



Micro Data Center User Manual



User Manual

VERICOM® Micro Data Center

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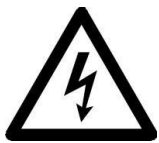
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1. Safety instructions

1.1..Symbol Conventions

Before installing, operating, servicing or maintaining the equipment, please read this manual carefully. The symbols that may be found in this document or are defined as follows, warning of potential danger or other matters requiring attention.



"Dangerous" or "Warning" safety label indicating that there is a risk of electric shock resulting in personal injury if the instructions are not followed.



Indicates a potentially hazardous situation which, if not avoided, could result in moderate or mild injury.

1.2..Operating Instructions

Read and follow the instructions below, including electrical, mechanical and handling refrigerant, observe all local and international regulations, where applicable.

 Dangerous

Danger of electric shock, explosion or arc flash, failure to do so may result in death or serious injury.

- Use proper protective equipment for protective operation and observe the electrical code of practice.
- The equipment can only be installed and overhauled by professionals certified by the company.
- Before installing or repairing the equipment, please cut off all the power.
- Please use the instrument to ensure that the power is cut off
- Before turning on the power, please complete the installation of the MDC, such as doors, covers, fasteners, etc.
- Filling air-conditioner refrigerant, must have professional qualification certificate, preparation for frostbite protection.

 warning

Danger of moving parts

Beware and keep hands, clothing and accessories away from the moving parts. Please check for foreign matter/parts in the device, before turn on the device.

Before operating the device, make sure that the spare parts and tools on the device or in the device have been removed.

Failure to do so may result in death or serious injury.

 warning

The risk of tipping equipment

There must always be two or more people moving or turning the device at least.

Be sure to push, pull or turn the front and back of the device. Do not push, pull or turn on the side of the device.

Moving the device slowly to across an uneven floor or door frame.

When the device is stationary, hold the feet to the floor.

After the device is placed, lower the leveling foot and connect it with the adjacent cabinet firmly.

Failure to do will result in serious injury or death or equipment damage.

 Be careful

Dangerous, high-pressure refrigerant or equipment damage Only

use R410A refrigerant.

Copper pipe must support a minimum of 55 bar working pressure.

If failure to do will result in serious injury or death or equipment damage.

2. Product Description

2.1..Product Description

For example : VRMDC3000-R1G-U6KVA2R-C4.2KW1-M-PD2

NO.	Classification	Dscription
1	Part number (Example)	VRMDC3000-R1G-U6KVA2R-C4.2KW1-M-PD2
2	Series	VRMDC3000
3	Number of Racks	R(Numeric)
4	Rack Door Type	Glass=G or Perforated=P
5	single row or double row	\
6	UPS Size With quantity	U (Size = Numeric KVA) Quantity=Numeric
7	UPS Redundancy	R
8	Cooling Size with Quantity	C (Size = Numeric KW) Quantity=Numeric
9	Cooling Redundancy	R
10	Monitoring	M
11	PDU Quantity	PD Numeric

Notes: The standard configuration only has a mesh door style for the single cabinet. Since the mesh door is naturally ventilated and has no air conditioning, there is no difference between low temperature and normal temperature.

Table 2-1 MDC Parameters Table (standard configuration)

Type	VRMDC3000R1P-U3KVA1- MPD2	VRMDC3000R1G-U6KVA1C4KW1-M-PD2	VRMDC3000-R2GU6KVA1-C4KW1-M-PD4	VRMDC3000-R3G-U10KVA1-C4KW2M-PD6	
Useful space(U)	32	23	65	99	
Width-mm	600	600	1200	1800	
Depth-mm	1200	1200	1200	1200	
Height-mm	2050	2050	2050	2050	
Cabinet					
Useful space(U)	42	Load-kg	1500	Backlight	RGB

Dustproof and waterproof	IP20	Door configuration		Front single and rear double
Cabinet size (WDXH)-mm ³			W600XD1200XH2000(with caster W600XD1200XH2060)	
Package size (WDXH)-mm ³			W680XD1280XH2080(with tray W700XD1280XH2210)	
Power supply				
Power supply input	110/120/220/230/240VAC	110/120/220/230/240VAC	110/120/220/230/240VAC	110/120/220/230/240VAC
UPS -KVA	3	6	6	10
UPS configuration	N	N	N	N
UPS output PF	0.9	0.9	0.9	0.9
UPS efficiency	89%	93%	93%	93%
UPS mounted type	Rack mounted	Rack mounted	Rack mounted	Rack mounted
Battery pack	2*12V/9AH/8 pcs	2*12V/9AH/16 pcs	2*12V/9AH/16 pcs	2*12V/9AH/16 pcs
Back time	10-15 Mins@2.4 kVA Load	10-15 Mins@4.8kVA Load	10-15 Mins@4.8kVA Load	10-15 Mins @8kVA Load
Long back time	Optional	Optional	Optional	Optional
Lightning protection	C level	C level	C level	C level
Manual maintenance bypass	Support	Support	Support	Support
PDU type	2 * Basic PDU 16A (12 x C13 + 4 x C19)	2 * Basic PDU 16A (12x C13 + 4 x C19)	4 * Basic PDU 16A (12 x C13 + 4 x C19)	6 * Basic PDU 16A (12 x C13 + 4 x C19)

PDU Quantity	2*	2*	4*	6*
Refrigeration				
Cooling capacity -kW	-	1*4.2	1*4.2	2*4.2
Refrigeration configuration	-	N	N	N
Sensible heat ratio	-	95%	95%	95%
Air volume m ³ /h	-	800	800	1600

Refrigeration type	natural ventilation	Compressor refrigeration	Compressor refrigeration	Compressor refrigeration
Mounted type	-	Rack mounted	Rack mounted	Rack mounted
Monitor				
Monitor function	Touch screen display	Touch screen display	Touch screen display	Touch screen display
	remote access	remote access	remote access	remote access
	Temperature and humidity access	Temperature and humidity access	Temperature and humidity access	Temperature and humidity access
	Temperature and	Temperature	Temperature and	Temperature and
	UPS monitoring	UPS monitoring	UPS monitoring	UPS monitoring
	-	Air conditioner monitoring	Air conditioner monitoring	Air conditioner monitoring
	Smoke sensor	Smoke sensor	Smoke sensor	Smoke sensor
	Water leakage sensor	Water leakage sensor	Water leakage sensor	Water leakage sensor
	Door statues	Door statues	Door statues	Door statues

2.2..Product Description

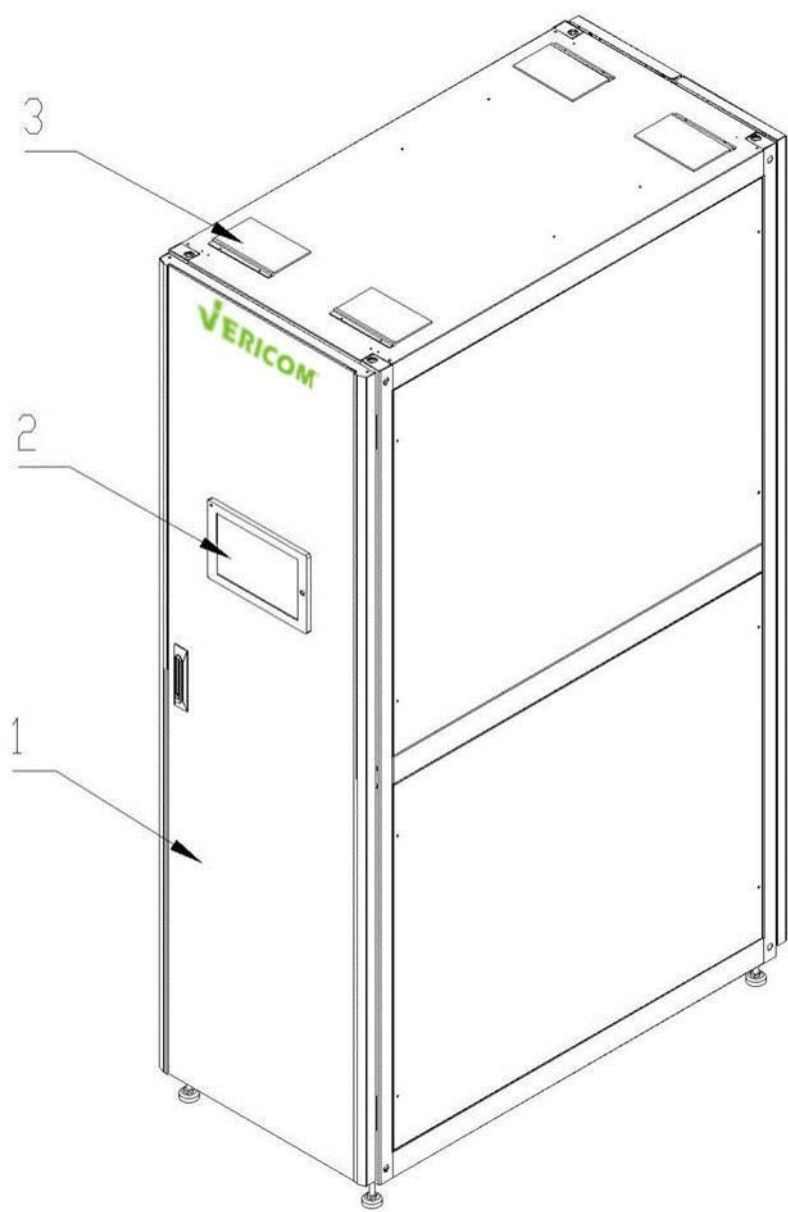


Figure 2-1 VRMDC3000-R1G* Exterior view

1	Front glass door	2	Monitoring host	3	Wiring hole
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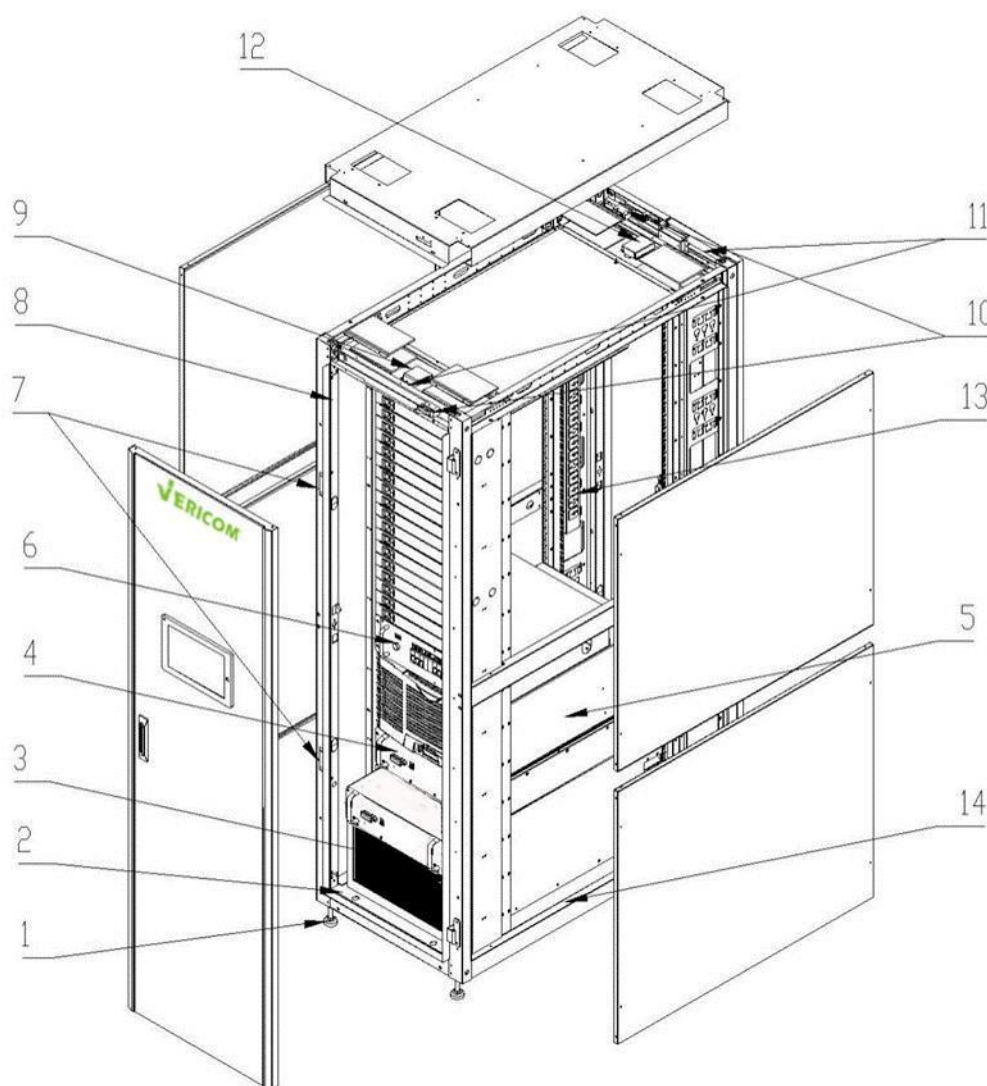


Figure 2-2 VRMDC3000-R1G-U6KVA-C4.2KW-M-PD1 internal view

1	Leveling feet	2	Caster	3	Air-conditioner
4	Battery pack	5	UPS	6	Power Distribution Module
7	Electromagnet	8	RGB	9	Temperature and humidity sensor
10	Travel switch	11	Light	12	Smoke sensor
13	PDU	14	Water leak detector		

UPS: Provide a stable power supply, and in the case of power outage, through the battery to provide backup power.

Battery module: When the mains is normal, the battery is charged by UPS. When the mains are cut off, power through battery is supplied to UPS for continuous operation to the connected equipment.

Air-conditioner: Provides stable temperature and humidity to the equipment.

Power distribution module: Power distribution and monitoring for critical load and equipment.

Blank panel: When equipment is not installed, the blank panel is installed to avoid hot and cold air mixing in front side of the rack.

Temperature and Humidity sensor: Monitoring the temperature and humidity of the within the cabinet.

Micro Switch: There are two main functions, one is monitoring host and the second is to detect the door status (open/close).

Smoke sensor: When smoke condition in the cabinet is detected, it is automatically alarmed and transmitted to the monitoring host.

Electromagnet: The core device of automatic doors, the electromagnet automatically opens the doors if a high temperature is detected.

Leveling feet: After the device is placed into the final position, leveling feet are used to level the device on uneven surfaces. If necessary, adjust the four leveling feet to raise the device to an appropriate level so that the copper pipe, cable and drain pipe can be routed underneath.

2.3..Product Dimensions

Table 2-2 Product dimensions

Product model	Width-mm	Depth-mm	Height-mm
VRMDC3000-R1G*	600	1200	2050
VRMDC3000-R2G*	1200	1200	2050
VRMDC3000-R3G*	1800	1200	2050
VRMDC3000-R4G*	2400	1200	2050
VRMDC3000-R5G*	3000	1200	2050
VRMDC3000-R6G*	3600	1200	2050
VRMDC3000-R7G*	4200	1200	2050
VRMDC3000-R8G*	4800	1200	2050
VRMDC3000-R9G*	5400	1200	2050
VRMDC3000-R10G*	6000	1200	2050

Table 2-3 Air-Conditioner dimensions

Product model	Width-mm	Depth-mm	Height-mm
VEN04-A1FQB-S	440	760	217
VEN08-A1FQB-S	960	396	700

2.4..Environment Requirement

Item	Indoor	Outdoor
Temperature	18℃～40℃	Air-cooling: -20℃～+40℃
Humidity	20%～80%	—
Altitude	<1000m. Derating use the device, derating about 6% / 1km	

Power supply	Voltage 230V±10% Frequency 50Hz±2Hz
--------------	---

Table 2-4 Product operating environment

Environment	Clean (no dust), well ventilated℃
Humidity	5%RH~95%RH No condensation
Time	No more than 6 months. If more than 6 months need to contact VERICOM technical support

Table 2-5 Product storage environment

3. Shipment Receiving

3.1. Transportation

Micro data center contains mechanical, electrical and other components, transportation and improper handling, may cause damage to the product, resulting in the equipment damage, please ensure the safety and quality of the product during transportation and handling.

Precautions

Transport related notes:

1. Transport environment and placed the requirements of the implementation of the relevant requirements.
2. Unload and move with mechanical handling tools.
3. Indoor unit handling angle should be in the range of 75 ° ~ 105 °.

Table 3-1 Indoor unit with the size of the package and gross weight

Model	Package size(mm)W×D×H	Gross weight(kg)
VRMDC3000-RNG*	N*W680XD1280XH2080(with tray W700XD1300XH2220)	428+/-5kgs

[Notes: N-cabinet quantity, W-width, D-depth, H-height]

DC-320B The model is shipped in separate parts and is divided into two packages.

Table 3-2 Outdoor unit with the size of the package and gross weight

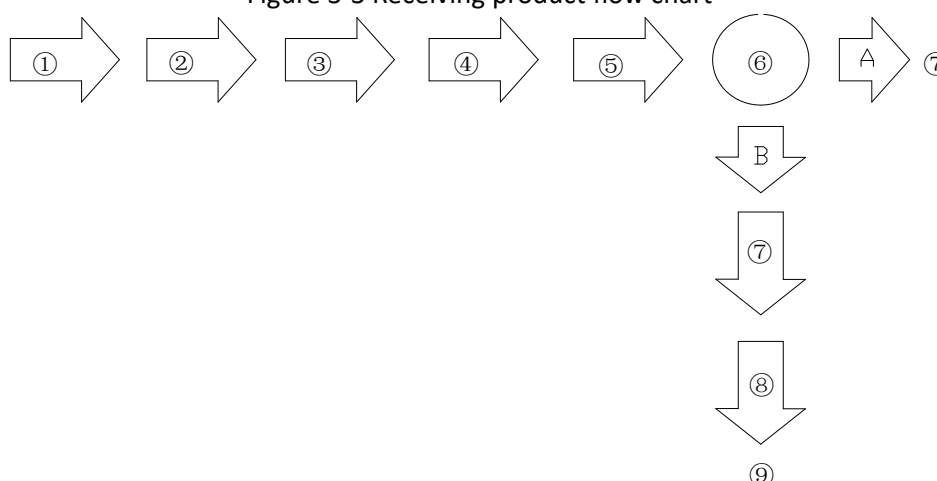
Model	Package size(mm)W×D×H	Gross weight(kg)
D06WP13VSG-04-S	1030*530*700	34
D06WP13VSG-08-S	1160*600*850	48

3.2. Shipment Receiving

VERICOM micro data center products have passed the strict quality test before delivery. Please carefully check the equipment when receiving the product, to ensure that the equipment undamaged during transportation.

After the arrival of the product, there will be two conditions: 1, immediately installed. 2, not installed immediately. In order to provide users with a better experience, the following gives the receiving process for the user reference, the user selects the best solution.

Figure 3-3 Receiving product flow chart



The figure shows the reception flow-process under two conditions, namely condition A and condition B respectively.

Conditions A: — — Immediately installed

B—— Not installed, Immediately

①——Product arrival

②——Product external check

③——Transport

④——Unpacking

⑤——Product internal check

⑥——Acceptance

A: ⑦——Receiving completed

B: ⑦——Packaging ⑧——store; ⑨——Receiving completed

Transport check

After arrival, check whether the mode of transportation meets the transportation requirements:

1. Not rainy
2. Straight placement
3. Not superimposed
4. No collision

Product external check

External check includes product packaging and product exterior. Check the contents:

1. Whether the packaging has been opened.
2. Whether the packaging has obvious signs of damage and collision.
3. Whether the device exposed parts of damage, such as: structural deformation and peeling paint.

Prompt

1. If packing is opened, check the bill of lading or other shipping documentation/information and contact the shipping company for inquiry.
2. If damage is found, please indicate the damage on the bill of lading and submit the damage claim to the shipping company.

