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Chapter 1 Summary

1.1 Product Summary

GMV digital multi variable air conditioners adopt new type digital scroll compressor with variable capacity. The design and installation are easy and flexible. The operation is economical and high efficient. The detailed features are as follows:

◆ **Flexible and free combination of indoor units**

a. The max. total capacity of indoor units can reach 135% of the capacity of outdoor unit. If the capacity of outdoor unit is different, the amount of the indoor units it can be connected with is different. An outdoor unit can be connected with up to 32 sets of indoor units.

b. According to the functions and decoration features of various rooms, indoor units of different types and with different capacities may be selected to make interior decoration harmonious and beautiful; indoor units that can be connected include cassette type, wall-mounted type, concealed ducted type, ultrathin concealed ducted type, one-way cassette type, floor-standing exposed ducted type, suspended exposed ducted type and floor-standing type.

◆ **The advanced PWM variable capacity compressor technology**

a. The capacity adjustment of GMV system adopts new type digital scroll compressor technology. It can make continual capacity adjustment in the range of 10%-100% by adjusting the unloading/loading rates of the compressor.

b. The electromagnetic valve with PWM (Pulse-Width Modulation) digital variable capacity can realize the unloading/loading through that pressure control the separation and reunion of the orbital scroll and the fixed scroll.

c. GMV system can keep a relatively high energy-efficiency ratio when partial loads are in operation. It can save up to 40% or more energy than the traditional central air conditioner.

d. The loading rate of outdoor unit can be controlled automatically according to the amount and capacity requirement of running indoor units.

e. When it is 10% of the loading, GMV system can still keep the continuous stable operation for a long time.

f. As compared to inverter transformation type, variable capacity compressor has better electromagnetic compatibility and no electromagnetic disturbance problem.

◆ **Long-distance refrigerant pipes (High-efficient space utilization and installation)**

a. The max. length of the pipe can reach 100m and the drop height between indoor units can reach 15m.

b. While outdoor unit is above indoor unit, their max. drop height can reach 50m; while indoor unit is above outdoor unit, their max. drop height can reach 40m.

◆ **High-efficient space utilization and installation**

a. GMV is a one-time coolant system in which cooling capacity is directly transmitted by refrigerant pipe. As compared to traditional second-time refrigerant system, GMV does not need huge and ponderous supporting system and complex pipework design. Its installation and maintenance is more convenient, which saves large amount of man-power and material resources, as well as installation space.

b. GMV system doesn't need special machine house. It not only can save much more space for the other purpose, but also enlarge the owners' profits at the most.

c. Simple piping and wiring system, portable indoor/outdoor units, which only need a few installation workers to fulfill the installation easily. It can save your installation cost.

d. Light weight outdoor unit can even be moved with elevator in the buildings. The vibration is small when the outdoor unit is running and the floors don't need additional reinforcement.

◆ **High-precision and intelligent temperature control**

a. GMV system can control the cooling/heating capacity of indoor units through continuously adjusting the electronic expansion valve of each indoor unit. It can keep room temperature around the set temperature and the temperature fluctuates within ±0.5℃.

b. GMV system adopts advanced highly-sensitive temperature control system that combines with intelligent temperature control technology. It enables the system to sense the changes of cooling and heating loads in the room and exactly control the temperature in time. So the room temperature can be uniformly distributed in order to avoid the great fluctuation of room temperature.

c. Powerful cooling/heating function, direct energy transmit of one-time coolant system and intelligent temperature control make the system rapid cooling/heating, then the room temperature can rapidly reach the setting temperature.

◆ **High reliability**

a. Adopt a complete set of high quality cooling parts. All the parts adopt scientific design and precise processing. The whole system has undergone longtime and strict test.

b. The main control system adopts advanced microcomputer control system, which controls the units in an all-round way. It has complete safety protection function and powerful self-diagnosis function. Maintenance work is easy because no serviceman is required.

◆ **Cooling distribution by intelligent network**

GMV's microcomputer control system can achieve the effect of scientific cooling distribution through the fine control over the electronic expansion valve of each indoor unit and fulfill the different needs of all indoor units while ensuring highly efficient energy-saving, which truly realizes "distribution according to one's ability and needs" of each indoor unit in the big family of GMV.

◆ **Powerful error self-detection and long-distance communication wire**

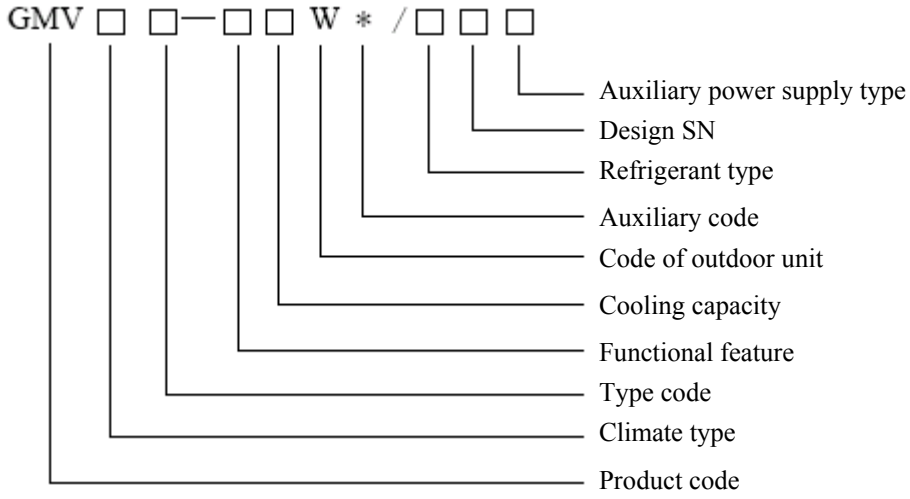
a. GMV system has a powerful error display and inquiry function, which can greatly save the servicing time and cost.

b. GMV adopts long-range wiring system that connect 16 indoor units and outdoor unit in series. The max. communication distance can reach 1km. The communication wiring of indoor and outdoor unit is so simple that wrong wiring can be easily avoided.

1.2 Expression of product model

1.2.1 Models of outdoor unit

The basic structure of the model



Meanings of outdoor unit model

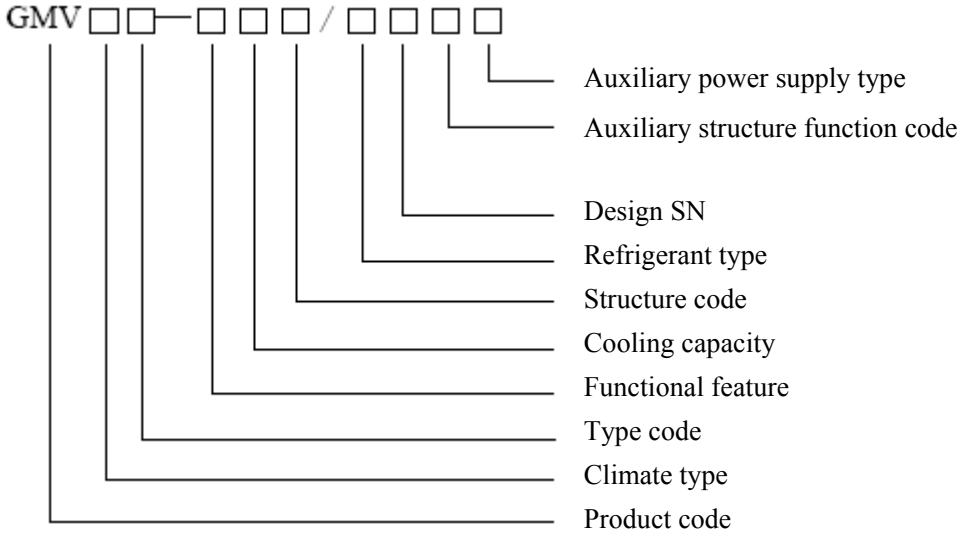
Standard primary model								**Suffixal model**		
Meaning	Product code	Climate Type	Type code	Functional feature	Cooling capacity	Code of outdoor unit	* Auxiliary code: amount of compressor (or indoor unit)	Refrigerant type	Design SN	Auxiliary power supply
Expression method	GMV	T1-omitted; T2-low-temperature climate T3-high-temperature climate	Type code of heat pump is omitted L-cooling only type	P-Variable frequency R-Variable capacity	Nominal cooling capacity $\times 10^{-2}$ (W)	W	Expressed by digit, code of single compressor is omitted;	R22-omitted R407C-N R410A-Na	Design SN is in the order of A, B, C…	Within 7000~16000W, single-phase power supply is omitted; three-phase power supply-S

Model example：

GMV-R300W2/B: Indicates B series digital multi variable air conditioners outdoor unit with two compressors and 30KW nominal cooling capacity.

1.2.2 Models of indoor units

The basic structure of the model



Meaning of indoor unit code

Meaning	Product code	Type code	Function code	Cooling capacity	Structure code	Refrigerant	Design SN	Auxiliary structure or function code	Auxiliary power supply
Express method	GMV	Code of type with auxiliary electrothermal pump is omitted R-Pure heat pump L-Cooling only type D-Electrothermal type W-With hot water wormpipe	R-Multi variable	Nominal cooling capacity $\times 10^{-2}$ (W)	G-Wall-mounted type L-Floor-standing type T-Cassette type Td-One-way type Ts-Two-way type P-Ducted type D-Suspended exposed type Z-Vertical exposed type Window type is omitted	R22-omitted R407C-N R410A-Na	In the order of A, B, C, D…	L-Ultrathin (ducted type unit) Omitted-Normal static pressure (ducted type unit); H-High static pressure (ducted type unit) or digit 1, 2... for other functions	Within 7000~14000W, single-phase power supply is omitted; three-phase power supply-S

Model example:

GMVL-R70P/D: Indicates the ducted type cooling only multi variable air conditioner indoor unit with 7000W nominal cooling capacity.

1.3 Product assembly

The quantity of indoor unit that can be connected by one outdoor unit ranges from two to thirty-two and any provided models of indoor units with total capacity between 50% and 135% of outdoor unit can be assembled freely.

1.3.1 Models of outdoor unit

Type	Model	Power supply	Refrigerant	The max. qty. of indoor units that can be connected	The total capacity of indoor units
Cooling only/ Cooling & Heating	GMV (L) -R620W4/A	380V 3N～, 50Hz	R22	32	310～837
	GMV (L) -R560W4/A			32	280～756
	GMV (L) -R420W3/A			28	210～567
	GMV (L) -R300W2/A			16	150～405
	GMV (L) -R300W2/B			16	150～405
	GMV (L) -R260W2/B			13	125～335
	GMV (L) -R250W2/A			13	125～335
	GMV (L) -R220W2/B			11	100～270
	GMV (L) -R200W2/A			10	100～270
	GMV (L) -R200W2/B			10	100～270
	GMV (L) -R150W/AS			8	75～200
	GMV (L) -R140W/A	220V～, 50Hz		8	75～200
	GMV (L) -R120W/A			7	60～160
	GMV (L) -R100W/A			6	50～135
	GMV (L) -R80W/A			5	40～110

Note:

☆ The total capacity of indoor units can only be permitted between 50% and 135% of the rated capacity of outdoor unit;

☆ If the total capacity of indoor units is 135% of the capacity of outdoor unit and all the indoor units are working simultaneously, the capacity of outdoor unit will exceed the rated capacity; the actual capacity of each indoor unit will reduce. (Simultaneous working is not recommended.)

☆ It is recommended that the total capacity of indoor units be equal to the rated capacity of outdoor unit, i.e. the matching rate is 100%.

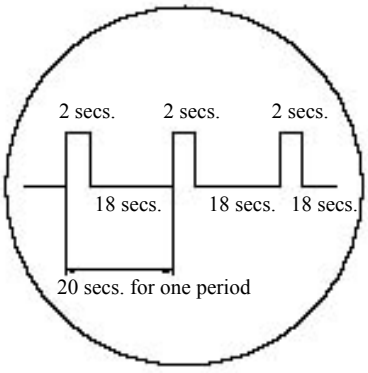
1.3.2 Model of indoor unit

Type / Capacity	Wall mounted type	Cassette type	One-way cassette type	Ducted type	Floor standing type	Low static pressure ultra-thin ducted type	Suspended exposed ducted type	Suspended exposed ducted type
20	GMV (L, R) -R20G/D	/	GMV (L, R) -R20Td/D	GMV (L, R) -R20P/D	/	GMV (L, R) -R20P/DL	/	/
25	GMV (L, R) -R25G/D	/	GMV (L, R) -R25Td/D	GMV (L, R) -R25P/D	/	GMV (L, R) -R25P/DL	/	/
30	/	GMV (L, R) -R30T/D	/	GMV (L, R) -R30P/D	/	GMV (L, R) -R30P/DL	/	/
35	GMV (L, R) -R35G/D	GMV (L, R) -R35T/D	GMV (L, R) -R35Td/D	GMV (L, R) -R35P/D	/	GMV (L, R) -R35P/DL	/	/
40	/	/	GMV (L, R) -R40Td/D	GMV (L, R) -R40P/D	/	GMV (L, R) -R40P/DL	/	/
45	/	GMV (L, R) -R45T/D	GMV (L, R) -R45Td/D	/	/	/	/	/
50	GMV (L, R) -R50G/D	GMV (L, R) -R50T/D	/	GMV (L, R) -R50P/D	GMV (L, R) -R50L/D	GMV (L, R) -R50P/DL	GMV (L, R) -R50D/D	GMV (L, R) -R50Z/D
60	/	GMV (L, R) -R60T/D	/	GMV (L, R) -R60P/D	/	GMV (L, R) -R60P/DL	GMV (L, R) -R60D/D	GMV (L, R) -R60Z/D
70	/	GMV (L, R) -R70T/D	/	GMV (L, R) -R70P/D	GMV (L, R) -R70L/D	GMV (L, R) -R70P/DL	GMV (L, R) -R70D/D	GMV (L, R) -R70Z/D
80	/	GMV (L, R) -R80T/D	/	GMV (L, R) -R80P/D	/	/	GMV (L, R) -R80D/D	GMV (L, R) -R80Z/D
100	/	GMV (L, R) -R100T/D	/	GMV (L, R) -R100P/D	GMV (L, R) -R100L/D	/	GMV (L, R) -R100D/D	GMV (L, R) -R100Z/D
120	/	GMV (L, R) -R120T/D	/	GMV (L, R) -R120P/D	GMV (L, R) -R120L/D	/	GMV (L, R) -R120D/D	GMV (L, R) -R120Z/D
140	/	/	/	GMV (L, R) -R140P/D	/	/	/	/

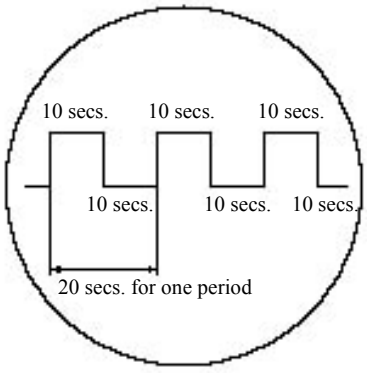
1.4 Working principle and system diagram of the air conditioners

1.4.1 Working principle

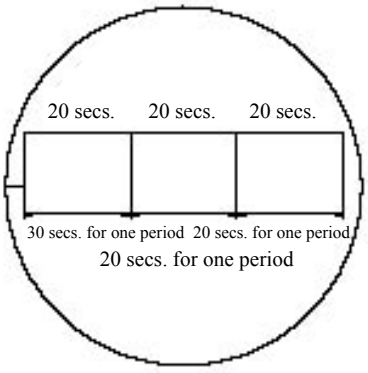
Digital multi variable air conditioners adopt new type scroll compressor with variable capacity. They can make continual capacity adjustment in the range of 10%~100% by adjusting the unloading/loading rates of digital scroll compressor. By controlling the open and close time of PWM electromagnetic valve (Pulse-Width Modulation) of the compressor, the unloading/loading time of the digital scroll compressor can be controlled, and the output capacity of the compressor can be adjusted. PWM electromagnetic valve is installed between the upper part of the fixed scroll and suction pipe. When PWM electromagnetic valve is closed, the fixed scroll and the orbital scroll should unite together (loading); when the electromagnetic valve is opened, the fixed scroll and the orbital scroll should separate (unloading). Outdoor unit can automatically adjust output capacity according to the actual capacity requirement of indoor units. For example: when total capacity is 10HP and control period is 20s, if output capacity of 5HP is required (50% of the total capacity), the loading time is 50% of control period, i.e. the loading time is 10s and the unloading time is 10s; if output capacity of 2HP is required (20% of the total capacity), the loading time is 20% of control period, i.e. the loading time is 4s and the unloading time is 16s. The other case is similar to the above. The following diagrams are the schematic diagrams when output capability is 10%, 50% and 100% respectively.



10% Output capacity



50% Output capacity



100% Output capacity

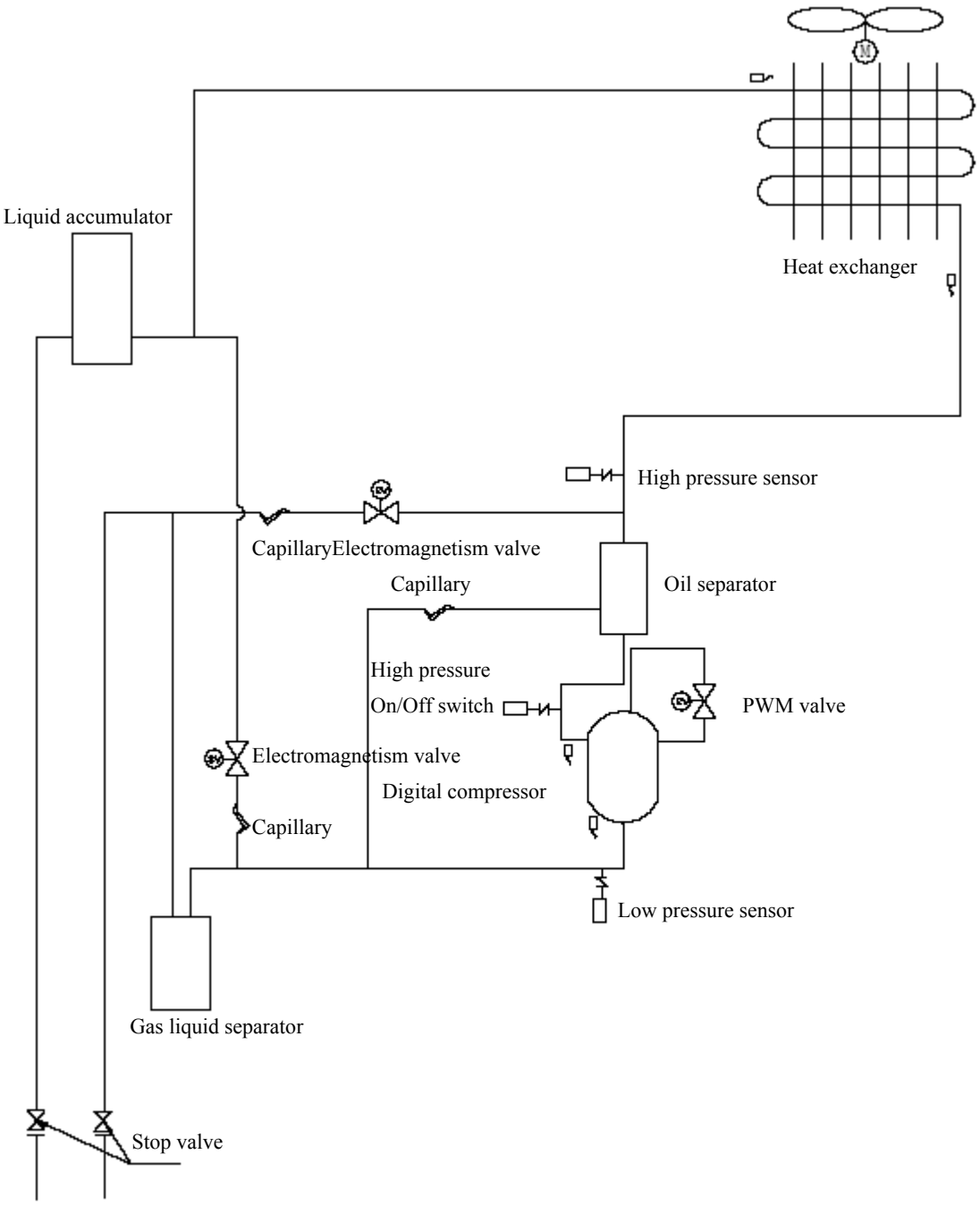
In COOL mode, electronic expansion valve of each indoor unit can automatically adjust the valve so that it can control the flow volume of refrigerant according to room loading change and the set temperature. For units with digital compressor and constant capacity compressor, if the total capacity requirement of indoor units is less than the capacity of digital compressor, only the digital compressor can be started; if the total capacity requirement of indoor units is more than the capacity of digital compressor, the constant capacity compressor will be started. With the total capacity requirement of indoor units being increased, the output capacity of outdoor unit will be increased accordingly. The output capacity of outdoor unit always keeps matching with the total capacity of indoor units. It is intelligent control and energy saving.

In HEAT mode, electronic expansion valve of indoor and outdoor unit can adjust the flow volume of refrigerant so that it can throttle and reduce the pressure. The start mode for digital and constant capacity compressor and the adjustment of output capacity are similar to those in COOL mode.

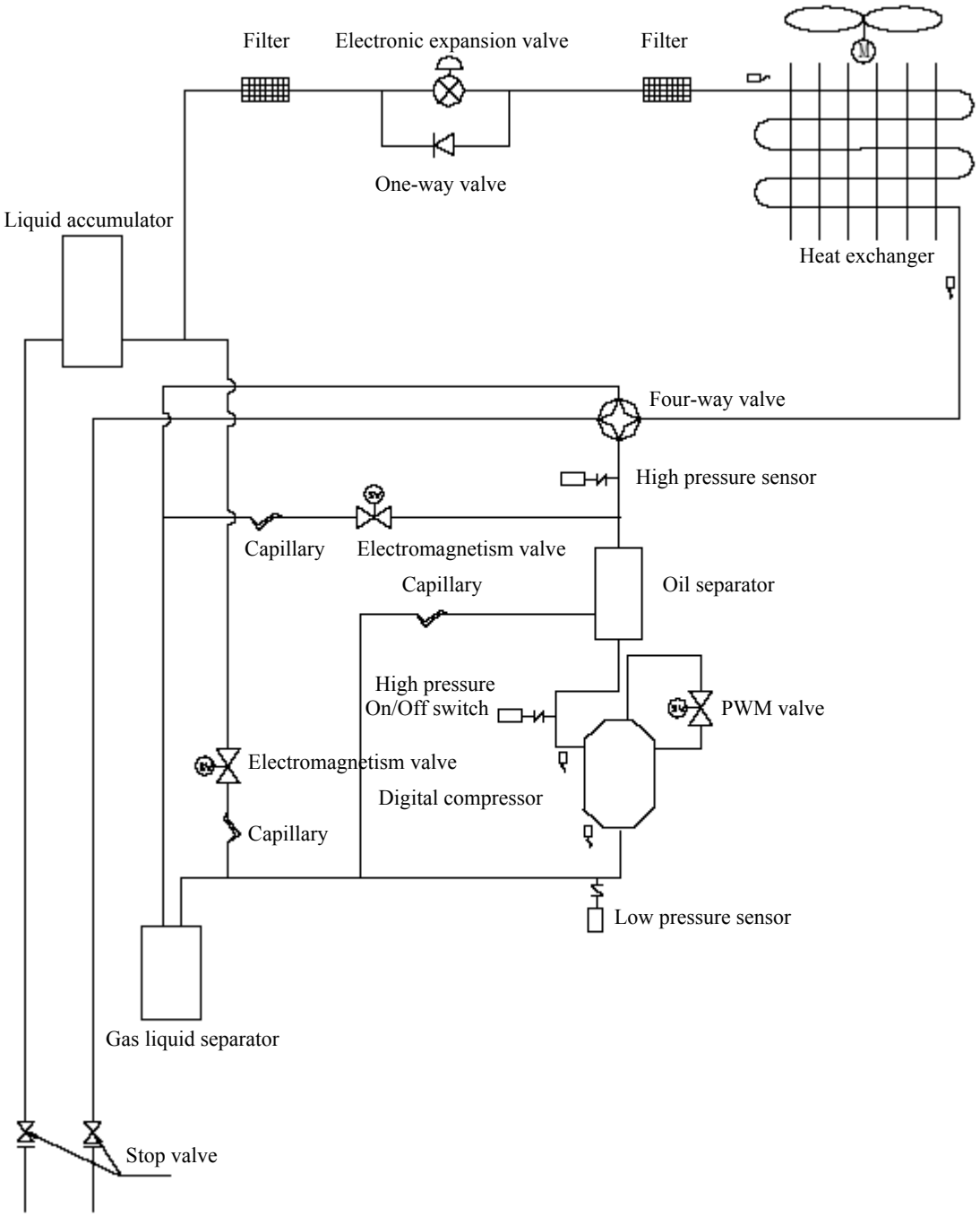
1.4.2 System diagram

Name	Function	Specification
Digital compressor	Combine the running output according to the capacity requirement of indoor unit.	GMV (L) -R100WN, GMV (L) -R120WN, GMV (L) -R150WN/A and GMV (L) -R150WN has no rated speed compressor
Rated speed compressor		
PWM electromagnetism valve	Adjust the unloading/loading ratio in digital scroll compressor to realize continual adjustment in range of 10%-100% of capability	
Electromagnetism valve	Control the On/off of the system bypass.	
High pressure sensor	Measure the exhaust pressure of the compressor.	
Low pressure sensor	Measure the suction pressure of the compressor.	
High pressure On/Off switch	Stop the compressor from running when exhaust pressure of compressor reaches a certain value.	
Electronic expansion valve	Control the flow volume of refrigerant and play the role of throttling.	Cooling only outdoor unit has no electronic expansion valve
Liquid accumulator	Accumulate rest refrigerant when system is running, and protect for variable capability adjustment	
Gas liquid separator	Separate gas and liquid of refrigerant to prevent compressor slugging	
Four-way valve	Change the flow direction of refrigerant when switching cooling and heating	Cooling only outdoor unit has no four-way valve
Oil separator	Separate lubricant oil expelled from compressor, and turn it back to compressor	

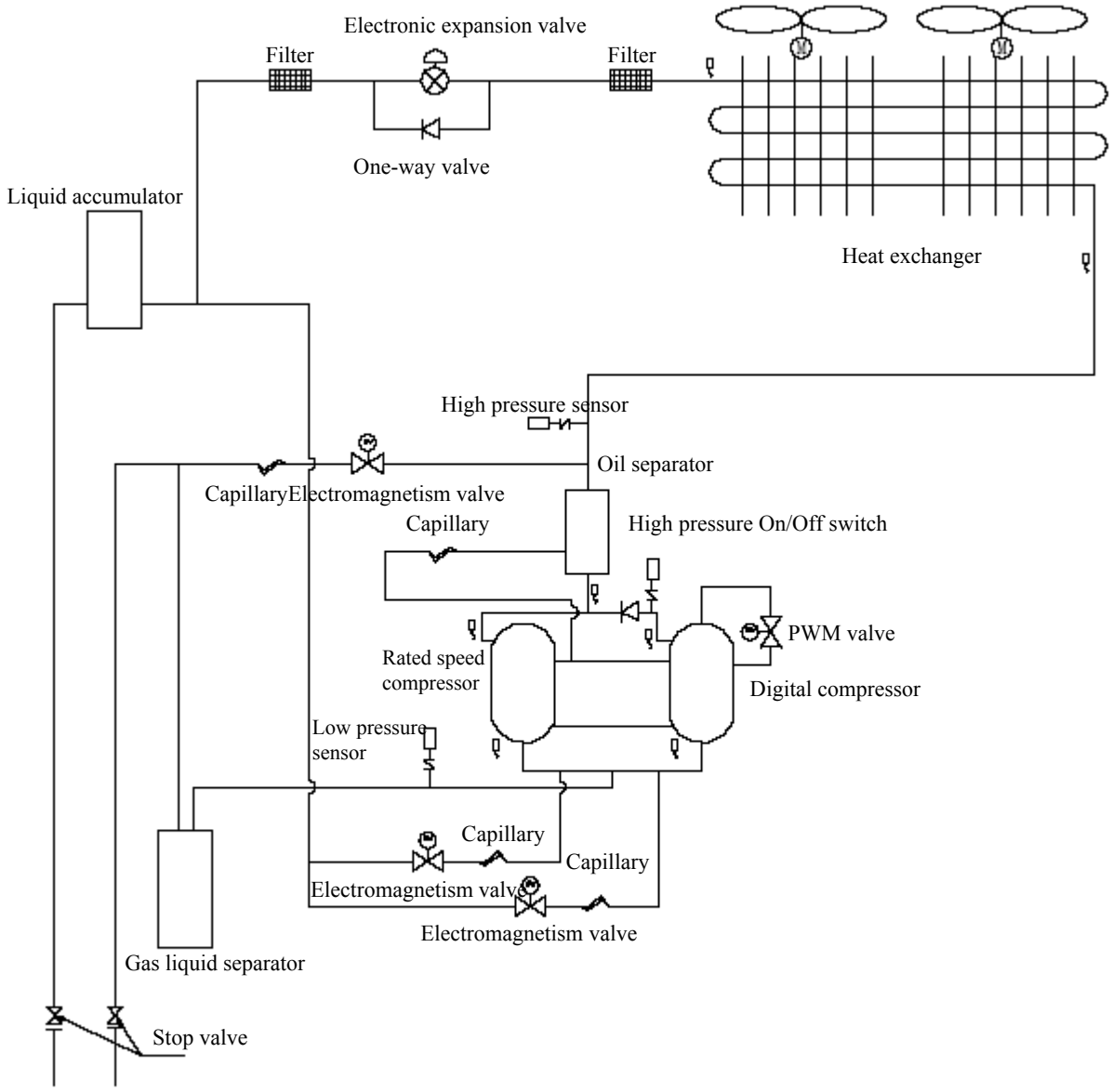
1.4.2.1 System digram of GMVL-R150W/AS, GMVL-R140W/A, GMVL-R120W/A, GMVL-R100W/A and GMVL-R80W/A units



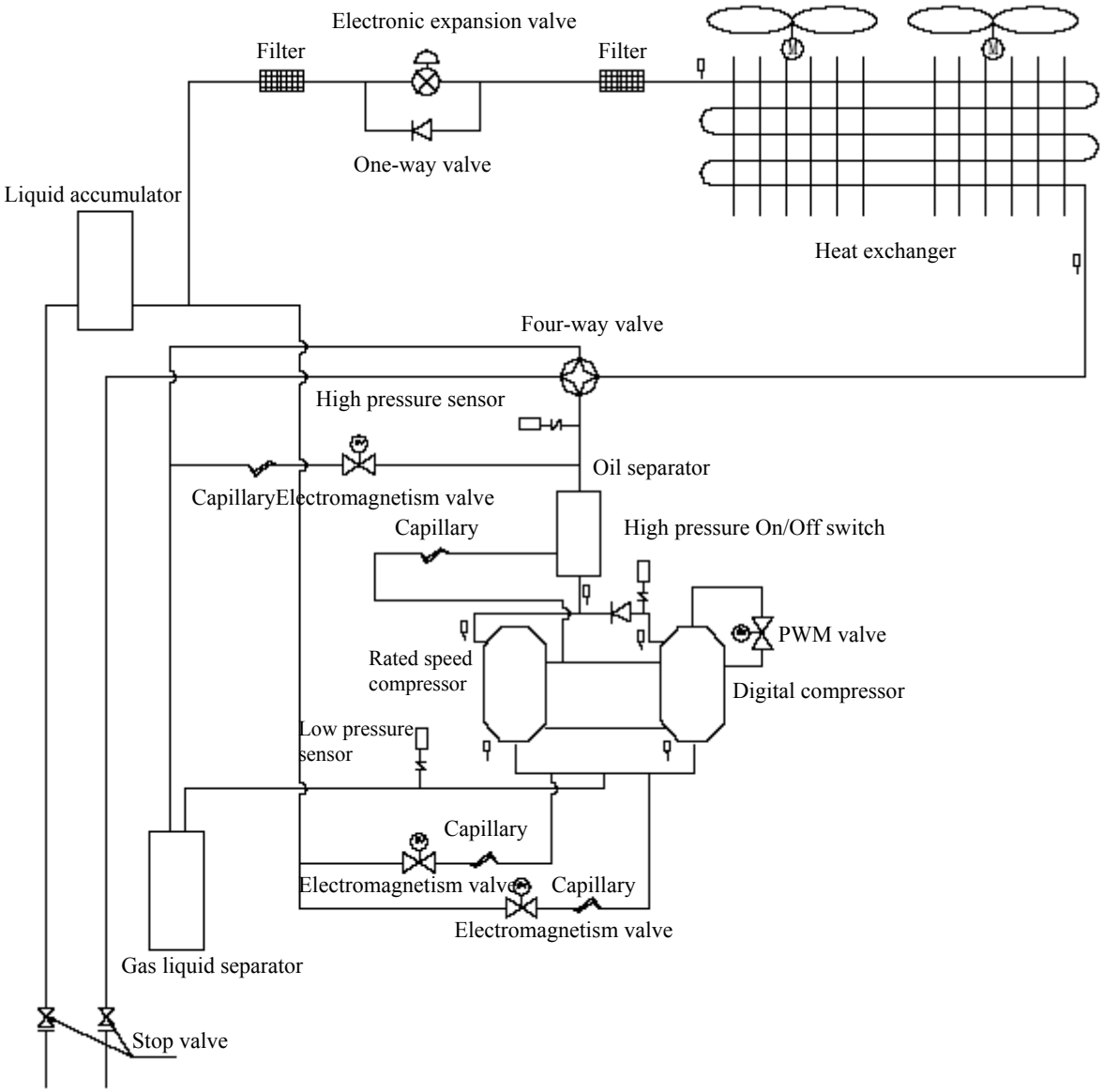
1.4.2.2 System diagram of GMV-R150W/AS, GMV-R140W/A, GMV-R120W/A, GMV-R100W/A and GMV-R80W/A units



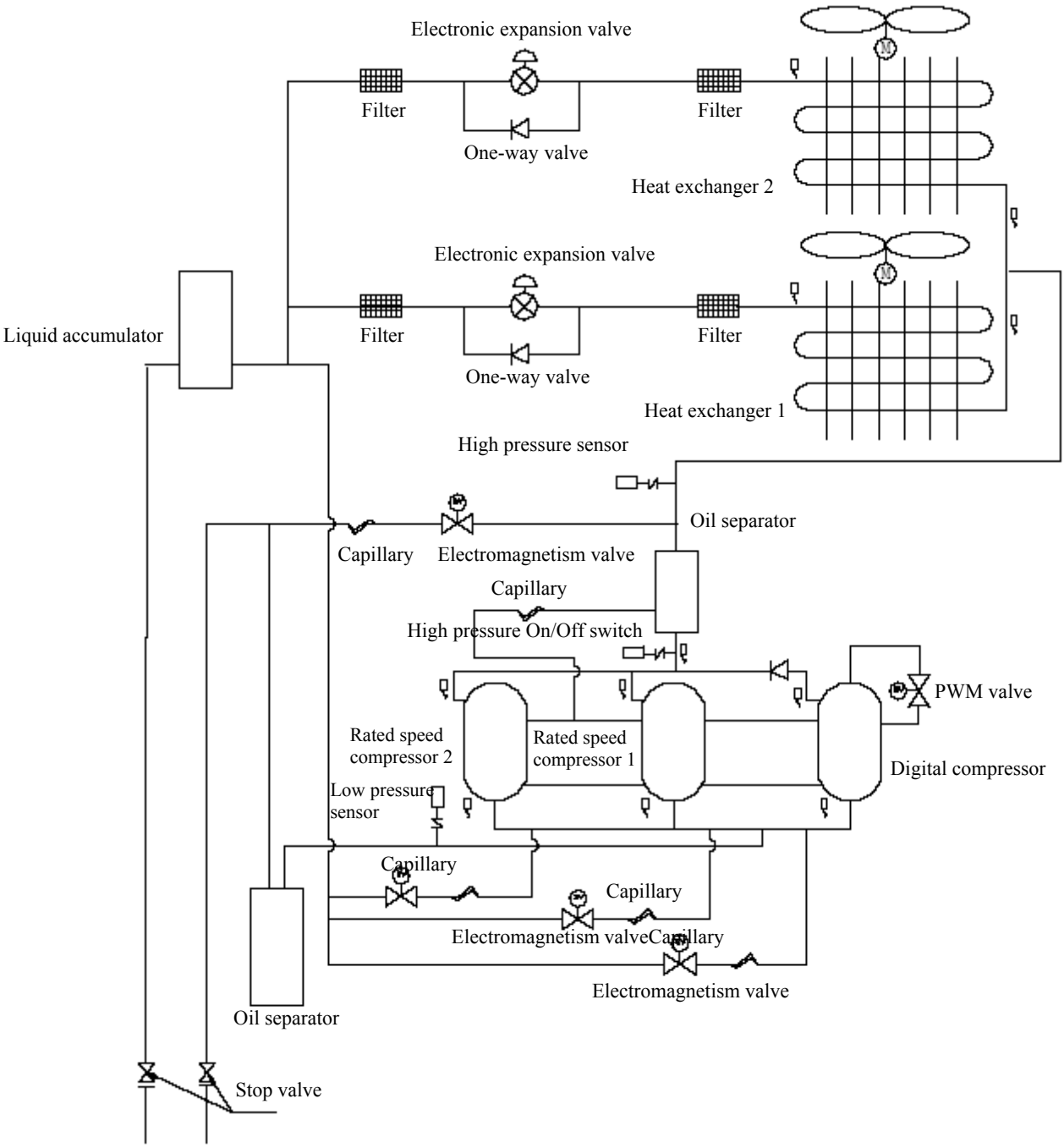
1.4.2.3 System diagram of GMVL-R300W2/A, GMVL-R300W2/B, GMVL-R260W2/B, GMVL-R250W2/A, GMVL-R220W2/B, GMVL-R200W2/A and GMVL-R200W2/B units



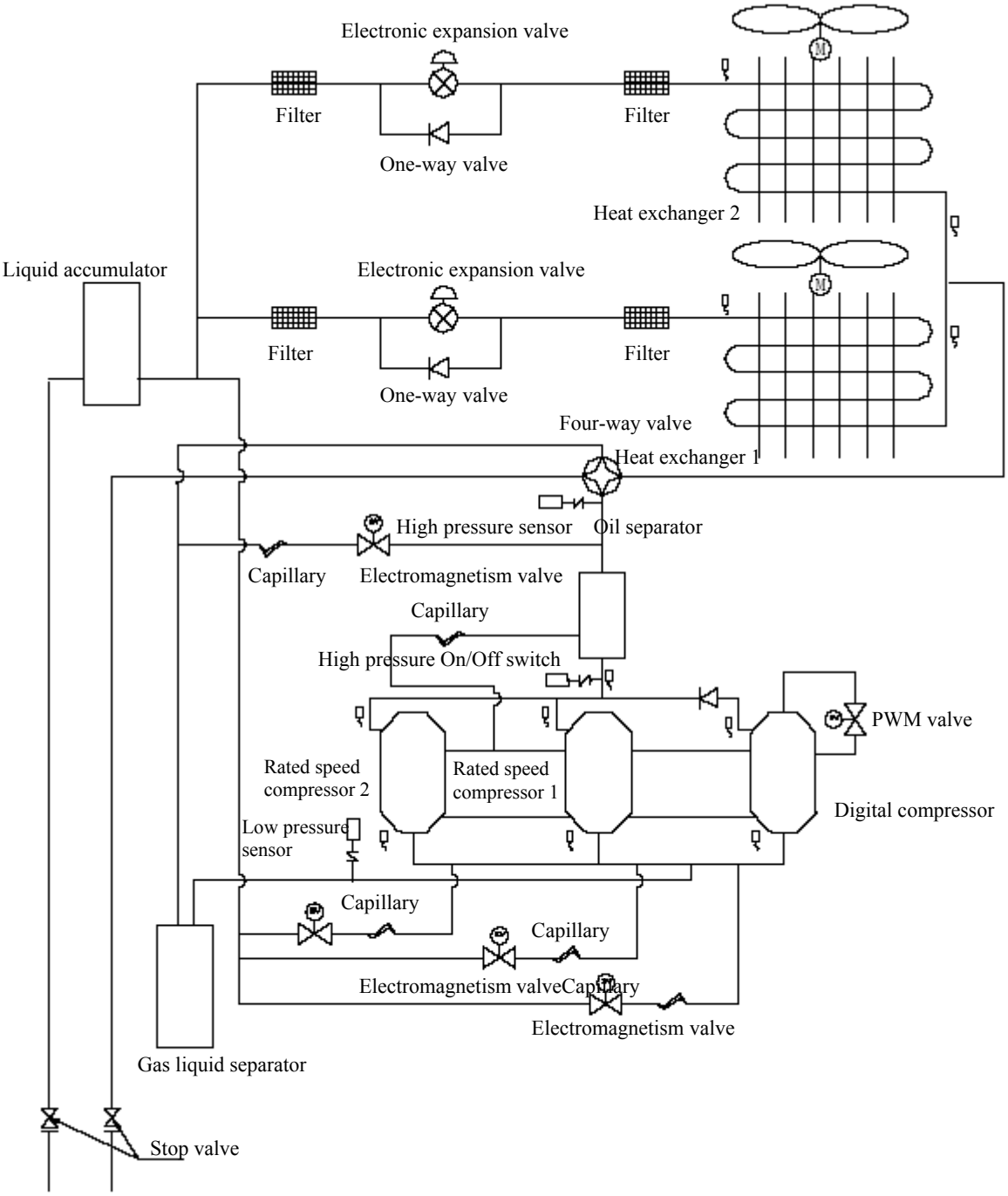
1.4.2.4 System diagram of GMV-R300W2/A, GMV-R300W2/B, GMV-R260W2/B, GMV-R250W2/A, GMV-R220W2/B, GMV-R200W2/A and GMV-R200W2/B units



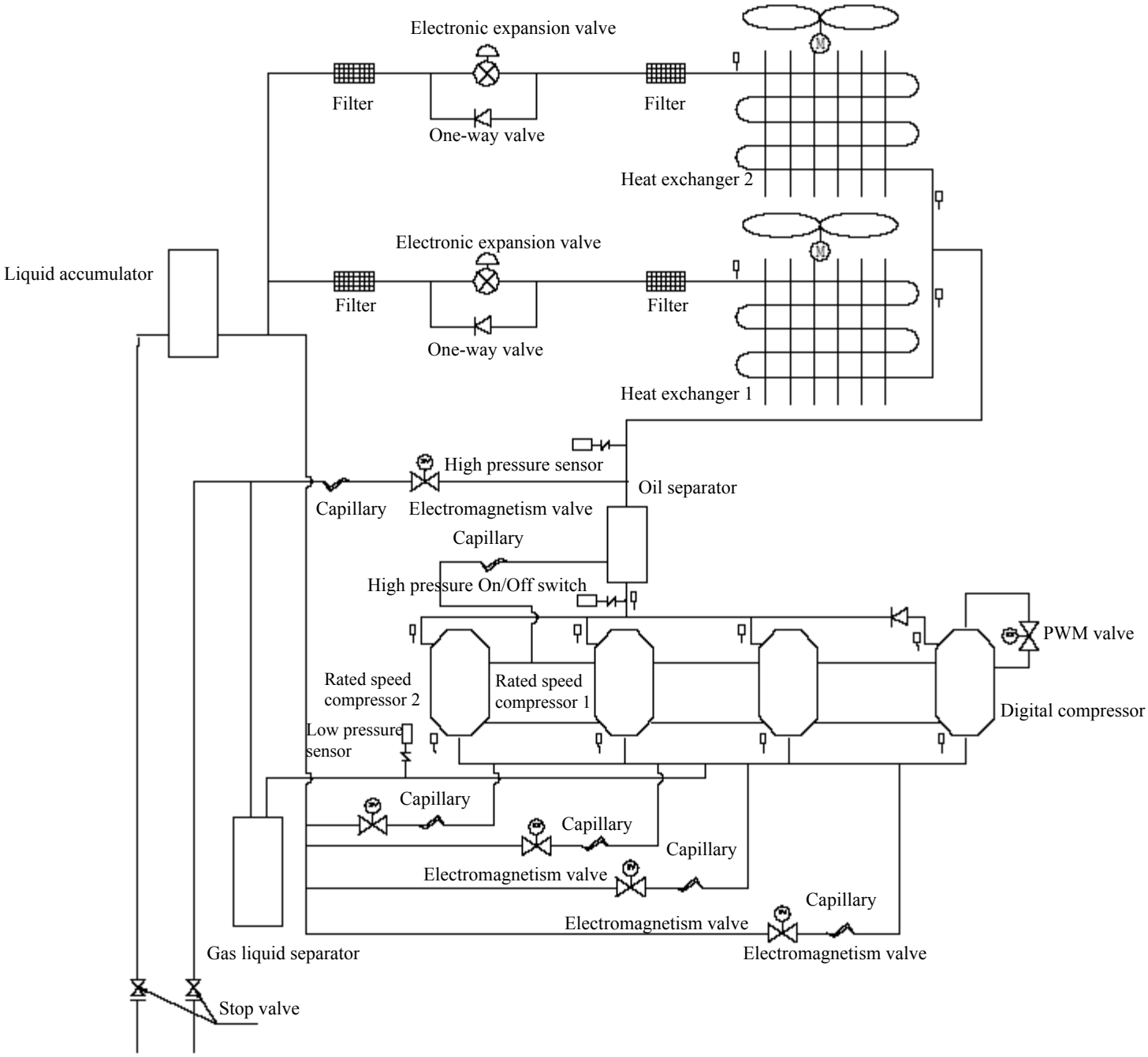
1.4.2.5 System diagram of GMVL-R420W3/A units



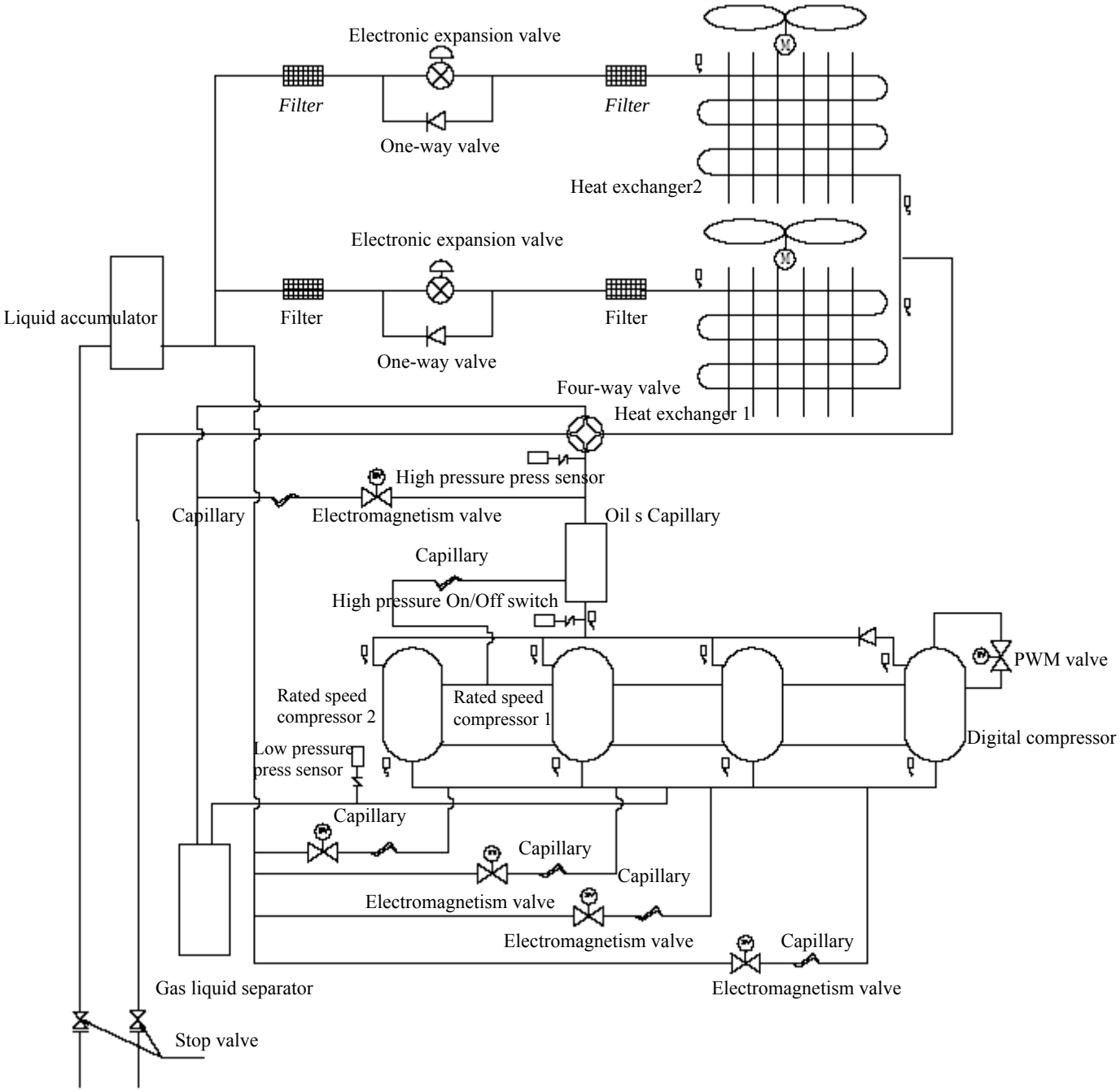
1.4.2.6 System diagram of GMV-R420W3/A units



1.4.2.7 System diagram of GMVL-R620W4/A and GMVL-R560W4/A units



1.4.2.8 System diagram of GMV-R620W4/A and GMV-R560W4/A units



1.5 Outline drawing of unit

1.5.1 Outline drawing of outdoor unit

1.5.1.1 Outline of GMV (L) -R80W/A

1.5.1.2 Outline of GMV (L) -R150W/AS, GMV (L) -R140W/A, GMV (L) -R120W/A and GMV (L) -R100W/A

1.5.1.3 Outline of GMV(L)-R300W2/B, GMV(L)-R260W2/B, GMV(L)-R220W2/B, GMV(L)-R200W2/B

1.5.1.4 Outline of GMV(L)-R620W4/A, GMV(L)-R560W4/A, GMV(L)-R420W3/A

1.5.1.5 Outline of GMV(L)-R300W2/A, GMV(L)-R250W2/A

1.5.3 Outline drawing of indoor unit

1.5.3.1 Four-way cassette type indoor unit

1.5.3.2 Outline of one-way cassette type indoor unit

1.5.3.3 Outline of ducted type indoor unit

1.5.3.4 Outline of low static pressure ultrathin ducted type indoor unit

1.5.3.3 Outline of wall-mounted type indoor unit

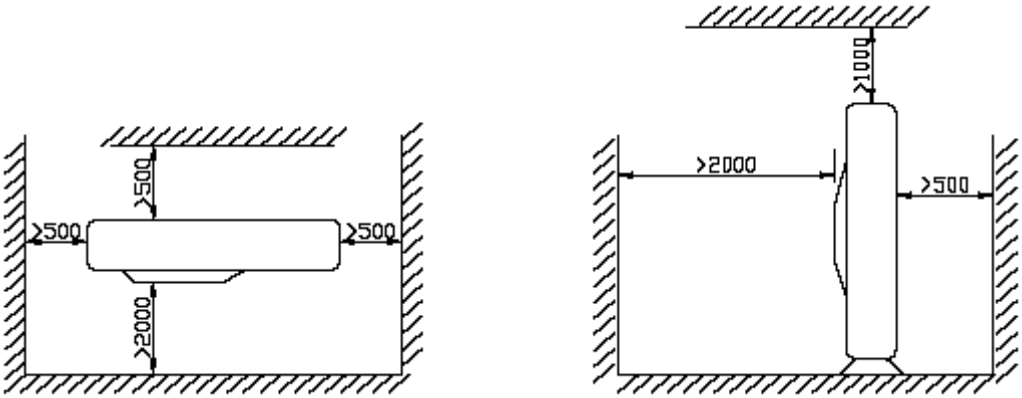
1.5.3.6 Outline of floor-standing type indoor unit

1.5.3.7Outline of vertical exposed and suspended exposed indoor unit

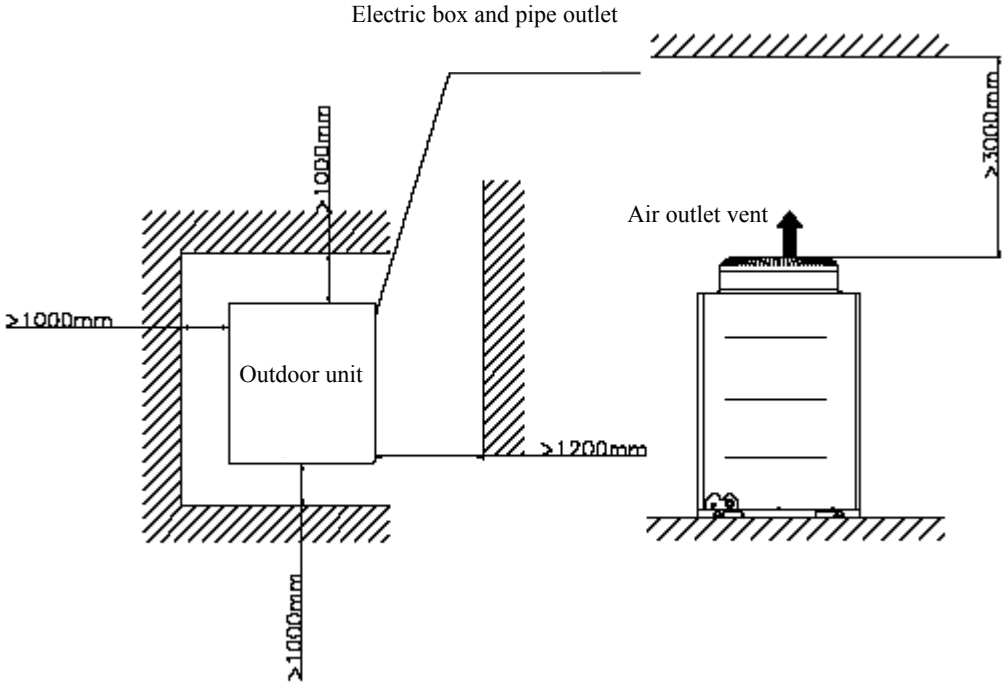
1.6 Installation space requirement for units

1.6.1 Installation space requirement for outdoor unit

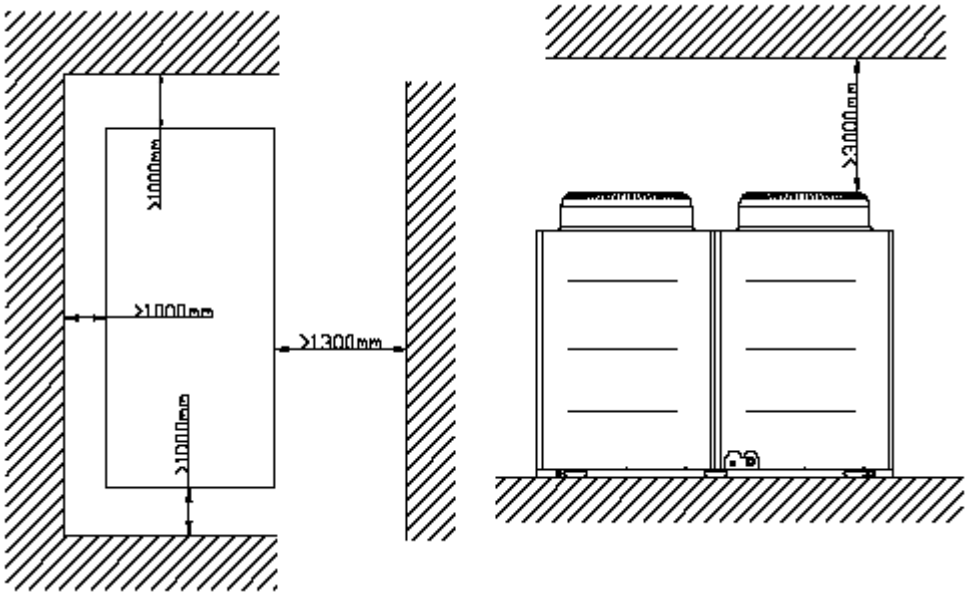
1.6.1.1 Installation space requirement for GMV(L)-R150W/AS, GMV(L)-R140W/A and GMV(L)-R120W/A; GMV(L)-R100W/A and GMV(L)-R80W/A outdoor unit;



1.6.1.2 Installation space requirement for GMV(L)-R300W2/B, GMV(L)-R260W2/B, GMV(L)-R220W2/B and GMV(L)-R200W2/B

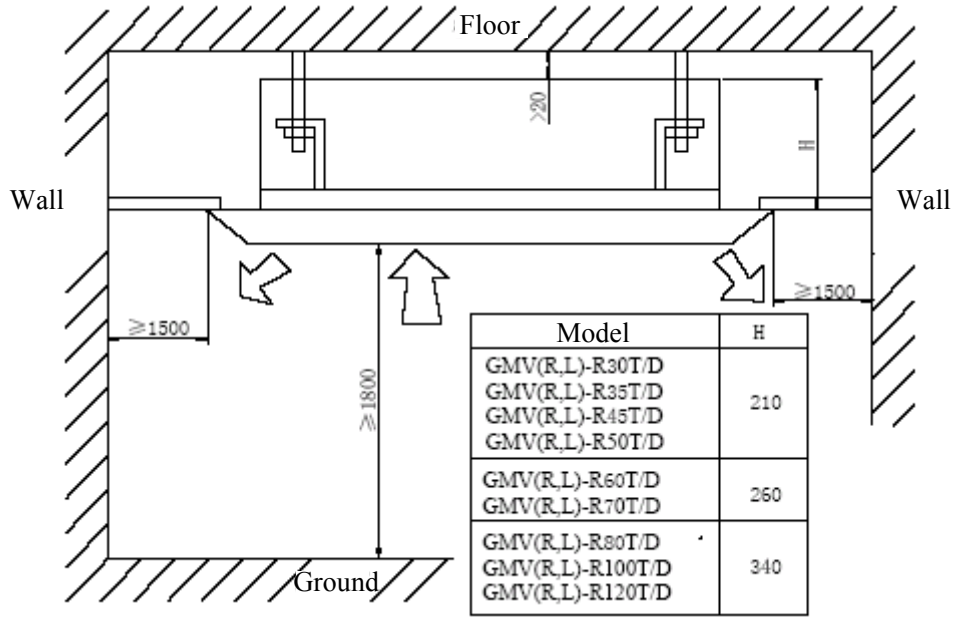


1.6.1.3 Installation space requirement for GMV(L)-R620W4/A, GMV(L)-R560W4/A and GMV(L)-R420W3/A outdoor unit



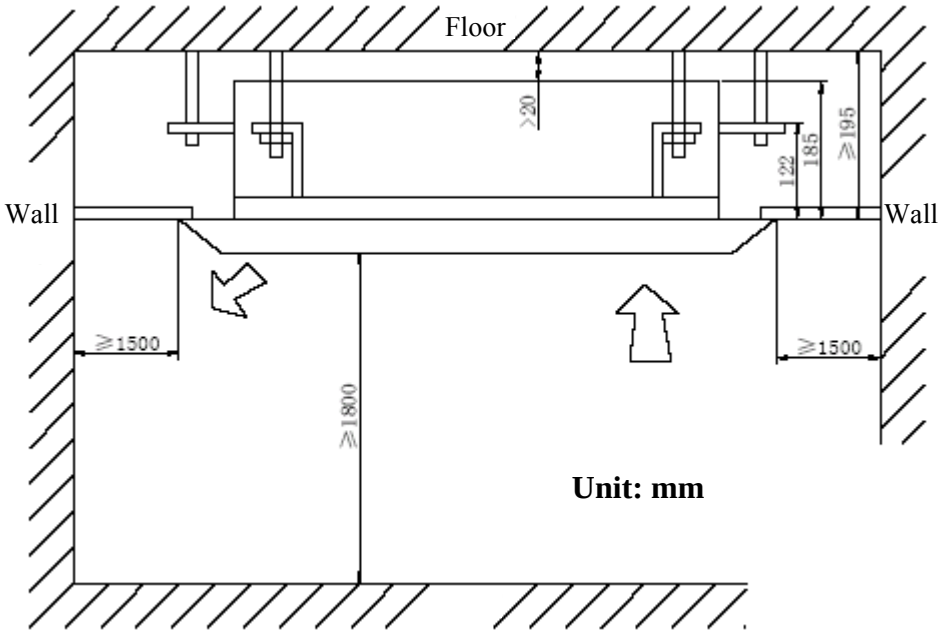
1.6.2 Installation space requirement for indoor unit

1.6.2.1 Installation space requirement for four-way cassette type indoor unit



Model	H
GMV(R,L)-R30T/D GMV(R,L)-R35T/D GMV(R,L)-R45T/D GMV(R,L)-R50T/D	210
GMV(R,L)-R60T/D GMV(R,L)-R70T/D	260
GMV(R,L)-R80T/D GMV(R,L)-R100T/D GMV(R,L)-R120T/D	340

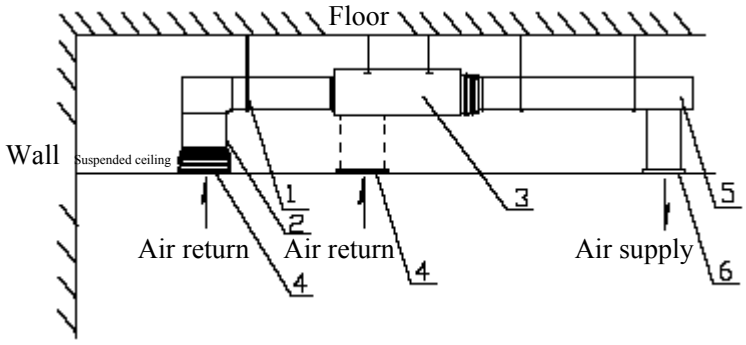
1.6.2.2 Installation space requirement for one-way cassette type indoor unit

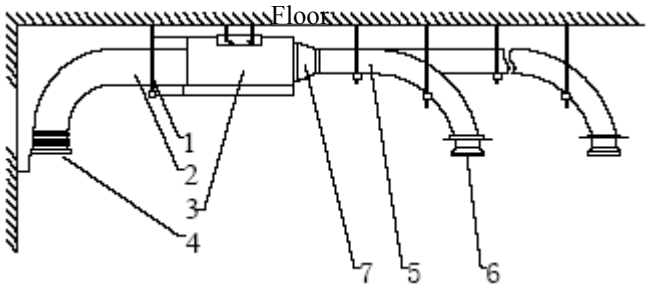


1.6.2.3 Installation schematic diagram of ducted type indoor unit

a. Duct installation

The lower left figure indicates the installation of rear air return hole; lower air return hole can be used according to actual installation needs (as shown in dotted portion). Users may choose rectangular or round shaped duct. The lower right figure is the schematic diagram for the installation of round shaped duct. The use of round shaped duct requires the prior installation of a transitional duct that connects with the round shaped outlet duct. Ducted indoor units with cooling capacity≥7kW can be equipped with 3 round shaped air outlet vents; ducted indoor units with cooling capacity≥10kW can be equipped with 4 round shaped air outlet vents; ducted indoor units with cooling capacity≤5kW shall not be considered for equipping round shaped air outlet. The max. length of duct must not exceed 10 meters.

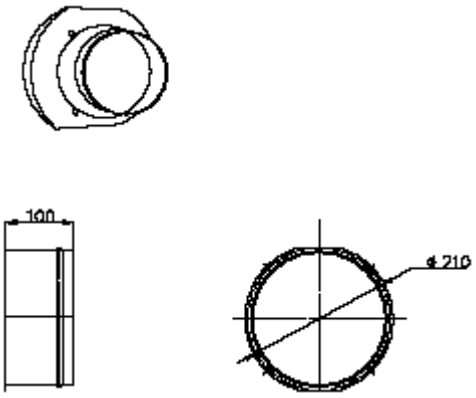




NO.	1	2	3	4	5	6	7
Name	Suspending beam	Air return pipe	Ducted type indoor unit	Air return hole	Air supply pipe	Air outlet vent	Transitional duct

Explanation:

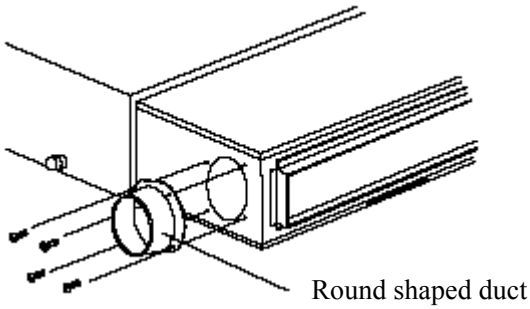
1. The max. length of duct refers to the total length of the air supply pipe at the farmost air outlet vent plus the total length of the air return pipe at the farmost air return hole.
2. For units with auxiliary electric heater, if round shaped duct is required, the straight length of transitional duct must not less than 200mm.



The round shaped duct and dimensions

b. Fresh air duct

1. When fresh duct is required for connection, cut the baffle away.
2. Install the round shaped flange to connect with the fresh duct.
3. Fresh air must be filtered before entering into the units.

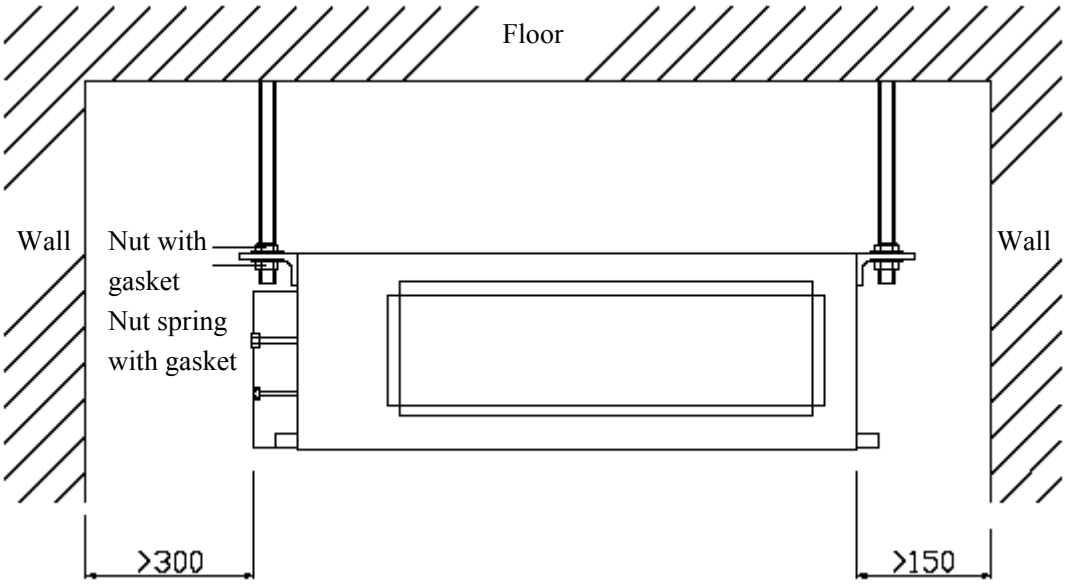


Round shaped duct

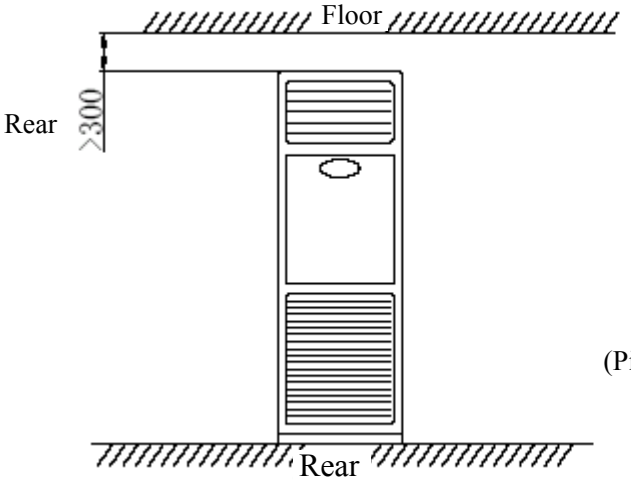
c. The high/low static pressure selection of ducted type indoor unit

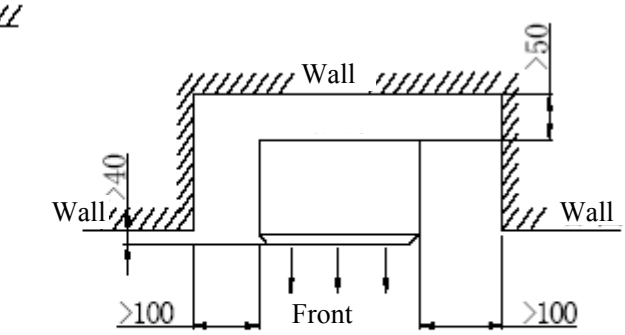
Via onsite adjustment of indoor wiring, high or low static pressure ducted type indoor unit can be selected according to project requirements.

