



Service Manual

ERV+DX coil

Capacity: Cooling(8.5kW-14.5kW)

Heating(4kW-12kW)


Rated Frequency: 50/60Hz


Operation Range: -25~48°C

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1 Safety Notices (Please be sure to follow)



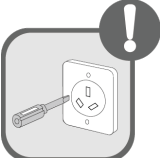





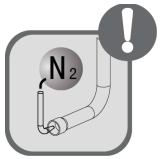







 **WANGER!** If you do not follow these instructions exactly, the unit may get severely damaged or cause personal injury or death.

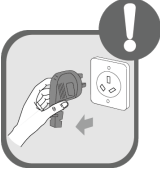



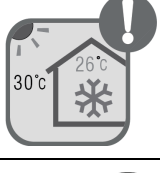
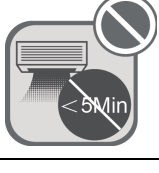
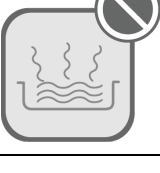

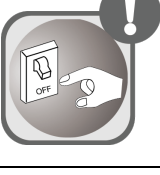
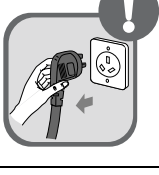
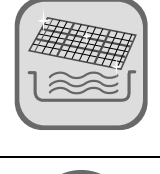


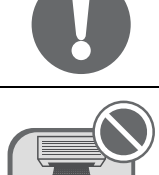


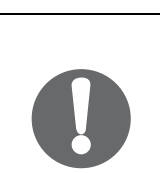

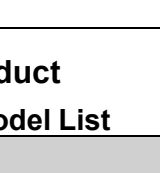
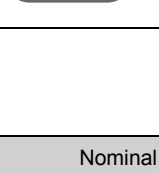
 **CAUTION!** If you do not follow these instructions exactly, the unit may have minor or moderate damage or cause personal injury.

 **NEVER ATTEMPT!** Improper operation may result in death or serious injury.

 **BE SURE TO OBSERVE!** Improper operation may lead to personal injury or property damage.

 **WARNING!** This product can't be installed in corrosive, inflammable, explosive or oily environments or places with special requirements (for example, a kitchen). Otherwise, the unit will not be able to operate normally, have a shorter service life, or even cause fire hazard or serious injury. As for such places, please adopt special air conditioners with anti-corrosive or anti-explosion feature.


	Please install the unit according to the instructions in this manual. Read this manual carefully before starting up or checking the machine.		Installation should be performed by the distributor or qualified technicians. Do not install the product by yourself. Improper installation may result in water leakage, electric shock or fire hazard
	Before installation, please check the power cord if it is in accordance with the specifications on the nameplate. Make sure the power is safe.		The air conditioner must be properly grounded through a power receptacle to avoid electric shock. The grounding wire shouldn't be connected with a gas pipe, water pipe, lightning arrester or a telephone line.
	When installing, specialized accessories and parts must be used; otherwise water leakage, electric shock, fire hazard may occur.		R410A refrigerant can produce poisonous gas once it meets fire, so please ventilate the room immediately if refrigerant leaks out during installation.
	A damaged power cord or connecting wire must be replaced with a specialized electric cable by a professional technician.		If the power cord is to be connected, please put back the cover of electric box after connecting the cord to avoid danger.
	Nitrogen must be charged according to technical requirements.		Connect power 8 hours before operation. Do not disconnect power if you want to stop the unit in a short period of time, e.g. in one night. (This is for protecting the compressor.)
	For units that adopt wired control, do not connect power until the wired controller is well installed. Otherwise, the wired controller cannot be used.		When installation is finished, please check and make sure the drain pipe, pipeline and electric wires are all well connected so as to avoid water leakage, refrigerant leakage, electric shock and fire hazard.
	Never start or stop the air conditioner by inserting or removing the power cord.		Never put your finger or any object into the air outlet or air grille.
	Children under the age of 12 and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge shall not operate this appliance.		Do not operate the machine with wet hands.

	Please turn the unit off and unplug the unit before cleaning. Otherwise, it may cause electric shock or personal injury.		Do not spray water on this product or wash the inside of the unit with water; otherwise, it will cause malfunction or electric shock.
	Do not expose this product directly to water or place it in a damp or corrosive environment.		Do not repair this product by yourself. Incorrect work will cause electric shocks or fire. Please contact GREE service center for repairs.
	During cooling mode, indoor temperature should not be set too low. Keep the difference between indoor temp and outdoor temp within 5°C.		Do not turn off the unit until it runs for at least 5 minutes. Otherwise, oil return of the compressor will be affected.
	Volatile liquid like thinner or gasoline will damage the appearance of this product. (Please use soft dry cloth and wet cloth with mild detergent to clean the outer case of the machine.)		When installation is finished, please check and make sure the power cable and communication wires are well connected so as to avoid electric shock, short circuit and fire hazard.
	When an abnormality (such as a bad smell) occurs, stop the unit at once and disconnect power. Then contact GREE service center. If the unit continues to operate despite abnormal condition, it may be damaged and cause electric shocks or fire.		For safety concern, if the unit is not used for a long time, please remove the power plug.
	Please clean the air filter regularly. Keep the air filter clean.		Install a bird screen or a similar device at the external air vent.
	The outdoor air inlet must be far away from the exhaust port of flammable gas.		The air inlet must be located in a place where backflow of exhaust air will not occur.
	A service port of specific size must be reserved according to the instructions of installation.		In order to avoid incomplete combustion, which may lead to intoxication, keep heating appliances away from the air flow of the unit.
	For pipe fan and partition wall fan, mind the air from the open air duct or other appliances that produce open fire flowing back into the indoor side.		Please verify completely before using the appliance in special places (for example, places where there are precision instruments, food and art works).
	For non-professionals, never touch the fan volute or other movable parts, as it may result in injury.		Due to the limitation of the detection principle of air quality detector, in places where humidifiers or aroma diffusers are used, the air quality detector will inevitably produce different deviations. This is a normal phenomenon.

2 Product

2.1 Model List

Model			Nominal Capacity		Power Supply
Model name	Refrigerant	Product Code	Cooling (W)	Heating(W)	Ph, V, Hz

GMV-VDR5PH/SA-S	R410A	CM810N1860	8500	4000	1,220–240,50/60
GMV-VDR8PH/SA-S	R410A	CM810N1880	12000	10600	
GMV-VDR10PH/SA-S	R410A	CM810N1870	14500	12000	
Appearance					
					

2.2 Function introduction

This series of fresh air unit is a ventilation device that can continuously filter fresh air for 24 hours and replace the installation of indoor air to meet user comfort requirements. The built-in heat exchange core of the unit can efficiently recover the exhaust energy during operation and reduce the additional indoor load brought about fresh air. The inside of the unit is also equipped with an evaporator which has the function of cooling and heating, further processing the fresh air after heat exchange. It will not increase AC capacity load additionally during the process of enjoying fresh air, avoiding indoor temperature fluctuation brought about fresh air, thus reducing comfort. This series of units also adopts constant air volume technology and a combination of various operating modes to greatly expand the applicable location of the unit.

The product accords with Rule (EU) 1253–2014

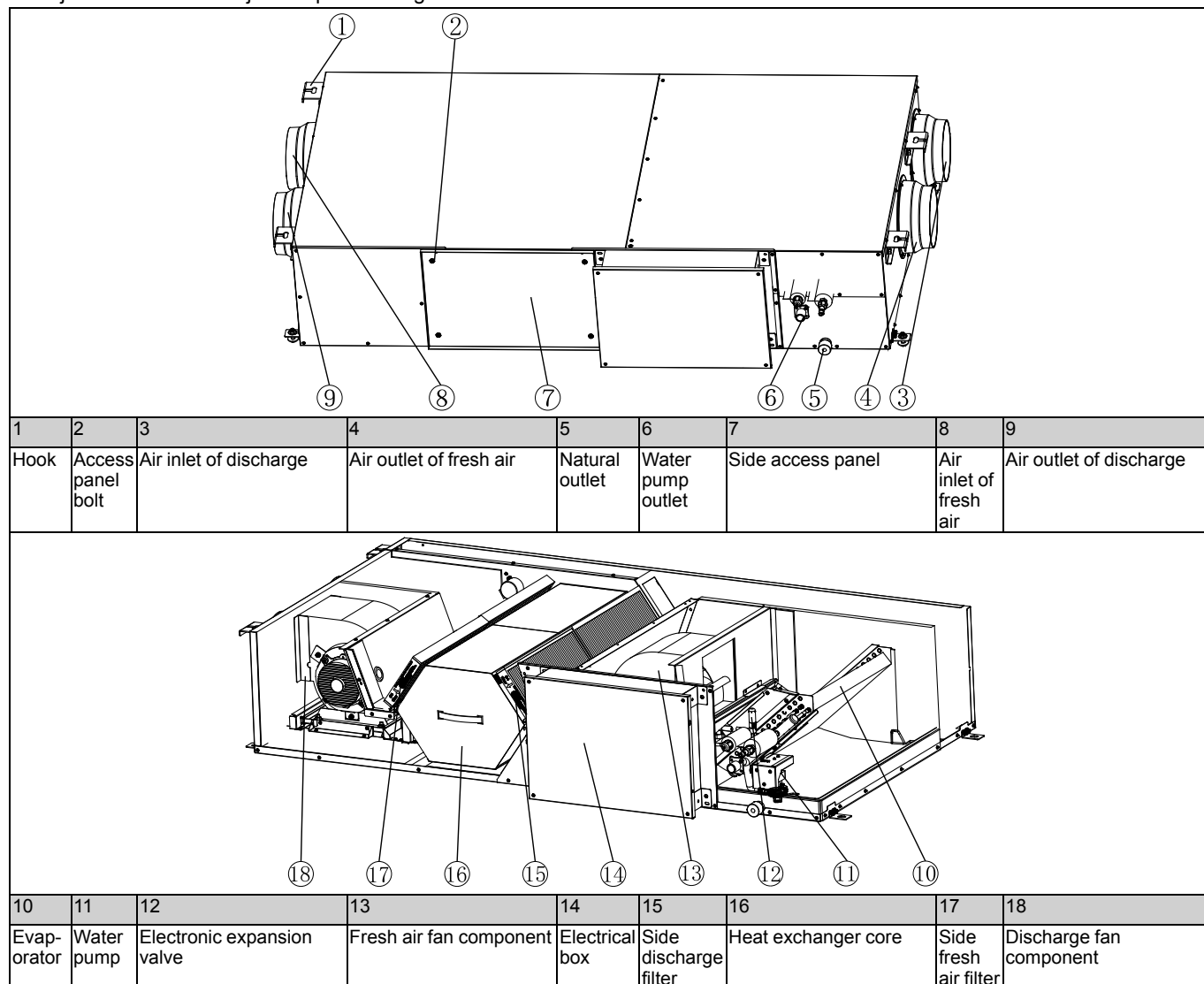
Table 2.2.1 Function list

Function	Model	Remarks
	GMV-VDR5PH/SA-S GMV-VDR8PH/SA-S GMV-VDR10PH/SA-S	
	√ : Standard function ○ : Optional function × : Not available	
Operation control	√	
Linkage control	√	Used with multi VRF unit
Fan speed	√	
Heat exchange operation mode	√	
Bypass operation mode	√	
Auto operation mode	√	
Cooling mode	√	
Heating mode	√	
Dehumidification mode	√	
Supply air mode	√	
Positive pressure mode	√	
Negative pressure mode	√	
Air filter	√	
Filter clean/replacement alarm	√	
Timer	√	
Group control	√	
Free cooling	√	

Function	Model	Remarks
	GMV-VDR5PH/SA-S GMV-VDR8PH/SA-S GMV-VDR10PH/SA-S	
	√ : Standard function ○ : Optional function × : Not available	
Free cooling at night	√	
Centralized control	○	The function is available when used with Gree centralized controller
Remote control	○	The function is available when used with Gree remote monitoring system

2.3 Major structure

Major structure and major component diagram



2.4 Outline Dimensions

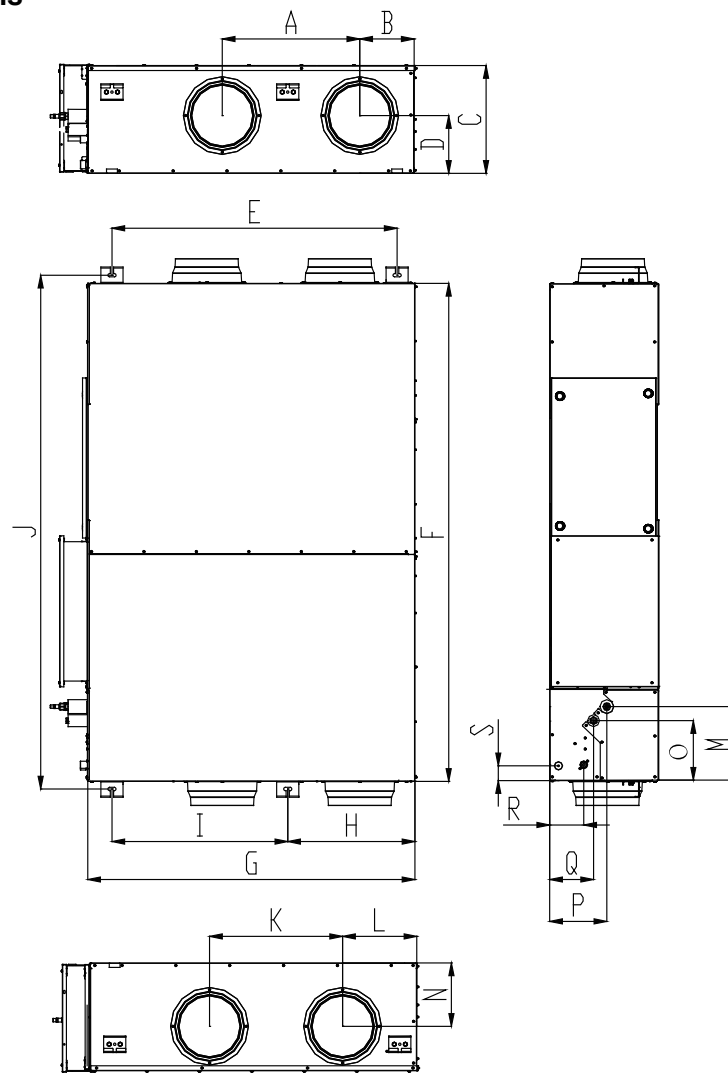


Figure 2-1 GMV-VDR10PH/SA-S GMV-VDR8PH/SA-S

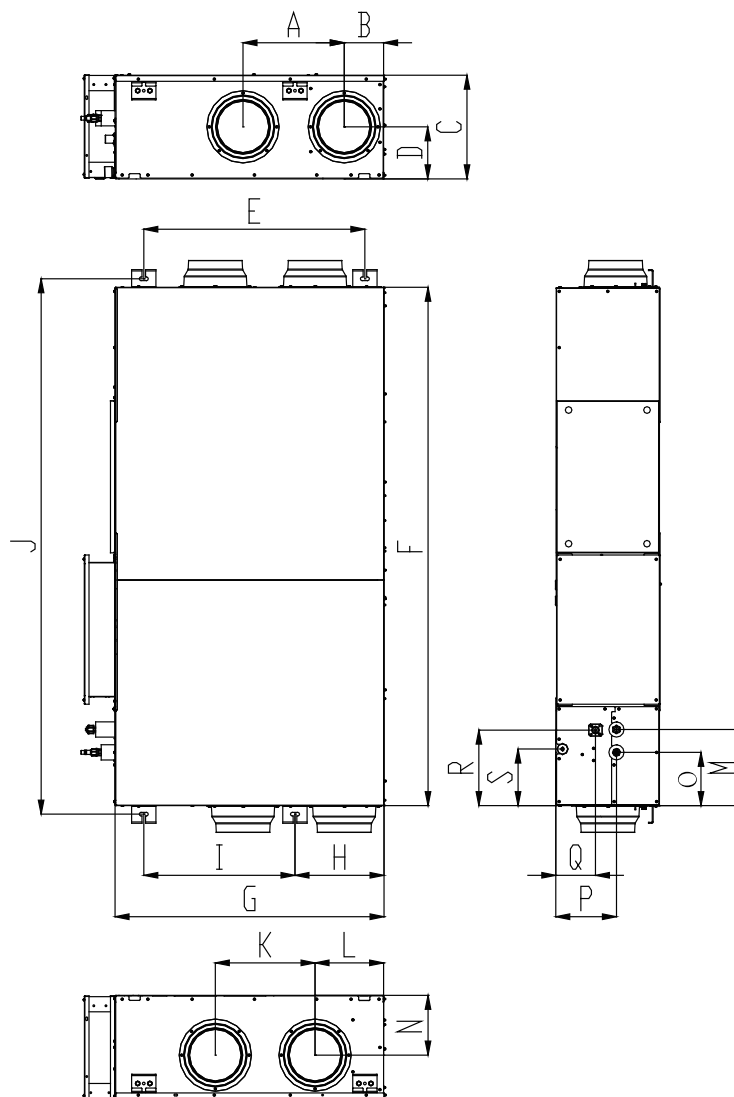


Figure 2-2 GMV-VDR5PH/SA-S

Table 2.4.1 Outline Dimensions

Measuring unit: mm

Model	A	B	C	D	E	F	G	H	I	J
GMV-VDR5PH/SA-S	333	130	340	170	727	1700	880	292	498	1762
GMV-VDR8PH/SA-S	498	197	390	210	1033	1800	1185	458	637	1861
GMV-VDR10PH/SA-S										
Model	K	L	N	M	O	P	Q	R	S	
GMV-VDR5PH/SA-S	328	226	196	250	175	200	130	247	185	
GMV-VDR8PH/SA-S	482	268	230	268	217	207	159	123	53	
GMV-VDR10PH/SA-S										



NOTE! Due to individual differences in production assembly, above figures may vary from those of the present products. Please refer to the actual dimensions of your product.

