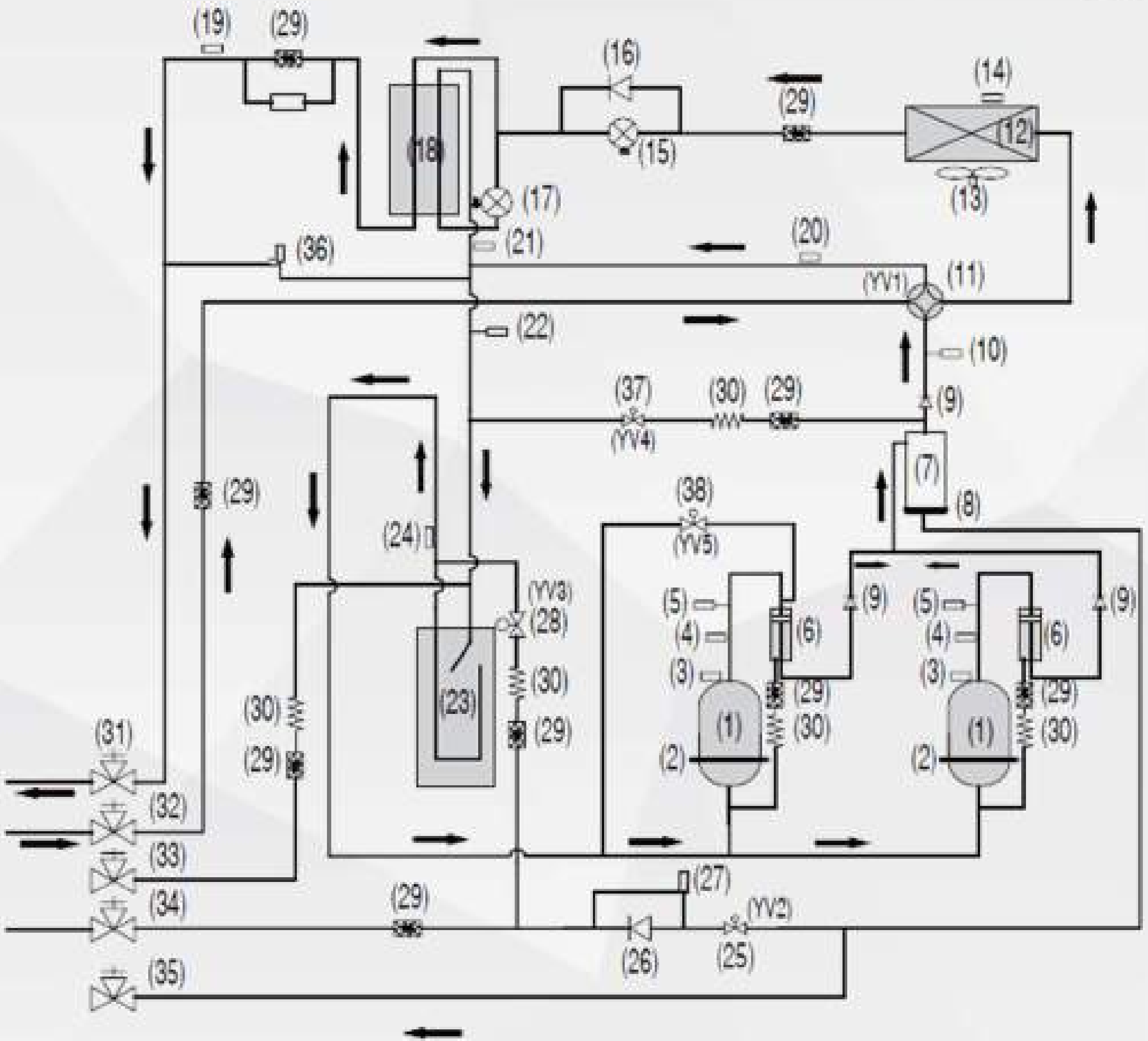
GMV5

After-sales service

CONTENTS

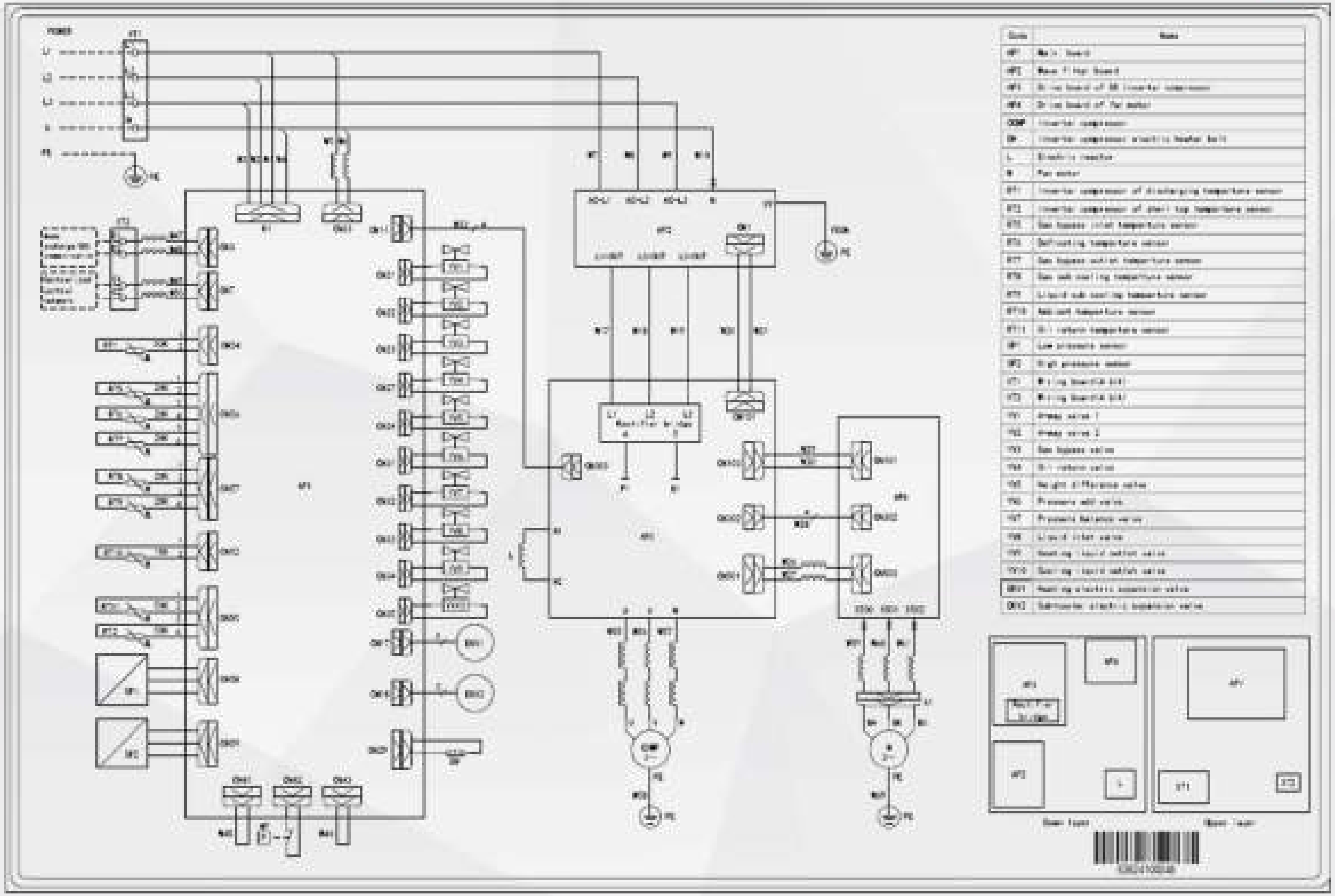
1 Operation Parameters

01



(19)
(29)
(16)
(14)
(29)
(12)
(18)
(15)
(13)
(17)
(20)
(36)
(21)
(YV1)
(11)
(22)
(10)
(37)
(30)
(29)
(9)
(YV4)
(7)
(29)
(38)
(8)
(24)
(YV5)
(YV3)
(9)
(9)
(28)
(5)
(5)
(6)
(6)
(4)
(4)
(30)
(3)
(3)
(30)
(29)
(29)
(23)
(30)
(30)
(1)
(1)
(31)
(29)
(29)
(2)
(2)
(32)
(33)
(27)
(34)
(29)
(YV2)
(26)
(25)
(35)

