Use of the VRF Management System

MY2025

Use of the VRF management system

The following describes how to use the system to manage the air conditioner:

The manual describes how to use the VRF management system to manage and monitor the air conditioners in the system.

Login preparation
After the system is properly connected, connect the LAN1 port of the centralized controller to the local area network or computer. An IPV4 address needs to be added to the computer: 192.168.1.X (X can be 1 ~ 253, except 140).

Login and logout the system

To login the system, please perform the following operation:

1. Enter “192.168.1.140” (default address) in the address bar.
2. Select the language at the upper right corner of the interface (the default language of the system is Chinese. After changing the language, you need to enter the system settings page of the system parameters and click the “restart” button to wait for the system to restart, otherwise, an alarm page will appear and part of the schedule management page may not be translated.)
3. Enter the user name and password. The super administrator user name is “admin” and the default password is “Admin12345”. Please change the password in time after login.
4. Click the “Login”.

For detailed instructions, please click “download the user manual” at the bottom right.

For security, when you are away or not using the system, please click the user name button at the upper right corner after the system logs in and select “logout” to exit the system.

Therefore, the gateway address settings are shown in the following tables:

Gateway address 1

Dial-up	1	2	3
Status	OFF	OFF	OFF

Gateway address 2

Dial-up	1	2	3
Status	ON	OFF	OFF

Gateway address 3

Dial-up	1	2	3
Status	OFF	ON	OFF

Gateway address 4

Dial-up	1	2	3
Status	ON	ON	OFF

Gateway address 5

Dial-up	1	2	3
Status	OFF	OFF	ON

Gateway address 6

Dial-up	1	2	3
Status	ON	OFF	ON

Gateway address 7

Dial-up	1	2	3
Status	OFF	OFF	ON

Gateway address 8

Dial-up	1	2	3
Status	ON	ON	ON

The communication rate setting between the centralized controller and gateway

The communication rate between the centralized controller and gateway should be fixed to 38,400 baud, as shown in the table below:

Dial-up	6	7	8
Status	ON	OFF	ON

2. There are 2 downstream MODBUS ports at the bottom of communication gateway. K1K2E connects the outdoor unit network and XYE connects the indoor unit network.

Note

1. Please connect with the terminals in the packing list and make sure there is no short circuit between the positive and negative terminals.
2. 485 cable: please select the shielded twisted pair with appropriate wire diameter according to the 485 engineering wiring specifications.
3. Connect up to 15 systems under one gateway.
4. Connect up to 128 indoor units under one gateway.

Gateway configuration

There is an 8-bit DIP switch on the gateway. The 8-bit DIP switch is used to set the gateway ID, as shown in the table below.

DIP switch bit	Function description
1-3	Device ID, Modbus address
4, 5	Reserved
6-8	Modbus communication rate (the communication rate between the centralized controller and gateway should be fixed to 38,400 baud)

Gateway address setting

The gateway address is the gateway device ID + 1, and the gateway device ID is achieved by pushing the corresponding position switch of the DIP to the ON position, see the table below:

