Open Energy for All



Power Conversion System

USER MANUAL

HPCS125

Revision History

Version	Date	Description
V1.1	2025-12-19	First Release
V1.2	2026-4-23	Updated 6.5.1 Packing List.

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1. About This Manual

This chapter introduces the contents of the manual, the applicable products and models, the target users, and the symbols used in the manual, so as to help users better understand the content of the manual.

1.1 Content Introduction

This manual covers the following sections:

Section	Description
Product Overview	Provides the operation principle, electrical topology, appearance, dimensions, operation state, and communication applications of the PCS.
Safety Precautions	Provides safety guidelines for the installation and operation of the PCS.
Unpacking and Handling	Provides precautions to take when unpacking and handling the PCS.
Mechanical Installation	Provides requirements for the mechanical installation of the PCS.
Electrical Installation	Provides requirements for the electrical installation of the PCS.
Operation	Provides procedures and precautions for power-on, normal stop, and emergency stop of the PCS.
Operation Mode	Provides operation modes and state of the PCS.
User Interface	Provides main components and basic operation on the user interface.
Routine Maintenance	Provides guidelines for routine maintenance and replacement of common parts on the PCS.
Troubleshooting	Provides fault causes and troubleshooting of the PCS.
Others	Provides technical parameters, warranty terms, and after-sale service information.

Table 1.1 Manual Contents

1.2 Validity

This manual is valid for the PCS model: HPCS125.

"PCS", "equipment", "product" mentioned in this manual all refer to the HPCS125.

This product is intended for commercial and industrial use only. Do not use it in residential settings.

1.3 Audience

This manual is only intended for professionals to install, operate, and maintain the PCS. The professionals must meet the following requirements:

- Familiar with local electrical codes and regulations.
- Familiar with the characteristics of electronic components and have undergone systematic training.
- Competent to handling risks linked to the PCS installation, usage, and maintenance.

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1.4 Symbols

Symbols in this manual are used to highlight relevant information to ensure the personal and property safety during the PCS operation. Read through the following symbols and comply with them before installing and operating the PCS.

Symbol	Description
DANGER	Indicates a hazard with a high level risks that, if not avoided, may lead to death or severe injuries.
WARNING	Indicates a hazard with a medium level risks that, if not avoided, may lead to personal injuries or device damage.
CAUTION	Indicates a potential hazard, if not avoided, may lead to minor personal injuries or equipment malfunctions.

The additional symbols below appear on the PCS.

Symbol	Description
Type Approved Safety Regular Production Surveillance TÜVRheinland CERTIFIED www.tuv.com ID 1111296119	**IEC 62477-1 & TÜV Mark**
CE	**CE Mark** The PCS conforms to the CE certification.
	RCM Mark Marked with the RCM in compliance with AS/NZS 4417.1&2 and the EESS.
20mins	**Risk of Electrical Shock** Indicates that after power disconnection with the power supply, it is necessary to wait for at least 20 minutes before touching the internal conductive parts.
ELECTRIC SHOCK	**Risk of Electric Shock** Indicates that the PCS may be charged. Do not touch the PCS to avoid electric shock.
WARNING	**Danger** Indicates that you need to strictly follow the instructions in this manual during installation, operation and maintenance of the PCS.
WARNING	**Hot Surface** Indicates that the PCS may become hot during operation. Do not touch the PCS to avoid burns.
	Treatment Do not dispose of the PCS as domestic garbage.
	Read the manual first Read through this manual before performing any installation, operation, or maintenance.

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2. Product Overview

This chapter mainly introduces the components, appearance, electrical principle, and communication application of the PCS.

2.1 System Overview

The PCS exchanges energy between the storage battery and the grid, and monitors and manages the exchange process. The energy storage system consists of a battery, the energy storage converter (PCS), the battery management system (BMS), the energy management system (EMS). Usually the power station is equipped with auxiliary power supply equipment. The following figure shows the system.

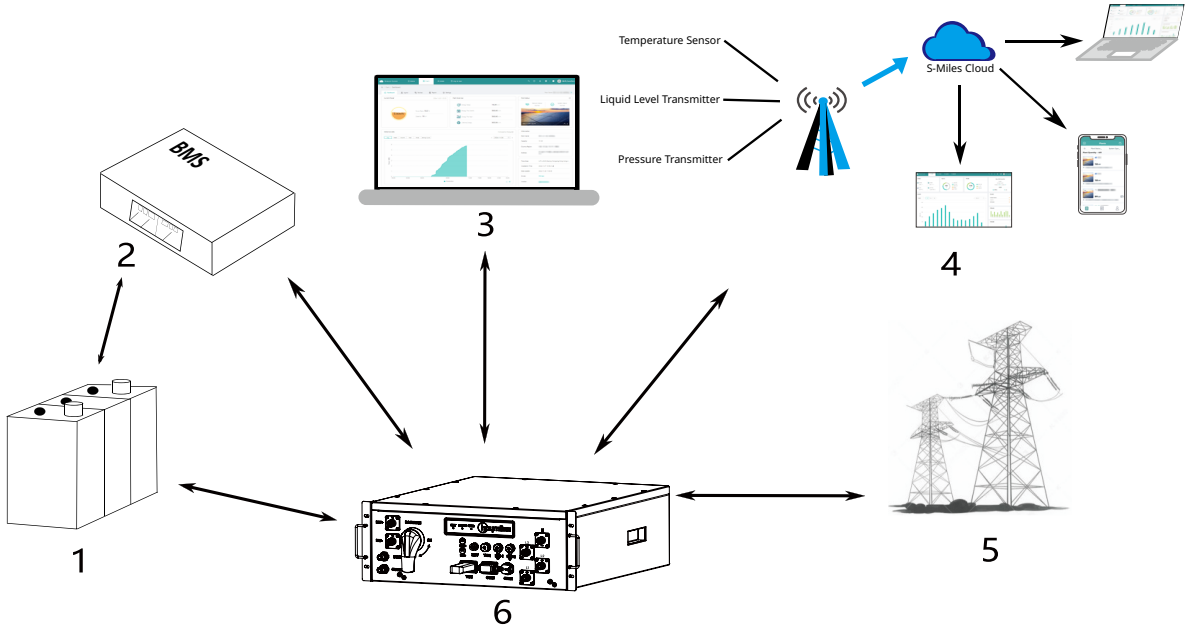


Figure 2.1 Energy Storage System

No.	Name
1	Battery
2	Battery Management System (BMS)
3	Energy Management System (EMS)
4	4G IoT Module
5	Grid
6	Power Conversion System (PCS)

Table 2.1 Energy Storage System

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2.2 Appearance and Dimensions

The PCS appearance is as follows:

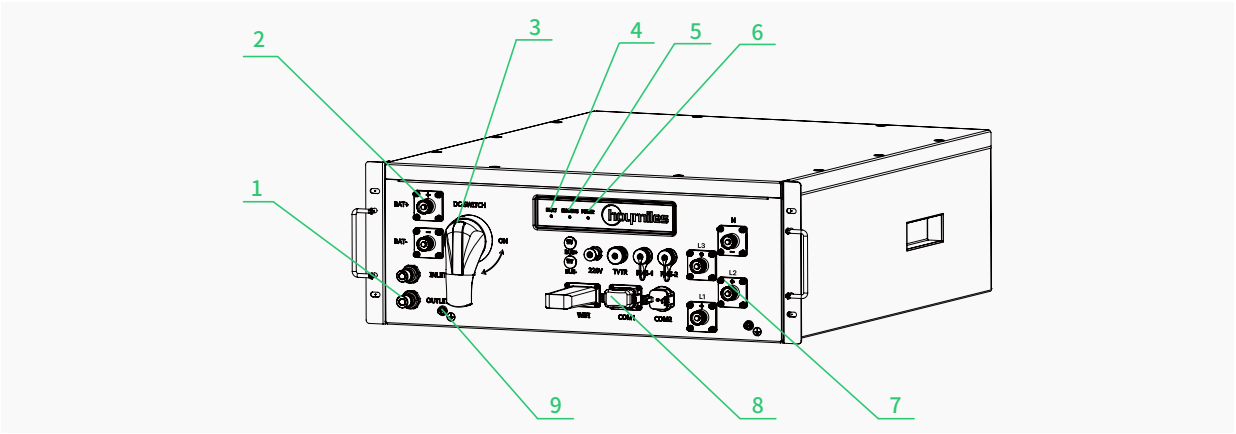


Figure 2.2-1 PCS Appearance

No.	Name	Description
1	Liquid Cooling Interface	/
2	DC Interface	/
3	DC Switch	/
4	LED Indicator (Power Indicator)	Solid blue when the PCS is powered on.
5	LED Indicator (Running Indicator)	Solid green when the PCS is running normally.
6	LED Indicator (Fault Indicator)	Solid red when a fault occurs.
7	AC Interface	/
8	Communication Interface	/
9	Grounding Terminal	/

Table 2.2-1 PCS Components

The panel indicator state is as follows:

LED State	Indication	PCS Mode
Power ○ Running ○ Fault ○	The PCS is powered off.	Normal Stop
Power ● Running ○ Fault ○	The PCS is powered on but is not running.	Standby
Power ● Running ● Fault ○	The PCS is powered on and is running normally.	Normal Running
Power ● Running ○ Fault ●	The PCS is powered on but stops due to a fault.	Fault Stop

Table 2.2-2 PCS LED Indicator Description

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The PCS Dimensions are as follows:

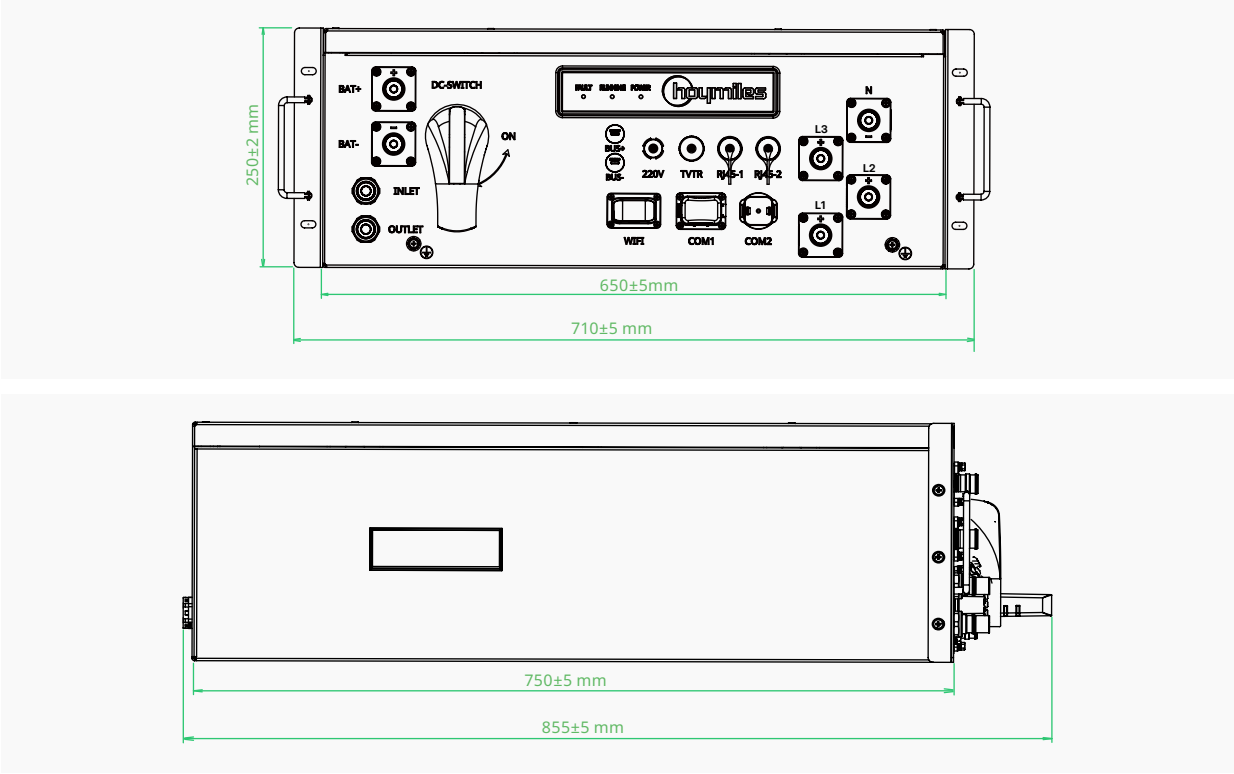


Figure 2.2-2 PCS Dimensions

2.3 Main Power Topology

- AC Side: The AC side of the PCS connects to the grid via an AC EMI filter.
- DC Side: The DC side connects to the battery via a DC EMI filter.
- Operation: The PCS supports four-quadrant operation, allowing energy to flow from the grid to the battery or from the battery to the grid via active control.

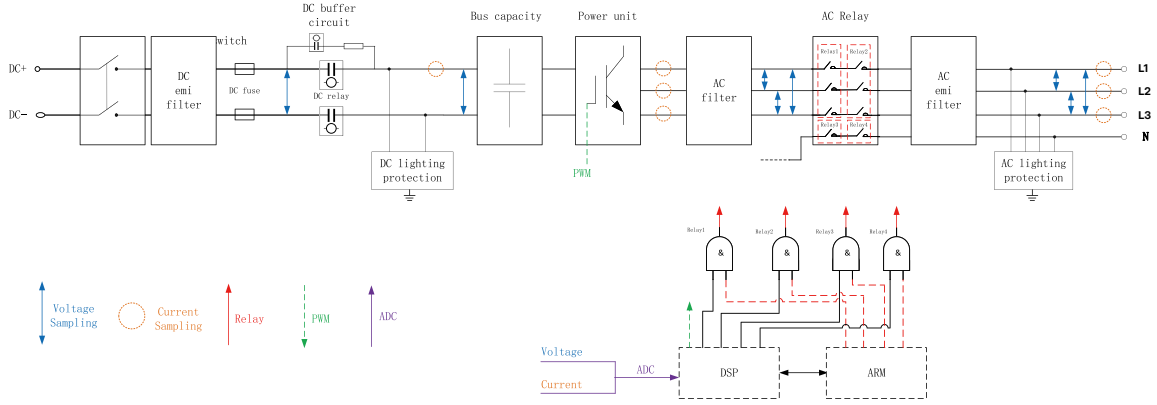


Figure 2.3 PCS Main Power Topology

2.4 DRM Topology

The detection control unit includes a PCS and a Micro Control Unit (MCU). The DO terminal of the detection control unit is connected to the DRED signal acquisition terminal through several isolation units, each of which includes an optocoupler. After detecting the signal, the front-stage optocoupler transmits it to the MCU. The MCU then transmits the status of the IO interface to the PCS via RS485 communication. Finally, the PCS modulates based on the IO status.

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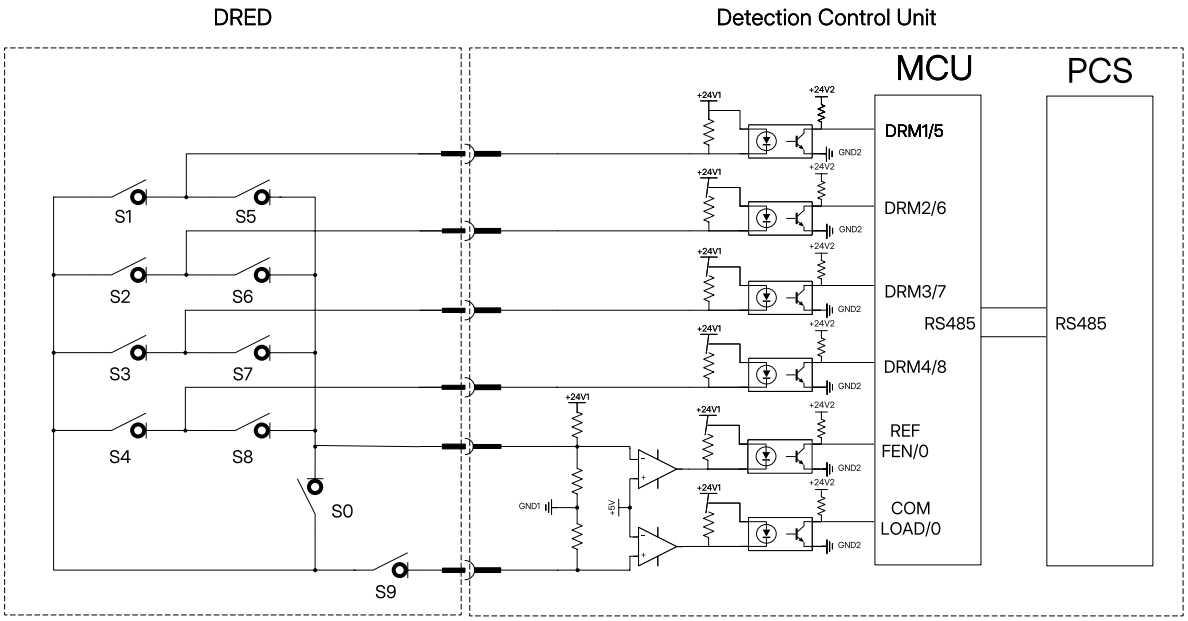


Figure 2.4 DRM Topology

	DRM1/5	DRM2/6	DRM3/7	DRM4/8	REF FEN/0	COM LOAD/0
All ON	1	1	1	1	0	0
S1 ON	0	1	1	1	0	1
S2 ON	1	0	1	1	0	1
S3 ON	1	1	0	1	0	1
S4 ON	1	1	1	0	0	1
S5 ON	0	1	1	1	0	0
S6 ON	1	0	1	1	0	0
S7 ON	1	1	0	1	0	0
S8 ON	1	1	1	0	0	0
S0 ON	1	1	1	1	0	1

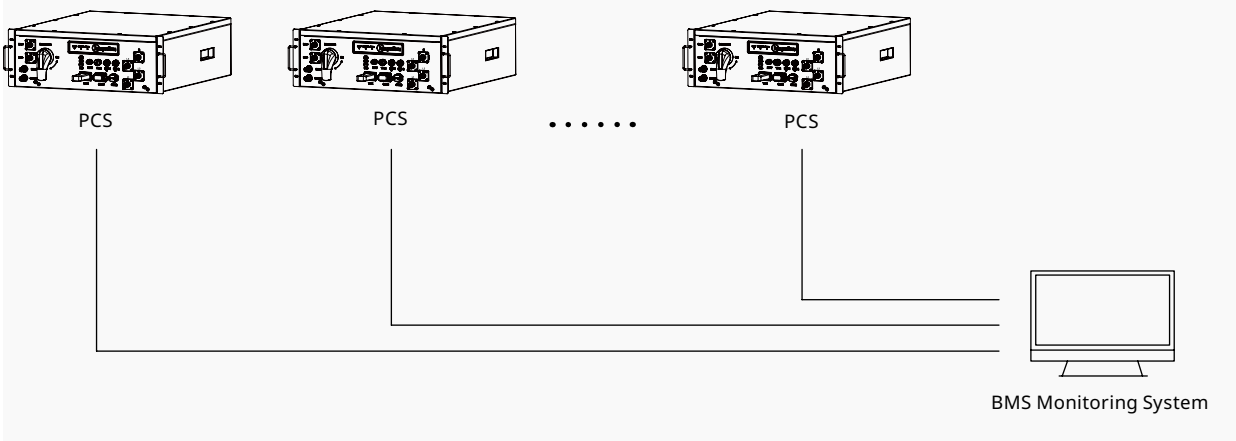
2.5 Communication Application

Hoymiles HPCS series energy storage converters support various communication protocols with BMS and EMS to ensure safe and stable operations.

2.5.1 BMS Communication

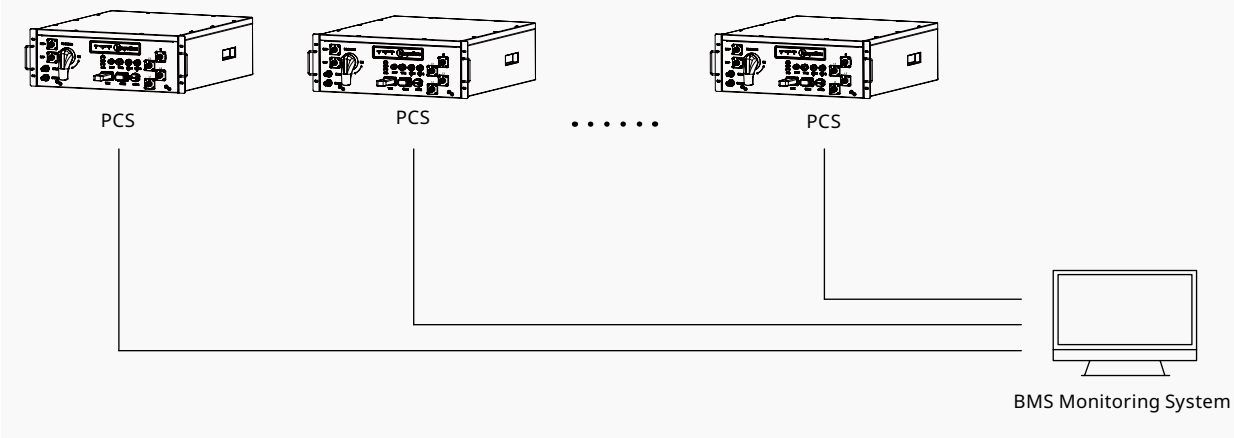
BMS can manage, protect, and monitor the battery to improve the safety of the battery pack. HPCS series can communicate with BMS so as to improve the reliability of the product and ensure the safety of the customer's property. HPCS125 supports RS-485 and CAN as optional communication methods; supports Modbus RTU protocol and CAN2.0 protocol. The PCS can communicate with BMS via Pin1 and Pin2 (RS-485) or Pin3 and Pin4 (CAN) in the COM2 interface.

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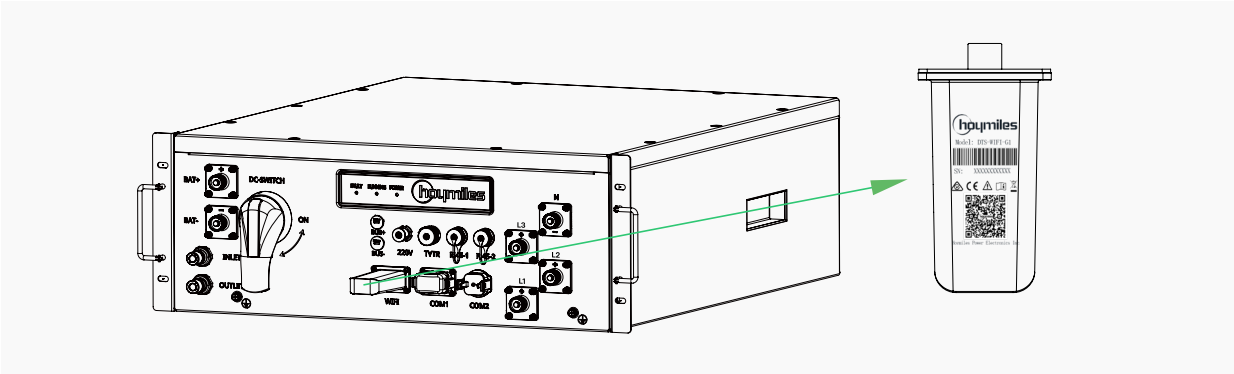
2.5.2 EMS Communication

EMS is responsible for the operation control, coordination control, state monitoring, etc. of the energy storage system. The PCS can communicate with EMS over Ethernet, using the Modbus TCP protocol.



2.5.3 Wi-Fi/4G Communication (Optional)

Wi-Fi/4G communication is mainly used for monitoring display. You can monitor the PCS operation information on the S-Miles Cloud Installer App. The Wi-Fi/4G interface on the PCS is shown in the figure below. You can scan the QR code on the Wi-Fi stick to view the operation instructions.