1.6.2.4 Installation space requirement for low static pressure ultrathin ducted type indoor unit

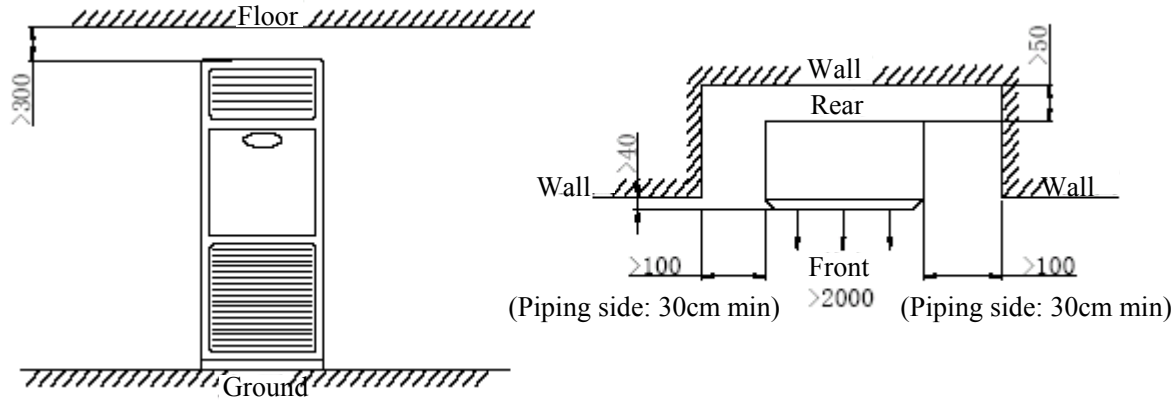


1.6.2.5 Install space requirement for wall mounted type indoor unit

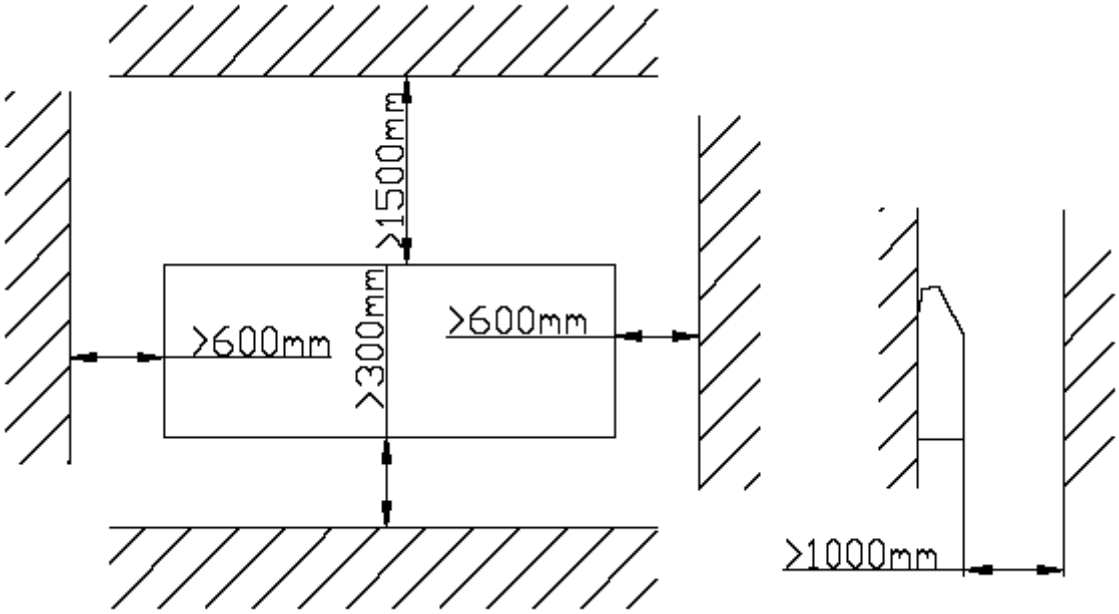




1.6.2.6 Installation room requirement for floor-standing type indoor unit



1.6.2.7 Installation space requirement for vertical exposed and suspended exposed indoor unit



1.7 Performance parameters of units

1.7.1 Performance parameter table of outdoor unit

1.7.1.1 Performance parameters of side air outlet compartment

Item Model			GMV(L)-R80W/A	GMV(L)-R100W/A	GMV(L)-R120W/A
Cooling capacity		W	8000	10000	12000
Heating capacity		W	8800	11000	13000
Noise		dB (A)	57	58	58
R22 Charge		kg	6.5	8	9
Dimension (Width×Depth×Height)		mm	950×340×860	1260×450×1270	1260×450×1270
Compressor			Digital scroll×1	Digital scroll×1	Digital scroll×1
Waterproof level			IPX4		
Climate type			T1		
Connecting pipe	Gas pipe	mm	ф15.9	ф19.05	ф19.05
	Liquid pipe	mm	ф9.52	ф12.7	ф12.7
	Connection mode		Pipe socket connection		
Net weight		kg	100	140	140

Item Model			GMV(L)-R140W/A	GMV(L)-R150W/AS
Cooling capacity		W	14000	15000
Heating capacity		W	15000	16500
Noise		dB(A)	58	58
R22 Charge		kg	10	10
Dimension (Width×Depth×Height)		mm	1260×450×1270	1260×450×1270
Compressor			Digital scroll×1	Digital scroll×1
Waterproof level			IPX4	
Climate type			T1	
Connecting pipe	Gas pipe	mm	ф19.05	ф19.05
	Liquid pipe	mm	ф12.7	ф12.7
	Connection mode		Pipe socket connection	
Net Weight		kg	140	140

Note: 1. Cooling only type (GMVL model) has no nominal heating capacity.

2. R22 charge in the table is the data without consideration for pipe connection. The actual refrigerant charge should be made according to the actual condition when the units are installed.
3. The performance parameters are tested under the nominal working condition;
4. Please refer to the actual parameters on the nameplate.

1.7.1.2 Performance parameters of upper air outlet compartment

Item		Model	GMV(L)-R300W2/B	GMV(L)-R260W2/B	GMV(L)-R220W2/B	GMV(L)-R200W2/B
Cooling capacity		W	30000	26000	22000	20000
Heating capacity		W	33500	28500	24000	23000
Noise		dB(A)	≤58	≤58	≤58	≤58
R22 Charge		kg	16	16	14	14
Dimension (Width×Depth×Height)		mm	990×840×1675	990×840×1675	990×840×1675	990×840×1675
Compressor			Digital scroll×1+Rated speed scroll×1	Digital scroll×1 +Rated speed scroll ×1	Digital scroll×1 +Rated speed scroll ×1	Digital scroll×1 +Rated speed scroll×1
Waterproof level			IPX4			
Climate type			T1			
Connecting pipe	Gas pipe	mm	φ28.6	Φ28.6	Φ25.4	Φ25.4
	Liquid pipe	mm	Φ12.7	Φ12.7	Φ12. 7	Φ12.7
	Connection mode		Soldering connection			
Net Weight		kg	300	280	260	260
Control mode			Wireless remote control, wired remote control or centralized control	Wireless remote control, wired remote control or centralized control	Wireless remote control, wired remote control or centralized control	Wireless remote control, wired remote control or centralized control

Item		Model	GMV(L)-R620W4/A	GMV(L)-R560W4/A	GMV(L)-R420W3/A
Cooling capacity		W	62000	56000	42000
Heating capacity		W	66000	60000	46000
Noise		dB(A)	60≤	60 ≤	≤59
R22 Charge		kg	40	30	28
Dimension (Width×Depth×Height)		mm	0×16751980×84	1980 16 ×840× 75	1980×840×1675
Compressor			Digital scroll×1 3+Rated speed scroll×	Digital scroll×1 3+Rated speed scroll×	Digital scroll×1 +Rated speed scroll×2
Waterproof level			IPX4		
Climate type			T1		
Connecting pipe	Gas pipe	mm	41.3 Φ	.1 Φ38	Φ34.8
	Liquid pipe	mm	9.05 Φ1	05 Φ19.	Φ16.3
	Connection mode		Soldering connection		
Net Weight		kg	600	600	560
Control mode			Wireless remote control, wired remote control or centralized control	Wireless remote control, wired remote control or centralized control	Wireless remote control, wired remote control or centralized control

Note: 1.Cooling only type (GMVL model) has no nominal heating capacity.

2. R22 charge in the table is the data without consideration for pipe connection. The actual refrigerant charge should be made according to the actual condition when the units are installed.

3.The performance parameters are tested under the nominal working condition;

4.Please refer to the actual parameters on the nameplate.

1.7.2 Performance parameters of indoor unit

1.7.2.1 Performance parameter table of four-way cassette type indoor unit

Model	GMVL-R30T/D	GMV R30T/D -	30T/DGMVR-R	GMVL-R35T/D	-GMV R35T/D	GMVR-R35T/D	GMVL-R45T/D	GMV-R45T/D	GMV-R R45T/D
Function	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating
Cooling capacity (W)	3000	3000	3000	3500	3500	3500	4500	4500	4500
Heating capacity (W)	—	3300	3300	—	3800	3800	—	5000	5000
Auxiliary electric heater power (W)	—	700	—	—	700	—	—	700	—
Air flow volume (m^3/h)	680	680	680	680	680	680	680	680	680
Noise (dB (A))	37	37	37	37	37	37	37	37	37
Inner diameter of water drainage pipe (mm)	ϕ27								
Dimension (Width×Depth×Height)	Main body: 840×840 ×60 ×190 Panel: 950×950								
Net weight (kg) (Main body/Panel)	25/6.5								

Model	GM R50 VL-T/D	V-/D GM R50T	GMVR-R50T/D	GMVL-R60T/D	GM R60 V-T/D	GMVR-R60T/D	GMVL R70T/ -D	GMV-R70T/D	GMVR-R70T/D
Function	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating
Cooling capacity (W)	50 00	5000	5000	6000	6000	6000	7000	7000	7000
Heating capacity (W)	—	5500	5500	—	6500	6500	—	7500	7500
Auxiliary electric heater power (W)	—	700	—	—	1400	—	—	1400	—
Air flow volume (m^3/h)	680	680	680	1180	1180	1180	1180	1180	1180
Noise (dB (A))	37	37	37	93	39	39	39	39	39
Inner diameter of water drainage pipe (mm)	ϕ27								
Dimension(mm) (Width×Depth ×Height)	Main body:840×840×190 Panel: 950×950×60			Main body:840×840×240 Panel: 950×950×60					
Net weight (k g) (Main body/Panel)	25/6.5			30/6.5					

Model	GM R80 VL-T/D	DS GMV-R80T/	GMVR-R80T/D	L-GMV R100T/D	GMV 10 -R 0T/DS	GMVR-R100T/D	R120T GMVL-/D	GMV-R 120T/DS	GMVR-R120T/D
Function	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating
Cooling capacity (W)	8000	8000	8000	10000	10000	10000	12000	12000	12000
Heating capacity (W)	—	8800	8800	—	11000	11000	—	12500	12500
Auxiliary electric heater power	—	2100	—	—	2100	—	—	2100	—
Air flow volume (m^3/h)	1860	1860	1860	1860	1860	1860	1860	1860	1860
Noise (dB (A))	40	40	40	40	40	40	40	40	40

Inner diameter of water drainage pipe (mm)	ϕ27
Dimension(mm) (Width×Depth×Height)	Main body: 840×840×320 Panel: 950×950×60
Net weight (kg) (Main body/Panel)	38/6.5

Explanation: 1. The performance parameters are tested under the nominal working condition;

2. Please refer to the actual parameters on the nameplate.

1.7.2.2 Performance parameter table of one-way cassette type indoor unit

Model	GMV-R20Td/D	VL-GM R20Td/D	-GMVR R20Td/D	GMV-R25Td/D	-GMVL R25Td/D	-GMVR R25Td/D	V-GM R35Td/D	GMVL-R35Td/D
Function	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only
Cooling capacity (W)	2000	2000	2000	2500	2500	2500	3500	3500
Heating capacity (W)	2300	—	2300	3000	—	3000	3800	—
Auxiliary electric heater power (W)	400	—	—	400	—	—	400	—
Air flow volume (m3/h)	700	700	700	700	700	700	700	700
Noise (dB (A))	37	37	37	37	37	37	40	40
Inner diameter of water drainage pipe (mm)	ϕ27							
Dimension (mm) (Width×Depth×Height)	Main body: 920×360×185 Panel: 1180×430×30							
Net weight (kg) (Main body/Panel)	16/3							

Model	Td/D GMVR-R35	-GMV R40Td/D	GMVL-R40Td /D	GMVR-R40 Td/D	R /D GMV-45Td	d/D GMVL-R45T	VR-GM R45Td/D
Function	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating	Cooling and Heating	Cooling only	Cooling and Heating
Cooling capacity (W)	3500	4000	4000	4000	4500	4500	4500
Heating capacity (W)	3800	4500	—	4500	5000	—	5000
Auxiliary electric heater power (W)	—	400	—	—	400	—	—
Air flow volume (m3/h)	700	700	700	700	700	700	700
Noise (dB (A))	40	40	40	40	40	40	40
Inner diameter of water drainage pipe (mm)	ϕ27						
Dimension(mm) (Width×Depth×Height)	Main body: 920×360×185 Panel: 1180×430×30						
Net weight (kg) (Main body/Panel)	16 /3						

Explanation: 1. The performance parameters are tested under the nominal working condition;

2. Please refer to the actual parameters on the nameplate.

1.7.2.3 Performance parameter table of ducted type indoor unit

Item		Model	GMVL-R20P/D	GMV-R20P/D	GMVR-R20P/D	GMVL-R25P/D	GMV R25P/D -	GMVR-R25P/D	GMVL-R30P/D	GMV-R30P/D	GMVR-R30P/D
Function			Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity		W	2000	2000	2000	2500	2500	2500	3000	3000	3000
Heating capacity		W	—	2300	2300	—	3000	3000	—	3300	3300
Air flow volume		m^3/h	450	450	450	450	450	450	570	570	570
Noise		dB(A)	37	37	37	37	37	37	39	39	39
Auxiliary electric heater power		W	—	800	—	—	800	—	—	800	—
Standard outer residual pressure		Pa	0			0			0		
Adjustable outer residual pressure		Pa	20			20			20		
Dimension	Width	mm	875			875			875		
	Depth	mm	680			680			680		
	Height	mm	220			220			220		
Diameter of condensing water drainage pipe (inner diameter × outer diameter)		mm	φ20×φ17			φ20×φ17			φ20×φ17		
Net weight		kg	27			27			27		

Item		Model	GMVL-R35P/D	GMV-R35P/D	VR-P/D GM R35	GMVL-R40P/D	GMV R40P -/D	GMVR-R40P/D	GMVL-R50P/D	GMV-R50P/D	GMVR-R50P/D
Function			Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity		W	3500	3500	3500	4000	4000	4000	5000	5000	5000
Heating capacity		W	—	3800	3800	—	4500	4500	—	5800	5800
Air flow volume		m^3/h	570	570	570	840	40 8	840	84 0	840	840
Noise		dB(A)	39	39	39	40	40	40	40	40	40
Auxiliary electric heater power		W	—	800	—	—	1500	—	—	1500	—
Standard outer residual pressure		Pa	0			51			15		
Adjustable outer residual pressure		Pa	20			04			40		
Dimensions	Width	mm	875			980			980		
	Depth	mm	680			673			736		
	Height	mm	220			266			26 6		
Diameter of condensing water drainage pipe (inner diameter × outer diameter)		mm	φ20×φ17			φ30×φ27			φ30×φ27		
Net weight		kg	27			36			36		

Item		Model	GMVL-R60P/D	GMV-R60P/D	GMVR-R60P/D	GMVL-R70P/D	GMV-R70P/D	GMVR-R70P/D	GMVL-R80P/D	GMV-R80P/D	GMVR-R80P/D
Function			Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity		W	6000	6000	6000	7000	7000	7000	8000	8000	8000
Heating capacity		W	—	6600	6600	—	8000	8000	—	8800	8800
Air flow volume		m^3/h	1400	1400	1400	1400	1400	1400	1400	1400	1400

Noise		dB(A)	42	42	42	42	42	42	42	42	42
Auxiliary electric heater power		W	—	2100	—	—	2100	—	—	2100	—
Standard outer residual pressure		Pa	50			50			50		
Dimension	Width	mm	1112			1112			1112		
	Depth	mm	756			756			756		
	Height	mm	300			300			300		
Diameter of condensing water drainage pipe (inner diameter × outer diameter)		mm	φ30×φ27			φ30×φ27			φ30×φ27		
Net weight		kg	55			55			55		

Item	Model	GMVL-R100P/D	GMV-R100P/DS	GMVR-R100P/D	GMVL-R120P/D	GMV-R120P/DS	GMVR-R120P/D
Function		Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity	W	10000	10000	10000	12000	12000	12000
Heating capacity	W	—	11000	11000	—	13000	13000
Air flow volume	m^3/h	2000	2000	2000	2000	2000	2000
Noise	dB(A)	44	44	44	44	44	44
Auxiliary electric heater power	W	—	3600	—	—	3600	—
Standard outer residual pressure	Pa	50			50		
Dimension	Width	1425	1382		1382		
	Depth	756	756		756		
	Height	300	300		300		
Diameter of condensing water drainage pipe (inner diameter × outer diameter)	mm	φ30×φ27			φ30×φ27		
Net weight	kg	57			75		

Explanation: 1. The performance parameters are tested under the nominal working condition; 2. Please refer to the actual parameters on the nameplate.

1.7.2.4 Performance parameter table of low static pressure ultrathin ducted type indoor unit

Model	GMVL-R20P/DL R	GMV R20P/D -L	GMVR-R20P/DL	GMVL-R25P/DL	GMV R25P/D -L	GMVR-R25P/DL	GMVL-R30P/DL	GMV R30P/D -L	GMVR-R30P/DL
Function	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity (W)	2000	2000	2000	2500	2500	2500	3000	3000	3000
Heating capacity (W)	—	2300	2300	—	3000	3000	—	3300	3300
Auxiliary electric heater power (W)	—	500	—	—	500	—	—	800	—
Air flow volume (m3/h)	452	452	452	452	452	452	572	572	572
Noise (dB (A))	36	36	36	36	36	36	37	37	37
Outer residual pressure (Pa)	0								
Inner diameter of water drainage pipe (mm)	ф27								
Dimension(mm) (Width × Depth× Height)	Main body: 1020×490× 185								
Weight (kg)	20								

Model	GMVL-R35P/DL	GMV-R35P/DL	GMVR-R35P/DL	GMVL-R40 P/DL	GMV - R40 P/DL	GMVR-R40 P/DL	GMVL R50 P/D L	GMV-R50 P/DL	GMVR R50-P/DL
Function	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity (W)	3500	3500	3500	4000	4000	4000	5000	5000	5000
Heating capacity (W)	—	3800	3800	—	4500	4500	—	5800	5800
Auxiliary electric heater power	—	800	—	—	1500	—	—	1500	—
Air flow volume (m3/h)	572	572	572	840	840	840	840	840	840
Noise (dB (A))	37	37	37	39	39	39	39	39	39
Outer residual pressure (Pa)	0								
Inner diameter of water drainage pipe (mm)	ф27								
Dimension (Width×Depth×Height)	Main body: 1020×490×185			Main body: 1380×490×185					
Weight (kg)	20			22			22		

Model	GMVL-R60P/DL	GMV-R60P/DL	GMVR-R60P/DL	GMVL-R70 P/DL	GMV-R70 P/DL	GMVR-R70P/DL
Function	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity (W)	6000	6000	6000	7000	7000	7000
Heating capacity (W)	—	6600	6600	—	8000	8000
Auxiliary electric heater power (W)	—	2100	—	—	2100	—
Air flow volume (m3/h)	1400	1400	1400	1400	1400	1400
Noise (dB (A))	40	40	40	40	40	40
Outer residual pressure (Pa)	0					
Inner diameter of water drainage pipe (mm)	ф27					
Dimension (Width×Depth×Height)	Main body: 1650×490×185					
weight (kg)	30					

Explanation: 1. The performance parameters are tested under the nominal working condition；
2. Please refer to the actual parameters on the nameplate；
3. Low static pressure ultrathin ducted type indoor unit cannot be connected with duct.

1.7.2.5 Performance parameter table of wall-mounted type indoor unit

Model	GMVL-R20G/D	GMV-R20G/D	GMVR-R20G/D	GMVL-R25G/D	GMV-R25G/D	GMVL-R25G/D
Function	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity (W)	2000	2000	2000	2500	2500	2500
Heating capacity (W)	—	2300	2300	—	3000	3000
Auxiliary electric heater power (W)	—	400	—	—	400	—
Air flow volume (m^3/h)	360	360	360	360	360	360
(A)) Noise (dB	31	31	31	31	31	31
Inner diameter of water drainage pipe (mm)	ф17					
Dimension (Width×Depth×Height)	830×189×285					
Weight (kg)	11					

Model	-GMVL R35G/D	MV-35G/D G R	R35G GMV R-/D	R L-G/D GMV 50	GMV-R50G/D	G R5 -/D MVR 0G
Function	Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity (W)	3500	3500	3500	5000	5000	5000
Heating capacity (W)	—	4000	4000	—	6200	6200
Auxiliary electric heater power (W)	—	400	—	—	400	—
Air flow volume (m^3/h)	500	500	500	700	700	700
Noise (dB (A))	35	35	35	42	42	42
Inner diameter of water drainage pipe (mm)	ф17			ф27		
Dimension (Width×Depth×Height)	830×189×285			907×195×290		
Weight (kg)	11			12		

Explanation: 1. The performance parameters are tested under the nominal working condition；

2. Please refer to the actual parameters on the nameplate.

1.7.2.6 Performance parameter table of floor-standing type indoor unit

Item / Model		GMVL-R50L/D	GMV-R50L/D	GMVR-R50L/D	GMVL-R70L/D	GMV-R70L/D	GMVR-R70L/D
Function		Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity	W	5000	5000	5000	7000	7000	7000
Heating capacity	W	—	5800	5800	—	8000	8000
Auxiliary electric heater power	W	—	1200	—	—	2550	—
Air flow volume	m^3/h	800	800	800	900	900	900
Noise	B(A)d	42	42	42	45	45	45
Inner diameter of water drainage pipe	mm	φ27					
Dimension (Width×Depth×Height)	mm	500×300×1660					
Weight	kg	43					

Item / Model		GMVL-R100L/D	GMV-R100L/DS	GMVR-R100L/D	GMVL-R120L/D	GMV-R120L/DS	GMVR-R120L/D
Function		Cooling only	Cooling and heating	Cooling and heating	Cooling only	Cooling and heating	Cooling and heating
Cooling capacity	W	10000	10000	10000	12000	12000	12000
Heating capacity	W	—	11000	11000	—	13000	13000
Auxiliary electric heater power	W	—	3500	—	—	3500	—
Air flow volume	m^3/h	1500	1500	1500	1500	1500	1500
Noise	d(A)B	48	48	48	48	48	48
Inner diameter of water drainage pipe	mm	φ27					
Dimension (Width×Depth×Height)	mm	540×380×1750					
Weight	kg	55					

Explanation: 1. The performance parameters are tested under the nominal working condition；
2. Please refer to the actual parameters on the nameplate.

1.7.2.7 Performance parameter table of vertical exposed type indoor unit

Item Model		GMVR-R50Z/D	GMVL-R50Z/D	GMVR-R60Z/D	GMVL-R60Z/D	GMVR-R70Z/D	GMVL-R70Z/D
Function		Cooling and heating	Cooling only	Cooling and heating	Cooling only	Cooling and heating	Cooling only
Cooling capacity	W	5000	5000	6000	6000	7000	7000
Heating capacity	W	5800	—	6600	—	8000	—
Auxiliary electric heater power	W	—	—	—	—	—	—
Air flow volume	m^3/h	1140	1140	1140	1140	1140	1140
Noise	dB(A)	43	43	43	43	43	43
Inner diameter of water drainage pipe	mm	φ27					
Dimension (Width×Depth×Height)	mm	1300×600×188					
Weight	Kg	34					

Item Model		GMVR-R80Z/D	GMVL-R80Z/D	GMVR-R100Z/D	GMVL-R100Z/D	GMVR-R120Z/D	GMVL-R120Z/D
Function		Cooling and heating	Cooling only	Cooling and heating	Cooling only	Cooling and heating	Cooling only
Cooling capacity	W	8000	8000	10000	10000	12000	12000
Heating capacity	W	8800	—	11000	—	13000	—
Auxiliary electric heater power	W	—					
Air flow volume	m^3/h	1140	1140	2100	2100	2100	2100
Noise	(A)dB	43	43	46	46	46	46
Inner diameter of water drainage pipe	mm	φ27					
Dimension (Width×Depth×Height)	mm	1300×600×188		1590×695×238			
Weight	kg	34		42			

Explanation: 1. The performance parameters are tested under the nominal working condition；
2. Please refer to the actual parameters on the nameplate.

1.7.2.8 Performance parameter table of suspended exposed type indoor unit

Item / Model		GMVR-R50D/D	GMVL-R50D/D	GMVR-R60D/D	GMVL-R60D/D	GMVR-R70D/D	GMVL-R70D/D
Function		Cooling and heating	Cooling only	Cooling and heating	Cooling only	Cooling and heating	Cooling only
Cooling capacity	W	5000	5000	6000	6000	7000	7000
Heating capacity	W	5800	—	6600	—	8000	—
Auxiliary electric heater power	W	—					
Air flow volume	m^3/h	1140	1140	1140	1140	1140	1140
Noise	dB(A)	43	43	43	43	43	43
Inner diameter of water drainage pipe	mm	φ27					
Dimension (Width×Depth×Height)	mm	1300×600×188					
Weight	kg	34					

Item / Model		GMVR-R80D/D	GMVL-R80D/D	GMVR-R100D/D	GMVL-R100D/D	GMVR-R120D/D	GMVL-R120D/D
Function		Cooling and heating	Cooling only	Cooling and heating	Cooling only	Cooling and heating	Cooling only
Cooling capacity	W	8000	8000	10000	10000	12000	12000
Heating capacity	W	8800	—	11000	—	13000	—
Auxiliary electric heater power	W	—					
Air flow volume	m^3/h	1140	1140	2100	2100	2100	2100
Noise	dB(A)	43	43	46	46	46	46
Inner diameter of water drainage pipe	mm	φ27					
Dimension (Width×Depth×Height)	mm	1300×600×188		1590×695×238			
Net weight	kg	34		42			

Explanation: 1. The performance parameters are tested under the nominal working condition;
2. Please refer to the actual parameters on the nameplate.

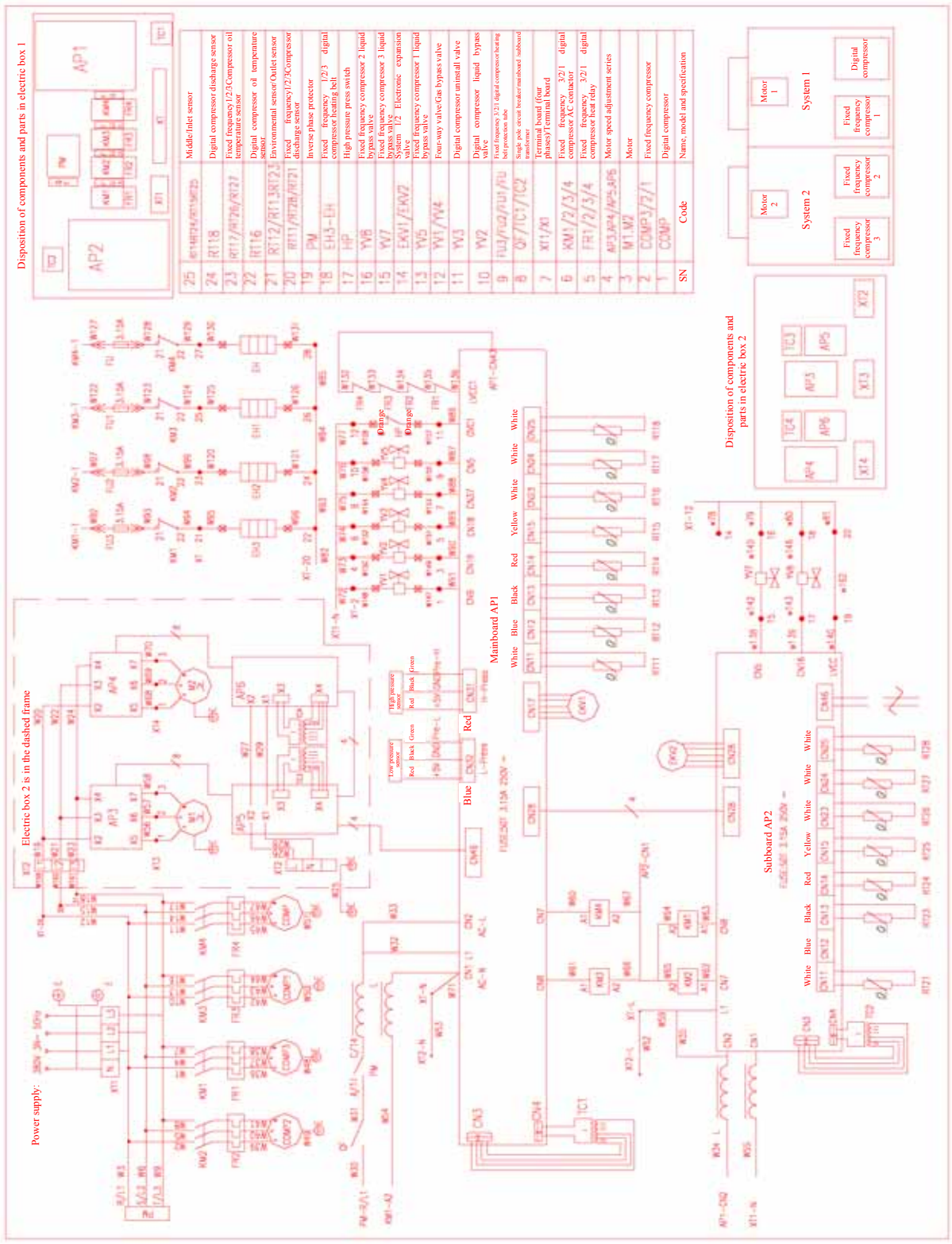
Chapter 2 Electricity and control

2.1 Strong current section

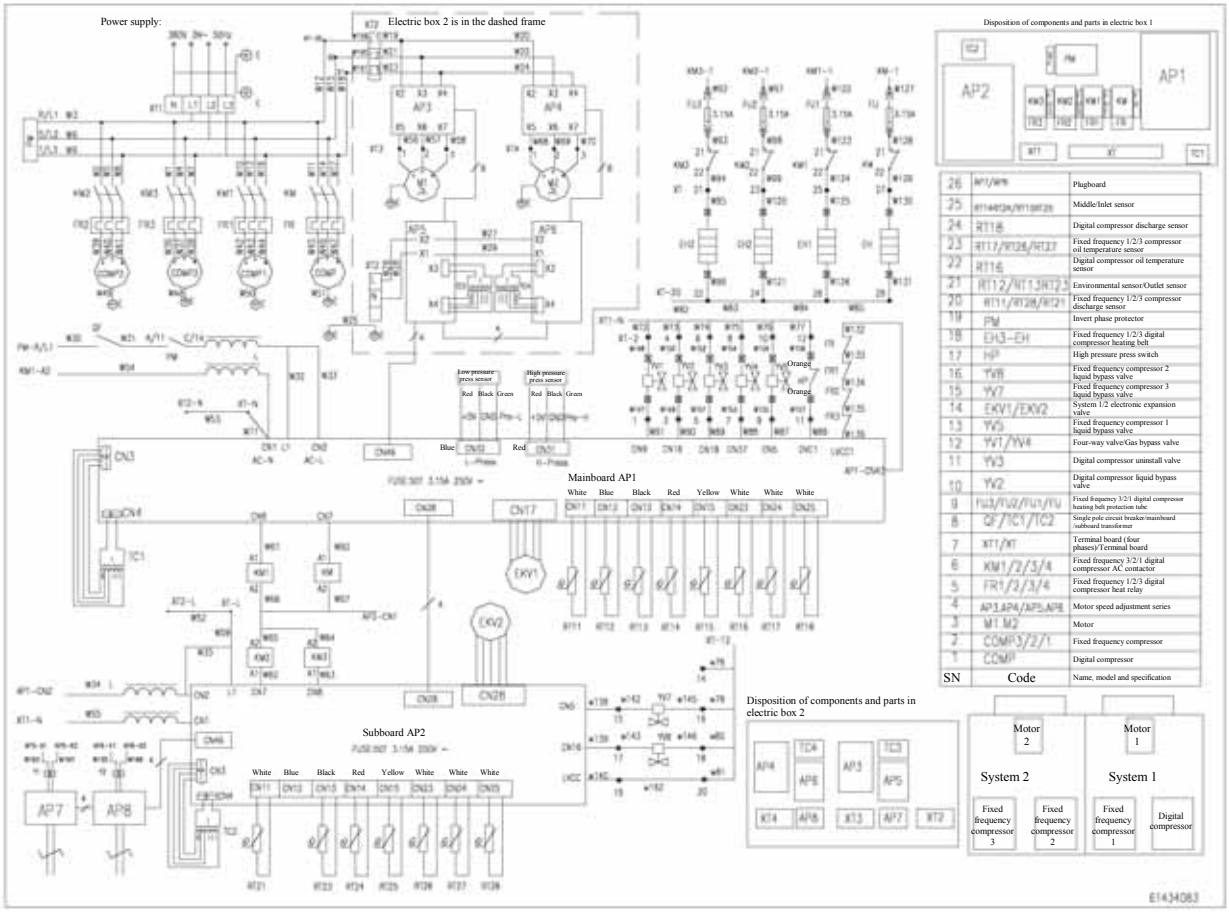
2.1.1 Circuit Diagram

Circuit diagrams in this section are for reference only. For specific contents please refer to the circuit diagram supplied with unit.

2.1.1.1 GMV (L) -R620W4/A

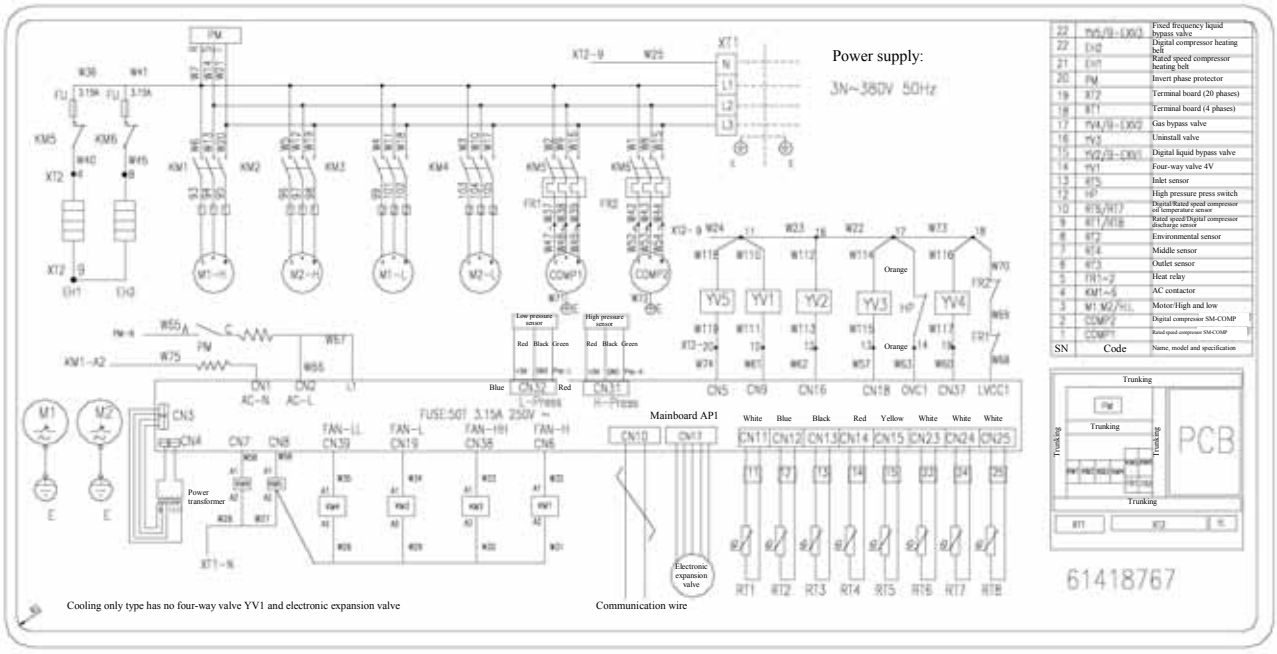


2.1.1.2 GMV（L）-R560W4/A



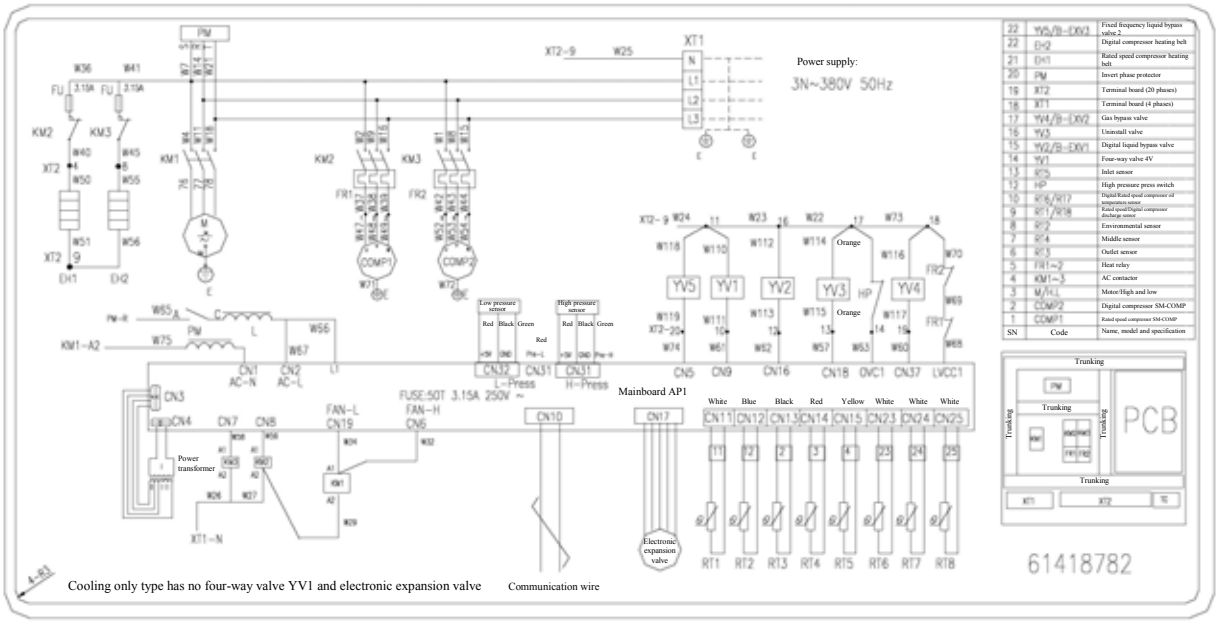
SN	Code	Name, model and specification
26	AP1/AP8	Plugboard
25	RT1/RT2/RT3/RT4/RT5/RT6/RT7/RT8	Middle/Inlet sensor
24	RT11	Digital compressor discharge sensor
23	RT13/RT28/RT37	Fixed frequency 1/2/3 compressor oil temperature sensor
22	RT16	Digital compressor oil temperature sensor
21	RT12/RT13/RT27	Environmental sensor/Outlet sensor
20	RT11/RT28/RT21	Fixed frequency 1/2/3 compressor discharge sensor
19	PM	Invert phase protector
18	EH3~EH	Fixed frequency 1/2/3 digital compressor heating belt
17	HP	High pressure press switch
16	YV8	Fixed frequency compressor 2 liquid bypass valve
15	YV7	Fixed frequency compressor 3 liquid bypass valve
14	EKV1/EKV2	System 1/2 electronic expansion valve
13	YV5	Fixed frequency compressor 1 liquid bypass valve
12	YV1/YV4	Four-way valve/Gas bypass valve
11	YV3	Digital compressor uninstall valve
10	YV2	Digital compressor liquid bypass valve
9	FU3/FU2/FU1/FU	Fixed frequency 3/2/1 digital compressor heating belt protection tube
8	QF/TC1/TC2	Single-pole circuit breaker/mainboard /subboard transformer
7	XT1/XT	Terminal board (four phases)/Terminal board
6	KM1/2/3/4	Fixed frequency 3/2/1 digital compressor AC contactor
5	FR1/3/3/4	Fixed frequency 1/2/3 digital compressor heat relay
4	AP3,AP4/AP5,AP6	Motor speed adjustment series
3	M1.M2	Motor
2	COMP3/2/1	Fixed frequency compressor
1	COMP	Digital compressor

2.1.1.3 GMV（L）-R300W2/A

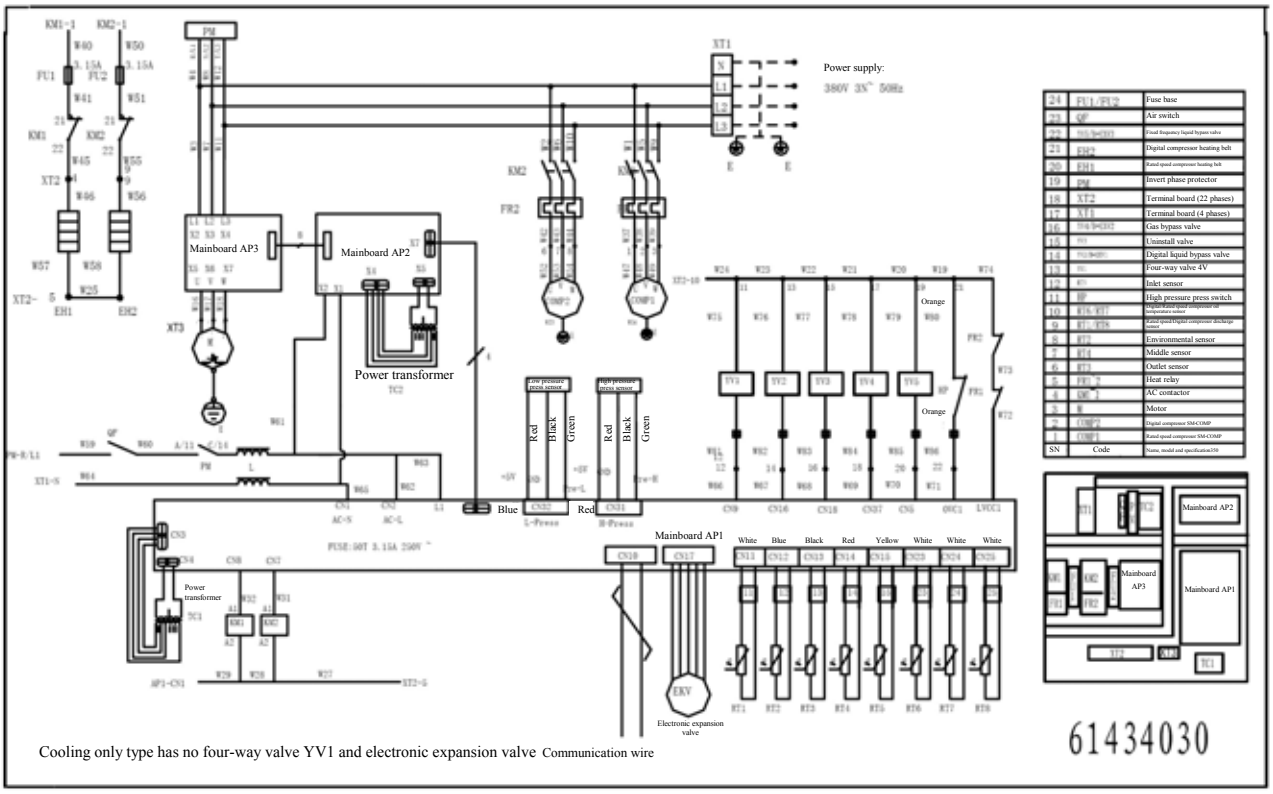


SN	Code	Name, model and specification
22	YV5/9~LV0/2	Fixed frequency liquid bypass valve
22	EH	Digital compressor heating belt
21	EH1	Rated speed compressor heating belt
20	PM	Invert phase protector
19	XT2	Terminal board (20 phases)
18	XT1	Terminal board (4 phases)
17	YV4/9~LV0/2	Gas bypass valve
16	YV3	Uninstall valve
15	YV2/9~DV1	Digital liquid bypass valve
14	YV1	Four-way valve 4V
13	RT5	Inlet sensor
12	HP	High pressure press switch
10	RT6/RT7	Digital/Rated speed compressor oil temperature sensor
9	RT1/RT8	Rated speed/Digital compressor discharge sensor
8	RT2	Environmental sensor
7	RT4	Middle sensor
6	RT3	Outlet sensor
5	FR1~2	Heat relay
4	KM1~5	AC contactor
3	M1 M2/H/L	Motor/High and low
2	COMP2	Digital compressor SM-COMP
1	COMP1	Rated speed compressor SM-COMP

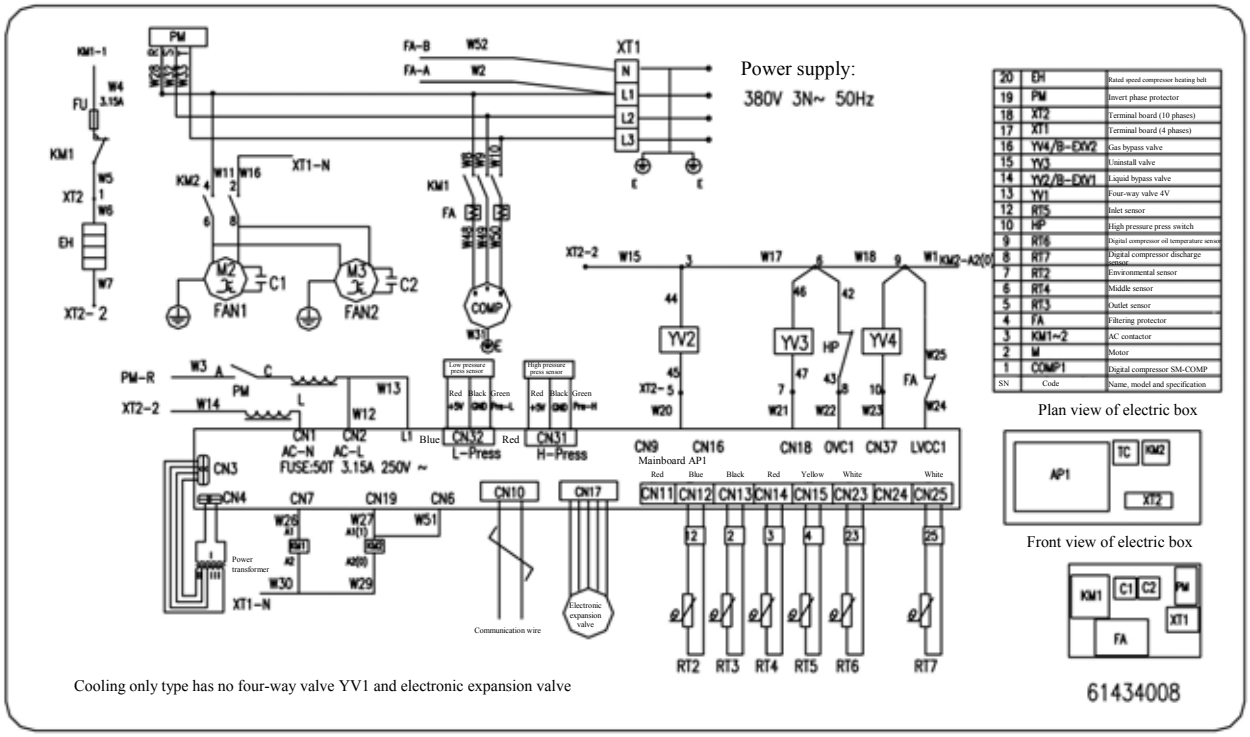
2.1.1.4 GMV（L）-R200W2/A



2.1.1.5 GMV（L）-R300W2/B GMV（L）-R260W2/B GMV（L）-R220W2/B

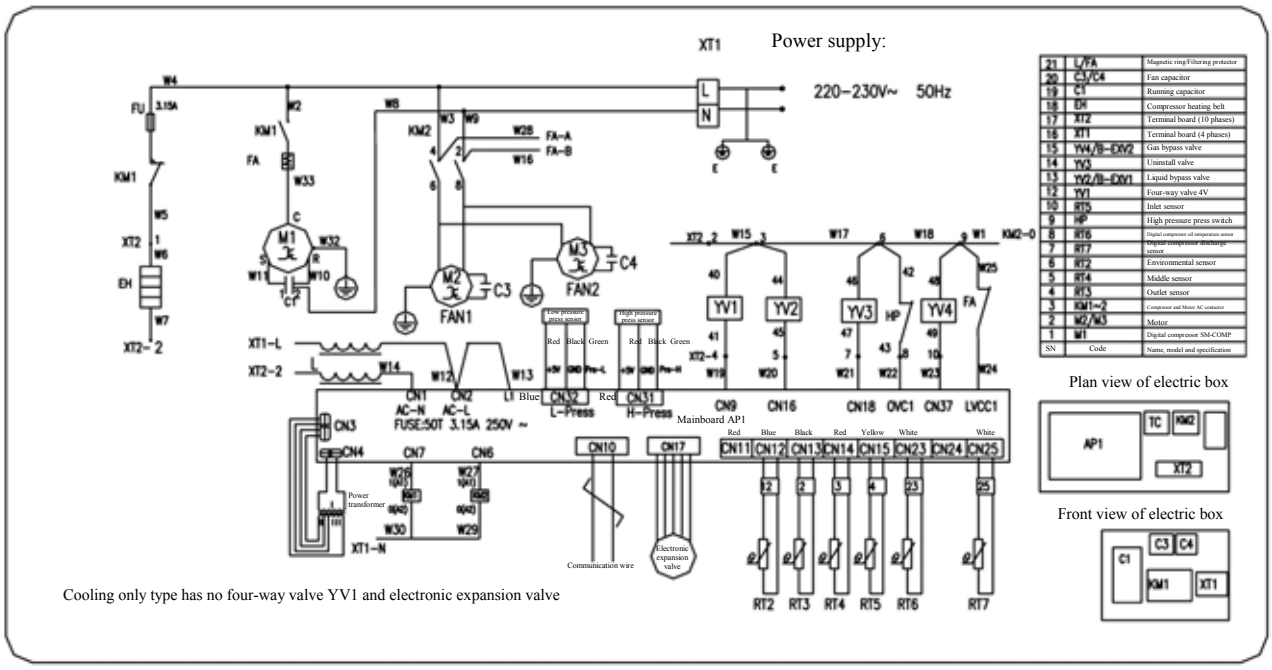


2.1.1.6 GMV（L）-R150W/AS



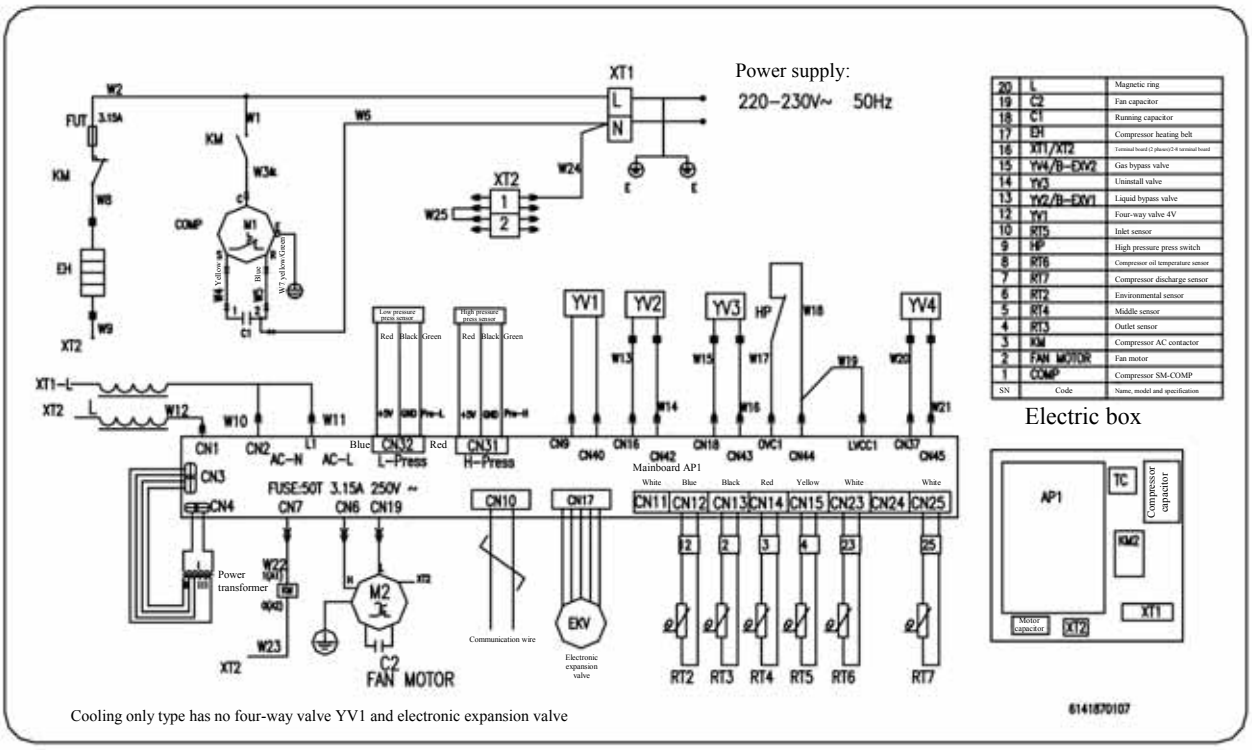
20	EH	Rated speed compressor heating belt
19	PM	Invert phase protector
18	XT2	Terminal board (10 phases)
17	XT1	Terminal board (4 phases)
16	YV4/B-EXV2	Gas bypass valve
15	YV3	Uninstall valve
14	YV2/B-EXV1	Liquid bypass valve
13	YV1	Four-way valve 4V
12	RT5	Inlet sensor
10	HP	High pressure press switch
9	RT6	Digital compressor oil temperature sensor
8	RT7	Digital compressor discharge sensor
7	RT2	Environmental sensor
6	RT4	Middle sensor
5	RT3	Outlet sensor
4	FA	Filtering protector
3	KM1~2	AC contactor
2	M	Motor
1	COMP1	Digital compressor SM-COMP
SN	Code	Name, model and specification

2.1.1.7 GMV（L）-R140W/A GMV（L）-R120W/A GMV（L）-R100W/A



21	L/FA	Magnetic ring/Filtering protector
20	C3/C4	Fan capacitor
19	C1	Running capacitor
18	EH	Compressor heating belt
17	XT2	Terminal board (10 phases)
16	XT1	Terminal board (4 phases)
15	YV4/B-EXV2	Gas bypass valve
14	YV3	Uninstall valve
13	YV2/B-EXV1	Liquid bypass valve
12	YV1	Four-way valve 4V
10	RT5	Inlet sensor
9	HP	High pressure press switch
8	RT6	Digital compressor oil temperature sensor
7	RT7	Digital compressor discharge sensor
6	RT2	Environmental sensor
5	RT4	Middle sensor
4	RT3	Outlet sensor
3	KM1~2	Compressor and Motor AC contactor
2	M2/M3	Motor
1	M1	Digital compressor SM-COMP
SN	Code	Name, model and specification

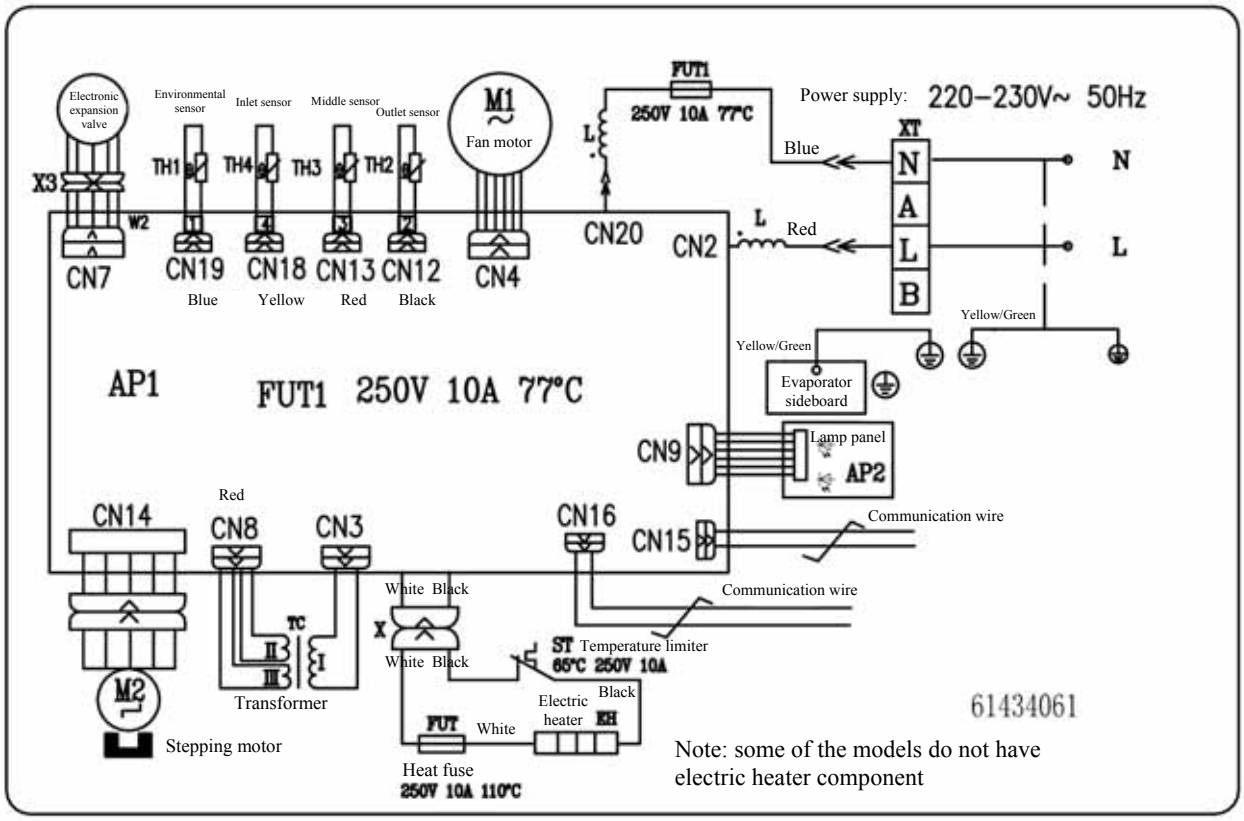
2.1.1.8 GMV（L）-R80W/A



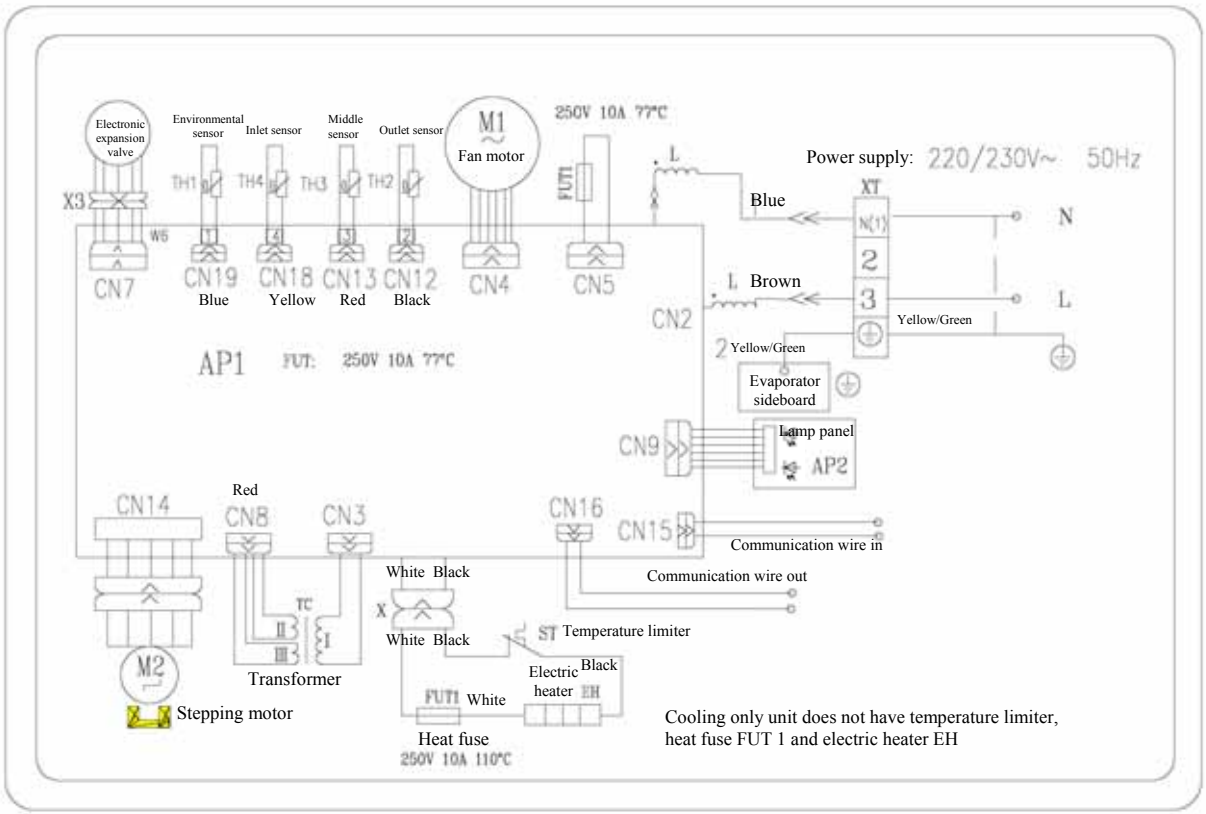
SN	Code	Name, model and specification
20	L	Magnetic ring
19	C2	Fan capacitor
18	C1	Running capacitor
17	EH	Compressor heating belt
16	XT1/XT2	Terminal board (2-phase)/2-8 terminal board
15	YV4/B-EXV2	Gas bypass valve
14	YV3	Uninstall valve
13	YV2/B-EXV1	Liquid bypass valve
12	YV1	Four-way valve 4V
10	RT5	Inlet sensor
9	HP	High pressure press switch
8	RT6	Compressor oil temperature sensor
7	RT7	Compressor discharge sensor
6	RT2	Environmental sensor
5	RT4	Middle sensor
4	RT3	Outlet sensor
3	KM	Compressor AC contactor
2	FAN MOTOR	Fan motor
1	COMP	Compressor SM-COMP

Cooling only type has no four-way valve YV1 and electronic expansion valve

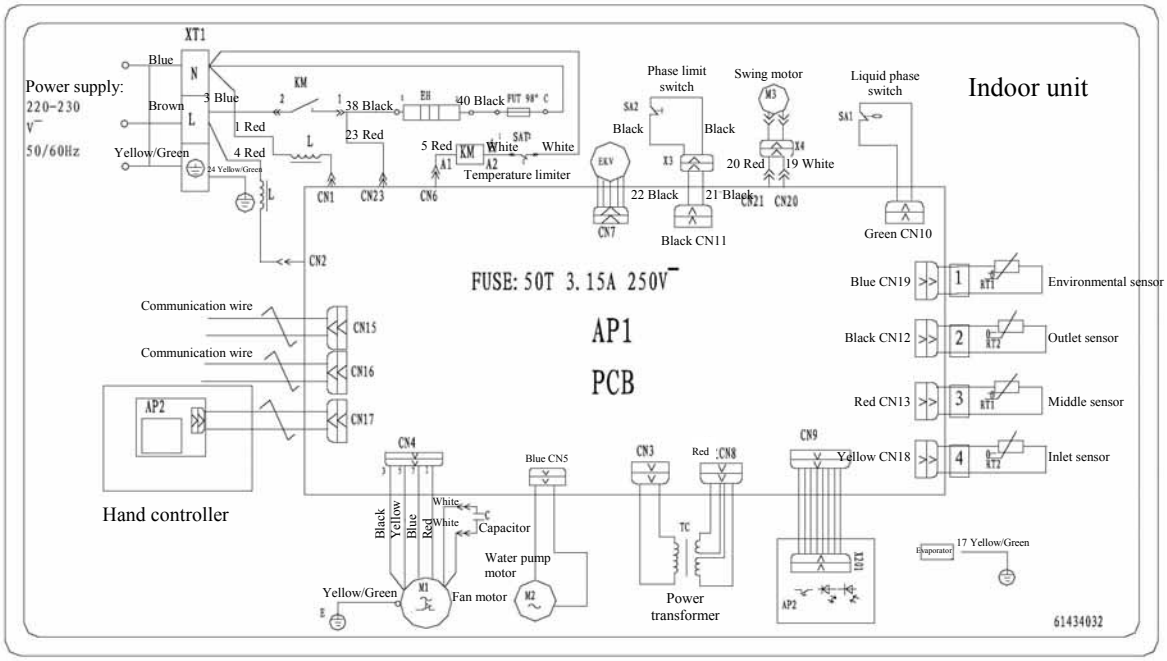
2.1.1.9 GMV（L，R）-R20G/D; GMV（L，R）-R25G/D; GMV（L，R）-R35G/D



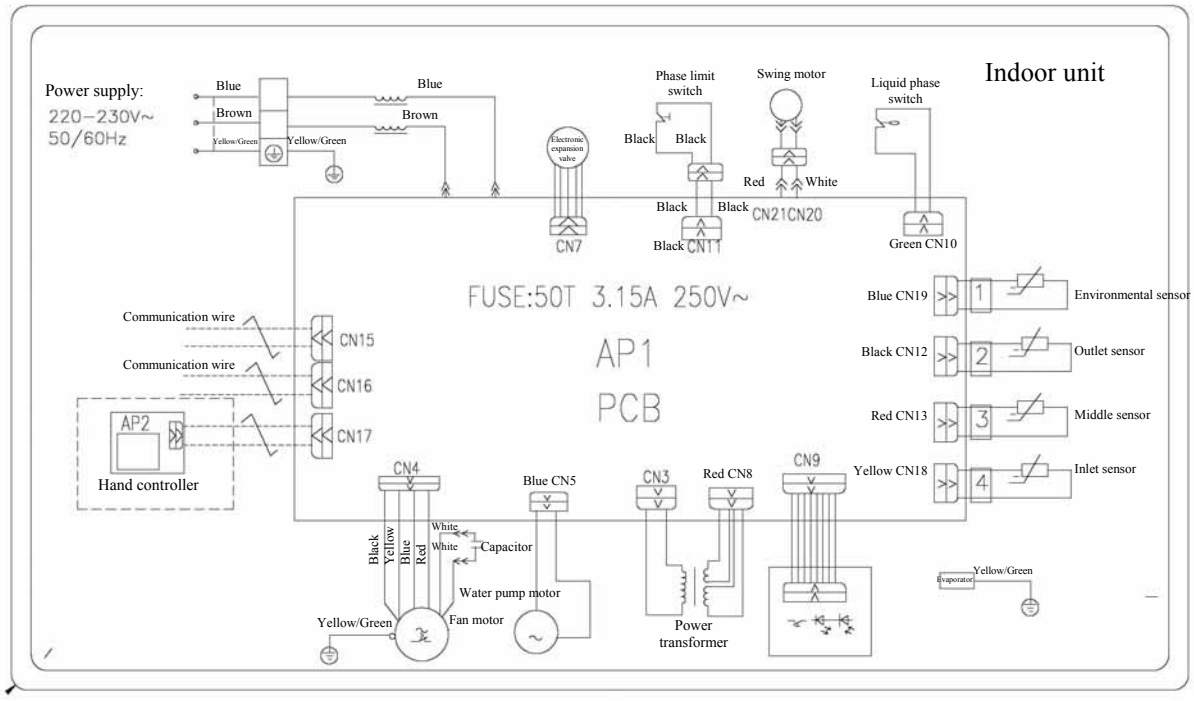
2. 1. 1. 10 GMV(L,R)-R50G/D



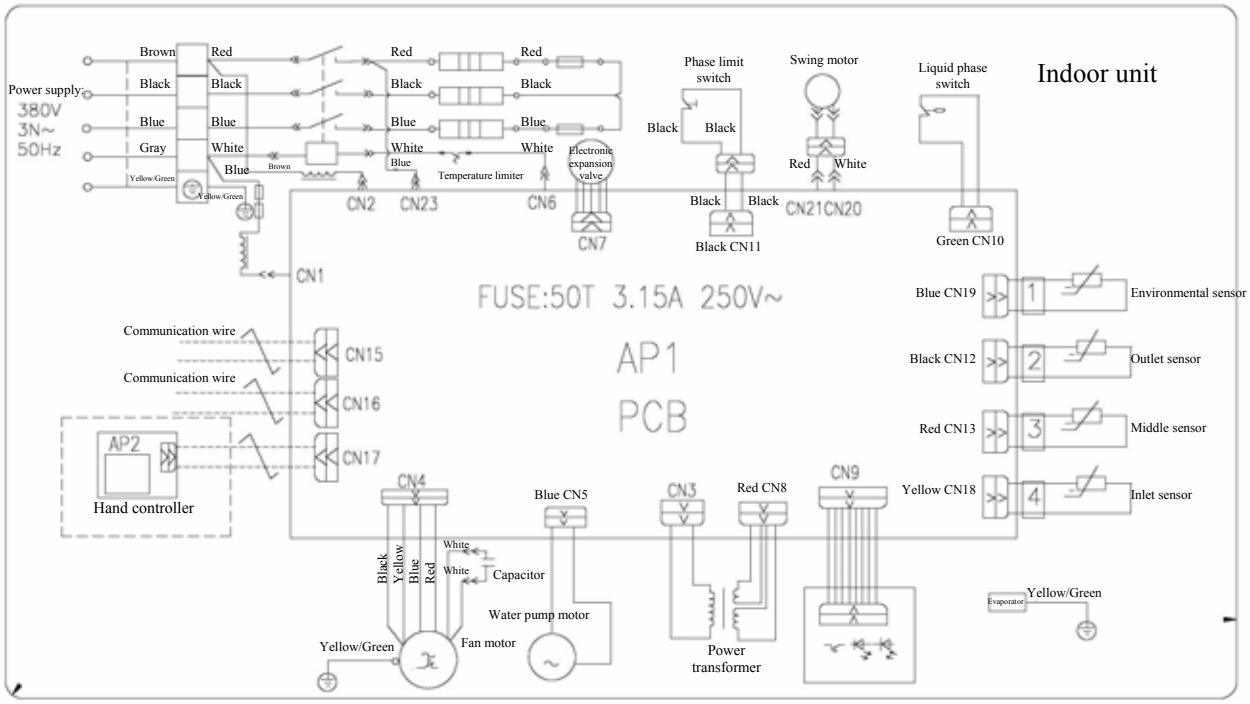
2.1.1.11 GMV-R30T/D; GMV-R35T/D; GMV-R45T/D; GMV-R50T/D



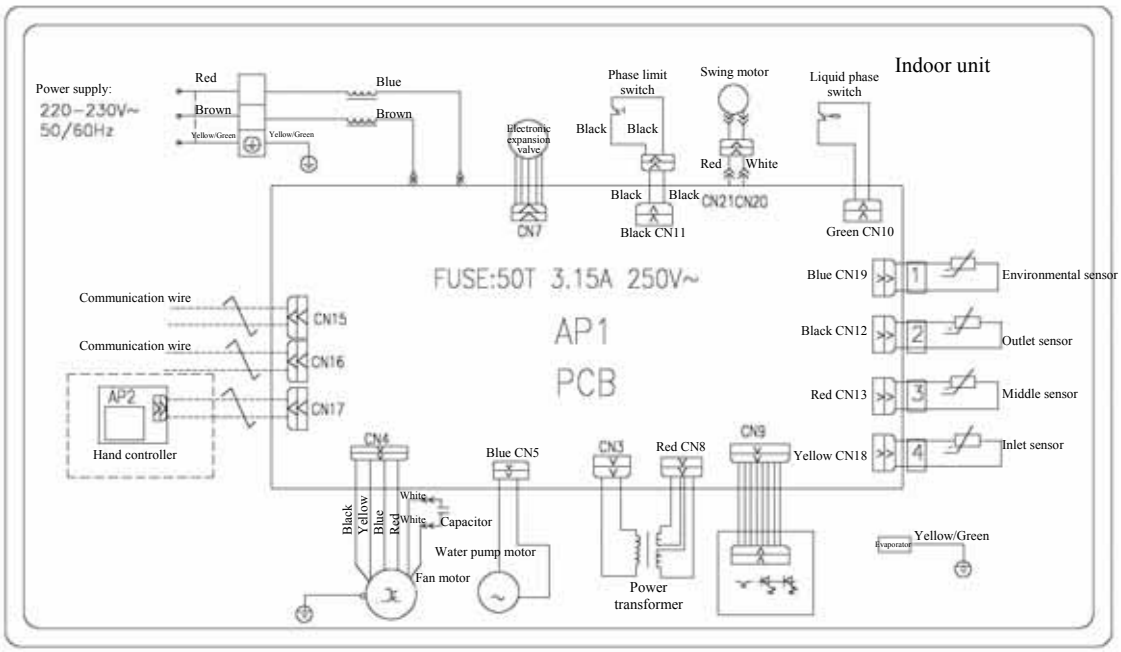
2.1.1.12 GMV-R60T/D;GMV-R70T/D



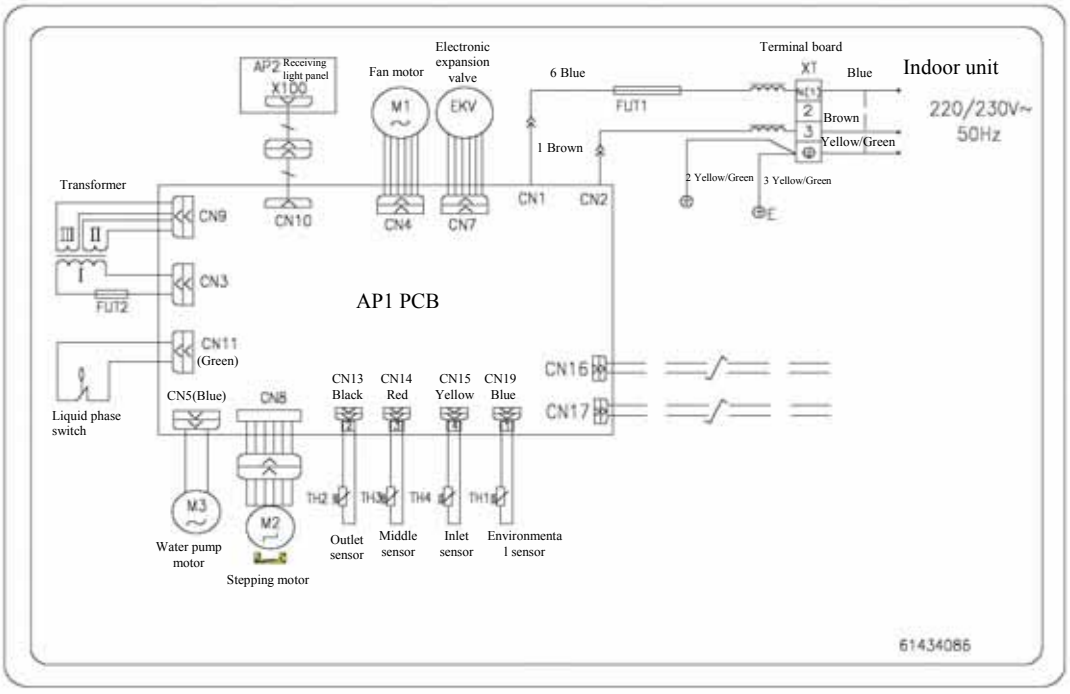
2.1.1.13 GMV-R80T/D;GMV-R100T/DS;GMV-R120T/DS;GMV-R140T/DS