01



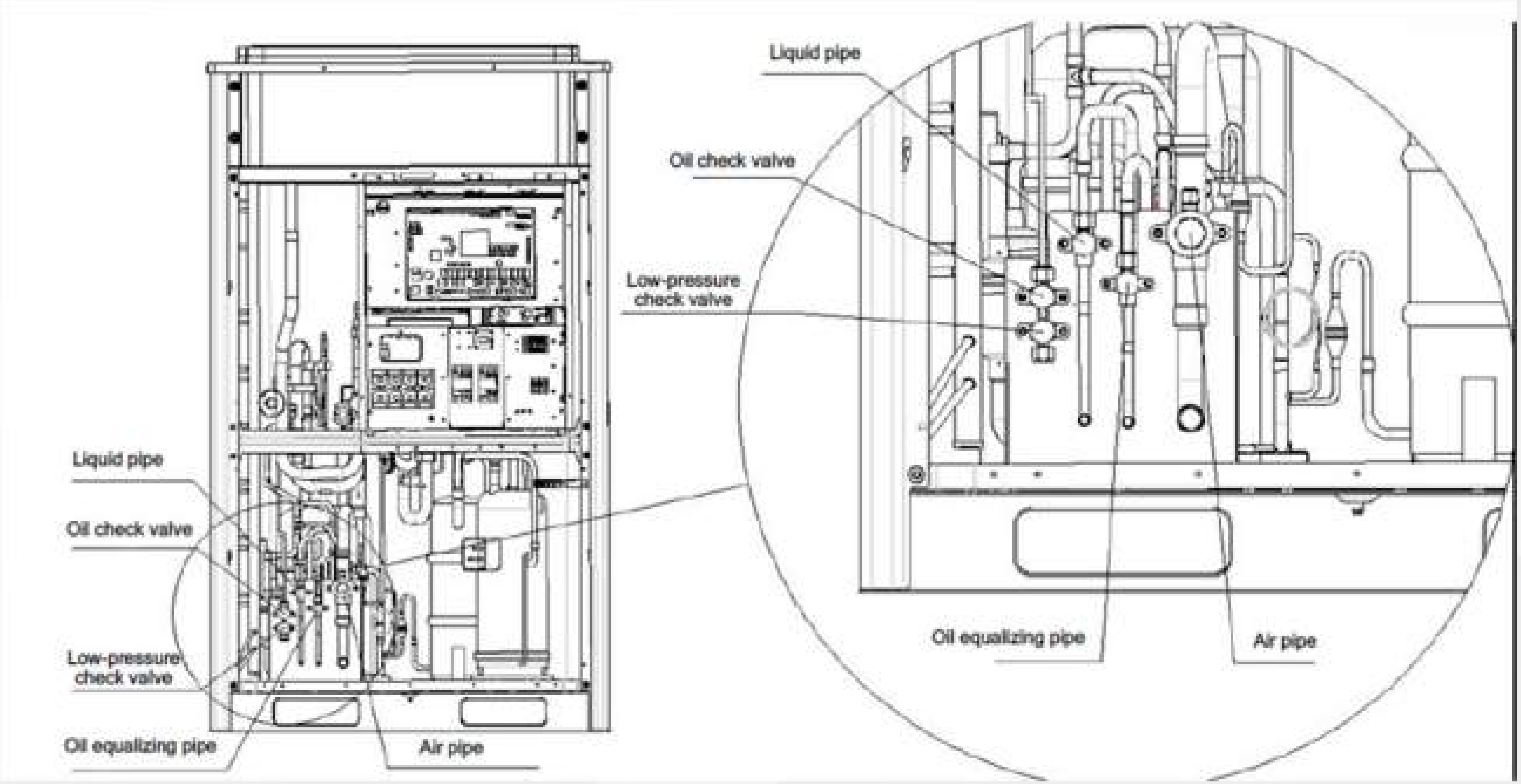
Remark: Discharge temp sensor: 50kΩ

Heat exchanger temp sensor: 20kΩ

Ambient temp sensor: 15kΩ

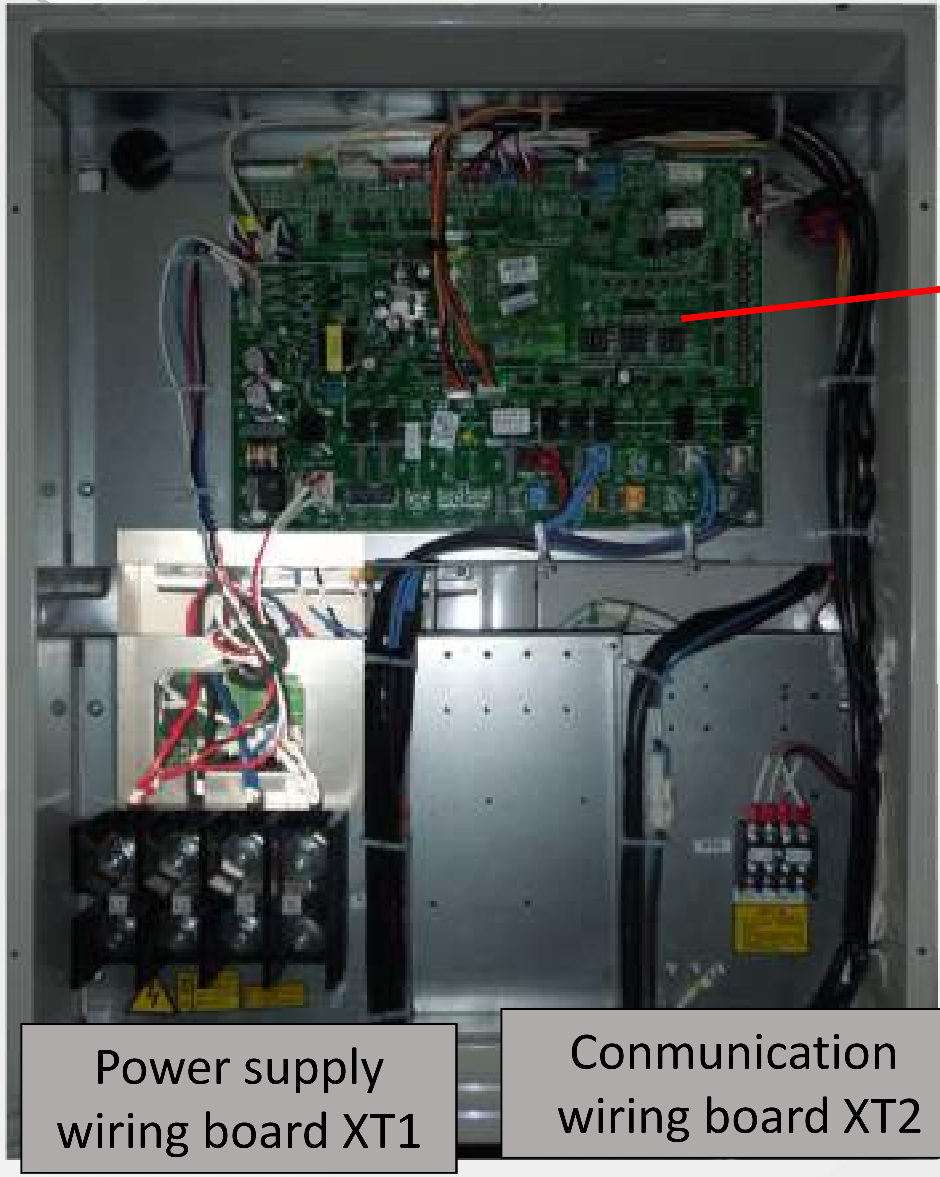
01

GMV-280WM/B



01

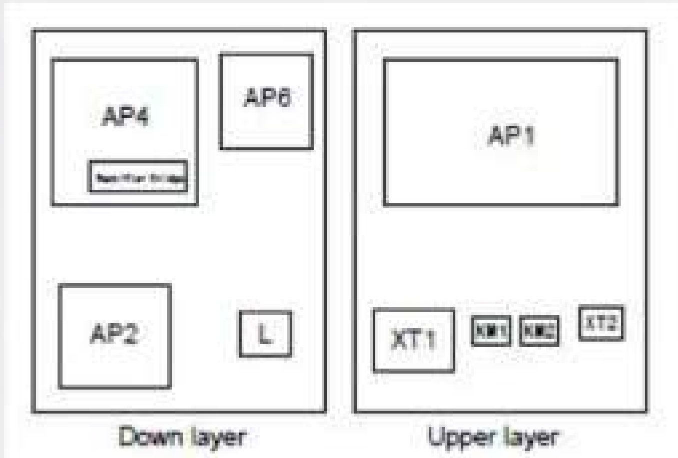
The upper layer electric box



Power supply wiring board XT1

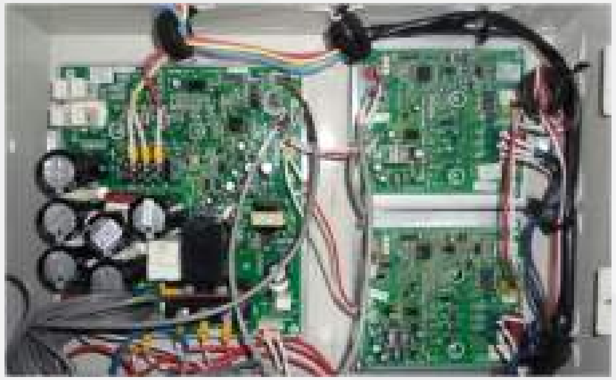
Conmunication wiring board XT2

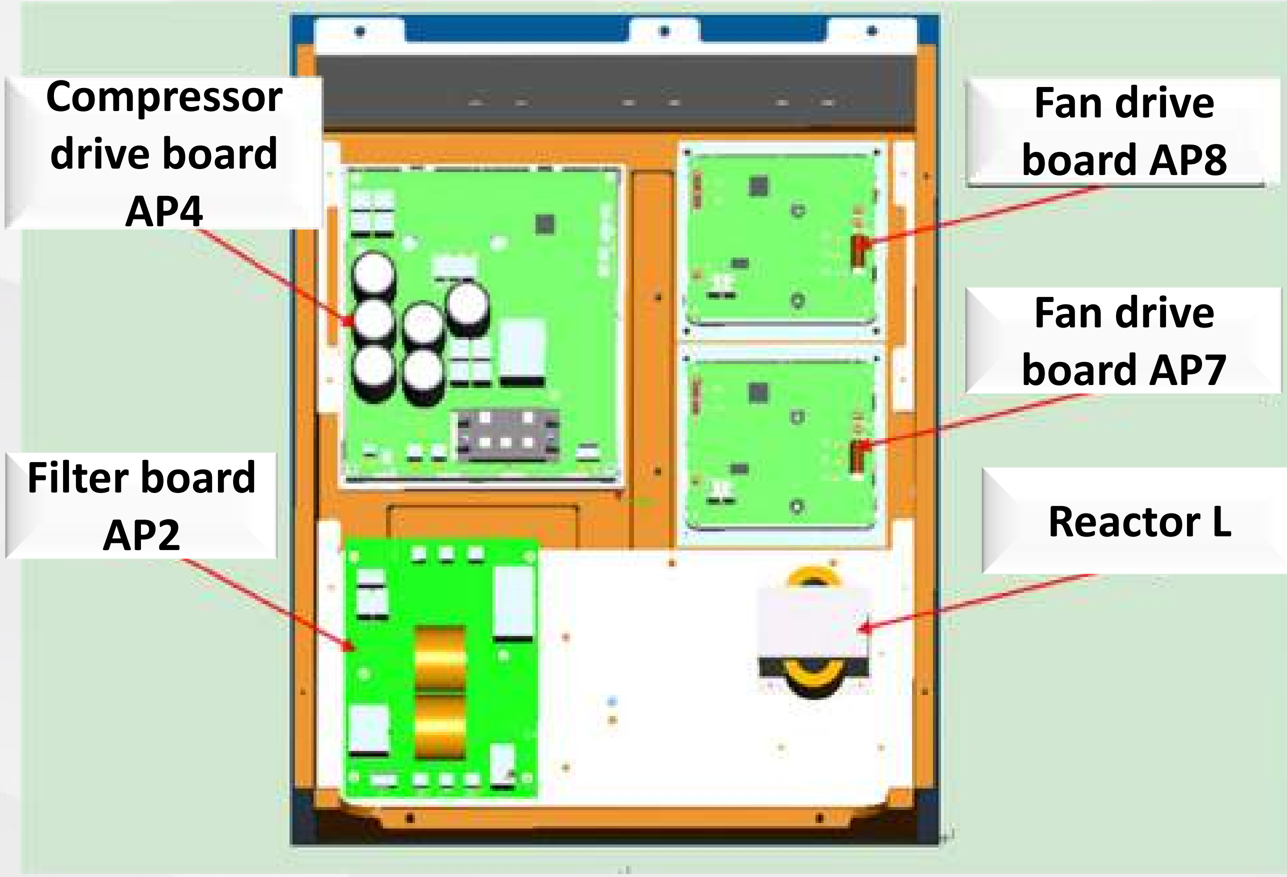
Main board AP1



01

The down layer electric box





01

For GMV-450WM/B

There are two electic box, the left one consist of another compressor drive board, only when drive board error happens to the compressor 2, you need to open it for inspecting

2 Operation Parameters

02 Operating Parameters

Reference parameter value of GMV5

No.	Item		Parameter	Unit	Reference Value
1	System Parameter	ODU Parameter	Compressor discharge tube temp	℃	● Under cooling mode,when compresors energize，normal discharge temp or top shell temp is within 70～95 ℃,and 10℃ higer than the corresponding saturation temp under system’s high pressure. When system runs under heating mode, normal temp is within 65～80 ℃, and 10℃ higer than the corresponding saturation temptemp under system’s high pressure.
2	System Parameter	ODU Parameter	Defrosting temp1	℃	● Under cooling mode,defrosting temp1 is 5～11 ℃ lower than system high pressure value; ● Under heating mode,compares with system low pressure value,defrosting temp1 is about 2℃ difference.
3	System Parameter	ODU Parameter	System high pressure	℃	● Normal high pressure value is 20～55℃. According to the changing ambient temp and system load, high pressure value will be 10～40℃ higher than ambient temp, and temp difference will be less when ambient temp is higher; ● Cooling under 25～35℃ ambient temp, system high pressure value will be 44～53℃; ● Heating under -5～10℃ ambient temp, system high pressure value will be 40～52℃.

