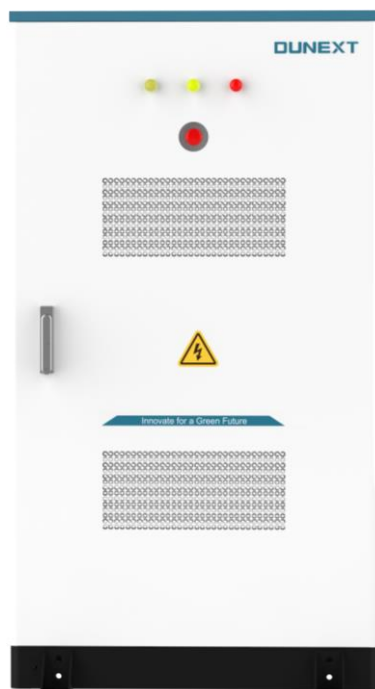




PCC-3/1-S2

User Manual

Notice

This manual contains important safety instructions, installation, electrical connections, commissioning, maintenance, and troubleshooting of the equipment.

Save the manual!

This manual must be stored carefully and be available at all times.

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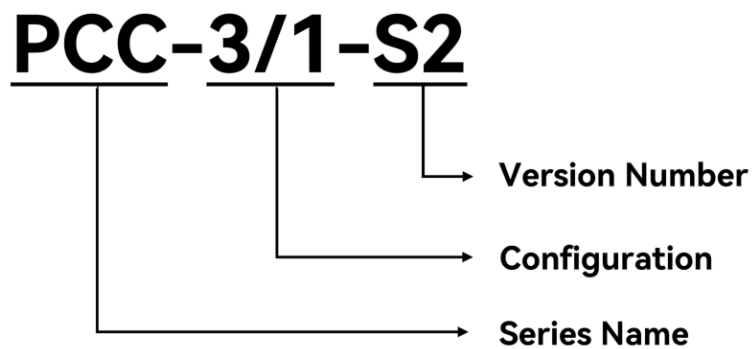
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About This Manual

Overview

Please read the product manual carefully before installation, operation, or maintenance of the PCC. This manual contains important safety instructions and installation instructions that must be followed during installation and maintenance of the equipment.

Designation explanation of the PCC:



No.	Meaning	Description
1	Series Name	PCC: On/off-grid switching cabinet
2	Configuration	3/1: maximum 3 inputs and 1 output
3	Version Number	S2: Seamless on/off-grid switching

Intended Audience

This manual is intended for technical professionals for installation, commissioning and maintenance of the product. The technical personnel have to be familiar with the product, local standards, and electric systems.

Symbol Conventions

The following types of safety instructions and general information appear in this document as described below:

Symbol	Description
	'Danger' indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.
	'Warning' indicates a hazard with a medium level of risk that, if not avoided, will result in death or serious injury.
	'Caution' indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.
	'Note' provides tips that are valuable for the optimal operation of the product.

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 01 (2026-07-15)

This issue is used for first application

1 Safety Precautions

1.1 Operator Requirements

A qualified operator must have the necessary knowledge, professional training, and proven experience. Specifically, the operator must:

- Hold all certificates required by local laws and regulations.
- Protect and maintain equipment according to all relevant safety standards.
- Be capable of performing safe first aid.
- Follow all local regulations, standards, and management directives.

Operators must ensure the following:

- Before working on any circuit breaker, understand all information and instructions, especially the critical safety procedures for assembly and installation.
- Use correct measuring devices and follow all standards and guides. Read the device manual before taking any measurements.
- Do not open the equipment during operation.
- Only authorized, certified personnel may operate machinery like forklifts or cranes on site.
- When equipment is connected to power, a safety officer must be assigned to prevent closed switches during maintenance.
- Wear required work clothing and personal protective equipment (PPE), and use dedicated tools as per local laws.
- Only dedicated operators are permitted to perform installation work.
- Only one operator at a time may connect a single wire during wiring.
- Inspect every completed item and perform a cross-check.
- Follow the installation sequence exactly. Do not skip any steps.
- Use safety barriers to prevent unauthorized site access during installation.
- Do not remove or change any nameplate.

- Do not open the PCC cabinet door in the rain.
- Do not change the software, enclosure, or parts without manufacturer approval. Unauthorized changes void all liability and warranty.
- A surge protection device is mandatory on the energy storage side when the PCC is used alone or with other systems.
- Comply with the User Manual for all system operations. Damage caused by failure to follow its instructions will void all liability and warranty.

2 Product Introduction

2.1 Overview

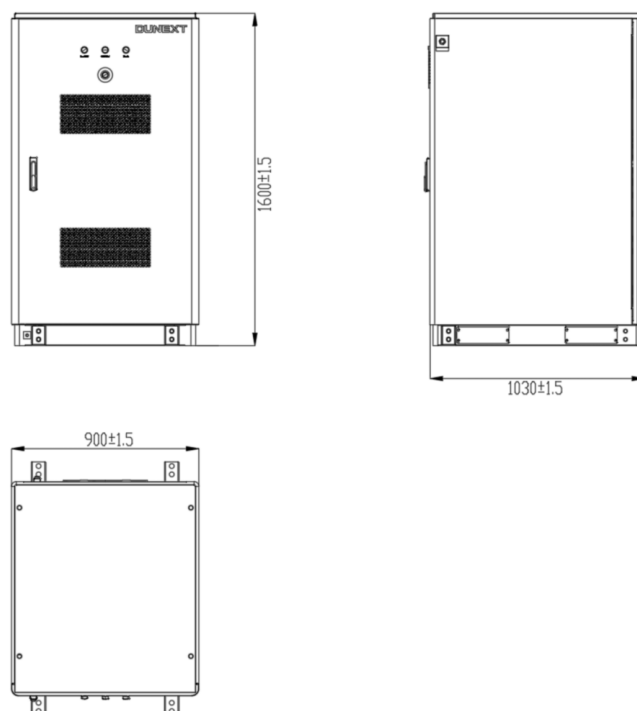
The seamless on/off-grid switching cabinet is used to control the on-grid and off-grid switching of the energy storage cabinet.

It contains STS (Static Transfer Switch), grid circuit breaker, etc.

- The STS works in conjunction with the PCS to perform automatic on-grid and off-grid switching.
- The grid circuit breaker acts as the main switch for the grid connection point.

2.2 Appearance

Figure 2-1 PCC dimensions (Unit: mm)



The specific length and width shall be subject to the parameter table.

2.3 Components

Figure 2-2 Front view of PCC

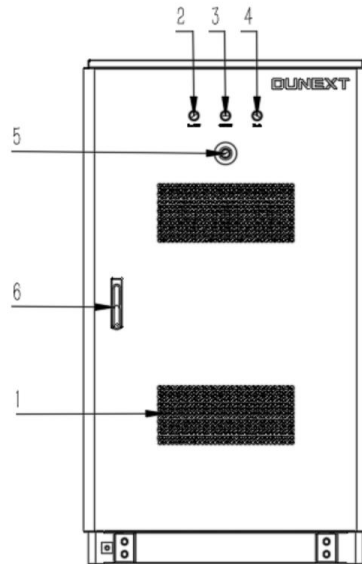


Table 2-1 Front view of PCC

No.	Name	Function
1	Air inlet	PCC cabinet cooling air inlet
2	On-grid indicator	Solid green indicates that the system is in the on-grid mode.
3	Off-grid indicator	Solid yellow indicates that the system is in the off-grid mode.
4	Fault indicator	Solid red indicates a system failure and the system stops running.
5	Emergency stop button	The system stops operating when the button is pressed
6	Door lock	Locking the PCC cabinet door requires a specific key to open it



Do not operate the emergency stop button unless it is an emergency.