3. Safety Instructions

This chapter mainly introduces some safety instructions before installing and using the PCS.

WARNING	Strictly comply with the instructions below.

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- Before using the PCS, read through and comprehend all the safety instructions. Failure to comply with the safety instructions may lead to equipment damage, severe physical injuries, or even death.
- "CAUTION", "WARNING", and "DANGER" symbols in this manual only indicate some of the instructions that need to be followed; they just supplement the safety instructions.
- Use the PCS in an environment that complies with local electrical standards and Hoymiles design specifications. Malfunctions or component damage is caused by improper use not covered by warranty.
- Hoymiles shall bear no legal responsibility for personal physical injury or property damage caused by non-compliance with this manual or improper use.

3.1 Personnel Requirements

WARNING	Operators must strictly meet the following requirements.

- Have been trained or qualified to operate the product.
- Fully familiar with the structure and working principle of the whole energy storage system.
- Fully familiar with this user manual and the basic safety requirements for the operation of electrical equipment.
- Fully familiar with the relevant standards in the country or region where the project is located.

3.2 Installation & Operation Instructions

DANGER	Before installing and operating the PCS, read through and strictly follow the instructions below. Failure to do so may result in death.

Safety Warning Signs Placement

During the installation, routine maintenance, and inspection of the PCS, it is necessary to avoid misuse or accidents caused by approach of unrelated personnel. Please comply with the following:

- Place clear signs at the front and rear switches of PCS to prevent accidents caused by accidental activation.
- Place warning signs or strips near the operation area.
- After the completion of installation, check the wiring to ensure correct positive and negative polarity and the phase sequence of L1-L2-L3-N.

Escape Routes Requirements

To ensure that operators can quickly evacuate when an accident occurs, please comply with the following:

- During maintenance, inspection, or other operations of the PCS, ensure that the escape routes are clear.
- Never place obstacles in the escape routes or occupy the escape routes in any form.

Equipment Installation

To avoid the noise during the operation, and to avoid other possible emergencies affecting the daily life of residents and causing safety accidents, please comply with the following for the installation of the PCS.

- Check whether the on-site temperature, humidity and noise meet the requirements.
- Check whether the warning sign is placed on site to prevent accidental entry or misoperation.
- Check whether the necessary escape routes is set up according to the regulations.

Electrical Wiring

Touching live electrical parts may result in death due to burns and electric shock. Please comply with the

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following:

- Set the parameters of battery packs based on the PCS technical parameters.
- The PCS can only be connected to the grid with the permission of the local power supply company and after the installation has been completed by professional personnel.
- All electrical installations must comply with the electrical installation standards of the country or region where the project is located.

Wiring Requirements

- Check the live parts of cables and ensure no exposure, so as to prevent accidental touch that could endanger life.
- Check the insulation of cables and ensure no scratches, so as to prevent electrical leakage.
- Check cables at the corners of the equipment and ensure they are free from force, so as to prevent damage to the insulation of the cables.
- Check the distance between cables and the equipment and ensure it is within a safe distance range.

Energy Storage Battery Protection

There is a very high voltage between the positive and negative electrodes of the energy storage battery pack in large power plants. Accidental touch may lead to electric shock or endanger life. Please comply with the following:

- When maintaining the equipment, ensure that the equipment and energy storage pack have been disconnected and the equipment is not energized.
- Ensure the correct polarity of the DC connection between the battery and the PCS to prevent reverse connection.
- Ensure that the voltage levels match.

Static Electricity Prevention

Static electricity may cause damage to the equipment. Please comply with the following:

- During operation, it is necessary to follow the prevention measures specified for electro-static discharge (ESD) , and wear anti-static wrist strap for wiring and other operations to avoid static damage to the equipment.
- Avoid unnecessary contact with the circuit board.

Live Line Measurement

There is a high voltage in the equipment, and accidental touch may endanger life. Please comply with the following:

- When conducting live measurements, you must take protective measures such as wearing insulated gloves and shoes.
- Must be accompanied by personnel to ensure safety.

Equipment Measurement

When conducting electrical connections, trial operations, and other operations on the equipment, it is necessary to use electrical measuring equipment to ensure that the electrical parameters meet the requirements. Please comply with the following:

- Select the measuring equipment that meets the on-site situation in terms of range and usage conditions.
- Ensure the correct connection of measuring equipment.

3.3 Maintenance Instructions

3.3.1 General Precautions

 **DANGER**	Before installing and operating the equipment, please read through and strictly follow the requirements below to avoid life-threatening situations.

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For the equipment maintenance, please comply with the following:

- Before maintenance, cut off all the power supplies of the equipment and wait for at least 30 minutes. Use a multimeter to measure the voltage and ensure it is below 36 V.
- After powering off the equipment, place a sign nearby to prevent accidental activation.

3.3.2 Routine Maintenance

To ensure a long-term and stable operation of the equipment, do not use corrosive chemicals or strong detergents to clean the equipment. For the equipment routine maintenance, please comply with the following:

Inspection Item	Method	Frequency
PCS Cleaning	Check regularly for obstructions and dust.	Every 6 months to 1 year.
PCS Operating State	• Check for physical damage or deformation. • Listen for abnormal sounds during operation. • Ensure that all parameters of the PCS are set correctly.	Every 6 months to 1 year.
Electrical Connections	• Check for loose or disconnected cables. • Check for damage to the PCS, particularly checking the cable surface in contact with the metal for any cut marks. • Ensure that the unused DC input terminals, PCS terminals, COM interfaces, and waterproof covers are securely fastened.	6 months after the first debugging and testing, and then every 6 months to 1 year.
Grounding Reliability	Ensure that grounding cables are securely connected.	6 months after the first debugging and testing, and then every 6 months to 1 year.

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3.4 Additional Precautions

CAUTION	Strictly comply with the following.

- All operations on the PCS must be in accordance with local regulations and standards.
- Make sure at least two operators on site to perform operations on the PCS.
- Wear and use necessary protective equipment for insulation, anti-scalding, and anti-noise.
- If you encounter any issues not covered in this manual, please contact our after-sales service.

4. Unpacking and Handling

DANGER	• Do not disassemble the PCS during transport or installation. Any faults caused by modifications without our authorization will void the warranty. • Do not transport the PCS in rainy days or under severe weather conditions. If conditions are unavoidable, please take necessary protective measures.

4.1 Unpacking

4.1.1 Unpacking Instructions

Please comply with the following when unpacking the PCS:

- Do not remove the package of the PCS during storage. Only remove the package before installation.
- Check every item received against the delivery list. In case of any missing components or damage, notify the freight carrier immediately.

No.	Name	Quantity
A	PCS	1
B	Documents (Quality Inspection Report and Certificate Card)	2
C	Non-Metallic Fluid Connector (Blue)	1
D	Non-Metallic Fluid Connector (Red)	1
E	Terminal Plug (Black)	2
F	Terminal Plug (Orange)	4
G	COM1 Communication Terminal	1
H	COM2 Communication Terminal	1
I	TVTR Sampling Terminal	1
J	220V AC Terminal	1
K	Screws (Size: M6 * 20 mm)	4
L	Desiccant	1
M	DC Connector with Positive Electrode (Optional)	1
N	DC Connector with Negative Electrode (Optional)	1
O	DC Fuse (Optional)	1
P	DC Connector Disconnect Tool (Optional)	1

4.1.2 Unpacking Procedure

Steps

1. Remove the outer package.
2. Remove the internal accessories, pearl cotton, and polypropylene bag.

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3. Take out the PCS, and place it on the designated location.
4. Ensure no damage on the exterior of the PCS.
5. Dispose of or recycle the package according to local regulations.

4.1.3 Check After Unpacking

Check the following items after unpacking (for abnormal situations, please contact our after-sales service).

- The exterior of the product is not damaged, scratched, or concaved.
- Options ordered for the product are complete.
- The nameplate is consistent with the ordered product model.
- Warning labels are legible and not damaged/scratched.

4.2 Storage

Item	Storage Requirements
Package	The PCS must be stored in its original package. Storage without packaging is not allowed.
Foundation	The PCS must be placed on a level and stable floor for storage. The floor must be capable of bearing the weight of the PCS.
Space	The PCS must be protected from collision during storage.
Time	• Power on the PCS once every three months. • Check the PCS once every three months. • Replace the desiccant once every six months.
Temperature	–40°C to +70°C
Humidity	0%RH to 100%RH (non-condensing)

Table 4.2 Storage Requirements

4.3 Handling

4.3.1 Handling Requirements

CAUTION	Please comply with the following when handling the PCS.

- Ensure a slow and stable handling during the process of lifting, moving, and placing the PCS by a forklift.
- Perform a forklift test and adjust the forklift as necessary. Then, lift the PCS and transport it to the designated position.
- Place and move the PCS on a solid and stable ground.
- Ensure that the tilting angle of the PCS is l than 10° during handling, and keep the handling height as low as possible.

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- Do not transport the PCS on a hydraulic vehicle for a long distance or on a sloping road. Failure to comply may result in damage to the hydraulic vehicle.
- Handle the PCS gently and steadily during lifting or landing to avoid shocks or oscillations. Mind your feet when the forklift is lowering.

4.3.2 Handling Before Unpacking

Steps

1. Adjust the width of the forklift feet so that the center of the PCS gravity is on the forklift feet.
2. Position the forklift as shown in the figure below.

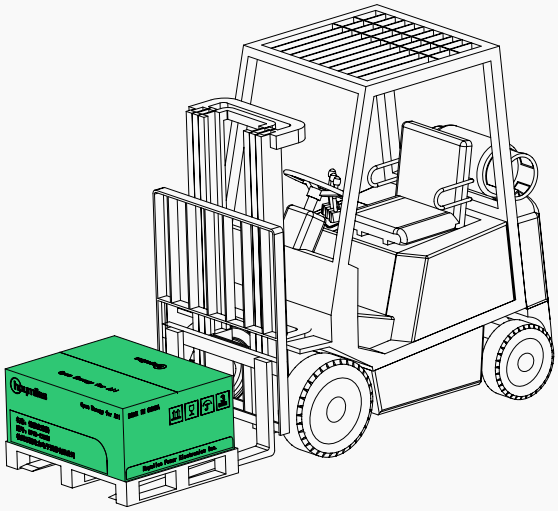


Table 4.3.2 Handling Packed PCS with Forklift

4.3.3 Handling After Unpacking

Steps

1. Adjust the width of the forklift feet to align it to the center of the wooden pallet, so that the center of the PCS gravity is on the forklift feet.
2. Position the forklift as shown in the figure below.

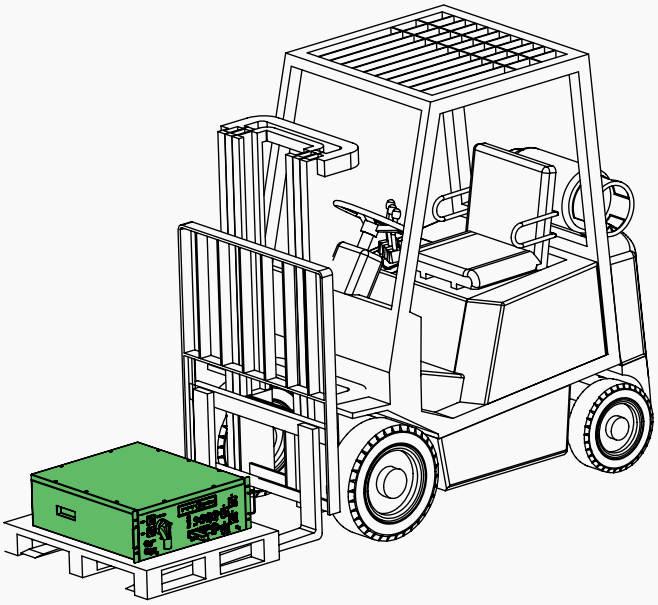


Table 4.3.3 Handling Unpacked PCS with Forklift

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5. Mechanical Installation

5.1 Installation Environment Requirements

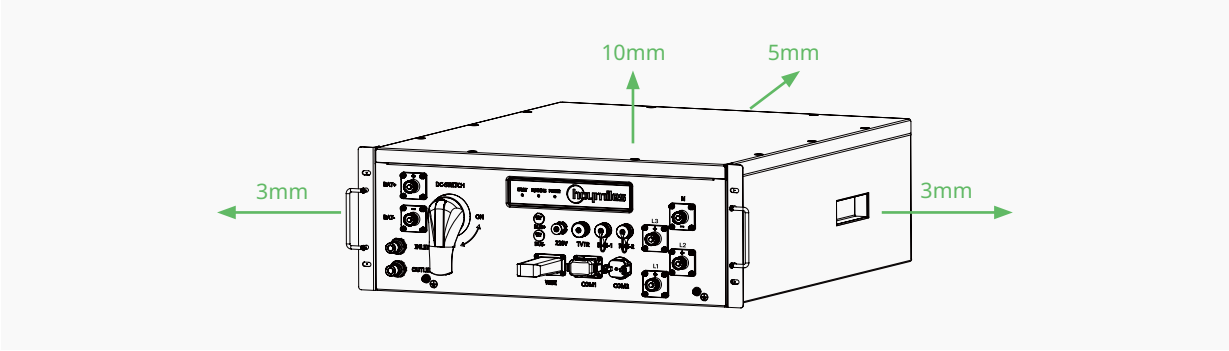
Item	Environment Requirements
Installation Site	The PCS is designed for installation and operation in the cabinet.
Pollution Level	3
Altitude	• 110 % overload below 3000 m. • Derated operation above 3000 m.
Temperature	-35 ℃ to 60 ℃ (If the ambient temperature exceeds 50 ℃, the PCS will reduce output power for self-protection.)
Humidity	0%RH to 100%RH (non-condensing)

5.2 Installation Tool Requirements

Tool	Description
Socket and Wrench Set	The maximum torque must be over 10 N·m.
Phillips Screwdriver	Used for fixing the M6 screws.
Automatic Cable Stripper	Used for stripping the outer jacket of a cable.
Steel Ruler	Used for measuring the length of a conductor.
Automatic Cable Crimping Machine	Used for crimping the Cable and the PCS terminal.

5.3 Installation Clearance Requirements

Reserve sufficient clearance around the inverter for installation and heat dissipation.



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5.4 Installing the PCS

CAUTION	When installing and fixing the PCS, please comply with the following: • Place the PCS on a solid and stable surface (no inclination angle). • Ensure that all AC and DC cables have been powered off.

Steps

1. Move the PCS to the fixture.
2. Raise the fixture to the PCS installation position.
3. Slowly push the PCS into the ESS cabinet.
4. Secure the PCS to the cabinet with four M6*20 mm combination screws (tightening torque: 6 ± 0.5 N.m).
5. Removing the fixture and restoring it to the lowest position.

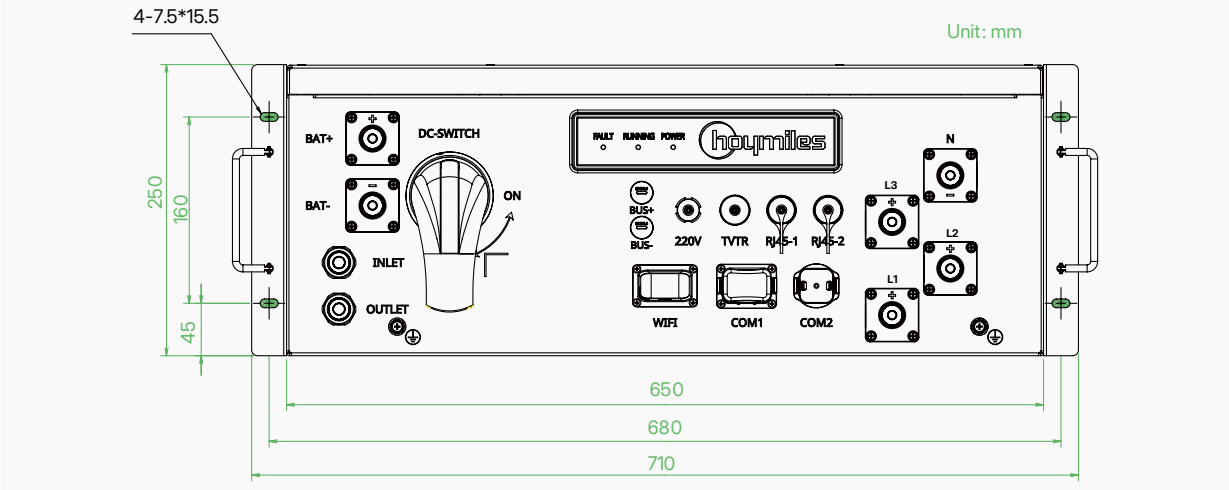
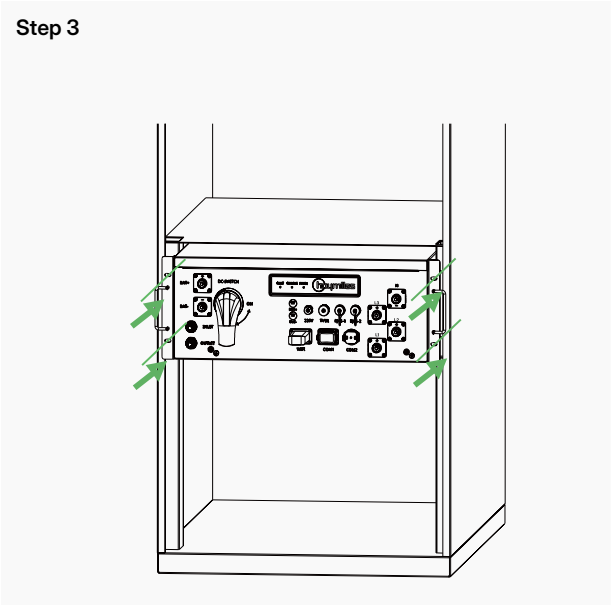
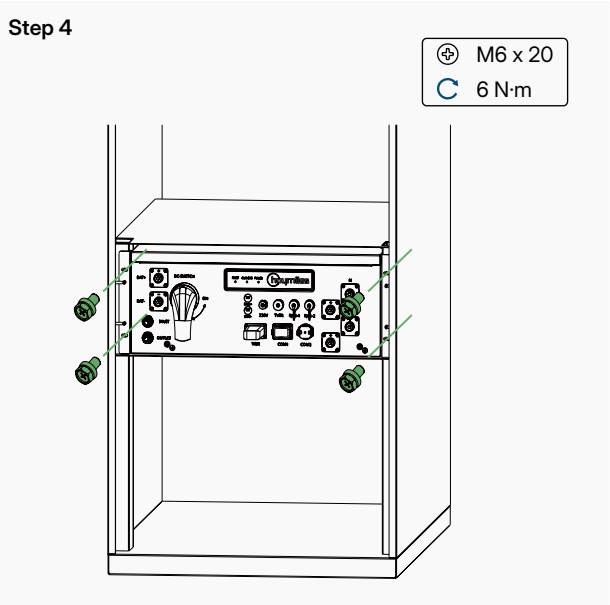


Figure 5.3 Mounting Holes





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5.5 Installing the Liquid Cooling System

CAUTION	Make sure the liquid cooling system is powered off before connection.

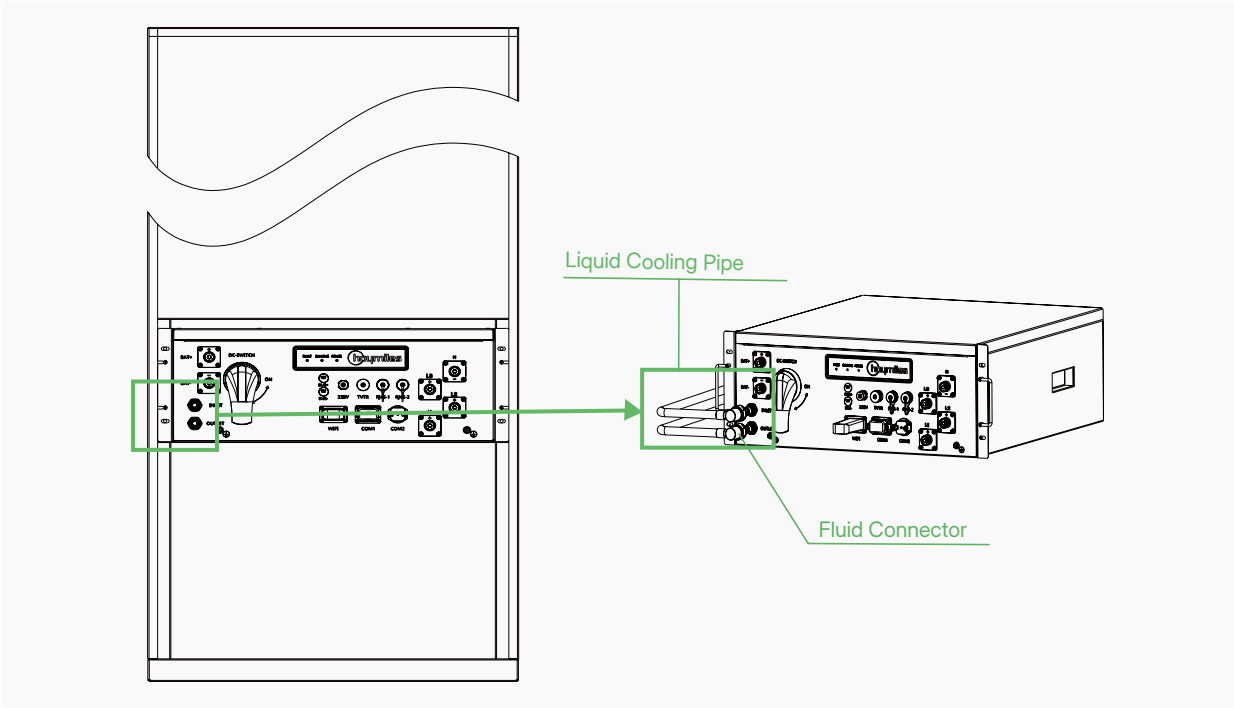


Figure 5.4 Liquid Cooling System

Item	Requirements
Cooling Medium	50 % Ethylene Glycol Solution
Inlet Liquid Temperature	• Ambient temperature ⩽ 40 °C: ambient temperature ⩽ inlet liquid temperature ⩽ 50 °C • Ambient temperature > 40 °C: 35°C ⩽ inlet liquid temperature ⩽ 50 °C
Rated Flow	10 to 12 L/min
Rated Water Pressure Loss at PCS	65 kpa
Rated Operating Pressure / Maximum Pressure for Liquid cooling	100kpa/400kpa
Cooling Capacity	> 3 kW

Table 5.4 Liquid Cooling System Requirements

NOTE

- Fluid pipe requirements: PA corrugated pipe (12 mm, maximum operation pressure ⩾ 20 bar, operation temperature: -40 °C to 85°C)
- Push (thrust: ⩾ 100 N) the red and blue fluid connector sockets into the corresponding plugs of the cabinet fluid connector in sequence.
- The above requirements for liquid cooling system is based on the data of one PCS.

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6. Electrical Installation

6.1 Safety Instructions

DANGER	• The PCS must be installed by skilled personnel in strict accordance with the user manual. Always follow the safety instructions in this manual, especially in this chapter. • Comply with the electrical installation standards of the country or region where the project is located.

Inspection Before Installation

- Cut off all power supplies and ensure the PCS is de-energized.
- Place a sign nearby to prevent accidental activation.
- After the PCS is de-energized, you must wait for 20 minutes to ensure that the PCS is internally de-energized before proceeding.
- Perform grounding and short-circuit connections.
- Use insulating materials to isolate live electrical parts to prevent physical injuries.
- It is recommended to use a Type-B RCD with a rating of 300 mA unless a lower value is required by the specific local electric codes.