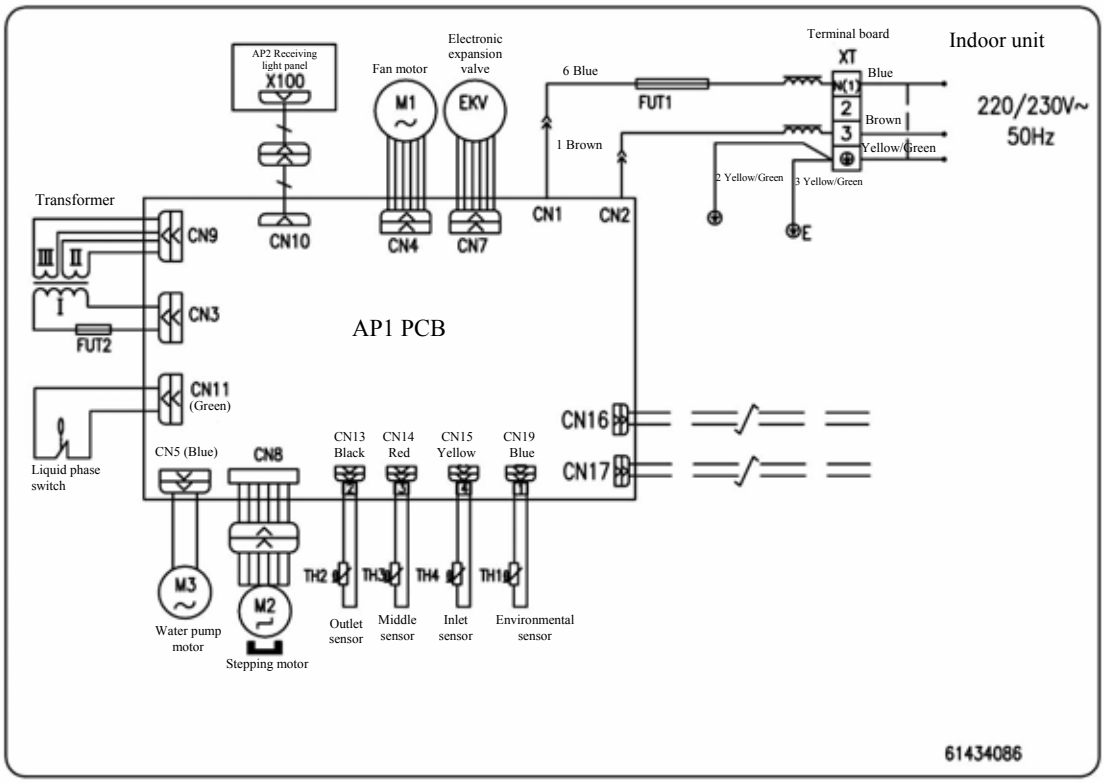
2.1.1.14 GMVL-R30T/D; GMVL-R35T/D; GMVL-R45T/D; GMVL-R50T/D; GMVL-R60T/D; GMVL-R70T/D; GMVL-R80T/D; GMVL-R100T/D; GMVL-R120T/D; GMVL-R140T/D;GMVR-R30T/D; GMVR-R35T/D; GMVR-R45T/D; GMVR-R50T/D; GMVR-R60T/D; GMVR-R70T/D; GMVR-R80T/D; GMVR-R100T/D; GMVR-R120T/D; GMVR-R140T/D



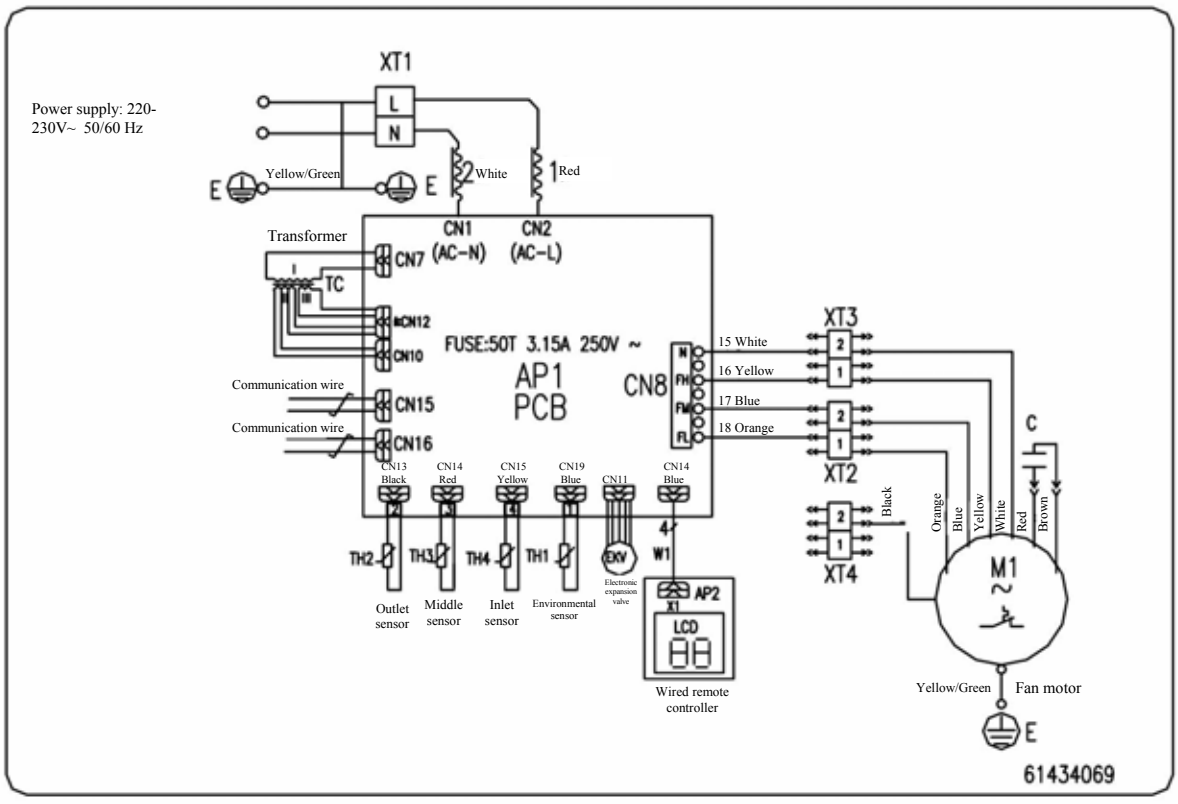
2.1.1.15 GMVL-R20Td/D；GMVL-R25Td/D；GMVL-R35Td/D ； GMVL-R40Td/D； GMVL-R45Td/D



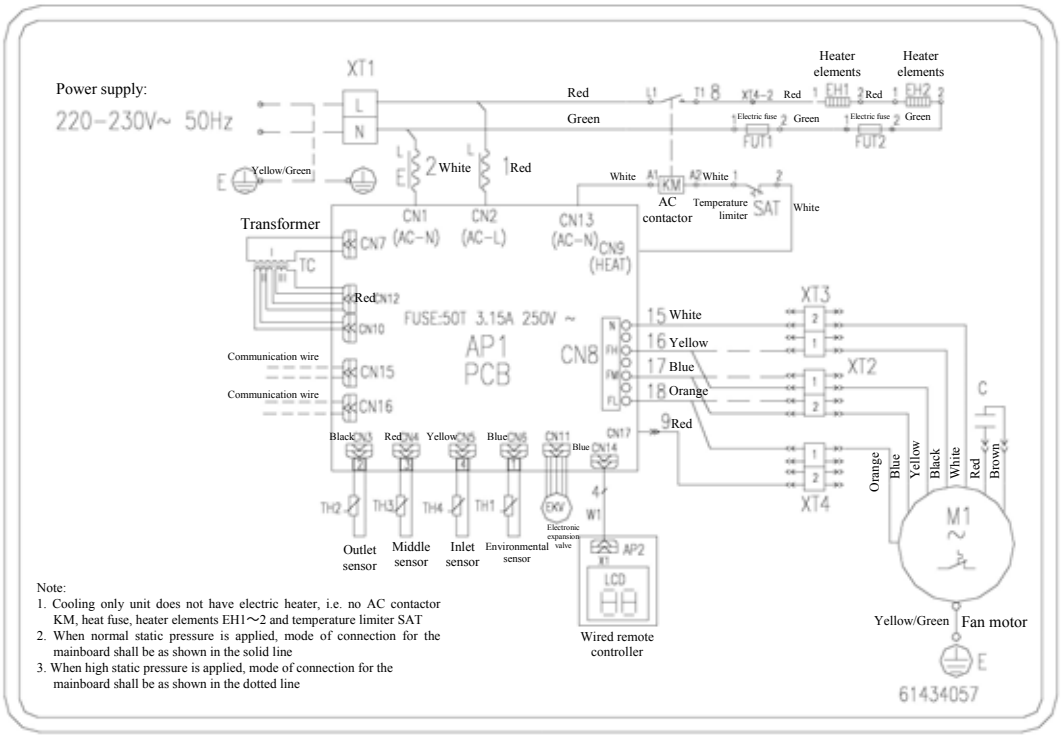
2.1.1.16 GMVR-R20Td/D; GMVR-R25Td/D; GMVR-R35Td/D; GMVR-R40Td/D; GMVR-R45Td/D



2.1.1.17 GMV-R20P/D; GMV-R25P/D; GMV-R30P/D; GMV-R35P/D

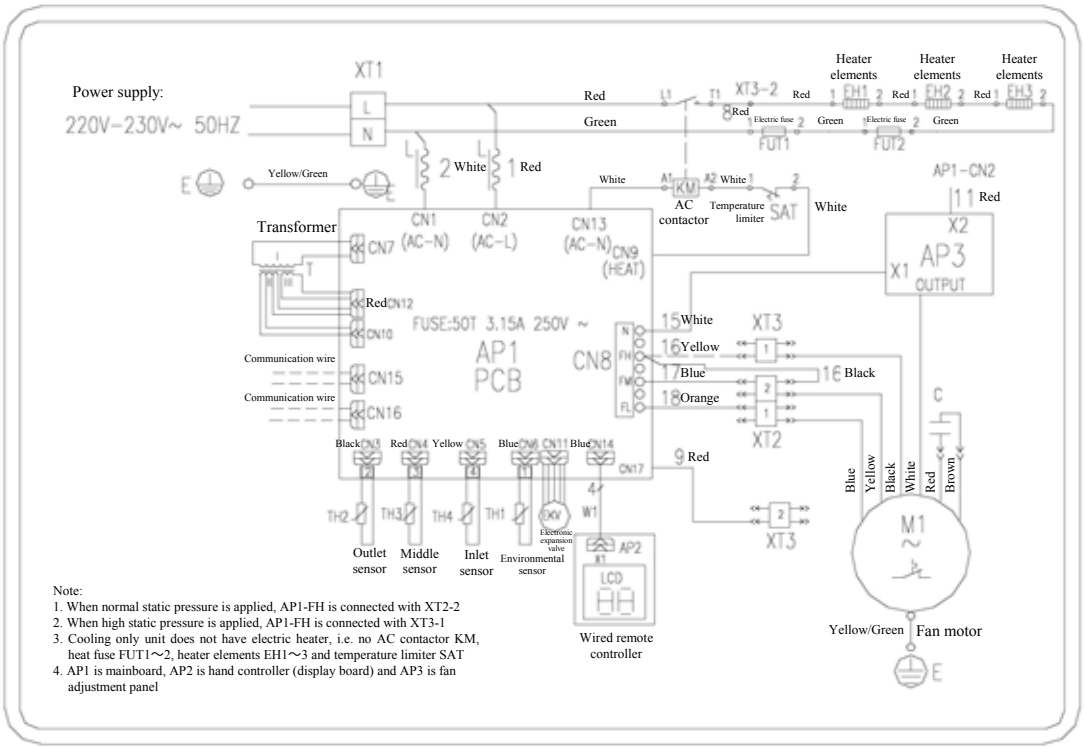


2. 1. 1. 18 GMV-R40P/DL; GMV-R50P/DL



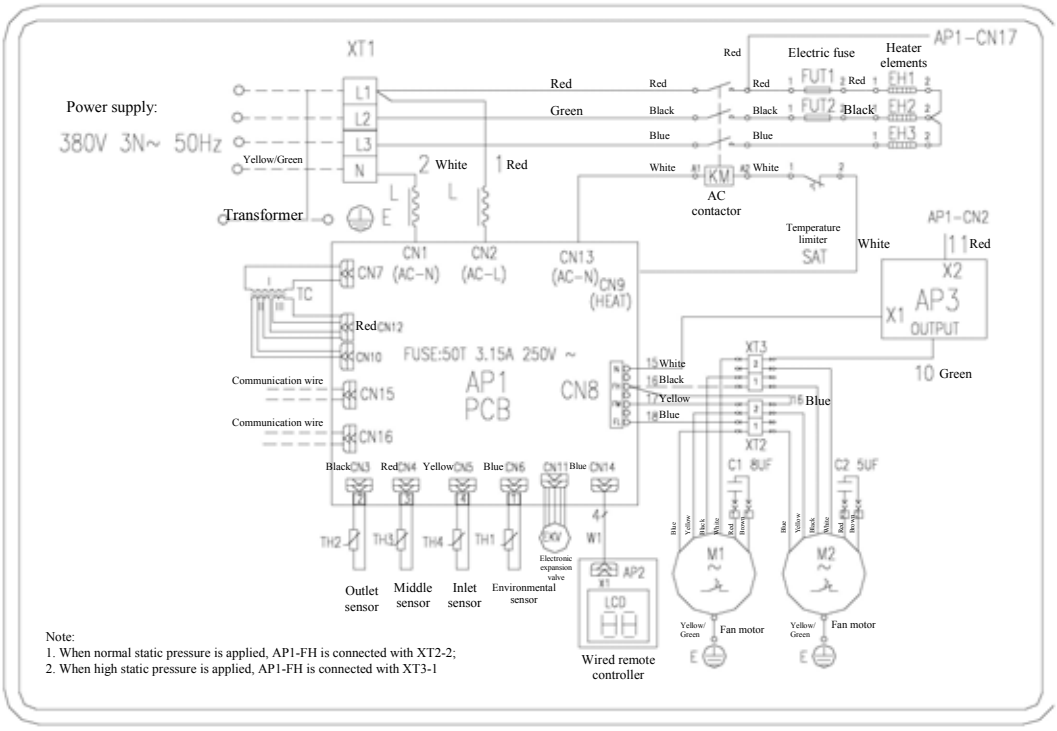
Note:
1. Cooling only unit does not have electric heater, i.e. no AC contactor KM, heat fuse, heater elements EH1～2 and temperature limiter SAT
2. When normal static pressure is applied, mode of connection for the mainboard shall be as shown in the solid line
3. When high static pressure is applied, mode of connection for the mainboard shall be as shown in the dotted line

2. 1. 1. 19 GMV-R60P/D;GMV-R70P/DL;GMV-R80P/D

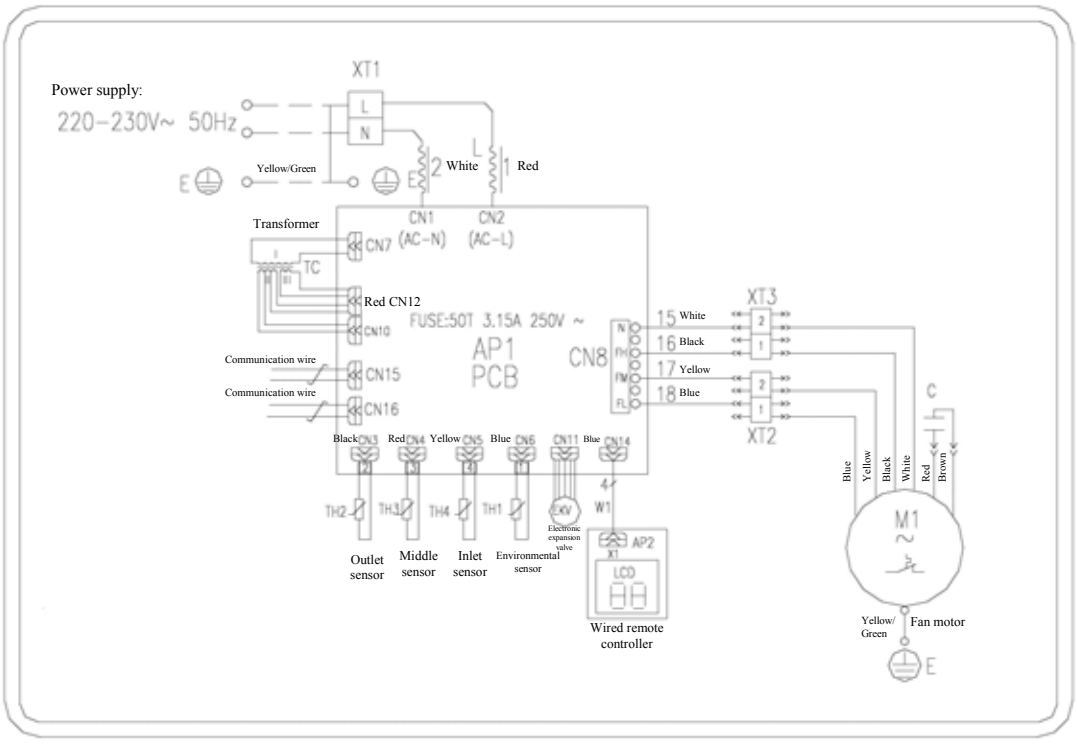


Note:
1. When normal static pressure is applied, AP1-FH is connected with XT2-2
2. When high static pressure is applied, AP1-FH is connected with XT3-1
3. Cooling only unit does not have electric heater, i.e. no AC contactor KM, heat fuse FUT1～2, heater elements EH1～3 and temperature limiter SAT
4. AP1 is mainboard, AP2 is hand controller (display board) and AP3 is fan adjustment panel

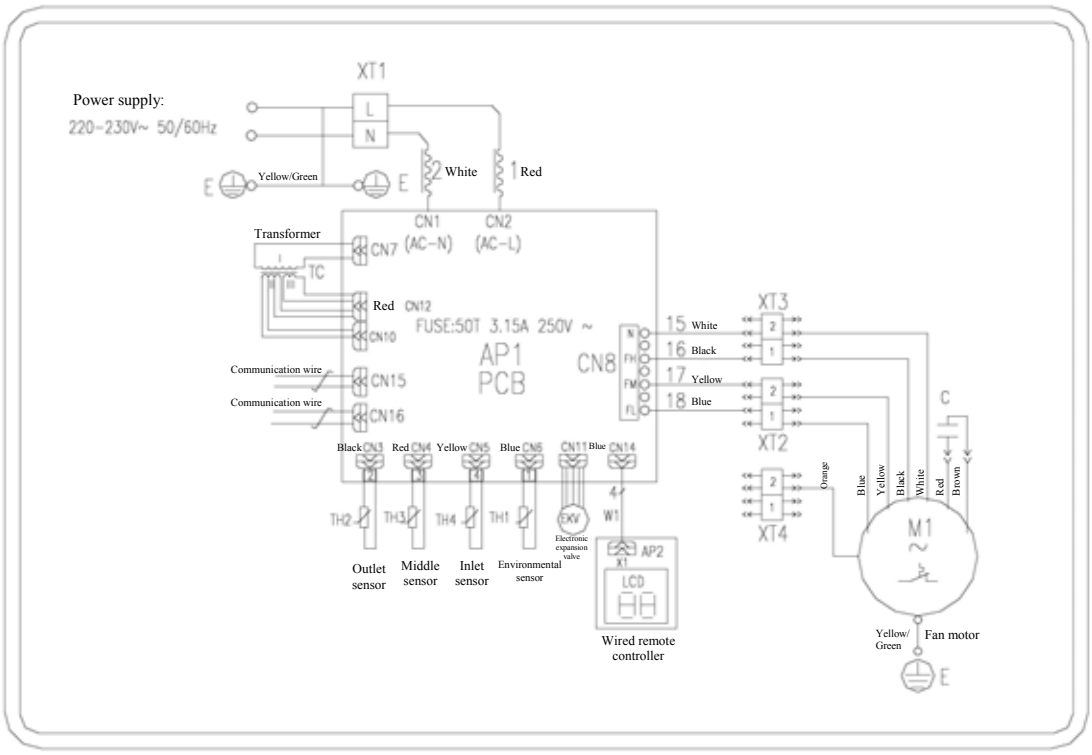
2. 1. 1. 20 GMV-R100P/D;GMV-R120P/D;GMV-R140P/D



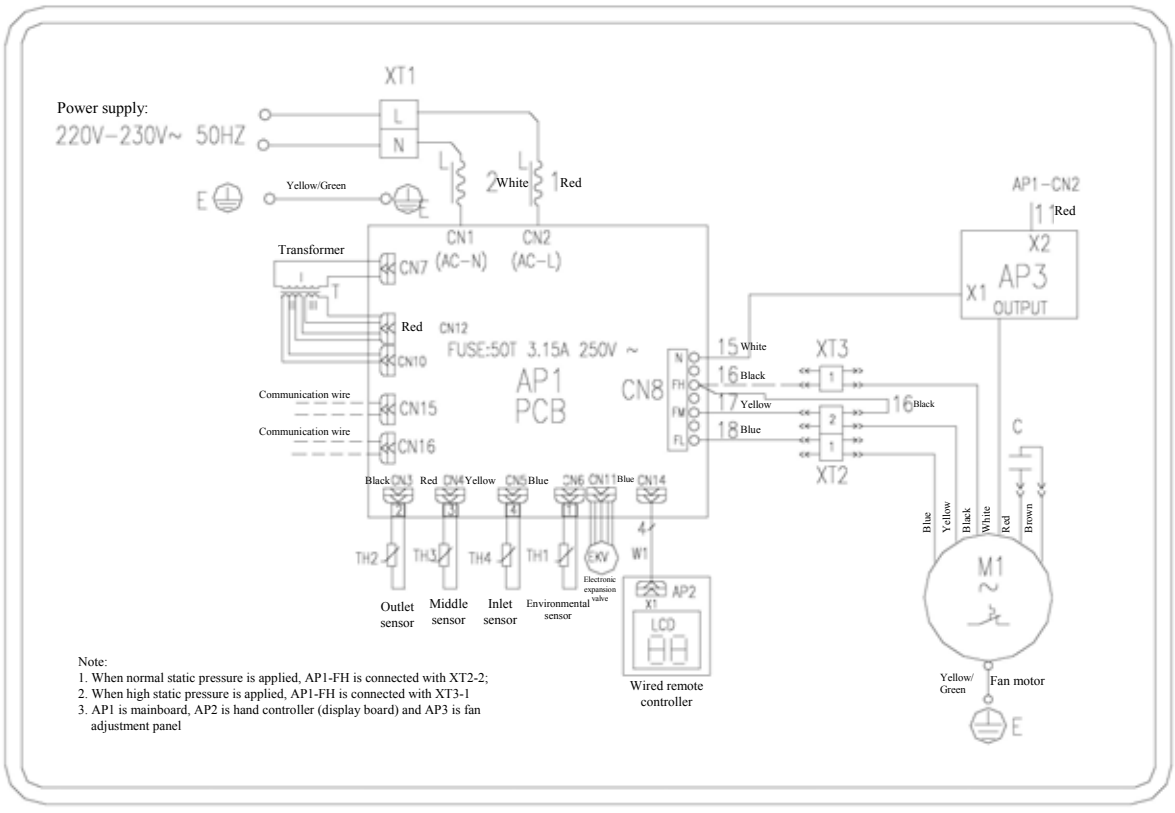
2. 1. 1. 21 GMVL-R20P/D; GMVL-R25P/D; GMVL-R30P/D; GMVL-R35P/D; GMVL-R40P/D



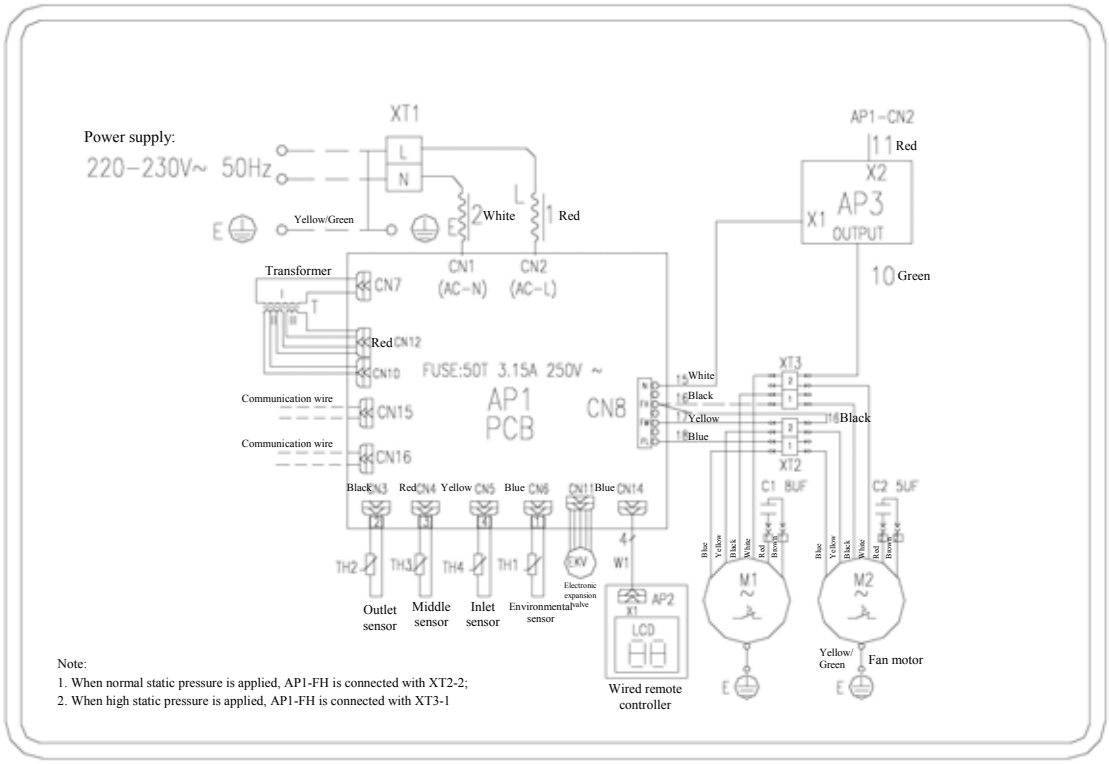
2.1.1.22 GMVL-R50P/D



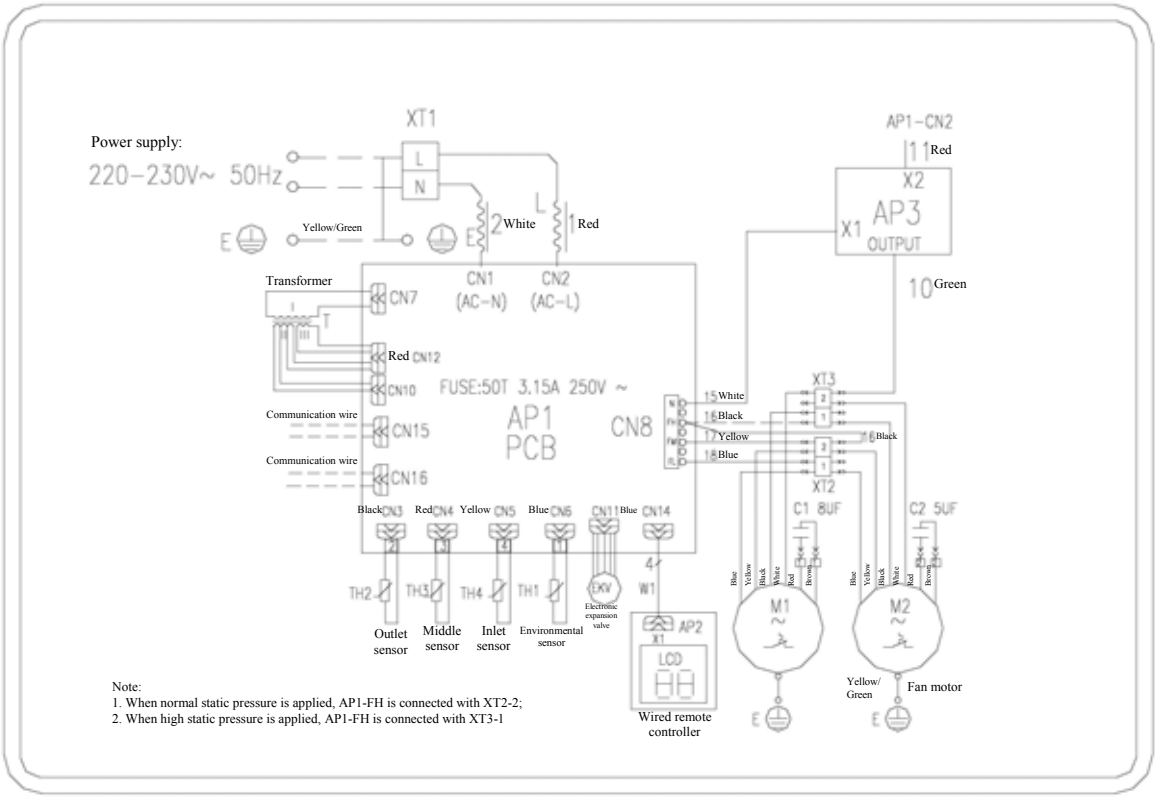
2. 1. 1. 23 GMVL-R60P/D;GMVL-R70P/D;GMVL-R80P/D



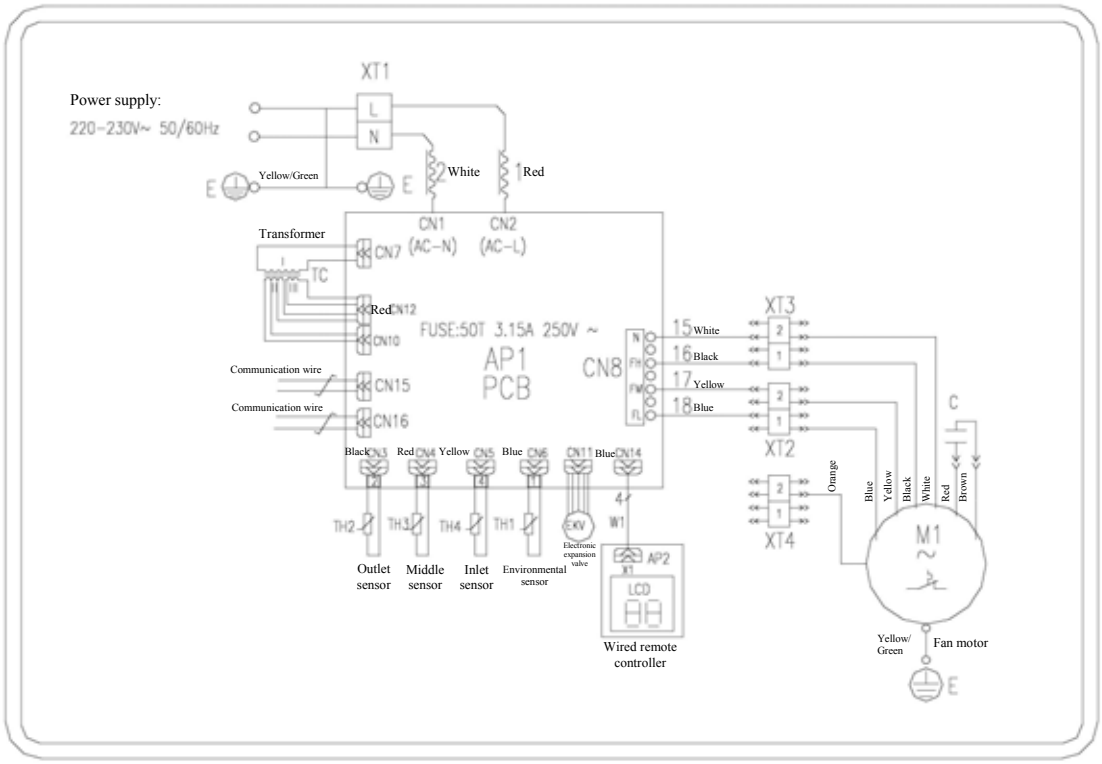
2. 1. 1. 24 GMVL-R100P/D;GMVL-R120P/D;GMVL-R140P/D



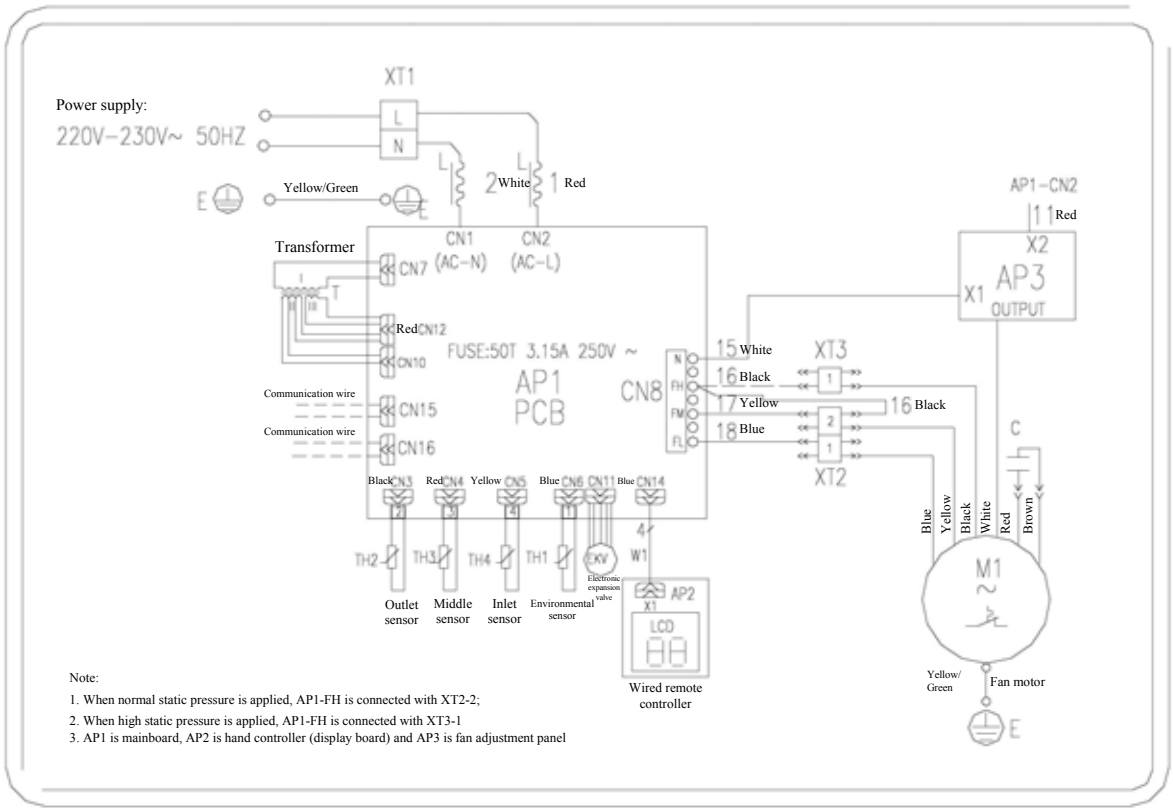
2. 1. 1. 25 GMVR-R20P/D;GMVR-R25P/D;GMVR-R30P/D



2. 1. 1. 26 GMVR-R40P/D;GMVR-R50P/D



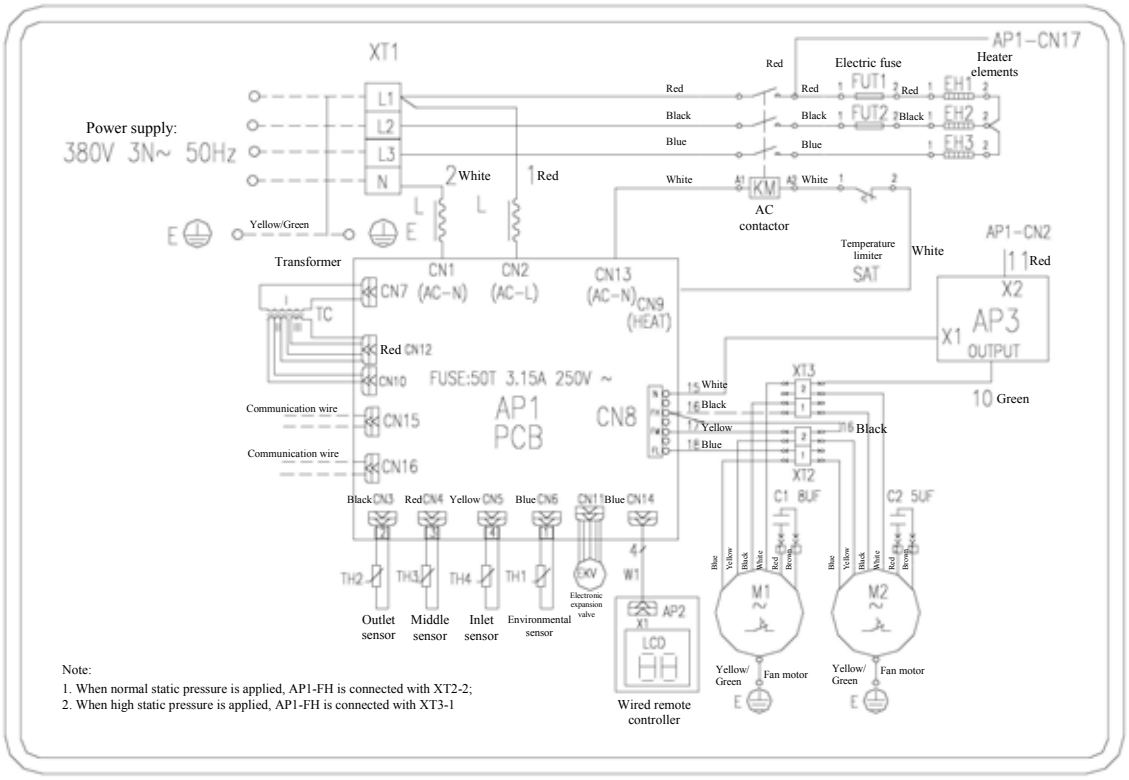
2. 1. 1. 27 GMVR-R60P/D;GMVR-R70P/D;GMVR-R80P/D



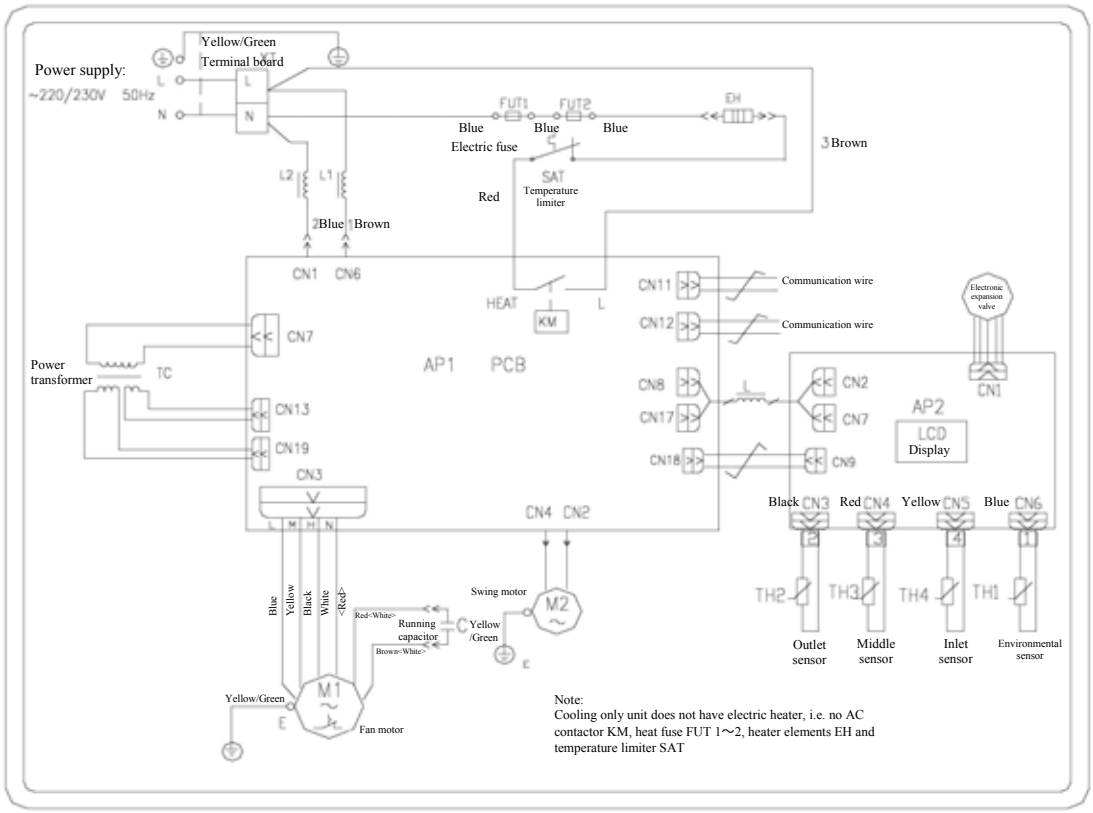
Note:

1. When normal static pressure is applied, AP1-FH is connected with XT2-2;
2. When high static pressure is applied, AP1-FH is connected with XT3-1
3. AP1 is mainboard, AP2 is hand controller (display board) and AP3 is fan adjustment panel

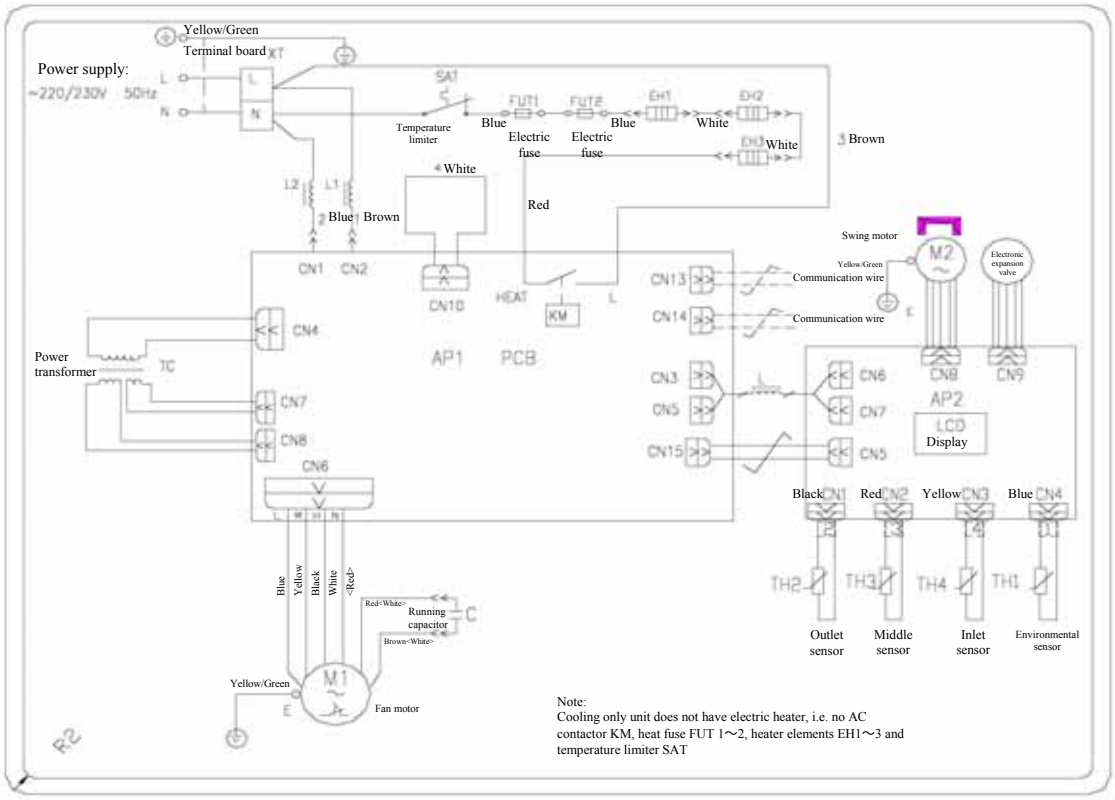
2. 1. 1. 28 GMVR-R100P/D;GMVR-R120P/D;GMVR-R140P/D



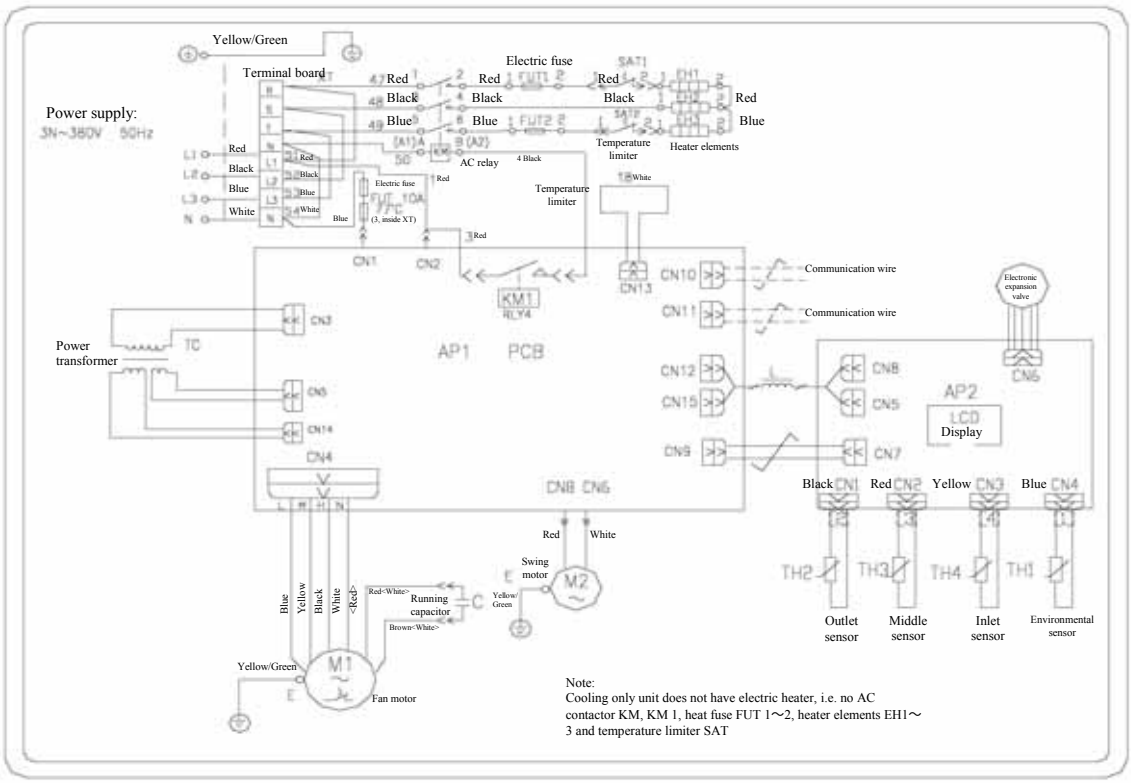
2.1.1.29 GMV-R50L/D



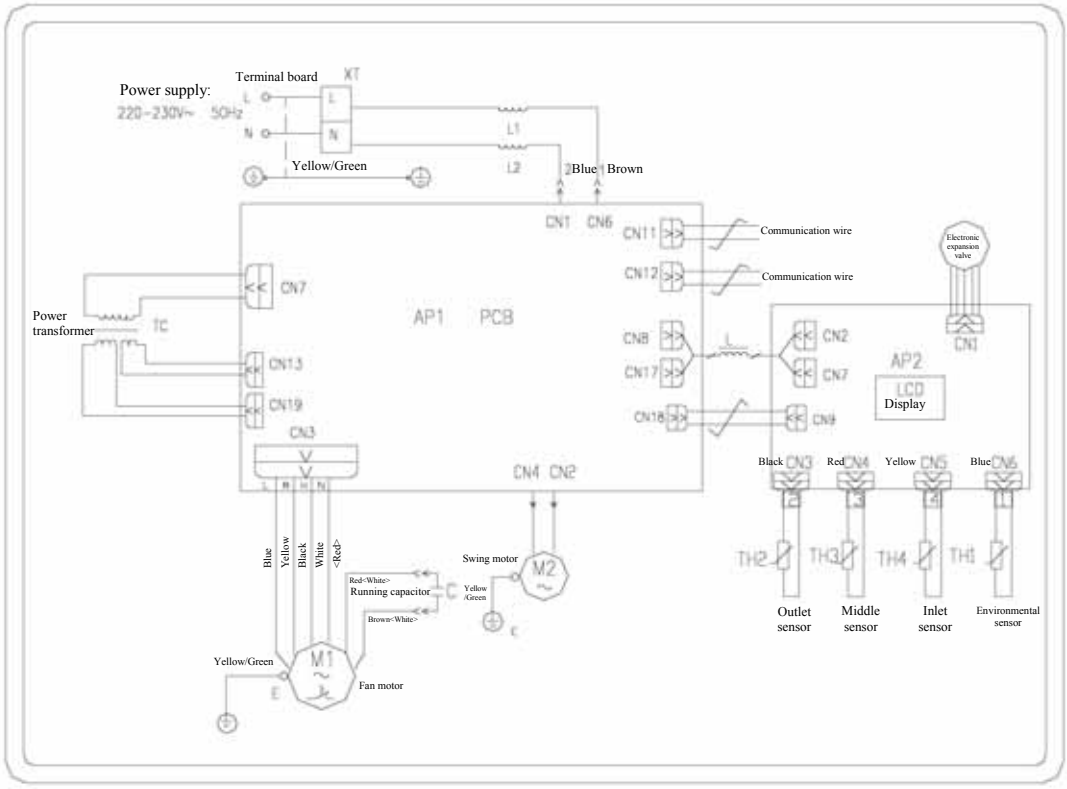
2.1.1.30 GMV-R70L/D



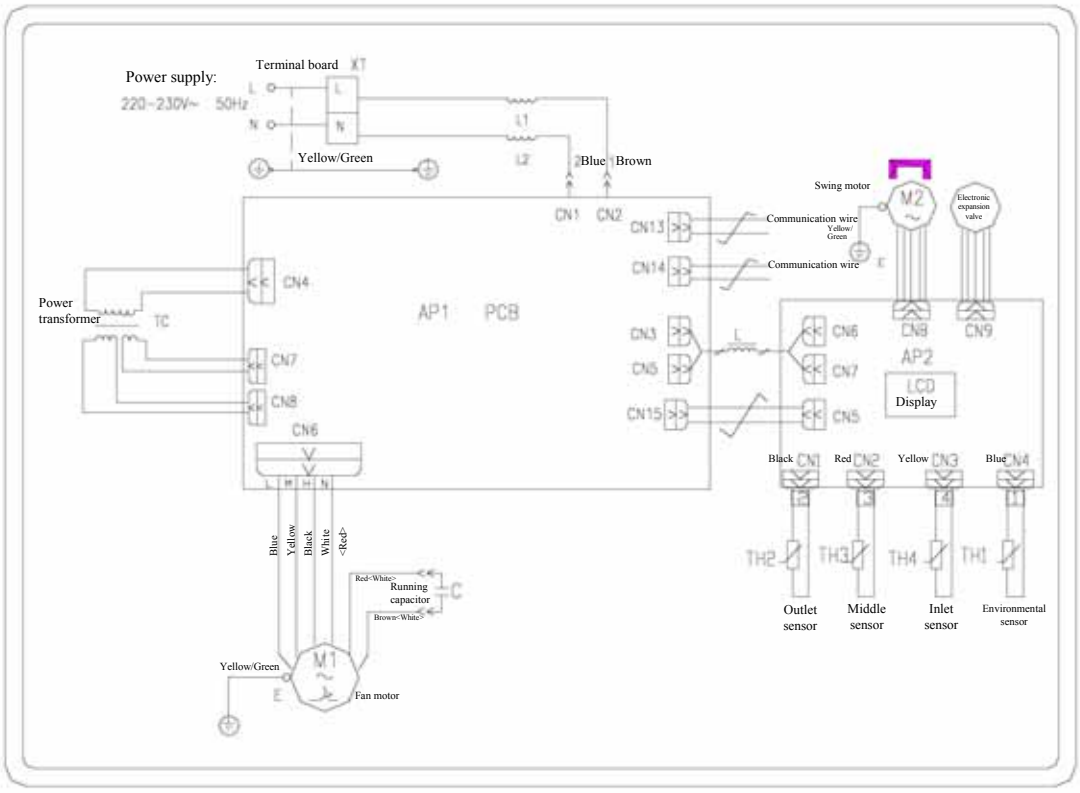
2. 1. 1. 31 GMV-R100L/D;GMV-R120L/D



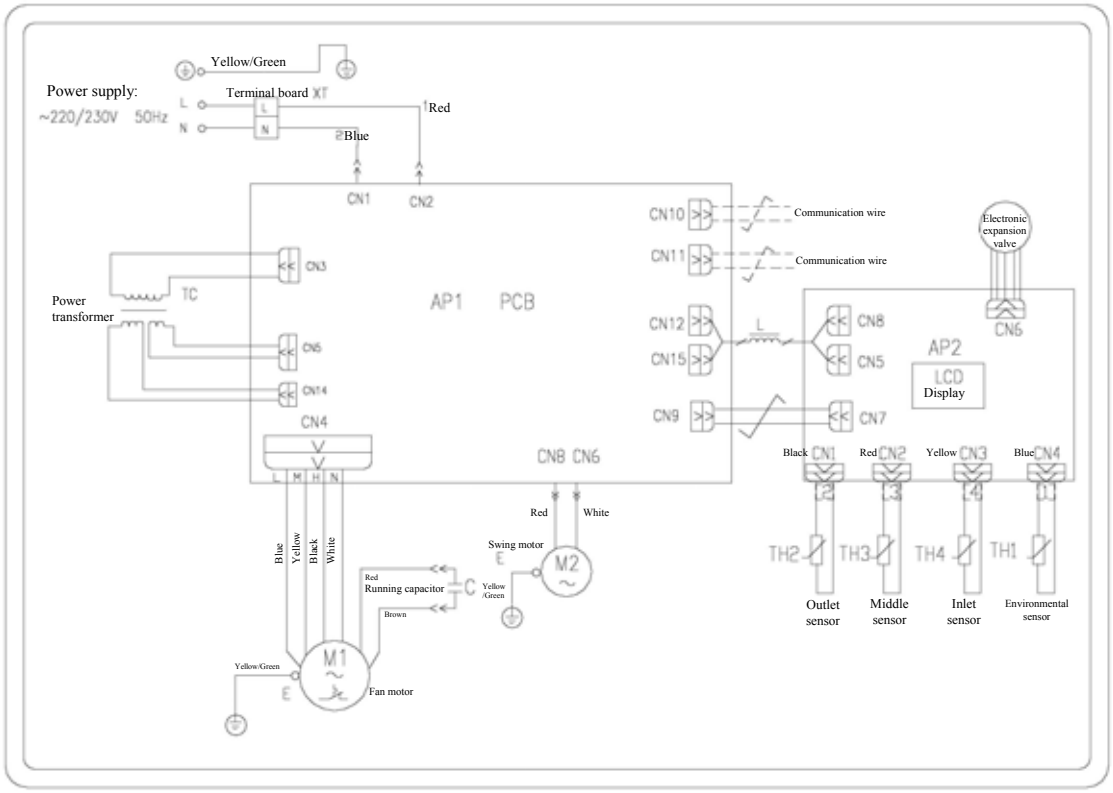
2.1.1.32 GMVL-R50L/D



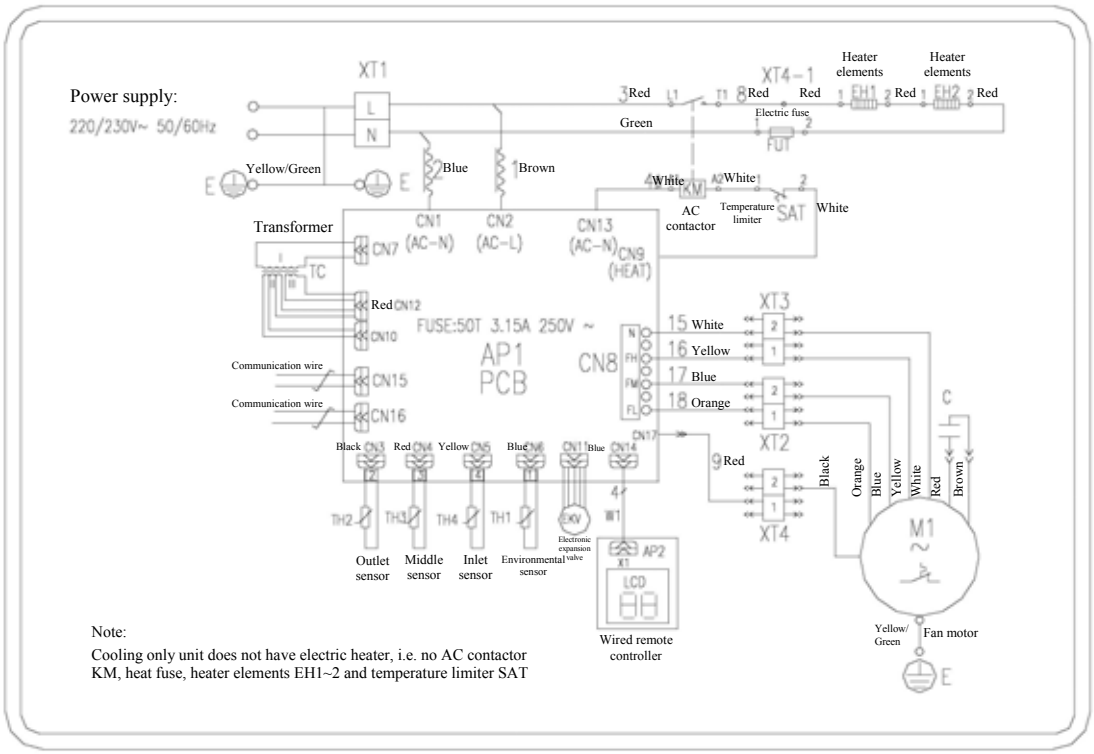
2.1.1.33 GMVL-R70L/D



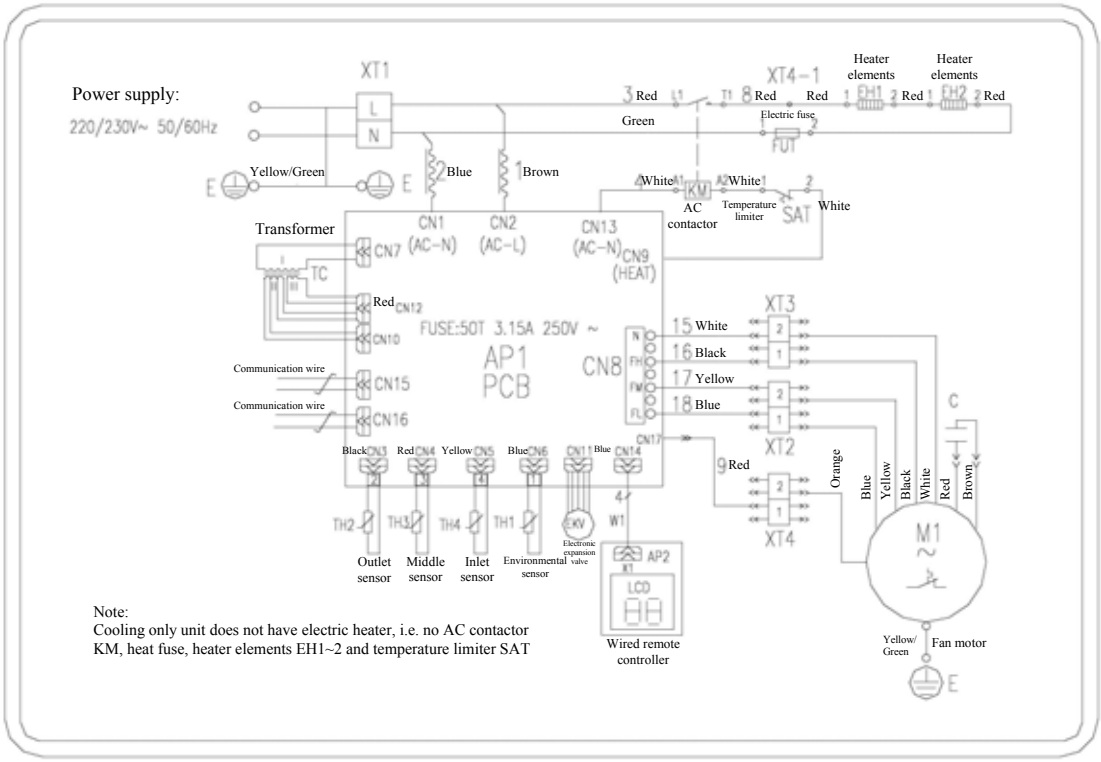
2. 1. 1. 34 GMVL-R100L/D;GMVL-R120L/D



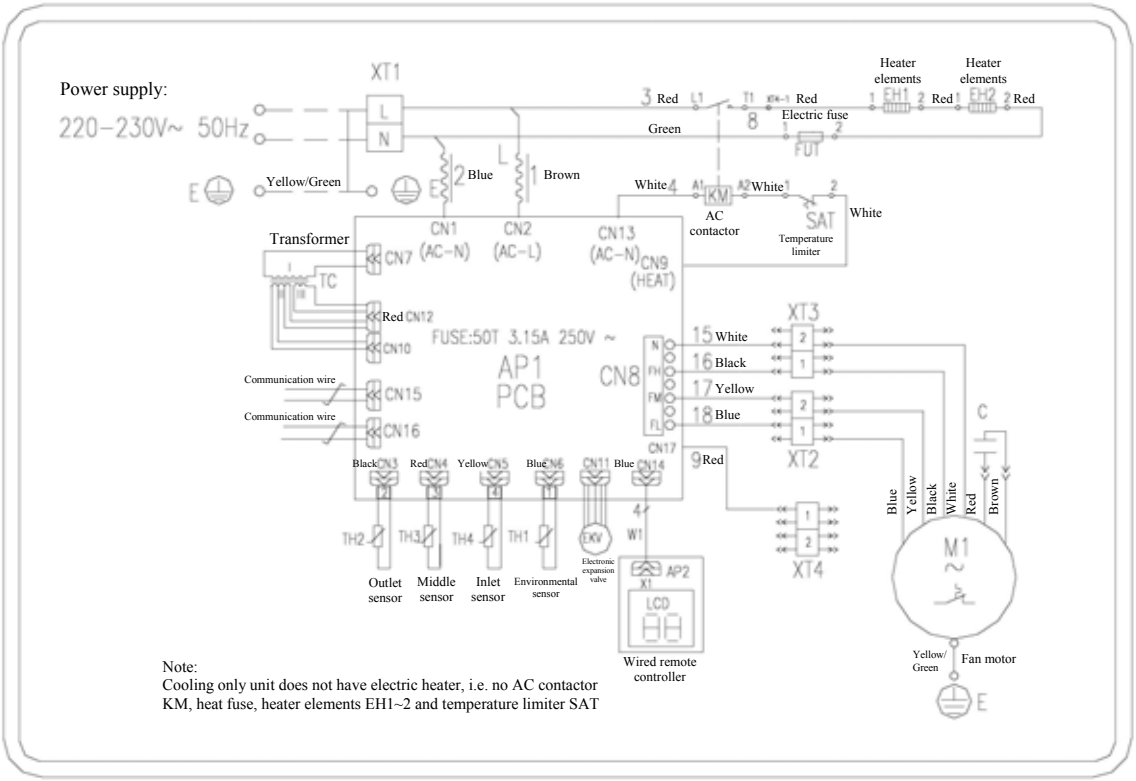
2. 1. 1. 35 GMV-R20P/DL;GMV-R25P/DL



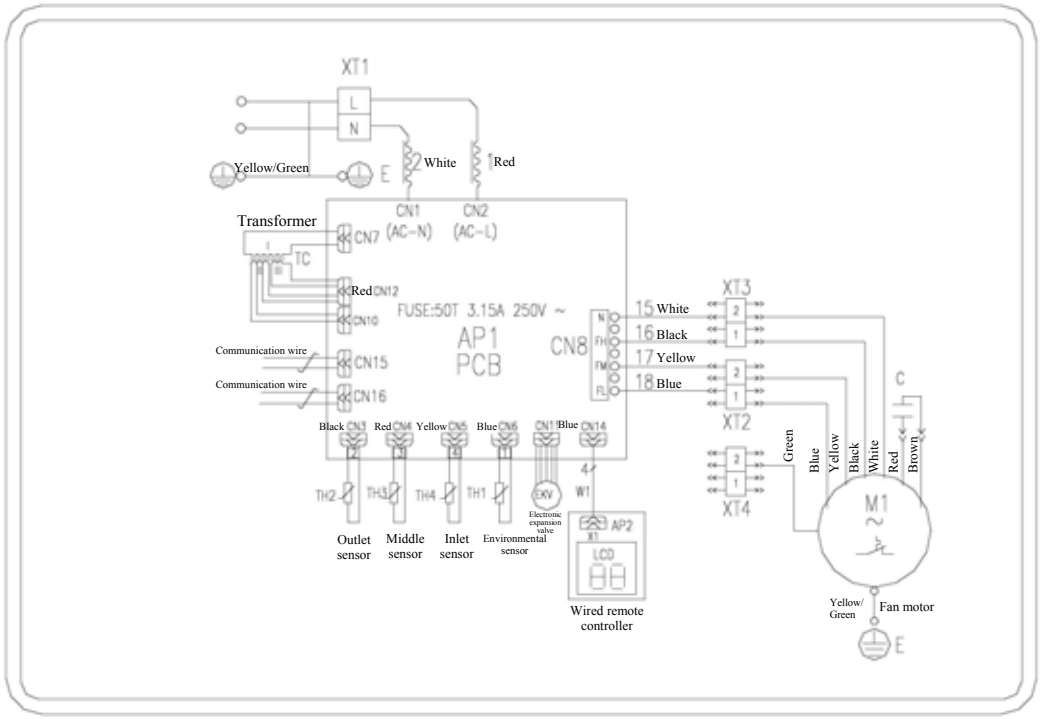
2. 1. 1. 36 GMV-R30P/DL;GMV-R35P/DL



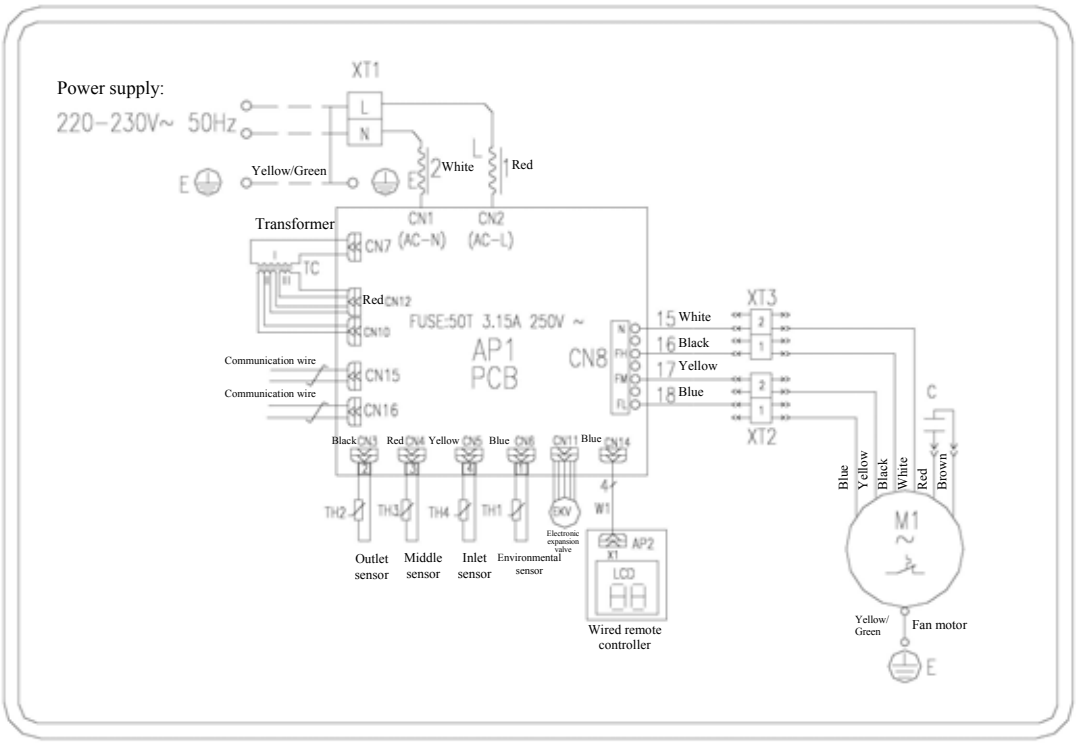
2. 1. 1. 37 GMV-R40P/DL;GMV-R50P/DL;GMV-R60P/DL;GMV-R70P/DL



2. 1. 1. 38 GMVL-R30P/DL;GMVL-R35P/DL;GMVR-R30P/DL;GMVR-R35P/DL



2. 1. 1. 39 GMVL-R40P/DL；GMvL-R50P/DL；GMVL-R60P/DL;GMVL-R70P/DL；GMVR-R40P/DL；GMVR-R50P/DL；GMVR-R60P/DL；;GMVR-R70P/DL



2.1.2 Wiring of power cord

After the installation location of the unit has been confirmed, according to the specific power supply system of Party A and relevant electrical specifications, confirm specific wiring direction and further confirm the length of cable from electric control cabinet to the unit. The following points should be noted:

1. If power supply is at the bottom floor of the building and the units are at the top floor of the building and cable shaft is required, cable-fastening measures must be available to protect cables against mechanical tension. In addition, fire protection requirements should be also considered and cable shield must be flame retardant.
2. Cable trunking is used for protecting the cable from electric control cabinet to the unit. Metallic trunking frame should be adopted for units with greater than 10 HP electric power, while engineering plastics PVC can be adopted for units with lower than 10 HP electric power;

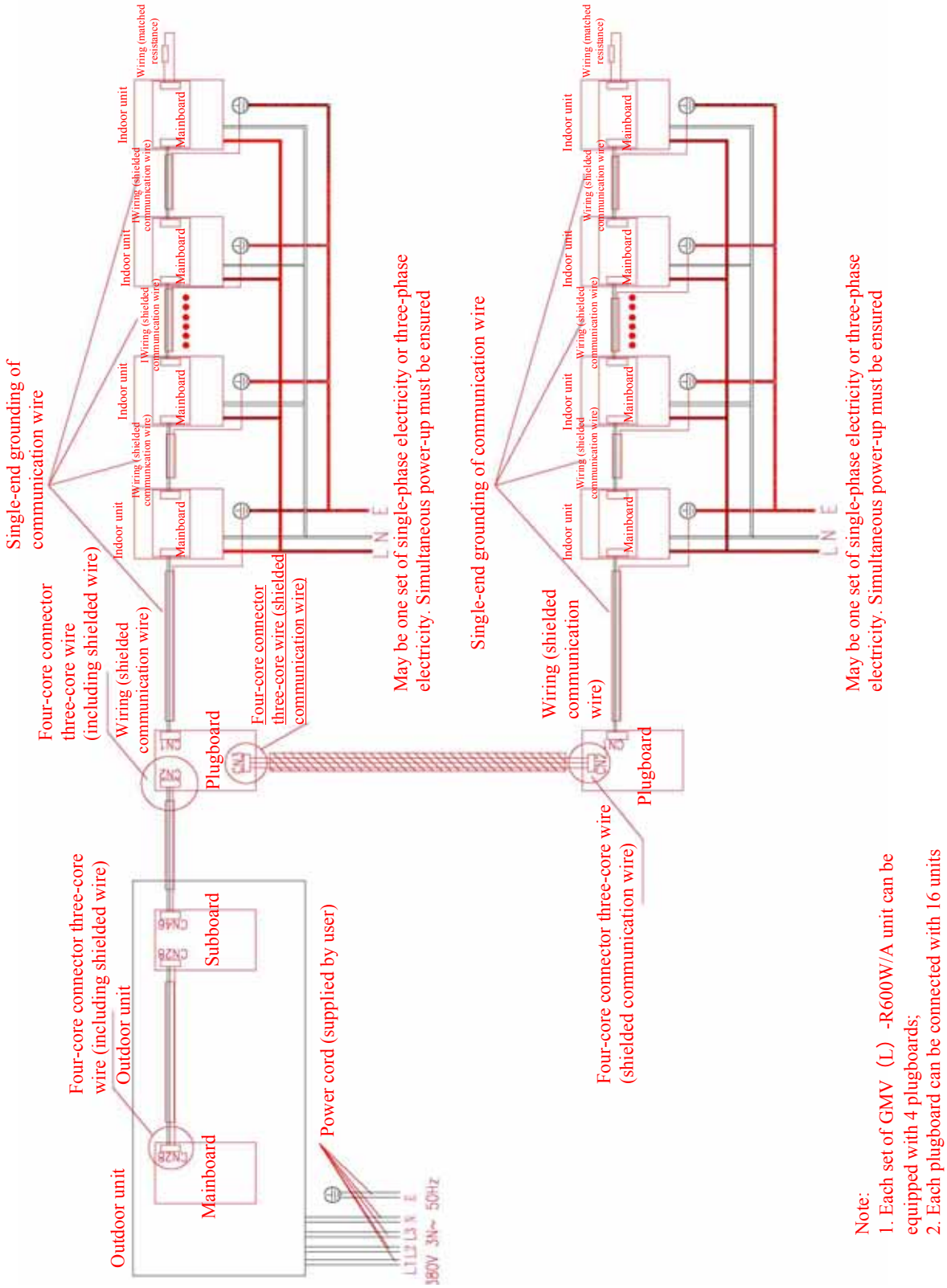
Note: Joint of metallic trunkings must be connected using ground wire, as shown in the figure, where two metallic trunkings are connected using dedicated yellow/green ground wire.

