YUNT
云天数能

# User Manual


## Microgrid PCS Cabinet

### Neptune-P Series

125/250/375/500KW

V1.0

**Trademark authorization**



**Note**

Due to product version upgrades or other reasons, the document content will be updated periodically. Unless otherwise specified, the document content does not replace the safety precautions on the product label. All descriptions in the document are for guidance only.

**Warranty Statement**

Under normal use, if the product malfunctions or is damaged, YUNT Digital Power will provide warranty service within the warranty period. After the warranty period or in cases where damage is caused by improper operation within the warranty period, repair fees will be charged. For detailed warranty information, please refer to the *Product Warranty Card*.

# Contents

# 1. About this Manual

Before installing and operating the PCS cabinet, please read this manual carefully to familiarize yourself with the product functions, features, and precautions. This manual describes the Neptune series PCS cabinets in terms of product information, storage and transportation, product installation, electrical connections, and system maintenance. Keep the manual in a place where it can be easily accessed. The content of the manual may be updated periodically. Please refer to the actual product for the latest information. The latest version and other product details can be obtained from YUNT Digital Power's official website or sales channels.

## 1.1 Product Naming

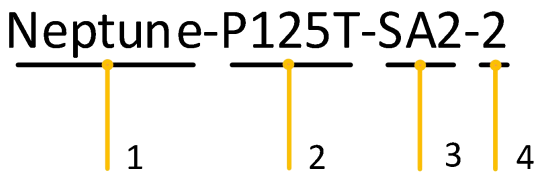



Figure 1-1 Product model naming rules

| Label | Example | Description |
|---|---|---|
| 1 | Neptune | Energy routing cabinet product series |
| 2 | P125T | First letter:<br>P: PCS cabinet<br>Number:<br>125: 125KW<br>250: 250KW<br>375: 375KW<br>500: 500KW<br>Last letter:<br>T: Includes a power frequency transformer |
| 3 | SA2 | Applicable to 125kW/250kW models:<br>S: Indicates optional STS<br>A: Indicates optional ATS<br>1: Indicates that the power of the STS/ATS is 1x the PCS power<br>2: Indicates that the power of the STS/ATS is 2x the PCS power |
| 4 | 2 | Applicable to P models:<br>It is empty by default, indicating that the battery input port is |

| | |
|---|---|
| | not in parallel<br>1~2 indicates 1~2 parallel battery clusters after connection<br>Applicable to H models:<br>It is empty by default, indicating 3 MPPT modules fully configured<br>1~2 indicates 1~2 optional MPPT modules |

### 1.2 Applicable Products

This manual applies to the following models of microgrid PCS cabinets (the manual also applies to user-selected models):

- Neptune-P125T-SA2
- Neptune-P250T-SA1/SA2
- Neptune-P375T
- Neptune-P500T

The illustrations in this document are for display purposes. If they differ from the actual product, please refer to the actual product.

### 1.3 Intended Audience

This manual is intended for professional technical personnel responsible for equipment installation, operation, and maintenance. Professional technical personnel should meet the following requirements:

- Possesses expertise in electronics, electricity, and mechanics, and is familiar with electrical and mechanical circuit diagrams.
- Has received professional training related to the installation and commissioning of electrical equipment.
- Responds quickly to emergencies during installation, operation, and maintenance.
- Familiar with local standards and safety regulations related to electrical systems.
- Able to carefully read and understand the safety operation instructions related to the following content.

### 1.4 Terminology and Abbreviations

| Terminology and abbreviation | Definition | Functions |
|---|---|---|
| PCS | Power conversion system | The PCS can convert DC from storage batteries to AC, supplying the grid or AC loads; it can also convert AC from the grid to DC for charging storage batteries. |

| | | |
|---|---|---|
| STS | Static transfer switch | The STS works with PCS equipment in the system to provide seamless switching between grid-connected and off-grid functions, enabling both seamless online-to-offline switching and automatic off-grid-to-online switching, thus ensuring uninterrupted and stable power supply for critical loads. |
| ATS | Auto transfer switch | ATS is used for the safe automatic switching device between diesel generators and power grid voltage sources. |
| Grid | Power grid | Grid |
| DG | Diesel generator | . |
| BL | Backup load | . |
| EMS | Energy Management System | An energy management system is an intelligent system that integrates hardware and software, used to monitor, control, and optimize the flow of energy and energy consumption in energy systems. |

### 1.5 Revision History

The latest version includes updates from all previous manual versions. Version: V1.0

# 2. Safety Instructions

## 2.1 Definition of Safety Symbols

This manual uses the following symbols to emphasize safety information. Please read the symbols carefully and understand their meanings.

| Symbol | Description |
|---|---|
|   | Indicates a high potential danger that could result in death or serious injury if not avoided. |
|   | Indicates a moderate potential danger that could result in death or serious injury if not avoided. |
|  Caution | Indicates a low potential danger that, if not avoided, may result in moderate or minor injury to personnel. |
|   | Emphasizes and supplements the content, and may also provide usage tips for product optimization to help you solve a problem or save time. |

## 2.2 Important Safety Tips

When operating the equipment, please follow the instructions below to ensure personal safety:

• All electrical connections must comply with local and national electrical standards.

• The copper bars and live terminals inside the equipment may cause fatal electric shocks.

• Before making electrical connections, ensure all powered equipment is de-energized, and the cables are not live. Do not power on before electrical connections are completed to prevent injury and equipment damage.

• Use the correct tools, wear protective equipment, and do not operate while powered to avoid injury and equipment damage.

• After wiring and parameter setting, conduct a trial operation to confirm the machine operates safely. Failure to do so could result in injury or equipment damage.

• Maintenance must be performed by qualified electrical technicians to prevent serious hazards. Damage caused by improper maintenance will not be covered by the warranty.

• Before DC input connection, ensure that the input voltage/power and other electrical specifications meet the equipment requirements.

• Before connecting the battery/photovoltaic, carefully read the user manual for the

battery/MPPT module, understand the product and corresponding precautions, and strictly follow the operational requirements of the battery/MPPT module.

• Pay attention to the polarity of the DC input, and ensure correct polarity connection.

**Attention**

• Before installing, operating, and maintaining the equipment, familiarize yourself with all safety instructions in this document and comply with them.

• All operations of the equipment must be performed by qualified electrical technicians who are familiar with local standards and electrical system safety regulations.

• Damage to the equipment or injury to personnel caused by improper installation and use according to the document's requirements is not the responsibility of the equipment manufacturer.

### 2.3 Safety Labels

The cabinet uses the following symbols to emphasize safety information. Please read the symbols carefully and understand their meanings.

| Safety icon | Description |
|---|---|
|  | Before operating the equipment, please carefully read the manual. |
|  | High voltage danger. The equipment operates with high voltage. Please be cautious and never operate it while powered on. |
|   | Equipment discharge time. After the equipment is powered off, it may still be charged internally for a period of time. Please wait 5 minutes for the equipment to discharge completely before operating. |
|  | Caution danger. There are dangers during storage, transportation, installation, operation, and maintenance of the equipment that should be noted. |
|  | Burn danger. The surface temperature of the equipment during operation may be high, potentially causing burns. |

# 3. Product Introduction

## 3.1 Product Overview

This manual introduces the PCS cabinet, which includes four standard models: Neptune-P125T-SA2, Neptune-P250T-SA1/SA2, Neptune-P375T, and Neptune-P500T. Its main features are:

- Supports DC coupling with solar storage
- Supports battery cluster connection, enhancing battery cycle life
- Includes a power frequency transformer
- Modular design for easy maintenance

The internal system of the Neptune-P125T-SA2 is shown in the figure below.

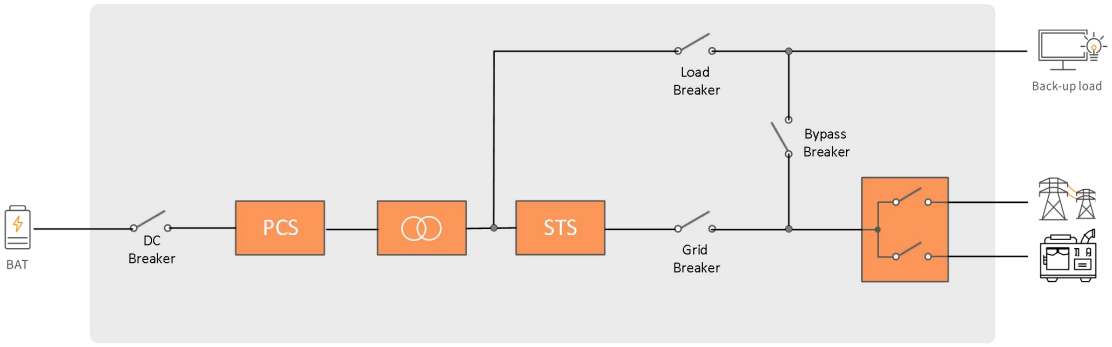



Figure 3-1 System block diagram of the Neptune-P125T-SA2 cabinet

The internal system of the Neptune-P250T-SA1 is shown in the figure below.

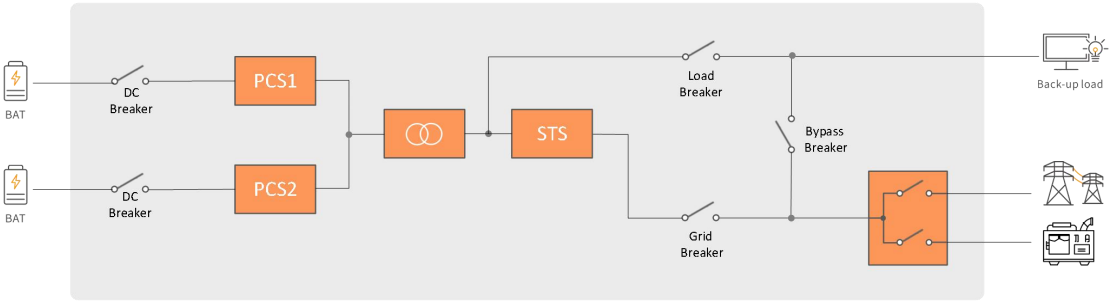



Figure 3-2 System block diagram of the Neptune-P250T-SA1 cabinet

The internal system of the Neptune-P250T-SA2 is shown in the figure below.

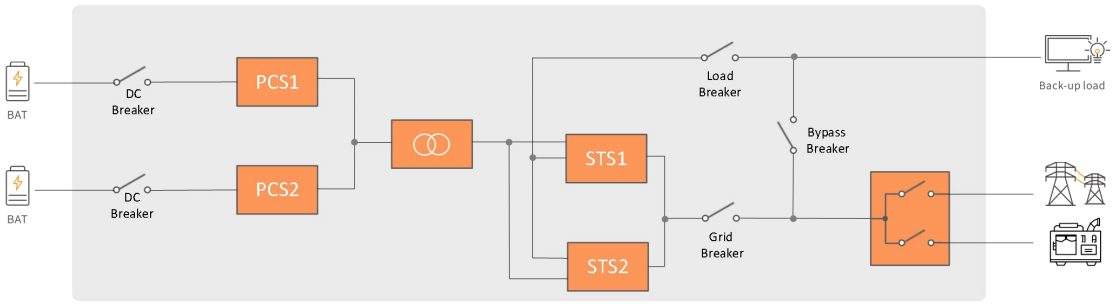



Figure 3-3 System block diagram of the Neptune-P250T-SA2 cabinet

The internal system of the Neptune-P375T is shown in the figure below.

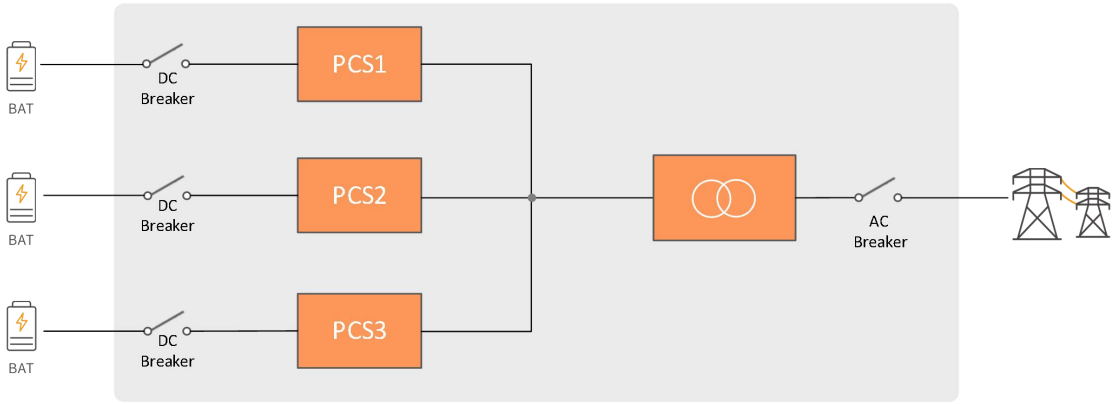



Figure 3-4 System block diagram of the Neptune-P375T cabinet

The internal system of the Neptune-P500T is shown in the figure below.