Unpacking

1. It is recommended that the user transport the product closer to place of installation (or transported to the place of storage) and begin unpacked.
2. Products uses wooden packaging and during the unpacking, care should be taken to avoid any damage.
3. Improper unpacking may result in equipment damage, thus losing the manufacturer warranty.
4. Packing list should be matched with the accessories and components of the package.

4. General Site Guideline

4.1.Site Readiness

Site Preparation is a key to successful implementation of the solution and optimal operation **Consideration**

1. The environmental temperature must be controlled within 30 °C.
2. The site should be clean from any dust and debris, packing material or any environmental corrosion.
3. Site should be checked for proper height and width clearance of the facility doors and service elevator.
4. Site should have detailed plan and preparation for cabling, raceways, refrigerant piping, condensate drain piping etc.

Indoor unit

The equipment is in accordance with the requirements of the transportation to the designated installation site, in principle, should be as close to the installation site. After the device is in place, leave a space of 800mm around the device to facilitate equipment maintenance. Adjust the height of the foot so that the height is achieved as per requirement, to ensure that each support foot has been at the same level. The Drain should be connected properly with the piping network with clear drainage to avoid blockage.

Outdoor unit

1. Outdoor unit should be installed in a location which is safe and easy for maintenance and should not be installed area which is susceptible to human traffic.
2. To ensure the proper operation, install the outdoor unit in a place where the air flow is smooth, proper rear and front clearance and avoid clogging of the heat exchanger by dust, snow and debris.
3. The outdoor unit can be installed on metallic platform on the wall, front and rear condenser clearance should be maintained with a clear space with minimum 500mm distance from rear and in front.
4. The outdoor unit should be mounted on a base capable of supporting the weight of the unit. The base should be at least 50mm above the surrounding ground and the base size should be 50mm larger than the outdoor unit.

4.2.Power Requirement

1. The power supply must comply with local country standards.
2. The device must be grounded.
3. Meet the maximum power demand of the unit.

4.3.Drainage

Before the installation of the unit, please set the drainage pipeline in advance according to the requirements. For details, see the drainage installation in the following article.

5. Unpacking Guideline

5.1.Unpacking

1. Remove the top, front, back, left and right packaging boards in sequence, remove the plastic packing, and finally remove the front and rear mounting bolts and feet.
2. Adjust the hexagonal legs with an adjustable wrench to make the cabinet casters touch the ground.
3. Using a forklift, move the cabinet from the pallet to the designated location.
4. The cabinet is heavy, be sure to handle it carefully. If manual handling is required, please ensure that 4 to 5 people work together.
5. During moving, adjust the cabinet casters to avoid single caster support, and then remove the bottom sealing plate from the back of the cabinet.

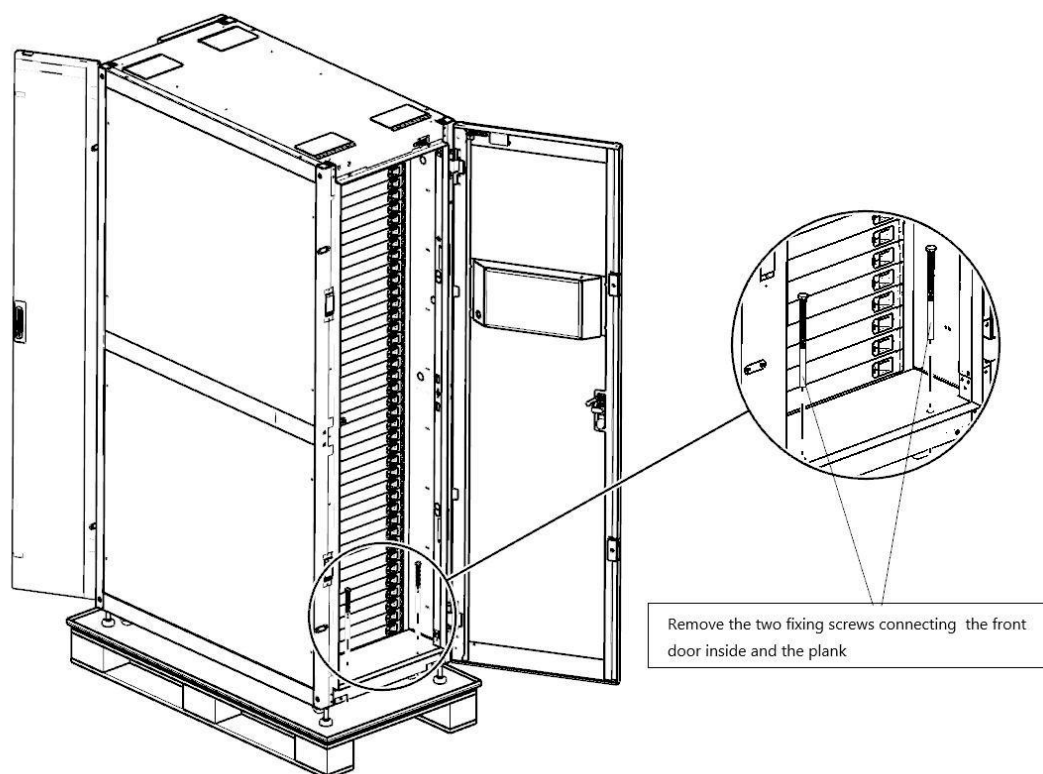


Figure 5-1 Remove the fixing bolts inside the front door

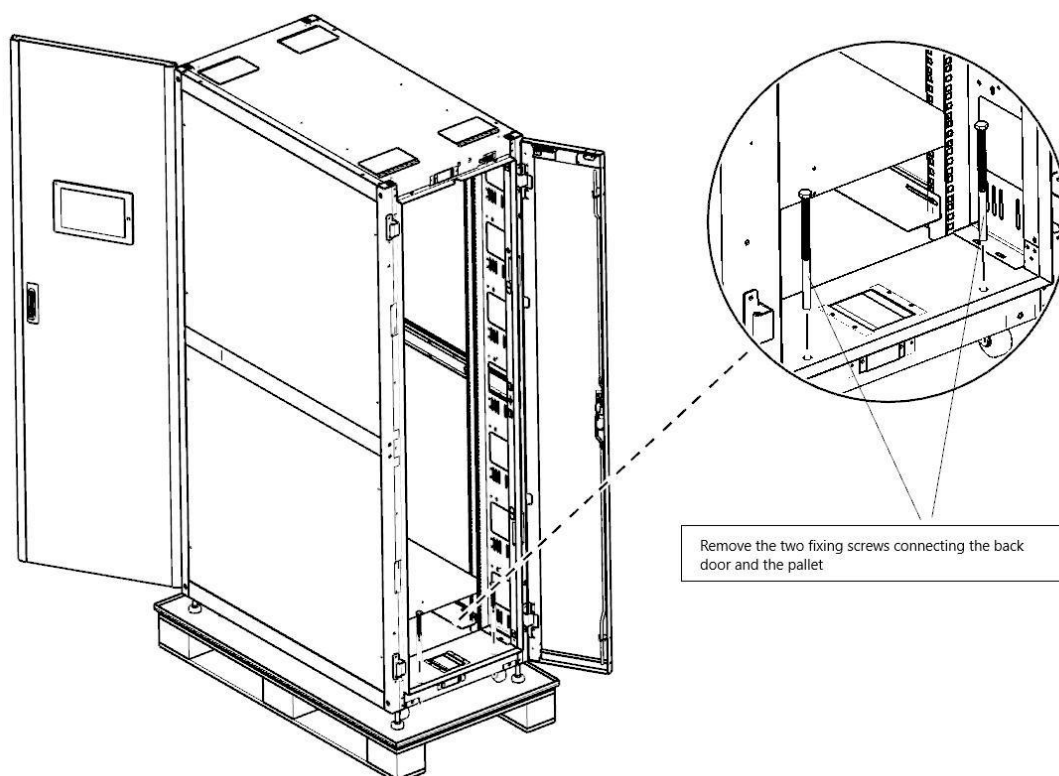


Figure 5-2 Remove the fixing bolts inside the rear door

5.2.Remove the Door Stopper

1. Remove the rear door stopper

Note: After removing the door stopper, the rear door will not close properly, it is a normal phenomenon. After the electromagnet lock is powered, the rear door will close properly.

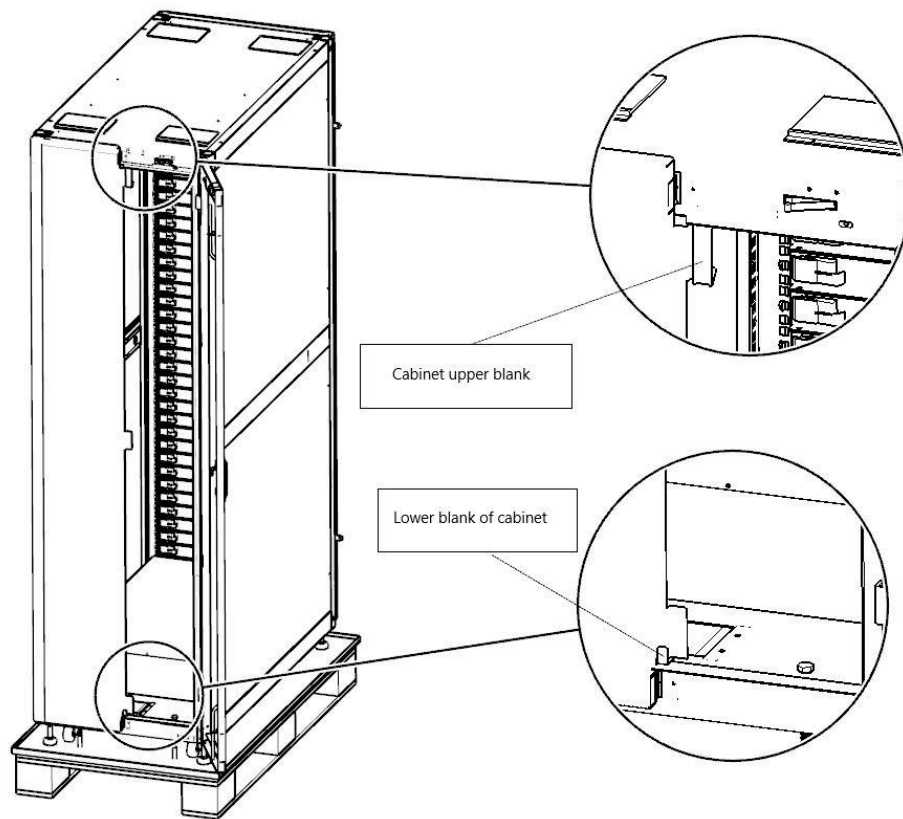


Figure 5-3 Remove the rear door stopper (for reference only)

5.3.Leveling cabinet / air conditioning

1. In step 1, measure the height from the ground to the top of the front and rear channels of the cabinet with a tape measure, and adjust the hexagonal support to make the cabinet height reach 2005mm-2008mm.
2. In step 2, measure with a level ruler and adjust the hexagonal support diagonally until it is completely level.
3. Step 3 adjust the fastening nut to fix the height of the hexagonal support at the position we adjusted.

Note:

1. Do not remove the hexagonal support, otherwise the cabinet height will not meet the standard.
2. Adjustment method of hexagonal support: wrench, socket or screw driver can be used to adjust the hexagonal support. The cabinet can be adjusted higher and anticlockwise lower by adjusting the hexagonal support clockwise. The adjustment range of hexagonal support: 0 mm ~ 80 mm.
3. Leveling criteria: when leveling the cabinet, it is necessary to ensure that the cabinet is horizontal in both the width direction and the depth direction, that is, the level ruler is placed horizontally at the bottom of the cabinet, and horizontal bubbles can be seen in the width direction and depth direction, and the horizontal bubble is located between the two marking lines in the middle of the glass tube.
4. After leveling, the four hexagonal legs support the weight of the whole cabinet, and the wheels shall not touch the ground directly.

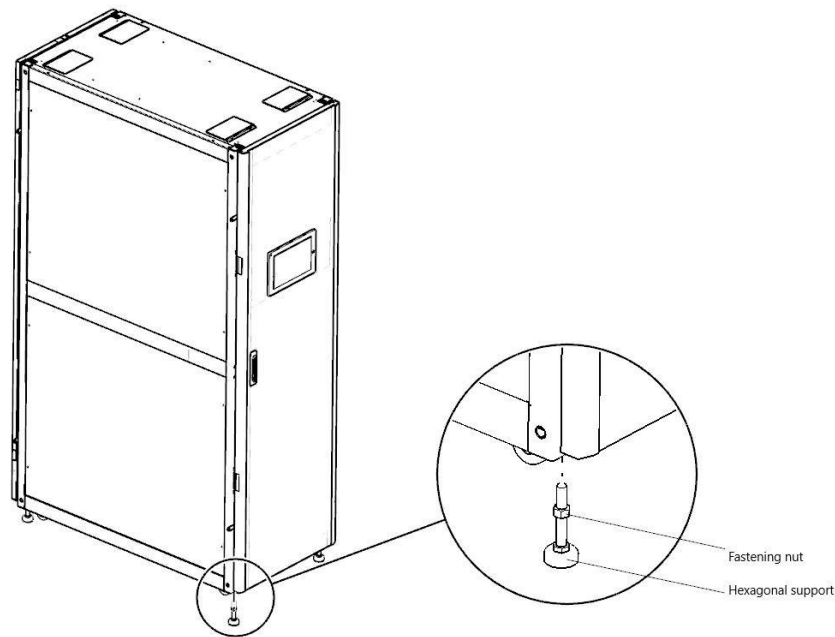


Figure 5-4 Leveling drawing of supporting feet

5.4. Combined cabinet

If there is on-site merging, it can be combined according to the requirements. For example, dc-303b.

1. Step 1 place the cabinet in order according to the layout drawing attached
2. Step 2 level the adjacent cabinet / air conditioner. Based on one of the adjusted cabinets / air conditioners, adjust the foot heights of other cabinets / air conditioners to ensure that the heights of adjacent cabinets / air conditioners are consistent.
3. Step 3 take out and prepare the "combined cabinet accessories" provided by the product itself.
4. In step 4, use "merging accessories" to merge adjacent cabinets / air conditioners at the merging positions of cold channel and hot channel of cabinet / air conditioner.
5. Step 5 complete the installation of the remaining cabinet / air conditioner in the same way as above.

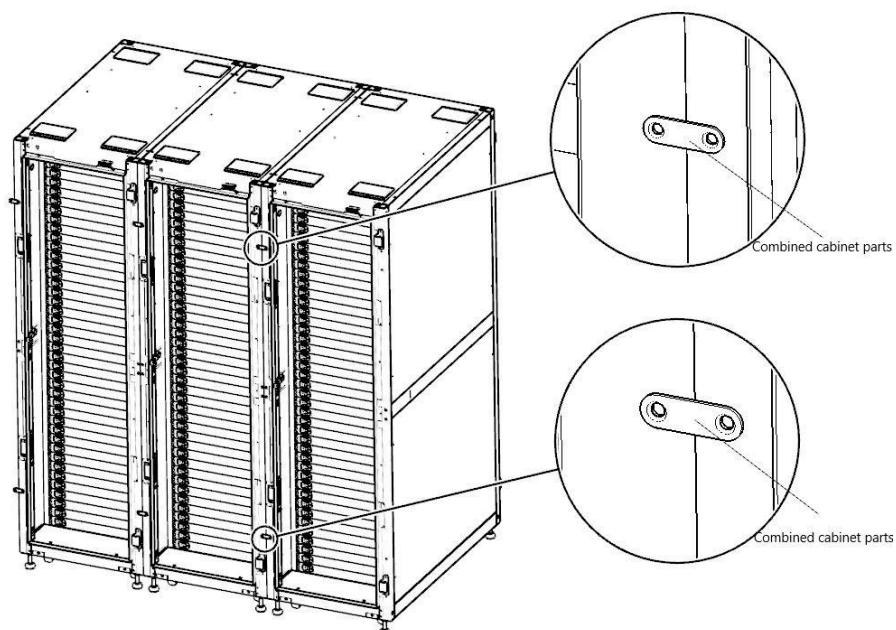


Figure 5-5 Detail drawing of combined cabinet

6. Air-Conditioning System Installation

6.1. Outdoor Unit Installation

Outdoor unit should be installed with sufficient space for proper air flow and removal of heat.

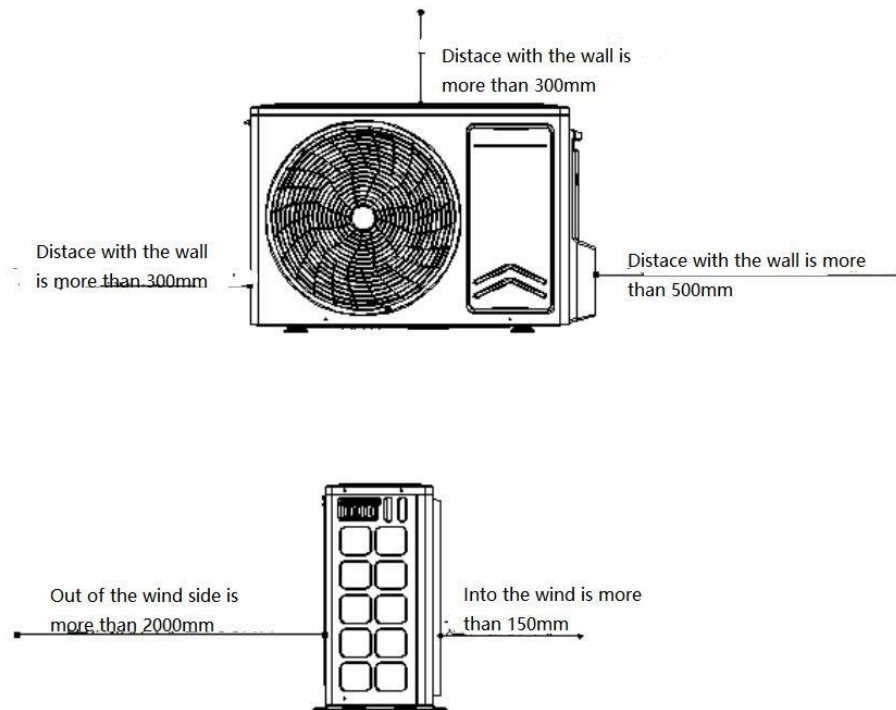


Figure 6-1 Condenser Unit Minimum gap requirement

Unit positioning

Unpacking

After the unit is transported to the floor or foundation where the unit is installed, remove the package and take out the desiccant in the unit.

Discharge nitrogen

※Note:

--if nitrogen is not discharged, please contact our customer service center..

Use the inner hexagon to open the air circuit and liquid circuit stop valve of the indoor unit respectively, and connect the pressure gauge to the air valve needle and the liquid path needle valve respectively. See the vacuum part for the specific position drawing.

Outdoor unit installations should consider the impact on the installation location to be selected as short as possible, where the piping is short, the bending is small, and the height difference is small.

When the outdoor unit is not on the floor or on the roof and hanging on the wall, a strong and reliable bracket should be used.

1. Place the outdoor unit on the base.
2. Secure the outdoor unit to the base with expansion bolts.

The AC Outdoor unit must be installed vertically. The Outdoor Unit can either be installed higher the indoor unit or lower than indoor unit

1. Outdoor Unit higher than Indoor unit
2. Outdoor Unit lower than Indoor unit

1. Outdoor Unit higher than Indoor unit

If outdoor unit is installed above the Height of Indoor Unit refer to Figure 6-2 diagram for installation.

