

User Manual

Micro Data Center

Version: V2.3

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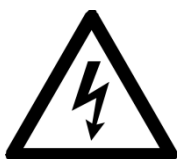
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1. Safety

1.1 Important Safety Information

Read the instructions carefully to become familiar with the equipment before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

NOTICE

NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.

1.2 Handle Information

Read the handle information before trying to install, operate, service, or maintain it. Comply with local regulation and law when handle refrigerant.

⚠️⚠️ DANGER

Hazard of electric shock, explosion, or arc flash

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must be installed and serviced by qualified personnel only.
- Turn off all power supplying this equipment before working on or inside the equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Or can result in death or serious injury.

⚠️ WARNING

Hazard from moving parts

- Keep hands, clothing, and jewelry away from moving parts. Check the equipment for foreign objects before closing the doors and starting the equipment.

Or can result in death or serious injury.

⚠️ CAUTION

Hazard to equipment or personnel

- All work must be performed by company qualified personnel.

Or can result in serious injury or equipment damage.

⚠WARNING**Hazard of equipment falling over**

- Use two or more persons at all times to move or turn this equipment.
- Always push, pull, or turn while facing the front and rear of this equipment. Never push pull, or turn while facing the sides of this equipment.
- Slowly move this equipment across uneven surfaces or door thresholds.
- Lower leveling feet to floor when this equipment is at rest.
- Lower leveling feet and attach joining brackets to adjacent racks when this equipment is in final position.

Or can result in serious injury or equipment damage.

⚠CAUTION**Hazard to equipment or personnel**

- Make sure no spare part or tool in equipment before handle equipment.

Or can result in serious injury or equipment damage.

⚠CAUTION**Refrigerant high pressure and hazard to equipment**

- The equipment is to be charged with R-410A only.
- Copper pipe must support minimum 55bar pressure.

Or can result in serious injury or equipment damage.

2. General Information

2.1 Component Identification

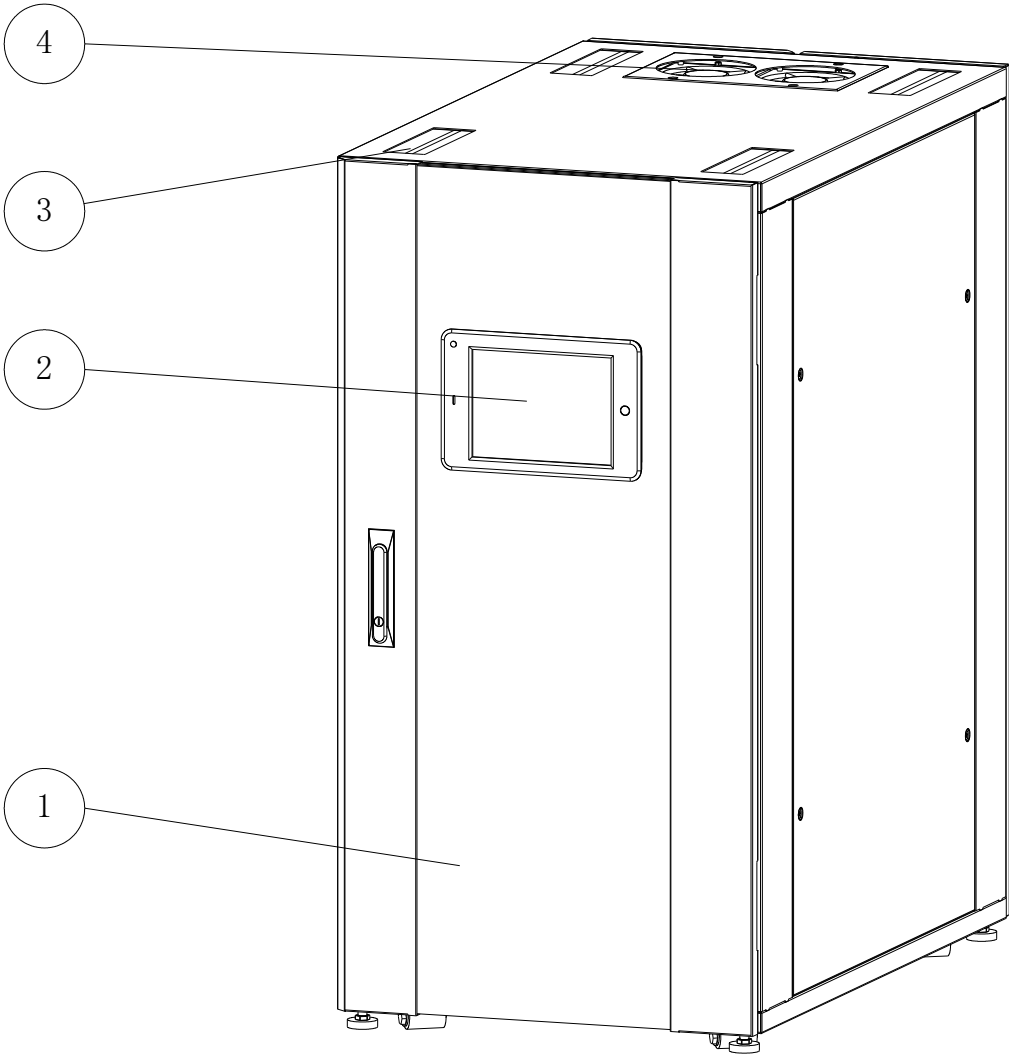


Figure2-1 03N exterior components

- 1. Glass door
- 2. Integrated monitor
- 3. Line holes
- 4. Fan

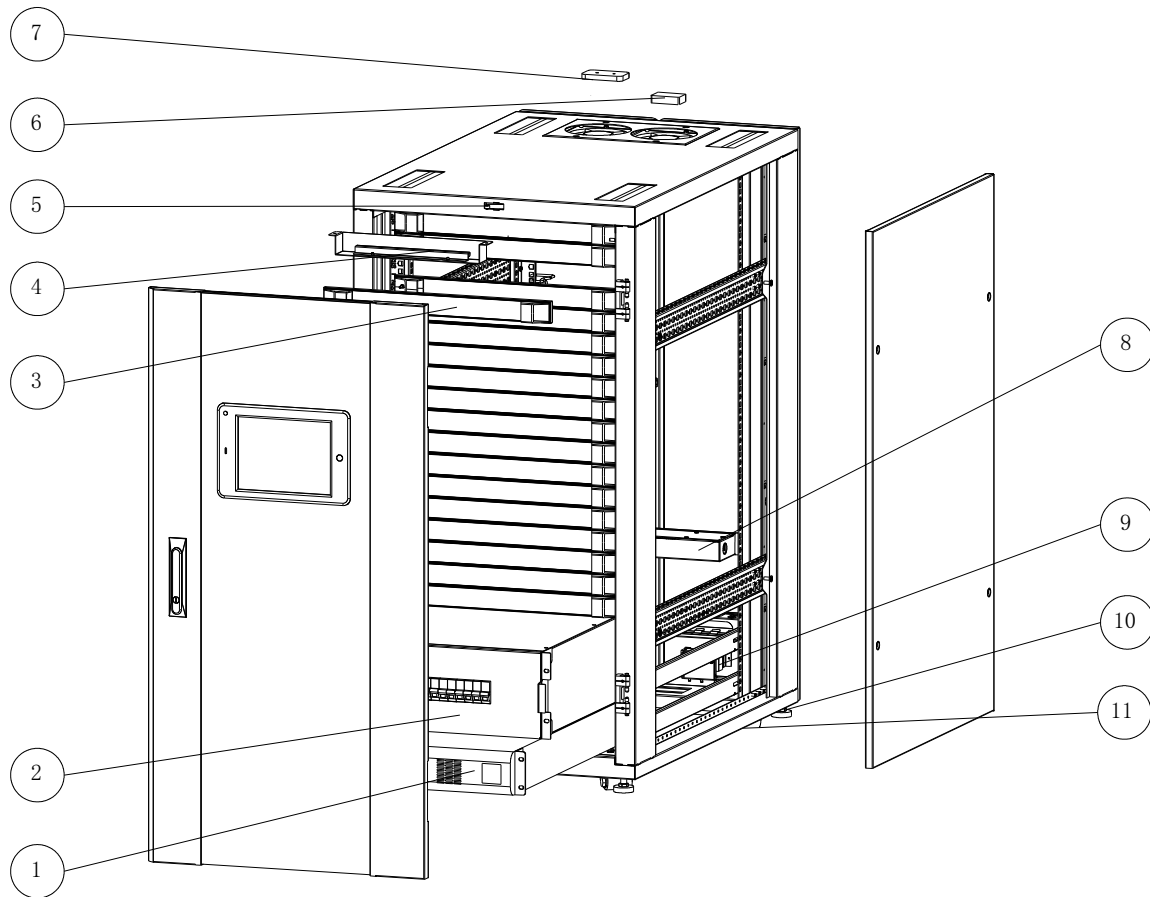


Figure2-2 03N interior components

- 1. UPS
- 2. Power distribution module
- 3. Blank panel
- 4. Light
- 5. Position switch(door status sensor)
- 6. Temp. & humid. sensor
- 7. Smoke sensor
- 8. Water leakage detector
- 9. Electric magnet door locker
- 10. Leveling foot
- 11. Castors

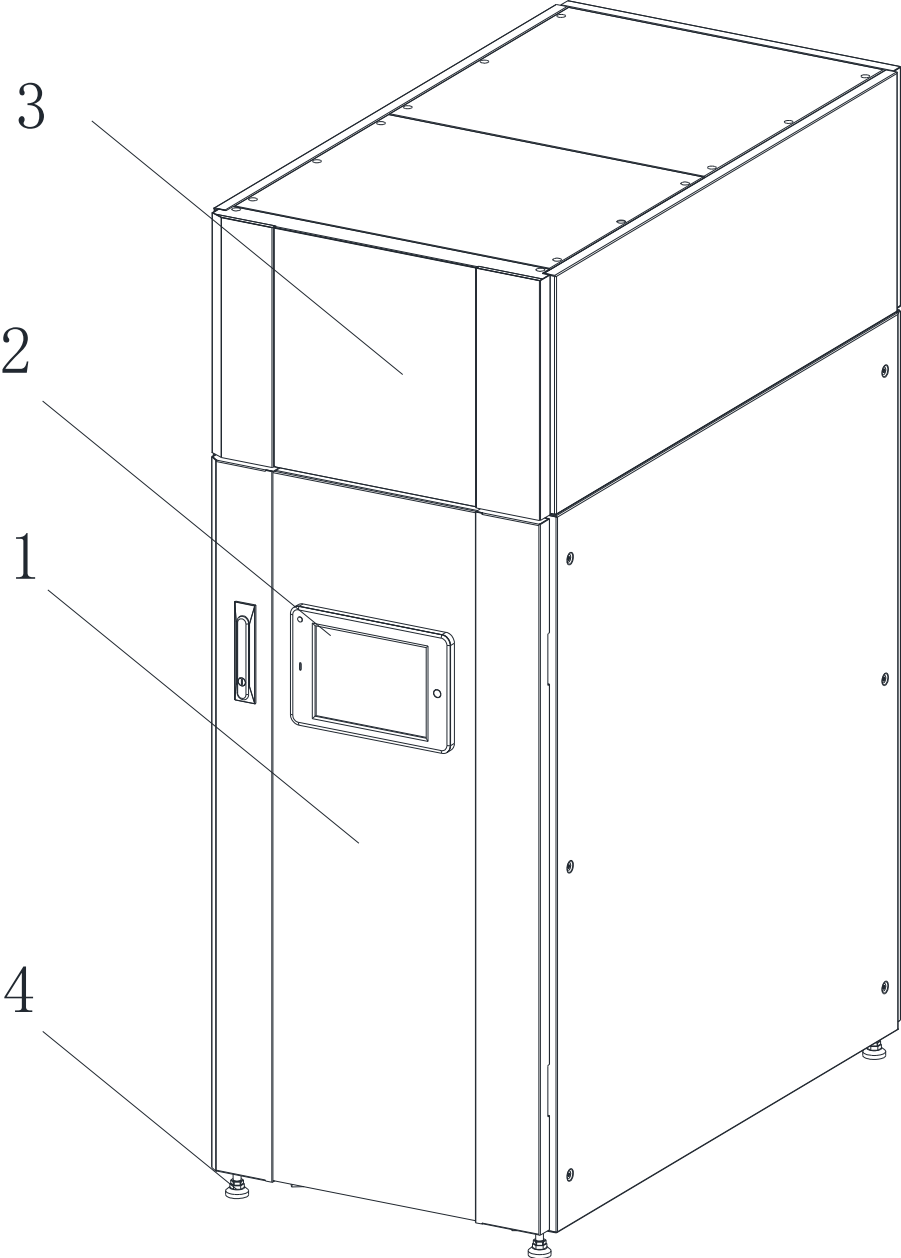


Figure2-3 03W/06E exterior components

- 1. Glass door
- 2. Integrated monitor
- 3. Air-condition
- 4. Foot margin

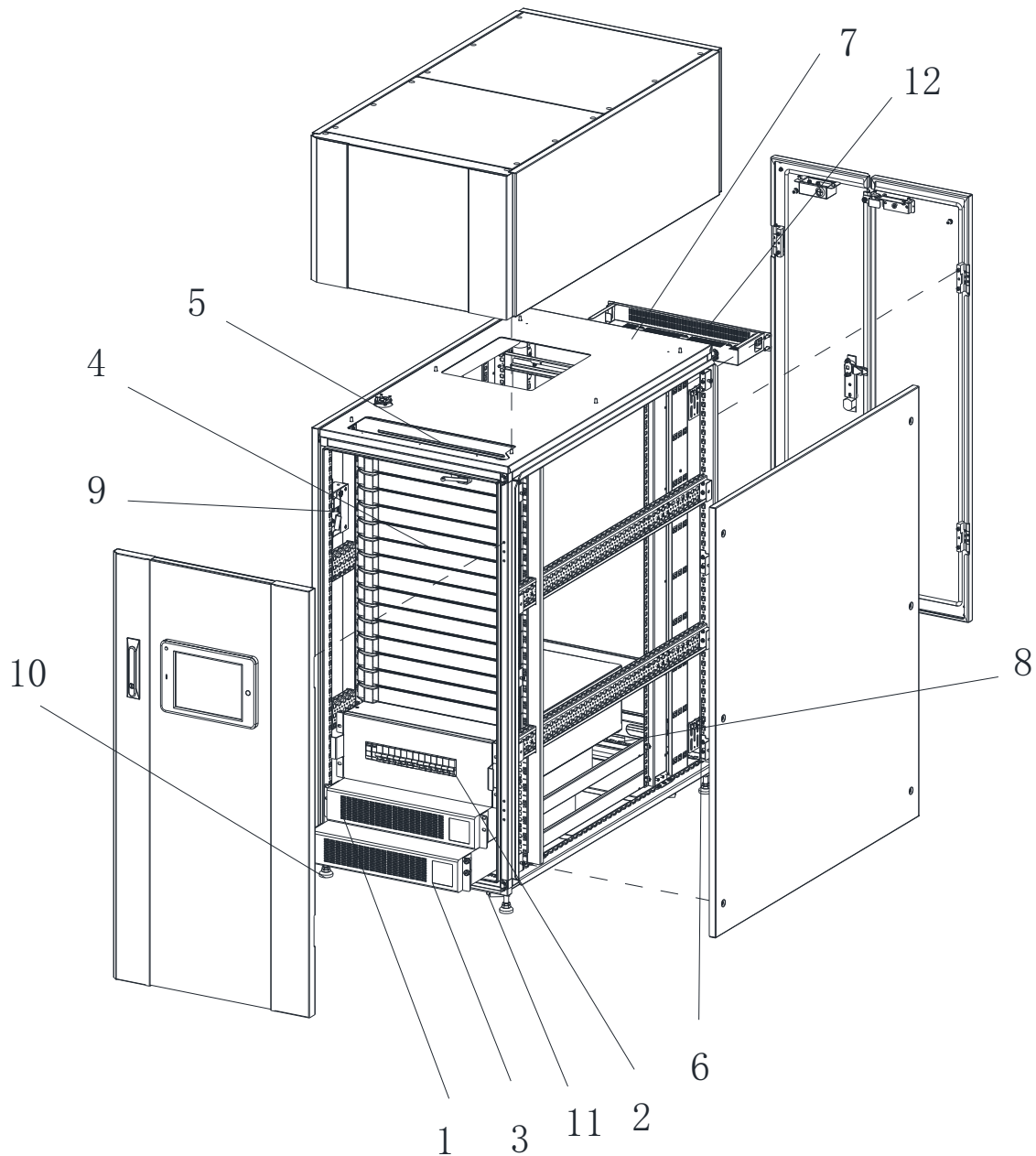


Figure2-4 03W/06E interior components

- 1. UPS 2. Power distribution module 3. Battery 4. Blank panel
- 5. Light 6. Temp. & humid. Sensor 7. Smoke sensor
- 8. Water leakage detector 9. Electronic magnet
- 10. Foot margin 11. Castors 12. DTU

Note: For 3k unit model, battery in UPS.

