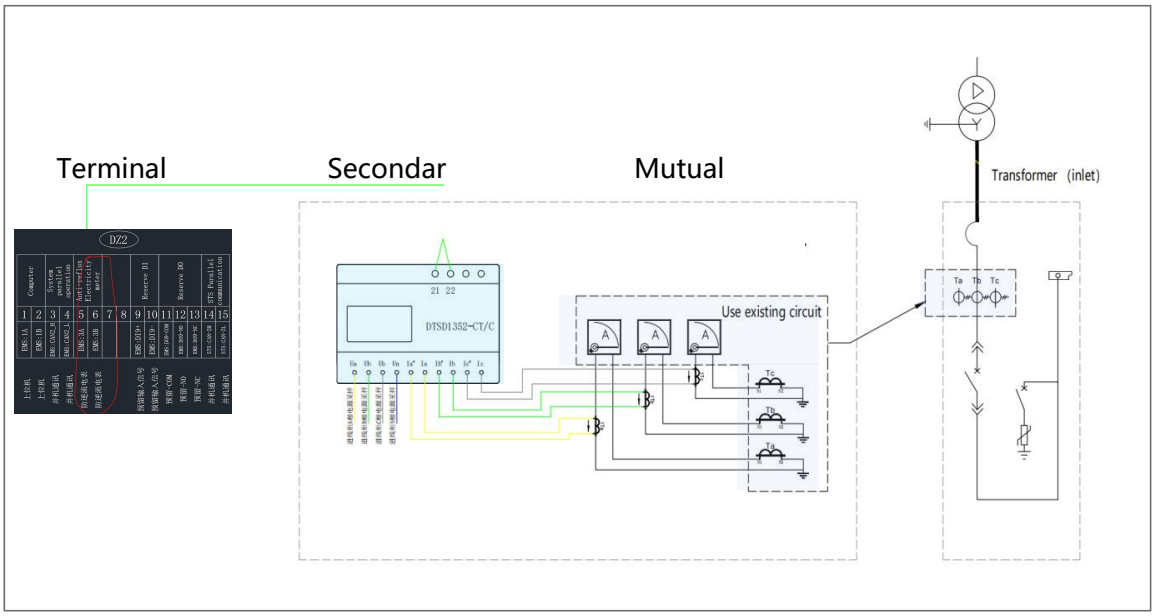


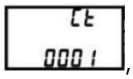
Figure 5-9 Wiring diagram of the secondary electricity meter

Note:

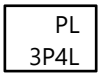
- DTSD1352 With mA level transformer, no access to ordinary 5A or 1A output transformer, easy to cause instrument damage:
- DTSD1352 When wiring, the transformer terminal must not be short connection / grounding, otherwise it will lead to inaccurate measurement or instrument damage to the instrument;
- DTSD1352 When measuring the secondary line of the field transformer, the instrument built-in transformer shall keep a distance (greater than 30cm) to avoid interference.

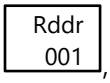
Commissioning steps of the electricity meter:

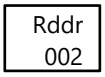
The meter shall not be set until the product is powered on. refer to Section 6.1

Set the current ratio of the meter: 

, the current transformer is set according to the actual, for example 200:5 is set to 0040.

- Confirmation line system: 

- Set communication address: system meter address set to 

, anti-countercurrent meter address set to 

Note: When the setting is completed, take power from the grid, the meter is "+", and when the grid is fed, the meter is "-".

Check after wiring

After the wiring, to avoid equipment damage and property damage:

Table 5-3 Post-wiring Checklist

NO	inspection item	Affirm
1	Before measuring, disconnect the battery side and the grid side switches to ensure that the PCS DC side and AC side are not charged	☐
2	The positive and negative electrode connection between the battery and the PCS are correct and tightened, the measurement of three interphase resistance should be megohm, if K or smaller, the line should be checked.	☐
3	External control cables, ground wires and communication lines have been well connected.	☐
4	The resistance of the grounding wire is less than 0.1 Ω, and the cable is intact without damage or cracks.	☐
5	Clean the installation area, no tools or foreign objects in the installation area.	☐
6	Outdoor cabinet in and out of the hole and the gap, the use of fire, waterproof materials for tight sealing.	☐

6 System Running And Stop

Product 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.

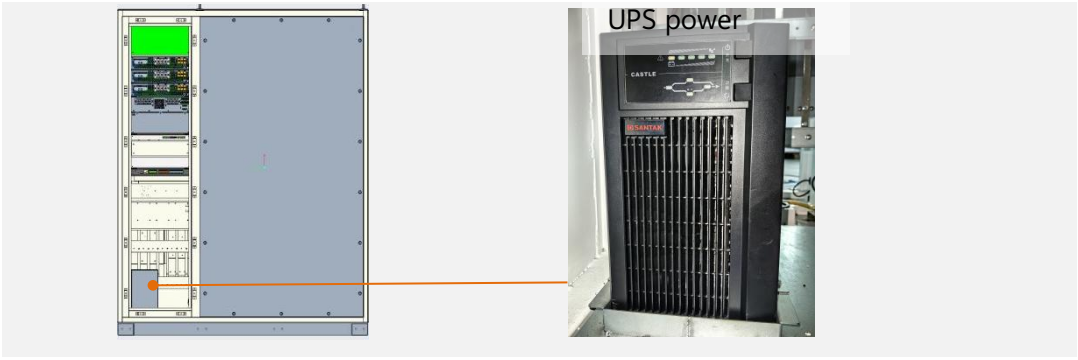
Power-on inspection:

Table 6-1 Item list to be checked before operation

No	Checklist	Affirm
1	Check that the wiring is correct.t;	☐
2	Check if the emergency stop button is released;	☐
3	Check whether the lightning arrester is in the closed state;	☐
4	Check the ground wire connection to ensure that there are no ground faults;	☐
5	Use a multimeter to check whether the AC and DC side voltages meet the start-up conditions and there is no risk of overvoltage;	☐
6	Check to make sure no tools or parts are left inside the device;	☐
7	Check whether the product has condensation (water film or water droplets on the surface). If so, the cabinet fan must be turned on for ventilation until the phenomenon disappears;	☐
8	Check whether the air conditioner has abnormal noise;	☐
9	Check whether the product has wire ends, metal scraps and other foreign objects that may cause short circuits in signal lines and power lines;	☐

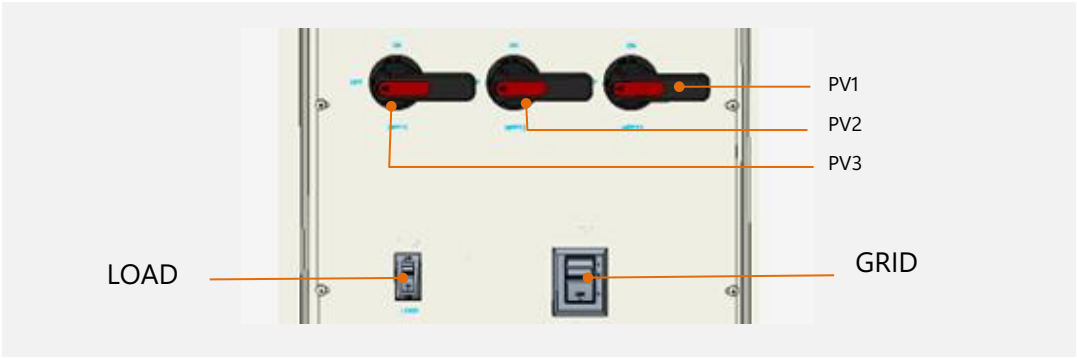
Operating procedures:

- Step 1：Open the rear cover and start the UPS power supply, confirm that the UPS starts working, and close the rear cover（DH200F-S150L00、DH200F-S100L00、DH200F-S050L00、DH200F-S000L00 skip this step）；



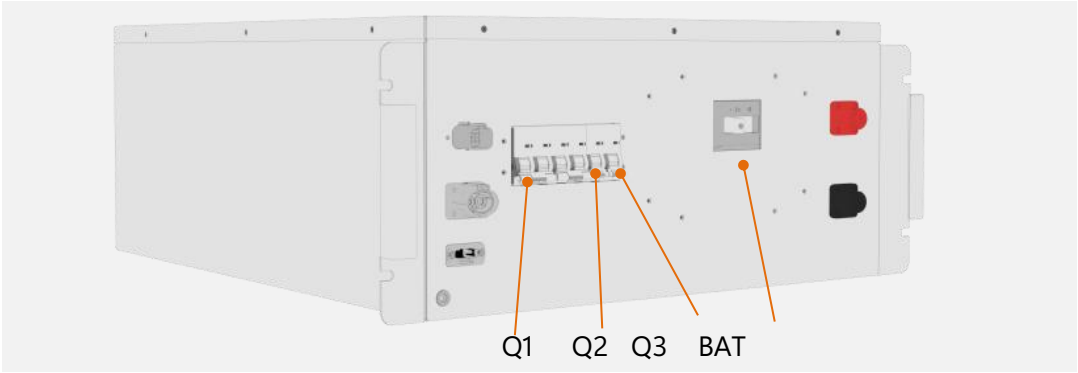
•Step 2: Turn on the "GRID" (AC circuit breaker)

•Step 3: Turn on the "LOAD" (load side circuit breaker)



•Step 4: Turn on “QF1” to “QF5” (each secondary circuit breaker) in sequence

•Step 5: Turn on "Q1", "Q2", "Q3", "BAT" (BMS circuit breaker) in sequence

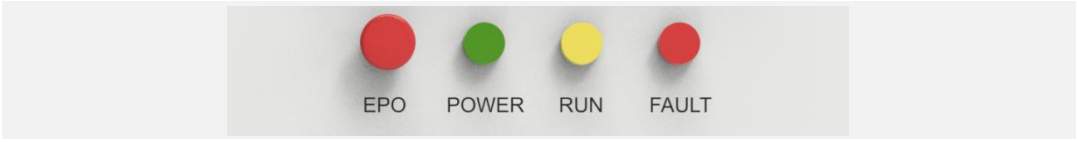


•Step 6: Turn on the "PV" (PV side circuit breaker)

•Step 7: Set the EMS working mode according to the application, and make the EMS work in automatic mode after setting.

After operating the steps one by one, check whether the indicator light of the product is

on and whether the screen is displayed. If the product status is normal, the running indicator light is on, and the fault indicator light and alarm indicator light are off. The screen starts to display the system running status and parameters.



Product power off process

Operating procedures: refer to the diagram of product power-on process

- Step 1: Stop the system through the screen or host computer
- Step 2: Disconnect "LOAD" (Load Side Breaker)
- Step 3: Disconnect "PV" (PV side breaker)
- Step 4: Disconnect "Q1", "Q2", "Q3", "BAT" in turn (BMS circuit breaker)
- Step5: Disconnect "QF1" to "QF5" (each secondary circuit breaker) in sequence
- Step 6: Disconnect "QF 4";
- Step 7: Disconnect the "GRID" (AC side circuit breaker).

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

WARNING

After following the steps, the system stops running, the product indicator light and the screen are off. After the inspection, wait five minutes for maintenance and inspection.

Emergency shut down

In case of emergency, press the red emergency stop button marked "EPO" on the front door of the product;

Figure 6-1 schematic of EPO position

WARNING

Under normal circumstances, please shut down the product using the normal product power-down step!

An emergency must use emergency shutdown to ensure rapid response, protect the safety of life and product equipment safety!

7 Human-Machine Interface (HMI) Screen

Overview of Main Functions

Remote Mode

In remote mode, the system only accepts external EMS (Energy Management System) remote dispatch commands. The external EMS can control the system through the EMS of this product.

Automatic Mode

In automatic mode, the system EMS can accept energy dispatch commands from both the system HMI and the Dyness cloud platform, executing the following strategies:

Anti-Reverse Flow Function:

For applications where photovoltaic (PV) power generation is not allowed to feed into the grid, the EMS controller prioritizes PV power supply to the load. Any surplus energy is stored in the energy storage system. If both the energy storage system and the load cannot consume the surplus, the EMS limits PV power generation to prevent it from feeding into the grid.