02 Operating Parameters

Reference parameter value of GMV5					
No.	**Item**		**Parameter**	**Unit**	**Reference Value**
4	System Parameter	ODU Parameter	System low pressure	℃	● Cooling under 25～35℃ ambient temp,system low pressure value will be 0～8 ℃ ; ● Heating under -5～10℃ ambient temp,system low pressure value will be -15～5℃.
5			Heating EXV opening step	PLS	● Under cooling mode,EXV keeps 480PLS; ● Under heating mode,EXV opening step is between 120～480PLS.
6			DC Compressor operation frequency	Hz	● The frequency of DC compressor1 is within 20Hz～95Hz; ● The frequency of DC compressor2 is within 30Hz～100Hz.
7			DC Compressor current	A	● According to different running frequency and load,current of DC compressor is within 7A ～ 25A

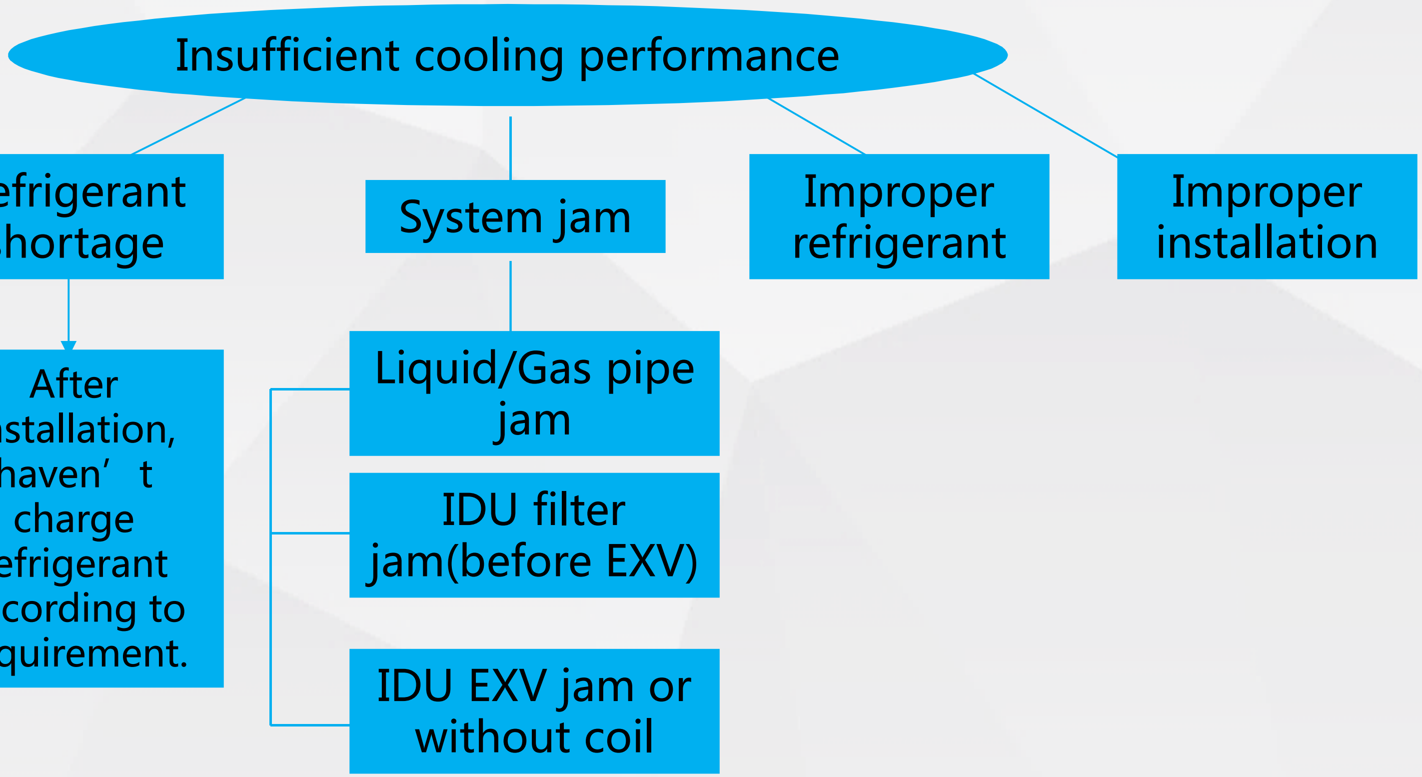
02 Operating Parameters

Reference parameter value of GMV5					
No.	Item		Parameter	Unit	Reference Value
8	System Parameter	ODU Parameter	DC compressor IPM temp	℃	● When the ambient temp is lower than 35℃,IPM temp should be less than 80 ℃,and max temp can not exceed 95℃.
9			DC compressor Drive Bus voltage	V	● Normal Bus line voltage is 1.414 times of power supply voltage.For example:390v 3 phase power supply,after rectifying,bus line voltage will be: 390v×1.414 = 551v.It is normal that if the difference of measured voltage value and the calculation value is less than 15v.
10			Fan motor frequency	Hz	● According to system pressure,operates between 0～65Hz.
11		IDU Parameter	Indoor heat exchanger inlet tube temp	℃	● According to different ambient temp,the IDU inlet tube temp will be 1~7℃ lower than outlet tube temp under cooling mode; ● Under heating mode,the IDU inlet tube temp will be 10～20℃ lower than outlet tube temp.
12			Indoor heat exchanger outlet tube temp		
13			Indoor EXV opening step	PLS	● Opening step will be adjusted automatically between 0～2000PLS or 0~480PLS.

3 Troubleshooting

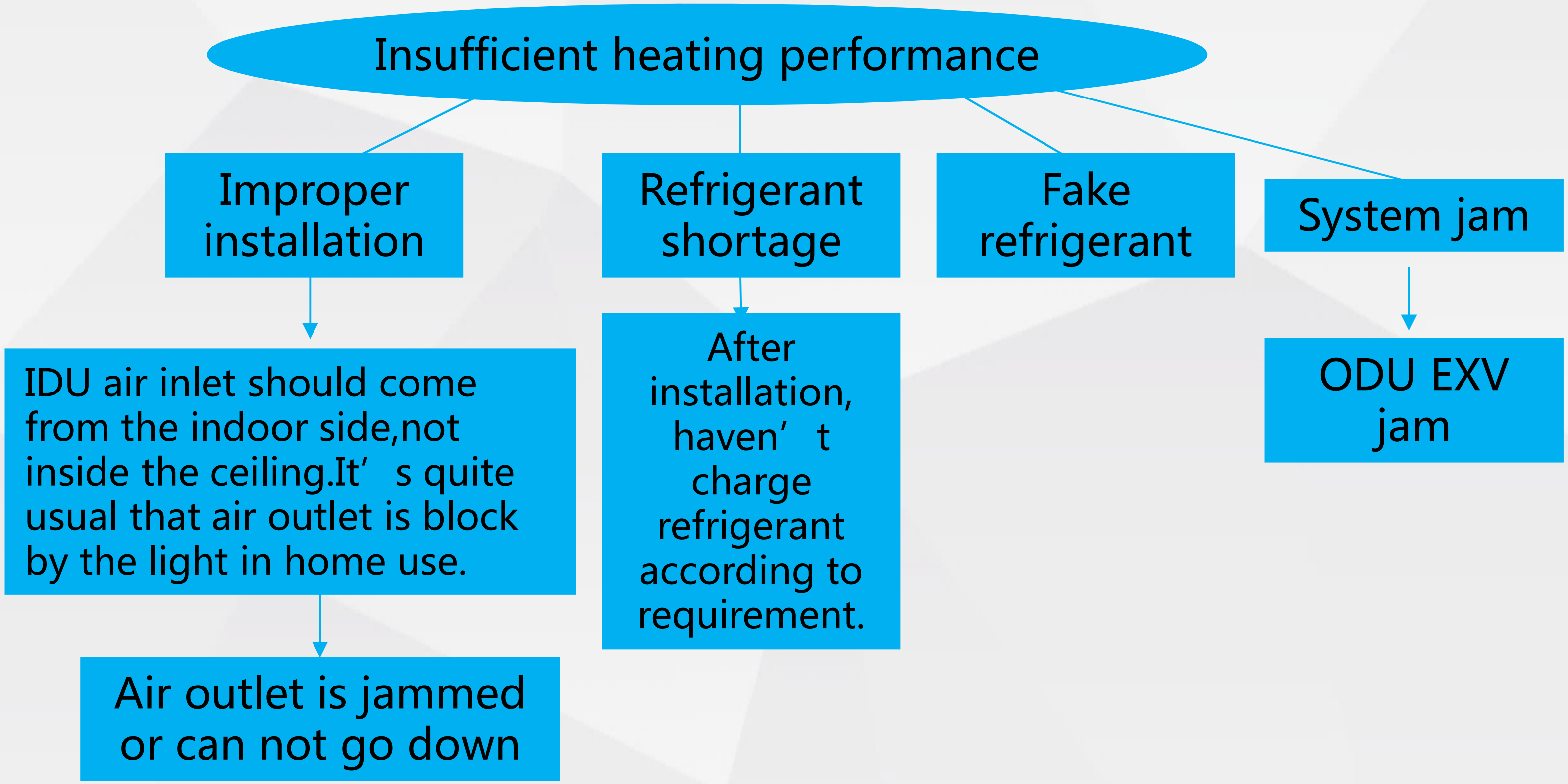
02 Insufficient Cooling Performance

Possibilities that can cause insufficient cooling performance, for example: improper installation, selection failure, connection pipe is too long, refrigerant shortage, system jam, etc.



