

**NetCol5000-A 42 kW Air Cooled In-row Precision  
Air Conditioner**

## User Manual

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HUAWEI TECHNOLOGIES CO., LTD.



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# About This Document

## Purpose

This document describes the NetCol5000-A air cooled in-row precision air conditioner in terms of its product overview, installation, power-on commissioning, operation and maintenance (O&M), and FAQ. It helps readers understand how to use and maintain the NetCol5000-A.

The figures provided in this document are for reference only.

## Intended Audience

This document is intended for:

- Sales personnel
- Technical support personnel
- System engineers
- Hardware installation personnel
- Commissioning engineers
- Data configuration engineers
- Maintenance personnel

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Symbol	Description
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
 <b>NOTE</b>	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Change History

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

### Issue 01 (2017-07-27)

This issue is the first official release.

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# 1 Safety Precautions

## 1.1 General Safety

### Declaration

Huawei shall not take responsibility for any damage caused by any of the following:

- Operation under severe environments which are not specified in this document.
- Usage under installation and operating environments which are not specified in related international specifications.
- Unauthorized product changes and software code modification.
- Operation ignoring safety precautions and operation guidance specified in this document.
- Damage caused by abnormal natural environments.

### Overview

- To ensure the safety of people and equipment, pay attention to the safety symbols on the equipment and all the safety instructions in this document.
- The "NOTICE", "CAUTION", "WARNING", and "DANGER" statements in this document do not represent all safety instructions. They are only supplements to the safety instructions.
- Pay attention to the safety symbols on the equipment and all safety instructions in this document. The safety precautions given in this document do not cover all safety precautions. Huawei will not be liable for any consequence caused by violation of the safety operation regulations and design, production, and usage standards.

### Local Safety Regulations

Follow local laws and regulations when operating the equipment. The safety instructions in this document are only supplements to local laws and regulations.

### Personnel Requirements

Personnel who will install, operate, and maintain Huawei equipment must receive thorough training, understand all necessary safety precautions, and be able to correctly perform all operations.

- Only trained and qualified personnel are allowed to install, operate, and maintain the equipment.
- Only personnel certified or authorized by Huawei are allowed to replace or modify the equipment or components (including software).
- Any fault or error that might cause safety problems must be reported immediately to a supervisor.

## Grounding Requirements

- When installing a device, always install the ground cable first. When uninstalling a device, disconnect it at the very end.
- Do not damage the ground conductor.
- Do not operate the device without a properly installed ground conductor.
- The device must be connected permanently to the protection ground.

## Personal Safety

- Do not perform operations on the equipment or cables during thunderstorms.
- Keep unauthorized personnel away from the equipment.
- When operating the equipment, wear insulation shoes and gloves and take measures to protect your eyes. Remove conductive objects such as jewelry and watches to avoid electric shocks or burns.
- Ensure that tools are insulated.

## Equipment Safety

- Keep the cabinet door key in a safe place when performing an installation, operation, or maintenance task.
- Before operating the equipment, ensure that the equipment is secured to a floor or another immovable object such as a wall or mounting rack.
- Do not block any ventilation opening when the equipment is in operation.
- Tighten screws using a tool when installing a panel.
- After the installation is complete, remove packing materials from the equipment area.
- Never use water to clean the electrical components in the interior and exterior of the cabinet.

## 1.2 Electrical Safety

### High Voltage



## DANGER

- The device is powered by a high-voltage power supply. Direct or indirect contact (through damp or conductive objects) with high-voltage power sources will result in serious injury or death.
- Non-standard and improper high voltage operations may result in fire or electric shocks.

## High Leakage Current



## CAUTION

Ground the device components and the general ground cable before powering the device on. Ensure that the ground continuity requirements stipulated in IEC61439-1:2011 is met, and the ground resistance is 0.1 ohm at most. Otherwise, personal injury or device damage may be caused by high leakage current.

Cover the exposed parts of cables inside the device with PVC insulation tape and place them in appropriate positions.

## Power Cable



## DANGER

Do not install or remove power cables when the equipment is powered on. Transient contact between the core wire of a power cable and a conductor may generate electric arcs or sparks, which may start a fire or cause eye injury.

- Turn off the power switch before installing or removing a power cable.
- Verify that the label on the power cable is correct before connecting the cable.
- To ensure safety, damaged power cables must be replaced by the manufacturer, the manufacturer's service agent, or similarly qualified persons.
- Ensure that the equipment has a mechanism for disconnecting from the main power supply. Contact intervals must be provided between different levels so that a circuit can be disconnected under class III overvoltage conditions. Cables for the mechanism must be incorporated into the fixed wiring based on the wiring rules.

## Fuse



## CAUTION

To ensure that the equipment runs safely, replace blown fuses with new fuses of the same model and specifications.

## 1.3 Mechanical Safety

### Drilling Holes



#### CAUTION

Do not drill holes into a cabinet without permission. Improper drilling may damage components, pipes, or cables inside the cabinet. Metal shavings from drilling may block pipes and cause short circuits in circuit boards if they enter the cabinet.

- Only drill with the approval of the customer, contractor, and Huawei.
- Remove interior cables before drilling holes into a cabinet.
- Wear goggles when drilling holes to protect your eyes from metal shavings.
- Wear protective gloves when drilling holes.
- After drilling, clean up the metal shavings immediately to prevent them from entering the cabinet.

### Fans

- When replacing a component, keep the component, screws, and tools at a safe place. If any of them falls into running fans, the fans may be damaged.
- When replacing a component near fans, do not insert your fingers or boards into the fans unless the fans are switched off and stop running.

### Transportation and Moving

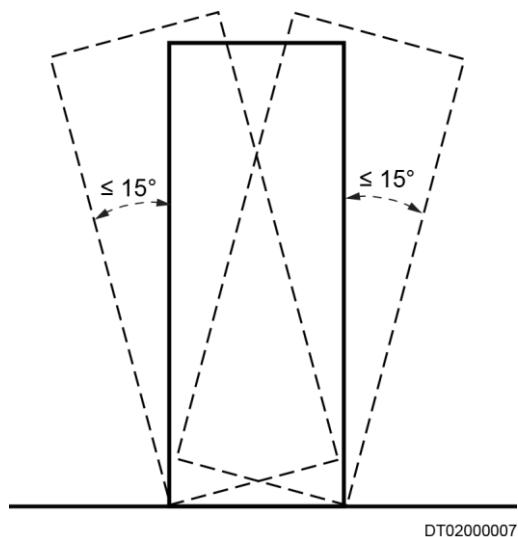


#### CAUTION

- Wear protective gloves when moving devices.
- Be careful when moving heavy objects.
- Use caution when removing a heavy or unstable device from a cabinet.
- Choose railways, sea, or roads with good condition for transportation. Ensure that the equipment is transported safely and securely. Excessive tilting or jolting during transportation is not allowed. During transportation, loading, and unloading, the equipment must not be tilted more than 15 degrees, as shown in [Figure 1-1](#).
- Only trained personnel are allowed to move the equipment.
- At least two persons are required to move the equipment.
- When moving the equipment, do not use any part of the equipment to support it. This may damage the equipment.
- Use a pallet truck to unload the equipment and its case from the vehicle. The forks must be properly positioned to ensure that the equipment does not fall over. Secure the equipment to the pallet truck before moving it, and assign personnel to watch the equipment during movement.

- Move the equipment close to the installation site before unpacking. Unpack the equipment with caution to avoid scratching or bumping it. Unload the equipment from the pallet immediately before installation.

**Figure 1-1** Transportation gradient



## Welding Hazard

- At least two persons are required at the welding site.
- The welder must have the required licenses for welding.
- No flammable materials are allowed in the welding area.
- Ensure that fire extinguisher, wet cloth, and water container are available.
- Do not place a flaming welding torch on equipment or the ground. To avoid burning caused by gas leaks, do not put an acetylene and oxygen welding torch inside a metal container.
- Cool down hot pipes immediately after welding them.
- Do not weld or cut on pressurized containers or pipes. Disconnect the equipment from power sources before welding or cutting.

## 1.4 Operating Safety

### High Temperature and High Pressure

- Incorrect operations may cause excessive pressure, which may result in breakage or exploration of the cooling system.
- High-temperature components: compressor, refrigerant pipe, and electric heater.
- High-pressure components: compressor and refrigerant pipe.

### Refrigerant Hazard

- To avoid frostbite caused by refrigerant leaks, take protective measures such as wearing antifreeze gloves when handling refrigerant.

- Low-temperature component: evaporator.

## High Rotational Speed

High-speed rotating component: fan.

## 1.5 Others

### Binding Signal Cables



#### NOTICE

Signal cables must be bound separately from power cables with a spacing of at least 50 mm.

### Laying Out Cables

In very low temperatures, violent impacts or vibration may crack the plastic cable jacket. To ensure safety, comply with the following requirements:

- Cables must be laid out and installed only when the temperature is higher than 0 °C.
- Cables previously stored at subzero temperatures must be stored at room temperature for at least 24 hours before they are laid out.
- Handle cables with caution, especially at a low temperature. Do not drop cables from vehicles to the ground.
- Cables must be routed with a distance of at least 30 mm between the cables and the DC busbar, shunt, and fuse. This prevents damage to and decelerates deterioration of the insulation layer of the cables. Cables must be flame-retardant and must not be routed behind the air inlets or outlets of the cabinet. The air inlets and outlets must not be blocked.

### Storage

- Ensure that the equipment is not located near heat sources or directly exposed to sunlight.
- To avoid explosion or refrigerant leaks, keep sources of ignition and high-temperature objects far away from the equipment. This is especially important for equipment containing high-pressure nitrogen or refrigerant.

### Recycling



This marking indicates that this product may not be disposed of with other housed wastes in the European Union's areas. Recycle the product to promote the sustainable reuse of resources and to avoid possible environment pollution and harm to human health. To recycle the product, use your local recycling system or contact the retailer where the product was purchased. The retailer can recycle this product in a safe and environmentally friendly way.

## Manual Loss

If you lose this manual, contact Huawei technical support to obtain the electronic document or download it from <http://www.huawei.com>.

# 2 Product Description

## 2.1 Model Description

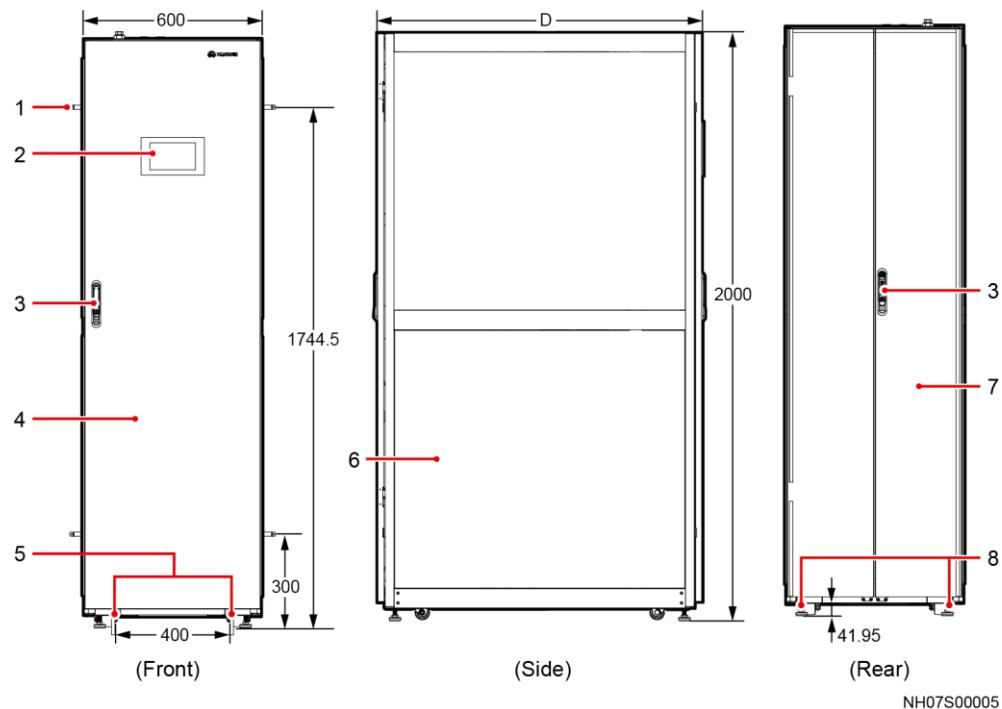
Figure 2-1 NetCol5000-A model description

NetCol	5000	-	A	042	H	4	1	2	D	2	W	1	2	0	E	1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Data Center Precision Air Conditioner	1 - 200-277 V, 1PH, 50/60 Hz	12 Humidifier	0 - None													
2 Model Range	2 - 200-240 V, 1PH, 50/60 Hz	R - Infrared Humidifier														
2000 - In-Cabinet Precision Air Conditioner	3 - 200-240 V, 3PH, 50/60 Hz	E - Electrode Humidifier														
5000 - In-Row Precision Air Conditioner	4 - 380-415 V, 3PH, 50/60 Hz	W - Wet Film Humidifier														
8000 - In-Room Precision Air Conditioner	5 - 380-480 V, 3PH, 50/60 Hz															
3 Hyphen	6 - 220 V, 1 PH, 50/60 Hz															
4 System Type	7 - 208-240 V, 1PH, 50/60 Hz															
A - Air Cooled	8 Cooling System	13 Re-Heating	0 - None													
C - Chilled Water	1 - R410A Single System	1 - Electric Heating 1 Level														
F - Free Cooling	2 - R410A Dual System	2 - Electric Heating 2 Level														
G - Glycol Cooled	3 - R407C Single System	14 Monitoring	0 - No Card													
H - Water Cooled + Chilled Water	4 - R407C Dual System	1 - Web Only														
T - Air Cooled + Loop Thermal Siphon	5 - R22 Single System	2 - 485 Only														
5 Mode Code	6 - R22 Dual System	3 - Web&485														
042 - Mode Code 042	7 - R134a Single System	15 Sensors	0 - None													
6 Air Discharge	8 - R134a Dual System	S - Smoke Temperature														
U - Up Flow	A - Chilled Water with Three Way Valve	F - High Temperature														
D - Down Flow	B - Chilled Water with Two Way Valve	B - Smoke & High Temperature														
H - Horizontal Flow	C - Others	16 Packaging	D - Domestic													
7 Power Supply	9 Fan Type	E - Export														
M - 380-415 V, 3 PH, 50 Hz	1 - AC Fan	17 Order Special Features	0 - None													
N - 208-230 V, 3 PH, 60 Hz	2 - EC Fan	1 - Condensate Pump														
P - 220-240 V, 3 PH, 50 Hz	3 - DC Fan	2 - Condensate Pump & Dual Power Supply														
Q - 380 V, 3 PH, 60 Hz	10 Compressor Type	380-415 V, 3PH, 50/60 Hz														
R - 460-480 V, 3 PH, 60 Hz	0 - No Compressor	3 - Condensate Pump & Dual Power Supply														
S - 220-240 V, 1 PH, 50 Hz	N - ON-OFF	460-480 V, 3PH, 60 Hz														
T - 208-230 V, 1 PH, 60 Hz	D - DC Inverter															
D - 48 V DC	11 Filter Grade															
	0 - None															
	1 - G3															
	2 - G4															

## 2.2 Product Overview

### 2.2.1 Appearance

Figure 2-2 Dimensions (unit: mm)



- (1) Cabinet connecting kit      (2) Controller panel      (3) Door lock      (4) Front door  
(5) Mounting hole      (6) Side panel      (7) Rear door      (8) Anchor

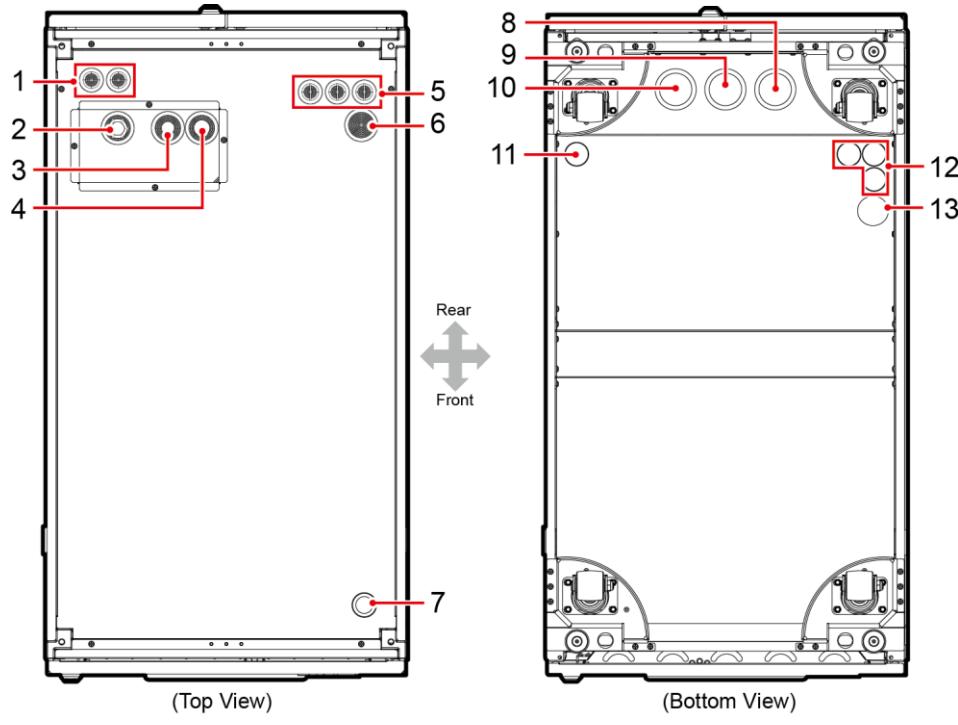


D in the figure stands for the cabinet depth, which can be 1100 mm or 1200 mm. [Table 2-1](#) shows the available cabinet dimensions.

Table 2-1 Dimensions

Dimensions	H x W x D (mm)	Expansion Method
Standard dimensions	2000 x 600 x 1100	-
Expanded dimensions	2000 x 600 x 1200	Install an enclosure frame.
	2200 x 600 x 1100	Install a top frame.
	2200 x 600 x 1200	Install an enclosure frame and a top frame.

**Figure 2-3** Holes in the air conditioner

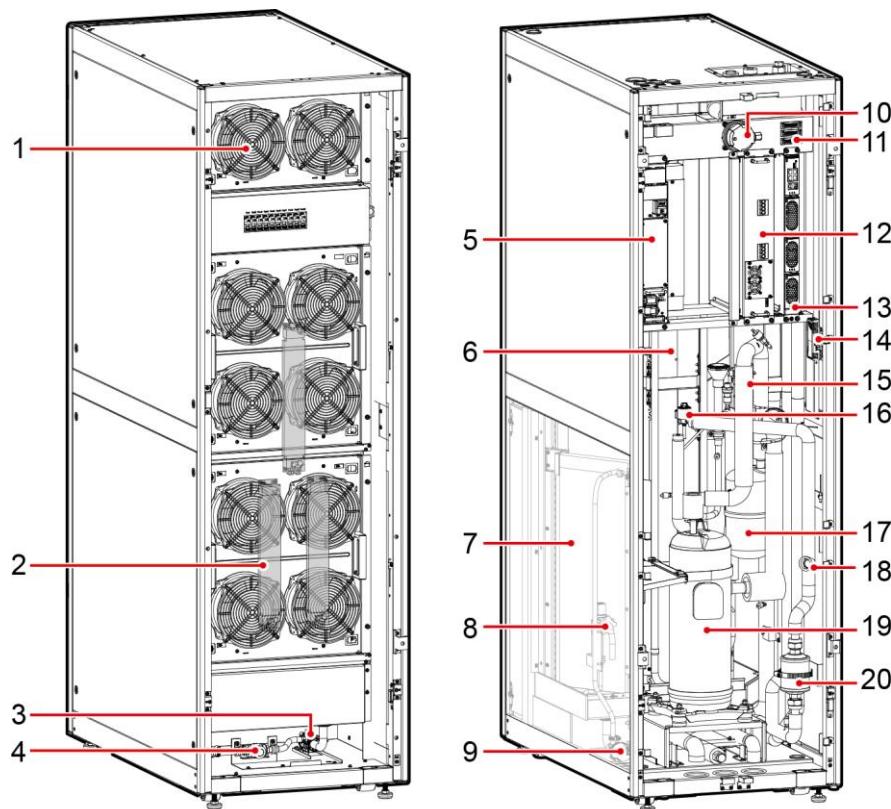


- |   |   |
|---|---|
| (1) Signal cable holes ( $\Phi 28$ mm) on the top           | (8) Refrigerant gas pipe hole ( $\Phi 60$ mm) at the bottom     |
| (2) Drainpipe hole ( $\Phi 43$ mm) on the top               | (9) Drainpipe hole ( $\Phi 60$ mm) at the bottom                |
| (3) Refrigerant liquid pipe hole ( $\Phi 43$ mm) on the top | (10) Refrigerant liquid pipe hole ( $\Phi 60$ mm) at the bottom |
| (4) Refrigerant gas pipe hole ( $\Phi 43$ mm) on the top    | (11) Signal cable hole ( $\Phi 28$ mm) at the bottom            |
| (5) Power cable hole ( $\Phi 28$ mm) on the top             | (12) Power cable hole ( $\Phi 28$ mm) at the bottom             |
| (6) Humidifier water inlet hole ( $\Phi 43$ mm) on the top  | (13) Humidifier water inlet hole ( $\Phi 43$ mm) at the bottom  |
| (7) Signal cable hole ( $\Phi 28$ mm) on the skylight       |   |

## 2.2.2 Cooling Components

The NetCol5000-A mainly consists of a DC variable-frequency compressor, EC fan, evaporator, electronic expansion valve (EEV), oil separator, sight glass, filter dryer, air filter, electric heater (optional), wet film humidifier (optional), condensate pump, check valve, differential pressure switch, and temperature and humidity sensor (T/H sensor).

**Figure 2-4 Components**



NH07W00004

(1) Fan	(2) Electric heater	(3) Condensate pump	(4) Drainage check valve
(5) Strong-current box	(6) Evaporator	(7) Wet film humidifier	(8) Water inlet solenoid valve
(9) Humidifier pump	(10) Differential pressure switch	(11) Signal cable terminal block	(12) Compressor driver
(13) Weak-current box	(14) T/H sensor	(15) Discharge pipe	(16) EEV
(17) Oil separator	(18) Sight glass	(19) Compressor	(20) Filter dryer

- Compressor
  - The NetCol5000-A uses a DC variable-frequency compressor that features compact size, light weight, long service life, low noise, easy installation as well as high reliability, stability, and energy efficiency.
  - The high-precision drive automatically adapts to the system pressure fluctuations.
  - The drive conducts precision self-check. Compressor and drive faults can be stored in separate zones.
- EC fan
  - The energy-efficient EC fan that supports stepless speed adjustment is used to reduce the energy efficiency of the fan.

- There are ten EC fans in total. The air conditioner will not shut down when a single fan fails.
- Fans can be maintained with power-on. You can replace one faulty fan without shutting down the air conditioner.
- Evaporator
  - The evaporator adopts the inner threaded copper pipe and blue hydrophilic aluminum foil to prevent water blowing due to condensate water accumulation and improve heat exchange performance. The V-type evaporator optimizes the airflow pattern and reduces the air resistance.
  - The finned-tube evaporator with a high cooling efficiency adopts the synergy field principle and computational fluid dynamics (CFD) to optimize the flow path design, which greatly improves the heat exchange efficiency.
  - The small diameter evaporator is adopted to enhance the heat exchange performance, a 10%+ increase in heat exchange efficiency compared with a traditional solution.
  - The designed pressure bearing capacity of the heat exchange coil is 1.6 MPa, an excellent pressure bearing capacity.
- EEV
  - The flow regulator uses a miniature controller to control the operation of the step motor, thereby changing the pass-through area of the valve to regulate the flow of refrigerant.
  - The EEV is equipped with an energy storage unit that prevents slugging due to migration of refrigerant when the air conditioner is powered off abnormally.
- Oil separator

It is an oil-gas separator which separates the lubricant brought out due to exhaustion of the compressor and brings back the separated lubricant to the compressor.
- Sight glass

It allows you to observe the refrigerant flow and gas content for easy maintenance and optimization.
- Filter dryer

It absorbs water from the refrigerant pipes and filters the foreign matter, which reduces component damage rates and improves operating efficiency and reliability.
- Air filter

The G4 air filter is used, and the F5 air filter is customizable. The air filter meets the relevant requirements of the China National Standard GB/T 14295-2008.
- Electric heater
  - The positive temperature coefficient (PTC) electric heater automatically adjusts heating capacity and provides multiple protection measures to ensure secure and reliable operating.
  - The heater features quick start, large heating capacity, and even heating.
- Wet film humidifier
  - The wet film humidifier has low water quality requirements and high environment adaptability.
  - The wet film humidifier has a simple structure and is easy to remove, clean, and maintain.
  - The wet film humidifier can quickly start and generate huge humidification capacity.

- The wet film humidifier consumes less power, saving more than 95% of energy compared with a traditional electrode humidifier.
- Compared with a traditional electrode humidifier, the wet film humidifier has a longer service life and maintenance interval.
- Condensate pump  
The water pump provides power for top drainage with a maximum lift of 4 m.
- Check valve  
The check valve effectively prevents gas or liquid backflow.
- Differential pressure switch  
When the air filter is dirty or blocked, the differential pressure switch triggers an alarm, prompting for air filter replacement.
- T/H sensor  
Six built-in negative temperature coefficient (NTC) temperature sensors and one return air T/H sensor are provided.

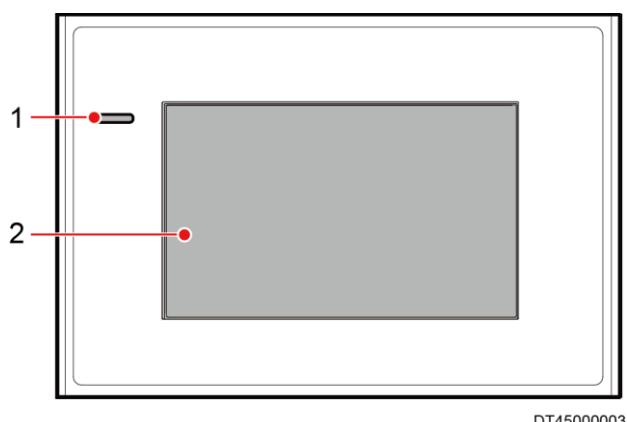
## 2.2.3 Controller

### Appearance

The 7-inch display panel with the true-color touchscreen provides user interfaces for query, setting, monitoring, and maintenance.

The indicator on the panel displays operating status of the precision air conditioner. [Figure 2-5](#) shows the location of the indicator. [Table 2-2](#) lists the relationship of the alarm status, indicator, and buzzer. If critical alarms, major alarms, and warning alarms are generated simultaneously, the indicator shows the status of the alarm with the highest severity level, and the buzzer shows the status of the alarm (not confirmed after the alarm generation) with the highest severity level.

**Figure 2-5** Location of the indicator



(1) Indicator

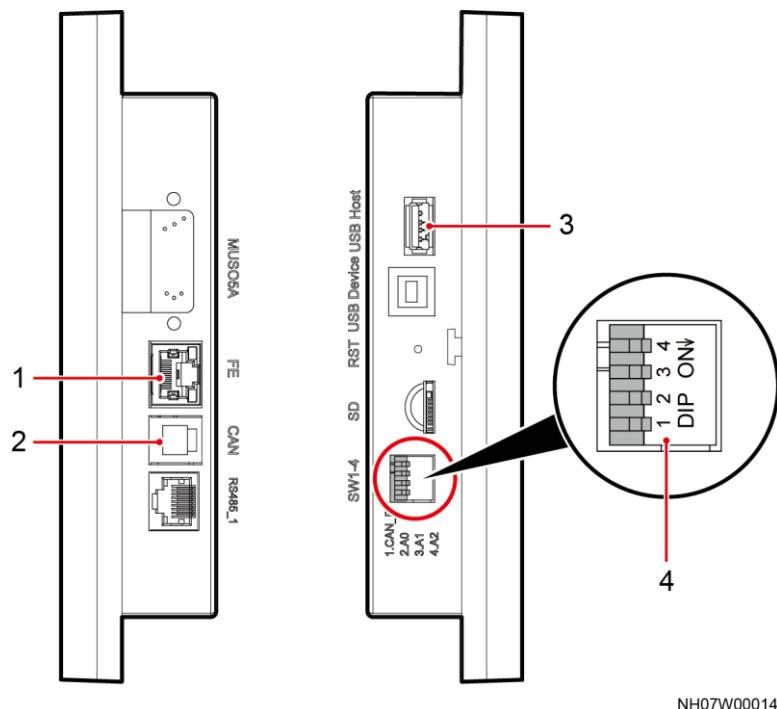
(2) Liquid crystal display (LCD)

**Table 2-2** Indicator and buzzer status description

Alarm Status	Indicators	Buzzer
The device is operating properly, or a warning alarm occurs.	Green	Silent
The buzzer keeps buzzing if a major alarm is not confirmed after the alarm generation.	Yellow	Beeping intermittently
The buzzer keeps buzzing if a critical alarm is not confirmed after the alarm generation.	Red	Beeping continuously

## Ports

**Figure 2-6** Ports on the controller sides



- (1) Fast Ethernet (FE) port    (2) Communications port for the main control board and LCD  
(3) USB port                         (4) Dual in-line package (DIP) switch on LCD<sup>a</sup>



**NOTE**

a: The first toggle switch DIP status is **ON**, and the second, third, and fourth toggle switch DIP status are not **ON**.

## Functions

- Each air conditioner has an independent control system, LCD, electric heater, humidifier, and T/H sensor to ensure its normal operating in high-precision mode.

- The 7-inch display panel with the true-color touchscreen allows you to set parameters for the air conditioner and query its status.
- The air conditioner has the following three remote functions.
  - Telemetry: supply air temperature, return air temperature, supply air humidity, return air humidity, and working status of the air conditioner
  - Teleindication: startup/shutdown, overvoltage/overcurrent, undervoltage/undercurrent, return air overtemperature/undertemperature, return air overhumidity/underhumidity, filter normal/blocked, and fan normal/faulty
  - Teleadjust: air conditioner startup/shutdown
- When multiple air conditioners work cooperatively, the controller optimally distributes the heat load to reduce power consumption and provides backup to improve reliability.
  - When an air conditioner in the group is faulty, the backup air conditioner starts to operate automatically to improve the reliability of the air conditioning system.
  - Each air conditioner enters the active mode one by one periodically.
  - The number of operating air conditioners varies depending on the thermal load in the equipment room to meet requirements promptly, eliminate hot spots, and save energy.
  - A mechanism is adopted to prevent the air conditioners in the same equipment room operating in opposite status (such as cooling and heating, or humidification and dehumidification), in order to save energy.
- You can monitor, manage, and upgrade one or more air conditioners using the remote management software provided by Huawei.
- At least 500 historical alarms can be stored.
- Access logs can be traced back. At least 200 historical login and setting records can be stored.
- The controller can display 30 days' temperature and humidity in colored curves and 30 days' differential pressure of supply air and return air (differential pressure control function required) in colored curves. O&M personnel can view the air conditioner operating status onsite.
- A comprehensive power monitoring function is provided. Faults such as power reverse phase, open phase, overvoltage, undervoltage, high frequency, and low frequency are diagnosed and appropriate alarms are reported and recorded. Automatic protection, recovery, and restart are also provided.
- The operating status and alarms of the outdoor unit are monitored using the touchscreen controller on the indoor unit. Audible and visual alarms are supported and alarms can be uploaded to the upstream element management system (EMS) for centralized management.
- Alarms about the condensate pump are monitored using the touchscreen controller on the indoor unit. Audible and visual alarms are supported and alarms can be uploaded to the upstream EMS for centralized management, which helps locate faults accurately and improve the drainage reliability.

## Features

- The controller provides a touchscreen with a user-friendly interface.
- The controller controls the indoor temperature precisely and responds quickly.
- The controller is protected by a multi-level password protection mechanism, avoiding misoperations.

- Password verification is required upon the first startup to ensure the system security. No password verification is required for subsequent startup if the first verification succeeds.
- The controller provides multiple protection functions, such as abnormal power-off self-recovery and water leakage detection, ensuring system reliability.
- The cooling capacity, air volume, as well as the operating status and time of each component in the air conditioner are displayed on the LCD in real time.
- The controller provides abundant external ports such as RS485 ports, CAN ports, FE ports, and USB ports that are protected by a security mechanism. These ports flexibly meet the communication requirements and feature good electrical isolation.
- O&M personnel can export fault records in one-click mode, making it easy to operate the air conditioner and know the running status of the air conditioner.
- The air conditioner supports communications protocols such as Modbus RTU, Modbus TCP, and SNMP, facilitating connection to the network management system.
- The controller intelligently identifies abnormal parameter settings (incorrect commands) and rejects them automatically.
- If the indoor temperature fluctuates beyond the normal range, an audible and visible alarm signal is sent automatically.

## Parameters

Table 2-3 describes the operating environment parameters for the ACC.

**Table 2-3** Parameter

Parameter	Specification
Net weight	0.86 kg
Touchscreen type	Resistive touchscreen
Rated input voltage	12 V DC
Input voltage range	9–14 V DC

## 2.3 Physical Ports

**Table 2-4** Physical ports

Item	Specifications	
Indoor unit	Refrigerant liquid pipe	Outer diameter of 5/8 inch (15.88 mm), welding
	Refrigerant gas pipe	Outer diameter of 7/8 inch (22.22 mm), welding
	Humidifier water inlet pipe	G 1/2 inch inner screw thread
	Drainpipe	BSPP 1/2 inch inner screw thread

Item		Specifications
Outdoor unit	Refrigerant liquid pipe	Outer diameter of 5/8 inch (15.88 mm), welding
	Refrigerant gas pipe	Outer diameter of 7/8 inch (22.22 mm), welding
Low-temperature component (optional component)	Connecting to indoor unit liquid pipe	Outer diameter of 5/8 inch (15.88 mm), welding
	Connecting to indoor unit gas pipe	Outer diameter of 7/8 inch (22.22 mm), welding
	Connecting to outdoor unit liquid pipe	Outer diameter of 5/8 inch (15.88 mm), welding
	Connecting to outdoor unit gas pipe	Outer diameter of 7/8 inch (22.22 mm), welding
For the requirement of engineering pipes, see <a href="#">3.2.2.2 (Optional) Pipe Assembly</a> .		

## 2.4 Product Specifications

[Table 2-5](#), [Table 2-6](#), and [Table 2-7](#) describe the technical specifications of the NetCol5000-A in-row precision air conditioner.

**Table 2-5** General specifications

Item	Specifications
Refrigerant	R410A
Cooling capacity <sup>a</sup>	42 kW
Air supply mode	Horizontal flow
Airflow	8600 m <sup>3</sup> /h
Dimensions (H x W x D)	<ul style="list-style-type: none"> <li>• 2000 mm x 600 mm x 1100 mm (cabinet dimensions)</li> <li>• 2000 mm x 600 mm x 1200 mm (including an enclosure frame)</li> <li>• 2200 mm x 600 mm x 1100 mm (including a top frame)</li> <li>• 2200 mm x 600 mm x 1200 mm (including an enclosure frame and a top frame)</li> </ul>
Net weight/Gross weight (full configuration)	305 kg/342 kg
Certification	CQC, CE, RoHS, REACH, WEEE, and IEC
a: Test condition is rated condition (Indoor dry-bulb temperature: 37.8 °C. Relative humidity: 20%. Outdoor temperature: 35 °C).	

**Table 2-6** Optional specifications

Item	NetCol5000-A0 42H413D20020 E1	NetCol5000-A0 42H413D20020 E2	NetCol5000-A0 42H413D2W12 0E1	NetCol5000-A0 42H413D2W12 0E2
Power system	380–415 V AC, 50 Hz or 60 Hz 3Ph+N+PE Tolerance: –10% to +10% of rated voltage, rated frequency $\pm 3$ Hz			
Power supply mode	Single power supply	Dual power supplies	Single power supply	Dual power supplies
Max Current	40 A	Active: 40 A Standby: 40 A	46 A	Active: 46 A Standby: 40 A
Condensate pump	Yes	Yes	Yes	Yes
Heating function	No	No	Yes	Yes
Humidification function	No	No	Yes	Yes
Reheating capacity	N/A	N/A	6 kW	6 kW
Humidifying capacity	N/A	N/A	3 kg/h	3 kg/h

**Table 2-7** Application conditions

Operating temperature	Specifications
Operating temperature	18–45 °C
Operating humidity	20%–80% RH
Storage temperature	–40 °C to +70 °C
Storage humidity	5%–95% RH (non-condensing)
Applicable outdoor temperature	<ul style="list-style-type: none"> <li>• Work with NetCol500-A0365C (including a low-temperature component): –40 °C to +45 °C</li> <li>• Work with NetCol500-A0365S: –20 °C to +45 °C</li> <li>• Work with NetCol500-A072: –5 °C to +55 °C</li> </ul>

Operating temperature	Specifications
Protection level	IP20
Installation mode	Floor or ESD floor-mounted
Pipe and cable routing	Pipes and cables routed from the top or bottom
Altitude	0–4000 m. When the altitude exceeds 1000 m, the power should be derated. For detailed derating data, see <a href="#">Table 2-8</a> .

**Table 2-8** Derating coefficients

Altitude (m)	0	1000	1500	2000	2500	3000	3500	4000
Air volume coefficient	1	0.887	0.835	0.785	0.737	0.692	0.649	0.608
Cooling capacity coefficient	1	0.940	0.909	0.878	0.846	0.815	0.784	0.753
The sensible heat ratio is all 100% in rated condition.								

# 3 Installation Guide

## 3.1 Installation Precautions

### Installation Requirements



#### NOTICE

If the actual server total load for each air conditioner is less than 10% of rated cooling capacity or the equipment room is not properly sealed, the humidity in the equipment room may be too high, which is not a product quality issue and should be dealt with by adding a dehumidifier.

**Table 3-1** Installation requirements

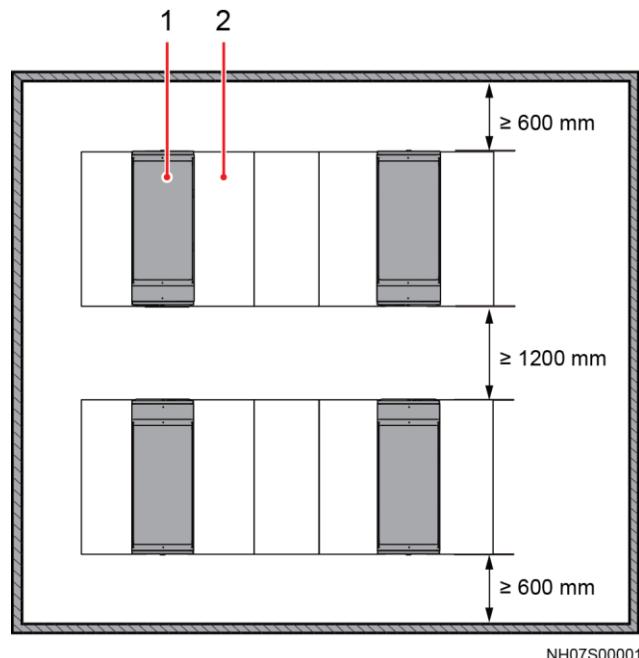
Item	Specifications
Equipment room door	Width: $\geq 1.2$ m; height: $\geq 2.3$ m
Floor	Floor bearing capacity: $\geq 530$ kg/m <sup>2</sup>
Equivalent length of one-way pipe	$\leq 100$ m
Vertical difference between the indoor and outdoor units	<ul style="list-style-type: none"><li>Outdoor unit higher than indoor unit: <math>\leq 30</math> m</li><li>Outdoor unit lower than indoor unit: <math>\leq 8</math> m</li></ul>
Water supply	The inlet water pressure should be in the range of 0.1–0.7 MPa, and the temperature should be in the range of 1 °C–40 °C. The wet film humidifier should use tap water (no water treatment facility needed for the inlet water) that meets the following requirements:

Item	Specifications
	<ul style="list-style-type: none"><li>Non-freezing and nephelometric turbidity units (NTU): &lt; 3</li><li>No visible substances</li><li><math>6.5 \leq \text{pH value} \leq 8.5</math></li><li>Total hardness (in <math>\text{CaCO}_3</math>): <math>\leq 450 \text{ mg/L}</math></li></ul>
Drainage	The distance between the upper drainage of the water pump and the cabinet installation floor should not exceed 4 meters.
Power distribution	Leakage circuit breakers are not recommended for the primary route. If a leakage circuit breaker is required by the customer or by local regulations, use the residual current circuit breaker (RCCB) that is not sensitive to the single-phase DC pulses and transient current pulses.
Note: If the requirements are not met, contact Huawei technical support for an optimized solution.	

## Space Requirements

- Before installation, verify that the installation environment meets the requirements and whether reconstruction is required for routing water pipes, cables, and ventilation pipes.
- Install the indoor unit according to the design drawing and reserve space for maintenance. For the front and rear maintenance space for an indoor unit, reserve at least 1200 mm for one end and 600 mm for the other end, as shown in [Figure 3-1](#).

**Figure 3-1** Maintenance space



(1) NetCol5000-A

(2) Equipment

- The equipment room should be thermal-insulated. Moisture proof measures should be applied to walls and floors.
- Take measure to avoid damaging cabinet components and cables during cabinet transportation.
- To ensure good ventilation, check that the indoor unit is not placed in the corner of a room or at the end of a long and narrow room.
- All doors and windows of the equipment room should be closed to reduce the additional load of the precision air conditioners during the system running.

## Precautions for Connecting Refrigerant Pipes



### NOTICE

Pipe length mentioned in this document is equivalent.

When selecting the refrigerant pipes, note the following:

- Avoid elbows and ensure that the connection between the indoor and outdoor units is the shortest.
- After determining the best pipe route between the indoor and outdoor units, calculate the number of the components that cause local resistance loss, for example, elbows, and convert them into the equivalent length to straight pipes, as shown in [Table 3-10](#).
- The total length of pipes connecting the indoor unit and outdoor unit (L) equals to the equivalent straight length of elbows and connectors plus the length of the straight pipes connecting the indoor unit and outdoor unit.
- Concrete floor does not support underfloor piping.

## Precautions for Connecting Cables

- Connections of all power cables, control cables, and ground cables must comply with local electrical regulations, and the cable specifications should comply with local cabling specifications.
- For details about current in full load, see the device nameplate.
- Cable connections can be performed only by qualified technicians. The installation personnel must wear insulation and protection equipment, such as protective gloves.
- All precision air conditioners must be reliably grounded.
- Concrete floor does not support underfloor cable routing.

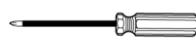
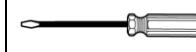
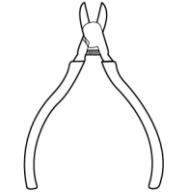
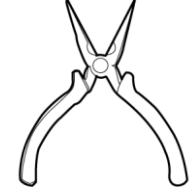
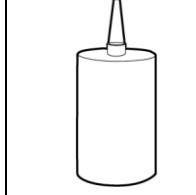
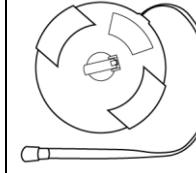
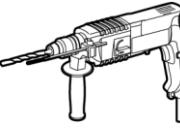
## 3.2 Installation Preparation

To ensure the optimal operating condition and longest service life, install the NetCol5000-A in strict accordance with requirements.

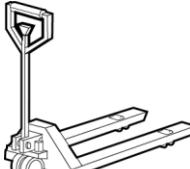
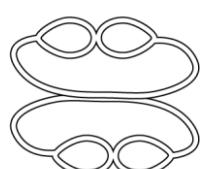
### 3.2.1 Tools

The following tables list the tools for installing the NetCol5000-A. Add or delete tools as required.

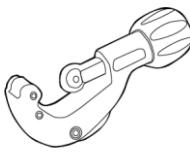
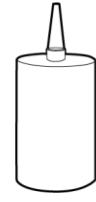
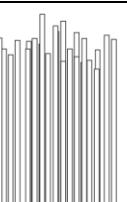
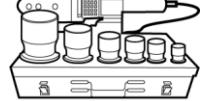
**Table 3-2 General tools**

Appearance, specifications, and name			
Adjustable wrench	Phillips screwdriver (M4, M6, and M8)	Flat-head screwdriver (M3 and M4)	Socket wrench (18 mm)
			
Torque wrench (28 mm)	Solid wrench (18 mm and 13 mm)	Box-end wrench	Diagonal pliers
			
Combination pliers	Needle-nose pliers	Sealant or seal tape (for thermal insulation foam) <sup>a</sup>	Right angle
			
Step ladder (2 m)	Torch	Measuring tape	Hammer drill
			
Marker	Protective glove	Electric screwdriver	N/A
			N/A
a: The sealant or seal tape for thermal insulation foam must be able to withstand temperatures higher than 85 °C.			

**Table 3-3** Transporting tools

Appearance, specifications, and name			
Manual pallet truck	Electrical pallet truck	Lifting rope (bearing at least 400 kg)	Lever (bearing at least 400 kg)
			

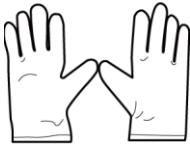
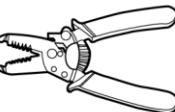
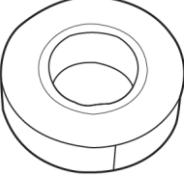
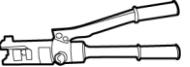
**Table 3-4** Pipe connection tools

Appearance, specifications, and name			
Cutter	Sealant or seal tape (for screw threads) <sup>a</sup>	Welding torch	Copper-phosphorus brazing rod (containing 5% silver)
			
Oxygen	Acetylene	Subterrene	Nitrogen
			

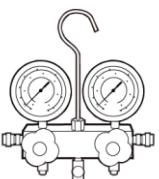
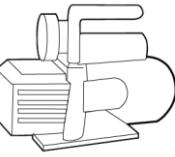
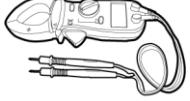
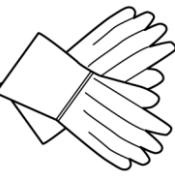
a: The specifications of the sealant or seal tape for screw threads are as follows:

- Sealant or seal tape: applies to all pipe material.
- Anaerobic metal pipe thread sealant with polytetrafluoroethylene (PTFE for short) as the filler
- Maximum seal gap: < 0.5 mm
- Pressure resistance: above 1.6 MPa
- Compliant with the industry standard *JB/T7311-2008 Technical Specification for the Application of Anaerobic Glue in Engineering Machinery*

**Table 3-5** Connecting cable tools

Appearance, specifications, and name			
ESD gloves	Insulation gloves	Wire stripper	Polyvinyl chloride (PVC) insulation tape
			
Heat gun	Crimping plier	N/A	N/A
		N/A	N/A

**Table 3-6** Commissioning tools

Appearance, specifications, and name			
Pressure gauge (2 PCS) <sup>a</sup>	Leather hose (5 PCS) <sup>a</sup>	Vacuum pump <sup>b</sup>	Nitrogen <sup>c</sup>
			
Clamp meter	Electronic scale	Antifreeze gloves	Reducing valve <sup>d</sup>
			

a: The pressure gauge and leather hose should be used especially for R410A, the measurement range of the pressure gauge must be greater than or equal to 4.0 MPa, and the tolerance range of the leather hose must be greater than or equal to 4.5 MPa. The size of needle valve in the unit is 1/4 inch. Purchase a conversion adapter if you have a different size of valve on leather hoses.

b: The airflow of the vacuum pump should be within 2–4 L/s and the absolute vacuum degree should be less than or equal to 60 Pa.

c: Dry nitrogen

d: A reducing valve should be used on the nitrogen cylinder port. The measuring range of the reducing valve should be at least 4.0 MPa.

## 3.2.2 Material Preparations

Materials to be prepared onsite are classified into three categories:

- Mandatory: mandatory configuration. This material is provided by Huawei and can be found in delivered fittings.
- Optional: This material can be purchased from Huawei or prepared by customers.
- Engineering purchase: This material will not be delivered by Huawei, and customers need to purchase it.

### 3.2.2.1 (Optional) Refrigerant R410A



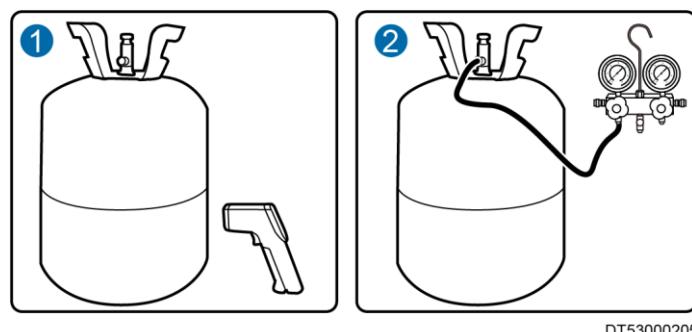
#### CAUTION

Do not use low-quality refrigerant. Huawei is not responsible for any damage caused by low-quality refrigerant.

Follow these suggestions to choose high-quality refrigerant:

1. Use high-quality brands such as DuPont, Daikin, or Honeywell.
2. Contact the refrigerant producer to confirm the refrigerant authenticity.
3. Check the refrigerant by following the steps shown in [Figure 3-2](#): Keep the refrigerant indoors at a constant temperature and humidity for 24 hours. Use a thermometer to measure the external surface temperature of the refrigerant container, and connect a pressure gauge to the container to measure its internal pressure. Determine the saturation pressure that corresponds to the measured external surface temperature according to [Table 3-7](#) and calculate the deviation from the measured internal pressure. If the deviation is more than 0.2 MPa, the refrigerant is not qualified and should be replaced.

**Figure 3-2** Checking refrigerant



DT53000205

**Table 3-7** Mapping between temperatures and R410A saturation pressure

Temperature (°C)	Saturation Pressure-Surface Pressure (MPa)	Temperature (°C)	Saturation Pressure-Surface Pressure (MPa)	Temperature (°C)	Saturation Pressure-Surface Pressure (MPa)
-40	0.000	-20	0.012	0	0.028
-30	0.000	-10	0.015	10	0.035
-20	0.000	0	0.020	20	0.045
-10	0.000	10	0.025	30	0.055
0	0.000	20	0.030	40	0.065
10	0.000	30	0.035	50	0.075
20	0.000	40	0.040	60	0.085
30	0.000	50	0.045	70	0.095
40	0.000	60	0.050	80	0.105
50	0.000	70	0.055	90	0.115
60	0.000	80	0.060		
70	0.000	90	0.065		
80	0.000				
90	0.000				

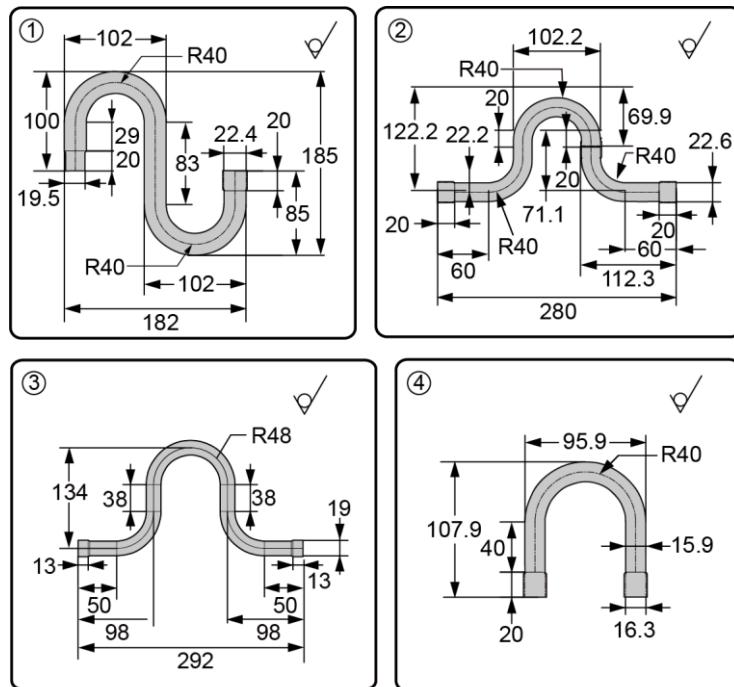
Temperature (°C)	Saturation Pressure-Surface Pressure (MPa)	Temperature (°C)	Saturation Pressure-Surface Pressure (MPa)	Temperature (°C)	Saturation Pressure-Surface Pressure (MPa)
0	0.7	19	1.31	38	2.21
1	0.73	20	1.35	39	2.27
2	0.75	21	1.39	40	2.33
3	0.78	22	1.4	41	2.39
4	0.81	23	1.47	42	2.45
5	0.84	24	1.51	43	2.51
6	0.87	25	1.56	44	2.57
7	0.9	26	1.6	45	2.63
8	0.93	27	1.65	46	2.7
9	0.96	28	1.69	47	2.76
10	0.99	29	1.74	48	2.83
11	1.02	30	1.79	49	2.9
12	1.05	31	1.84	50	2.97
13	1.09	32	1.89	51	3.04
14	1.12	33	1.94	52	3.11
15	1.16	34	1.99	53	3.19
16	1.19	35	2.04	54	3.26
17	1.23	36	2.1	55	3.34
18	1.27	37	2.15	N/A	N/A

### 3.2.2.2 (Optional) Pipe Assembly

- Liquid pipe:
  - $L \leq 60$  m: R410A copper pipe; outer diameter of 5/8 inch (15.88 mm); wall thickness of 1.0 mm; operating pressure  $> 4.5$  MPa
  - $60 < L \leq 100$  m: R410A copper pipe; outer diameter of 3/4 inch (19.05 mm); wall thickness of 1.2 mm; operating pressure  $> 4.5$  MPa
- Gas pipe requirements: R410A copper pipe; outer diameter of 7/8 inch; thickness of 1.2 mm; operating pressure  $\geq 4.5$  MPa
- Thermal insulation foam: thickness  $\geq 9.2$  mm

- Oil trap and inverted trap: Install an oil trap every five to six meters in the vertical direction along the gas pipe and an inverted trap for the inlet and outlet of the outdoor unit to ensure system reliability.

**Figure 3-3** Specifications for oil traps and inverted traps (unit: mm)



NH07S00047

**Table 3-8** Specifications for oil traps and inverted traps

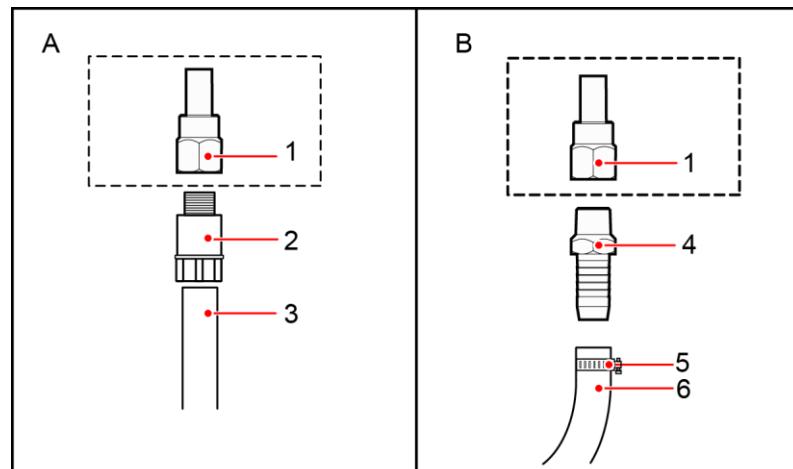
No.	Name	Outer Diameter and Thickness (mm)	Technical Requirements
1	Oil trap	22.2 x 1.2	The flaring inner diameter of the copper pipe is 22.4 mm, and the necking outer diameter is 19.5 mm.
2	Inverted trap of gas pipes	22.2 x 1.2	The flaring inner diameters at both ends of the copper pipe are 22.6 mm.
3	Inverted trap of liquid pipes	19.0 x 1.0	Inner diameters at the two expanded ends of the copper pipe: 19.0 mm
4	Inverted trap of liquid pipes	15.9 x 1.0	The flaring inner diameters at both ends of the copper pipe are 16.3 mm.
Note: The surface of molded parts must be even.			

### 3.2.2.3 (Optional) Humidifier Water Inlet Pipe

Humidifier water inlet pipes are not required by the models without heating or humidification functions.

The humidifier water inlet pipe can be connected using a hose or a rigid pipe. [Figure 3-4](#) shows how to connect the pipe.

**Figure 3-4** Connecting a water inlet pipe



DT20000009

(1) Connector with inner screw threads: G 1/2 inch, delivered with the water inlet pipe for the air conditioner

(4) Pagoda connector: G 1/2 inch; connected to a pagoda connector with outer screw threads

(2) Rigid pipe conversion adapter: G 1/2 inch; connected to a rigid pipe with outer screw threads

(5) Hose clamp

(3) Rigid pipe: made of PP-R or other materials

(6) Hose: made of EPDM or other materials



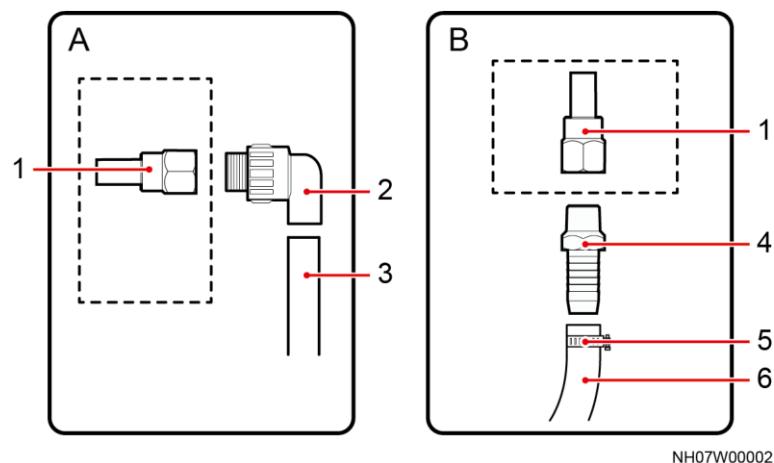
#### NOTE

The object shown in the dotted line box is the water inlet pipe connector with inner screw threads delivered with air conditioners. The hose clamp as shown by (5) in the preceding figure is provided in standard configuration. Other parts are not provided and need to be purchased.

### 3.2.2.4 Drainpipe

The drainpipe can be connected using a hose or a rigid pipe. [Figure 3-5](#) shows how to connect the pipe.

**Figure 3-5** Connecting a drainpipe

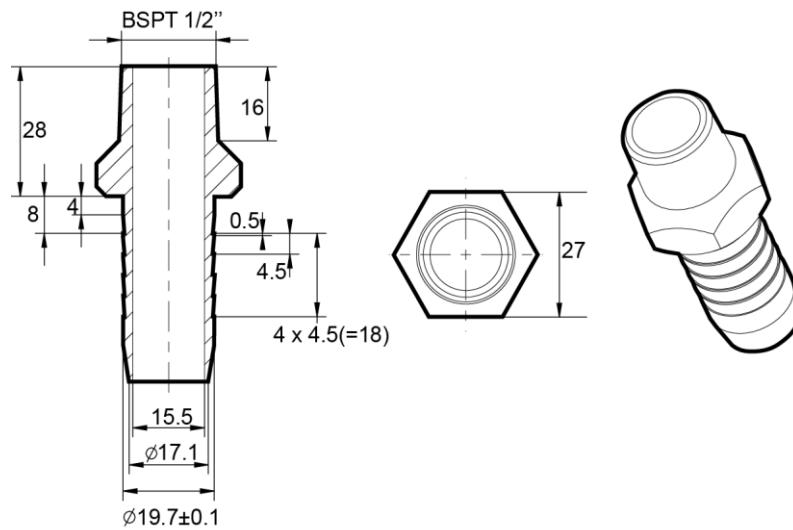


- (1) Connector with inner screw threads: BSPP 1/2 inch; delivered with air conditioners  
(2) Conversion adapter: BSPT 1/2 inch; connected to a rigid pipe with external threads  
(3) Rigid pipe: made of PP-R, C-PVC, or other materials  
(4) Pagoda connector: For details, see [Figure 3-6](#).  
(5) Hose clamp  
(6) Hose: inner diameter of 3/4 inch; made of EPDM or other materials

**NOTE**

The object shown in the dotted line box is the drainpipe connector with inner screw threads delivered with air conditioners. The hose clamp as shown by (5) in the preceding figure is provided in standard configuration. Other parts are not provided and need to be purchased.

**Figure 3-6** Pagoda connector (unit: mm)

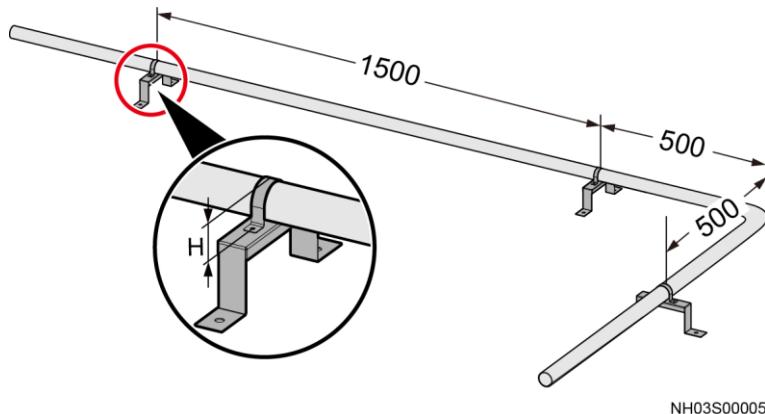


DT20000010

### 3.2.2.5 Pipe Support

Figure 3-7 shows supports for refrigerant pipes and water pipes. The actual appearance of the supports will be different based on onsite situations.

Figure 3-7 Pipe supports (unit: mm)



#### NOTE

- The height of the U-shaped pipe clamp is 5 mm less than the pipe diameter (including the thermal insulation foam). Pipe supports are subject to engineering procurement.
- It is recommended that pipe supports and pipe clamps be made of 304 stainless steel.
- Install a support every 1500 mm for the straight sections of pipes, and 500 mm away from each bending point in turning sections.

### 3.2.2.6 Cable



#### NOTICE

- The site ground resistance must be less than 0.1 ohm.
- The cable flame spread rating must be at least VB.

Table 3-9 lists the cables and devices to be connected onsite. When connecting signal cables, fit them with protective hoses.