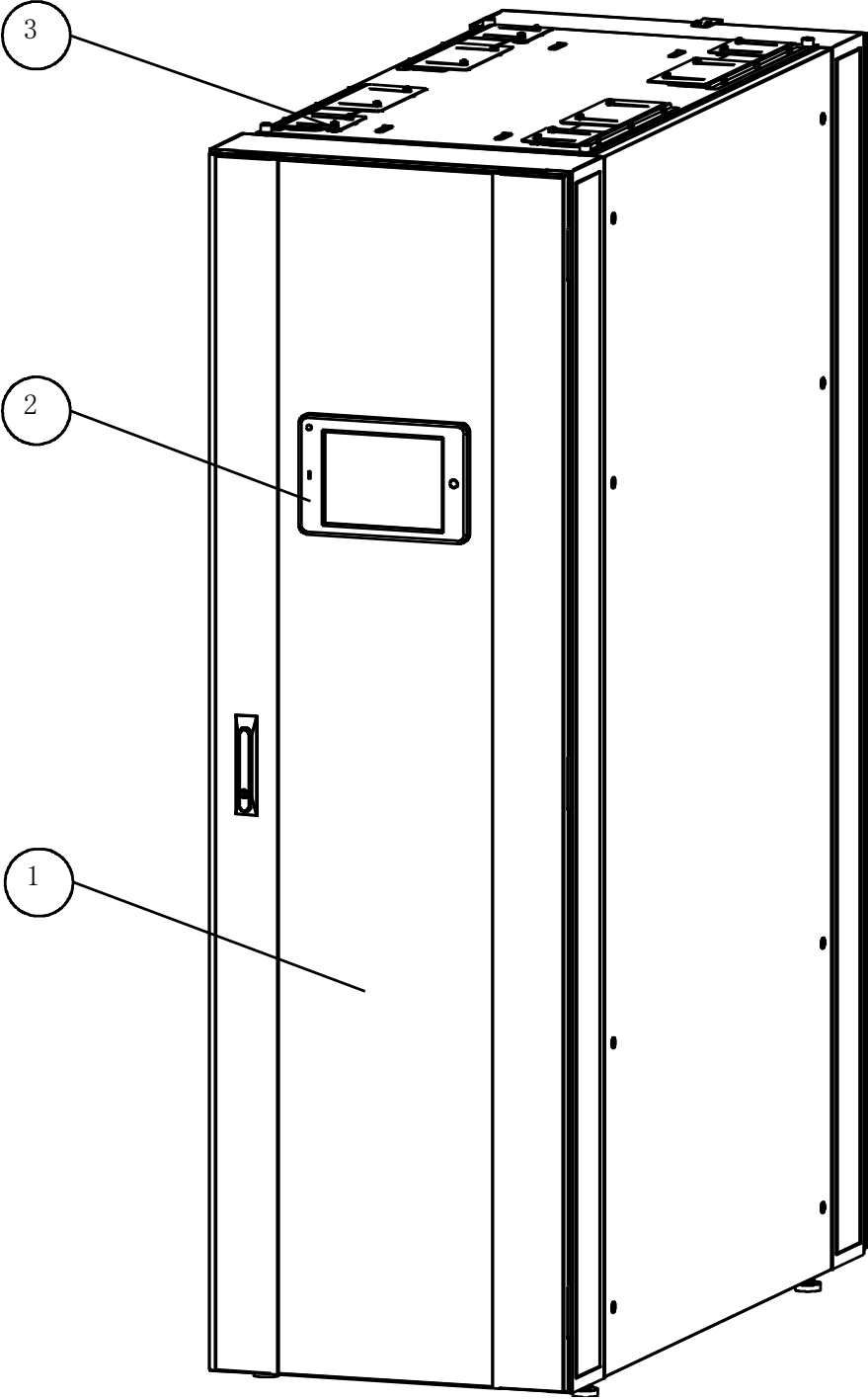


Figure2-5 06T exterior components

- 1. Glass door
- 2. Integrated monitor
- 3. Line holes

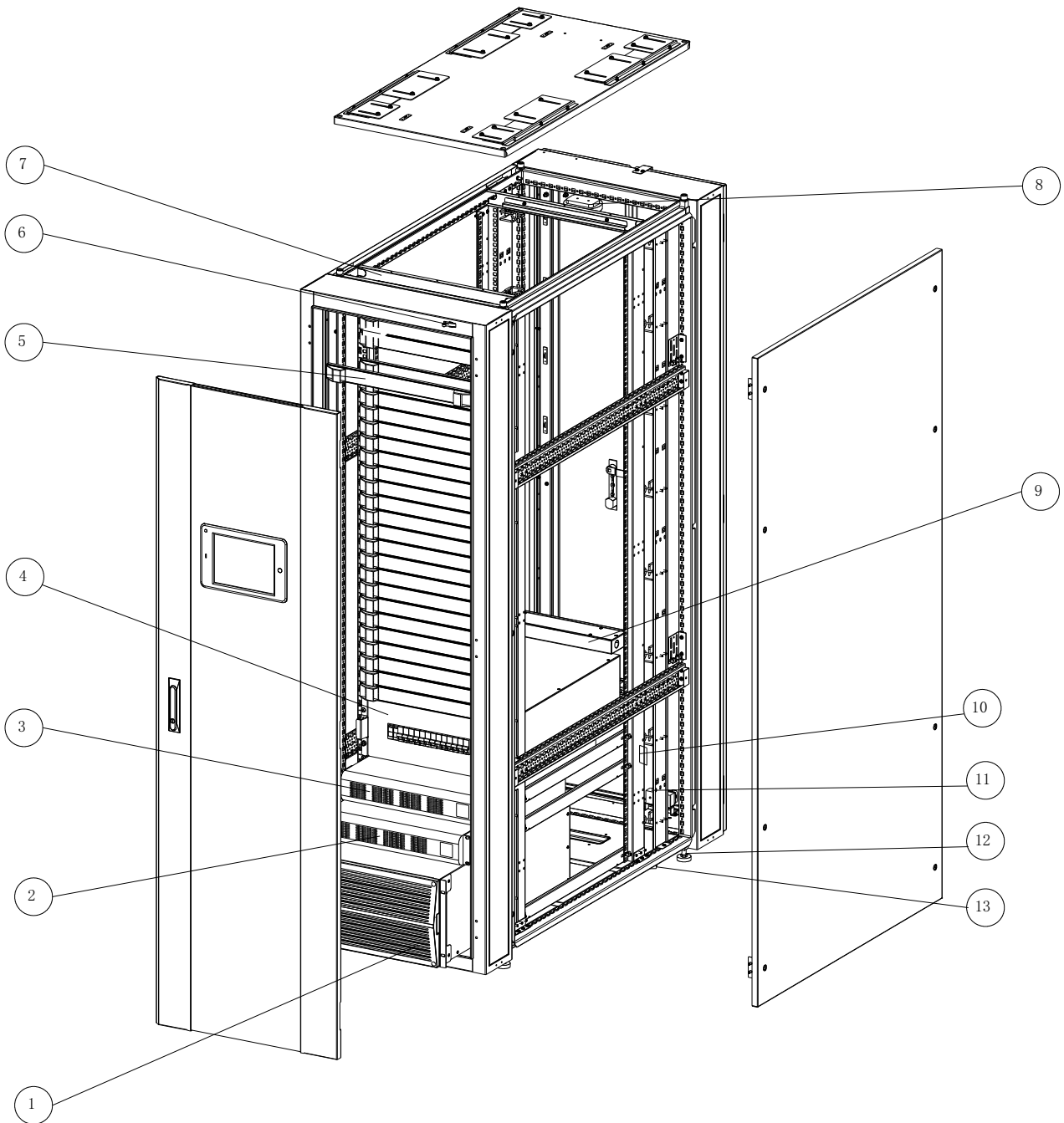


Figure2-6 06T interior components

- 1. Air condition 2. Battery box 3. UPS
- 4. Power distribution module 5. Blank panel
- 6. Position switch(door status sensor) 7. Light 8. Smoke sensor
- 9. Water leakage detector 10. Temp. & humid. sensor
- 11. Electromagnet iron door suction 12. Leveling foot 13. Castors

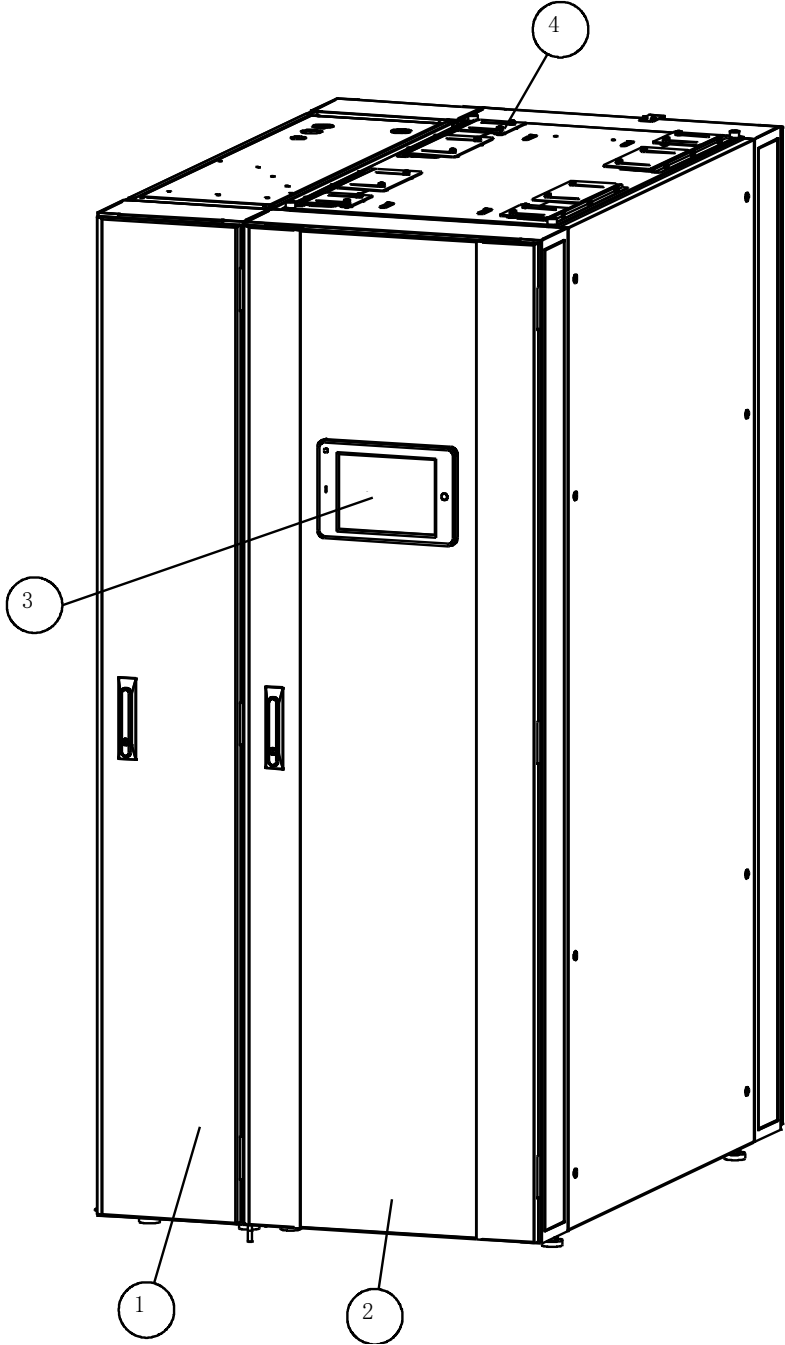


Figure2-7 06F/10S exterior components

- 1. Air condition
- 2. Glass door
- 3. Integrated monitor
- 4. Line holes

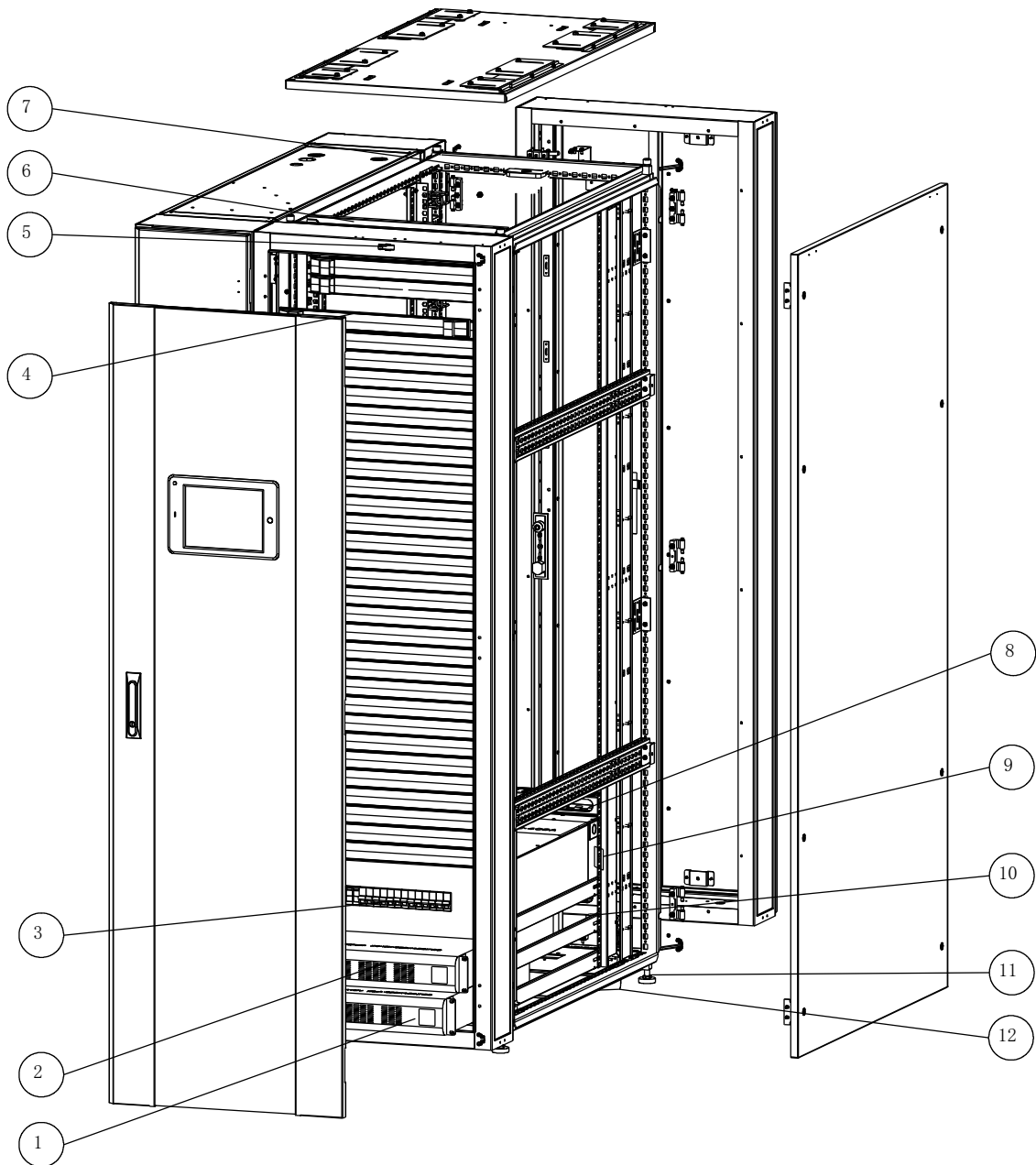


Figure2-8 06F/10S interior components

- | | | |
|-------------------|---------------------------|------------------------------|
| 1. Battery box | 2. UPS | 3. Power distribution module |
| 4. Blank panel | 5. Position switch | 6. Light |
| 7. Smoke sensor | 8. Water leakage detector | 9. Temp. & humid. sensor |
| 10. Electromagnet | 11. Leveling foot | 12. Castors |

UPS——UPS has two main functions, one is to optimize the power supply to provide clean power to the critical load equipment, the second is the use of battery electricity to the critical load equipment after the main power supply break off.

Battery——When the main power electricity is normal, the power is stored to battery, and the electricity is discharged through the UPS for critical load equipment after the main power supply break off. 3kVA UPS has batteries in it to provide the backup power.

Air condition——Provides stable temperature, humidity and clean air for critical load equipment.

Power distribution module——Power distribution and monitoring for critical load equipment and infrastructure equipment

Integrated monitoring host——Monitoring host is the information center of entire device and the hub of human-computer interaction. It monitor, control, alarm all the system which include the UPS, air conditioning, power distribution module, temperature and humidity sensors and other intelligent equipment. And also monitor, alarm the door switch status, leak detection status and other dry contacts. All information can be monitored remotely by network details refer to the monitoring system chapter. And it with touch screen for local display and control terminal. It can be use to check information and set parameters.

Blank panel——When the spare U is not installed, install the blind plate for hot and cold airflow isolation and improve the cool air utilization.

Temperature and humidity sensor——Detect the channel temperature and humidity of the cabinet.

Position switch——It has two main functions, one is to detect the door open and closed state, and give signal to the monitoring host, the second is to control the back door.

Smoke sensor——Detection of smoke inside the cabinet, in the event of fire smoke, automatic alarm, and give signal to the monitoring host.

Electromagnet iron door suction——The core device of automatic door, the electromagnet power and the door automatically open when temperature high.

Castors——When the device is initially installed, the smooth ground can move the device to the final position by the casters.

Leveling foot—After the device moves to the final position, it is uneven and adjusts the leveling foot to level the device. If necessary, adjust the four leveling feet to support the equipment to raise the appropriate location, can be placed under the copper pipe, cable and drain pipe.

2.2 Product Size

Table2-1 Product size

Model	Width-mm	Depth-mm	Height-mm
03N	600	1000	1200
03W	600	1100	1590
06E	600	1100	2000
06T	600	1400	2000
06F/10S	900	1400	2000

Note: the size will be adjust if not standard unit. Refer to actual product.

Table2-2 Outdoor unit size

Model	Width-mm	Depth-mm	Height-mm
KSF06AC	800	395	632
KSF08AN	800	455	790
KSF12AN	800	455	790

2.3 Environmental Requirements

Running environment

Table2-3 product running environment

Item	Indoor	Outdoor
Temperature	18°C~40°C	Air cooled: -20°C~+55°C
Humidity	20%~80%	5%RH ~ 95%RH (Non-condensing)
Altitude	altitude<1000m, Above 1000m derating capacity, power derating 6% per kilometer	
Power	Voltage 230V±20% Frequency 50Hz±5Hz	

The voltage and frequency check the nameplate!

Storage environment

Table2-4 product storage environment

Item	Requirements
Environment	clean (no dust) 、 good ventilation
Temperature	-40°C~+60°C
Humidity	5%RH~95%RH without condensation
Duration	less than 6 months, if not, need to reconsider performance

3. Reception

3.1 Transportation

Micro DC has machine and electric equipment inside. Improper transport and handling may damage the product lead to the equipment cannot be normal used. So please make sure the safety and quality while doing transportation.

Attention.

Transportation Attention

1. Please choose better transport way like railway and shipping. To prevent excessive turbulence while choose bus transportation.
2. Transportation environment and the placement of request in accordance with the relevant requirements.
3. Please use mechanical handling tools when unloading.
4. Indoor machine handling Angle should be in the range of 75 ° ~ 105 °.
5. Anti-collision and anti-rain.

Table3-1 Indoor unit packing size and gross weight

Model	Packing size(mm)W×D×H	G/W(kg)
03N	700×1110×1375	172
03W	710×1210×1770	324
06E	710×1210×2180	374
06T	710×1500×2180	424
06F/10S	1010×1500×2180	586

Note: the size will be adjust if not standard unit. Refer to actual product.

[Note: W-WIDTH, D-DEPTH, H-HEIGHT]

Table3-2 Outdoor unit packing size and gross weight

Model	Packing size(mm)L×W×H	G/W(kg)
KSF06AC	/	65
KSF08AN	910×610×935	58
KSF12AN	910×610×935	60

[Note: L-Length; W-Width; H-Height.]

3.2 Reception

MicroDC have been strict quality assurance testing and inspection before delivery. Please check carefully after received the product to make sure that the equipment is in good condition.

Reception Process

There are two conditions after received the product, one is installed it immediately and the other is not. In order to provide a better reception plan, here is the simulation of reception process for client's reference please select your best plan.

Process View

Figure 3-1 Reception Process simulation view. Detailed information of every step is in this Chapter.