●Timed Mode:

The system can be set to "arbitrary time periods" or "48 time periods" (dividing the 24-hour day into 48 segments).

（1）When set to "arbitrary time periods," the system supports selecting periods by month (1~4), with up to four configurable time periods (Time Period One, Time Period Two, Time Period Three, Time Period Four). The system is open for 7 days a week (Monday to Sunday), with up to 10 preset periods each day. Each period can have a predefined mode, and once set, the system operates according to this schedule.

（2） When set to "48 time periods," the system supports selecting periods by month (1~4), with up to four configurable time periods (Time Period One, Time Period Two, Time Period Three, Time Period Four). The system can divide each day into 48 segments, with each segment having a predefined mode. Once set, the system operates according to this schedule.

● Peak Shaving and Valley Filling:

Based on user electricity consumption patterns, peak and valley values are set to reduce peak loads and fill valley loads, balancing power generation and consumption. In this mode, the PV system maximizes output, and if the anti-reverse flow function is enabled, it limits PV output when triggered.

（1）When the grid power exceeds the peak value, the energy storage system discharges.

（2）When the grid power falls below the valley value, the energy storage system 、 charges.

●Self-Consumption Mode:

Also known as PCC (Point of Common Coupling) power control mode, users can set the power value at the PCC point, and the system maintains the PCC point power at the set value. In self-consumption mode:

（1） When the PV inverter's output power exceeds the load power and cannot be entirely consumed by the load, the energy storage system charges.

（2） When the PV inverter's output power is less than the load power and insufficient for load consumption, the energy storage system discharges to the load.

Overview of the Operating System

The integrated solar and storage unit is equipped with a 10-inch HMI screen. Users can opt for the HMI screen to view the system's operational information and set system operating parameters. For ease of operation, the manual provides a logical structure distribution diagram of the HMI screen menu. Note: If the user does not opt for the HMI screen, the system can still operate without affecting its functionality.

Table 7-1 HMI Screen Menu Logical Structure Distribution Diagram

Main Window	Main Menu	First Level Submenu	Second Level Submenu	Third Level Submenu
Main Interface	Running Info	Grid		
		Inverter		
		Battery		
		Load		
		Photovoltaic		
		Generator		
	Query Data	EMS Data	Online Status	
			Parallel Status	
			Charge/Discharge Data	
		PCS Data	Basic Data	
		BMS Data	Basic Data	
			Single Cell Voltage	
			Temperature Data	
		System Data	Meter	
			Fire Protection	
			Liquid Cooling	
			Temperature/Humidity	
		Alarm Info	Real-time Alarms	
			Historical Records	

		Version Info		
	Set Device	EMS	Operation Settings	Automatic Mode
				Remote Mode
			Parameter Settings	System Parameters
			System Settings	Basic Settings
	Login Rights	Select User		
		Change Password		

HMI Main Interface

- Running Info:Displays detailed information about the devices connected to the system.
- Query Data:Queries detailed data from various submodules of the system, including alarm information, version information, etc.
- Set Device:Sets system operating parameters (Note: Users can only modify EMS-related parameters).
- Login Rights:Required permissions to log into the system.

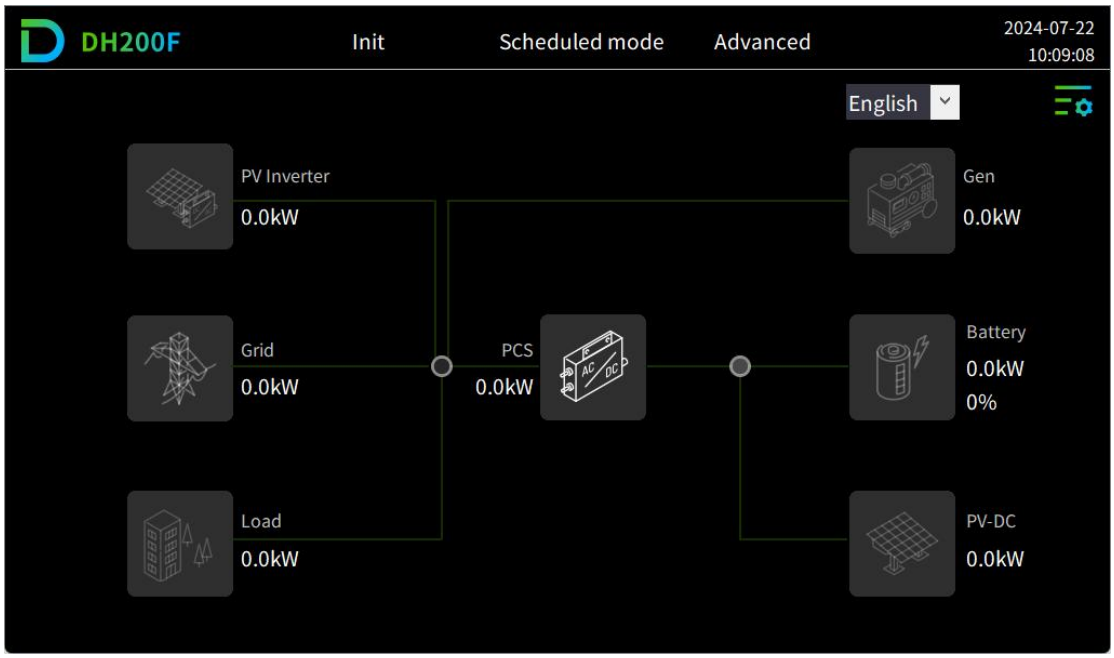


Figure 7-1 HMI Screen Main Interface

Note:The image is for reference only. The actual interface may differ and should be based on the actual screen.

User Login

Table 7-2 Login Permission Description

Permission	Description
Not Logged In	When not logged in, users can only view system operating data and cannot set up devices.
General User	Can view system operating information and set relevant system parameters. This permission is intended for on-site installation personnel, with the initial password being 1111.
Advanced User	Only available to manufacturer staff.

Login Steps:

- Step 1: Click on the main menu icon in the top right corner of the main interface  .
- Step 2: In the main menu, click on "Login Rights" to enter the user selection interface.
- Step 3: In the user selection section, choose "General User," enter the password (1111), and click "Login."
- Step 4: In the login success prompt popup, click "Confirm."

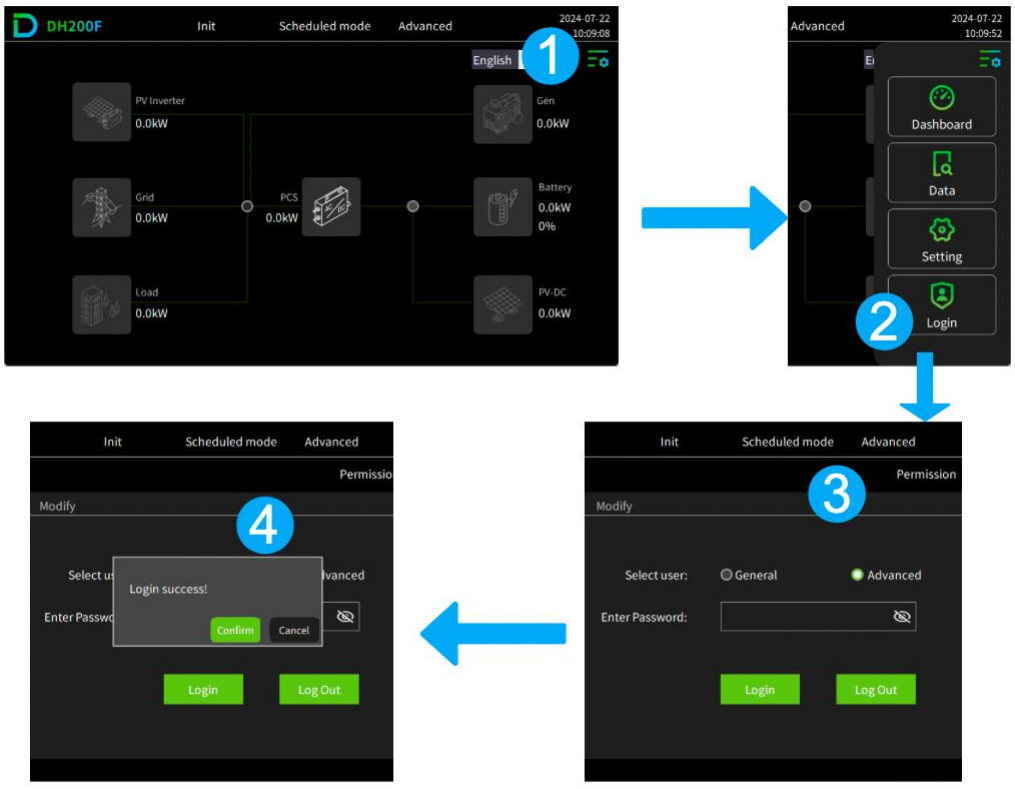


Figure 7-2 User Login Illustration

Password Modification

- Step 1:Log in with "General User" permissions. Refer to Section 7.3 User Login for details.
- Step 2:In the top left navigation bar, click "Change Password" to enter the password modification interface.
- Step 3:In the "Change Password" interface, enter the old password and the new password. After verification, the setting is completed.

End

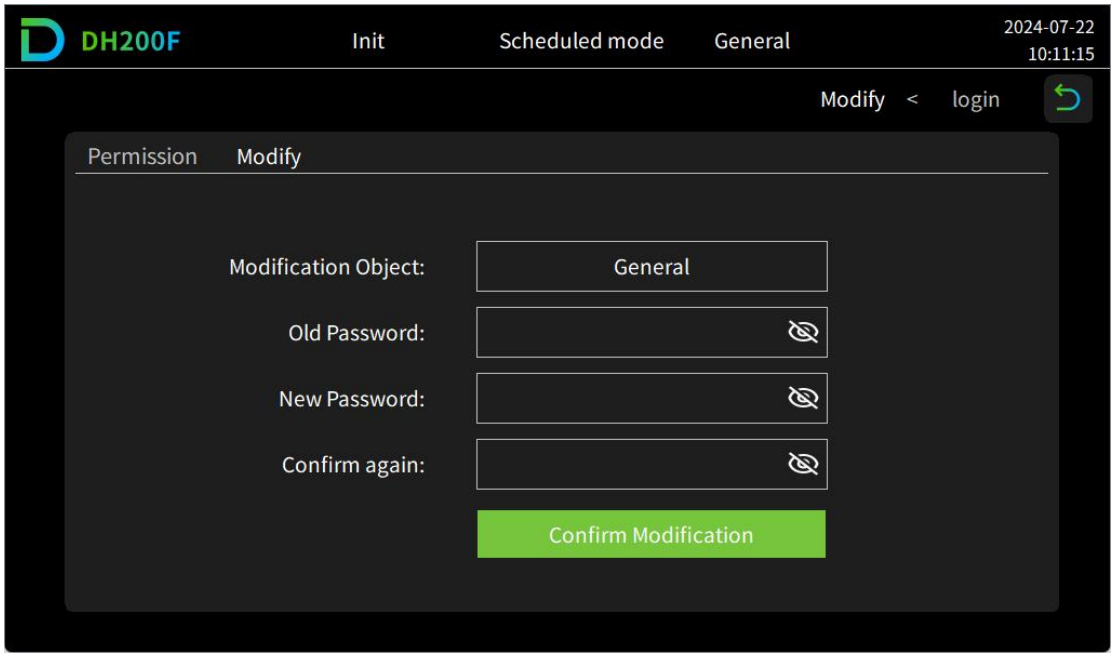
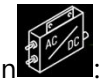


Figure 7-3 Password Modification Illustration

Running Information

Method 1:

On the main interface, click the corresponding module icon to directly enter the module information interface.

- Grid Icon  :Enter the grid information interface.
- Load Icon  :Enter the load information interface.
- Inverter Icon  :Enter the inverter information interface.

- Battery Icon  :Enter the battery information interface.
- PV Inverter Icon  :Enter the photovoltaic inverter information interface.
- Generator Icon  :Enter the generator information interface.

Method 2:

- Step 1:Click on the main menu icon in the top right corner of the main interface  .
- Step 2:In the main menu, click on the "Running Info" option.
- Step 3:Select the corresponding first-level menu option as needed.