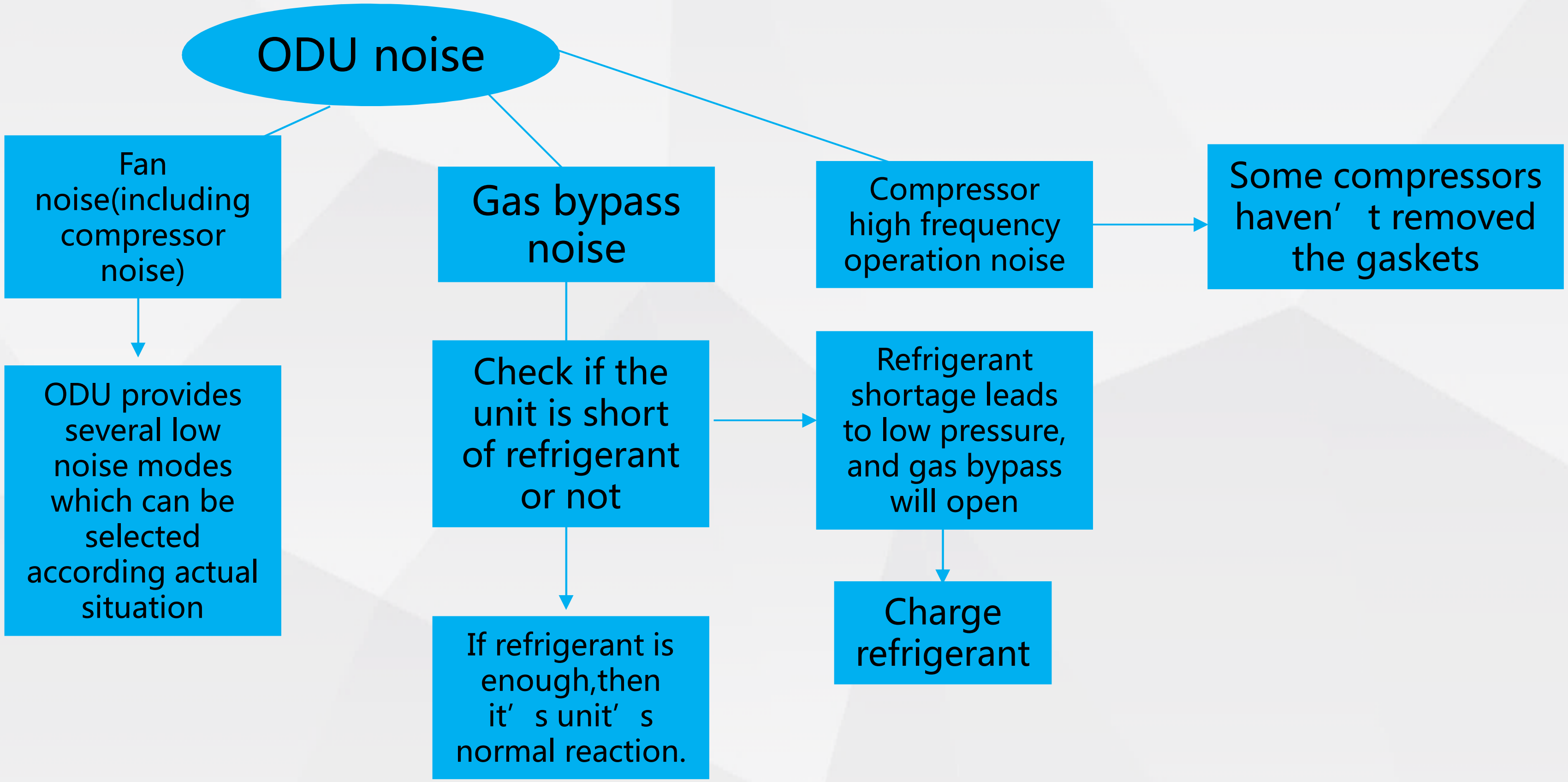
02 Insufficient Heating Performance

Possibilities that can can cause insufficient heating performance,for example: improper installation, selection failure, refrigerant shortage, improper refrigerant, system jam, etc.



02 Noise

ODU noise is mainly caused by fan and compressor, and sometimes the gas bypass.



02 Error Code

GREE VRF Display Code (1)									
		0	1	2	3	4	5	6	7
Indoor	L	Indoor unit fault (unified)	Indoor fan protection	Auxiliary heating protection	Water overflow protection	Power supply over-current protection	Anti-freezing protection	Mode conflict	No master IDU
	d		Indoor unit PCB fault		Temperature sensor fault	Intake temperature sensor fault	Middle temperature sensor fault	Exhaust temperature sensor fault	Humidity sensor fault
		8	9	A	H	C	L	E	b
	L	Power supply shortage	Inconsistent number of multi-split IDUs	Inconsistent series of multi-split IDUs	Warning about poor air quality	Mismatching indoor and ODU models			
	d	Water temperature sensor fault	Jumper cap fault	Indoor unit network address exception	Wired controller PCB exception	Capacity DIP switch setting exception	Air outlet temperature sensor fault	Indoor CO2 sensor fault	Project commissioning

02 Error Code

GREE VRF Display Code (2)											
		0	1	2	3	4	5	6	7	8	9
Outdoor	E	Outdoor unit fault (unified)	High-pressure protection	Low exhaust temperature protection	Low-pressure protection	High exhaust temperature protection	High exhaust temperature protection for compressor 1	High exhaust temperature protection for compressor 2	High exhaust temperature protection for compressor 3	High exhaust temperature protection for compressor 4	High exhaust temperature protection for compressor 5
	F	Outdoor unit main board fault	High pressure sensor fault		Low pressure sensor fault		Compressor 1 exhaust temperature sensor fault	Compressor 2 exhaust temperature sensor fault	Compressor 3 exhaust temperature sensor fault	Compressor 4 exhaust temperature sensor fault	Compressor 5 exhaust temperature sensor fault
		A	H	C	L	E	F	J	P	U	b
	E	High exhaust temperature protection for compressor 6		Exhaust temperature sensor falling protection for compressor 1	Exhaust temperature sensor falling protection for compressor 2	Exhaust temperature sensor falling protection for compressor 3	Exhaust temperature sensor falling protection for compressor 4	Exhaust temperature sensor falling protection for compressor 5	Exhaust temperature sensor falling protection for compressor 6	High cover temperature protection for compressor 1	High cover temperature protection for compressor 2
	F	Compressor 6 exhaust temperature sensor fault	Compressor 1 current sensor fault	Compressor 2 current sensor fault	Compressor 3 current sensor fault	Compressor 4 current sensor fault	Compressor 5 current sensor fault	Compressor 6 current sensor fault		Compressor 1 cover temperature sensor fault	Compressor 2 cover temperature sensor fault

02 Error Code

GREE VRF Display Code (3)								
		0	1	2	3	4	5	6
Outdoor	J	Other module protection	Over-current protection for compressor 1	Over-current protection for compressor 2	Over-current protection for compressor 3	Over-current protection for compressor 4	Over-current protection for compressor 5	Over-current protection for compressor 6
	b		Outdoor ambient temperature sensor fault	Defrosting temperature sensor 1 fault	Defrosting temperature sensor 2 fault	Subcooler outflow temperature sensor fault	Subcooler exhaust temperature sensor fault	Air intake temperature sensor 1 fault
		7	8	9	A	H	C	L
	J	Four-way valve leakage protection	High system pressure ratio protection	Low system pressure ratio protection	Exceptional pressure protection		Water flow switch protection	Low high pressure protection
	b	Air intake temperature sensor 2 fault	Outdoor humidity sensor fault	Heat exchanger exhaust temperature sensor fault	Oil return temperature sensor fault	System clock exception	Cover temperature sensor falling protection for compressor 1	Cover temperature sensor falling protection for compressor 2

02 Error Code

GREE VRF Display Code (4)										
		0	1	2	3	4	5	6	7	8
Outdoor	P	Compressor driver board fault (displayed on the IDU)	Compressor driver board failure (displayed on the IDU)	Compressor driver board power voltage protection (displayed on the IDU)	Compressor drive module reset protection	Compressor drive PFC protection	Inverter compressor over-current protection	Compressor drive IPM module protection	Compressor drive temperature sensor fault	Compressor drive IPM over-temperature protection
	H	Fan driver board fault (displayed on the IDU)	Fan driver board failure (displayed on the IDU)	Fan driver board power voltage protection (displayed on the IDU)	Fan drive module reset protection	Fan drive PFC protection	Variable frequency fan over-current protection	Fan drive IPM module protection	Fan drive temperature sensor fault	Fan drive IPM over-temperature protection
		9	A	H	C	L	E	F	J	P
	P	Inverter compressor out-of-step protection	Inverter compressor drive storage chip fault	Compressor drive DC bus high voltage protection	Compressor drive current detection circuit fault	Compressor drive DC bus low voltage protection	Inverter compressor out-of-phase protection	Compressor drive recharging circuit fault	Inverter compressor starting failure	Inverter compressor AC current protection
	H	Variable frequency fan out-of-step protection	Variable frequency fan drive storage chip fault	Fan drive DC bus high voltage protection	Fan drive current detection circuit fault	Fan drive DC bus low voltage protection	Variable frequency fan out-of-phase protection	Fan drive recharging circuit fault	Variable frequency fan starting failure	Variable frequency fan AC current protection