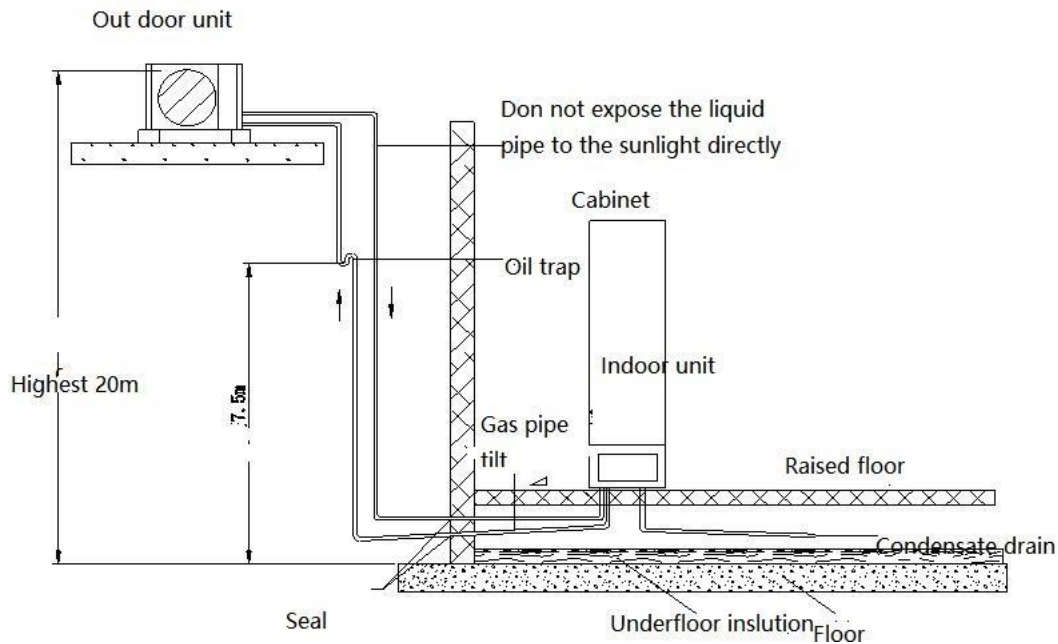


Figure 6-2 Outdoor Unit Higher than Indoor Unit

Attention: If the outdoor unit is installed 6m higher than the indoor unit, the oil bend (reservoir) should be installed every 6~7.5m on the trachea to ensure that the return of the gas in the vertical height is returned to the oil when the compressor is stopped and restarted.

2. Outdoor Unit lower than Indoor unit

If outdoor unit is installed lower than the Height of Indoor Unit refer to Figure 6-3 diagram for installation.

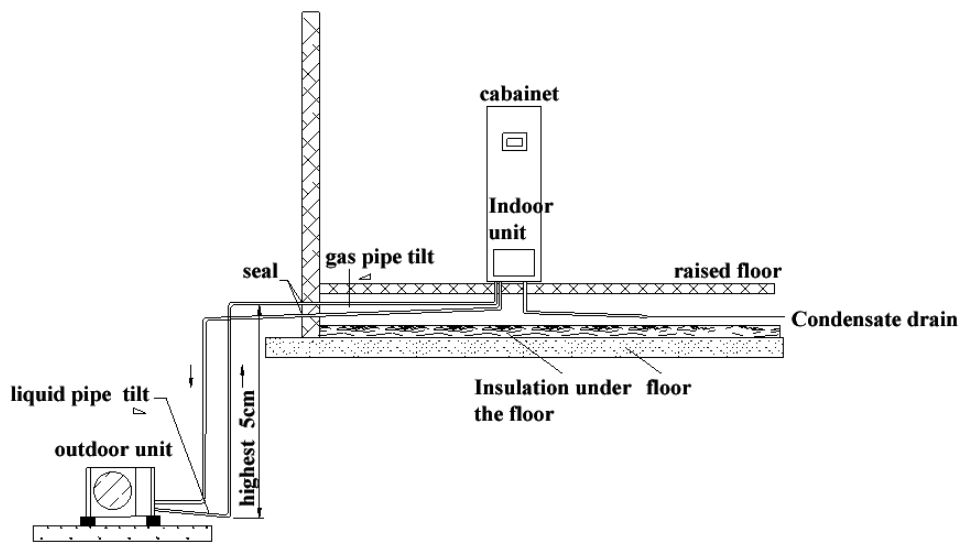


Figure 6-3 Outdoor Unit lower than Indoor Unit

※**Note:**

If the outdoor unit is installed 6m higher than the indoor unit, the oil trap (oil trap) shall be installed on the air pipe every 6 ~ 7.5m to ensure that when the compressor is restarted after shutdown, the compressor oil returned to the oil return bend in the vertical air pipe can be quickly taken away.

Connection steps

Warning:

- Please release the indoor unit nitrogen before connecting the machine. If there is no nitrogen discharge, please contact our customer service.
- Prepare the copper tube for connecting indoor and outdoor machines. The copper tube must be clean, free of impurities and moisture.
- After the installation, copper piping needs to be filled with dry nitrogen, leak test, and vacuum.

The unit damage caused by the user not operating correctly according to the above regulations is improper use by the user and is not covered by the warranty promised by the company!

6.2.Refrigerant Piping

The length of refrigerant pipe

The arrangement of the refrigerant pipes shall be carried out according to the following site conditions.

1. Minimize the length of the refrigerant pipe, preferably within 10m.
2. Minimize the distance between indoor and outdoor units.

3. Minimize the number of bends in the connecting line.
4. The sum of the equivalent length of the straight pipe and the length of the single-pass straight pipe of the indoor and outdoor units is the total length of the indoor and outdoor joints.

Straight pipe equivalent length of each partial component			
Copper pipe diameter (mm)	Equipment length(m)		
	45° elbow	90° elbow	180°elbow
15.88	0.15	0.25	0.5
12.7	0.14	0.25	0.5
9.52	0.10	0.20	0.34
6	0.06	0.12	0.24

If the connecting line between the indoor and outdoor units exceeds 10m, in order to reduce the flow resistance, it is necessary to increase the refrigerant pipe diameter as appropriate. The recommended piping size is shown in the following table. Vericom should be consulted for pipe length greater than 10m from indoor to outdoor.

Model	VEN04-A1FQB-S		VEN08-A1FQB-S	
Pipe length	D	L	D	L
10m	9.52	6	12.7	9.52
20m	12.7	9.52	15.88	9.52
30m	12.7	9.52	15.88	12.7
40m	12.7	9.52	15.88	12.7
50m	12.7	9.52	15.88	12.7
60m	12.7	9.52	15.88	12.7
Note:				
1. D is gas pipe, L is liquid pipe				
2. If the pipe length exceeds 60m, please consult the manufacturer.				

6.2.1 Cleaning Instruction

Make sure the refrigerant pipe is clean and free of rust, scale, sand, oil, etc. During the installation and maintenance of the unit, flush the pipeline as necessary with nitrogen.

1. Cleaning of copper pipes

If there are impurities such as scale in the copper tube, it can be purged/flushed with nitrogen. In the maintenance process, the copper pipe has more oil, and an appropriate amount of trichloroethylene or carbon tetrachloride may be added. After the oil is dissolved, the air is purged.

2. Cleaning of air-cooled condenser

The air-cooled condenser fins are easy to adhere to dust and oil, thereby reducing the heat exchange area, and the corresponding air volume is also reduced, so it must be cleaned frequently. Brushing and purging methods are generally used. Pay attention to the protection of fins, heat exchange tubes, etc. during cleaning.

6.2.2 Installation Steps

1. Tool Preparation

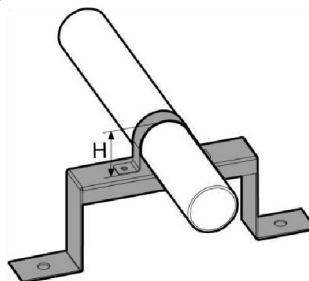
All tools, spare parts and materials must be prepared, such as hexagon sockets, impact drills, vacuum pumps, nitrogen bottles, piping tools, refrigerant pressure gauges, etc.

2. Wall hole

Make a round hole or a rectangular hole at the bottom/top of the wall to pass through the refrigerant pipe, drain pipe, electrical wire, etc. When the system pipe passes through the wall, the holes must be effectively sealed to prevent debris from entering the room.

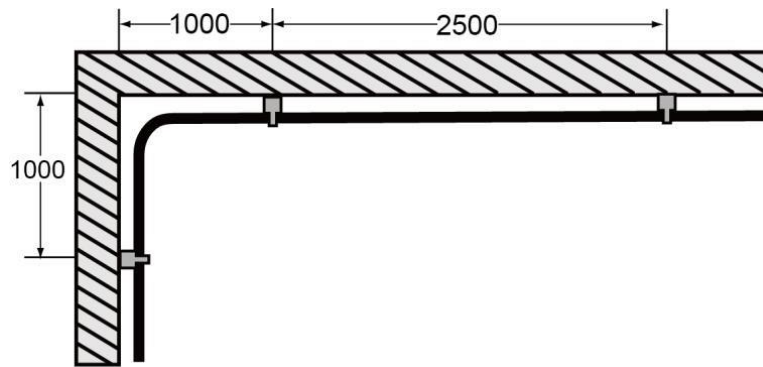
3. Pipe Connection

- Connect the copper pipe according to the unit specifications;
- Install the refrigerant line and check the nozzle threads for a protective seal.
- The appearance of the fixed support of the refrigerant pipe and water pipe is shown in the figure below. The parameters of the specific support can be determined according to the site



- Note: U-shaped pipe clamp height H (mm) = pipe diameter (including insulation cotton) (mm) - 5mm. In order to reduce equipment vibration noise, the following operations are required:
 - When the refrigerant pipeline changes direction, it is necessary to increase the fixed support at a position 1000mm away from the pipeline change.
 - When the refrigerant pipeline is a straight pipe section, a fixed support is required every 2500mm.
 - Note: The on-site engineering staff is responsible for the preparation and installation of the fixed support.

4. Connect the threaded joint.



5. Nitrogen Test Leak

After the copper pipe is connected (the shut-off valve of the indoor unit should be open at this time), the needle valve is filled with nitrogen gas to 3.5 MPa from the front and rear of the expansion valve, and the pressure is maintained for 24 hours. The system pressure is similar when the ambient temperature is similar before and after the pressure keeping. There should be no reduction in pressure; if there is a slight change in the ambient temperature and the pressure is slightly deviated, it is recommended to do the pressure holding test again. After the leakage testing is completed, discharge the nitrogen in the system completely and perform vacuuming.

Warning:

- Try not to use compressed air because moisture and impurities in the air can affect system operation.
- Never use oxygen or acetylene gas to test leaks! Otherwise there is a danger of explosion.
- Air-Conditioning unit should be turned off and not to be operated when nitrogen is being hold for pressure test. There is a danger of compressor

6. Vacuuming

Air-Conditioning unit should be vacuumed.

7. Refrigerant Oil

Air in the pipe must be removed after the leakage test with nitrogen. Use vacuum pump to remove the air in the pipeline, and do not use refrigerant to remove the air in the pipeline, otherwise incomplete noncondensing gas elimination will cause high pressure rise of the system and decrease of refrigeration performance.

Step 1: connect the pressure gauge to the air circuit needle valve (i.e. the low-pressure end and the thick nozzle) and the liquid circuit needle valve (i.e. the high-pressure end and the thin nozzle) in the indoor machine respectively, and then connect the vacuum pump.

Step 2: at the beginning of vacuum extraction, the vacuum pump is loud and white smoke comes out of the exhaust outlet. If white smoke still comes out after 10min, it may be because the refrigeration system has poor sealing, or because there is too much refrigerant and moisture left in the refrigeration system.

Step 3: After 20 min, the pointer of the pressure gauge should be in the negative area, and the sound of the vacuum pump is low. At this time, the pressure gauge can be repeatedly closed or opened for several times. Before and after the pressure gauge is closed, the sound of the vacuum pump should not change significantly.

Step 4: After confirming that there is no leakage in the refrigeration system, the vacuum extraction time should not be less than 80min in general, and the final vacuum pump display pressure should not be more than 60Pa (absolute pressure)

Step 5: After vacuuming, close all valves of the pressure gauge, close the vacuum pump (no connection is required), maintain pressure for 10min, and the pressure of the refrigeration system should not be more than 90Pa (absolute pressure). **Note:** when vacuuming, the indoor machine stop valve must be opened, and then the air can be removed by air route needle valve and liquid route needle valve respectively in the indoor machine, not only at one end (the unit equipped with low-temperature components shall refer to the installation and operation manual of low-temperature components).

8. Insulation

Cell tube type flexible sheet insulation material should be used for insulating the refrigerant pipes for moisture and vapor resistance.

9. Connecting Cable

Please select the cable according to the electrical connection requirements, and properly fix the cable within plastic conduit.

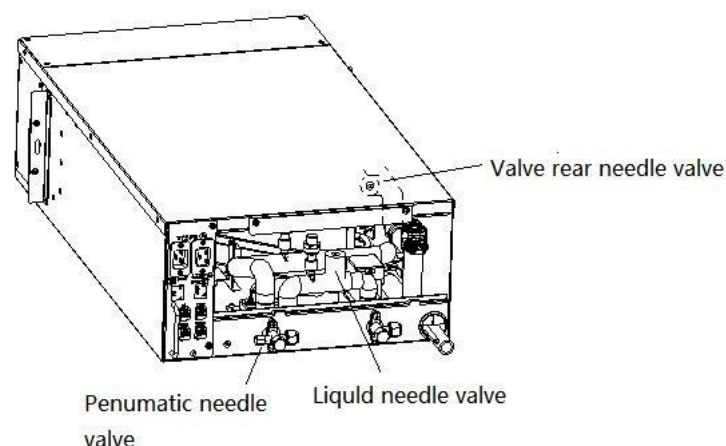
10. Drain Installation

The unit provides a condensate drain connection.

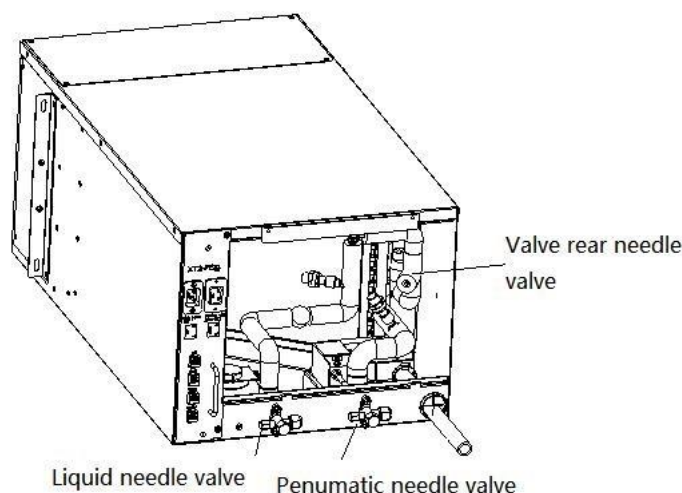
- The condensate pipe can be PVC pipe, galvanized steel pipe or aluminum plastic pipe.
- After connecting the drain pipe, power on, add water to the water tray until the low float switch is raised, and check whether the drainage is normal.
- There must be no bending or partial bending when installing the condensate pipe. - The water pipe must be firmly connected, there must be no fistula or strong twist - The pump head can be up to 5 meters when draining.

11. Turn on the air circuit and the liquid path shutoff valve of the outdoor unit with the inner hexagon, and wait for 10 minutes for the refrigerant flow system of the outdoor unit.

12. Power on and commissioning.



SCN04AFLTQV13G-04 Unit needle valve schematic



SCN04AFLTQV13G-08 Unit needle valve schematic

Add freezing oil

The addition of refrigerant will lead to the dilution of frozen oil in the system, affecting the lubrication and cooling effect of frozen oil. Therefore, it is necessary to add frozen oil. The model of frozen oil used by the unit is FV50S. If not in accordance with the specified model of frozen oil, will cause irreversible damage to the compressor.

The unit has been filled with refrigerated oil according to the standard when leaving the factory. If the connection pipeline between indoor and outdoor machines exceeds 10m, the refrigerated oil shall be added to the system to ensure the normal operation of the system. For each additional 1m of indoor and outdoor connection pipe length, the refrigerated oil supplement is as follows: The additional formula is as follows: additional refrigerant amount (ml) required by the system = 300 (ml) + refrigerant addition amount (kg) × 22.6. Refueling method: add refrigerant after vacuuming.

Refueling position: Add frozen oil to the indoor air valve needle valve.

The amount of refrigerant added refers to the amount of refrigerant that exceeds the standard charge. Generally, refrigerant is added when the standard connection is exceeded. For the low temperature components to be added, please refer to the installation instructions for the low temperature components. Refrigerant charge

When the machine is stopped, the refrigerant can be filled from the exhaust pipe (that is, the high-pressure end, the compressor is thinner). When the machine is turned on, the refrigerant must be sucked from the rear valve of the expansion valve, and it is inverted or inclined (45° or more). However, it is necessary to ensure that the refrigerant is slowly sucked into the compressor to avoid damage from the compressor.

When the unit is shipped from the factory, it has been charged in the outdoor unit according to the standard length of the pipe. If the connecting pipe between the indoor and outdoor units does not exceed 10m, no additional refrigerant is required.

If the connecting line between the indoor and outdoor units exceeds 10m, it is necessary to add refrigerant to the system to make the system operate normally. The amount of refrigerant replenishment for each additional 1 m of indoor and outdoor connection pipe length is shown in the table below. Units equipped with low temperature components are required to refer to the installation instructions for the low temperature components.

Liquid pipe diameter mm	Unit length refrigerant addition amount(kg/m)
-------------------------	---

6	0.009
9.52	0.04
12.7	0.1

Note: Since the optimal charge is affected by the working conditions, the above is for user's reference only, and the best charge is subject to actual conditions.

6.2.3 Electrical Connection

If there is a parallel cabinet, the two parts of the cabinet body of the combined cabinet shall be respectively reserved with wiring terminals in the diagram, and both sides shall be marked with wire numbers, and the lines with the same wire number can be butted together.

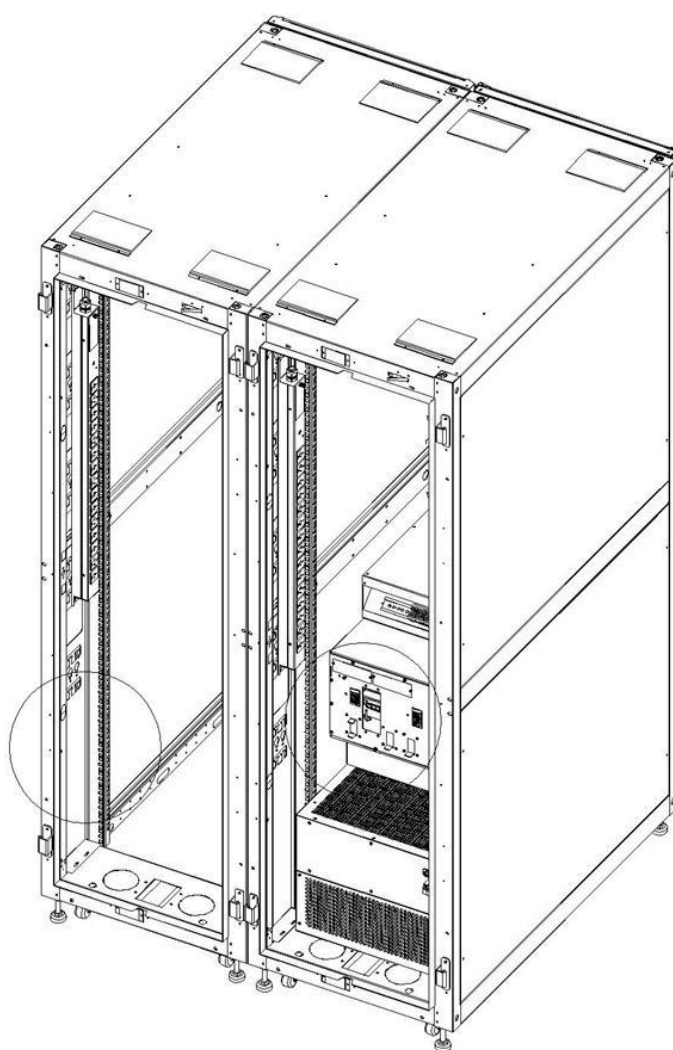
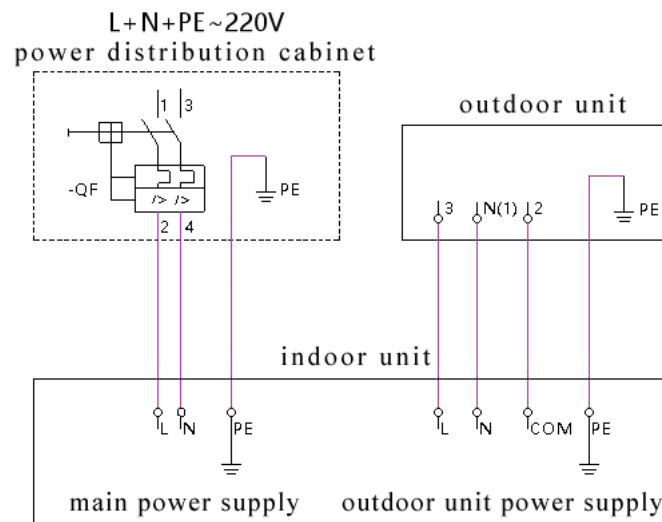


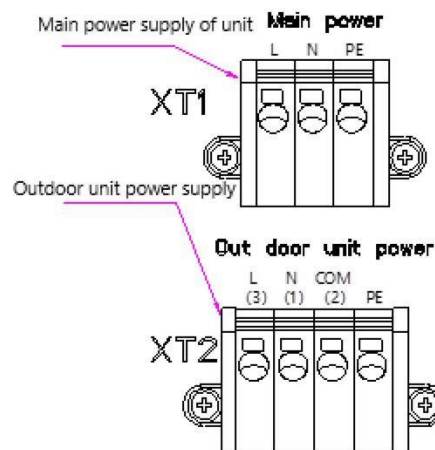
Figure 6-4 Wiring diagram of parallel cabinet

Electrical supply connection for Air-Conditioning System.