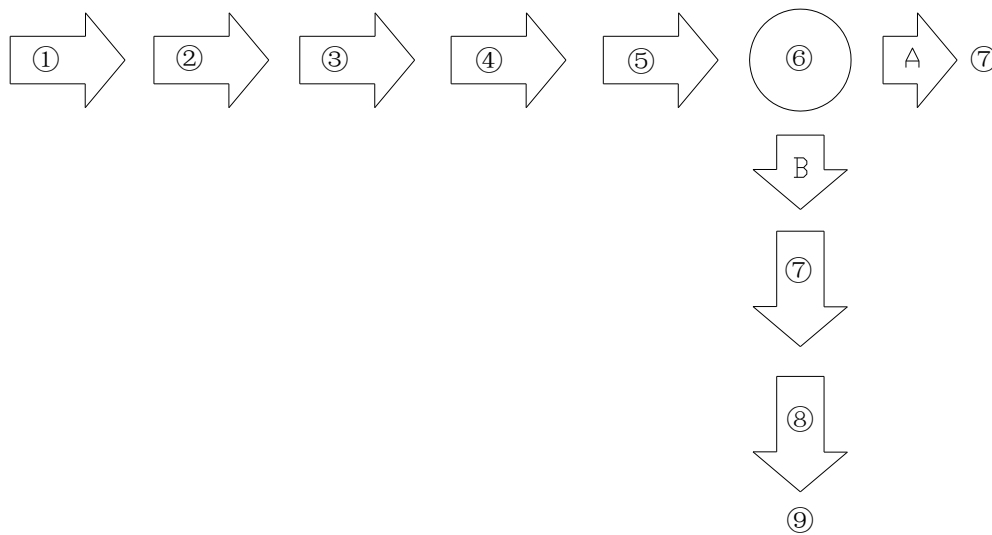


Figure 3-1 Reception Process simulation view

Picture shows the process of two condition. Condition A and Condition B.

Condition: A——Installed immediately.

B——Not installed for now.

①——Arrival;

②——External Inspection;

③——Handling;

④——Unpack;

⑤——Internal Inspection;

⑥——Check and Accept;

A: ⑦——Finish.

B: ⑦——Sealing; ⑧——Storage; ⑨——Finish.

External Inspection

Shipping Inspection

Check if the transport is accordance with the requirements.

Transport Requirement:

1. Do not get wet in the rain.
2. Standing.
3. Cannot be stacked.
4. Careful impact.

[Note: Specific requirement according to external packing.]

External Inspection

External Inspection means product packing and product outside.

Inspection Content:

1. Whether external packing has been opened.
2. Whether external packing damaged or crash spur.
3. Whether the equipment exposed parts damaged. Such as:
malformation, paint falls off etc.

Instruction

1. If package had been opened please check if there is an information on the bill of lading or other tips. If not, please contact the relevant departments.
2. If you found damaged please mark the corresponding damaged and submit damage claim to transportation company.
3. These problem may cause the equipment damaged and cannot be used properly. Please contact Technology Service Department.

Unpack

1. Before the unpacking, suggest user carry the product to the installation site or storage place as near as possible.
2. Before the unpacking, suggest user to consider the package can be used again.
3. Product use steel belt box packing. Must handle carefully before unpacking. To avoid equipment damaged and cannot be used due to improper operation.
4. The warranty is invalid due to improper operation caused the equipment damaged.

Internal Inspection

1. Please check carefully if all the units completely or damaged after unpack.
2. Count if the accessories completely according to the packing list.
3. If there are any parts missing or damaged please contact the Manufacture immediately.
If there is a hidden damaged please also contact the Manufacture and local office of supplier.
4. If there is a counting incompletely according to the packing list please contact related personnel immediately.

4. Installation Preparation

4.1 Installation place

User should consider all the factors of installation place to make sure the place is suitable for the operating requirements. In order to ensure the equipment is easily installation and run in best condition.

Consideration factors

1. Should be installed in indoor. Environment temperature should be controlled within 30°C.
2. Whether the installation place clean. No steam or corrosive gas.
3. Whether the size of installation site passageway or door conveniently for equipment enter. The equipment should completely to the installation position.
4. Whether the copper pipe, drain pipe and electric cable is convenient.
5. Whether the equipment installation site drainage is convenient.

4.2 Installation position

Indoor Unit

Handle the equipment to the appointed place as close as possible to the installation position. There should have 800mm space for maintenance around the equipment after the equipment is ready. Adjust the height of the feet to ensure every one of it and the unit is in a same level.

Outdoor Unit

1. Should be installed in the outdoor far enough away from residential areas, to avoid noise nuisance. Please refer to the installation distance of local environmental protection standard.
2. Should be installed where is easy to maintain and safety. Should not install in the ground floor with public access
3. Please installed in a place where air flow smoothly, and to avoid dust or heat exchanger gets jammed in order to make sure the cooling effectiveness of the unit.
4. Ensure there no gas, no waste heat and no acidic or alkaline gas around the unit.
5. The outdoor unit should keep a 500mm distance from walls, obstacle and adjacent equipment.

6. Outdoor unit should be installed on a base which can withstand weight. The base should be higher than the ground at least for 50mm. And the base should be bigger than the outdoor unit for 50mm.

4.3 Power supply

Please provide appropriate power to unit for installation place before install the unit. Power supply need to achieve the mentioned requests as follows. To ensure the unit can run in the normal range. Specific power parameter please read the manual of optional model.

Power supply requirement

1. Power supply must conform to country standard or local standard.
2. Unit must be grounded.
3. Meet the maximum power demand of unit.

4.4 Water drainage

Please see the drainage installation and set up the drain pipe before installation.

5. Installation

5.1 Removing the package

1. Step 1 first remove the packaging above pallet, and then remove the front and rear of the cabinet fixed bolts and fixed feet, a total of 4.
2. Step 2 move the outdoor unit out from the cabinet. If outdoor unit transportation independently, get to next step.
3. Step 3 Use the active wrench to fine tune the hexagonal feet so that the cabinet casters touch the ground.
4. Step 4 Remove the cabinet from the pallet and place it in the specified position.

NOTE:

1. The cabinet is heavy, be careful when handling, please ensure that 4 to 5 people together to install, to avoid single operation
2. When handling, touch the two casters on the same side of the cabinet to avoid single casters, and then remove the pallet from the other side of the cabinet

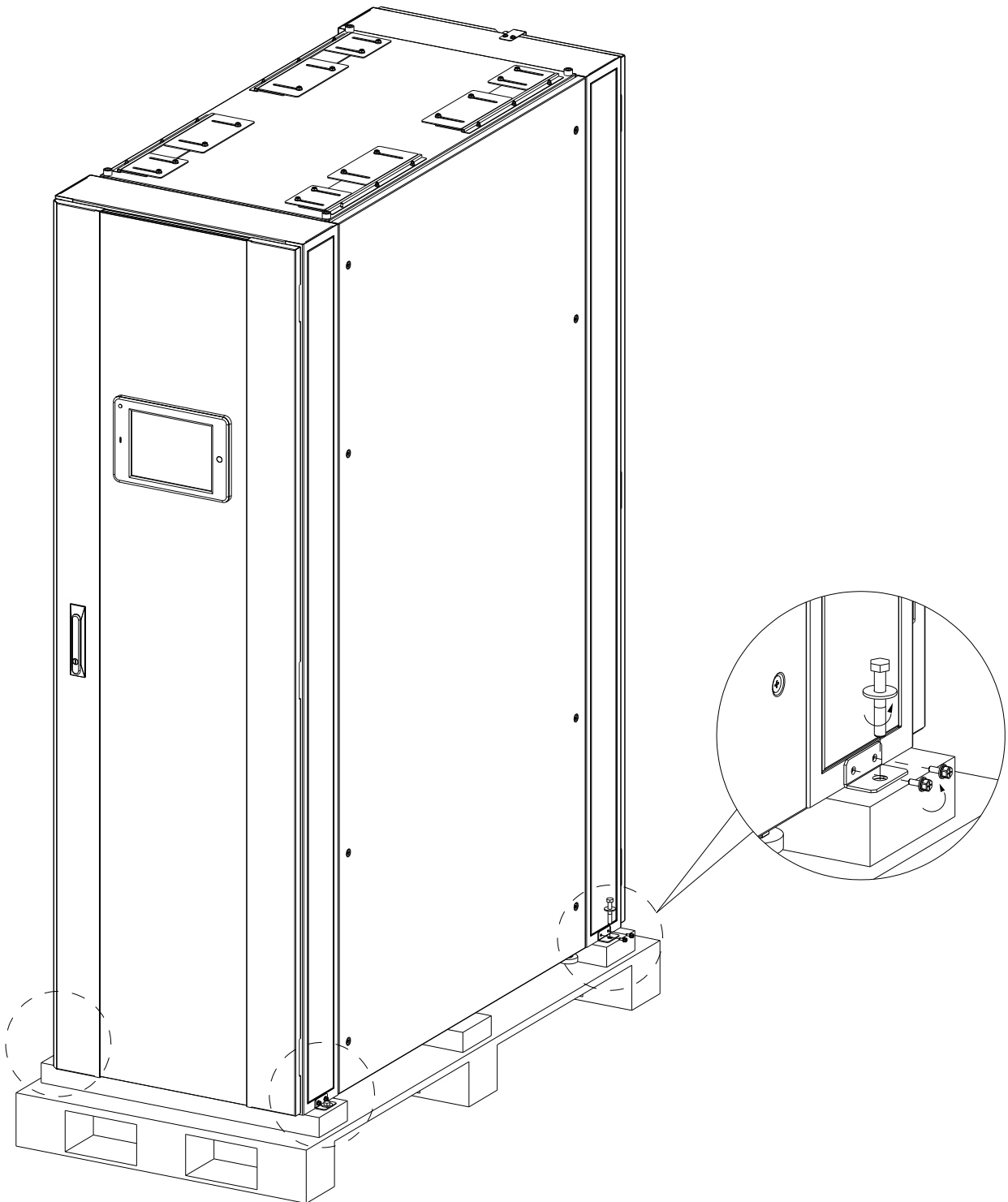


Figure 5-1 Remove the package

5.2 Leveling cabinet/air conditioner

1. Step 1 Measure the height from the ground to the top of the cabinet channel with a tape measure. By adjusting the hexagonal feet, make sure the height of the cabinet is from 2005mm to 2008mm.
2. Step 2 Measure with the spirit level and divert the hexagonal feet to the full level

Step 3 Adjust the fastening nut so that the heights of the hex feet are fixed in the position we are adjusting

NOTE:

1. Do not remove the hexagonal feet, otherwise it will cause the cabinet height is not up to standard.
2. Hexagonal foot adjustment method: You can use the wrench, sleeve or screwdriver to adjust the hexagonal feet, clockwise adjustment of the hexagonal feet can increase the cabinet height, counterclockwise down. Hexagon feet adjustment range: 0mm ~ 80mm.
3. Leveling criteria: leveling cabinets need to ensure that the cabinet in the width direction and depth direction are to maintain the level, that is, the level of flat placed in the bottom of the cabinet in the width direction and depth direction can be seen in the horizontal bubble in the middle of the glass tube two Mark between lines.
4. After leveling the four hexagonal feet support the entire cabinet weight, not the wheels directly to the ground.

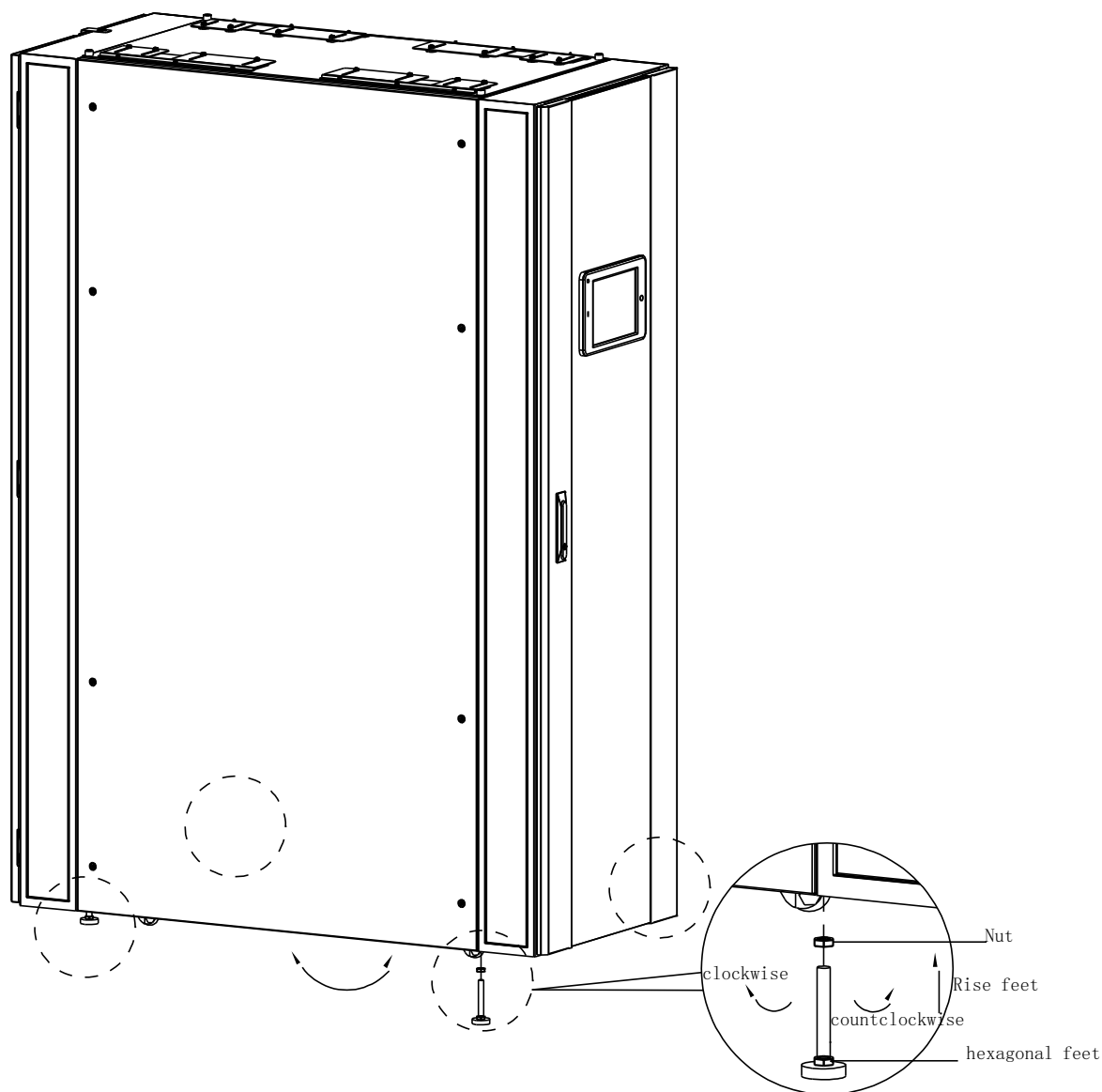


Figure5- 2 Leveling cabinet/air conditioner

5.3 Combination

If it is row solution, the rack transportation independent, need to assembly on site.

1. Step 1 Place the cabinet in the order of the layout according to the supplied layout file.
2. Step 2 Level the adjacent cabinet / air conditioner. Adjust the height of the other cabinet / air conditioner with one of the adjusted cabinet / air conditioning to ensure that the adjacent cabinet / air conditioner is highly uniform.
3. Step 3 Remove and prepare the "parallel cabinet accessory" (including the parallel sheet metal parts, screws, sealed cotton, hex wrench).
4. Step 4 Use the "parallel cabinet accessory" to arrange the adjacent cabinets / air

conditioners in the cabinet / air-conditioning cold and hot aisle parallel cabinets.

5. Step 5 After the cabinet is finished, paste "sealed cotton" in the position shown in ① and ② in the figure.

6. Step 6 Complete the installation of the remaining cabinet / air conditioner in the same way as above.

NOTE:

Cold and hot channels each have 8 and the cabinet, the cold, hot and parallel to the cabinet into the front and rear columns, each column to be 4 and the cabinet, as shown in the location.

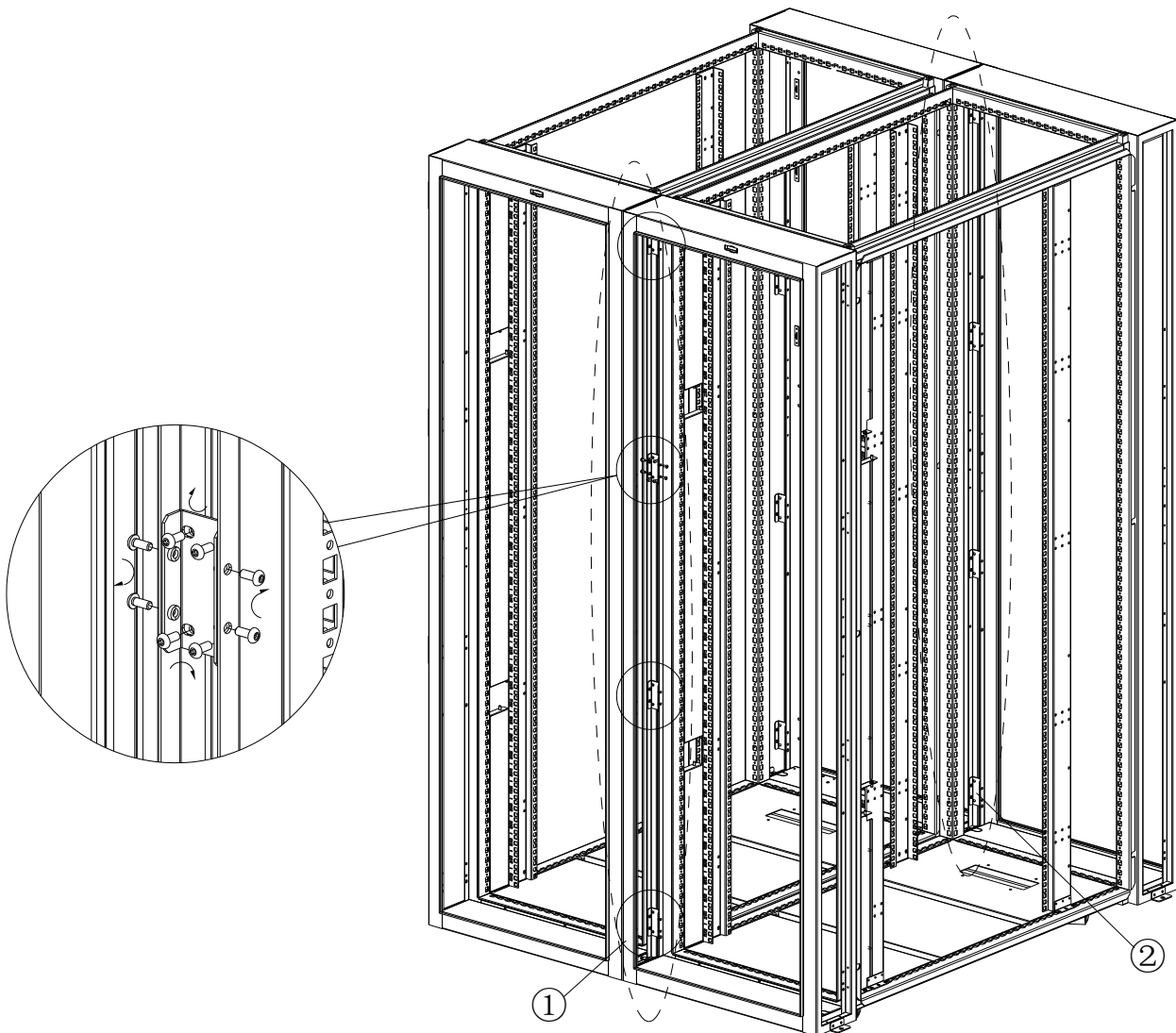


Figure5- 3 Combination

5.4 Remove the compressor fixed kit

For Inrow air conditioning, the device is placed in position, need to remove the compressor fixed kit.

