improve your life

X3 VRF MODULAR

INVERTER

SERVICE MANUAL

OUTDOOR UNITS

AEG08MI2H3
AEG10MI2H3
AEG12MI2H3
AEG14MI2H3
AEG16MI2H3
AEG18MI2H3
AEG20MI2H3

Please read this manual carefully before installing and using the air conditioner, and retain for future reference.

V 09/22

Contents

Preface

Thank you for purchasing DC Inverter Modular VRF Units. For correct operation, please read this manual carefully.

This manual applies to Modular VRF units. It clarifies the safety requirements, basic principles and implementation methods in engineering commissioning, troubleshooting, and after-sales maintenance. Relevant professionals must follow the national (local) safety and technical requirements as well as this manual. Failure to do so may result in improper functioning or damage to the air conditioning system, or even personal injury.

Safety Instructions

Warning symbols

Symbols in this document indicate different severities and possibilities.

DANGER!

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

WARNING!

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

CAUTION!

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Or indicates an unsafe behavior.

NOTES!

Indicates a situation which could result in equipment or property loss.

INFO

Indicates helpful tips or additional information.

JUMP

Indicates a jump connection.

Chapter 1 Product

1 Unit List

1.1 Basic Modules

HP	Product Code	Model	Power	External view
8	398800010	AEG08MI2H3	380-415V 3N~ 50/60Hz	
10	398800011	AEG10MI2H3	380-415V 3N~ 50/60Hz	
12	398800012	AEG12MI2H3	380-415V 3N~ 50/60Hz	
14	398800013	AEG14MI2H3	380-415V 3N~ 50/60Hz	
16	398800014	AEG16MI2H3	380-415V 3N~ 50/60Hz	
18	398800015	AEG18MI2H3	380-415V 3N~ 50/60Hz	
20	398800016	AEG20MI2H3	380-415V 3N~ 50/60Hz	
22	398800017	AEG22MI2H3	380-415V 3N~ 50/60Hz	

2 Parameters

2.1 Parameters of Basic Modules

Model		-	AEG08MI2H3	AEG10MI2H3	AEG12MI2H3	AEG14MI2H3
HP		HP	8	10	12	14
Product Code		-	398800010	398800011	398800012	398800013
Cooling capacity	Rated	kW	22.4	28	33.5	40
Heating capacity	Rated	kW	16.2	16.2	18.5	23.32
	Max.	kW	25	31.5	37.5	45
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
Sound pressure level(Cooling)		dB(A)	56	57	59	59
Sound power level(Cooling)	dB(A)	dB(A)	81	83	88	85
	dB(A)	dB(A)	81	86	88	88
Power Supply		-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Rated power input		kW	12.87	13.15	13.50	21.0
Rated current		A	23.0	23.5	24.1	37.5
Compressor type		-	Inverter scroll	Inverter scroll	Inverter scroll	Inverter scroll
Compressor quantity		N	1	1	1	1
Refrigeration oil No. of compressor		-	FV68H	FV68H	FV68H	FV68H
Refrigeration oil charge	Gross	L	4.6	4.6	4.6	6.1
	Compressor charge	L	1.1	1.1	1.1	1.1
	The others	L	3.5	3.5	3.5	5
Cooling operation range		°C	-5~55	-5~55	-5~55	-5~55
Heating operation range		°C	-30~24	-30~24	-30~24	-30~24
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	5.5	5.5	7.5	7.5
Maximum drive IDU NO.		unit	13	16	19	23
Gas pipe		mm	Φ19.05	Φ22.2	Φ25.4	Φ25.4
Liquid pipe		mm	Φ9.52	Φ9.52	Φ12.7	Φ12.7
Outline dimensions(W × D × H)		mm	930×775×1690	930×775×1690	930×775×1690	1340×775×1690
Packing dimensions (W × D × H)		mm	1000×830×1855	1000×830×1855	1000×830×1855	1400×830×1855
Net weight		kg	220	220	240	300
Gross weight		kg	230	230	250	315

Model		-	AEG16MI2H3	AEG18MI2H3	AEG20MI2H3	AEG22MI2H3
HP		HP	16	18	20	22
Product Code		-	398800014	398800015	398800016	398800017
Cooling capacity	Rated	kW	45.00	50.40	56.00	61.50
Heating capacity	Rated	kW	23.32	31.00	31.00	33.00
	Max.	kW	50.00	56.50	63.00	69.00
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
Sound pressure level(Cooling)		dB(A)	60	61	62	63
Sound power level(Cooling)	dB(A)	dB(A)	89	93	93	93
	dB(A)	dB(A)	93	88	94	94
Power Supply		-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Rated power input		kW	22	26.3	26.85	27.41
Rated current		A	39.3	47	48	49
Compressor type		-	Inverter scroll	Inverter scroll	Inverter scroll	Inverter scroll

Model		-	AEG16MI2H3	AEG18MI2H3	AEG20MI2H3	AEG22MI2H3
Compressor quantity		N	1	1	2	2
Refrigeration oil No. of compressor		-	FV68H	FV68H	FV68H	FV68H
Refrigeration oil charge	Gross	L	6.1	6.1	7.2	7.2
	Compressor charge	L	1.1	1.1	1.1×2	1.1×2
	The others	L	5	5	5	5
Cooling operation range		℃	-5~55	-5~55	-5~55	-5~55
Heating operation range		℃	-30~24	-30~24	-30~24	-30~24
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.5	8.3	8.3	8.3
Maximum drive IDU NO.		unit	26	29	33	36
Gas pipe		mm	Φ28.6	Φ28.6	Φ28.6	Φ28.6
Liquid pipe		mm	Φ12.7	Φ15.9	Φ15.9	Φ15.9
Outline dimensions(W × D × H)		mm	1340×775×1690	1340×775×1690	1340×775×1690	1340×775×1690
Packing dimensions (W × D × H)		mm	1400×830×1855	1400×830×1855	1400×830×1855	1400×830×1855
Net weight		kg	300	350	350	355
Gross weight		kg	315	365	365	370

Note:

① Rated cooling capacity test conditions: indoor 27℃ DB/19℃ WB, outdoor 35℃ DB; connection pipe length: 5 m, without height drop between units.

② Rated heating capacity test conditions(Tdesingnh): indoor 20℃ DB, outdoor -10℃ DB/-11 ℃ WB; connection pipe length: 5 m, without height drop between units. Max heating capacity test conditions: indoor 20℃ DB, outdoor 7℃ DB/6 ℃ WB; connection pipe length: 5 m, without height drop between units.

③ The total capacity of connected indoor units must be in the range of 50%~135% of the outdoor unit capacity. The relevant parameters can be corrected by referring to the unit capacity correction table.

④ The above parameters are tested based on the standard connection pipe length. In the actual project, the parameters should be corrected referring to the capacity correction for the long connection pipe of units.

⑤ Specifications may be changed due to product improvement. Please refer to nameplates of the units.

3 The Range of Production Working Temperature

—	Cooling	Heating
Ambient temperature	-5°C ~55°C DB	-30°C ~24°C DB
Indoor temperature	14°C ~25°C WB	15°C ~27°C DB
Indoor humidity	≤80%	

When the indoor units are all VRF fresh air processor, the unit operating range is as follows:

Cooling	Ambient temperature: 16°C ~45°C
Heating	Ambient temperature: -7°C ~16°C

NOTE!

If exceeding the temperature range for working, the product may be damaged, which is not within the warranty range.

Chapter 2 Commissioning

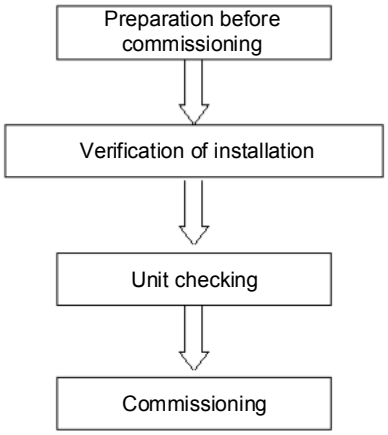
WARNING!

Before performing operations (such as commissioning, maintenance, and repair) on the device, you need to shut down the unit and cut off the power, and use a relevant instrument to ensure that the voltage at the power input terminal is zero, and the power indicator on the main board is off. Otherwise, an electric shock or injury may be caused.

NOTE!

The unit features a low-power standby function. When the unit is standby, the power indicators on the main control board and the drive board are on.

1 Commissioning Process



2 Safety Requirements

WARNING!

Safety measures must be taken for outdoor operations. All involved commissioning personnel and maintenance personnel must master the building construction safety regulations and strictly follow them.

Special workers like refrigeration workers, electricians, and welders must hold special work licenses and cannot work on other posts.

When the device is operated, the power of the entire system must be cut off, and the equipment safety requirements must be strictly followed.

All installation and maintenance operations must comply with the product design requirements and national and local safety requirements.

It is strictly forbidden to directly connect the compressor to the power.

3 Unit Commissioning

3.1 Preparation

3.1.1 Tools

Name	Picture
Screwdrivers	
Spanner	
Hex key	
Pincers	
Vacuum pump	
Electronic balance	
Pressure gauge	
Multimeter	

3.1.2 Files

To record the installation and commissioning of the unit, all the following documents need to be prepared: minutes of the pre-commissioning scheme determining meeting, commissioning personnel record form, pre-commissioning checklist, commissioning data record form, and commissioning report.

Minutes of the commissioning scheme determining meeting:

Minutes of the commissioning scheme determining meeting for XXX project:
Theme: xxx
Date: xxx
Place: xxx
Participants: xxx
Details: xxx
1
2
3

Checklist of the commissioning system appearance:

Checklist of the equipment appearance of xxx air-conditioning project				
Item		Defect	Inspector	Time
Refrigerating system	Outdoor unit appearance			
	Indoor unit appearance			
	Copper pipe insulation			
Drainage system	Condensate water pipe insulation			
Electrical system	Power cable diameter			
	Power cable layout			
	Air circuit breaker			
Communication system	Communication cable material			
	Communication cable connection			

Commissioning data record form

Project name:				Unit model:	
Debugger:				Date:	
Rated capacity of the outdoor unit (kW):		Rated capacity of the indoor unit (kW):		Total length of the refrigerant pipe (m):	
Maximum drop between the indoor unit and outdoor unit (m):		Supplemented refrigerant (kg):			
Commissioning status: □ Cooling □ Heating Qty and capacity of indoor units:					
Status Parameter		Unit	Before Startup	30 min	60 min
Status parameters of the outdoor unit	Outdoor ambient temperature	°C			
	Power voltage	V			
	Frequency	Hz			
	Compressor current	A			
	Discharge temperature	°C			
	High system pressure	°C			
	Low system pressure	°C			
	...				
Parameters of indoor unit 1#	Rated capacity	kW			
	Ambient temperature	°C			
	Air position	Position			
	Temperature at the air outlet	°C			
	Outlet airflow	M/S			
	Noise	dB			
	Drainage pan	—			
Parameters of indoor unit 2#	Rated capacity	kW			
	Ambient temperature	°C			
	Air position	Position			
	Temperature at the air outlet	°C			
	Outlet airflow	M/S			
	Noise	dB			
	Drainage pan	—			

3.1.3 Checking

NOTE!

Items not complying with installation specifications need to be recorded in time as analysis basis for the test of the refrigerating system.

Checklist before commissioning

Checklist Before VRF Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Installation drawings	1	Are the engineering design drawings complete?	—		
	2	Is the project constructed according to the design drawings?	—		
Installation environment	3	Is there any pollution source in the outdoor unit installation environment, and is the outdoor unit installation location selected correctly?	Refer to the outdoor unit installation.		
	4	Is the outdoor unit foundation firm? Do vibration reduction and drainage meet the requirements?	Refer to the outdoor unit installation.		
	5	Are the outdoor unit basic modules installed at the same level?	Refer to the outdoor unit installation.		
	6	Does the outdoor unit operate with static pressure? Is the corresponding static pressure set?	—		
Refrigerating system	7	Is the rated capacity of the internal and external units of the cooling system within 50%~135%?	50% to 135%		
	8	Is the fresh air unit access capacity within 30%?	≤30%		
	9	Is VRF connected to outdoor units in other series?	VRF cannot be connected to outdoor units in other series.		
	10	Does the drop between the indoor and outdoor units meet the unit design requirements?	≤110 m with the outdoor unit up ≤110 m with the outdoor unit down		
	11	Does the drop between indoor units meet the unit design requirements?	≤40 m		
	12	Is the length of the pipe from the outdoor unit to the farthest indoor unit less than or equal to 200 m?	≤200m		
	13	Is the total length of the piping less than 1000 m?	≤1000 m		
	14	Is the length of the outdoor unit to the first branch joint greater than 90 m? If yes, is the pipe diameter increased accordingly?	The pipe diameter needs to be increased when the length is greater than 90 m.		
	15	Is the distance between an indoor unit and the nearest branch joint greater than 15 m? If yes, is the diameter of a liquid pipe whose original diameter is less than or equal to 6.35 mm, or the diameter of a gas pipe whose original diameter is less than or equal to 9.52 mm be increased?	≤15 m. When the length exceeds 10 m, the diameter of a liquid pipe whose original diameter is less than or equal to 6.35 mm, or the diameter of a gas pipe whose original diameter is less than or equal to 9.52 mm needs to be increased.		

Checklist Before VRF Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Refrigerating system	16	The inclination of indoor and outdoor branch joints should not exceed the specified requirements.	Branch joints need to be installed horizontally. Refer to branch joint installation.		
	17	Is the stop valve of each module open to the maximum opening?	—		
	18	Is the refrigerant pressure normal? Connect the high pressure gauge of the pressure gauge to the liquid pipe valve of the outdoor unit, connect the low pressure gauge to the gas pipe valve, and read the value.	At this time, the high and low pressures of the system are in balance, and the difference between the saturation temperature corresponding to the balanced pressure value and the ambient temperature (higher one of the indoor and outdoor temperatures) does not exceed 5°C. If it exceeds 5°C, check for the outdoor unit leakage.		
	19	Is there any leakage of chiller oil at the valve? If so, immediately check for valve leakage with soap bubbles or a leak detector. If leakage is confirmed, stop subsequent commissioning at once, and continue the work only after the problem is solved.	—		
	20	Is the outdoor unit being warmed up for more than 2 hours before commissioning?	—		
Electrical system	21	Is the power cable connected correctly? Is the terminal block secure?	—		
	22	Is the power cable appearance in good condition and not exposed?	The appearance is in good condition and not exposed.		
	23	Is the power capacity less than the maximum power of the unit?	The power capacity is not less than the maximum power of the unit.		
	24	Is there any poorly connected electrical component detected when the power is off?	All components are reliably connected.		
	25	Do the cable diameters of the indoor and outdoor units meet the unit design requirements?	Refer to electrical installation.		
	26	Do the circuit breaker and leakage switch meet the unit design requirements?	Refer to electrical installation.		
	27	Do the power voltage, phase sequence, and frequency meet the unit requirements?	The power voltage, phase sequence, and frequency are consistent with those on the unit nameplate, and the voltage fluctuates within ±10%.		
	28	Is the power cable more than 1 m away from a TV?	—		

Checklist Before VRF Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
	29	Is there any strong electromagnetic interference, dust, acid and alkaline gas in the environment where the unit is located?	—		
Communication system	30	Does the communication cable material meet the unit design requirements?	—		
	31	Is the communication connection between outdoor unit modules correct?	—		
	32	Is the DIP switch of the master unit of the outdoor unit module correct?	—		
	33	Is the communication between the outdoor master unit and the indoor unit correct?	Serial connection		
	34	Is the communication connection between indoor units correct?	—		
	35	Is the communication connection between the indoor unit and the wired controller correct?	—		
	36	Is the last communication indoor unit installed with a communication build-out resistor?	—		
	37	The communication cable cannot be laid in the same trough as the power cable. It is laid separately in a flame-retardant hard PVC pipe. The parallel spacing between a communication cable and a strong-current cable is greater than 20 cm.	—		
Indoor unit installation	38	Does the indoor unit drain pipe have a slope of 1/100?	—		
	39	Does the height of the indoor unit riser drain pipe meet the requirements?	—		
	40	Does the indoor unit drain smoothly?	—		
	41	Is there a U-shaped trap for indoor unit drainage?	—		
	42	Is there a soft joint at the air outlet and air return vent of the indoor unit? Does the return air have a static pressure box?	—		
	43	Does the indoor unit water pipe have an emptying port?	—		
	44	Is a "main" label attached to the wired controller or panel of the main indoor unit?	—		

3.2 Debugging and Operation

3.2.1 Precautions

(1) Do set one (only one) module as the main module during debugging.

(2) When there is no special requirement, the other functions do not need to be set, and it can be operated according to the factory settings. For special functions, please refer to the related technical documents.

(3) Installation and debugging operation must comply with the relevant regulations of the local country or region.

(4) Debugging must be carried out by a professional or under the guidance of a professional. Do not debug the air conditioning unit by yourself.

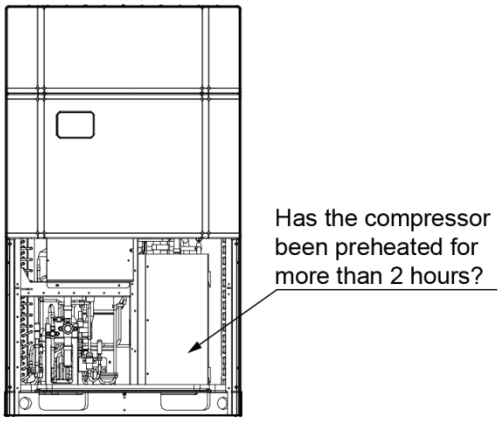
(5) All scattered objects, especially metal chips, wire ends and clamps, should be removed from the body.

(6) Check if the terminals of the electrical components in the unit are loose and the phase sequence is correct.

(7) Before debugging, all pipeline valves of the unit are required to be open.

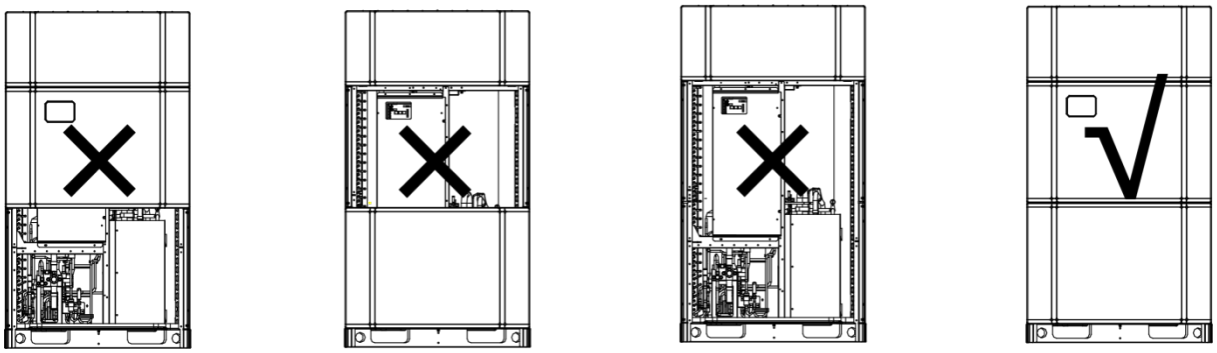
(8) Power cannot be supplied until all installation work is completed.

(9) Before conducting the debugging, please ensure that the compressor has been preheated for more than 2 hours, and check whether the preheating is normal by hand. Debugging can be started up only when the preheating is normal, otherwise the compressor may be damaged.



(10) When starting up the debugging, the system automatically selects the operating mode according to the current ambient temperature.

(11) When debugging, the front panel of the outdoor unit must be completely closed, otherwise it will affect the accuracy of debugging (as shown in the figure as below).



(12) Button description:

Short press: press the button for 3s and then release it;

Hold the button for 5s: press the button for 5-10s and then release it;

Hold the button for 10s: press the button for 10s and then release it.

3.2.2 Basic Introduction for Engineering Debugging

3.2.2.1 Debugging Method

DC inverter multi VRF unit has three debugging methods at present:

(1) Conduct it by pressing the buttons on the main board of outdoor unit.

(2) Install proprietary software to conduct the debugging through PC. Indoor and outdoor units' parameters displayed simultaneously through PC software.

(3) Use multi-functional debugger. (As for the detailed operation method for debugging, please refer to corresponding instruction manual.)

3.2.2.2 Basic Operations

Operation	Action	Remarks
Commissioning start	Press and hold the SW3 confirm button on the master unit for over 5 seconds.	—
Selection of non-wired-controller commissioning mode	During the commissioning, press and hold the SW1 up button and SW4 back button for over 5 seconds to enter non-wired-controller commissioning mode.	After entering this mode, the system no longer detects the communication status between the indoor unit and the wired controller, and the indoor unit can be commissioned without a wired controller.
Commissioning exit	In commissioning status, press and hold the SW3 confirm button on the master module for over 5 seconds to exit commissioning.	—
Commissioning pause	During commissioning, press the SW4 back button on the master unit to keep the status of the completed previous commissioning phase of the current phase.	For example, if the system receives a commissioning pause signal when performing step 10 "Main pipeline status detection before startup", the system returns to the waiting phase after step 9 "Refrigerant detection before startup".
Commissioning resume	In commissioning pause status, press the SW4 back button on the master unit to continue to perform commissioning.	—

3.2.2.3 Display instruction for each stage progress at the time of debugging

Instruction for each stage progress at the time of debugging							
—	Deubugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
01_ set up master unit	db	ON	01	ON	A0	ON	Undebugged status.
	db	ON	01	ON	CC	ON	The system hasn't set master module. It needs to reset it.
	db	ON	01	ON	CF	ON	The system has set more than 2 master modules. It needs to reset it.
	db	ON	01	ON	OC	ON	Master module setting is succeeded. It will automatically enter into the next step.

Instruction for each stage progress at the time of debugging							
—	Deubugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
02_allocate addresses	db	ON	02	ON	Ad	Flash	The system is conducting the address assignment.
	db	ON	02	ON	OC	ON	Address assignment is succeeded. It will automatically enter into the next step.
03_module quantity confirmation	db	ON	03	ON	01~04	Flash	LED3 displays the module quantity. It needs to manually confirm the module quantity.
	db	ON	03	ON	OC	ON	Once the system module quantity is confirmed, it will automatically enter into the next step for judgment.
04_indoor unit's quantity confirmation	db	ON	04	ON	××/ The quantity of online indoor units	Flash	LED3 displays the quantity of online indoor units.
	db	ON	04	ON	OC	ON	Indoor unit's quantity inspection is finished. Enter into the next step automatically.
05_ detect internal communicatio n	db	ON	05	ON	C2	ON	The system has detected "communication malfunction between main control and inverter compressor driver".
	db	ON	05	ON	C3	ON	The system has detected "communication malfunction between main control and inverter fan driver".
	db	ON	05	ON	CH	ON	Indoor/outdoor unit's "rated capacity ratio is too high".
	db	ON	05	ON	CL	ON	Indoor/outdoor unit's "rated capacity ratio is too low".
	db	ON	05	ON	OC	ON	System inspection is finished. Enter into the next step automatically.
06_ outdoor unit's internal components confirmation	db	ON	06	ON	correspod ing error code	ON	The system has detected the fault of outdoor unit' components.
	db	ON	06	ON	OC	ON	The system detected that there's no outdoor unit fault. Enter into the next step automatically.
07_indoor unit componets inspection	db	ON	07	ON	XXXX/cor respoding error code	ON	The system detected an indoor unit fault. XXXX indicates engineering number of fault indoor unit, and the corresponding fault code is displayed 2s later. For example, if there is D5 fault in the No. 100 indoor unit, LED3 displays as follows: 01 (after 2s) 00 (after 2s) d5, and they will be displayed circularly.
	db	ON	07	ON	OC	ON	The system detected that there's no outdoor unit fault. Enter into the next step automatically.
08_compress or reheat comfirmation	db	ON	08	ON	U0	ON	Preheat time for compressor is insufficient.
	db	ON	08	ON	OC	ON	Preheat time for compressor is enough. Enter into the next step automatically.
09_refrigerant judge before startup	db	ON	09	ON	U4	ON	The system refrigerant is insufficient. Please charge the refrigerant until the fault is eliminated.
	db	ON	09	ON	OC	ON	The system refrigerant judge is normal. Enter into the next step automatically.

Instruction for each stage progress at the time of debugging							
—	Deubugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
10_ status judgment of main pipeline before starting	db	ON	10	ON	ON	ON	Starting up the operation.
	db	ON	10	ON	U6	ON	Main pipeline status is abnormal.
	db	ON	10	ON	OC	ON	Main pipeline status is normal.
11_ reserved function	db	ON	11	ON	AE	ON	—
12_ reserved function	db	ON	12	ON	01	ON	—
13~15_ pilot run stage	db	ON	13/14/15	ON	AC	ON	Test run under heating mode.
	db	ON	13/14/15	ON	AH	ON	Test run under cooling mode.
	db	ON	13/14/15	ON	Corresponding error code	ON	There is fault in the pilot run stage. Note: fault module display.
	db	ON	13/14/15	ON	J0	ON	There is fault in the pilot run stage. Note: non-fault module display.
	db	ON	13/14/15	ON	XXXX/U8	ON	The system detected the indoor unit's pipeline is abnormal. XXXX indicates the engineering number of fault indoor unit. Error code U8 is displayed after 2s. For example, if the U8 fault occurs in the No. 100 indoor unit, LED3 displays as follows: 01 (after 2s) 00 (after 2s) U8, and they will be displayed circularly.

Note: In the pilot run stage, the unit will display corresponding procedures according to actual circumstances.

When master module displays as below, the complete unit has conducted the debugging and it stays at the standby status.

Debugging code		Progress code		Status code		Meaning
LED1		LED2		LED3		
Code	Display status	Code	Display status	Code	Display status	
01~04	ON	OF	ON	OF	ON	The complete unit has conducted the debugging and the unit is under standby status. LED1 displays module address; LED2 and LED3 displays "OF".

NOTE!

In commissioning status and before the above commissioning processes are completed, when the SW1 up button and SW4 back button are pressed for over 5 seconds, the system enters non-wired-controller commissioning mode, and no longer detects the communication status between the wired controller and indoor units.

3.2.3 Debugging Through the Main Board of Outdoor Unit

When conducting the debugging through the main board of outdoor unit, the main board has the following debugging operation functions.

Step 1: Cover all the front panels of the outdoor unit and open the debugging window of each basic module.

Step 2: When the outdoor unit is powered off, set one of the modules as the master module. For the setting method, see “Master Module DIP Switch Code Setting (SA8_MASTER-S)”.

Step 3: Under the power-on state of the outdoor unit, set the corresponding static pressure module for the unit according to the design requirements of the outdoor static pressure of the project.

Step 4: The module address is displayed as “01” is the master module. On the master module, press and hold the SW3 confirmation button for 5 seconds or press the SW3 confirmation button for more than 10 seconds to enter the unit debugging function.

Step 5: Wait. The unit automatically runs the steps 01 and 02 at this time.

If the master module is set incorrectly in step 01, the following corresponding fault is displayed in step 01:

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
01_ set up master unit	db	ON	01	ON	CC	ON	Mater module hasn’t been set in the system. It needs to reset it.
	db	ON	01	ON	CF	ON	More than two master modules are set in the system and it needs to reset it.
	db	ON	01	ON	OC	ON	Mater module of system has been set successfully. Enter into the next step automatically.

According to the above fault phenomenon, reset the master module according to the setting method of “Master Module DIP Switch Code Setting (SA8_MASTER-S)”, and re-enter into the debugging after setting.

During the assignment process, all module digital tubes displays are as below:

—	Debugging code		Progress code		Status code	
Progress	LED1		LED2		LED3	
	Code	Display status	Code	Display status	Code	Display status
02_allocate addresses	db	ON	02	ON	Ad	Flash

Step 6: When the unit is running to step 03, it displays the number of modules connected to the outdoor connection. At this time, the main board of each module is displayed as below:

—	Debugging code		Progress code		Status code	
Progress	LED1		LED2		LED3	
	Code	Display status	Code	Display status	Code	Display status
03_ module quantity confirmation	db	ON	03	ON	Module quantity	Flash

After 30s of display, the automatic display is as follows; if press SW3 button within 30s, the display is as follows. The unit automatically enters the next step of debugging:

—	Debugging code		Progress code		Status code	
Progress	LED1		LED2		LED3	
	Code	Display status	Code	Display status	Code	Display status
03_module quantity confirmation	db	ON	03	OC	OC	ON

Note: It is important to confirm that the number of online outdoor unit modules is the same as that of actual modules; otherwise it will need to conduct the inspection and debugging again.

Step 7: When the unit is running to step 04, the number of online connected indoor unit is displayed. At this time, the main board of each module is displayed as below:

—	Debugging code		Progress code		Status code	
Progress	LED1		LED2		LED3	
	Code	Display status	Code	Display status	Code	Display status
04_indoor unit quantity confirmation	db	ON	04	ON	The quantity of online indoor units	Flash

After 30s of display, the display is as follows; if press SW3 button within 30s, the display is as follows. The unit automatically enters the next step of debugging:

—	Debugging code		Progress code		Status code	
Progress	LED1		LED2		LED3	
	Code	Display status	Code	Display status	Code	Display status
04_indoor unit quantity confirmation	db	ON	04	ON	OC	ON

Note: It is important to confirm that the number of online indoor unit modules is the same as that of actual connected indoor units for the project; otherwise it will need to conduct the inspection and debugging again.

Step 8: Step 05 of the unit debugging is “confirmation of internal communication of outdoor unit”.

If there is no abnormality in the detection, the display is below, and then it automatically enters the next step of detection.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
05_detect internal communication	db	ON	05	ON	OC	ON	Once the system inspection is completed, it will enter into the next step automatically.

If an abnormality is detected, it will stay in the current state and manual troubleshooting is required. The corresponding faults are as below:

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
05_ detect internal communication	db	ON	05	ON	C2	ON	The system has detected “communication malfunction between main control and inverter compressor driver”.
	db	ON	05	ON	C3	ON	The system has detected “communication malfunction between main control and inverter fan driver”.
	db	ON	05	ON	CH	ON	Indoor/outdoor units’ rated capacity ratio is too high.
	db	ON	05	ON	CL	ON	Indoor/outdoor units’ rated capacity ratio is too low.

Refer to the part of “Troubleshooting” for the corresponding troubleshooting method.

Step 9: The unit debugging step 06 is “outdoor unit’s parts inspection”.

If there is no abnormality in the detection, the display is below, and then it automatically enters the next step of detection.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
06_outdoor unit’s parts inspection	db	ON	06	ON	OC	ON	The system detected that there’s no fault for outdoor unit’s parts. Then it will automatically enter into the next step.

If an abnormality is detected, it will stay in the current state and manual troubleshooting is required. The corresponding faults are as below:

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
06_ outdoor unit's internal components confirmation	db	ON	06	ON	Corresponding error code	ON	The system detected that there’s fault for outdoor unit’s parts.

Refer to the part of “Troubleshooting” for the corresponding troubleshooting method.

Step 10: The unit debugging step 07 is “indoor unit’s parts inspection”.

If there is no abnormality in the detection, the display is as below, and then it automatically enters the next step of detection.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
07_ indoor unit componets inspection	db	ON	07	ON	OC	ON	The system detected that there’s no fault for indoor unit’s parts. Then it will automatically enter into the next step.

If an abnormality is detected, it will stay in the current state and manual troubleshooting is required. The corresponding faults are as below:

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Display status	Code	Display status	Code	Display status	Display status	
07_ indoor unit componets inspection	db	ON	07	ON	XXXX/ correspodin g error code	ON	The system detected that there's fault for indoor unit's parts.

XXXX indicates the engineering no. of fault indoor unit. 3s later, the corresponding error code will be displayed. For example, if d5 fault occurs for No.100 indoor unit, LED3 displays as below: 01 (2s later) 00(2s later) d5, and they will display like that circularly.

Refer to the part of "Troubleshooting" for the corresponding troubleshooting method.

Step 11: The debugging step 08 is "compressor preheat confirmation".

If the preheat time has reached for 2h, the display is as below. Then it will enter into the next step for inspection.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
08_compressor preheat confirmation	db	ON	08	ON	OC	ON	Compressor's preheat time has reached 2h, and then it will enter into the next step.

If the preheat time for compressor hasn't reached 2h, there will be abnormal phenomenon. The display is as below.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
08_compressor preheat confirmation	db	ON	08	ON	U0	ON	The preheat time for compressor hasn't reached 2h.

Step 12: Unit debugging step 09 is "refrigerant judgment before startup".

If the amount of refrigerant inside the system satisfies the requirements for starting the operation, the display is as below. Then it will automatically enter into the next step.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
09_refrigerant judgement before startup	db	ON	09	ON	0C	ON	The system refrigerant judgment is normal. It will automatically enter into the next step.

If there is no refrigerant in the system or the amount of refrigerant does not meet the requirements for starting operation, the unit will display U4 "Refrigerant-lacking protection", as shown below. The unit will enter into the next step. At this time, it is necessary to check whether there is a leak or charge some refrigerant until the abnormality is eliminated.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
09_refrigerant judgement before startup	db	ON	09	ON	U4	ON	The refrigerant in the system is insufficient. Please charge refrigerant until the fault disappears.

Step 13: Unit debugging step 10 is “status judgment of main pipeline before starting”.

If the main module displays as below, it indicates the unit is starting the operation for judgment.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
10_ status judgment of main pipeline before starting	db	ON	10	ON	ON	ON	Starting and operating.

If the unit has detected the abnormal status, the display is as below:

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
10_ status judgment of main pipeline before starting	db	ON	10	ON	U6	ON	Main pipeline is abnormal.

At this time, it is necessary to check whether the gas valve and the liquid valve are completely open or whether the main pipeline is blocked. Once inspection is completed, you can return to the previous step by pressing SW4 button to re-enter the judgment.

If inspection valve of the unit is normal, the display is as below. The unit will automatically enter into the next step.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
10_ status judgment of main pipeline before starting	db	ON	10	ON	OC	ON	The main pipeline is turned on normally.

Step 14: Unit debugging step 11 is “reserved function”.

The main module display is as below. The unit automatically enters into the next step.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
11_ reserved function	db	ON	11	ON	AE	ON	—

Step 15: Unit debugging step 12 is “reserved function”.

The master module display is as below. Then the unit automatically enters into the next step.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
12_reserved function	db	ON	12	ON	01	ON	—

Step 16: After the unit debugging method is confirmed, the system automatically selects cooling or heating mode according to the ambient temperature.

Once cooling/heating mode is selected, the relevant display is as below.

—	Debugging code		Progress code		Status code		Meaning
Progress	LED1	LED2	LED3	LED1	LED2	LED3	
	Code	Display status	Code	Display status	Code	Display status	
13~15_ pilot run stage	db	ON	13/14/15	ON	AC	ON	Pilot run of cooling mode
	db	ON	13/14/15	ON	AH	ON	Pilot run of heating mode
	db	ON	13/14/15	ON	Corresponding error code	ON	There's fault on pilot run stage. Note: fault module display
	db	ON	13/14/15	ON	J0	ON	There's fault on pilot run stage. Note: non-fault module display
	db	ON	13/14/15	ON	U9	ON	Outdoor unit's pipeline or valve is abnormal.
	db	ON	13/14/15	ON	XXXX/U8	ON	The system detected the indoor unit's pipeline is abnormal. XXXX indicates engineering number of fault indoor unit. 2s later, U8 fault occurred for No. 100 indoor unit. LED3 will display as below: 01 (2s later) 00 (2s later) U8, and it will display like that circularly.

Note: In the pilot run stage, the unit will display corresponding procedures according to actual circumstances.

Once debugging is completed, resume the standby status and the display is as below:

Debugging code		Progress code		Status code		Meaning
LED1		LED2		LED3		
Code	Display status	Code	Display status	Code	Display status	
01~04	ON	OF	ON	OF	ON	The complete unit has finished the debugging and it stays at standby status. LED1 displays module address; LED2 and LED3 displays "OF".

Once the debugging for the complete unit is finished, please set relevant functions for the unit according to the actual functional requirements of the project. Refer to relative technical materials for the detailed operation method. If there is no special requirement, skip this step directly.

When delivery it to the user for operation, explain the precautions to the user.

3.2.4 Unit Commissioning on Commissioning Software

Step 1: Install the commissioning software.

Install the commissioning software on a PC, and connect the monitoring communication cable. (For details, see Gree Debugger.)

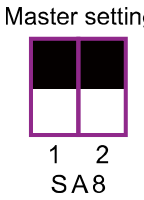
Step 2: Cover all the front panels of the outdoor unit.

Step 3: Set the master module.

Keep the outdoor unit disconnected from the power and set one module to the master unit as

follows:

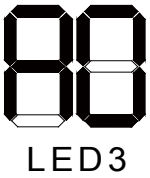
Master unit setting (SA8):



Master and Slave Unit Setting	DIP Switch (Two Digits)	
Position	1	2
Master unit	ON	OFF
Slave unit	OFF	OFF

Step 4: Power on the indoor and outdoor units.

Power on all indoor and outdoor units. In this case, all modules of the outdoor unit indicate that the unit is in "Not commissioning" status.



Step 5: Set the static pressure for the outdoor unit.

When the indoor and outdoor units are powered on, and the unit is to be commissioned, set the static pressure mode for the unit according to the design requirements for the outdoor static pressure of the project. Five static pressure modes are available: The factory default static pressure mode 0 represents 0 Pa outdoor static pressure, mode 1 represents 30 Pa, mode 2 represents 50 Pa, mode 3 represents 80 Pa, and mode 4 represents 110 Pa.

Each basic module can be set separately or uniformly by the master module. When basic modules are set separately, the static pressure value of each module can be different; when the modules are set uniformly, the static pressure value of each module remains the same. When a static pressure value is set in either of the two modes, the previous mode setting limit is automatically released. The static pressure value of each basic module is subject to the last received set value. The setting procedure is as follows:

When the unit is to be commissioned, press and hold the SW1 up button on the master unit for over 5 seconds. The system enters the function setting status. The master unit displays "A7 (blinking) 00 (blinking) 00 (blinking)" by default, and other modules display current statuses.

Then, press the SW1 up button and the SW2 down button on the master unit to select the corresponding function/parameter till "A7 (blinking) 00 (blinking) 00 (blinking)" is displayed, indicating outdoor static pressure setting. Press the SW3 confirm button to enter the function setting. The master unit displays as follows, and other basic modules display in normal working mode:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1G	On	01	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding basic module: 00 means all modules, 01~04 means module 1 to module 4.

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1G	On	00	Blinks	OC	Blinks
1G	On	01	Blinks	OC	Blinks
1G	On	02	Blinks	OC	Blinks
1G	On	03	Blinks	OC	Blinks
1G	On	04	Blinks	OC	Blinks

After selecting the corresponding basic module, press the SW3 confirm button. The module displays as follows. The current factory default status is 00. Value 00 represents 0 Pa outdoor static pressure, 01 represents 30 Pa, 02 represents 50 Pa, 03 represents 80 Pa, and 04 represents 110 Pa.

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	00	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding static pressure mode for the outdoor unit.

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	00	Blinks
1G	On	ADD	On	01	Blinks
1G	On	ADD	On	02	Blinks
1G	On	ADD	On	03	Blinks
1G	On	ADD	On	04	Blinks

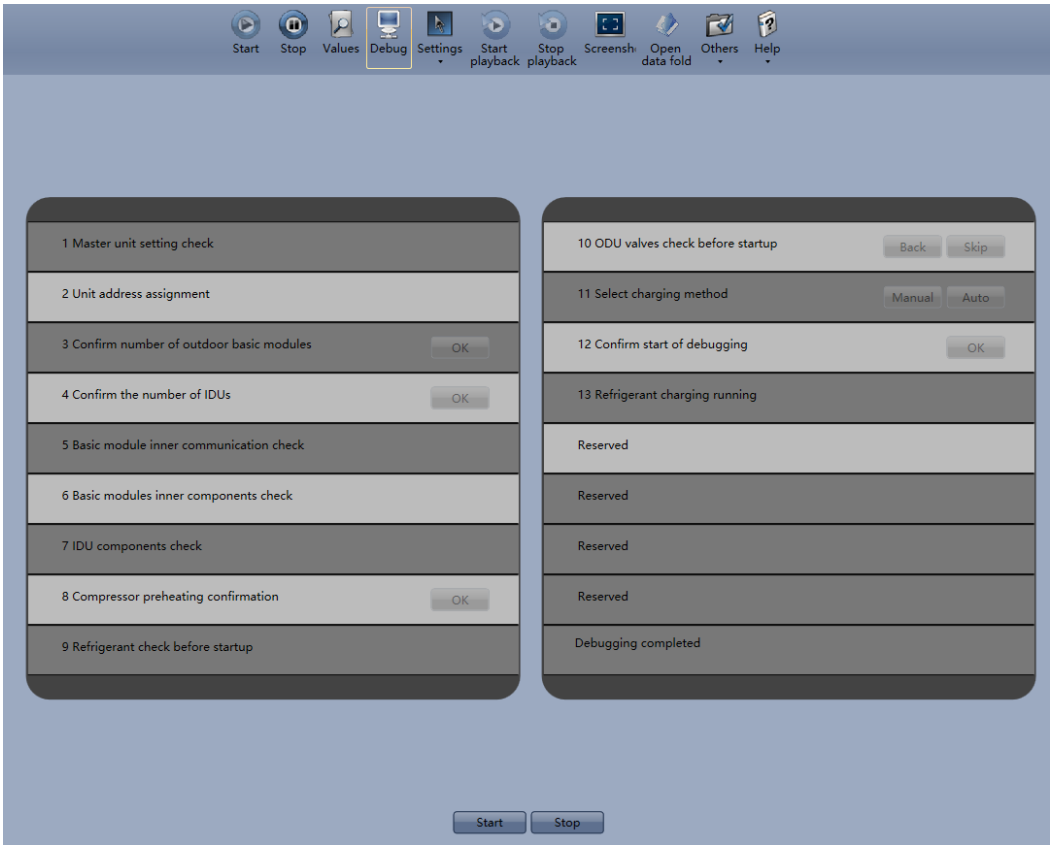
After selecting the corresponding static pressure mode for the outdoor unit, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	00	On
1G	On	ADD	On	01	On
1G	On	ADD	On	02	On
1G	On	ADD	On	03	On
1G	On	ADD	On	04	On

Each basic module memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

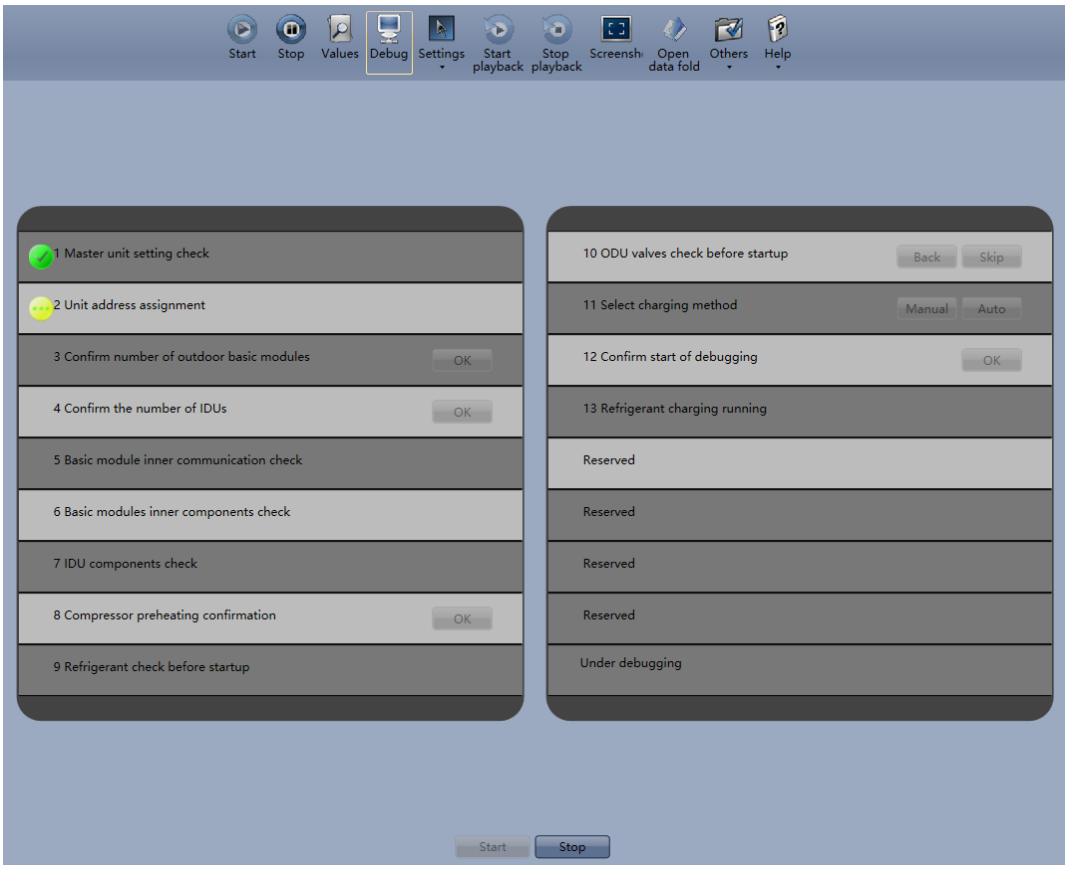
Step 6: Switch the commissioning software to the commissioning control interface.

Click "Debug" to switch to the engineering commissioning interface. The unit will automatically operate the commissioning modules listed in this interface from top to bottom and from left to right. Note: The commissioning function only applies to the single-system network.

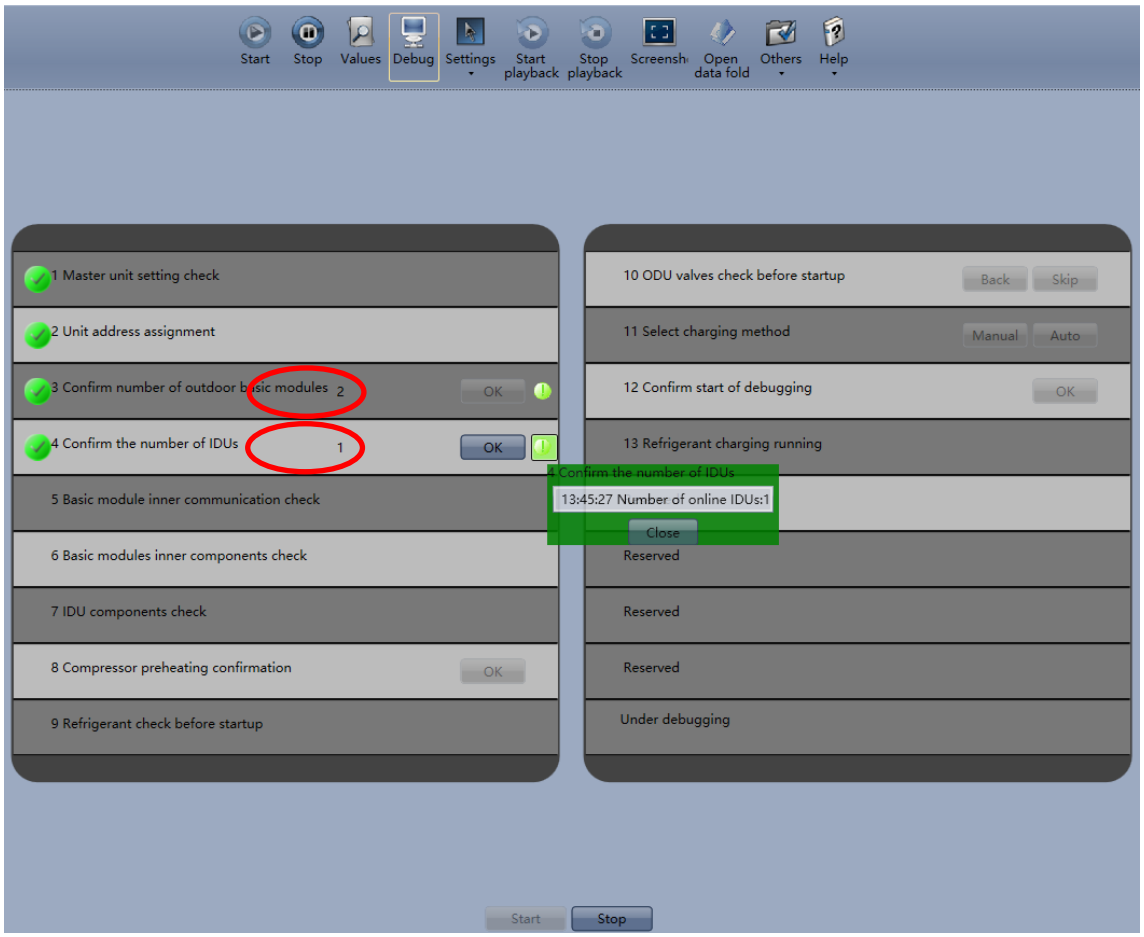


Step 7: Click "Start" to enter the commissioning function

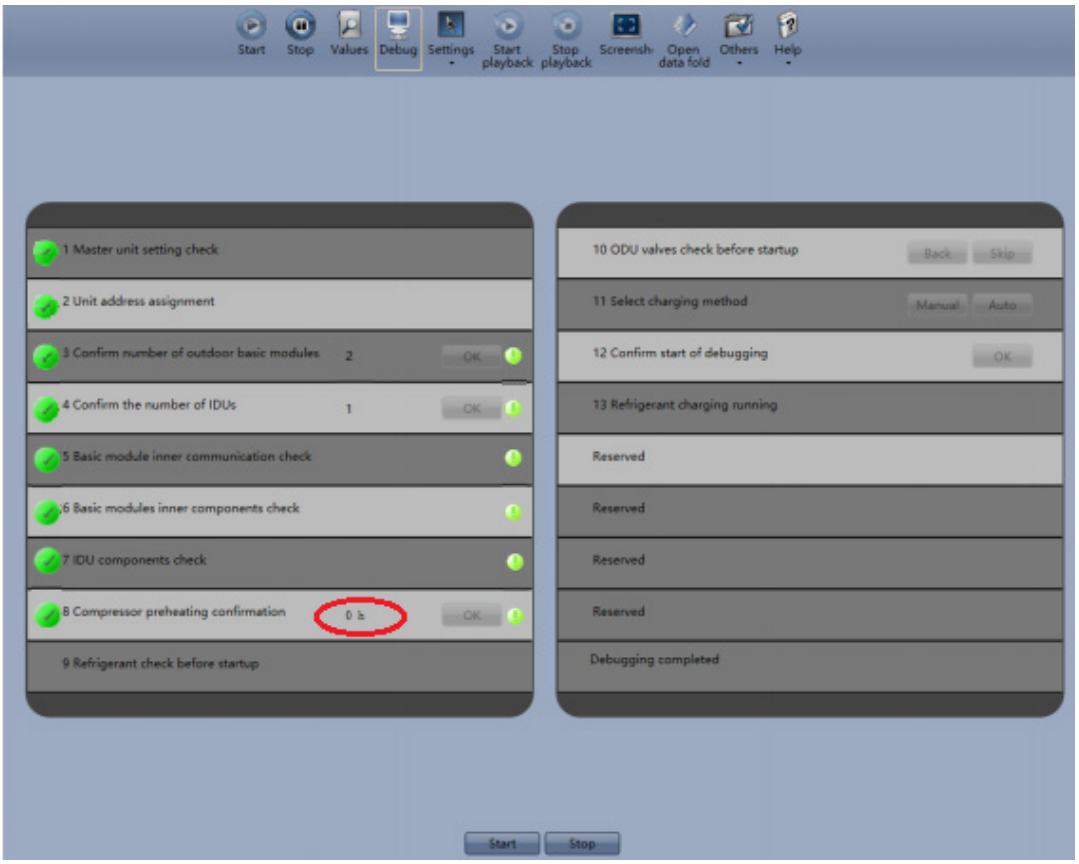
Click "Start" to enter the commissioning function and the software automatically performs commissioning. "  " indicates that commissioning is being performed on the phase and "  " indicates that commissioning is passed on the phase.



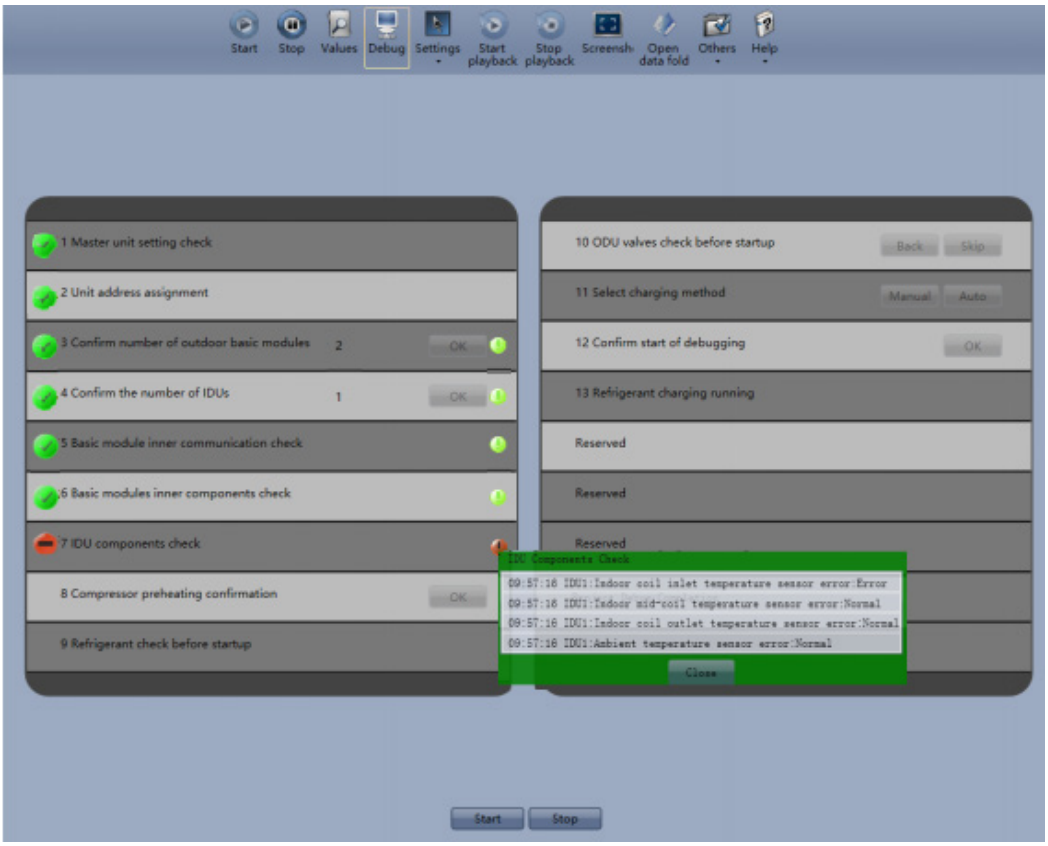
For the phase with "OK" displayed, a manual confirmation is required for entering the next commissioning step. In processes "3 Confirm number of outdoor basic modules" and "4 Confirm the number of IDUs", if the number of online units is consistent with the actual number, click Confirm or wait for 30 seconds to go to the next process. If the displayed number of online units is inconsistent with the actual number in the project, manual check and commissioning again are required for confirmation. Click "  " to display relevant information detected on this phase, which provides references for selection. Click "Close" to close the information (the number of commissioning units is displayed in "3 Confirm number of outdoor basic modules" and "4 Confirm the number of IDUs", as shown in the red boxes in the figure below.)



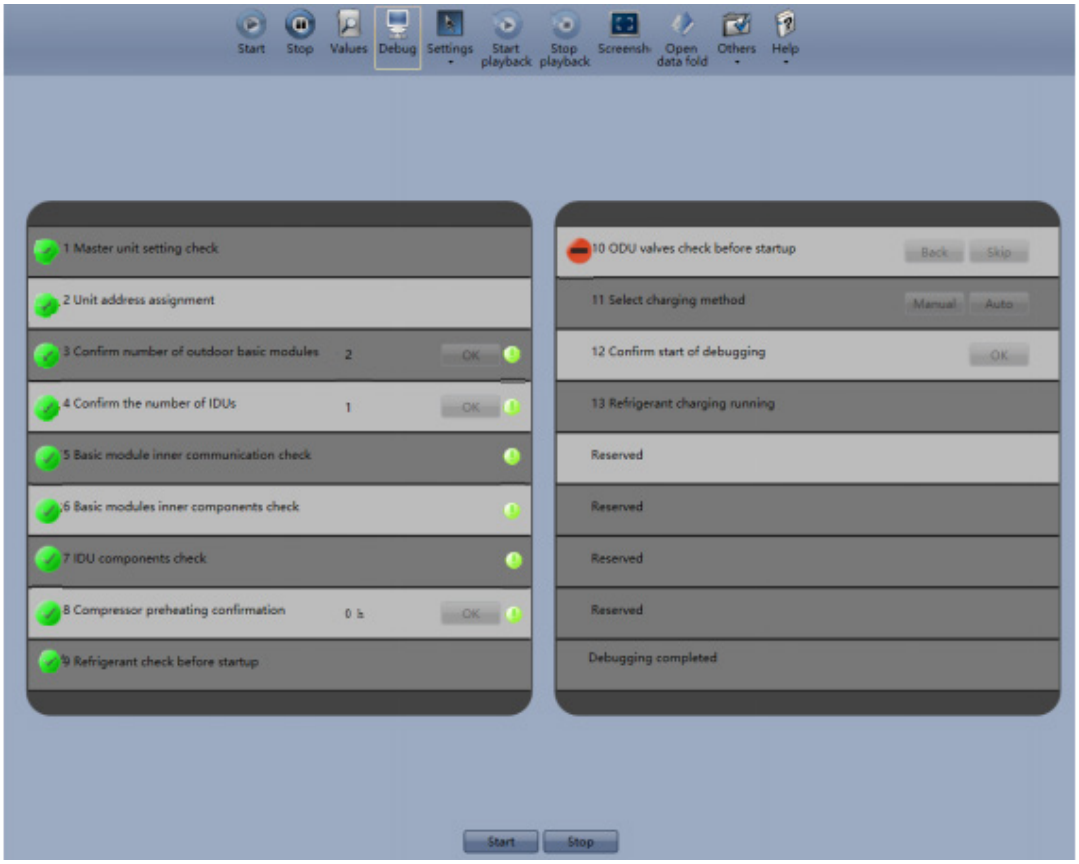
In step “8 Compressor preheating confirmation”, the current preheat time is directly displayed, as shown in the red box in the figure below. If the system currently detects that all the basic modules have been continuously powered on for 2 hours or more, or the previous time when the modules were powered on for 2 hours or more is less than 2 hours from the current time, preheat is completed and the system can proceed to the next process. Otherwise, the system prompts UO (insufficient compressor preheat time).



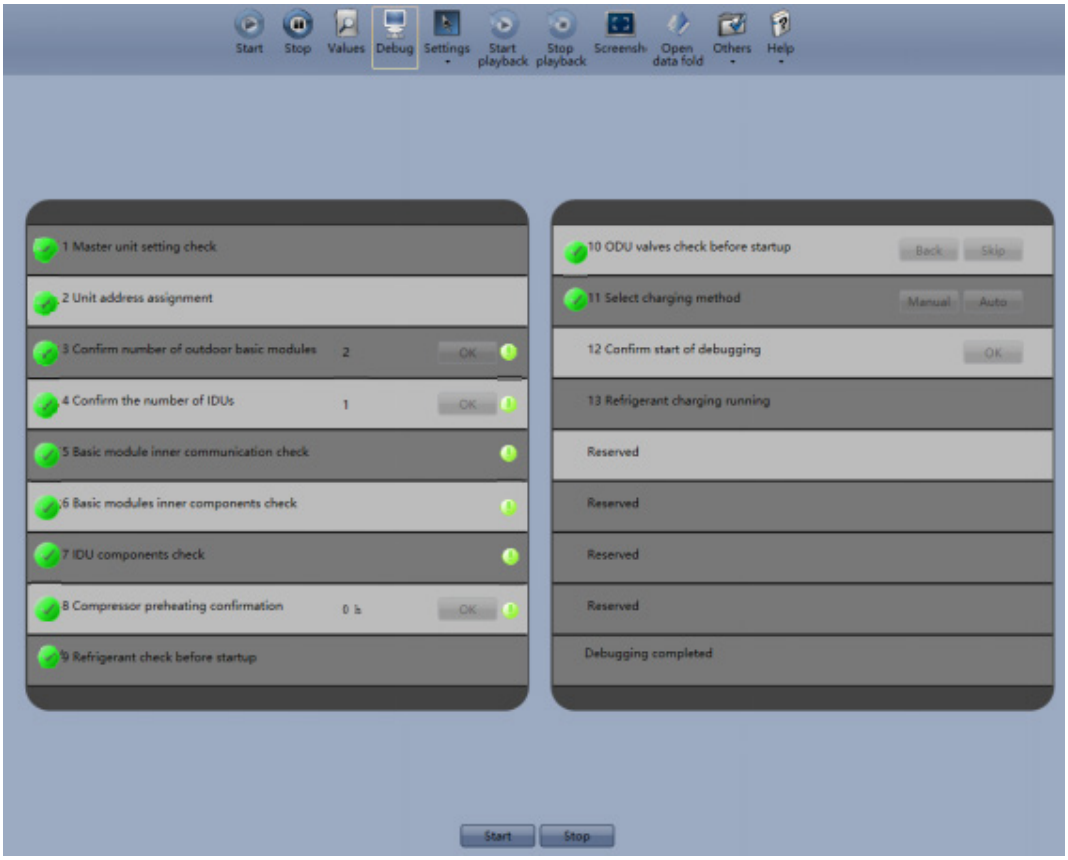
"  " indicates that commissioning is not passed on the phase and troubleshooting is required (after troubleshooting, the unit automatically enters the next step if no "OK" exists or click "OK" to enter the next step). Click "  " to display relevant information detected on this phase, which provides references for troubleshooting. Click "Close" to close the information.



During commissioning, click "Stop" to stop commissioning and then click "Start" to continue commissioning till commissioning ends. "Back" and "Skip" are provided in "10 ODU valves check before startup". When an exception occurs in step 10, click "Back" to return to step 9 and then click "OK" in step 9 to perform commissioning again for step 10. If a U6 fault (valve exception) occurs in step 10, users can click "Skip" to skip the fault. For other faults, "Skip" is unavailable.

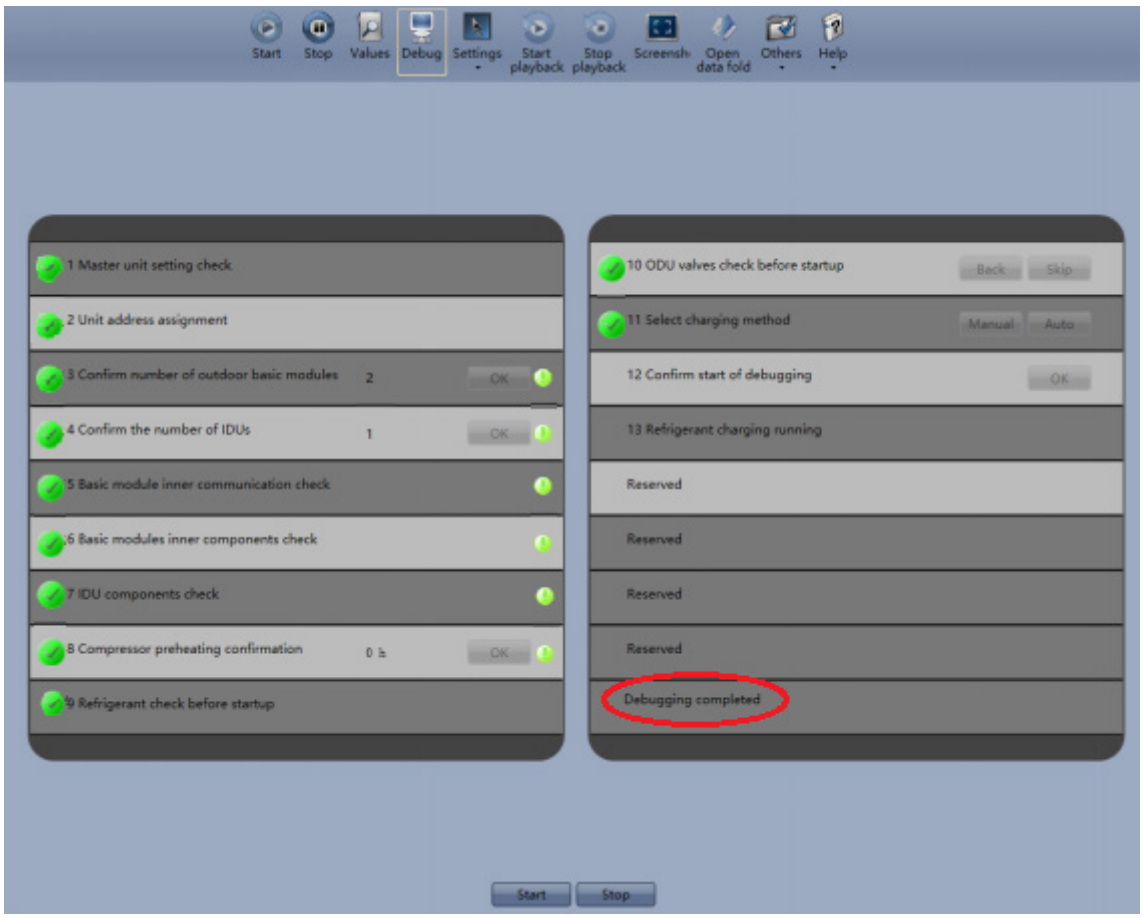


In step "11 Select charging method", the system automatically selects manual or auto charging mode. You can directly choose manual charging. If no operation is performed within 3 minutes, manual charging is automatically entered.



In step "13 Refrigerant charging running" is divided into trial running in manual charging cooling mode or manual charging heating mode. The system automatically determines and enables indoor unit cooling or forcibly enables indoor unit heating. When the system runs for 60 minutes without exception, it determines that the refrigerant is normal, the unit is shut down, and the commissioning is completed. Alternatively, after staying for 65 minutes in the process, the commissioning is exited and completed.

The interface after the commissioning is shown below. "Debugging completed" indicates that the commissioning is completed, and the system enters normal standby status 5 seconds later. Step "13 Refrigerant charging running" is reserved.



Note:

During commissioning, users must listen to the operating sound of outdoor and indoor fans and compressors to check for exceptions.

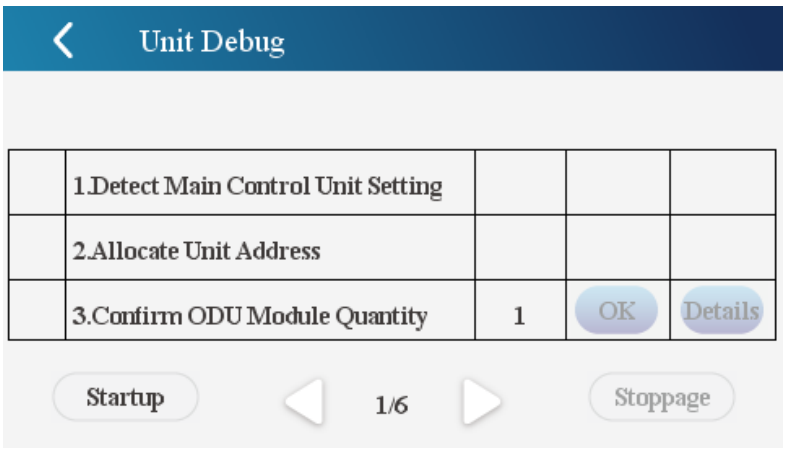
3.2.5 Unit Commissioning by Using Multi-functional Debugger

Step 1: Connect multi-functional debugger. For details, see the user manual of multi-functional debugger.

Step 2: Set the address DIP switch (SA8) of the master outdoor unit to 00. Otherwise, it is invalid.

Step 3: Click **Unit Debug** on the home page to enter the commissioning page.

Step 4: On the commissioning page, click **Startup** to start commissioning or click **Stoppage** to stop commissioning.



Step 5: During commissioning, multi-functional debugger shows the current process (step). In steps 3, 4, 8, and 12, click Confirm to go to the next step. In step 10, click Skip or Back. In steps 3, 4, 5, 6, and 7, you can view the details.

Step 6: After the commissioning, the outdoor unit displays "01 AC" or "AH OF" (or a fault, if any, or "on" when the unit is started up).

Warning:

After the product is used, the cable connection of the air-conditioner unit must be recovered. Otherwise, the actual use will be affected.

3.2.6 After Commissioning

Organize and save the data. Make complete and detailed records of exceptions and corresponding solutions in the commissioning process for future maintenance and query. Finally, export the commissioning report and hand it over to the user.

After the commissioning, instruct the user of the following precautions:

When the outdoor unit is continuously powered off for more than 24 hours, it must be warmed up for at least 2 hours to avoid damage to the compressor.

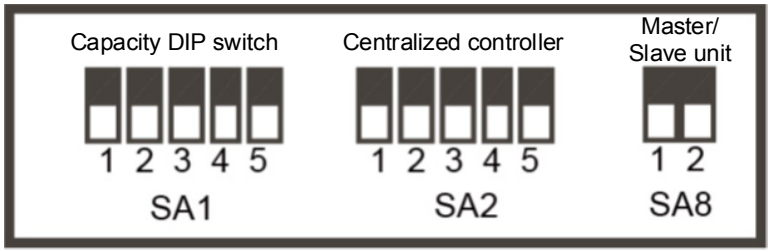
3.2.7 Reference Values of Unit Normal Operation Parameters (Commissioning Check)

Reference Values of Commissioning Parameters of the DC Inverter VRF Air-conditioning Unit						
No.	Commissioning Item		Parameter Name	Unit	Reference Value	Remarks
1	System parameters	Outdoor unit parameters	Outdoor ambient temperature	°C	—	—
2			Air discharge pipe temperature of inverter compressor 1	°C	●When the system compressor starts running and in normal cooling mode, the air discharge pipe or shell top temperature is between 70°C and 95°C, more than 10°C higher than the saturation temperature corresponding to the high system pressure; in normal heating mode, the air discharge pipe or shell top temperature is between 65°C and 90°C, more than 10°C higher than the saturation temperature corresponding to the high system pressure.	—
3			Shell top temperature of inverter compressor 1	°C		—
4			Air discharge pipe temperature of inverter compressor 2	°C		—
5			Shell top temperature of inverter compressor 2	°C		—
6			Temperature of the defrosting temperature sensor	°C	●When the system operates in cooling mode, the temperature of the defrosting temperature sensor is 5°C to 11°C lower than the high system pressure; ●When the system operates in heating mode, the difference between the temperature of the defrosting temperature sensor and the low system pressure is about 2°C.	—
7			High system pressure	°C	●The normal high system pressure value is between 20°C and 55°C. Based on the change of the ambient temperature and operating capacity of the system, the high system pressure value is 10°C to 40°C higher than the ambient temperature, and the higher the ambient temperature, the smaller the temperature difference between the two is; ●In cooling mode, when the ambient temperature is between 25°C and 35°C, the high system pressure is between 44°C and 56°C; ●In heating mode, when the ambient temperature is between –5°C and 10°C, the high system pressure is between 40°C and 56°C.	—
8			Low system pressure	°C	●In cooling mode, when the ambient temperature is between 25°C and 35°C, the low system pressure is between 0°C and 8°C; ●In heating mode, when the ambient temperature is between –5°C and 10°C, the low system pressure is between –15°C and 5°C.	—
9			Opening of the heating electronic	PLS	●In cooling mode, the opening of the heating electronic expansion valve is 3000PLS;	—

Reference Values of Commissioning Parameters of the DC Inverter VRF Air-conditioning Unit						
No.	Commissioning Item		Parameter Name	Unit	Reference Value	Remarks
	System parameters	Outdoor unit parameters	expansion valve		●In heating mode, the opening of the electronic expansion valve can be adjusted between 0PLS and 3000PLS.	
11			IPM module temperature of the inverter compressor	°C	●The IPM module temperature is lower than 80°C, and the highest temperature does not exceed 95°C.	—
12			Bus voltage of the inverter compressor driver	V	●The normal bus voltage is 1.414 times of the power voltage. For example, if the voltage of a three-phase power is 390 V, the rectified bus voltage is: 390 V x 1.414 = 551 V. Difference between the measured value and the above calculated value within 15 V is normal.	—
14		Indoor unit parameters	Inlet pipe temperature of the indoor heat exchanger	°C	●Based on the ambient temperature, the inlet pipe temperature of the same indoor unit in cooling mode is 1°C to 7°C lower than the outlet pipe temperature; ●In heating mode, the inlet pipe temperature of the same indoor unit is 10°C to 20°C lower than the outlet pipe temperature.	—
15			Outlet pipe temperature of the indoor heat exchanger	°C		—
16			Opening of the indoor electronic expansion valve	PLS	●2000PLS electronic expansion valve: The opening can be automatically adjusted between 200PLS and 2000PLS. ●480PLS electronic expansion valve: The opening can be automatically adjusted between 70PLS and 480PLS.	—
17	Drainage system	—		—	●The indoor unit drains smoothly and thoroughly, and the condensate water pipe has no slope water storage; the outdoor unit can completely drain from the drain pipe, and no water drops directly from the unit foundation.	—
18	Others	—		—	●The compressor and indoor and outdoor fans operate without abnormal noise. The unit operates normally without faults.	—

4 Unit Function Settings

4.1 DIP Switch Settings



Code	Name	Meaning	Default Setting	Remarks
SA1_capacity	Capacity DIP switch	Defines the rated capacity of the unit.	Depending on the model	The DIP switch is set by the factory and cannot be changed.
SA2_Addr-CC	Address DIP switch for centralized control	Defines and distinguishes addresses of different systems for centralized control of multiple systems.	00000	The code is used only for centralized control. Otherwise, keep the default setting. This address can be set only on the master unit.
SA8_MASTER-S	Master module setting DIP switch	Defines the master module.	00	Exactly one module must be configured as the master module in a refrigerating system. The master module status is set by default.

NOTES!

① The function DIP switches must be set when the outdoor unit is powered off. A DIP switch setting takes effect after the unit is re-powered on.

② The master module SA8 DIP switch must be reset in the project. SA1 DIP switch cannot be changed. The default settings of other DIP switches do not need to be changed if there are no special requirements.

4.1.1 Unit Capacity DIP Switch (SA1_capacity)

This DIP switch is set by the factory before shipment, and cannot be changed. Otherwise, the system will work abnormally and even damage the compressor.

4.1.2 Address DIP Switch for Centralized Control (SA2_Addr-CC)

This DIP switch indicates the address for centralized control of different refrigerating systems. It is set to 0000× by default.

If centralized control is not required between multiple refrigerating systems, keep the default setting of this DIP switch.

If centralized control is required between multiple refrigerating systems, set as follows:

(1) Be sure to set the DIP switch on the master unit.

(2) Setting this DIP switch on non-master units in a refrigerating system is invalid and unnecessary.

(3) Be sure to set the address DIP switch for centralized control (SA2_Addr-CC) on the master unit of a refrigerating system to "0000x". Then, this system is the main system.

(4) Set the address DIP switch for centralized control (SA2_Addr-CC) on the master units of other

refrigerating systems as follows:

SA2					Address No.
DIP1	DIP2	DIP3	DIP4	DIP5	
1	0	0	0	×	2
0	1	0	0	×	3
1	1	0	0	×	4
0	0	1	0	×	5
1	0	1	0	×	6
0	1	1	0	×	7
1	1	1	0	×	8
0	0	0	1	×	9
1	0	0	1	×	10
0	1	0	1	×	11
1	1	0	1	×	12
0	0	1	1	×	13
1	0	1	1	×	14
0	1	1	1	×	15
1	1	1	1	×	16

Note:

① DIP switch at the ON end indicates 0;

② DIP switch at the other end indicates 1;

③ × indicates invalid.

(5) This DIP switch of different refrigerating systems cannot be set the same. Otherwise, an address conflict will occur and the unit will not operate.

4.1.3 Master Module Setting DIP Switch (SA8_MASTER-S)

This DIP switch defines module management setting for a system. Exactly one module must be configured as the master module (in power-off state) in a refrigerating system. The setting method is as follows:

Master Module Setting DIP Switch (SA8_MASTER-S)		
DIP1	DIP2	Remarks
0	0	Master module
1	0	Submodule

When delivered, all modules are in "00" master module status by default. When multiple modules are connected in parallel, only one module remains in master module status, and other modules are set to submodule status. When a module is used independently, the default settings can be used.

On the basic module set to the master module, the module address on the main board is displayed as "01".

NOTES!

① When the DIP switch is not set to the above values, a DIP switch setting exception occurs.

② Exactly one module must be configured as the master module in a refrigerating system. Other modules are in submodule status.

③ Settings must be performed in power-off status.

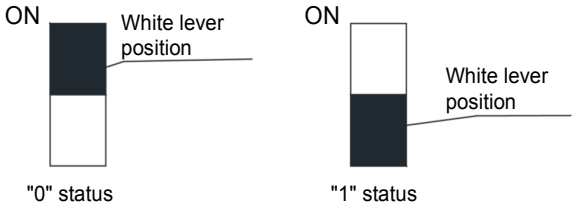
④ When delivered, all modules are in "00" master module status by default.

4.1.4 DIP Switch Examples

(1) DIP switch position description

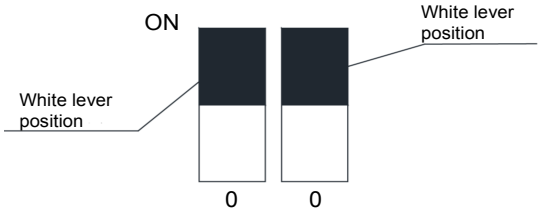
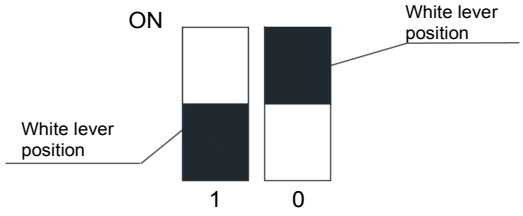
DIP switch at the ON end indicates 0; DIP switch at the other end indicates 1.

The white lever is DIP switch position.



(2) Example

This example describes master module settings. If a system has three modules, namely modules a, b and c, to set module c to the master module and the other two modules to submodules, do as follows:

Module c (master module)	Modules a and b (submodules)
 SA8_MASTER-S	 SA8_MASTER-S

4.2 System Function Operations

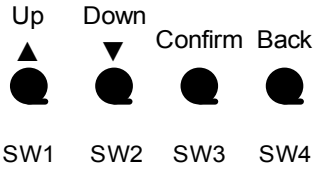
CAUTIONS!

① System function settings and queries must be performed after the entire system is commissioned.

② System function settings and queries can be performed regardless of whether the entire system is running or not.

4.2.1 Function Buttons

There are four function buttons on the main board of the outdoor unit, as shown below:



Names and Functions of the Buttons		
Button No.	Code	Function
SW1	Up	Selects the upper item.
SW2	Down	Selects the lower item.
SW3	Confirm	Confirms the selection.
SW4	Back	Returns to the previous operation.

4.2.2 Function Description

Function Code	Function Name	Description	Default Setting		Remarks
			Code	Meaning	
A2	Refrigerant recycle	This function is automatically started during maintenance. Based on the system pressure change, this function recycles all or partial refrigerant of the faulty module or the indoor unit pipeline.	—	—	This function can only be set.
A6	Cooling/heating of the entire system	The unit can be set to cooling and heating, cooling only, heating only, or fan mode for centralized management.	nA	Cooling and heating	This function can be set and queried.
A7	Outdoor silence mode	This function sets different silence modes based on the user's needs.	00	No silence	This function can be set and queried.
A8	After-sales vacuum pumping mode	During maintenance, the system automatically turns on all electronic expansion valves and solenoid valves to ensure that all lines can be vacuumed.	—	—	This function can only be set.
n0	Auto energy saving	This function can automatically reduce power consumption of the unit based on system operating parameters.	01	Capability priority control	This function can be set and queried.
n3	Forced defrosting	This function forcibly enables defrosting of the outdoor unit of the system.	—	—	This function can only be set.
n4	Forced energy saving	This function forcibly reduces the maximum power consumption of the unit.	10	100% capability output	This function can be set and queried.
n5	Indoor unit engineering SN offset	When different refrigerating systems are controlled in a centralized manner, this function avoids the conflict of indoor unit engineering numbers.	—	—	This function can only be set.
qJ	One-button drainage of dual-heat-source units	This function opens the water valves of all dual-heat-source indoor units in the system.	—	—	This function is applicable to drainage in non-heating seasons.
C8	Compressor emergency setting	—	00	Normal operation of the compressor	—
CA	Module emergency setting	—	00	Normal operation of the module	—
C9	Fan emergency setting	—	00	Normal operation of the fan	—
1G	Outdoor static pressure setting	—	00	0 Pa static pressure	—

4.2.3 Function Operations

Before setting every function, perform the following steps to select the function you want to set. The following premise steps will not be repeated.

Premise steps for function setting:

Step 1: Open the commissioning window on the main board of the master unit.

Step 2: Power on the entire system.

Step 3: Press and hold the SW1 up button on the master unit for over 5 seconds. The system enters the function setting status. The master unit displays as follows by default, and other modules display current statuses.

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A7	Blinks	00	Blinks	00	Blinks

Press the SW1 up button and the SW2 down button on the master module to select the corresponding function/parameter:

LED1		LED2		LED3		Function Name
Function code	Display status	Current process	Display status	Current status	Display status	
A7	Blinks	00	Blinks	00	Blinks	Outdoor unit silence
A6	Blinks	00	Blinks	00	Blinks	Cooling/heating of the entire system
A2	Blinks	00	Blinks	00	Blinks	Refrigerant recycle
A8	Blinks	00	Blinks	00	Blinks	After-sales vacuum pumping
n0	Blinks	01	Blinks	00	Blinks	Auto energy saving
n3	Blinks	00	Blinks	00	Blinks	Forced defrosting
n4	Blinks	00	Blinks	00	Blinks	Forced energy saving
n5	Blinks	00	Blinks	00	Blinks	Indoor unit engineering SN offset
IG	Blinks	00	Blinks	00	Blinks	Outdoor unit static pressure
qJ	Blinks	00	Blinks	00	Blinks	One-button drainage
C8	Blinks	00	Blinks	00	Blinks	Compressor emergency setting
CA	Blinks	00	Blinks	00	Blinks	Module emergency setting
C9	Blinks	00	Blinks	00	Blinks	Fan emergency setting
4J	Blinks	00	Blinks	00	Blinks	emergency setting of components
1F	Blinks	00	Blinks	00	Blinks	SRL low-pressure control
1G	Blinks	00	Blinks	00	Blinks	Outdoor static pressure setting
1H	Blinks	00	Blinks	00	Blinks	Efficient module rotation
4n	Blinks	00	Blinks	00	Blinks	Adaptive control of noise
4q	Blinks	00	Blinks	00	Blinks	Forced switch of the electric heater of an indoor unit
5L	Blinks	00	Blinks	00	Blinks	Fan reverse dust removal
5n	Blinks	00	Blinks	00	Blinks	Fan anti-snow

After selecting the function to be set, press the SW3 confirm button to enter the function setting. The master module displays as follows:

LED1		LED2		LED3		Function Name
Function code	Display status	Current process	Display status	Current status	Display status	
A7	On	00	Blinks	00	Blinks	Outdoor unit silence
A6	On	00	Blinks	00	Blinks	Cooling/heating of the entire system
A2	On	00	Blinks	00	Blinks	Refrigerant recycle
A8	On	00	Blinks	00	Blinks	After-sales vacuum pumping
n0	On	01	Blinks	00	Blinks	Auto energy saving
n3	On	00	Blinks	00	Blinks	Forced defrosting
n4	On	00	Blinks	00	Blinks	Forced energy saving
n5	On	00	Blinks	00	Blinks	Indoor unit engineering SN offset
qJ	On	00	Blinks	00	Blinks	One-button drainage
IG	On	00	Blinks	00	Blinks	Outdoor unit static pressure
C8	On	00	Blinks	00	Blinks	Compressor emergency setting
CA	On	00	Blinks	00	Blinks	Module emergency setting
C9	On	00	Blinks	00	Blinks	Fan emergency setting
4J	On	00	Blinks	00	Blinks	Components and parts emergency setting
1F	On	00	Blinks	00	Blinks	SRL low-pressure control
1G	On	00	Blinks	00	Blinks	Outdoor static pressure setting
1H	On	00	Blinks	00	Blinks	Efficient module rotation
4n	On	00	Blinks	00	Blinks	Adaptive control of noise
4q	On	00	Blinks	00	Blinks	Forced switch of the electric heater of an indoor unit
5L	On	00	Blinks	00	Blinks	Fan reverse dust removal
5n	On	00	Blinks	00	Blinks	Fan anti-snow

Then, set the function/parameter accordingly.

After entering the function/parameter setting status, press the SW4 back button to return to the previous process or exit the function setting status. If you do not press any button in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.3.1 "A2" Refrigerant Recycle

Introduction:

This function is mainly used to recycle some refrigerant in the faulty module or the indoor unit pipeline during unit maintenance. The table below lists the maximum amount of refrigerant that can be recycled:

Basic Module Model	Maximum Amount of Refrigerant to Be Recycled
AEG08MI2H3	6.0
AEG10MI2H3	6.0
AEG12MI2H3	9.0
AEG14MI2H3	8.5
AEG16MI2H3	8.5
AEG18MI2H3	13.0
AEG20MI2H3	13.0
AEG22MI2H3	13.0

Refrigerant recycle can be divided to two modes: fault module refrigerant recycle and indoor unit

pipeline refrigerant recycle.

Refrigerant Recycle Mode Code	Refrigerant Recycle Mode Name	Remarks
01	Indoor unit pipeline refrigerant recycle	This mode is selected when an indoor unit is faulty, and the refrigerant in the indoor unit pipeline needs to be recycled to the outdoor unit.
02	Basic module refrigerant recycle	This mode is selected when a basic module is faulty, and the refrigerant in the basic module needs to be recycled to other pipelines and modules.

After entering refrigerant recycle, the outdoor unit automatically starts, and recycles the refrigerant to the pipeline of the outdoor unit or indoor unit.

Setting steps:

Step 1: Enter A2 refrigerant recycle, and ensure that the master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A2	On	01	Blinks	00	Blinks

Step 2: When the default value 01 is displayed, press the SW1 up button and the SW2 down button to select the corresponding recycle mode. Press SW3 to confirm the selected mode.

Press the SW4 back button on the master module to return to the previous process or exit the function setting status.

If you do not press any button in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

Indoor unit pipeline refrigerant recycle:

Step 3: Select 01 in step 2 to enter indoor unit pipeline refrigerant recycle. The LEDs of all basic modules display as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A2	On	01	On	[Module low pressure Ps]	On

LED3 shows the low pressure value of the module. If it is negative, LED3 circularly displays negative value code "nE" and the numerical value every 1 second. For example, for –30, LED3 circularly displays nE for 1 second, and 30.

Step 4: When the system prompts for manual operation of refrigerant recycle, press SW3 on the master unit to confirm refrigerant recycle. The entire system will stop immediately, and cannot be restarted in 10 minutes. After 10 minutes, the system will exit refrigerant recycle, and enter standby status.

Then, press the SW4 back button to return to the previous process to resume the standby status of the entire system. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

Note:

After refrigerant recycle, the system cannot be restarted within 10 minutes.

Basic module refrigerant recycle:

Step 3: Set the basic module that needs refrigerant recycle to emergency status, close the liquid pipe stop valve of the module in emergency status, and then select 02 in step 2 to enter refrigerant recycle of the basic module, as shown below:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A2	On	02	On	Module high pressure	On

LED3 displays the high pressure value of the module.

Step 4: When the high pressure value displayed by LED3 continuously blinks (if the high pressure is below 0, 0 is displayed), quickly close the air pipe stop valve of the emergency module, and press SW3 on the master unit to confirm refrigerant recycle. The entire system will stop immediately. If the high pressure value displayed by LED3 continuously blinks and you do not operate in 3 minutes, the system forcibly stops.

Press the SW4 back button on the master module to return to the previous process or exit the function setting status.

Note:

Before the refrigerant recycle of a basic module, the liquid pipe stop valve of the basic module must be closed. After refrigerant recycle, the system cannot be restarted within 10 minutes.

4.2.3.2 "A6" Cooling/Heating of the Entire System

Introduction:

This function sets the cooling/heating mode of the entire system. Available modes include:

Outdoor Unit Function Mode		Available Indoor Unit Operation Modes
Code	Name	
nA	Cooling and heating	Cooling, dry, heating, and fan (Note: Heating mode cannot run with other modes at the same time.) (Default setting)
nC	Cooling only	Cooling, dry, and fan
nH	Heating only	Heating and fan (Note: Heating mode cannot run with other modes at the same time.)
nF	Fan	Fan

The user or administrator needs to set the mode of the outdoor unit based on the actual usage to avoid conflicts.

Setting steps:

Step 1: Enter A6 cooling/heating setting of the entire system, and ensure that the master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A6	On	nC	Blinks	nC	Blinks

Step 2: Press the SW1 up button and the SW2 down button to select the corresponding cooling/heating mode.

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
A6	On	nC	Blinks	nC	Blinks
A6	On	nH	Blinks	nH	Blinks
A6	On	nA	Blinks	nA	Blinks
A6	On	nF	Blinks	nF	Blinks

Step 3: After selecting the mode, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
A6	On	nC	On	nC	On
A6	On	nH	On	nH	On
A6	On	nA	On	nA	On
A6	On	nF	On	nF	On

Press the SW4 back button on the master module to return to the previous process or exit the function setting status.

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is nA cooling and heating mode.

4.2.3.3 A7 Outdoor Silence Mode

Introduction:

This function is mainly used in scenarios where the user requires low ambient noise. Smart night silence mode and forced silence mode are available.

In smart night silence mode, need to set timer of outdoor units.

to ensure low-noise operation at night. Smart night silence mode has nine options:

Silence Mode	Code	Noise Level
Mode 1	01	Low noise
Mode 2	02	
Mode 3	03	
Mode 4	04	
Mode 5	05	
Mode 6	06	
Mode 7	07	
Mode 8	08	Medium-low noise
Mode 9	09	Ultra low noise

Note:

Highest temperature during the day generally appears during 13:00 and 15:00.

In forced silence mode, the system operates in low-noise mode regardless of day or night. This mode has three options:

Silence Mode	Code	Noise Level
Mode 10	10	Low noise
Mode 11	11	Medium-low noise
Mode 12	12	Ultra low noise

Note:

After a silence mode is set, the system capability will be attenuated. Therefore, the noise and the capability need to be balanced when a silence mode is selected.

No silence is set by default, that is, "00" status.

Setting steps:

Step 1: Enter A7 outdoor silence mode, and ensure that the master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Silence mode code	Display status	Current status	Display status
A7	On	00	Blinks	OC	Blinks

Step 2: Press the SW1 up button and the SW2 down button to select the corresponding silence mode.

LED1		LED2		LED3	
Function code	Display status	Silence mode code	Display status	Current status	Display status
A7	On	00	Blinks	OC	Blinks
A7	On	01	Blinks	OC	Blinks
A7	On	02	Blinks	OC	Blinks
A7	On	03	Blinks	OC	Blinks
A7	On	04	Blinks	OC	Blinks
A7	On	05	Blinks	OC	Blinks
A7	On	06	Blinks	OC	Blinks
A7	On	07	Blinks	OC	Blinks
A7	On	08	Blinks	OC	Blinks
A7	On	09	Blinks	OC	Blinks
A7	On	10	Blinks	OC	Blinks
A7	On	11	Blinks	OC	Blinks
A7	On	12	Blinks	OC	Blinks

Step 3: After selecting the corresponding silence mode, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Silence mode code	Display status	Current status	Display status
A7	On	00	On	OC	On
A7	On	01	On	OC	On
A7	On	02	On	OC	On
A7	On	03	On	OC	On
A7	On	04	On	OC	On
A7	On	05	On	OC	On
A7	On	06	On	OC	On
A7	On	07	On	OC	On
A7	On	08	On	OC	On
A7	On	09	On	OC	On
A7	On	10	On	OC	On
A7	On	11	On	OC	On
A7	On	12	On	OC	On

Press the SW4 back button on the master module to return to the previous process or exit the function setting status.

The default status is 00, that is, no silence.

4.2.3.4 A8 After-Sales Vacuum Pumping Mode

Introduction:

This function is used to ensure the vacuum of the entire system during maintenance and to avoid dead pipeline zones. When this function is set, both the expansion valve and the solenoid valve of the unit will open.

Setting steps:

Step 1: Enter A8 after-sales vacuum pumping mode, and ensure that the master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A8	On	00	Blinks	OC	Blinks

The system enters the to-be-confirmed status of vacuum pumping mode.

Step 2: Press the SW3 button. The system enters the confirmed status of vacuum pumping mode and all modules display as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
A8	On	00	On	OC	On

At this time, the expansion valves of all indoor and outdoor units are open, and the entire system cannot be started.

When you press the SW4 back button on the master unit for over 5 seconds or the vacuum pumping status remains for 24 hours, the entire system exits the status.

4.2.3.5 n0 Auto Energy Saving

Introduction:

This function sets the user-required energy saving mode. The default mode is capability priority control.

After energy saving mode is set, the system capability will deteriorate.

Code	Function Name
01	Capability priority control (default setting)
02	Energy saving priority control

Setting steps:

Step 1: Enter n0 system energy saving operation, and ensure that the master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n0	On	01	Blinks	OC	Blinks

Step 2: Press the SW1 up button and the SW2 down button to select the corresponding mode.

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n0	On	01	Blinks	OC	Blinks
n0	On	02	Blinks	OC	Blinks

Step 3: After selecting the mode, press the SW3 confirm button. The master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n0	On	01	On	OC	On
n0	On	02	On	OC	On

If you do not press any button on the master unit in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

4.2.3.6 n3 Forced Defrosting

Introduction:

This function is used when forced defrosting is required during unit maintenance. After entering forced defrosting, the system automatically exits according to the exit conditions, and then automatically runs according to the system conditions.

Setting steps:

Step 1: Enter n3 forced defrosting, and ensure that the master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n3	On	00	Blinks	00	Blinks

Step 2: Press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n3	On	00	On	00	On

If the defrosting condition is not met, the module displays the set mode. If the setting is completed, press SW4 to resume the unit to the current normal working status.

When the defrosting exit condition is met, the system automatically exits and resumes normal running control.

4.2.3.7 n4 Forced Energy Saving and Defrosting

Introduction:

The maximum output capability limit is used in scenarios where the user needs to forcibly limit the system power consumption. Available functions are as follows:

Code	Maximum Output Capability
10	100% (default setting)

Code	Maximum Output Capability
09	90%
08	80%

Note:

After the capability limit is set, the cooling or heating effect is correspondingly reduced.

Setting steps:

Step 1: Enter n4 maximum output capability limit setting, and ensure that the master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n4	On	10	Blinks	OC	Blinks

Step 2: Press the SW1 up button and the SW2 down button to select the corresponding value.

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n4	On	10	Blinks	OC	Blinks
n4	On	09	Blinks	OC	Blinks
n4	On	08	Blinks	OC	Blinks

Step 3: After selecting the value, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n4	On	10	On	OC	On
n4	On	09	On	OC	On
n4	On	08	On	OC	On

If you do not press any button on the master unit in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

4.2.3.8 n5 Indoor Unit Engineering SN Offset

Introduction:

When different refrigerating systems are controlled in a centralized manner (by remote monitoring or a centralized controller), this function sets the engineering numbers of indoor units and avoids their conflict among different systems, and therefore must be set.

Set this function only in the master system, whose centralized control address SA2 is "0000×". For details, see the settings in section "Address DIP Switch for Centralized Control (SA2_Addr-CC)".

Setting steps:

Step 1: Enter n5 indoor unit engineering SN offset, and ensure that the master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n5	On	00	Blinks	00	Blinks

Step 2: Press the SW3 confirm button to send the engineering number offset instruction. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process/mode	Display status	Current status	Display status
n5	On	00	On	OC	On

After 10s, the system exits the mode and enters normal working.

4.2.3.9 IG Outdoor Unit Static Pressure

Each basic module can be set separately or uniformly by the master module.

When basic modules are set separately, the static pressure value of each module can be different; when the modules are set uniformly, the static pressure value of each module remains the same. When a static pressure value is set in either of the two modes, the previous mode setting limit is automatically released.

The static pressure value of each basic module is subject to the last received set value.

Setting steps:

Enter the function setting. The master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1G	On	01	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding basic module: 00 means all modules, 01~-04 means module 1 to module 4.

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1G	On	00	Blinks	OC	Blinks
1G	On	01	Blinks	OC	Blinks
1G	On	02	Blinks	OC	Blinks
1G	On	03	Blinks	OC	Blinks
1G	On	04	Blinks	OC	Blinks

After selecting the corresponding basic module, press the SW3 confirm button. The module displays as follows. The current factory default status is 00.

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	00	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding static pressure mode for the outdoor unit.

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	00	Blinks
1G	On	ADD	On	01	Blinks

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	02	Blinks
1G	On	ADD	On	03	Blinks
1G	On	ADD	On	04	Blinks

After selecting the corresponding static pressure mode for the outdoor unit, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1G	On	ADD	On	00	On
1G	On	ADD	On	01	On
1G	On	ADD	On	02	On
1G	On	ADD	On	03	On
1G	On	ADD	On	04	On

Each basic module memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

4.2.3.10 qJ One-button Drainage

Code	Meaning
on	One-button drainage
OF	Non-one-button drainage

Setting steps:

Enter the function setting. The master unit displays as follows by default:

LED1		LED2		LED3	
Function code	Display status	Current module	Display status	One-button drainage code	Display status
qJ	On	OF	Blinks	00	Blinks

Press the SW3 confirm button. The master unit displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current module	Display status	One-button drainage code	Display status
qJ	On	OF	Blinks	00	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding status, and press the SW3 confirm button.

LED1		LED2		LED3	
Function code	Display status	Current module	Display status	One-button drainage code	Display status
qJ	On	on or OF	On	oC	On

After the setting is completed, if you do not press any button in 10s, the system will automatically exit the current screen and resume displaying the current standby status.

Note:

The one-button drainage function is valid in running or standby status of the entire system. After entering the one-button drainage function, the outdoor unit sends a forced shutdown instruction, and the indoor unit shuts down. When the system exits drainage, the forced shutdown instruction is canceled. If

the one-button drainage status is set to on (one-button drainage is enabled), the one-button drainage code is automatically recovered to OF after 60 minutes.

4.2.3.11 C8 Compressor Failure Emergency Operation

This function is after-sales emergency setting when a compressor works abnormally. It shields the abnormal compressor in a short time to ensure the emergency operation of other compressors.

Setting steps:

Enter the function setting on the main board of the faulty basic module. The module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
C8	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding compressor emergency operation status.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
C8	On	00	Blinks	OC	Blinks	Compressors 1 and 2 run normally.
C8	On	01	Blinks	OC	Blinks	The operation of compressor 1 is shielded.
C8	On	02	Blinks	OC	Blinks	The operation of compressor 2 is shielded.

After selecting the corresponding value, press the SW3 confirm button. All modules display as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
C8	On	00	On	OC	On
C8	On	01	On	OC	On
C8	On	02	On	OC	On

The basic module memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

Then, press the SW4 back button to return to the previous process. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

If you do not press any button in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

If a basic module sets compressor failure emergency operation, the status indicators and LEDs on the module indicate the corresponding status.

LED1	LED2	LED3	Description
Module address	Module failure/indoor unit failure	Module status	
ADD	C8	ON	System running-compressor emergency operation status
ADD	C8	OF	System standby-compressor emergency operation status

NOTES!

① A module can set only one compressor to emergency mode;

② The compressor emergency operation mode is valid only in single-module multi-compressor system;

③ The default status is 00.

④ The system cannot run continuously for more than 24 hours in compressor emergency operation status. If it exceeds 24 hours, the entire system is forcibly stopped, and the indoor unit displays the "Ad" limit operation code.

4.2.3.12 C9 Fan Failure Emergency Operation

This function is after-sales emergency setting when a fan on a dual-fan module works abnormally. It shields the abnormal fan in a short time to ensure the emergency operation of the system.

Setting steps:

Enter the function setting on the main board of the faulty basic module. The module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
C9	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding compressor emergency operation status.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
C9	On	00	Blinks	OC	Blinks	Fans 1 and 2 run normally.
C9	On	01	Blinks	OC	Blinks	The operation of fan 1 is shielded.
C9	On	02	Blinks	OC	Blinks	The operation of fan 2 is shielded.

After selecting the corresponding value, press the SW3 confirm button. All modules display as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
C9	On	00	On	OC	On
C9	On	01	On	OC	On
C9	On	02	On	OC	On

The basic module memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

Then, press the SW4 back button to return to the previous process. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

If you do not press any button in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

If a basic module sets compressor failure emergency operation, the status indicators and LEDs on the module indicate the corresponding status.

LED1	LED2	LED3	Description
Module address	Module failure/indoor unit failure	Module status	
ADD	C9	ON	System running-fan emergency operation status
ADD	C9	OF	System standby-fan emergency operation status

NOTES!

① This function is applicable only to dual-fan models;

② A module can set only one fan to emergency mode;

③ The default status is 00.

④ The system cannot run continuously for more than 120 hours in fan emergency operation status. If it exceeds 120 hours, the entire system is stopped, and the indoor unit displays the "Ad" limit operation code.

4.2.3.13 CA Module Failure Emergency Operation

This function is after-sales emergency setting when a module works abnormally. It shields the abnormal module in a short time to ensure the emergency operation of other modules.

Setting steps:

Enter the function setting on the main board of the faulty basic module. The module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
CA	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding module to enter and exit emergency operation status.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
CA	On	00	Blinks	OC	Blinks	All basic modules run normally.
CA	On	01	Blinks	OC	Blinks	The operation of module 1 is shielded.
CA	On	02	Blinks	OC	Blinks	The operation of module 2 is shielded.
CA	On	03	Blinks	OC	Blinks	The operation of module 3 is shielded.
CA	On	04	Blinks	OC	Blinks	The operation of module 4 is shielded.

After selecting the corresponding value, press the SW3 confirm button. The shielded module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
CA	On	00	On	OC	On
CA	On	01	On	OC	On
CA	On	02	On	OC	On
CA	On	03	On	OC	On
CA	On	04	On	OC	On

Modules not shielded display as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
CA	On	00	On	OC	On

Press the SW4 back button. Modules not shielded display normal working status, and the shielded module displays as follows:

LED1		LED2		LED3	
Module address	Display status	Module failure/indoor unit failure	Display status	Module status	Display status
ADD	On	CA	On	OF	On

NOTES!

① This function is valid only in systems with two or more modules connected in parallel;

② A system can set only one module to emergency mode;

③ The default status is 00.

④ The system cannot run continuously for more than 48 hours in module emergency operation status. If it exceeds 48 hours, the entire system is stopped, and the indoor unit displays the "Ad" limit operation code.

4.2.3.14 4J Emergency setting of components

Emergency setting of components

The emergency setting of components is used for the after-sales emergency setting when some components of the unit work abnormal, to remove the fault protection of abnormal components in a short time and ensure the emergency operation of the unit.

Setting operation:

Enter the function setting on the main control machine's main board, which is shown as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4J	On	00	Blinks	OC	Blinks

Press SW1 to select the key above and SW2 to select the key below to select the corresponding value of 00 or 01, in which 00 represents "emergency state of non-components" and 01 represents "emergency state of components". The factory default is 00.

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4J	On	00	Blinks	OC	Blinks

After selecting the corresponding value, press SW3 to confirm the key, and the main module will be

displayed as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4J	On	00	On	OC	On

At this time, if there is no button operation on the main control machine for 5 minutes, it will exit automatically and the unit will resume the current state display.

Notes:

① Default is "00" state;

② The emergency setting of components is effective in a single module system or a modular system;

③ The system cannot run continuously for more than 168 hours under the emergency operation state of components. If it runs for more than 168 hours, the whole machine will stop running;

④ At present, the emergency setting of components is only effective for temperature-sensing package fault, overcurrent protection and startup failure.