02 Commissioning Code

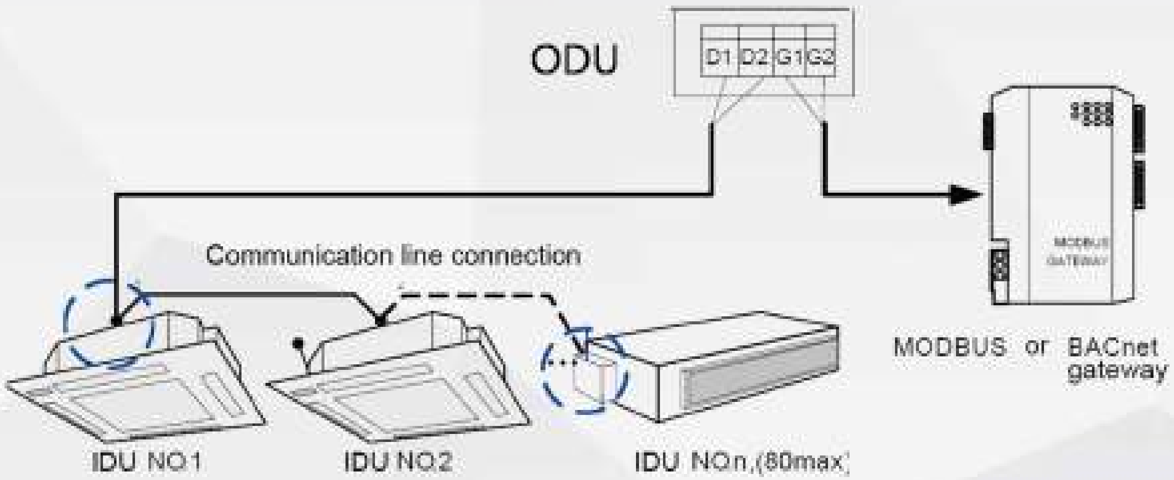
GREE VRF Display Code (5)										
		0	2	3	4	5	6	8	9	A
Commissioning	U	Deficient preheating of the compressor	Wrong ODU capacity code/jumper cap setting	Power phase sequence protection	Refrigerant shortage protection	Wrong compressor drive board address	Valve exception warning	Indoor unit pipeline fault	Outdoor unit pipeline fault	
	C	Communication failure between indoor and ODUs and IDU's communicator	Communication failure between control board and inverter compressor drive	Communication failure between control board and variable frequency fan drive	No IDU	Indoor unit project number conflict warning	Outdoor unit number inconsistency warning	Compressor emergency	Fan emergency	Module emergency
		H	C	L	E	F	J	P	U	b
	U		Master IDU is set	Wrong compressor emergency operation dial	Invalid refrigerant injection					
	C	High rating capacity ratio	No controlling unit	Low rating capacity ratio		Multiple controlling units	System address dial conflict	Multiple master wired controllers	Communication failure between the IDU and receiving light board	IP address allocation overflow

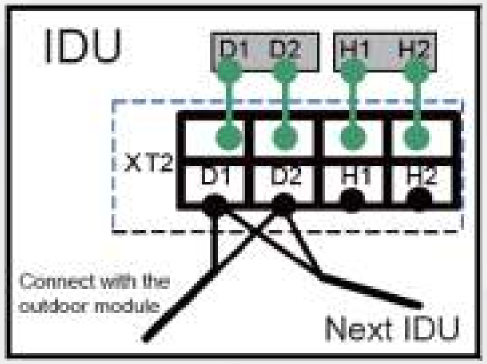
02 Status Code

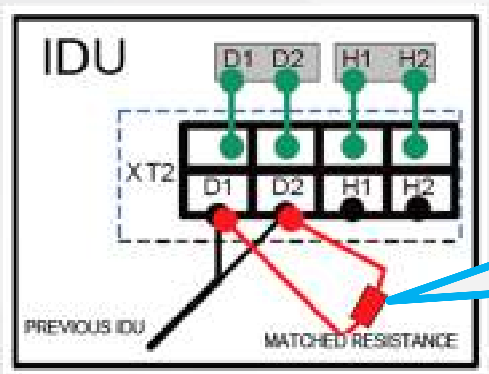
GREE VRF Display Code (6)										
		0	2	3	4	6	7	8	A	H
Status	A	The unit is not commissioned.	After-sales refrigerant recycling	Defrosting	Oil recycling	Cooling and heating setting	Silent mode setting	Vacuum mode		Heating
	n	Economic mode setting	Upper indoor/outdoor capacity ratio		Maximum output capacity	Unite fault enquiry	Unit parameter enquiry	Indoor unit project number enquiry	Cooling and heating model	Heating model
		C	E	F	J	P	U	b	d	
	A	Cooling	Refrigerant injecting	Ventilation	Filter cleaning reminder	Unit starting commissioning confirmation	Remote emergency shutdown	Emergency shutdown	Restricted operation	
	n	Cooling model	Negative code	Ventilation model						

02

Communication Error C0

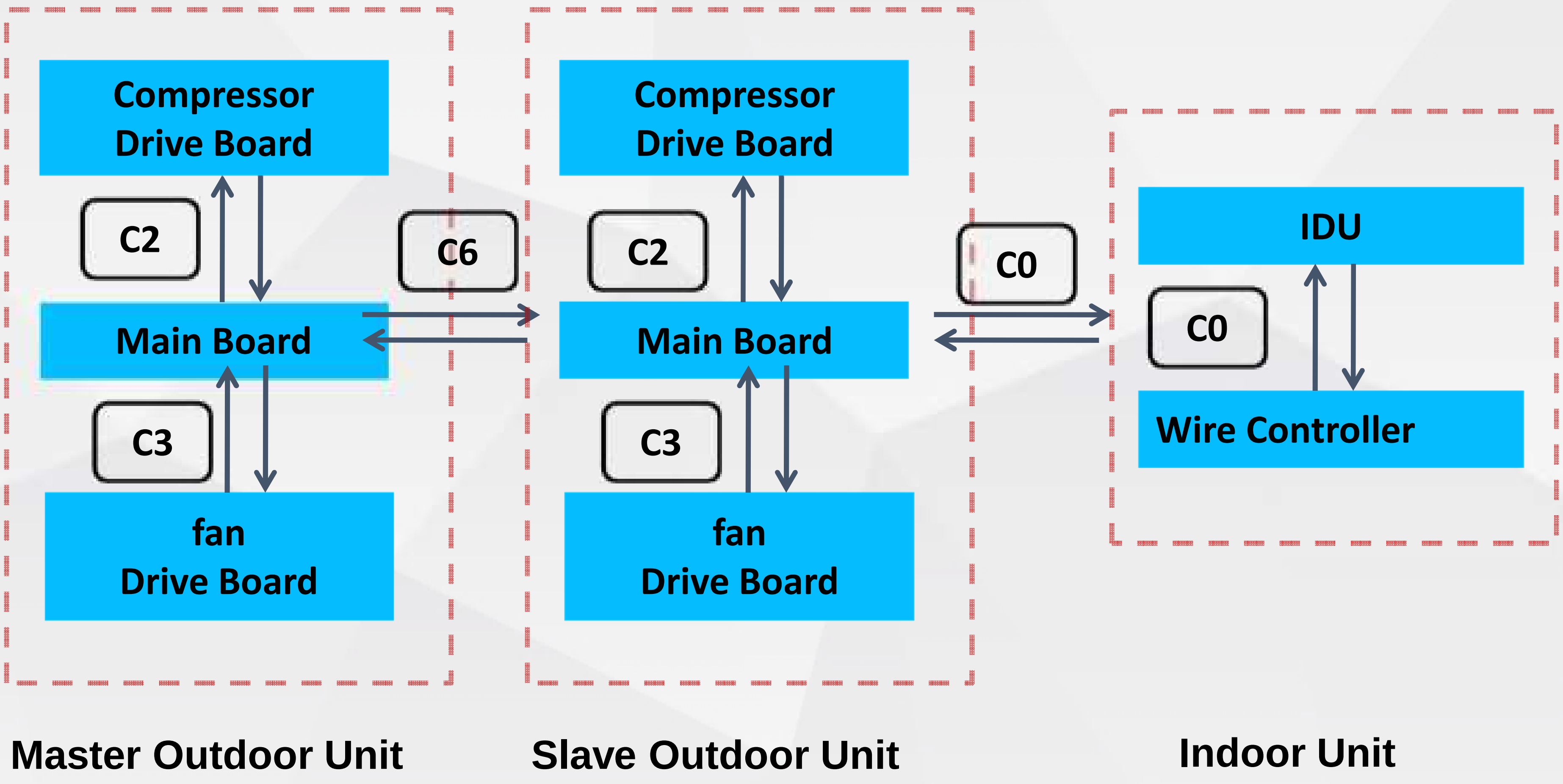






Matched resistance goes with ODU;H1,H2 terminals are used to connect wired controller