Table 3-9 Cable specifications

Installation Scenario	Item	Specifications	Remarks
Indoor unit	Power cable (optional)	Electrical power cable, 600 V/1000 V, ZA-YJV, 5 x 10 mm <sup>2</sup> , black (5 cores: brown, black, gray, blue, and yellow/green), 80 A, CE	<p>The length is determined based on site survey.</p> <ul style="list-style-type: none"><li>Dual power supplies: 2 PCS</li><li>Single power</li></ul>

Installation Scenario	Item	Specifications	Remarks
			supply: 1 PCS
	OT terminal	Naked crimping terminal, OT, 10 mm <sup>2</sup> , M6, 60 A, tin plating, naked ring terminal	Delivered with the fittings
	Cord end terminal	Common terminal, single cord end terminal, conductor cross section 10 mm <sup>2</sup> , length 22 mm, 50 A, insertion depth 12 mm, ivory	Delivered with the fittings
Outdoor unit	Power cable (optional)	Electrical power cable, 600 V/1000 V, ZA-RVV, 5 x 2.5 mm <sup>2</sup> , black (five cores: brown, black, gray, blue, and yellow/green), 27 A, outdoor cable, CE	The length is determined based on site survey.
	OT terminal	Naked crimping terminal, OT, 2.5 mm <sup>2</sup> , M6, 27 A, tin plating, 16–14 AWG, blue	Delivered with the fittings
	Cord end terminal	Naked crimping terminal, single-wire cord end terminal, 2.5 mm <sup>2</sup> , 12.5 A, tin plating, insertion depth 8 mm, blue	Delivered with the fittings
Indoor and outdoor units	Signal cable to the indoor and outdoor units (optional)	Electrical power cable, 300 V, SJTW, 3 x 16 AWG, black (three cores: black, white, and green), 10 A, shielded outdoor cable, UL	The cable applies to the RS485 communication connection. The length is determined based on site survey.
	Signal cable to the indoor and outdoor units (optional)	Electrical power cable, 450 V/750 V, H07RN-F, 2 x 1 mm <sup>2</sup> , black (two cores: brown and blue), 10 A, rubber power cable, VDE	The cable applies to the dry contact connection. The length is determined based on site survey.
	Cord end terminal for the cable	Naked crimping terminal, single-wire cord end terminal, 1.5 mm <sup>2</sup> , 7.5 A, tin plating, insertion depth 8 mm, red	Delivered with the fittings
Teamwork control	Teamwork control network cable (optional)	Symmetric twisted-pair cable, 100 ohm, enhanced category 5 cable, aluminum foil shield, 0.52 mm, 24 AWG, eight cores, four pairs of PANTONE 430U, equipped with plug	1 PCS (10 m)

Installation Scenario	Item	Specifications	Remarks
Water sensor monitoring	Water detection cable	Electrical power cable, 5 m, 22 AWG, black, (2 x T0.5 <sup>2</sup> , orange), (2 x 22UL1007, black), (2 x T0.5 <sup>2</sup> , orange)	Delivered with the fittings

### 3.2.3 Installation Layout Principles

Layout principles for installing the NetCol5000-A are as follows:

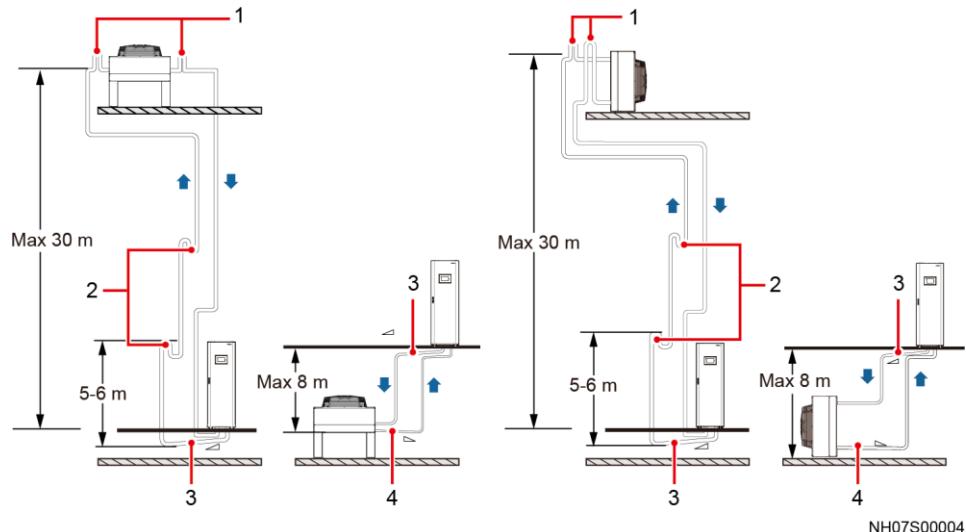
- If the outdoor unit is placed higher than the indoor unit, the vertical distance between them should be less than or equal to 30 m. An oil trap should be installed every 5 m to 6 m in the vertical direction along the gas pipe to ensure system reliability. [3.2.2.2 \(Optional\) Pipe Assembly](#) shows the oil trap and inverted U-shaped trap and their specifications.
- If the indoor unit is placed higher than the outdoor unit, the vertical distance between them should be less than or equal to 8 m.



## NOTICE

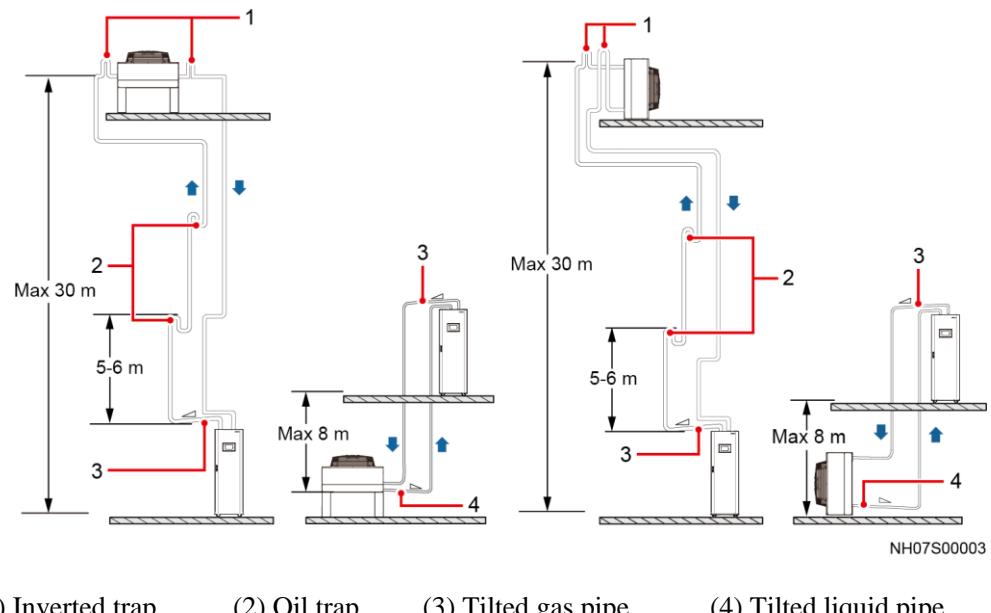
- When calculating the height difference, the compressor base is regarded as the baseline for the indoor unit, and the condenser top is regarded as the baseline for the outdoor unit.
- The inverted trap should be higher than the top copper pipe of the condenser.
- In the figure, is a sign of a tilt, indicating that the scale of the pipe tilting is at least 1:200. The pipe tilting direction should be consistent with the hypotenuse of the right triangle.
- If the indoor unit is placed higher than or equal to the outdoor unit, inverted traps or oil traps are not needed.
- When pipes are routed through the wall or floor of the main equipment room, protective tubes should be installed. Sealing measures should be taken between the pipes and protective tubes (firestop putty recommended).

Figure 3-8 Bottom pipe routing scenario



(1) Inverted trap      (2) Oil trap      (3) Tilted gas pipe      (4) Tilted liquid pipe

**Figure 3-9** Top pipe routing scenario



## 3.3 Unpacking

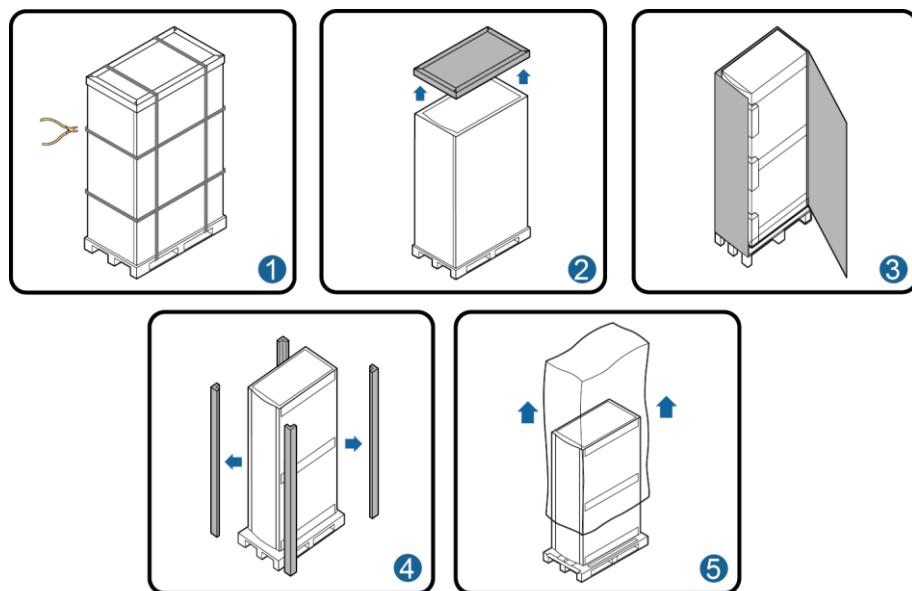
### Procedure

**Step 1** Inspect the outer packing for signs of damage. If any damage is found, contact the shipping company immediately.

**Step 2** Unpack the product.

1. Remove the straps, top cover, outer packing, cushioning materials, and then plastic film, as shown in [Figure 3-10](#).

**Figure 3-10 Unpacking**



NH07H00003

2. Inspect the cabinet exterior for signs of collision or scratches. If any damage is found, contact the shipping company immediately.

**Step 3** Check the type and quantity of fittings against the packing list. If fittings are missing or inconsistent with those in the packing list, record the information and contact your local Huawei office immediately.

----End

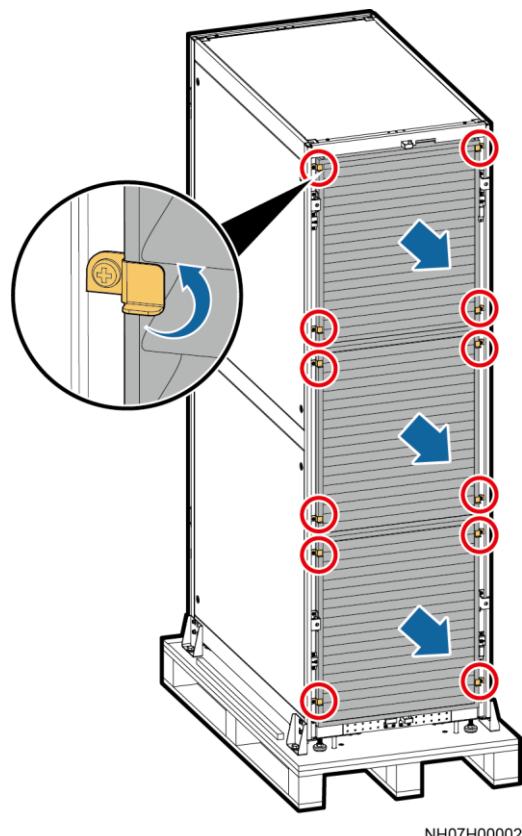
## 3.4 Checking the Nitrogen Pressure

### Procedure

**Step 1** Open the door lock using a key, and open the cabinet rear door.

**Step 2** Unfasten the rotating baffle plates, and remove the air filters.

**Figure 3-11** Removing an air filter



 **NOTE**

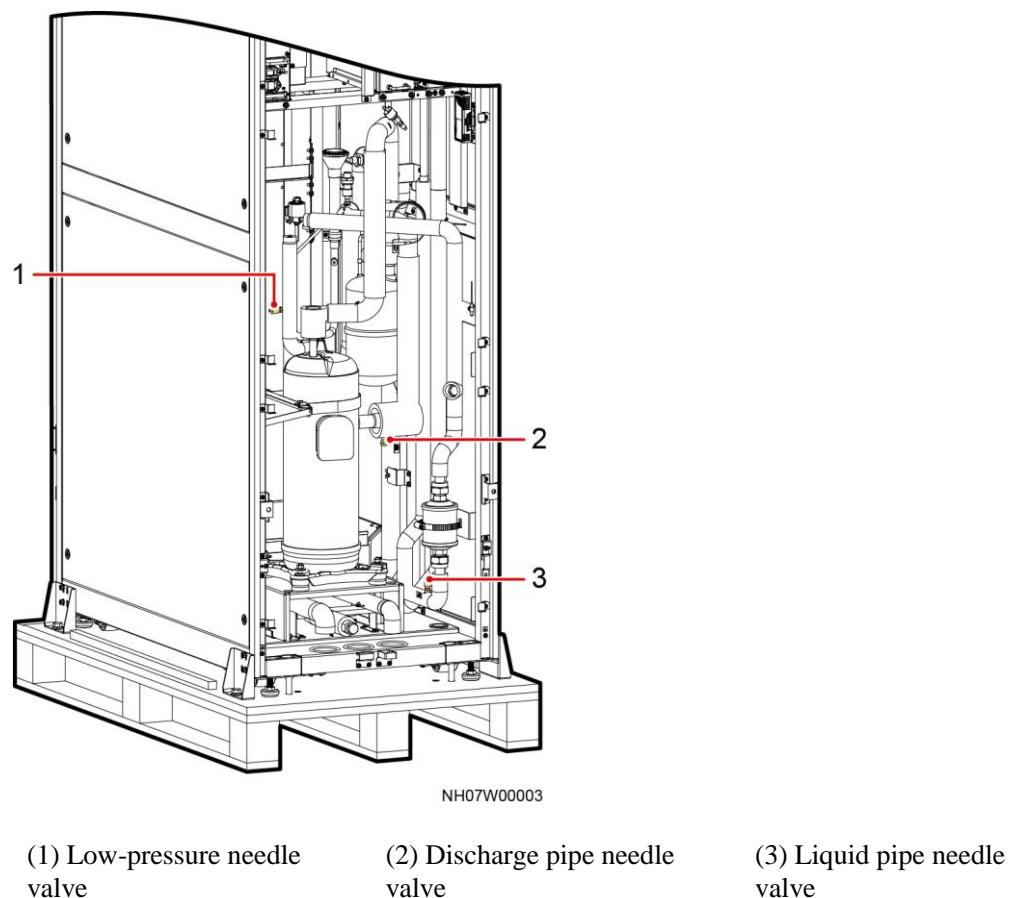
If the baffle plates cannot be rotated manually, loosen the screws that secure the baffle plates using a Phillips screwdriver until they can be rotated open manually.

**Step 3** Take out the desiccant bag.

**Step 4** Check whether any of the needle valve bonnets shown in [Figure 3-12](#) is missing by turns.

1. If they do not exist, contact Huawei technical support.
2. If they exist, remove each valve bonnet and use it to press the valve plugs in turn. If nitrogen is exhausted, the system is working properly. If no nitrogen is exhausted, contact Huawei technical support.

**Figure 3-12** Positions of the needle valves



----End

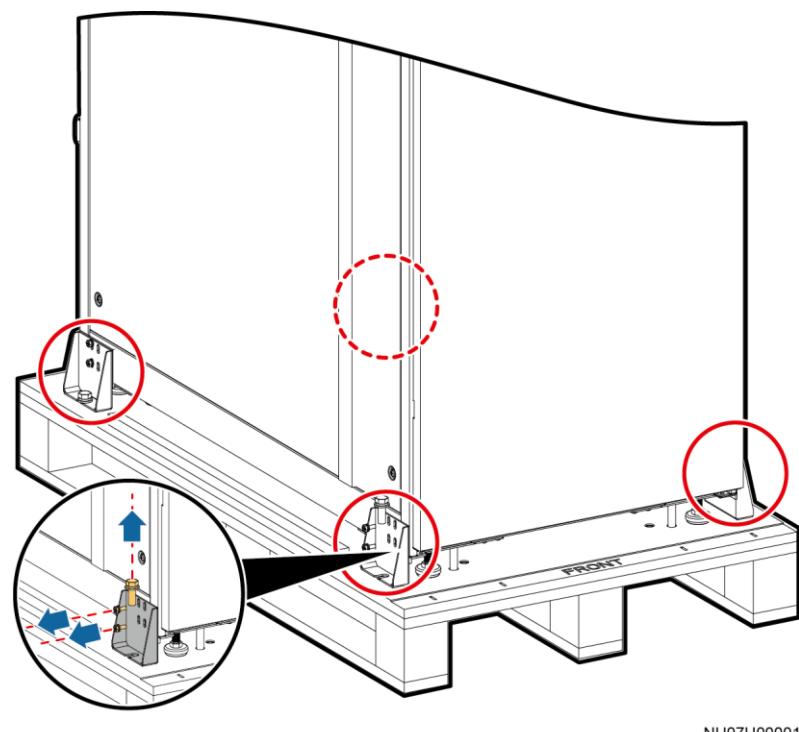
## 3.5 Removing the Transport Fixing Sheet Metals

### 3.5.1 Removing the Pallet

#### Procedure

- Step 1** Use a 10# socket wrench to remove the eight M6x16 screws securing the fasteners to the cabinet, and use an 18# socket wrench to remove the four M12x35 screws securing the fasteners to the pallet, as shown in [Figure 3-13](#).

**Figure 3-13** Removing the screws



NH07H00001

**Step 2** Remove the cabinet from the pallet.

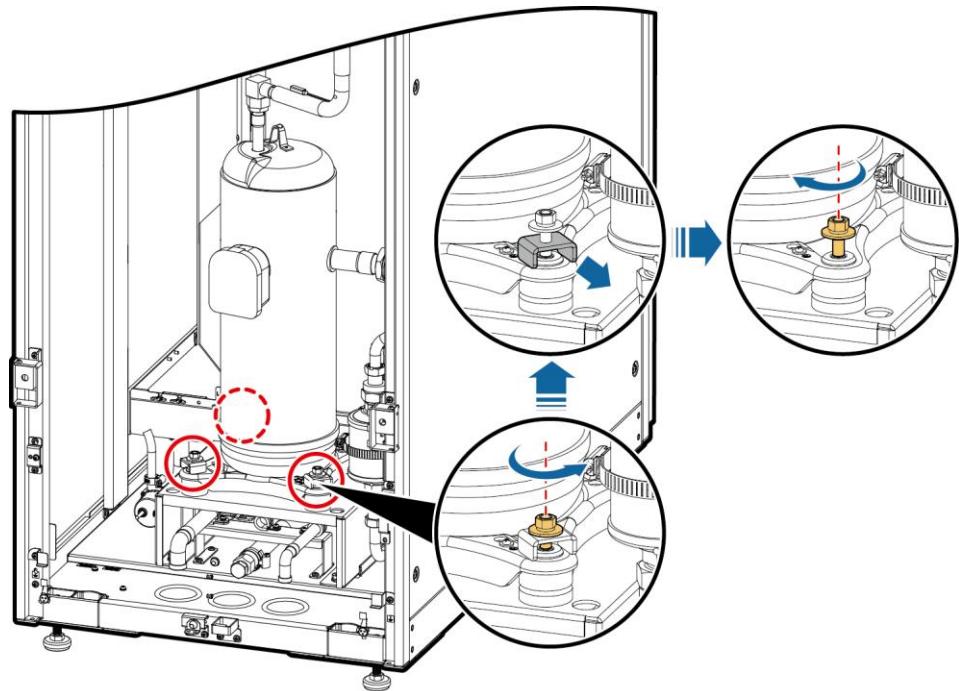
----End

### 3.5.2 Removing the Transport Fasteners from the Compressor

#### Procedure

**Step 1** Loosen the three bolts on the compressor transport fasteners using a 13# solid wrench.

**Figure 3-14** Removing the transport fasteners from the compressor



NH07H00032

**NOTE**

- Do not remove the bolts directly.
- Put away the removed transport fasteners so that you can reinstall them if the indoor unit is to be transported again in the container scenario.

**Step 2** Remove the transport fasteners.

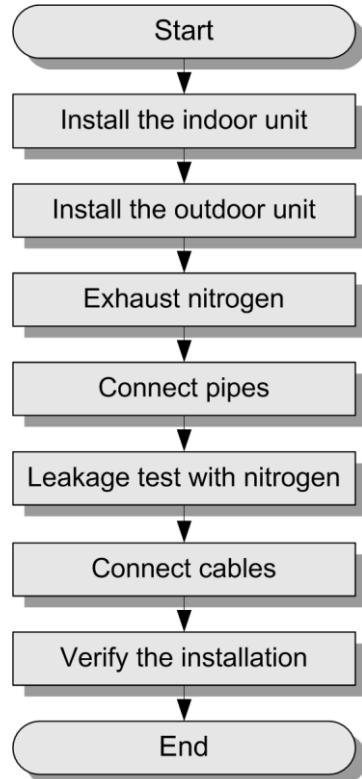
**Step 3** Tighten the bolts on the compressor again to a torque of 12 N·m.

----End

## 3.6 Install Process

Figure 3-15 shows the process for installing an indoor unit.

**Figure 3-15** Process for installing an indoor unit



## 3.7 Installing Indoor Units

### 3.7.1 Installing the Air Conditioner Cabinet (with Base)

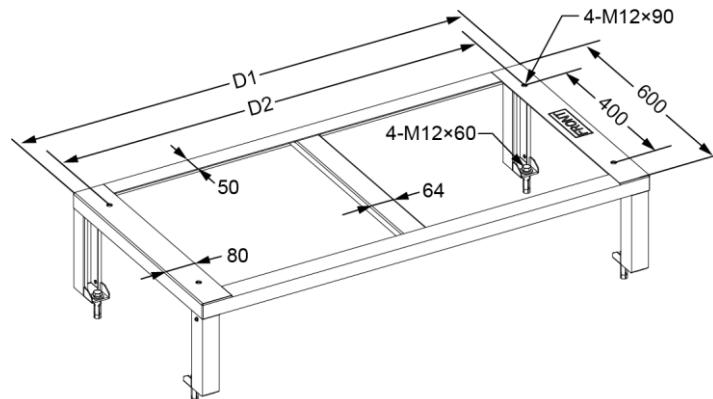
#### Procedure

**Step 1** (Optional) Make the base.



If the base is not need to make onsite, skip this step.

**Figure 3-16** Base (Unit: mm)



NH07S00049

 **NOTE**

- Shock absorption bars (EPDM rubber, 5 mm thick) are need to install between the ground and the base.
- 1100 mm depth: D1 = 1100 mm, D2 = 980 mm. 1200 mm depth: D1 = 1200 mm, D2 = 1080 mm.
- You are advised to use angle steel, square steel or channel steel. Width of 50 mm and thickness of 3 mm to 5 mm is recommended.
- When the width of angle steel is more than 50 mm, it is interfering with the cable routing holes. Cut out the part on the angle steel to avoid interfering. If the width is less than or equal to 50 mm, skip this step.
- Control the welding process and avoid excessive error.
- The M12 bolt used for securing the cabinet to its base must be at least 80 mm long.
- The base bearing capacity must be at least 2 t.
- Connect adjacent bases in parallel using bolts. Ensure that each base is secured to the ground through at least four corners.

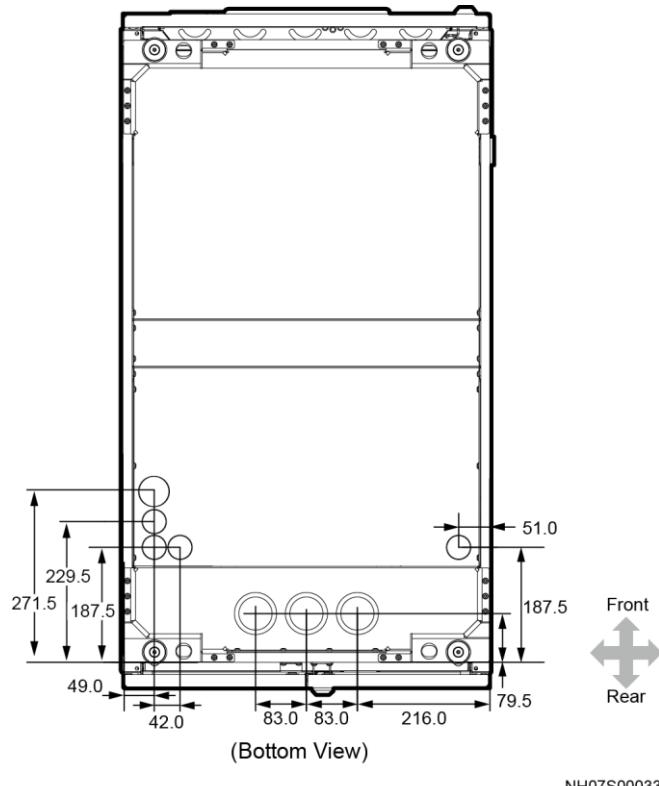
**Step 2** (Optional) Determine the installation position of the air conditioner. Mark cable holes on the floor based on [Figure 3-17](#), and make the cable holes.



## NOTICE

- Making cable holes on the floor is required only when the cables or pipes are routed from the bottom and there is an ESD floor under the air conditioner.
- Drill holes based on the actual situation. Avoid drilling unnecessary holes from which mice may enter into equipment and damage the equipment.

**Figure 3-17** Positions of holes at the cabinet bottom (unit: mm)



**Step 3** Place a cabinet onto the base and adjust the cabinet position to ensure that the mounting holes in the cabinet and base are aligned with each other.

**Step 4** Level the cabinet using an adjustable wrench, as shown in [Figure 3-18](#).

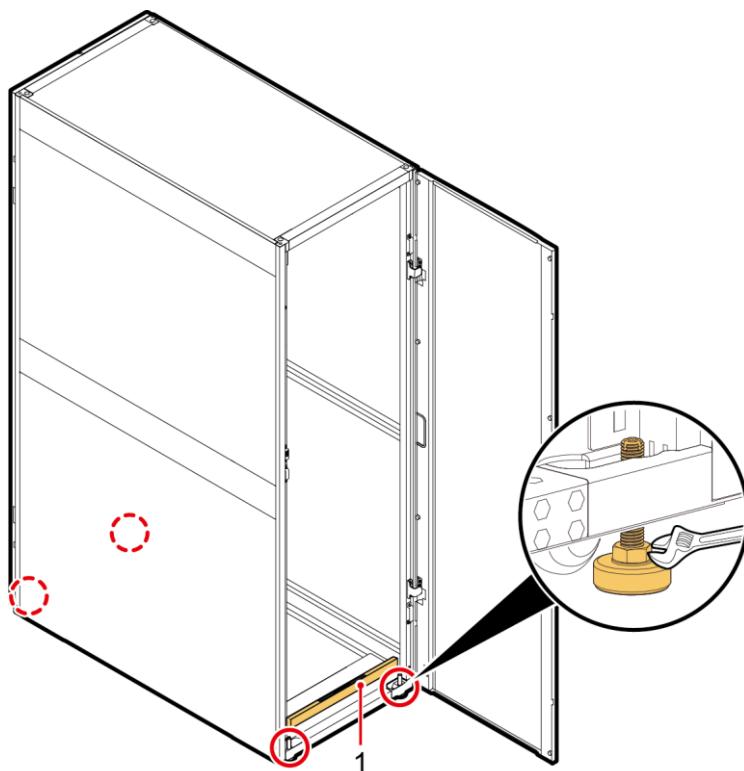
Before leveling the cabinet, use a measuring tape to check that the vertical distance between the top of the cabinet and the floor is 2000 mm (+3 mm) for a 2000 mm high cabinet or 2200 mm (+3 mm) for a 2200 mm high cabinet. Ensure that the cabinet is level using a level.



## NOTICE

- Do not remove the anchor bolts. Otherwise, rework is required if the cabinet height does not meet requirements.
- Anchor bolt adjustment method: Rotate anchor bolts clockwise to raise the cabinet and rotate them counterclockwise to lower the cabinet. Anchor bolts can be adjusted within a range of 0–8 mm.
- Levelness check standard: Ensure that the cabinet is level in width and depth directions when leveling the cabinet. Put a level at the bottom of the cabinet in width and depth directions and check that the air bubble is in the middle between the two lines marked on the glass tube, as shown in [Figure 3-18](#).

**Figure 3-18** Leveling a cabinet



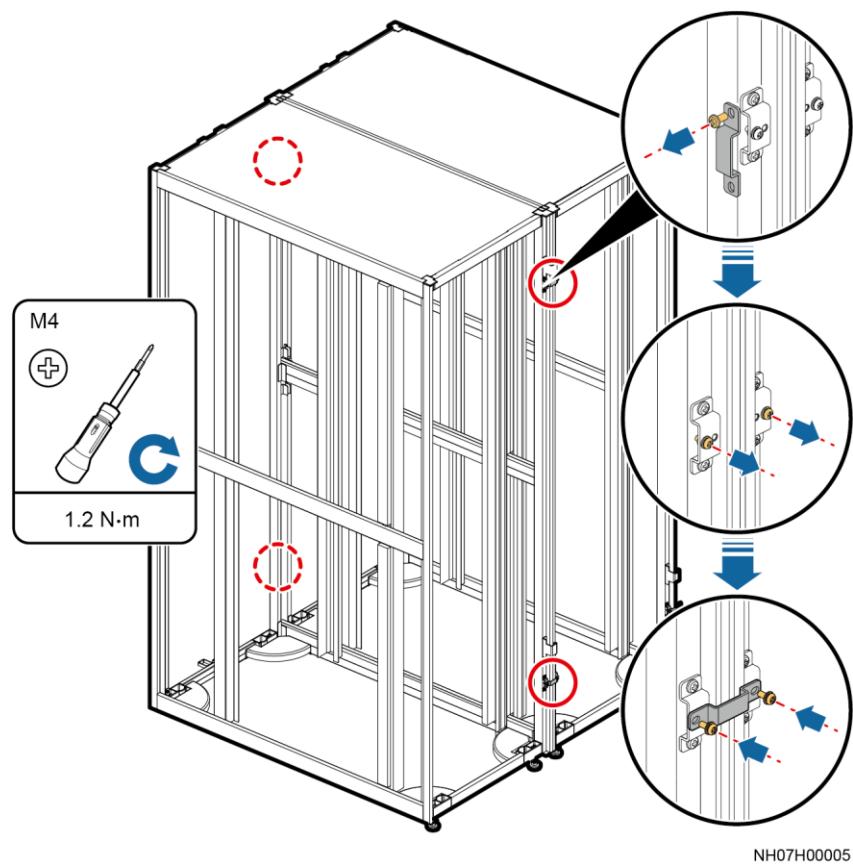
NH07H00006

(1) Level

**Step 5** (Optional) Combine the cabinets, as shown in [Figure 3-19](#).

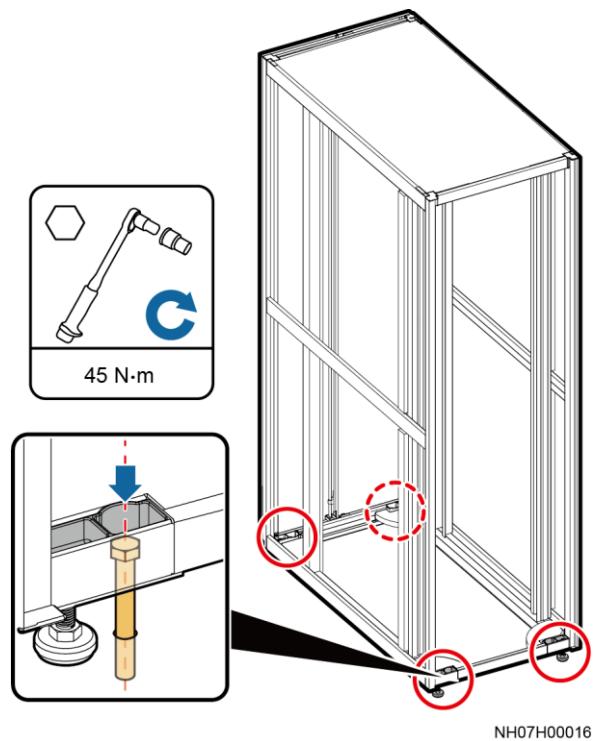
1. Remove the M5 tapping screws that secure the connecting kit and then remove the connecting kit.
2. Remove the M4 screw assembly from the position for combining cabinets.
3. Combine the adjacent cabinets by installing the connecting kit and M4 screw assembly at the combination positions on the front and rear doors of the cabinets.

**Figure 3-19** Combining cabinets



**Step 6** Secure the cabinets using the M12 bolts in the fittings bag.

**Figure 3-20** Securing a cabinet



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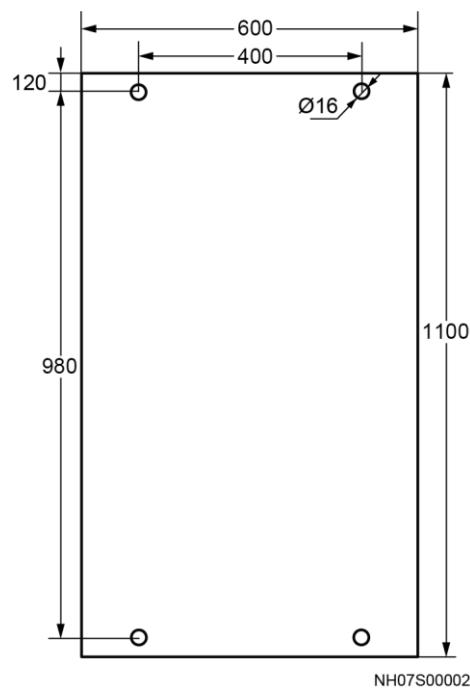
----End

### 3.7.2 Installing the Air Conditioner Cabinet (Without Base)

#### Procedure

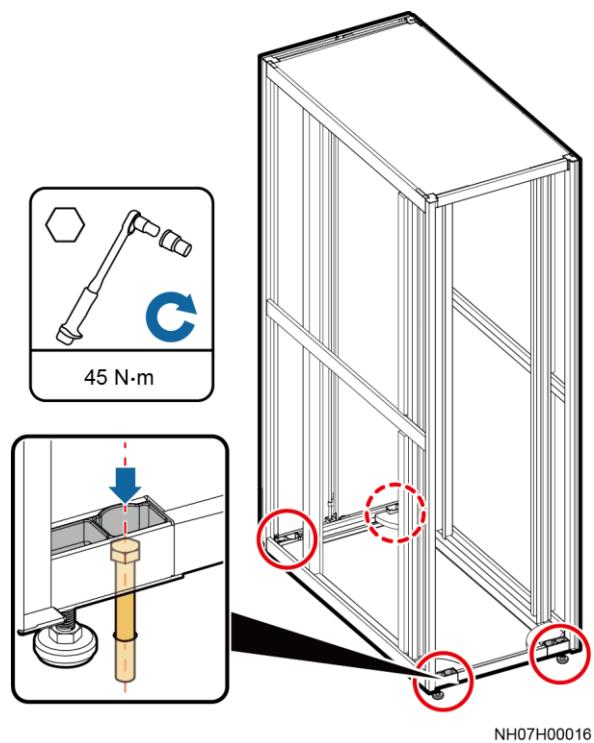
**Step 1** Determine the position for installing the cabinet. Mark mounting holes based on the drawings, as shown in [Figure 3-21](#).

**Figure 3-21** Distances between mounting holes (unit: mm)



- Step 2** Drill a hole in each mounting hole position using a hammer drill.
- Step 3** Move the cabinet over its castors to the installation position.
- Step 4** Level and combine the cabinets by referring to [Figure 3-18](#) and [Figure 3-19](#).
- Step 5** Secure the air conditioner cabinet to the ground using the M12 bolts in the fittings bag.

**Figure 3-22 Securing a cabinet**



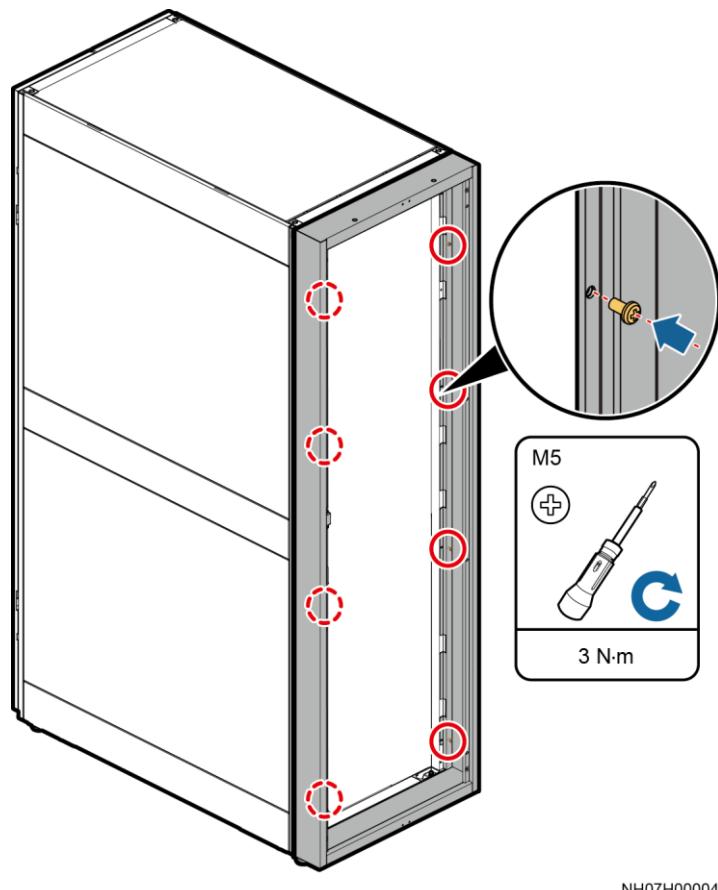
----End

### 3.7.3 (Optional) Installing the Enclosure Frame

#### Procedure

- Step 1** Open the front door. Remove the power cable of the display screen, FE cable, and the ground cable for the front door. Then pull the front door upwards and remove it.
- Step 2** Remove one bolt fixing plate, two connection plates, and two hinges.
- Step 3** Move the enclosure frame to the front door, and adjust the anchor bolts of the enclosure frame to ensure that the enclosure frame has the same height with the cabinet.
- Step 4** Install the enclosure frame to the front door using eight M5 tapping screws.

**Figure 3-23** Installing an enclosure frame

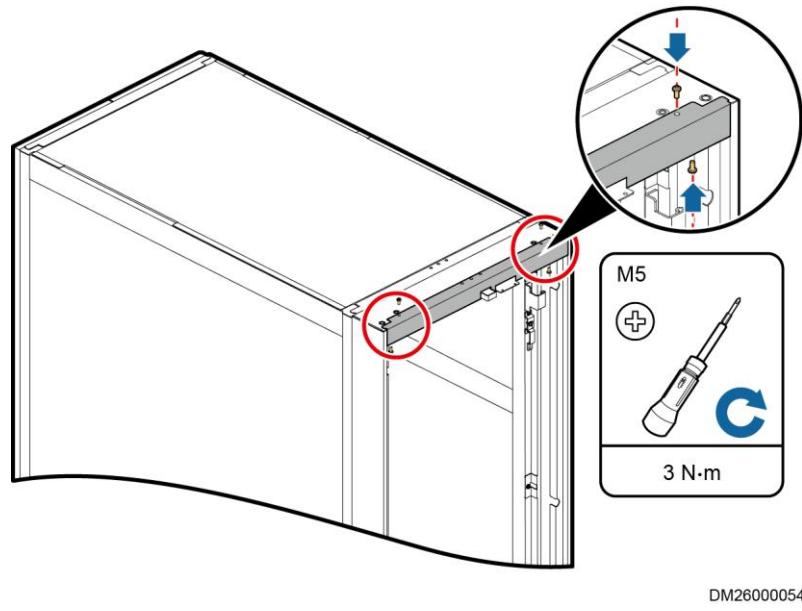


**NOTE**

The positions of the bolt fixing plate, hinges, and connecting plates vary depending on the cabinet model.

**Step 5** Secure one top sealing plate to the enclosure frame using four M5 tapping screws.

**Figure 3-24** Installing a top sealing plate



DM26000054

**Step 6** Install the hinges and connecting plates removed in [Step 2](#) on the corresponding positions on the enclosure frame.

**Step 7** Install the cabinet front door on the enclosure frame.

**NOTE**

When installing the front doors, do not mix up the doors of different air conditioners. Ensure that the bar code in the lower left corner on the back of the LCD is consistent with the bar code on the frame.

**Step 8** Install the power cable for the display screen and the FE cable. Connect the ground cable under the front door to the enclosure frame according to the label on the enclosure frame.

**Step 9** Cut the cable ties securing the LCD power cable to the cabinet, and ensure that the door can be opened and closed smoothly.

**----End**

## 3.8 Exhausting Nitrogen

### Context



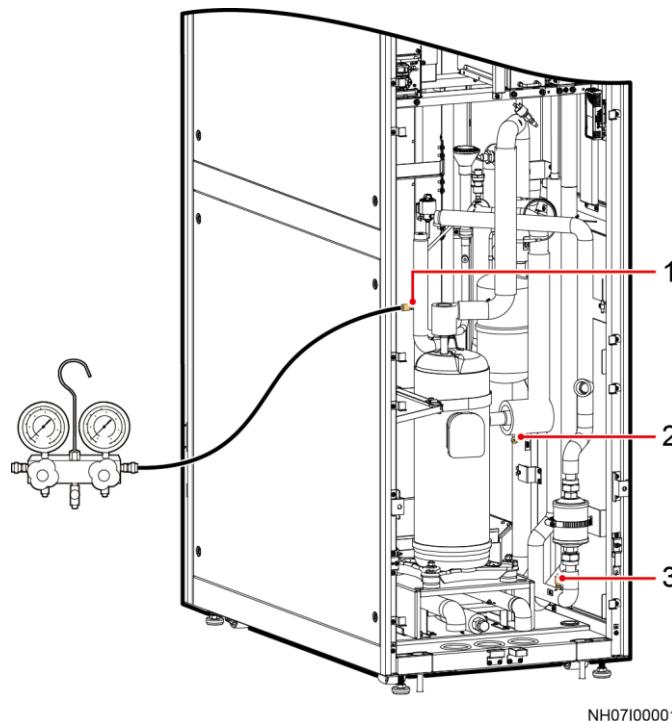
#### DANGER

Before welding refrigerant pipes, fully exhaust nitrogen from the refrigerant pipes to avoid explosion and injuries.

## Procedure

**Step 1** Remove the bonnet of the low-pressure needle valve shown in [Figure 3-25](#) and connect the pressure gauge leather hose to the needle valve.

**Figure 3-25** Exhausting nitrogen



- (1) Low-pressure needle valve      (2) Exhaust pipe needle valve      (3) Liquid pipe needle valve

**Step 2** Open the pressure gauge valve. Loud noises of air flow are generated at first and then disappear gradually.

**Step 3** After the air is exhausted, remove the pressure gauge and install the valve bonnet.

**Step 4** Continue exhausting nitrogen from the exhaust pipe needle valve and liquid pipe needle valve by performing [Step 1–Step 3](#).

----End

## 3.9 Connecting Pipelines



## NOTICE

- The thickness of heat insulation cottons should not be less than 9.2 mm.
- When purchasing water pipes, ensure that the water pipe with thermal insulation foam warped can go through the ports on the bottom and top boards.

### 3.9.1 Connecting the Refrigerant Pipe

#### Precautions

Refrigerant pipes can be routed from the bottom or top. Select the pipe routing based on the actual situation.



## DANGER

Before welding, exhaust all nitrogen from the refrigerant pipe to avoid explosion and personal injury.



## NOTICE

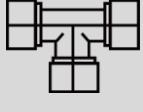
- When connecting the indoor and outdoor units, you are advised to weld pipes to the outdoor unit first. Seal the pipe after welding if the welding break exceeds 15 minutes to prevent dust and moisture from entering the pipe.
- Before the welding, take measures to protect needle valves (liquid pipe need valve) within 500 mm from the welding position by removing the valve plug or wrapping the valve with a piece of wet cloth.
- Take protective measures, such as spreading a piece of wet cloth, around the welding position, to avoid burning the bottom panel, top panel, side panel, internal components, needle valves, other pipes, thermal insulation foam, power cables, labels, and tags.
- During the welding, avoid exposing the refrigerant pipes for over 15 minutes. Otherwise, system reliability is affected.
- To avoid leakage of ventilation channels and damage to copper pipes, seal the holes after the pipes are routed through the bottom panel. Seal the top of the copper pipes to prevent foreign matter from entering the refrigerant pipes.
- After welding copper pipes that are excessively long or with bends, blow nitrogen into the pipes to clean foreign matter so that other components will not be affected.
- The refrigerant pipe should be wrapped with thermal insulation foam.
- Avoid elbows and ensure that the connection between the indoor and outdoor units is the shortest.

When selecting the refrigerant pipes, note the following:

1. Avoid elbows and ensure that the connection between the indoor and outdoor units is the shortest.

2. After determining the best pipe route between the indoor and outdoor units, calculate the number of the components that cause local resistance loss, for example, elbows, and convert them into the equivalent length to straight pipes, as shown in [Table 3-10](#).
3. The total length of pipes connecting the indoor and outdoor units equals to the equivalent length of the straight pipes plus the length of the straight pipes connecting the indoor and outdoor units.
4. You are advised to select the pipes based on the total length of the pipes connecting the indoor and outdoor units, because different pipe diameters influence the voltage drop and performance of the cooling system. For details, see [Table 3-11](#).
5. Pipe length mentioned in this document is equivalent.

**Table 3-10** Equivalent length of components

Copper Pipe Outer Diameter (in.)	45° Bend (Unit: m)	90° Bend (Unit: m)	180° Bend (Unit: m)	T-shaped Three-Way Valve
				
3/8	0.12	0.2	0.4	0.6
1/2	0.14	0.25	0.5	0.65
5/8	0.17	0.3	0.6	0.7
3/4	0.2	0.35	0.7	0.8
7/8	0.24	0.42	0.8	1.2
1	0.28	0.5	1	1.3
1-1/8	0.32	0.6	1.2	1.4

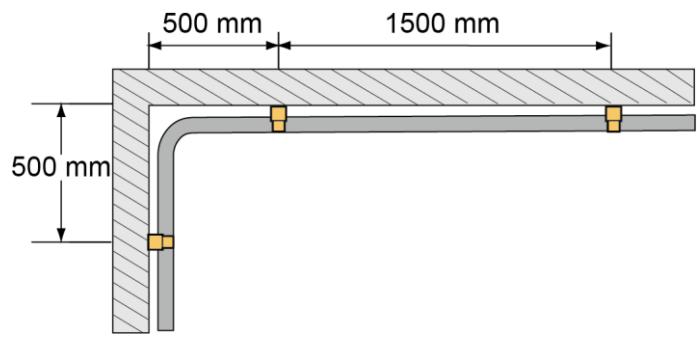
**Table 3-11** Recommended pipe specifications

Pipe Length (m)	Recommended Gas Pipe Diameter	Recommended Liquid Pipe Diameter
L ≤ 60 m	7/8 inch (22.22 mm)	5/8 inch (15.88 mm)
60 m < L ≤ 100 m	7/8 inch (22.22 mm)	3/4 inch (19.05 mm)
If the one-way pipe length is longer than 100 m, contact Huawei technical support.		

To dampen noises generated by the equipment due to vibration, refrigerant pipe supports should be installed as required by [Figure 3-26](#).

- When the direction of the refrigerant pipe changes, add a support at the position that is 500 mm away from the changing point.
- If the refrigerant pipe is straight, add a support every 1500 mm.

**Figure 3-26** Routing the refrigerant pipe



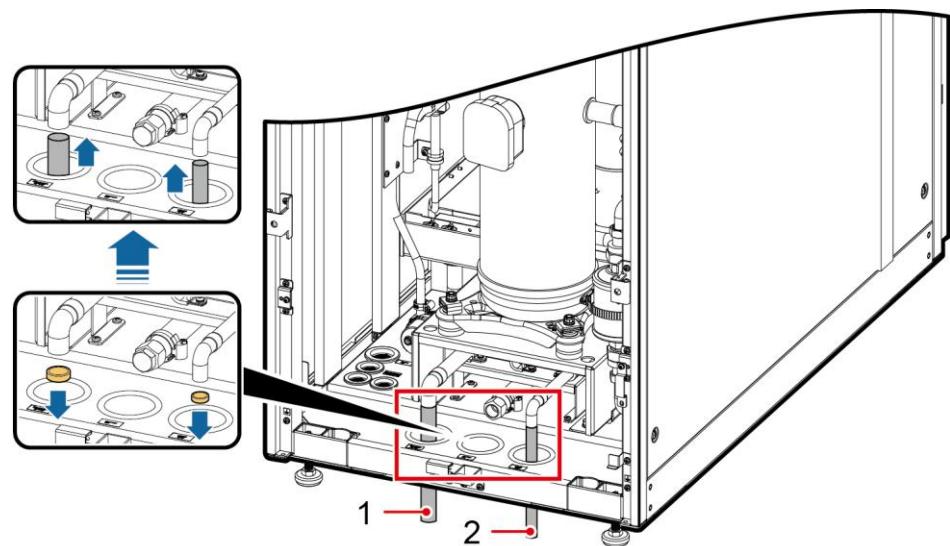
**NOTE**

Onsite personnel are responsible for preparing the required materials and installing the supports.

## Bottom Pipe Routing

**Step 1** Remove the plugs from the bottom refrigerant pipe using a welding torque, as shown in Figure 3-27.

**Figure 3-27** Bottom pipe routing



(1) Gas pipe

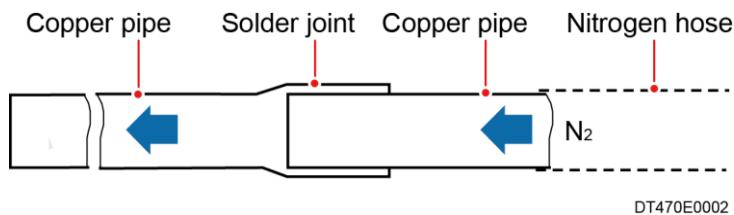
(2) Liquid pipe



## NOTICE

- Be careful during welding to avoid burning components, such as rubber rings, inside the cabinet.
- Use a rubber hose to connect the nitrogen cylinder which connecting the reducing valve and the end of the copper pipe, then fill nitrogen at 0.03–0.05 MPa into the copper pipe to avoid internal oxidation, as shown in [Figure 3-28](#).
- When welding a gas pipe, gently inject nitrogen into the pipe through the exhaust pipe needle valve.
- When welding a liquid pipe, gently inject nitrogen into the pipe through the liquid pipe needle valve.

**Figure 3-28** Welding pipes



DT470E0002

- Step 2** Cut a cross in the rubber ring using a utility knife and route the pipe wrapped with the thermal insulation tube through the hole.



## NOTICE

Ensure that the rubber ring is not disconnected. If the rubber ring is disconnected or damaged, seal the gaps around the pipes with mastic cement or thermal insulation foam.

- Step 3** Connect the gas and liquid pipes to the gas and liquid pipes of the outdoor unit respectively.

----End

## Top Pipe Routing

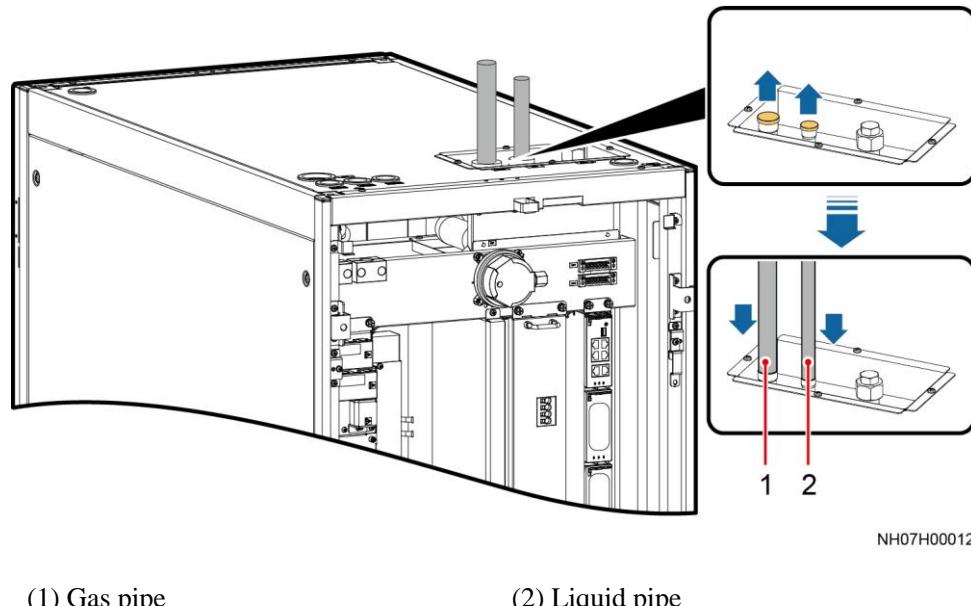


## NOTICE

When routing pipes from the top, do not route the pipes over servers. If unavoidable, take measures to protect the servers from being affected by pipe leaks.

- Step 1** Remove the plugs from the top refrigerant pipe using a welding torque, as shown in [Figure 3-29](#).

**Figure 3-29** Top pipe routing



**Step 2** Connect the gas and liquid pipes to the gas and liquid pipes of the outdoor unit respectively.

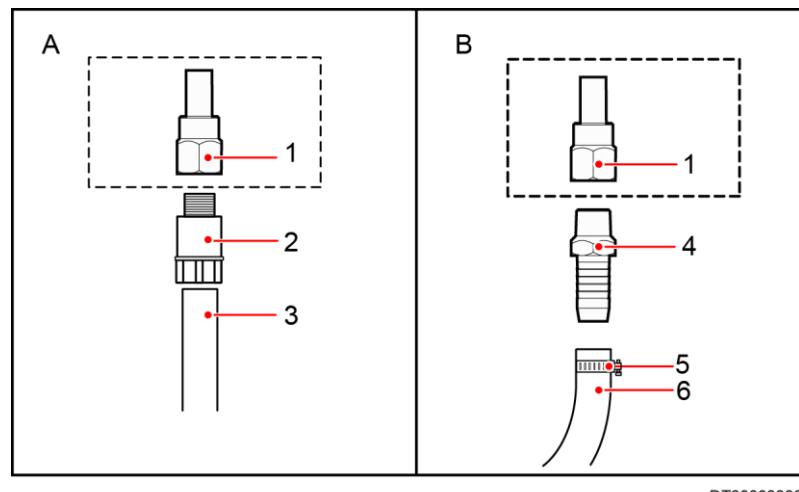
-----End

### **3.9.2 Connecting the Humidifier Water Inlet Pipe**

## Context

The humidifier water inlet pipe can be connected using a hose or a rigid pipe. Figure 3-4 shows how to connect the pipe.

**Figure 3-30** Connecting a water inlet pipe



### (1) Connector with inner screw

## (2) Rigid pipe conversion

### (3) Rigid pipe:

threads: G 1/2 inch, delivered with the water inlet pipe for the air conditioner	adapter: G 1/2 inch; connected to a rigid pipe with outer screw threads	made of PP-R or other materials
(4) Pagoda connector: G 1/2 inch; connected to a pagoda connector with outer screw threads	(5) Hose clamp	(6) Hose: made of EPDM or other materials

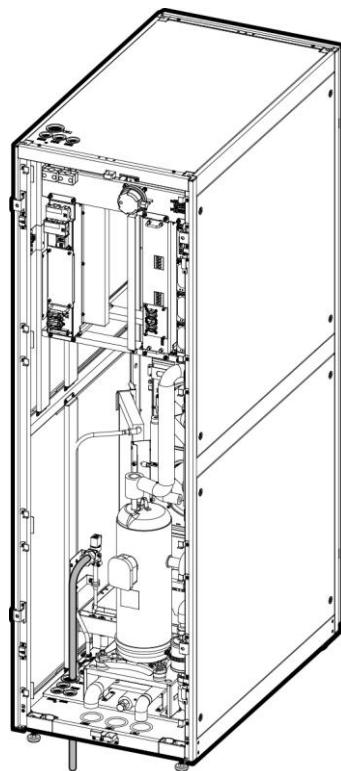
 **NOTE**

The object shown in the dotted line box is the water inlet pipe connector with inner screw threads delivered with air conditioners. The hose clamp as shown by (5) in the preceding figure is provided in standard configuration. Other parts are not provided and need to be purchased.

## Bottom Pipe Routing

- Step 1** Straighten the water inlet pipe delivered with the air conditioner, and route it from the inside to the outside through the water inlet hole at the bottom of the air conditioner.

**Figure 3-31** Downward routing of the water inlet pipe



 **NOTE**

The other end is a reserved G 1/2 inch connector with inner screw threads. Connect the other end to a hose or rigid pipe based on site requirements.

- Step 2** Connect the external water inlet pipe based on the actual condition and wrap the pipe with thermal insulation foam.

**----End**

## Top Pipe Routing

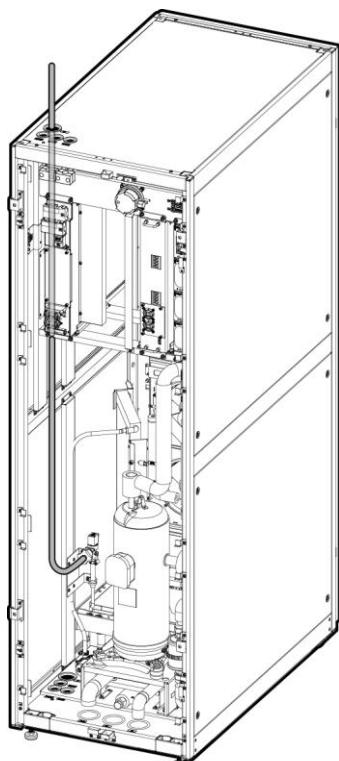


### NOTICE

When routing pipes from the top, do not route the pipes over servers. If unavoidable, take measures to protect the servers from being affected by pipe leaks.

- Step 1** Straighten the water inlet pipe delivered with the air conditioner, and route it from the inside to the outside through the water inlet hole on the top of the air conditioner.

**Figure 3-32** Upward routing of the water inlet pipe



### NOTE

- The other end is a reserved G 1/2 inch connector with inner screw threads. Connect the other end to a hose or rigid pipe based on site requirements.
- Secure the water inlet pipe inside the cabinet to the left post of the cabinet using cable ties.

- Step 2** Connect the external water inlet pipe based on the actual condition and wrap the pipe with thermal insulation foam.

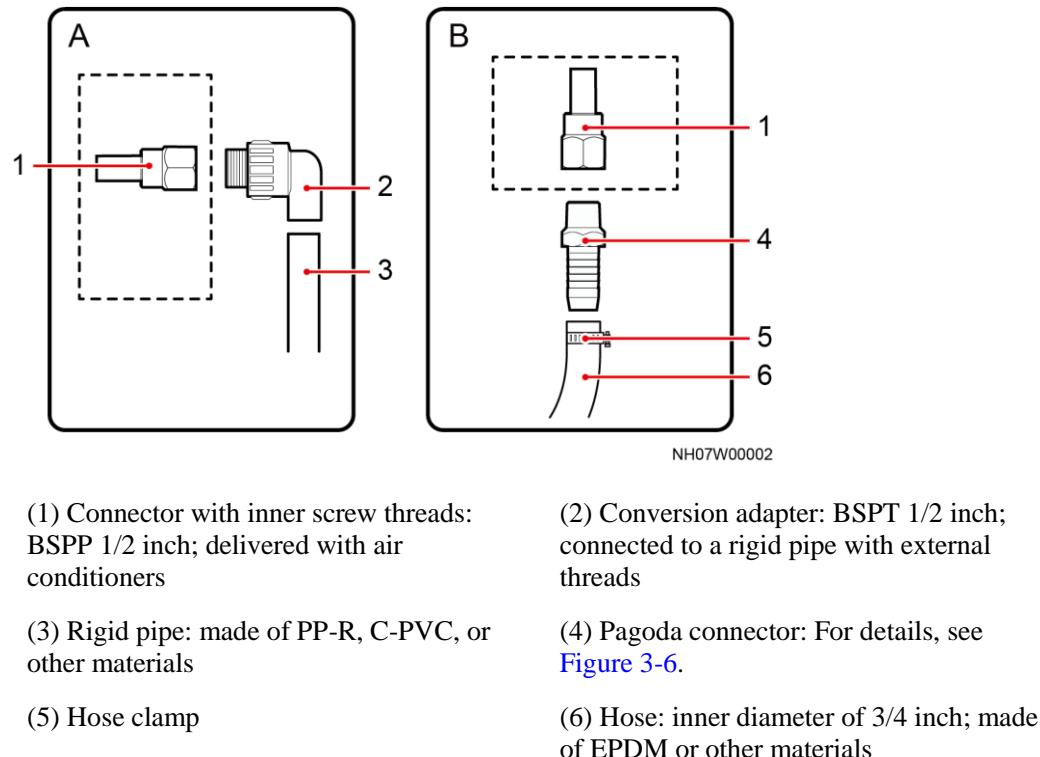
----End

### 3.9.3 Connecting the Drainpipe

#### Context

The drainpipe can be connected using a hose or a rigid pipe. [Figure 3-5](#) shows how to connect the pipe. The following uses rigid drainpipe routing as an example to describe how to connect drainpipes.

**Figure 3-33** Connecting a drainpipe



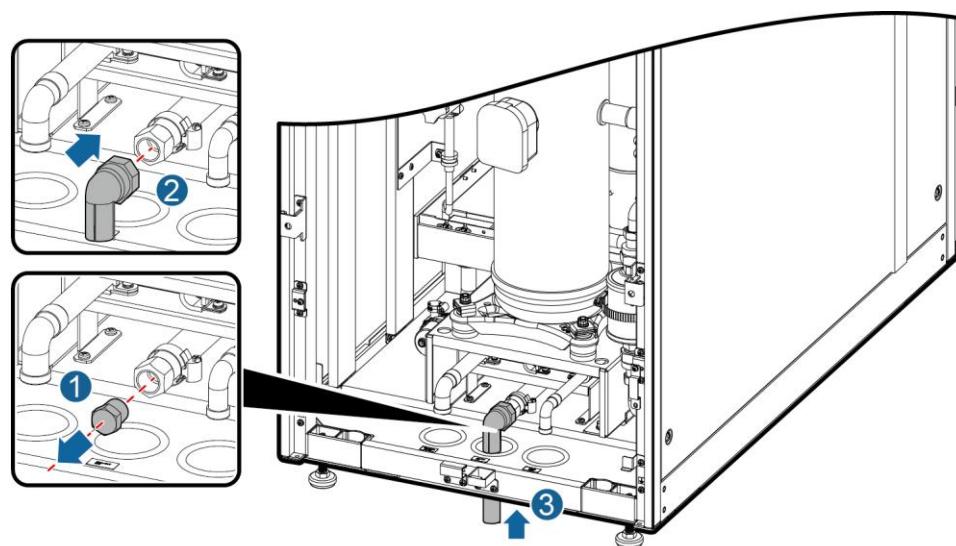
**NOTE**

The object shown in the dotted line box is the drainpipe connector with inner screw threads delivered with air conditioners. The hose clamp as shown by (5) in the preceding figure is provided in standard configuration. Other parts are not provided and need to be purchased.

#### Bottom Pipe Routing

**Step 1** Remove the drainpipe plug, as shown by (1) in [Figure 3-34](#).

**Figure 3-34** Bottom pipe routing



**Step 2** Install the water pipe conversion adapter and seal it with sealant, as shown by (2) in [Figure 3-34](#).

**Step 3** Cut a cross in the rubber ring using a utility knife and route the pipe wrapped with the thermal insulation tube through the hole.



### NOTICE

Ensure that the rubber ring is not disconnected. If the rubber ring is disconnected or damaged, seal the gaps around the pipes with mastic cement or thermal insulation foam.

**Step 4** Connect the PPR water pipe using a hot melt gun, as shown by (3) in [Figure 3-34](#).

**Step 5** Connect the drainpipe to the external drainage system.

----End

## Top Pipe Routing

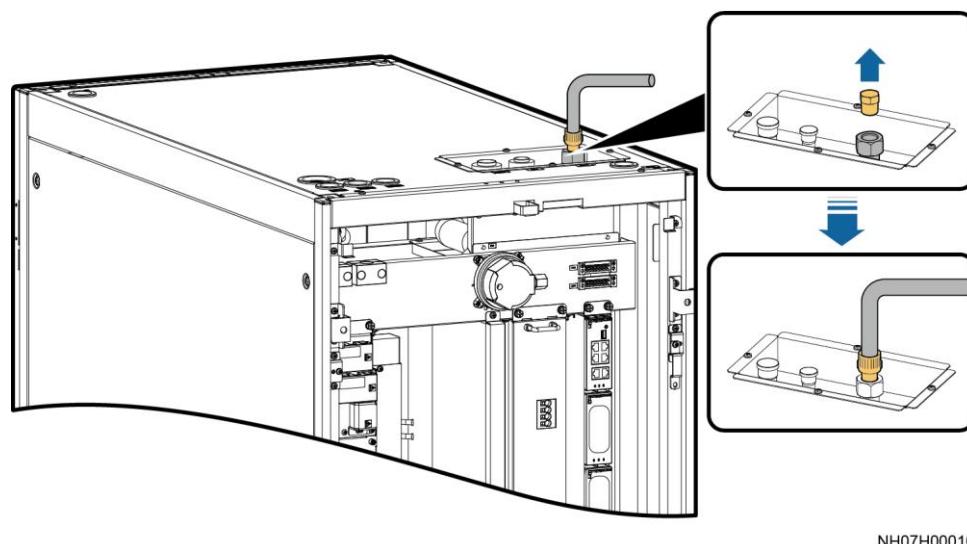


### NOTICE

When routing pipes from the top, do not route the pipes over servers. If unavoidable, take measures to protect the servers from being affected by pipe leaks.