6.2 Preparation Before Wiring

6.2.1 Required Tools and Parts

No.	Name
1	Straight Screwdriver (2.0 mm)
2	Cable Stripper
3	Hydraulic Plier
4	Alcohol Blast Burner / Hot Air Blower
5	Megameter and Multimeter
6	Heat Shrink Tubing
7	Insulating Tape
8	Other auxiliary tools and spare parts

Table 6.2.1 Installation Tools and Parts

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6.2.2 Terminal Overview

All input and output terminals are located at the front of the PCS casing. The silkscreen marking of each terminal is shown in the figure below. Follow these markings to correctly connect the cables.

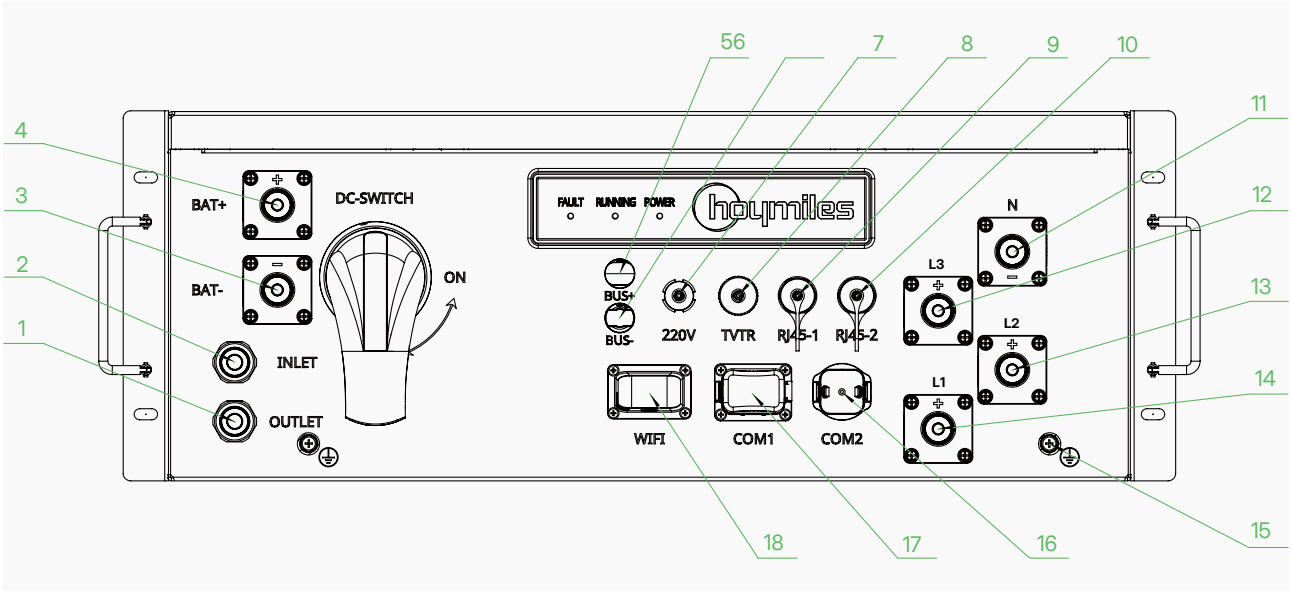


Table 6.2.2 Terminal Overview

No.	Marking	Terminal Name
1	OUTLET	Liquid Outlet
2	INLET	Liquid Inlet
3	BAT-	Battery Negative Electrode
4	BAT+	Battery Positive Electrode
5	BUS+	DC Output Positive Electrode
6	BUS-	DC Output Negative Electrode
7	220V	AC Auxiliary Power Supply Input (Range: 180 to 260 VAC)
8	TVTR	Grid Voltage Sampling
9	RJ45-1	Background Monitoring
10	RJ45-2	Ethernet Communication
11	N	AC Output Phase-N
12	L3	AC Output Phase-L3
13	L2	AC Output Phase-L2
14	L1	AC Output Phase-L1
15	⏚	Grounding Point
16	COM2	Communication Interface
17	COM1	I/O
18	Wi-Fi	Wi-Fi

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6.2.3 Cable Preparation

Cable Selection

- Select a cable with sufficient current-carrying capacity. Factors such as environmental conditions, insulating materials, laying method, cable material, and cross-sectional area may affect the current carrying capacity of a conductor.
- Select the cable size according to the maximum current on the AC/DC side of the PCS, and leave a margin for the size.
- Select the same size and type of connecting cables on the same side.
- Select flame-retardant cables and flame retardants.

Cable Configuration

Configure cables in accordance with the recommendations below.

No.	Cable Position	Marking	Max. Voltage/ Current	Connector/Terminal Specification	Cable Specification	Remarks
1	DC Output	BUS+	DC 1000 V / 1 A	Connector: VP-D4B-CTSF2	2.0 mm^2 - 2.5 mm^2 × 1 (14 AWG)	/
2	DC Output	BUS-	DC 1000 V / 1 A	Connector: VP-D4B-CTSM2	2.0 mm^2 - 2.5 mm^2 × 1 (14 AWG)	/
3	Battery Input	BAT+	DC 1000 V / 209.5 A	Connector: P11-2201-105	50 mm^2 - 70 mm^2 × 1 (1 / 0 AWG)	/
		BAT-	DC 1000 V / 209.5 A	Connector: P11-2201-104		/
4	AC Output	L1	AC 440 V / 190.5 A	Connector: P11-2201-105	50 mm^2 - 70 mm^2 × 1 (1 / 0 AWG)	/
		L2		Connector: P11-2201-105		/
		L3		Connector: P11-2201-105		/
		N		Connector: P11-2201-104		/
5	AC Power Supply 220 V Input	220V	AC 220 V / 1 A	Connector: EC100-2202-101 Nylon-Insulated Cord End Terminal: E1010	1.0 mm^2 × 2 (18 AWG)	/
6	Grid Voltage Sampling	TVTR	/	Connector: EP040-2224-01 Nylon-Insulated Cord End Terminal: E1010	1.0 mm^2 × 4 (18 AWG)	/
7	Background Monitoring	RJ45-1	/	Ethernet Connector	Category 5E Cable	/
8	Ethernet communication	RJ45-2	/	Ethernet Connector	Category 5E Cable	/
9	Wi-Fi Stick	Wi-Fi	/	/	/	Wireless Connection
10	I/O Interface	COM1	/	Connector: S10-2218-100 Nylon-Insulated Cord End Terminal: ENY0512	0.5 mm^2 - 1.0 mm^2 × 18 (22 AWG)	/

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11	Communication Interface	COM2	/	Connector: S9-2216-100 Nylon-Insulated Cord End Terminal: E0512	0.5 mm^2 - 1.0 mm^2 × 16 (22 AWG)	/
12	Grounding Point	⏚	/	Matches with wire diameter	Cross-sectional area of a cable ≥ half of the AC output cable diameter	/

Table 6.2.3 Cable Specifications

NOTE

- Cable recommendation in the table is made assuming that 70°C thermoplastic DCC insulated copper cables are used. To use cables of other models, configure the cables by referring to the local wiring regulations, application environment (including the temperature and physical support medium), and Table 24 in IEC62109-1.
- DC cable recommendation is applicable only to unipolar input. In the case of multiple inputs, configure the cables based on the maximum input current of each input and by referring to the local wiring regulations, application environment (including the temperature and physical support medium), and Table 24 in IEC62109-1.
- Ensure the cable terminals are matched with the cables. Add AC fuse to each phase on communication output side.
- The AC-side of PCS requires a separate circuit breaker. Recommended parameters: 400V/250A/4P/50kA. Conditional short-circuit current (Icc), less 10kA.

CAUTION	• The wire diameter in the table refers to the copper wire diameter. If aluminum wire is needed, please select the wire diameter and quantity with the same current carrying capacity. • The number of input channels and cable specifications in the table are standard configuration parameters. If there are special applications, please configure the wiring according to the specific environmental conditions on site and local wiring regulations. • When laying DC cables, keep a safe distance between positive and negative cables to avoid crossing and reduce the possibility of short circuits. • The positive and negative DC voltages must be strictly tested to ensure that the voltage range meets the PCS requirements and the polarity are correct.

6.3 Wiring of Grounding Cable

WARNING	Ensure that the PCS is well grounded. Failure to comply will result in the following: • The PCS may malfunction and cause fatal electric shock to the operator! • In the event of a lightning strike, the PCS may be damaged!
CAUTION	• Grounding unit shall be wired in accordance with relevant standards of the country/region where this project is located. • The grounding cable must be firmly and reliably connected to the PCS and the earth electrode. • Measure the grounding resistance after wiring, and the resistance value should not be greater than 4 Ω.
DANGER	Wire the grounding cable in accordance to the internal wiring markings on the equipment.

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6.3.1 Wiring of Grounding Terminal

The PCS is grounded through PE grounding terminals. Specific operations are as follows:

Connect the PE grounding terminal to the equipotential bonding device on the installation site or in the electrical room using a grounding cable (the cross-sectional area ≥ half of the AC output wire diameter). The PCS will be connected to the earth or grounding grid through the equipotential bonding device. The grounding resistance shall not be greater than 4 Ω.

NOTE

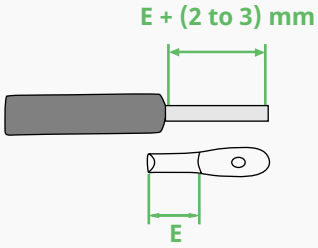
Before leaving factory, the PCS casing and PCS internal components (e.g. lightning protectors) that require grounding have been pre-connected to the grounding terminals inside the PCS cabinet.

CAUTION

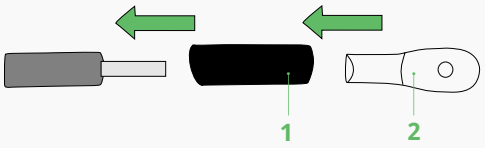
- This PCS is transformerless, which requires that both the positive and negative electrodes of the battery pack cannot be grounded. Otherwise, the PCS will malfunction.
- The PCS cabinet is equipped with two grounding terminals. Make sure at least one of the grounding terminal is used for grounding connection.
- After completing the grounding connection, it is recommended to apply anticorrosive coating to the grounding terminal to improve its corrosion resistance.

Steps

1. Strip the protection layer of the cable by E + (2 to 3) mm. **(**The cable length should include an appropriate allowance to avoid excessive tension during installation, because the tension may cause mechanical damage to the AC cable terminals and result in arcing and other problems.)

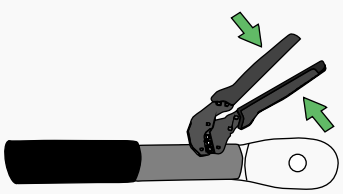


2. Push the cable into the Heat Shrink Tubing and the Crimping Terminal in sequence.



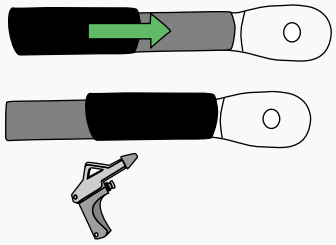


3. Crimp the cable and Crimping Terminal by a crimping plier.

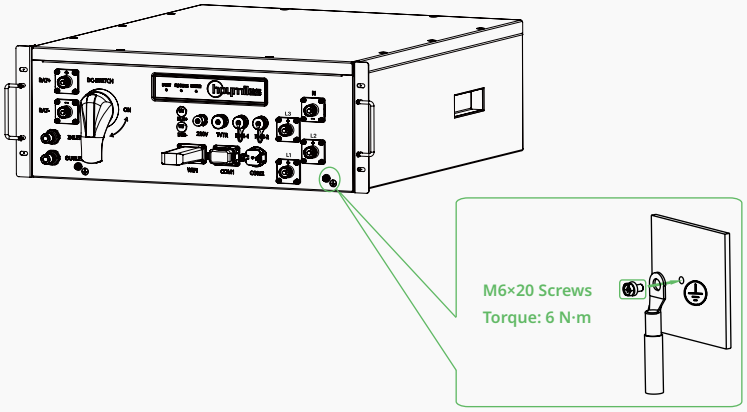


4. Move the Heat Shrink Tubing to the crimping position and use a hot air gun to heat and shrink it.

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5. Secure the cable to the PCS grounding hole by M6*20 mm screws.



6.3.2 Equipotential Connection of Multiple Equipments

When several equipments are used at the same time, it is necessary to perform equipotential connections as follows. Choose one of the two methods to connect:

- **Method 1:** Fix the PE wire (cross-sectional area ≥ half of the AC output wire diameter) to the cabinet casing with terminal lugs and bolts.
- **Method 2:** Connect the PE grounding terminal of each equipment to the equipotential connection copper busbar in the electrical control room.

NOTE

- During grounding connection, other electrical devices should also be connected equipotentially to prevent currents from occurring in the shielding layer of the communication cables (due to the unequal potentials of each device).
- The PCS is neutral continuity maintained externally. Please ensure correct external grounding connection for the PCS. If the PCS shows a 'ground fault' after system installation, please check if the grounding is compliant with the requirements.

NOTE

In accordance with AS/NZS 5139, the PCS is equipped with an earth fault detection system. If an earth fault occurs, the PCS will trigger an alarm to notify the user.

- Alarm Indication: The fault indicator light will turn red.
- User Notification: The fault details will be displayed on the monitoring app, prompting the electrician to check the system wiring

6.4 Wiring of PCS Connector Terminal

6.4.1 Wiring of Connector Terminal on AC Side

DANGER	Before wiring, please ensure the following. Otherwise, the PCS may be damaged. • The grid voltage and frequency meet the requirements of the PCS. • The open-circuit voltage of the battery pack does not exceed the maximum DC voltage. • Wire the PCS connector terminal in accordance to the internal wiring markings on the PCS.

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CAUTION	• Incorrect wiring sequence can cause poor contact and may cause a fire. • Incorrect phase sequence can cause the PCS to malfunction. • Tighten the cable, otherwise it may cause a fire. Avoid compression or force on the insulation layer of the cable, otherwise it may cause the PCS to malfunction. • When using aluminum wires, you need to use copper-aluminum connecting terminals to avoid direct contact between aluminum wires and copper conductors.

Steps

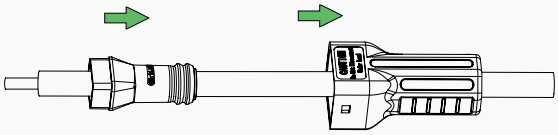
NOTE

Before wiring, ensure that the PCS and the cables are uncharged. Methods to determine uncharged state:
- Disconnect the DC cables and AC cables.
- Disconnect the DC-side isolation switch and the AC-side circuit breaker.
- Use a multimeter (recommended range ≥ 1000 V) to ensure that the installation position is uncharged.

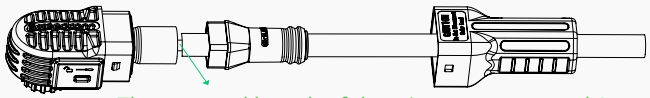
1. Strip the protection layer of the cable by 13 ±1 mm. (The cable length should include an appropriate allowance to avoid excessive tension during installation, because the tension may cause mechanical damage to the AC cable terminals and result in arcing and so on.)



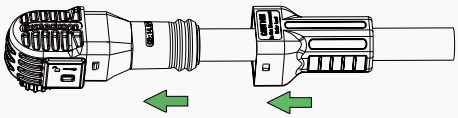
2. Push the cable into the Sealing and the End Cap.

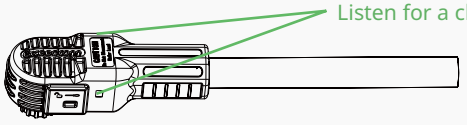


3. Align the wires of L1, L2, and L3 phases with the corrsponding terminal.
4. Crimp the Terminal Plug and the cable by crimping tools.

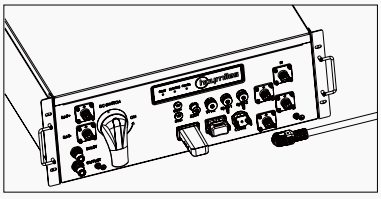


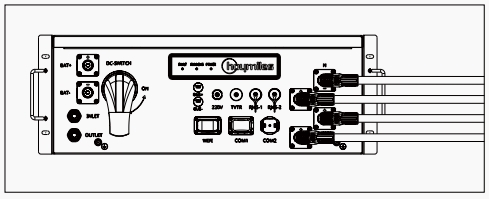
5. After crimping, push the Sealing and the End Cap to the Terminal Plug. Listen for a click as they engage.





6. Insert the Terminal Plug into the corresponding terminal on the PCS, with a maximum insertion force of 75 N.





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6.4.2 Wiring of Connector Terminal on DC Side

DANGER	• Before wiring, measure the open-circuit voltage of the battery pack to ensure that the open-circuit voltage does not exceed the maximum DC input voltage (1000 V). Otherwise, the PCS may be damaged. • Wire the PCS connector terminal in accordance to the internal wiring markings on the PCS.

CAUTION	• In the case of grounding faults, please troubleshoot before wiring. • Tighten the cable, otherwise it may cause a fire. Avoid compression or force on the insulation layer of the cable. Otherwise, it may cause the PCS to malfunction. • Incorrect wiring may result in the PCS malfunction and even burnout. • When using aluminum wires, you need to use copper-aluminum connecting terminals to avoid direct contact between aluminum wires and copper conductors.

Steps

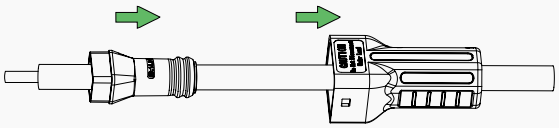
NOTE

Before wiring, ensure that the PCS and the cables are uncharged. Please refer to 6.4.1 for the methods to determine uncharged state.

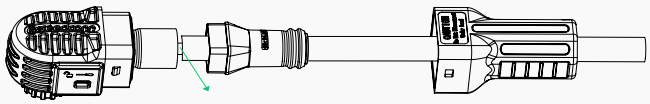
1. Strip the protection layer of the cable by 13 ±1 mm. (The cable length should include an appropriate allowance to avoid excessive tension during installation, because the tension may cause mechanical damage to the AC cable terminals and result in arcing and so on.)



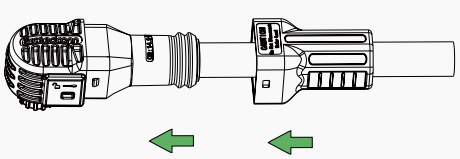
2. Mark the positive and negative electrodes of the cable.
3. Measure the resistance between the positive and negative electrodes of the cable, as well as the resistance between the positive/negative electrodes of the cable and the PE wire. (The resistance value must be megohm. Otherwise, check the circuits.)
4. Push the cable into the Sealing and the End Cap.

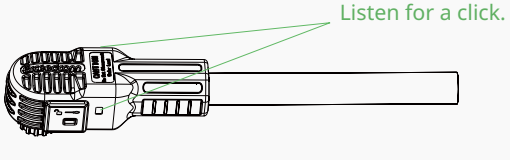


5. Crimp the Terminal Plug and the cable by crimping tools.



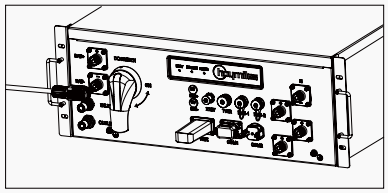
6. After crimping, push the Sealing and the End Cap to the Terminal Plug. Listen for a click as they engage.

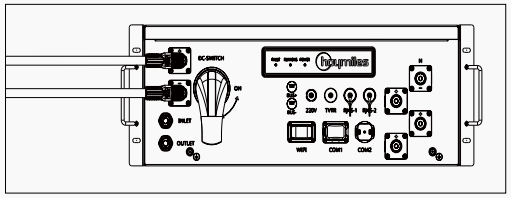




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7. Insert the Terminal Plug into the corresponding terminal on the PCS, with a maximum insertion force of 75 N.





6.5 Wiring of Auxiliary Power Supply and Communication Cable

6.5.1 Description

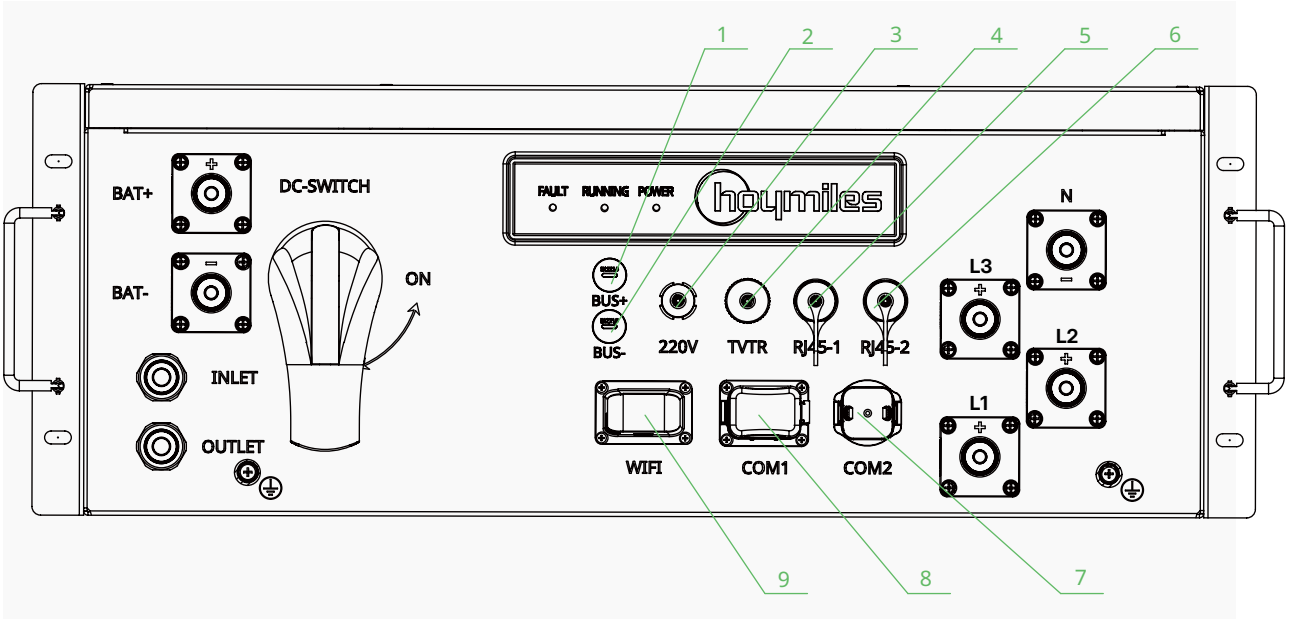


Figure 6.5.1 Auxiliary Power Supply and Communication Cable

No.	Name	Marking	Description		Remarks
1	DC Output	BUS+	DC Output Positive Sampling and Auxiliary Power Supply		/
2	DC Output	BUS-	DC Output Negative Sampling and Auxiliary Power Supply		/
3	Auxiliary Power Supply	220V	220V:1	Auxiliary Power Supply (L)	Connected with Auxiliary Power Supply Cable (Range: 180 to 260 VAC)
			220V:2	Auxiliary Power Supply (N)	
4	Grid Voltage Sampling	TVTR	TVTR:1	AC Voltage Sampling (L1)	Connected with Grid (for automatic switch between on-grid and off-grid mode)
			TVTR:2	AC Voltage Sampling (L2)	
			TVTR:3	AC Voltage Sampling (L3)	
			TVTR:4	AC Voltage Sampling (N)	
5	Background Monitoring	RJ45-1	Background Monitoring		/
6	Ethernet Communication	RJ45-2	Ethernet Communication		/