Communication Principle



Communication Malfunction

C0 only displays on IDU/ wire controller

1. IDU / wire controller malfunction
2. IDU & IDU can’t malfuncate

C2 /C3 displays on ODU

1. C2: main board & compressor drive board can’t communicate
2. C3: main board & fan driving board can’t communicate

C0 displays on ODU

1. ODU& IDU can’t communicate
2. The controller board of IDU/ODU maifaction

C6 displays on ODU

1. C6:ODU &ODU can’t communicate

POINT TO CHECK –

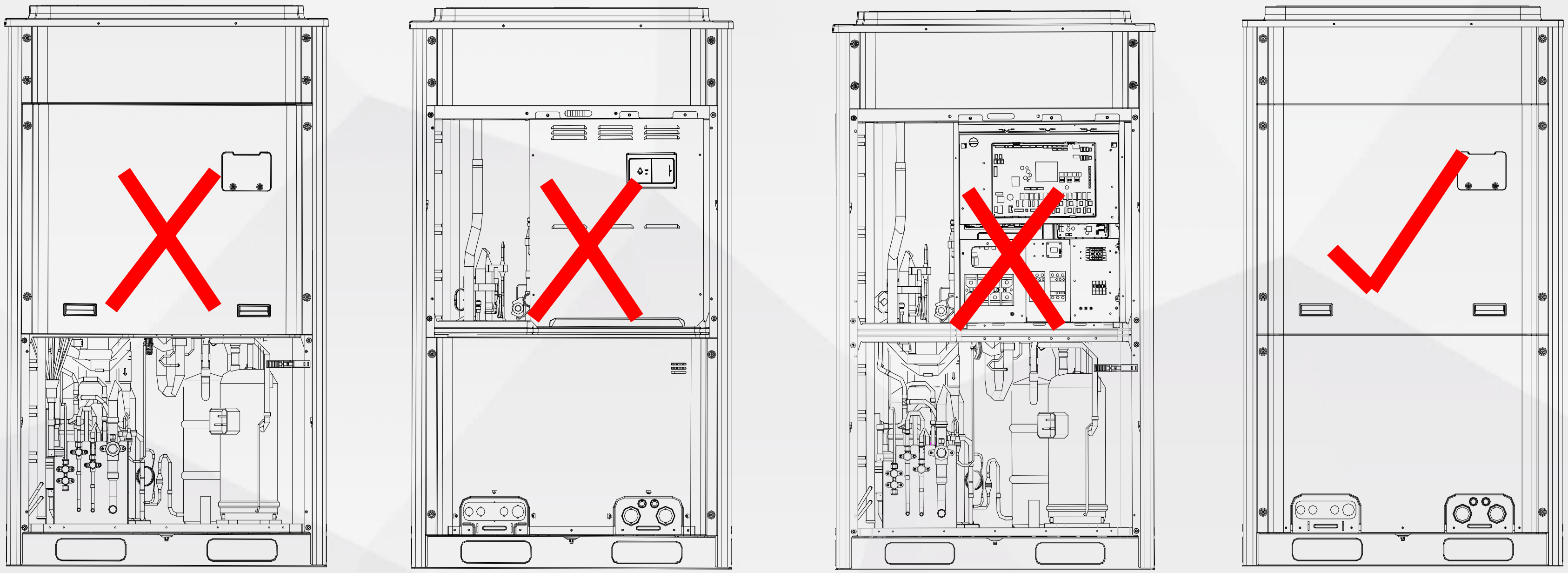
BASIC FOR SYSTEM MALFUCTION

1. GAS AND LIQUID VALVES SHOULD BE OPENED

BASIC FOR SYSTEM

POINT TO CHECK –

2. FRONT PLATE SHOULD COVER TIGHT



POINT TO CHECK –

BASIC FOR SYSTEM

Heat exchange

3. Air inlet and outlet (IDU & ODU) should be good

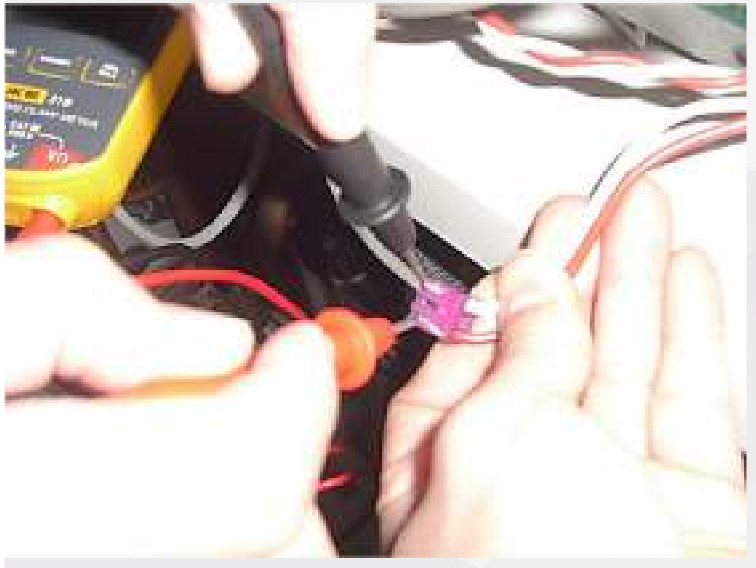
4. Fan (IDU & ODU) should run normally

5. Heat exchanger (IDU & ODU) should be clean. Filter for IDU is clean.

POINT TO CHECK –

BASIC FOR SYSTEM

6. Check pressure switch

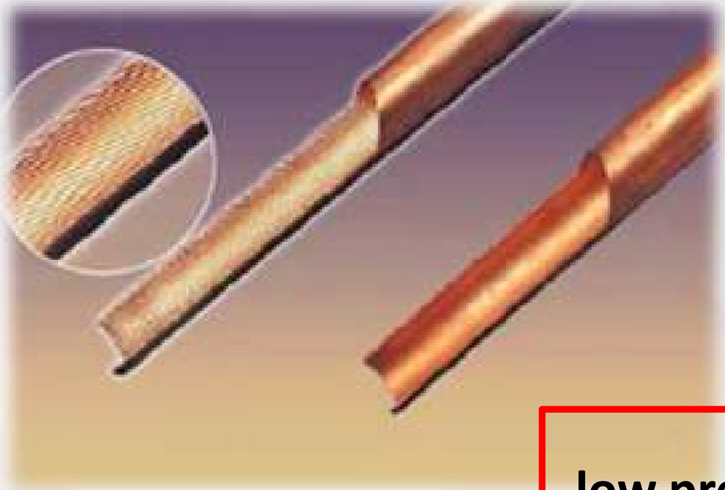


No Beep! → pressure switch failed

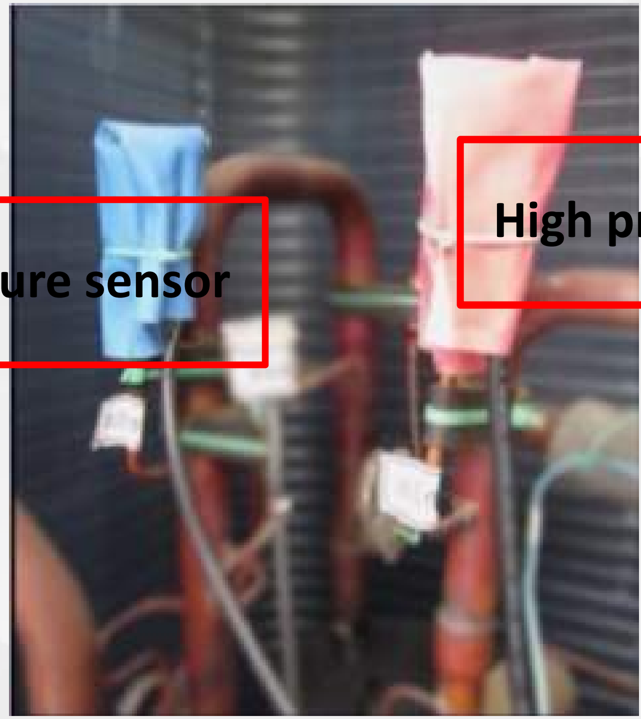
POINT TO CHECK –

BASIC FOR SYSTEM

BASIC FOR SYSTEM



7. No block in piping system



8. Check High /low pressure

BASIC FOR SYSTEM

POINT TO CHECK –

9. Check EXV

Power on/off
Listen or touch

Make sure the coil is firm and fixed

Outdoor unit's

Indoor unit's

02 EXV

1. Most failure involves valve itself, coil failure is not common.
2. Three typical failure modes are founded now,mechanical jam,valve demagnetization,valve welding leakage.

Cause of demagnetization:Severe impact,or too close to strong magnet(for example,screwdriver with magnetism).

02 High Pressure Protection

Error display: ODU PCB, wired controller, IDU light board

Error judgement condition and method:

Through high pressure sensor checking system to monitor system’ s real time high pressure and high pressure switch. If high pressure is more than 65 ℃ (4.2Mpa)or high pressure switch is off, then judge that the pressure is too high, system will forced to shut down.

Possible reason:

■ODU cutoff valve is closed;

■High pressure sensor abnormal;

■High pressure switch abnormal;

■ODU fan motor or IDU fan motor abnormal;

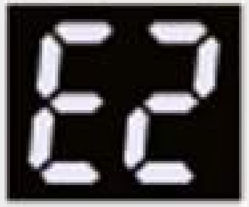
■IDU filter jam or bad ventilation(heating mode);

■Ambient temp is too high;

■Too much refrigerant;

■Pipe system jam.

02 Low Discharge Temp Protection



Error display: ODU PCB,wired controller,IDU light board

Error judgement condition and method:

Through check the compressor discharge temp value and high pressure value, If these two values’ difference is less than 10 ℃,then the system will be forced to shut down.

Possible reason:

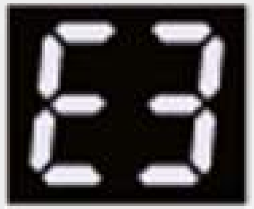
■Compressor discharge temp sensor abnormal

■Under cooling mode,IDU EXV abnormal

■Under heating mode,ODU EXV abnormal

■Too much refrigerant

02 Low Pressure Protection



Error display: ODU PCB,wired controller,IDU light board

Error judgement condition and method:

Through low pressure sensor to detect compressor suction pressure,when the pressure value is lower than -41℃(0.17Mpa),system will be forced to shut down.

Possible reason:

■ODU cutoff valve is closed;

■Low pressure sensor abnormal;

■ ODU fan motor or IDU fan motor abnormal;

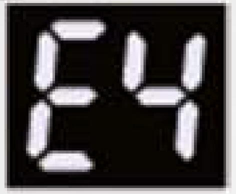
■ IDU filter jam or bad ventilation(cooling mode);

■ Ambient temp is too low;

■Refrigerant is insufficient;

■ Pipe system jam.

02 High Discharge Temp Protection



Error display: ODU PCB,wired controller,IDU light board

Error judgement condition and method:

Through compressor discharge pipe temp sensor and top shell temp sensor to detect discharge temp,when the temp is higher than 118℃,system will be forced to shut down.

Possible reason:

■ ODU cutoff valve is closed;

■EXV abnormal;

■ ODU fan motor or IDU fan motor abnormal;

■ IDU filter jam or bad ventilation(cooling mode);

■Ambient temp is beyond the range;

■ Refrigerant is insufficient;

■ Pipe system jam.

02

Error display: Wired controller,IDU light board

Application: All IDU

Error judgement condition and method:

When there is no Master IDU in the system,L7 will appear.

Possible reason:

■Master IDU offline

■Master IDU PCB has been replaced

■Master IDU PCB error

02 Temp Sensor Error

Error display: ODU PCB,wired controller,IDU light board

Application: All ODU

Error judgement condition and method:

Through temp sensor checking circuit to sampling the AD value,and judge the range of AD value;if the value has exceed the upper limit or the lower limit continuously for 30s,error will be displayed.

Possible reason:

- Improper connection between temp sensor and PCB port
- Temp sensor abnormal
- Checking circuit abnormal

02

IDU Lost Error

Error display: ODU PCB,wired controller,IDU light board

Application: All ODU

Error judgement condition and method:

When offline IDU quantity is more than 3,unit will forced to shut down.

Possible reason:

■Communication cable connection is improper;

■IDU power failure;

■IDU PCB abnormal.

02 Multiple Master Wired Controller

Error display: ODU PCB, wired controller, IDU light board

Application: All IDU

Error judgement condition and method:

In one CAN network, there’s two wired controllers are master wired controllers.

Possible reason:

■Two wired controllers control one or multiple IDU simultaneously, and both controllers are master controllers.