3. PVC-shielded copper core cable is recommended for units with greater than 10 PH electric power. The linear diameter of the cable is determined by the required capacity of power supply and required length of cable.
4. The ground wires of the unit include ground wires from the ground wire of power supply inlet wire to the unit and from the unit to installation location, which are normally provided by Party A.
5. If power cord goes through metallic trunking, burr inside metallic trunking must be considered, or such burr will pierce cable shield, which will easily lead to leakage of electricity or interphase short circuit.
6. The position of entrance hole for different air conditioners might be different, but all wiring work must be carried out by electrical engineer or electrician certified by the State.

2.1.3 Wiring list

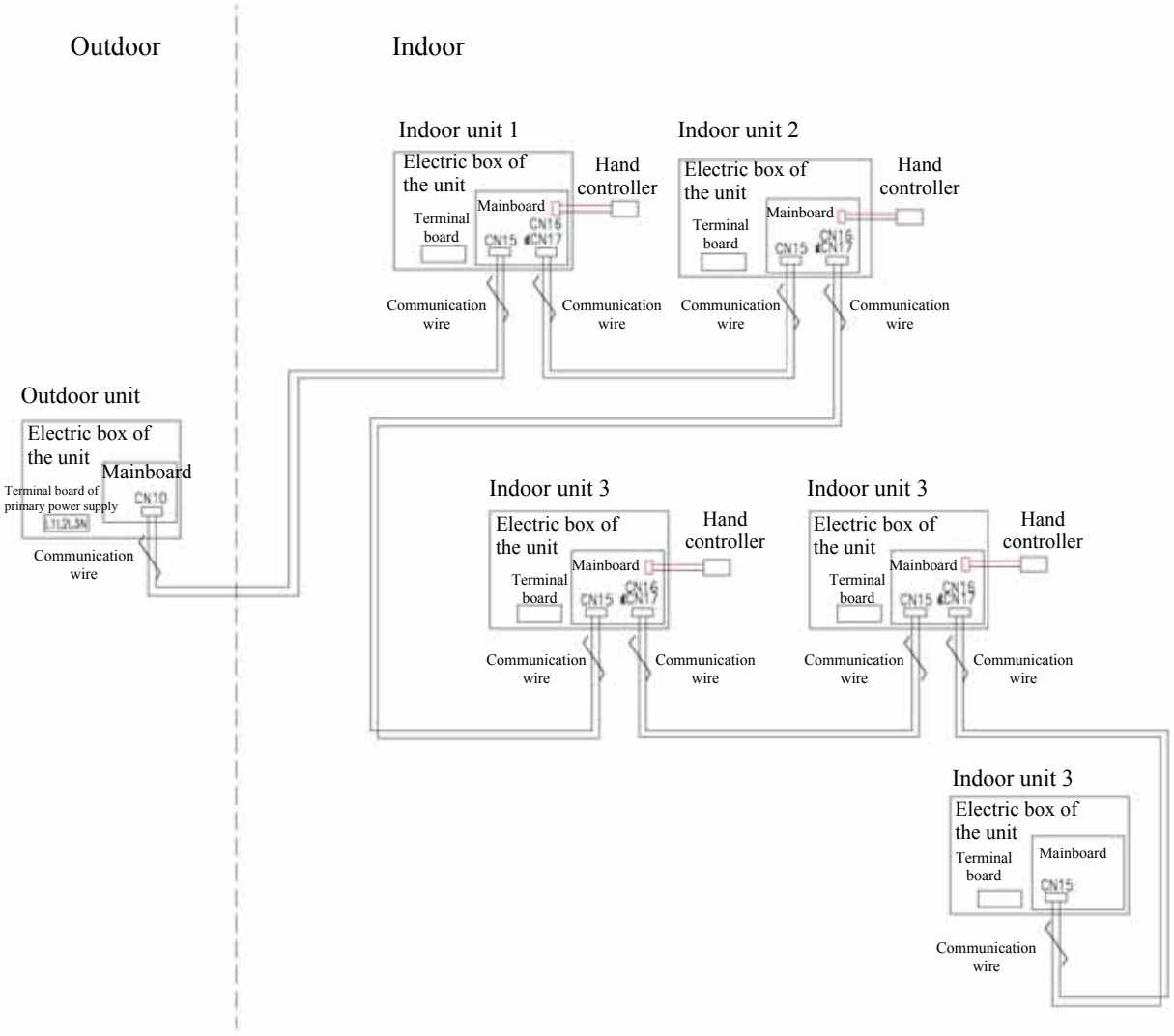
Unit wiring diagram 1

Outdoor units are GMV（L）-R620W4/A, GMV（L）-R560W4/A and GMV（L）-R420W3/A. There is one communication wire equipped inside each indoor and outdoor unit. Wiring principle is shown in the following diagram: series connection is adopted for communication wire; each plugboard can be totally connected with sixteen indoor units; each plugboard of outdoor unit is connected with indoor unit 1, indoor unit 1 is connected with indoor unit 2, ..., Indoor unit n-1 is connected with indoor unit n



Unit wiring diagram 2

Outdoor units are GMV（L）-R300W2/A, GMV（L）-R250W2/A, GMV（L）-R200W2/A, GMV（L） -R300W2/B, GMV（L）-R260W2/B, GMV（L）-R220W2/B, GMV（L）-R150W/AS, GMV（L）-R140W/A, GMV（L）-R120W/A, GMV（L）-R100W/A and GMV（L）-R80W/A. There is one communication wire equipped inside each indoor and outdoor unit. Wiring principle is shown in the following diagram: series connection is adopted for communication wire; outdoor unit is connected with indoor unit 1; indoor unit 1 is connected with indoor unit 2, ..., Indoor unit n-1 is connected with indoor unit n



Selection specifications for power cord and air switch (if the distance from the unit to the air switch is greater than 15m, linear diameter should be increased appropriately)

Indoor unit model / Specifications	GMV (L) - R620W4/A	GMV (L)- R560W4/A	GMV (L)- R300W2/A	GMV (L)- R300W2/B	GMV (L)- R260W2/B
Power cord specifications mm^2	5X10mm^2	5X10mm^2	5X6mm^2	5X6mm^2	5X4mm^2
Air switch specifications A	100A	100A	50A	50A	50A
Outdoor unit model / Specifications	GMV (L)- R250W2/A	GMV (L)- R220W2/B	GMV (L)- R200W2/A	GMV (L)- R200W2/B	GMV (L)- R150W/AS
Power cord specifications mm^2	5X4mm^2	5X4mm^2	5X4mm^2	5X4mm^2	5X2.5mm^2
Air switch specifications A	50A	50A	50A	50A	25A
Outdoor unit model / Specifications	GMV (L)- R140W/A	GMV (L)- R120W/A	GMV (L)- R100W/A	GMV (L)- R80W/A	
Power cord specifications mm^2	3X6mm^2	3X6mm^2	3X6mm^2	3X6mm^2	
Air switch specifications A	63A	63A	50A	40A	

Note: the recommended linear diameter of power cord is within 15m distance from power supply to the unit. If 15m is exceeded, linear diameter should be increased appropriately

2.2 Weak current section

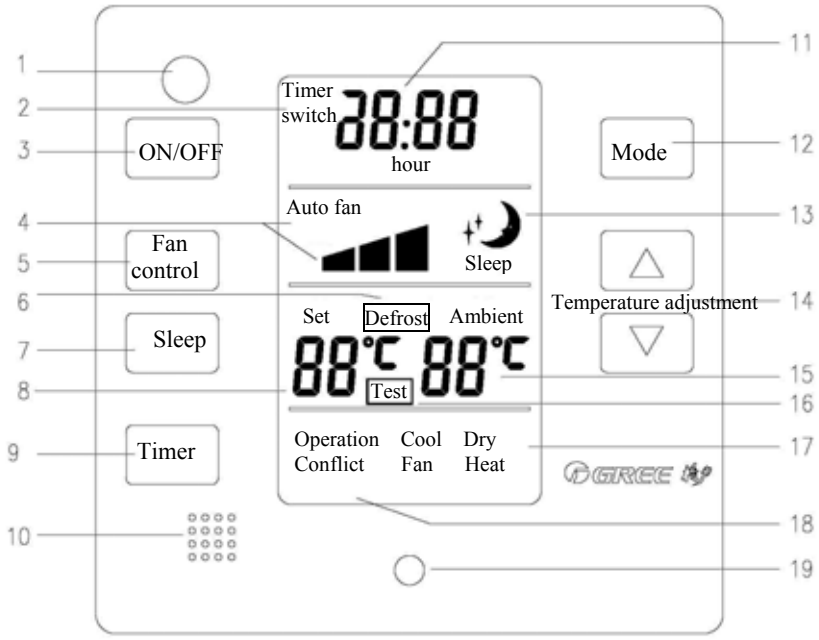
2.2 1 Operational modes

Under normal conditions, please set the operational mode of the unit according to the following table:

Outdoor ambient temperature (℃)	Operational mode
＞21	COOL
＜18	HEAT
≤21 and ≥18	COOL or HEAT

2.2.2 Wired remote controller

2.2.2.1 Type-A wired remote controller



Various Components of Hand Controller			
1	Reception head of remote signal	2	Display of timer on/timer off
3	ON/OFF button	4	Fan speed control display （AUTO, HI, MED, LOW）
5	Fan control button	6	Defrosting display
7	Sleeping mode button	8	Display of temperature setting
9	Timer button	10	Buzzer

11	Display of timer	12	Mode button
13	Sleep mode display	14	Temperature adjustment button
15	Display of ambient temperature	16	Display of testing
17	Display of operational modes（COOL, DRY, FAN, HEAT）	18	Display of operational conflicts
19	Power supply indicator		

1） Turn on /turn off the unit（Fig.1） When the ON/OFF button is pressed, the unit will start.

❖ When the button is presses once more the unit will stop. The indoor motor runs to blow the remaining cool or heat for 20-70 seconds.

NOTE：

After receiving the stopping signal, the fan motor and electronic expansion valve of each indoor unit still keeps running for 20-70 secs to make use of remaining cool or heat of the heat exchanger, and prepare for the next running. This is normal phenomenon.

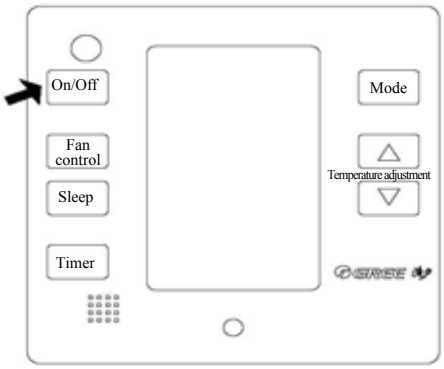


Fig 1

2） FAN control (Fig.2) (content shown in Fig.2 is the relevant display area)

❖ Each time this button is pressed, fan speed will change in the following order：

AUTO→LOW→MED→HI

❖ When fan control is set to AUTO, under HEAT, FAN and COOL mode, fan speed will be adjusted according to indoor temperature; under DRY mode, fan speed will be set to LOW automatically.

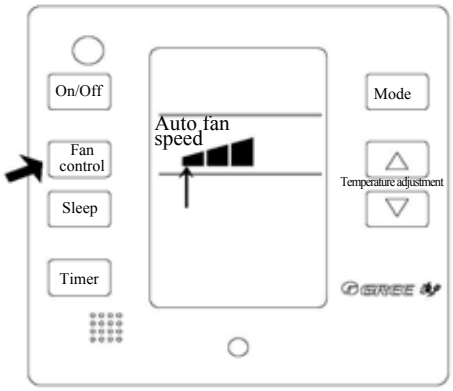


Fig 2

3） Temperature adjustment（Fig.3）

❖ Press the temperature adjustment button to:

: Increase the temperature;

: Decrease the temperature.

(Each time this button is pressed, temperature will be increased or decreased by 1℃.

When this button is pressed and held, temperature will be increased or decreased by 1℃ every 0.5 second)

❖ Temperature setting range in every mode:

HEAT -------- 16℃～30℃

COOL -------- 16℃～30℃

DRY -------- 16℃～30℃

FAN -------- 16℃～30℃

4） SLEEP function setting （Fig.4）

SLEEP function is available under COOL, DRY and HEAT mode. There is no SLEEP function under FAN mode.

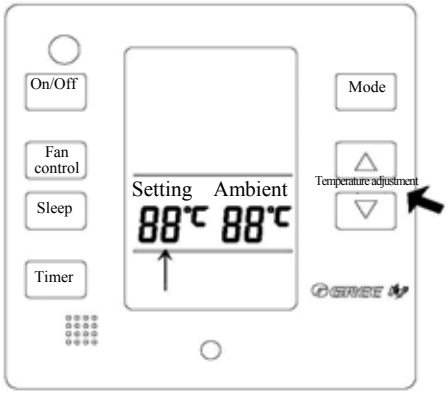


Fig 3

5) Operational mode setting (Fig.5)

NOTE: When the chosen operational mode of the indoor unit conflicts with the operational mode of the outdoor unit, the hand controller will display the operational conflict after 5 secs and the power indicator of the hand controller will blink. Then the indoor unit will stop running. At this time, change the operational mode of the indoor unit to the one that will not conflict with that of the outdoor unit to make the operation normal. The cooling mode does not conflict with the dry mode, while the fan mode does not conflict with any mode.

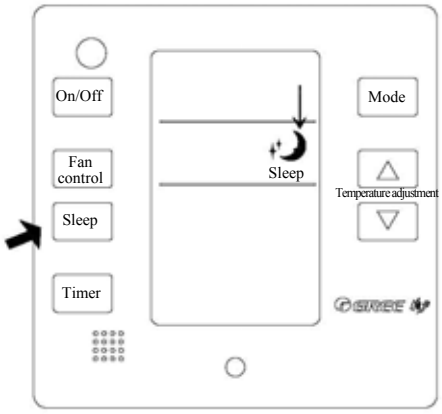


Fig 4

❖ Each time this button is pressed, the mode will change in the following order:

→COOL→DRY→FAN→HEAT—

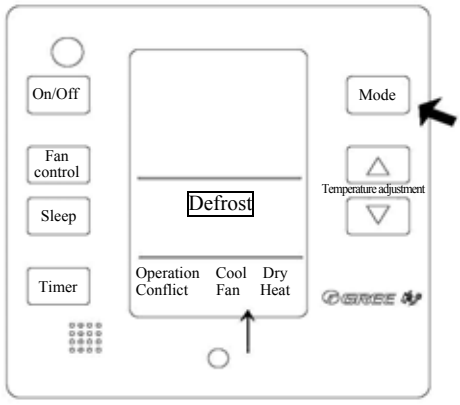


Fig 5

❖ During "COOL" mode operation, the indicator for cooling operation will be on. The set temperature must be lower than the current room temperature. If not, this air conditioning system will not enter into the COOL mode. Instead, only the fan will operate.

❖ During "DRY" mode operation, the indicator for dehumidification operation will be on. The fan of the indoor unit will operate in LOW speed within the range of a certain temperature. The dehumidification effect of this mode is more obvious than the operation in the COOL mode, as well as more energy saving.

❖ During "HEAT" mode operation, the indicator for heating operation will be on. The set temperature must be higher than the current room temperature. If not, this air conditioning system will not be activated for HEAT operation.

❖ During "FAN" mode operation, the indicator for fan operation will be on. Room temperature is displayed on the LCD of the controller.

❖ During "HEAT" operation, when outdoor temperature is low while humidity is high, there will be frost on the outdoor unit, which will lower heating effect. In this case, the controller will automatically activate the defrosting cycle, with the indicator blinking.

NOTE: Cooling only unit does not have the HEAT mode.

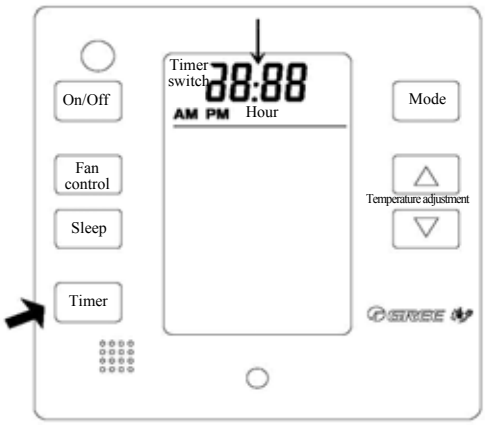


Fig 6

6) Timer setting (Fig.6)

Under turn-off state, timed turn-on can be set, while under turn-on state, timed turn-off can be set. Each time this button is pressed, the set time will be increased by 0.5 hour. When it is pressed and held, the time will be increased by 0.5 hour automatically every 0.5 sec.

The setting range is 0.5-24 hours.

7) When malfunction occurs while the system is running, the hand controller will display the malfunction code. The display as shown in Fig. 7 indicates compressor high-pressure protection.

When the controller displays malfunction, please turn off the unit to stop the malfunction display. Ask specialized serviceman to eliminate the malfunction.

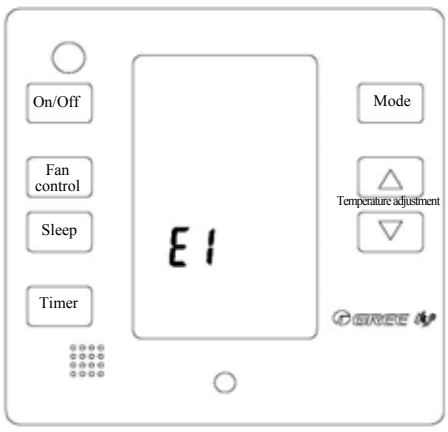


Fig 7

2.2.2.2 Type-B wired remote controller

Type-B wired remote controller is the improved product of type-A wired remote controller.

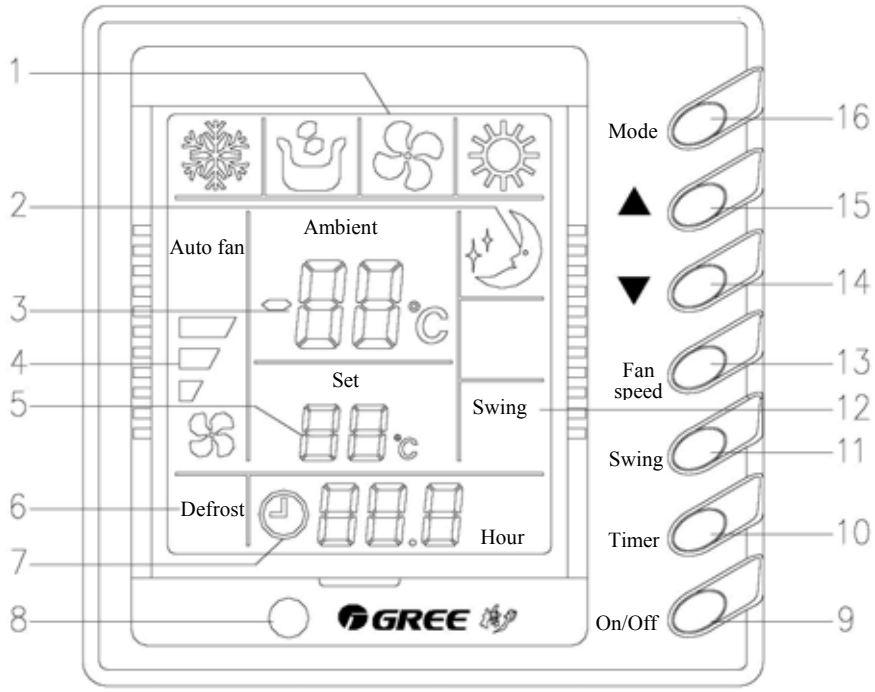


Fig 1

Various Components of Wired Remote Controller			
1	Operational mode display (Cool, Dry, Fan, Heat)	9	On/Off button
2	Sleep mode display	10	Timer button
3	Ambient temperature display /Malfunction display	11	Swing button
4	Fan speed display（AUTO, LOW, MED, HI）	12	Swing display
5	Set temp. display	13	Fan speed button
6	Defrosting display	14	Temp./ Timer decrease button
7	Timer display	15	Temp./ Timer increase button
8	Signal reception head	16	Mode button

1） Turning on/off the unit (Fig. 2)

❖ When the ON/OFF button is pressed, the unit will start.

❖ When the ON/OFF button is pressed again, the unit will stop.

NOTE：Fig.2 shows the turn-off state after power-on. When it is powered on and the communication is normal, under both turn-on and turn-off state, ambient temperature will be displayed on the LCD. At this time, there is no “graticule line” as shown in Fig.3 on the LCD, which indicates the unit is turned off.

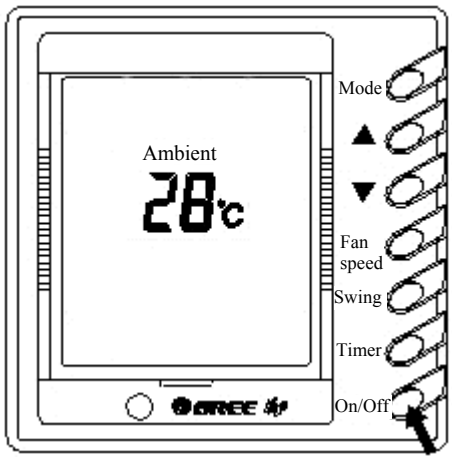


Fig 2

Fig 3

(Fig.3, the following will be displayed according to the function of the wired remote controller)

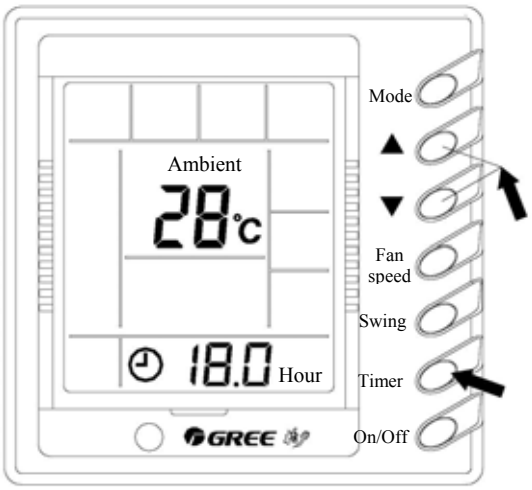


Fig 3

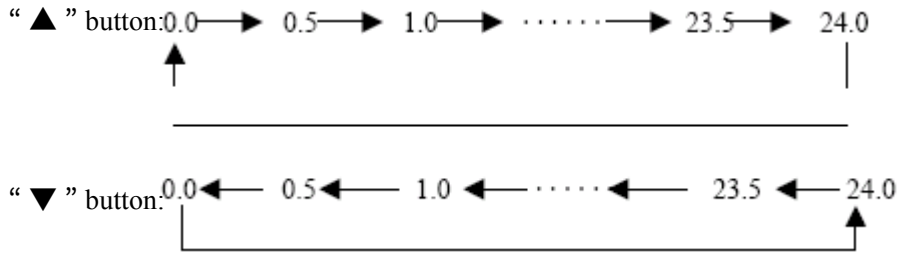
❖ Under turn-off state, press the TIMER button to set the turn-on time, while under turn-on state, press the TIMER button to set the turn-off time.

❖ When the unit is not timed（i.e. there is no content in the timing display area), press the TIMER and the LCD will display the pattern of “ xx.x hour ”. The symbols of “ ” and “ HOUR ” will blink continuously every 0.5 second. At this time press “ ▲ ” or “ ▼ ” button to set the time. After adjusting to the desired time with “ ▲ ” or “ ▼ ” button, press the TIMER button again and the symbols of “ ” and “ HOUR ” will stop blinking, which indicates that the TIMER has been set.

❖ After power-on, press the TIMER button once and the LCD will display “ 0.0 HOUR ”. The symbol of “ ” and “ HOUR ” will blink. Press the TIMER button again and the LCD will no longer display the timer pattern, which indicates that the TIMER has been canceled.

❖ When the TIMER has been set,（i.e. the symbols of “ ” and “ HOUR ” do not blink）, press the TIMER button again and the LCD will display “ xx.x HOUR ” (Note: “ xx.x ” is the time of last setting, after power-on it will be cleared automatically) again. The symbols of “ ” and “ HOUR ” will blink continuously. At this time press the “ ▲ ” or “ ▼ ” button to reset the timer, or press the TIMER button again to confirm the timer function.

❖ The range of timed turn-on and turn-off is from 0.5hour to 24hour. Each time the “ ▲ ” or “ ▼ ” button is pressed, the set time will be increased or decreased by 0.5hour. Press and hold the “ ▲ ” or “ ▼ ” button and the set time will be increased or decreased by 0.5hour every 0.5 second. The setting range of “ ▲ ” and “ ▼ ” is from 0 to 24, which is in cycle.



Note：Content showed in the figure is the relevant display area.

3) SLEEP function setting（Fig. 4）

❖ When the PCB is running at COOL or DRY mode, after it receives the SLEEP mode signal and runs for 1 hour, the preset temperature T_{set} will be increased by 1℃. After 2 hours it will be increased by 1℃ again. T_{set} has been increased by 2℃ totally within 2 hours, then the unit will run according to this set temperature.

❖ When the PCB is running at HEAT mode, after it receives the SLEEP mode signal and runs for 1 hour, the preset temperature T_{set} will be decreased by 1℃. After 2 hours it will be decreased by 1℃ again. T_{set} has been decreased 2℃ totally within 2 hours, then the unit will run according to this sett temperature.

❖ There is no SLEEP function in FAN mode.

NOTE：There is no SLEEP button in the wired remote controller. If SLEEP mode is required, please use remote controller to operate.

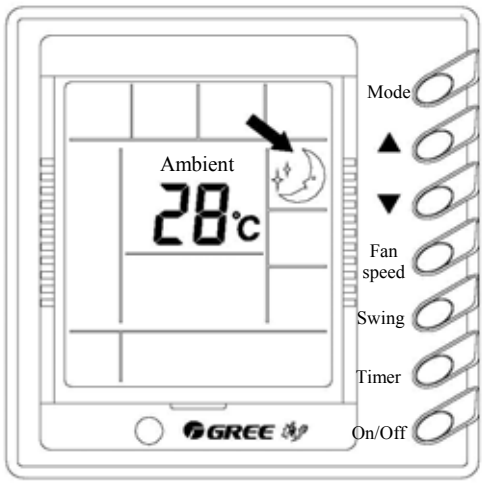


Fig 4

4) SWING（Fig.5）

❖ Press the SWING button and the SWING operation will be started.

❖ Press the SWING button again and the SWING operation will be stopped.

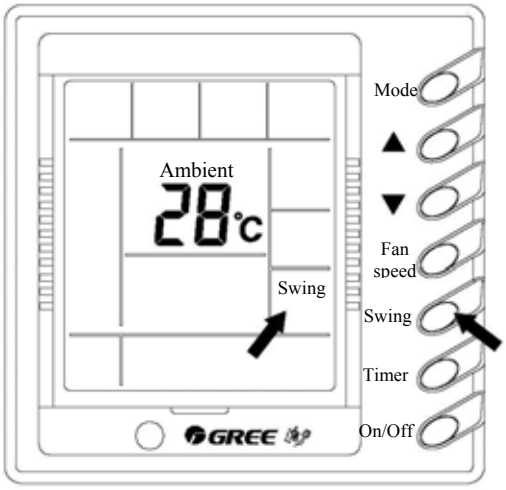


Fig 5

5) FAN SPEED control（Fig.6）

❖ Press FAN SPEED button each time, fan speed will be changed in the following order:

→ AUTO → LOW → MED → HIG →

❖ During DRY mode operation: fan speed will be set to LOW speed automatically.

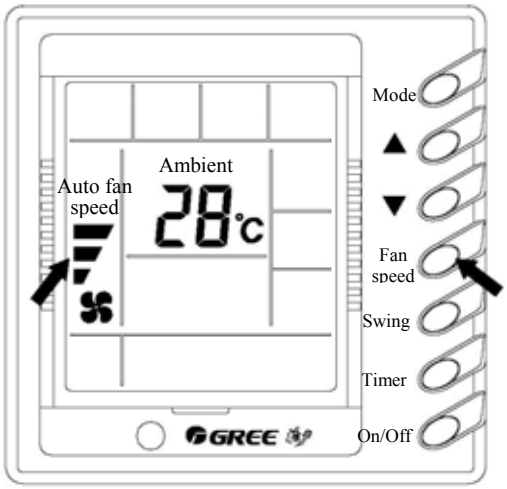


Fig 6

6) TEMPERATURE ADJUSTMENT (Fig. 7)

❖ When the time is not being set, press the “▲” and “▼” button to adjust the temperature.

▲：Increase the set temperature;

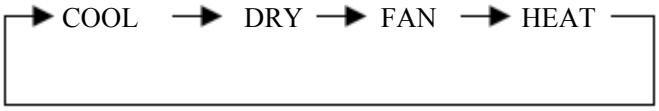
▼：Decrease the set temperature.

(Each time this button is pressed, the temperature will be increased or decreased by 1℃.)

❖ The temperature setting range is 16℃～30℃ for various modes.

7） Operational mode setting（Fig. 7）

❖ Each time the MODE button is pressed, the operational mode will change in the following order:



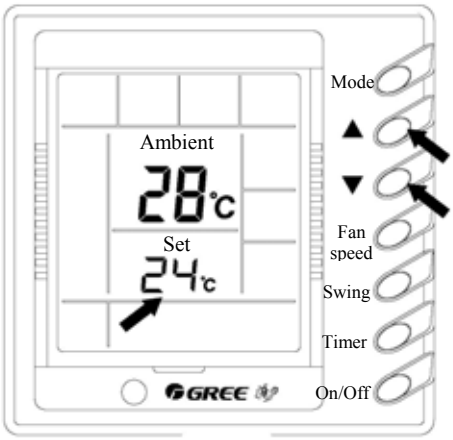


Fig 7

❖ During “COOL” mode operation, the COOL indicator will be on. The set temperature must be lower than the room temperature. If the set temperature is higher than the room temperature, the unit will not run at cool mode.

❖ During “DRY” mode operation, the DRY indicator will be on. The fan motor will run at low fan speed in a certain temperature range. The dehumidification effect of this mode is better than that in COOL mode and more energy saving.

❖ During “HEAT” mode operation, the HEAT indicator will be on. The set temperature must be higher than the room temperature; if the set temperature is lower than the room temperature, the unit will not run at HEAT mode.

❖ During “ FAN ” mode operation, the FAN indicator will be on.

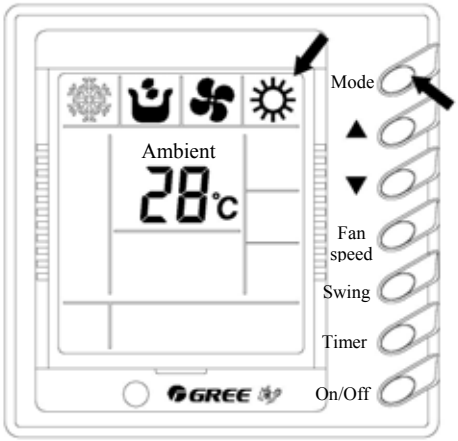


Fig 8

8） Malfunction display (Fig.9)

❖ When malfunction occurs in the system, the ambient temperature display area will show the malfunction code. The display as shown in Fig. 9 indicates compressor high-pressure protection.

❖ When malfunction occurs, except for FAN mode, the outdoor unit and fan motor will be turned off under COOL, DRY and HEAT mode, nor will it response to the functions displayed on the LCD.

❖ When the controller displays malfunction, please turn off the unit to stop the malfunction display. Ask specialized serviceman to eliminate the malfunction.

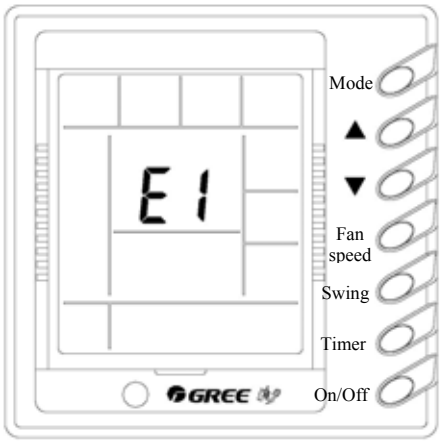


Fig 9

2.2.3Wireless remote controller

(1). Names and functions of each part of the wireless remote controller

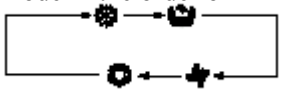
NOTE：

- Make sure there are no obstructions between the wireless remote controller and the signal receiver.
- Do not drop or throw the wireless remote controller.
- Do not let any liquid flow into the wireless remote controller.
- Do not place the wireless remote controller in a location exposed to direct sunlight or extra heat.

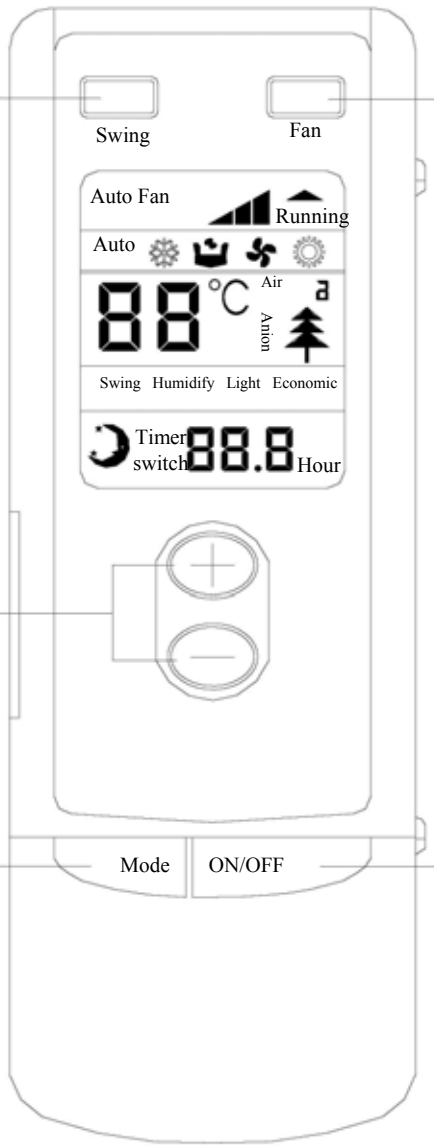
SWING button
When it is pressed, the swing blades start to swing automatically at a certain angle and stop when it is pressed again.

TEMP. button
Each time " ⊕ " is pressed, temperature will be increased by 1℃; each time "⊖" is pressed, temperature is decreased by 1℃.
Under " ❁ " mode, room temperature can be adjusted at any temperature between 16℃～30℃.
Under " ☕ " mode, 16℃～30℃.
Under " ✿ " mode, 16℃～30℃.

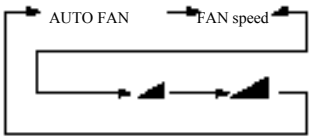
MODE button
Press this button to change the operational mode in the order of



(NOTE: There is no " ✿ " mode for cooling only unit)



FAN button
Each time this button is pressed, fan speed will change in the order of:



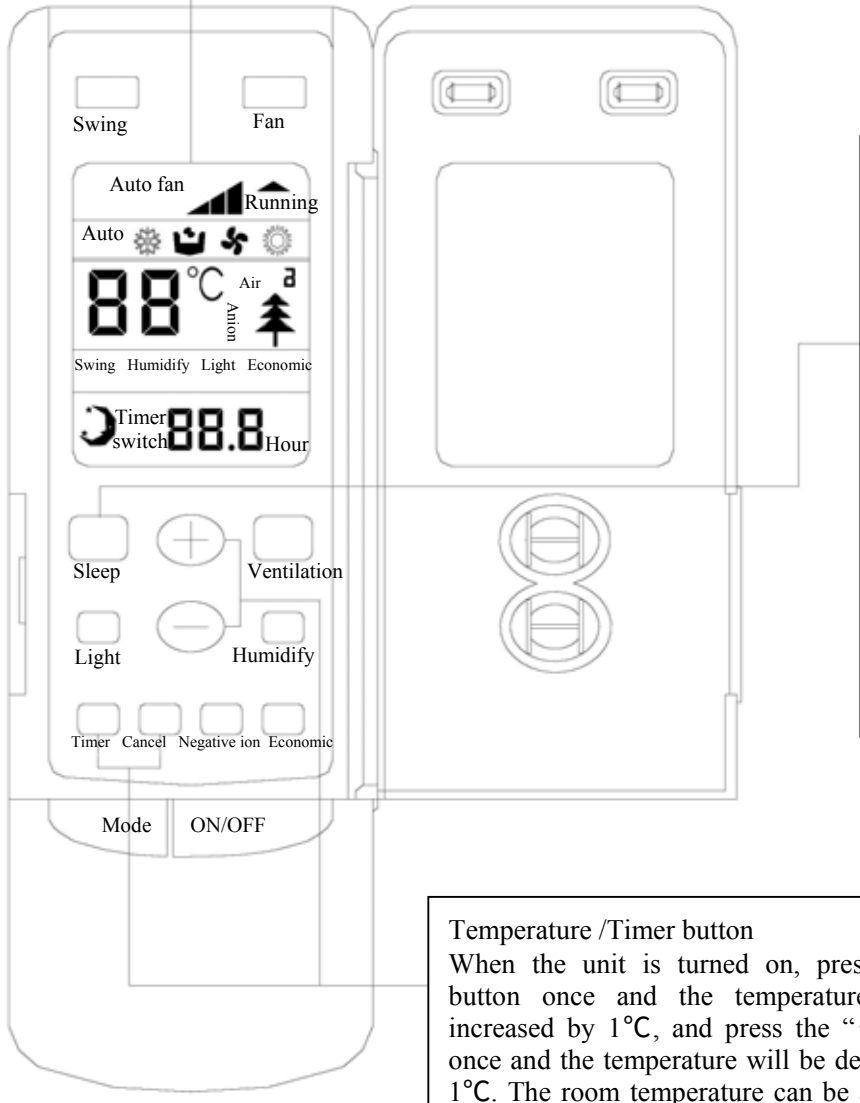
❁ COOL mode
☕ DRY mode
✤ FAN mode
✿ HEAT mode

ON/OFF button
Press this button to start the unit and press it again to stop the unit and cancel the timer at the same time.

NOTE: Pull out the power plug only after the indoor unit stops running completely. After each indoor unit receives the signal for stopping, the fan and electronic expansion valve of this indoor unit will continue to work for 20-70 seconds so as to make use of the remaining cooling or heating of the heat exchanger, as well as to get ready for the next operation. This phenomenon is something normal.

(2).**Names and function of wireless remote controller（After cover is opened）**

NOTE: This model is a general-purpose wireless remote controller, which can be applied to multiple types (functions) of air conditioning units. No descriptions will be made on the functions and buttons that are not applicable to this air conditioning system. We are sorry for the inconvenience.



LCD.
It shows the selected content.

SLEEP button
Press this button once and the unit will enter into the sleep mode. Press the button once again and the unit will quit the sleep mode. During cooling and dehumidification operations, after sleep program runs, the set temperature will be increased by 1—2℃ in a certain period of time, and the unit will then run at this set temperature. During heating operation, after sleep program runs, the set temperature will be decreased by 1—2℃ in a certain period of time, and the unit will then run at this set temperature.

Temperature /Timer button
When the unit is turned on, press the "+" button once and the temperature will be increased by 1℃, and press the "—" button once and the temperature will be decreased by 1℃. The room temperature can be adjusted at user's discretion in the range of 16-30℃. When the unit is under turn-on/turn-off state, press the "Timer" button to set the timed turn-on/turn-off for the unit. Press the "+" button once to increase the timer by 0.5 hour and press the "-" button to decrease the timer by 0.5 hour. After adjustments, press the "Timer" button once again to transmit the setting. Press the "Cancel" button to cancel the timer setting.

(3). Instructions on running operations

General steps：

1. After connecting to the power supply, press the ON/OFF button and the air conditioner unit is ready for operation.
2. Press the MODE button to select the desired operational mode.
3. Press the SWING button to make the swing blades swing at a certain angle. Press the button once again to stop the swing (ducted type indoor unit does not have swing function)
4. Set the fan speed by pressing the FAN button.
5. Press +/- button to select the desired temperature.

Optional steps：

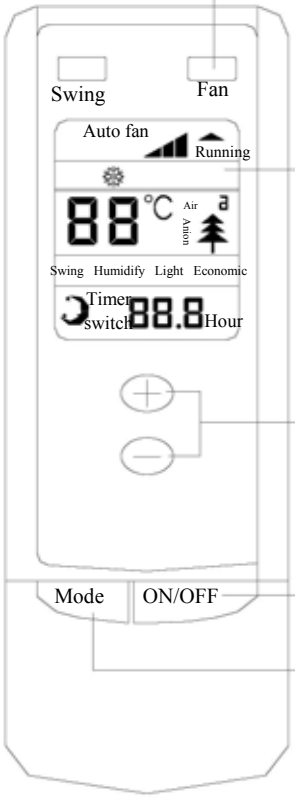
6. Press the SLEEP mode button to set the unit in the sleeping mode.
7. Press the TIMER button and then press the +/- button to set the desired operation time.

NOTE: When the chosen operational mode of the indoor unit conflicts with the operational mode of the outdoor unit, the power indicator of the hand controller will blink after 5 secs and the indoor unit will stop running. At this time, change the operational mode of the indoor unit to the one that will not conflict with that of the outdoor unit to make the operation normal. The cooling mode does not conflict with the dry mode, while the fan mode does not conflict with any mode.

(4) The operation method of wireless remote controller

COOL mode operation：

According to the temperature difference between the room temperature detected by the room temperature sensor and the set temperature, the controller will confirm whether to start cooling operation or not. When the temperature detected by the room temperature sensor is higher than the set temperature, cooling operation runs; when the temperature detected by the room temperature sensor is lower than the set temperature, cooling operation stops and the indoor fan motor runs. The range of setting is 16℃-30℃



3. Press the FAN button to set fan speed

Display operational mode and fan speed

4. Press the TEMP. Button to set the desired temperature

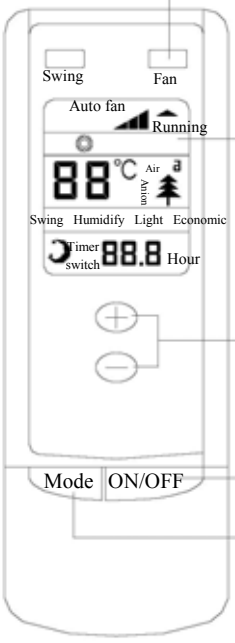
1. After connecting to the power supply, press the ON/OFF button to make the indoor unit ready for operation

2. Press the MODE button to select "❁ " mode

HEAT mode operation:

When the temperature detected by the room temperature sensor is lower than the set temperature, the compressor and indoor fan motor run, and heating operation runs; When the temperature detected by the room temperature sensor is higher than the set temperature, the compressor and outdoor fan motor stops.

The range of setting is 16℃-30℃



3. Press the FAN button to set fan speed

Display operational mode and fan speed

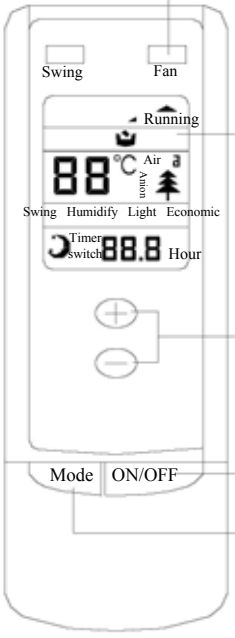
4. Press the TEMP. Button to set the required temperature

1. After connecting to the power supply, press the ON/OFF button to make the indoor unit ready for operation

2. Press the MODE button to select "" mode

DRY mode operation:

In DRY mode operation, when the temperature detected by the room temperature sensor is higher than the set temperature, cooling operation runs and indoor fan motor runs at low speed. The range of setting is16℃-30℃.



3. Press the FAN button to set fan speed

Display operational mode and fan speed

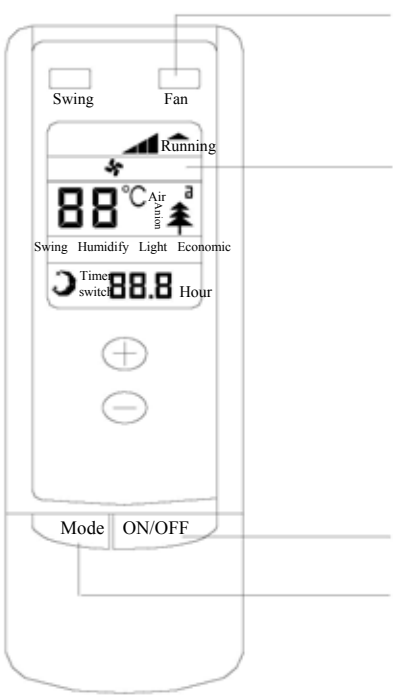
4. Press the TEMP. Button to set the temperature required

1. After connecting to the power supply, press the ON/OFF button to make the indoor unit ready for operation

2. Press the MODE button to select "" mode

FAN mode operation:

In FAN mode operation, the temperature is adjustable; the fan speed can be adjusted automatically.



3. Press the FAN button to set fan speed

Display operational mode and fan speed

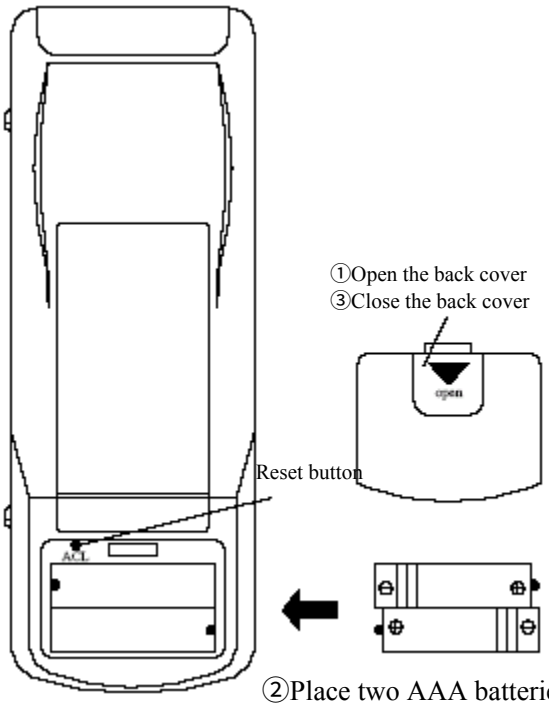
1. After connecting to the power supply, press the ON/OFF button to make the indoor unit ready for operatoin

2. Press the MODE button to select " " mode

(5). **Installation of batteries into the wireless remote controller**

The wireless remote controller uses two AAA alkali batteries

1. Slide down the back cover of the remote controller and take out the used batteries, and then replace with two new ones (in correct polarities).
2. Close the back cover of the remote controller.



②Place two AAA batteries (accessory).

1. After batteries are installed, the screen will display all functional symbols and letter code, and the controller is ready for operation after 10 seconds.
2. Battery life is about one year.
3. Do not mix new and old batteries, nor different types of batteries for use.
4. When the controller is not used for a long time, take out the batteries to prevent leakage of the batteries, which will cause malfunction.
5. Remote controller should be more than one meter's distance to TV or sound equipments.
6. Operations of the remote controller should be within its reception range (reception range is 10 meters).
7. If the remote controller is uncontrollable in case of battery replacement etc., slide down the back cover and press "ACL (Reset)" button to make it normal.

2.3 Remote monitoring

2.3.1 User instructions

2.3.1.1 System requirement

CPU: Pentium or higher.

Memory: 32M or higher

Operating system: Windows 98/NT/2000, running under Windows 95 might lead to abnormal operation.

Recommended configuration:

CPU: Pentium II or higher.

Memory: 64M or higher

Operating system: Windows 98/NT/2000.

2.3.1.2 Installation and uninstallation

Installation: Run the installation file "setup.exe" on the CD to start installation. If the operating system is not installed with "Windows Installer 2.0", the setup program will install it first and prompt to restart the computer (after that, if reinstallation is required, restart is not needed). After restart, the setup program will continue and finish the installation of Gree GMV Monitor. The default installation directory is [C:\Program Files\Gree\GMV Monitor].

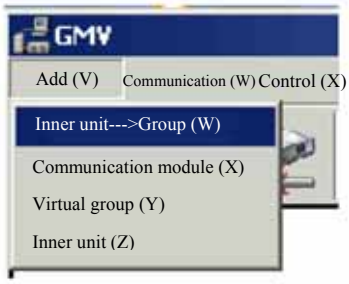
Uninstallation: Use [Control Panel -- Add/Remove program] to carry out uninstallation

2.3.1.3 Hardware connection

This software is connected with the lower-end unit (remote monitored air conditioner) in the following way: the use of RS-485 communication wire to connect with the lower-end unit can connect with 1024 sets of air conditioners in theory, and at this time cycle reading and setting is applied to the data of air conditioners.

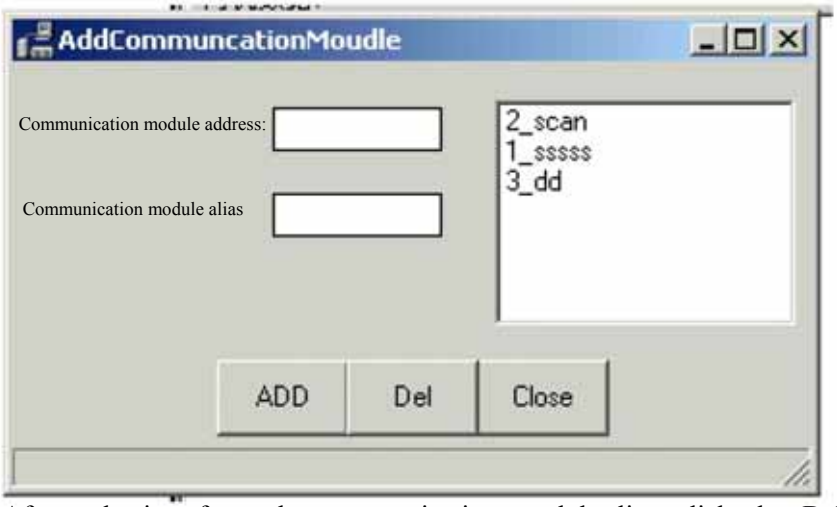
2.3.1.4 Function menu

(1) Options menu

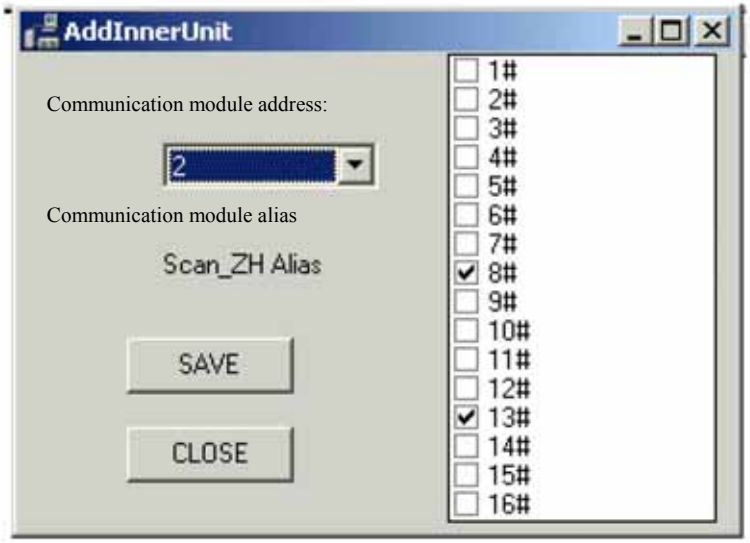


After starting the software for the first time, set the communication module correctly. Inner unit number is the critical step for use;

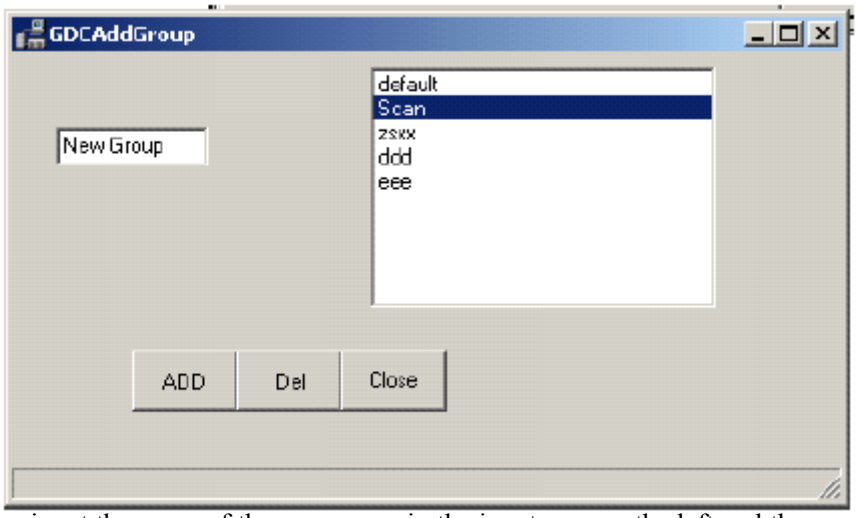
Communication module should be added first. The address of communication module must be filled using the actual address of the communication module that has been written, or it will cause communication failure; after inputting the alias of communication module, click the ADD button



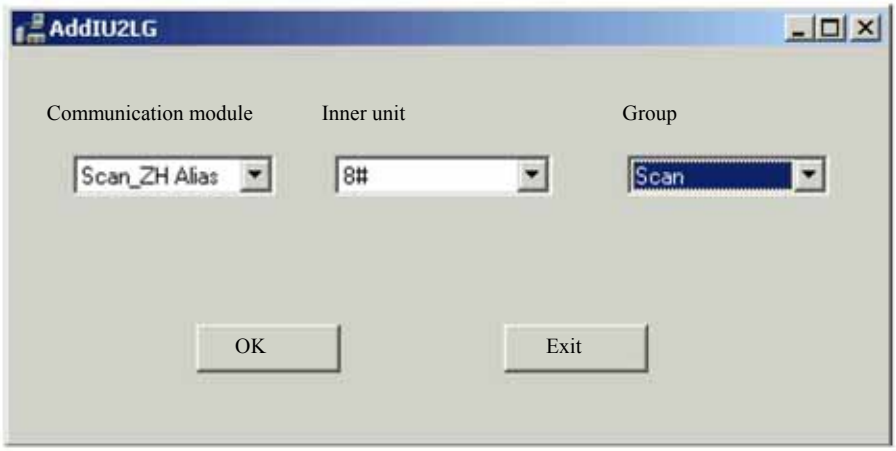
Add successfully: After selecting from the communication module list, click the Del button to delete communication module; please be careful when deleting communication module; after finishing setting communication module, click the Close button to close the communication module setting window;



At first, select communication module address from the communication module address list and the alias of the selected communication module will be displayed. Select the inner unit you want to add from the inner unit list on the right and then click the Save button to save; After adding inner unit, click the Close button to close the window;



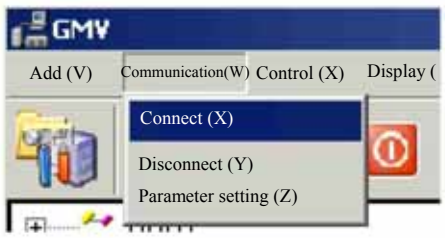
To add a new group, input the name of the new group in the input area on the left and then press the ADD button to add; to delete a group, select one of the group on the right and click the Del button to delete the group; after finishing setting the group, click the Close button to close the window;



To add inner unit to a group, select communication module and the corresponding inner unit and select the group you want to add it to, and then press "OK" to finish;

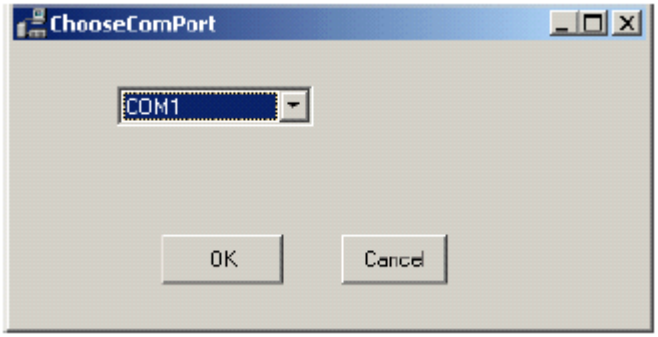
Press "Exit" to close the window;

2.3.1.5Communication menu



(1) Setting parameters

Before communication, Com port must be set correctly. Press "Parameter setting" to show the following window:

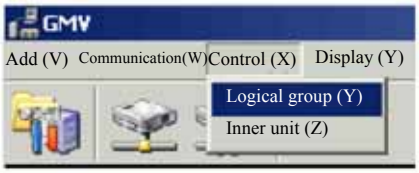


After selecting the Com port, press OK to confirm, and press Cancel to cancel the setting and close the window;

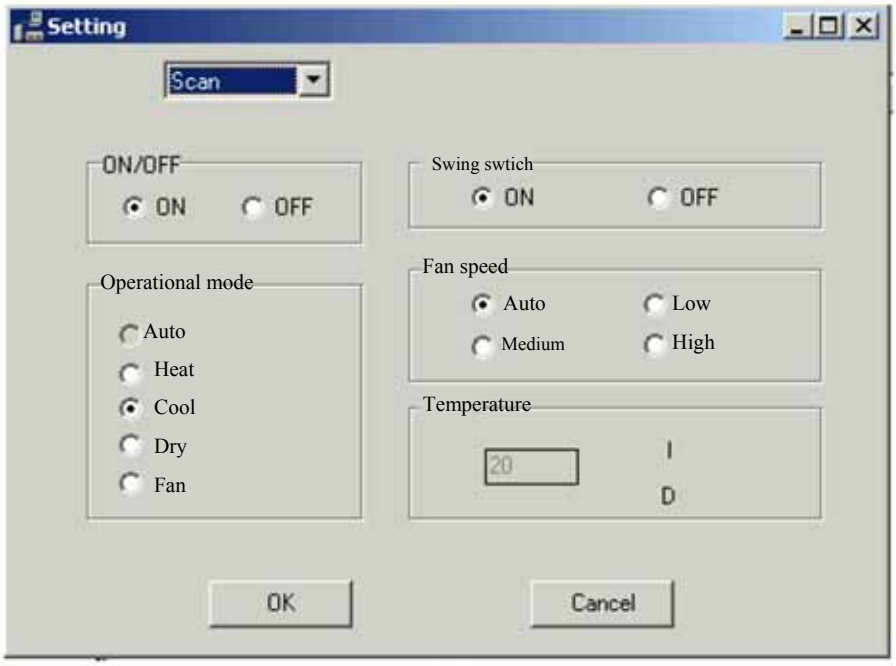
(2) Connection and disconnection

After that, you may click "Connect and Disconnect" to start and stop communication;

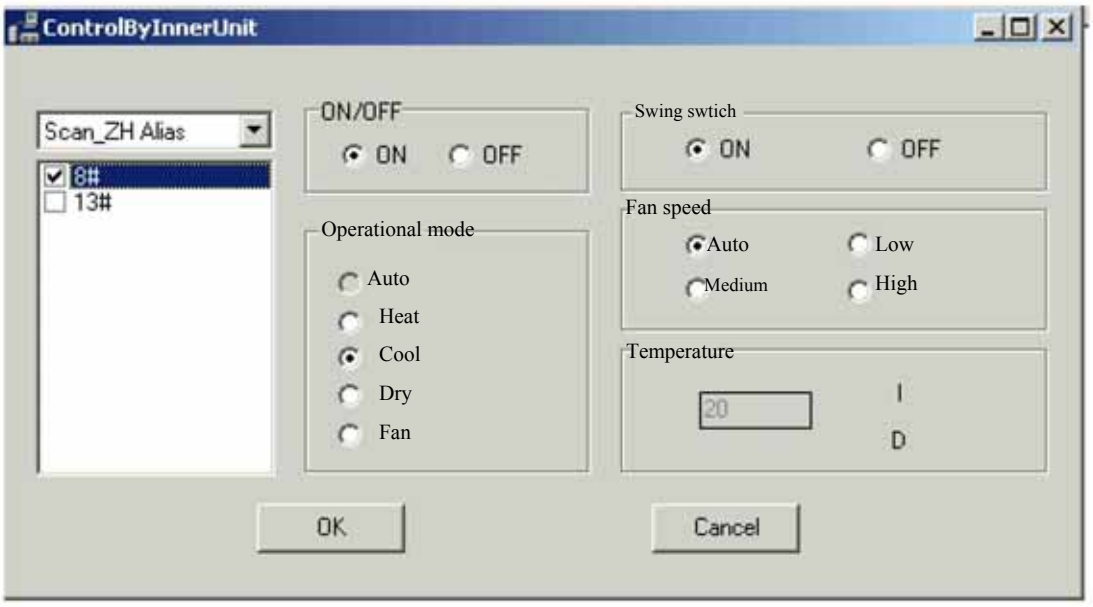
2.3.1.6 Control menu



There are two modes for control: you may choose to control one single communication module, or to control one single group; you need to set the group correctly and add inner unit to the group prior to the use of group control mode; then you can use group control;



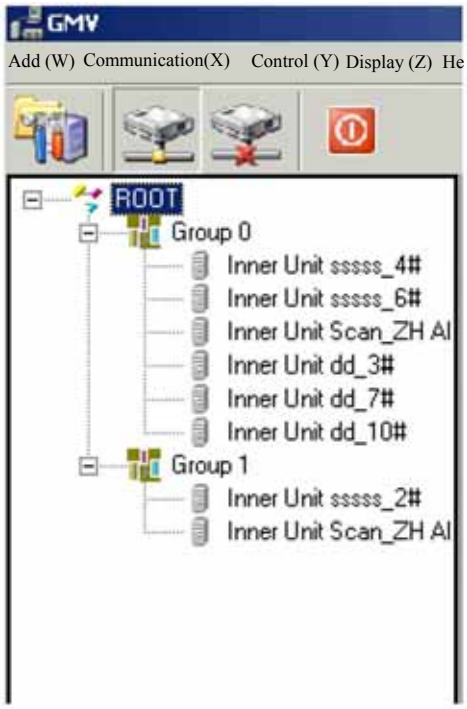
After selecting a group, you can set the control information, and then you can control all inner units of this group at discretion;



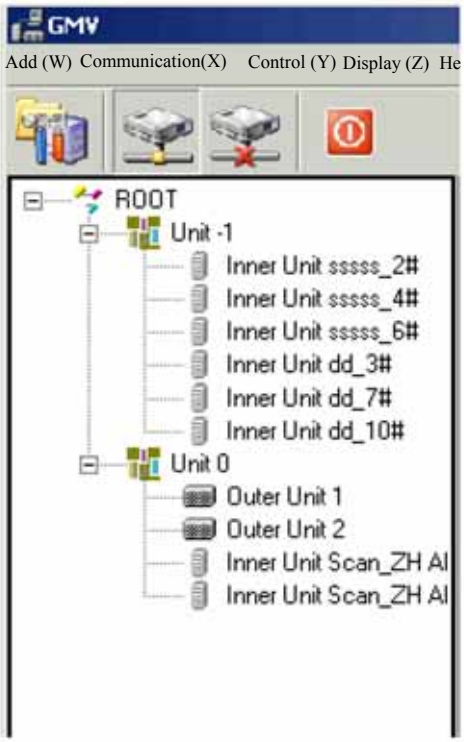
After selecting communication module, you can select the inner unit to be controlled. You can control one unit at one time, or multiple units at one time; after setting the control information, you can press the OK button to control the air conditioners.

2.3.1.7 Display menu

Air conditioners can be displayed in two ways: it can be displayed by group, or by communication module; the display by group is as follows:



In case that inner unit is not put into the user-defined group, it will be put into Group 0 by default;



The display by communication module is as follows: inner units corresponding to communication modules that are not sent successfully are put into Unit -1 by default;

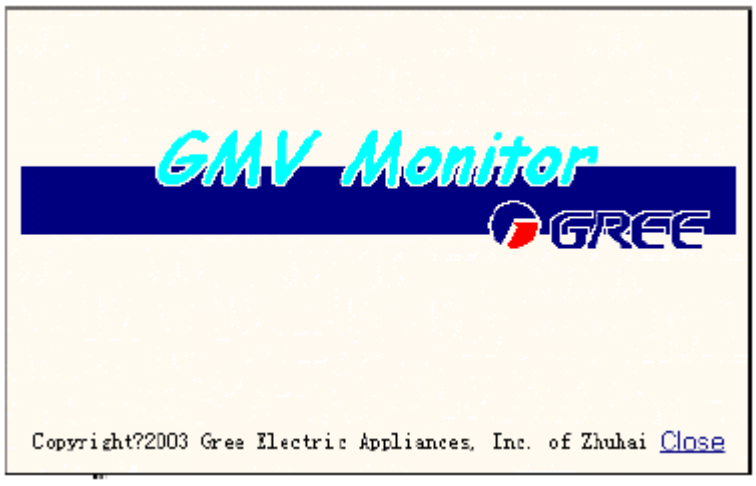
After communication starts, restart the program and you can see something as shown above;

After selecting inner unit, you can see the operating status of this inner unit displayed in the display area on the right; operating information is refreshed in real-time and each time communication is finished, the most updated operating status information will be displayed; if the selected inner unit does not exist or communication fails, you will see a prompting message;

Data of outer unit is not displayed;

2.3.1.8 About menu

The description about the copyright of the software is as follows:

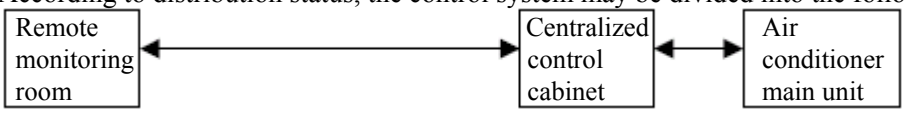


Press Close to close;

2.3.2 Installation instructions

I.Composition of remote monitoring system

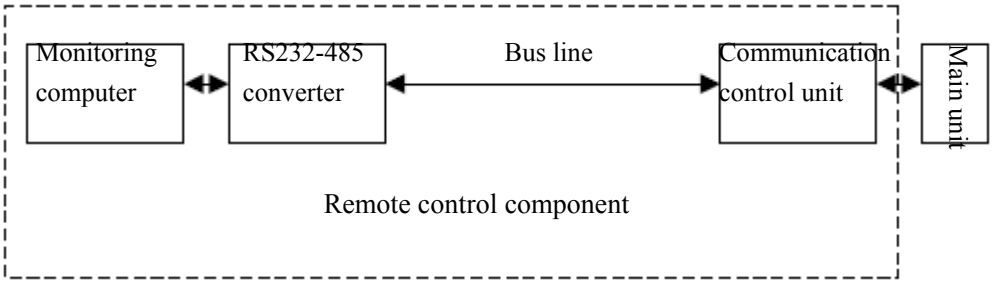
According to distribution status, the control system may be divided into the following frames:



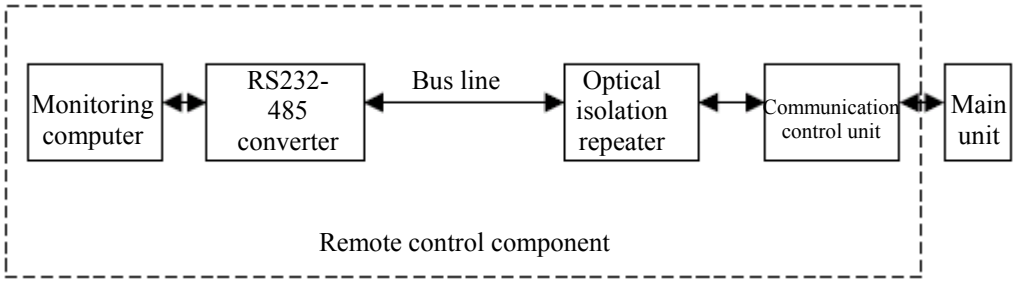
In the system, four-core five class twisted pair is used (two-core can also be used, but four-core is recommended) for connection. Equipments provided inside "remote monitoring room" are mainly general PC, RS232-485 converter and 220V power supply system; "centralized control cabinet" is used for the installation and position of such equipments as communication control unit etc., which will be carried out by the construction party in the project. Our company will only provide necessary equipments such as communication control unit, optical isolation repeater, power transformer etc.