2.5 Performance Parameters

Table 2.5.1 Performance Parameters

Model	GMV-VDR5PH/SA-S	GMV-VDR8PH/SA-S	GMV-VDR10PH/SA-S
Power supply	220-240V~		
Rated frequency(Hz)	50/60		
Power input(W)	270	440	640
Cooling capacity(W)	8500	12000	14500
Heating capacity(W)	4000	10600	12000
Fresh air volume(m ³ /h)	500	800	1000
External static pressure (Pa)	150	150	150
Thermal efficiency(%)	73	74	73

Noise(dB)	55	59	62
Weight(kg)	120	158	158
Connection pipe size of duct type(mm)	200	250	250

**NOTES!**

- (1) Airflow volume data is the value tested under the condition of rated static pressure in high fan speed, subject to actual installation condition, there might be certain deviation.
- (2) The nominal static pressure is the static pressure tested acquiescently when leaving the factory, other high-level filter might affect unit performance parameter.

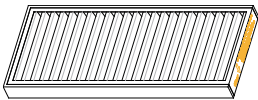
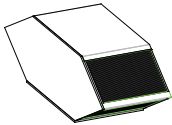
2.6 Parameters of Filter and Heat Exchange

Table 2.6.1 Performance parameter of filter core

Measuring Unit : mm

Model	GMV-VDR5PH/SA-S	GMV-VDR8PH/SA-S	GMV-VDR10PH/SA-S	Washable	Recyclable	Suggested replacement time
Rough filter	155×382×28	184×530×35		yes	no	Refer to the tips of wired controller after cleaning for 3 times
Heat exchanger core	268×386×382	330×450×522		no	no	2 years

Table 2.6.2 Filter and Heat Exchange

Rough filter (standard configuration)

Heat Exchange core




NOTE!Conduct cleaning and maintenance periodically for the fresh air side of filter and discharge side of filter.

2.7 List of Accessories

Table 2.7.1 List of Accessories

Measuring Unit:pc

No	Name	GMV-VDR5PH/SA-S	GMV-VDR8PH/SA-S	GMV-VDR10PH/SA-S	Remarks
1	Nut with washer M10×8	4	4	4	
2	Nut M10	4	4	4	
3	Washer 10(spring washer M10×2.6)	4	4	4	
4	Washer 10(big washer M10×Φ30×2.5)	4	4	4	
5	Union nut	2	2	2	
No	Name	GMV-VDR5PH/SA-S	GMV-VDR8PH/SA-S	GMV-VDR10PH/SA-S	Remarks
6	Insulating sleeve of gas collecting pipe	1	1	1	
7	Insulating sleeve of liquid inlet pipe	1	1	1	
8	Drain pipe sponge	2	2	2	
9	Drain hose	1	1	1	
10	Drain hose sponge	1	1	1	
11	Clamp	1	1	1	
12	Wired controller	1	1	1	



NOTE!The package base can be used to locate the unit during installation.

2.8 Naming rules of product

2.8.1 Basic structure of model

GMV	—	□	□	□	□	□	□	□	/	□	□	□	□	□
1		2	3	4	5	6	7	8		9	10	11	12	13

2.8.2 Instruction for rules of model

Table 2.8.1 Instruction for rules of model

No.	Name	Instruction
1	product code	GMV
2	code of indoor unit	N- indoor unit V- energy-recovery ventilation unit
3	classification of residential unit and commercial unit	H- residential commercial: default

4	special functions	Y- solar energy Z- heating dry DC inverter - default
5	form of motor	D- DC motor AC motor: default
6	functional code	R- pure heat pump/ energy-recovery ventilation unit with cooling function L- cooling only unit X- fresh air unit W- dual heating source Q- heat recovery electric heating default: default
7	code of cooling refrigerant / air volume	Indoor unit: nominal cooling capacity / 100 (W) Energy-recovery ventilation unit: air volume/ 100 (m³/h)
8	classification of unit	PL-low static pressure duct type unit P-standard static pressure duct type unit PM-medium static pressure duct type unit PH-high static pressure duct type unit PB-thin duct type unit T- 4-way cassette type unit TX- compact cassette type unit (4-way air outlet) TD- 1-way cassette type unit TS- 2-way cassette type unit ZD- floor ceiling type unit A-Air handler ZK- combine unit C- console type unit G- wall-mounted unit ZA- horizontal concealed LA- vertical concealed
9	with water pump or not	S- with water pump
10	code of refrigerant	R410A default omitted
11	code of panel of wall-mounted unit	Use the panel code of residential product mode for export, such as "B3"
12	design serial number	Arrange according to the order of A, B, C.....
13	power supply	3 phase power-S



NOTE! "S" in this series refers to the code of supplementary power supply.

3 Operating range of product

The recommended outdoor temperature range for operation is -25°C~48°C.

If the temperature of outdoor fresh air is over 48°C or less than -25°C, the inhaled fresh air may damage the internal components of unit, such as the heat exchange core freezes and destroys the internal structure of the unit body, the sensor damages, etc.

4 Operational principles

4.1 Instruction of principles

ERV-DX coil series is an equipment for comprehensively processing and supplying fresh air. The unit consists of air ducts (- fresh air side and exhaust side) in two sides. Power of exhaust side is provided by the exhaust fan. After being drawn into the unit by the fan, the indoor exhaust air goes through the filter, heat exchange core, and then be pumped to the outside. Power of fresh air side is provided by the fresh air fan. The outdoor fresh air goes through the filter, heat exchange core after being drawn into the unit by the fan, and then be drawn into heat exchanger via fan, finally be sent into the room.

4.2 Name and major functions of different parts

Table 4.2.1 Name and major functions of different part

No.	Name	Major functions
1	Exhaust fan	Provide power, draw the indoor exhaust air to the outside
2	Fresh air fan	Provide power, draw the outdoor fresh air into the room
3	Filter	Protect the heat exchange core, filter the large particles in the air

4	Heat exchange core	Reclaim the energy of exhaust air, improve energy efficiency
5	Heat exchanger	Further process the temperature and humidity of fresh air

5 Product Installation

5.1 General specification

The user shall entrust professional HVAC engineer to conduct equipment model selection and engineering design, hire experienced construction company to complete the construction. The design and construction shall be consistent with related national stipulations and regulations. If engineering accidents occur due to incorrect installation, the user shall undertake the full responsibility. If equipment installation is not conducted according to stipulations and requirement and the device cannot operate normally, corresponding charges will be taken for product after-sales maintenance and services provided by our staffs.

This series of unit shall be used with multi VRF unit. It can be connected to the system by means of mixed connection. To avoid affecting the performance of indoor unit, the capacity sum of the connected fresh air unit and normal indoor unit shall between 50% ~ 100% of the capacity of outdoor unit. Among which, the capacity of the connected fresh air unit shall not exceed 30% of the capacity of outdoor unit; otherwise, it will affect user comfort, or even damage the unit.

5.2 Flow chart for engineering installation

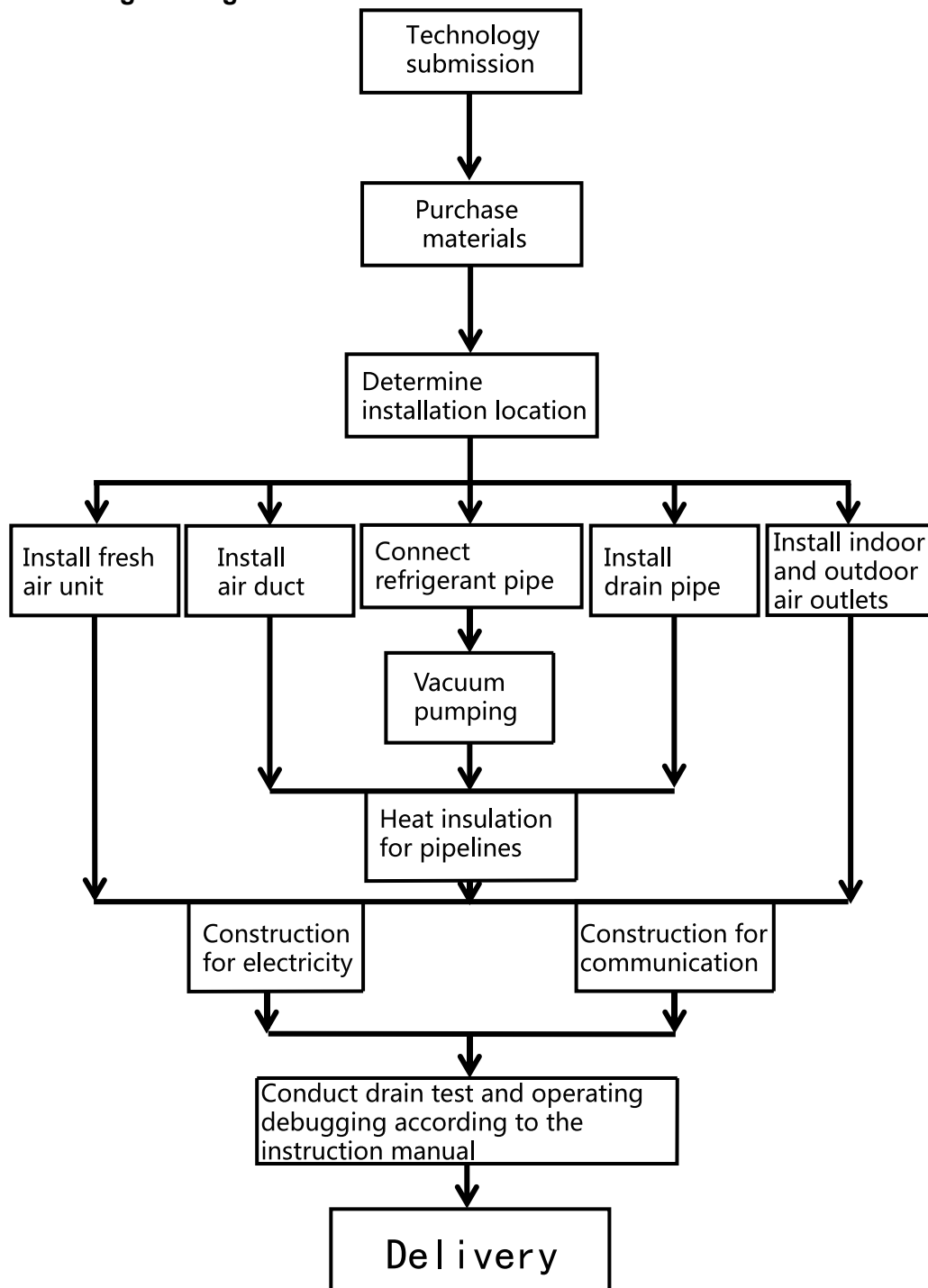




Figure 5-1 Flow chart for engineering installation

5.3 Preparation before installation

5.3.1 Safety requirements for installation and construction

- (1)  **WARNING!** Before the construction, all safety and related safety assessments must be carried out for all personnel involved in the installation and construction. In the event of violations, the relevant personnel must bear the responsibility.
- (2)  **WARNING!** During the entire installation and construction process, personal and property safety must always be placed first. The construction process must comply with relevant national safety regulations to avoid personal injury or property damage.

5.3.2 Importance of installation

Multi VRF fresh air system is a residential central air conditioning fresh air system. Some issues for the installation of the system may also impact the operating effect of the unit. Frequent problems that may occur during the installation are:

Table 5.3.1 Feedback table for problems of installation

No.	Installation problems	Influences
1	There are debris in the air duct (sands, dusts, etc.)	Impact the service life of filter, increase the initial resistance of air duct and filter.
2	Improper fixture of air duct or distortion	There is vibration or noise during operation of unit.
3	Heat insulation for air duct has not been well conducted	regions, condensation is likely to occur when the temperature difference between indoor and outdoor is large.
4	Installation space and inhalation space for fresh air unit is not sufficient	filter or maintaining motor may damage the indoor decoration or impact the air switch performance of unit due to sufficient space for maintenance.
5	Improper position of air inlet and outlet of fresh air unit	Not conducive to the arrangement of fresh air exhaust flow field
7	Wrong wire connection or invalid connection of linkage communication wire	system cannot report error normally and the unit cannot start up the linkage control.
8	Improper protection of linkage communication wire	communication wire is short-circuited or open-circuited, the unit reports communication error.
9	Heat insulation for refrigerant pipeline or condensate water pipeline does not meet the requirements	It is prone to condensation and dripping, destroying indoor decoration; in severe cases, it will cause overheating of the system and activate protection mode.
10	Condensate water pipeline is not well drained	It will cause water accumulation in indoor unit, affecting the normal operation of the system; water leak may damage the decoration of indoor unit.
11	Insufficient slope or incorrect connection of the condensate pipe	When the slope is inconsistent, it will cause water accumulation and water leakage in the indoor unit.
12	The refrigerant pipe is blocked or mixed with impurities and dust.	The cooling and heating effect of the unit is reduced; in severe cases, the compressor will be overheated for a long time; the impurities mixed into the lubricating oil will affect the lubrication effect and even burn the compressor.
13	Refrigerant piping exceeds piping requirements	The pipeline loss is too large, and the energy efficiency of the whole unit is reduced; it is not conducive to the long-term operation of unit. (Please refer to the instruction manual for configuration of outdoor unit)
14	Incorrect charging volume of refrigerant	The unit cannot properly control the flow distribution; the compressor is prone to conduct wet operation or overheating operation. (Please refer to the instruction manual for configuration of outdoor unit)
15	Refrigerant pipe leak	Insufficient circulating refrigerant in the unit, the cooling and heating effect of the unit is reduced; long-term operation is prone to cause overheating or even damage to the compressor.
16	No (nitrogen) or insufficient nitrogen charge when installing (welding) the refrigerant pipe	pipeline is blocked; the cooling and heating effect of the unit is reduced; the compressor is worn; in severe cases, the unit cannot operate normally or even burn the compressor.
17	Insufficient vacuum degree in the refrigerant piping system	The cooling and heating effect is degraded; protection often occurs thus the unit cannot work normally, and in severe cases, it will damage important parts such as the compressor.
18	Water is mixed into the refrigerant pipe	The compressor is prone to have copper plating, the efficiency is reduced, and abnormal noise is generated; the system is prone to occur ice blockage and cannot be operated normally.
19	Refrigerant piping specifications do not meet the configuration requirements	If the configuration specification is too small, the pipeline resistance will increase, which will affect the cooling and heating effect of the unit. If the configuration specification is too large, it will not only cause unnecessary waste, but also cause the system cooling and heating effect to decrease.