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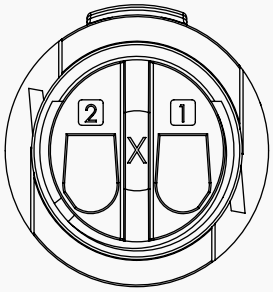
7	Communication Interface	COM2	COM2:1	A	BMS RS485
			COM2:2	B	
			COM2:3	H	BMS CAN
			COM2:4	L	
			COM2:5	H	Local Controller RS485
			COM2:6	L	
			COM2:7	A	HMI RS485
			COM2:8	B	
			COM2:9	A	Parallel 1 CAN
			COM2:10	B	
			COM2:11	A	Parallel 2 CAN
			COM2:12	B	
			COM2:13	H	Hall H
			COM2:14	L	Hall L
			COM2:15	H	Hall -
			COM2:16	L	Hall +
8	I/O	COM1	COM1:1	DI+	Emergency Stop DI
			COM1:2	DI-	
			COM1:3	DI1+	Feedback Signal of AC Switching Cabinet Status
			COM1:4	DI1-	
			COM1:5	DI2+	External DI2 (Stop Control)
			COM1:6	DI2-	
			COM1:7	DO1+	ON Control Signal of AC Switching Cabinet
			COM1:8	DO1-	
			COM1:9	HDI+	High Speed HDI
			COM1:10	HDI-	
			COM1:11	HDO+	High Speed HDO
			COM1:12	HDO-	
			COM1:13	DO2+	External DO2 (Stop Feedback)
			COM1:14	DO2-	
			COM1:15	DO3+	OFF Control Signal of AC Switching Cabinet
			COM1:16	DO3-	
9	Wi-Fi Stick	Wi-Fi	Wi-Fi		/

Table 6.5.1 Description of Auxiliary Power Supply and Communication Cable

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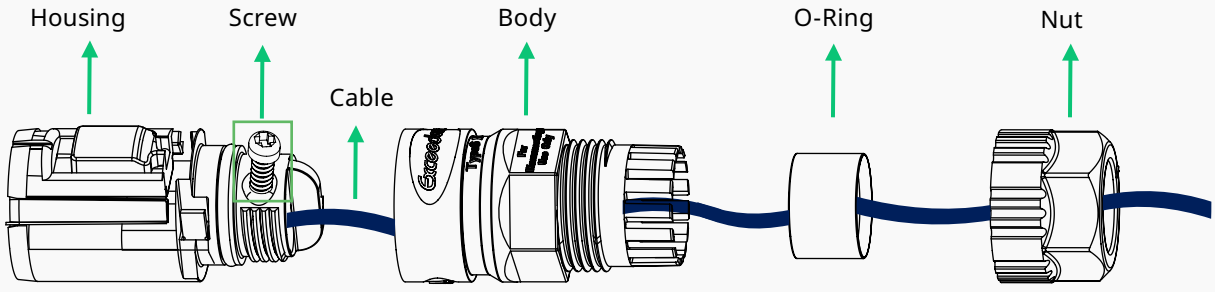
6.5.2 Wiring of Auxiliary Power Supply

Auxiliary Power Supply Pinout



Steps

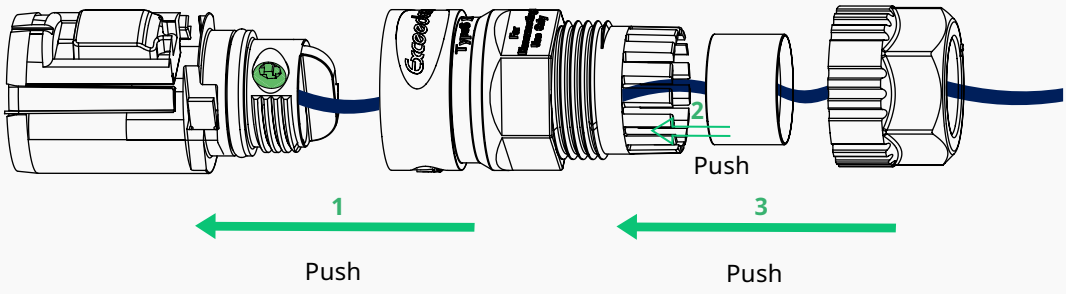
1. Arrange the terminal components and pass the cable through them as shown below.



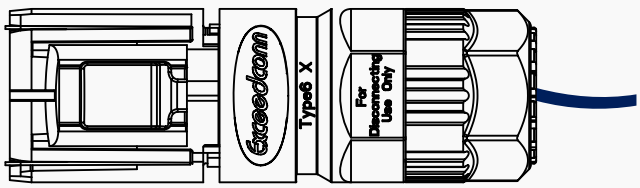
2. Use a screwdriver to tighten the screws (2 in total) to secure the cable.

> **NOTE**
>
> Do not over-tighten the screws. Ensure the cable is secured but avoid damaging or piercing it.

3. Push the Body into the Housing and tighten them. Then, push the O-Ring into the Body, and push the Nut to tighten them.



Complete the Overall Assembly



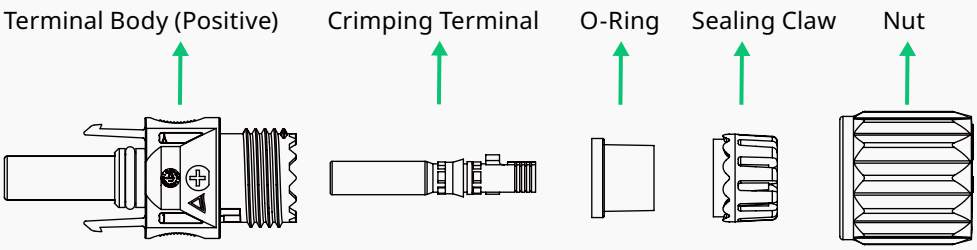
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6.5.3 Wiring of DC Output Terminal

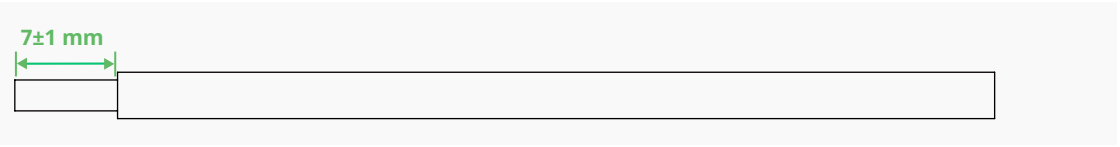
1) Wiring of DC Output Positive Terminal

Steps

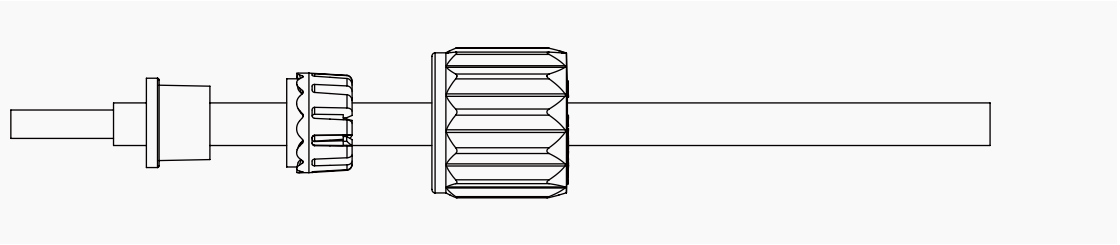
1. Arrange the positive terminal components as shown below.



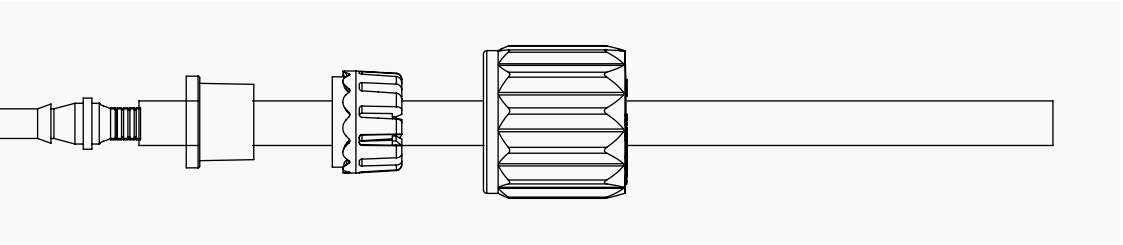
2. Strip the insulation layer of the cable by 7 ±1 mm.



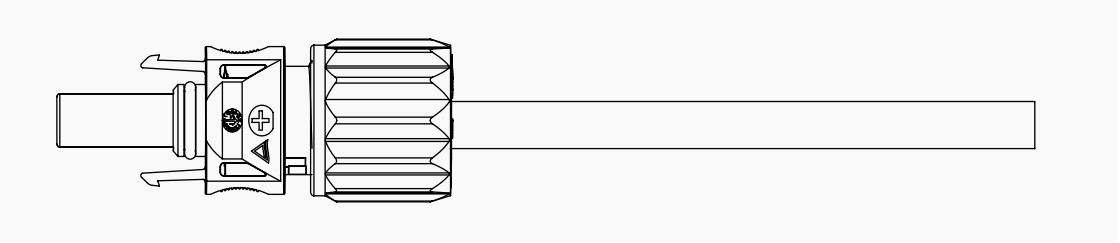
3. Pass the cable through the components as shown below.



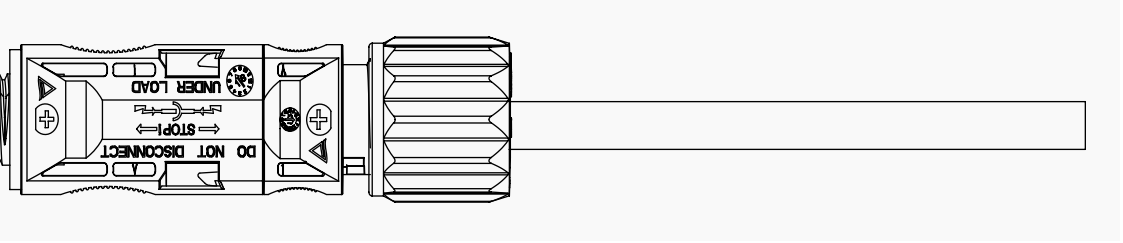
4. Crimp the cable and the Crimping Terminal by a crimping plier.



5. Push the cable into the Terminal Body (positive), and then push the O-Ring, the Sealing Claw, and the Nut into the terminal body.



6. Push the positive electrode of the wire into the positive Terminal Body.

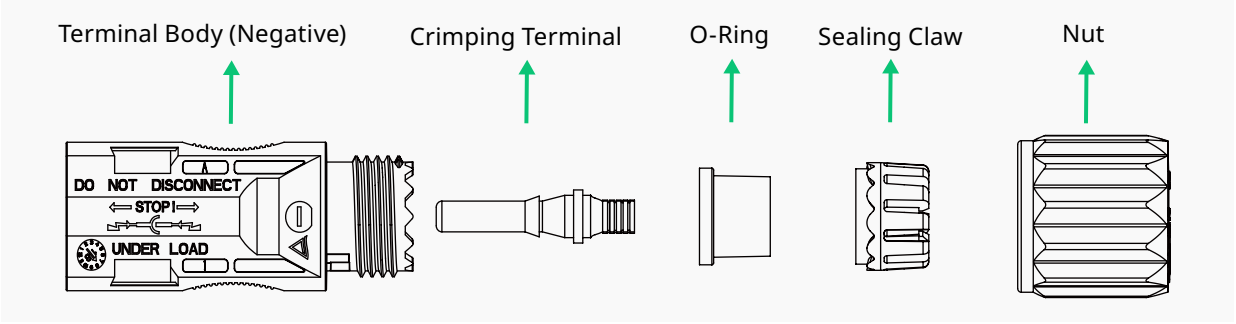


2) Wiring of DC Output Negative Terminal

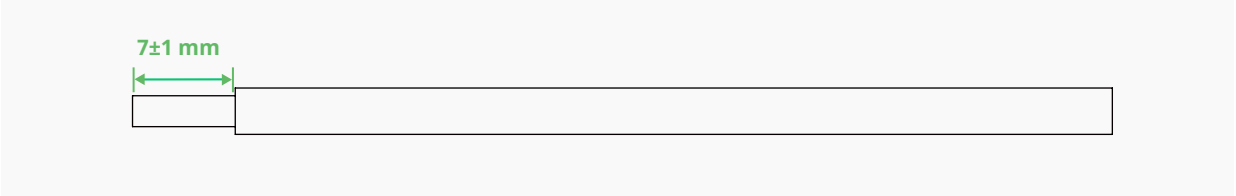
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Steps

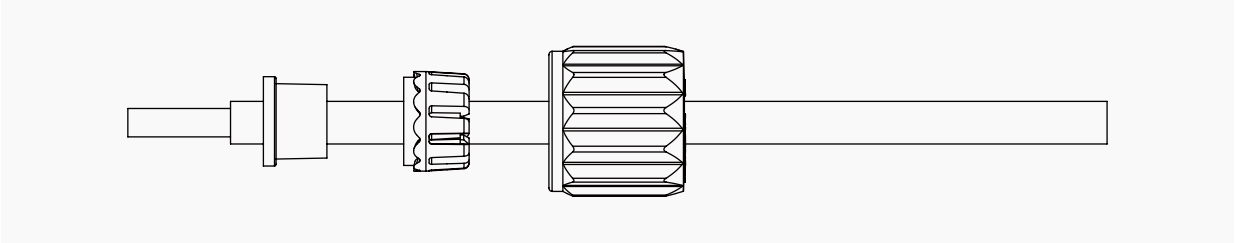
1. Arrange the negative terminal components as shown below.



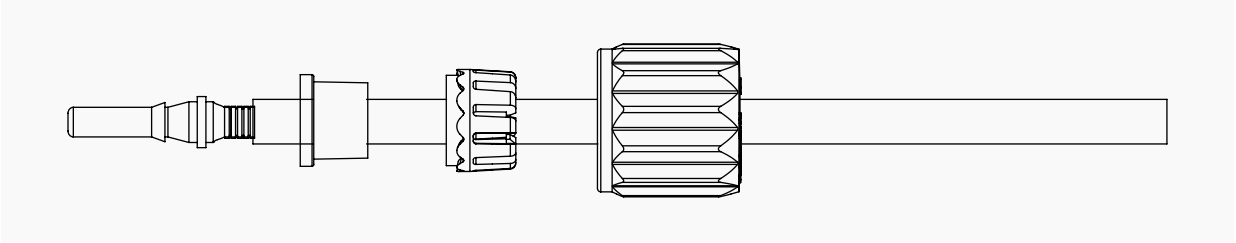
2. Strip the insulation layer of the cable by 7 ±1 mm.



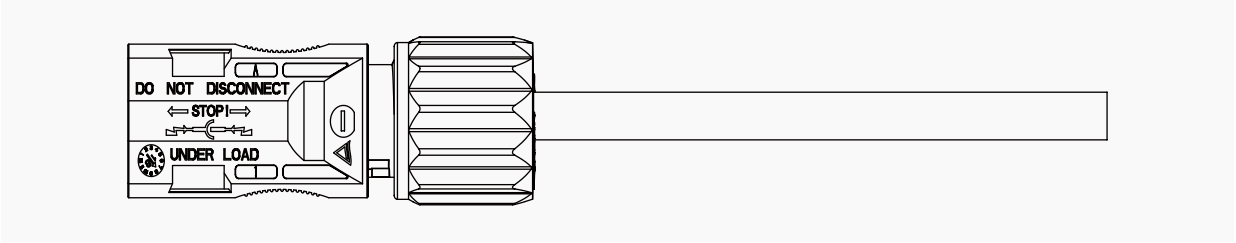
3. Pass the cable through the components as shown below.



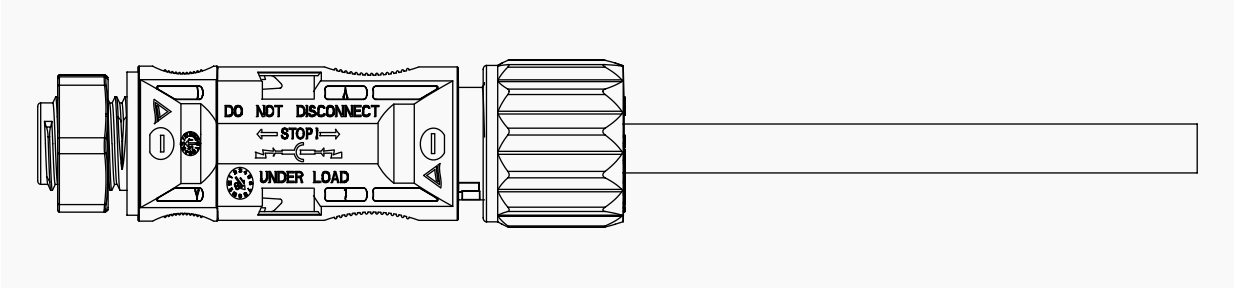
4. Crimp the wire and the Crimping Terminal by a crimping plier.



5. Push the cable into the Terminal Body (negative), and then push the O-Ring, the Sealing Claw, and the Nut into the Terminal Body.



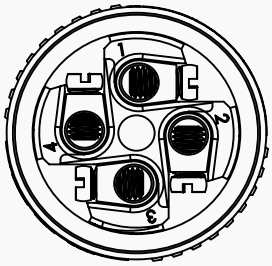
6. Push the negative electrode of the wire into the negative Terminal Body.



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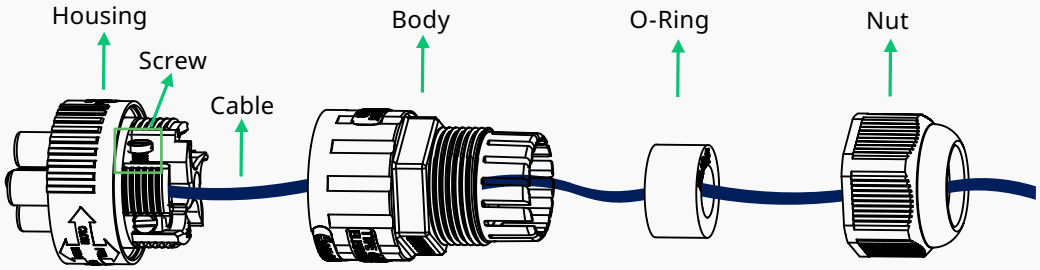
6.5.4 Wiring of Grid Voltage Sampling Interface

Pinout of Grid Voltage Sampling Interface



Steps

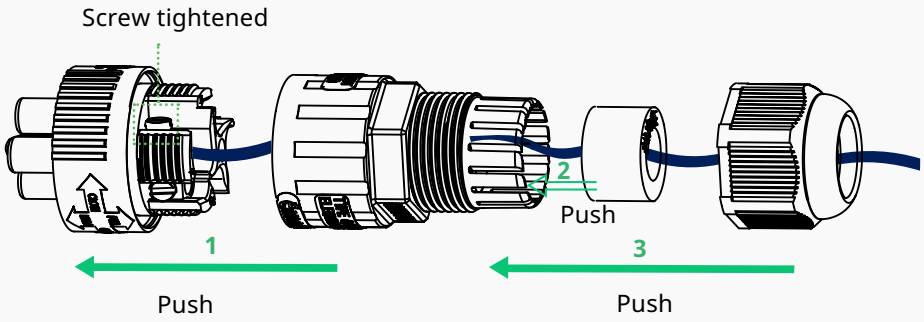
1. Arrange the terminal components and pass the cable through them as shown below.



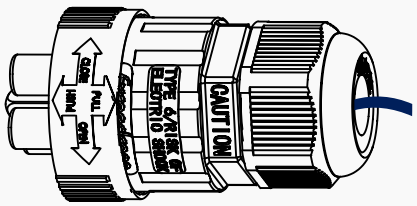
2. Tighten screws (4 in total) by straight screwdriver to secure the screw.

NOTE
Do not over-tighten the screws. Ensure the cable is secured but avoid damaging or piercing it.

3. Push the Body into the Housing and tighten them. Then, push the O-Ring into the Body, and push the Nut to tighten them.



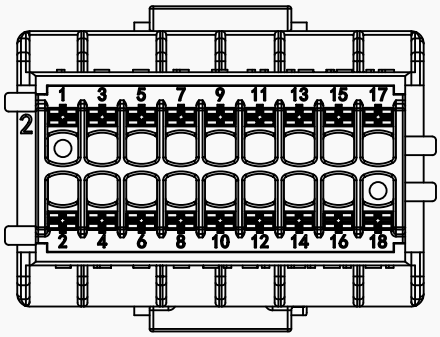
Complete the Overall Assembly



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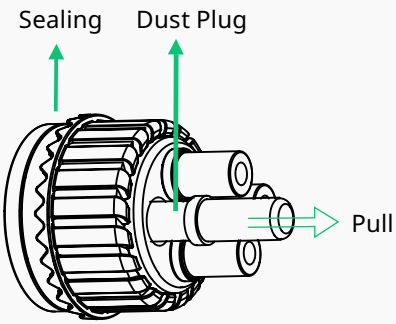
6.5.5 Wiring of COM1 Interface

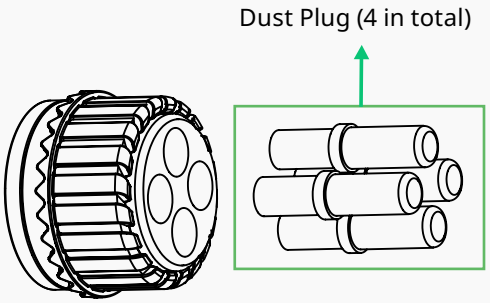
COM1 Terminal Pinout



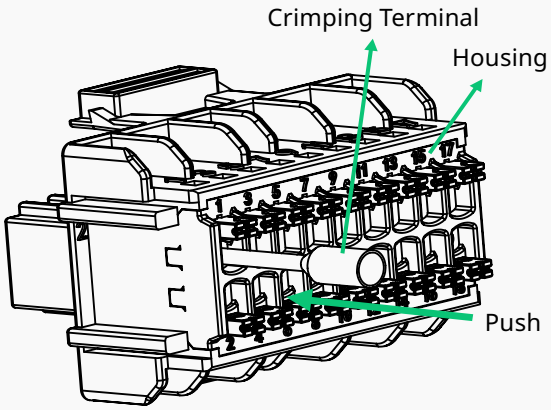
Steps

1. Pull out 4 Dust Plugs from the Sealing.



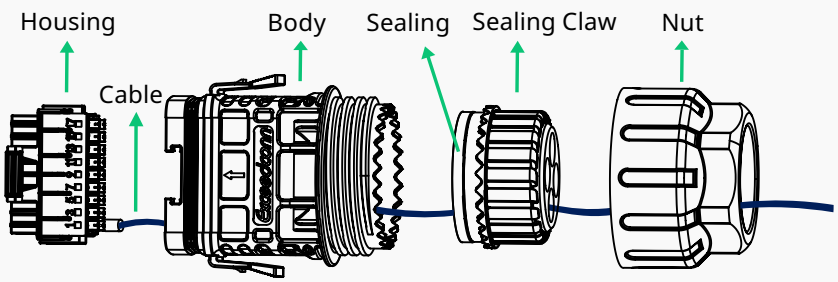


2. Push Crimping Terminals (18 in total) into the Housing.

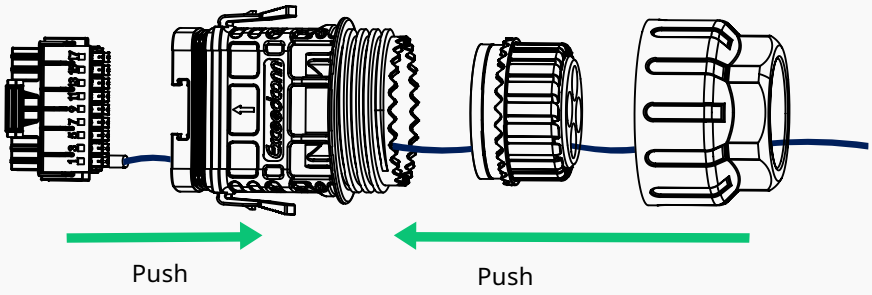


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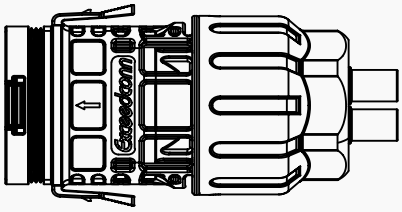
3. Arrange the terminal components and pass the cable through them as shown below.