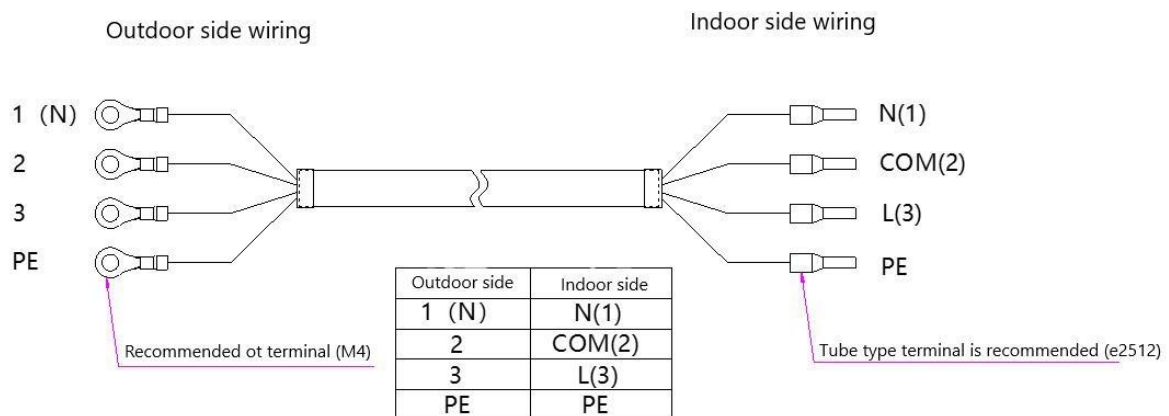


Unit power terminal selection

The power terminal of indoor unit is shown in the figure, xt1 is the main power supply of the unit, XT2 is the power supply of outdoor unit.

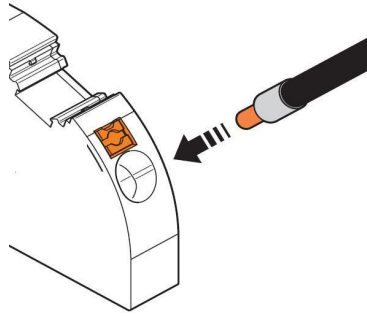


The power supply of the outdoor unit is provided by the indoor unit, and the cable diagram is shown in the figure.



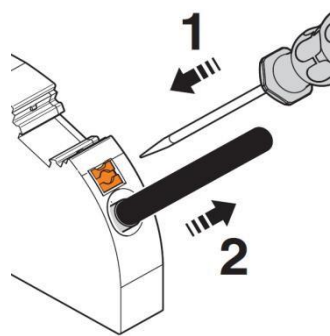
Wiring description of unit power terminal

The wiring method of power terminal is as follows:



The power line of the unit can be directly inserted into the circular hole of the power terminal after the terminal is crimped.

The method of removing the power supply terminal is as follows:

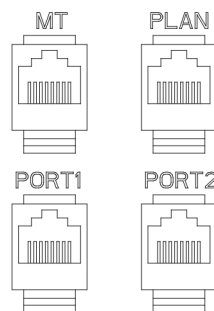


Step 1: use a small screwdriver to press down the yellow part of the terminal block.

Step 2: press down the yellow part of the terminal block until the black power line is loose, and then pull out the power line.

6.2.4 Communication Installation

The rack-type precision air conditioner has four communication interfaces (network interface form), as shown in the figure,



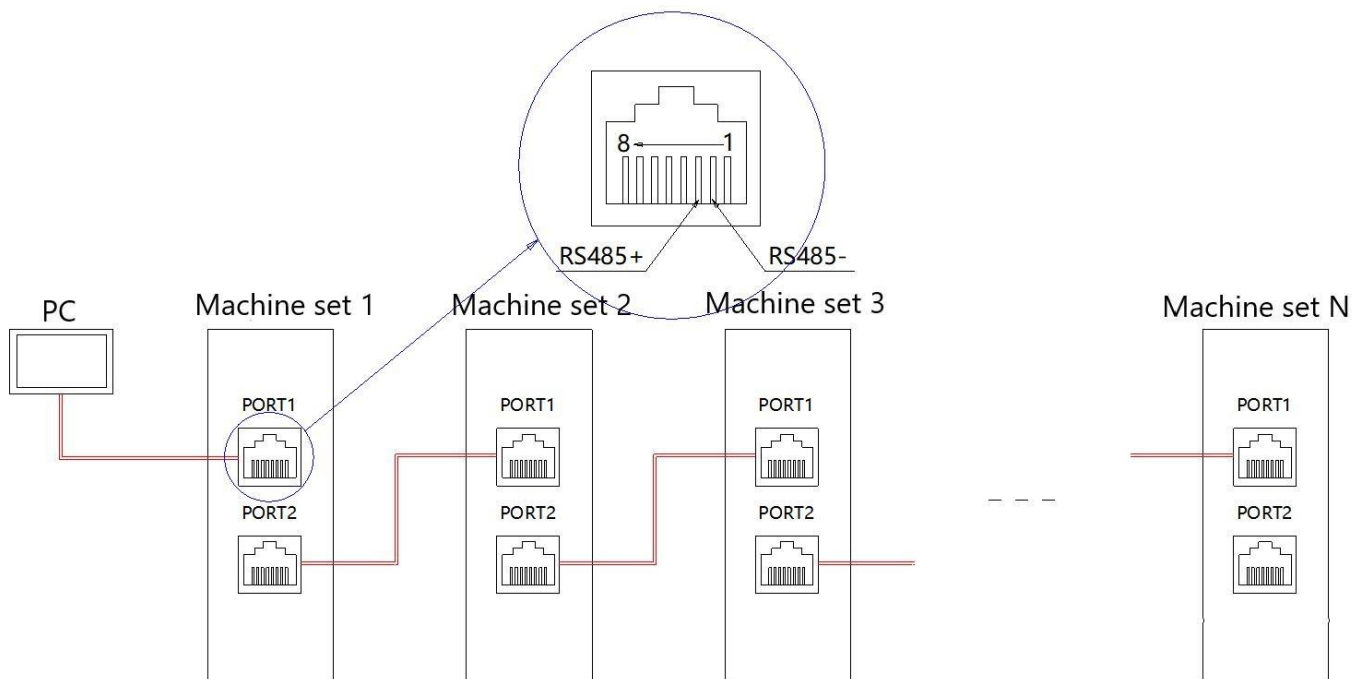
SCN04AFLTQV13G-04Communication port schematic



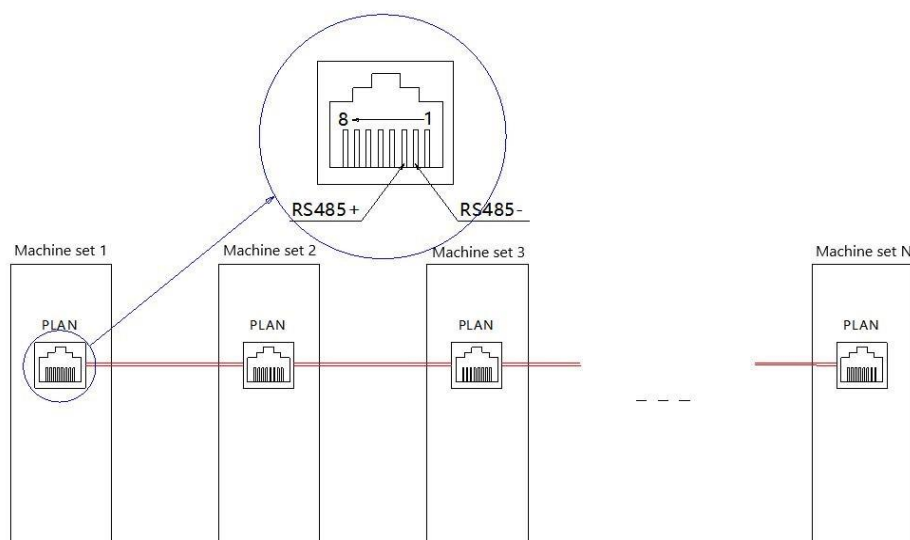
SCN04AFLTQV13G-08 Communication port schematic

MT: Maintenance communication interface, support MODBUS-RTU communication protocol. Connect with the Communicator to facilitate maintenance personnel to view and modify data, enter factory password to view and modify individual factory parameters.

PORT1, PORT2: RS485 host computer communication interface, support MODBUS-RTU communication protocol. The communication wiring of the host computer is shown in Figure 4-8. Through this port, the user can view the unit status, temperature and humidity data, fault information, etc., to achieve temperature setting, unit start and stop operations.



PLAN: Group control communication interface, support MODBUS-RTU communication protocol. The group control communication wiring is shown in Figure 4-9. The user can realize the group control function of the unit through this port.



In addition to the above contents, the following points should be supplemented when installing the power supply of air conditioner. Please pay attention to the installation.

Note

- to ensure personal safety, after the air conditioner is installed, a good metal connection must be made between the metal shell of the unit (with the grounding bolt indicated by the label at the bottom of the unit) and the grounding body. Please be sure to ground properly when installing the machine.
- the power input of all indoor units is single-phase three wire system (L + N + PE), please pay attention when installing.
- indoor and outdoor unit connecting cable shall be provided by the user.
- the supply voltage must be in the normal range (187-253V).
- the original lines in the unit are not allowed to be changed under any circumstances.
- do not connect the wiring of "L" and "n" reversely.
- all terminals must be installed firmly.
- all safety protection devices in the unit are set before delivery. Do not adjust them by yourself. Our company will not be responsible for any damage to the unit caused by the user's self adjustment.

Customer incoming wiring.

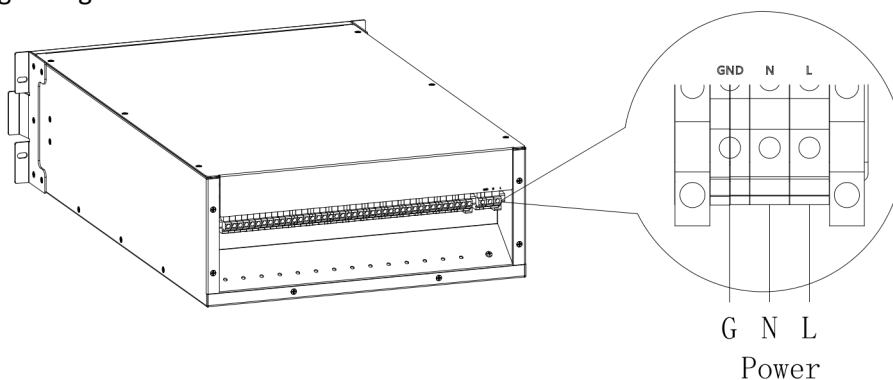


Figure 6-4 wiring of user's incoming line

The electrical parameter table is shown in the figure below

Table 6-1 Electrical parameter table

7.

model	VRMDC3000-R1P-U3KVA1-MPD1	VRMDC3000R1G-U6KVA1-C4.2KW1-MPD2	VRMDC3000-R2GU10KVA1-C8.1KW1-MPD4	VRMDC3000-R3GU10KVA2N-C8.1KW2-MPD6	diameter
input voltage	220V	220V	220V	220V	
Input current	50A	63A	63A	80A	
Input cable diameter	10mm ²	16mm ²	16mm ²	25mm ²	
model	VRMDC3000-R1P-U3KVA1-MPD1	VRMDC3000R1G-U6KVA1-C4.2KW1-MPD2	VRMDC3000-R2GU10KVA1-C8.1KW1-MPD4	VRMDC3000-R3GU10KVA2N-C8.1KW2-MPD6	
input voltage	220V	220V	220V	220V	
Input current	50A	63A	63A	80A	
Input cable	10 mm ²	16 mm ²	16 mm ²	25 mm ²	

Commissioning Micro Data Center

7.1.Pre-Start Checklist

The voltage of power supply is similar to the nominal voltage of equipment nameplate; System electrical connection connected correctly; All connection are tightly secured; The rating value of circuit breaker or fuse is correct.

Before commissioning check the status of every unit according to table 7-1

List	Checking details and request.
Unit appearance	Appearance without damaged, surface is clean, insulation is in good condition.
Electric I Connection	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 blockage in air-in and air-out side.
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.

Table 7-1 Checklist

matters needing attention

1. All power lines, control lines and ground wires must be connected in accordance with local regulations.

2. For the full load working current of the unit, please check the name plate of the unit. Cable size shall meet electrical requirements.
3. Electrical installation must be completed by professional electrical installation personnel.
4. Before connecting the circuit, test the input power voltage with a multimeter and make sure that the power supply is disconnected.

7.2. Equipment Startup

1. After the equipment is properly installed and the cables are correctly wired, turn on the equipment, Open the all switches, except for manual maintenance bypass.
2. Turn on the UPS switch (in the rear of UPS), battery switch, and air conditioner indoor unit switch.
3. Press the "ON" button on the front panel of the UPS for more than 2 seconds to power on.

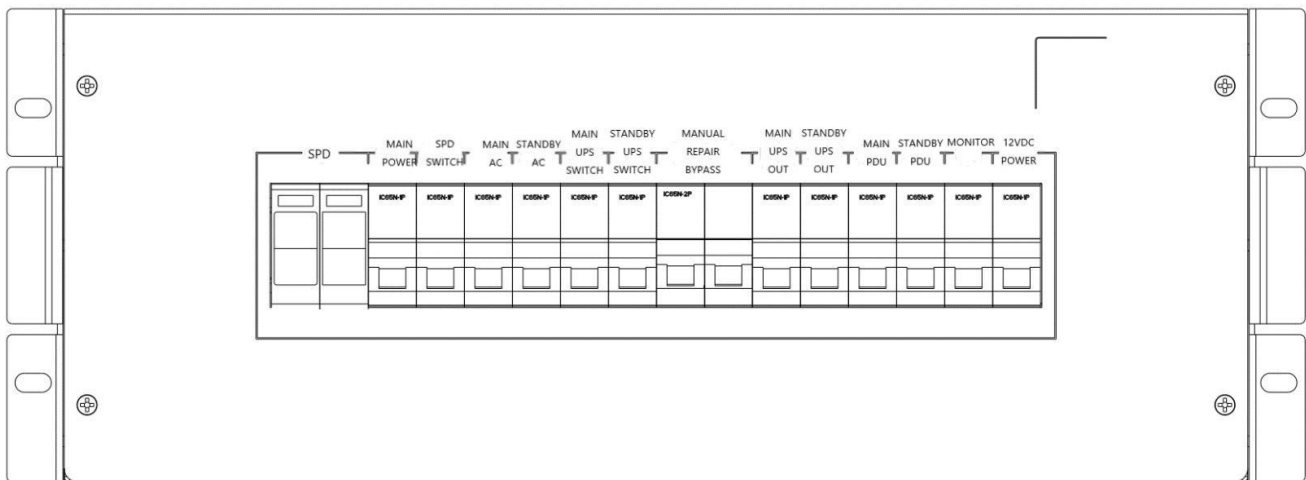


Figure 7-1 Power Distribution Box Panel Switch

7.3. Air-Conditioning Commissioning

The daily operation and management of the unit shall be in charge of by a specially assigned person, and the operation shall be carried out according to the relevant regulations, and the inspection shall be conducted before starting up.

Common tools

1. Common refrigeration tools
2. Multimeter (grade 3 or above)
3. Clamp on ammeter (Grade 5 or above)
4. R410A special pressure gauge (high pressure range 0 ~ 5.5mpa, low pressure range 0 ~ 2.5MPa, with three-way valve, gauge tube, high / low pressure gauge)
5. 500V insulation tester (megohmmeter)

Power supply and instrument inspection

- before the initial start-up, check whether the distribution capacity matches the unit power and whether the selected cable can withstand the maximum working current of the unit.
- check whether the distribution power supply is consistent with the power supply requirements of the unit name plate.
- check whether the wiring terminals of the electric control box are tightened (the connector may be loose due to long-distance transportation and handling of the unit). If it is loose, please tighten it again. Otherwise, the electrical components (such as transformer, AC contactor, etc.) and compressor in the electric control box of the unit may be

damaged. Check whether the electric control instruments and electrical appliances are correctly installed, complete and effective.

-- carefully check all electrical circuits with a multimeter to check whether the wiring is correctly installed in place; measure with megohm to ensure that there is no shell short circuit; check whether the grounding wire is correctly installed in place, and the insulation resistance to the ground is greater than $2\text{m}\ \Omega$; check whether the power line meets the capacity requirements.

-- check that the power line supplying the unit is equipped with a circuit breaker.

Inspection of refrigeration system

-- check whether the set values of high and low pressure values are normal.

-- switch on the power supply 12-24 hours in advance after the initial start-up or long-term shutdown to preheat the compressor.

-- check the refrigerant charge. Under full load, if bubbles are visible in the sight glass, it means that the refrigerant is insufficient and refrigerant needs to be added.

-- check that the compressor wiring is correct. The compressor should be able to open normally.

Long pipe add refrigerant

If the copper pipe between the indoor unit and the outdoor unit exceeds a certain distance, refrigerant must be added to the pipe to allow the system to operate normally. The amount of refrigerant added can be calculated according to the following formula: When the length of the indoor and outdoor units is $>5\text{M}$, the refrigerant increases by 0.065kg for each additional meter, and the compressor refrigeration oil increases by 2.6g . Note: The piping must be vacuumed before the refrigerant is filled.

Function tests

Cooling

1. The display sets the return air temperature lower than the ambient temperature, the compressor and outdoor fan start, and the system refrigeration runs.
2. When starting the compressor, observe the changes of high and low pressure gauges. The low pressure drops and the high pressure rises. If the pressure does not change, it should be stopped immediately.
3. If any abnormal conditions are found during the start-up of the compressor, the compressor shall be shut down in time, otherwise the compressor shall not be started again.
4. The operating current of outdoor unit is measured by clamp type ammeter. The operating current is required to be less than the rated current. Ensure that the outdoor unit is free from abnormal noise and vibration.

Unit shutdown

The unit should be shut down according to the specified procedures, and do not start and stop frequently.