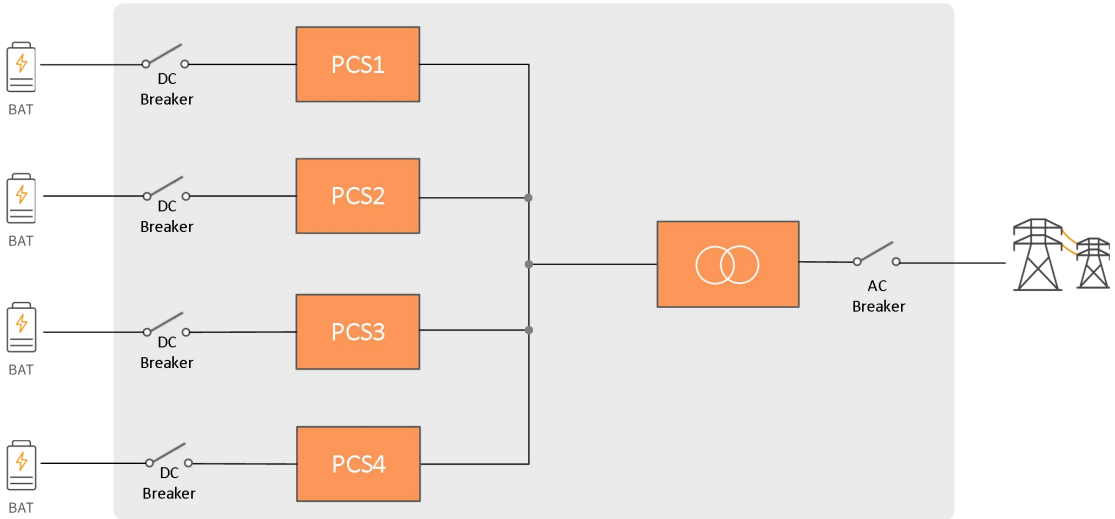



Figure 3-5 System block diagram of the Neptune-P500T cabinet

### 3.2 125KW PCS Cabinet

#### 3.2.1 Product Appearance

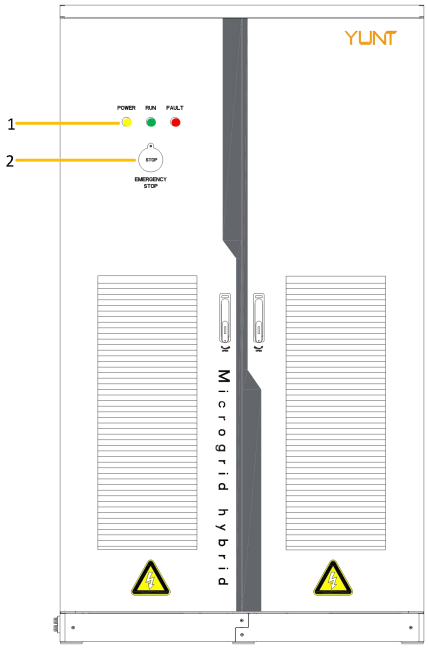



Figure 3-6 125KW PCS cabinet

| Label | Component name | Description |
|---|---|---|
| 1 | Indicators | POWER: System power-on indicator<br>RUN: System running indicator<br>FAULT: System emergency stop or fault indicator |
| 2 | Emergency stop button | |

#### 3.2.2 System Block Diagram

The Neptune-P125T-SA2 system block diagram is shown below.

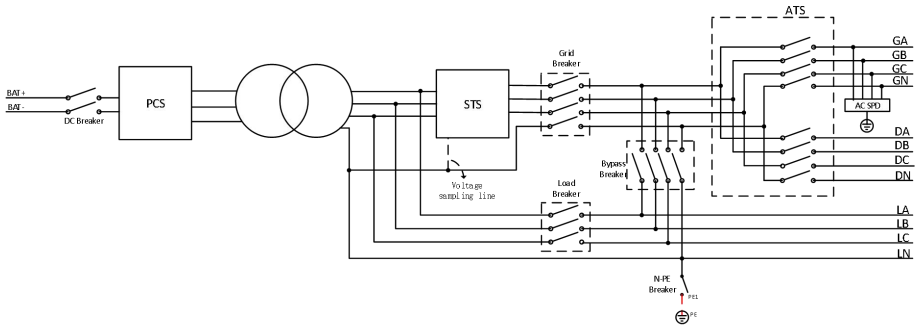



Figure 3-7 125KW PCS cabinet system

Note: When LN and PE are connected at the user side, the short-circuit copper bar between PE1 and PE needs to be removed (the red dashed line in the diagram indicates the copper bar position, as shown by the 17th position in Figure 5-7).

### 3.2.3 Internal Composition

The internal structure layout of the Neptune-P125T-SA2 is shown in the figure below.

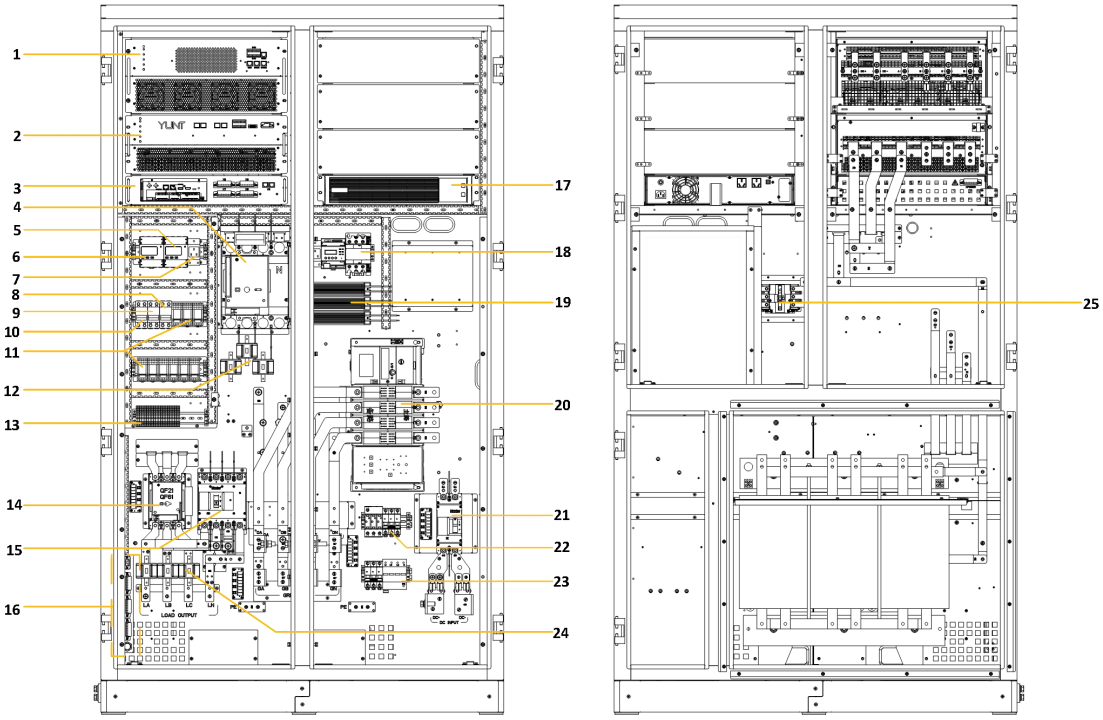



Figure 3-8 Internal structure of the 125KW PCS cabinet

The relevant components indicated in the diagram are described in the table below.

Table 3-1 Internal components of the 125KW PCS cabinet

| Label | Component | Description |
|---|---|---|
| 1 | PCS | 125KW PCS |
| 2 | STS | 250KW STS |
| 3 | EMS | Energy management system |
| 4 | Grid circuit breaker | 400A/400Vac |
| 5 | Load ammeter | Load power monitoring |
| 6 | Grid ammeter | Grid power monitoring |
| 7 | XP1 | UPS charging socket |
| 8 | Lighting circuit breaker | |
| 9 | Fan circuit breaker | |
| 10 | 24Vdc power circuit breaker | |
| 11 | Cabinet middle control relay | |
| 12 | Grid-side current transformer | Grid-side current detection |

| | | |
|---|---|---|
| 13 | X1<br>X5<br>X10 | 24Vdc voltage terminal block<br>220Vac voltage terminal block<br>Signal terminal block |
| 14 | Load circuit breaker | 225A/400Vac |
| 15 | Bypass circuit breaker | 225A/400Vac |
| 16 | External wiring terminal | |
| 17 | UPS | 1000VA/230Vac |
| 18 | Transformer soft-start contactor | |
| 19 | Transformer soft-start resistor | |
| 20 | ATS | Automatic transfer switch |
| 21 | DC circuit breaker | 250A/1000Vdc |
| 22 | DC-side lightning arrester | DC lightning protection device |
| 23 | AC-side lightning arrester | AC lightning protection device |
| 24 | Load current transformer | Load-side current detection |
| 25 | N-PE contactor | |

### 3.3 250KW PCS Cabinet

#### 3.3.1 Product Appearance

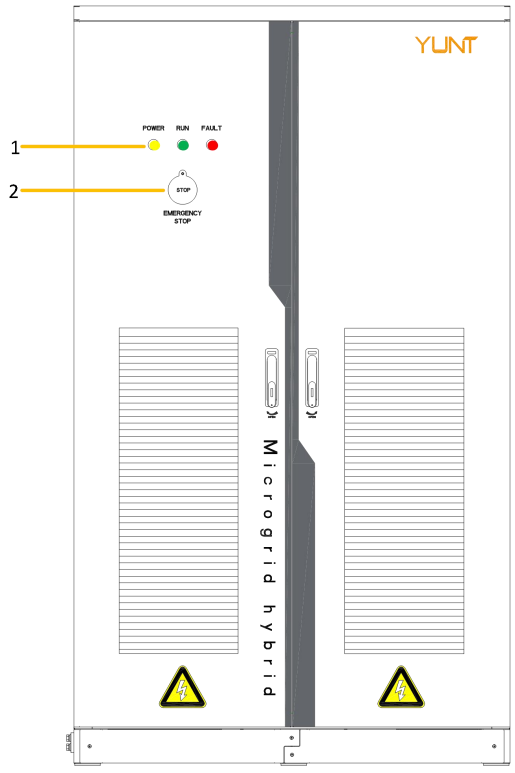



Figure 3-9 250KW PCS cabinet

| Label | Component name | Description |
|---|---|---|
| 1 | Indicators | POWER: System power-on indicator<br>RUN: System running indicator<br>FAULT: System emergency stop or fault indicator |
| 2 | Emergency stop button | |

### 3.3.2 System Block Diagram

The Neptune-P250T-SA1/SA2 system block diagram is shown below. The DC input can either be shorted together as indicated by the dashed line in the diagram, or can have 2 separate inputs.

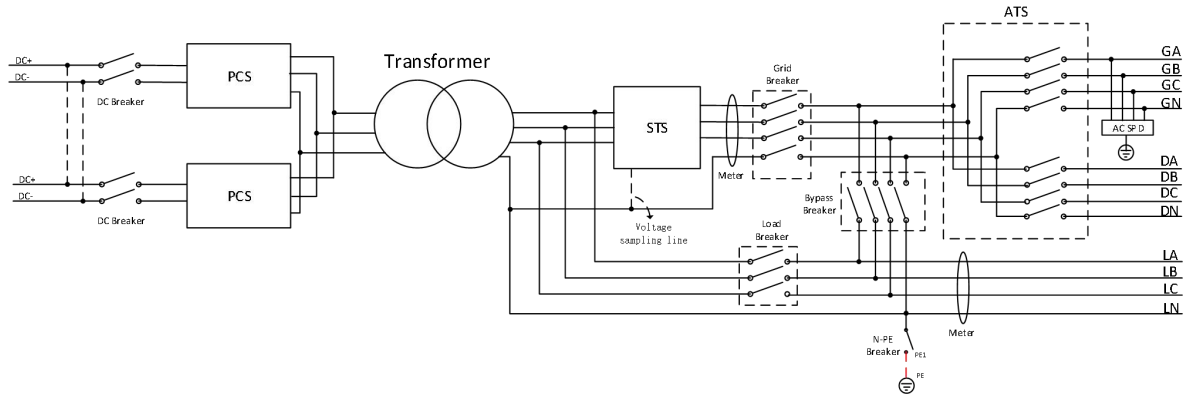



Figure 3-10 Neptune-P250T-SA1 cabinet system

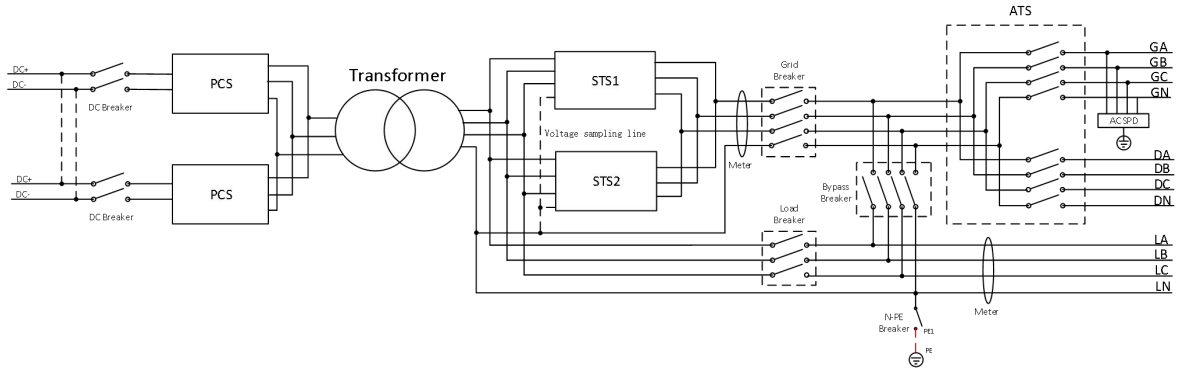



Figure 3-11 Neptune-P250T-SA2 cabinet system

Note: When LN and PE are connected at the user side, the short-circuit copper bar between PE1 and PE needs to be removed (the red dashed line in the diagram indicates the copper bar position, as shown by the 19th position in Figure 5-8).

### 3.3.3 Internal Composition

The internal structure layout of the Neptune-P250T-SA1 is shown in the figure below.