**Step 1** Remove the drainpipe plug, as shown in [Figure 3-35](#).

**Figure 3-35** Top pipe routing



**Step 2** Route the drainpipe from the top by referring to [Step 2–Step 5](#) of the bottom pipe routing.

----End

## 3.10 Leak Checking

### Prerequisites



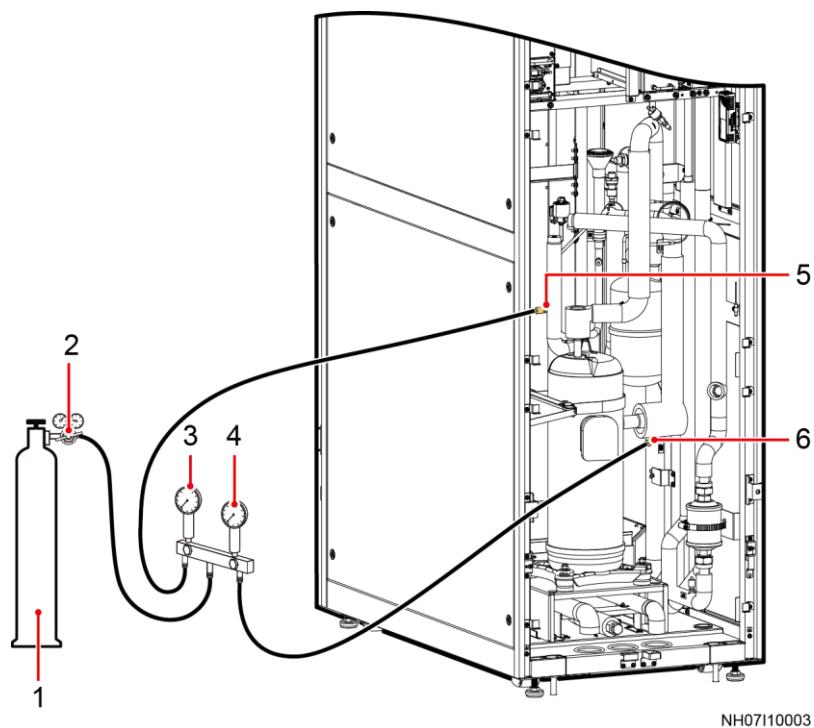
#### NOTICE

- Pipes from indoor unit and outdoor unit have been soldered properly.
- The needle valve plugs are tightened.
- The measuring range of the pressure gauge must be greater than or equal to 4.0 MPa, and the tolerance range of the leather hose must be greater than or equal to 4.5 MPa.
- Only nitrogen is allowed when leak checking.
- Do not remove the pressure gauge and the leather hose when charging nitrogen to retain the pressure to prevent the nitrogen from leaking.

### Procedure

- Step 1** Connect a leather hose, pressure gauge, reducing valve, and nitrogen cylinder to the equipment. Ensure that the pressure gauge and reducing valve are closed.
- If no low-temperature component is installed on the outdoor side, connect pipes as shown in [Figure 3-36](#), and charge nitrogen into the system from the low-pressure and exhaust pipe needle valves simultaneously.

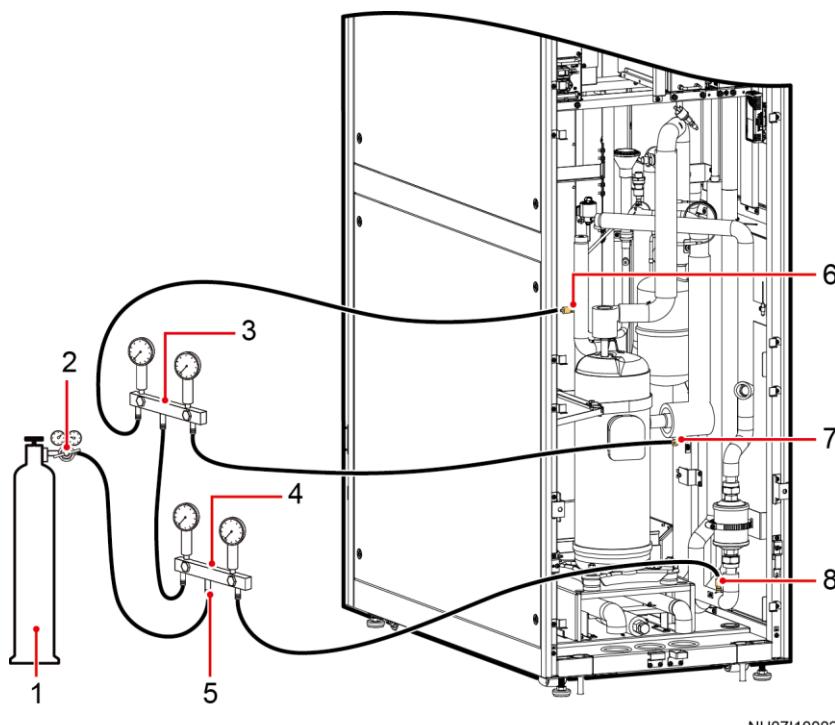
**Figure 3-36** Charging nitrogen to pipes without configuring low-temperature component



- |                         |                               |                               |
|-------------------------|-------------------------------|-------------------------------|
| (1) Nitrogen cylinder   | (2) Reducing valve            | (3) Low pressure gauge        |
| (4) High pressure gauge | (5) Low-pressure needle valve | (6) Exhaust pipe needle valve |

- If a low-temperature component is installed on the outdoor side, connect pipes as shown in [Figure 3-37](#), and charge nitrogen into the system from the low-pressure, discharge pipe, and liquid pipe needle valves simultaneously.

**Figure 3-37** Charging nitrogen to pipes with installing low-temperature component



- |                               |                              |                               |
|-------------------------------|------------------------------|-------------------------------|
| (1) Nitrogen cylinder         | (2) Reducing valve           | (3) Pressure gauge 1          |
| (4) Pressure gauge 2          | (5) Connection nut           | (6) Low-pressure needle valve |
| (7) Exhaust pipe needle valve | (8) Liquid pipe needle valve |                               |

**Step 2** Open the pressure gauge valves and reducing valve to charge nitrogen into the pipes to preserve the pressure at 3.0 MPa for 24 hours. The system pressure should not decrease before and after pressure preservation provided that the ambient temperature is stable. If the pressure varies due to ambient temperature changes, conduct the pressure preservation test again.



### NOTICE

The outlet pressure must be no more than 3.0 MPa. If the outlet pressure is more than 3.0 MPa, some parts of the system may be damaged.

**Step 3** If the pressure decreases, find out and repair the leakage point by using soap water or a halogen leak detector. If the pressure is preserved properly, exhaust nitrogen from the three positions shown in [Figure 3-25](#).



**NOTE**  
For scenarios where a container is transported without refrigerant, keep 0.3 to 0.5 MPa of nitrogen in the pipe.

----End

## 3.11 Connecting Cables

### 3.11.1 Connecting the Power Cable

Before connecting cables, remove the top cover of the indoor unit power terminals.

- Power cables can be routed from the top or bottom.
- For details about the general circuit breaker and cable specifications, see [3.2.2.6 Cable](#).



#### DANGER

Check that the input power cable of the indoor unit has no reverse phase sequence or open phase.

---



#### CAUTION

Keep cables out of touch with the compressor, fan, and copper pipes (if unavoidable, take protective measures), and connect cables properly.

---



#### NOTICE

- The device must be grounded as required by local electrical regulations.
  - Cables must be routed in through cable clips.
- 

### Connecting the Power Cable to an Indoor Unit (Single Power Supply)

**Step 1** Route the external power cable through the cabinet cable hole to the L1, L2, L3, and N ports of the AC1 terminal on the indoor unit.

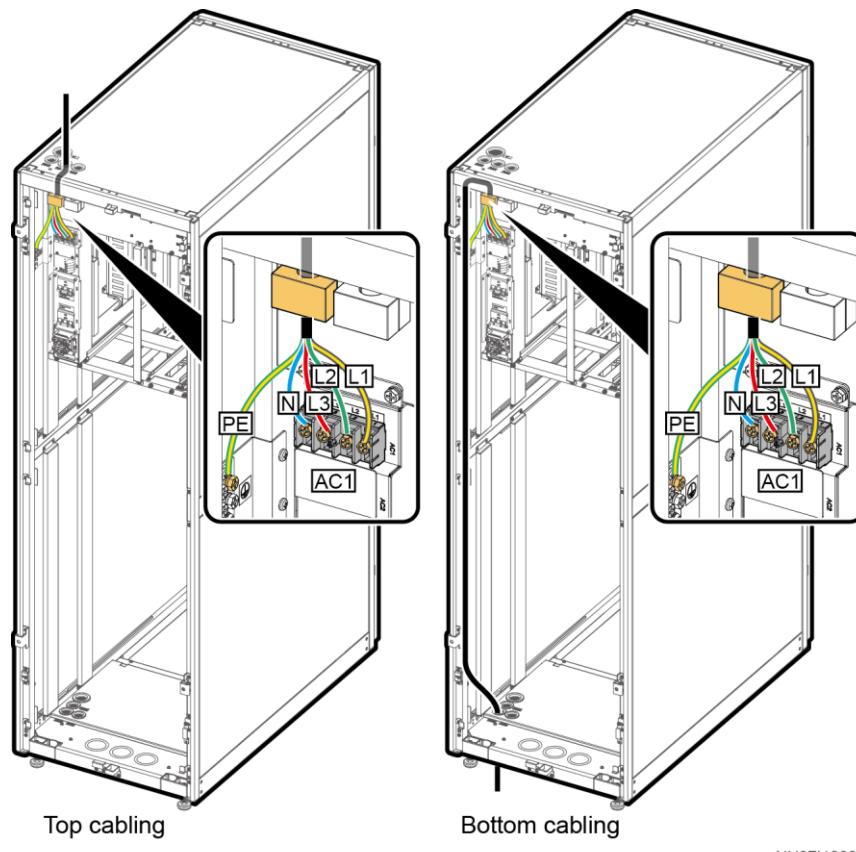


#### NOTICE

When there is only one power supply, the power cable must be connected to the primary route AC1.

---

**Figure 3-38** Routing cables for the single power supply



NH07I10008

**Step 2** Connect the PE cable to the cabinet ground bar, as shown in [Figure 3-38](#).

----End

## Connecting the Power Cable to an Indoor Unit (Dual Power Supplies)

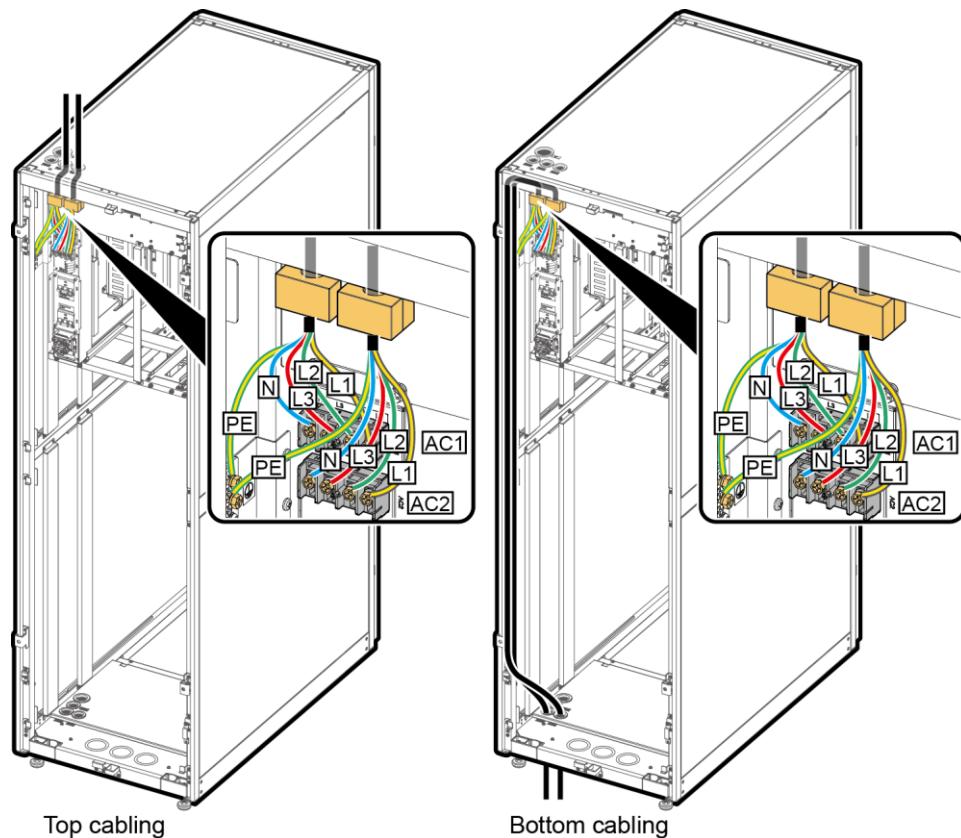
**Step 1** Route the external power cable through the cabinet cable hole to the L1, L2, L3, and N ports of the AC1 and AC2 terminals on the indoor unit respectively.



### NOTICE

When there are two power supplies, the power cables must be connected to the primary route AC1 first and then connected to the secondary route AC2.

**Figure 3-39** Routing cables for the dual power supplies



NH0710009

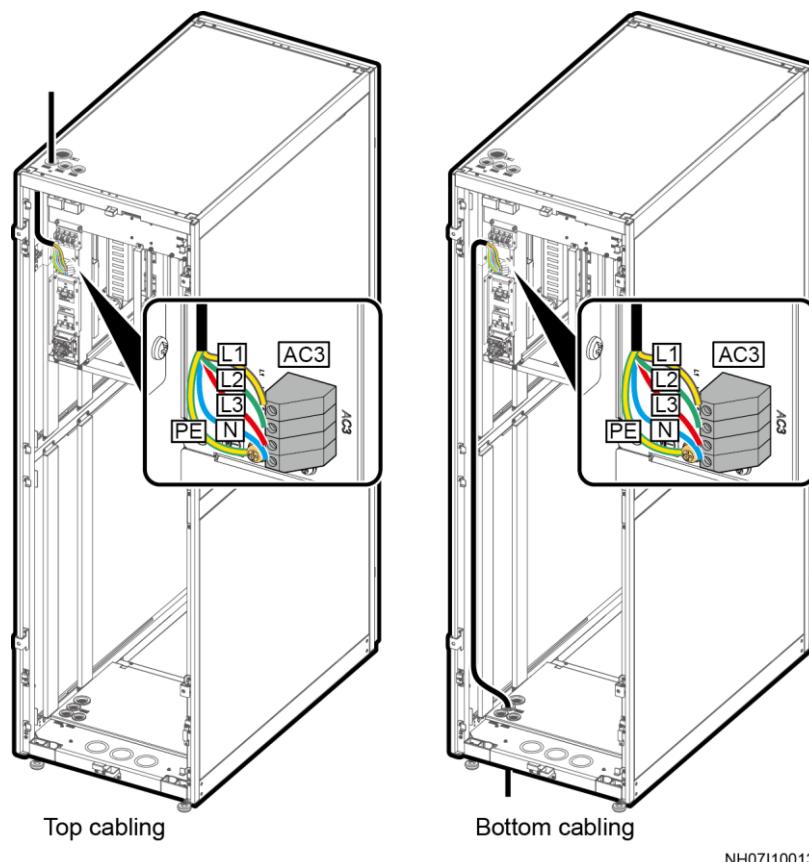
**Step 2** Connect the PE cable to the cabinet ground bar, as shown in [Figure 3-39](#).

----End

## Connecting the Power Cable to an Outdoor Unit

**Step 1** Route the outdoor unit power cable through the cabinet cable hole to the L1, L2, L3, and N ports of the AC3 terminal on the indoor unit.

**Figure 3-40** Connecting the power cable to an outdoor unit



NH07I10013

 **NOTE**

The figure shows how to connect the outdoor unit power cable AC3 in the single power supply scenario. The cable connection method is the same when there are two power supplies.

**Step 2** Connect the PE cable to the PE bar on the right of the AC3 terminal, as shown in [Figure 3-40](#).

----End

### 3.11.2 Connecting Signal Cables

Customers can purchase the signal cables from Huawei or prepare their own cables.



#### NOTICE

Before connecting signal cables, take effective ESD measures.

### 3.11.2.1 Connecting the Outdoor Unit On/Off Signal Cable

#### Context

The outdoor unit signal cable can connect to a dry contact or an RS485 port (by default).

**Outdoor fan control mode** is set to **Communicate** by default. If the signal cable connects to a dry contact, set **Settings > System Settings > Outdoor Fan > Outdoor fan control mode** to **Dry contact**.



#### NOTICE

- If the signal cable connects to a dry contact while **Outdoor fan control mode** is set to **Communicate**, the **Outdoor fan communication failure** alarm will be displayed on the LCD.
  - If the signal cable connects to an RS485 port while **Outdoor fan control mode** is set to **Dry contact**, the **Comp discharge HP** alarm will be displayed on the LCD after the compressor starts.
  - If the **Outdoor fan control mode** is changed on the screen, the screen will restart.
- 

#### Procedure

**Step 1** Route the cable through the cable hole on the top or at the bottom of the cabinet.

**Step 2** Connect the signal cable.

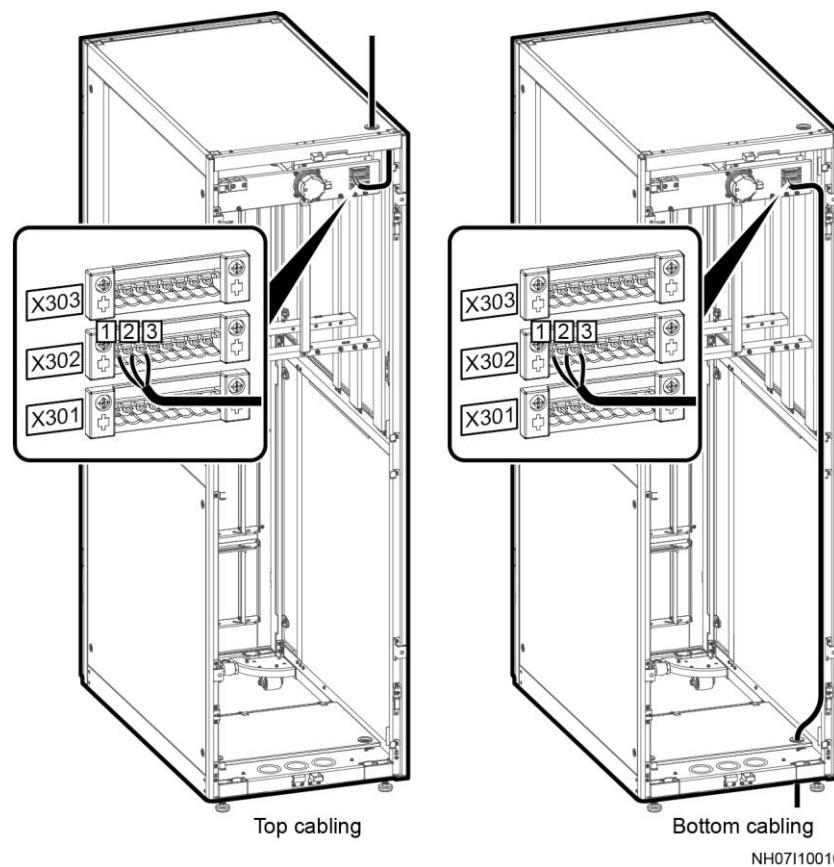


#### NOTICE

Remove the female connector from the interconnection terminal. After the cable is connected to the female connector, reconnect the connector to the interconnection terminal.

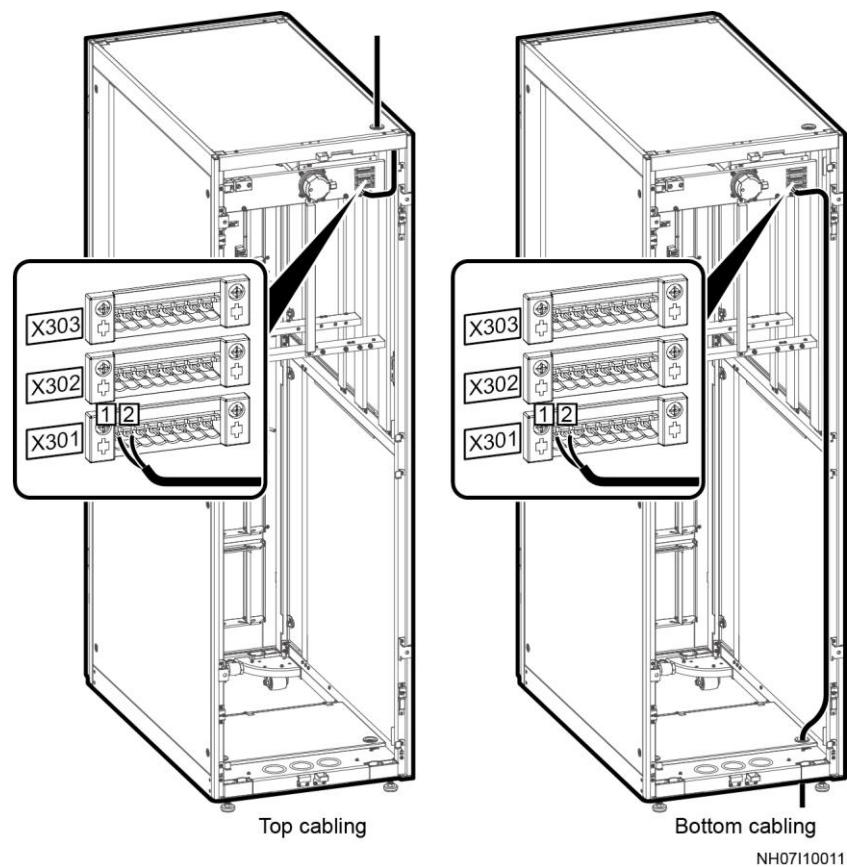
- (RS485 connection) Connect one end of the cable to points 1, 2, and 3 on the external signal port X302 and the other end to ports 3, 4, and 5 on the outdoor unit.

**Figure 3-41** Connecting the outdoor unit on/off signal cable (RS485 connection)



- (Dry contact connection) Connect one end of the cable to points 1 and 2 on the external signal port X301 and the other end to ports 1 and 2 on the outdoor unit.

**Figure 3-42** Connecting the outdoor unit on/off signal cable (dry contact connection)



**Step 3** Secure the cable to the right post of the cabinet using cable ties.

----End

### 3.11.2.2 Connecting the Water Sensor

#### Context

A water sensor monitors resistance changes at terminals to determine whether the floor is watery. When the terminals of a water sensor detect water or other conductive liquid, resistance between the two terminals decreases. Keep water sensors far away from water traps or floor drains.

#### Procedure

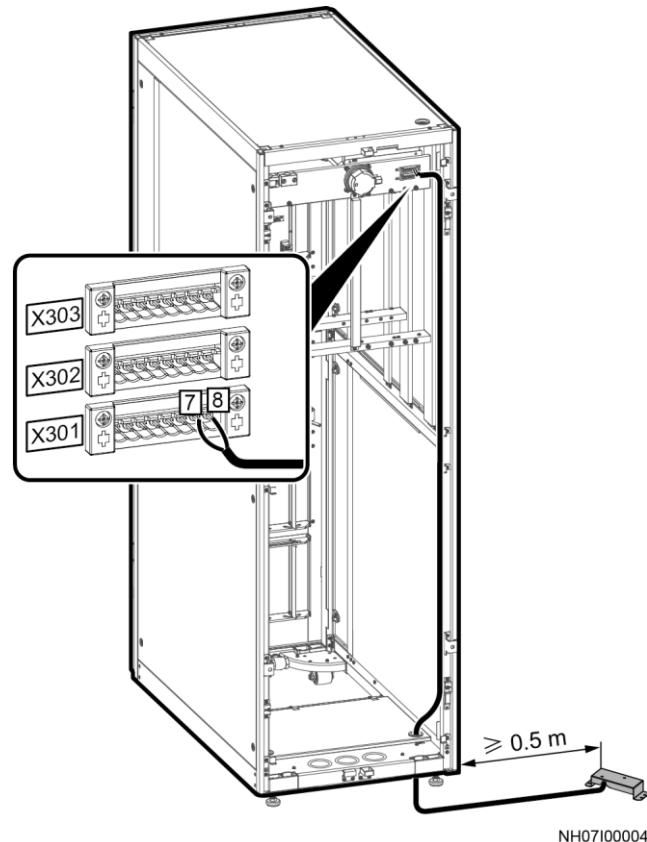
- Step 1** Connect one end of the water sensor cable to the water sensor.
- Step 2** Connect the other end of the water sensor cable to 7 and 8 on signal terminal X301 through the signal cable hole at the bottom of the cabinet.
- Step 3** Secure the cable to the right post of the cabinet using cable ties.



## NOTICE

Place the sheet metal of the water sensor upwards and its detection board downwards on the ground.

**Figure 3-43** Connecting a cable to the water sensor



----End

### 3.11.2.3 (Optional) Installing the Differential Pressure Sensor

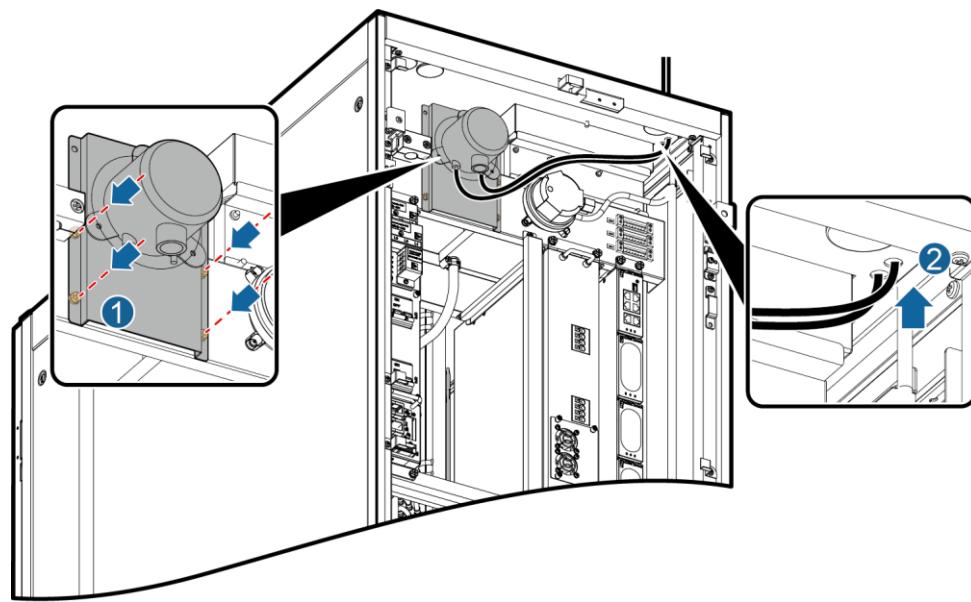
#### Context

The differential pressure sensors are optional components and installed with sheet metal fasteners before delivery. Secure the fasteners, install the pressure inlet tube, and connect cables onsite.

#### Procedure

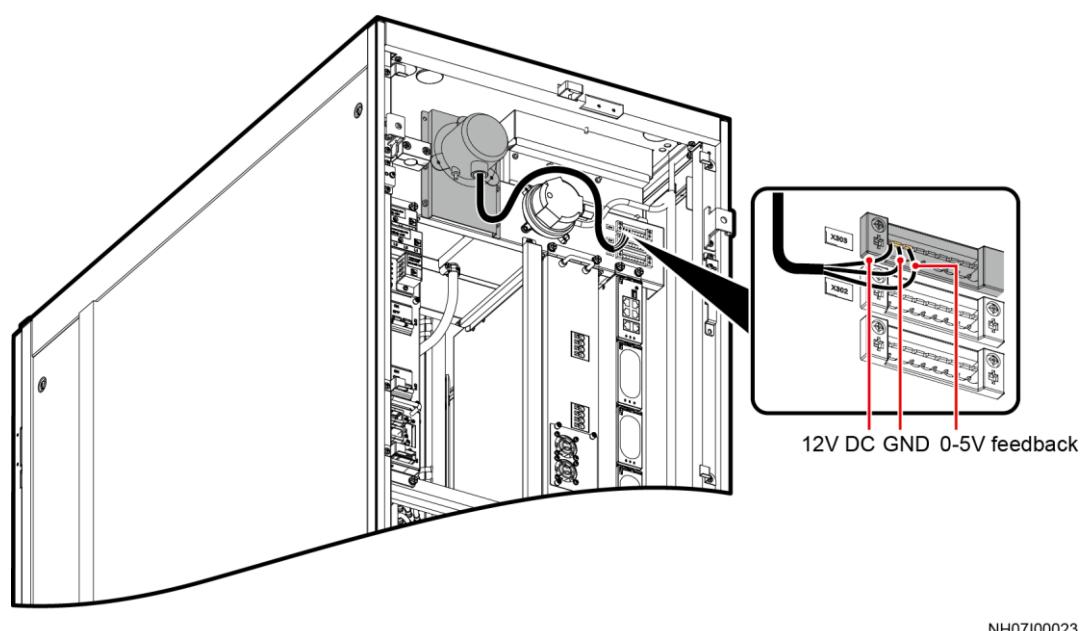
- Step 1** Secure the differential pressure sensor and the fasteners using M5 tapping screws, as shown in step 1 in [Figure 3-44](#).

**Figure 3-44** Securing a differential pressure sensor



- Step 2** Connect a pressure inlet tube to the + mark on the micro differential pressure sensor and route it to the cold aisle through the hole on the top of the cabinet. Connect another pressure inlet tube to the – mark on the micro differential pressure sensor and route it to the hot aisle through the hole on the top of the cabinet, as shown in step 2 in [Figure 3-44](#).
- Step 3** Connect the three terminals of 12 V DC, GND, and 0-5 V feedback of differential pressure sensor cable to ports 1, 2, and 3 (from left to right) on the X303 terminal, as shown in [Figure 3-45](#).

**Figure 3-45** Connecting a differential pressure sensor



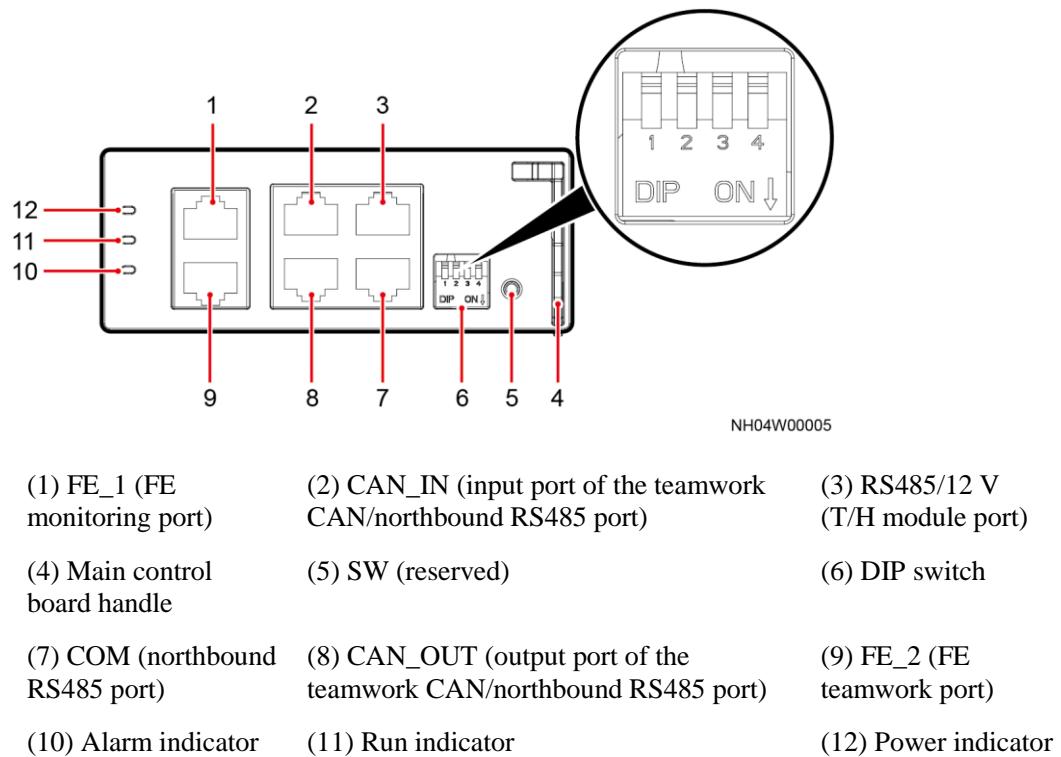
----End

### 3.11.3 Teamwork Networking and Monitoring

#### 3.11.3.1 Main Control Module

Ports for the teamwork and monitoring network cables are on the main control module at the rear of the air conditioner. [Figure 3-46](#) shows a main control module.

**Figure 3-46** Main control module



#### 3.11.3.2 Connecting the Teamwork Network Cable



#### NOTICE

- Air conditioners in a teamwork group must be of the same model.
- FE teamwork network applies only to the scenario when air conditioners are monitored by the ECC800.

#### Connecting the FE teamwork network cable

**Step 1** (Optional) Make FE teamwork network cables by referring to [Figure 3-47](#) if required onsite.

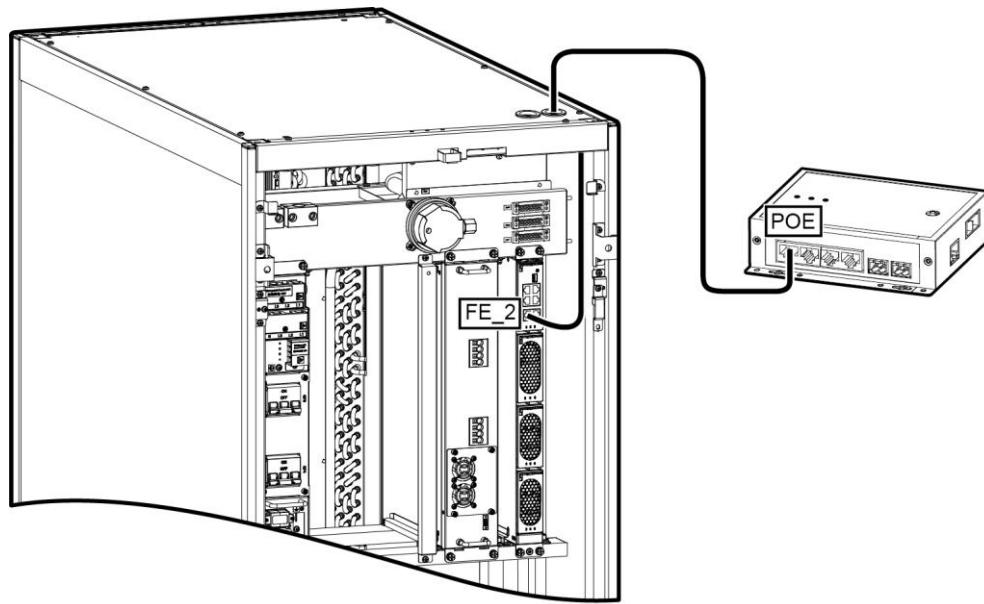
**Figure 3-47** Pin sequence of network cable

PIN	Color	CAN network cable for teamwork signal attribute	Northbound RS485 network cable signal attribute	FE network cable signal attribute
1	white-orange	RS-485 T+(D+)	RS-485 T+(D+)	FE_TX+
2	orange	RS-485 T-(D-)	RS-485 T-(D-)	FE_TX-
3	white-green	N/A	N/A	FE_RX+
4	blue	RS-485 R+	RS-485 R+	N/A
5	white-blue	RS-485 R-	RS-485 R-	N/A
6	green	N/A	N/A	FE_RX-
7	white-brown	CANH	N/A	N/A
8	brown	CANL	N/A	N/A

NH07Z00001

- Step 2** Connect one end of the FE network cable to an FE\_2 port in [Figure 3-46](#), and connect the other end to the POE port on the smart ETH gate, as shown in [Figure 3-48](#).

**Figure 3-48** Connecting the FE teamwork network cable



NH07I00005

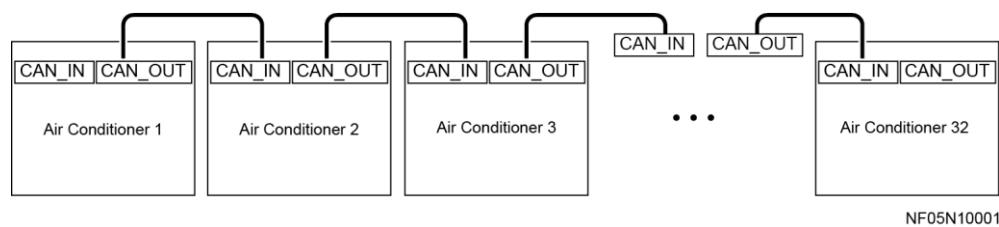
----End

## Connecting the CAN teamwork network cable

In CAN networking, a maximum of 32 air conditioners can be teamworked. If CAN networking is required onsite, set **Teamwork CAN resistor enable** on **Teamwork Settings** of the first and last air conditioners to **Yes**.

- Step 1** Connect the CAN\_OUT port of each air conditioner to the CAN\_IN port of the following air conditioner using a CAN network cable, as shown in [Figure 3-49](#).

**Figure 3-49** Connecting the CAN teamwork cable



----End

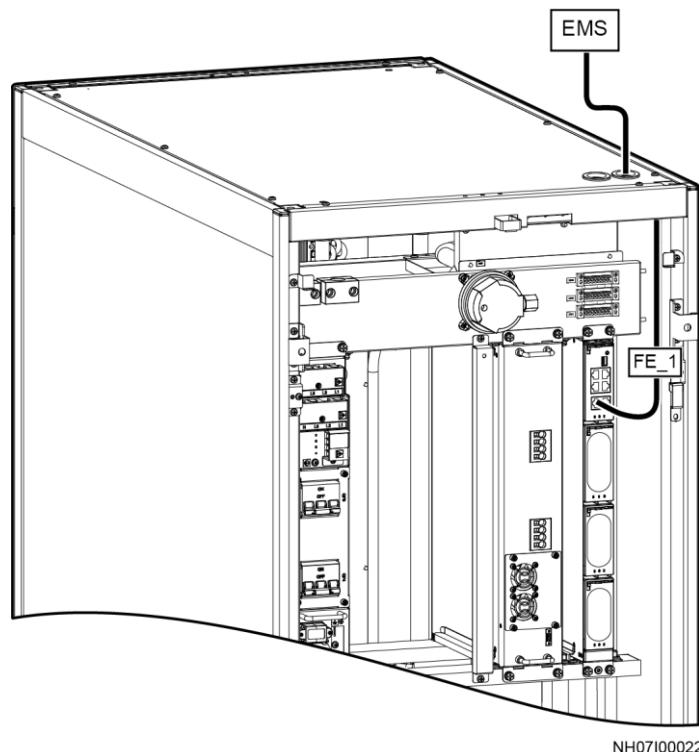
### 3.11.3.3 Connecting the Monitoring Network Cable

#### Connecting the FE Monitoring Network Cable (SNMP/Modbus-TCP)

When the FE teamwork networking is used inside the air conditioners, connect the external monitoring network cable to the FE port on the air conditioner. To use the FE monitoring, the communications protocol should be SNMP or Modbus-TCP.

- Step 1** Connect one end of the monitoring network cable (standard network cable; prepared by the customer onsite) to the FE\_1 port on the main control module, and connect the other end to the monitoring device, as shown in [Figure 3-50](#).

**Figure 3-50** Connecting the FE monitoring network cable



----End

## Connecting the RS485 Monitoring Network Cable (Modbus-RTU)

When the CAN teamwork networking is used inside the air conditioners, connect the external monitoring network cable to the RS485 port on the air conditioner. To use the northbound RS485 monitoring, the communications protocol should be Modbus-TCP.

When monitoring air conditioners over northbound RS485, the EMS needs 3 seconds to collect data from one air conditioner. Therefore, the time required for collecting data from N air conditioners in a group is  $3 \times N$ . If the data collection time is longer than the performance requirement, you can divide the air conditioners into several groups. For example, if the EMS needs to finish data collection in 12 seconds, you are advised to group air conditioners by four and connect the COM port of the main control module of the first air conditioner in each group to the RS485 port of the EMS.

- Step 1** (Optional) Make the RS485 monitoring network cable by referring to [Figure 3-47](#) if required onsite.
- Step 2** Group air conditioners for monitoring based on performance requirements and connect the monitoring network cables, as shown in [Figure 3-51](#).



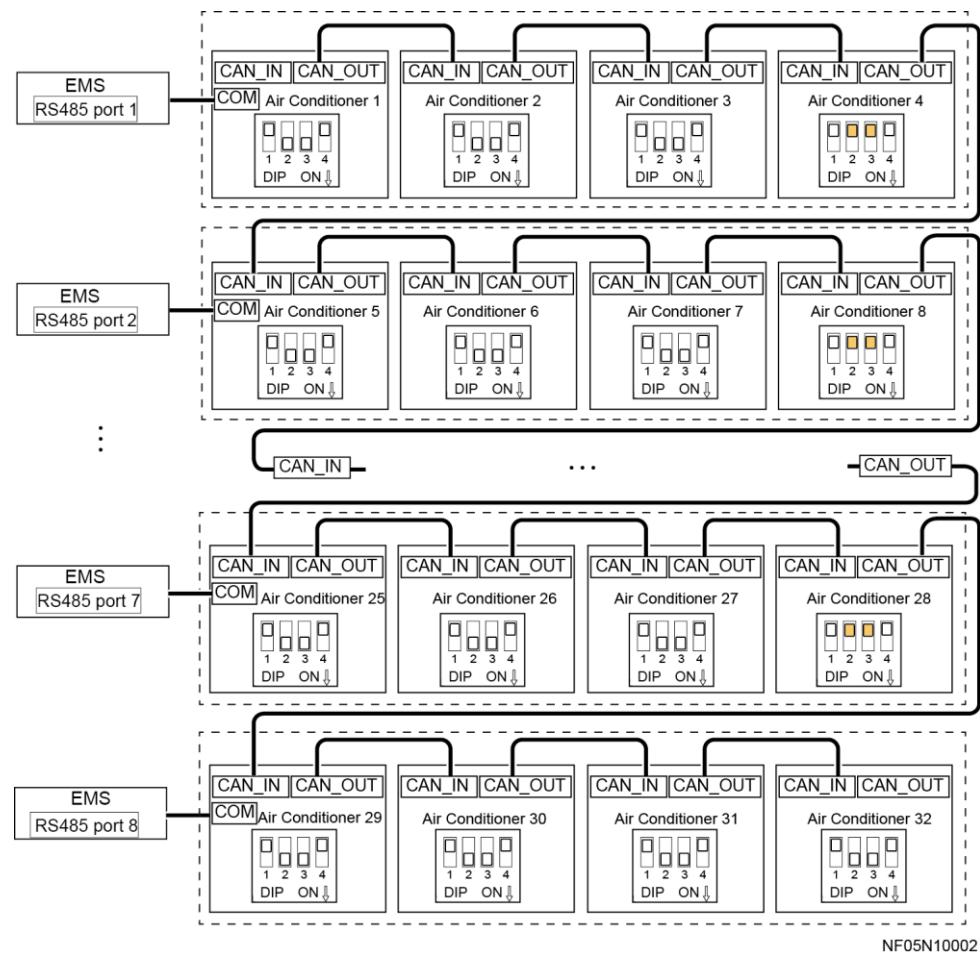
### NOTICE

- Monitoring grouping of air conditioners can be achieved through the toggle switches on the main control module. For details, see [Table 3-12](#).
- The following figure shows the connection diagram when 32 air conditioners grouped by four are connected to the EMS. The customer can adjust the number of air conditioners in each group based on performance requirements.
- Set the northbound RS485 grouping switches (namely, toggle switches 2 and 3) for the last air conditioner of each group (namely, air conditioner 4, air conditioner 8, ..., air conditioner 28) to OFF, except the air conditioner in the end, that is, air conditioner 32. Retain the default settings of other toggle switches.

**Table 3-12** DIP switch settings

Toggle Switch	Default Value	Operation Description
1	OFF	<ul style="list-style-type: none"><li>Non-teamwork situations: Retain the OFF state.</li><li>Teamwork situations: Flip toggle switch 1 of the first and last precision air conditioners in the network to ON, and toggle switch 1 of other air conditioners to OFF.</li></ul>
2	ON	Monitoring grouping switch. If you need to enable the monitoring of northbound devices by group, flip toggle switches 2 and 3 to OFF. For details, see <a href="#">Figure 3-51</a> .
3	ON	
4	OFF	This toggle switch determines whether to restore factory defaults.

**Figure 3-51** Connecting the RS485 monitoring



----End

### 3.11.4 Connecting the T/H Sensor Outside the Cabinet

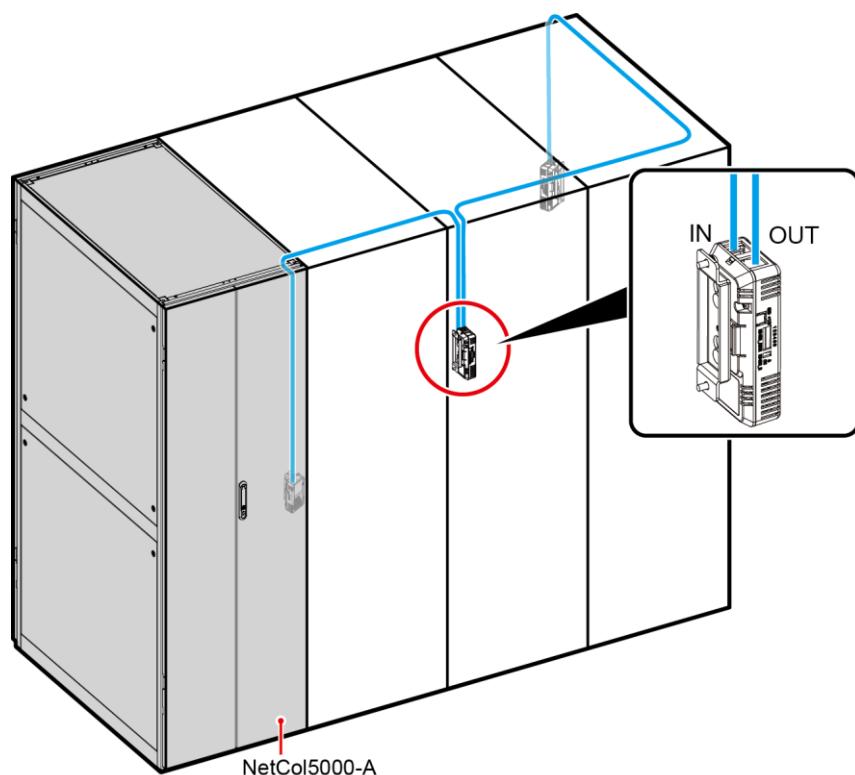
#### Context

T/H sensors outside the cabinet are configured to detect the temperatures of cold/hot aisles. They can be flexibly installed on the server cabinet based on onsite situation. It is recommended that the T/H sensors be deployed near heat sources in the hot aisle, or in places which lacks cooling air in the cold aisle. The T/H sensors outside the cabinet must be near the air conditioner to sense the temperature of the outlet air, and must be away from the air exhaust vents of other air conditioners.

#### Procedure

- Step 1** Connect the T/H sensors outside the cabinet and the T/H sensors at the return air side in series. [Figure 3-52](#) shows how to route the cables.

**Figure 3-52** Cables routed outside the cabinet



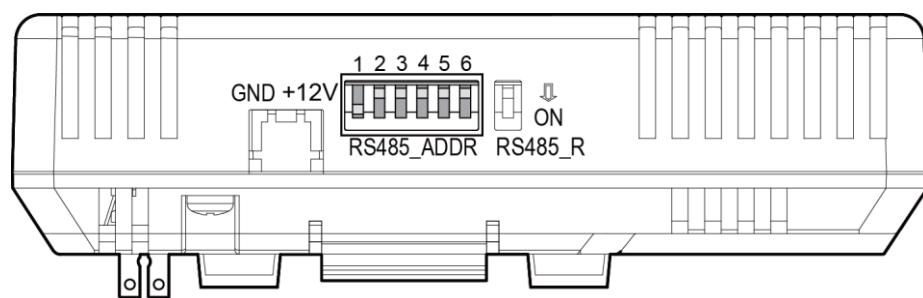
NH07I10014

**NOTE**

- The T/H sensors inside the cabinet are secured at the return air side and their IN ports are connected to the main control board. When connecting the T/H sensors outside the cabinet, connect the OUT port of one T/H sensor inside the cabinet to the IN port of the next T/H sensor outside the cabinet. Connect all T/H sensors in series in this way.
- The T/H sensors should be 1.5 m above the ground (33 U).
- Each air conditioner supports a maximum of ten T/H sensors.

**Step 2** Set the DIP switches of T/H sensors. [Figure 3-53](#) shows a T/H sensor. [Table 3-13](#) shows how to set the DIP switches for T/H sensors.

**Figure 3-53** DIP switches



UM01000003

**Table 3-13** DIP switch setting on a T/H sensor

Locati on	Display Name	Addr ess	DIP Switch Sequence No.					
			1	2	3	4	5	6
Air return side	Return-air 2 temp/humid	1	ON	OFF	OFF	OFF	OFF	OFF
Cold aisle	Cold-aisle 1 temp/humid	11	ON	ON	OFF	ON	OFF	OFF
	Cold-aisle 2 temp/humid	12	OFF	OFF	ON	ON	OFF	OFF
	Cold-aisle 3 temp/humid	13	ON	OFF	ON	ON	OFF	OFF
	Cold-aisle 4 temp/humid	14	OFF	ON	ON	ON	OFF	OFF
	Cold-aisle 5 temp/humid	15	ON	ON	ON	ON	OFF	OFF
Hot aisle	Hot-aisle 1 temp/humid	21	ON	OFF	ON	OFF	ON	OFF
	Hot-aisle 2 temp/humid	22	OFF	ON	ON	OFF	ON	OFF
	Hot-aisle 3 temp/humid	23	ON	ON	ON	OFF	ON	OFF
	Hot-aisle 4 temp/humid	24	OFF	OFF	OFF	ON	ON	OFF
	Hot-aisle 5 temp/humid	25	ON	OFF	OFF	ON	ON	OFF



### NOTICE

- The default addresses of T/H sensors purchased from Huawei are 1.
- Keep the last RS485\_R toggle switch at OFF.
- After the addresses are set, power on the device. On the display's home screen, choose **Settings > System Settings > T/H Sensor**, and set the sensors in the aisles corresponding to the addresses to **Enable**. Otherwise, the sensors will not work.

----End

## 3.12 Connections Verification

After the installation, check the items listed in [Table 3-14](#), [Table 3-15](#), and [Table 3-16](#), and record the check results.

**Table 3-14** Check items on the indoor unit

Check Item	Expected Result	Actual Result
Cabinet	The cabinet is installed properly, without any tilts.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The cabinet is secured to the bottom base using bolts as required.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The foreign matter inside the cabinet such as cable ties and stubs is cleaned up.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
EC fan	The fan is secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The fan has no foreign matter inside.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The fan blades rotate properly.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Wet film humidifier	The water inlet solenoid valve is secured reliably and steadily.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The humidifier water pump is secured reliably and steadily.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The wet film is secured reliably and steadily.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The humidifier float is secured. The fasteners for the humidifier float are secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	Water inlet pipes are connected securely without leaks.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Compressor	The sheet metal for transporting the compressor is removed.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The bolts on the compressor are tightened.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Condensate pump	The water inlet pipes and drainpipes of the water pump are securely connected without leaks.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The condensate pump is securely connected to its base.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Liquid level detector	The liquid level detector is secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The fasteners for the liquid level detector are secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	The low liquid level detector functions flexibly.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Water pan	The foreign matter inside the water pan is cleaned up, and water pan filter is not blocked.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed

Check Item	Expected Result	Actual Result
Differential pressure switch	The cable ties on the differential pressure tubes are secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
	There is no foreign matter in the differential pressure tubes. The differential pressure tubes are not seriously bent.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Air filter	The air filter is correctly installed according to the air flow direction on the frame.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed

**Table 3-15** Pipeline checklist

Expected Result	Actual Result
Ports are connected correctly. The pipelines have oil trap, inverted traps, gradients (of refrigerant pipes), and pipe supports.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The hose clamps and cable ties of the condensate water pipe are reliably secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
All pipes are secured reliably and steadily.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
All pipes are wrapped with thermal insulation foam, and the insulation foam is intact.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The water pipe joints are sealed by sealant.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Check that the needle valve plug is secured (torque of $0.45 \pm 0.05$ N•m), and valve bonnet is tightened.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The pipes are not seriously bent.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed

**Table 3-16** Electrical checklist

Expected Result	Actual Result
Cables are intact and not over-bent.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
No open or short circuits, or incorrect connections occur in electrical loops.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The power cables for the indoor and outdoor units, signal cable, teamwork cable, and T/H sensor cable are connected as required.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The rated specifications of the upstream general circuit breaker meet the maximum current requirement.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
All cables, connectors, and screws are secured.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
Devices are properly grounded.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed

# 4 Commissioning

## 4.1 Vacuumizing and Precharging Refrigerant



### CAUTION

Ensure that no combustion-supporting materials (air or additives) enter the air conditioning system during commissioning. Huawei shall not be liable for any risks and losses thus incurred.

### 4.1.1 Refrigerant Charge Amount

Refrigerant R410A from name brands such as DuPont, Daikin, and Honeywell is recommended.

**Table 4-1** Refrigerant

Length of the One-Way Connection Pipe Between the Indoor and Outdoor Units (L)	Refrigerant Charge Amount	NetCol500 -036	NetCol500-036 Including a Low-Temperature Component	NetCol500-072
$L \leq 10 \text{ m}$	Standard charge amount (kg)	9.2	20.2	13.2
$10 \text{ m} < L \leq 60 \text{ m}$	Refrigerant charge (kg) = Standard charge + Additional charge	$9.2 + (L - 10) \times 0.19$	$20.2 + (L - 10) \times 0.19$	$13.2 + (L - 10) \times 0.19$
$60 \text{ m} < L \leq 100 \text{ m}$	Refrigerant charge (kg) = Standard charge + Additional charge	$9.2 + (L - 10) \times 0.25$	$20.2 + (L - 10) \times 0.25$	$13.2 + (L - 10) \times 0.25$

## 4.1.2 Vacuumizing

### Prerequisites



#### NOTICE

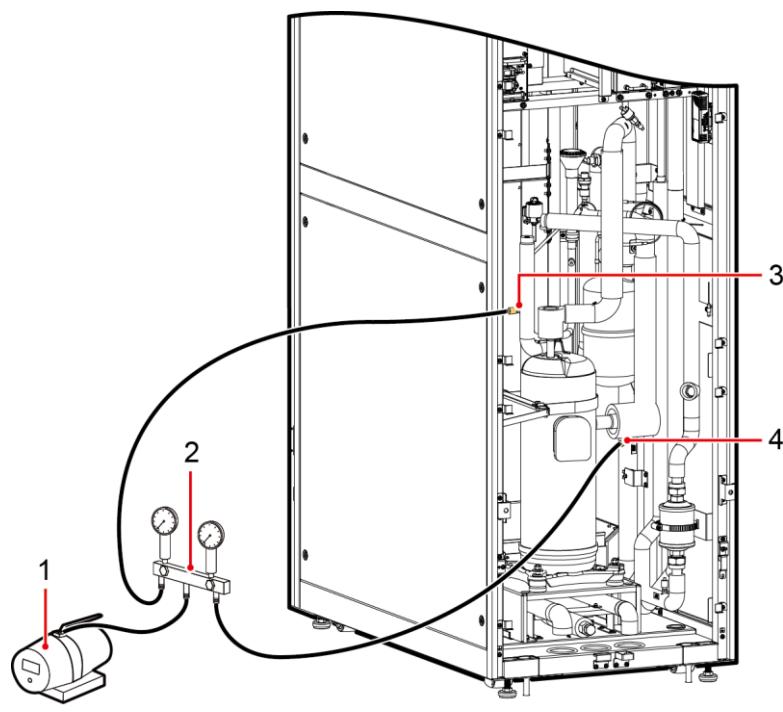
- Before vacuumizing the cooling system, ensure that the refrigerant pipes have passed the air tightness test and do not leak.
- Before vacuumizing the cooling system, ensure that all connectors are secured.
- System high pressure may occur if the cooling system is not vacuumized or is not thoroughly vacuumized. Ensure that the cooling system is thoroughly vacuumized before refrigerant is charged.

### Procedure

**Step 1** Check whether a low-temperature component is installed on the outdoor side.

- If no low-temperature component is installed on the outdoor side, connect the pressure gauge and vacuum pump at the low-pressure and exhaust pipe needle valves to vacuumize the system simultaneously, as shown in [Figure 4-1](#).

**Figure 4-1** Vacuumizing the system without a low-temperature component



(1) Vacuum pump

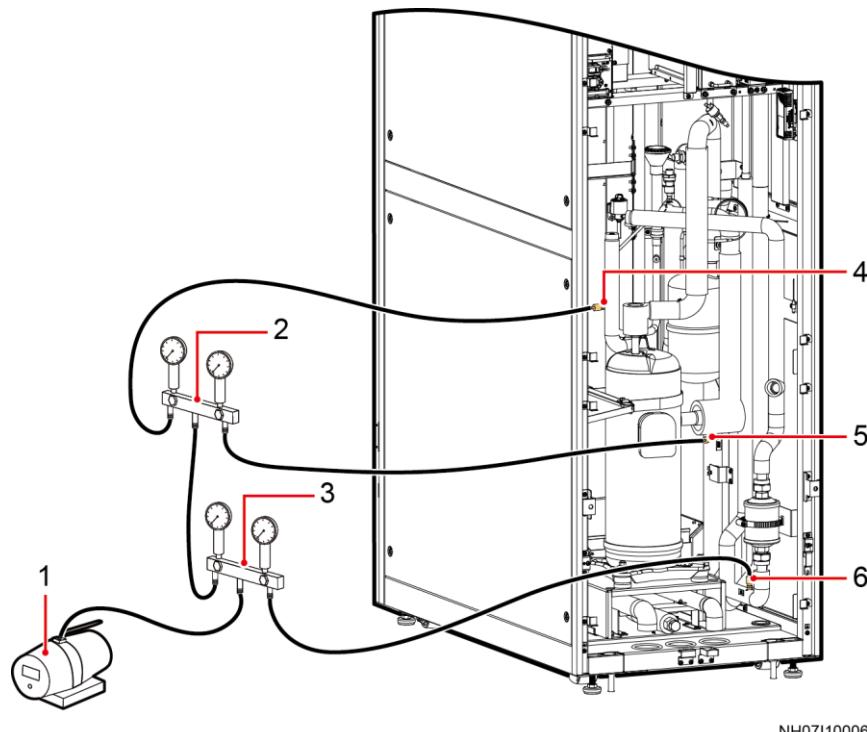
(2) Pressure gauge

(3) Low-pressure needle valve

(4) Exhaust pipe needle valve

- If a low-temperature component is installed on the outdoor side, connect the pressure gauge and vacuum pump at the low-pressure, discharge pipe, and liquid pipe needle valves to vacuumize the system simultaneously, as shown in [Figure 4-2](#).

**Figure 4-2** Vacuumizing the system with a low-temperature component



- |                               |                               |                              |
|-------------------------------|-------------------------------|------------------------------|
| (1) Vacuum pump               | (2) Pressure gauge 1          | (3) Pressure gauge 2         |
| (4) Low-pressure needle valve | (5) Exhaust pipe needle valve | (6) Liquid pipe needle valve |

**Step 2** In the beginning, the vacuum pump makes loud noise and exhausts white smoke from the exhaust vent. After 10 minutes, if it still exhausts white smoke, observe it for another 10 minutes because the cooling system may not be sealed properly or there may be too much refrigerant or water residues in the cooling system.

**Step 3** After 20 minutes, the pressure gauge pointer should be in the negative area and the vacuum pump makes small noise. Close and open the pressure gauge alternatively for several times. The position of the pressure gauge pointer and the sound made by the vacuum pump do not obviously change. Otherwise, the cooling system may not be sealed properly.

**Step 4** Vacuumize the cooling system for at least 80 minutes after checking that the cooling system does not leak. The pressure displayed on the vacuum pump should be less than or equal to 60 Pa (absolute pressure). When the pressure stops dropping, pump for another 10 minutes. The indication of sight glass is dry (green).

**Step 5** Close all the pressure gauge valves, and the vacuum pump after vacuumizing the cooling system. Preserve the pressure for 10 minutes without disconnecting the connection. The pressure should be lower than and equal to 90 Pa (absolute pressure).



If the precision of the pressure gauge is too low to display 60 Pa (absolute pressure), ensure that the pressure gauge pointer stays at the minimum scale while vacuumizing the cooling system. Preserve the pressure for 1 hour, and make sure the displayed pressure does not increase obviously.

----End

### 4.1.3 Precharging Refrigerant

#### Prerequisites

Before charging refrigerant, ensure that air is exhausted from the gas pipe connecting to the refrigerant cylinder.

#### Context



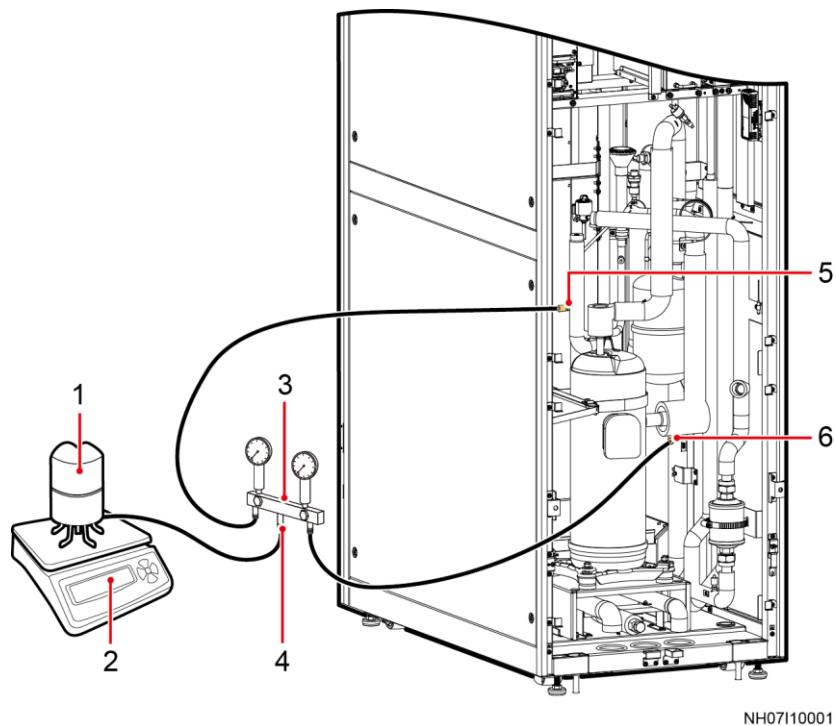
#### CAUTION

- Wear antifreeze gloves when performing refrigerant-related operations.
- Charge refrigerant (R410A) right after checking that the cooling system does not leak and the vacuum level meets the requirements.

#### Procedure

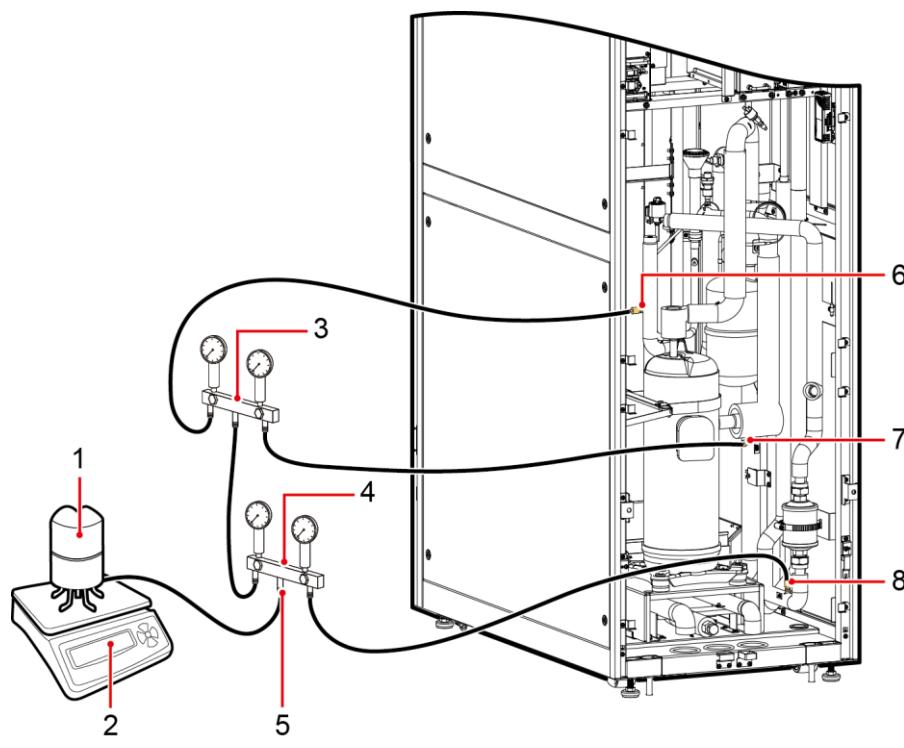
- Step 1** Remove the vacuum pump from the vacuumizing equipment, and replace the vacuum pump with a refrigerant cylinder, as shown in [Figure 4-3](#) or [Figure 4-4](#).