Query Data

Operation Steps:

- Step 1: Click on the main menu icon in the top right corner of the main interface  .
- Step 2: In the main menu, click on the "Query Data" option.
- Step 3: As needed, select the corresponding first-level menu option to query EMS data, PCS data, BMS data, system data, alarm information, and version information.

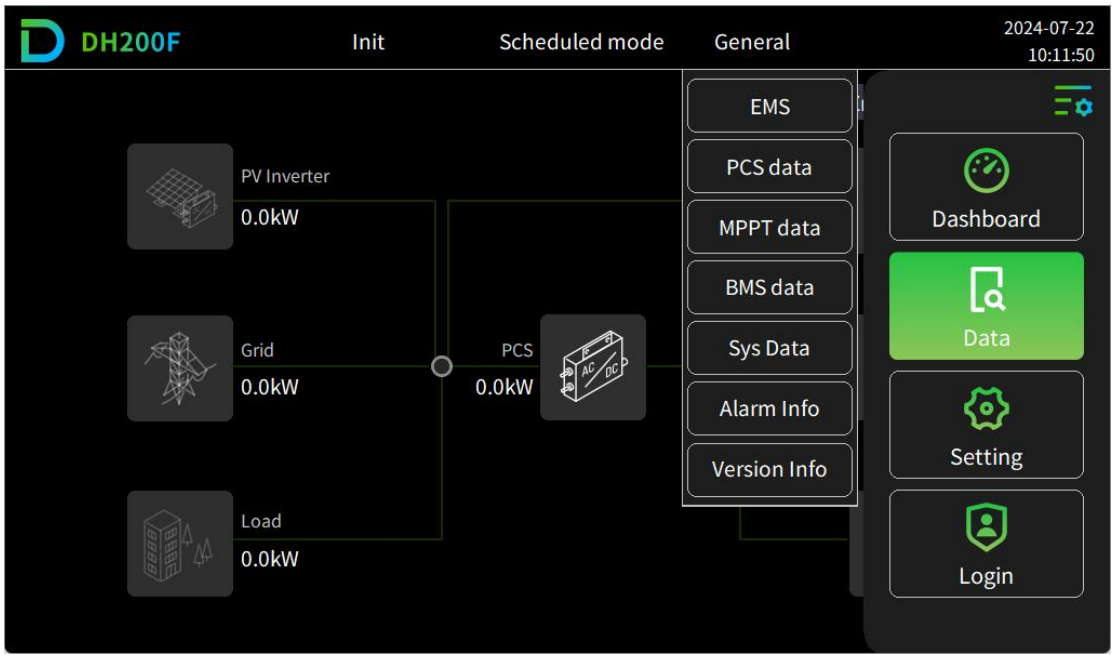


Figure 7-4 Query Data Illustration

EMS Settings

Operation Settings

The operation settings interface is used for performing operation settings, parameter settings, and system settings.

- Step 1:** Click on the main menu icon in the top right corner of the main interface.
- Step 2:** In the main menu, click on the "Set Device" option.
- Step 3:** In the first-level menu, select the "EMS" option.
- Step 4:** In the top left navigation bar, click "Operation Settings," enter the corresponding parameter values, and the settings will be completed.

End

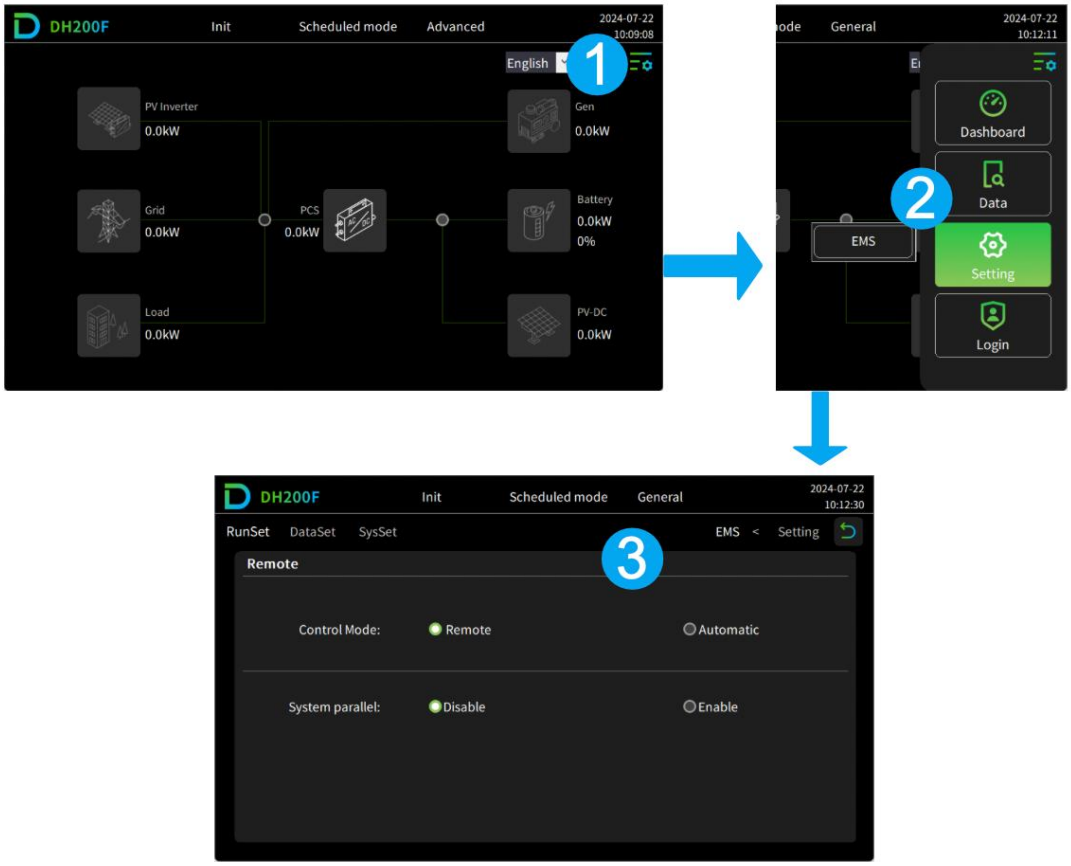


Figure 7-5 Operation Settings Illustration

Control Modes:

The control modes are divided into remote mode and automatic mode.

(1) Remote Mode:

In remote mode, the system only accepts external EMS remote dispatch commands. Once remote mode is selected, local HMI operation is not allowed. The external EMS can control the system through this product's EMS.

●Setting up the System's Parallel Operation Function:

When multiple units are connected in parallel, set the system's parallel address and the number of parallel units. '1' indicates the master unit, and others indicate slave units.

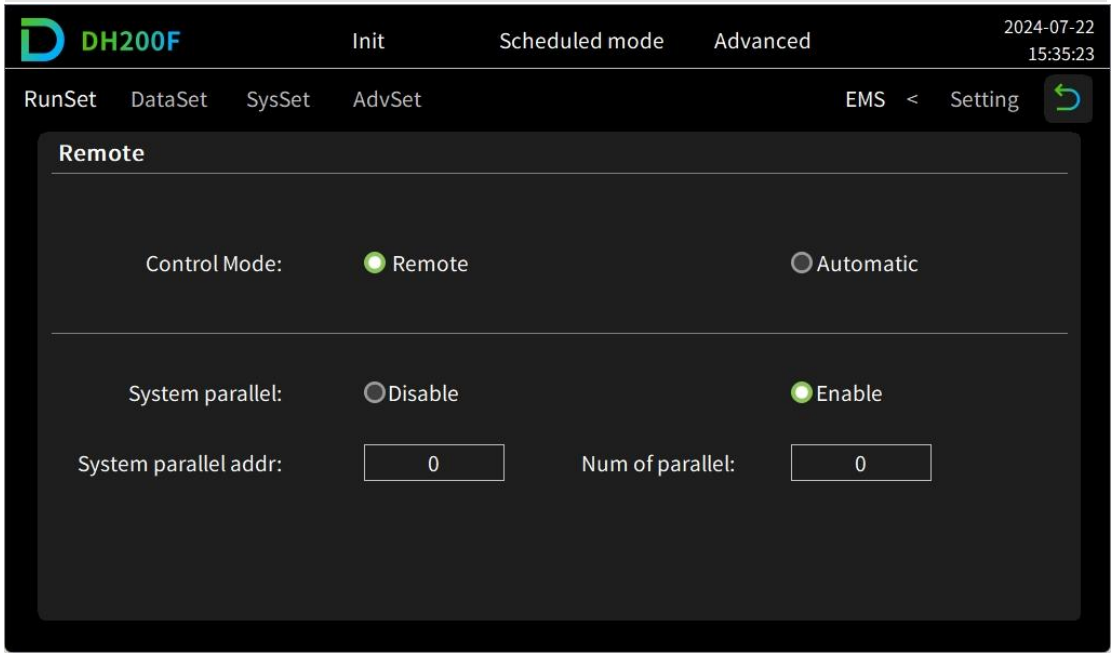


Figure 7-6 Remote Mode Settings Illustration

(2)Automatic Mode:

●Setting up the system's parallel operation function:

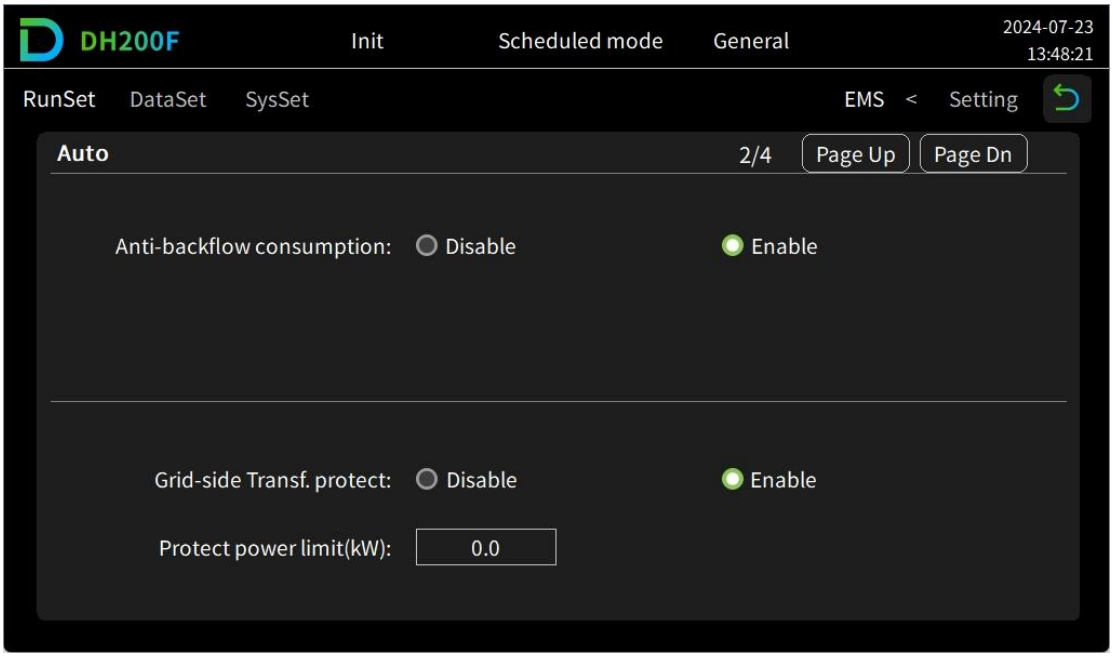
When multiple units are connected in parallel, set the system's parallel address and the number of parallel units. '1' indicates the master unit, and others indicate slave units. The master unit needs to perform the next step, while the slave units do not.

●Setting Methods:

HMI/Web: The system can be configured via both local HMI and the Dyness cloud platform.

HMI: The system can only be configured via the local HMI.