1. Step 1 Loosen the screws and remove the compressor fixed kit

2. Step 2 Tighten the screws.

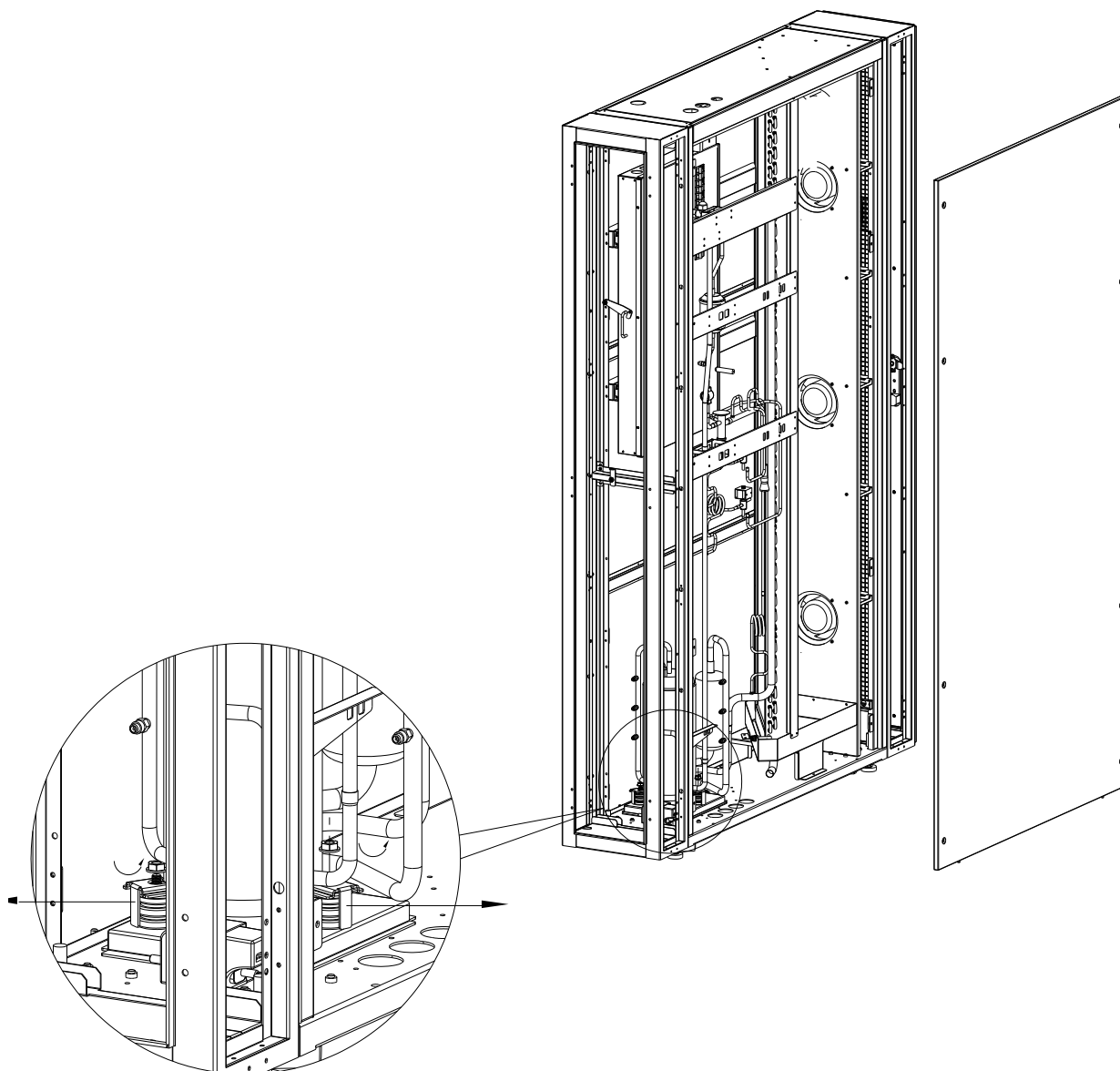


Figure5- 4 Remove the compressor fixed kit

5.5 Outdoor unit installation

Note: 03N/03W/06E no outdoor unit. 06T supporting KSF06AC outdoor unit. 06F supporting KSF08AN outdoor unit. 10S supporting KSF12AN outdoor unit.

1. Outdoor unit should put on the base.
2. Use the expansion bolt to fix the unit on the base.

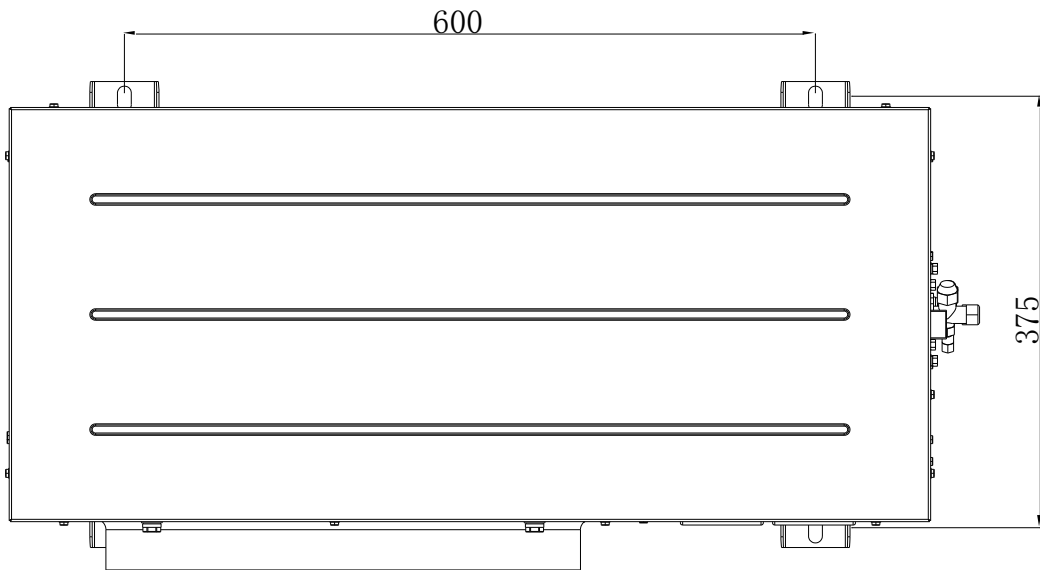


Figure5- 5 Outdoor unit fixed hole

5.6 Copper pipe connection

1. Air conditioning indoor and outdoor unit connect with copper pipe.

NOTE:

Detailed copper requirements, connection precautions, etc., later described in detail

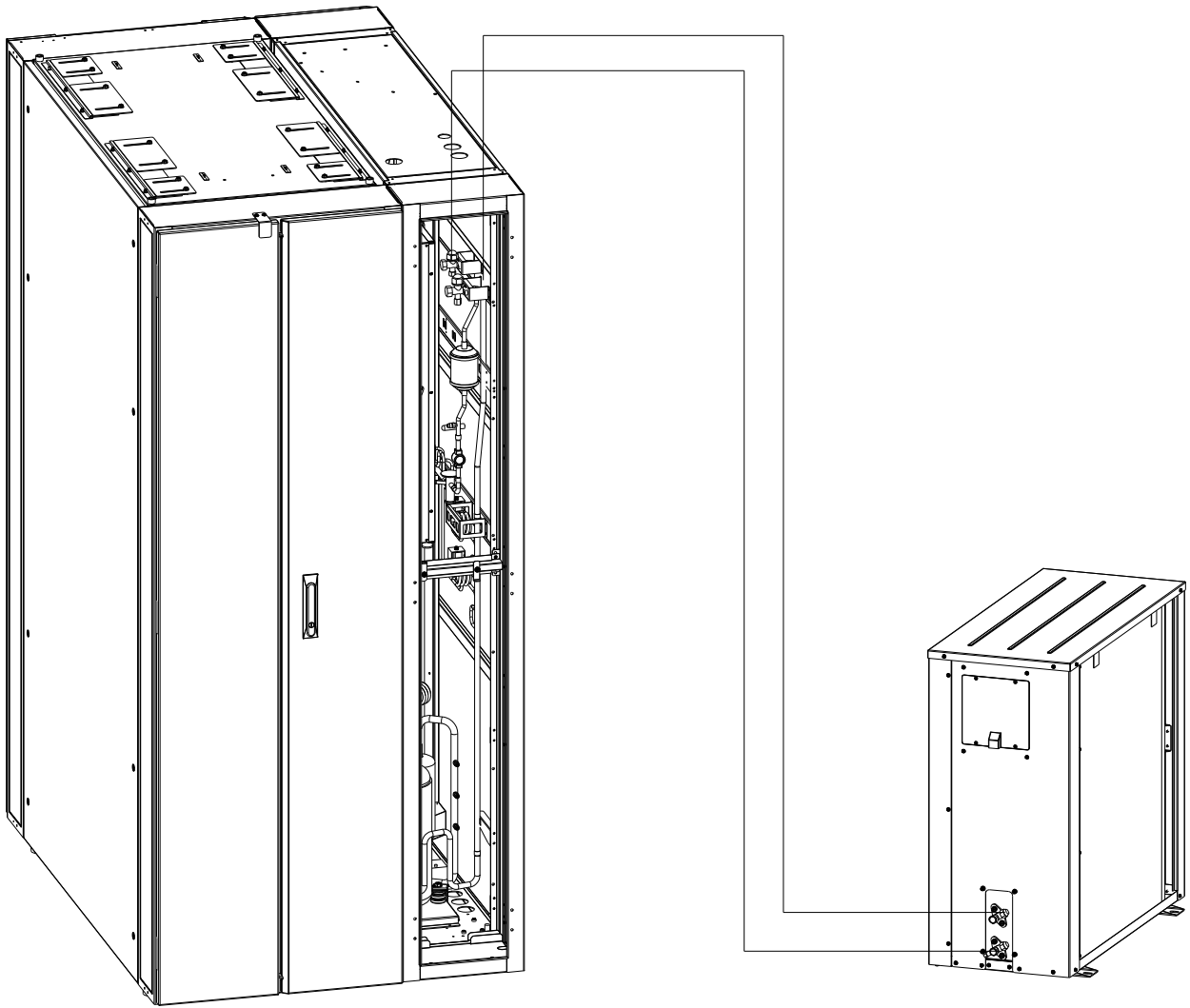


Figure 5-6 Inrow AC copper pipe connection

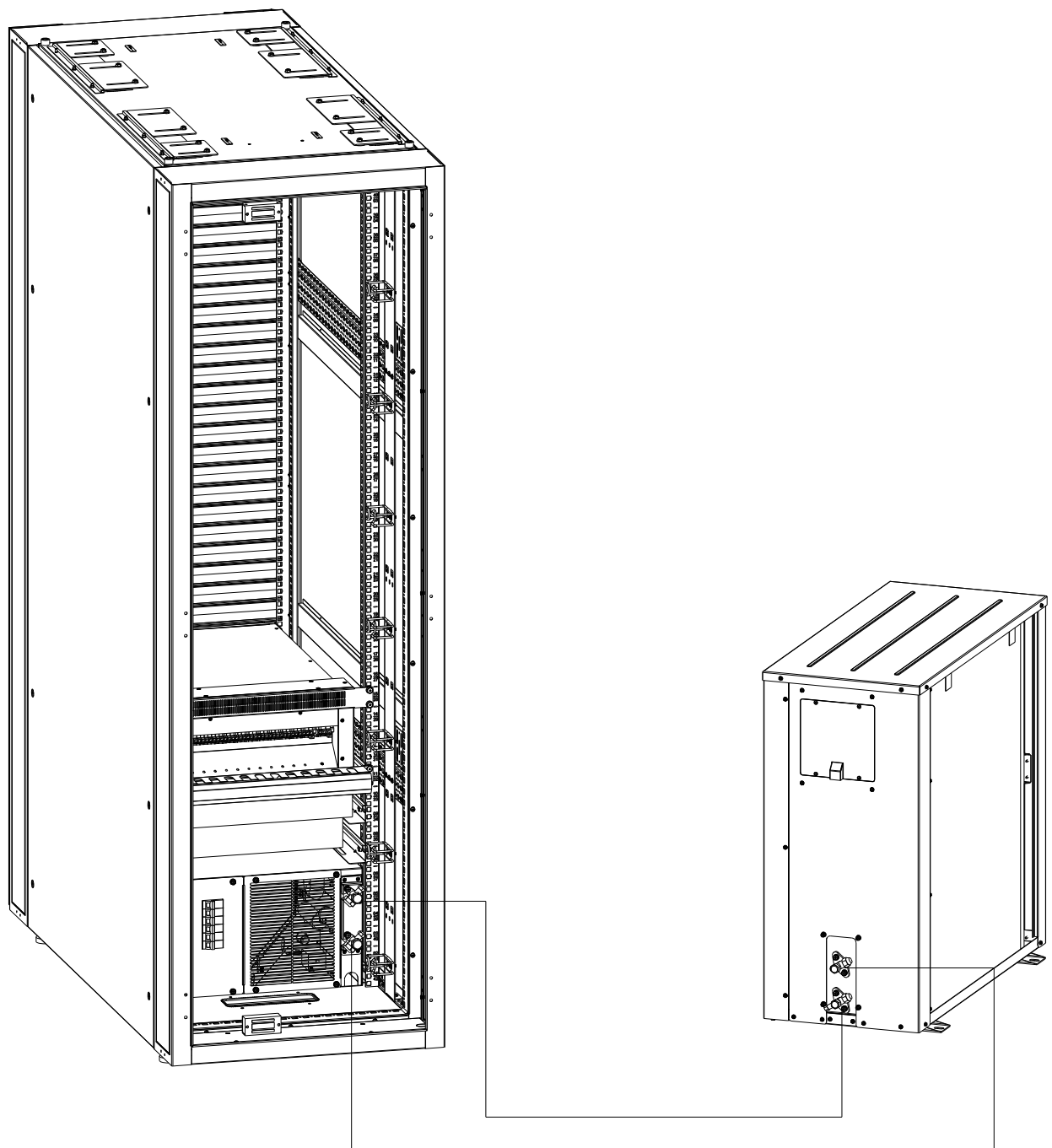


Figure5- 7 Rack mounted AC copper pipe connection

Standard pipeline size

Match with certain length copper pipe when AC subsystem delivered. Need to piping as required by user if the installation distance is too far. Size and length of standard pipe please see table 5-1.

Table 5-1 Size and length of standard pipe

Model	Length	Indoor exhaust pipe /OD	Indoor liquid pipe/OD
06T	5m	1/2"(13mm)	3/8"(10mm)
06F/10S	5m	1/2"(13mm)	3/8"(10mm)

Please see pipe size in table 5-2 when you need long pipe.

Table 5-2 Suggestion size of pipe

Model	Length(Equivalence)					
	10m		20m		30m	
	ØD(mm)	ØL(mm)	ØD(mm)	ØL(mm)	ØD(mm)	ØL(mm)
06T	13	10	13	10	13	10
06F/10S	13	10	13	10	13	10

Piping principal

1. Outdoor and Indoor unit should be connected with copper pipe. The connector should be imperial system. (When pipe length is longer than standard pipe please see table5-2. Added pipe need to be connected by welding.)
2. MicroDC standard configuration is R410A.

Notes: Refrigerant been charged in 03W/06E model, N2 in 06T/06F/10S, check the refrigerant before installation!

3. All cooling pipe should be as short, neat, straight as possible. To minimize the elbow and fixed well.
4. Pipe length should conform to the positive and negative gap of installation request.
5. Comply with standard to choose the pipe size. Pipe size refers to table5-2.
6. Recommended maximum distance between evaporator and condenser is 30m(Equivalent length), Please contact the manufacturer for help if over the distance. Equivalent lengths of partial units refer to table 5-3. The resistance loss from elbow and valve has been counted.

Table 5-3 Equivalent length partial units

Liquid Size(mm)	Equivalent length(m)		
	90° elbow	45° elbow	T style three links.
10	0.21	0.10	0.76
13	0.24	0.12	0.76
16	0.27	0.15	0.76
19	0.30	0.18	0.76
22	0.44	0.24	1.1
28	0.56	0.30	1.4

Connector installation notes

Install the quick nibble should be very careful. Please read the following notes before operation.

1. Remove the dust cover of valve connector.
2. Use clean cloth to wipe and connecting base and screw thread.
3. Use refrigeration oil to lubricate the connector and fitting surface.
4. Connect the screw nut with the connector ensure the screw thread is coordinate.
5. Connecting the hexagonal nut tightly with the valve until feeling the obvious resistance.
6. Draw a vertical line from connecting nut to pipe head. Tighten nut for a quarter circle with two wrenches to ensure the tightness. Dislocation line means tightly connect. Must use two wrenches when installation. One wrench will easily damage the valve connecting pipe. Suggested tightening value refers to table 5-4.

Table 5-4 tightening value suggestion

Connector size(mm)	Tightening value (N.m)
16	7~8
19	25~32
22	25~32

Pipe line that needs to connected

Include:

1. Refrigerant line of Indoor unit and Outdoor unit. (exhaust pipe and liquid pipe)
2. Condensate drainage of Indoor unit.

◆ Notice:

After the installation and before starting device please make sure the entire necessary pipes are connected.

Leak detection, pressurize and vacuumed

1. Use nitrogen to detect the leak after all pipes are connected. Aerate pressure should be $\geq 3\text{MPa}$, filling the nitrogen to connected pipes.
2. There should be no leakage in 24hours after filling the nitrogen. The pressure will have a little change due to thermal expansion of gas if temperature change is bigger in 24hours. It's normal the pressure change will be $\leq 1\%$ when temperature difference is 3°C . If the value of pressure changes is out of limits. Should find out the leakage and testing the pressure after rewelding.
3. Release the nitrogen in the system after leak detection. And open the vacuum pump to vacuum the connected pipes to absolute vacuum of 100Pa , keep

negative pressure 2h. It is qualified if the pressure doesn't rise.

◆ **Notice:**

- 1、 It is forbidden to use oxygen or other gas in the air test.
- 2、 The filled-in nitrogen pressure while leak detection cannot over the maximum working pressure.

Positive and negative installation

There are two type of system installation, positive and negative.

Positive installation——Means the installation vertical height of outdoor unit is higher than indoor unit.