Figure 2-3 Structure design of PCC front view (door opened)

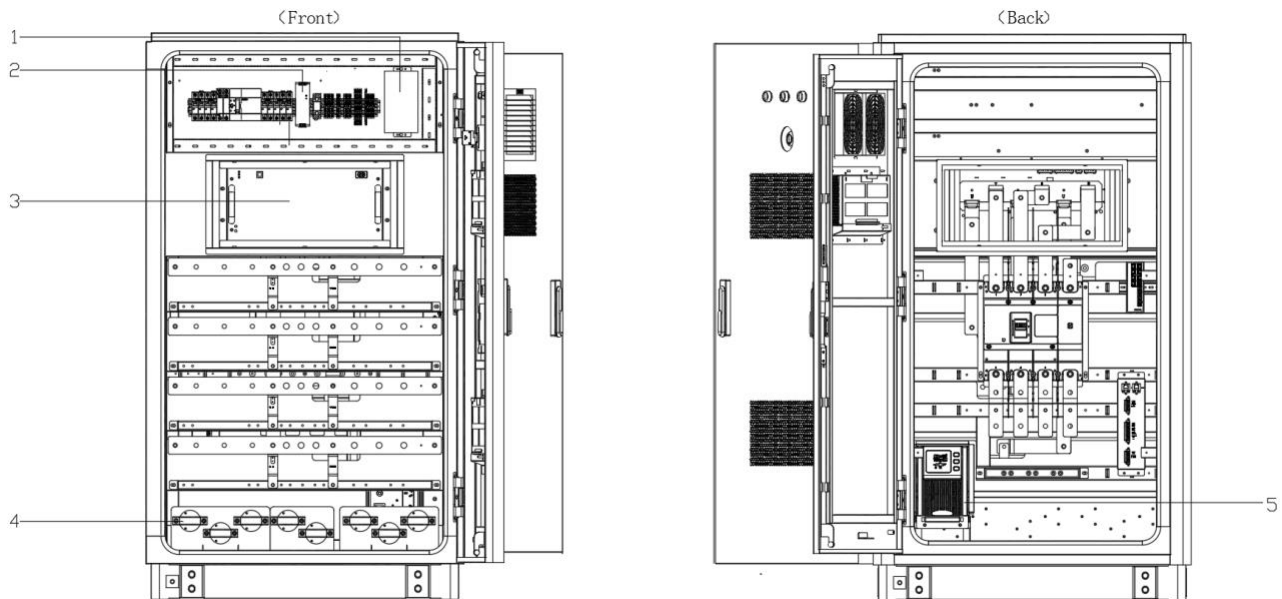


Table 2-2 Structure design of PCC front view (door opened)

No.	Name	Function
1	I/O module	Signal acquisition and command dispatch
2	AC/DC	24V DC output
3	STS	Static transfer switch
4	Cable clamp	Secure cables
5	UPS	230V uninterruptible power supply

2.4 Parameters

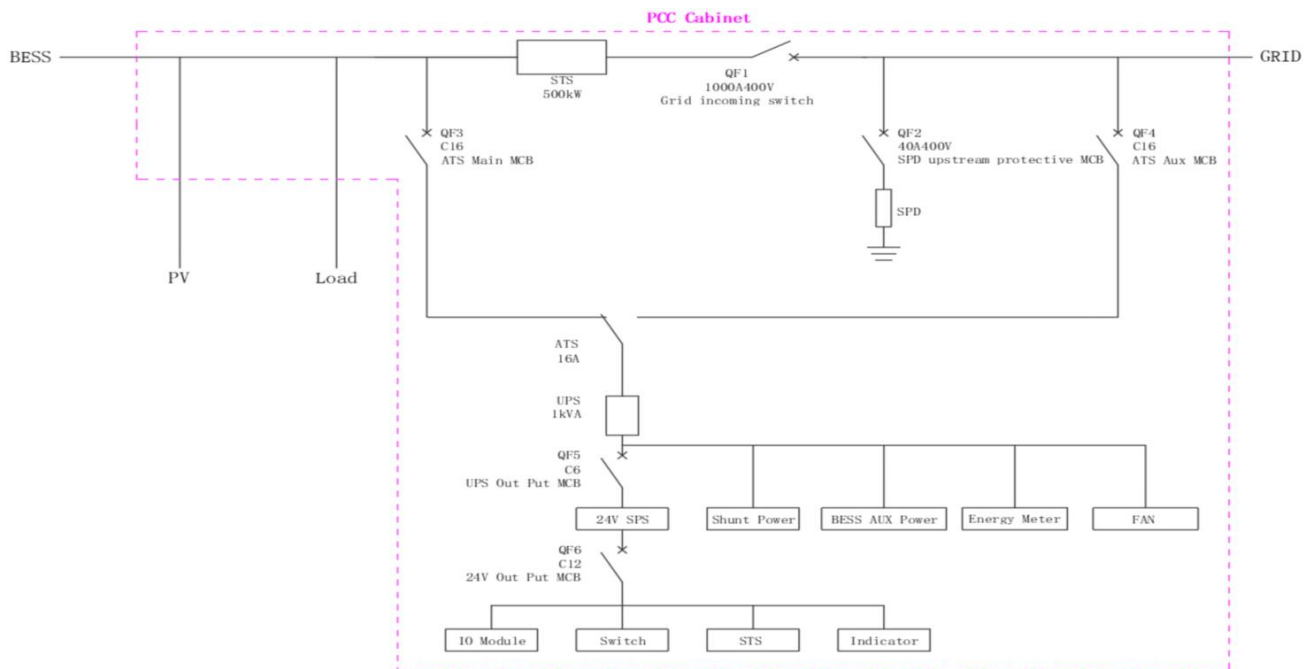
Detailed parameters of PCC are shown in the table below:

Item	Parameters
Rated power	500kW
Rated voltage	AC400V
Rated frequency	50Hz
Rated grid-side output current	722A
Maximum allowable grid-side current	794A
IP rating	IP55, supports outdoor use
Cooling method	Forced air cooling
Anti-corrosion level	C4-H
Operating temperature	-25°C ~ 55°C
Relative humidity	0~95%RH (non-condensing)

Item	Parameters
Operating altitude	2000m (Derated above 2000m)
Dimension (W * D * H)	900mm*1030mm*1600mm
Maximum weight	< 340kg
Grid connection parameters	≤500kW
Grid connection method	2 inputs, 3P4W+PE
ESS connection parameters	105kW*3 PowerHill (233kWh); 125kW*3 PowerHill (261kWh)
ESS connection method	3 inputs, 3P4W
Load connection parameters	≤315kW for PowerHill (233kWh); ≤375kW for PowerHill (261kWh)
Load connection method	3 inputs, 3P4W+PE

2.5 Circuit Diagram

Figure 2-4 Electrical diagram of power circuit and auxiliary power circuit



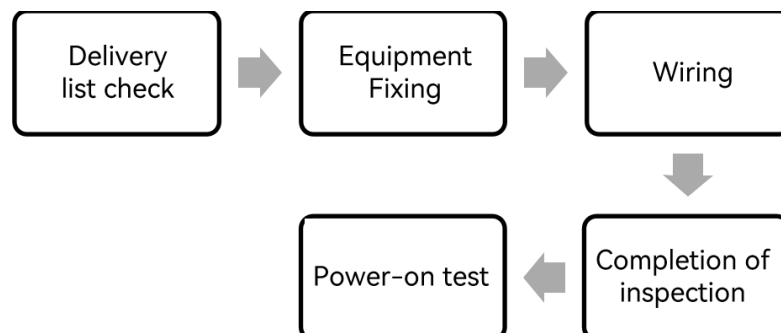
3 Installation

3.1 Preparations Before Installation

Please refer to the packing list for details of the shipment contents.

3.1.1 Installation Process

Figure 3-1 Installation process



3.1.2 Installation Tools

Prior to on-site installation, ensure all required tools are gathered.

Figure 3-2 Protective tools

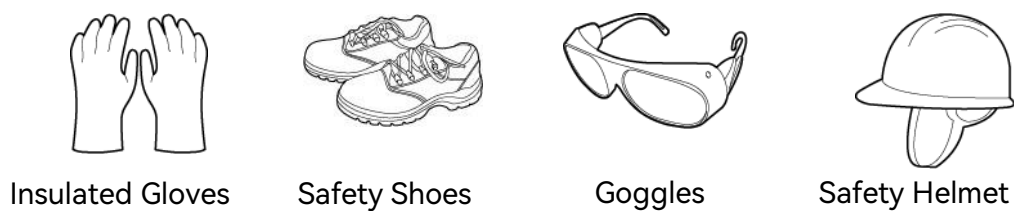


Table 3-1 Tool list

No.	Recommended Tools	Quantity	Description
1	Electric forklift	1	Rated load $\geq 2T$; used for unloading and handling
2	Hammer drill bit & M22 drill bit	1 set	Drill holes in the ground, and place expansion bolts (M8-M18)
3	Hammer	1	Drive the expansion bolts into place
4	Socket	1 set	M18 socket: used to tighten expansion bolts
5	Insulated torque wrench	1	Check and mark the torque value
6	Adjustable wrench	1	Tighten the bolts for the cable connections.
7	Diagonal pliers	1	Cut the cable tie on the packaging bag.
8	Flat-head screwdriver / pry bar	1	Unpacking operation

3.1.3 Installation Environment Requirements

The installation site environment requirements are shown in the following table:

Table 3-2 Installation environment requirements

No.	Item	Requirement
1	Ambient temperature range	-25°C ~ 55°C
2	Permissible altitude	< 2000m (derated above 2000m)
3	Permissible humidity	0 ~ 95%RH (non-condensing)
4	Installation foundation requirements	For specific requirements, see 3.1.4
5	Installation space requirements	For specific requirements, see 3.1.4


WARNING!