1. Stop the refrigeration system.
2. Stop the indoor fan.
3. Turn off the power.

Daily operation inspection of unit

The unit will enter the operation stage after the start-up. In daily operation, the following contents shall be inspected and handled:

1. Whether the temperature, sound and vibration of the operating equipment are normal, or take necessary measures to deal with it. Check whether the current and surface temperature of running equipment are normal.
2. Whether the outdoor ambient temperature is within the required range, otherwise adjust it.
3. After the unit runs stably, check whether the suction pressure and exhaust pressure are normal, otherwise, they should be adjusted.
4. Check whether the temperature and humidity in the room are within the normal range. Test run record and form

Indoor unit model		Outdoor unit model	
Indoor unit number		Outdoor unit number	
Purchase date		Total current of outdoor unit	
Ambient temperature during test run		Inlet air temperature of condenser	
Ambient humidity during test run		Outlet air temperature of condenser	
supply voltage		Condensation pressure	
Total current of indoor unit		System high voltage	
Running time		System low pressure	
Inlet air dry bulb temperature of indoor unit			
Temperature of indoor unit entering rheumatic bulb			
Indoor unit outlet air dry bulb temperature			
Indoor unit outlet rheumatic bulb temperature			
remarks			

Tested by:

Test run time:

[Notice: air conditioner commissioning must be done by professional HVAC engineer/technician.] Condensate drainage

The unit is equipped with a standard condensate drain pipe. The condensate drain pipe can be PVC or stainless steel. The slope of the drain pipe is recommended to be at least 1:100.

7.3.1 Air-Conditioning Alarms

High pressure alarm

- The R22 refrigerant is set at 2.2 to 2.6 MPa, and the R410A refrigerant is set at 3.7 to 4.2 MPa. Refer to the manufacturer's specifications for specific values. The test method is as follows:
- First connect the barometer to the high-pressure test interface;
- Set the return air temperature and humidity, start the cooling operation;
- Disconnect the outdoor fan switch or close the exhaust pipe shutoff valve;
- Observe the change of high-pressure value, whether the high-pressure switch can alarm normally, record the high-pressure value when the alarm occurs;
- If the high pressure exceeds the alarm pressure value, it will not alarm, stop immediately, and wait until the pressure is lower than 1.5 MPa (R22 refrigerant) or 2.5MPa (R410A refrigerant), reset the high pressure alarm, and adjust the high pressure alarm value to re-test to make it meet the requirements.

Low pressure alarm

- The low-pressure alarm value is generally set at 0.1 to 0.24 MPa (R22 refrigerant) or 0.25 to 0.4 MPa (R410A refrigerant). The low-pressure test method is as follows:
- First connect the barometer to the high-pressure test interface; -Set the return air temperature and humidity, start the cooling operation; - De-energize the solenoid valve or close the valve.
- Observe the change of low-pressure value, whether the low-pressure switch can alarm normally, record the low pressure value when the alarm occurs;
- If the pressure is lower than the lower limit of the alarm and the alarm is not reached or the pressure is higher than the upper limit of the alarm, the machine stops or stops immediately;

High and low temperature alarm

- Set the return air temperature upper limit value lower than the current return air temperature below 5°C, observe whether there is a high temperature alarm signal;
- Set the return air temperature lower limit value to be higher than the current return air temperature by more than 5°C, observe whether there is a low temperature alarm signal.

7.4.UPS and external battery connection

7.4.1 Wiring diagram of 6-10k single in and single out UPS

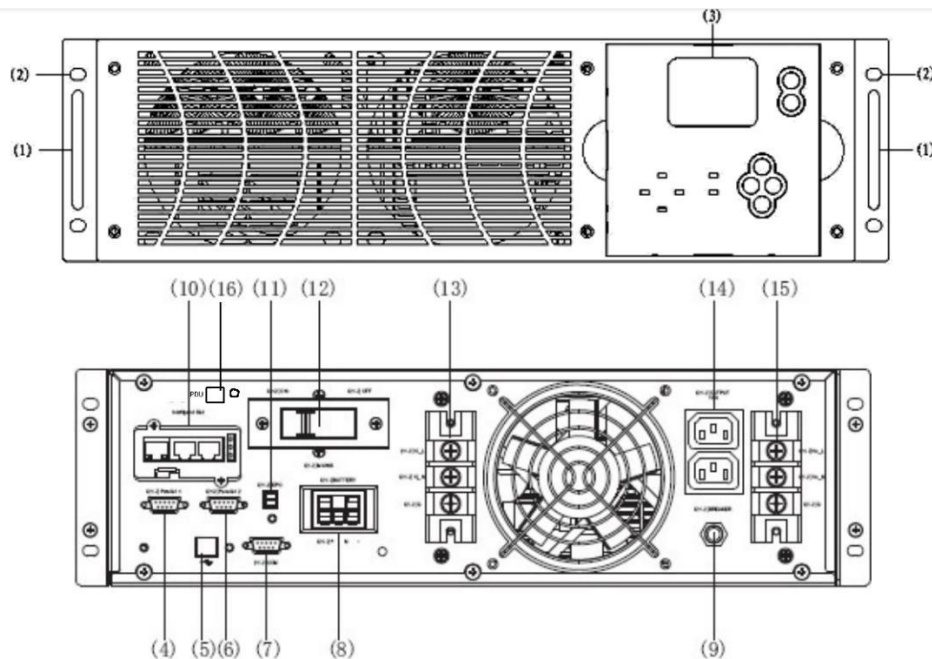


Figure 7-2 Wiring diagram of 6-10k single in and single out UPS

(1) Handle (2) fixed lug (3) LCD panel (4) parallel interface 1 (5) USB interface (6) Parallel interface 2 (7) communication interface (8) battery interface (9) output IEC base circuit breaker (10) intelligent socket (11) EPO (12) input circuit breaker (13) input terminal (14) output IEC base (15) Output terminal (16) PDU

Ports 8, 13 and 15 in the figure above are battery interface, power input port and UPS output port respectively. Please connect according to the identification on the equipment

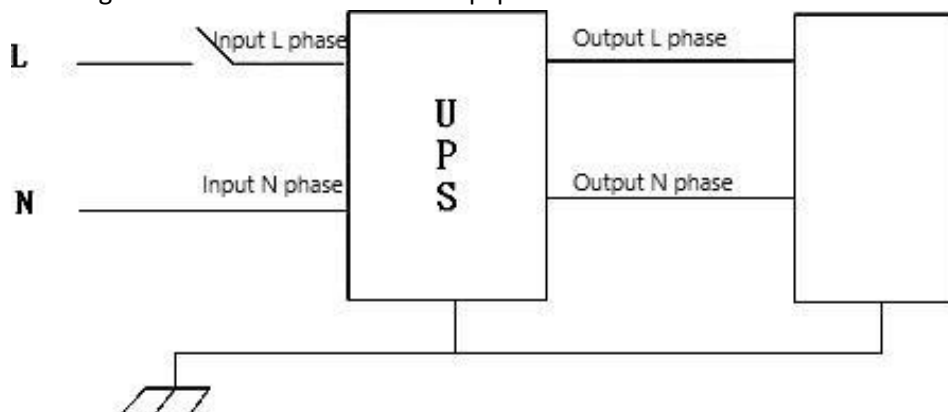


Figure 7-3 Input "single phase + ground" connection diagram

UPS adopts positive and negative double battery structure, a total of 16 (18 / 20 optional) sections are connected in series. A neutral line is led out from the connection between the cathode of section 8 (9 / 10) and the anode of section 9 (10 / 11), and three wires are connected with the positive and negative ends of the battery pack. The battery between the positive end of the battery pack and the neutral line of the battery pack is called a positive

battery, and the battery between the negative end of the battery pack and the neutral line of the battery pack is called a negative battery. Users can select the capacity and number of batteries according to their needs. The battery connection method is shown in the following figure:

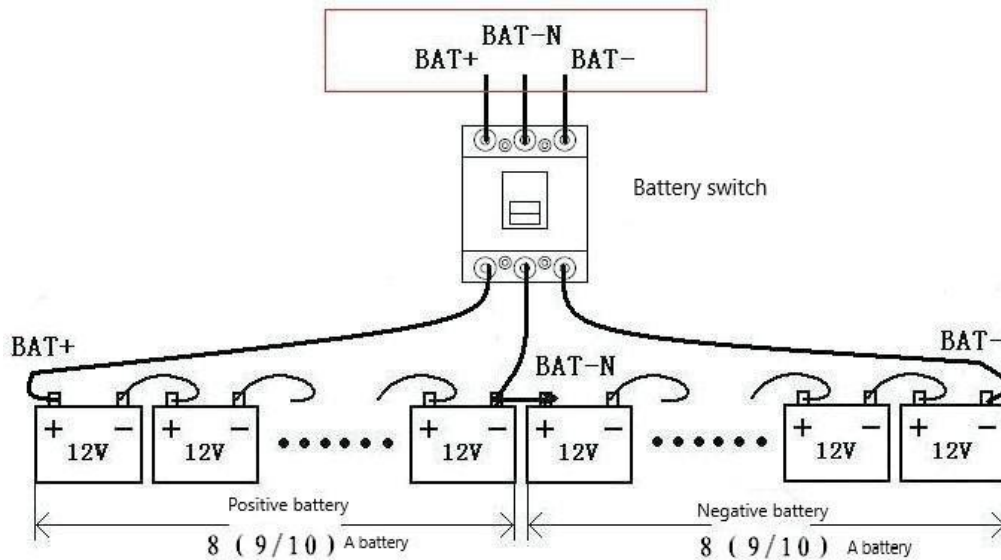


Figure 7-4 Battery wiring diagram

Bat + is connected to the positive level of the positive battery, bat-n is connected to the cathode of the positive battery and the anode of the negative battery, and bat - is connected to the cathode of the negative battery. The factory default battery number is 16, and the battery capacity is 7Ah (charging current is 1a). When 18 or 20 batteries are connected, please set the corresponding number of batteries in the mains mode; when there are 16 batteries and the battery capacity is greater than 18ah, it is 0.7 power factor; when there are 18 batteries and the capacity is more than 18ah, it is 0.8 power factor. It is 0.9 power factor at 20 batteries. The corresponding battery capacity is set, and the charging current is automatically distributed according to the battery capacity (the charging current can be set). Through the LCD to achieve the relevant settings.

7.4.2 Wiring diagram of 10-20K three in and three out UPS

Once the device is finally installed reliably, connect the power cord according to the steps described below.

Check whether the UPS equipment is completely isolated from the external power grid, and whether the input / output air switch of the UPS power module is fully opened. Check whether there is electrical insulation between input power lines and post necessary warning signs to prevent careless operation.

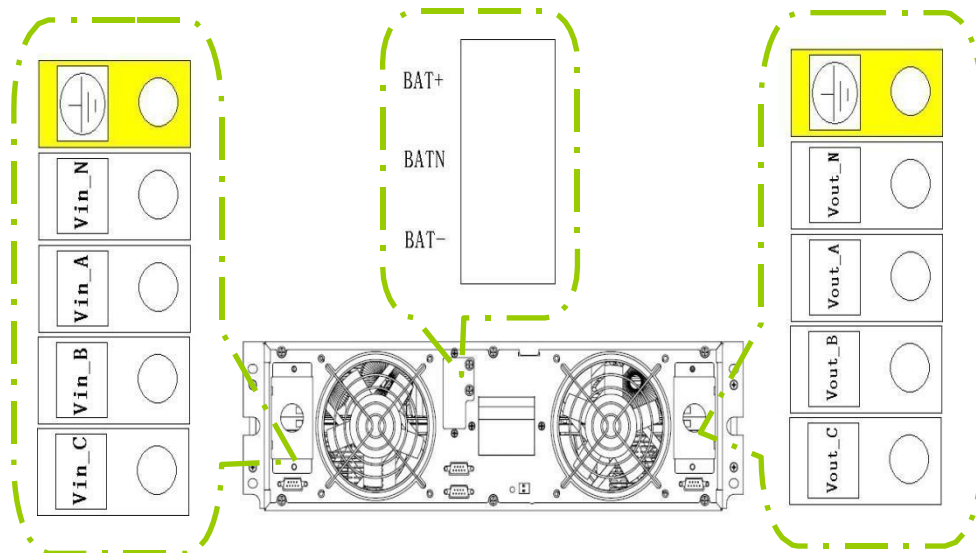


Figure 7-5 10-20K three in three out UPS wiring diagram

1. From top to bottom in the left figure are input ground wire, input n phase, input a phase, input B phase, input C phase;
2. In the middle, from top to bottom are the positive end of the battery, the N line of the battery, and the negative end of the battery;
3. From top to bottom in the right figure are output ground wire, output N phase, output a phase, output B phase, output C phase.
4. Select the appropriate size of cable; pay attention to the diameter of the terminal of the cable should be greater than or equal to the diameter of the terminal;
5. Adopt correct power distribution mode.

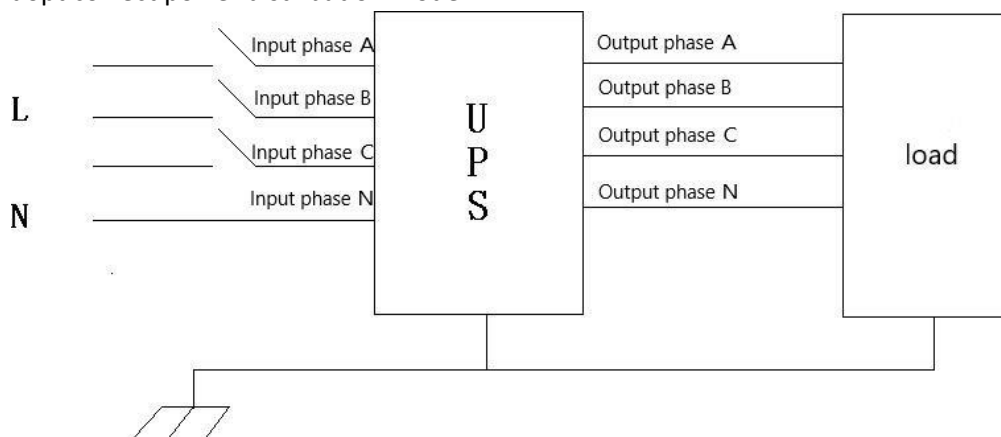


Figure 7-6 10-20K three in three out UPS power distribution diagram

7.4.3 UPS battery connection

UPS adopts positive and negative double battery structure, a total of 32 (34 / 36 / 38 / 40 optional) sections are connected in series. A neutral line is led out from the connection between the cathode of section 16 (17 / 18 / 19 / 20 / 20) and the anode of section 17 (18 / 19 / 20 / 21), and three wires are connected with the positive and negative ends of the battery pack. The battery between the positive end of the battery pack and the neutral line of the battery pack is called a positive battery, and the battery between the negative end of the battery pack and the

neutral line of the battery pack is called a negative battery. Users can select the capacity and number of batteries according to their needs. The battery connection method is shown in the following figure:

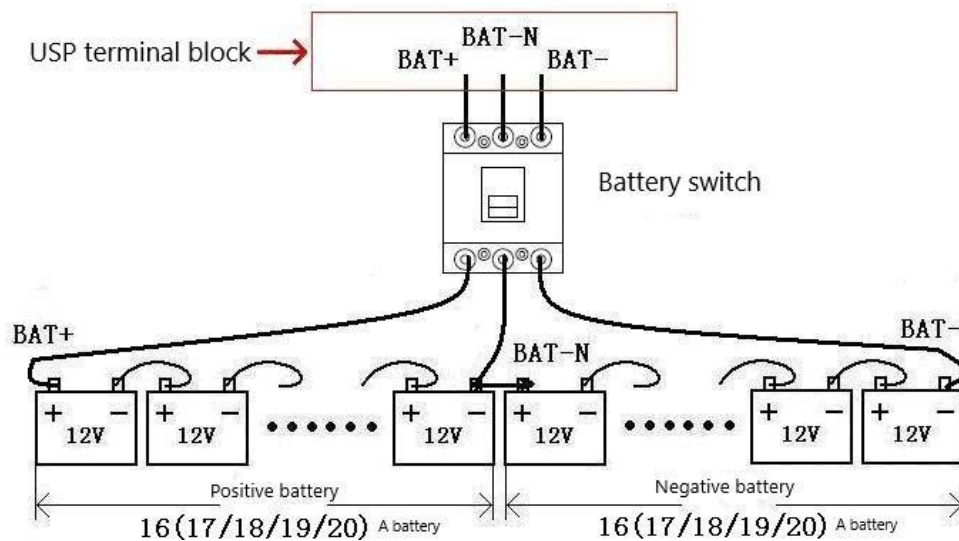
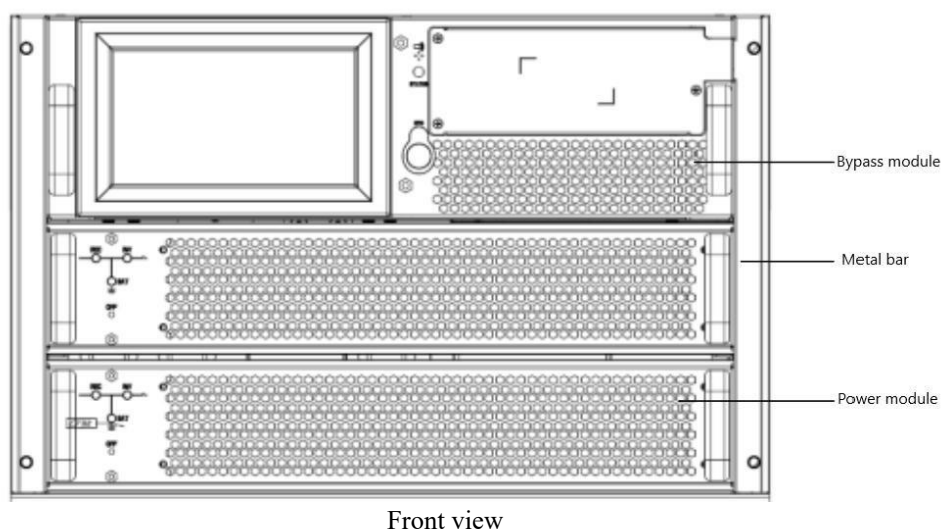


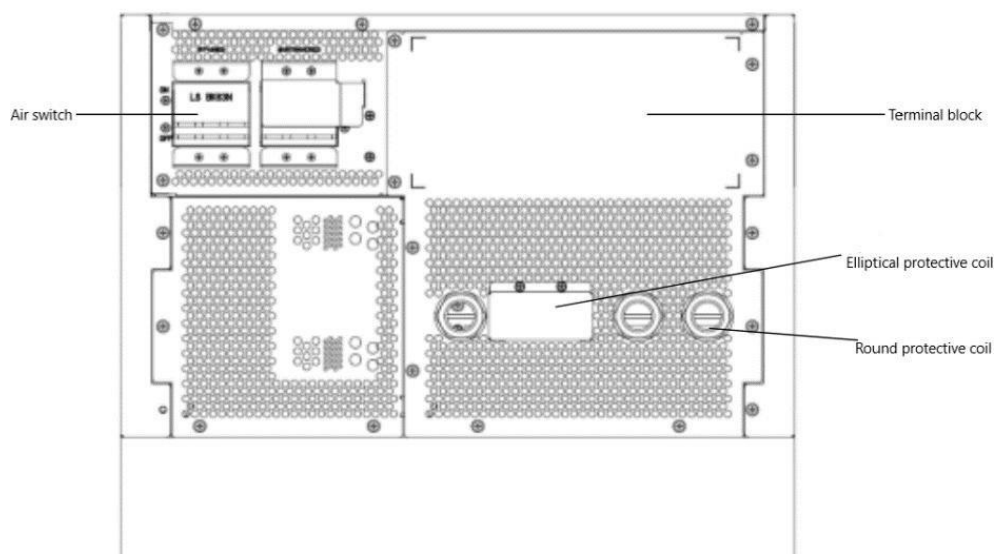
Figure 7-7 UPS battery connection diagram

explain:

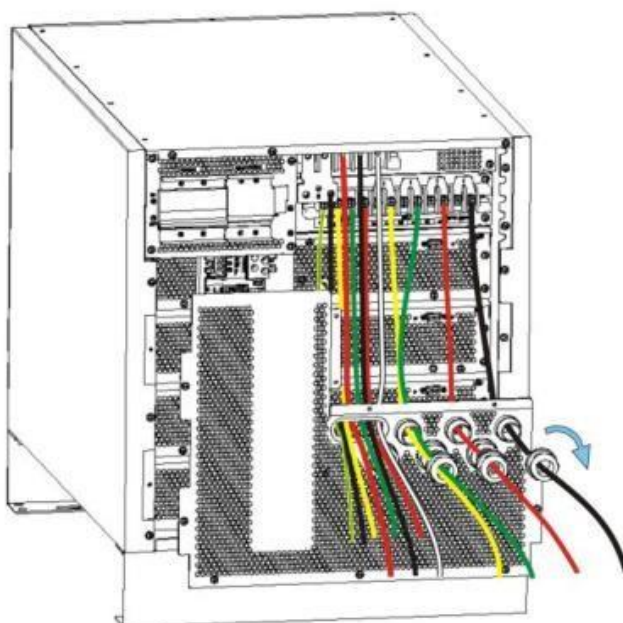
Bat + is connected to the positive level of the positive battery, bat-n is connected to the cathode of the positive battery and the anode of the negative battery, and bat - is connected to the cathode of the negative battery. The factory set the number of batteries to 32 and the battery capacity to 65ah (charging current 6a). When connecting 34 / 36 / 38 or 40 batteries, please set the corresponding number of batteries in the mains mode, and set the corresponding battery capacity. The charging current is automatically allocated according to the battery capacity (the charging current can be set). Through LCD panel or monitoring software to achieve the relevant settings.