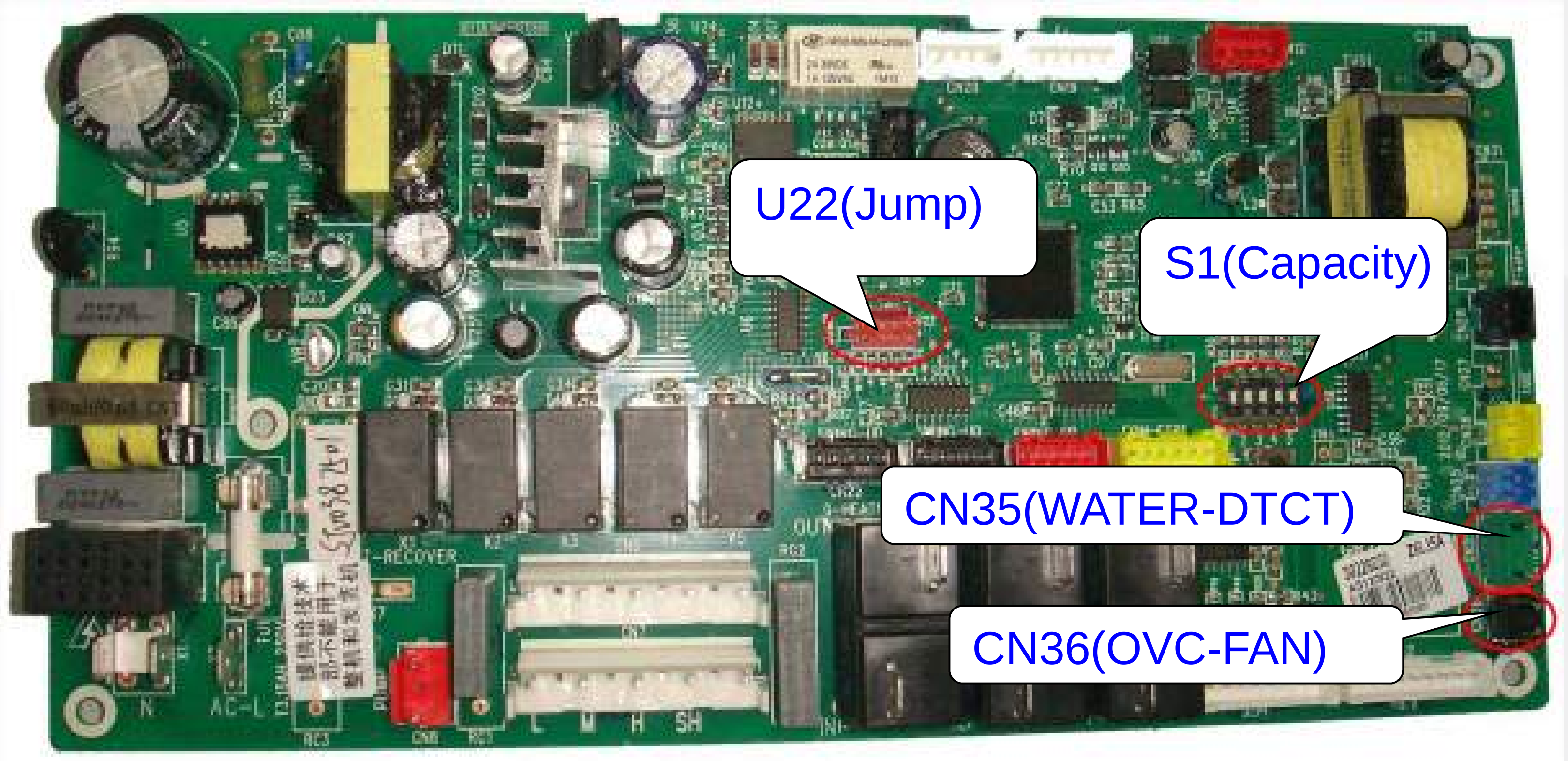
Troubleshooting:

Make sure at most two wired controllers connect one or multiple IDU; When there is two wired controllers control one or multiple IDU, enter wired controller parameter setting(P13),set one controller’s address to 02,which means slave controller.

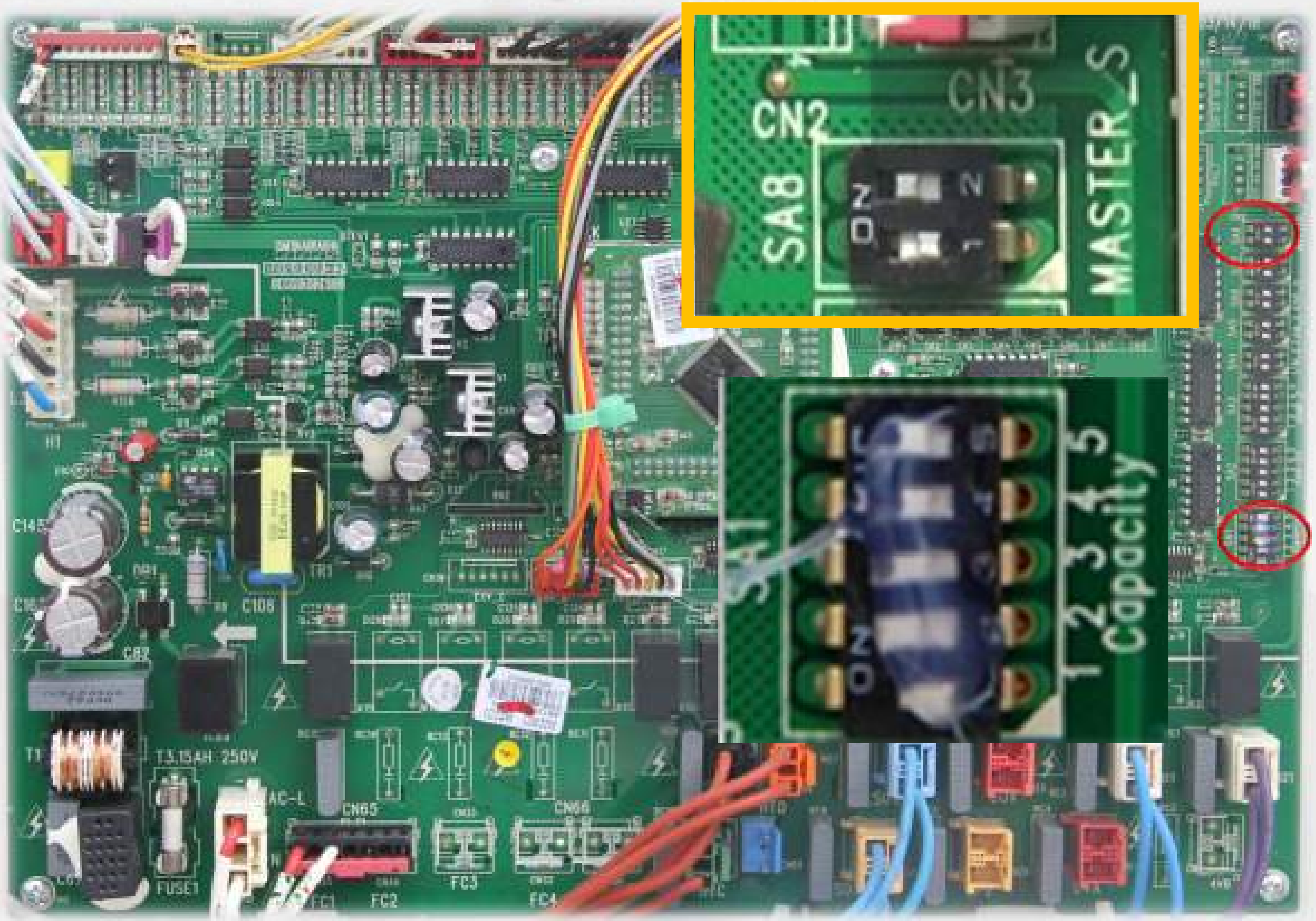
02 Replace IDU PCB

PCB DIP switch setting and Model Jumper confirmation

New PCB need to set Capacity DIP switch,Model Jumper,Fan motor overload detector,water level detector,all these four should keep the same with the old PCB.
Location and corresponding silkscreen are as follow:
Capacity DIP switch: S1(Capacity)
Model Jumper: U22(Jump)
Water level detector: CN35(WATER-DTCT)
Fan motor overload detector: CN36(OVC-FAN)



Cautions on ODU AP1 Replacement



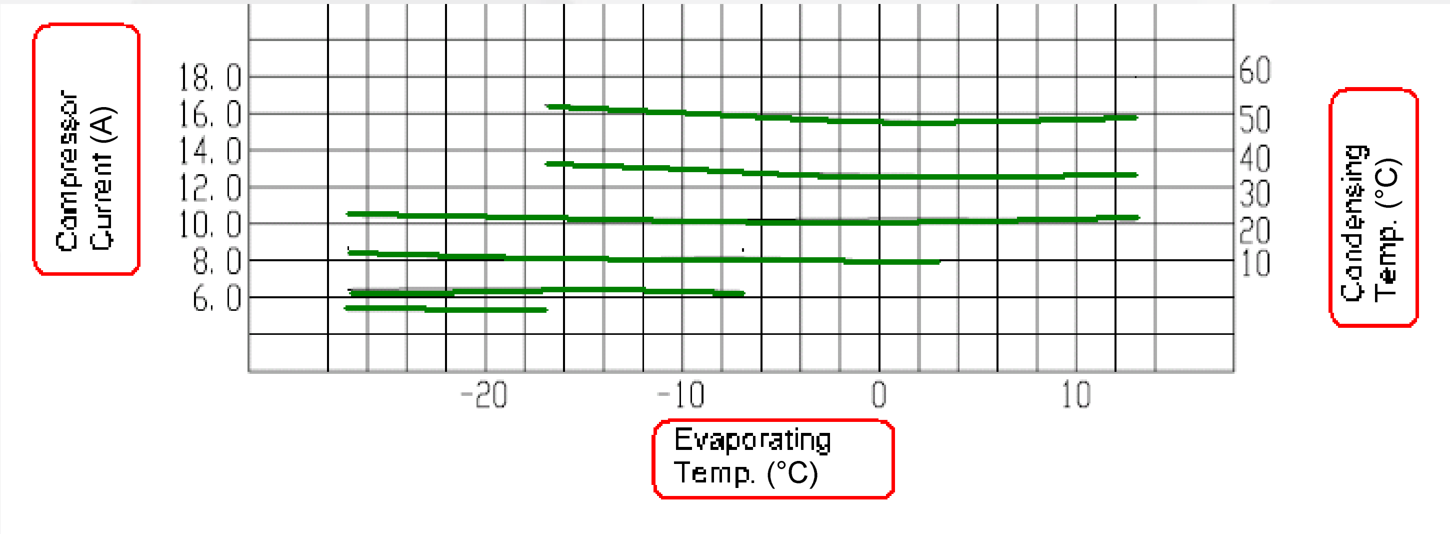
02 Compressor Inspection

Step 1:

If units can be normally started, start the units so as to measure the current of the faulty compressor.