**Figure 4-3** Precharging refrigerant into the system without a low-temperature component



- |                          |                               |                               |
|--------------------------|-------------------------------|-------------------------------|
| (1) Refrigerant cylinder | (2) Electronic scale          | (3) Pressure gauge            |
| (4) Connection nut       | (5) Low-pressure needle valve | (6) Exhaust pipe needle valve |

**Figure 4-4** Precharging refrigerant into the system with a low-temperature component



NH07I10005

- |                          |                               |                               |                              |
|--------------------------|-------------------------------|-------------------------------|------------------------------|
| (1) Refrigerant cylinder | (2) Electronic scale          | (3) Pressure gauge 1          | (4) Pressure gauge 2         |
| (5) Connection nut       | (6) Low-pressure needle valve | (7) Exhaust pipe needle valve | (8) Liquid pipe needle valve |

- Step 2** Slightly open the refrigerant cylinder valve and loosen the connection nut of the pressure gauge. Tighten the nut when cold air escapes out of the nut.
- Step 3** Put the refrigerant cylinder upside down on the electronic scale. Clear the reading on the balance.



### NOTICE

If the R410A refrigerant is provided by Huawei, put the refrigerant steel vessel upside down when charging in the refrigerant. If the refrigerant is not provided by Huawei, check with the refrigerant provider whether the steel vessel has a siphon. If the vessel has a siphon, do not put it upside down when charging refrigerant. If the vessel has no siphon, put it upside down when charging refrigerant. These measures ensure that the refrigerant is charged in the liquid form.

- Step 4** Open the pressure gauge valves and refrigerant cylinder valve shown in [Figure 4-4](#) to charge refrigerant.



## NOTICE

- Do not move the pipe or steel vessel when charging refrigerant. Otherwise, the value on the electronic scale is influenced.
- When charging refrigerant for a cooling system without a low-temperature component, open only the low-pressure gauge valve. Charge 1 kg of refrigerant from the low pressure side, and then close the low-pressure gauge valve. Then, open the high-pressure gauge valve and charge the remaining refrigerant from the exhaust pipe needle valve.
- When charging refrigerant for a cooling system with a low-temperature component, open only the low-pressure valve of gauge 1 and gauge 2. Charge 1 kg of refrigerant from the low pressure side, and then close the low-pressure valve of gauge 1. Then, open the high-pressure valves of gauge 1 and gauge 2. Charge the remaining refrigerant from the exhaust pipe needle valve and liquid pipe needle valve.

**Step 5** The amount of refrigerant precharged must be more than half of the total charge amount calculated and less than the total charge amount. If refrigerant is not charged to the total amount in the precharging process, charge the remaining amount of refrigerant during power-on commissioning. For details about commissioning, see [4.7 Charging the Remaining Refrigerant](#).

**Step 6** After refrigerant charging, close pressure gauge valves and the refrigerant steel vessel valve.



### NOTE

After the injection is completed, tighten the needle valve bonnet, and check whether the needle valve leaks by applying soap bubbles to the valve vent or using a halogen leak detector. If the valve leaks, contact Huawei technical support.

----End

## 4.2 Preparing for Power-On

### Procedure

- Step 1** Verify that the air conditioner switch in the upstream power distribution cabinet (PDC) is OFF.
- Step 2** Verify that the input voltage meets the requirement.



## DANGER

Ensure that there is no reverse or open phase for the input power cable of the air conditioner. Otherwise, the air conditioner may be damaged beyond repair.

- Step 3** Verify that the L1, L2, L3, N, and PE wires are connected to the indoor and outdoor units in correct phase sequence.
- Step 4** Verify that the signal cable between the indoor and outdoor units is properly connected.
- Step 5** Verify that the water sensor is properly installed.

- Step 6** If teamwork networking is required, verify that the teamwork cable is correctly connected.
- Step 7** Verify that the cable connections and DIP switch settings of the T/H sensors are correct.
- Step 8** If humidifier is required, verify that the main water inlet valve is open.
- Step 9** Verify that the humidifier water inlet pipe and drainpipe are correctly connected, refrigerant pipes are connected, and refrigerant has been precharged.
- Step 10** Verify that fan switches Fan1–Fan10 are turned on.

----End

## 4.3 Power-On

### Context

All switches are set to OFF before delivery. If the preset status is changed, restore the preset status before any operation.

### Procedure

- Step 1** Turn on the air conditioner switch in the upstream PDC.
- Step 2** Turn on the switch QF3 that controls the outdoor unit and compressor, and switch QF4 that controls the electric heating. (If electric heater is not configured, it is not need to turn on the QF4.)
- Step 3** After the system is powered on for the first time, the **Quick Settings** screen is displayed. Log in as the admin user, as shown in [Figure 4-5](#).

**Figure 4-5** Initial power-on



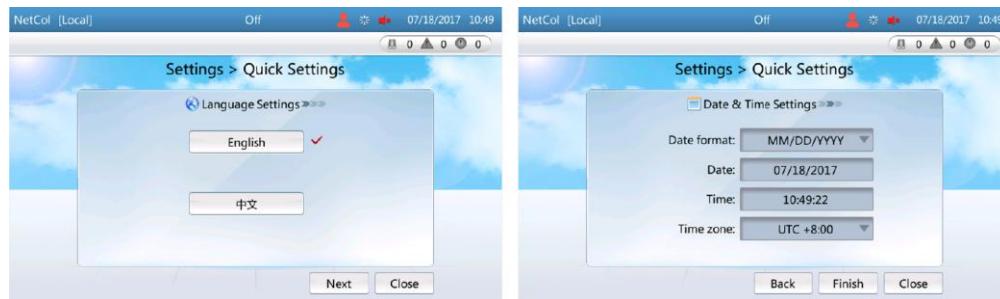


## NOTICE

- To prevent the effect of misoperation on the system, log in as the operator user first before modifying parameters. Confirm with Huawei before modifying parameters that cannot be modified by operator users; otherwise, Huawei will not be liable for any consequences of the unauthorized modification.
- Only certified pros are allowed to modify the advanced parameters. Unauthorized modifications may lead to device malfunction or damage.
- Users are classified as admin who can operate all menus and operator who can only view parameter settings and set a part of parameters in the menus. The preset password is 000001 for both types of users.
- The operator user can access customer and delivery parameters. Parameters in the advanced menu are the delivery parameters. The admin user can access customer, delivery, maintenance, and R&D parameters. Parameters in the advanced menu are the R&D parameters.
- For system security purposes, change the preset password after first login. For details about changing the password, see [6.16 How to Modify a Password](#). If you forget the password, restore preset password by referring to [6.17 Restoring Factory Settings](#).
- After login, you are allowed to perform operations until being logged out if no operation is performed within 3 minutes (user set). For security purposes, tap **Logout** at the lower-right corner of the screen to manually log out after you have completed all operations.

**Step 4** [Figure 4-6](#) shows how to configure relevant parameters. Click **Next** until the LCD home screen is displayed after the configuration.

**Figure 4-6** Quick Settings

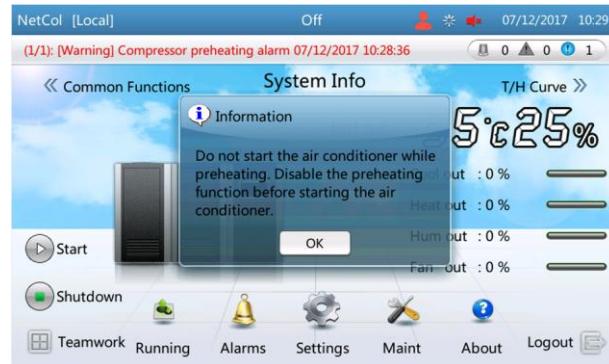


----End

## Follow-up Procedure

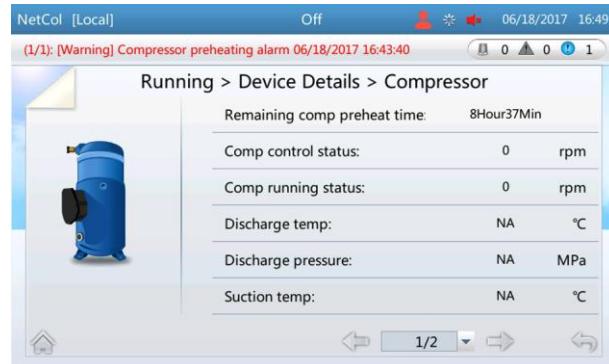
After powering on, the compressor starts preheating, and the system generates an alarm indicating that the compressor is preheating (for 12 hours). Do not start the air conditioner before the preheating ends. [Figure 4-7](#) is shown if you tap **Start**.

**Figure 4-7** Compressor preheating warning



If you need to query the remaining preheating time, choose **Running > Device Details > Compressor** on the home screen.

**Figure 4-8** Remaining compressor preheating time



## 4.4 Home Screen

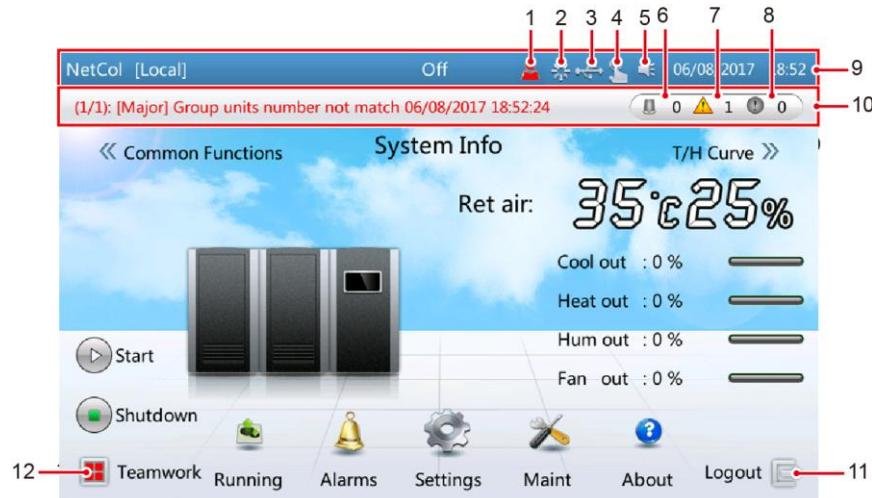
You can tap the menu items, buttons, or icons on the screen to enter related screens or perform operations, such as **Running**, **Alarms** and **Settings**. The controller main screen is shown in [Figure 4-9](#).



### NOTICE

User interfaces displayed in this document correspond to the ACC software version V200R001C30B078 and are for reference only.

**Figure 4-9** Home screen



**Table 4-2** Note for the page

No.	Items	Note
1	Permission status	indicates that you have not logged in to the system.  indicates that you have logged in to the system as an operator user.  indicates that you have logged in to the system as an admin user.
2	Communication status between the display panel and the main control board	in the status bar indicates that the display panel communicates properly with the main control board. If  is displayed in this position in the status bar, the communication fails.
3	USB status	in the status bar indicates that the USB flash drive is successfully connected to the display panel.
4	Diagnostic mode	in the status bar indicates that the precision air conditioner is in diagnostic mode. Tap the icon to exit from the diagnostic mode.
5	The buzzer status	The buzzer status can be set to <b>On</b> or <b>Off</b> . The  icon indicates that the buzzer is on. When the buzzer is on, it buzzes when an alarm is generated. When the buzzer is buzzing, you can tap anywhere on the screen to mute the buzzer. After the buzzer is muted, it still buzzes when a new alarm is generated. The  icon indicates that the buzzer is off (silenced). After the buzzer is silenced, it does not buzz when

No.	Items	Note
		an alarm is generated.
6	The current critical alarm and their quantity	0 refers to the current critical alarm and their quantity.
7	The current major alarm and their quantity	1 refers to the current major alarm and their quantity.
8	The current warning alarm and their quantity	0 refers to the current warning alarm and their quantity.
9	The status bar	N/A
10	The alarm bar	You can tap  in the alarm bar to enter the active alarm screen that displays all active alarms.
11	Login button / Logout button	<b>Login</b> indicates that you have not logged in to the system, and can tap the icon to log in. <b>Logout</b> indicates that you have logged in to the system as admin or operator user, and can tap the icon to log out.
12	Teamwork control button	indicates that there is no teamwork control at present.  indicates that there is teamwork control without alarms at present.  indicates that there is teamwork control with alarms at present.

## 4.5 Initial Configuration



### NOTICE

When configuring the temperature and humidity parameters, do not place the cursor between the decimal point and the following digit of the value. Otherwise, the decimal point cannot be deleted, and the parameter value fails to be configured.

### 4.5.1 Common Settings

#### Procedure

- Step 1** On the home screen, choose **Settings > System Settings > Common Settings**, [Figure 4-10](#) is displayed.

**Figure 4-10** Common settings



**Step 2** Set the parameters by referring to [Table 4-3](#).

**NOTE**

You are not recommended to modify the parameters not listed in [Table 4-3](#).

**Table 4-3** Parameter description

Parameter	Description	Configuration Principle
T/H control type	<b>Cold-aisle, Hot-aisle, Return-air, or Supply-air</b> can be set as required. The temperature and humidity set points correspond to the selected control type can be set.	<ul style="list-style-type: none"> <li><b>Return-air:</b> Select <b>Return-air</b> to control the temperature and humidity around the air return vent of the precision air conditioner.</li> <li><b>Supply-air:</b> Select <b>Supply-air</b> to control the temperature and humidity around the air supply vent of the precision air conditioner.</li> <li><b>Cold-aisle:</b> For a cold aisle, select <b>Cold-aisle</b> to control the temperature and humidity of the aisle. The temperature and humidity values come from the humidity and temperature sensor in the aisle.</li> <li><b>Hot-aisle:</b> For a hot aisle, choose <b>Hot-aisle</b> to control the temperature and humidity of the aisle. The temperature and humidity values come from the humidity and temperature sensor in the aisle.</li> </ul>
Ctrl temp setpoint at ctrl point	After the T/H control type and the temperature value under this type are set, the device conducts cooling or heating based on the settings.	<p>Set this parameter as required.</p> <ul style="list-style-type: none"> <li>Return air temperature: 26–35 °C recommended</li> <li>Supply air temperature: 18–24 °C recommended</li> <li>Cold aisle temperature: 18–24 °C recommended</li> <li>Hot aisle temperature: 26–35 °C</li> </ul>

Parameter	Description	Configuration Principle
		recommended
Ctrl humid setpoint at ctrl point	After the T/H control type and the humidity value under this type are set, the device conducts humidifying or dehumidifying based on the settings.	Set this parameter as required. 40%–60% RH recommended
Cold-aisle sensor	The sensors in cold aisles can be set to <b>Enable</b> or <b>Disable</b> .	<b>Enable</b> the corresponding humidity and temperature sensor installed in the cold aisle.
Hot-aisle sensor	The sensors in hot aisles can be set to <b>Enable</b> or <b>Disable</b> .	<b>Enable</b> the corresponding humidity and temperature sensor installed in the hot aisle.
Heat	The heat function can be set to <b>Enable</b> , <b>Disable</b> , or <b>Enabled when active pwr</b> (for dual-power supply scenarios).	<b>Enable</b> indicates that the electric heater will be started when the ambient temperature is lower than the certain temperature range of the temperature set point. <b>Disable</b> indicates that the electric heater will not be started. <b>Enabled when active pwr</b> indicates that the electric heater will be started when the main power is active and the ambient temperature is lower than the certain temperature range of the temperature set point.
Heat mode	Sets the starting mode of the electric heater.	If <b>Dehumid heat</b> is selected, the electric heater starts heating based on the current temperature only after the dehumidification function is enabled. If <b>Low-temp heat</b> is selected, the electric heater starts heating based only on the current temperature, no matter the dehumidification function is enabled or not. If <b>Dehumid &amp; LT heat</b> is selected, the electric heater starts heating when the dehumidification and heating condition or the low temperature heating condition is met.
Humid	The humidification can be set to <b>Enable</b> , <b>Disable</b> , or <b>Enabled when active pwr</b> (for dual-power supply scenarios).	<b>Enable</b> indicates that the electric humidifier will be started when the ambient humidity is lower than the certain humidity range of the humidity set point. <b>Disable</b> indicates that the electric humidifier will not be started. <b>Enabled when active pwr</b> indicates that the electric humidifier will be started when the main power is active and the ambient humidity is lower than the certain humidity range of the humidity

Parameter	Description	Configuration Principle
		set point.
Dehumid	The dehumidification can be set to <b>Enable</b> , <b>Disable</b> , or <b>Enabled when active pwr</b> (for dual-power supply scenarios).	<b>Enable</b> indicates that the dehumidification function will be enabled when the ambient humidity exceeds the certain humidity range of the humidity set point. <b>Disable</b> indicates that the dehumidification function will not be enabled. <b>Enabled when active pwr</b> indicates that the dehumidification function will be enabled when the main power is active and the ambient humidity exceeds the certain humidity range of the humidity set point.
DO associated alarm	<b>DO associated alarm</b> can be set to <b>Smoke&amp;water only</b> , <b>Critical&amp;major ALM</b> , and <b>None</b> to associate alarms.	<ul style="list-style-type: none"> <li>When DO associated alarm is set to <b>Smoke&amp;water only</b>, if a smoke sensor alarm or water overflow alarm is generated, port 1 for reporting common alarms generates a dry contact close alarm, and port 2 for reporting common alarms does not function.</li> <li>When DO associated alarm is set to <b>Critical&amp;major ALM</b>, if a critical alarm is generated, port 1 for reporting common alarms generates a dry contact close alarm; if a major alarm is generated, port 2 for reporting common alarms generates a dry contact close alarm.</li> <li>When DO associated alarm is set to <b>None</b>, ports 1 and 2 for reporting common alarms are open and generate no alarms.</li> </ul>
Outdoor fan control mode	Select the control mode for the outdoor fan based on the cable connection of the indoor and outdoor units (dry contact cable or RS485 cable).	When the indoor and outdoor units are connected using the dry contact cable, select <b>Dry contact</b> ; when the indoor and outdoor units are connected using the RS485 cable, select <b>Communicate</b> .
Cooling (for dual-power supply scenarios)	The cooling function can be set to <b>Enable</b> or <b>Enabled when active pwr</b>	If <b>Enable</b> is selected, the main and auxiliary power supplies allow the start of the cooling. If <b>Enabled when active pwr</b> is selected, only the main power supply allows the start of the cooling.

----End

## 4.5.2 Temperature and Humidity Values

### Procedure

- Step 1** On the home screen, choose **Settings > System Settings > T/H Sensor**. [Figure 4-11](#) is displayed.

**Figure 4-11** Setting temperature and humidity values



- Step 2** Set the parameters by referring to [Table 4-4](#).



You are not recommended to modify the parameters not listed in [Table 4-4](#).

**Table 4-4** Parameter description

Parameter	Description	Configuration Principle
T/H control type	<b>Cold-aisle, Hot-aisle, Return-air, or Supply-air</b> can be set as required. The temperature and humidity set points correspond to the selected control type can be set.	<ul style="list-style-type: none"><li><b>Return-air:</b> Select <b>Return-air</b> to control the temperature and humidity around the air return vent of the precision air conditioner.</li><li><b>Supply-air:</b> Select <b>Supply-air</b> to control the temperature and humidity around the air supply vent of the precision air conditioner.</li><li><b>Cold-aisle:</b> For a cold aisle, select <b>Cold-aisle</b> to control the temperature and humidity of the aisle. The temperature and humidity values come from the humidity and temperature sensor in the aisle.</li><li><b>Hot-aisle:</b> For a hot aisle, choose <b>Hot-aisle</b> to control the temperature and humidity of the aisle. The temperature and humidity values come from the humidity and temperature sensor in the aisle.</li></ul>
Temp control	This parameter controls the	<ul style="list-style-type: none"><li>Average: Select <b>Average</b> if the</li></ul>

Parameter	Description	Configuration Principle
mode	temperature inside the room or aisles based on the <b>Average</b> , <b>Maximum</b> , or <b>Minimum</b> of the temperatures collected by each sensor.	<p>temperature is to be controlled based on the averaged data value collected by the collector.</p> <ul style="list-style-type: none"> <li>• Maximum: Select <b>Maximum</b> if the temperature is to be controlled based on the maximum data value collected by the collector.</li> <li>• Minimum: Select <b>Minimum</b> if the temperature is to be controlled based on the minimum data value collected by the collector.</li> </ul>
Ctrl temp setpoint at ctrl point	After the T/H control type and the temperature value under this type are set, the device conducts cooling or heating based on the settings.	<p>Set this parameter as required.</p> <ul style="list-style-type: none"> <li>• Return air temperature: 26–35 °C recommended</li> <li>• Supply air temperature: 18–24 °C recommended</li> <li>• Cold aisle temperature: 18–24 °C recommended</li> <li>• Hot aisle temperature: 26–35 °C recommended</li> </ul>
Ctrl humid setpoint at ctrl point	After the T/H control type and the humidity value under this type are set, the device conducts humidifying or dehumidifying based on the settings.	Set this parameter as required. 40%–60% RH recommended
Cold-aisle sensor	The sensors in cold aisles can be set to <b>Enable</b> or <b>Disable</b> .	The sensors in cold aisles can be set to <b>Enable</b> or <b>Disable</b> .
Hot-aisle sensor	The sensors in hot aisles can be set to <b>Enable</b> or <b>Disable</b> .	The sensors in hot aisles can be set to <b>Enable</b> or <b>Disable</b> .

----End

### 4.5.3 (Optional) Setting the Pressure Difference Control

#### Prerequisites

If the differential pressure sensors are installed, perform the following operations accordingly. If the differential pressure sensors are not installed, skip this part.

#### Procedure

- Step 1** On the home screen, choose **Settings > System Settings > Indoor Fan**, set **Side pressure diff sensor type** to **0-50 Pa**.

**Step 2** Set Indoor fan ctrl type to Pressure diff control.

**Step 3** Change the other parameters based on the following instructions.

**Table 4-5** Parameter description

Parameter	Description	Configuration Principle
Indoor fan ctrl type	Sets the control type for the indoor fan.	Normally, retain <b>Ret air temp diff rate control</b> . If the differential pressure sensors are configured, change to <b>Pressure diff control</b> .
Indoor fan pressure diff setpoint	Sets the value for the pressure difference control.	The default value is 10 Pa. When there are partial hot spots indoors, you are advised to raise the value to ensure that the air volume of the indoor fans is between 60%–70%.
Side pressure diff sensor type	Sets the measuring range for the air side differential pressure sensor.	There is no default value. Set it to 0–50 Pa.
Indoor fan min speed	Sets the minimum speed for the indoor fan.	The default value is 30%. You are advised not to change the value.
Indoor fan max speed	Sets the maximum speed for the indoor fan.	The default value of EBM fan is 61%. You are advised not to change the value. The default value of AVC fan is 87%. You are advised not to change the value.

----End

#### 4.5.4 Setting Communications Parameters (IP Settings)

##### Procedure

**Step 1** On the home screen, choose **Settings > Comm Settings > IP Settings**. [Figure 4-12](#) is displayed.

**Figure 4-12** Setting the IP address, subnet mask, and gateway address



**Step 2** Set the parameters by referring to [Table 4-6](#).

**Table 4-6** IP address settings

Parameter	Setting Method
IP assigning mode	Set according to the actual plan.
IP address	Set according to the actual plan.
Subnet mask	Set according to the actual plan.
Gateway	Set according to the actual plan.

**Step 3** Tap **Submit**.

----End

## 4.5.5 Setting Communications Parameters (WiFi Settings)

### Prerequisites

After connecting the WIFI module of the USB interface to the USB port of the air conditioning display, **WiFi Settings** is enable to be set.

### Procedure

**Step 1** On the home screen, choose **Settings > Comm Settings > WiFi Settings**. [Figure 4-13](#) is displayed.

**Figure 4-13** Setting WiFi parameters



**Step 2** Set the parameters by referring to [Table 4-7](#).

**Table 4-7** WiFi settings

Parameter	Setting Method
WiFi SSID	Set WiFi SSID based on the actual configuration; WiFi SSID is the name used for the WiFi hotspot over which a mobile phone can connect to the air conditioner.
WiFi Password	Enter the WiFi password when you use a mobile phone to connect to the WiFi. When you enable the WiFi function for the first time, you need to set a password (the WiFi has no default password).
Enable WiFi	Enable the WiFi function. The default status is <b>Disable</b> .

**Step 3** Tap **Submit**.

----End

## 4.5.6 Setting Communications Parameters (Modbus Settings)

### Context

- To set communications parameters, log in as the **admin** user.
- If **Link mode** is **Server**, a precision air conditioner can be accessed by a maximum of two element management system (EMS) clients at the same time. If **Link mode** is **Client**, a precision air conditioner can be connected only to the EMS with the corresponding IP address. If **Link mode** is **Server and client**, a precision air conditioner can be accessed by a maximum of two EMS clients and connect to the EMS with the corresponding IP address at the same time.

[Figure 4-14](#) shows the screen for setting the Modbus communications parameters.

**Figure 4-14** Setting Modbus



## Setting Parameters for Modbus RTU

- Step 1** On the home screen, choose **Settings > Comm Settings > Modbus Settings**. Figure 4-14 is displayed.
- Step 2** Set parameters for Modbus RTU by following instructions in Table 4-8.

**Table 4-8** Modbus RTU parameter settings

Parameter	Setting	Setting Method
Baud rate	9600, 19200	Set the baud rate as required. The value should be consistent with that set on the EMS.
Comm address	1–255	Set the communication address of the precision air conditioner as planned. The EMS communicates with the precision air conditioner through this address, and the communication addresses of two precision air conditioners connecting to the same EMS must be unique.

----End

## Setting Parameters for Modbus TCP

- Step 1** On the home screen, choose **Settings > Comm Settings > Modbus Settings**. Figure 4-14 is displayed.
- Step 2** Set parameters for Modbus TCP by following instructions in Table 4-8.

**Table 4-9** Modbus TCP parameter settings

Parameter	Setting	Setting Method
Link mode	Server, Client, Server and client	<ul style="list-style-type: none"><li>If you set <b>Link mode</b> to <b>Server</b>, the air conditioner, as a server, supports two client connection and establishes communication.</li><li>If you set <b>Link mode</b> to <b>Client</b>, the air conditioner, as</li></ul>

Parameter	Setting	Setting Method
		<p>a client, can connect to a remote server and establish communication.</p> <ul style="list-style-type: none"><li>If you set <b>Link mode</b> to <b>Server and client</b>, the air conditioner, as a server, supports two client connection and establishes communication. In addition, the air conditioner, as a client, can connect to a remote server and establish communication.</li></ul>
Client encrypt	Enable, Disable	The default value is <b>Enable</b> . This parameter is configurable when <b>Link mode</b> is set to <b>Client</b> .
Server encrypt	Enable, Disable	The default value is <b>Disable</b> . This parameter is configurable when <b>Link mode</b> is set to <b>Server</b> .
Network IP	N/A	Enter the actual IP address of the EMS. IP addresses of the display panel, EMS client, and EMS server must be unique. This parameter is configurable when <b>Link mode</b> is set to <b>Client</b> .
Network port	N/A	It is recommended that you retain the default value 16100. If you need to change the value, enter a value as required. This parameter is configurable when <b>Link mode</b> is set to <b>Client</b> .

----End

## 4.5.7 Setting Communications Parameters (SNMP Parameters)

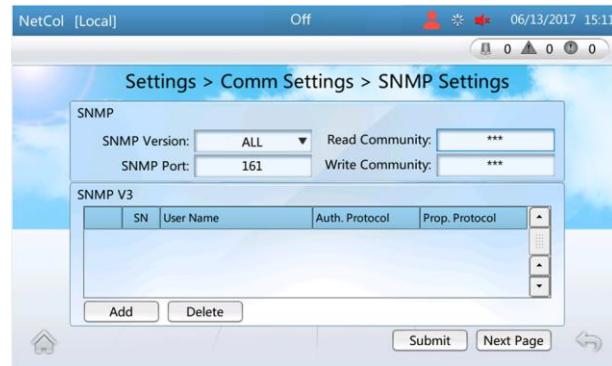
### Context

- To set communications parameters, log in as the **admin** user.
- This section is suitable only for SNMP. Skip this section if you use Modbus.
- Record the values entered in this section. They will be used when you access a precision air conditioner to an EMS (element management system).
- One precision air conditioner supports concurrent access of up to 10 EMSs through SNMP.

### Procedure

**Step 1** On the home screen, choose **Settings > Comm Settings > SNMP Settings**. Figure 4-15 is displayed.

**Figure 4-15** Setting SNMP communications parameters



**Step 2** Set **SNMP Version** based on site requirements, and then tap **Submit**.

- If you set **SNMP Version** to **ALL** or **SNMPv1&v2c**, you can set **Read Community** and **Write Community** by performing [Step 3](#).
- If you set **SNMP Version** to **ALL** or **SNMPv3**, you can add SNMPv3 users by performing [Step 4](#).

**Step 3** Set **Read Community** and **Write Community**.

1. Tap the text box after **Read Community**, as shown in [Figure 4-16](#). Set **Read Community** as planned, tap , and then tap **Submit**.

**Figure 4-16** Setting read community



2. Tap the text box after **Write Community**, as shown in [Figure 4-17](#). Set **Write Community** as planned, tap and then tap **Submit**.

**Figure 4-17** Setting write community



**Step 4** Add an SNMPv3 user.

1. Tap **Add** under **SNMP V3**.
2. Enter a planned value for **User Name**, select values for **Auth. Protocol** and **Prop.**

**Protocol** from drop-down list boxes, and tap  as shown in [Figure 4-18](#).

MD5 and DES protocols are not secure. It is recommended that you set **Auth. Protocol** to **SHA**, and set **Prop. Protocol** to **AES**. The following operations use the recommended settings as an example.

**Figure 4-18** Setting the protocol type



**NOTICE**

Passwords of an authentication protocol and proprietary protocol must comply with the following policies:

- The password must consist of 8–15 characters and contain at least two types of characters among uppercase letters (A–Z), lowercase letters (a–z), and digits (0–9).
- A password must be different from the corresponding user name or inverted user name.
- A password must not be a string containing duplicate sections, such as **12a12a12a**.

3. Set **SHA Password** and **Confirm Password** as planned, and tap  as shown in [Figure 4-19](#).

**Figure 4-19** Setting an SHA password



4. Set **AES Password** and **Confirm Password** as planned, and tap  , as shown in [Figure 4-20](#).

**Figure 4-20** Setting an AES password



5. Tap **Submit**.

**Step 5** Tap the text box after **SNMP Port**, as shown in [Figure 4-21](#). Set **SNMP Port** to the actual port number, tap  , and then tap **Submit**.

**Figure 4-21** Setting SNMP port





**NOTE**  
SNMP Port is set to **161** by default.

**Step 6** Tap Next Page.

**Step 7** Set SNMP trap parameters.

1. Tap **Add** under **SNMP Trap**.

2. Set **Trap Address** as planned and **Trap Port** to the actual port number.



**Trap Port** is set to null by default.

3. Select the **SNMP Version**. If an SNMPv3 user is configured, it is recommended that **SNMP Version** be set to **SNMPv3**.

4. If **SNMP Version** is set to **SNMPv3**, select an **SNMPv3 user name**, and then tap as shown in [Figure 4-22](#).

**Figure 4-22** Setting SNMP trap parameters



5. Tap **Submit** under **SNMP Trap**.

----End

## Follow-up Procedure

After a USB flash drive has been inserted into the controller USB port and successfully identified, tap **Export File** under **MIB File** to export the MIB file to the USB flash drive for the customer's use in accessing a third-party EMS. [Figure 4-23](#) shows successful file export.



### NOTICE

Before using a USB flash drive, ensure that its data has been scanned by antivirus software and is secure.

**Figure 4-23** Exporting the MIB file successfully



## 4.5.8 Setting Teamwork Control Parameters

### Prerequisites

Assign teamwork group number and teamwork unit address for the teamwork controlled precision air conditioners as follows:

- Teamwork group no.: Group the precision air conditioners in adjacent areas as one, that is, assign one teamwork group number for them. At most four teamwork groups can be assigned (1–4).
- Teamwork unit address: The address for the precision air conditioner in the same group cannot be the same (address range: 1–32). The precision air conditioner addressed 1 is the master one that collects, processes, and delivers data. It is recommended that you set the unit address numbers from one to the **Total number of units** in this group.

### Context

The parameters in this section are for reference only. Set actually parameter values as required.

### Procedure

**Step 1** On the home screen, tap > **Teamwork Settings**, to enter **Teamwork Settings** page, as shown in [Figure 4-24](#).

**Figure 4-24** Teamwork settings



**Step 2** Set teamwork control parameters.

All teamwork control parameters can be set on the master air conditioner. Only **Teamwork group no.**, **Teamwork unit address**, **Teamwork CAN resistor enable**, **Teamwork function** and **Network** can be set on slave air conditioners. [Table 4-10](#) describes how to set the parameters.

**Table 4-10** Teamwork settings

Parameter	Description	Configuration Principle	Default Value
Teamwork group no.	The number of the teamwork controlled group, which is the same for all the devices in the group.	Set the assigned teamwork control number.	1
Teamwork unit address	Only one device in each group can be set to 1. Other device addresses should be different from each other.	Set the assigned unit address.	NA
Teamwork CAN resistor enable	Indicates the build-out resistor status of each precision air conditioner in a teamwork group.	<ul style="list-style-type: none"> <li>Set this parameter to <b>No</b> for non-teamwork scenarios.</li> <li>For teamwork scenarios, set this parameter to <b>Yes</b> for the first and last precision air conditioners in a teamwork group, and set it to <b>No</b> for other precision air conditioners.</li> </ul>	No
Teamwork function	Disable or enable the teamwork function. If the teamwork function is disabled, this device is operating according to its own control. If the teamwork	Set this parameter based on the onsite device heat distribution.	Disable

Parameter	Description	Configuration Principle	Default Value
	function is enabled, this device works in harmony with others that in the same group.		
Teamwork mode	Set the teamwork mode. The options include Smart only.	/	Smart
Network	Networking mode for the teamwork. The networking mode set on the screen must be consistent with the actual networking mode. Otherwise, the teamwork control function will be unavailable. If the networking mode changes, select the corresponding networking mode on the screen. If the networking mode is changed on the screen, the software will restart and then run in the new networking mode.	Networked over CAN or MAC_CAN. <b>CAN</b> indicates teamwork control over a CAN bus, <b>MAC_CAN</b> teamwork control over an FE port.	MAC_CAN
Total number of units	Number of the precision air conditioners in this group (1 to 32 can be set).	Total number of the precision air conditioners in this group.	3
Number of running units	Number of active units in a group. The value ranges from 1 to <b>Total number of units</b> .	The master unit assigns the devices to be active units by the device number, beginning with the address 1 until to 32. The rest will become the standby ones.	2
Rotation	Disable or enable the active and standby precision air conditioners to change identity after a certain time, maximizing their service life.	This function is recommended when the heat is even.	Disable
Rotation period	Rotation days (1–30).	7 by default	7 day(s)
Rotation time	24 hours in a day (0–23).	0 by default	0
Forced rotation	<b>Forced rotation</b> specifies whether to enable a forcible rotation on the group before the specified rotation time. After a forced rotation, the accumulated time is	This item is set to "No" by default. If forced rotation is required, the function is set to "Yes".	No

Parameter	Description	Configuration Principle	Default Value
	recalculated.		
Requirement control	<p>Enable or disable the requirement control for the master device.</p> <ul style="list-style-type: none"> <li>When the requirement control is <b>Disable</b>, the master device does not synchronize data to the slave device, and all the air conditioners operate based on their own requirements, not referring to the mode delivered by the master device.</li> <li>When the requirement control is <b>Avoid competit run</b>, the master device synchronizes data (the temperature and humidity control type and set points of the master device and other parameters) to the slave device, and all the precision air conditioners in the group refer to the mode delivered by the master device.</li> <li>When the requirement control is <b>Indoor fan unify ctrl</b> or <b>Centrl load distribut</b>, all air conditioner fans in the group rotate at the same speed.</li> </ul>	<p><b>Avoid competit run</b> is recommended for the following scenario: In one teamwork, the temperature and humidity control type and temperature and humidity set point of units are the same, and device heat loads are distributed evenly.</p>	Disable
Cascade	After the requirement control is enabled, you can configure Cascade. The cascade function starts standby precision air conditioners if the active one cannot meet the refrigerating requirements.	If the heat load to the device increases, the cascade function is recommended.	Disable

**Step 3** Complete the teamwork settings for all the precision air conditioners by performing [Step 1](#) and [Step 2](#).

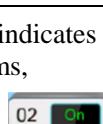
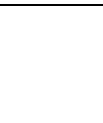
- Step 4** On the home screen of any teamwork controlled air conditioner, tap  . If the teamwork control succeeds, the teamwork topology of the air conditioner in the group is displayed, as shown in [Figure 4-25](#). [Table 4-11](#) describes the note for the screen.

**Figure 4-25** Teamwork topology



**Table 4-11** Notes for the screen

No.	Parameters	Note
1	ON/OFF/NA	<b>On</b> indicates that the precision air conditioner is started and <b>Off</b> indicates that the precision air conditioner is shut down. <b>NA</b> indicates that the precision air conditioner is offline.
2	01, 02, 03	Indicates the device address. 01 is the master one and the rest are all slave ones. <b>NOTE</b> If the master one offline, the teamwork networking failed.
3	Active/Stand by	Active: properly responds to the requirement control. Standby: responds to the requirement control when <b>Active</b> is faulty (critical alarms, shutdown, and offline) or <b>Active</b> cannot meet cooling requirements.
4	M/S	M indicates the master unit, and S indicates a slave unit. Blue indicates that the device is operating, and gray indicates that the device is idle.
5	Frame: green/non-green	A device with green frame indicates the device itself, as shown in  A non-green frame indicates the other device in the group, as shown in 
6	Ground	Red indicates that a critical alarm is generated,

No.	Parameters	Note
	color: red, bright gray	 as shown in  Bright gray indicates that the device is operating without any critical alarms,  as shown in  .

 **NOTE**

If teamwork succeeds, the teamwork icon is green. If teamwork fails, the teamwork icon is red. If teamwork mode is disabled, the teamwork icon is gray.

----End

## Follow-up Procedure

After you have completed the settings, perform the following checks to confirm whether the teamwork control is available:

1. Check whether the device number on the topology is the same as the actual device number.
  - If yes, go to [2](#).
  - If no, check the cable connection and the settings of teamwork control parameters.
2. Check whether the number of active devices on the topology is the same as the actual device number.
  - If yes, go to [3](#).
  - If no, check the cable connection and the settings of teamwork control parameters.
3. Check whether the number of standby devices on the topology is the same as the actual device number.
  - If yes, go to [4](#).
  - If no, check the cable connection and the settings of teamwork control parameters.
4. Check whether the number of online devices on the topology is the same as the actual device number.
  - If yes, the check is complete.
  - If no, check the cable connection and the settings of teamwork control parameters.

## 4.6 Startup

### Context

Tap the **Start** or **Shutdown** buttons on the home screen to start or shut down the precision air conditioner.

- If a power failure occurs and the precision air conditioner is powered on again, the precision air conditioner automatically restores to the original state (start or shutdown) before the power failure.
- The hardware port for controlling the status of the remote dry contact or On/Off status on remote is reserved on the ACC. The status of the remote dry contact and On/Off status on remote is on by default.
- The operations that start the air conditioner successfully by the display button or by element management system (EMS) is effective only when the remote dry contact or On/Off status on remote is on by default.

## Prerequisites

Download the **Service Expert** app from Huawei app store and runs on Android.

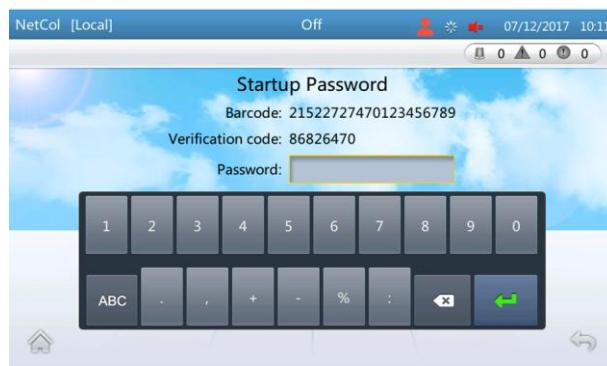
**Step 1** Tap **Start** on the home screen of the ACC.

- If the screen shown in [Figure 4-26](#) is displayed, tap **yes**. Indicating initial startup, perform [Step 2](#) for initial startup verification.

**Figure 4-26** Initial startup



**Figure 4-27** Password screen



- If the screen shown in [Figure 4-28](#) is displayed, indicating not initial startup, tap **Yes** to start the air conditioner.

**Figure 4-28 Startup**



**Step 2** Open the **Service Expert** app.



### NOTICE

User interfaces displayed in this document correspond to the APP software version V100R001C00B043T007 and are for reference only.

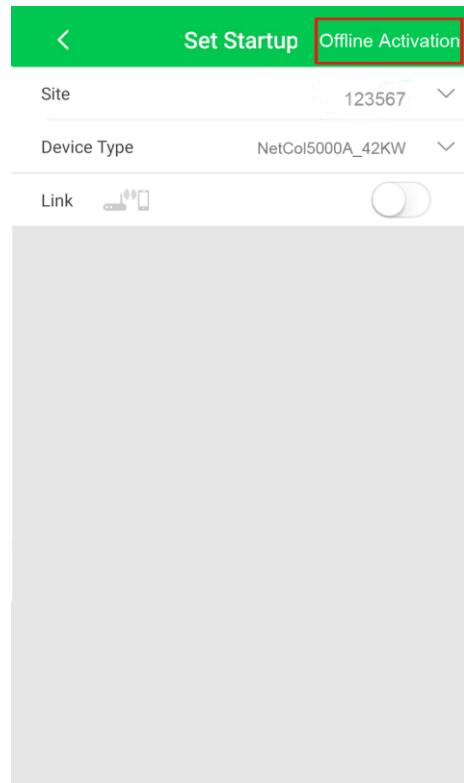
If the initial startup verification is passed, startup verification is not required afterwards.

After factory settings are restored, re-verification for startup is required.

**Step 3** Open the **Service Expert** app.

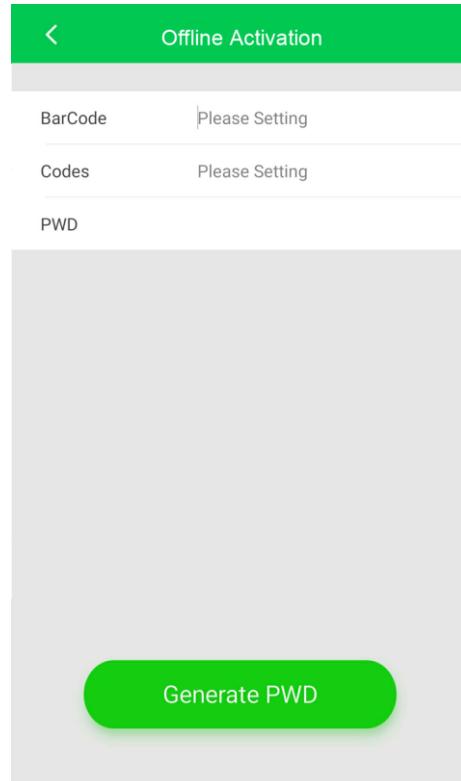
**Step 4** Tap **StartUp** on the home screen of the app and the screen shown in [Figure 4-29](#) is displayed.

**Figure 4-29** Offline activation



**Step 5** Tap **Offline Activation** and the screen shown in [Figure 4-30](#) is displayed.

**Figure 4-30** Generating a startup password



**Step 6** On the **Offline Activation** screen, enter **Bar code** and **Verification code**, which are available on the home screen of the ACC shown in [Figure 4-26](#). Tap **Generate PWD** to generate a startup password.

 **NOTE**

If startup verification fails (when you do not enter the password within 5 min or the password you enter is incorrect), the generated password will be invalid for the sake of security. The initial startup verification fails.

**Step 7** Tap **Password** on the home screen of the ACC and enter the generated startup password in the displayed dialog box.

**Step 8** After you power on the air conditioner, the screen displays the **Wizard Startup** screen.

- If the refrigerant is charged exactly as required, complete the wizard commissioning by referring to [4.8 Startup wizard](#).
- If the remaining refrigerant is not charged, tap **No**. Complete refrigerant charging by referring to [4.7 Charging the Remaining Refrigerant](#), and then perform the wizard commissioning by choosing **Maint > Wizard Startup** to enter the wizard startup screen.

----End

## 4.7 Charging the Remaining Refrigerant

### Prerequisites

- Check that the outdoor unit switch is turned on before you start the compressor.
- Remove the refrigerant steel vessel after checking that no more refrigerant is required.
- Charge refrigerant in an amount exactly as required by [4.1.1 Refrigerant Charge Amount](#). Otherwise, the devices may be damaged.

### Procedure

**Step 1** Charge refrigerant on the basis of the precharging.

- If there are no low-temperature components, open the low-pressure valve of the pressure gauge, and charge the remaining refrigerant from the low-pressure needle valve in small flow or intermittently, as shown in [Figure 4-3](#).
- If there are low-temperature components, open the low-pressure valves of pressure gauge 1 and pressure gauge 2, and charge the remaining refrigerant from the low-pressure needle valves in small flow or intermittently, as shown in [Figure 4-4](#).

**Step 2** On the home screen, choose **Running > Device Details > Compressor**, and view **Suction pressure** and **Discharge pressure** to determine whether they are within normal ranges. The normal suction pressure range is 0.7–1.2 MPa. [Table 4-12](#) lists the proper discharge pressure range. Choose **Running > Device Details > EEV**, and view the **EEV suction overheating degree**. The normal overheating degree should be in the range of 8–15 °C.

**Table 4-12** Normal discharge pressure ranges

Ambient Temperature	Discharge Pressure Range
< 15 °C	1.5–2.5 MPa
15–35 °C	1.5–3.1 MPa
35–45 °C	2.5–3.8 MPa
> 45 °C	3.1–4.15 MPa

**Step 3** After charging refrigerant, close all valves.

----End

## 4.8 Startup wizard

### Prerequisites

Check that refrigerant is fully charged before performing the wizard startup.

## Context

The startup wizard allows for commissioning of components such as the indoor fan, electric heater, humidifier, condensate pump, and cooling system. It also supports component automatic operation and automatic device checking, and can output commissioning report.

After you power on the air conditioner for the first time, the screen displays the **Wizard Startup** screen. If the air conditioner is not started for the first time, choose **Maint > Wizard Startup** to enter the **Wizard Startup** screen.



### NOTICE

Tapping **No** or **Exit**, submission timeout, and system exception all result in commissioning failures. Choose **Maint > Wizard Startup** to enter the **Wizard Startup** screen for new commissioning.

## Procedure

**Step 1** On the home screen, choose **Maint > Wizard Startup**, as shown in [Figure 4-31](#).

**Figure 4-31** Startup wizard



### NOTE

- For the initial startup wizard, **Last record** is in gray, indicating that the operation is not allowed.
- For the non-initial startup wizard, choose **Last record** and you can view the last startup wizard report.

**Step 2** Tap **Yes**. The checking before startup screen is displayed, as shown in [Figure 4-32](#).



### NOTICE

If the remaining refrigerant is not charged, tap **No**. Complete refrigerant charging by referring to [4.7 Charging the Remaining Refrigerant](#), and then perform the wizard commissioning.

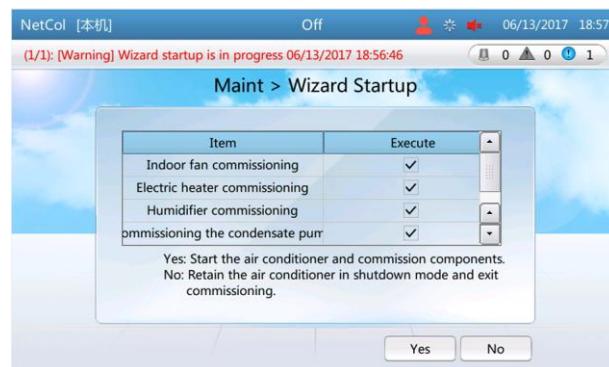
**Figure 4-32** Checking before startup



**Step 3** Tap **Yes** for check items one by one according to the prompt messages on the screen.

**Step 4** Tap **Yes** and enter the screen where you select commissioning items, as shown in [Figure 4-33](#).

**Figure 4-33** Selecting commissioning items

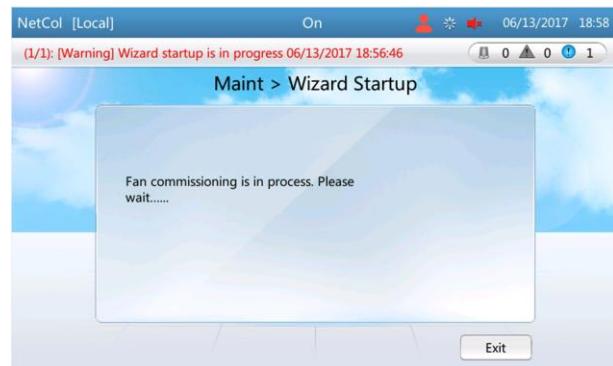


#### NOTE

- If the system is not configured with the electric heater and humidifier components, the electric heater and humidifier commissioning items will not appear on the screen.
- If the heating function and humidification function are disabled, you cannot select the electric heater and humidifier items.
- All the items are selected by default if you first enter the screen where you select commissioning items. Except that the indoor fan item is mandatory, you can clear other commissioning items that are not required.

**Step 5** Tap **Yes**. The fan commissioning screen is displayed, as shown in [Figure 4-34](#).

**Figure 4-34** Fan commissioning

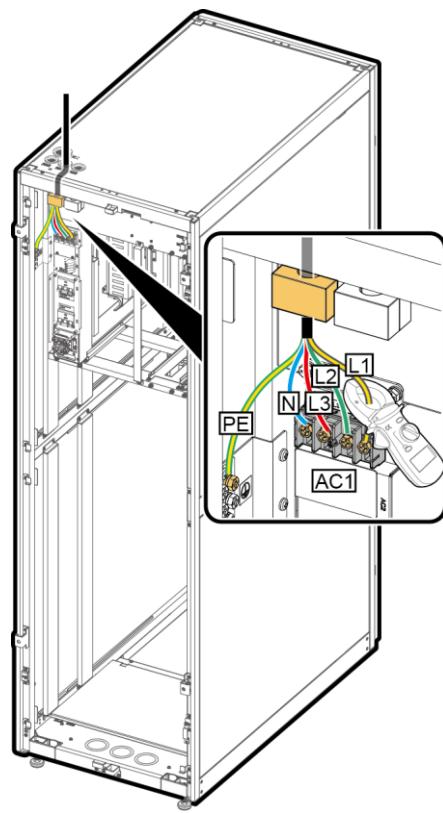


**NOTE**

The fan commissioning item is mandatory. After commissioning a component succeeds, the system automatically performs commissioning for the next component you selected. If commissioning fails, startup wizard ends.

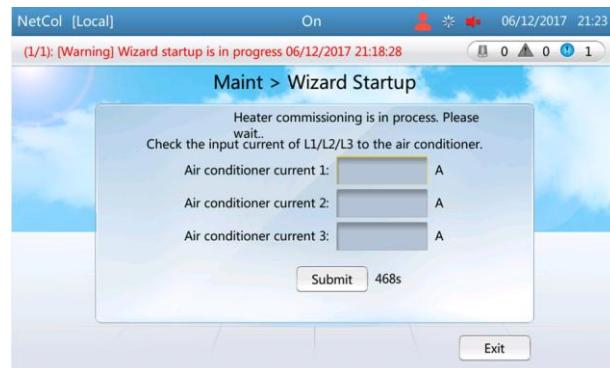
- Step 6** After the fan commissioning, the electric heater commissioning screen is displayed. Use a clamp meter to detect the currents of cables L1, L2, and L3. Enter the detected values on the screen, and tap **Submit** within the time limit displayed on the screen. The controller automatically determines whether the current of the air conditioner is within the normal range.
- If the current is within the normal range, the system automatically performs commissioning for the next component you selected.
  - If the current is beyond the normal range, the system deems that the commissioning has failed.

**Figure 4-35** L1/L2/L3 current detection



NH07I10023

**Figure 4-36** Electric heater commissioning



**Step 7** After the electric heater commissioning, the humidifier commissioning screen is displayed. Verify that the main water inlet valve is open. Check whether the humidifier pipes and the solenoid valve leak.

- If yes, select **Leak**, and tap **Submit**. The commissioning has failed. Locate and repair the leak points.
- If no, select **No leak**, and tap **Submit** within the time limit displayed on the screen.

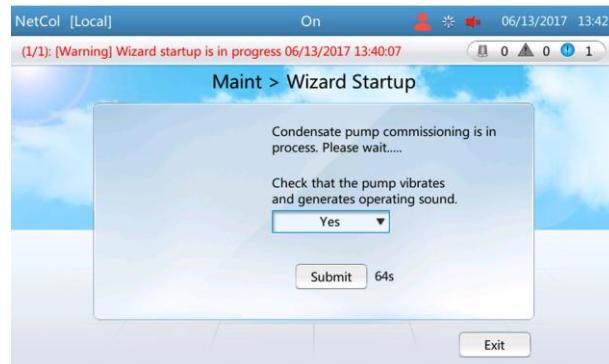
**Figure 4-37** Humidifier commissioning



**Step 8** After the humidifier commissioning, the condensate pump commissioning screen is displayed. Check whether the condensate pump vibrates and generates operating sound.

- If yes, select **Yes**, and tap **Submit** within the time limit displayed on the screen.
- If no, select **No**, and tap **Submit**. The commissioning has failed. Locate and rectify the faults of the condensate pump.

**Figure 4-38** Condensate pump commissioning



**Step 9** After the condensate pump commissioning, the cooling system commissioning screen is displayed. Check whether the electric heating belt is firmly attached to the compressor outer wall and whether there is noticeable temperature rise by touching the belt surface.

- If yes, select **Yes**, and tap **Submit** within the time limit displayed on the screen.
- If no, select **No**, and tap **Submit**. The commissioning has failed. Locate and repair the faults of the electric heating belt.

**Figure 4-39** Cooling system commissioning



**Step 10** View the commissioning result.

- [Figure 4-40](#) is displayed if component commissioning succeeds.

**Figure 4-40** Commissioning successfully



- [Figure 4-41](#) is displayed if component commissioning fails, which ends startup wizard commissioning.

**Figure 4-41** Commissioning unsuccessfully



 **NOTE**

- If commissioning fails, tap **Commissioning failed.** in Figure 4-41 to view the details, as shown in Figure 4-42.
- After the fault is cleared, choose **Maint > Wizard Startup** to enter the wizard startup screen for new commissioning.

**Figure 4-42** Details of failure



----End

## Adjusting the Air Deflecting Assembly

Adjust the air deflecting assembly on the inner side of the front door to a proper angle based on actual needs. The air deflecting assembly can be adjusted to 30°, 60°, 90°, 120°, and 150° (90° by default).

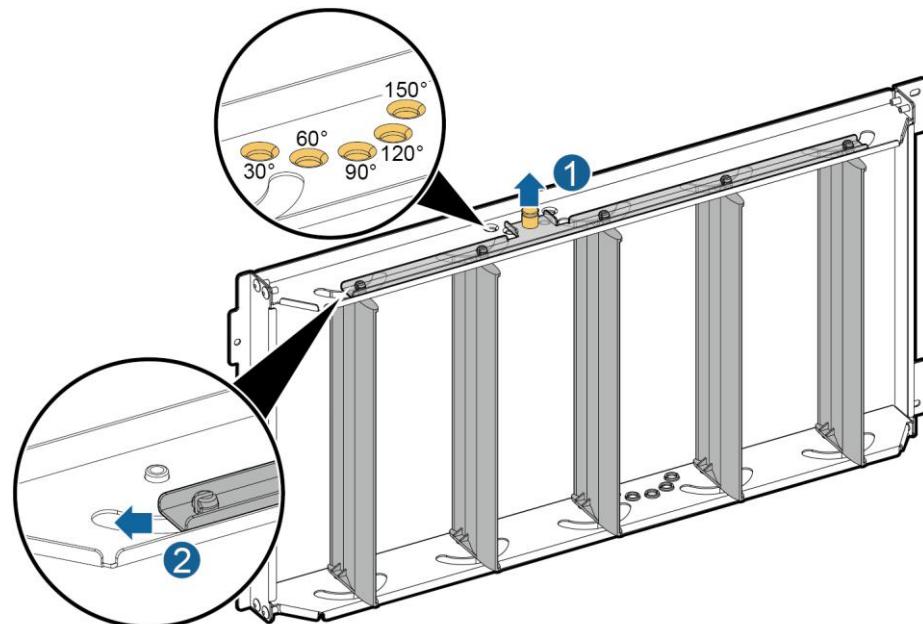
Figure 4-43 uses adjusting the air deflecting assembly to 30° as an example to illustrate how to adjust air deflecting assemblies.

1. Raise the button on the top of the air deflecting assembly, and the air deflector is loosened.
2. Rotate the air deflector assembly along the chute to the leftmost (30°).

 **NOTE**

From the leftmost to the rightmost of the chute, the angle is 30°, 60°, 90°, 120°, and 150° respectively. Determine the adjustment angle of the air deflector assembly based on the airflow.

**Figure 4-43** Adjusting the air deflecting assembly



NH07H00028

3. Put down the button.

## 4.9 (Optional) Power-off

### Context

In shutdown mode, the **Shutdown** button is green (unavailable) and the **Start** button is gray (available).

### Procedure

- Step 1** Tap **Shutdown** on the home screen. A warning is displayed, indicating whether to shut down the precision air conditioner, as shown in [Figure 4-44](#).

**Figure 4-44** Shutdown



- Step 2** Tap Yes. If the device is successfully shut, the system displays a message, indicating that the command is successfully triggered.
- Step 3** Turn off the switch QF3 that controls the outdoor unit and compressor and switch QF4 that controls the electric heater. (If electric heater is not configured, it is not need to operate the QF4.)
- Step 4** (Optional) If the air conditioner needs to be maintained in power-off mode or long-term power-off, switch off the air conditioner circuit breaker on PDC.

----End

## 4.10 Checking After Commissioning

Table 4-13 lists the commissioning checklist.

**Table 4-13** Commissioning checklist

Check Item	Actual Result
No oil stain exists on the copper pipe thermal insulation foam or bottom plate, or it has been cleaned.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The needle valve plug is secured (torque of $0.45\pm0.05\text{ N}\cdot\text{m}$ ), and valve bonnet is tightened.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The foreign matter inside the water pan and bottom plate is cleaned up.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
The air filter is correctly installed according to the air flow direction on the frame.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed

# 5 Operation and Maintenance

## 5.1 Routine Maintenance

### 5.1.1 Data Record

Before performing monthly maintenance, record data in [Table 5-1](#).

**Table 5-1** Recording table

Menu Item	Parameter	Record
Choose <b>Settings &gt; System Settings &gt; T/H Sensor</b> .	T/H control type	
	Temp set point	
	Humid set point	
Choose <b>Common Functions &gt; Operating Info</b> , or tap <b>Running &gt; Operating Info</b> .	Current temperature	
	Current humidity	
	Rated power voltage	
	Measured power voltage	
Choose <b>Running &gt; Device Details &gt; Compressor</b> .	Discharge temp	
	Discharge pressure	
	Suction pressure	
Tap <b>Teamwork</b> .	Teamwork function	
Choose <b>Teamwork &gt; Teamwork Settings</b> .	Total number of units	
	Number of active units	

### 5.1.2 Monthly Maintenance

[Table 5-2](#) lists the monthly maintenance items for an indoor unit. Record the maintenance result in the table after checking each maintenance item.

**Table 5-2** Monthly maintenance checklist

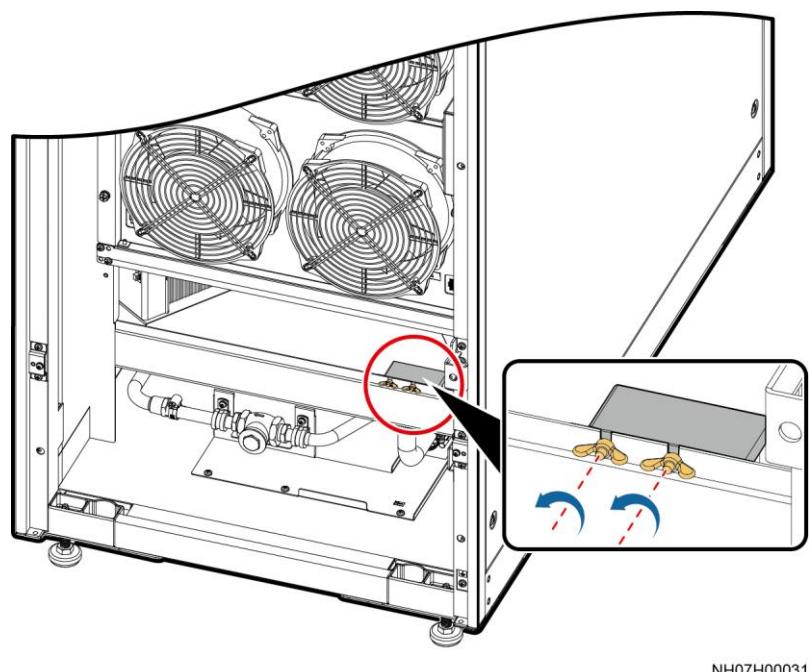
Task	Baseline Requirement	Troubleshooting
Air filter	The air filter is clean and not blocked.	Replace the air filter. It is recommended that an air filter should be replaced every 6 months. <a href="#">5.4.1 Replacing the Air Filter</a> shows how to replace an air filter.
	The air filter is not damaged or distorted.	Replace the air filter. It is recommended that an air filter should be replaced every 6 months. <a href="#">5.4.1 Replacing the Air Filter</a> shows how to replace an air filter.
Condensate pan and liquid level detector	The condensate pan and liquid level detector have no scale.	Clean up the scale from the condensate pan and liquid level detector.
Compressor	The compressor is secured.	Tighten screws if the compressor is not secured.
	The compressor service valve has no oil stains.	Clean the oil stains.
	The operating compressor generates no metal friction noise or collision noise from inside.	Replace the compressor.
Wet film humidifier	The humidifier float has no scale, and humidifier float functions properly.	Clean or replace the humidifier float.
	The wet film and humidifier water pan are clean and have no scale.	Replace the wet film humidifier. The wet film should be replaced every 12 months. <a href="#">5.4.10 Replacing the Wet Film Humidifier</a> shows how to replace the wet film. Remove and clean the water pan filter. <a href="#">Figure 5-1</a> shows how to remove a water pan filter.
	No operating overtime alarm is generated on the wet film humidifier.	Replace the wet film humidifier, as shown in <a href="#">5.4.10 Replacing the Wet Film Humidifier</a> .
	The upstream water pan filter of the humidifier pump is not dirty or blocked.	Remove and clean the water pan filter. <a href="#">Figure 5-1</a> shows how to remove a water pan filter.
Pipe	The refrigerant pipe does not leak or corrode, and the wrapped thermal insulation foam is intact.	Repair the leakage points and rewrap thermal insulation foam.
	The liquid sight glass is almost green, or not totally turns yellow.	If the sight glass completely turns yellow, water is too much in the pipe. To solve the problem, empty refrigerant out of the pipe, vacuumize the pipe, drain out water,

Task	Baseline Requirement	Troubleshooting
		<p>and then charge new refrigerant.</p> <p><b>NOTE</b></p> <p>If the sight glass does not obviously turn green, use a blow drier to blow wind to the filter until the sight glass is green.</p>
	Wear protective gloves and touch the compressor angle valve (as shown in <a href="#">Figure 5-11</a> ), needle valve, and soldering points in the refrigerant pipe to check whether there are oil stains.	<p>If there is an oil stain, check whether the suction and exhaust pressure of the compressor is within the normal ranges. (For the proper ranges of suction and exhaust pressure of the compressor, see <a href="#">4.7 Charging the Remaining Refrigerant</a>.) If the pressure is beyond the normal range, contact Huawei technical support.</p>
	No water exists under the water pipe or on the thermal insulation foam.	<ul style="list-style-type: none"> <li>• If drops of water are evenly distributed, wipe off them with a dry cloth.</li> <li>• If there are large water marks, close the water inlet sluice and process the leak points. If the thermal insulation foam is damaged or missing, lay out new thermal insulation foam.</li> </ul>
	The refrigerant pipe support is secure and intact.	Replace the refrigerant pipe support and secure it again.
Indoor fan	The indoor fan guard is not deformed, and the fan blades are not damaged.	Replace the fan. <a href="#">5.4.2 Replacing the Indoor Fan</a> describes how to replace a fan.
	The indoor fan runs smoothly.	Take out the foreign matter.
	The screws on the indoor fan are not loose or distorted.	Tighten the screws using a 10# socket wrench.