In order to ensure the quality of the installation, it is necessary to know whether the unit has special requirements for installation before installation. The relevant installer should have the corresponding engineering construction qualification. Otherwise, it must be trained by the professional technicians of the manufacturer and reach the standard before construction.

An electrician engaged in special operations during construction must have an operation permit and a corresponding vocational skill qualification certificate.

5.3.3 Cooperation

Quality of the engineering installation is inseparable from the cooperation with various professional personnel, which should be coordinated and meticulously organized with various fields such as architecture, structure, electrical, water supply and drainage,

fire protection and decoration. When the pipeline is arranged, it is necessary to avoid the automatic sprinkler of fire protection, and coordinately distribute it with electric, lighting fixtures and decorative surfaces, and arrange it reasonably.

(1) Requirements for construction

- 1) Special pipeline wells and wind shafts should be reserved, and the space for installation of equipment and related pipelines should be reserved as much as possible so that the equipment should be installed in the ceiling as much as possible.
- 2) Reserve holes and casings, pre-embedded pipe installation positions, etc.
- 3) The thread-through position of wall for the refrigerant pipe, duct pipe and drain pipe shall be reserved with holes or casing. Bearing girder must be laid with steel casing.

(2) Cooperation requirements for decoration engineering

- 1) Installation of the unit should not destroy the bearing structure and decorative style of the construction.
- 2) Style of air outlets and maintenance port should be comply with the decorative style.
- 3) Reserve installation space for indoor unit, air duct, refrigerant pipe, drain pipe, air outlets, maintenance port, wired controller, etc., the air supply or air return outlets should not be shielded; air supply outlet or air return outlet should not be too closed; maintenance port should facilitate the maintenance of unit; position of wired controller (if necessary) should be convenient to operate.
- 4) Indoor pipelines should adopt concealed installation by laying out inside the ceiling; all installation of pipelines should reduce the installation space as much as possible to avoid conflicting the decoration.


(3) Cooperation requirements for electricity

- 1) Reserve special route for electric wires, model of power supply and power consumption capacity should meet the using requirements;
- 2) If the air switch satisfies the requirements of unit or related national safety regulations.
- 3) If the regional power supply quality (including voltage fluctuation and interference clutter) meets the requirements of related national standard; if not, please actively cooperate to solve the problem.

5.3.4 On-site review of design drawings

The installation personnel should carefully read the design and drawings provided by the engineering designer, understand the design intent, review it according to the site conditions, and then write a detailed installation process.

Table 5.3.2 On-site review of design drawings

No.	Contents for confirmation	Results
1	<p>Capacity ratio of fresh air unit should not exceed 30% of the rated capacity of the outdoor unit. The total rated capacity of the indoor unit and the fresh air unit should be within 50% to 135% of the rated capacity of outdoor unit. If the rated capacity of the indoor units that are running at the same time exceeds 100% of the rated capacity of the outdoor unit, the actual capacity requirement cannot be met.</p> <p> NOTE! Exceedance of capacity will affect the using experience of users. The more Exceedance, the worse the system adjustment capability will be. When it exceeds 135% of configuration, it will even affect the reliability of the system. Please strictly comply with the capacity limit regulations.</p>	
2	<p>Whether the refrigerant piping design meets the operating requirements of unit:</p> <p>(1) Whether the total length of refrigerant pipelines meet the design requirements of unit.</p> <p>(2) Whether the height difference between indoor unit and outdoor unit meets the design requirement (please refer to related instruction of outdoor unit).</p> <p>(3) Whether the pipe diameter of cooling system and model of branch pipe meet the technical regulations (please refer to related instruction of outdoor unit).</p>	
3	<p>Whether the design of condensate water pipe meets the operating requirements of unit; draining method of condensate water of unit should be reasonable, slope of pipeline should meet the design requirements of unit.</p>	

4	Whether the total length of fresh air pipeline meets the design requirements of unit.	
5	Whether the installation position meets the installation space requirement of unit;	
	Whether the installation position of air outlets are reasonable; whether the position is conducive to the flow field distribution.	
	Whether sufficient space for maintenance has been reserved.	
6	Whether the installation of air duct meets the requirements (heat insulation, securement, etc.).	
7	Whether the air switch, specification of power cord, model, etc. satisfy the safety requirements of unit.	
8	Whether the manufacture, total length and control method of control wire meet the design requirements of unit.	



NOTE! Construction workers should strictly follow the design drawings. In the process of construction, if it is unable to meet the design requirements, it must be approved by the designer and form a written document (design change record).

5.3.5 Selection of installation materials

Materials and equipment used in the construction shall have a certificate of conformity and a test report. Products with fire protection requirements shall have fire test certificates and comply with the relevant national and relevant mandatory standards. In addition, if the user requests the use of environmentally friendly materials, all materials must comply with the relevant national environmental requirements and provide relevant certification.

Preparation of tools;

(1) The tools used for installation of ventilation ducts and unit are divided into: general electric tools, electric machinery and common tools for ventilation and air-conditioning. General electric tools include the following:

1) Hand drill :

Purpose: Hand drill is the most widely used tool. It is equipped with a twist drill, which is mainly used for drilling metal parts, and is also suitable for drilling wood, plastic parts, etc.

2) Electric hammer:

Purpose: With hard alloy electric hammer drill bit to drill, groove, and chisel the concrete, rock, brick wall, etc.

3) Impact drill:

Purpose: Impact drill has two motion forms. When adjusted to the rotating state, the twist drill can be used with the impact drill as an electric drill; when it is adjusted to the rotating and impact state, it can be equipped with a hard alloy impact drill, which is suitable for drilling brittle materials such as brick, concrete and ceramics.

4) Polisher (grinding machine):

Purpose: With fiber-reinforced linear grinding wheels for the grinding of metal parts and cutting of profiles, opening of the groove before welding and cleaning of the work piece burrs; with diamond cutting pieces, it can cut non-metallic materials, such as tiles, stones, etc.; with special grinding wheel can grind glass; with wire brush for rust removal; with rubber pad and round sandpaper for sanding.

Preparation of materials

(1) Pipe material:

- 1) Pipe material of fresh air duct can select PVC pipe and PE pipe. Common size for air duct: $\Phi 75\text{mm}$, $\Phi 110\text{mm}$, $\Phi 160\text{mm}$, $\Phi 200\text{mm}$, 250mm
- 2) Condensate water pipes can adopt UPVC pipe, PP-R pipe, PP-C pipe and hot-dip galvanized steel pipe.
- 3) Pipe material of copper pipe should select dephosphorized seamlessly drawn copper tube, and the tensile strength should not be less than 240kgf/mm^2 .

Table 5.3.3 Specification of copper pipe

R410A refrigerant system	
Outer diameter (mm/inch)	Wall thickness (mm)
Φ6.35(1/4)	≥0.8
Φ9.52(3/8)	≥0.8
Φ12.70(1/2)	≥0.8
Φ15.9(5/8)	≥1.0
Φ19.05(3/4)	≥1.0

Note**NOTES!**

- ① The inner and outer surfaces of the pipeline shall be free of pinholes, cracks, peeling, blistering, inclusions, copper powder, carbon deposits, green rust, dirt and severe oxide film, and obvious defects such as scratches, pits and spots are not allowed.
- ② After the inside of the copper tube is clean and dry, the nozzle must be tightly sealed with a cap, plug or tape.

(2) Sheet material:

Sheet materials are also the major materials for the production of duct components, usually galvanized steel, ordinary low carbon steel, stainless steel, aluminum and so on.

1) Galvanized steel

Performance: the galvanized steel sheet is galvanized as a protective layer on ordinary steel Q195, Q235A sheet, and its specifications are the same as ordinary steel sheets, and the thickness is generally 0.5 to 1.5 mm. Because the surface of the galvanized sheet is silver-white, commonly known as "white iron", its surface is corrosion-resistant, generally needs not to paint, and usually used in the air duct system in the humid environment without acid mist.

2) Ordinary low carbon steel plate

Performance: ordinary low carbon steel plate is Q235-B (GB700-1988) steel, which is supplied by sheet and coil after cold rolling or hot rolling. It has good plasticity and processing properties, commonly known as "black iron", which is easy to process and can be welded, but it is easy to rust and often needs to be painted to prevent corrosion.

3) Stainless steel plate

Performance: stainless steel plates contain a lot of chromium, nickel, and some also contain copper. It has high temperature resistance and corrosion resistance, and its surface is generally white. Stainless steel contains different alloying elements and different corrosion resistance to different media. Suitable stainless steel materials can be selected according to the corrosive medium. Stainless steel sheets are often used in ducted systems that require corrosion resistance in chemical environments.

4) Aluminum plate

Performance: aluminum plates are divided into industrial pure aluminum plate and aluminum alloy plate. Aluminum plate has light weight, and the surface is covered by a dense layer of aluminum oxide film, the color is silver-white. Aluminum has good plasticity, strong acid resistance, and is easy to be corroded by alkali and salt, which is often used in ventilation ducts for acid-resistant environments. The aluminum plate is soft and does not easily generate sparks during collision. It is mostly used for ventilation pipes with explosion-proof requirements.

(3) Insulation materials

Main functions of insulation materials are cold insulation or heat insulation. Loose fibers and porous materials are often used as insulation materials. At present, the commonly used insulation materials are polystyrene (self-extinguishing type), that is, PE insulation board and foam rubber insulation material.

1) Polyethylene foam (PEF):

Features: it adopts the most advanced foaming technology in the country, with excellent thermal insulation performance and is soft, light, fireproof and corrosion resistant. It is mostly used in the insulation materials for construction, refrigeration storage, air conditioning and other equipment and low temperature pipeline; construction is simple and convenient.

2) Rubber and plastic insulation cotton:

Features: the product is made of high-quality nitrile rubber PVC as the main material and a variety of high-quality auxiliary materials foamed by special process. This product is a high foaming closed-cell structure with soft texture, low density, low thermal conductivity, good weathering resistance, wide temperature range, shock absorption, sound absorption, flame retardant, waterproof, etc., no pollution is generated during production and use. It is a green product.

Specification requirements for rubber foam tube:

Air duct	Heat insulation thickness	Material
Pipe diameter	≥15	Rubber foam tube, flame retardant grade B1 or above
Installation in the wet environment should increase the thickness of the insulation material		

(4) Specification requirements of boom and support (please take damping measures when connecting pipes):

- 1) Boom: M10 (the same size as the standard fitting nut of fresh air unit)
- 2) Channel steel: 5# or above
- 3) Angle steel: equal sides 30mm×30mm×3mm or above
- 4) Round steel: overΦ10mm

5.4 Electricity Connecting

5.4.1 Electric diagram

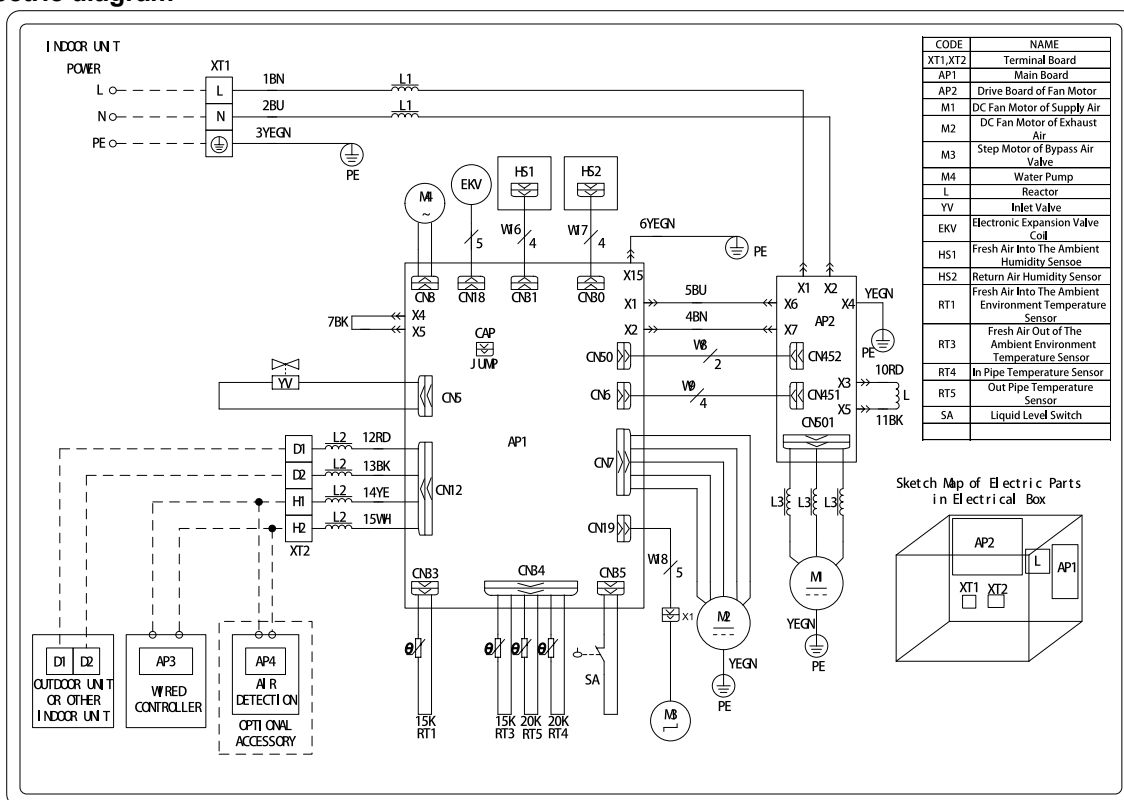


Figure 5-2 GMV-VDR5PH/SA-S Electric diagram

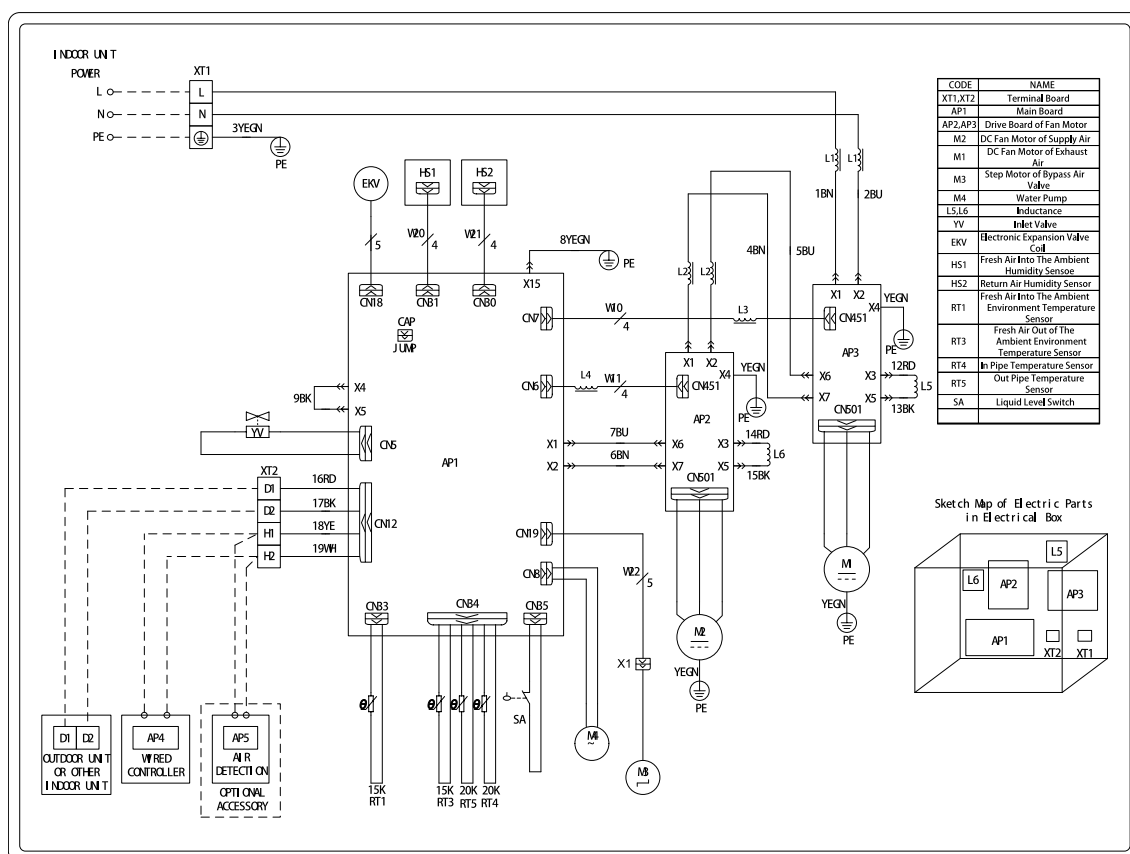


Figure 5-3 GMV-VDR8H/SA-S GMV-VDR10PH/SA-S Electric diagram

5.4.2 Requirements for Electric Installation

- Install units according to national wiring codes.
- Power cord must be reliably secured to avoid stress on wire terminal. Please connect wire according to the standard and make sure the unit operate normally. The connection wire between indoor unit and outdoor unit must apply the required electric wire and avoid stress on wire terminal, otherwise fire hazard may be caused.
- If the power cord and connection wire are damaged, it shall be replaced by the professionals with specialized wire.
- The wire shall not touch the refrigerant pipe, the fan or other parts.
- All electric installation must be performed by qualified personnel in accordance with local laws, regulations and this manual.
- Units must be properly grounded to specialized grounding device in the building. Please ask professionals to install.
- Air switch and circuit breaker that can disconnect power of the whole system must be installed.
- During installation, please install all-pole disconnection device with contact separation not less than 3mm in the power supply circuit.
- The circuit breaker should have both magnetic trip and thermal trip functions so as to protect the unit when short circuit or overload occurs.