In actual project, equipment floor should be determined according to the quantity of air conditioner main unit, floor characteristics and the installation site of main unit. Equipment floor refers to the place where air conditioner main units are centralized installed and positioned. For example, if 30 sets of air conditioner main units are installed at the terrace on the left side of 20th floor, these 30 sets of main units belong to one equipment floor. A centralized control cabinet must be built indoor for each equipment floor to centralize the position and power supply for remotely controlled equipments.

When the quantity of main units is less than 64 sets, remote monitoring system mainly consists of four components: monitoring computer, communication control unit and RS232-485 converter, as is shown in the following diagram. For detailed wiring diagram please refer to Fig. 5 in "Wiring Schemes for Remote Monitoring of Commercial Air Conditioners".



When the quantity of main units is greater than 64 sets, remote monitoring system mainly consists of five components: monitoring computer, communication control unit, RS232-485 converter and optical isolation 485 repeater, as is shown in the following diagram. For detailed wiring diagram please refer to the Figure 1 in "Wiring Schemes for Remote Monitoring of Commercial Air Conditioners". When the quantity of main units is less than 64, optical isolation 485 repeater can also be used to achieve better performance.



II.Connection method for each component

1. After the installation of monitoring software, the monitoring computer is connected with the RS232-485 converter through 9-core communication wire S1 (with converter)
2. RS232-485 converter is connected with telephone three-way connector (supplied by user) through communication wire S2 (supplied by GREE)
3. Telephone three-way connector (supplied by user) is directly connected through communication wire S5 (supplied by user)
4. (1) (in case that optical isolation repeater is present) connected with optical isolation 485 repeater though communication wire (supplied by GREE); then connected with connection board through S2;

(2) (in case that optical isolation repeater is not present) connected with connection board through communication wire S3

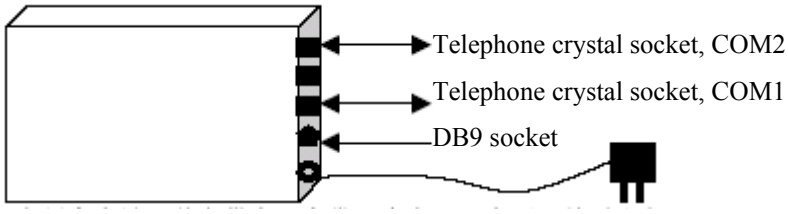
5. Each communication control unit is connected with connection board through communication wire S4 (supplied by GREE)
6. Communication control unit is connected with telephone three-way connector through communication wire S6, and the other two ends of this telephone three-way connector are connected with air conditioners. For detailed wiring diagram please refer to the Figure 4 and Figure 3 in "Wiring Schemes for Remote Monitoring of Commercial Air Conditioners".

III. Wiring work in initial stage

Initial stage of wiring work follows the progress of the whole project, which mainly includes network bus wiring and the building of centralized control cabinet. Specific contents are as follows:

1. Confirm the position of the centralized control cabinet and build the centralized control cabinet, which is designed by the construction party. Centralized control cabinet is used for placing communication control unit and optical isolation repeater, so a wind-resistant and rainproof indoor environment must be selected.

   The apparent size of each communication control unit is 16×11×3 (length×width×height), as shown in the following diagram:



   Each communication control unit and optical isolation are supplied with power separately and are equipped with a transformer power, so a 220V AC socket should be provided for power supply.
2. Lay communication wire S6 from outdoor unit to centralized control cabinet.
3. Lay communication wire S5 from centralized control cabinet to monitoring room. Note: S3 is provided with the optical isolation repeater as a short line, so S5 should be laid to the position of the centralized control cabinet and some margin should be left.

Note:

The transmittability of each communication wire clamped with crystal head must be ensured and pass special transmittability test.

Communication signal wire cannot be put in the same trunking with other industrial-frequency strong-current line or high-frequency signal wire; nor even bound with such type of strong-interference signal wire for wiring. For experience, at least 15cm must be kept between this communication wire and industrial-frequency strong-current line. The min. distance for other high-frequency signal wires should be calculated according to signal frequency and voltmeter; in case that no other wiring method is available and the communication signal wire must be bound with such type of strong-interference signal wire, shielding steel tube must be added by the construction party.

If proper communication wire is not available in the market, please contact our company to purchase bundles of communication wire (such as 500m and 1000m) and then clamp crystal head.

IV.Debugging work in later stage

After the fitment for a building is finished, water supply and power supply are normal and all equipments are ready for use, the debugging work in the later stage can be carried out. At this time, the backbone network of this monitoring system has been laid and work required is as follows:

1. Place the communication control unit and repeater into the centralized control cabinet and connect properly the connection line of centralized control cabinet through a 1-to-32 multi-connection plugboard (or multiple telephone three-way connectors) and S2, S3 and S4.
2. Connect properly the RS232-485 converter in the remote control room and connect the RS232 signal output from the converter to the DB9 serial port of computer through S1.
3. Install corresponding software on the computer in the remote control room. Run the software to perform software debugging. The main work of software debugging is to set unit address and test the communication data of unit. For specific methods please refer to the help document supplied with the software.

V.Required accessory list and requirements

1. A set of remote monitoring software CD

2. A set of communication module is provided for each main unit. Each set includes one communication control unit, one power transformer and one communication wire S4. (S4 number 40030093, drawing number TY.15.05.144)
3. One set of optical isolation RS232-485 converter. Each set includes one optical isolation RS232-485 converter (material number: 46010701), one communication wire S1 (supplied with the converter) and one communication wire S2 (number 40010397, drawing number TY.15.05.180)
4. Several sets of optical isolation repeaters. Number of sets is determined by the number of air conditioner main units and the installation site. Each set includes one optical isolation repeater (46010702), one communication wire S2 (number 40010397, drawing number TY.15.05.180) and one communication wire S3 (number 40030095, drawing number TY.15.05.182)
5. Several 1-to-32 multi-connection plugboards of telephone jack (number: 30226035), which can be replaced by several telephone three-way connectors and three-way connectors instead.
6. Communication wire S5 and S6 are provided and are clamped with crystal head by users according to the actual length of onsite construction. One-to-one connection of four-core class five twisted pair is adopted, where the middle two cores are in one pair and the other two cores are in one pair.Four-core five class twisted pair is available in the market, or purchased from our company.

2.3.3 Wiring schemes

Description:

1. This group of diagrams only provides the connection method for signal wire.
2. Each communication control unit, communication repeater and signal converter must be connected to a 220V external power supply through the supplied transformer and power socket is required!
3. Communication wire for remote control is required for the addition of S1~S6 six types, among which only communication wire S5 and S6 are configured by users according to the actual length of onsite construction (remember to leave some margin to clamp crystal head), and others are supplied by GREE.
4. The clamping method of communication wire S5 and S6 is shown as Figure 2, where one-to-one connection method is adopted and the middle two cores of the crystal head are in one pair, and the other two cores are in one pair (same as that of S4).
5. The two ends of communication wire S1 are DB9 connector, which is supplied with RS232-485 converter
6. One end of communication wire S2 is telephone crystal head while the other is DB9 female connector
7. One end of communication wire S3 is telephone crystal head while the other is DB9 male connector
8. Figure 1 is the connection diagram from the communication control unit to the monitoring room (If number of air conditioner main units is greater than 64, the number of centralized control cabinet and optical isolation repeater should be determined by the number of units and their positions. This diagram is an example where three separate places are used to place air conditioner main units)
9. Figure 2 is the clamping method for communication wire S4, S5 and S6
10. Figure 3 is the telephone three-way connector and the plug direction
11. Figure 4 is the connection diagram between indoor unit and communication control unit. Please note that the definitions of signal wire 485A and 485B of air conditioner indoor and outdoor units of different models might be different, so one-to-one relation must be ensured during connection, i.e. A to A, B to B and inverse connection is not allowed
12. Figure 5 is the connection diagram from communication control unit to monitoring room (number of main units is less than 64). The scheme shown in Figure 1 can also be adopted

Note:

1. The clamping and wiring of communication wire S5 and S6 must follow the project progress of the building
2. Centralized control cabinet is installed in an indoor wind-resistant and water-proof greenhouse environment

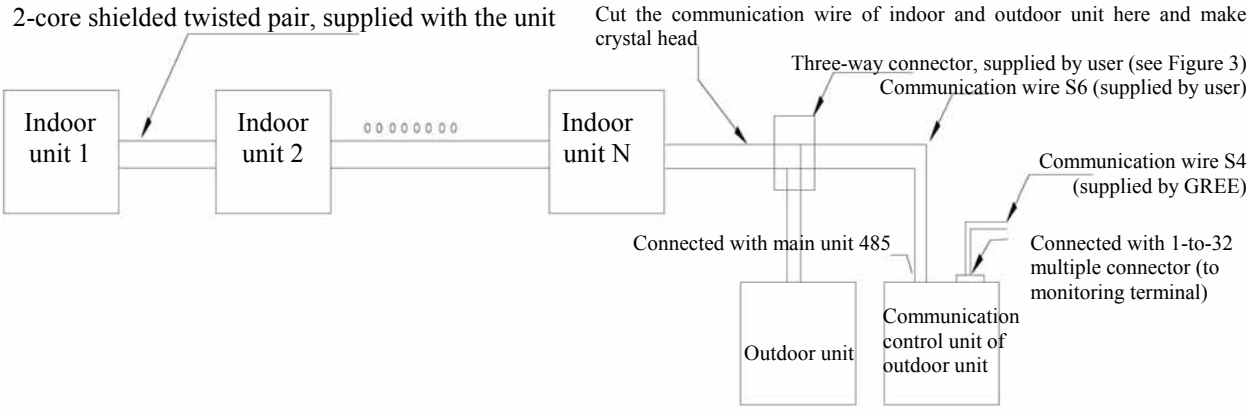
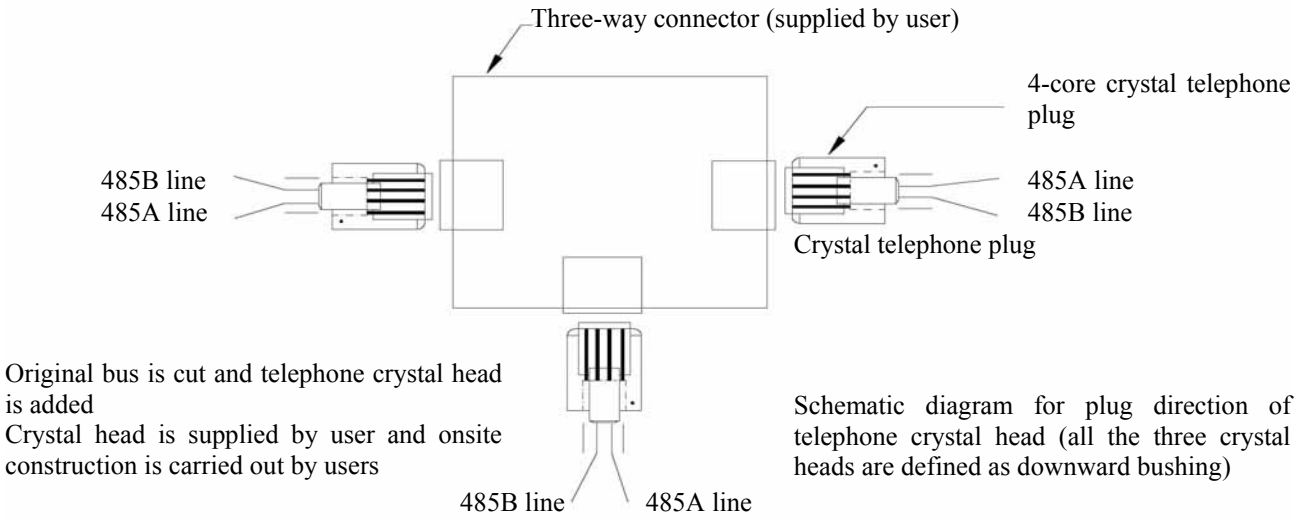


Figure 4: Connection diagram between indoor unit and communication control unit



Original bus is cut and telephone crystal head is added
Crystal head is supplied by user and onsite construction is carried out by users

Schematic diagram for plug direction of telephone crystal head (all the three crystal heads are defined as downward bushing)

Figure 3 Telephone three-way connector and the plug direction

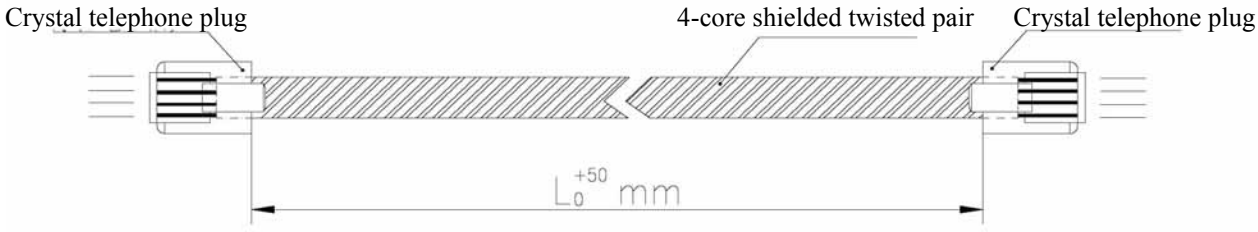


Figure 2 Clamping method for communication wire S4,S5 and S6

Wiring diagram of remote monitoring at the top floor (centralized control cabinet at the top floor)

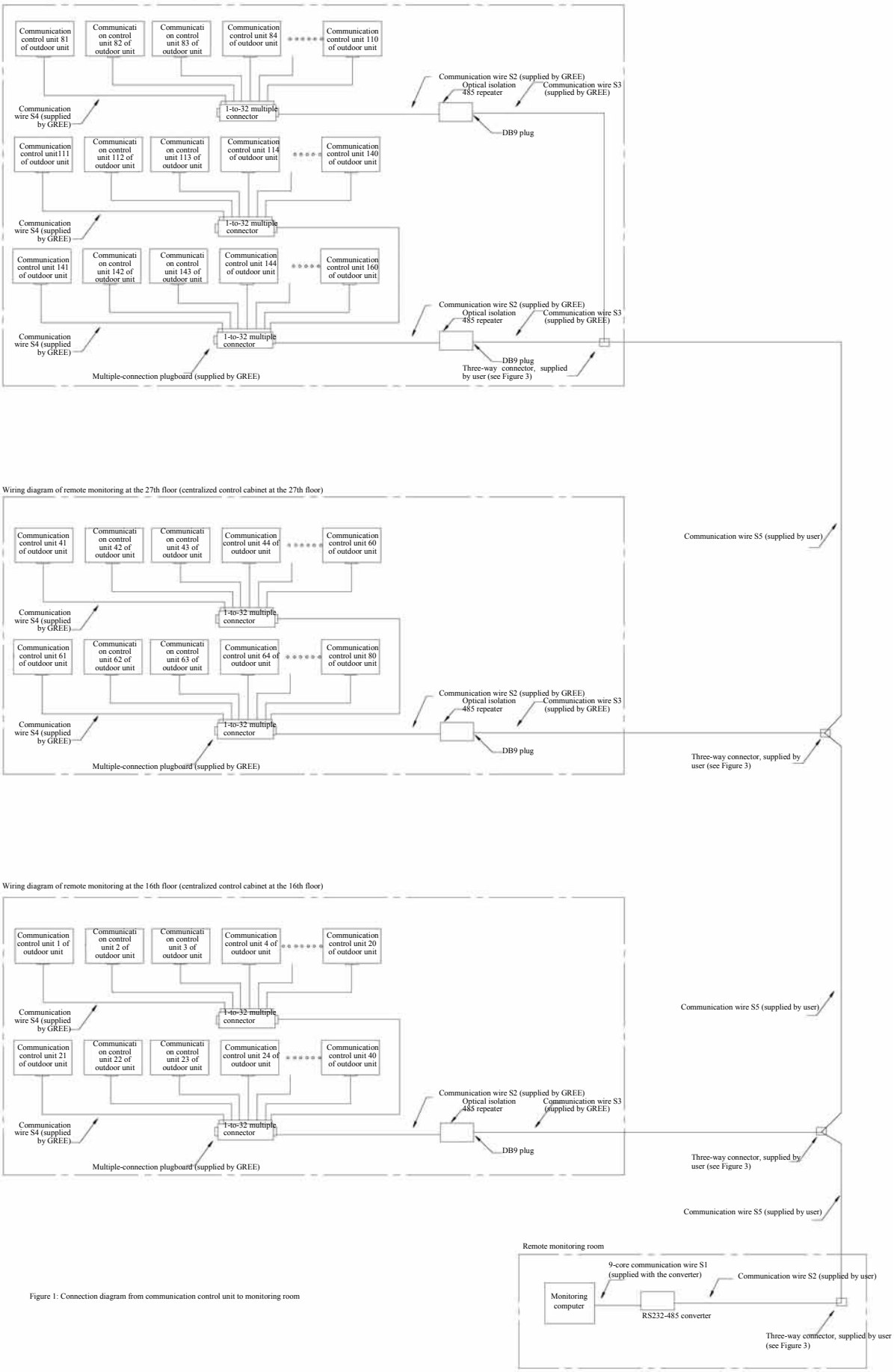


Figure 1: Connection diagram from communication control unit to monitoring room

Wiring diagram of remote monitoring at the equipment floor (centralized control cabinet at the equipment floor)

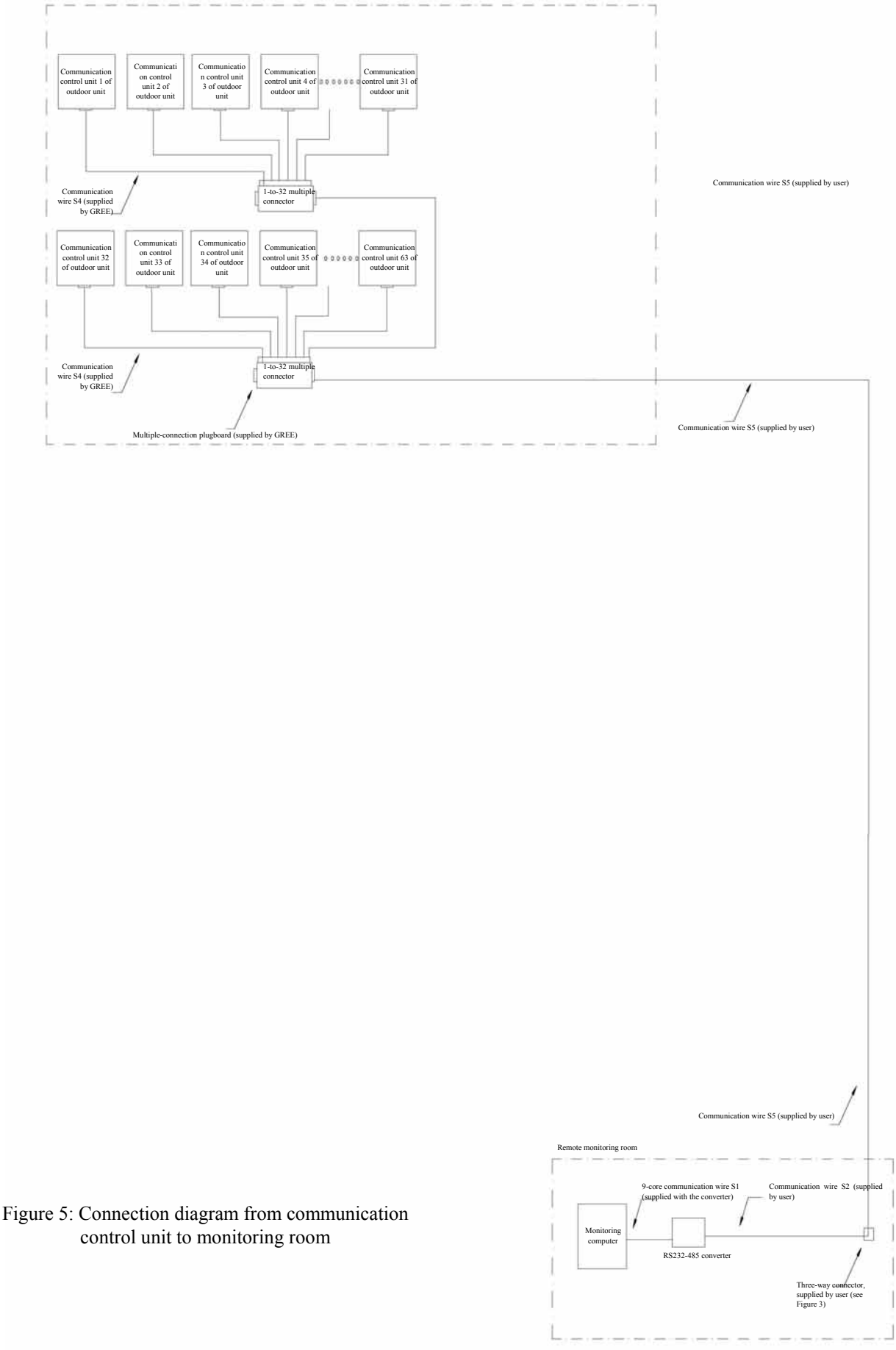


Figure 5: Connection diagram from communication control unit to monitoring room

2.3.4 Description of signal access

This chapter is the supplementary instructions for the "Wiring Scheme", which explains the signal access points of various air conditioner models (the place where the wire is cut to gain signal and make crystal head)..The access points of Figure 4 in "Wiring Schemes for Remote Monitoring of Commercial Air Conditioners" are shown as follows:

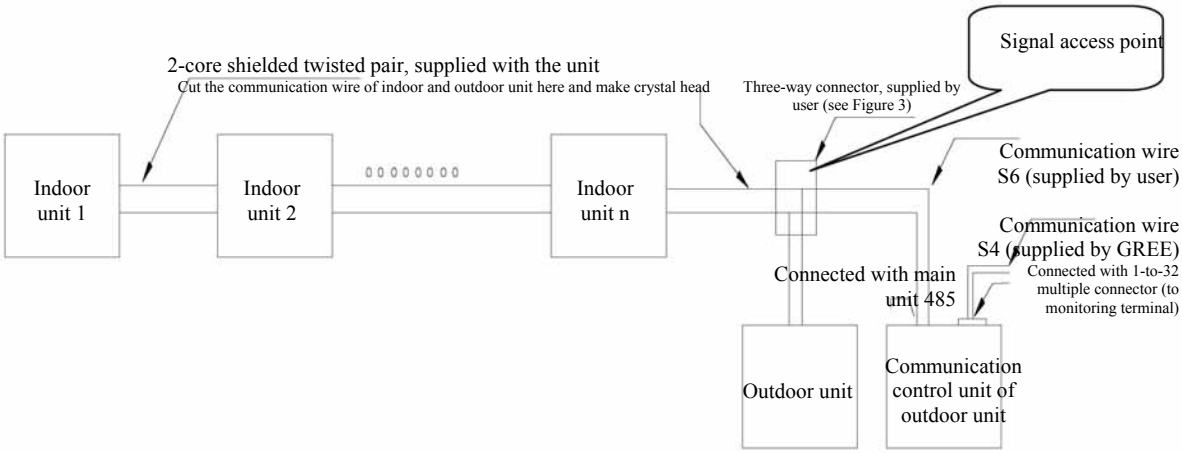
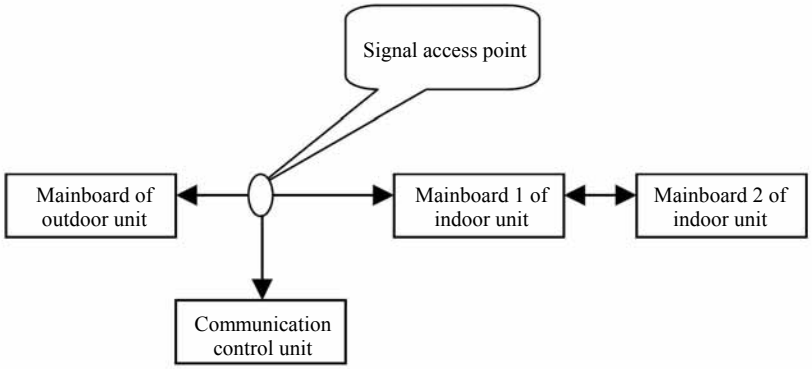
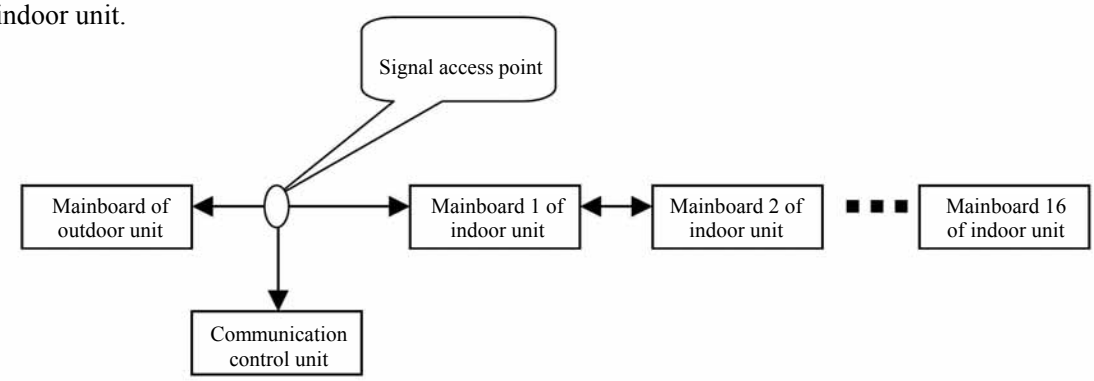


Figure 4 Connection diagram between indoor unit and communication control unit

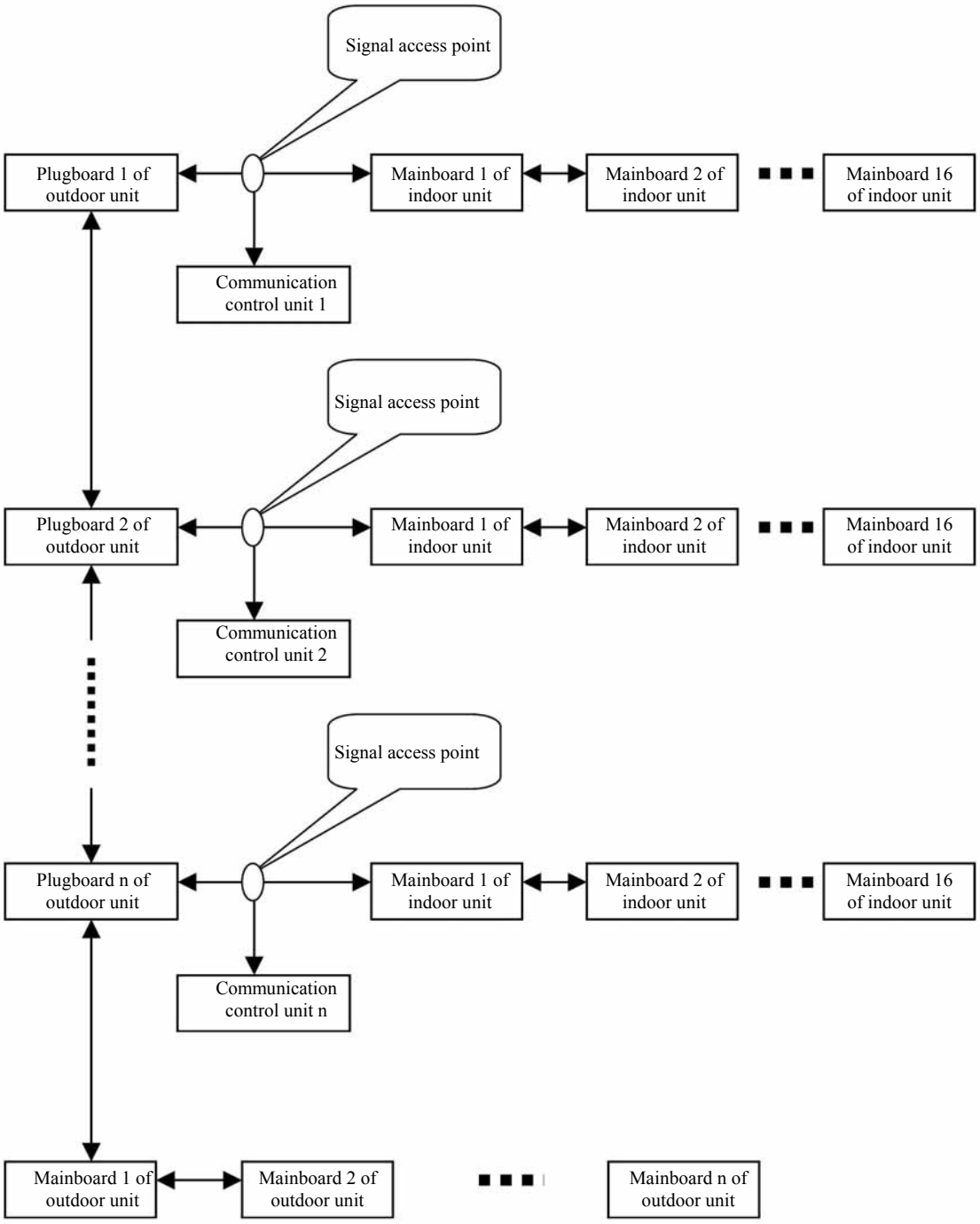
1. Access point for intelligent multi variable one-to-two: between mainboard of outdoor unit and mainboard of indoor unit.



2. Access point for digital multi variable one-to-sixteen: between mainboard of outdoor unit and mainboard of indoor unit.



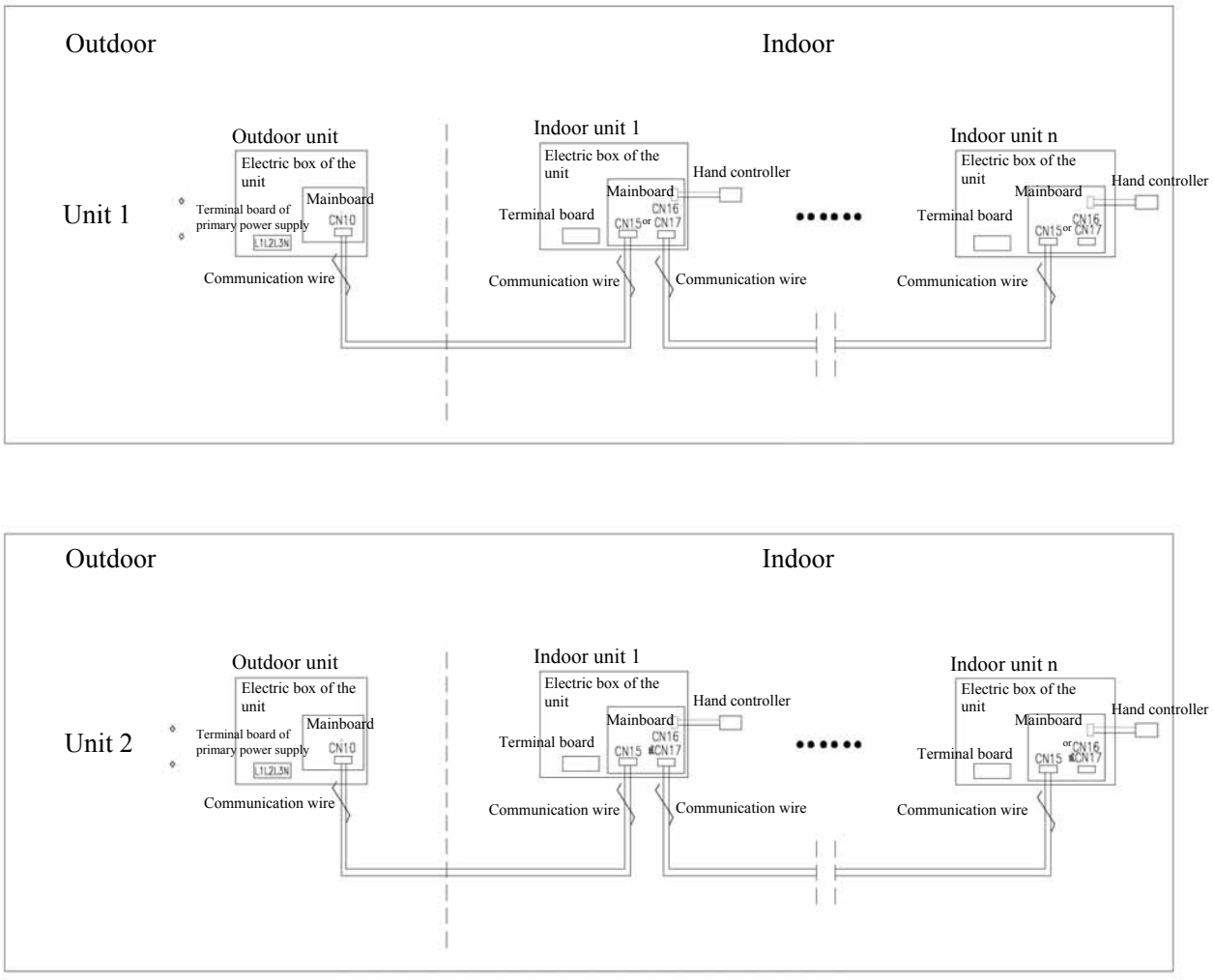
3. Access point for digital multi variable one-to-thirty-two and above: between plugboard of outdoor unit and mainboard of indoor unit.



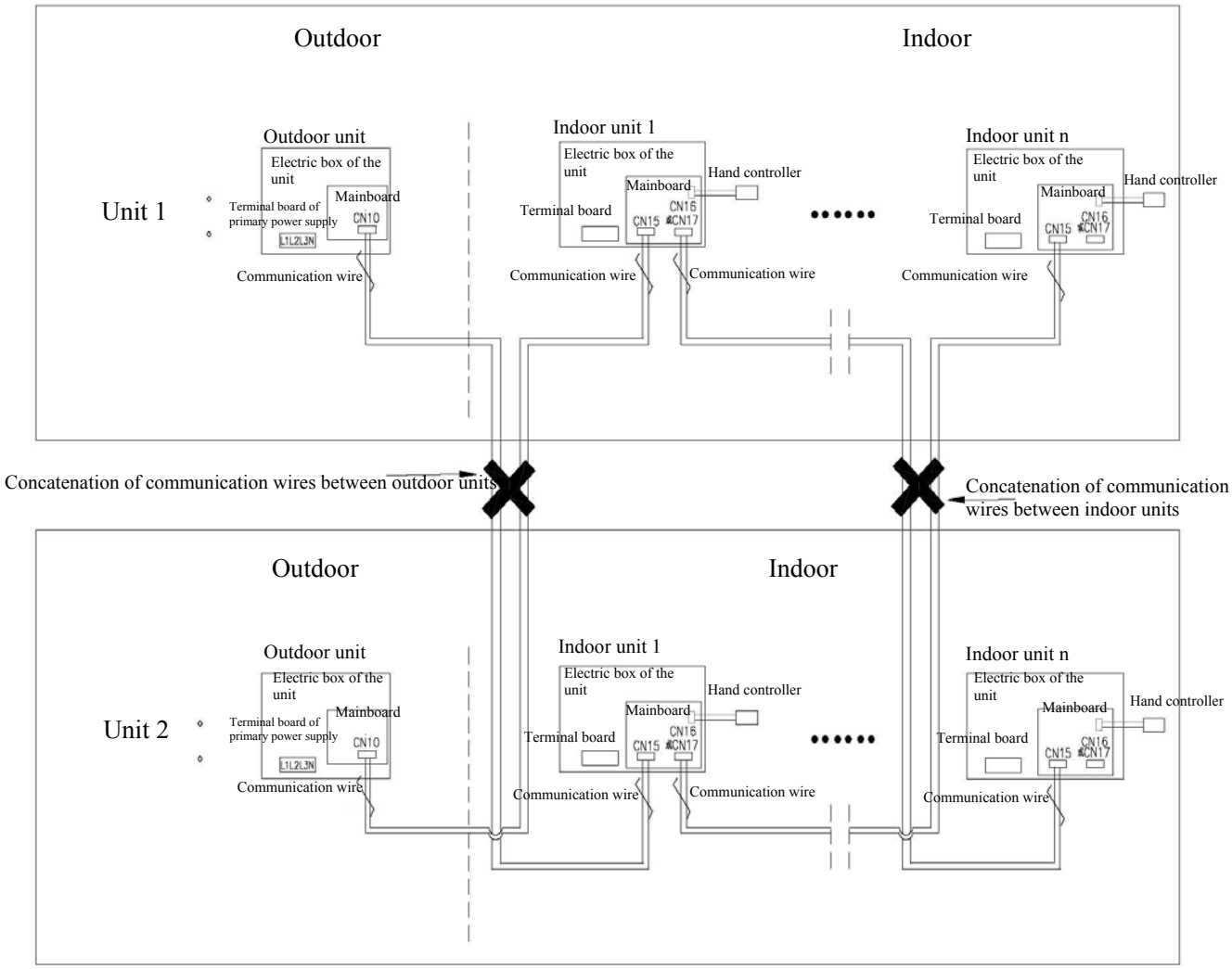
2.4 Wiring for communication wire

★ To prevent mutual interference between strong current and weak current, power cord and communication wire should be wired separately during construction. Power cord and communication wire are installed inside bushing or trunking (PVC pipe can be used) and distance between these two bushings should be greater than 20cm.

1. Communication wire is required to follow the refrigerant pipeline for wiring and special trunking should be used to avoid wiring with power cord.
2. Since the supplied communication wire is quite long (considering the max. length between outdoor unit and indoor unit), the outdoor unit is supplied with a 50-meter-long communication wire and indoor unit with a 30-meter-long communication wire. Unnecessary wire of outdoor unit should be placed inside electric box or trunking, and unnecessary wire of indoor unit should be placed inside trunking.
3. When pulling communication wire inside trunking, do not use excessive strength to avoid pulling apart the communication wire.
4. When there are multiple sets of multi variable units, communication wires of outdoor units can be wired together, but they must be differentiated. Marks can be used to stick on the two ends of the communication wire. Avoid concatenation of communication wires between multi variable units.



Connection of communication wires of multiple sets of multi variable units (as correct)



Connection of communication wires of multiple sets of multi variable units (as wrong)

2.5 Codes switch and capacity codes setting

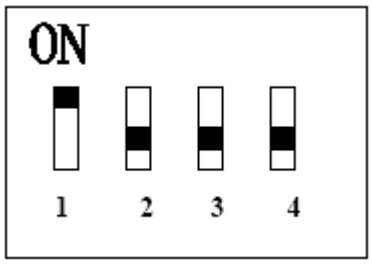
Digital multi variable air conditioner unit is a unit that can connect with 2-32 indoor units. For the communication between outdoor unit and every indoor unit, we set different addresses to different indoor units so that the outdoor unit would recognize every indoor unit. This is codes switch. The aim of codes switch is to recognize the signal transmitted from the indoor unit of what address code so that it can send out the control signal.

Notice to codes switch:

1. The code of hand controller should be the same with the code of corresponding indoor unit.
2. Every code should stand for only one indoor unit (hand controller), and they should not be the same with others, otherwise it would cause control invalidation.

2.5.1 Capacity code setting of outdoor unit

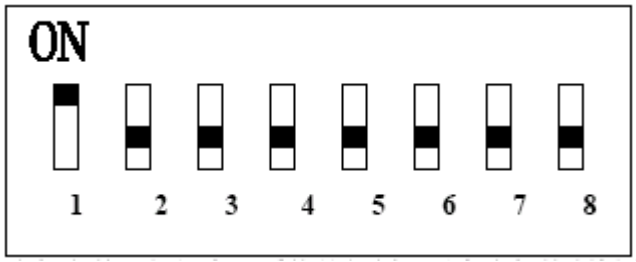
The code switch (DIP switch) of outdoor unit has 4 digits. The setting method is the same with that of indoor unit. The first to fourth digit is capacity code switch and ON is 0 which has been set before leaving the factory, and users cannot change it at will. Schematic diagram of code switch is shown below:



The corresponding pin on the 4-digit DIP switch				**Corresponding capacity**（KW）
1	2	3	4	
1	0	0	0	30
1	0	0	0	25
0	0	1	0	20
1	0	1	0	15
0	1	1	0	10
Note: When switched to ON, it shows "0"				

2.5.2 Address and capacity code setting of indoor unit

The code switch (DIP switch) of indoor unit has 8 digits. The first to fourth digit is address code switch and On is 0. The fifth to eighth digit is capacity code switch, which has been set before leaving the factory, and users cannot change it at will. Schematic diagram of code switch is shown below:



Before installing the indoor unit, set the code switch 1-4 digit on the control board of indoor unit to assign address of each indoor unit according to the layout of the air conditioning system.

Address setting of indoor unit is shown in the following table:

(1) **The corresponding pin on the 8-digit DIP switch**

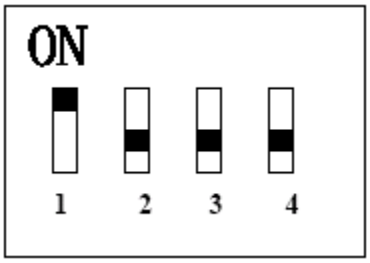
The corresponding pin on the 8-digit DIP switch									
8	7	6	5	**Corresponding capacity** (kW)	4	3	2	1	Corresponding address
0	0	0	1	2.5	0	0	0	0	1
0	0	1	0	3.0	0	0	0	1	2
0	0	1	1	3.5	0	0	1	0	3
0	1	0	0	4.0	0	0	1	1	4
0	1	0	1	4.5	0	1	0	0	5
0	1	1	0	5.0	0	1	0	1	6
0	1	1	1	6.0	0	1	1	0	7
1	0	0	0	6.5	0	1	1	1	8
1	0	0	1	7.0	1	0	0	0	9
1	0	1	0	7.5	1	0	0	1	10
1	0	1	1	9.0	1	0	1	0	11
1	1	0	0	10.0	1	0	1	1	12
1	1	0	1	11.0	1	1	0	0	13
1	1	1	0	12.0	1	1	0	1	14
1	1	1	1	12 .5	1	1	1	0	15
					1	1	1	1	16
Note: When switched to ON, it shows "0".									

(2) **The corresponding pin on the two 4-digit DIP switches**

The corresponding pin on the two 4-digit DIP switches									
Capacity						Address			
4	3	2	1	**Corresponding capacity** (kW)		4	3	2	1	Corresponding address
0	0	0	1	2.5		0	0	0	0	1
0	0	1	0	3.0		0	0	0	1	2
0	0	1	1	3.5		0	0	1	0	3
0	1	0	0	4.0		0	0	1	1	4
0	1	0	1	4.5		0	1	0	0	5
0	1	1	0	5.0		0	1	0	1	6
0	1	1	1	6.0		0	1	1	0	7
1	0	0	0	6.5		0	1	1	1	8
1	0	0	1	7.0		1	0	0	0	9
1	0	1	0	7.5		1	0	0	1	10
1	0	1	1	9.0		1	0	1	0	11
1	1	0	0	10.0		1	0	1	1	12
1	1	0	1	11.0		1	1	0	0	13
1	1	1	0	12.0		1	1	0	1	14
1	1	1	1	12.5		1	1	1	0	15
						1	1	1	1	16
Note: When switched to ON, it shows "0"									

2.5.3 Address code setting of wired remote controller

The address code switch (DIP) of the hand controller circuit board diagram has 4 digits, and the setting method is similar with that of indoor unit.



Disassemble the plastic cover of the hand controller and find the 4-digit code switch (DIP switch) on the control board of the hand controller. The address code method is similar with that of address code of indoor unit. **The address code of wired remote controller must correspond to that of its connected indoor unit**.

Address setting of hand controller is shown in the following table:

The corresponding pin on the 4-digit DIP switch				
4	3	2	1	Corresponding address
0	0	0	0	1
0	0	0	1	2
0	0	1	0	3
0	0	1	1	4
0	1	0	0	5
0	1	0	1	6
0	1	1	0	7
0	1	1	1	8
1	0	0	0	9
1	0	0	1	10
1	0	1	0	11
1	0	1	1	12
1	1	0	0	13
1	1	0	1	14
1	1	1	0	15
1	1	1	1	16
Note: When switched to ON, it shows "0"				

Chapter 3 Running test and malfunction analysis

3.1 Item list for running test of units

Project name:_____ Units model: _____ Testing date:_____

Communication wire	Power cord and communication wire are wired separately, with more than 10cm distance	☐ Yes ☐ No Other:_____
	Mark the communication wires of different units for multiple sets of units	☐ Yes ☐ No Other: _____
	Whether the shielded communication wire supplied with units are adopted	☐ Yes ☐ No Other: _____
Address code	Whether address codes of indoor units in the same set of system are unique	☐ Yes ☐ No Other:_____
	Whether the address code of wired remote controller is the same with that of the corresponding indoor unit	☐ Yes ☐ No Other:_____
	Whether the address codes of all units and the corresponding units in the system are numbered and recorded for reference	☐ Yes ☐ No Other:_____
Electrical installation	Whether capacity of power supply meets requirement	☐ Yes ☐ No Other:_____
	Whether the connection of communication wire and each connecting terminal is fastened	☐ Yes ☐ No Other:_____
	Whether air switch and leakage switch are installed	☐ Yes ☐ No Other:_____
	Whether the length of power cord is appropriate	☐ Yes ☐ No Other:_____
	Whether the diameter of power cord meets requirement	☐ Yes ☐ No Other:_____
	Whether grounding of the units is reliable	☐ Yes ☐ No Other:_____
	All indoor units of the same system must be supplied by the same power source	☐ Yes ☐ No Other:_____
System installation	Specifications of condensing water pipe meet requirement	☐ Yes ☐ No Other:_____
	Condensing water pipe has a certain gradient at downstream direction	☐ Yes ☐ No Other:__ ____
	Whether condensing water system passes water test after installation	☐ Yes ☐ No Other:_____
	Specifications of insulating pipe for copper pipe meet requirement	☐ Yes ☐ No Other:_____
	Whether the seal of insulating pipe for copper pipe meets requirement	☐ Yes ☐ No Other:_____
	Specifications of copper pipe meet requirement	☐ Yes ☐ No Other:_____
	Whether nitrogen has been added for protection as required when copper pipe was being welded	☐ Yes ☐ No Other:_____
	Copper pipe welding conforms to welding procedure to ensure none-leakage of the system	☐ Yes ☐ No Other:__ ____
	Install an additional dual flow filter at liquid pipe side	☐ Yes ☐ No Other:_____
	Mark all systems when multisystem is applicable	☐ Yes ☐ No Other:_____
	Whether the system has been blown clean	☐ Yes ☐ No Other:_____
	When ducted type unit is being installed, the design of air return hole is appropriate	☐ Yes ☐ No Other:_____
	When high static pressure ducted type unit is being installed, whether the length of duct is designed according to static pressure	☐ Yes ☐ No Other:_____
	Whether an appropriate installation site has been selected	☐ Yes ☐ No Other:_____
	Whether the base of outdoor unit conforms to the hole site of foot screw and the dimension of outdoor unit	☐ Yes ☐ No Other:_____
	Whether the antivibration device of outdoor unit has been set properly;	☐ Yes ☐ No Other:_____
	Whether gas pipe and liquid pipe are pumped vacuum at the same time	☐ Yes ☐ No Other:_____
	Whether vacuumizing time of gas pipe and liquid pipe is long enough	☐ Yes ☐ No Other:_____
	After maintaining pressure of the system for one hour, whether the pressure is recovered	☐ Yes ☐ No Other:_____
	Whether additional refrigerant is required by the system	☐ Yes ☐ No Other:_____
	Whether the valve of outdoor unit has been opened	☐ Yes ☐ No Other:_____

3.2Reference list for malfunction code

3.2.1 Malfunction display of outdoor unit

LED1	LED2	LED3	LED4	Name of malfunction	Remarks
Blink	Off	Off	Off	High pressure protection	
Off	Blink	Off	Off	Low pressure protection	
Blink	Blink	Off	Off	Discharge temperature protection	
Off	Off	Blink	Off	Over currency protection	
Blink	Off	Blink	Off	Communication malfunction between outdoor main unit and sub unit	Only for outdoor units with main and sub unit structure
Off	Blink	Blink	Off	Communication malfunction between outdoor main unit and plugboard	
Blink	Blink	Blink	Off	Defrosting (Normal action, not malfunction)	
Off	Off	Off	Blink	Malfunction of outdoor environmental sensor	
Blink	Off	Off	Blink	Malfunction of outdoor scroll input sensor	For outdoor units with main and sub unit structure, their display information on the mainboard corresponds to their respective outdoor heat exchanger or compressor.
Off	Blink	Off	Blink	Malfunction of outdoor scroll middle sensor	
Blink	Blink	Off	Blink	Malfunction of outdoor scroll output sensor	
Off	Off	Blink	Blink	Malfunction of fixed frequency discharge sensor	
Blink	Off	Blink	Blink	Malfunction of digital discharge sensor	
Off	Blink	Blink	Blink	Malfunction of fixed frequency bottom sensor	
Blink	Blink	Blink	Blink	Malfunction of digital bottom sensor	
Blink	Blink	Blink	On	Malfunction of high pressure press sensor	
Blink	Blink	On	On	Malfunction of low pressure press sensor	
Blink	On	Blink	Blink	Oil returning	
On	Blink	Blink	Blink	Oil balancing	
Blink	Blink	On	Blink	High temperature protection for 80℃ oil temperature	

3.2.2 Malfunction display of cassette type indoor unit

Malfunction display			Name of malfunction
Power light	Running light	Timer light	
On	On	Off	Malfunction of indoor environmental sensor
On	Off	Blink	Malfunction of indoor scroll input sensor
On	Blink	Blink	Malfunction of indoor scroll middle sensor
On	Blink	On	Malfunction of indoor scroll output sensor
On	Blink	Off	Defrosting (Normal action, not malfunction)
Off	Off	Blink	Anti-freeze protection (normal action, not malfunction)
Off	Blink	Blink	Over water protection (normal action, not malfunction)
Off	Blink	On	Mode conflict
Blink	Blink	Blink	Communication malfunction
Blink	Off	Off	Outdoor unit malfunction

3.2.3 Malfunction display of wired remote controller and floor-standing type indoor unit

Malfunction code	Name of malfunction
E1	High pressure protection
E2	Anti-freeze protection (normal action, not malfunction)
E3	Low Pressure Protection
E4	Discharge temperature protection
E5	Over currency protection
E6	Communication malfunction
E7（Displayed by floor standing indoor unit）	Mode conflict (Displayed by remote controller)
F0	Malfunction of indoor environmental sensor
F1	Malfunction of indoor scroll input sensor
F2	Malfunction of indoor scroll middle sensor
F3	Malfunction of indoor scroll output sensor
F4	Malfunction of outdoor environmental sensor
F5	Malfunction of outdoor scroll input sensor
F6	Malfunction of outdoor scroll middle sensor
F7	Malfunction of outdoor scroll output sensor
F8	Malfunction of fixed frequency discharge sensor
F9	Malfunction of digital discharge sensor
FA	Malfunction of fixed frequency bottom sensor
Fb	Malfunction of digital botton sensor
Fc	Malfunction of high pressure press sensor
Fd	Malfunction of low pressure press sensor

3.2.4 Malfunction display of wall-mounted type indoor unit (25, 35)

Malfunction display			Name of malfunction
Power light	Running light	Timer light	
On	On	Off	Malfunction of indoor environmental sensor
On	Off	Blink	Malfunction of indoor scroll input sensor
On	Blink	Blink	Malfunction of indoor scroll middle sensor
On	Blink	On	Malfunction of indoor scroll output sensor
On	Blink	Off	Anti-freeze protection (normal action, not malfunction)
Off	Off	Blink	Anti-freeze protection (normal action, not malfunction)
Off	Blink	On	Mode conflict
Blink	Blink	Blink	Communication malfunction
Blink	Off	Off	Malfunction of outdoor unit

Note: this table only applies to GMV（L）-R25G/A and GMV（L）-R35G/A two types of indoor units.

3.2.5 Malfunction definition of wall-mounted type indoor unit (50, 70)

Malfunction display		Name of malfunction
Running light	Timer light	
Blink（1）	Blink	Malfunction of indoor environmental sensor
		Malfunction of indoor scroll input sensor
		Malfunction of indoor scroll middle sensor
		Malfunction of indoor scroll output sensor
ON	Blink	Anti-freeze protection (normal action, not malfunction)
Off	Blink	Anti-freeze protection (normal action, not malfunction)
Off	Blink	Mode conflict
Blink（2）	Blink	Communication malfunction
Blink	Off	Malfunction of outdoor unit

Note: (1)“＊”means 1 light on and 1 light off;“＊＊” means 2 lights on and 2 lights off simultaneity；

(2) This table only applies to GMV（L）-R50G/A and GMV（L）-R70G/A two types of indoor units.

3.2.6 Malfunction display of plugboard

Malfunction code	Name of malfunction	Malfunction code	Name of malfunction
E1	High Pressure Protection	F7	Malfunction of scroll output sensor of system 1
E2	Anti-freeze protection (normal action, not malfunction)	F8	Malfunction of fixed frequency 1 discharge sensor
E3	Low Pressure Protection	F9	Malfunction of digital discharge sensor
E4	Discharge temperature protection or 80℃ oil temperature protection	FA	Malfunction of fixed frequency 1 bottom sensor
E5	Over currency protection	Fb	Malfunction of digital botton sensor
E6	Communication malfunction	Fc	Malfunction of high pressure press sensor
E7	Mode conflict	Fd	Malfunction of low pressure press sensor
E9	Over water protection	b5	Malfunction of scroll input sensor of system 2
F0	Malfunction of indoor environmental sensor	b6	Malfunction of scroll middle sensor of system 2
F1	Malfunction of indoor scroll input sensor	b7	Malfunction of scroll output sensor of system 2
F2	Malfunction of indoor scroll middle sensor	b8	Malfunction of fixed frequency 2 bottom sensor
F3	Malfunction of indoor scroll output sensor	b9	Malfunction of fixed frequency 3 bottom sensor
F4	Malfunction of outdoor environmental sensor	bA	Malfunction of digital botton 2 sensor
F5	Malfunction of scroll input sensor of system 1	bb	Malfunction of digital botton 3 sensor
F6	Malfunction of scroll middle sensor of system 1		

3.3 Malfunction analysis

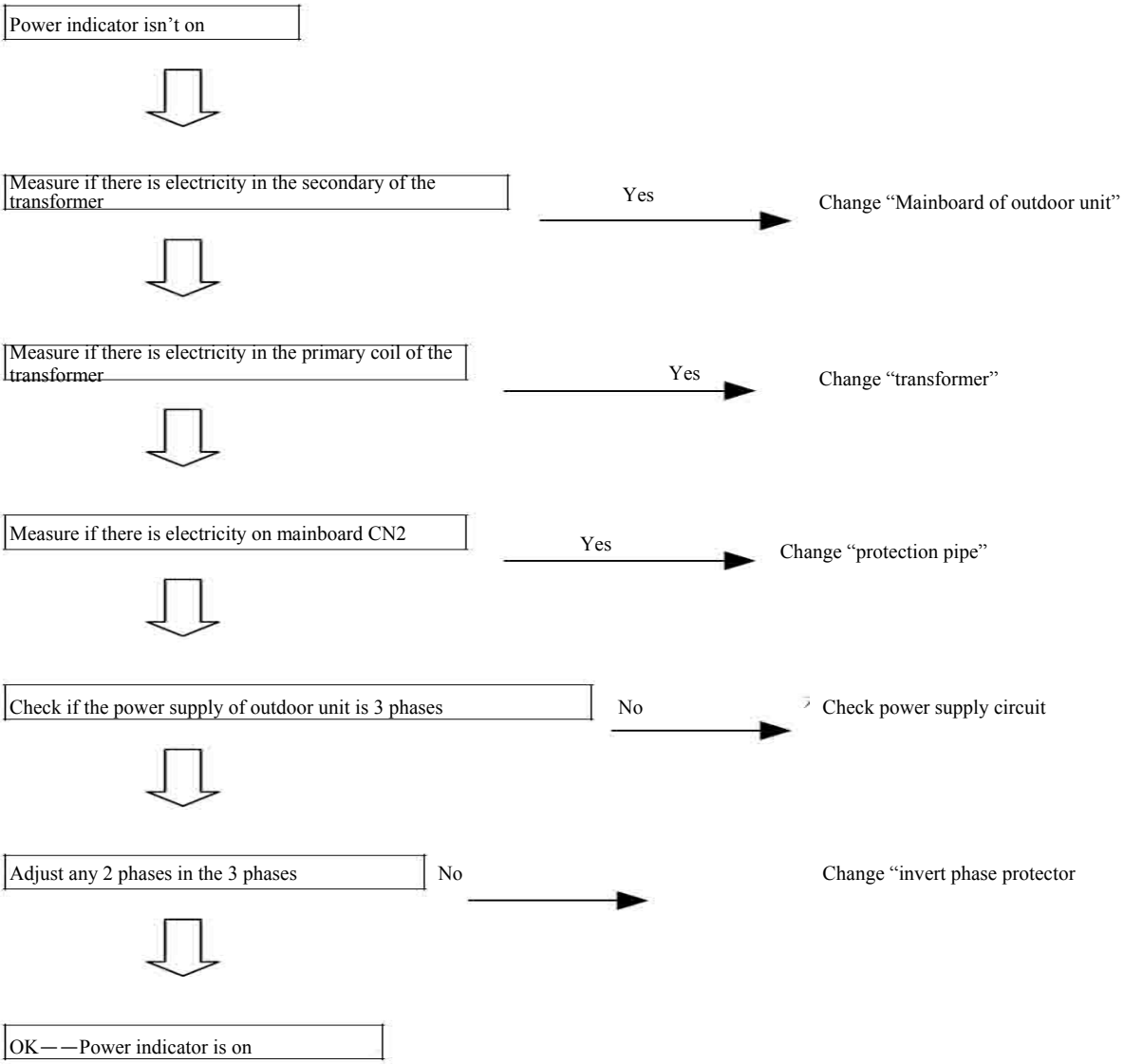
Maintenance personnel should collect as much malfunction information as possible, carry out careful study and list those electrical or system components and parts that might cause the malfunction. Then maintenance personnel should be able to determine specific malfunction cause, check out the components or parts that have malfunction and solve the problem.

★ Observe the overall device. Do not limit by partial observation. Pay attention to the observation of overall state of device;

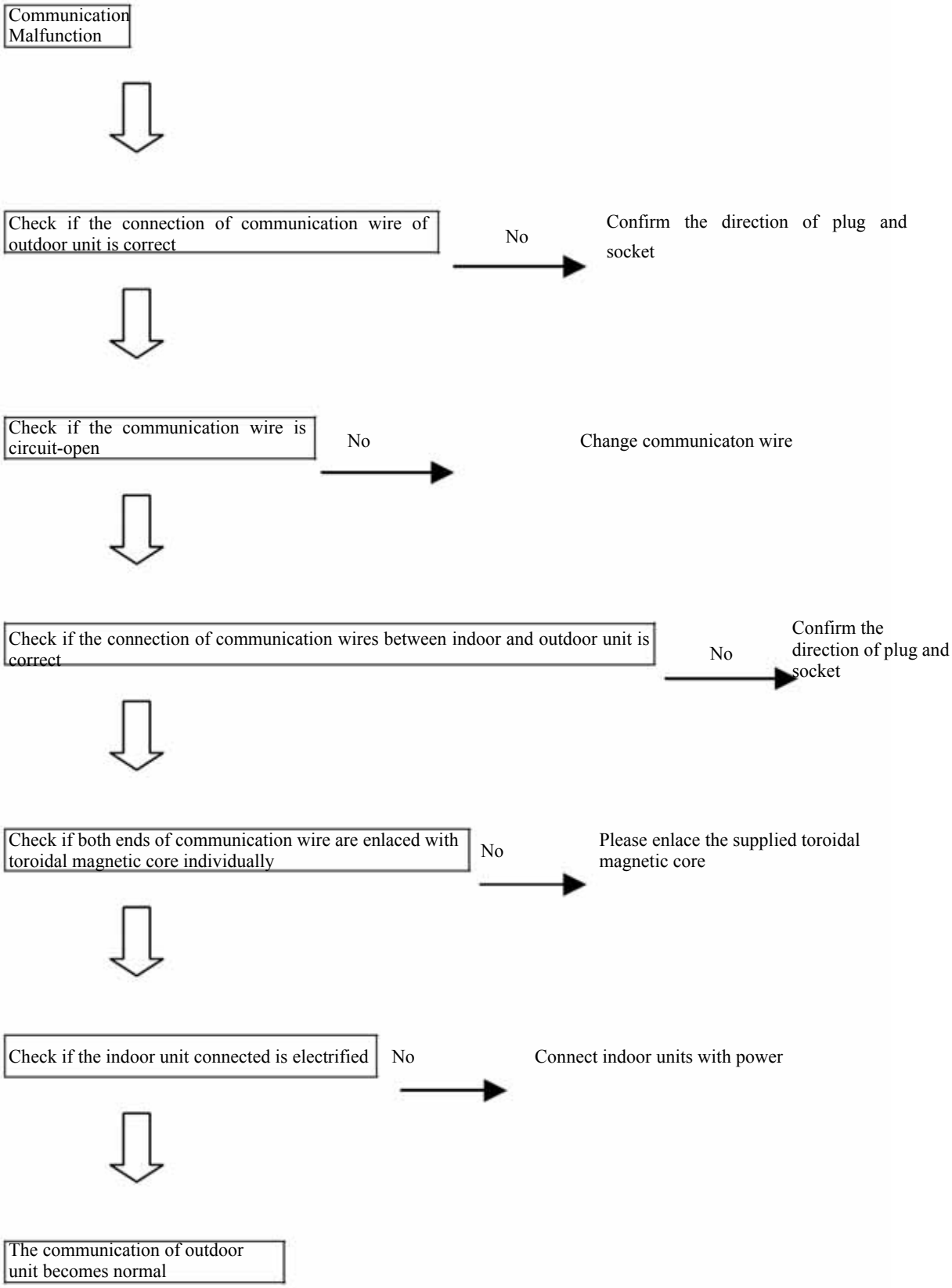
★ Study from the simple point. When analyzing, concluding and confirming malfunction cause, remember to start from the relatively simple operations, and then finally proceed to such complicated operations as the discharge of refrigerant, disassembling of devices, replacement of parts and charge of refrigerant etc.;

★ Carefully locate the cause. There might be several malfunctions in units at the same time, and malfunction cause might not be only one, and one malfunction might turn into several malfunctions, so a comprehensive system analysis should be established to make the judgment result more accurate and reliable.