Negative installation——Means the installation vertical height of outdoor unit is lower than indoor unit.

Positive and negative installation value

Table 5-5 Positive and negative installation value

Type	Vertical height value	Others
Positive	Inrow cooling Max: +20m Rack mounted cooling Max: +20m	Indoor unit lower than outdoor unit
Negative	Max: -5m	Indoor unit higher than outdoor unit

1. Should install reserve banding in the intake pipe and drainage pipe of outdoor unit when installation, to avoid liquid backflow when power off.
2. If positive gap is bigger than 20m or connecting pipe is longer than 30m. Extension component is needed.
3. Install oil bending in every 6m vertical height of gas pipe when the installation vertical height is over 10m.
4. Liquid pipe shall not be under the sunlight directly. Heat insulation is needed.
5. The gas pipe and condensate drain of indoor unit shall piping with particular angel(exhaust pipe angle $\geq 0.3^\circ$).
6. When installed in negative gap, condenser liquid pipe shall piping with particular angel(gas pipe angle $\geq 0.3^\circ$)

Positive and negative installation instruction.

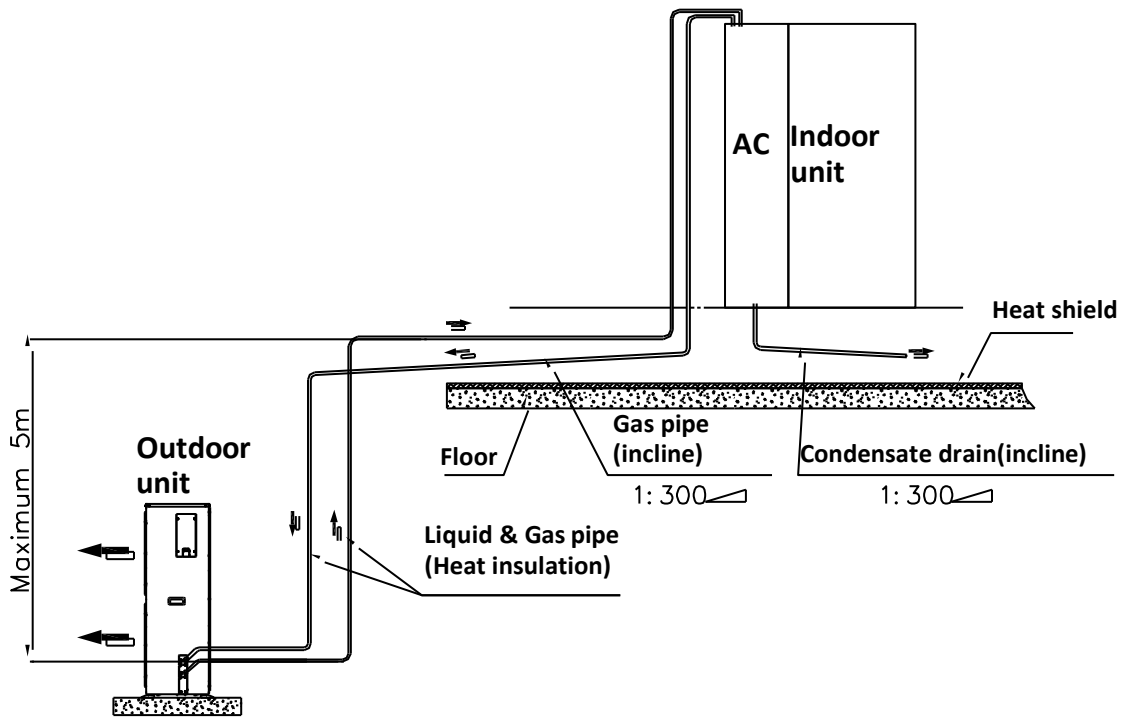
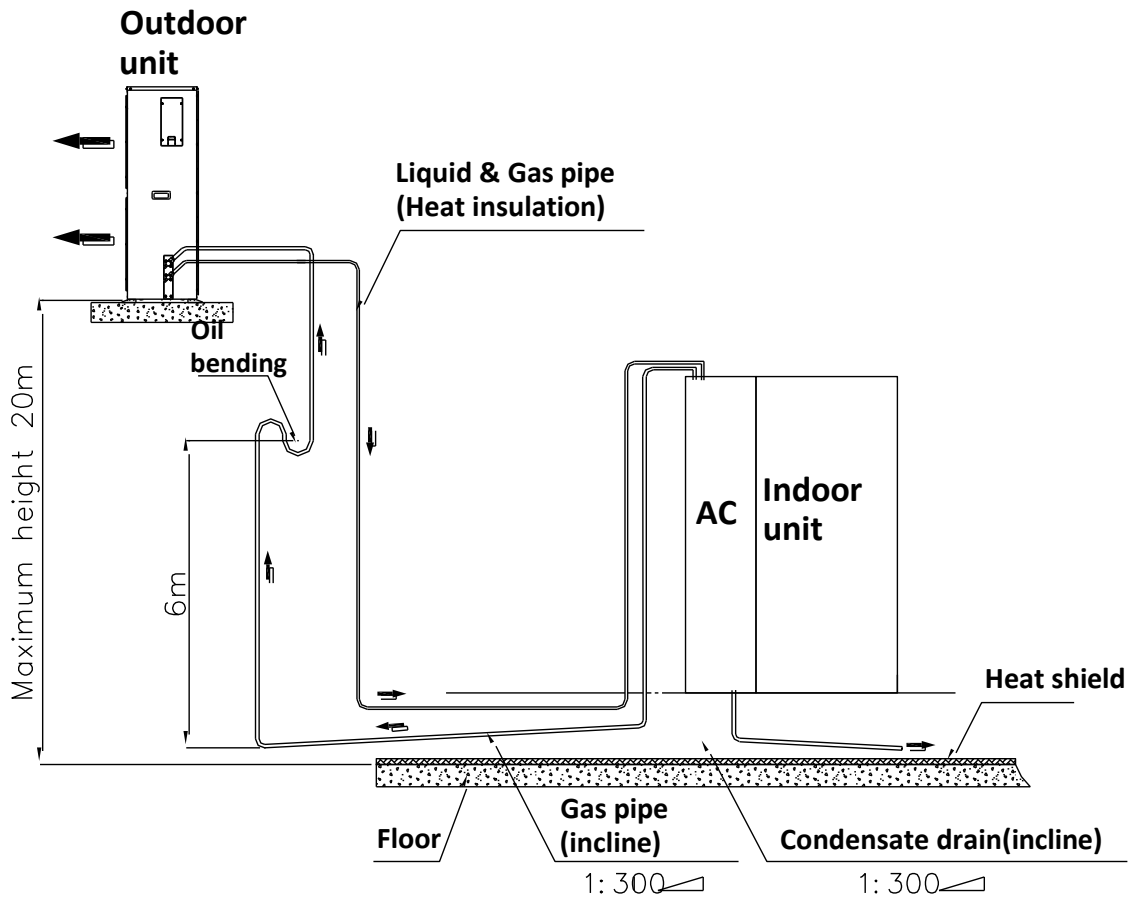


Figure 5-8 Inrow cooling Positive and negative installation instruction

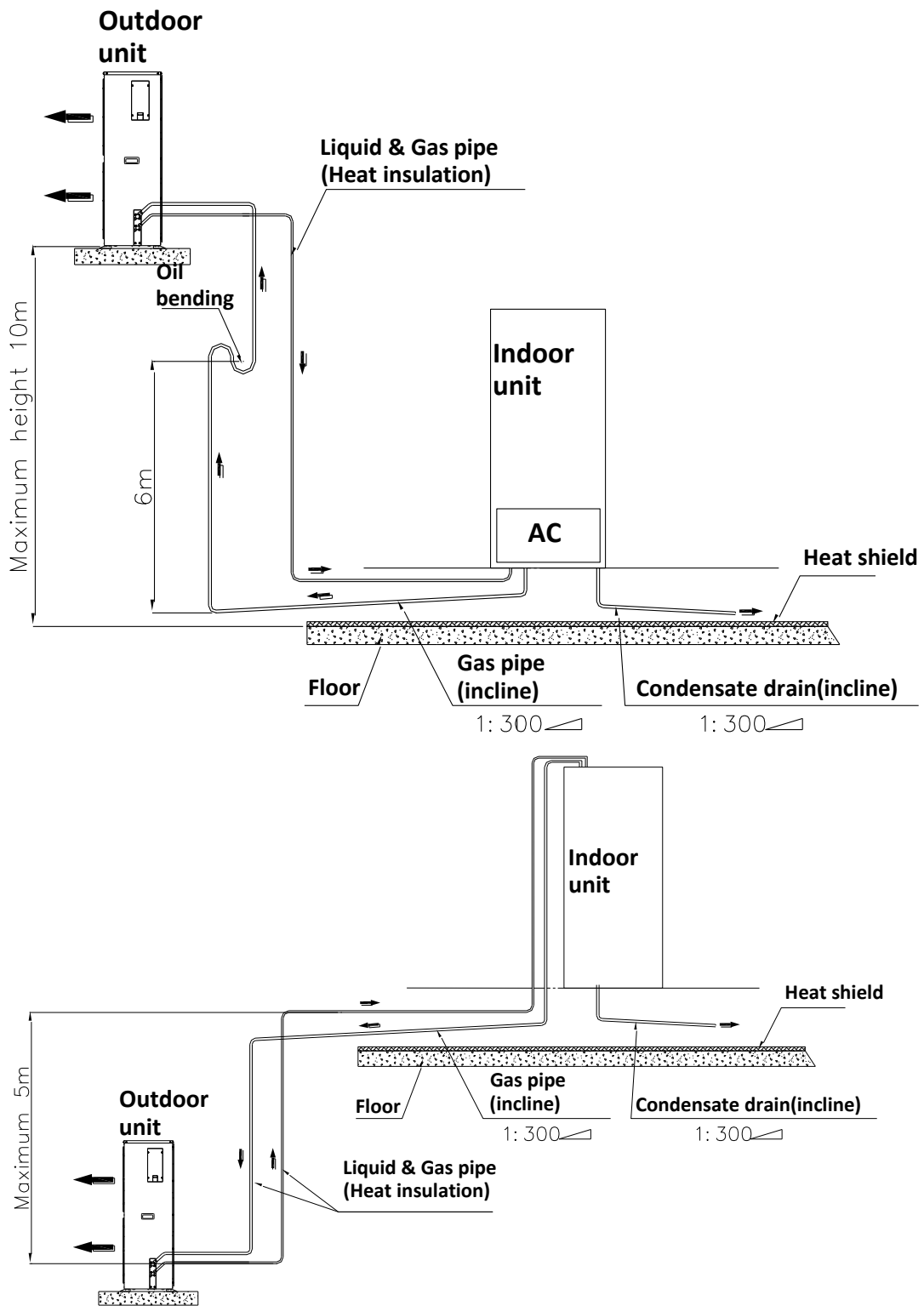


Figure 5-9 Rack mounted cooling Positive and negative installation instruction

5.7 Electronic installation

1. Step 1 If there are combination cabinets, and cabinet two parts of the cabinet, respectively, in the figure at the wiring head, both sides are marked with a line number, the same line number line can be connected together

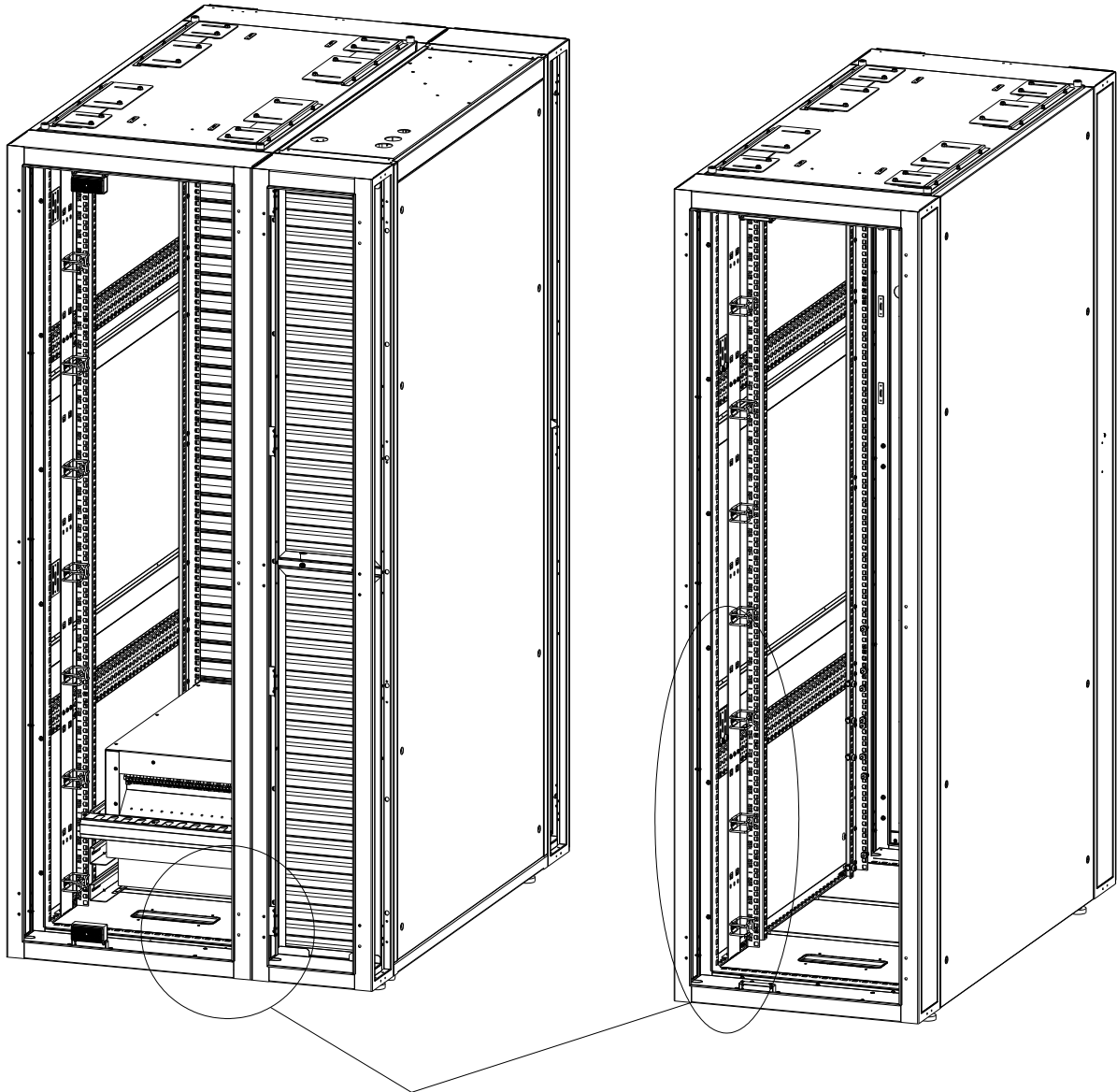


Figure 5-10 Combination cabinets wires

2. Step 2 air conditioning indoor and outdoor unit wiring. Check the wiring of the label after removing the cover, include power line (G、N、L) , fan signal line 0-10V (Y、O) . Compressor communication line (A、B) if rack mounted air conditioning