5.4.2.1 Grounding Requirements

- Reliable grounding must be ensured. The yellow-green wire inside the unit is a ground wire, so it shall not be used for other purposes nor shall it be cut. Do not tighten it with tapping screws; otherwise it will cause risk of electric shock.
- Power supply must provide reliable grounding terminal. Do not connect the ground wire to the following:
 1. Water pipe; 2. Gas pipe; 3. Drain pipe; 4. Other places that are deemed as not reliable by professional personnel.

Table 5.4.1 Grounding Requirements

WARNING!
Before installation and maintenance, please cut off power supply to avoid electric shock. Please use the wire according to related configuration requirement. Otherwise it may lead to unit malfunction and hazards such as electric shock and fire hazard.
Special statement
If the users alter the electric control system by themselves without prior consent of our company, our company will not bear any responsibility for the abnormal results caused by this.

5.4.2.2 Wiring Requirement

Dimension of power cord and capacity of air switch:

Table 5.4.2 Wiring Requirement

Model	Power specification	Circuit breaker capacity (A)	Wire diameter (mm ²)	
			Ground wire	Ground wire
GMV-VDR5PH/SA-S	220 - 240V~ 50/60Hz	6	3x1.0	3x1.0
GMV-VDR8PH/SA-S				
GMV-VDR10PH/SA-S				



NOTES!

- ① Selection of circuit breaker and power cord in the above table is based upon unit's maximum power (maximum current).
- ② Specification of power cord is based on the working condition where ambient temperature is 40°C and multi-core copper cable (working temperature is 90°C, e.g. power cable with YJV cross-linked copper, insulated PE and PVC sheath) is lying on the surface of slot (IEC 60364-5-52). If working condition is changed, please adjust the specification according to national standard.
- ③ Specification of circuit breaker is based on the working condition where ambient temperature of circuit breaker is 40°C. If working condition is changed, please adjust the specification accordingly.
- ④ Install cut-off device near the unit. The minimum distance between each stage of cut-off device should be 3mm.

5.5 Wiring Work

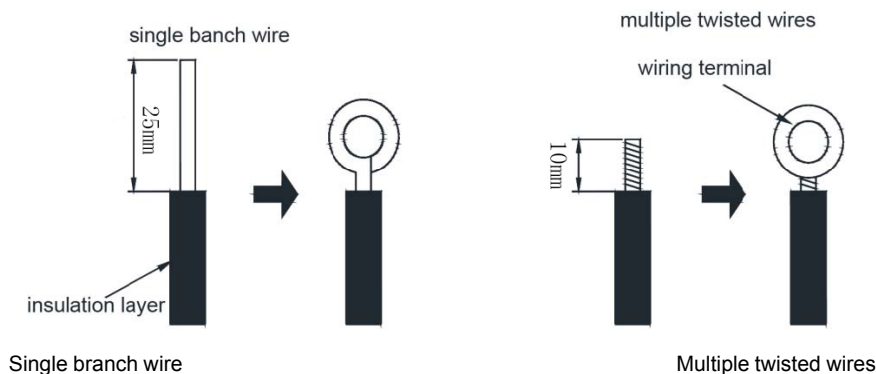
5.5.1 Connection of Wires and Wiring Board Terminals

(1) Connection of single branch wires

- 1) Use a stripper to strip away about 25mm of the insulation layer at the end of single branch line so that the single-core wire can be exposed.
- 2) Remove the wiring screws on the patch board.
- 3) Shape the tail of wire into ring by needle nose pliers, and keep the gauge of ring in accordance with screw.
- 4) Lead the screw across the circle of the single branch line and fix it on the wiring board.

(2) Connection of multi-twisted wires

- 1) Use a wired stripper to strip away about 10mm of the insulation layer at the end of multi-twisted wire.
- 2) Remove the screws on wiring board.
- 3) Use a round terminal fastener or pliers to securely fasten the round terminal with each core wire of the multi-core wire.
- 4) Confirm the position of each core wire on the round terminal and then use a screwdriver to tighten the terminal screw.



Connection of Power Cord :

- (1) The unit must be installed with circuit breaker independently which is used for short circuit protection and overload protection. The circuit breaker shall be closed in normal times.

(2) During operation, all outdoor units, fresh air units and outdoor units in the same system must be kept energized. Otherwise, the system cannot operate normally.

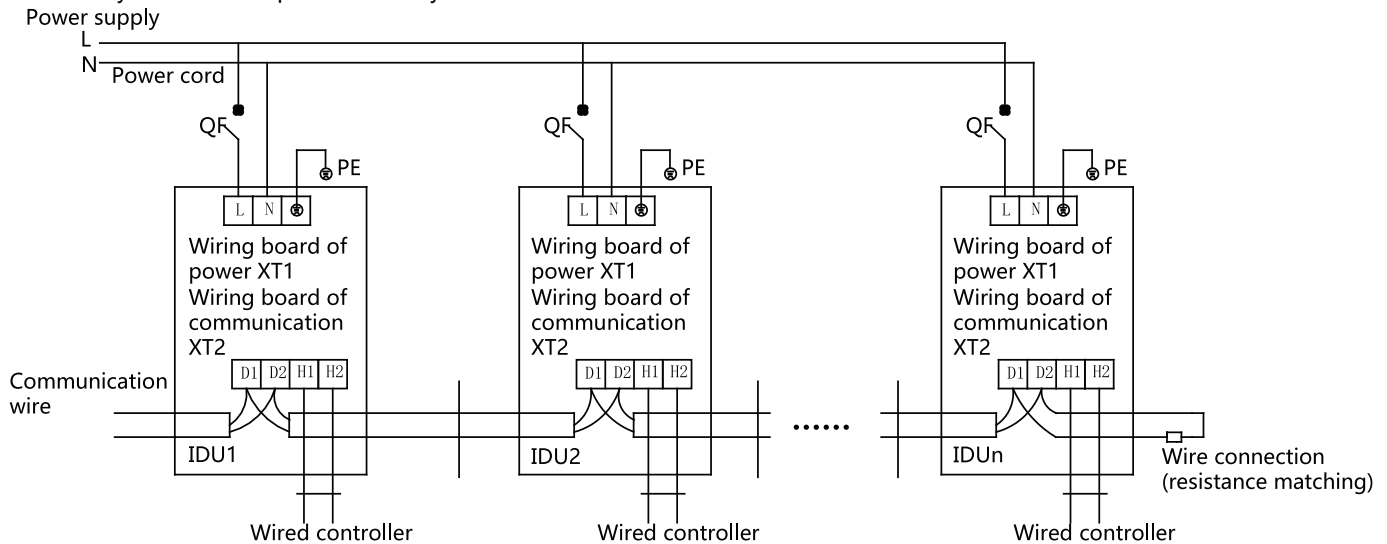


Figure 5-4 Diagram for System Electric Wiring



NOTE! Max indoor unit quantity n is according to the outdoor unit capacity. For more details, please refer to the unit capacity configuration.

5.5.2 Selection of Communication Wire

(1) Selection of Wired Controller Communication Wire

Table 5.5.1 Selection of Wired Controller Communication Wire

Type of wire	Total length of communication wire between unit and wired controller (m)	Wire diameter (mm ²)	Remarks
Light/Ordinary PVC sheathed twisted-pair copper core wire (PVVS)	L_{01} or $L_{02} \leq 10$	$2 \times 0.75 \sim 2 \times 1.5$	Total length of communication wire between unit and wired controller cannot exceed 10m
	$L \leq 250$		Total length of communication wire cannot exceed 250m
Shielded light/ordinary PVC sheathed twisted-pair copper core wire (RVVSP)	$L \leq 250$	$2 \times 0.75 \sim 2 \times 1.5$	If unit is installed in a place with intense magnetic field or strong interference, it's necessary to use shielded wire (RVVSP)

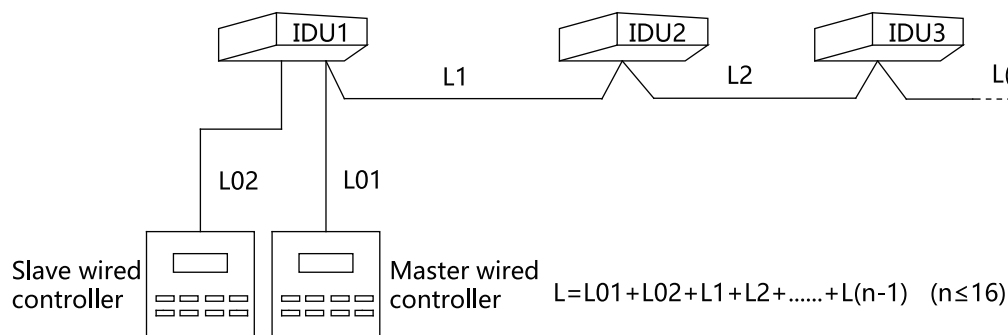


Figure 5-5 Diagram of Wired Controller Control Connection

(2) Selection of Communication Wire between Unit and VRF ODU

Table 5.5.2 Diagram of IDU and ODU Control Connection

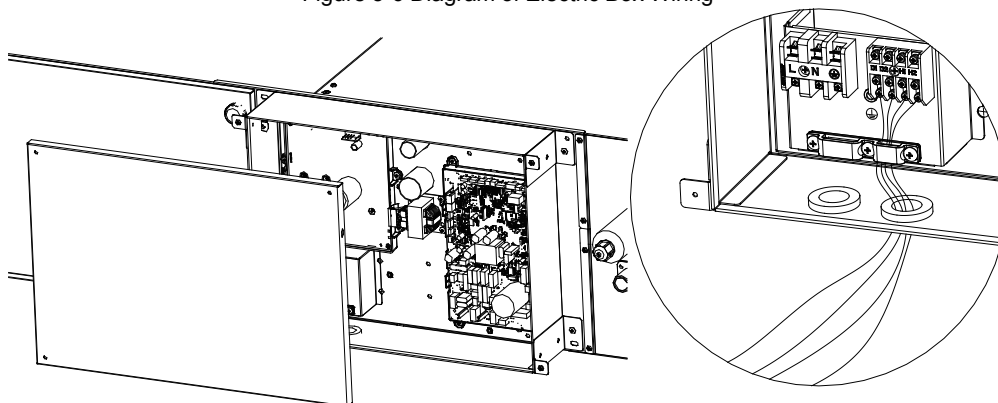
Type of wire	Total length of communication wire between unit and VRF ODU L (m)	Wire diameter (mm ²)	Remarks
Light/Ordinary PVC sheathed twisted-pair copper core wire (PVVS)	$L \leq 1000$	$\geq 2 \times 0.75$	The communication wire can be prolonged if the wire diameter is $2 \times 1 \text{ mm}^2$. But the total length of communication wire can't exceed 1500m
Shielded light/ordinary PVC sheathed twisted-pair copper core wire (RVVSP)	$L \leq 1000$	$\geq 2 \times 0.75$	If unit is installed in a place with intense magnetic field or strong interference, it's necessary to use shielded wire (RVVSP)

5.5.3 Connection of Communication Wire

Connection of Communication Wire between indoor unit and outdoor unit

- (1) Detach the electric box cover of indoor unit.
- (2) Let the communication wire go through the rubber ring.

Figure 5-6 Diagram of Electric Box Wiring



- (3) Connect the communication wire to terminal D1 and D2 of indoor 4-bit wiring board, as shown in the following figure.

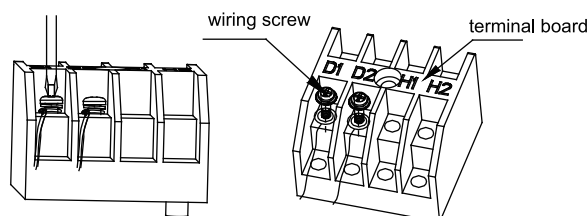


Figure 5-7 Diagram 1 of Wiring Board

- (4) Fix the communication cable with clamp of electric box.
- (5) In order to ensure the reliability of communication between IDU and ODU and the communication among each IDU, add a matched resistance (supplied in a package before ex-factory) on the wiring board of the last indoor unit in a series connection. The matched resistance should be connected in parallel between terminal screw D1 and D2, as shown in the following diagram.

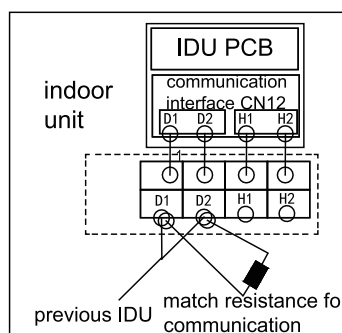


Figure 5-8 Diagram 2 of Wiring Board

Connection of Communication Wire of wired controller

- (1) Detach the electric box cover of indoor unit.
- (2) Let the communication wire of wired controller go through the rubber ring.
- (3) Connect the communication wire of wired controller to terminal H1 and H2 of indoor 4-bit wiring board.
- (4) Fix the communication cable of wired controller with clamp.

Wiring Instruction between Wired Controller and IDU Network

- (1) The communication between IDU and ODU and the communication among each IDU shall connect with D1 and D2.
- (2) The communication between IDU and wired controller shall connect with H1 and H2.
- (3) One indoor unit can connect two wired controllers (master wired controller and slave wired controller).

(4) One wired controller can control 16 indoor units in maximum at the same time.