4.2.3.15 1F SRL Low-Pressure Control

Setting steps:

Enter the function setting. The master unit displays as follows by default, and other basic modules display normal working status:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1F	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding low pressure control mode.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
1F	On	00	Blinks	OC	Blinks	Ordinary low-pressure control
1F	On	01	Blinks	OC	Blinks	SRL low-pressure control

After selecting the corresponding mode, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1F	On	00	On	OC	On
1F	On	01	On	OC	On

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

4.2.3.16 1H Efficient Module Rotation

Setting steps:

Enter the function setting. The master unit displays as follows by default, and other basic modules display normal working status:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
1H	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding module rotation mode.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
1H	On	00	Blinks	OC	Blinks	Efficient module rotation
1H	On	01	Blinks	OC	Blinks	Ordinary module rotation

After selecting the corresponding value, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
1H	On	00	On	OC	On
1H	On	01	On	OC	On

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

4.2.3.17 4n Adaptive Control of Noise

Setting steps:

Enter the function setting. The master unit displays as follows by default, and other basic modules display normal working status:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4n	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding low pressure control mode.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
4n	On	00	Blinks	OC	Blinks	The adaptive control of noise is valid.
4n	On	01	Blinks	OC	Blinks	The adaptive control of noise is invalid.

After selecting the corresponding mode, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4n	On	00	On	OC	On
4n	On	01	On	OC	On

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

After the entire system is commissioned, the commissioner sends a flag, indicating whether the adaptive control of noise is valid. The master unit memorizes this setting and does not clear it even upon power failure and power-on again.

4.2.3.18 4q Forced Off of the Electric Heater of an Indoor Unit

Setting steps:

Enter the function setting. The master unit displays as follows by default, and other basic modules display normal working status:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4q	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding low pressure control mode.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
4q	On	00	Blinks	OC	Blinks	Invalid forced off function of the electric heater of an indoor unit
4q	On	01	Blinks	OC	Blinks	Forced off of the electric heater of an indoor unit in full temperature range
4q	On	02	Blinks	OC	Blinks	Forced off of the electric heater of an indoor unit above –2°C outdoor temperature

After selecting the corresponding mode, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
4q	On	00	On	OC	On
4q	On	01	On	OC	On

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

After the entire system is commissioned, the commissioner sends a flag, indicating whether the forced switch function of the electric heater of the indoor unit is valid. The master unit memorizes this setting and does not clear it even upon power failure and power-on again.

4.2.3.19 5L Fan Reverse Dust Removal

Setting steps:

Enter the function setting. The master unit displays as follows by default, and other basic modules display normal working status:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
5L	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding fan reverse dust

removal mode.

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
5L	On	00	Blinks	OC	Blinks
5L	On	01	Blinks	OC	Blinks
5L	On	02	Blinks	OC	Blinks

After selecting the corresponding value, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
5L	On	00	On	OC	On
5L	On	01	On	OC	On
5L	On	02	On	OC	On

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00. Mode 00 indicates the fan reverse dust removal function is turned off, 01 indicates fan reverse dust removal mode 1, and 02 indicates mode 2.

4.2.3.20 5n Fan Anti-Snow

Setting steps:

Enter the function setting. The master unit displays as follows by default, and other basic modules display normal working status:

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
5n	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding fan anti-snow mode.

LED1		LED2		LED3	
Function code	Display status	Current process	Display status	Current status	Display status
5n	On	00	Blinks	OC	Blinks
5n	On	01	Blinks	OC	Blinks

After selecting the corresponding value, press the SW3 confirm button. The master module displays as follows:

LED1		LED2		LED3	
Function code	Display status	Mode	Display status	Current status	Display status
5n	On	00	On	OC	On
5n	On	01	On	OC	On

The master unit memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00. Mode 00 indicates that this function is off, and 01 indicates that this function is on.

4.2.4 Outdoor Unit Status Query

The following functions can be queried:

Function Code	Function Name
n6	Fault query
n7	Parameter query
n8	Indoor unit engineering SN query
n9	Online indoor unit qty query
nb	Outdoor unit barcode query

After the unit is powered, you can query the function setting status, historical fault record, indoor unit engineering number and real-time parameter of the unit in any status. The query method is as follows:

On the master unit, press and hold the SW2 down button for over 5 seconds. The master unit displays the current function setting status, and other modules display based on their current status. Press the SW1 up button and the SW2 down button on the master unit to select the corresponding query. The default selection is A6.

In function query status, if there are two levels of menus, you can press the SW4 back button to return to the previous level. Press the SW4 query button again to exit query status.

In function query status, if you do not press any button on the master unit in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.4.1 n6 Fault Query

Press the SW1 up button and the SW2 down button to select fault query. The master unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Current process/mode	Display status	Current status	Display status
n6	Blinks	00	Blinks	00	Blinks

Press the SW3 confirm button on the master unit to confirm the selection.

Introduction:

This function is used to query historical faults in the system. Up to five historical faults can be stored in the order of time.

Operations:

In fault query status, press the SW1 up button and the SW2 down button. LED3 circularly displays the code and address of the faulty module in history in the order of time (at an interval of 1s), and LED2 displays the fault sequence number. If there is no historical fault, LED2 and LED3 display "00" by default. Up to five latest historical faults can be queried. Faults that can be stored and queried are as follows:

1	High pressure protection	20	Inverter compressor over-current protection
2	Low pressure protection	21	Current detection circuit fault of the inverter compressor driver
3	Lack-of-refrigerant protection	22	Loss of synchronization protection for the inverter compressor
4	Air discharge low temperature protection	23	Communication fault between the primary controller and inverter compressor driver
5	Over low pressure ratio protection	24	Over temperature protection for the inverter compressor driver module.

6	Over high pressure ratio protection	25	Temperature sensor fault of the inverter compressor driver module.
7	Four-way valve air backflow protection	26	Charging loop fault of the inverter compressor driver.
8	High pressure low protection	27	Under voltage protection for DC bus of the inverter outdoor fan driver
9	High temperature protection for compressor 1	28	Over voltage protection for DC bus of the inverter outdoor fan driver
10	High temperature protection for compressor 2	29	IPM module protection for the inverter outdoor fan driver.
11	Compressor 2 over-current protection	30	Inverter outdoor fan startup failure.
12	Shell roof high temperature protection for compressor 1	31	Inverter outdoor fan phase loss protection.
13	Shell roof high temperature protection for compressor 2	32	Inverter outdoor fan driver module reset.
14	Under voltage protection for the DC bus of inverter compressor driver	33	Inverter outdoor fan over-current protection.
15	Over voltage protection for DC bus of the inverter compressor driver.	34	Current detection circuit fault of the inverter outdoor fan driver.
16	IPM module protection for the inverter compressor driver.	35	Loss of synchronization protection for the inverter outdoor fan.
17	Inverter compressor startup failure	36	Communication fault between the primary controller and inverter outdoor fan driver.
18	Inverter compressor phase loss protection.	37	Over temperature protection for the inverter outdoor fan driver module.
19	Inverter compressor driver module reset.	38	Temperature sensor fault of the inverter outdoor fan driver module.

The figure below shows the **Debug** page.

LED1		LED2		LED3	
Function Code	Display status	Sequence	Display status	Current status	Display status
n6	On	01	On	Historical fault/module address	Alternated
n6	On	02	On		Alternated
n6	On	03	On		Alternated
n6	On	04	On		Alternated
n6	On	05	On		Alternated

If historical faults are less than five, after the last fault is displayed, LED2 and LED3 display 00, indicating no more fault.

In fault query status, press and hold the SW3 confirm button for over 5 seconds to clear all historical faults of the outdoor unit.

4.2.4.2 n7 Parameter Query

Press the SW1 up button and the SW2 down button to select parameter query. The master unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Current process/mode	Display status	Current status	Display status
n7	Blinks	00	Blinks	00	Blinks

Press the SW3 confirm button on the master unit to confirm the selection.

Introduction:

This function is used to query running parameters of each module of the outdoor unit in real time.

Operations:

In parameter query status, the master unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Module address	Display status	Current status	Display status
n7	On	01	Blinks	00	Blinks
n7	On	02	Blinks	00	Blinks
n7	On	03	Blinks	00	Blinks
n7	On	04	Blinks	00	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding query module, and press the SW3 confirm button. The unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Parameter code	Display status	Current status	Display status
n7	On	XX	On	Value	Blinks

LED2 displays the module parameter code, and LED3 displays the specific value. The parameters and display sequence are listed below. "Outdoor ambient temperature (master module)" is displayed by default. Press the SW1 up button and the SW2 down button to select the corresponding query parameter value.

Parameter Code	Parameter Name	Remarks
01	Outdoor ambient temperature	Outdoor ambient temperature of the master module is used.
02	Operating frequency of compressor 1	—
03	Operating frequency of compressor 2	—
04	Operating frequency of the outdoor fan	Operating frequency of outdoor fan 1 is used.
05	Module high pressure	Temperature value corresponding to the pressure
06	Module low pressure	Temperature value corresponding to the pressure
07	Discharge temperature of compressor 1	The air discharge pipe temperature is used.
08	Discharge temperature of compressor 2	The air discharge pipe temperature is used.
09	Discharge temperature of compressor 3	—
10	Discharge temperature of compressor 4	—
11	Discharge temperature of compressor 5	—
12	Discharge temperature of compressor 6	—
13	Operating frequency of compressor 3	—
14	Current of compressor 1	The integer value is used, and the wired controller does not query.
15	Current of compressor 2	The integer value is used, and the wired controller does not query.
16	Current of compressor 3	The integer value is used, and the wired controller does not query.
17	Current of compressor 4	The integer value is used, and the wired controller does not query.
18	Current of compressor 5	The integer value is used, and the wired controller does not query.
19	Current of compressor 6	The integer value is used, and the wired controller does not query.
20	Reserved	—
21	Module temperature of compressor 1	The wired controller does not query.
22	Module temperature of compressor 2	The wired controller does not query.
23	Module temperature of outdoor fan 1	The wired controller does not query.
24	Module temperature of outdoor fan 2	The wired controller does not query.
25	Outdoor unit heating EEV 1	The displayed value is the integer value of the actual value divided by 10.
26	Outdoor unit heating EEV 2	The displayed value is the integer value of the actual value divided by 10.

Parameter Code	Parameter Name	Remarks
27	Subcooler EEV	The displayed value is the integer value of the actual value divided by 10.
28	Defrost temperature	Defrost temperature 1 is used.
29	Subcooler's liquid outlet temperature	—
30	Outlet temperature of accumulator	—
31	Oil return temperature	—
32	Inlet pipe temperature of the condenser	—
33	Outlet pipe temperature of the condenser	—

Note:

If a parameter value is negative, LED3 circularly displays negative value code "nE" and the numerical value every 1 second. For example, for –30, LED3 circularly displays nE for 1 second, and 30.

Discharge temperature and ambient temperature values are in four digits. The LED circularly displays the left two digits and then the right two digits. For example, 01 and 15 indicate 115 degrees, while nE, 00, and 28 indicate –28 degrees.

If a parameter is invalid on the unit, value "00" is displayed.

If there are two levels of menus on the master unit, you can press the SW4 back button to return to the previous level. Press the SW4 query button again to exit query status.

If you do not press any button on the master unit in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.4.3 n8 Indoor Unit Engineering SN Query

Introduction:

This function makes all indoor units display their SN respectively by performing an operation on the outdoor unit, facilitating indoor unit address query.

Operations:

Press the SW1 up button and the SW2 down button to select indoor unit engineering SN query. The master unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Current process/mode	Display status	Current status	Display status
n8	Blinks	00	Blinks	00	Blinks

Press the SW3 confirm button on the master unit to confirm the selection. The master unit displays as follows, and other modules normally display the corresponding status:

LED1		LED2		LED3	
Function Code	Display status	Current process/mode	Display status	Current status	Display status
n8	On	00	On	00	On

At this time, regardless of the current display status of all indoor unit wired controllers or display panels, all of them switch to display the engineering number of the internal unit, without affecting the setting and operation status of the indoor units and the outdoor unit.

Press the SW4 back button on the master unit to return to the upper operation level, but the indoor units remains displaying the engineering numbers.

Press and hold the SW4 back button on the master unit for over 5 seconds to make all indoor units exit displaying the engineering numbers and return to the upper operation level.

If you do not press any button on the master unit to exit indoor unit engineering SN query in 30 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.4.4 n9 Online Indoor Unit Qty Query

Introduction:

This function directly uses the outdoor unit to query the quantity of online indoor units.

Operations:

In n9 online indoor unit qty query status, the module displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Current process/mode	Display status	Current status	Display status
n9	On	AC or AH	On	00	Blinks

LED2 displays the left two digits of the quantity, and LED3 displays the right two digits. For example, if the indoor unit quantity is 75, 0075 is displayed.

If there are two levels of menus on the master unit, you can press the SW4 back button to return to the previous level. Press the SW4 query button again to exit query status.

If you do not press any button on the master unit in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

Note:

This function can query the quantity of indoor units only on a single-system network.

4.2.4.5 nb Outdoor Unit Barcode Query

Introduction:

This function queries the barcodes of the outdoor unit and controller.

Operations:

Press the SW1 up button and the SW2 down button to select outdoor unit barcode query. The master unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Current process/mode	Display status	Current status	Display status
nb	Blinks	00	Blinks	00	Blinks

Press the SW3 confirm button on the master unit to enter the next level of menu. The module displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Module address	Display status	Current status	Display status
nb	On	01	Blinks	00	Blinks
nb	On	02	Blinks	00	Blinks
nb	On	03	Blinks	00	Blinks
nb	On	04	Blinks	00	Blinks

Press the SW1 up button and the SW2 down button to select the corresponding query module, and press the SW3 confirm button. The unit displays as follows:

LED1		LED2		LED3	
Function Code	Display status	Parameter Code	Display status	Current status	Display status
nb	On	Un/Pc	Blinks	-n	Blinks

Note:

Un indicates the unit barcode, while Pc indicates the controller barcode.

After confirming the module, press the SW1 up button and the SW2 down button to select the barcode sequence. The displayed sequence is as follows:

Unit barcode digits 1–13, controller barcode digits 1–13, that is, unit barcode head, unit barcode (digits 1–6), unit barcode (digits 7–12), unit barcode (digit 13), controller barcode head, controller barcode (digits 1–6), controller barcode (digits 7–12), controller barcode (digit 13). The LEDs display as follows:

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
Barcode	On	Barcode	On	Barcode	On

Example:

A unit barcode is N1R0128150066.

A controller barcode is N1M0128150067.

The display sequence is as follows:

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
nb	On	Un	Blinks	-n	Blinks

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
N1	On	R0	On	12	On

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
81	On	50	On	06	On

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
6X	On/Off	XX	Off	XX	Off

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
nb	On	Pc	Blinks	-n	Blinks

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
N1	On	M0	On	12	On

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
81	On	50	On	06	On

↓

LED1		LED2		LED3	
Parameter code	Display status	Parameter code	Display status	Parameter code	Display status
7X	On/Off	XX	Off	XX	Off

If a parameter is invalid on the unit, value "00" is displayed.

If there are two levels of menus on the master unit, you can press the SW4 back button to return to the previous level. Press the SW4 query button again to exit query status.

If you do not press any button on the master unit in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.3 Restoration to Default Settings

Restoration to default settings 1 (clearing all settings)

On the main board of the master unit, press and hold the SW1 up button and SW4 back button for over 10 seconds to restore the system default settings. All modules display as follows:

LED1			LED2		LED3	
Meaning	Address code	Display status	Function code	Display status	Status code	Display status
Restoration to default settings 1	ADD	On	01	On	0C	Blinks for 3 seconds

At this time, the system clears all settings, including engineering numbers of the indoor and outdoor units, quantities of the indoor and outdoor units, and commissioning completion status.

Restoration to default settings 2 (clearing all settings except the commissioning status)

On the main board of the master unit, press and hold the SW2 down button and SW4 back button for over 10 seconds to clear all the system settings. All modules display as follows:

LED1			LED2		LED3	
Meaning	Address code	Display status	Function code	Display status	Status code	Display status
Restoration to default settings 2	ADD	On	02	On	0C	Blinks for 3 seconds

At this time, the system clears all settings, including engineering numbers of the indoor and outdoor units, but stores quantities of the indoor and outdoor units, and commissioning completion status.

Restoration to default settings 3 (clearing only function settings of the outdoor unit)

On the main board of the master unit, press and hold the SW3 back button and SW4 back button for over 10 seconds to clear all the system settings. All modules display as follows:

LED1			LED2		LED3	
Meaning	Address code	Display status	Function code	Display status	Status code	Display status
Restoration to default settings 3	ADD	On	03	On	0C	Blinks for 3 seconds

At this time, the system clears all settings, but stores engineering numbers of the indoor and outdoor units, quantities of the indoor and outdoor units, and commissioning completion status.

4.4 Fire Alarm Function Setting

The VRF unit system reserves a fire alarm interface "CN44", which connects with the external fire alarm system. In case of an external fire, the unit urgently shuts down for protection based on the received signal. Then, the unit enters the standby status.

4.5 Indoor Unit Function Applications

For details, see the service manual of the indoor unit.

Chapter 3 Faults

1 Error Indication

—	Error Code	Content	Error Code	Content
Indoor	L0	Malfunction of IDU	L1	Protection of indoor fan
	L2	Auxiliary heating protection	L3	Water-full protection
	L4	Abnormal Power for wired controller	L5	Freeze prevention protection
	L6	Mode conflict	L7	No main IDU
	L8	Power is insufficient	L9	For single control over multiple units, number of IDU is inconsistent (HBS network)
	LA	For single control over multiple units, IDU series is inconsistent (HBS network)	LH	Alarm due to bad air quality
	LC	IDU is not matching with outdoor unit	LL	Malfunction of water flow switch
	LE	Rotation speed of EC DC water pump is abnormal	LF	Malfunction of shunt valve setting
	LJ	Setting of functional DIP switch code is wrong	LP	Zero-crossing malfunction of PG motor
	LU	Zero-crossing malfunction of PG motor	Lb	For single control over multiple units, IDU is inconsistent (reheating-dehumidifying system)
	d1	Indoor PCB is poor	d2	Malfunction of lower water temperature sensor of water tank
	d3	Malfunction of ambient temperature sensor	d4	Malfunction of entry-tube temperature sensor
	d5	Malfunction of mid-tube temperature sensor	d6	Malfunction of exit-tube temperature sensor
	d7	Malfunction of humidity sensor	d8	Malfunction of water temperature sensor
	d9	Malfunction of jumper cap	dA	Web address of IDU is abnormal
	dH	PCB of wired controller is abnormal	dC	Setting capacity of DIP switch code is abnormal
	dL	Malfunction of air outlet temperature sensor	dE	Malfunction of indoor CO_2 sensor
	dF	Malfunction of upper water temperature sensor of water tank	dJ	Malfunction of backwater temperature sensor
	dP	Malfunction of inlet tube temperature sensor of generator	dU	Malfunction of drainage pipe temperature sensor of generator
	db	Debugging status	dd	Malfunction of solar power temperature sensor
	dn	Malfunction of swing parts	dy	Malfunction of water temperature sensor
	y1	Malfunction of entry-tube temperature sensor 2	y2	Malfunction of exit-tube temperature sensor 2
	y7	Malfunction of fresh air inlet temperature sensor	y8	Malfunction of IDU's air box sensor
	yA	Malfunction of IFD	o1	Low bus bar voltage of IDU
	o2	High bus bar voltage of IDU	o3	IPM module protection of IDU
	o4	Failure startup of IDU	o5	Over-current protection of IDU
	o6	Current detection circuit malfunction of IDU	o7	Desynchronizing protection of IDU
	o8	Communication malfunction of IDU's drive	o9	Communication malfunction of main mater of IDU
	oA	High temperature of IDU's module	ob	Malfunction of temperature sensor of IDU's module
	oC	Charging circuit malfunction of IDU	o0	Other drive malfunction

—	Error Code	Content	Error Code	Content
Outdoor	E0	Malfunction of ODU	E1	High-pressure protection
	E2	Discharge low-temperature protection	E3	Low-pressure protection
	E4	High discharge temperature protection of compressor	Ed	Drive IPM low temperature protection
	F0	Main board of ODU is poor	F1	Malfunction of high-pressure sensor
	F3	Malfunction of low-pressure sensor	F5	Malfunction of discharge temperature sensor of compressor 1
	F6	Malfunction of discharge temperature sensor of compressor 2	F7	Malfunction of discharge temperature sensor of compressor 3
	F8	Malfunction of discharge temperature sensor of compressor 4	F9	Malfunction of discharge temperature sensor of compressor 5
	FA	Malfunction of discharge temperature sensor of compressor 6	FC	Current sensor of compressor 2 is abnormal
	FL	Current sensor of compressor 3 is abnormal	FE	Current sensor of compressor 4 is abnormal
	FF	Current sensor of compressor 5 is abnormal	FJ	Current sensor of compressor 6 is abnormal
	FP	Malfunction of DC motor	FU	Malfunction of casing top temperature sensor of compressor 1
	Fb	Malfunction of casing top temperature sensor of compressor 2	Fd	Malfunction of exit tube temperature sensor of mode exchanger
	Fn	Malfunction of inlet tube temperature sensor of mode exchanger	J0	Protection for other modules
	J1	Over-current protection of compressor 1	J2	Over-current protection of compressor 2
	J3	Over-current protection of compressor 3	J4	Over-current protection of compressor 4
	J5	Over-current protection of compressor 5	J6	Over-current protection of compressor 6
	J7	Gas-mixing protection of 4-way valve	J8	High pressure ratio protection of system
	J9	Low pressure ratio protection of system	JA	Protection because of abnormal pressure
	JC	Water flow switch protection	JL	Protection because high pressure is too low
	JE	Oil-return pipe is blocked	JF	Oil-return pipe is leaking
	b1	Malfunction of outdoor ambient temperature sensor	b2	Malfunction of defrosting temperature sensor 1
	b3	Malfunction of defrosting temperature sensor 2	b4	Malfunction of liquid outlet temperature sensor of sub-cooler
	b5	Malfunction of gas outlet temperature sensor of sub-cooler	b6	Malfunction of inlet tube temperature sensor of vapor liquid separator
	b7	Malfunction of exit tube temperature sensor of vapor liquid separator	b8	Malfunction of outdoor humidity sensor
	b9	Malfunction of gas temperature sensor of heat exchanger	bA	Malfunction of oil-return temperature sensor 1
	bH	Clock of system is abnormal	bE	Malfunction of inlet tube temperature sensor of condenser
	bF	Malfunction of outlet tube temperature sensor of condenser	bJ	High-pressure sensor and low-pressure sensor are connected reversely
	bP	Malfunction of temperature sensor of oil-return 2	bU	Malfunction of temperature sensor of oil return 3
	bb	Malfunction of temperature sensor of oil return 4	bd	Malfunction of gas inlet temperature sensor of sub-cooler
	bn	Malfunction of liquid inlet temperature sensor of sub-cooler	P0	Malfunction of driving board of compressor
	P1	Driving board of compressor operates abnormally	P2	Voltage protection of driving board power of compressor
	P3	Reset protection of driving module of compressor	P4	Drive PFC protection of compressor

—	Error Code	Content	Error Code	Content
Outdoor	P5	Over-current protection of inverter compressor	P6	Drive IPM module protection of compressor
	P7	Malfunction of drive temperature sensor of compressor	P8	Drive IPM high temperature protection of compressor
	P9	Desynchronizing protection of inverter compressor	PA	Malfunction of drive storage chip of compressor
	PH	High-voltage protection of compressor's drive DC bus bar	PC	Malfunction of current detection circuit drive of compressor
	PL	Low voltage protection for DC bus bar of drive of compressor	PE	Phase-lacking of inverter compressor
	PF	Malfunction of charging loop of driven of compressor	PJ	Failure startup of inverter compressor
	PP	AC current protection of inverter compressor	PU	AC input voltage of drive of inverter compressor
	H0	Malfunction of driving board of fan	H1	Driving board of fan operates abnormally
	H2	Voltage protection of driving board power of fan	H3	Reset protection of driving module of fan
	H4	Drive PFC protection of fan	H5	Over-current protection of inverter fan
	H6	Drive IPM module protection of fan	H7	Malfunction of drive temperature sensor of fan
	H8	Drive IPM high temperature protection of fan	H9	Desynchronizing protection of inverter fan
	HA	Malfunction of drive storage chip of inverter outdoor fan	HH	High-voltage protection of fan's drive DC bus bar
	HC	Malfunction of current detection circuit of fan drive	HL	Low voltage protection of bus bar of fan drive
	HE	Phase-lacking of inverter fan	HF	Malfunction of charging loop of fan drive
	HJ	Failure startup of inverter fan	HP	AC current protection of inverter fan
	HU	AC input voltage of drive of inverter fan	G0	PV reversed connection protection
	G1	PV anti-islanding protection	G2	PV DC overcurrent protection
	G3	PV power generation overload	G4	PV leakage current protection
	G5	Phase-lacking protection at power grid side	G6	PV LVRT
	G7	Grid over/under frequency protection	G8	Overcurrent protection at power grid side
	G9	Drive IPM module protection at power grid side	GA	Low/high input voltage protection at power grid side
	GH	Photovoltaic DC/DC protection	GC	Photovoltaic DC hardware overcurrent protection
	GL	Grid side hardware overcurrent protection	GE	High or low photovoltaic voltage protection
	GF	DC bus neutral-point potential unbalance protection	GJ	Grid side module high-temperature protection
	GP	Grid side temperature sensor protection	GU	Charging circuit protection
	Gb	Grid side relay protection	Gd	Grid side current side protection
	Gn	Insulation resistance protection	Gy	Power protection (PV)

—	Error Code	Content	Error Code	Content
Debugging	U0	Preheat time of compressor is insufficient	U2	Wrong setting of ODU's capacity code/jumper cap
	U3	Power phase sequence protection	U4	Refrigerant-lacking protection
	U5	Wrong address for driving board of compressor	U6	Alarm because valve is abnormal
	U8	Malfunction of pipeline for IDU	U9	Malfunction of pipeline for ODU
	UC	Setting of main IDU is succeeded	UL	Emergency operation DIP switch code of compressor is wrong
	UE	Charging of refrigerant is invalid	UF	Identification malfunction of IDU of mode exchanger
	Ud	Drive board of grid-connection is abnormal	Un	Communication malfunction between the drive board of grid-connection and the main board
	C0	Communication malfunction between IDU, ODU and IDU's wired controller	C1	Communication malfunction between main control and DC-DC controller
	C2	Communication malfunction between main control and inverter compressor driver	C3	Communication malfunction between main control and inverter fan driver
	C4	Malfunction of lack of IDU	C5	Alarm because project code of IDU is inconsistent
	C6	Alarm because ODU quantity is inconsistent	C7	Abnormal communication of converter
	C8	Emergency status of compressor	C9	Emergency status of fan
	CA	Emergency status of module	CH	Rated capacity is too high
	CC	No main unit	CL	The matching ratio of rated capacity for IDU and ODU is too low
	CE	Communication malfunction between mode exchanger and IDU	CF	Malfunction of multiple main control units
	CJ	Address DIP switch code of system is shocking	CP	Malfunction of multiple wired controller
	CU	Communication malfunction between IDU and the receiving lamp	Cb	Overflow distribution of IP address
	Cd	Communication malfunction between mode exchanger and ODU	Cn	Malfunction of network for IDU and ODU of mode exchanger
	Cy	Communication malfunction of mode exchanger		
Status	A0	Unit waiting for debugging	A2	Refrigerant recovery operation of after-sales
	A3	Defrosting	A4	Oil-return
	A6	Heat pump function setting	A7	Quiet mode setting
	A8	Vacuum pump mode	AH	Heating
	AC	Cooling	AL	Charge refrigerant automatically
	AE	Charge refrigerant manually	AF	Fan
	AJ	Cleaning reminding of filter	AP	Debugging confirmation when starting up the unit
	AU	Long-distance emergency stop	Ab	Emergency stop of operation
	Ad	Limit operation	An	Child lock status
	Ay	Shielding status	n0	SE operation setting of system
	n3	Compulsory defrosting	n4	Limit setting for max. capacity/output capacity
	n5	Compulsory excursion of engineering code of IDU	n6	Inquiry of malfunction
	n7	Inquiry of parameters	n8	Inquiry of project code of IDU
	n9	Check quantity of IDU on line	nA	Heat pump unit
	nH	Heating only unit	nC	Cooling only unit
	nE	Negative code	nF	Fan model
	nJ	High temperature prevention when heating	nU	Eliminate the long-distance shielding command of IDU
	nb	Bar code inquiry	nn	Length modification of connection pipe of ODU

2 Troubleshooting

WARNING!

When troubleshooting the modular units, make sure that all outdoor units are powered off and powered on at the same time. Avoid doing so to only some of the outdoor units.

2.1 "A0" Unit's to-be-commissioned State

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code. It is displayed before the completion of system engineering commissioning. At this time, the unit cannot be started.

Possible causes: --

Troubleshooting: not required.

2.2 "A2" Refrigerant Recycle Running State

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code. It indicates that the system has entered refrigerant recycle running state and will automatically start.

Possible causes: --

Troubleshooting: not required.

2.3 "A3" Defrosting State

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code. It indicates that the system has entered defrosting state. In this case, the indoor fan will stop working for 5 to 10 minutes.

Possible causes: --

Troubleshooting: not required.

2.4 "A4" Oil Return State

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code. It indicates that the system has entered oil return state. In case of oil return in

heating mode, the indoor fan will stop working for 5 to 10 minutes.

Possible causes: --

Troubleshooting: not required.

2.5 "A6" Cooling and Heating Function Settings State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has entered cooling and heating function settings state. In this case, you can select Cooling and Heating (nA), Cooling Only (nC), Heating Only (nH) or Fan Type (nF).

Possible causes: --

Troubleshooting: not required.

2.6 "A7" Silent Mode Settings State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has entered silent mode settings state.

Possible causes: --

Troubleshooting: not required.

2.7 "A8" Vacuum Pumping Mode

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has entered vacuum pumping mode and relevant expansion valves and solenoid valves will open.

Possible causes: --

Troubleshooting: not required.

2.8 "AH" Heating State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has entered heating mode.

Possible causes: --

Troubleshooting: not required.

2.9 "AC" Cooling State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has entered cooling mode.

Possible causes: --

Troubleshooting: not required.

2.10 "AF" Fan State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has entered the fan mode. In this case, all the indoor units operate only in fan mode.

Possible causes: --

Troubleshooting: not required.

2.11 "AE" Artificial Refrigerant Charging State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the system has employed artificial refrigerant charging mode.

Possible causes: --

Troubleshooting: not required.

2.12 "AJ" Filter Clean Prompt

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

This is a status code. It indicates that the filter of indoor unit needs to be cleaned. The cleaning interval of filter can be set according to actual circumstances.

Possible causes: --

Troubleshooting: Clean the filter and remove the prompt to have the filter proceeds to the next service cycle.

2.13 "AP" Unit Commissioning Startup Confirmation

Fault display: main board of outdoor unit displays 

Fault diagnosis:

This is a status code. It indicates that the unit has been commissioned and is ready for operation.

Possible causes: --

Troubleshooting: not required.

2.14 "AU" Remote Control for Emergency Stop

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit

display 

Fault diagnosis:

This is a status code. It indicates that the unit is in emergency stop status through remote centralized control, and it cannot be started unless such state is disabled.

Possible causes: --

Troubleshooting: not required.

2.15 "Ab" Emergency Stop

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code. It indicates that the main board of outdoor unit has received emergency stop signal, and the unit cannot be started unless such state is disabled.

Possible causes: --

Troubleshooting: not required.

2.16 "Ad" Restricted Running State

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code. It indicates that an emergency running state has been set for the system, but the unit is not allowed to perform emergency running because the emergency running has reached the time limit.

Possible causes: --

Troubleshooting: not required.

2.17 "b1" Outdoor Ambient Temperature Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

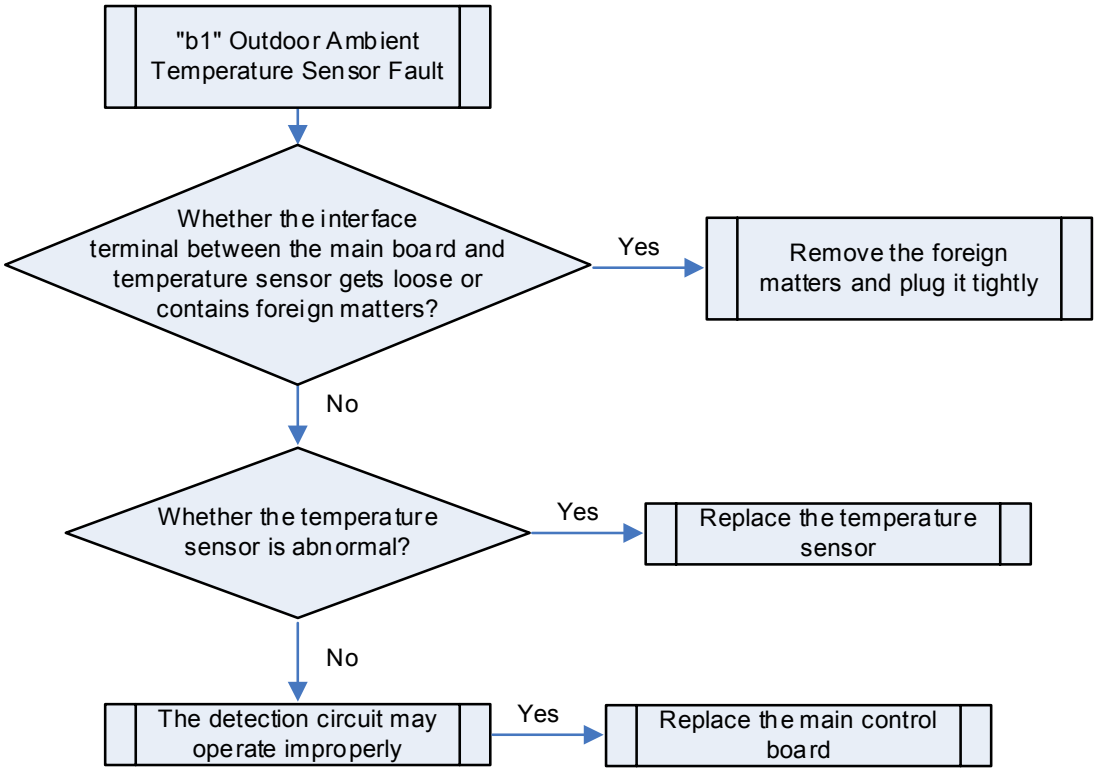
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.18 "b2" Defrosting Temperature Sensor 1 Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

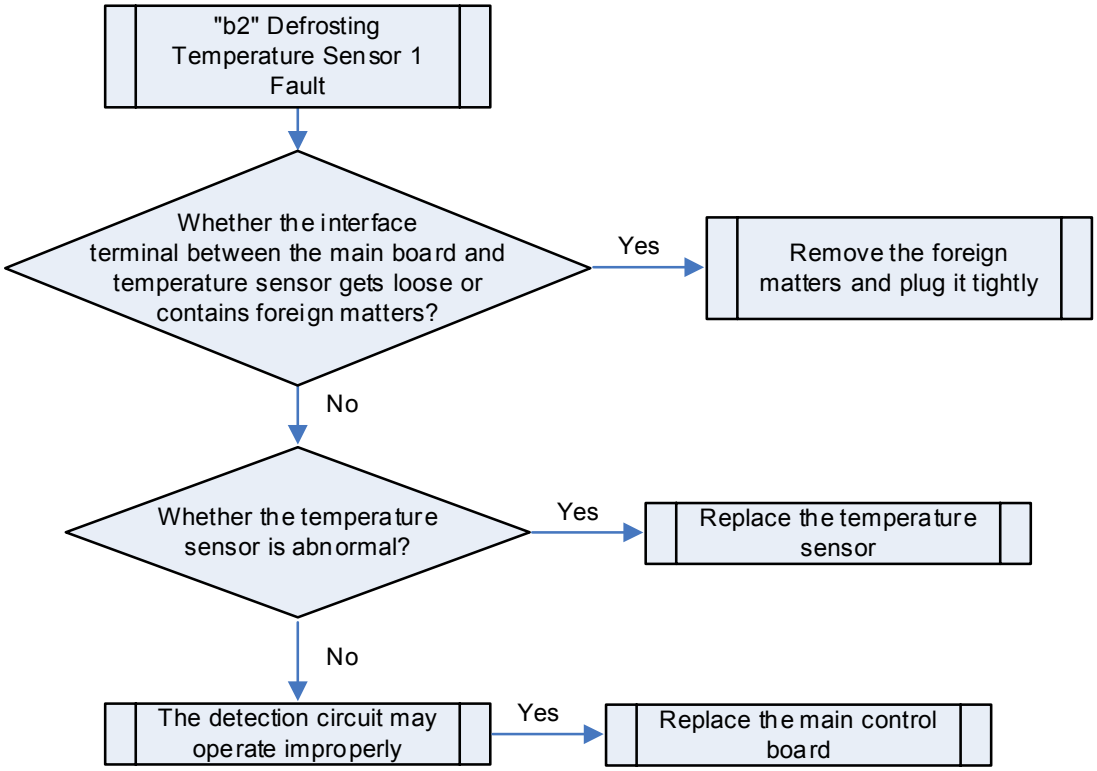
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.19 "b3" Defrosting Temperature Sensor 2 Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

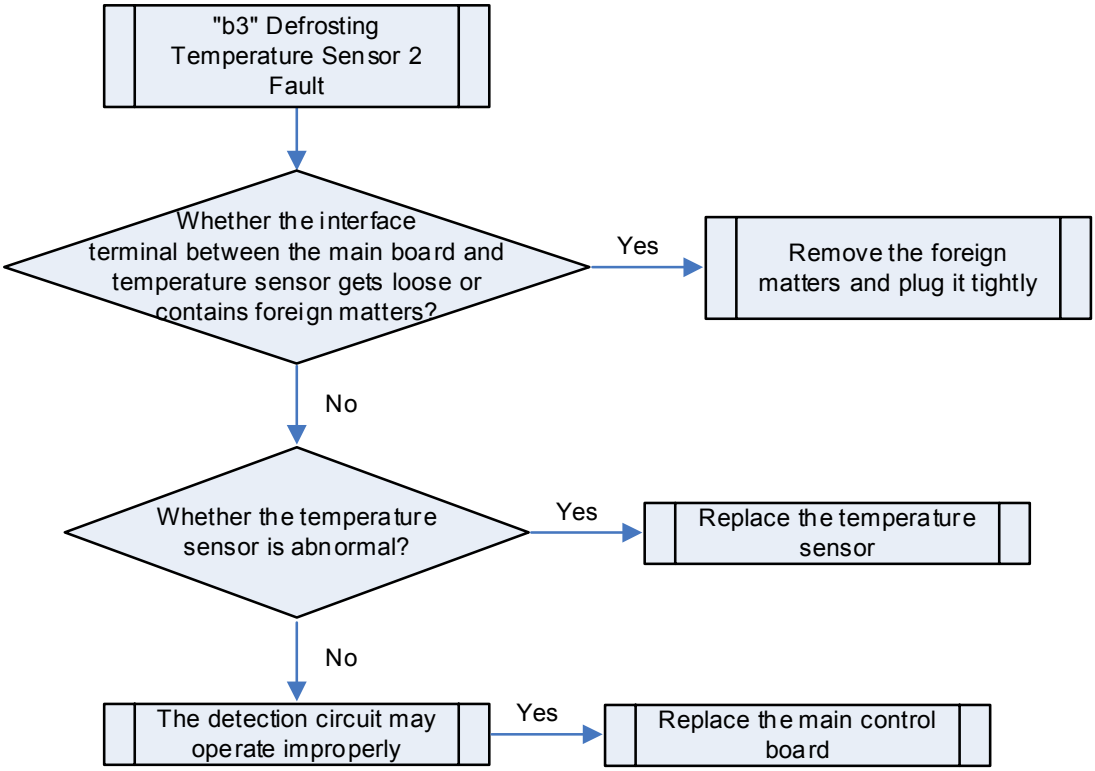
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.20 "b4" Subcooler's Liquid Outlet Temperature Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

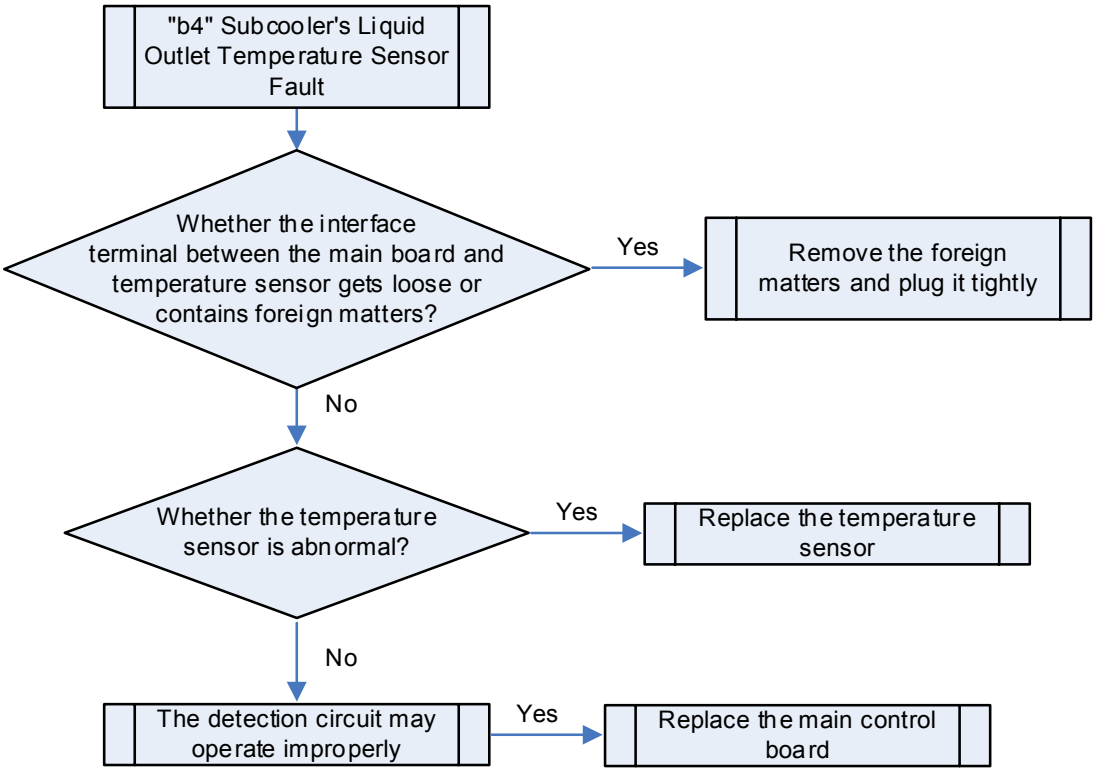
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.21 "b5" Subcooler's Gas Outlet Temperature Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

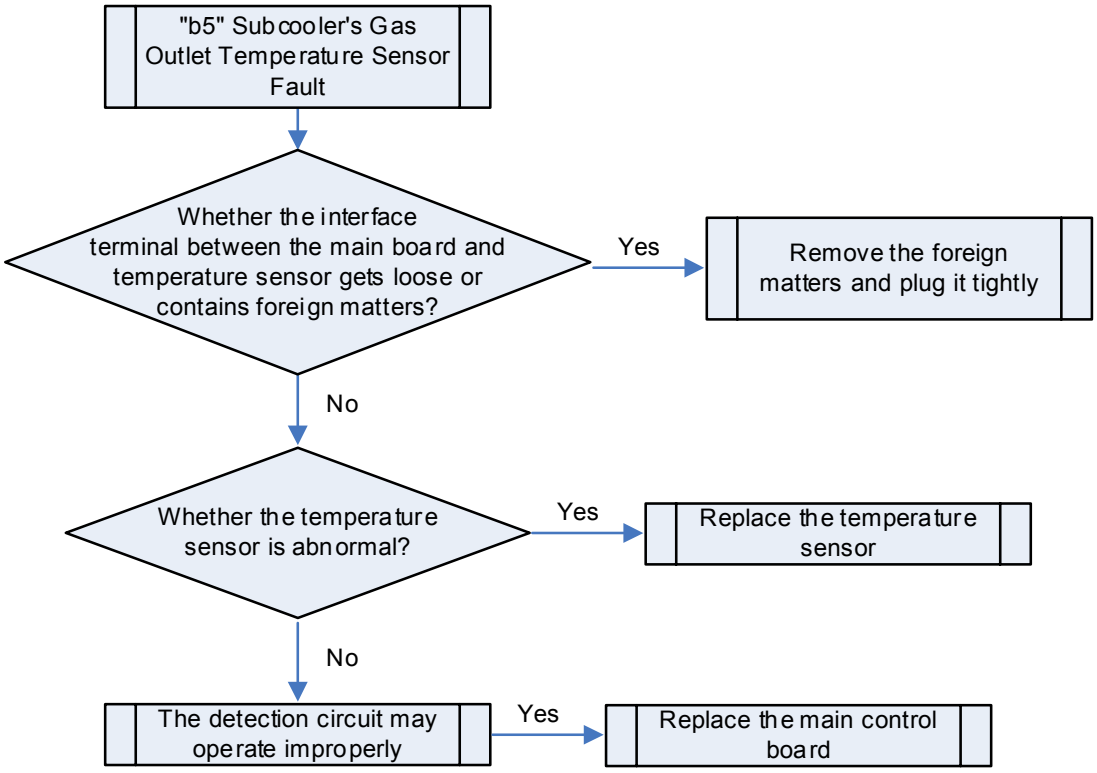
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.22 "b6" Suction Temperature Sensor 1 Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

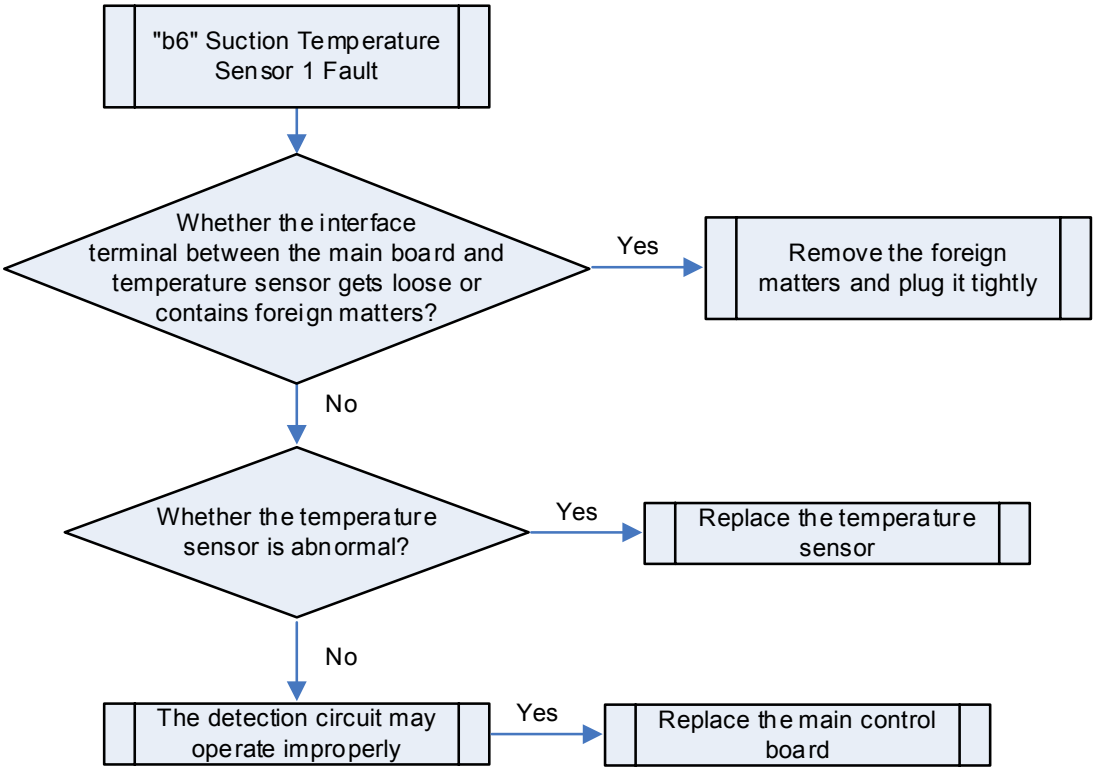
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.23 "b7" Suction Temperature Sensor 2 Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

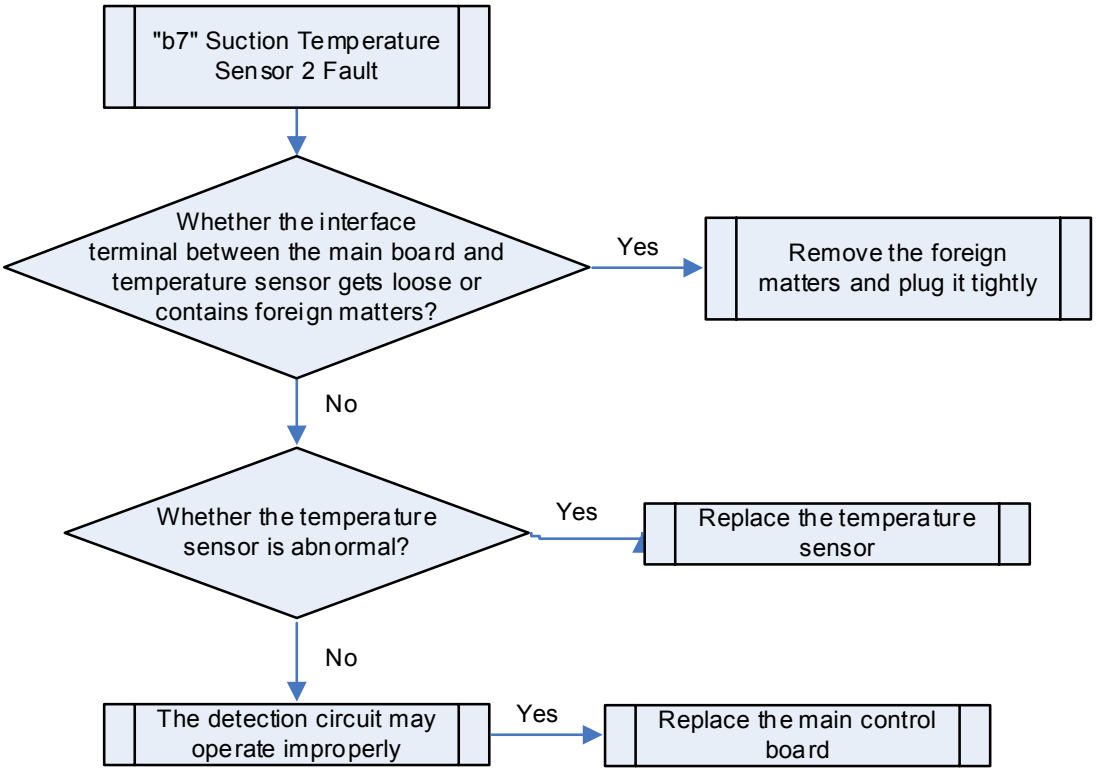
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.24 "b8" Outdoor Humidity Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

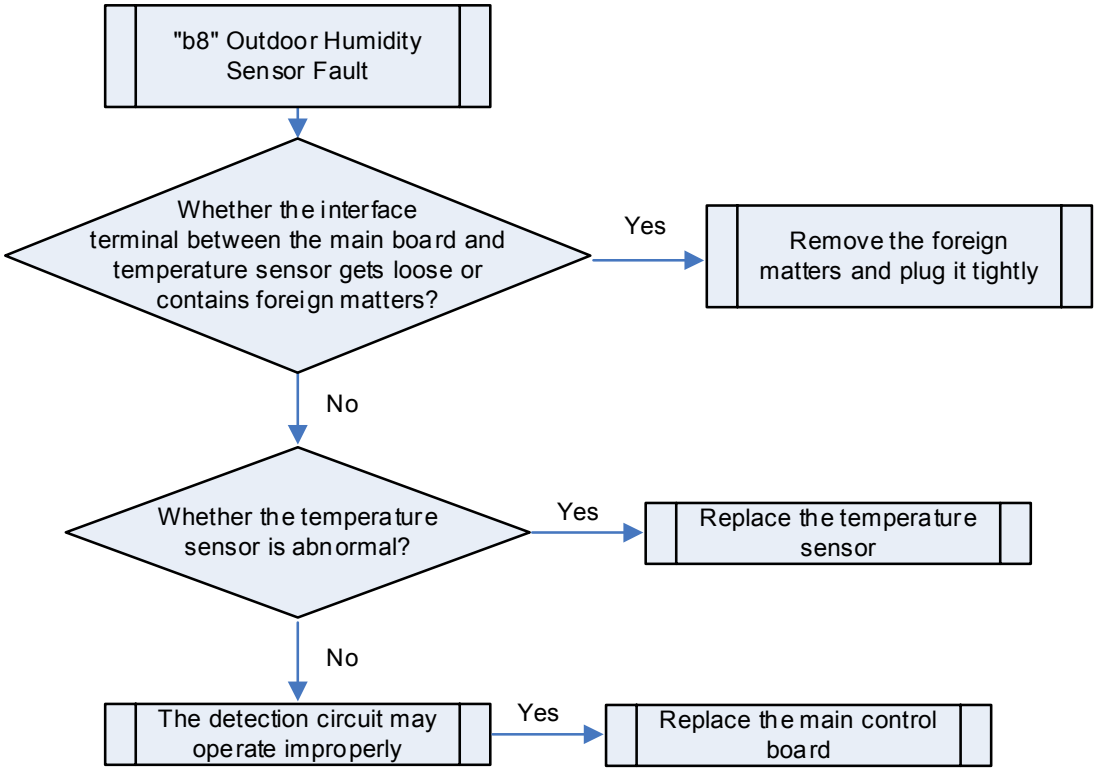
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.25 "b9" Heat Exchanger's Gas Outlet Temperature Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

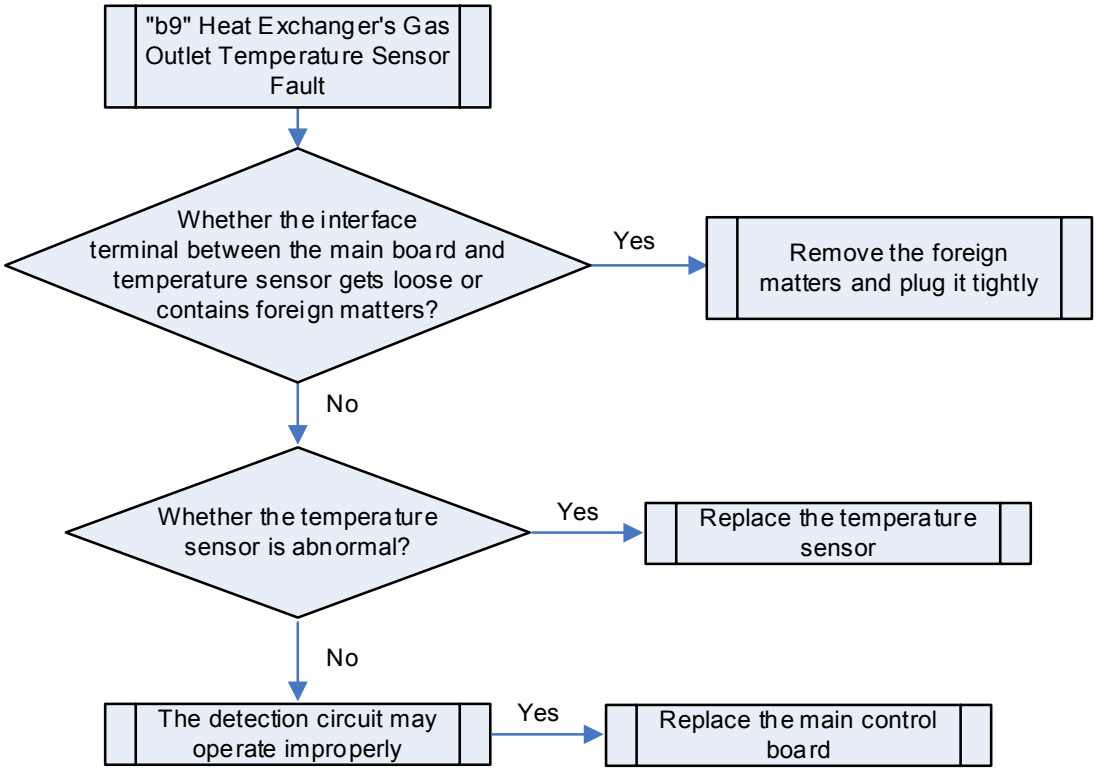
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.26 "bA" Oil Return Temperature Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

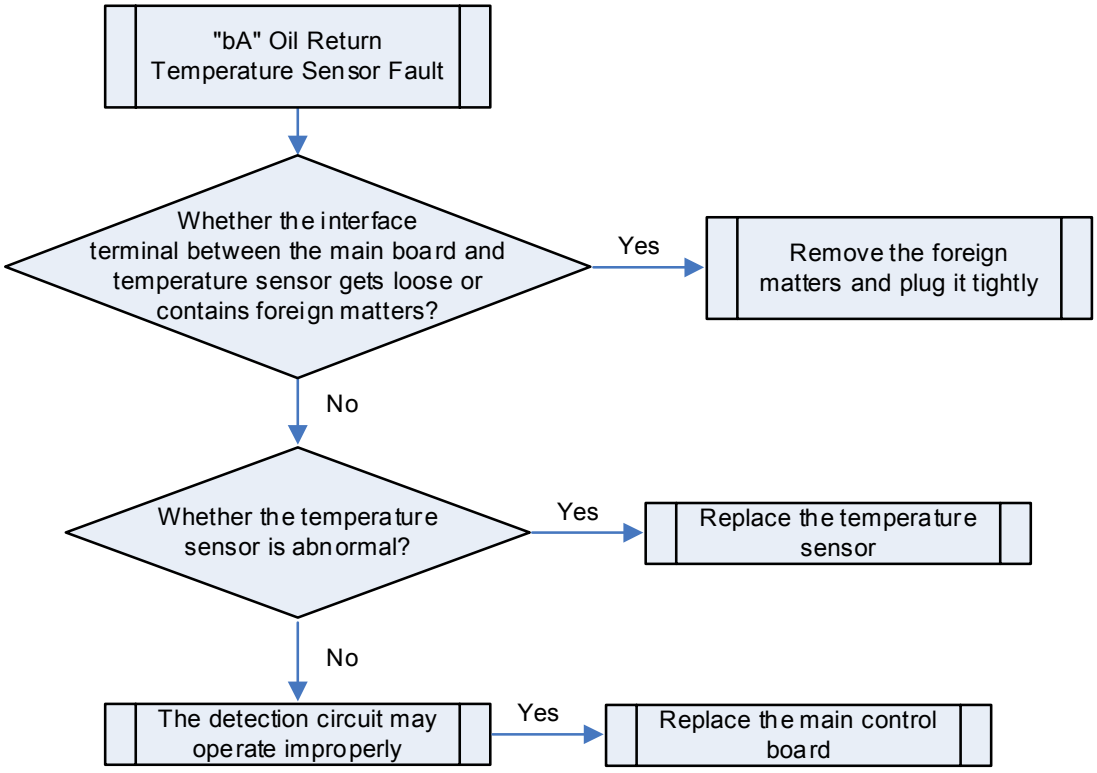
Possible causes:

■ Poor contact between the temperature sensor and the main board interface;

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.27 "C0" Communication Fault Between Indoor and Outdoor Units and Between Indoor Unit and Wired Controller

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

There is no communication between the outdoor unit and indoor unit or between the indoor unit and wired controller for 30 seconds, and a fault is generated.

Possible causes:

■ Communication cables are connected wrongly or get loose;

■ Communication cables are broken;

■ Poor contact of communication cables;

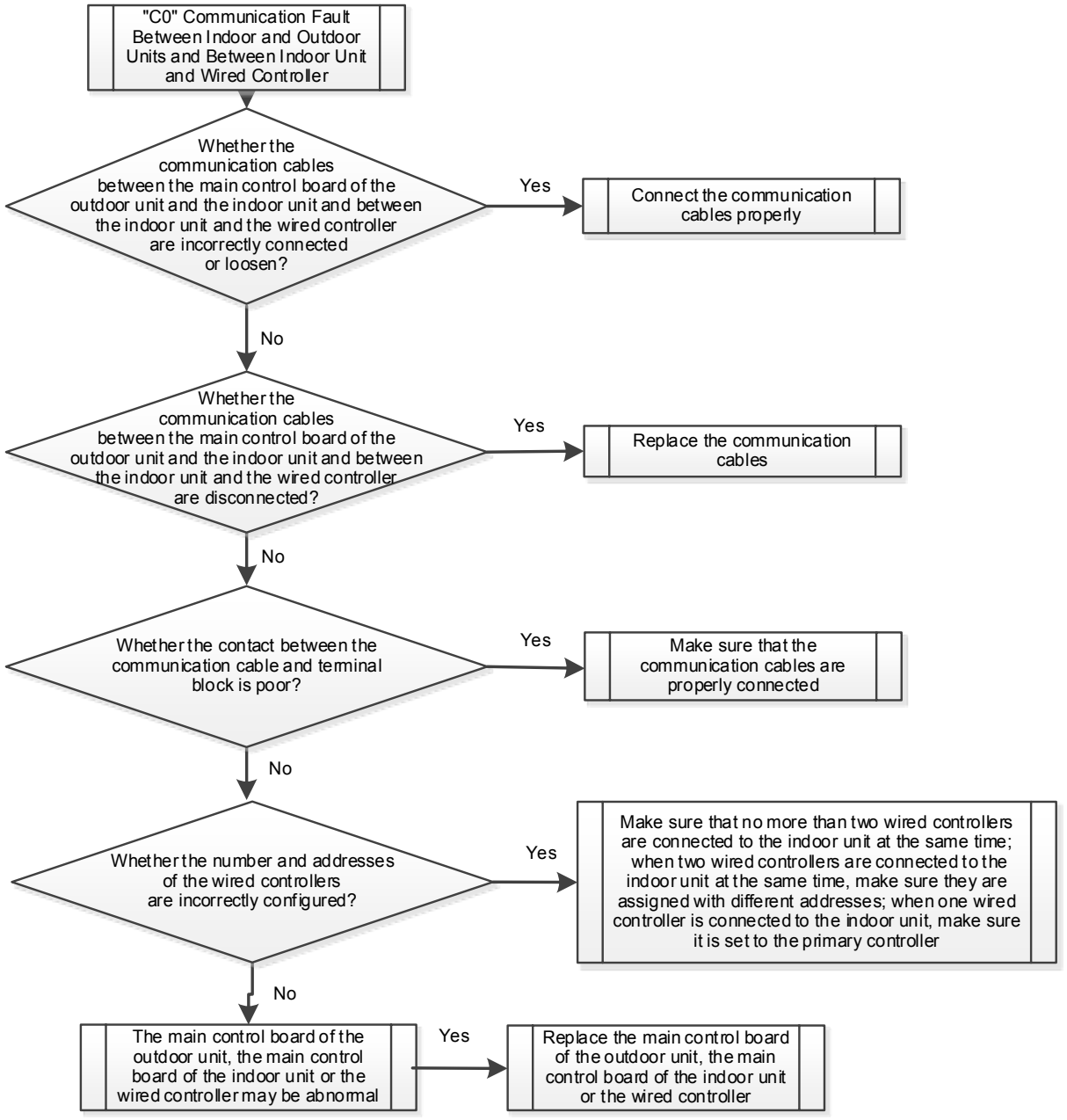
■ Number of wired controllers connected or addresses are set improperly;

■ Controller operates improperly.

Troubleshooting:

If the main control board of outdoor unit does not display C0, check the connection between the indoor unit and the wired controller; if the main control board of outdoor unit, indoor unit's receiver and wired controller display C0, check the connection between the indoor unit and outdoor unit and between the indoor unit and wired controller; if only the wired controller displays C0, check the connection between the indoor unit and wired controller, the number of wired controllers connected and address settings.

Perform the troubleshooting as follows:



2.28 "C2" Communication Fault Between the Primary Controller and Inverter Compressor Driver

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the outdoor unit fails to detect inverter compressor driver for 30 consecutive seconds, the fault is generated.

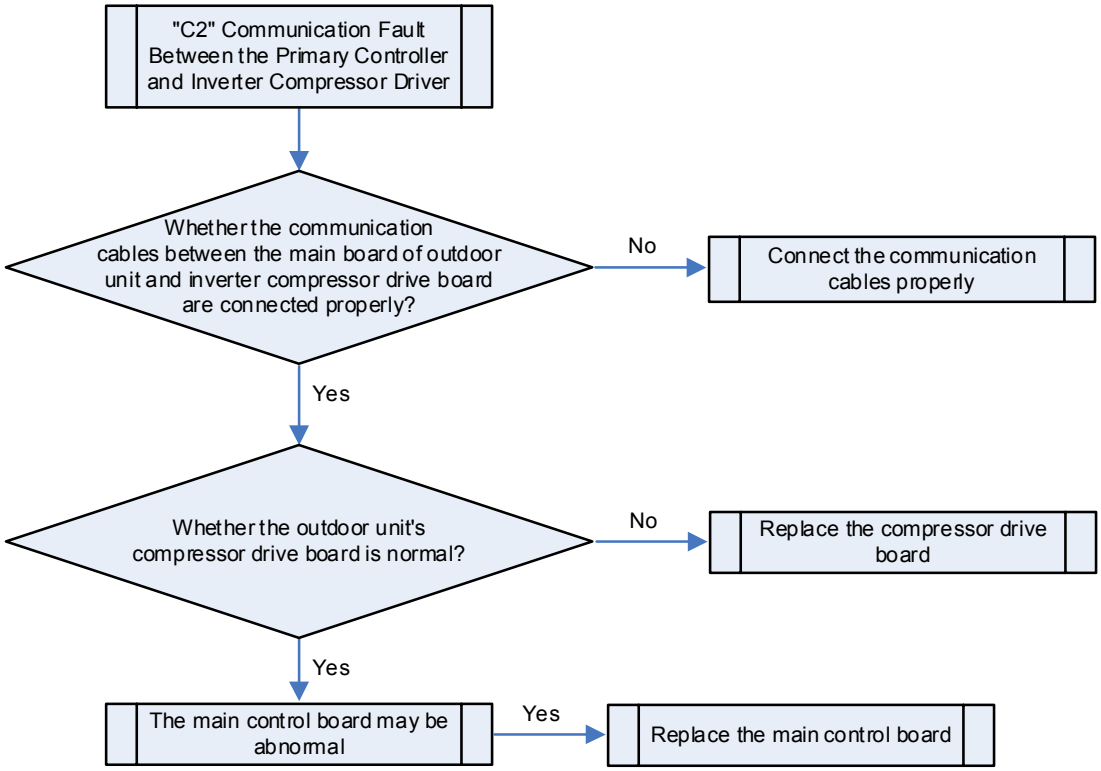
Possible causes:

■ The communication cables between the main board of outdoor unit and inverter compressor driver inside the module are connected improperly;

■ The inverter compressor driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



2.29 "C3" Communication Fault Between the Primary Controller and Inverter Fan Driver

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the outdoor unit fails to detect inverter fan driver for 30 consecutive seconds, the fault is generated.

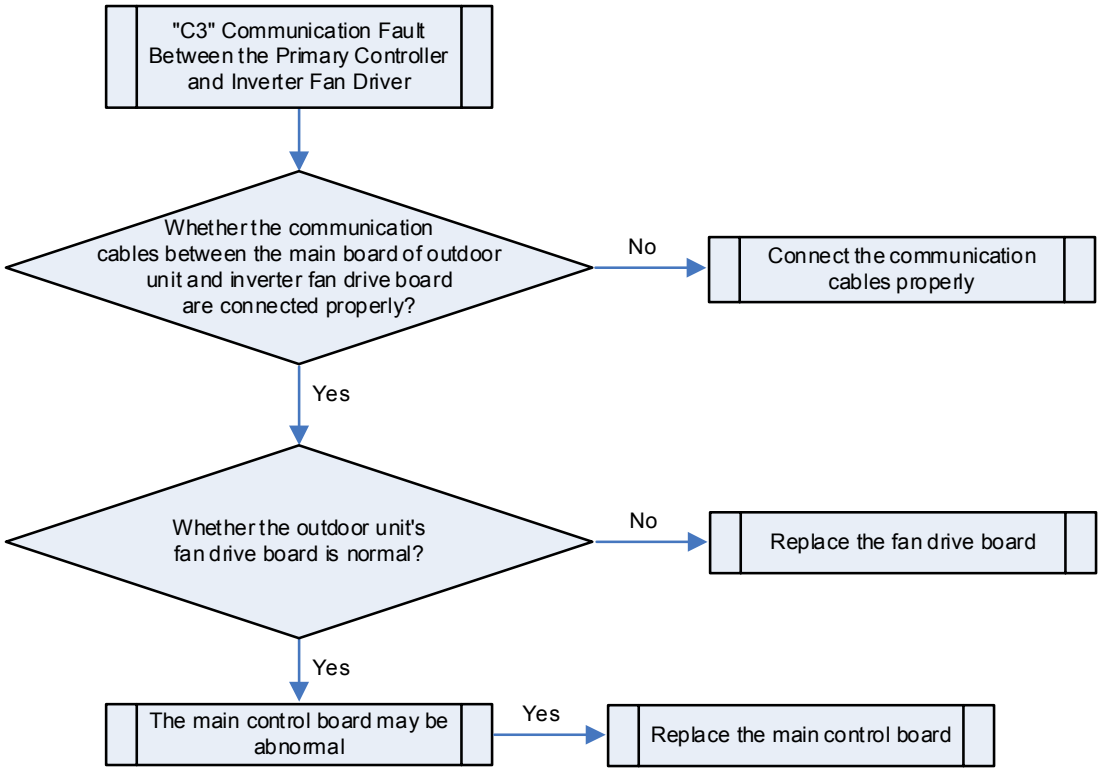
Possible causes:

■ The communication cables between the main board of outdoor unit and inverter fan driver inside the module are connected improperly;

■ The inverter fan driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



2.30 "C4" Indoor Unit Loss Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the unit identifies that more than three indoor units are disconnected, it will stop for protection.

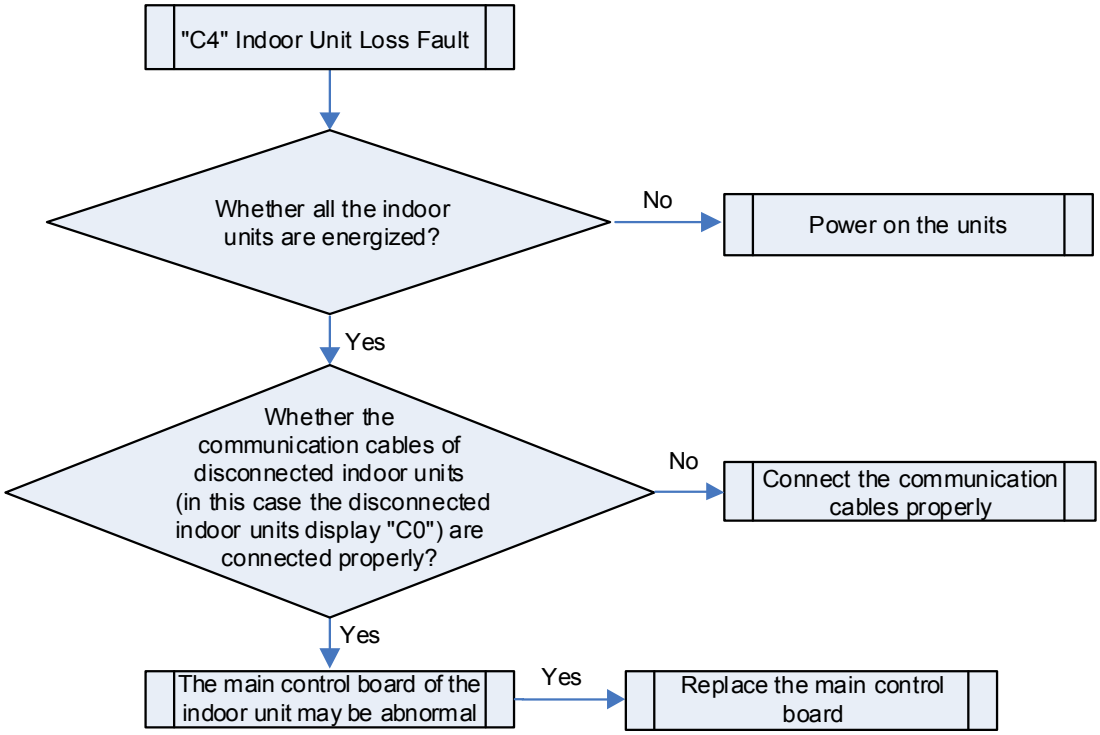
Possible causes:

■ Poor contact of communication cables;

■ The indoor units are powered off;

■ The main board of indoor unit operates improperly.

Troubleshooting:



2.31 "C5" Indoor Unit Engineering SN Conflict

Fault display: commissioning software and remote monitoring software display the fault  ;

The wired controller of indoor unit and receiver of indoor unit do not display the fault.

Fault diagnosis:

Check the engineering SN of indoor units, as the indoor units having the same numbers generate the same fault. However, the fault is displayed and required to be removed only when the commissioning software, centralized controller and remote monitoring are connected.

In the case of non-centralized control, the conflict in terms of the engineering SNs of some indoor units, if any, do not affect the operation of themselves and of the entire system.

Possible causes:

■ The same engineering SN is configured for different indoor units;

■ The main board of indoor unit is from another unit.

Troubleshooting:

There are several ways to reset the conflicting engineering SN of an indoor unit:

by commissioning software;

by wired controller;

by commissioning the remote controller;

by pressing the Reset button on the main board of indoor unit so that the system reassigns the numbers.

2.32 "C6" Alarm on Inconsistent Number of Outdoor Units

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

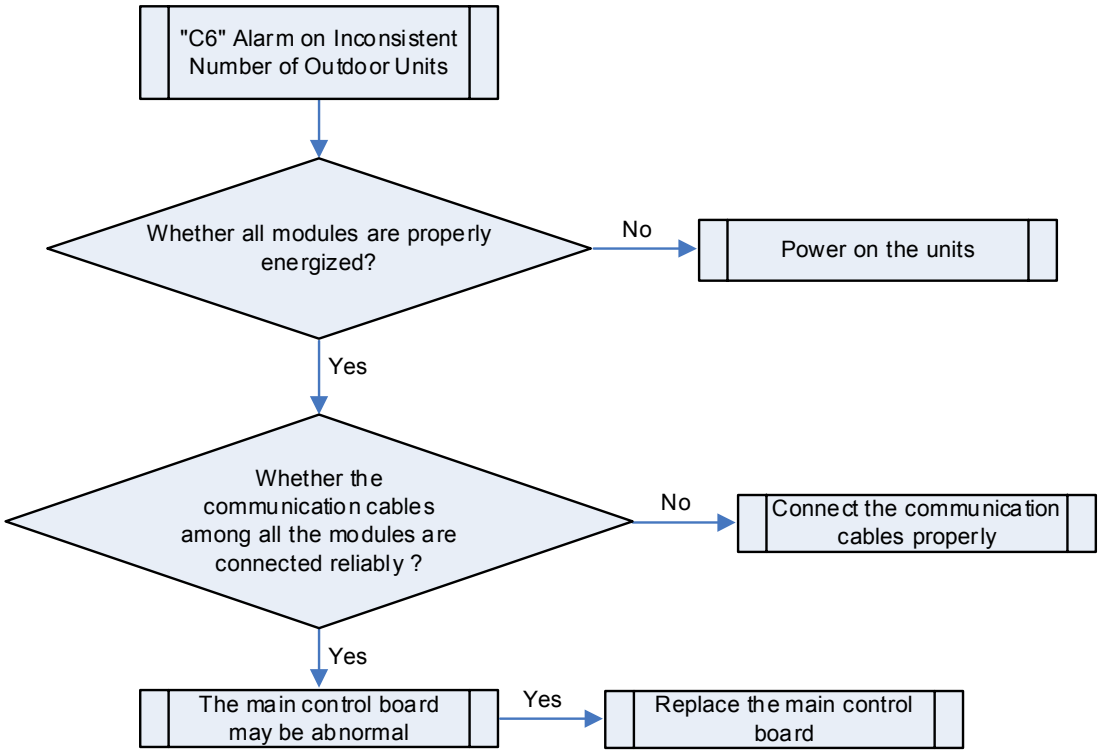
The unit detects the number of online outdoor modules in real time. When it detects that the number of current modules is inconsistent with the number of modules previously commissioned and memorized, the unit will report the fault and stop working.

Possible causes:

■ Abnormal communication among modules;

■ The modules are not powered on.

Troubleshooting:



2.33 "C8" Emergency Operation of Compressor

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If any compressor is set to emergency operation mode, the main board displays the code during the operation, indicating that the unit's compressor has entered emergency operation.

Possible causes: --

Troubleshooting: not required.

2.34 "C9" Emergency Operation of Fan

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If any fan is set to emergency operation mode, the main board displays the code during the operation, indicating that the unit's fan has entered emergency operation.

Possible causes: --

Troubleshooting: not required.

2.35 "CA" Emergency Operation of Module

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If any module is set to emergency operation mode, the main board displays the code during the operation, indicating that the unit's module has entered emergency operation.

Possible causes: --

Troubleshooting: not required.

2.36 "CH" Too High Rated Capacity Ratio

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The unit detects the rated capacity of the online indoor and outdoor units. When the ratio of the total rated capacity of indoor units to the total rated capacity of outdoor units exceeds 1.35, the unit will stop operation and display the fault.

Possible causes:

■ The total rated capacity of the indoor units exceeds 1.35 times of the total rated capacity of the outdoor units.

Troubleshooting:

Re-engineer the unit to decrease indoor unit capacity or increase outdoor unit capacity.

2.37 "CL" Too Low Rated Capacity Ratio

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The unit detects the rated capacity of the online indoor and outdoor units. When the ratio of the total rated capacity of indoor units to the total rated capacity of outdoor units is below 0.5, the unit will stop operation and display the fault.

Possible causes:

■ The total rated capacity of the indoor units is smaller than 0.5 times of the total rated capacity of the outdoor units.

Troubleshooting:

Re-engineer the unit to increase indoor unit capacity or decrease outdoor unit capacity.

2.38 "CC" No Master Units Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The main board detects the master DIP switch (SA8) and determines whether it is the master.

When no master unit is detected in the multi-module communication network, the fault is generated.

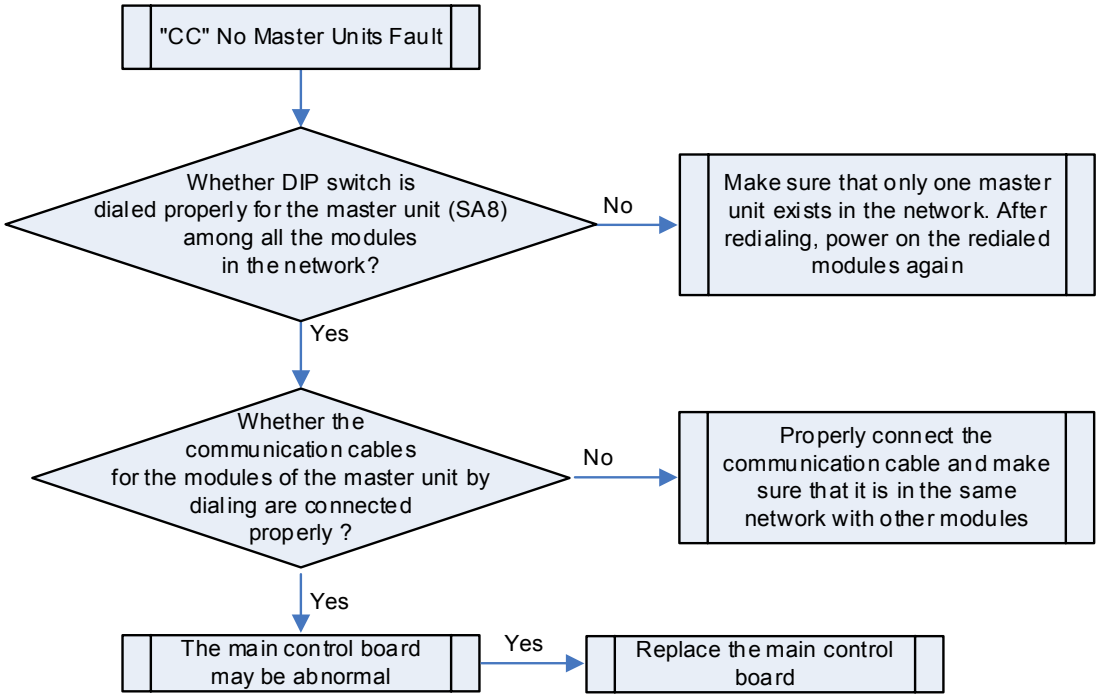
Possible causes:

■ The master DIP switch is abnormal and no master unit exists in the network;

■ The communication cables are abnormal, causing the master unit to be disconnected;

■ Abnormal detection circuit.

Troubleshooting:



2.39 "CF" Multi-master Units Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The main board detects the master DIP switch (SA8) and determines whether it is the master.

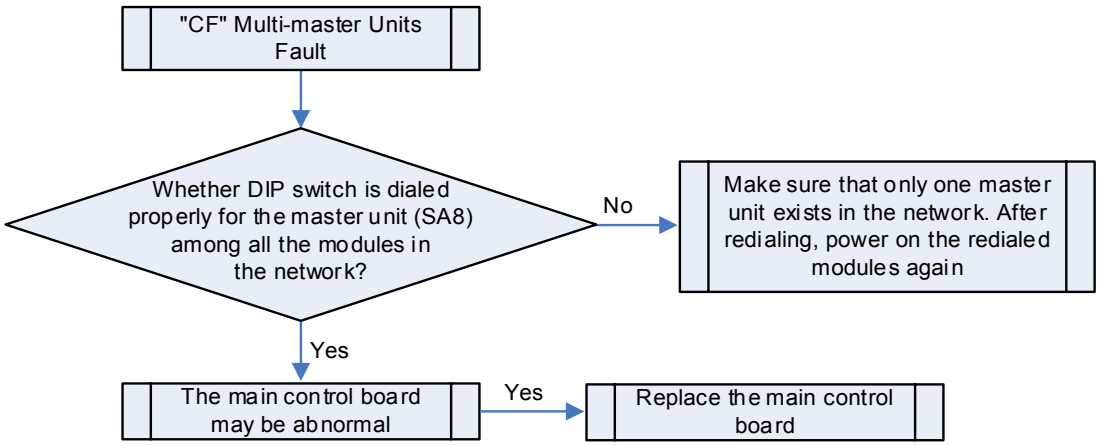
When multiple master units are detected in the multi-module communication network, the fault is generated.

Possible causes:

■ The master DIP switch is abnormal and multiple master units exist in the network;

■ Abnormal detection circuit.

Troubleshooting:



2.40 "CJ" System Address Code Conflict

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When multiple refrigerant systems are connected through the CAN2 network of the unit's main board, only one primary system is allowed in the network.

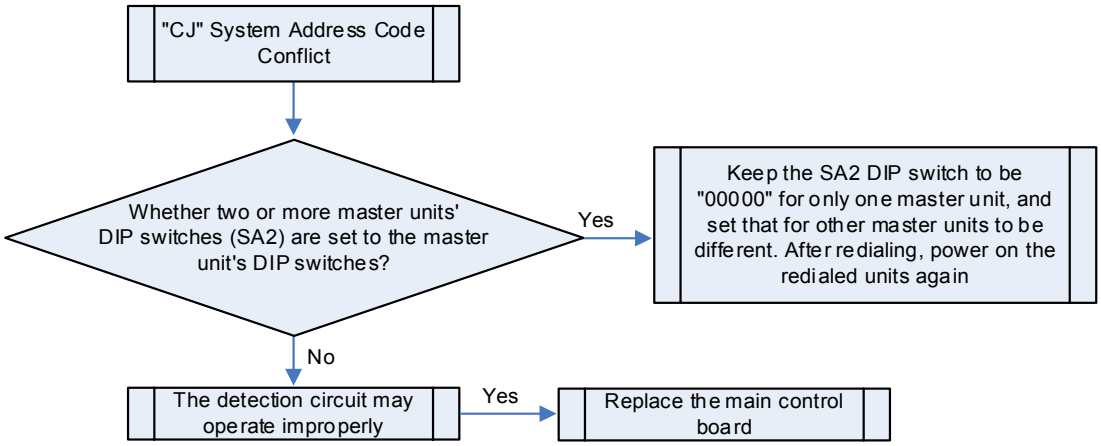
If two or more master units' DIP switches (SA2) are detected to be master unit's DIP switches in the network (that is, SA2 DIP switch is "00000"), the fault of multiple master units is reported.

Possible causes:

■ If two or more master units' DIP switches (SA2) are detected to be master unit's DIP switches, keep only one master unit's DIP switch (SA2) to be "00000" and other master units' DIP switches (SA2) to be different;

■ Abnormal DIP switch or main board.

Troubleshooting:



2.41 "CP" Fault of Multiple Main Wired Controllers

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

Two or more wired controllers in an HBS network are main wired controllers.

Possible causes:

■ When two (or more) wired controllers control one or more indoor units at the same time, the two (or more) wired controllers are the main wired controllers.

Troubleshooting:

Make sure that at most two wired controllers control one or more indoor units; when two wired controllers control one or more indoor units, enter the wired controller parameter settings (P13) to set the address of one of the wired controllers to be 02 (that is, to be the secondary wired controller).

2.42 "Cb" IP Address Assignment Overflow

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

If more than four addresses are assigned to other outdoor units by the outdoor unit, the unit reports an IP address assignment overflow.

If more than 80 (100) addresses are assigned to indoor units by the outdoor unit, the unit reports an IP address assignment overflow.

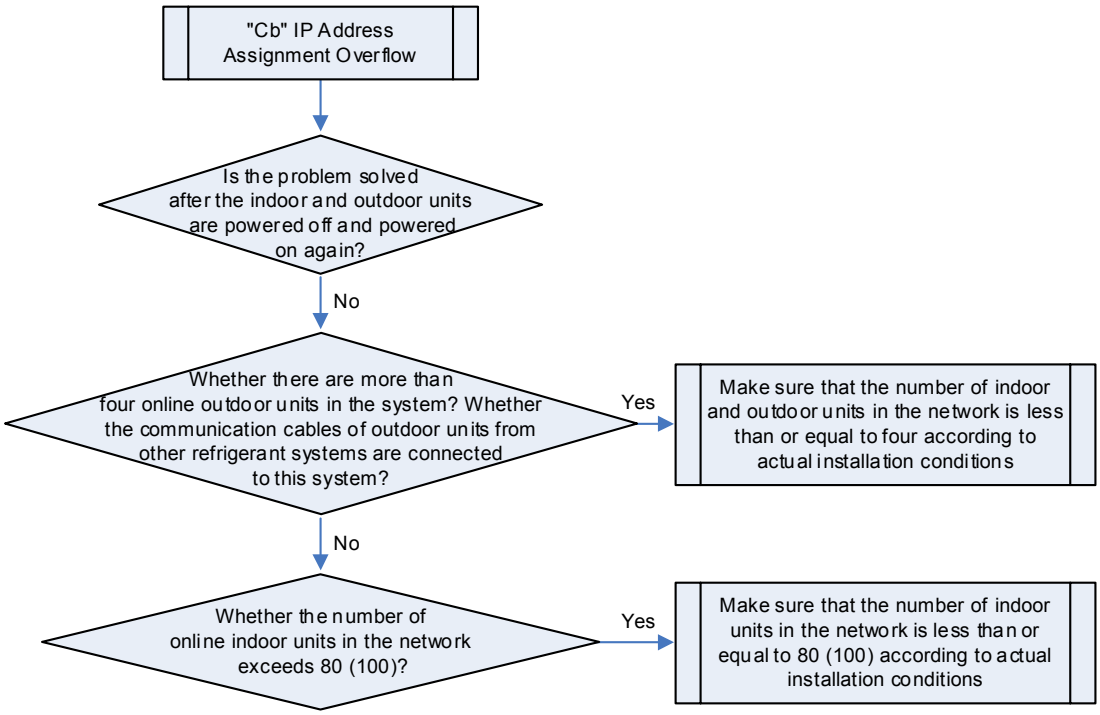
Possible causes:

■ More than four outdoor units exist;

■ More than 80 (100) indoor units exist.

■ After replacing the main boards of the indoor units and the outdoor units, the outdoor units are not powered off.

Troubleshooting:



Note: When the number of indoor units is 100, engineering customization is required.

2.43 "d1" Poor Indoor Circuit Board

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

Check whether the address chip and memory chip of the indoor unit's main board can be read properly. If not, the fault is generated.

Possible causes:

■ Abnormal address chip;

■ Abnormal memory chip.

Troubleshooting:

Replace the main control board.

2.44 "d3" Ambient Temperature Sensor Fault

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 5 consecutive seconds, the fault is generated.

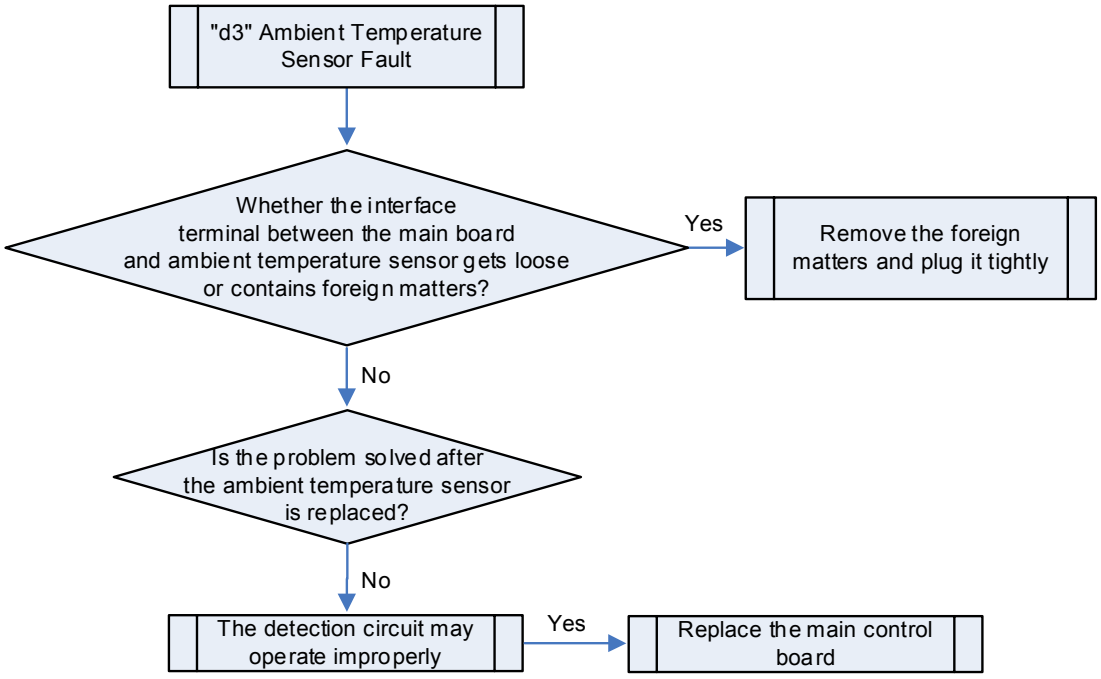
Possible causes:

■ Poor contact between the ambient temperature sensor and the main board interface;

■ Abnormal ambient temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.45 "d4" Inlet Pipe Temperature Sensor Fault

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value.

When the sampled AD value exceeds the limits for 5 consecutive seconds, the fault is generated.

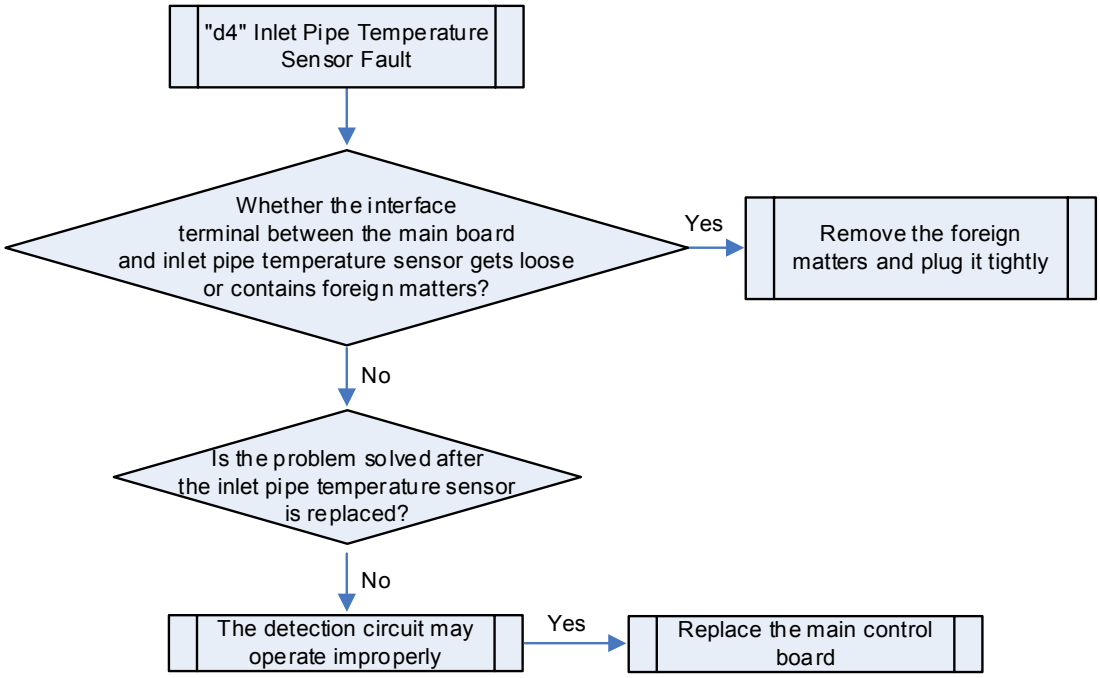
Possible causes:

■ Poor contact between the inlet pipe temperature sensor and the main board interface;

■ Abnormal inlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.46 "d5" Middle Part Temperature Sensor Fault (Reserved)

2.47 "d6" Outlet Pipe Temperature Sensor Fault

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 5 consecutive seconds, the fault is generated.

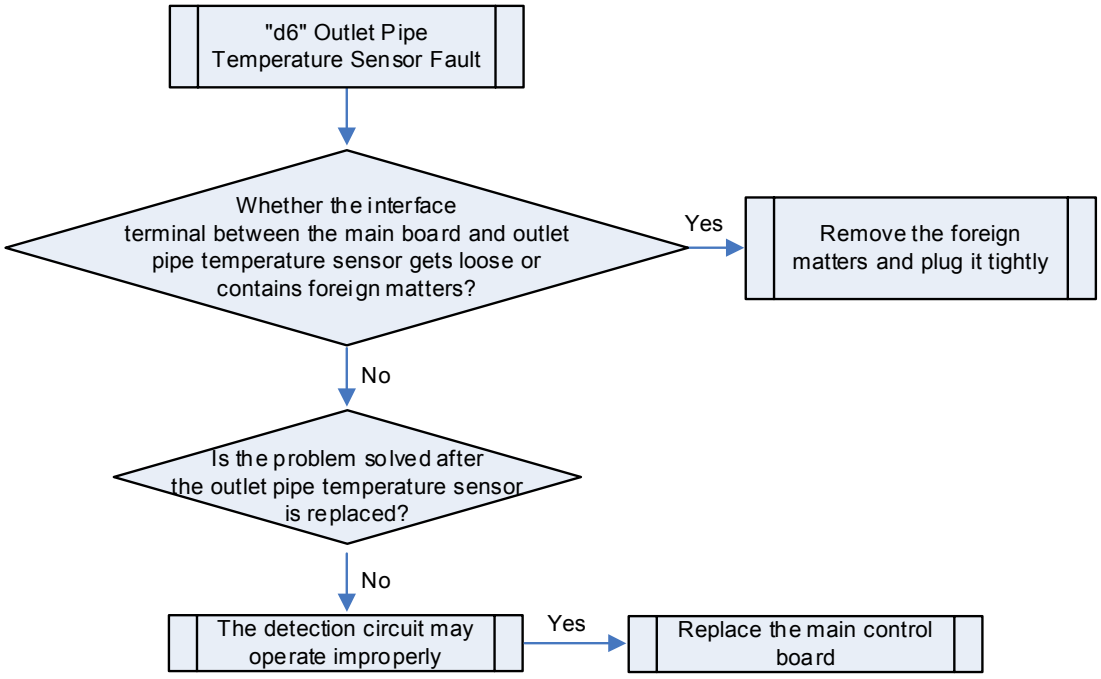
Possible causes:

■ Poor contact between the outlet pipe temperature sensor and the main board interface;

■ Abnormal outlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.48 "d7" Humidity Sensor Fault

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 5 consecutive seconds, the fault is generated.

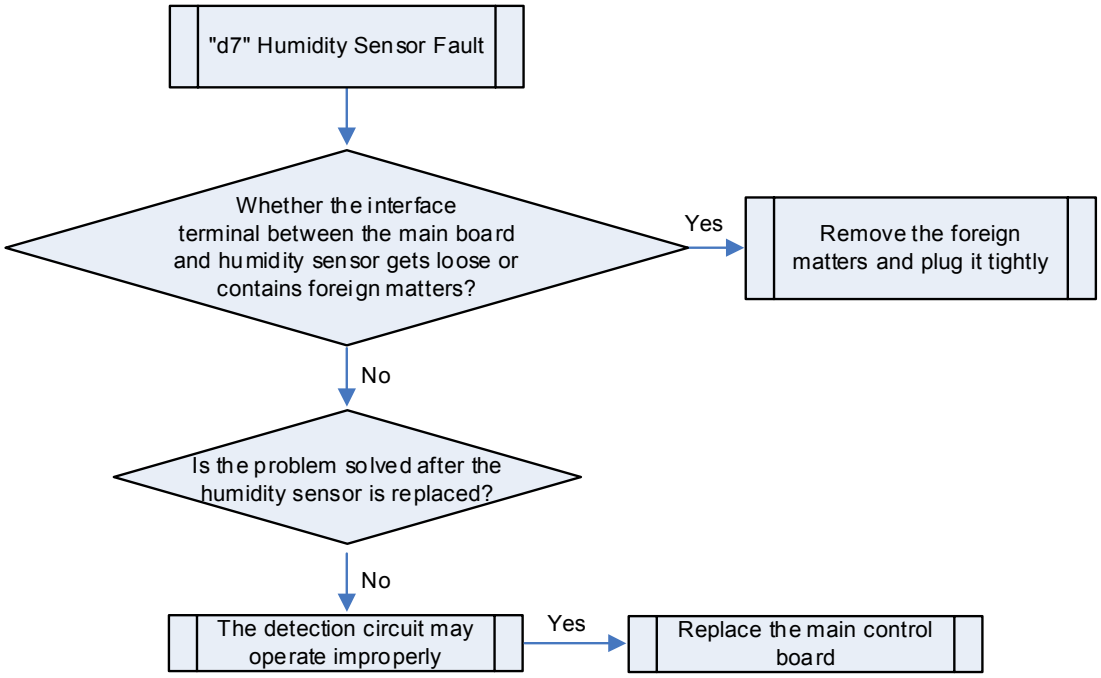
Possible causes:

■ Poor contact between the humidity sensor and the main board interface;

■ Abnormal humidity sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.49 "d8" Water Temperature Sensor Fault (Reserved)

2.50 "d9" Jumper Cap Fault

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

A fault is reported if the jumper cap does not match the main board.

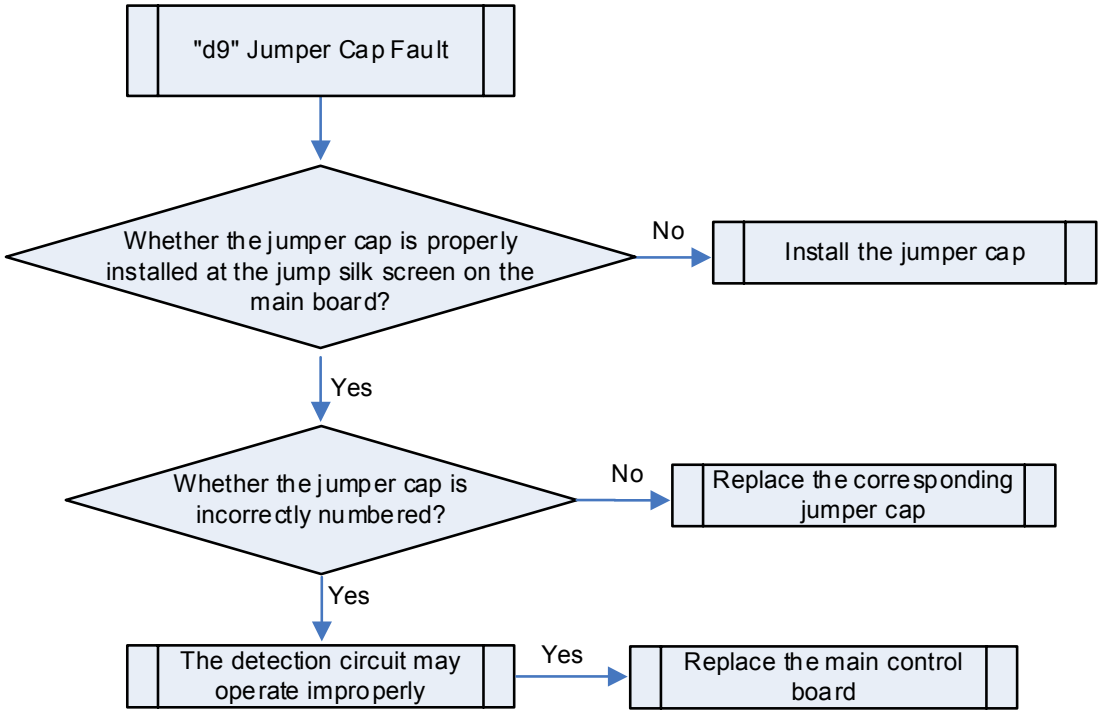
Possible causes:

■ The jumper cap is not installed;

■ The jumper cap is numbered incorrectly;

■ Abnormal detection circuit.

Troubleshooting:



2.51 "dA" Abnormal Network Address of Indoor Unit

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

Check the indoor unit's address chip and IP address. If the address chip cannot be read, the indoor unit's IP address is 0 and IP addresses conflict, the fault is generated.

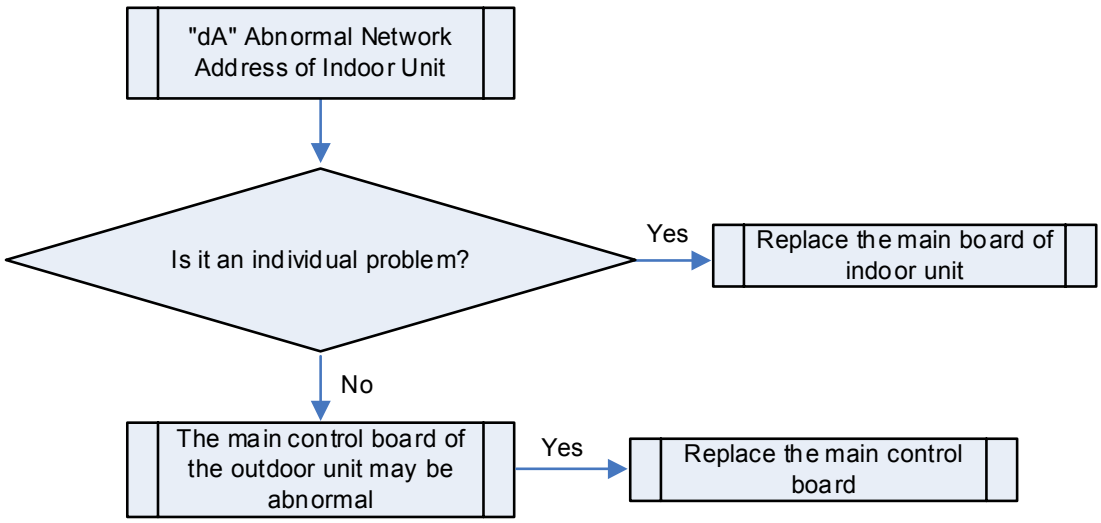
Possible causes:

■ Outdoor units' address are assigned incorrectly;

■ Indoor unit's processing error;

■ Abnormal address chip.