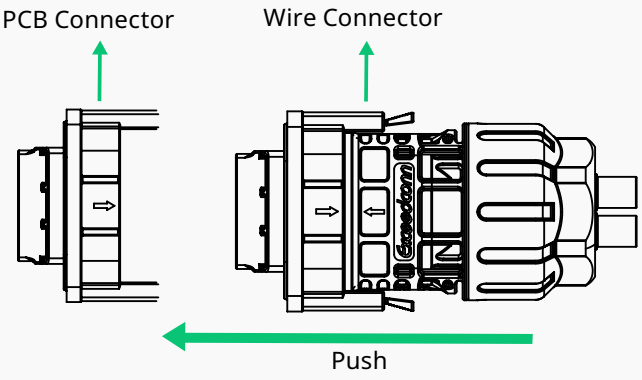
4. Push the Housing into the Body. Push the Nut into the Sealing Claw, the Sealing, and the Body in sequence, and then tighten them.



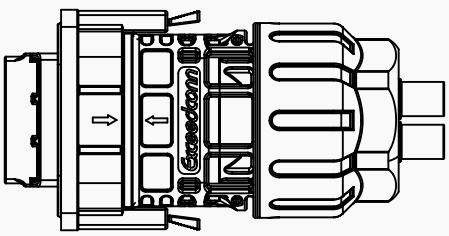
Complete the Wire Connector Assembly



5. Push the Wire Connector into the PCB Connector. Listen for a click as they engage.



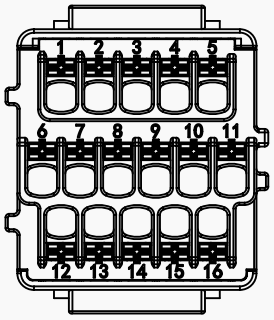
Complete the Overall Assembly



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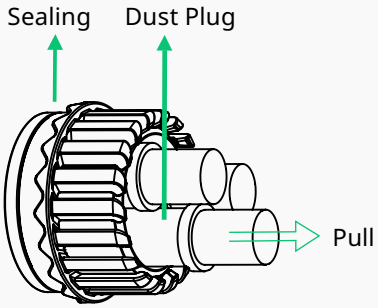
6.5.6 Wiring of COM2 Interface

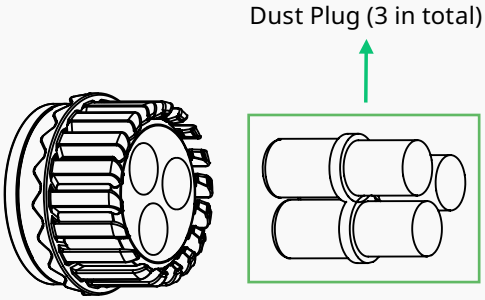
COM2 Terminal Pinout



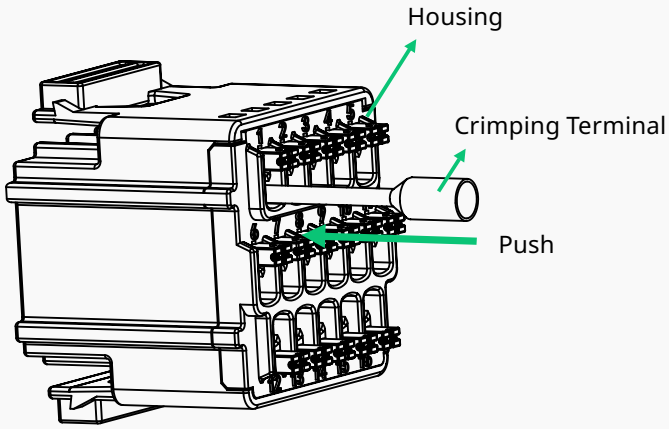
Steps

1. Pull out 3 Dust Plugs from the Sealing.

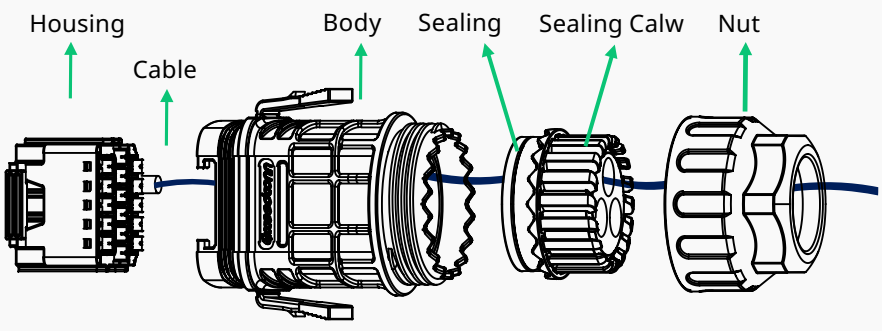




2. Push Crimping Terminals (16 in total) into the Housing.

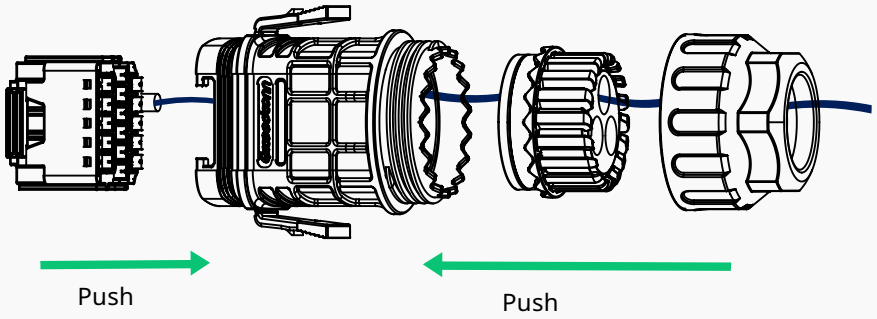


3. Arrange the terminal components and pass the cable through them as shown below.

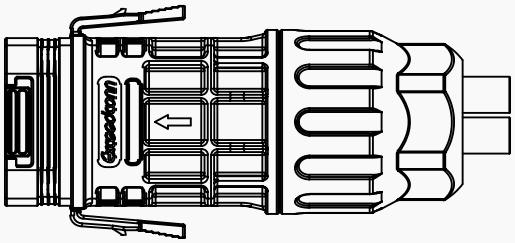


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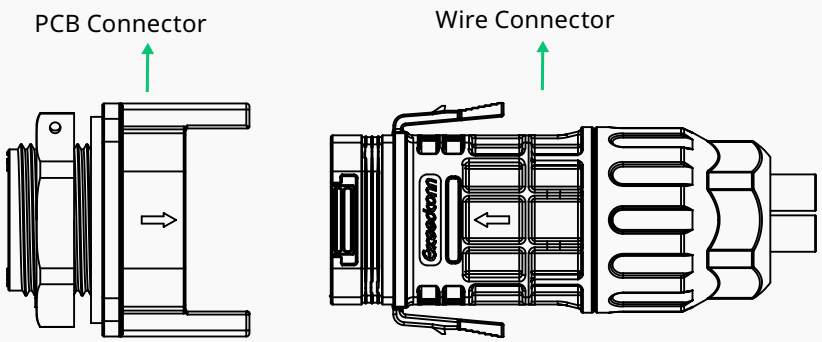
4. Push the Housing into the Body. Push the Nut into the Sealing Claw, the Sealing, and the Body in sequence, and then tighten them.



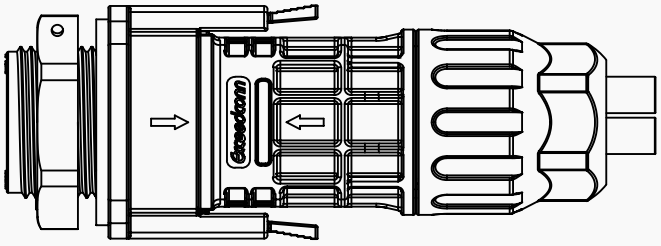
Complete the Wire Connector Assembly



5. Push the Wire Connector into the PCB Connector. Listen for a click as they engage.



Complete the Overall Assembly



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6.6 Inspection After Wiring

Perform a thorough inspection for mechanical installation and electrical connections after installing the PCS. Follow the checklist below and keep a record for the inspection process. Immediately correct any items that do not meet the requirements.

Item	Checked	Remarks
The PCS is free of deformation or damage.	☐	
The PCS is securely fixed and stable.	☐	
Control cables, grounding cables, and communication cables are securely fixed.	☐	
The grounding cable is intact, free of damage or crack.	☐	
The grounding resistance* is less than 0.1 Ω.	☐	
The installation area is free of tools or foreign objects.	☐	
The polarity of the DC input connection is correct.	☐	
The phase sequence of the AC-side connection is consistent.	☐	
The AC-side voltage matches the rated output voltage of the PCS.	☐	
The outside of the PCS cabinet is free of condensation of moisture or freezing.	☐	

* The resistance between the accessible parts of the PCS and the ground bar.

7. Product Operation

This chapter introduces check items and operation procedures for powering on and off the PCS.

7.1 Power-on

7.1.1 Inspection Before Power-On

DANGER	Before powering on the PCS, you need to conduct a thorough inspection. Please carefully check the following items to ensure correct operation and safety.

No.	Item	Checked
1	The installation and operation environments meet the requirements. (For details, refer to 3 Safety Instructions.)	☐
2	Grounding cables, DC-side cables, and AC-side cables are correctly connected and securely fixed.	☐
3	The cable bracket is installed properly and the cable layout meets the requirements.	☐
4	No tools, drilling debris, or foreign objects are left inside the cabinet.	☐
5	Polarity connections are correct on the DC side, and the voltage does not exceed the maximum input voltage of the PCS.	☐
6	The AC voltage is within the allowable range, and the grid frequency is within the pre-defined range.	☐
7	The DC isolating switch is closed.	☐

Table 7.1.1 Checklist Before Power-On

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7.1.2 Power-On Procedure

LED State		Name	Indication
	Off	Power Indicator	The PCS is powered off.
	Solid Blue	Power Indicator	The PCS has been charged. You should pay attention to safety.
	Solid Green	Running Indicator	The PCS is powered on and is running normally.
	Solid Red	Fault Indicator	A fault occurs. You must power off the PCS immediately. (For details, refer to 9.2 Fault List.)

Table 7.1.2 PCS LED Indicator

Before You Start

Make sure the AC-side and DC-side cables and communication cables of the PCS have been correctly connected.

Steps

1. Rotate the load switch on the DC side to ON, and then the power indicator remains solid blue.

> **NOTE**
>
> By default, the PCS is in the Stop state.

2. Set the operation mode to Standby or Run on the EMS as needed, and the EMS will automatically issue the command to the PCS via communication.
   - If the EMS issues the Standby command, switches on the AC side and DC side of the PCS will be automatically turned on and the PCS will be powered on.
   - If the EMS issues the Run command, switches on the AC side and DC side of the PCS will be automatically turned on, and the PCS will automatically operate. Solids green on the running indicator indicates the power-on is completed.

7.2 Stop

The PCS stops when the EMS issues the Stop command. The PCS stops in two cases: stops during normal maintenance or inspection, and stops in case of malfunction or emergency. You can stop the PCS according to the actual need.

7.2.1 Normal Stop

Steps

1. EMS issues the Stop command, and the PCS stops.
2. Manually disconnect the DC-side load switch of the PCS.
3. If the PCS is charged by the power supply, you need to disconnect the power supply.

Results

The PCS stops running.

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7.2.2 Emergency Stop

WARNING	The emergency stop switch can be used only when an emergency occurs.

Steps

1. Press the emergency stop button on the door of the integrated equipment cabinet (the emergency stop button is connected to the COM1:1/COM1:2 emergency stop control terminal of the PCS).
   The PCS will be powered off, and the internal AC-side relay will be automatically disconnected.
2. Manually disconnect the DC-side load switch of the PCS.
3. If the PCS is charged by an power supply, you need to disconnect the power supply.

Results

The PCS is powered off and stops running.

NOTE

1. Rotate the emergency stop button to the right to restore the normal state.
2. This manual does not cover the maintenance of parts, as the PCS is maintained as a whole.

8. Operation Mode

This chapter introduces the main operation modes and states of the product.

8.1 Mode

The HPCS series support on-grid, off-grid, and hybrid modes.

On-Grid Mode

- Function: Used for battery charging/discharging control and reactive power regulation.
- Battery charge/discharge control: Achieved by setting active commands, supporting constant AC active power, constant DC power, constant AC active current, constant DC current, and constant DC voltage.
- Reactive Power Control: Achieved by setting reactive power commands, supporting constant AC reactive power, constant AC reactive current, constant power factor, and Q/U curve.
- Settings: Achieved by setting commands and control modes via HMI or EMS communication.
- Application Scenario: Power peak regulation, frequency regulation, peak load shifting, and renewable energy on-grid smoothing.

Off-Grid Mode

- Function: Provides a stable AC voltage source with fixed voltage amplitude and frequency.
- Settings: Voltage amplitude and frequency can be set via HMI or EMS communication.
- Application Scenarios: Suitable for distributed microgrids and black start scenarios.

Hybrid Mode

- Function: Supports both on-grid and off-grid operations.
- Control Range: When the grid is within normal range, it controls active and reactive power. When the grid is out of range, the PCS (with the switch cabinet) automatically switches to off-grid mode, providing a stable AC voltage source to the load.

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8.2 State

The HPCS series have the following states:

Stop

By default, the PCS is in the Stop state initially after power-on and without any command received.

In the Standby or Run state, if the PCS receives a Stop command, the PCS will stop.

Standby

In the Stop state, if the PCS receives a Standby command, the PCS will be in the standby state after its DC side is powered on.

In the Run state, if the PCS receives a Standby command, the PCS will stop generating waves. At this time, the AC switch and DC switch remain closed and the PCS will be in a hot standby state.

Run

On-Grid Standby State: If the PCS receives a Run command, the AC switch closes after the system enters the grid synchronization state, transitioning the system to the on-grid operation state.

Off-grid Standby State: If the PCS receives a Run command, the AC switch closes directly, transitioning the system to the off-grid state.

Fault

When the PCS detects faults, it will stop generating the wave. Depending on the fault level, the PCS may also disconnect the AC and DC switches, transitioning the system into a Fault state.

State Machine

The diagram below illustrates the state machine diagram of the PCS.

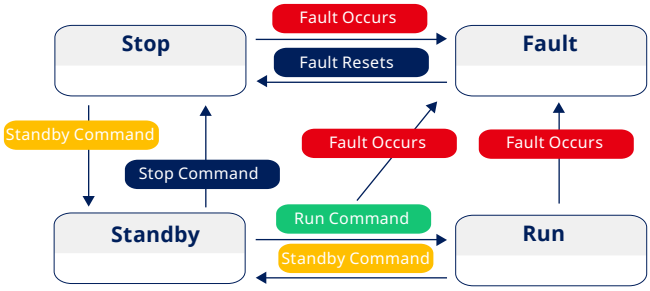


Figure 8.2 State Machine Diagram

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9. System Commissioning

9.1 Login

Prerequisites

Ensure the PC can access the external network.

A browser (such as Chrome, Firefox, Microsoft Edge, etc.) is installed on the PC. The latest version of Chrome is recommended.

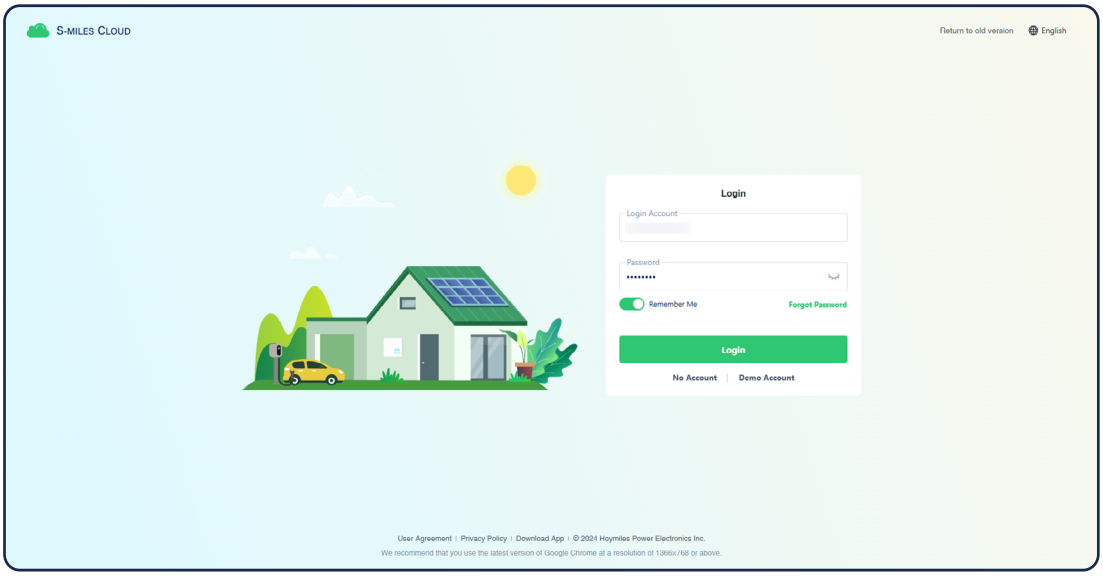
Procedures

Step 1 Go to https://global.hoymiles.com/website/login.

Step 2 Select the language.

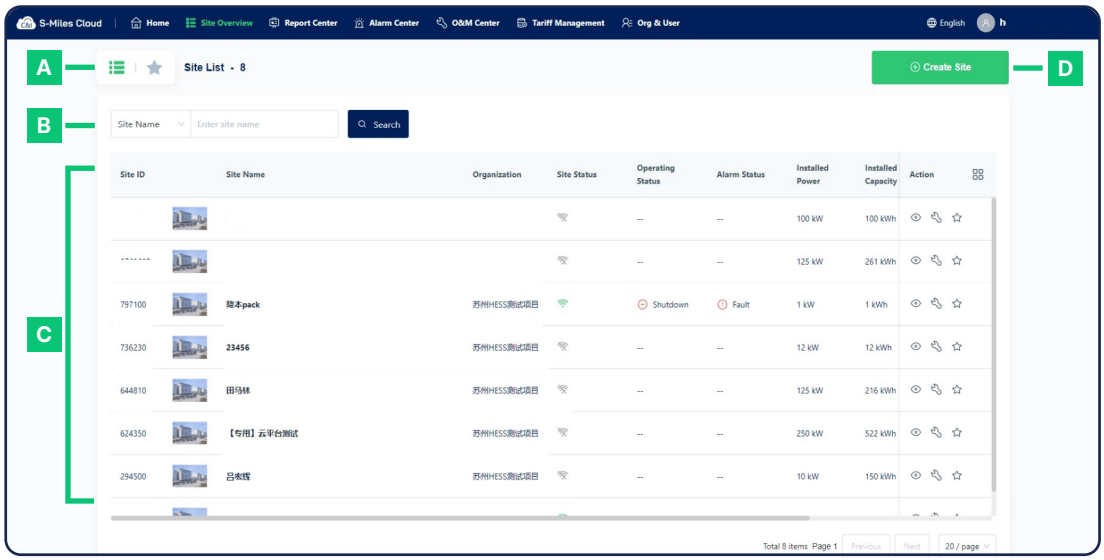
Step 3 Enter your account and password.

Step 4 Click Login.



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9.2 Site List Overview



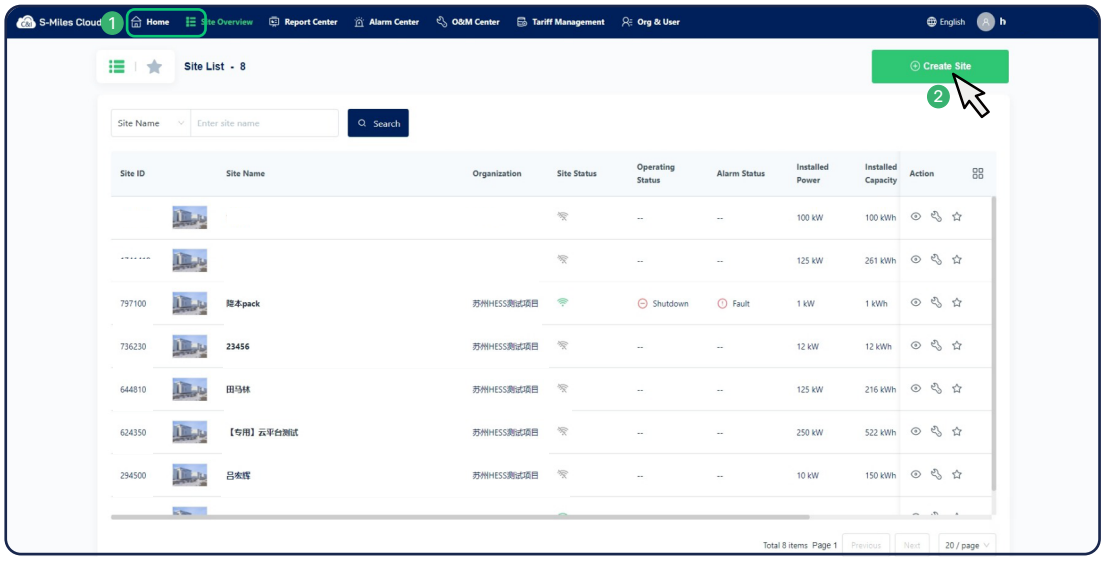
No.	Item	Description	
A	Site List		**Site List**: Displays all sites within the organization and their basic information in a list format.
			My Favorites: Displays all my favorited sites and their basic information in a list format.
B	Search		Filter sites by the criteria.
C	Site Information	—	Click the on the right of **Action**, then check/uncheck the information labels to display/hide specific information in the list. Users can view the following site information: Site ID, Site Cover,Site Name, Organization, Site Status, Operating Status, Alarm Status, Installed Power, Installed Capacity, Profit Today, Historical Profit, Charge Today, Historical Charge, Discharge Today, Historical Discharge, SOC (%), Days since Commissioning, Commissioning Date.
			Site Status: – Offline – Normal – Unfinished – Inactive
			Operating Status: – Charge – Discharge – Standby – Shutdown
			Alarm Status: – Normal – Warn – Alarm – Fault – Critical
D	Create Site		Create a new site.