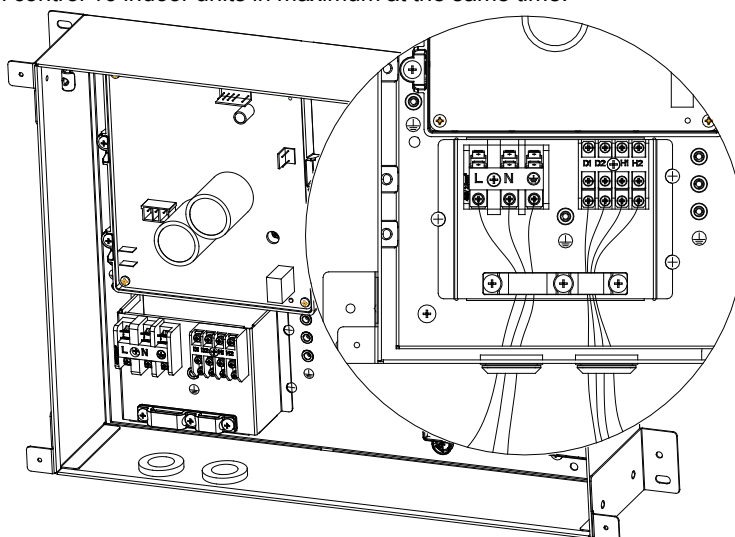


Figure 5-9 Diagram 3 of Wiring Board



NOTES!

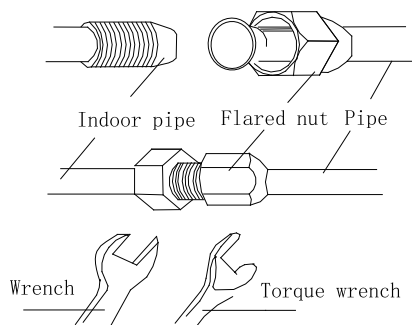
- (1) When one wired controller controls several indoor units at the same time, the indoor unit types must be identical. ERV+DX coil series wired controller can work with normal indoor units, but this wired controller can only be connected with the fresh air unit of this series and it is recommended that the indoor unit of this series shall not be set as master indoor unit.
- (2) When the indoor unit is controlled by two wired controllers, the addresses of the two wired controllers should be different through address setting. Address 1 is for master wired controller; Address 2 is for slave wired controller. Detailed setting please refer to the owner's manual of wired controller.

5.6 Installation for Pipeline

5.6.1 Installation for copper Pipeline

- (1) Direct the flared part of a copper pipe to the center of a screwed joint. Twist on the flared nut tightly by hand. See the diagram below.

Torque required for twisting a screw nut	
Pipe gauge (mm)	Twisting torque (N×M)
Φ6.35	15 ~ 30
Φ9.52	35 ~ 40
Φ12.7	45 ~ 50
Φ15.9	60 ~ 65



- (2) Use a torque wrench to twist on the flared nut until the wrench gives out a click sound.
- (3) The curvature of a pipe should not be too small; otherwise, the pipe may be cracked. Installers should use pipe benders to bend the pipes.
- (4) Use sponge to wrap the non-insulated connecting pipes and joints. Then tie them well with plastic tape.

5.6.2 Installation for Drain Pipes

Installation Requirement for Drain Pipes

- (1) Never connect the condensate drainage pipe with waste water pipes or other pipes that produce corrosive matters and peculiar smell; otherwise, the peculiar smell will enter into the room and the unit will be corroded.
- (2) Never connect the condensate drainage pipe with rainwater pipes; otherwise, the rainwater will flow back, resulting in property loss and personal injury.
- (3) The condensate drainage pipe must be connected to the drainage system specialized for the air conditioner.
- (4) The shorter the drainage pipe, the better it is. Keep it downward with an inclination of $1^{\circ} \sim 2^{\circ}$ or more so that the condensate can be easily drained away.

- (5) Apply thermal insulation for the drainage pipe. The insulation cotton used for thermal insulation of the drainage pipe is already provided in the package of accessories.

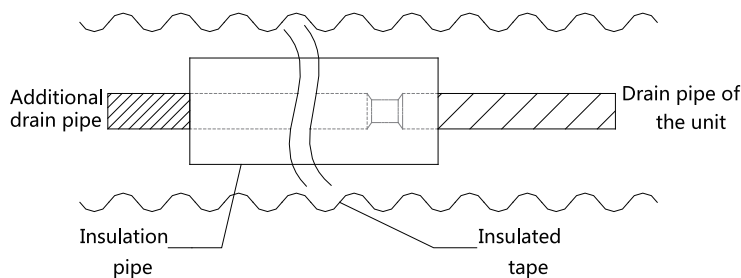


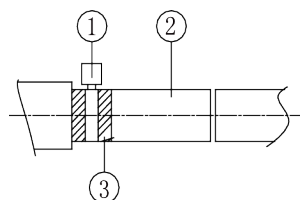
Figure 5-10 Thermal Insulation of Drain Pipes

- (6) If the drainage pipe is used for several appliances, the location of the drainage pipe should be 100mm lower than the drainage port of each appliance. In this case, use a thicker pipe.
- (7) Drain pipes are hard PVC types which can be bought locally. When connecting the pipes, insert the end of the PVC pipe into the drainage port and then use drainage hose and wire tie to tie them well. Do not use glue to fasten the drainage port and drainage hose.

Installation of Drainage Pipe

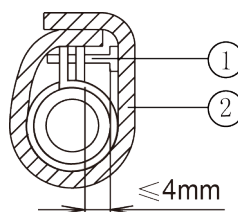
- (1) Insert the drainage hose into the drainage port and tie them with adhesive tape, as shown below.

1. Metal clamp (accessory)
2. Drainage hose (accessory)
3. Insulation cotton (accessory)

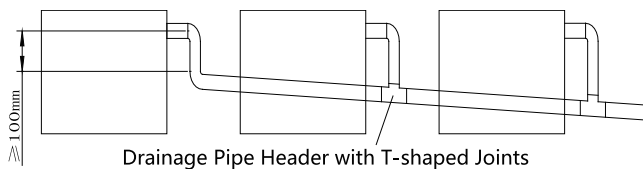


- (2) Twist on the pipe clamp. The distance between the nut and the hose is less than 4mm.
- (3) Gasket should be used for the thermal insulation of the pipe clamp and hose. (Thermal insulation should be done after the drainage test.) See the diagram below.

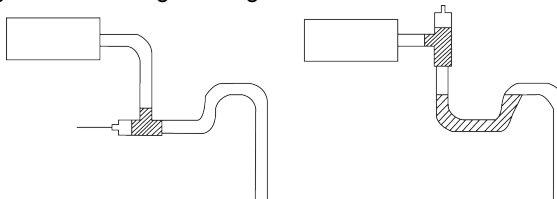
1. Metal clamp (accessory)
2. Insulation cotton (accessory)



- (4) If multiple drainage pipes are connected within a system, as show below, please select a drainage header that matches the capacity of the unit.

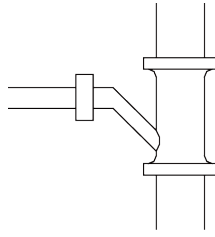


- (5) Please install water traps according to the following drawings.

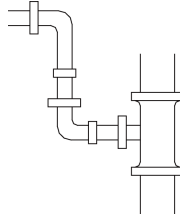


- (6) Each unit should have one water trap.
- (7) Water traps should be installed in a way that is easy for cleaning.
- (8) Horizontal pipes must not be connected with vertical pipes of the same level. Connect them in the following way:

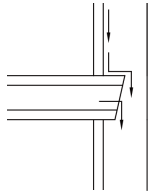
1) Below is the 3-way connection of drainage pipes:



2) Below is the connection of water bends:



3) Below is the connection of a horizontal pipe:



(9) Keep the drain pipe downward with an inclination of $1^\circ \sim 2^\circ$ or more. Therefore, install a supporter every 1000-1500mm.

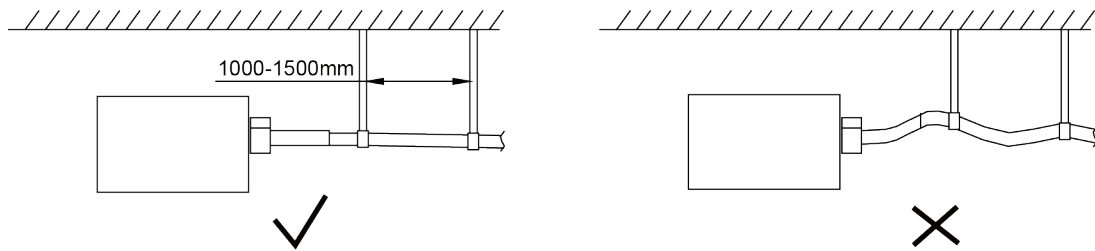


Figure 5-11

(10) Make sure the weight of drain pipes won't be borne by the unit.

5.6.3 Drainage Test

After completing the installation of the entire drainage pipeline (without insulation cotton), perform a drainage test.

(1) The method of adding certain quantity of water to the water tray of the unit is as follow:

- 1) Open the side panel of the unit, as shown below. Use hose to infuse 1.5~2L of water to the water tray of the unit to observe if there's leakage of drainage system. The guide hose shall be inserted to the bottom of water tray for watering operation. When infusing water, please observe if water flows out from the drain pipe normally and make sure no water leakage in the connection location of pipeline.

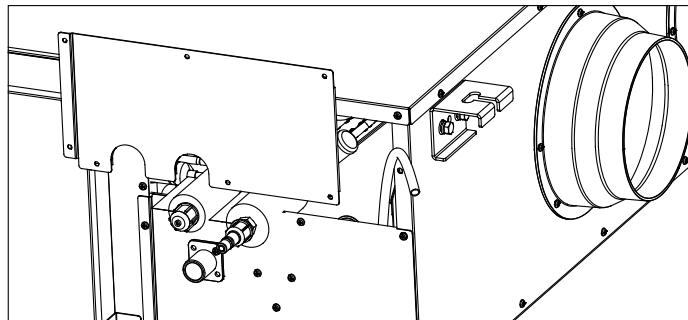


Figure 5-12 Drainage test

- 2) Then use a sprayer to spray about 1L of water into the evaporator of the unit through the fresh air opening. Observe from the service panel whether the unit can drain water smoothly. Make sure there is no leakage.

(2) Start the water pump of the unit and test if drainage of water pump is smooth. Startup method of water pump is as follow.

- 1) If the unit has completed project debugging, switch the indoor unit to cooling or dehumidification mode, at this time, water pump will operate automatically.
- 2) Confirm if water flows out from drainage pipeline correctly and observe the connection pipe carefully to see if there's no leakage. After the test, remove the temporary drainage hose and stuff the water tray stuff (if natural drainage hole is not used).
- (3)After the drainage system is checked OK, perform thermal insulation for the drainage hose and pipe clamp.

5.7 Engineering Design

5.7.1 Engineering Design

- (1)The inner filter and heat exchange filter core of the unit should be replaced periodically. To facilitate the maintenance of the key parts of the unit, please reserve some space for maintenance according to the following diagram. Dimensions of the maintenance space are as below.

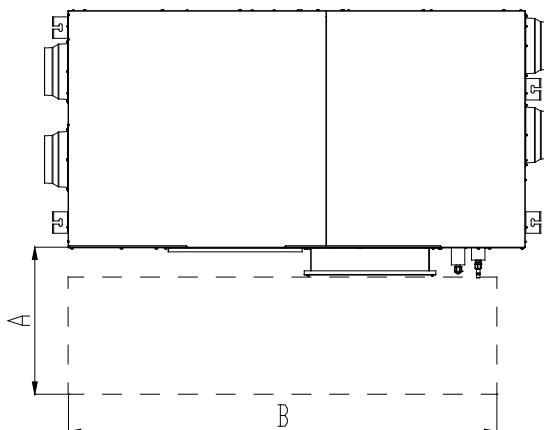


Figure 5-13 Maintenance Space

Table 5.7.1 Maintenance Space

Measuring unit: mm

Model	A	B	Pipe gauge
GMV-VDR5PH/SA-S	550	1725	200
GMV-VDR8PH/SA-S	680	1620	250
GMV-VDR10PH/SA-S	680	1620	250

Note



NOTE!Some parts of the unit may get loose during transport, so please check the screws of each part of the unit carefully before hoisting the unit, especially the movable parts.

(2)Positioning and Installation

- 1) You may place the package base (mounting cardboard) flat against the installation position. Install the unit according to the hole positions on the cardboard, as shown below.

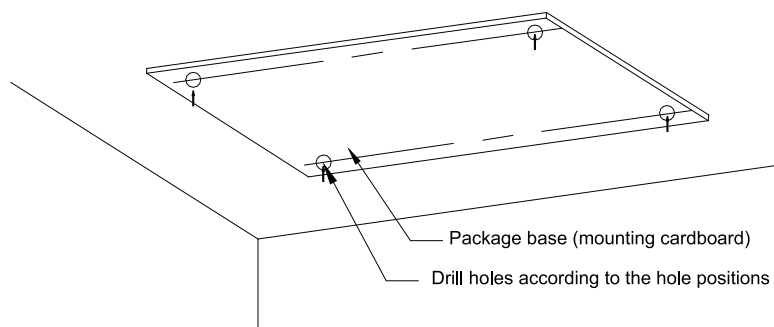


Figure 5-14 Hole Positions

- 2) When the unit is installed in place, use a level bar to adjust the levelness of the unit. Make sure the unit is horizontal from front to back and has an inclination of $0.5 \sim 1^\circ$ from side to side so that water can be drained through the drainage port.

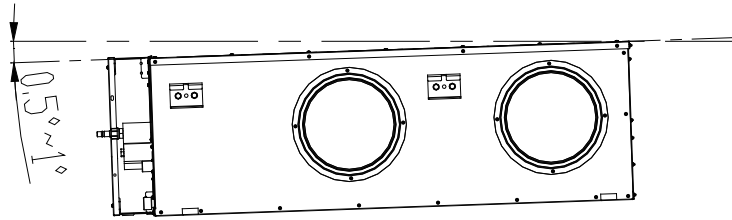


Figure 5-15 Inclination of the Unit



NOTES!

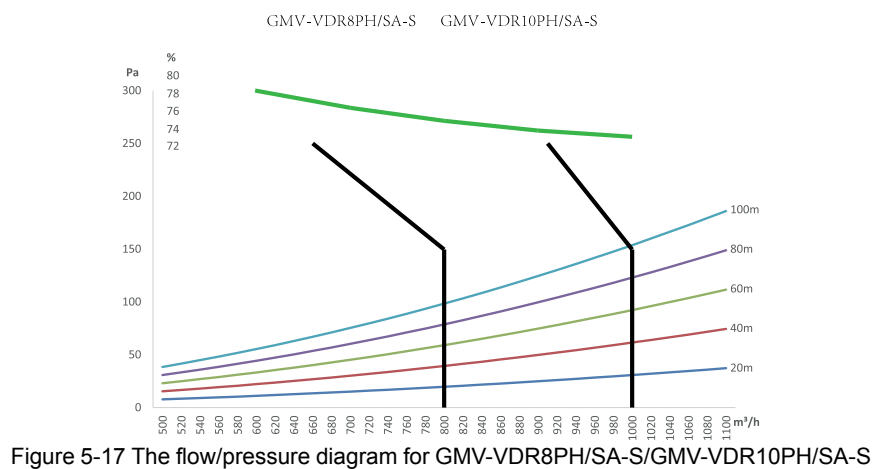
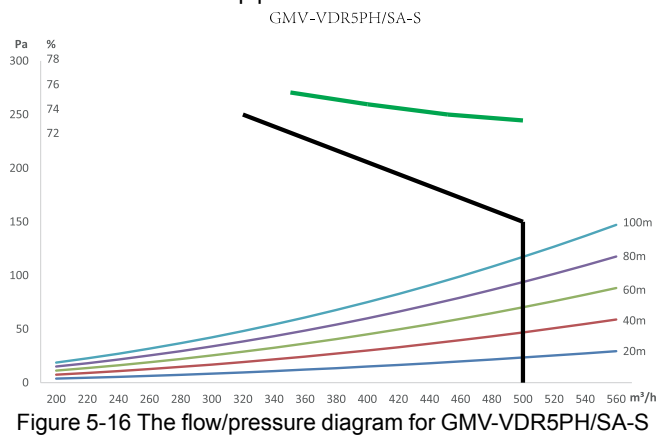
- (1) Make sure the installation location is strong enough to withstand the weight of the unit.
- (2) Add a spring rubber damping cushion if necessary.
- (3) The selected installation location won't affect water drainage and pipe connection.
- (4) If the unit is installed in a place where there is oil mist, oil gas or risk of leakage of inflammable gas, such as a kitchen, fire hazard may occur.
- (5) If the unit is installed in a humid place or near a bathroom, electric leakage or electric shocks may occur.
- (6) If radioactive or electromagnetic equipment is placed near the installation location, the unit may fail to work.
- (7) If the unit is installed in a place with high pH value or large voltage fluctuation, it may be damaged.
- (8) Power cables of indoor and outdoor units as well as connecting wires should be at least 1m away from TV and radios. This is to prevent the electric appliances from having image interference and noise. (If interference still occurs at a distance of 1m, please increase the distance or ask for professional help.).