Do not install or commission the PCC when it is raining.

3.1.4 On-site Foundation Installation

The PCC must be secured to a concrete foundation. Construct the foundation in advance as shown in the figure below.

Figure 3-3 On-site foundation installation (Unit: mm)

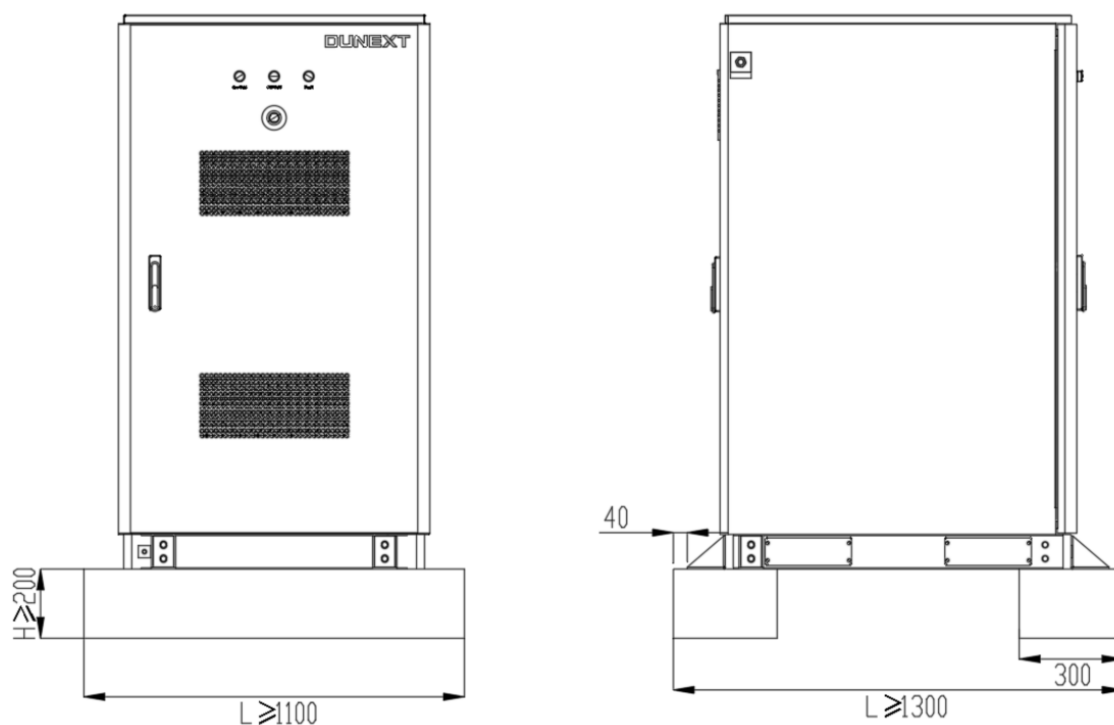
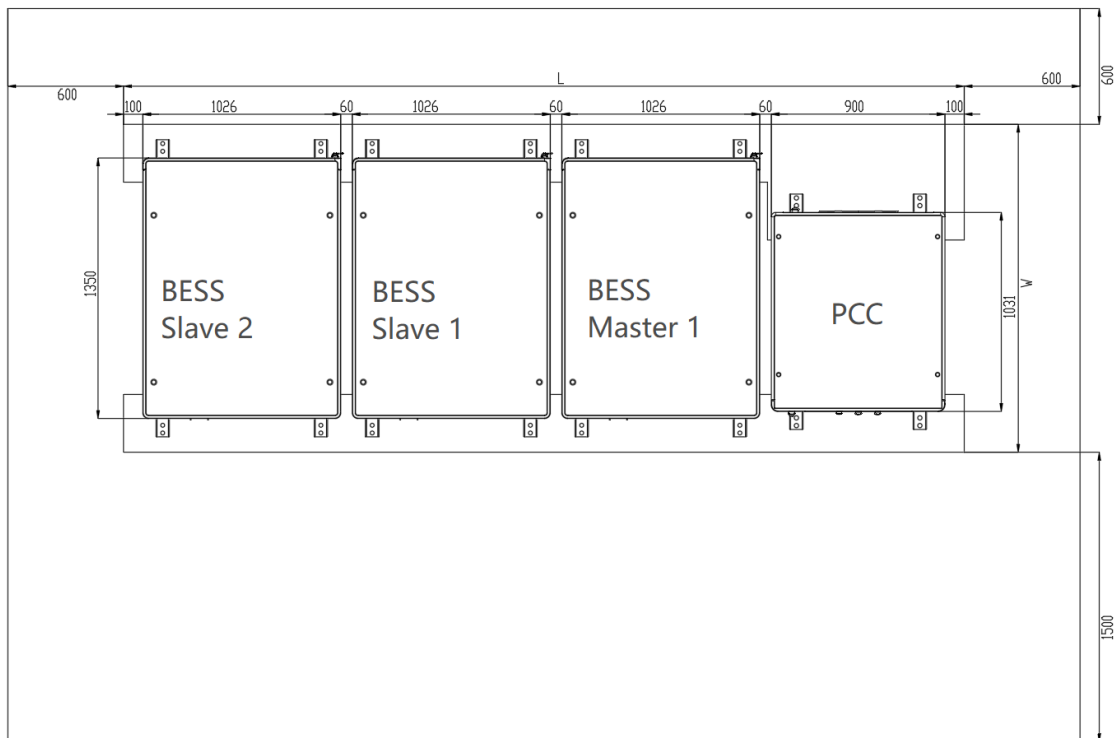


Table 3-3 Installation foundation requirements

No.	Category	Parameters
1	Minimum hardening area	$L \geq 1590$ mm, $W \geq 1660$ mm
2	Installation foundation height	$H \geq 200$ mm (higher than the highest flood level in history)
3	Mounting base load capacity	Load capacity > 2 t/m ²
4	Foundation service life	≥ 20 years
5	Foundation levelness	3 mm/m ²

Figure 3-4 Clearance requirements for multiple PowerHill with PCC (Unit: mm)



- It is recommended to install the PCC on the right of the ESS.
- The distance from the PCC cabinet to the farthest slave unit shall not exceed 10m.

3.1.5 Product Transportation



- Before transportation, the work area must be inspected and clearly marked with safety barriers.
- Unauthorized personnel shall not enter the designated danger zone during transport operations.

Table 3-4 Forklift requirements

Item	Description
Forklift specifications	The PCC has a maximum weight of approximately 350kg and shall be handled by an electric forklift with a rated capacity of 1.5t or greater.
Fork length	Given that the PCC cabinet's width is about 0.9m, a forklift with a minimum fork length of 1.5m must be used for safe handling.
Width of forklift hole	The forklift holes on this product are 220mm wide with a center-to-center distance of 520mm.
Fork position	Position the forks as follows: ensure the clearance between the forks and the

Item	Description
	rear of the PCC cabinet is less than 50mm, while the protrusion of the far fork beyond the right side of the PCC cabinet exceeds 50mm. Gently raise the forks until the product is in the designated position. Subsequently, lower the forks and retract the base. Note: The fork enters from the PCC cabinet's rear side where there is no air conditioner.