7.4.4 Wiring diagram of 30K three in and three out UPS





Rear view



Rear entry line

This type of UPS supports rear incoming line mode. After removing the rear terminal baffle of UPS, the following terminal layout can be seen

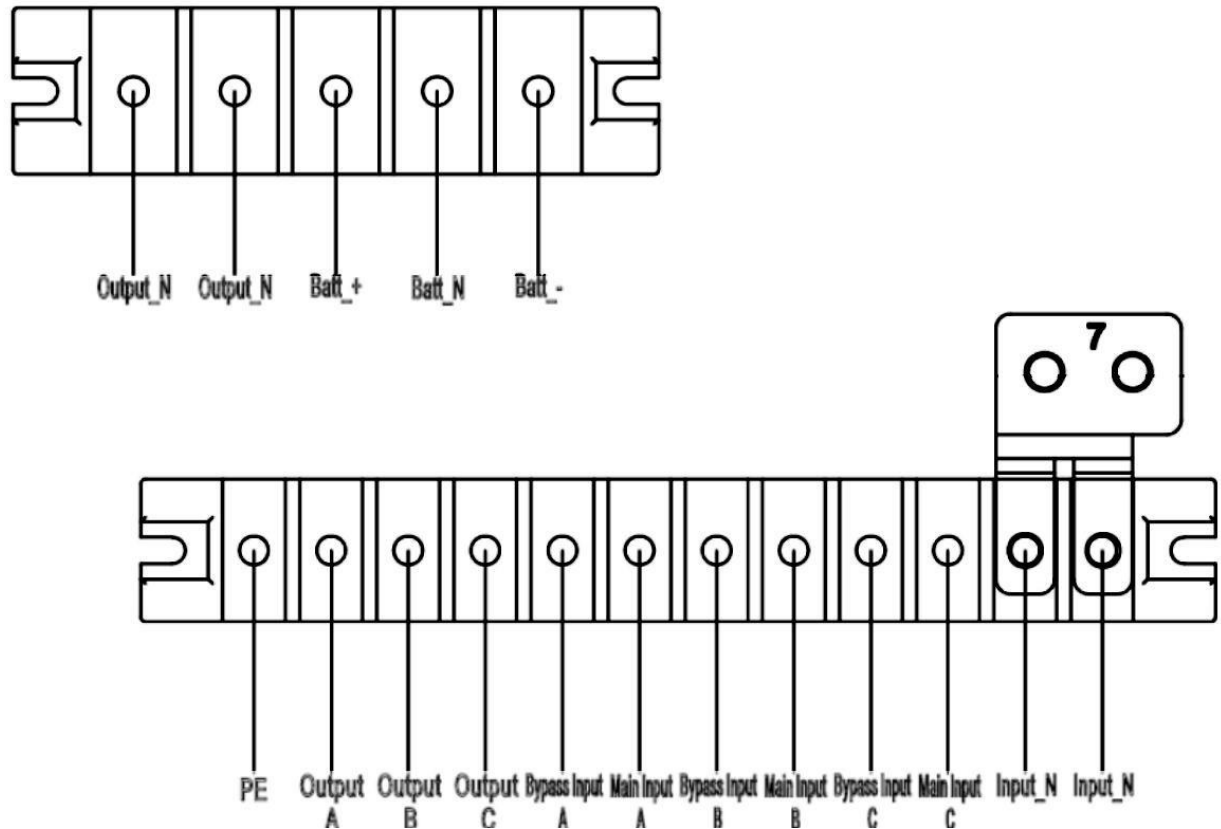


Figure 7-8 30K three in three out UPS wiring diagram

Please connect according to the specific identification on the rear of ups

7.4.5 UPS battery connection

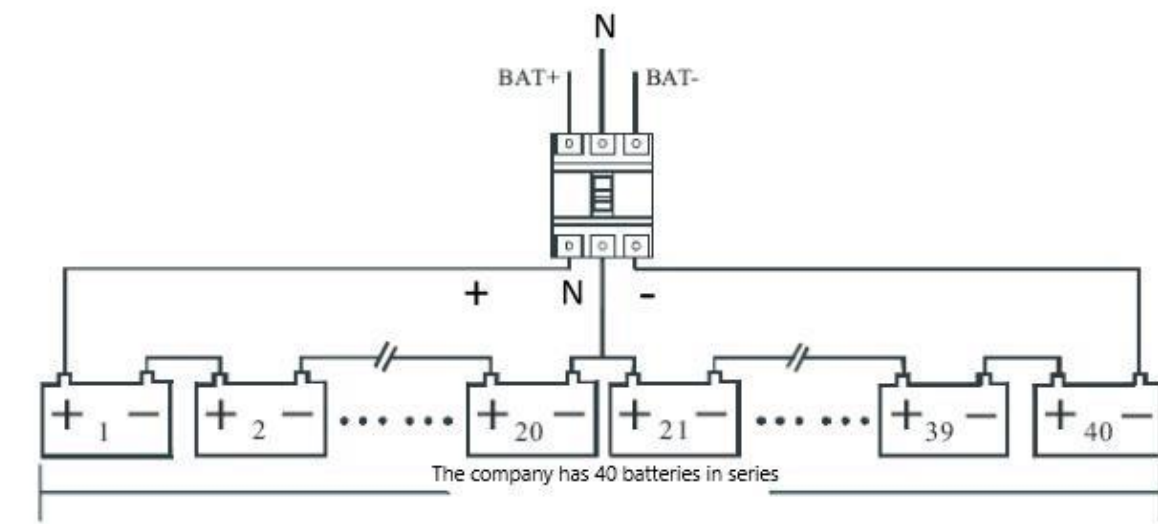


Figure 7-9 UPS battery wiring diagram

Bat + is connected to the positive level of the positive battery, bat-n is connected to the cathode of the positive battery and the anode of the negative battery, and bat - is connected to the cathode of the negative battery. The number of batteries is set to 40 at the factory. When connecting 34 / 36 / 38 or 40 batteries, please set the corresponding number of batteries in the mains mode, and set the corresponding battery capacity. The charging current is automatically allocated according to the battery capacity (the charging current can be set). Through LCD panel or monitoring software to achieve the relevant settings.

8. Monitoring System

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

8.1..Touch Screen

Touch screen of product is the tablet, can get the electronic version user manual corresponding model of the Tablet PC on the original official website, or get it from micro data center product provider.

8.2..Software Interface

Software interface consist of login page, homepage, facility management page, energy efficiency management page, report center page, log page, alarm center page, setting page and exit. **Login Page**

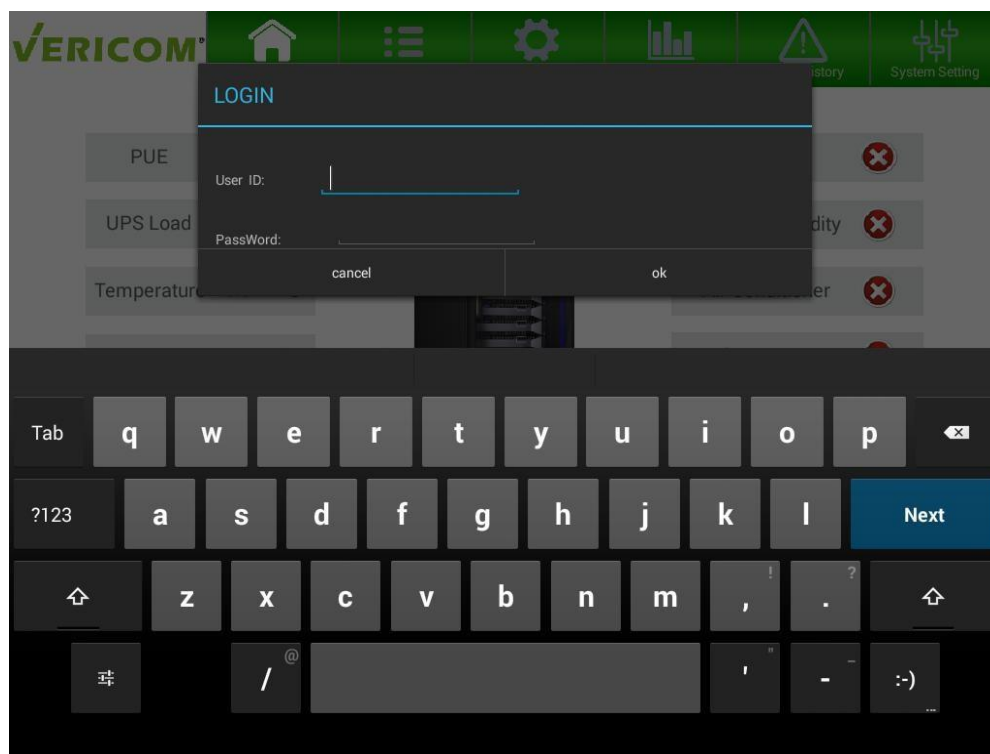


Figure8-1 System login page

(System Login) Here is the login dialog

(User Name: admin) Admin is the default user account, which is also the administrator account, which can be added, edited, deleted, etc. in the program. If you have added other account, you can log in with other's user account.

(Password :) The default password of the factory is 4321 or 12345678, and the password can be modified in the program

(IP address 192.168.3.111) is the IP address of the host, if the IP address of the monitoring host is changed to the other, the IP address should be change here. The IP address of the monitoring host can be edited and modified in the program. Only client application has this item.

(Next Auto Login) Every time login, system needs to enter a username and password

(Login) When the user name, password and IP address are entered correctly, click the login button to enter the program. If the user name or the password is incorrect, error will prompt.

8.3..Home Screen



Figure 8-2 Homepage

(System running time: 0days 00hours 31minutes 08seconds) This shows the continuous running time since the last login system. The program has this information in each interface, and it will not explain this later again.

(VERICOM) Here is the product logo. The program has this information in each interface, and it will not explain this later again.

(Home) Yellow background are highlighted, which indicates that the page as the front page, other facilities management, energy efficiency management, reporting center, system log, alarm management, system Settings and exit, click to enter the corresponding page interface, can be later in this article will introduce in detail.

(Emergency Alarm - Series Alarm 1 General Alarm1Notice 1) Here show the number of alarms by alarm level. An emergency alarm is a warning for damage to the person or equipment. A series alarm is a warning that the device will not function properly. The general alarm is normally operated for the equipment but will cause the device to fail to run. Notice is a status notification that does not harm the device. The program has this information in each interface, and it will not explain this later again.

(Alarm information) Alarm information is divided into warning lights and alarm lists. Warning lights will flicker when there are alarms. The alarm list contains the device name, alarm name, meaning and start time. The alarm list will display the current alarm, and the alarm will not be displayed after the alarm is removed.

(UPS Load) Dial shows the current load rate of the UPS, UPS allowed a certain period of time within a certain range of overload, so the load factor can be more than 100%, "1.0" shows the value of load rate and the dial pointer will point to the corresponding scale. This is consistent with the UPS load rate data and presentation form in the facility management - UPS.

(UPS supply mode) Power supply mode in order to made clear the current power supply mode, the line color change here for the green is not all communication data display, when UPS communication normal, red line route is the current power supply mode, power supply mode is divided into three kinds of mode, bypass mode and battery mode.

(Temperature and humidity of cold aisle) Temperature and humidity in cold channel is shown here, is through the temperature and humidity sensors to collect real-time data, "34.8℃" show temperature value, "32.9 % RH" show relative humidity value.

(Energy consumption of monthly) The current annual energy consumption per month is shown in the histogram. The unit is kWh.

8.4..Facility UPS

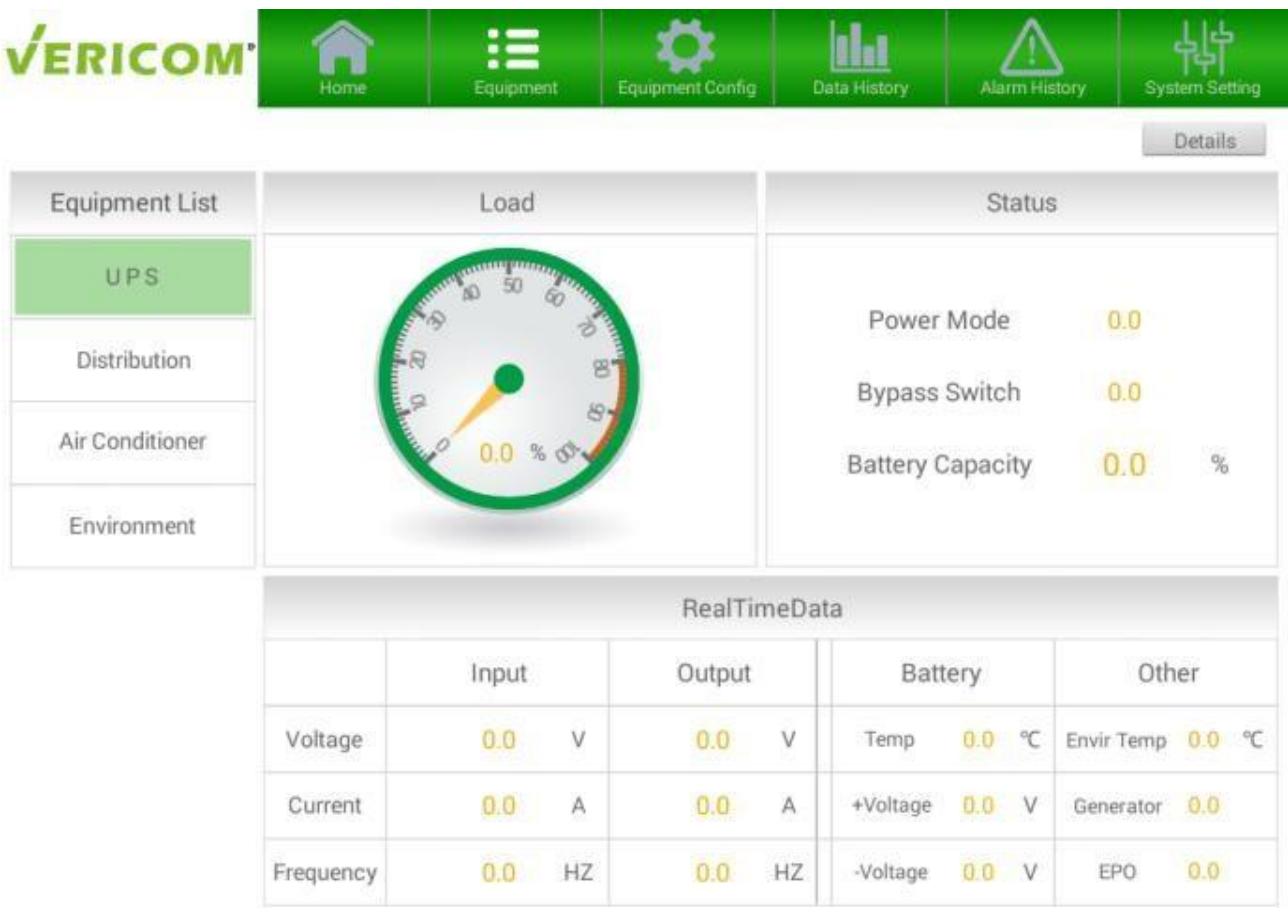


Figure 8-3 Facility-UPS page

(Facility management, UPS Power, AC Environment) UPS light blue background is highlighted, which indicates that the page for facility management of UPS equipment, other power supply, air conditioning, micro environment, to click into the corresponding interface pages, later will be introduced in detail

(UPS Load) Refer to the UPS load rate on the homepage.

(UPS Status) Shows some running information for UPS. The "Input Frequency 49.9 Hz" displays the input frequency. "Running Status on-line" means UPS is working.

(UPS Real-Time) Display the real-time input and output voltage current data of UPS operation

8.5..Facility –Power



Figure 8-4 Facility-Power page

(Main Power) Display main circuit voltage, current and active power data in power distribution module

(Branch Power) Display branch circuit voltage, current and active power data in power distribution module

8.6..Facility Air-Conditioner

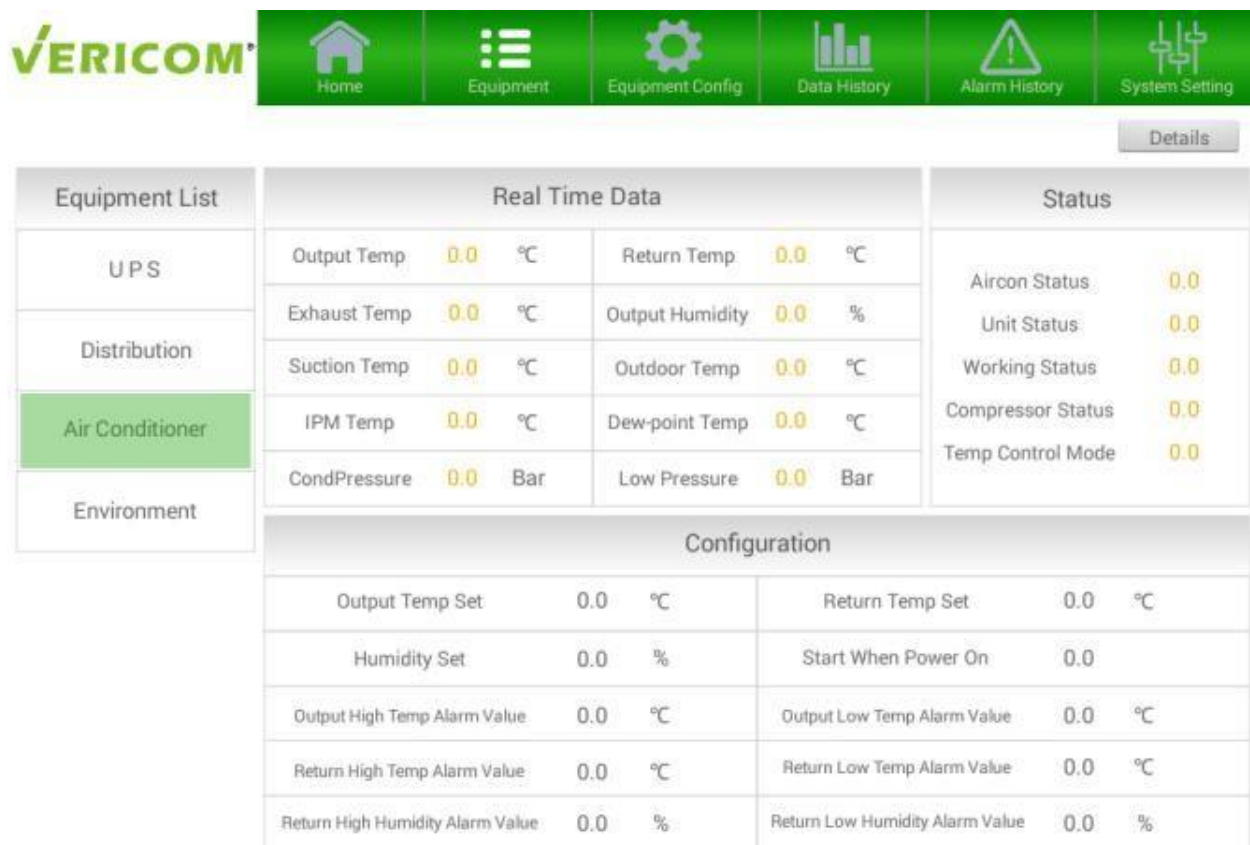


Figure 8-5 Facility-A/C page

(temperature and humidity) the supply air temperature is 0.0 °C for air conditioning supply air temperature probe to detect real-time supply air temperature, the return air temperature of 0.0 °C "display for air conditioning of the return air temperature and humidity sensors to detect real-time return air temperature," return air humidity 0.0% "shows for air conditioning return air temperature and humidity sensors to detect realtime return air humidity," breathe in temperature 0.0 °C for suction temperature probe to detect the temperature of the compressor suction pipe section.