5.7.2 Installation Requirement for Air Ducts

This product requires the user to prepare PVC ventilating ducts for outdoor air suction and indoor air discharge. Our unit adopts constant air volume control to ensure constant air volume within a certain range of pipe resistance. If the pipe resistance is beyond the designed value, air supply volume will be insufficient. Therefore, in order to prevent performance degrading due to improper pipeline design, please follow the principles recommended below during installation design.

- (1) The total length of air ducts should be based on the features of the using environment. The resistance of air ducts should not exceed the requirement for static pressure. Use non-flammable or in-combustible material.
- (2) Set as few bends as possible in the pipeline. For each pipeline, try to limit the number of bends under 3. Each bend should have a round curve instead of a right angle of 90° .
- (3) The inner surface of the pipeline is smooth, free of dust and wrinkles. The outdoor air inlet should be set in a place that is convenient for maintenance.
- (4) If you want the indoor noise to be as low as possible, you may add a silencer in the air ducts. The type of silencer should be selected based on actual requirements. Please consult professionals to select an applicable silencer. If the air ducts are equipped with a silencer, the air outlet noise will be lowered by 4~6 decibels.
- (5) When the unit is used in winter, the outside of the pipeline will be frosted after the dry and cold air enters the ducts; on the other hand, the inside of the pipeline will get easily frosted after the wet and warm air of the exhaust outlet enters the ducts.
- (6) The connecting ducts should be set with an inclination of not less than 0.03. The ducts should slant down to the outdoor side so that condensate and rainwater will not enter the unit.
- (7) If the unit is used in alpine regions or the air outlet is set in a place that faces the wind, please add an air damper to prevent the cold air from entering into the room.
- (8) Make sure the weight of air ducts will not be borne by the unit.
- (9) If necessary, use an air hose to connect the air suction duct and air discharge duct during engineering installation. When installing the hose, be sure it is smooth with no folds or sharp turns. The installation drawing is shown below.

(10) Try to avoid using it if the resistance difference of pipeline at both sides of air outlet of fresh air unit is big.



NOTES!

- (1) The length of duct type on the curve is equal to that of straight pipe when friction coefficient is 0.02.
- (2) Before connecting air ducts, please finish the installation of the drainage system and test whether the drainage is normal.

6 Product control

6.1 Control method

set two control methods for unit, which are operating control mode and linkage control mode.

When conducting operating control mode, the unit will operate according to the command input by the wired controller.

When conducting linkage control mode, the unit should be connected into the control network of multi VRF unit, then the unit will conduct linkage operation according to the operating status of multi VRF unit.

6.2 Operating mode

According to the actual using working conditions, and protect the internal components at the same time, this unit has multiple operating modes for satisfying the using demands under different environmental conditions.

- (1) Heat exchange mode: when the unit detects that the indoor and outdoor ambient temperature difference is large and the outdoor humidity is lower, the unit will activate heat exchange mode. Under such mode, fresh air and exhaust air conduct normal heat exchange.
- (2) By-pass mode: when the unit detects that the indoor and outdoor ambient temperature difference is small and the outdoor humidity is lower, the unit will activate by-pass mode. Under such mode, the unit will not conduct heat exchange.
- (3) Auto mode: the unit will determine to operate heat exchange mode, by-pass mode or other modes (default mode) according to the detected temperature and humidity.
- (4) Cooling mode: cooling mode of general air conditioner.
- (5) Dry mode: dry mode of general air conditioner.
- (6) Heating mode: heating mode of general air conditioner.

(7) Air supply mode: dry mode of general air conditioner.

6.3 Free cooling and night free cooling

The unit has free cooling and night free cooling functions. When the outdoor temperature is lower than the indoor temperature, the unit will use the fresh air to cool down the indoor temperature to eliminate the heat load generated by indoor person and equipment, reducing the impact of comfort caused by large temperature fluctuation.

(1) Free cooling mode:

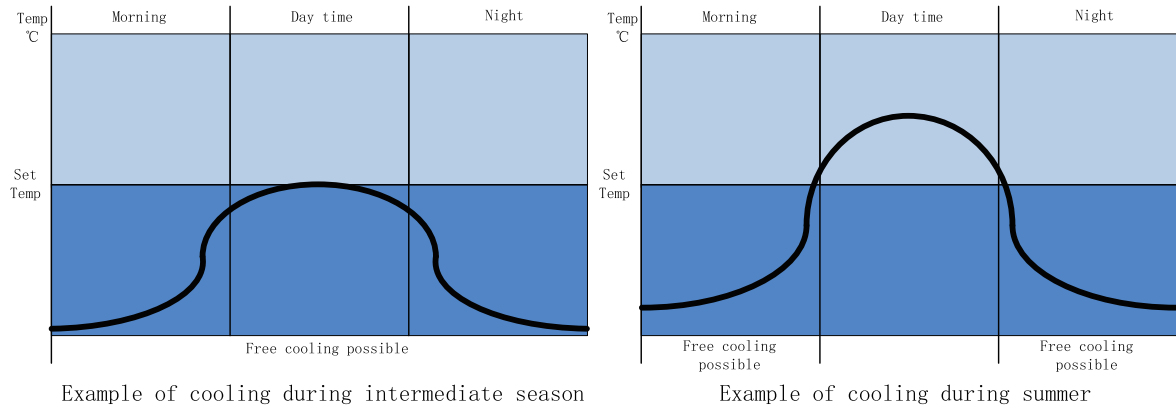


Figure 6-1 schematic diagram for temperature variation of startup of free cooling

(2) Night free cooling mode:

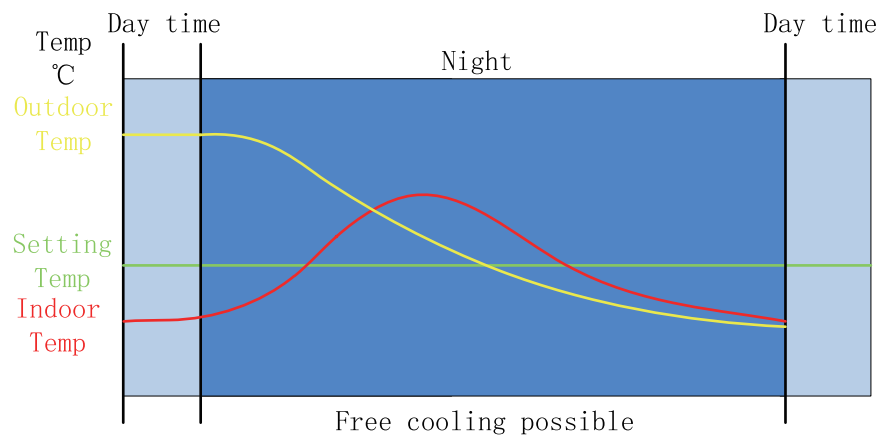
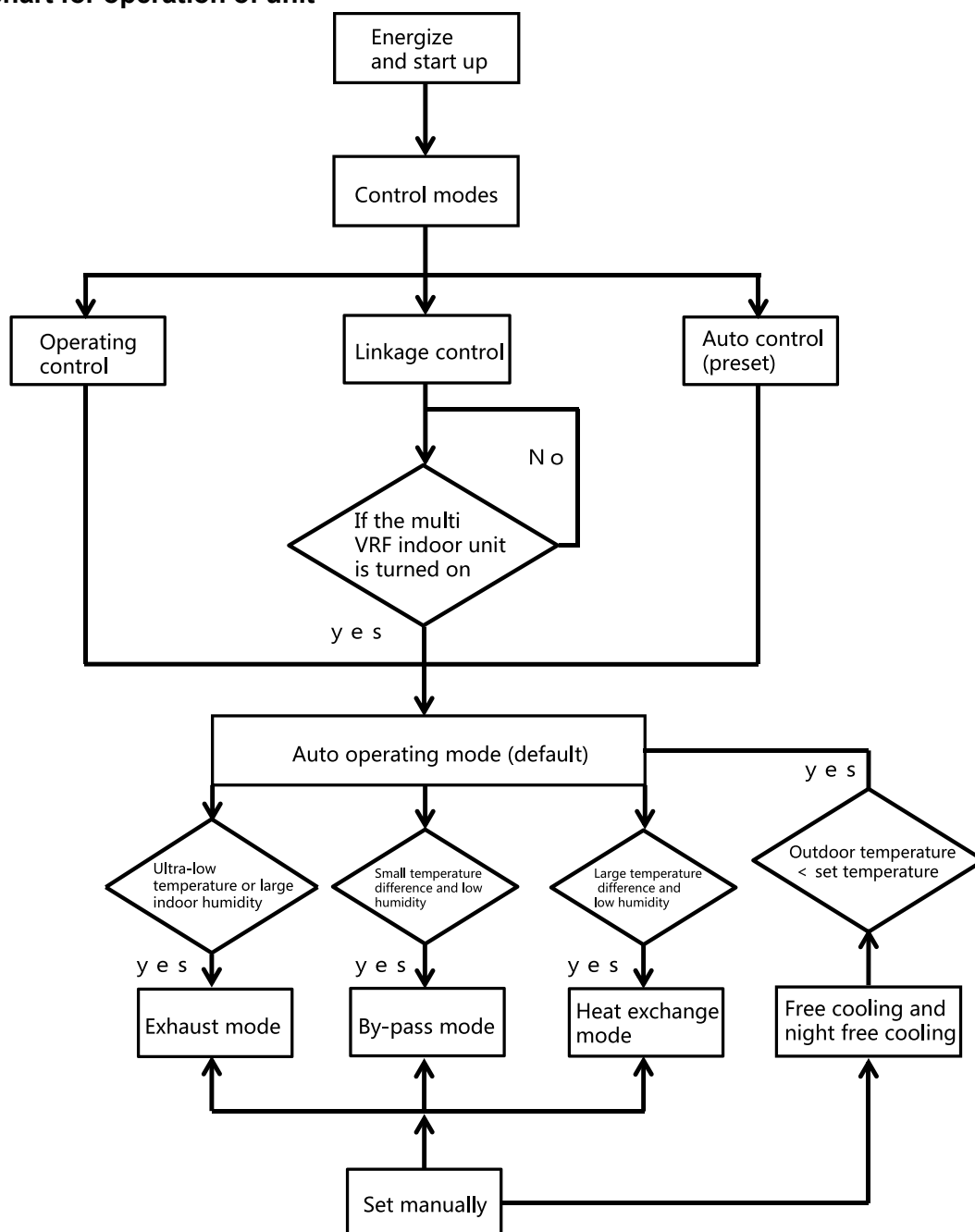


Figure 6-2 schematic diagram for temperature variation of startup of night free cooling

6.4 Flow chart for operation of unit



7 Inspection, pilot run and daily setting

7.1 Check before Startup

After finish installation, please arrange running test to the unit before start operation.

(1) Check before Startup

- 1) Check if the arrangement of ducts are correct according to this owner's manual.
- 2) Check if the equipment is hung reliably; if the hanging frame is coated with anti-rust paint.
- 3) Check if there is sufficient space in the unit for replacing filter; if the installation location of duct mufflers comply with the instructions besides this manual.
- 4) Check if there is foreign objects or installation tools inside the duct or unit or at the top of the duct or unit; check if the air ports are insulated completely or if the duct connection is reliable.
- 5) Check the drainage water trap of unit to ensure it is properly installed and drainage is good.
- 6) Check the integrity of refrigerant system pipeline again and check if the external insulation layer of pipeline has apparent abrasion.
- 7) According to the electric wiring diagram in this manual, check if the power cord complies with related requirements, if the wiring way is correct, if the joint is secured, if the power voltage is normal.

7.2 Pilot run and debugging test

Running Test

- (1) Turn on the unit for running test after connecting power. Please pay attention that if there is abnormal noise in the pipeline during actual operation and if the unit has abnormal vibration or abnormal noise.
- (2) Make sure if the unit installation floor, hanging rod and box iron, etc. can withstand unit's weight during normal operation. Spring shock absorber can be installed in the hanging rod if necessary, in order to prevent shock transmit to the floor.
- (3) If there is abnormal situation, please cut off power immediately and refer to the troubleshooting.



NOTE! Please refer to the above-mentioned drainage test chapter to conduct drainage test preferentially.

7.3 Daily setting

(1) Pollution level setting and filter replacement reminder

During equipment operation process, the unit will calculate the accumulative operation time automatically according to the set outdoor pollution level and remind the user to replace the consumable items. However, the ambient condition of actual usage is complex, to enable the user to obtain correct replacement and cleaning reminder, the user shall conduct setting for the outdoor pollution level under actual usage condition.

Under startup or shutdown status, enter "Project setting" from the "Setting" interface of wired controller menu directly, inquire "Outdoor pollution level setting" in project setting to conduct setting for outdoor pollution level of the unit.

Parameter setting of outdoor pollution level [default-02]	01 : Excellent 02 : Good 03 : Mild pollution 04 : Moderate pollution 05 : Severe pollution 06 : Serious pollution	It is used to calculate the time for cleaning and replacement reminder.
---	--	---

Note



NOTE! If need to clean or replace the filter at fresh air side or discharge side of filter, the wired controller will display the corresponding cleaning replacement hint in text.

(2) Defrosting setting

Fresh air temperature will decrease suddenly due to defrosting when the unit is conducting heating. If the user requires constant indoor temperature, please reduce the operating fan speed in project parameter setting when conducting defrosting, to enhance usage comfort.

(3) Positive and negative setting

If the user has special requirement on indoor supply air, conduct pertinent setting in project parameter for different supply air mode.

Positive and negative setting	Balanced (defaulted)	Under this mode, the fan speed setting of fresh air and discharge is consistent with wired controller
	Positive pressure	Under this mode, the fan speed setting of wired controller is fresh air, the fan speed of fresh air is higher than that of discharge
	Negative pressure	Under this mode, the fan speed setting of wired controller is discharge, the fan speed of discharge is higher than that of fresh air



NOTE! Detailed setting method shall refer to the specification of wired controller.

8 Daily error inquiry and maintenance

8.1 Error diagnosis

After device debugging and pilot run, the user can use the unit normally. If the following errors occur, before contacting the after-sales service department of Gree, please conduct troubleshooting on your own according to the following table.

Table 8.1.1 General error diagnosis

Abnormality	Possible reason	Solution
Airflow of supply air outlet is decreased obviously after a period of time	Too much dust accumulated in air filter	Replace or clean the filter
Wind noise occur at the air outlet	The installation of air outlet is loose	Re-tighten the installation location of air outlet

The device cannot be started	Power off	Check the circuit or to see if the reset switch of protective plug for electric leakage is abnormal
	Transformer terminal on main board is loose	Insert and connect the transformer terminal
	No cooling or heating	Check if refrigerant pipeline is leaked or if the valve of outdoor unit is opened
	Communication error (C0)	Check the connection wire of wired controller and main board, or the connection wire of the unit and outdoor unit

8.2 Error code table

During operation, if errors occur, error code will be displayed. Error code is as follow:

Table 8.2.1 Error code table

Displayed code	Content	Displayed code	Content
d1	Circuit board of indoor unit is poor	L0	Indoor unit error
d3	Ambient temperature sensor error	L1	Motor protection for fresh air
d4	inlet pipe temperature sensor error	L3	Water overflow protection
d6	outlet pipe temperature sensor error	L4	Abnormal power supply for wired controller
d9	Jumper cap error	L5	Anti freezing protection
dL	Fresh air outlet temperature sensor error	L9	The number of indoor unit of multi-split is inconsistent
LA	The series of indoor unit of multi-split is inconsistent	yC	Return air and temperature air inlet sensor error
Ld	Air exhaust motor protection	y7	Fresh air and air inlet humidity sensor error



NOTE! Please immediately contact local Gree after-sales company if the above codes are displayed on wired controller, don't handle it by yourself.