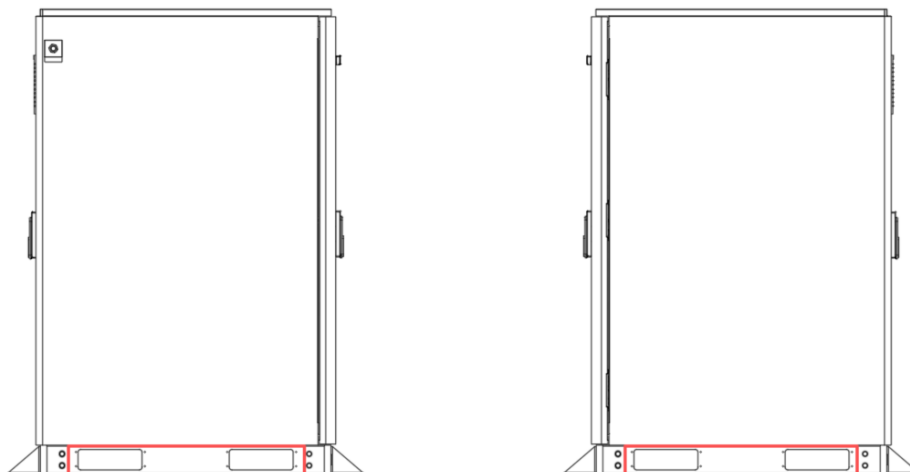

WARNING!

- The PCC can be transported using a forklift or a crane.
- Use an electric forklift with adjustable forks to move the PCC cabinet. Manual forklift is not recommended.
- During forklift transportation, adequate protection must be provided to prevent damage to the PCC cabinet's surface.
- Secure the PCC cabinet to the forklift using belts or safety straps before transport.

Transportation method: side insertion

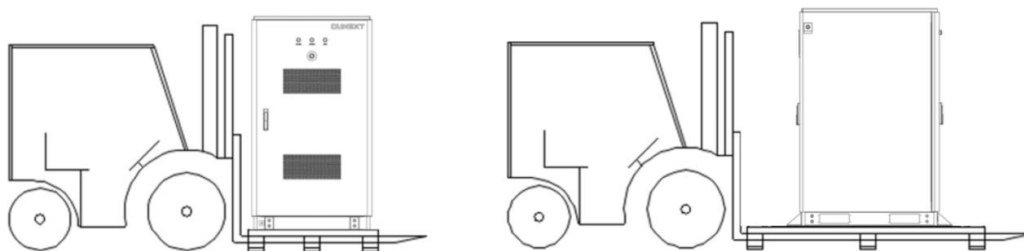
1. Remove the bottom pallets and confirm the fork hole

Figure 3-5 Bottom pallets position



2. Transportation

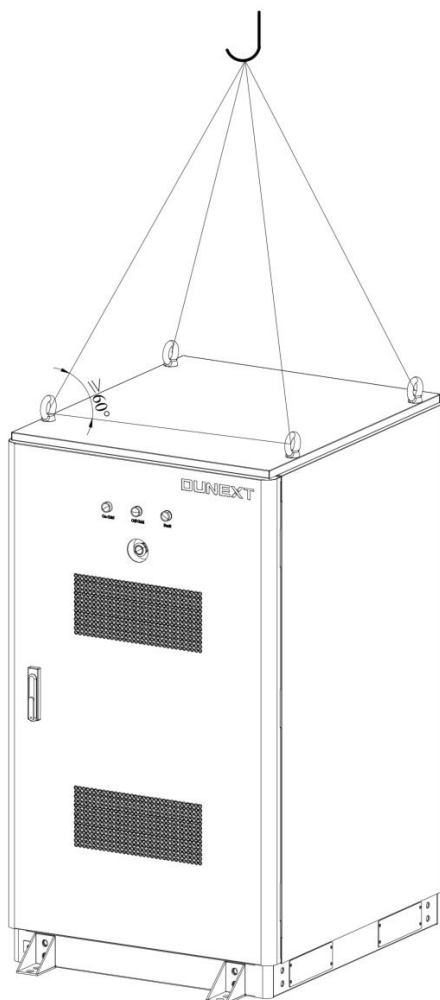
Figure 3-6 Moving the PCC using a forklift



3. Hoisting

Hoisting is supported with a minimum hoisting angle of 60°.

Figure 3-7 Hoisting angle ($\geq 60^\circ$)



The hoisting device must be properly connected to the PCC.

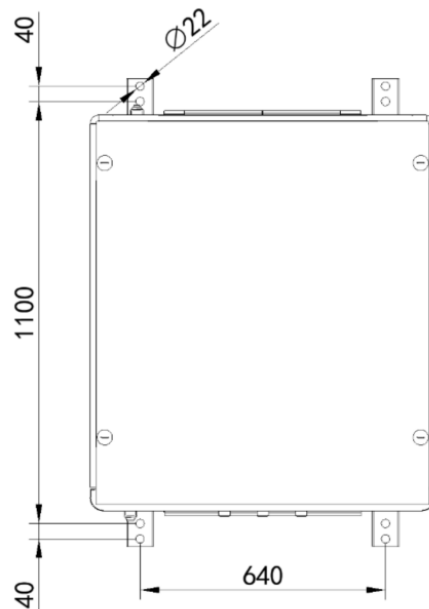
Table 3-5 Hoisting methods

Hoisting Point	Hoisting Hook	Shackle	Torque
Connection Diagram			160N.m
Precautions	Hooks must be connected from the inside out. Connecting from the outside in is strictly prohibited.	The shackle pin must be fully tightened.	160N.m

3.2 Fixation of the PCC

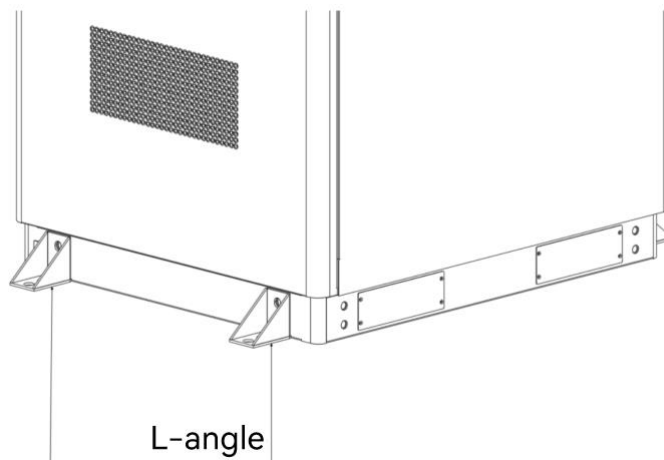
After verifying that the foundation is compliant, sufficiently dry, firm, and level, hoist the outdoor PCC cabinet to its designated position.

Secure the L-angles at the base of the PCC cabinet to the foundation using anchor bolts. The required locations for these angles are illustrated in the diagram below.

Figure 3-8 Fixing hole at the bottom of PCC (Unit: mm)


Each L-angle features two slotted holes sized $\phi 20$, and M16 bolts are specified for the installation.

Figure 3-9 Angle support



After fastening, apply an anti-rust treatment, such as anti-rust paint, to all L-angles.

3.3 External Wiring

Refer to this chapter for instructions to ensure all wiring is correctly connected for the PCC



- Only qualified electricians may perform wiring and must confirm all connections are correct.
- The wiring operation requires at least two personnel: one to perform the physical connection, and the other to provide supervision and assistance to prevent errors.
- Ensure that all switches are off before wiring.
- The operator shall bear all consequences of any damage or accident caused by improper operation.
- The power grid system connected to the PCC must have lightning protection.
- The AC cable and PE cable shall be prepared by customers.

3.3.1 Product Switch Position



- Ensure that all switches are off before wiring.
- Personnel must wear the required Personal Protective Equipment (PPE) during connection work: safety goggles, insulating gloves, and safety shoes.

The table below lists all switches in the PCC.