Web: The system can only be configured via the Dyness cloud platform



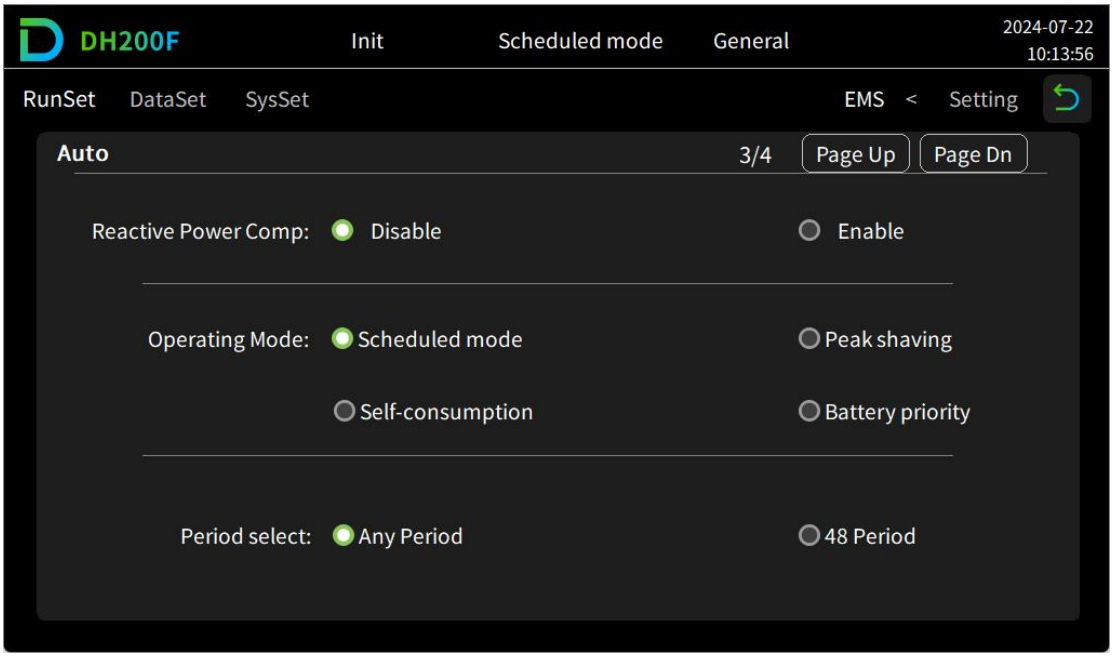


Figure 7-7 Automatic Mode Settings Illustration

Table 7-3 Automatic Mode Settings

Setting Item	Description
Anti-Reverse Flow	Disabled: The system does not limit photovoltaic (PV) power generation. - Enabled: The system enables the anti-reverse flow function to prevent PV power from feeding into the grid.
Grid-Side Transformer Protection	Set the power limit for the grid-side transformer. When the load power exceeds the set demand power, the EMS controller controls the energy storage system output to balance the excess power. Disabled: The system does not perform transformer protection. -Enabled: The system enables transformer protection and requires setting the protection power limit.
Reactive Power Compensation	Set the reactive power compensation function. - Disabled: The system does not compensate for reactive power. - Enabled: The system enables reactive power compensation. (Note: Can be set in automatic mode)
Operating Mode	- Timed Mode: In this strategy, the timed mode (time period) can be set. - Peak Shaving and Valley Filling: In this strategy, peak power and valley power can be set. - Self-Consumption: In this strategy, priority mode and charging target power can be set.

Arbitrary Time Period	The system supports selecting time periods by month (1~4), with up to four configurable periods (Period One, Period Two, Period Three, Period Four). The system operates on a weekly basis (Monday to Sunday), with up to 10 time periods configurable per day. (Note: Can be set when the system is in "Timed Mode" strategy)
48 Time Periods	The system supports selecting time periods by month (1~4), with up to four configurable periods (Period One, Period Two, Period Three, Period Four). The system can divide each day into 48 time periods. (Note: Can be set when the system is in "Timed Mode" strategy)
Peak Power (kW)	Set the peak power value of the system in kW. (Note: Can be set when the system is in "Peak Shaving and Valley Filling" strategy)
Valley Power (kW)	Set the valley power value of the system in kW. (Note: Can be set when the system is in "Peak Shaving and Valley Filling" strategy)

System Parameters

The parameter settings interface is used to set protection parameters related to the energy storage system.

(1) System Parameter Settings

- Step 1:Click on the main menu icon in the top right corner of the main interface  .
- Step 2:In the main menu, click on the "Set Device" option.
- Step 3:In the first-level menu, select the "EMS" option.
- Step 4:In the top left navigation bar, click "Parameter Settings."

--End

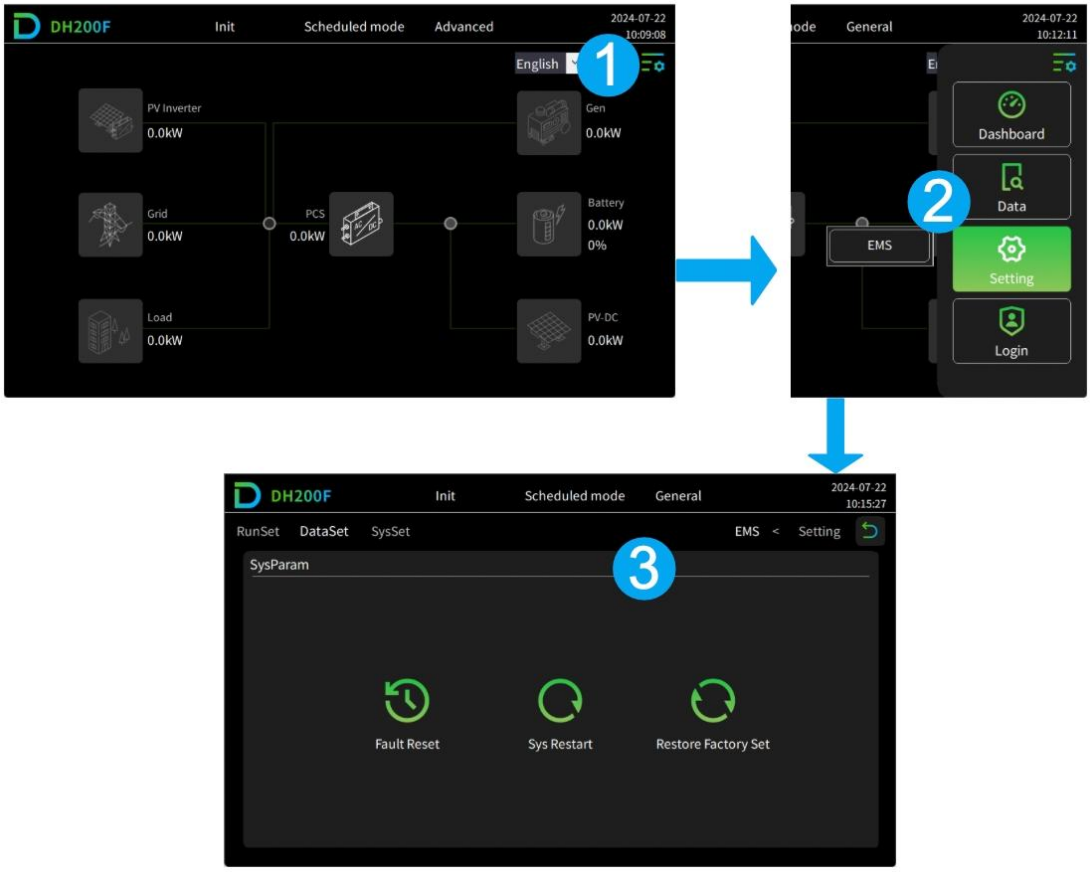


Figure 7-8 System Parameter Settings Illustration

Table 7-4 System Control Description

Setting Item	Description
Fault Reset	Perform a reset operation for system faults.
System Restart	Restart the EMS (Note: This operation cannot be performed while the system is running)
Restore Factory Settings	Restore factory settings except for safety parameters, calibration coefficients, and power generation data

System Settings

The system settings interface allows for the configuration of basic settings.

Operation Steps:

- Step 1: Click on the main menu icon in the top right corner of the main interface  .
- Step 2: In the main menu, click on the "Set Device" option.
- Step 3: In the first-level menu, select the "EMS" option.
- Step 4: In the top left navigation bar, click "System Settings," enter the corresponding parameter values, and the settings will be completed.

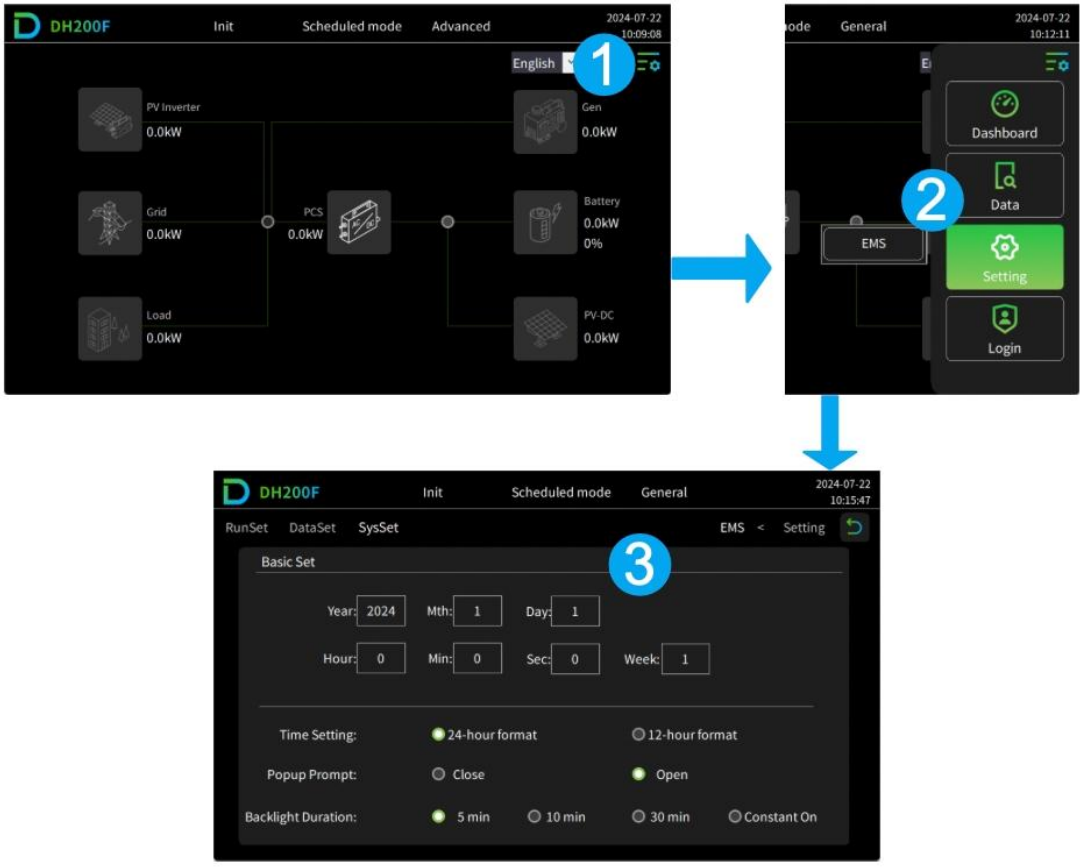


Figure 7-9 System Settings Illustration

Table 7-5 System Settings Description

Setting Item	Description
HMI Time	Set the display time on the HMI.
HMI Time Format	Set the time format on the HMI; options are 12-hour or 24-hour format.
HMI Popup Prompt	Set the HMI popup prompt function. When set to "On," a guided prompt message will appear when setting important parameters.
HMI Backlight Duration	Set the duration of the HMI backlight.

Application Case Configuration

Timed Mode

Steps 1:Log in with Permissions (General User) and Password (1111)

- Click on the main menu icon in the top right corner of the main interface.
- In the main menu, click on "Login Rights" to enter the user selection interface.
- In the user selection section, choose "General User," enter the password (1111), and click "Login."

●In the login success prompt popup, click "Confirm" to return to the main interface.