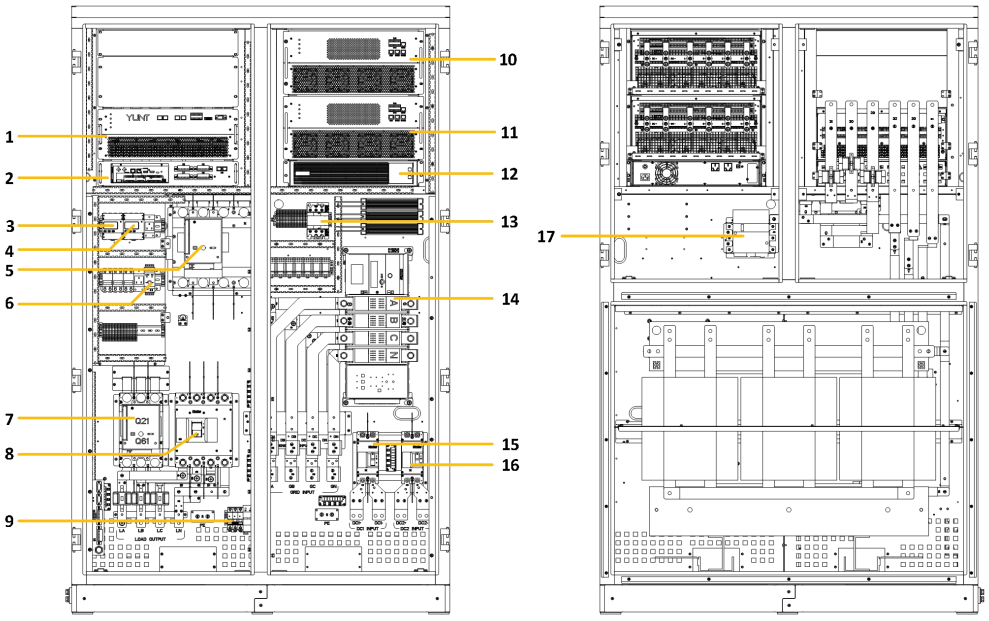



Figure 3-12 Internal structure of the Neptune-P250T-SA1 cabinet

The relevant components indicated in the diagram are described in the table below.

Table 3-2 Internal components of the Neptune-P250T-SA1 cabinet

| Label | Component | Description |
|---|---|---|
| 1 | STS | 250KW STS |
| 2 | EMS | Energy management system |
| 3 | Grid ammeter | Grid power monitoring |
| 4 | Load ammeter | Load power monitoring |
| 5 | Grid circuit breaker | 800A/400Vac |
| 6 | Water leakage alarm | |
| 7 | Load circuit breaker | 400A/400Vac |
| 8 | Bypass circuit breaker | 400A/400Vac |
| 9 | AC-side lightning arrester | |
| 10 | PCS1 | 125KW PCS |
| 11 | PCS2 | 125KW PCS |
| 12 | UPS | 1000VA/230Vac |
| 13 | Transformer soft-start contactor | |
| 14 | ATS | ATS (400A/400Vac) |
| 15 | DC-side 1 circuit breaker | 250A/1000Vdc |
| 16 | DC-side 2 circuit breaker | 250A/1000Vdc |
| 17 | N-PE contactor | |

The internal structure layout of the Neptune-P250T-SA2 is shown in the figure below.

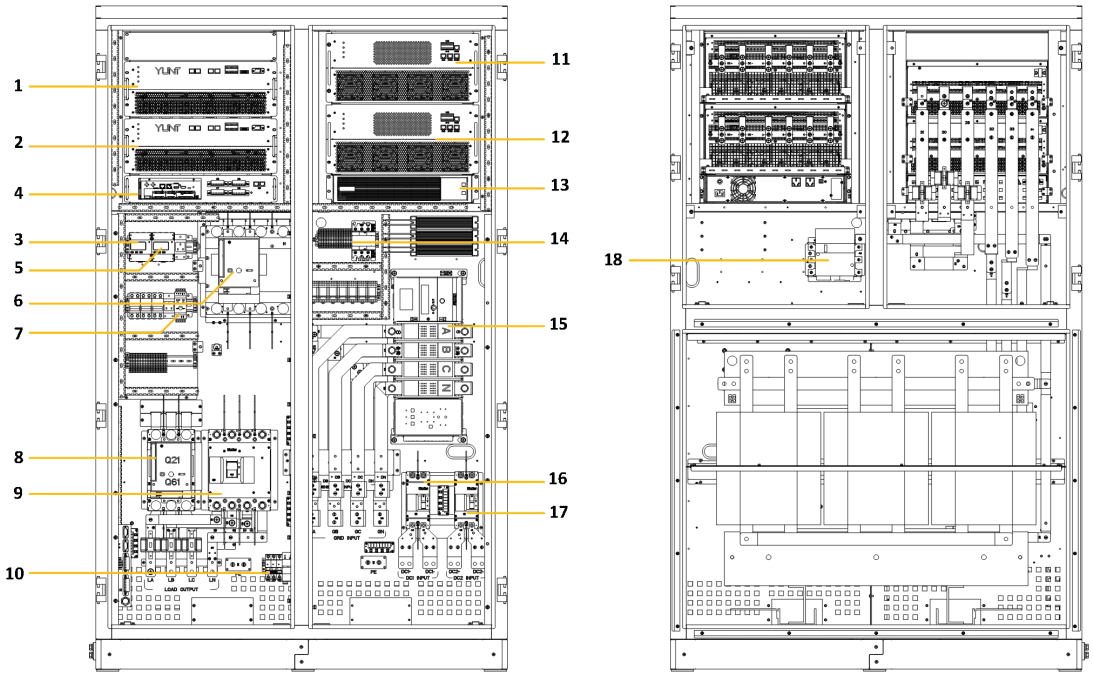



Figure 3-13 Internal structure of the Neptune-P250T-SA2 cabinet

The relevant components indicated in the diagram are described in the table below.

Table 3-3 Internal components of the Neptune-P250T-SA2 cabinet

| Label | Component | Description |
|---|---|---|
| 1 | STS1 | 250KW STS |
| 2 | STS2 | 250KW STS |
| 3 | EMS | Energy management system |
| 4 | Grid ammeter | Grid power monitoring |
| 5 | Load ammeter | Load power monitoring |
| 6 | Grid circuit breaker | 800A/400Vac |
| 7 | Water leakage alarm | |
| 8 | Load circuit breaker | 400A/400Vac |
| 9 | Bypass circuit breaker | 400A/400Vac |
| 10 | AC-side lightning arrester | |
| 1 | PCS1 | 125KW PCS |
| 12 | PCS2 | 125KW PCS |
| 13 | UPS | 1000VA/230Vdc |
| 14 | Transformer soft-start contactor | |
| 15 | ATS | ATS (800A/400Vac) |
| 16 | DC-side 1 circuit breaker | 250A/1000Vdc |
| 17 | DC-side 2 circuit breaker | 250A/1000Vdc |
| 18 | N-PE contactor | |

### 3.4 375KW PCS Cabinet

#### 3.4.1 Product Appearance

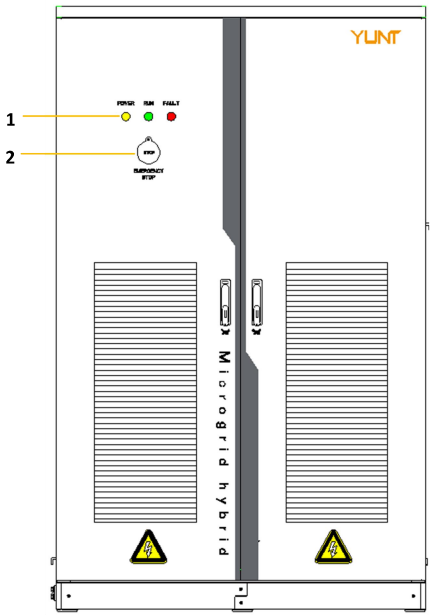



Figure 3-14 375KW PCS cabinet

| Label | Component name | Description |
|---|---|---|
| 1 | Indicators | POWER: System power-on indicator<br>RUN: System running indicator<br>FAULT: System emergency stop or fault indicator |
| 2 | Emergency stop button | |

#### 3.4.2 System Block Diagram

The Neptune-P375T system block diagram is shown below. The DC input can either be shorted together as indicated by the dashed line in the diagram, or can have 3 separate inputs.

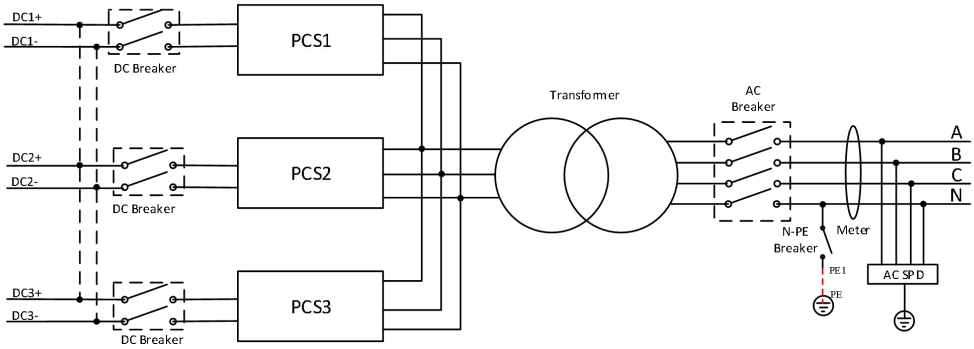



Figure 3-15 Neptune-P375T cabinet system

Note: When N and PE are connected at the user side, the short-circuit copper bar between PE1 and PE needs to be removed (the red dashed line in the diagram indicates the copper bar position, as shown by the 12th position in Figure 5-9).

### 3.4.3 Internal Composition

The internal structure layout of the Neptune-P375T is shown in the figure below.

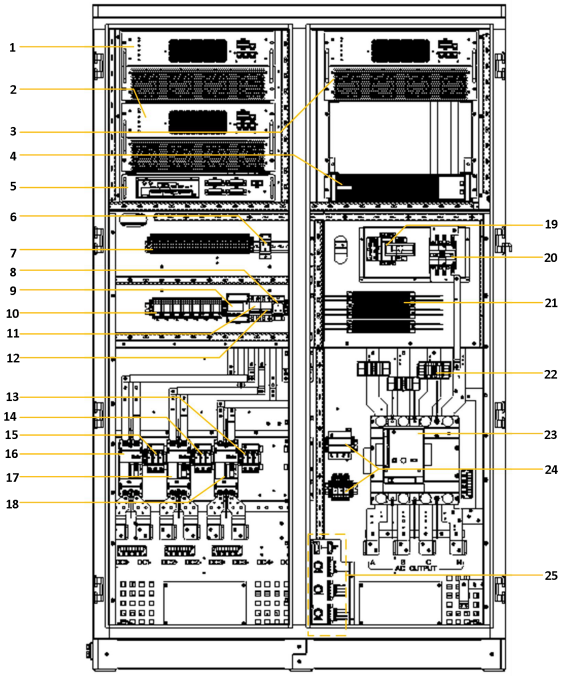



Figure 3-16 Internal structure of the Neptune-P375T cabinet

The relevant components indicated in the diagram are described in the table below.

Table 3-4 Internal components of the 375KW PCS cabinet

| Label | Component | Description |
|---|---|---|
| 1 | PCS1 | 125KW PCS |
| 2 | PCS2 | 125KW PCS |
| 3 | PCS3 | 125KW PCS |
| 4 | UPS | 1000VA/230Vac |
| 5 | EMS | Energy management system |
| 6 | XP1 | UPS charging socket |
| 7 | X1 | 24Vdc terminal block/signal |
| | X5 | 220Vac terminal block |
| | X10 | Signal terminal block |
| 8 | 220V socket | External 220V socket |
| 9 | Energy storage ammeter | Energy storage power monitoring |
| 10 | Cabinet middle control relay | |
| 11 | 24Vdc power circuit breaker | |
| 12 | Fan circuit breaker | |

| | | |
|---|---|---|
| 13 | DC-side 1 lightning arrester | |
| 14 | DC-side 2 lightning arrester | |
| 15 | DC-side 3 lightning arrester | |
| 16 | DC-side 1 circuit breaker | 250A/1000Vdc |
| 17 | DC-side 2 circuit breaker | 250A/1000Vdc |
| 18 | DC-side 3 circuit breaker | 250A/1000Vdc |
| 19 | Transformer soft-start contactor | |
| 20 | N-PE contactor | |
| 21 | Transformer soft-start resistor | |
| 22 | Current transformer | Grid-side current detection |
| 23 | AC-side circuit breaker | 800A/400Vac |
| 24 | AC-side lightning arrester | AC lightning protection device |
| 25 | External wiring terminal | |

### 3.5 500KW PCS Cabinet

#### 3.5.1 Product Appearance

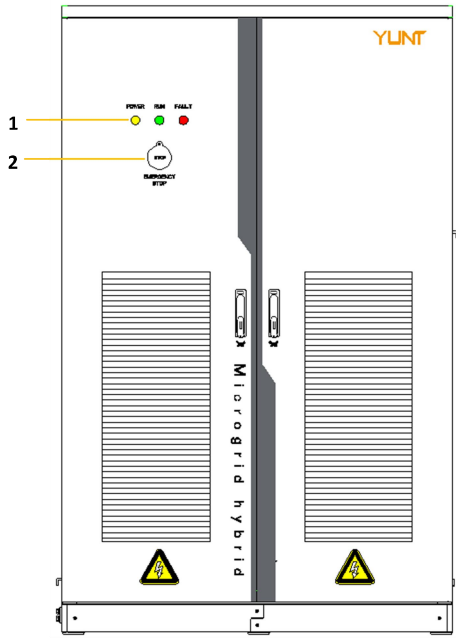



Figure 3-17 500KW PCS cabinet

| Label | Component name | Description |
|---|---|---|
| 1 | Indicators | POWER: System power-on indicator<br>RUN: System running indicator<br>FAULT: System emergency stop or fault indicator |
| 2 | Emergency stop button | |

### 3.5.2 System Block Diagram

The Neptune-P500T system block diagram is shown below. The DC input can either be shorted together as indicated by the dashed line in the diagram, or can have 2-way or 4-way inputs.