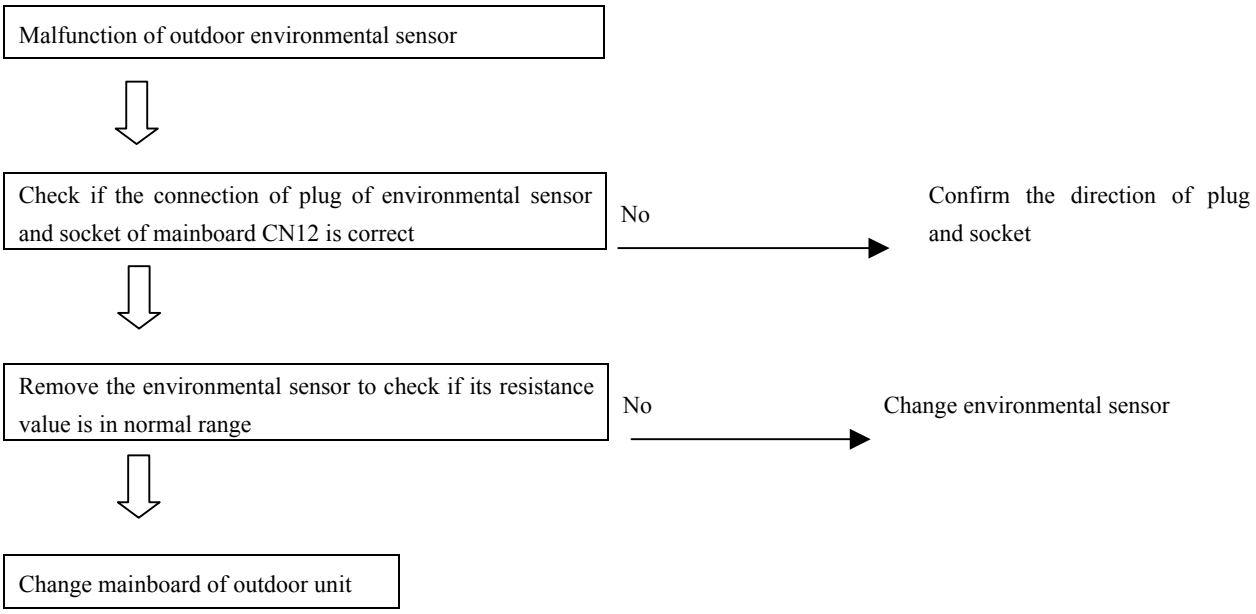
3.3.1 Power indicator of outdoor unit isn't on



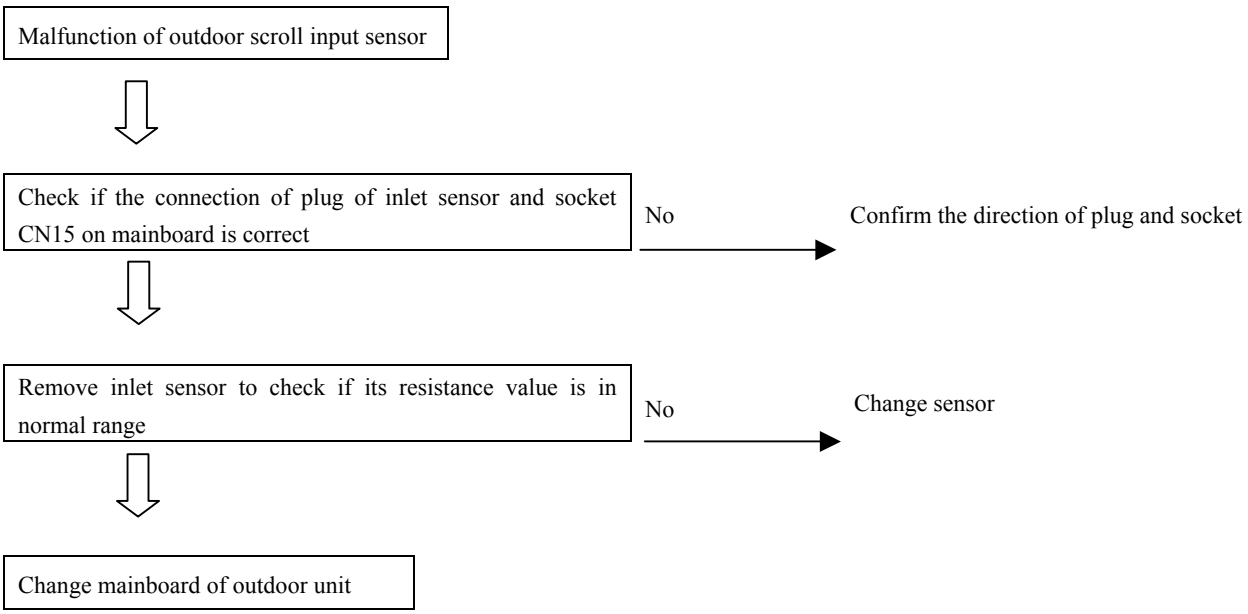
3.3.2 Outdoor unit indicates “Communication Malfunction”



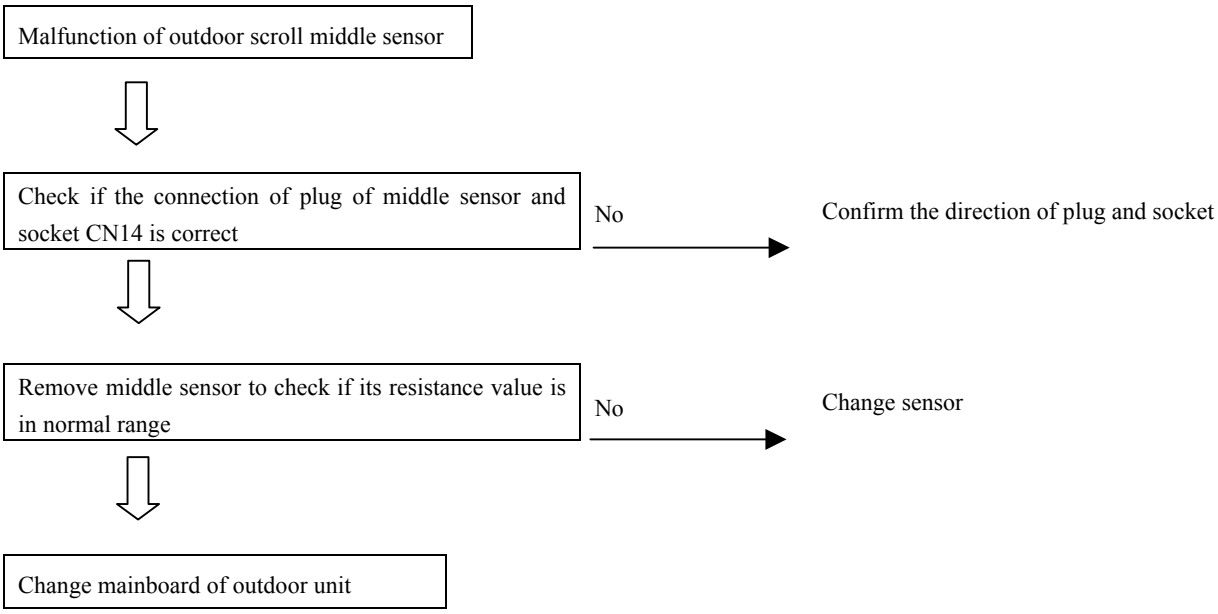
3.3.3 Outdoor unit indicates “Malfunction of outdoor environmental sensor”



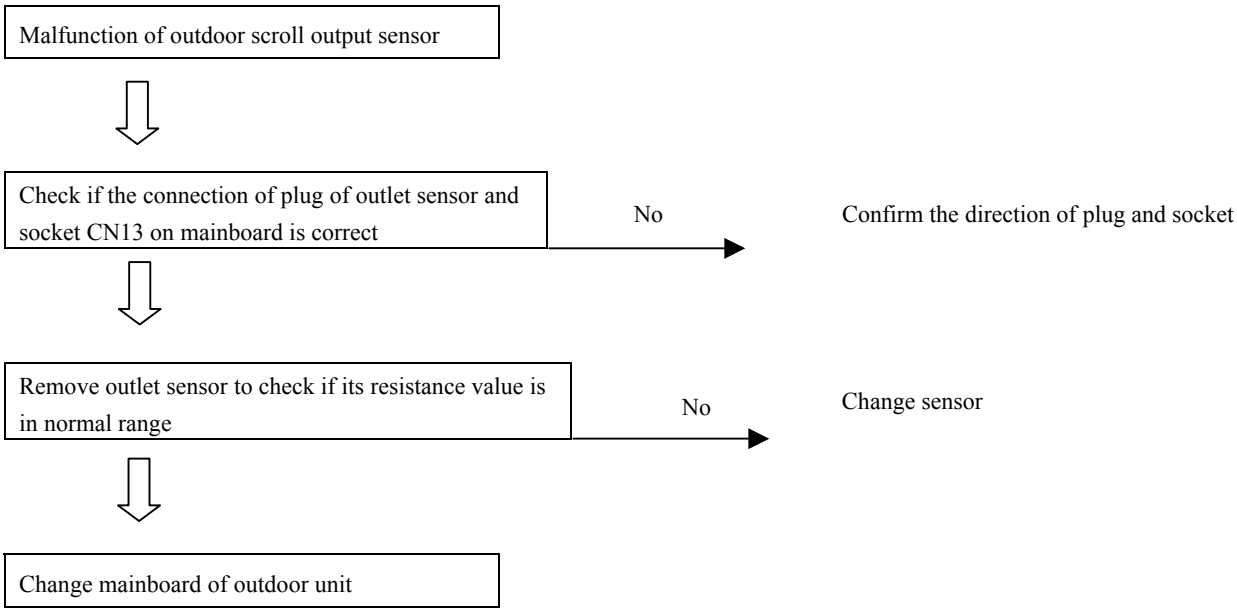
3.3.4Outdoor unit indicates “Malfunction of outdoor scroll input sensor”



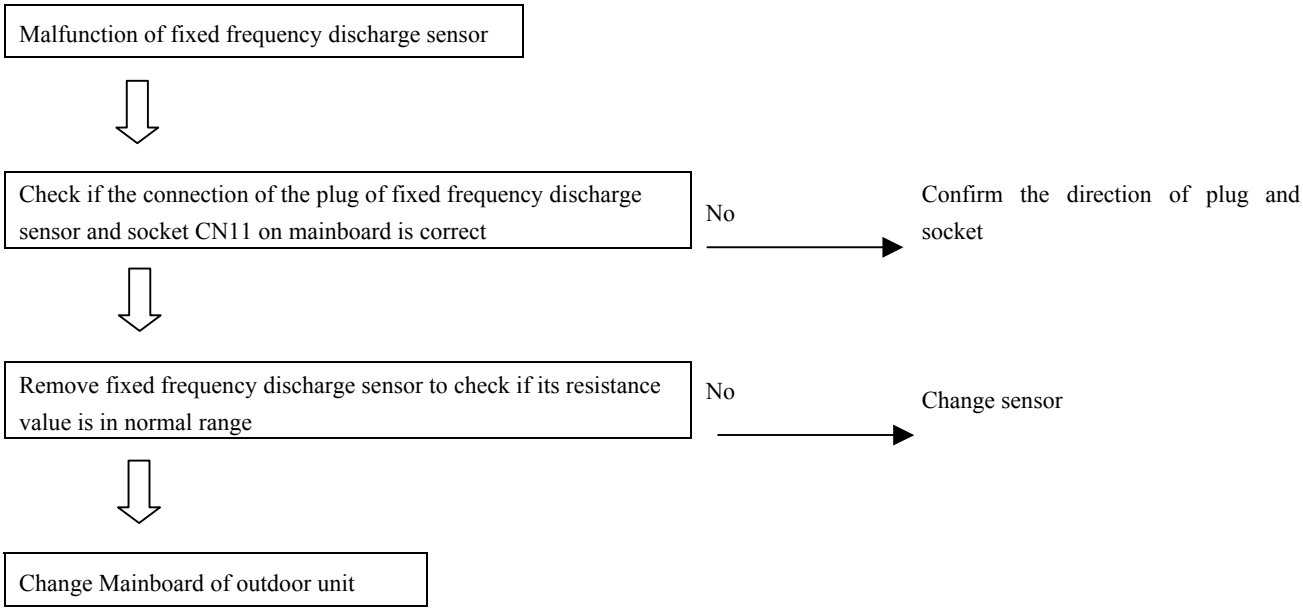
3.3.5 Outdoor unit indicates “Malfunction of out door scroll middle sensor”



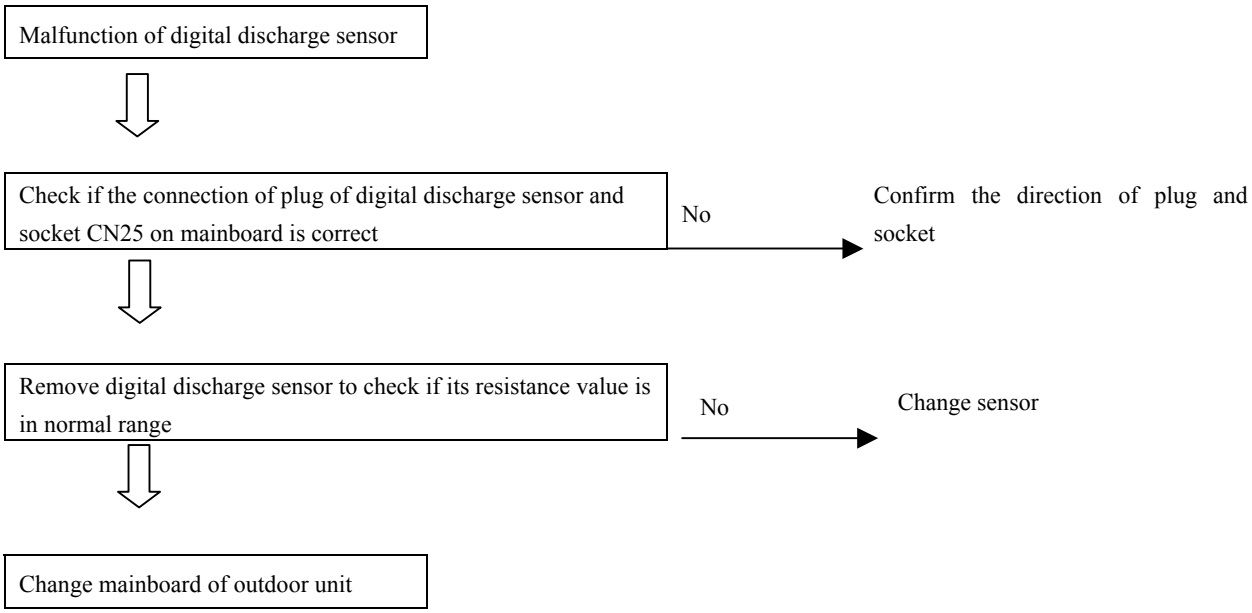
3.3.6 Outdoor unit indicates “Malfunction of outdoor scroll output sensor”



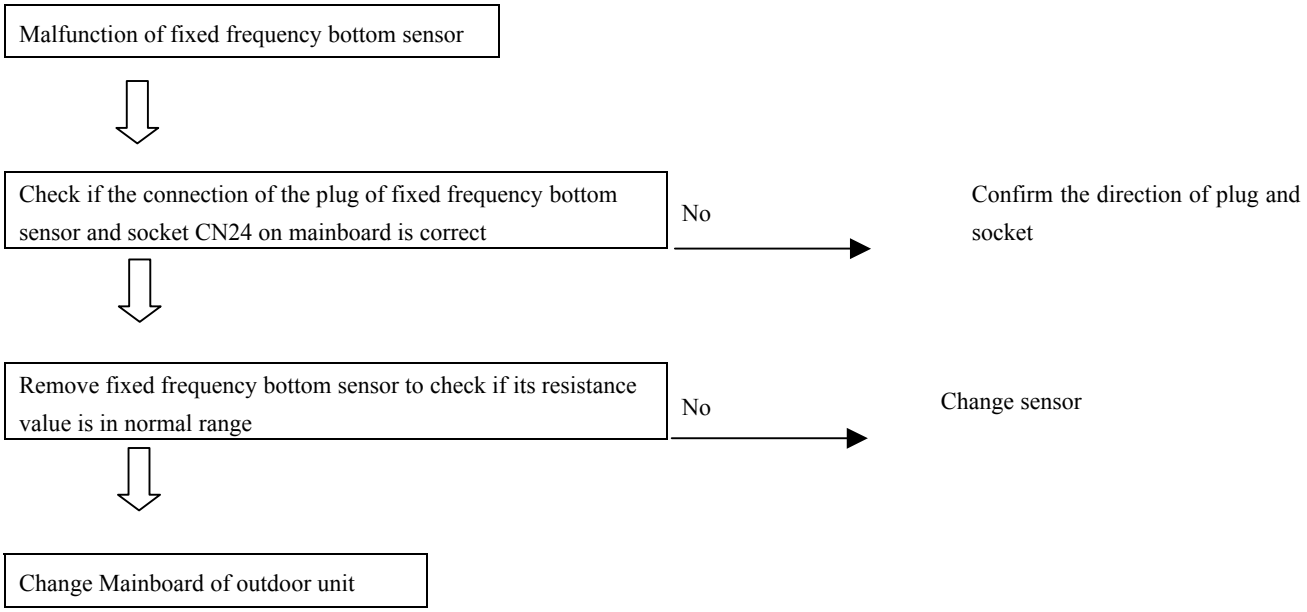
3.3.7 Outdoor unit indicates “Malfunction of fixed frequency discharge sensor”



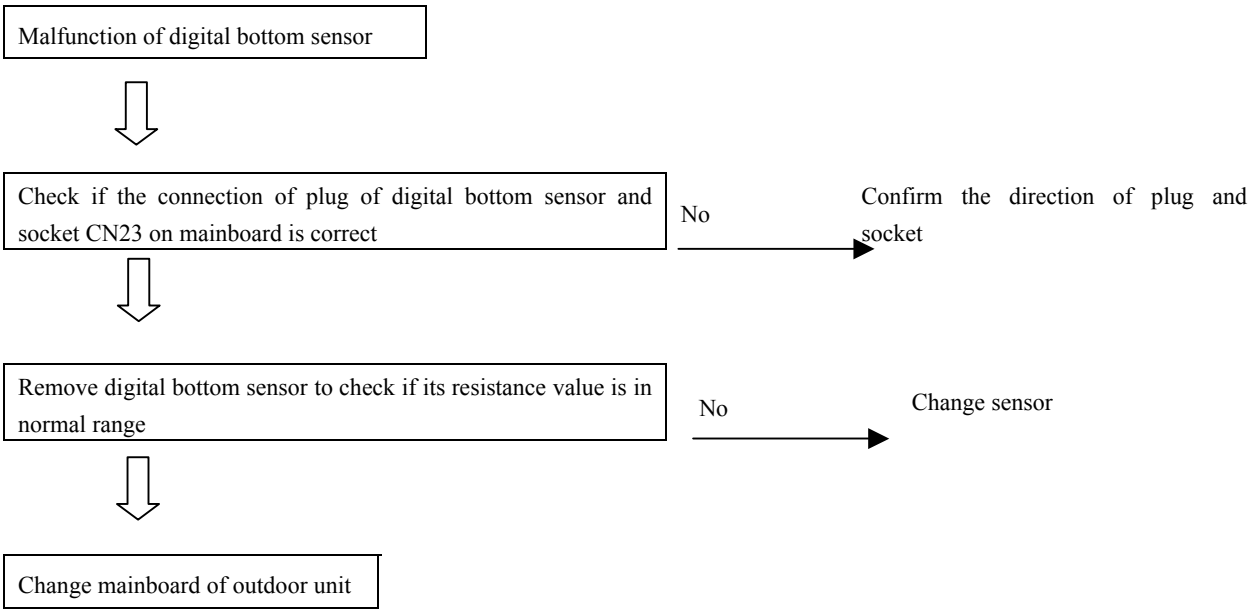
3.3.8 Outdoor unit indicates “Malfunction of digital discharge sensor”



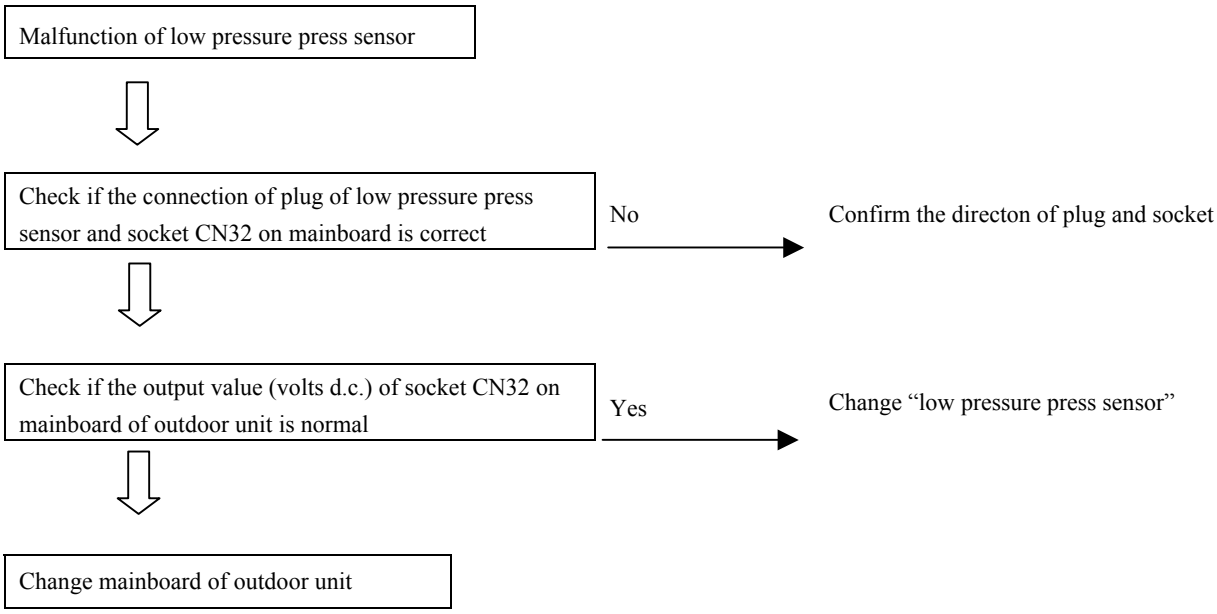
3.3.9 Outdoor unit indicates "Malfunction of fixed frequency bottom sensor"



3.3.10 Outdoor unit indicates "Malfunction of digital bottom sensor"



3.3.11 Outdoor unit indicates “Malfunction of low pressure press sensor”



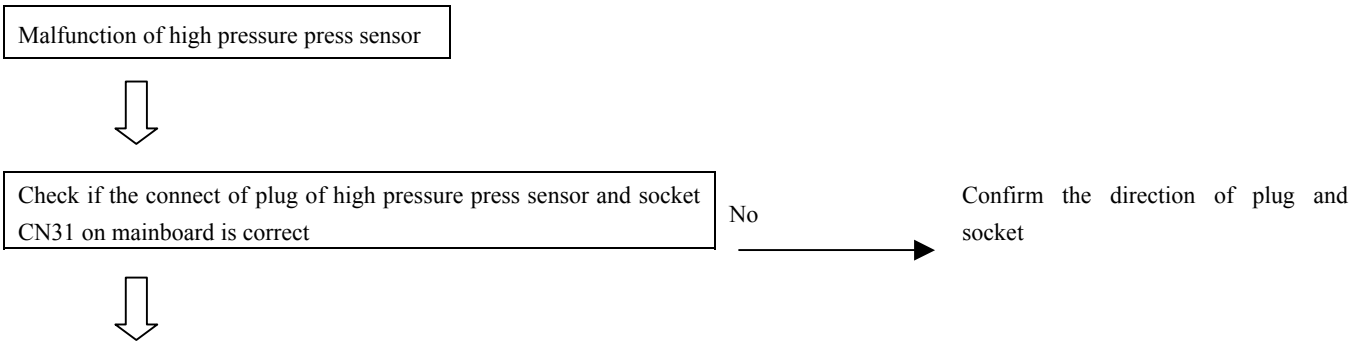
Note:Under normal circumstance, the voltage output value of socket CN32 on mainboard of outdoor unit is:

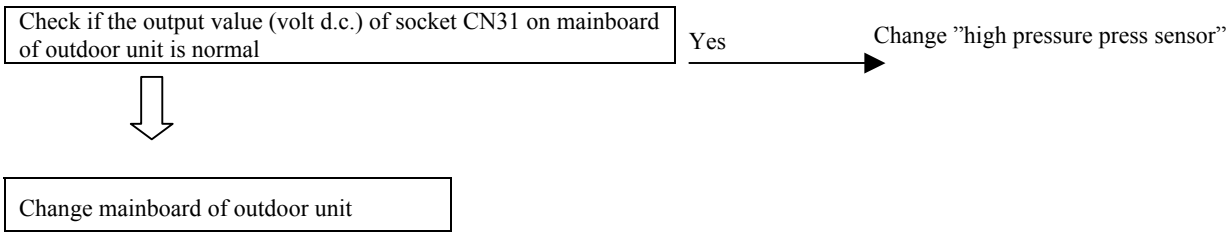
The black wire and earth wire of mainboard is phase connection；

Black wire——Red wire（power cord of the low pressure press sensor） Direct currency 5V；

Black wire——Green wire（communication wire of low pressure press sensor）Direct currency 0.4~4.8V.

3.3.12 Outdoot unit indicates ”Malfunction of high pressure press sensor”





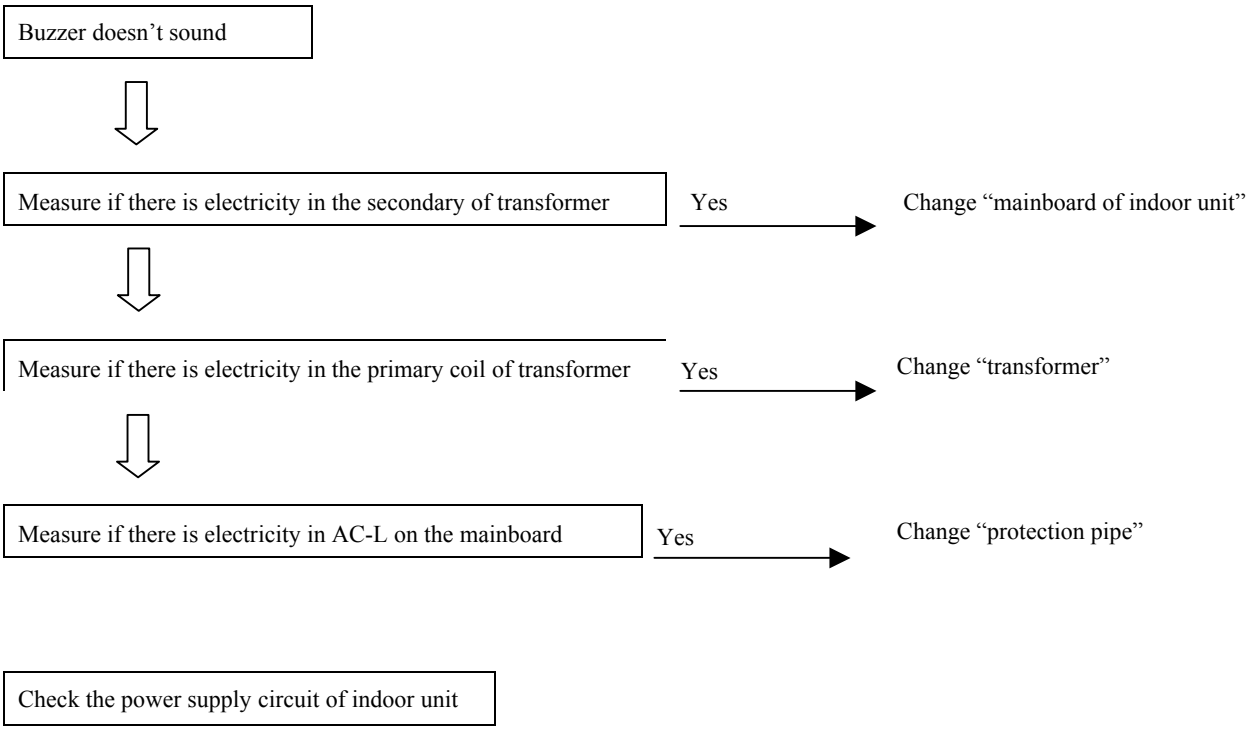
Note:Under normal circumstance, the voltage output value of socket CN32 on mainboard of outdoor unit is:

The connection of black wire and mainboard wire is phase connection；

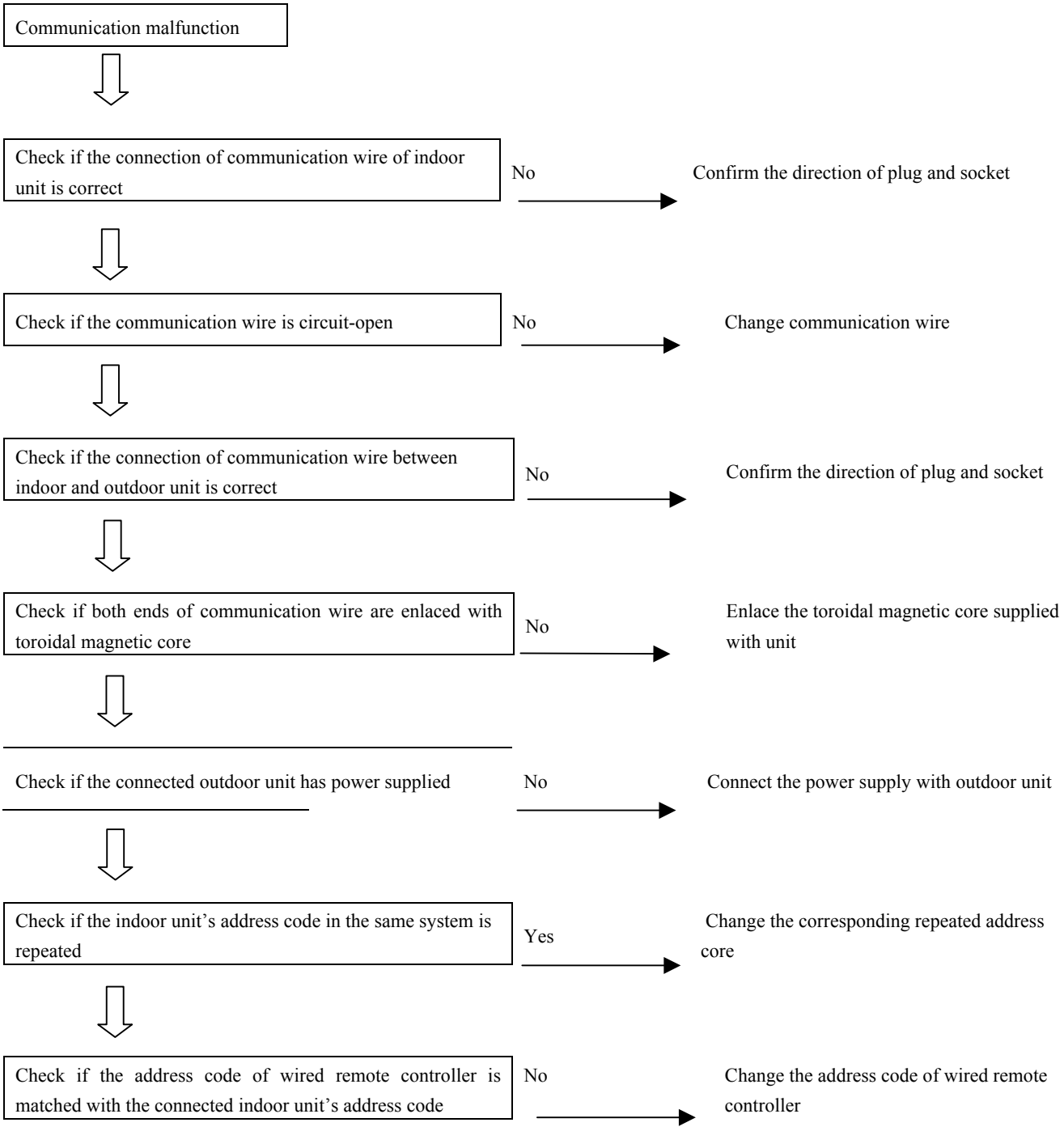
Black wire——Rec wire（Power cord of high pressure press sensor）Direct currency 5V;

Black wire——Green wire（Signal wire of high pressure press sensor）Direct currency 0.4~4.8V

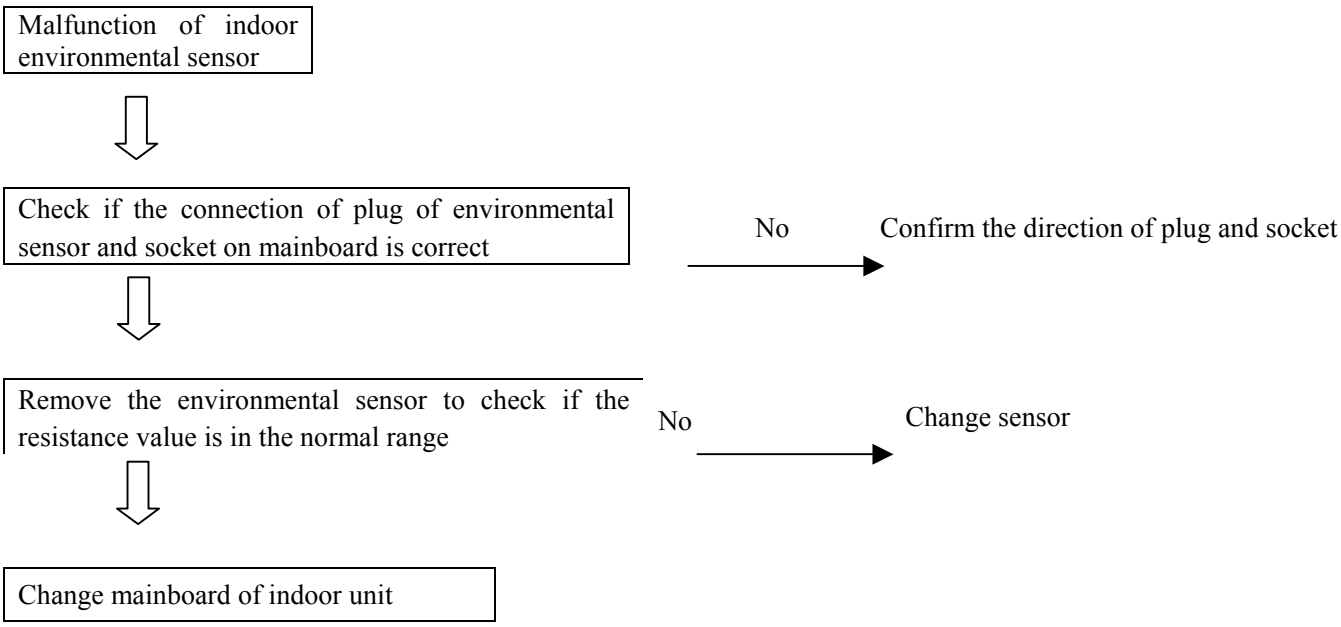
3.3.13 Buzzer of indoor unit doesn’t sound after power-on



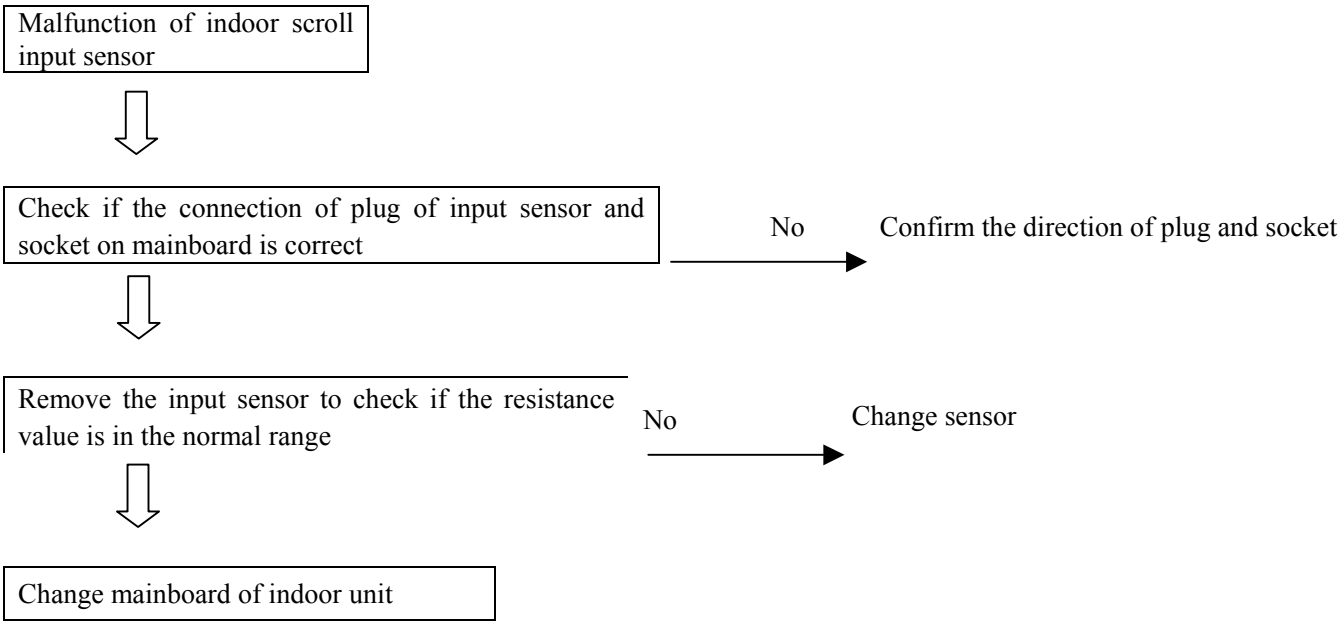
3.3.14 Indoor unit indicates “Communication malfunction”



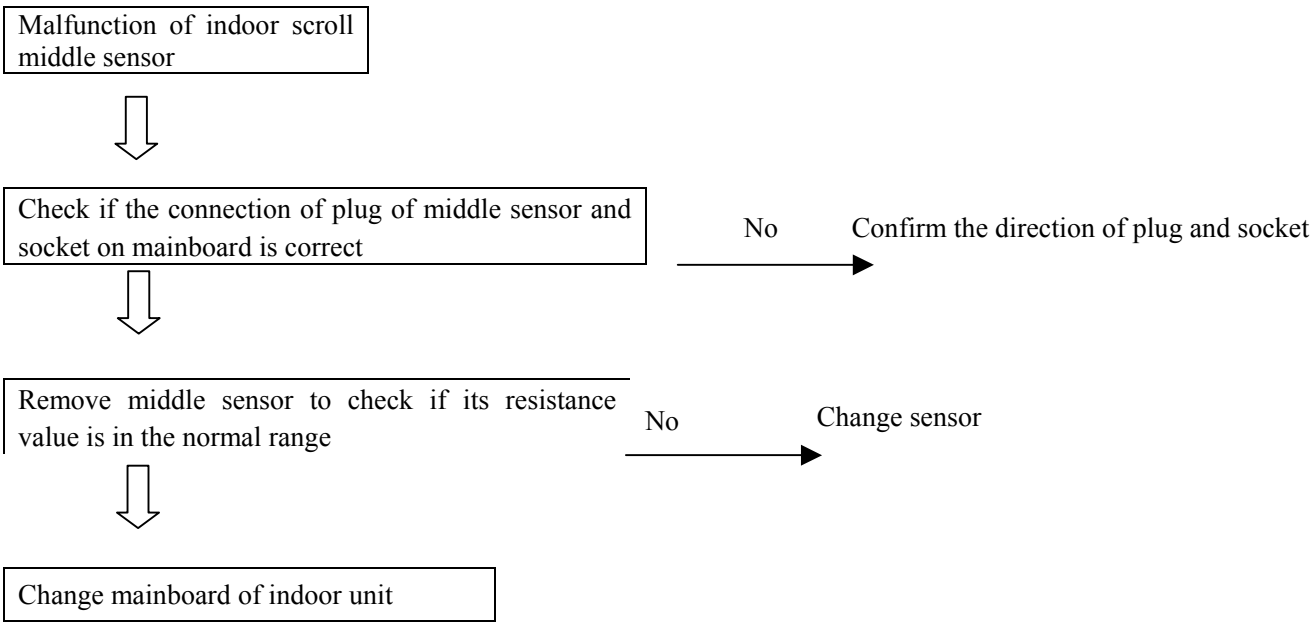
3.3.15 Indoor unit indicates “Malfunction of indoor environmental sensor”



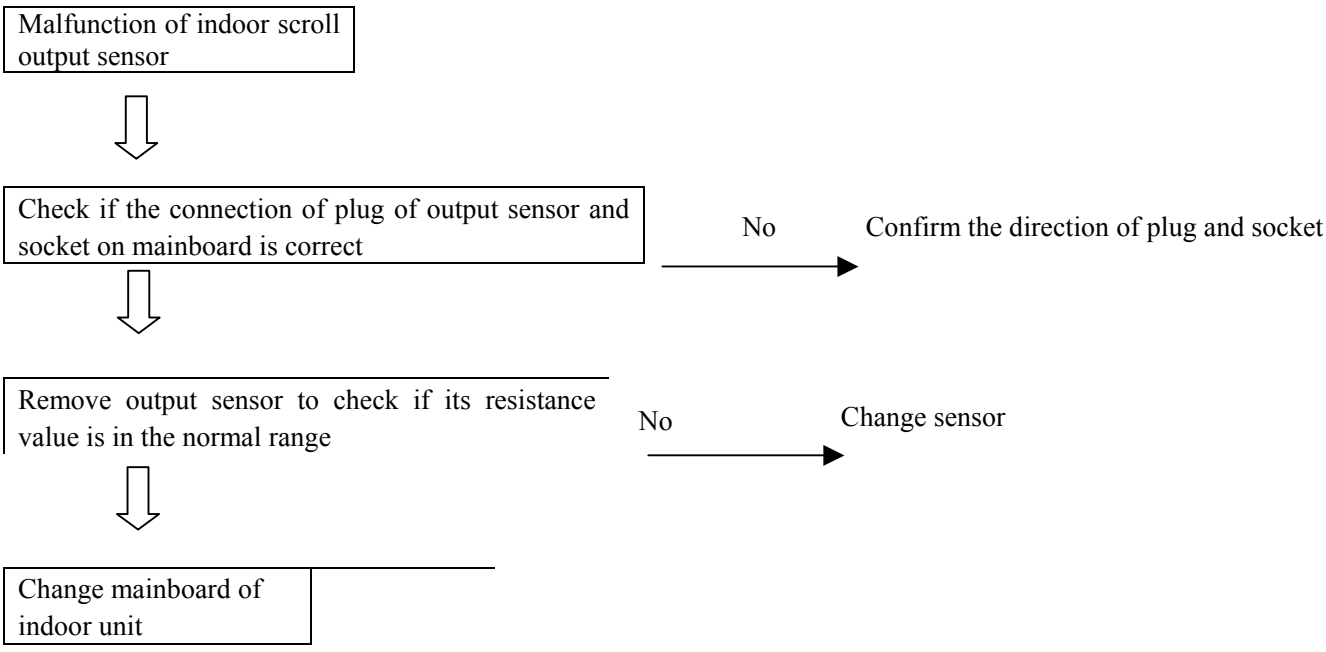
3.3.16 Indoor unit indicates “Malfunction of indoor scroll input sensor”



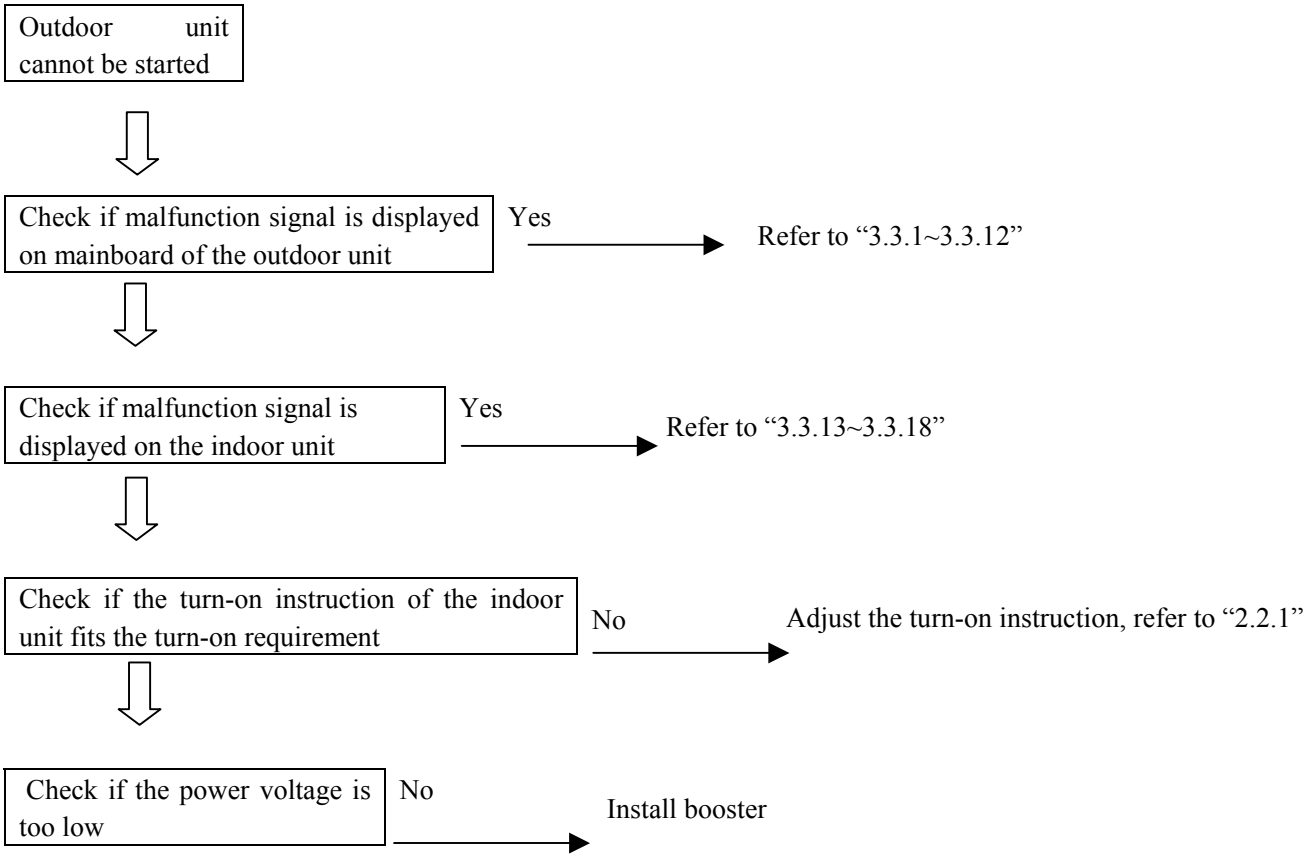
3.3.17 Indoor unit indicates "Malfunction of indoor scroll middle sensor"



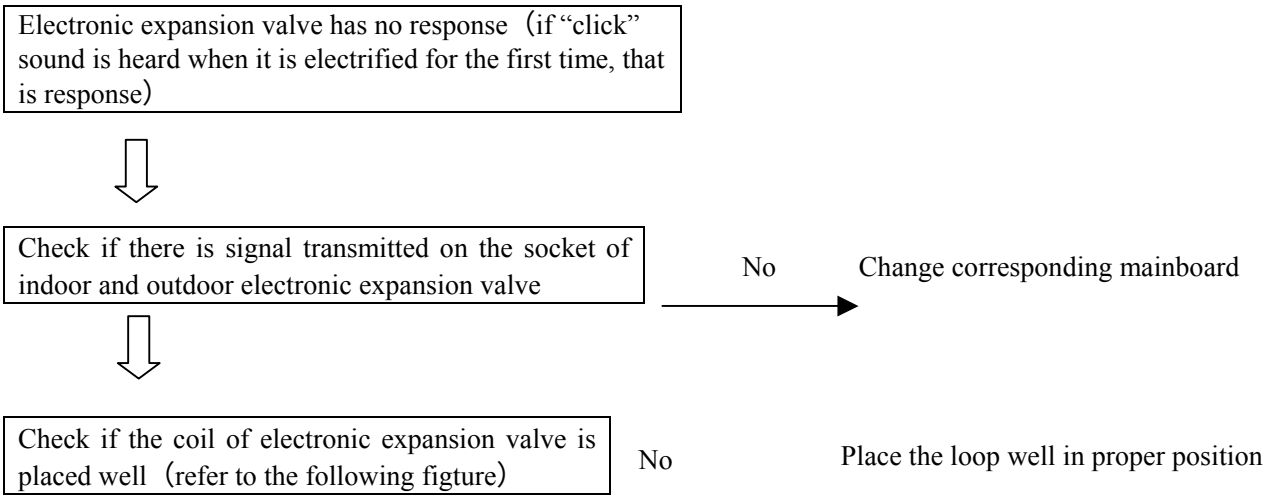
3.3.18 Indoor unit indicates "Malfunction of indoor scroll output sensor"

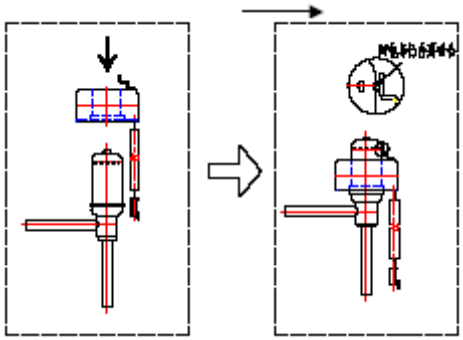


3.3.19 Outdoor unit cannot be started



3.3.20 Electronic expansion valve has no response





Check if the electronic expansion valve is heated — Yes → Knock the valve body of the electronic expansion valve slightly

Change electronic expansion valve

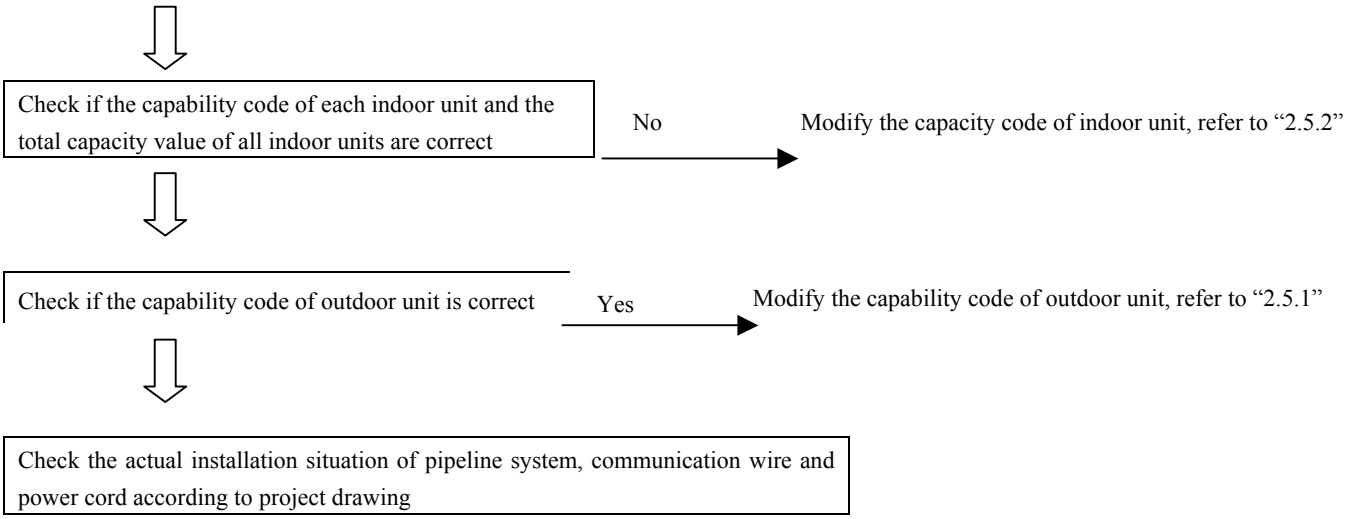
3.3.21 Output capability of outdoor unit does not match the required capacity of indoor unit

Output capability of outdoor unit does not match the required capacity of indoor unit

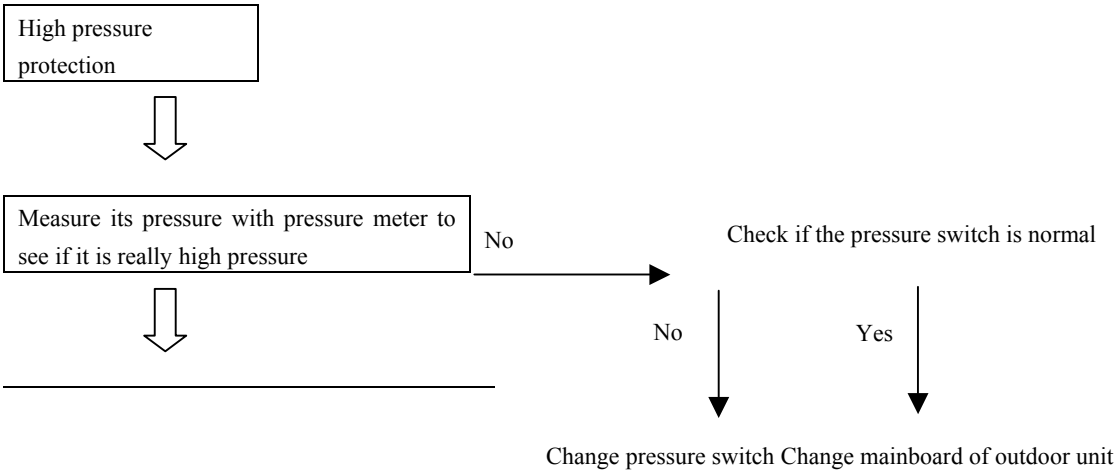
Check if there is signal transmitted in the PWM plug of outdoor unit mainboard — No → Change mainboard（When testing PWM, make sure that the total capacity requirement of indoor unit is 70% less than the total capacity of outdoor unit）

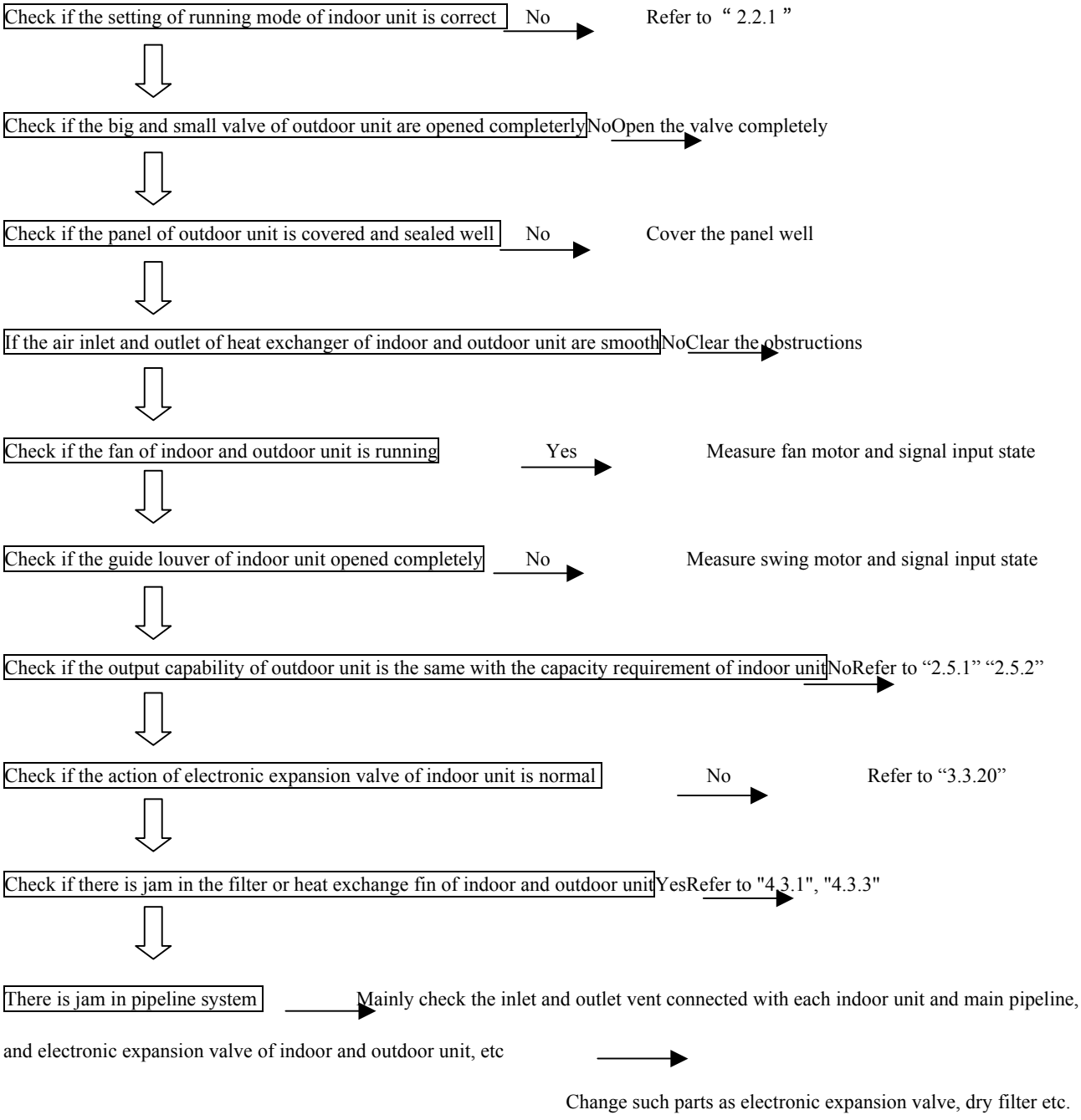
Check if the uninstall valve coil of outdoor unit is broken — Yes → Change the uninstall valve coil

Check if the valve body of the uninstall valve of outdoor unit is broken — Yes → Change the valve body of uninstall valve



3.3.22 High pressure protection




Check if the setting of running mode of indoor unit is correct
No
Refer to “2.2.1”
Check if the big and small valve of outdoor unit are opened completerly
No
Open the valve completely
Check if the panel of outdoor unit is covered and sealed well
No
Cover the panel well
If the air inlet and outlet of heat exchanger of indoor and outdoor unit are smooth
No
Clear the obstructions
Check if the fan of indoor and outdoor unit is running
Yes
Measure fan motor and signal input state
Check if the guide louver of indoor unit opened completely
No
Measure swing motor and signal input state
Check if the output capability of outdoor unit is the same with the capacity requirement of indoor unit
No
Refer to “2.5.1” “2.5.2”
Check if the action of electronic expansion valve of indoor unit is normal
No
Refer to “3.3.20”
Check if there is jam in the filter or heat exchange fin of indoor and outdoor unit
Yes
Refer to "4.3.1", "4.3.3"
There is jam in pipeline system
Mainly check the inlet and outlet vent connected with each indoor unit and main pipeline, and electronic expansion valve of indoor and outdoor unit, etc
Change such parts as electronic expansion valve, dry filter etc.

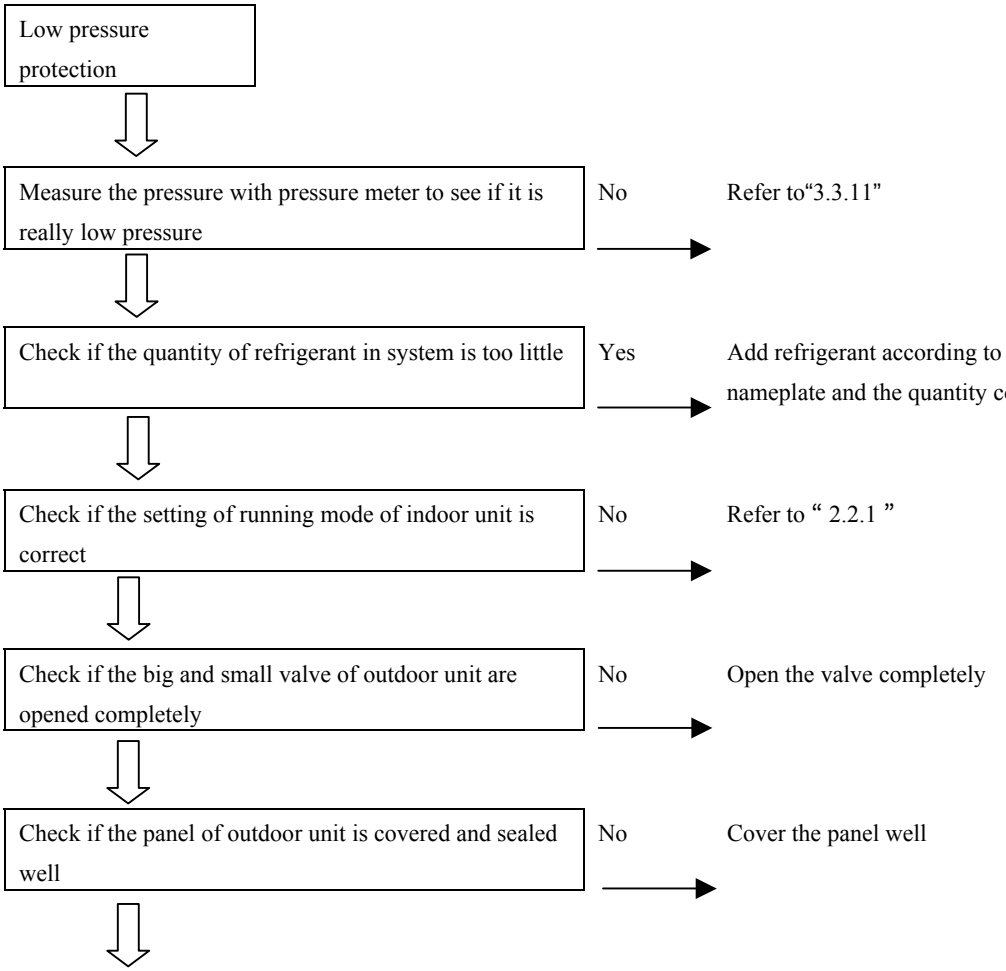
Note:Under normal circumstance, the voltage output value of socket CN32 on mainboard of outdoor unit is:

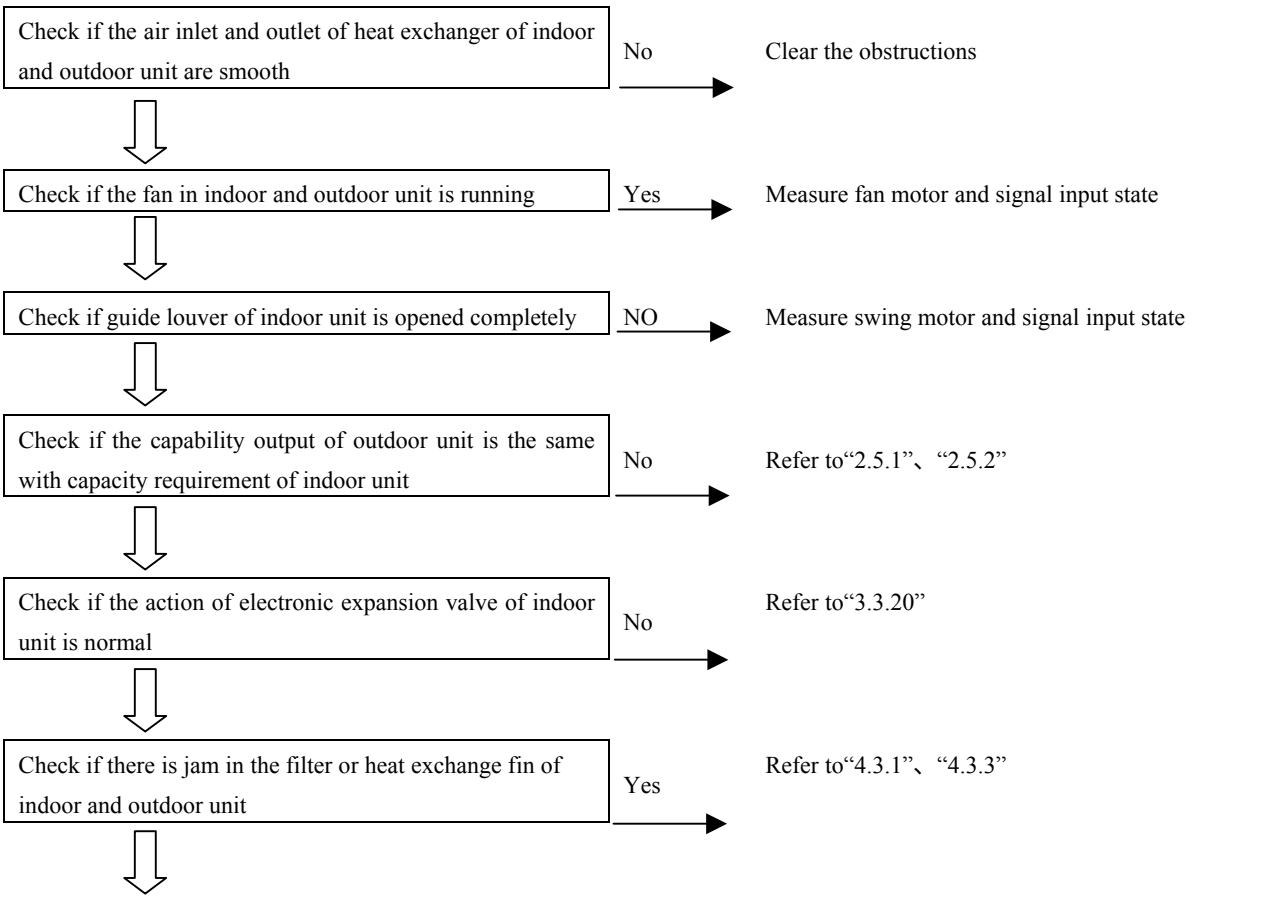
The connection of black wire and mainboard earth wire is phase connection；

Black wire——Red wire（power cord of high pressure press sensor） direct currency 5V；

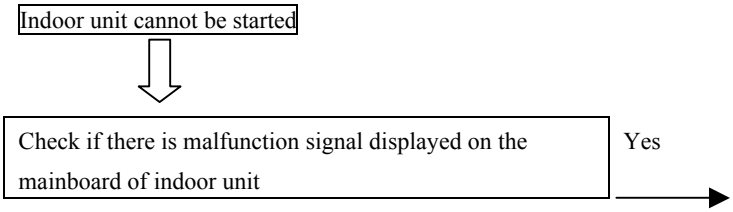
Black wire——Green wire（signal wire of high pressure press sensor） direct currency 0.4~4.8V.

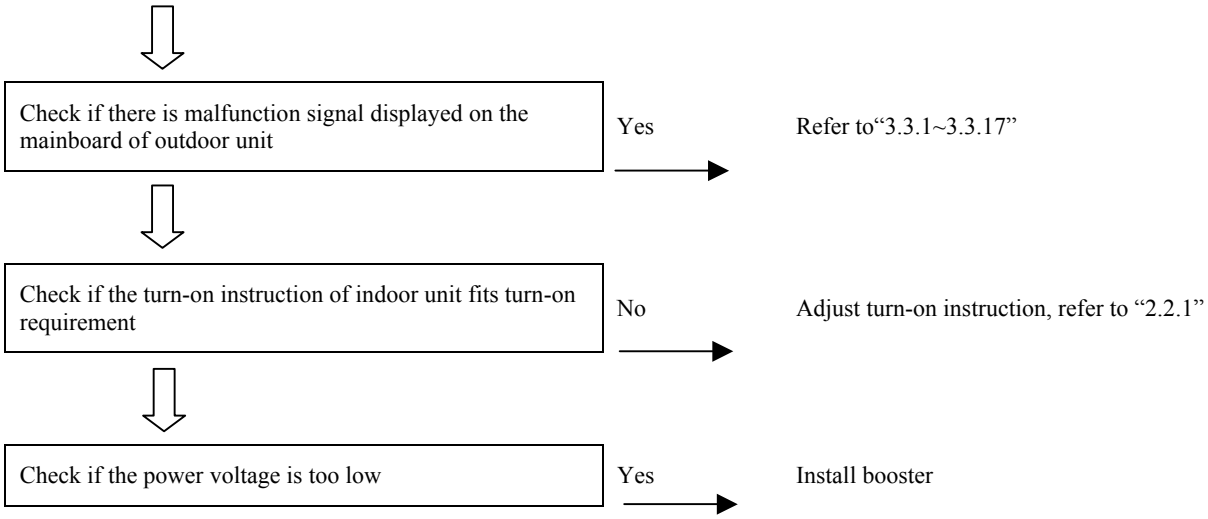
3.3.23 Low pressure protection



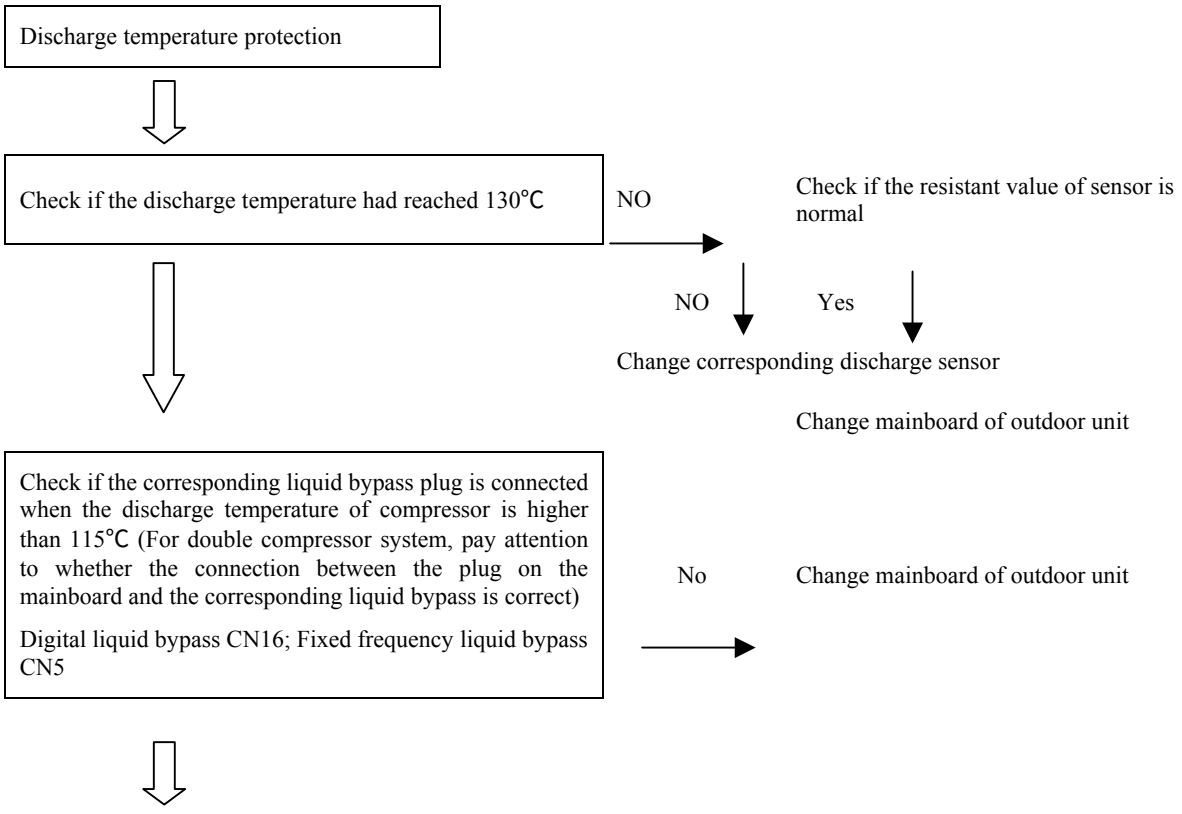


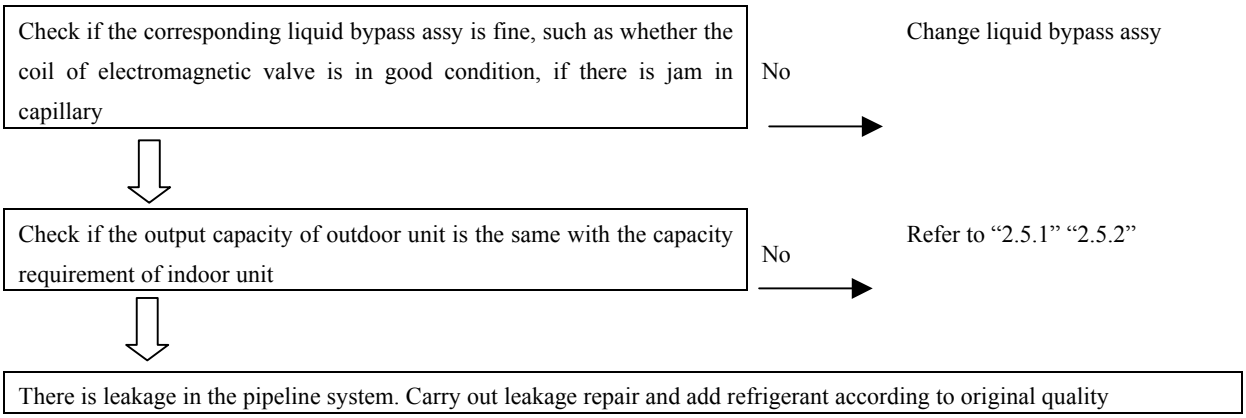
3.3.24 Indoor unit cannot be started



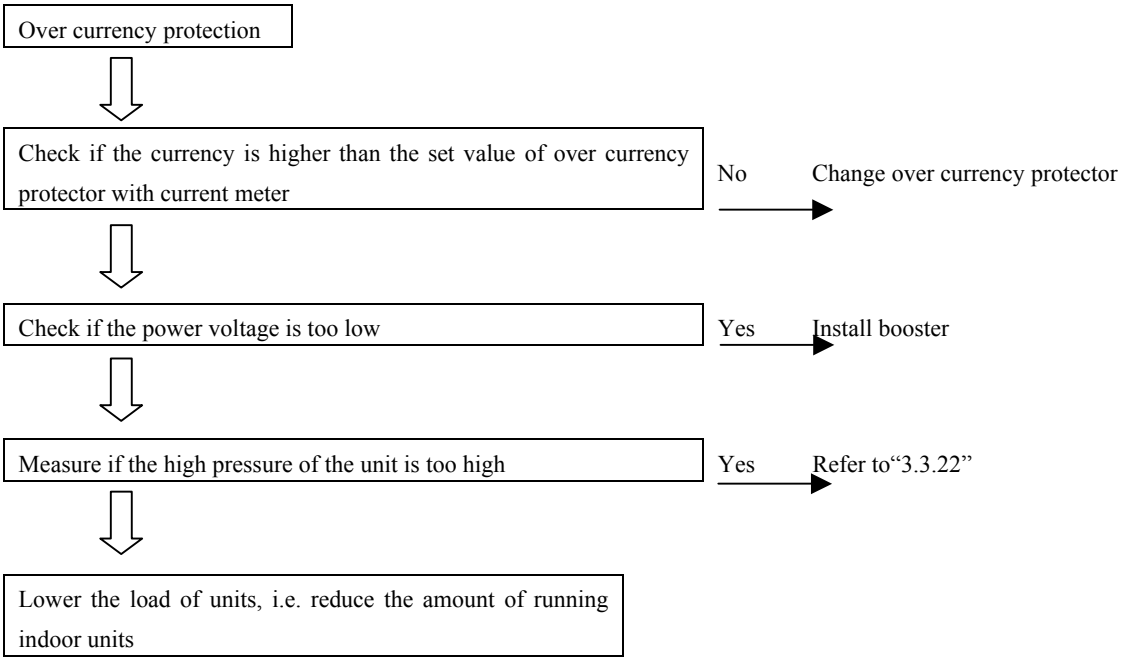


3.3.25 Discharge temperature protection

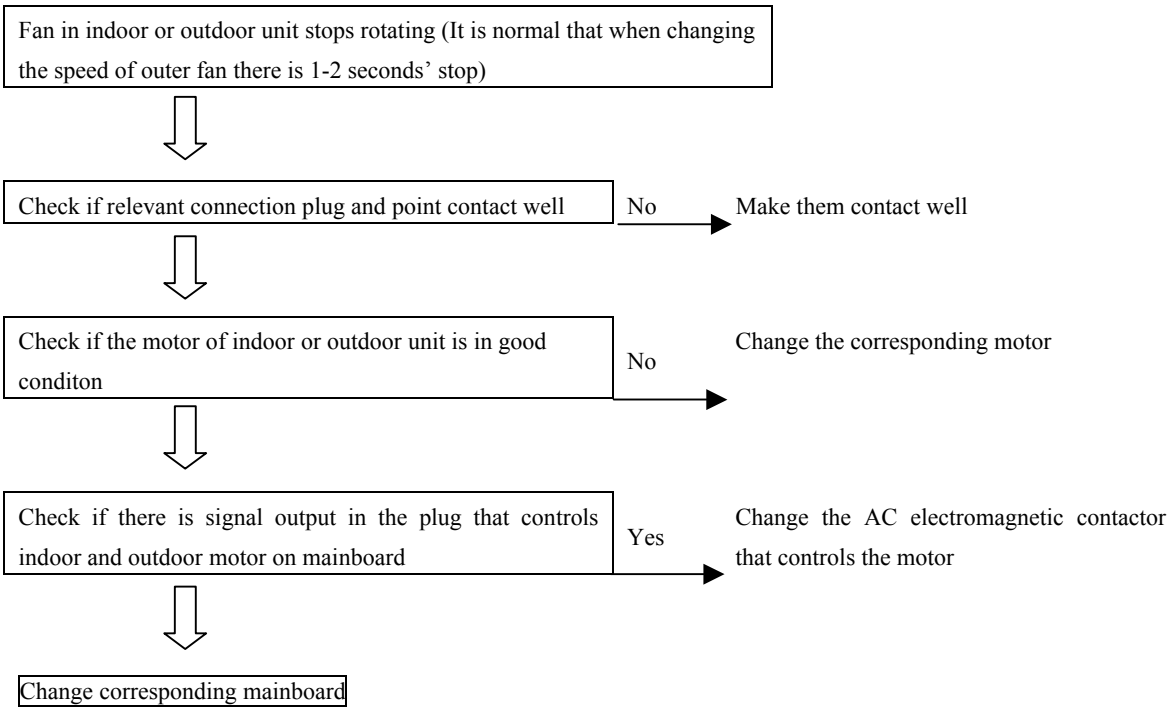




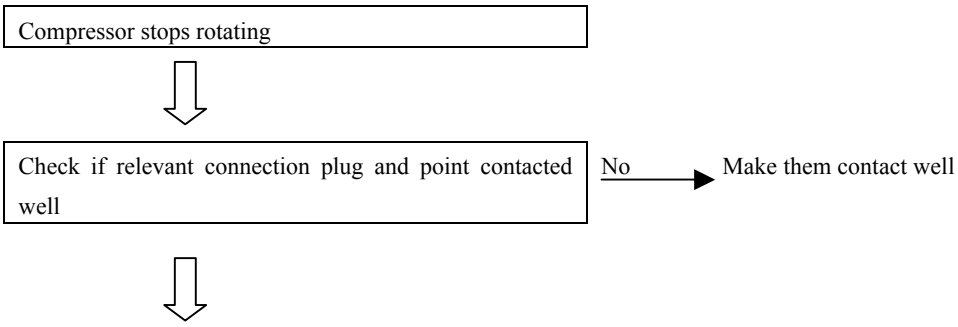
3.3.26 Over currency protection

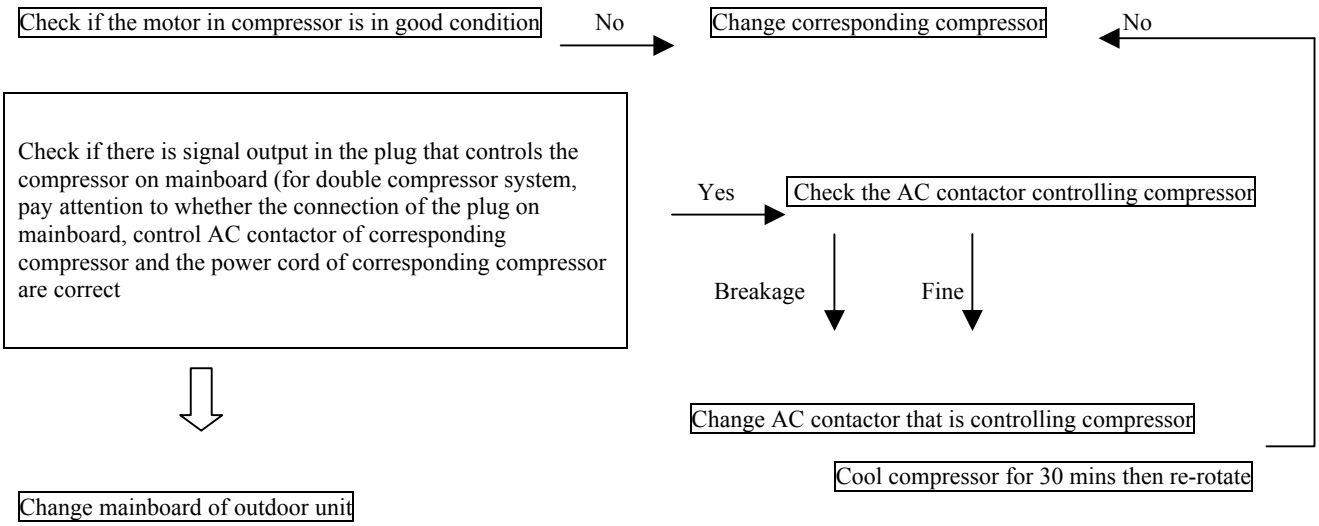


3.3.27 Fan of indoor or outdoor unit stops rotating

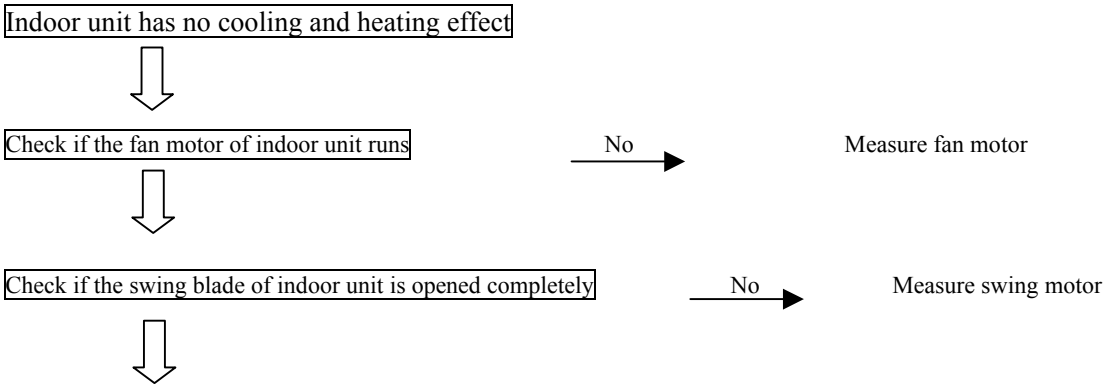


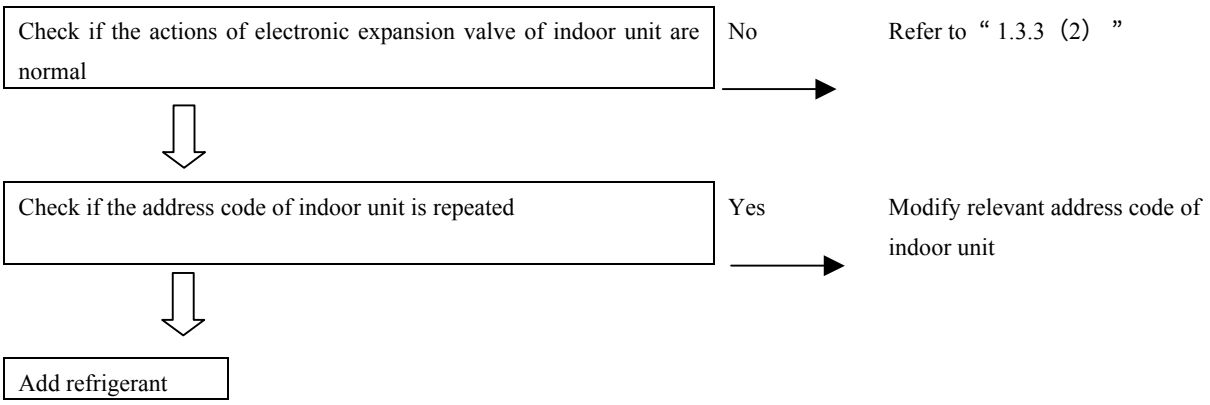
3.3.28 Compressor stops rotating



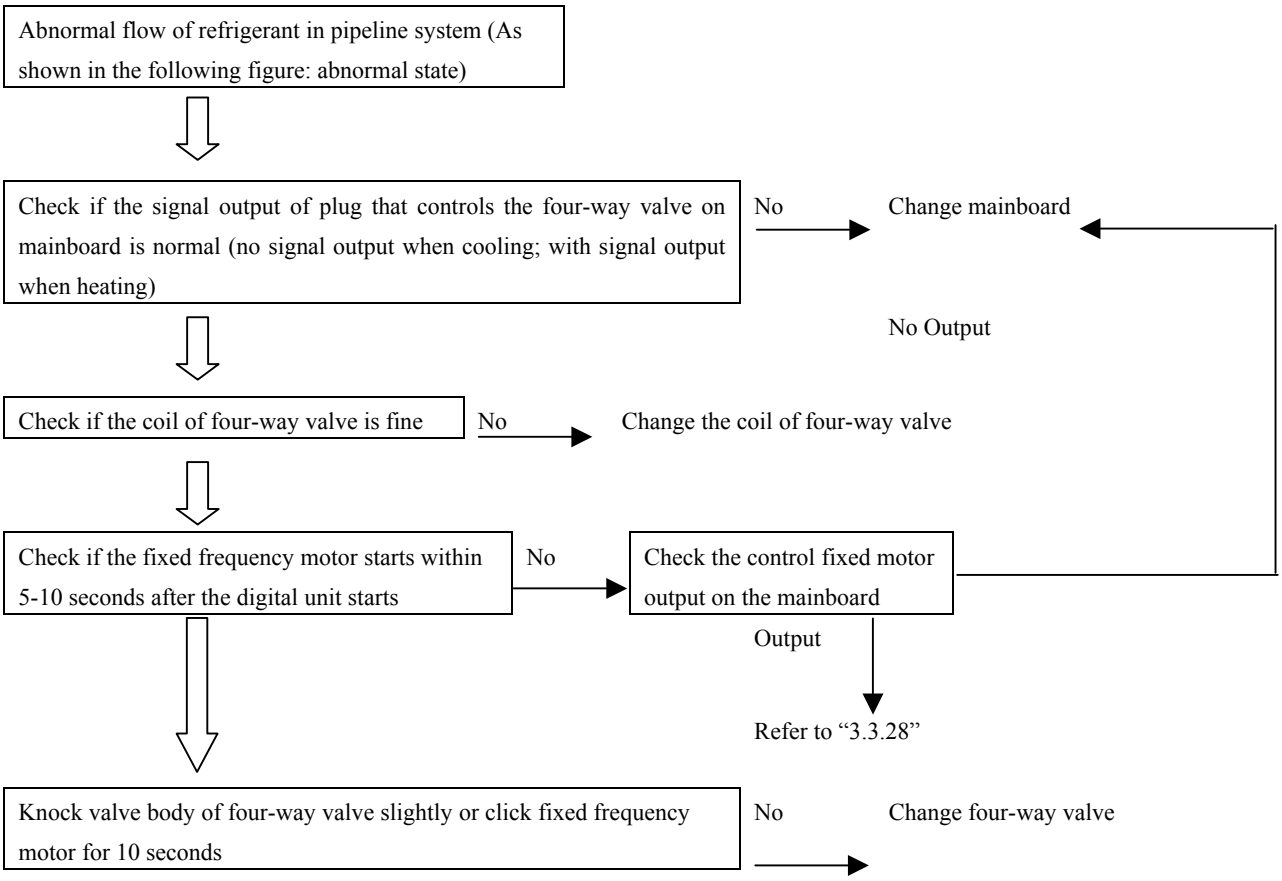


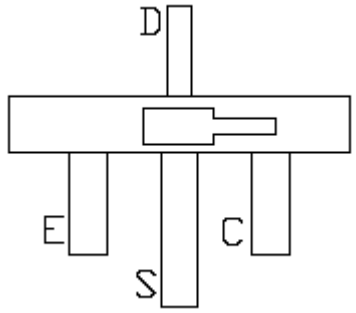
3.3.29 Indoor unit has no cooling and heating effect





3.3.30 Abnormal flow of refrigerant in pipeline system





Normal state:
When Cooling: Pipe D is ducting with pipe O, which means two temperatures are the same;
Pipe E is ducting with pipe S, which means two temperatures are the same.
Abnormal state:
When heating：Pipe D is ducting with pipe C, which means two temperatures are the same；
Pipe E is ducting with pipe s, which means two temperatures are the same;
When heating: Pipe D is ducting with pipe E, which means two temperatures are the same;
Pipe D is ducting with pipe O, which means two temperatures are the same.
When Cooling: Pipe D is ducting with pipe E, which means two temperatures are the same;
Pipe D is ducting with pipe O, which means two temperatures are the same.
The four-way valve doesn't reverse to the designated position or the compressor cannot be started
Pipe D, pipe E, pipe C and pipe S, four pipes are ducting to each other, which means four temperatures are almost the same.