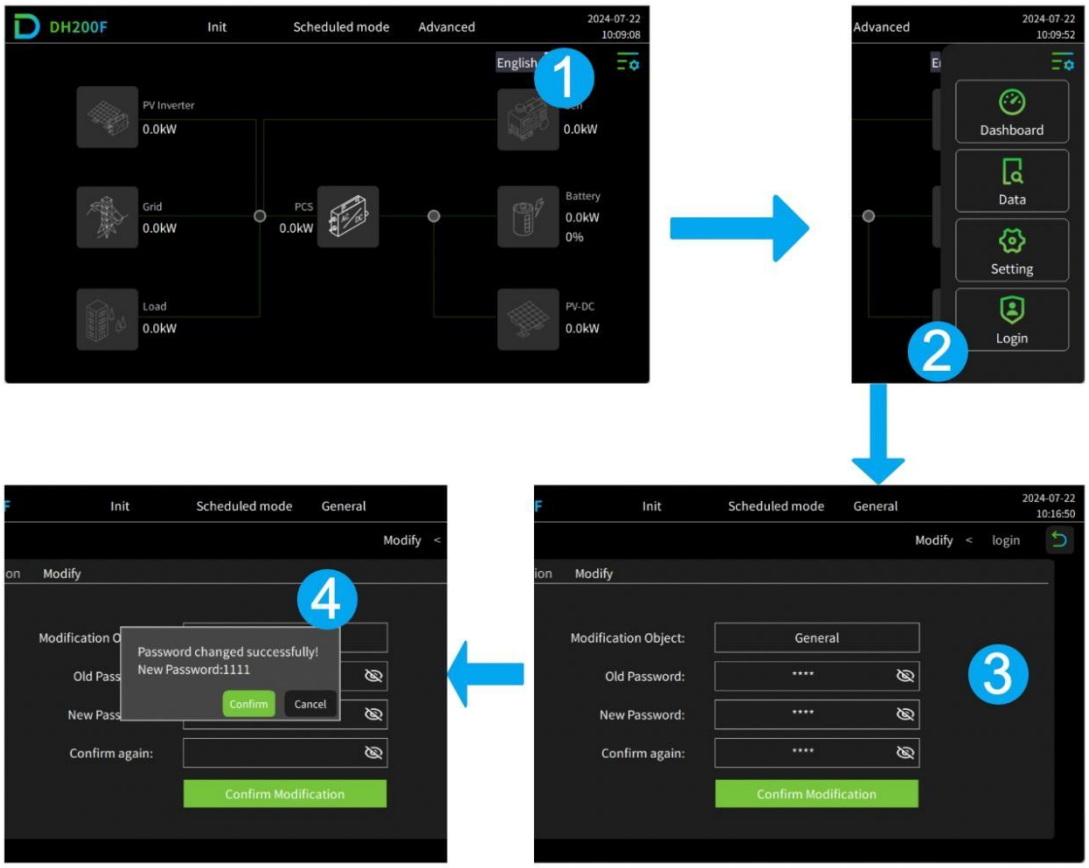


Figure 7-10 General User Login Illustration

Step 2: Enter the "Operation Settings" Interface to Configure

- In the main interface, click the main menu icon .
- In the main menu, click on the "Set Device" option.
- ●In the "Set Device" options, click the "EMS" option.
- In the top left navigation bar, click "Operation Settings" to enter the operation settings interface.

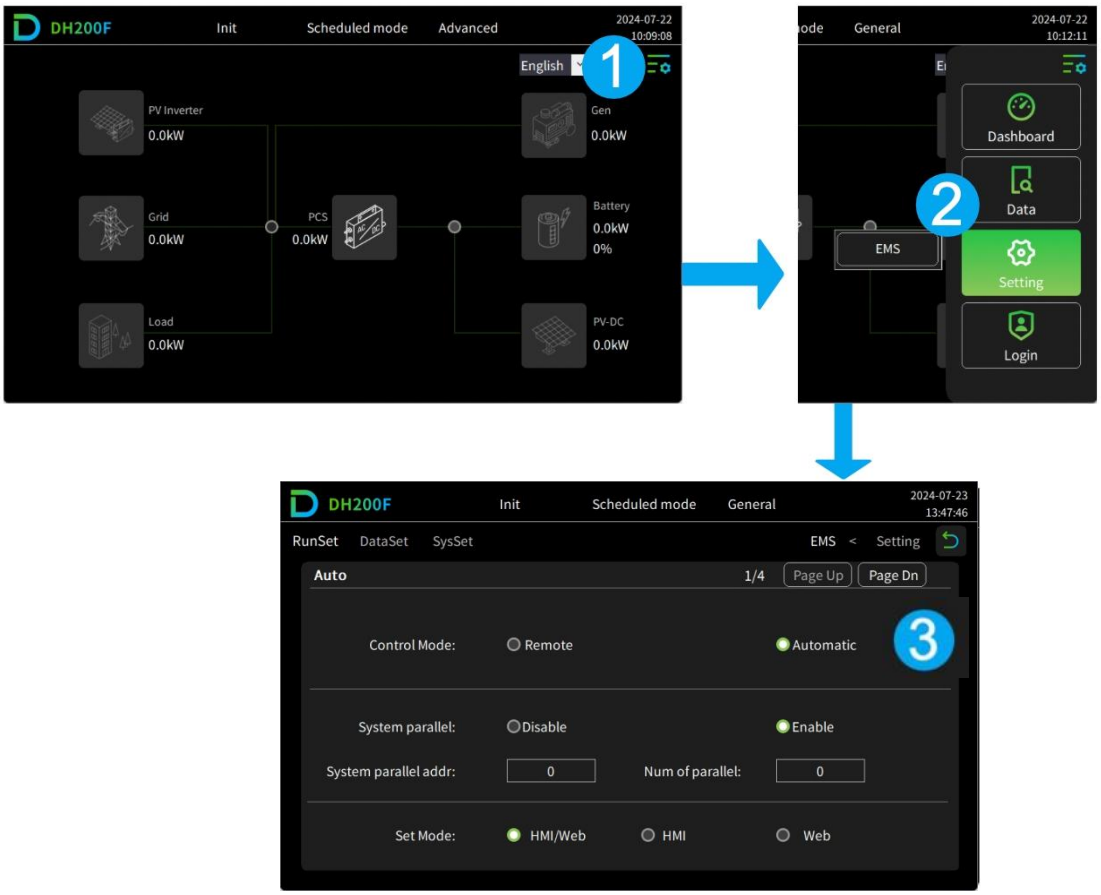


Figure 7-11 Operation Settings Illustration

Step 3: Configure Parallel Function and Setting Method in "Automatic Mode" Interface

●In the automatic mode interface page “1/4,” set the **Control Mode** to "Automatic."

● Configure **System Parallel Enable**: If there is only one unit, set to "Disabled." If multiple units are connected in parallel, set to "Enabled," and configure the parallel address and the number of parallel units ('1' indicates the master unit, others indicate slave units). The master unit needs to perform the next step, while the slave units do not.

● Choose the setting method as needed: If "Web" is selected, further operations will be performed on the Dyness cloud platform.If "HMI/Web" or "HMI" is selected, click to proceed to the next page.

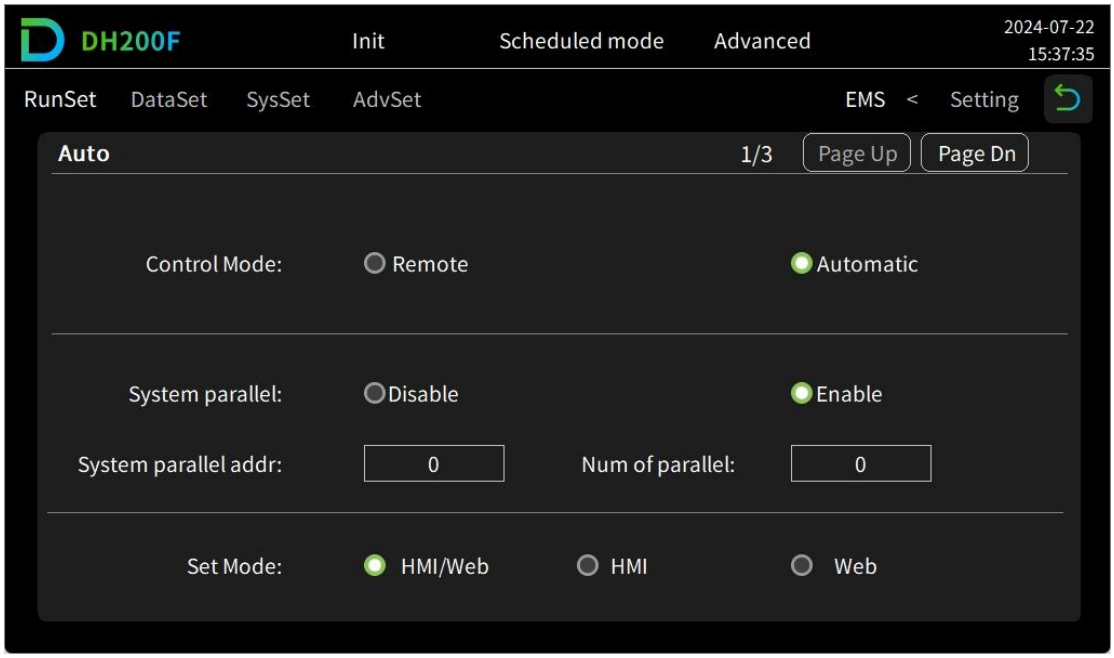
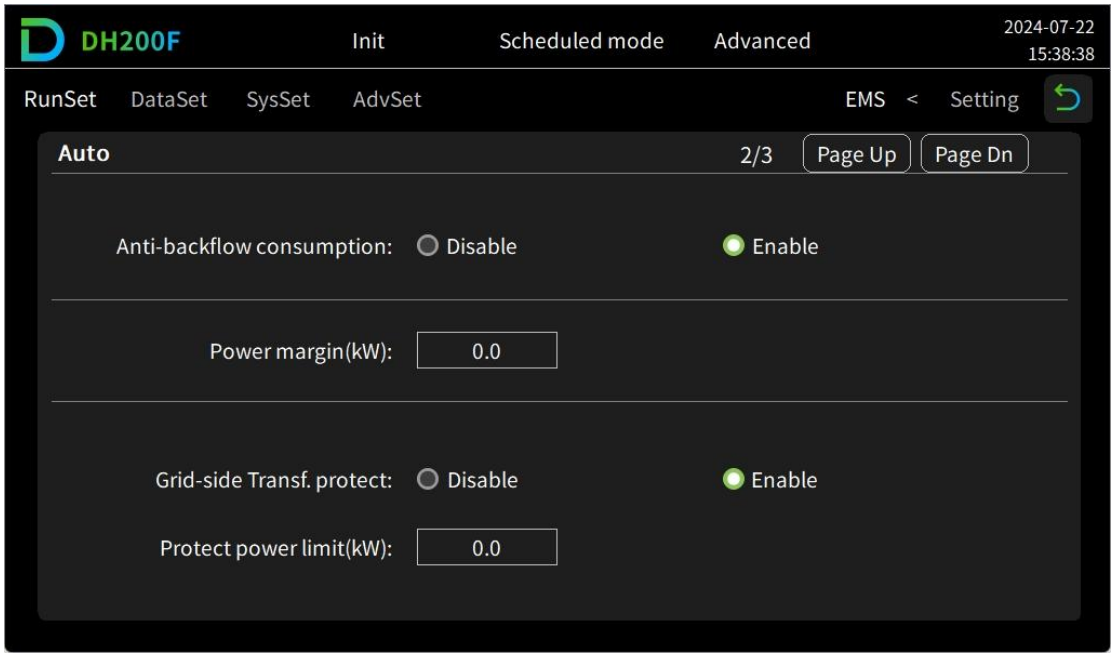


Figure 7-12 Parallel and Setting Method Illustration

Step 4: Configure Automatic Mode Functions

- In the automatic mode interface "2/4," set the **Anti-Reverse Flow** function and the **Grid-Side Transformer Protection** function; click "Next Page."
- In the automatic mode interface "3/4," set the **Reactive Power Compensation** function.



