Service Manual

GMV6 HR DC Inverter VRF Units

Capacity: 22.4kW~246.0kW

Rated Frequency: 50Hz / 60Hz

Operation Range: Cooling: -10~55°C
Heating: -25~24°C

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Contents

Preface

Thank you for purchasing GMV6 HR DC Inverter VRF Units. For correct operation, please read this manual carefully.

This manual applies to GMV6 HR series 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.

NOTES:

(1) All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. We have the right to make necessary revision to the product from time to time due to the reason of sales or production, and reserve the right to revise the contents without further notice.

(2) The final right to interpret for this instruction manual belongs to Gree Electric Appliances Inc. of Zhuhai.

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 Outdoor Unit

1.1.1 Basic Modules

HP	Product Code	Model	Power Supply	Appearance
8	CN851W3140	GMV-VQ224WM/C-X	380-415V 3N~50/60Hz	
10	CN851W2950	GMV-VQ280WM/C-X	380-415V 3N~50/60Hz	
12	CN851W2370	GMV-VQ335WM/C-X	380-415V 3N~50/60Hz	
14	CN851W3160	GMV-VQ400WM/C-X	380-415V 3N~50/60Hz	
16	CN851W2850	GMV-VQ450WM/C-X	380-415V 3N~50/60Hz	
18	CN851W2380	GMV-VQ504WM/C-X	380-415V 3N~50/60Hz	
20	CN851W3150	GMV-VQ560WM/C-X	380-415V 3N~50/60Hz	
22	CN851W2470	GMV-VQ615WM/C-X	380-415V 3N~50/60Hz	

1.1.2 Combined Modules

HP	Standard Combination	Model	HP	Standard Combination	Model
24	10+14	GMV-VQ680WM/C-X	58	14+22+22	GMV-VQ1630WM/C-X
26	10+16	GMV-VQ730WM/C-X	60	16+22+22	GMV-VQ1680WM/C-X
28	10+18	GMV-VQ784WM/C-X	62	18+22+22	GMV-VQ1734WM/C-X
30	10+20	GMV-VQ840WM/C-X	64	20+22+22	GMV-VQ1790WM/C-X
32	10+22	GMV-VQ895WM/C-X	66	22+22+22	GMV-VQ1845WM/C-X
34	12+22	GMV-VQ950WM/C-X	68	10+16+20+22	GMV-VQ1905WM/C-X
36	14+22	GMV-VQ1015WM/C-X	70	10+18+20+22	GMV-VQ1959WM/C-X
38	16+22	GMV-VQ1065WM/C-X	72	10+20+20+22	GMV-VQ2015WM/C-X
40	18+22	GMV-VQ1119WM/C-X	74	10+20+22+22	GMV-VQ2070WM/C-X
42	20+22	GMV-VQ1175WM/C-X	76	10+22+22+22	GMV-VQ2125WM/C-X
44	22+22	GMV-VQ1230WM/C-X	78	12+22+22+22	GMV-VQ2180WM/C-X
46	10+16+20	GMV-VQ1290WM/C-X	80	14+22+22+22	GMV-VQ2245WM/C-X
48	10+16+22	GMV-VQ1345WM/C-X	82	16+22+22+22	GMV-VQ2295WM/C-X
50	12+16+22	GMV-VQ1400WM/C-X	84	18+22+22+22	GMV-VQ2349WM/C-X
52	10+20+22	GMV-VQ1455WM/C-X	86	20+22+22+22	GMV-VQ2405WM/C-X
54	10+22+22	GMV-VQ1510WM/C-X	88	22+22+22+22	GMV-VQ2460WM/C-X
56	12+22+22	GMV-VQ1565WM/C-X	—	—	—

1.2 Mode Exchange Box

Model	Product Code	Power Supply	Appearance
NCHS1D	EN01600110	220-240V ~ 50/60Hz	
NCHS2D	EN01600090	220-240V ~ 50/60Hz	
NCHS4D	EN01600070	220-240V ~ 50/60Hz	
NCHS8D	EN01600100	220-240V ~ 50/60Hz	

1.3 Hydro Box

Model	Product Code	Power Supply	Appearance
NRQR16L/A-T	CN700N0020	220-240V~ 50Hz 208-230V~ 60Hz	
NRQR30L/A-T	CN700N0030	220-240V~ 50Hz 208-230V~ 60Hz	

1.4 Water Tank

Model	Product Code	Power Supply	Appearance
SXTVD300LCJ2/A-K	ER20000350	230V~ 50Hz	

2 Parameters

2.1 Parameters of Outdoor Unit

2.1.1 Parameters of Basic Modules

Model		-	GMV-VQ224WM/C-X	GMV-VQ280WM/C-X	GMV-VQ335WM/C-X	GMV-VQ400WM/C-X
HP		HP	8	10	12	14
Product Code		-	CN851W3140	CN851W2950	CN851W2370	CN851W3160
Cooling capacity	Rated	kW	22.4	28	33.5	40
Heating capacity	Rated	kW	16.2	16.2	18.5	23.5
	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)	60	61	63	63
Sound power level(Cooling)	ducted	dB(A)	80	83	83	91
	cassette	dB(A)	80	85	86	87
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
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	8.2	8.5	9.6	11.1
Maximum drive IDU NO.		unit	13	16	19	23
High pressure gas pipe		mm	Φ15.9	Φ19.05	Φ19.05	Φ22.2
Low pressure 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	243	243	256	325
Gross weight		kg	253	253	266	340

Model		-	GMV-VQ450WM/C-X	GMV-VQ504WM/C-X	GMV-VQ560WM/C-X	GMV-VQ615WM/C-X
HP		HP	16	18	20	22
Product Code		-	CN851W2850	CN851W2380	CN851W3150	CN851W2470
Cooling capacity	Rated	kW	45.00	50.40	56.00	61.50
Heating capacity	Rated	kW	23.5	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)	63	63	63	64
Sound power level(Cooling)	ducted	dB(A)	91	89	89	89
	cassette	dB(A)	94	87	89	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
Compressor quantity		N	1	2	2	2
Refrigeration oil No. of compressor		-	FV68H	FV68H	FV68H	FV68H
Refrigeration oil charge	Gross	L	6.1	7.2	7.2	7.2
	Compressor charge	L	1.1	1.1×2	1.1×2	1.1×2
	The others	L	5	5	5	5
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	11.6	12.8	12.8	13.3
Maximum drive IDU NO.		unit	26	29	33	36
High pressure gas pipe		mm	Φ22.2	Φ25.4	Φ25.4	Φ25.4
Low pressure 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	325	385	385	385
Gross weight		kg	340	400	400	400

Note:

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

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

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

2.1.2 Parameters of Combined Modules

Model		-	GMV-VQ680WM/C-X	GMV-VQ730WM/C-X	GMV-VQ784WM/C-X	GMV-VQ840WM/C-X	GMV-VQ895WM/C-X
HP		HP	24	26	28	30	32
Combination mode		-	10+14	10+16	10+18	10+20	10+22
		-	GMV-VQ280WM/C-X+GMV-VQ400WM/C-X	GMV-VQ280WM/C-X+GMV-VQ450WM/C-X	GMV-VQ280WM/C-X+GMV-VQ504WM/C-X	GMV-VQ280WM/C-X+GMV-VQ560WM/C-X	GMV-VQ280WM/C-X+GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	68	73	78.4	84	89.5
Heating capacity	Rated	kW	39.7	39.7	47.2	47.2	49.2
	Max.	kW	76.5	81.5	88	94.5	100.5
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110	0-110
Power Supply		-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Rated power input		kW	13.15+21.00	13.15+22.00	13.15+26.3	13.15+26.85	13.15+27.41
Rated current		A	23.5+37.5	23.5+39.3	23.5+47	23.5+48	23.5+49
Refrigerant type		-	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	8.5+11.1	8.5+11.6	8.5+12.8	8.5+12.8	8.5+13.3
Maximum drive IDU NO.		unit	39	43	46	50	53
High pressure gas pipe		mm	Φ25.4	Φ28.6	Φ28.6	Φ28.6	Φ28.6
Low pressure gas pipe		mm	Φ28.6	Φ31.8	Φ31.8	Φ31.8	Φ31.8
Liquid pipe		mm	Φ15.9	Φ19.05	Φ19.05	Φ19.05	Φ19.05
Outline dimensions (W × D × H)		mm	930×775×1690+1340×775×1690	930×775×1690+1340×775×1690	930×775×1690+1340×775×1690	930×775×1690+1340×775×1690	930×775×1690+1340×775×1690
Packing dimensions (W × D × H)		mm	1000×830×1855+1400×830×1855	1000×830×1855+1400×830×1855	1000×830×1855+1400×830×1855	1000×830×1855+1400×830×1855	1000×830×1855+1400×830×1855
Net weight		kg	243+385	256+385	325+385	325+385	8.5+13.3
Gross weight		kg	253+340	253+340	253+400	253+400	253+400

Model		-	GMV-VQ950WM/C-X	GMV-VQ1015WM/C-X	GMV-VQ1065WM/C-X	GMV-VQ1119WM/C-X
HP		HP	34	36	38	40
Combination mode		-	12+22	14+22	16+22	18+22
		-	GMV-VQ335WM/C-X + GMV-VQ615WM/C-X	GMV-VQ400WM/C-X + GMV-VQ615WM/C-X	GMV-VQ450WM/C-X + GMV-VQ615WM/C-X	GMV-VQ504WM/C-X + GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	95	101.5	106.5	111.9
Heating capacity	Rated	kW	51.5	56.5	56.5	64
	Max.	kW	106.5	114	119	125.5
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
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	13.5+27.41	21+27.41	22+27.41	26.3+27.41
Rated current		A	24.1+49	37.5+49	39.3+49	47+49
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	9.6+13.3	11.1+13.3	11.6+13.3	12.8+13.3
Maximum drive IDU NO.		unit	56	59	63	64
High pressure		mm	Φ28.6	Φ31.8	Φ31.8	Φ31.8

Model		-	GMV-VQ950WM/C-X	GMV-VQ1015WM/C-X	GMV-VQ1065WM/C-X	GMV-VQ1119WM/C-X
gas pipe						
Low pressure gas pipe		mm	Φ31.8	Φ38.1	Φ38.1	Φ38.1
Liquid pipe		mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05
Outline dimensions (W × D × H)		mm	930×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690
Packing dimensions (W × D × H)		mm	1000×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855
Net weight		kg	256+385	325+385	325+385	385+385
Gross weight		kg	266+400	340+400	340+400	400+400

Model		-	GMV-VQ1175WM/C-X	GMV-VQ1230WM/C-X	GMV-VQ1290WM/C-X	GMV-VQ1345WM/C-X
HP		HP	42	44	46	48
Combination mode		-	20+22	22+22	10+16+20	10+16+22
		-	GMV-VQ560WM/C-X + GMV-VQ615WM/C-X	GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ450WM/C-X + GMV-VQ560WM/C-X	GMV-VQ280WM/C-X + GMV-VQ450WM/C-X + GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	117.5	123	129	134.5
Heating capacity	Rated	kW	64	66	70.70	72.70
	Max.	kW	132	138	144.5	150.5
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
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	26.85+27.41	27.41+27.41	13.15+22.00+26.85	13.15+22.00+27.41
Rated current		A	48+49	49+49	23.5+39.3+48	23.5+39.3+49
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	12.8+13.3	13.3+13.3	8.5+11.6+12.8	8.5+11.6+13.3
Maximum drive IDU NO.		unit	64	64	64	64
High pressure gas pipe		mm	Φ31.8	Φ31.8	Φ31.8	Φ31.8
Low pressure gas pipe		mm	Φ38.1	Φ38.1	Φ38.1	Φ38.1
Liquid pipe		mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05
Outline dimensions (W × D × H)		mm	1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690
Packing dimensions (W × D × H)		mm	1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855
Net weight		kg	385+385	385+385	243+325+385	243+325+385
Gross weight		kg	400+400	400+400	253+340+400	253+340+400

Model		-	GMV-VQ1400WM/C-X	GMV-VQ1455WM/C-X	GMV-VQ1510WM/C-X	GMV-VQ1565WM/C-X
HP		HP	50	52	54	56
Combination mode		-	12+16++22	10+20+22	10+22+22	12+22+22
		-	GMV-VQ335WM/C-X + GMV-VQ450WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ560WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ335WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	140	145.5	151	156.5

Model		-	GMV-VQ1400WM/C-X	GMV-VQ1455WM/C-X	GMV-VQ1510WM/C-X	GMV-VQ1565WM/C-X
Heating capacity	Rated	kW	75.0	80.2	82.2	84.5
	Max.	kW	156.5	163.5	169.5	175.5
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
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	13.50+22.00+27.41	13.15+26.85+27.41	13.15+27.41+27.41	13.50+27.41+27.41
Rated current		A	24.1+39.3+49	23.5+48+49	23.5+49+49	24.1+49+49
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	9.6+11.6+13.3	8.5+12.8+13.3	8.5+13.3+13.3	9.6+13.3+13.3
Maximum drive IDU NO.		unit	66	69	71	74
High pressure gas pipe		mm	Φ38.1	Φ38.1	Φ38.1	Φ38.1
Low pressure gas pipe		mm	Φ41.3	Φ41.3	Φ41.3	Φ41.3
Liquid pipe		mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05
Outline dimensions (W × D × H)		mm	930×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690
Packing dimensions (W × D × H)		mm	1000×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855
Net weight		kg	256+325+385	243+385+385	243+385+385	256+385+385
Gross weight		kg	266+340+400	253+400+400	253+400+400	266+400+400

Model		-	GMV-VQ1630WM/C-X	GMV-VQ1680WM/C-X	GMV-VQ1734WM/C-X	GMV-VQ1790WM/C-X
HP		HP	58	60	62	64
Combination mode		-	14+22+22	16+22+22	18+22+22	20+22+22
		-	GMV-VQ400WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ450WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ504WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ560WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X +
Cooling capacity	Rated	kW	163	168	173.4	179
Heating capacity	Rated	kW	89.5	89.5	97	97
	Max.	kW	183	188	194.5	201
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
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	21.00+27.41+27.41	22.00+27.41+27.41	26.30+27.41+27.41	26.85+27.41+27.41
Rated current		A	37.5+49+49	39.3+49+49	47+49+49	48+49+49
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	11.1+13.3+13.3	11.6+13.3+13.3	12.8+13.3+13.3	12.8+13.3+13.3
Maximum drive IDU NO.		unit	77	80	80	80
High pressure gas pipe		mm	Φ38.1	Φ38.1	Φ38.1	Φ38.1
Low pressure gas pipe		mm	Φ41.3	Φ41.3	Φ41.3	Φ41.3
Liquid pipe		mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05
Outline dimensions (W × D × H)		mm	1340×775×1690+ 1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690+ 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+ 1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855+ 1400×830×1855

Model	-	GMV-VQ1630WM/C-X	GMV-VQ1680WM/C-X	GMV-VQ1734WM/C-X	GMV-VQ1790WM/C-X
Net weight	kg	325+385+385	325+385+385	385+385+385	385+385+385
Gross weight	kg	340+400+400	340+400+400	400+400+400	400+400+400

Model		-	GMV-VQ1845WM/C-X	GMV-VQ1905WM/C-X	GMV-VQ1959WM/C-X	GMV-VQ2015WM/C-X
HP		HP	66	68	70	72
Combination mode		-	22+22+22	10+16+20+22	10+18+20+22	10+20+20+22
		-	GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ450WM/C-X + GMV-VQ560WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ504WM/C-X + GMV-VQ560WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ560WM/C-X + GMV-VQ560WM/C-X + GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	184.5	190.5	195.9	201.5
Heating capacity	Rated	kW	99	103.70	111.2	111.2
	Max.	kW	207	213.5	220	226.5
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
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	27.41+27.41+27.41	13.15+22.00+26.85+27.41	13.15+26.30+26.85+27.41	13.15+26.85+26.85+27.41
Rated current		A	49+49+49	23.5+39.3+48+49	23.5+47+48+49	23.5+48+48+49
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	13.3+13.3+13.3	8.5+11.6+12.8+13.3	8.5+12.8+12.8+13.3	8.5+12.8+12.8+13.3
Maximum drive IDU NO.		unit	80	80	80	80
High pressure gas pipe		mm	Φ38.1	Φ41.3	Φ41.3	Φ41.3
Low pressure gas pipe		mm	Φ41.3	Φ44.5	Φ44.5	Φ44.5
Liquid pipe		mm	Φ19.05	Φ22.2	Φ22.2	Φ22.2
Outline dimensions (W × D × H)		mm	1340×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690
Packing dimensions (W × D × H)		mm	1400×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855
Net weight		kg	385+385+385	243+325+385+385	243+385+385+385	243+385+385+385
Gross weight		kg	400+400+400	253+340+400+400	253+400+400+400	253+400+400+400

Model		-	GMV-VQ2070WM/C-X	GMV-VQ2125WM/C-X	GMV-VQ2180WM/C-X	GMV-VQ2245WM/C-X
HP		HP	74	76	78	80
Combination mode		-	10+20+22+22	10+22+22+22	12+22+22+22	14+22+22+22
		-	GMV-VQ280WM/C-X + GMV-VQ560WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ280WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ335WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ400WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	207	212.5	218	224.5
Heating capacity	Rated	kW	113.2	115.2	117.5	122.50
	Max.	kW	232.5	238.5	244.5	252
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110

Model	-	GMV-VQ2070WM/C-X	GMV-VQ2125WM/C-X	GMV-VQ2180WM/C-X	GMV-VQ2245WM/C-X
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	13.15+26.85+27.41+27.41	13.15+27.41+27.41+27.41	13.50+27.41+27.41+27.41	21.00+27.41+27.41+27.41
Rated current	A	23.5+48+49+49	23.5+49+49+49	24.1+49+49+49	37.5+49+49+49
Refrigerant type	-	R410A	R410A	R410A	R410A
Refrigerant charge	kg	8.5+12.8+13.3+13.3	8.5+13.3+13.3+13.3	9.6+13.3+13.3+13.3	11.1+13.3+13.3+13.3
Maximum drive IDU NO.	unit	80	80	80	80
High pressure gas pipe	mm	Φ41.3	Φ41.3	Φ41.3	Φ41.3
Low pressure gas pipe	mm	Φ44.5	Φ44.5	Φ44.5	Φ44.5
Liquid pipe	mm	Φ22.2	Φ22.2	Φ22.2	Φ22.2
Outline dimensions (W × D × H)	mm	930×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	930×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690
Packing dimensions (W × D × H)	mm	1000×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1000×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855
Net weight	kg	243+385+385+385	243+385+385+385	256+385+385+385	325+385+385+385
Gross weight	kg	253+400+400+400	253+400+400+400	266+400+400+400	340+400+400+400

Model		-	GMV-VQ2295WM/C-X	GMV-VQ2349WM/C-X	GMV-VQ2405WM/C-X	GMV-VQ2460WM/C-X
HP		HP	82	84	86	88
Combination mode		-	16+22+22+22	18+22+22+22	20+22+22+22	22+22+22+22
		-	GMV-VQ450WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ504WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ560WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X	GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X + GMV-VQ615WM/C-X
Cooling capacity	Rated	kW	229.5	234.9	204.5	246
Heating capacity	Rated	kW	122.50	130	130	132
	Max.	kW	257	263.5	270	276
Outdoor static pressure		Pa	0-110	0-110	0-110	0-110
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	22.00+27.41+27.41+27.41	26.30+27.41+27.41+27.41	26.85+27.41+27.41+27.41	27.41+27.41+27.41+27.41
Rated current		A	39.3+49+49+49	47+49+49+49	48+49+49+49	49+49+49+49
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	11.6+13.3+13.3+13.3	12.8+13.3+13.3+13.3	12.8+13.3+13.3+13.3	13.3+13.3+13.3+13.3
Maximum drive IDU NO.		unit	80	80	80	80
High pressure gas pipe		mm	Φ41.3	Φ41.3	Φ41.3	Φ41.3
Low pressure gas pipe		mm	Φ44.5	Φ44.5	Φ44.5	Φ44.5
Liquid pipe		mm	Φ22.2	Φ22.2	Φ22.2	Φ22.2
Outline dimensions (W × D × H)		mm	1340×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690	1340×775×1690+ 1340×775×1690+ 1340×775×1690+ 1340×775×1690

Model	-	GMV-VQ2295WM/C-X	GMV-VQ2349WM/C-X	GMV-VQ2405WM/C-X	GMV-VQ2460WM/C-X
Packing dimensions (W × D × H)	mm	1400×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855	1400×830×1855+ 1400×830×1855+ 1400×830×1855+ 1400×830×1855
Net weight	kg	325+385+385+385	385+385+385+385	385+385+385+385	385+385+385+385
Gross weight	kg	340+400+400+400	400+400+400+400	400+400+400+400	400+400+400+400

Note:

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

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

2.2 Parameters of Mode Exchange Box

Model				NCHS1D	NCHS2D	NCHS4D	NCHS8D
Numbers of branches			unit	1	2	4	8
Maximum numbers of connectable IDUs		Per branch	unit	8	8	8	8
		Total	unit	8	16	32	64
Maximum capacity of connectable IDUs		Per branch	kW	16	16	16	16
		Total	kW	16	28	45	85
Power supply				220-240V ~ 50/60Hz			
Piping connections	ODU	Liquid	mm	Φ9.52	Φ9.52	Φ12.7	Φ15.9
		High pressure gas	mm	Φ19.05	Φ19.05	Φ22.2	Φ22.2
		Low pressure gas	mm	Φ22.2	Φ22.2	Φ28.6	Φ28.6
	IDU	Liquid	mm	Φ6.35/9.52	Φ6.35/9.52	Φ6.35/9.52	Φ6.35/9.52
		Gas	mm	Φ12.7/15.9	Φ12.7/15.9	Φ12.7/15.9	Φ12.7/15.9
Outline dimension(W×D×H)			mm	340×388×250	340×388×250	460×388×250	784×388×250

2.3 Parameters of Hydro Box

Model			NRQR16L/A-T	NRQR30L/A-T
Hot water heating capacity		kW	4.5(3.6~16)	4.5(3.6~30)
Max setting temperature of domestic hot water		°C	55(35~55)	55(35~55)
Floor heating capacity		kW	16	30
Max setting temperature of floor heating		°C	45(25~45)	45(25~45)
Power supply		-	220-240V~ 50Hz 208-230V~ 60Hz	220-240V~ 50Hz 208-230V~ 60Hz
Heat exchanger	Type	-	Plate heat exchanger	Plate heat exchanger
	Quantity	-	1	1
	Rated water flow	L/min	46	86
Water system connection	Diameter of inlet/outlet water pipe	mm	Φ25	Φ25
	Thread specification	-	G1	G1
Refrigerant system connection	Gas pipe	mm	Φ15.9	Φ22.2
	Liquid pipe	mm	Φ9.52	Φ9.52
Outline dimension(W×D×H)		mm	515×330×606	515×330×606
Net weight		kg	36	40

2.4 Parameters of Water Tank

Model			SXTVD300LCJ2/A-K
Capacity		L	300
Electric heating power consumption		kW	3
Max. Allowable Pressure		MPa	0.7
Liner	Material	-	Hot rolled steel plate （enamel）Q330TC1
	Thickness	mm	2.5
Insulation	Material	-	Foam rubber
	Thickness	mm	42
Outer layer	Material	-	Color coated plate hot-dip galvanized sheet
	Thickness	mm	0.6
Circular Water Pipe	Diameter	mm	19.05
	Screw Thread Spec	-	3/4″Female BSP
Cold water inter pipe	Diameter	mm	19.05
	Screw Thread Spec	-	3/4″Female BSP
Hot water inter pipe	Diameter	mm	19.05
	Screw Thread Spec	-	3/4″Female BSP
Dimension of Outline	Outer Diameter × Height	mm	Φ620×1725
Net Weight		kg	135

3 The Range of Production Working Temperature

—	Cooling	Heating	Heating recovery	Water heating	Floor heating
Ambient temperature	-10°C ~55°C DB	-25°C ~24°C DB	-10°C ~24°C DB	-20°C ~35°C DB	-20°C ~24°C DB
Indoor temperature	14°C ~25°C WB	15°C ~27°C DB	15°C ~25°C DB	—	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

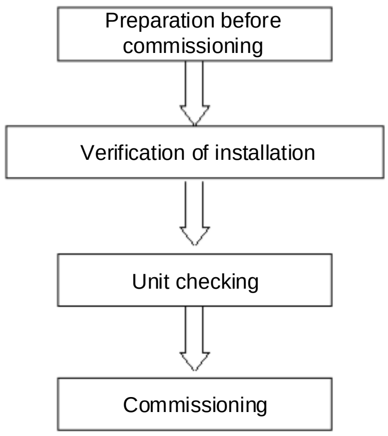
WARNING!

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.

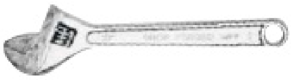
All installation and maintenance operations must comply with the product design requirements and national and local safety requirements.

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			
	Mode exchange box appearance			
	Hydro box 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 GMV6 HR 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?	—		
	7	Is the hydro box installation location selected correctly?	Refer to the hydro box installation manual.		
	8	Is the mode exchange box unit installation location selected correctly?	Refer to the mode exchange box installation manual.		
Refrigerating system	9	Is the rated capacity of the internal and external units of the cooling system within 50%~135%?	50% to 135%		
	10	If the single cooling system hydro box and the rated capacity of outdoor unit meet the requirements of instruction manual?	Refer to the hydro box installation manual.		
	11	Is the fresh air unit access capacity within 30%?	≤30%		
	12	Is GMV6HR connected to outdoor units in other series?	GMV6 HR cannot be connected to outdoor units in other series.		
	13	Does the drop between the indoor and outdoor units meet the unit design requirements?	Refer to the outdoor unit installation.		
	14	Does the drop between indoor units meet the unit design requirements?	Refer to the outdoor unit installation.		
	15	Is the length of the pipe from the outdoor unit to the farthest indoor unit less than or equal to 200 m?	Refer to the outdoor unit installation.		
	16	Is the total length of the piping less than 1000 m?	Refer to the outdoor unit installation.		
	17	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.		

Checklist Before GMV6 HR Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Refrigerating system	18	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.		
	19	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.		
	20	Is the stop valve of each module open to the maximum opening?	—		
	21	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.		
	22	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.	—		
	23	Is the outdoor unit being warmed up for more than 2 hours before commissioning?	—		
	24	If the piping length from the hydro box to the mode exchange box is less than or equal to 10m?	≤10m		
Electrical system	25	Is the power cable connected correctly? Is the terminal block secure?	—		
	26	Is the power cable appearance in good condition and not exposed?	The appearance is in good condition and not exposed.		
	27	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.		
	28	Is there any poorly connected electrical component detected when the power is off?	All components are reliably connected.		
	29	Do the cable diameters of the indoor and outdoor units meet the unit design requirements?	Refer to electrical installation.		
	30	Do the circuit breaker and leakage switch meet the unit design requirements?	Refer to electrical installation.		

Checklist Before GMV6 HR Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Electrical system	31	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%.		
	32	Is the power cable more than 1 m away from a TV?	—		
	33	Is there any strong electromagnetic interference, dust, acid and alkaline gas in the environment where the unit is located?	—		
Communication system	34	Does the communication cable material meet the unit design requirements?	—		
	35	Is the communication connection between outdoor unit modules correct?	—		
	36	Is the DIP switch of the master unit of the outdoor unit module correct?	—		
	37	Is the communication between the outdoor master unit and the indoor unit correct?	Serial connection		
	38	Is the communication connection between indoor units correct?	—		
	39	Is the communication connection between the indoor unit and the wired controller correct?	—		
	40	Is the last communication indoor unit installed with a communication build-out resistor?	—		
	41	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	42	Does the indoor unit drain pipe have a slope of 1/100?	—		
	43	Does the height of the indoor unit riser drain pipe meet the requirements?	—		
	44	Does the indoor unit drain smoothly?	—		
	45	Is there a U-shaped trap for indoor unit drainage?	—		
	46	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?	—		
	47	Does the indoor unit water pipe have an emptying port?	—		
	48	Is a "main" label attached to the wired controller or panel of the main indoor unit?	—		

Checklist Before GMV6 HR Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Check the installation situation of water circuit of hydro box.	49	If the circulating water circuit has been installed with C/D valve (electric ball valve) as required?	—		
	50	If the circulating water pump is installed according to correct model selection.	—		
	51	If the expansion drum is installed as required.	—		
	52	If the safety valve, filter, water circuit fittings of exhaust valve are installed as required.	—		

3.2 Debugging and Operation

3.2.1 Commissioning inspection for hydro box circulating water system

3.2.1.1 Precautions

(1) Check if the unit is installed correctly.

(2) Check if water system pipes and electric system wires are reasonable.

(3) Check if the earthed wires are connected.

(4) Check if the supply voltage complies with the rated voltage of unit.

(5) Check if the check valve and relief valve at the water inlet are installed correctly.

(6) The pressure of inlet water shall be not less than 0.15MPa.

(7) Please add anti-freeze fluid according to instruction manual of hydro box.

(8) Before conducting commissioning inspection for hydro box circulating water system, the outdoor unit, mode exchange box and hydro box must be energized simultaneously.

3.2.1.2 Test Run

3.2.1.2.1 Leakage Detection

After connecting all waterway pipeline, please arrange leakage detection firstly and then arrange insulation to waterway system after making sure there is no water leakage. Please pay special attention to the thermal insulation at the joints of valves and pipe joints. The insulation cotton with thickness not less than 15mm is recommended.

3.2.1.2.2 Filling Water for Exhausting Air between Hydro Box with Water Tank and Floor Heating Pipe

(1) Ensure that each water pipe is correctly connected, the exhaust valve on the user side is closed and the sewage port is sealed;

(2) Open the water filling valve to fill water. Open the exhaust valve;

(3) When there is water flown out from the exhaust valve, please open the manual exhaust valve;

(4) When it is completely water flowing out of the vent valve, energize the hydro box and enter cleaning mode to start exhausting. The operation method is that when the hydro box is off, pressing “Menu/OK” button to enter menu interface. Press “Left” or “Right” to find “Function” option, then press “Menu/OK” button to enter “Function Setting”. Select “Clean” and pressing “Menu/OK” button to start cleaning.

(5) After operating for 15~20min, if the water flow discharged by exhaust valve of hydro box outlet pipe is stable and there is no airflow, it means exhausting is done. In this case, you can close the manual exhaust valve and stop the operation of hydro box. Operation method: pressing “Menu/OK” button to enter menu interface. Press “Left” or “Right” to find “Function” option, then press “Menu/OK” button to enter “Function Setting”. Select “Clean” and pressing “Menu/OK” button to stop cleaning.

3.2.1.2.3 Air Exhausting of Water Tank and Pipeline at User Side

(1) Make sure each pipe port of water tank is connected and make sure the sewage port of water tank is sealed;

(2) Open the water filling valve of water tank and open the valve at user side to fill water into water tank until there is water flowed out from the valve at user side and there is no air bubble continuously, which means water filling and air exhausting of water tank have been done. Then you can close the valve at user side and enter operation debugging of the whole unit.

3.2.1.2.4 Second Time of Air Exhausting

After all connection wires of IDU, ODU and hydro box are connected and the debugging of refrigerant system is done, please arrange air exhausting again. Detailed steps are as below:

(1) Open the hot water faucet to discharge water and open the water filling valve of water tank to fill water into water tank until the water temperature reaches 20°C~30°C;

(2) Start hot water generation mode and open the manual exhaust valve at the same time;

After operating for 15~20min, if the difference between outlet water temperature and inlet water temperature of hydro box is between 4~10°C, it means air exhausting is done. In this case, you can close the manual exhaust valve and stop the operation of hydro box. Air exhausting operation of water system is done.

(3) The steps mentioned above shall be done when water temperature in water tank is below 45°C. When the temperature reaches 45°C, if the difference between inlet water temperature and outlet water temperature of hydro box doesn’t meet the requirement, please turn off the unit. Open the faucet to discharge hot water and tap water will enter water tank from the water filling valve of water tank, until water temperature in water tank reaches 20°C~30°C again. Then start hot water generation mode again and open the manual exhaust valve at the same time to exhaust air.

NOTE：If the hydro box is not used for a long time, the water inside water system should be drained to prevent freezing the circulating water pipe.

3.2.2 Commissioning operation of refrigerant system

3.2.2.1 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.

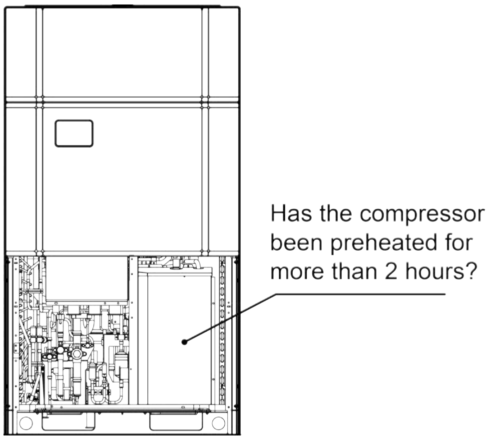
(5) All scattered objects, especially metal chips, wire ends and clamps, should be removed from the body.

(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.

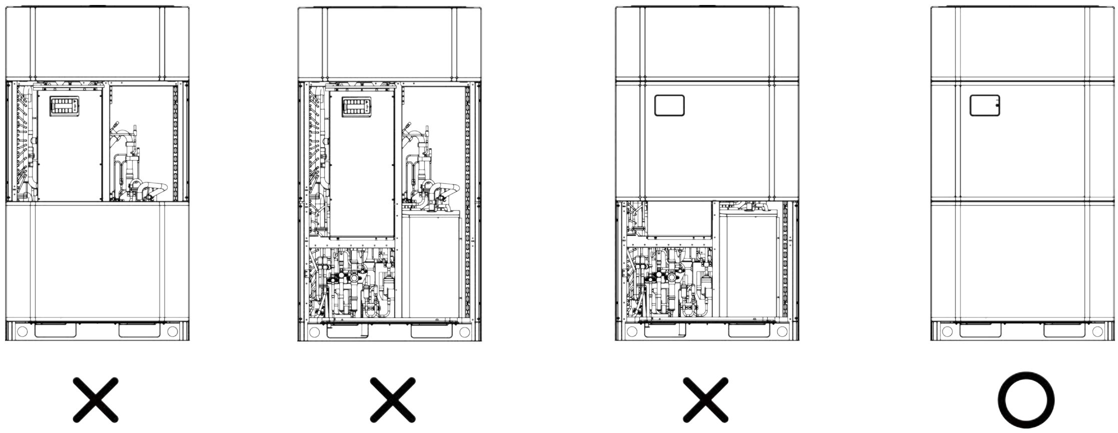
(8) Power cannot be supplied until all installation work is completed.

(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.

(13) During the commissioning operation, the hydro box is under power-off status.

3.2.2.2 Basic Introduction for Engineering Debugging

3.2.2.2.1 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.)

3.2.2.2.2 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.	—

3.2.2.2.3 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.
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 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 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	correspoding 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/correspoding 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.

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	
08_compressor 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.
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.

3.2.2.3 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/ correspoding 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.

3.2.2.4 Unit Commissioning on Commissioning Software

Step 1: Install the commissioning software.

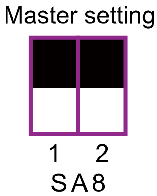
Install the commissioning software on a PC, and connect the monitoring communication cable. (For details, see Gree Debugger.)

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:

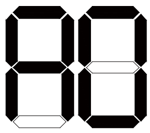
Master unit setting (SA8):



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.