Figure 3-10 Switches in PCC

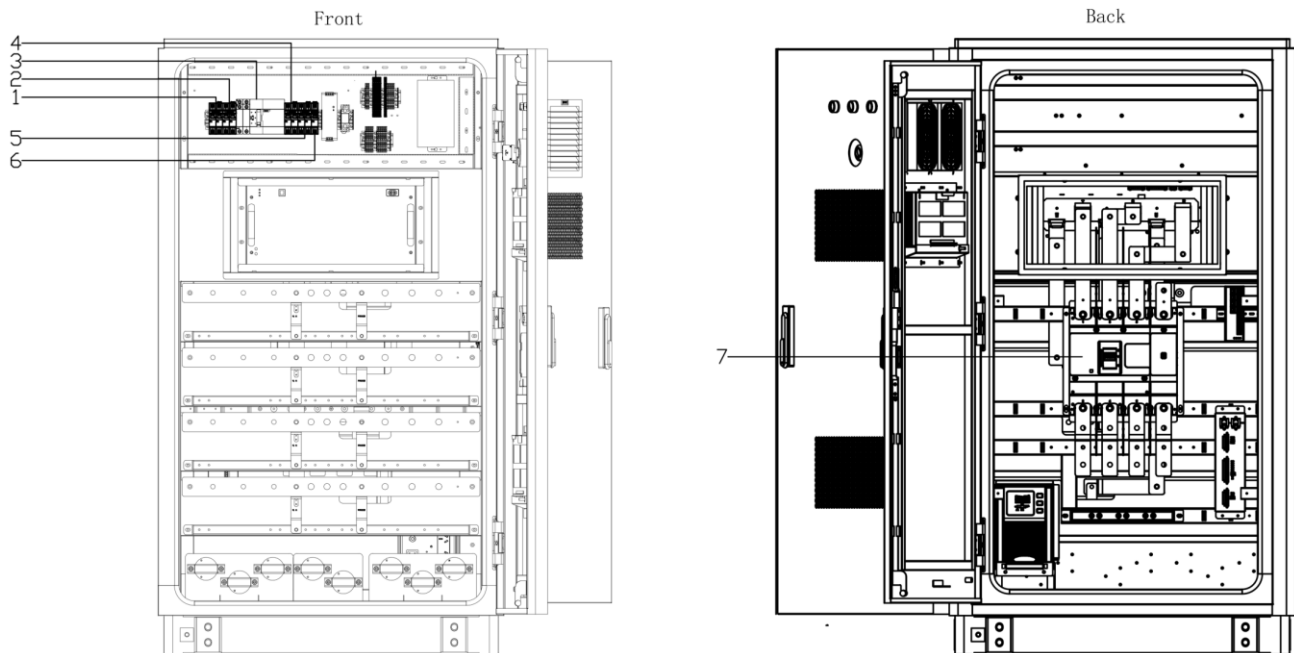


Table 3-6 Switches in PCC

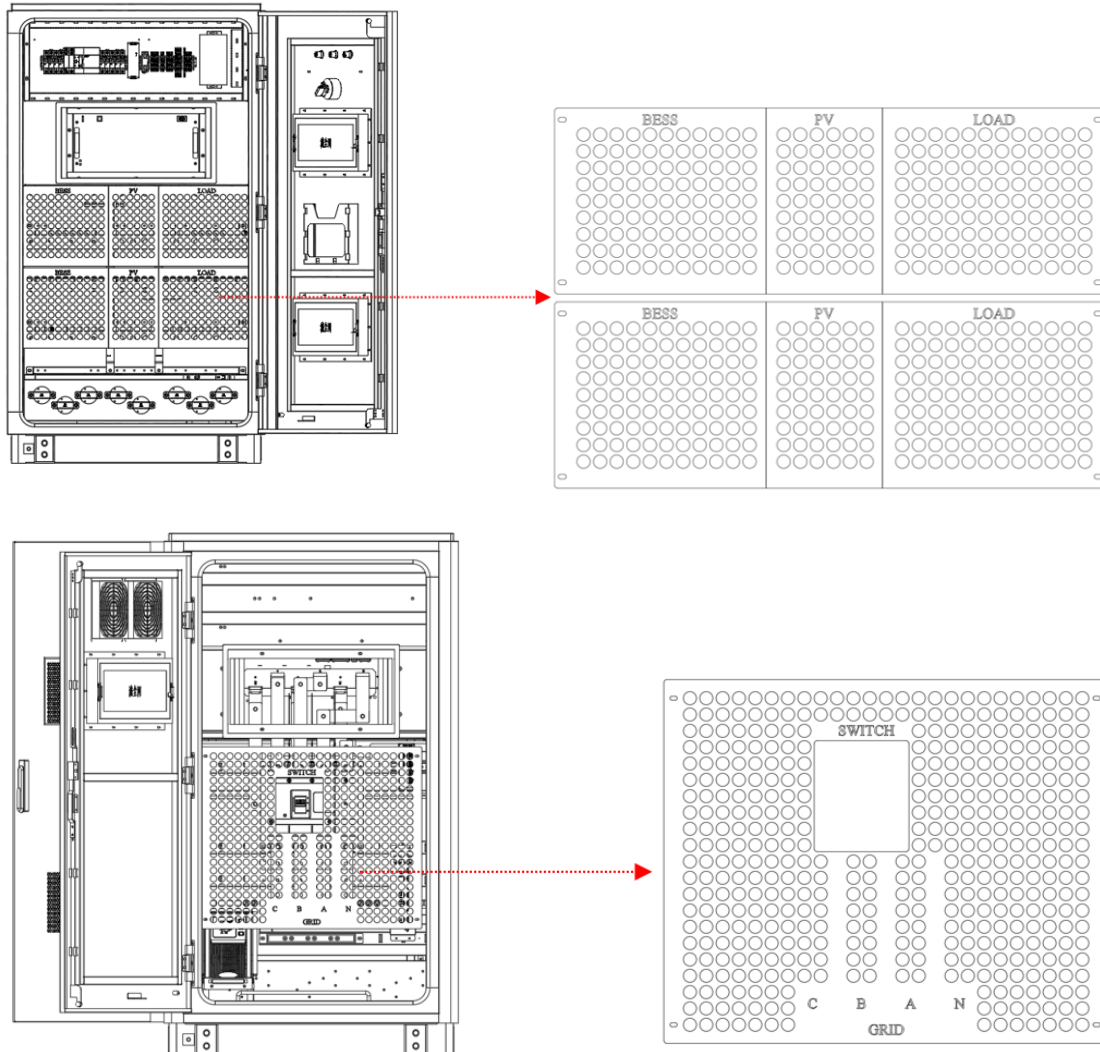
No.	Switch Name/Type	Shipment Status	Function
1	ATS Main Input Circuit Breaker (QF3)	OFF	230V Input Power Supply
2	ATS Auxiliary Input Circuit Breaker (QF4)	OFF	230V Main/Auxiliary Power Switching
3	Automatic Transfer Switch (ATS)	Auto mode, no operation required	
4	UPS Output Circuit Breaker (QF5)	OFF	UPS 230V Output Power Supply
5	Power Supply Circuit Breaker (QF6)	OFF	Power Supply Circuit Breaker
6	Fan Circuit Breaker (QF7)	OFF	Cooling Fan Power Supply
7	Grid Circuit Breaker (QF1)	OFF	Grid Power Supply

3.3.2 AC Wiring

- During wiring, the AC cables must be fully matched with the AC terminals at ports "A", "B", "C", "N", and "PE". Incorrect cable connection may result in power failure.
- Ensure that all cables are firmly connected. Otherwise, the terminals may overheat during equipment operation, leading to equipment damage.

- The wiring terminals inside the cabinet are clearly marked with corresponding silk-screen labels. Please connect the AC cables to the designated areas as indicated. Remove the protective cover before wiring. The cover securing screws are M4×12. The silk-screen labels are shown in the figure below:

Figure 3-11 Silk-screen labels on the protective cover



- All external interfaces are arranged inside the PCC, and terminals are provided with the it. The terminal models are as follows:

Table 3-7 Terminal model

Location		Model	Qty
BESS	A, B, C, N	SC70-10	12
GRID	A, B, C, N	SC185-16	8
	PE	SC95-12	2
PV	A, B, C, N	SC150-16	12