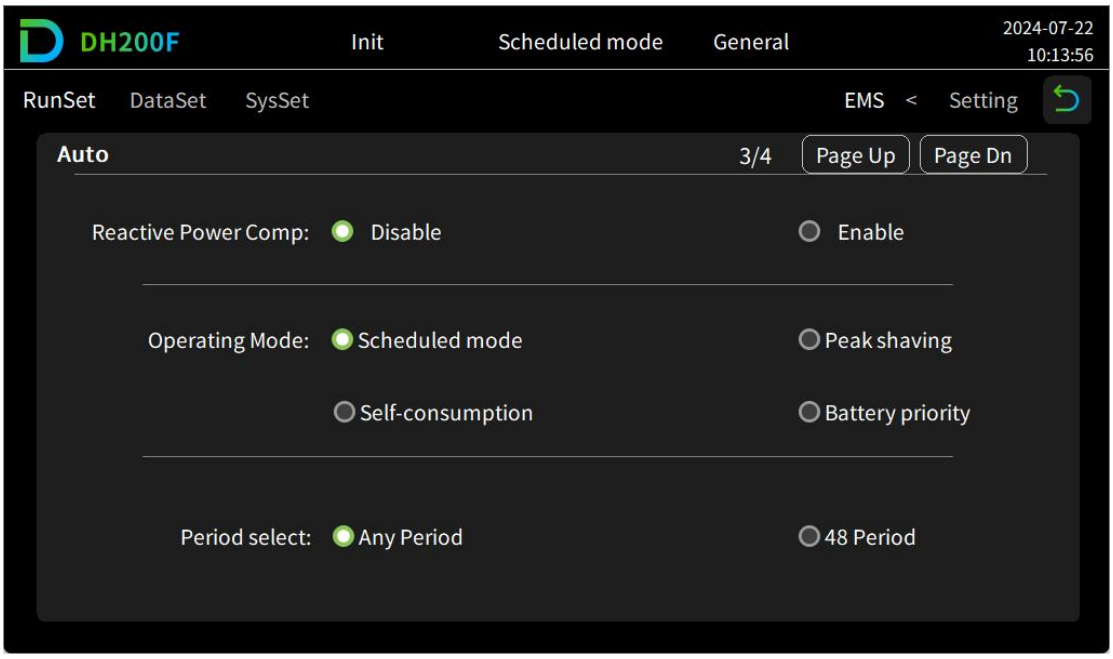
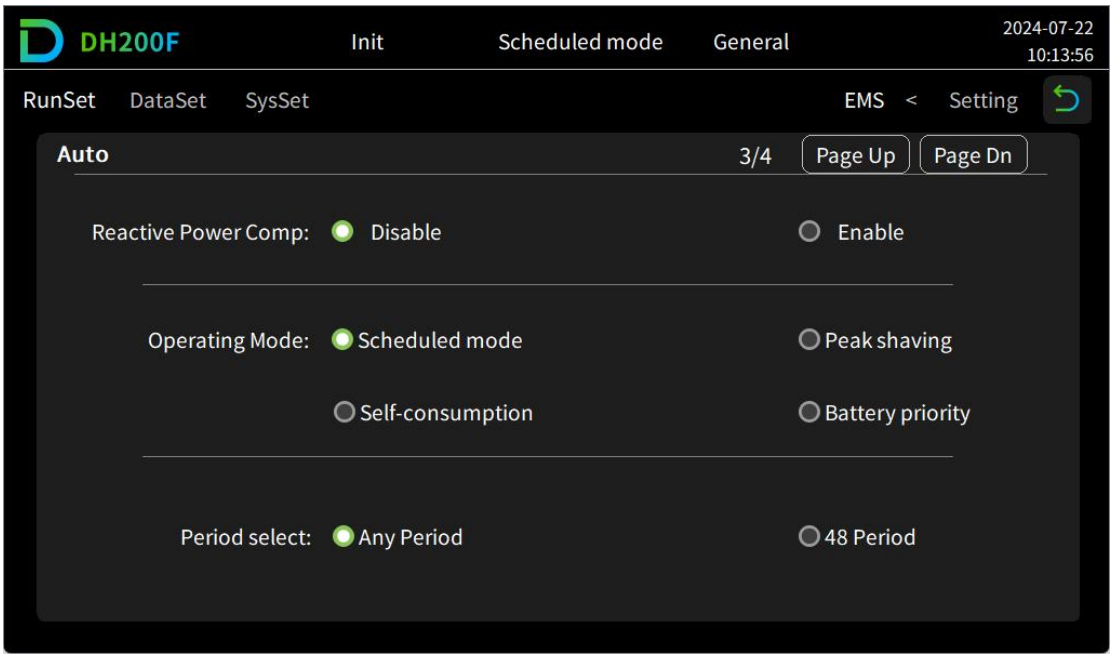


Figure 7-13 Automatic Mode Settings Illustration

Step 5: Configure Timed Mode

- In the automatic mode interface "3/4," select "Timed Mode" and choose "Time Period Selection" based on project requirements; click "Next Page."
- In the automatic mode interface "4/4," set the time period tables for January to December (1/2/3/4 can be set). Click on "Period One," "Period Two," "Period Three," and "Period Four" respectively to enter the time period settings.
- Set the start and end times, dates, and corresponding power values and SOC for each time period.
- Return, click "Peak and Valley Settings," and set the peak and valley time period table.
- Click "Next Page" to set the peak and valley electricity prices.

End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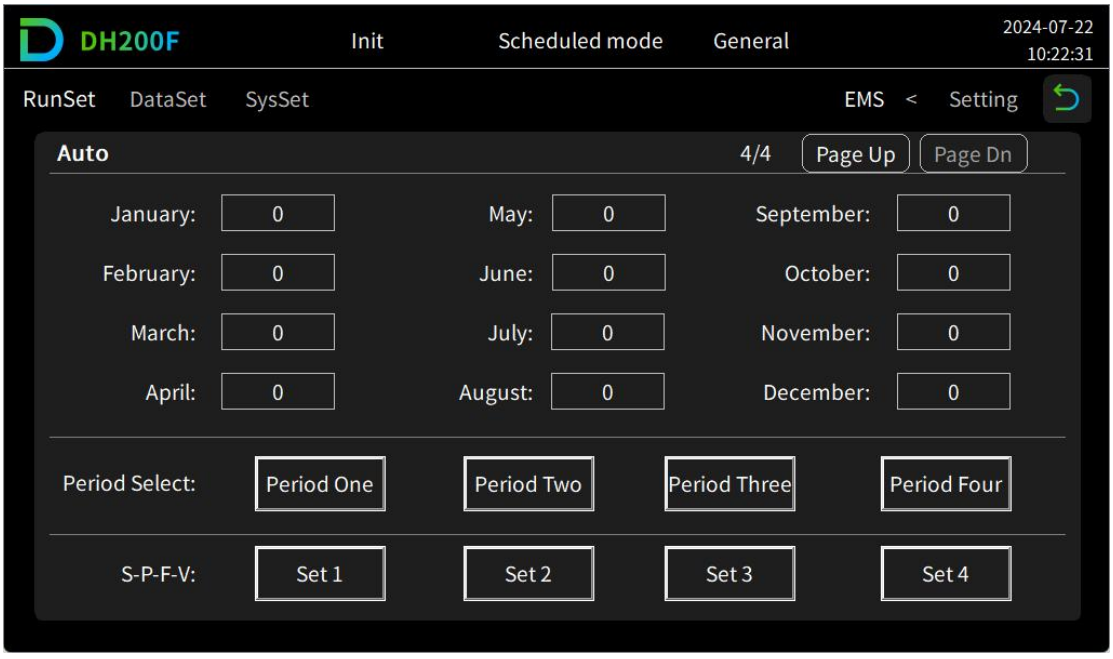
Scheduled mode
General
2024-07-22
10:13:56
RunSet
DataSet
SysSet
EMS
<
Setting
Auto
3/4
Page Up
Page Dn
Reactive Power Comp:
Disable
Enable
Operating Mode:
Scheduled mode
Peak shaving
Self-consumption
Battery priority
Period select:
Any Period
48 Period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June:
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March:
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July:
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November:
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April:
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August:
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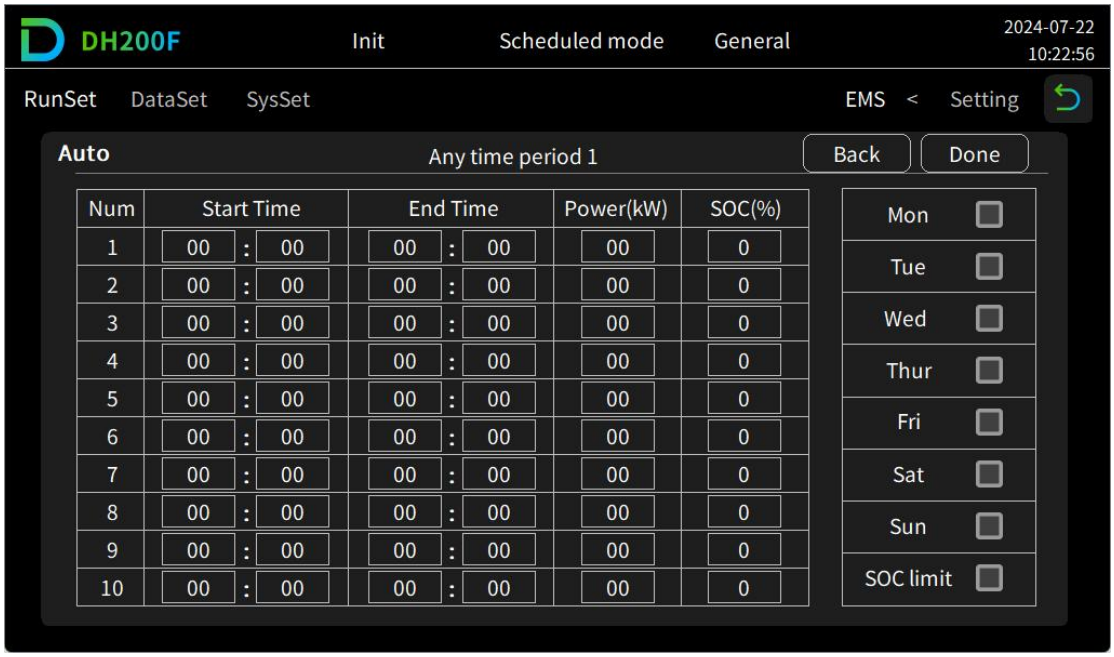
December:
0
Period Select:
Period One
Period Two
Period Three
Period Four
S-P-F-V:
Set 1
Set 2
Set 3
Set 4



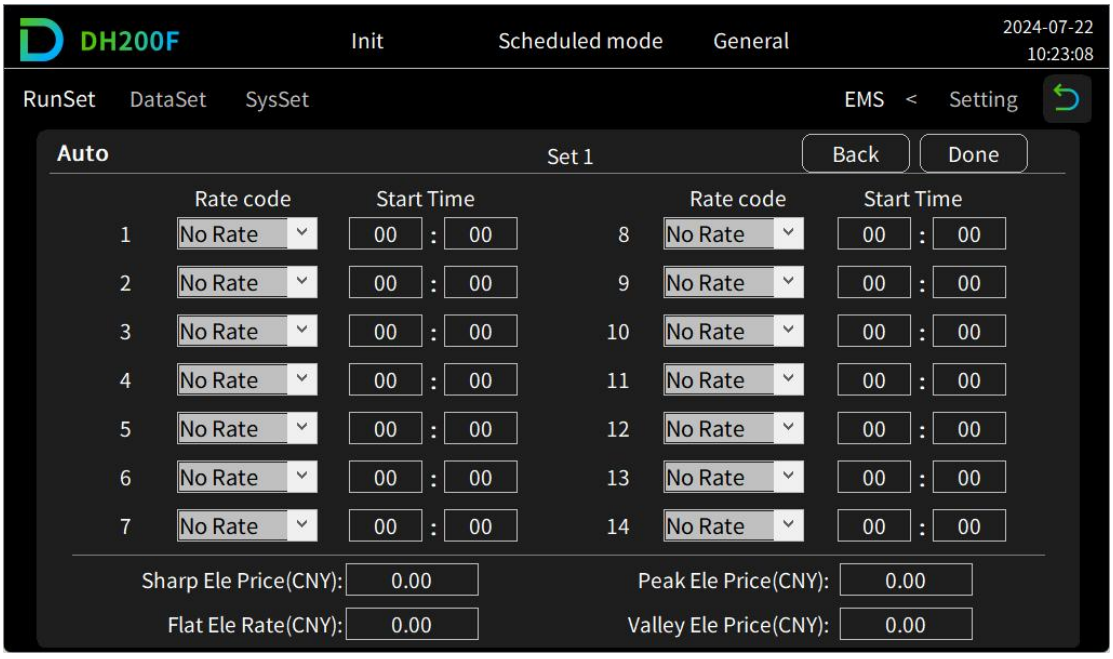


Figure 7-14 Timed Mode Settings Illustration

Peak Shaving and Valley Filling

Step 1: Log in with Permissions (General User) and Password (1111)

- Click on the main menu icon in the top right corner of the main interface  .
- In the main menu, click on "Login Rights" to enter the user selection interface.
- n the user selection section, choose "General User," enter the password (1111), and click "Login."
- In the login success prompt popup, click "Confirm" to return to the main interface.