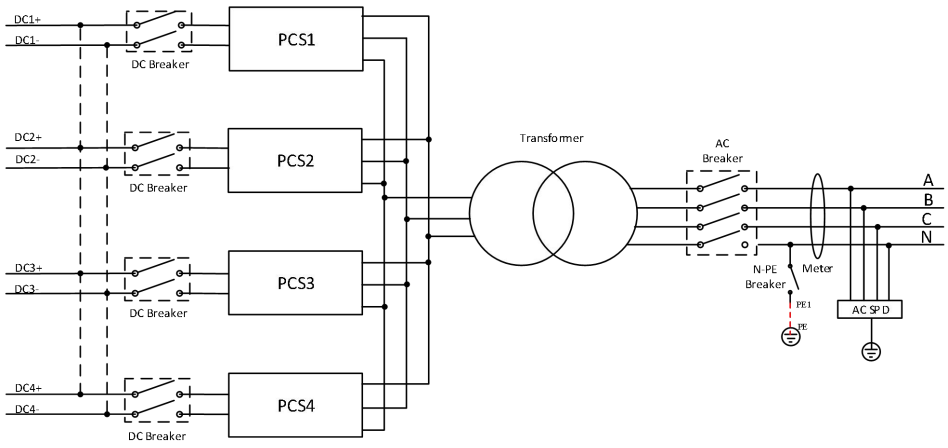



Figure 3-18 Neptune-P500T cabinet system

Note: When N and PE are connected at the user side, the short-circuit copper bar between PE1 and PE needs to be removed (the red dashed line in the diagram indicates the copper bar position, as shown by the 14th position in Figure 5-10).

### 3.5.3 Internal Composition

The internal structure layout of the Neptune-P500T is shown in the figure below.

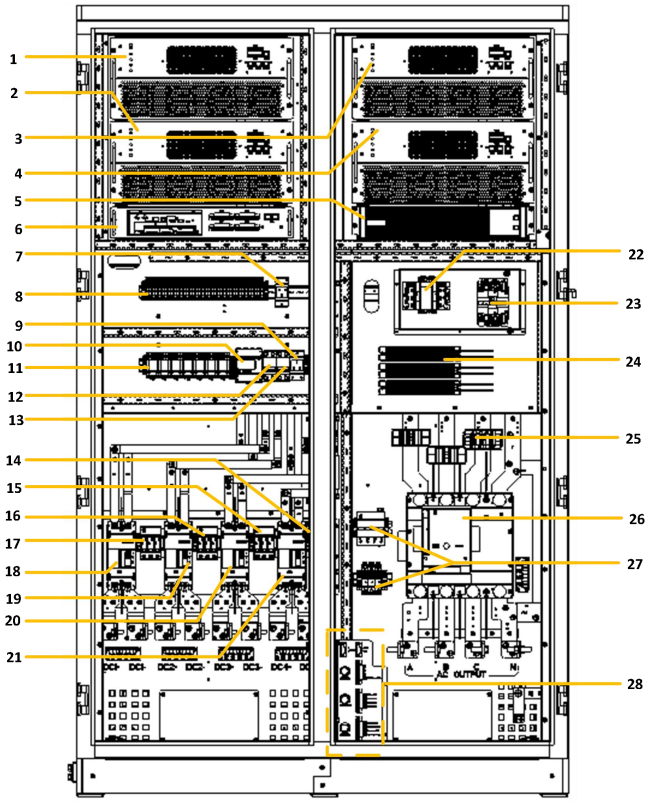



Figure 3-19 Internal structure of the 500KW PCS cabinet

The relevant components indicated in the diagram are described in the table below.

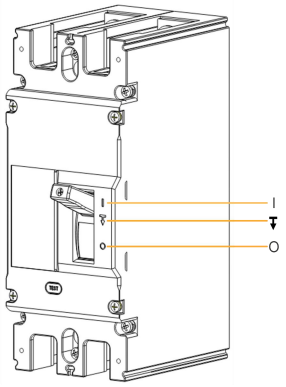
Table 3-5 Internal components of the 500KW PCS cabinet

| Label | Component | Description |
|---|---|---|
| 1 | PCS1 | 125KW PCS |
| 2 | PCS2 | 125KW PCS |
| 3 | PCS3 | 125KW PCS |
| 4 | PCS4 | 125KW PCS |
| 5 | UPS | 1000VA/230Vac |
| 6 | EMS | Energy management system |
| 7 | XP1 | UPS charging socket |
| 8 | X1 | 24Vdc terminal block/signal |
| | X5 | 220Vac terminal block |
| | X10 | Signal terminal block |
| 9 | XP2 | External 220V socket |
| 10 | Energy storage ammeter | Energy storage system power monitoring |
| 11 | Cabinet middle control relay | |
| 12 | 24Vdc power circuit breaker | |
| 13 | Fan circuit breaker | |
| 14 | DC-side 4 lightning arrester | |
| 15 | DC-side 3 lightning arrester | |
| 16 | DC-side 2 lightning arrester | |
| 17 | DC-side 1 lightning arrester | |
| 18 | DC-side 1 circuit breaker | 250A/1000Vdc |
| 19 | DC-side 2 circuit breaker | 250A/1000Vdc |
| 20 | DC-side 3 circuit breaker | 250A/1000Vdc |
| 21 | DC-side 4 circuit breaker | 250A/1000Vdc |
| 22 | Transformer soft-start contactor | |
| 23 | N-PE contactor | |
| 24 | Transformer soft-start resistor | |
| 25 | AC-side current transformer | AC-side current sampling |
| 26 | AC-side circuit breaker | 800A/400Vac |
| 27 | AC-side lightning arrester | AC lightning protection device |
| 28 | External wiring terminal | |

### 3.6 Switches

#### 3.6.1 DC Switch

The DC switch is used for the protective connection between the external DC input and the DC common bus.

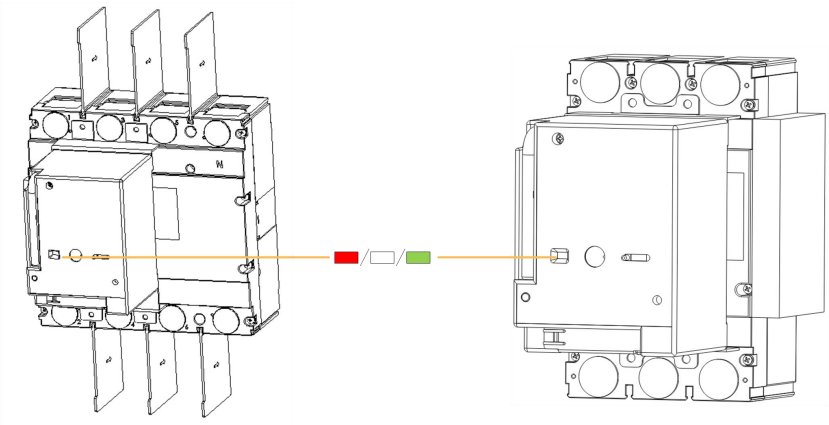



| Status symbol | Status | Description |
|---|---|---|
|  | Switch closed | The switch is in the closed state, and DC power is input to the microgrid PCS cabinet. |
|  | Switch tripped | The switch is in the tripped state, and the connection is disconnected. |
| O | Switch open | The switch is in the open state, disconnecting the DC power from the microgrid PCS cabinet. |

#### 3.6.2 AC Switch

■ AC electric switch:

The AC electric switch includes grid input switch and load output switch.



Grid Breaker

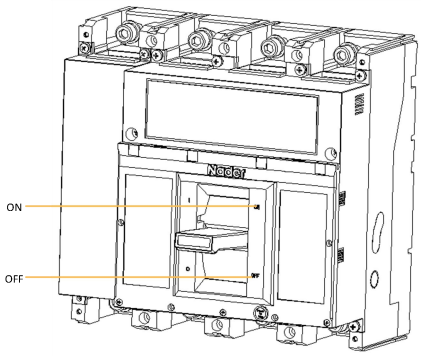
Load Breaker

| Status symbol | Status | Description |
|---|---|---|
|  | Switch closed | The symbol is red, indicating the switch is in the closed state. |

| | | |
|---|---|---|
| | Switch tripped | The symbol is white, indicating the switch is in the tripped state, and the switch has opened, disconnecting the connection. |
| | Switch open | The symbol is green, indicating the switch is in the open state. |

■ **AC bypass switch:**

The AC bypass switch is used for the protective connection between the AC input and backup load in the case of system faults or maintenance.

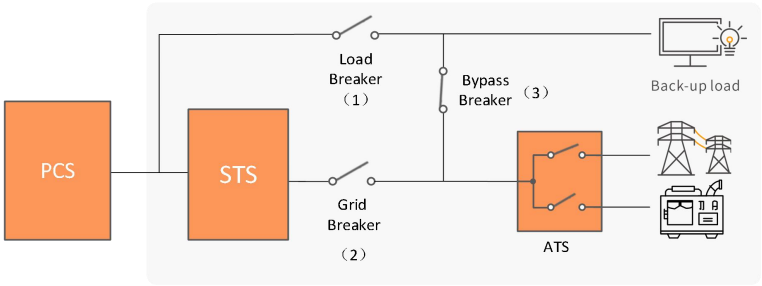



| Status symbol | Status | Description |
|---|---|---|
| ON | Switch closed | The switch is in the closed state |
| OFF | Switch open | The switch is in the open state |

Note:

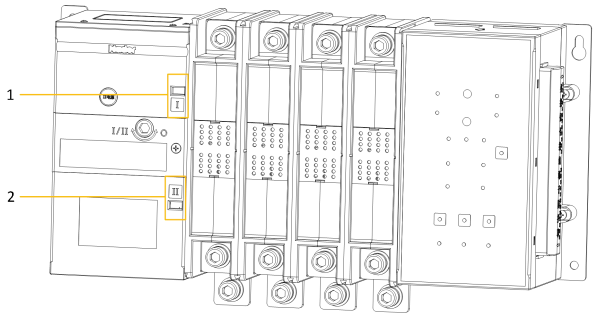
• Do not close the AC bypass switch during normal system operation.

• In the event of a system fault, to ensure that critical loads are powered by the grid or diesel generator, disconnect the load switch (1) and grid switch (2), then close the bypass switch (3), as shown below.




■ ATS:

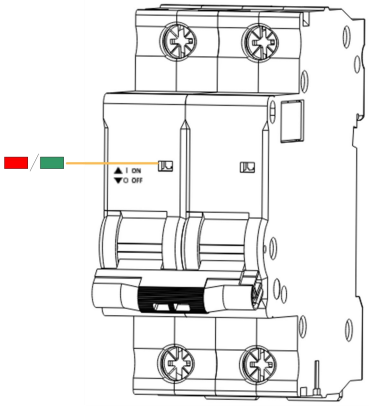
The ATS automatically switches the main power to the diesel generator when the grid fails and the diesel generator is supplying power properly. When the grid is restored, the ATS will automatically switch the main power back to the grid.




| Power indicator | Status symbol | Status | Description |
|---|---|---|---|
| I (Grid) | \| | Grid power supply | The symbol is red, indicating the main power is from the grid. |
| | O | No grid power supply | The symbol is green, indicating the main power is not from the grid. |
| II (Diesel generator) | \| | Diesel generator power supply | The symbol is red, indicating the main power is from the diesel generator |
| | O | No diesel generator power supply | The symbol is green, indicating the main power is not from the diesel generator |

### 3.6.3 Auxiliary Switch

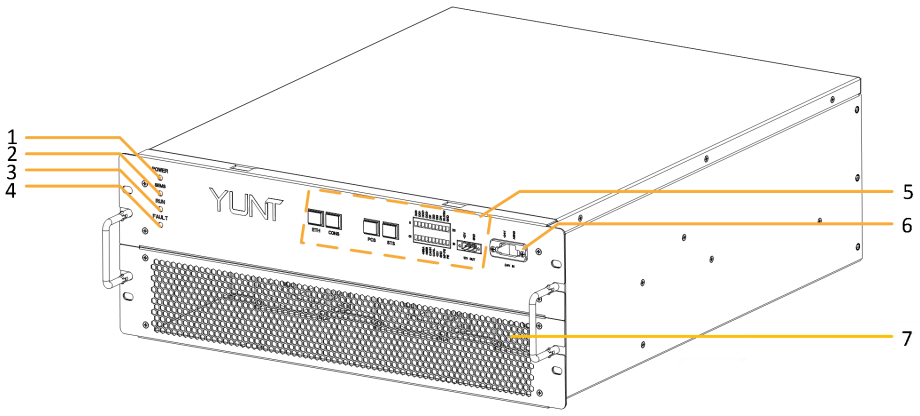
The auxiliary switch is responsible for providing 24VDC power to the cabinet and turning on the cabinet fans.



| Status symbol | Status | Description |
|---|---|---|
| | Switch closed | The switch is in the closed state. |
| | Switch open | The switch is in the open state. |

### 3.7 Module Indicators

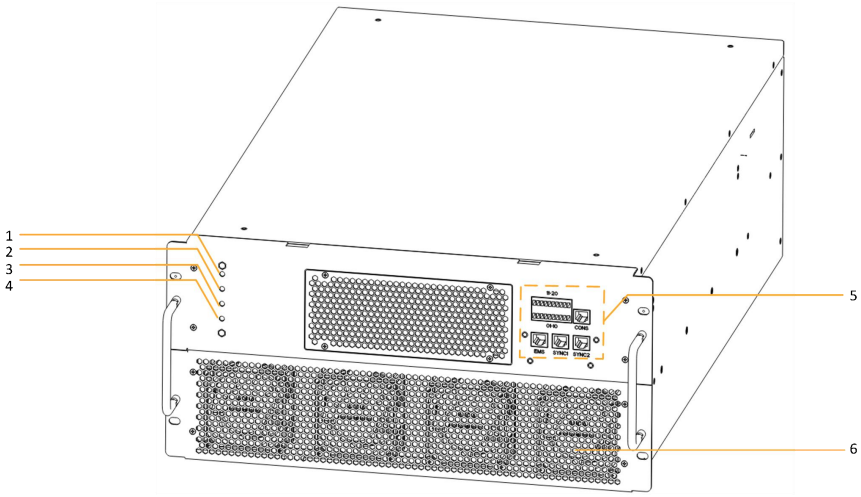
### 3.7.1 STS Module




| Position No. | Indicating component | Description |
|---|---|---|
| 1 | Power-on indicator<br>POWER (green) | Steady on: PCS port, grid port, and external 24V are powered<br>Fast blink: Software upgrade in progress<br>Slow blink: External 24V, PCS port, or grid port powered<br>Steady off: PCS port, grid port, and external 24V are not powered |
| 2 | Communication indicator<br>SEMS (green) | Fast blink: Communication with PCS is normal<br>Steady off: Communication with PCS is abnormal |
| 3 | Run indicator<br>RUN (green) | Steady off: The STS is in shutdown state<br>Steady on: The STS is in grid-connected state<br>Fast blink: The STS is in off-grid state<br>Slow blink: Grid-connected switch closed state |
| 4 | Fault indicator<br>FAULT (red indicator) | Slow blink: Alarm<br>Steady on: Fault, shutdown state |
| 5 | Communication port | Communication and debugging between modules and other devices |
| 6 | External 24VDC power supply port | +24V/15W |
| 7 | Cooling fan | Module cooling |

[1] Fast blink period: 1 second; slow blink period: 3 seconds;

### 3.7.2 PCS Module




| Position No. | Indicating component | Description |
|---|---|---|
| 1 | Power-on indicator<br>POWER (green light) | Steady on: Battery and grid both connected<br>Fast blink: Battery not connected<br>Slow blink: Grid not connected<br>Steady off: Battery and grid both not connected |
| 2 | EMS communication indicator<br>SEMS (green light) | Fast blink: Communication normal<br>Off: Communication abnormal |
| 3 | Run indicator RUN (green light) | Steady off: The PCS is in shutdown state<br>Steady on: The PCS is in standby state<br>Fast blink: The PCS is in operation state |
| 4 | Fault indicator<br>FAULT (red indicator) | Slow blink: Alarm<br>Steady on: Fault, shutdown state |
| 5 | Communication port | Communication and debugging between modules and other devices |
| 6 | Cooling fan | Module cooling |

[1] Fast blink period: 1 second; slow blink period: 3 seconds;

[2] Shutdown state: The PCS is powered on but not working;

[3] Standby state: The PCS is grid-connected, with grid power at 0kW.