LED3

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

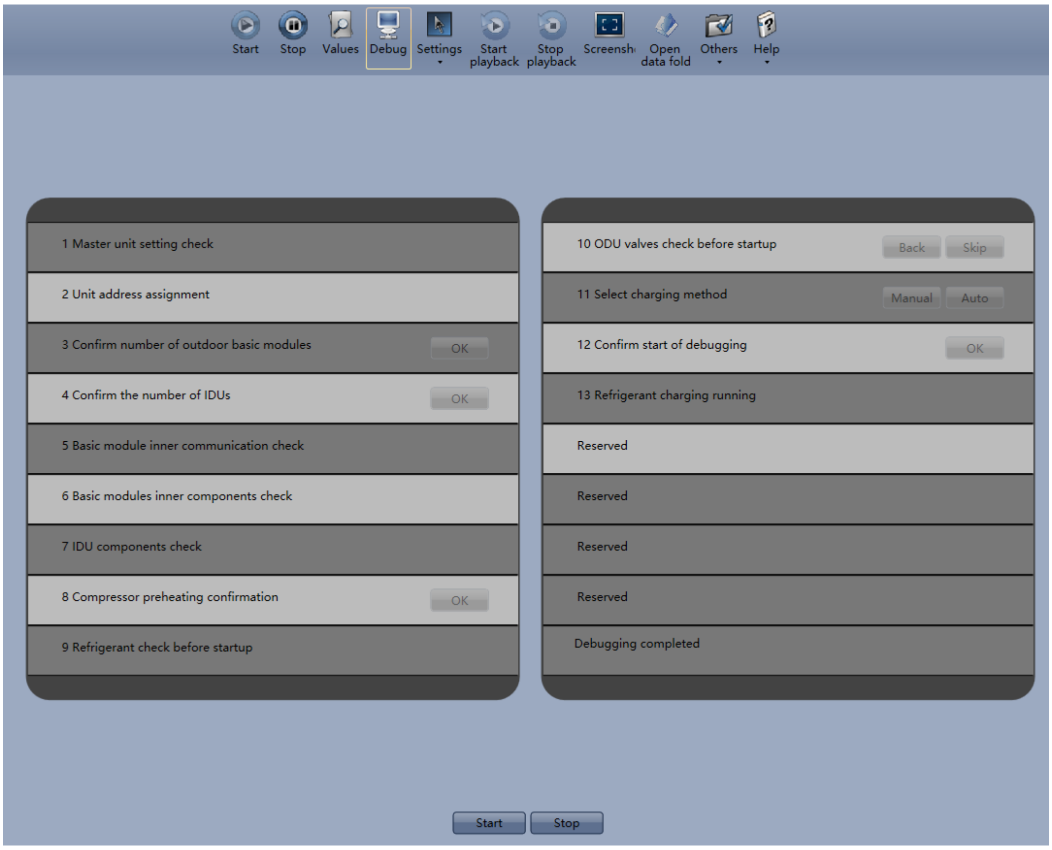
After selecting the corresponding static pressure mode for the outdoor unit, press the SW3 confirm button. The master module displays as follows:

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

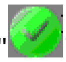
Each basic module memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

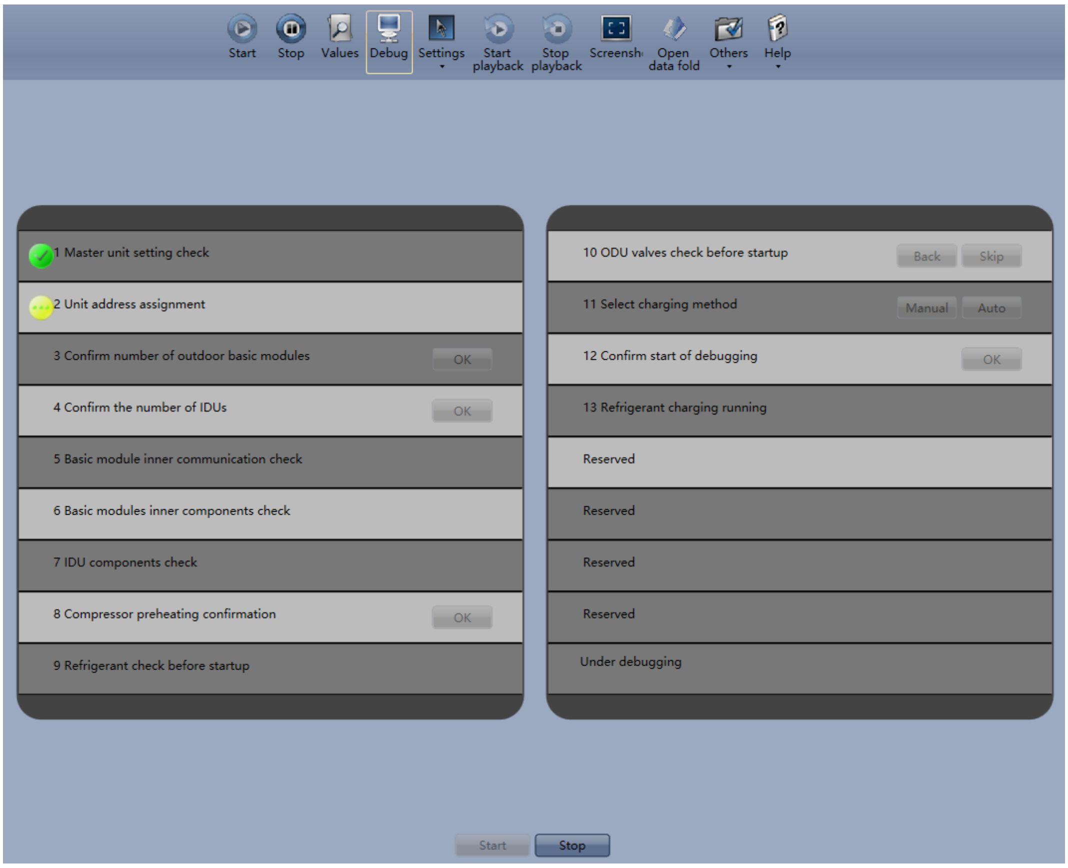
Step 6: Switch the commissioning software to the commissioning control interface.

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.

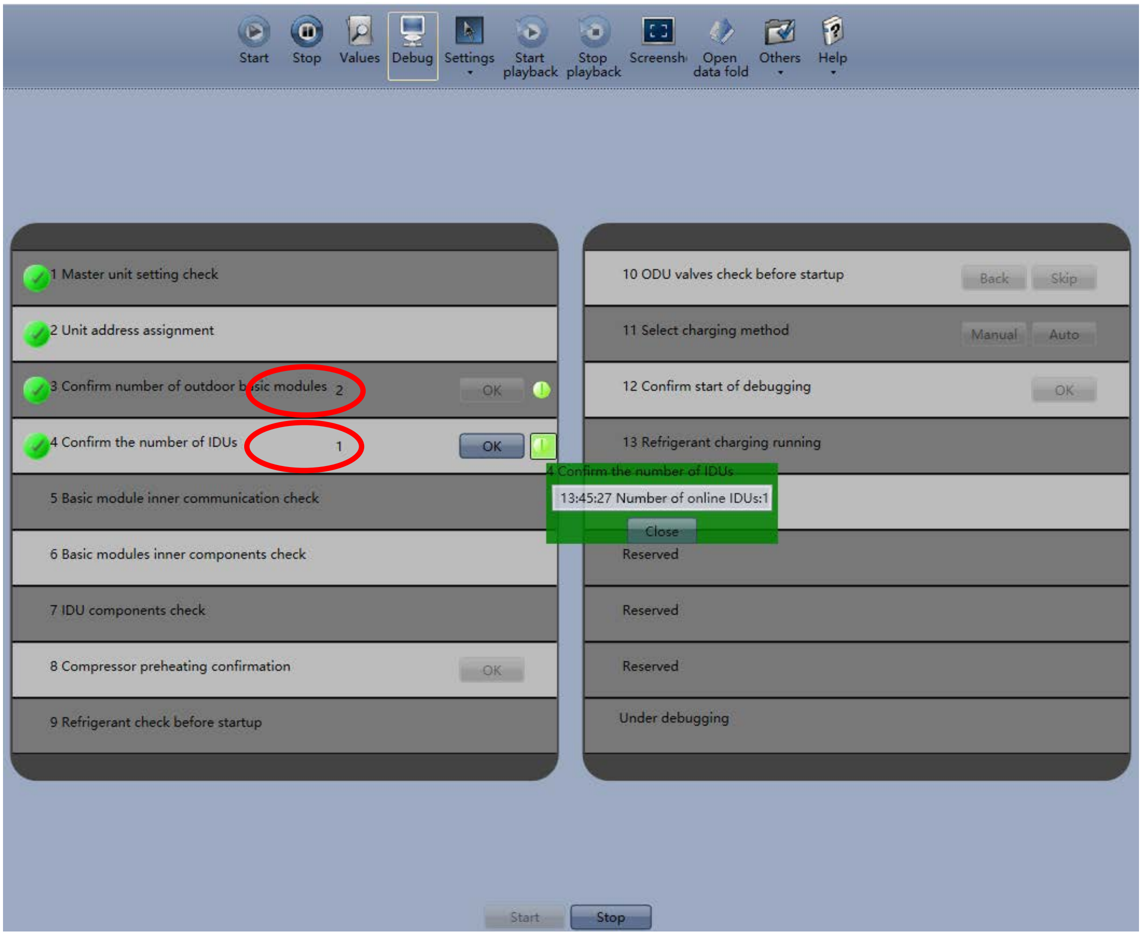


Step 7: Click "Start" to enter the commissioning function

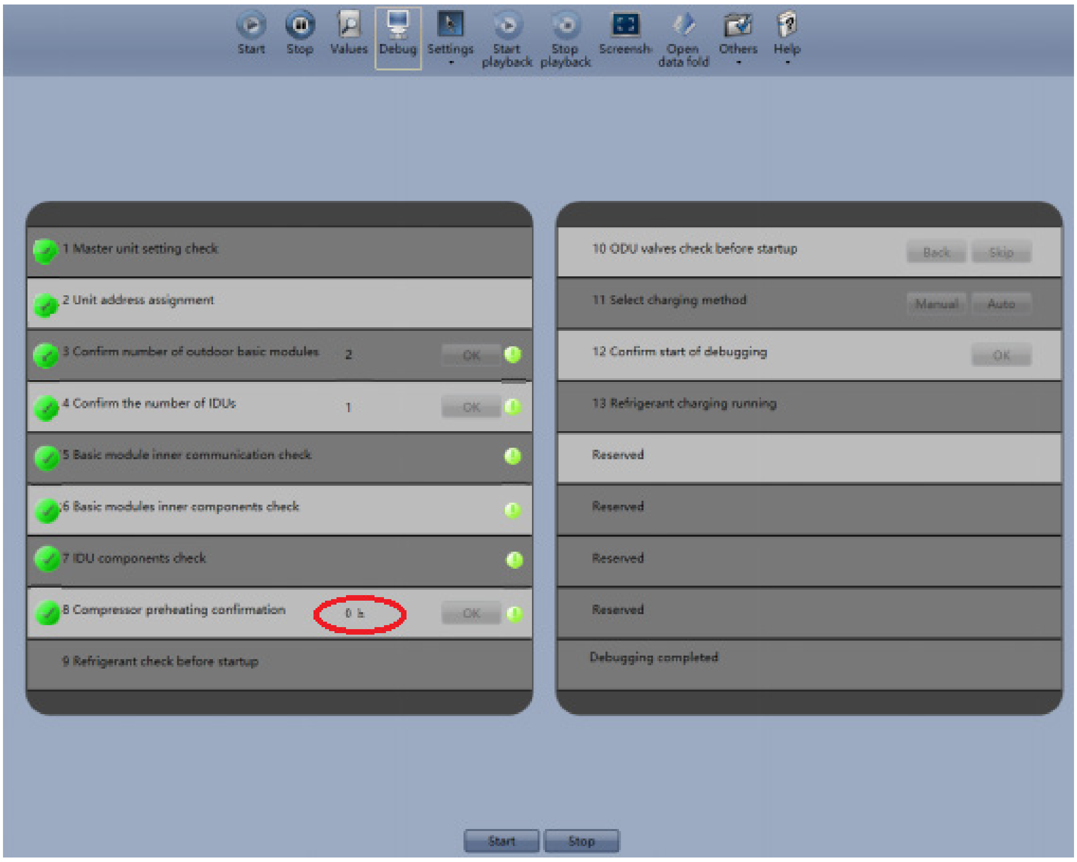
Click "Start" to enter the commissioning function and the software automatically performs commissioning. "" indicates that commissioning is being performed on the phase and "" indicates that commissioning is passed on the phase.



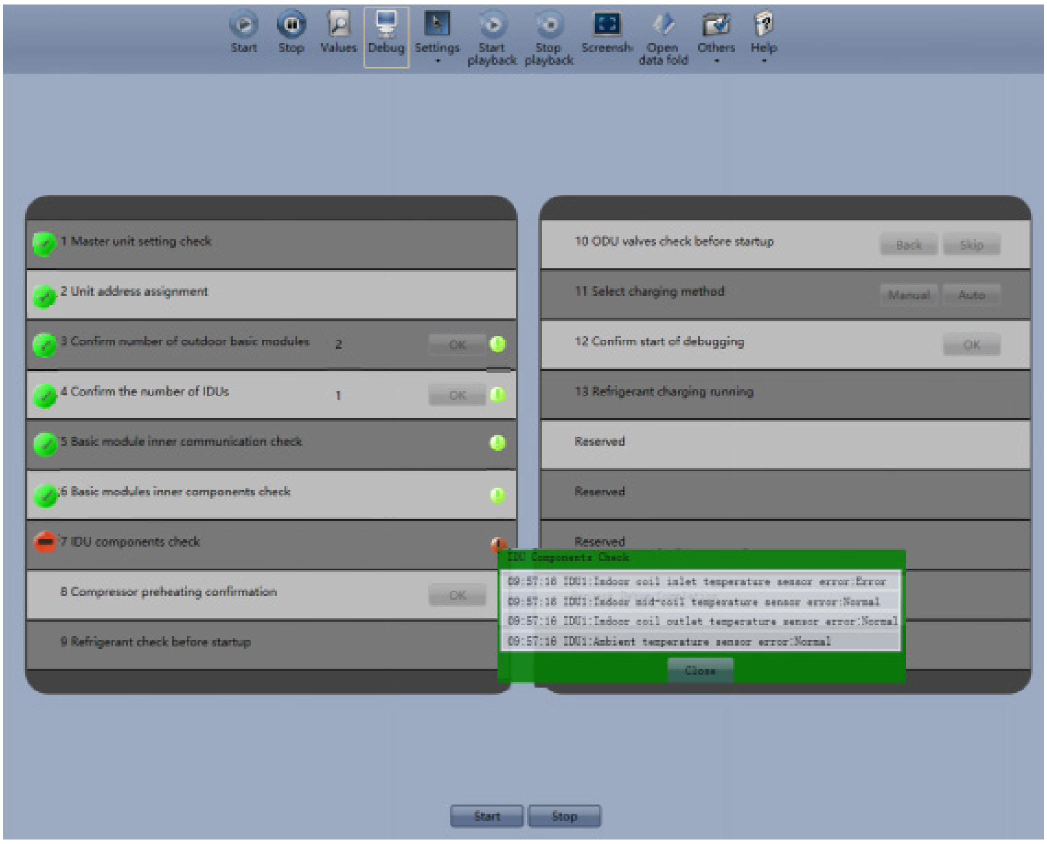
For the phase with "OK" displayed, a manual confirmation is required for entering the next commissioning step. In processes "3 Confirm number of outdoor basic modules" and "4 Confirm the number of IDUs", if the number of online units is consistent with the actual number, click Confirm or wait for 30 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.)



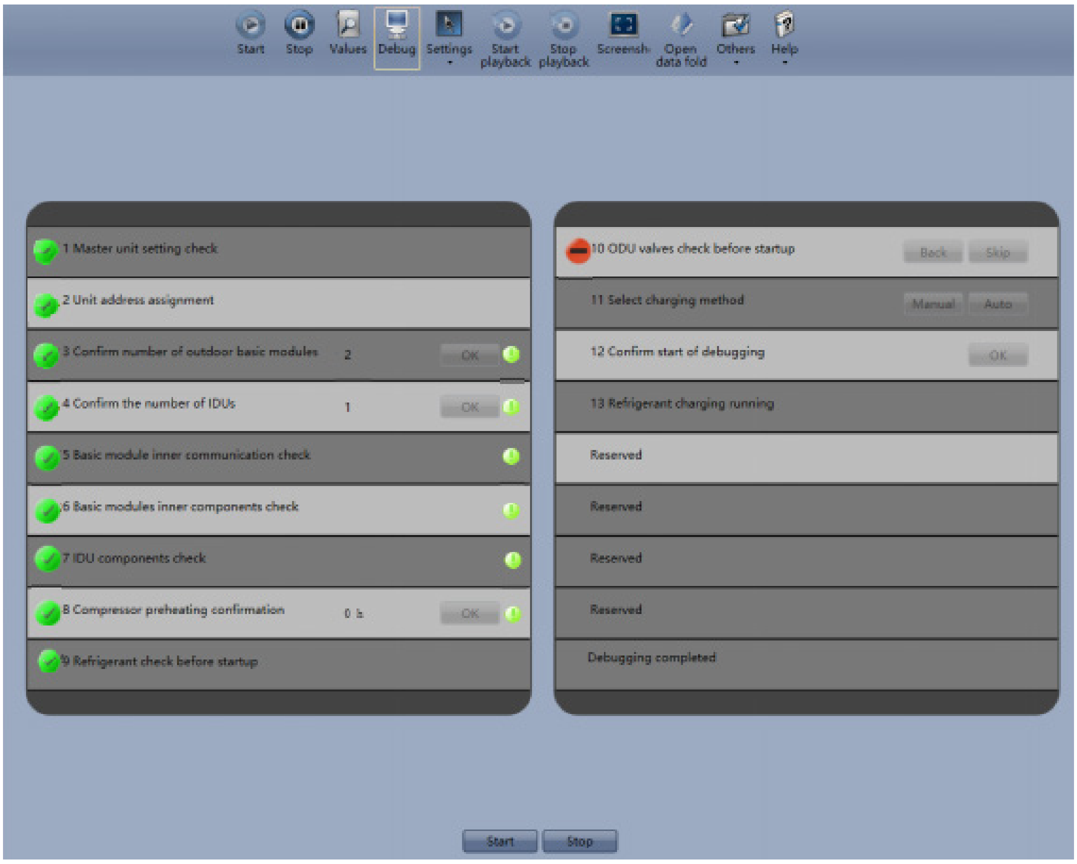
In step “8 Compressor preheating confirmation”, the current preheat time is directly displayed, as shown in the red box in the figure below. If the system currently detects that all the basic modules have been continuously powered on for 2 hours or more, or the previous time when the modules were powered 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).



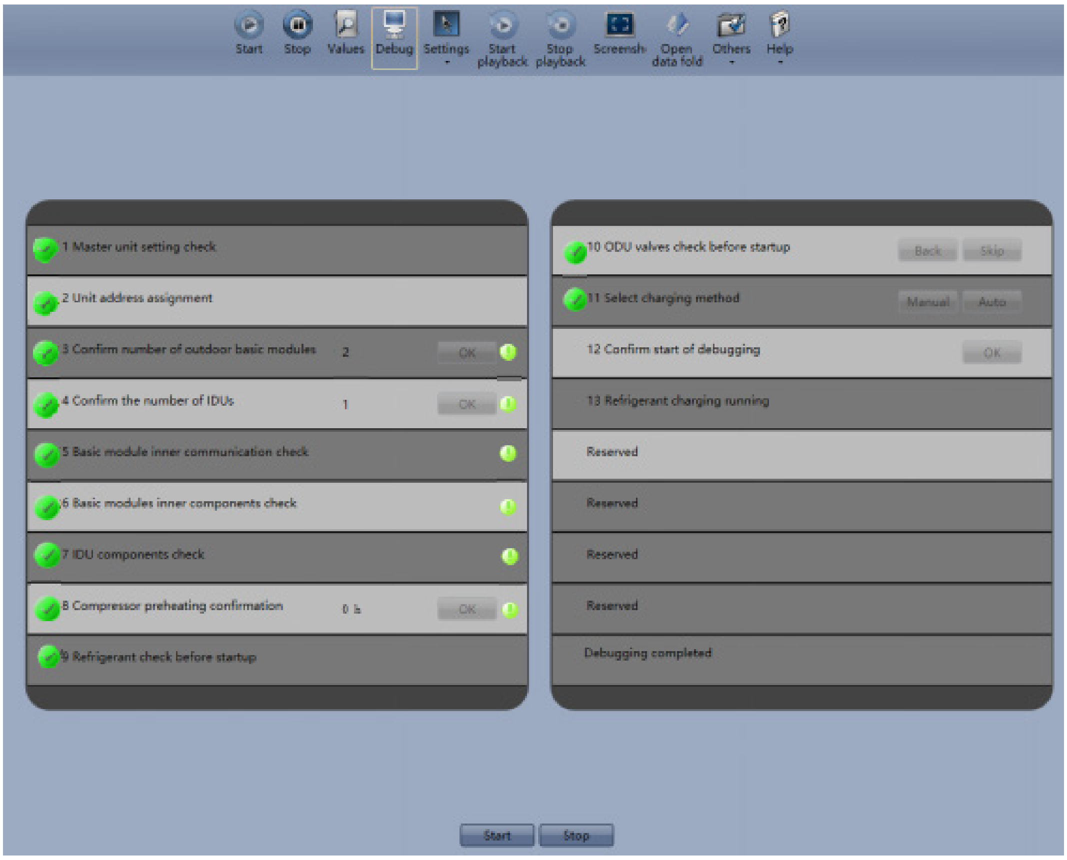
"" indicates that commissioning is not passed on the phase and troubleshooting is required (after troubleshooting, the unit automatically enters the next step if no "OK" exists or click "OK" to enter the next step). Click "" to display relevant information detected on this phase, which provides references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

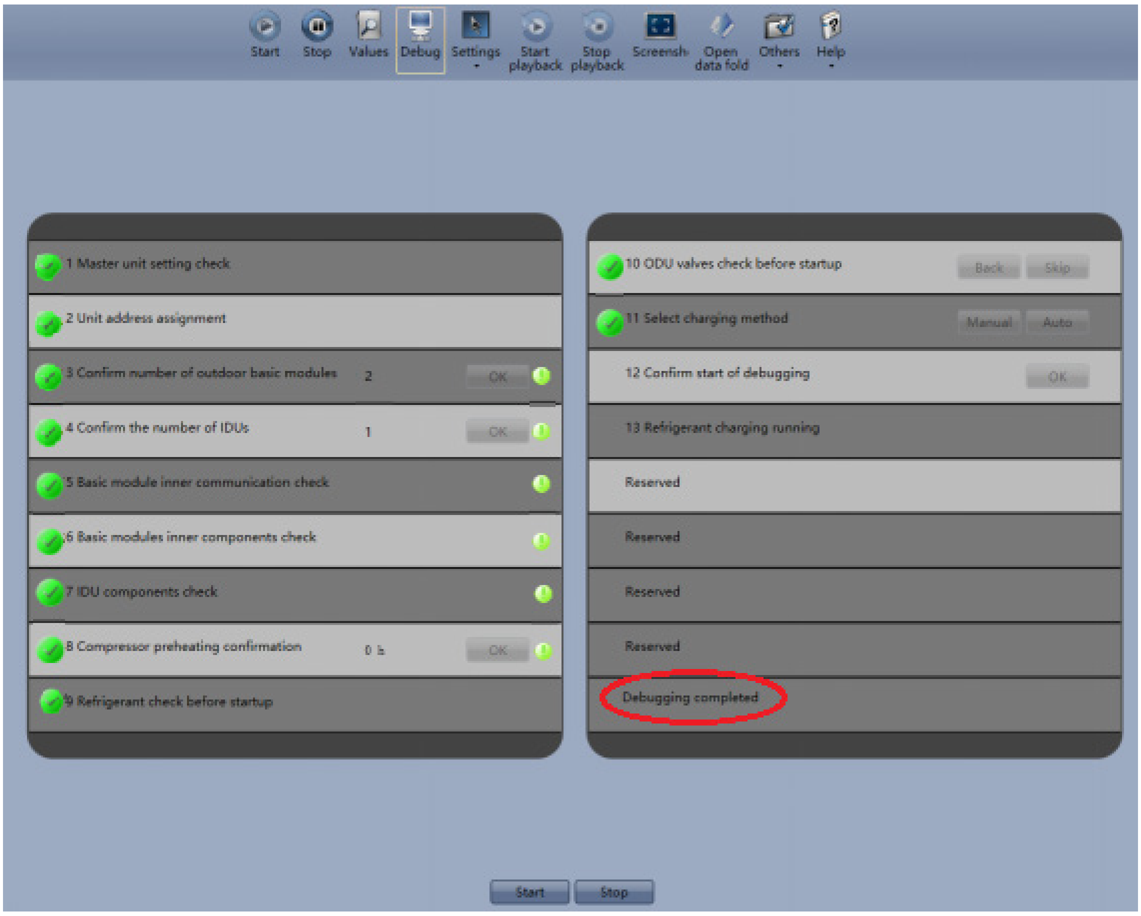


In step "11 Select charging method", the system automatically selects manual or auto charging mode. You can directly choose manual charging. If no operation is performed within 3 minutes, manual charging is automatically entered.



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:

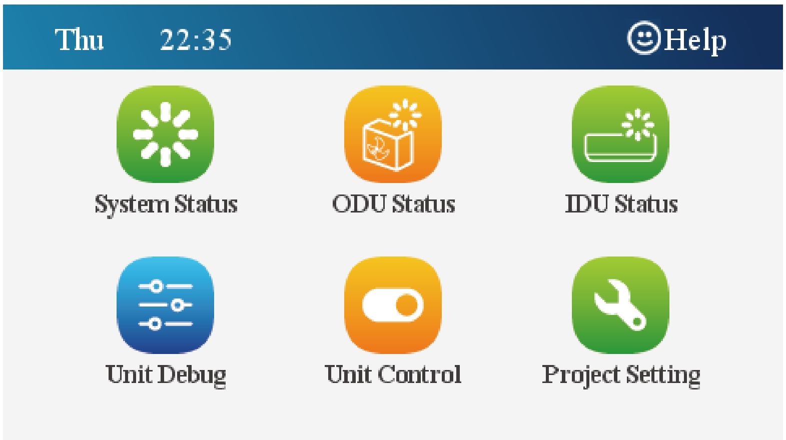
During commissioning, users must listen to the operating sound of outdoor and indoor fans and compressors to check for exceptions.

3.2.2.5 Unit Commissioning by Using Multi-functional Debugger

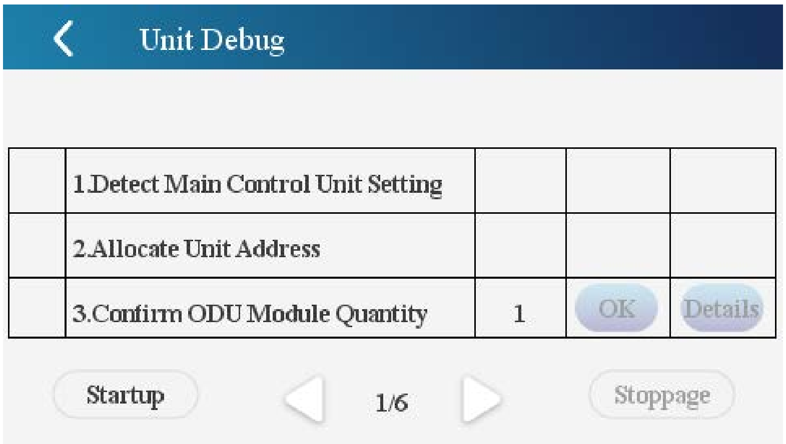
Step 1: Connect multi-functional debugger. For details, see the user manual of multi-functional debugger.

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.

3.2.2.6 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.

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

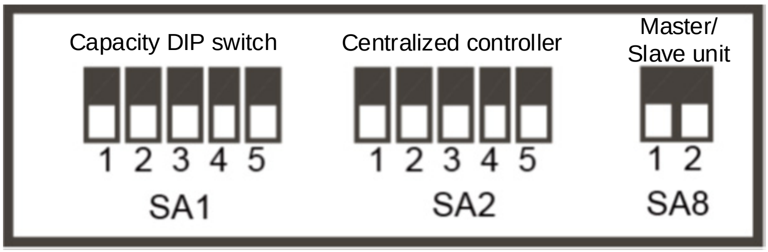
Reference Values of Commissioning Parameters of the DC Inverter VRF Air-conditioning Unit						
No.	Commissioning Item		Parameter Name	Unit	Reference Value	Remarks
1	System parameters	Outdoor unit parameters	Outdoor ambient temperature	°C	—	—
2			Air discharge pipe temperature of inverter compressor 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 expansion valve	PLS	●In cooling mode, the opening of the heating electronic expansion valve is 3000PLS; ●In heating mode, the opening of the electronic expansion valve can be	—

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			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 Outdoor Unit

4.1.1 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.

4.1.1.1 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.

4.1.1.2 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.

4.1.1.3 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.

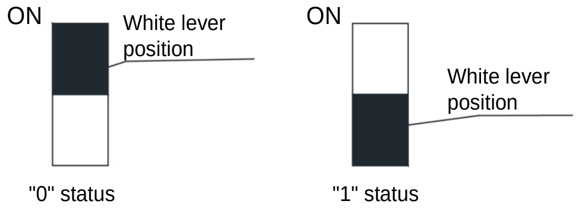
④ When delivered, all modules are in "00" master module status by default.

4.1.1.4 DIP Switch Examples

(1) DIP switch position description

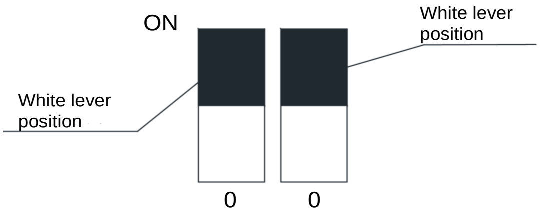
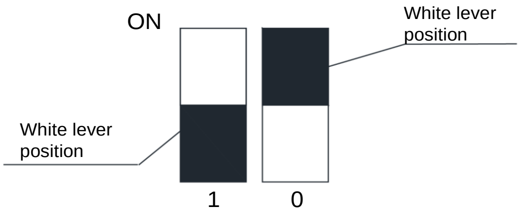
DIP switch at the ON end indicates 0; DIP switch at the other end indicates 1.

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

4.1.2 System Function Operations

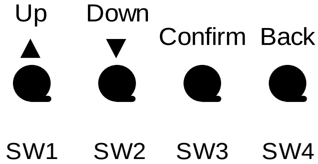
CAUTIONS!

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.

4.1.2.1 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.

4.1.2.2 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	—

4.1.2.3 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
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
1C	Blinks	00	Blinks	00	Blinks	Continuous heating
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
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
1C	On	00	Blinks	00	Blinks	Continuous heating
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.

4.1.2.3.1 "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
GMV-VQ224WM/C-X	6.0
GMV-VQ280WM/C-X	6.0
GMV-VQ335WM/C-X	9.0
GMV-VQ400WM/C-X	8.5
GMV-VQ450WM/C-X	8.5
GMV-VQ504WM/C-X	13.0
GMV-VQ560WM/C-X	13.0
GMV-VQ615WM/C-X	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.

4.1.2.3.2 "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.

4.1.2.3.3 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.

4.1.2.3.4 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.

4.1.2.3.5 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.)

4.1.2.3.6 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.

4.1.2.3.7 n4 Forced Energy Saving Mode

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

Code	Maximum Output Capability
10	100% (default setting)
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.)

4.1.2.3.8 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.

4.1.2.3.9 1G 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.

4.1.2.3.10 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.

4.1.2.3.11 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.

4.1.2.3.12 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.

4.1.2.3.13 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.

4.1.2.3.14 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.

4.1.2.3.15 1C Continuous Heating

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
1C	On	00	Blinks	OC	Blinks

Press the SW1 up button and the SW2 down button to select the continuous heating mode.

LED1		LED2		LED3		Description
Function code	Display status	Current process	Display status	Current status	Display status	
1C	On	00	Blinks	OC	Blinks	Non-continuous heating control
1C	On	01	Blinks	OC	Blinks	Continuous heating 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
1C	On	00	On	OC	On
1C	On	01	On	OC	On

The default value is 00.

4.1.2.3.16 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.

4.1.2.3.17 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.

4.1.2.3.18 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.

4.1.2.3.19 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.

4.1.2.3.20 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.

4.1.2.4 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.

4.1.2.4.1 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.

4.1.2.4.2 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.
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.

4.1.2.4.3 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.

4.1.2.4.4 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.

4.1.2.4.5 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.

4.1.3 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

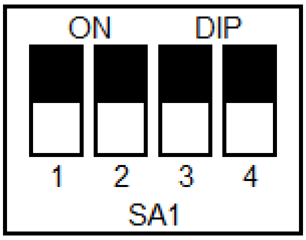
At this time, the system clears all settings, but stores engineering numbers of the indoor and outdoor units, quantities of the indoor and outdoor units, and commissioning completion status.

4.1.4 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.

4.2 Mode Exchange Box

4.2.1 DIP Switch Settings



Code	Name	Meaning	Default Setting	Remarks
SA1	Parallel connection code	Set the parallel control of the box branches	0000	The code is used only for connecting to the indoor unit with capacity of over 16 kW. Otherwise, keep the default setting.

Parallel connection code (SA1) of mode exchange box is used to set the parallel control of the box branches. It is set to 0000 by default.

If all branches connect to indoor units not exceeding 16 kW, keep the default setting of this DIP switch.

If the box needs to connect to the indoor unit with capacity of over 16 kW, it must use two branches controlled by the same mainboard for parallel connection. Set the DIP switch and connect the communication line of the indoor unit as blow.

SA1				Parallel connection	Indoor unit communication connection for mode exchange box
DIP1	DIP2	DIP3	DIP4		
1	0	0	0	Indoor unit No.1 and No.2	“1D1 1D2” or “2D1 2D2”
0	1	0	0	Indoor unit No.2 and No.3	“2D1 2D2” or “3D1 3D2”
0	0	1	0	Indoor unit No.3 and No.4	“3D1 3D2” or “4D1 4D2”
0	0	0	1	Indoor unit No.1 and No.2 Indoor unit No.3 and No.4	“1D1 1D2” or “2D1 2D2” “3D1 3D2” or “4D1 4D2”

4.3 Hydro Box

4.3.1 Capacity DIP Switch Settings(S1)

Capacity DIP switch S1 is 5 bit. Please do not change it.

Capacity of hydro box(kW)	Capacity DIP switch				
	1	2	3	4	5
16	ON	OFF	OFF	ON	OFF
30	OFF	ON	OFF	ON	OFF

Notes:

① DIP switch at the ON end indicates 0;

② DIP switch at the other end indicates 1;

4.3.2 Function DIP Switch Settings (S2)

Function DIP switch S2 is 4 bit. “1”, “2”, and “3” stand for “Water tank”, “Floor heating” and “Solar power” respectively. Each function DIP is as below: Setting to “number” means this function is connected; setting to “ON” means this function is not connected. “1” , “2” and “3” must be set according to the actual status of project. “4” cannot be changed. Otherwise, the unit may occur temperature sensor malfunction or cannot operate.

DIP sequence	Meaning	DIP		Ex-factory setting
		Not connected	Connected	
1	Gree water tank	ON	OFF	OFF
2	Floor heating	ON	OFF	OFF
3	Solar power	ON	OFF	ON
4	NULL	ON	OFF	ON

4.3.3 Wire Controller Function Settings (S2)

Operation Notices：

■The power supply for all hydro box must be unified.

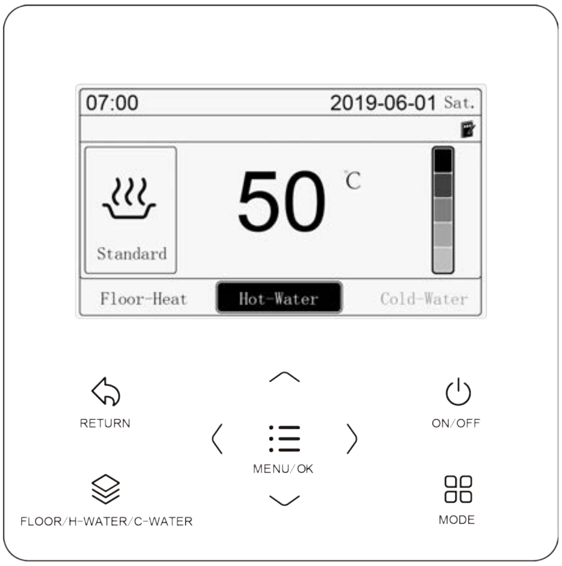
■Prohibit installing the wired controller at wet or sunshine places.

■Do not knock, throw or frequently disassemble the wired controller.

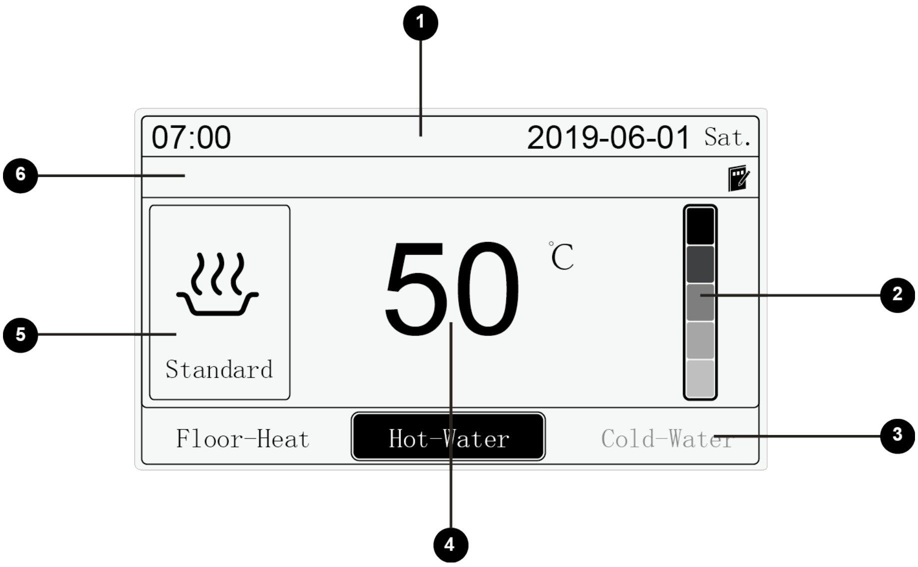
■Do not operate the wired controller with wet hands.

■When two wired controllers control one (or more) hydro box(es), the address of wired controller should be different.

The appearance of wire controller is shown below：



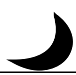
4.3.3.1 LCD of Wired Controller

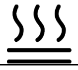
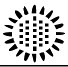
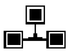


Instruction for LCD of wired controller as follows:

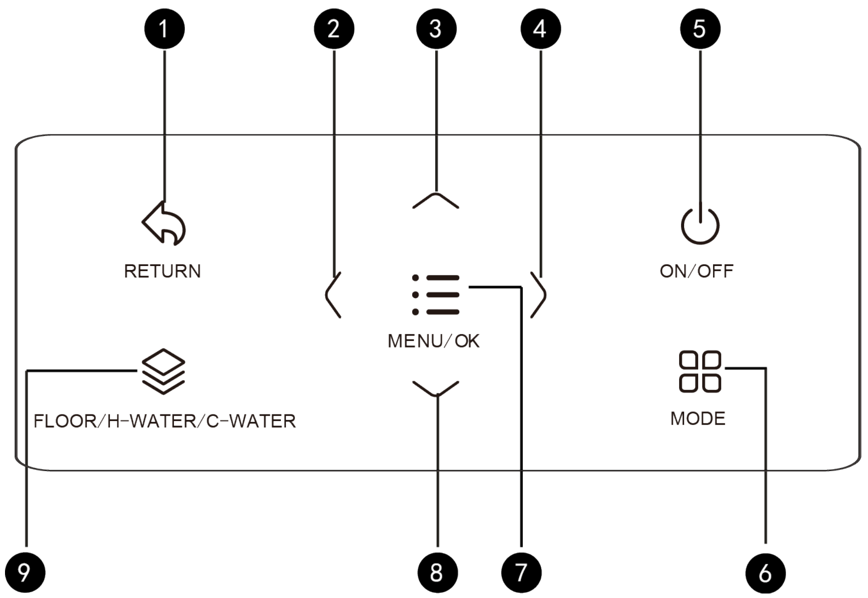
No.	Name	Instruction
1	Time column	Display date and time
2	Available hot water	The proportion of available hot water for the current user is displayed according to the state in the frame for available hot water; it is displayed only at the interface for hot water
3	Interface mark	Current interface and startup status of floor heating and hot water
4	Temperature area	Display water tank temperature, outlet water temperature or set temperature
5	Mode	Display floor heating or hot water mode
6	Status	Display current status and function of the unit

Instruction for wired controller icon as follows：

Icon	Name	Instruction
	Standard hot water	It means the current mode is the standard hot water mode
	Night hot water	It means the current mode is the night hot water mode

Icon	Name	Instruction
	Standard floor heating	It means the current mode is the standard floor heating mode
	Schedule	Display when schedule function is enabled
	Memory	Memory status (when the unit is re-energized after power failure, the indoor unit will resume to the setting status)
	Sun-flower	It is displayed when the sun-flower function is valid
	High-temp sterilization	The icon will light up when the high-temp sterilization function is valid and will be blinking under sterilization
	Auto function	The corresponding interface will display this icon when automatic floor heating water temp. setting or automatic hot water temp. setting function is valid
	Rapid heat function	The corresponding interface will display this icon when rapid floor heating or rapid water heating function is valid
	Solar	It is displayed when the hydro box is connected to solar energy; Flicker when solar power is on work
	Shield	It means the wired controller is in shielding status
	Group control	It displays when a wired controller controls several hydro boxes at the same time
	Slave wired controller	It means the wired controller is the slave wired controller
	Cycle	Running status of the back water pump
	Anti-freeze	It displays under anti-freezing status
	E-heater	It displays when the auxiliary electrical heating is on
	Child lock	It means the wired controller is in child lock status
	Defrost	It displays if the ODU is in defrosting status
	Invalid operation	It displays when the operation is invalid
NOTE： When wired controller is connected with different hydro boxes, some functions will be different.		