Refer to 7.7.1 Step 1 for the specific interface operation

Step 2: Enter the "Operation Settings" Interface to Configure

- In the main interface, click the main menu icon  .
- In the main menu, click on the "Set Device" option.
- In the "Set Device" options, click the "EMS" option.
- In the top left navigation bar, click "Operation Settings" to enter the operation settings interface.

Refer to 7.7.1 Step 2 for the specific interface operation

Step 3: Configure Parallel Function and Setting Method in "Automatic Mode" Interface

- In the automatic mode interface page “1/4,” set the **Control Mode** to "Automatic."
- Configure **System Parallel Enable**:If there is only one unit, set to "Disabled."If multiple units are connected in parallel, set to "Enabled," and configure the parallel address and the number of parallel units ('1' indicates the master unit, others indicate slave units). The master unit needs to perform the next step, while the slave units do not.
- Choose the setting method as needed:If "Web" is selected, further operations will be performed on the Dyness cloud platform. If "HMI/Web" or "HMI" is selected, click to proceed to the next page.

Refer to 7.7.1 Step 3 for the specific interface operation

Step 4: Configure Automatic Mode Functions

- In the automatic mode interface "2/4," set the **Anti-Reverse Flow** function and the **Grid-Side Transformer Protection** function; click "Next Page."
- In the automatic mode interface "3/4," set the **Reactive Power Compensation** function.

Refer to 7.7.1 Step 4 for the specific interface operation

Step 5: Configure Peak Shaving and Valley Filling Mode

- In the automatic mode interface "3/4," set the **Operating Mode** to "Peak Shaving and Valley Filling."
- Set the **Peak Power (kW)** and **Valley Power (kW)** values.

End

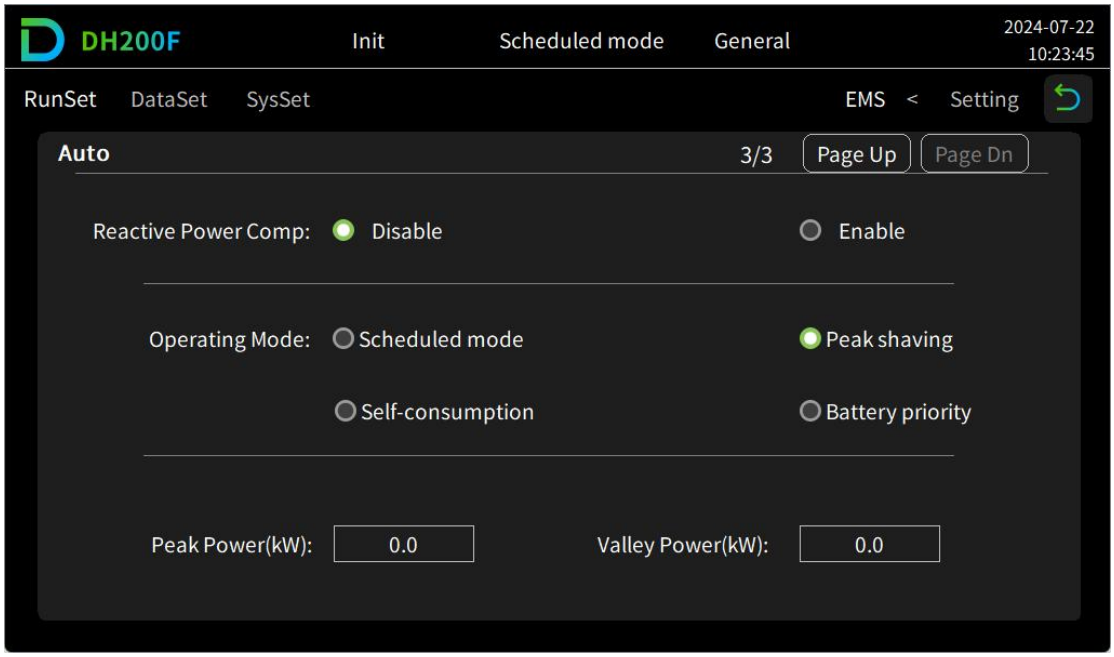


Figure 7-15 Peak Shaving and Valley Filling Settings Illustration

Self-Consumption Mode

Step 1: Log in with Permissions (General User) and Password (1111)

- Click on the main menu icon in the top right corner of the main interface.
- In the main menu, click on "Login Rights" to enter the user selection interface.
- In the user selection section, choose "General User," enter the password (1111), and click "Login."
- In the login success prompt popup, click "Confirm" to return to the main interface.

Refer to 7.7.1 Step 1 for the specific interface operation

Step 2: Enter the "Operation Settings" Interface to Configure

- In the main interface, click the main menu icon.
- In the main menu, click on the "Set Device" option.
- In the "Set Device" options, click the "EMS" option.
- In the top left navigation bar, click "Operation Settings" to enter the operation settings interface.

Refer to 7.7.1 Step 2 for the specific interface operation

Step 3: Configure Parallel Function and Setting Method in "Automatic Mode" Interface

● In the automatic mode interface page “1/4,” set the **Control Mode** to "Automatic."

●Configure **System Parallel Enable**:If there is only one unit, set to "Disabled." If multiple units are connected in parallel, set to "Enabled," and configure the parallel address and the number of parallel units ('1' indicates the master unit, others indicate slave units). The master unit needs to perform the next step, while the slave units do not.

●Choose the setting method as needed: If "Web" is selected, further operations will be performed on the Dyness cloud platform. If "HMI/Web" or "HMI" is selected, click to proceed to the next page.

Refer to 7.7.1 Step 3 for the specific interface operation

Step 4: Configure Automatic Mode Functions

●In the automatic mode interface "2/4," set the **Anti-Reverse Flow** function and the **Grid-Side Transformer Protection** function; click "Next Page."

●In the automatic mode interface "3/4," set the **Reactive Power Compensation** function.

Refer to 7.7.1 Step 4 for the specific interface operation

Step 5: Configure Self-Consumption Mode

●In the automatic mode interface "3/4," set the **Operating Mode** to "Self-Consumption."

End

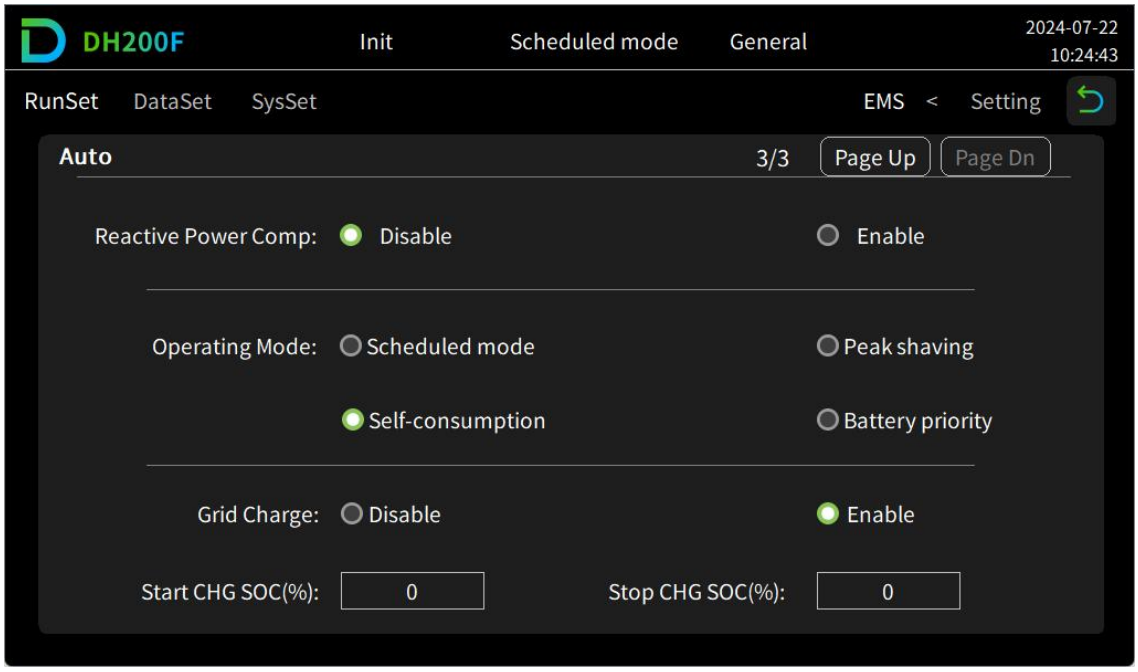


Figure 7-16 Self-Consumption Mode Settings Illustration

Remote Mode

Step 1: Log in with Permissions (General User) and Password (1111)

- Click on the main menu icon in the top right corner of the main interface.
- In the main menu, click on "Login Rights" to enter the user selection interface.
- In the user selection section, choose "General User," enter the password (1111), and click "Login."
- In the login success prompt popup, click "Confirm" to return to the main interface.

Refer to 7.7.1 Step 1 for the specific interface operation

Step 2: Enter the "Operation Settings" Interface to Configure

- In the main interface, click the main menu icon.
- In the main menu, click on the "Set Device" option.
- n the "Set Device" options, click the "EMS" option.
- In the top left navigation bar, click "Operation Settings" to enter the operation settings interface.

Refer to 7.7.1 Step 2 for the specific interface operation

Step 3: Configure Remote Mode

- Set the **Control Mode** to "Remote."
- Configure **System Parallel Enable**:If there is only one unit, set to "Disabled."If multiple units are connected in parallel, set to "Enabled," and configure the parallel address and the number of parallel units ('1' indicates the master unit, others indicate slave units).

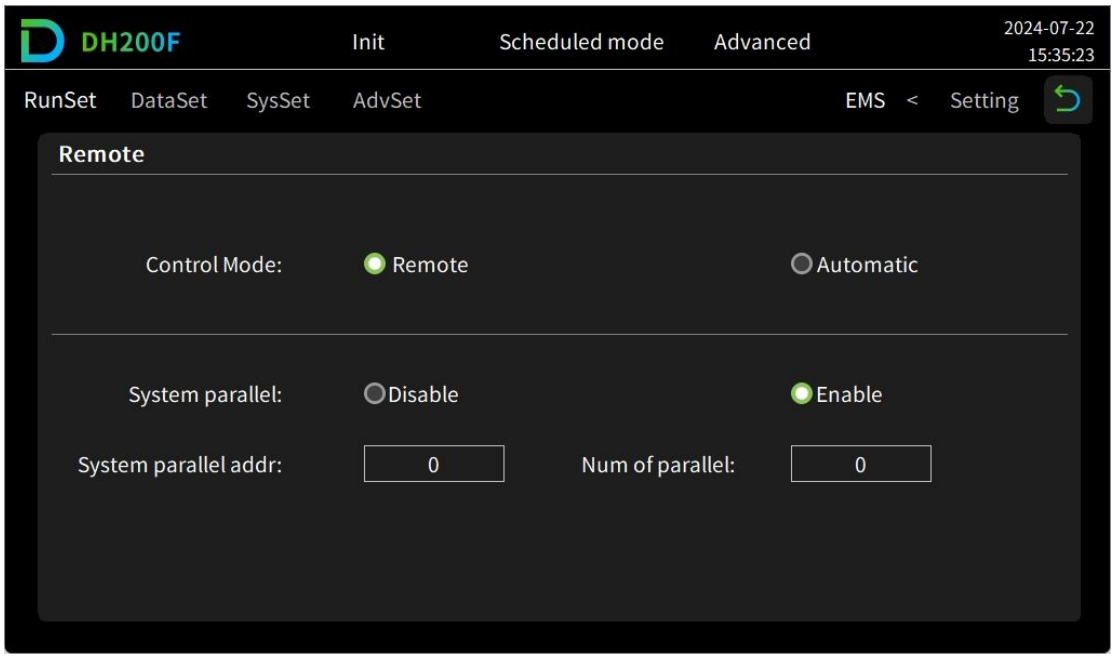


Figure 7-17 Remote Mode Settings Illustration

8 Troubleshooting

If the issue is not resolved after following the troubleshooting instructions provided, please contact Dyness for further assistance.