# 4. Transportation and Storage

## 4.1 Transportation

■ Forklift transportation

If the installation site and transport roads are smooth, forklift transportation can be used. When using a forklift, the following requirements must be met:

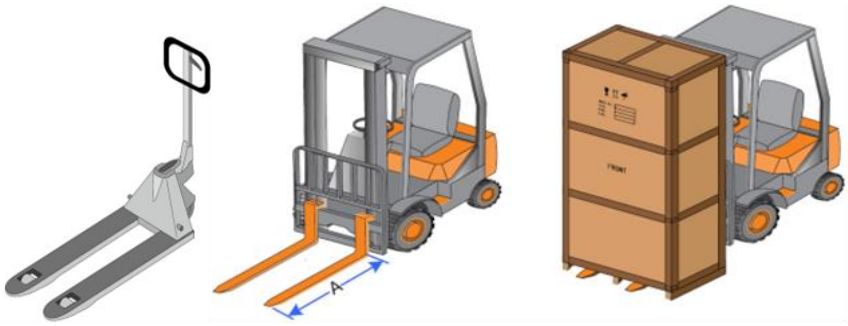
• Before transportation, ensure the cabinet door is tightly locked, transport under good weather conditions, clear any obstacles on the transport route, and ensure the road is clear. Make sure to evacuate personnel in advance and prohibit unauthorized personnel from entering the transport route.

• At least two people are required for transportation, and the forklift must have adequate load-bearing capacity. Fork leg length must meet equipment requirements. Perform a test adjustment before transportation to ensure the safety and reliability of the tools. The forklift legs should be inserted into the slots at the bottom of the cabinet. Do not transport through any place other than the fork legs.

• During transportation, ensure the cabinet remains balanced and transport at a steady speed. Keep the height variation as low as possible, avoiding large swings. Strive to keep the transportation process smooth.

• Lifting and lowering should be done gently to avoid impact or vibration.

• When moving, ensure the ground is smooth and free of debris, and avoid contact with sharp objects.




Forklift outer width ≥ 685mm  A ≥ 1200mm  Load capacity (at least 3t)

■ Lifting transportation

When using lifting for transportation, the following requirements must be met:

• Before transportation, ensure the cabinet door is tightly locked and transport under good weather conditions.

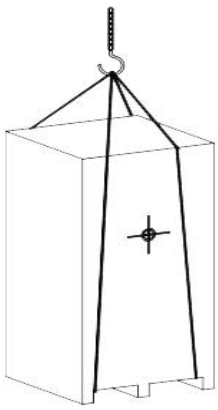
• Evacuate personnel in advance, and prohibit people within 5m-10m of the lifting area and equipment to ensure safety.

• A professional operator must be present for the entire transportation process.

• The lifting straps used must have the strength to bear the equipment's weight.

• Use all necessary auxiliary means to ensure a smooth transportation process. Otherwise, there may be a risk of the equipment tipping over or falling.

• Perform a test lift before transportation. After lifting 300mm from the support surface, pause for inspection to ensure the lifting straps and connections are secure before proceeding with the lift.
• During lifting, ensure vertical lifting. Do not drag or push the equipment. During lifting, the equipment should be transported at a steady speed, keeping height variation as low as possible. Avoid large swings.
• Lifting and lowering should be done gently to avoid impact or vibration. During lifting and lowering, the cabinet must not pass over people, and no one should remain under it.
• The area where the equipment is placed should be solid, flat, well-drained, and free from obstacles or protruding objects.



**4.2 Storage**

If the equipment is not in use, it should meet the following requirements:
• Do not open the outer packaging of the equipment. If the equipment is unpacked, try to repack it in the original packaging box provided by the company.
• The storage location should be clean, dry, and maintain a temperature between -40℃ and +60℃, with a temperature change of less than 1℃ per minute. Prevent corrosion from dust and water vapor.
• Avoid storing in high-temperature, sun-exposed, low-temperature, and humid environments.
• For long-term storage, it is recommended to inspect the equipment every three months, promptly identify any abnormalities, and address them (such as damage to the outer packaging by insects or rodents).
• After long-term storage, the equipment must be inspected by a professional before being put into use again.

# 5. Installation

## 5.1 Pre-installation Check

Before installation, carefully check the following:

• Check if the outer packaging is damaged. If there is any damage, deformation, or cracking, it may cause internal damage to the equipment. In such cases, do not open the packaging or sign for it, and contact the distributor.

• Check if the model of the received equipment matches the model ordered. If they do not match, do not open the packaging or sign for it, and contact the distributor.

• Check if the cabinet shell and internal components are intact and undamaged.

## 5.2 Accessories Inspection

Before signing for receipt, please carefully check the following:

• Check the packing list to ensure all materials are complete and check for any external damage. If there is any issue, do not sign for the delivery and contact the distributor.


When making electrical connections, if the accessories come with dedicated terminal blocks, please be sure to use them. Using incompatible terminal blocks may cause damage to the equipment.

## 5.3 Site Requirements


• Before installing, operating, and maintaining the equipment, familiarize yourself with all safety instructions in this document and comply with them.

• All equipment operations must be performed by professional and qualified electrical technicians, who must be familiar with local standards and safety regulations related to electrical systems.

The installation environment must meet the following requirements:

• When choosing the installation site, fully consider the local climate, geological conditions (such as stress wave emissions, groundwater level), etc. Avoid installing in environments that are flammable, explosive, corrosive, or prone to mechanical impact or strong magnetic fields. The temperature and humidity in the installation environment should be within the specified range for the equipment, and proper ventilation must be ensured.

• Ensure there are no trees near the installation site to prevent wind from knocking branches down or leaves from blocking the cabinet door or intake.

• The installation site should avoid gas pipelines, water pipes, and other cable pathways to prevent

damage to pipes, cables, and the equipment.

• Ensure the installation site is free of debris and leave enough space for future installation, wiring, and maintenance.

• During installation, ensure the equipment's indicators, warning signs, and labels are unobstructed for easy viewing and warnings.

• The equipment generates some noise during operation, so it is recommended to install it in an area that does not disturb the daily life of yourself or others.

### 5.4 Foundation Requirements

**Danger**

The equipment is quite heavy, so before constructing the foundation, the installation site conditions (mainly geological and environmental conditions) must be thoroughly investigated. Only after this investigation can the foundation design and construction begin.

An unreasonable foundation design may cause significant difficulties or issues with placing the equipment, opening and closing doors, and later operation. Therefore, the foundation must be designed and built according to certain standards to meet mechanical support, cable routing, and future maintenance needs.

**Attention**

Embed grounding units according to the relevant standards of the country/region where the project is located.

### 5.5 Installation Space Requirements

To ensure better heat dissipation and maintenance of the equipment, it is recommended to leave enough space in front and behind the cabinet for installation, ensuring that the cabinet door can be opened smoothly. Also, leave appropriate distance on the sides for parallel operation. Installation space requirements are shown in the figure below:

- **125KW PCS cabinet installation**

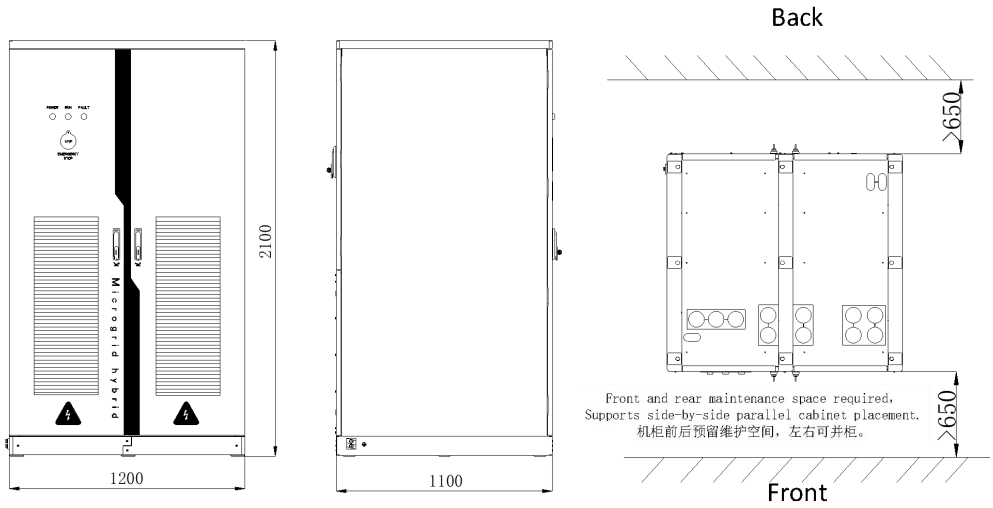



Figure 5-1 Installation space requirements of the 125KW PCS cabinet

- **250KW PCS cabinet installation**

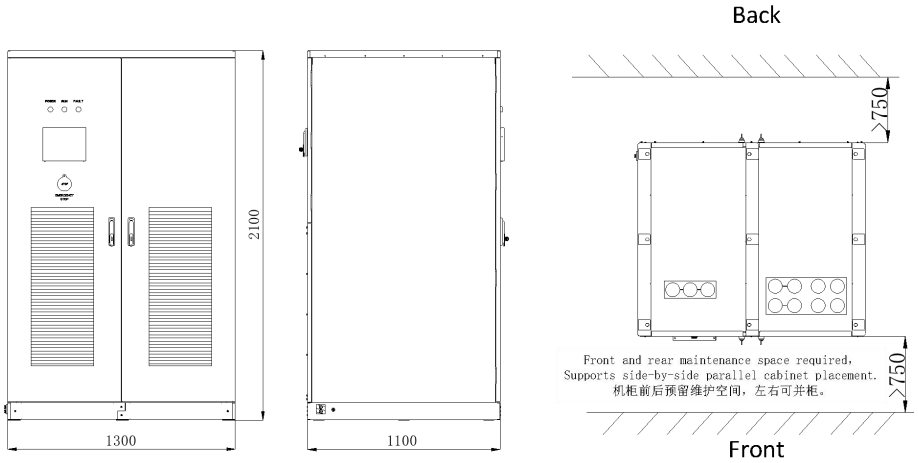



Figure 5-2 Installation space requirements of the 250KW PCS cabinet

- **375KW/500KW PCS cabinet installation**

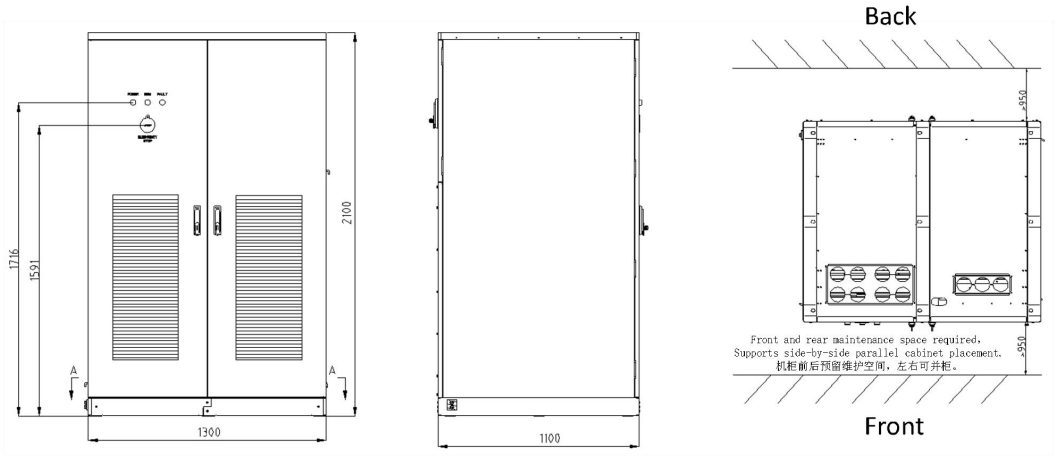



Figure 5-3 Installation space requirements of the 375KW/500KW PCS cabinet

### 5.6 Mechanical Installation

The product installation steps are as follows:

- Confirm that the cabinet installation plane is level, and the fixing holes on the installation plane align with the bottom mounting holes of the cabinet. There should be one fixing hole at each of the four corners. The hole positions are shown in the figure below.
- Move the cabinet to the installation position, align the screw holes, and use the corresponding bolts to fix the cabinet to the channel steel or foundation.
- Alternatively, the cabinet can be welded to the channel steel or the metal floor of the prefabricated warehouse. Be sure to avoid welding damage and take rust prevention measures.
- After finishing, apply anti-corrosion treatment to the fixed areas.