3.3.31 None-running indoor unit is condensed

None-running indoor unit is condensed

⇩

Check if the address code of indoor unit is repeated — Yes → Modify relevant address code of indoor unit

⇩

Check if electronic expansion valve of indoor unit works properly — No → Refer to "3.3.20"

3.3.32 Running indoor unit is condensed

Running indoor unit is condensed

⇩

Check if the installation of indoor unit is horizontal — No → Adjust the installation of indoor unit to make it a little slant to the drainage side

⇩

Check if the condensation pipe of indoor unit is smooth → No → Check the dimension of branch drainage pipe and main pipe, and the installation should slant to the drainage side

Diameter dimension of condensing drainage main pipe	
Cooling capacity of unit（kW）	Diameter of main condensing drainage（mm）
≤7.0	20
＞7.0 and ≤17.0	25
＞17.0 and ≤100.0	32

⇩

Check if the environmental relative humidity of indoor unit is too high → Yes → Close the room door and window

⇩

Add proper refrigerant to raise its low pressure

3.3.33 Running “Communication Malfunction” of units

Communication Malfunction

⇩

Check if the connected outdoor unit has power supplied → No → Refer to “3.3.1”

⇩

Check if the connected indoor unit has power supplied → No → Refer to “ 3.3.13 ”

⇩

Measure if communication wire is circuit-open → No → Change communication wire

↓

Check if both ends of communication wire are enlaced with toroidal magnetic core individually → No → Please enlace the supplied toroidal magnetic core

↓

Check if communication wire is enlaced with strong current wire → Yes → Separate communication wire from strong current wire and keep at least 50mm distance between them. Place them at both sides of the copper pipe

3.3.34 Units have peculiar smell

Units have peculiar smell

↓

Determine if the smell is rubber or plastic smell → No → There is large leakage in the pipeline system

Cause

↓

Large refrigerant leakage will mix and bring out lubricant. The smell is lubricant smell.

Measure

↓

Detect and repair leakage, add refrigerant and lubricant

↓

Motor coil is over heated, which causes ageing of insulation layer and sends out empyreuma of appliance → Measure → Change motor

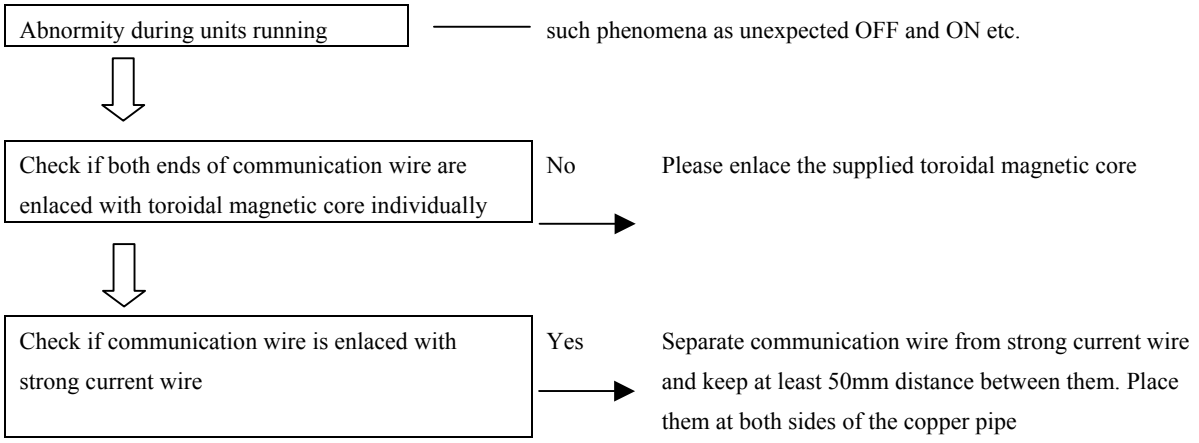
↓

Power cord is over-heated due to over capacity, which causes ageing and even burnout of insulation layer → Measure → Change to a greater capacity power cord

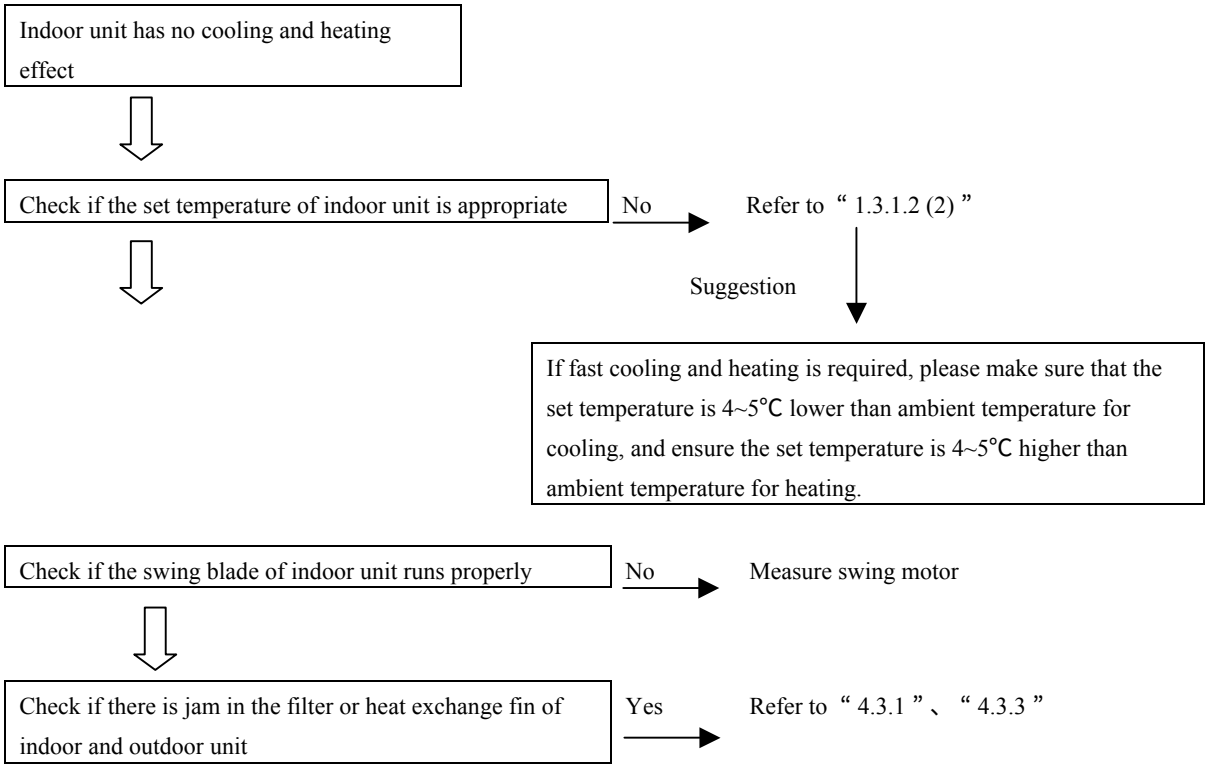
↓

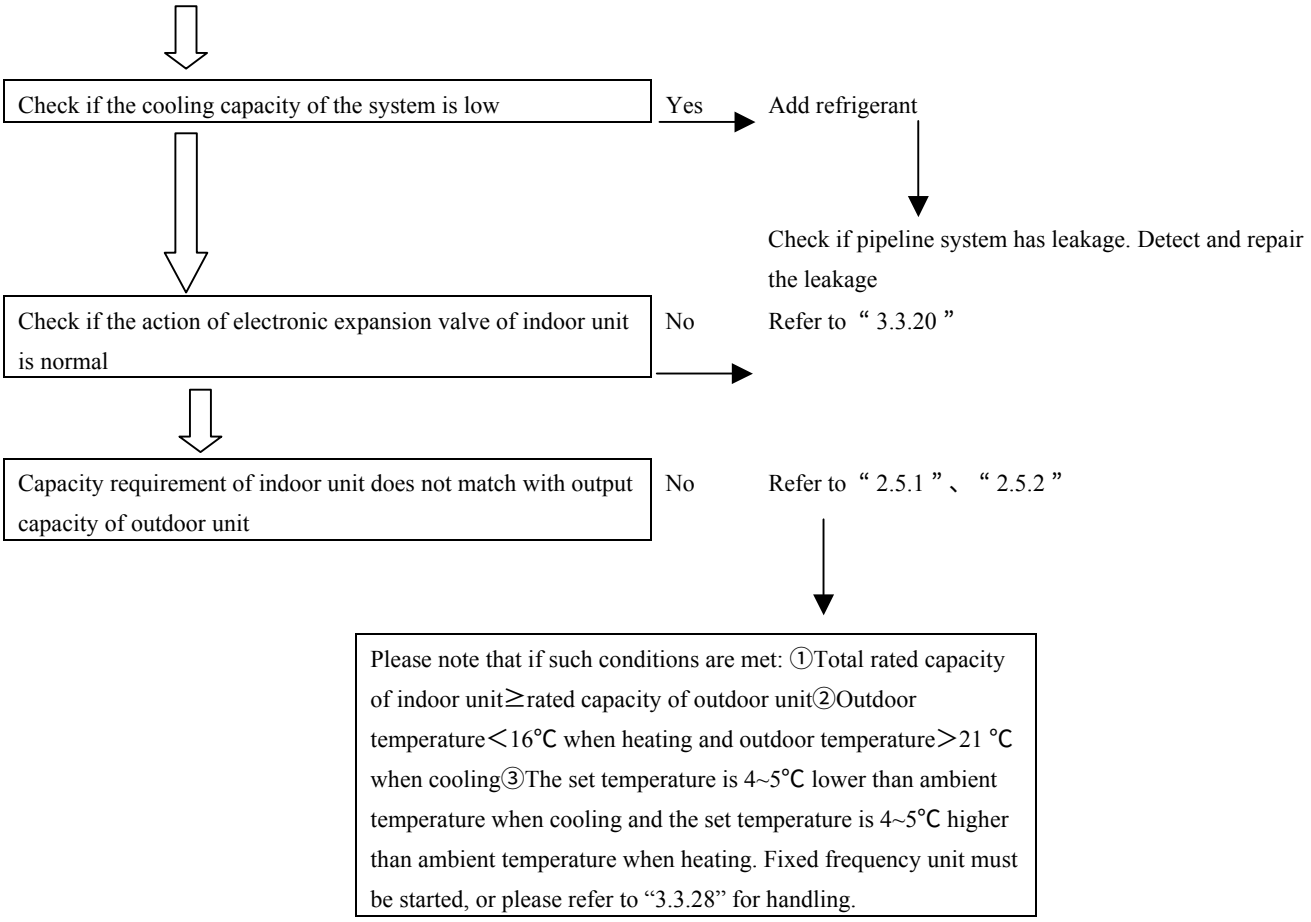
Poor contact at the joint of power cord, which causes electric spark and makes insulation layer burned → Measure → Fasten the joint of power cord again

3.3.35 Abnormity during units running – such phenomena as unexpected OFF and ON etc.

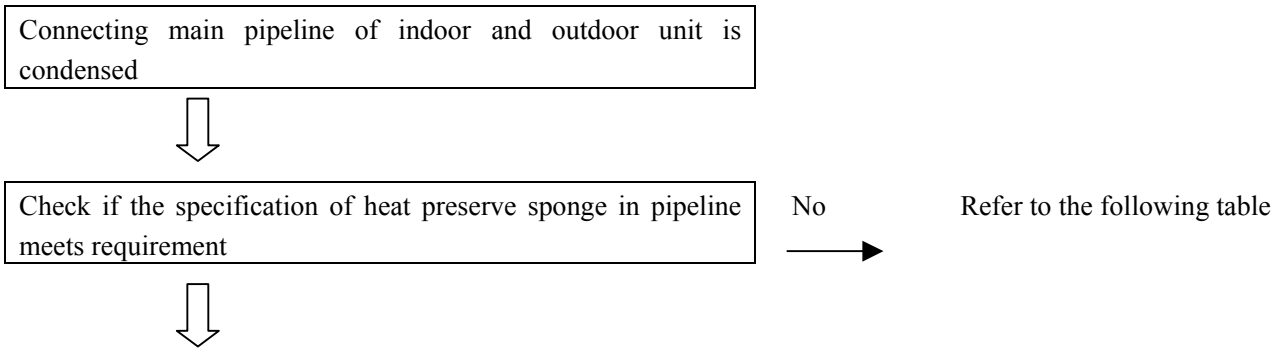


3.3.36 Indoor unit has no cooling and heating effect





3.3.37 Connecting main pipeline of indoor and outdoor unit is condensed



Check if the heat preserve sponge in pipeline is sealed well → No → Seal well the sponge opening to prevent air contact with the copper pipe

⇩

The relative humidity of environmental air is too high → Yes → Don't run the unit for a long time

Copper pipe specifications (mm)(outer diameter×wall width)	Specifications of insulation materials (mm)	
	Outer diameter	Wall width
Φ6×0.5	Φ24	10
Φ9.52×0.71	Φ27	10
Φ12×1.0	Φ34	15
Φ16×1.0	Φ37	15
Φ19×1.0	Φ41	15
Φ22×1.5	Φ64	20
Φ25×1.5	Φ68	20
Φ28×1.5	Φ70	20

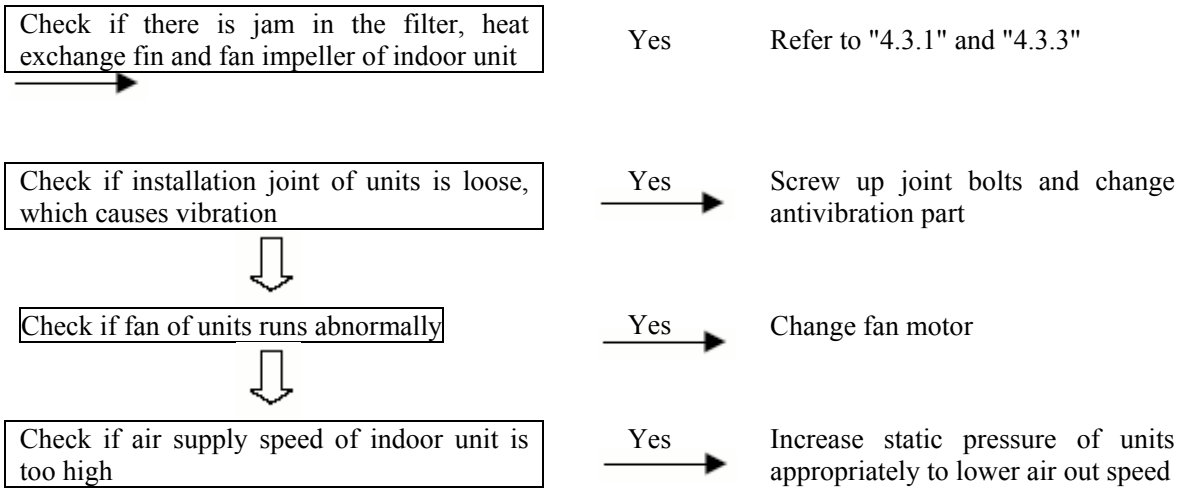
3.3.38 Units send out abnormal sound while running

Units send out abnormal sound while running

⇩

Check if there is foreign substance inside fan compartment → Yes → Clear the foreign substance

⇩



3.4 Reference table of running data of units

The following table is specially made to address the distinctiveness of digital units and direct project debugging:

Mode	Outdoor Temp. (℃)	Indoor Temp. (℃)	High pressure value (**kgf/cm^2**)	Low pressure value (**kgf/cm^2**)
Cooling	45	32/23	22	6.0
	35/24*	27/19	18.5	5.0
	15	21/17	20/15	5/10
	24	27	20/14	6.5/9.0
Heating	7/6	20/15	18	4.0
	-6/-7	20/15	16	2.8

Explanation:

(1) This data sheet is for units with single compressor outdoor unit, whose total capacity of indoor unit is equal to the capacity of outdoor unit and running load is 100%;

(2) The length of the connecting pipe between indoor and outdoor unit is 15m, and without drop height;

(3) The two data with ＊ in temperature field indicate dry-bulb temperature and wet-bulb temperature respectively;

(4) The two data with ＊＊ in pressure value field indicate the high and low variation of pressure when digital compressor is unloading and loading respectively;

(5) Data in this table is only used for the reference of project debugging or maintenance. When the dry-bulb temperature or wet-bulb temperature of indoor and outdoor environment changes, or the length or drop height of the connecting pipe between indoor unit and outdoor unit is increased, data in the above table will change accordingly.

3.5 Frequent cases of failed projects

3.5.1 Installation space problem of outdoor unit

In many actual projects, due to the lack of certain specialized knowledge of air conditioner designers, they often randomly find a place to install outdoor unit, and due to the lack of good coordination and communication between air conditioner design and building design, they have no other way but install it at a randomly selected place. All these affect greatly the running of the whole set of units.

Take the following project for example. Several units are placed close to each other in a small room, which will certainly affect greatly the heat exchange of units.

3.5.2 Model selection for indoor unit

(1) For rooms requiring long-distance air supply, when selecting ducted type indoor unit, it's better to select high static pressure ducted type unit, or not only the cooling/heating effect will not be good, but also it will cause a series of other problems, such as condensation and dripping at air outlet vent of indoor unit, appearance of high pressure protection or low pressure protection for the whole unit etc.

This project selected low static pressure ducted type unit in practice and dripping phenomenon often occurs at air outlet vent during actual operation. Only after the fan motor of indoor unit was replaced could such problem be solved.

(2) For rooms requiring short-distance air supply, when selecting ducted type indoor unit, it's better to select low static pressure or zero static pressure ducted type unit, or noise will be increased.

This project selected high static pressure ducted type unit in practice and wind noise is too loud during actual operation. Likewise, only after the fan motor of indoor unit was replaced could such problem be solved.

3.5.3 Reservation of repairing hole for indoor unit

For ducted type indoor unit, repairing hole of the unit must be reserved in project installation for the convenience of carrying out unit repairing and normal maintenance.

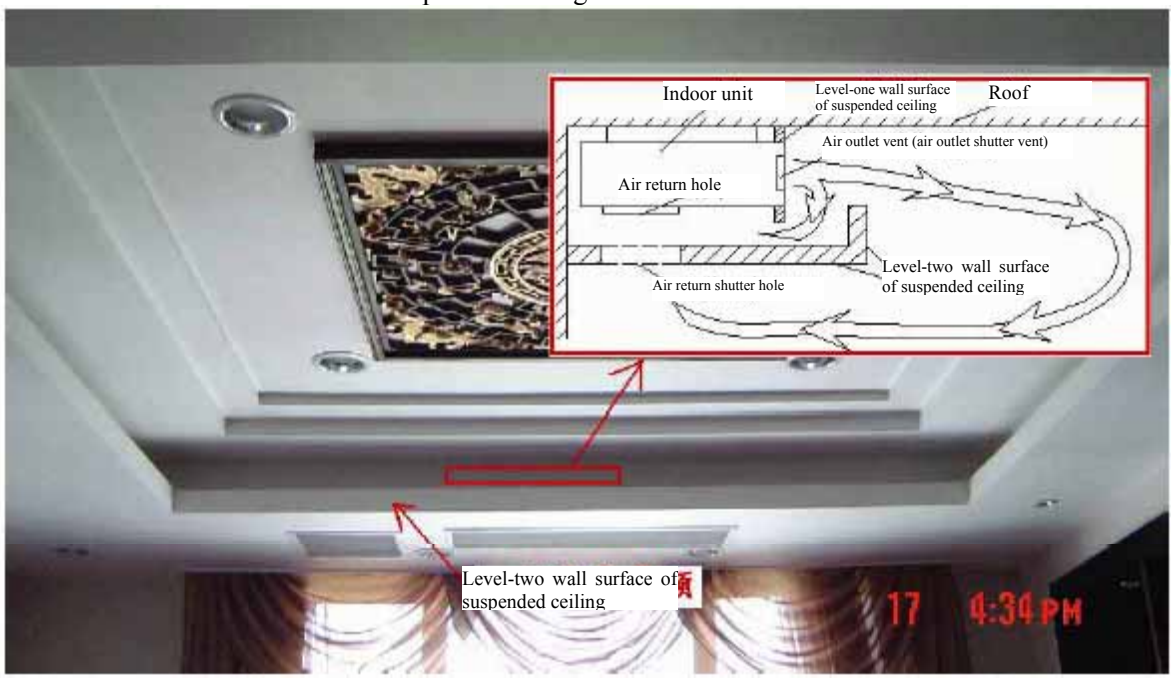
There was no repairing hole in the original design of installation of this project and it was added later. The design principle of repairing hole is based on the convenience for repairing personnel to carry out maintenance operation and its specification is normally 600mm×600mm.

3.5.4 When designing indoor unit, fail to apply flexibility according to actual condition of the project

The house type of this project is a typical representative of high buildings. There is strengthening girder in the room, which is thick (normally about 500mm). As is shown in the diagram, the air conditioner has been installed completely inside the grid enclosed by the two walls and two strengthening girders. The wind supplied by the indoor unit will hover inside this grid, which will decrease the cooling and heating effect for the entire room, and might have negative impact on the operation of the whole set of units.

3.5.5 When installing indoor unit, fail to consider the change of air flow organization A

In modern home decoration, many of them adopt the decoration style shown in the following diagram, where there is a circle of level-two decoration suspended ceiling.



In the actual project, due to the lack of knowledge of air conditioner designers about the air supply and air return of ducted type unit, many units have been designed as shown in the diagram, which causes short flow phenomenon of air supply and air return of units and make the main unit mistake that room temperature has reached the required temperature. This will consequently lower its output capacity and decrease the cooling and heating effect of the entire room.

3.5.6 When installing indoor unit, fail to consider the change of air flow organization B

In the actual project, due to the lack of knowledge of air conditioner designers about the air supply and air return of ducted type unit, many units are designed as shown in the diagram, which will also cause short flow phenomenon of air supply and air return of units and make the main unit mistake that room temperature has reached the required temperature. This will consequently lower its output capacity and decrease the cooling and heating effect of the entire room.

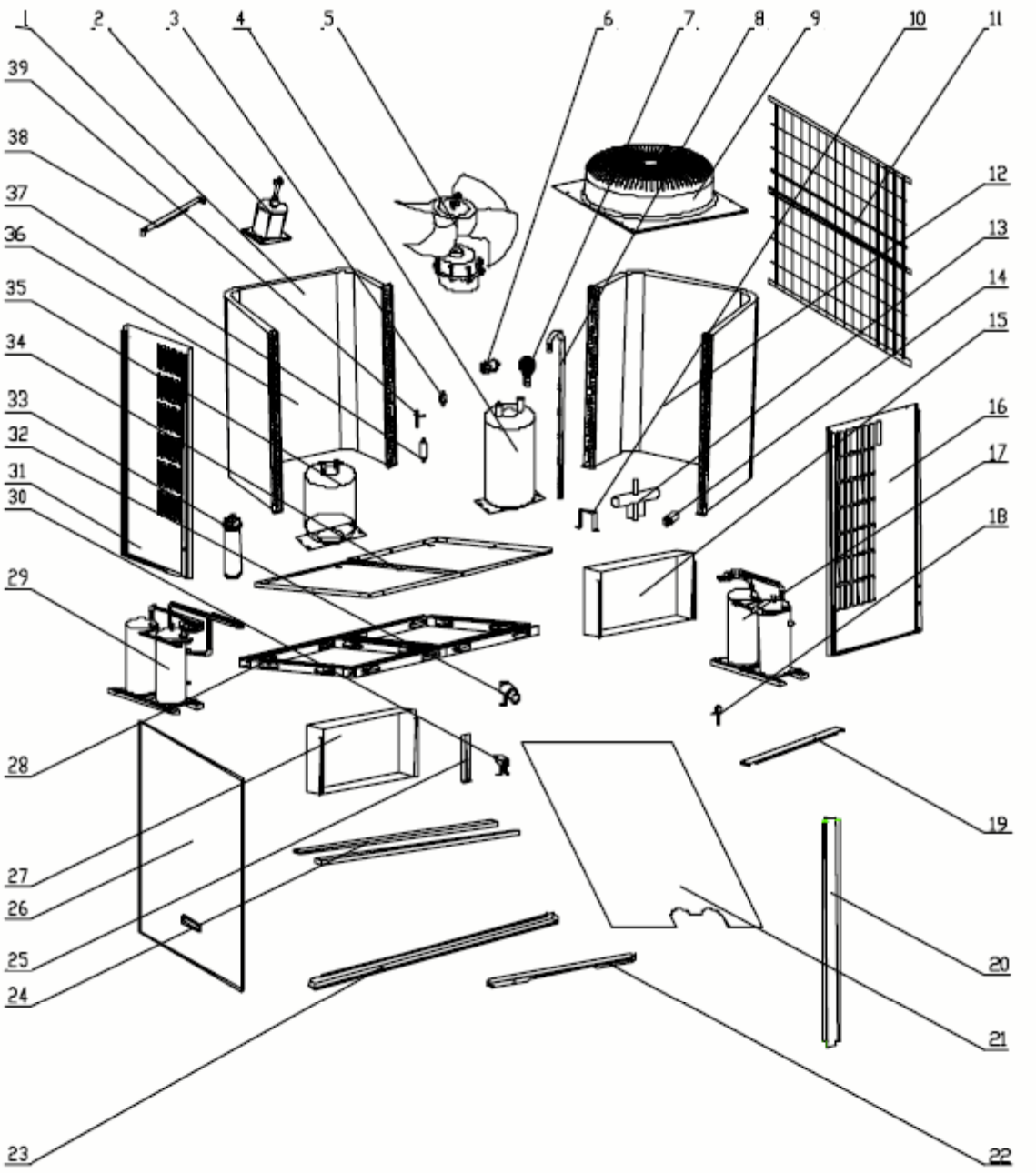
3.5.7 Power cord and communication wire must be separated with a certain distance

We know that when communication wire is close to power cord, the power cord will interfere the normal communication of the units. In this project, power cord and communication wire were enlaced together, which caused abnormal operation of the units. Only after the power cord and communication wire were separated with a certain distance (about 10cm) later could the units be back to normal.

Chapter 4 Repair and maintenance

4.1 Explosive view and parts and components list

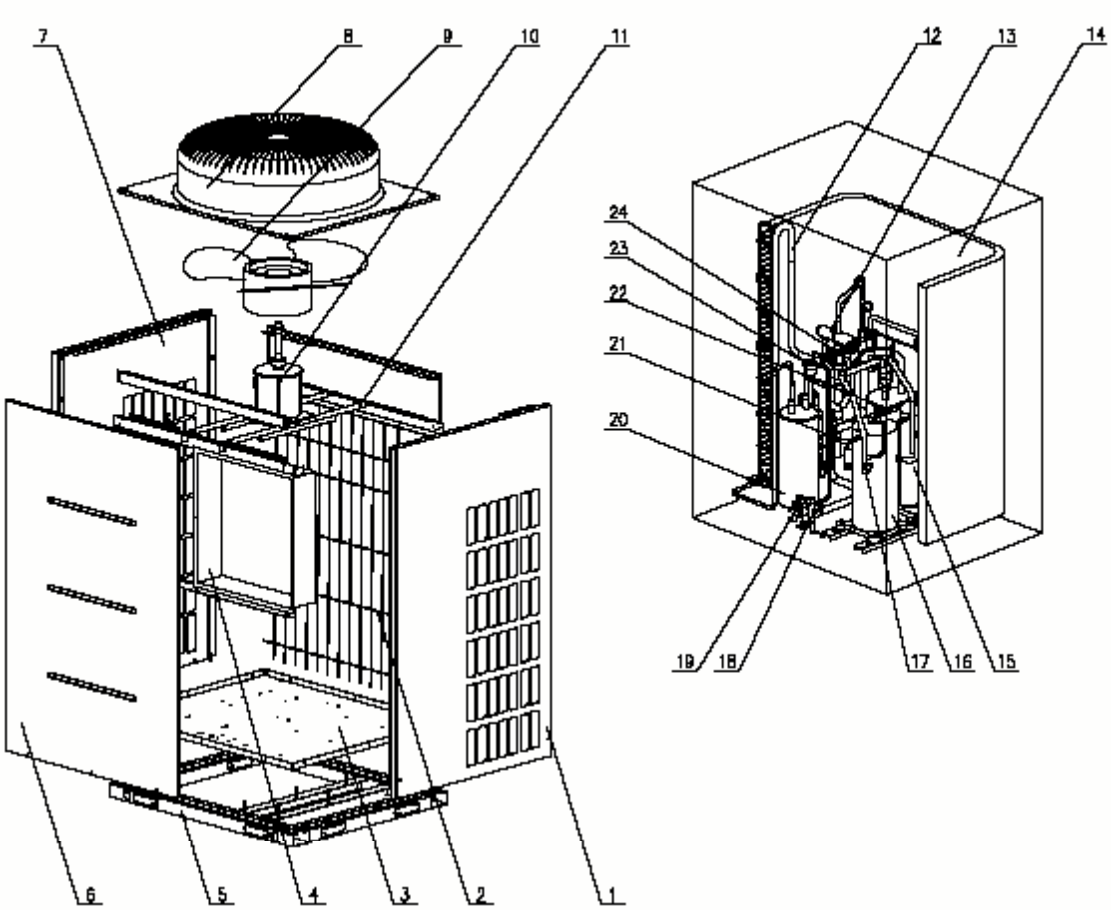
4.1.1 GMV(L)-R620W4/A、GMV(L)-R560W4/A



Parts and components list

No	Name of structural part	Drawing No	Code	Qty
1	Condenser assy (left)	VR600W4A.07010000	01138778	1
2	Motor	LF28WO.01000000	15015802	2
3	Dual flow filter	TY.01.72	07220016	2
4	Gas liquid separator	VR600W4A.03000102	07228781	1
5	Fan	RF28WO.00000015	10355801	2
6	Filter	RF60M.10170002b	07210021	2
7	Liquid separator	TY.01.90(01)	072200071	2
8	Gas collector	VR600W4A.07020001	03828792	2
9	Cowl	RF28WO.00000001	22265801	2
10	Support (Filter)	VR600W4A.09020006	01728795	2
11	Rear grill	VPd280W.03030001	01238740	2
12	Condenser assy (right)	VR600W4A.08010000	01138779	1
13	Four-way valve	43000409	43000409	1
14	Big-tube filter	FGR65AO.01040005	07219058	1
15	Electric box (right)	VLR600W4A.30010001	01418788	1
16	Right side plate	VLR600W4A.20000004	01308775	1
17	Compressor assy (right)	VR600W4A.02000000	00138764	1
18	Two-way valve	43000251	43000251	6
19	Supporting frame 2	VLR600W4A.20000011	01798775	2
20	Supporting frame 3	VLR600W4A.20080013	01798779	1
21	Right front plate	VLR600W4A.20000009	01538804	1
22	Supporting frame 4	VLR600W4A.20080013	01798779	2
23	Supporting frame 1	VLR600W4A.20000005	01798773	1
24	Weld assembly of compressor mounting beam	VR600W4A.02000400	01338739	1
25	Weld assembly of support	VR600W4A.09020100	01728802	2
26	Left front plate	VLR600W4A.20000008	01538802	1
27	Electric box (left)	VR600W4A.30010001	01418791	1
28	Base support	VR600W4A.01000000	01208782	1
29	Compressor assy (left)	VR600W4A.04000000	00138765	1
30	Small valve	FGR40H(O).01030000	07108501	1
31	Left side plate	VLR600W4A.20000003	01308773	1
32	Big valve	FGR65AO.03000020	07189057	1
33	Oil separator	07220023	07220023	1
34	Chassis	VLR600W4A.20010000	01208784	1
35	Two-way liquid accumulator	VR600W4A.03000103	07228780	1
36	Condenser assy (left)	VR600W4A.07010000	01138778	1
37	One-way valve	RF28WO.18000004	07135801	2
38	Motor mounting rack	RF28WO.09000001	01335801	4
39	Electronic expansion valve	07130323	07130323	2

4.1.2 GMV(L)-R260W2/B、GMV（L）-R300W2/B



GMV（L）-R300W2/B Parts and components list

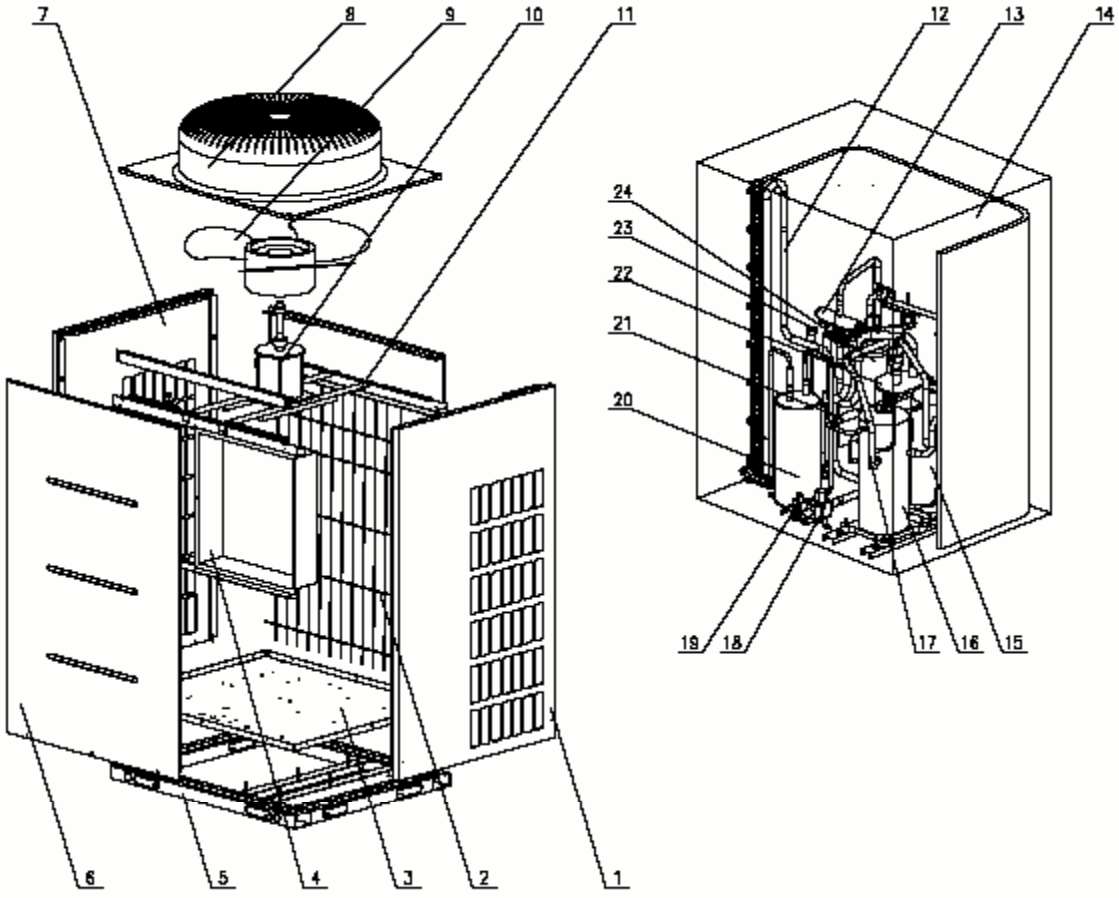
No.	Name	Part code	Drawing No	Qty
1	Right side plate assy	01308780	VR300W2B.02030000	1
2	Rear grill	01238740	VPd280W.03030001	1
3	Chassis assy	01208792	VR300W2B.01030000	1
4	Electric box assy	01404636	VR30W2N.07010000	1
5	Base support assy	01208788	VR300W2B.01010000	1
6	Front plate assy	01538806	VR300W2B.02050000	1
7	Left side plate assy	01308777	VR300W2B.02040000	1
8	Cowl	22265801	RF28WO.00000001	1
9	Fan	10355801	RF28WO.00000015	1
10	Motor LW400B	15015802	LF28WO.01000000	1
11	Motor mounting rack	01335801	RF28WO.09000001	2
12	Gas collector assy	03828805	VR300W2B.07030000	1
13	Four-way valve assy	43008761	VR300W2B.03010000	1

14	Condenser assy	01138780	VR300W2B.08010000	1
15	Compressor and its parts ZR72KC-TFD-420	00108705	00108705	1
16	Compressor and its parts ZRD72KC-TFD-433	00108704	00108704	1
17	Air suction pipe (digital compressor)	03828803	VR300W2B.02010002	1
18	Stop valve 1-1/8	07138236	HWR60D.01030000	1
19	Stop valve 1/2	07138235	HWR60D.01020000	1
20	Two-way liquid accumulator	07228765	VR30W2.05000010	1
21	Compressor discharge pipe assy	03638767	VR30W2.03000100	1
22	Gas liquid separator	07228768	VR20W2.05000006	1
23	Liquid separator assy	07228795	VR300W2B.07000000	1
24	Oil separator FS-5204	07220023	07220023	1

GMV（L）-R260W2/B Parts and components list

No.	Name	Part code	Drawing No	Qty
1	Right side plate assy	01308780	VR300W2B.02030000	1
2	Rear grill	01238740	VPd280W.03030001	1
3	Chassis assy	01208792	VR300W2B.01030000	1
4	Electric box assy	01404636	VR30W2N.07010000	1
5	Base support assy	01208788	VR300W2B.01010000	1
6	Front plate assy	01538806	VR300W2B.02050000	1
7	Left side plate assy	01308777	VR300W2B.02040000	1
8	Cowl	22265801	RF28WO.00000001	1
9	Fan	10355801	RF28WO.00000015	1
10	Motor LW400B	15015802	LF28WO.01000000	1
11	Motor mounting rack	01335801	RF28WO.09000001	2
12	Gas collector assy	03824605	VR260W2B.08020000	1
13	Four-way valve assy	43008761	VR300W2B.03010000	1
14	Condenser assy	01134601	VR260W2B.08030000	1
15	Compressor and its parts ZR72KC-TFD-420	00108705	00108705	1
16	Compressor and its parts ZRD72KC-TFD-433	00108704	00108704	1
17	Air suction pipe (digital compressor)	03828803	VR300W2B.02010002	1
18	Stop valve 1-1/8	07138236	HWR60D.01030000	1
19	Stop valve 1/2	07138235	HWR60D.01020000	1
20	Two-way liquid accumulator	07228765	VR30W2.05000010	1
21	Compressor discharge pipe assy	03638767	VR30W2.03000100	1
22	Gas liquid separator	07228768	VR20W2.05000006	1
23	Liquid separator assy	03234739	VR260W2B.08010000	1
24	Oil separator FS-5204	07220023	07220023	1

4.1.3 GMV（L）-R200W2/B、GMV（L）-R220W2/B

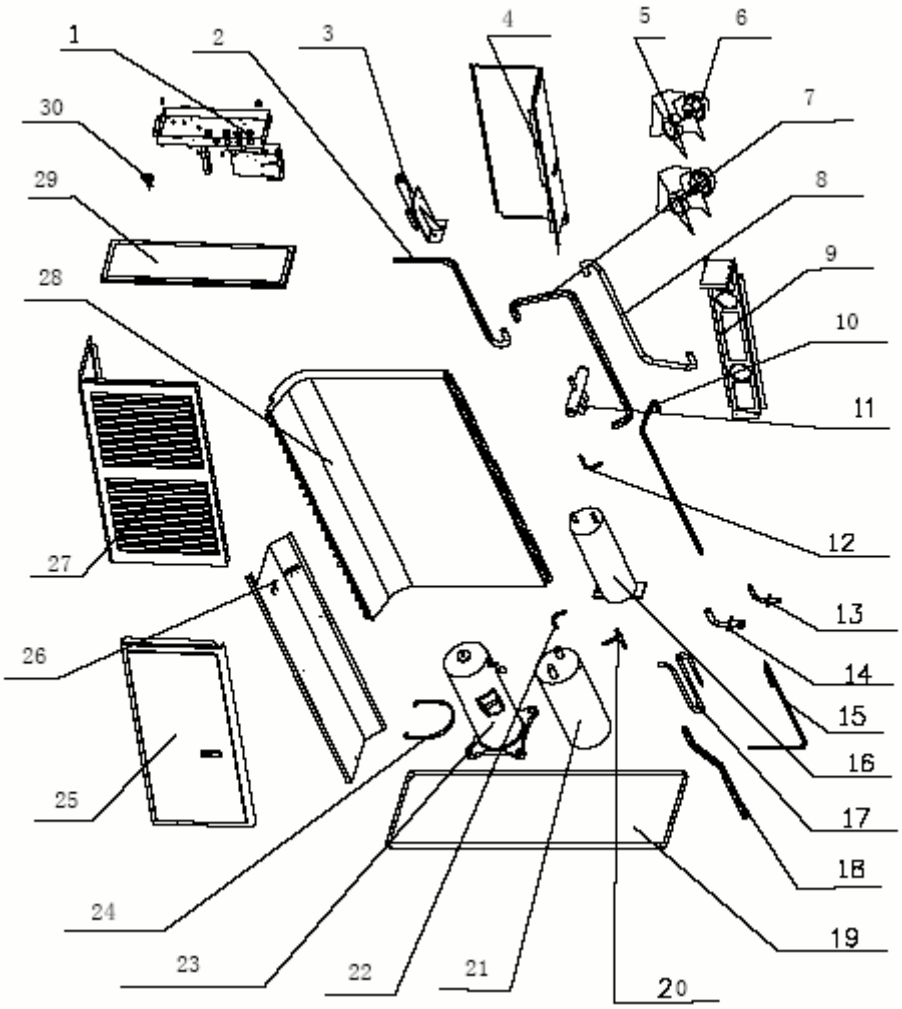


Parts and components list

No.	Name	Part code	Drawing No	Qty
1	Right side plate assy	01308780	VR300W2B.02030000	1
2	Rear grill	01238740	VPd280W.03030001	1
3	Chassis assy	01208792	VR300W2B.01030000	1
4	Electric box assy	01404636	VR30W2N.07010000	1
5	Base support assy	01208788	VR300W2B.01010000	1
6	Front plate assy	01538806	VR300W2B.02050000	1
7	Left side plate assy	013087771	VR300W2B.02040000(01)	1
8	Cowl	22265801	RF28WO.00000001	1
9	Fan	10355801	RF28WO.00000015	1
10	Motor LW400B	15015802	LF28WO.01000000	1
11	Motor mounting rack	01335801	RF28WO.09000001	2
12	Gas collector assy	03824606	VR200W2B.07030000	1
13	Four-way valve assy	03028770	VR200W2B.03010000	1
14	Condenser assy	01138781	VR200W2B.08010000	1
15	Compressor ZR49K3-TFD-422	00108711	00108711	1

16	Compressor ZRD61KC-TFD-433	00108712	00108712	1
17	Air suction pipe (digital compressor)	03828803	VR300W2B.02010002	1
18	Ball valve 2-φ25X1.5	071800041	TY.01.98 (01)	1
19	Ball valve	07180006	TY.01.98a	1
20	Two-way liquid accumulator	07228765	VR30W2.05000010	1
21	Compressor discharge pipe assy	03638767	VR30W2.03000100	1
22	Gas liquid separator	07228768	VR20W2.05000006	1
23	Liquid separator assy	07228802	VR200W2B.07000000	1
24	Oil separator FS-5203	07220025	07220025	1

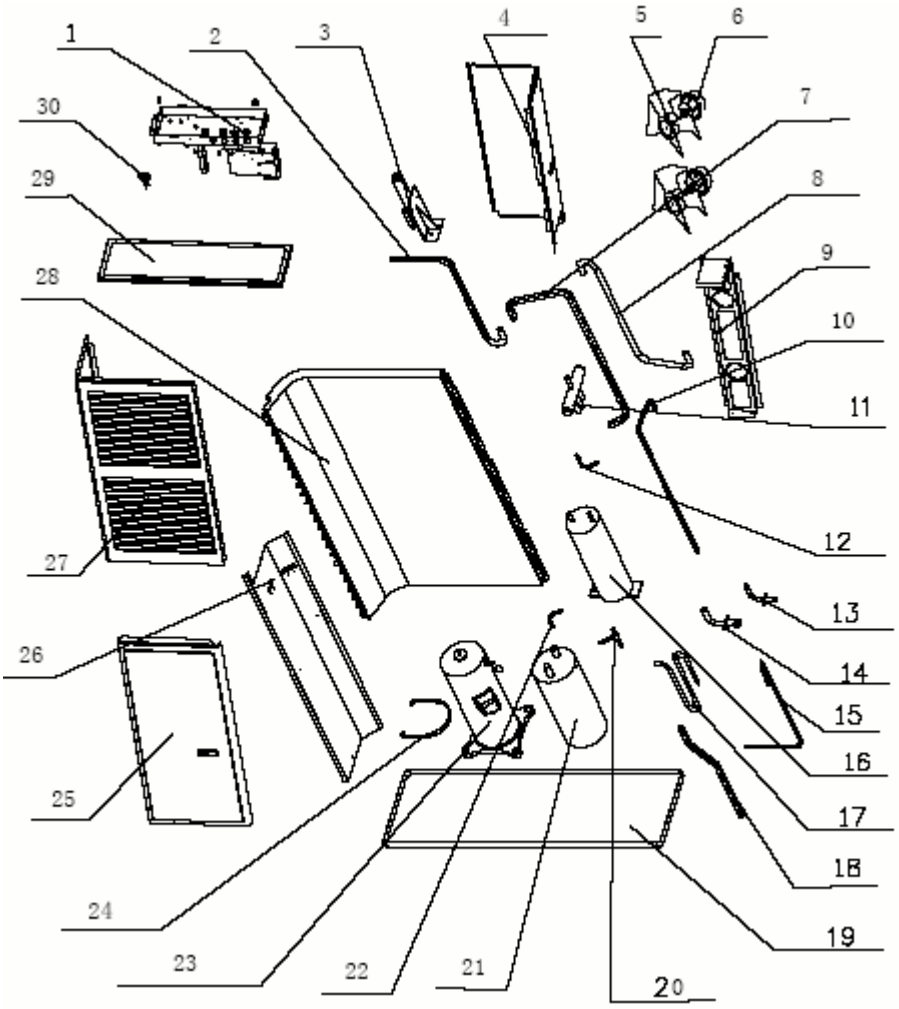
4.1.4 GMV(L)-R150W/AS



Parts and components list

No	Name	Qty	Drawing No	Part code	Remarks
1	Electric box assy	1	VR120WA.05010000	01404617	
2	Gas split connecting pipe	1	VR100WA.09010003	05014617	
3	Oil separator assy	1	VR100WA.08020000	07228777	
4	Rear side plate assy	1	VP14WA.07010000	01308744	
5	Axial fan	2	LF7.5WB.00000003	10335253	
6	Motor	2	KFR140WlE.03010002	15015451	
7	Air suction pipe	1	VR120WA.08010003	03628805	
8	Condenser connecting pipe	1	VR140WA.09010002	05014622	
9	Motor support	1	VP14WA.03010003	01708733	
10	Discharge pipe 2	1	VR100WA.09010001	03818797	
11	Four-way valve	1	TY.00.374	43000405	
12	Uninstall valve outlet pipe	1	VR100WA.02010002	03234632	
13	Stop valve assy 1/2	1	TY.01.118q (03)	071302333	One diagram for multiple articles
14	Big valve assy	1	KFR120WpB.01000000a (01)	071034011	One diagram for multiple articles
15	Liquid accumulator inlet pipe	1	VR100WA.15000001	03234641	
16	High-pressure liquid accumulator	1	VP14WA.16000000	07228735	
17	Discharge pipe 1	1	VR120WA.08010001	03618769	
18	Big valve connecting pipe	1	VR100WA.09010004	05014618	
19	Chassis assy	1	VR100WA.01000000	01208780	
20	Uninstall valve	1			Compressor part
21	Gas liquid separator	1	VR100WA.17000001	07228767	
22	Uninstall valve inlet pipe	1	VR120WA.02010001	03234649	
23	Compressor and its parts ZRD72KC-TFD-532	1	00108701	00108701	
24	Gas split bracket	1	VR100WA.04000002	02148768	
25	Front side plate	1	VP14WA.06000001	01308733	
26	Separator	1	VR100WA.04000001	01238763	
27	Cover	1	KFR120WlB.00000001	01435433	
28	Condenser assy	1	VR140WA.18010000	01138768	
29	Top cover	1	VP14WA.12000001	01258731	
30	Electronic expansion valve	1	07130320	07130320	

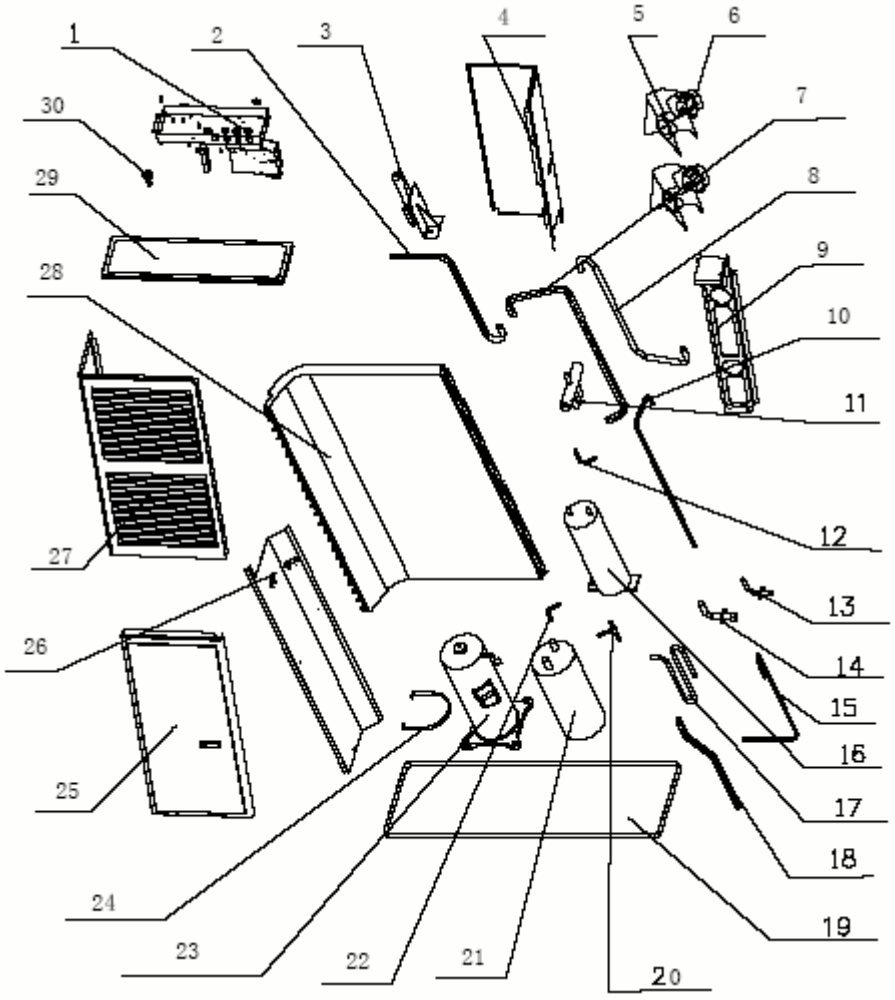
4.1.5 GMV(L)-R140W/A、GMV(L)-R120W/A



Parts and components list

No	Name	Qty	Drawing No	Part code	Remarks
1	Electric box assy	1	VR120WA.05010000	01404617	
2	Gas split connecting pipe	1	VR100WA.09010003	05014617	
3	Oil separator assy	1	VR100WA.08020000	07228777	
4	Rear side plate assy	1	VP14WA.07010000	01308744	
5	Axial fan	2	LF7.5WB.00000003	10335253	
6	Motor	2	KFR140WlE.03010002	15015451	
7	Air suction pipe	1	VR120WA.08010003	03628805	
8	Condenser connecting pipe	1	VR140WA.09010002	05014622	
9	Motor support	1	VP14WA.03010003	01708733	
10	Discharge pipe 2	1	VR100WA.09010001	03818797	
11	Four-way valve	1	TY.00.374	43000405	
12	Uninstall valve outlet pipe	1	VR100WA.02010002	03234632	
13	Stop valve assy 1/2	1	TY.01.118q (03)	071302333	One diagram for multiple articles
14	Big valve assy	1	KFR120WpB.01000000 a (01)	071034011	One diagram for multiple articles
15	Liquid accumulator inlet pipe	1	VR100WA.15000001	03234641	
16	High-pressure liquid accumulator	1	VP14WA.16000000	07228735	
17	Discharge pipe 1	1	VR120WA.08010001	03618769	
18	Big valve connecting pipe	1	VR100WA.09010004	05014618	
19	Chassis assy	1	VR100WA.01000000	01208780	
20	Uninstall valve	1			Compressor part
21	Gas liquid separator	1	VR100WA.17000001	07228767	
22	Uninstall valve inlet pipe	1	VR120WA.02010001	03234649	
23	Compressor and its parts ZRD61KC-PFZ-532	1	00108728	00108728	
24	Gas split bracket	1	VR100WA.04000002	02148768	
25	Front side plate	1	VP14WA.06000001	01308733	
26	Separator	1	VR100WA.04000001	01238763	
27	Cover	1	KFR120WlB.00000001	01435433	
28	Condenser assy	1	VR140WA.18010000	01138768	
29	Top cover	1	VP14WA.12000001	01258731	
30	Electronic expansion valve	1	07130320	07130320	

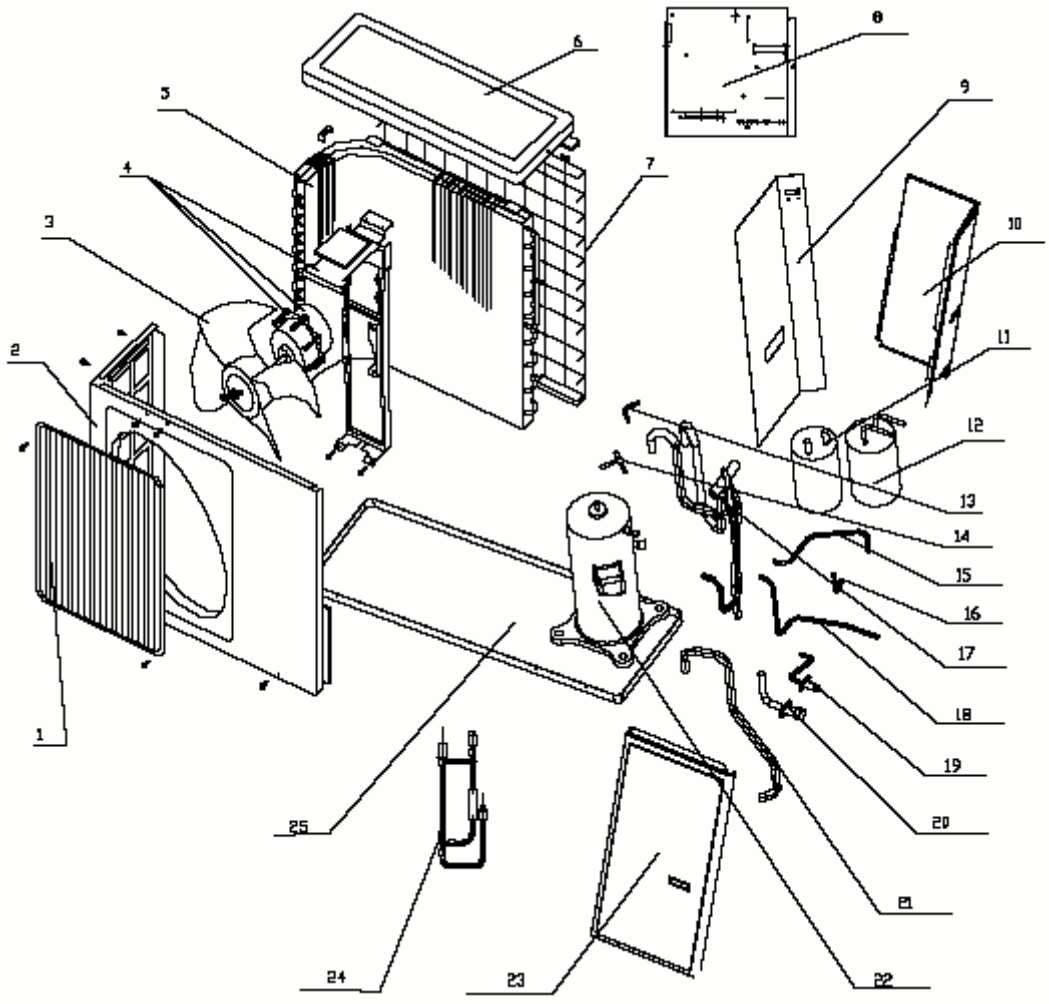
4.1.6 GMV(L)-R100W/A



Parts and components list

No	Name	Qty	Drawing No	Part code	Remarks
1	Electric box assy	1	VR100WA.05010000	01404614	
2	Gas split connecting pipe	1	VR100WA.09010003	05014617	
3	Oil separator assy	1	VR100WA.08020000	07228777	
4	Rear side plate assy	1	VP14WA.07010000	01308744	
5	Axial fan	2	LF7.5WB.00000003	10335253	
6	Motor	2	KFR140WlE.03010002	15015451	
7	Air suction pipe	1	VR100WA.08010002	03828770	
8	Condenser connecting pipe	1	VR100WA.09010002	05014616	
9	Motor support	1	VP14WA.03010003	01708733	
10	Discharge pipe 2	1	VR100WA.09010001	03818797	
11	Four-way valve	1	TY.00.374	43000405	
12	Uninstall valve outlet pipe	1	VR100WA.02010002	03234632	
13	Stop valve assy1/2	1	TY.01.118q (03)	071302333	One diagram for multiple articles
14	Big valve assy	1	KFR120WpB.01000000 a (01)	071034011	One diagram for multiple articles
15	Liquid accumulator inlet pipe 1	1	VR100WA.15000003	03234674	
16	High-pressure liquid accumulator	1	VP14WA.16000000	07228735	
17	Discharge pipe 1	1	VR100WA.08010001	03818796	
18	Big valve connecting pipe	1	VR100WA.09010004	05014618	
19	Chassis assy	1	VR100WA.01000000	01208780	
20	Uninstall valve	1			Compressor part
21	Gas liquid separator	1	VR100WA.17000001	07228767	
22	Uninstall valve inlet pipe	1	VR100WA.02010001	03234631	
23	Compressor and its parts ZRD48KC-PFJ-532	1	00108700	00108700	
24	Gas split bracket	1	VR100WA.04000002	02148768	
25	Front side plate	1	VP14WA.06000001	01308733	
26	Separator	1	VR100WA.04000001	01238763	
27	Cover	1	KFR120WlB.00000001	01435433	
28	Condenser assy	1	VR100WA.18010000	01138768	
29	Top cover	1	VP14WA.12000001	01258731	
30	Electronic expansion valve	1	07130320	07130320	

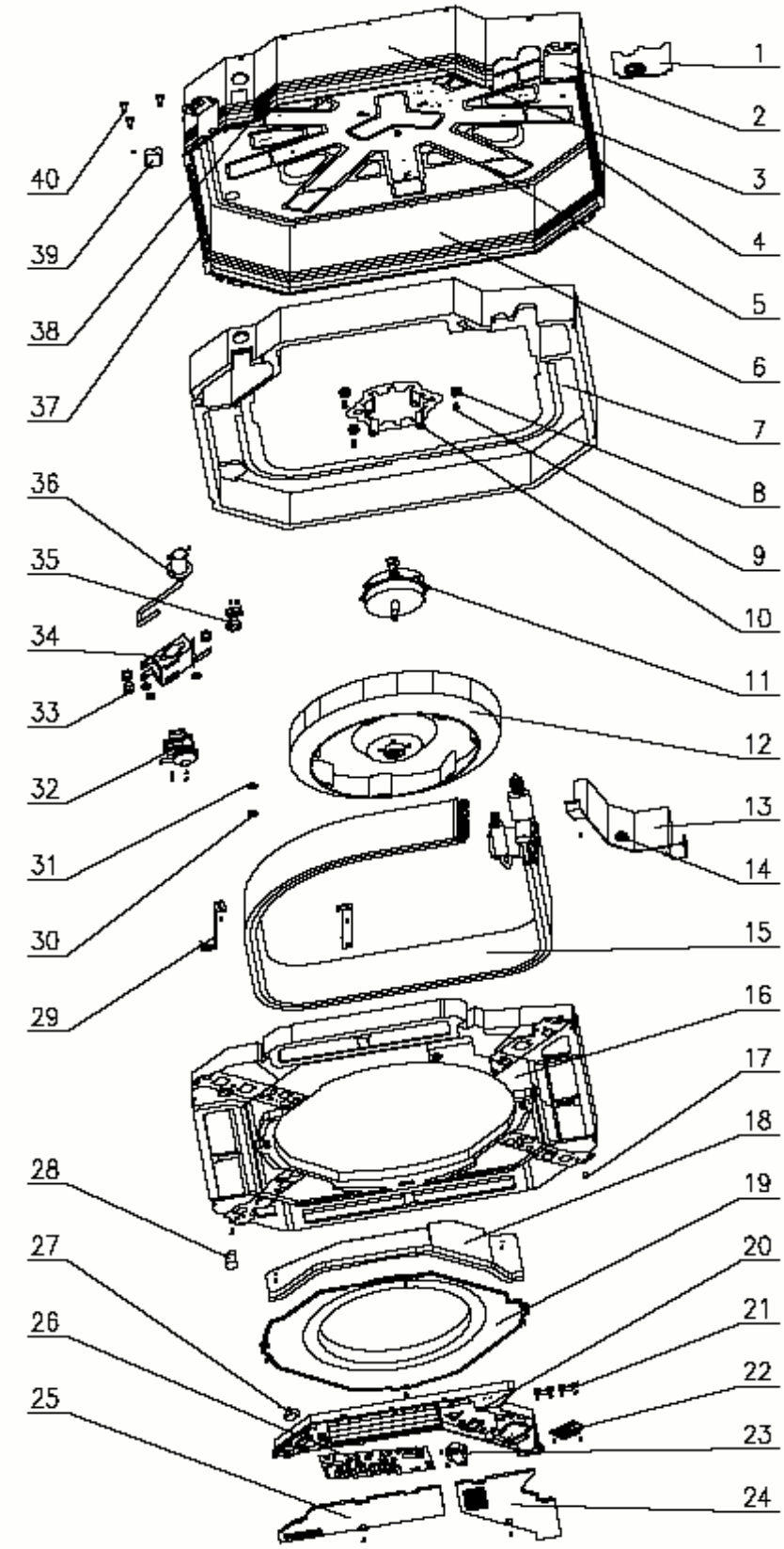
4.1.7 GMV(L)-R80W/A



Parts and components list

No	Name	Qty	Drawing No	Part code	Remarks
1	Front cover	1	LF7.5WB.10000001	22265251	
2	Cover	1	LF7.5WB.00000001	01435254	
3	Axial fan	1	LF7.5WB.00000003	10335253	
4	Motor	1	KFR140WlE.03010002	15015451	
	Motor support	1	LF7.5WB.04010001	01705253	
5	Condenser	1	VR80WA.01010000	01138775	
6	Top cover	1	LF7.5WB.09000001	01255262	
7	Grill cover	1	LF7.5WB.00000004c	01475252	
8	Electric box	1	VR80WA.05010000	01418786	
9	Separator	1	VR80WA.06000001	01238768	
10	Rear side plate	1	LF7.5WB.14000001	01305260	
11	Gas liquid separator	1	VR80WA.07010000	07228782	
12	Liquid accumulator	1	VR80WA.09000001	07228779	
13	Uninstall valve inlet pipe	1	VR80WA.02010001	03234659	
14	Uninstall valve	1			Compressor part
15	Liquid accumulator inlet pipe	1	VR80WA.09000003	03234665	
16	Uninstall valve outlet pipe	1	VR80WA.02010002	03234660	
17	Four-way valve assy	1	VR80WA.04000000	03028767	
18	Liquid accumulator outlet pipe	1	VR80WA.09000002	03234664	
19	Small valve assy	1	LF7.5WB.13000000	07105255	
20	Big valve assy	1	LF7.5WB.12000000	07105251	
21	Air suction pipe	1	VR80WA.08010002	03828777	
22	Compressor and its parts ZRD42KC-PFJ-532	1	00108729	00108729	
23	Front side plate	1	LF7.5WB.08000001	01305247	
24	Electronic expansion valve assy	1	VR80WA.13010000	07138775	
25	Chassis	1	LF7.5WB.01010001	01215251	