4.3.3.2 Button Graphics



Function instruction of buttons as follow：

Button No.	Button name	Button function
1	RETURN	Return to the previous interface
3	Up	Set water temperature; Move the cursor; Set or view parameters
8	Down	
2	Left	Turn page; Move the cursor; Set or view parameters
4	Right	
5	ON/OFF	Turn on/off hot water or floor heating function; return to the home page
6	MODE	Under hot water interface, it is used to switch the operation mode of hot water function
7	MENU/OK	Enter menu or confirm the set
9	FLOOR/H-WATER /C-WATER	Under home page, it is used to switch floor heating and hot water interface (The cold water function is reserved, and it is temporarily impossible to switch to the cold water interface)
3+8	Child lock	Simultaneously press “ Up ” and “ Down ” for 5s to enter or cancel the Child Lock function

4.3.3.3 Function Setting

Under hot water or floor heating interface and press “MENU/OK” button to enter corresponding function menu, e.g., under hot water interface, press “MENU/OK” button to enter hot water menu, select “Function” in menu to enter hot water function setting interface.

Under ON/OFF status, the available function for hot water is as follow:

ON/OFF	Function
Standard hot water mode	Sun-flower, automatic hot water temp. setting, high-temp sterilization and rapid water heating
Preset hot water mode	Automatic hot water temp. setting, high-temp sterilization and rapid water heating
Night hot water mode	Automatic hot water temp. setting, high-temp sterilization and rapid water heating
OFF	Clean

Under ON/OFF status, the available function for floor heating is as follow:

ON/OFF	Function
ON	Automatic floor heating water temp. setting and rapid floor heating
OFF	Clean

Switch the function through “Up” or “Down” button, press “MENU/OK” button to start or shut down corresponding function, “◉” means the function has started, “○” means the function has shut down. Press “RETURN” button to save the setting and return to the previous interface. Select the item(High-temp sterilization/Automatic floor heating water temp. setting) with “◢” icon, press “MENU/OK” button will enter corresponding function setting interface.

4.3.3.3.1 Sun-flower Function

Introduction: Find out the highest outdoor temperature in a day through recording historical outdoor data to confirm hot water heating time to reach the purpose of energy conservation.

Setting steps: Enter hot water function setting interface，press “Up” or “Down” button to select “Sun-flower”, press “MENU/OK” button to start or shut down “Sun-flower” function.

4.3.3.3.2 Automatic Hot Water Temp. Setting Function

Introduction: Temperature setting of hot water will be decided by the main board according to outdoor ambient temperature, it’s no need for the user to set it.

Setting steps: Enter hot water function setting interface，press “Up” or “Down” button to select “Automatic Hot Water Temp. Setting”, press “MENU/OK” button to start or shut down “Automatic Hot Water Temp. Setting” function.

4.3.3.3.3 High-temp Sterilization Function

Introduction: The water temperature of the water tank is required to be heated to 65 to 70℃ (configurable) in the preset time for high-temperature sterilization. (Can only be set when the hot water is turned on).

If the number of high-temp sterilization cycle days is 0, high temperature sterilization setting is valid for once, preset time setting for high temperature sterilization is not available. After setting, high temperature sterilization will be implemented immediately. High temperature sterilization will be shut down after that.

If the number of high-temp sterilization cycle days is over 0, the circulation for high temperature sterilization setting is valid. The user can preset high temperature sterilization, the unit will be operated circularly according to the preset time.

Setting steps: Enter the hot water function setting interface, press “Up” or “Down” button to select “ High-temp sterilization”, then press “MENU/OK” button to enter high temperature sterilization setting interface, as shown below:

Select “ON/OFF” and press “MENU/OK” button to start or shut down high temperature sterilization function.

Select “Water temp.” set for high-temp sterilization”, press “MENU/OK” button to enter the setting interface, press “Up” or “Down” button to adjust the sterilization temperature, press “MENU/OK” button to save setting and return to the previous page, or press “RETURN” button to cancel setting and return to the previous page.

Select “Preset time set for high-temp sterilization” to enter the setting interface, press “Up” or “Down” button to adjust time value, press “Left” or “Right” button to switch time unit, press “MENU/OK” button to save setting and return to the previous page, or press “RETURN” button to cancel setting and return to the previous page.

NOTE: Defaulted ex-factory setting for high-temp sterilization cycle days is 0.

4.3.3.3.4 Rapid Water Heating Function

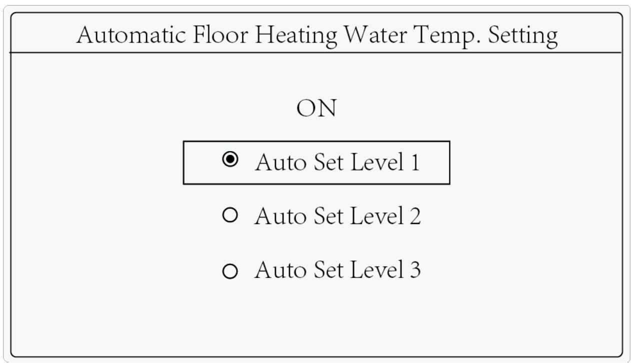
Introduction: Under the allowable condition of outdoor unit, start the compressor and electrical heater to speed up water heating.

Setting steps: Enter hot water function setting interface，press “Up” or “Down” button to select “Rapid water heating”, press “MENU/OK” button to start or shut down “Rapid water heating” function.

4.3.3.3.5 Automatic Floor Heating Water Temp. Setting Function

Introduction: Water outlet temperature of floor heating will be decided by the main board according to outdoor ambient temperature, it’s no need for the user to set it.

Setting steps: Enter floor heating function setting interface, press “Up” or “Down” button to select “Automatic Floor Heating Water Temp. Setting”, press “MENU/OK” button to enter setting interface, as shown below：



Select “ON/OFF” and press “MENU/OK” button to start or shut down automatic floor heating water temp. setting function.

Select “Auto set level 1/2/3” and press “MENU/OK” button to set auto setting level for floor heating. The higher the auto setting level is, the higher water outlet temperature will be. The user can select proper auto setting level according to their own usage habits.

4.3.3.3.6 Rapid Floor Heating Function

Introduction: Under the allowable condition of outdoor unit, start the compressor and electrical heater(engineering options) to speed up heating.

Setting steps: Enter floor heating function setting interface，press “Up” or “Down” button to select “Rapid water heating”, press “MENU/OK” button to start or shut down “Rapid water heating” function.

4.3.3.3.7 Clean Function

Introduction: Start the water pump, which is used for engineering evacuation, water line cleaning, etc.

Setting steps: Enter function setting interface to start cleaning when hot water and floor heating function is off. After starting clean function, “Clean” icon will be on, during cleaning process, “Clean” icon will blink.

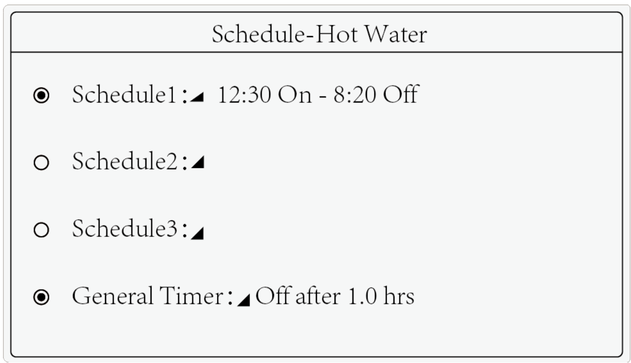
4.3.3.3.8 Child Lock

Setting steps: Simultaneously pressing the “Up” and “Down” buttons for 5s when it is on or off with no fault, the wired controller will enter child lock state, and the LCD display will show the icon of “🔒”; Press “Up” and “Down” button for 5s again to exit child lock state.

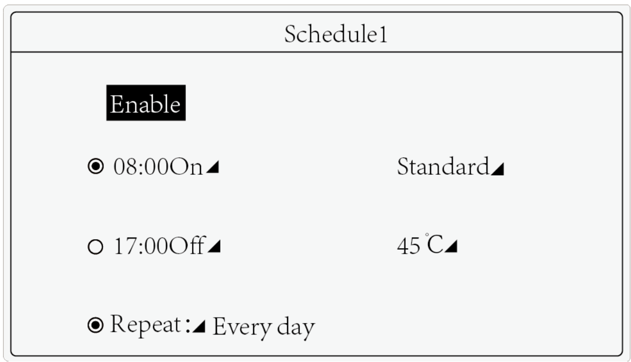
The other buttons will not response in the child lock state.

4.3.3.3.9 Schedule Function

Setting steps: Under hot water or floor heating interface, press “MENU/OK” button to enter menu, then select “Schedule” to enter schedule setting interface of corresponding function, e.g., under hot water interface, press “MENU/OK” button to enter menu and select “Schedule” to enter schedule interface of hot water function, as shown below. “◉” displayed on the left of schedule item means schedule function has enabled, “O” means schedule function has disabled.



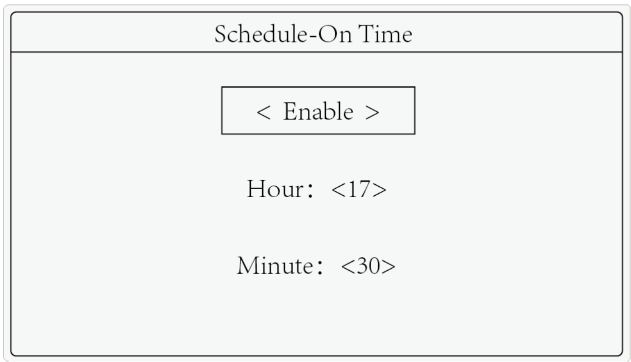
（1）In schedule interface, press “Up” or “Down” button to switch item, select “Schedule 1”, “Schedule 2” or “Schedule 3” to enter schedule setting interface, as shown below (take schedule 1 as an example).



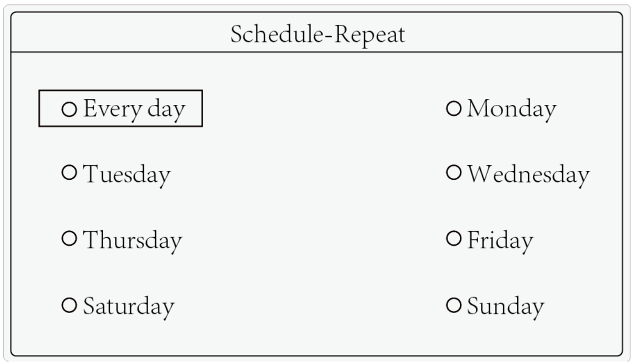
In schedule 1 interface, switch item through “Up” or “Down” button, when choosing the first item, press “MENU/OK” button to start or shut down schedule 1; when choosing the other items, press “MENU/OK” button to enter corresponding setting interface.

After entering mode or temperature setting interface, the user can set the mode or temperature for timer startup;

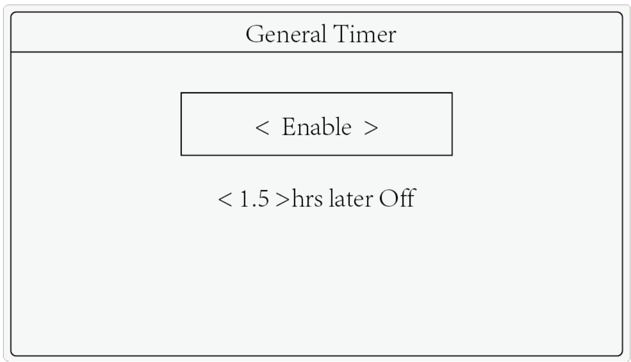
Set On/Off time only if timer on/off is needed. If both timer on/off is needed at the same time, set On/Off time at the same time. On time setting interface as shown below. In On/Off time setting interface, switch items through “Up” or “Down” button and press “Left” or “Right” button to switch On/Off time or adjust the time, press “MENU/OK” button to save setting and return to the previous page.



In schedule 1 interface, select “Repeat” to enter the setting interface as shown below to set the effective time for repeated timer, switch items through “Up” or “Down” button and press “MENU/OK” button to confirm/cancel corresponding item, then press “RETURN” button to save setting and return to the previous page.



（2）In schedule interface, switch items through “Up” or “Down” button and select “General timer” to enter timer countdown setting interface, as shown below. Under ON status, you can set countdown time for shutdown. Under OFF status, you can set countdown time for startup.



Switch items through “Up” or “Down” button and press “Left” or “Right” button to switch On/Off time or adjust the time, then press “MENU/OK” button to save setting and return to the previous page.

NOTES:

① To ensure time accuracy, before setting timer, please check if the system time is the current date and time first, if it is not correct, please reset date and time in “Date&Time” setting interface.

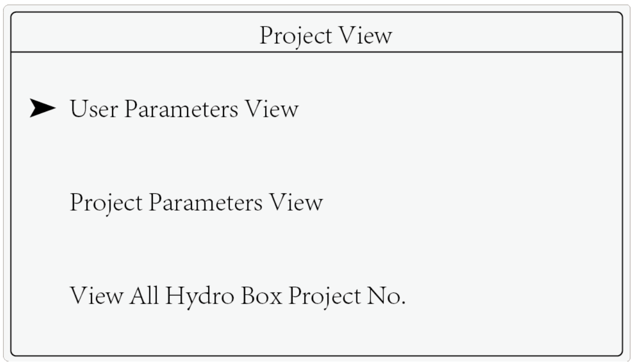
② For floor heating function, only standard mode is available, so timer on mode is not settable.

4.3.3.4 Parameter Inquiry and setting

4.3.3.4.1 Parameter Inquiry

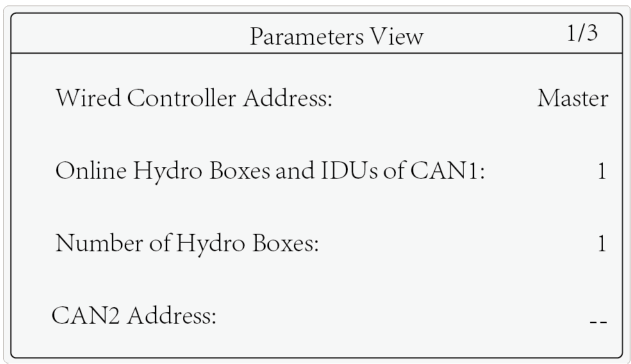
Parameters can be viewed under both ON and OFF status.

Press “MENU/OK” button on homepage to enter menu, then select “View” to enter inquiry interface. In inquiry interface, select “Project View” to enter project inquiry interface,as shown below.

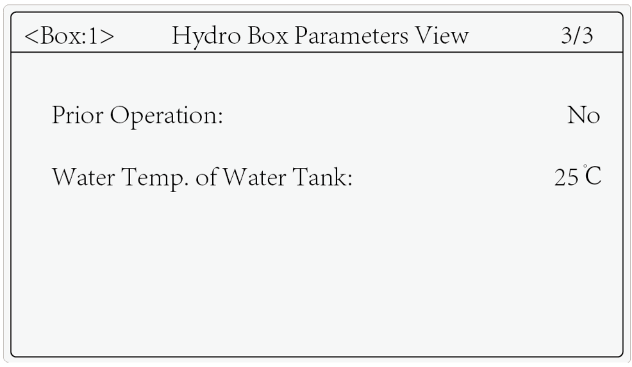


Parameter inquiry:

Parameter inquiry includes “Project Parameters View” and “User Parameters View”, project parameters view is used by the engineer in commissioning, the password shall be verified (password: 000000). In project inquiry interface, select “User Parameters View” to enter user parameters view interface as shown below.



When inquiring the parameter of hydro box, if there are several hydro boxes, press “Left” or “Right” button to switch them, the interface will display the parameters of corresponding hydro box, as shown below.



(1)User parameters view list:

Parameter name	Parameter range	Instruction
Wired controller address	Master(01) Slave(02)	Display the wired controller address
Online hydro boxes and IDUs of CAN1	1-80	Display the total quantity of IDUs and hydro boxes
Number of hydro boxes	1-3	Display the quantity of hydro boxes controlled by the wired controller
CAN2 Address	1-255	Display CAN2 address
ODU Amb Sensor Temp. Query	—	Display outdoor ambient temperature value
Prior Operation	00:Non-priority operation 01:Priority operation	If current hydro box is operated preferentially (hydro box parameter, press “Left” or “Right” button to switch hydro box)
Water Temp. of Water Tank	0-100℃	Hot water temperature value of water tank of current hydro box (hydro box parameter, press “Left” or “Right” button to switch hydro box)

NOTE：

If the parameter is invalid value, it displays “--”.

(2)Project Parameters view list:

Parameter name	Parameter range	Instruction
Wired controller address	Master(01) Slave(02)	Display the wired controller address
Online hydro boxes and IDUs of CAN1	1-80	Display the total quantity of IDUs and hydro boxes
Number of hydro boxes	1-3	Display the quantity of hydro boxes controlled by the wired controller
CAN2 Address	1-255	Display CAN2 address
ODU Amb Sensor Temp. Query	—	Display outdoor ambient temperature value
Water Temp. of Water Tank	0-100°C	Hot water temperature value of water tank of current hydro box (hydro box parameter, press “Left” or “Right” button to switch hydro box)
Max Distribution Ratio	35、50、10	

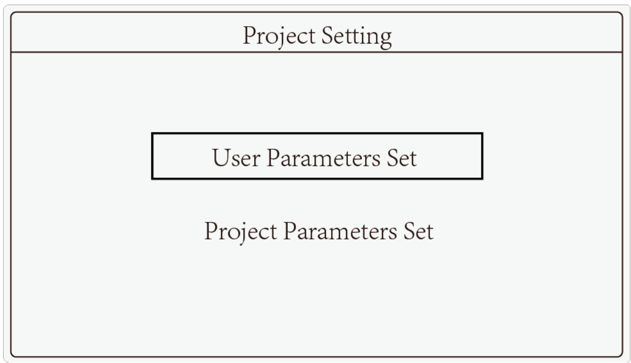
Parameter name	Parameter range	Instruction
Cool&Heat Modes	nA（Cool&Heat）、nC（Cool）、nH（Heat）、nF（Air supply）	
Capacity of Water Tank	150~3500	
Error Log of Hydro Box	five error log	
Prior Operation	00:Non-priority operation 01:Priority operation	
Temp. of Refrigerant Inlet Tube Temp. Sensor of Hydro Box	-30～138°C	
Temp. of Refrigerant Outlet Tube Temp. Sensor of Hydro Box	-30～138°C	
EXV Status of Hydro Box	0～20	
Temp. of Inlet Water Temp. Sensor of Hydro Box	-30～138°C	
Temp. of outlet Water Temp. Sensor of Hydro Box	-30～138°C	
Water Temp. of Water Tank	0-100°C	Current water temperature of hot water inside the water tank (parameters of hydro box, press “left” or “right” button to switch the hydro box).
Unit Code of Hydro Box	-	
ODU Static Pressure	0：0Pa 20：20Pa 50：50Pa 80：80Pa	
Outdoor Temp	-30~139°C	
Comp1 Operation Freq	0~120Hz	
Comp2 Operation Freq	0~120 Hz	
ODU Fan Operation Freq	0~70 Hz	
Module High Pressure	-40~70°C	
Module Low Pressure	-69~38°C	
Comp1 Discharge Temp	-30~150°C	
Comp2 Discharge Temp	-30~150°C	

Parameter name	Parameter range	Instruction
Comp3 Discharge Temp	-30~150°C	
Comp4 Discharge Temp	-30~150°C	
Comp5 Discharge Temp	-30~150°C	
Comp6 Discharge Temp	-30~150°C	
Comp3 Operation Freq	0~120 Hz	
ODU Heating EXV1	Display integer with the actual value divided by 10	
ODU Heating EXV2	Display integer with the actual value divided by 10	
Subcooler EXV	Display integer with the actual value divided by 10	
Defrosting Temp	-30~139°C	
Subcooler Liquid Temp	-30~139°C	
Separator Outlet Temp	-30~139°C	
Oil Return Temp	-30~139°C	
Condenser Inlet Temp	-30~139°C	
Condenser Outlet Temp	-30~139°C	

4.3.3.4.2 Parameter Setting

Parameters can be set under both ON and OFF status.

Press "MENU/OK" button on homepage to enter menu and select "Set" to enter setting interface; in setting interface, select "Project Setting" to enter project setting interface, as shown below.



Parameter setting includes "User parameters Set" and "Project parameters set", "Project parameters set" is used by the engineer in project setting, password shall be verified (password: 000000). "User parameters Set" is for the user and shall be set under the guidance of professionals, otherwise, the system might not function normally, please refer to Table below "User parameter setting list”. Press “Up” or “Down” button to select parameter, press “MENU/OK” button to enter corresponding parameter setting interface, press “Up” or “Down” button to adjust parameter value and press “MENU/OK” button to complete setting.

Press “Left” or “Right” button for page turning.

(1) User parameters setting list:

Parameter name	Parameter range	Default value	Note
Address Setting for Dual Wired Controller	01:Master wired controller 02:Slave wired controller	01	When two wired controllers control a set of (several) hydro box(es) at the same time, the address of the two wired controller shall be different. Apart from setting the address of this wired controller, the slave wired controller (address 02) has no parameter setting function.
Number of hydro box	00:This function is prohibited 01-03:Quantity of hydro box	01	Set corresponding value according to the quantity of the connected hydro box.
Prior Operation	00:Non-priority operation 01:Priority operation	00	When power supply is insufficient, set the operated hydro box preferentially for ON/OFF operation, the other hydro boxes will be off compulsorily.
Standby keep warm function of water tank	00:Allowed 01:Not allowed	00	—
Standby keep warm function setting of water tank	35-46˚C	42˚C	—
Sunflower keep warm water temp. setting	35-50˚C	40˚C	—
Automatic water temp. Correction of hot water	-2-8˚C	0˚C	—
High-temp sterilization cycle days	0-60	0	When it is 0, high temperature sterilization function is valid for once and will not conduct circulating operation.
Advance startup time of high-temp sterilization	0-3 hours	1	—
Hot water E-heater setting for normal operation	00:Allowed 01:Not allowed	00	—
Automatic heat recovery is allowed or not	00:Allowed 01:Not allowed	00	—
Automatic heat recovery water temp. setting	35-46˚C	42˚C	—
Rapid heat mode setting	00:Allowed 01:Not allowed	01	—
Floor heating E-heater setting	00:Allowed 01:Not allowed	00	—
Max. outlet water temp. setting value for floor heating	40-52˚C	45˚C	—

(2) Project parameters setting list：

Parameter name	Parameter range	Default value	Note
Address Setting for Dual Wired Controller	01:Master wired controller 02:Slave wired controller	01	When two wired controllers control a set of (several) hydro box(es) at the same time, the address of the two wired controller shall be different. Apart from setting the address of this wired controller, the slave wired controller (address 02) has no parameter setting function.
Number of Hydro Box	00:This function is prohibited 01-03:Quantity of hydro box	01	Set corresponding value according to the quantity of the connected hydro box.
Memory	00：standby after power failure and being re-energized 01：resume after power failure and being re-energized	01	
Temp. Unit Switchover	00：Degree Celsius 01：Fahrenheit	00	
Clear IDU Error Log	00：Do not clear 01：Clear	00	
Reset User Functions	00：invalid 01：effective	00	
Reset Parameter Setting	00：invalid 01：effective	00	
Max Defrosting Time	10、15、20	15	This is reserved function
Hydro Box Project No. Setting	1~255	-	
Prior Operation	00:Non-priority operation 01:Priority operation	00	When power supply is insufficient, set the operated hydro box preferentially for ON/OFF operation, the other hydro boxes will be off compulsorily.
Reset All Hydro Box Project No.	00：invalid 01：effective	00	
Standby Keep Warm Function of Water Tank	00：Allowed 01：Not allowed	00	—
Standby Keep Warm Function Setting of Water Tank	35-46°C	42°C	—
System Priority Setting	00、01、02、03	00	00: no; 01: air conditioner takes priority；02: water heating takes priority；03: floor heating takes priority；(This is reserved function)
Max. Hot Water Temp. Setting	55～70°C 131~158°F	55°C	
Sunflower Keep Warm Water Temp. Setting	35-50°C	40°C	—
Max. Automatic Water Temp. of Hot Water	40～52°C 104~126°F	55°C	
Min. Automatic Water Temp. of Hot Water	-2～8°C 28~46°F	42°C	
Automatic Water Temp. Correction of Hot Water	-2-8°C	0°C	—
High-temp Sterilization Cycle Days	0-60	0	When it sets 0, the high-temperature sterilization function is valid for once after setting, and will not operate circularly.
Advance Startup Time of High-temp Sterilization	0-3hours	1	—
Hot Water E-heater Setting for Normal Operation	00：Allowed 01：Not allowed	00	—

Parameter name	Parameter range	Default value	Note
Hot Water E-heater Setting for ODU Fault	00：Allowed 01：Not allowed	00	
Automatic Heat Recovery is Allowed or Not	00：Allowed 01：Not allowed	00	—
Automatic Heat Recovery Water Temp. Setting	35-46°C	42°C	—
Water Tank Capacity Setting	150~3500L	300L	
Defrosting Method Setting	00：Be allowed the water tank to participate in defrosting 01：Be not allowed the water tank to participate in defrosting.	00	This is reserved function
Delayed Preset Time	1～4hours	2	
Preset Time Correction	0～3 hours	1	
Startup Interval of Backwater Pump	0.5～10 hours	2	
Running Time of Backwater Pump	1～10min	2	
Lower Speed Limit X for Cooling/Water Heating	5～30°C 41~86°F	5～30°C	
Upper Speed Limit X for Cooling/Water Heating	10～50°C 50~122°F	10～50°C	
Compensation Value Z for Cooling/Water Heating	5～60°C 41~140°F	5～60°C	
Lower Speed Limit M for Cooling/Water Heating	5～30°C 41~86°F	5～30°C	
Upper Speed Limit N for Cooling/Water Heating	10～50°C 50~122°F	10～50°C	
Compensation Value L for Cooling/Water Heating	5～60°C 41~140°F	5～60°C	
Floor Heating Capacity Setting	05～45（As same with main board）	Default setting on main board	Set value≤Setting value on main board
Rapid Heat Mode Setting	00：Allowed 01：Not allowed	01	—
Max. Automatic Water Temp. for Floor Heating	26～Max. Outlet Water Temp. Setting for Floor Heating	45	
Min. Automatic Water Temp. for Floor Heating	25～Max. Outlet Water Temp. Setting for Floor Heating	30	
Automatic Water Temp. Correction for Floor Heating	-2～8°C	0	
Floor Heating E-heater Setting	00：Allowed 01：Not allowed	00	—
Max. Outlet Water Temp. Setting for Floor Heating	40-52°C	45	—
Min. Outlet Cold Water Temp. Setting	5～25°C	10	This is reserved function
Forcible Defrost	00：Does not enter defrost 01：Force into defrost	00	

Parameter name	Parameter range	Default value	Note
Defrosting Cycle K1	50：K1=50min 40：K1=40min 60：K1=60min	50	
System Energy-Saving	00：Disable 01：Enable	00	
ODU Quiet	00: No silent mode 01～09:Intelligent night silent mode1 to 9 10～12：Forced silent mode1 to 3	01	This is reserved function
Capacity Upper Limit	10：100% 09：90% 08：80%	10	

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)
	Ln	Lifting panel return air frame reset error	—	—
	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.

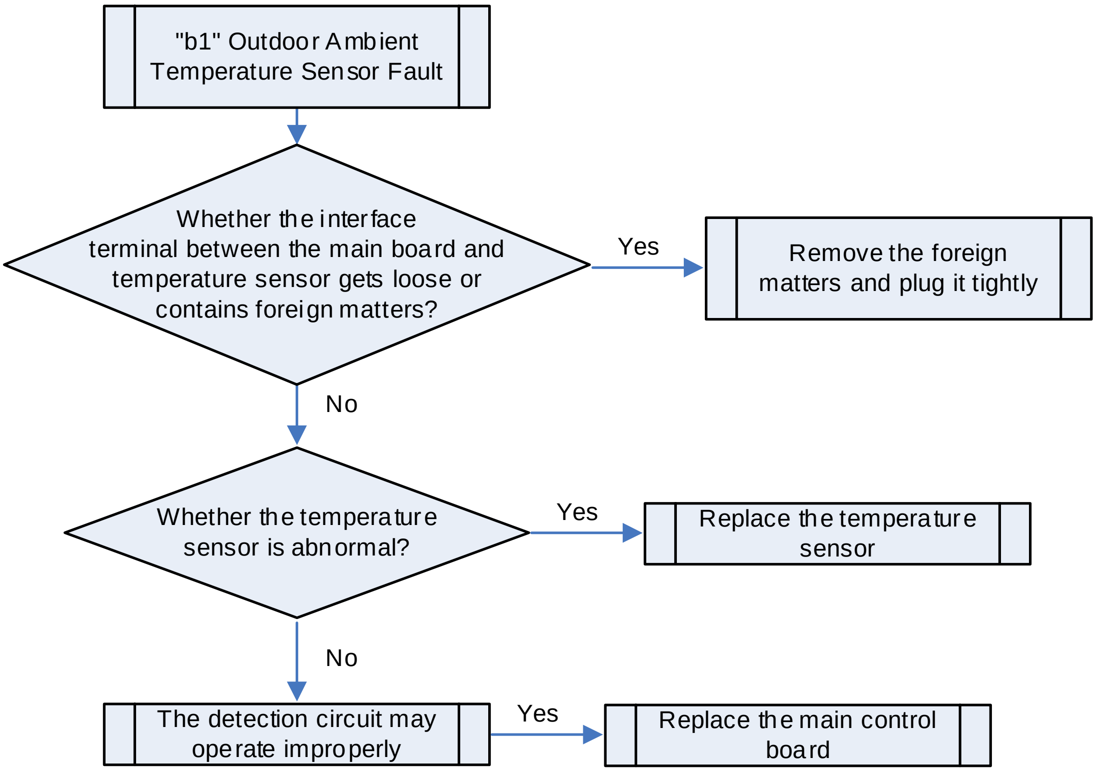
Possible causes:

■ 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.

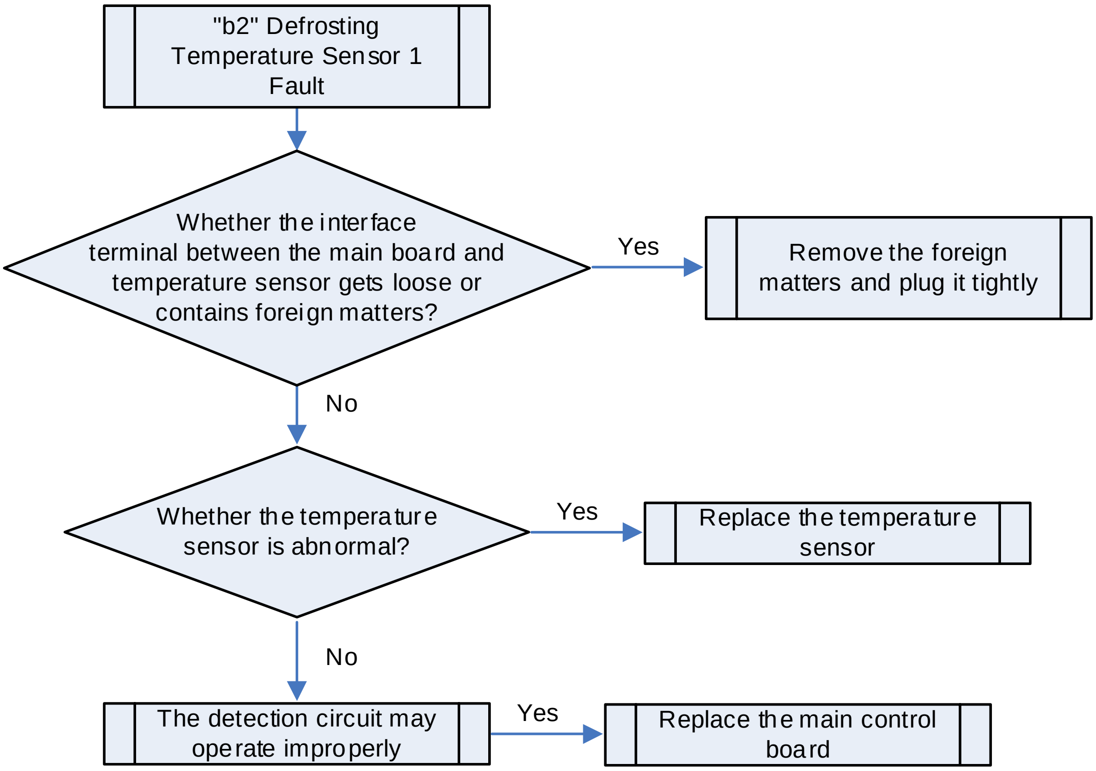
Possible causes:

■ 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.

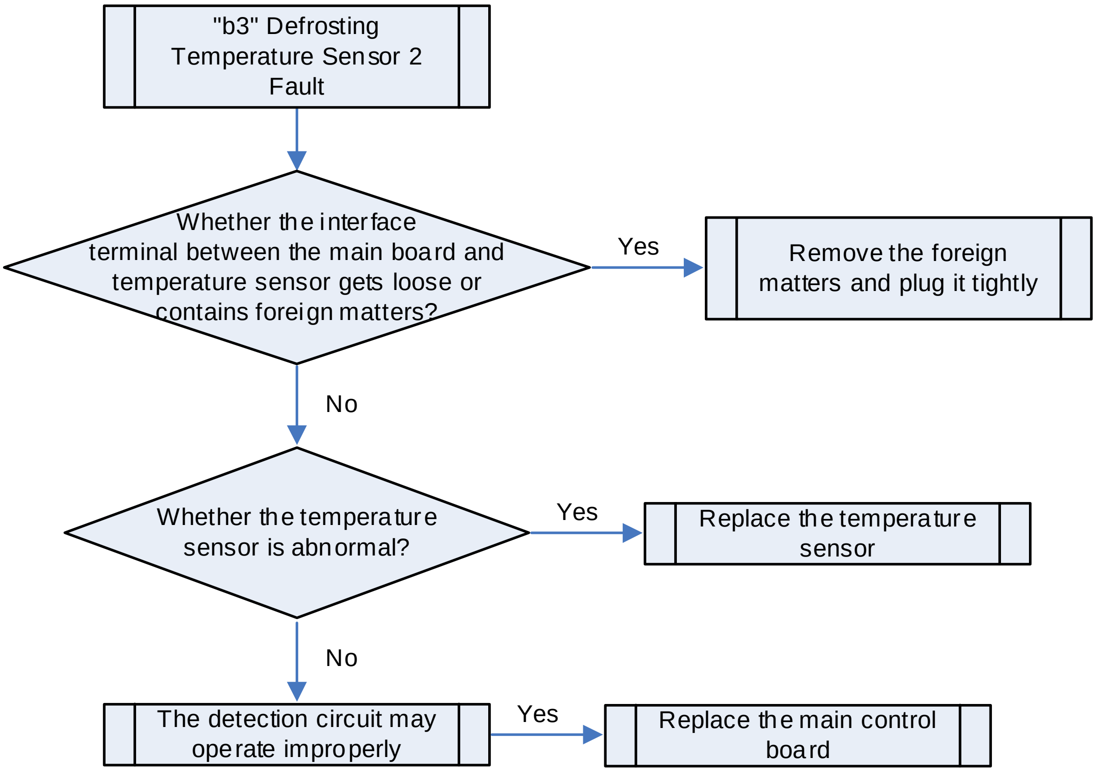
Possible causes:

■ 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.