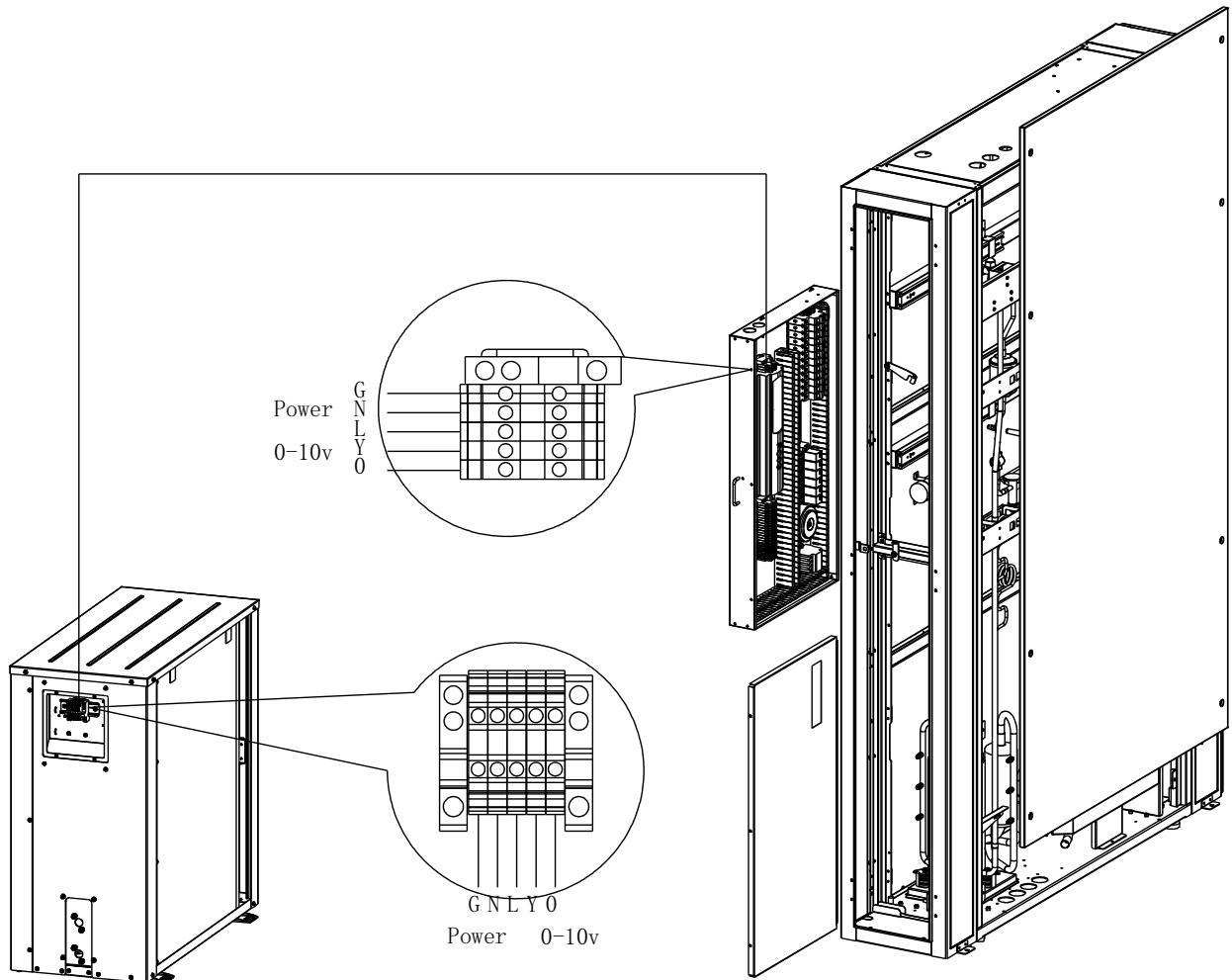


Figure 5-11 Inrow air conditioner wires

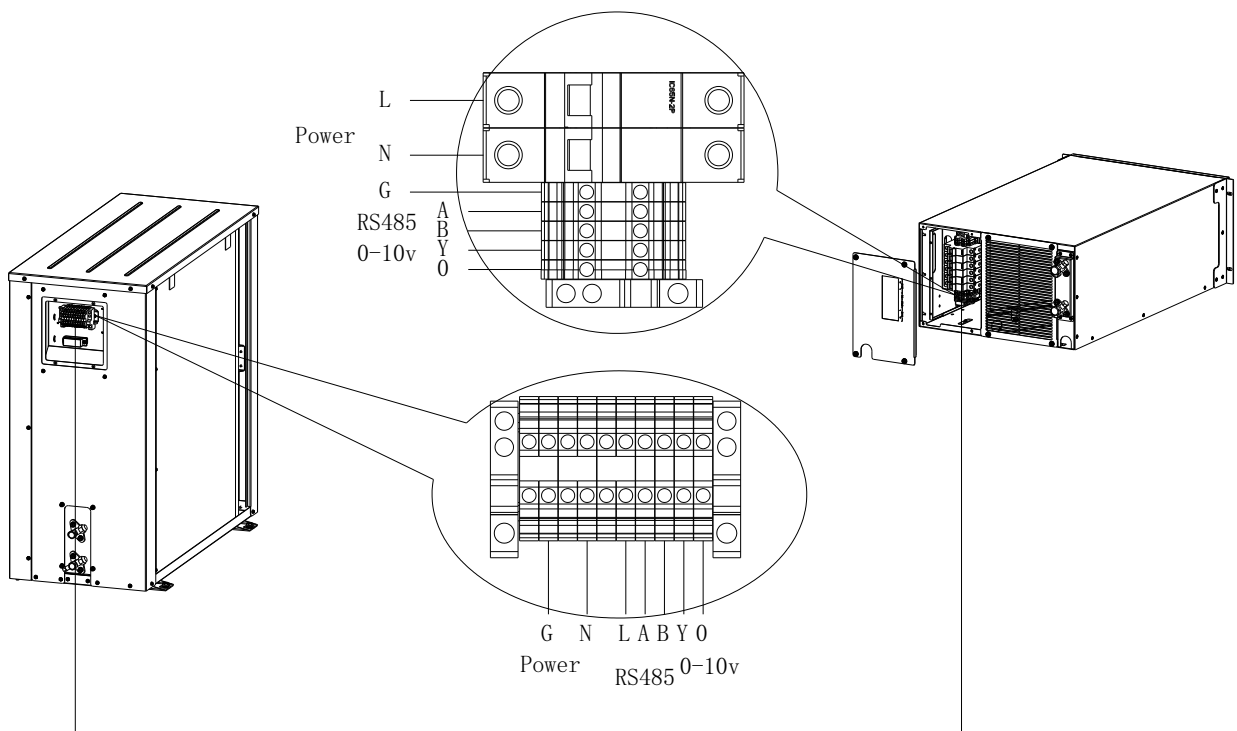


Figure 5-12 Rack mounted air conditioner wires

3. Step 3 Main power lines

Connect main power lines to power distribution unit rear port for main power.

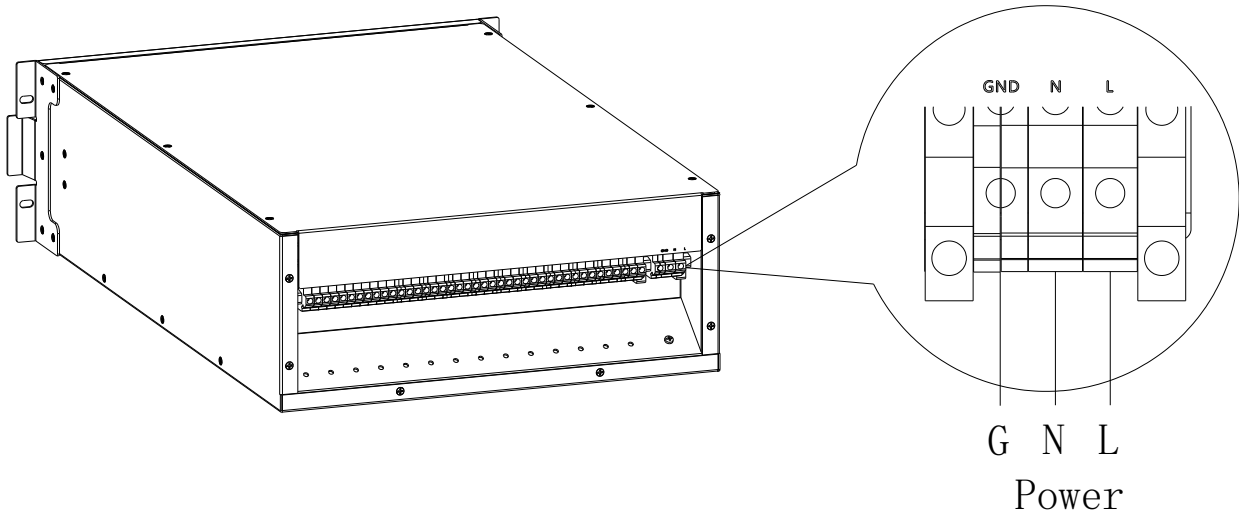


Figure5- 13

Rack mounted air conditioner wires

Electronic parameters

Table 5-6 Electronic parameters

Model		03N	03W/06E	06T	06F/10S
Indoor	Full load current	16A	63A	63A	63A
	Cable advice	2.5 mm ²	10 mm ²	10 mm ²	10 mm ²
	Breaker advice	C16	D63	D63	D63
outdoor	Full load current	-	-	8A	1A
	Cable specification advice	-	-	2.5 mm ²	1.5 mm ²

Notice

1. All the connection of electric line, control line and ground electrode must conform to the local laws and regulation.
2. Full-load current of unit please see unit nameplate. The size of cable should conform to the electrical request.
3. Electronic installation must be installed by professional installer.
4. To make sure the power is cut-off by power meter test before connected with circuit.

6. Commissioning

6.1 Inspection

Overview

1. The voltage of power supply is the same as the nominal voltage of equipment nameplate.
2. System electrical connected correctly.
3. All connection is tightly.
4. The rating value of circuit breaker or fuse is correct.

Before commissioning please check the status of every unit according to table6-1.

Table6-1 Checklist

List	Checking details and request.
Unit appearance.	Appearance without damaged, surface is clean, insulation is in good condition.
Electric line	Power supply connection should be no loose, measure and record the voltage value before startup unit.
Electric control box	Electric components of control box are good.
Indoor AC fan	No blocked on air-in and air-out spot.
AC Valve	All valves should be in open position.
Outdoor unit	Outdoor unit installation position is appropriate, also the piping installation. Oil bending is in the right position.

6.2 Start unit on

1. Step 1 Ensure that the device is properly installed and the cable is properly wired. Turn on all switch at front of power distribution unit except manual maintenance bypass switch.
2. Step 2 Turn on the switch at the rear of UPS device and the switch at the rear of battery package, air conditioning indoor unit switch at air conditioning power box.
 Note:
 1. These switches are on the device and are not on the power distribution unit.
 2. The air conditioning pipe connection is correct, the refrigerant charging is completed, the valves have been opened before turn the compressor switch, otherwise you cannot turn on the compressor switch.
3. Step 3 Press and hold the operation button "ON" on the front panel of the UPS device for more than 2s.

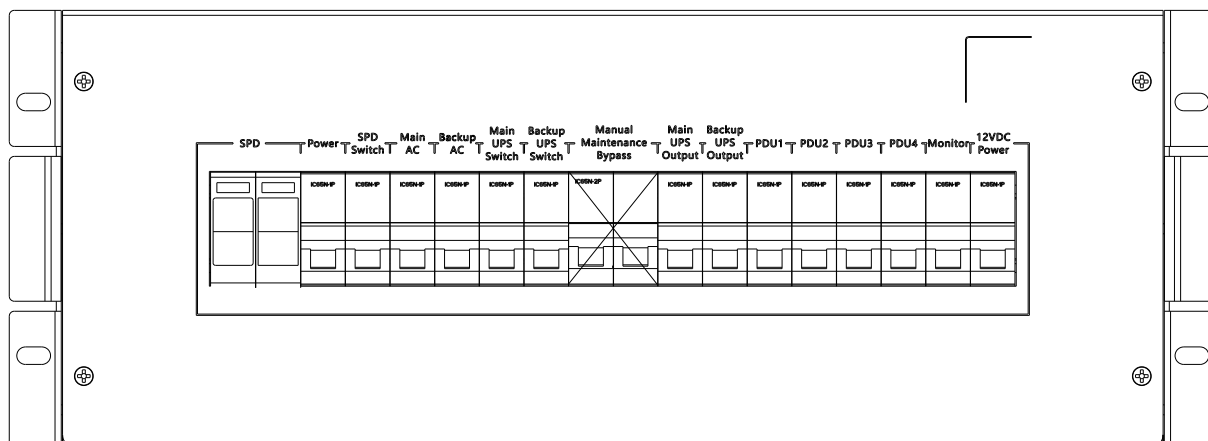


Figure 6-1 Power distribution unit switch panel

6.3 Air conditioner Commissioning

Long pipe add refrigerant

If no long pipe, no this step. Long pipe is mean longer than 5m.

Add refrigerant to system when connecting line is over certain distance of outdoor unit and indoor unit. Make sure system running at normal condition.

The amount of add refrigerant according to the following formula.

The adding amount of refrigerant (kg) = The adding amount of liquid refrigerant (kg/m) × Total length of extension pipe(m)

Total length of unit extension pipe(m) = Total length of pipe(m) – 5m;

The refrigerant adding amount of pipe length refers to table 6-2.

Table 6-2 The refrigerant adding amount of pipe length

Pipe size(mm)	Refrigerant adding amount(kg/m)
10	0.060
13	0.112
16	0.181
19	0.261
22	0.362
28	0.618

[Note: This can be the preliminary calculation before installation. Or as the guidance after installation. The actual adding amount will be subject to final debugging results.]

Lubricate oil adding amount.

When the pipe is longer, lubricating oil along with the gas adhere to pipe wall and mix the refrigerant affecting the oil circulation, we need to add the lubricating oil to make sure the compressor run in a normal and efficiently condition.

Normal condition is unnecessary to add the lubricating oil when the connecting pipe is within 30m. The lubricating oil add amount of unit according to the following formula.

Counting formula:

$$L = \frac{(R - M) \times 0.4}{0.9} \times 1000$$

Inside: L——lubricating oil adding amount(ml)

R——refrigerant adding amount(kg)

M——allow max charge amount. Please see table 6-3.

Table6-3 Allow max. charge amount

Model	Max charge amount
06T	2
06F	2
10S	3

Note: R410A refrigerant compressor, lubricating oil purchasing please according to the provided model. R410A need oil model RL68H.

There is 5m prefilled refrigerant and lubricating oil before unit delivery.

Function detection

Cooling

Switch the power supply of unit and set temperature setpoint 5°C lower than actual temperature, at the same time system will start the cooling function, compressor will start running.

[Notice: air conditioner commissioning must operated by professional engineer.]

7. Management System

7.1 Switch

Connect the user network to the any port of switch by CAT6 cable.

The monitoring display connect to switch already, the access controller connects to switch already. If option NVR and camera system, the NVR connect to switch already.

7.2 Access control

a) Access controller software link:

https://drive.google.com/open?id=1OKjFaO_sco2gCHfxVT2B7fR5hJwEXe_a

b) Access controller user manual link:

https://drive.google.com/open?id=1zTIOv8C5WeosQPLvcrVgRJ_T5drFpt7e

c) Access controller operation video introduce link:

<https://drive.google.com/open?id=1eovVKOzLVQkZTPmOAHi6pSfIRr9abtpW>

The access controller register information:

Serial number is 2004, user is acb, password is 123, company name is anteng.

The card reader default password is 4321, the administrator password is *123456.

a) Password setting

- i. Press *123456 to access to administrator status
- ii. Press 200# to set the user ID 200, other user is same method.
- iii. Press 4321# to set the password as 4321, other password is the same method
- iv. Press 4321# to confirm the password setting
- v. Press # to done this setting

Note: the password has to be setting in the access controller software

b) Fingerprint setting

- i. Press *123456 to access to administrator status
- ii. Press 100# to set the user ID 100, other user is same method.
- iii. Put your finger to input fingerprint
- iv. Put your finger to confirm
- v. Press # to done this setting

Note: the user ID has to be setting in the access controller software as user ID and worker number.

- c) Card setting
 - i. Press *123456 to access to administrator status
 - ii. Press 300# to set the user ID 300, other user is same method.
 - iii. Put your card to input information
 - iv. Press # to done this setting

Note: the card number has to be setting in the access controller software as card ID.

7.3 Camera system (optional)

- a) a) The hardware disc been installed in the NVR
- b) b) The NVR default IP is 192.168.1.64, user manual link:

<https://drive.google.com/open?id=1VvWcf3JmKHcrMIWQRUaIEShdOR42sHF3>

- c) The camera default IP is 192.168.1.64, user manual link:

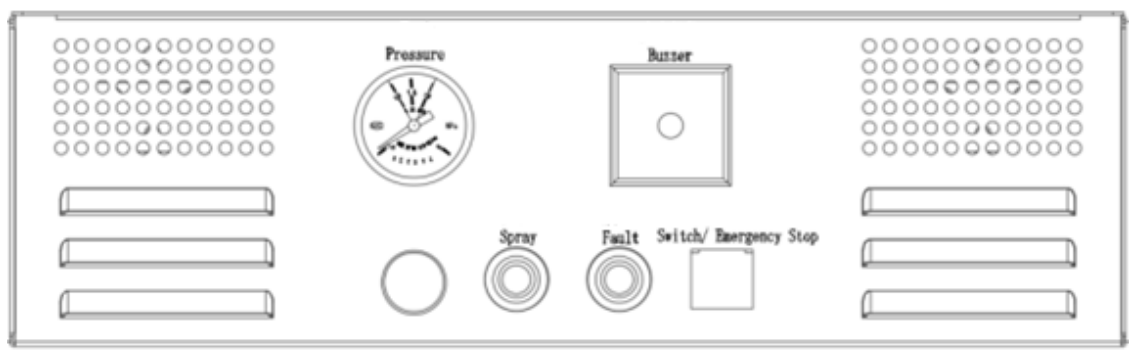
https://drive.google.com/open?id=1DIwL_Gk5L-dGY_mqzQV4zB9d_7rWUxIG

7.4 SMS system (optional)

SMS configuration and install instruction link:

https://drive.google.com/open?id=1QZR38K9LrBa_75SoHsXnH7ekHyDMcQt

7.5 Fire protection system (optional)



FM200 rack-mounted fire protection system module is a system with integrated temperature sensor, smoke sensor and fire-fighting gas.

- a) Pull out the protect ring after unit installed well.
- b) When the temperature sensor active and smoke sensor active will trigger gas release. The temperature sensor point is 65 degrees.

- c) Observe whether the pressure gauge on the fire box indicates that the pressure is between 1.3MPa ~ 2.5MPa. If the pressure gauge indicates that the pressure is less than 1.3MPa, please replace the fire extinguisher storage tank in time.
- d) Turn on the power switch on the panel of the box. The power switch also functions as an emergency stops function. When the device reports a fire alarm due to external environmental factors, the ejection operation can be terminated within the ejection delay time (30s).
- e) Smoke and temperature active will show spray.
- f) Smoke or temperature active will show buzzer light.
- g) If power off will show fault light.

7.6 Software interface

After the device is powered on, the monitoring host automatically starts to enter the monitoring system.

The default equipment setting page password is 4321. The default system setting page password is 4321. The management system user is admin, password is 12348765, this is used for logout the management system to android interface.

Software interface consist of homepage, facility management page, energy efficiency management page, report center page, log page, alarm center page, setting page.

After the monitoring device is powered on, the device automatically enters the monitoring system interface after the start, no need to operate in the middle.

Home page

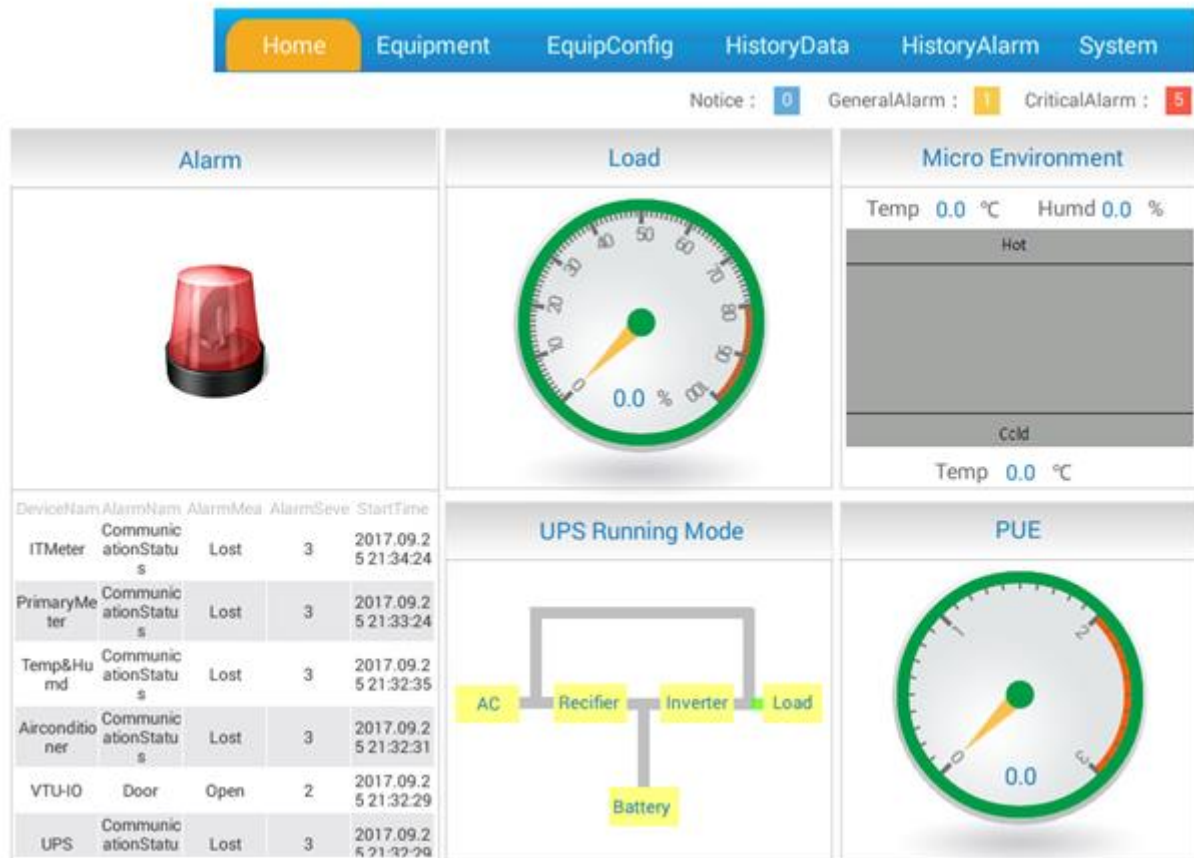


Figure7-1 Home page

() Left top here is the product logo, in the monitoring system interface, click on the logo will pop out of the monitoring system interface prompts, enter the user name 'admin', password' 12348765' to exit the monitoring system. Each interface has this information, the latter no longer introduced.