Troubleshooting:



2.52 "dH" Abnormal Circuit Board of Wired Controller

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

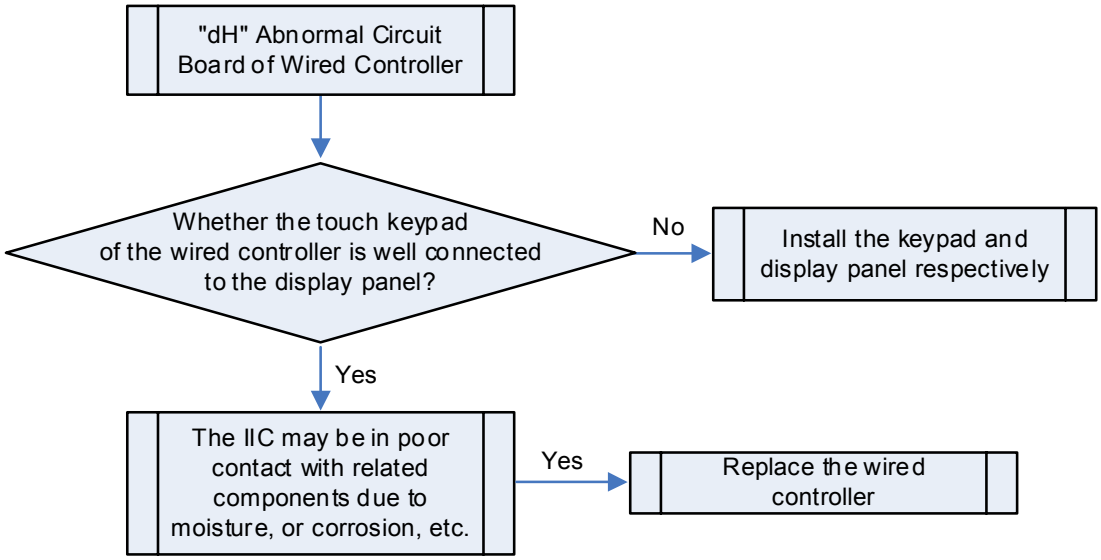
The wired controller's IIC communication is abnormal.

Possible causes:

■ The communication between the wired controller's touch keypad and display panel IIC is abnormal;

■ The wired controller's memory chip IIC cannot be read or written properly (if there are any memory chips).

Troubleshooting:



2.53 "dC" Abnormal Settings of DIP Switch for Capacity

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

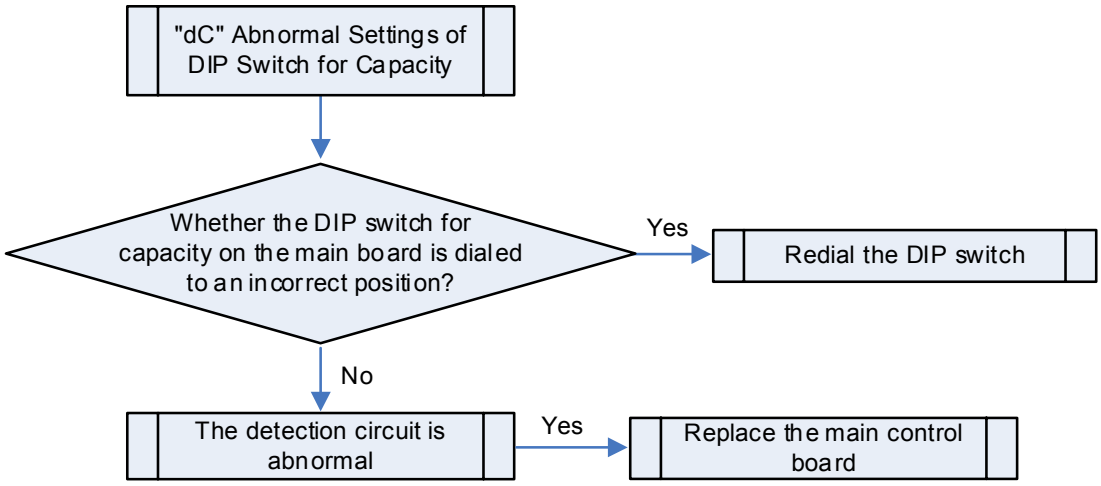
If DIP switch for capacity is set to the wrong position, the fault is generated.

Possible causes:

■ DIP switch for capacity is set to a wrong position;

■ Abnormal detection circuit.

Troubleshooting:



2.54 "dL" Air Outlet Temperature Sensor Fault

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 5 consecutive seconds, the fault is generated.

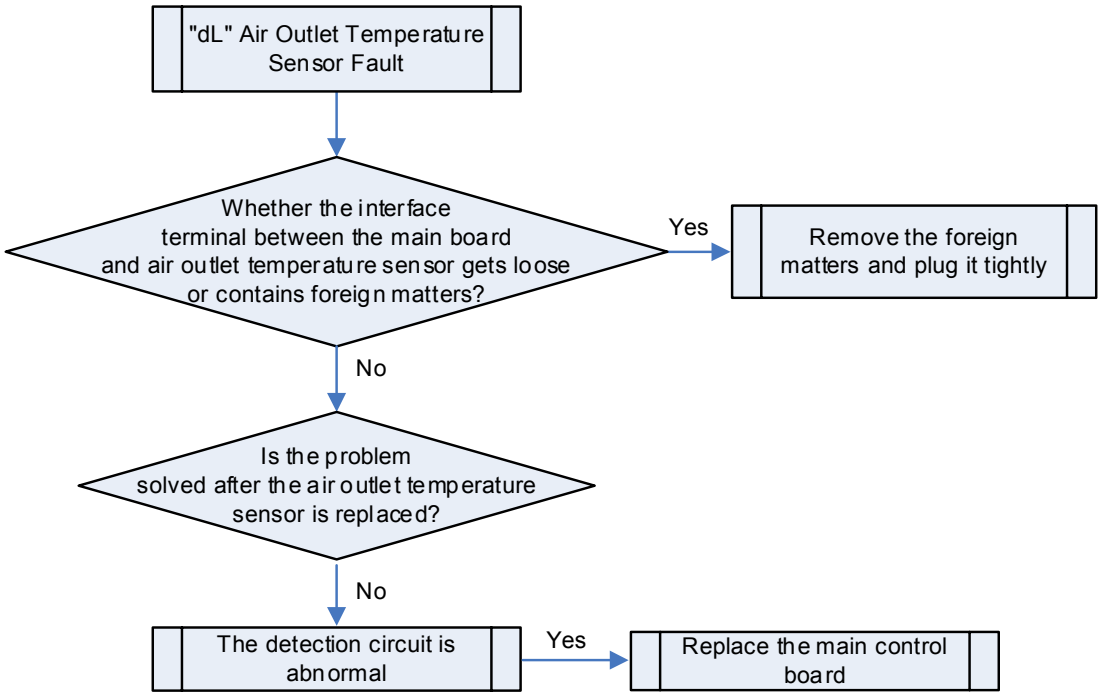
Possible causes:

■ Poor contact between the air outlet temperature sensor and the main board interface;

■ Abnormal air outlet temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.55 "dE" Indoor CO2 Sensor Fault (Reserved)

2.56 "db" Engineering Commissioning

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code but not a fault code. It indicates that the unit is being commissioned and the indoor unit is not operational.

Possible causes: --

Troubleshooting: --

2.57 "E1" Protection in Case of Too High Pressure

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the high pressure sensor detects that the temperature at the high pressure is greater than 65°C or the high pressure switch is disconnected, it indicates that the high pressure is too high, and the unit will stop running to ensure safe operation.

Possible causes:

■ Check valve of the outdoor unit is closed;

■ Abnormal high pressure sensor;

■ The high pressure switch operates improperly;

■ Abnormal outdoor or indoor fans;

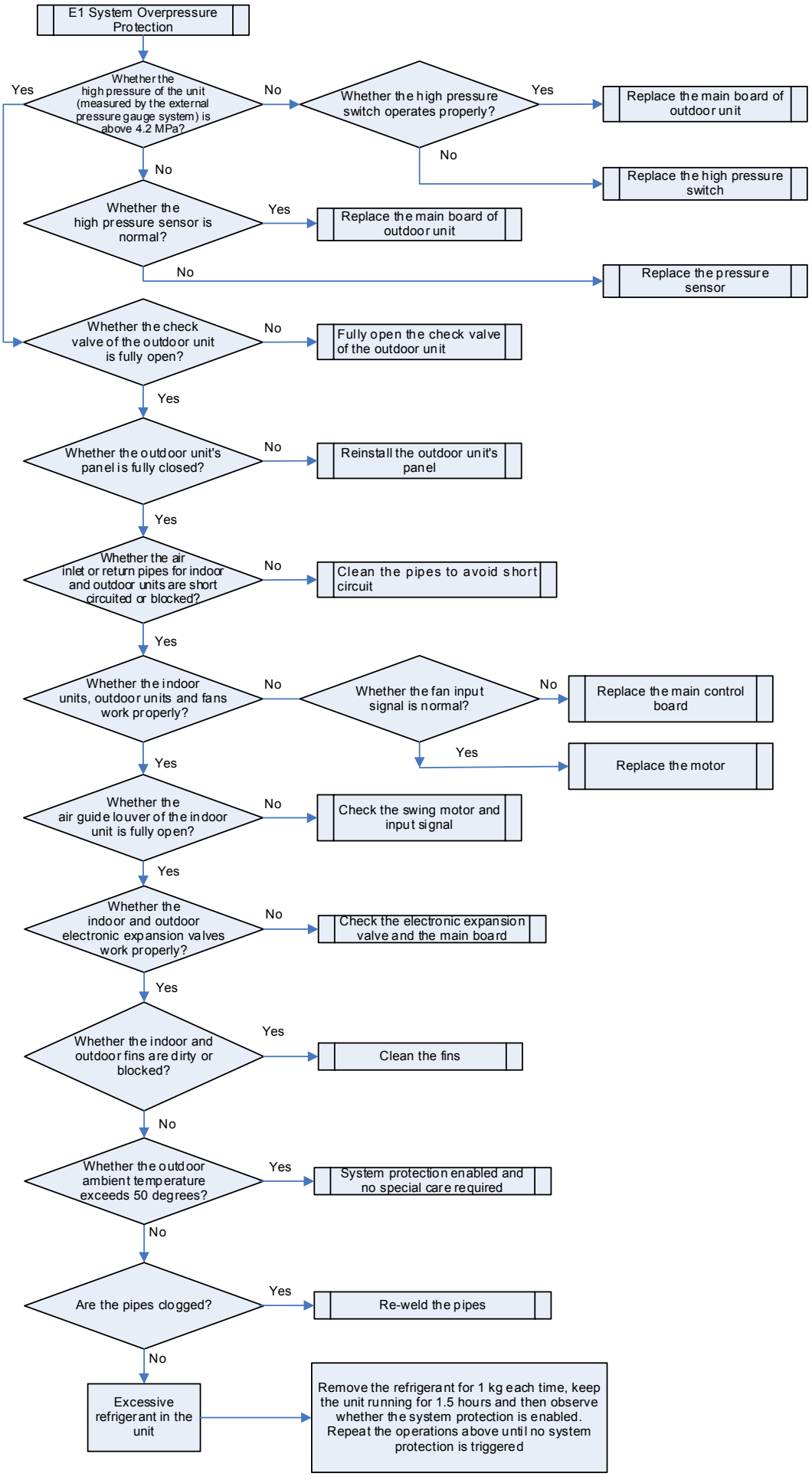
■ Clogging of indoor filter or air duct (heating mode);

■ The ambient temperature where the unit operates is too high;

■ Excessive refrigerant in the unit;

■ Clogging of unit pipes.

Troubleshooting:


E1 System Overpressure Protection
Whether the high pressure of the unit (measured by the external pressure gauge system) is above 4.2 MPa?
Yes
No
Whether the high pressure switch operates properly?
Yes
Replace the main board of outdoor unit
No
Replace the high pressure switch
Whether the high pressure sensor is normal?
Yes
Replace the main board of outdoor unit
No
Replace the pressure sensor
Whether the check valve of the outdoor unit is fully open?
No
Fully open the check valve of the outdoor unit
Yes
Whether the outdoor unit's panel is fully closed?
No
Reinstall the outdoor unit's panel
Yes
Whether the air inlet or return pipes for indoor and outdoor units are short circuited or blocked?
No
Clean the pipes to avoid short circuit
Yes
Whether the indoor units, outdoor units and fans work properly?
No
Whether the fan input signal is normal?
No
Replace the main control board
Yes
Replace the motor
Yes
Whether the air guide louver of the indoor unit is fully open?
No
Check the swing motor and input signal
Yes
Whether the indoor and outdoor electronic expansion valves work properly?
No
Check the electronic expansion valve and the main board
Yes
Whether the indoor and outdoor fins are dirty or blocked?
Yes
Clean the fins
No
Whether the outdoor ambient temperature exceeds 50 degrees?
Yes
System protection enabled and no special care required
No
Are the pipes clogged?
Yes
Re-weld the pipes
No
Excessive refrigerant in the unit
Remove the refrigerant for 1 kg each time, keep the unit running for 1.5 hours and then observe whether the system protection is enabled. Repeat the operations above until no system protection is triggered

2.58 "E2" Protection in Case of Too Low Air Discharge Temperature of Compressor

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the difference between the air discharge temperature of compressor and the temperature at the high pressure is below 10°C, the unit stops running to ensure safe operation.

Possible causes:

■ The compressor's temperature sensor for air discharge operates improperly;

■ The electronic expansion valve of indoor unit operates improperly in cooling mode;

■ The electronic expansion valve of outdoor unit operates improperly in heating mode;

■ Excessive refrigerant in the unit.

Troubleshooting:

Step 1: Check whether the air discharge pipe and shell roof temperature sensor of each compressor are installed firmly, and whether the protection sponge is fastened.

Then, check whether the resistance corresponding to each temperature is normal based on the temperature - resistance table of temperature sensor. If not, replace the temperature sensor.

Step 2: If the unit is in cooling mode:

First, inspect the indoor electronic expansion valve:

① When the electronic expansion valve of the indoor unit is closed to 0PLS, if the temperature difference between the inlet and outlet pipes of the indoor unit coil and the temperature at the low pressure is less than 10°C, it indicates that the unit operates improperly.

Solution: First, make sure that the EXV coil is connected properly, and then power off the unit. Power on to reset the unit and check the resetting action. If unable to reset the unit, replace the coil or the main board. If able to reset the unit normally despite the problem, replace the electronic expansion valve.

② Check whether the electronic expansion valve of the indoor unit operates properly: If the electronic expansion valve is open to 200PLS, the temperature of the outlet pipe of indoor unit coil is smaller than that of the inlet pipe by over 1°C, and the difference between the discharge temperature of the compressor or the shell roof temperature of the compressor and the high pressure temperature is less than 10°C.

Solution: First, make sure that the EXV coil is connected properly, and then power off the unit. Power on to reset the unit and check the resetting action. If unable to reset the unit, replace the coil or the main board. If able to reset the unit normally despite the problem, replace the electronic expansion valve.

Next, inspect the outdoor subcooler electronic expansion valve:

After confirming that the EXV coil is connected properly, power off the unit. Then power on to reset the unit and check the resetting action.

Step 3: If the unit is in heating mode, check the electronic expansion valve of the outdoor unit first.

After confirming that the EXV coil is connected properly, power off the unit. Then power on to reset the unit and check the resetting action. If unable to reset the unit, replace the coil or the main board. If able to reset the unit normally, inspect other parts of the unit.

Step 4: Check whether the refrigerant is added in accordance with the design requirements, as excessive refrigerant may trigger system protection.

Solution: Add refrigerant in accordance with the design requirements.

2.59 "E3" System Low Pressure Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The low pressure sensor detects the compressor's suction pressure. When the saturation temperature corresponding to the low pressure is below -41°C, the unit stops to ensure safe operation.

Possible causes:

■ Check valve of the outdoor unit is closed;

■ Abnormal low pressure sensor;

■ Abnormal outdoor or indoor fans;

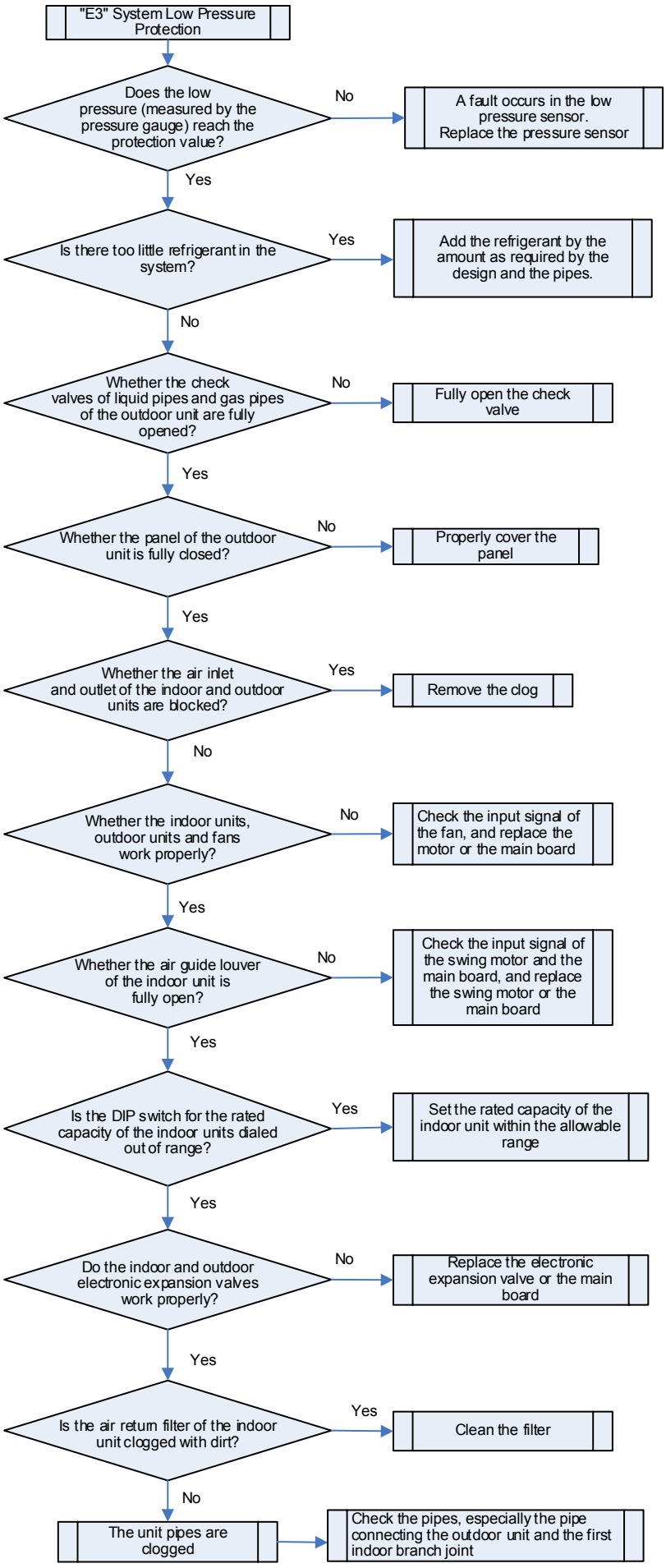
■ Clogging of indoor filter or air duct (cooling mode);

■ The ambient temperature where the unit operates is too low;

■ Insufficient refrigerant in the unit;

■ Clogging of unit pipes.

Troubleshooting:


"E3" System Low Pressure Protection
Does the low pressure (measured by the pressure gauge) reach the protection value?
No
A fault occurs in the low pressure sensor. Replace the pressure sensor
Yes
Is there too little refrigerant in the system?
Yes
Add the refrigerant by the amount as required by the design and the pipes.
No
Whether the check valves of liquid pipes and gas pipes of the outdoor unit are fully opened?
No
Fully open the check valve
Yes
Whether the panel of the outdoor unit is fully closed?
No
Properly cover the panel
Yes
Whether the air inlet and outlet of the indoor and outdoor units are blocked?
Yes
Remove the clog
No
Whether the indoor units, outdoor units and fans work properly?
No
Check the input signal of the fan, and replace the motor or the main board
Yes
Whether the air guide louver of the indoor unit is fully open?
No
Check the input signal of the swing motor and the main board, and replace the swing motor or the main board
Yes
Is the DIP switch for the rated capacity of the indoor units dialed out of range?
Yes
Set the rated capacity of the indoor unit within the allowable range
Yes
Do the indoor and outdoor electronic expansion valves work properly?
No
Replace the electronic expansion valve or the main board
Yes
Is the air return filter of the indoor unit clogged with dirt?
Yes
Clean the filter
No
The unit pipes are clogged
Check the pipes, especially the pipe connecting the outdoor unit and the first indoor branch joint

2.60 "E4" Protection in Case of Too High Air Discharge Temperature of Compressor

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the compressor's discharge temperature detected by the temperature sensors on the discharge pipes and on the top of the compressor is above 118°C, the unit stops running to ensure safe operation.

Possible causes:

■ Check valve of the outdoor unit is closed;

■ The electronic expansion valve operates improperly;

■ Abnormal outdoor or indoor fans;

■ Clogging of indoor filter or air duct (cooling mode);

■ The ambient temperature where the unit operates exceeds the limit;

■ Insufficient refrigerant in the unit;

■ Clogging of unit pipes.

Troubleshooting:

Step 1: Inspect and make sure that the check valves of the gas pipe and liquid pipe of the outdoor unit are fully opened.

Step 2: Power on the units based on the capacity and number of indoor units enabled previously in the case of protection state. After confirming that the EXV coil is connected properly, power off the unit. Then power on to reset the unit and check the resetting action. If unable to reset the unit, replace the coil or the main board. If able to reset the unit normally, inspect other parts of the unit.

Step 3: Power on the units based on the capacity and number of indoor units enabled previously in the case of protection state. Observe whether the indoor and outdoor fans are operating properly according to the rotational speed displayed by the commissioning software. If not, replace the motor or motor drive module (outdoor fan).

Step 4: In the case of cooling mode, check whether the filter of the indoor unit is dirty or clogged or whether the air resistance is too high (the air resistance is designed to be larger than the static pressure of the unit as required).

Step 5: Check whether the air return temperature of the unit exceeds the limit during operation (requirements in cooling mode: outdoor ambient temperature -5°C to +50°C, indoor ambient temperature 16°C to 32°C; requirements in heating mode: outdoor ambient temperature -20°C to +24°C, indoor ambient temperature 16°C to 30°C).

Step 6: Check whether the refrigerant is added in accordance with the design requirements, as insufficient refrigerant may trigger system protection.

Step 7: Power on the units based on the capacity and number of indoor units enabled previously in the case of protection state. Check whether the pipeline or expansion valve is blocked according to the parameters of the indoor and outdoor units and the temperature of the pipelines (touch with hands).

2.61 "F0" Poor Main Board of Outdoor Unit

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

Check whether the address chip, memory chip and clock chip of the main board of the outdoor unit can be read properly. If not, the fault is generated.

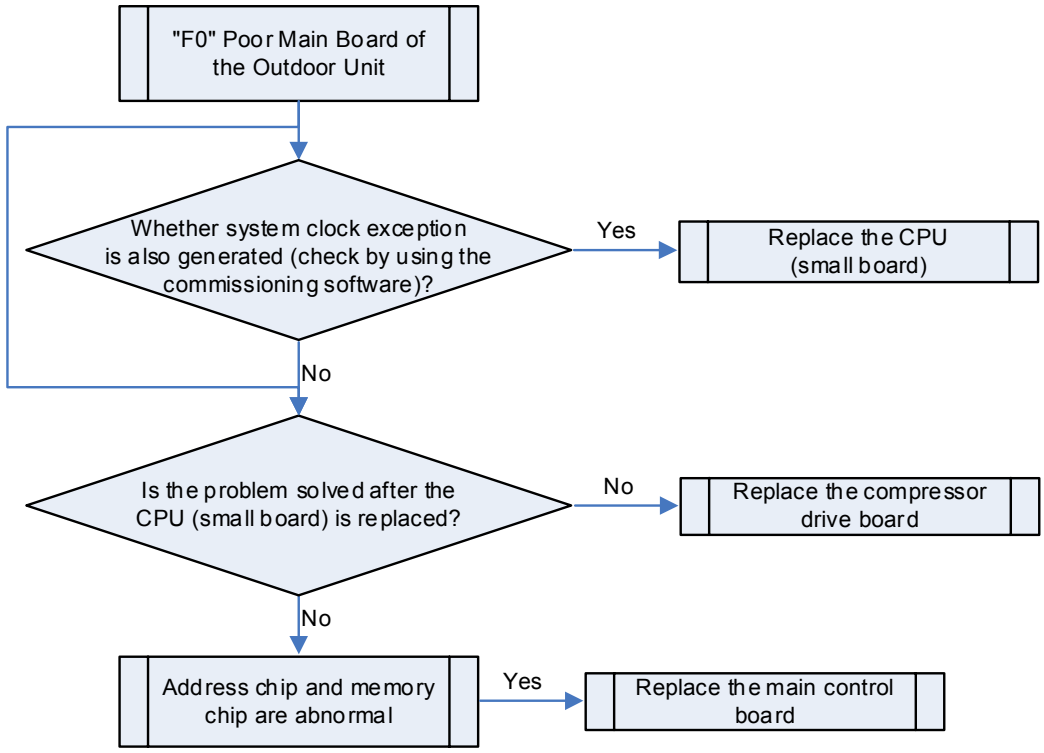
Possible causes:

■ Abnormal address chip;

■ Abnormal memory chip;

■ Abnormal clock chip.

Troubleshooting:



2.62 "F1" High-pressure Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The sensor detection circuit samples the AD value of high pressure sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

Possible causes:

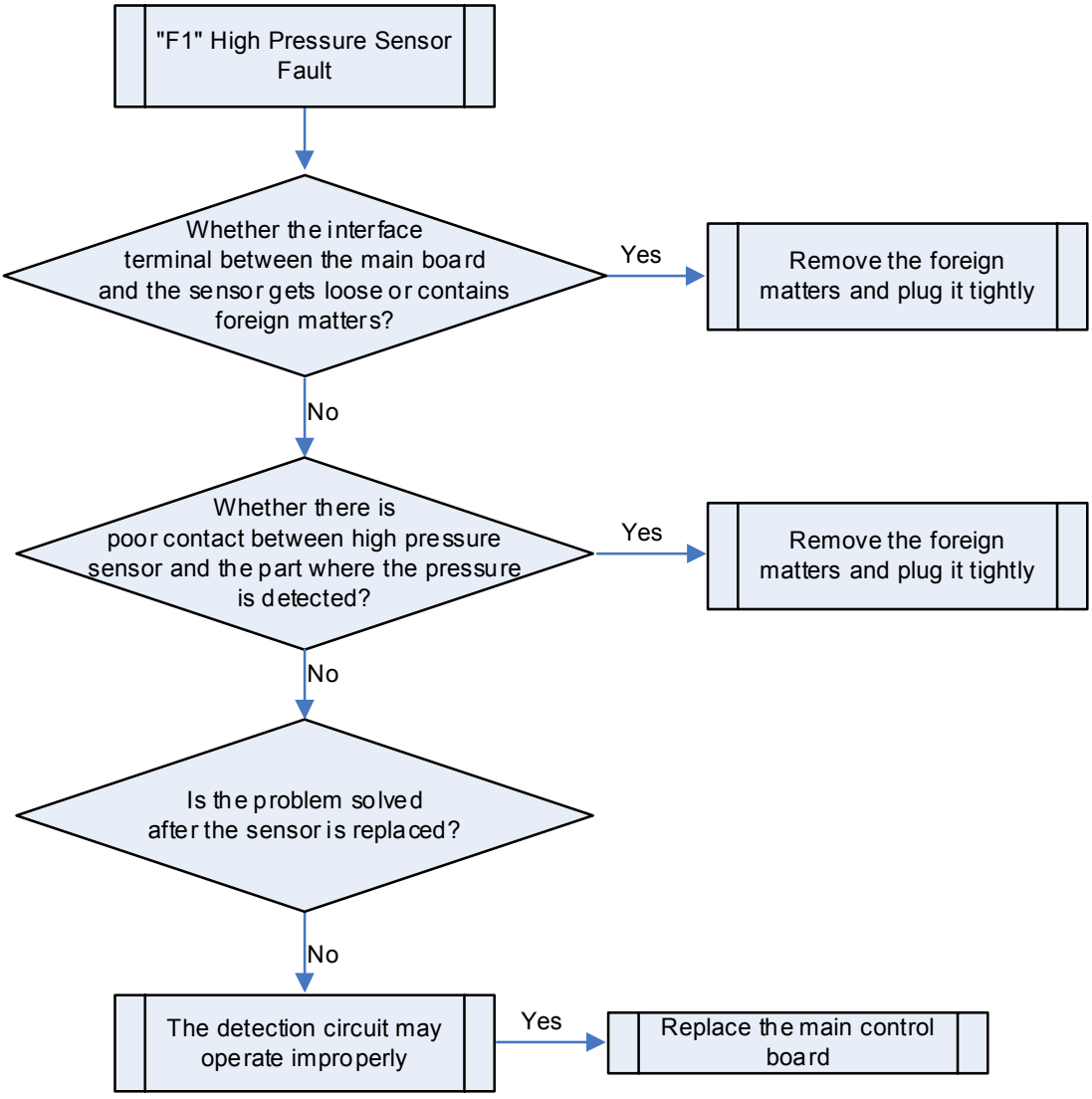
■ Poor contact between the high pressure sensor and the main board interface;

■ Poor contact between high pressure sensor and part where the pressure is detected;

■ Abnormal high pressure sensor;

■ Abnormal sensor detection circuit.

Troubleshooting:



2.63 "F3" Low Pressure Sensor Fault

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The sensor detection circuit samples the AD value of low pressure sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

Possible causes:

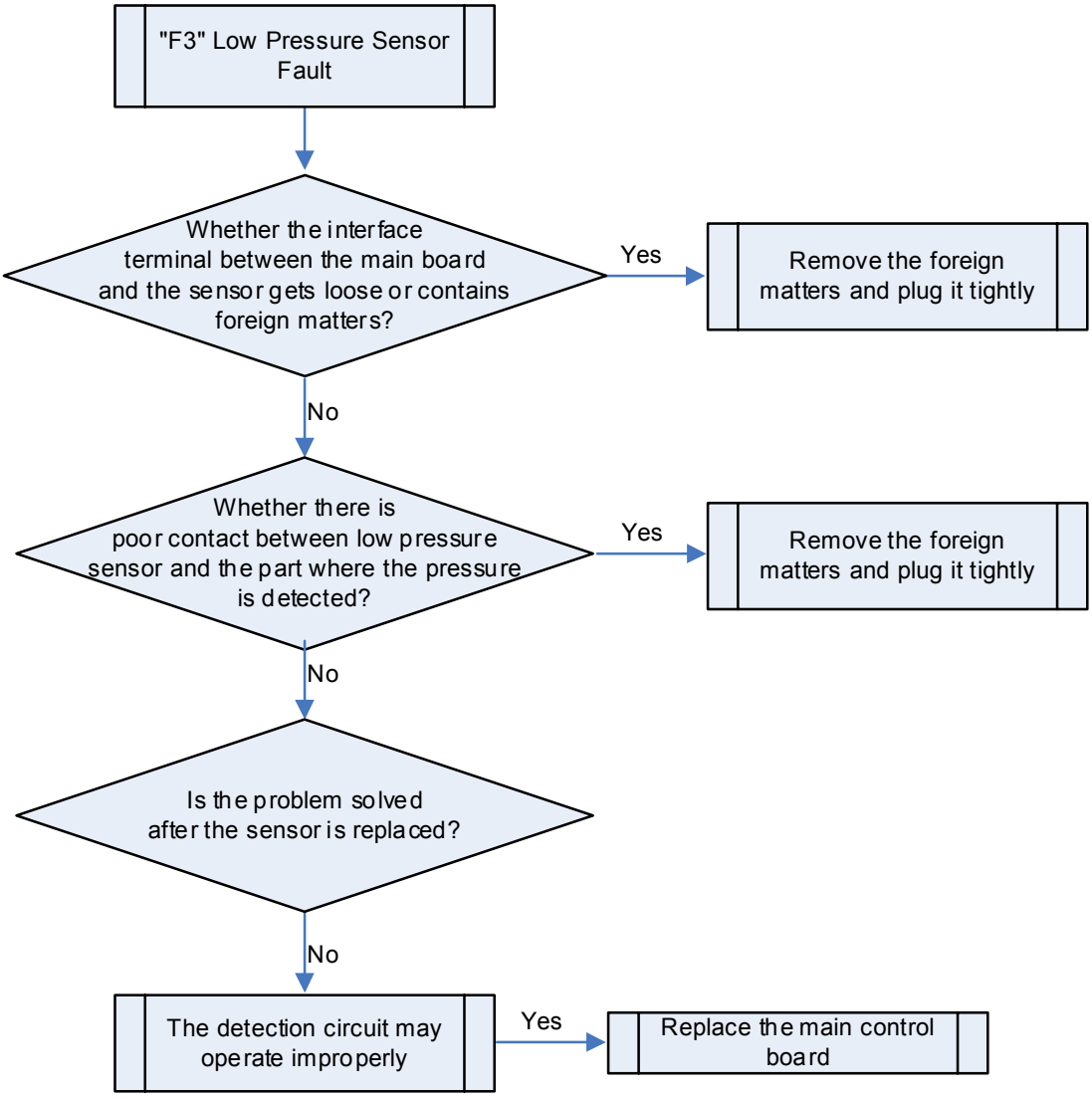
■ Poor contact between the low pressure sensor and the main board interface;

■ Poor contact between low pressure sensor and part where the pressure is detected;

■ Abnormal low pressure sensor;

■ Abnormal low pressure sensor detection circuit.

Troubleshooting:



2.64 "F5" Discharge Temperature Sensor Fault of Compressor 1

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

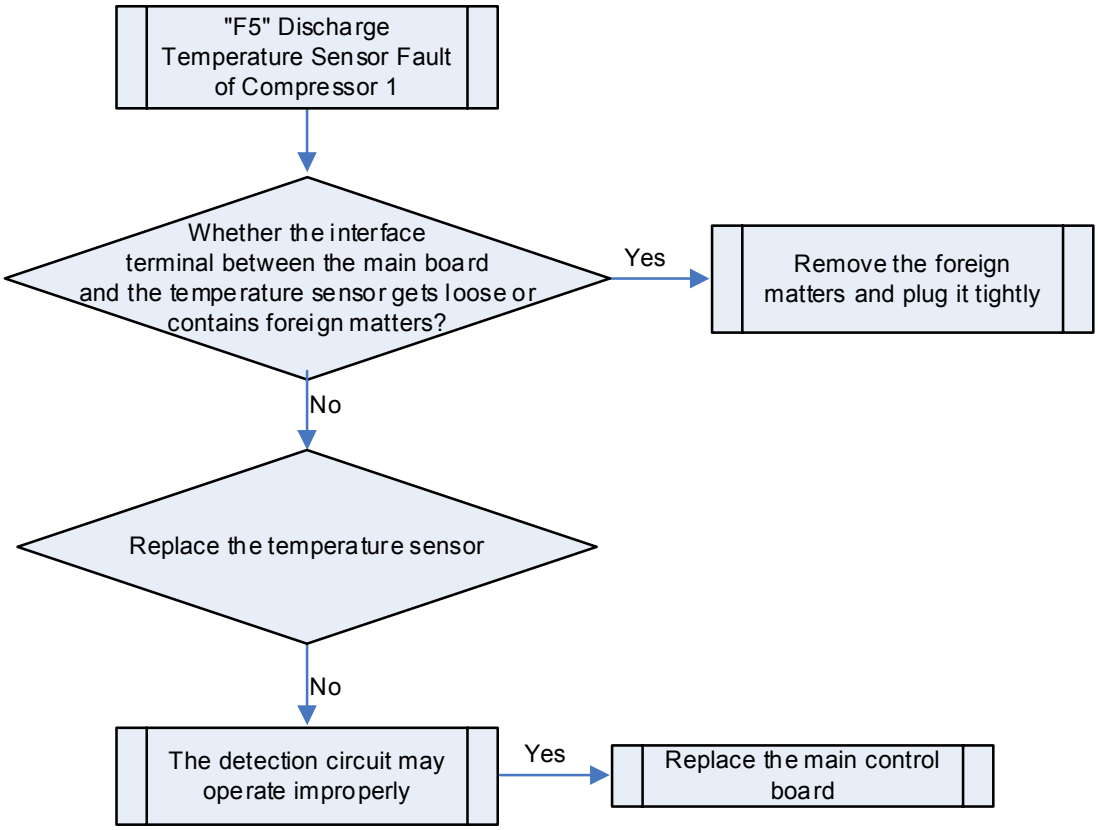
Possible causes:

■ Poor contact between the discharge temperature sensor and the main board interface;

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.65 "F6" Discharge Temperature Sensor Fault of Compressor 2

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

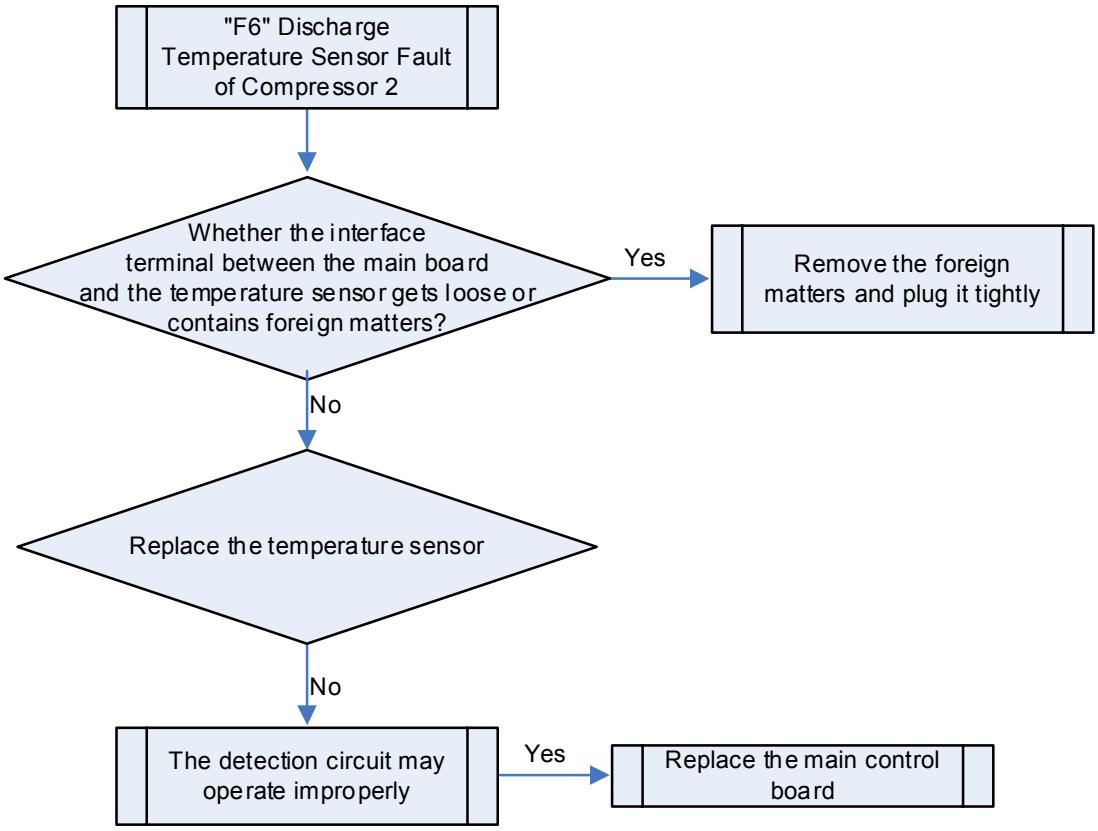
Possible causes:

■ Poor contact between the discharge temperature sensor and the main board interface;

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.66 "F7" Discharge Temperature Sensor Fault of Compressor 3

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

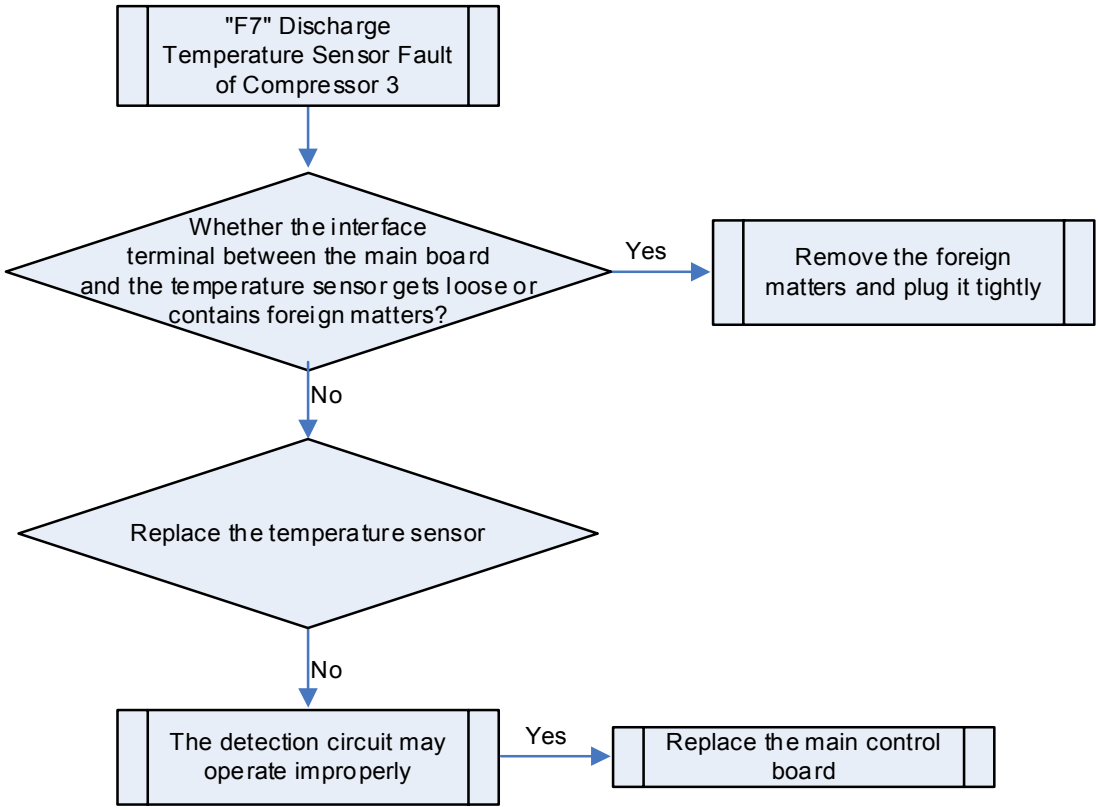
Possible causes:

■ Poor contact between the discharge temperature sensor and the main board interface;

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.67 "F8" Discharge Temperature Sensor Fault of Compressor 4

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

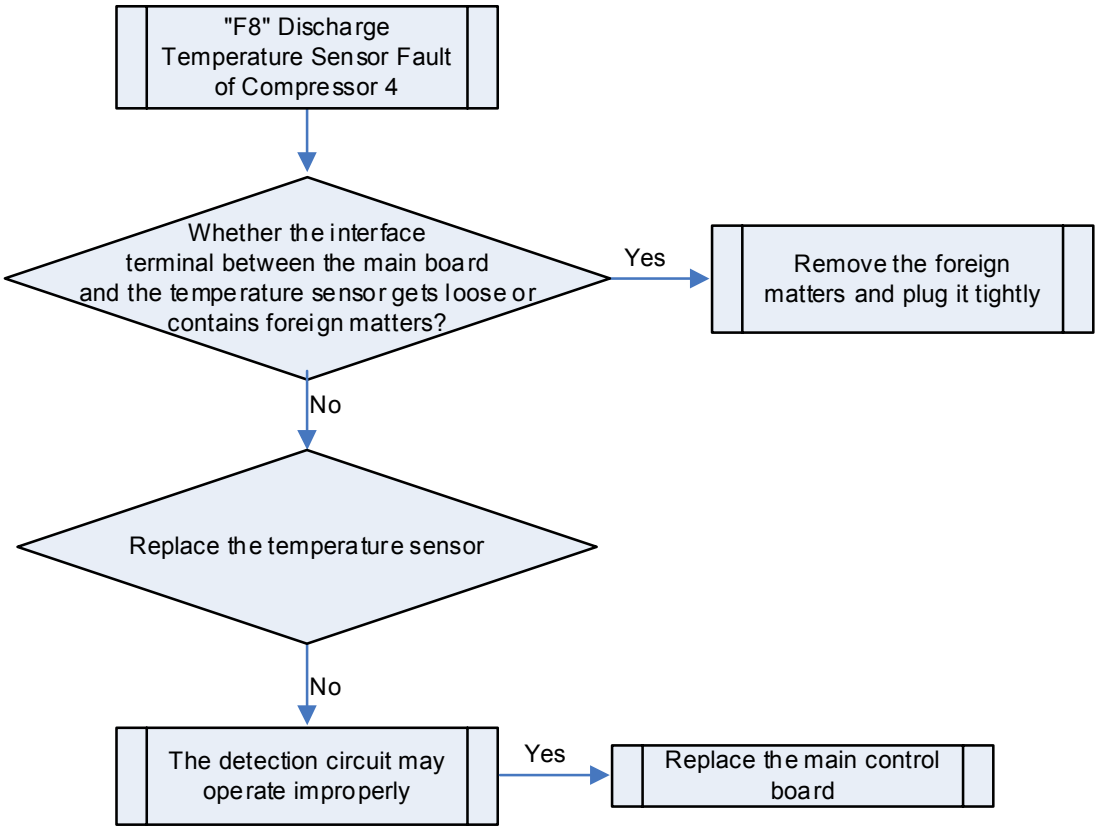
Possible causes:

■ Poor contact between the discharge temperature sensor and the main board interface;

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.68 "F9" Discharge Temperature Sensor Fault of Compressor 5

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

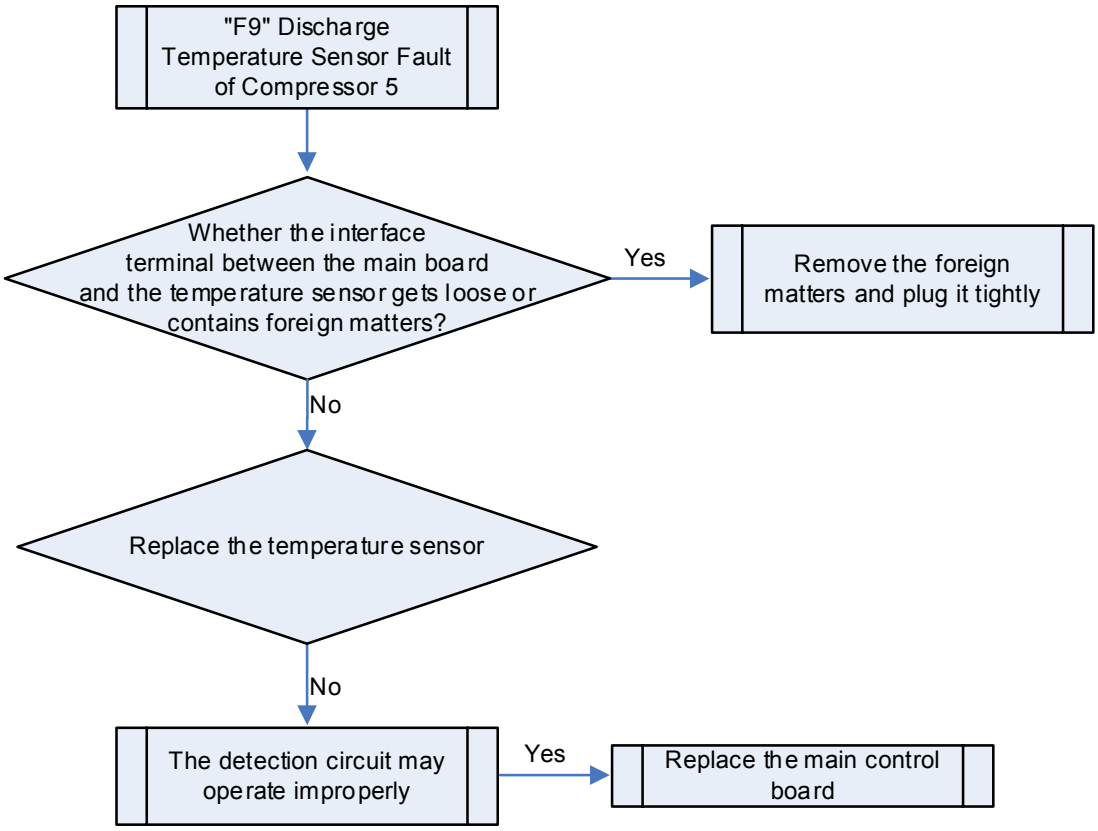
Possible causes:

■ Poor contact between the discharge temperature sensor and the main board interface;

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.69 "FA" Discharge Temperature Sensor Fault of Compressor 6

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

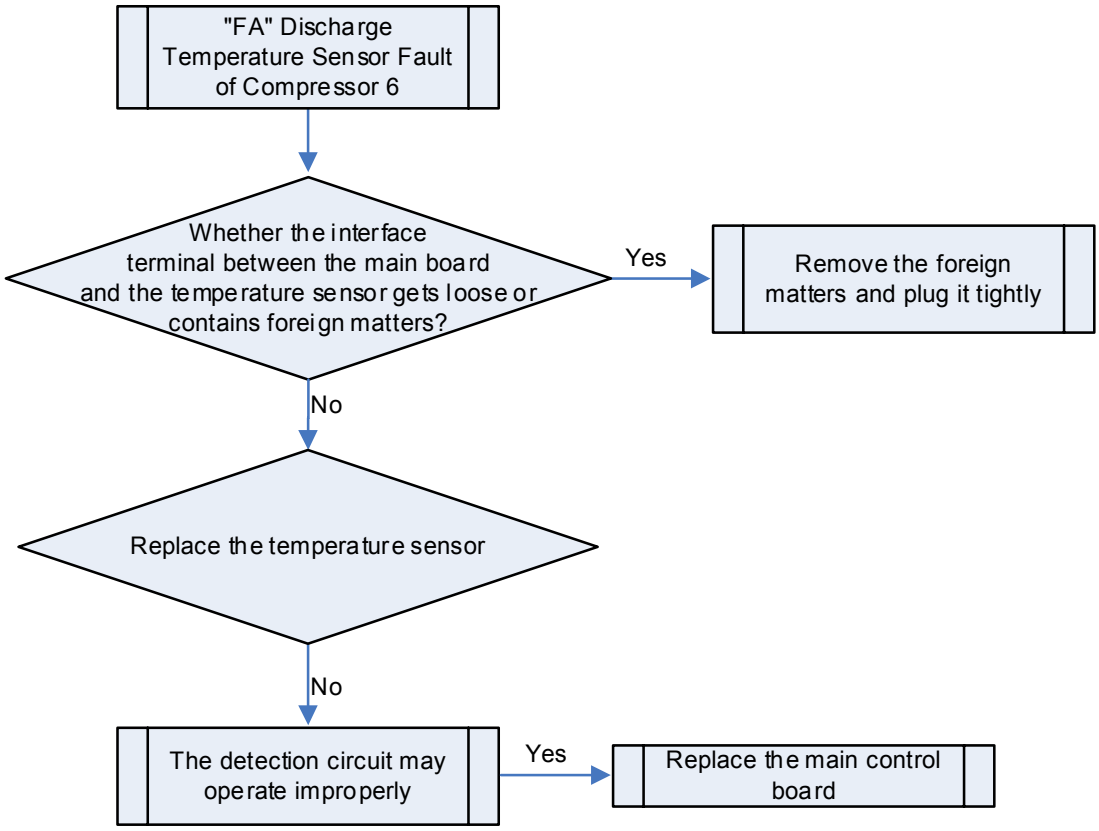
Possible causes:

■ Poor contact between the discharge temperature sensor and the main board interface;

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.70 "FH" Abnormal Current Sensor of Compressor 1

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The circuit detection circuit samples the AD value and determines the range of AD value. When the sampled AD value exceeds the limits for 3 consecutive seconds, the fault is generated.

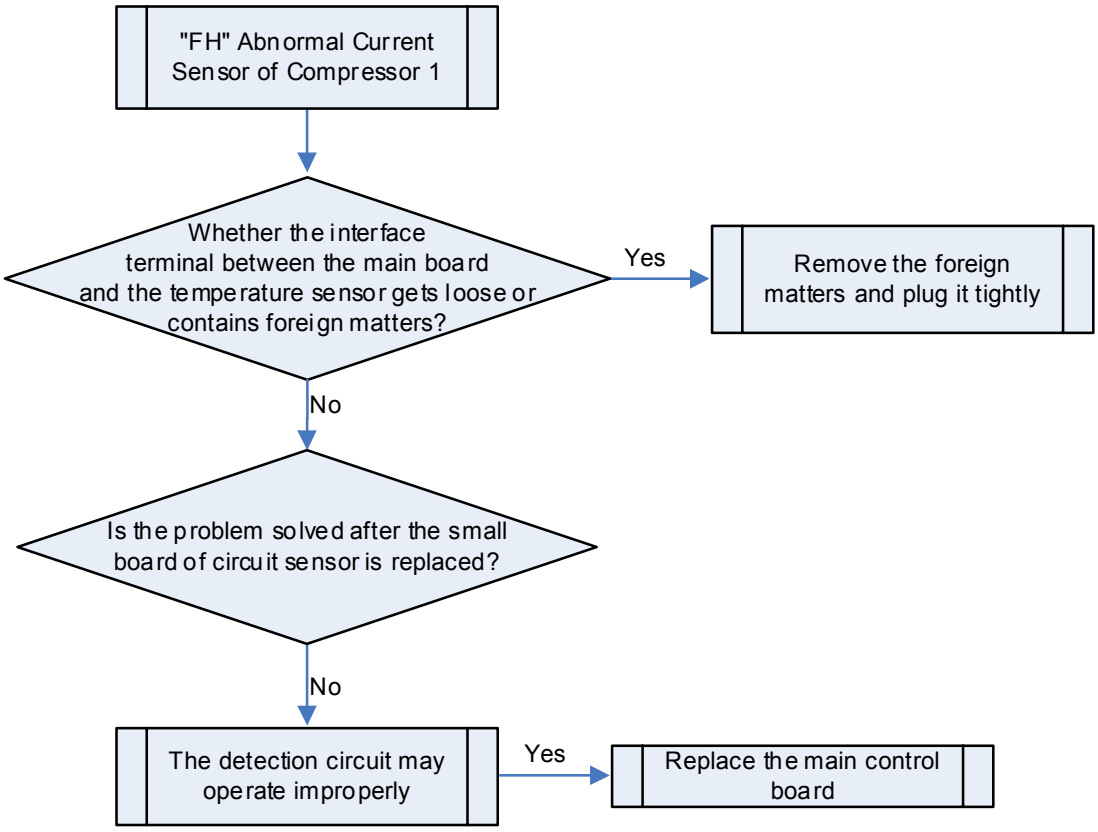
Possible causes:

■ Poor contact between the circuit sensor and the main board interface;

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.71 "FC" Abnormal Current Sensor of Compressor 2

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The circuit detection circuit samples the AD value and determines the range of AD value. When the sampled AD value exceeds the limits for 3 consecutive seconds, the fault is generated.

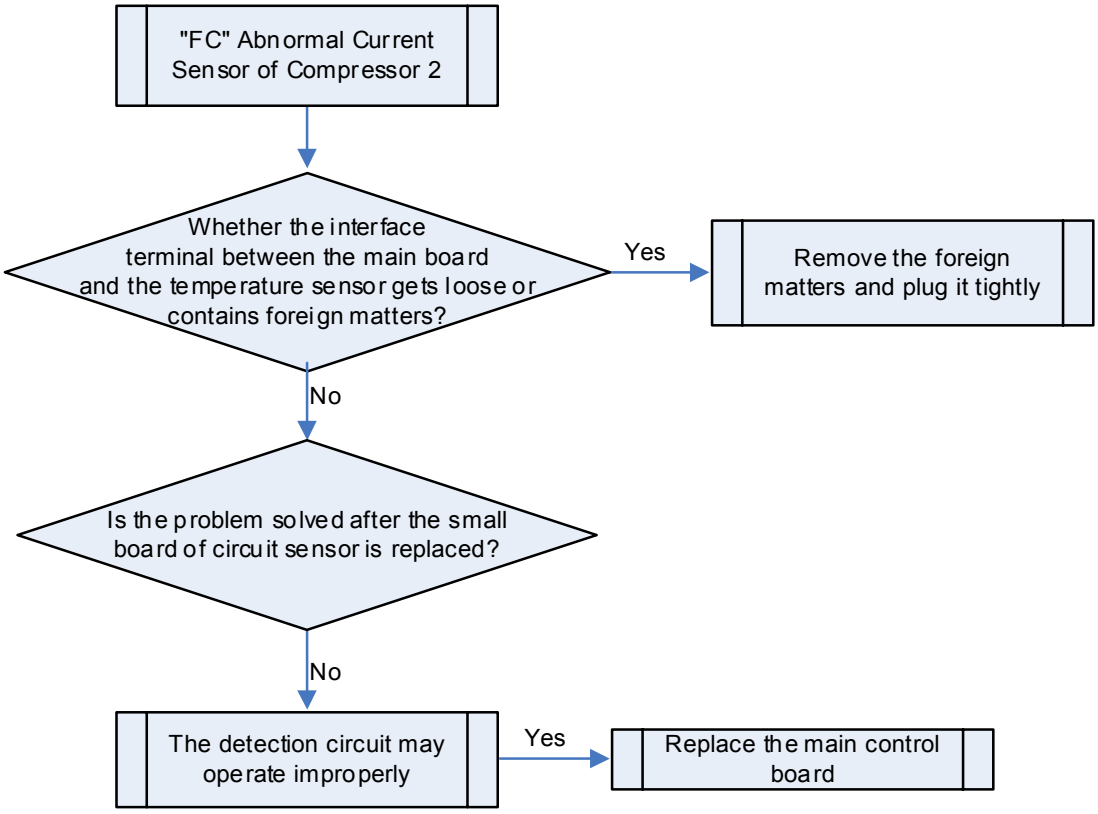
Possible causes:

■ Poor contact between the circuit sensor and the main board interface;

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.72 "FL" Abnormal Current Sensor of Compressor 3

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The circuit detection circuit samples the AD value and determines the range of AD value. When the sampled AD value exceeds the limits for 3 consecutive seconds, the fault is generated.

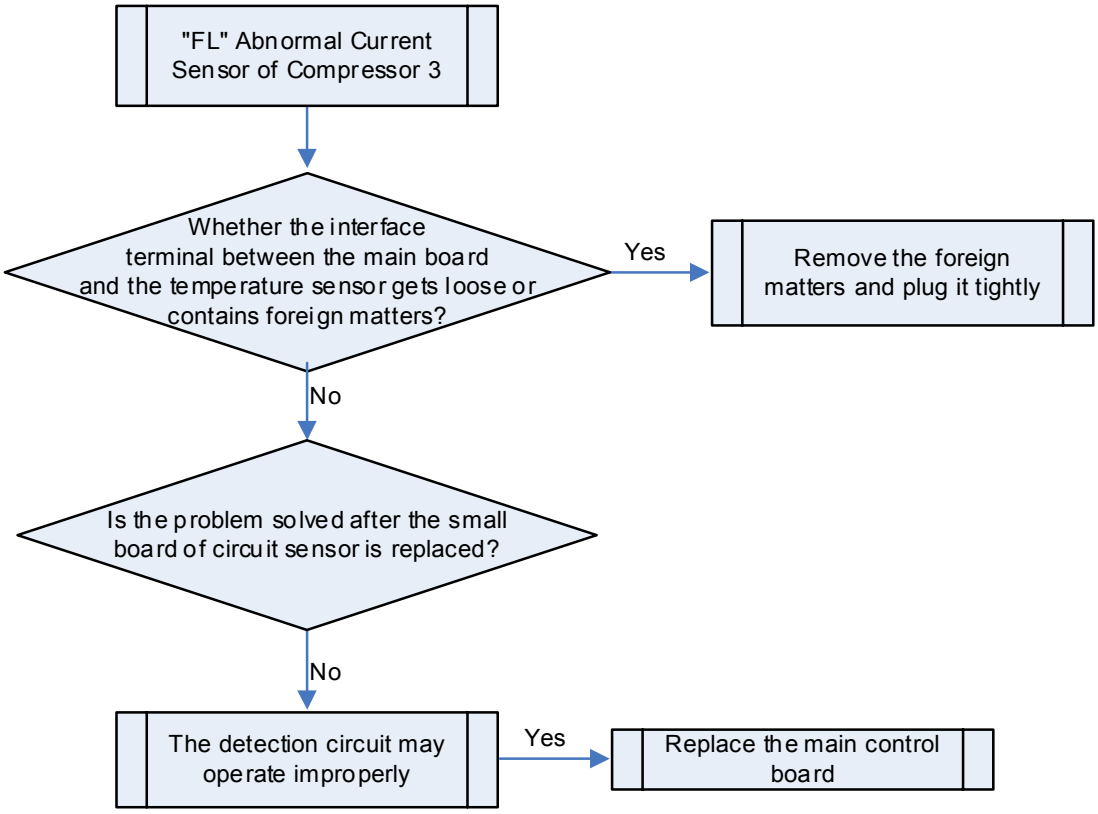
Possible causes:

■ Poor contact between the circuit sensor and the main board interface;

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.73 "FE" Abnormal Current Sensor of Compressor 4

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The circuit detection circuit samples the AD value and determines the range of AD value. When the sampled AD value exceeds the limits for 3 consecutive seconds, the fault is generated.

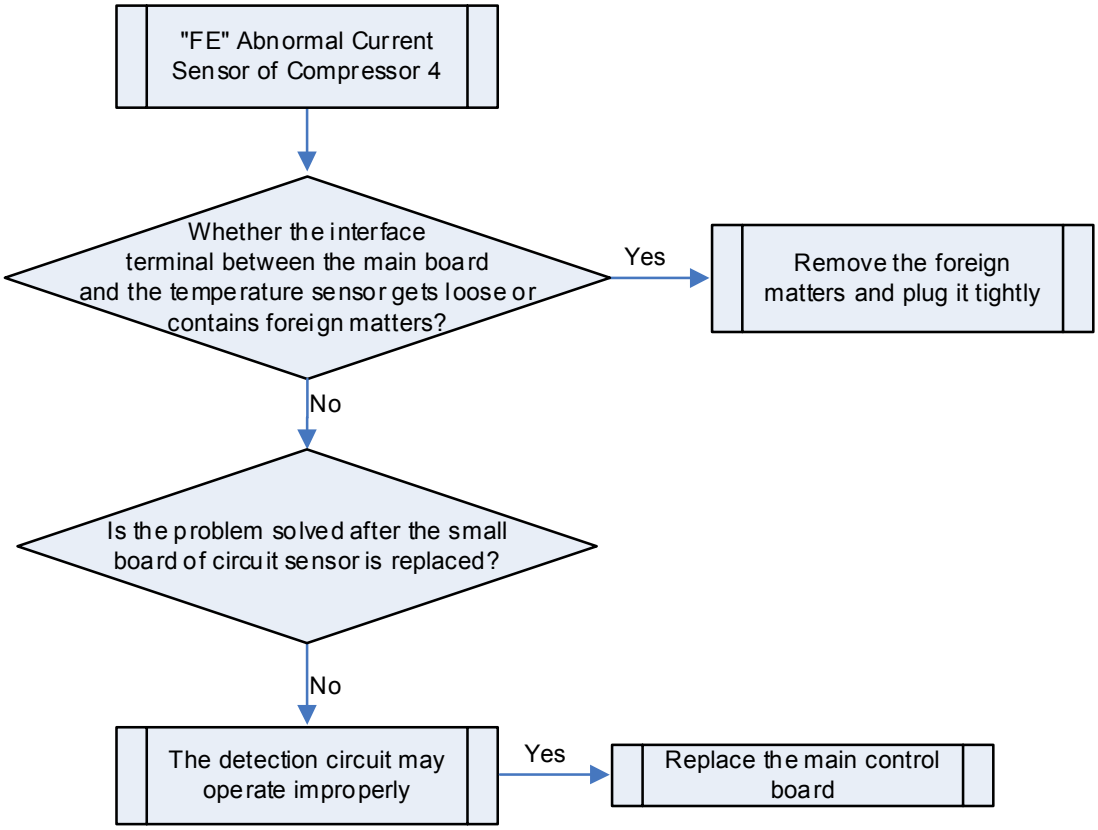
Possible causes:

■ Poor contact between the circuit sensor and the main board interface;

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.74 "FF" Abnormal Current Sensor of Compressor 5

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The circuit detection circuit samples the AD value and determines the range of AD value. When the sampled AD value exceeds the limits for 3 consecutive seconds, the fault is generated.

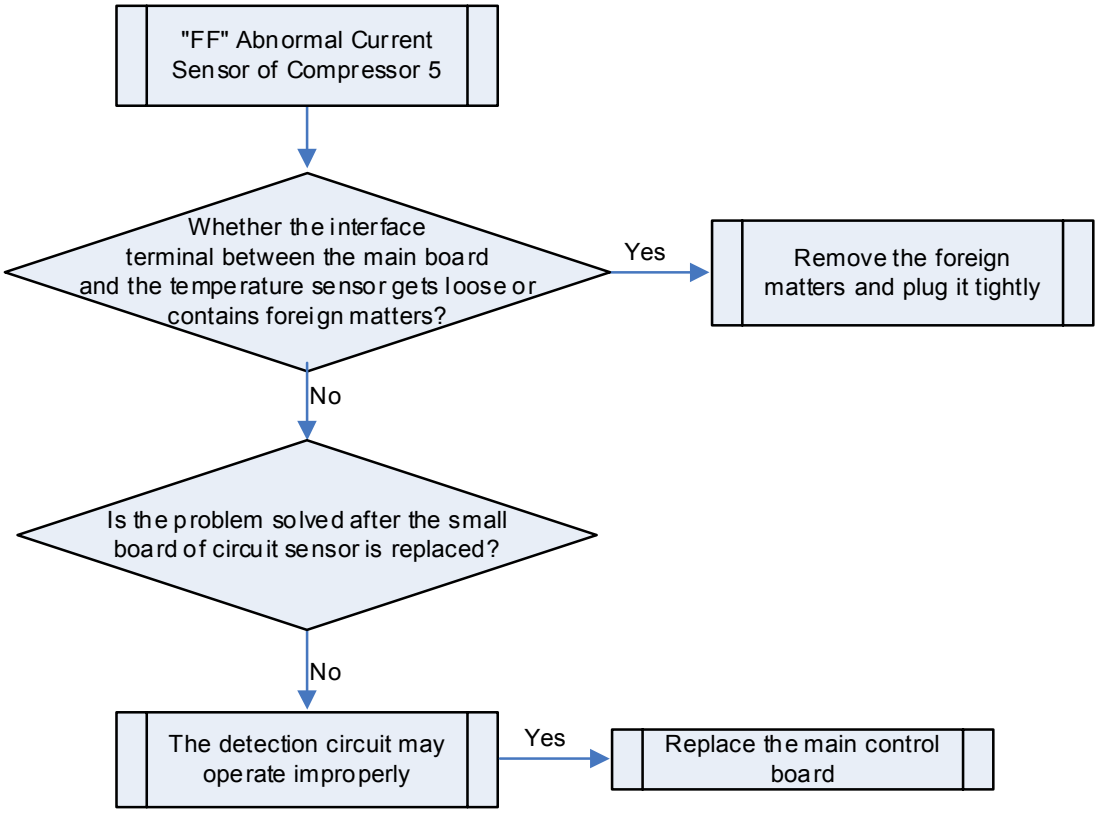
Possible causes:

■ Poor contact between the circuit sensor and the main board interface;

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.75 "FJ" Abnormal Current Sensor of Compressor 6

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The circuit detection circuit samples the AD value and determines the range of AD value. When the sampled AD value exceeds the limits for 3 consecutive seconds, the fault is generated.

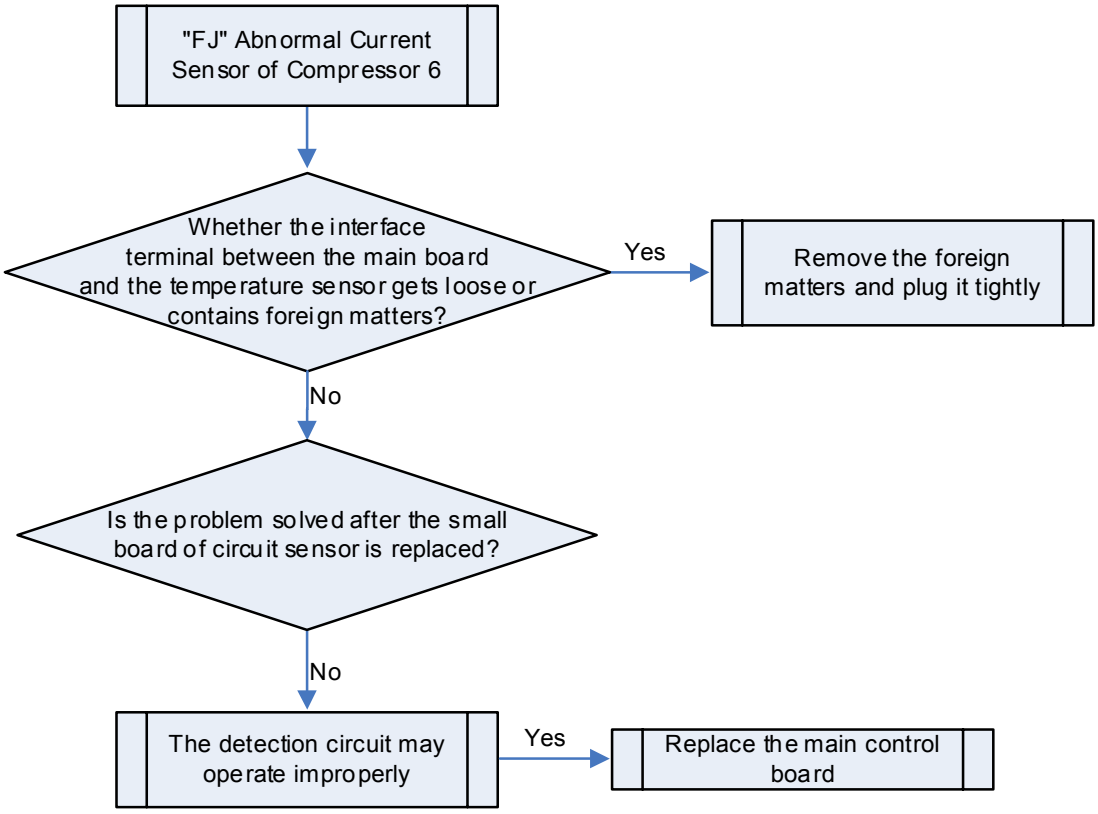
Possible causes:

■ Poor contact between the circuit sensor and the main board interface;

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.76 "FU" Shell Roof Temperature Sensor Fault of Compressor 1

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

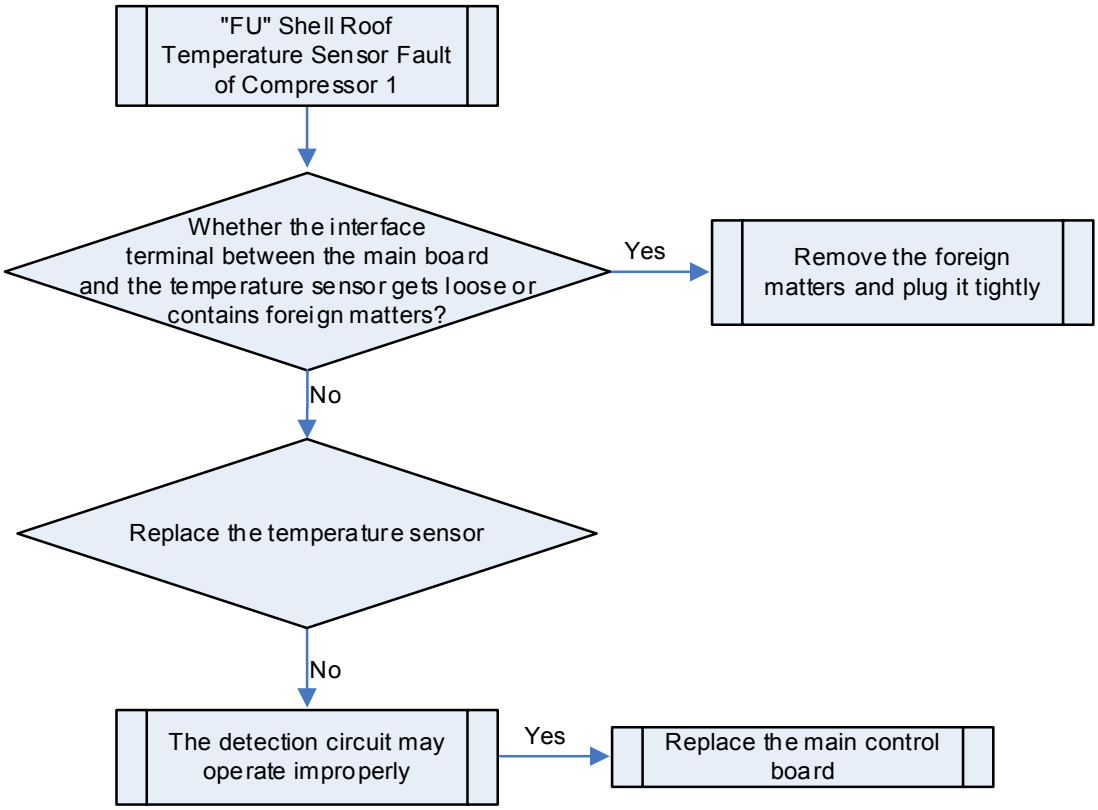
Possible causes:

■ Poor contact between the shell roof temperature sensor and the main board interface;

■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.77 "Fb" Shell Roof Temperature Sensor Fault of Compressor 2

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The temperature sensor detection circuit samples the AD value of temperature sensor and determines the range of AD value. When the sampled AD value exceeds the limits for 30 consecutive seconds, the fault is generated.

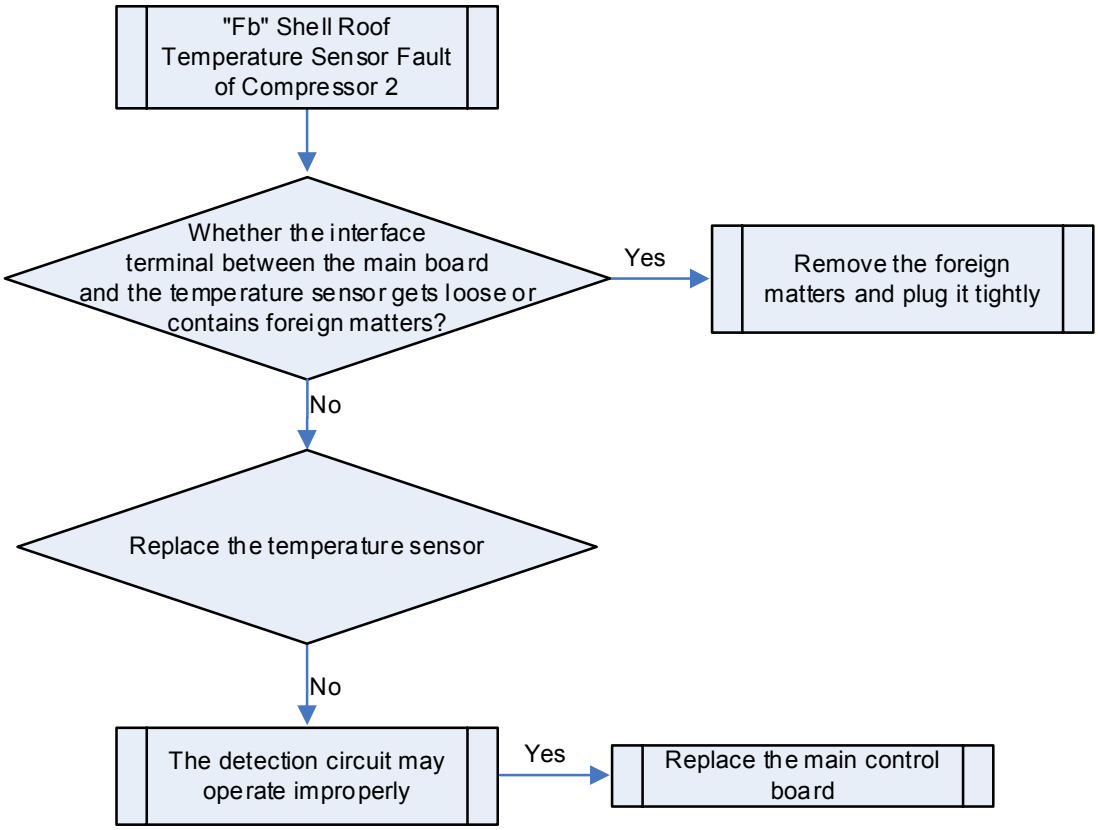
Possible causes:

■ Poor contact between the shell roof temperature sensor and the main board interface;

■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.78 "H0" Fan Drive Board Fault

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

Check the fault code displayed on the wired controller of the indoor unit. If the wired controller displays HO, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the fan drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Fan drive module reset protection (2-digit digital LED of the main control board of the outdoor unit displays H3);

■ Temperature sensor fault of fan drive (2-digit digital LED of the main control board of the outdoor unit displays H7);

■ IPM over temperature protection for the fan drive (2-digit digital LED of the main control board of the outdoor unit displays H8);

■ Current detection circuit fault of fan drive (2-digit digital LED of the main control board of the outdoor unit displays HC);

■ Charging loop fault of fan drive (2-digit digital LED of the main control board of the outdoor unit displays HF);

■ Loss of synchronization protection for the inverter fan (2-digit digital LED of the main control board of the outdoor unit displays H9);

■ Inverter fan startup failure (2-digit digital LED of the main control board of the outdoor unit displays HJ).

Troubleshooting:

Step 1: Check the fault code displayed on the wired controller of the indoor unit.

Step 2: Check the fault code displayed on the 2-digit digital LED of the outdoor unit at the same time.

Step 3: Troubleshoot according to the fault code displayed on the 2-digit digital LED of the outdoor unit (troubleshooting procedures may vary depending on the fault).

2.79 "H1" Abnormal Fan Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

Check the fault code displayed on the wired controller of the indoor unit. If the wired controller displays H1, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the fan drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ IPM module protection for the fan drive (2-digit digital LED of the main control board of the outdoor

unit displays H6);

■ Inverter fan over-current protection (2-digit digital LED of the main control board of the outdoor unit displays H5);

■ Communication fault of fan drive (2-digit digital LED of the main control board of the outdoor unit displays C3).

Troubleshooting:

Step 1: Check the fault code displayed on the wired controller of the indoor unit.

Step 2: Check the fault code displayed on the 2-digit digital LED of the outdoor unit at the same time.

Step 3: Troubleshoot according to the fault code displayed on the 2-digit digital LED of the outdoor unit (troubleshooting procedures may vary depending on the fault).

2.80 "H2" Power Voltage Protection for the Fan Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

Check the fault code displayed on the wired controller of the indoor unit. If the wired controller displays H2, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the fan drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Over voltage protection for the DC bus of fan drive (2-digit digital LED of the main control board of the outdoor unit displays HH);

■ Under voltage protection for the DC bus of fan drive (2-digit digital LED of the main control board of the outdoor unit displays HL).

Troubleshooting:

Step 1: Check the fault code displayed on the wired controller of the indoor unit.

Step 2: Check the fault code displayed on the 2-digit digital LED of the outdoor unit at the same time.

Step 3: Troubleshoot according to the fault code displayed on the 2-digit digital LED of the outdoor unit (troubleshooting procedures may vary depending on the fault).

2.81 "H3" Reset Protection for the Fan Drive Module

Fault display: wired controller of indoor unit displays 

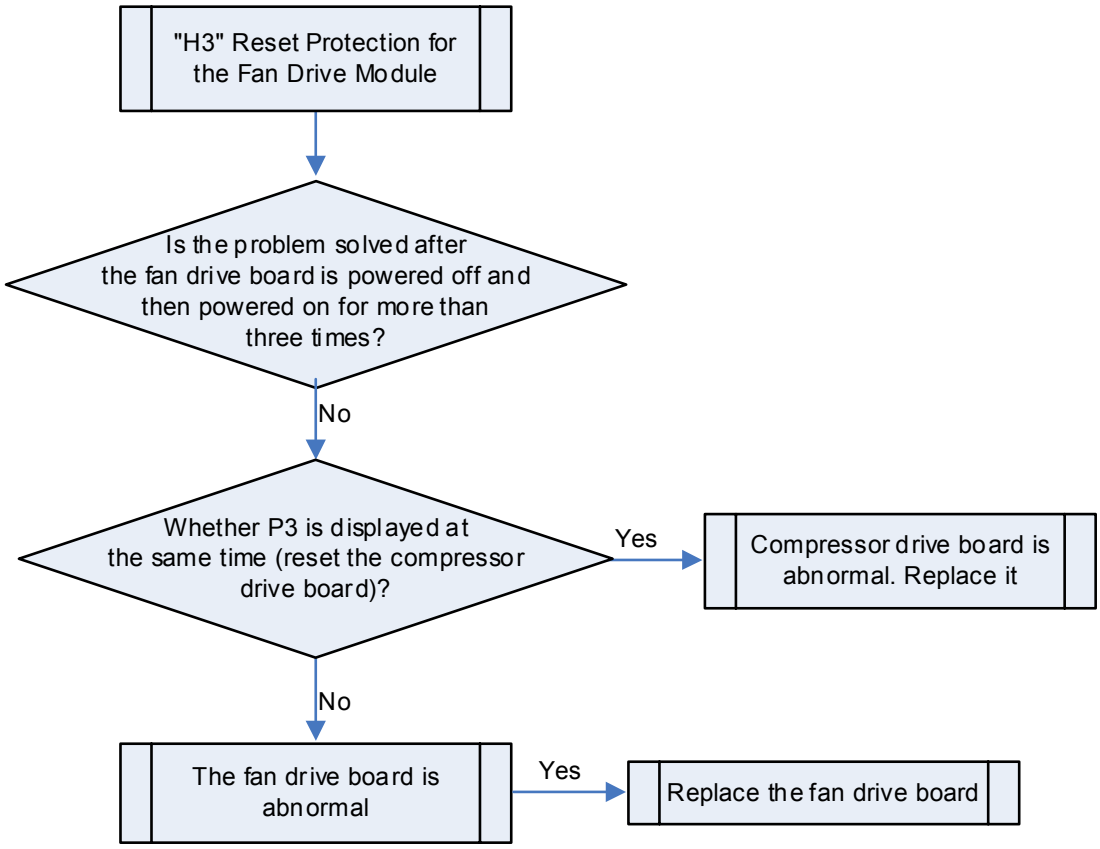
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is H3, it indicates the reset protection for the fan drive board.

Possible causes:

■ The fan drive board operates improperly

Troubleshooting:



2.82 "H5" Inverter Fan Over-current Protection

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is H5, it indicates the over-current protection for the inverter fan.

Possible causes:

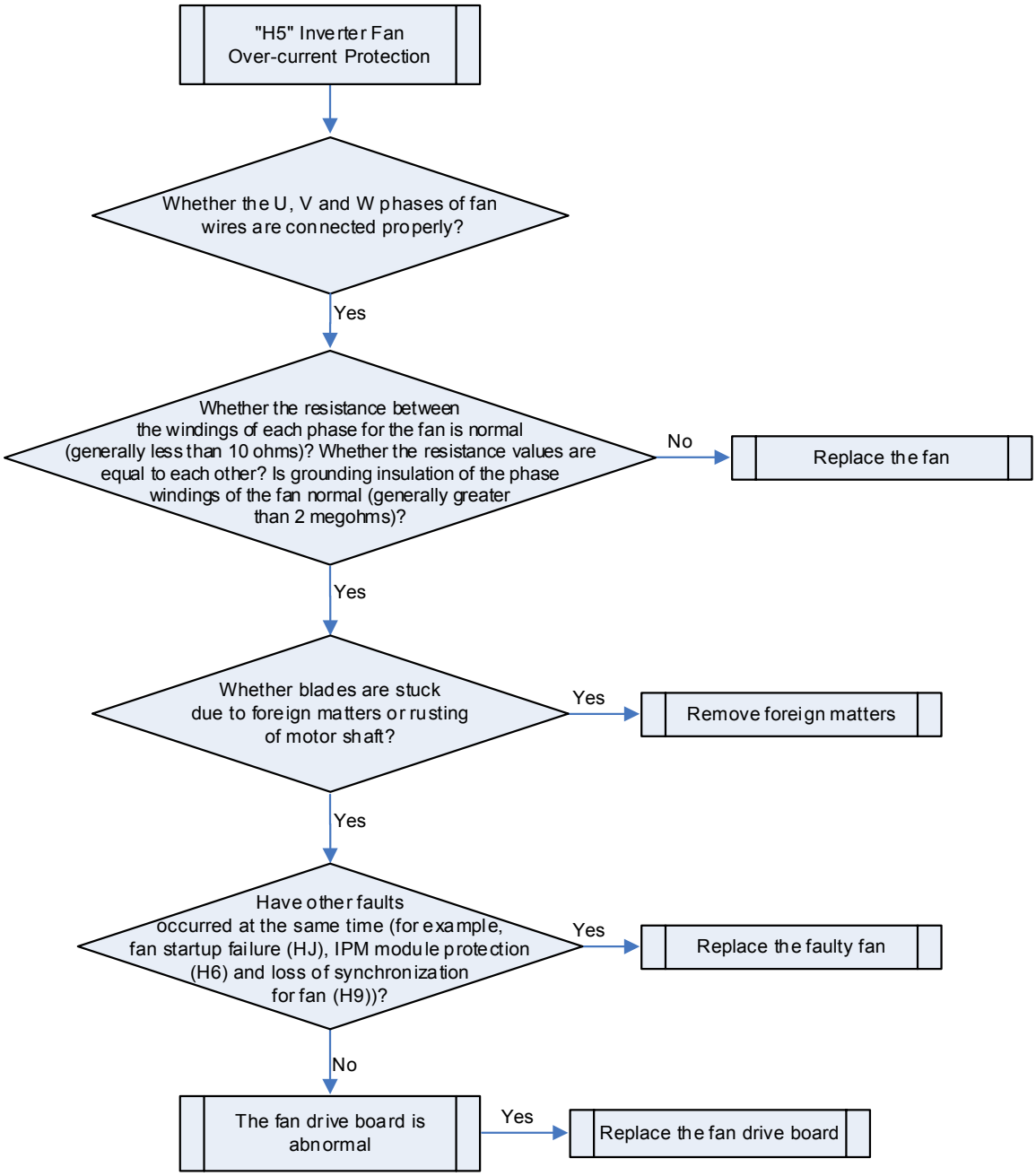
■ Poor contact of fan's UVW cables;

■ The fan is damaged;

■ The blades are stuck (the blades are blocked or the motor shaft gets rusty);

■ The fan drive board operates improperly.

Troubleshooting:



2.83 "H6" IPM Module Protection for Fan Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is H6, it indicates the IPM module protection for the fan drive.

Possible causes:

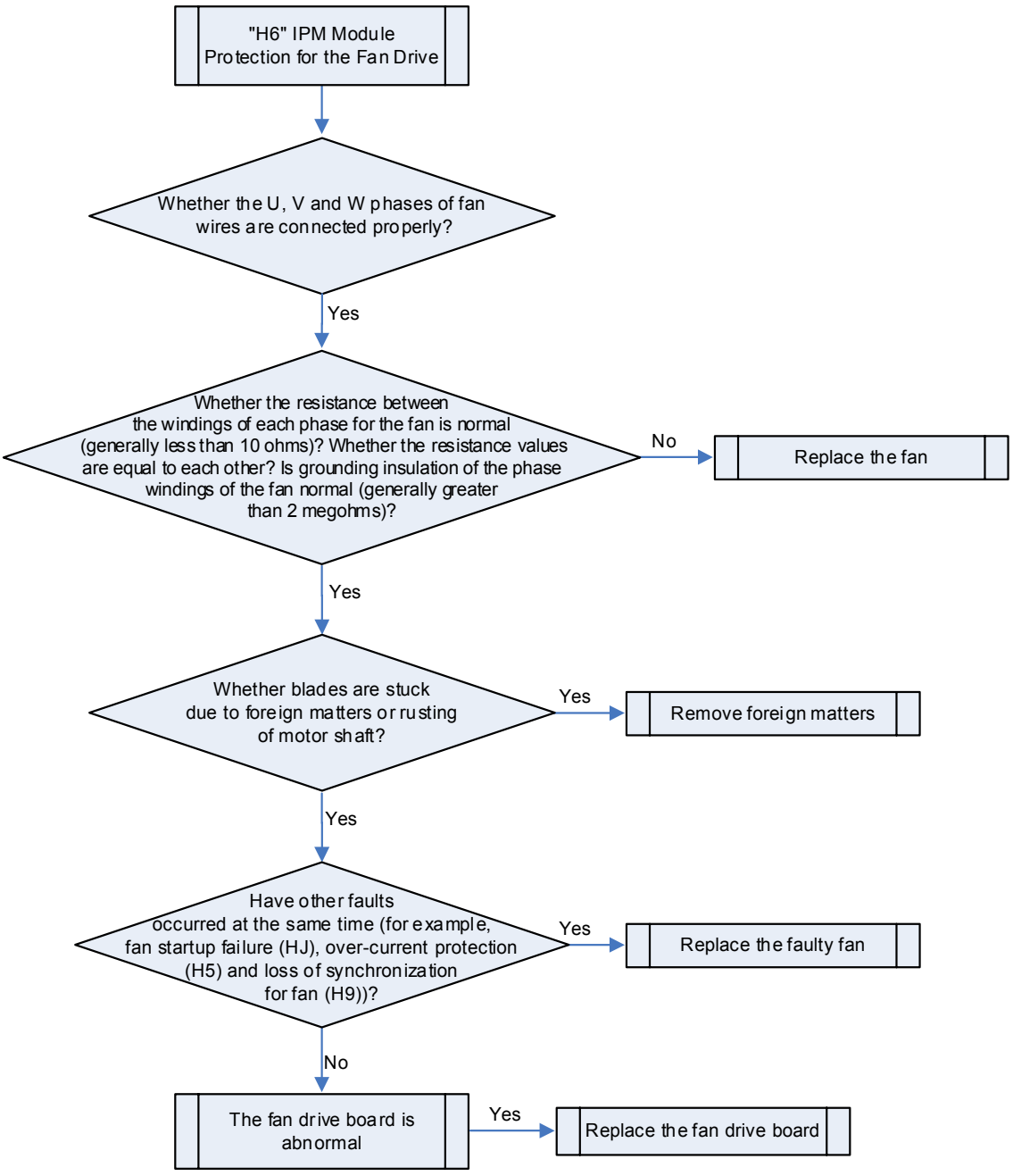
■ Poor contact of fan's UVW cables;

■ The fan is damaged;

■ The blades are stuck (the blades are blocked or the motor shaft gets rusty);

■ The fan drive board operates improperly.

Troubleshooting:



2.84 "H7" Temperature Sensor Fault of Fan Drive

Fault display: main board of outdoor unit displays 

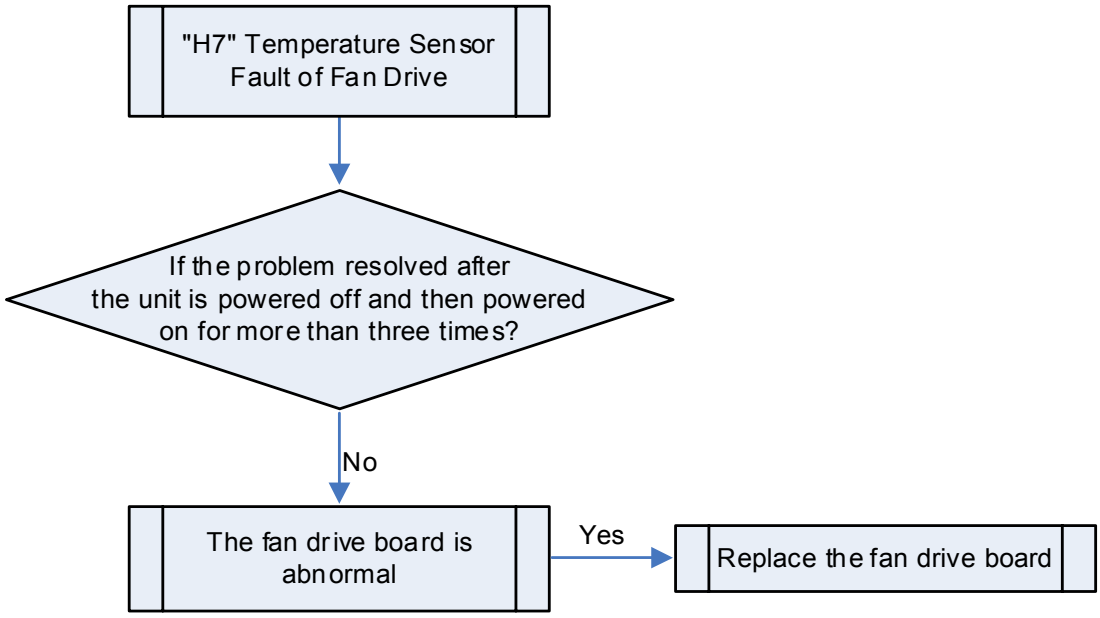
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is H7, it indicates the temperature sensor fault for the fan drive.

Possible causes:

■ The fan drive board operates improperly.

Troubleshooting:



2.85 "H8" IPM Over Temperature Protection for Fan Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is H8, it indicates the IPM over temperature protection for the fan drive.

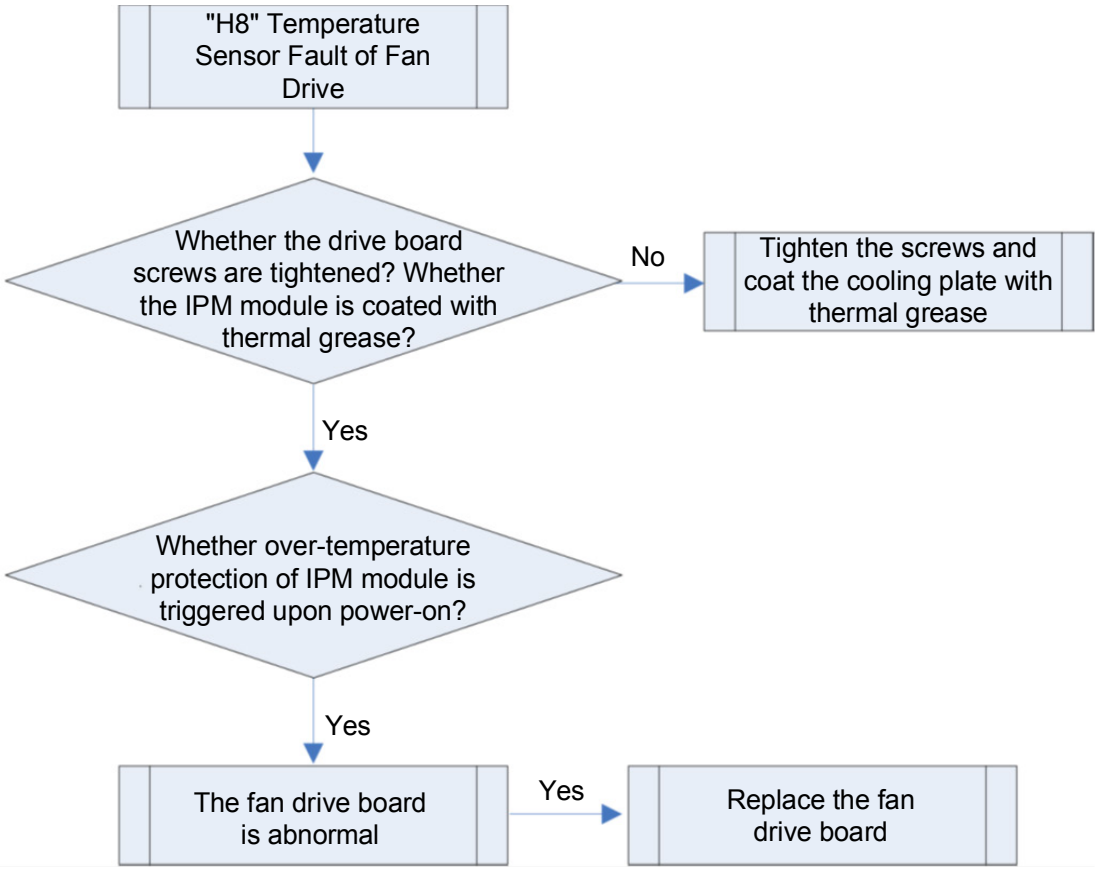
Possible causes:

■ The IPM module is not covered, or unevenly covered by thermal grease, or covered by dried thermal grease;

■ The IPM module's screws are not tightened;

■ The fan drive board operates improperly.

Troubleshooting:



2.86 "H9" Loss of Synchronization Protection for Inverter Fan

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is H9, it indicates the loss of synchronization protection for the inverter fan.

Possible causes:

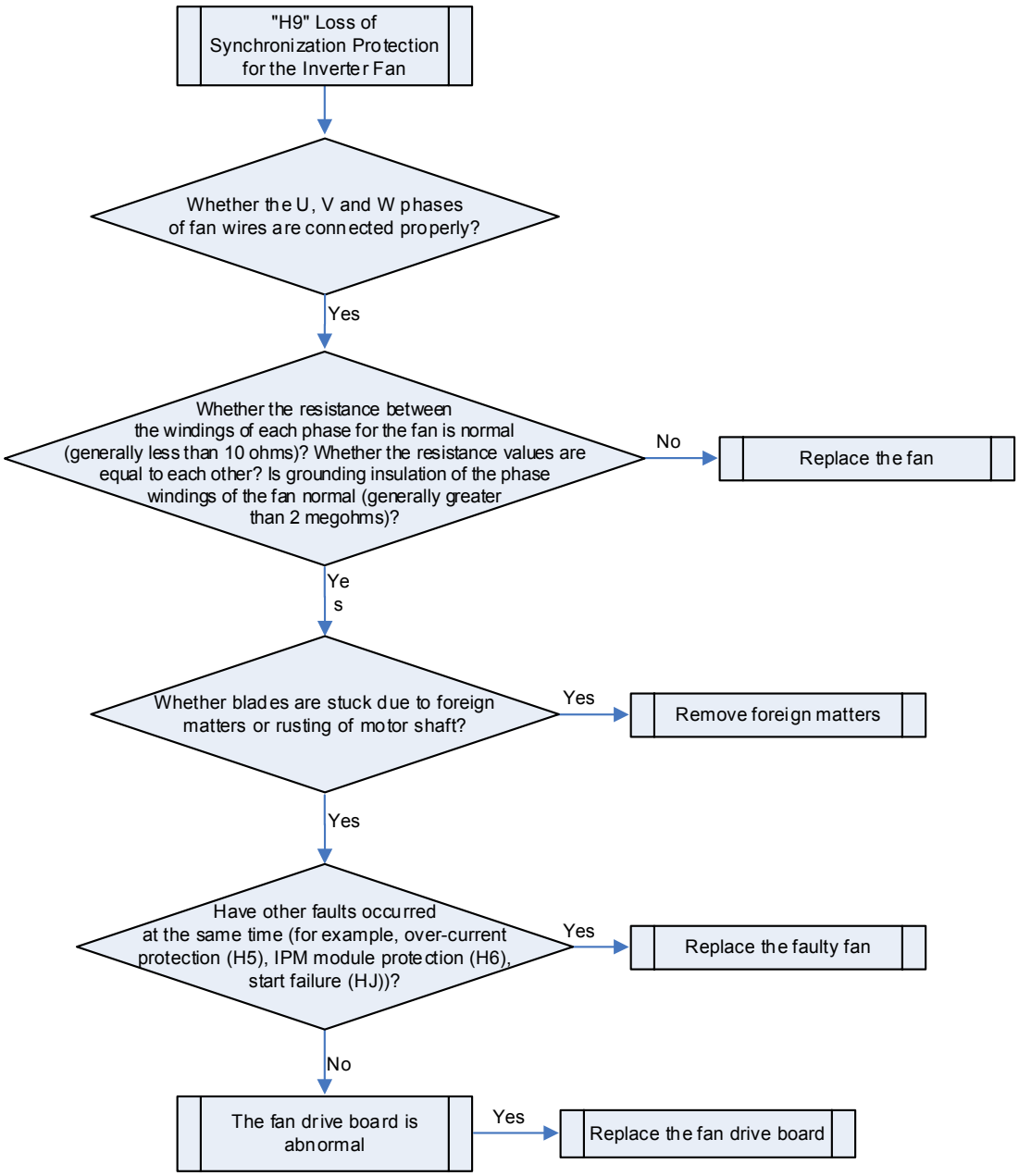
■ Poor contact of fan's UVW cables;

■ The fan is damaged;

■ The blades are stuck (the blades are blocked or the motor shaft gets rusty);

■ The fan drive board operates improperly.

Troubleshooting:



2.87 "HC" Current Detection Circuit Fault of Fan Drive

Fault display: main board of outdoor unit displays 

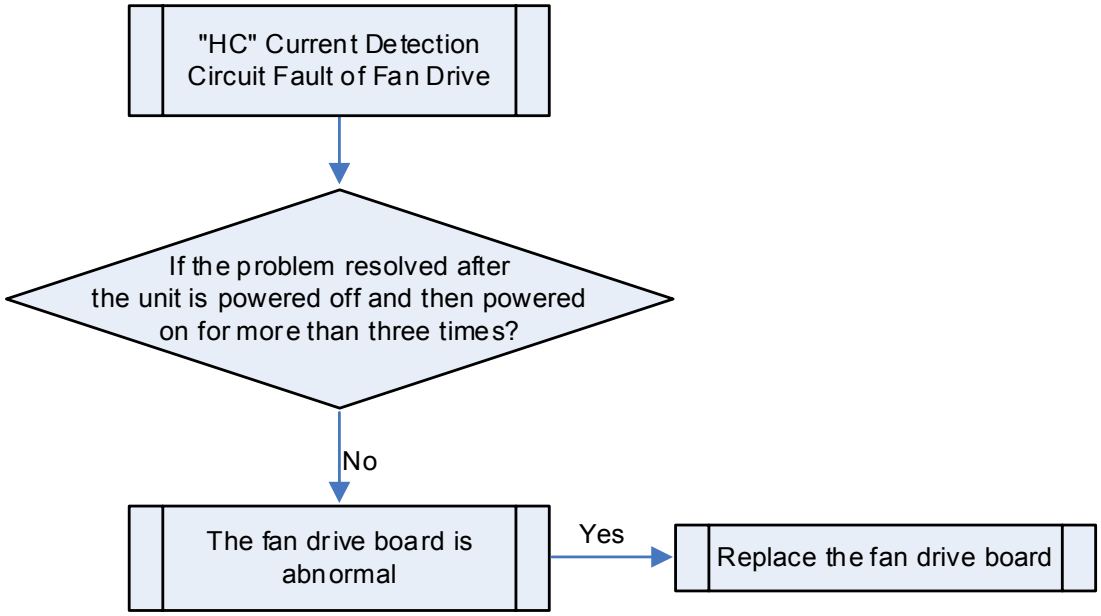
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HC, it indicates the current detection circuit fault of fan drive.

Possible causes:

■ The fan drive board operates improperly.