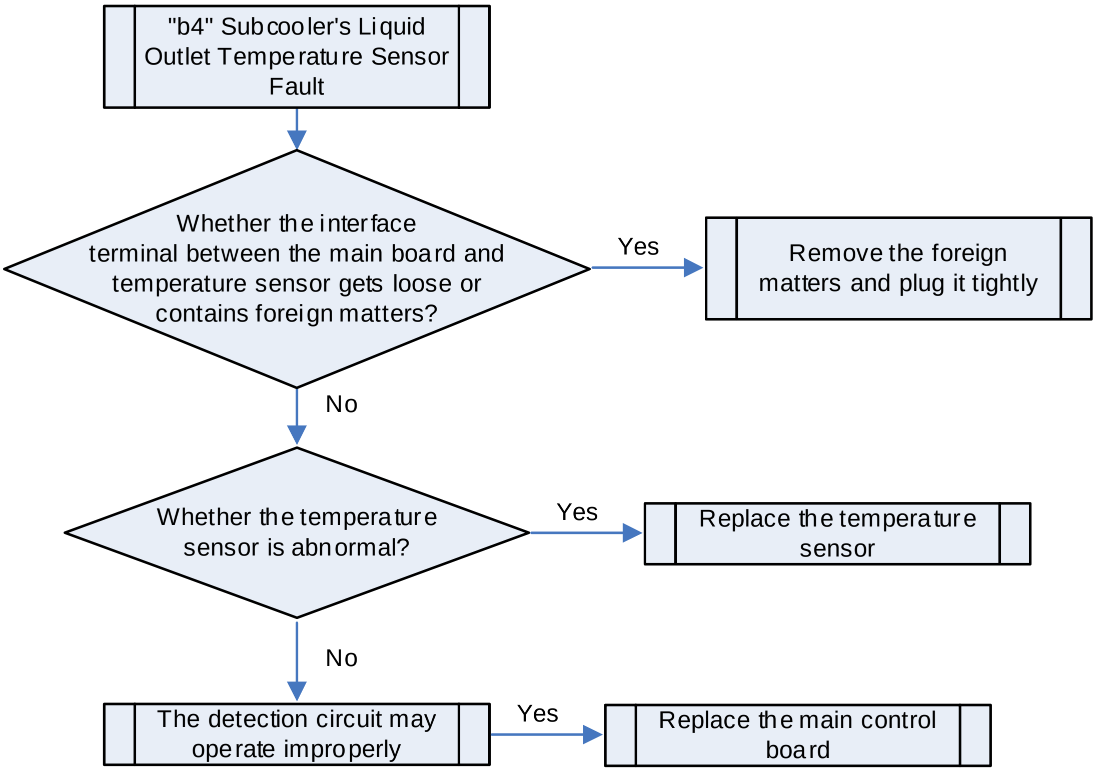
Possible causes:

■ 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.

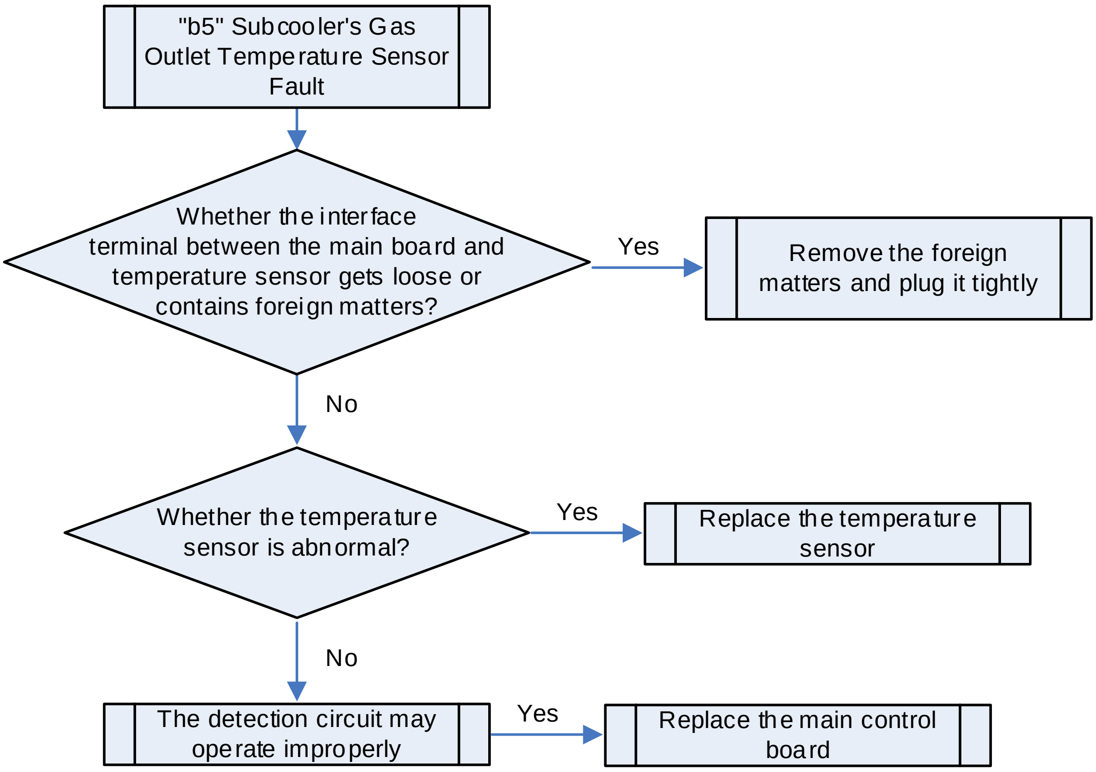
Possible causes:

■ 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.

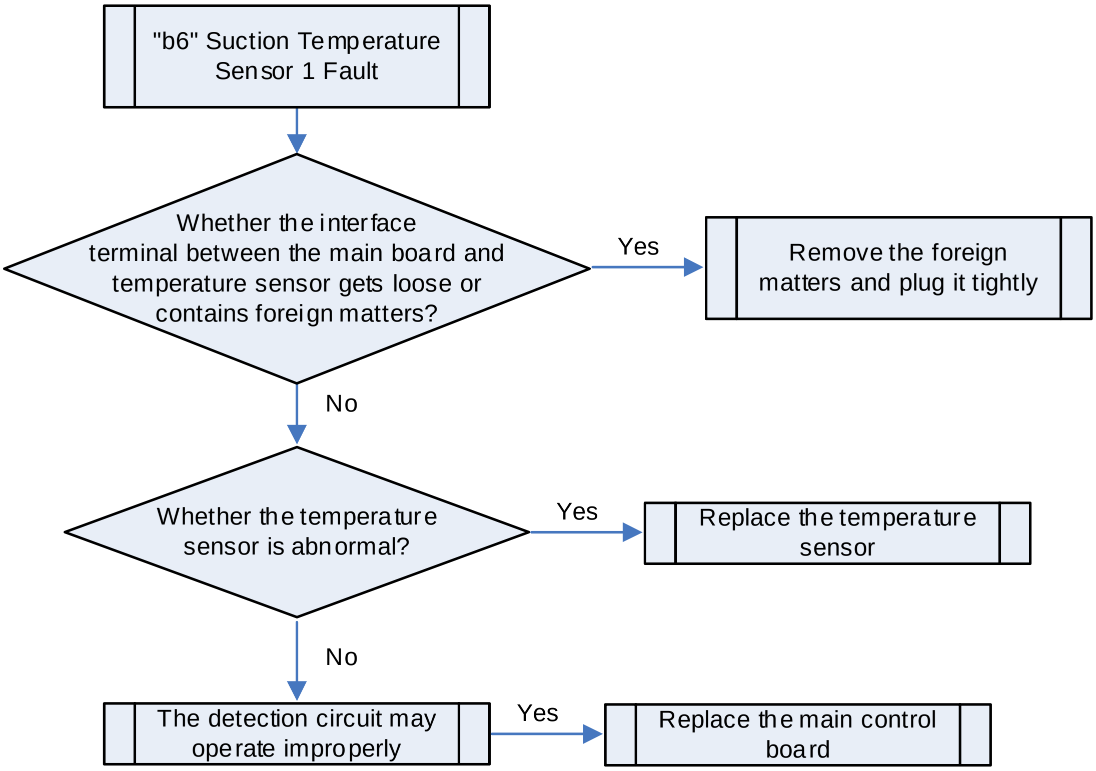
Possible causes:

■ 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.

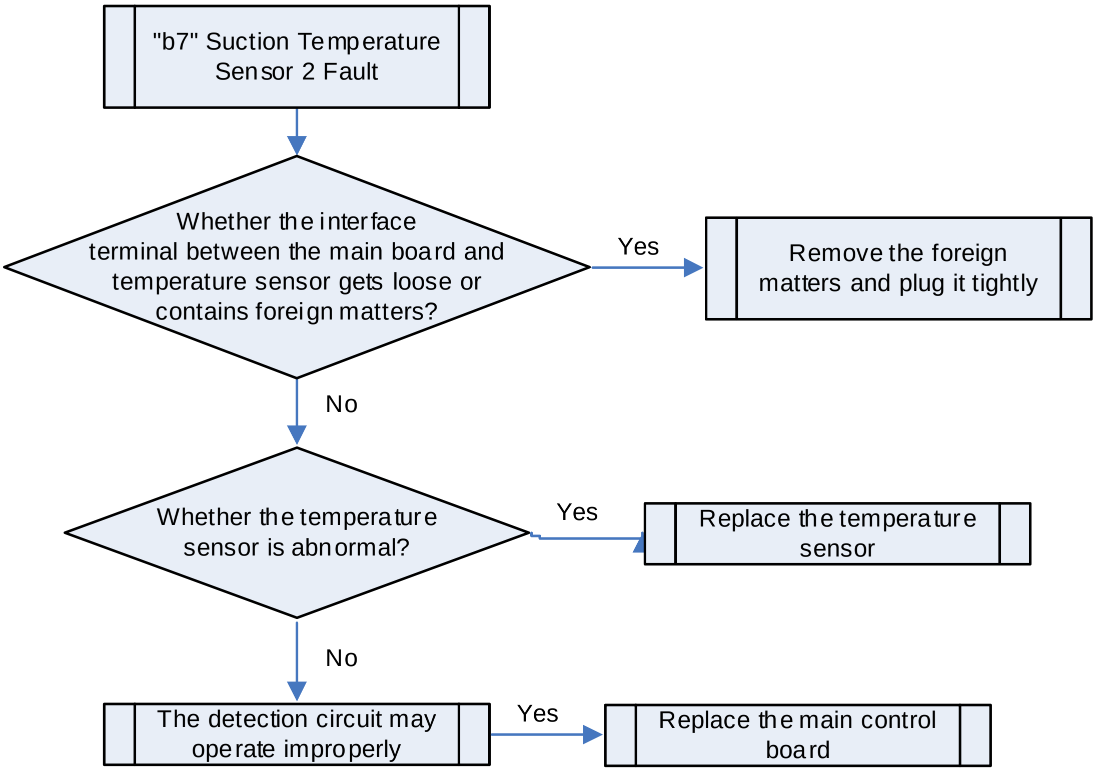
Possible causes:

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

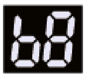
■ Abnormal temperature sensor;

■ 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.

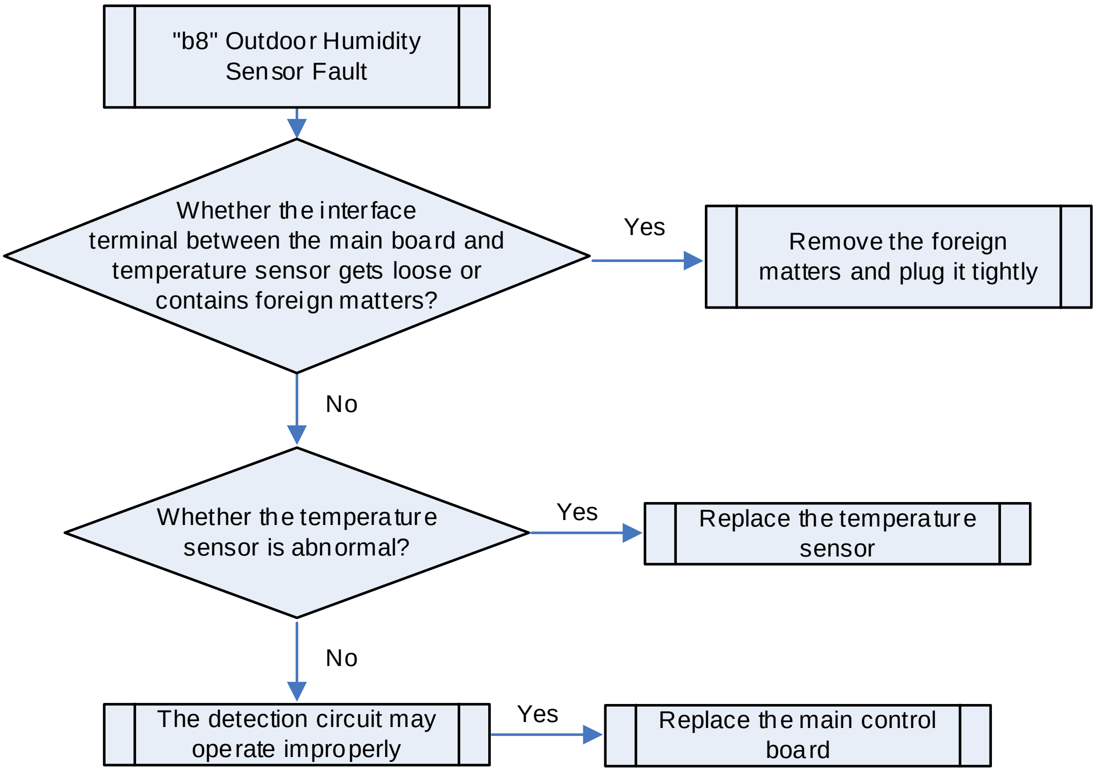
Possible causes:

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

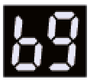
■ Abnormal temperature sensor;

■ 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.

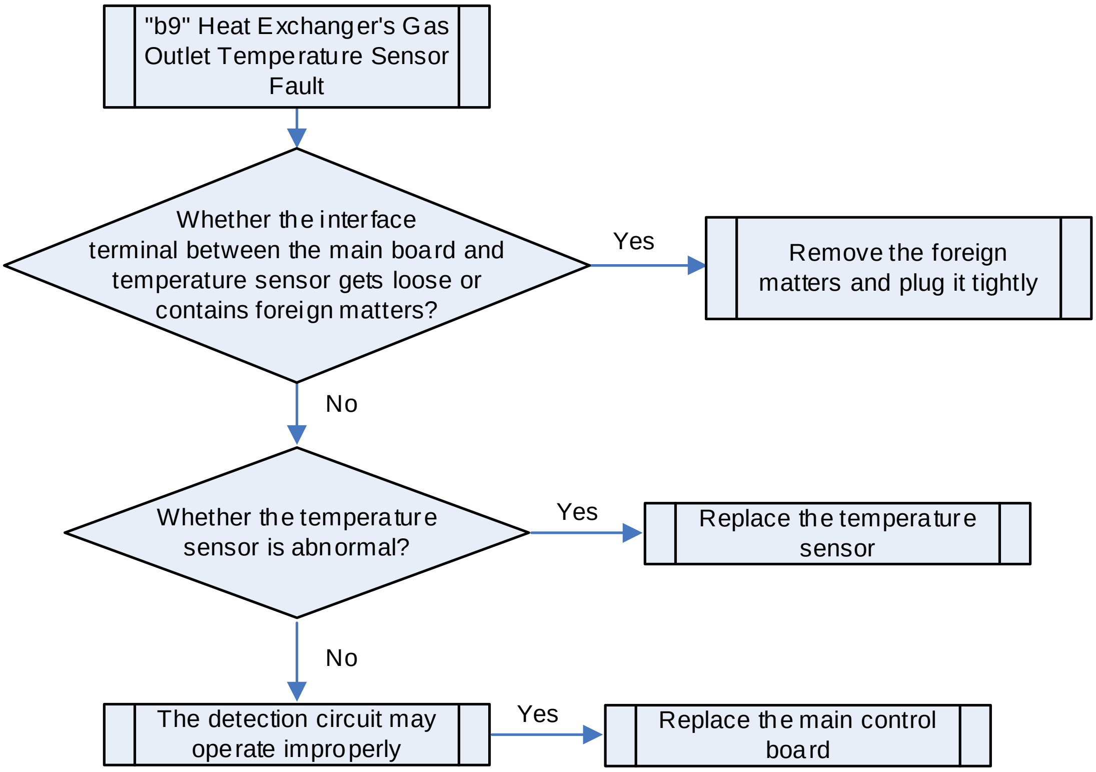
Possible causes:

■ 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.

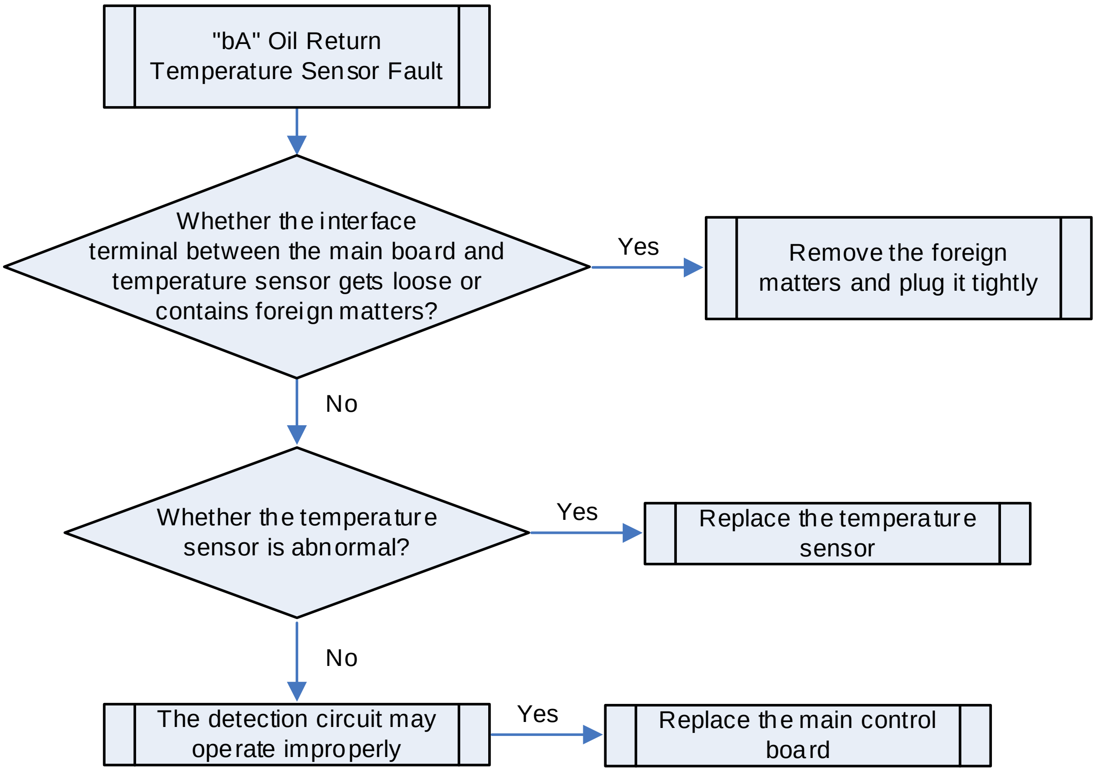
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.27 "bd" Subcooler air inlet temperature sensor error

Error display: ODU main board, IDU wired controller, IDU receive light board will display 

Applicable model: all ODUs

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 30 seconds continuously, report the error

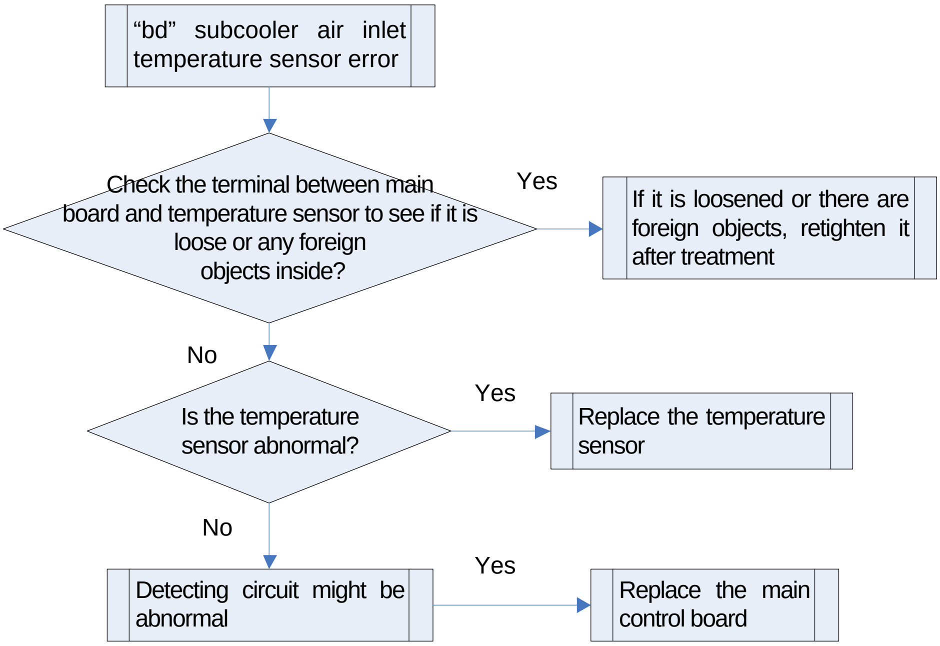
Possible reasons:

■Poor contact between temperature sensor and terminal in main board interface

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.28 "bJ" High and low pressure sensor is wrongly connected

Error display: ODU main board, IDU wired controller and IDU receive light board will display 

Applicable model: all ODUs

Error judgment condition and method:

Under shutdown status, the high and low pressure sensor has detected that the high pressure test value of module is 30℃ higher than the low pressure, the unit will report that the high and low pressure is wrongly connected.

Possible reasons:

■The resistance of high pressure sensor is abnormal, the test value is high.

■The resistance of low pressure sensor is abnormal, the test value is low.

■High and low pressure sensor is wrongly connected.

Troubleshooting:

Step 1: check if the input voltage of high pressure sensor between "4.9~5.1V" and the output voltage between "0.5~4.5V", if no, replace the high pressure sensor.

Step 2: check if the input voltage of low pressure sensor between "4.9~5.1V" and the output voltage between "0.5~4.5V", if no, replace the high pressure sensor.

Step 3: if the above inspections on input/output voltage of pressure sensor are normal, exchange the corresponding terminal of two pressure sensors.

2.29 "bn" Subcooler liquid temperature sensor error

Error display: ODU main board, IDU wired controller and IDU receive light board will display 

Applicable model: all ODUs

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 30 seconds continuously, report the error

Possible reasons:

■Poor contact between temperature sensor and terminal in main board interface

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

Step 1: check the terminal between main board and temperature sensor to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 2: check if the temperature sensor is abnormal, if yes, replace the temperature sensor;

Step 3: if the above inspections are normal, the detecting circuit might be abnormal, please replace the main board.

2.30 "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;

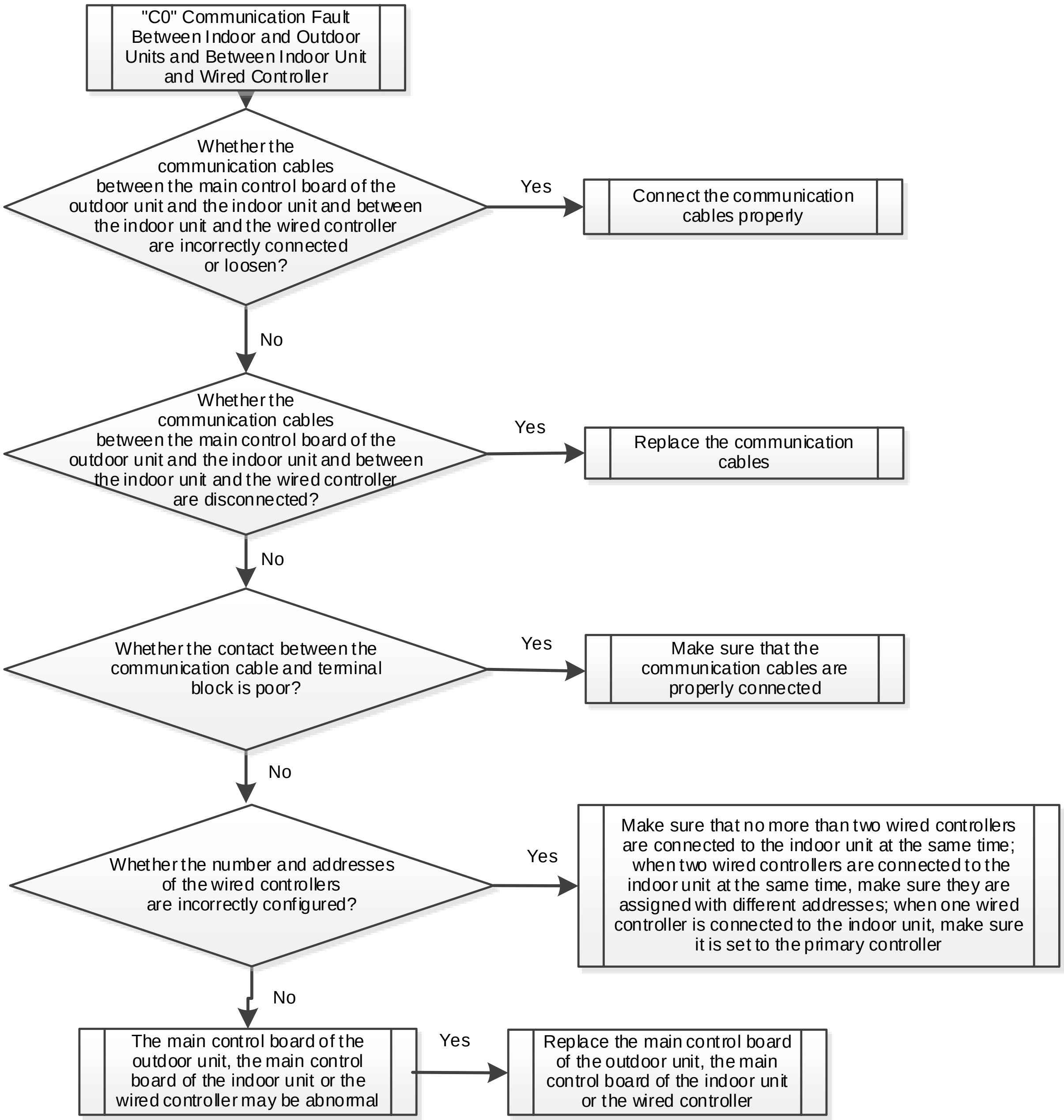
■ Number of wired controllers connected or addresses are set improperly;

■ Controller operates improperly.

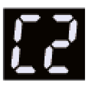
Troubleshooting:

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:



2.31 "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.

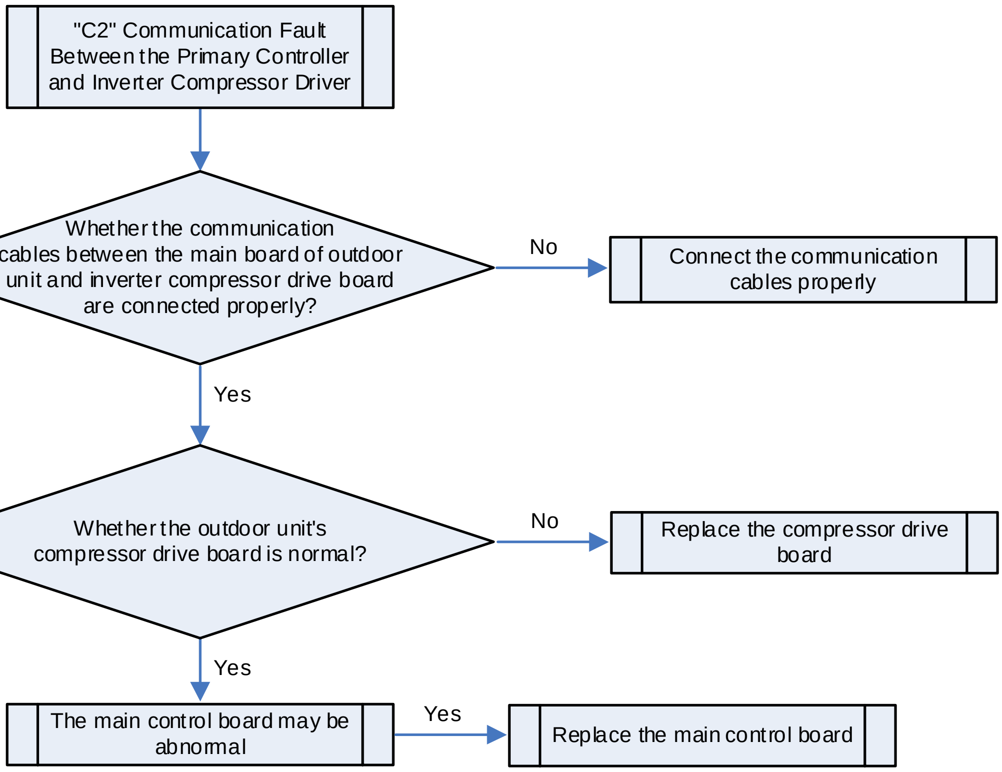
Possible causes:

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

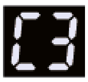
■ The inverter compressor driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



2.32 "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.

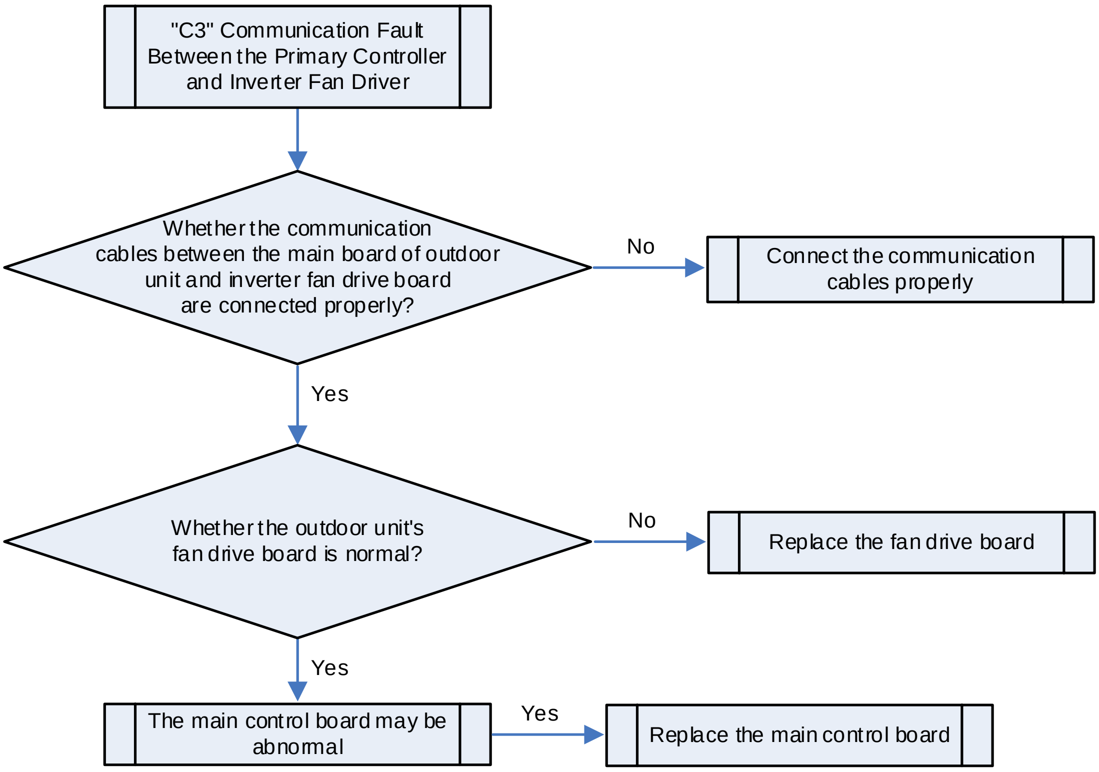
Possible causes:

■ 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:



2.33 "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.

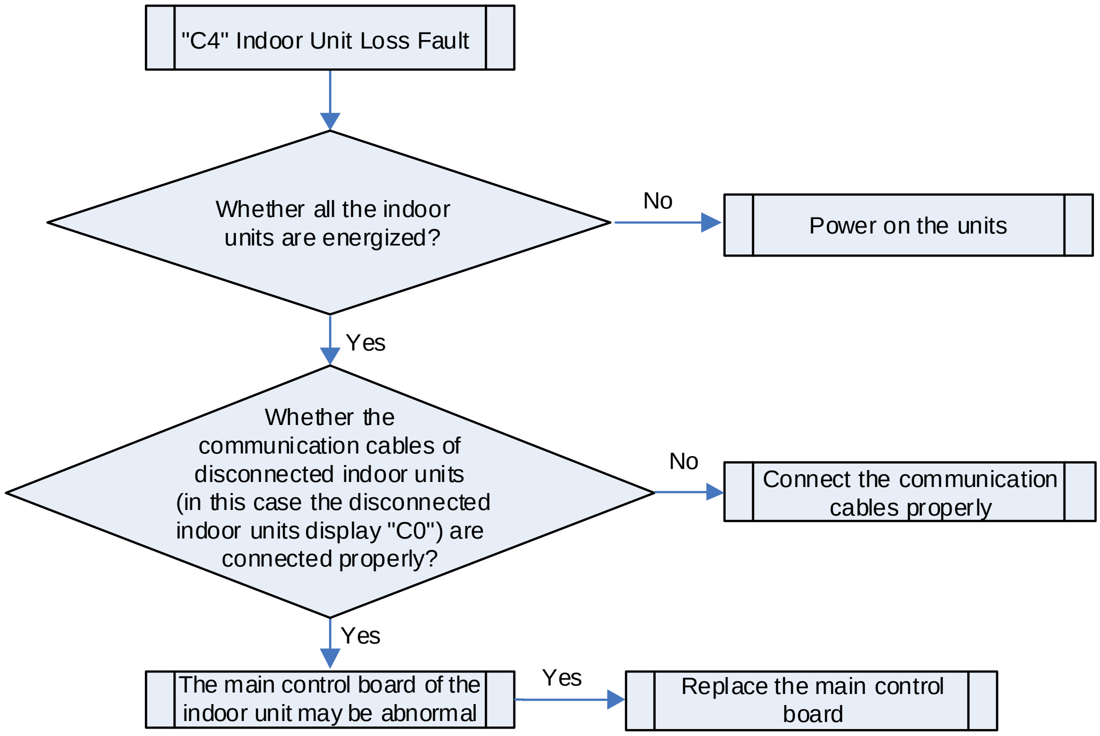
Possible causes:

■ Poor contact of communication cables;

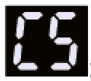
■ The indoor units are powered off;

■ The main board of indoor unit operates improperly.

Troubleshooting:



2.34 "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.

2.35 "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:

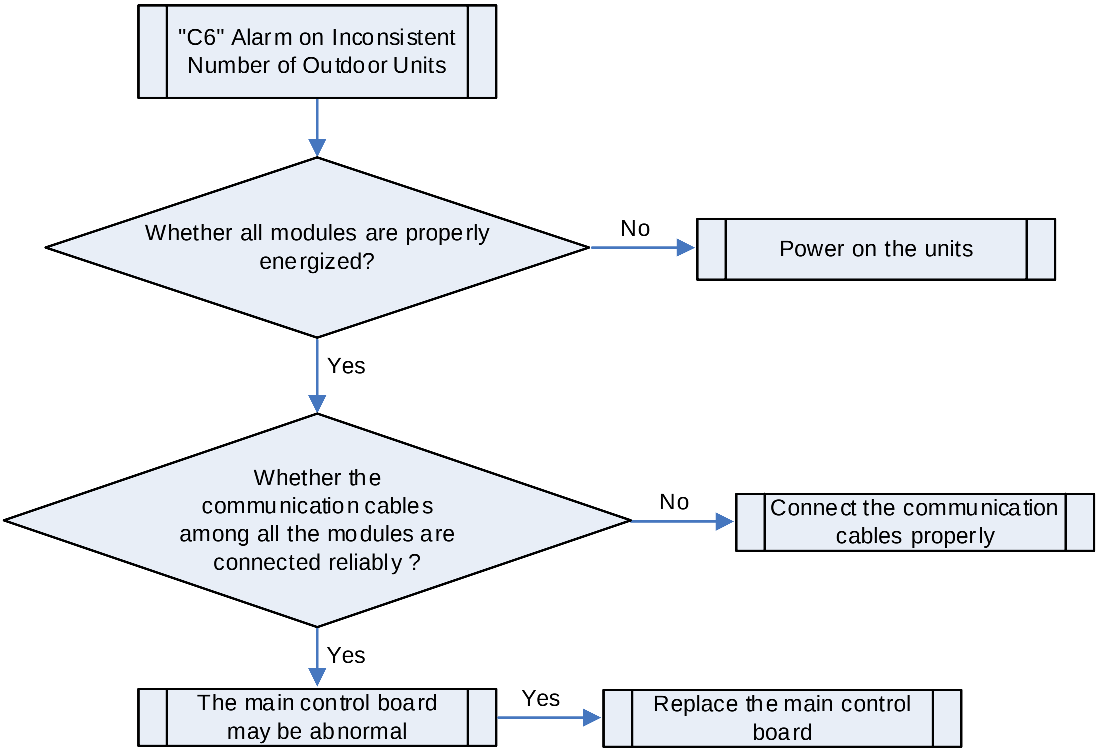
The unit detects the number of online outdoor modules in real time. When it detects that the number of current modules is inconsistent with the number of modules previously commissioned and memorized, the unit will report the fault and stop working.

Possible causes:

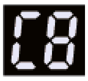
■ Abnormal communication among modules;

■ The modules are not powered on.

Troubleshooting:



2.36 "C8" Emergency Operation of Compressor

Fault display: main board of outdoor unit displays 

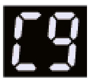
Fault diagnosis:

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.

2.37 "C9" Emergency Operation of Fan

Fault display: main board of outdoor unit displays 

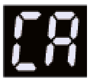
Fault diagnosis:

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.

2.38 "CA" Emergency Operation of Module

Fault display: main board of outdoor unit displays 

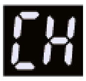
Fault diagnosis:

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.

2.39 "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.

2.40 "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.

2.41 "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.