Location		Model	Qty
LOAD	A, B, C, N	SC150-16	12
	PE	SC70-10	2

Figure 3-12 Wiring location in PCC

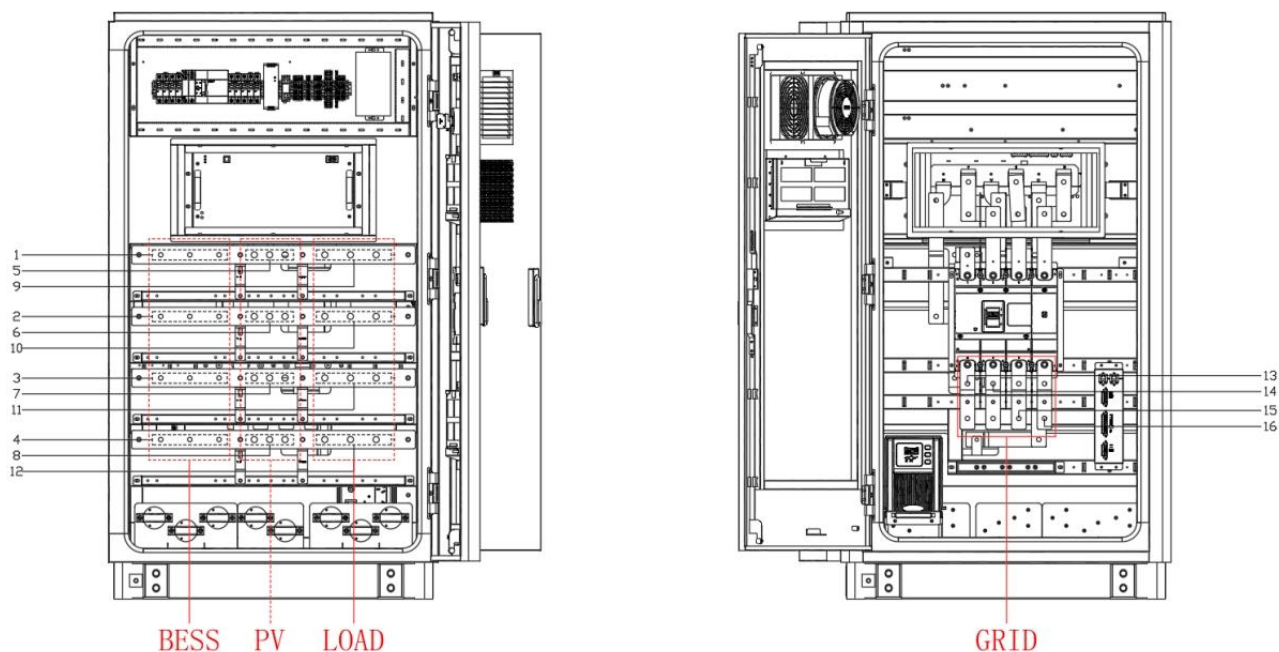
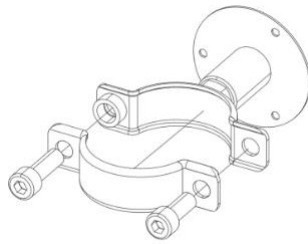


Table 3-8 Wiring location in PCC

No.	Name/Function	Cable Specifications	Remarks
1	BESS A	Copper core cable: 70mm ²	Connect to ESS
2	BESS B		
3	BESS C		
4	BESS N		
9	Load A	2 x 150mm ² copper core cables per phase	Connect to loads
10	Load B		
11	Load C		
12	Load N		
\	Load PE	2 x 70mm ² copper core cables	
13	PV A	2 x 150mm ² copper core cables per phase	Connect to PV
14	PV B		
15	PV C		
16	PV N		
17	Grid C	2 x 185mm ² copper core cables per phase	Connect to the grid
18	Grid B		
19	Grid A		
20	Grid N		
\	Grid PE		

Notes:

- All power cables and communication cables must be secured using dedicated cable clamps.
- Route the cables into the clamping cavity of the cable clamps. Evenly adjust the tightening bolts on both sides to ensure that the clamps fit snugly against the cable outer sheaths. Apply moderate tightening force—do not over-tighten to avoid crushing or damaging the cable insulation.
- PV incoming cables, grid incoming cables, load incoming cables, and BESS cables shall be grouped separately and secured with independent cable clamps. Cables of different specifications must not be mixed in the same clamp.
- Allow sufficient bending slack during cable routing. Maintain a service loop between the clamp fixing point and the terminal connection to absorb vibration during equipment operation, preventing terminal loosening and cable stress damage.

Figure 3-13 Wiring location in PCC


3.3.3 Communication Wiring


WARNING!

The distance from the PCC cabinet to the farthest slave unit shall not exceed 10m.

The external signal and communication wiring of the PCC are shown in the figure below:

Figure 3-14 External ports

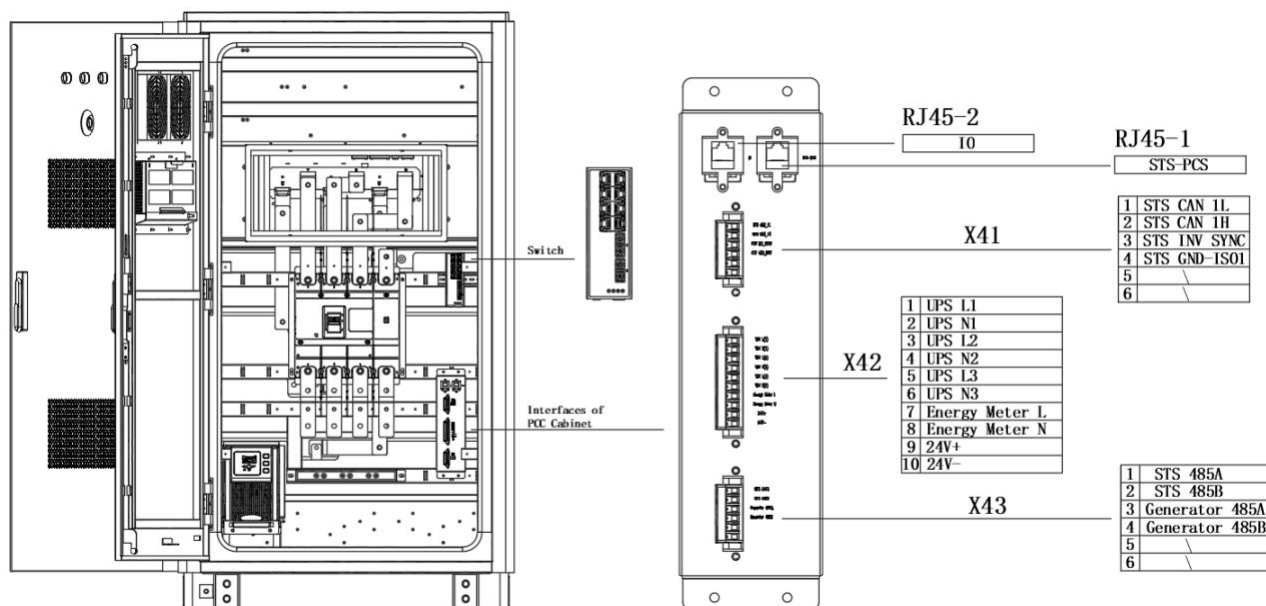


Figure 3-15 External ports connection diagram

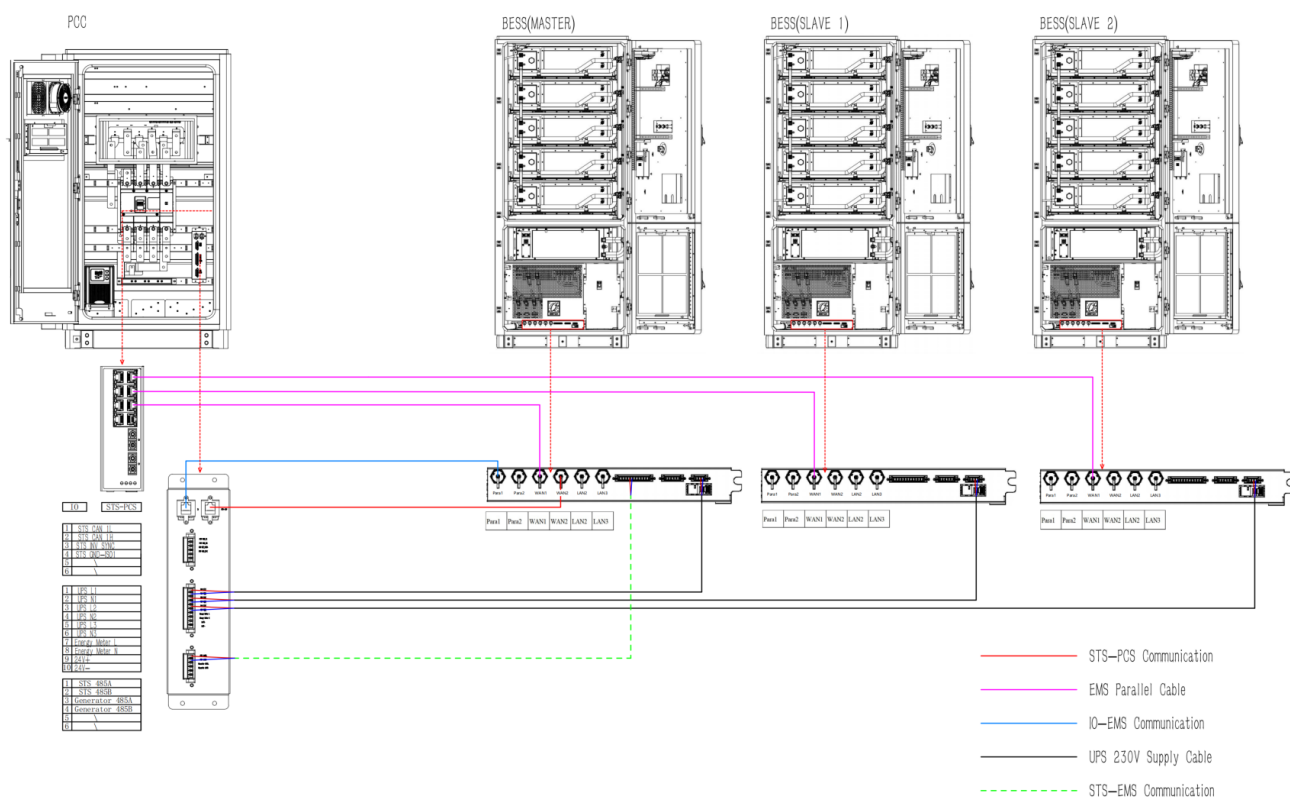


Table 3-9 Signal and external communication ports

Position	Terminal block	Name	Recommended Cable Spec.	Function	Remarks
RJ45-1	1	STS-PCS	Shielded CAT6	Ethernet Port	STS-PCS Communication
RJ45-2	1	I/O	Shielded CAT6	Ethernet Port	I/O-EMS Communication
X41	1	STS CAN_1L	2×1 mm ² Shielded Twisted-Pair Cable	CAN Communication L	STS-PCS Communication
	2	STS CAN_1H		CAN Communication H	
	3	STS INV_SYNC	2×1 mm ² Shielded Twisted-Pair Cable	Sync Control Signal (+)	STS-PCS Sync Control Signal
	4	STS GND-ISO1		Sync Control Signal (-)	
	5	\	\	\	\
	6	\	\	\	\
X42	1	UPS L1	1.5mm ²	ESS 1: 230V Power Supply L	Supply 230V Power Supply for ESS 1
	2	UPS N1	1.5mm ²	ESS 1: 230V Power Supply N	
	3	UPS L2	1.5mm ²	ESS 2: 230V Power Supply L	Supply 230V Power Supply for ESS 2
	4	UPS N2	1.5mm ²	ESS 2: 230V Power Supply N	
	5	UPS L3	1.5mm ²	ESS 3: 230V Power Supply L	Supply 230V Power Supply for ESS 3
	6	UPS N3	1.5mm ²	ESS 3: 230V Power Supply N	
	7	Energy Meter L	1.5mm ²	Energy Meter: 230V Power Supply L	Reserved Power Supply for Energy Meter
	8	Energy Meter N	1.5mm ²	Energy Meter: 230V Power Supply N	
	9	24V+	0.5mm ²	Reserved 24V+	Reserved 24V Power Supply
	10	24V-	0.5mm ²	Reserved 24V-	
X43	1	STS 485A	2×1 mm ² Shielded Twisted-Pair Cable	485 Communication A	STS-EMS Communication
	2	STS 485B		485 Communication B	
	3	Generator 485A	2×1 mm ² Shielded Twisted-Pair Cable	485 Communication A	Reserved Diesel Generator Communication
	4	Generator 485B		485 Communication B	

Position	Terminal block	Name	Recommended Cable Spec.	Function	Remarks
	5	\	\	\	\
	6	\	\	\	\

3.3.4 Grounding



- The protective ground wire of the PCC enclosure cannot replace the one at the AC port. During wiring, ensure that both protective ground wires are reliably connected.
- To enhance terminal corrosion resistance, apply silicone or paint to the ground terminals after installing the protective ground wire.
- The protective ground wire shall be prepared by customers.

The grounding terminal on the PCC is an M8 nut, and the required cross-sectional area for the grounding cable must be selected from the table below.

Table 3-10 Cross-sectional area of PE cables

Cross-sectional Area for Main Circuit Conductor S (mm ²)	External Protective Earth Conductor Sp (mm ²)
S≤16	S
16 < S≤35	16
35 < S	S/2

3.4 Inspection After Installation



Another operator needs to double-check the wiring to confirm that all cables are connected correctly.

3.4.1 Wiring Inspection

Please refer to Section 3.3 to ensure that all cables are connected correctly.



For optimal communication performance, cable lengths must be kept as short as possible. It is mandatory to route all external cables through protective conduits.

3.4.2 Bolt Torque Check

Ensure all bolts are torqued according to the following requirements. After torque verification, each bolt shall be identified by a red marking.

Table 3-11 Bolt torque requirements

No.	Location	Fastener	Value
1	PCC and ground fixing	4-M18*150	140±5N·m
2	Grounding bolt	M8*20 hexagonal nut	18±1N·m

4 Power-on the PCC

4.1 Check Before Power-on

Step 1: Complete the wiring inspection detailed in Section 3.4.

Step 2: Make sure the PCC cabinet is mounted vertically on the ground, firmly secured, and positioned for easy operation and maintenance, with adequate space for ventilation and heat dissipation, and a clean, tidy environment.

Step 3: Check that the PE cables, AC cables, and communication cables are connected correctly and securely.

Step 4: Verify that cables are bundled neatly in compliance with routing requirements, arranged properly, and free from any damage.

4.2 Power-on Operations



- Ensure all pre-energization inspections are completed.
- The wiring operation requires at least two personnel: one to perform the physical connection, and the other to provide supervision and assistance to prevent errors.
- The operator shall bear all consequences of any damage or accident caused by improper operation.

The power-on sequence for the PCC consists of two steps (for switch details and locations, refer to Section 3.3.1):

Step 1: Close the grid circuit breaker QF1;

Step 2: Press and hold the UPS power-on button for more than 2 seconds and wait for the UPS to start up.

Step 3: Close QF2 → QF3 → QF4 → QF5 → QF6 → QF7 in sequence.

Proceed with the following steps in sequence.

If the PCC is in normal condition, it will automatically complete the on/off-grid switching after power-on. The STS will communicate in real-time with the PCS inside

the energy storage cabinet, and the STS will automatically detect whether the grid is energized.

When the grid is connected, if both the STS and PCS are powered on and communication is normal, the STS will close and connect to the grid after 3 minutes, at which point the on-grid indicator will light up.

When the grid power is lost, the STS will open, and the PCS will simultaneously switch to off-grid mode to supply power to the load, at which point the off-grid indicator will light up. When grid power is restored, the STS will detect the recovery of grid voltage. If communication between the STS and PCS remains normal, the STS will reconnect to the grid after another 3 minutes, and the PCS will simultaneously switch back to on-grid mode.



For long-term storage, the UPS must be powered off. It is recommended to recharge the UPS battery every 3 months to prevent over-discharge.

4.3 Power-off Operations

The power-off sequence for the PCC consists of two steps (for switch details and locations, refer to Section 3.3.1):



Before the power-off operation, ensure all the AC circuit breakers on the load side and the ESS side are open.

Step 1: Open QF7→QF6→QF5→QF4→QF3 in order;

Step 2: Press and hold the UPS power-off button for more than 2 seconds and wait for the UPS to shut down.

Step 3: Open the grid circuit breaker QF1.

Upon completion of this sequence, the indicator light on the PCC should turn off.

5

Maintenance Guidelines

5.1 Safety Precautions

5.1.1 Power-Off Operations

- Before any maintenance operation, the main power and control power of the PCC cabinet must be disconnected, and the input and output sides must be verified to be free of residual voltage.
- Follow the principle of "Disconnect power before performing maintenance". Never work on live equipment.
- When performing maintenance on the high-voltage side, wear insulating gloves and other protective equipment.