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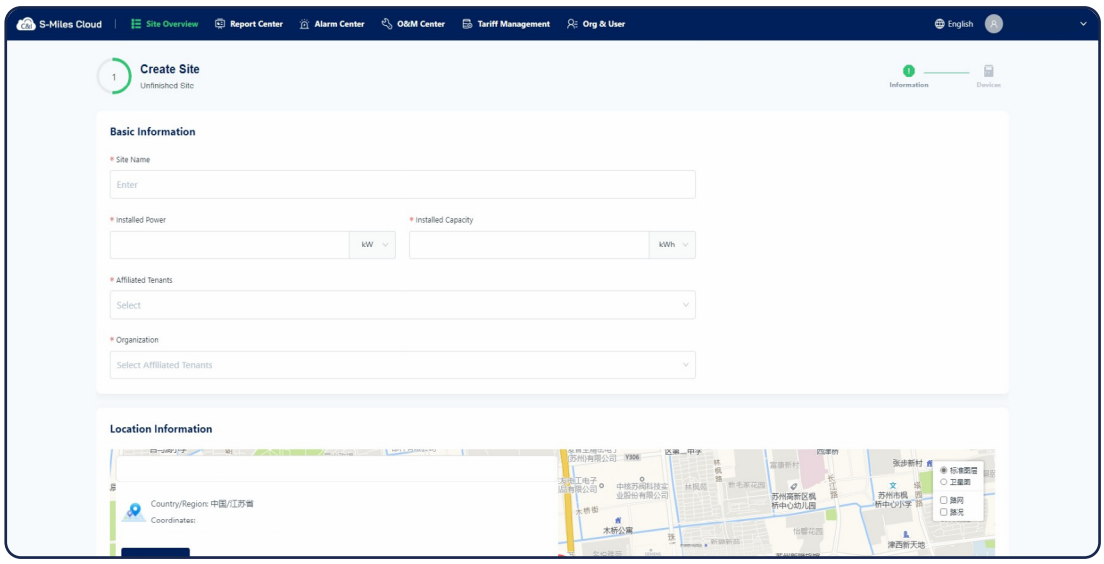
9.3 Creating a Site

Step 1 Click Site Overview in the menu bar.

Step 2 Click ⊕ Create Site in the upper-right corner.



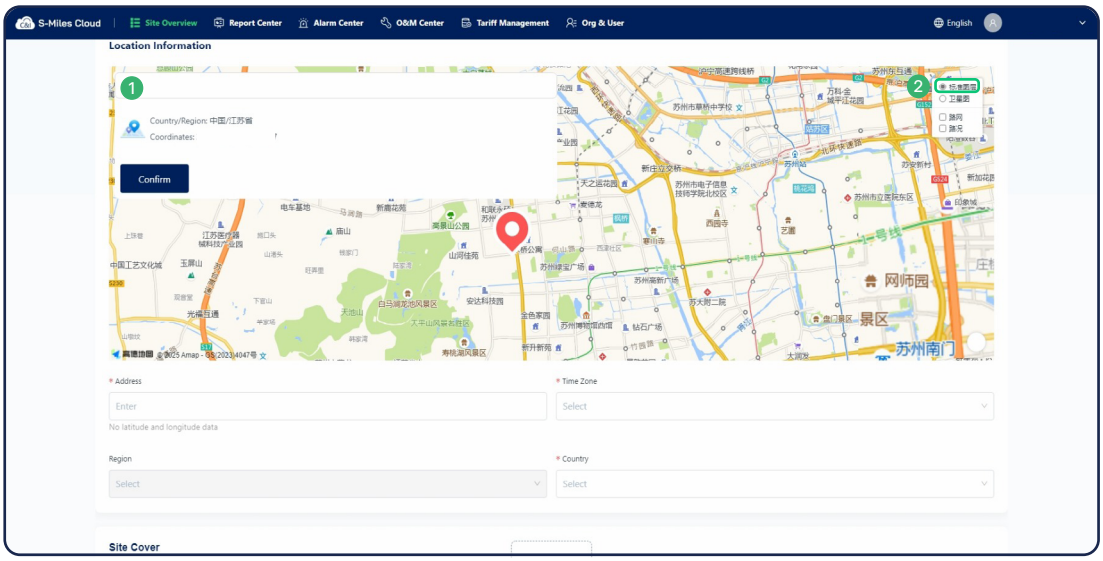
Step 3 Enter the basic information of the site. Fields marked with * are mandatory.



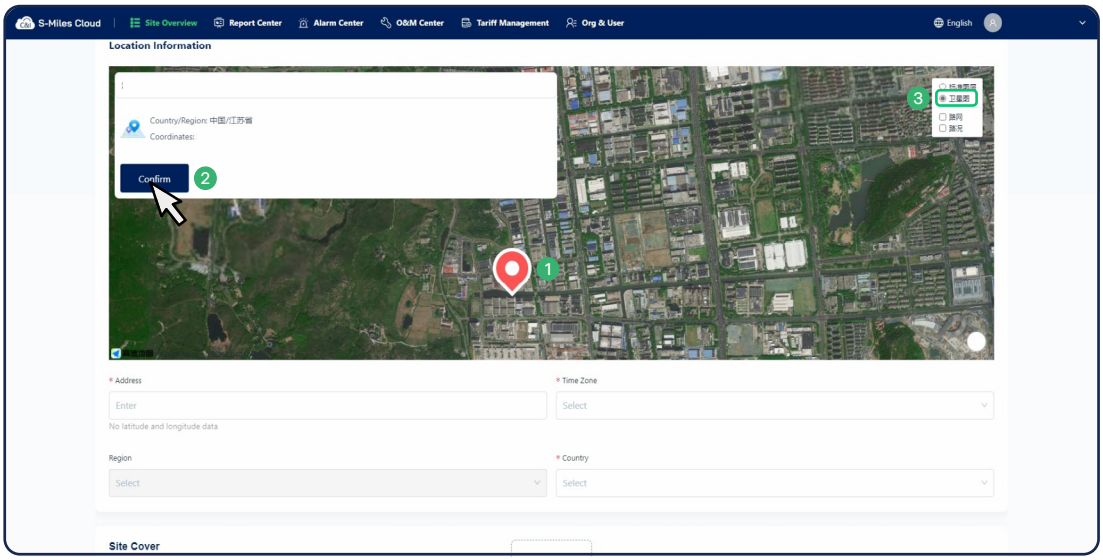
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Step 4 Enter the **Location Information**. You can enter the site address in the search field, or click the site location on the map. **Time Zone** and **Country** are automatically filled by the system. The map style can be selected as **Standard Layer** or **Satellite Map**.

Standard Layer



Satellite Map

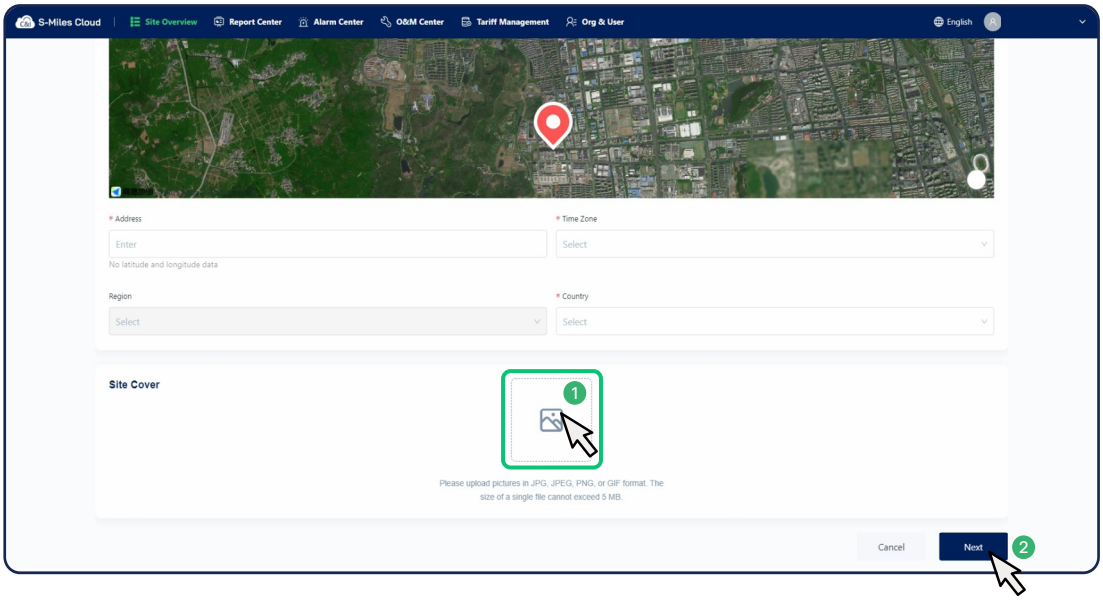


NOTE

- To pan the map, drag the map.
- To zoom the map, scroll your mouse wheel.

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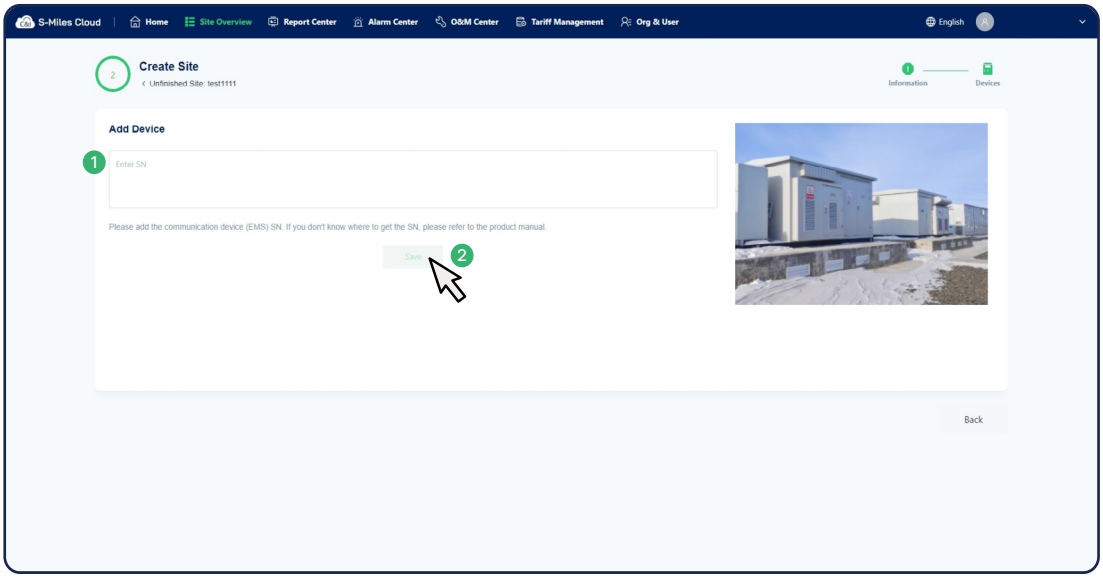
Step 5 Upload a **Site Cover** image (note the file requirements), then click **Next**.



NOTE

Please upload pictures in JPG, JPEG, PNG, or GIF format. The size of a single file cannot exceed 5 MB.

Step 6 Enter the device **SN** (Serial Number), then click **Save**.



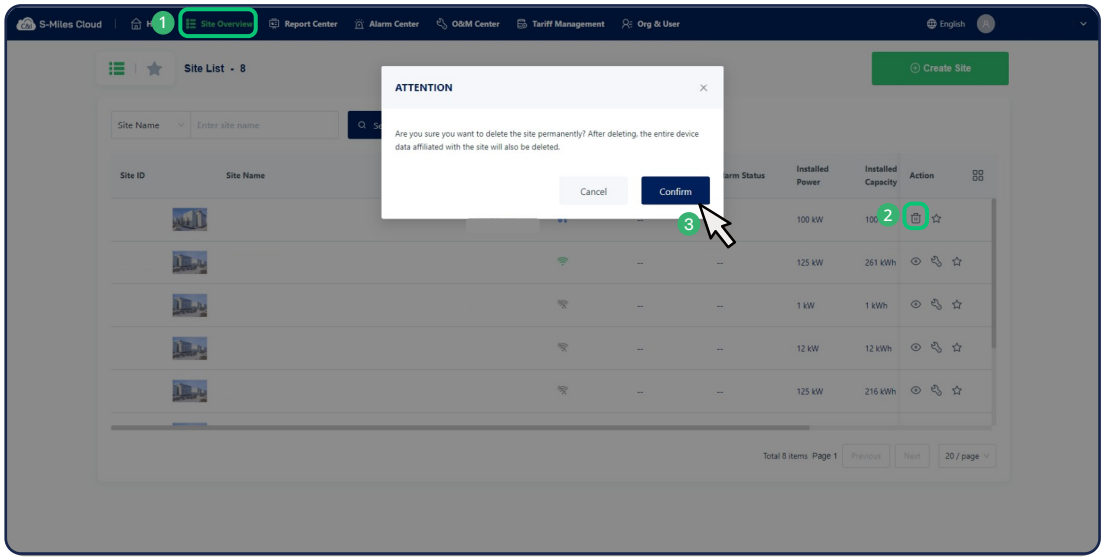
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9.4 Deleting a Site

Deleting an Unfinished Site

Step 1 Click **Site Overview** in the menu bar.

Step 2 Find the target site, click in the **Action**, then click **Confirm**.

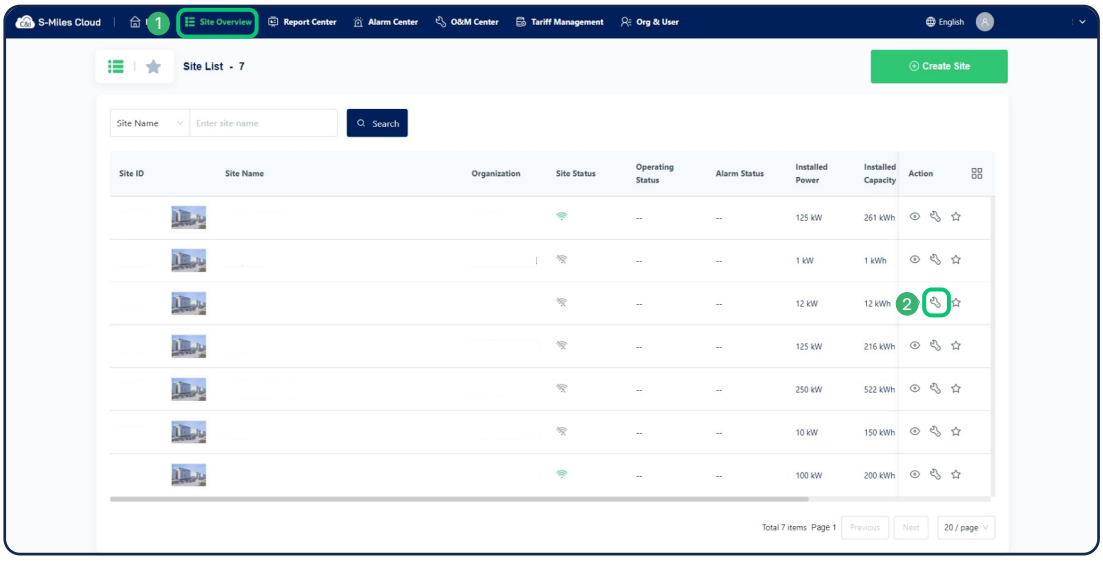


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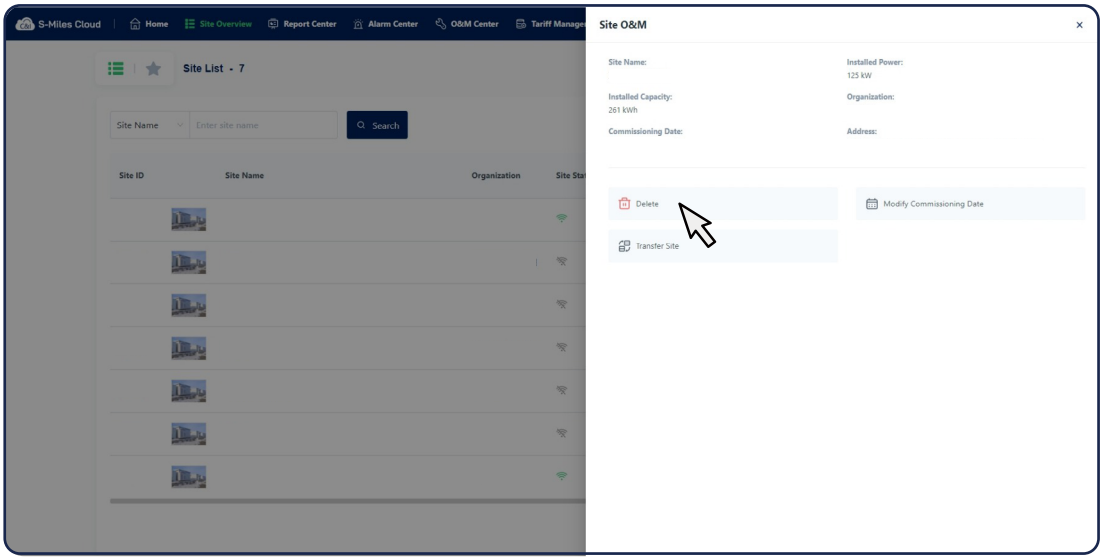
Deleting an O&M Site

Step 1 Click **Site Overview** in the menu bar.

Step 2 Find the target site, click in the **Action**.

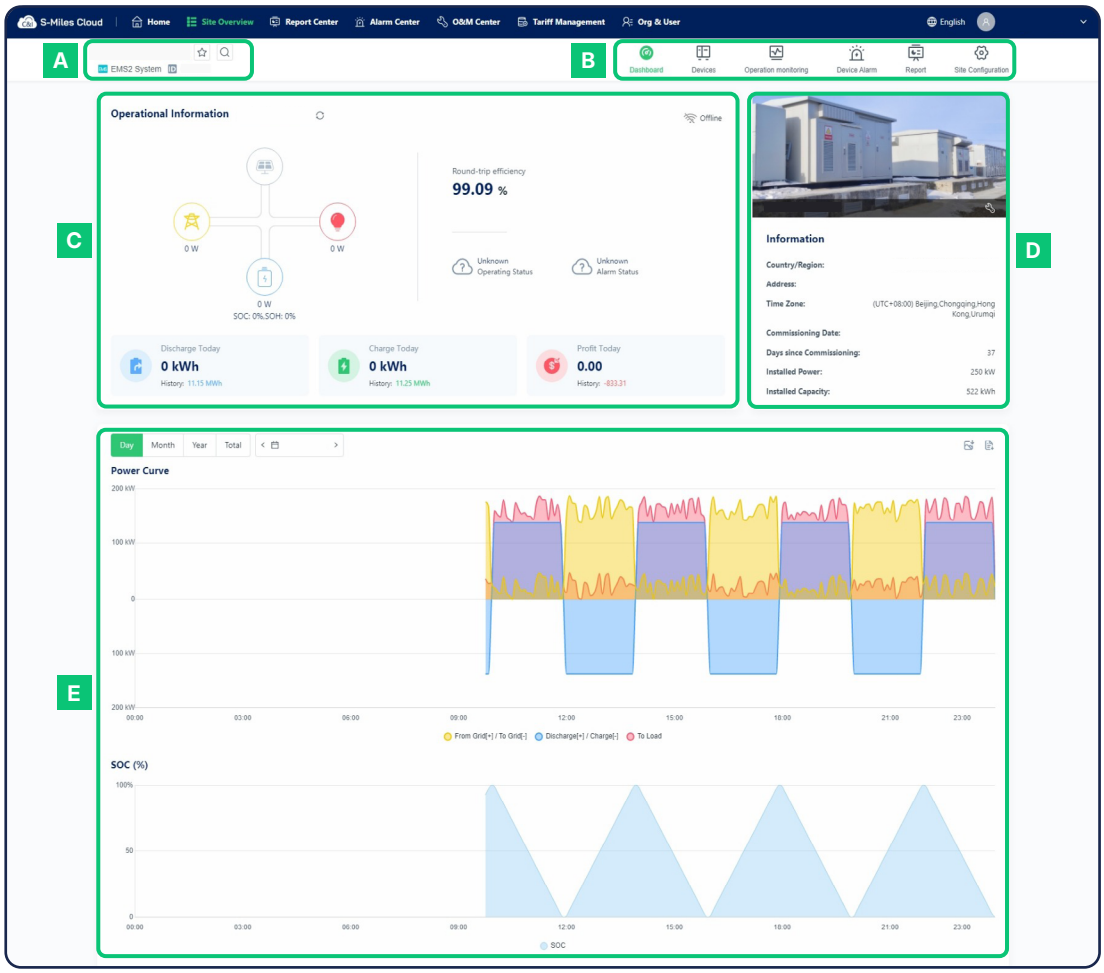


Step 3 Click **Delete** on the left, then click **Confirm** in the pop-up window.



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9.5 Dashboard

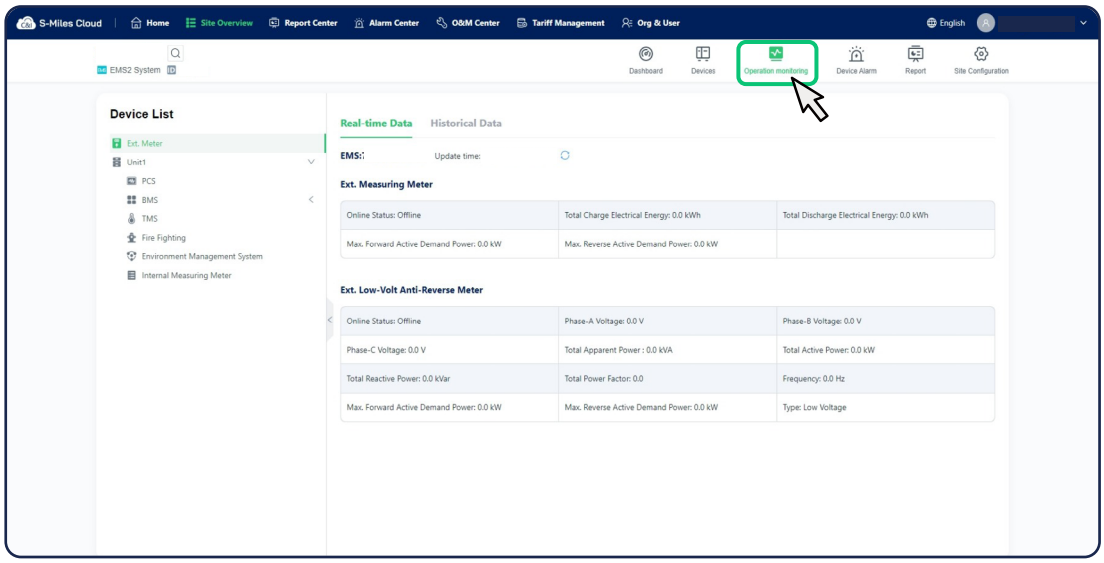


No.	Item	Description		
A	Basic Information	—	Site Name	—
		EMS	Site Type	EMS: Energy Storage System
		ID	Site ID	Unique identifier.
		★	Favorite	Favorite / Unfavorite the site.
		🔍	Search	Search for a site by entering its name or ID.
B	Site Menu Bar		Dashboard	—
			Devices	—
			Operation monitoring	—
			Device Alarm	—
			Report	—
			Site Configuration	—
C	Operation Information	Operation information panel of the EMS.		
D	Site Information	Core basic data of the ESS.		
E	Site Charts	Power Curve: Current operating power of the site. SOC (%): Current SOC of the battery.		

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9.6 Operation Monitoring

Click **Operation Monitoring** in the navigation bar.