### 5.6.1 125KW PCS Cabinet Installation

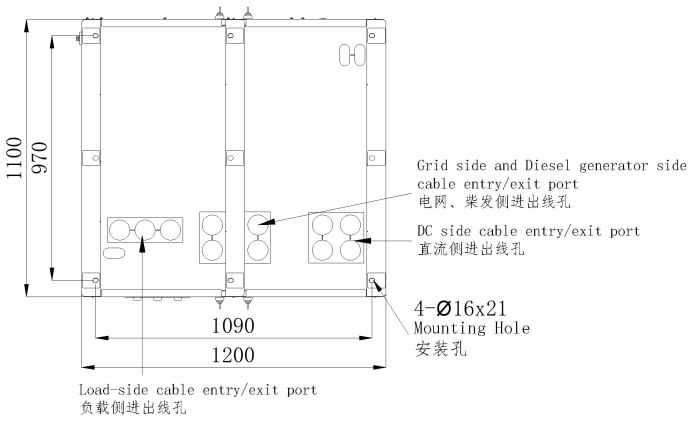



Figure 5-4 125KW PCS cabinet mounting holes

### 5.6.2 250KW PCS Cabinet Installation

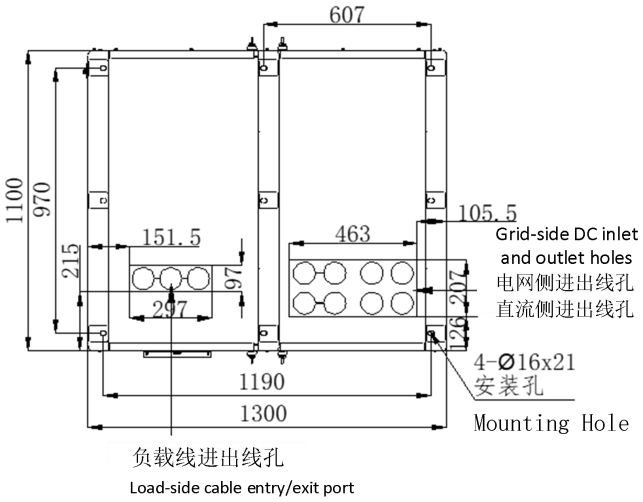



Figure 5-5 250KW PCS cabinet mounting holes

### 5.6.3 375/500KW PCS Cabinet Installation

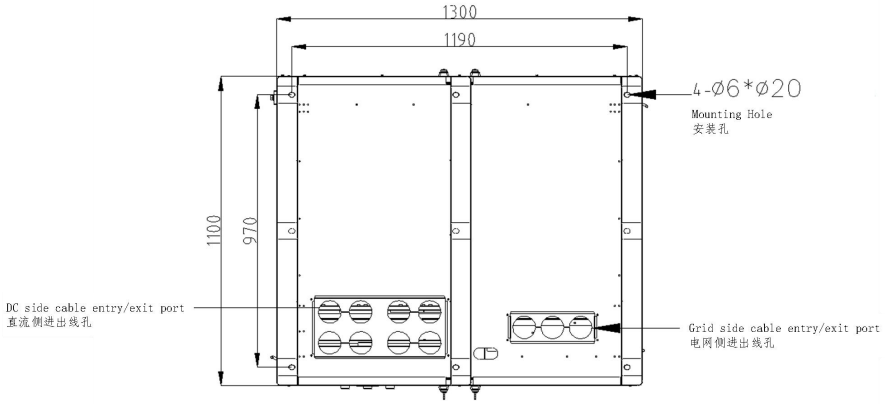



Figure 5-6 375KW/500KW PCS cabinet mounting holes

Notes:

• During the handling of the cabinet, it must be done slowly and steadily. When placing the

cabinet, ensure that the installation surface is flat and can bear the weight of the cabinet.

• The cabinet must be secured to the installation surface with expansion bolts. Use expansion bolts with appropriate hole sizes, and it is recommended that the bolt protrudes 45mm above the surface.

### 5.7 Electrical Installation


When making electrical connections, to ensure personal safety, please follow the instructions below:

• It is strictly prohibited for non-professional personnel to install, wire, maintain, inspect, or replace components of the equipment.

• Before making any connections, cut off the power to all equipment and use a multimeter to ensure that there is no power before proceeding. Do not touch powered equipment or perform installations with power on.

• Installers must use the correct tools and wear protective gear to avoid personal injury and damage to the equipment.

• After wiring, check the connections to ensure they are secure and that the phase sequence is correct.


• Choose the connection cables according to the voltage and current levels of the system's power supply and system specifications. Failure to do so may lead to severe electrical failures.

### 5.7.1 125KW Power Interfaces

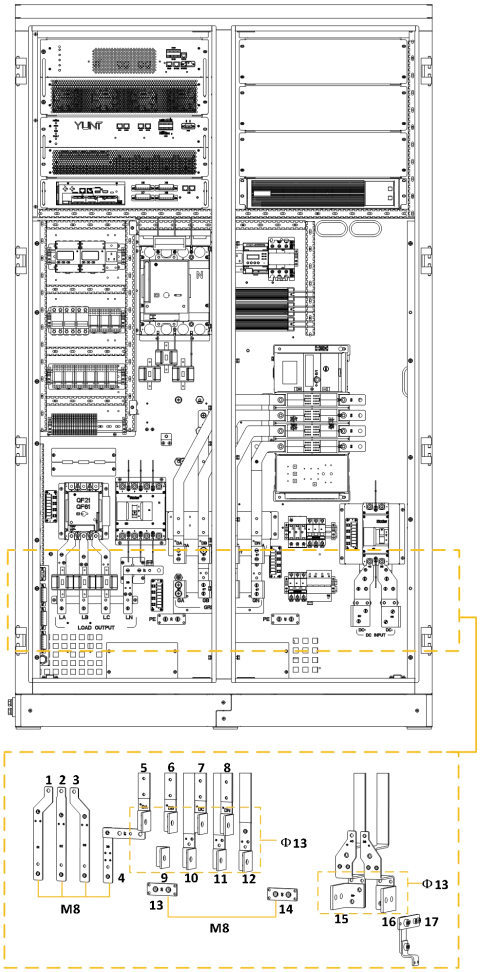



Figure 5-7 Power cable interfaces of the 125KW PCS cabinet

The power interfaces of the 125KW PCS cabinet are defined in the table below.

Table 5-1 Power interface definition of the 125KW PCS cabinet

| Position No. | Name | Description |
|---|---|---|
| 1 | LA | Load-side phase A connection port |
| 2 | LB | Load-side phase B connection port |
| 3 | LC | Load-side phase C connection port |
| 4 | LN | Load-side N phase connection port |
| 5 | DA | Diesel generator A phase connection port |
| 6 | DB | Diesel generator B phase connection port |
| 7 | DC | Diesel generator C phase connection port |
| 8 | DN | Diesel generator N phase connection port |
| 9 | GA | Grid-side A phase connection port |
| 10 | GB | Grid-side B phase connection port |
| 11 | GC | Grid-side C phase connection port |

| | | |
|---|---|---|
| 12 | GN | Grid-side N phase connection port |
| 13 | PE | Ground connection port |
| 14 | PE | Ground connection port |
| 15 | DC+ | DC-side positive terminal connection port |
| 16 | DC- | DC-side negative terminal connection port |
| 17 | PE1-PE | PE1-PE short-circuit copper bar |

### 5.7.2 250KW Power Interfaces

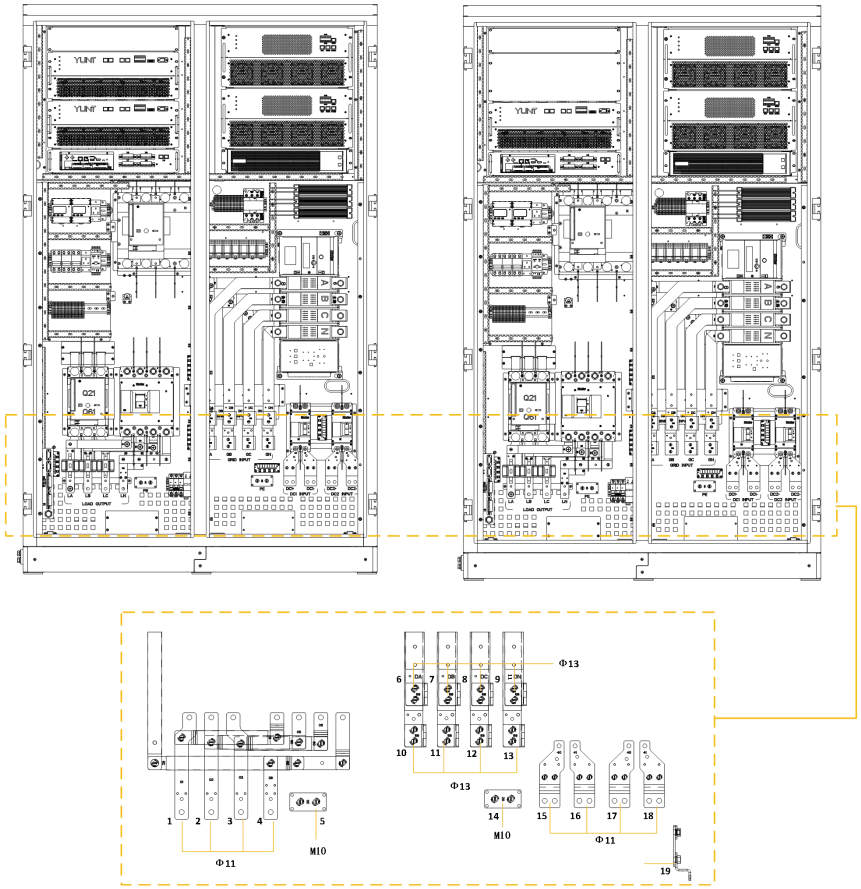



Figure 5-8 Power cable interfaces of the 250KW PCS cabinet

The power interfaces of the 250KW PCS cabinet are defined in the table below.

Table 5-2 Power interface definition of the 250KW PCS cabinet

| Position No. | Name | Description |
|---|---|---|
| 1 | LA | Load-side A phase port |
| 2 | LB | Load-side B phase port |
| 3 | LC | Load-side C phase port |
| 4 | LN | Load-side N phase port |
| 5 | PE | Common ground port |
| 6 | DA | Diesel generator A phase port |
| 7 | DB | Diesel generator B phase port |
| 8 | DC | Diesel generator C phase port |
| 9 | DN | Diesel generator N phase port |
| 10 | GA | Grid-side A phase port |
| 11 | GB | Grid-side B phase port |
| 12 | GC | Grid-side C phase port |
| 13 | GN | Grid-side N phase port |

| | | |
|---|---|---|
| 14 | PE | Common ground port |
| 15 | BAT1+/DC1+ | Battery cluster 1/DC-side 1 positive terminal port |
| 16 | BAT1-/DC1- | Battery cluster 1/DC-side 1 negative terminal port |
| 17 | BAT2+/DC2+ | Battery cluster 2/DC-side 2 positive terminal port |
| 18 | BAT2-/DC2- | Battery cluster 2/DC-side 2 negative terminal port |
| 19 | PE1-PE | PE1-PE short-circuit copper bar |

### 5.7.3 375KW Power Interfaces

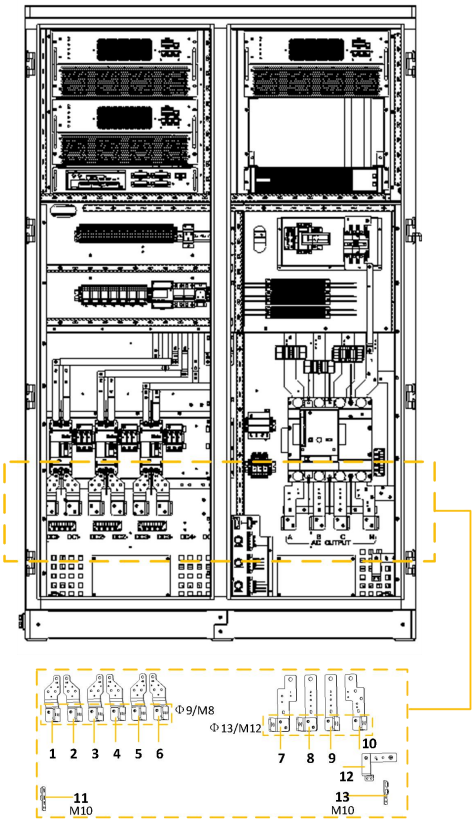



Figure 5-9 Power cable interfaces of the 375KW PCS cabinet

The power interfaces of the 375KW PCS cabinet are defined in the table below.