## Water pan filter

Open the water pan cover at the front door, and you can see the water pan filter. [Figure 5-1](#) shows how to remove a water pan filter.

**Figure 5-1** Removing a water pan filter



### 5.1.3 Quarterly Maintenance

Table 5-3 lists quarterly maintenance items for the indoor unit.

**Table 5-3** Quarterly maintenance checklist

Component	Item (Monthly Maintenance)	Troubleshooting
Monitoring	Export air conditioner logs, alarms, temperature, and humidity, as well as the operating status and time of the compressor, fan, electric heater, electric humidifier, and water pump from the monitoring system. View the historical alarms generated in this quarter and select the most common five ones. (If no monitoring system is available, skip this item.)	Rectify the fault or contact Huawei technical support.
Wet film humidifier	Start the indoor unit. Choose <b>Maint &gt; Diagnostic Mode &gt; Enter</b> on the main screen, and set the humidifier to a certain value.	<ul style="list-style-type: none"><li>If no water is supplied, check the cable connection or replace the water inlet solenoid valve.</li><li>If no water is supplied to the wet film humidifier, check the cable connection to the water pump or replace the humidifier pump.</li></ul>

Component	Item (Monthly Maintenance)	Troubleshooting
Electric heater	<p>Start the indoor unit. Choose <b>Maint &gt; Diagnostic Mode &gt; Enter</b> on the main screen, and set <b>Electric heater</b> to <b>On</b>.</p> <p>Check whether the electric heater generates heat.</p> <p><b>NOTE</b></p> <p>To avoid burns, do not touch the electric heater surface with bare skin.</p>	Replace the electric heater. For details, refer to <a href="#">5.4.11 Replacing the Electric Heater</a> .

## 5.1.4 Yearly Maintenance

[Table 5-4](#) lists yearly maintenance items for the indoor unit.



### NOTICE

Calculate the total cooling capacity and total server load of running indoor units. If the total load exceeds 80% of the total cooling capacity of the air conditioner, Huawei recommends increasing the number of air conditioners.

**Table 5-4** Yearly maintenance checklist

Component	Item (Quarterly Maintenance)	Troubleshooting
Sensor	Use a high-precision humidity and temperature sensor to calibrate the humidity and temperature sensors inside and outside the cabinet.	If the temperature deviation is greater than 1 °C or humidity deviation is greater than 5%, the T/H sensor must be calibrated or replaced. <a href="#">6.12 Calibrating a Sensor</a> describes how to calibrate the T/H sensor.
Evaporator	The evaporator fins are not pushed down.	Use a fin brush to organize the fins that are pushed down.
Welding spot and needle valve	Check that the welding spots and needle valves do not leak using soapy water, or check that they are free from oil stains.	If leaking points are found, retrieve the refrigerant and weld the leaking points again. For details, contact Huawei technical support.

## 5.2 Alarm Reference

Table 5-5 describes the alarm reference of the NetCol5000-A.



### NOTICE

If the **Clear** icon is displayed on the **Details screen**, the alarm can be manually cleared by tapping the **Clear** button after the fault is rectified. The alarm clearance type (automatic or manual) varies with precision air conditioners. Alarms can be cleared are a009, a013, a025, a046, a058, a061, a062, a064, a079, a095, a130, a137, a179, a182, a190.

**Table 5-5** Alarm description

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
a001	Return-air 1 temp invalid Return-air 2 temp invalid	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged 2. The T/H sensor is faulty.	1. Remove dirt or water from the T/H sensor. 2. Maintain or replace the T/H sensor.
a002	Return-air HT	Critical	The alarm is generated.	1. The load is high or the refrigeration capacity is insufficient. 2. The ambient temp is high. 3. The return-air HT alarm threshold is inappropriate. 4. The temp displayed is different from the actual temp.	1. Add more air conditioner units or Consult Huawei technical support. 2. Check other causes if the alarm persists after startup. 3. Adjust the return-air HT alarm threshold. 4. Calibrate or replace the abnormal sensors.
a003	Return air LT	Warning	The alarm is generated.	1. The load is low. 2. The ambient temp is low. 3. The return-air LT alarm threshold is inappropriate. 4. The temp displayed is different from the actual temp.	1. Please consult Huawei technical support. 2. Check other causes if the alarm persists after startup. 3. Adjust the undertemperature alarm threshold. 4. Calibrate or replace the abnormal sensors.
a004	Return-air 2 humid invalid	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The T/H sensor is faulty.	1. Remove dirt or water from the T/H sensor. 2. Maintain or replace the T/H sensor.
a007	Return-air	Major	The alarm	1. The cables to the T/H	1. Check the cables to the

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	2 T/H brd comm failed		is generated.	<p>sensor are loose or damaged.</p> <p>2. The DIP switch of the T/H sensor is set incorrectly.</p> <p>3. The T/H sensor is faulty.</p> <p>4. The communication port of the control board is faulty.</p>	<p>T/H sensor.</p> <p>2. Set the DIP switch of the T/H sensor correctly.</p> <p>3. Maintain or replace the T/H sensor.</p> <p>4. Maintain or replace the control board.</p>
a008	Comp HP switch	Major	The alarm is generated, and the compressor shuts down.	<p>1. The outdoor unit input power has an open phase, incorrect phase sequence, or is unavailable.</p> <p>2. The condenser is blocked.</p> <p>3. The condenser fins are blocked.</p> <p>4. Cables to the high pressure switch are not properly connected.</p> <p>5. The cables to the high pressure switch are loose or damaged.</p> <p>6. The high pressure switch is faulty.</p> <p>7. The refrigerant is overfilled.</p>	<p>1. Check the power supply of the outdoor unit.</p> <p>2. Check the cables to outdoor unit.</p> <p>3. Clean the condenser fins.</p> <p>4. Maintain or replace the outdoor unit or unit driver.</p> <p>5. Check the cables to the high pressure switch.</p> <p>6. Maintain or replace the high pressure switch.</p> <p>7. Decrease certain amount of refrigerant.</p>
a009	Comp HP switch lock	Critical	The alarm is generated, and the compressor shuts down.	The a008 comp HP switch alarm is generated frequently.	Reference to the solutions for the a008 comp HP switch alarm.
a012	Comp discharge HT	Major	The alarm is generated, and the compressor shuts down.	<p>1. The refrigerant leaks.</p> <p>2. The condenser fins are blocked.</p> <p>3. The ambient temp is high.</p> <p>4. The temperature displayed is different from the actual temperature.</p> <p>5. The discharge temperature sensor is faulty.</p> <p>6. The outdoor unit input power has an open phase, incorrect phase sequence,</p>	<p>1. Check for any leakages. Fill refrigerant after maintenance or replacement.</p> <p>2. Clean the condenser fins.</p> <p>3. Measure the ambient temperature.</p> <p>4. Calibrate or replace the exhaust air temperature sensor.</p> <p>5. Maintain or replace the temperature sensor.</p> <p>6. Check the power supply of the outdoor unit.</p> <p>7. Check the cables to</p>

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
				or is unavailable. 7. Cables to the outdoor unit are not properly connected. 8. The outdoor fan driver or fan is faulty.	outdoor unit. 8. Maintain or replace the outdoor unit or unit driver.
a013	Comp discharge HT lock	Critical	The alarm is generated, and the compressor shuts down.	The a012 comp discharge HT alarm is generated frequently.	Reference to the solutions for the a012 comp discharge HT.
a015	Comp exceed runtime	Warning	The alarm is generated.	The accumulated runtime of the compressor exceeds the alarm threshold.	Maintain or replace the compressor. Tap <b>Maint &gt; Performance Maint</b> to clear the accumulated runtime.
a018	Indoor fan 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 exceed runtime	Warning	The alarm is generated.	The accumulated runtime of the fan exceeds the alarm threshold.	Maintain or replace the indoor fan. Tap <b>Maint &gt; Performance Maint</b> to clear the accumulated runtime.
a023	Electric heater HT	Major	The alarm is generated, and the electric heater shuts down forcibly.	1. The temperature switch probes are located inappropriately. 2. The cables to the temp switch of the elec reheat are loose or damaged. 3. The temp switch is faulty. 4. The manual reset temperature switch is not reset. 5. The indoor fans are faulty.	1. Adjust the positions of the temperature switch probes. 2. Check the cables to the temp switch of the elec reheat. 3. Maintain or replace the temperature switch. 4. Reset the manual reset switch. 5. Maintain or replace the indoor fans.
a024	Elec heater exceed runtime	Warning	The alarm is generated.	The accumulated runtime of the electric heater exceeds the alarm set point.	Maintain or replace the electric heater. Tap <b>Maint &gt; Performance Maint</b> to clear the accumulated runtime.
a025	Air filter blocked	Warning	The alarm is generated.	1. Air filters are blocked. 2. The differential press switch is faulty. 3. The differential press switch is set inappropriately. 4. The pressure inlet tube of the differential pressure	1. Maintain or replace the air filters. 2. Replace the differential press switch. 3. Adjust the thres of the differential press switch. 4. Maintain or replace the press tube.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
				switch is blocked or disconnected. 5. The cables to the differential press switch are loose or damaged.	5. Check the cables to the differential press switch.
a026	Air filter exceed runtime	Warning	The alarm is generated.	The accumulated runtime of the air filters exceeds the alarm set point.	Maintain or replace the air filters. Tap <b>Maint &gt; Performance Maint</b> to clear the accumulated runtime.
a027	Power loss	Warning	The alarm is generated.	The supply power is cut off.	Check the power supply cables.
a028	Power phase A overvolt	Major	The alarm is generated, and the system shuts down.	1. The power supply voltage is too high. 2. The SPD three-phase test board is faulty.	1. Check the power supply voltage, Ensure that the voltage is within the operating range. 2. Replace the SPD three-phase test board.
a029	Power phase B overvolt	Major	The alarm is generated, and the system shuts down.	1. The power supply voltage is too high. 2. The SPD three-phase test board is faulty.	1. Check the power supply voltage, Ensure that the voltage is within the operating range. 2. Replace the SPD three-phase test board.
a030	Power phase C overvolt	Major	The alarm is generated, and the system shuts down.	1. The power supply voltage is too high. 2. The SPD three-phase test board is faulty.	1. Check the power supply voltage, Ensure that the voltage is within the operating range. 2. Replace the SPD three-phase test board.
a031	Power phase A undervolt	Major	The alarm is generated, and the system shuts down.	1. The power supply voltage is too low. 2. The SPD three-phase test board cable is not properly connected. 3. The SPD three-phase test board is faulty.	1. Check the power supply voltage. 2. Check the cable connection to the SPD three-phase test board. 3. Replace the SPD three-phase test board.
a032	Power phase B undervolt	Major	The alarm is generated, and the system shuts down.	1. The power supply voltage is too low. 2. The SPD three-phase test board cable is not properly connected. 3. The SPD three-phase test board is faulty.	1. Check the power supply voltage. 2. Check the cable connection to the SPD three-phase test board. 3. Replace the SPD three-phase test board.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
a033	Power phase C undervolt	Major	The alarm is generated, and the system shuts down.	1. The power supply voltage is too low. 2. The SPD three-phase test board cable is not properly connected. 3. The SPD three-phase test board is faulty.	1. Check the power supply voltage. 2. Check the cable connection to the SPD three-phase test board. 3. Replace the SPD three-phase test board.
a034	Power overfreq	Major	The alarm is generated, and the system shuts down.	1. The power supply frequency is too high. 2. The SPD three-phase test board is faulty.	1. Check the power supply frequency. Ensure that the frequency is within the operating range. 2. Replace the SPD three-phase test board.
a035	Power underfreq	Major	The alarm is generated, and the system shuts down.	1. The power supply frequency is too low. 2. The SPD three-phase test board is faulty.	1. Check the power supply frequency. Ensure that the frequency is within the operating range. 2. Replace the SPD three-phase test board.
a038	Liquid pipe temp sensor fault	Major	The alarm is generated.	1. Cables to the liquid pipe temp sensor are not properly connected. 2. The liquid pipe temp sensor is faulty.	1. Check cables to the liquid pipe temp sensor. 2. Maintain or replace the liquid pipe temp sensor.
a039	Ctrl point sensor disabled	Major	The alarm is generated.	All the T/H sensors of the control point are disabled.	Enable the T/H sensors of the control point or change the control point.
a040	PSU 1 power input failure PSU 2 power input failure	Warning	The alarm is generated.	The power input cables of the PSU are loose or damaged.	Check the power input cables of the PSU.
a042	Remote shutdown	Critical	The alarm is generated, and the system shuts down.	1. The remote shutdown dry contact is triggered. 2. The cables to the remote shutdown dry contact is faulty.	1. Check the status of the remote shutdown dry contact. 2. Check the cables to the remote shutdown dry contact.
a043	Floor water	Critical	The alarm is generated,	1. Water exists on the floor. 2. The overflow sensor cable is not properly	1. Check and clean the water. 2. Check the cable

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	overflow		and the system shuts down.	connected. 3. The water sensor is faulty.	connection to the overflow sensor. 3. Maintain or replace the water sensor.
a044	Smoke detected	Critical	The alarm is generated, and the system shuts down.	1. Smoke is generated in the equipment room. 2. Cables to the smoke sensor are loose or damaged. 3. The smoke sensor is faulty.	1. Exhaust smoke from the equipment room and reset the smoke sensor. 2. Check cables to the smoke sensor. 3. Maintain or replace the smoke sensor.
a045	Teamwork networking failed	Major	The alarm is generated, and a message "Networking failed" is displayed.	1. The DIP switch is set incorrectly for teamwork. 2. The teamwork cables are loose or damaged. 3. Any two air conditioner units have the same address. 4. No air conditioner unit is configured as the master unit. 5. The master unit is powered off.	1. Set the DIP switch correctly for teamwork. 2. Check the teamwork cables. 3. Change the addresses of the air conditioner units. 4. Configure one air conditioner unit as the master unit. 5. Power on the master unit, or configure another unit as the master unit.
a046	Comp freeze point protection	Major	The alarm is generated, and the compressor shuts down forcibly.	1. The solenoid valve is faulty. 2. The cables to the low press sensor are loose or damaged. 3. The low press sensor is faulty. 4. The dryer filter is blocked. 5. The expansion valve is blocked. 6. The indoor fans are faulty. 7. The ambient temp is low.	1. Maintain or replace the solenoid coil or the solenoid valve. 2. Check the cables to the low press sensor. 3. Maintain or replace the low press sensor. 4. Maintain or replace the dryer filter. 5. Maintain or replace the expansion valve. 6. Maintain or replace the indoor fans. 7. Check the ambient temp.
a048	Supply-air HT	Critical	The alarm is generated, and the rotational speed of the compressor increases.	1. The load is high, or the refrigeration capacity is insufficient. 2. The ambient temp is high. 3. The supply-air HT alarm threshold is inappropriate. 4. The temp displayed is different from the actual temp.	1. Add more air conditioner units or Consult Huawei technical support. 2. Check other causes if the alarm persists after startup. 3. Adjust the supply-air HT alarm threshold. 4. Calibrate or replace the abnormal sensors.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
a049	Supply-air LT	Warning	The alarm is generated.	<ul style="list-style-type: none"> <li>1. The load is low.</li> <li>2. The ambient temp is low.</li> <li>3. The supply-air LT alarm threshold is inappropriate.</li> <li>4. The temp displayed is different from the actual temp.</li> <li>5. The air filters are blocked.</li> </ul>	<ul style="list-style-type: none"> <li>1. Please consult Huawei technical support.</li> <li>2. Check other causes if the alarm persists after startup.</li> <li>3. Adjust the supply-air LT alarm threshold.</li> <li>4. Calibrate or replace the abnormal sensors.</li> <li>5. Maintain or replace the air filters.</li> </ul>
a050	Cold-aisle HT	Critical	The alarm is generated, and the rotational speed of the compressor increases.	<ul style="list-style-type: none"> <li>1. The T/H sensors are located in inappropriate position.</li> <li>2. The load is high or the refrigeration capacity is insufficient.</li> <li>3. The ambient temp is high.</li> <li>4. The cold-aisle HT alarm threshold is inappropriate.</li> <li>5. The temp displayed is different from the actual temp.</li> </ul>	<ul style="list-style-type: none"> <li>1. Adjust the position of the T/H sensors.</li> <li>2. Add more air conditioner units or Consult Huawei technical support.</li> <li>3. Check other causes if the alarm persists after startup.</li> <li>4. Adjust the cold-aisle HT alarm threshold.</li> <li>5. Calibrate or replace the abnormal sensors.</li> </ul>
a051	Hot-aisle HT	Critical	The alarm is generated.	<ul style="list-style-type: none"> <li>1. The T/H sensors are located in inappropriate position.</li> <li>2. The load is high or the refrigeration capacity is insufficient.</li> <li>3. The ambient temp is high.</li> <li>4. The hot-aisle HT alarm threshold is inappropriate.</li> <li>5. The temp displayed is different from the actual temp.</li> </ul>	<ul style="list-style-type: none"> <li>1. Adjust the position of the T/H sensors.</li> <li>2. Add more air conditioner units or Consult Huawei technical support.</li> <li>3. Check other causes if the alarm persists after startup.</li> <li>4. Adjust the hot-aisle HT alarm threshold.</li> <li>5. Calibrate or replace the abnormal sensors.</li> </ul>
a052	Supply-air 1 temp invalid Supply-air 2 temp invalid	Major	The alarm is generated.	<ul style="list-style-type: none"> <li>1. The cables to the T/H sensor are loose or damaged</li> <li>2. The T/H sensor is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>1. Remove dirt or water from the T/H sensor.</li> <li>2. Maintain or replace the T/H sensor.</li> </ul>
a053	PSU 1 fault	Major	The alarm is	The PSU is faulty.	Maintain or replace the PSU.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	PSU 2 fault		generated.		
a054	PSU 1 comm interrupt PSU 2 comm interrupt	Major	The alarm is generated.	1. The communication cables of the PSU are faulty. 2. The PSU is faulty. 3. The communication port of the control board is faulty.	1. Check the communication cables of the PSU. 2. Maintain or replace the PSU. 3. Maintain or replace the control board.
a055	Discharge temp sensor fault	Major	The alarm is generated.	1. Cables to the exhaust air temperature sensor are not properly connected. 2. The discharge temperature sensor is faulty.	1. Check cables to the exhaust air temperature sensor. 2. Maintain or replace the exhaust air temperature sensor.
a056	Discharge pressure sensor fault	Major	The alarm is generated.	1. The cables to the press sensor are loose or damaged. 2. The press sensor is faulty.	1. Check the cables to the press sensor. 2. Replace the press sensor.
a057	Comp discharge HP	Major	The alarm is generated, and the compressor shuts down.	1. The outdoor unit input power has an open phase, incorrect phase sequence, or is unavailable. 2. Signal cables to the outdoor unit are not properly connected. 3. The condenser fins are blocked. 4. The outdoor fan driver or fan is faulty. 5. The press displayed is different from the actual press. 6. The refrigerant is overfilled.	1. Check the power supply of the outdoor unit. 2. Check the signal cables to outdoor unit. 3. Clean the condenser fins. 4. Maintain or replace the outdoor unit or unit driver. 5. Calibrate or replace the press sensor. 6. Decrease certain amount of refrigerant.
a058	Comp discharge HP lock	Critical	The alarm is generated, and the compressor shuts down.	The a057 comp discharge HP alarm is generated frequently.	Reference to the solutions for the a057 comp discharge HP alarm.
a059	Suction pres sensor fault	Major	The alarm is generated.	1. The cables to the press sensor are loose or damaged. 2. The press sensor is faulty.	1. Check the cables to the press sensor. 2. Maintain or replace the press sensor.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
a060	Comp suction LP	Major	The alarm is generated, and the compressor shuts down.	<ul style="list-style-type: none"> <li>1. The refrigerant leaks.</li> <li>2. The cables to the press sensor are loose or damaged.</li> <li>3. The pressure sensor displayed is different from the actual pressure.</li> <li>4. The filter dryer is blocked.</li> <li>5. The expansion valve is blocked.</li> <li>6. The indoor fans are faulty.</li> <li>7. The ambient temp is low.</li> </ul>	<ul style="list-style-type: none"> <li>1. Identify and repair the leaking point, and refill refrigerant after maintenance.</li> <li>2. Check the cables to the press sensor.</li> <li>3. Calibrate or replace the pressure sensors.</li> <li>4. Maintain or replace the filter dryer.</li> <li>5. Maintain or replace the expansion valve.</li> <li>6. Maintain or replace the indoor fans.</li> <li>7. Check the ambient temp.</li> </ul>
a061	Comp suction LP lock	Critical	The alarm is generated, and the compressor is locked and not allowed to be started.	The a060 comp LP alarm is generated frequently.	Refer to the solutions for the a060 comp LP alarm.
a062	Comp drive alarm	Major	The alarm is generated, and the compressor shuts down.	<ul style="list-style-type: none"> <li>1. The comp driver is faulty.</li> <li>2. The comp is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>1. Maintain or replace the comp driver.</li> <li>2. Maintain or replace the comp.</li> </ul>
a063	Comp drive comm failed	Critical	The alarm is generated, and the compressor shuts down.	<ul style="list-style-type: none"> <li>1. The cables to the comp driver are loose or damaged.</li> <li>2. The comp driver is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>1. Check the cables to the comp driver.</li> <li>2. Maintain or replace the comp driver.</li> </ul>
a064	Comp drive lock	Critical	The alarm is generated, and the compressor shuts down.	<ul style="list-style-type: none"> <li>1. The comp driver is faulty.</li> <li>2. The comp is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>1. Maintain or replace the comp driver.</li> <li>2. Maintain or replace the comp.</li> </ul>
a065	Comp drive DC	Major	The alarm is	<ul style="list-style-type: none"> <li>1. The power supply voltage is high.</li> </ul>	<ul style="list-style-type: none"> <li>1. Check the power supply voltage.</li> <li>2. Maintain or replace the</li> </ul>

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	overvolt		generated.	2. The comp driver is faulty. 3. The comp is faulty.	comp driver. 3. Maintain or replace the comp.
a066	Comp drive DC undervolt	Major	The alarm is generated.	1. The power supply voltage is low. 2. The comp driver is faulty. 3. The comp is faulty. 4. The main power supply is faulty or the cables to the comp driver are loose or damaged.	1. Check the power supply voltage. 2. Maintain or replace the comp driver. 3. Maintain or replace the comp. 4. Reconnect the main power supply or the cables to the comp driver.
a067	Comp drive overload	Major	The alarm is generated.	1. The comp is in lack of oil. 2. The condenser fins are blocked. 3. The outdoor units are faulty. 4. The refrigerant is overfilled. 5. The comp is faulty.	1. Fill oil to the comp. 2. Clean the condenser fins. 3. Maintain or replace the outdoor units. 4. Decrease certain amount of refrigerant. 5. Maintain or replace the comp.
a068	Comp drive overcurrent	Major	The alarm is generated.	1. The comp is in lack of oil. 2. The condenser fins are blocked. 3. Outdoor fans run abnormally. 4. The refrigerant is overfilled. 5. The comp is faulty.	1. Fill oil to the comp. 2. Clean the condenser fins. 3. Maintain or replace outdoor fans. 4. Decrease certain amount of refrigerant. 5. Maintain or replace the comp.
a069	Comp start failed	Major	The alarm is generated.	1. The comp is in lack of oil. 2. The comp is faulty. 3. The comp driver is faulty.	1. Fill oil to the comp. 2. Maintain or replace the comp. 3. Maintain or replace the comp driver.
a070	Comp drive fan fault	Major	The alarm is generated.	The fans in the comp driver are faulty.	Check the fans in the comp driver.
a071	Comp drive module overheated	Major	The alarm is generated.	1. The fans in the comp driver are faulty. 2. Dirt exists in the air vents of the fans in the comp driver. 3. Comp drive heat sink is dirty & heat ex effect poor. 4. ECB cavity is	1. Check the fans in the comp driver. 2. Clean the air vents of the fans in the comp driver. 3. Clean the heat sink after power-off. 4. Clean the cavity after power-off. 5. Replace the drive

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
				dirty/blocked & heat effect poor. 5. The drive module is faulty.	module.
a072	Comp drive U phase loss	Major	The alarm is generated.	1. The cables to phase U of the comp driver are loose or damaged. 2. The comp driver is faulty.	1. Check the cables to the comp driver. 2. Maintain or replace the comp driver.
a073	Comp drive V phase loss	Major	The alarm is generated.	1. The cables to phase V of the comp driver are loose or damaged. 2. The comp driver is faulty.	1. Check the cables to the comp driver. 2. Maintain or replace the comp driver.
a074	Comp drive W phase loss	Major	The alarm is generated.	1. The cables to phase W of the comp driver are loose or damaged. 2. The comp driver is faulty.	1. Check the cables to the comp driver. 2. Maintain or replace the comp driver.
a075	Comp phase current alarm	Major	The alarm is generated, and the compressor shuts down.	1. The comp is in lack of oil. 2. The condenser is blocked. 3. Outdoor fans run abnormally. 4. The refrigerant is overfilled. 5. The comp is faulty.	1. Fill oil to the comp. 2. Clean the condenser fins. 3. Maintain or replace outdoor fans. 4. Decrease certain amount of refrigerant. 5. Maintain or replace the comp.
a077	Indoor fan 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 fault	Major	The alarm is generated. Can not start the compressor, humidifier, and electric heater.	1. The power supply to the indoor fan is abnormal. 2. The cables to the indoor fan are loose or damaged. 3. The indoor fan is faulty.	1. Check the power supply to the indoor fan. 2. Check the cables to the indoor fan. 3. Maintain or replace the indoor fan.
a078	Full water	Critical	The alarm is generated, and the system shuts down.	1. The cables to the high float are loose or damaged. 2. The high float is faulty or stuck. 3. The condensate pump is faulty, or the drainage capacity decreases. 4. The pipeline or the internal drainpipe is blocked or frozen.	1. Check the cables to the high float. 2. Maintain or replace the high float or clear the obstacles. 3. Reference to the solutions for the a041 cond pump fault alarm. 4. Clear the internal drainpipe.
a079	Drain	Major	The alarm	1. The cables to the high	1. Check the cables to the

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	abnormal		is generated.	float are loose or damaged. 2. The high float is faulty or stuck. 3. The condensate pump is faulty, or the drainage capacity decreases. 4. The pipeline or the internal drainpipe is blocked or frozen.	high float. 2. Maintain or replace the high float or clear the obstacles. 3. Reference to the solutions for the a041 cond pump fault alarm. 4. Clear the internal drainpipe.
a089	Comp speed limit	Major	The alarm is generated.	1. The comp is in lack of oil. 2. The refrigerant leaks.	1. Fill oil to the comp. 2. Check for any leakages. Fill refrigerant after maintenance or replacement.
a090	Cond pump exceed runtime	Warning	The alarm is generated.	The ambient temperature is higher than the upper alarm threshold.	Maintain or replace the condensate pump. Tap <b>Maint &gt; Performance Maint</b> to clear the accumulated runtime.
a093	High humidity	Warning	The alarm is generated.	1. The load is low. 2. The ambient humidity is high. 3. The T/H sensors are located in inappropriate position. 4. The high humidity alarm threshold is inappropriate. 5. The temp displayed is different from the actual temp.	1. Please consult Huawei technical support. 2. Check the ambient humidity. 3. Adjust the position of the T/H sensors. 4. Adjust the high humidity alarm threshold. 5. Calibrate or replace the abnormal T/H sensors.
a094	Low humidity	Warning	The alarm is generated.	1. The ambient humidity is low. 2. The T/H sensors are located in inappropriate position. 3. The low humidity alarm threshold is inappropriate. 4. The temp displayed is different from the actual temp.	1. Check the ambient humidity. 2. Adjust the position of the T/H sensors. 3. Adjust the low humidity alarm threshold. 4. Calibrate or replace the abnormal T/H sensors.
a095	Comp drive short period	Critical	The alarm is generated.	The comp driver is faulty for multiple times, or the faulty lasts for a long time.	Maintain or replace the comp driver and tap <b>Maint &gt; Performance Maint</b> to clear the accumulated runtime.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
a102	Indoor fan 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 overspeed	Major	The alarm is generated.	1. The cables to the indoor fan are loose or damaged. 2. The indoor fan is faulty.	1. Check the cables to the indoor fan. 2. Maintain or replace the indoor fan.
a105	Indoor fan failure	Critical	The alarm is generated.	The indoor fan is faulty.	Maintain or replace the indoor fan.
a108	Cold-aisle 1, 2, 3, 4, 5 temp invalid	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The T/H sensor is faulty.	1. Remove dirt or water from the T/H sensor. 2. Maintain or replace the T/H sensor.
a109	Cold-aisle 1, 2, 3, 4, 5 humid invalid	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The T/H sensor is faulty.	1. Remove dirt or water from the T/H sensor. 2. Maintain or replace the T/H sensor.
a110	Cold aisle 1, 2, 3, 4, 5 T/H brd comm failed	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The DIP switch of the T/H sensor is set incorrectly. 3. The T/H sensor is faulty. 4. The communication port of the control board is faulty.	1. Check the cables to the T/H sensor. 2. Set the DIP switch of the T/H sensor correctly. 3. Maintain or replace the T/H sensor. 4. Maintain or replace the control board.
a111	Hot-aisle 1, 2, 3, 4, 5 temp invalid	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The T/H sensor is faulty.	1. Remove dirt or water from the T/H sensor. 2. Maintain or replace the T/H sensor.
a112	Hot-aisle 1, 2, 3, 4, 5 humid invalid	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The T/H sensor is faulty.	1. Remove dirt or water from the T/H sensor. 2. Maintain or replace the T/H sensor.
a113	Hot-aisle 1, 2, 3, 4, 5 T/H brd comm failed	Major	The alarm is generated.	1. The cables to the T/H sensor are loose or damaged. 2. The DIP switch of the T/H sensor is set incorrectly. 3. The T/H sensor is faulty. 4. The communication port of the control board is faulty.	1. Check the cables to the T/H sensor. 2. Set the DIP switch of the T/H sensor correctly. 3. Maintain or replace the T/H sensor. 4. Maintain or replace the control board.
a116	iCooling communic	Major	The alarm is	1. The monitoring host (ECC) is faulty.	1. Check that the monitoring host (ECC)

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	ation fault		generated.	2. The ETH converter is faulty. 3. The smart socket is faulty. 4. The cables are faulty between the air conditioner and the smart socket or monitoring host.	works properly. 2. Maintain or replace the ETH converter. 3. Maintain or replace the smart socket. 4. Maintain or replace the cables between the air conditioner and the smart socket or monitoring host.
a117	Group units number not match	Major	The alarm is generated.	1. Teamwork settings are incorrect for slave units. 2. The number of air conditioner units is incorrectly set in the master unit. 3. A slave unit is offline.	1. Modify teamwork settings for slave units to enable slave units to join the teamwork group. 2. Set total number of units on the master unit to the actual number of units. 3. Check the cable connection and running conditions of the slave units.
a118	Main power off	Major	The alarm is generated.	1. The primary power supply is faulty. 2. The cables to the primary power supply is loose.	1. Check the primary power supply. 2. Check the cables to the primary power supply.
a119	L1/L2 linkage condition not met	Major	Cables to the temperature sensor in the cabinet are not properly connected.	1. The cables to the cabinet temperature sensor are loose or damaged. 2. The cabinet temperature sensor is faulty. 3. The monitoring host (ECC) is faulty. 4. The rack environment unit is faulty. 5. The temperature sensor configuration is incorrect in the monitoring host (ECC). 6. The air conditioner configuration is incorrect. 7. Teamwork settings are incorrect for the master unit.	1. Maintain or replace the cables to the temperature sensor, rack environment unit, and the monitoring host (ECC). 2. Maintain or replace the temp sensor of cabinets. 3. Check or maintain the monitoring host (ECC). 4. Check or maintain the rack environment unit. 5. Check that the configuration between the temp sensor and the cabinet is correct. 6. Check that the configuration of the monitoring host (ECC) is correct. 7. Set total number of units on the master unit to the actual number of units.
a120	A/C	Major	The alarm	1. Teamwork settings are	1. Enable the sensors for controlling the indoor

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	abnormal L1/L2 disconnect		is generated.	incorrect for slave units. 2. Teamwork settings are incorrect for the master unit. 3. A slave unit is power off or offline. 4. The ETH converter is faulty. 5. The smart socket is faulty. 6. The cables are faulty between the air conditioner and the smart socket or monitoring host.	fan. 2. Modify teamwork settings for slave units to enable slave units to join the teamwork group. 3. Check the cable connection and running conditions of the slave units. 4. Maintain or replace the ETH converter. 5. Maintain or replace the smart socket. 6. Maintain or replace the cables between the air conditioner and the smart socket or monitoring host.
a130	Water inlet solenoid valve fault	Major	The alarm is generated, and the humidifier shuts down.	The water inlet solenoid valve is faulty.	Replace the water inlet solenoid valve.
a134	Suction temp sensor fault	Major	The alarm is generated.	1. Cables to the suction temperature sensor are not properly connected. 2. The suction temperature sensor is faulty.	1. Check cables to the suction temperature sensor. 2. Maintain or replace the suction temperature sensor.
a136	EEV low overheating degree	Major	The alarm is generated, and the compressor shuts down.	1. The electronic expansion valve coil is loose. 2. The electronic expansion valve coil is faulty. 3. The electronic expansion valve is faulty.	1. Reinstall the electronic expansion valve coil. 2. Replace the electronic expansion valve coil. 3. Replace the electronic expansion valve.
a137	EEV low overheating locked	Critical	The alarm is generated, and the compressor shuts down.	The EEV low overheating degree alarm is generated several times within a certain period.	Refer to the solutions for the a136 EEV low overheating degree alarm.
a140	EEV auto control fault	Critical	The alarm is generated,	1. The suction pressure sensor is faulty. 2. The suction temperature	1. Verify that the suction pressure sensor works properly.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
			and the compressor shuts down.	sensor is faulty.	2. Verify that the suction temperature sensor works properly.
a143	Outdoor fan communication failure	Major	The alarm is generated.	1. The indoor and outdoor communications cable is not properly connected. 2. The outdoor fan driver is faulty. 3. The outdoor unit is not powered on. 4. The communication port of the control board is faulty.	1. Check the indoor and outdoor communications cable. 2. Maintain or replace the outdoor fan driver. 3. Power on the outdoor unit. 4. Maintain or replace the control board.
a144	Outdoor fan run overtime	Warning	The alarm is generated.	The outdoor fan running time exceeds the upper limit.	Replace the outdoor fan, and clear the accumulated running time.
a145	Outdoor fan Dr hardware protect	Major	The alarm is generated.	1. The driver output cable is short-circuited or grounded. 2. The fan is faulty. 3. The power grid voltage exceeds the upper threshold.	1. Replace the driver output cable. 2. Replace the fan. 3. Power off and verify that the input power supply voltage meets the specifications.
a146	Outdoor fan blocked	Major	The alarm is generated.	The fan is blocked.	Clean the fan and remove obstacles to ensure that the fan works properly.
a147	Outdoor fan Dr OP open phase	Major	The alarm is generated.	1. A driver output cable connector or fan input cable connector is loose. 2. A cable is not properly connected.	1. Secure the driver output cable. 2. Replace the driver output cable.
a148	R/W fail of outdoor fan Dr	Critical	The alarm is generated.	EEPROM read/write fails.	Power off the driver and power it on 10s later. Replace it if the alarm persists.
a149	Outdoor fan Dr 12V undervolt	Major	The alarm is generated.	The auxiliary power supply is faulty.	Replace the fan driver.
a150	Outdoor fan grid overvolt	Major	The alarm is generated.	The power grid voltage exceeds the upper threshold.	Power off the driver and verify that the supply voltage meets specifications.
a151	Grid undervolt or phase	Major	The alarm is	The power grid has an open phase, or its voltage is below	Secure the power grid input cable, power off the driver, and verify that the supply

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
	open		generated.	the lower threshold.	voltage meets specifications.
a152	Outdoor fan driver fault	Warning	The alarm is generated.	1. A cable of the fan is loose or disconnected. 2. The fan is blocked. 3. The fan is faulty.	1. Secure the cables connected to fan terminals. 2. Clear obstacles in the fan. 3. Replace the fan.
a153	Outdoor fan Dr DC bus undervol	Major	The alarm is generated.	1. A power grid input cable is loose. 2. The power grid voltage is below the lower threshold.	1. Secure the power grid input cable. 2. Power off the driver and verify that the supply voltage meets specifications.
a154	Outdoor fan Dr DC bus overvolt	Major	The alarm is generated.	The power grid voltage exceeds the upper threshold.	Power off the driver and verify that the supply voltage meets specifications.
a155	Inverter power module overtemp	Major	The alarm is generated.	1. The fan is faulty. 2. The ambient temperature exceeds the upper threshold.	1. Replace the fan. 2. Power off and power on after the ambient temperature drops to a proper level.
a156	Inverter output U overcurrent	Major	The alarm is generated.	1. The driver output cable is grounded. 2. The driver output cable is short-circuited. 3. The fan is faulty.	1. Cut off the three-phase power supply and check whether the driver output cable is grounded. See a145 handling methods. 2. Cut off the three-phase power supply and check whether the driver output cable is faulty. See the a145 handling methods. 3. Replace the fan.
a157	Inverter output V overcurrent	Major	The alarm is generated.	1. The driver output cable is grounded. 2. The driver output cable is short-circuited. 3. The fan is faulty.	1. Cut off the three-phase power supply and check whether the driver output cable is grounded. See a145 handling methods. 2. Cut off the three-phase power supply and check whether the driver output cable is faulty. See the a145 handling methods. 3. Replace the fan.
a158	Inverter output W overcurrent	Major	The alarm is generated.	1. The driver output cable is grounded. 2. The driver output cable is short-circuited.	1. Cut off the three-phase power supply and check whether the driver output cable is grounded. See

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
				3. The fan is faulty.	a145 handling methods. 2. Cut off the three-phase power supply and check whether the driver output cable is faulty. See the a145 handling methods. 3. Replace the fan.
a159	Outdoor fan Dr. sampling drift	Major	The alarm is generated.	The sampling circuit is faulty.	Replace the fan driver.
a160	Outdoor fan Dr OP ground fault	Major	The alarm is generated.	The driver output cable is short-circuited or grounded.	Cut off the three-phase power supply and check whether the driver output cable is faulty or grounded.
a161	Outdoor fan output current Imba	Major	The alarm is generated.	The fan three-phase loads are imbalanced.	Check whether the fan is faulty.
a162	Outdoor fan pres sensor fault	Warning	The alarm is generated.	1. A cable of the pressure sensor is loose. 2. The pressure sensor is faulty.	1. Secure the pressure sensor terminals. 2. Replace the press sensor.
a163	Outdoor fan overtemp	Major	The alarm is generated.	1. The fan overtemperature feedback cable is loose. 2. The outdoor unit is dirty and blocked. 3. The fan is faulty.	1. Secure the cable connected to the fan overtemperature feedback terminal. 2. Clean the fan and remove obstacles to ensure that the fan works properly. 3. Replace the fan.
a164	Outdoor fan Dr Elec control box HT	Warning	The alarm is generated.	Honeycomb holes in the driver rear panel are dirty or blocked.	Clean the honeycomb holes using a brush.
a165	Outdoor fan power freq error	Major	The alarm is generated.	The power grid freq is abnormal.	Power off the driver and verify that the supply freq meets specifications.
a166	Outdoor fan driver fault	Major	The alarm is generated, and the compressor shuts down.	The fan driver has generated a major alarm.	Clear the major alarm for the driver.

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
a167	Auxiliary power 24V overvoltage	Major	The alarm is generated.	The auxiliary power supply is faulty.	Replace the auxiliary power supply module.
a168	Auxiliary power 24V undervoltage	Major	The alarm is generated.	The auxiliary power supply is faulty.	Replace the auxiliary power supply module.
a169	Power phase A open	Critical	The alarm is generated, and the system shuts down.	1. The power grid is unstable. 2. The phase A cable is faulty.	1. Check the power grid. 2. Check the phase A cable is faulty.
a170	Power phase B open	Critical	The alarm is generated, and the system shuts down.	1. The power grid is unstable. 2. The phase B cable is faulty.	1. Check the power grid. 2. Check the phase B cable is faulty.
a171	Power phase C open	Critical	The alarm is generated, and the system shuts down.	1. The power grid is unstable. 2. The phase C cable is faulty.	1. Check the power grid. 2. Check the phase C cable is faulty.
a172	SPD 3-phase test board comm fault	Major	The alarm is generated.	1. The communications cable is not properly connected. 2. The SPD three-phase test board is faulty. 3. The communication port of the control board is faulty.	1. Check the communications cable. 2. Replace the SPD three-phase test board. 3. Maintain or replace the control board.
a174	SPD failed	Major	The alarm is generated.	The SPD three-phase test board is faulty.	Replace the SPD three-phase test board.
a175	L1/L2 linkage humidity not met	Major	The alarm is generated.	1. The cabinet T/H sensor is faulty. 2. The cables to the cabinet T/H sensor are loose or damaged.	1. Maintain or replace the cabinet T/H sensor. 2. Maintain or replace the cables to the temperature sensor, rack environment

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
				<ul style="list-style-type: none"> <li>3. The aisle T/H sensor of an air conditioner is faulty.</li> <li>4. The cables to the aisle T/H sensor of an air conditioner are loose or damaged.</li> <li>5. The DIP switch of the T/H sensor is set incorrectly.</li> <li>6. The communications port of the control board is faulty.</li> <li>7. The ETH converter is faulty.</li> <li>8. The smart socket is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>unit, and monitoring host (ECC).</li> <li>3. Maintain or replace the T/H sensor of the air conditioner.</li> <li>4. Maintain or replace the cables between the T/H sensor and the control board.</li> <li>5. Set the DIP switch correctly for the T/H sensor.</li> <li>6. Maintain or replace the control board.</li> <li>7. Maintain or replace the ETH converter.</li> <li>8. Maintain or replace the smart socket.</li> </ul>
a177	Humidity invalid L1/L2 interrupt	Major	The alarm is generated.	<ul style="list-style-type: none"> <li>1. All cabinet T/H sensor is faulty.</li> <li>2. All cables to the cabinet T/H sensor are loose or damaged.</li> <li>3. All aisle T/H sensor of an air conditioner is faulty.</li> <li>4. All cables to the aisle T/H sensor of an air conditioner are loose or damaged.</li> <li>5. All DIP switch of the T/H sensor is set incorrectly.</li> <li>6. All communications port of the control board is faulty.</li> <li>7. The ETH converter is faulty.</li> <li>8. The smart socket is faulty.</li> </ul>	<ul style="list-style-type: none"> <li>1. Maintain or replace the cabinet T/H sensor.</li> <li>2. Maintain or replace the cables to the temperature sensor, rack environment unit, and monitoring host (ECC).</li> <li>3. Maintain or replace the T/H sensor of the air conditioner.</li> <li>4. Maintain or replace the cables between the T/H sensor and the control board.</li> <li>5. Set the DIP switch correctly for the T/H sensor.</li> <li>6. Maintain or replace the control board.</li> <li>7. Maintain or replace the ETH converter.</li> <li>8. Maintain or replace the smart socket.</li> </ul>
a179	Humidifier pump fault	Major	The alarm is generated, and the humidifier shuts down.	<ul style="list-style-type: none"> <li>1. The water pump inlet is blocked.</li> <li>2. Cables to the humidifier pump are loose or damaged.</li> <li>3. The humidifier pump is faulty.</li> <li>4. The humidifier pump</li> </ul>	<ul style="list-style-type: none"> <li>1. Clear the blockage from the water pump inlet.</li> <li>2. Verify that the humidifier pump cable is properly connected.</li> <li>3. Replace the pump if it is faulty.</li> <li>4. Check whether the</li> </ul>

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
				<p>experiences overvoltage.</p> <p>5. The water pump races due to a liquid level detection fault.</p> <p>6. The humidifier pump is blocked.</p> <p>7. The humidifier pump races or is blocked due to air pressure.</p> <p>8. The drainage capability of the water pump deteriorates, or the drainpipe is blocked.</p>	<p>humidifier pump voltage.</p> <p>5. Rectify the liquid level detection fault.</p> <p>6. Replace the pump if it is faulty.</p> <p>7. Verify that the humidifier water supply is normal, and start the humidifier pump multiple times.</p> <p>8. Replace the water pump or dredge the drainpipe.</p>
a180	Wet film replacement due	Warning	The alarm is generated.	The humidifier pump has exceeded the maximum operating time.	Maintain or replace the humidifier pump and clear the accumulated runtime.
a181	Humidifier Pump Timeout Alarm	Warning	The alarm is generated.	The humidifier pump has exceeded the maximum operating time.	Maintain or replace the humidifier pump and clear the accumulated runtime.
a182	Water Supply Alarm	Major	The alarm is generated, and the humidifier shuts down.	<p>1. The water supply is insufficient.</p> <p>2. The humidifier float has dropped and is jammed.</p> <p>3. The humidifier float interconnection terminals are abnormal.</p> <p>4. The water inlet solenoid valve cannot open.</p> <p>5. Cables of the water inlet solenoid valve are not properly connected.</p>	<p>1. Verify that water supply to the humidifier is normal.</p> <p>2. Verify that the humidifier float can float and drop properly.</p> <p>3. Verify that the humidifier float interconnection terminals are properly connected.</p> <p>4. Verify that water flows into the humidifier pan from the water inlet pipe of the humidifier.</p> <p>5. Verify that cables of the water inlet solenoid valve are properly connected.</p>
a184	Compressor or preheating alarm	Warning	The alarm is generated.	The compressor is preheating.	Power on the device after the compressor is preheated.
a190	Outdoor fan driver fault lock	Critical	The alarm is generated, and the compressor shuts	<p>1. The cables to the outdoor fan are loose or damaged.</p> <p>2. The outdoor fan is faulty.</p> <p>3. The outdoor unit main control board is faulty.</p>	<p>1. Check the cables to the outdoor fan.</p> <p>2. Maintain or replace the outdoor fan.</p> <p>3. Maintain or replace the outdoor unit main control</p>

Alarm ID	Alarm	Alarm Severity	Impact	Possible Cause	Solution
			down.		board.
a222	Main ctrl module power failure	Critical	The alarm is generated.	1. The PSU is faulty. 2. The PSU is in poor contact. 3. The auxiliary power supply is faulty. 4. The auxiliary power supply is in poor contact. 5. The main control module is faulty.	1. Replace the PSU. 2. Check the PSU interconnection module. 3. Replace the auxiliary power supply. 4. Check the interconnection module of the auxiliary power supply. 5. Replace the main control module.

## 5.3 Troubleshooting



### NOTICE

- Certain circuits in the air conditioner have lethal voltages. Only professional technicians are allowed to perform maintenance.
- Exercise caution during live-line troubleshooting.
- If jumpers are used for troubleshooting, remove them after troubleshooting. Connected jumpers may affect control functions and damage equipment.

[Table 5-6](#) describes how to troubleshoot the NetCol5000-A.

**Table 5-6** Troubleshooting

Symptom	Possible Cause	Solution
The unit generates abnormal voice.	Compressor, fans, or pipes are loose.	Check the fixing structure and ensure that all components are securely installed.
A compressor does not work.	The high-pressure switch reacts.	Check the high-pressure switch status.
	Circuit breakers, fuses, or cables are disconnected.	Check the main circuit breaker, compressor circuit breakers, fuses, and cables.
	A compressor motor is damaged.	Replace the motor.
	A compressor does not need to	Check for any startup requirement on

Symptom	Possible Cause	Solution
	start.	the display.
	The compressor does not work.	Check whether the drive is faulty. Replace it if it is faulty.
The compressor exhaust temperature is too high.	The refrigerant loop or a component is blocked.	Check whether the refrigerant loop or a component is blocked.
	The outdoor unit is installed in an inappropriate position. (The outdoor unit should not be exposed to direct sunlight and must be installed at a specified spacing according to the installation guide.)	Install the outdoor unit in a correct position, without exposure to direct sunlight and with an appropriate spacing.
	Air exists in the cooling system.	Exhaust air, and examine and repair the pipeline.
	Heat dissipation is poor because of blockages in the condenser.	Clean the condenser fins.
	An outdoor fan fails.	Check whether the outdoor fan works.
	Refrigerant is insufficient.	Increase the amount of refrigerant filled.
The compressor exhaust temperature is too low.	The outdoor fan speed controller fails.	Replace the speed controller.
	Refrigerant is insufficient.	Increase the amount of refrigerant filled.
	Refrigerant is leaking.	Check the pipeline for any leakage.
The compressor suction temperature is too low or liquid returns.	The refrigerant filled is insufficient.	Add the refrigerant.
	The indoor temperature is too low.	Change the temperature setting.
	Filters are clogged with dirt.	Replace the filters.
	The superheat degree that is set with the thermostatic expansion valve is inappropriate.	Adjust the thermostatic expansion valve to an optimal degree.
	The sensing bulb is disconnected from the thermostatic expansion valve.	Check whether the thermometer bulb is disconnected from the thermostatic expansion valve.
	The external excess pressure is too high, and air decreases.	Check whether the air duct is blocked.
	The condensing pressure is too low.	Check the condenser.
The compressor	Liquid returns in a compressor.	Check whether the oil temperature and exhaust temperature are within a

Symptom	Possible Cause	Solution
generates excessive noises.		normal range.
	Refrigerant oil is insufficient.	Add refrigerant oil.
	The transport sheet metal is not removed from a compressor.	Remove the sheet metal.
An indoor fan fails to start.	The switch of the indoor fan is not turned on.	Check the switch of the indoor fan.
	An indoor fan is damaged.	Replace the indoor fan.
	The interconnection terminals for the fans are not securely connected.	Secure the interconnection terminals again.
The heating function is unavailable.	The electric heater temperature switch is being protected.	Check the temperature switch and replace it if it is faulty.
	The electric heater is not switched on.	Check the electric heater switch.
	An electric heater is burnt out.	Disconnect the power supply and check whether the electric heater is damaged by checking the electric heater resistance properties with an ohmmeter.
No water is supplied to the water inlet solenoid valve of the humidifier.	The upstream water supply is faulty or the water pressure is below the lower threshold.	Restore the water supply.
	The water inlet solenoid valve is blocked or faulty.	Replace the water inlet solenoid valve.
	The cable to the water inlet solenoid valve is incorrectly connected.	Reconnect the cable.
	The humidifier float jams and fails to fall down, or the cable connection is faulty.	Manually operate the float or reconnect the cable.
The humidifier pump fails to supply water.	The humidifier pump is faulty or the cable connection is incorrect.	Replace the humidifier pump or reconnect the cable.
	The humidifier pump is blocked.	Replace the humidifier pump.
	The humidifier pump is blocked due to atmospheric pressure.	Restart the humidifier pump.
The water overflows the NetCol5000-A.	The drainpipe does not connect to the pump, or the lift between the drainpipe and the water chiller is set to an appropriate value.	Ensure that the drainpipe is properly connected to the pump and that the lift of the drainpipe is lower than 4 meters.
	The condensate pump is faulty.	Replace the condensate pump.

Symptom	Possible Cause	Solution
	The liquid level detector is faulty.	Check the alarm. Check cable connections for high and low liquid level detectors. Check whether the liquid level detectors are damaged. If necessary, replace the liquid level detectors.
	The inlet pipe and drainpipe leak.	Check the inlet pipe and drainpipe and the connectors. Rectify any leakage and fasten the connectors.
	The self-drainpipe is blocked.	Check that no blocks and frost in the self-drainpipe.
The humidity of the computer room is high, or condensate water generates.	The server heat load for each air conditioner is lower than 5 kW.	<ul style="list-style-type: none"> <li>• Make sure that the doors, windows, floor, and ceiling of the datacenter room/container environment are sealed well.</li> <li>• If the outside environment humidity is too high, shut down the fresh air system.</li> <li>• In modular datacenter, open the modular doors and ceilings, or open some false panel on the IT rack.</li> </ul>
Power failures occur on the active and standby routes.	<ol style="list-style-type: none"> <li>1. The input power has an open phase.</li> <li>2. The contactor fuse in the active route is damaged.</li> <li>3. The interlock contactor and middle contactor are damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify the power supply fault.</li> <li>2. Replace the fuse.</li> <li>3. Replace the interlock contactor and middle contactor.</li> </ol>
The electric heater switch trips abnormally.	The switch is faulty.	Replace the electric heater switch.
The electric heater fails.	The electric heater contactor is not closed.	Replace the electric heater contactor.
The compressor switch trips abnormally.	The switch is faulty.	Replace the compressor switch.
The crankcase heater does not heat.	<ol style="list-style-type: none"> <li>1. The crankcase heater is disconnected abnormally.</li> <li>2. The fuse has blown.</li> <li>3. The crankcase heater is short-circuited abnormally, and the fuse has blown.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the crankcase heater.</li> <li>2. Replace the fuse.</li> <li>3. Replace the crankcase heater and the fuse.</li> </ol>
The crankcase	The relay contacts of the crankcase	Replace the crankcase heater relay.

Symptom	Possible Cause	Solution
heater does not stop heating.	heater are short-circuited.	



If the fault persists, contact Huawei technical support.

## 5.4 Parts Replacement

After replacing any part, verify that the new part works properly.

### 5.4.1 Replacing the Air Filter

#### Prerequisites

- The air filter needs to be replaced.
- Spare air filters of the same model are available and functional.

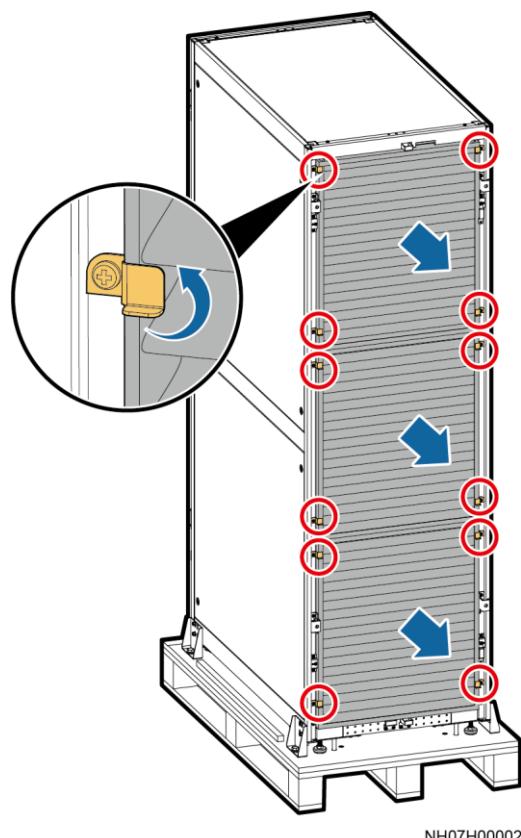
#### Context

The air filters need to be maintained from the rear door.

#### Procedure

**Step 1** Open the rear door, rotate the clips on the two sides of the upper air filter, and draw out the air filter.

**Figure 5-2** Removing an air filter



**Step 2** Draw out the air filter.

**Step 3** Remove the lower air filter in the same way.

**Step 4** Install new air filters in an inverse order.



### NOTICE

Note the following during the reinstallation:

- Install air filters as instructed by the labels thereon and avoid reverse installation.
- Check that the pressure tube is properly connected.

**Step 5** On the LCD home screen, choose **Maint > Performance Maint**, and clear the air filter runtime.

----End

## 5.4.2 Replacing the Indoor Fan

### Prerequisites

- The indoor fan needs to be replaced.

- A spare indoor fan of the same model is available and functional.
- Tools: protective gloves, Phillips screwdriver, diagonal pliers, cable tie

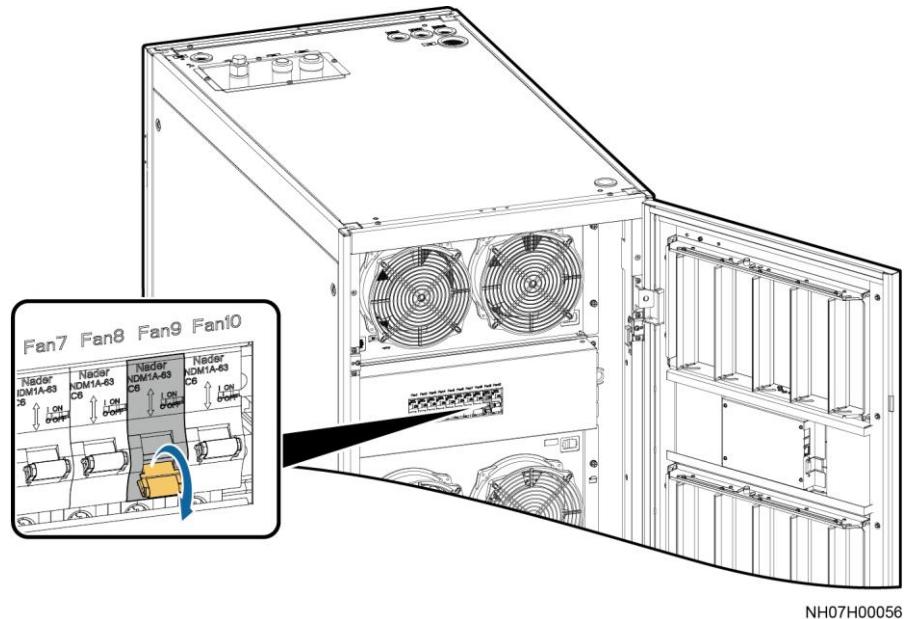
## Context

The indoor fan can be maintained only from the front door. Replacing fan 9 is used as an example.

## Procedure

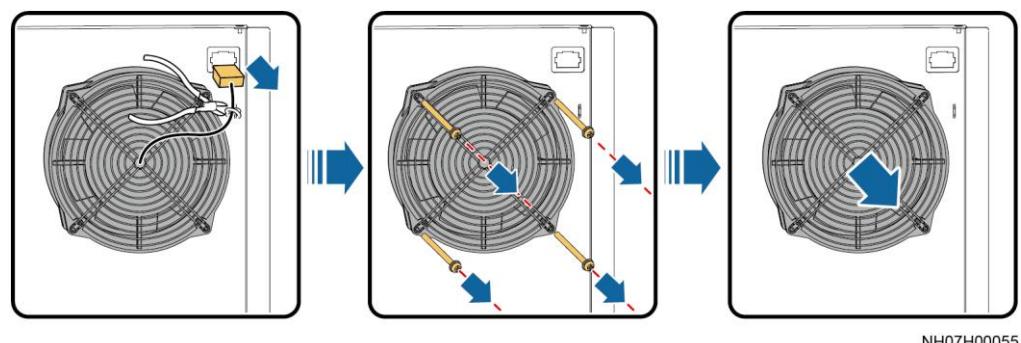
**Step 1** Open the front door and switch off the circuit breaker for the faulty fan 9.

**Figure 5-3** Switching off the circuit breaker for the faulty fan 9 switch



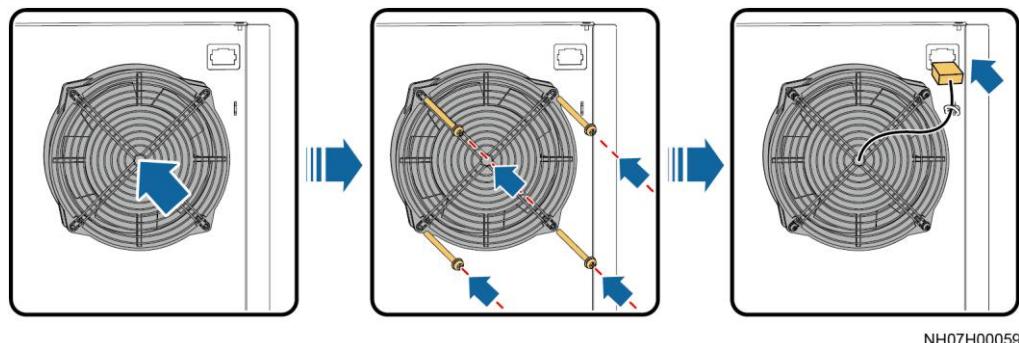
**Step 2** Cut the cable ties that bind the cable connected to the faulty fan, and remove the fan terminals. Take out the faulty fan.

**Figure 5-4** Taking out a faulty fan



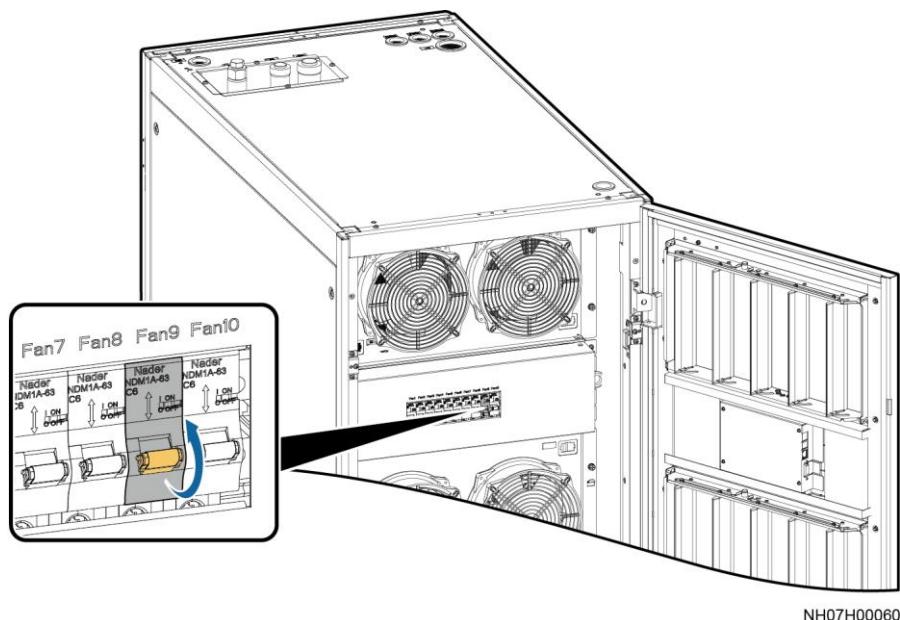
**Step 3** Install a new fan and fan guard, connect the terminals, and secure the cable using cable ties.

**Figure 5-5** Installing a new fan



**Step 4** Switch on the circuit breaker for the faulty fan 9, and close the front door.

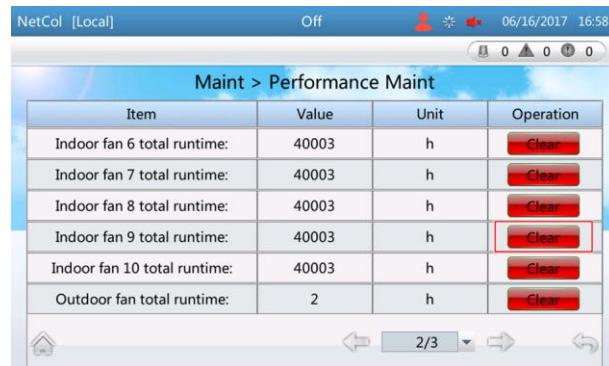
**Figure 5-6** Switching on the circuit breaker for the faulty fan 9



NH07H00060

**Step 5** Power on the device. On the LCD home screen, choose **Maint > Performance Maint**, and clear the indoor fan runtime.

**Figure 5-7** Performance maintenance



**Step 6** Tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

### 5.4.3 Replacing the Differential Pressure Switch

#### Prerequisites

- The differential pressure switch needs to be replaced.
- A spare differential pressure switch of the same model is available and functional.
- Tool: Phillips screwdriver

#### Context

The differential pressure switch can be maintained only from the rear door.

#### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



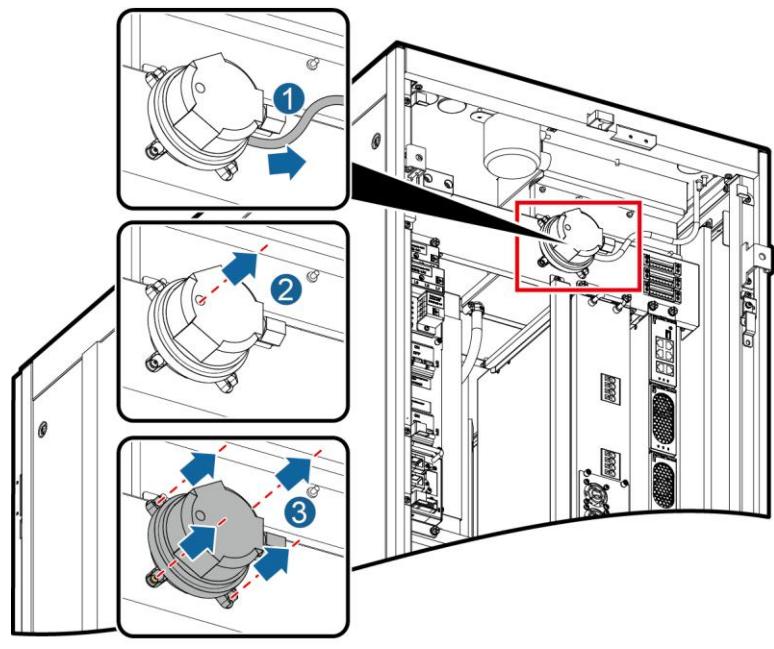
#### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the rear door and remove the air filter.

**Step 3** Remove the pressure inlet tube, as shown by (1) in [Figure 5-8](#).

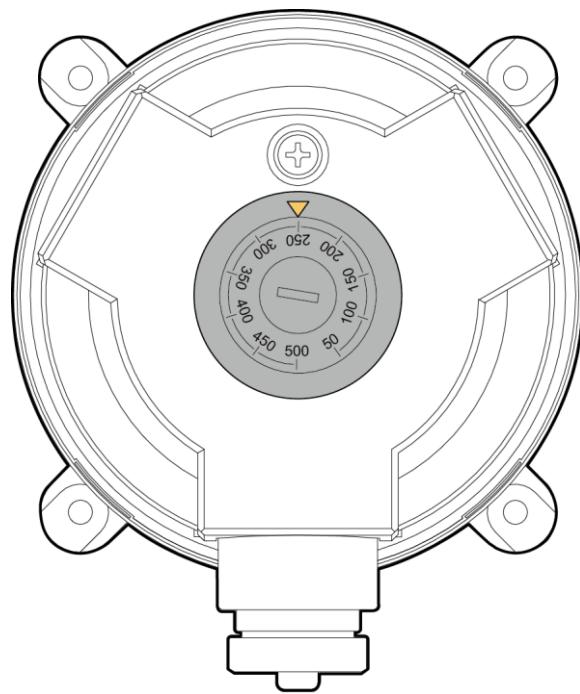
**Figure 5-8** Removing a differential pressure switch



NH07H00058

- Step 4** Use a Phillips screwdriver to remove the screws on the top cover of the differential pressure switch and cable screws, as shown by (2) in [Figure 5-8](#), and remove the cables.
- Step 5** Use a Phillips screwdriver to remove the four screws, and remove the differential pressure switch, as shown by (3) in [Figure 5-8](#).
- Step 6** Set the new differential pressure switch to 250 Pa.

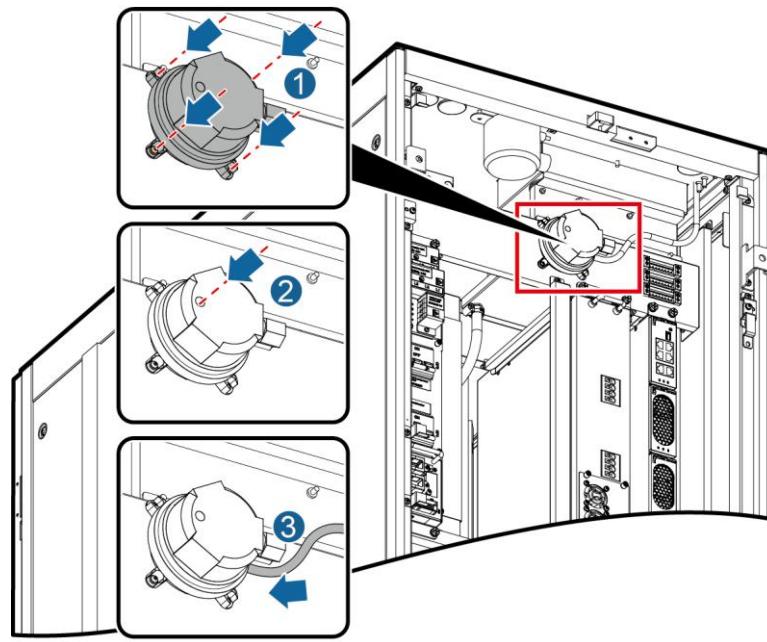
**Figure 5-9** Setting values for a differential pressure switch



NH07W00017

**Step 7** Install the new differential pressure switch and the pressure tube, and connect the cables.

**Figure 5-10** Installing a differential pressure switch



NH07H00095

**Step 8** Install the air filter and close the rear door.

**Step 9** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.4 Replacing the Compressor

### Prerequisites

- The compressor needs to be replaced.
- A spare compressor of the same model is available and functional.
- The compressor must be replaced with the dry filter. [5.4.5 Replacing the Filter Dryer](#) shows how to replace the dry filter.
- Recommended materials: Phillips screwdriver, two 45# adjustable wrenches, 45# and 50# torque wrenches, 13# and 30# solid wrenches or socket wrenches, new compressor, dryer filter, refrigerant reclaiming devices, refrigerant charging devices, R410A refrigerant

### Context

Components and working principle: The scroll compressor is composed of the air intake and exhaust angle valves, oil pump, motor, and electric heating belt. Air is sucked from the outside and exhausted from the position in the center. A variable-frequency scroll compressor uses a frequency converter, and generates different air volumes as the frequency changes, thereby increasing or reducing the cooling and heating capacity. When the compressor operates at a high speed, it generates a large heating or cooling capacity, which enables the room temperature to quickly reach the preset temperature. When the room temperature decreases to a value close to the preset temperature, the compressor frequency automatically decreases to a certain level to meet the heating or cooling capacity requirements and maintain the room temperature at a stable level.

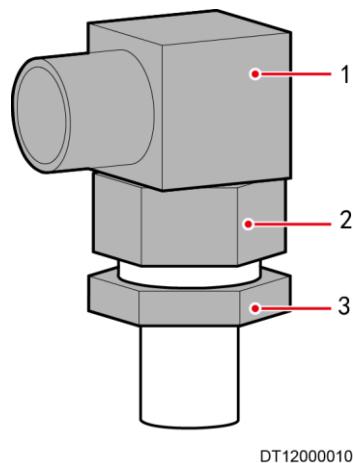


#### NOTICE

- Reclaim or dispose of the refrigerant in accordance with local laws and regulations. Do not discharge the refrigerant to the atmosphere.
  - When replacing a compressor, avoid skin contact with the refrigerant or lubricant to prevent frostbite or burns.
  - Do not tilt the compressor during replacement to prevent lubricant leakage.
  - Install a new compressor immediately after you remove the rubber plugs of the suction inlet and exhaust outlet to prevent the moisture.
- 

[Figure 5-11](#) shows an angle valve.

**Figure 5-11 Angle valve**



(1) Angle valve nut

(2) Adjustable nut

(3) Pipe nut

## Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

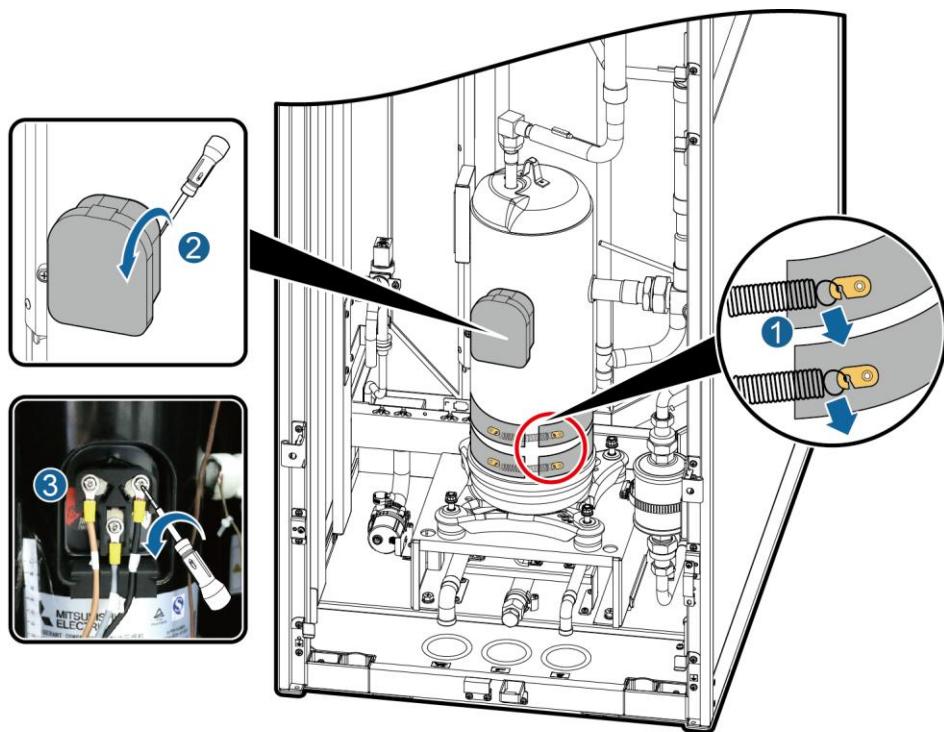
**Step 2** Open the rear door and remove the air filter.

**Step 3** Reclaim the refrigerant.

**Step 4** Remove the electric heating belt.

**Step 5** Remove the cover of the connection box and disconnect the compressor power cables.

**Figure 5-12** Removing the electric heating belt and compressor power cables

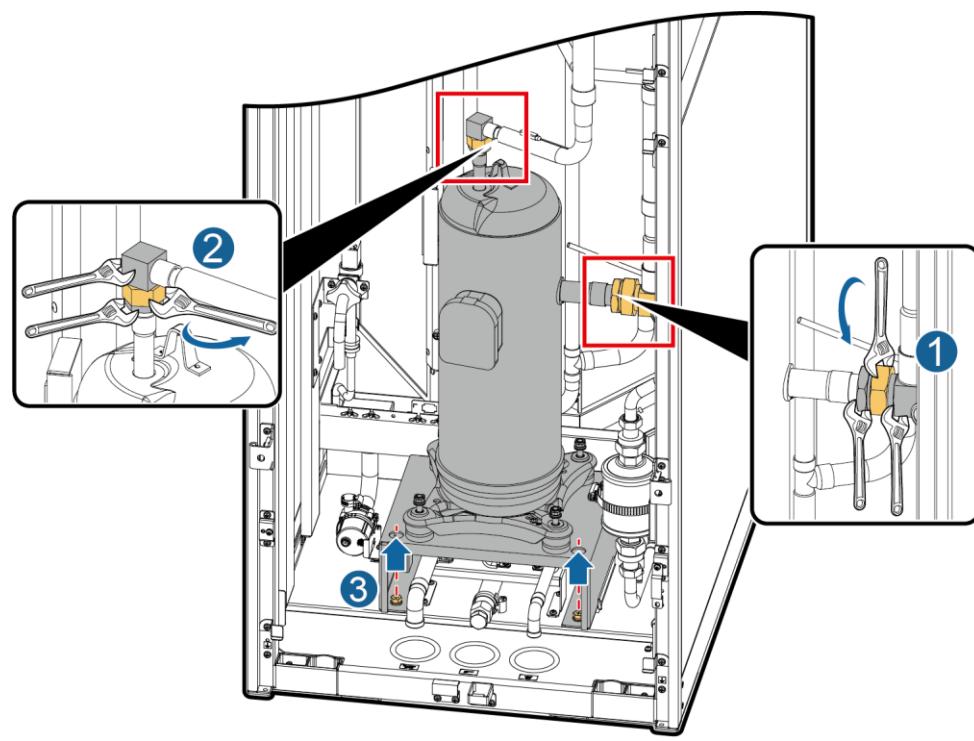


NH07H00074

**Step 6** Remove the compressor.

1. Heat the air intake angle valve joints using a heat gun for 10 minutes. Secure the angle nut and pipe nut on the air intake side, as shown by (1) in [Figure 5-13](#), using two 30# adjustable wrenches respectively. Then loosen the adjustable nut using a 36# adjustable wrench to separate the pipe from the angle valve.

**Figure 5-13** Removing a compressor angle valve



NH07H00072



### NOTICE

After removing the valve, seal the suction vent immediately to ensure that the system is clean and moisture does not enter the pipe.

2. Heat the air intake angle valve joints using a heat gun for 10 minutes. Secure the angle nut and pipe nut on the air intake side, as shown by (2) in [Figure 5-13](#), using two 30# adjustable wrenches respectively. Then loosen the adjustable nut using a 30# adjustable wrench to separate the pipe from the angle valve. After removing the valve, seal the suction vent immediately.
3. Remove the two M8 screws below the compressor bracket, as shown by (3) in [Figure 5-13](#), using a 13# socket wrench (or solid wrench).

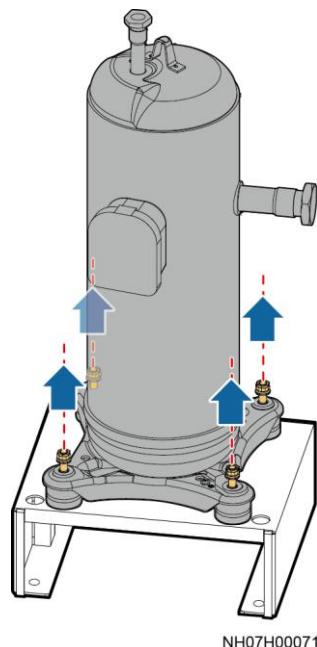


### NOTICE

Do not move the compressor by moving its air exhaust vent.

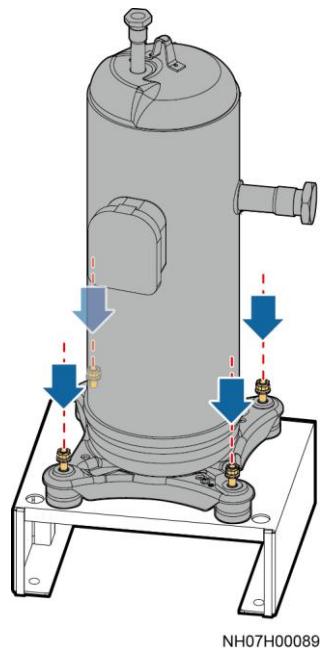
4. Remove the four nut washers and spring washers that secure the compressor and the bracket using a 13# socket wrench (or solid wrench), and remove the compressor.

**Figure 5-14** Removing a compressor bracket



**Step 7** Secure the new compressor to the bracket again using a solid wrench.

**Figure 5-15** Installing a compressor bracket



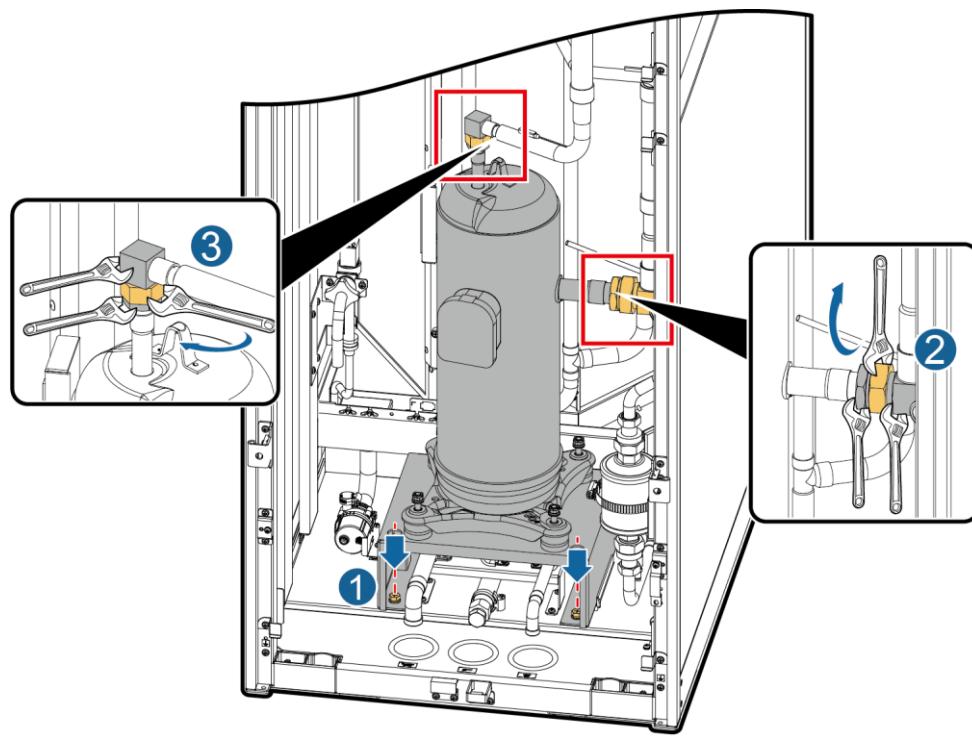


### NOTICE

- Seal the screw thread joints in the pipe using sealant.
- After the installation, check that the input power cables of the compressor are in the same phase sequence as the wiring terminals.

**Step 8** Secure the compressor bracket to the cabinet interior using a 13# socket wrench, as shown by 1 in [Figure 5-16](#).

**Figure 5-16** Installing a compressor angle valve



NH07H00073

**Step 9** Apply red glue from the second to the fourth circles of the inner screw thread of the suction and discharge angle valves. Secure the angle valve nuts and pipe nuts, as shown by (2) and (3) in [Figure 5-16](#), using two adjustable wrenches, and tighten the adjustable nuts using a torque wrench.

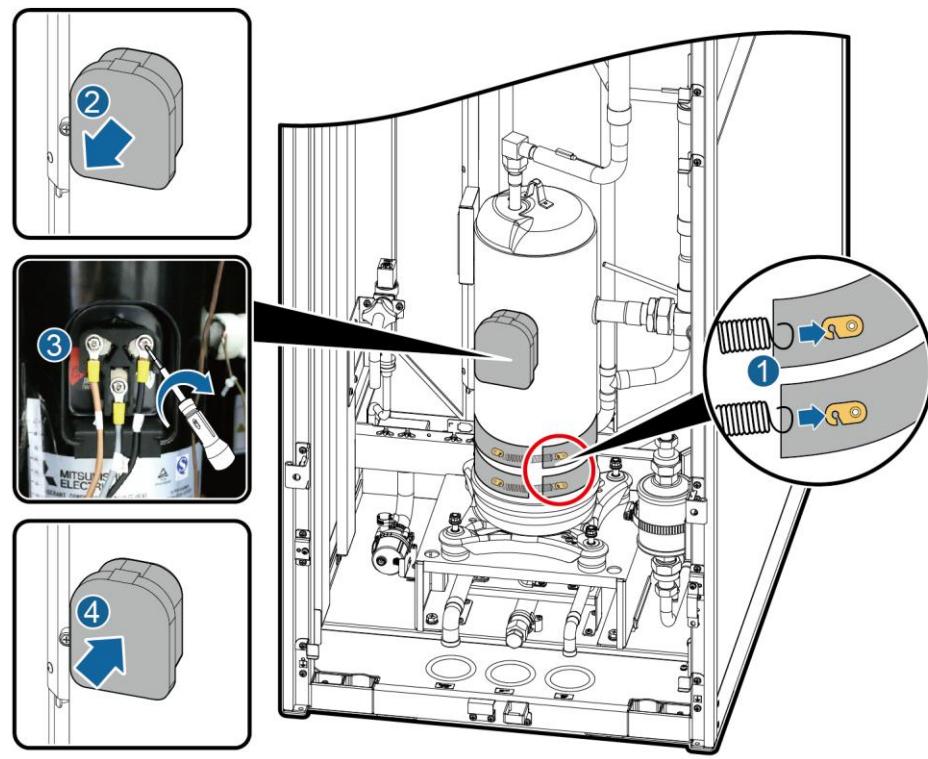


### NOTICE

Tighten the air intake angle valve to a torque of 180 N·m and tighten the air exhaust angle valve to a torque of 120 N·m.

**Step 10** Install the electric heating belt, remove the connection box cover, and reinstall the cover after the compressor cables are connected.

**Figure 5-17** Connecting cables to the electric heating belt and the compressor



NH07H00075

- Step 11** Vacuumize the system and precharge refrigerant, as shown in [4.1 Vacuumizing and Precharging Refrigerant](#).
- Step 12** Check that the phase sequences are correct before starting the system. Then choose **Maint > Diagnostic Mode** > **Enter** to check the system pressure and temperature and ensure the refrigerant is charged with an optimal system status (see [4.7 Charging the Remaining Refrigerant](#)). Ensure that the system is running normally without alarms.
- Step 13** Install the air filter and close the rear door.
- Step 14** Power on the device. On the LCD home screen, choose **Maint > Performance Maint**, and clear the compressor runtime.

**Figure 5-18** Performance maintenance



----End

## 5.4.5 Replacing the Filter Dryer

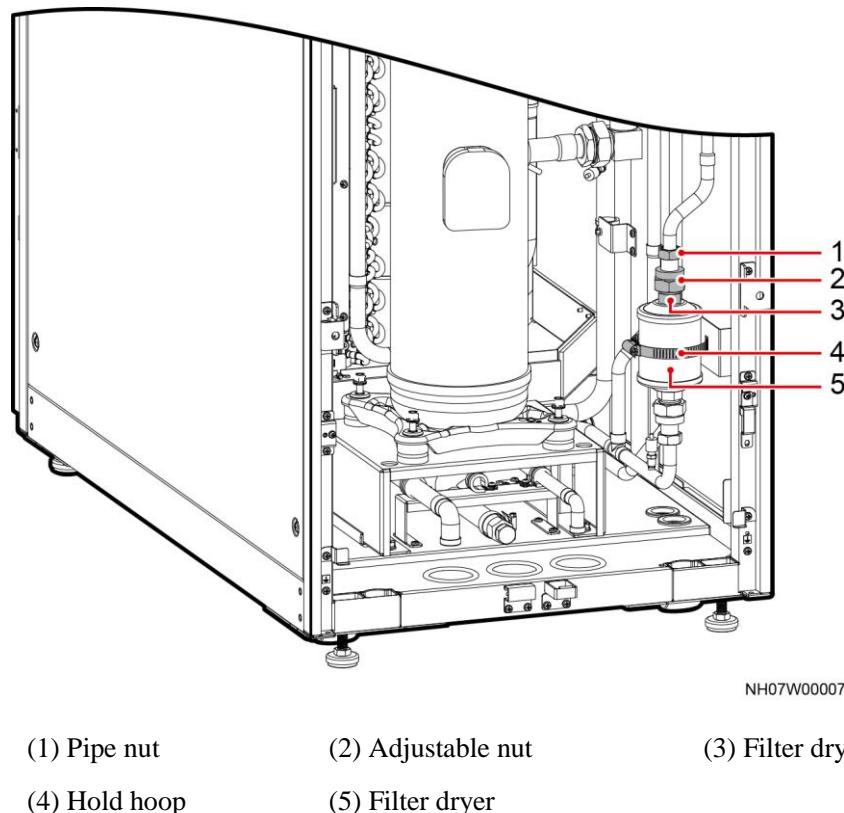
### Prerequisites

- The filter dryer needs to be replaced.
- A spare filter dryer of the same model is available and functional.
- Tools: refrigerant retrieval device (configured based on local conditions), Phillips screwdriver, nitrogen cylinder, refrigerant tank, vacuum pump, pressure gauge, leather hose, protective gloves, two 27# adjustable wrenches, 36# wrench

### Context

Figure 5-19 shows the position of the filter dryer.

**Figure 5-19** Filter dryer position



### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



## NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the rear door and remove the air filter.

**Step 3** Reclaim all the refrigerant from the system using a refrigerant retrieval device to ensure that there is no pressure inside the system.



### NOTE

Discharge the refrigerant if the local laws and regulations allow.

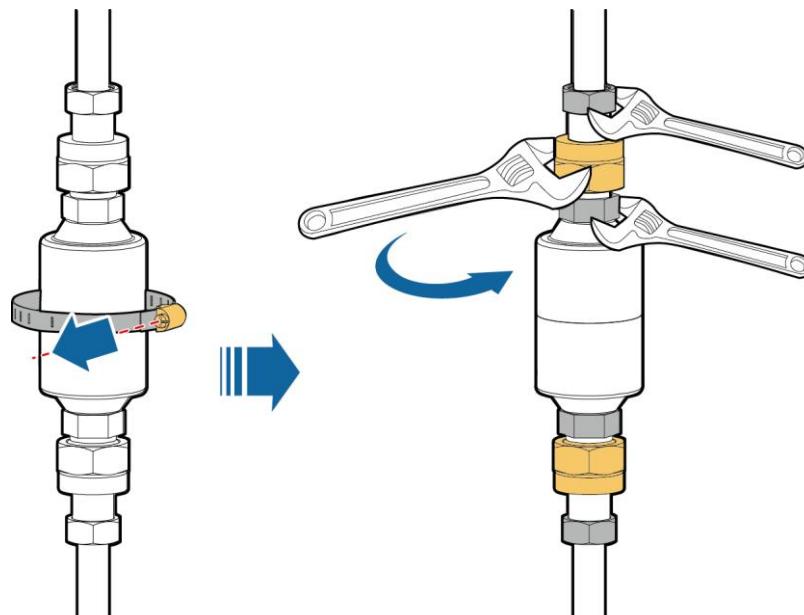
**Step 4** Remove the filter dryer, as shown in [Figure 5-20](#).



## NOTICE

- Filter dryer replacement requires the collaboration of two persons.
- After removing the filter dryer, immediately seal the pipe to ensure that the system is clean and moisture does not enter the pipes.

**Figure 5-20** Removing a filter dryer



NH07H00018

1. Remove the hold hoops from the filter dryer using a Phillips screwdriver.
2. Heat the air intake angle valve joints using a heat gun for 10 minutes. Secure the filter dryer nut and pipe nut (as shown in [Figure 5-19](#)) using two 27# adjustable wrenches respectively. Then loosen the adjustable nut using a 36# adjustable wrench to separate the pipe from the filter dryer.

**Step 5** Remove the plastic plug from the port of the new filter dryer.

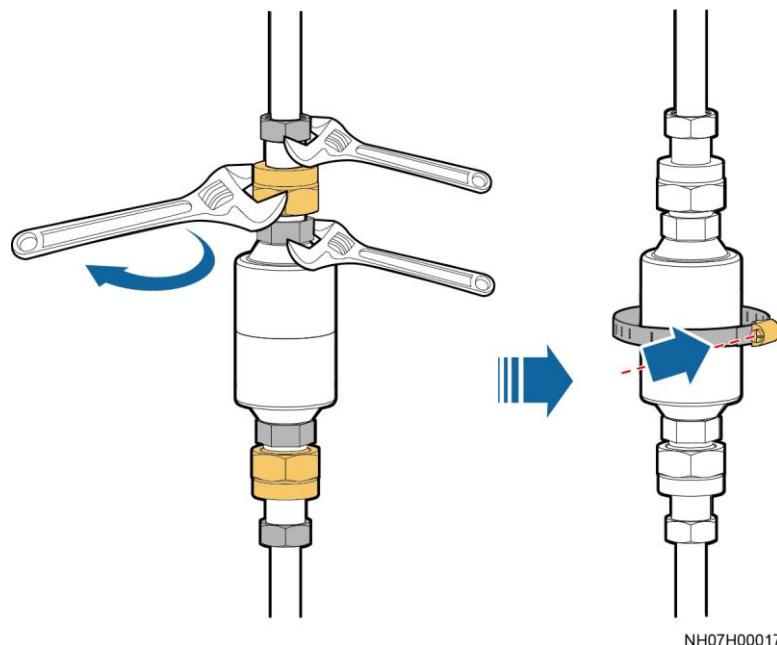
**Step 6** Install the new filter dryer, as shown in [Figure 5-21](#).



### NOTICE

- Secure the filter dryer in the original position. Ensure that the arrow on the filter dryer points upwards.
- Installation of the new filter dryer requires the collaboration of two persons. The torque for tightening the adjustable nut is 70 N·m.

**Figure 5-21** Installing a filter dryer



- Apply red glue to the third to second last thread circles of the outer screw thread counting from the pipe outlet inward. Secure the filter dryer nut and pipe nut using two 27# adjustable wrenches respectively. Then tighten the adjustable nut using a 36# adjustable wrench.
- Reinstall the hold hoops.

**Step 7** Perform a leakage test with nitrogen again.

**Step 8** After checking that the air conditioner does not leak, vacuumize the air conditioner and charge refrigerant by referring to [4 Commissioning](#).

**Step 9** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.6 Replacing the Driver

### Prerequisites

- The driver needs to be replaced.
- A spare driver of the same model is available and functional.
- Tools: Phillips screwdriver, diagonal pliers, cable tie.



#### DANGER

Before checking and maintaining the NetCol5000-A, ensure that the primary power supply to the NetCol5000-A is disconnected and the drive has been placed without primary power supply for 10 minutes. Otherwise, electric shocks may occur.

---

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



#### NOTICE

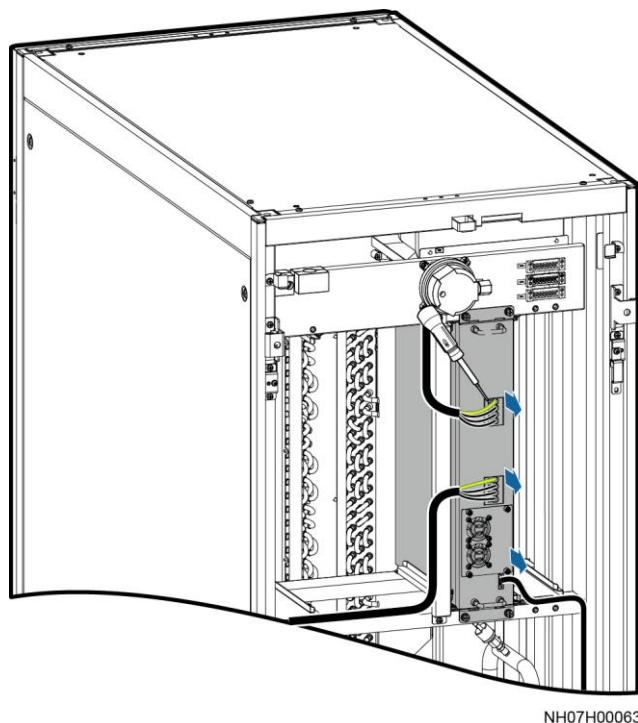
Exercise caution because the device is still energized after it is shut down on the controller home screen.

---

**Step 2** Open the rear door and remove the air filter.

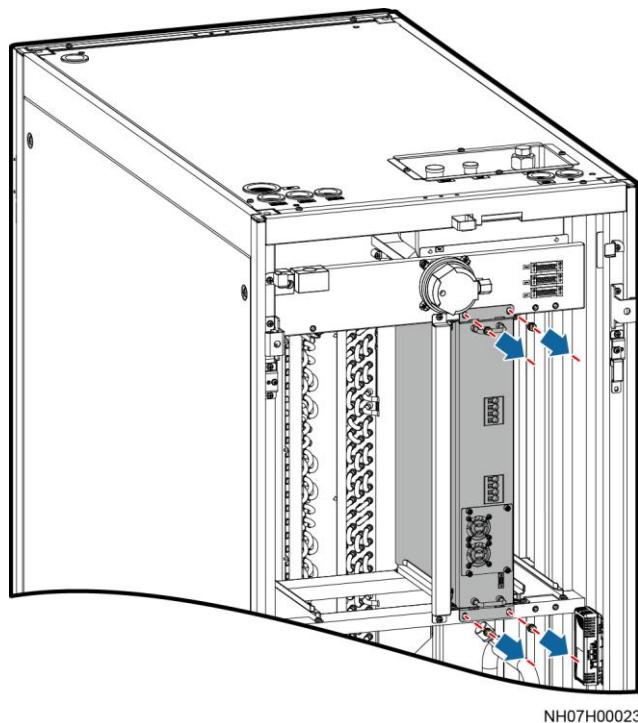
**Step 3** Remove all cables from the driver and cut the cable ties using diagonal pliers.

**Figure 5-22** Removing cables



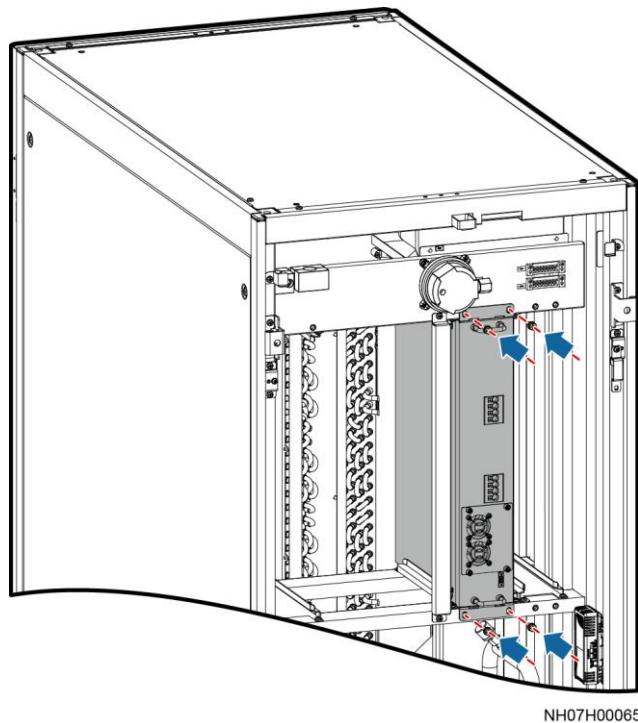
**Step 4** Remove the four screws on the driver using a Phillips screwdriver and pull out the driver, as shown in [Figure 5-23](#).

**Figure 5-23** Removing a driver



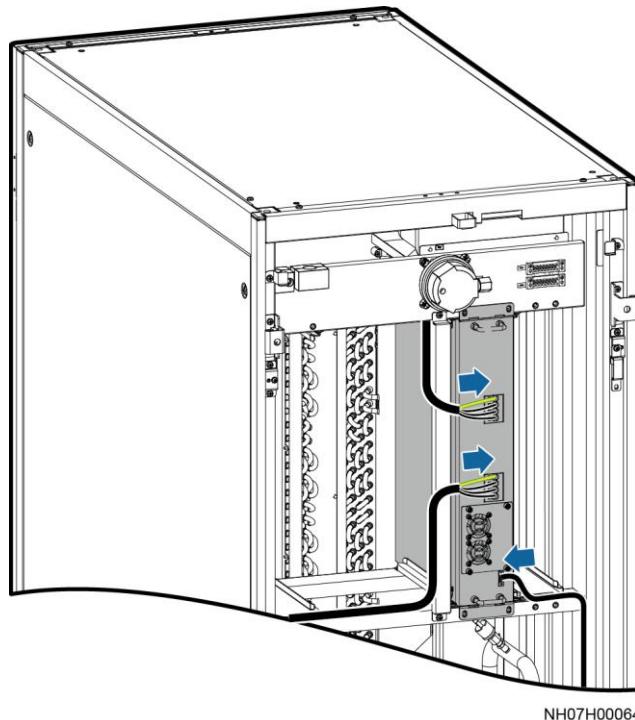
**Step 5** Install the new driver.

**Figure 5-24** Installing a driver



**Step 6** Connect the new driver cables.

**Figure 5-25** Connecting driver cables



**Step 7** Install the air filter and close the rear door.

**Step 8** Power on the NetCol5000-A, choose **Maint > Diagnostic Mode > Enter** on the home page, start the compressor, and check that the compressor works properly and the NetCol5000-A generates no alarms. Then exit the diagnostic mode.

----End

## 5.4.7 Replacing the Liquid Level Detector

### Prerequisites

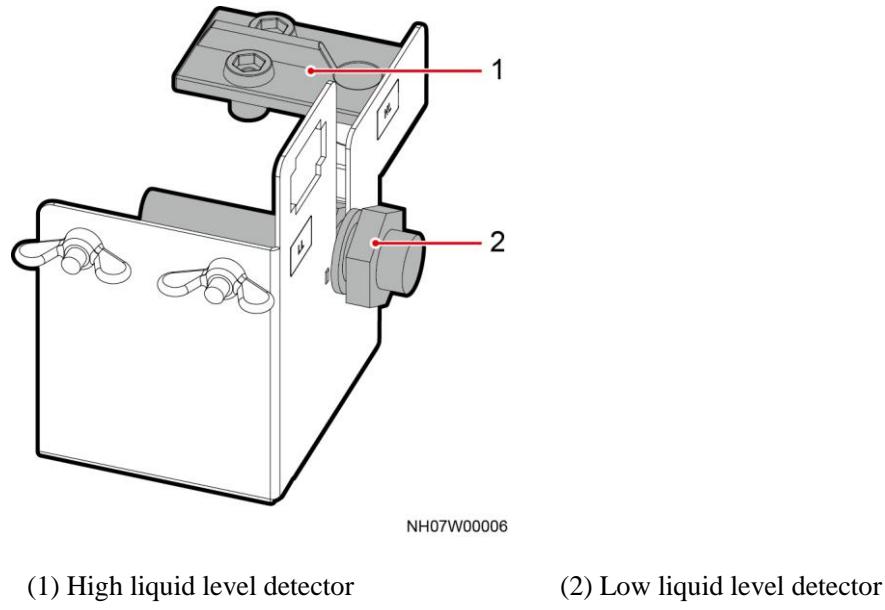
- The liquid level detector needs to be replaced.
- A spare liquid level detector of the same model is available and functional.
- Tool: Phillips screwdriver

### Context

A liquid level detector is composed of the conductor outer jacket, liquid level detector, switch, and card pole. A liquid level detector rises or drops as the liquid level changes due to the magnetism of the liquid level switch. The rise or drop causes the reed switch chip in the specified position inside the sensor detection pipe to move, sending the contact on/off conversion signal to control the liquid level detector.

The liquid level detector is maintained from the front door. [Figure 5-26](#) shows a liquid level detector.

**Figure 5-26** Liquid level detector



## Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.

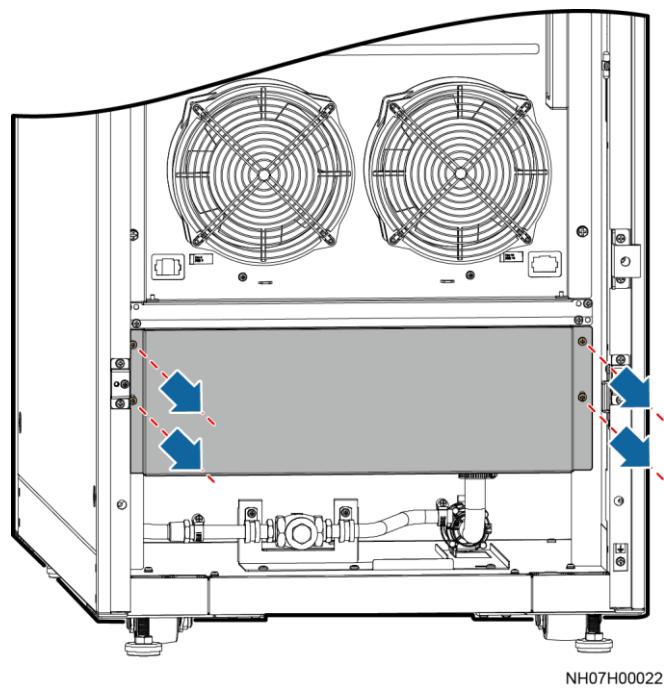


### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the front door, and remove the water pan cover, as shown in [Figure 5-27](#).

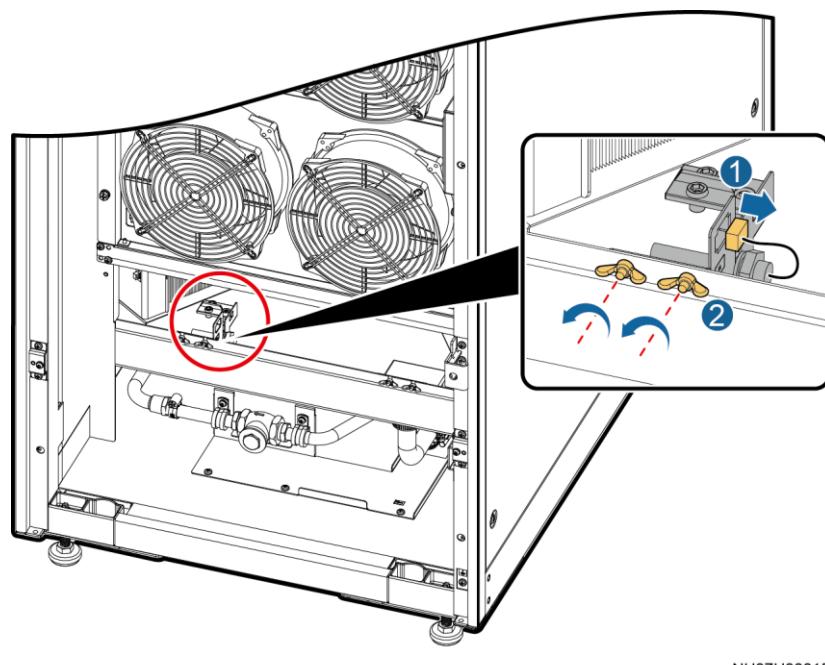
**Figure 5-27** Removing a water pan cover



**Step 3** Cut the cable tie securing the liquid level detector and remove the terminal.

**Step 4** Remove the two butterfly nuts on the liquid level detector fastener, remove cables from the liquid level detector, and remove the liquid level detector and its fastener, as shown in [Figure 5-28](#).

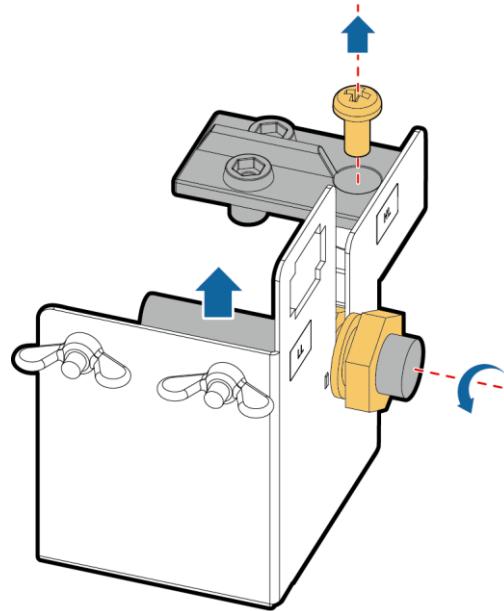
**Figure 5-28** Removing a liquid level detector fastener



**Step 5** Remove the liquid level detector, as shown in [Figure 5-29](#).

- Remove screws from the high liquid level detector using a Phillips screwdriver, and remove the high liquid level detector.
- Loosen the nuts on the low liquid level detector, and move the low liquid level detector upwards to remove it.

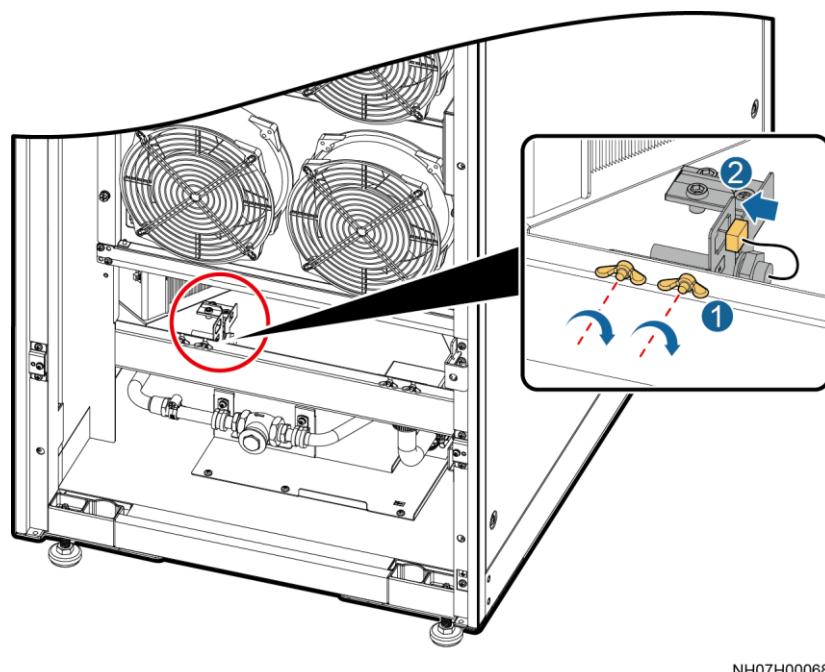
**Figure 5-29** Removing a liquid level detector



NH07H00014

**Step 6** Install the new liquid level detector and properly connect its terminals.

**Figure 5-30** Installing a liquid level detector



**Step 7** Install the water pan cover, and close the front door.

**Step 8** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.8 Replacing the Condensate Pump

### Prerequisites

- The condensate pump needs to be replaced.
- A spare condensate pump of the same model is available and functional.
- Tools: Phillips screwdriver, flat-head screwdriver, socket wrench



### NOTICE

Before removing the condensate pump, drain water from the water pan completely.

### Context

The condensate pump can be maintained only from the front door.

## Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.

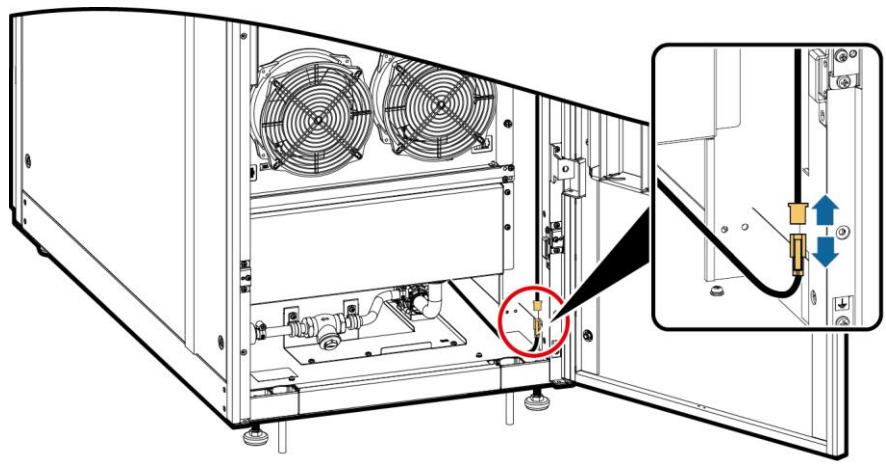


### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

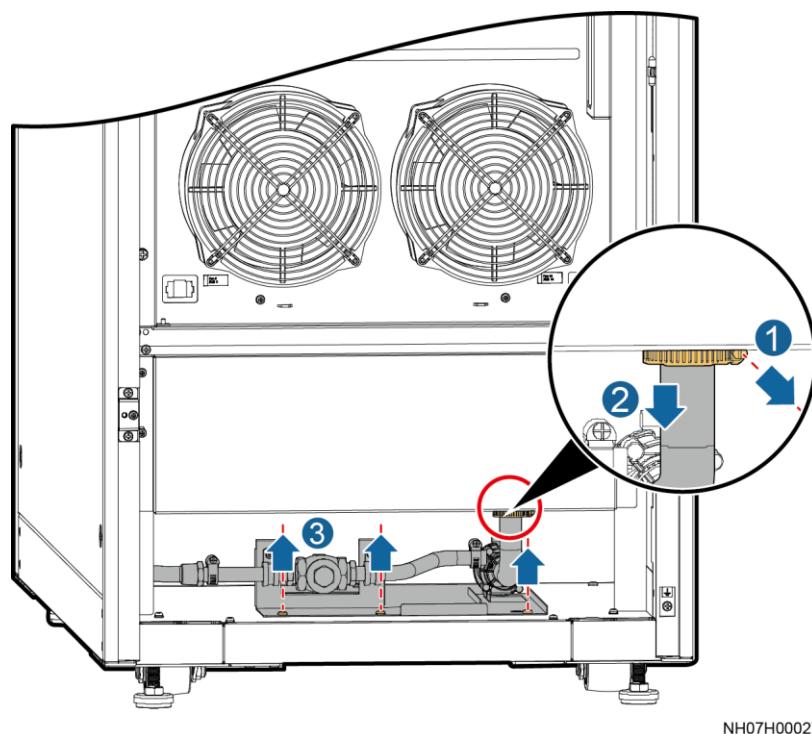
**Step 2** Open the front door, and disconnect the white power cable terminals of the condensate pump at the lower right corner of the cabinet.

**Figure 5-31** Disconnecting the power cable terminals



**Step 3** Remove the condensate pump assembly, as shown in [Figure 5-32](#).

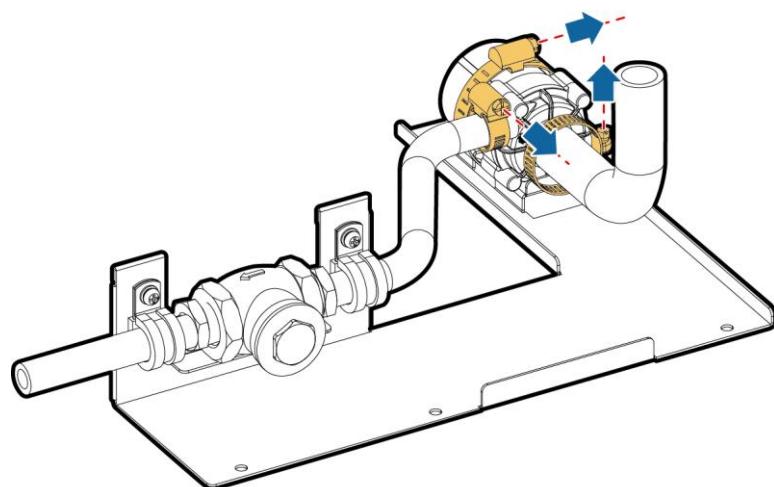
**Figure 5-32** Removing a condensate pump assembly



1. Remove the hose clamp at the water pan drain outlet, and remove the hose, as shown by (1) and (2) in [Figure 5-32](#).
2. Remove the three screws that secure the condensate pump assembly using a socket wrench, and pull out the condensate pump assembly, as shown by (3) in [Figure 5-32](#).

**Step 4** Remove the hose clamps on the condensate pump pipes and the condensate pump using a flat-head screwdriver, pull out the hose, and take out the condensate pump, as shown in [Figure 5-33](#).

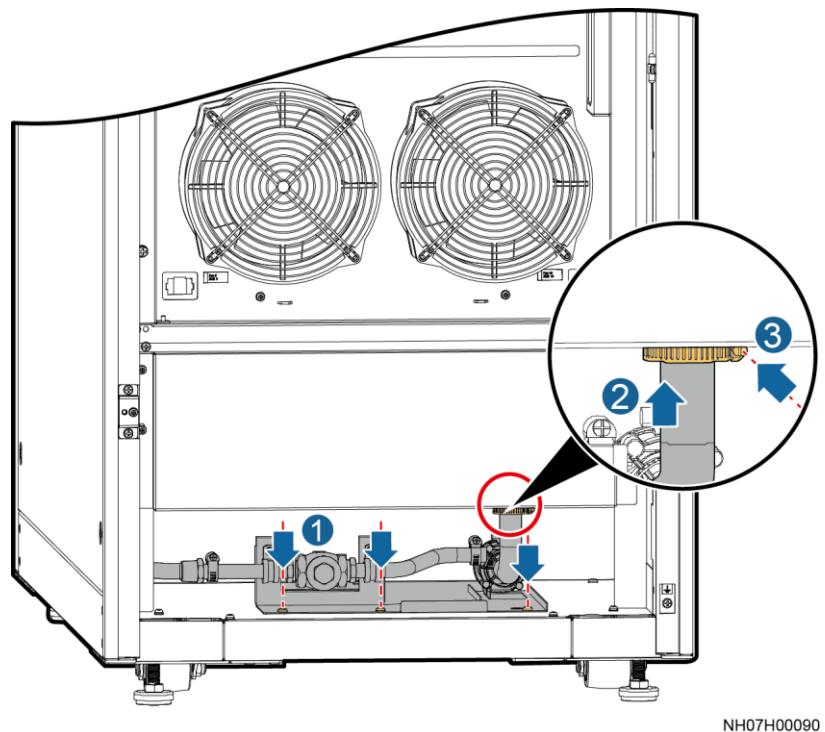
**Figure 5-33** Removing a condensate pump



NH07H00026

- Step 5** Install the new condensate pump and reinstall the condensate pump assembly in the cabinet. Connect the water pipe and secure it using hose clamps. Connect the condensate pump power cable.

**Figure 5-34** Installing a condensate pump

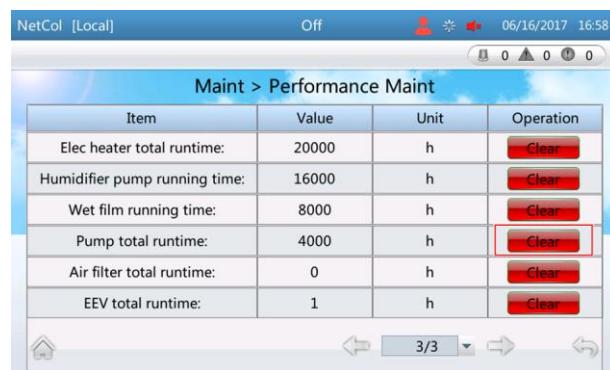


NH07H00090

- Step 6** Remove the blockage from the pipe and close the front door.

- Step 7** Power on the device. On the LCD home screen, choose **Maint > Performance Maint**, and clear the condensate pump runtime.

**Figure 5-35** Performance maintenance



- Step 8** Tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.9 Replacing the Humidifier Pump

### Prerequisites

- The humidifier pump needs to be replaced.
- A spare humidifier pump of the same model is available and functional.
- Tools: Phillips screwdriver, flat-head screwdriver.

### Context

The humidifier pump can be maintained only from the rear door.

### Procedure

- Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



#### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

---

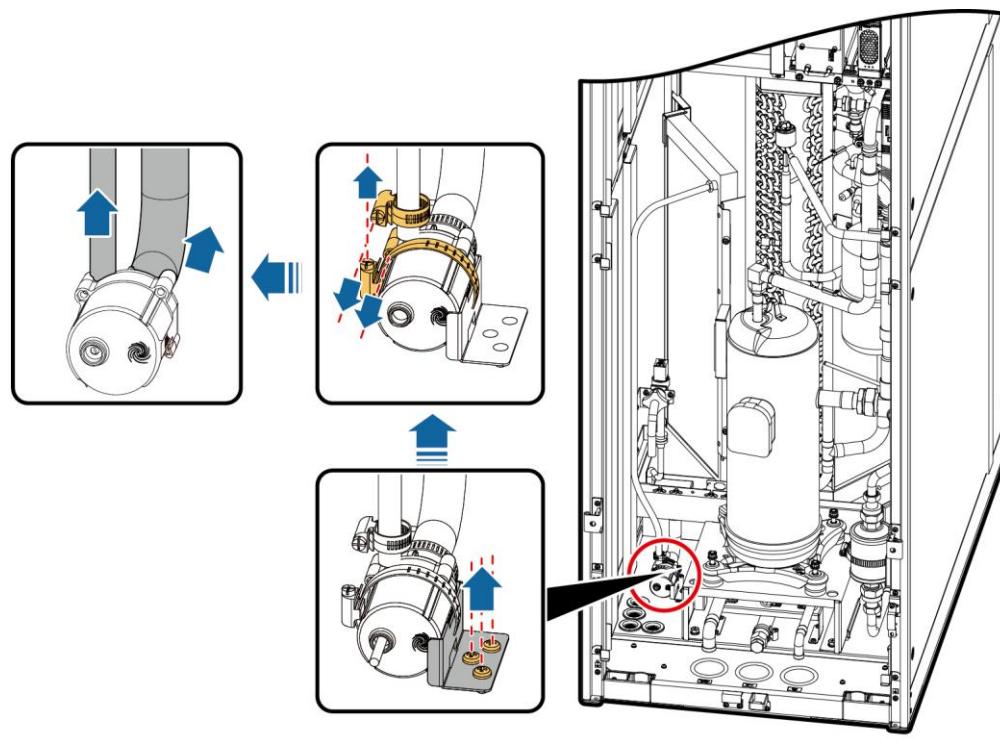
- Step 2** Open the rear door and remove the air filter.

- Step 3** Cut the cable ties securing the humidifier pump cable and remove the terminals.

- Step 4** Remove the screws that secure the humidifier pump fastener using a Phillips screwdriver, as shown in [Figure 5-36](#), and pull out the humidifier pump and the fastener.

- Step 5** Remove the hose clamps at the water inlet and outlet ports of the humidifier pump and on the humidifier pump using a flat-head screwdriver, and remove the water inlet and outlet pipes, as shown in [Figure 5-36](#).

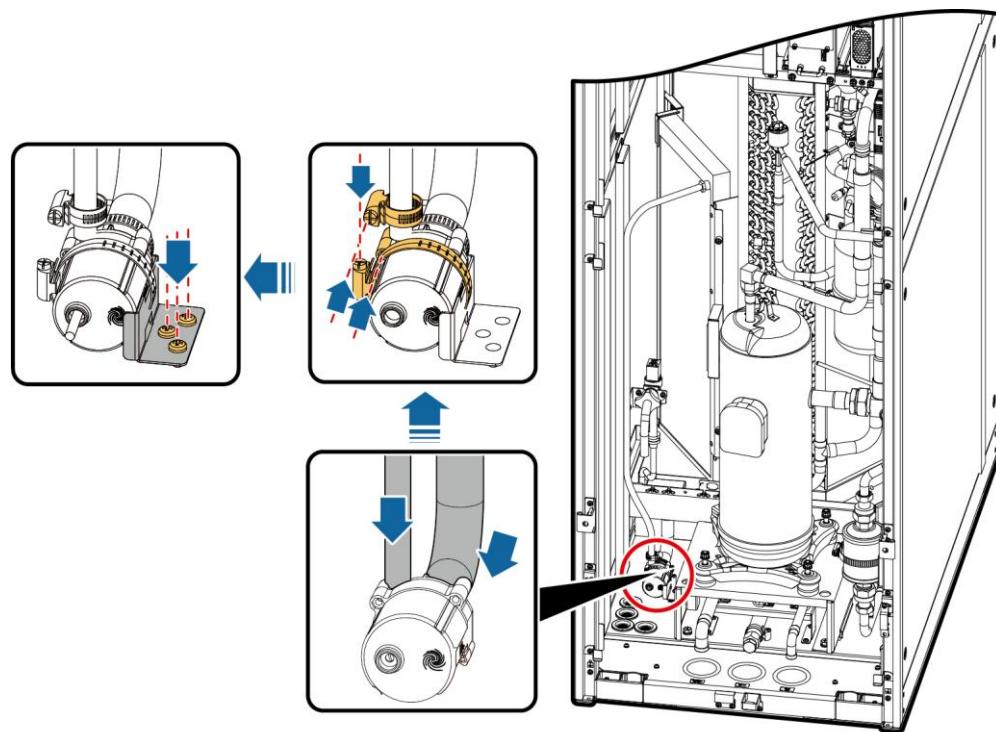
**Figure 5-36** Removing a humidifier pump



NH07H00008

**Step 6** Install the new humidifier pump by performing the preceding steps in reverse order, connect the hoses and cables, and secure them using hose clamps.

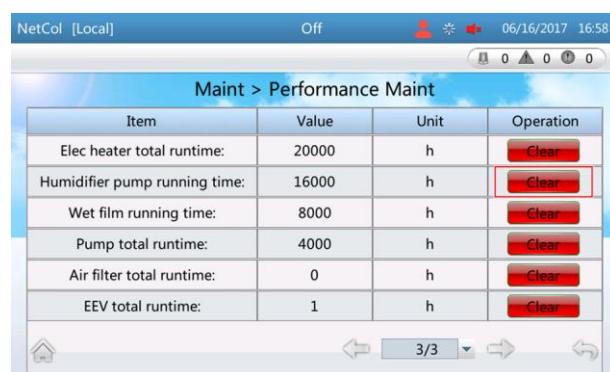
**Figure 5-37** Installing a humidifier pump



**Step 7** Install the air filter and close the rear door.

**Step 8** Power on the device. On the LCD home screen, choose **Maint > Performance Maint**, and clear the humidifier pump runtime.

**Figure 5-38** Performance maintenance



**Step 9** Tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.10 Replacing the Wet Film Humidifier

### Prerequisites

- The wet film humidifier needs to be replaced.
- A spare wet film humidifier of the same model is available and functional.

### Context

The wet film humidifier can be maintained only from the rear door.

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



#### NOTICE

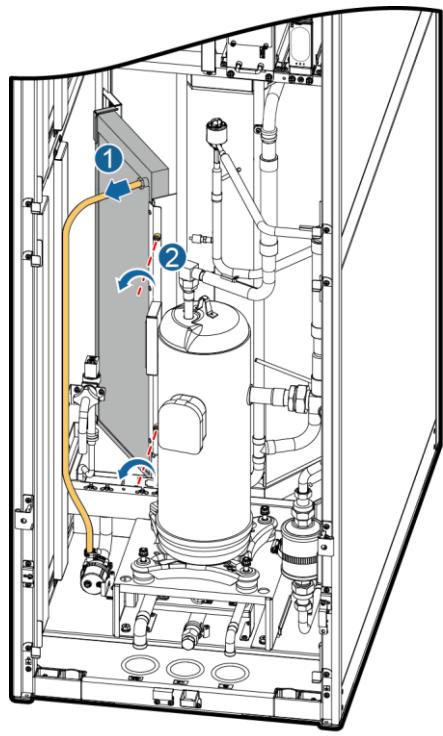
Exercise caution because the device is still energized after it is shut down on the controller home screen.

---

**Step 2** Open the rear door and remove the air filter.

**Step 3** Remove the wet film humidifier.

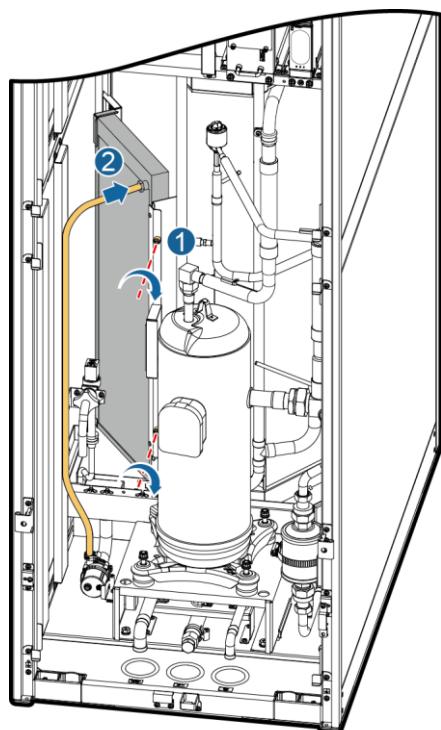
**Figure 5-39** Removing a wet film humidifier



1. Hold the blue release sleeve and remove the water inlet pipe.
2. Loosen the two captive nuts on one side of the wet film humidifier and remove the humidifier.

**Step 4** Install the new wet film humidifier in the original position by performing the preceding steps in reverse order, secure the screws, and connect the hose.

**Figure 5-40** Install a wet film humidifier



NH07H00066

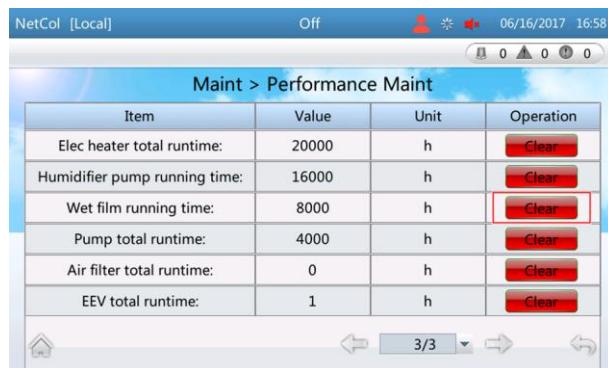
**NOTE**

Put the bottom of wet film humidifier into the installation position, and then put the top into the installation position. Fasten the two captive nuts.