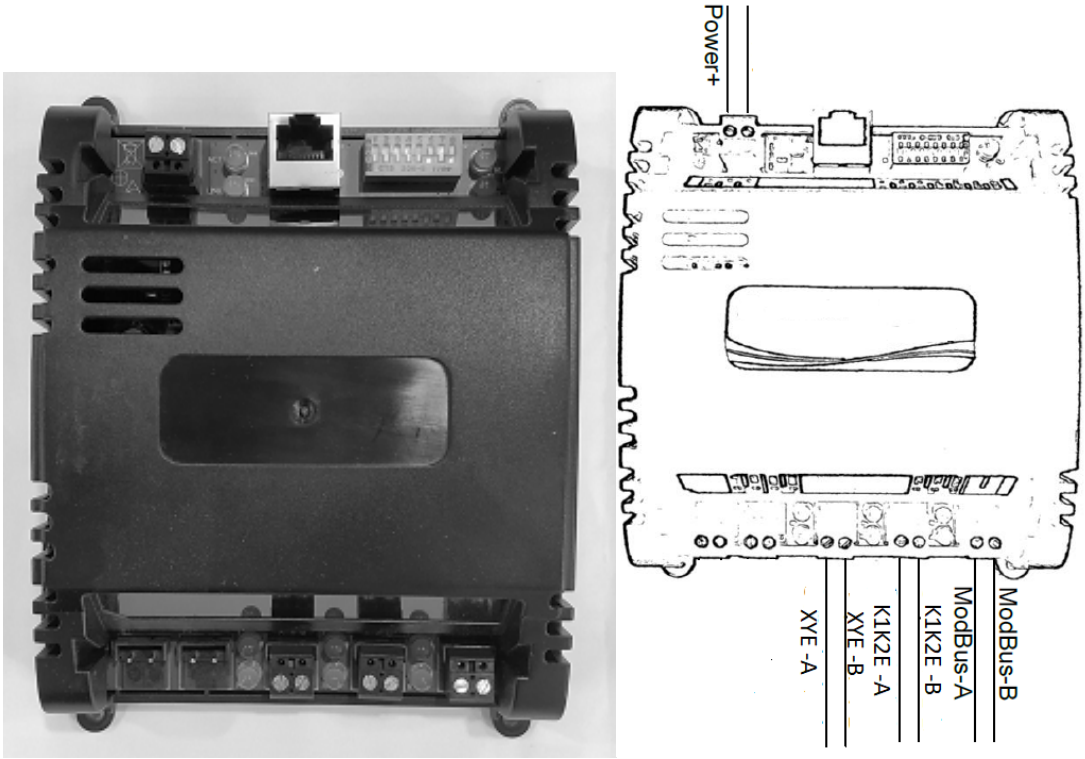
Dial-up	1	2	3	4	5	6	7	8
Weight	1	2	4	X	X	X	X	X

remain on as long as the centralized controller is powered on.
If the status LED indicator is not on after powered, please contact the system engineer for technical support.

5. Heartbeat (yellow) – During normal operation, the heartbeat LED indicator should flash approximately once per second. At startup, the heartbeat LED indicator flashes in the mode of 90% on - 10% off. If the heartbeat indicator remains on, off, or flashing quickly, contact the system engineer for technical support.
6. Sub-network port SEC (LAN2):
   The left green LED indicator - OFF indicates no Ethernet connection, and ON indicates an Ethernet connection
   The right yellow LED indicator - OFF indicates no data activity, and ON indicates an Ethernet connection and there is data activity on the LAN
7. Main network port PRI (LAN1):
   The left green LED indicator - OFF indicates no Ethernet connection, and ON indicates an Ethernet connection
   The right yellow LED indicator - OFF indicates no data activity, and ON indicates an Ethernet connection and there is data activity on the LAN
8. (Under the cover plate) Backup – the green LED indicator lights up when USB is plugged in, or when backup, restore, or factory defaults are restored.