5.1.2 Environmental Requirements

- The maintenance area must be kept dry and well-ventilated, and free from moisture or accumulation of flammable materials.
- Before operation, inspect tools for insulation integrity to ensure there is no risk of damage or electric leakage.

5.1.3 Warning Signs

- Place a "Do Not Close" warning tag in the maintenance area to prevent unintended energization.
- When multiple personnel are involved, clearly assign roles and maintain ongoing communication.

5.2 Maintenance

To ensure the proper operation of all devices inside the PCC cabinet, regular maintenance is required. The maintenance intervals provided in this section are for reference only. Actual maintenance schedules should be determined based on the

specific environmental conditions at the project site. If the PCC cabinet is installed in harsh environments, such as desert areas, the corresponding maintenance intervals should be shortened. In particular, internal and external cleaning, as well as anti-corrosion and anti-rust measures, should be performed more frequently. If the system is installed in a desert area, it is recommended that a thorough inspection and complete cleaning of the PCC cabinet be carried out after each sandstorm.

- Periodically check whether the cooling fans inside the PCC cabinet are operating normally. Also, listen for any abnormal friction noise during operation. If such noise is present, it may be caused by dust ingress. The system must be shut down before cleaning. Prior to cleaning, use a multimeter to verify that the internal components are completely de-energized to avoid electric shock.
- Most maintenance tasks require the removal of the internal protective covers. After all maintenance work is completed, be sure to restore all removed covers to their original positions and ensure that all screws are securely tightened.
- During routine maintenance and inspection of the devices inside the PCC cabinet, any non-conformities found must be corrected immediately. If there are any questions, contact DUNEXT immediately.

5.2.1 Monthly Operation & Maintenance Requirements

No.	Check Item	Check Method	Maintenance Interval
1	Appearance	Check if the cabinet exterior has paint peeling or rust.	Every Month
2	Cabinet Grounding	Check if grounding is reliable.	
3	Sealing Strip	Ensure cabinet doors open and close smoothly; sealing strips should not be aged, damaged, or detached. They must fit tightly when closed.	
4	IP Rating Check	Check for water marks along cabinet door edges.	
5	UPS	Check if the UPS operates properly.	
6	Louver	Check for blockages; inspect whether filter cotton needs cleaning.	
7	Circuit Breaker	Check if the main circuit breaker operates normally.	
8	Meter	Check if the meter is lit and displaying data correctly.	
9	Module Indicators	Check if indicator lights on the power supply module and IO controller module are on. Also check system status indicators.	
10	High-voltage Cables	Inspect cable connection points for signs of burning or torque marker changes.	
11	Air Filter Cleaning	● Ensure the equipment is shut down and disconnected from power. ● Loosen the air filter screws (without fully removing) fixed on the device.	

No.	Check Item	Check Method	Maintenance Interval
		- Gently pull out the air filter, avoiding damage to internal components. - Clean the air filter using a dry soft brush or vacuum cleaner. - Reinstall the cleaned air filter and tighten screws in the correct sequence.	

5.2.2 Annual Operation & Maintenance Requirements

The PCC cabinet has an IP55 protection rating and is suitable for outdoor use. However, harsh environments or long-term operation can still cause aging of the cabinet or damage to internal devices. Regular maintenance inspections of the cabinet and replacement of aged or damaged components will effectively extend its service life and improve the performance of internal devices.

To ensure the proper operation of all devices within the cabinet, regular maintenance should be performed. The maintenance cycles provided here are reference values. The actual maintenance cycle should be reasonably determined based on the actual environmental conditions of the project site. If the PCC cabinet operates in a harsh environment, such as a desert area, the corresponding maintenance cycle should be shortened. In particular, internal and external cleaning, anti-corrosion, and anti-rust work should be performed more frequently. If the system is installed in a desert area, it is recommended that after each sandstorm, the inside and outside of the cabinet be carefully inspected and thoroughly cleaned.

Maintenance Tasks (Every Six Months to One Year)	
Item	Inspection Content
Safety Functions	Check the emergency stop button function.
	Simulate a stop.
	Check machine warning labels and other device labels. If they are found to be blurred or damaged, replace them promptly.
	1. Check whether the cabinet door opens and closes flexibly, and whether the door lock, hinges, etc. are functioning properly and in good condition. If necessary, appropriately lubricate the door lock keyhole, hinges, etc. 2. Check whether the sealing strip is aged, damaged, or detached. After closing, it should fit tightly.
	Check for any external water ingress into the cabinet to confirm whether the IP rating has failed.
Internal Components Inspection	Check whether the UPS is operating normally.
	- Check whether the indicators on the power supply module and I/O controller module are illuminated. - Check whether the system status indicators are illuminated.
	Check whether the main circuit breaker can open and close properly.

Maintenance Tasks (Every Six Months to One Year)	
Item	Inspection Content
	Check whether the meter is illuminated and whether the readings are normal.
	Check for signs of burning/scorching at AC cable connections and whether the torque values have changed.
	Check the dust accumulation on various modules. If necessary, clean the modules using a vacuum cleaner.
	Check whether the louver is blocked and whether the filter cotton requires dust removal. If the filter cotton is damaged, replace it promptly.
Component Maintenance	Perform a routine inspection for corrosion on all metal components (every six months).
	Perform an annual inspection of contactors (auxiliary switches and micro-switches) to ensure their mechanical operation is in good condition.
	Check operating parameters (especially voltage and insulation).

Maintenance Tasks (Every One Year)	
Item	Inspection Content
Cabinet Exterior	1. Check whether there are flammable objects on top of the PCC cabinet. 2. Check whether the foundation fixing screws of the PCC cabinet are securely fastened and free from corrosion. 3. Check whether the cabinet enclosure has any damage, paint loss, oxidation, etc.
Cabinet Interior	Check the interior of the cabinet for foreign objects, dust, dirt, and condensation.
Air Inlets/Outlets	Check the internal dust accumulation. If necessary, clean the relevant modules using a vacuum cleaner.
Wiring and Cable Arrangement	1. Check whether the cable arrangement is standardized and whether there are any risks such as short circuits. If any abnormality is found, correct it immediately. 2. Check whether all cable entry and exit holes of the cabinet are properly sealed. 3. Check for any water ingress inside the cabinet. Check whether power cable connections are loose, and re-tighten according to the previously specified torque. 4. Check power cables and control cables for any damage, especially whether the outer sheath in contact with metal surfaces has any cut marks. 5. Check whether the insulating tape at the terminals of power cables is detached.
Grounding and Equipotential Bonding	1. Check whether the grounding connection is correct. The grounding resistance value shall not exceed 4Ω. 2. Check whether the equipotential bonding inside the cabinet is correct.
Fans	1. Check the operating status of the fans. 2. Check whether the fans are blocked. 3. Check whether there is any abnormal noise from the fans during

Maintenance Tasks (Every One Year)	
Item	Inspection Content
	operation.
Wall Penetrations	Check whether the IP rating of various types of wall penetration components has failed.
Screws	Check whether any screws have fallen inside the cabinet.

5.2.3 Biennial Operation & Maintenance Requirements

Maintenance Tasks (Every Two Years)	
Item	Inspection Content
System Status and Cleaning	Check the following items. If any do not meet the requirements, correct them immediately: 1. Check whether the PCC cabinet and internal devices are damaged or deformed. 2. Check whether internal devices produce any abnormal noise during operation. 3. Check whether the internal temperature of the cabinet is too high. 4. Check whether the internal humidity and dust level of the cabinet are within the normal range. Clean if necessary. 5. Check whether the air inlets and outlets of the cabinet are blocked.
Warning Labels	Check that warning signs and labels are clearly visible and not dirty or damaged. Replace if necessary.
Cable Shield Grounding	Check whether the cable shield is in good contact with the insulating bushing and whether the grounding copper busbar is properly fixed.
Surge Protection Devices and Fuses	Check whether surge protection devices and fuses are in good condition and properly tightened.
Corrosion	Check for any oxidation or corrosion inside the cabinet.



Innovate for a Green Future

Dunext Technology Xiamen Co., Ltd.

📍 Building 7, No. 1001 Haiming Road, Xiamen Torch High-tech
Industrial Development Zone (Xiang'an), Xiamen, Fujian, China

✉ info@dunext.com

🌐 www.dunext.com