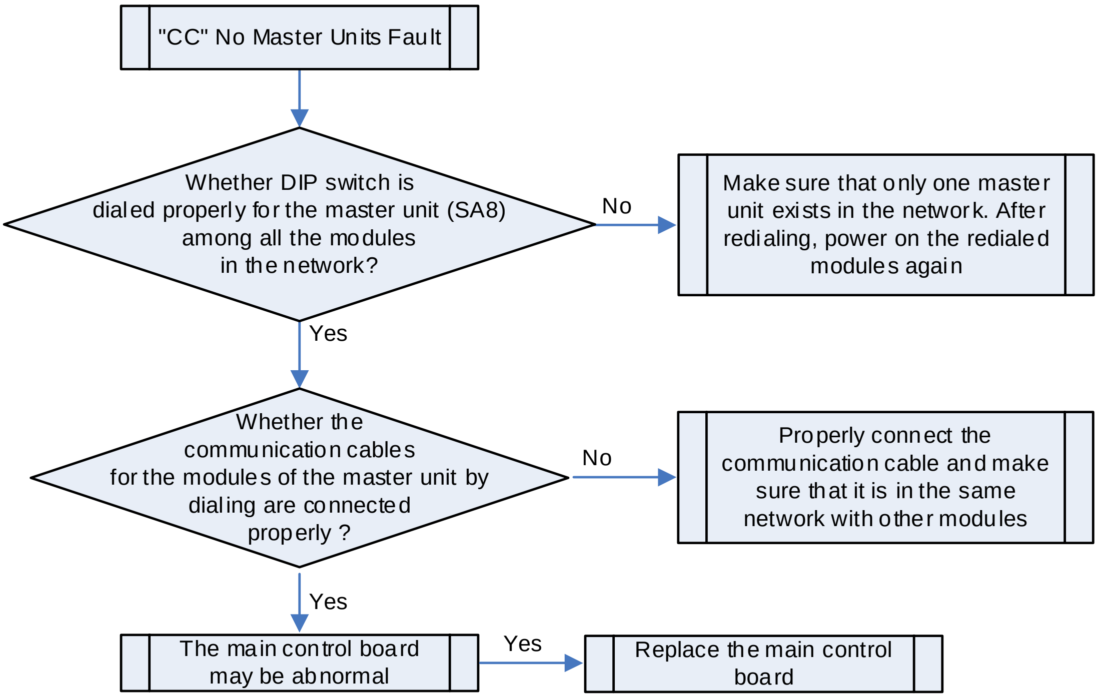
Possible causes:

■ 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:



2.42 “CE” Mode exchanger and IDU communication error

Error display: mode exchanger main board will display 

Applicable model: all mode exchangers

Error judgment condition and method:

For the mode exchanger, no IDU communication is detected in 1 consecutive minute.

Possible reasons:

■Poor contact between mode exchanger main control board and IDU main control board terminal

■Communication cord is abnormal

■Circuit is abnormal

Troubleshooting:

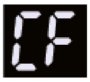
Step 1: for the mode exchanger with several main boards, please check if error is reported for every main board, if no, please make sure at least one branch is connected with IDU under the main board of every mode exchanger;

Step 2: check the terminal between mode exchanger main board and IDU to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 3: check if the communication cord between mode exchanger and IDU is damaged or short-connected, if yes, please replace it;

Step 4: if the above inspections are normal, the detecting circuit might be abnormal, please replace the mode exchanger main board and IDU main board in turn; then replace the main board after confirming the faulted board.

2.43 "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.

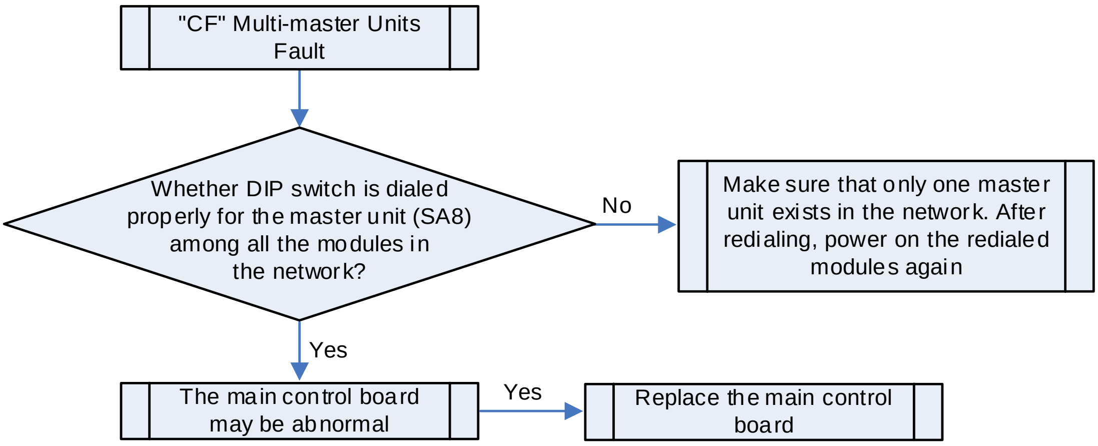
When multiple master units are detected in the multi-module communication network, the fault is generated.

Possible causes:

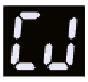
■ The master DIP switch is abnormal and multiple master units exist in the network;

■ Abnormal detection circuit.

Troubleshooting:



2.44 "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.

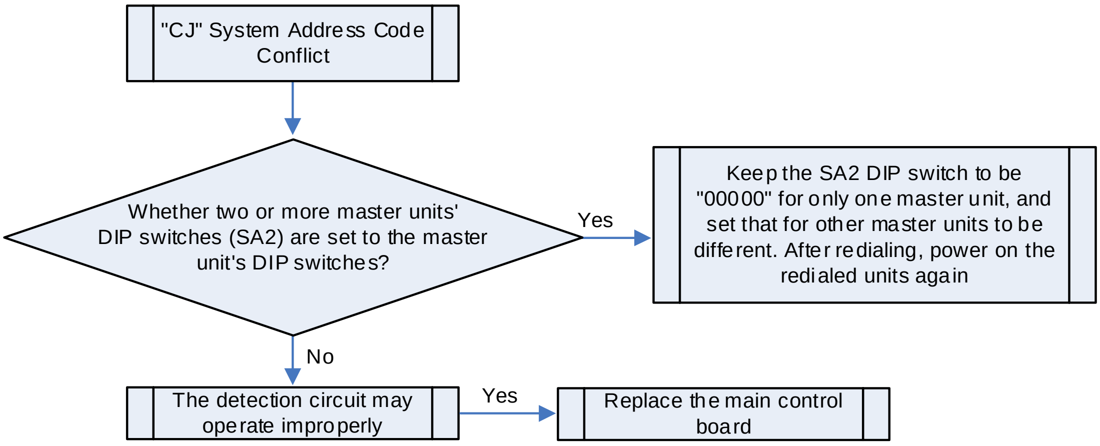
If two or more master units' DIP switches (SA2) are detected to be master unit's DIP switches in the network (that is, SA2 DIP switch is "00000"), the fault of multiple master units is reported.

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:



2.45 "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).

2.46 "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.

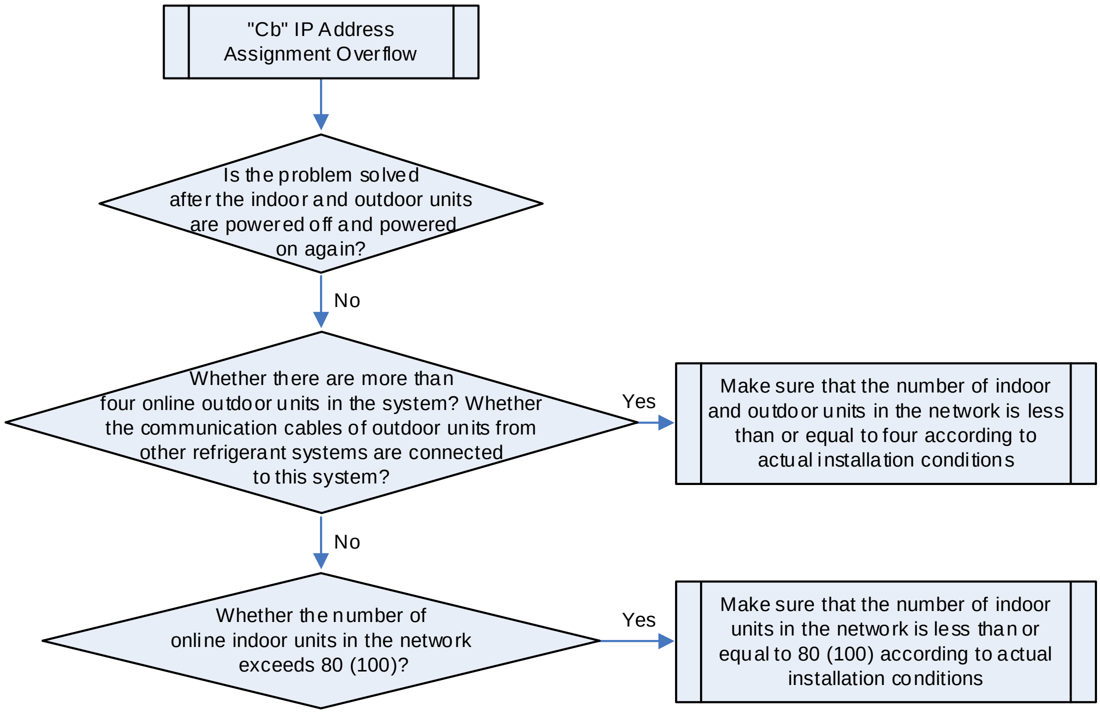
Possible causes:

■ 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.

2.47 “Cd” Mode exchanger and ODU communication error

Error display: mode exchanger main board will display 

Applicable model: all mode exchangers

Error judgment condition and method:

For the mode exchanger, no ODU communication is detected in 1 consecutive minute.

Possible reasons:

■Poor contact between mode exchanger main control board and ODU main control board terminal

■Communication cord is abnormal

■Circuit is abnormal

Troubleshooting:

Step 1: check the terminal between mode exchanger main board and ODU to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 2: check if the communication cord from mode exchanger to ODU is complete, if it is damaged or short-connected, please replace the communication cord;

Step 3: if the above inspections are normal, the detecting circuit might be abnormal, please replace the mode exchanger main board and ODU main board in turn; then replace the main board after confirming the faulted board.

2.48 “Cn” Mode exchanger IDU and ODU network abnormality error

Error display: mode exchanger main board will display 

Applicable mode: mode exchanger

Error judgment condition and method:

If the communication cord of mode exchanger IDU and ODU is not correctly connected, it will report IDU and ODU network communication abnormality; if data tested in 5 consecutive seconds is back to normal, the error will be resumed.

Possible reasons:

■Mode exchanger IDU and ODU communication cord is incorrectly connected.

■Mode exchanger main board is damaged.

Troubleshooting:

Step 1: check if the communication cord between mode exchanger and IDU and ODU again to see if it is correctly connected according to the guidance; otherwise, connect the communication cord again according to the guidance to see if the problem has been solved;

Step 2: if the connection of communication cord among mode exchanger, IDU and ODU is correct, the possible error reason might be the damaged main board, please replace the mode exchanger main board.

2.49 “Cy” No communication error on the mode exchanger

Error display: mode exchanger main board will display 

Applicable model: all mode exchangers

Error judgment condition and method:

For the mode exchanger main board, no subcooling electronic expansion valve signal or main board signal is detected in 1 consecutive minute.

Possible reasons:

■Poor contact between mode exchanger main control board and ODU main control board terminal

■For the mode exchanger with several control boards, the contact between the main board and communication terminal of subsidiary board is poor

■Circuit is abnormal

Troubleshooting:

For the mode exchanger with only one piece of main board:

Step 1: check the terminal of subcooling electronic expansion valve on the main board of mode exchanger to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 2: if the above inspections are normal, the detecting circuit might be abnormal, please replace the mode exchanger main board.

For the mode exchanger with several main boards

Step 1: check the mode exchanger, is one piece of main board reporting alarm or are all main boards reporting alarm?

Step 2: if one piece of main board is reporting alarm, please check the communication terminal between this main board and other main boards to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 3: if all main boards are reporting alarm, please check the terminal of subcooling expansion valve of mode exchanger to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 4: if the above inspections are normal, the detecting circuit might be abnormal, please replace each main board of mode exchanger in turn; then replace it after confirming the faulted board.

2.50 "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.

2.51 "d2" Water tank temperature sensor error

Error display: wired controller of hydro box displays 

Applicable model: hydro box

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

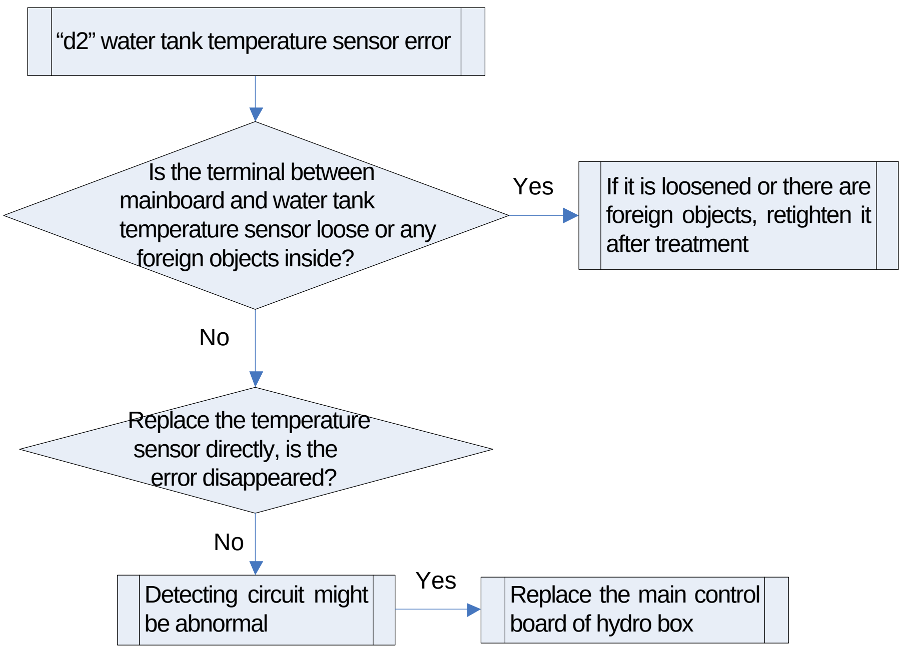
Possible reasons:

■Poor contact between water tank temperature sensor and terminal in main board interface

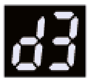
■Water tank temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.52 "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.

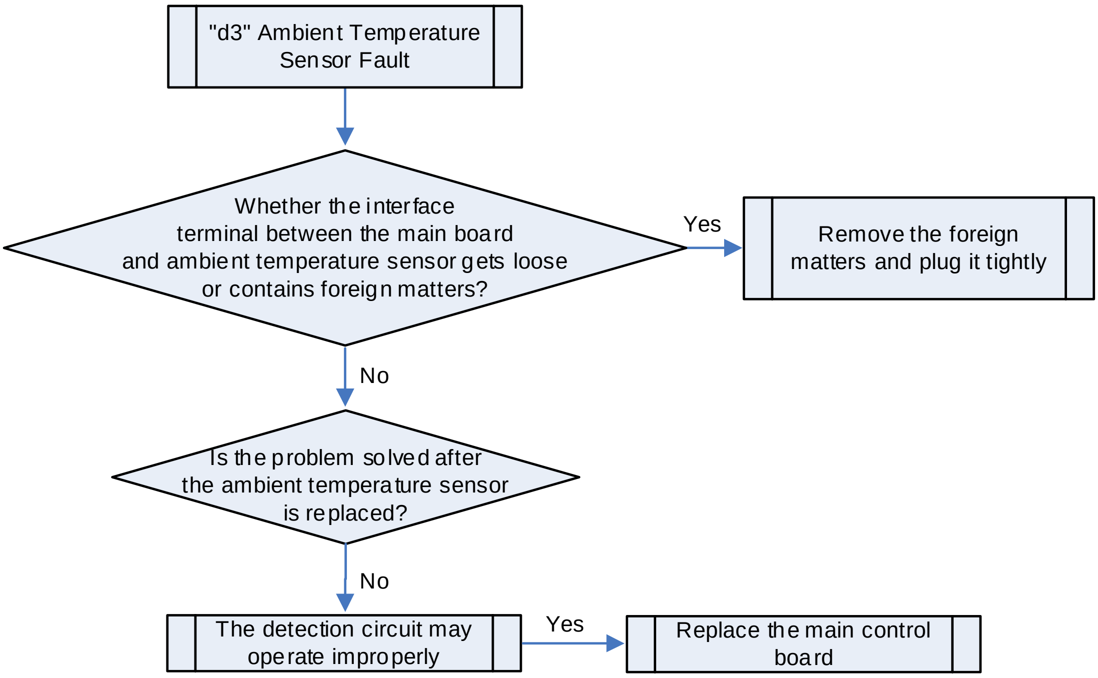
Possible causes:

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

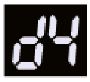
■ Abnormal ambient temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.53 "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.

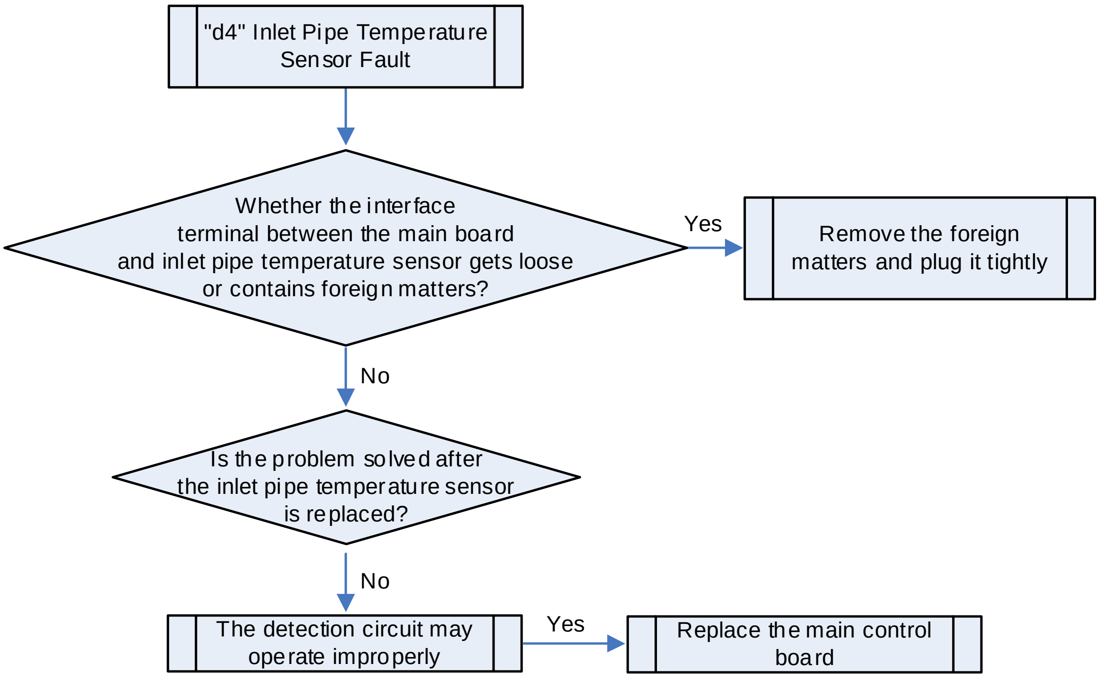
Possible causes:

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

■ Abnormal inlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

2.55 "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.

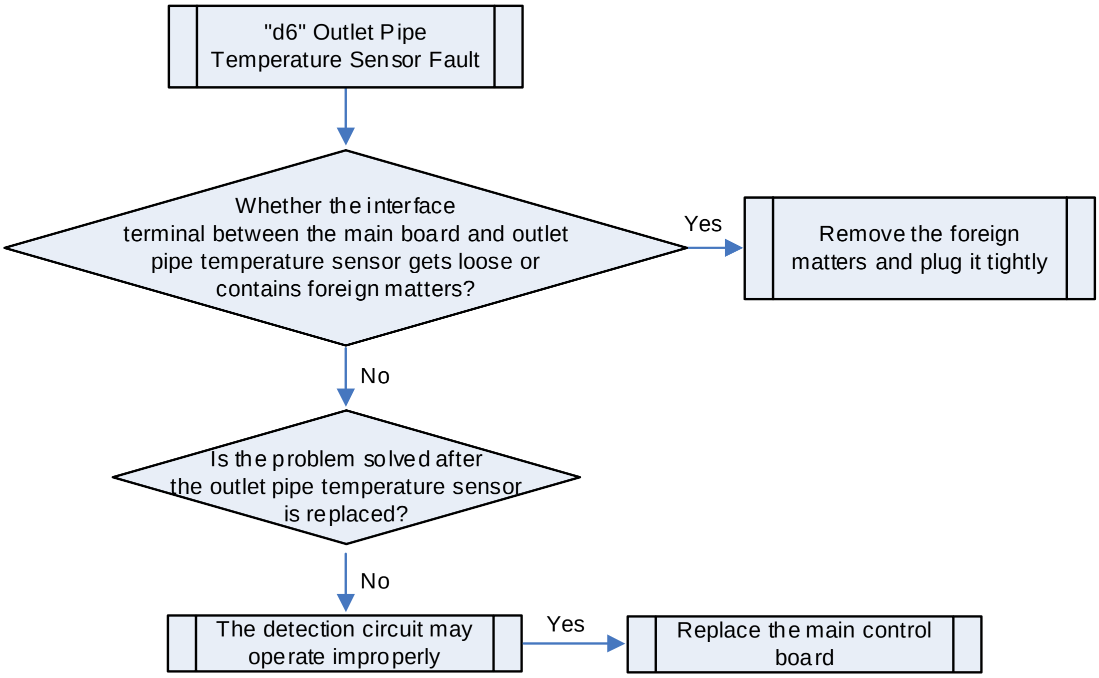
Possible causes:

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

■ Abnormal outlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.56 "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.

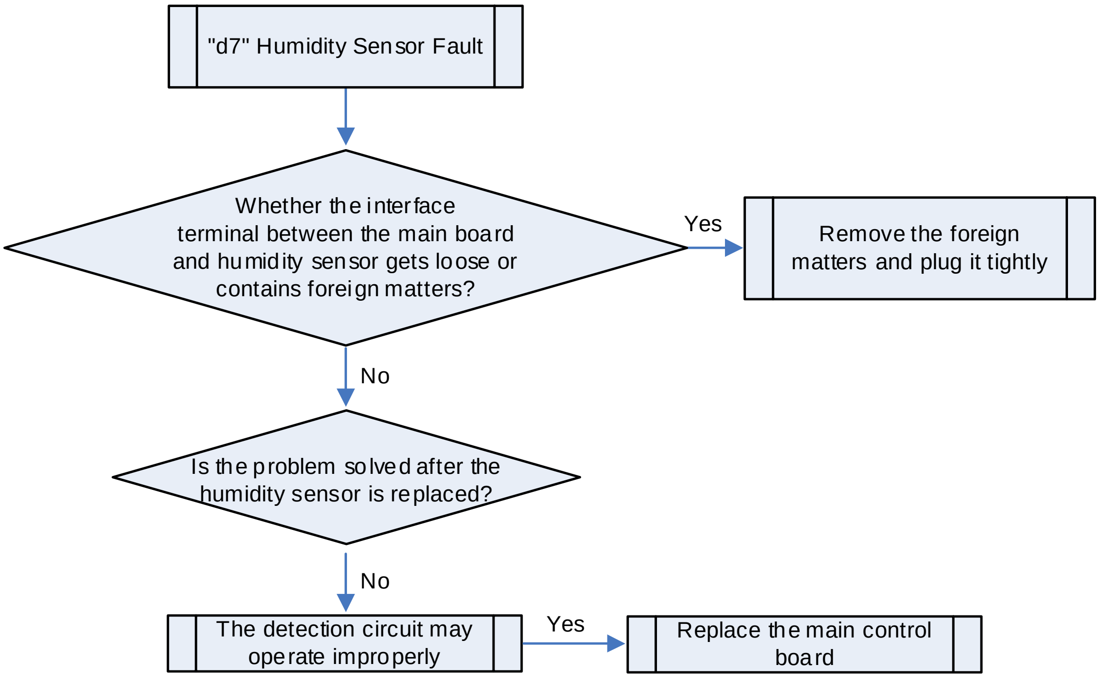
Possible causes:

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

■ Abnormal humidity sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.57 "d8" Water Temperature Sensor Fault (Reserved)

2.58 "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.

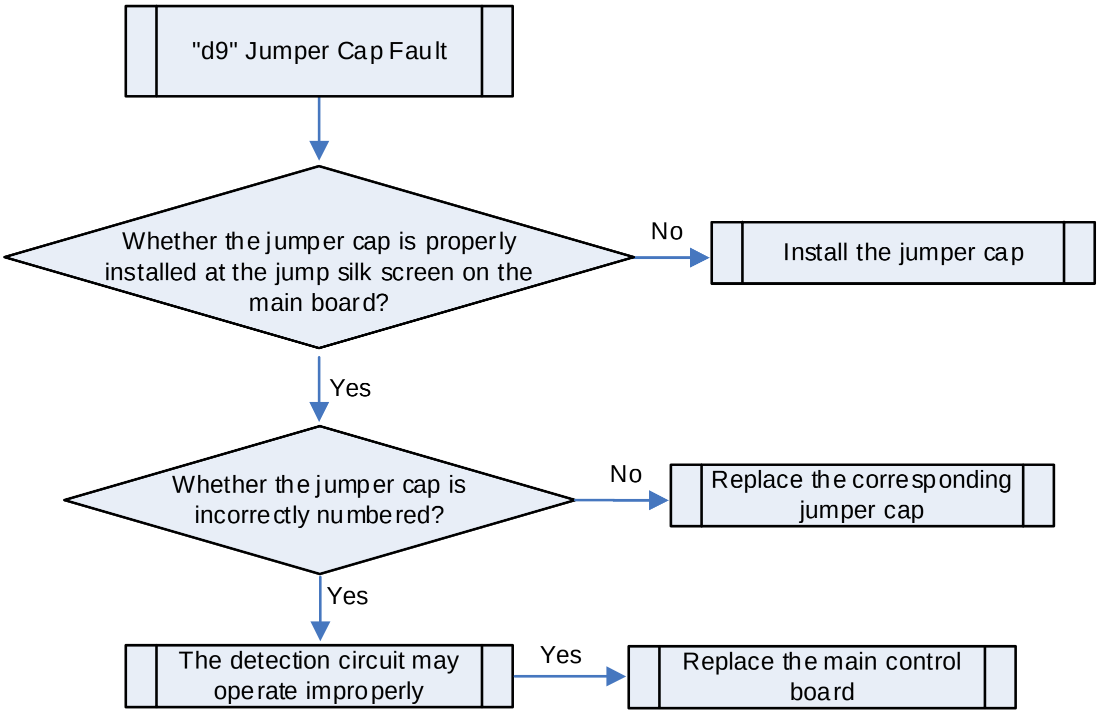
Possible causes:

■ The jumper cap is not installed;

■ The jumper cap is numbered incorrectly;

■ Abnormal detection circuit.

Troubleshooting:



2.59 "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.

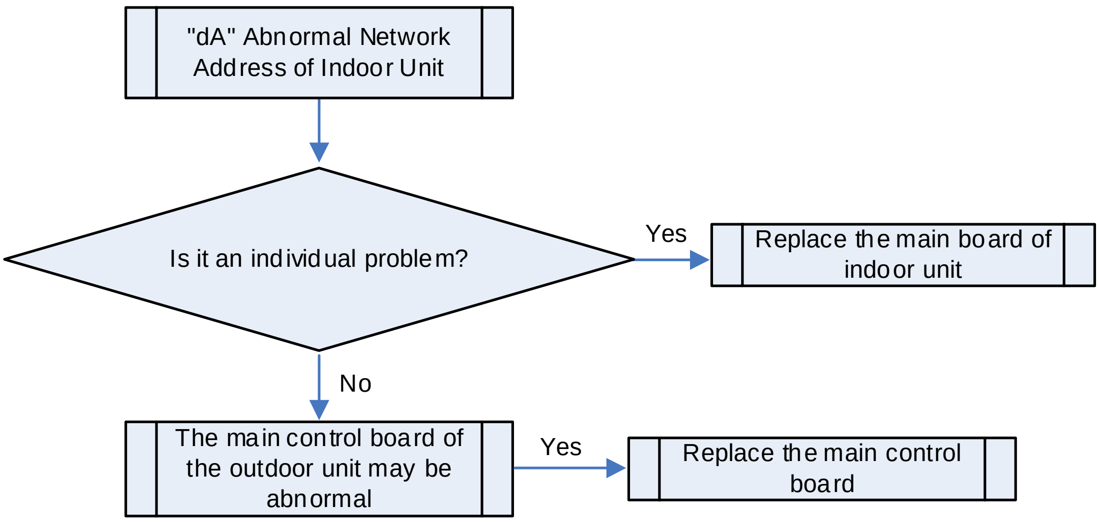
Possible causes:

■ Outdoor units' address are assigned incorrectly;

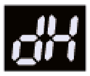
■ Indoor unit's processing error;

■ Abnormal address chip.

Troubleshooting:



2.60 "dH" Abnormal Circuit Board of Wired Controller

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

Fault diagnosis:

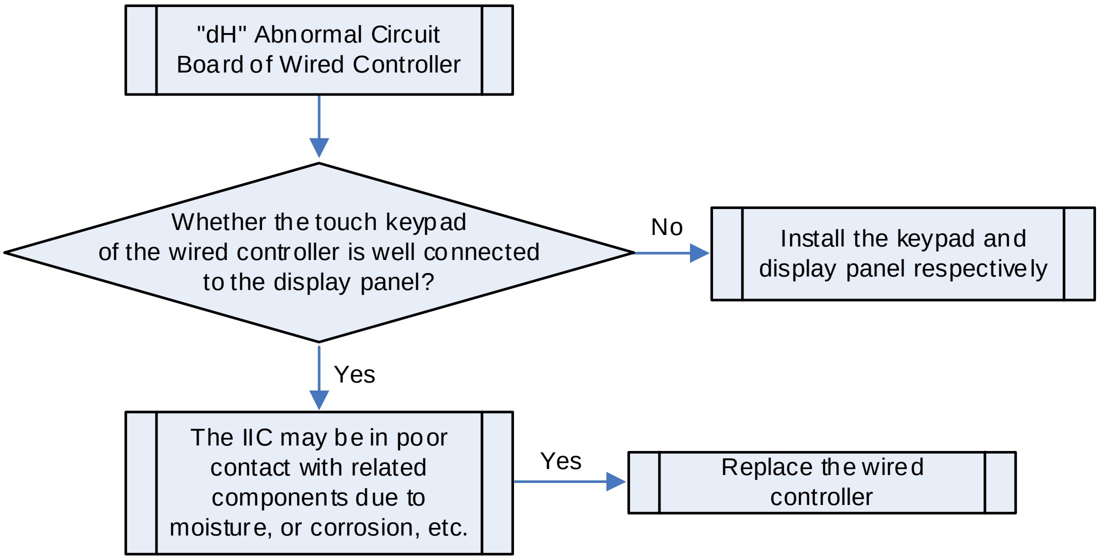
The wired controller's IIC communication is abnormal.

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:



2.61 "dC" Abnormal Settings of DIP Switch for Capacity

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

Fault diagnosis:

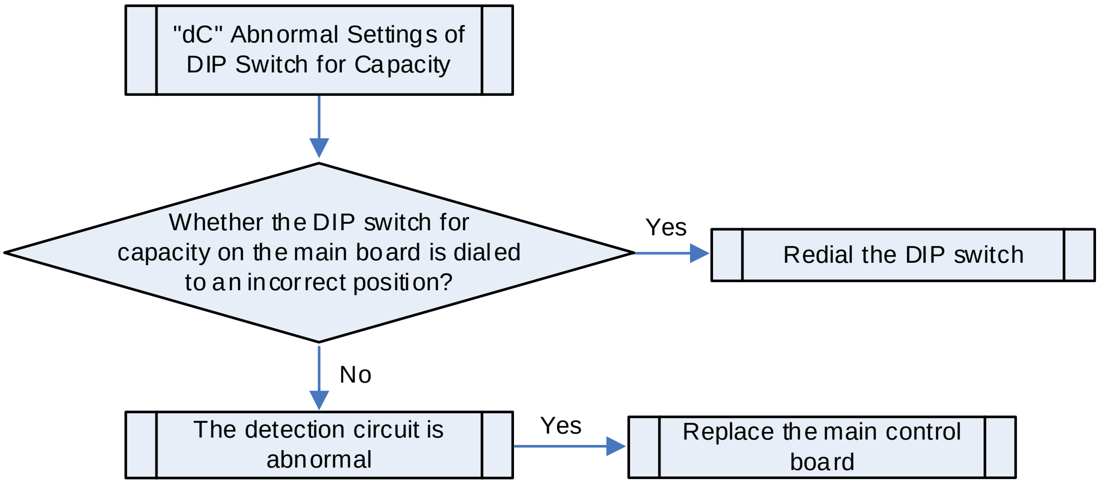
If DIP switch for capacity is set to the wrong position, the fault is generated.

Possible causes:

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

■ Abnormal detection circuit.

Troubleshooting:



2.62 "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.

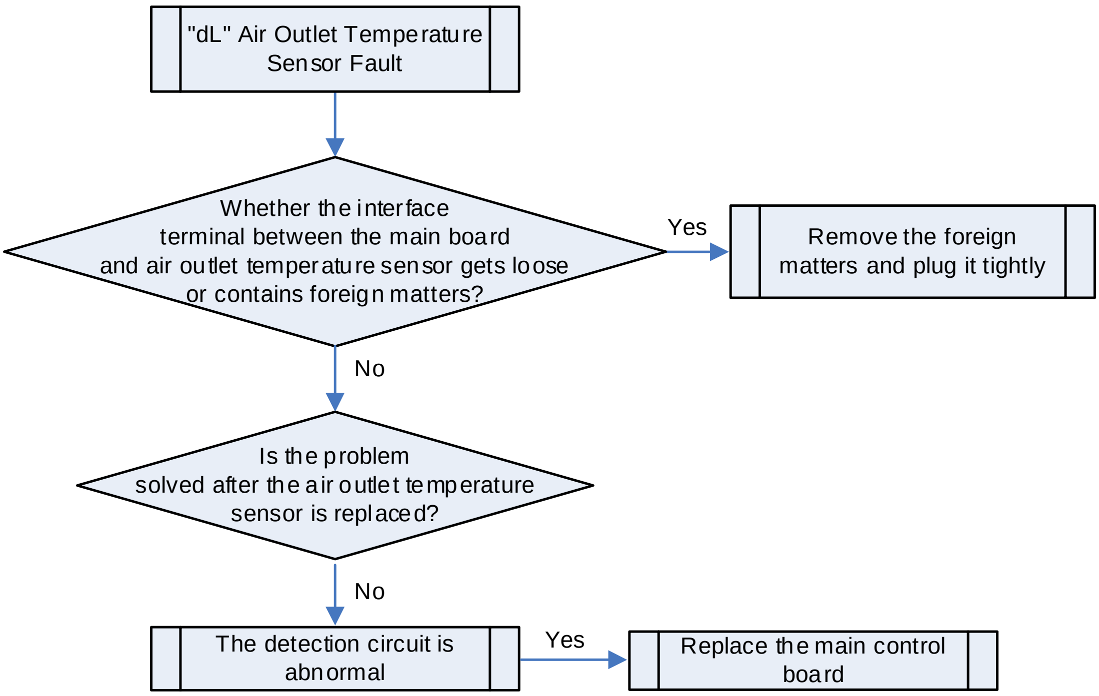
Possible causes:

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

■ Abnormal air outlet temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.63 "dE" Indoor CO2 Sensor Fault (Reserved)

2.64 “dF” Temperature sensor error

Error display: hydro box wired controller will display

Applicable mode: all hydro boxes

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 30 seconds continuously, report the error

Possible reasons:

■Poor contact between temperature sensor and terminal in main board interface

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

Step 1: check the hydro box main board and temperature sensor interface terminal to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 2: check if the temperature sensor is abnormal, if yes, replace the temperature sensor;

Step 3: if the above inspections are normal, the detecting circuit might be abnormal, please replace the main board.

2.65 “dJ” Water return temperature sensor error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

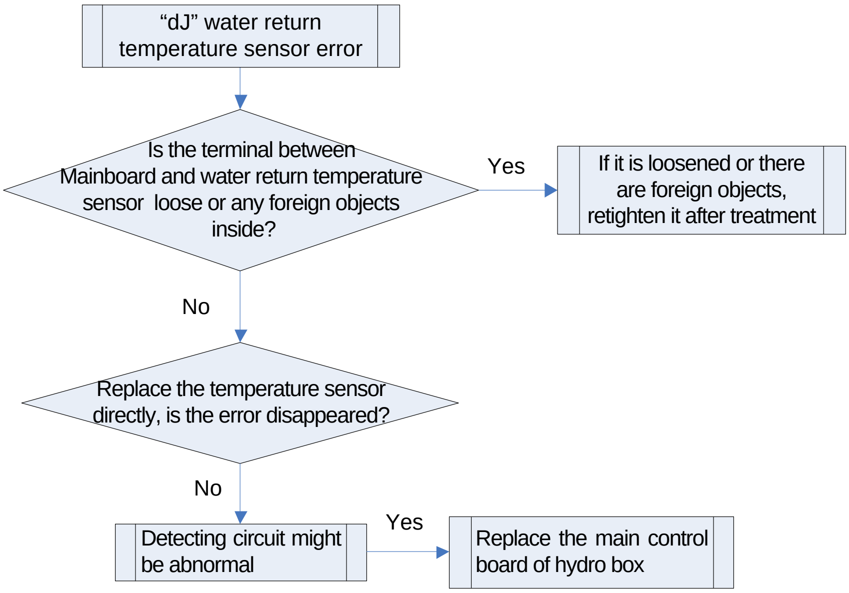
Possible reasons:

■Poor contact between water return temperature sensor and terminal in main board interface

■Water return temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.66 "dP" Floor heating water inlet temperature sensor error

Error display: hydro box wired controller 

Applicable model: all hydro boxes

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 30 seconds continuously, report the error

Possible reasons:

■Poor contact between temperature sensor and terminal in main board interface

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

Step 1: check the hydro box main board and temperature sensor interface terminal to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 2: check if the temperature sensor is abnormal, if yes, replace the temperature sensor;

Step 3: if the above inspections are normal, the detecting circuit might be abnormal, please replace the main board.

2.67 "dU" Floor heating water outlet pipe temperature sensor error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

1) Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

2) After the water pump has operating for 30min, report alarm if detecting that water inlet temperature of generator is higher than water outlet temperature in 10 consecutive minutes.