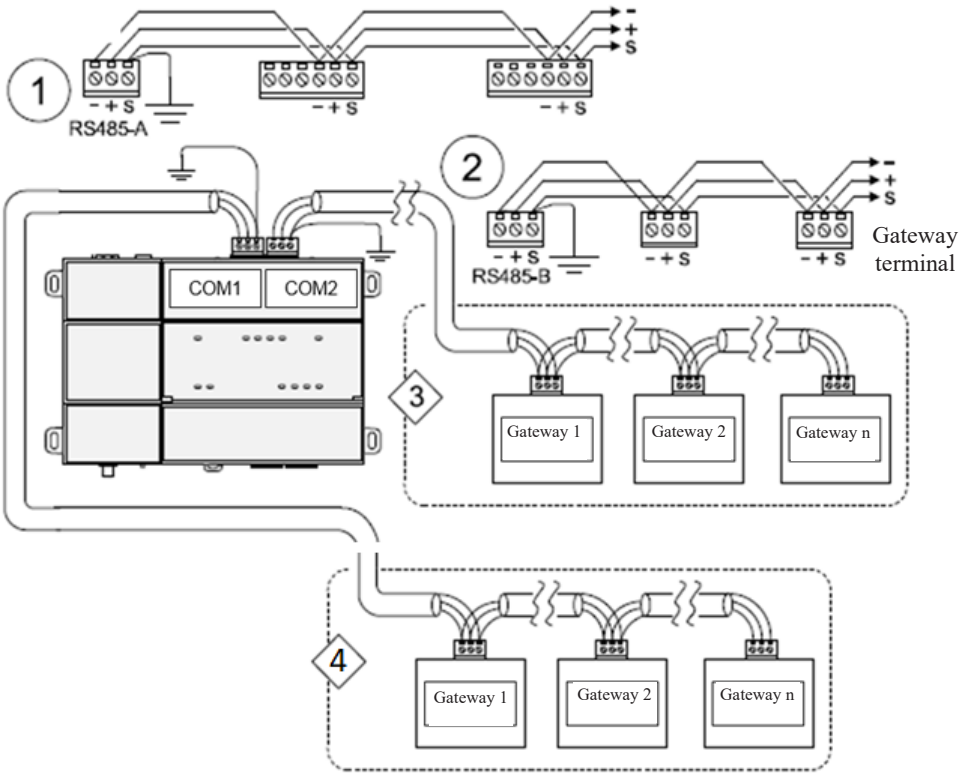
Communication gateway

Gateway connection port



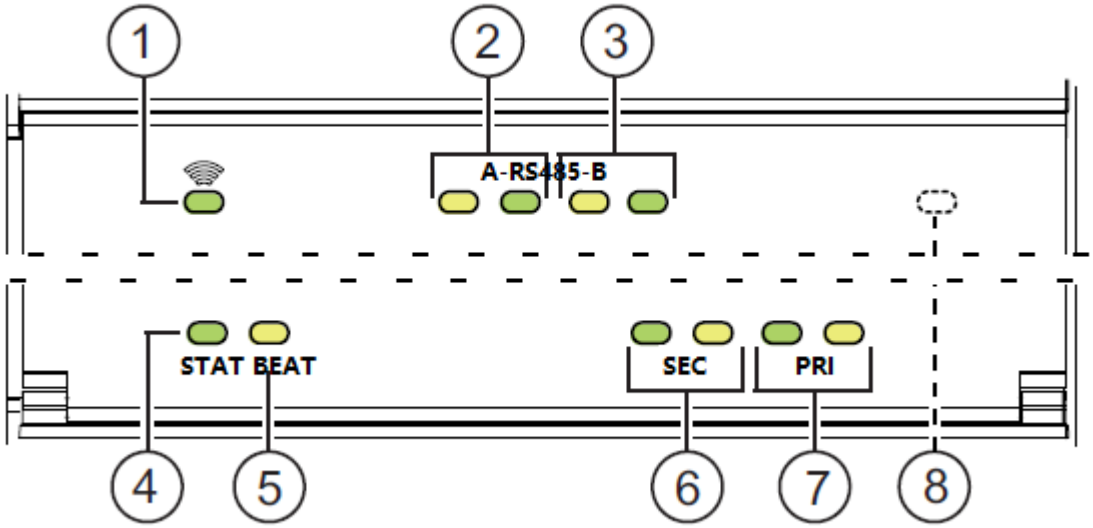
Follow the steps below to wire the communication gateway:

1. Connect the output end of 24V power (+ V1, -V1) of the gateway to the input terminals of power (+ V1 connecting to POWER+, -V1 connecting to COM) of the communication gateway and plug the power input terminal into the communication gateway.



Operation status LED

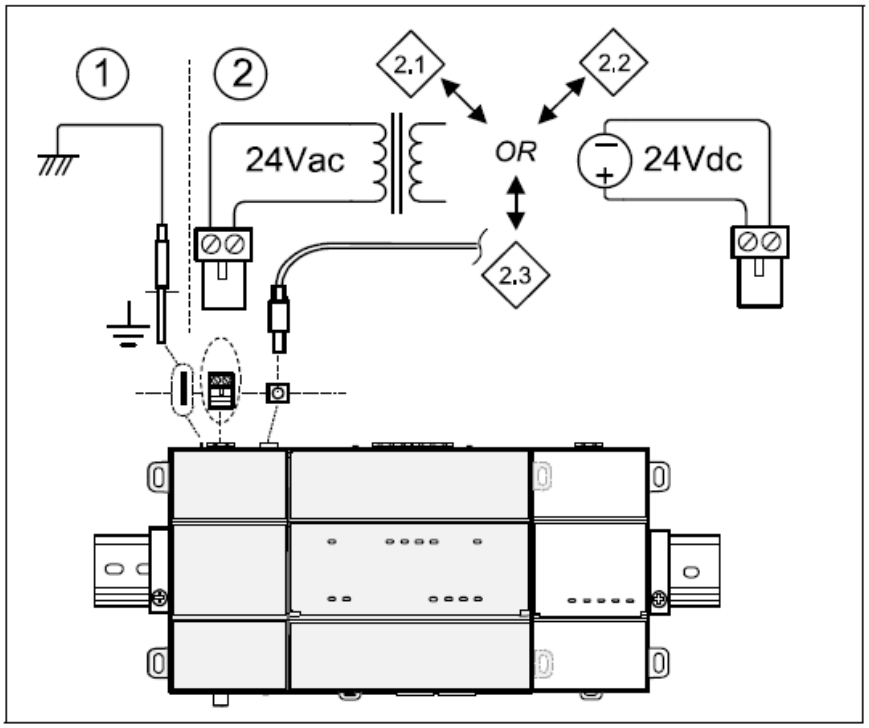
There are multiple LED indicators on the centralized controller to help confirm the status of the device.