(Home) Yellow shading highlighted, indicating that this page is the home page, other Equipment page, EquipConfig page, HistoryData page, HistoryAlarm page, System page, you can click into the corresponding interface page, the details will be described later.

(Notice 0 GeneralAlarm 1 CriticalAlarm 5) The number of alarms is displayed by the severity level of the alarm. Critical alarms are alarms that cause the device to fail. General alarm for the equipment to run normally but will continue to cause the device cannot run.

(Alarm) alarm information is divided into alarm lights and alarm list. The alarm list contains the device name, alarm name, meaning, alarm level and start time. All the alarms are displayed in the alarm list. If the alarm is reset it is no longer displayed.

(Load) Dial shows the current UPS load, the "0.0" is the corresponding load rate value, and the dial pointer will refer to the corresponding scale.

(UPS Running Mode) power supply mode to the line color changes clearly indicate the current power supply mode, the green line is the current power supply mode, power supply mode is divided into mains mode, bypass mode and battery mode.

(Micro Environment) Here shows the temperature and humidity in the hot channel, real-time data collected by the temperature and humidity sensor, "0.0 °C" is the corresponding temperature value, "0.0% RH" for the corresponding relative humidity value. The following temperature is the temperature in the cold pass, which is the real time data collected by the air supply temperature probe, "0.0 °C" is the corresponding temperature value.

Note: For 03N model, because there is no air conditioning, there is no such item.

(PUE) main road meter and tributary load meter to detect the data stored regularly to the database. PUE is calculated by accumulating the stored power consumption data. The PUE formula is the total power divided by the IT load power consumption. Therefore, the minimum PUE is 1, and the "0.0" in the table is the corresponding PUE value, and the dial The pointer will refer to the corresponding scale.

Equipment-UPS

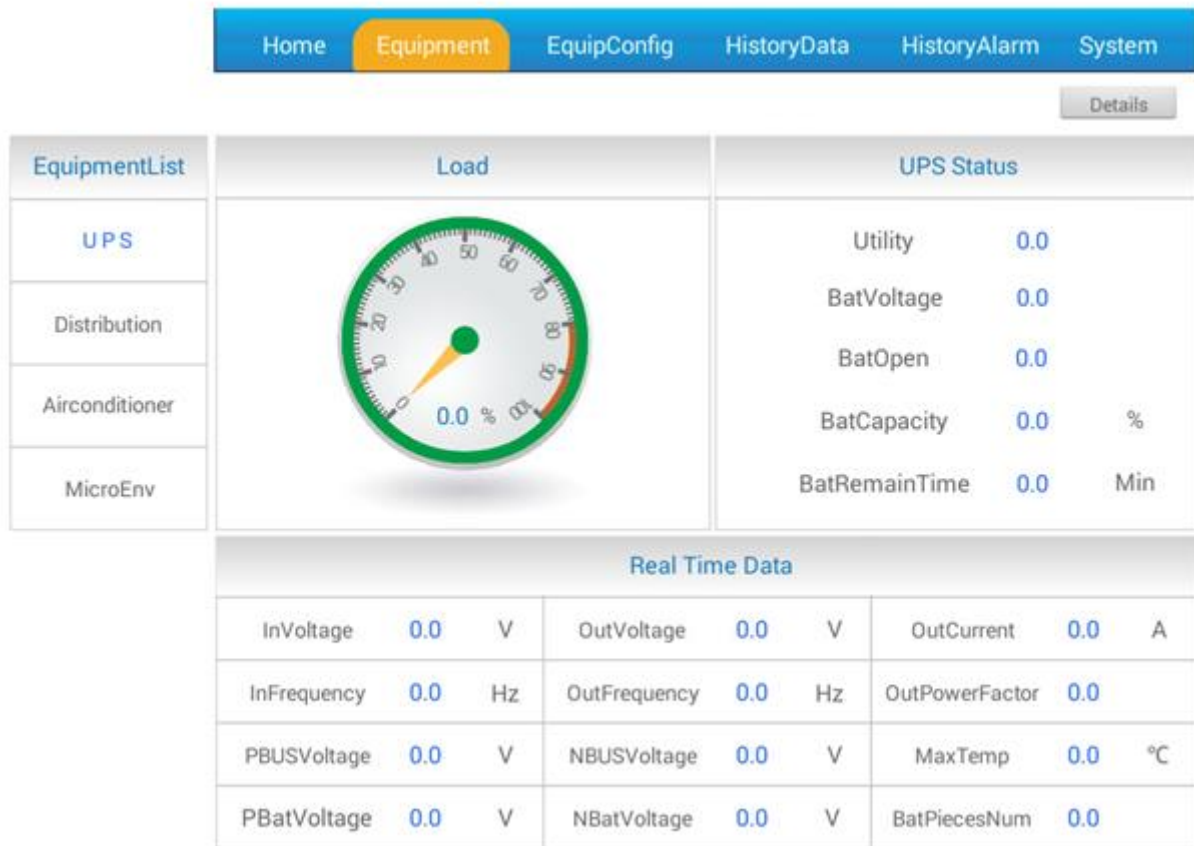


Figure7-2 EquipmentList-UPS page

(Equipment list UPS Distribution Airconditioner MicroEnv) UPS light blue shading highlighted, indicating that this page for the facilities management of the UPS equipment page, other power distribution, air conditioning, micro environment, you can click into the corresponding interface page, after The text will be described in detail.

(UPS load) can refer to the home page UPS load rate introduction.

(UPS status) shows some of the operating information for the UPS. When the mains state and battery status abnormal, the back of the text will prompt the corresponding alarm, and in red, no alarm when the normal display.

(Real-time data) shows the UPS running real-time input and output voltage and current data.

(Details) Click to view all the parameters in the UPS protocol list, the professionals can refer to see more of the interface does not show the data information, the latter part of the details of other equipment is the same, no longer explain later.

Equipment-Distribution

Home Equipment EquipConfig HistoryData HistoryAlarm System								
	PrimaryMeter		ITMeter		Details			
EquipmentList	Primary Meter							
UPS	Voltage	0.0	V	Current	0.0 A	Power	0.0	Kw
Distribution	Frequency	0.0	Hz	PowerFactor	0.0			
Airconditioner	TotalActiveEnergy		0.0	Kwh				
	ImportActiveEnergy		0.0	Kwh				
MicroEnv	ExportActiveEnergy		0.0	Kwh				

Figure7-3 EquipmentList-Distribution page

(PrimaryMeter ITMeter Details) Power distribution module installed in the main road detection and detection of IT load road support table, through the main road meter and IT load meter were viewed, the same interface. For details explain, refer to the previous article.

(Primary Meter) display power distribution module in the main circuit voltage, current and other data. IT load meter real-time data with the same meaning, not repeat the description.

Equipment-AirConditioner

Home Equipment EquipConfig HistoryData HistoryAlarm System						
					Details	
EquipmentList	Temp & Humd				Status	
UPS	OutTemp	0.0	°C	InletTemp	0.0	°C
Distribution	ReturnTemp	0.0	°C	ReturnHumd	0.0	%
Airconditioner						
MicroEnv						
Configuration						
	TempSet	0.0	°C	HumdSet	0.0	%
	TempThreshold	0.0	°C	HumdThreshold	0.0	%

Figure7-4 Equipment-AirConditioner page

Note: For 03N model, there is no air conditioner page because there is no air conditioner. The 06F and 10S models have slightly different air-conditioning parameters, as described below.

(Temp & Humd) "OutTemp 0.0 °C" shows the air conditioning air temperature probe to detect the real-time air supply temperature, "Return Temp 0.0 °C" shows the air conditioning temperature and humidity sensor to detect the real-time back Wind temperature, "ReturnHumd 0.0%" shows the air conditioning return air temperature and humidity sensor to detect the real-time return air humidity, "InletTemp 0.0 °C" shows the inlet temperature probe to detect the compressor suction Pipe section temperature.

Note: 06F and 10S models without inlet temperature parameters.

(Status) shows the operating status of air conditioning, including the switch machine status, compressor frequency, control mode, control mode for the return air control, or air supply control, set to the device settings page.

Note: 06F and 10S models no frequency display, only shows the state of the compressor on or off.

(Configuration) The value of the control parameter set for the user displayed in the control parameter can not be set here.

Note: 06F and 10S models have a distinction between supply air temperature setting and return air temperature setting.



Figure7-5 Equipment-MicroEnv page

(MicroEnv) Here shows the temperature and humidity in the channel, real-time data collected by the temperature and humidity sensor, and the status of the smoke alarm, water leakage alarm and cabinet door switch.

(Temp Curve) The detected channel temperature data is periodically stored in the database, and the stored data can be viewed graphically. "1h 24h 1mon 1year" can view the corresponding time period of the temperature curve, 1 hour for the current hour of the temperature curve, 24 hours for the day 24 hours of temperature curve, 30 days for the 30 days of the temperature curve, Year of December the temperature curve.

(Humd Curve) The channel humidity data detected is regularly stored in the database, and the stored data can be viewed graphically. "1h 24h 1mon 1year" can view the corresponding time period of the humidity curve, 1 hour for the current hour of humidity curve, 24 hours for the day 24 hours humidity curve, 30 days for the 30 days of the humidity curve, one year for the Year of December the humidity curve.

EquipConfig

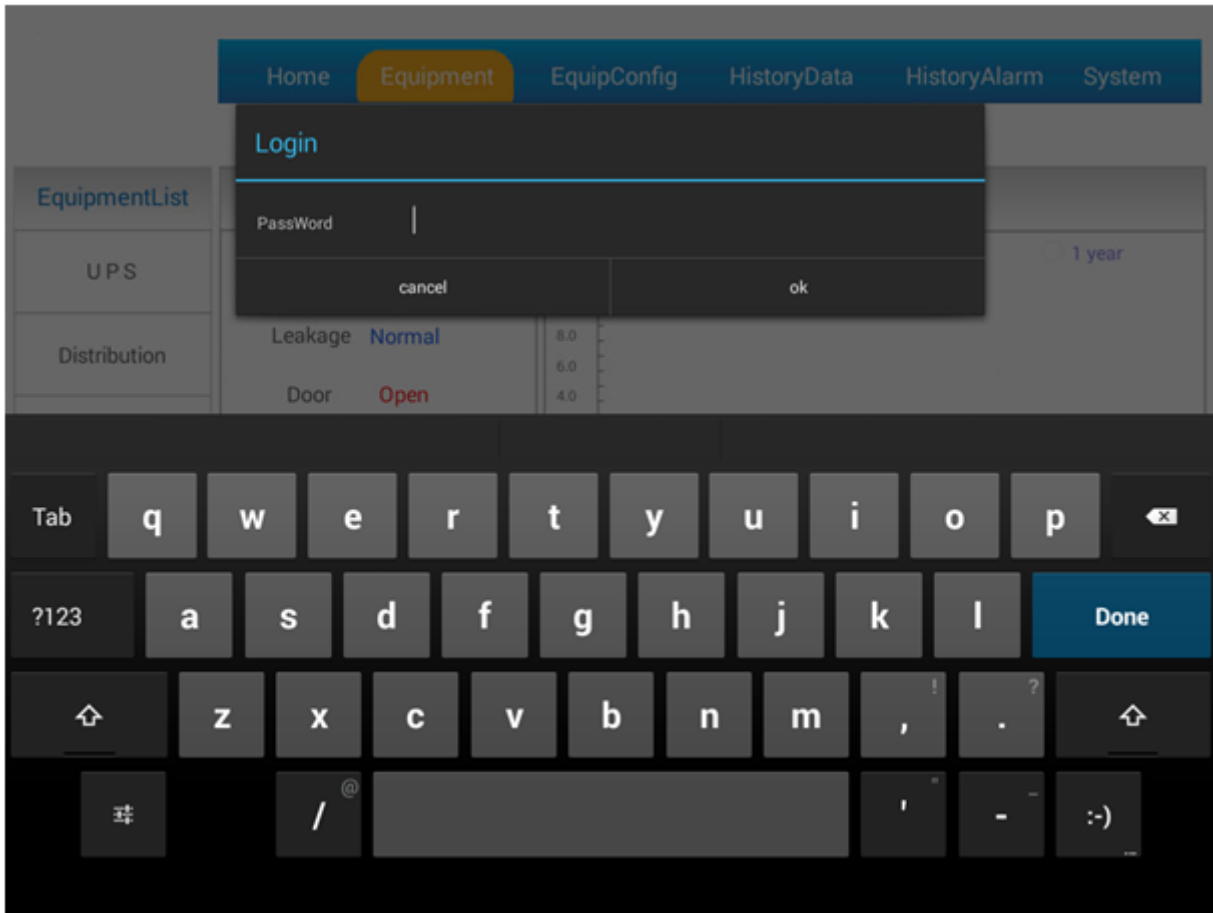


Figure7-6 EquipConfig page

(Login) This page default password 4321. The user can make changes on the system settings page. Password:4321

EquipConfig-MicroEnv

Home Equipment EquipConfig HistoryData HistoryAlarm System								
EquipConfig	Temp&Humd Alarm Value			Emergency Ventilate				
MicroEnv	HighTemp	35.0 °C	<input type="text"/>	Set	StartTemp	0.0 °C	<input type="text"/>	Set
Airconditioner	LowTemp	10.0 °C	<input type="text"/>	Set	StopTemp	0.0 °C	<input type="text"/>	Set
SMS	HighHumd	90.0 %	<input type="text"/>	Set	DoorOpen	<input type="button" value="Open"/>		
	LowHumd	30.0 %	<input type="text"/>	Set	DoorReset	<input type="button" value="Reset"/>		

Figure7-7 EquipConfig-MicroEnv page

(Temp&Humd Alarm value) "HighTemp 35.0 °C" shows the current set point, click on the back of the data box can enter the settings, pop-up keyboard input data, click on the back of the settings can be. After the success of the interface will pop up the success of the change or set the success of the tips, the other settings are the same, later not repeat the description. When the temperature and humidity sensor detects the temperature is greater than this set temperature, there will be high temperature alarm. "LowTemp 10.0 °C" shows the current set point, click on the back of the data box can enter the settings, pop-up keyboard input data, click on the back of the settings can be, when the temperature and humidity sensor detects the temperature is less than this set temperature , Will appear low temperature alarm. "HighHumd 90.0%" shows the current set point, click on the back of the data box can enter the settings, pop-up keyboard input data, click on the back of the settings can be, when the humidity sensor detects humidity greater than this set humidity , There will be a high humidity alarm. "LowHumd 30.0%" shows the current set point, click on the back of the data box can enter the settings, pop-up keyboard input data, click on the

back of the settings can be, when the temperature and humidity sensor detects the humidity is less than this set humidity , There will be low humidity warning.

(Emergency ventilate) can be set by the emergency ventilation of the opening temperature and stop temperature, when the temperature and humidity sensor detects the temperature is greater than the opening temperature set value, the emergency ventilation device will open when the temperature and humidity sensor detects the temperature is lower than the stop temperature set When the value is set, the emergency ventilation device will be closed and the shut-off is not the door closed but the corresponding logic is powered. If the temperature has dropped after the alarm, and did not reach the stop temperature point, you can click the door to stop the reset, this time can be closed normally. If you need to test the state of the door, click to open the door, the solenoid power supply off, the door open.

Emergency ventilation required to restart the machine before the entry into force. Restart the machine method, long press the hardware panel on the circular function keys, prompt off, point off. Wait for a program shutdown is complete, long press the round function keys, the device automatically enter the monitoring system boot.

EquipConfig-Airconditoner

Figure7-8 EquipConfig-Airconditioner page

(ON/OFF 0.0) "ON OFF" can be set through the button to start and shut down, if the 06F and 10S models must ensure that the air conditioner's control display does not shut down, or here can not boot operation.

Note: air conditioning ON and off there is a delay, need to be wait.

"PowerOnRun 0.0" can be set by the button after the air conditioning power off and then power on, air conditioning is automatically activated

Note: 06F and 10S model default Power on run, without this setting.

"Control mode 0.0" can be set through the button air conditioning temperature adjustment object, you can choose to send air or return air. "Fault reset" When the air conditioner alarm, and the fault has been resolved, you can use this button to reset, cancel the alarm state. "TempSet 0.0 °C" can set the temperature set point, showing the current set point. "HumdSet 0.0%" You can set the humidity set point, which shows the current set point. "Temp Thresh 0.0 °C" can set the temperature deviation, showing the current set deviation. "Humd Thresh 0.0%" can set the humidification deviation, showing the current set point, humidification deviation and dehumidification bias share the same control value, humidification deviation is dehumidification deviation.

Note: 06F and 10S models have a distinction between supply air temperature setting and return air temperature setting.

EquipConfig-SMS

This page for the SMS alarm settings page, for the optional, will not introduced here.