Possible reasons:

■Poor contact between floor heating outlet water pipe temperature sensor and terminal in main board interface

■Floor heating outlet water pipe temperature sensor falls off or is abnormal

■The circulating water in generator is not drained completely

■Detecting circuit is abnormal

Troubleshooting:

Step 1: Is the terminal between main board of hydro box and temperature sensor loose or any foreign objects inside? If yes, retighten it after treatment;

Step 2: Is the temperature sensor loose or any foreign objects inside? If yes, retighten it or replace the temperature sensor;

Step 3: If air exist in the circulated waterway of hydro box, if yes, drain it again;

Step 4: If the above tests are normal, then the detecting circuit might be abnormal, please replace the main board.

2.68 "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: --

2.69 “dd” Solar energy temperature sensor error

Error display: wired controller of hydro box will display 

Applicable model: hydro box which the solar energy at function DIP code of the main board is set as “connect”

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

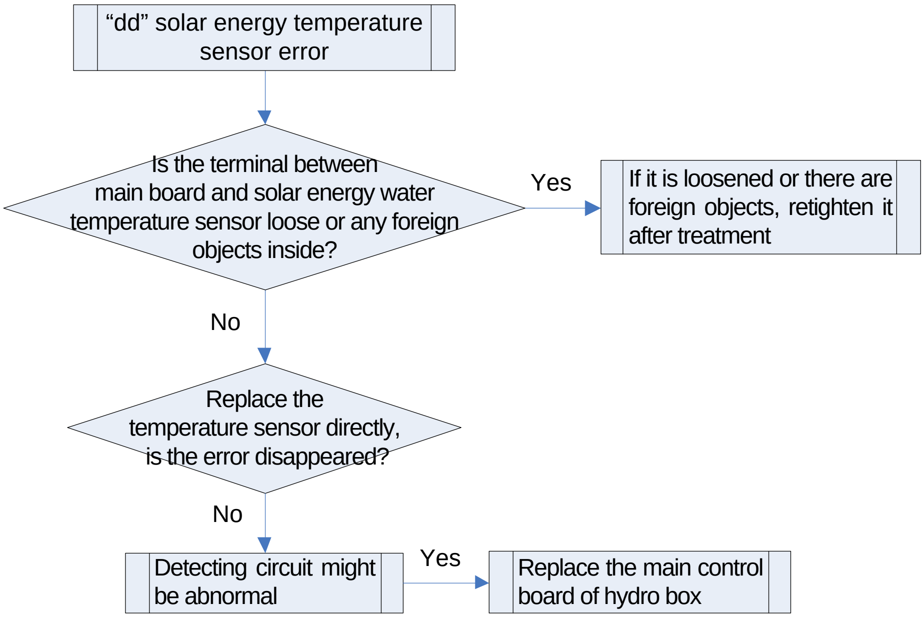
Possible reasons:

■Poor contact between temperature sensor and terminal in main board interface

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.70 "dn" Swing assy error

Error display: display in the monitor software only 

Applicable model: Multi VRF indoor unit with swing assy

Error judgment condition and method:

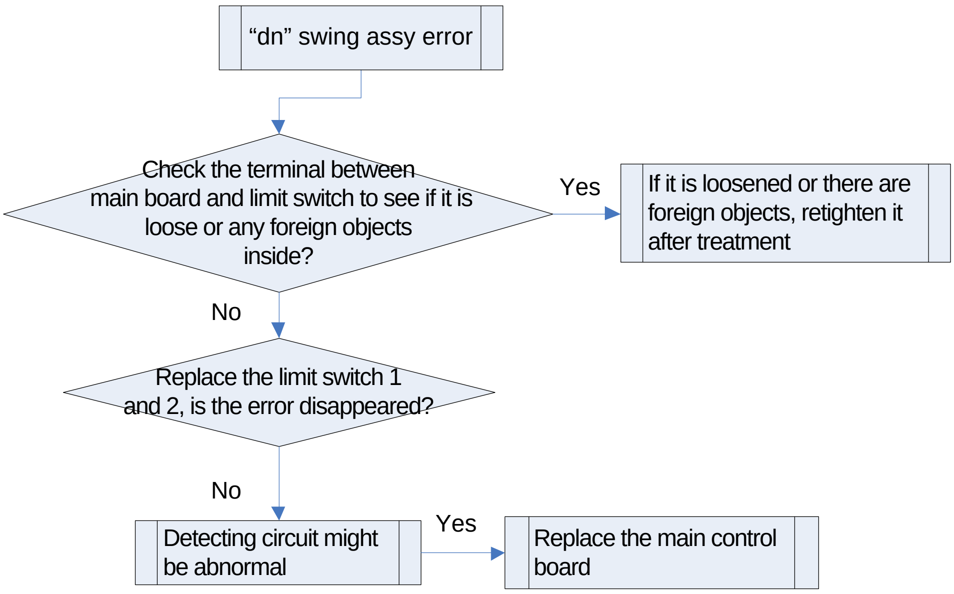
Report alarm through judging the status of limit switch 1 and 2, When the swing structure is faulted, the indoor unit will not stop, the display board does not display error code (the error will only be embodied in CAN communication data)

Possible reasons:

■Poor contact between limit switch and terminal in main board interface

■Detecting circuit is abnormal

Troubleshooting:



2.71 "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;

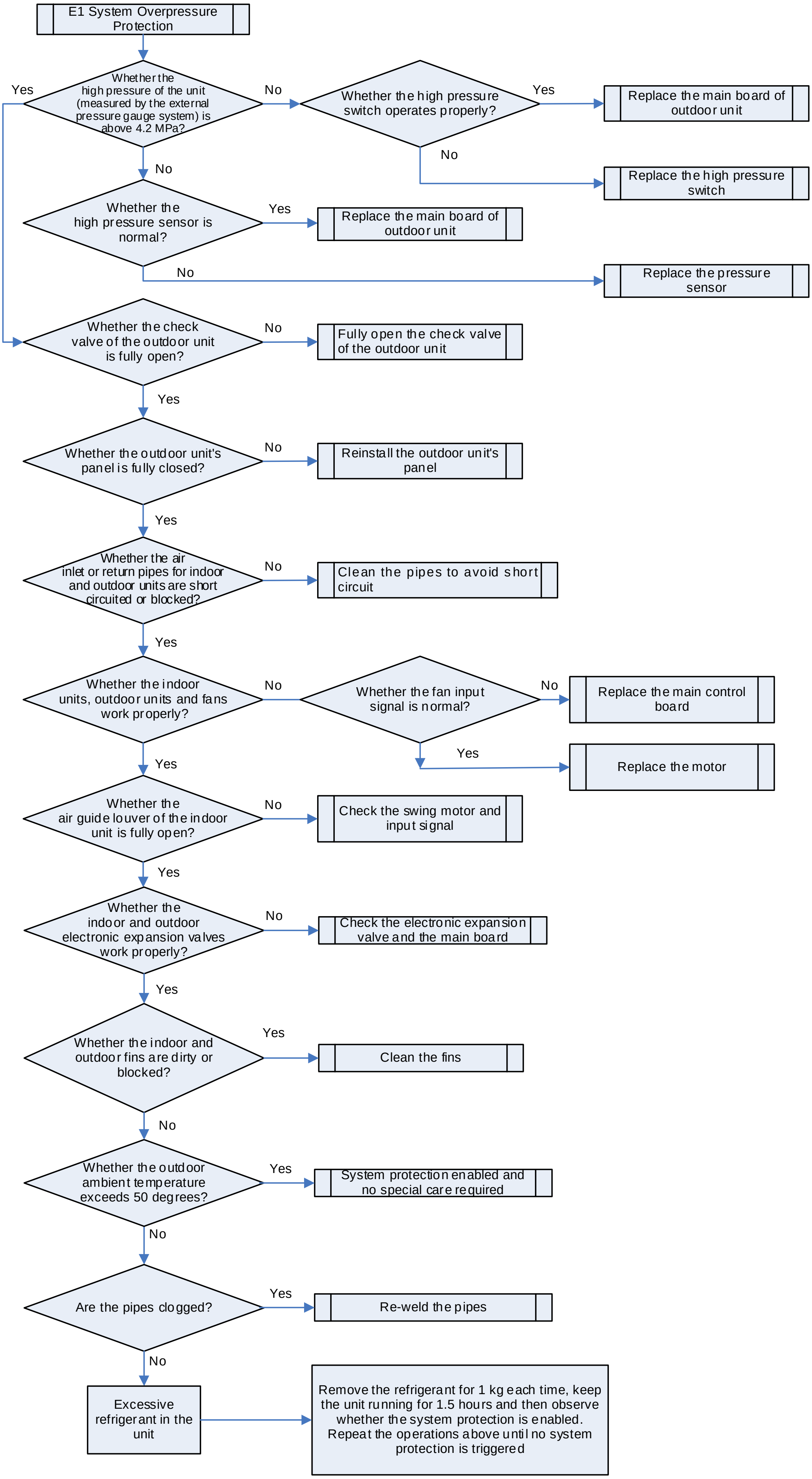
■ Clogging of indoor filter or air duct (heating mode);

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

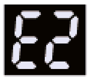
■ Excessive refrigerant in the unit;

■ 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
No
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

2.72 "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.

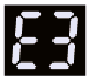
Step 3: If the unit is in heating mode, check the electronic expansion valve of the outdoor unit first.

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.

2.73 "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;

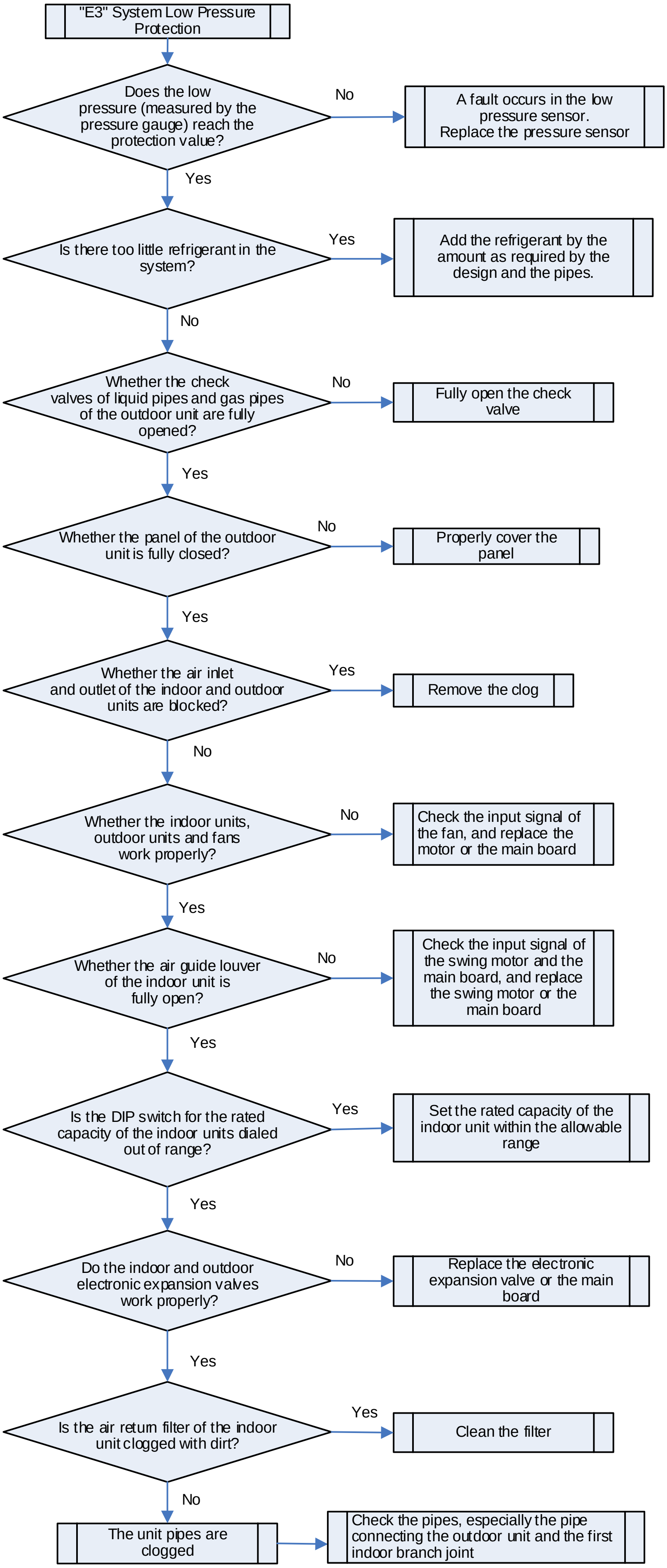
■ Clogging of indoor filter or air duct (cooling mode);

■ 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

2.74 "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).

2.75 “Ed” Low drive module temperature protection

Error display: ODU main board, IDU wired controller and IDU receive light board will display

Applicable model: GMV6 series

Error judgment condition and method:

Test module temperature through the internal sensor of IPM module, when the test value is below outdoor ambient temperature, the system will stop for protection.

Possible reasons:

■Insufficient system refrigerant

■Electronic expansion valve is abnormal

■Drive board is damaged

Troubleshooting:

Step 1: confirm if the refrigerant charge is added according to the design requirement, or any leakage exists, insufficient refrigerant might lead to protection;

Step 2: turn on the unit according to the IDU capacity and quantity in previous protection status, after confirming the coil of IDU and ODU expansion valve is correctly connected, disconnect the power, then re-energize for reset and check the reset action. If it is abnormal, replace the coil or main board; if it is normal, check other items;

Step 3: if no problems are found in other inspection steps, the drive board might be damaged, IPM temperature test is abnormal, please replace the drive board.

2.76 "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.

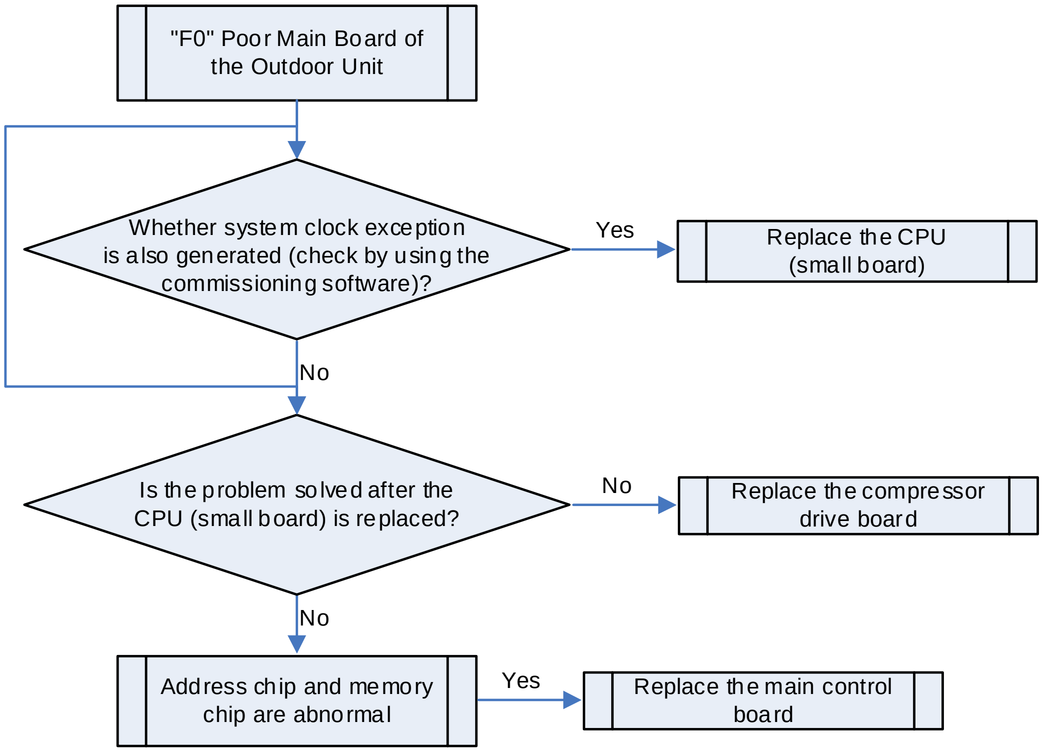
Possible causes:

■ Abnormal address chip;

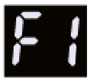
■ Abnormal memory chip;

■ Abnormal clock chip.

Troubleshooting:


"F0" Poor Main Board of the Outdoor Unit
Whether system clock exception is also generated (check by using the commissioning software)?
Yes
Replace the CPU (small board)
No
Is the problem solved after the CPU (small board) is replaced?
No
Replace the compressor drive board
No
Address chip and memory chip are abnormal
Yes
Replace the main control board

2.77 "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:

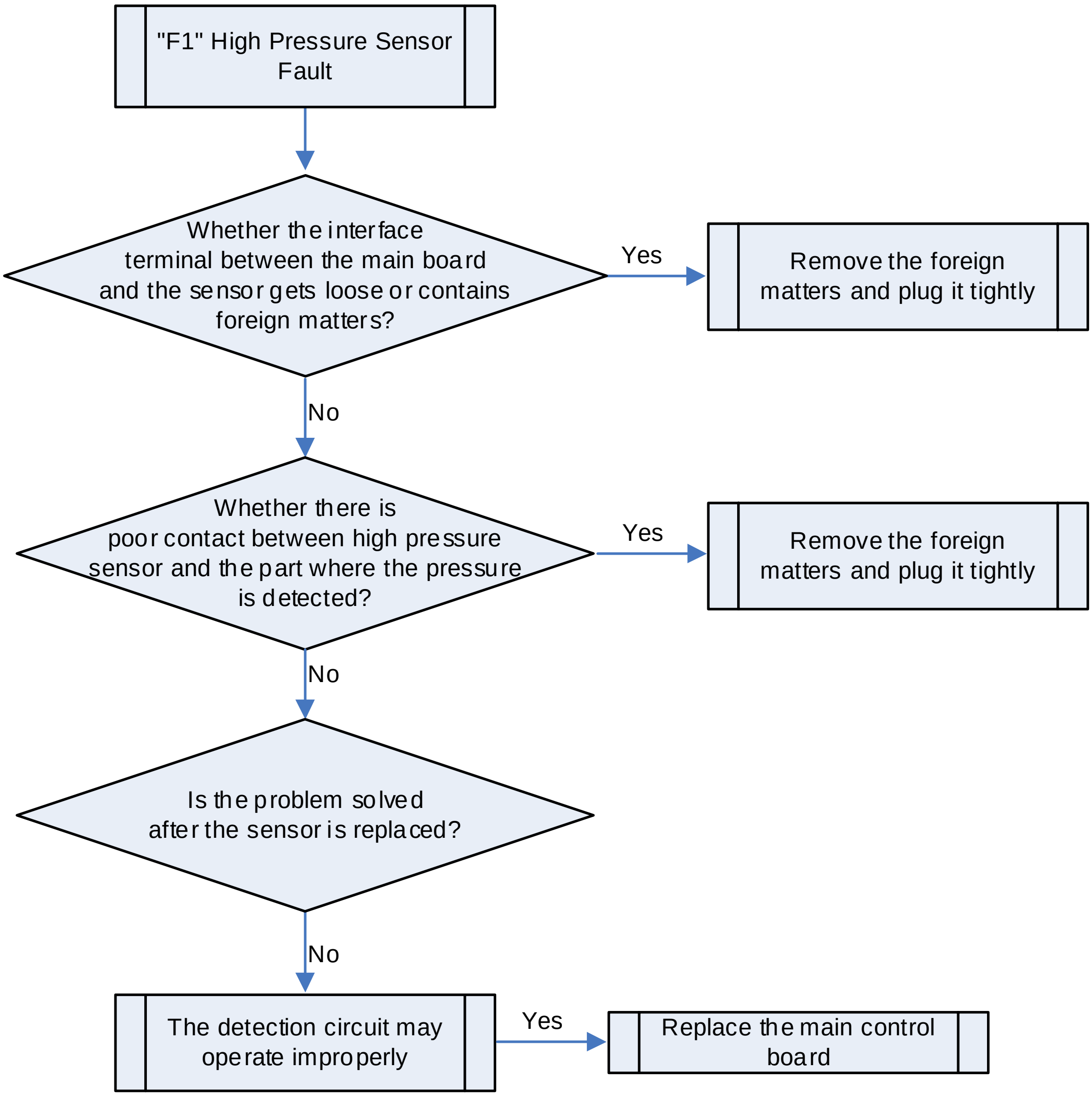
■ Poor contact between the high pressure sensor and the main board interface;

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

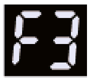
■ Abnormal high pressure sensor;

■ Abnormal sensor detection circuit.

Troubleshooting:



2.78 "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:

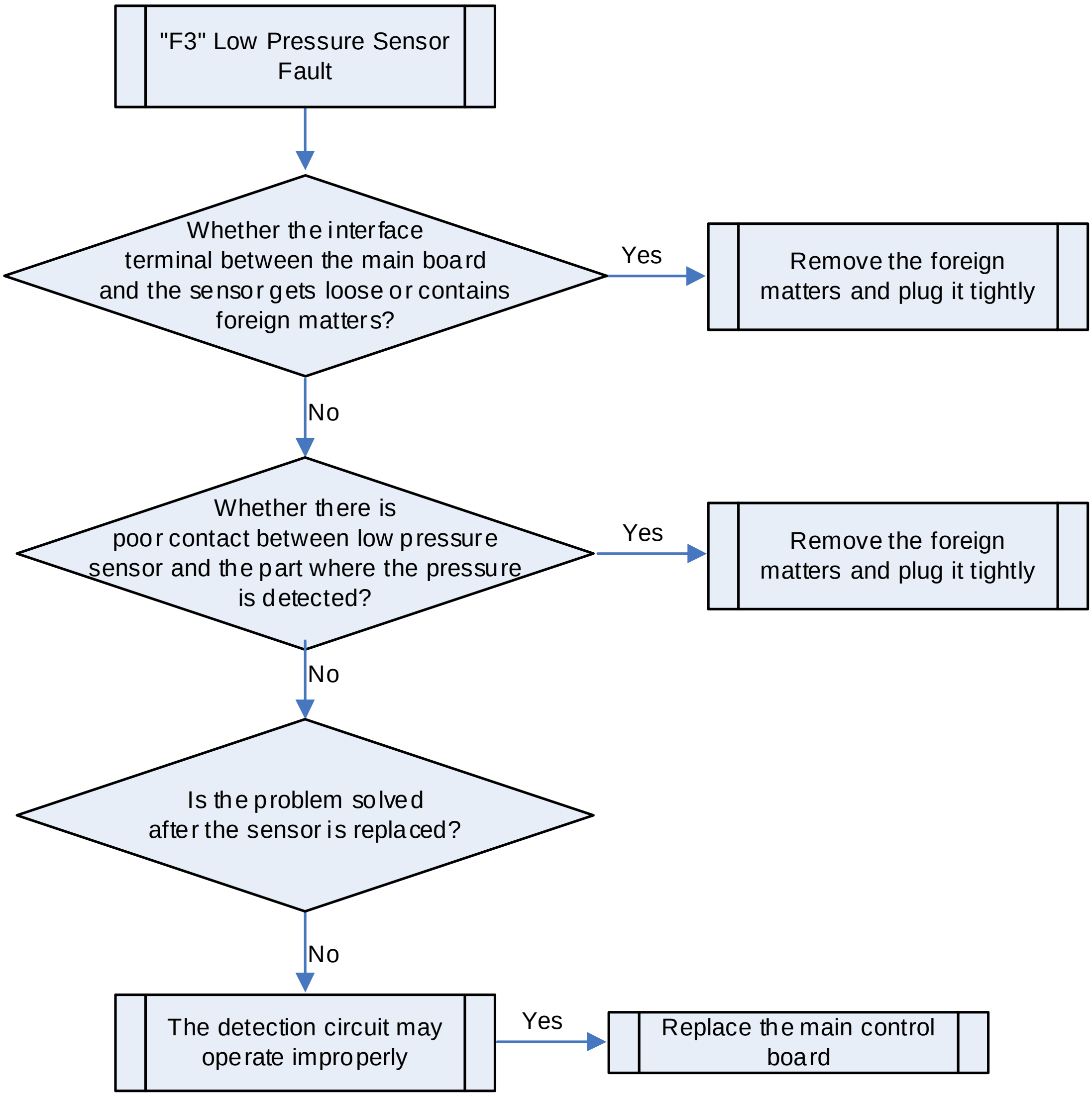
■ Poor contact between the low pressure sensor and the main board interface;

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

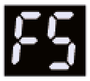
■ Abnormal low pressure sensor;

■ Abnormal low pressure sensor detection circuit.

Troubleshooting:



2.79 "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.

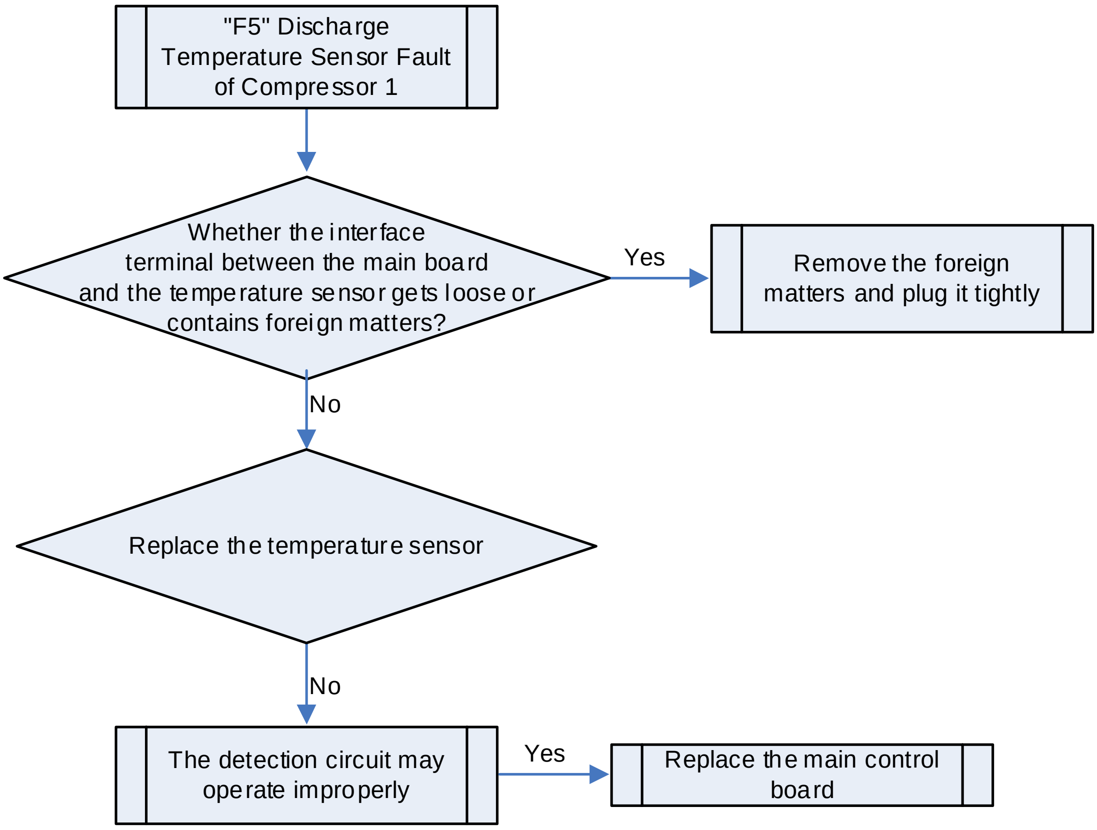
Possible causes:

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

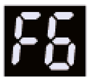
■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.80 "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.

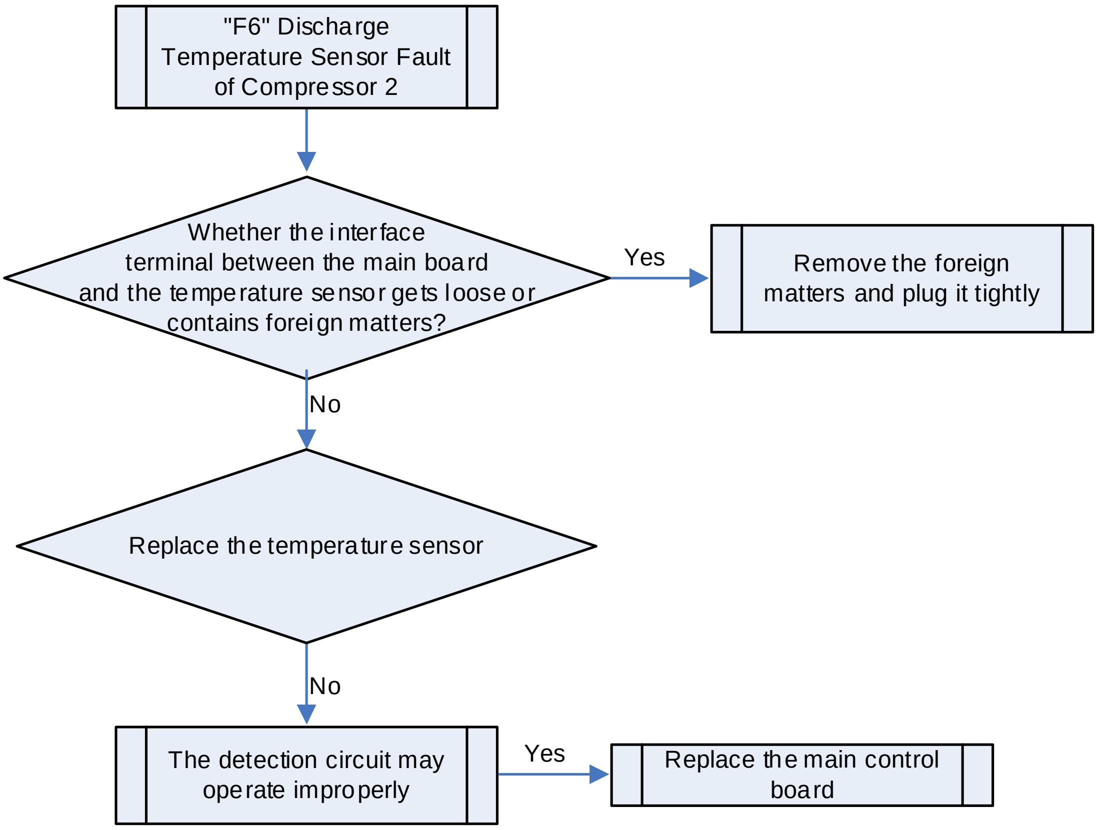
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.81 "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.

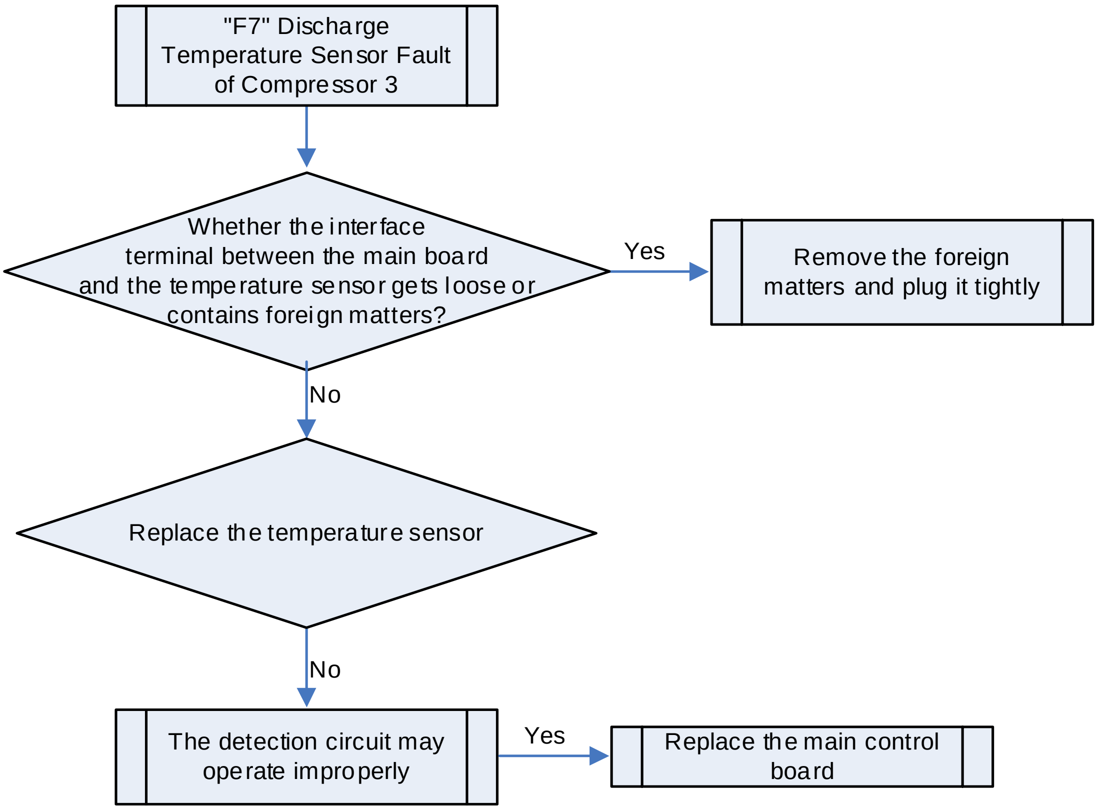
Possible causes:

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

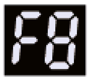
■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.82 "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.

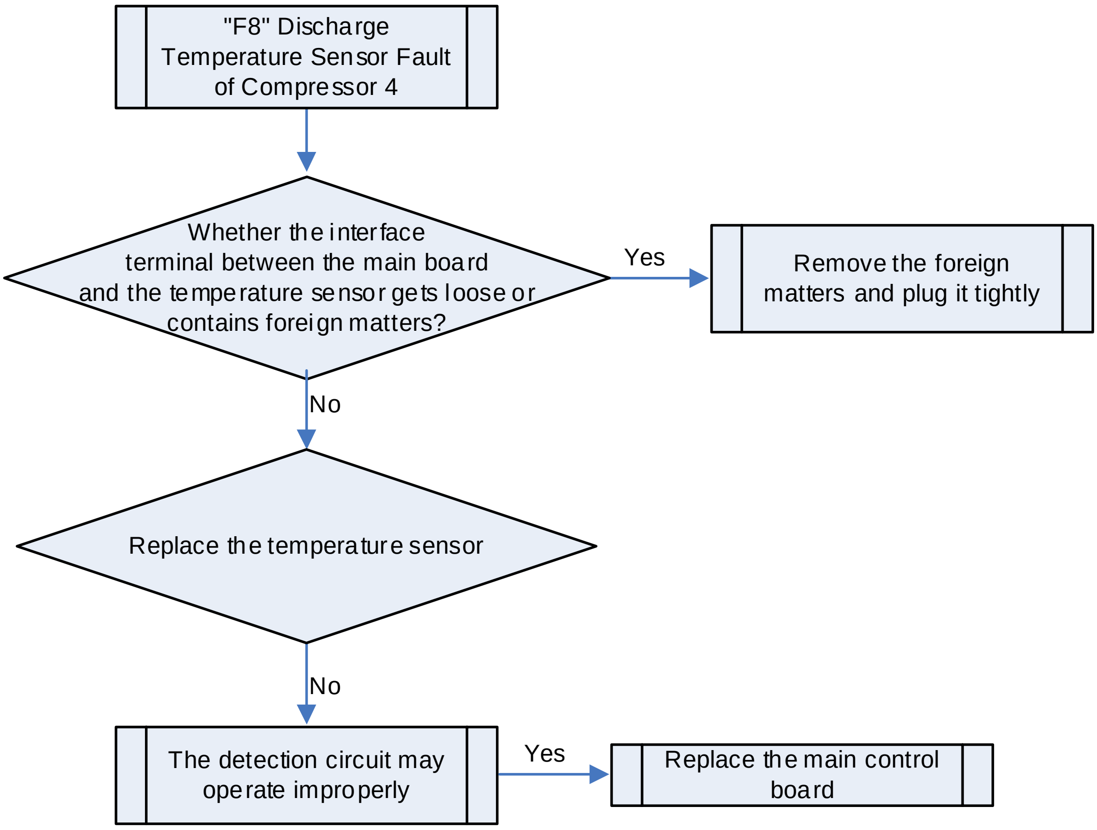
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.83 "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.

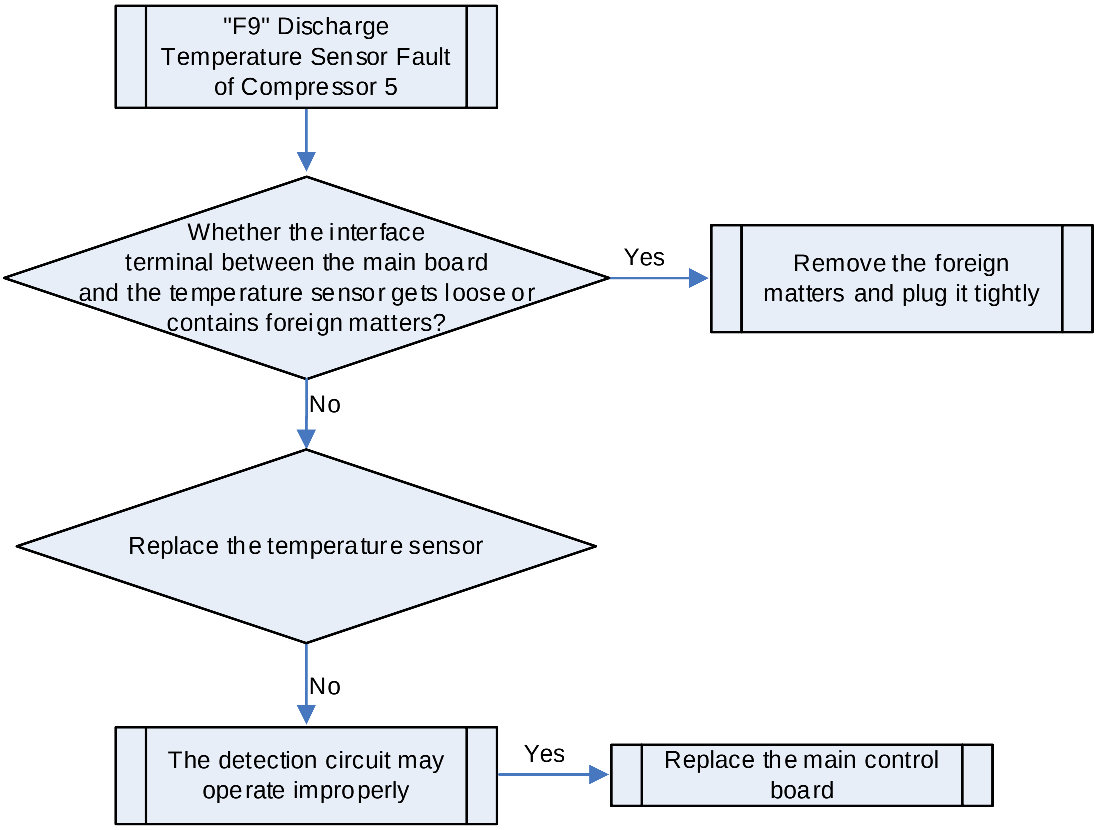
Possible causes:

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

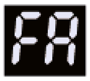
■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.84 "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.