Troubleshooting:



2.88 "HH" Over Voltage Protection for DC Bus of Fan Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

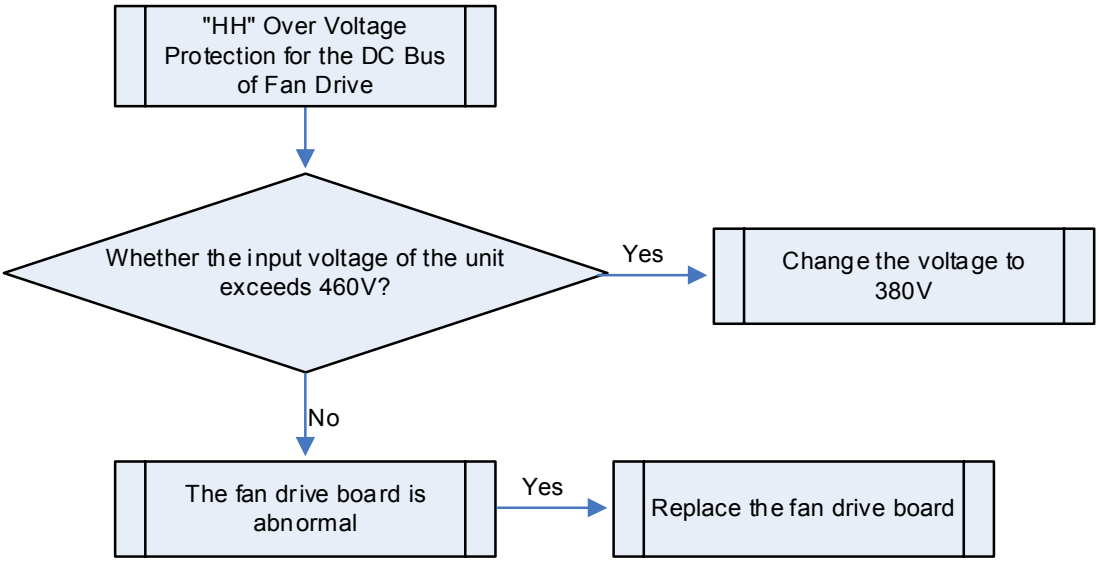
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HH, it indicates the over voltage protection for the DC bus of fan drive.

Possible causes:

■ The unit's input power cable has a voltage exceeding 460V;

■ The fan drive board operates improperly.

Troubleshooting:



2.89 "HL" Under Voltage Protection for DC Bus of Fan Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

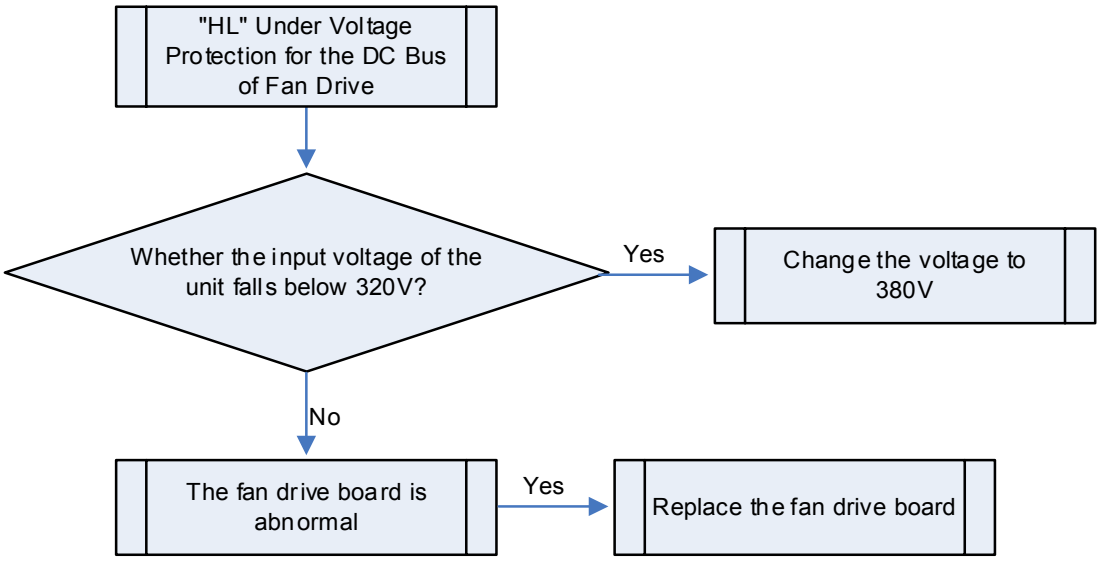
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HL, it indicates the under voltage protection for the DC bus of fan drive.

Possible causes:

■ The unit's input power cable has a voltage below 320 V;

■ The fan drive board operates improperly.

Troubleshooting:



2.90 "HJ" Inverter Fan Startup Failure

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HJ, it indicates the inverter fan startup failure.

Possible causes:

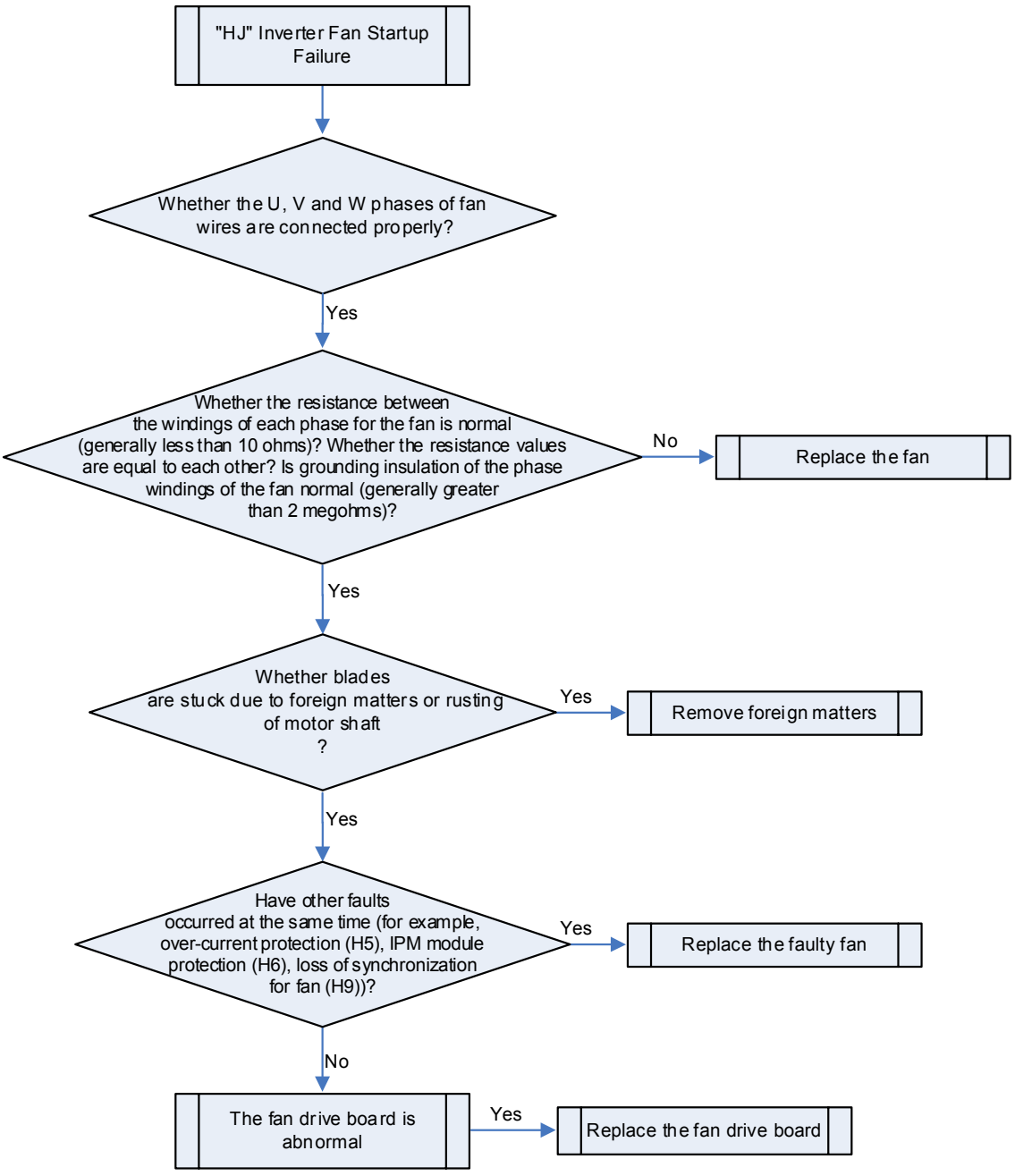
■ Poor contact of fan's UVW cables;

■ The fan is damaged;

■ The blades are stuck (the blades are blocked or the motor shaft gets rusty);

■ The fan drive board operates improperly.

Troubleshooting:



2.91 "J0" Protection for Other Modules

Fault display: main board of outdoor unit displays  while the indoor unit and receiver of indoor unit do not.

Applicable models: GMV6, GMV5, GMV5S, TOPS, GMV water Series

Fault diagnosis:

In a multi-module system, the fault of any module will cause any other properly operating modules to display the fault code. It indicates that some other module has a fault, thereby causing the shutdown of the unit to ensure safe operation.

Possible causes:

■ Other modules have faults, thereby causing the unit to stop operation.

Troubleshooting:

Troubleshoot other modules.

2.92 "J1" Compressor 1 Over-current Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

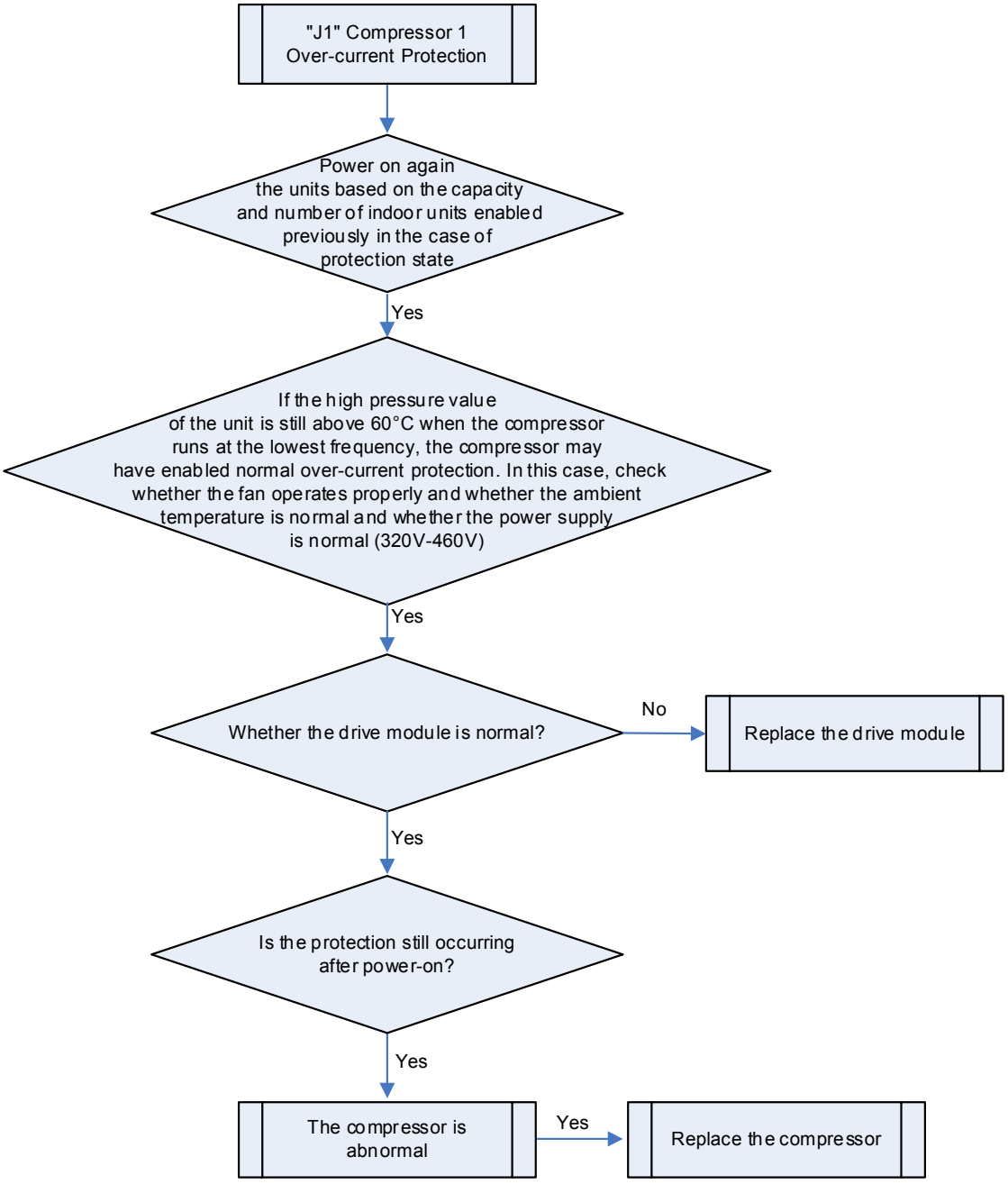
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:


"J1" Compressor 1 Over-current Protection
Power on again the units based on the capacity and number of indoor units enabled previously in the case of protection state
Yes
If the high pressure value of the unit is still above 60°C when the compressor runs at the lowest frequency, the compressor may have enabled normal over-current protection. In this case, check whether the fan operates properly and whether the ambient temperature is normal and whether the power supply is normal (320V-460V)
Yes
Whether the drive module is normal?
No
Replace the drive module
Yes
Is the protection still occurring after power-on?
Yes
The compressor is abnormal
Yes
Replace the compressor

2.93 "J2" Compressor 2 Over-current Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

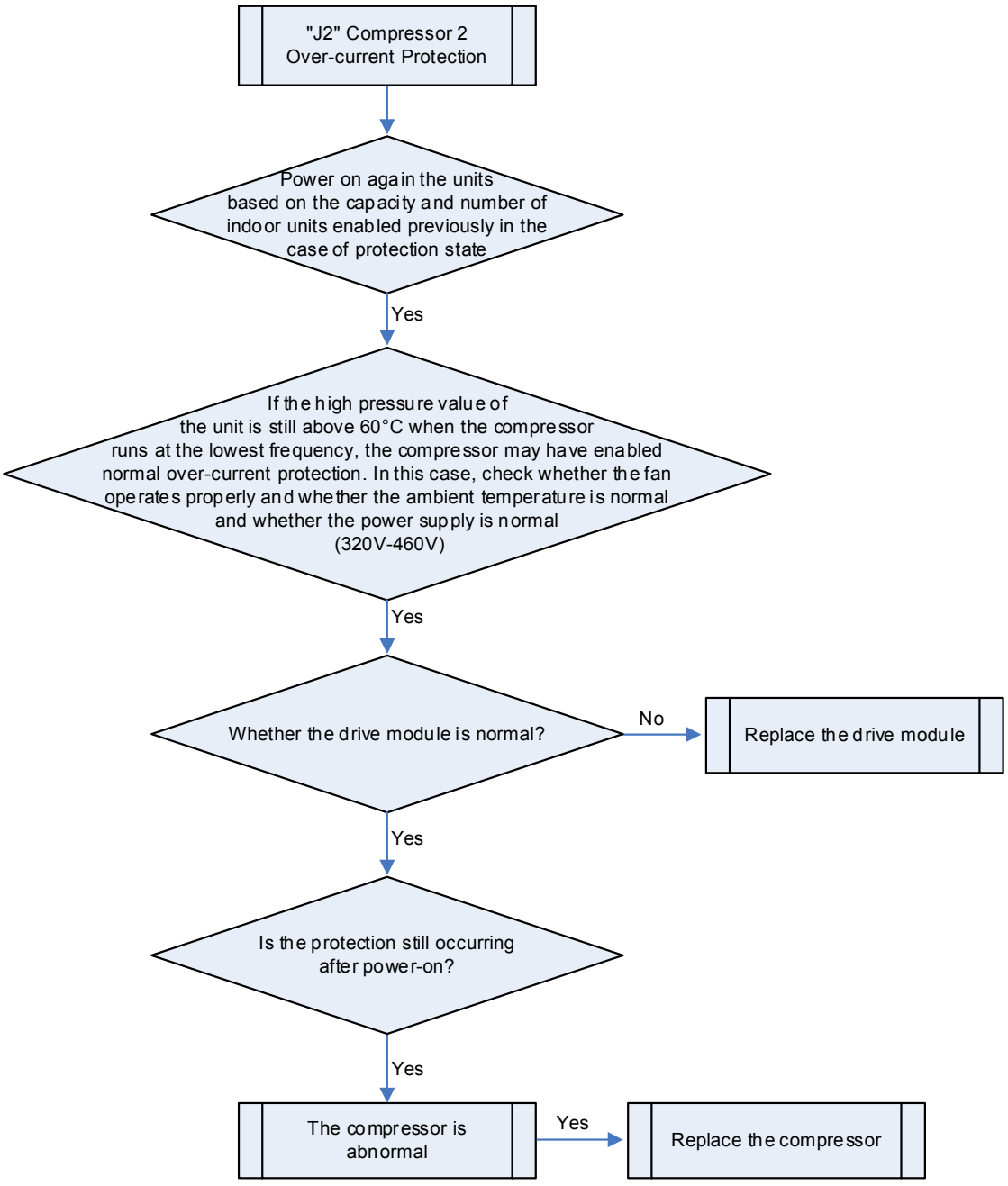
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.94 "J3" Compressor 3 Over-current Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

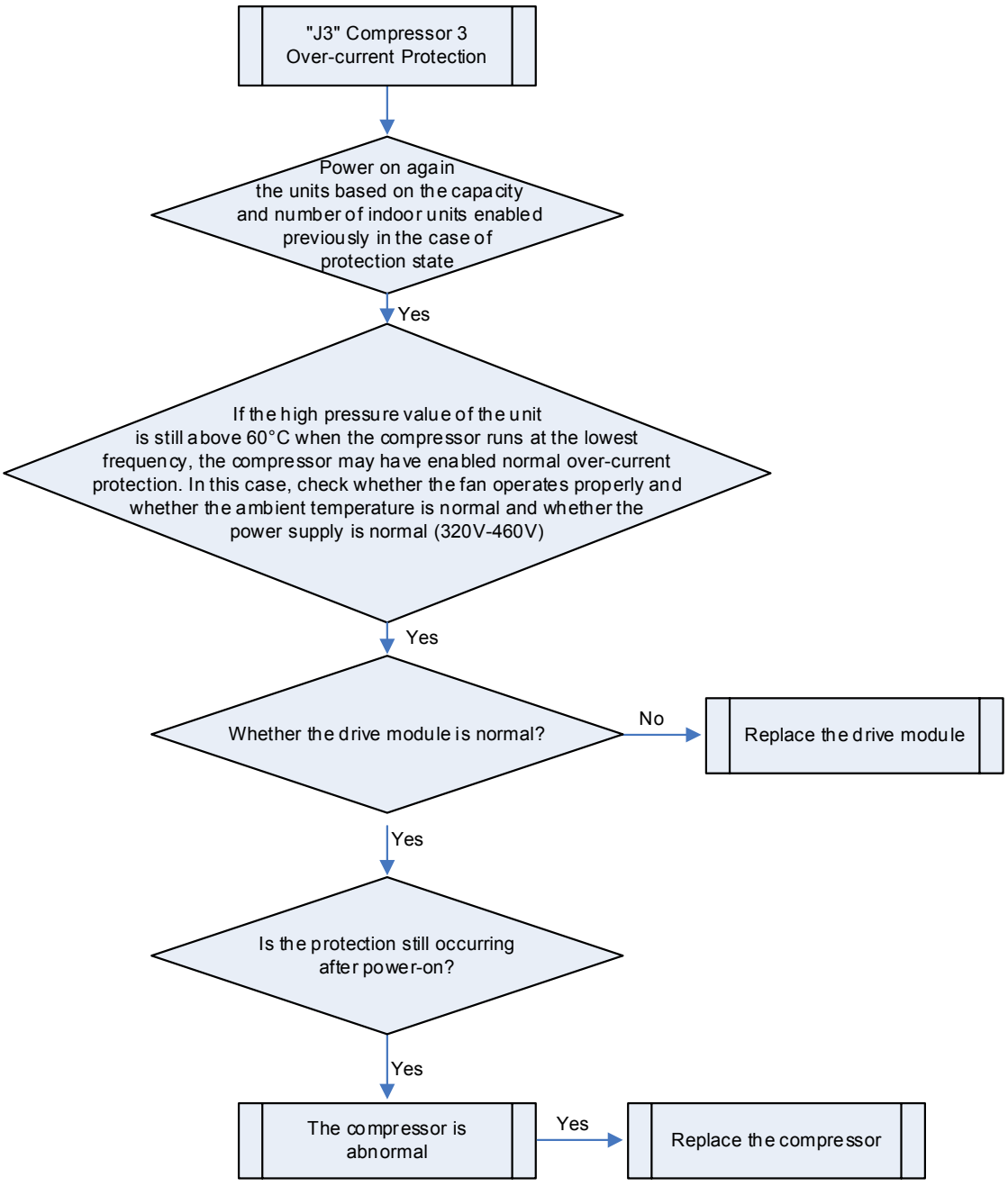
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.95 "J4" Compressor 4 Over-current Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

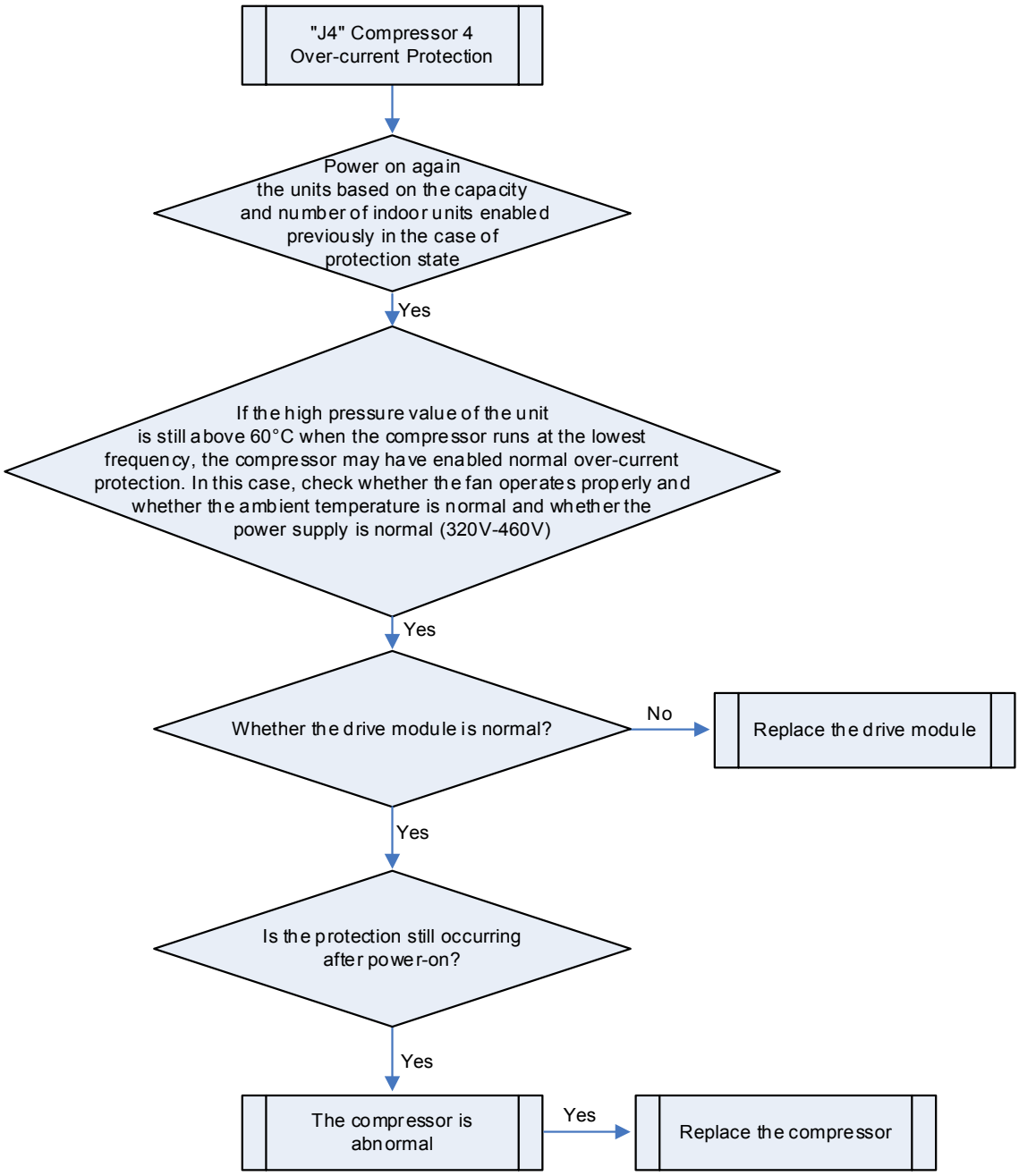
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.96 "J5" Compressor 5 Over-current Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

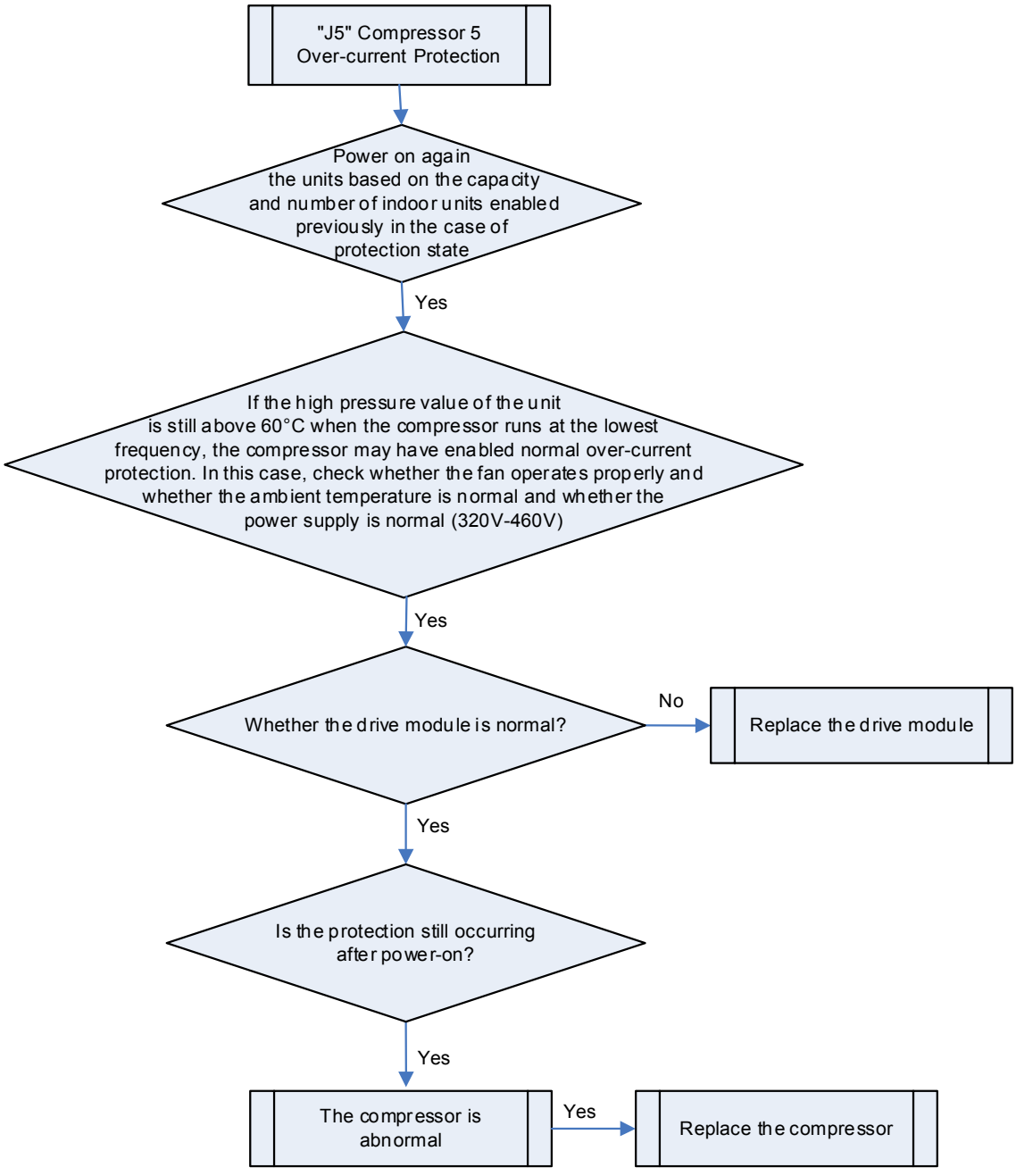
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.97 "J6" Compressor 6 Over-current Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

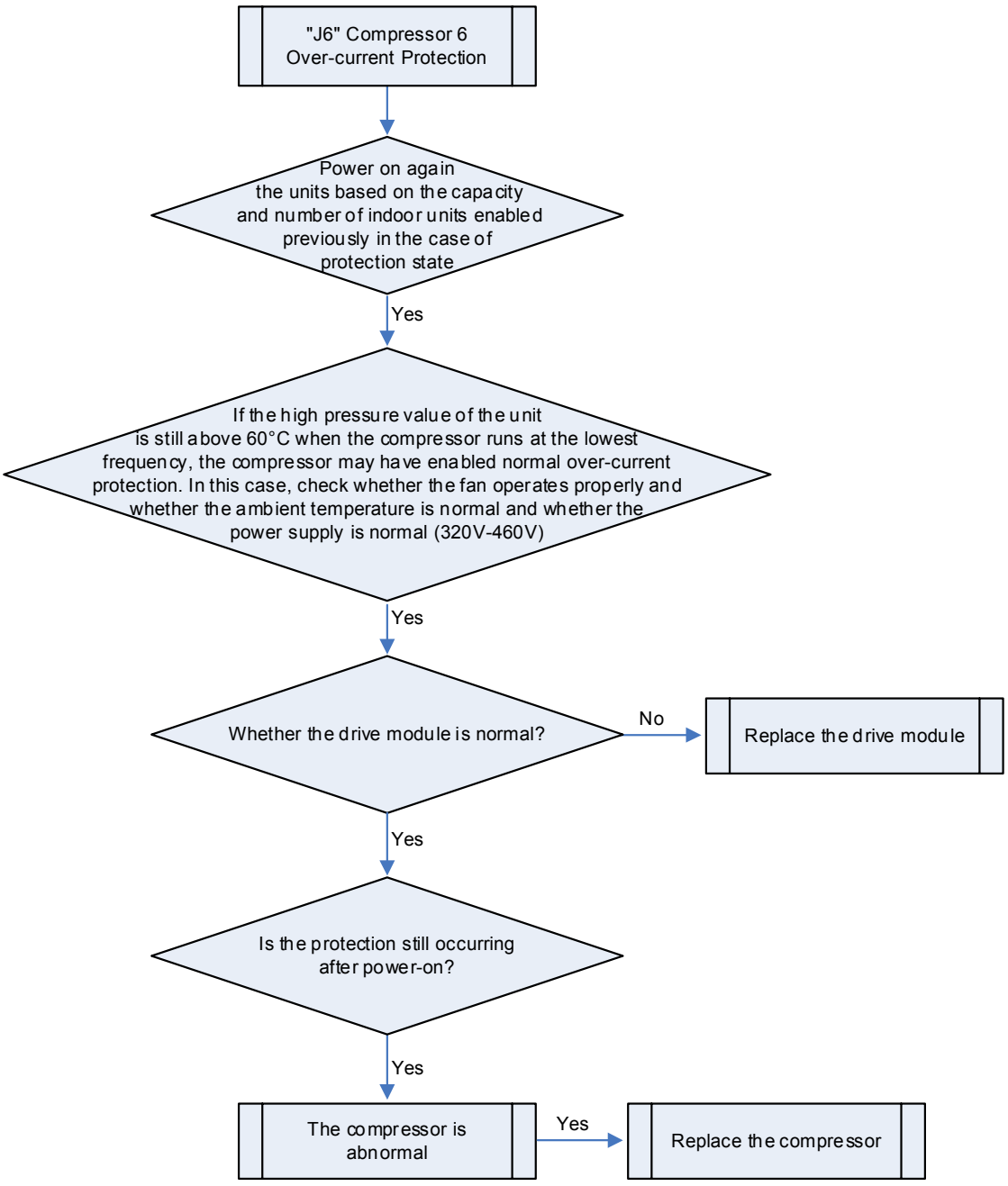
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.98 "J7" Four-way Valve Air Backflow Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the difference between the system high pressure and low pressure during operation detected by the pressure sensor is less than 0.1 MPa, the unit will stop running to ensure safe operation.

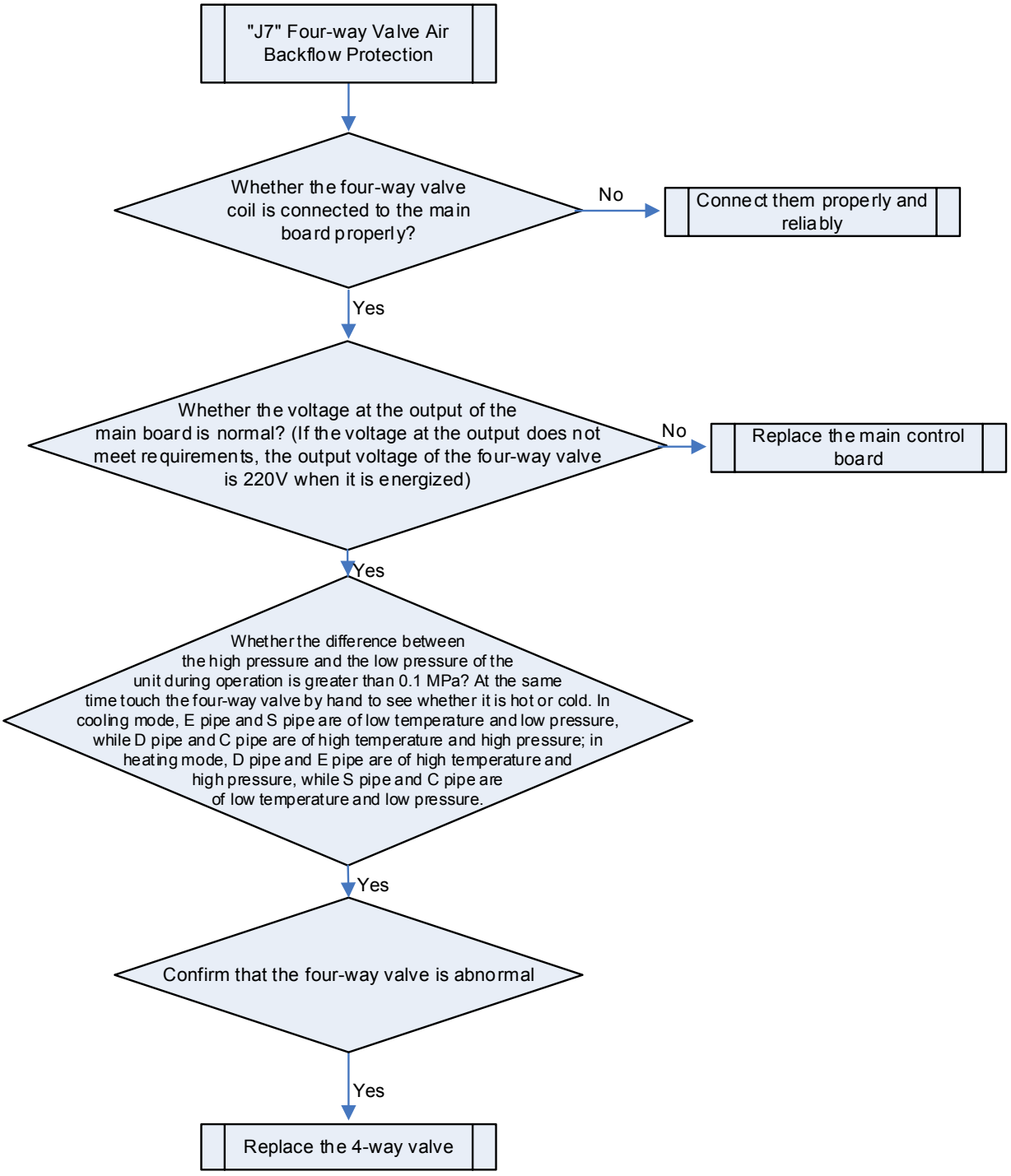
Possible causes:

■ The coil or connecting wire is abnormal;

■ The main board is abnormal;

■ The four-way valve is abnormal.

Troubleshooting:


"J7" Four-way Valve Air Backflow Protection
Whether the four-way valve coil is connected to the main board properly?
No
Connect them properly and reliably
Yes
Whether the voltage at the output of the main board is normal? (If the voltage at the output does not meet requirements, the output voltage of the four-way valve is 220V when it is energized)
No
Replace the main control board
Yes
Whether the difference between the high pressure and the low pressure of the unit during operation is greater than 0.1 MPa? At the same time touch the four-way valve by hand to see whether it is hot or cold. In cooling mode, E pipe and S pipe are of low temperature and low pressure, while D pipe and C pipe are of high temperature and high pressure; in heating mode, D pipe and E pipe are of high temperature and high pressure, while S pipe and C pipe are of low temperature and low pressure.
Yes
Confirm that the four-way valve is abnormal
Yes
Replace the 4-way valve

2.99 "J8" High Pressure Ratio Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

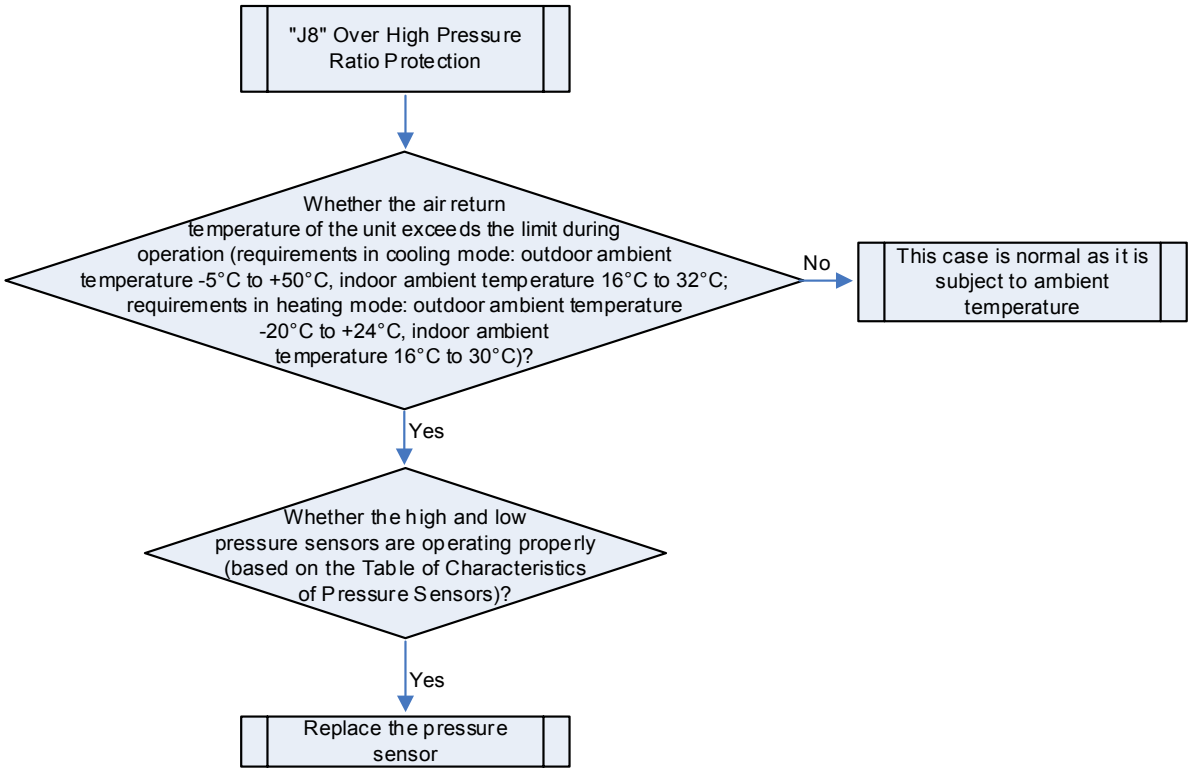
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor exceeds 8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

■ The ambient temperature where the unit operates exceeds the limit.

Troubleshooting:



2.100 "J9" Low Pressure Ratio Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

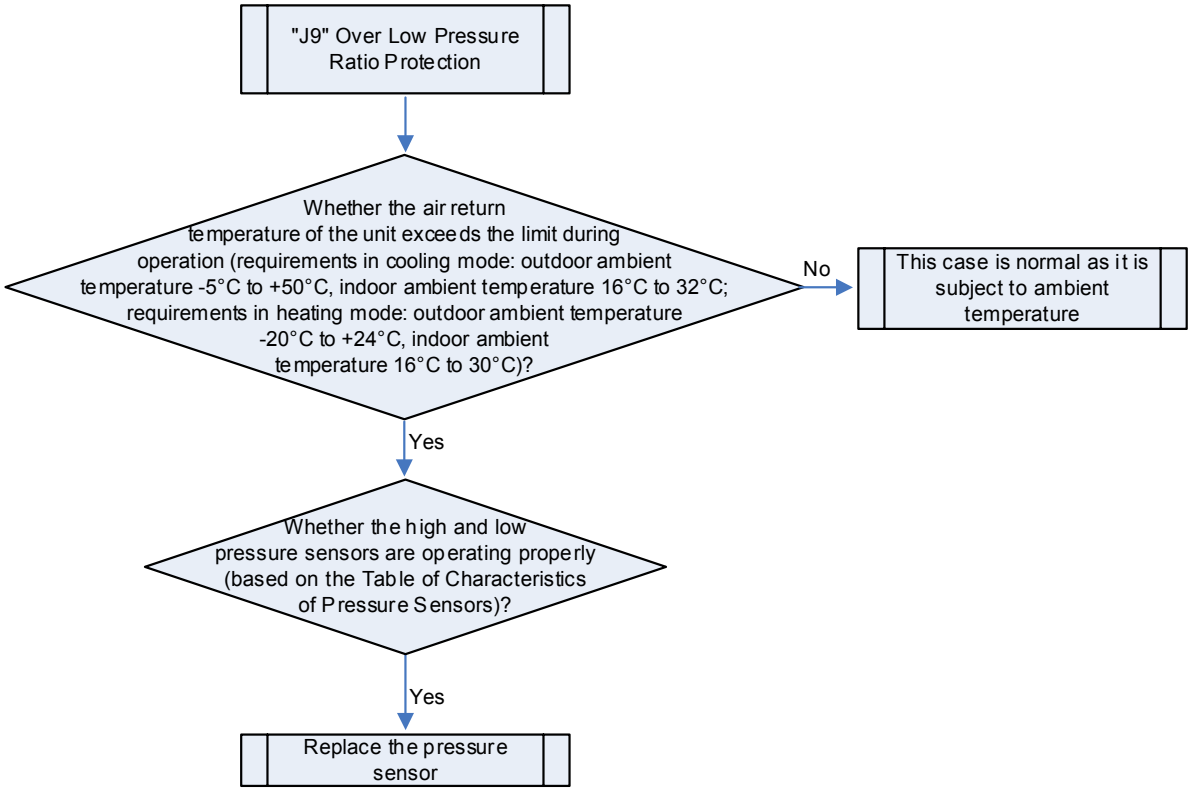
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor is smaller than 1.8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

■ The ambient temperature where the unit operates exceeds the limit.

Troubleshooting:



2.101 "L0" Indoor Unit Fault (Unified)

Fault display: wired controller of indoor unit displays 

Applicable models: all indoor units

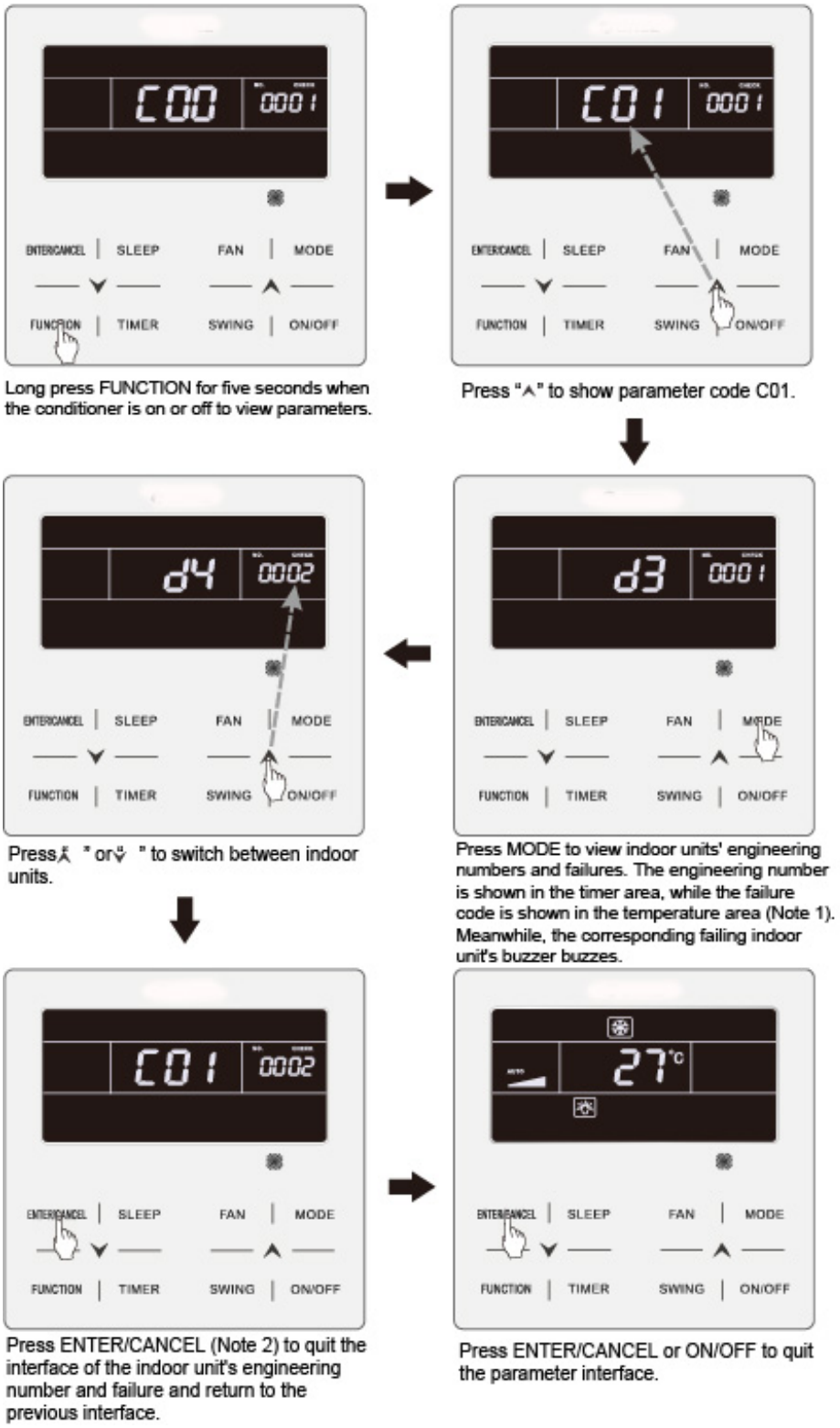
Possible causes:

■ The indoor unit is faulty.

Troubleshooting:

When multiple indoor units are installed in the same place, you can use the function of "indoor unit engineering SN query and fault indoor unit identification" to fast locate the faulty indoor unit or the corresponding indoor unit controlled by a wired controller. The detailed operations are as follows:

"C01" indoor unit engineering SN and fault query:



NOTES!

① If the enquired IDU is normal, no fault code will be displayed in the temperature area; if the unit indoor has multiple faults, fault codes will be displayed in the temperature area at an interval of 3 seconds.

② Press the “ON/OFF” button on the interface of IDU project number and fault enquiry to exist the parameter enquiry interface.

2.102 "L1" Indoor Fan Protection

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

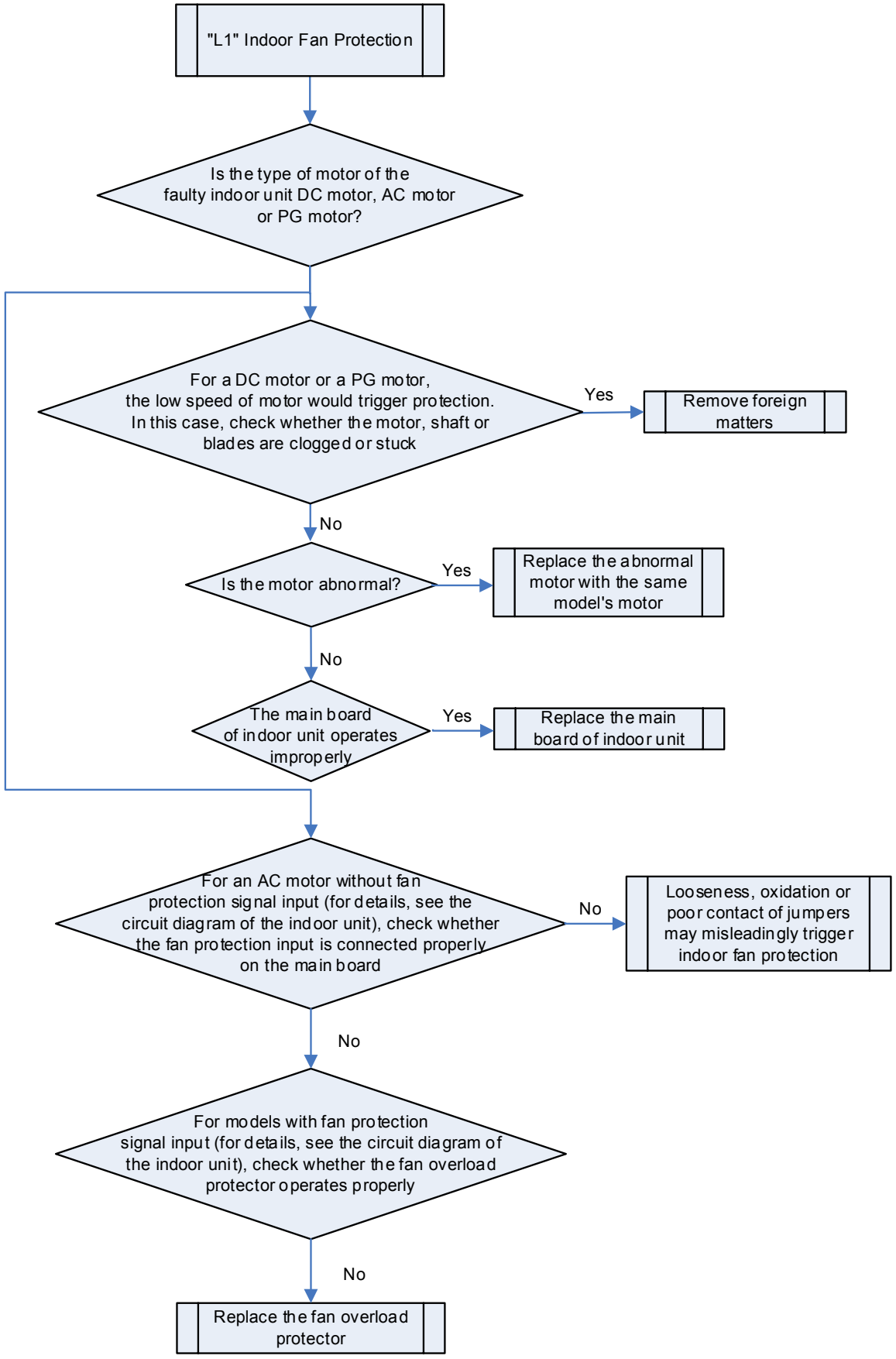
Check whether the indoor unit rotates slowly or stops or whether there exists external fan protection signal. If yes, it indicates the indoor fan protection.

Possible causes:

■ The motor stops or is stuck

■ The main board of indoor unit operates improperly

Troubleshooting:


"L1" Indoor Fan Protection
Is the type of motor of the faulty indoor unit DC motor, AC motor or PG motor?
For a DC motor or a PG motor, the low speed of motor would trigger protection. In this case, check whether the motor, shaft or blades are clogged or stuck
Yes
Remove foreign matters
No
Is the motor abnormal?
Yes
Replace the abnormal motor with the same model's motor
No
The main board of indoor unit operates improperly
Yes
Replace the main board of indoor unit
For an AC motor without fan protection signal input (for details, see the circuit diagram of the indoor unit), check whether the fan protection input is connected properly on the main board
No
Looseness, oxidation or poor contact of jumpers may misleadingly trigger indoor fan protection
No
For models with fan protection signal input (for details, see the circuit diagram of the indoor unit), check whether the fan overload protector operates properly
No
Replace the fan overload protector

2.103 "L2" E-heater Protection (Reserved Code, Not Yet Applied)

2.104 "L3" Overflow Protection

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

When the water level is too high, the float switch of indoor unit will be triggered for overflow protection.

Possible causes:

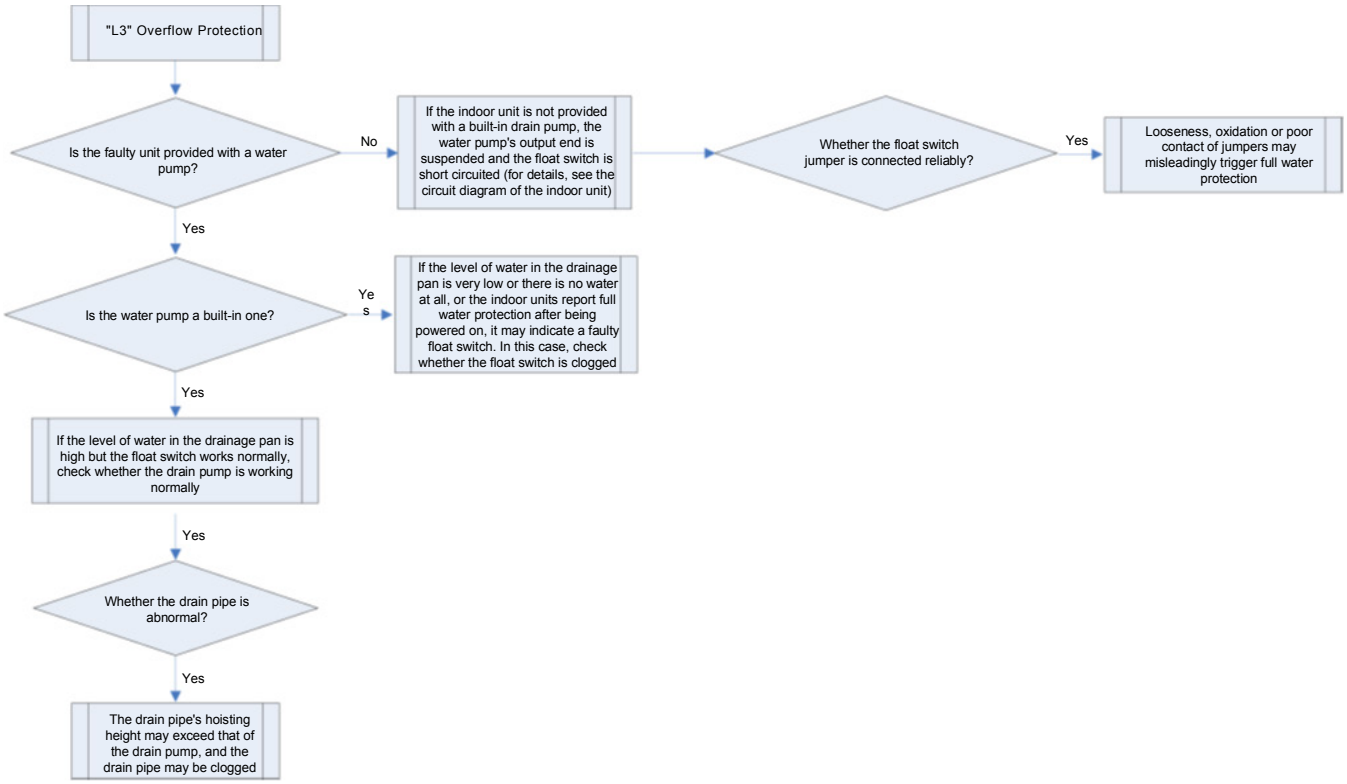
■ The indoor unit is installed improperly;

■ The drain pump is damaged;

■ The float switch operates improperly;

■ The main board of indoor unit operates improperly.

Troubleshooting:



2.105 "L4" Supply Power Over-current Protection

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

When the current supplied to the wired controller by the indoor unit is too large, the fault is generated.

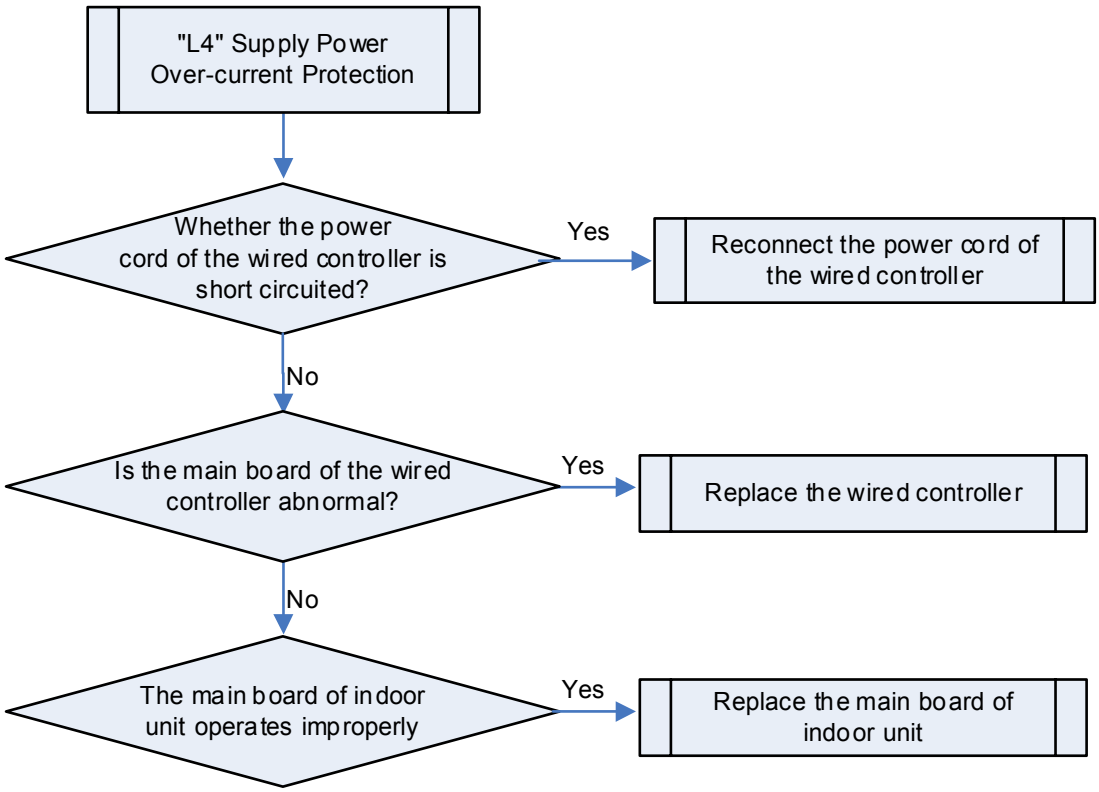
Possible causes:

■ The wires of the wired controller are short circuited;

■ The main board of indoor unit operates improperly;

■ The main board of the wired controller is abnormal.

Troubleshooting:



2.106 "L5" Antifreeze Protection

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

When the pipe temperature of the indoor unit is too low, the unit will trigger antifreeze protection to prevent the evaporator from freezing.

Possible causes:

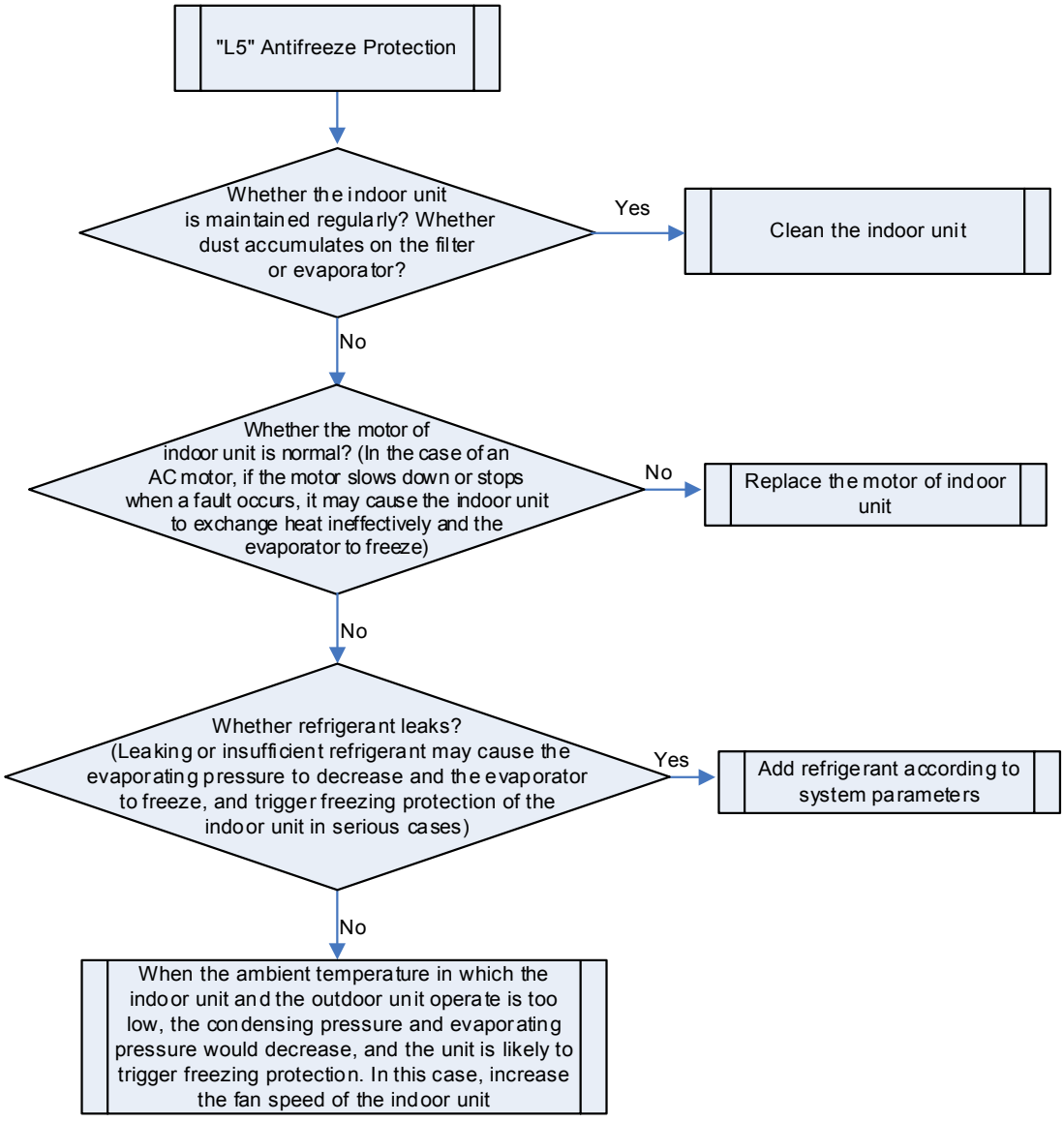
■ The indoor filter and evaporator are dirty;

■ The indoor motor is stuck;

■ Insufficient refrigerant in the unit;

■ The ambient temperature where the indoor unit and outdoor unit operate is too low.

Troubleshooting:



2.107 "L6" Mode Conflict

2.108 "L7" No Master Indoor Unit

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

The unit triggers the "no master indoor unit" fault when no master indoor unit exists in the system.

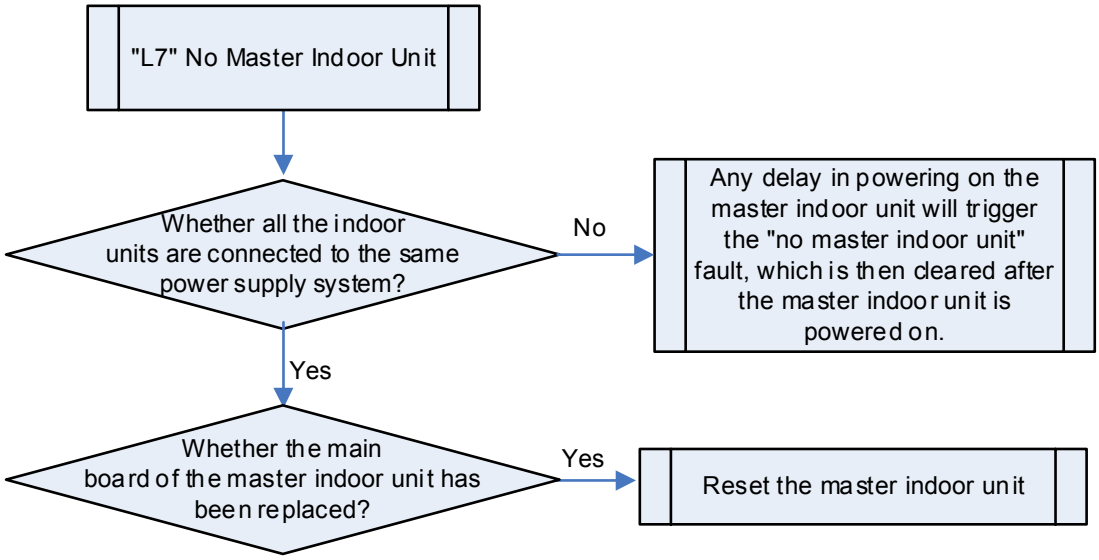
Possible causes:

■ The master indoor unit is disconnected;

■ The main board of the master indoor unit is replaced;

■ The main board of the master indoor unit is faulty.

Troubleshooting:



2.109 "L9" Inconsistent Number of Indoor Units Under Integrated Control

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

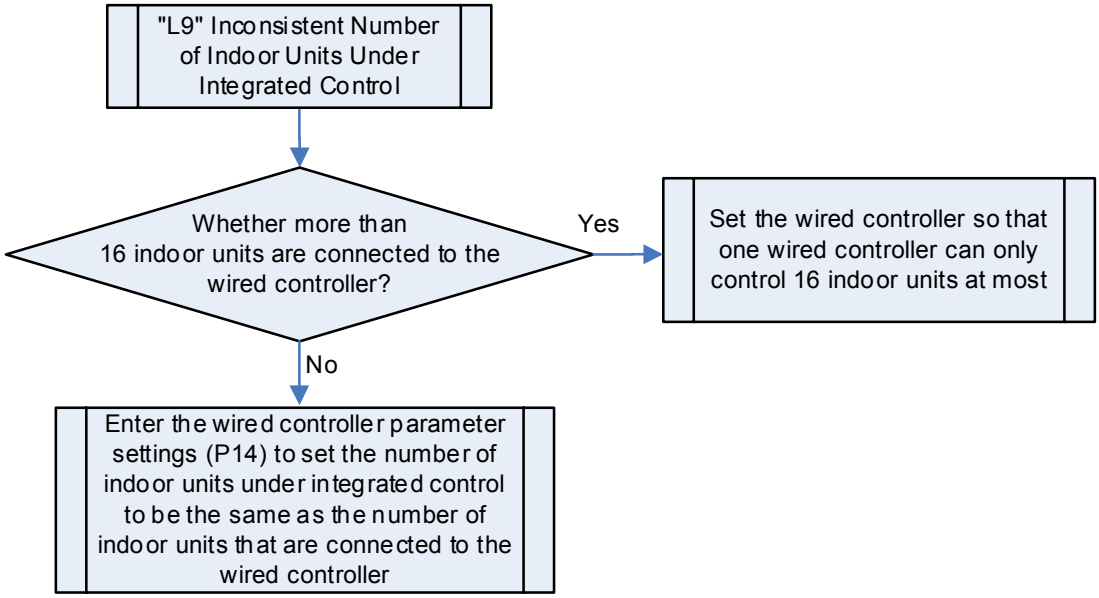
When more than 16 indoor units are connected to the wired controller or the number of indoor units connected to the wired controller is not the same as what is configured under integrated control, the fault is generated.

Possible causes:

■ More than 16 indoor units are connected to one wired controller;

■ The number of indoor units connected to the wired controller is not the same as what is configured under integrated control.

Troubleshooting:



2.110 "LA" Inconsistent Series of Indoor Units Under Integrated Control

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all indoor units

Fault diagnosis:

When the wired controller detects that the multiple indoor units connected to it belong to different series, the fault is generated.

Possible causes:

■ The multiple indoor units connected to the wired controller belong to different series.

Troubleshooting:

Make sure that the multiple indoor units connected to the wired controller belong to the same series.

2.111 "LH" Poor Air Quality Alarm (Reserved Code, Not Yet Applied)

2.112 "LC" Unmatched Models of Indoor and Outdoor Units

Fault display: wired controller of indoor unit and receiver of indoor unit display 

Applicable models: some indoor units

Fault diagnosis:

The unit triggers the fault of "unmatched indoor and outdoor units" when it fails to recognize some indoor units or equipment.

Possible causes:

■ The indoor unit is incompatible with the outdoor unit.

Troubleshooting:

The unit triggers the fault when it is connected to indoor units or equipment that it cannot recognize, such as floor heating in a modular DC inverter VRF system. In this case, to troubleshoot this fault, you can remove the involved indoor units or change the outdoor unit to make it match the indoor units.

2.113 "n0" System Energy Efficiency Running Settings Status

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code of a function. It indicates that the unit has entered energy efficiency state. "00" indicates comfort as priority; "01" indicates energy efficiency as priority, in which case the unit is up to 15% more efficient.

Possible causes: --

Troubleshooting: not required.

2.114 "n2" Settings Status of Maximum Capacity Configuration Rate for Indoor and Outdoor Units

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code of a function. It indicates that the unit has entered settings status of maximum capacity configuration rate for indoor and outdoor units.

Possible causes: --

Troubleshooting: not required.

2.115 "n4" Settings Status of Maximum Output Capacity

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

This is a status code of a function. It indicates that the unit has entered settings status of maximum output capacity. "10" indicates the maximum output capacity of 100%; "09" indicates the maximum output capacity of 90%; and "08" indicates the maximum output capacity of 80%.

Possible causes: --

Troubleshooting: not required.

2.116 "n6" Unit Fault Query Status

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The code is a query status code. It indicates that the unit has entered unit fault query state. In this case, you can query five historical faults of indoor and outdoor units. Keep in mind that you have to query the faults respectively for indoor units and outdoor units.

Possible causes: --

Troubleshooting: not required.

2.117 "n7" Unit Parameter Query Status

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The code is a query status code. It indicates that the unit has entered unit parameter query state.

Possible causes: --

Troubleshooting: not required.

2.118 "n8" Indoor Unit Engineering SN Query

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

The code is a query status code. It indicates that the unit has entered "indoor unit engineering SN query" state. In this case the wired controller displays engineering SN of the indoor unit, the buzzer of which sounds at the same time.

Possible causes: --

Troubleshooting: not required.

2.119 "n9" Status of Querying Number of Online Indoor Units

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code is a query status code, in which case you can query the number of online indoor units.

Possible causes: --

Troubleshooting: not required.

2.120 "nA" Heating and Cooling Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code indicates that the indoor unit operates in both heating and cooling modes.

Possible causes: --

Troubleshooting: not required.

2.121 "nH" Heating Only Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code indicates that the indoor unit only operates in heating mode.

Possible causes: --

Troubleshooting: not required.

2.122 "nC" Cooling Only Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code indicates that the indoor unit only operates in cooling mode.

Possible causes: --

Troubleshooting: not required.

2.123 "nE" Negative Number Code

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code is a negative number code. It indicates that the number following the code is a negative one.

Possible causes: --

Troubleshooting: not required.

2.124 "nF" Fan Type Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code indicates that the indoor unit only operates in fan mode.

Possible causes: --

Troubleshooting: not required.

2.125 "P0" Compressor Drive Board Fault

Fault display: wired controller of indoor unit displays 

Fault diagnosis: If the fault code displayed on the wired controller of the indoor unit is PO, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the compressor drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Compressor drive module reset protection (2-digit digital LED of the main control board of the outdoor unit displays P3);

■ Temperature sensor fault of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays P7);

■ IPM over temperature protection for the compressor drive (2-digit digital LED of the main control board of the outdoor unit displays P8);

■ Current detection circuit fault of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays PC);

■ Charging loop fault of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays PF);

■ Loss of synchronization protection for the inverter compressor (2-digit digital LED of the main control board of the outdoor unit displays P9);

■ Inverter compressor startup failure (2-digit digital LED of the main control board of the outdoor unit displays PJ).

Troubleshooting: based on the faults displayed on the main board of the outdoor unit.

2.126 "P1" Malfunctioning Compressor Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

If the fault code displayed on the wired controller of the indoor unit is P1, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the compressor drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Inverter compressor over-current protection (2-digit digital LED of the main control board of the outdoor unit displays P5);

■ IPM module protection for the compressor drive (2-digit digital LED of the main control board of the outdoor unit displays P6);

■ Communication fault of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays C2).

Troubleshooting: based on the faults displayed on the main board of the outdoor unit.

2.127 "P2" Input Voltage Protection for the Compressor Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

If fault code displayed on the wired controller of the indoor unit is P2, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the compressor drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Over voltage protection for the DC bus of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays PH);

■ Under voltage protection for the DC bus of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays PL).

Troubleshooting: based on the faults displayed on the main board of the outdoor unit.

2.128 "P3" Reset Protection for the Compressor Drive Module

Fault display: main board of outdoor unit displays 

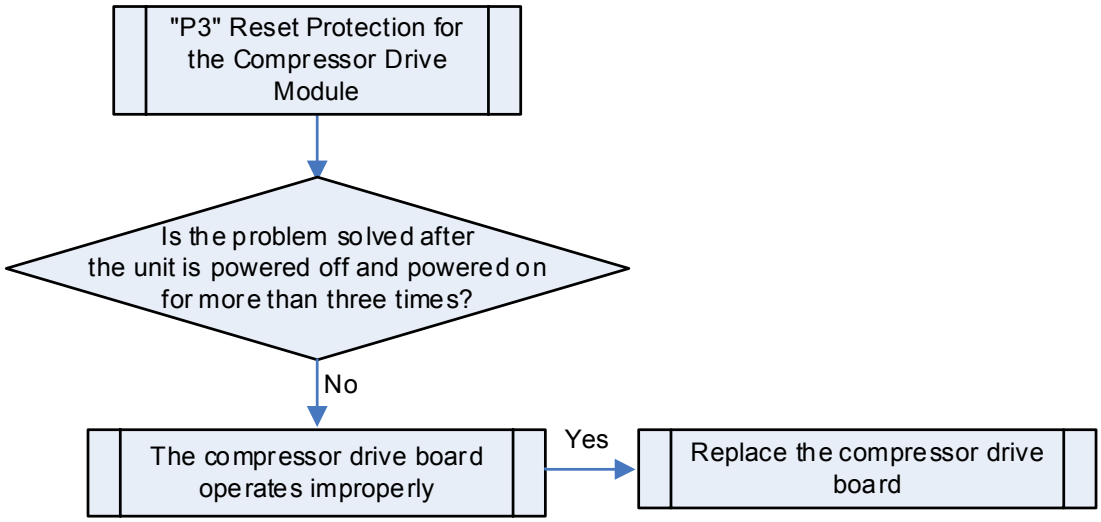
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P3, it indicates the reset protection for the compressor drive board.

Possible causes:

■ The compressor drive operates improperly

Troubleshooting:



2.129 "P5" Inverter Compressor Over-current Protection

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P5, it indicates the over-current protection for the inverter compressor.

Possible causes:

■ Poor contact of compressor's UVW cables;

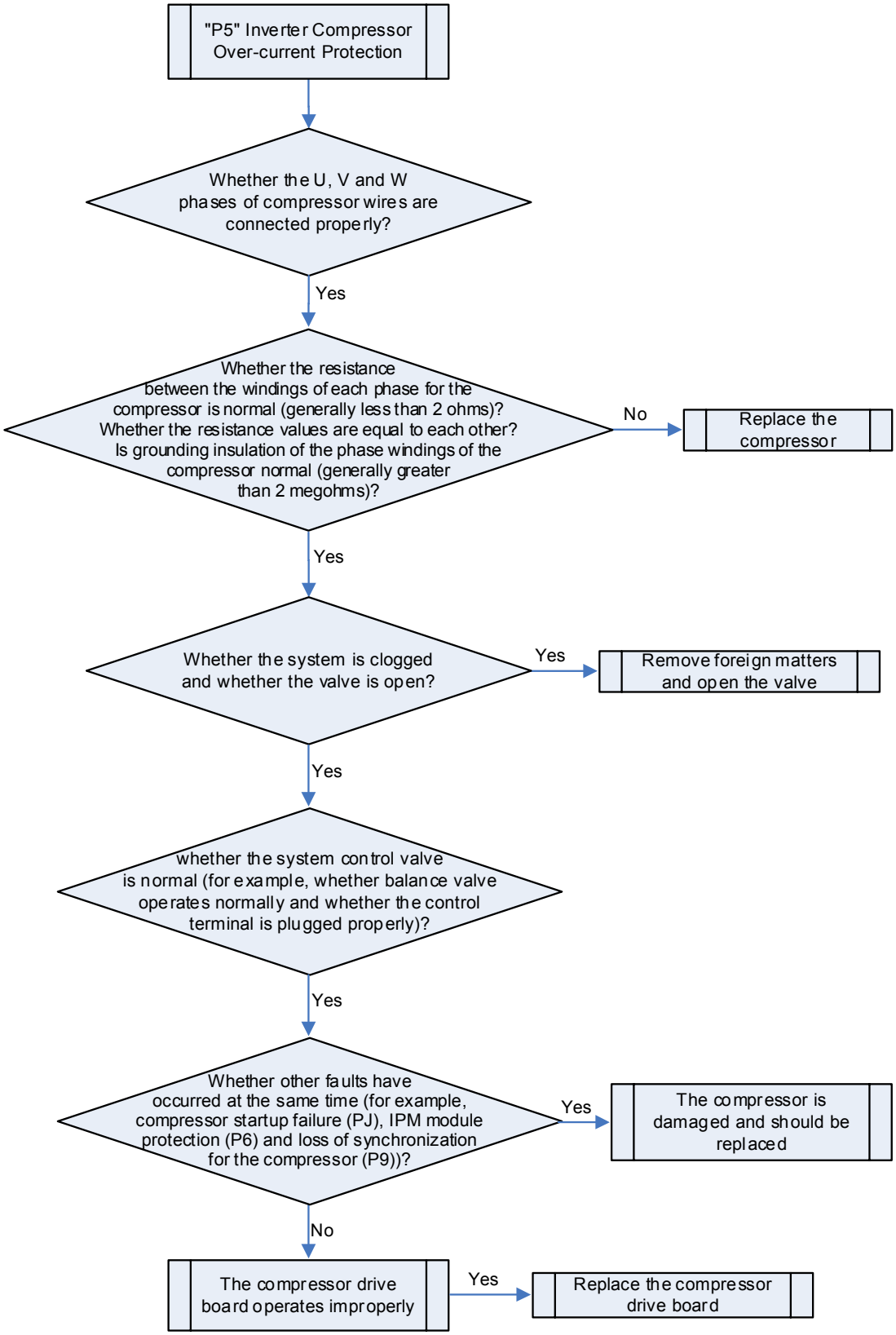
■ The compressor's UVW cables are wrongly connected;

■ The compressor is damaged;

■ The system is blocked;

■ IPM module of the compressor drive board is damaged.

Troubleshooting:


"P5" Inverter Compressor Over-current Protection
Whether the U, V and W phases of compressor wires are connected properly?
Yes
Whether the resistance between the windings of each phase for the compressor is normal (generally less than 2 ohms)? Whether the resistance values are equal to each other? Is grounding insulation of the phase windings of the compressor normal (generally greater than 2 megohms)?
No
Replace the compressor
Yes
Whether the system is clogged and whether the valve is open?
Yes
Remove foreign matters and open the valve
Yes
whether the system control valve is normal (for example, whether balance valve operates normally and whether the control terminal is plugged properly)?
Yes
Whether other faults have occurred at the same time (for example, compressor startup failure (PJ), IPM module protection (P6) and loss of synchronization for the compressor (P9))?
Yes
The compressor is damaged and should be replaced
No
The compressor drive board operates improperly
Yes
Replace the compressor drive board

2.130 "P6" IPM Module Protection for the Compressor Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P6, it indicates the IPM module protection for the compressor drive.

Possible causes:

■ Poor contact of compressor's UVW cables;

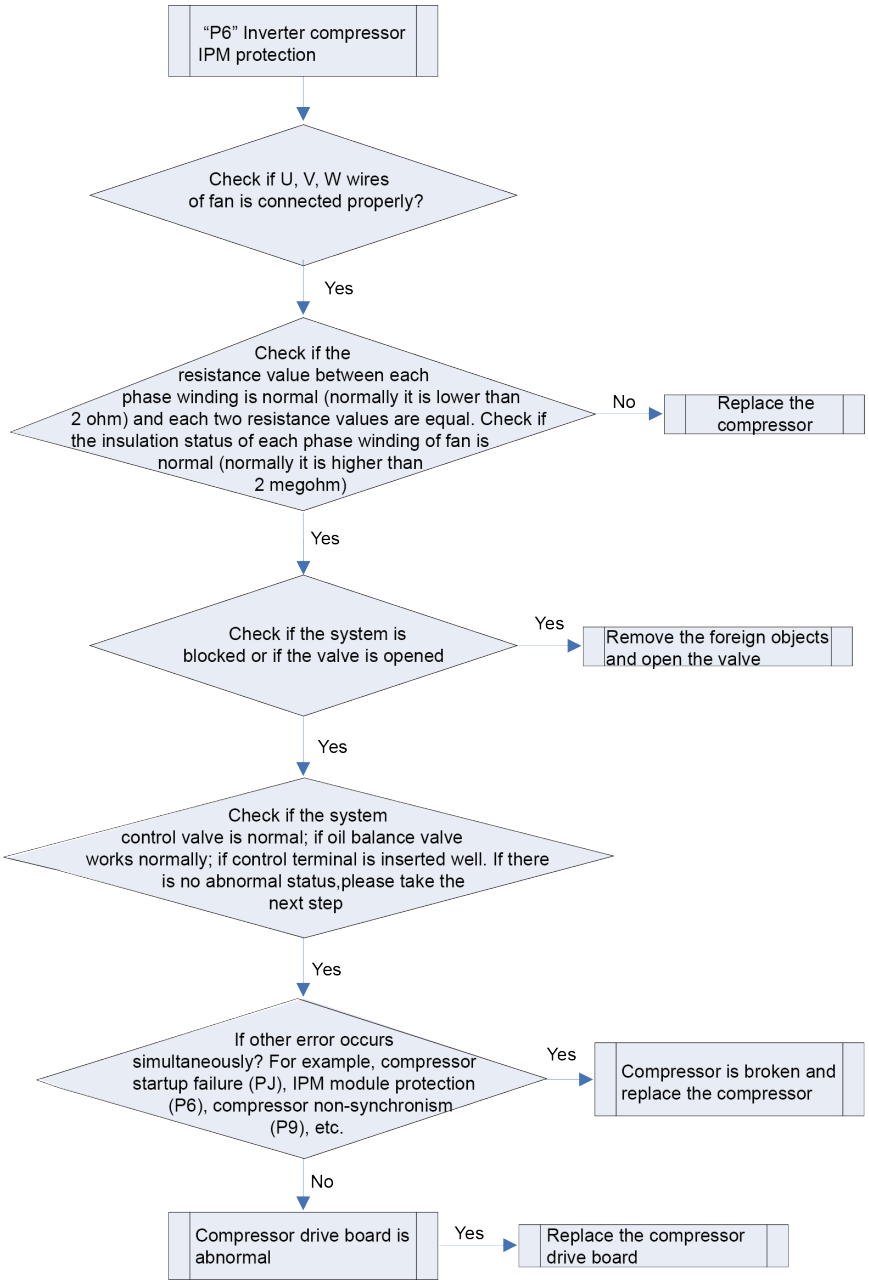
■ The compressor's UVW cables are wrongly connected;

■ The compressor is damaged;

■ The system is blocked;

■ IPM module of the compressor drive board is damaged.

Troubleshooting:



2.131 "P7" Abnormal Temperature Sensor of Compressor Drive Board

Fault display: main board of outdoor unit displays 

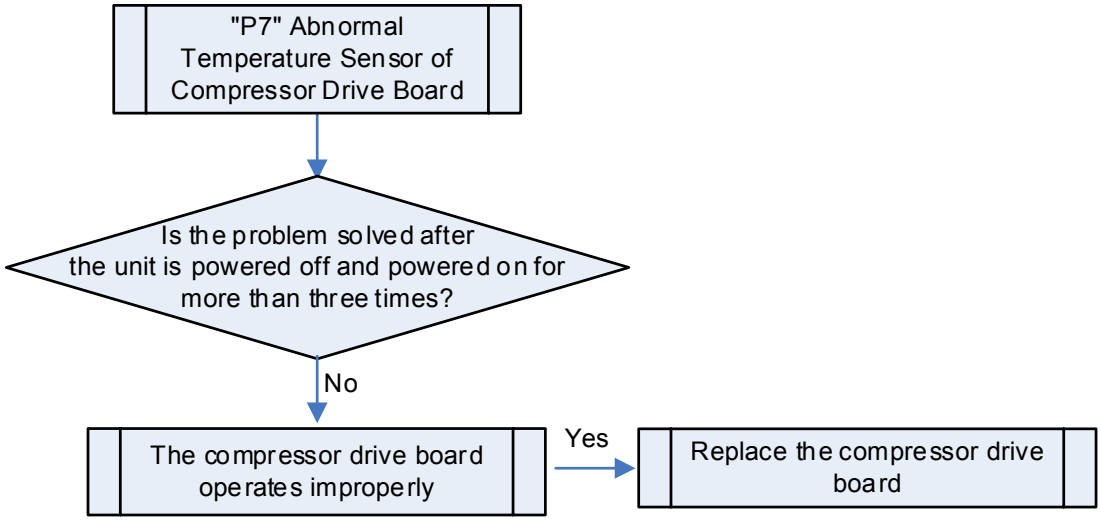
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P7, it indicates the abnormal temperature sensor of compressor drive board.

Possible causes:

■ The compressor drive board operates improperly.

Troubleshooting:



2.132 "P8" IPM Over Temperature Protection for Compressor Drive Board

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P8, it indicates the IPM over temperature protection for the compressor drive.

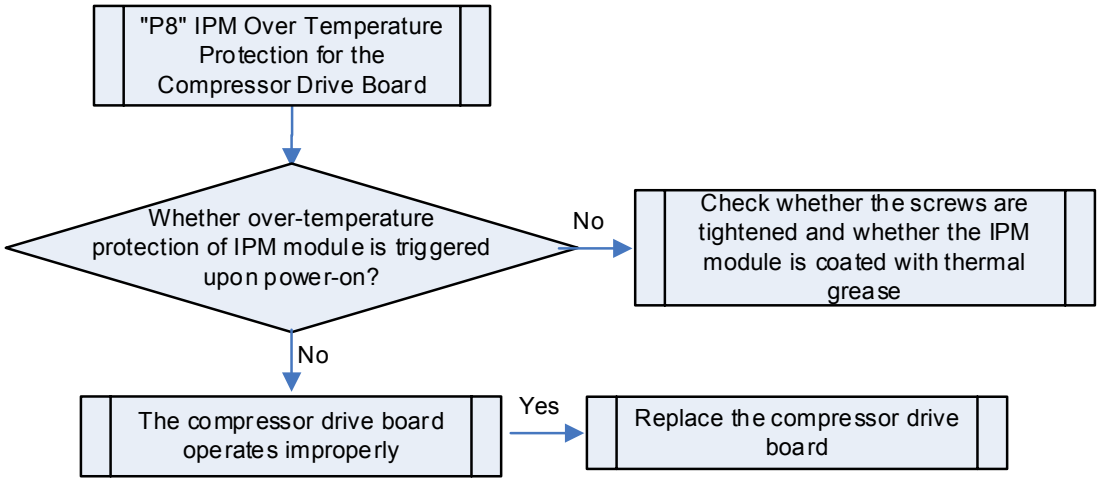
Possible causes:

■ The IPM module's screws are not tightened;

■ The IPM module is not covered, or unevenly covered by thermal grease, or covered by dried thermal grease;

■ The compressor drive board operates improperly.

Troubleshooting:



2.133 "P9" Loss of Synchronization Protection for Inverter Compressor

Fault display: main board of outdoor unit displays 

Fault diagnosis:

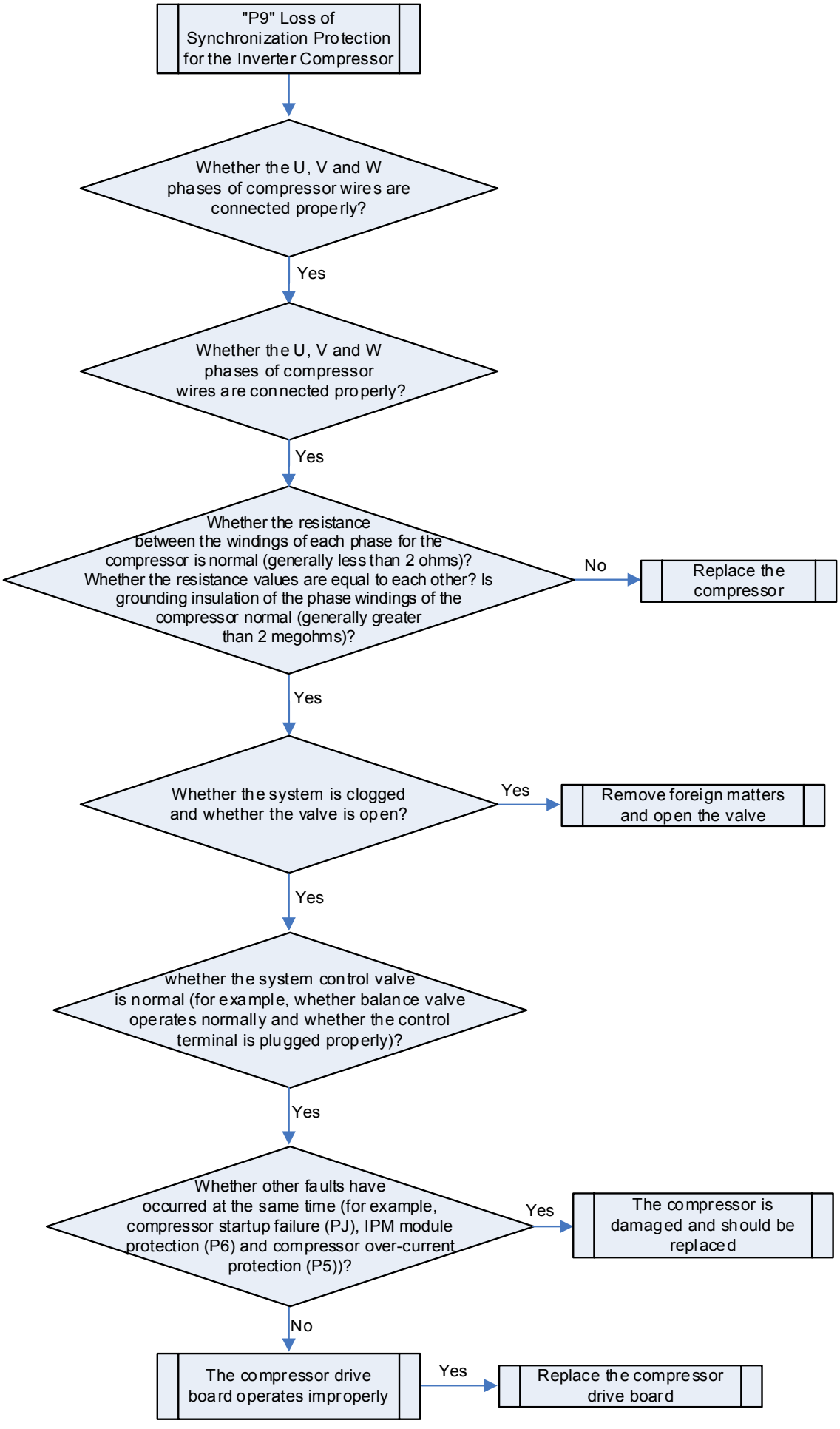
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P9, it indicates the loss of synchronization protection for the inverter compressor.

Possible causes:

■ The compressor drive board operates improperly.

■ The compressor is damaged.

Troubleshooting:


"P9" Loss of Synchronization Protection for the Inverter Compressor
Whether the U, V and W phases of compressor wires are connected properly?
Yes
Whether the U, V and W phases of compressor wires are connected properly?
Yes
Whether the resistance between the windings of each phase for the compressor is normal (generally less than 2 ohms)? Whether the resistance values are equal to each other? Is grounding insulation of the phase windings of the compressor normal (generally greater than 2 megohms)?
No
Replace the compressor
Yes
Whether the system is clogged and whether the valve is open?
Yes
Remove foreign matters and open the valve
Yes
whether the system control valve is normal (for example, whether balance valve operates normally and whether the control terminal is plugged properly)?
Yes
Whether other faults have occurred at the same time (for example, compressor startup failure (PJ), IPM module protection (P6) and compressor over-current protection (P5))?
Yes
The compressor is damaged and should be replaced
No
The compressor drive board operates improperly
Yes
Replace the compressor drive board

2.134 "PC" Current Detection Circuit Fault of Compressor Drive

Fault display: main board of outdoor unit displays 

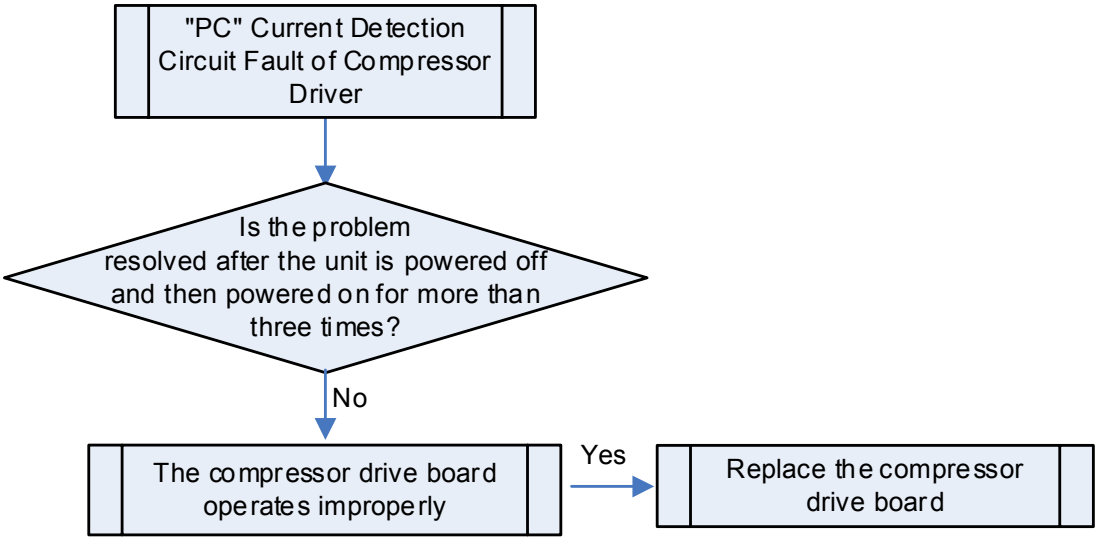
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is PC, it indicates the current detection circuit fault of compressor drive.

Possible causes:

■ The compressor drive board operates improperly.

Troubleshooting:



2.135 "PH" Over Voltage Protection for DC Bus of Compressor Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

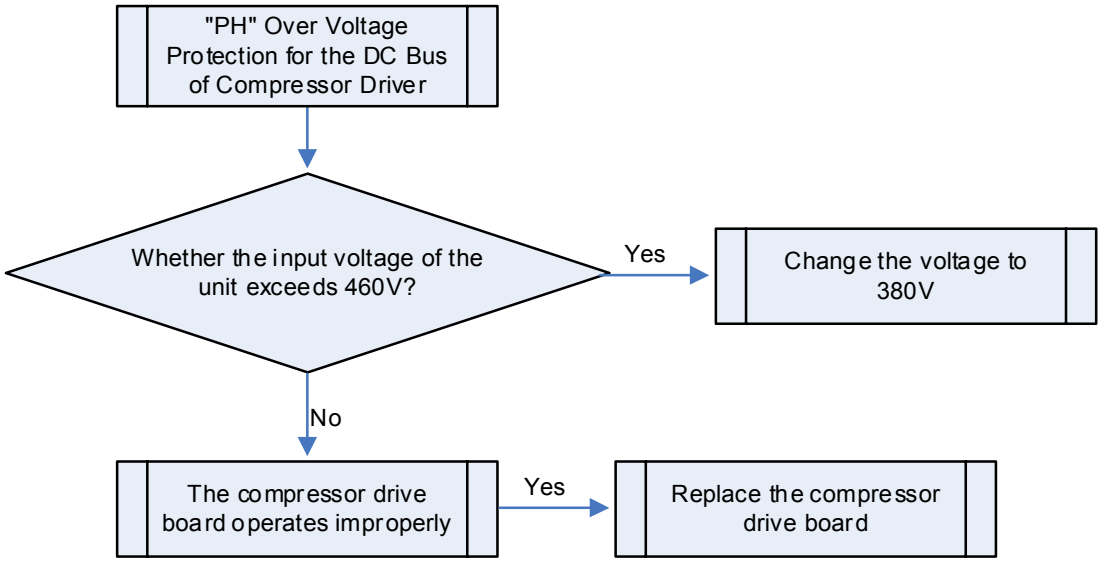
When the input power cable of the main board has a voltage over 460 V, the unit triggers protection against faults.

Possible causes:

■ The unit's input power cable has a voltage exceeding 460 V;

■ The compressor drive board operates improperly.

Troubleshooting:



2.136 "PL" Under Voltage Protection for DC Bus of Compressor Drive

Fault display: main board of outdoor unit displays 

Applicable models: GMV6, GMV5, GMV5S series

Fault diagnosis:

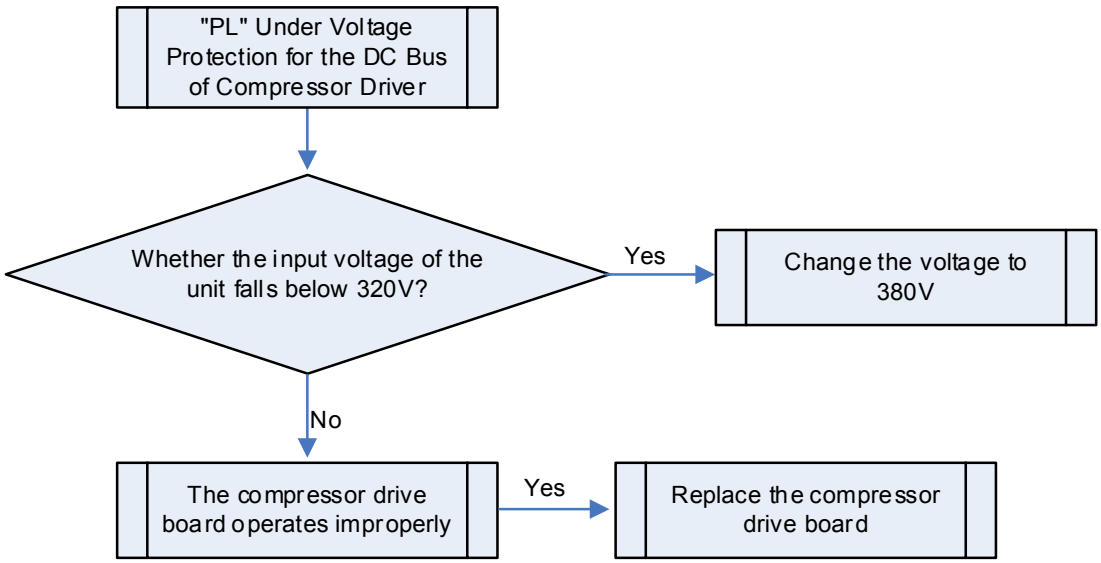
When the input power cable of the main board has a voltage below 320 V, the unit triggers protection against faults.

Possible causes:

■ The unit's input power cable has a voltage below 320V;

■ The compressor drive board operates improperly.

Troubleshooting:



2.137 "PJ" Inverter Compressor Startup Failure

Fault display: main board of outdoor unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is PJ, it indicates the inverter compressor startup failure.

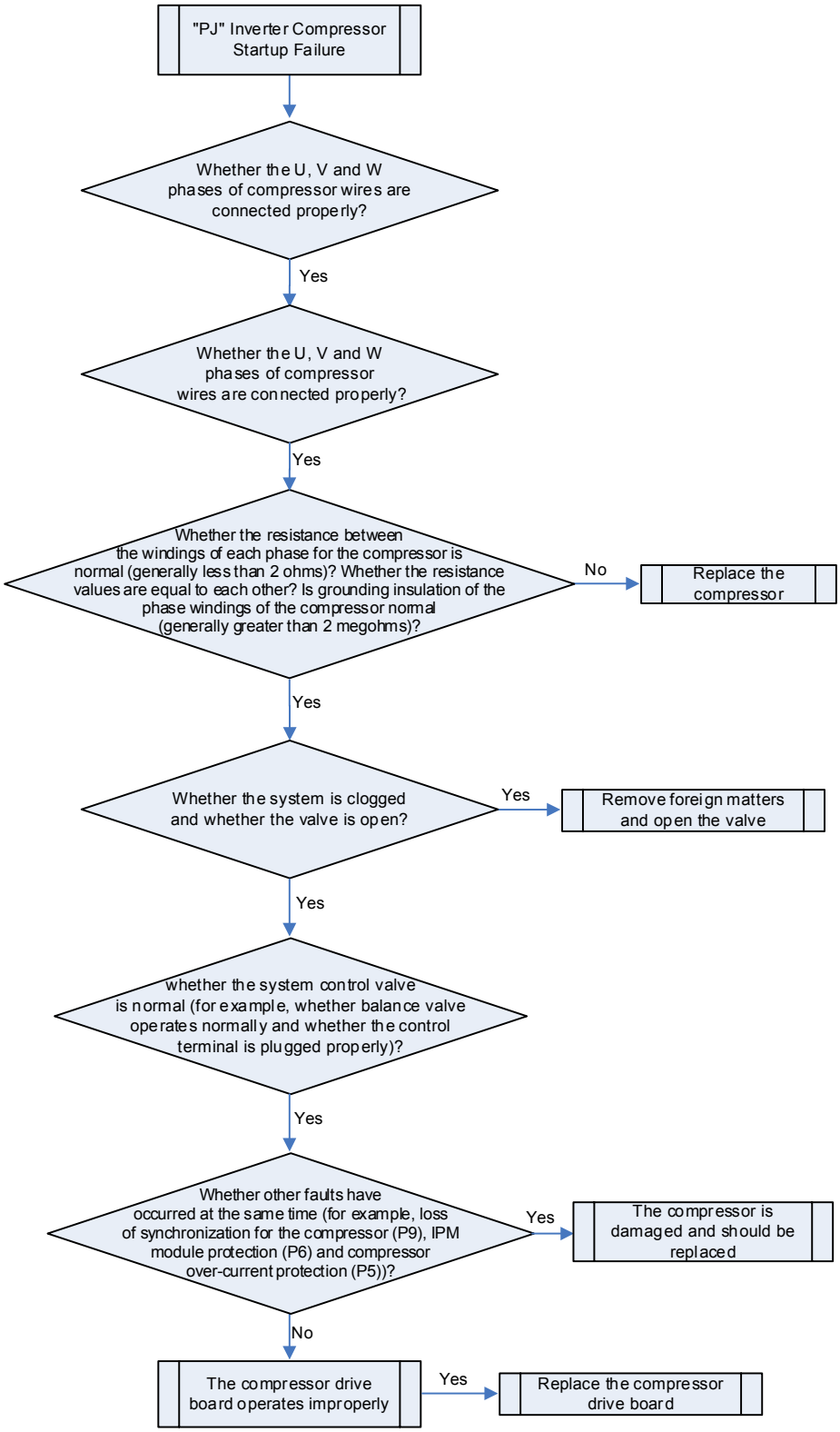
Possible causes:

■ Poor contact of compressor's UVW cables;

■ The compressor is damaged;

■ The compressor drive board operates improperly.

Troubleshooting:



2.138 "U0" Insufficient Warm-up Time for Compressor

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

When the oil preheating period of time before compressor starts is less than eight hours, the unit generates a fault.

Possible causes: --

Troubleshooting: Warm up the whole unit for more than eight hours before startup.