1. WiFi (green) – As long as the WiFi DIP switch is not OFF, the LED indicator lights up.
2. RS485 “A”(COM1):
   Yellow LED sending indicator indicates that the centralized controller is transmitting data through RS485 port.
   Green LED receiving indicator indicates that the centralized controller is receiving data from the connected device
3. RS485 “B” (COM2):
   Yellow LED sending indicator indicates that the centralized controller is transmitting data through RS485 port.
   Green LED receiving indicator indicates that the centralized controller is receiving data from the connected device
4. Status (green) – This LED indicator is used to improve the CPU status check result, and should

Follow the steps below to wire the centralized controller

1. Take out the ground wire from the packing bag, connect one end to the chip terminal of the controller, and ground the other end nearby.
2. Take out the two-wire terminals from the packaging bag, and connect the 24V power (+ V1, - V1) wires of the gateway to the screw holes of the two-wire terminals using the method in Figure 2.2 below, and tighten the screws.



2.1 (AC): a dedicated 24V transformer; 2.2 (DC): no distinction between positive and negative

RS485 cables connecting to the centralized controller (two RS-485 ports are provided on the centralized controller):

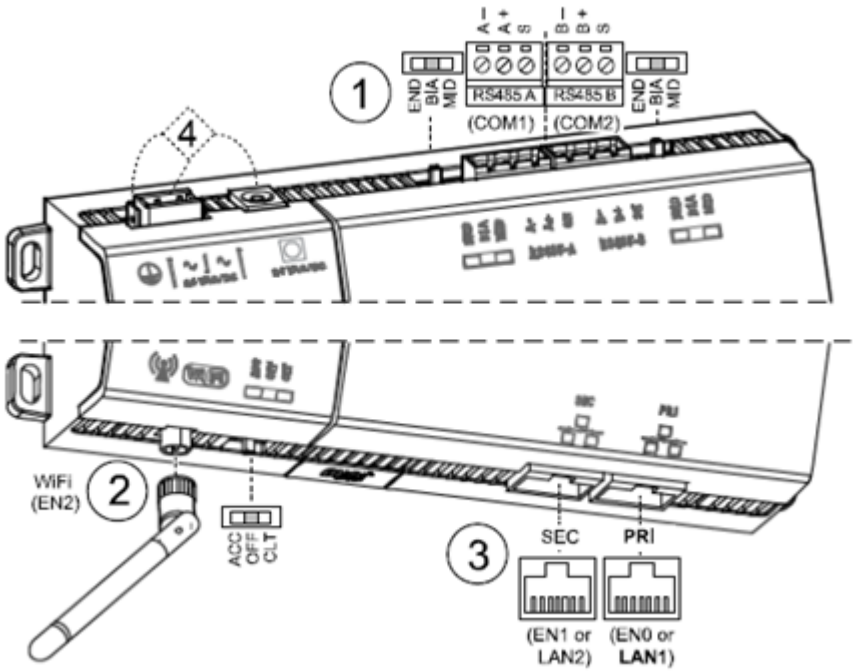
1. Connect the RS-485 ports of multiple gateways in series to port COM1 on the centralized controller. Connect this connector to the RS-485 positive and negative of the communication gateway using a shielded twisted pair. Please refer to the following figure for positive, negative and shielding terminal positions.
2. Connect the RS-485 ports of multiple gateways in series to port COM1 on the centralized controller.

Note:

1. Please connect with the terminals in the packing list and make sure there is no short circuit between the positive and negative terminals.
2. Type of connecting gateway cable: please select the shielded twisted pair with appropriate wire diameter according to the 485 wiring specifications.