Table 8-1 Troubleshooting Instructions

Fault Description	Suggested Actions
Power Indicator Not Lit	- Check if all circuit breakers are closed.
Operation Indicator Not Lit	- Check if the EMS is in operation.
Alarm Indicator Lit	- Check the screen or Web interface for alarms. If not caused by improper operation, contact manufacturer support.
Unusual Noise from System	- Check if the system's air inlets and outlets are blocked or have foreign objects. If the noise is internal, contact support.
Door Alarm Displayed	- Check if the cabinet door is properly closed.
Water Ingress Alarm Displayed	- Check if the system has water ingress or if the water sensor wiring is damaged.
Emergency Stop Alarm Displayed	- Check if the emergency stop switch is released.
Surge Protector Alarm Displayed	- Check if the surge protector is damaged or if the fault indicator is lit. Contact support for replacement if damaged.
Gas Detector Alarm Displayed	- Stop using immediately and contact manufacturer support.
Temperature Detector Alarm Displayed	- Stop using immediately and contact manufacturer support.
Smoke Detector Alarm Displayed	- Stop using immediately and contact manufacturer support.
Other Alarms Displayed	- Contact manufacturer support.
Anti-Reverse Flow Anomaly	- Check if the anti-reverse flow meter settings are correct and if the meter is properly installed. - Check if the EMS PE cable is grounded. - If the fault persists, contact the manufacturer.
EMS to BMS Communication Error	- Power off and check if the communication cables are securely and correctly connected. - Restart the EMS and check if it is normal. - If the error persists, contact the manufacturer.
EMS to Fire Module Communication Error	- Power off and check if the communication cables are securely and correctly connected. - Restart the EMS and check if it is normal. - If the error persists, contact the manufacturer.

EMS to PCS Communication Error	- Power off and check if the communication cables are securely and correctly connected. - Restart the EMS and check if it is normal. - If the error persists, contact the manufacturer.
EMS to DCDC Communication Error	- Power off and check if the communication cables are securely and correctly connected. - Restart the EMS and check if it is normal. - If the error persists, contact the manufacturer.
EMS to Meter Communication Error	- Power off and check if the communication cables are securely and correctly connected. - Restart the EMS and check if it is normal. - If the error persists, contact the manufacturer.
EMS to Air Conditioner Communication Error	- Power off and check if the communication cables are securely and correctly connected. - Restart the EMS and check if it is normal. - If the error persists, contact the manufacturer.
EMS to HMI Communication Error	- Power off and check the meter wiring. - If the error persists, contact the manufacturer.
SD Card Detection Error	- Check if the SD card is functioning properly. Replace the SD card if necessary. - If the error persists, contact the manufacturer.
Network Connection Error (Default Shielded)	- Check the 4G/WIFI/LAN module antenna. - If the error persists, contact the manufacturer.
EMS Power Failure Save Error	- If the error persists, contact the manufacturer.
EMS External Flash Error	- If the error persists, contact the manufacturer.
System Version Mismatch Error	- Restart the inverter and check if it is normal. - If the error persists, contact the manufacturer.
Parallel Communication Lost	- Restart the inverter and check if it is normal. - If the error persists, contact the manufacturer.
Parallel Master Unit Lost	- Restart the inverter and check if it is normal. - If the error persists, contact the manufacturer.
Parallel Utility Input Mismatch	- If the error persists, contact the manufacturer.
Parallel Input Phase Sequence Error	- If the error persists, contact the manufacturer.
Parallel Output Phase Loss	- If the error persists, contact the manufacturer.
Software Version Mismatch Cannot Parallel	- If the error persists, contact the manufacturer.

Cable shield grounding

Check whether the cable shielding layer is in good contact with the insulating sleeve; whether the grounding copper bar is fixed in position.

Lightning protection devices and fuses

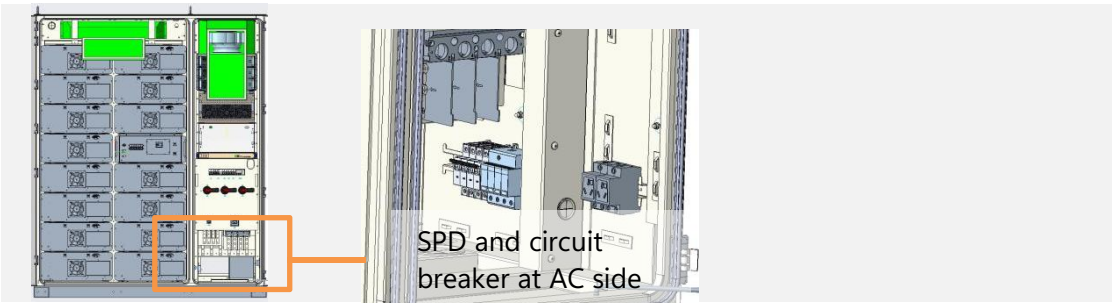
Check whether the lightning protection device and the fuse are well fastened.

Corrosion

Check whether there is oxidation or rust inside the outdoor cabinet.

Caution

The system needs to check and maintain the SPD device irregularly. Make sure SPD is not damaged and the circuit breaker is in closed state after lightning strikes.
The SPD and circuit breaker positions are shown in the figure below.



9 System Maintenance

Before performing system maintenance, ensure that all equipment inside the outdoor cabinet is completely powered off before starting the inspection work. If any non-compliance is found during the inspection, please correct it immediately.
The system enclosure must be secured before maintenance work. The maintenance items and maintenance frequency are as follows:

Table 9-1 System Maintenance Inspection Items

Inspection Area	Inspection Item	Frequency
Cabinet Exterior	Check if there are any flammable objects on top of the outdoor cabinet.	1 time/year
	Check if the outdoor cabinet and expansion bolts are secure and free from rust.	
	Inspect the outdoor cabinet shell for any damage, paint peeling, or oxidation.	
	Check if the cabinet door locks and other mechanisms can open and close smoothly.	
	Ensure the sealing strips are properly fixed.	
System Status	Inspect the outdoor cabinet and internal equipment for damage or deformation.	1 time/year
	Check if warning labels and signs are clear and undamaged. Replace if necessary.	
	Check for any loose or missing screws inside the outdoor cabinet.	
	Ensure the cable shielding and insulation sleeves are properly connected; verify the grounding copper bar is fixed in place.	
	Inspect for oxidation or rust inside the outdoor cabinet.	
Wiring and Cable Arrangement	Check if all entry and exit cable holes of the outdoor cabinet are well sealed.	1 time/year
	Inspect the outdoor cabinet for any water leakage.	
	Ensure power cable connections are not loose, and retighten according to specified torque.	
	Inspect power and control cables for damage, especially where they contact metal surfaces.	
	Check if the insulation tape on power cable terminals is intact.	
	Verify that grounding connections are correct; ground resistance should not exceed 1Ω.	
	Check if the internal equipotential bonding of the outdoor cabinet is correct.	

System Cleaning	Inspect the air inlets and outlets of the outdoor cabinet for blockages and clean if necessary.	1 time/6 months
	Check the internal humidity and dust levels of the outdoor cabinet. Clean if there is water or condensation.	
	Remove any foreign objects, dust, dirt, and condensation inside the outdoor cabinet.	
	Regularly inspect for water or condensation inside the cabinet: once a year in low humidity areas; once every six months in medium humidity areas; once every 1-3 months in high humidity areas.	
System Functionality	Check for unusual noises from internal equipment during operation.	1 time/2 years
	Inspect if the internal temperature of the outdoor cabinet is too high.	
	Perform startup and shutdown tests to check for any abnormalities.	
Fans	Inspect the operating condition of the fans.	1 time/year
	Check if the fans are blocked.	
	Listen for any abnormal noise during fan operation.	
Air Conditioning	Inspect the operating condition of the air conditioning.	1 time/year
	Check if the air conditioning is blocked.	
	Listen for any abnormal noise during air conditioning operation.	
Safety Functions	Test the emergency stop button and display screen stop function with a simulated shutdown test.	1 time/6 months to 1 year
	Inspect warning labels and other equipment labels for clarity and replace if blurred or damaged.	
Component Maintenance	Regularly inspect all metal components for rust (every six months).	1 time/6 months to 1 year
	Annually inspect contactors (auxiliary switches and micro switches) to ensure proper mechanical operation.	
	Check operating parameters, especially voltage and insulation.	

10 Quality Assurance

Please refer to the "Warranty Agreement" for the validity period of the quality assurance.
Warranty Period:
For any failure of Daqin Energy Storage products within the warranty period, we will be responsible for handling and providing appropriate replacement or repair solutions, offering free repair services or replacement with new products. During the warranty period, we require customers to provide a valid invoice and date of purchase as evidence. Additionally, the Daqin trademark on the product should be clearly visible to ensure the validity of the quality assurance.

We reserve the right not to provide quality assurance under the following circumstances:

- The whole machine or parts are beyond the free warranty period;
- Incorrect installation, modification, or usage;
- Usage in harsh environmental conditions beyond those specified in the product manual, or damage caused by abnormal natural environmental factors;
- Faults or damages resulting from installation, repair, alteration, or disassembly by non-Daqin authorized service agencies or individuals;
- Faults or damages caused by using non-standard or non-Daqin authorized parts or software.

In cases where the above situations cause failures, Daqin can provide paid repair services upon customer request.

If you have any questions about this product, please contact us. To facilitate and expedite the resolution of your issues, please provide the following information:

- Original purchase proof
- Contact information, including name, phone number, email address, and shipping address
- Information about all defective products, including product model, serial number, installation date, and failure date, as well as a description of the failure.

11 Appendix

To better serve our users, our company provides a checklist to ensure the following steps are completed before the product operates.

Item	Inspection Item	Completed
1	Check if there is any damage to the appearance and if the internal equipment is intact	☐
2	Check if the cabinet assembly is secure	☐
3	Check if the cabinet trademark and component labels are clear or damaged	☐
4	Check if the GRID wiring cable is connected according to the correct AC cable connection sequence	☐
5	Check if the LOAD wiring cable is connected according to the correct AC cable connection sequence	☐
6	Check if the PV wiring cable is connected according to the correct DC cable connection sequence	☐
7	Check if the communication cable connection is completed	☐
8	Check if the grounding cable is fault-free	☐
9	Check if the meter can read correctly	☐
10	Check if all connection points are correctly connected and have good contact	☐
11	Check if manual operation parts are free from abnormalities	☐
12	Check if the circuit breaker closing and opening are normal	☐
13	Check if the button operations and related indicator lights are normal	☐
14	Check if the power indicator light is normal	☐
15	Check if the operation indicator light is normal	☐
16	Check if the fan and air conditioner are operating normally and without abnormal noise	☐
17	Check if the HMI screen displays normally and without errors	☐
18	Check if there are any tools or parts left inside the equipment	☐
19	Check if the cabinet door opens and closes smoothly	☐

DYNESS

DISCOVER YOUR NATURE

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