**Step 5** Install the air filter and close the rear door.

**Step 6** Power on the device. On the LCD home screen, choose **Maint > Performance Maint**, and clear the humidifier runtime.

**Figure 5-41** Performance maintenance



**Step 7** Tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

**----End**

## 5.4.11 Replacing the Electric Heater

### Prerequisites

- The electric heater needs to be replaced.
- A spare electric heater of the same model is available and functional.
- Tool: Phillips screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.

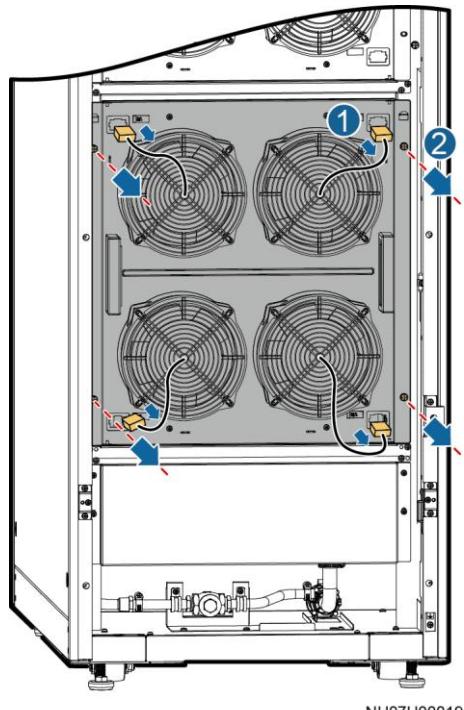


#### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the front door, disconnect the fan terminals, and remove the fan support.

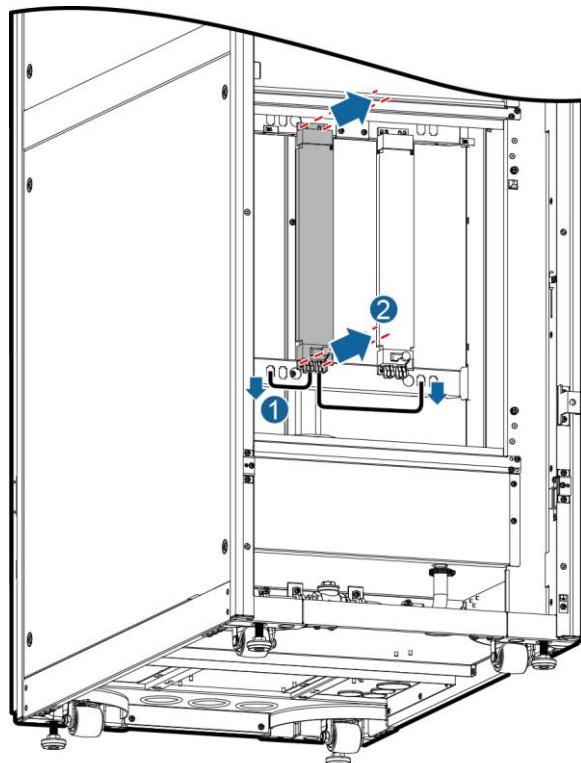
**Figure 5-42** Removing a fan support



**Step 3** Cut the cable ties that secure the electric heater terminal and remove the terminals.

**Step 4** Unscrew the four screws on the single electric heater, as shown in [Figure 5-43](#).

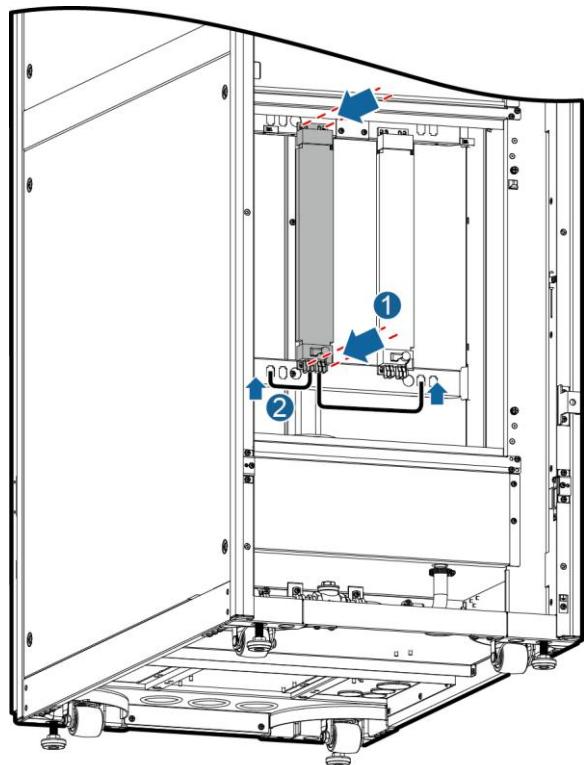
**Figure 5-43** Removing an electric heater



NH07H00077

**Step 5** Install the new electric heater in the reverse order of the removal.

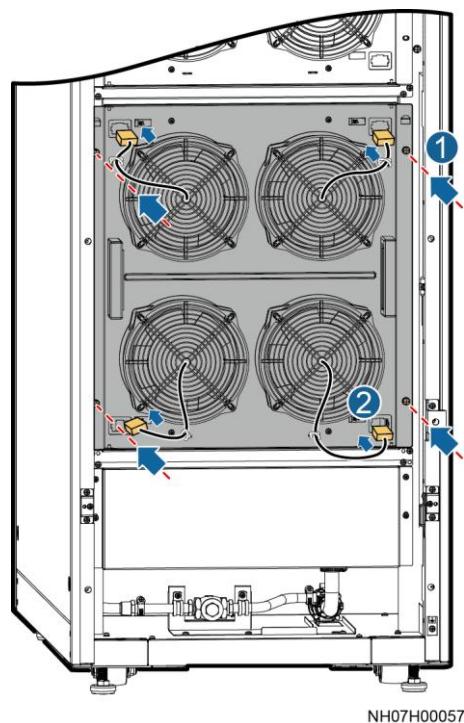
**Figure 5-44** Installing a new electric heater



NH07H00078

**Step 6** Install the fan support and connect the terminals.

**Figure 5-45** Installing a fan support

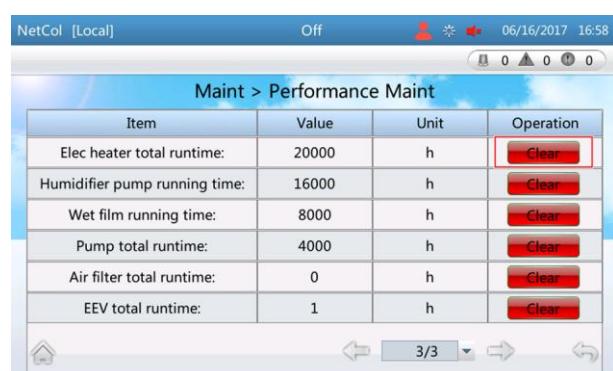


**NOTE**

Install the fan support by following the consequence on the label of fan support, to avoid reverse installation.

- Step 7** Power on the system. On the main screen, choose **Maint > Diagnostic Mode > Enter**. Manually start the electric heater, and check that the electric heater works properly. Then exit from the diagnostic mode.
- Step 8** Power on the device. On the LCD home screen, choose **Maint > Performance Maint**, and clear the electric heater runtime.

**Figure 5-46** Performance maintenance



- Step 9** Tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.12 Replacing a Strong-current Box

### Prerequisites

- A component inside the electric control box, such as the main control board, circuit breaker, AC contactor, fuse, or fuse base, needs to be replaced.
- A spare electric control box of the same model is available and functional.
- Tool: Phillips screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC. Check whether the port is energized. (Use a multimeter to check that the AC voltage of the port is 0 V.)



#### NOTICE

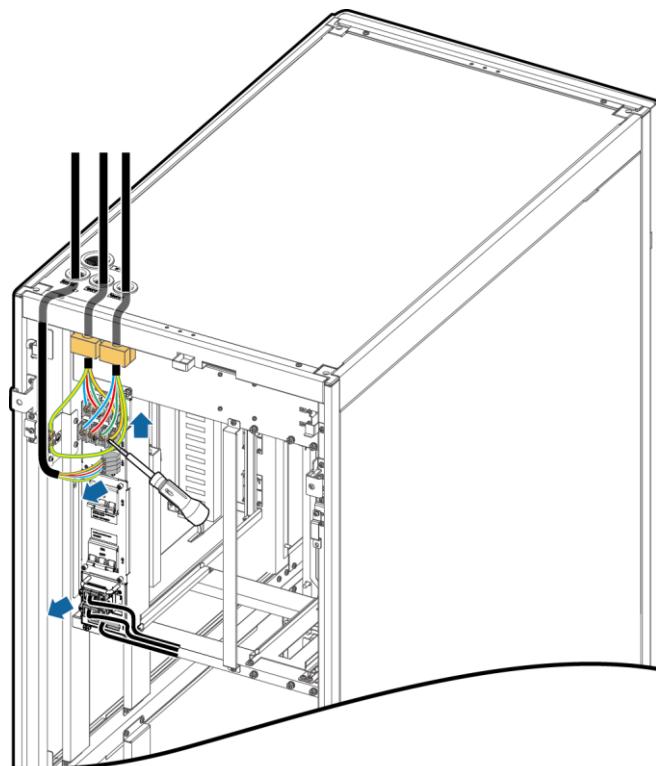
Exercise caution because the device is still energized after it is shut down on the controller home screen.

---

**Step 2** Open the rear door and remove the air filter.

**Step 3** Remove the power cables and terminals shown in [Figure 5-47](#) using a Phillips screwdriver.

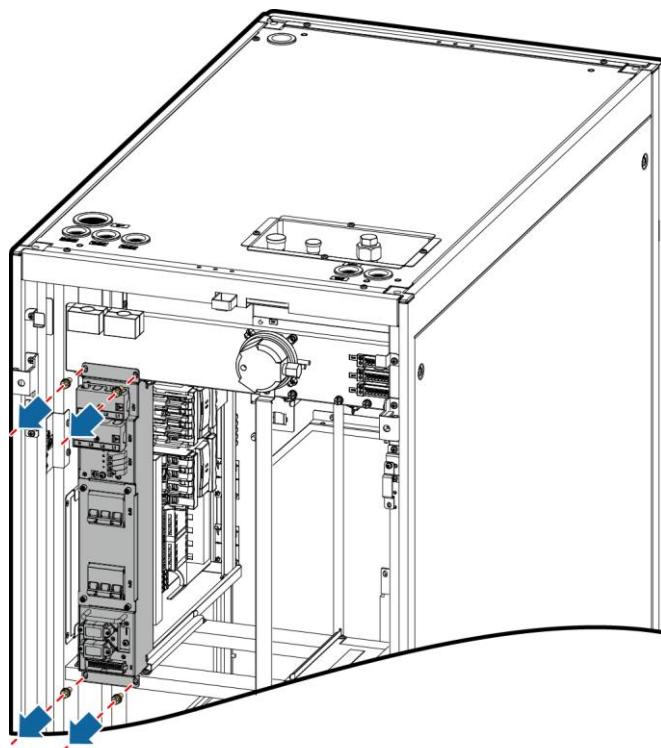
**Figure 5-47** Removing cables



NH07W00018

**Step 4** Remove the four screws in front of the strong-current box using a Phillips screwdriver, as shown in [Figure 5-48](#).

**Figure 5-48** Removing a strong-current box



NH07H00020

**Step 5** Replace the electric control box.

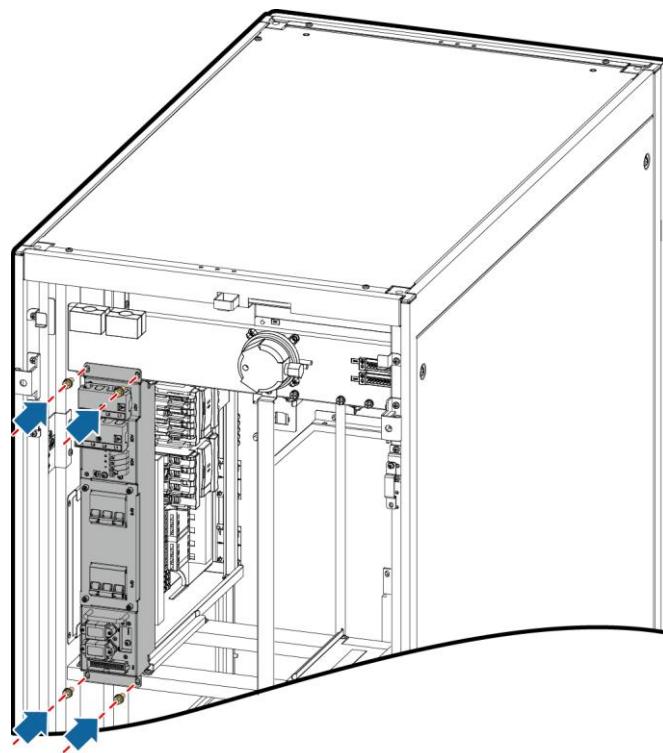


**NOTICE**

Ensure that the four screws are tightened when installing the strong-current box.

**Step 6** Place the new strong-current box in the installation position and secure it.

**Figure 5-49** Installing a strong-current box



NH07H000093

**Step 7** Reconnect the cables and terminals shown in [Figure 5-47](#).

**Step 8** Install the air filter and close the rear door.

**Step 9** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

### 5.4.13 Replacing Main Control Module, Auxiliary Power Supply Module, or PSU

#### Prerequisites

- The main control module, auxiliary power supply module, or PSU needs to be replaced.
- A spare main control module, auxiliary power supply module, or PSU of the same model is available and functional.

#### Context

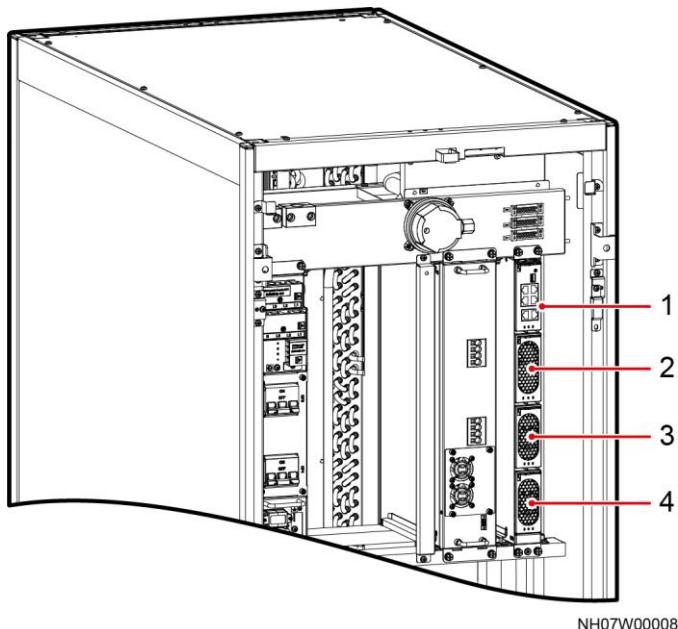


## NOTICE

- The new module must be installed in the same slot as the faulty module. Otherwise, the air conditioner may fail to work properly.
- Before replacing a main control module, disconnect the network cables from the main control module.

The module can be maintained only from the rear door.

**Figure 5-50** Module



(1) Main control module

(2) Auxiliary power supply module

(3) PSU 1

(4) PSU 2

## Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



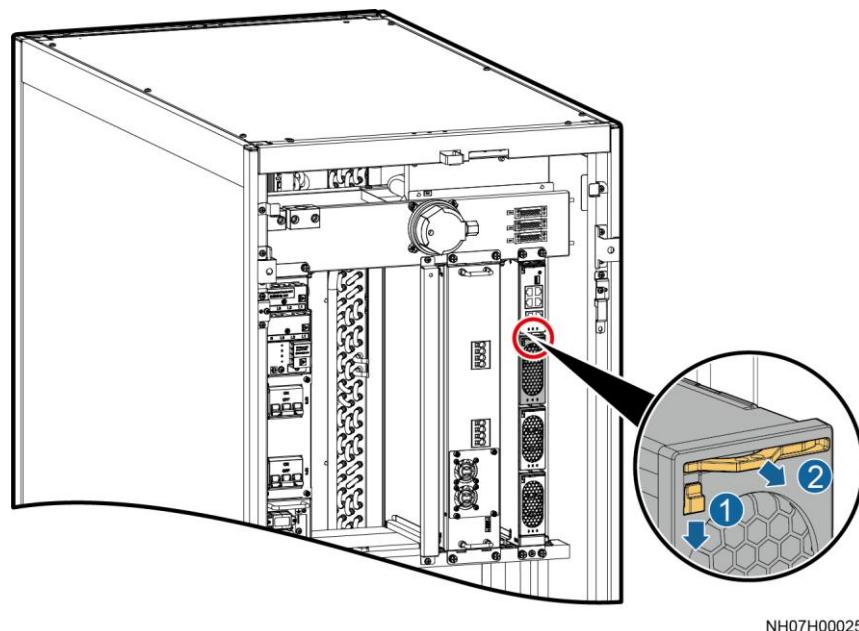
## NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the rear door and remove the air filter.

**Step 3** Flip the clip on the module downwards, as shown by (1) in [Figure 5-51](#).

**Figure 5-51** Removing a module



NH07H00025

**Step 4** Take out the handle and pull out the module from the subrack, as shown by (2) in [Figure 5-51](#).

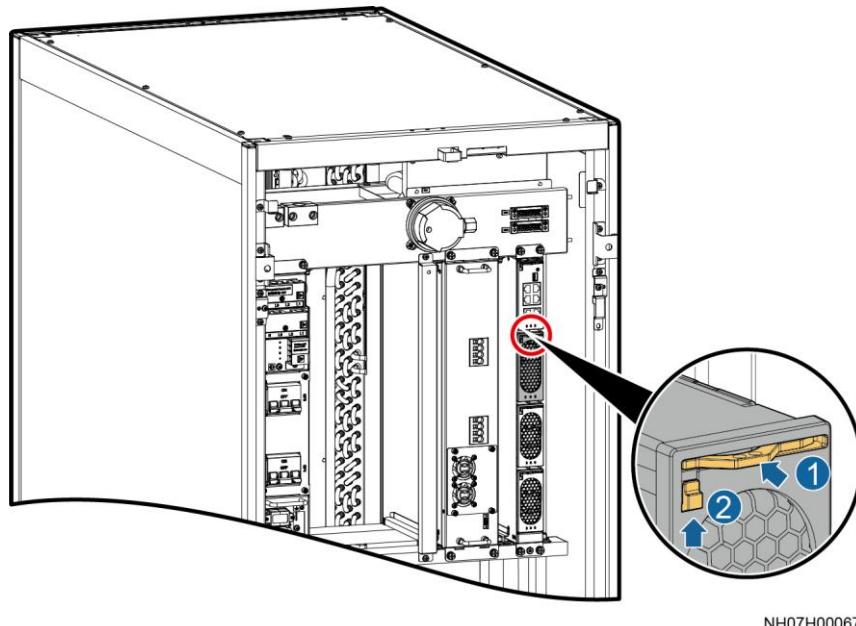


### NOTICE

When installing a new module, ensure that the handle is in the upper part of the module, and the HUAWEI logo is in the lower left corner of the module.

**Step 5** Insert the spare module into the corresponding slot, and flip the clip upwards to lock the module.

**Figure 5-52** Locking a module



**Step 6** Install the network cable and air filter, and close the rear door.

**Step 7** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.14 Replacing the T/H Sensor

### Prerequisites

- The T/H sensor needs to be replaced.
- A spare T/H sensor of the same model is available and functional.

### Context

The T/H sensor can be maintained only from the rear.

### Procedure

**Step 1** Tap **Shutdown** on the controller home screen.



#### NOTICE

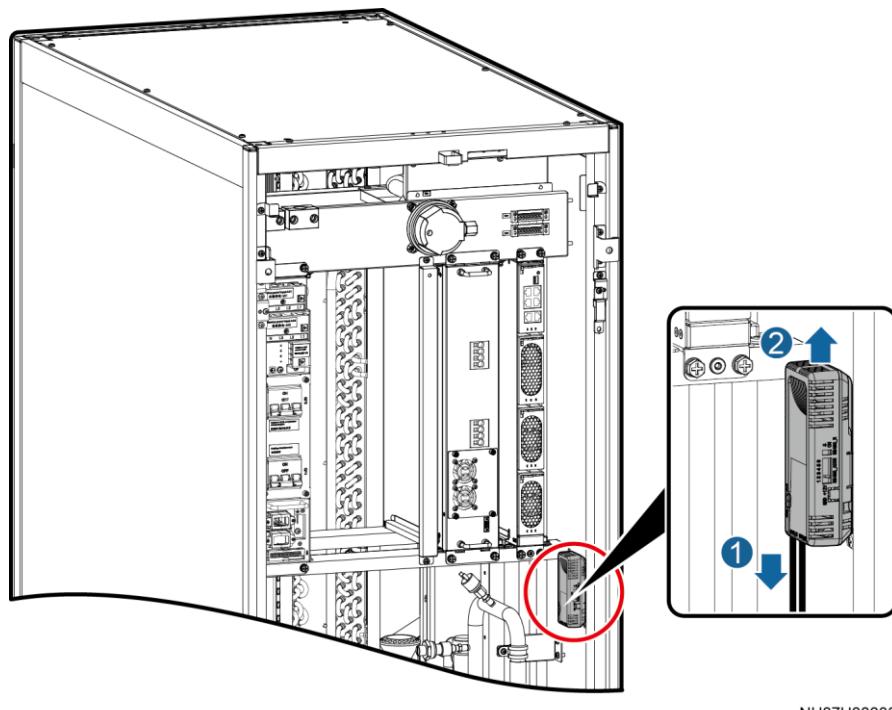
Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the rear door and remove the air filter.

**Step 3** Disconnect cables from the RS485\_IN and RS485\_OUT ports on the T/H sensor, as shown by (1) in [Figure 5-53](#).

**Step 4** Pull out the T/H sensor in the direction shown by (2) in [Figure 5-53](#).

**Figure 5-53** Removing a T/H sensor

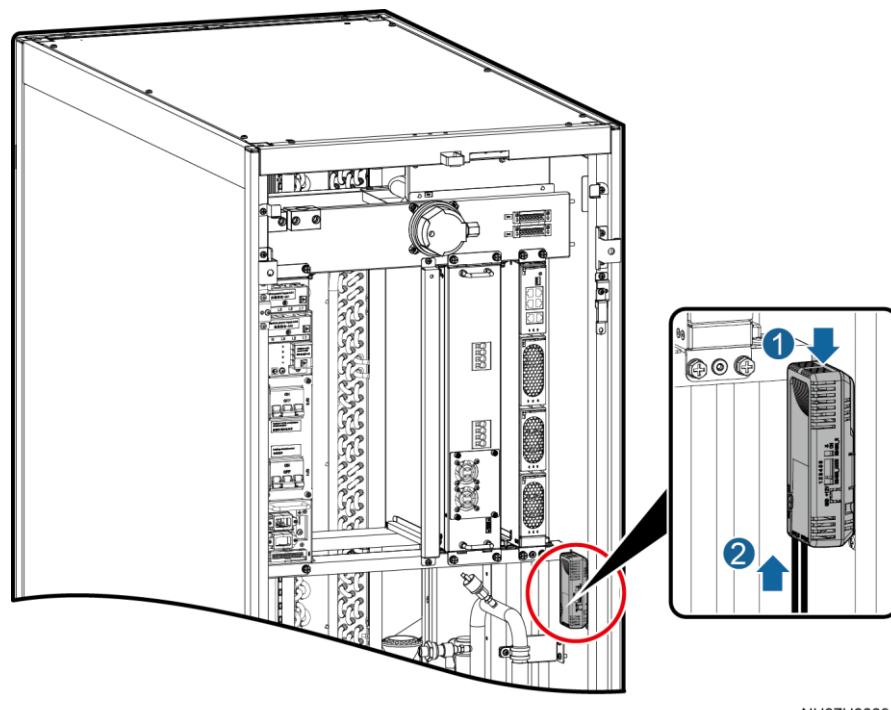


 **NOTE**

Before installing a new T/H sensor, check that the DIP switch setting is consistent with that for the original T/H sensor.

**Step 5** Connect cables to the RS485\_IN and RS485\_OUT ports, and install a new T/H sensor in the original position.

**Figure 5-54** Installing a T/H sensor



**Step 6** Install the air filter and close the rear door.

**Step 7** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.15 Replacing the LCD

### Prerequisites

- The LCD needs to be replaced.
- A spare LCD with the correct software version is available. If the LCD software is incorrect, upgrade the software by following the instructions in the *ACC Software Upgrade Guide*.
- Tool: Phillips screwdriver

### Procedure

**Step 1** Tap **Shutdown** on the ACC home screen.

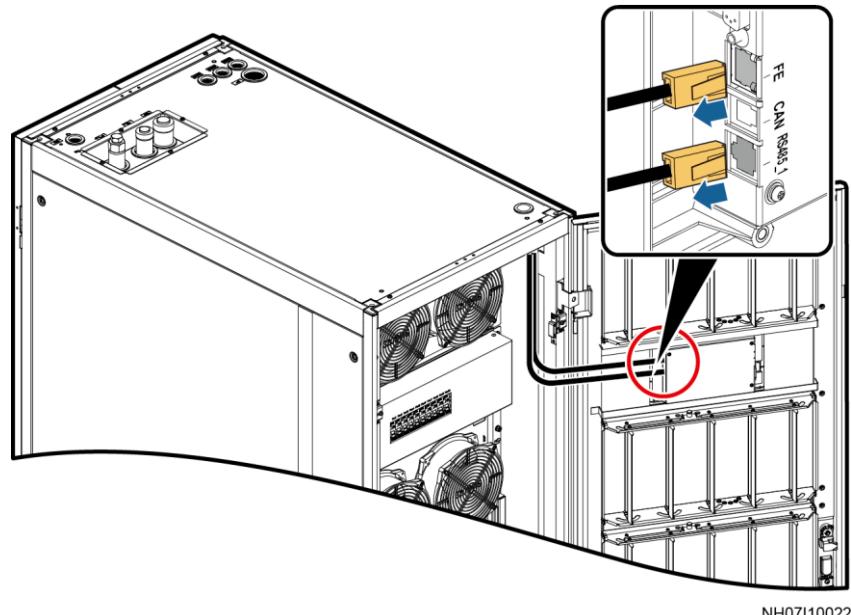


## NOTICE

Exercise caution because the NetCol5000-A is still energized when it is being shut down on the LCD.

**Step 2** Open the front door and disconnect cables.

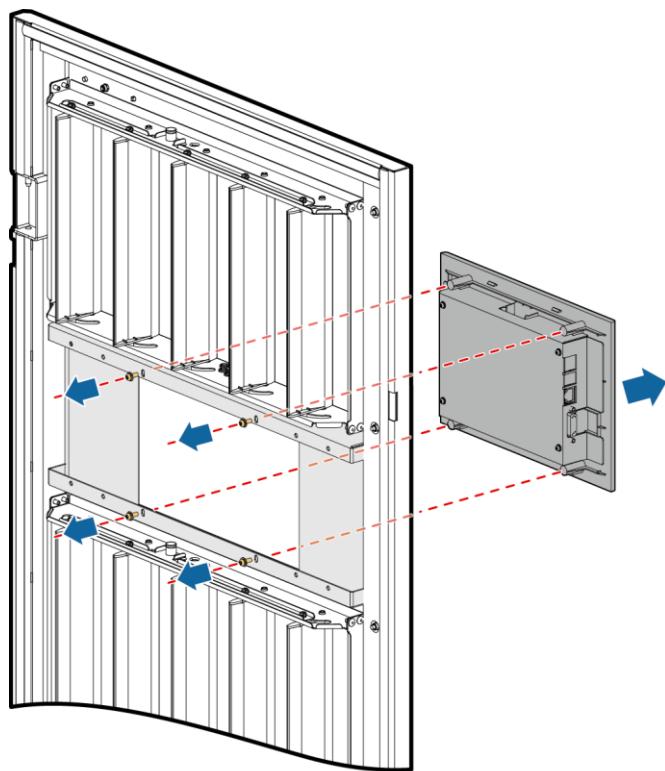
**Figure 5-55** Disconnecting cables



NH07110022

**Step 3** Hold the LCD screen from the front, remove the four screws from the screen using a Phillips screwdriver, and then remove the LCD screen, as shown in [Figure 5-56](#).

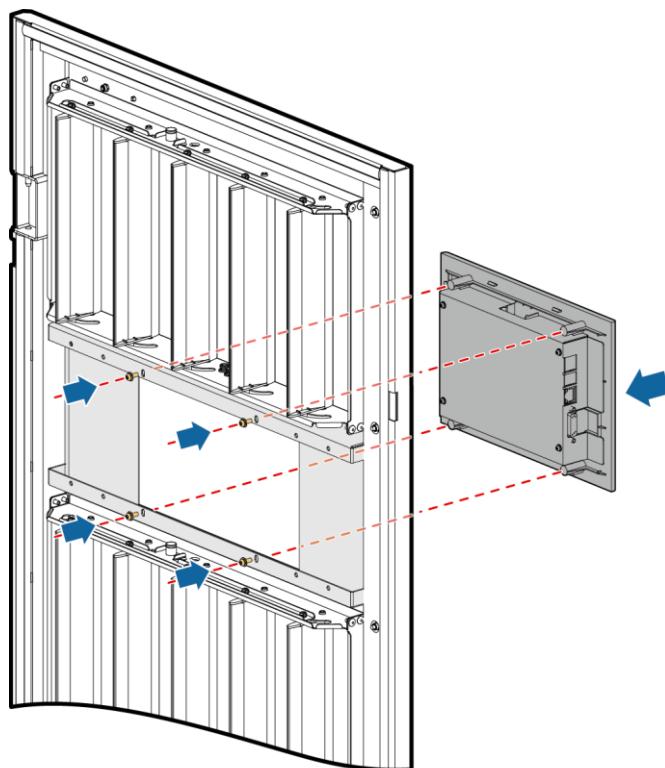
**Figure 5-56** Removing an LCD



NH07H00062

**Step 4** Secure the spare LCD screen to the original position on the front door using a Phillips screwdriver.

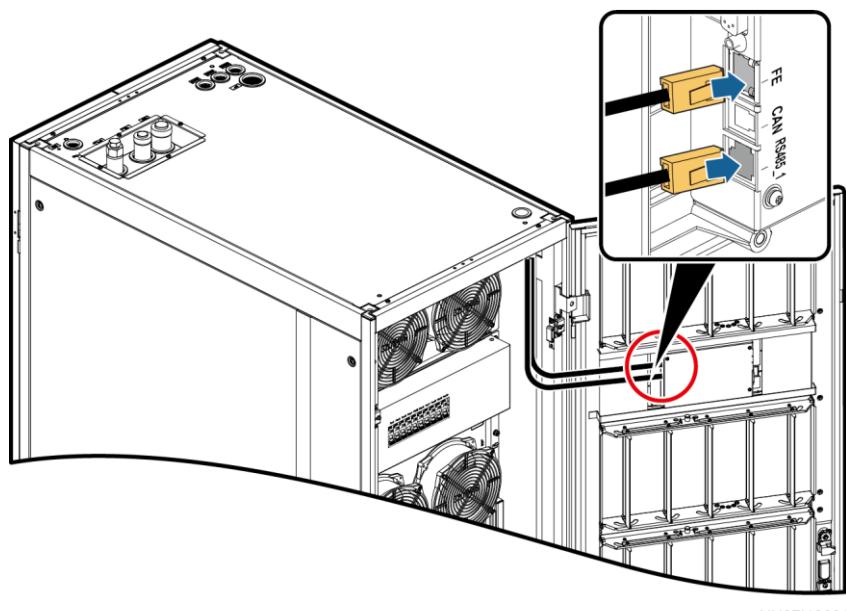
**Figure 5-57** Installing an LCD



NH07H00061

**Step 5** Connect the cables to the LCD and close the front door.

**Figure 5-58** Connecting cables



NH07I10021

**Step 6** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.16 Replacing the Switch

### Prerequisites

- The switch QF3 that controls the outdoor unit and compressor or the QF4 that controls the electric heater, as shown in [A Electric Control Box Layout](#), needs to be replaced.
- A spare switch QF3 that controls the outdoor unit and compressor or the QF4 that controls the electric heater of the same model is available and functional.
- Tool: Phillips screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



#### NOTICE

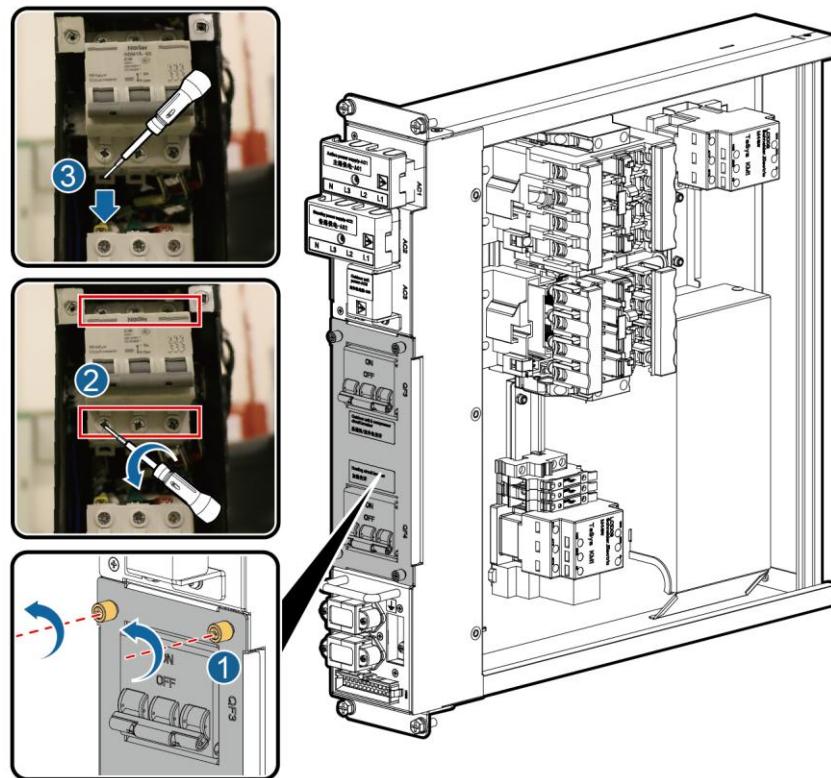
Exercise caution because the device is still energized after it is shut down on the controller home screen.

---

**Step 2** Open the rear door and remove the air filter.

**Step 3** Open the front cover of the switch, as shown by (1) in [Figure 5-59](#).

**Figure 5-59** Removing a faulty switch



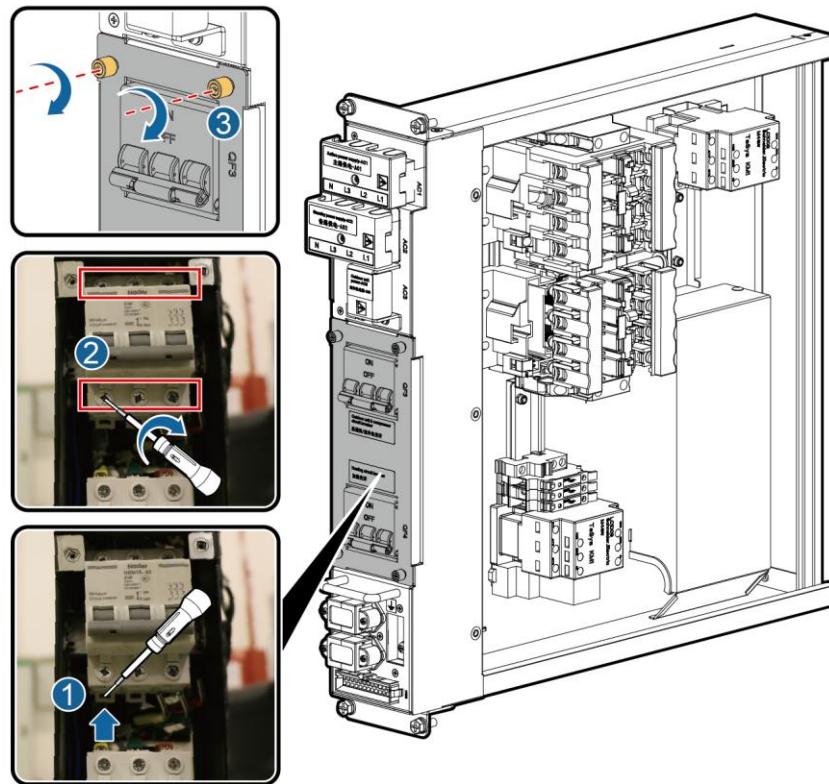
NH07H00079

**Step 4** Remove all cables from the faulty switch QF3 or QF4, as shown by (2) in [Figure 5-59](#).

**Step 5** Push the faulty switch upward and pull it outward at the same time to remove it, as shown by (3) in [Figure 5-59](#).

**Step 6** Fasten the buckle under the new switch to the guide rail. Push the buckle upward and press it inward at the same time to install the switch properly, as shown by (1) in [Figure 5-60](#).

**Figure 5-60** Installing a switch



NH07H00080

**Step 7** Reconnect the cables to the switch and reinstall the cover, as shown by (2) and (3) in Figure 5-60.

**Step 8** Install the air filter and close the rear door.

**Step 9** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.17 Replacing the Contactor

### Prerequisites

- The dual power switch contactor, AC contactor, or electric heater contactor, as shown in [A Electric Control Box Layout](#), needs to be replaced. This part uses KM3 as an example.
- A spare contactor of the same model is available and functional.
- Tool: Phillips screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.

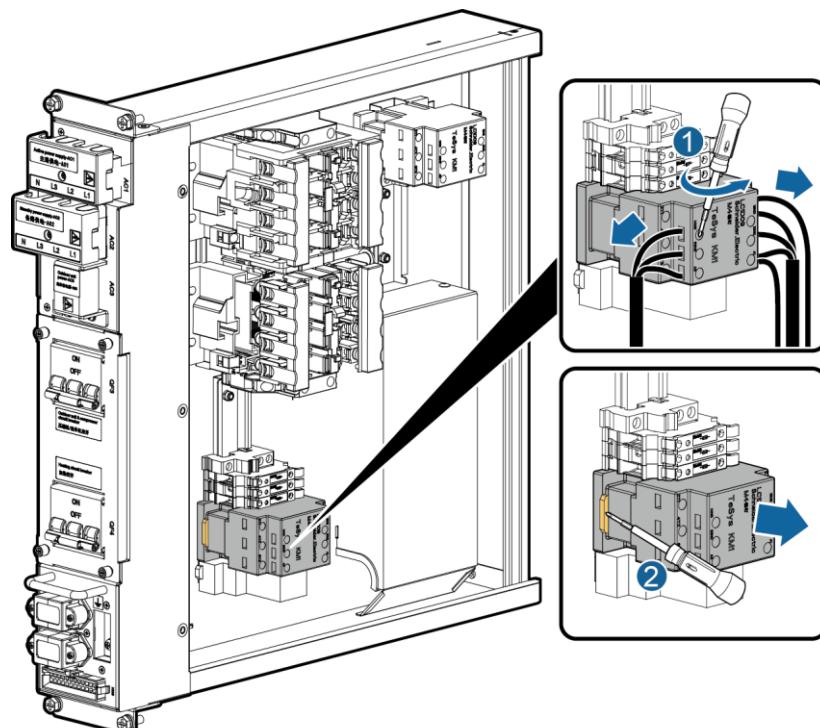


## NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

- Step 2** Open the rear door and remove the air filter.
- Step 3** Remove all cables and terminals connected to the electric control box.
- Step 4** Remove the four screws in front of the electric control box using a Phillips screwdriver, as shown in [Figure 5-48](#).
- Step 5** Remove cables from the faulty contactor. Open the contactor buckle and remove the faulty contactor.

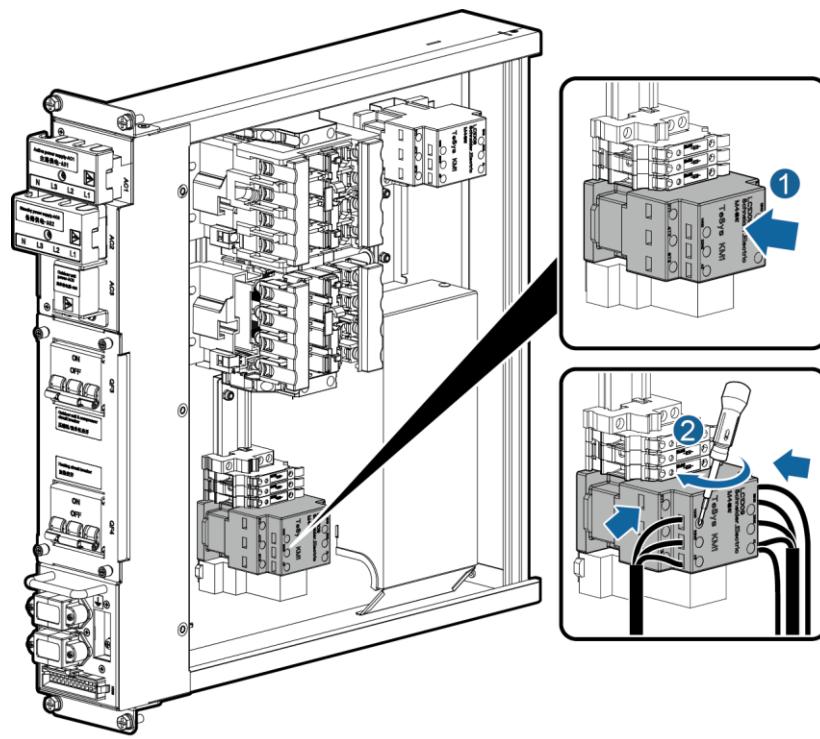
**Figure 5-61** Removing a faulty contactor



NH07H00083

- Step 6** Install the new contactor and reconnect the cables.

**Figure 5-62** Installing a new contactor



NH07H00084

**Step 7** Install the air filter and close the rear door.

**Step 8** Power on the device and tap **Startup** on the home screen. Ensure that the air conditioner is running normally without any alarms.

----End

## 5.4.18 Replacing the SPD

### Prerequisites

- The surge protective device (SPD), as shown in [A Electric Control Box Layout](#), needs to be replaced.
- A spare SPD of the same model is available and functional.
- Tool: Phillips screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.

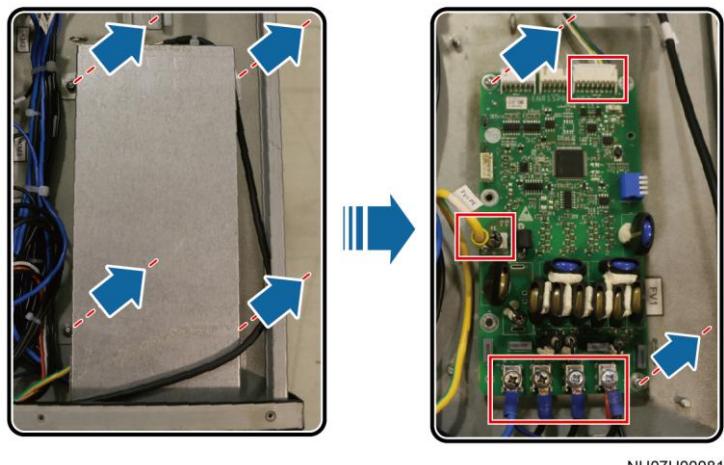


## NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

- Step 2** Open the rear door and remove the air filter.
- Step 3** Remove all cables and terminals connected to the strong-current box, as shown by **Step 3** in [5.4.12 Replacing a Strong-current Box](#).
- Step 4** Use a Phillips screwdriver to remove the four screws in the front of the strong-current box, as shown by **Step 4** in [5.4.12 Replacing a Strong-current Box](#), and remove the strong-current box.
- Step 5** Remove the SPD cover using a socket wrench, remove cables from the SPD, and remove the SPD.

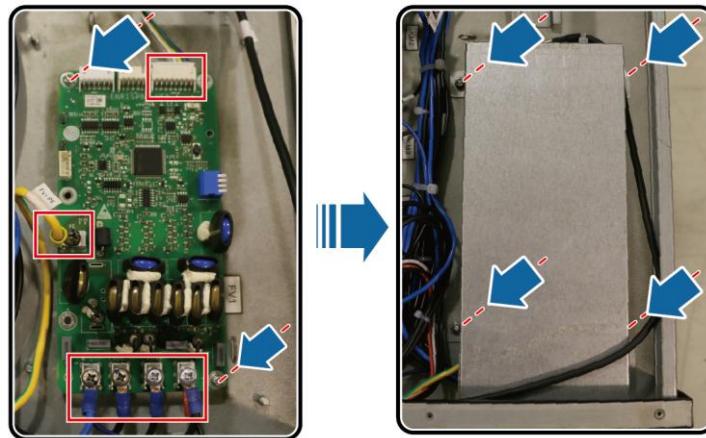
**Figure 5-63** Removing an SPD



NH07H00081

- Step 6** Secure the new SPD, connect the cables, and install the SPD cover.

**Figure 5-64** Installing an SPD



**Step 7** Reinstall the strong-current box, as shown by [Step 6](#) and [Step 7](#) in [5.4.12 Replacing a Strong-current Box](#).

**Step 8** Power on the device, and ensure that the air conditioner works properly without alarms.

**Step 9** Install the air filter and close the rear door.

----End

## 5.4.19 Replacing the Relay

### Prerequisites

- The relay, as shown in [A Electric Control Box Layout](#), needs to be replaced.
- A spare relay of the same model is available and functional.
- Tool: Phillips screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



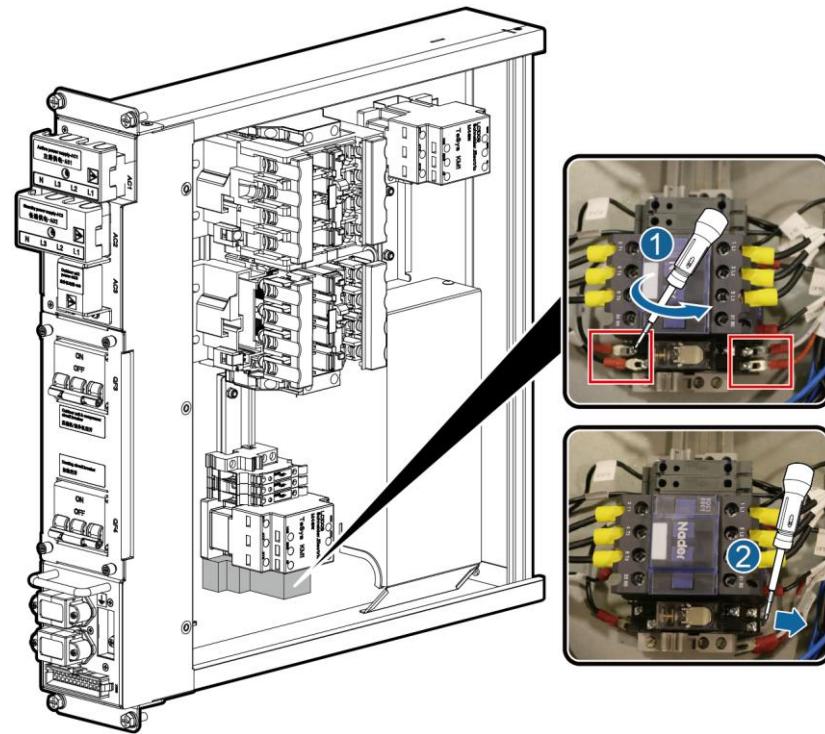
#### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the rear door and remove the air filter.

**Step 3** Remove the relay cable, open the buckle on the relay mounting base, and pull out the relay.

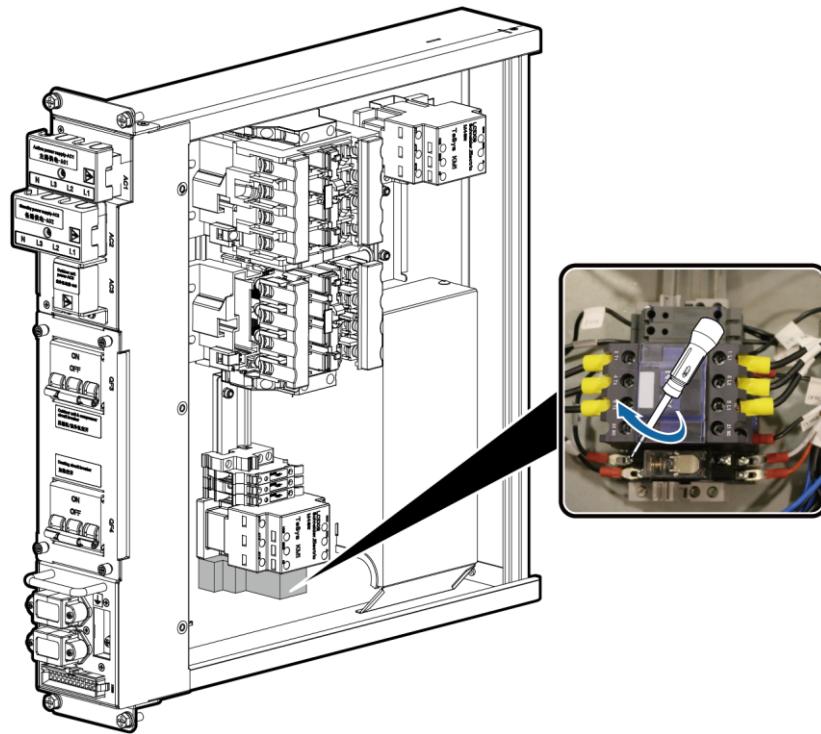
**Figure 5-65** Removing a relay



NH07H00085

**Step 4** Insert the spare relay to the mounting base, properly fasten the buckle, and connect the cables.

**Figure 5-66** Installing a relay



NH07H00086

**Step 5** Power on the device, and ensure that the air conditioner works properly without alarms.

**Step 6** Install the air filter and close the rear door.

----End

## 5.4.20 Replacing the Fuse

### Prerequisites

- The fuse, as shown in [A Electric Control Box Layout](#), needs to be replaced.
- A spare fuse of the same model is available and functional.
- Tool: flat-head screwdriver

### Procedure

**Step 1** On the controller home screen, tap **Shutdown**, and turn off the air conditioner switch in the PDC.



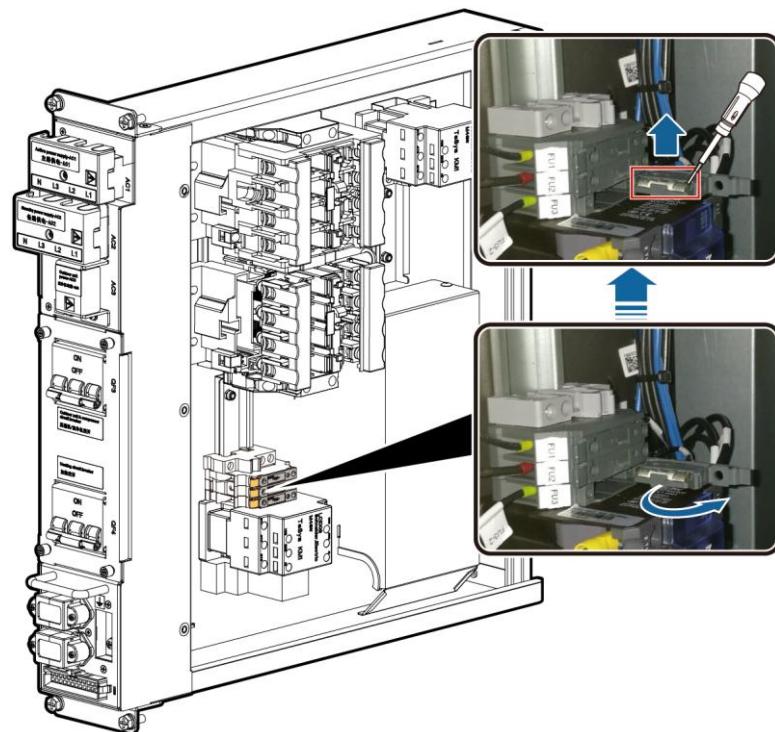
#### NOTICE

Exercise caution because the device is still energized after it is shut down on the controller home screen.

**Step 2** Open the rear door and remove the air filter.

**Step 3** Find the fuse to be replaced and open the knife-shaped fuse holder. Take the fuse out of the fuse holder by using a flat-head screwdriver.

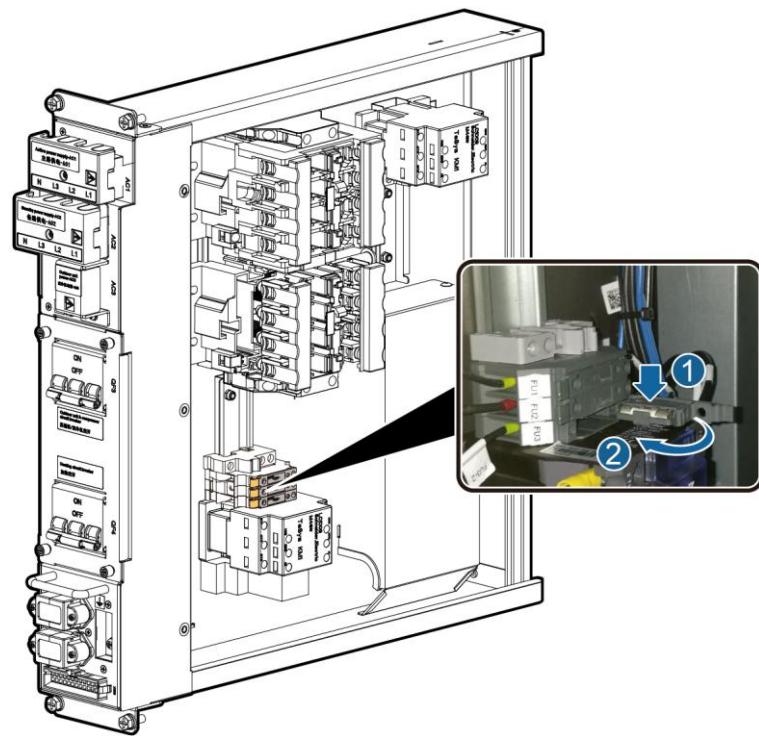
**Figure 5-67** Removing the fuse



NH07H00087

**Step 4** Replace the fuse with a new one and close the fuse holder.

**Figure 5-68** Replacing the fuse



NH07H00088

**Step 5** Power on the device, and ensure that the air conditioner works properly without alarms.

**Step 6** Install the air filter and close the rear door.

----End

# 6 FAQ

## 6.1 Querying Temperature and Humidity Curves

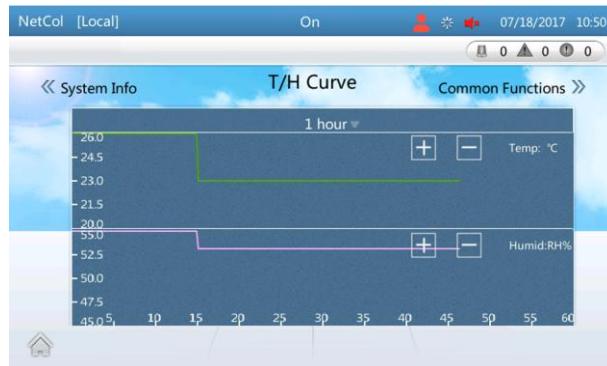
### Context

The **T/H Curve** screen displays temperature and humidity curves showing the recent temperature and humidity changes. You can choose to display the curves showing data changes of recent one hour, one day, seven days, or 30 days.

### Procedure

**Step 1** On the home screen, tap **T/H Curve**. [Figure 6-1](#) is displayed.

**Figure 6-1** T/H curve screen



#### NOTE

- The temperature curve (upper) and the humidity curve (lower) are displayed on the same screen. The abscissa shows time. The temperature set point is the midpoint temperature on the upper ordinate while the humidity set point is the midpoint humidity on the lower ordinate.
- The temperature and humidity curves show the current average temperature and humidity of the control type.
  - You can tap and to zoom in or out the range of the temperature and humidity ordinate. The midpoint temperature is the temperature set point and the midpoint humidity is the humidity set point after the ordinate range is zoomed in or out.
  - You can view the temperatures from (temp set point - 3 °C) to (temp set point + 3 °C) at least and from (temp set point - 30 °C) to (temp set point + 30 °C) at most.

- You can view the humidity from (humidity set point - 5%) to (humidity set point + 5%) at least, and from (humidity set point - 50%) to (humidity set point + 50%) at most. Specific humidity fluctuation range displayed varies according to different models of precision air conditioners.

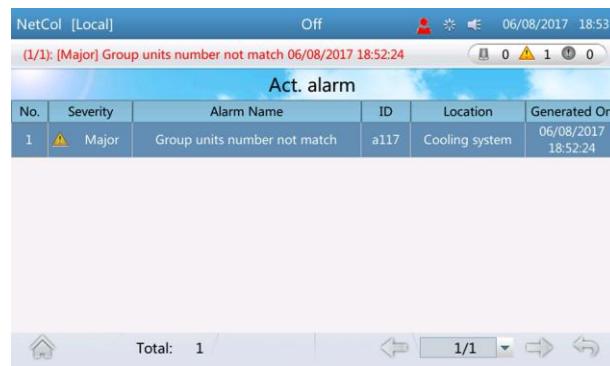
----End

## 6.2 How Can I Handle Active Alarms?

### Procedure

- Step 1** Tap  or choose **Alarms > Query Act. Alarms** on the home screen to enter the **Query Act. Alarms** screen.

**Figure 6-2** Query Act. Alarms

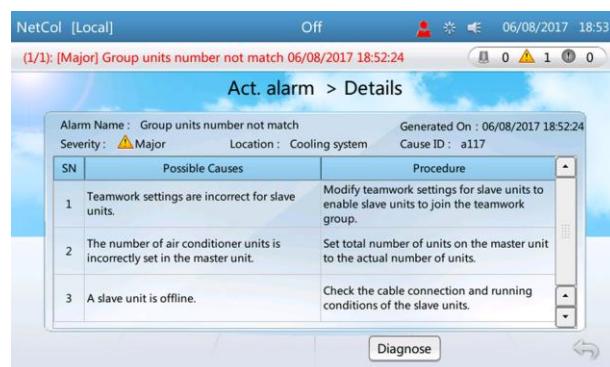


#### NOTE

- Active alarms are displayed in chronological order. The latest generated alarm is displayed in the uppermost row.
- If active alarms exist, they are displayed on the alarm bar one by one.
- You can query an alarm on the alarm list in related user manual for precision air conditioner based on the alarm ID to view causes of the alarm and methods used to clear the alarm.

- Step 2** Click each alarm to open the **Details** page, which contains **Alarm Name**, **Severity**, **Location**, **Cause ID**, **SN**, **Possible Causes** and **Procedure** for the alarm.

**Figure 6-3** Details

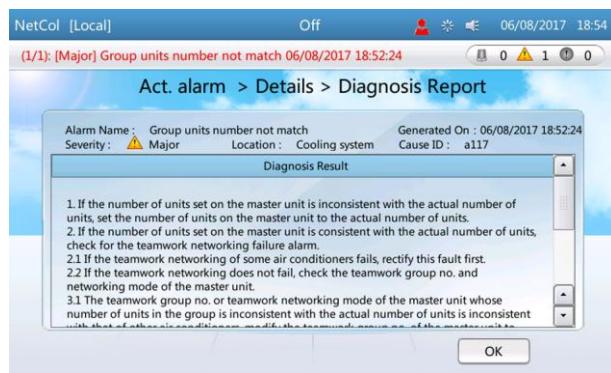


 **NOTE**

- If the  icon is not displayed on the **Details** screen, the alarm can be automatically cleared after the fault is rectified.
- If the  icon is displayed on the **Details** screen, it indicates that the alarm can be cleared manually. You need to tap **Clear** to clear the alarm after the fault is rectified. The alarm clearance type (automatic or manual) varies with precision air conditioners. Some of the alarms can either be cleared automatically or manually. Perform operations as required.

**Step 3** Tap **Diagnostic Mode** to view the diagnosis report. Rectify the faults following instructions in the diagnosis report.

**Figure 6-4** Diagnosis report



----End

## Follow-up Procedure

To query historical alarms, choose **Common Functions > Query Hist. Alarms** or **Alarms > Query Hist. Alarms** on the home screen.

 **NOTE**

Historical alarms are displayed in chronological order. The latest cleared alarm is displayed in the uppermost row.

## 6.3 Querying Logs

### Context

The **Query Logs** screen displays the operations performed by the user.

### Procedure

**Step 1** On the home screen, choose **Maint > Log Maint > Query Logs**. Figure 6-5 is displayed.

**Figure 6-5** Query logs screen

No.	User Name	Time	Source	Parameter
1	admin	12/31/2020 11:56:25	LCD	Enter diagnostic mode
2	admin	12/31/2020 11:47:42	LCD	Cooling System-Language: 中文->English
3	admin	12/31/2020 11:47:05	LCD	User login
4	guest	12/31/2020 11:39:34	LCD	A new USB device is found.
5	admin	12/31/2020 10:55:24	LCD	Configuration file exported successfully
6	admin	12/31/2020 10:55:18	LCD	Configuration export started

----End

## 6.4 Querying Device Runtime

### Procedure

**Step 1** On the home screen, choose **Maint > Performance Maint**. [Figure 6-6](#) is displayed.

**Figure 6-6** Performance Maint screen

Item	Value	Unit	Operation
Compressor total runtime:	2	h	<b>Clear</b>
Indoor fan 1 total runtime:	33	h	<b>Clear</b>
Indoor fan 2 total runtime:	33	h	<b>Clear</b>
Indoor fan 3 total runtime:	33	h	<b>Clear</b>
Indoor fan 4 total runtime:	33	h	<b>Clear</b>
Indoor fan 5 total runtime:	33	h	<b>Clear</b>

----End

## 6.5 Querying Component Status

### Context

You can query component status in the following two ways.

- Enter the **Status** screen. The control or running status of major components such as the compressor, EEV, indoor fan are displayed.

- Enter the **Device Details** screen and then enter the menu of a specific component. All parameters for the component are displayed.

## Procedure

- When viewing the component status through **Status**, choose **Common Functions > Status** or **Running > Status** on the home screen. The general component status screen is displayed. [Figure 6-7](#) shows the screen displayed after choosing **Running > Status**.

**Figure 6-7** General status



- When querying component status through **Device Details** (using the T/H sensor as an example), choose **Running > Device Details > T/H Sensor** on the home screen to query the status of the T/H Sensor, as shown in [Figure 6-8](#).

**Figure 6-8** T/H Sensor



----End

## 6.6 Querying System Parameters

### Context

You can query the system parameters through two ways.

- Enter the **Operating Info** screen that displays the major system parameters such as the current detected temperature, humidity, dew point temp, and auxiliary power voltage.
- Enter the **Device Details** screen and then enter the menu of a specific component. All parameters for the component are displayed.

## Procedure

- When querying system parameters through **Operating Info**, choose **Common Functions > Operating Info** or choose **Running > Operating Info** on the home screen, the related screen is displayed. [Figure 6-9](#) shows the screen displayed after choosing **Running > Operating Info**.

**Figure 6-9** Operating Info



- When viewing system parameters through **Device Details** (using the EEV as an example), choose **Running > Device Details > EEV** on the home screen to view the compressor parameters, as shown in [Figure 6-10](#).

**Figure 6-10** EEV



----End

## 6.7 Querying Version Details

### Procedure

**Step 1** On the home screen, select **About**.

**Step 2** On the **About** screen, tap **Version Info** or **E-label**. [Figure 6-11](#) and [Figure 6-12](#) are displayed.

**Figure 6-11** Version Info



**Figure 6-12** E-label



#### NOTE

- The **Version Info** screen displays version details of the display board, control board, and temperature and humidity collection board. The **E-label** screen displays electronic labels of the entire system, control board, display board, temperature and humidity collection board, SPD three-phase test board, and auxiliary power source board.
- When some T/H boards of the cold or hot aisles are enabled, **T/H Board** on the **About > Version Info** screen, or **T/H Board** on the **About > E-label** screen shows the information of these T/H boards.
- When some T/H boards of the cold or hot aisles are disabled, **T/H Board** on the **About > Version Info** screen, or **T/H Board** on the **About > E-label** screen does not show the information of these T/H boards.