2.139 "U2" Incorrect Settings of Outdoor Unit Capacity DIP Switch/Jumper Cap

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Applicable models: all outdoor units

Fault diagnosis:

When the capacity DIP switch detected by the outdoor unit's main board is inconsistent with the unit's actual capacity, or the jumper cap value detected by the outdoor unit's main board is inconsistent with the actual unit, the fault is generated.

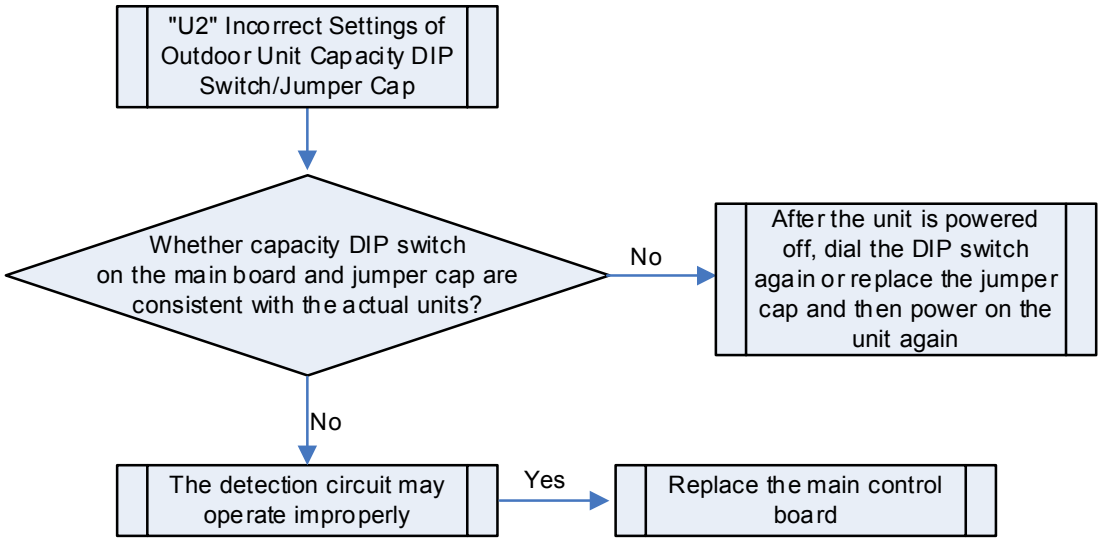
Possible causes:

■ Capacity DIP switch error or jumper cap error (for some models without jumper caps, jumper cap error is not detected)

■ DIP switch or jumper cap is broken

■ Abnormal detection circuit

Troubleshooting:



2.140 "U3" Power Phase-Sequence Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

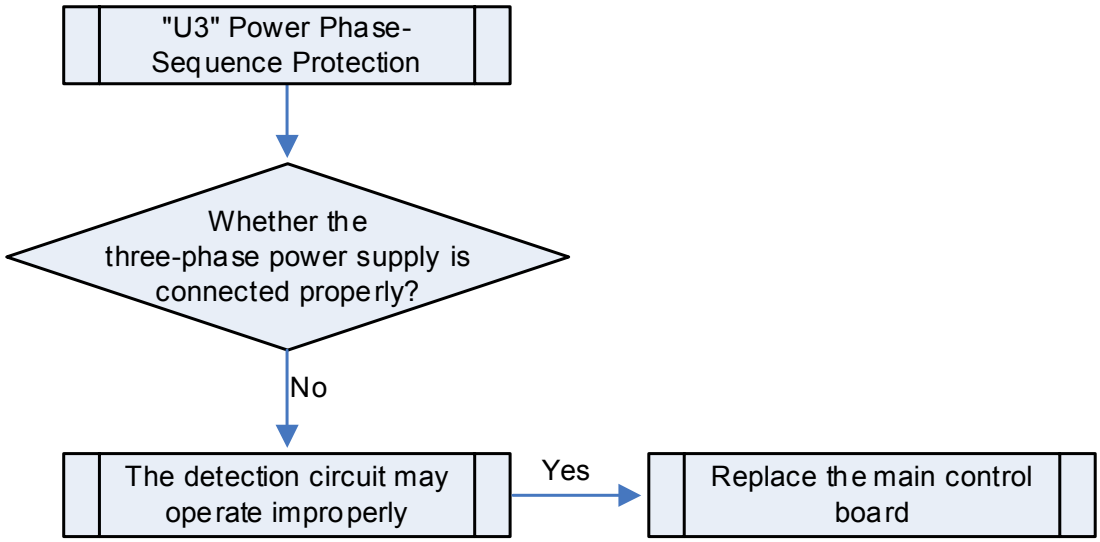
Check the three-phase power of the unit. If the power is connected incorrectly, thereby causing phase loss or reverse phase, the unit generates a fault.

Possible causes:

■ The power is connected wrongly or phase loss or reverse phase occurs

■ Abnormal detection circuit

Troubleshooting:



2.141 "U4" Refrigerant Loss Protection

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

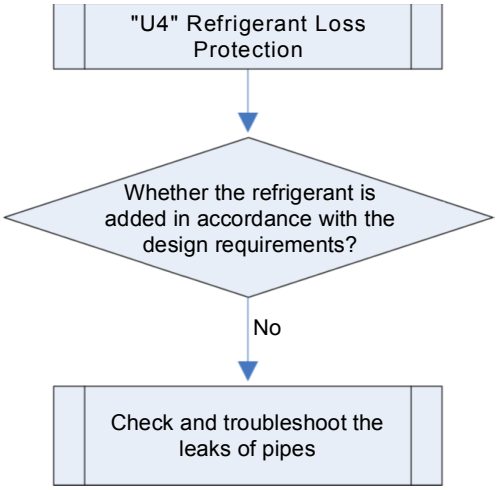
Check the high pressure and the low pressure of the unit by the pressure sensor. If the temperatures corresponding to the high pressure and the low pressure of the unit are below the ambient temperature for over 5, the unit will not start operation for safety purpose.

Possible causes:

■ Insufficient refrigerant in the unit;

■ The pipes leak.

Troubleshooting:



2.142 "U6" Abnormal Valve Prompt

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

During commissioning process, determine whether the check valve of the outdoor unit is open by detecting the unit's parameters by the pressure sensor. If the parameters are abnormal, the unit prompts you to confirm whether you want to open the check valve again. After confirmation, press SW4 to proceed.

Possible causes:

■ The check valve of the outdoor unit is not open.

Troubleshooting: Reconfirm and open the check valve of the outdoor unit.

2.143 "U8" Abnormal Pipes of the Indoor Unit

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

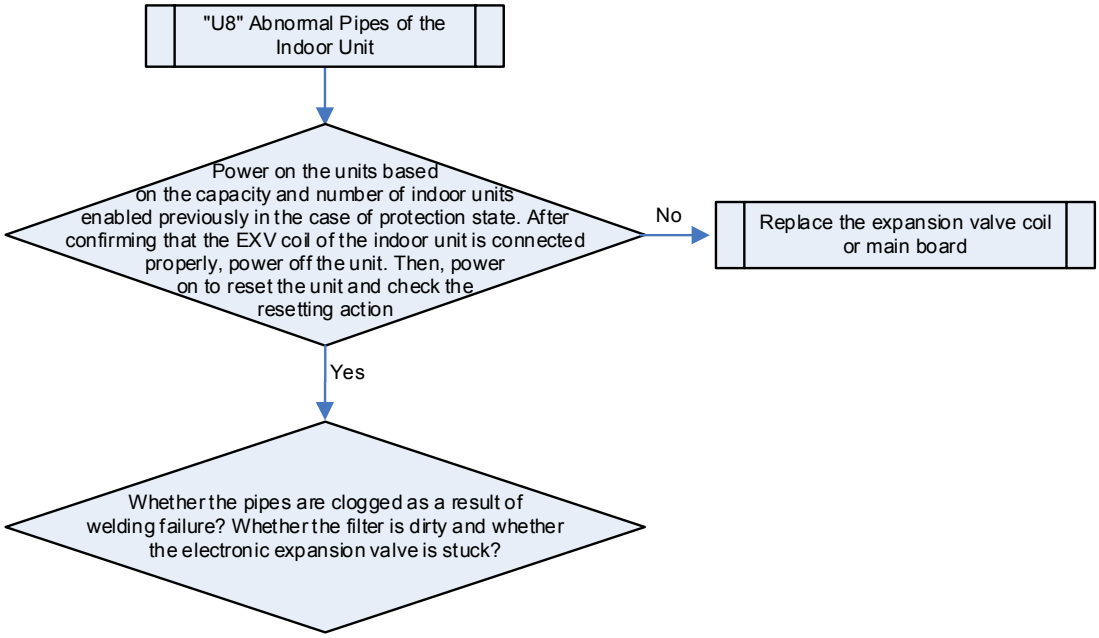
During commissioning process, check the temperature of the indoor unit's pipes to determine whether the pipes are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The indoor unit's pipes are blocked.

Troubleshooting:



2.144 "U9" Abnormal Pipes of Outdoor Unit

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

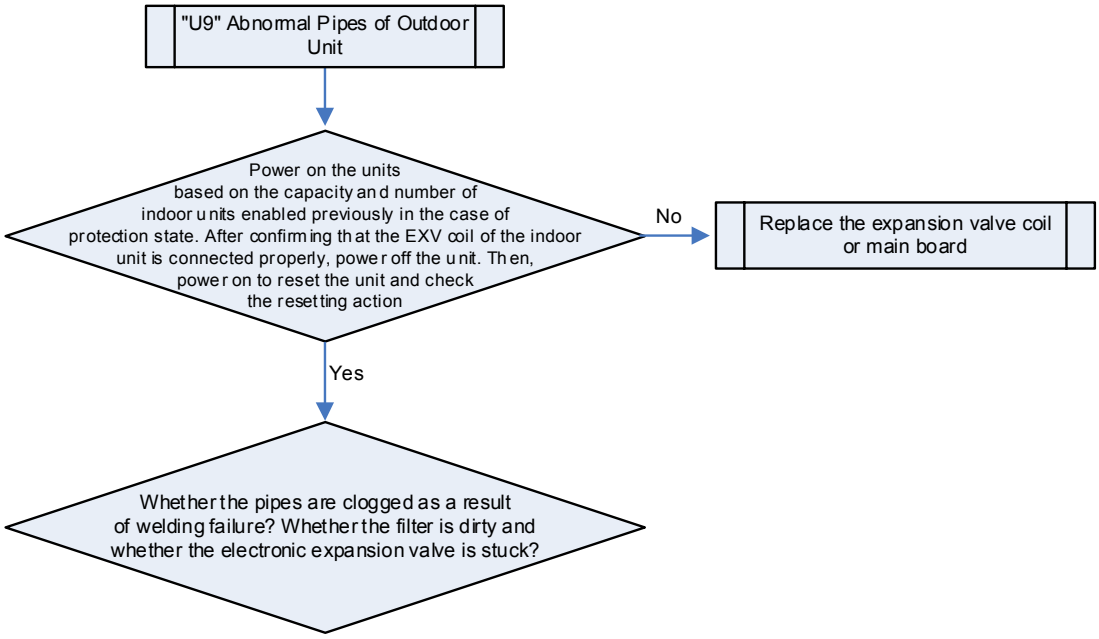
During commissioning process, check the pressure of the unit to determine whether the pipes of the outdoor unit are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The outdoor unit's pipes are blocked.

Troubleshooting:



2.145 "UC" Master Indoor Unit Set Successfully

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The code indicates the state of the unit rather than the fault. During the commissioning process, the unit prompts that the master indoor unit is already set successfully.

Possible causes: --

Troubleshooting: --

2.146 "UL" DIP Switch Error of Compressor Emergency Operation

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The fault is displayed when the DIP switch of compressor emergency operation is not set within the reasonable range.

Possible causes: --

Troubleshooting: Re-dial the DIP switch according to the DIP switch table.

2.147 "UE" Auto Refrigerant Charging Void

Fault display: main board of outdoor unit, wired controller of indoor unit and receiver of indoor unit display 

Fault diagnosis:

The code is displayed when the outdoor ambient temperature exceeds the range of auto refrigerant charging (the normal range of charging refrigerant automatically is 0-40°C).

Possible causes: --

Troubleshooting: Disable the auto refrigerant charging. Instead, charge the refrigerant manually.

2.148 Ineffective Cooling and Heating

Applicable models: all indoor units

Fault diagnosis:

1) In cooling mode, when the electronic expansion valve is open to 2000PLS, the temperature of outlet pipes of the indoor unit coil is over 5°C greater than the temperature of inlet pipes of the indoor unit coil;
2) In heating mode, when the electronic expansion valve is open to 2PLS, the temperature of inlet pipes of the indoor unit coil is over 12°C less than the saturation temperature corresponding to the high pressure;

Possible causes:

■ The check valve of the outdoor unit is not opened fully as required.

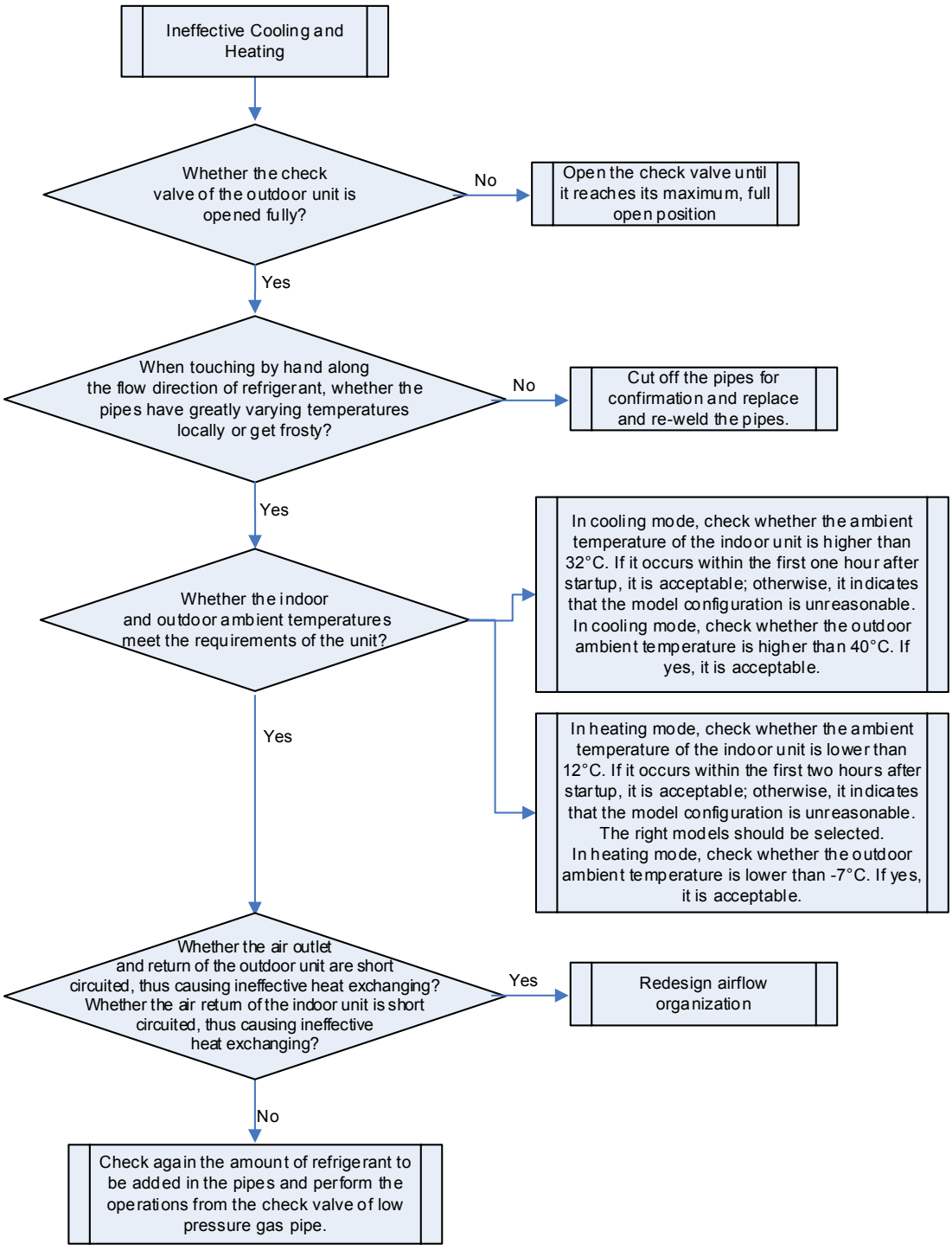
■ The unit pipes are clogged.

■ The unit operates out of the range of required ambient temperature.

■ Airflow organization is set ineffectively.

■ The amount of refrigerant is insufficient.

Troubleshooting:



2.149 No Faults Displayed But Compressor Not Starting in Cooling/Heating Mode

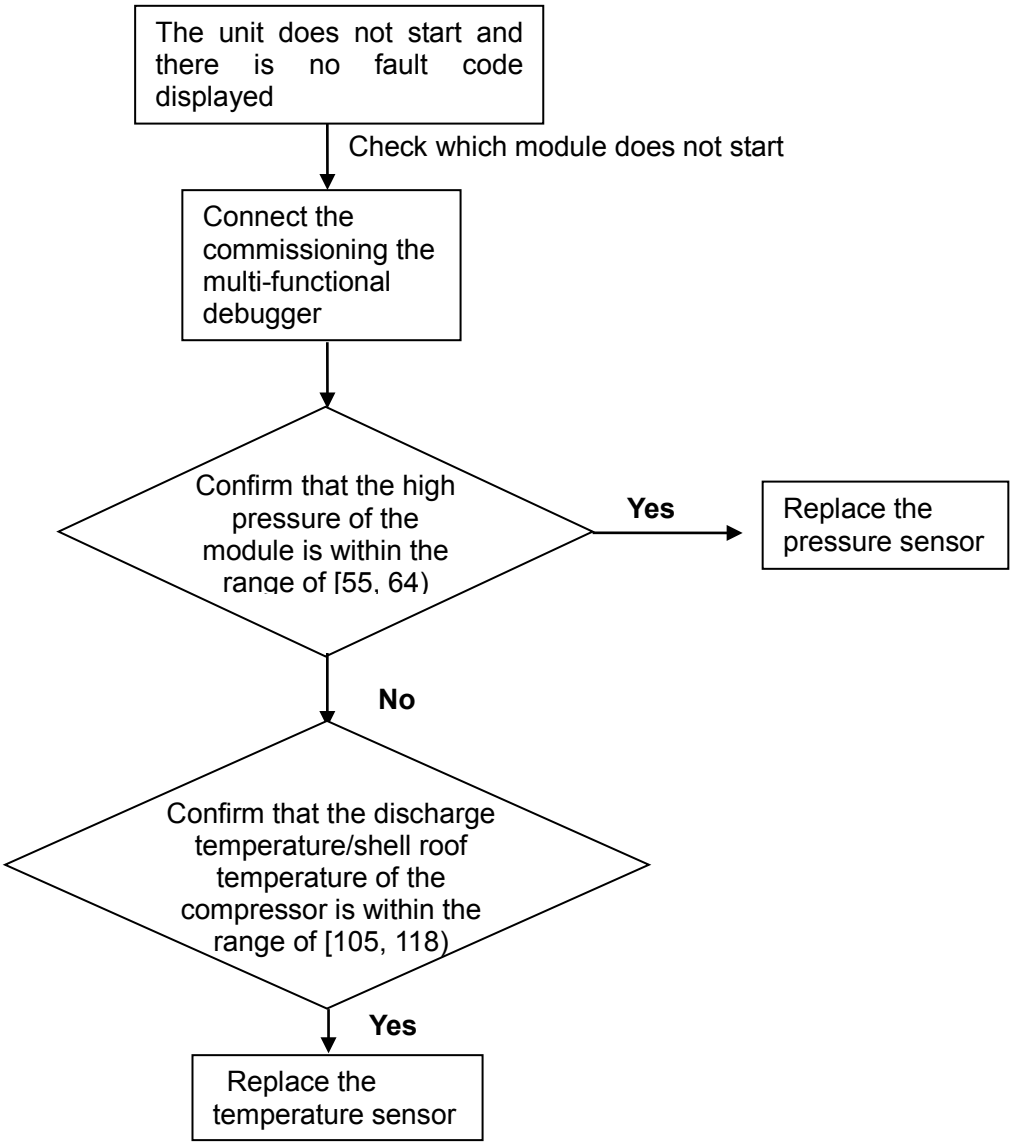
Fault: no faults displayed but compressor not starting in cooling/heating mode

Fault diagnosis: Commission the multi-functional debugger. If any high pressure/discharge temperature/shell roof temperature of the unit falls within the following range before the unit starts operation, replace the corresponding components.

Possible causes:

1) The pressure sensor fails to work properly [55, 64)
2) The discharge temperature sensor/shell roof temperature sensor fails to work properly [105, 118)

Troubleshooting:



3 Non-fault Type Troubleshooting

3.1 The Unit Does Not Start

Problem	Reason	Solution
The unit does not start	No power	Connect the air conditioning unit with a power
	The line voltage is too low	Check whether the line voltage is within the specified range
	The fuse or breaker is disconnected	Replace the fuse or connect the breaker
	Low battery of the remote controller	Replace the battery
	The remote controller is beyond the control range	Keep the remote controller within the 8 m control range

3.2 The Unit Stops During Operation

Problem	Reason	Solution
The air conditioning unit stops after operating for a very short time	The air inlet or air outlet of the indoor or outdoor unit is blocked	Remove obstacles

3.3 Some Indoor Units Do Not Work

Problem	Reason	Solution
Some indoor units do not work	The indoor unit is incompatible with the outdoor unit	① Install communication terminals block ② Use compatible indoor units
	The power cord is not connected properly	Connect the power cord properly
	The voltage does not meet requirements	Provide the proper voltage

3.4 Unit Operates Without Cooling/Heating

Problem	Reason	Solution
Malfunctioned cooling and heating	The air inlet or air outlet of the indoor or outdoor unit is blocked	Remove obstacles
	Improper set of temperature	Adjust the settings of the remote controller or wired controller
	The fan speed is too low	Adjust the settings of the remote controller or wired controller
	Incorrect wind direction	Adjust the settings of the remote controller or wired controller
	The door or window is open	Close the door or window
	Direct exposure to sunlight	Hang a curtain or shutter on the window
	Too many people in the room	—
	Too many sources of heat in the room	Reduce the sources of heat
	The filter is dirty and blocked	Clean the filter

3.5 Loud Noises or Overwhelming Vibrations During Operation

Problem	Reason	Solution
The air conditioning unit generates noise	A slight click is generated when the unit starts to operate	Sound made by the electronic expansion valve during the initialization
	Continuous sizzles during cooling	Sound made by the gas state refrigerant when it flows within the unit
	Sizzles when the unit starts and stops	Sound made when the gas state refrigerant stops flowing
	Continuous and slight sizzles during operation and after operation	Sound of operating of the drainage system
	Creaking sounds during operation and after operation	Sound due to friction of expanded panels and other parts because of temperature change

Chapter 4 Maintenance

WARNING!

During the maintenance of a modular unit, all the outside units must be powered on and off concurrently. Avoid doing so to only some of the outdoor units.

1. Precautions for Refrigerant Leakage

(1) AC project designers and installers shall obey the local laws and regulations on the safety requirement of the usage and leakage of refrigerant.

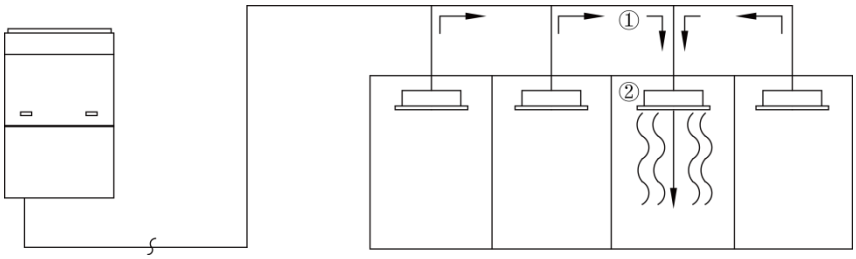
(2) The multi VRF unit adopts R410A refrigerant. When installing in the space with people, the refrigerant amount shall not exceed the max.allowable concentration. Otherwise, suffocation will occur. For example, the max.allowable concentration for refrigerant of European safety standard and regulation is 0.44kg/m^3.

Max. refrigerant charge(kg)= Room volume(m3)× max. allowable concentration(kg/m^3)

Refrigerant charge（kg）= Adding quantity of refrigerant（kg）+ ∑ex-factory charge of ODU（kg）

Refrigerant charge ≤ Max. refrigerant charge

(3) When refrigerant charge has exceeded the max.refrigerant charge, re-design the refrigeration system and divide the refrigeration system to several refrigeration systems of small volume, or add corresponding ventilation measures and alarms.



① The flow when refrigerant is leaking;

② For the room with leaked refrigerant, as the density of refrigerant is higher than that of air, please pay attention to the locations which might have refrigerant, e.g basement.

2. Refrigerant Charging

Total refrigerant charging amount R= Pipeline charging amount A + Σ charging amount B of every module.

2.1 Pipeline charging amount:

Pipeline charging amount A= Σ Liquid pipe length × refrigerant charging amount of every 1m liquid pipe.

Diameter of liquid pipe (mm)	Φ28.6	Φ25.4	Φ22.2	Φ19.05	Φ15.9	Φ12.7	Φ9.52	Φ6.35
kg/m	0.680	0.520	0.350	0.250	0.170	0.110	0.054	0.022

2.2 Refrigerant charging amount B of every module

Refrigerant charging amount B of every module (kg) ②		Module capacity (kW)							
IDU/ODU rated capacity collocation ratio C ①	Quantity of indoor unit	22.4	28.0	33.5	40.0	45.0	50.4	56.0	61.5
50%≤C≤70%	<4	0	0	0	0	0	0	0	0
	≥4	0.5	1.0	1.0	1.0	1.0	0.5	1.0	1.5
70%<C≤90%	<4	0.5	1.0	1.0	2.0	2.0	1.5	2.0	2.0
	≥4	1.0	1.0	1.0	2.0	2.0	2.5	3.0	3.5
90%<C≤105%	<4	1.0	1.0	1.0	2.0	2.0	2.5	3.0	3.5
	≥4	2.0	2.0	2.0	4.0	4.0	4.0	5.0	5.0
105%<C≤135%	<4	2.0	2.0	2.0	3.0	3.0	3.5	4.0	4.0
	≥4	3.5	4.0	4.0	5.0	5.0	5.5	6.0	6.0

Notes:

① Rated capacity configuration rate of indoor unit and outdoor unit C = sum of indoor unit rated cooling capacity / sum of outdoor unit rated cooling capacity.

② If all indoor units are all fresh air indoor units, the added refrigerant amount for each module B is 0kg.

③ If all fresh air indoor units are mixed with the general VRF indoor units, charge the refrigerant according to the refrigerant-charging method of the general indoor unit.

For example1:

Outdoor unit consists of one 28kW module and one 45kW module. Five 14kW duct type units are used as indoor units.

IDU/ODU rated capacity collocation ratio C=14.0×5/(28.0+45.0)=96%. The quantity of included IDUs is more than 4 sets. Please refer to the above table.

Additional refrigerant quantity B for 28kW module is 2.0 kg.

Additional refrigerant quantity B for 45kw module is 4 kg.

So, ∑Refrigerant charging amount B of every module=2.0+4=6 kg.

Suppose the Pipeline charging amount A=∑Liquid pipe length×refrigerant charging amount of every 1m liquid pipe=20kg.

Total refrigerant charging amount R=20+6=26kg.

For example 2:

Outdoor unit is a 45kW module and the indoor unit is a 45kW fresh air unit. The quantity (B) of refrigerant added to this module is 0kg.

So, ∑Refrigerant charging amount B of every module= 0kg.

Suppose the Pipeline charging amount A=∑Liquid pipe length×refrigerant charging amount of every 1m liquid pipe = 5kg.

Total refrigerant charging amount R = 5+0=5kg.

Modular combination of outdoor unit subjects to combinations that is currently available.

3. Refrigerant Charging Method

Refrigerant charging for multi VRF unit includes two parts: pre-charging and start-up charging.

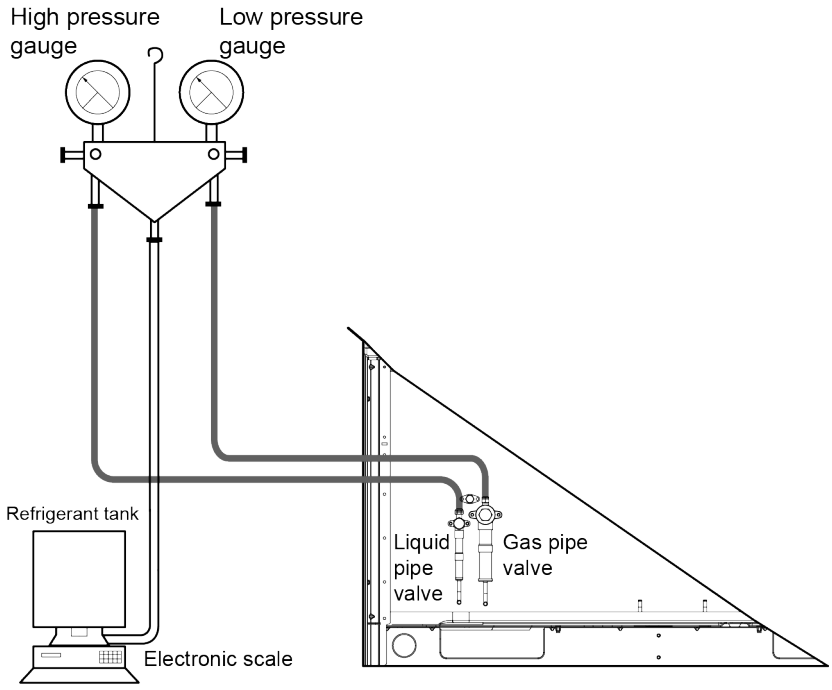
3.1 Pre-charging of refrigerant.

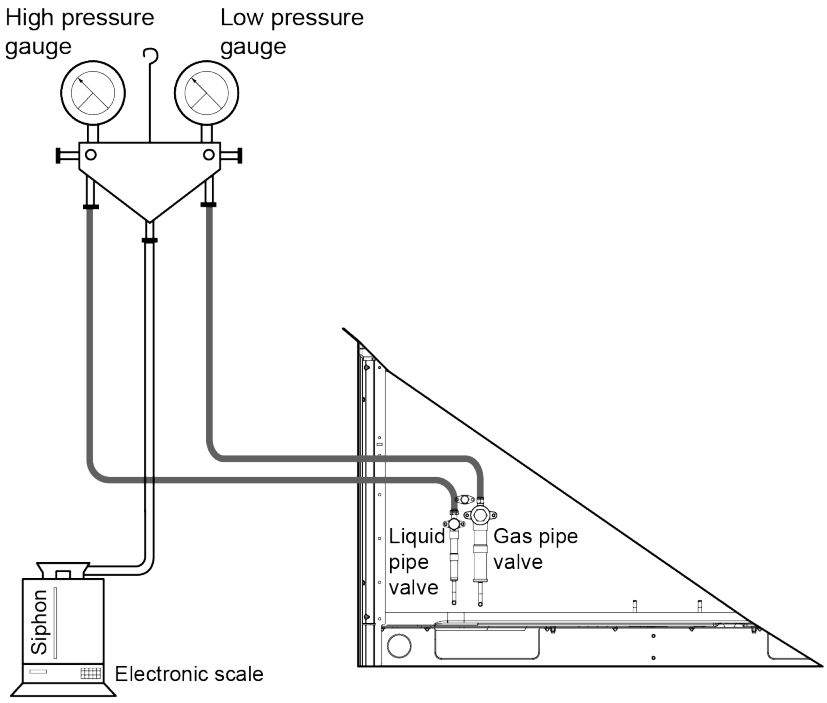
Step 1: Connect the pipe of high pressure gauge of the pressure gauge to the detection port of liquid pipe, the pipe of low pressure gauge to the detection port of gas pipe valve, and the pipe of intermediate pressure gauge to the vacuum pump. Put through the power for the vacuum pump to conduct the vacuum drying work.

Step 2: Once vacuum drying is completed, close the high pressure gauge valve and the low pressure gauge valve. Disassemble the intermediate gauge pipe and the vacuum pump connection end, and then connect the refrigerant tank.

Step 3: Properly loosen the pipe of intermediate gauge and the connection end of pressure gauge, slightly open the refrigerant tank valve, and empty the pipe of intermediate gauge. After that, retighten the joint and open the refrigerant tank valve.

Step 4: If the refrigerant tank itself does not have a siphon, then the refrigerant tank needs to be inverted and placed on the electronic scale to record the current weight of m1; if the refrigerant tank itself has a siphon, the refrigerant tank should be kept in an upright state, and record the current weight of m1.





Step 5: Open the high pressure gauge valve (the low pressure gauge valve remains closed), charge the system with refrigerant, and record the weight change of the refrigerant tank.

Step 6: When refrigerant tank is over and the refrigerant can't be charged to the system any more, record the current weight of m2.

Step 7: Close the high pressure gauge valve and replace the refrigerant tank.

Step 8: Re-execute "step 3".

Step 9: Repeat "step 5" and "step 6" to record the weight of m3 before charging refrigerant and the weight of m4 after charging refrigerant.

Step 10: If the refrigerant cannot be continuously charged into the system and the calculated added amount of refrigerant has not been fully charged into the system, record current total pre-charging amount:

m=(m1-m2) +(m3-m4) +…+(mn-1-mn)

Remained refrigerant for start-up charging m`=M-m

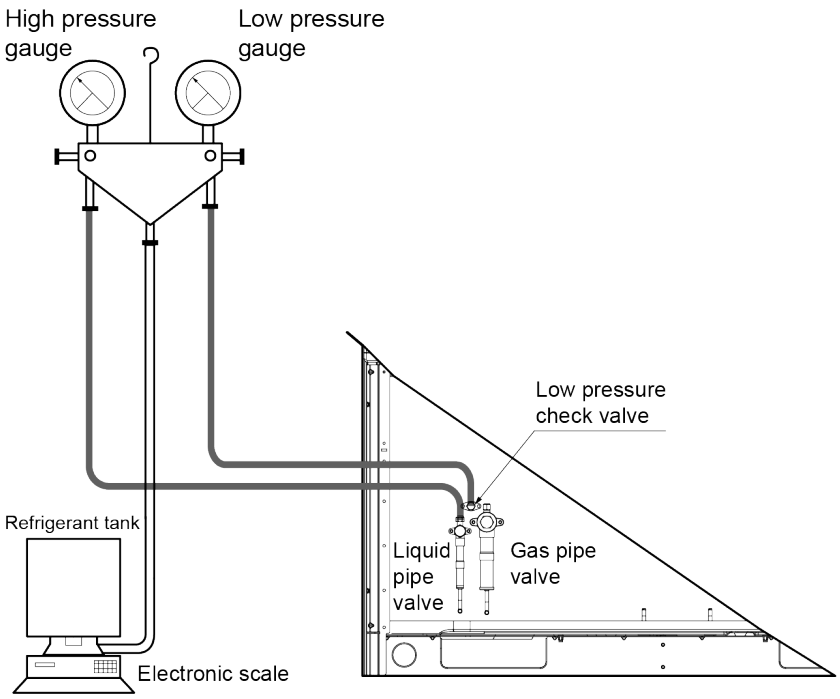
"M" is the calculated total required refrigerant-charging volume.

If the amount of pre-charging refrigerant "m" has reached the total added amount of refrigerant for the system, close the refrigerant tank valve immediately to complete the refrigerant-charging work. Skip to the "step 11".

Step 11: Complete the refrigerant-charging work and remove the pressure gauge, etc.

3.2 Start-up charging of refrigerant

Step 1: Close the refrigerant tank valve and reconnect the pipe of pressure gauge. Remove the pipe of low pressure gauge from the check port of gas pipe valve and connect it to the low pressure check valve(as shown in the following figure).



Step 2: Fully open the liquid pipe valve and gas pipe valve of each module.

Step 3: Make the complete unit enter into debugging operation by the debugging software or the main board of outdoor unit. (see the debugging part for the specific operation).

Step 4: When it comes to the procedure of charging refrigerant, open the refrigerant tank valve and charge the residual refrigerant “m`”.

Step 5: When all refrigerant has been charged, close the refrigerant tank valve and wait until the automatic debugging for the complete unit is finished.

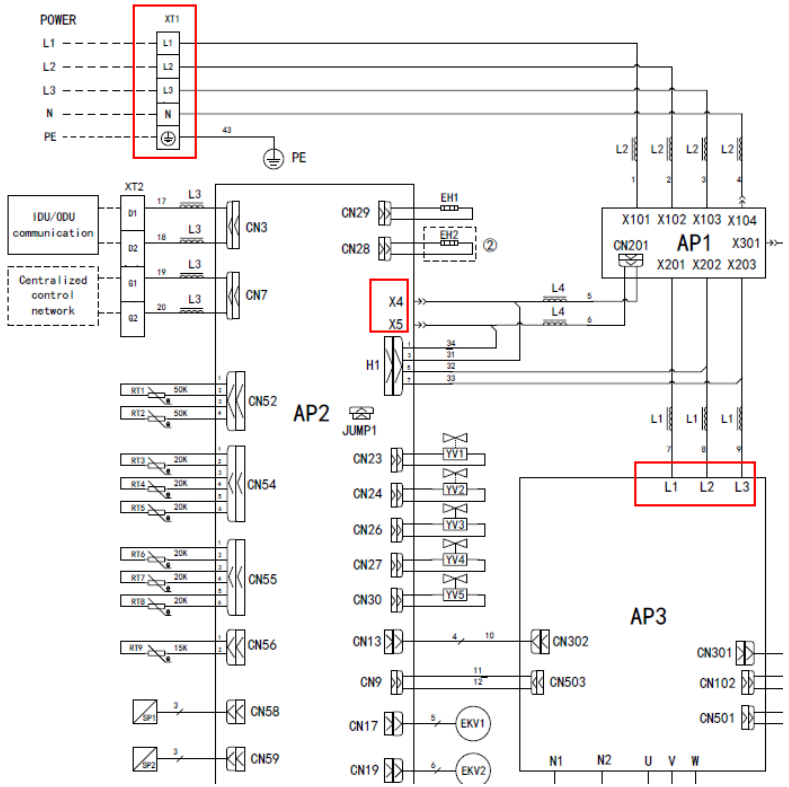
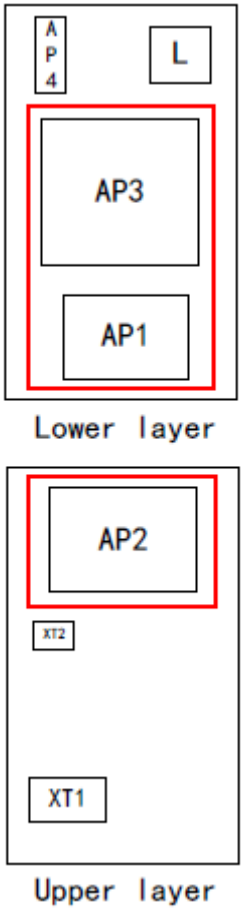
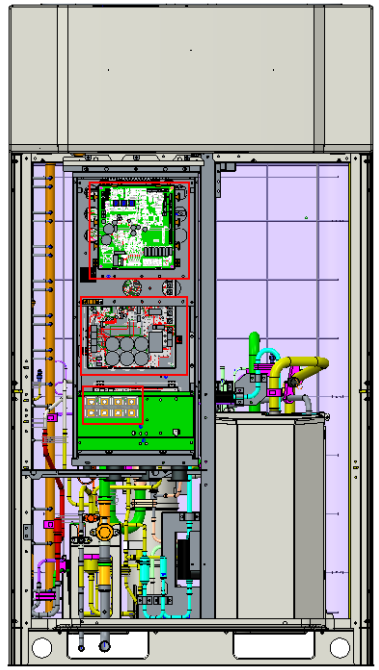
Step 6: Once debugging is finished, disassemble the pressure gauge, etc., to complete the refrigerant-charging work.

4. Inspection of Key Parts

4.1 Power

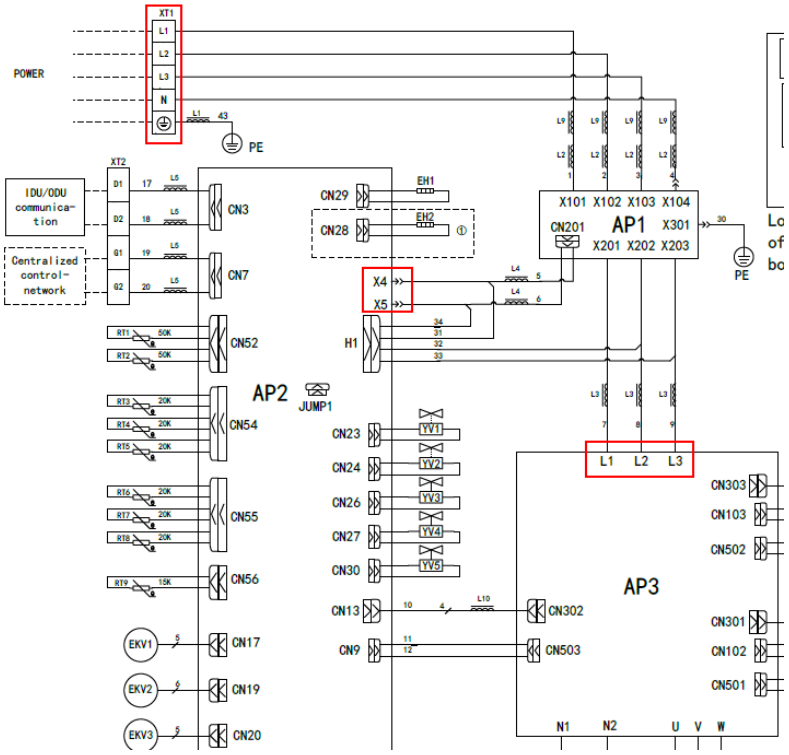
<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The power supplies of the compressor and fan comprise the following three parts:
① The specifications of the input power are 380-415V 3N~ 50/60Hz+ neutral line and earth line.
② The drive board can convert AC power to DC power of about 540 V (1.41 x power voltage).
③ DC-AC three-phase inverter.</td><td colspan="2">Use of power to the main control board:
① Phase protection.
② Providing 220V AC power for the solenoid valve coil and 4-way valve coil.
③ Generating the low-voltage DC power.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><td colspan="3">Models: AEG08MI2H3、AEG10MI2H3、AEG12MI2H3</td></tr>
</table>

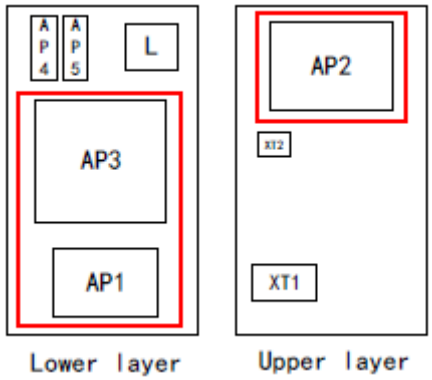
Specifications	Description
The power supplies of the compressor and fan comprise the following three parts: ① The specifications of the input power are 380-415V 3N~ 50/60Hz+ neutral line and earth line. ② The drive board can convert AC power to DC power of about 540 V (1.41 x power voltage). ③ DC-AC three-phase inverter.	Use of power to the main control board: ① Phase protection. ② Providing 220V AC power for the solenoid valve coil and 4-way valve coil. ③ Generating the low-voltage DC power.

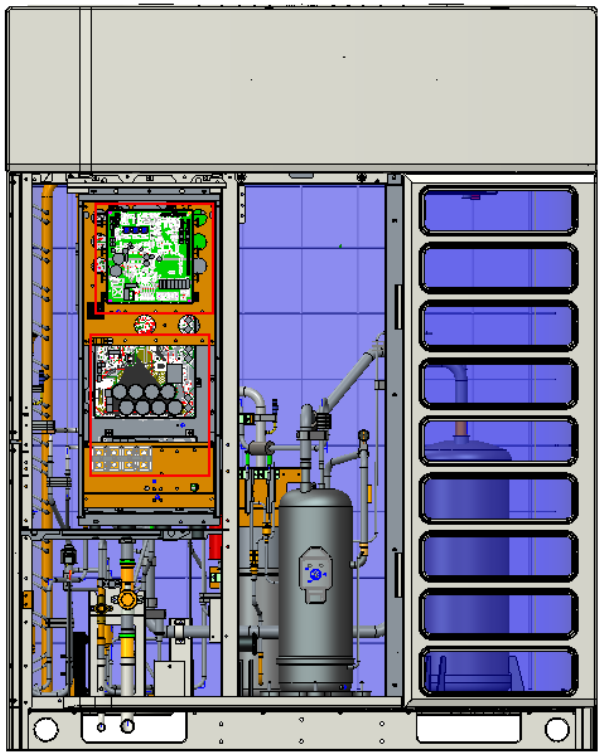
Circuit diagram	Layout of electrical appliance box	Physical position
		

Specifications	Description
The power supplies of the compressor and fan comprise the following three parts: ① The specifications of the input power are 380-415V 3N~ 50/60Hz+ neutral line and earth line. ② The drive board can convert AC power to DC power of about 540 V (1.41 x power voltage). ③ DC-AC three-phase inverter.	Use of power to the main control board: ① Phase protection. ② Providing 220V AC power for the solenoid valve coil and 4-way valve coil. ③ Generating the low-voltage DC power.

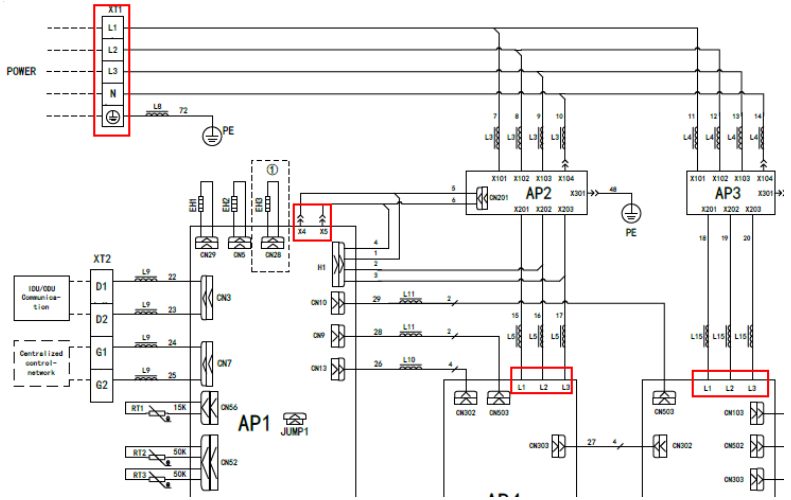
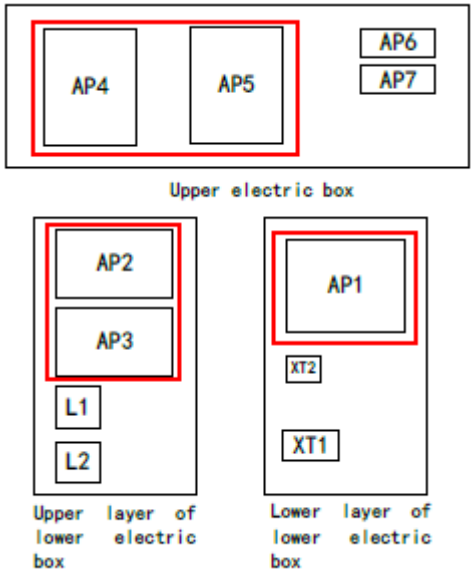
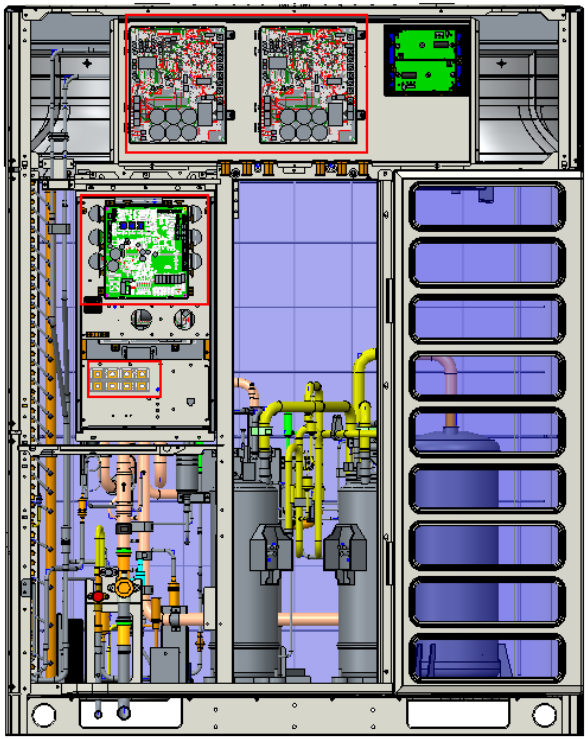
Circuit diagram	Layout of electrical appliance box	Physical position
Models: AEG14MI2H3、AEG16MI2H3		







Specifications	Description
The power supplies of the compressor and fan comprise the following three parts: ① The specifications of the input power are 380-415V 3N~ 50/60Hz+ neutral line and earth line. ② The drive board can convert AC power to DC power of about 540 V (1.41 x power voltage). ③ DC-AC three-phase inverter.	Use of power to the main control board: ① Phase protection. ② Providing 220V AC power for the solenoid valve coil and 4-way valve coil. ③ Generating the low-voltage DC power.

Circuit diagram	Layout of electrical appliance box	Physical position
Models: AEG18MI2H3 、AEG20MI2H3、AEG22MI2H3		
		

4.1.1 Mechanical Inspection

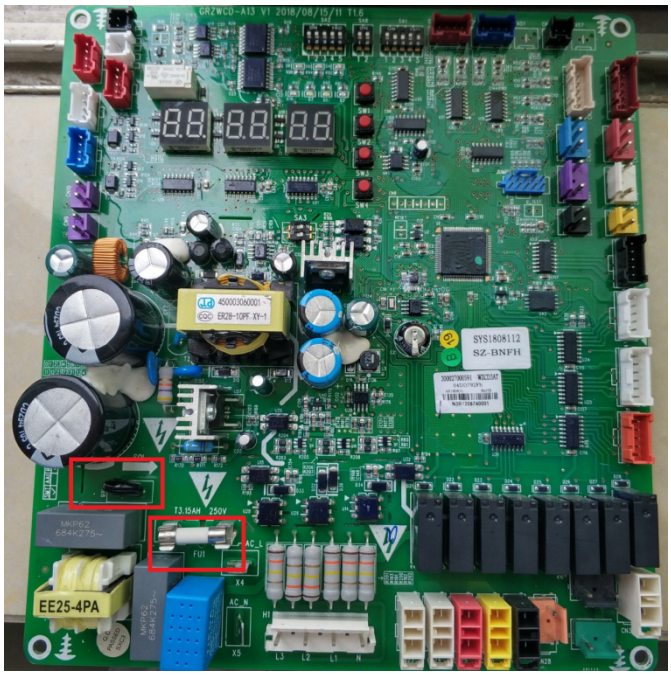
(1) Confirm that the unit power is disconnected.

(2) Remove the electrical appliance cover.

(3) Check whether the power cable is fixed on the wiring board.

(4) Check whether the fuses on the main board and filter board are damaged.

(5) Check whether the varistors on the main board and filter board are damaged.



4.1.2 Electrical Inspection

Check the power cable from the main switch board to the ODU:

(1) Use an ohmmeter of at least 500V DC to check whether the insulation resistance between each phase and the ground reaches at least 1 megohm. Small insulation resistance indicates a potential electric leakage.

Warning: Electric shock

(2) After the checking, connect the power and verify that the voltage of the power terminals is correct:

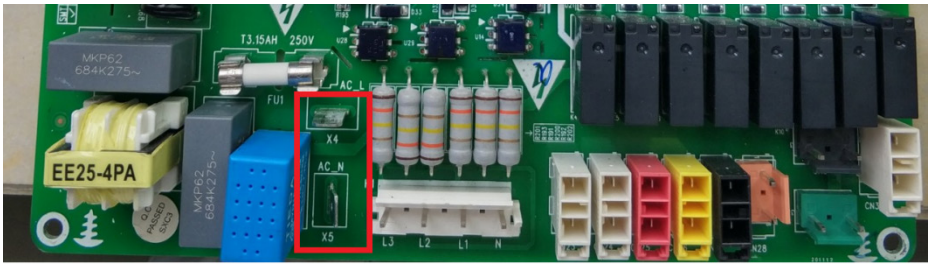
The power voltage between two phases is 380VAC±10%.

The unbalance rate of the power between two phases does not exceed 2%.

Voltage between L1 and N: 220 VAC.

(3) Check the power on the main control board:

Confirm that the X4 and X5 on the main control board are active.

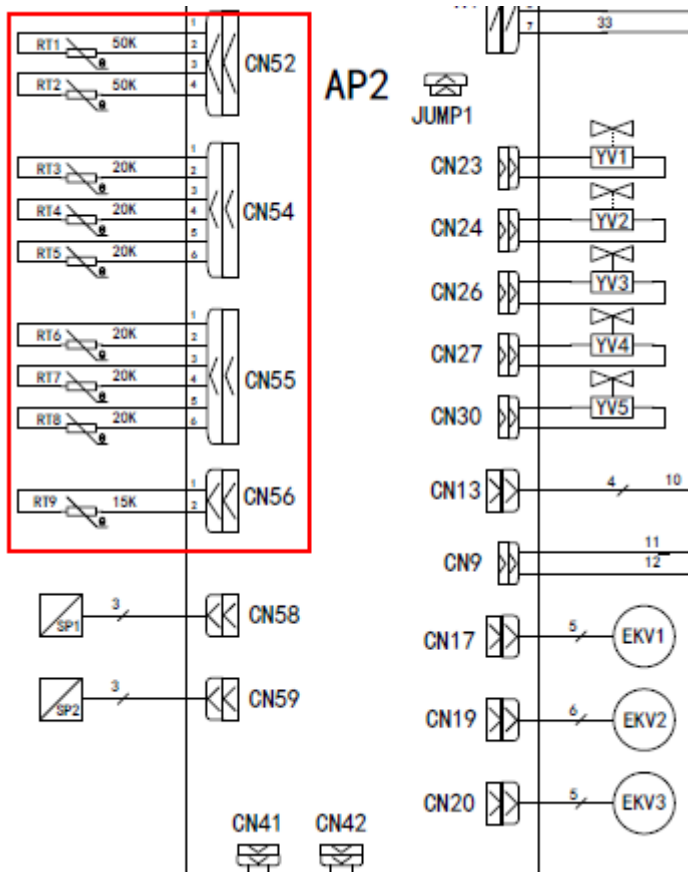


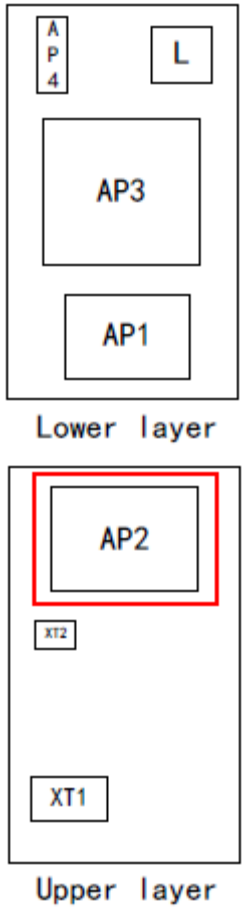
4.2 Temperature Sensors

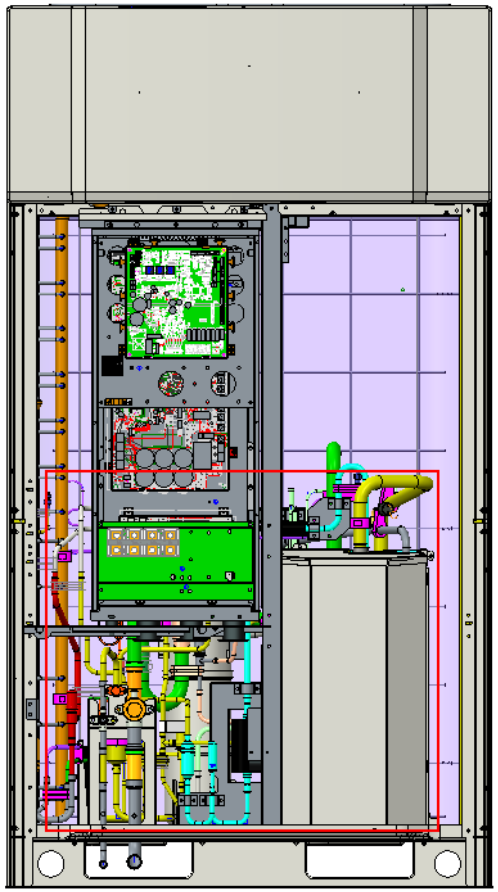
Specifications	Description
Three types of temperature sensors of different specifications are used, including 50K, 20K and 15K.	The sensors are used to measure the temperature of the unit at different positions.

Models: AEG08MI2H3、AEG10MI2H3、AEG12MI2H3

Circuit diagram	Layout of electrical appliance box	Physical position



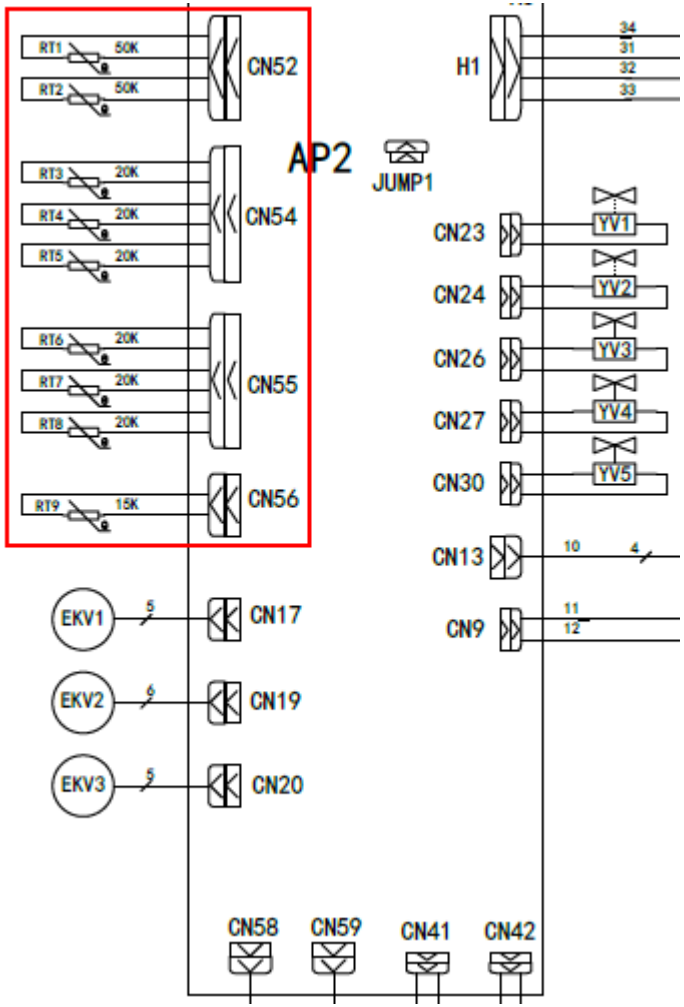


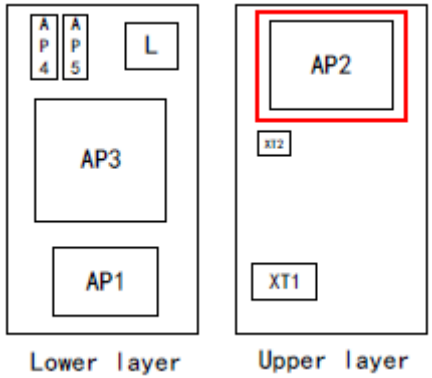


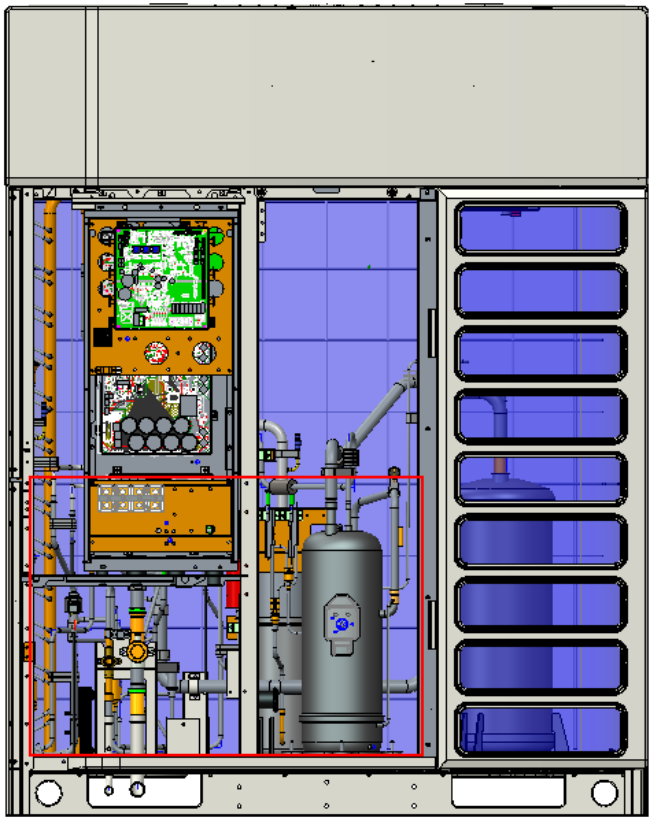
Specifications	Description
Three types of temperature sensors of different specifications are used, including 50K, 20K and 15K.	The sensors are used to measure the temperature of the unit at different positions.

Models: AEG14MI2H3、AEG16MI2H3

Circuit diagram	Layout of electrical appliance box	Physical position



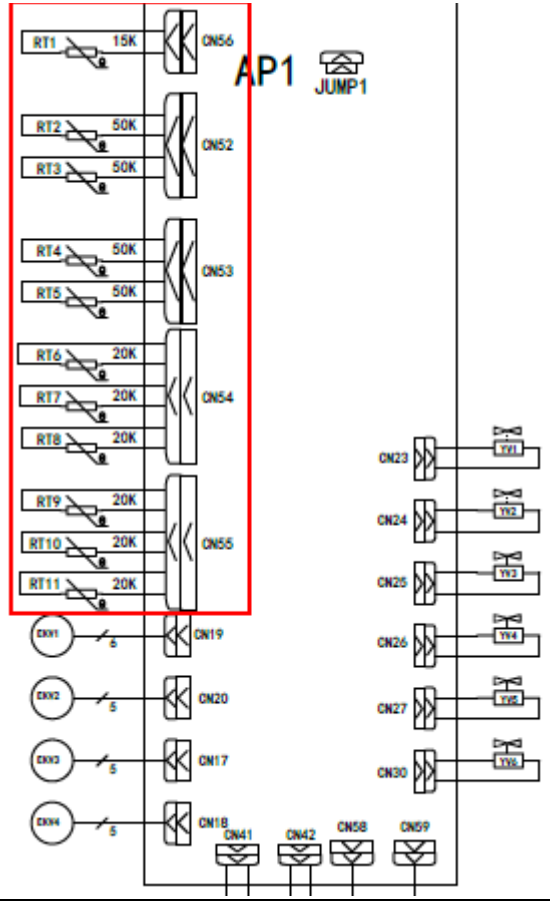


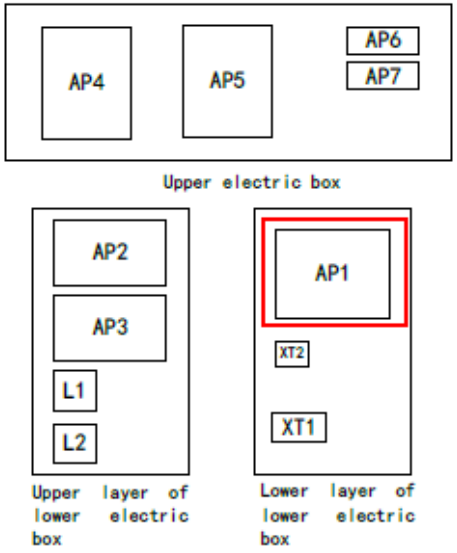


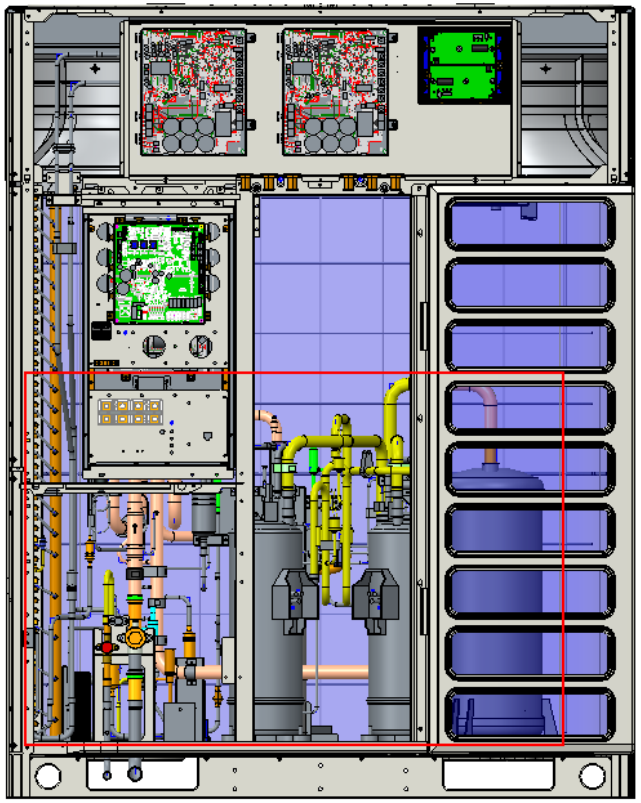
Specifications	Description
Three types of temperature sensors of different specifications are used, including 50K, 20K and 15K.	The sensors are used to measure the temperature of the unit at different positions.

Models: AEG18MI2H3 、AEG20MI2H3、AEG22MI2H3

Circuit diagram	Layout of electrical appliance box	Physical position







4.2.1 Mechanical Inspection

(1) Confirm that the unit Power is disconnected.

(2) Find the place corresponding to each sensor on the unit and check if the sensors are firmly fixed on the unit.

4.2.2 Electrical Inspection

Measure the actual temperature and resistance of the temperature sensors, and compare it with the characteristic curve of the temperature sensors to determine whether the thermocouple is normal.

(1) Power off the unit. Remove the electrical appliance cover after the ODU stops.
Warning: Electric shock

(2) Remove the electrical appliance cover and check whether the connecting terminal of the temperature sensors is firm.

(3) Use a thermometer to measure the temperature of the spot sensed by the temperature sensors.

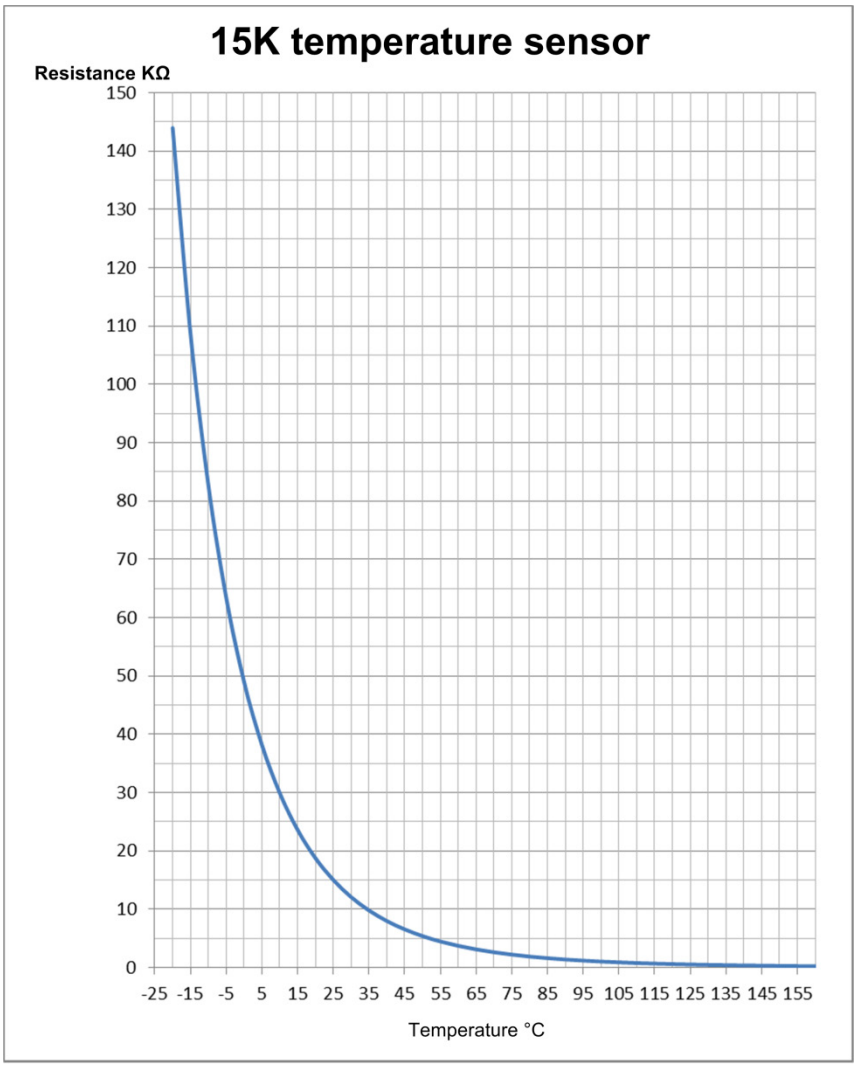
(4) Disconnect the connecting terminal of the corresponding temperature sensor from the main board. Use a multimeter to measure the resistance of the temperature sensors and compare it with the confirmed temperature range.

(5) If the measured resistance and temperature do not match with the resistance and temperature in the characteristic curve of the temperature sensor, the temperature sensor needs to be replaced.

(6) If the measured resistance and temperature match with the resistance and temperature in the characteristic curve of the temperature sensor, but the temperature of the spot is abnormal according to the monitoring of the unit, the main board needs to be replaced.

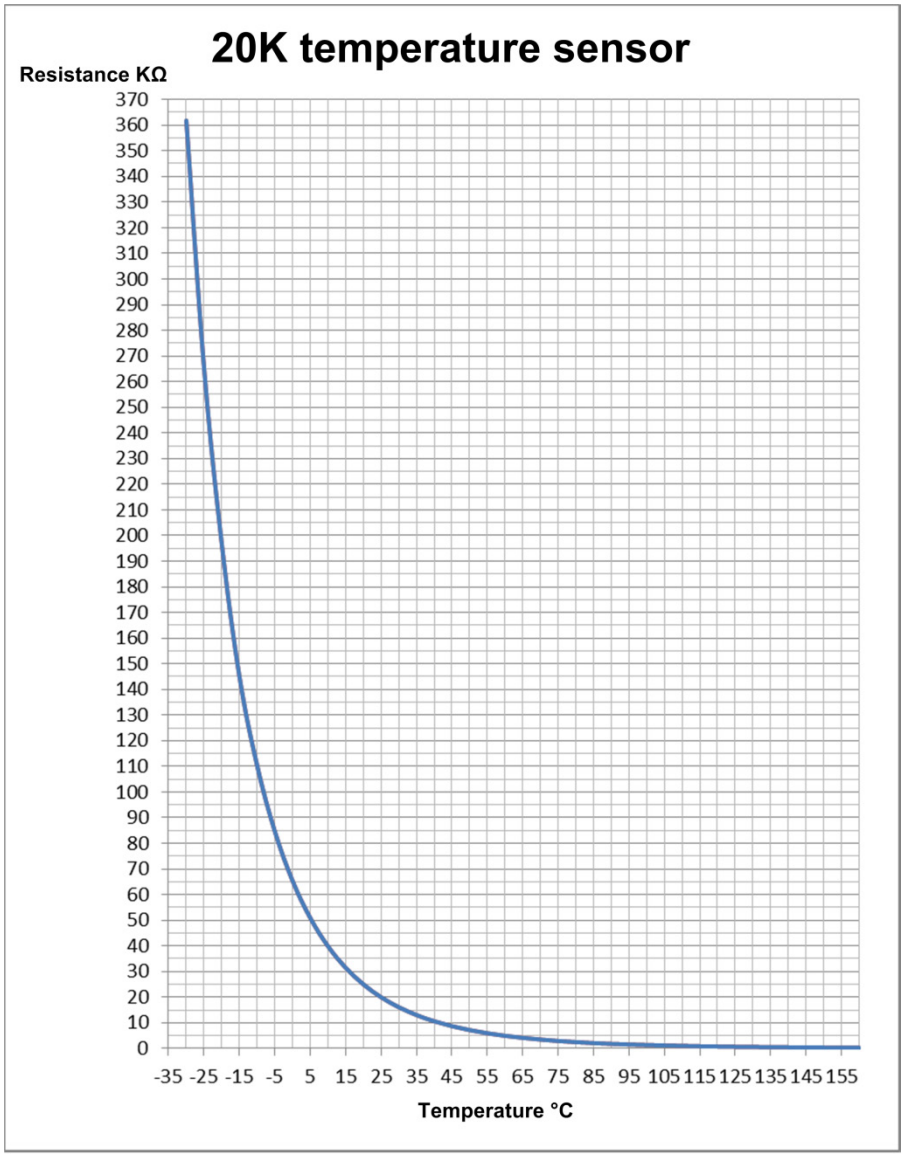
15K temperature sensor resistance - temperature curve

15K	
Temperature \°C	Resistance \KΩ
-20	144
-15	108.7
-10	82.75
-5	63.46
0	49.02
5	38.15
10	29.9
15	23.6
20	18.75
25	15
30	12.07
35	9.779
40	7.967
45	6.529
50	5.379
55	4.456
60	3.711
65	3.105
70	2.611
75	2.205
80	1.871
85	1.594
90	1.363
95	1.171
100	1.009
105	0.873
110	0.7577
115	0.6599
120	0.5765
125	0.5052
130	0.4441
135	0.3914
140	0.346
145	0.3066
150	0.2725
155	0.2427
160	0.2166



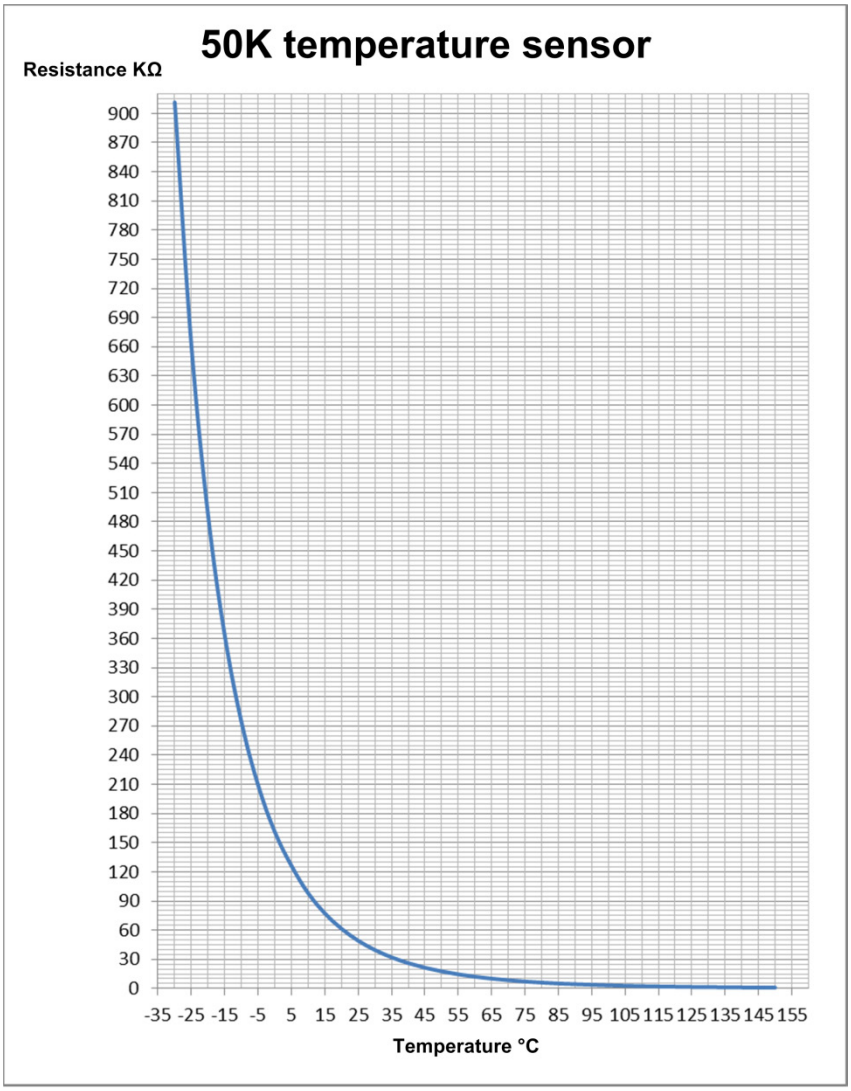
20K temperature sensor resistance - temperature curve

20K	
Temperature \°C	Resistance \KΩ
-30	361.8
-25	265.5
-20	196.9
-15	145
-10	110.3
-5	84.61
0	65.37
5	50.87
10	39.87
15	31.47
20	25.01
25	20
30	16.1
35	13.04
40	10.62
45	8.705
50	7.173
55	5.942
60	4.948
65	4.14
70	3.481
75	2.94
80	2.495
85	2.125
90	1.818
95	1.561
100	1.346
105	1.164
110	1.01
115	0.8799
120	0.7687
125	0.6736
130	0.5921
135	0.5219
140	0.4613
145	0.4088
150	0.3633
155	0.3237
160	0.2891



50K temperature sensor resistance - temperature curve

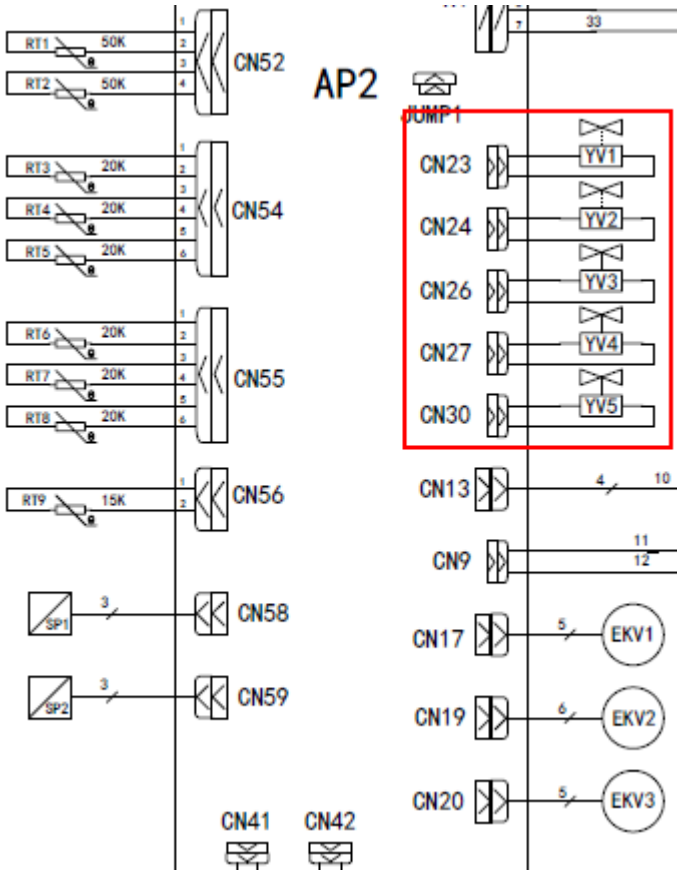
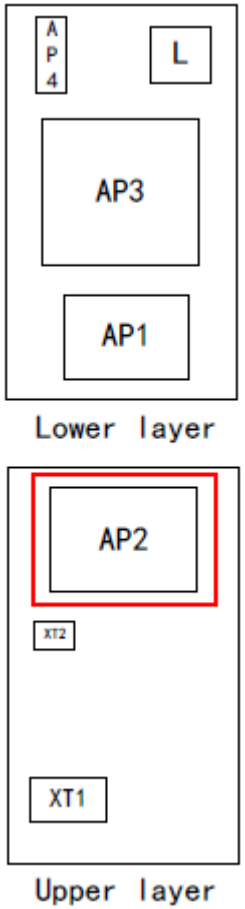
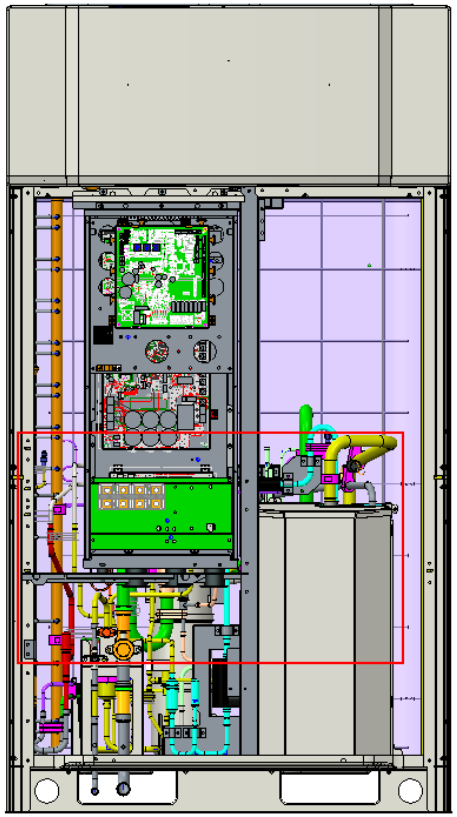
50K	
Temperature \°C	Resistance \KΩ
-30	911.56
-25	660.93
-20	486.55
-15	362.99
-10	274.02
-5	209.05
0	161.02
5	126.17
10	98.006
15	77.349
20	61.478
25	49.191
30	39.61
35	32.088
40	26.147
45	21.425
50	17.651
55	14.618
60	12.168
65	10.178
70	8.5551
75	7.2245
80	6.1288
85	5.2223
90	4.4693
95	3.841
100	3.3147
105	2.8721
110	2.4983
115	2.1816
120	1.9123
125	1.6821
130	1.485
135	1.3155
140	1.1694
145	1.0429
150	0.9331



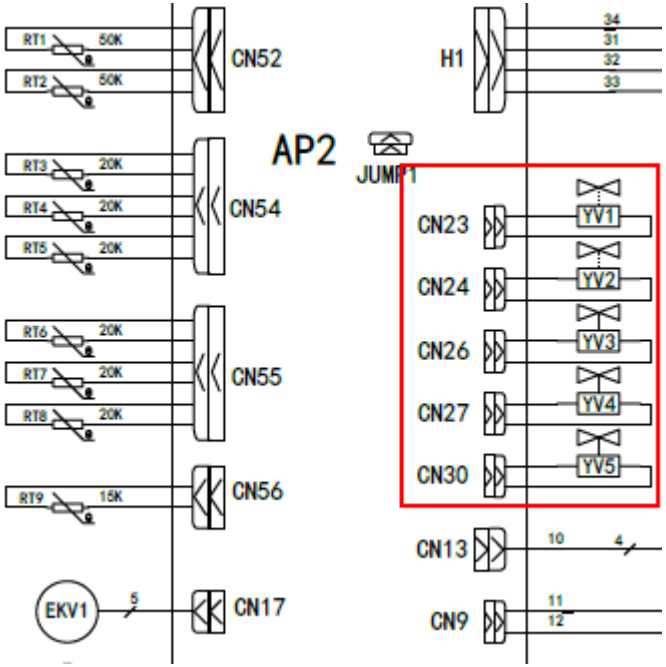
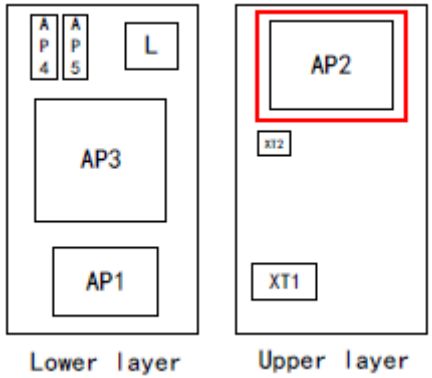
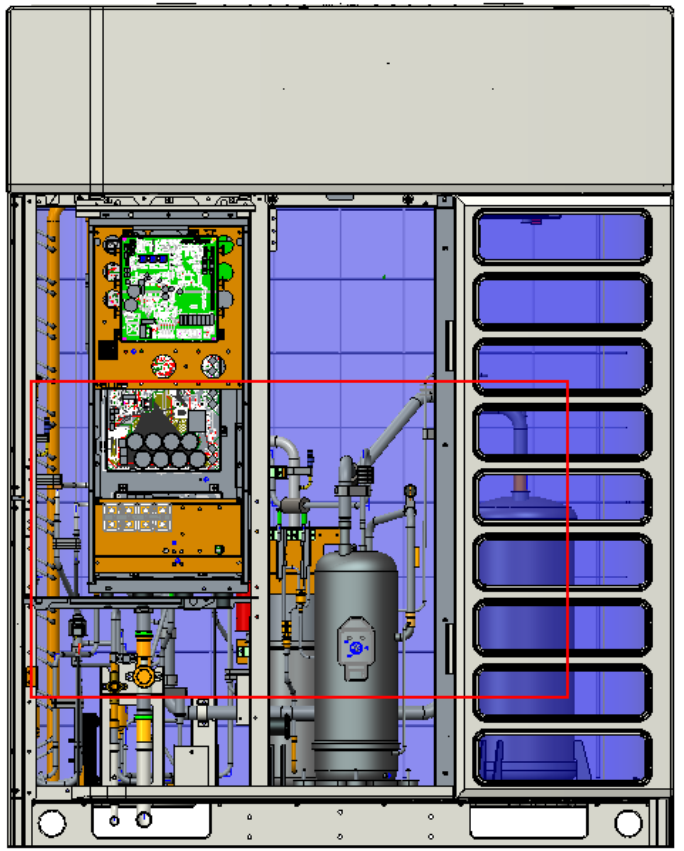
4.3 Solenoid Valve

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>Coils of different types are used on:
① Solenoid valve.
② 4-way valve.</td><td colspan="2">① The 4-way valve is used to switch between cooling mode and heating mode. If the 4-way valve is active, the unit works in heating mode, if the 4-way valve is inactive, the unit works in cooling mode.
② The solenoid valve is used to control the on-and-off of the pipeline. The valve of the unit is solid closed. That is, the valve is closed when it is inactive, open when it is active.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><td colspan="3">Models: AEG08MI2H3、AEG10MI2H3、AEG12MI2H3</td></tr>
</table>

Specifications	Description
Coils of different types are used on: ① Solenoid valve. ② 4-way valve.	① The 4-way valve is used to switch between cooling mode and heating mode. If the 4-way valve is active, the unit works in heating mode, if the 4-way valve is inactive, the unit works in cooling mode. ② The solenoid valve is used to control the on-and-off of the pipeline. The valve of the unit is solid closed. That is, the valve is closed when it is inactive, open when it is active.

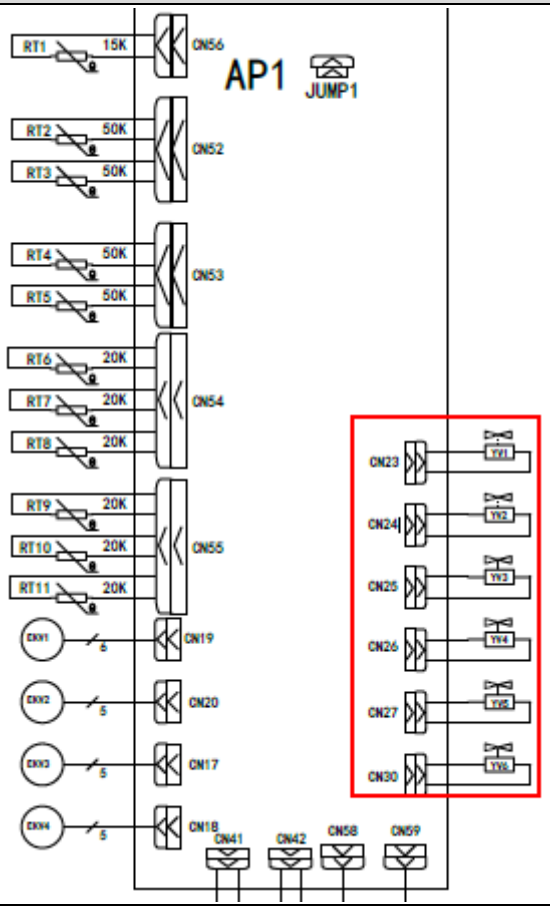
Circuit diagram	Layout of electrical appliance box	Physical position
		

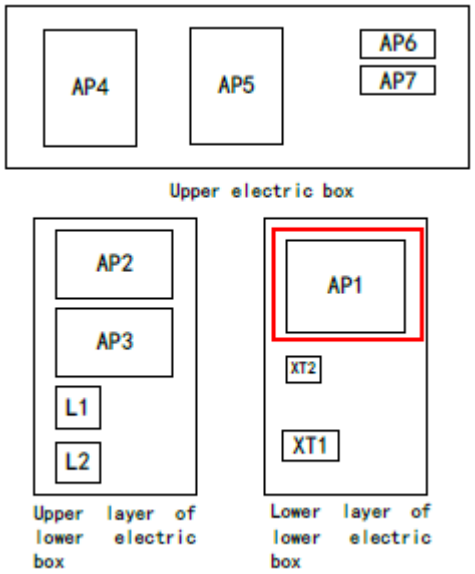
Specifications	Description
Coils of different types are used on: ① Solenoid valve. ② 4-way valve.	① The 4-way valve is used to switch between cooling mode and heating mode. If the 4-way valve is active, the unit works in heating mode, if the 4-way valve is inactive, the unit works in cooling mode. ② The solenoid valve is used to control the on-and-off of the pipeline. The valve of the unit is solid closed. That is, the valve is closed when it is inactive, open when it is active.

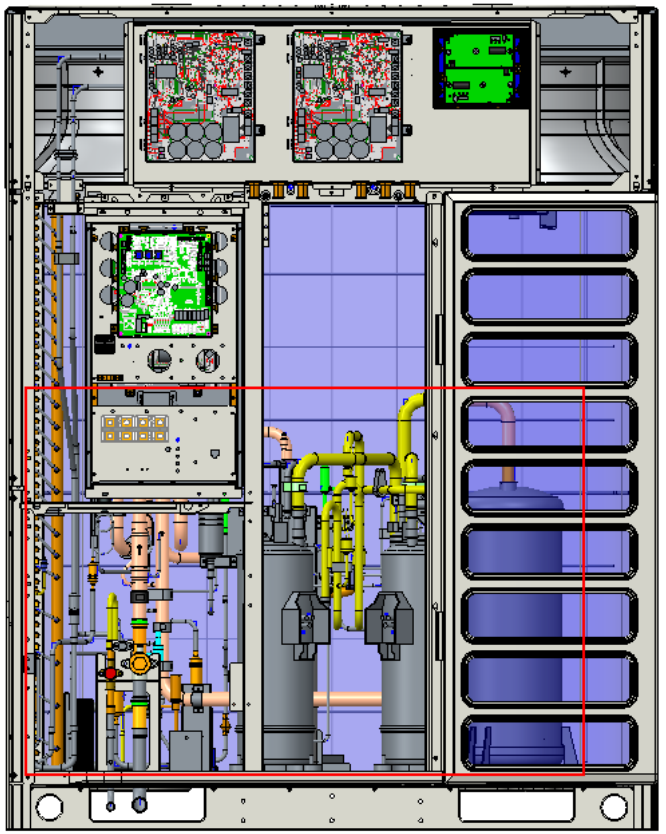
Circuit diagram	Layout of electrical appliance box	Physical position
Models: AEG14MI2H3、AEG16MI2H3		
		

Specifications	Description
Coils of different types are used on: ① Solenoid valve. ② 4-way valve.	① The 4-way valve is used to switch between cooling mode and heating mode. If the 4-way valve is active, the unit works in heating mode, if the 4-way valve is inactive, the unit works in cooling mode. ② The solenoid valve is used to control the on-and-off of the pipeline. The valve of the unit is solid closed. That is, the valve is closed when it is inactive, open when it is active.

Circuit diagram	Layout of electrical appliance box	Physical position
Models: AEG18MI2H3、AEG20MI2H3、AEG22MI2H3		







4.3.1 Mechanical Inspection

(1) Confirm that the unit Power is disconnected.

(2) Find the 4-way valve or solenoid valve, check whether the fixing screw is loose and whether the valve and coil have any apparent exceptions.

4.3.2 Electrical Inspection

Compare the measured coil resistance with the normal coil resistance to check whether the coil is damaged.

(1) Power off the unit. Remove the electrical appliance cover after the ODU stops.
Warning: Electric shock

(2) Remove the electrical appliance cover and check whether the connecting terminal of the 4-way valve or solenoid valve is firm.

(3) Disconnect the corresponding valve's coil terminal from the main board and use a multimeter to measure the coil resistance.

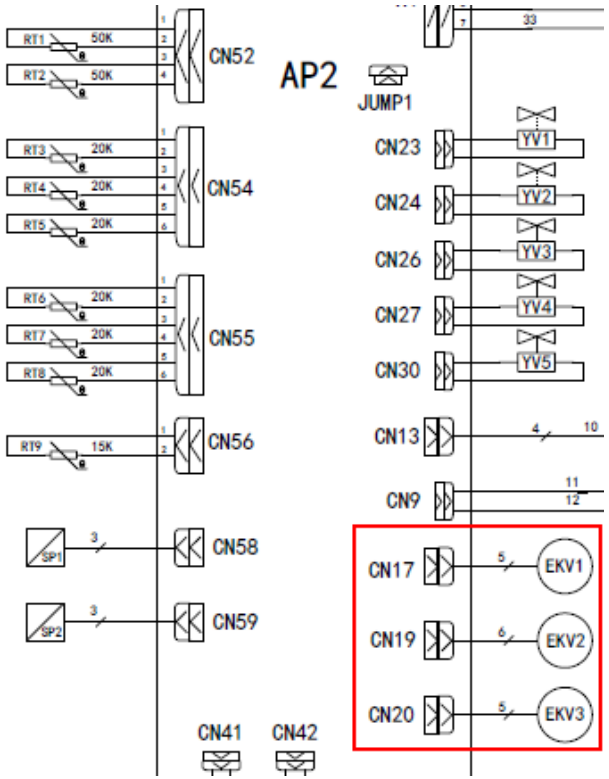
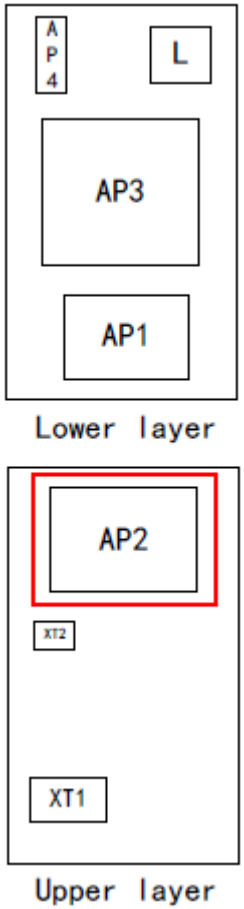
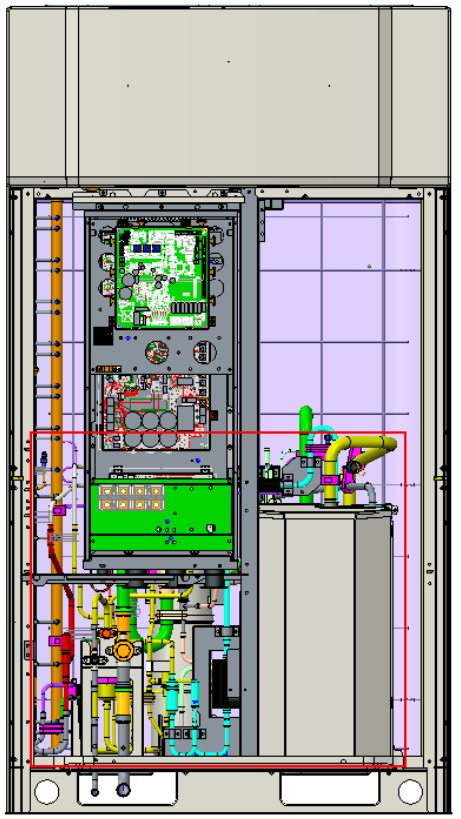
(4) If the measured resistance does not match with that in the following table, the coil needs to be replaced.

Coil	Bolt on the main board	Resistance (Ω)			Normal range of deviation
		ODU capacity (HP)			
		8、10、12	14、16	18、20,、22	
Main cooling 4-way valve	CN23	2085			±10%
Oil-return solenoid valve 1	CN24	2085			±10%
Oil-return solenoid valve 2	CN25	—		2085	±10%
Low-temperature oil-return solenoid valve	CN26	2085			±10%
Subcooler solenoid valve	CN27	1273			±10%
Gas bypass valve	CN30	2085			±10%

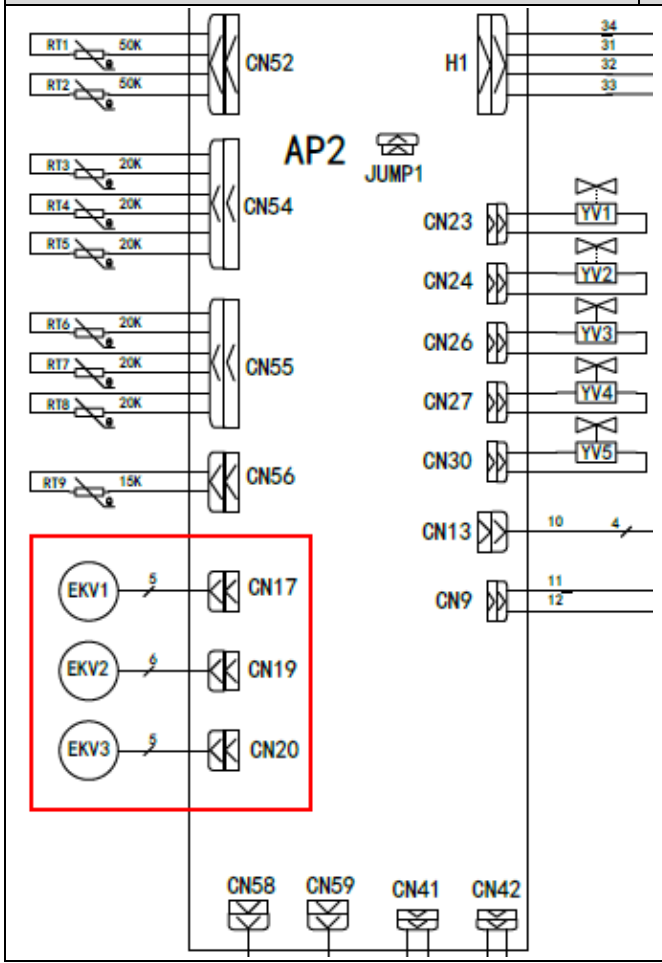
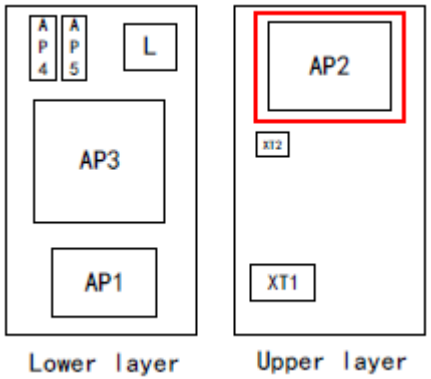
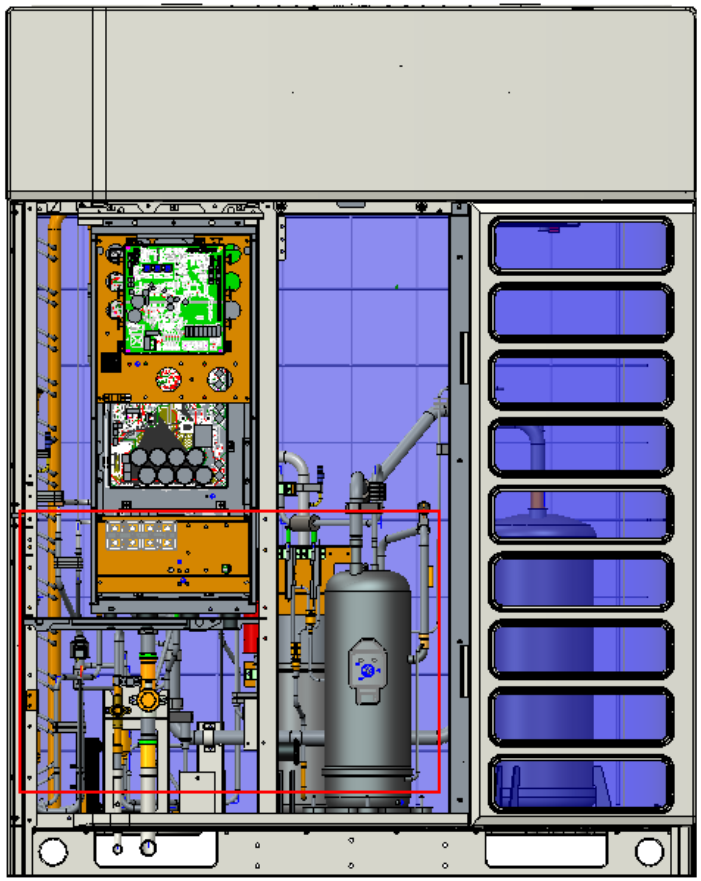
4.4 Electronic Expansion Valve

<table>
<tr><th colspan="2">Specifications</th><th colspan="2">Description</th></tr>
<tr><td colspan="2">Two types of electronic expansion valves are adopted by the unit:
① Heating electronic expansion valve with the largest openness of 3000 pls and 6-core coil.
② Subcooling electronic expansion valve and EVI electronic expansion valve with the largest openness of 480 pls and 5-core coil.</td><td colspan="2">The electronic expansion valve is used to control the flow. When the electronic expansion valve is closed (the openness is 0 pls), the flow is stopped.</td></tr>
<tr><td>Circuit diagram</td><td>Layout of electrical appliance box</td><td colspan="2">Physical position</td></tr>
<tr><td colspan="4">Models: AEG08MI2H3、AEG10MI2H3, AEG12MI2H3</td></tr>
</table>

Specifications	Description
Two types of electronic expansion valves are adopted by the unit: ① Heating electronic expansion valve with the largest openness of 3000 pls and 6-core coil. ② Subcooling electronic expansion valve and EVI electronic expansion valve with the largest openness of 480 pls and 5-core coil.	The electronic expansion valve is used to control the flow. When the electronic expansion valve is closed (the openness is 0 pls), the flow is stopped.