Wiring

Centralized controller connection port



1. For the two RS485 connection ports (COM1 and COM2) and bias switch, please refer to RS485 bias switch
2. WiFi antenna port
3. Ethernet port (PRI means LAN1 is the main network port, SEC means LAN2 is the sub-network port). When installing and using, the network cable should be connected to the PRI, that is, the LAN1 main network port.
4. Ground wire and 24V power input

RS485 bias switch

Three bias switches are settled below each RS485 port:

- BIA – (default) RS485 bias and terminal: 2.7KΩ bias resistor without terminal resistor
- END – RS485 bias and terminal: 562Ω bias resistor and 150Ω terminal resistor
- MID – RS485 bias or terminal: 47.5K bias resistor without terminal resistor

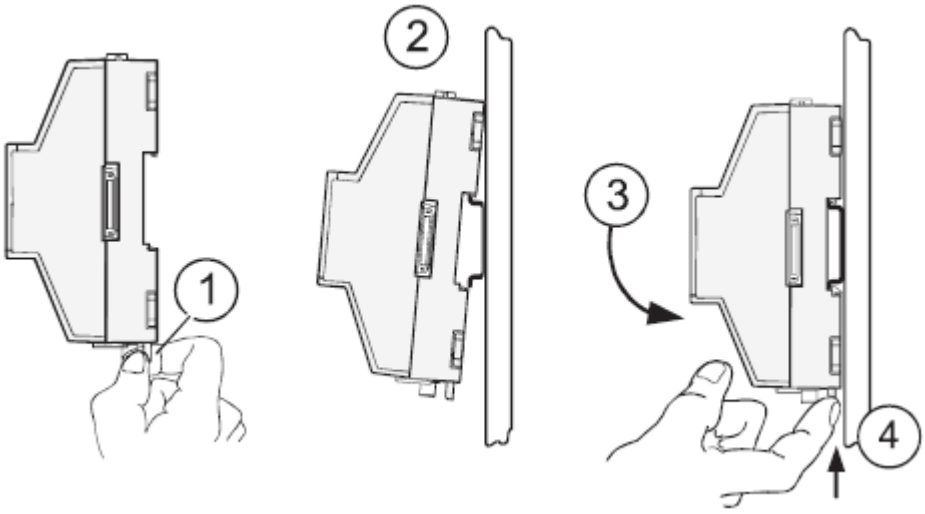
Generally, adding RS485 bias to eliminate the uncertainty when the bus is idle can improve the quality of bus communication:

- BIA -(default) this option can be selected, when the RS485 bus needs to be biased, but the centralized controller is not installed at the end of the bus
- END - This option can be selected when the centralized controller is installed at the end of the RS485 bus which has not been biased
- MID - This option can be selected when the centralized controller is installed at the middle of the RS485 bus which has been biased

Note: the factory default setting BIA is valid

Centralized controller connection

- Tilt the mounting compartment onto the guide rail and clip the fixing clasp to one edge of the guide rail.
- Pull down the plastic buckle with a screwdriver, then press down on the mounting compartment and make the buckle to snap onto the other edge of the DIN guide rail with force.
- Install the communication gateway and power supply in the same way.



1. Pull out the buckle under the centralized controller.
2. First tilt the centralized controller to hang one side of the guide rail.
3. Press the centralized controller flat to the guide rail.
4. Press the buckle upwards to lock the centralized controller onto the guide rail.