Table 5-3 Power interface definition of the 375KW PCS cabinet

| Position No. | Name | Description |
|---|---|---|
| 1 | DC1+ | DC-side 1 positive terminal connection port |
| 2 | DC1- | DC-side 1 negative terminal connection port |
| 3 | DC2+ | DC-side 2 positive terminal connection port |
| 4 | DC2- | DC-side 2 negative terminal connection port |
| 5 | DC3+ | DC-side 3 positive terminal connection port |
| 6 | DC3- | DC-side 3 negative terminal connection port |
| 7 | A | Load-side phase A connection port |
| 8 | B | Load-side phase B connection port |
| 9 | C | Load-side phase C connection port |
| 10 | N | Load-side N phase connection port |
| 11 | PE | Earth connection port |
| 12 | PE1-PE | PE1-PE short-circuit copper bar |
| 13 | PE | Earth connection port |

### 5.7.4 500KW Power Interfaces

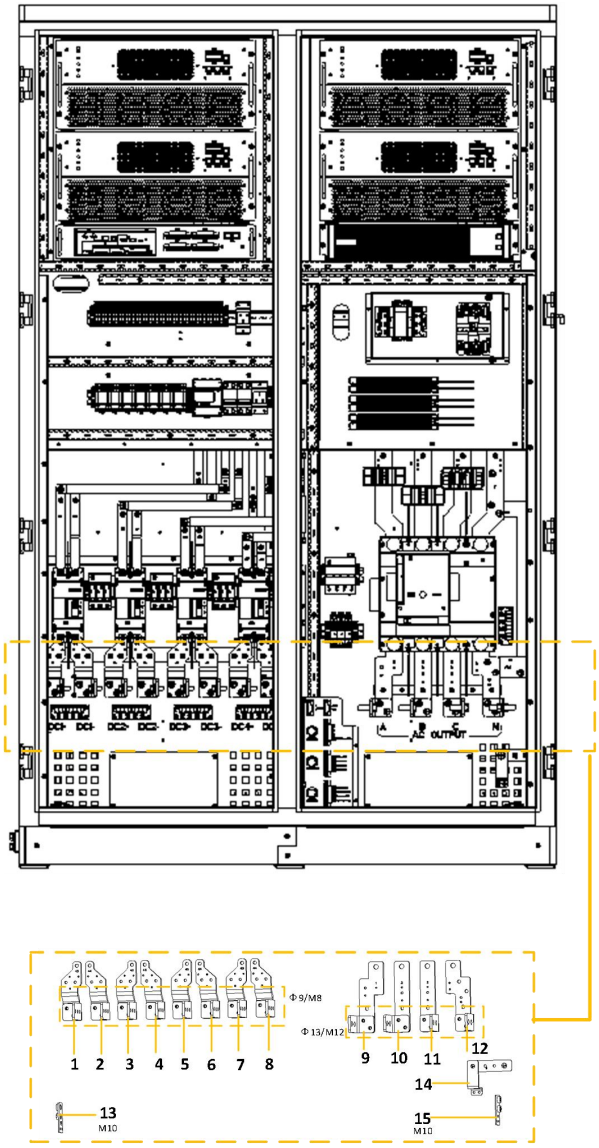



Figure 5-10 Power interfaces of the 500KW PCS cabinet

The power interfaces of the 500KW PCS cabinet are defined in the table below.

Table 5-4 Power interface definition of the 500KW PCS cabinet

| Position No. | Name | Description |
|---|---|---|
| 1 | DC1+ | DC-side 1 positive terminal connection port |
| 2 | DC1- | DC-side 1 negative terminal connection port |
| 3 | DC2+ | DC-side 2 positive terminal connection port |
| 4 | DC2- | DC-side 2 negative terminal connection port |
| 5 | DC3+ | DC-side 3 positive terminal connection port |
| 6 | DC3- | DC-side 3 negative terminal connection port |
| 7 | DC4+ | DC-side 4 positive terminal connection port |

| | | |
|---|---|---|
| 8 | DC4- | DC-side 4 negative terminal connection port |
| 9 | A | Load-side phase A connection port |
| 10 | B | Load-side phase B connection port |
| 11 | C | Load-side phase C connection port |
| 12 | N | Load-side N phase connection port |
| 13 | PE | Earth connection port |
| 14 | PE1-PE | PE1-PE short-circuit copper bar |
| 15 | PE | Earth connection port |

### 5.7.5 Wiring Precautions

■ Battery side

Wiring must be performed with the system powered off. Ensure there is no hazardous voltage at any port of the system during wiring. Cables should be labeled, and after wiring, the layout should be clearly visible.

**Danger**

• The positive and negative terminals of the battery should not be connected in reverse. Please measure with a multimeter before wiring.

• Electrically live bolts must be connected with the specified torque. A torque that is too low can reduce the current-carrying capacity of the connection point, causing overheating of the contact components and damaging the equipment. A torque that is too high and repeated tightening can lead to the connection components breaking.

■ AC side

Wiring must be performed with the system powered off. Ensure there is no hazardous voltage at any port of the system during wiring. Cables should be labeled, and after wiring, the layout should be clearly visible.

**Note**

Before installing a system with grid connection functionality, obtain permission from the local power department. The grid connection requirements and the PCS-related parameter settings must comply with local grid connection regulations.

**Warning**

• When performing AC-side wiring, ensure that the cable phase sequence is correct. Measure with a multimeter before wiring to prevent equipment damage and avoid electrical accidents.

• Electrically live bolts must be connected with the specified torque. A torque that is too low can reduce the current-carrying capacity of the connection point, causing overheating of the contact components and damaging the equipment. A torque that is too high and repeated tightening can lead to the connection components breaking.

■ Grounding connection

The internal equipment is grounded through the internal frame and cabinet body, with a grounding copper bar inside the cabinet.

**Warning**

- The neutral point of the AC port inside the cabinet is not connected to the cabinet shell.
- The cabinet should be reliably grounded, with a grounding impedance of less than 4Ω.

| Cross-sectional area S (mm²) of phase conductors | Minimum cross-sectional area (mm²) of external protection grounding conductor |
|---|---|
| S ≤ 16 | S |
| 16 ＜S ≤ 35 | 16 |
| 35 ＜S | S/2 |

Note: The values in this table are valid only when the external protective grounding conductor is made of the same metal as the phase conductor. If this is not the case, the cross-sectional area of the external protection grounding conductor should be determined to produce the same electrical conductivity as the result in this table.

## 5.8 Signal Connections

### 5.8.1 125KW Signal Interfaces

In addition to the power cable connection, the PCS cabinet also has input and output signal nodes that can be connected as needed.

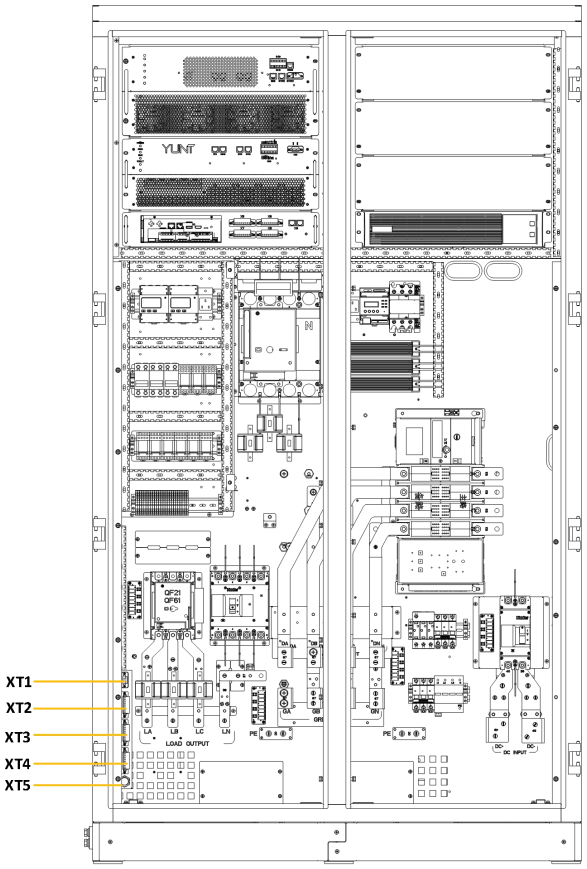
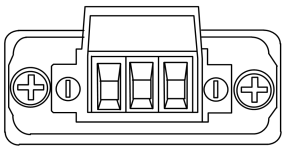


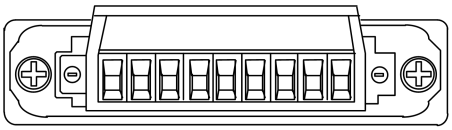

Figure 5-11 External signal interfaces of the 125KW PCS cabinet

The signal interfaces of the 125KW PCS cabinet are defined in the table below.

Table 1 External signal interface definition of the 125KW PCS cabinet



| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT1 | 1 | L | 220Vac external BMS power supply (220Vac/50Hz/60Hz 300W) |
| | 2 | NC | |
| | 3 | N | |



| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT2 | 1 | DO- | Diesel generator drive interface |
| | 2 | DO+ | |
| | 3 | DI1- | Fire alarm feedback interface |
| | 4 | DI1+ | |
| | 5 | DI2- | Emergency stop short-circuit interface |
| | 6 | DI2+ | |
| | 7 | NC | Reserved |
| | 8 | NC | |
| XT3 | 1 | RS-485A | EMS and BMS 485 communication |
| | 2 | RS-485B | |
| | 3 | CAN_H | EMS and BMS CAN communication |
| | 4 | CAN_L | |
| | 5 | CAN_H | PCS and BMS CAN communication |
| | 6 | CAN_L | |
| | 7 | NC | Reserved |
| | 8 | NC | |
| XT4 | 1 | RS-485A | Electric meter 485 communication |
| | 2 | RS-485B | |
| | 3 | RS-485A | EMS and MPPT cabinet 485 communication |
| | 4 | RS-485B | |
| | 5 | CAN_H | Reserved CAN |
| | 6 | CAN_L | |
| | 7 | NC | Reserved |
| | 8 | NC | |

| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT5 | 1 | Ethernet | External third-party EMS communication |

### 5.8.2 250KW Signal Interfaces

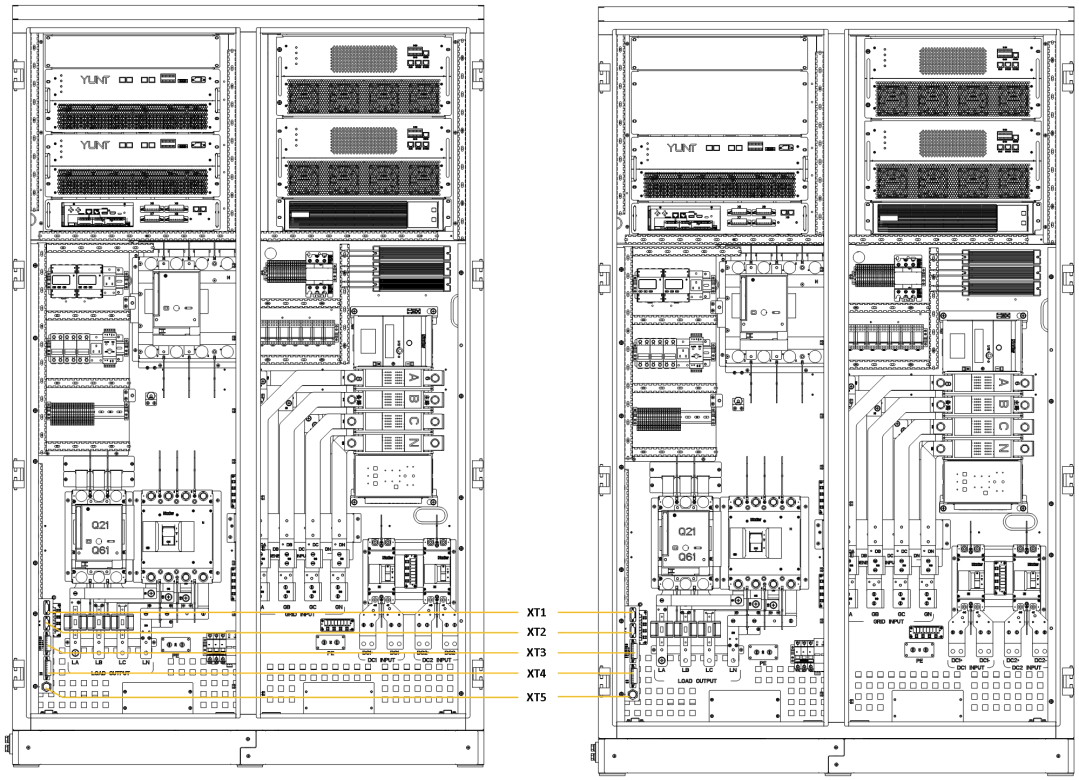
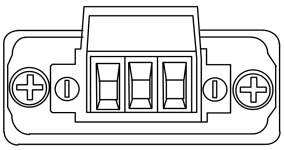


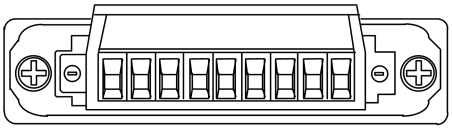

Figure 5-12 External signal interfaces of the Neptune-P250T-SA2 (left)/Neptune-P250T-SA1 (right) cabinet

The signal interfaces of the 250KW PCS cabinet are defined in the table below.