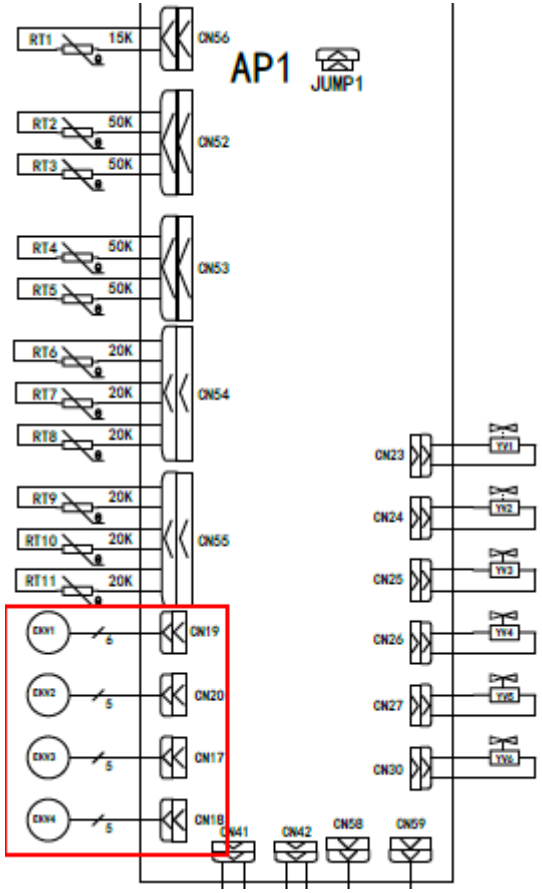
Circuit diagram	Layout of electrical appliance box	Physical position
		
Models: AEG14MI2H3、AEG16MI2H3		

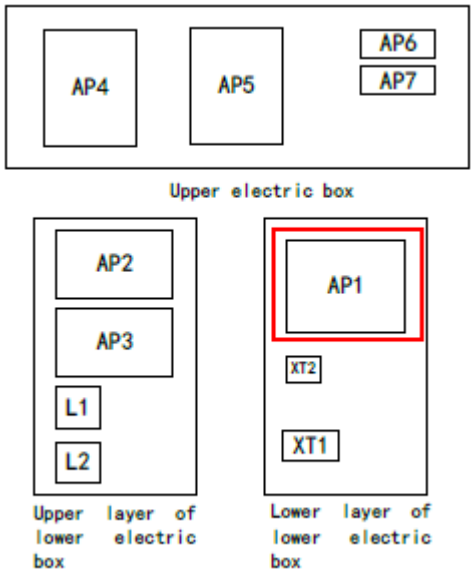
Specifications	Description
Two types of electronic expansion valves are adopted by the unit: ① Heating electronic expansion valve with the largest openness of 3000 pls and 6-core coil. ② Subcooling electronic expansion valve and EVI electronic expansion valve with the largest openness of 480 pls and 5-core coil.	The electronic expansion valve is used to control the flow. When the electronic expansion valve is closed (the openness is 0 pls), the flow is stopped.

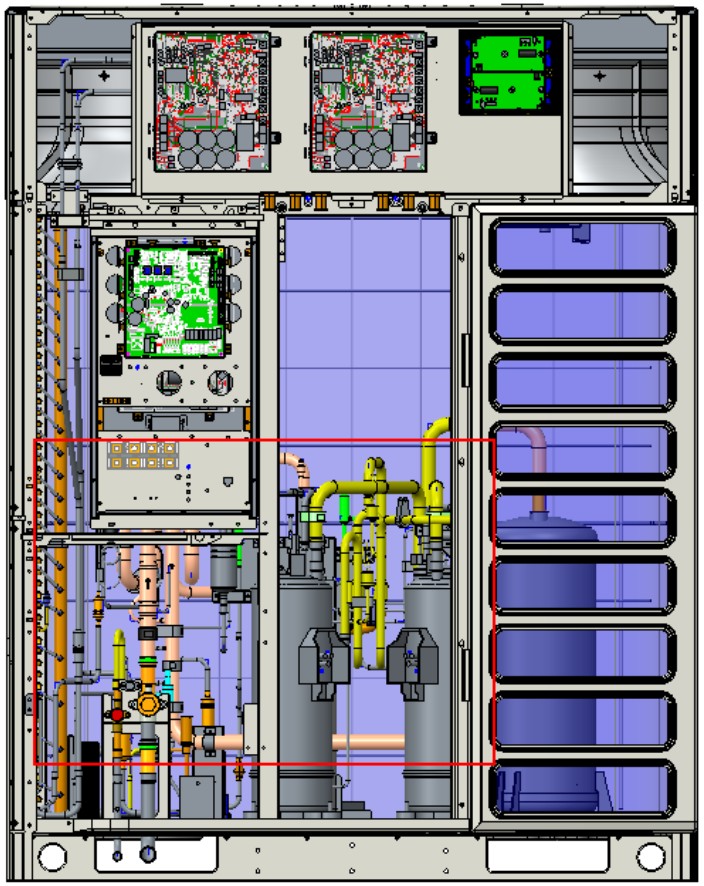
Circuit diagram	Layout of electrical appliance box	Physical position
		

Specifications	Description
Two types of electronic expansion valves are adopted by the unit: ① Heating electronic expansion valve with the largest openness of 3000 pls and 6-core coil. ② Subcooling electronic expansion valve and EVI electronic expansion valve with the largest openness of 480 pls and 5-core coil.	The electronic expansion valve is used to control the flow. When the electronic expansion valve is closed (the openness is 0 pls), the flow is stopped.

Circuit diagram	Layout of electrical appliance box	Physical position
Models: AEG18MI2H3 、AEG20MI2H3、AEG22MI2H3		







4.4.1 Mechanical Inspection

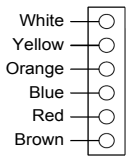
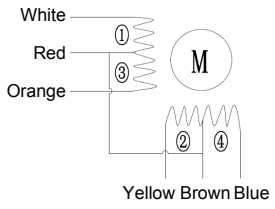
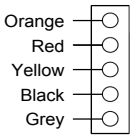
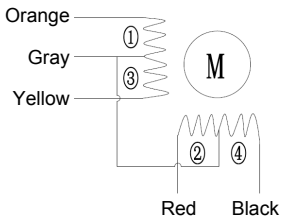
Step 1: Switch off the power of the ODU.

Step 2: Check whether the coil of the electronic expansion valve is firmly fixed on the electronic expansion valve.

4.4.2 Electrical Inspection

Step 1: Power off the ODU and power on it. When the ODU is powered on again, the electronic expansion valve should be reset. When the electronic expansion valve is reset, touch the valve with a hand to check if the valve core rotates. In the second half of the resetting process, the valve core will click and vibrate obviously; otherwise, the electronic expansion valve, coil or the main board needs to be replaced.

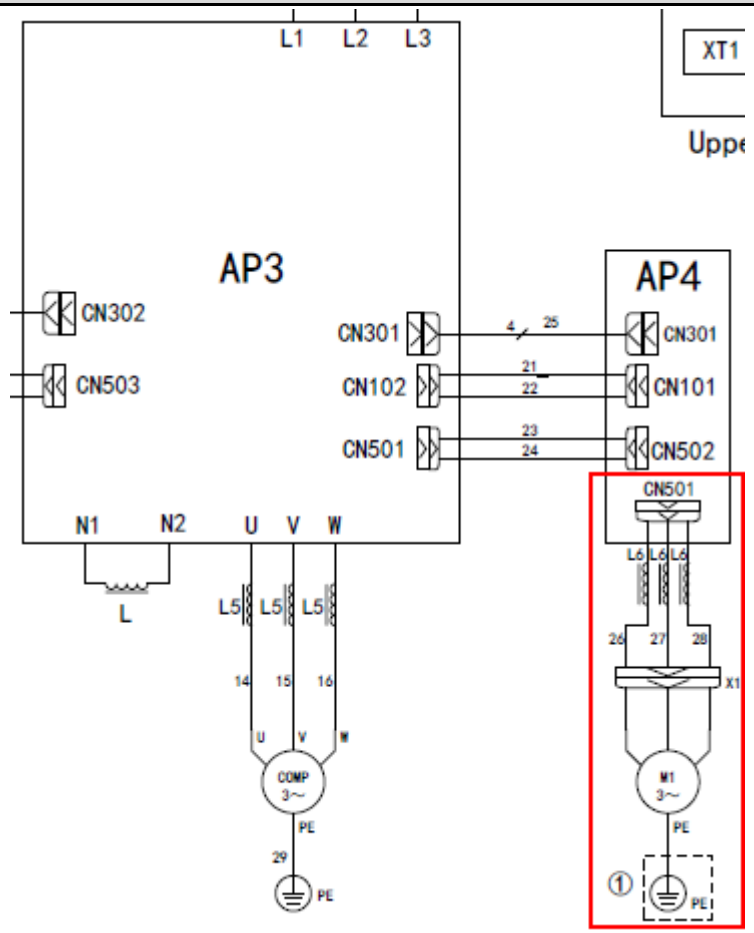
Step 2: Switch off the power of the ODU, disconnect the coil terminal of the electronic expansion valve from the main board and use a multimeter to measure the resistance of each contact point of the terminal. The normal range of the resistance is shown in the following table. If any value is beyond the normal range, the coil is damaged and needs to be replaced.

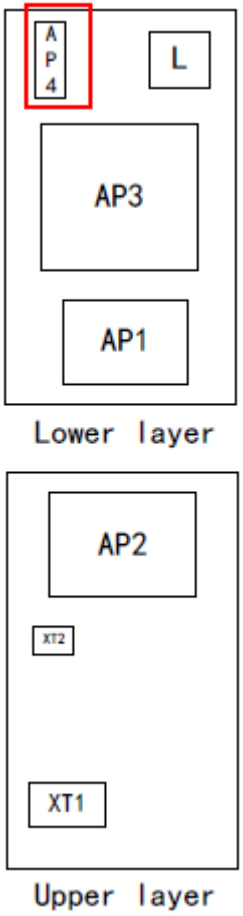
Coil	Interface No.	Color	Port specifications	Max. number of steps	Terminal layout	Diagram of internal coils	Coil resistance range
Heating electronic expansion valve	CN19	White	6 cores	3000			100Ω±10Ω
Subcooler electronic expansion valve	CN20	Red	5 cores	480			46Ω±3Ω
EVI electronic expansion valve 1	CN17	Black	5 cores	480			
EVI electronic expansion valve 2	CN18	White	5 cores	480			

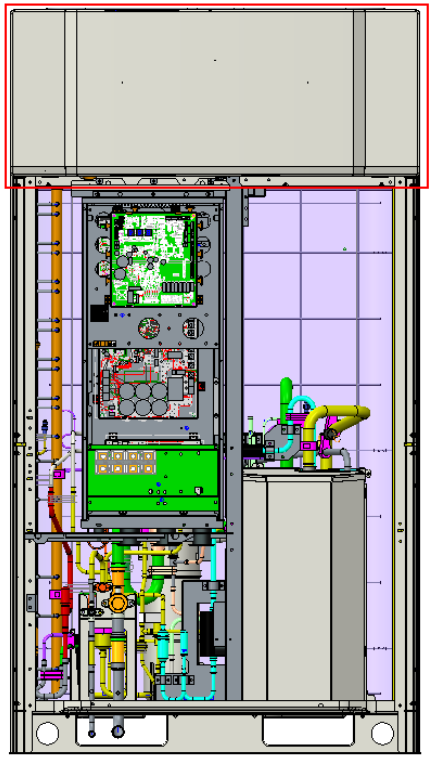
4.5 Fans

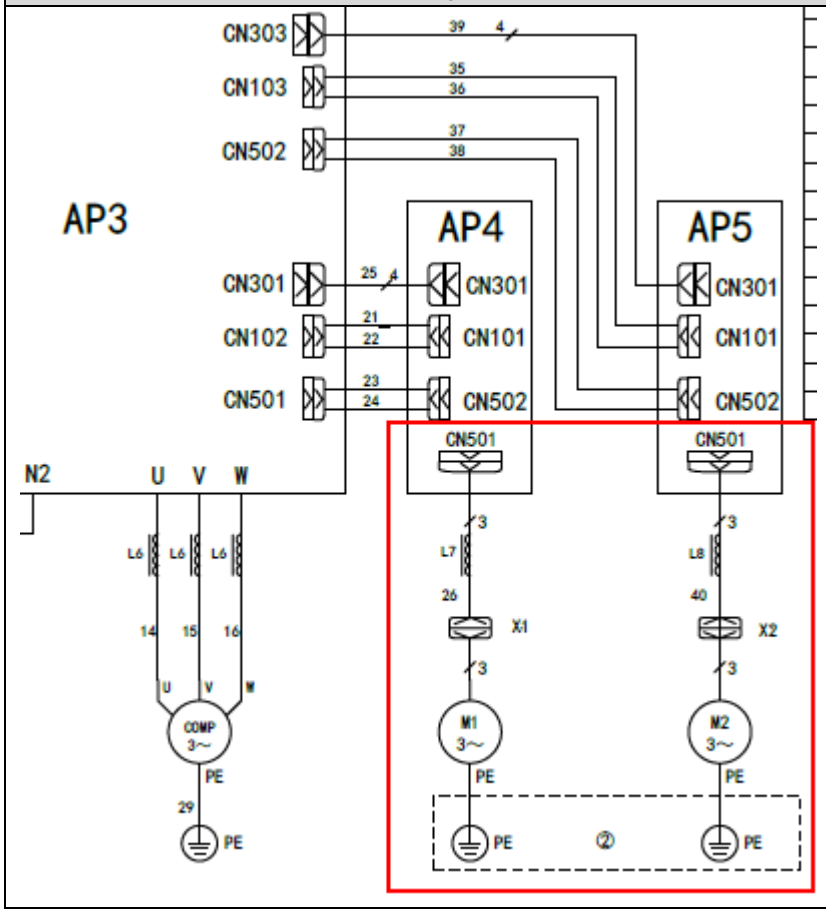
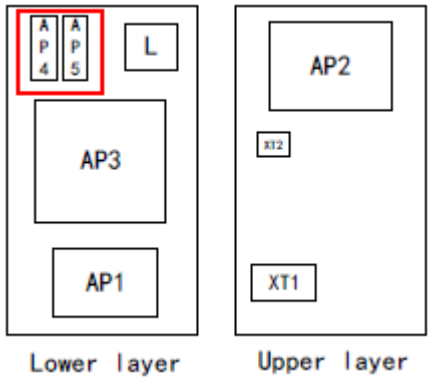
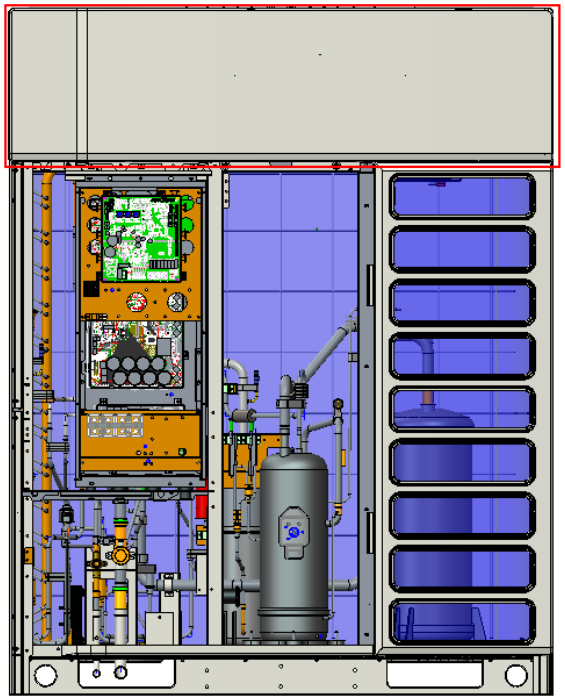
Specifications	Description
The unit of 8HP-12HP is equipped with one fan, while the unit of 14HP-24HP is equipped with two fans. The fans are connected to the fan drive board by a group of three power cables.	The fans are powered by a DC inverter motor and can adjust the speed automatically according to the environmental temperature and load, thus adapting to the demand of the unit operation.

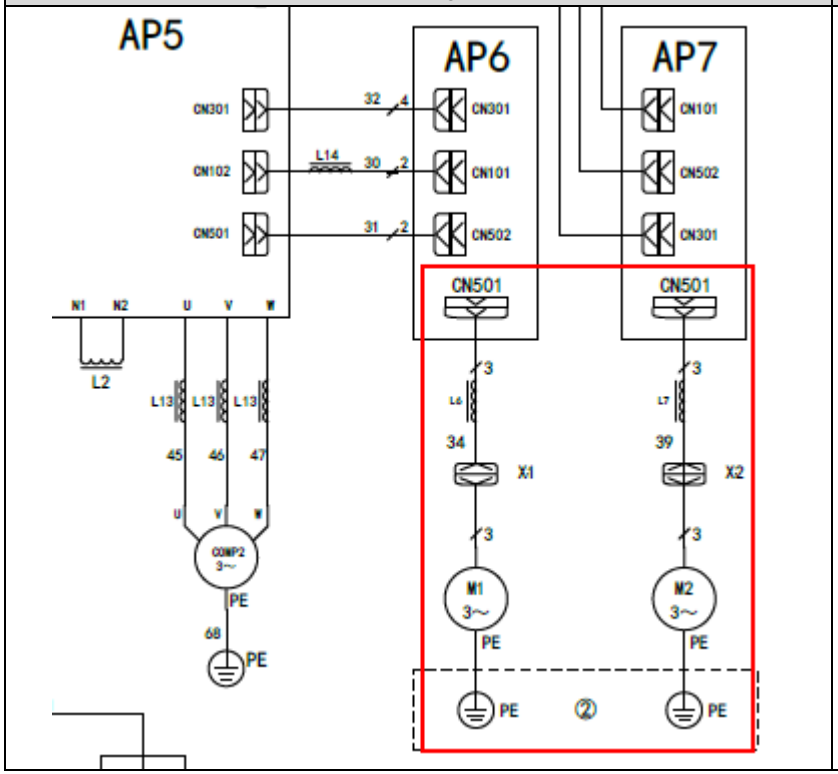
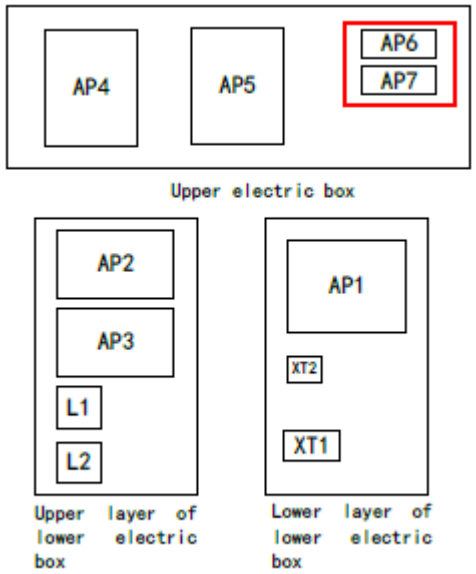
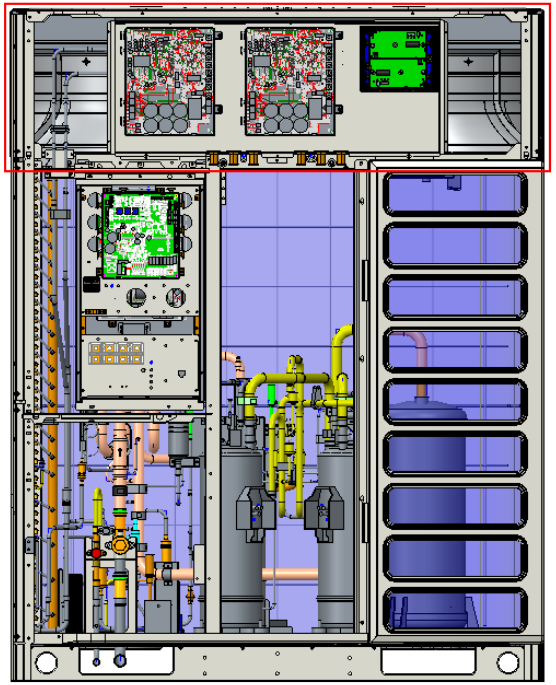
Circuit diagram	Layout of electrical appliance box	Physical position
Models: AEG08MI2H3、AEG10MI2H3、AEG12MI2H3		







Models: AEG14MI2H3, AEG16MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position
		

Models: AEG18MI2H3、AEG20MI2H3、AEG22MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position
		

4.5.1 Mechanical Inspection

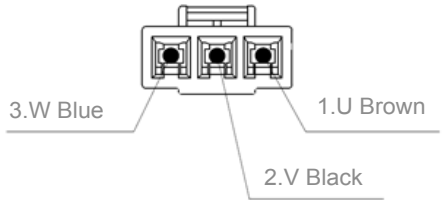
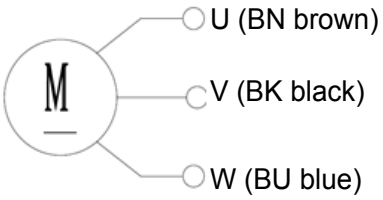
Step 1: Switch off the power of the ODU.

Step 2: Check whether the connector between the fan motor and fan drive board is firmly connected.

Step 3: Rotate the blades with a hand to check whether they can rotate smoothly and whether the blades rub the baffle ring during rotation. If the blades are blocked during rotation, the motor needs to be replaced; if the blades rub the baffle ring during rotation, check whether the blades and baffle ring deform and needs to be replaced.

4.5.2 Electrical Inspection

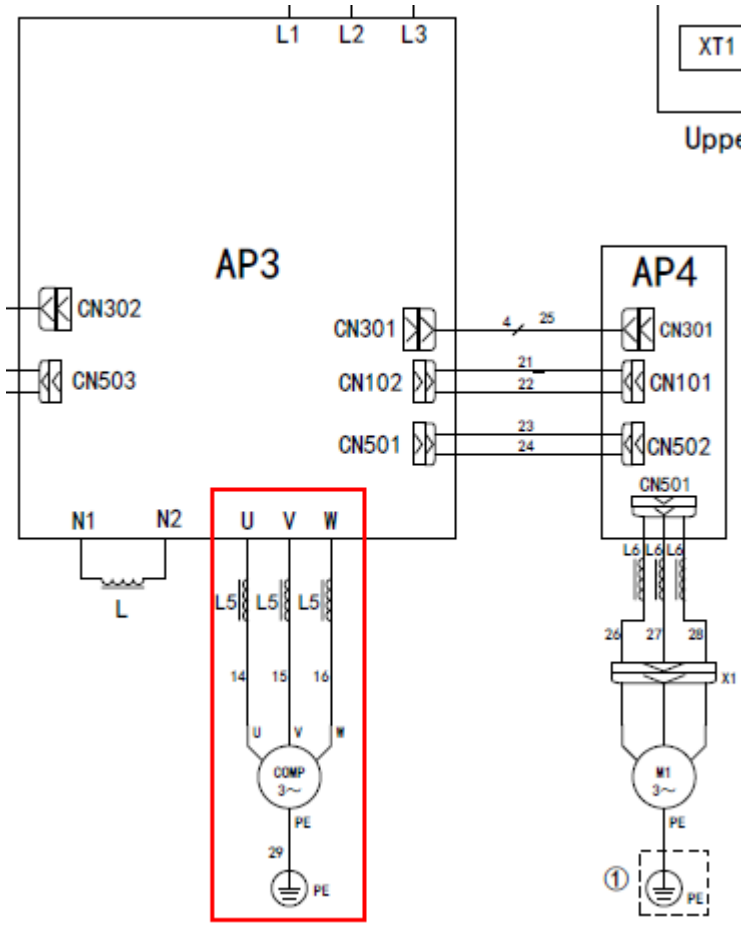
Switch off the power of the ODU. Disconnect the connector between the fan motor and fan drive board. Use a multimeter to measure the resistance of each contact point of the motor terminal. The normal range of the resistance is shown in the following table. If any value is beyond the normal range, the motor is damaged and needs to be replaced.

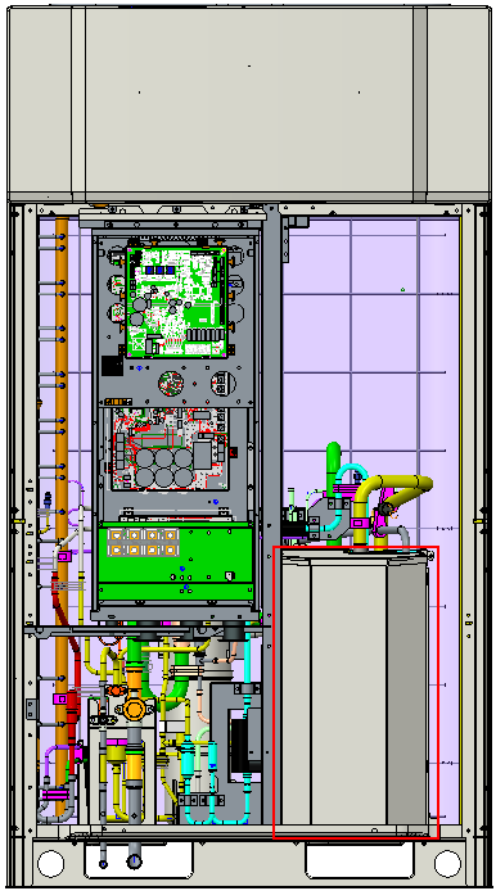
Terminal layout	Diagram of internal coils	Range of coil resistance between any two phases
		10.2Ω±7%

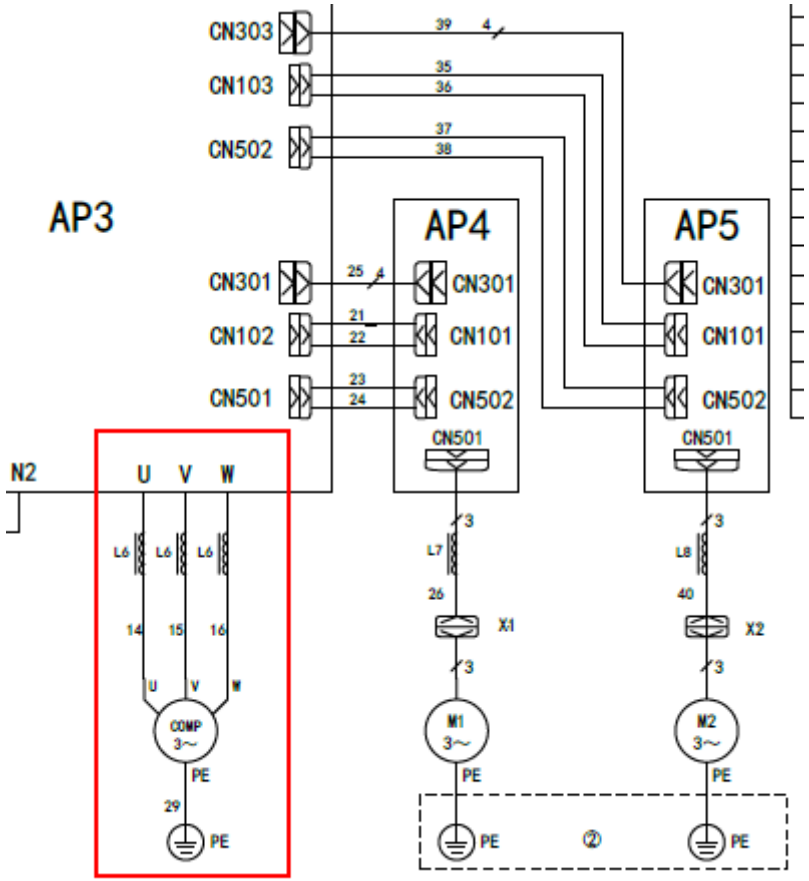
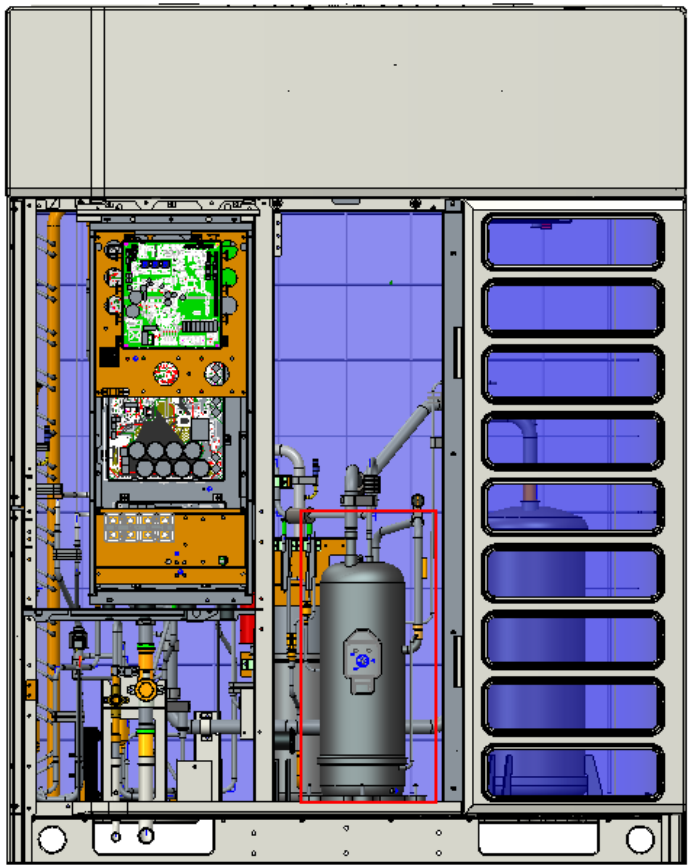
4.6 Compressor

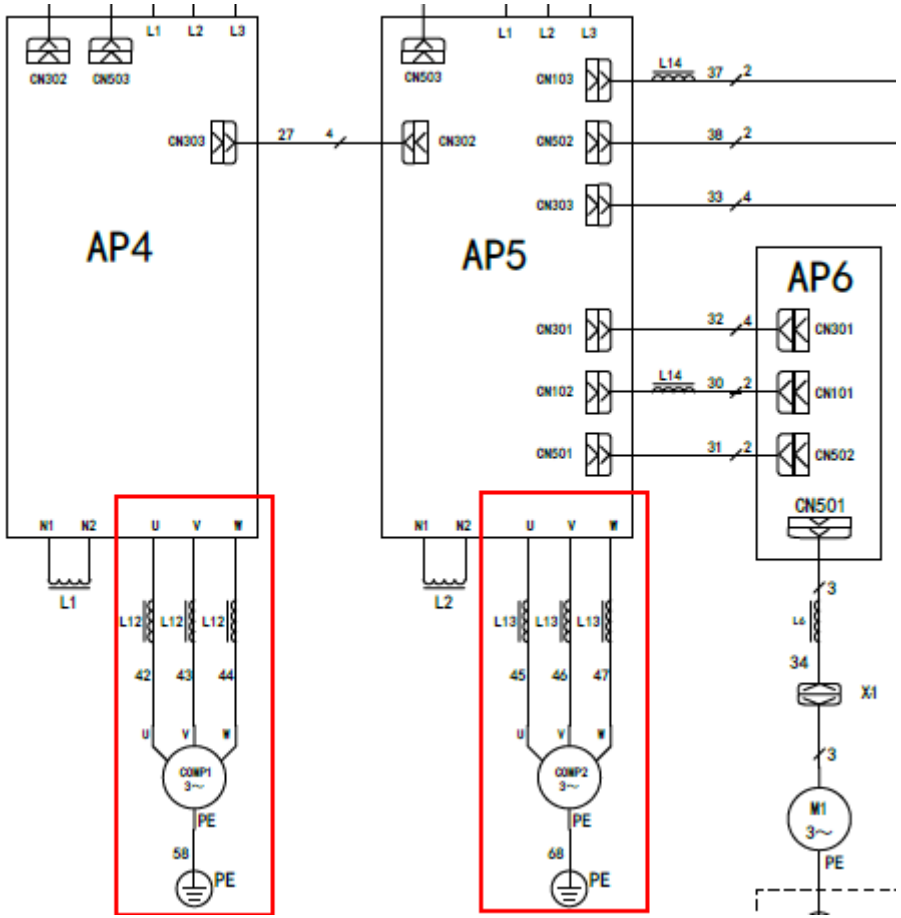
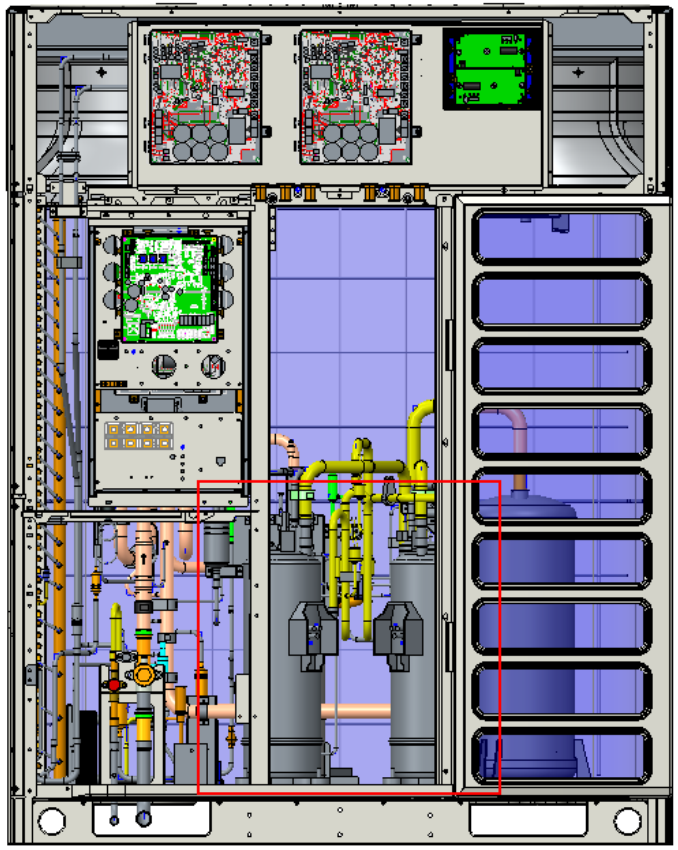
Specifications	Description
Models: AA55PHDG-D1Y2, DA80PHDG-D1Y2	Compression refrigerant, recycling refrigerant.

Models: AEG08MI2H3、AEG10MI2H3、AEG12MI2H3	
Circuit diagram	Physical position





Models: GMV-400WM/H-X、GMV-450WM/H-X	
Circuit diagram	Physical position
	

Models: AEG18MI2H3、AEG20MI2H3、AEG22MI2H3	
Circuit diagram	Physical position
	

4.6.1 Diagnosis of Compressor Failures

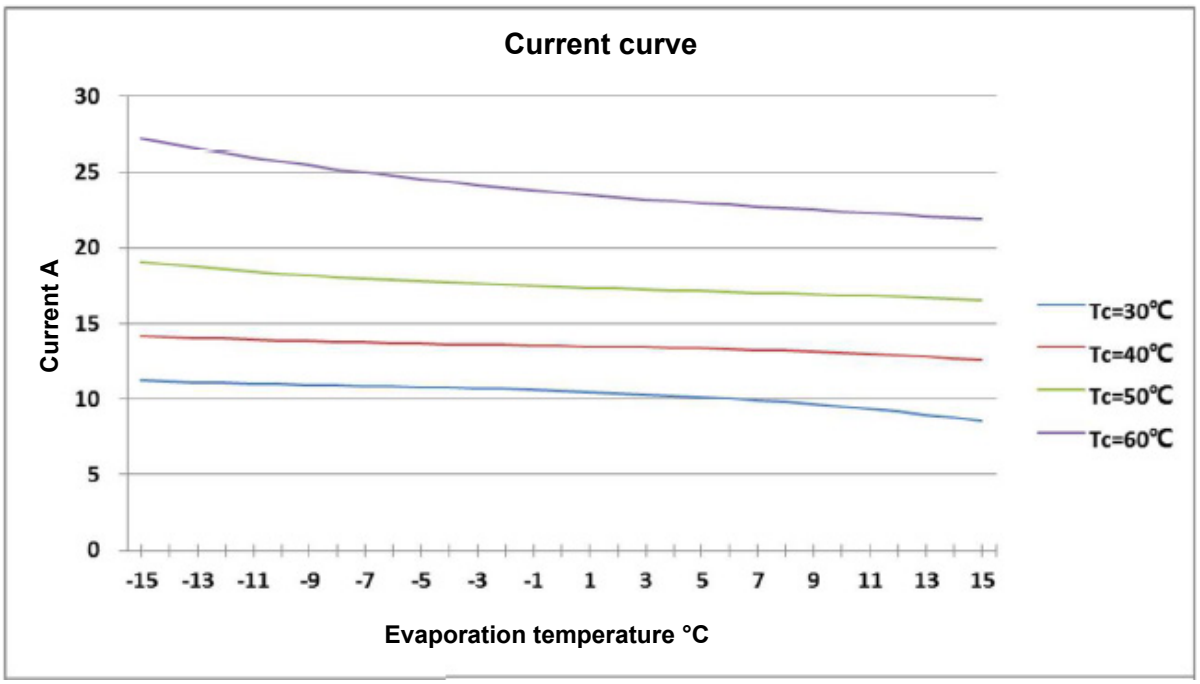
4.6.1.1 When the unit can be started

Step 1:

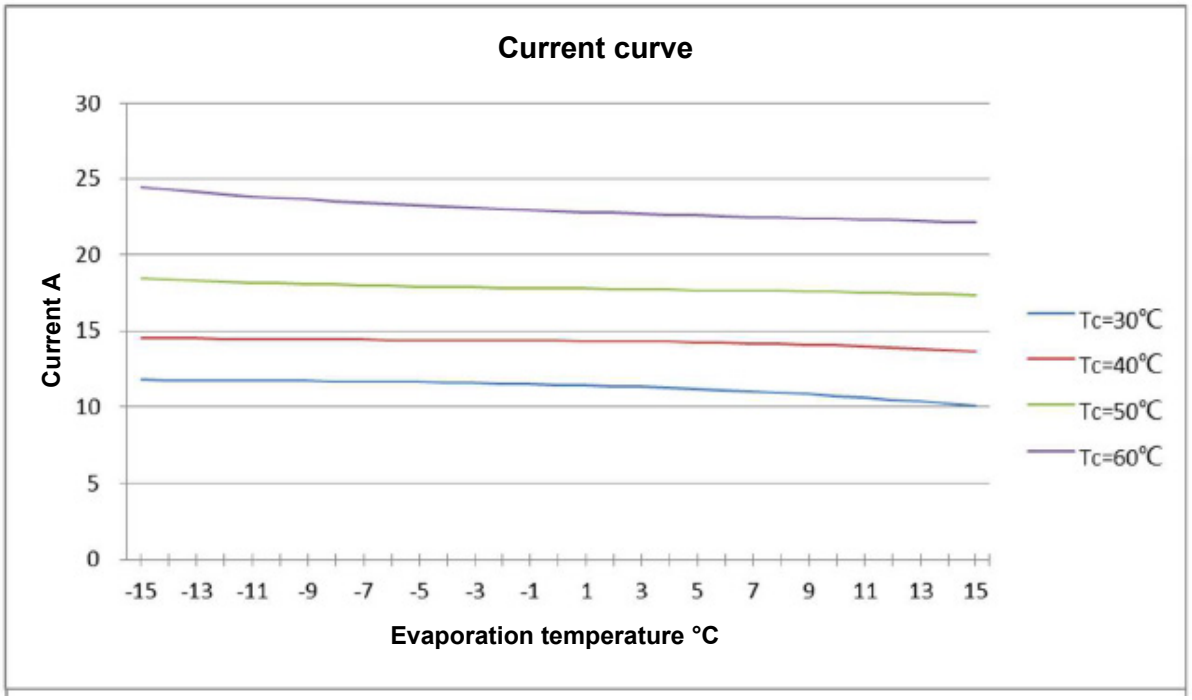
If the unit can be started, check the faulty compressor's line current. Use a pressure gauge to measure the gas and liquid valve pressure and monitor the measured data on a PC. Compare the data to the following table of recommended current. The current may deviates by about 10% depending on the inverter compressor's speed and working condition.

(1) Inverter compressor AA55PHDG-D1Y2:

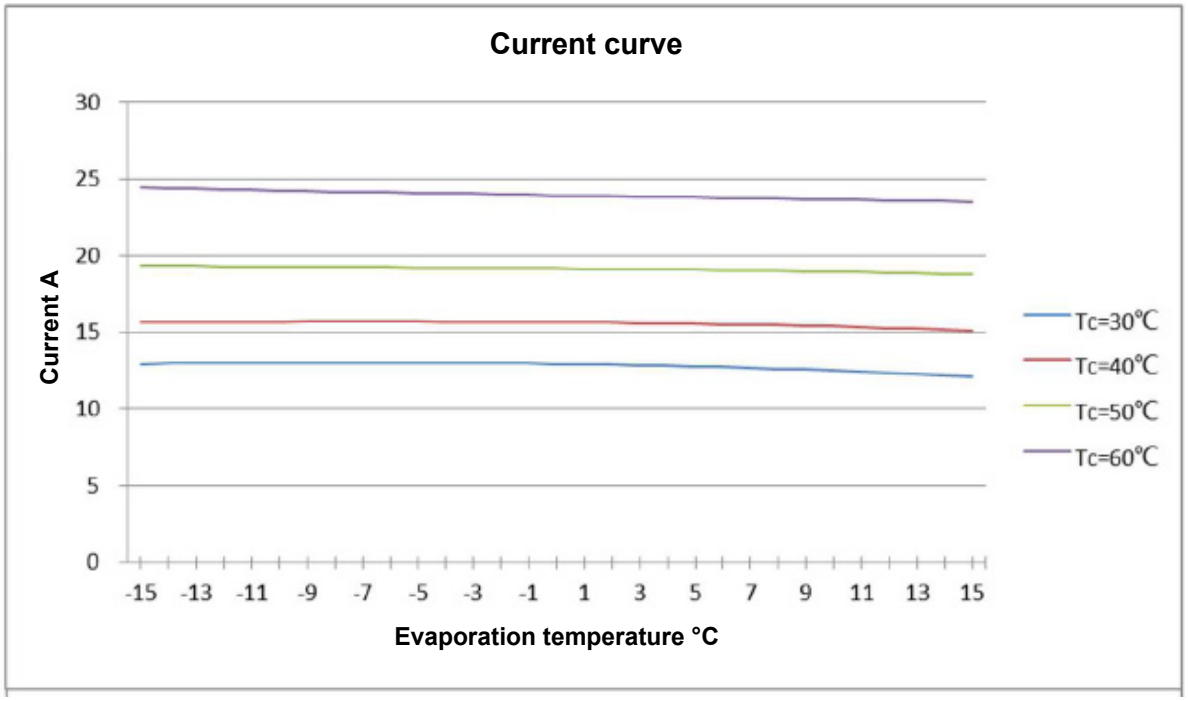
When the compressor frequency is 30 Hz, the current curve under different evaporation temperature and condensation temperature is shown as follows:



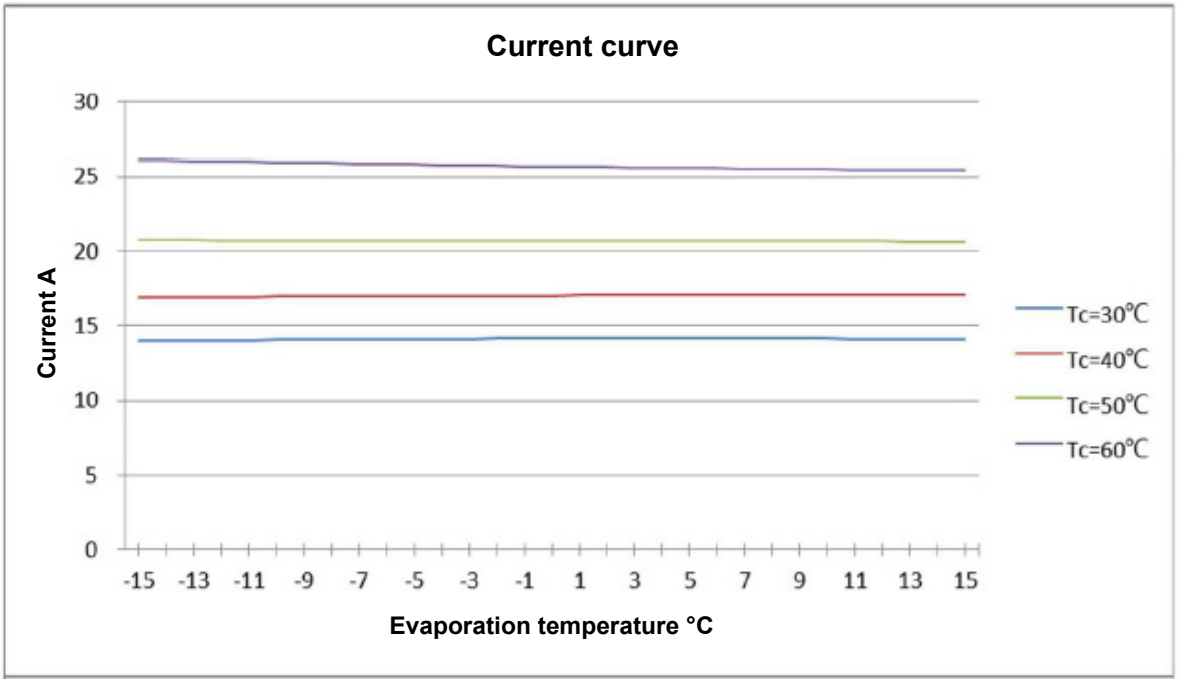
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



When the compressor frequency is 90 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



When the compressor frequency is 120 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:

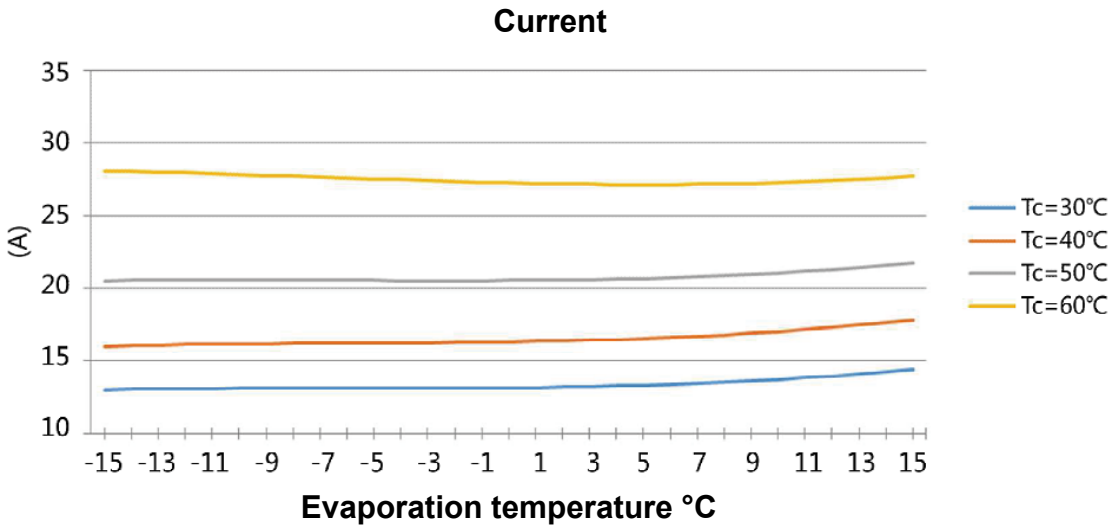


NOTE!

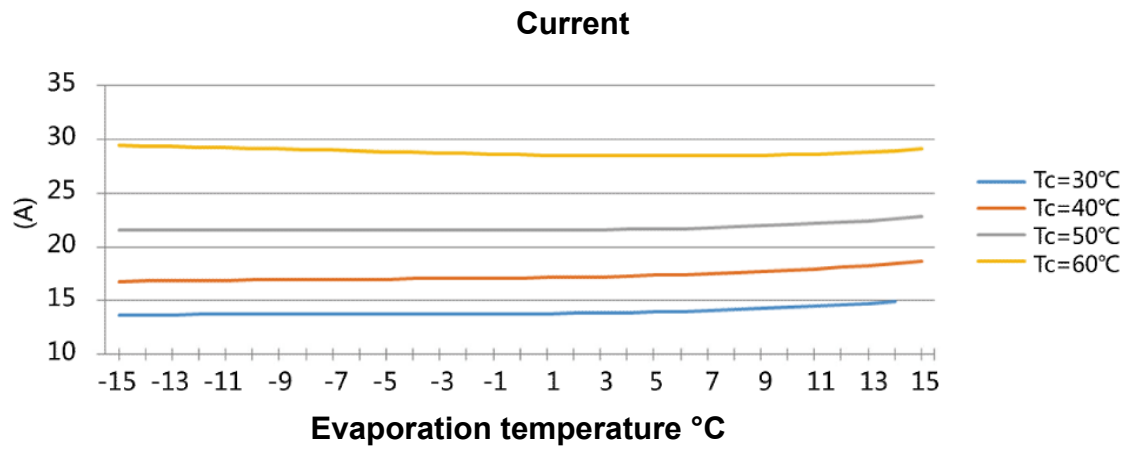
When the compressor is working at another frequency, the current curve can be obtained through interpolation calculation of the above frequency.

(2) Inverter compressor DA80PHDG-D1Y2:

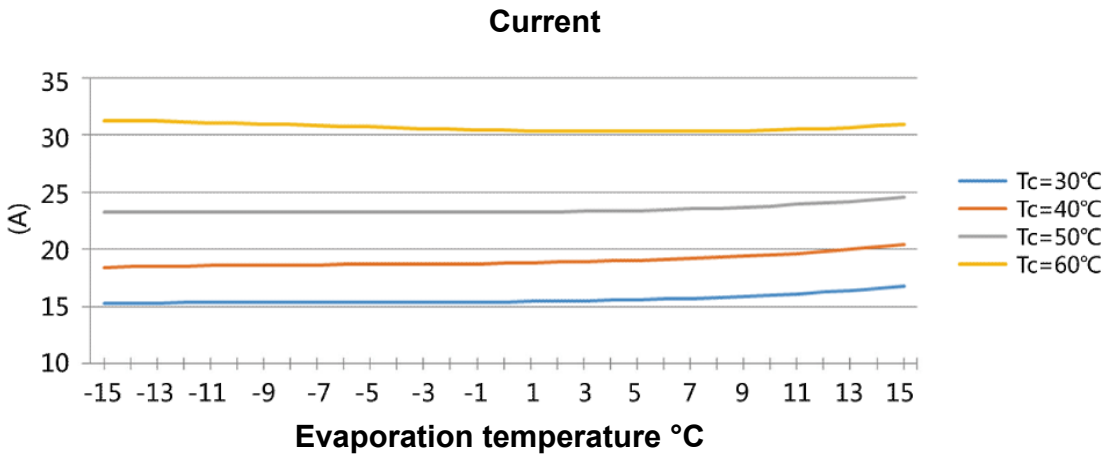
When the compressor frequency is 30 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



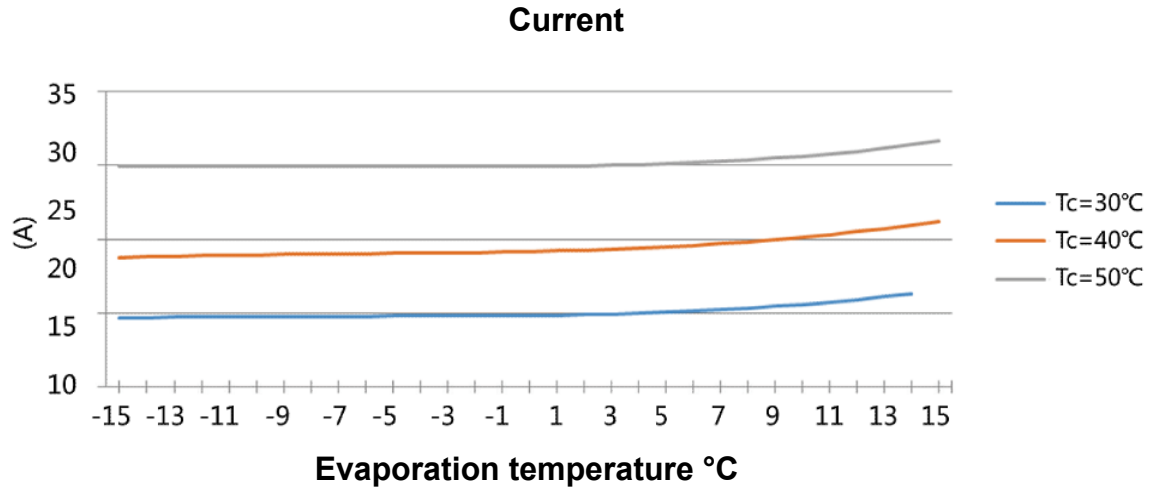
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



When the compressor frequency is 90 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



When the compressor frequency is 120 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



NOTE!

When the compressor is working at another frequency, the current curve can be obtained through interpolation calculation of the above frequency.

Step 2:

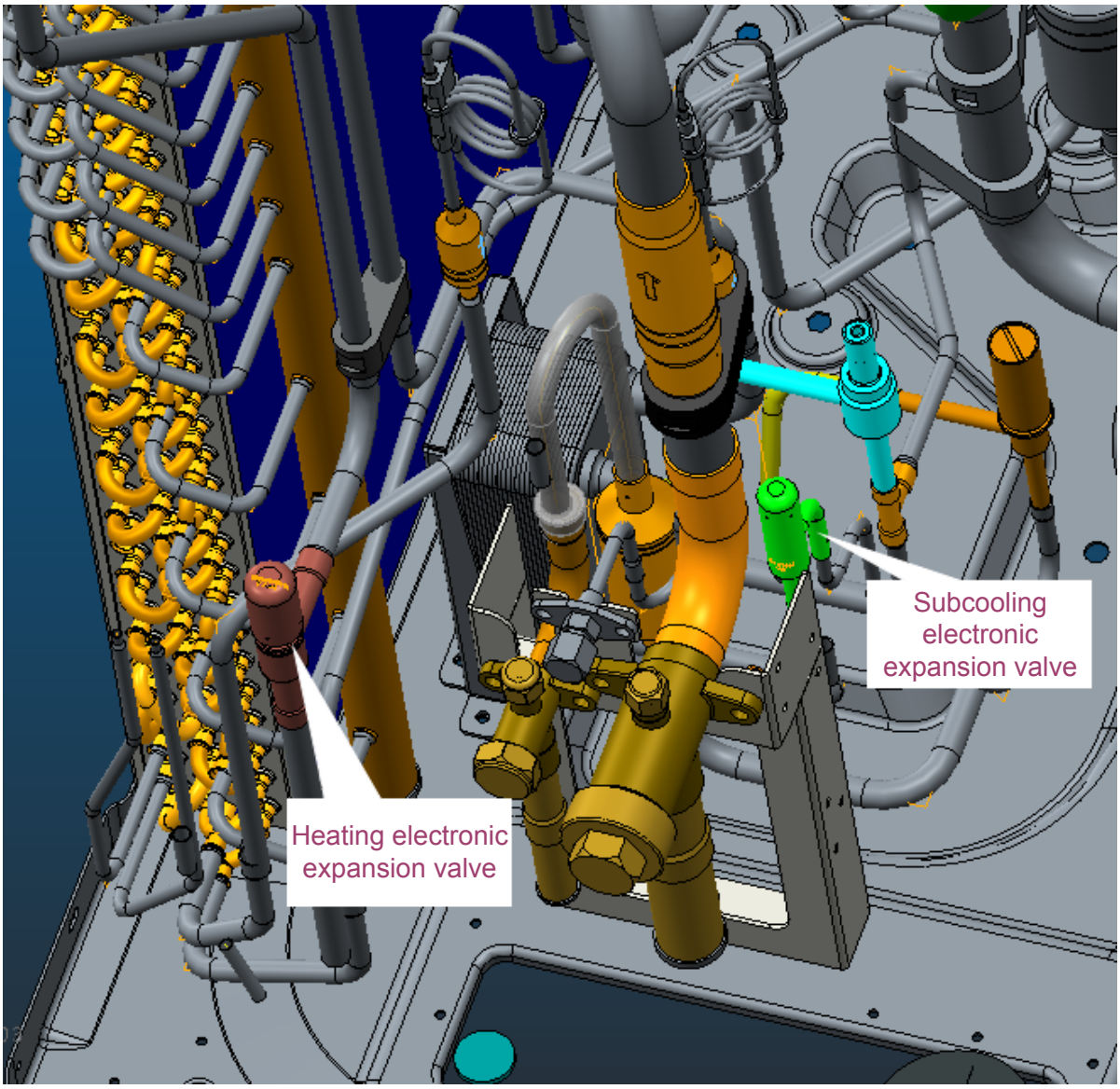
Check whether the running sound of the compressor is normal and whether any high-pitched sound or obvious scratch can be heard. If there is a nearby unit running properly, compare the sound of the compressor under inspection with that of the normally running unit.

Step 3:

Check whether the electronic expansion valve of the ODU and 4-way valve work properly, and whether the oil-return pipeline and oil-return valve are normal. Touch the oil-return capillary tube with a hand to check whether oil flows in the tube and check the pipeline temperature.

Diagnosis method:

1) Electronic expansion valve: When the unit is powered on and off each time, the electronic expansion valve needs to reset. Touch the valve with a hand to check if the valve core rotates. In the second half of the resetting process, the valve core will click and vibrate obviously.



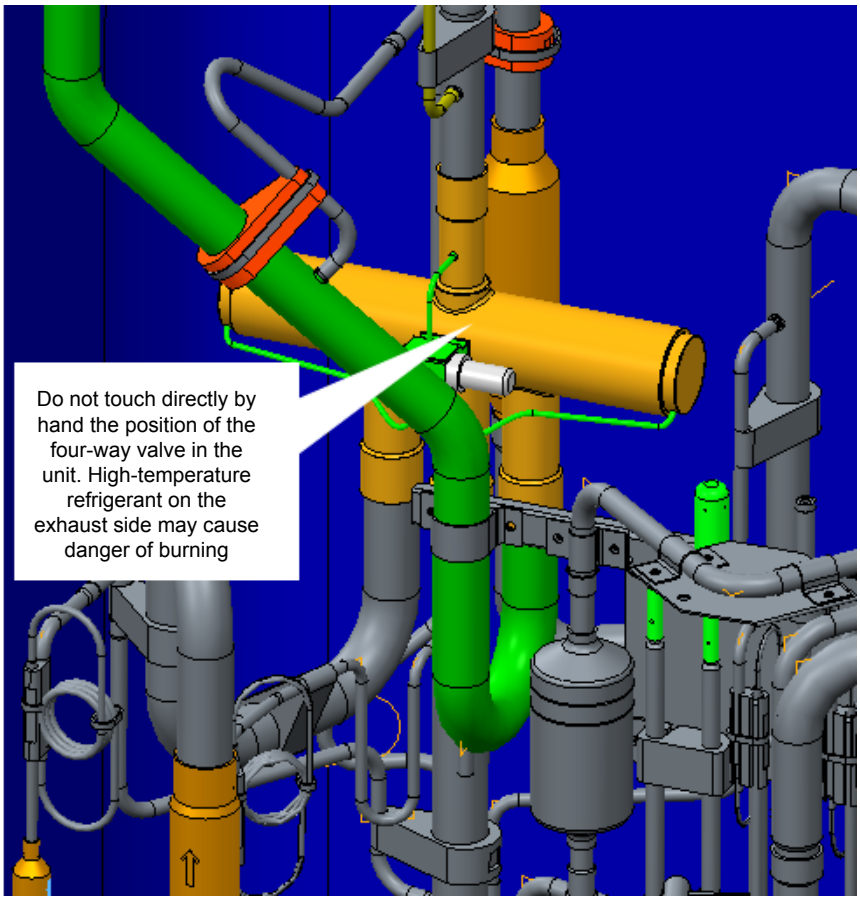
Note on touching the electronic expansion valve:

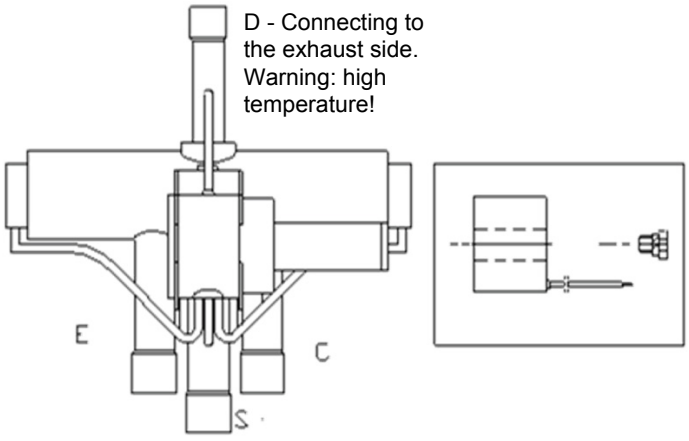
Notes:

① Check whether the coil is firmly fixed.

② Touch the upper part of the electronic expansion valve and check whether the resetting of the unit can be clearly felt.

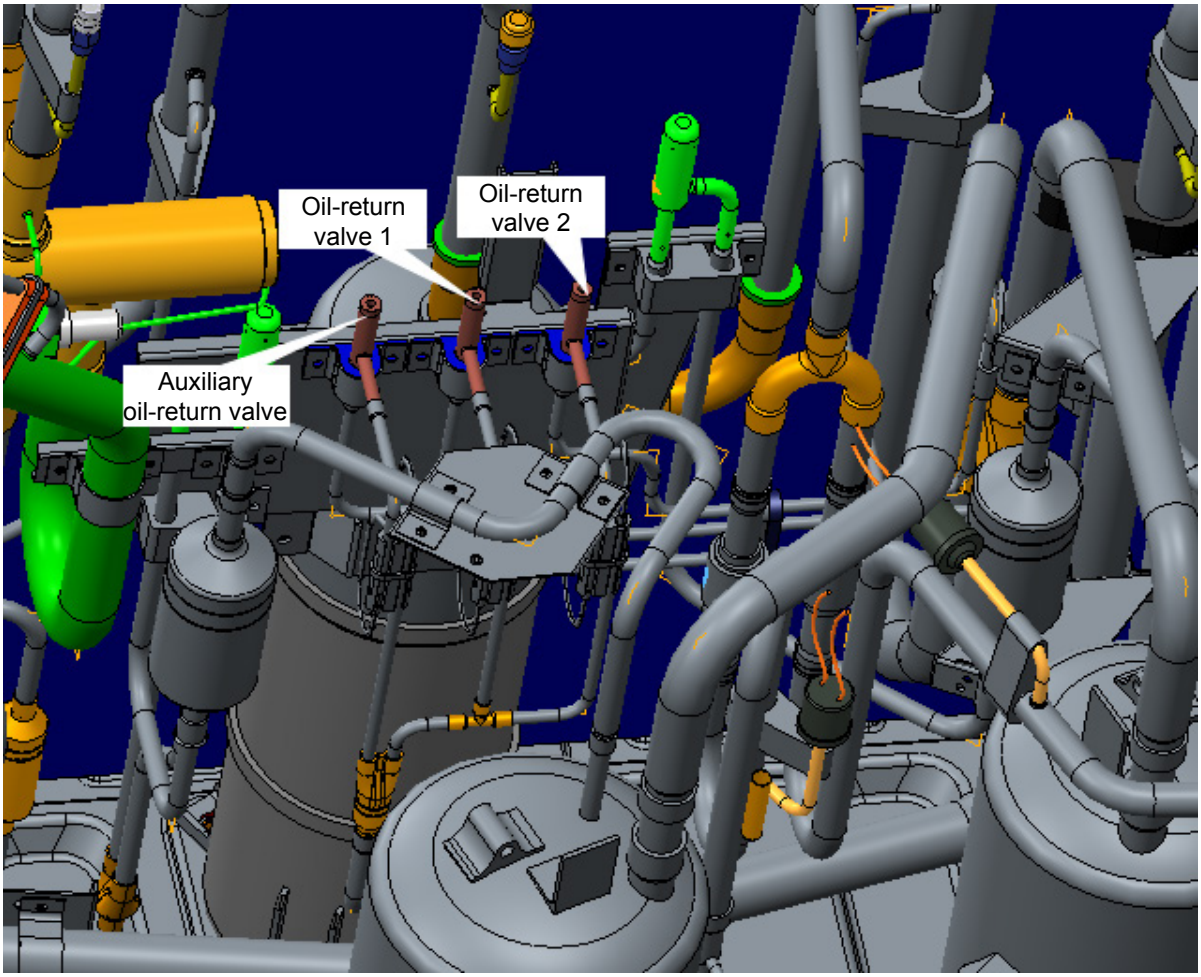
2) 4-way valve: When it is normal, the temperature different between it and the four copper tubes connecting to the valve is obvious. When the 4-way valve works, obvious sound and vibration can be heard and felt.





Marks are made on the 4-way valve: D indicates connection to the exhaust side, E indicates connection to the IDU evaporator, S indicates connection to the air inlet of gas-liquid separator, C indicates connection to the condenser; when the system runs in the cooling mode, C indicates that the pipeline is in the high-pressure and high-temperature status, while E and S indicate that the pipeline is in the low-pressure and low-temperature status; when the system runs in the heating mode, E indicates that the pipeline is in the high-pressure and high-temperature status, while C and S indicate that the pipeline is in the low-pressure and low-temperature status; the pipe marked by D is connected to the air outlet and remains in the high-pressure and high-temperature status. When the unit is being started, defrosting and conducting oil return, the 4-way valve produces obvious valve pushing sound. Do not touch the pipeline with hands. Otherwise, you may get scalded.

3) Oil-return solenoid valve: It can be diagnosed based on the oil-return valve status displayed on the monitor program and the actual operation. When the balance valve is open, the coil heats up and the lubricant flow before and after the valve is obvious.

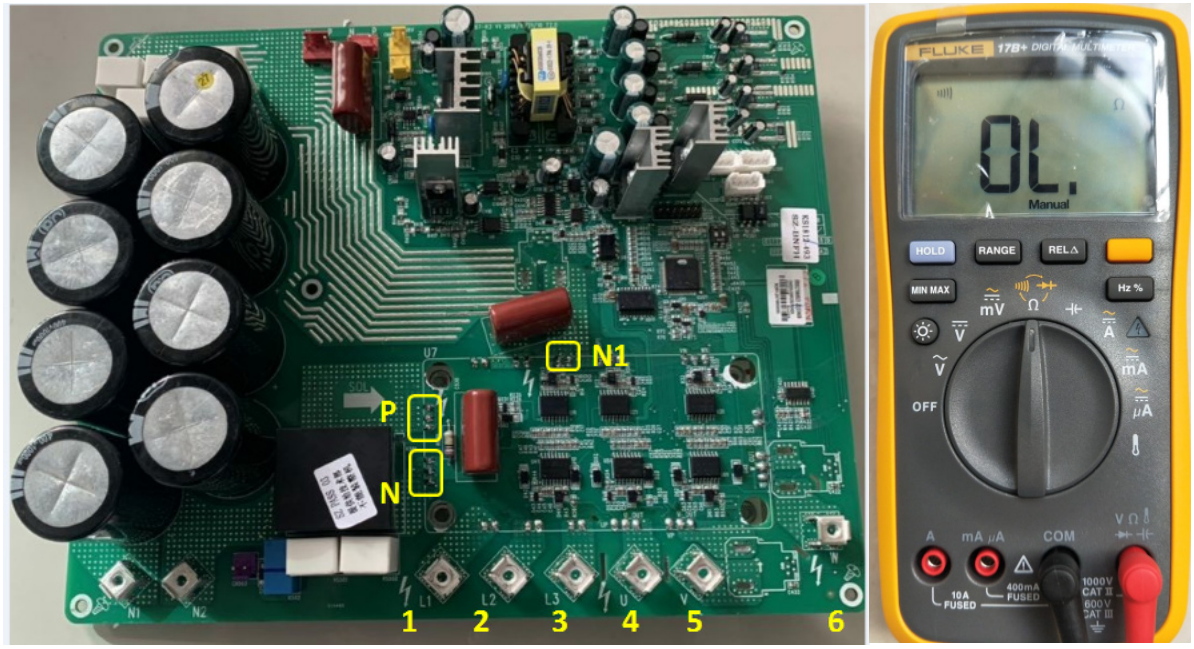


Step 4:

Test the compressor drive board (IPM module).

1: Disconnect the power and wait five minutes, and unplug the compressor cable.

2: As shown in the figure, switch the multimeter to the diode gear. Point the black probe to the P bonding pad and the red probe to the L1 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.



3: Point the black probe to the P bonding pad and the red probe to the L2 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

4: Point the black probe to the P bonding pad and the red probe to the L3 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

5: Point the black probe to the P bonding pad and the red probe to the L1 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

6: Point the black probe to the P bonding pad and the red probe to V wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

7: Point the black probe to the P bonding pad and the red probe to the W wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

8: Point the black probe to the N bonding pad and the red probe to the L1 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

9: Point the black probe to the N bonding pad and the red probe to the L2 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

10: Point the black probe to the N bonding pad and the red probe to the L3 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

11: Point the black probe to the N1 bonding pad and the red probe to U wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

12: Point the black probe to the N1 bonding pad and the red probe to V wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

13: Point the black probe to the N1 bonding pad and the red probe to W wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

4.6.1.2 When the unit cannot be started properly.

Step 1:

Disconnect the unit from power. Remove the terminal box cover and check whether the compressor is wired correctly.

Step 2:

Measure the resistance between any two of the wiring terminals of the compressor (U, V and W). The resistance between two wiring terminals of AA55PHDG-D1Y2 is 0.197±7% Ω. The resistance between two wiring terminals of DA80PHDG-D1Y2 is 0.086±7% Ω.

Measure the grounding resistance of each wiring terminal, which should be greater than 10 MΩ; otherwise, the compressor has an internal fault.

Step 3:

When the unit cannot be started properly, the solenoid valves of the system, including the electronic expansion valve and oil-return valve, need to be checked using the same method described above.

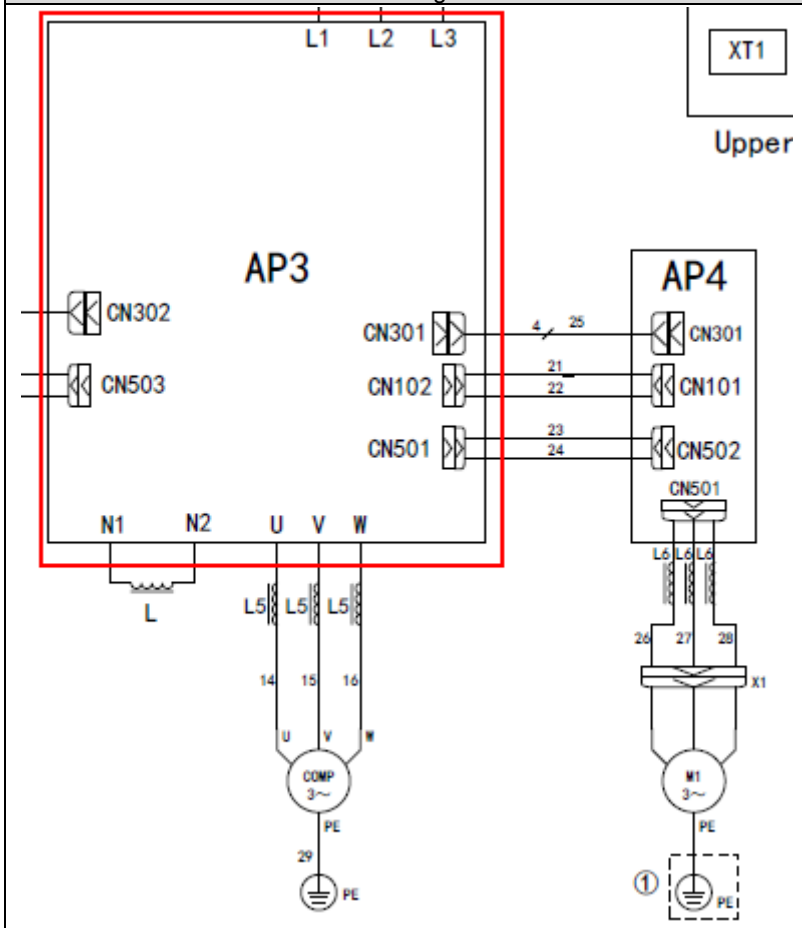
Step 4:

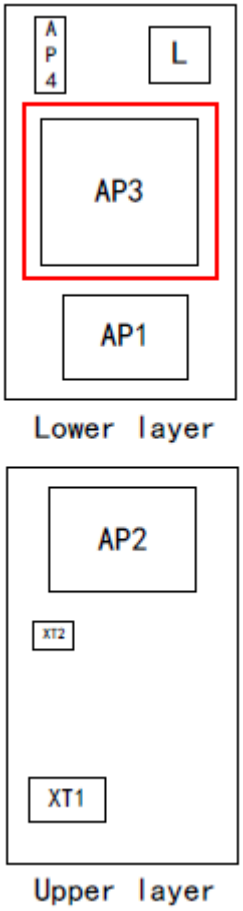
Check the IPM module using the same method described above.

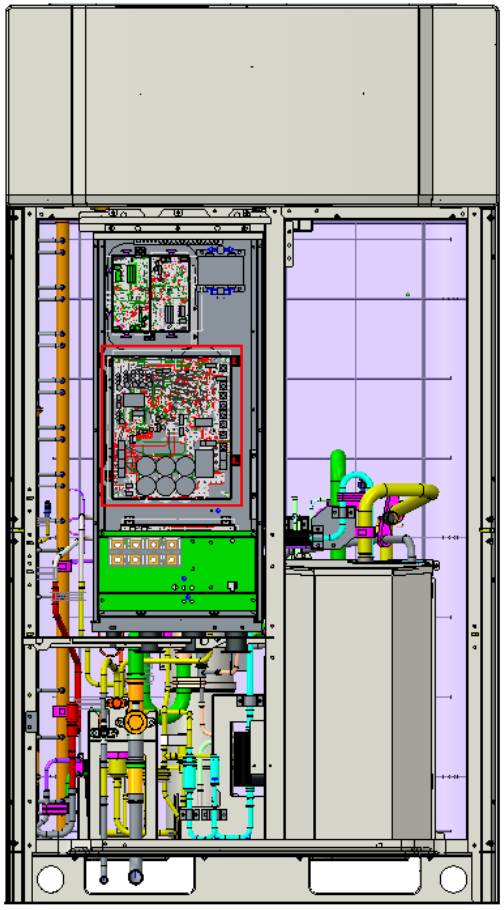
4.7 Compressor Drive Board

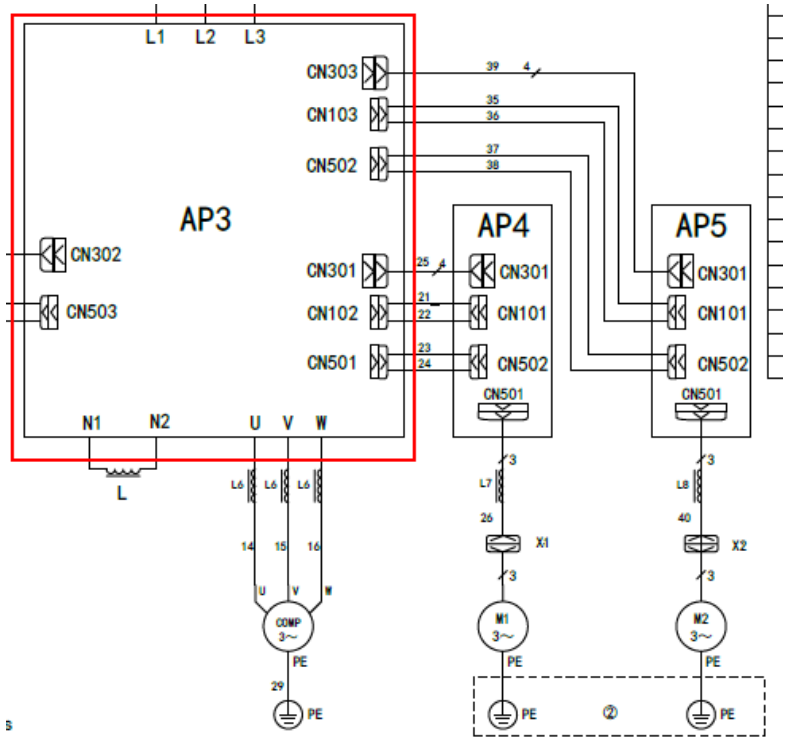
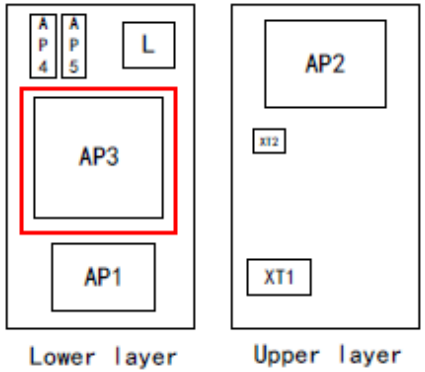
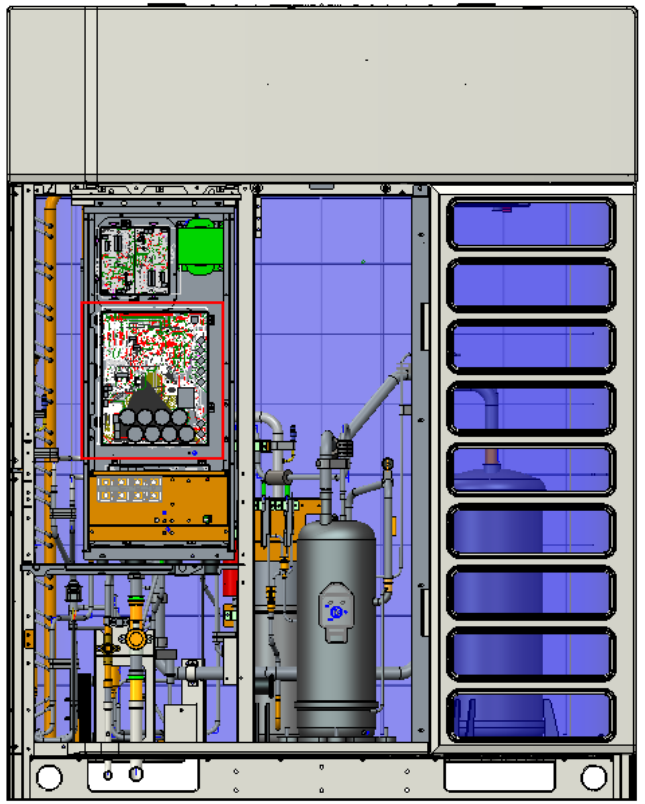
The compressor drive board is used to control the operation of the compressor.

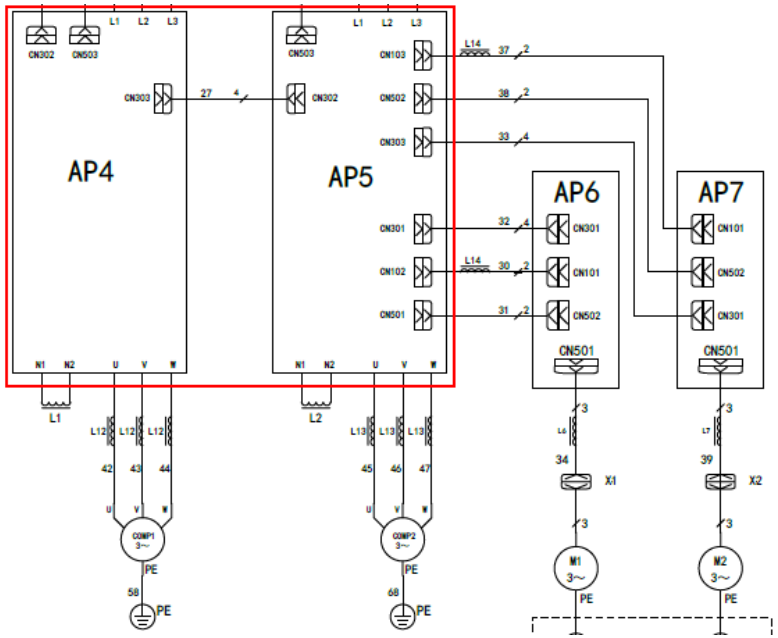
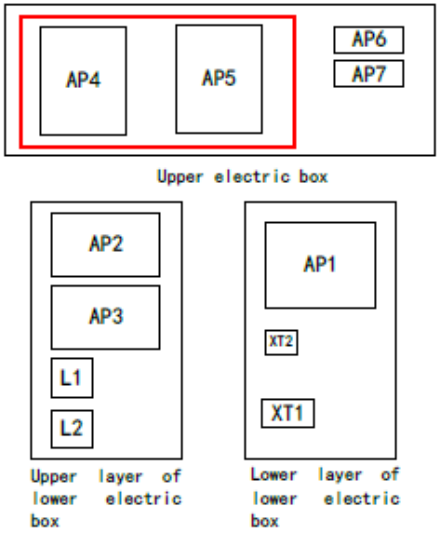
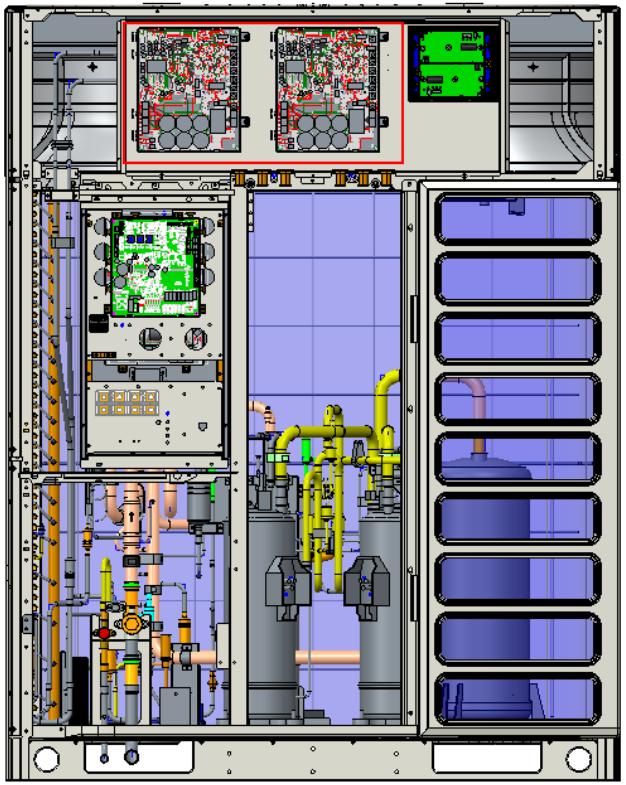
Specifications	Description
—	The compressor drive board is used to control the operation of the compressor.
Models: GMV-224WM/H-X、GMV-280WM/H-X、GMV-335WM/H-X	
Circuit diagram / Layout of electrical appliance box / Physical position	







Models: AEG14MI3H3、AEG16MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position
		

Models: AEG18MI2H3 、AEG20MI2H3、AEG22MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position
		

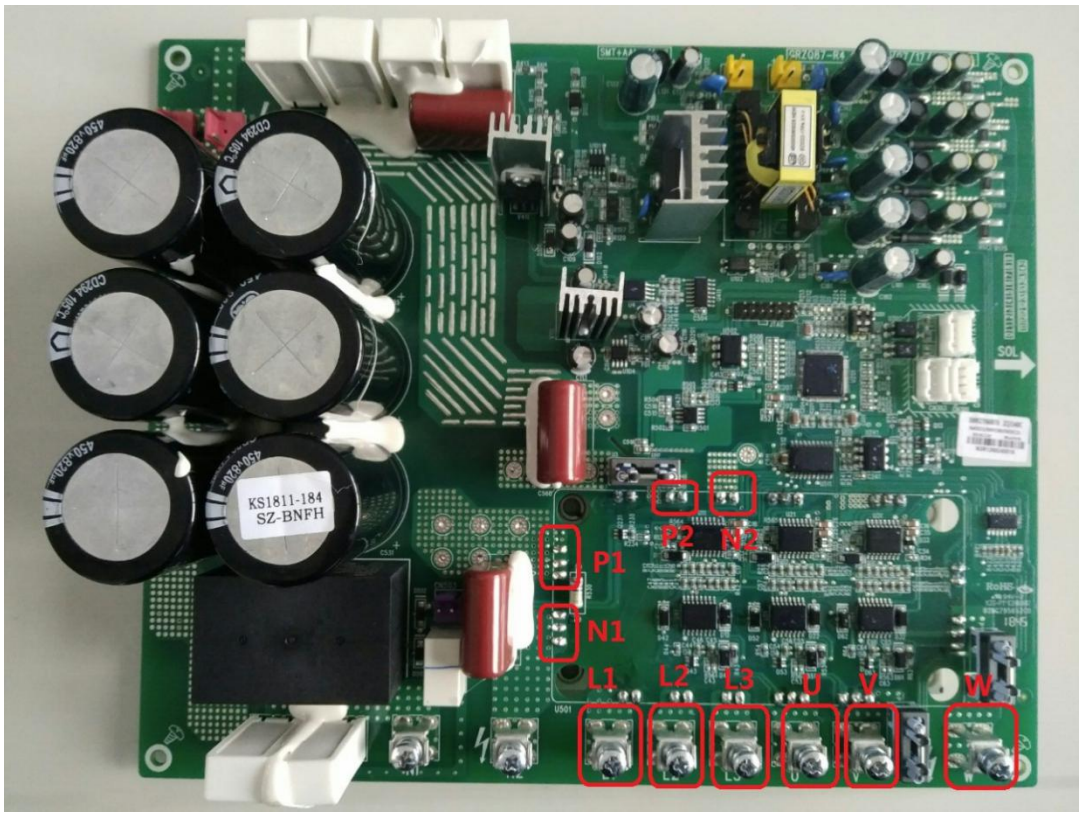
(1) Before the inspection: Find a correct digital multimeter and switch it to the diode gear. Power off the unit and wait two minutes. Disconnect the U, V and W cables of the compressor and L1, L2 and L3 power cables from the drive board. Do not operate without waiting two minutes after the unit is powered off.

(2) Testing method:

① Point the black probe of the multimeter to the P1 bonding pad shown in the following figure and the red probe to L1, L2 and L3 wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N1 bonding pad shown in the following figure and the black probe to L1, L2 and L3 wiring terminals respectively and check the readings of the multimeter.

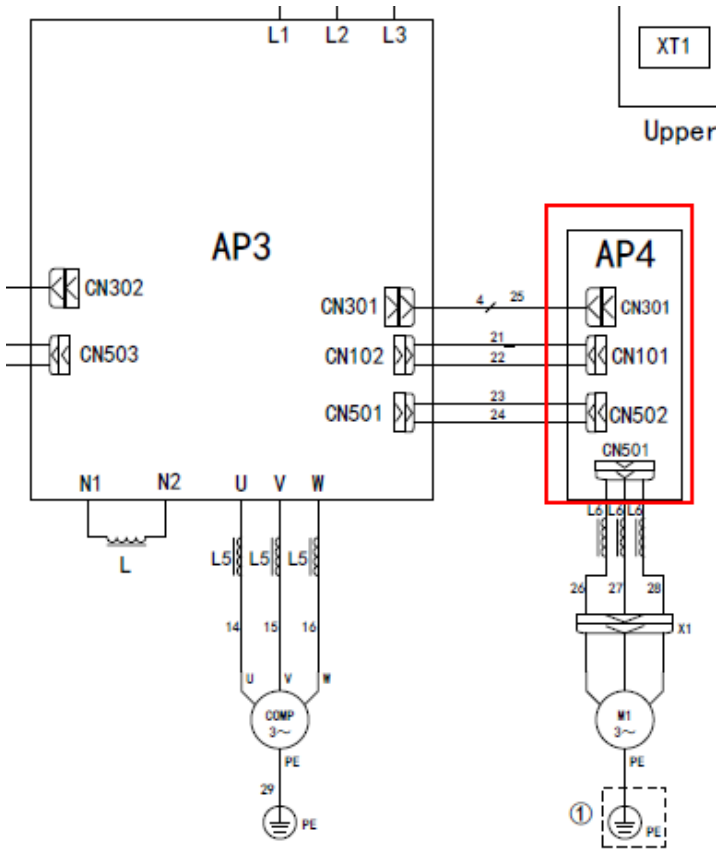
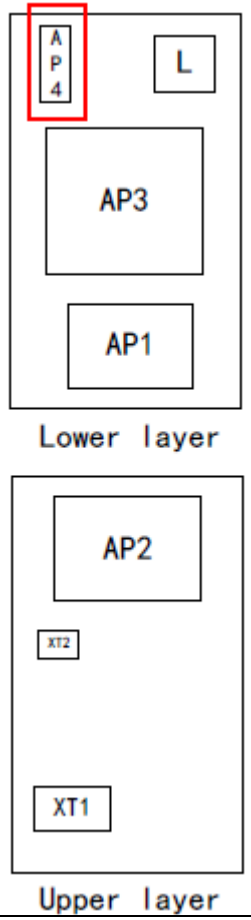
② Point the black probe of the multimeter to the P2 bonding pad shown in the following figure and the red probe to U, V and W wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N2 bonding pad shown in the following figure and the black probe to U, V and W wiring terminal respectively and check the readings of the multimeter.

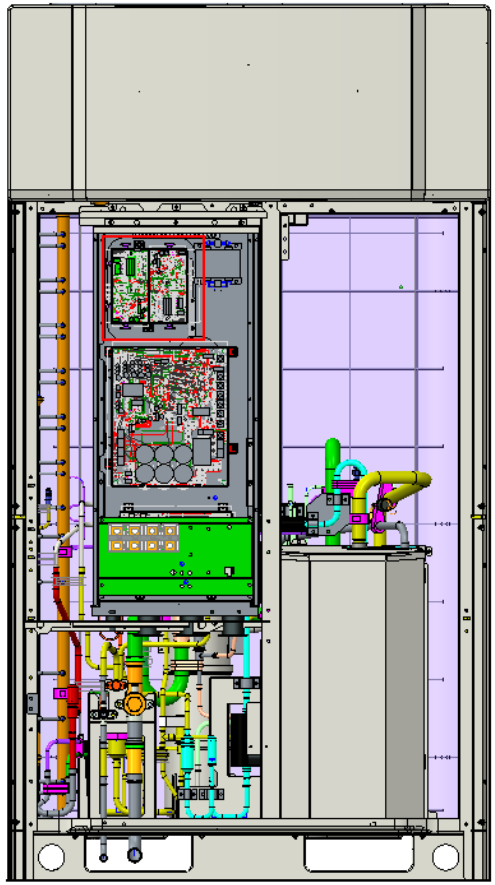
(3) Result analysis: If all the readings of the multimeter are between 0.3 V and 0.7 V in the above 12 conditions, the module is normal; if any of the readings is 0, the module is damaged.

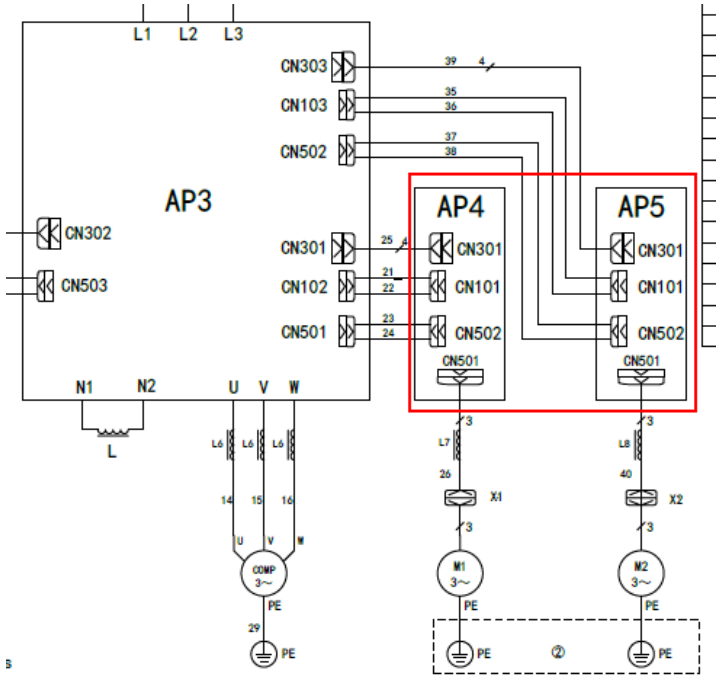
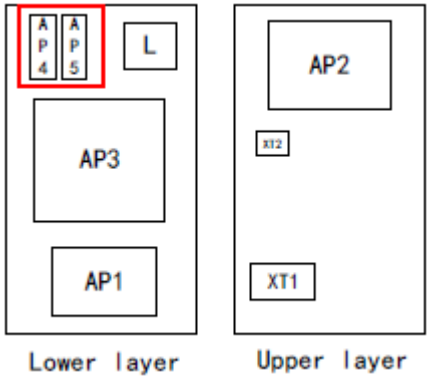
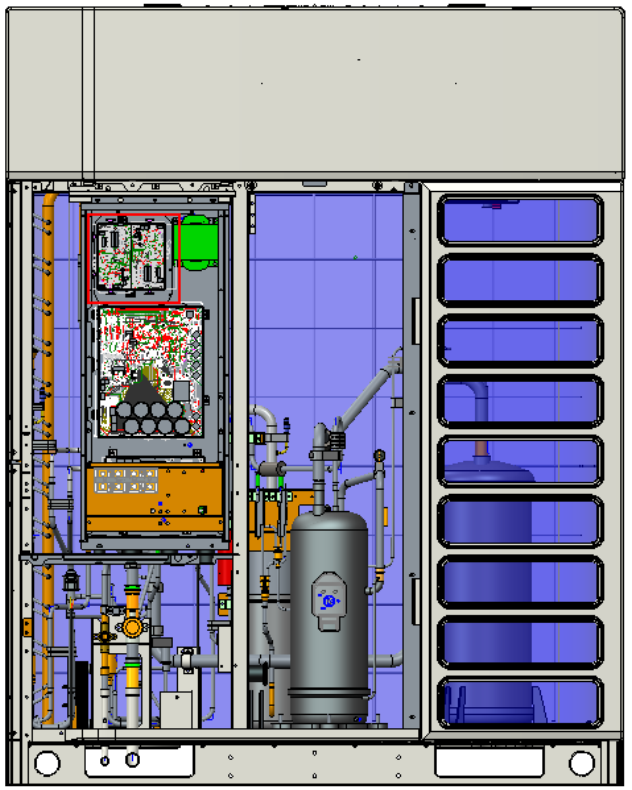


4.8 Fan Drive Board

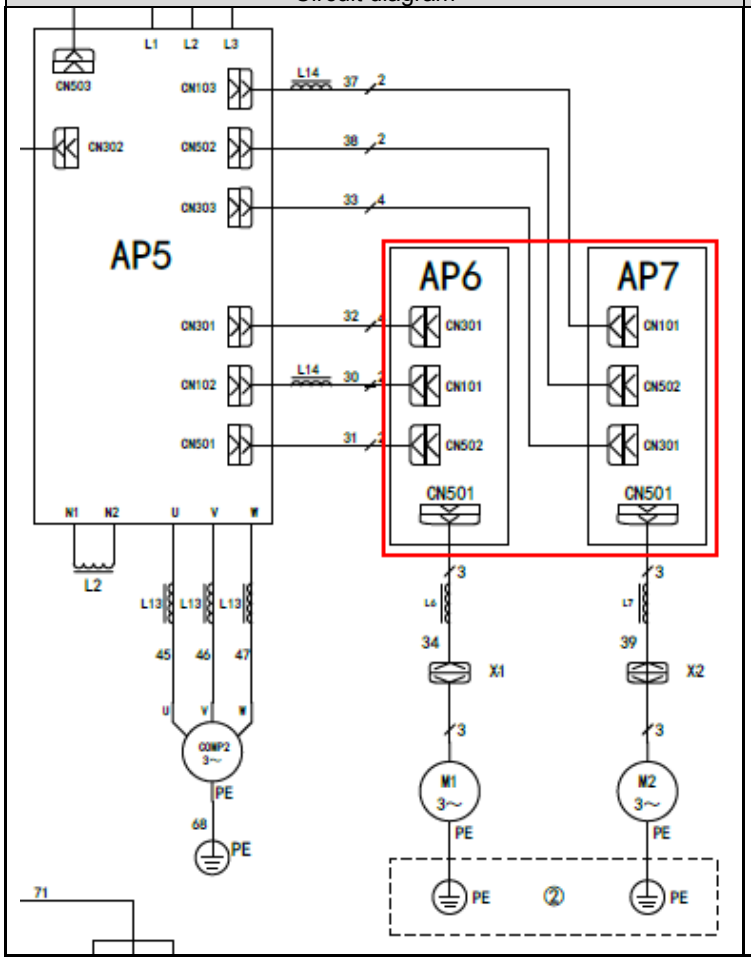
The fan drive board is used to control the operation of the fan(s).

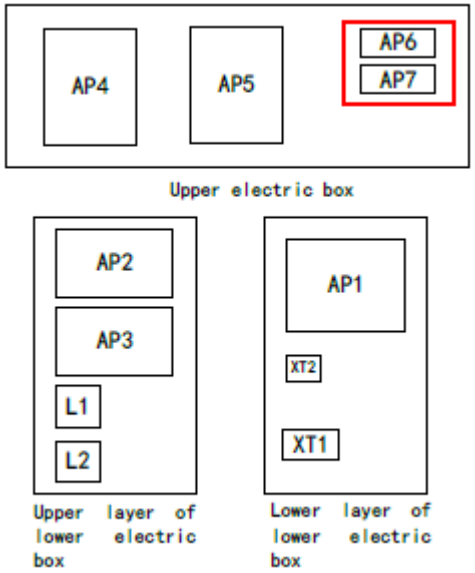
Specifications	Description
—	The compressor drive board is used to control the operation of the compressor.
Models: AEG08MIH23、AEG10MI2H3、AEG12MI2H3	
Circuit diagram	Layout of electrical appliance box
	

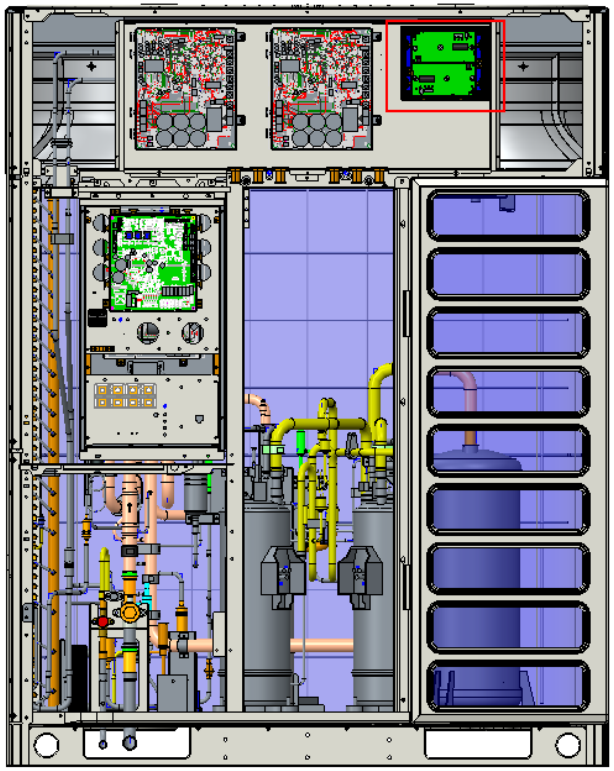
Physical position


Models: AEG14MI2H3、AEG16MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position
		

Models: AEG18MI2H3 、AEG20MI2H3、AEG22MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position



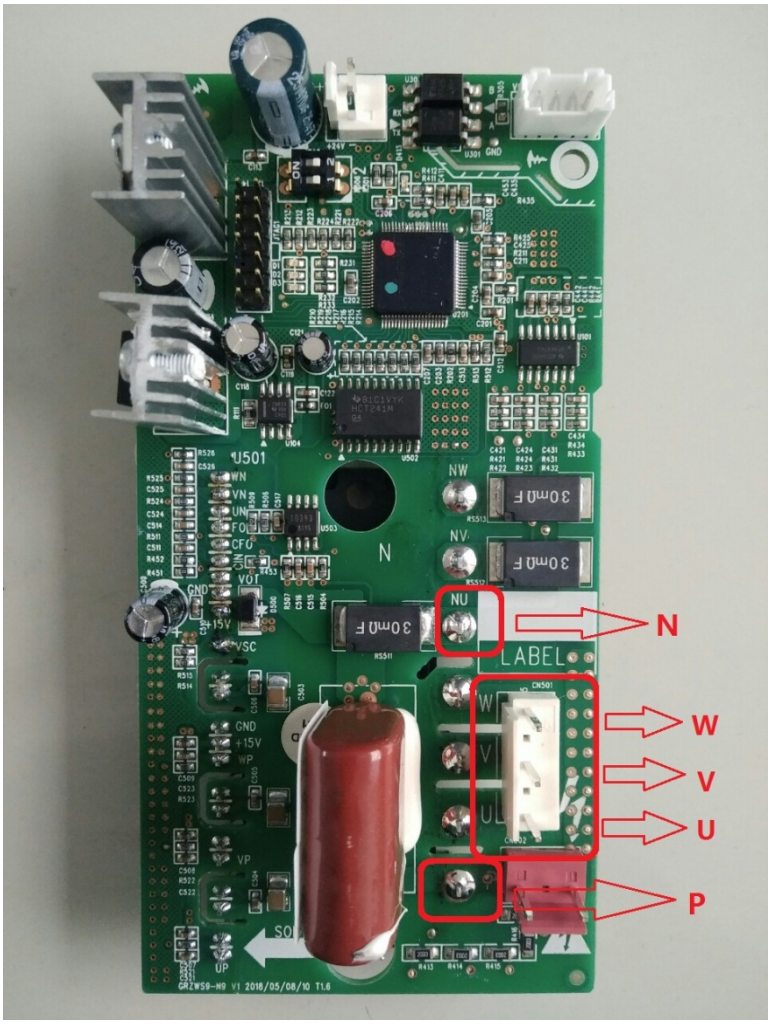




(1) Before the inspection: Find a correct digital multimeter and switch it to the diode gear. Power off the unit and wait two minutes. Disconnect the U, V and W cables of the fans from the drive board. Do not operate without waiting two minutes after the unit is powered off.

(2) Testing method: Point the black probe of the multimeter to the P bonding pad shown in the following figure and the red probe to U, V and W wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N bonding pad shown in the following figure and the black probe to U, V and W wiring terminal respectively and check the readings of the multimeter.

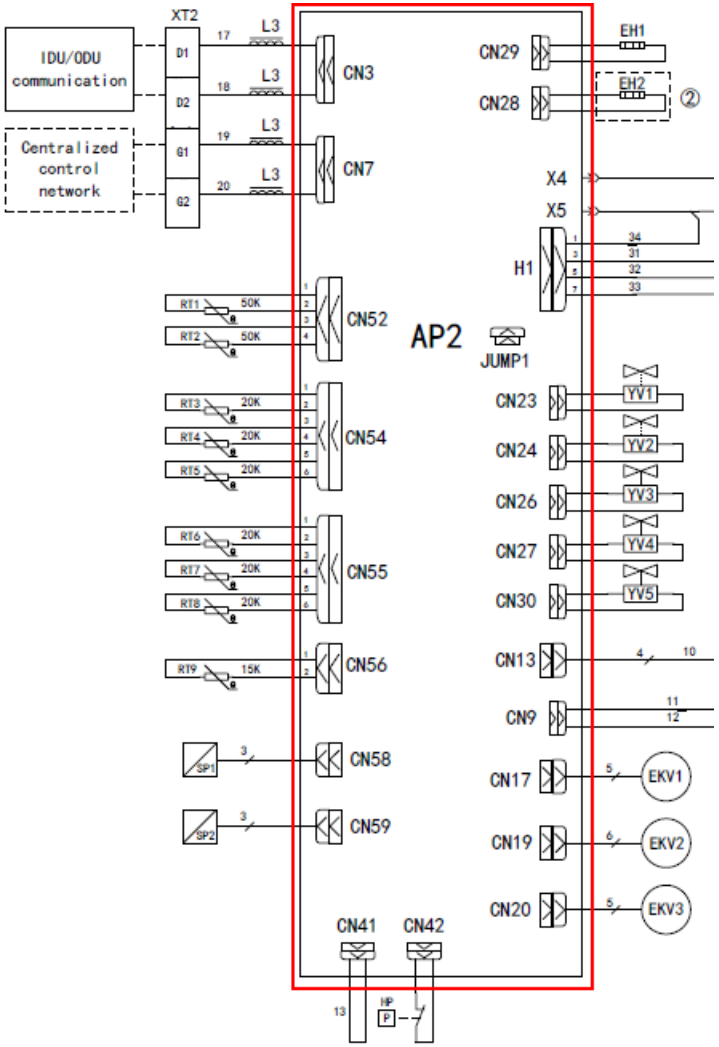
(3) Result analysis: If all the readings of the multimeter are between 0.3 V and 0.7 V in the above six conditions, the module is normal; if any of the readings is 0, the module is damaged.