(operating state) shows the operating state of the air conditioner, including the state of the switch, the frequency of the compressor, and the control mode. the control mode is return risk control system or send risk control system, setting can go to the device Settings page.

(control parameter) the value of the control parameter set for the user shown in the control parameter and cannot be set here.

8.7..Facility Environment

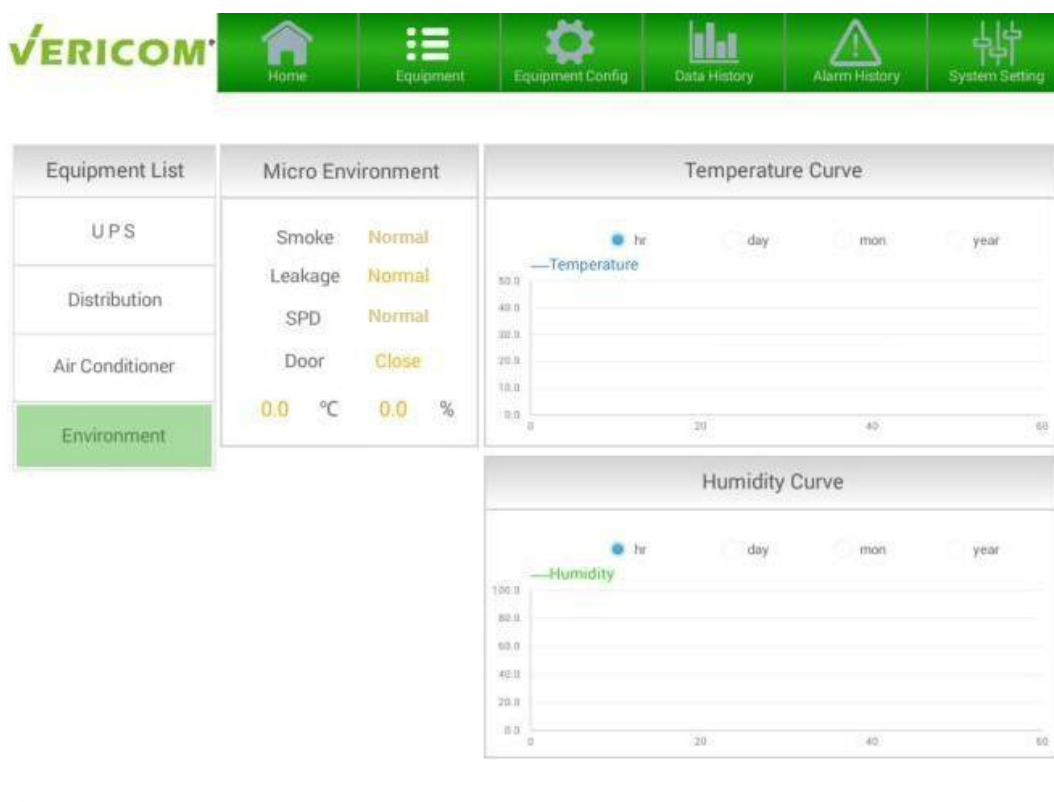


Figure 8-6 Facility-Environment page

(Environment) The temperature and humidity in the cold channel are shown here, which is the real-time data collected by the temperature and humidity sensor, as well as the state of temperature and humidity alarm. "34.7 °C" is the temperature value, "32.9 % RH" is the relative humidity value. "High Temp" "if there is a high temperature alarm, the green circle icon will be red, no warning and the default status is green." "Low Temp" "if there is a low temperature alarm, the green circle icon will be red, no alarm and the default will be green." "High Humid" "If there is a high humidity alarm, the green circle icon will be red, no alarm and the default will be green." "Smoke" If the smoke sensor detects the smoke and triggers the alarm, the green circle icon will be red, without warning and the default status is green.

(Setting) "High Temp + - 38 °C" can be set High temperature alarm set point by pressing the button, the display for the current set point, when the temperature and humidity sensors to detect temperature is greater than the per-set temperature, there will be a High temperature alarm. "Low Temp + - 8 °C" can set the alarm set point in Low temperature by pressing the button, the display for the current set point, when the temperature and humidity sensors to detect temperature is less than the per-set temperature, there will be a Low temperature alarm. "High Humid + - 85%" can be set up through the button humidity alarm set point, the display for the current set point, when the temperature and humidity sensor detects humidity is more than the per-set humidity, and there will be a High humidity alarm. (Cold Aisle Temp. Curve) The detected cold channel temperature data is regularly stored in the database, and the stored data can be displayed as a chart. "24H 7D 30D" can look at the temperature curve in the corresponding time period, the temperature curve of 24 hours in 24 hours, the temperature curve of 7 days in 7 days and the 30-day temperature curve in 30 days.

(Cold Aisle Humid. Curve) The detected cold channel humidity data is stored regularly in the database, and the stored data can be displayed as a chart. "24H 7D 30D" can be used to view the humidity curves in the corresponding time period, 24 hours for the 24-hour humidity curve, 7 days for the seven-day humidity curve, 30 days for the 30-day humidity curve.

8.8..Data History



VTU-IO		Set Time	Next Day	Previous Day	Receive
Device Name	Signal Name	Value	Unit	Value Type	Alarm Level
VTU-IO	Smoke	0.0		0	0
VTU-IO	Leakage	1.0		0	0
VTU-IO	Door	0.0		0	0
VTU-IO	SPD	1.0		0	0
VTU-IO	DI5	1.0		0	0
VTU-IO	DO1	0.0		0	0
VTU-IO	DO2	0.0		0	0
VTU-IO	CommunicationStatus	1.0		0	0

Acquisition Time: 2020-03-17 16:53:08

Figure 8-8 Data history page

The alarm distribution chart shows the number of alarms of various types of devices.

8.9..Alarm History Report Information



All Device	2020-03-17	2020-03-17	-	2020-03-17	Receive
Device Name	Alarm Name	Alarm Meaning	Numerical Signal	Alarm Level	Start Time
VTU-IO	Smoke	Alarm	0.00	CriticalAlarm	2020-03-17 16:53:56
VTU-IO	SPD	Alarm	1.00	CriticalAlarm	2020-03-17 16:53:56
Temp & Humidity	CommunicationStatus	Lost	0.00	CriticalAlarm	2020-03-17 16:53:56
UPS	CommunicationStatus	Lost	0.00	CriticalAlarm	2020-03-17 16:54:03
Air Conditioner	CommunicationStatus	Lost	0.00	CriticalAlarm	2020-03-17 16:54:01
Primary Meter	CommunicationStatus	Lost	0.00	CriticalAlarm	2020-03-17 16:55:48
IT Meter	CommunicationStatus	Lost	0.00	CriticalAlarm	2020-03-17 16:54:47

End Time: null

Figure 8-9 Alarm History Report page

The Information page can be used to check the history alarms. The warning rules have no annual report, monthly report, daily newspaper, time period.

(Query) Click the query to query the history warning details, including device name, event name, meaning, event level, start time, end time. "Previous first page/total 1 pages next page" will scroll to the next page if the alarm bar is too many, but it can be turned over here.

8.10 Device Setting

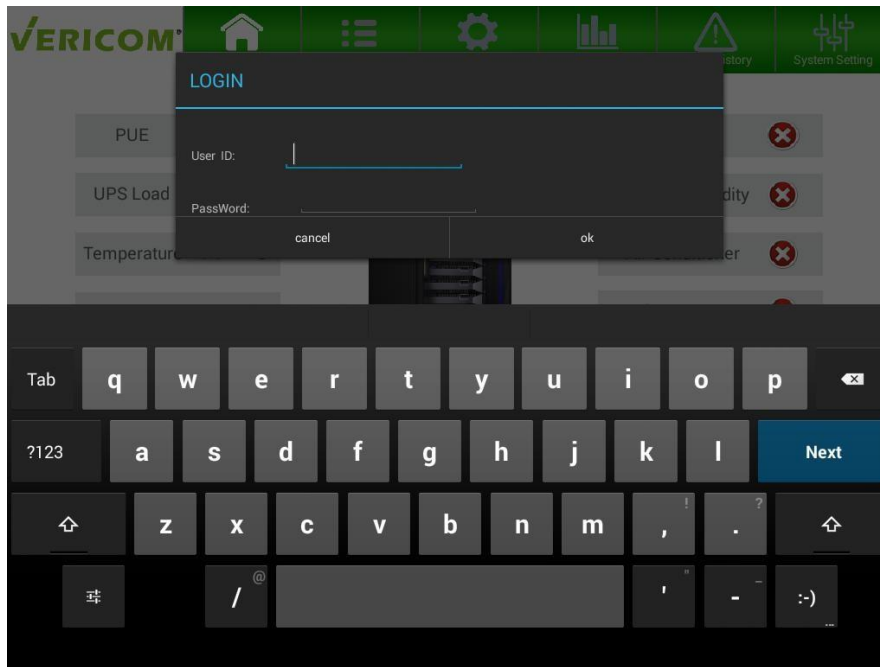


Figure 8-10 device setting page

(User Login Password) The default password of this page is 4321. Users can make changes on the system settings page.

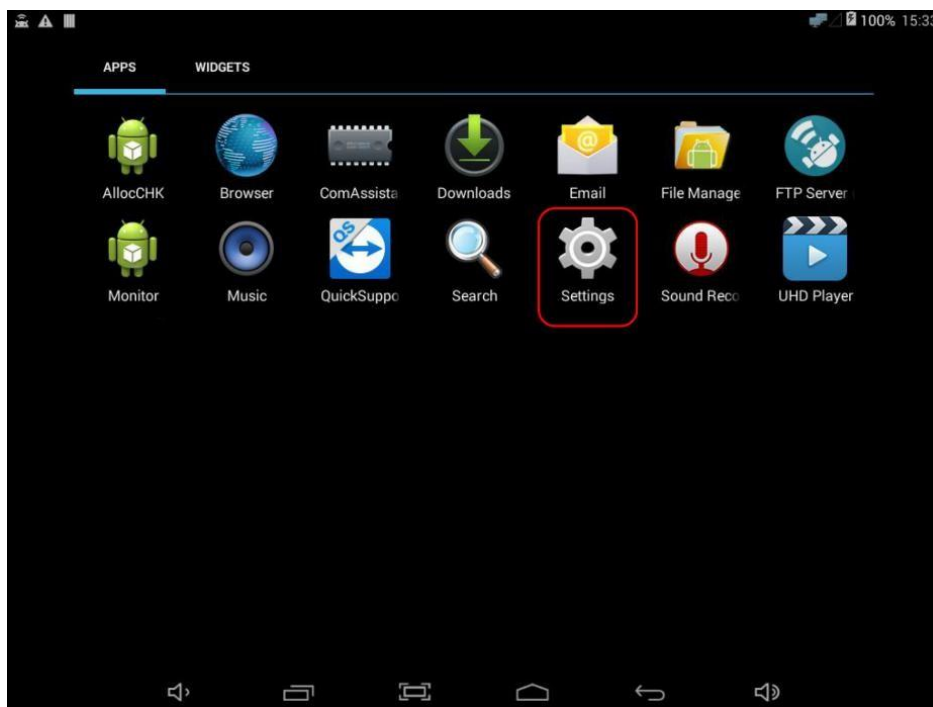
8.11 IP Setting

The default IP mode is DHCP, if static IP mode is needed, please follow the steps

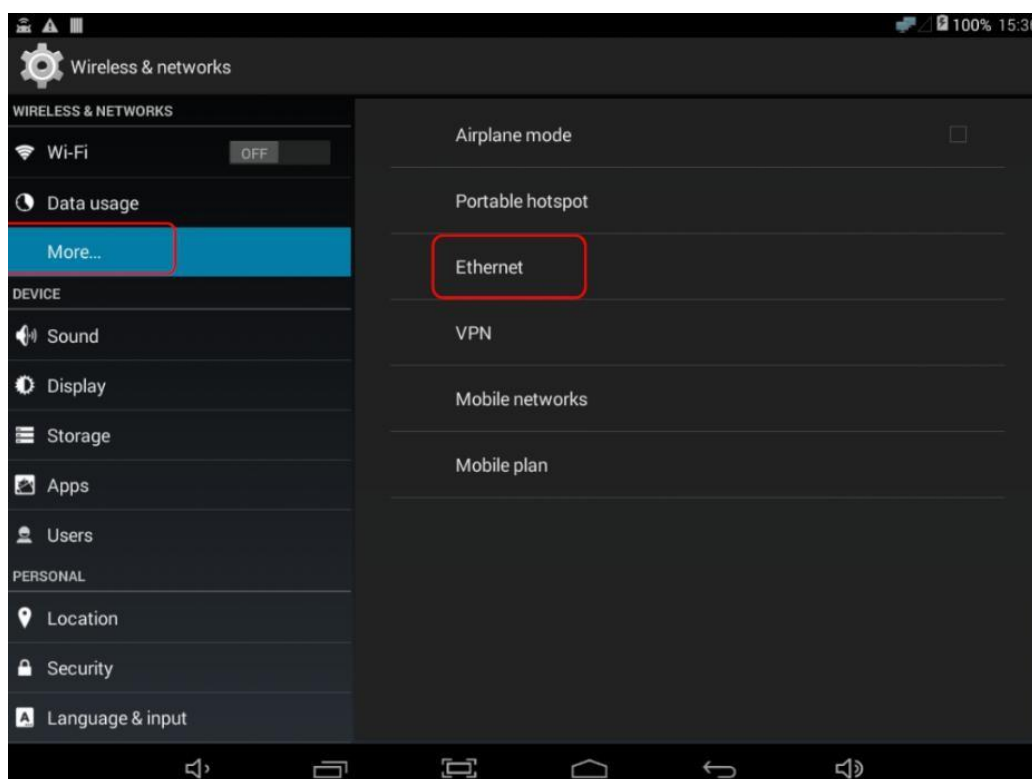
1. Touch the icon in the red frame.



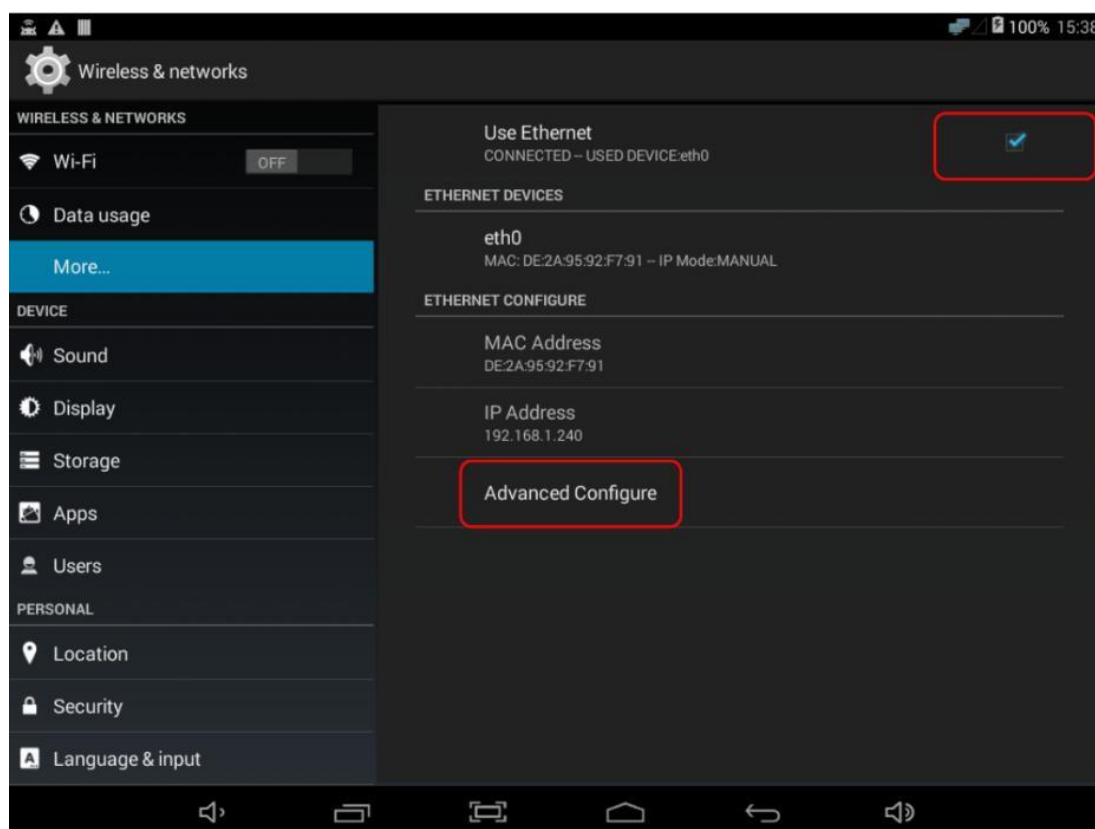
2. Touch the Settings icon.