HistoryData

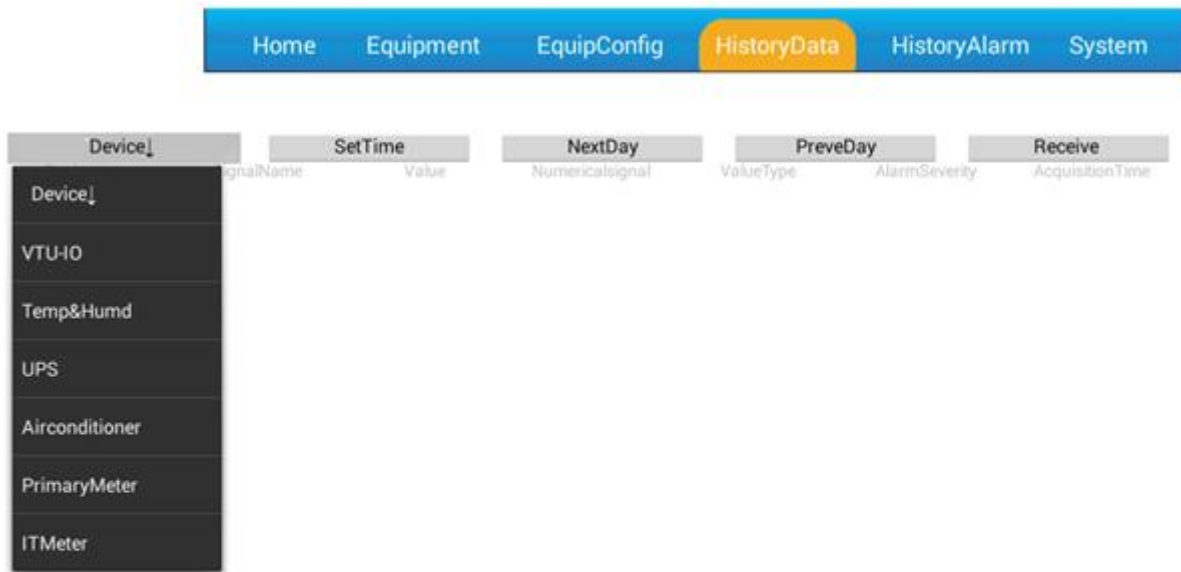
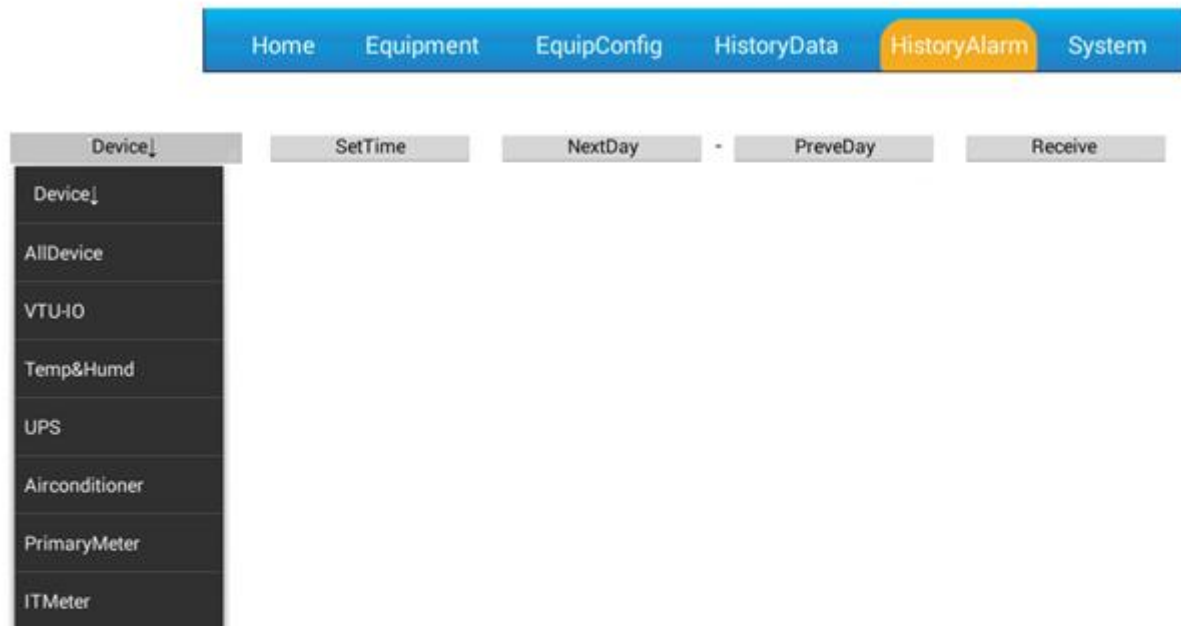


Figure7-9 HistoryData page

(Device SetTime NextDay PreveDay Receive). The device will pop up. Select the corresponding device to view. After selecting, the device will be replaced with the selected device name. Click on the interface. Form to show historical collection of data. The date of the historical data can be selected by setting the date.

HistoryAlarm



Figuration7-10 HistoryAlarm page

(Device SetTime NextDay PreveDay Receive). The device will pop up. Select the corresponding device to view. After selecting, the device will be replaced with the selected device name. Click on the interface. Form to show historical alarm data. The date of the historical alarm data can be selected by setting the date.

System Login

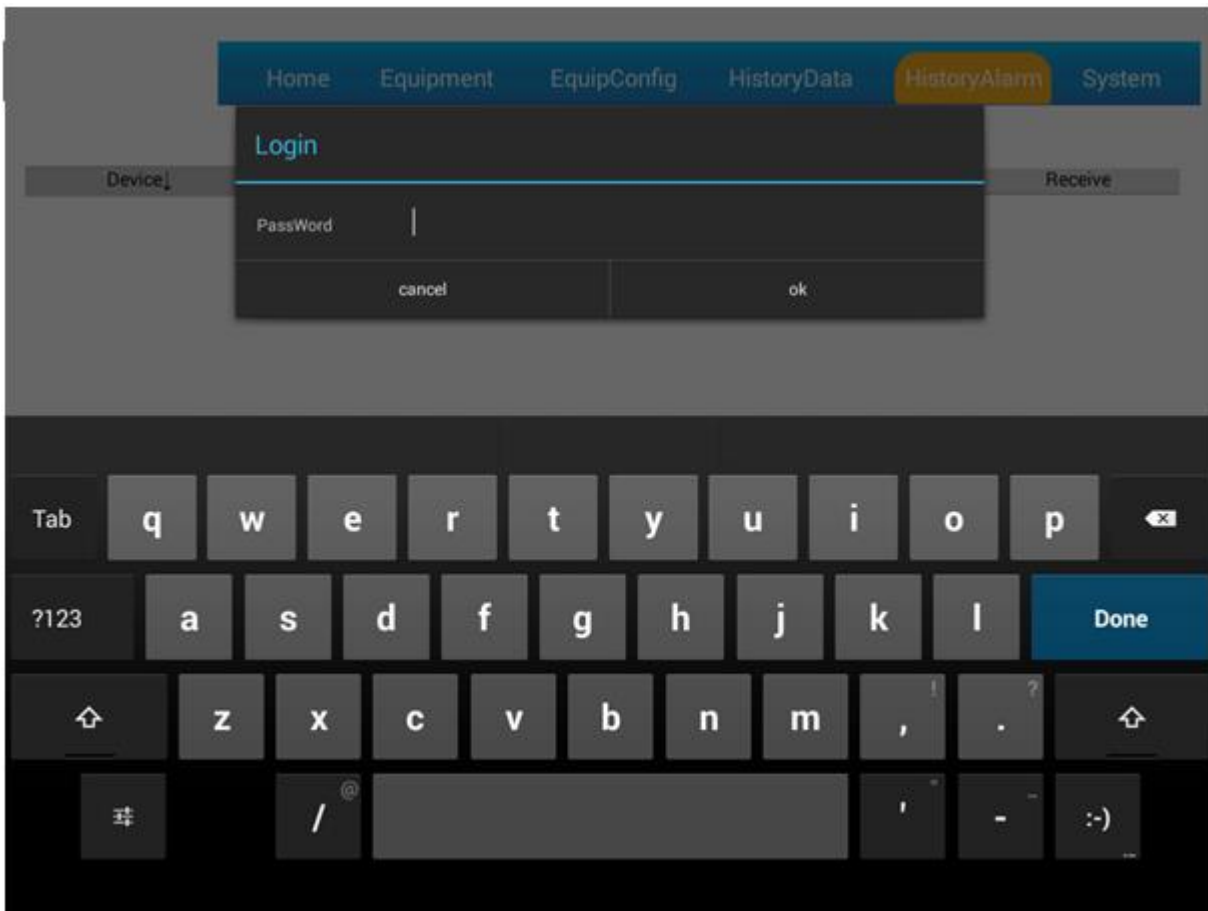


Figure7-11 System Login page

(Login) This page default password 4321. The user can make changes on the system settings page.

System page

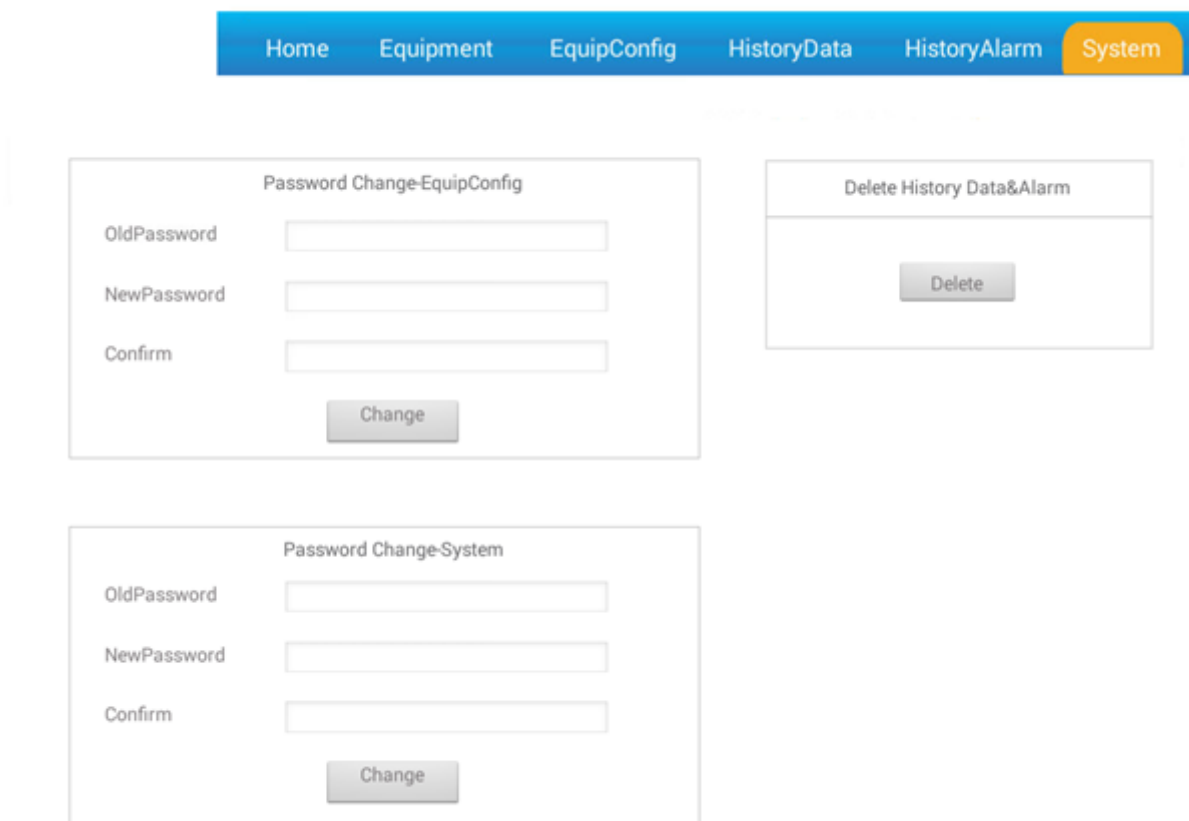


Figure7-12 System page

(Password Change-EquipConfig) You can change the password set by the device by entering the old password and the new password.

(Password Change-System) can be entered by entering the old password and the new password to modify the system settings password.

(Delete History Data&Alarm) Click the Delete button to delete the history data.

Remote monitor

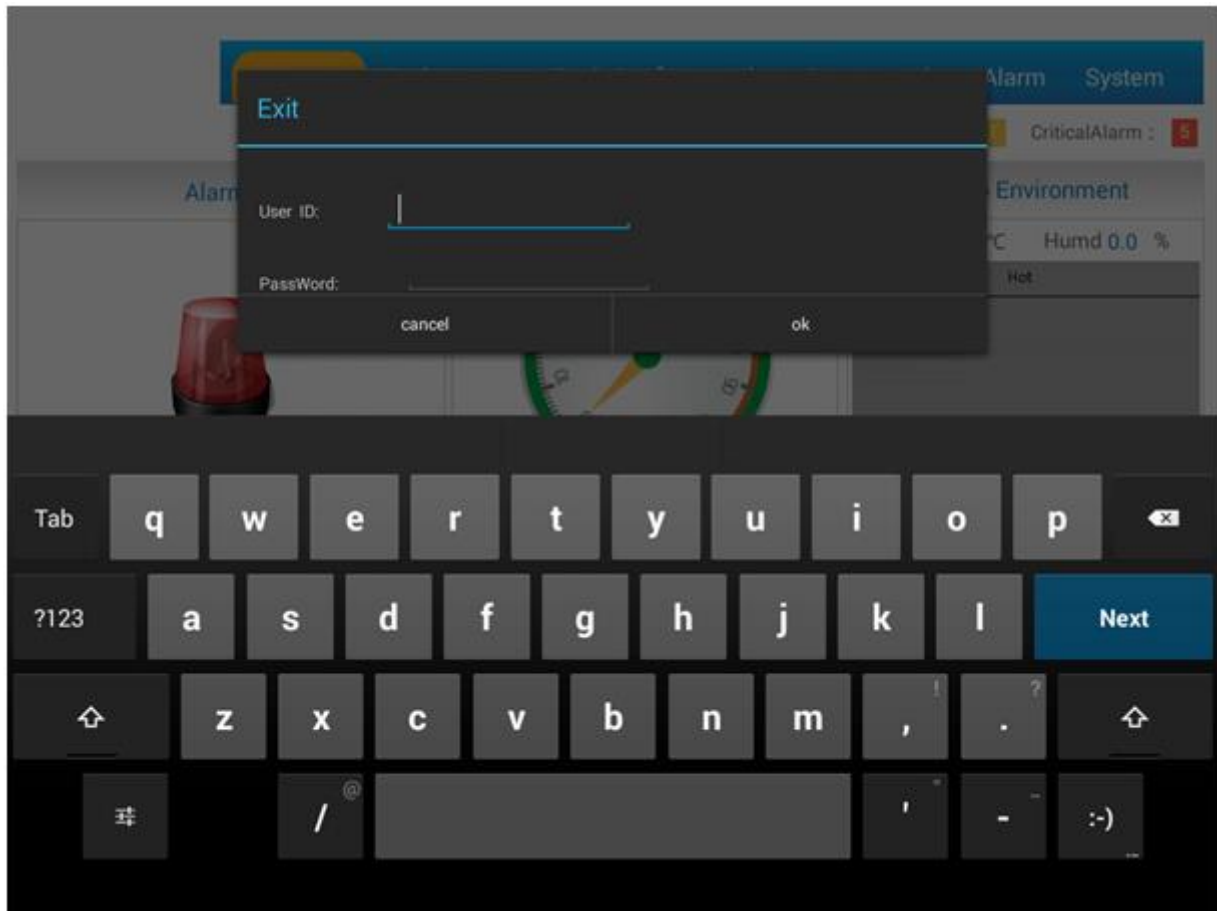


Figure7-13 Exit page

In the monitoring host click logo to log off the monitoring system interface, the user name "admin", password "12348765" into the Android system.

In the menu item to find "Settings" option, in the wireless and network "more" project, enter the view IP, IP default for the dynamic allocation, the customer can also set their own, and ordinary tablet computer operation. In the same local area network in the computer, enter the monitor host in the corresponding IP address to view the web page interface.

8. Troubleshooting

8.1 List of problem

Table8-1 problems and solution

Symptom	Possible cause	Solution
No indication and alarm even though the main is normal.	The AC input power is not connected well.	Check if input power cord firmly connected to the mains
	The AC input is connected to the UPS output.	Plug AC input power cord to AC input correctly.
The icon “! ”and the warning code “EP” flash on LCD display and alarm beeps every second.	EPO function is enabled and EPO switch is in “OFF” status,or the jumper is open.	Set the circuit in closed position to disable EPO function.
The icon “! ” and “BATTE FAULT” flash on LCD display and alarm beeps every second.	The external or internal battery is incorrectly connected.	Check if all batteries are connected well.
The icon “! ” and “OVERLOAD” flash on LCD display and alarm beeps twiceevery second.	UPS is overload.	Remove excess loads from UPS output.
	UPS is overloaded. Devices connected to the UPS are fed directly by the electrical network via the Bypass.	Remove excess loads from UPS output.
	After repetitive overloads, the UPS is locked in the Bypass mode. Connected devices are fed directly by the mains.	Remove excess loads from UPS output first. Then shut down the UPS and restart it.
Fault code is shown as 43. The icon “OVERLOAD” lights on LCD display and alarm beeps continuously.	UPS is overload too long and becomes fault. Then UPS shut down automatically.	Remove excess loads from UPS output and restart it.
Fault code is shown as 14. The icon “SHORT” lights on LCD display, and alarm beeps continuously.	The UPS shut down automatically because short circuit occurs on the UPS output.	Check output wiring and if connected devices are in short circuit status.
Other fault codes are shown on LCD display and alarm beeps continuously.	A UPS internal fault has occurred.	Contact your dealer
Battery backup time is shorter than nominal value	Batteries are not fully charged	Charge the batteries for atleast 7 hours and then check capacity. If the problem still persists, consult your dealer.
	Batteries defect	Contact your dealer to replace the battery
The icon“! ” and DC/AC icon flash on LCD display and alarm beeps every second.	Fan is locked or not working; or the UPS temperature is too high.	Check fans and notify dealer.

Table8-1 problems and solution (continue)

Symptom	Possible cause	Solution
AC doesn't work	AC Power is disconnect.	Check the input power line and if tightly enough.
Compressor overload	Thermal load is too large.	Check the insulation and sealing condition, add equipment if necessary.
	Too much refrigerant.	Released unnecessary refrigerant.
	The compressor failure.	Compressor shaft, something wrong with the motor coil insulation must replace the compressor
	The power supply voltage overvalue	Exclude instability factors of power supply voltage.
	Compressor connection is loose.	Tightening compressor connecting wires.
High pressure protection alarm.	High pressure protection switch failure.	Replace the high pressure protection switch.
	Expansion valve adjusting too loose.	Appropriate adjustment of the expansion valve opening.
	Expansion valve failure	Replace the expansion valve.
	Too much refrigerant in summer.	Release unnecessary refrigerant. Control the high pressure in 2.5 ~ 2.7Mpa (R410A system.)
	Outdoor condenser is dirty.	Clean the condenser surface dust and dirt.
	Axial flow fan does not work.	Check the static value of axial flow fan and grounding resistance, if coil burned should replace the fan.
	With non-condensable gas in the system	Discharge part of gas from the up system. To vacuum system, fluorine filling when necessary.
Low pressure protection alarm.	Low pressure protection switch failure.	Replace the low pressure protection switch.
	Expansion valve opening too small.	Appropriate adjustment of the expansion valve opening.
	Expansion valve failure	Replace the expansion valve.
	Refrigerant leakage.	Check the leak and add refrigerant, control the low pressure in 0.8 ~ 1.0Mpa (R410A system)
	Filter drier clogging.	Replace the filter drier.
	Evaporator frosting.	Defrosting for the evaporator.
	The evaporator surface dirt.	Clean the evaporator surface.
	Air volume is too small.	Check if the return pipe is blocked.
	Setting of low pressure protection time delay is incorrect.	Reset the low pressure delay time.
	Outdoor fan is still running at full speed while low temperature outside.	To check whether there is exception, the output of the fan speed connection is loose.
High temperature alarm	Upper limit of temperature setting is not reasonable.	Reset.
	Load design is too small.	Check the room sealed condition, add equipment when necessary.
	Refrigeration system is not open.	Check the cooling system working condition.
	Lower limit temperature settings is not reasonable	Reset.

Troubleshooting

Low temperature alarm	The abnormal situations.	Check the room sealed condition in winter and if there's any abnormal situation.
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