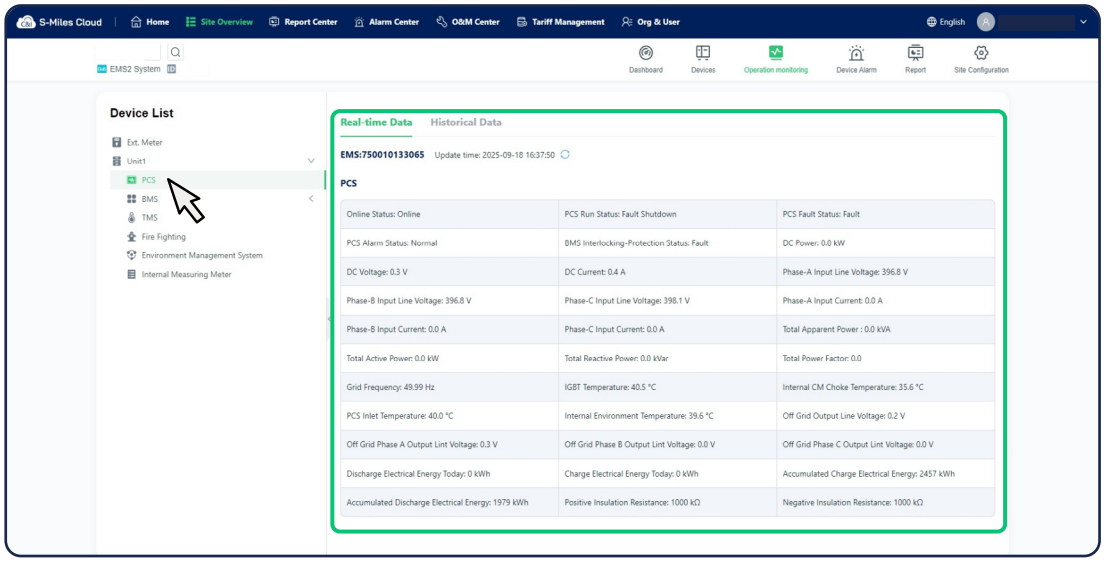


PCS

Click **PCS** under **Device List** to view its **Real-time/Historical Data**, including:

Online status, Run status, Fault status, Alarm status, BMS Interlocking-Protection Status

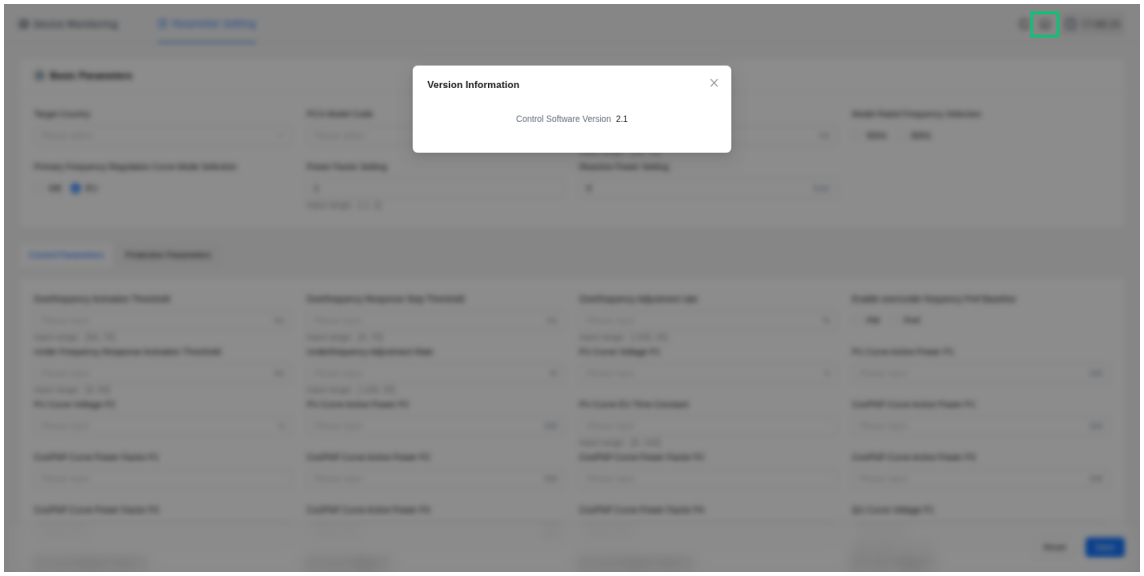
Voltage, Current, Power, Energy, Frequency, Temperature, etc.



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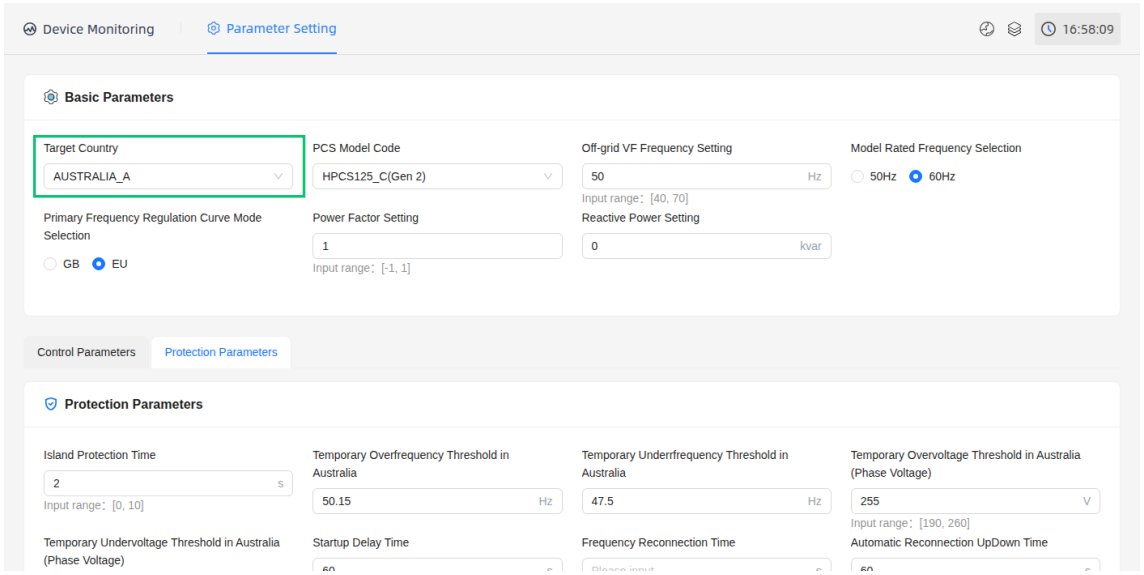
9.7 Firmware Version

Click the icon in the upper right corner to view the PCS firmware version.



9.8 Region Setting

Click **Basic Parameters** > **Target Country** to choose the grid region. (Such as AUSTRALIA_A, AUSTRALIA_B or AUSTRALIA_C)



NOTE

Generation Limit Control & Export Limit Control: DTSD1352 is suitable for extermal and ancillary equipment, and they are for export/generation limit control.

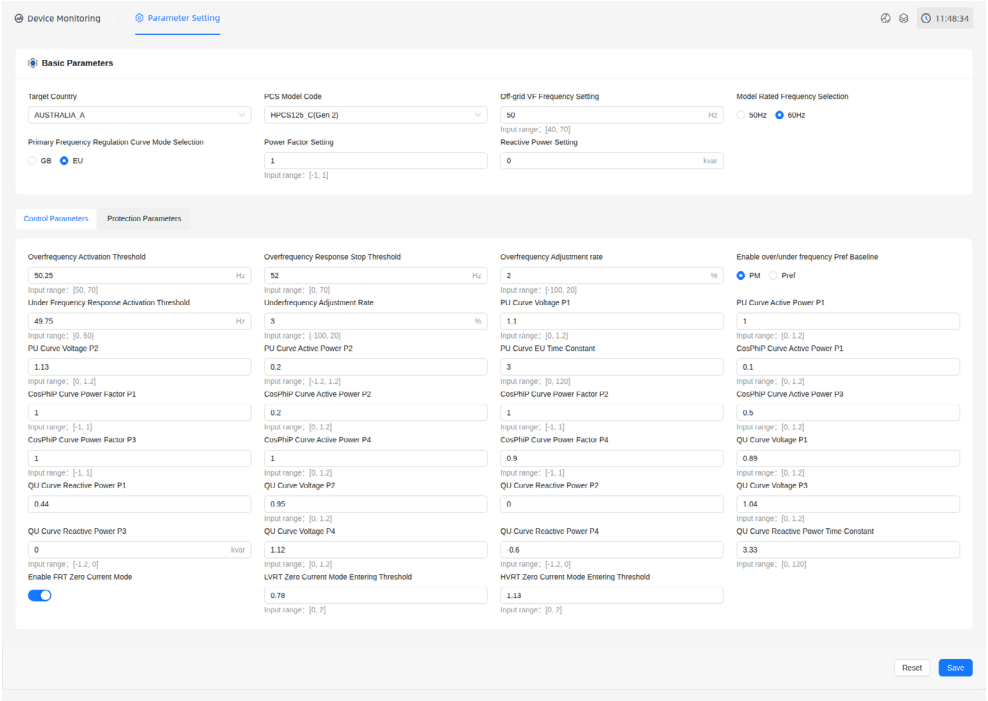
NOTE

- Please keep your login password safe.
- After completing the parameter settings in the version configuration section and the grid-connection parameters on subsequent pages, please click the "Save" button in the bottom right corner. If you need to reset the parameters, please log in to your account and follow the steps above to reconfigure and save them.

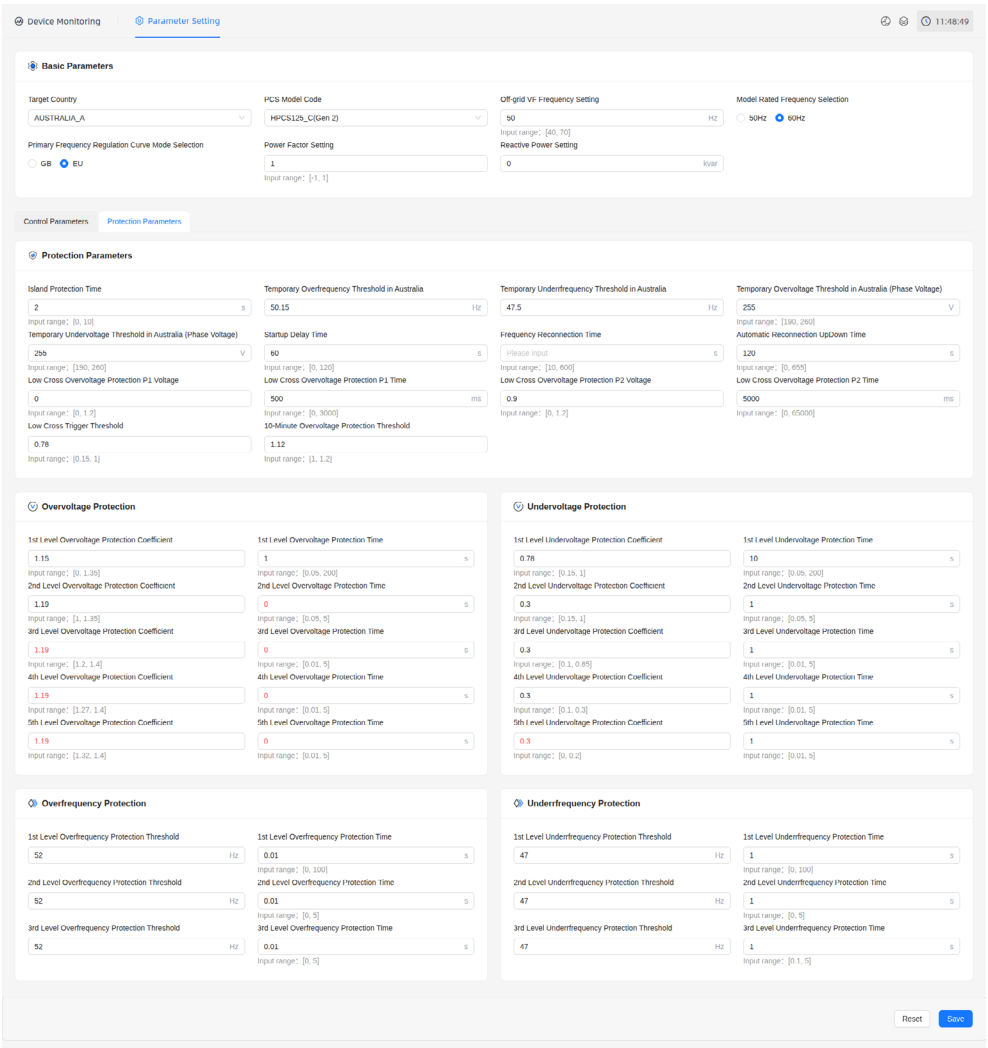
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9.9 AUSTRALIA_A Parameter

Control Parameters



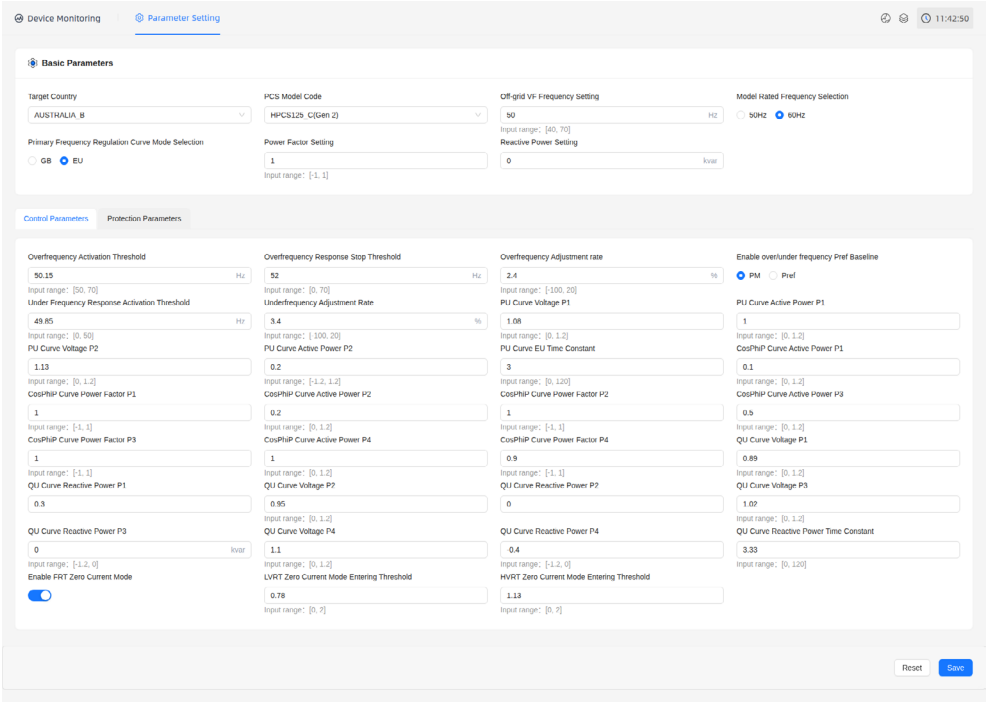
Protection Parameters



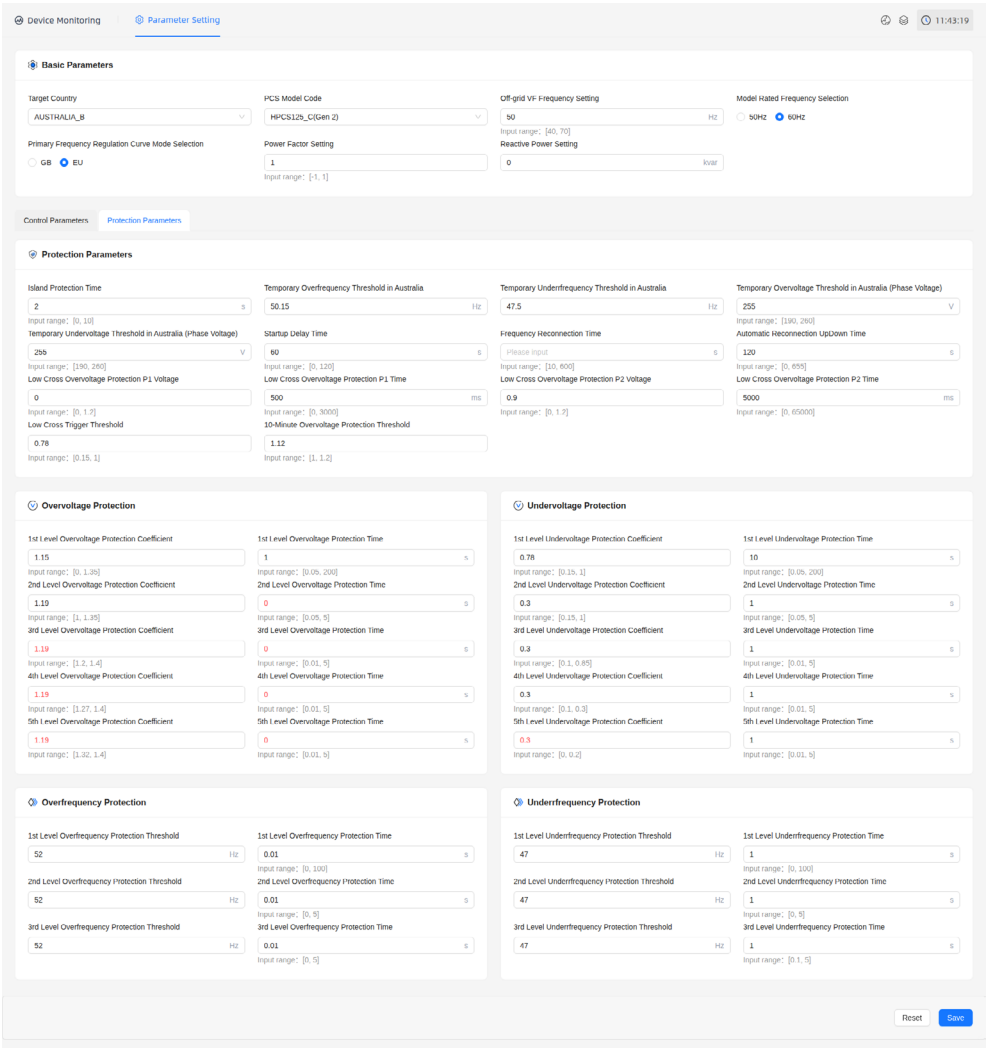
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9.10 AUSTRALIA_B Parameter

Control Parameters



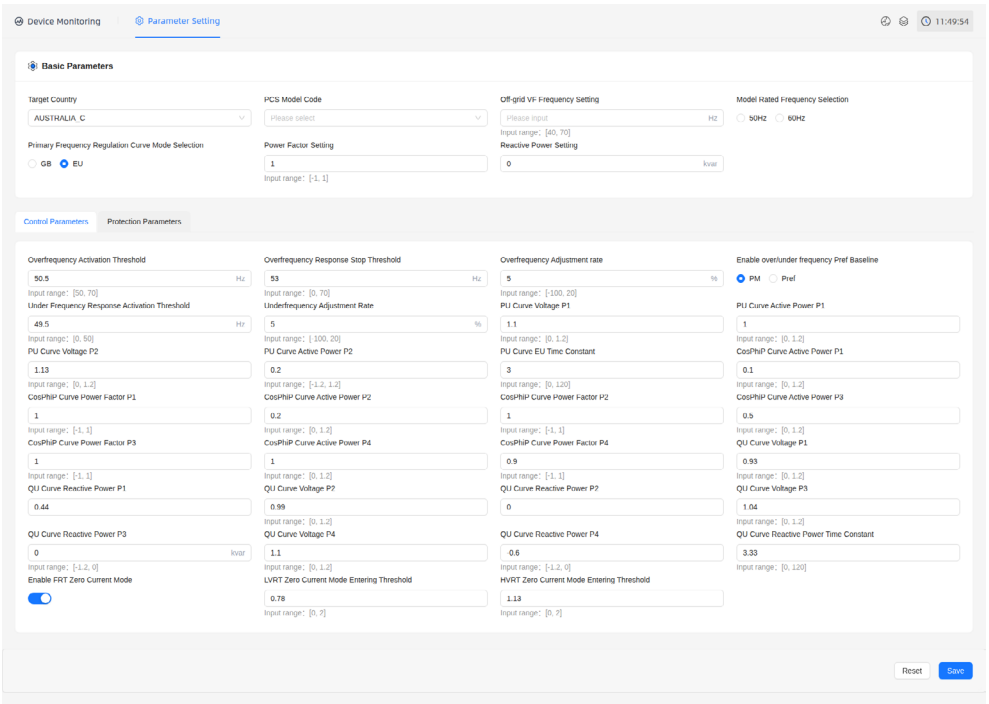
Protection Parameters



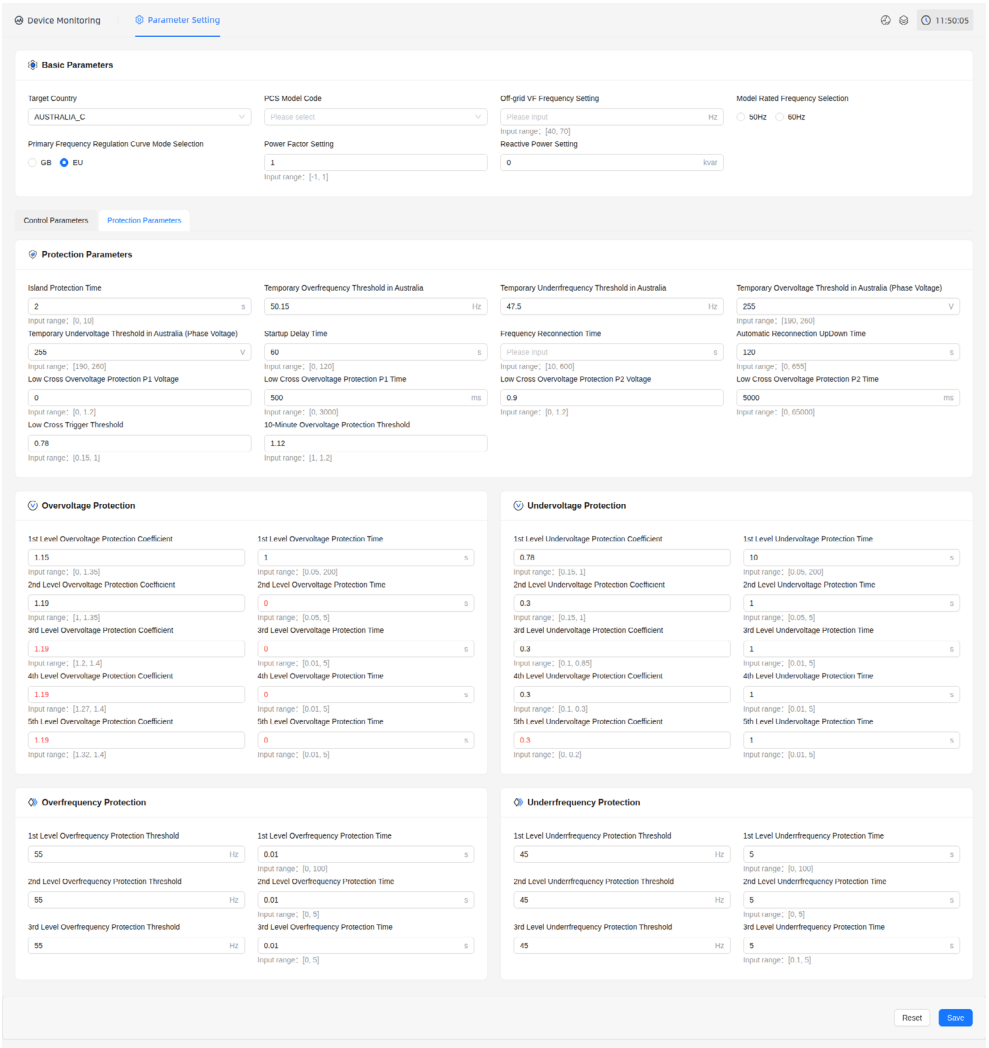
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9.11 AUSTRALIA_C Parameter

Control Parameters



Protection Parameters



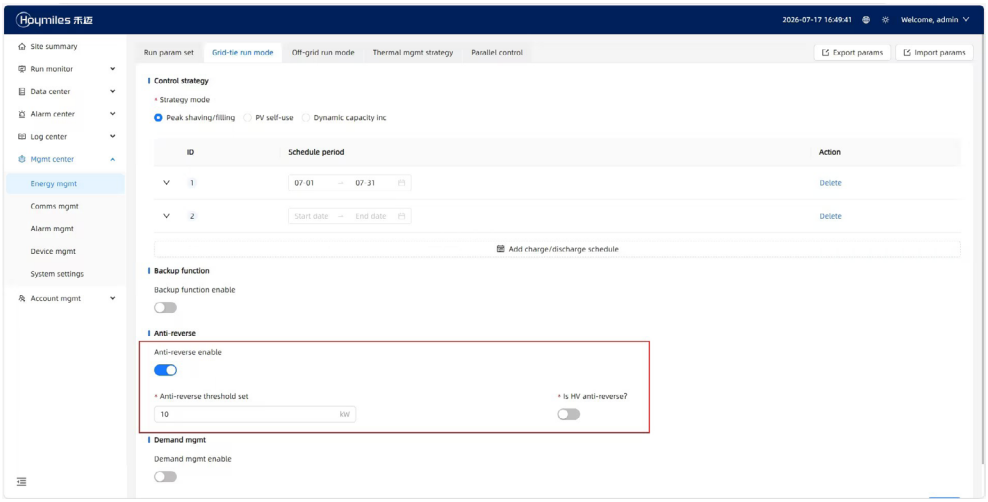
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9.12 Limit Controls

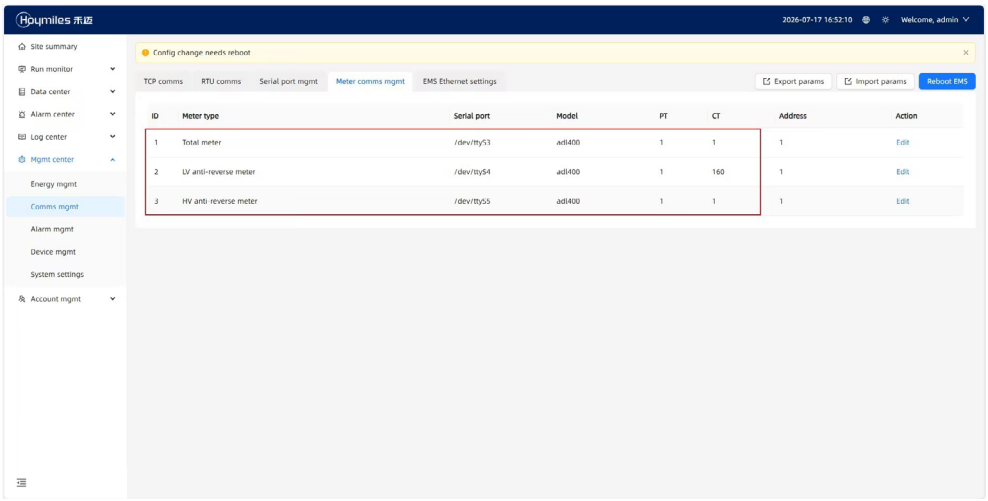
Connect the PC to the HPCS125.