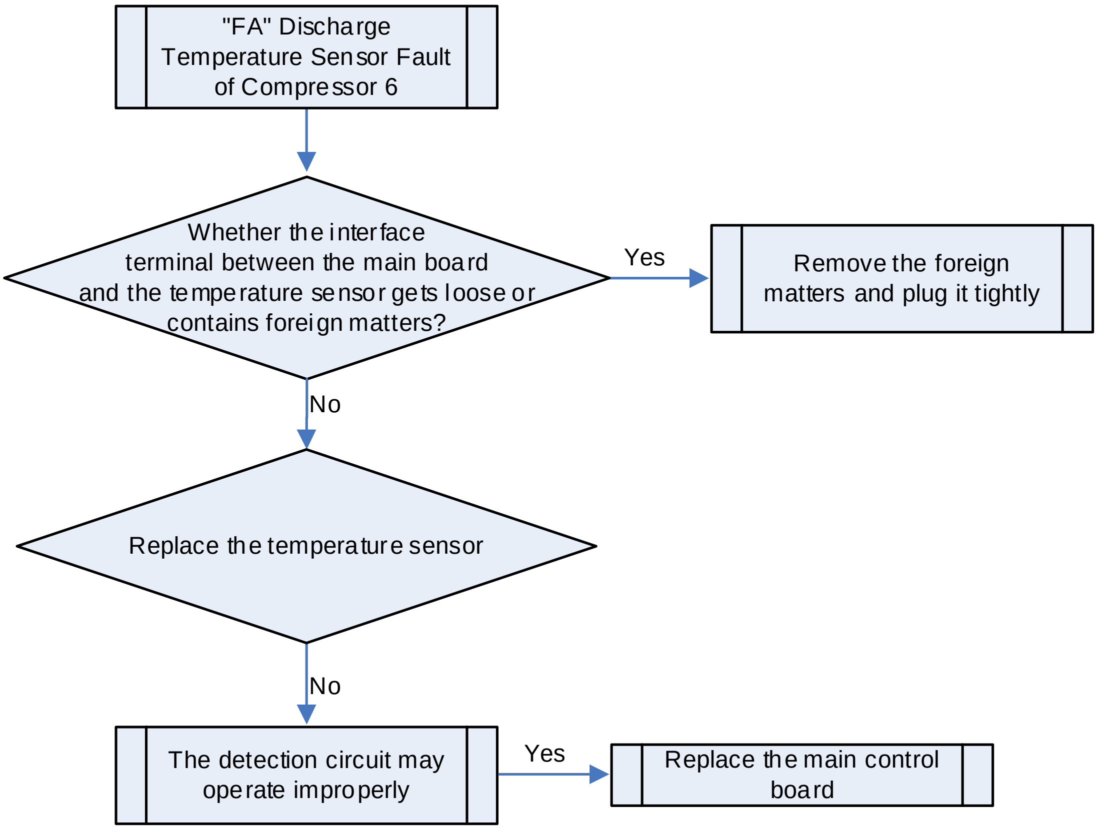
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.85 "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.

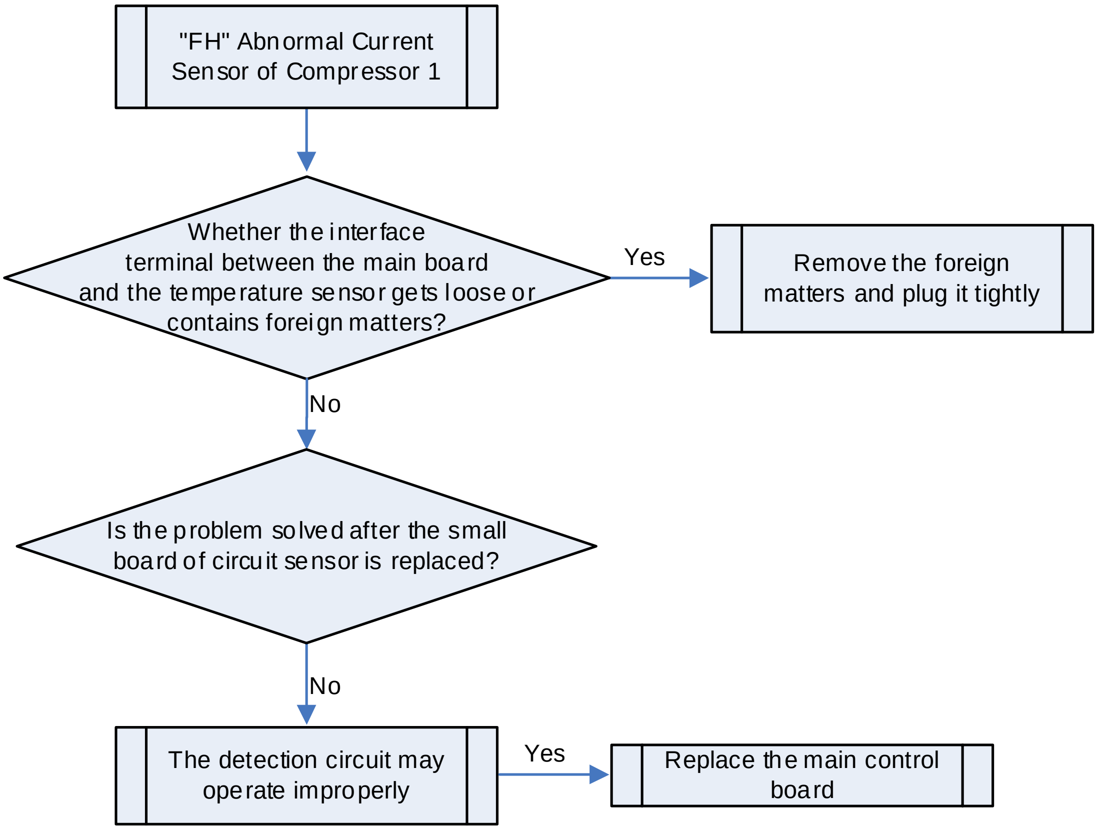
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.86 "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.

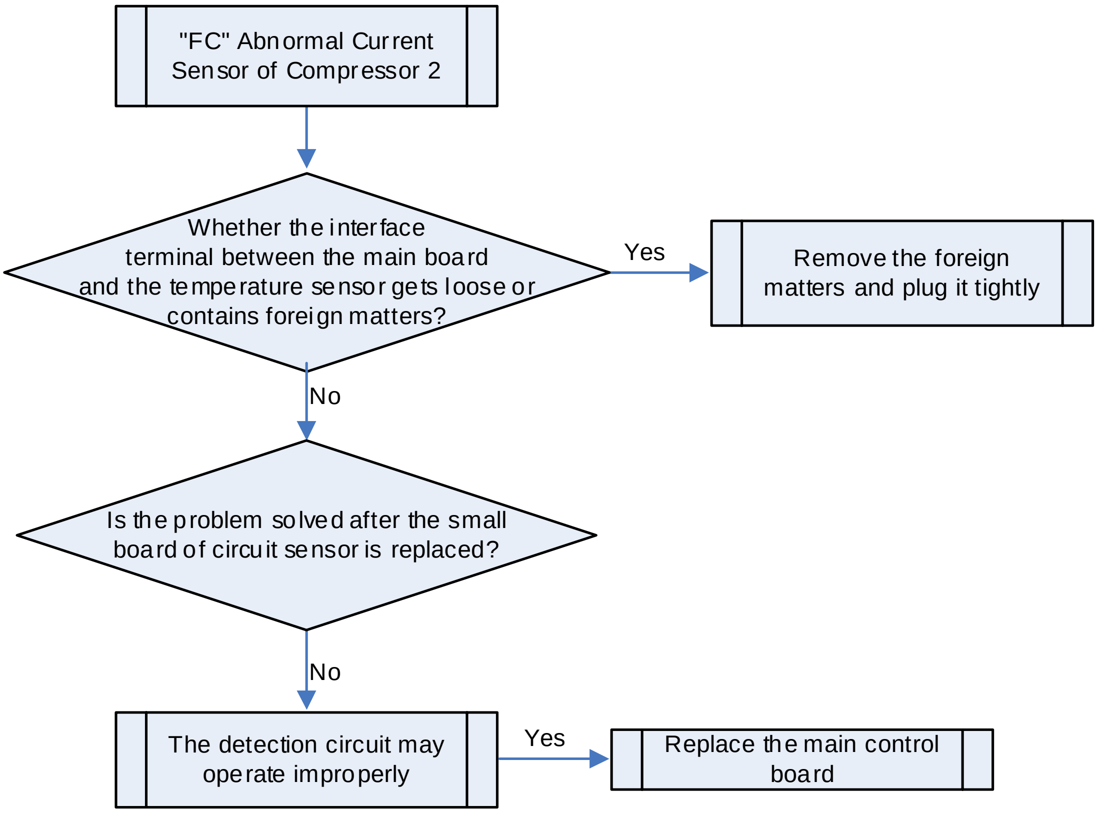
Possible causes:

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

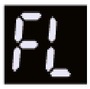
■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.87 "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.

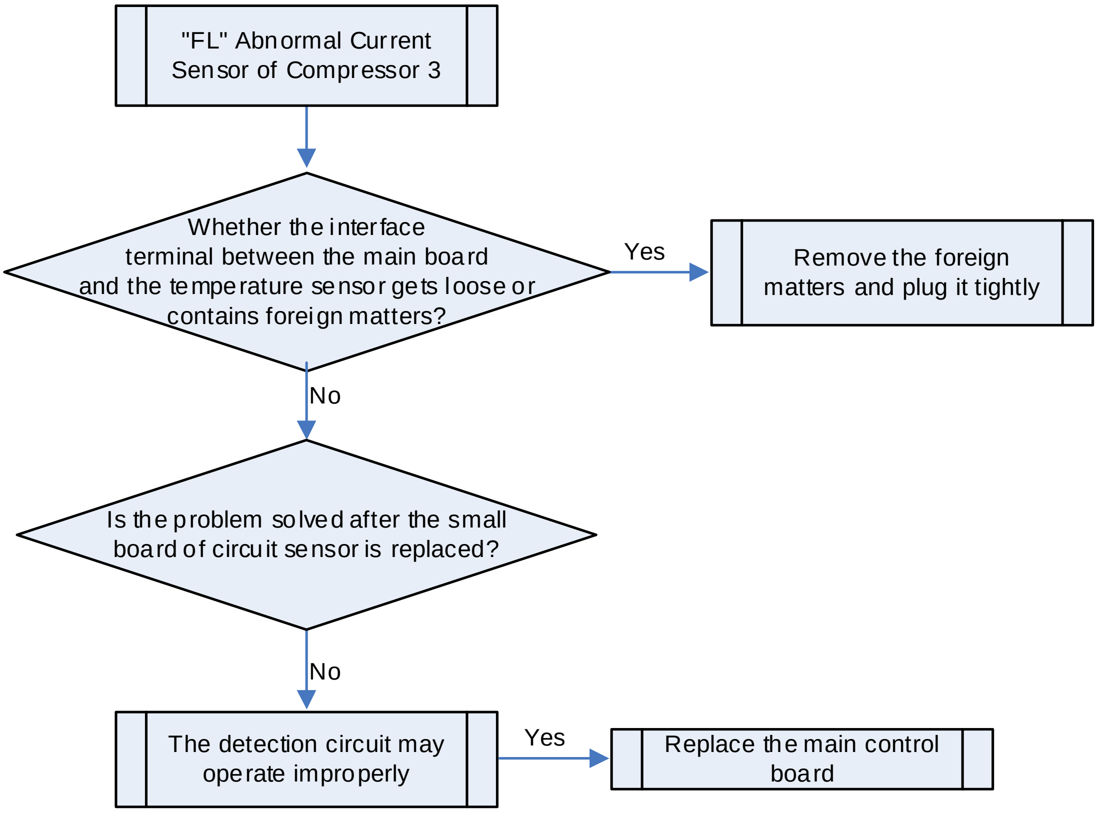
Possible causes:

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

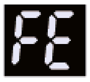
■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.88 "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.

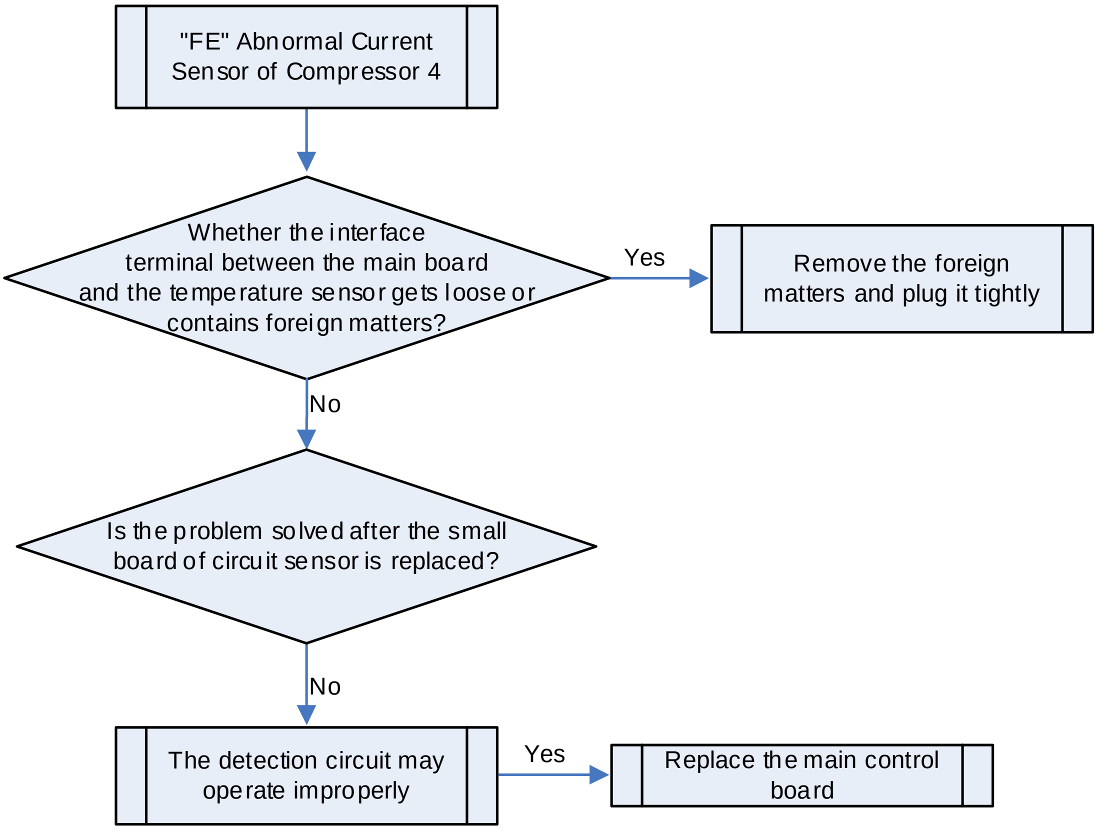
Possible causes:

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

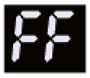
■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.89 "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.

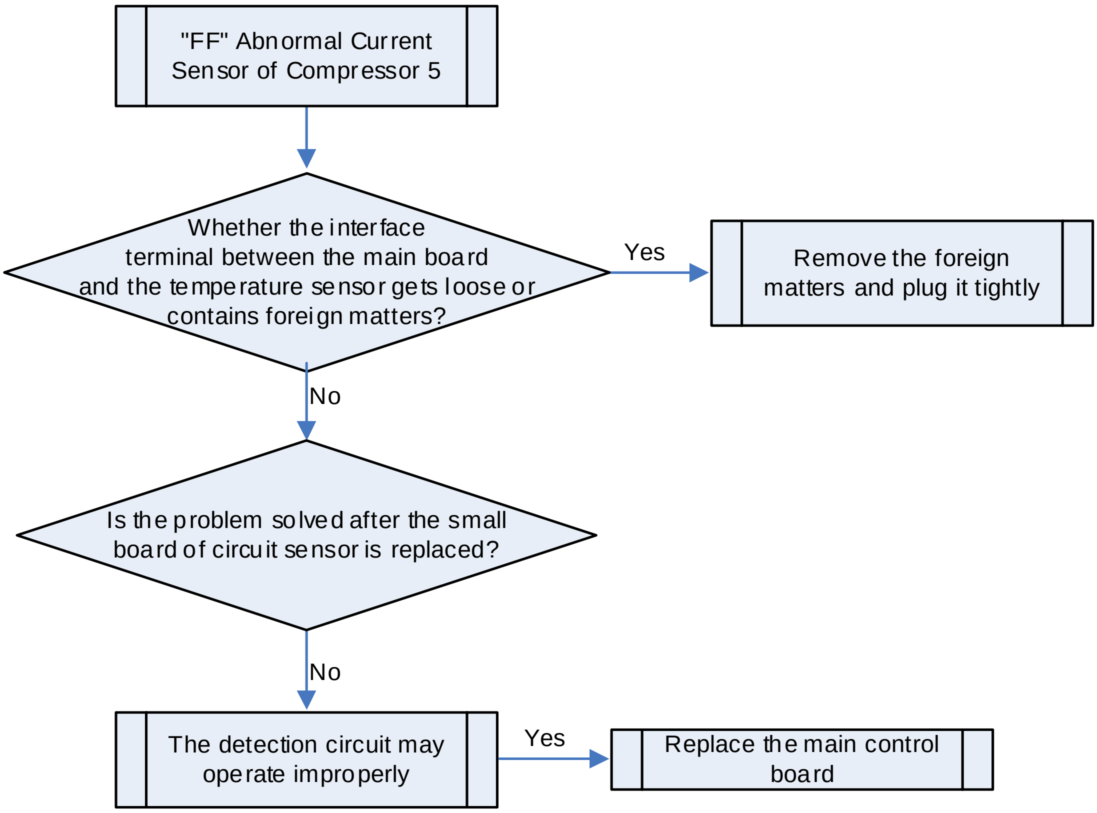
Possible causes:

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

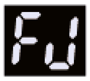
■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.90 "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.

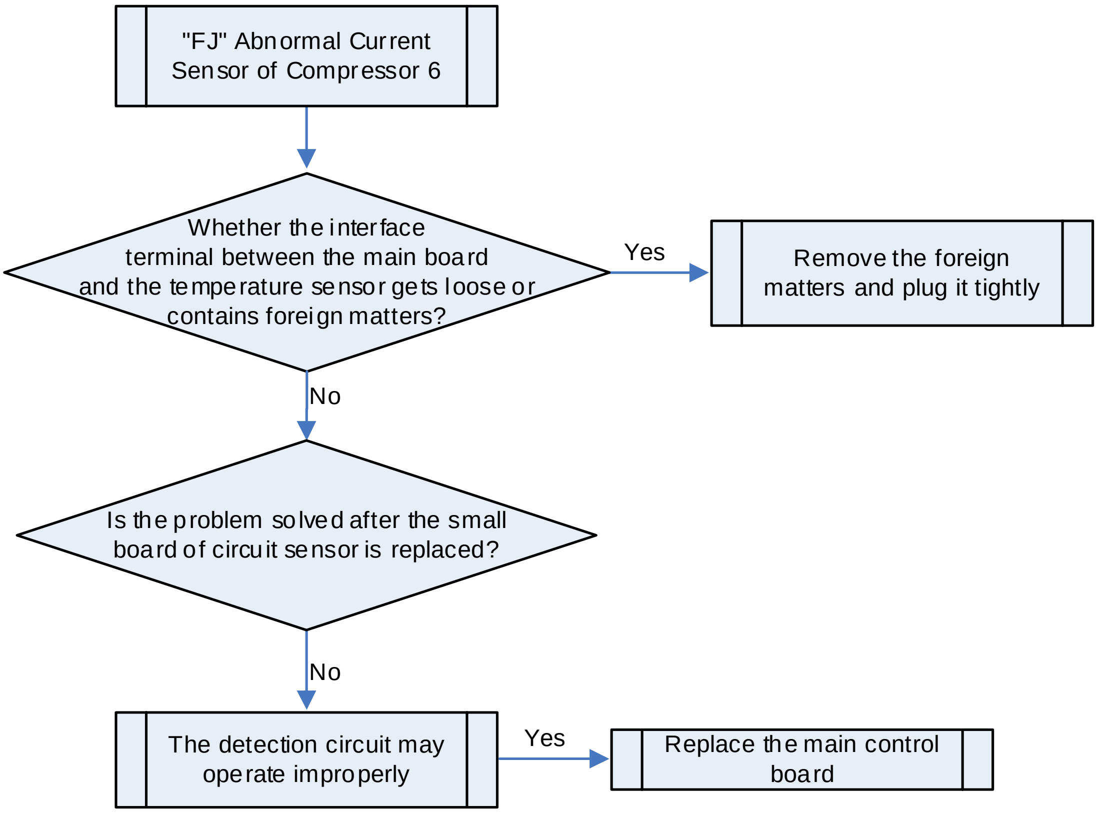
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.91 "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.

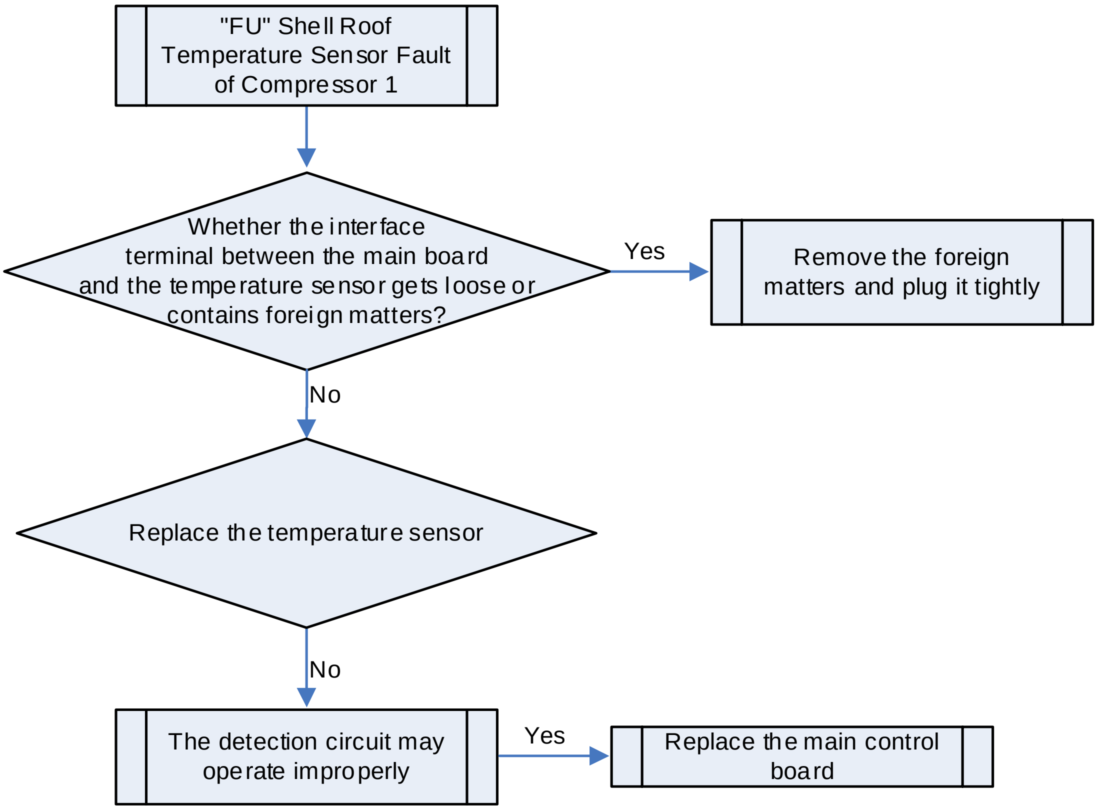
Possible causes:

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

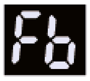
■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.92 "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.

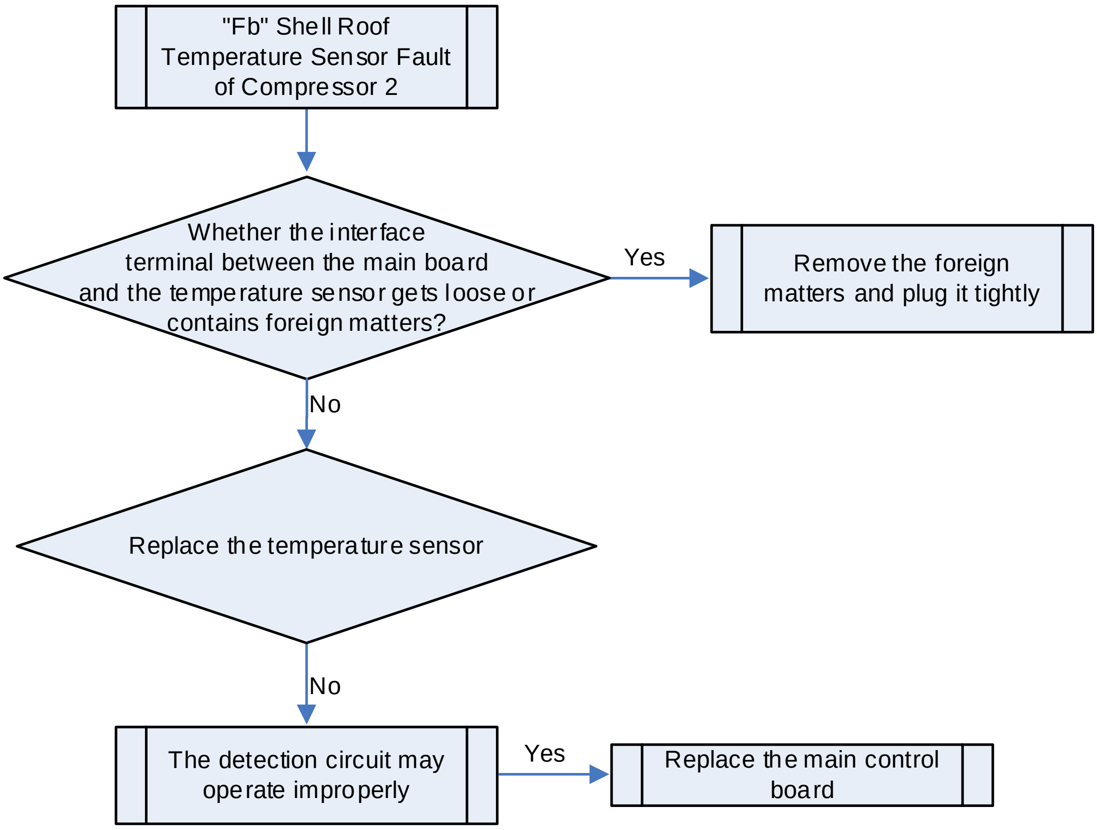
Possible causes:

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

■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.93 “Fd” Mode exchanger outlet pipe temperature sensor error

Error display: main board of mode exchanger will display 

Applicable mode: mode exchanger

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

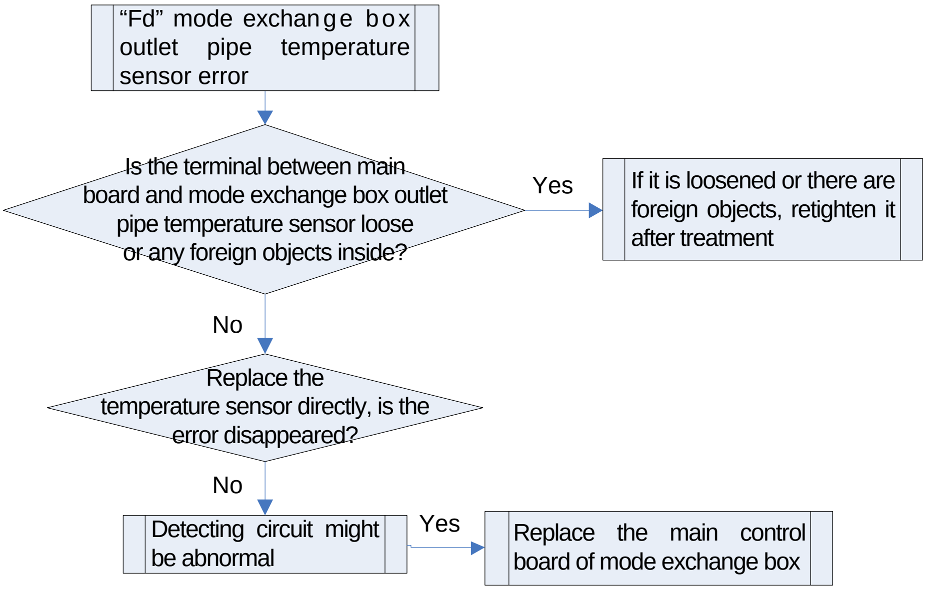
Possible reasons:

■Poor contact between temperature sensor and terminal in main board interface

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.94 "Fn" Mode exchanger inlet pipe temperature sensor error

Error display: mode exchanger main board will display 

Applicable mode: all mode exchangers

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

Possible reasons:

■Poor contact between inlet pipe temperature sensor and terminal in main board interface

■Inlet pipe temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

Step 1: check the terminal between mode exchanger main board and temperature sensor to see if it is loose or any foreign objects inside? If yes, reconnect it after treatment;

Step 2: check if the temperature sensor is abnormal, if yes, replace the temperature sensor;

Step 3: if the above inspections are normal, the detecting circuit might be abnormal, please replace the main board.

2.95 "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).

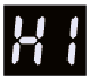
Troubleshooting:

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).

2.96 "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).

2.97 "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).

2.98 "H3" Reset Protection for the Fan Drive Module

Fault display: wired controller of indoor unit displays 

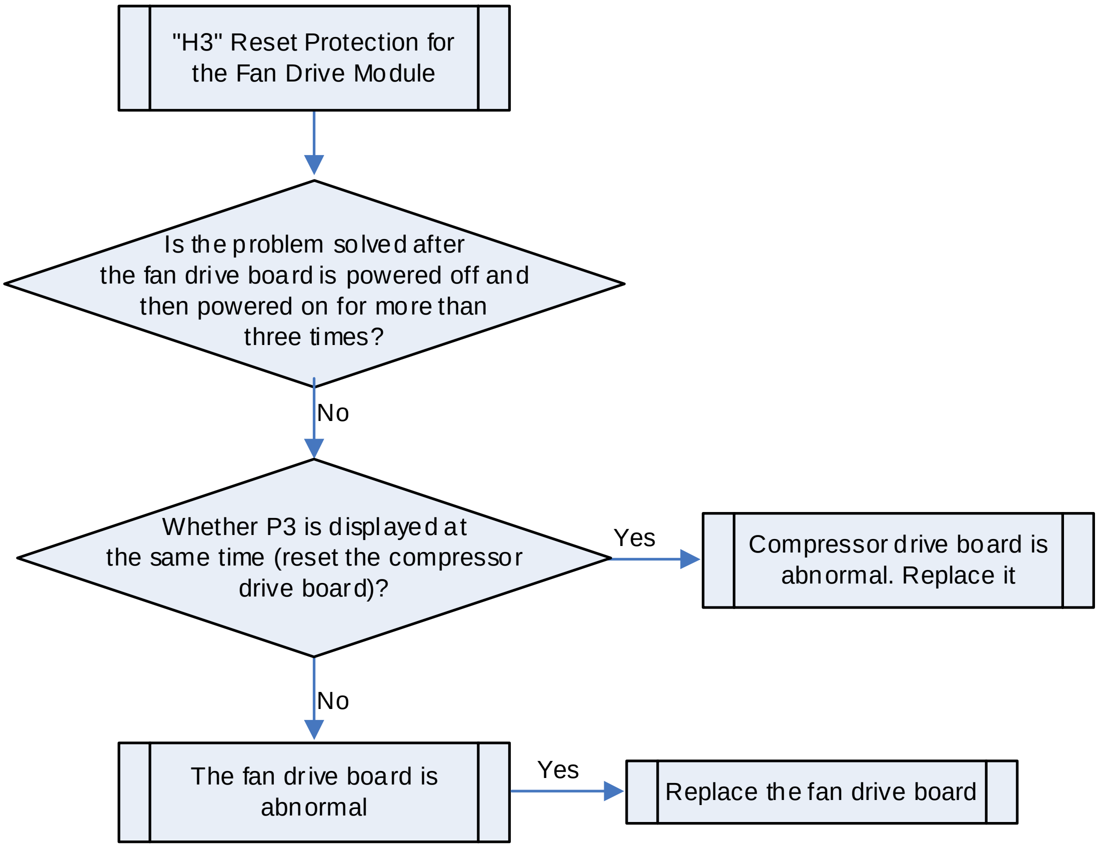
Fault diagnosis:

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:



2.99 "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:

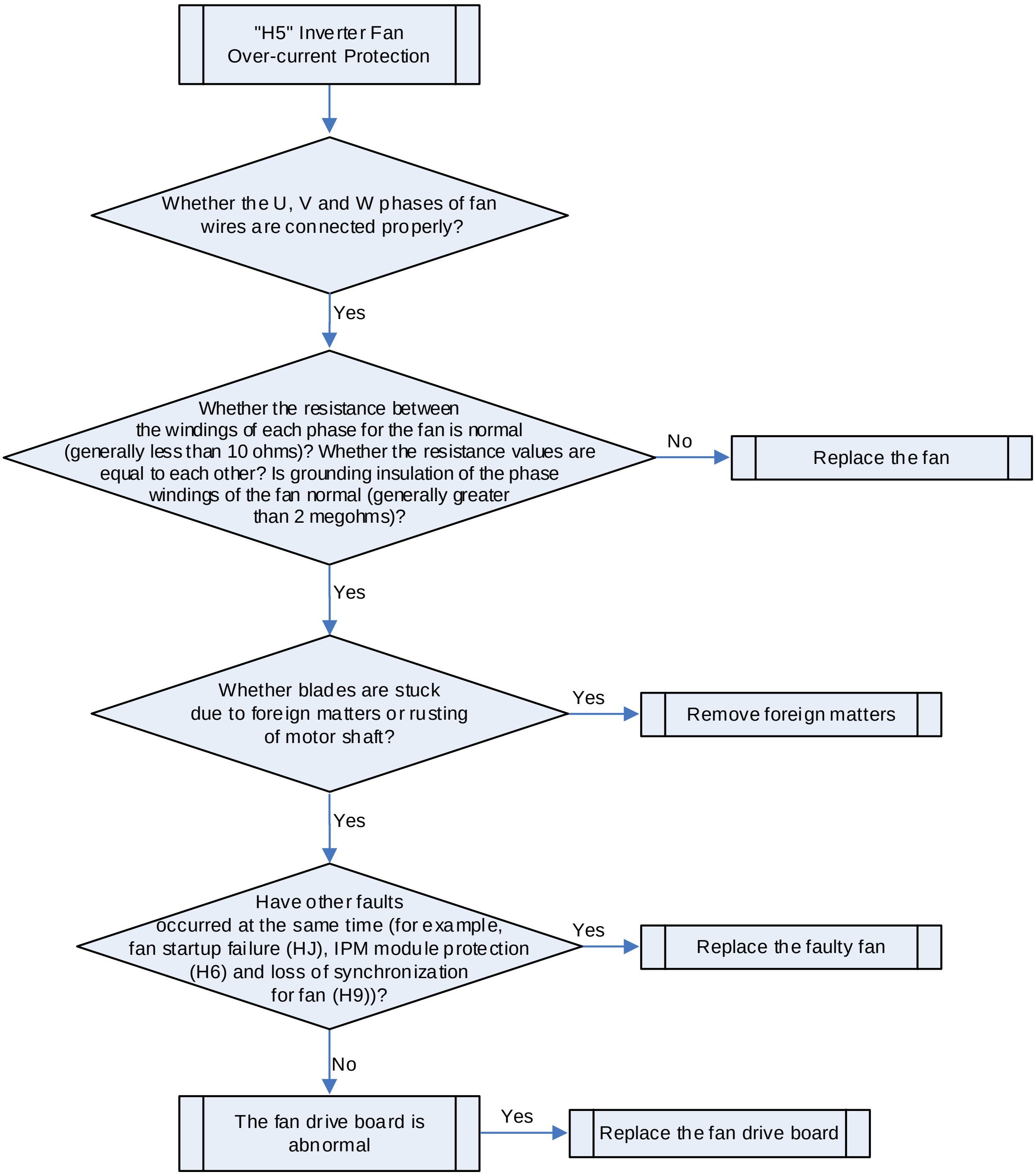
■ Poor contact of fan's UVW cables;

■ 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:



2.100 "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:

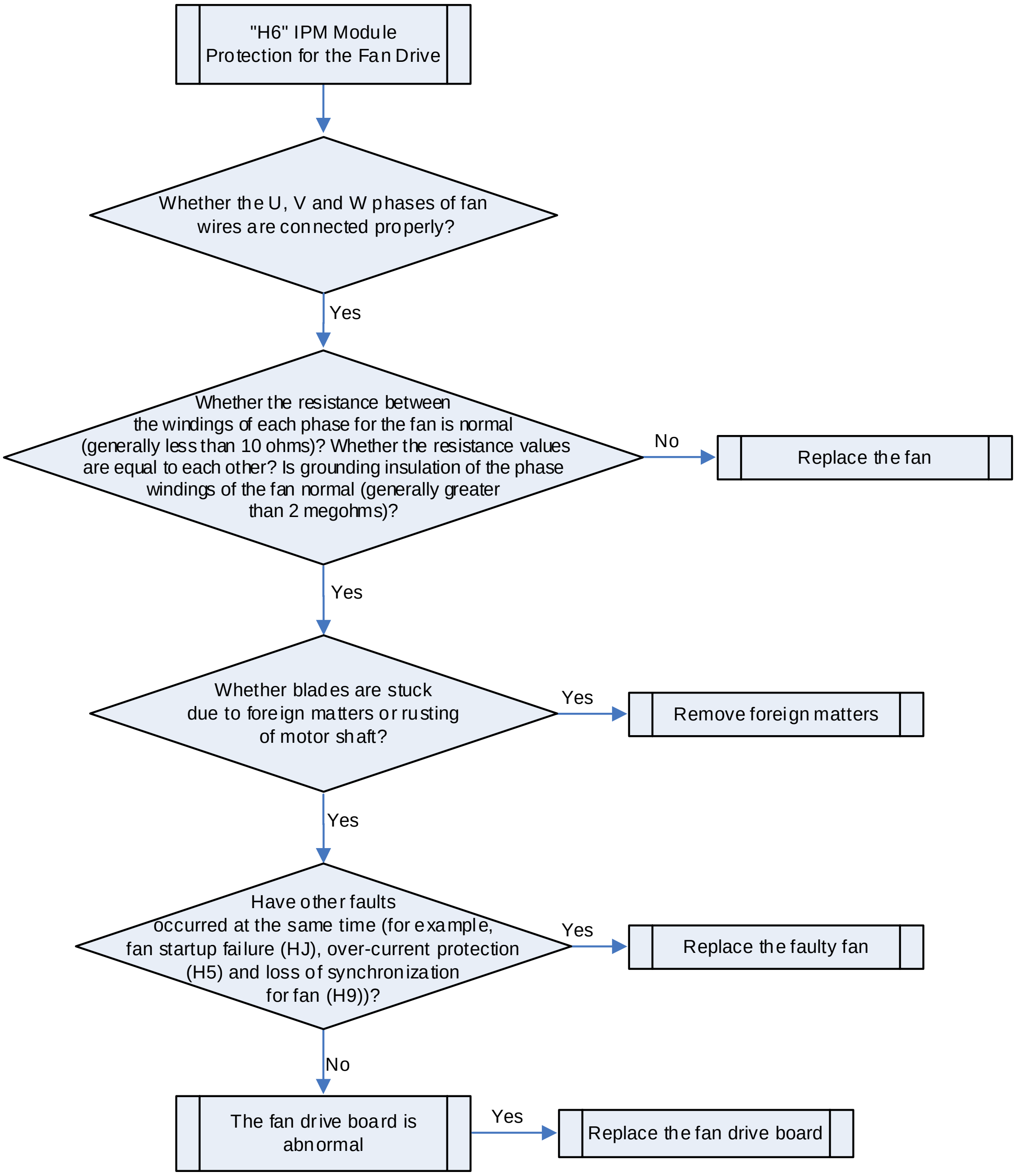
■ Poor contact of fan's UVW cables;

■ The fan is damaged;

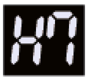
■ The blades are stuck (the blades are blocked or the motor shaft gets rusty);

■ The fan drive board operates improperly.