----End

## 6.8 Deleting Historical Alarms

### Context

To delete historical alarms, log in as the **admin** user.



#### NOTICE

Exercise caution when deleting all historical alarms. Because this operation may cause clearance of all historical alarms and affects device maintenance.

---

### Procedure

**Step 1** On the home screen, choose **Alarms > Delete Hist. Alarms**. [Figure 6-13](#) is displayed.

**Figure 6-13** Delete hist. alarms screen



**Step 2** Tap **Yes** to delete all historical alarms.



#### NOTE

After alarms are deleted, the operation is recorded in logs.

----End

## 6.9 Deleting Logs

### Context

- Logs can be deleted in a one-click manner.
- To delete logs, log in as the **admin** user.



## NOTICE

If you perform this operation, all logs will be deleted, and device maintenance will be affected. Exercise caution when doing this operation.

## Procedure

**Step 1** On the home screen, choose **Maint > Log Maint > Delete Logs > Yes** to delete all the logs.



### NOTE

After logs are deleted, the log deletion operation is recorded in the first log that is displayed.

----End

## 6.10 Exporting Data

### Context

You can export data in one-click mode or by configurations. With the one-click mode, you can export active alarms, historical alarms, run logs, and so on. The two export methods are the same. This section uses one-click mode as an example to describe the export method.

You are advised to use the FAT32 USB flash drive with a capacity no greater than 64 GB.



## NOTICE

Before using a USB flash drive, ensure that its data has been scanned by antivirus software and is secure.



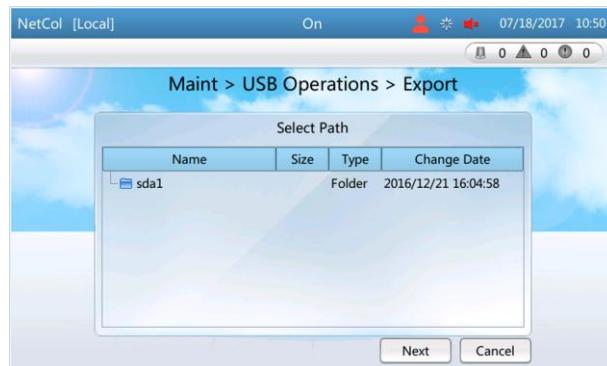
### NOTE

- Before exporting active alarms, historical alarms, logs, and configurations, ensure that the USB flash drive has been successfully identified. The position of the USB port is shown in [Figure 2-6](#).
- If the USB flash drive has been successfully identified, is displayed in the status bar.
- If the USB flash drive is not properly connected, the system will display **No USB device found**. during operations about the USB flash drive.

## Procedure

**Step 1** Tap **Maint > USB Operations > Export** to enter the **Select Path** screen, as shown in [Figure 6-14](#).

**Figure 6-14** Select path



**Step 2** Tap the file where the user saves current data in the **Select Path** dialog box and tap **Next**. Then tap **Yes** in the displayed dialog box.

**Step 3** After the data is successfully exported, [Figure 6-15](#) is displayed. Click **Finish**.

**Figure 6-15** Screen showing that data export has succeeded



**Step 4** Click **Maint > USB Operations > Remove USB** to remove the USB flash drive in safe mode.

----End

## 6.11 Clearing the Runtime

### Context



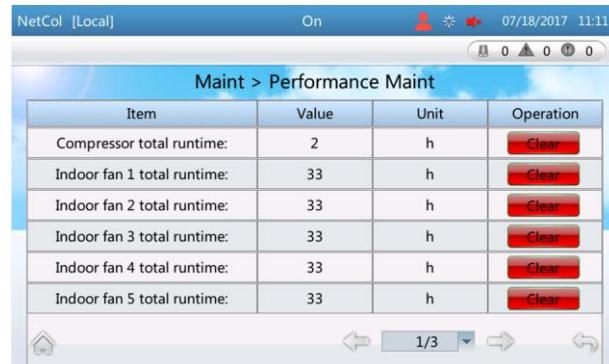
#### NOTICE

Performance value clearance can be performed only after component maintenance. Otherwise the component may run overtime and degrade performance.

## Procedure

**Step 1** On the home screen, choose **Maint > Performance Maint**. [Figure 6-16](#) is displayed.

**Figure 6-16** Performance Maint screen



**Step 2** Tap **Clear** of a specific performance parameter to clear its runtime.

----End

## 6.12 Calibrating a Sensor

### Context

Calibrate a sensor if the displayed temperature or humidity on the sensor deviates from the actual value. For example, if the return air temperature measured by other temperature detection devices at the return air detection point is 20 °C while the value measured by the sensor is 22 °C, the sensor has an error of 2 °C, and the calibration value should be set to -2 °C.

## Procedure

**Step 1** On the home screen, choose **Maint > Sensor Adjust**. [Figure 6-17](#) is displayed.

**Figure 6-17** Sensor adjust screen



**Step 2** Fill the calibration value based on the measured error.

----End

## 6.13 Calibrating the Screen

### Context

- You can calibrate for touching point deviation on the touchscreen.
- You can calibrate the screen by tapping the screen on the **Screen Calib** page or by DIP switch.
  - Tapping the screen on the **Screen Calib** page: The program of the display board works normally; the deviation between the touching point and the responding point is small; the **Maint > Screen Calib** page can be entered over the screen.
  - Calibrating the screen by DIP switch: The display board works normally; the deviation between the touching point and the responding point is unfavorably big; or the screen does not respond when being tapped.



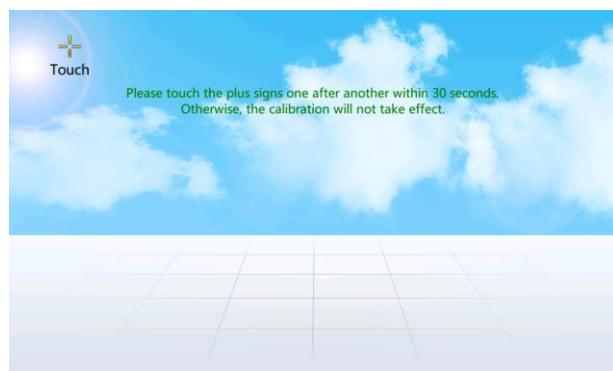
#### NOTICE

- You can calibrate the screen by DIP switch only when the system enters Quick Settings page after the first power-on or when the system is on the home screen.
  - Touch the display screen firmly if you are using your fingertips. It is recommended that you use the pen tip for accurate selection and quick response.
- 

### Procedure

- When calibrating the screen by tapping the screen, tap **Maint > Screen Calib**, as shown in [Figure 6-18](#). [Figure 6-19](#) is displayed when the screen calibration is complete.

**Figure 6-18** Screen calibration page



**Figure 6-19** Screen displayed when the calibration is complete



- Calibrating the screen by DIP switch.
  - a. Flip toggle switch 1 for the display to ON, and others to the opposite position, and wait for 3 seconds before calibrating. [Figure 2-6](#) shows the toggle switches for the screen.
  - b. Flip the fourth toggle switch to ON and others remain unchanged. The screen calibration function is triggered.

After 15 seconds, a dialog box indicating **Are you sure you want to calibrate the screen? If you do not click Yes or No, calibration will start automatically 10 seconds later.** is displayed, as shown in [Figure 6-20](#).

**Figure 6-20** Confirming to calibrate the screen



- c. Wait for 10 seconds or tap Yes. [Figure 6-18](#) is displayed. Tap the screen. When [Figure 6-19](#) is displayed, the adjustment is complete.
- d. Flip toggle switch 1 for the display to ON, and others to the opposite position.

**NOTE**

- After the DIP switch is calibrated, flip toggle switch 1 to ON, and others to the opposite position.
- You need to manually operate the operation again from the first step to trigger the touchscreen calibration function after the calibration failure.

----End

## 6.14 How to Perform Quick Settings

### Context

On the quick settings screen, you can set the language, time, date, and system.

### Procedure

- Step 1** Choose **Settings > Quick Settings** on the home screen. The quick settings screen is displayed, as shown by (1), (2) in [Figure 4-6](#).

----End

## 6.15 How to Set the Language, Date, or Time

### Context

Enter the **User Settings** screen to set **Language**, **Date**, **Time** or **Time zone**. You can also set **Password**, **LCD contrast**, **LCD saturation**, **LCD brightness**, and **LCD backlight off delay** on the screen.

### Procedure

- Step 1** On the home screen, choose **Settings > User Settings**. [Figure 6-21](#) is displayed.

**Figure 6-21** User Settings screen



- Step 2** Tap the parameter to be set.

**NOTE**

**LCD backlight off delay** is 3 min by default. If no operation is performed within 3 min, the backlight will be off. This value can be modified based on actual conditions.

----End

## 6.16 How to Modify a Password

### Prerequisites

- To modify a password, log in as the **admin** user or **operator** user.
- You can only modify the password of the current user.

### Procedure

**Step 1** On the home screen, choose **Settings > User Settings** to enter the **User Settings** screen, as shown in [Figure 6-22](#).

**Figure 6-22** User Settings



**Step 2** Tap **Password** to enter the password changing screen, as shown in [Figure 6-23](#).



#### NOTE

It is recommended that the password should contain at least two types of characters.

**Figure 6-23** Modifying the password



**NOTE**

If you forget the password, restore the initial password by referring to [6.17 Restoring Factory Settings](#).

----End

## 6.17 Restoring Factory Settings

### Context

If you have forgotten the password or need to delete system information, you can restore factory settings using DIP switch on the main control module.



## NOTICE

- If you restore factory settings, all system data will be restored to the state before delivery, including login passwords, operation logs, parameter configurations, alarms, and performance statistics. Perform this operation with caution as it may affect other users.
- To ensure device security, operate the DIP switch after powering off the main power supply of the device.
- To ensure information security and prevent malicious password reset, you must keep the cabinet keys securely. If any abnormal operation is found, check the information in the equipment room access control system and monitoring system.

## Procedure

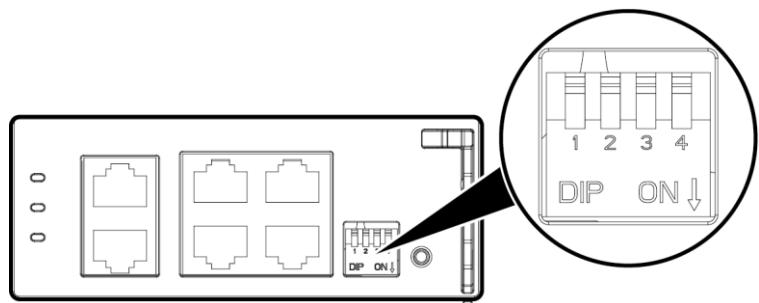
**Step 1** Tap **Shutdown** on the screen and wait for the system to shut down.

**Step 2** Disconnect the main power supply of the device.

**Step 3** Switch the fourth toggle of the DIP switch on the main control module to ON.

[Figure 6-24](#) shows the DIP switches on the main control module.

**Figure 6-24** DIP switches on the main control module



NH07W00001

**Step 4** Connect the main power supply of the device.

**Step 5** After the restart completes, the LCD displays a dialog box asking you to confirm the operation of restoring factory settings.

- To continue restoring factory settings, tap **Yes**, go on the next step.
- Otherwise, tap **No**.



### NOTE

If you do not confirm the operation within 30s, the dialog box disappears, and the process of restoring factory settings is terminated.

**Step 6** Disconnect the main power supply of the device.

**Step 7** Switch the fourth toggle of the DIP switch on the main control module to OFF.

**Step 8** Connect the main power supply of the device.

**Step 9** After the restart completes, the LCD displays the setup wizard screen for setting parameters.

 **NOTE**

After the system is restored to factory settings, the user password is also reset to the preset password, and must be promptly modified to ensure information security and normal system running.

----End

## 6.18 How to Silence the Buzzer

### Context

Silencing the buzzer: After the buzzer is silenced, it does not buzz when a new alarm is generated.

### Procedure

- Step 1** Tap the  icon in the status bar and tap **Off** to silence the buzzer. After the buzzer is silenced, the icon changes to .

----End

## 6.19 How to Enable a Humidity and Temperature Sensor

### Context

- A humidity and temperature sensor needs to be enabled after it is installed in an aisle.
- If you need to enable a humidity and temperature sensor, log in as the **admin** user.
- This section describes how to enable **Cold-aisle sensor 1** and **Cold-aisle sensor 2**.

### Procedure

- Step 1** On the home screen, choose **Settings > System Settings > Common Settings**.
- Step 2** Set **Cold-aisle sensor 1** and **Cold-aisle sensor 2** to **Enable**, as shown in [Figure 6-25](#).

**Figure 6-25** Common Settings



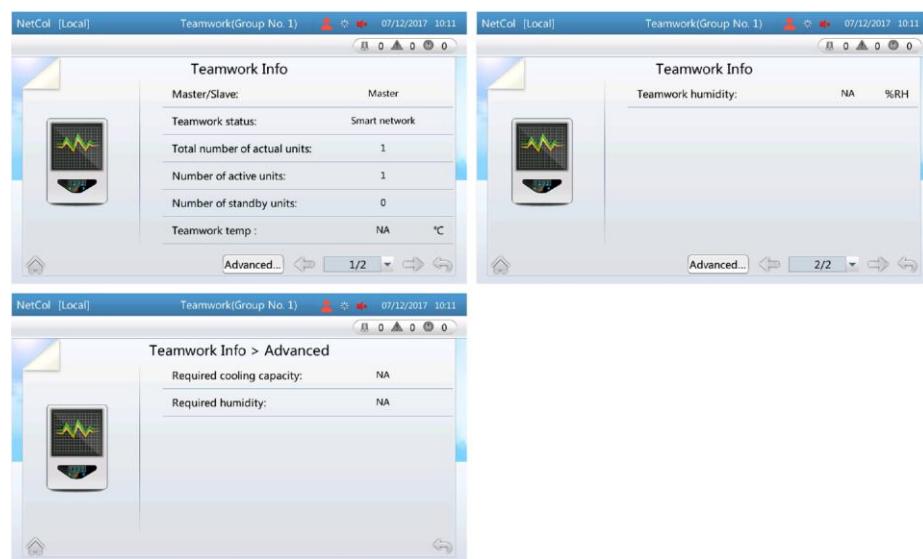
----End

## 6.20 How to View Teamwork Control Information

### Procedure

- Step 1** On the home screen, choose > . The teamwork control information is displayed, as shown in [Figure 6-26](#).

**Figure 6-26** Teamwork control information screen



#### NOTE

- **Master/Slave** and **Active/Standby** indicate the information of this single unit. Other information is about the teamwork control information of the group.
- Required cooling capacity: indicates the total cooling/heating requirements of the group and is used as a reference for enabling the cooling/heating mode by the master device. If the cascade function is enabled, the capacity is used as a reference for determining whether to start a standby unit.
- Required humidity: indicates the total dehumidification and humidification requirements of the group and is used as a reference for enabling the dehumidification and humidification mode by the master device.

----End

## 6.21 Which Parameters Are Restored to Default Values After Default Settings Are Operated

After choosing **Settings > Restore Defaults > Yes**, the following parameters are displayed:

- All parameters displayed on **Settings > System Settings**.
- All parameters displayed on **Settings > Alarm Settings**.

- All parameters displayed on **Settings > Comm Settings**.
- Date format and time zone settings displayed on **Settings > User Settings**.
- All parameters displayed on **Maint > Sensor Adjust**.



### NOTICE

To prevent key data from being lost, you are recommended to record all parameter values or back up data with export configurations before restoring defaults. Then change the parameter values back to the recorded values after restoring defaults. For details about how to use export configurations, see [6.10 Exporting Data](#).



### NOTE

After default settings are restored, all communication addresses are changed to 1 and the communication between all devices and the EMS is disconnected. The communication addresses must be reset to recover the communication.

## 6.22 How to Change the SSH Access Password

### Context



### CAUTION

- SSH is used only for advanced maintenance.
- Change the preset password in your first login to the controller over SSH.
- Except for password changes, do not perform any other operations. Otherwise, the controller cannot work properly.
- Except for password changes, operations resulting in controller faults are beyond the warranty scope.
- Remember the new password.



### NOTE

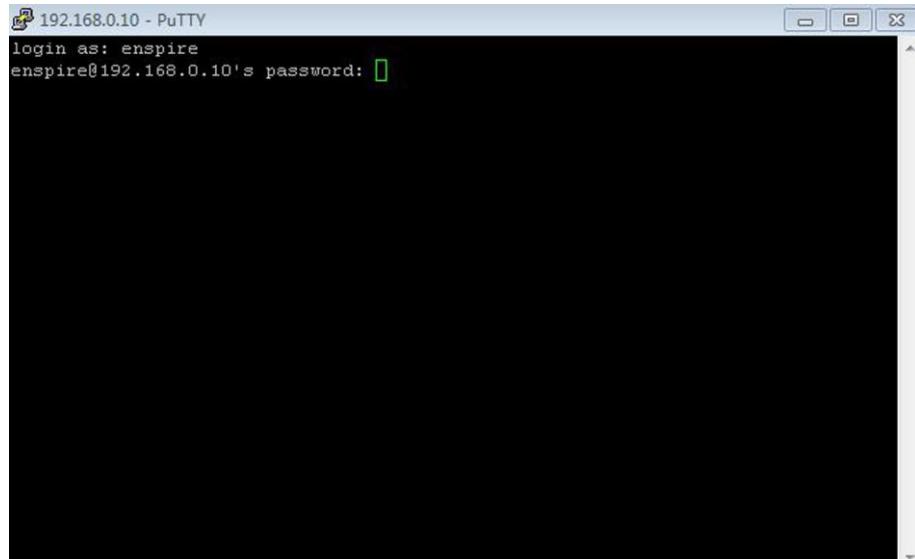
When Windows accesses the controller over SSH, you need to use client software such as PuTTY.

### Procedure

**Step 1** Log in to the controller over SSH.

**Step 2** Specify **User name** and **Password**. The preset user name and password are **enspire** and **Changeme** respectively, as shown in [Figure 6-27](#).

**Figure 6-27** Entering the user name and password



### NOTICE

The new password should meet the following requirements:

- Contains at least eight characters.
- Contains at least two types of characters: lowercase letter, uppercase letter, digit, space, and special character (^~!@#\$%^&\*()\_-+=\{|}:;\"<.>/?).
- Be different from the user name or user name in its inverted order.

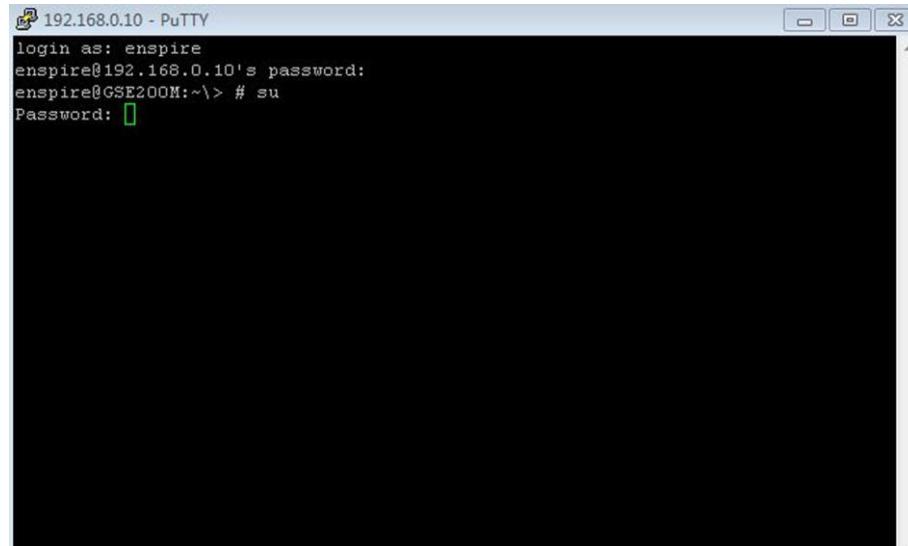


### NOTE

If a user enters incorrect passwords for five times, the user's account will be locked for 10 minutes.

**Step 3** After successful login, enter **su** and **Changeme** to switch to the root user, as shown in [Figure 6-28](#).

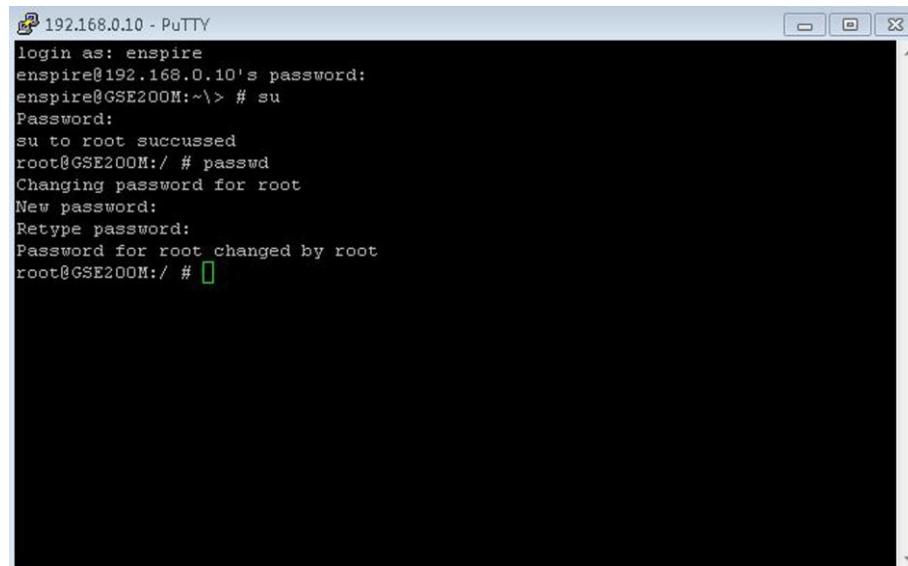
**Figure 6-28** Switching to the root user



```
192.168.0.10 - PuTTY
login as: enspire
enspire@192.168.0.10's password:
enspire@GSE200M:~\> # su
Password: [REDACTED]
```

**Step 4** Enter **passwd** (the password change command) to change the password. In the displayed window, enter a new password and confirm it, as shown in [Figure 6-29](#).

**Figure 6-29** Changing the password



```
192.168.0.10 - PuTTY
login as: enspire
enspire@192.168.0.10's password:
enspire@GSE200M:~\> # su
Password:
su to root succussed
root@GSE200M:/ # passwd
Changing password for root
New password:
Retype password:
Password for root changed by root
root@GSE200M:/ # [REDACTED]
```

 **NOTE**

The new password must meet complexity requirements. When you are changing the password, you can press **Ctrl+C** to stop this operation.

**----End**

## 6.23 How to Import a Certificate and a Key

### Prerequisites

You have obtained **CA certificate file**, **local certificate file**, and **key file** into a USB disk that is connected to the USB controller port shown in [Figure 2-6](#) and has been recognized.

You are advised to use the FAT32 USB flash drive with a capacity no greater than 64 GB.



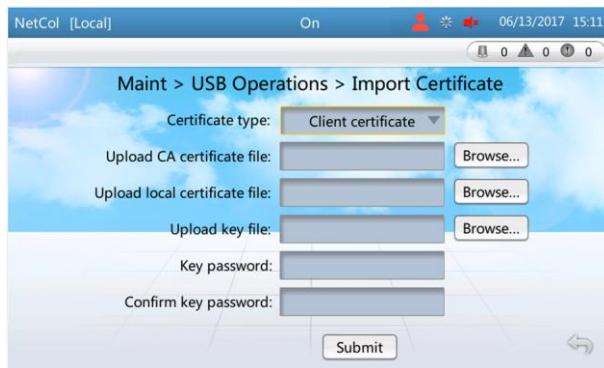
#### NOTICE

- Ensure that the key file has been encrypted using AES128.
- Before using a USB flash drive, ensure that its data has been scanned by antivirus software and is secure.

### Procedure

**Step 1** On the home page, choose **Maint > USB Operations > Import Certificate**, as shown in [Figure 6-30](#).

**Figure 6-30** Importing a certificate



**Step 2** Select **Client certificate** or **Server certificate** based on the type of the certificate in use.

**Step 3** Tap **Browse...** next to **Upload CA certificate file**.

**Step 4** Select the CA certificate file to be imported.

**Step 5** Upload the local certificate file and the key file in turn in the same way.

**Step 6** Enter **Key password** and **Confirm key password**.

**Step 7** Tap **Submit**.

- If files are imported successfully, a success message will be displayed.
- If files fail to be imported, the message indicating the cause for failure will be displayed. Rectify the fault according to the message and import files again.

----End

## 6.24 How to Import a Configuration file

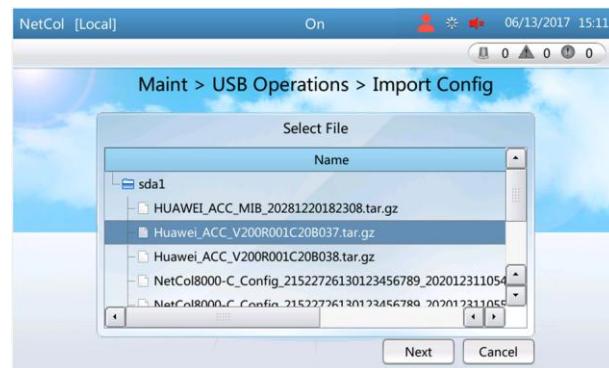
### Context

You are advised to use the FAT32 USB flash drive with a capacity no greater than 64 GB.

### Procedure

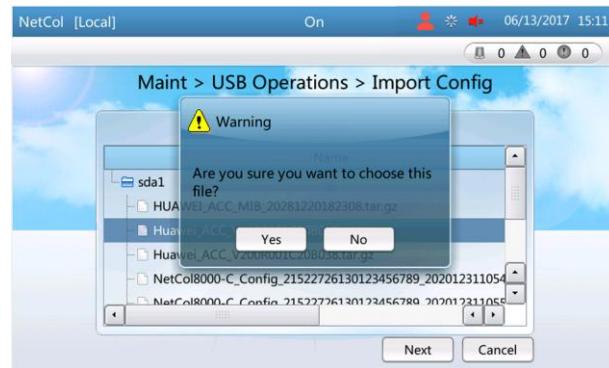
**Step 1** Tap **Maint > USB Operations > Import Config**, as shown in [Figure 6-31](#).

**Figure 6-31** Select file



**Step 2** Select the file that needs to be imported and tap **Next**, as shown in [Figure 6-32](#).

**Figure 6-32** Confirming the file



**Step 3** After you tap **Yes** and **Next**, [Figure 6-33](#) and [Figure 6-34](#) are displayed.

**Figure 6-33** Data process 1



**Figure 6-34** Data process 2



**Step 4** After the file is imported successfully, [Figure 6-35](#) is displayed. Then tap **Finish**.

**Figure 6-35** Importing the file successfully



 **NOTE**

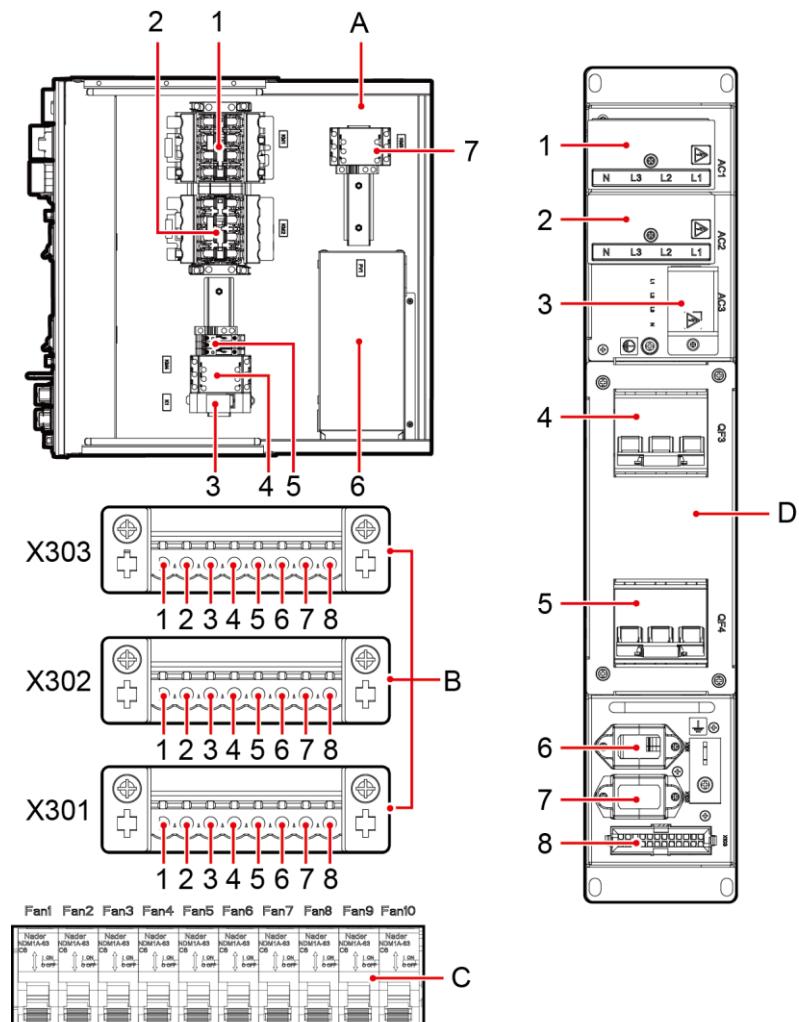
If the file fails to be imported, a failure message will be displayed.

**Step 5** Tap **Maint > USB Operations > Remove USB** to remove the USB flash drive.

**----End**

# A Electric Control Box Layout

Figure A-1 Electric control box layout



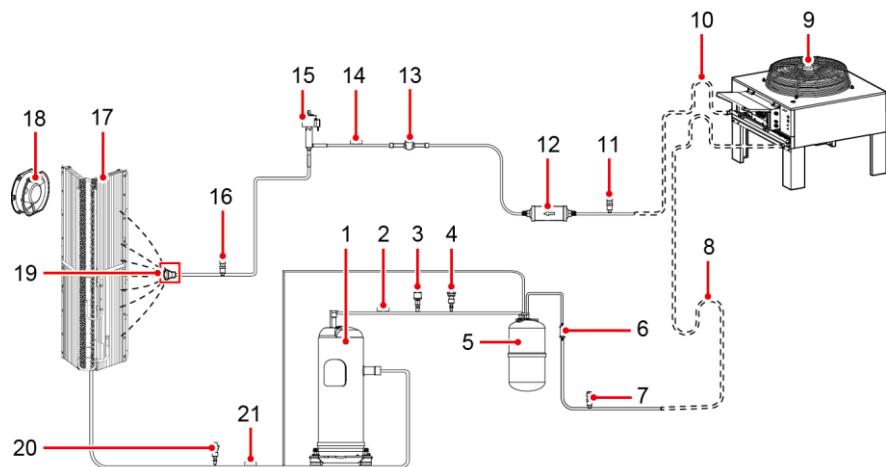
**Table A-1** Electric control box layout description

No.	Name and Function				
A	Side view of the electric control box	(1) Dual power switch contactor KM1 <sup>a</sup>	(2) Dual power switch contactor KM2 <sup>a</sup>	(3) Crankcase heater relay	(4) Electric heater contactor KM4
		(5) Fuse holder	(6) SPD	(7) AC contactor KM3 <sup>a</sup>	-
B	Signal cable terminal block	X301	(1)	Outdoor unit control	Outdoor unit control dry contact
			(2)		Outdoor unit control dry contact
			(3)	Smoke sensor	Smoke sensor power supply (12 V DC)
			(4)		Smoke sensor feedback
			(5)	Port for remote startup and shutdown+	Port for remote startup and shutdown+
			(6)		Port for remote startup and shutdown-
			(7)	Water immersion	Water leakage detection-contact 1 (water leakage in the floor)+
			(8)		Water leakage detection-contact 1 (water leakage in the floor)-
		X302	(1)	Outdoor unit RS485 control	RS485-SW+
			(2)		RS485-SW-
			(3)		GND-ISO
			(4)	Dry contact alarm 1	Dry contact alarm 1
			(5)		Dry contact alarm 1
			(6)	Dry contact alarm 2	Dry contact alarm 2
			(7)		Dry contact alarm 2
			(8)	Reserved	-
		X303	(1)	Differential pressure transmitter (DPT)	DPT 12 V DC
			(2)		DPT GND
			(3)		DPT 0–5 V feedback

No.	Name and Function					
			(4)			DPT 5 V DC (Reserved)
			(5)	Reserved	-	
			(6)			
			(7)			
			(8)			
C	Fan circuit breakers Fan1–Fan10 (between the two groups of fans on the front door)					
D	Front view of the electric control box	(1) Main power port (AC1)	(2) Backup power port (AC2) <sup>a</sup>	(3) Power port for outdoor unit (AC3)	(4) Switch QF3 controlling the outdoor unit and compressor	
		(5) Electric heater switch QF4	(6) Compressor PSU power port (X101) (connected before delivery)	(7) Electric heater power port (X102) (connected before delivery)	(8) Signal port (X103) (connected before delivery)	
a: This item is not for the equipment configured with single power supply.						

# B Cooling Component Layout

**Figure B-1** Cooling component layout



NH07S00035

- |                                |                                     |                                 |
|--------------------------------|-------------------------------------|---------------------------------|
| (1) Compressor                 | (2) Discharge temperature sensor    | (3) High pressure switch        |
| (4) High pressure sensor       | (5) Oil separator                   | (6) Check valve                 |
| (7) Exhaust pipe needle valve  | (8) Oil trap                        | (9) Outdoor unit                |
| (10) Inverted U-shaped trap    | (11) Liquid pipe needle valve       | (12) Dryer filter               |
| (13) Sight glass               | (14) Liquid pipe temperature sensor | (15) Electronic expansion valve |
| (16) Low-pressure needle valve | (17) Evaporator                     | (18) Indoor fan                 |
| (19) Distributor               | (20) Low pressure sensor            | (21) Suction temperature sensor |

## NOTE

The pipes shown in real lines in [Figure B-1](#) are installed by Huawei before delivery and the pipes shown in dotted lines in [Figure B-1](#) are installed onsite (by technical personnel).

# C Parameter Description



## NOTE

- Parameters and preset values are from ACC V200R001C30B078.
- Parameters are those that can be queried by the admin user.
- In [Table C-1](#), only the component names are used. For example, **Indoor fan 1** and **Indoor fan 2** are indicated by **Indoor fan**. The actual number of a component displayed on the relevant screen prevails.

**Table C-1** Parameter description

Menu	Parameter	Description	Default Value
Settings > User Settings	Language	Specifies the interface language to Chinese or English.	Consistent with the current interface language
	Date format	Specifies the date display format for the ACC.	Consistent with the current interface date format
	Date	Specifies the date displayed on the ACC.	Consistent with the current interface date
	Time	Specifies the time displayed on the ACC.	Consistent with the current interface time
	Time zone	Specifies the time zone displayed on the ACC.	Consistent with the current interface time zone
	Password	Changes the password.	N/A
	LCD contrast	Specifies the contrast of the ACC LCD.	5
	LCD saturation	Specifies the saturation of the ACC LCD.	8
	LCD brightness	Specifies the brightness of the ACC LCD.	6
	LCD backlight off delay	Specifies the time of no operation after which the controller LCD backlight turns off.	3 min

Menu	Parameter	Description	Default Value
<b>Settings &gt; Comm Settings &gt; IP Setting</b>	IP assigning mode	Specifies the way of allocating IP addresses for precision air conditioners.	Manual
	IP address	Specifies the IP address for the precision air conditioner.	192.168.000.010
	Subnet mask	Specifies the subnet mask for the precision air conditioner.	255.255.255.000
	Gateway	Specifies the gateway for the precision air conditioner.	192.168.000.001
<b>Settings &gt; Comm Settings &gt; WiFi Settings</b>	WiFi SSID	Set WiFi SSID based on the actual configuration; WiFi SSID is the name used for the WiFi hotspot over which a mobile phone can connect to the air conditioner.	NETCOL_6650b0
	WiFi Password	Enter the WiFi password when you use a mobile phone to connect to the WiFi. When you enable the WiFi function for the first time, you need to set a password.	N/A
	Enable WiFi	Enable the WiFi function.	Disable
<b>Settings &gt; Comm Settings &gt; Modbus Settings</b>	Baud rate	The baud rate for the communication between the precision air conditioner and the EMS can be set to <b>9600</b> and <b>19200</b> . The value should be consistent with that set on the EMS.	9600
	Comm address	Specifies the address for the communication between the precision air conditioner and the EMS.	1
	Link mode	<ul style="list-style-type: none"> <li><b>Server:</b> The air conditioner, as a server, supports two client connection and establishes communication.</li> <li><b>Client:</b> The air conditioner, as a client, can connect to a remote server and establish communication.</li> <li><b>Server and client:</b> The air conditioner, as a server, supports two client connection and establishes communication. In addition, the air conditioner, as a client, can connect to a remote server and establish communication.</li> </ul>	<b>Server and client</b>
	Client encrypt	This parameter is configurable when <b>Link mode</b> is set to <b>Client</b> .	Enable
	Server encrypt	This parameter is configurable when <b>Link mode</b> is set to <b>Server</b> .	Disable
	Network IP	Enter the actual IP address of the EMS. IP addresses of the display panel, EMS client, and EMS server must be unique. This parameter is configurable when <b>Link mode</b> is	000.000.000.000

Menu	Parameter	Description	Default Value
		set to <b>Client</b> .	
	Network port	It is recommended that you retain the default value 16100. If you need to change the value, enter a value as required. This parameter is configurable when <b>Link mode</b> is set to <b>Client</b> .	16100
<b>Settings &gt; Comm Settings &gt; SNMP Settings</b>	See <a href="#">4.5.7 Setting Communications Parameters (SNMP Parameters)</a> .		
<b>Settings &gt; Alarm Settings</b>	Action	Three options are available for setting whether to report an alarm. <ul style="list-style-type: none"> <li><b>Enable</b>: Alarms are reported to the EMS. The LCD displays active alarms and the system implements related protection actions.</li> <li><b>Disable</b>: Alarms are not reported and no protection actions are implemented.</li> </ul>	Allow
	Delay	Specifies the delay time for reporting alarms.	Not displayed
	Threshold	Specifies the alarm threshold for a certain alarm.	Not displayed
	T/H control type	<b>Cold-aisle</b> , <b>Hot-aisle</b> , <b>Return-air</b> , or <b>Supply-air</b> can be set as required. The temperature and humidity set points correspond to the selected control type can be set.	Return-air
<b>Settings &gt; System Settings &gt; COMM Settings</b>	Ctrl temp setpoint at ctrl point	After the T/H control type and the temperature value under this type are set, the device conducts cooling or heating based on the settings.	23.0 °C
	Ctrl humid setpoint at ctrl point	After the T/H control type and the humidity value under this type are set, the device conducts humidifying or dehumidifying based on the settings.	50.0%RH
	Cold-aisle sensor	The sensors in cold aisles can be set to <b>Enable</b> or <b>Disable</b> .	Disable
	Hot-aisle sensor	The sensors in hot aisles can be set to <b>Enable</b> or <b>Disable</b> .	Disable
	Heat	<b>Enable</b> indicates that the electric heater will be started when the ambient temperature is lower than the certain temperature range of the temperature set point. <b>Disable</b> indicates that the electric heater will not be started. <b>Enabled when active pwr</b> indicates that the electric heater will be started when the main	Enable

Menu	Parameter	Description	Default Value
		power is active and the ambient temperature is lower than the certain temperature range of the temperature set point.	
	Heat mode	If <b>Dehumid heat</b> is selected, the electric heater starts heating based on the current temperature only after the dehumidification function is enabled. If <b>Low-temp heat</b> is selected, the electric heater starts heating based only on the current temperature, no matter the dehumidification function is enabled or not. If <b>Dehumid &amp; LT heat</b> is selected, the electric heater starts heating when the dehumidification and heating condition or the low temperature heating condition is met.	Dehumid heat
	Humid	<b>Enable</b> indicates that the electric humidifier will be started when the ambient humidity is lower than the certain humidity range of the humidity set point. <b>Disable</b> indicates that the electric humidifier will not be started. <b>Enabled when active pwr</b> indicates that the electric humidifier will be started when the main power is active and the ambient humidity is lower than the certain humidity range of the humidity set point.	Enable
	Dehumid	<b>Enable</b> indicates that the dehumidification function will be enabled when the ambient humidity exceeds the certain humidity range of the humidity set point. <b>Disable</b> indicates that the dehumidification function will not be enabled. <b>Enabled when active pwr</b> indicates that the dehumidification function will be enabled when the main power is active and the ambient humidity exceeds the certain humidity range of the humidity set point.	Enable
	DO associated alarm	<ul style="list-style-type: none"> <li>• When DO associated alarm is set to <b>Smoke&amp;water only</b>, if a smoke sensor alarm or water overflow alarm is generated, port 1 for reporting common alarms generates a dry contact close alarm, and port 2 for reporting common alarms does not function.</li> <li>• When DO associated alarm is set to <b>Critical&amp;major ALM</b>, if a critical alarm is generated, port 1 for reporting common alarms generates a dry contact close alarm; if a major alarm is generated, port 2 for reporting common alarms generates a dry contact close alarm.</li> <li>• When DO associated alarm is set to <b>None</b>,</li> </ul>	Smoke&water only

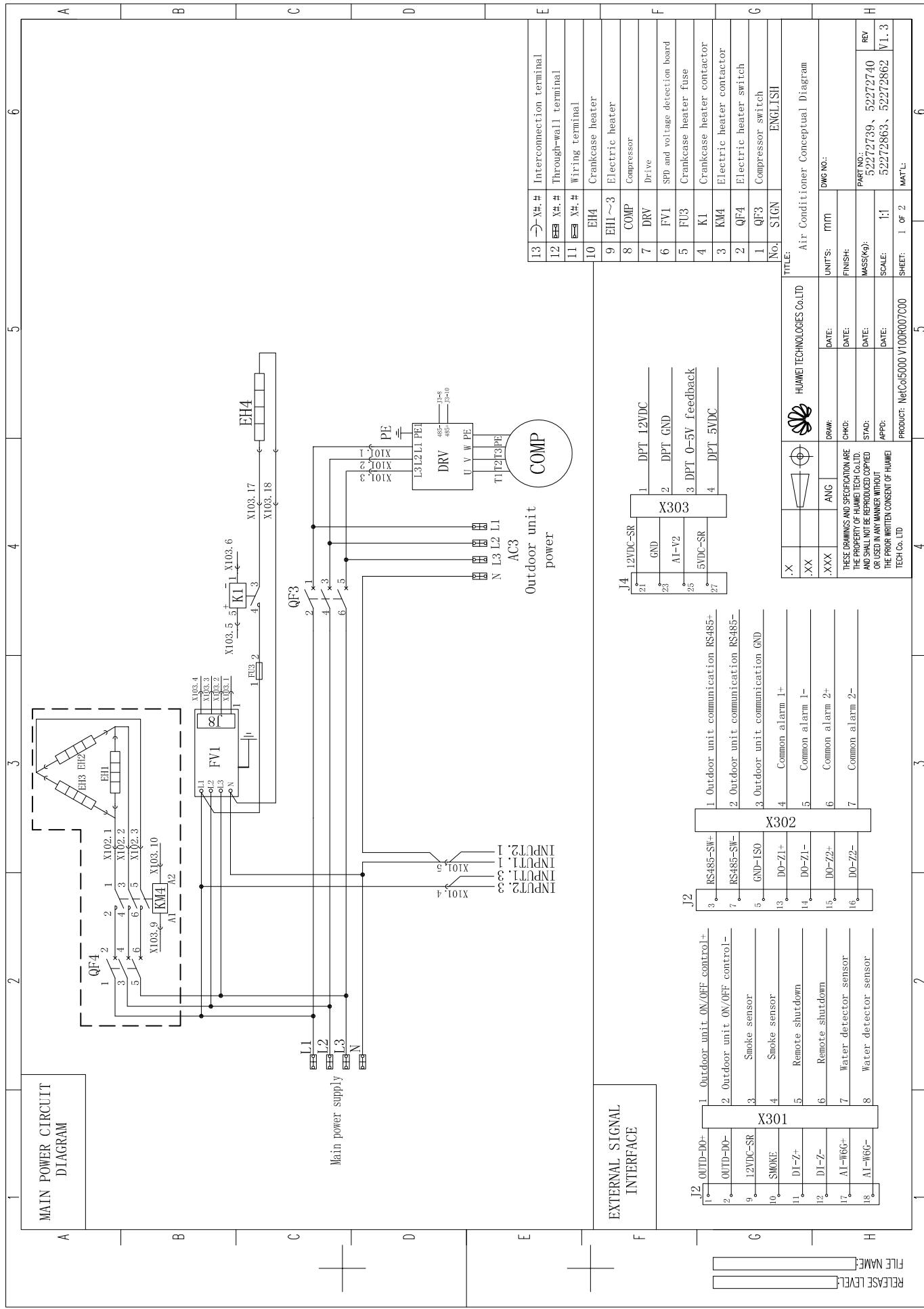
Menu	Parameter	Description	Default Value
		ports 1 and 2 for reporting common alarms are open and generate no alarms.	
	Outdoor fan control mode	Select the control mode for the outdoor fan based on the cable connection of the indoor and outdoor units (dry contact cable or RS485 cable).	Communicate
	Cooling	The cooling function can be set to <b>Enable</b> or <b>Enabled when active pwr</b>	Enable
<b>Settings &gt; System Settings &gt; System Control</b>	Units start time integral	Specifies the time interval between the starts of units under teamwork control.	2s
	Disallow on/off via EMS	When the function is disallowed, the EMS is not allowed to turn on or off the devices.	No
	Silent mode	When the silent mode is enabled, the indoor unit is running in low noise mode. When the silent mode is disabled, the indoor unit is running in normal mode.	Enable
	Cooling	The cooling function can be set to <b>Enable</b> or <b>Enabled when active pwr</b>	Enable
	Heat	<b>Enable</b> indicates that the electric heater will be started when the ambient temperature is lower than the certain temperature range of the temperature set point. <b>Disable</b> indicates that the electric heater will not be started. <b>Enabled when active pwr</b> indicates that the electric heater will be started when the main power is active and the ambient temperature is lower than the certain temperature range of the temperature set point.	Enable
	Heat mode	If <b>Dehumid heat</b> is selected, the electric heater starts heating based on the current temperature only after the dehumidification function is enabled. If <b>Low-temp heat</b> is selected, the electric heater starts heating based only on the current temperature, no matter the dehumidification function is enabled or not. If <b>Dehumid &amp; LT heat</b> is selected, the electric heater starts heating when the dehumidification and heating condition or the low temperature heating condition is met.	Dehumid heat
	Humid	<b>Enable</b> indicates that the electric humidifier will be started when the ambient humidity is lower than the certain humidity range of the humidity set point. <b>Disable</b> indicates that the electric humidifier will not be started. <b>Enabled when active pwr</b> indicates that the electric humidifier will be started when the	Enable

Menu	Parameter	Description	Default Value
		main power is active and the ambient humidity is lower than the certain humidity range of the humidity set point.	
	Humid mode	Specifies the starting mode of the humidifier.	Independent humidification
	Dehumid	<b>Enable</b> indicates that the dehumidification function will be enabled when the ambient humidity exceeds the certain humidity range of the humidity set point. <b>Disable</b> indicates that the dehumidification function will not be enabled. <b>Enabled when active pwr</b> indicates that the dehumidification function will be enabled when the main power is active and the ambient humidity exceeds the certain humidity range of the humidity set point.	Enable
	Forced cooling start temp	Specifies the temperature threshold for forcibly starting the compressor when the cold aisle temperature or supply air temperature is higher than the threshold under return air/hot aisle control.	25.0 °C
	DO associated alarm	<ul style="list-style-type: none"> <li>When DO associated alarm is set to <b>Smoke&amp;water only</b>, if a smoke sensor alarm or water overflow alarm is generated, port 1 for reporting common alarms generates a dry contact close alarm, and port 2 for reporting common alarms does not function.</li> <li>When DO associated alarm is set to <b>Critical&amp;major ALM</b>, if a critical alarm is generated, port 1 for reporting common alarms generates a dry contact close alarm; if a major alarm is generated, port 2 for reporting common alarms generates a dry contact close alarm.</li> <li>When DO associated alarm is set to <b>None</b>, ports 1 and 2 for reporting common alarms are open and generate no alarms.</li> </ul>	Smoke&water only
Settings > System Settings > T/H Sensor	T/H control type	<b>Cold-aisle</b> , <b>Hot-aisle</b> , <b>Return-air</b> , or <b>Supply-air</b> can be set as required. The temperature and humidity set points correspond to the selected control type can be set.	<b>Supply-air</b>
	Temp control mode	Controls the temperature inside the room or aisles based on the <b>Average</b> , <b>Maximum</b> , or <b>Minimum</b> of the temperatures collected by each sensor.	Average
	Ctrl temp setpoint	After the T/H control type and the temperature value under this type are set, the	35.0 °C

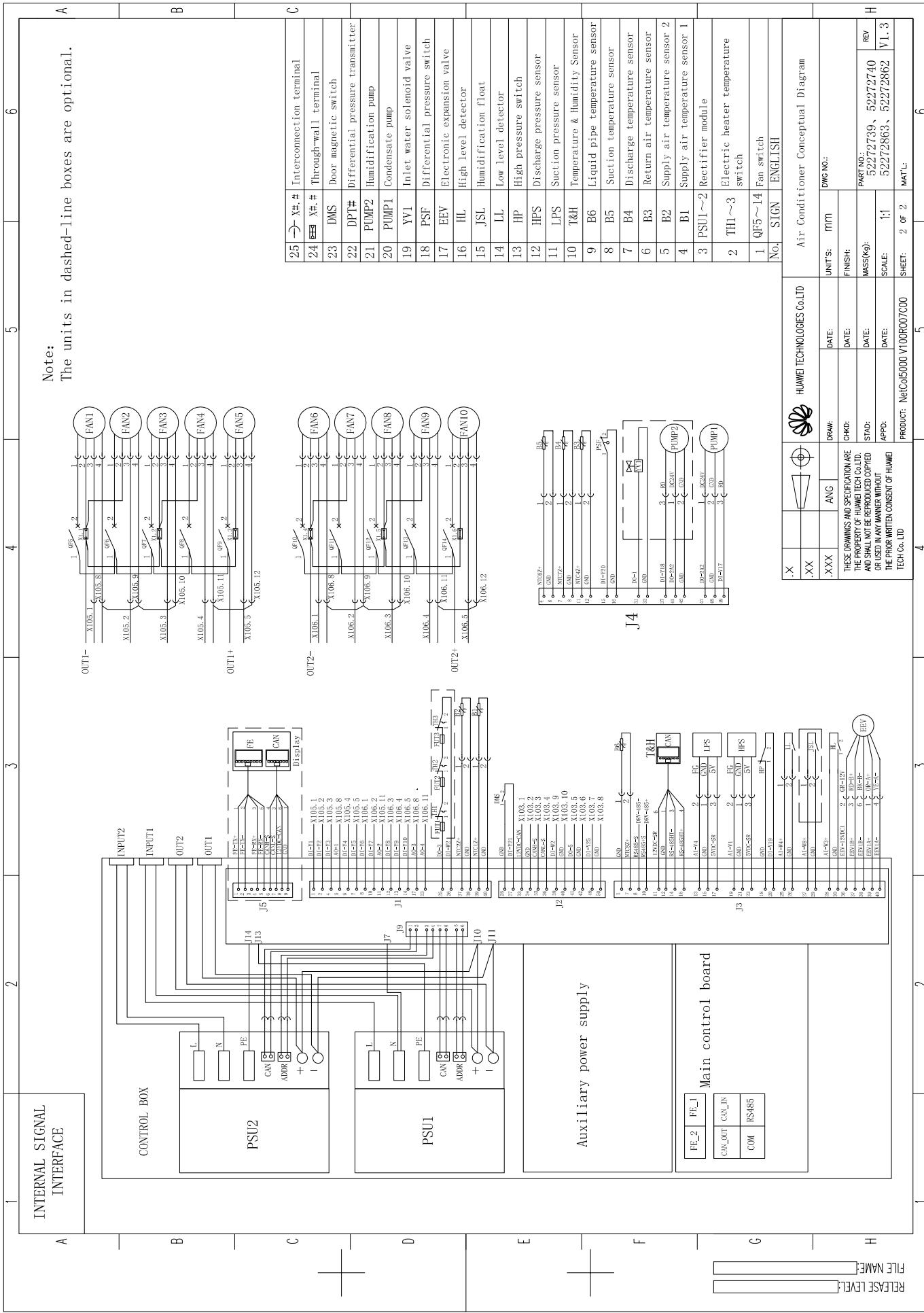
Menu	Parameter	Description	Default Value
<b>Settings &gt; System Settings &gt; Compressor</b>	at ctrl point	device conducts cooling or heating based on the settings.	
	Ctrl humid setpoint at ctrl point	After the T/H control type and the humidity value under this type are set, the device conducts humidifying or dehumidifying based on the settings.	25.0% RH
	Cold-aisle sensor	The sensors in cold aisles can be set to <b>Enable</b> or <b>Disable</b> .	Disable
	Hot-aisle sensor	The sensors in hot aisles can be set to <b>Enable</b> or <b>Disable</b> .	Disable
<b>Settings &gt; System Settings &gt; Indoor Fan</b>	Compressor preheating	Specifies whether to forcibly start the preheating function of the compressor oil heating belt.	Start
<b>Settings &gt; System Settings &gt; Outdoor Fan</b>	Indoor fan ctrl type	Choose between <b>R/S air temp diff ctrl</b> and <b>Pressure diff ctrl</b> .	R/S air temp diff ctrl
	Pressure diff set point	When <b>Indoor fan ctrl type</b> is set to <b>Pressure diff ctrl</b> , you can modify the parameter. If the fan control type is kept to <b>Pressure diff control</b> , the device adjusts the speed based on this pressure difference value.	10 Pa
	Side pressure diff sensor type	Select the measuring range of the air side pressure difference sensor.	No
	Indoor fan min speed	Specifies the minimum speed for the indoor fan.	30%
	Indoor fan max speed	Specifies the maximum speed for the indoor fan.	80%
<b>Settings &gt; Quick Settings</b>	Outdoor fan control mode	Select the control mode for the outdoor fan based on the cable connection of the indoor and outdoor units (dry contact cable or RS485 cable).	Communicate
<b>Settings &gt; Quick Settings &gt; Date &amp; Time Settings</b>	Language Settings	Specifies the interface language to Chinese or English.	Consistent with the current interface language
	Date format	Specifies the date display format for the ACC.	Consistent with the current interface date format
	Date	Specifies the date displayed on the ACC.	Consistent with the current interface date
	Time	Specifies the time displayed on the ACC.	Consistent with the current interface time

Menu	Parameter	Description	Default Value
	Time zone	Specifies the time zone displayed on the ACC.	Consistent with the current interface time zone
<b>Maint &gt; Performance Maint</b>	Compressor total runtime, Indoor fan total runtime, Outdoor fan total runtime, Elec heater total runtime, Humidifier pump running time, Humidifier running time, pump total runtime, Air filter total runtime, Total EEV total runtime	Total runtime for each component.	0h
<b>Maint &gt; Sensor Adjust</b>	Supply-air temp adj value, Return-air temp adj value, Return-air humid adj value, Comp discharge temp adj value, Comp discharge pres adj value, Comp suction temp adj value, Comp suction pres adj value, Comp liq pipe temp adj value, Side calibrated pressure difference value	Specifies the adjustment value of each sensor when the detected temperature or humidity varies from the practical value. For example, if the detected return air temperature is 1 °C lower than the value detected by other devices, set the calibration value to 1 °C.	0.0 °C, 0.0% RH, 0 Pa, or 0.00 MPa

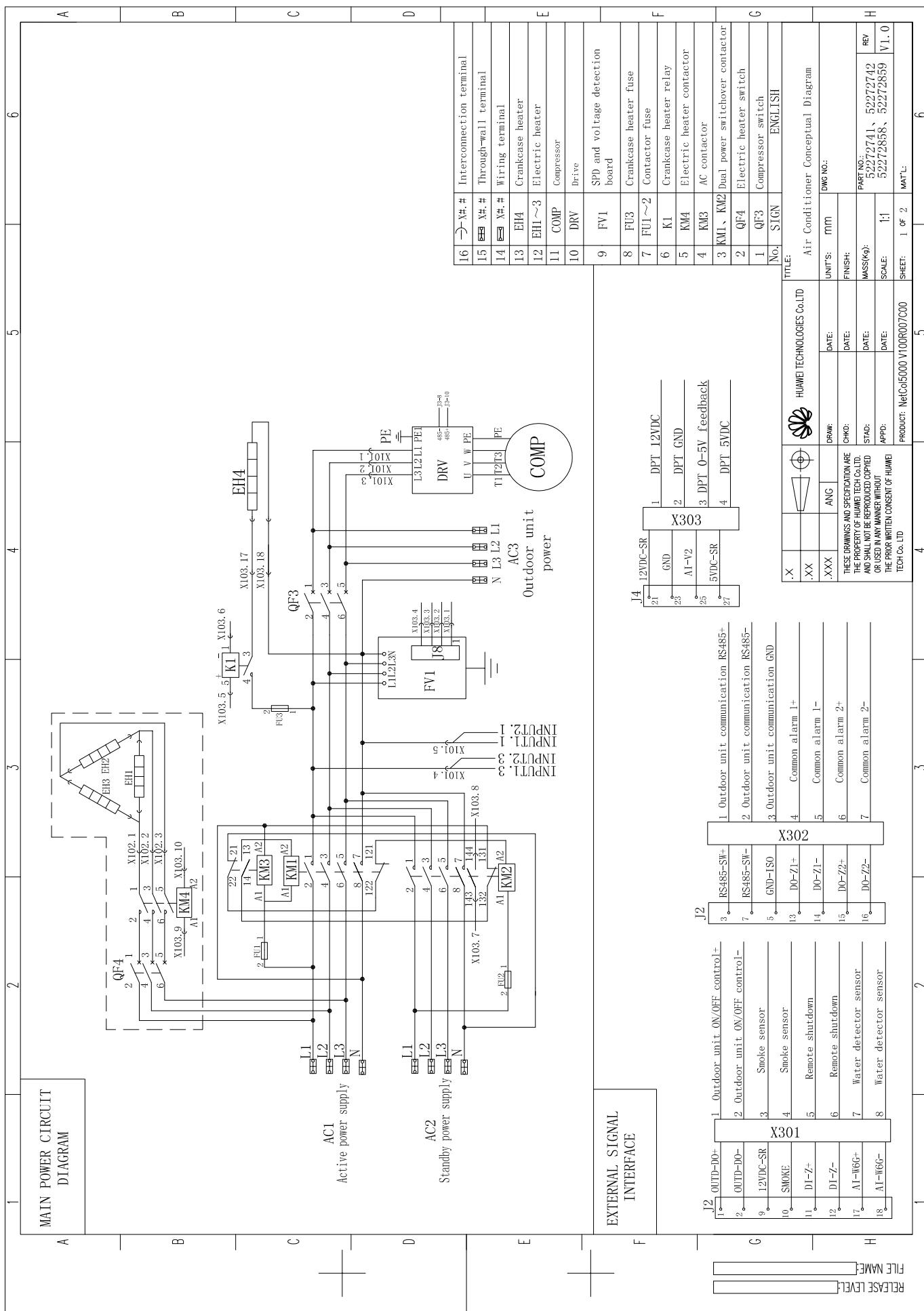
D Electrical Conceptual Diagram



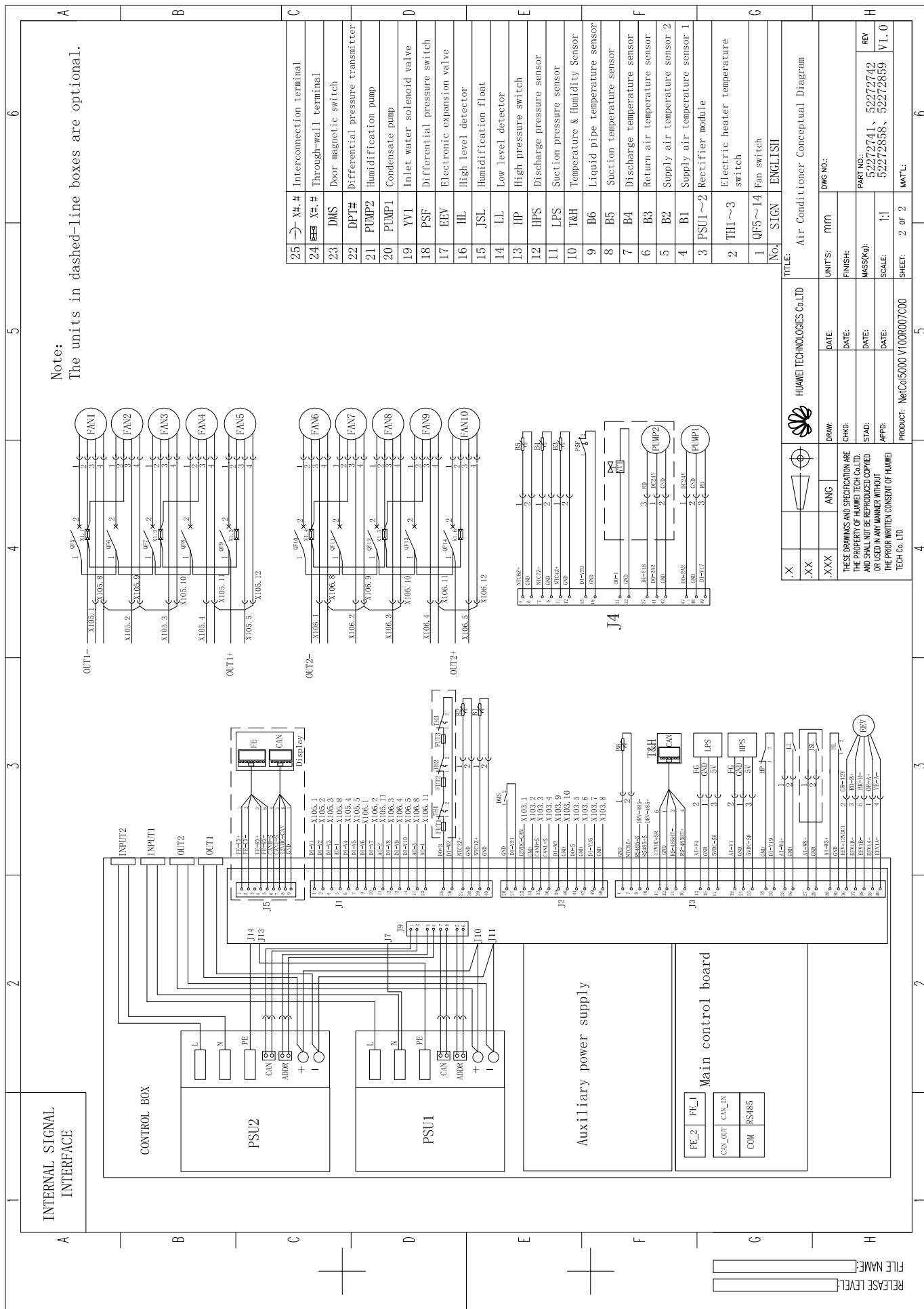
D Electrical Conceptual Diagram



## D Electrical Conceptual Diagram



D Electrical Conceptual Diagram



# E Acronyms and Abbreviations

## A

**AC** alternating current

## C

**CFD** Computational Fluid Dynamics

**CAN** Controller Area Network

## D

**DC** direct current

**DIP** dual in-line package

## E

**EC** electronic commutation

**EEV** electronic expansion valve

**EMS** Element Management System

## L

**LCD** liquid crystal display

**LUI** local user interface

## F

**FE** fast Ethernet

## N

<b>NTC</b>	negative temperature coefficient
<b>P</b>	
<b>PDC</b>	power distribution cabinet
<b>PTC</b>	positive temperature coefficient
<b>PUE</b>	Power Usage Effectiveness
<b>R</b>	
<b>RCCB</b>	Residual Current Circuit Breaker
<b>S</b>	
<b>SPD</b>	surge protective device
<b>T</b>	
<b>TFT</b>	thin film transistor
<b>U</b>	
<b>USB</b>	Universal Series Bus