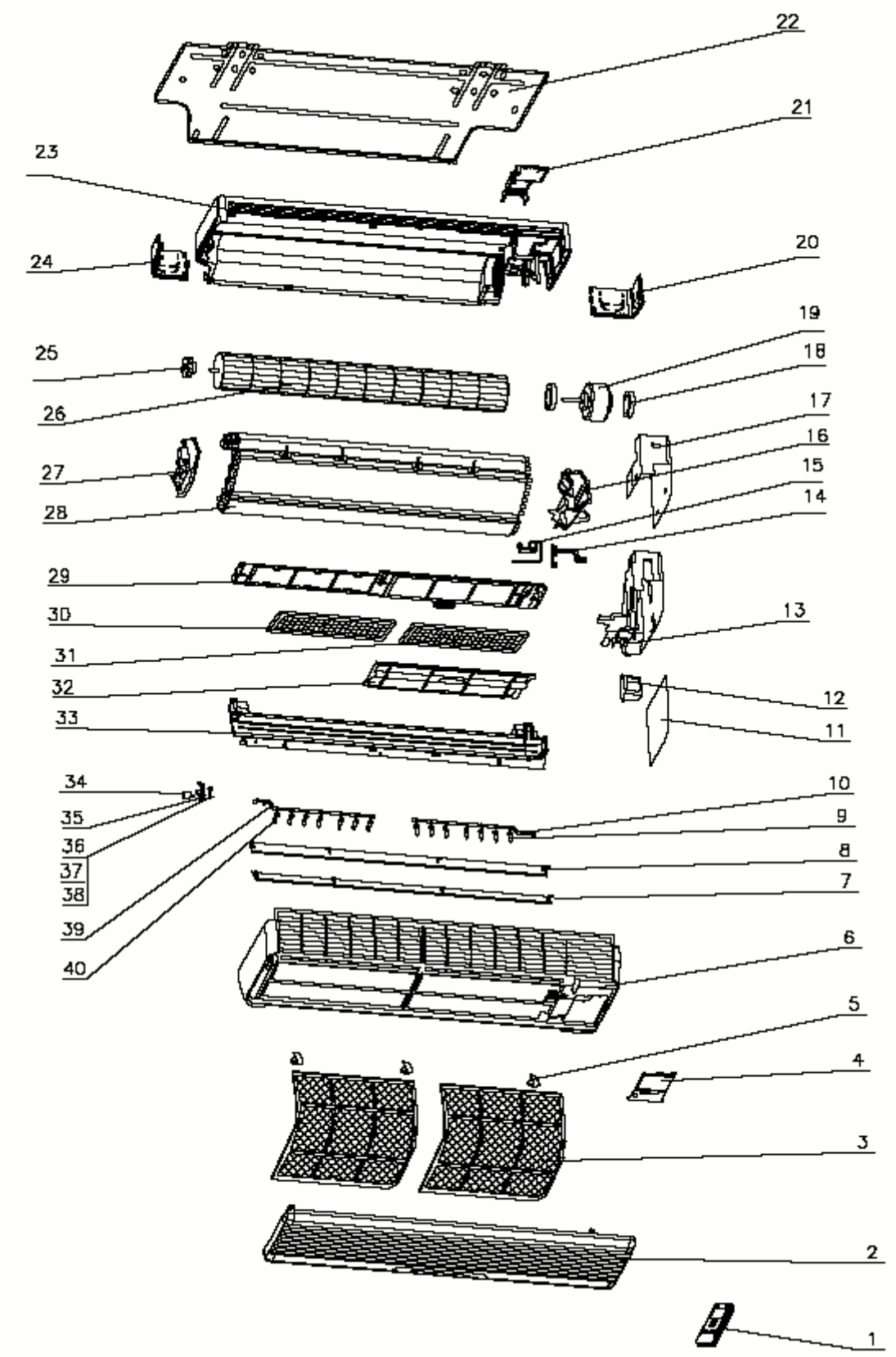
4.1.8 Cassette type unit



Parts and components list

No	Name	Qty	Drawing No	Part code
1	Pipe outlet plate	1	KT01.01000004	01382711
2	Main mounting plate	4	KT01.01000006	01332701
3	Front side plate assy	1	KT01.01010000	01302718
4	Left side plate assy	1	KT01.01030000	01302715
5	Chassis	1	KT01.01000001	01222702
6	Rear side plate assy	1	KT01.01020000	01302714
7	Chassis foam	1	KT01.02000001	52012711
8	Motor rubber pad	3	KT11.05000002	76712711
9	Bolt	3	KT01.01000002	70212701
10	Motor mounting rack	1	KT11.05000003	01702701
11	Motor	1	KT01.05000001a	15012703
12	Centrifugal fan	1	KT01.05010000	10312705
13	Evaporator connecting plate	1	KT01.06000001	01072710
14	Wire rubber ring	2	LF7.5WB.05000004	76515202
15	Evaporator assy	1	VR70T.03000000	01008763
16	Water pan	1	KT01.07010000	12412701
17	Tapping screw with gasket	4	TY.00.323	70140032
18	Electric box base plate	1	KT01.07000013	01412722
19	Cowl	1	KT11.07000014a	10372722
20	Electric box	1	KT01.08000001	20102701
21	Insulating clamp B	3	TY.00.72	71010082
22	Terminal board T360B	1		
23	Power transformer	1	TY.11.09	43110170.
24	Electric box cover I	1		
25	Electric box cover Ⅱ	1		
26	Controller	1	Digital one-to-many cassette type unit locking band	30226302
27	Capacitor	1	QJ/GD53.12	33010010
28	Rubber stopper	1	KT01.07000017	76712701
29	Evaporator mounting rack	2	KT02.09000001	01072003
30	Nut with gasket M6	1	TY.00.301	70310012
31	Fan mount	1	KT01.05000003	10312701
32	Water pump	1	TY.11.02.01	43130324
33	Water pump rubber pad	3	KT01.04000002	76712702
34	Water pump mounting rack	1	KT01.04000001	01332702
35	Liquid phase switch	1	TY.12.02.01	45010201
36	Water pump drainage hose	1	KT01.04000004	05230026
37	Right side plate assy			
38	Wire rubber	1	KT01.01000009	76512702
39	Spare cover plate of water pump	1	KT02.10000001	01252710
40	Bolt	3	KT01.01000002	70212701

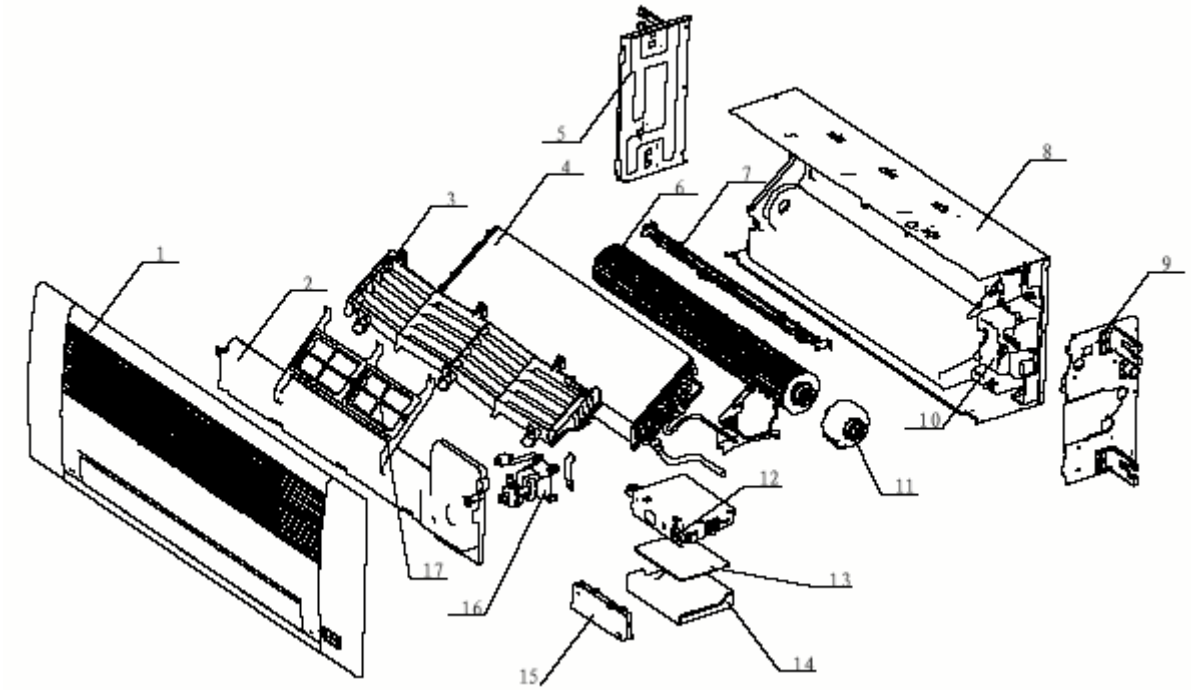
4.1.9 Wall-mounted unit



Parts and components list

No	Name of structural part	Qty	Drawing No	Part code
1	Remote controller Y502	1	@@Adopts SGNEC IC	30512503
2	Front panel	1	(3551) A .01000001	20002161
3	Filter	2	(2535).01000001	11122440
4	Electric box cover	1	(3257H) Fd.05000002	20102059
5	Bolt cover	3	(2535).01010002	24252440
6	Front panel assy	1	KA210N .02000000(03)	200020133
7	Lower air guide	1	KA210N .04000003	10512012
8	Upper air guide	1	KA210N .04000002	10512011
9	Right swing blade	7	KA210N .04000010(01)	105120141
10	Right connecting lever of swing blade	1	KA210N.04000012	10582015
11	Controller	1	Mainboard Z6435	30226403
12	Power transformer	1	TY.11.01.09	43110170
13	Electric box	1	(3551) A.04000001	20102108
14	Liquid hose assy	1	VR50G.03000000	03234604
15	Gas collector assy	1	VR50G.02010000	03828765
16	Evaporator right holder	1	KA210N .07000002	01072012
17	Shielding case	1	KA210N .03000002	1592001
18	Motor	1	KA1 10N.05000006a	15012067
19	Motor rubber ring	1		
20	Right pipe outlet plate of rear case	1	KA210N .05000003	26112012
21	Connecting pipe hold piece	1	KA210N .05000004	24242014
22	Wall-mounting frame	1	KA210N .00000002b	01252218
23	Rear case	1	KA210N .05000001	22202011
24	Left pipe outlet plate of rear case	1	KA210N .05000002	26112011
25	Bearing rubber ring	1	K A210N.05000005	76512205
26	Cross flow fan	1	K A210N.05010000	10352021
27	Evaporator left holder	1	KA210N .07000001	01072011
28	Evaporator assy	1	VR50G .01000000(01)	010087721
29	Evaporator mounting rack	1	KA210N .06000001	24222014
30	Air cleaner A	1	KA210N.BX000008	11012021
31	Air cleaner B	1	KA210N.BX000009	11012022
32	Air cleaner upper frame	1	KA 210N.06000002	26112013
33	Water tray assy	1	KA210N .04000000	20182010
34	Stepping motor MP24EA	1	KA210N .04000015	15212101
35	Air guide motor support	1	KA210N .04000005	26152011
36	Upper swing link	1	KA210N .04000006	10582011
37	Lower swing link	1	KA210N .04000007	10582012
38	Connecting lever	1	KA210N .04000008	10582013
39	Left connecting lever of swing blade	1	KA210N .04000011	10582014
40	Left swing blade	7	KA210N.04000009 (01)	105120131

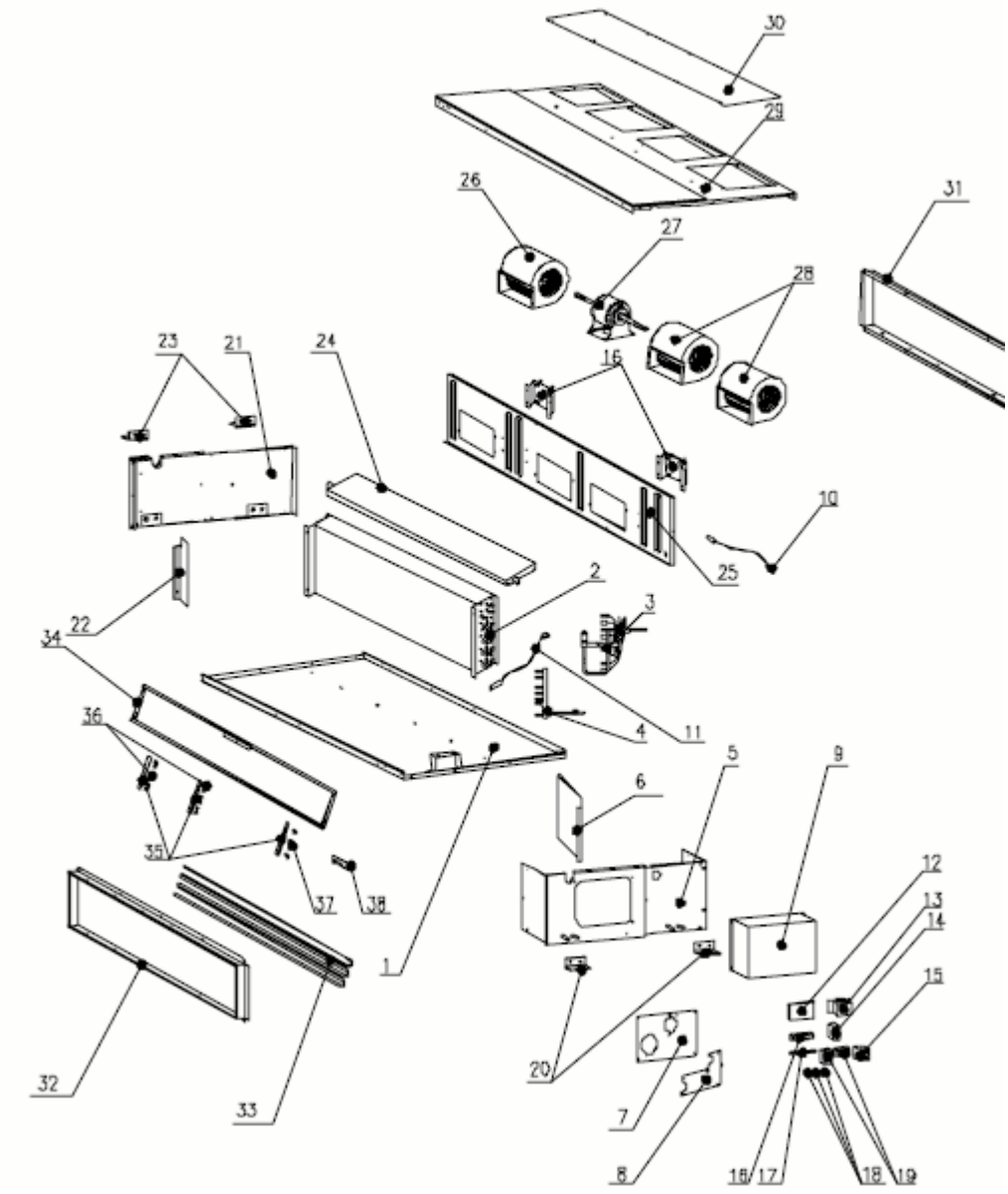
4.1.10 One-way cassette type unit



Parts and components list

No	Name	Qty	Drawing No	Part code
1	Front panel assy	1		
2	Water tray assy	1	(4555T).06000000	12412702
3	Water diversion frame	1	(4555T).00000007	24212708
4	Evaporator assy	1	VR40TdD.07000000	01004611
5	Left side plate assy	1	(4555T).02000000	01302729
6	Cross flow fan	1	(4555T).00000006	10352701
7	Electric heater assy	1	(4555T).09000000	32002708
8	Chassis	1	(4555T).01000001	01222713
9	Right side plate assy	1	(4555T).03000000	01302746
10	Rear case	1	(4555T).05000001	22202701
11	Motor	1	(4555T).00000012	15012717
12	Wire hook	1	LF12WA.6.2-2	02144433
13	Controller	1	Mainboard Z6G35	30226034
14	Cover plate of electric box	1	(4555T).04000005	01412725
15	Protective cover of terminal board	1	(4555T).04000003	22242722
16	Water drainage pump	1	(4555T).00000010	43132701
17	Supporting frame	1	(4555T).00000008	01792703
18	Electronic expansion valve DPF-14D147	1	07130331	07130331

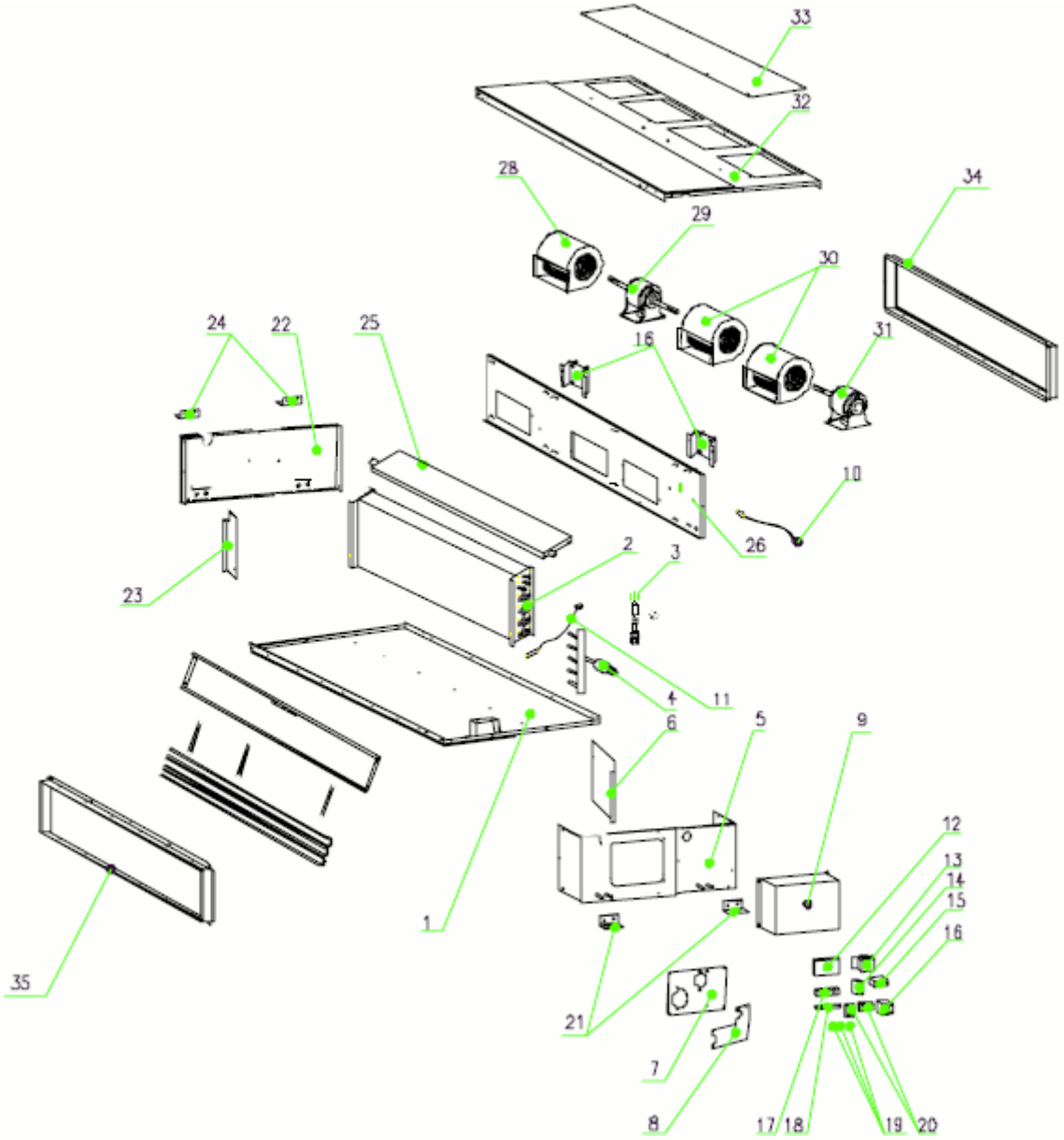
4.1.11 Ducted type unit（20——80）



Parts and components list

No	Name of structural part	Qty	Drawing No	Part code
1	Upper cover plate assy	1	FGR2I.01010000	01259052
2	Evaporator assy	1	VR35PC.10010000	01038771
3	Liquid inlet pipe assy	1	VR25PD.10030000	03234692
4	Gas collector assy	1	VP35PB.10030000a	03638745
5	Left side plate assy	3	FGR2I.04010000	01309052
6	Left supporting frame of evaporator	1	FGR5I.00000005	01078626
7	Connecting pipe closing plate 1	1	FGR5I.11000001	01498640
8	Connecting pipe closing plate 2	1	FGR5I.12000001	01498644
9	Electric box assy	1	VR50PD.12000000	01398762
10	Sensor（TY.13.04.03(10)）	1	（TY.13.04.03(10)）	
11	Sensor（TY.13.04.03(11)）	1	（TY.13.04.03(11)）	
12	Mainboard Z6035	1	Used in the trial installation of digital multi variable ducted type indoor unit	30226052
13	Power transformer SC25A	1		
14	Capacitor CBB61 4μF/450V	1	QJ/GD53.12	33010035
15	Ac contactor GC8-30	1	44010199	44010199
16	Terminal board (4 phases)	1	TY.00.205	42011103
17	Insulating pad F	1	TY.00.84	70410523
18	Wire clamp	3	LF7.5WB.06000001	71010102
19	Terminal board 2-8	2	TY.00.205	42011103
20	Hook	2	(2641PA).05010007	02112446
21	Right side plate assy	1	FGR2I.05010000	01309055
22	Right supporting frame of evaporator	1	FGR5I.00000004	01078625
23	Hook	1		
24	Water tray assy	1	FGR5I.06010000	01278633
25	Fan mounting plate assy	1	FGR3HAI.03010000 (01)	01338630
26	Fan (right type) SYP-160/200J	1	FGRD10I.03010003	15002401
27	Motor FG70A	1	FGR5I.00000003a	15018322
28	Fan (left type) SYP-160/200J	1	FGRD10I.03010003	15018603
29	Lower cover plate	1	FGR2I.02000001	01259055
30	Air return cover plate	2	FGR2I.02000002	01259056
31	Air return hole assy	1	FGR5HAI.09010000	01499061
32	Air outlet vent assy	1	FGR7I.06010000	01498612
33	Electric heating elements	1	(3551PA).10090105	32012005
34	Upper mounting rack assy of electric heating elements	1	FGR5I.10010000	01228629
35	Fastening piece of electric heating elements	3	FGR5I.10000002	01228631
36	Electric heating elements clamp II	4	(7050L).01000003	01224255
37	Electric heating elements clamp I	2	RFD12WA.1-7	2115001
38	Heat protector assy	1	FGR5I.10020000	46018601

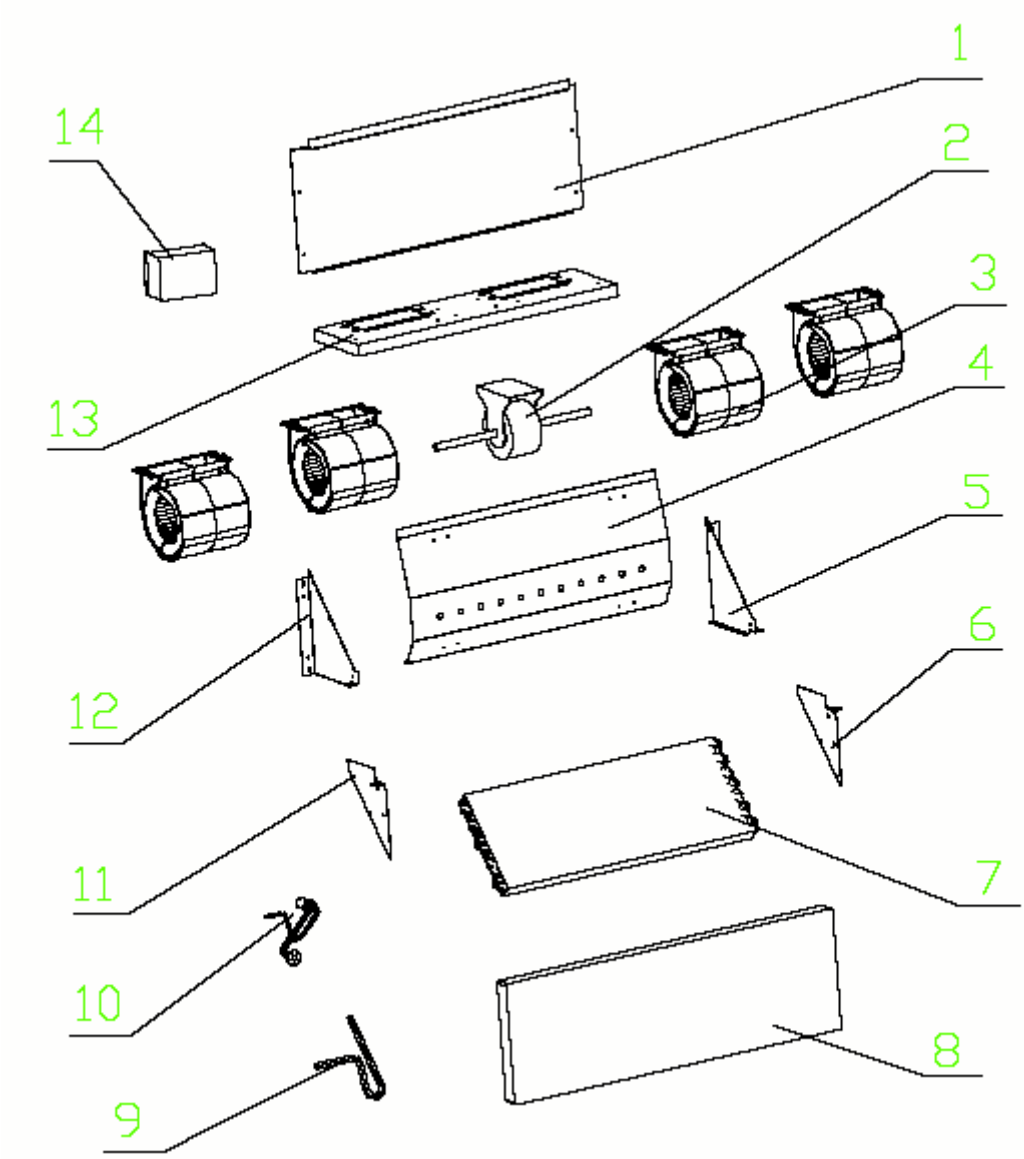
4.1.12 Ducted type unit（100——140）



Parts and components list

No	Name of structural part	Qty	Drawing No	Part code
1	Upper cover plate assy	1	FGRD10I.01000000	01258607
2	Evaporator assy	1	FGRD10I.09010000	01038624
3	Liquid inlet pipe assy	2	VR100PDS.01010000	03234693
4	Gas collector assy	1	KFR120PNA1A.10020000	03632459
5	Left side plate assy	3	FGRD10I.04000000	01308678
6	Left supporting frame of evaporator	1	FGRD10I.09010005	01078603
7	Closing plate assy of left side plate	1	FGRD10I.04020000	01308672
8	Connecting pipe closing plate	1	FGRD10I.04010010	01498601
9	Electric box assy	7	VR100PDS.12000000	01404656
10	Sensor（TY.13.04.03(10)）	1		
11	Sensor（TY.13.04.03(11)）	1		
12	Mainboard	1	Used in the trial installation of digital multi variable ducted type indoor unit	30226052
13	Power transformer SC25A	1		
14	Capacitor CBB61 5μF/450V	1	33010064	33010064
15	Capacitor CBB61 8μF/450V	1	33010014	33010014
16	AC contactor LC1K0910M7	1	44010199	44010199
17	Terminal board (9 phases)	1		
18	Insulating pad F	1		
19	Wire clamp	1	LF7.5WB.06000001	71010102
20	Terminal board 2-8	1	TY.00.205	42011103
21	Hook	1	FGRD10I.00000009	02118504
22	Right side plate assy	1	FGRD10I.05000000	01308679
23	Right supporting frame of evaporator	1	FGRD10I.09010006	01078604
24	Hook	1	FGRD10I.00000009	02118504
25	Water tray assy	1	FGRD10I.08000000	01278603
26	Fan mounting plate assy	1	FGRD10I.03010000	01338630
27	Motor support assy	2	FGRD10I.03020000	01708502
28	Fan (right type) SYP-200/190J-1	2	FGRD10I.03010003	15018604
29	Motor FG150B	1	FGRD10I.01010008a	15018612
30	Fan (left type) SYP-200/190J-1	2	FGRD10I.03010003	15018603
31	Motor FG75B	1	FGRD10I.01010009a	15018613
32	Lower cover plate assy	1	FGRD10I.02000000	01258603
33	Air return cover plate	1	FGRD10I.02010002	01258602
34	Air return side plate assy	1	FGR12HAI.07010000	01499066
35	Air outlet side plate assy		FGRD10I.06010000	01498607

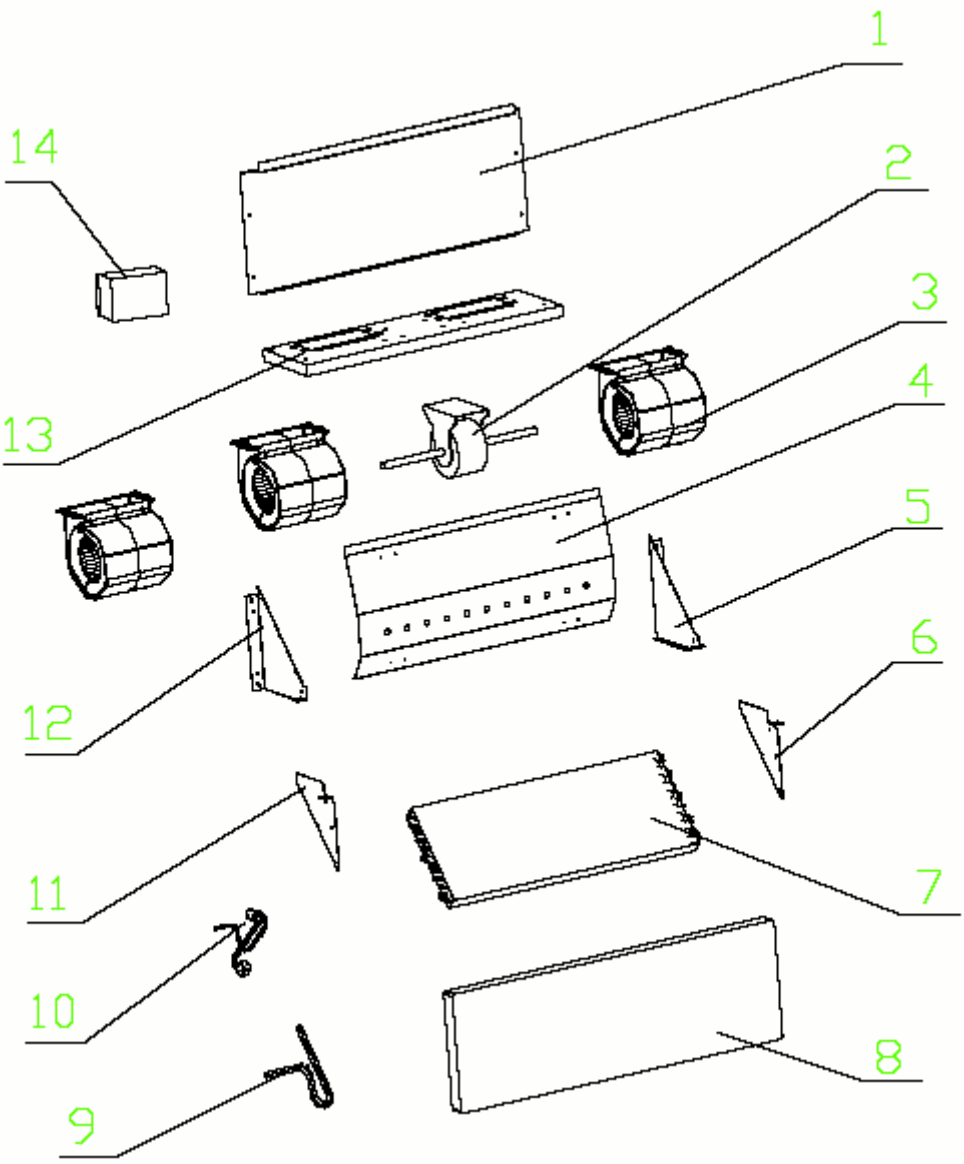
4.1.13 Explosive view of GMVL-R60P/DL, GMV-R60P/DL, GMVR-R60P/DL, GMVL-R70P/DL, GMV-R70P/DL and GMVR-R70P/DL



Parts and components list

No	Name of structural part	Qty	Drawing No	Part code
1	Upper cover	1		
2	Motor	1	Motor PG40E	15019524
3	Fan	4		
4	Chassis	1		
5	Right end plate 2	1		
6	Right end plate 1	1		
7	Evaporator	1		
8	Water tray assy	1		
9	Gas collector assy	1		
10	Electronic expansion valve assy	1		
11	Left end plate 2	1		
12	Left end plate 1	1		
13	Fan mounting plate assy	1		
14	Electric box assy	1		
15	Electronic expansion valve	1	Electronic expansion valve DPF-18D148	07130332
16	Mainboard	1	Mainboard Z6515V	30226513
17	Environmental sensor	1	Thermistor GR15K1100EPOXY	34030025
18	Inlet, middle and outlet sensor	4	Thermistor GR20K1400CAP	34030026
19	Front spiral casing	4	GST3638LAI.03000004	22202031
20	Rear spiral casing	4	GST3638LAI.03000005	22202032
21	Centrifugal fan	4	GST3638LAI.03000002	10312401

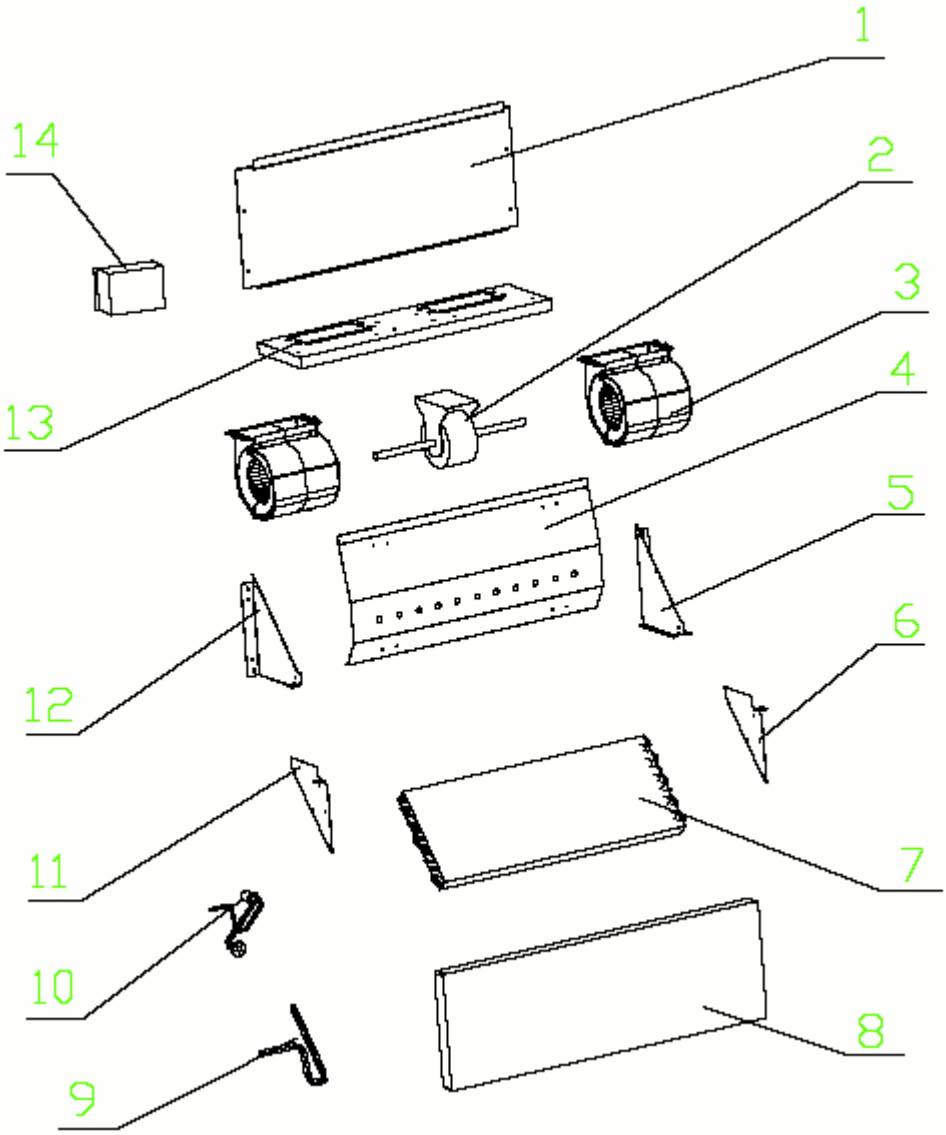
4.1.14 Explosive view of GMVL-R40P/DL, GMV-R40P/DL, GMVR-R40P/DL, GMVL-R50P/DL, GMV-R50P/DL and GMVR-R50P/DL



Parts and components list

No	Name of structural part	Qty	Drawing No	Part code
1	Upper cover	1		
2	Motor	1	Motor PG40E	15019524
3	Fan	3		
4	Chassis	1		
5	Right end plate 2	1		
6	Right end plate 1	1		
7	Evaporator	1		
8	Water tray assy	1		
9	Gas collector assy	1		
10	Electronic expansion valve assy	1		
11	Left end plate 2	1		
12	Left end plate 1	1		
13	Fan mounting plate assy	1		
14	Electric box assy	1		
15	Electronic expansion valve	1	Electronic expansion valve DPF-18D148	07130332
16	Mainboard	1	Mainboard Z6515V	30226513
17	Environmental sensor	1	Thermistor GR15K1100EPOXY	34030025
18	Inlet, middle and outlet sensor	3	Thermistor GR20K1400CAP	34030026
19	Front spiral casing	3	GST3638LAI.03000004	22202031
20	Rear spiral casing	3	GST3638LAI.03000005	22202032
21	Centrifugal fan	3	GST3638LAI.03000002	10312401

4.1.15 Explosive view of GMVL-R20P/DL, GMV-R20P/DL, GMVR-R20P/DL, GMVL-R25P/DL, GMV-R25P/DL, GMVR-R25P/DL, GMVL-R30P/DL, GMV-R30P/DL, GMVR-R30P/DL, GMVL-R35P/DL 35P/DL and GMVR-R35P/DL



Parts and components list

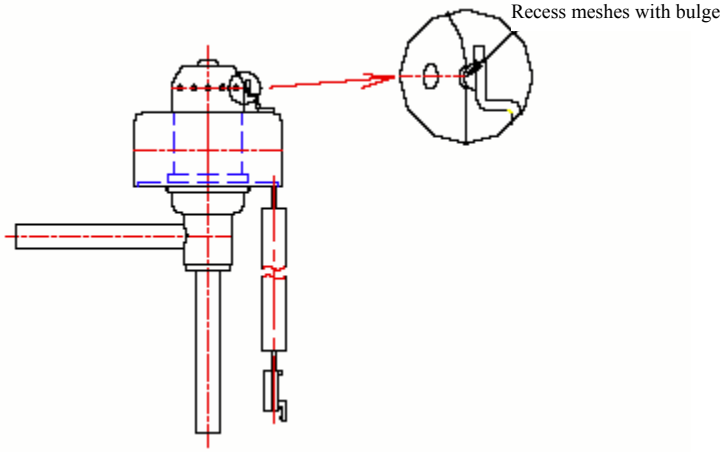
No	Name of structural part	Qty	Drawing No	Part code
1	Upper cover	1		
2	Motor	1	Motor FG20D	15018323
3	Fan	2		
4	Chassis	1		
5	Right end plate 2	1		
6	Right end plate 1	1		
7	Evaporator	1		
8	Water tray assy	1		
9	Gas collector assy	1		
10	Electronic expansion valve assy	1		
11	Left end plate 2	1		
12	Left end plate 1	1		
13	Fan mounting plate assy	1		
14	Electric box assy	1		
15	Electronic expansion valve	1	Electronic expansion valve DPF-14D147	07130331
16	Mainboard	1	Mainboard Z6515V	30226513
17	Environmental sensor	1	Thermistor GR15K1100EPOXY	34030025
18	Inlet, middle and outlet sensor	3	Thermistor GR20K1400CAP	34030026
19	Front spiral casing	2	GST3638LAI.03000004	22202031
20	Rear spiral casing	2	GST3638LAI.03000005	22202032
21	Centrifugal fan	2	GST3638LAI.03000002	10312401

4.2 Disassembly procedure of some of the parts

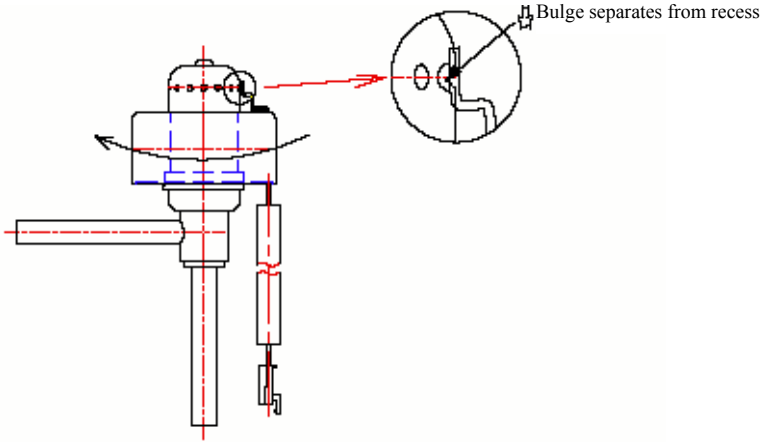
4.2.1 Disassembling the coil of electronic expansion valve

In actual project, if the coil of electronic expansion valve is to be taken out from electronic expansion valve, please notice some techniques:

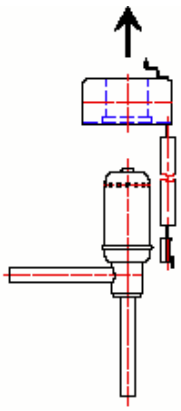
(1) Under normal circumstance, bulge on the coil and recess on the valve should mesh well, as shown in the following diagram:



(2) Before disassembling, turn the coil clockwise or counterclockwise for a small angle and turn the bulge to the middle of two adjacent recesses, and then separate the bulge from the recess, as shown in the following diagram:



(3) After the bulge separates from the recess, take out the coil from the valve in the direction shown in the diagram:



4.2.2 Disassembling the connecting wire of pressure sensor

(1) In actual maintenance project, if pressure sensor is to be disassembled, the connecting wire of pressure sensor should be disassembled first. These two parts are connected as shown in the following diagram:

(2) When disassembling, use your thumb to press the bulge with strength as shown in the diagram and then pull the wire out from both sides:

4.3 Units maintenance

4.3.1 Cleaning the air filter of indoor unit

All air return holes of indoor unit of digital multi variable air conditioners are equipped with air filter to filter out dust and germ in the air for the purpose of cleaning the air. But when used for a long time, the filter will be jammed and even breed bacteria, which will directly decrease the cooling and heating effect of indoor unit, and bacteria bred will pollute indoor air as well. So it is necessary to clean the air filter.

Cleaning method:

(1) Under normal circumstance, air filter should be cleaned once every 3 months. If the operating environment has much dust, the number of times to clean the air filter should be increased;

(2) Under normal circumstance, vacuum cleaner or water rinsing can be used to clean the air filter. If air filter is very dirty (such as oil contamination), use warm water (below 45 ℃) with neutral detergent dissolved to clean the air filter, and place it in a shady and cool place for natural drying;

(3) Do not use hot water above 45 ℃ to clean the air filter, or it will lose its color or be distorted;

(4) Do not dry wet filter over a fire, or it will get burnt or distorted.

4.3.2 Cleaning the front panel of indoor unit

After used for a long time, the surface of air return hole front panel of cassette type indoor unit, wall-mounted type indoor unit and floor-standing type indoor unit of digital multi variable units will be stuck with dust and bacteria, which will affect the visible beauty of indoor unit.

Cleaning method:

(1) Under normal circumstance, the front panel should be cleaned once every 10-12 months. If the operating environment has much dust, the number of times to clean the front panel should be increased;

(2) Under normal circumstance, soft brush or water rinsing can be used to clean the front panel. If front panel is very dirty (such as oil contamination), use warm water (below 45 ℃) with neutral detergent dissolved to clean the front panel, and place it in a shady and cool place for natural drying;

(3) Do not use hot water above 45 ℃ to clean the front panel, or it will lose its color or be distorted;

(4) Do not dry wet front panel over a fire, or it will get burnt or distorted.

4.3.3 Cleaning the fin of outdoor unit

The condenser of outdoor unit of these digital units adopts air swept fin type heat exchanger. Considering better heat exchange, it will be placed outdoor under normal circumstance. Thus after running for some time, the fin will be inevitably jammed by such foreign substances as dust etc., which will consequently decrease the effect of heat exchange of the condenser.

When cooling, high pressure is increased, cooling effect is decreased and energy consumption is increased; when heating, low pressure is decreased, heating effect is decreased and discharge temperature is increased. All these will easily damage the compressor.

Therefore, under normal circumstance, after the units have run for 10-12 months, it's necessary to clean the condenser. When environmental pollution is high, cleaning period should be shortened.

Cleaning method:

(1) Cut off the power supply of outdoor unit;

(2) Disassemble those parts that cannot touch with water, such as electric box, compressor heat preserve sponge etc.

(3) Use waterproof plastic bag to seal up all connecting terminals (including the terminal box of compressor) to ensure water will not go in;

(4) Use high pressure gas or high pressure water (if there is oily substance stuck on the fin, use water with neutral detergent dissolved) to wash the fin repeatedly in the reverse direction of inlet air of the condenser. When washing, water direction should be perpendicular to the direction of fin to prevent fin inverse;

(5) Finally the cleaning standard should be the visibility of the original color of the fin or that all water flowing down along the fin are clean.

4.4 Maintenance operation

4.4.1 Replacement of compressor

Compressor is the heart of the whole cooling system. When damage of compressor is confirmed, it should be replaced immediately. And in order to ensure the cleanliness of pipeline system, some corresponding supporting components should be replaced as well, including oil separator, gas liquid separator and dry filter (for these three components, materials supplied by our company must be used). When the compressor is double compressor structure, as long as one of them is damaged, the other one is to be replaced as well. Here only the replacement method for doudble compressor is explained.

(1) Cut off the power supply of outdoor unit first. When disassembling the power cord of the compressor, mark each cord and each of its corresponding wiring terminal properly for the convenience to restore the wiring after maintenance;

(2) Replacement of compressor

★ In these digital units series, the parallel connection of double compressors adopts the connection of gas balancing pipe and oil balancing pipe (as shown in the following diagram)

★ The newly replaced compressor should be placed and fastened on the compressor support. To avoid the carbonization of lubricant by welding, slant the compressor for some time and pull out the rubber stopper of oil balancing pipe;

★ After pulling out the rubber stopper of oil balancing pipe, weld the oil balancing pipe immediately and then place and level the compressor steadily.

★ After placing the compressor in proper position, pull out the remaining rubber stoppers at the joint and weld the connecting pipeline immediately (discharge pipe, suction pipe and gas balancing pipe, among which digital compressor further includes unloading pipeline component).After pulling out rubber stoppers, do not leave the compressor for a long time, or water will go into the compressor. When welding pipeline, always ensure there is sufficient nitrogen for welding, whose pressure is 1.0~3.0kgf/cm^2.

(3) Restore units to the status before replacement of compressor

★ Install the heating belt that was originally installed;

★ For oil temperature sensor and discharge sensor, besides adopting the original method to fasten it in the original position, use heat preserve sponge to preserve heat as well;

★ After installing the power cord of the compressor, power on the compressor to see if the connection is inversed (if connection is inversed, the compressor will clunk);

★ Once lubricant leaks, replenish lubricant immediately. Lubricant for the digital units is mineral oil and the required specification is 4GS. The leak amount is the amount to replenish.

4.4.2 Replacement of oil separator

Considering the distinctiveness of digital multi variable units, we have added an oil separator at the discharge opening of the compressor to separate out the lubricant mixed in the refrigerant and return it directly to the compressor in order to decrease the amount of lubricant left in the pipeline system and ensure the normal oil requirement of the compressor, and consequently achieve the purpose of protecting the compressor. So once damage of the oil separator is found, replace it immediately.

Replacement requirements:

(1) Use the same model of oil separator with the original one for replacement;

(2) Add measured lubricant according to the mark on the label of the new oil separator, which is mineral oil and whose required specification is 4GS;

(3) When installing, pay attention to its in and out direction;

(4) When welding pipeline, always ensure there is sufficient nitrogen for welding, whose pressure is 1.0~3.0kgf/cm^2.

4.4.3 Replacement of four-way valve

Outdoor unit of heat pump type digital units is equipped with a device to adjust the flow direction of refrigerant, which is the four-way valve. The cooling and heating switch is realized through this valve and it is the indispensable part in the heat pump system.

Replacement requirements:

(1) Use the same model of four-way valve with the original one for replacement;

(2) Pipeline connection should be consistent with the original four-way valve;

(3) When welding, use wet cloth to wrap up the four-way valve to prevent the burnout of slipper inside the valve and prevent the water from going into the pipeline;

(4) When welding pipeline, always ensure there is sufficient nitrogen for welding, whose pressure is 1.0~3.0kgf/cm^2.

4.4.4 Replacement of electronic expansion valve

The throttling device of these digital units is electronic expansion valve. Cooling only unit has electronic expansion valve only for the indoor unit and heat pump type has electronic expansion valve for both indoor and outdoor unit. In such way different refrigerant flow amount can be distributed according to different actual needs of various indoor units, which truly realizes "distribution according to one's ability and needs".

When problem of electronic expansion valve is confirmed and replacement is required, replace it immediately, even if the indoor unit will be out of service temporarily, or it will affect the normal operation of the whole set of system.

Replacement requirements:

(1) Use the same model of electronic expansion valve with the original one for replacement;

(2) Before welding, take out the coil; when welding, use wet cloth to wrap up the electronic expansion valve to prevent the burnout of slipper inside the valve and prevent the water from entering into the pipeline;

(3) When welding, always ensure there is sufficient nitrogen for welding, whose pressure is 1.0~3.0kgf/cm^2;

(4) After welding the connecting pipeline, put the coil back again. At this time, pay attention that the bulge on the coil and the recess on the valve should mesh well (refer to 1.3.3 (2));

(5) After the replacement of new electronic expansion valve, carry out the process of cutting off the power supply of the units and powering them on again. If coil plug of the electronic expansion valve was ever pulled out from the mainboard, after the plug was connected again, also carry out the process of cutting off the power supply of the units and powering them on.

4.4.5 Handling of leakage of pipeline system

For multi variable units, ensuring the high sealability of the pipeline system is the most important point for the installation and repair of multi variable units, as well as the most difficult point for installation and repair. The leakage of refrigerant not only directly affects the normal operation of units, but also pollutes the environment. Once reacting with naked flame, it will be decomposed into noxious gas, which is extremely harmful to creatures.

Once leakage of pipeline system is found, stop the operation of the units immediately and then detect and repair the leakage.

Operating procedures:

(1) Fill nitrogen of 20.0 kgf/cm^2 into the pipeline system;

(2) Use soap water to mainly test the joints of pipeline and properly mark the leakage point detected;

(3) After the leakage detection of the whole pipeline is over, add more nitrogen of 1.0~3.0kgf/cm^2 and carry out leakage repair by welding;

(4) After leakage repair is over, add high-pressure nitrogen (25.0 kgf/cm^2). After 48 hours, recheck the reading of pressure meter. Its pressure drop, as calculated according to the following formula, should not be greater than 1% of the test pressure, or find out the reason, repair the leakage and recheck again until it meets the condition.

$$\Delta P=P1-P2\ (273+T1)\ /\ (273+T2)$$

In which: ΔP——Pressure drop（**MPa**）;
P1.P2——Nitrogen pressure at the beginning and at the end of the test (MPa)

T1, T2——Nitrogen temperature at the beginning and at the end of the test (℃)

(5) If condition permits, it's better to use halogen leakage indicator to carry out leakage detection at the beginning when refrigerant leakage is found.

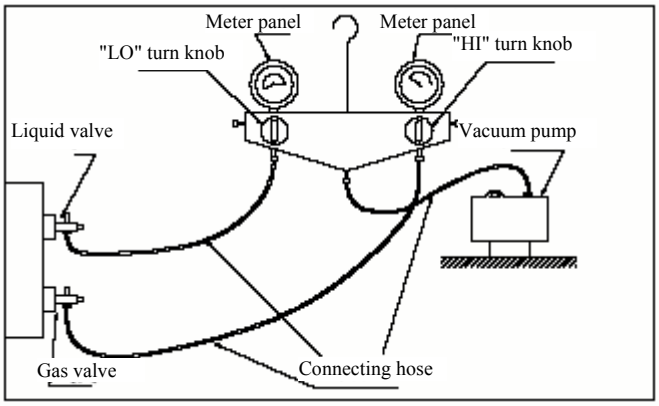
4.4.6 Vacuumizing the pipeline system after repair

The vacuum degree of the pipeline system directly affects whether the units can work properly. When vacuum degree is not enough, sometimes it will make the high pressure of the system raise abnormally, which increases power consumption of units and even damage the compressor. So after high-pressure nitrogen pressure-maintaining leakage detection, strict vacuumizing should be carried out for the system.

Operating procedures:

(1) Discharge the high-pressure nitrogen that is used for pressure-maintaining leakage detection;

(2) As shown in the following diagram, connect the pressure meter to the refrigerant fitting of both the high and low pressure valve of the system at the same time (for these digital units, vacuumizing must be performed at both sides of high and low pressure at the same time). At least one of the two meter panels should be low pressure meter panel and the vacuum degree should be based on the reading of the low pressure meter panel;



(3) Turn on the vacuum pump, and the "LO" and "HI" turn knob ;

(4) After vacuum degree reaches -1.0kgf/cm^2, continue to pump for 0.5-1.0 hour, and then turn off the "LO" and "HI" turn knob and stop the vacuum pump;

(5) Change the connection of the hose that connects with the vacuum pump to the refrigerant (use refrigerant marked on the nameplate of the units) filling tank. Discharge the air inside the hose. Turn the "LO" turn knob to ON and fill refrigerant into the pipeline system until the pressure reaches 0.0kgf/cm^2, and then turn the "LO" turn knob to OFF;

(6) Change the connection of the hose that connects with the refrigerant filling tank to the vacuum pump. Turn the "HI" turn knob to ON and pump for 30 minutes, and then turn the "LO" turn knob to ON again until vacuum degree reaches -1.0kgf/cm^2;

(7) So far, vacuum degree pumping is finished

4.4.7 Determination of charge amount of refrigerant after repair

Since these digital units use electronic expansion valve to control the flow amount of refrigerant, when pipeline system is very long, the method of closing the liquid valve first and then closing the gas valve and running the compressor is adopted to recover refrigerant. Thus there will be plenty of refrigerant left inside the pipeline and once the pipeline system is open, this refrigerant will volatilize into the air. In this way, when next time the units run, it's hard to determine whether the amount of refrigerant in the system is high or low.

Therefore, when redetermination of system charge amount is to be made, it should be determined according to the following formula:

Total charge amount = charge amount marked on the nameplate of outdoor unit + additional charge amount for the pipeline system

In the formula, the additional charge amount for the pipeline system is the additional charge amount for the liquid pipe. See the following table:

Additional charge amount of refrigerant: Unit: kg/m

Additional charge amount per meter for the liquid pipe					
Φ22	Φ19	Φ16	Φ12	Φ9.52	Φ6
0.41	0.29	0.187	0.12	0.06	0.03

4.4.8 About the handling of condensation dripping at the air outlet vent of ducted type unit

During the running of units, if condensation dripping at air outlet vent appears, it should be solved from the following aspects:

(1) Check the opening degree of the air door of air outlet vent. When the opening degree of air door is low, it means to increase the static pressure resistance of units and decrease the dynamic pressure resistance of units, i.e. wind amount of actual cycle is decreased, air out temperature is lowered and thus it's easy to form condensed water. So when condensed water is found, check the air door of air outlet vent first and adjust it to the maximum opening degree;

(2) Check whether the filter of air return hole is jammed. After units run for some time, the filter of air return hole will be inevitably be jammed, which increases the static pressure resistance of units and decrease the dynamic pressure resistance of units, i.e. wind amount of actual cycle is decreased, air out temperature is lowered and thus it's easy to form condensed water. So when condensed water is found, the second step is to check whether there is jam at air return hole and clear the jam if found;

(3) Check whether the window and door of the room where the air conditioner is installed are open for a long time. The long-time ventilation of air in the room will increase the relative humidity, which will easily lead to condensed water. So it should be noted to close the window and door as a natural procedure at all times to shorten ventilation time.

Appendices

1. Parameter table of physical property of R22

Temperature **(℃)**	Absolute pressure **P(bar)**	Specific volume **(l/kg)**		Specific enthalpy **(kJ/kg)**		Specific latent heat **r(kJ/kg)**	Specific entropy **(kJ/kg. K)**	
		∪ ’	**∪ ”**	**h’**	**h”**		**S’**	**S”**

-90	0.049	0.649	3556.81	104.61	362.77	258.16	0.5825	1.9921
-80	0.105	0.659	1757.88	113.62	367.85	254.23	0.6304	1.9466
-75	0.149	0.665	1273.99	118.27	370.41	252.14	0.6541	1.9266
-70	0.206	0.671	940.11	123.02	372.97	249.95	0.6778	1.9081
-65	0.281	0.667	705.32	127.88	375:53	247.65	0.7013	1.8911
-60	0.376	0.683	537.92	132.84	378.07	245.23	0.7249	1.8754
-55	0.497	0.689	415.07	137.92	380.60	242.68	0.7483	1.8608
-50	0.646	0.695	324.82	143.10	383.09	239.99	0.7718	1.8473
-45	0.830	0.702	257.23	148.40	385.55	237.15	0.7952	1.8347
-40	1.053	0.709	205.95	153.80	387.97	234.17	0.8186	1.8229
-35	1.321	0.717	166.57	159.30	390.34	231.04	0.8418	1.8119
-30	1.640	0.824	135.98.	164.89	392.65	227.76	0.8649.	1.8016
-25	2.016	0.732	111.97	170.58	394.90	224.32	0.8880	1.7919
-20	2.455	0.740	92.93	176.66	397:07	220.74	0.9108	1.7827
-15	2.964	0.749	77.70	182.17	399.17	217.00	0.9335	1.7740
-10	3.550	0.758	65.40	188.06	401.18	213.12	0.9559	1.7658
-9	3.677	0.760	63.23	189.24	401.57	212.33	0.9603	1.7642
-8	3.807	0.762	61.15	190.43	401.96	211.53	0.9648	1.7626
-7	3.941	0.764	59.16	191.61	402.34	210.73	0.9692	1.7610
-6	4.078	0.766	57.24	192.81	402.73	209.92	0.9736	1.7594
-5	4.219	0.768	55.39	194.00	403.10	209.10	0.9781	1.7579
-4	4.364	0.770	53.62	195.20	403.48	208.28	0.9825	1.7563
-3	4.512	0.772	51.92	196.40	403.85	207.45	0.9869	1.7548
-2	4.664	0.774	50.28	197.59	404.21	206.62	0.9012	1.7533
-1	4.820	0.776	48.70	198.79	404.21	206.62	0.9956	1.7517
0	4.980	0.778	47.18	200.00	404.93	204.95	1.0000	1.7502
1	5.143	0.780	45.72	201.20	405.28	204.08	1.0043	1.7488
2	5.311	0.782	44.32	202.41	405.63	203.22	1.0087	1.7473
3	5.483	0.784	42.96	203.62	405.98	202.36	1.0130	1.7458
4	5.659	0.786	41.66	204.83	406.32	201.49	1.0174	1.7444
5	5.839	0.788	40.40	206.03	406.65	200.62	1.0216	1.7429

6	6.023	0.790	39.19	207.25	406.99	199.74	1.0259	1.7415
7	6.211	0.793	38.02	208.45	407.31	198.86	1.0302	1.7400
8	6.404	0.795	36.89	209.67	407.64	197.97	1.0345	1.7386
9	6.601	0.797	35.80	210.89	407.96	197.07	1.0387	1.7372
10	6.803	0.7`99	34.75	212.10	408.27	196.17	1.0430	1.7358
12	7.220	0.804	32.76	214.54	408.88	194.34	1.0515	1.7330
14	7.656	0.809	30.91	216.98	409.48	192.50	1.0599	1.7302
16	8.112	0.814	29.17	219.44	410.06	190.62	1.0682	1.7275
18	8.586	0.819	27.56	221.88	410.61	188.73	1.0765	1.7248
20	9.081	0.824	26.04	224.34	411.15	186.84	1.0848	1.7220
22	9.597	0.829	24.62	226.80	411.66	184.86	1.0930	1.7194
24	10.135	0.835	23.29	229.26	412.15	182.89	1.1012	1.7167
26	10.694	0.840	22.05	234.74	412.65	182.88	1.1093	1.7140
28	11.275	0.846	20.88	234.21	413.06	178.85	1.1174	1.7113
30	9.081	0.824	26.04	224.34	411.15	186.81	1.0848	1.7220
32	12.508	0.858	18.74	239.18	413.88	174.70	1.1335	1.7660
34	13.160	0.864	17.77	241.68	414.25	172.57	1.1414	1.7033
36	13.837	0.871	16.85	244.18	414.59	170.41	1.1494	1.7006
38	14.540	0.877	15.99	246.69	414.91	168.22	1.1682	1.6979
40	15.269	0.884	15.17	249.24	415.19	165.98	1.1651	1.6952
42	16.024	0.891	14.40	251.74	415.44	163.76	1.1730	1.6924
44	16.807	0.899	13.67	254.29	415.66	161.37	1.1808	1.6896
46	117.618	0.906	12.98	256.85	415.85	159.00	1.1886	1.6868
48	18.485	0.914	12.33	259.43	416.00	156.57	1.1964	1.6840
50	19.327	0.923	11.70	262.03	416.11	154.08	1.2043	1.6811
55	21.635	0.945	10.29	268.62	416.20	147.58	1.2238	1.6736
60	24.146	0.970	9.03	275.40	415.99	140.59	1.2436	1.6656

2.Properties of high pressure press sensor

Temperature (℃)	Pressure（kPa）	Voltage	AD	Rounded value
1	514.01	0.979218578	49.94014746	50
2	530.83	0.998748331	50.93616488	51
3	548.06	1.018754136	51.95646096	52
4	565.71	1.039247605	53.00162787	53
5	583.78	1.060228737	54.0716656	54
6	602.28	1.081709144	55.16716633	55
7	621.22	1.103700435	56.28872221	56
8	640.59	1.126191001	57.43574107	57
9	660.42	1.149215675	58.60999942	58
10	680.7	1.172762845	59.81090508	60
11	701.44	1.196844122	61.03905022	61
12	722.65	1.221471118	62.295027	62
13	744.33	1.246643832	63.57883541	63
14	766.5	1.272385486	64.8916598	65
15	789.15	1.29868447	66.23290798	66
16	812.29	1.325552395	67.60317213	67
17	835.93	1.353000871	69.00304441	69
18	860.08	1.381041509	70.43311698	70
19	884.75	1.409685922	71.893982	72
20	909.93	1.438922496	73.38504731	73
21	935.64	1.468774456	74.90749724	75
22	961.89	1.499253411	76.46192395	76
23	988.67	1.53034775	78.04773527	78
24	1016	1.562080697	79.66611553	79
25	1043.9	1.594475472	81.31824906	81
26	1072.3	1.627450798	82.99999071	83
27	1101.4	1.661238897	84.72318374	84
28	1130.9	1.695491437	86.47006328	86
29	1161.1	1.730556749	88.25839419	88
30	1191.9	1.766318723	0.08225486	90
31	1223.2	1.802661248	91.93572366	92
32	1255.2	1.839816546	93.83064383	94
33	1287.8	1.877668505	95.76109376	96
34	1321	1.916217126	97.72707344	98
35	1354.8	1.955462409	99.72858287	100
36	1389	1.995172134	101.7537788	101
37	1424.3	2.036159071	103.8441126	104
38	1460.1	2.07772656	105.9640546	106

39	1496.5	2.119990711	108.1195263	108
40	1533.5	2.162951524	110.3105277	110
41	1571.2	2.206725109	112.5429806	112
42	1609.6	2.251311466	114.8168848	115
43	1648.7	2.296710595	117.1322403	117
44	1688.5	2.342922496	119.4890473	119
45	1729	2.38994717	121.8873057	122
46	1770.2	2.437784615	124.3270154	124
47	1812.1	2.486434833	126.8081765	127
48	1854.8	2.536013933	129.3367106	129
49	1898.2	2.586405806	131.9066961	132
50	1942.3	2.63761045	134.5181329	134
51	1987.55	2.690150363	137.1976685	137
52	2032.8	2.742690276	139.8772041	140
53	2079.65	2.797087954	142.6514856	142
54	2126.5	2.851485631	145.4257672	145
55	2174.85	2.907624964	148.2888731	148
56	2223.2	2.963764296	151.1519791	151
57	2273.2	3.021819448	154.1127919	154
58	2323.2	3.079874601	157.0736046	157
59	2374.9	3.139903628	160.1350851	160
60	2426.6	3.199932656	163.1965655	163
61	2479.95	3.261877504	166.3557527	166
62	2533.3	3.323822351	169.5149399	169
63	2588.4	3.387799129	172.7777556	173
64	2643.5	3.451775907	176.0405713	176
65	2700.4	3.517842671	179.4099762	179
66	2757.3	3.583909434	182.7793811	183
67	2816	3.652066183	186.2553753	186
68	2874.7	3.720222932	189.7313695	190
69	2935.3	3.790585776	193.3198746	193
70	2995.9	3.860948621	196.9083797	197

3. Properties of low pressure press sensor

Temperature (℃)	Pressure （kPa）	Voltage	AD	Rounded value
-1	481.57	2.363841316	120.5559071	120
-2	465.94	2.303347847	117.4707402	117
-3	450.7	2.244363812	114.4625544	114
-4	435.84	2.186850508	111.5293759	111
-5	421.35	2.130769231	108.6692308	108
-6	407.23	2.076119981	105.882119	106
-7	393.47	2.022864054	103.1660668	103
-8	380.06	1.970962748	100.5191001	100
-9	367.01	1.920454765	97.94319303	98
-10	354.3	1.8712627	95.43439768	95
-11	341.93	1.823386551	92.99271408	93
-13	318.17	1.731427189	88.30278665	88
-14	306.78	1.687343977	86.05454282	86
-15	295.7	1.644460571	83.86748911	84
-16	284.93	1.602776971	81.74162554	82
-17	274.46	1.562254475	79.67497823	79
-18	264.29	1.522893082	77.66754717	77
-19	254.42	1.484692791	75.71933237	75
-20	244.83	1.447576197	73.82638607	74
-21	235.52	1.411543299	71.98870827	72
-22	226.48	1.376555394	70.20432511	70
-23	217.72	1.342651185	68.47521045	68
-24	209.22	1.309753266	66.79741655	67
-25	200.98	1.277861635	65.1709434	65
-26	192.99	1.246937591	63.59381713	63
-27	185.25	1.216981132	62.06603774	62
-28	177.76	1.187992259	60.58760522	60
-29	170.5	1.159893566	59.15457184	59
-30	163.48	1.132723754	57.76891147	58
-31	156.68	1.106405418	56.42667634	56
-32	150.11	1.080977262	55.12984035	55
-33	143.75	1.056361877	53.87445573	54
-34	137.61	1.032597968	52.66249637	52
-35	131.68	1.009646831	51.49198839	51
-36	125.94	0.98743106	50.35898403	50
-37	120.41	0.96602806	49.26743106	49

-38	115.07	0.945360426	48.21338171	48
-39	109.92	0.925428157	47.19683599	47
-40	104.95	0.90619255	46.21582003	46
-41	100.16	0.887653604	45.27033382	45
-42	95.54	0.869772617	44.35840348	44
-43	91.1	0.852588292	43.4820029	43
-44	86.82	0.836023222	42.63718433	42
-45	82.7	0.820077407	41.82394775	42
-46	78.74	0.804750847	41.04229318	41
-47	74.94	0.790043541	40.29222061	40
-48	71.28	0.775878084	39.56978229	39
-49	67.76	0.762254475	38.87497823	39
-50	64.39	0.749211418	38.20978229	38
-51	61.15	0.736671505	37.57024673	37
-52	58.04	0.724634736	36.95637155	37
-53	55.06	0.713101113	36.36815675	36
-54	52.2	0.70203193	35.80362845	36
-55	49.47	0.691465893	35.26476052	35
-56	45.86	0.677493953	34.55219158	34
0	497.59	2.425844219	123.7180552	124
1	514.01	2.489395259	126.9591582	127
2	530.83	2.554494436	130.2792163	130
3	548.06	2.621180455	133.6802032	133
4	565.71	2.689492017	137.1640929	137
5	583.78	2.759429124	140.7308853	140
6	602.28	2.831030479	144.3825544	144
7	621.22	2.904334785	148.121074	148
8	640.59	2.979303338	151.9444702	152
9	660.42	3.05605225	155.8586647	156
10	680.7	3.134542816	159.8616836	160
11	701.44	3.21481374	163.9555007	164
12	722.65	3.296903725	168.14209	168
13	744.33	3.380812772	172.4214514	172
14	766.5	3.466618287	176.7975327	177
15	789.15	3.554281567	181.2683599	181
16	812.29	3.643841316	185.8359071	186
17	835.93	3.735336236	190.502148	190
18	860.08	3.828805031	195.2690566	195
19	884.75	3.924286405	200.1386067	200
20	909.93	4.021741655	205.1088244	205
21	935.64	4.121248186	210.1836575	210
22	961.89	4.222844702	215.3650798	215

23	988.67	4.326492501	220.6511176	220
24	1016	4.432268989	226.0457184	226
25	1043.9	4.540251572	231.5528302	231