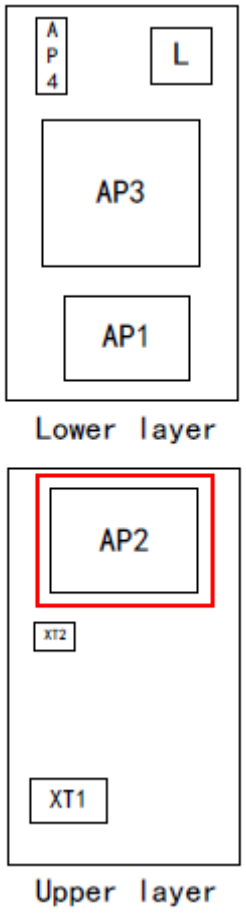


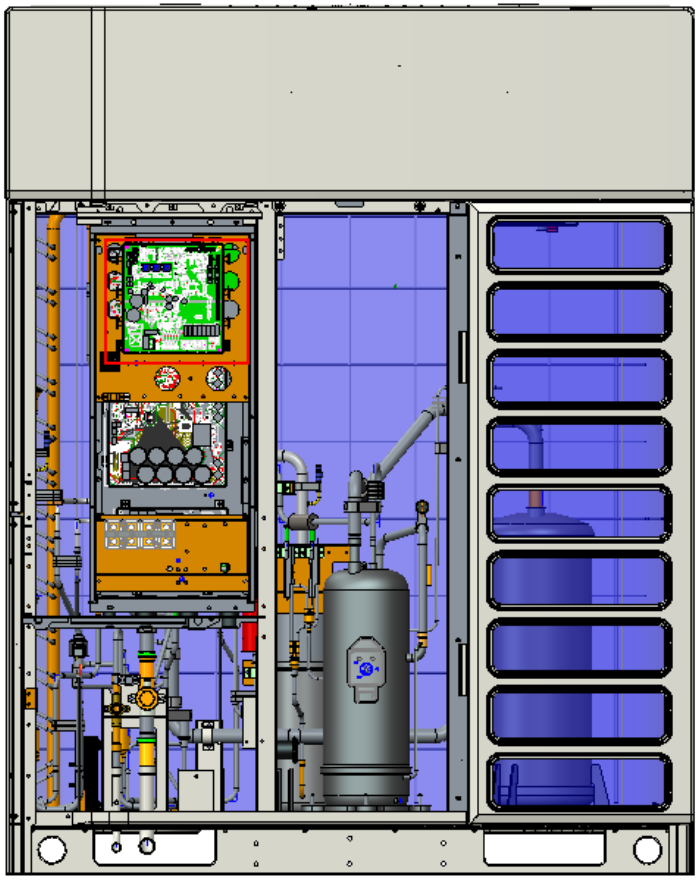
4.9 Main Board

The main board is used to control the load of the ODU.

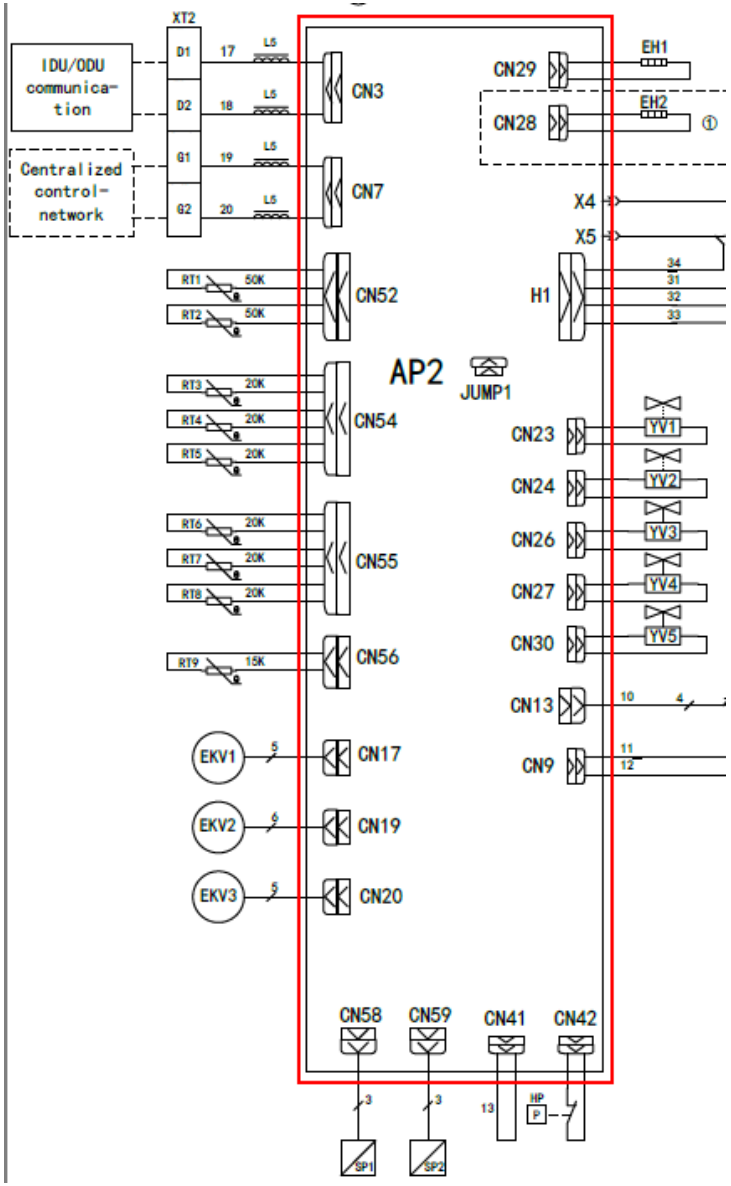
Models: AEG08MI2H3、AEG10MI2H3、AEG12MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position

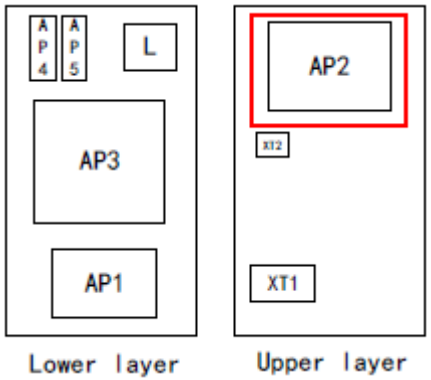


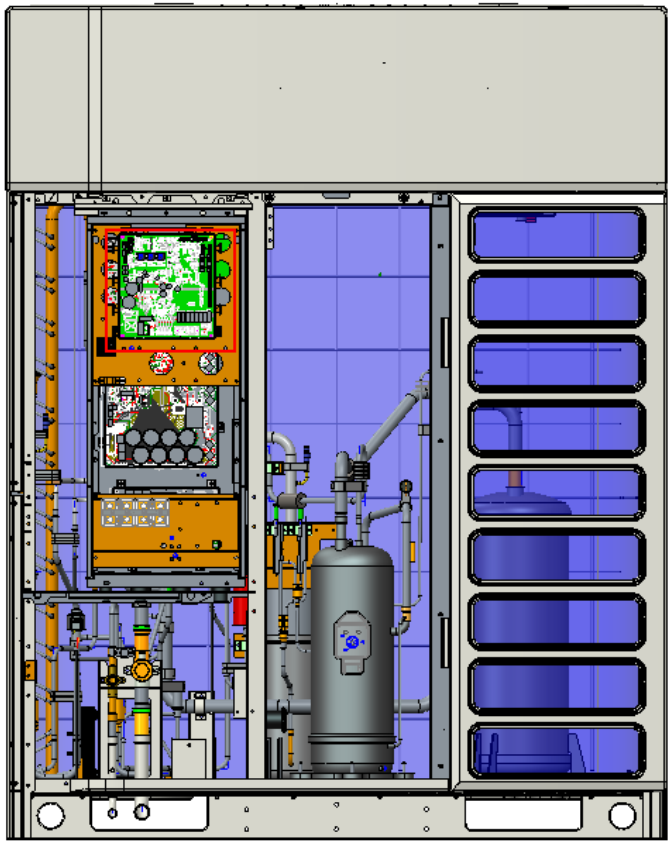




Models: AEG14MI2H3、AEG16MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position

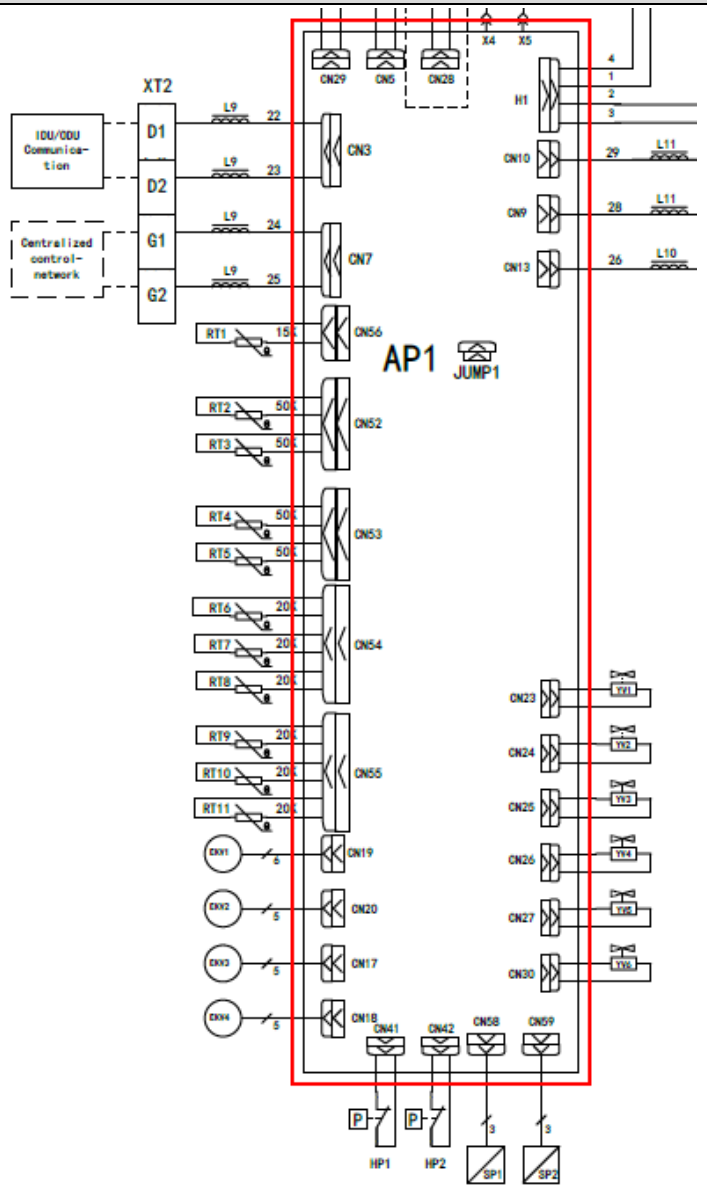


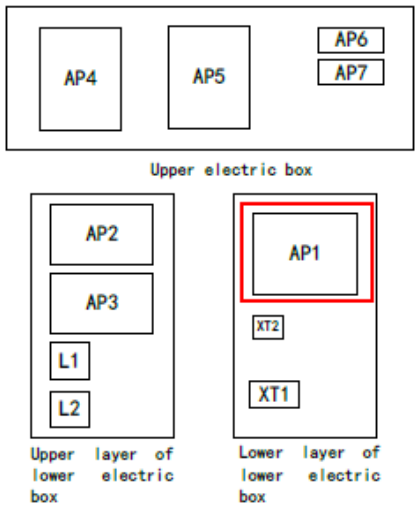


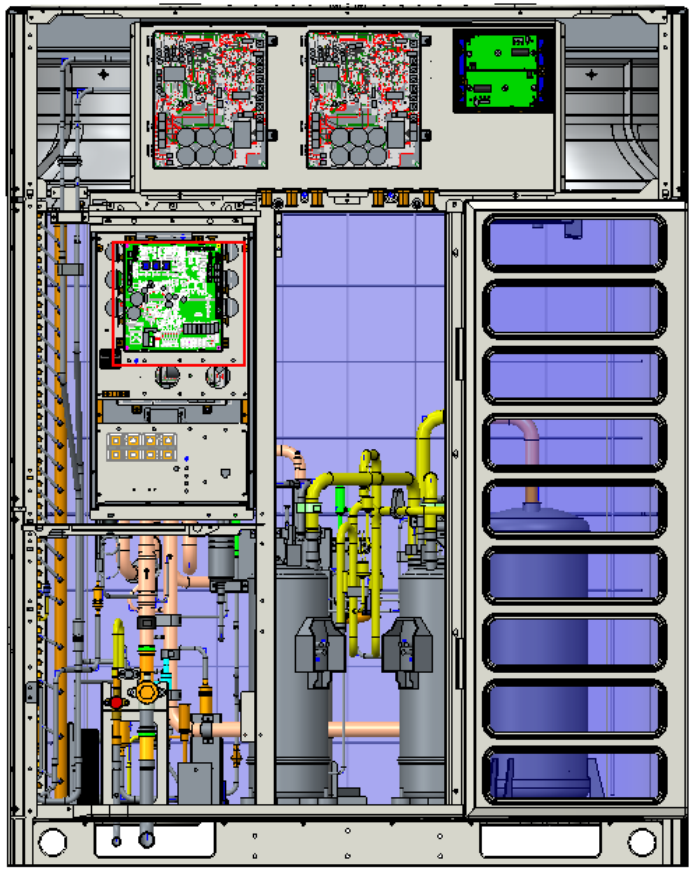


Models: AEG18MI2H3、AEG20MI2H3、AEG22MI2H3

Circuit diagram	Layout of electrical appliance box	Physical position

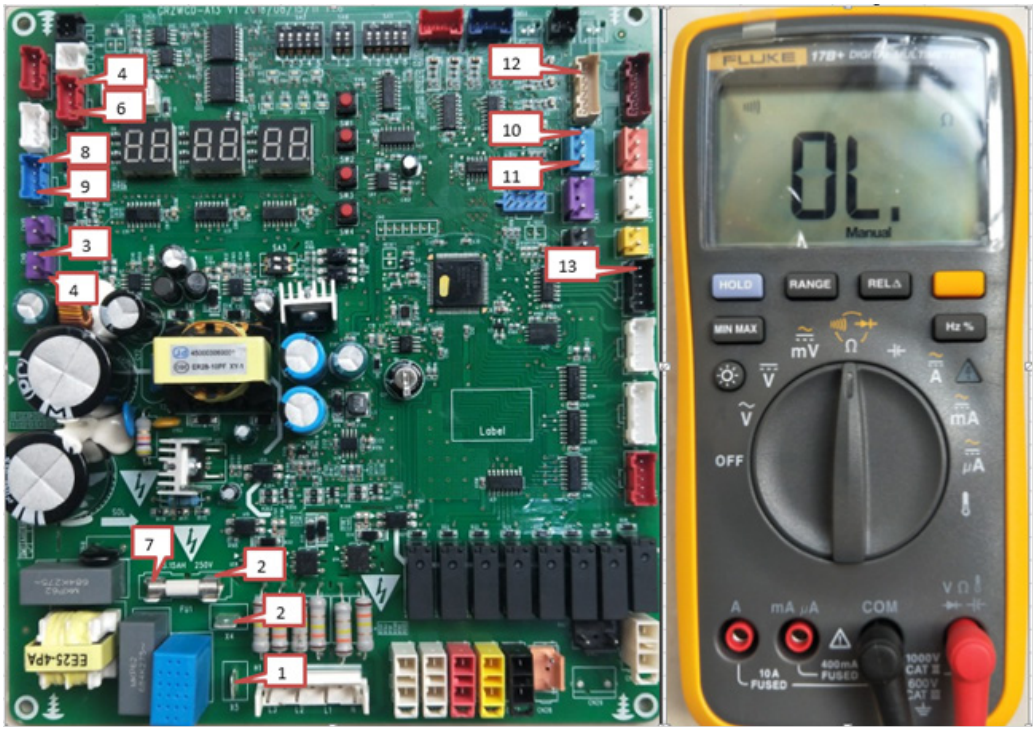






Step 1: Disconnect the power and wait five minutes.

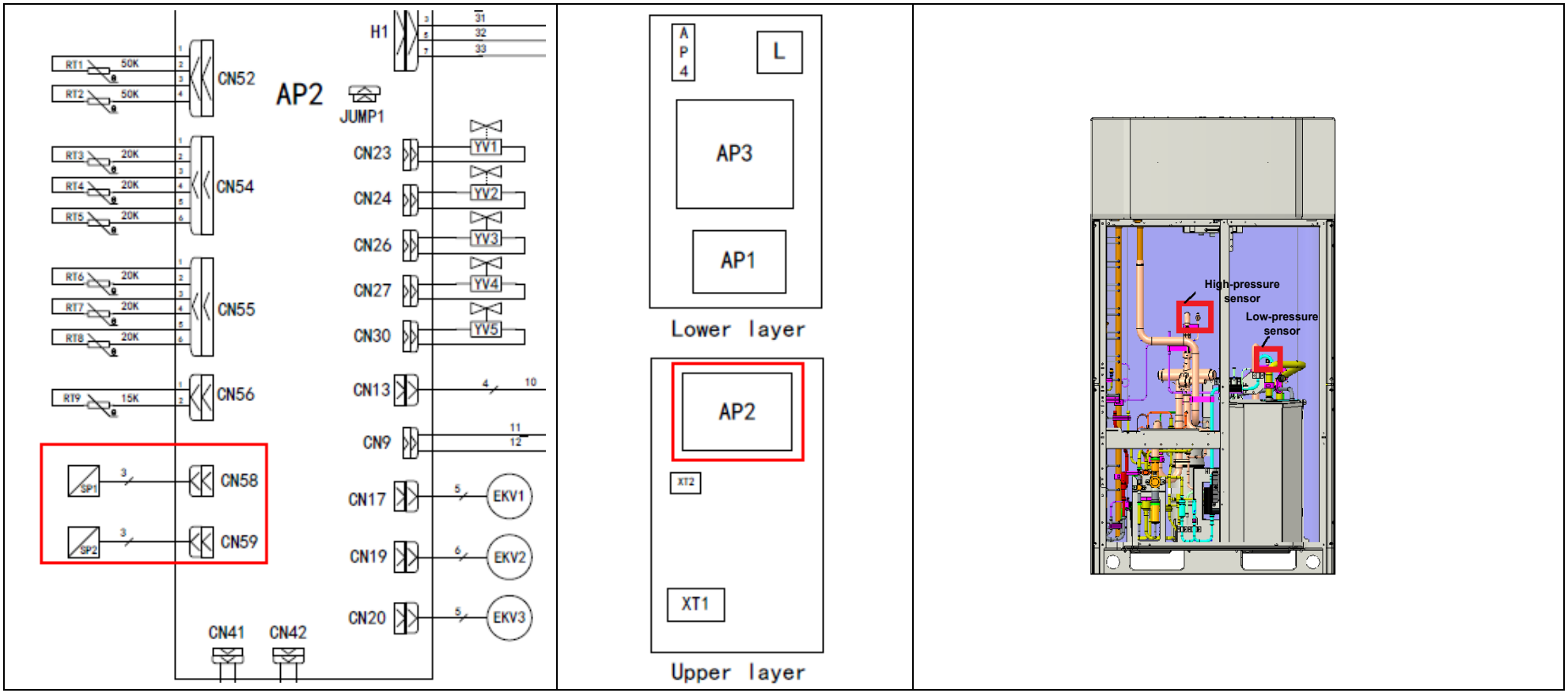
Step 2: As shown in the figure, switch the multimeter to the diode gear. Point the black and red probes to the following positions to check if the main board is normal.



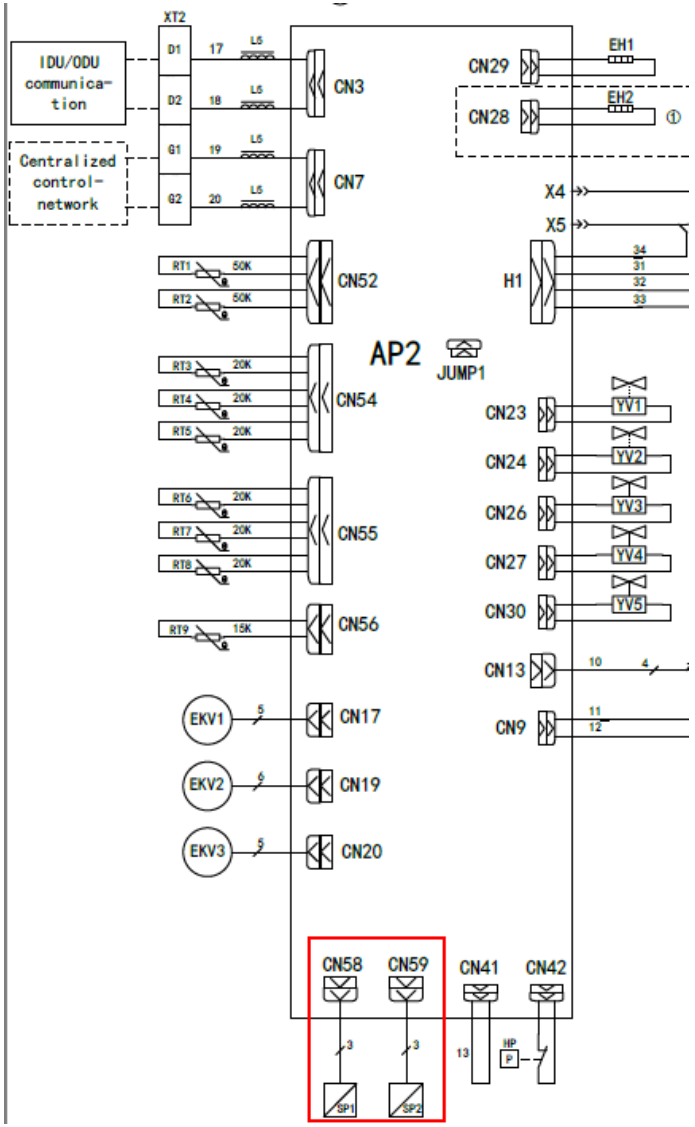
Black probe	Red probe	Symptom
X5 (1)	X4 (2)	The main board is normal if the multimeter does not beep.
CN9 (3)	CN9 (4)	The main board is normal if the multimeter does not beep.
Anode of fuse (2)	Cathode of fuse (7)	The fuse is damaged and needs to be replaced if the multimeter does not beep.
CN1 (4)	CN1 (6)	The main board is normal if the multimeter does not beep.
CN12 (8)	CN12 (9)	The main board is normal if the multimeter does not beep.
CN58 (11)	CN58 (10)	The main board is normal if the multimeter does not beep.
CN58 (11)	CN54 (12)	The main board is normal if the multimeter does not beep.
CN58 (11)	CN17 (13)	The main board is normal if the multimeter does not beep.
CN58 (10)	CN54 (12)	The main board is normal if the multimeter does not beep.
CN58 (10)	CN17 (13)	The main board is normal if the multimeter does not beep.

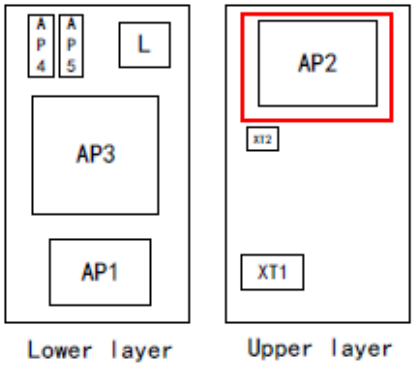
4.10 Pressure Sensor

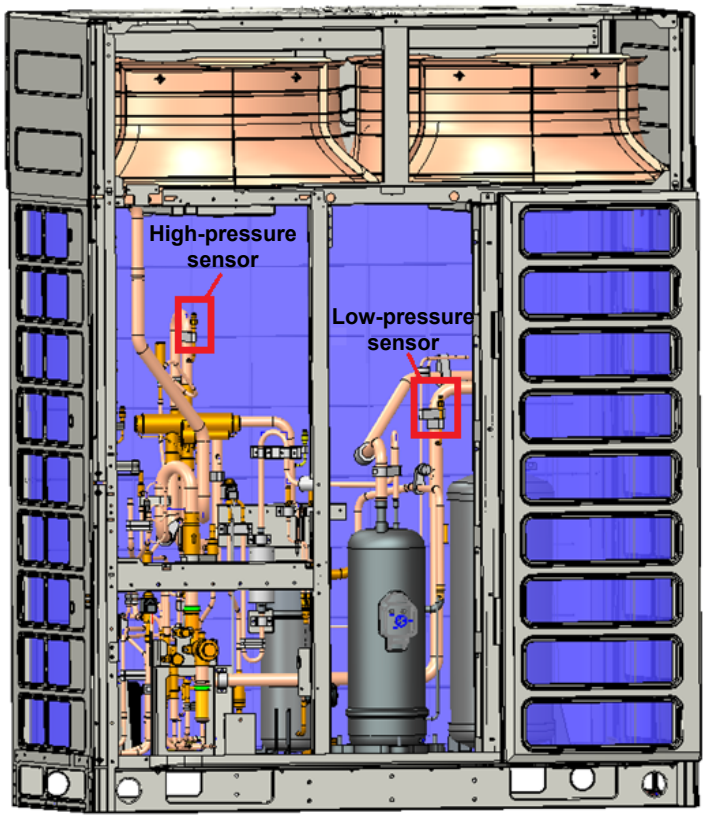
<table>
<tr><th colspan="2">Specifications</th><th>Description</th></tr>
<tr><td colspan="2">—</td><td>Inspection of high-pressure temperature of the high-pressure sensor:
1. Control of compressor output capacity
2. Conversion and calculation of saturated condensing temperature
3. Protection high pressure
4. Inspection of high-pressure value and calculation of exhaust superheat degree
5. Inspection of the minimum and maximum compression ratio
Inspection of low-pressure temperature of the low-pressure sensor:
1. Control of compressor output capacity
2. Conversion and calculation of saturated evaporating temperature
3. Inspection of suction superheat degree
4. Low-pressure protection functions
5. Inspection of the minimum and maximum compression ratio</td></tr>
<tr><td colspan="3">Models: AEG08MI2H3、AEG10MI2H3、AEG12MI3H3</td></tr>
<tr><td>Circuit diagram</td><td>Layout of electrical appliance box</td><td>Physical position</td></tr>
</table>


AP2
JUMP1
H1
CN52
CN54
CN55
CN56
CN58
CN59
CN41
CN42
CN23
CN24
CN26
CN27
CN30
CN13
CN9
CN17
CN19
CN20
YV1
YV2
YV3
YV4
YV5
EKV1
EKV2
EKV3
RT1
RT2
RT3
RT4
RT5
RT6
RT7
RT8
RT9
SP1
SP2
AP4
L
AP3
AP1
Lower layer
AP2
XT2
XT1
Upper layer
High-pressure sensor
Low-pressure sensor

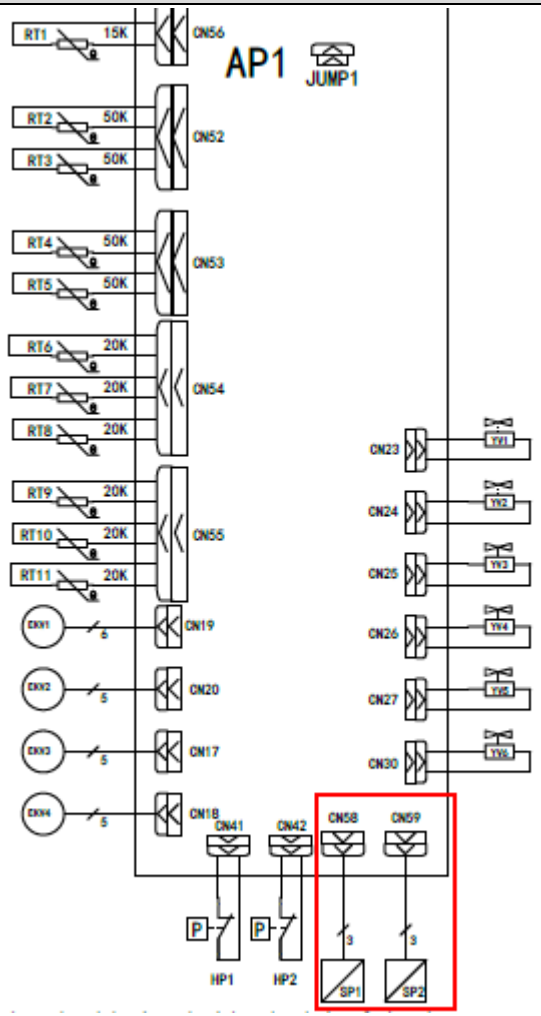
Models: AEG14MI2H3、AEG16MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position

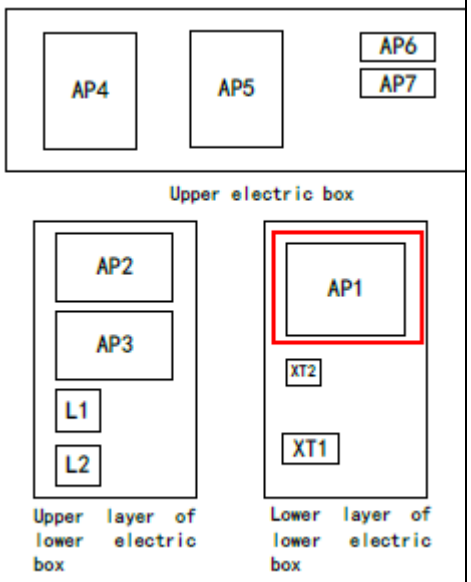


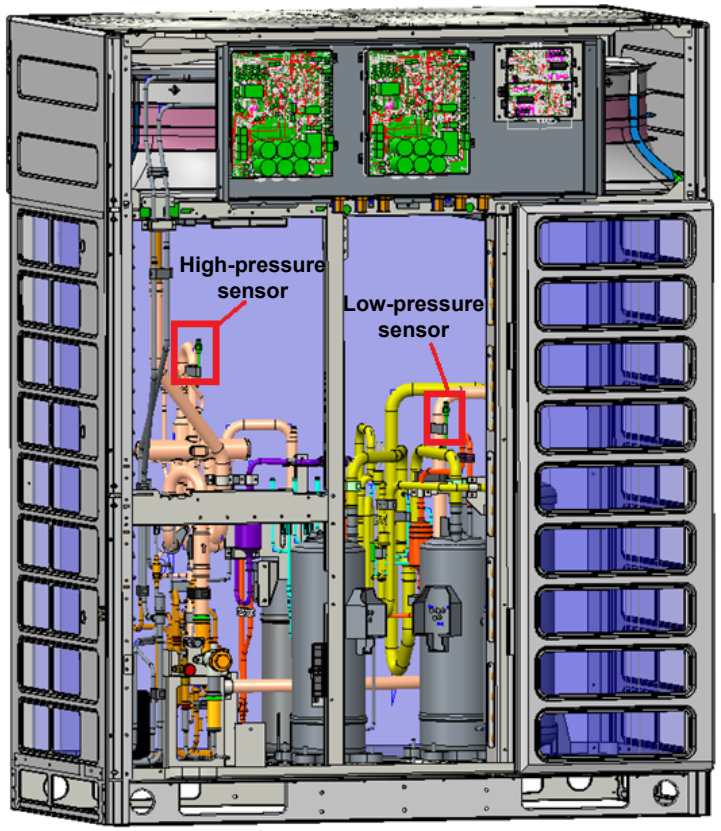




Models: AEG18MI2H3、AEG20MI2H3、AEG22MI2H3		
Circuit diagram	Layout of electrical appliance box	Physical position







Inspection procedure

1. Preparations

(1) Use the wired controller or remote controller to shut down the unit.

(2) Remove the front cover and open the electrical appliance box.

2. Inspection of low-pressure sensor

(1) Connect the pressure gauge to the gas valve and check if the gas and liquid valves are open.

(2) Switch the unit to the cooling mode. After the system stabilizes, check the reading of the pressure gauge.

(3) Check the unit's suction pressure via the wired controller and compare it with the reading of the pressure gauge on the gas valve. If the value shown on the wired controller is within the range of ±10% of the reading of the pressure gauge, the pressure sensor is normal. Otherwise, it is abnormal.

3. Inspection of high-pressure sensor

(1) Connect the pressure gauge to the gas valve and check if the gas and liquid valves are open.

(2) Switch the unit to the heating mode. After the system stabilizes, check the reading of the pressure gauge.

4. Check the unit's exhaust pressure via the wired controller and compare it with the reading of the pressure gauge on the gas valve. If the value shown on the wired controller is within the range of ±10% of the reading of the pressure gauge, the pressure sensor is normal. Otherwise, it is abnormal.

5. Replacement of Key Unit Parts

5.1 Preliminary Removing Procedure of the Main Body

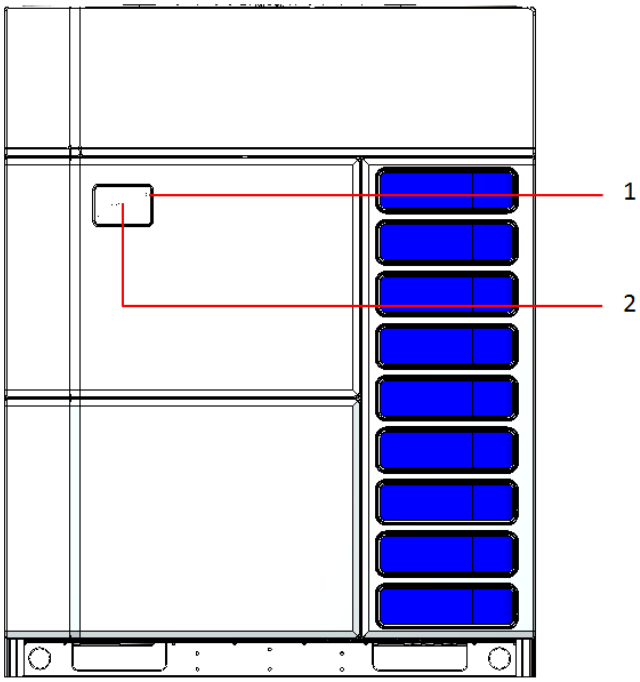
5.1.1 Removing the Unit Panel

5.1.1.1 Removing the maintenance port panel

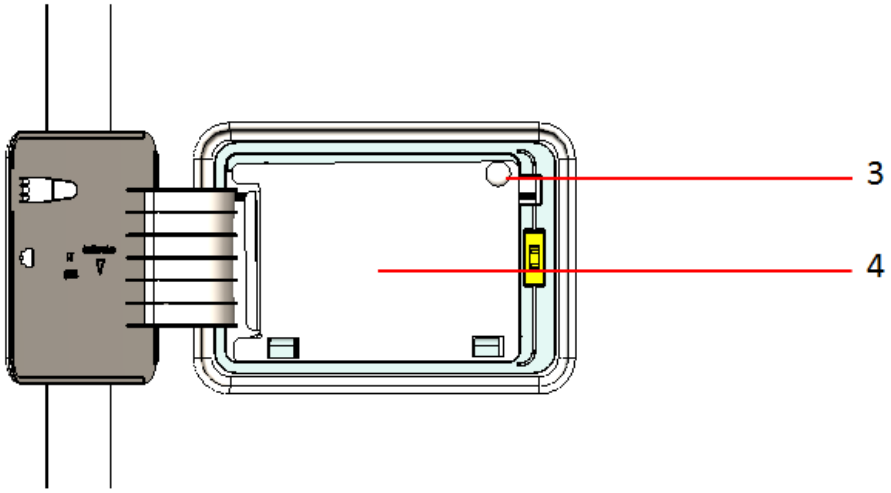
(1) Press the window in the bulkhead cover to open the window.

(2) Use a tool to press the buckle shown in the figure to rotate and open the window in the bulkhead cover.

(3) Remove the screw and turn over the service seal plate to take out the seal plate.



1 – Buckle 2 - Window in the bulkhead cover

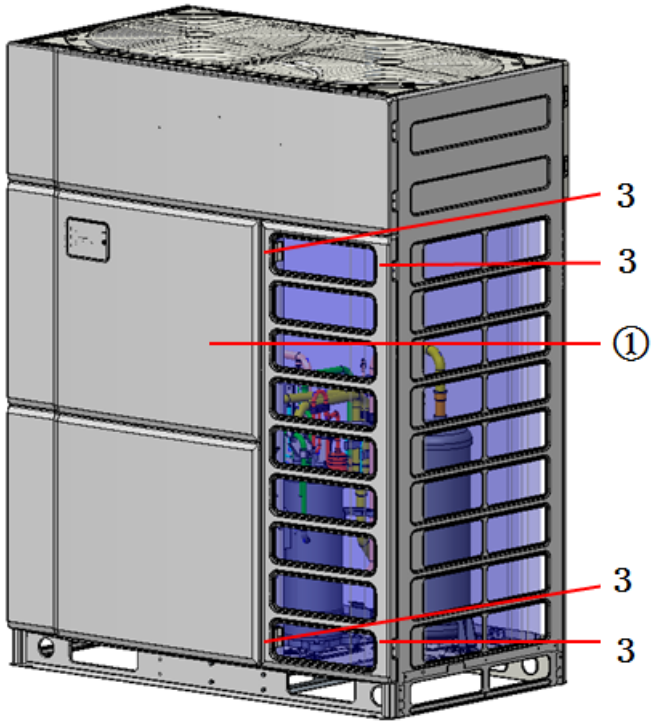


3 – Screw 4 - Service seal plate

5.1.1.2 Removing the right panel

(1) Use a screwdriver to remove the screw marked by 1 on ① right panel

(2) Remove ① right panel from the unit

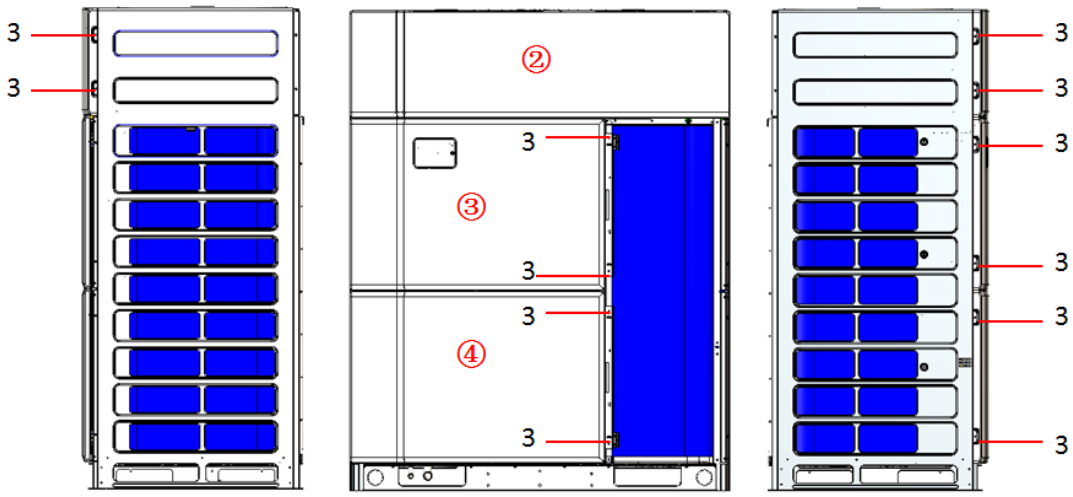


3 – Screw ① - Right panel

5.1.1.3 Removing the upper left panel, bottom left panel and upper covering plate

(1) Use a screwdriver to remove the screws marked by ②, ③ and ④ in the figure.

(2) Remove ② upper covering plate, ③ upper left panel and ④ bottom left panel

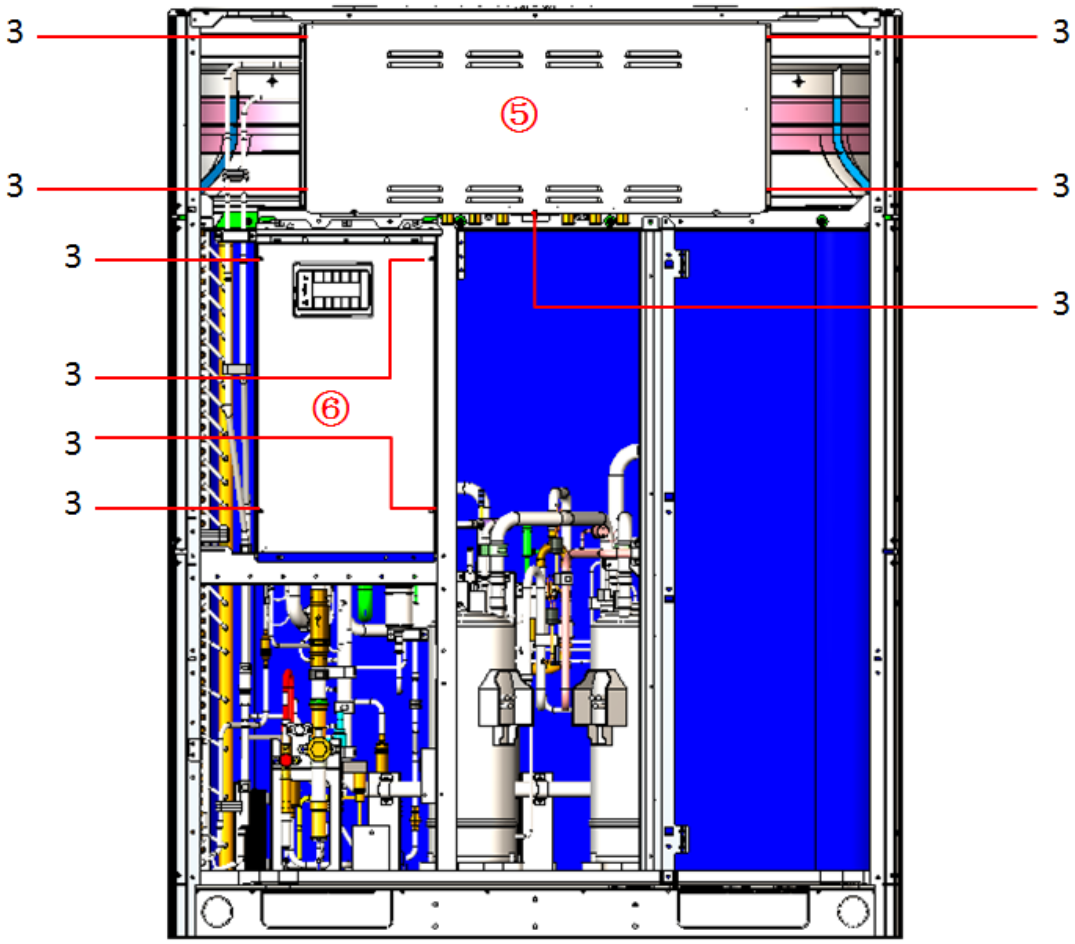


3 - Screw; ② - Upper covering plate; ③ - Upper left panel; ④ - Bottom left panel.

5.1.2 Removing the Cover of Electrical Appliance Box

(1) Use a screwdriver to remove the screw marked by 1 on ⑤⑥ electrical appliance box

(2) Remove ⑤⑥ electrical appliance box from the unit



3 - Screw; ⑤ - Upper electrical appliance cover; ⑥ - Bottom electrical appliance cover.

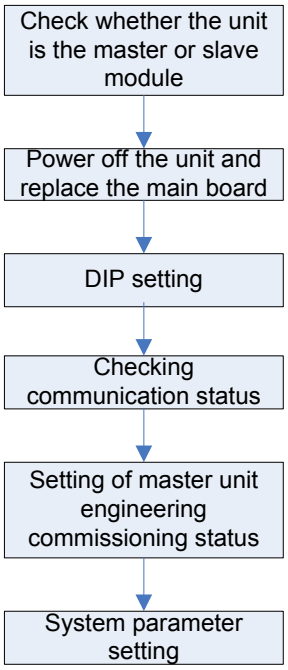
5.2 Removing the ODU Main Board

Preparations

(1) Use the Power circuit breaker to switch off the Power of the VRF system.

(2) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

(3) Remove the cover of electrical appliance box by referring to 5.1.2 Removing the Cover of Electrical Appliance Box.



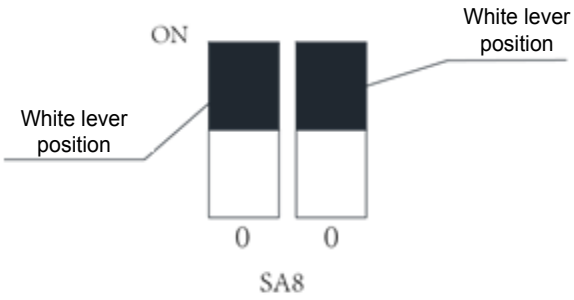
Removing procedure

(1) Check whether the unit is the master or slave module.

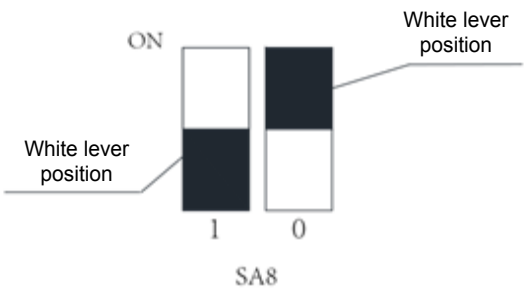
① It can be checked by the “master module setting DIP SA8” of the ODU.

There is only one master module in a refrigeration system (set in the power-off status). The master module is defined as follows: (the ON position on the DIP identification is “0”, the opposite direction is the status of “1”). If SA8 is set to 00, it is the master module. If SA8 is set to 10, it is a slave module.

Master module status



Slave module status



② It can be checked by the display of the digital LEDs on the main board of the ODU.

When the master module is powered on, the LED1 shows “01”. The digital LEDs of a slave module show “02”, “03” or “04” (as shown in the following figure).

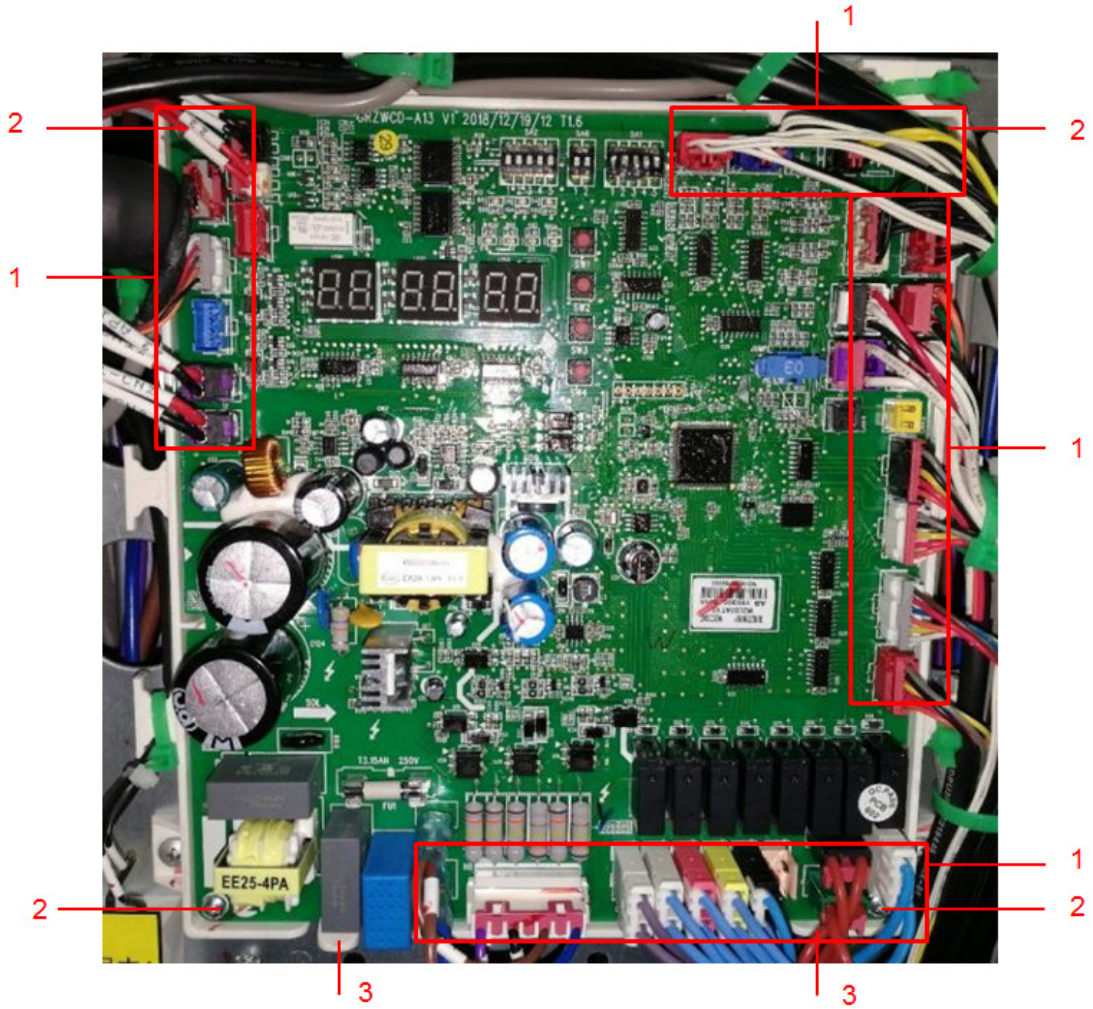
	 Or	 Or	
Display status of LED1	Display status of LED1	Display status of LED1	Display status of LED1
Master module status	Slave module status	Slave module status	Slave module status

(2) Powering off and replacing the main board

① Disconnect all the plugs in the areas marked by 1 from the main board.

② Use a screwdriver to remove the screws marked by 2 on the main board.

③ Pull the side buckle 3 carefully to take out the main board from the unit.



Installation procedure

(1) Complete the installation procedure in the reverse sequence of removal.

(2) Refer to the unit circuit diagram for the plugging

(3) DIP setting

Complete the setting of the new main board based on that of the faulty one while the ODU is power-off. The setting becomes active after the unit is powered on again. Setting made when the ODU is active is ineffective.

(4) Checking communication status

After the setting of the main board DIP switches is completed and all the cables are connected, the ODU's main control board is switched on. Check whether D3 and D4 indicators on the IDU sand ODU flash. If D3 and D4 flash, the communication between the main control boards of the IDU and ODU is normal. If not, the communication is faulty. The communication wiring between the IDUs and ODU needs to be checked again.

Note:

After the main control is replaced, the IDUs and ODU need to be powered on concurrently or the ODU needs to be powered on before the IDUs. Otherwise, the "No controlling unit" faulty will occur, and the IDUs will report the C0 fault.

(5) Setting of master unit engineering commissioning status

After the main board of the master module is replaced, engineering commissioning needs to be performed on the master unit.

(6) System parameter setting

After the engineering commissioning, system parameters need to be set to be consistent with the previous system parameters. Read *ODU Function Setting* for the setting method.

5.3 Removing the Compressor

Step 1: Preparations before replacing

(1) Make sure that all the spare parts for replacement are in place.

During the handling of the old and new compressors, do not place the compressor flat or place it upside down. The compressor needs to be placed with an angle of less than ±30°. The lubricant of the compressor must not outflow from the pipe. Make sure that the compressor air inlet, air outlet and vapor injection tube opening are sealed. If the sealing rubber block is missing, use rubber tap to seal it to prevent direct contact between oil in the compressor and air.

WARNING!

Check whether the models of the new and old compressors on the nameplates are the same.

Check the sealing rubber blocks of components such as the oil separator and gas separator. If any sealing rubber block is missing, use rubber tap to seal it in order to make sure that the vessel is dry and sealed.

WARNING!

Make sure that the compressor's lubricant is sealed reliably. Hitachi compressors adopt the FVC68D dedicated lubricant, which is highly hygroscopic. Therefore, the lubricant has a strict requirement on lubricant sealing.

(2) Tools

1) Get nitrogen ready. Comply with the nitrogen charging and welding regulations during the welding. Make sure that the nitrogen is sufficient. The suggested nitrogen pressure is above 2.0 MPa.

2) Get welding rods ready. In addition, special welding rods with the silver content of above 5% are required to weld the compressor as the compressor air inlet and outlet adopt copper-coated steel pipes, which require special welding rods and welding flux.

3) Get welding tools ready. Assess the nitrogen and acetylene quantity necessary for the welding according to the part to be welded. Prevent repeated welding of the same places.

4) Get all the auxiliary service tools ready, including hex key, diagonal pliers, pincer pliers, needle-nosed pliers, multimeter, pressure gauge, Phillips screwdriver, slotted screwdriver, at least two wrenches, insulating tape, and cable ties.

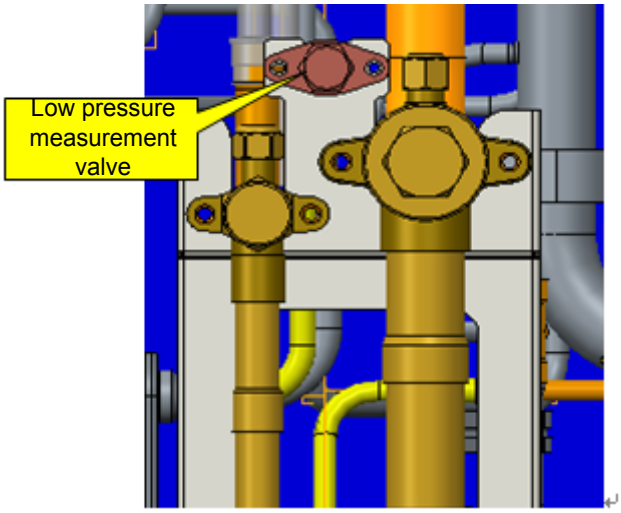
Step 2: Power-off

If the replacement of the compressor is necessary according to the above-mentioned conditions, switch off the power of the ODU, disconnect the power cable, disconnect the ODU from the power and wrap the power cables with insulating tapes, and put a warning sign at the power switch to prevent electric shocks.

Step 3: Removing electric parts

Mark the compressor cables, temperature sensors and auxiliary electric heater properly while removing them so that the parts can be rewired correctly later.

Step 4: Checking lubricant quality

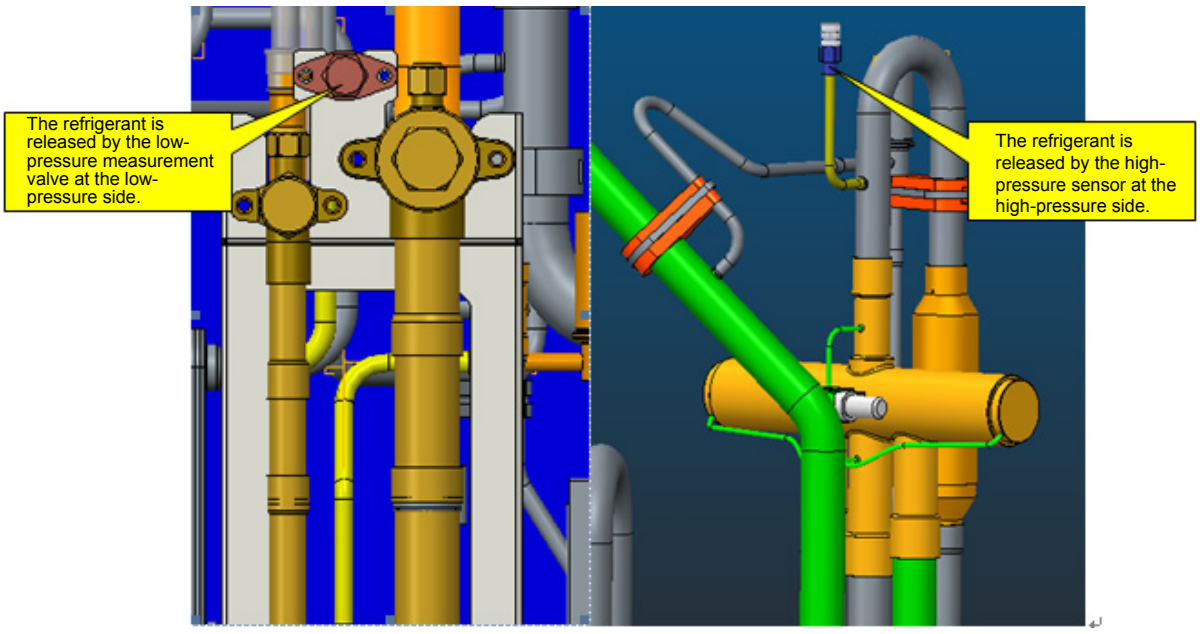


Before discharging refrigerant and dismantling the unit, collect the refrigeration oil in the system from the low-pressure measurement valve using the following method. Connect one end of a rubber hose to the low-pressure measurement valve and the other one to a transparent container. Since that the container contains the mixture of the refrigerant and lubricant and the refrigerant volatilizes, do not seal the container. Otherwise, the high pressure in the container may lead to breaking of the container or even an explosion.

Record the oil quantity after the lubricant is fully discharged.

Step 5: Discharging refrigerant

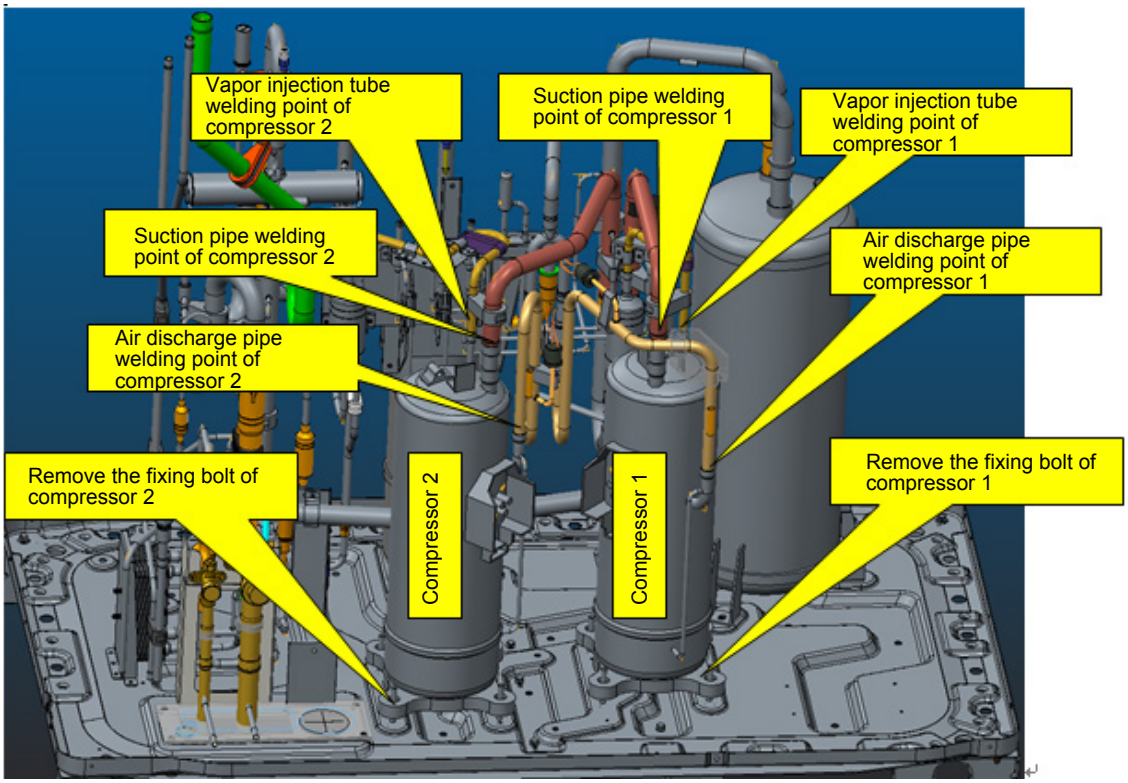
The refrigerant in the system needs to be discharged from the high and low pressure sides of the system concurrently. If the refrigerant is discharged from one side only, the sealed scroll will hinder the refrigerant from being fully discharged. Do not discharge the refrigerant too fast (in no shorter than 12h). Otherwise, a large amount of lubricant will be discharged together with the refrigerant as well.



Step 6: Removing compressors

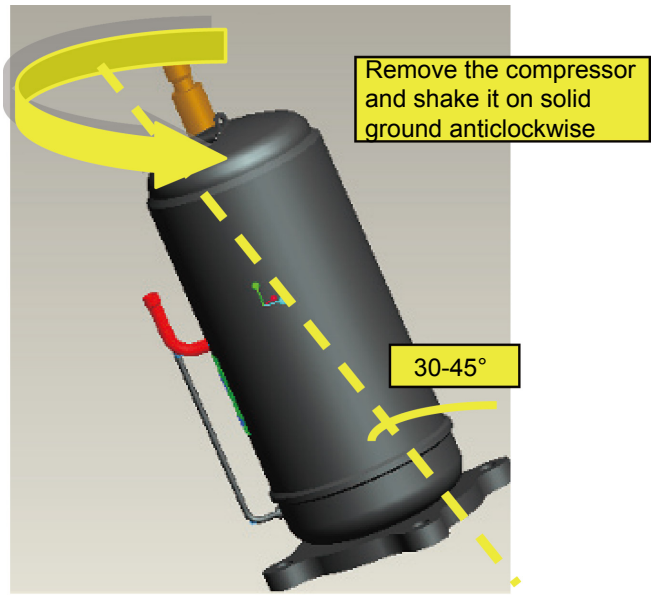
Check the damage of compressors, including the number of damaged compressors, positions and models.

After confirming the compressor information, remove the compressors and confirm the oil quality. If the oil is clear with no impurity, it can be considered that the oil in the system is not polluted. When the valves and oil passages of the unit are normal, only the compressors need to be replaced.



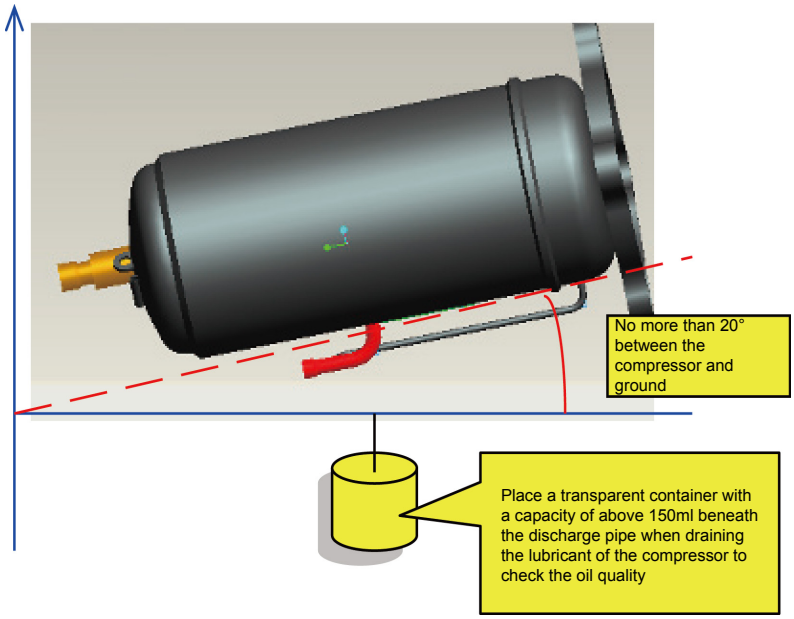
The procedure of checking oil quality is described as follows:

① After removing a compressor, shake the compressor on a solid ground in the sway angle of 30 to 45 degrees to ensure that the pollutants deposited on the bottom of the compressor can be poured out.



② Place the compressor at a position above the level of the ground, pour oil from the compressor exhaust port, and use a beverage bottle or other transparent container (with a volume of over 150 ml) to store oil.

Note that the angle between the axial position of the compressor and the horizontal plane should not exceed 20 degrees to prevent the compressor from falling and injuring people.



③ Place the collected compressor oil in a bright place to check if it contains impurities and discolors, and smell the compressor oil. Normal lubricant has no obvious pungent odor.

After removing the compressor and oil, check the oil quality separately. If it is contaminated, replace the compressor, oil separator and gas-liquid separator. If the color of the oil turns black, check the other modules in the system using the same method.

Note:

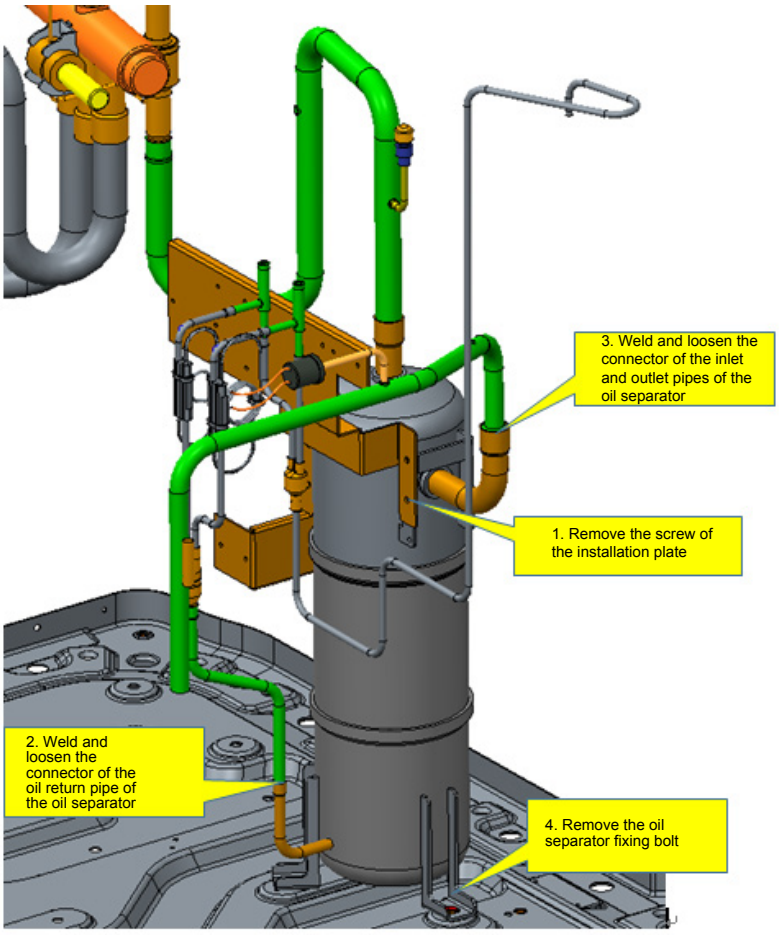
Check the compressor that needs to be replaced, and ensure that pipe openings of the damaged compressor are sealed with tape or the like in time to ensure that the compressor is in good condition for further analysis.

Step 7: Checking system parts

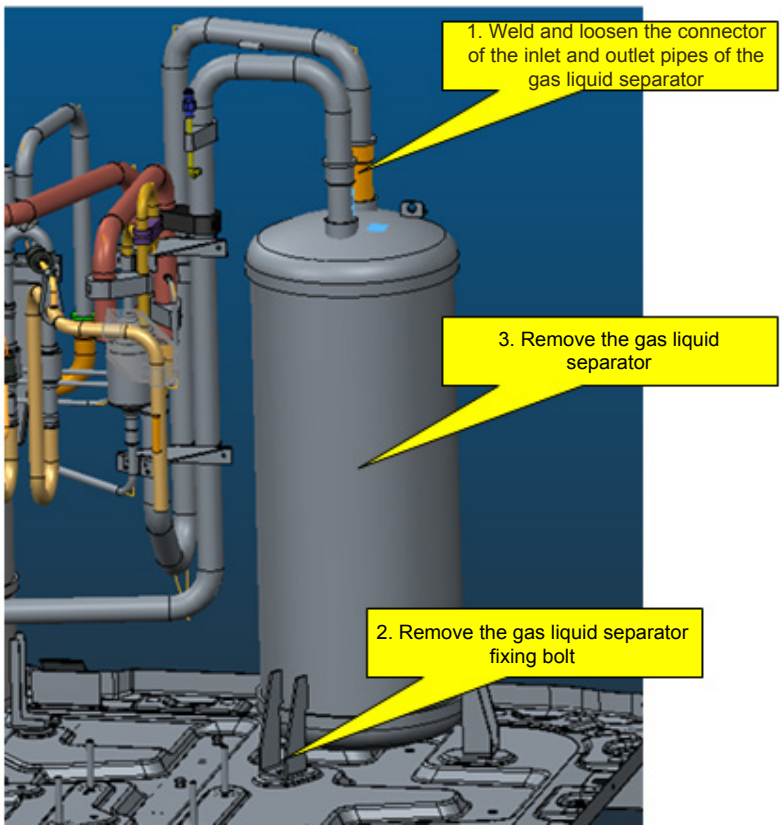
When the system oil is polluted, it is necessary to confirm the parts of the unit, including the oil separator, gas-liquid separator and storage tank.

1) Checking oil separator

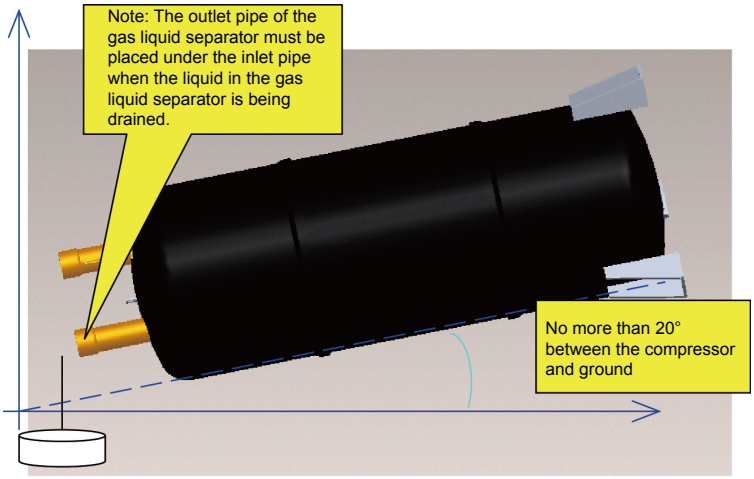
Remove the oil separator according to the procedure of step 4, discharge oil from the oil separator, use the container to hold the oil, and seal the container for return to the factory for inspection.



2) Checking gas-liquid separator



After removing the gas-liquid separator, check whether the gas-liquid separator contains impurities or other substances. The checking procedure is described as follows:



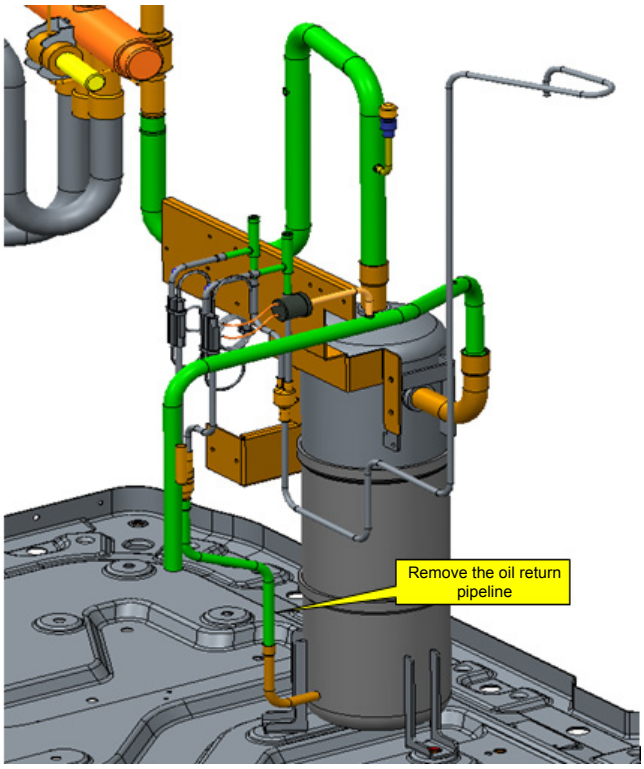
It is also necessary to use a transparent container to hold the impurities in the gas-liquid separator, observe the impurity color and seal the container, and return it to the factory to check the impurity composition.

Note:

If the compressor is damaged and needs to be replaced, the gas-liquid separator must be replaced at the same time. It needs to be replaced regardless of whether it contains impurities or has any other exceptions.

3) Checking the compressor oil-return pipeline

Remove the compressor oil-return pipeline and check the amount of oil and impurities in the pipeline.



CAUTION!

Check the system components that need to be replaced, and ensure that pipe openings of the damaged components are sealed with tape or the like in time to ensure that they are in good condition

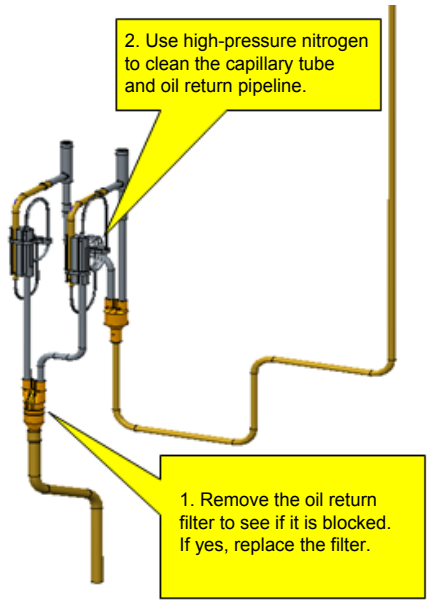
for further analysis.

Collect the amount of compressor oil poured out from the oil separator, gas-liquid separator and oil equalizer, and make relevant records to facilitate the replacement of compressors, gas-liquid separator and other components, and adding of lubricant to the system. The total amount of oil that is poured out of the system needs to be supplemented with additional oil after repair.

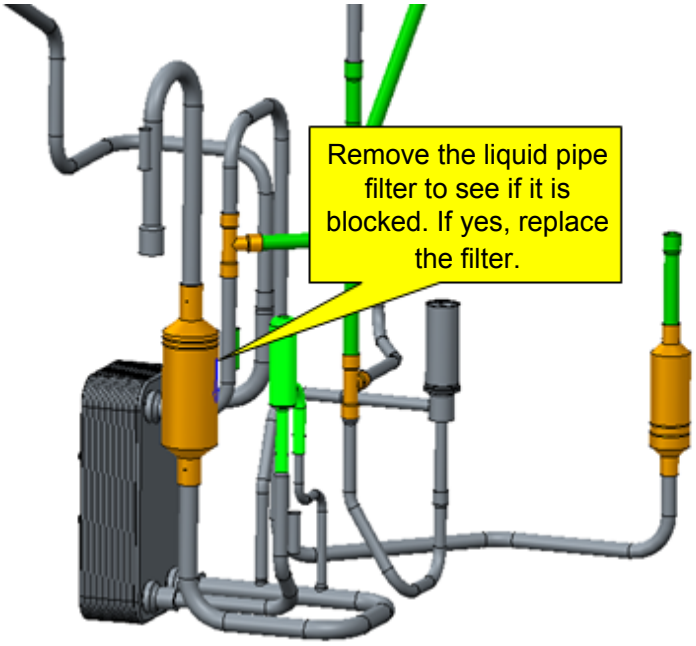
Step 8: Removing pipeline system

After checking the parts that need to be replaced, check whether there is any abnormality in the system pipeline. Use nitrogen to blow the main pipeline and focus on detecting and removing the oil passages.

① Removing the oil return pipeline.



② Checking the liquid pipe filter.



Remove the other piping components according to the actual conditions. If the components are not replaced immediately after removing the pipeline, use tape to seal the pipeline to prevent moisture and

impurities from contaminating the system.

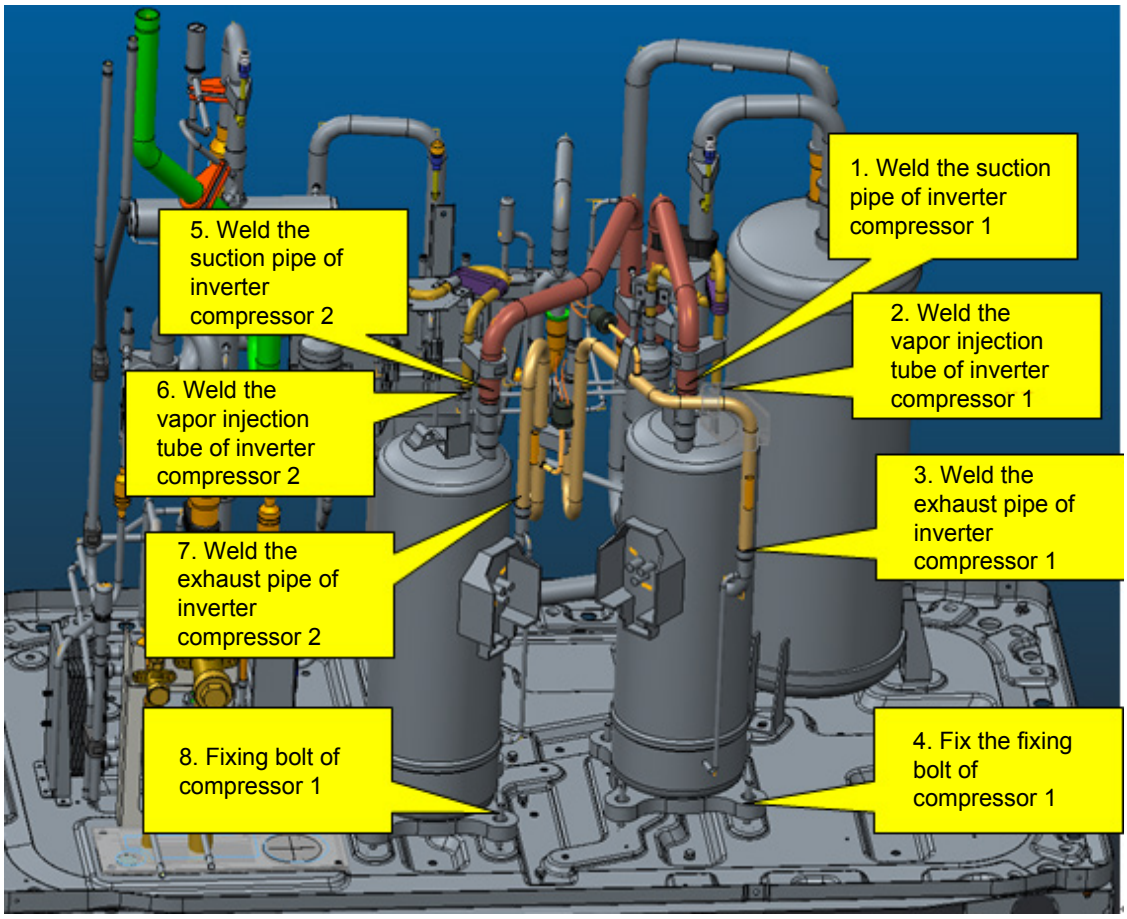
Step 9: Replacing compressors

Pay attention to the following items when replacing the compressors:

1) Remove the sealing rubber block before replacing the compressor and weld the compressor and the corresponding pipeline. Nitrogen is required during the welding process. Since the compressor suction and exhaust ports are all copper-plated steel pipes, it is necessary to use solder with at least 5% silver. The welding gap should be 0.1~0.3mm to prevent blocking or insufficient welding. Do not overheat the nozzles during the welding process.

2) After the pipeline system is welded, use special foot pads and bolts to fix the compressor to ensure the stability of the compressor during operation.

3) When the compressor is connected to the power cables, it must be connected according to the connection condition of the unit at the factory and based on the electrical circuit diagram. The wires of the compressor must be connected in the correct phase sequence. In particular, make sure that the two full inverter compressors are wired correctly. If the power lines of compressor 1 and compressor 2 are reversed, it may cause unit failure, which may cause damage to the compressors in severe cases; (for example, model, compressor 1 and compressor 2 are of the same type. If compressor 1 and the compressor 2 power lines are reversed, the temperature sensor package is correctly installed, and the unit may malfunction when the unit is running;)



Before replacing the compressors, make sure that the models of the compressors to be replaced are same as the models of the new compressors. The new compressors must be installed at the same

places of the respective old compressors and wired correctly. We recommend you replace the compressors one by one.

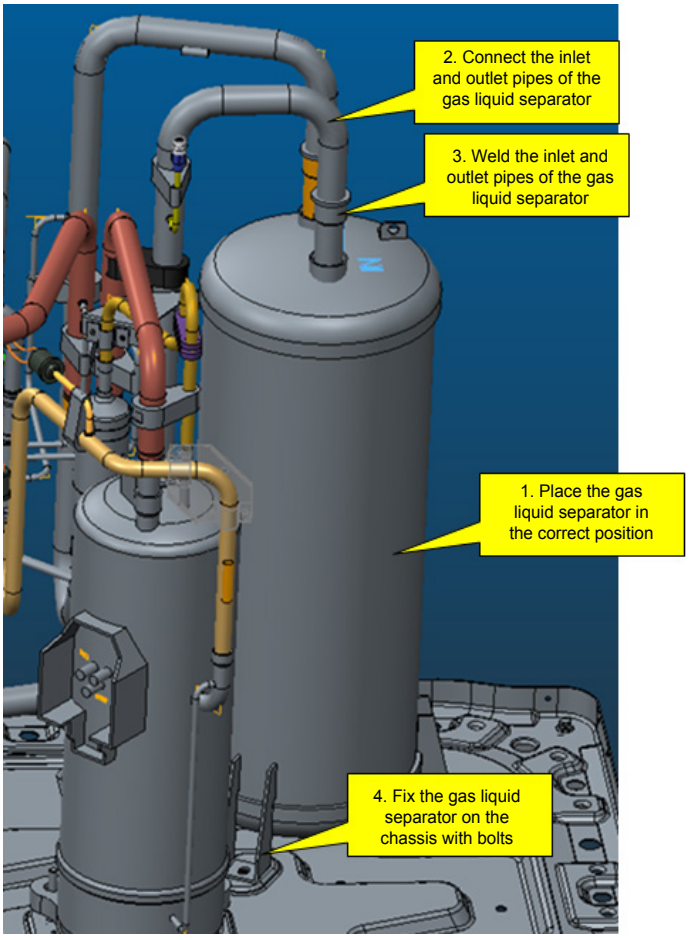
CAUTION!

The compressors must be wired in accordance with the wiring at the factory. The control varies by compressors. If the wiring is incorrect or the two compressors are reversed, the unit may be damaged.

Step 10: Checking/replacing gas-liquid separator

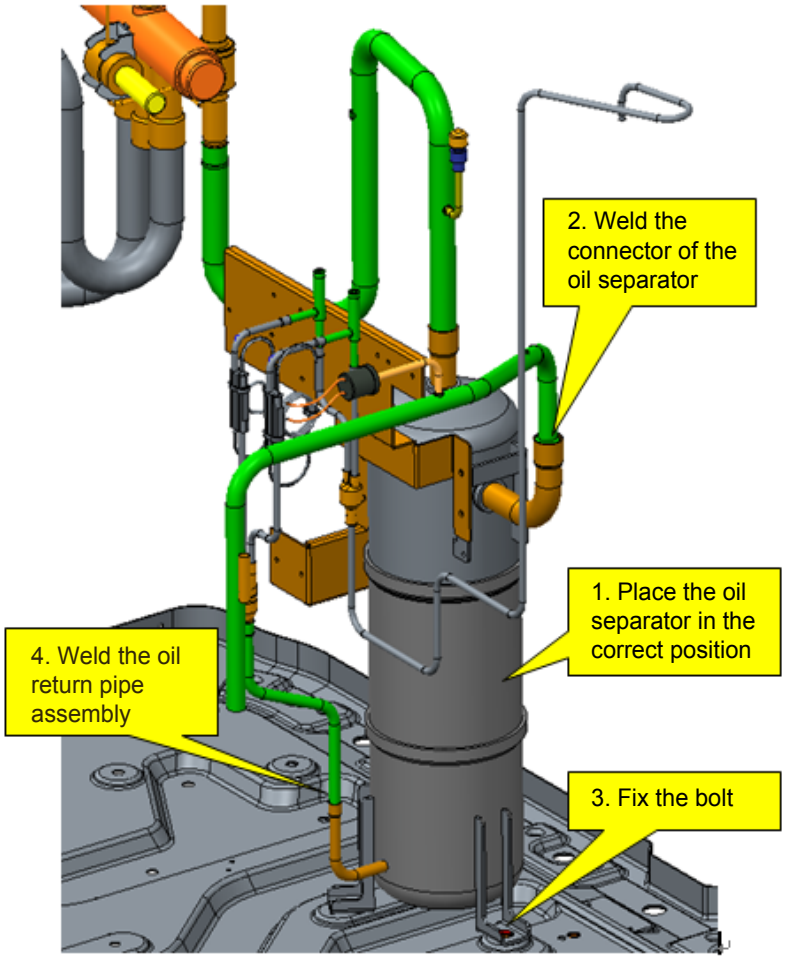
※ **Note:** If a damaged compressor in the system needs to be replaced, the gas-liquid separator must be replaced at the same time to avoid abnormal conditions inside the gas-liquid separator, which may affect the safety and reliability of the system.

Place the gas-liquid separator in a suitable position on the chassis, connect the gas-liquid separator inlet and outlet pipes, and then connect the nitrogen port on the gas-liquid separator connection pipe. The nitrogen position can be selected according to the site conditions. Use the bypass interface or directly connect it to the inlet and outlet pipes of the gas-liquid separator. When the pipelines are large, they can be fixed by tape. Make sure that the nitrogen can flow smoothly through the gas-liquid separator.



Step 12: Checking/replacing oil separator

If the oil separator is found to contain impurities after it is removed, the oil separator needs to be replaced.



Step 13: System leakage inspection

1) Check each welding joints. Firstly, observe whether the welding joints are smooth and whether there are obvious welding holes and other abnormal conditions.

2) Then, charge the unit system with high-pressure nitrogen for leak inspection. If it is only for ODU maintenance, and it can be confirmed that there is no abnormality in the IDU system, only charge the ODU with high-pressure nitrogen for leak inspection. Note that it is necessary to simultaneously charge nitrogen from the high and low pressure sides. It is recommended to charge the nitrogen valve at the same time with nitrogen. The nitrogen pressure should be greater than 20kgf. Use soapy water to check whether the unit system leaks, and focus on checking the service joints.

3) Finally, charge the system with high-pressure nitrogen to keep the system pressure at above 25kgf. Close the large and small unit valves and hold the pressure of the IDUs and ODU for more than 12 hours. If the pressure does not change, start vacuuming. Otherwise, repeat the aforementioned procedure until the leaking point is located.

When checking whether there is any change in the pressure of the system, it is necessary to eliminate the temperature influence as the temperature changes by 1°C, and the pressure changes by about 0.01 MPa. For example, when the temperature of nitrogen is 30°C, the pressure is 2.5 MPa. After the pressure is held for more than 12 hours, the temperature becomes 25°C, the unit passes the test if

the pressure is above 2.43 MPa.

Step 14: Recharging refrigeration oil

The amount of refrigeration oil needs to be recharged is mainly determined by the total amount of lubricant poured out from removing components such as compressors and gas-liquid separator. If there is obvious abnormality, for example, when the amount of lubricant poured out is too little or too much, empty the lubricant in the system, and then check the section 3 basic parameters of the unit in Chapter 1 to determine the amount of lubricant that needs to be recharged.

The specific amount of additional lubricant is divided into two parts: in the first part, the compressor lubricant is added according to the number of compressors to be replaced. 1.5L of lubricant is required for each compressor to be replaced. After replacing the compressors and other parts such as the gas-liquid separator and filters, use high-pressure nitrogen to clean the pipelines and recharge the second part of the lubricant according to the lubricant parameters in the section 3 of Chapter 1.

For example:

① One compressor needs to be replaced for AEG16MI2H3 and 1L of lubricant is discharged from the gas-liquid separator and 0.7L is discharged from the oil separator for cleaning the system. Therefore, 3.2L (1.5L+1L+0.7L) of lubricant needs to be recharged.

② One compressor needs to be replaced for AEG10MI2H3. The gas-liquid separator and other parts such as filters need to be replaced. The pipelines need to be cleaned by high-pressure nitrogen. Nearly all the parts are involved and nearly all the lubricant is discharged except for a small amount remaining in the pipelines. Therefore, 3.5L of refrigeration oil needs to be recharged according to the parameter form.

Lubricant recharging method:

1) Only FV68H refrigeration oil can be used for the unit. Verify the model number before recharging. It is forbidden to use the refrigeration oil of a different model number.

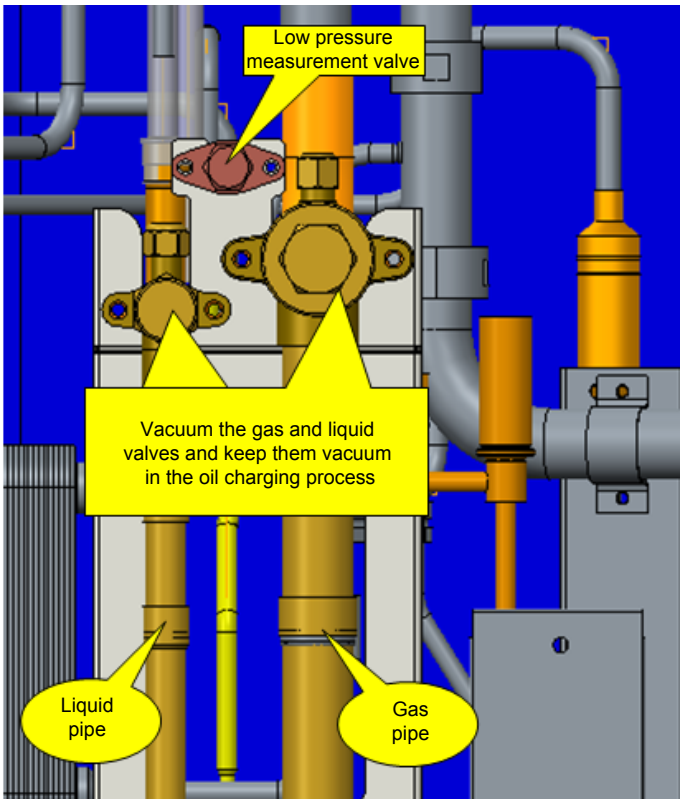
2) Connect the gas and liquid valves of the unit and vacuum the unit for over 30 minutes.

3) Connect a rubber tube to the oil charging valve, open the container containing the lubricant, discharge the lubricant into the measuring cup and measure the appropriate recharging amount. If the measuring cup capacity is sufficient to measure the appropriate lubricant quantity once, the lubricant can be recharged in several times. Record the amount of lubricant recharged each time, then dip the other end of the rubber tube into the lubricant in the measuring cup.

4) Vacuum the unit and open the oil charging valve at the same time to charge the lubricant into the low-pressure side of the unit by using the atmosphere pressure.

5) When the lubricant needs to be recharged several times, close the oil valve before measuring the lubricant to be recharged. Keep vacuuming the unit during the process.

6) After the appropriate amount of lubricant is recharged, close and seal the oil charging valve.



CAUTION!

Compressor refrigeration oil plays an important role in the normal operation of compressor. The lubricant with the correct model number and quality must be used in accordance with the requirements of Gree after-sales and technical departments. The recharging amount must be correct.

Step 15: System vacuuming

After adding the appropriate lubricant, it is necessary to continue vacuuming the unit. Make sure that the pressure after vacuuming reaches the absolute pressure of 0 kgf/cm^2 and the gauge pressure is -1 kgf/cm^2. Only in this way, can the water in the pipeline system be fully evaporated.

Recommended specifications of vacuum pump are as follows:

Model	Maximum vacuum discharge	Purpose	
		Air discharge	Vacuum drying
Oil-lubricating rotor pump	100 L/min	Yes	Yes
Non-oil rotor pump	50 L/min	Yes	Yes

Use a vacuum pump to vacuum the unit from the gas and liquid valves simultaneously. The pressure gauge must be connected when vacuuming. When the unit pressure reaches the absolute pressure 0 kgf/cm^2 and the gauge pressure is -1 kgf/cm^2, continue to vacuum the unit for 0.5-1h. Then, close the high and low pressure gauge knob and stop the vacuum pump for 1h, If the pressure does not change, the refrigerant can be charged. If the pressure rises by over 0.1 kgf/cm^2, recheck the system for leakage.

Step 16: Charging refrigerant

Charge the unit with the correct refrigerant. Only use high-quality refrigerant made by qualified manufacturers. The refrigerant package must be intact and the printing must be clear. Measure the

refrigerant pressure before charging the refrigerant. The refrigerant quality can be judged according to the refrigerant saturation pressure and temperature table.

The charging method is described as follows: Measure the pressure of the whole refrigerant tank, check the saturation pressure and temperature against the parameter table, and check the ambient temperature. If the difference is greater than 3°C, there is a problem with the refrigerant.

After confirming that the refrigerant is correct, calculate the refrigerant charging amount according to the standard charging requirement; the standard refrigerant charging amount is the sum of the nominal charging amount of the nameplate, the refrigerant amount to be recharged for the pipeline and the additional refrigerant amount necessary for the module.

If the unit comprises multiple modules, discharge only the refrigerant of the ODU before the maintenance. Make corresponding adjustment via the startup commissioning parameters after recharging 80% of the nominal charging amount of the nameplate of the ODU.

Step 17: Connecting electrical parts

Connect the electrical parts according to the previous markings and the circuit diagram behind the electrical appliance cover, connect the compressor cables, the corresponding electric heating belt and the corresponding temperature sensors.

※**Note:** Check the wiring according to the circuit diagram and make sure that all the electrical parts are wired correctly.

Step 18: Startup commissioning

Perform the startup commissioning separately when the unit is working in cooling mode with full load, in cooling mode only, in heating mode with full load, and in heating mode only. In each case, run the unit for more than 30 minutes, analyze the data, adjust the unit system and make sure that all parameters are correct. For specific parameters, contact after-sales engineers or Gree's technicians.

5.4 Removing and Installing Four-way Valve Coil

Preparations

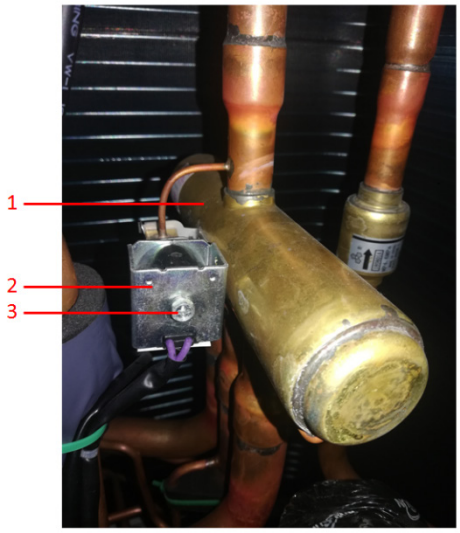
(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Remove the unit’s front panel by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Use a screwdriver to remove the fixing screw of the 4-way valve coil.

(2) Remove the 4-way valve coil.



1 --- 4-way valve 2 --- 4-way valve coil 3 --- Screw

Installation procedure

(1) Install the new 4-way valve coil to the exact position.

(2) Tighten the screw with a screwdriver to ensure that the 4-way valve coil does not rotate.

5.5 Removing and Installing Four-way Valve Coil

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's front panel by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Remove the 4-way valve coil by referring to 5.4 Replacing 4-way Valve Coil (YV1).

(2) Use gas welding to heat the four-port (DESC) connecting pipe of the 4-way valve and pull them off the 4-way valve. Nitrogen protection should be applied during welding. Refer to Table 1 for nitrogen pressure.

Table 1 Nitrogen Pressure for Pipeline Assembly Welding

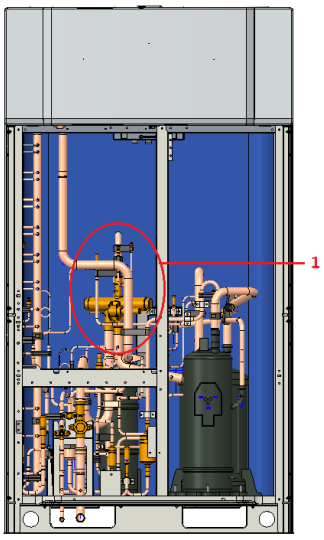
Pipe diameter range (mm)	Nitrogen pressure range (MPa)	Pipe length (m)	Shortest pre-charge time (s)	Shortest hysteresis nitrogen charging time (s)
Φ6~Φ9.52	0.01~0.05	≤2	10	10
Φ12~Φ16	0.01~0.08	≤2	15	20
Φ19~Φ22	0.03~0.1	≤3	30	20
Φ25~Φ28	0.03~0.1	≤3	30	30
Φ34.9~Φ41.3	0.03~0.1	≤3	35	60
Φ53.9~Φ104.8	0.03~0.1	≤3	75	400

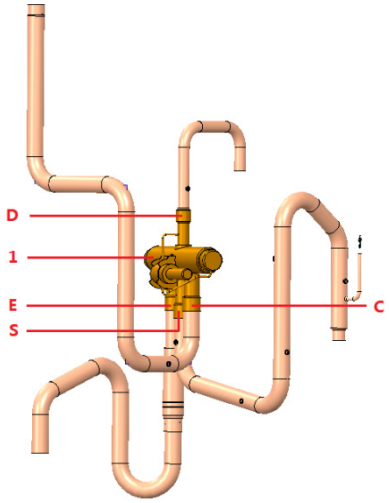
(1) Before the 4-way valve is welded, record the direction of the 4-way valve and the installation position of each nozzle.

Note:

When welding, wrap the surrounding components with a damp cloth carefully, and do not get the other components burnt.

(2) Remove the old 4-way valve from the pipeline.





1 ---- 4-way valve

D - Gas pipe, connecting to the exhaust pipe of the cooling compressor;

C - Gas pipe, connecting to the inlet pipe of the condenser.

S - Gas pipe, connecting to the suction pipe of the cooling compressor;

E - Gas pipe, connecting to the air return pipe of the evaporator.

Installation procedure

(1) Install the new 4-way valve to the exact position.

(2) Connect the new 4-way valve to the pipeline.

(3) When welding the 4-way valve, wrap the valve body with a damp cloth to prevent the slider in the valve from being burned out and the water from flowing into the pipe.

(4) Nitrogen protection should be applied during welding. Refer to Table 1 for nitrogen pressure.

(5) Install the 4-way valve coil by referring to 5.4 Installing 4-way Valve Coil (YV1).

(6) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(7) Make sure that the components and cables are properly connected.

(8) After checking that there is no problem, buckle the front panel and tighten the screws.

5.6 Removing and Installing Electronic Expansion Valve

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system. Make sure that the unit pipeline system is free of refrigerant.

(2) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Remove the damping block wrapped on the electronic expansion valve.

(2) Rotate the electronic expansion valve coil counterclockwise until it is released and then remove it.

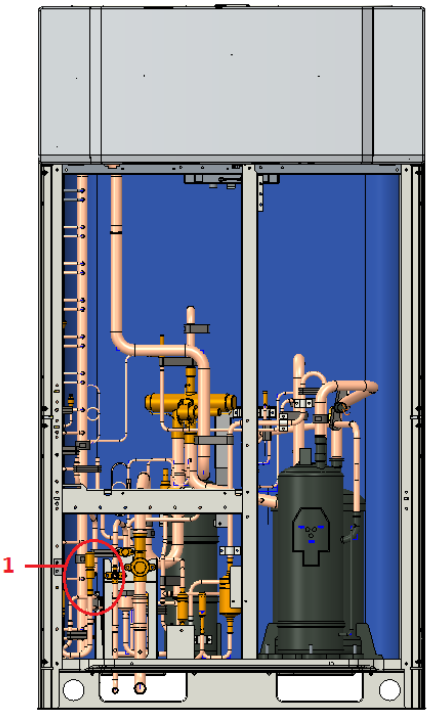
(3) Cut the electronic expansion valve inlet and outlet pipes to ensure that there is no residual refrigerant in the unit. Remove the old electronic expansion valve.

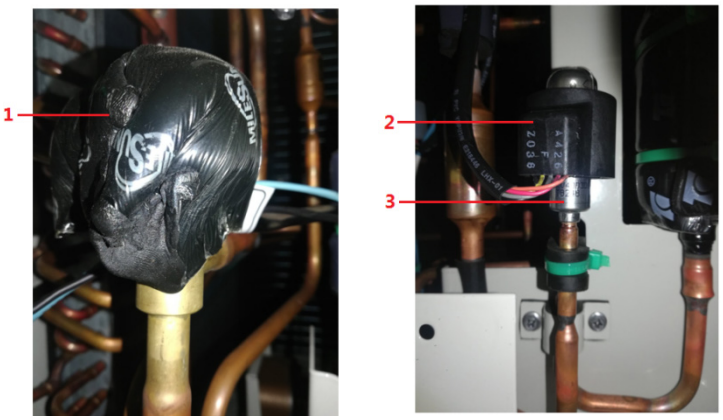
(4) Weld and loosen the connecting tube of the electronic expansion valve and then pull the connecting tube off.

Note:

When welding, do not get the other components burnt.

(5) Remove the old electronic expansion valve.





1 --- Damper block 2 --- Electronic expansion valve coil 3 --- Electronic expansion valve

Installation procedure

(1) Install the new electronic expansion valve to the exact position.

(2) Weld the connecting tube of the electronic expansion valve.

(3) When welding the electronic expansion valve, wrap the valve body with a damp cloth.

(4) Nitrogen protection should be applied. Refer to Table 1 for nitrogen pressure.

Note:

When welding, do not get the other components burnt.

(5) Install the electronic expansion valve coil to the correct position and turn it clockwise until a click is heard, indicating that it is in place.

(6) Wrap the damping block.

(7) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(8) Make sure that the components and cables are properly connected.

(9) After checking that there is no problem, buckle the front panel and tighten the screws.

5.7 Removing and Installing Oil Separator

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

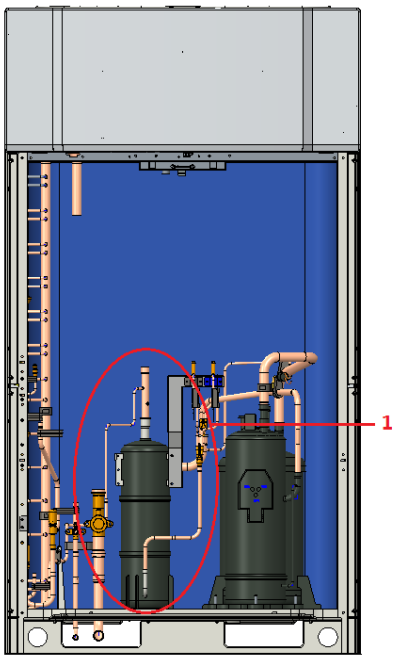
Removing procedure

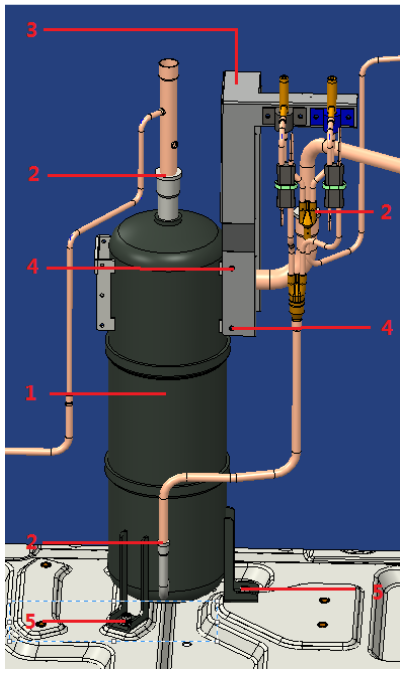
(1) Use a screwdriver to remove the screws that connect the oil separator to the bracket, and remove the bracket or the pipe clamp on the bracket.

(2) Weld and loosen the three connection points of the oil separator, and then pull the connecting tube off. Note: When welding, do not get the other components burnt.

(3) Use a screwdriver to loosen the fixing bolt for the oil separator.

(4) Remove the oil separator from the chassis.





1 --- Oil separator 2 --- Connection point 3 --- Oil separator bracket

4 --- Screws 5 --- Bolts and washers

Installation procedure

(1) Install the oil separator in place and tighten the foot bolts of the oil separator.

(2) Weld the three connection points of the oil separator. Nitrogen protection should be applied. Refer to Table 1 for nitrogen pressure. Note: When welding, do not get the other components burnt.

(3) Fasten the fixing screws with a screwdriver to tighten the bracket.

(4) Make sure that the components and cables are properly connected.

(5) After checking that there is no problem, buckle the front panel and tighten the screws.

5.8 Removing and Installing Gas-Liquid Separator

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 VRF system.

(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's front panel by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

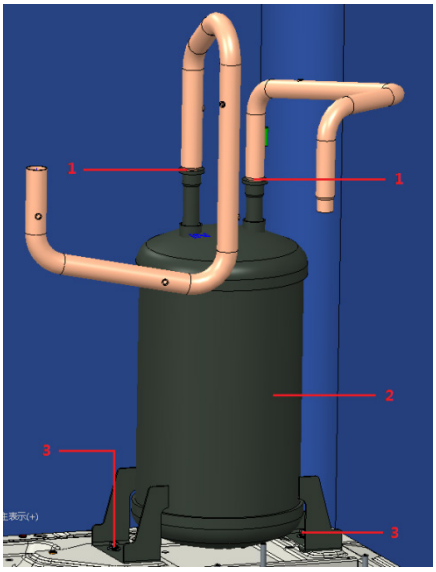
(1) Weld and loosen the two connection points of the gas-liquid separator and then pull the connecting tube off.