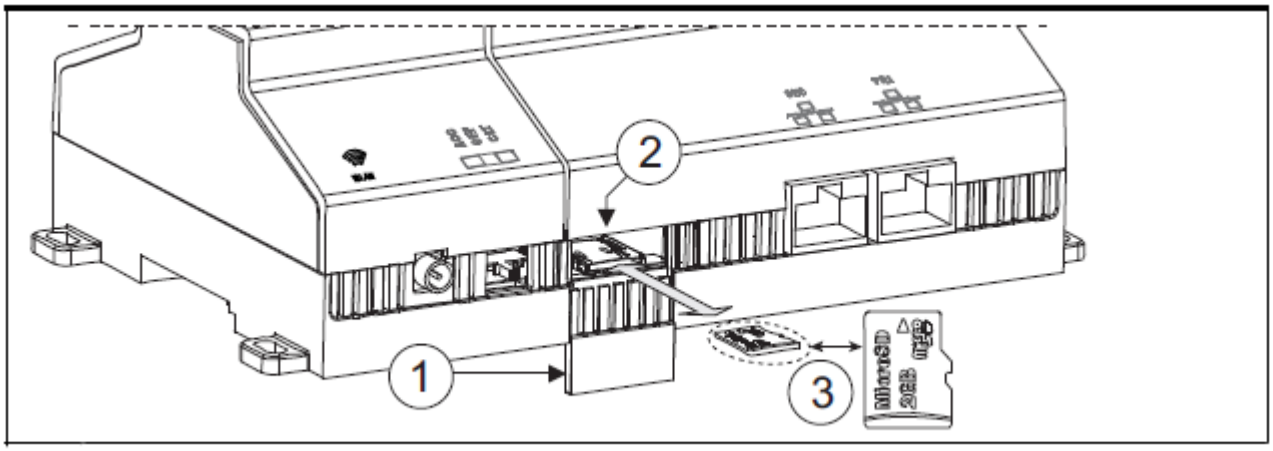
Materials required

The following materials are requested during installation:

- DIN guide rail: type NS35/7.5 (35mm x 7.5mm) and DIN guide rail mounting, used for the installation of centralized controller, power module and communication gateway. The length of DIN guide rail depends on the number of installation options.
- Power cable: used for the centralized controller power connection and gateway power connection.
- 485 cable: Used for the centralized controller connecting gateway.

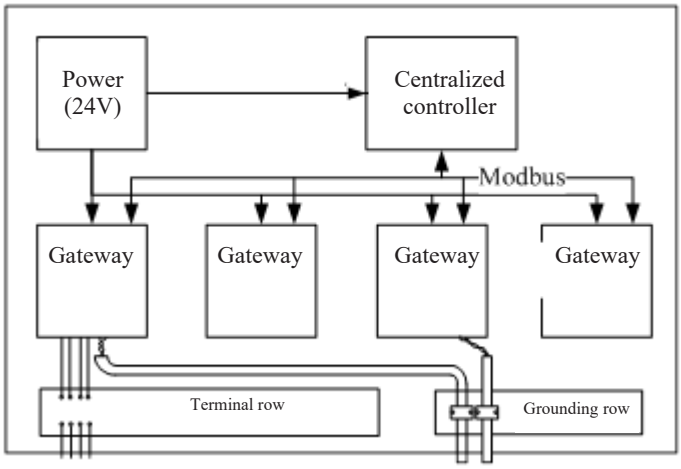
Installation

Install the SD card for the centralized controller:



1. Pull out the protection grid of the SD card.
2. Expose the SD card slot.
3. Plug the SD card into the slot in the direction shown and close the protection grid up.

Installation wiring layout reference:



Please install the centralized controller, communication gateway and gateway power supply onto the guide rail:

Installation preparation

Unpack the VRF centralized controller and communication gateway, and check whether the contents are damaged or missing pieces. If there is any damage, please inform the shipping company immediately and return the damaged parts for immediate repair or replacement.

Environmental requirement

Note that the installation location of the system has the following requirements:

- The centralized controller is only suitable for indoor use, the altitude is limited to 2,000 m, and its environment must meet the following conditions: operation temperature range is-20ºC ~ 60ºC (-4ºF ~ 140ºF), storage temperature range is -40ºC ~ 85ºC (-40ºF ~ 185ºF), relative humidity range is 5% ~ 95%, no condensation, pollution degree 3, allowable voltage fluctuation to +/- 10%.
- The gateway is only suitable for indoor use, its environment must meet the following conditions: operation temperature range is 0ºC ~ 49ºC (32ºF ~ 120ºF), storage temperature range is -28.9ºC ~ 55ºC (-20ºF ~ 130ºF), relative humidity range is 5% ~ 95%, no condensation, pollution degree 3, allowable voltage fluctuation to +/- 10%.
- Horizontal installation is strongly recommended to achieve maximum heat dissipation and meet the upper limit of operating temperature. Other installation directions will lower the upper temperature limit.
- It is recommended to install in the control box. The control box should be designed with the heat dissipation of the 20-watt controller. If other equipment is also installed in the same control box, the heat dissipation problem should also be considered to ensure that the temperature is controlled in the required operation range.
- Do not install the controller to:
  – Extremely humid, corrosive or flammable and explosive areas.
  – Locations subject to vibration or shock.
  – Locations susceptible to electrical noise, such as near large compressors, motors, welding equipment, spark igniter, and variable frequency drives.