8.3 Troubleshooting

(1) "d1" IDU circuit board error

Fault judgment condition and method: by detecting whether the address chip and the memory chip of the mainboard of indoor unit are read normally, if the address chip and memory chip cannot be read, the data is interpreted as abnormal.

Possible causes:

- address chip faulted
- Memory chip faulted

Troubleshooting: replace the mainboard directly.

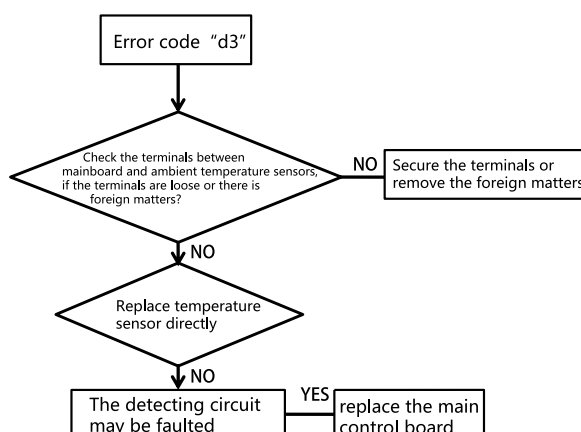
(2) "d3" ambient temperature sensor error

Fault judgment condition and method: by sampling AD value of temperature sensor via temperature sensor detecting circuit to estimate the range of AD value, after continuously sampling for 5 seconds and the AD value is out of the upper limit and lower limit, it will report the error.

Possible causes:

- poor contact between the ambient temperature sensor and the mainboard terminal
- Ambient temperature sensor is faulted
- Detecting circuit is faulted

Troubleshooting:



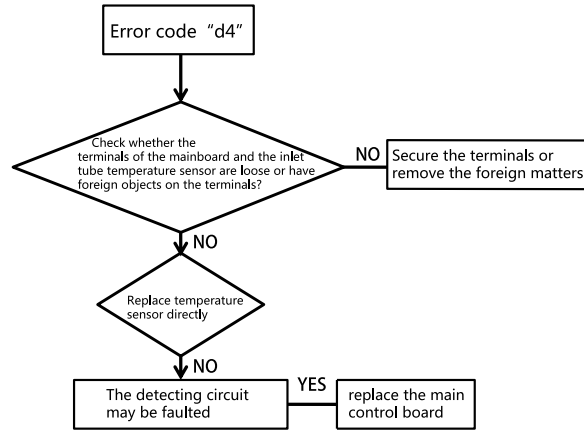
(3) "d4" replace the main control board

Fault judgment condition and method: by sampling AD value of temperature sensor via temperature sensor detecting circuit to estimate the range of AD value, after continuously sampling for 5 seconds and the AD value is out of the upper limit and lower limit, it will report the error.

Possible causes:

- poor contact between the inlet tube temperature sensor and the mainboard terminal
- Inlet tube temperature sensor is faulted
- Detecting circuit is faulted

Troubleshooting:



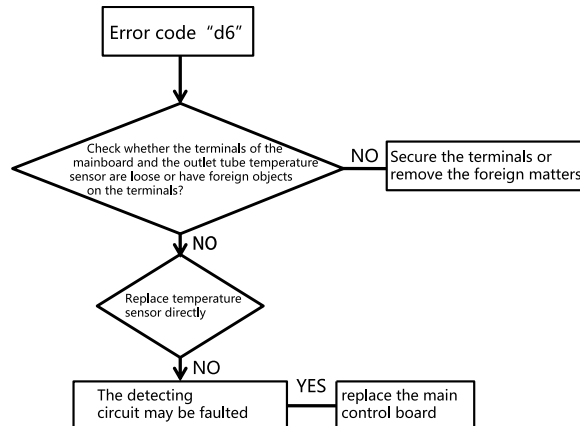
(4) "d6" outlet tube temperature sensor error

Fault judgment condition and method: by sampling AD value of temperature sensor via temperature sensor detecting circuit to estimate the range of AD value, after continuously sampling for 5 seconds and the AD value is out of the upper limit and lower limit, it will report the error.

Possible causes:

- poor contact between the ambient temperature sensor and the mainboard terminal
- Temperature sensor is faulted
- Detecting circuit is faulted

Troubleshooting:



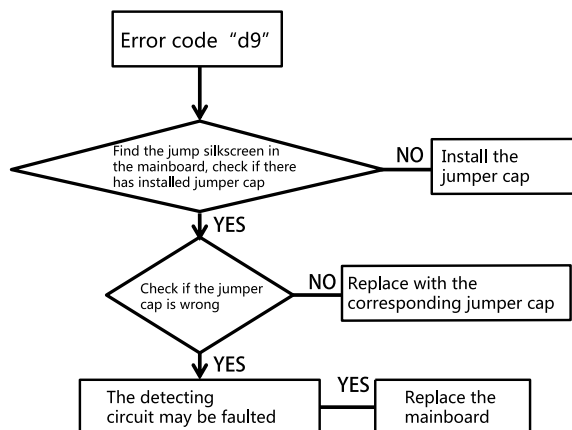
(5) "d9" jumper cap error

Fault judgment condition and method: model of jumper cap is inconsistent with the mainboard, it will report the error.

Possible causes:

- jumper cap has not been installed
- Number of jumper cap is wrong (ERV+DX coil series is number 1~3)
- Detecting circuit is faulted

Troubleshooting:



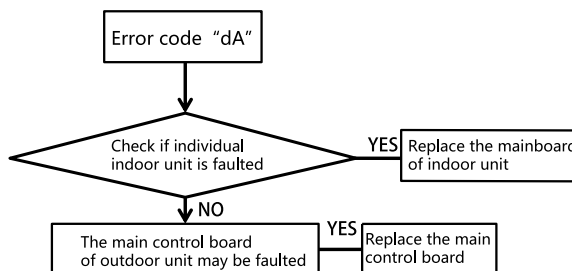
(6) "dA" indoor unit network address error

Fault judgment condition and method: detect the address chip and IP address of indoor unit, if the address chip cannot be read, IP of indoor unit is 0, or IP confliction, it will report the error.

Possible causes:

- assigned address of outdoor unit is wrong
- Indoor unit processing error
- Address chip error

Troubleshooting:



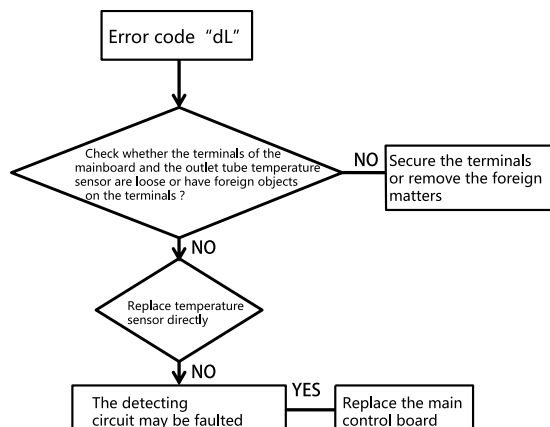
(7) "dL" fresh air-out temperature sensor error

Fault judgment condition and method: by sampling AD value of temperature sensor via temperature sensor detecting circuit to estimate the range of AD value, after continuously sampling for 5 seconds and the AD value is out of the upper limit and lower limit, it will report the error.

Possible causes:

- poor contact between the ambient temperature sensor and the mainboard terminal
- Ambient temperature sensor is faulted
- Detecting circuit is faulted

Troubleshooting:

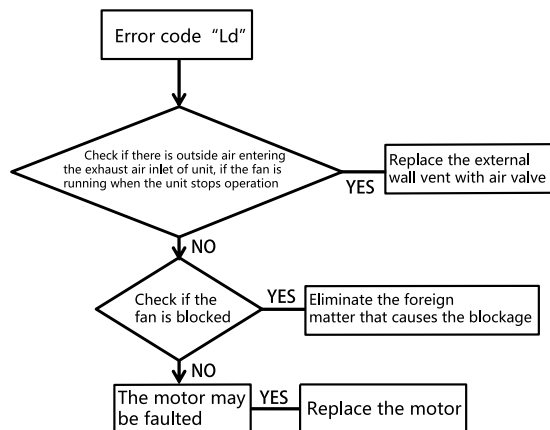


(8) "Ld" exhaust motor protection

Fault judgment condition and method: check if the revolving speed of fan is too low or the fan stops operation, if yes, it is exhaust fan protection.

Possible causes:

- motor stops operation or the motor is blocked
- Mainboard of indoor unit is faulted
- The fan is started under non-stationary status

Troubleshooting:

(9) "L0" indoor unit error

Possible cause:

- the indoor unit is faulted

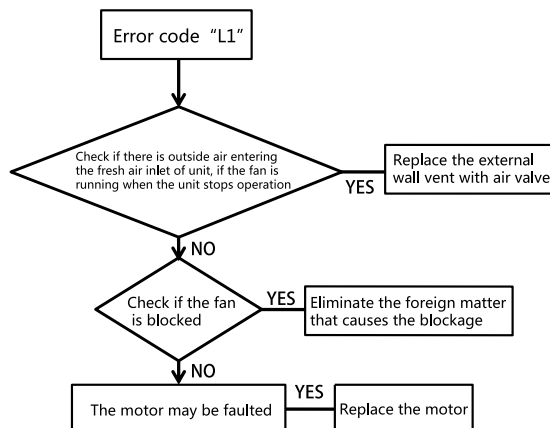
Troubleshooting: find the corresponding indoor unit of fault through the "indoor unit number query and faulted indoor unit positioning" function of the indoor unit, and then confirm the error code.

(10) "L1" fresh air motor protection

Fault judgment condition and method: check if the revolving speed of fan is too low or the fan stops operation, if yes, it is fresh air fan protection.

Possible causes:

- motor stops operation or the motor is blocked
- Mainboard of indoor unit is faulted
- The fan is started under non-stationary status

Troubleshooting:

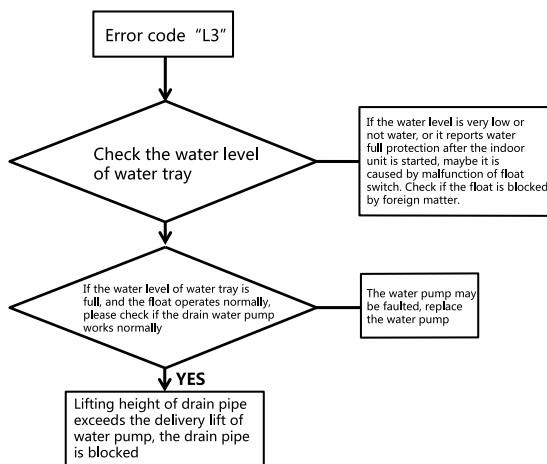
(11) "L3" water full protection

Fault judgment condition and method: check if the float of indoor unit is in open status, when the water level is too high, the float switch is activated, and then the water full protection occurs.

Possible causes:

- improper installation
- Drain water pump is damaged
- Malfunction of float switch

Troubleshooting:

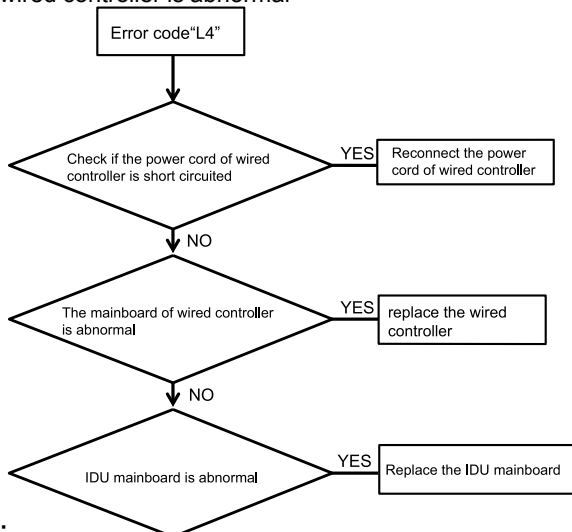


(12) "L4" Power supply overcurrent protection

Error judgment condition and method: Check if the power supply current from IDU to wired controller is normal. If power supply current is too big, it is judged that the current is abnormal.

Possible reason :

- Power supply conducting wire of wired controller is short circuited
- IDU mainboard is abnormal
- Mainboard of wired controller is abnormal



Troubleshooting:

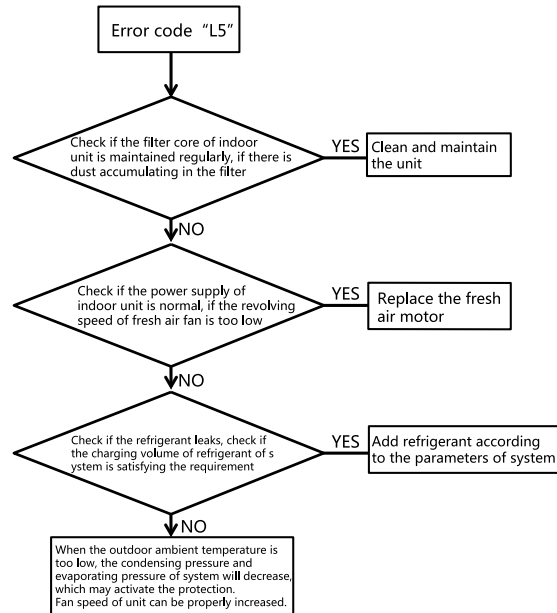
(13) "L5" anti-freeze protection

Fault judgment condition and method: detect the pipe temperature of indoor unit, if the pipe temperature is too low, the unit will conduct anti-freeze protection to prevent the evaporator from being frozen.

Possible causes:

- filter of indoor unit or the evaporator is dirty
- Motor of indoor unit is blocked
- Refrigerant of system is insufficient
- Ambient temperature of indoor unit and outdoor unit is too low

Troubleshooting:



(14) "L9" inconsistent of quantity of indoor unit

Fault judgment condition and method: quantity of indoor units connected to the wired controller is over 16, or the actually connected quantity of indoor units is inconsistent with the set quantity of group control indoor units

Possible cause:

- the quantity of indoor units connected to one wired controller is over 16
- The actually connected quantity of indoor units for one wired controller is inconsistent with the set quantity of group control indoor units

Troubleshooting:

- 1) Troubleshooting: if the quantity of indoor units connected to wired controller is over 16, adjust the control range of the wired controller, one wired controller can control 16 indoor units at most.
- 2) If the quantity of indoor units connected to wired controller is less than 16, please enter the parameter setting to set the quantity of group control indoor units is the same with that of the actually connected indoor unit.

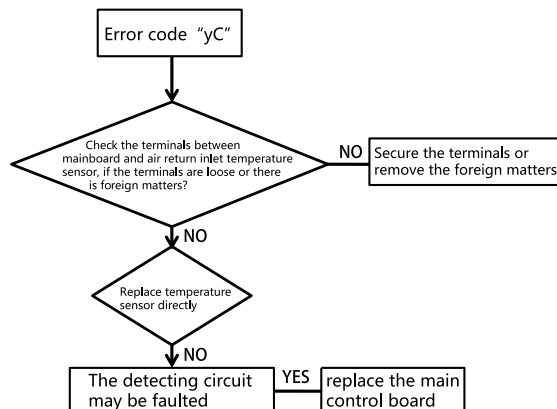
(15) "yC" air return inlet temperature sensor error

Fault judgment condition and method By sampling AD value of temperature sensor via temperature sensor detecting circuit to estimate the range of AD value, after continuously sampling for 5 seconds and the AD value is out of the upper limit and lower limit, it will report the error.