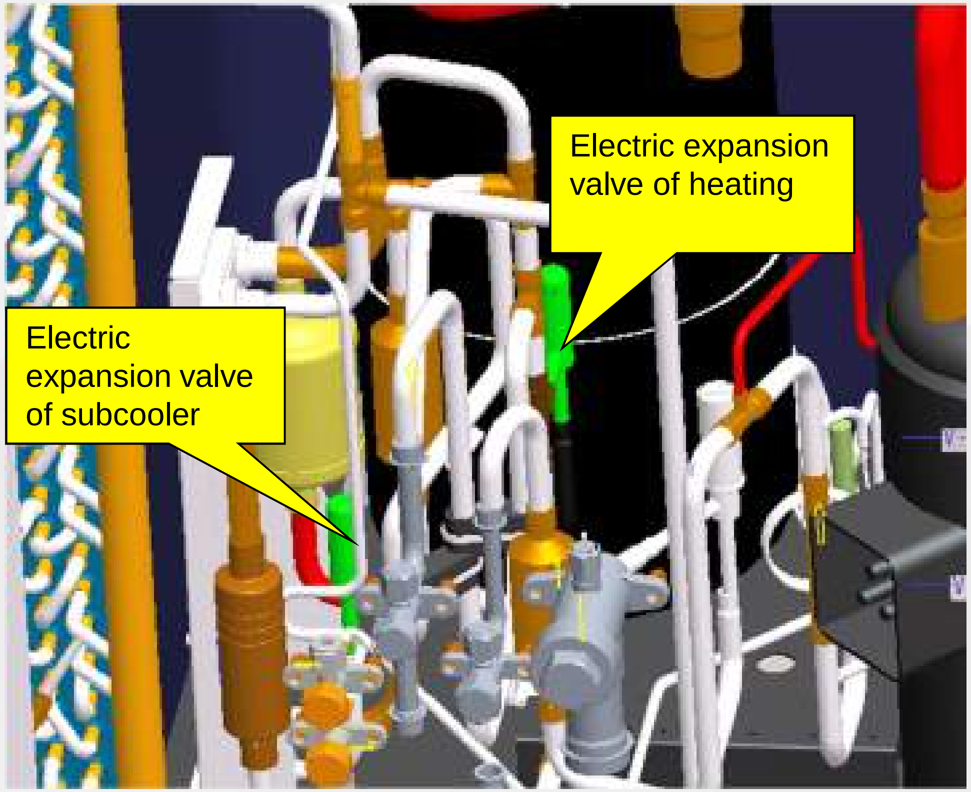
For inverter compressors E655DHD-65D2YG and E705DHD-72D2YG:

The figure below shows current curves that change with evaporating temperature and condensing temperature while the compressors work at 30 Hz.



02 Compressor Inspection

Step 2:
Check whether the compressor sounds sharp or rubs. Compare the sound of the faulty compressor with that of normal ones.
Step 3:
Check whether the electric expansion valves of ODUs and the 4-way valves act, and whether the oil return pipes and oil balance valves 1 and 2 are normal. Touch the pipelines next to the return capillary tubes to check whether there is oil flowing.



02 Compressor Inspection

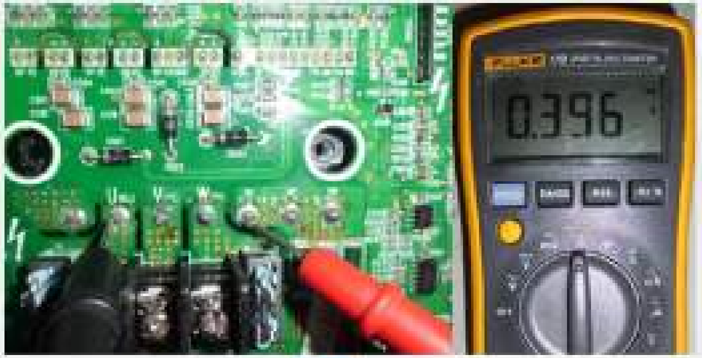
Step 4:

Check the compressor drive board(IPM) is normal or not.

1. Power off, wait for 5 minutes, then unplug compressor cable;

2. As shown in the picture, turn the multimeter to diode mode, put the black probe on ‘P’ position(on the left of U), put the red probe on U, V, W welding position(make the moistureproof glue is already removed), normally, the multimeter will display 0.39±0.3V, if it’s 0 or infinity, that means the IPM is broken.

How To Test the IPM Module



02 Compressor Inspection

Units cannot be normally started

If the units cannot be normally started

Step 1:

Disconnect the power supply of the units and open the electric junction box of the compressor to see whether wiring of the compressor is intact.

Step 2:

Measure resistance between two wiring terminals (U, V, W). The resistance value range should be 0.5~2.0 Ω. Measure the resistance to earth of each wiring terminal. The value should be 10 MΩ. If not, the compressor has an internal fault.

Step 3:

Check the solenoid valves of the system, include electric expansion valves, oil return valves, and oil balance valves. Refer to the preceding section for the test method.

Step 4:

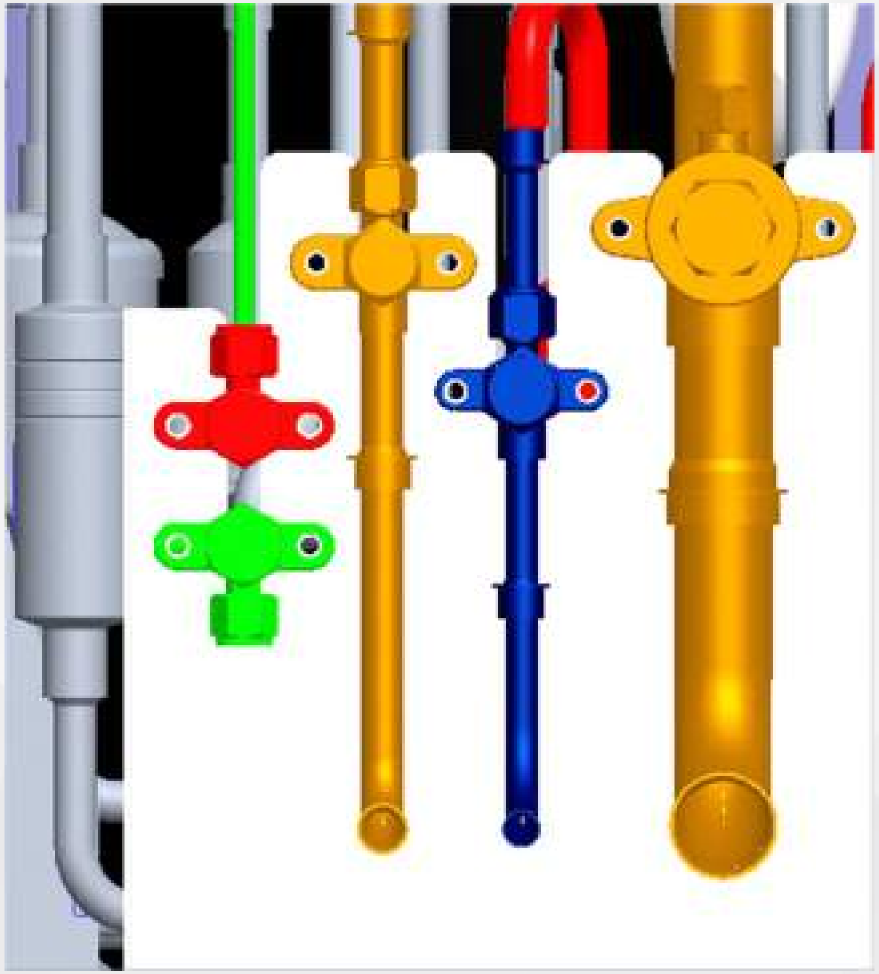
Check the IPM module. Refer to the preceding section for the test method.

02 Compressor Replacement

Step 1: Disconnect power supply.

Step 2: Clear electric parts (no need to disassemble the electric box).

Step 3: Check oil quality.



02 Compressor Replacement

Step 4: Release refrigerant.

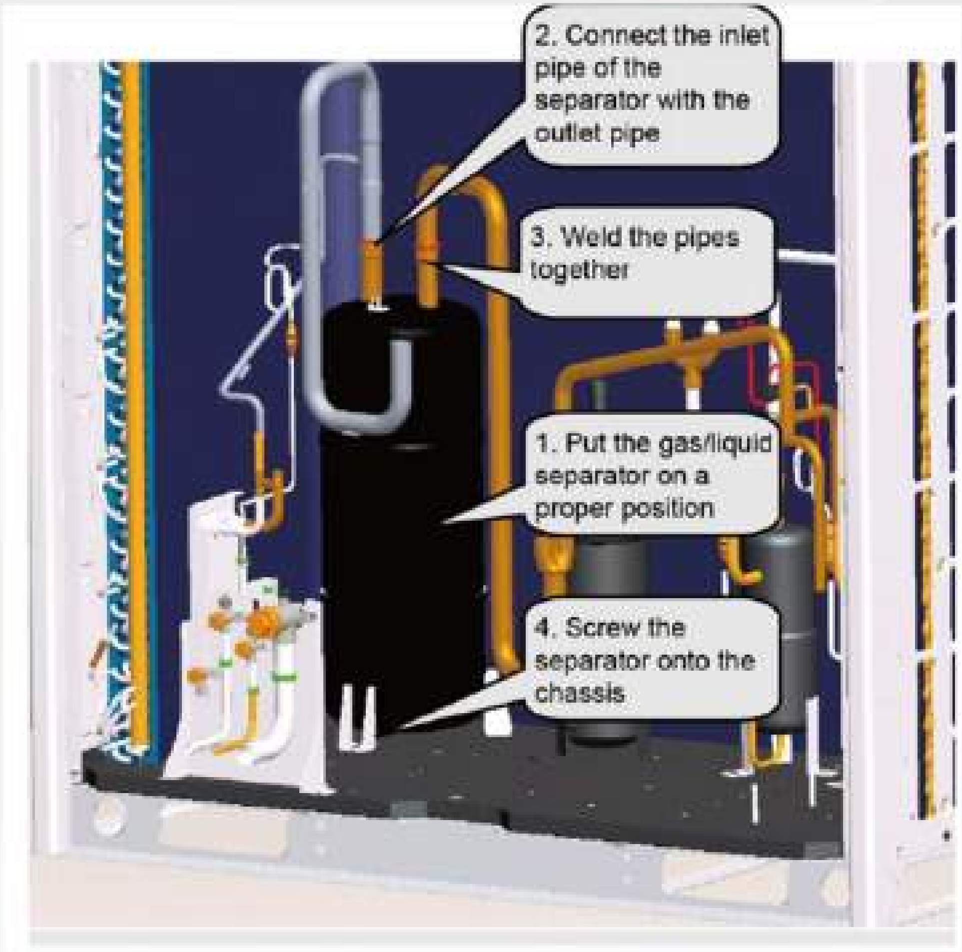
Step 5: Remove faulty compressors.

.

Step 6: Clear pipeline system.

Step 7: Install a new gas/liquid separator.

Note: If a faulty compressor needs replacement, the gas/liquid separator needs replacement as well.



02 Compressor Replacement

Color difference of the oil from compressor :

Clear oil: almost transparent(or sligtly yellow),high viscosity

Polluted oil: half transparent, black, low viscosity, even floc happens

Heavy polluted oil: totally black,low viscosity, even sundries can be founded

It's a must to check oil color and quantity when replace compressor, and check the other components according to actual situation.