Anti-reverse settings

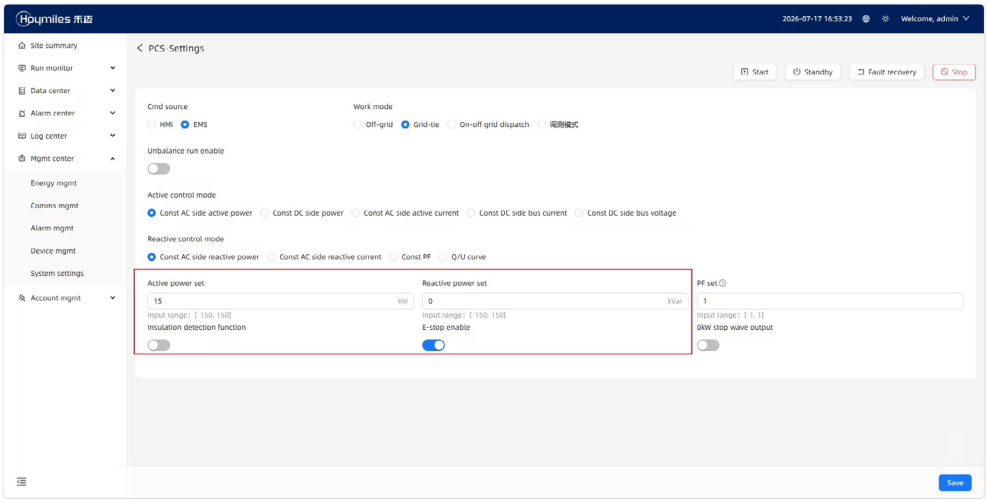
This PCS has an anti-reverse management function. To enable this function, an anti-reverse meter must be installed. The anti-reverse meter should be clamped on the main live line of the grid side.



Meter settings



Active power settings



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10. Troubleshooting

The HPCS series provide comprehensive protection and warning functions. Once a fault occurs, follow these steps.

Step 1: Check the fault message reported by the PCS.

Step 2: Perform a self-test by following the 9.2 Fault List. Analyze the cause of the fault and find a solution.

Step 3: If the fault persists, contact your dealer or Hoymiles technical support.

10.1 Confirmation of Operating Conditions

⚠ **CAUTION**	When the output or charge/discharge capacity of the PCS is abnormal, please check the following items before contacting us: • Open circuit voltage of the energy storage battery is normal. • The power grid is connected correctly and powered on. • The communication of the PCS is normal.

10.2 Fault List

NOTE

In accordance with AS/NZS 5139, the PCS is equipped with an earth fault detection system. If an earth fault occurs, the PCS will trigger an alarm to notify the user.

- Alarm Indication: The fault indicator light will turn red.
- User Notification: The fault details will be displayed on the monitoring app, prompting the electrician to check the system wiring

Fault Name	Possible Cause	Troubleshooting
Earth Fault	An earth fault occurs	Check the system wiring.
Grid Overvoltage	1. Actual overvoltage of the grid.	1. Check if the grid voltage is normal.
	2. Abnormal grid sampling circuit.	2. Check if the sampling circuit of the grid voltage is normal.
	3. Inappropriate setting of fault protection parameters.	3. Check if the grid undervoltage threshold is within a reasonable range.
		4. Contact the manufacturer for further assistance.
Grid Undervoltage	1. Actual undervoltage of the grid.	1. Check if the grid voltage is normal.
	2. Abnormal grid sampling circuit.	2. Check if the grid voltage is normal.
	3. Inappropriate setting of fault protection parameters.	3. Check if the grid undervoltage threshold is within a reasonable range.
		4. Contact the manufacturer for further assistance.

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Grid Overfrequency	1. Actual overfrequency of the grid.	1. Check if the grid voltage is normal.
	2. Abnormal grid sampling circuit.	2. Check if the grid voltage sampling circuit is normal.
	3. Inappropriate setting of fault protection parameters.	3. Check if the grid undervoltage threshold is within a reasonable range.
		4. Contact the manufacturer for further assistance.
Grid Underfrequency	1. Actual underfrequency of the grid.	1. Check if the grid voltage is normal.
	2. Abnormal grid sampling circuit.	2. Check if the grid voltage sampling circuit is normal.
	3. Inappropriate setting of fault protection parameters.	3. Check if the grid undervoltage threshold is within a reasonable range.
		4. Contact the manufacturer for further assistance.
AC Voltage Imbalance	1. Grid voltage imbalance in on-grid mode exceeds the threshold.	1. Check if the grid voltage is unbalanced in on-grid mode.
	2. Grid voltage imbalance in off-grid mode exceeds the threshold.	2. Check if the AC load is unbalanced in off-grid mode.
		3. Contact the manufacturer for further assistance.
Islanding Fault	1. Actual islanding fault.	1. Check if the grid voltage is normal.
	2. AC switch failure.	2. Check if the AC switch is functioning correctly.
		3. Contact the manufacturer for further assistance.
TRIP Fault	Overvoltage on the DC side or overcurrent on the AC side.	If this fault occurs repeatedly, contact the manufacturer for further assistance.
AC Hardware Overcurrent	Excessive current on the AC side.	
DC Hardware Overcurrent	Excessive current on the DC side.	
Phase A Software Overcurrent	Excessive current on the AC side.	
Phase B Software Overcurrent		
Phase C Software Overcurrent		
Half-Bus Hardware Overvoltage	DC-side half-bus overvoltage.	
CBC Limit Exceeded	Repeatedly excessive current leads to exceeded limit of CBC actions.	
IGBT Fault	IGBT failure.	Contact the manufacturer for further assistance.

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Full Bus Software Overvoltage	1. Actual overvoltage on the DC bus.	1. Check if the grid voltage is normal.
	2. Abnormal grid sampling circuit.	2. Check if the grid voltage sampling circuit is normal.
	3. Inappropriate setting of fault protection parameters.	3. Check if the grid undervoltage threshold is within a reasonable range.
		4. Contact the manufacturer for further assistance.
Full Bus Software Under voltage	1. Actual undervoltage on the DC bus.	1. Check if the bus voltage is normal.
	2. Abnormal voltage sampling.	2. Check if the bus voltage sampling circuit is normal.
	3. Inappropriate setting of fault protection parameters.	3. Check if the bus undervoltage threshold is within a reasonable range.
		4. Contact the manufacturer for further assistance.
Bus Midpoint Voltage Imbalance	Excessive voltage deviation between the positive and negative half-buses.	If this fault occurs repeatedly, contact the manufacturer for further assistance.
AC Voltage Imbalance	1. Abnormal sampling circuit.	1. Check if the current sampling circuit is normal.
	2. Sampling coefficient is abnormal.	2. Ensure the current sampling correction coefficient and imbalance protection threshold are within a reasonable range.
	3. Check if the AC load is unbalanced in off-grid mode.	3. Unbalanced load in the off-grid mode.
		4. Contact the manufacturer for further assistance.
DC Main Switch / Snubber Switch / Isolating Switch Not Engaging	1. Adhesion of switch contact.	1. Check if the switch contact are adhesive.
	2. Switch feedback signal line is disconnected.	2. Check if the switch feedback circuit is functioning correctly.
	3. Switch control signal line is disconnected.	3. Check if the control signal circuit is functioning correctly.
		4. Contact the manufacturer for further assistance.
DC Fuse Fault	1. DC fuse is blown.	1. Check if the fuse is blown.
	2. Fuse feedback signal line is disconnected.	2. Check if the feedback signal circuit is normal.
		3. Contact the manufacturer for further assistance.
DCI Limit Exceeded	DC component of AC-side current exceeds limit.	Contact the manufacturer for further assistance.
DCV Limit Exceeded	DC component of AC-side voltage exceeds limit	
Overloading	The PCS is running with overcurrent for a long time.	Check if the power scheduling instruction exceeds the PCS specification requirements.

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DC Software Overcurrent	Excessive current on the DC side.	Check if the overcurrent parameters on the DC side are within a reasonable range.
AC Instantaneous Overvoltage	Instantaneous overvoltage on the AC side.	If this fault occurs repeatedly, contact the manufacturer for further assistance.
Sampling Fault	Abnormal sampling circuit.	Contact the manufacturer for further assistance.
Module Overtemperature / Relay Inductance Overtemperature / Inlet and Outlet Overtemperature / Cavity Overtemperature	1. Overtemperature is caused by overloading, abnormal water circulation, fan failure, etc.	1. Check if the water circulation is normal, the air duct is blocked, the fan is damaged, and check if the ambient temperature is too high.
	2. Overtemperature is caused by abnormal temperature sampling.	2. Contact the manufacturer for further assistance.
Relay Inductance Low Temperature / Inlet and Outlet Low Temperature / Cavity Low Temperature	1. Actual low temperature is caused by abnormal water circulation, fan failure, etc.	1. Check if the current sampling circuit is normal.
	2. Low temperature is caused by abnormal temperature sampling.	2. The actual temperature below -35°C is considered as normal protection.
Battery Overvoltage	Battery voltage is too high.	1. Check if the battery voltage is within a normal range.
		2. Check if the battery overvoltage threshold is set correctly.
Battery Undervoltage	Battery voltage is too low.	1. Check if the battery voltage is within a normal range.
		2. Check if the battery undervoltage threshold is set correctly.
Battery Polarity Reversed	1. The positive and negative electrodes of the battery are connected reversely.	1. Check if the PCS positive and negative buses are connected correctly to the battery.
	2. Abnormal sampling circuit.	2. Check if the grid voltage sampling circuit is normal.
DC Slow Start Timeout	DC slow start time is too long.	1. Check if the grid voltage and battery voltage are within a normal range.
		2. Check if the AC switch is functioning correctly.
		3. Contact the manufacturer for further assistance.
AC Switch Closure Timeout	Grid synchronization time is too long.	If this fault occurs repeatedly, contact the manufacturer for further assistance.
Grid Phase-Locked Loop (PLL) Fault	Grid PLL is malfunctioning.	
Carrier Synchronization Failure	Grid PLL is malfunctioning.	
Emergency Stop Fault	1. Emergency stop button is pressed.	1. Check if the emergency stop button is pressed.
	2. Emergency stop circuit is abnormal.	2. Check if the emergency stop circuit is abnormal.
Emergency Stop Fault	DI1 is reserved to receive the emergency stop command.	Check if the reserved DI1 is at a low voltage.

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BMS Emergency Stop Fault	DI2 is reserved to receive the BMS emergency stop command.	Check if the reserved DI2 is at a low voltage.
Phase Sequence Recognition Failure	Phase sequence recognition is malfunctioning.	If this fault occurs repeatedly, contact the manufacturer for further assistance.
Grid Negative Sequence Fault	The phase sequence of grid voltage is negative.	Check the phase sequence of grid voltage. If it is a negative sequence, switch any two phases.
Control Command Tracking Abnormality	1. PWM drive line is abnormal (reversed, disconnected, etc.).	1. Check the PWM drive line.
	2. Sampling circuit is abnormal (voltage and current sampling circuits are reversed or disconnected).	2. Check if the voltage and current sampling circuits are normal.
		3. Contact the manufacturer for further assistance
AC/DC Active Power Excessive Deviation	1. Sampling circuit (bus voltage, bus current, grid voltage, inductance current sampling, etc.) is abnormal.	1. Check if the sampling circuit is normal.
	2. Sampling coefficient is abnormal.	2. Check the sampling coefficient function code.
		3. Contact the manufacturer for further assistance.
Parallel CAN Communication Timeout	1. CAN communication connection cable is disconnected.	1. Check if the CAN communication cable is normal.
	2. No host in the parallel system.	2. Check if there is a host in the communication system.
Parallel CAN Number Conflict	Multiple equipments have the same identifier.	Check if there are two or more equipments with the same identifier in the communication system.
Parallel CAN Host Conflict	There are multiple hosts in the system.	Check if there two or more hosts in the communication system.
FPGA and DSP Heartbeat Abnormality	FPGA heartbeat frequency does not match the settings.	Contact the manufacturer for further assistance.
FPGA Hardware Sealing Fault	Abnormal Circuit	
SPI Communication Fault	1. Breakpoint is set on DSP or ARM emulator. 2. DSP or ARM chip is damaged.	1. Check if the emulator is connected. 2. Replace the control board. 3. Re-energize the system.
HMI Communication Fault	HMI communication connection cable is disconnected.	Check if the HMI communication cable is disconnected.
BMS Communication Fault	BMS communication connection cable is disconnected.	Check if the BMS communication cable is disconnected.
EMS Communication Fault	TCP communication connection cable is disconnected.	1. Check if the Ethernet communication cable is disconnected.
		2. Check if the ARM control board can ping.
		3. Re-energize the system.

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Liquid Cooling Machine Communication Fault	Liquid Cooling Machine Communication is abnormal.	1. Check if the communication cable of the liquid cooling machine is connected normally.
		2. Restart the liquid cooling machine communication.
		3. If this fault occurs repeatedly, contact the manufacturer for further assistance.
Liquid Cooling Machine Fault (except the above faults)	Liquid cooling machine is malfunctioning.	1. Restart the liquid cooling machine after repairing its malfunction.
		2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
Liquid Cooling Machine Not Running	Liquid cooling machine is not powered on.	1. Check if the water cooling machine is powered on.
		2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
Liquid Cooling Machine Dry Contact Fault	Reserved DI of the liquid cooling machine receives the dry contact fault command.	1. Check if the reserved dry contact DI is closed.
		2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
EEPROM Communication Fault	1. EEPROM reading/writing is abnormal. 2. EEPROM is damaged.	1. Re-energize the system again. 2. Contact the manufacturer to replace the ARM control board.
FLASH Reading Fault	1. FLASH reading is abnormal. 2. FLASH is damaged.	
FLASH Writing Fault	1. FLASH writing is abnormal. 2. FLASH is damaged.	
Residual Current Surge Sensor Failure	Self-test failure of residual current surge sensor.	1. Re-energize the system again.
		2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
Average Jump Fault of Residual Current Surge	Jumping in average value of residual current surge.	1. Check if the AC and DC circuits are normal.
Instantaneous Jump fault of Residual Current Surge	Jumping in instantaneous value of residual current surge.	1. Check if the AC and DC circuits are normal.
		2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
24 V Power Supply Too High/Low	24 V power supply is abnormal.	1.Power on and power off the system again. 2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
220 V Power Supply Too High/Low	220 V power supply is abnormal.	
Internal/External Fan Fault	1. Fan power supply cable is disconnected.	1. Check if the fan power supply cable is connected.
	2. Fan is damaged.	2. Replace the fan.
		3. If this fault occurs repeatedly, contact the manufacturer for further assistance.

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Liquid Cooling Machine Alarm Fault	Liquid Cooling Machine is alarming.	1. Power on and power off the system again after repairing the liquid cooling machine. 2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
Low Insulation Resistance	Short circuit between the PCS positive/negative electrodes and ground.	1. Check the PCS system wiring. 2. If this fault occurs repeatedly, contact the manufacturer for further assistance.
AC/DC Lightning Protector Fault	1. Lightning Protector Cable is disconnected.	1. Check the lightning protector cable.
	2. Lightning protector is damaged.	2. Replace the lightning protector.

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11. Appendix

11.1 Technical Data

Model	HPCS125
DC Side	
DC voltage range	580 to 1000 V
Max. input DC voltage	1000V
Full-load DC voltage range	640 to 950 V
Starting voltage	580 V
Maximum charge/discharge current @45℃	214.8 A
Short-circuit current	10kA
Battery type	Li-ion
Number of inputs	1
AC Side (On-Grid)	
Rated output apparent power @50℃	125 kVA
Rated output power @50℃	125 kW
Maximum output power @45℃	137.5 kW
Maximum apparent power @45℃	137.5 kVA
Rated current @50℃	180.4 A
Maximum continuous AC-side current @45℃	198.5 A
Icc	318 A
Icw	216.5 A @2min
Ipk	450 A @6μs
Icpmr	282 A
Short-circuit current	450A
Rated AC voltage	3W/(N)/PE, 230/400V
AC voltage range	340 to 440 V
Nominal frequency	50/60 Hz
DC component of AC-side current	< 0.5% * rated current
Current harmonic	< 2% (@rated power)
Power factor	> 0.99 (@rated power)
Power control precision	≤1%Pn (output power > 20% * Pn)
Reactive power adjustment range	-105% to 105%
Grid type	3P3W / 3P4W (compatible)
Charge/discharge switching time	< 20 ms
AC Side (Off-Grid)	
Rated AC voltage	3W/(N)/PE, 230/400V
AC voltage range	340 to 440 V
Nominal frequency	50/60 Hz
Output voltage imbalance	< 2% (< 4% in short time)
Voltage harmonic	< 2% (off-grid with no load or rated resistive load)
DC component of AC-side voltage	< 0.5% Un (balanced linear load)
Unbalance load capacity	100% (single-phase load 41.6 kVA)
Efficiency	
Peak efficiency	> 98.7%

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Protections	
DC input / reverse polarity protection	Load switch + fuses
AC output protection	Relay
Surge protection	DC Type II / AC Type II
Protection degree	Class I
Application environment	Outdoor and indoor
Grid monitoring and grounding fault monitoring	Integrated
Insulation monitoring	Integrated
Overheat and overtemperature protection	Integrated
Short circuit protection	Integrated
DC overvoltage and undervoltage protection	Integrated
AC line phase sequence error protection	Integrated
Cooling system failure protection	Integrated
Communication failure protection	Integrated
Anti-islanding protection	Integrated, Combination of active and passive (Active: Frequency shift)
Overload capacity	Operate for a long time at 1.1 times the rated load. Operate for no less than 2 minutes at 1.2 times the rated load
General	
Dimensions (W × H × D)	650 mm × 250 mm × 750 mm
Weight	75 kg
Distribution system	TN / TT
Isolation method	Transformerless isolation
Overvoltage degree	DC port: II, AC port: III
Protection degree	IP65
Temperature range	-35 to +60℃ (> 45 ℃ derating for 137.5kW, > 50 ℃ derating for 125kW)
Relative humidity range	0%RH to 100%RH (non-condensing)
Noise	⩽ 70 dB
Cooling mode	Intelligent liquid cooling
Liquid coolant type	Ethylene glycol coolant
Nominal / Max. pressure	1bar / 4bar (100 kPa, 400 kPa)
Maximum altitude	≤ 5000 m (> 3000 m, derating operation)
Type of converter	Non-isolated
Warranty period	5 years
Country of manufacture	China
Display and Communication	
Display	LED + S-Miles Installer App
Communication interface	RS-485, CAN, Ethernet, Wi-Fi
Communication protocol	MODBUS-RTU / CAN2.0 / MODBUS-TCP
Standard and Regulation	
Compliance	AS/NZS 4777.2, IEC/EN 62477, IEC/EN 61000, IEC/EN 50549
Grid supported	L/HVRT, L/HFRT, active/reactive power control, power ramp rate control

*This PCS is compliant with IEC 62109-1:2010 Clause 4.4.4.6 and Clause 5.3.2 j and has no backfeed current.

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11.2 Certified

IEC 62477-1 & TÜV Mark



11.3 Warranty

For products that fail during the warranty period, we will repair the faulty product or replace new products free of charge. The after-sales service of the PCS must follow the requirements below:

Evidence

During the warranty period (5 years), please keep present purchase invoice and inform the date of purchase. At the same time, the trademark on the product should be clearly visible, otherwise we reserve the right to deny warranty service.

Conditions

Unqualified products after replacement shall be handled by us.

Reserve reasonable time and provide necessary conditions and assistance for us to repair the malfunctioning equipment.

Immunity

In the following cases, we reserve the right to deny warranty service:

- Expired Warranty: The complete equipment and parts have exceeded the free warranty period.
- Transportation Damage: The equipment is damaged during transportation.
- Incorrect Use: Any incorrect installation, modification, or use.
- Harsh Conditions: The operation environments does not meet the requirements in this manual.
- Unauthorized Service: Equipment malfunction or damage caused by installation, repair, modification, or disassembly by service agencies or personnel unauthorized by us.
- Non-Standard Use: Installation and use beyond the scope specified in relevant international standards.
- Natural Disasters: Equipment malfunction or damage caused by abnormal natural conditions.

11.4 Contact Information

If you have any questions about this product, feel free to contact us. To provide you with faster and better after-sales service, we need the following information:

Model	Serial Number	Error Code / Name

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Hoymiles Power Electronics Inc.

Manufacturer Contact

www.hoymiles.com

No. 18 Kangjing Road, Hangzhou, Zhejiang Province, P.R.China

+86 571 2805 6101

service@hoymiles.com

support@hoymiles.com

Importer Contact

www.hoymiles.com

Unit 8/15 Ricketts Road MountWaverley VIC 3149, Australia

+61 468 052 888

service.au@hoymiles.com