Note:

When welding, do not get the other components burnt.

(2) Loosen the fixing bolts of the Loosen the gas-liquid separator.

(3) Remove the gas-liquid separator from the chassis.



1 --- Connection points 2 --- Gas-liquid separator 3 --- Bolts and washers

Installation procedure

(1) Install the gas-liquid separator in place and tighten the foot bolts of the gas-liquid separator.

(2) Weld the two connection points of the gas-liquid separator. Nitrogen protection should be applied. Refer to Table 1 for nitrogen pressure.

Note:

When welding, do not get the other components burnt.

(3) Make sure that the components and cables are properly connected.

(4) After checking that there is no problem, buckle the front panel and tighten the screws.

5.9 Removing and Installing Plate Heat Exchanger

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Remove the temperature sensors near the nozzles.

(2) Weld and loosen the tubes connecting the four nozzles of the plate heat exchanger, and then pull the connecting tubes off.

Note:

When welding, do not get the other components burnt. The welding points of the plate heat exchanger are steel and copper. Pay attention to the welding quality.

(3) Loosen the plate heat exchanger bracket fixing screws and take out the plate heat exchanger and the bracket as a whole.

Installation procedure

(1) Fix the plate heat exchanger and the screws of the bracket, and then fix the whole on the chassis.

(2) Fix the plate heat exchanger according to the position of the inlet and outlet tubes of the plate heat exchanger and weld the four connection points on the plate heat exchanger.

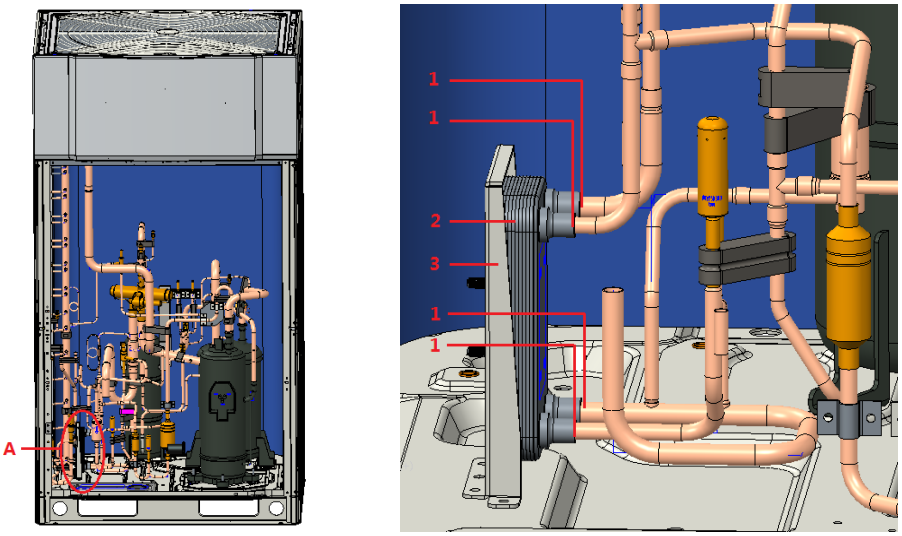
(3) Nitrogen protection should be applied. Refer to Table 1 for nitrogen pressure.

Note:

When welding, do not get the other components burnt.

(4) Make sure that the components and cables are properly connected.

(5) After checking that there is no problem, buckle the front panel and tighten the screws.



A --- plate heat exchanger assembly

1 --- connection point 2 --- plate heat exchanger 3 --- plate heat exchanger bracket

5.10 Removing and Installing Pressure Sensor

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 VRF system.

(2) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

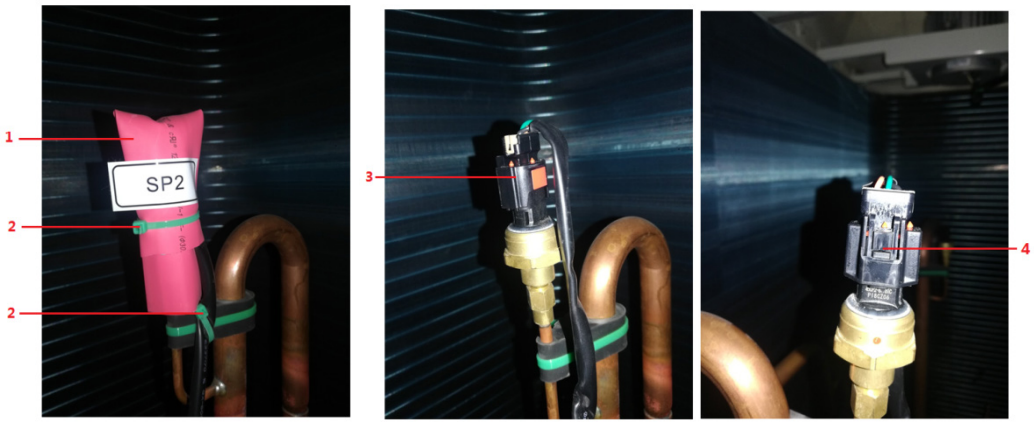
Removing procedure

(1) Use a diagonal pliers to cut off the high temperature wire tie that is attached to the heat-shrinkable tubing of the pressure sensor.

(2) Remove the heat-shrinkable tubing wrapped around the pressure sensor.

(3) Pull the plastic plug of the pressure sensor out by pressing the pressing point on the plastic plug of the pressure sensor with your hand.

(4) Prepare two wrenches. Use one to fix the fluorine nozzle and the other to unscrew the metal interface of the pressure sensor.



1 --- heat-shrinkable sleeve 2 --- high temperature wire tie

3 --- pressure sensor 4 --- pressing point

Installation procedure

(1) Find a new pressure sensor. First install the metal interface of the pressure sensor in the correct position, fix the fluorine nozzle with a wrench, and tighten it with another wrench.

(2) Then insert the plastic plug of the pressure sensor into the correct position and a “click” can be heard when it is in place.

(3) Put on the heat-shrinkable sleeve and tie the high temperature wire according to the original position.

(4) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(5) Make sure that the components and cables are properly connected.

(6) After checking that there is no problem, buckle the upper and bottom panels and tighten the screws.

5.11 Removing and Installing Temperature Sensor

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

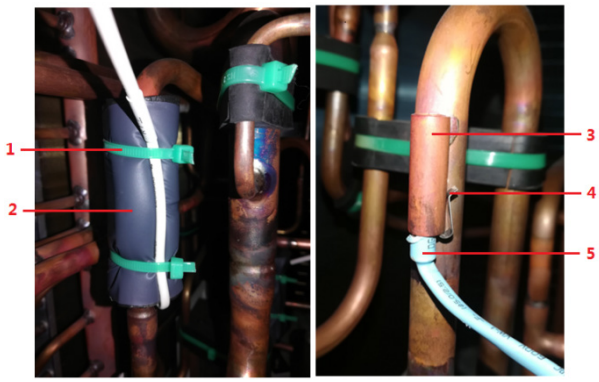
(2) Remove the unit’s upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Use a diagonal pliers to cut off the wire tie of the insulation cotton.

(2) Remove the insulation cotton wrapped on the temperature sensor.

(3) Take the temperature sensor off.



1 --- high temperature wire tie 2 --- insulation cotton 3 --- temperature sensor sleeve

4 --- temperature sensor connector 5 --- temperature sensor

Installation procedure

(1) Connect the temperature sensor connector into the temperature sensor sleeve.

(2) Apply heat-dissipating grease to the surface of the temperature sensor and insert the temperature sensor into the temperature sensor sleeve (from bottom to top).

(3) Wrap the insulation cotton and tie it with a high temperature wire tie.

(4) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(5) Make sure that the components and cables are properly connected.

(6) After checking that there is no problem, buckle the upper and bottom panels and tighten the screws.

5.12 Removing and Installing Pressure Switch

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Remove the upper fixing block and wire tie of the pressure switch.

(2) Wrap the pressure switch with a damp cloth.

(3) After the pressure switch connection port is heated by gas welding, pull off the pressure switch. Nitrogen protection must be adopted during welding.

(4) Take the old pressure switch off the pipeline and record the pressure switch's wiring position.

Installation procedure

(1) Install the new pressure switch to the exact position.

(2) When welding the pressure switch, wrap the valve with a damp cloth to prevent the valve from being burned out and the water from flowing into the pipe.

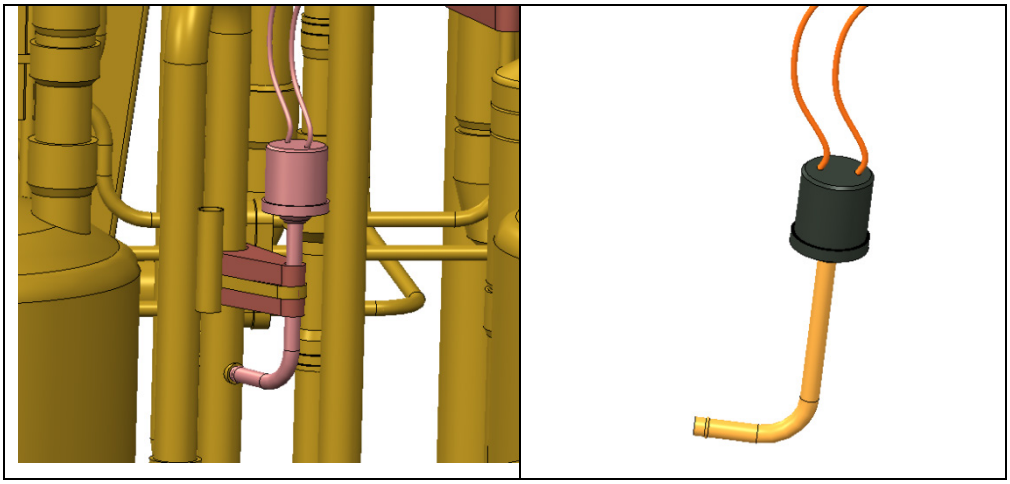
(3) Adopt nitrogen protection during welding. The nitrogen pressure is 0.5±0.1kgf/cm2 (relative pressure).

(4) Install the fixing block and wire tie of the pressure switch.

(5) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(6) Make sure that the components and cables are properly connected.

(7) Install the unit panel.



5.13 Preparation for Removing and Installing Solenoid Valve

Steps:

(1) Use the power circuit breaker to switch off the power of the VRF system.

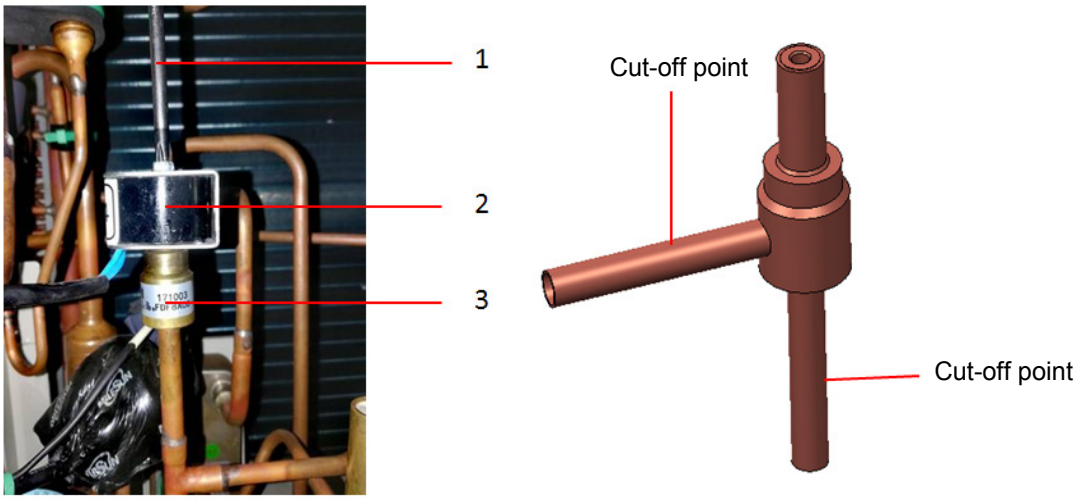
(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Use a tool to remove the solenoid valve coil.

(2) Use a pipe cutter to cut off the solenoid valve inlet and outlet pipes and remove the valve body.



(3) Use gas welding to heat the pressure switch connection port and pull out the solenoid valve inlet and outlet pipes. Nitrogen protection should be applied during welding; the nitrogen pressure is 0.5±0.1kgf/cm2 (relative pressure).

(4) Weld and take off the old solenoid valve inlet and outlet pipes from the pipeline.

Installation procedure

(1) Install the new solenoid valve to the exact position.

(2) Wrap the solenoid valve with a damp cloth.

(3) Adopt nitrogen protection during welding. The nitrogen pressure is 0.5±0.1kgf/cm2 (relative

pressure).

(4) Install the new solenoid valve coil to the exact position.

(5) Use a torque wrench to fix the solenoid valve coil.

(6) Fix the wires according to the original requirements by referring to the unit wiring diagram.

(7) Make sure that the components and cables are properly connected.

(8) Install the panel.

5.14 Removing and Installing Blades

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Remove the unit top cover assembly.

Removing procedure

(1) Use a wrench to remove the fastening nut, spring washer, and flat piece in sequence.

(2) Take off the blade ⑦.

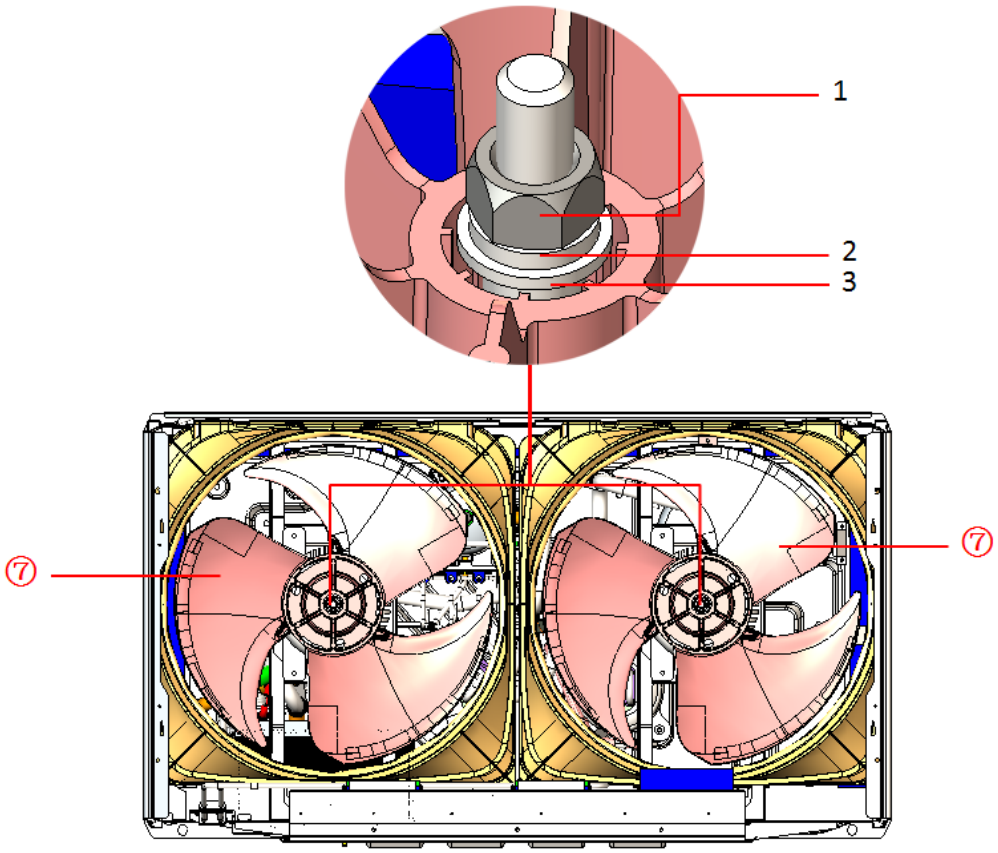
Installation procedure

(1) Use the power circuit breaker to switch off the power of the VRF system; install the blades on the motor shaft and check if they are fixed properly.

(2) Use a wrench to install the fastening nut, spring washer, and flat piece in sequence.

(3) Rotate the blade ⑦ and check the gap between the blade and baffle ring.

(4) Install the top cover assembly and panel assembly.



1 - nut; 2 - spring washer; 3 - flat piece; ⑦ - blade.

5.15 Removing and Installing Fan

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Remove the unit's panel, top cover and upper electrical appliance cover by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Disconnect the fan connection port.

(2) Remove the blades by referring to the 5.14 Removing and Installing Blades.

(3) Remove the bolts as shown in the figure and remove the fan.

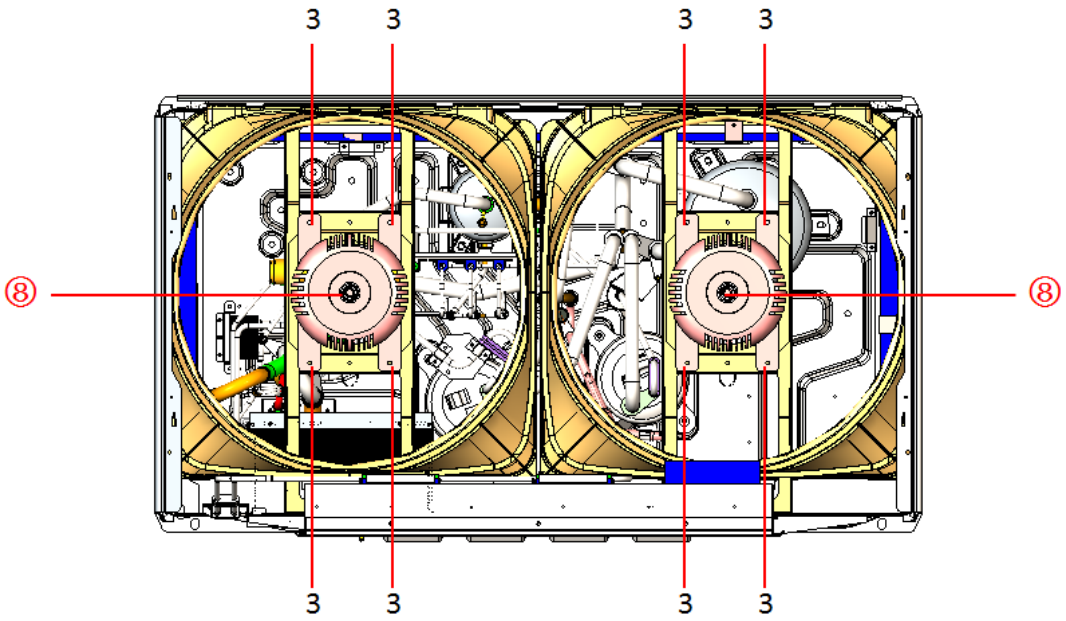
Installation procedure

(1) Install a new fan on the motor bracket and fix the fan feet.

(2) Install the blades by referring to the 5.14 Removing and Installing Blades.

(3) Connect the fan according to the original wiring.

(4) Install the unit's top cover assembly and panel by referring to 5.1.1 Removing and Installing the Unit Panel.



3 - bolt; ⑧ - blade.

5.16 Removing and Installing Electric Heating Belt

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

(2) Remove the unit's front panel by referring to 5.1.1 Removing and Installing the Unit Panel.

(3) Remove the compressor soundproof cotton and the soundproof cap (if there is a soundproof cover, please remove the front cover of the soundproof cover); please refer to the instructions and procedures.

Removing procedure

(1) Loosen the spring hook of the electric heater on the compressor.

(2) Remove the electric heating belt.

Installation procedure

(1) Install the electric heating belt at the shaft of the compressor, as shown in the figure.

(2) Buckle up the electric heating belt.

(3) Connect the fan according to the original wiring.

(4) Install the soundproof cotton.

(5) Install the unit's front panel by referring to 5.1.1 Removing and Installing the Unit Panel.

1 — buckle 2 — spring hook

5.17 Removing and Installing Condenser

Preparations

(1) Use the power circuit breaker to switch off the power of the VRF system.

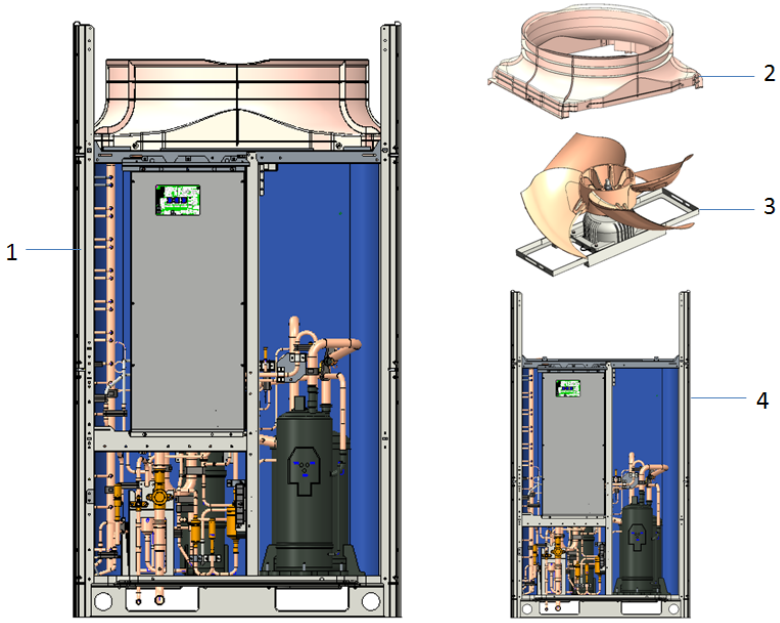
(2) Make sure that the unit pipeline system is free of refrigerant.

(3) Remove the unit's panel by referring to 5.1.1 Removing and Installing the Unit Panel.

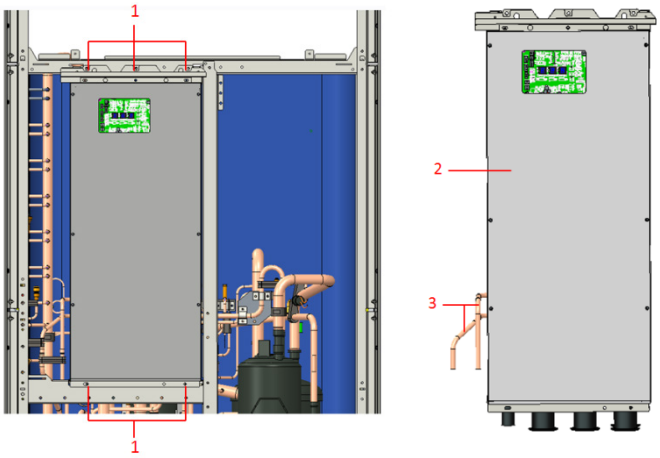
(4) Remove the top cover assembly by referring to 5.1.2 Removing and Installing the Unit Top Cover Assembly.

Removing procedure

(1) Remove the baffle ring 2 and the fan unit 3 in turn, and the unit is shown as 4 after the removing.



(2) Remove the electrical appliance box: Use a screwdriver to remove the screw that secures the electrical appliance box and remove the electrical appliance box 2. Note: Before removing, loosen the two refrigerant tubes of the electrical box radiator.



1 — screw 2 — electrical appliance box 3 — radiator refrigerant tube

(3) Remove the grille (back), the upper cross beams (two in front and rear), the right side panel, and the left side panel.

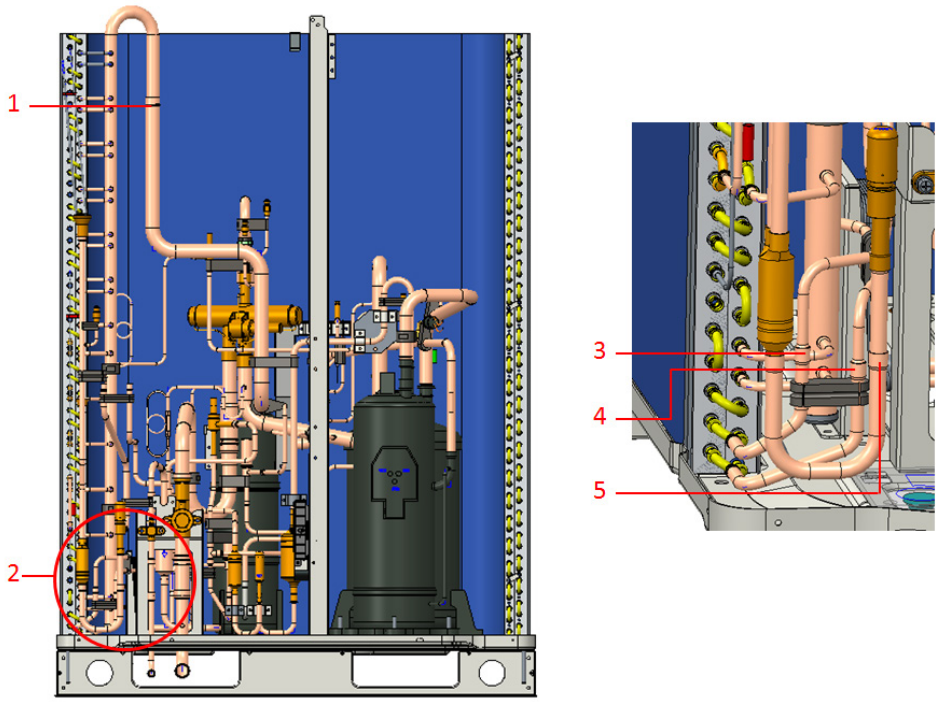
(4) Use a screwdriver to remove the two screws that connect the condenser to the chassis.

(5) Weld and loosen the four connection points of the condenser and pipeline system and then pull the connecting tube off.

Note:

When welding, do not get the other components burnt.

(6) Remove the condenser from the chassis.



1 — connection point 2 — three connection points (3, 4, 5)

(7) Pull it off the compressor after using gas welding to heat the inlet and outlet pipes. Adopt nitrogen protection during welding. The nitrogen pressure is 0.5±0.1kgf/cm^2 (relative pressure). When heating, do not burn the surrounding materials.

(8) Remove the condenser from the chassis.

Installation procedure

(1) Place the new condenser in the correct position.

(2) Fix the two screws that connect the condenser to the chassis.

(3) Install the left side panel, the right side panel, the upper cross beams (two in front and rear), and the grille (rear) in sequence.

(4) Place the electrical appliance box in the correct position and tighten the screws.

(5) Weld the four connection points of the condenser and pipeline system and the two refrigerant tubes of the radiator of the box. Adopt nitrogen protection during welding. The nitrogen pressure is 0.5±0.1kgf/cm^2 (relative pressure). Note: When welding, do not get the other components burnt.

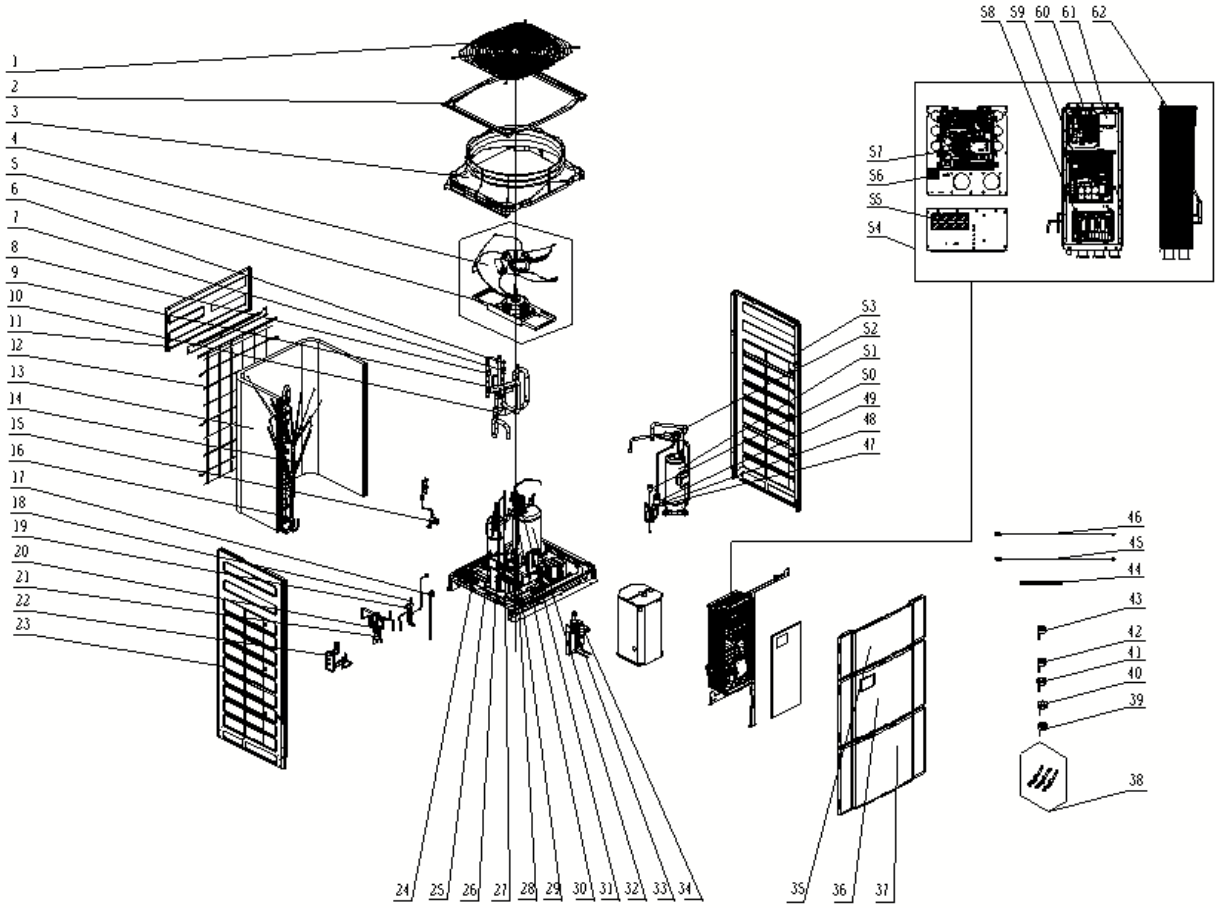
(6) Install the fan, the baffle ring, the top cover assembly, the upper cover (front), and the upper cover (rear) in sequence.

(7) Make sure that the components and cables are properly connected.

(8) After checking that there is no problem, buckle the front panel and tighten the screws.

6 Explosive View and Parts List

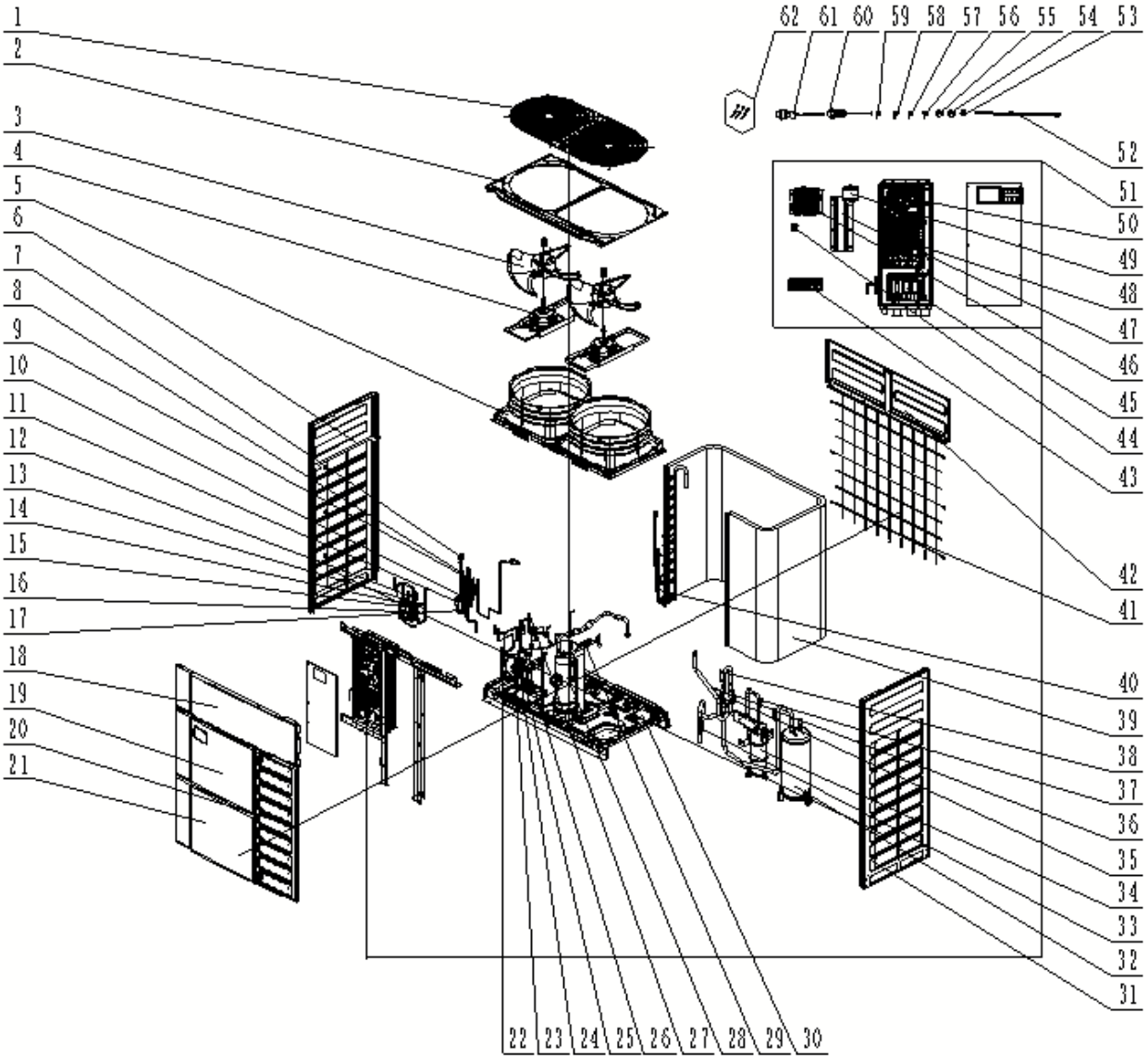
6.1 Explosive View and Parts List of AEG08MI2H3, AEG10MI2H3 and AEG12MI2H3



No.	Name	Material code	Vulnerable part *	Qty
1	Rear Grill	016001060007	*	1
2	Coping	012049000050P		1
3	Diversion Circle	200150060002	*	1
4	Axial Flow Fan	103002000007	*	1
5	Brushless DC Motor	1570412406	*	1
6	Nozzle for Adding Freon	06120012	*	2
7	Nozzle for Adding Freon(R410A)	06123006	*	1
8	One way Valve	071001060007	*	1
9	4-way Valve	43000339	*	1
10	Filter	07218603	*	1
11	Cover Plate	012035000236P		1
12	Rear Grill	016001060006	*	1
13	Condenser Assy	01100206078901	*	1
14	Nozzle for Adding Freon	061200101	*	1
15	Nozzle for Adding Freon	06130002	*	1
16	Filter	0341010701	*	1
17	Electric Expand Valve Fitting	4304413248	*	1
18	Electromagnetic Valve	43044100224	*	1
19	Discharge Charge Valve	07334100002	*	2
20	Electronic Expansion Valve	43044100172	*	1
21	Gas Tube Filter	072190511	*	1
22	Plate-type Heat Exchanger	010007060008	*	1

No.	Name	Material code	Vulnerable part *	Qty
23	Left Side Plate Sub-Assy	017037060016P		1
24	Chassis Sub-assy	017000000334P		1
25	Oil Separator	035028060002	*	1
26	Strainer	07415200002	*	2
27	Electromagnetic Valve	43000072	*	1
28	Electronic Expansion Valve	072009060013	*	1
29	Electric Expand Valve Fitting	072002000011	*	1
30	Strainer	07222025	*	1
31	Electromagnetic Valve	072008000005	*	2
32	Gas-liquid Separator	035027060002	*	1
33	Cut off Valve	0733410001301	*	1
34	Cut off Valve	0733410001401	*	1
35	Cover Plate	012035000237P		1
36	Front Panel	012073000244P		1
37	Front Panel	012073000245P		1
38	Sensor Sub-assy	390002060033	*	1
39	Magnet Coil (electromagnetic valve)	07200106000812	*	1
40	Magnet Coil (electromagnetic valve)	072001060007	*	1
41	4 Way Valve Coil	072010060002	*	1
42	Magnet Coil (electromagnetic valve)	072001060006	*	1
43	Magnet Coil (electromagnetic valve)	07200106000811	*	1
44	Electric Heater(Compressor)	7651521244	*	1
45	Pressure Sensor	32218000009	*	1
46	Pressure Sensor	32218000008	*	1
47	Electronic Expansion Valve	43044100190	*	1
48	Bidirection Strainer	07220016	*	1
49	Silencer	07245008	*	1
50	Electric Expand Valve Fitting	4304413250	*	1
51	Compressor and Fittings	009001000190	*	1
52	Pressure Protect Switch	4602000911	*	1
53	Right Side Plate Sub-Assy	017038060017P		1
54	Electric Box Assy	100002066482	*	1
55	Terminal Board	420102471	*	1
56	Terminal Board	422000060004	*	1
57	Main Board	300027000591	*	1
58	Filter Board	300020060006	*	1
59	Main Board	300027060076	*	1
60	Main Board	300027000583	*	1
61	Reactor	450004060009	*	1
62	Radiator	4901800008801	*	1

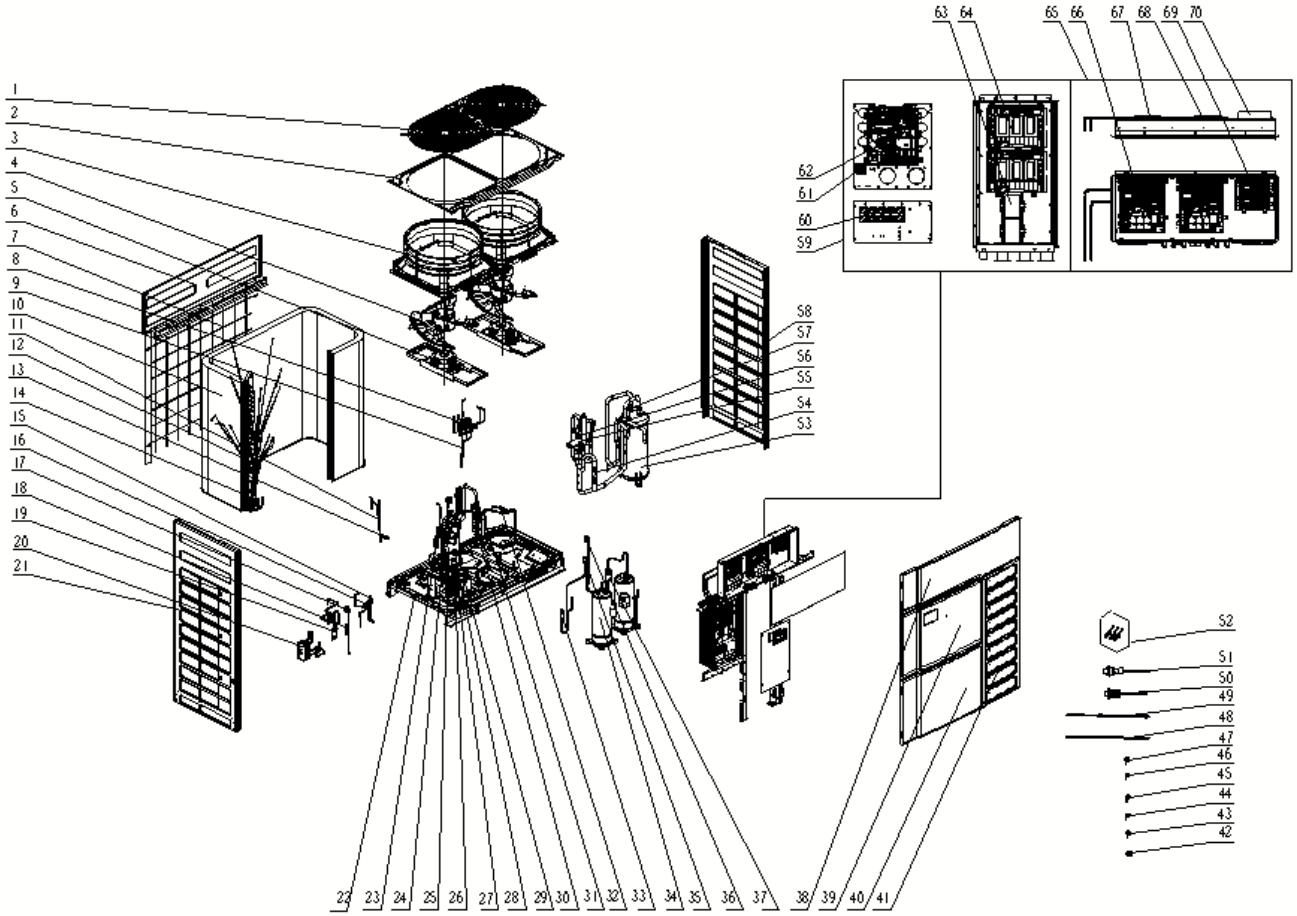
6.2 Explosive View and Parts List of AEG14MI2H3, AEG16MI2H3



No.	Name	Material code	Vulnerable part *	Qty
1	Rear Grill	016001060013	*	2
2	Coping	012049000059P		1
3	Axial Flow Fan	10434100002	*	2
4	Brushless DC Motor	1570412406	*	2
5	Diversion Circle	200150000011	*	2
6	Left Side Plate Sub-Assy	017037060016P		1
7	Electric Expand Valve Fitting	072002000011	*	1
8	Electronic Expansion Valve	43044100190	*	1
9	Electromagnetic Valve	072008000005	*	2
10	Silencer	07245008	*	1
11	Bidirection Strainer	07220016	*	1
12	Electromagnetic Valve	43044100224	*	1
13	Discharge Charge Valve	07334100002	*	2
14	Electronic Expansion Valve	43044100172	*	1
15	Gas Tube Filter	072190511	*	1

No.	Name	Material code	Vulnerable part *	Qty
16	Plate-type Heat Exchanger	010007060007	*	1
17	Strainer	07222025	*	1
18	Cover Plate	012035000246P		1
19	Left Front Panel	012062000017P		1
20	right panel	012167000014P		1
21	Left Front Panel	012062000016P		1
22	Electronic Expansion Valve	072009060012	*	1
23	Cut off Valve	0733410005301	*	1
24	Nozzle for Adding Freon	06130002	*	1
25	Cut off Valve	07334100014	*	1
26	Strainer	07415200002	*	2
27	Electromagnetic Valve	43000072	*	1
28	Compressor and Fittings	009001060198	*	1
29	Pressure Protect Switch	4602000911	*	1
30	Base Plate Sub-Assy	017000060119P		1
31	Right Side Plate Sub-Assy	017038060026P		1
32	Gas-liquid Separator	035027060004	*	1
33	Filter	07218603	*	1
34	Oil Separator	035028060002	*	1
35	4-way Valve	43000339	*	1
36	One way Valve	071001060007	*	1
37	Nozzle for Adding Freon	061200101	*	2
38	Nozzle for Adding Freon	06120012	*	2
39	Condenser Assy	01100206024901	*	1
40	Filter	0341010701	*	1
41	Rear Grill	016001060012	*	1
42	Cover Plate	012035000247P		1
43	Terminal Board	422000060055	*	1
44	Terminal Board	422000060004	*	1
45	Filter Board	300020060004	*	1
46	Main Board	300027000583	*	1
47	Radiator	4901800008801	*	1
48	Main Board	300027060023	*	1
49	Reactor	450004060005	*	1
50	Main Board	300027060862	*	1
51	Electric Box Assy	100002067826	*	1
52	Electric Heater(Compressor)	7651540714	*	1
53	4 Way Valve Coil	072010060002	*	1
54	Electric Expand Valve Fitting	4304413264	*	1
55	Electric Expand Valve Fitting	4304413274	*	1
56	Magnet Coil (Electromagnetic Valve)	07200106000811	*	1
57	Magnet Coil (Electromagnetic Valve)	07200106000812	*	1
58	Magnet Coil (Electromagnetic Valve)	072001060007	*	1
59	Magnet Coil (Electromagnetic Valve)	072001060006	*	1
60	Pressure Sensor	32218000009	*	1
61	Pressure Sensor	32218000008	*	1
62	Sensor Sub-Assy	390002060037	*	1

6.3 Explosive View and Parts List of AEG18MI2H3, AEG20MI2H3 and AEG22MI2H3



No.	Name	Code	Vulnerable part *	Qty
1	Rear Grill	016001060013	*	1
2	Coping	012049000059P		1
3	Diversion Circle	200150000011	*	2
4	Axial Flow Fan	10434100002	*	1
5	Brushless DC Motor	1570412405	*	1
6	Cover Plate	012035000247P		1
7	Rear Grill	016001060012	*	1
8	Electromagnetic Valve	072008000005	*	3
9	Strainer	07222025	*	1
10	Condenser Assy	01100206022601	*	1
11	Strainer	07415200002	*	2
12	Nozzle for Adding Freon	061200101	*	2
13	Nozzle for Adding Freon	06130002	*	1
14	Filter	0341010701	*	1
15	Electromagnetic Valve	43044100224	*	1
16	Discharge Charge Valve	07334100002	*	2
17	Electric Expand Valve Fitting	4304413220	*	1
18	Electronic Expansion Valve	43044100173	*	1
19	Gas Tube Filter	072190511	*	1
20	Plate-type Heat Exchanger	010007060006	*	1
21	Left Side Plate Sub-Assy	017037060016P		1
22	Base Plate Sub-Assy	017000060113P		1
23	Electromagnetic Valve	43000072	*	1
24	Electric Expand Valve Fitting	4304413269	*	1

No.	Name	Code	Vulnerable part *	Qty
25	Oil Separator	035028060002	*	1
26	Electronic Expansion Valve	072009060012	*	1
27	Cut off Valve	0733410005301	*	1
28	Electric Expand Valve Fitting	072002000011	*	1
29	Cut off Valve	0733410001401	*	1
30	One Way Valve	07333700032	*	2
31	Pressure Protect Switch	4602000911	*	1
32	Pressure Protect Switch	4602000910	*	1
33	Bidirection Strainer	07220016	*	1
34	Compressor and Fittings	009001000190	*	2
35	Electronic Expansion Valve	43044100190	*	2
36	Electric Expand Valve Fitting	4304413274	*	1
37	Silencer	07245008	*	2
38	Cover Plate	012035000246P		1
39	Left Front Panel	012062000017P		1
40	Left Front Panel	012062000016P		1
41	right panel	012167000014P		1
42	4 Way Valve Coil	072010060002	*	1
43	Magnet Coil (electromagnetic valve)	07200106000812	*	1
44	Magnet Coil (electromagnetic valve)	072001060006	*	1
45	Magnet Coil (electromagnetic valve)	072001060007	*	1
46	Magnet Coil (electromagnetic valve)	072001060010	*	1
47	Magnet Coil (electromagnetic valve)	07200106000811	*	1
48	Electric Heater(Compressor)	7651521244	*	1
49	Electric Heater(Compressor)	7651521243	*	1
50	Pressure Sensor	32210103	*	1
51	Pressure Sensor	32218000008	*	1
52	Sensor Sub-assy	390002060038	*	1
53	Gas-liquid Separator	035027060004	*	1
54	Filter	07218603	*	1
55	4-way Valve	43000412	*	1
56	One Way Valve	071001060008	*	1
57	Nozzle for Adding Freon	06120012	*	2
58	Right Side Plate Sub-Assy	017038060026P		1
59	Electric Box Assy	100002067745	*	1
60	Terminal Board	22000060055	*	1
61	Terminal Board	422000060004	*	1
62	Main Board	300027060862	*	1
63	Reactor	45000406000901	*	2
64	Filter Board	300020060006	*	2
65	Electric Box Assy	100002067747	*	1
66	Main Board	300027060076	*	2
67	Radiator	49018000088	*	2
68	Radiator	4901800008002	*	2
69	Main Board	300027000582	*	2
70	Radiator	43003406003301	*	1

Appendixes

Appendix 1 Temperature Senor Resistance and Temperature Relationship Table

Environmental temperature sensor 15kΩ resistance ~ voltage correspondence table (including outdoor and indoor environment temperature sensors)

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-20	144	0.311	**71**	2.523	2.825
-19	138.1	0.323	**72**	2.439	2.838
-18	128.6	0.345	**73**	2.358	2.852
-17	121.6	0.362	**74**	2.28	2.865
-16	115	0.381	**75**	2.205	2.877
-15	108.7	0.4	**76**	2.133	2.889
-14	102.9	0.42	**77**	2.064	2.901
-13	97.4	0.44	**78**	1.997	2.912
-12	92.22	0.462	**79**	1.933	2.923
-11	87.35	0.484	**80**	1.871	2.934
-10	82.75	0.506	**81**	1.811	2.945
-9	78.43	0.53	**82**	1.754	2.955
-8	74.35	0.554	**83**	1.699	2.964
-7	70.5	0.579	**84**	1.645	2.974
-6	66.88	0.605	**85**	1.594	2.983
-5	63.46	0.631	**86**	1.544	2.992
-4	60.23	0.658	**87**	1.497	3.001
-3	57.18	0.686	**88**	1.451	3.009
-2	54.31	0.714	**89**	1.408	3.017
-1	51.59	0.743	**90**	1.363	3.025
0	49.02	0.773	**91**	1.322	3.033
1	46.8	0.801	**92**	1.282	3.04
2	44.31	0.835	**93**	1.244	3.047
3	42.14	0.866	**94**	1.207	3.054
4	40.09	0.899	**95**	1.171	3.061
5	38.15	0.931	**96**	1.136	3.068
6	36.32	0.965	**97**	1.103	3.074
7	34.58	0.998	**98**	1.071	3.08
8	32.94	1.033	**99**	1.039	3.086
9	31.38	1.067	**100**	1.009	3.092
10	29.9	1.102	**101**	0.98	3.098
11	28.51	1.138	**102**	0.952	3.103
12	27.18	1.174	**103**	0.925	3.108
13	25.92	1.21	**104**	0.898	3.114
14	24.73	1.246	**105**	0.873	3.119
15	23.6	1.282	**106**	0.848	3.123
16	22.53	1.319	**107**	0.825	3.128
17	21.51	1.356	**108**	0.802	3.133

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
18	20.54	1.393	**109**	0.779	3.137
19	19.63	1.429	**110**	0.758	3.141
20	18.75	1.467	**111**	0.737	3.145
21	17.93	1.503	**112**	0.717	3.15
22	17.14	1.54	**113**	0.697	3.153
23	16.39	1.577	**114**	0.678	3.157
24	15.68	1.613	**115**	0.66	3.161
25	15	1.65	**116**	0.642	3.165
26	14.36	1.686	**117**	0.625	3.168
27	13.74	1.722	**118**	0.608	3.171
28	13.16	1.758	**119**	0.592	3.175
29	12.6	1.793	**120**	0.577	3.178
30	12.07	1.829	**121**	0.561	3.181
31	11.57	1.863	**122**	0.547	3.184
32	11.09	1.897	**123**	0.532	3.187
33	10.63	1.931	**124**	0.519	3.19
34	10.2	1.964	**125**	0.505	3.192
35	9.779	1.998	**126**	0.492	3.195
36	9.382	2.03	**127**	0.48	3.198
37	9.003	2.062	**128**	0.467	3.2
38	8.642	2.094	**129**	0.456	3.203
39	5.997	2.125	**130**	0.444	3.205
41	7.653	2.185	**131**	0.433	3.207
42	7.352	2.215	**132**	0.422	3.21
43	7.065	2.243	**133**	0.412	3.212
44	6.791	2.272	**134**	0.401	3.214
45	6.529	2.299	**135**	0.391	3.216
46	6.278	2.326	**136**	0.382	3.218
47	6.038	2.353	**137**	0.372	3.22
48	5.809	2.379	**138**	0.363	3.222
49	5.589	2.404	**139**	0.355	3.224
50	5.379	2.429	**140**	0.346	3.226
51	5.179	2.453	**141**	0.338	3.227
52	4.986	2.477	**142**	0.33	3.229
53	4.802	2.5	**143**	0.322	3.231
54	4.625	2.522	**144**	0.314	3.232
55	4.456	2.544	**145**	0.307	3.234
56	4.294	2.566	**146**	0.299	3.235
57	4.139	2.586	**147**	0.292	3.237
58	3.99	2.607	**148**	0.286	3.238
59	3.848	2.626	**149**	0.279	3.24
60	3.711	2.646	**150**	0.273	3.241
61	3.579	2.664	**151**	0.266	3.242
62	3.454	2.682	**152**	0.261	3.244
63	3.333	2.7	**153**	0.254	3.245

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
64	3.217	2.717	**154**	0.248	3.246
65	3.105	2.734	**155**	0.243	3.247
66	2.998	2.75	**156**	0.237	3.249
67	2.898	2.766	**157**	0.232	3.25
68	2.797	2.781	**158**	0.227	3.251
69	2.702	2.796	**159**	0.222	3.252
70	2.611	2.811	**160**	0.217	3.253

Pipeline temperature sensor 20kΩ resistance ~ voltage correspondence table (including defrosting temperature sensor, subcooler temperature sensor, gas-liquid separator temperature sensor, IDU inlet and outlet tube temperature sensor)

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30	361.8	0.173	**66**	3.998	2.75
-29	339.8	0.183	**67**	3.861	2.766
-28	319.2	0.195	**68**	3.729	2.781
-27	300	0.206	**69**	3.603	2.796
-26	282.2	0.218	**70**	3.481	2.811
-25	265.5	0.231	**71**	3.364	2.825
-24	249.9	0.245	**72**	3.252	2.838
-23	235.3	0.259	**73**	3.144	2.852
-22	221.6	0.273	**74**	3.04	2.865
-21	208.9	0.288	**75**	2.94	2.877
-20	196.9	0.304	**76**	2.844	2.889
-19	181.4	0.328	**77**	2.752	2.901
-18	171.4	0.345	**78**	2.663	2.912
-17	162.1	0.362	**79**	2.577	2.923
-16	153.3	0.381	**80**	2.495	2.934
-15	145	0.4	**81**	2.415	2.944
-14	137.2	0.42	**82**	2.339	2.954
-13	129.9	0.44	**83**	2.265	2.964
-12	123	0.462	**84**	2.194	2.974
-11	116.5	0.484	**85**	2.125	2.983
-10	110.3	0.507	**86**	2.059	2.992
-9	104.6	0.53	**87**	1.996	3.001
-8	99.13	0.554	**88**	1.934	3.009
-7	94	0.579	**89**	1.875	3.017
-6	89.17	0.605	**90**	1.818	3.025
-5	84.61	0.631	**91**	1.763	3.033
-4	80.31	0.658	**92**	1.71	3.04
-3	76.24	0.686	**93**	1.658	3.047
-2	72.41	0.714	**94**	1.609	3.054
-1	68.79	0.743	**95**	1.561	3.061
0	65.37	0.773	**96**	1.515	3.068
1	62.13	0.804	**97**	1.47	3.074

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
2	59.08	0.835	**98**	1.427	3.08
3	56.19	0.866	**99**	1.386	3.086
4	53.46	0.898	**100**	1.346	3.092
5	50.87	0.931	**101**	1.307	3.098
6	48.42	0.965	**102**	1.269	3.103
7	46.11	0.998	**103**	1.233	3.108
8	43.92	1.033	**104**	1.198	3.114
9	41.84	1.067	**105**	1.164	3.119
10	39.87	1.102	**106**	1.131	3.123
11	38.01	1.138	**107**	1.099	3.128
12	36.24	1.174	**108**	1.069	3.133
13	34.57	1.209	**109**	1.039	3.137
14	32.98	1.246	**110**	1.01	3.141
15	31.47	1.282	**111**	0.9825	3.145
16	30.04	1.319	**112**	0.9556	3.15
17	28.68	1.356	**113**	0.9295	3.153
18	27.39	1.393	**114**	0.9043	3.157
19	26.17	1.429	**115**	0.8799	3.161
20	25.01	1.466	**116**	0.8562	3.165
21	23.9	1.503	**117**	0.8333	3.168
22	22.85	1.54	**118**	0.8111	3.171
23	21.85	1.577	**119**	0.7895	3.175
24	20.9	1.614	**120**	0.7687	3.178
25	20	1.65	**121**	0.7485	3.181
26	19.14	1.686	**122**	0.7289	3.184
27	18.32	1.722	**123**	0.7099	3.187
28	17.55	1.758	**124**	0.6915	3.19
29	16.8	1.793	**125**	0.6736	3.192
30	16.1	1.828	**126**	0.6563	3.195
31	15.43	1.863	**127**	0.6395	3.198
32	14.79	1.897	**128**	0.6232	3.2
33	14.18	1.931	**129**	0.6074	3.203
34	13.59	1.965	**130**	0.5921	3.205
35	13.04	1.998	**131**	0.5772	3.207
36	12.51	2.03	**132**	0.5627	3.21
37	12	2.063	**133**	0.5487	3.212
38	11.52	2.094	**134**	0.5351	3.214
39	11.06	2.125	**135**	0.5219	3.216
40	10.62	2.155	**136**	0.509	3.218
41	10.2	2.185	**137**	0.4966	3.22
42	9.803	2.215	**138**	0.4845	3.222
43	9.42	2.243	**139**	0.4727	3.224
44	9.054	2.272	**140**	0.4613	3.226
45	8.705	2.299	**141**	0.4502	3.227
46	8.37	2.326	**142**	0.4394	3.229

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
47	8.051	2.353	**143**	0.4289	3.231
48	7.745	2.379	**144**	0.4187	3.232
49	7.453	2.404	**145**	0.4088	3.234
50	7.173	2.429	**146**	0.3992	3.235
51	6.905	2.453	**147**	0.3899	3.237
52	6.648	2.477	**148**	0.3808	3.238
53	6.403	2.5	**149**	0.3719	3.24
54	6.167	2.522	**150**	0.3633	3.241
55	5.942	2.544	**151**	0.3549	3.242
56	5.726	2.565	**152**	0.3468	3.244
57	5.519	2.586	**153**	0.3389	3.245
58	5.32	2.607	**154**	0.3312	3.246
59	5.13	2.626	**155**	0.3237	3.247
60	4.948	2.646	**156**	0.3164	3.249
61	4.773	2.664	**157**	0.3093	3.25
62	4.605	2.682	**158**	0.3024	3.251
63	4.443	2.7	**159**	0.2956	3.252
64	4.289	2.717	**160**	0.2891	3.253
65	4.14	2.734	**—**	**—**	**—**

Exhaust temperature sensor 50kΩ resistance ~ voltage correspondence table (including compressor top shell temperature sensor and air exhaust pipe temperature sensor)

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30	911.56	0.036	**61**	11.736	1.518
-29	853.66	0.038	**62**	11.322	1.548
-28	799.98	0.041	**63**	10.925	1.577
-27	750.18	0.043	**64**	10.544	1.606
-26	703.92	0.046	**65**	10.178	1.635
-25	660.93	0.049	**66**	9.8269	1.664
-24	620.94	0.052	**67**	9.4896	1.693
-23	583.72	0.056	**68**	9.1655	1.722
-22	549.04	0.059	**69**	8.9542	1.741
-21	516.71	0.063	**70**	8.5551	1.778
-20	486.55	0.066	**71**	5.9676	1.806
-19	458.4	0.07	**72**	7.9913	1.834
-18	432.1	0.075	**73**	7.7257	1.862
-17	407.51	0.079	**74**	7.4702	1.889
-16	384.51	0.084	**75**	7.2245	1.916
-15	362.99	0.088	**76**	6.9882	1.943
-14	342.83	0.094	**77**	6.7608	1.969
-13	323.94	0.099	**78**	6.542	1.995
-12	306.23	0.104	**79**	6.3315	2.021
-11	289.61	0.11	**80**	6.1288	2.046
-10	274.02	0.116	**81**	5.9336	2.071

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-9	259.37	0.123	**82**	5.7457	2.096
-8	245.61	0.129	**83**	5.5647	2.12
-7	232.67	0.136	**84**	5.3903	2.144
-6	220.5	0.143	**85**	5.2223	2.168
-5	209.05	0.151	**86**	5.0605	2.191
-4	195.97	0.158	**87**	4.9044	2.214
-3	188.12	0.167	**88**	4.7541	2.237
-2	178.65	0.175	**89**	4.6091	2.259
-1	169.68	0.184	**90**	4.4693	2.281
0	161.02	0.193	**91**	4.3345	2.302
1	153	0.202	**92**	4.2044	2.323
2	145.42	0.212	**93**	4.0789	2.344
3	135.96	0.223	**94**	3.9579	2.364
4	131.5	0.233	**95**	3.841	2.384
5	126.17	0.242	**96**	3.7283	2.404
6	119.08	0.256	**97**	3.6194	2.423
7	113.37	0.267	**98**	3.5143	2.442
8	107.96	0.28	**99**	3.4128	2.46
9	102.85	0.292	**100**	3.3147	2.478
10	98.006	0.306	**101**	3.22	2.496
11	93.42	0.319	**102**	3.1285	2.514
12	89.075	0.333	**103**	3.0401	2.531
13	84.956	0.348	**104**	2.9547	2.547
14	81.052	0.362	**105**	2.8721	2.564
15	77.349	0.378	**106**	2.7922	2.58
16	73.896	0.393	**107**	2.715	2.595
17	70.503	0.41	**108**	2.6404	2.611
18	67.338	0.427	**109**	2.5682	2.626
19	64.333	0.444	**110**	2.4983	2.64
20	61.478	0.462	**111**	2.4308	2.655
21	58.766	0.48	**112**	2.3654	2.669
22	56.189	0.499	**113**	2.3021	2.682
23	53.738	0.518	**114**	2.2409	2.696
24	51.408	0.537	**115**	2.1816	2.709
25	49.191	0.558	**116**	2.1242	2.722
26	47.082	0.578	**117**	2.0686	2.734
27	45.074	0.599	**118**	2.0148	2.747
28	43.163	0.621	**119**	1.9626	2.759
29	41.313	0.643	**120**	1.9123	2.77
30	39.61	0.665	**121**	1.8652	2.781
31	37.958	0.688	**122**	1.8158	2.793
32	36.384	0.711	**123**	1.7698	2.804
33	34.883	0.735	**124**	1.7253	2.814
34	33.453	0.759	**125**	1.6821	2.825
35	32.088	0.784	**126**	1.6402	2.835

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
36	30.787	0.809	**127**	1.5996	2.845
37	29.544	0.835	**128**	1.5602	2.855
38	28.359	0.86	**129**	1.522	2.864
39	27.227	0.886	**130**	1.485	2.873
40	26.147	0.913	**131**	1.449	2.882
41	25.114	0.94	**132**	1.4141	2.891
42	24.128	0.967	**133**	1.3803	2.9
43	23.186	0.994	**134**	1.3474	2.908
44	22.286	1.022	**135**	1.3155	2.916
45	21.425	1.05	**136**	1.2846	2.924
46	20.601	1.078	**137**	1.2545	2.932
47	19.814	1.107	**138**	1.2233	2.94
48	19.061	1.136	**139**	1.1969	2.947
49	18.34	1.164	**140**	1.1694	2.955
50	17.651	1.193	**141**	1.1476	2.96
51	16.99	1.223	**142**	1.1166	2.969
52	16.358	1.252	**143**	1.0913	2.975
53	15.753	1.281	**144**	1.0667	2.982
54	15.173	1.311	**145**	1.0429	2.988
55	14.618	1.34	**146**	1.0197	2.995
56	14.085	1.37	**147**	0.9971	3.001
57	13.575	1.4	**148**	0.9752	3.007
58	13.086	1.429	**149**	0.9538	3.013
59	12.617	1.459	**150**	0.9331	3.018
60	12.368	1.475	**—**	**—**	**—**

Appendix 2 Refrigerant Temperature and Pressure Table

Refrigerant: R410A

Temperature (°C)	Corresponding saturation pressure (BAR)	Temperature (°C)	Corresponding saturation pressure (BAR)	Temperature (°C)	Corresponding saturation pressure (BAR)
-43	1.54	**-9**	5.96	**25**	16.4
-42	1.61	**-8**	6.16	**26**	16.9
-41	1.68	**-7**	6.37	**27**	17.3
-40	1.76	**-6**	6.58	**28**	17.8
-39	1.84	**-5**	6.80	**29**	18.5
-38	1.93	**-4**	7.03	**30**	18.7
-37	2.02	**-3**	7.26	**31**	19.2
-36	2.11	**-2**	7.50	**32**	19.7
-35	2.24	**-1**	7.74	**33**	20.2
-34	2.33	**0**	7.99	**34**	20.7
-33	2.43	**1**	5.94	**35**	21.2
-32	2.53	**2**	8.50	**36**	21.7
-31	2.64	**3**	8.77	**37**	22.3
-30	2.75	**4**	9.04	**38**	22.8
-29	2.86	**5**	9.32	**39**	23.4
-28	2.98	**6**	9.61	**40**	24.0
-27	3.10	**7**	9.90	**41**	24.6
-26	3.22	**8**	10.2	**42**	25.2
-25	3.35	**9**	10.5	**43**	25.8
-24	3.48	**10**	10.8	**44**	26.4
-23	3.61	**11**	11.1	**45**	27.0
-22	3.75	**12**	11.5	**46**	27.7
-21	3.89	**13**	11.8	**47**	28.3
-20	4.04	**14**	12.1	**48**	29.0
-19	4.19	**15**	12.5	**49**	29.6
-18	4.35	**16**	12.8	**50**	30.3
-17	4.51	**17**	13.2	**52**	31.7
-16	4.67	**18**	13.6	**54**	33.2
-15	4.84	**19**	14.0	**56**	34.7
-14	5.02	**20**	14.4	**58**	36.3
-13	5.19	**21**	14.7	**60**	37.9
-12	5.38	**22**	15.2	**62**	40.17
-11	5.57	**23**	15.6	**65**	42.78
-10	5.76	**24**	16.0	**67**	44.57

Appendix 3 Pressure Sensor Voltage and Pressure Table

High-pressure sensor features (R410A)

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-40	176	0.102	**16**	1300	1.3
-39	184	0.111	**17**	1337	1.34
-38	193	0.12	**18**	1375	1.38
-37	202	0.13	**19**	1413	1.421
-36	211	0.139	**20**	1453	1.463
-35	220	0.149	**21**	1493	1.506
-34	230	0.16	**22**	1535	1.551
-33	240	0.17	**23**	1577	1.596
-32	250	0.181	**24**	1620	1.641
-31	261	0.193	**25**	1664	1.688
-30	273	0.206	**26**	1708	1.735
-29	283	0.216	**27**	1754	1.784
-28	295	0.229	**28**	1801	1.834
-27	307	0.242	**29**	1848	1.884
-26	319	0.255	**30**	1897	1.937
-25	332	0.268	**31**	1946	1.989
-24	345	0.282	**32**	1996	2.042
-23	359	0.297	**33**	2048	2.098
-22	373	0.312	**34**	2100	2.153
-21	388	0.328	**35**	2153	2.21
-20	403	0.344	**36**	2208	2.268
-19	418	0.36	**37**	2263	2.327
-18	434	0.377	**38**	2320	2.388
-17	450	0.394	**39**	2377	2.448
-16	467	0.412	**40**	2436	2.511
-15	484	0.43	**41**	2495	2.574
-14	502	0.45	**42**	2556	2.639
-13	520	0.469	**43**	2618	2.705
-12	538	0.488	**44**	2681	2.772
-11	558	0.509	**45**	2745	2.841
-10	577	0.53	**46**	2810	2.91
-9	597	0.551	**47**	2876	2.98
-8	618	0.573	**48**	2944	3.053
-7	639	0.596	**49**	3013	3.126
-6	661	0.619	**50**	3083	3.201
-5	684	0.644	**51**	3154	3.277
-4	707	0.668	**52**	3226	3.353
-3	730	0.693	**53**	3300	3.432
-2	754	0.718	**54**	3374	3.511
-1	779	0.745	**55**	3450	3.592
0	804	0.772	**56**	3528	3.675
1	830	0.799	**57**	3606	3.759

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
2	857	0.828	**58**	3686	3.844
3	884	0.857	**59**	3767	3.93
4	912	0.887	**60**	3849	4.018
5	940	0.917	**61**	3932	4.106
6	969	0.947	**62**	4017	4.197
7	999	0.979	**63**	4103	4.288
8	1030	1.012	**64**	4190	4.381
9	1061	1.046	**65**	4278	4.475
10	1093	1.08	**66**	4367	4.57
11	1125	1.114	**67**	4457	4.666
12	1159	1.15	**68**	4548	4.763
13	1193	1.186	**69**	4639	4.86
14	1228	1.224	**70**	4731	4.958
15	1263	1.261	**71**	4893	5.13

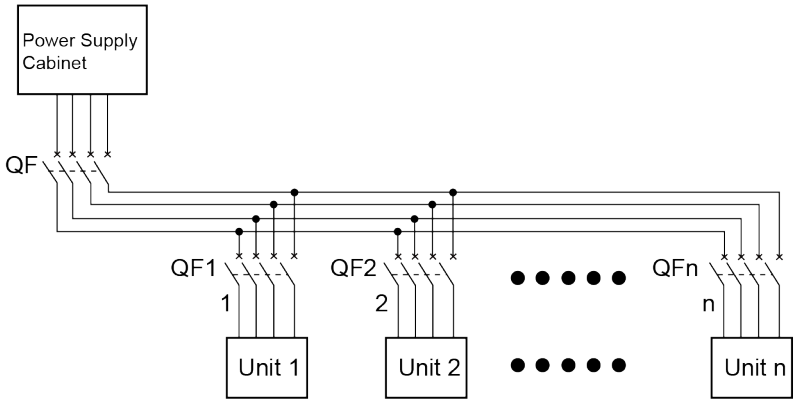
Low-pressure sensor features (R410A)

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-70	36	0.369	**-14**	502	1.301
-69	38	0.373	**-13**	520	1.337
-68	40	0.377	**-12**	538	1.373
-67	43	0.383	**-11**	558	1.413
-66	46	0.389	**-10**	577	1.451
-65	48	0.393	**-9**	597	1.491
-64	51	0.399	**-8**	618	1.533
-63	54	0.405	**-7**	639	1.575
-62	57	0.411	**-6**	661	1.619
-61	61	0.419	**-5**	684	1.665
-60	64	0.425	**-4**	707	1.711
-59	68	0.433	**-3**	730	1.757
-58	72	0.441	**-2**	754	1.805
-57	76	0.449	**-1**	799	1.895
-56	80	0.457	**0**	804	1.905
-55	84	0.465	**1**	830	1.957
-54	89	0.475	**2**	857	2.011
-53	94	0.485	**3**	884	2.065
-52	99	0.495	**4**	912	2.121
-51	104	0.505	**5**	940	2.177
-50	109	0.515	**6**	969	2.235
-49	115	0.527	**7**	999	2.295
-48	121	0.539	**8**	1030	2.357
-47	127	0.551	**9**	1061	2.419
-46	133	0.563	**10**	1096	2.489
-45	140	0.577	**11**	1125	2.547
-44	146	0.589	**12**	1159	2.615
-43	154	0.605	**13**	1193	2.683

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-42	161	0.619	**14**	1228	2.753
-41	168	0.633	**15**	1263	2.823
-40	176	0.649	**16**	1300	2.897
-39	184	0.665	**17**	1337	2.971
-38	193	0.683	**18**	1375	3.047
-37	202	0.701	**19**	1413	3.123
-36	211	0.719	**20**	1453	3.203
-35	220	0.737	**21**	1493	3.283
-34	230	0.757	**22**	1535	3.367
-33	240	0.777	**23**	1577	3.451
-32	250	0.797	**24**	1620	3.537
-31	261	0.819	**25**	1664	3.625
-30	272	0.841	**26**	1708	3.713
-29	283	0.863	**27**	1754	3.805
-28	295	0.887	**28**	1801	3.899
-27	307	0.911	**29**	1848	3.993
-26	319	0.935	**30**	1897	4.091
-25	332	0.961	**31**	1946	4.189
-24	345	0.987	**32**	1996	4.289
-23	359	1.015	**33**	2048	4.393
-22	373	1.043	**34**	2100	4.497
-21	388	1.073	**35**	2153	4.603
-20	403	1.103	**36**	2208	4.713
-19	418	1.133	**37**	2263	4.823
-18	434	1.165	**38**	2320	4.937
-17	450	1.197	**39**	2377	5.051
-16	467	1.231	**40**	2439	5.175
-15	484	1.265	**—**	—	—

Appendix 4 Electric Specifications

Every unit should have corresponding short-circuit and overload protection. And also a main switch is required to control power supply or disconnection.



Please refer to the following table for outdoor unit power cord specifications and circuit breakers

Model	Combination method	Power supply	Capacity of circuit breaker of each combination module (A)	Minimum cross-sectional area of grounding wire (mm^2)	Recommended wire (cross-sectional area) (mm^2)
AEG08MI2H3	-	380-415V 3N~ 50/60Hz	25	2.5	2.5×5
AEG10MI2H3	-	380-415V 3N~ 50/60Hz	25	2.5	2.5×5
AEG12MI2H3	-	380-415V 3N~ 50/60Hz	25	4.0	4.0×5
AEG14MI2H3	-	380-415V 3N~ 50/60Hz	40	6.0	6.0×5
AEG16MI2H3	-	380-415V 3N~ 50/60Hz	40	6.0	6.0×5
AEG18MI2H3	-	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
AEG20MI2H3	-	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
AEG22MI2H3	-	380-415V 3N~ 50/60Hz	50	10.0	10.0×5

NOTES!

① Specification of circuit breaker and power cord is selected on the basis of unit's maximum power (max. current).

② Specification of power cord is based on the working condition where ambient temperature is 40°C. and multi-core copper cable (working temperature is 90°C.) is lying on the surface of slot (IEC 60245). If working condition changes, please adjust the specification according to standard IEC 60245. Power cord used for outdoor unit should not be below standard 60245 IEC57.

③ Copper-core cable must be used.

④ The engineering wiring should meet the requirements of IEC 60364-5-52 to ensure that the line voltage drop meets the requirements and the voltage is not lower than the lower limit of the nominal value of equipment.

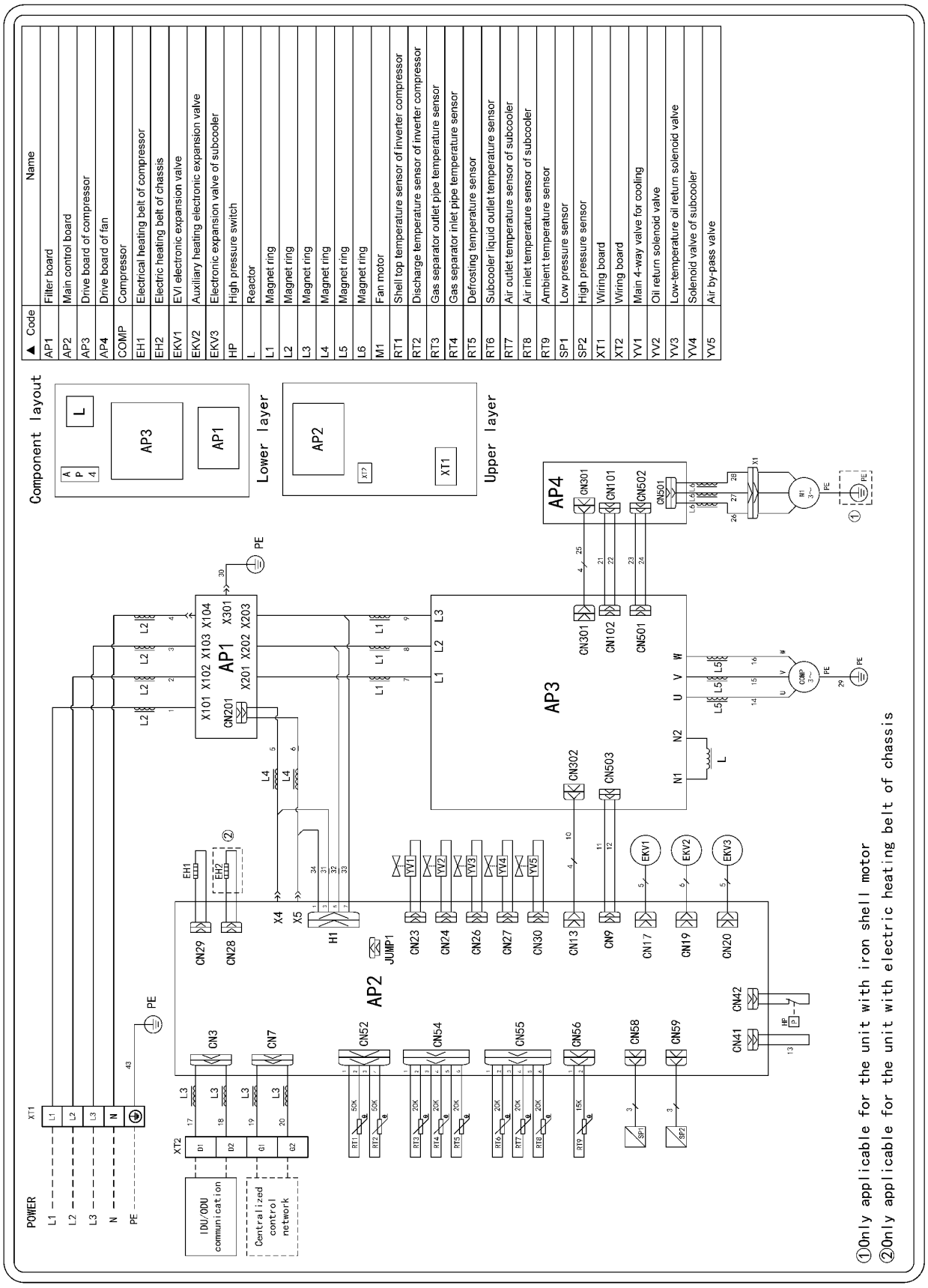
⑤ Specification of circuit breaker is based on the working condition where the ambient temperature of circuit breaker is 40°C. If working condition is different, please adjust the specification according to national standard

⑥ The circuit breaker should include magnetic trip function and thermal trip function so that system can be protected from short circuit and overload.

⑦ An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

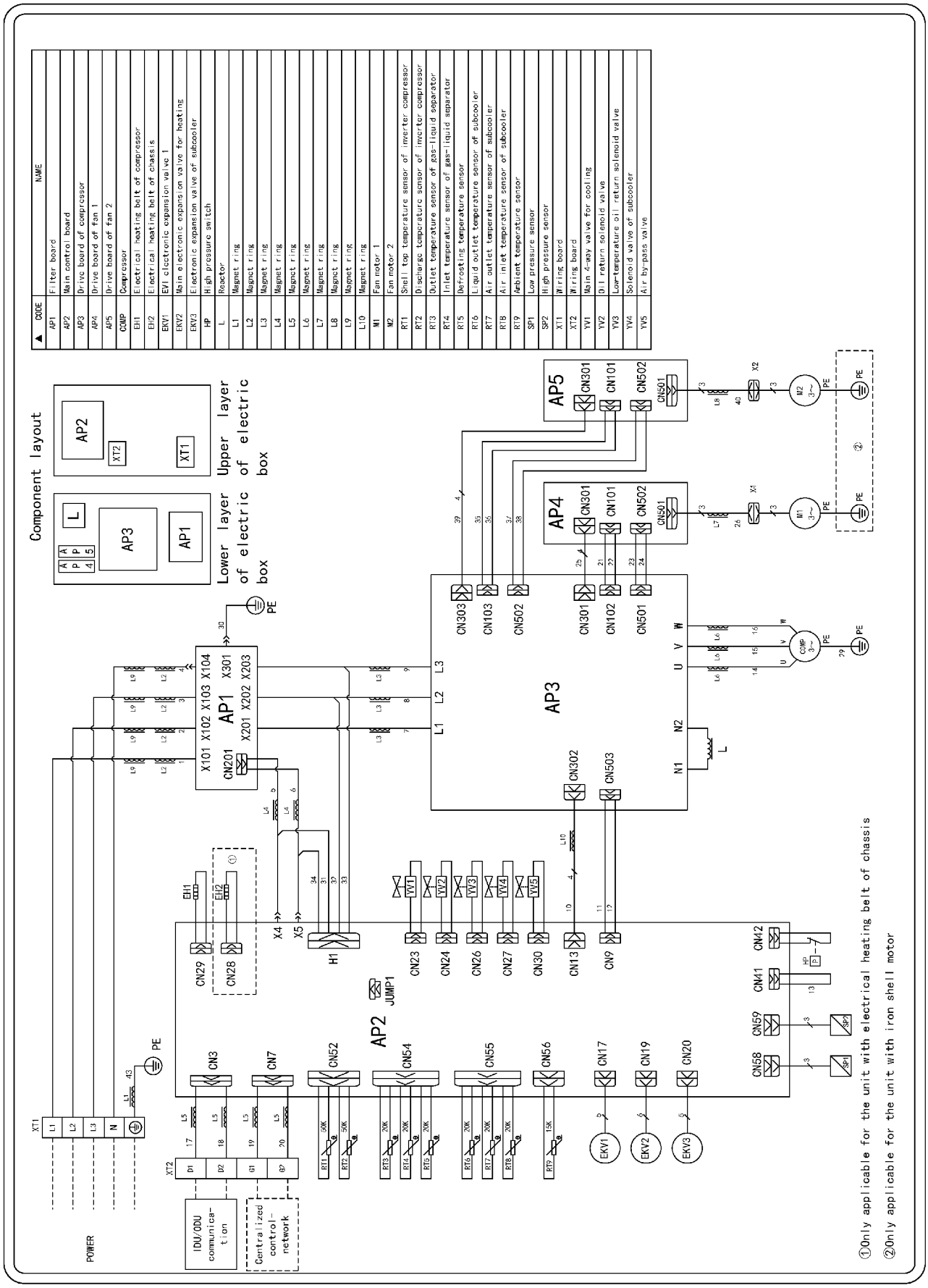
Appendix 5 Circuit Diagram

AEG08MI2H3、AEG10MI2H3 and AEG12MI2H3



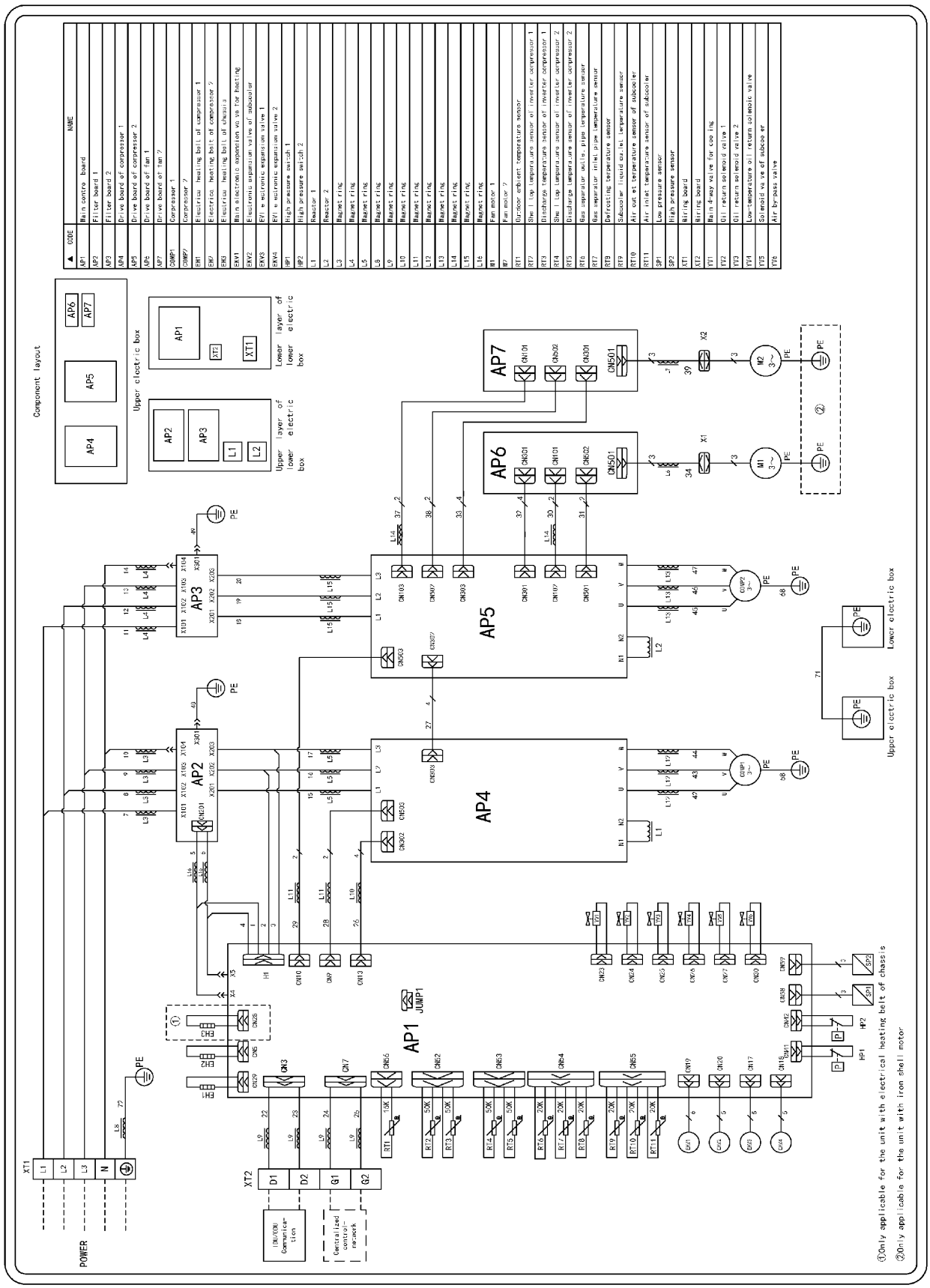
▲ Code	Name
AP1	Filter board
AP2	Main control board
AP3	Drive board of compressor
AP4	Drive board of fan
COMP	Compressor
EH1	Electrical heating belt of compressor
EH2	Electric heating belt of chassis
EKV1	EVI electronic expansion valve
EKV2	Auxiliary heating electronic expansion valve
EKV3	Electronic expansion valve of subcooler
HP	High pressure switch
L	Reactor
L1	Magnet ring
L2	Magnet ring
L3	Magnet ring
L4	Magnet ring
L5	Magnet ring
L6	Magnet ring
M1	Fan motor
RT1	Shell top temperature sensor of inverter compressor
RT2	Discharge temperature sensor of inverter compressor
RT3	Gas separator outlet pipe temperature sensor
RT4	Gas separator inlet pipe temperature sensor
RT5	Defrosting temperature sensor
RT6	Subcooler liquid outlet temperature sensor
RT7	Air outlet temperature sensor of subcooler
RT8	Air inlet temperature sensor of subcooler
RT9	Ambient temperature sensor
SP1	Low pressure sensor
SP2	High pressure sensor
XT1	Wiring board
XT2	Wiring board
YV1	Main 4-way valve for cooling
YV2	Oil return solenoid valve
YV3	Low-temperature oil return solenoid valve
YV4	Solenoid valve of subcooler
YV5	Air by-pass valve

AEG14MI2H3、AEG16MI2H3



CODE	NAME
AP1	Filter board
AP2	Main control board
AP3	Drive board of compressor
AP4	Drive board of fan 1
AP5	Drive board of fan 2
COMP	Compressor
EH1	Electrical heating belt of compressor
EH2	Electrical heating belt of chassis
EKV1	EVI electronic expansion valve 1
EKV2	Main electronic expansion valve for heating
EKV3	Electronic expansion valve of subcooler
HP	High pressure switch
L	Reactor
L1	Magnet ring
L2	Magnet ring
L3	Magnet ring
L4	Magnet ring
L5	Magnet ring
L6	Magnet ring
L7	Magnet ring
L8	Magnet ring
L9	Magnet ring
L10	Magnet ring
M1	Fan motor 1
M2	Fan motor 2
RT1	Shell top temperature sensor of inverter compressor
RT2	Discharge temperature sensor of invertor compressor
RT3	Outlet temperature sensor of gas-liquid separator
RT4	Inlet temperature sensor of gas-liquid separator
RT5	Defrosting temperature sensor
RT6	Liquid outlet temperature sensor of subcooler
RT7	Air outlet temperature sensor of subcooler
RT8	Air inlet temperature sensor of subcooler
RT9	Ambient temperature sensor
SP1	Low pressure sensor
SP2	High pressure sensor
X11	Wiring board
XT2	Wiring board
YV1	Main 4-way valve for cooling
YV2	Oil return solenoid valve
YV3	Low-temperature oil return solenoid valve
YV4	Solenoid valve of subcooler
YV5	Air by-pass valve

AEG18MI2H3、AEG20MI2H3 and AEG22MI2H3



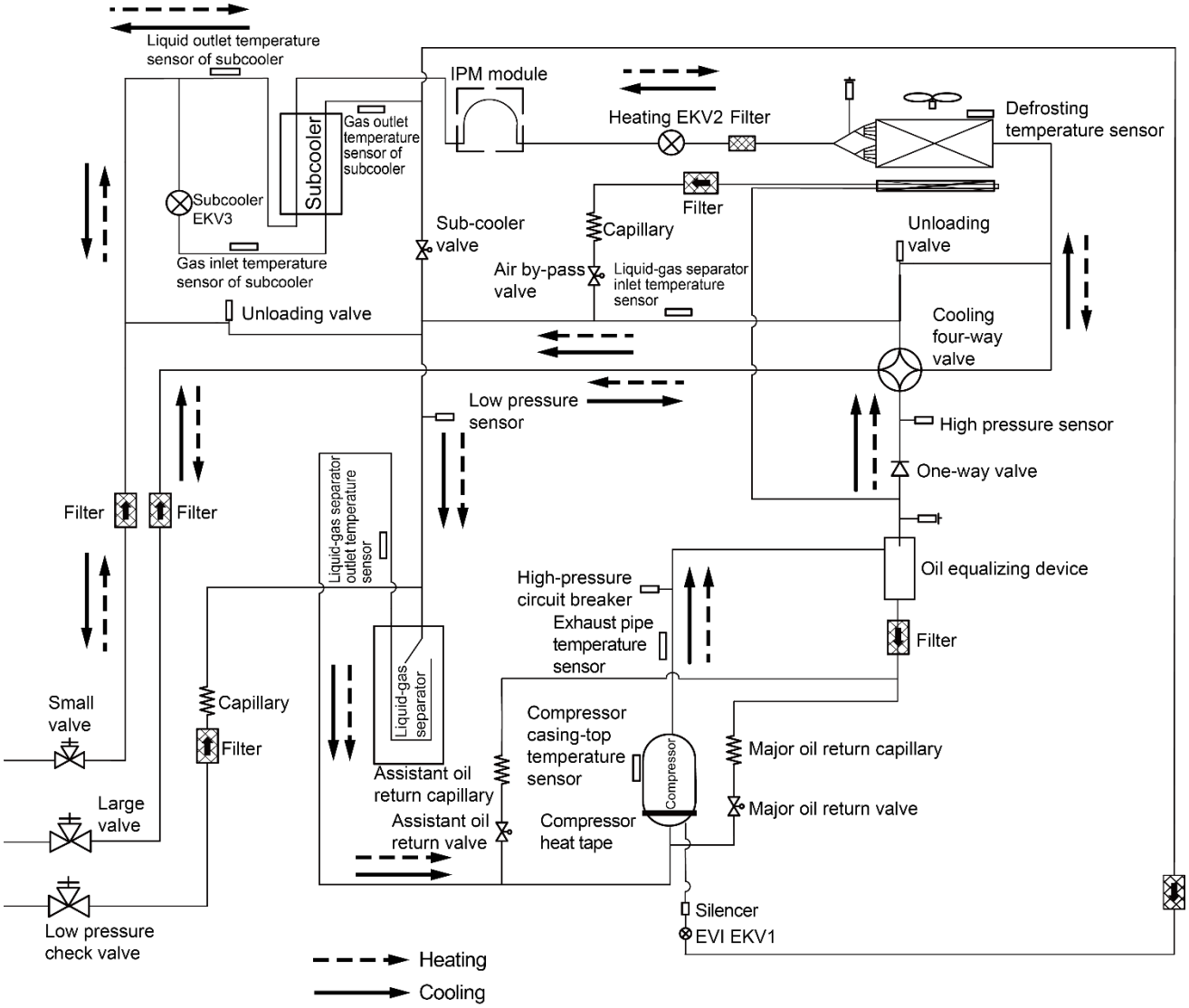
Note: Refer to the mark on the unit for the actual circuit diagram.

Appendix 6 Schematic Diagram

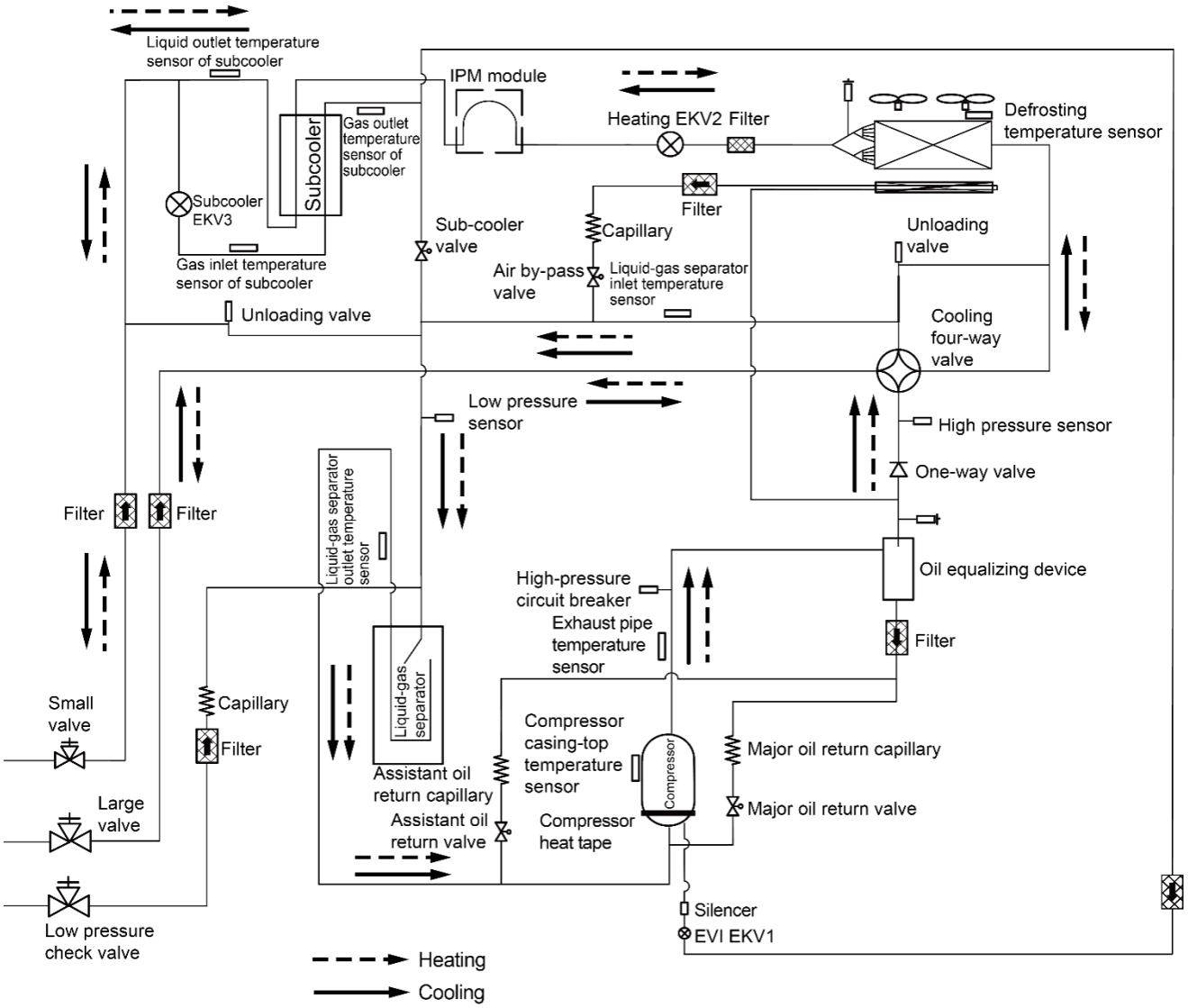
The outdoor unit of multi VRF unit can be realized by parallel combination of modules, and the indoor unit can also be composed of multiple units in parallel. The working principle is as follows: when the indoor unit is running in the cooling mode, the outdoor unit starts the outdoor module according to the running load demand of the indoor unit. The outdoor heat exchanger is used as the condenser of the system, and the heat exchangers of indoor units are connected in parallel as the evaporator of system. It realizes the adjustment of the air temperature and humidity for indoor space through the return air circulation of the indoor unit; when the indoor unit is in the heating mode, all the four-way valves of the outdoor unit module are switched to the energizing state, the outdoor heat exchanger is used as the evaporator of the system and the heat exchanger of indoor unit is used as the condenser of the system. The air temperature and humidity in the indoor space is realized by the return air circulation of the indoor unit.

Working principle diagrams:

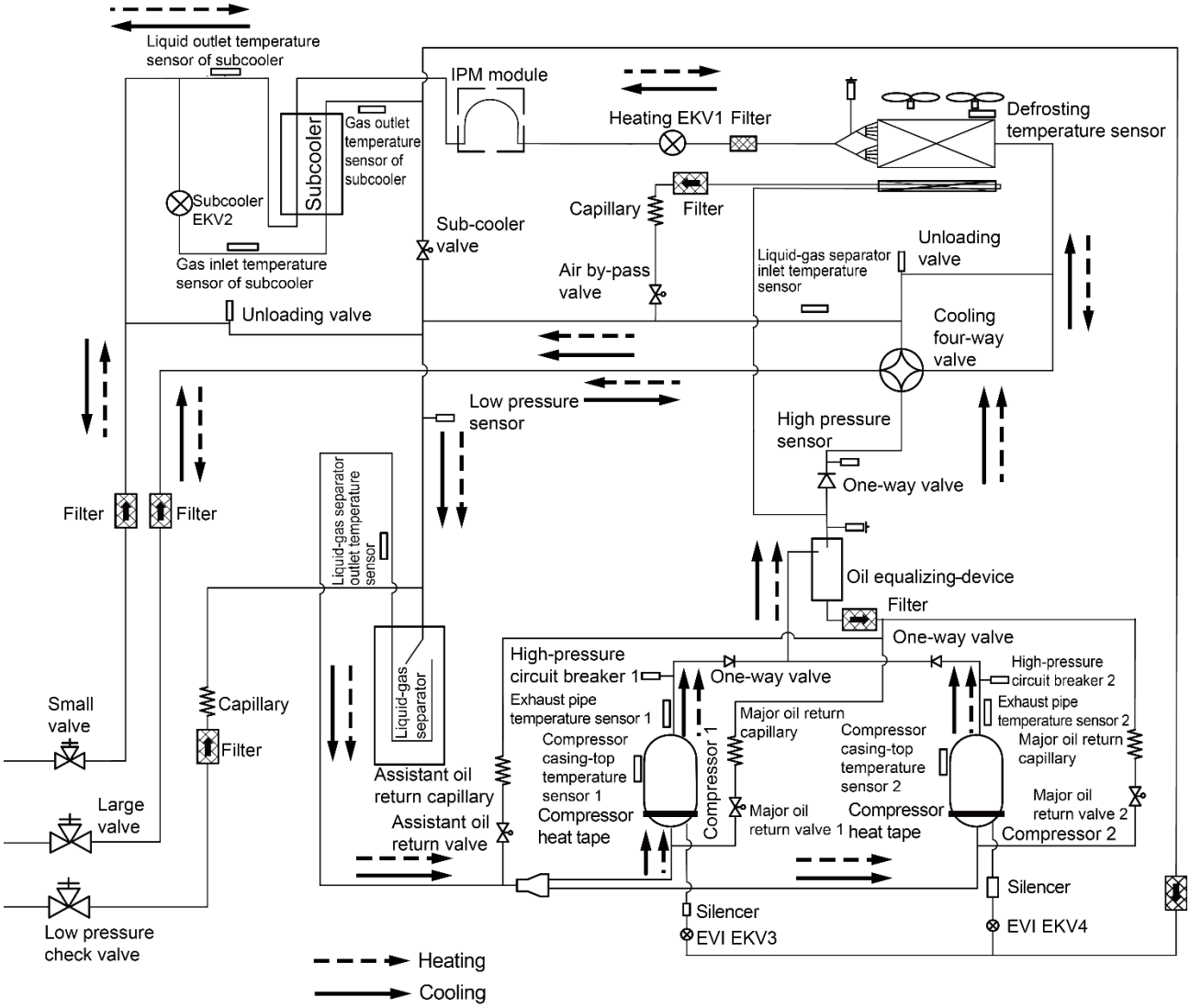
System principle diagram of AEG08MI2H3、AEG10MI2H3 and AEG12MI2H3



System principle diagram of AEG14MI2H3, AEG16MI2H3



System principle diagram of AEG18MI2H3、AEG20MI2H3 and AEG22MI2H3



Appendix 7 Names and Functions of Components

No.	Name	Main Functions
1	Compressor	The compressor changes its speed according to the actual system need for capacity adjustment.
2	Electrical heating belt of the compressor	In the standby state, the oil temperature of the compressor is guaranteed to prevent backflow.
3	Shell top temperature sensor of the inverter compressor	The exhaust temperature of the compressor is detected to achieve the purpose of controlling and protecting the compressor.
4	Discharge temperature sensor of the inverter compressor	The exhaust temperature of the compressor is detected to achieve the purpose of controlling and protecting the compressor.
5	High pressure switch	When the exhaust pressure of the compressor exceeds the action value of the high-pressure switch, the feedback signal immediately stops the operation of the whole unit to achieve the purpose of protecting the compressor.
6	Oil separator	It separates the system's gas and oil to ensure the reliability of the compressor.
7	Oil return solenoid valve	It is used to control the connection of the compressor return oil pipeline.
8	Enthalpy-adding electronic expansion valve	It is used to control the EVI capacity of the compressor.
9	One-way valve	It prevents high pressure gas from entering the compressor and quickly balances the pressure on the compressor.
10	High pressure sensor	It detects real-time high voltage values of the system, protects the compressor and realizes other control purposes.
11	4-way valve	It is used for cooling and heating switching of the IDU.
12	Heat exchanger	It is used for outdoor heat exchange.
13	Fan	It improves the heat exchange efficiency.
14	Defrosting temperature sensor	It is used to detect defrosting.
15	Heating electronic expansion valve	It adjusts the refrigerant in heating mode
16	Air by-pass valve/Gas bypass solenoid valve	It is used to defrost the heat gas bypass and bottom of the outdoor heat exchanger.
17	One-way valve	It is used to control the flow direction of refrigerant.
18	Electronic expansion valve of the sub-cooler	It is used to control the liquid pipe refrigerant subcooling degree during the cooling operation of the system and reduce the loss of the pipeline capacity.
19	Sub-cooler	It is used to control the liquid pipe subcooling degree.
20	Liquid outlet temperature sensor of the sub-cooler	It is used to detect the liquid pipe temperature.
21	Inlet temperature sensor of the gas-liquid separator	It is used to check the inlet temperature of the gas-liquid separator to prevent liquid refrigerant from entering the system.
22	Gas inlet temperature sensor of the sub-cooler	It is used to detect the gas pipe temperature.
23	Low pressure sensor	It is used to detect the low pressure of the system and prevent the operation pressure from being too low.
24	Gas-liquid separator	It separates the gas and liquid and prevents liquid refrigerant from entering the compressor.
25	Outlet temperature sensor of the gas-liquid separator	It is used to detect the internal state of the gas-liquid separator and further control the suction state of the compressor.
26	Capillary	It throttles flows and reduces pressure.
27	Liquid valve	It is closed after the unit is delivered from the factory.
28	Gas valve	It is closed after the unit is delivered from the factory.
29	Low pressure measuring valve	It is used to detect the system's operation low pressure value and refrigerant charging.
30	Unloading valve	It prevents a dead zone in the pipeline, which may cause over high pressure.
31	Gas bypass valve	It is used to prevent the operation pressure from being too high or too low.
32	Solenoid valve of the sub-cooler	It is used to control the flow direction of refrigerant for the enthalpy injection of the sub-cooler.
33	Low-temperature oil-return solenoid valve	It is used to control the connection of the compressor return oil pipeline.

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