Possible causes:

- poor contact between the air return inlet temperature sensor and the mainboard terminal
- air return inlet temperature sensor is faulted
- Detecting circuit is faulted

Troubleshooting:



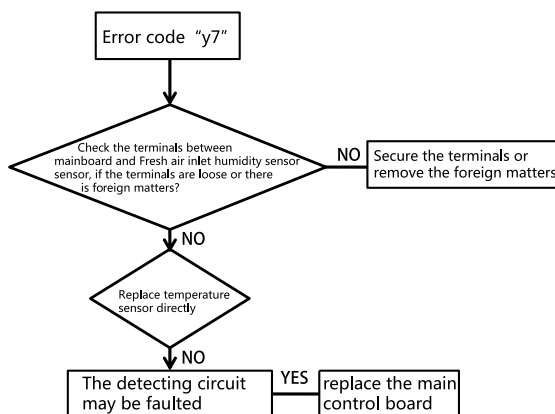
(16) "y7" fresh air inlet humidity sensor error

Possible causes:By sampling AD value of temperature sensor via temperature sensor detecting circuit to estimate the range of AD value, after continuously sampling for 5 seconds and the AD value is out of the upper limit and lower limit, it will report the error.

可能原因：

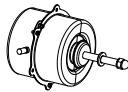
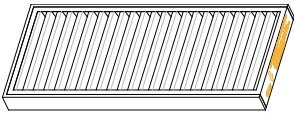
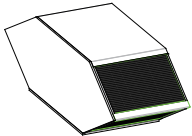
- poor contact between the fresh air inlet humidity sensor and the mainboard terminal
- fresh air inlet humidity sensor is faulted
- Detecting circuit is faulted

Troubleshooting:



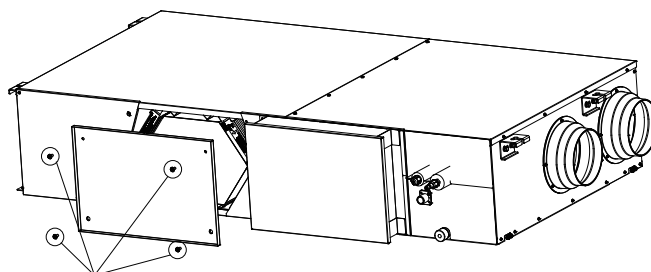
8.4 Maintenance of key components

8.4.1 Key components

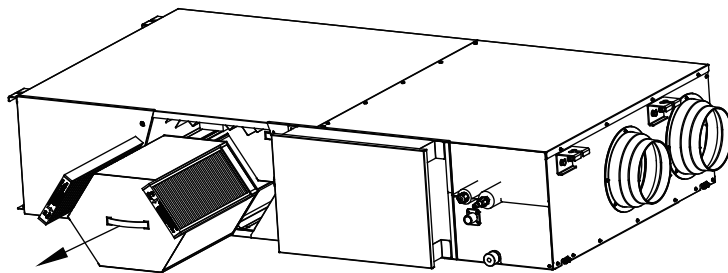
Photo	Name	Function
	Motor	Drive the operation of fan
	Filter	Protect the internal of unit, filter the air
	Heat exchange core	Recover the energy

Overhaul and replacement of heat exchange core and filter:

1. Unscrew the four bolts of access panel and disassemble the side access panel.

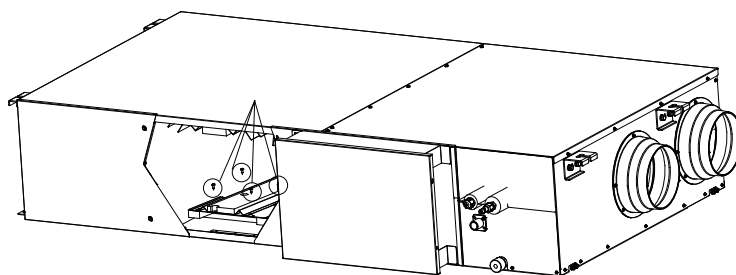


2. Dismantle the heat exchange core and filter.

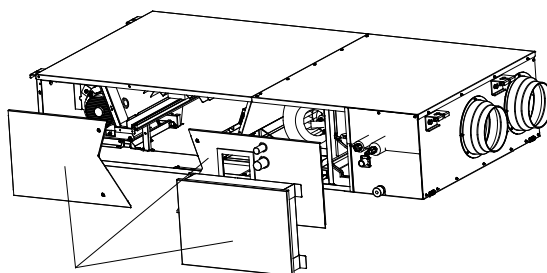


Repair and replace of motor

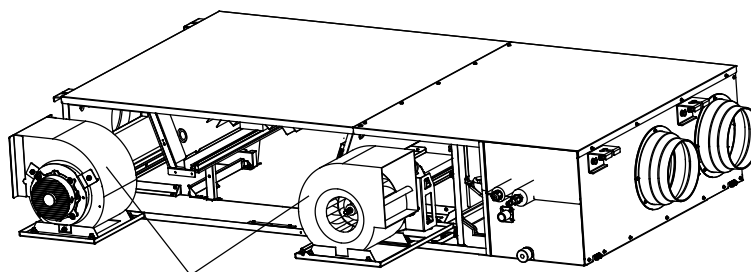
1.Remove the core filter of unit according to the way of removing the core filter.



2.Remove the 4 screws of wire-pressed cover plate of unit, draw out the wire-pressed cover plate.



3.Remove the wires of electric box and the front and rear maintenance boards as shown above.



4.After removing the fixing sheet metal of motor, the motor can be slid out from the rail.

8.5 Explosive view of unit

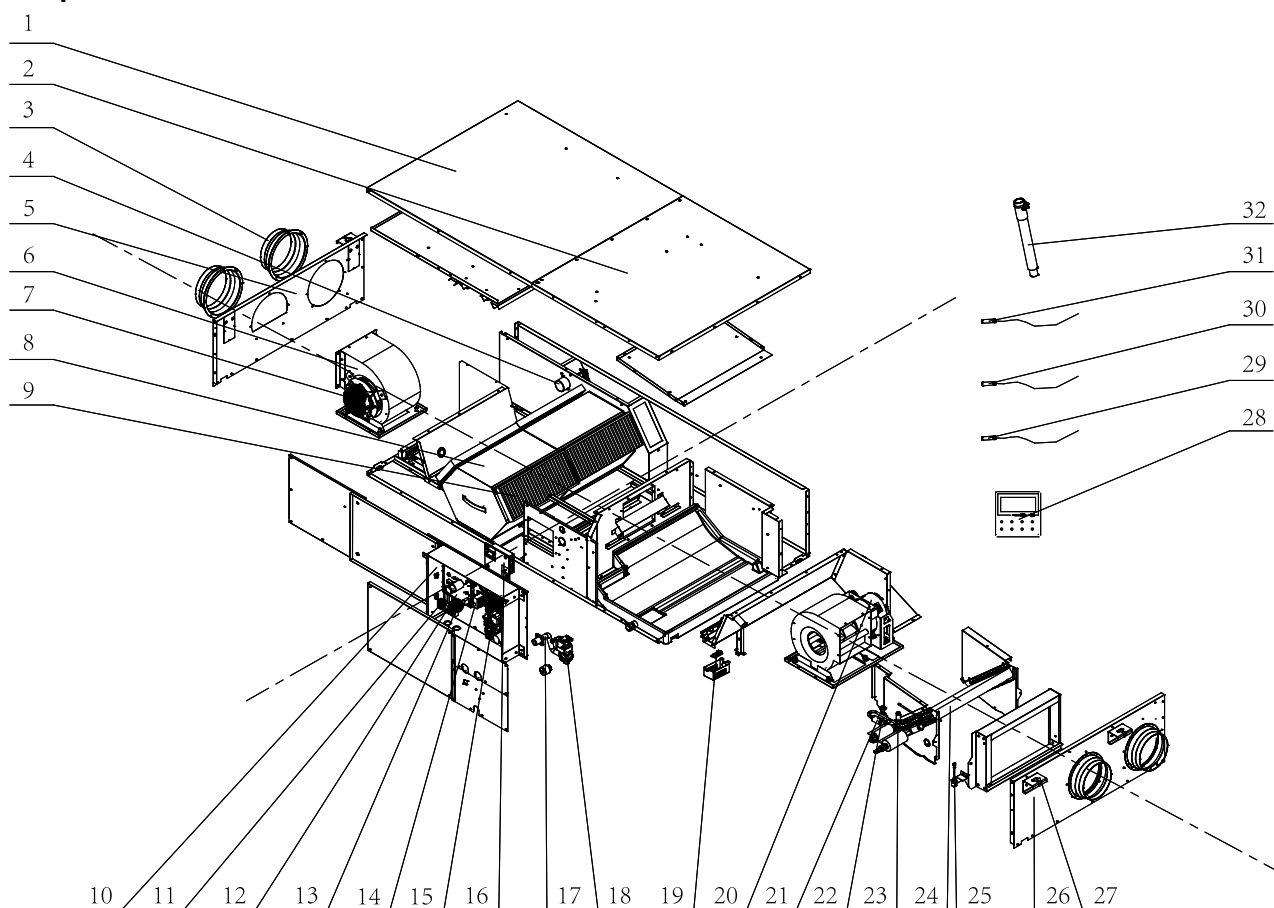


Figure 8-1 GMV-VDR5PH/SA-S

No	Name of part	Quantity	Part code
	GMV-VDR5PH/SA-S	/	CM810N1860
1	Top Cover Assy	1	000097060104
2	Top Cover Assy	1	000097060105
3	Air Opening	4	26906055
4	Stepping Motor	1	1521401501
5	Side Plate Assy	1	000240060023
6	Motor for Centrifugal Fan	1	1570890101
7	Brushless DC Motor	1	15010400001103
8	Total Heat Exchange Core Assembly	2	812036060009
9	Primary Filter	4	710024060015
10	Electric Box Assy	1	100002062091
11	Terminal Board	1	42000100000204
12	Main Board	1	300002060263
13	Terminal Board	1	42200006000401
14	Reactor	1	43138000047
15	Main Board	1	300002060407
16	Radiator	1	49018000068
17	Pump Drainpipe	1	200070060004
18	Water Pump	1	4313822005
19	Detecting Plate	1	30070022
20	Brushless DC Motor	1	15010406000202

21	Strainer	1	0741410000601
22	Strainer	1	07415210
23	Electronic Expansion Valve	1	07334466
24	Evaporator Assy	1	011001060356
25	Liquid Level Switch	1	43002400000501
26	Rear Side Plate Sub-Assy	1	017051060091P
27	Hook	2	0220530201
28	Display Board	1	300001060299
29	Temperature Sensor	1	3900040302
30	Ambient Temperature Sensor	1	390002065
31	Temperature Sensor	1	3900020635
32	Drain Hose	1	05232046

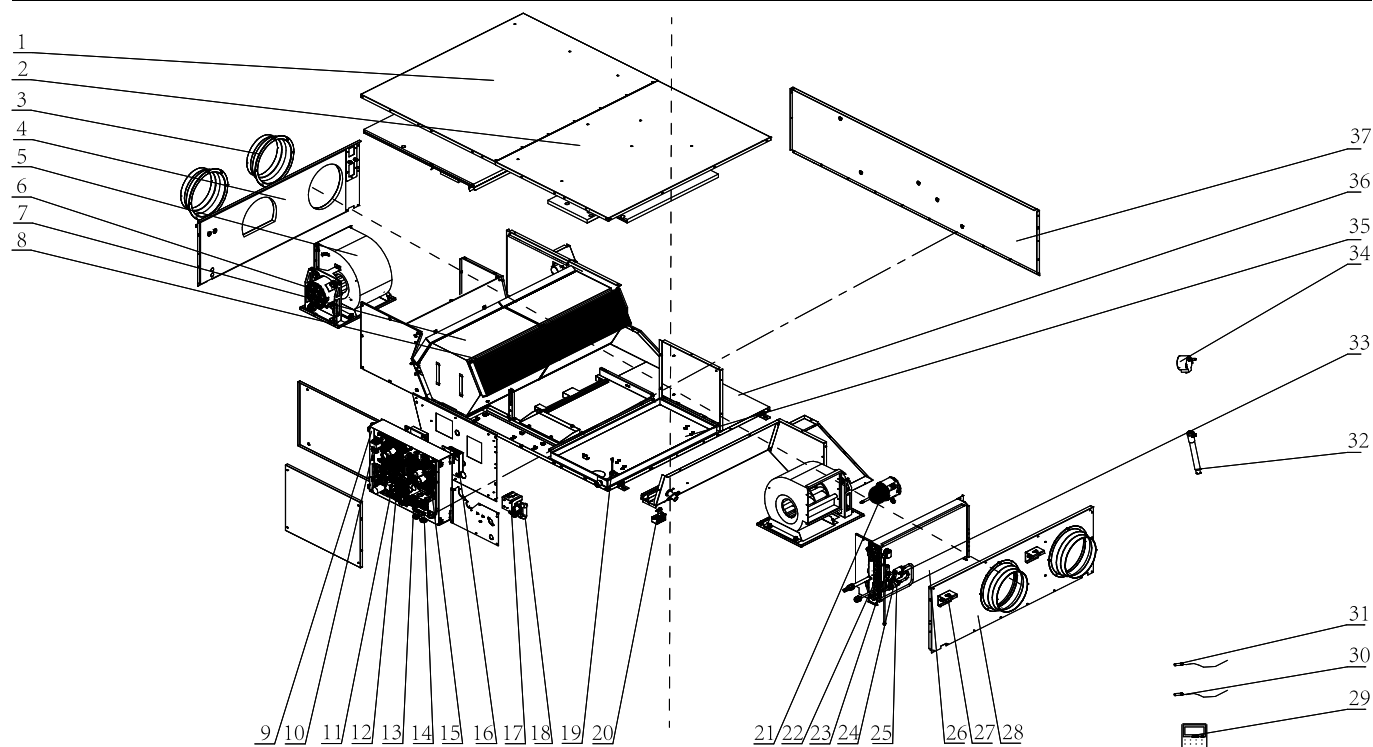


Figure 8-2 GMV-VDR8PH/SA-S GMV-VDR10PH/SA-S

No	Name of part	Quantity	Part code
	GMV-VDR8PH/SA-S	/	CM810N1880
	GMV-VDR10PH/SA-S	/	CM810N1870
1	Coping	1	012049060034P
2	Top Cover Assy	1	000097060106
3	Air Opening	4	26906056
4	Side Plate Assy	1	000240060010
5	Motor For Centrifugal Fan	1	15701103
6	Brushless DC Motor	1	15010406000201
7	Total Heat Exchange Core Assembly	2	812036060005
8	Primary Filter	4	710024060017
9	Electric Box Assy	1	100002064646
10	Reactor	2	43138000047
11	Main Board	1	300002060263

12	Main Board	1	300002060263
13	Terminal Board	1	42200006000401
14	Terminal Board	1	42000100000204
15	Main Board	1	300002060263
16	Radiator	2	49018000068
17	Water Pump	1	4313822005
18	Pump Drainpipe	1	26905288
19	Liquid Level Switch	1	43002400000501
20	Detecting Plate	2	30070022
21	Brushless DC Motor	1	15010406000201
22	Electric Expand Valve Fitting	1	4304413205
23	Electronic Expansion Valve	1	07334468
24	Strainer	1	0741410000601
25	Strainer	1	0741410000601
26	Evaporator Assy	1	011001060537
27	Hook	4	0220530201
28	Rear Side Plate Assy	1	000153060002
29	Display Board	1	300001060299
30	Temperature Sensor	1	3900020626
31	Ambient Temperature Sensor	1	3900040302
32	Drain Hose	1	05232046
33	Strainer	1	07220005
34	Stepping Motor	1	1521401501
35	Water Tray Assy	1	000069060080
36	Base Plate Assy	1	011007060052
37	Left Side Plate	1	000080060037

Above data is subject to change without notice,pls reference the SP in global service website.



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