Table 5-6 External signal interface definition of the 250KW PCS cabinet



| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT1 | 1 | L | 220Vac external BMS power supply (220Vac/50Hz/60Hz 300W) |
| | 2 | NC | |
| | 3 | N | |
| XT2 | 1 | +24V | External 24V (reserved) |
| | 2 | NC | |
| | 3 | GND | |



| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT3 | 1 | RS-485A | EMS and BMS 485 |

| | | | |
|---|---|---|---|
| | 2 | RS-485B | communication |
| | 3 | CAN_H | EMS and BMS CAN communication |
| | 4 | CAN_L | |
| | 5 | CAN_H | CAN (reserved) |
| | 6 | CAN_L | |
| | 7 | CAN_H | PCS and BMS 485 communication |
| | 8 | CAN_L | |
| XT4 | 1 | DO1- | Diesel generator drive interface |
| | 2 | DO1+ | |
| | 3 | DI1- | Fire alarm feedback interface |
| | 4 | DI1+ | |
| | 5 | DI2- | Emergency stop short-circuit interface |
| | 6 | DI2+ | |
| | 7 | RS-485A | EMS and MPPT cabinet 485 communication |
| | 8 | RS-485B | |
|  | | | |
| **Terminal block No.** | **No.** | **Definition** | **Description** |
| XT5 | 1 | Ethernet | External EMS network port |

### 5.8.3 375KW/500KW Signal Interfaces

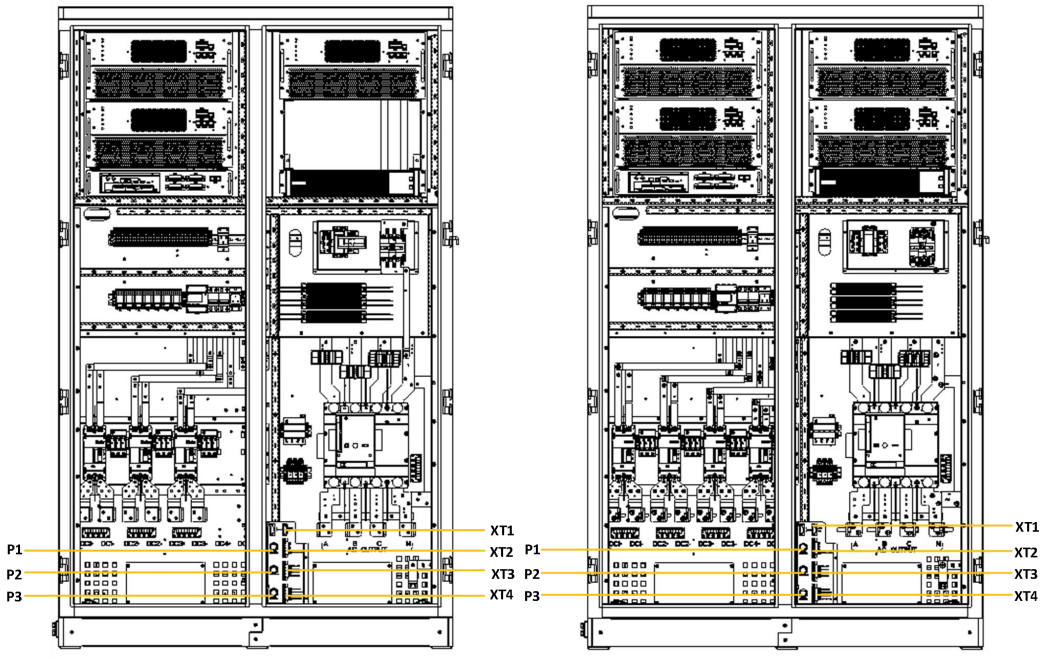
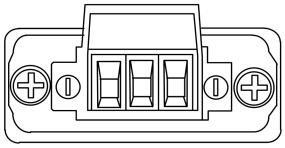


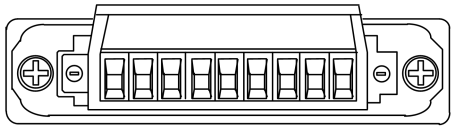

Figure 13 External signal interfaces of the 375KW (left)/500KW (right) PCS cabinet

The signal interfaces of the 375KW/500KW PCS cabinet are defined in the table below.

Table 5-7 External signal interface definition of the 375KW/500KW PCS cabinet



| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT1 | 1 | L | 220Vac external BMS power supply (220Vac/50Hz/60Hz 300W) |
| | 2 | NC | |
| | 3 | N | |
| XT2 | 1 | +24V | External 24V (reserved) |
| | 2 | NC | |
| | 3 | GND | |



| Terminal block No. | No. | Definition | Description |
|---|---|---|---|
| XT3 | 1 | DO1- | Diesel generator drive connection port |
| | 2 | DO1+ | |
| | 3 | DI1- | Fire alarm feedback connection port |
| | 4 | DI1+ | |
| | 5 | DI2- | Emergency stop short-circuit port |
| | 6 | DI2+ | |
| | 7 | RS-485A | EMS and STS cabinet RS485 communication |
| | 8 | RS-485B | |
| XT4 | 1 | RS-485A | EMS and STS cabinet DIO/VP11/VP21 RS485 communication |
| | 2 | RS-485B | |
| | 3 | CAN_H | EMS and BMS CAN communication |
| | 4 | CAN_L | |
| | 5 | CAN_H | PCS and BMS CAN communication |
| | 6 | CAN_L | |
| | 7 | RS-485A | EMS and MPPT cabinet 485 communication |
| | 8 | RS-485B | |
| XT5 | 1 | RS-485A | Electric meter 485 communication |
| | 2 | RS-485B | |
| | 3 | RS-485A | Reserved RS485 communication |
| | 4 | RS-485B | |

| | | | |
|---|---|---|---|
| | 5 | CAN_H | Reserved CAN communication |
| | 6 | CAN_L | |
| | 7 | RS-485A | System parallel RS485 communication |
| | 8 | RS-485B | |
| | |  | |
| **Terminal block No.** | **No.** | **Definition** | **Description** |
| P1 | 1 | Ethernet | External third-party EMS communication |
| P2 | 2 | SYNC1 | PCS and STS communication |
| P3 | 3 | SYNC2 | PCS parallel communication (reserved) |

### 5.9 Pre-operation Inspection

After the installation of the Neptune series microgrid integrated cabinet, please perform the following checks before startup:

| No. | Check item |
|---|---|
| 1 | Check if the cables are correctly connected and if the connection points are secure. |
| 2 | Check if any installation tools or debris are left inside the cabinet. |
| 3 | Check if the DC and AC-side voltages are within the specified range. |
| 4 | Check the temperature, humidity, and ventilation conditions around the cabinet. |
| 5 | Check if the DC and AC-side voltages match the cable specifications and if the grid phase sequence is correct. |
| 6 | Check if the cable markings are correct and clearly visible. |
| 7 | Check if the safety labels are unobstructed or damaged. |
| 8 | Check if the cabinet is deformed or at risk of water ingress. |

# 6. System Maintenance

Due to the influence of environmental temperature, humidity, dust, and vibration, the internal components of the equipment may age, leading to potential failures or reduced service life. Therefore, it is necessary to carry out daily and periodic maintenance, especially in high-temperature environments, frequent starts and stops, with AC power and load fluctuations, strong vibrations or impacts, or corrosive environments with dust/metal dust/hydrochloric acid. In such cases, the interval for regular inspections should be shortened.

■ Regular inspection items:

The following table lists the regular inspection items for this product. It is generally recommended to perform a regular inspection every 6 months. During actual maintenance, please determine the actual inspection cycle based on the product's usage and working environment. Regular maintenance helps prevent product function deterioration and equipment damage.

| No. | Check item |
|---|---|
| 1 | Check if the surface of the entire machine has debris, dirt, or dust accumulation. |
| 2 | Check if the power cable connections are loose or discolored, and if the cable insulation is aging or cracked. |
| 3 | Check the information on the display screen. |
| 4 | Check the external indicators. |
| 5 | Check the fans of the cabinet and modules. |
| 6 | Check if safety labels are unobstructed and undamaged. |
| 7 | Check if the dust filters are clogged and if the fans are working properly. If dust accumulation is severe, replace the dust filter. |
| 8 | Check the condensation status of the equipment. If there is condensation, ventilate first. |
| 9 | Check the AC lightning protection device. |
| 10 | Check the AC switch, DC switch, and auxiliary switch. |

**Danger**

• When performing maintenance operations on the equipment, do not operate it while powered on. Disconnect all power sources and leave warning signs to prevent electric shock or equipment damage.

• Maintenance personnel must have professional electrical training and carry qualified maintenance and safety tools.

• The equipment may still be powered after power-off for a period of time. After the internal capacitors are fully discharged and the DC and AC-side switches are completely turned off, the equipment can be operated. Ensure that the equipment is in a no-power state before operating.

# 7. Disposal

When the equipment can no longer be used and needs to be disposed of, follow the electrical waste disposal regulations of the country/region where the equipment is located. It must not be disposed of as household waste.

# 8. Appendix

## 8.1 Technical Data

■ Neptune-P125T-SA2/Neptune-P250T-SA1/SA2

| Product model | Neptune-P125T-SA2 | Neptune-P250T-SA1/SA2 |
|---|---|---|
| **DC(BAT input)** | | |
| DC voltage range | 600-1000V (Min.680V for off-grid) | 600-1000V (Min.680V for off-grid) |
| Max. Num. of battery input | 1 | 2 |
| Max. charge/discharge current | 216A | 216A*2 |
| Max. charge/discharge power | 125kW | 125kW*2 |
| **AC (on-grid)** | | |
| Rated output apparent power | 125kVA | 250kVA |
| Rated output current | 182A | 364A |
| Max. input apparent power | 125kVA | 250KVA/500KVA |
| Rated voltage | 400V | 400V |
| Rated frequency | 50/60Hz | 50/60Hz |
| PF | >0.99 (-0.8~0.8) | >0.99 (-0.8~0.8) |
| THDi | <3% (@rated power) | <3% (@rated power) |
| AC connection | 3W+N+PE | 3W+N+PE |
| **AC (off-grid)** | | |
| Rated output power | 125kW(@resistive load) | 250kW(@resistive load) |
| Rated output voltage | 400V | 400V |
| Rated output current | 182A | 364A |
| Rated frequency | 50/60Hz | 50/60Hz |
| THDu | <3% (@linear load) | <3% (@linear load) |
| Overload capability | 120%-1min | 120%-1min |
| **System data** | | |
| Build-in transformer | Yes | Yes |
| Build-in STS | Yes | Yes |
| Transfer between on/off grid with STS | < 10ms | < 10ms |
| IP level | IP54 | |
| Cooling method | Intelligent air cooling | |
| Operating temperature range | -40~60°C (45~60°C derating, derating factor 5%/°C) | |
| Relative humidity | 0~95% (non-condensing) | |
| Noise | < 75dB @1m | |
| Maximum operating altitude | 4000m (derating above 3000m, derating factor 1%/100m) | |
| AC lightning protection | Type II | |
| Communication | RS485/CAN for BMS, RS485 for meter | |
| Remote communication | WLAN/4G/Ethernet | |
| Display | LED+LCD+APP | |

| | | |
|---|---|---|
| Dimensions (W*D*H) | 1200*1100*2100mm | 1300*1100*2100mm |
| Weight | 1350kg | 1700kg/1730kg |
| **Certificate** | | |
| IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4, NRS 097-2-1 | | |
| **Expand models** | | |
| Expand models | Neptune-P125T-SA2 | Neptune-P250T-SA1<br>Neptune-P250T-SA2 |
| | Neptune-P125T-A2 | Neptune-P250T-A1<br>Neptune-P250T-A2 |
| | Neptune-P125T | Neptune-P250T |

■ Neptune-P375T/Neptune-P500T

| **Product model** | **Neptune-P375T** | **Neptune-P500T** |
|---|---|---|
| **DC(BAT input)** | | |
| DC voltage range | 600-1000V (Min.680V for off-grid) | 600-1000V (Min.680V for off-grid) |
| Max. Num. of battery input | 3 | 4 |
| Max. charge/discharge current | 216A*3 | 216A*4 |
| Max. charge/discharge power | 125kW*3 | 125kW*4 |
| **AC (on-grid)** | | |
| Rated output apparent power | 375kVA | 500kVA |
| Rated output current | 546A | 728A |
| Max. input apparent power | 375kVA | 500kVA |
| Rated voltage | 400V | 400V |
| Rated frequency | 50/60Hz | 50/60Hz |
| PF | >0.99 (-0.8~0.8) | >0.99 (-0.8~0.8) |
| THDi | <3% (@rated power) | <3% (@rated power) |
| AC connection | 3W+N+PE | 3W+N+PE |
| **AC (off-grid)** | | |
| Rated output power | 375kW (@resistive load) | 500kW (@resistive load) |
| Rated output voltage | 400V | 400V |
| Rated output current | 546A | 728A |
| Rated frequency | 50/60Hz | 50/60Hz |
| THDu | <3% (@linear load) | <3% (@linear load) |
| Overload capability | 120%-1min | 120%-1min |
| **System data** | | |
| Build-in transformer | Yes | Yes |
| Build-in STS | No | No |
| IP level | IP54 | |
| Cooling method | Intelligent air cooling | |
| Operating temperature range | -40~60°C (45~60°C derating, derating factor 5%/°C) | |

| | | |
|---|---|---|
| Relative humidity | 0~95% (non-condensing) | |
| Noise | < 75dB @1m | |
| Maximum operating altitude | 4000m (derating above 3000m, derating factor 1%/100m) | |
| AC lightning protection | Type II | |
| Communication | RS485/CAN for BMS, RS485 for meter | |
| Remote communication | WLAN/4G/Ethernet | |
| Display | LED+LCD+APP | |
| Dimensions (W*D*H) | 1300*1100*2100mm | 1300*1100*2100mm |
| Weight | 2450kg | 2500kg |

## Certificate

IEC 62477-1, IEC 61000-6-2, IEC 61000-6-4, NRS 097-2-1

## 8.2 Quality Assurance Statement

**Precautions:**

- The product should be protected from dust and moisture to prevent damage or functionality issues.
- Maintenance should be carried out only when the product is fully powered off, discharged, and unpowered.
- After installation, protective measures should be taken to prevent direct contact with live parts.
- The product must be used strictly according to the user manual to avoid abnormal operation.
- After the product is in operation, regular inspections should be performed on the ventilation conditions and dust inside the equipment.
- Avoid using the product in environments with corrosive gases or pollutants.

**Liability exemption:**

The following conditions are not covered under the quality assurance:

- Damage caused during transportation, handling, or installation due to impact or improper operation.
- Improper installation methods or modifications.
- Exceeding the usage conditions specified in the product manual, such as voltage or current beyond the product specifications, incorrect input power, abnormal external load devices, excessive temperature, or corrosive environments.
- Abnormal equipment caused by disassembly, repair, modification, or research by non-company personnel.
- Damage caused by changing the product's default protection parameters or operating and configuring the product using non-company software.
- Damage caused by abnormal natural environments.

### 8.3 Contact Information

For any questions during the use of this product, please feel free to contact us.

Please provide the following information to help us assist you better:

- Equipment model
- Equipment SN
- Battery type and photovoltaic module type
- External communication method of the equipment
- Software version number
- Fault code/name
- A brief description of the issue

YUNT website: www.yunt-power.com

Tel: 0755-23592426

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