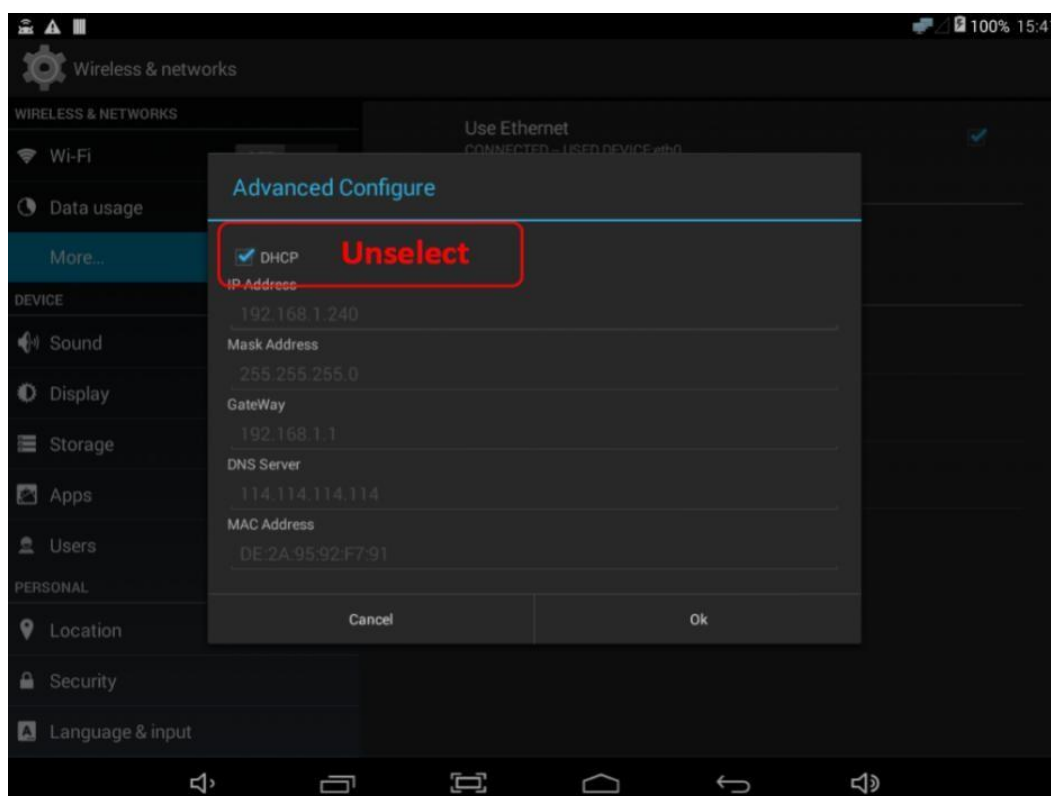
3. More -> Ethernet



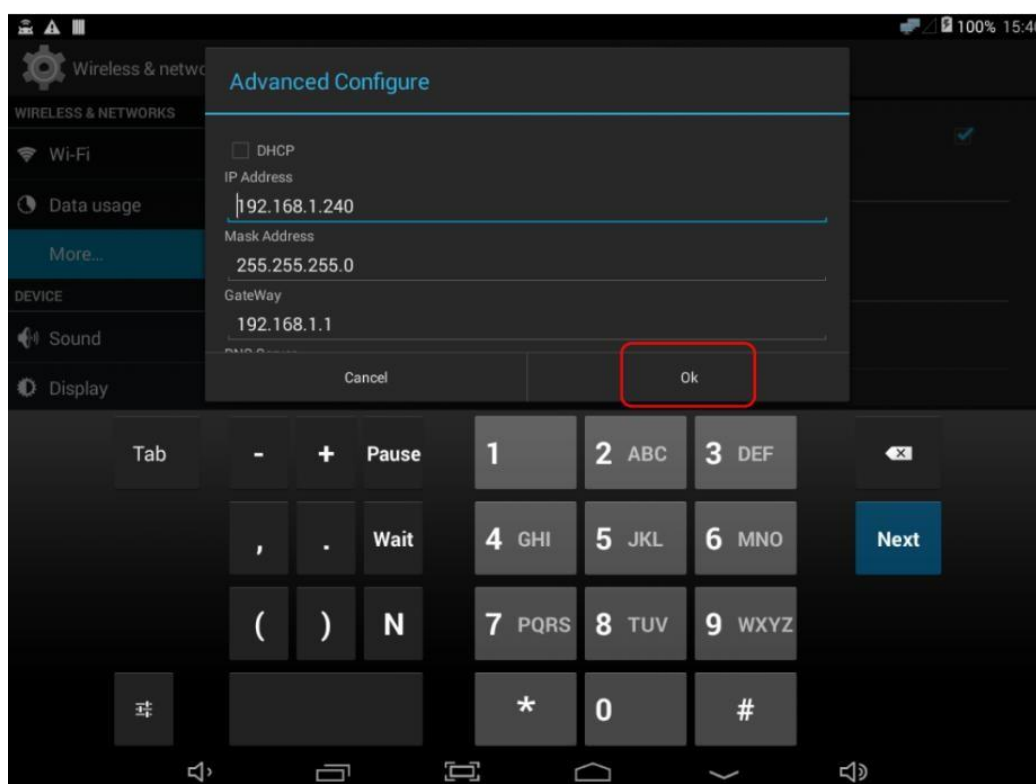
4. Select “Use Ethernet”, then touch “Advanced Configure”



5. Unselect DHCP



6. Input the IP Address, Mask Address, Gateway and DNS Server. Click OK.



8.12 Setting-Environment

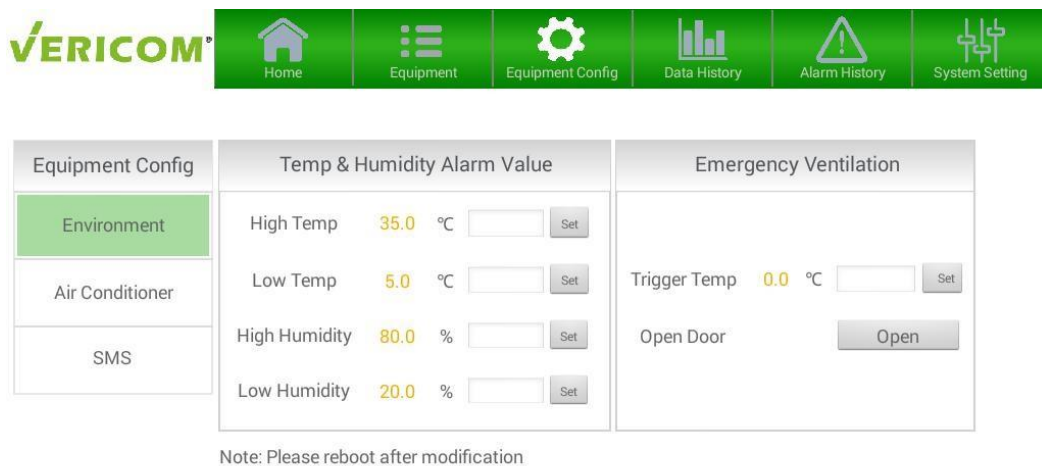


Figure 8-12 -device setting page

(setting of temperature and humidity alarm) "high temperature alarm value 35.0 °C" is the current set point. Click the data box in the back to enter the setting. After setting successfully, the interface will pop up the prompt of modifying successfully or setting successfully. The same is true for other Settings, which will not be repeated in the following text. When the temperature and humidity sensor detectors that the temperature is higher than the set temperature, a high temperature alarm will appear.

Low temperature alarm value of 10.0 °C is shown as the current set point. Click the data box in the back to enter the setting, and the keyboard will pop up to input data. Click the setting in the back.

"High humidity alarm value 90.0 percent" is shown as the current set point. Click the data box behind to enter the setting, and the keyboard will pop up to input data. Click the setting behind.

Low humidity alarm value of 30.0 % is the current set point. Click the data box behind to enter the setting, and the keyboard will pop up to input data. Click the setting behind.

(emergency ventilation) the starting and stopping temperatures of emergency ventilation can be set. When the temperature and humidity sensor detectors that the temperature is greater than the setting value of the starting temperature, the emergency ventilation mode will be opened and the front and rear doors will automatically spring open. When the temperature and humidity sensor detectors that the temperature is less than the set value of the stop temperature, the emergency ventilation device will be closed. Closing does not mean the door is closed but the corresponding logical power supply. If the alarm has occurred after the temperature drops, and does not reach the stop temperature point, you can click the "door reset" button to stop, at this time can normally close the door. If you need to test the door's switching function, click the "open door" button, then cut off the electromagnet power supply, the door springs open.

After the emergency ventilation setting, it is necessary to restart the monitoring main engine to take effect. Restart the machine method, long press the circular function key on the hardware panel, prompt shutdown, click

shutdown. After waiting for a while to complete the program shutdown, long press the circular function key, the device will automatically enter the monitoring system after starting up. **8.13Setting-Air Conditioner**

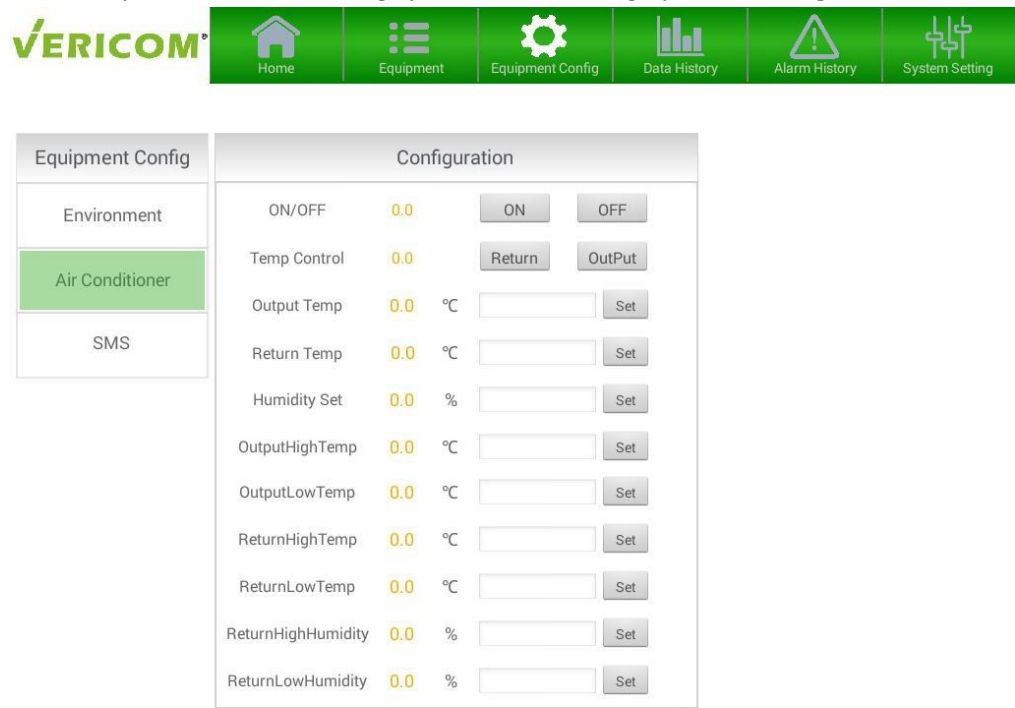


Figure 8-13 -device setting page

Power on and power off button can be set to power on and power off.

Note: there is a delay in starting and shutting down the air conditioner. You need to wait patiently. "Power from start 0.0" can be set by the button after the air conditioning power off and then power, air conditioning is automatically started

"Power from start 0.0" can be set by the button after the air conditioning power off and then power, air conditioning is automatically started.

"Control mode 0.0" can be set through the button air conditioning temperature adjustment object, you can choose air supply or air return. "Fault reset" when the air conditioning alarm, and the fault has been resolved, can be reset through this button, the alarm state. "Temperature setting 0.0 °C" can set the temperature set point, which is shown as the current set point. Humidity setting 0.0 % can set the humidity set point, which is shown as the current set point. "Temperature deviation 0.0 °C" can set the temperature deviation, the display is the currently set deviation. "Humidification deviation 0.0%" can set the humidification deviation, which is shown as the current set point. The humidification deviation and dehumidification deviation share the same control value, and the humidification deviation is also known as dehumidification deviation.

8.14System Setting

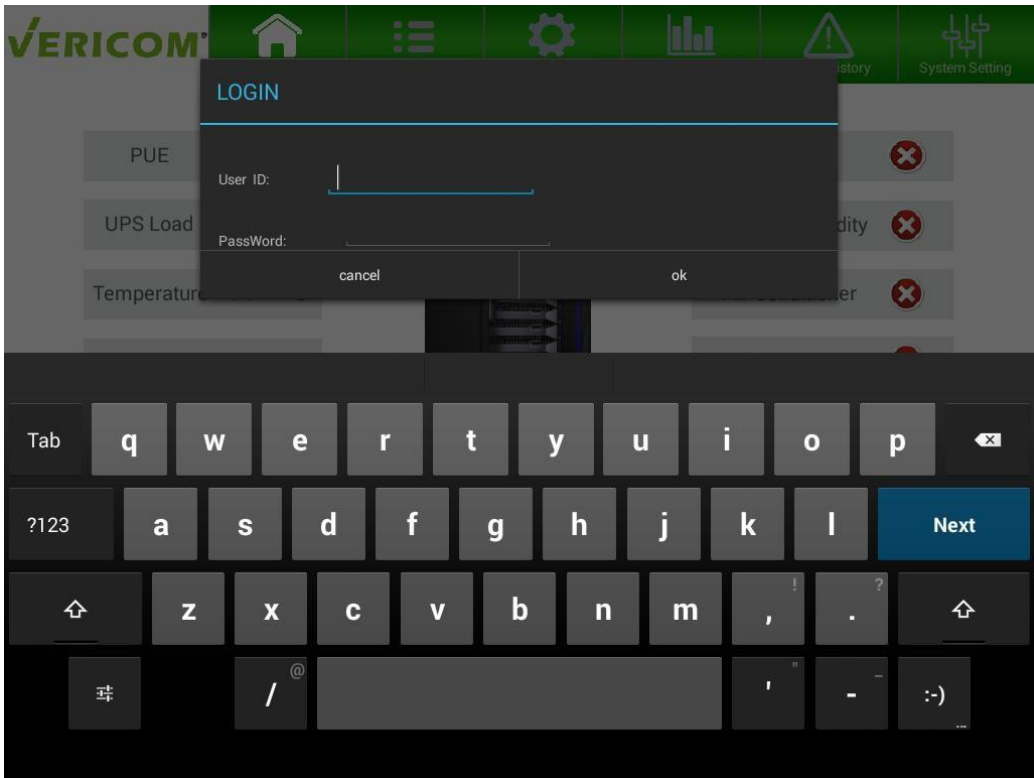


Figure 8-14 System Settings - login permissions page

The default password for this page is 4321. Users can make changes in the system Settings page.

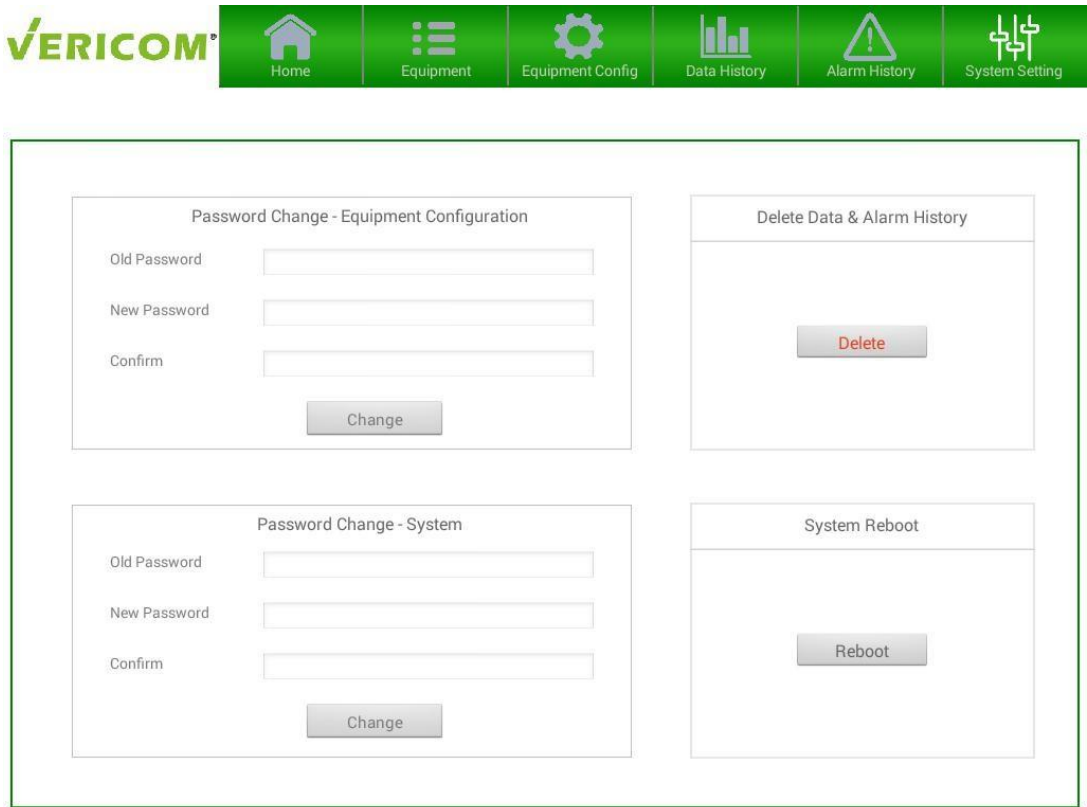


Figure 8-14 System Setting page

(device setting password change) the password set by the device can be changed by entering the old password once and the new password twice. The password can be changed by entering the old password once and the new password twice. Delete history click the delete button to delete the history data.

9. Trouble shooting

9.1.UPS

Table 9-1 UPS Fault Phenomenon and Solution Measure

Problem situation	Possible reasons	Solution
The main power supply is normal, but there are no indicator lights, and no alarm sounds.	The main input power cable and UPS input power cable on the power distribution box may be loose and not connected properly or the input surge protector action.	Check the cable for bad contact. If the mains supply is normal and the UPS is not working, check if the input surge protector is protected.
Error code 24: bypass overload.	UPS works in bypass state and bypass overload	Please reduce UPS load to 95%.
Error code 26: Bypass overload timeout.	The UPS fault in bypassed, and the bypass overload time has been exceeded.	Remove some loads properly so that the UPS restarts. After the UPS works normally, gradually add the load.
Error code 30: The number of switching times reached the limit (within an hour).	About the inverter and bypass, if the number of switching times exceeds 5 in a small time, the UPS will work in the bypass state.	Check if the output is overloaded or some load is short-circuited. Remove the problematic load and restart the UPS or wait until the UPS automatically recovers to the inverter power supply
Error code 32: Output shortcircuit.	Output short circuit	Turn off the UPS, remove all loads, confirm that the load is not faulty or internal short circuit, reboot again, if failed, contact your supplier
Error code 34: Low battery	After the battery discharges to the low voltage protection point of the battery, the UPS will shut down the output if there is still no normal power input.	When the UPS issues a "mains failure" alarm, please save your data
Battery backup time is shorter than expected.	The battery is not fully charged.	Keep the UPS connected to the mains for more than 10 hours and let the battery recharge. If the battery power is still low, contact your dealer.
	The UPS is overloaded.	Check the load level and remove non-critical devices.
	The battery ages.	Please contact your supplier and ask for battery replacement.
Error code 47: Rectifier failure.	Bus over voltage, bus low voltage, bus voltage imbalance, rectifier soft start failure, input fuse disconnected	Please contact our customer service center
Error code 49: Inverter failure.	Inverter output overvoltage; inverter output undervoltage.	Please contact our customer service center
Error code 51: Over temperature.	The temperature exceeds the allowable value and air circulation is not smooth.	The working temperature of the UPS is 0~40.

Error code 53: Fan failure.	One or more of the fans have failed and the fan cable is slack.	Please contact our customer service center
Error code 55: Inverter overloaded.	The UPS is operating in main mode and the inverter is overloaded.	Please reduce the load below rated capacity.
Error code 57: Inverter overload timeout.	When the inverter overload times out, the UPS will transfer to bypass mode (if the bypass operating conditions are satisfied).	Reduce the load to less than 95% of the load rate, the UPS will automatically transfer to the inverter.
Error code 65: Battery low voltage.	The UPS operates in battery mode and the battery voltage is low.	Restore the power input or backup your data before the battery shuts down.
Error code 71: Charger failure.	No charger output.	Please contact our customer service center
Error code 72: Input over-current.	Rectifier abnormally high current.	Please contact our customer service center
Error code 74: Manual shutdown.	The UPS shuts down the output.	/

9.2. Air Conditioning

Table 9-2 Air Conditioning Fault Phenomenon and Solution Measure

Symptom	Possible cause	Solution
AC doesn't work	AC Power is disconnected and less than 3 minutes from last shutdown	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 over value	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.
Low temperature alarm	Lower limit temperature settings are not reasonable	Reset.
	The abnormal situations.	Check the room sealed condition in winter and if there's any abnormal situation.
Condensation on the front door of the cabinet	The humidity of the external environment is too large, and the insulation of the cabinet is poor; the temperature of the cold aisle is too low.	Increase the air temperature of the air conditioner; close the front door.

Note: The air-conditioner compressor has a time delay protection function. It needs to wait at least 3 minutes from the shutdown to the next startup.

10.VTU Monitoring Screen Connection Diagram