Power Requirements

Centralized controller power supply

- If you use AC power to power the centralized controller:
  A dedicated 24V AC transformer that meets the UL CLASS2 certification should be used, with which minimum power is 24V. The AC power supply can only provide power for the device, and cannot provide additional gateway.
- If you use DC power to power the centralized controller:
  A dedicated 24V DC adapter that meets the UL CLASS2 certification or LPS (limited power source) should be used, with which minimum current is 1A (24W). A barrel connector can be used to supply power (9.5mm L x 5.5mm OD x 2.1mm ID).

Power for the gateway: 15~24V AC/DC, allowable voltage fluctuation: +/-10%.

It is recommended that you use the corresponding power of 24V DC power supply to power the centralized controller and the gateway.

Packing list

The following items shall be contained in the packing case:

For the J-8000-VRF-L system

Model	Quantity	Description
J-8000-VRF-L	1	centralized controller, used to centralized control of up to 1,024 indoor units
GW-VRF	8	Communication gateway, used to connect the air conditioner network and the VRF centralized controller
Wiring terminal	51	Gateway terminal (6*8), centralized controller terminal (3)
Centralized controller ground wire	1	
24V Power adapter	1	100-240V 50/60HZ

For the J-8000-VRF-M system

Model	Quantity	Description
J-8000-VRF-M	1	centralized controller, used to centralized control of up to 512 indoor units
GW-VRF	4	Communication gateway, used to connect the air conditioner network and the VRF centralized controller
Wiring terminal	27	Gateway terminal (6*4), centralized controller terminal (3)
Centralized controller ground wire	1	
24V Power adapter	1	100-240V 50/60HZ

For the J-8000-VRF-S system

Model	Quantity	Description
J-8000-VRF-S	1	centralized controller, used to centralized control of up to 256 indoor units
GW-VRF	2	Communication gateway, used to connect the air conditioner network and the VRF centralized controller
Wiring terminal	15	Gateway terminal (6*2), centralized controller terminal (3)
Centralized controller ground wire	1	
24V Power adapter	1	100-240V 50/60HZ

For the J-8000-VRF-MIN system

Model	Quantity	Description
J-8000-VRF-S	1	centralized controller, used to centralized control of up to 128 indoor units
GW-VRF	1	Communication gateway, used to connect the air conditioner network and the VRF centralized controller
Wiring terminal	15	Gateway terminal (6), centralized controller terminal (3)
Centralized controller ground wire	1	
24V Power adapter	1	100-240V 50/60HZ

Please read this manual carefully before installation and follow the relevant content.
Please simultaneously refer to the installation manuals for the indoor unit and outdoor unit during the installation.
This device must be installed in accordance with the national wiring rules.
This product is a precision equipment. Therefore, please be careful to prevent damage from being dropped or stepped on.

Installation Precautions

Please read this "Installation Precautions" before installation and strictly observe the relevant content.
After installation, please conduct a trial run and make sure that no abnormal happens during the trial run. Please explain the operation mode of the equipment to the customer according to the User manual.
Please ask the customer to keep the Installation and configuration manual.

Warnings

- The installation work must be done by the distributor or a professional installer. Do-it-yourself may cause poor construction, electric shock or fire.
- Please correctly install the equipment according to the Installation manual.
- Incorrect installation may cause electric shock and fire.
- Be sure to use the accessories included and parts specified during installation, otherwise, it may cause electric shock or fire.
- Electrical work should be performed by an authorized electrical engineer in accordance with *Electrical Standards, Local Electrical Safety Regulations*, and *wiring specifications*. Incorrect installation may cause electric shock and fire.
- During the wiring process, make sure the wires are correctly and securely connected to the specified cables, so as to avoid external forces acting on the cables from affecting the terminals.

Notice

- Please connect the ground wire and make construction.
- Never connect the ground wire onto the gas pipes, water pipes, lightning rods or phone wires. Incorrect grounding may cause electric shock.
- Operate in the electrostatic discharge protected area.
- Do not touch the printed circuit board (PCB) without electrostatic protection. Use an anti-static wrist strap when touching the PCB. The anti-static wrist strap chucks must be grounded firmly.
- Do not install the centralized controller, gateway and other equipment in the following places.
    1. Places full of lampblack, such as kitchens and other places with lampblack and steam, etc.
    2. Places producing corrosive gases such as sulfur dioxide.
    3. Places where radio waves are generated. It may cause abnormal operation of the control system and equipment.
    4. Places with a risk of combustible gas leakage.