Troubleshooting:



2.101 "H7" Temperature Sensor Fault of Fan Drive

Fault display: main board of outdoor unit displays 

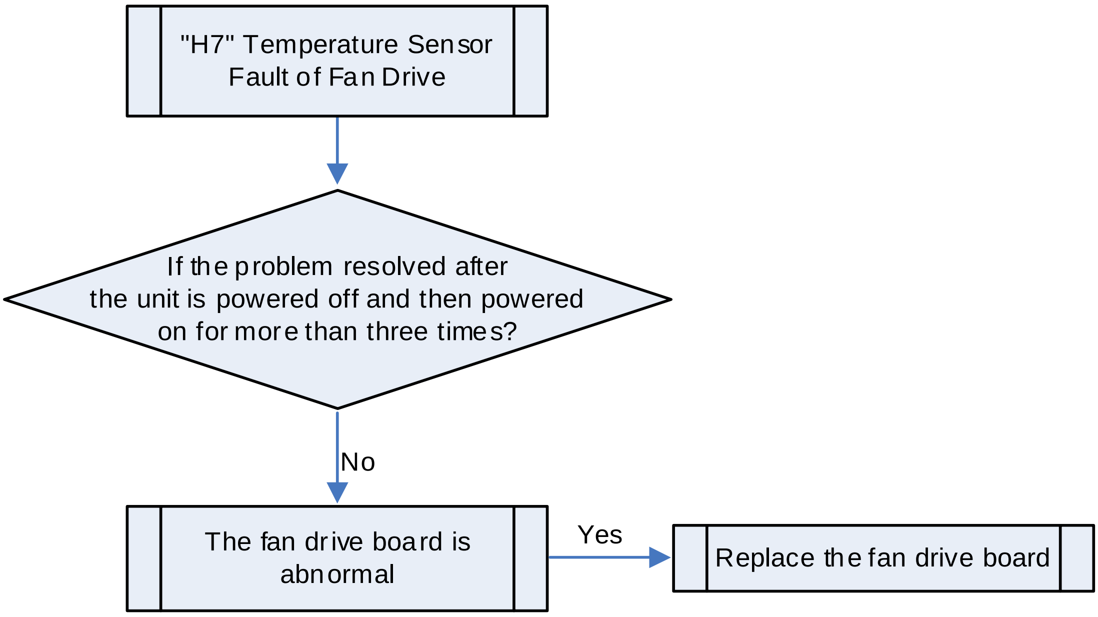
Fault diagnosis:

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:



2.102 "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.

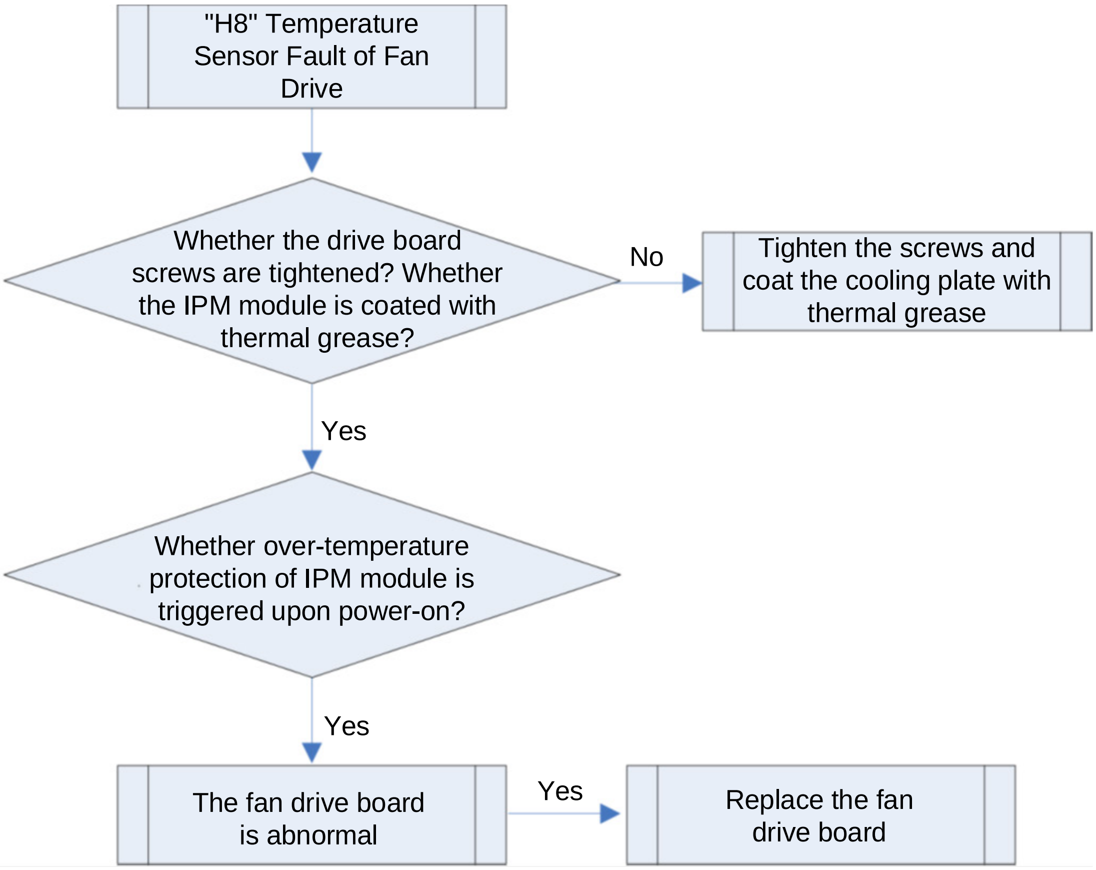
Possible causes:

■ 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:



2.103 "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:

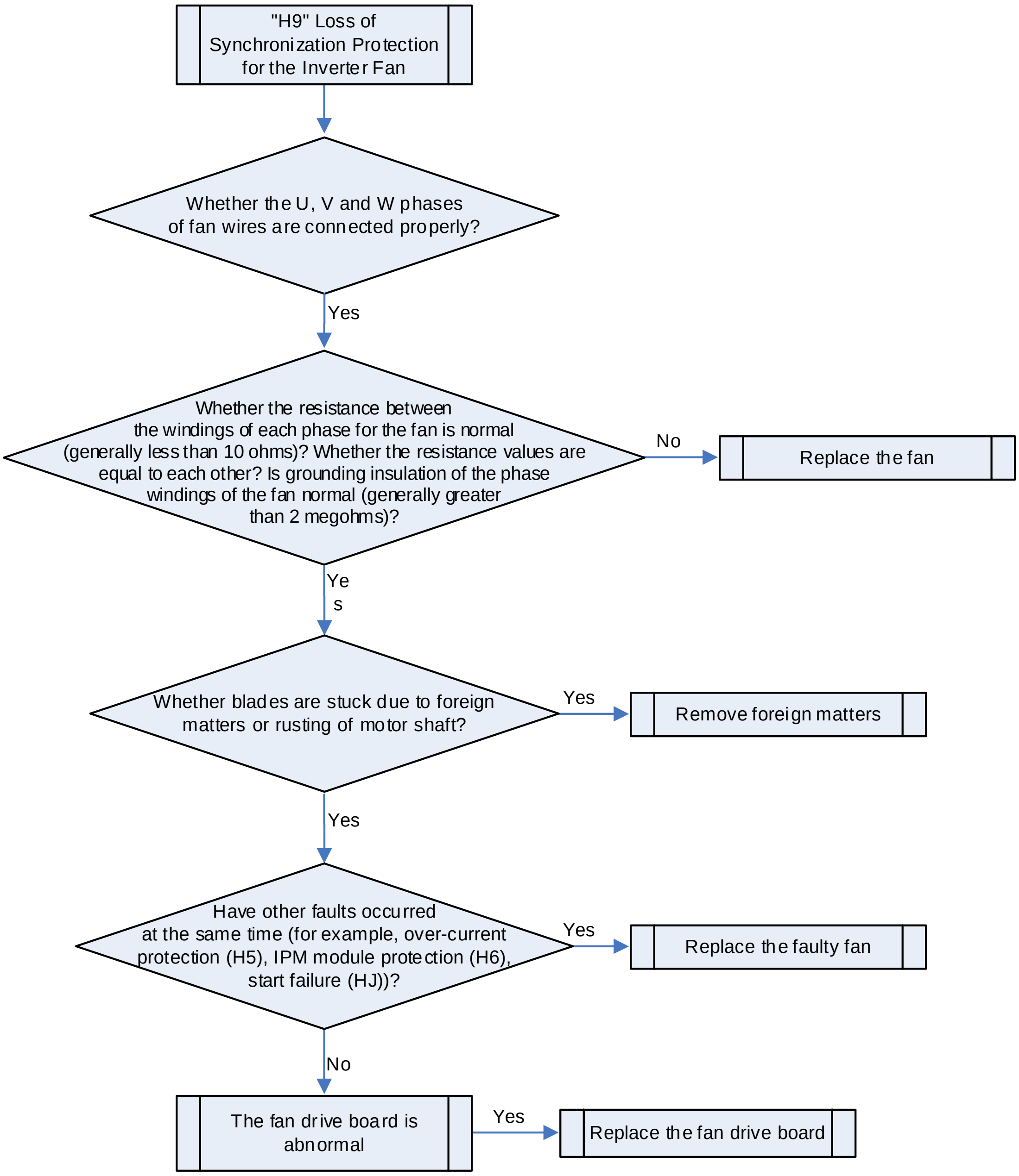
■ Poor contact of fan's UVW cables;

■ 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:



2.104 "HC" Current Detection Circuit Fault of Fan Drive

Fault display: main board of outdoor unit displays 

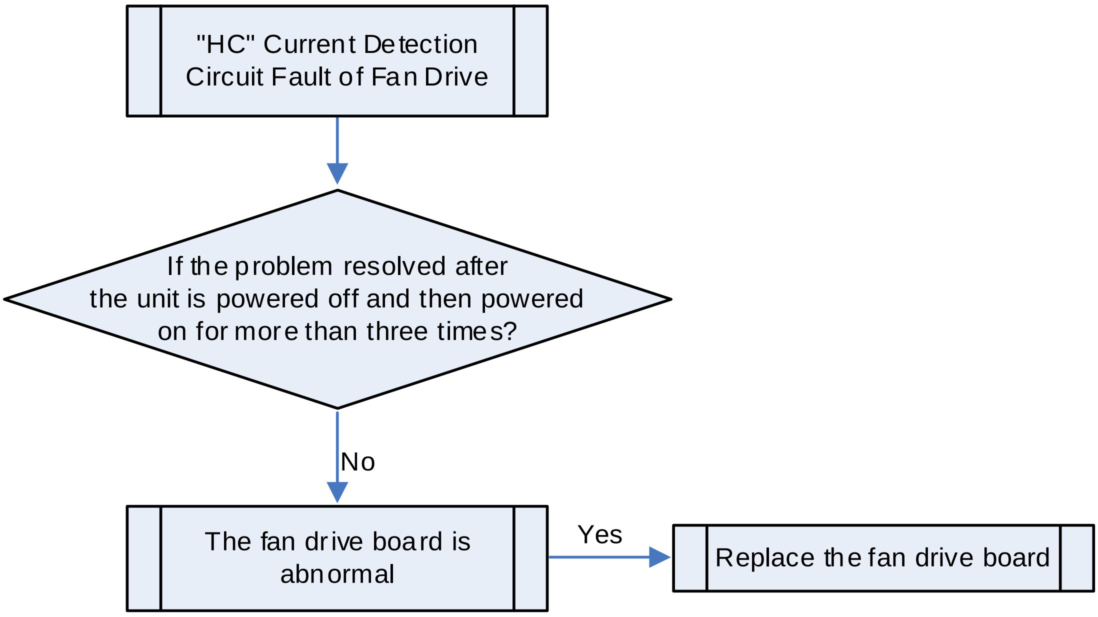
Fault diagnosis:

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.

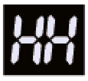
Possible causes:

■ The fan drive board operates improperly.

Troubleshooting:



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

Fault display: main board of outdoor unit displays 

Fault diagnosis:

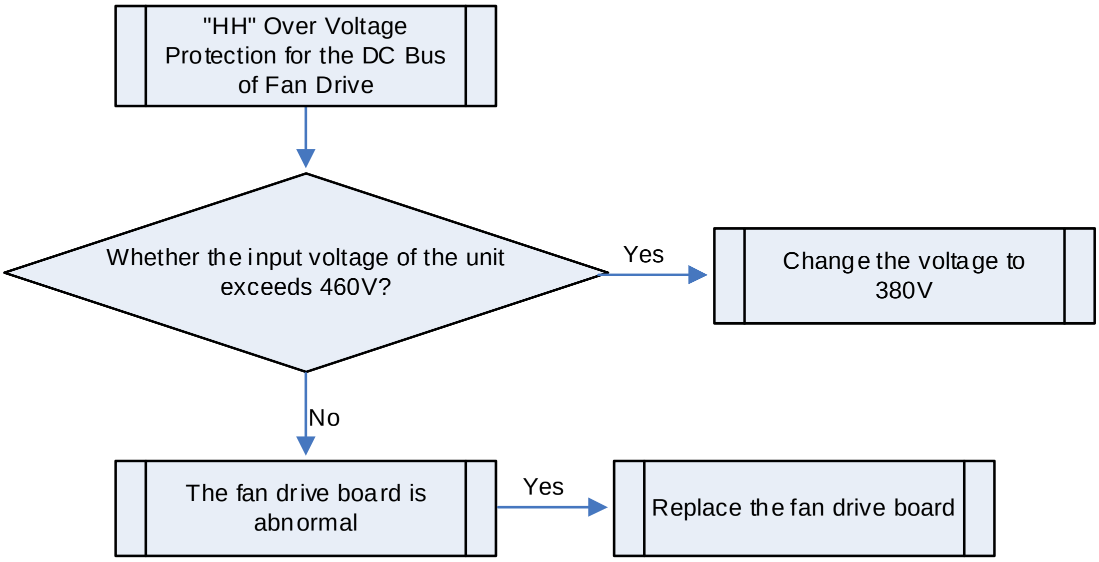
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HH, it indicates the over voltage protection for the DC bus of fan drive.

Possible causes:

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

■ The fan drive board operates improperly.

Troubleshooting:



2.106 "HL" Under Voltage Protection for DC Bus of Fan Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

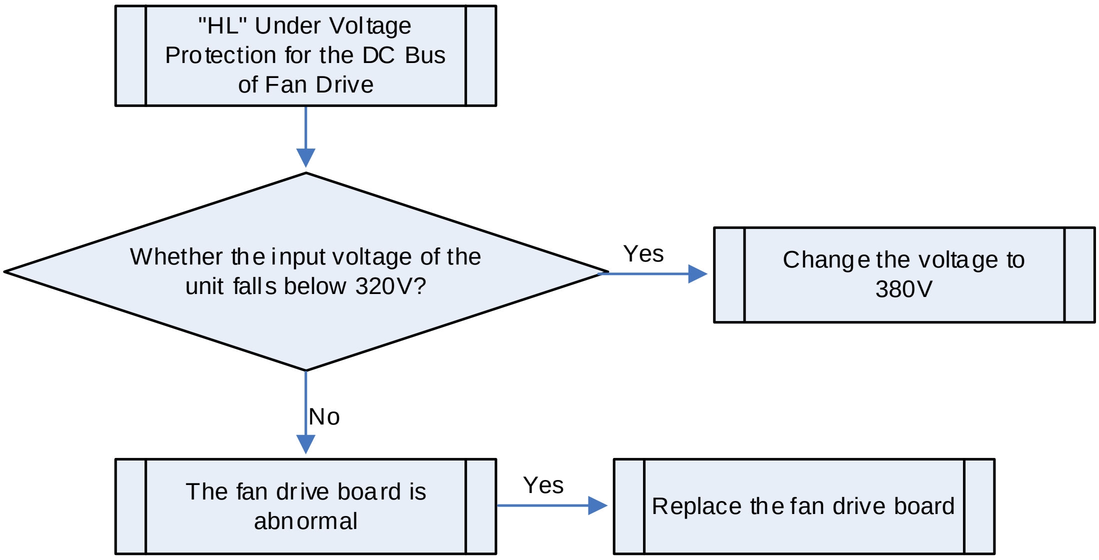
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HL, it indicates the under voltage protection for the DC bus of fan drive.

Possible causes:

■ The unit's input power cable has a voltage below 320 V;

■ The fan drive board operates improperly.

Troubleshooting:



2.107 "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:

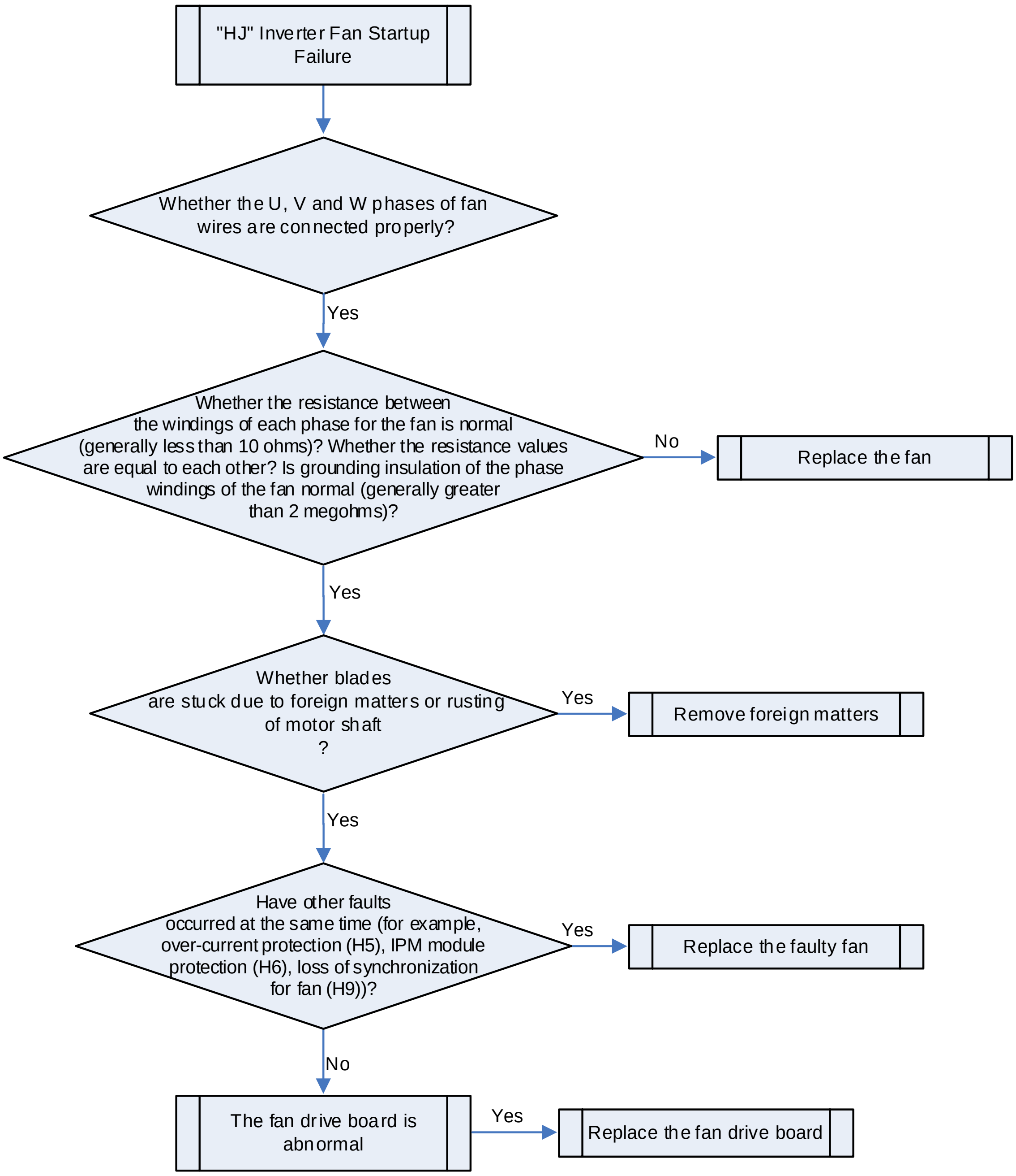
■ Poor contact of fan's UVW cables;

■ 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:



2.108 "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.

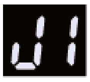
Possible causes:

■ Other modules have faults, thereby causing the unit to stop operation.

Troubleshooting:

Troubleshoot other modules.

2.109 "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.

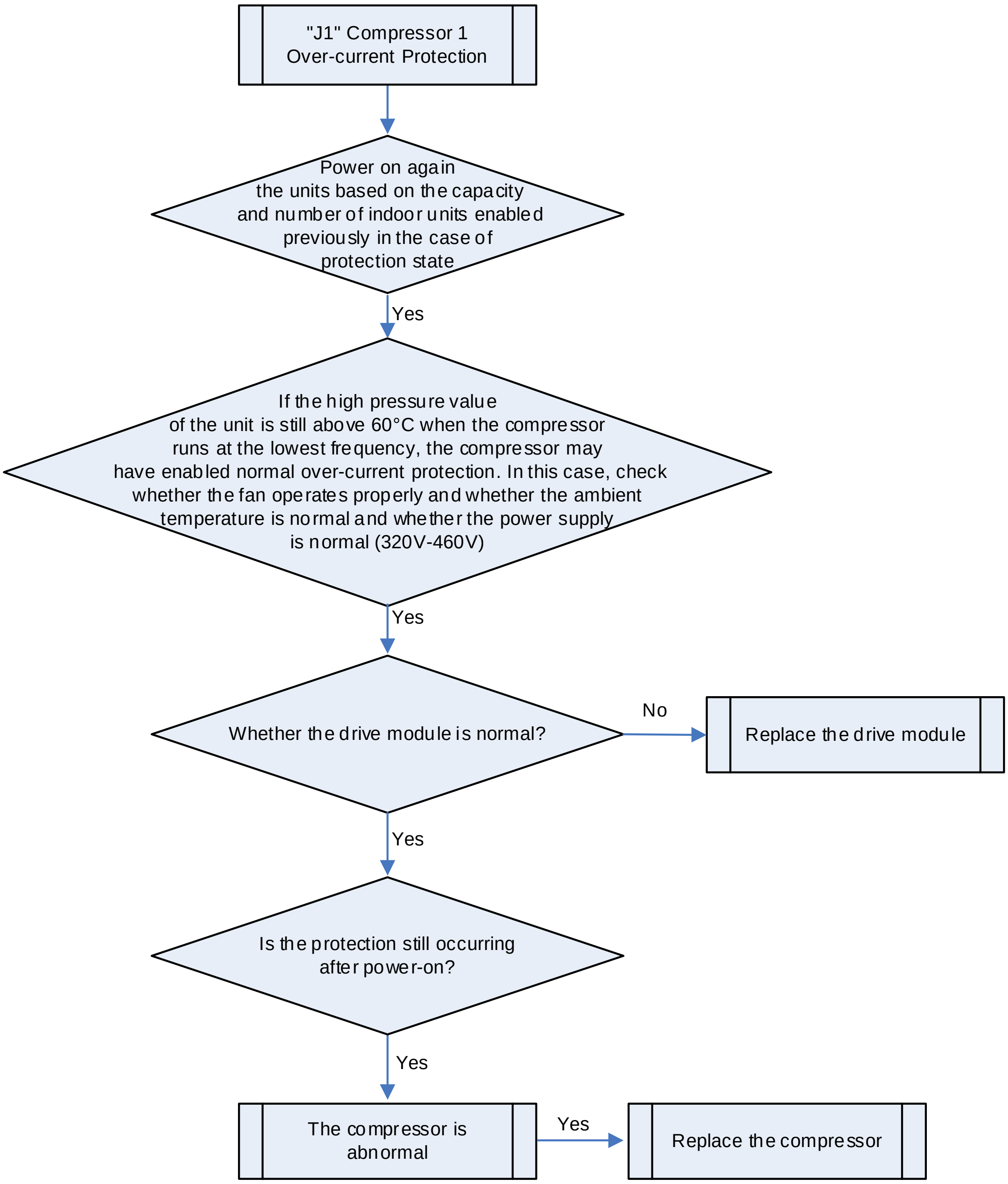
Possible causes:

■ 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

2.110 "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.

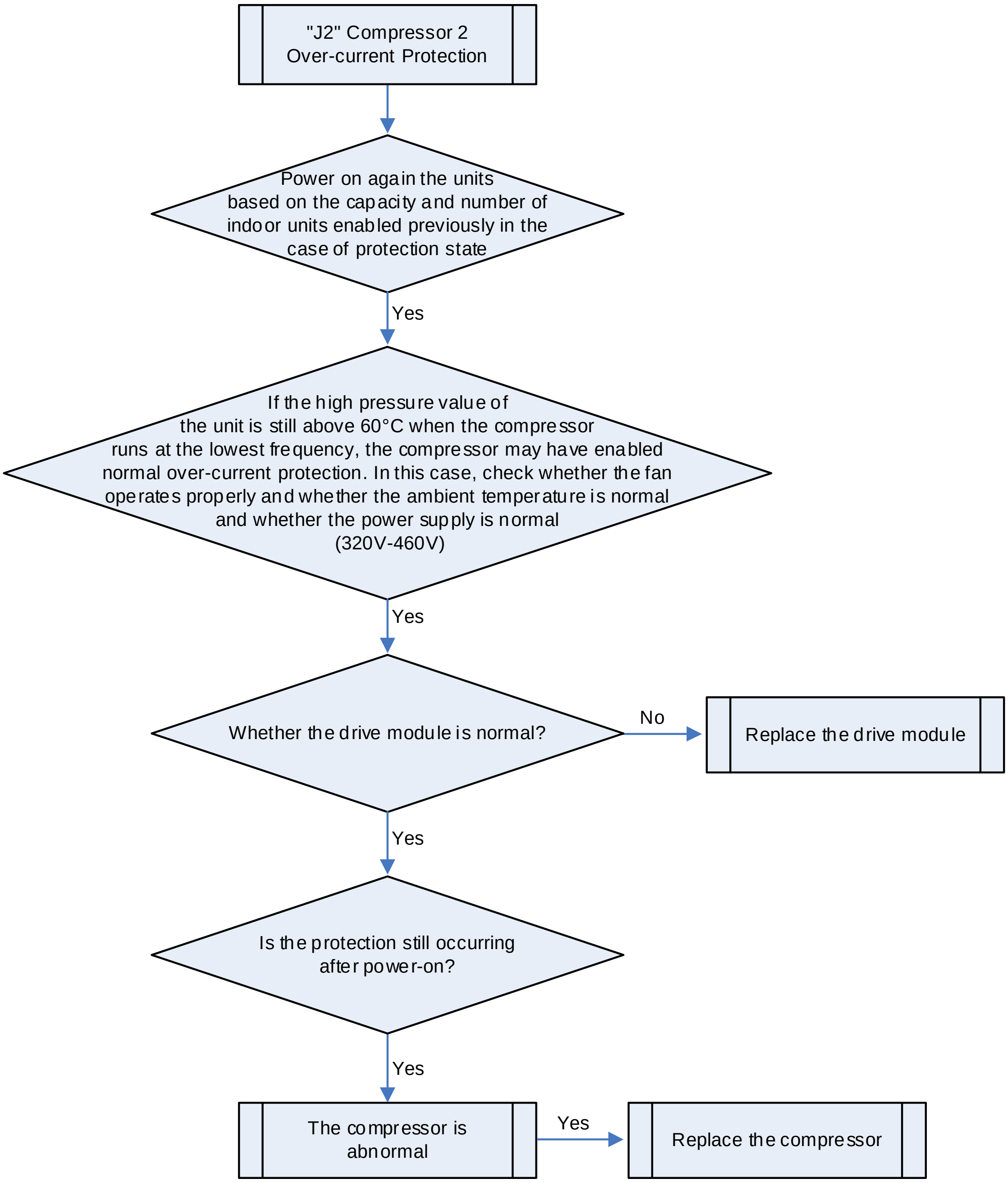
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.111 "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.

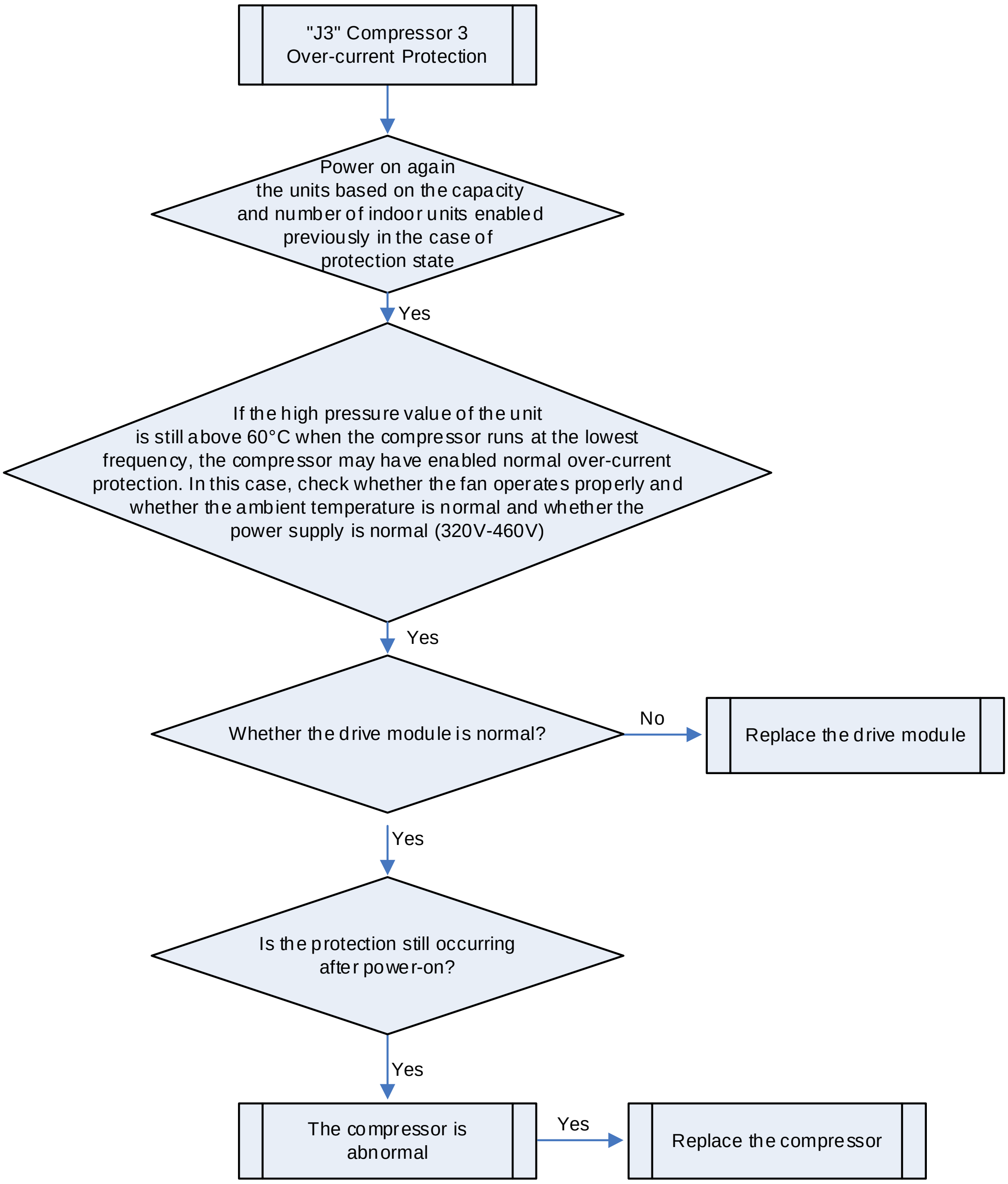
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.112 "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.

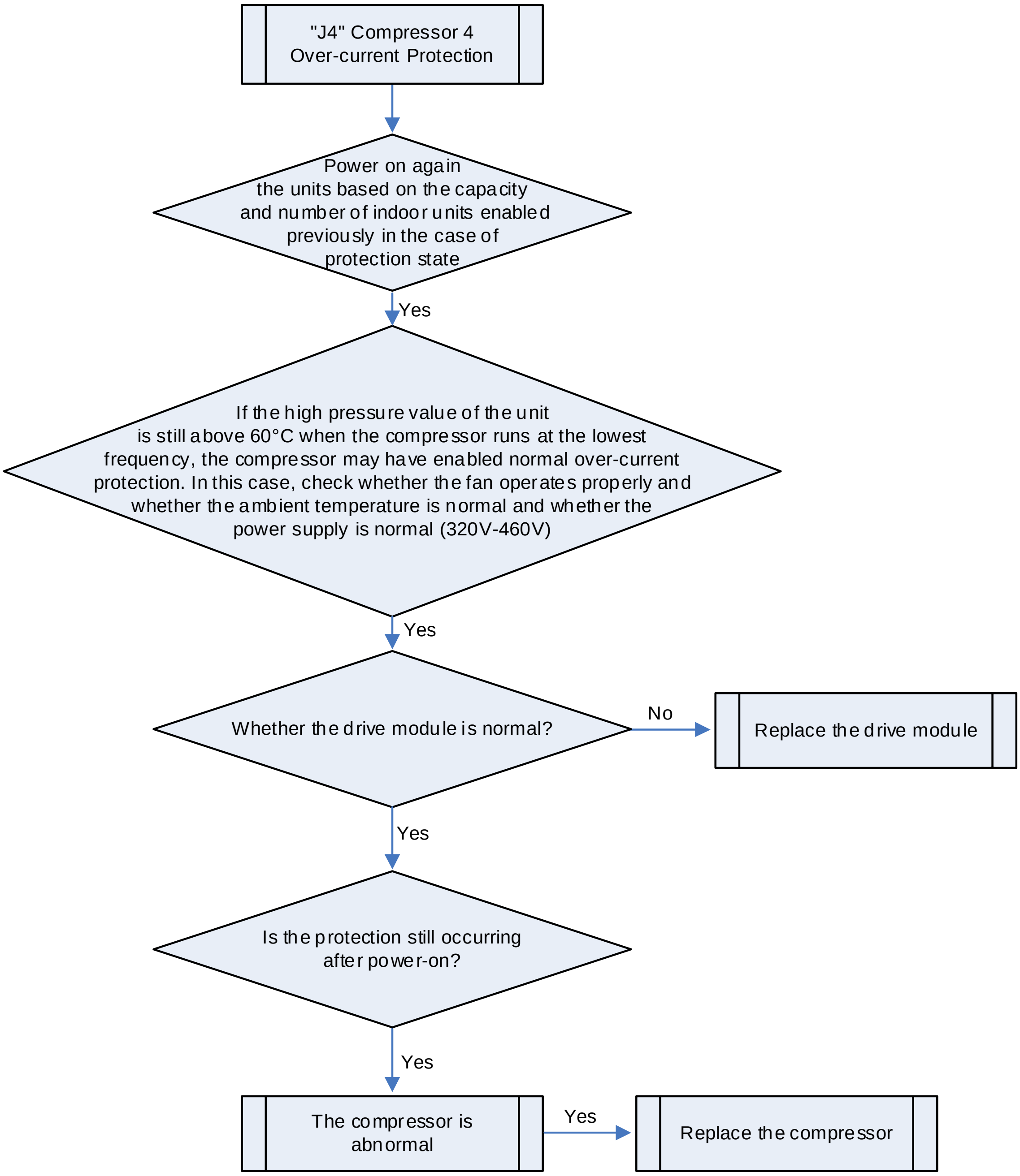
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.113 "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.

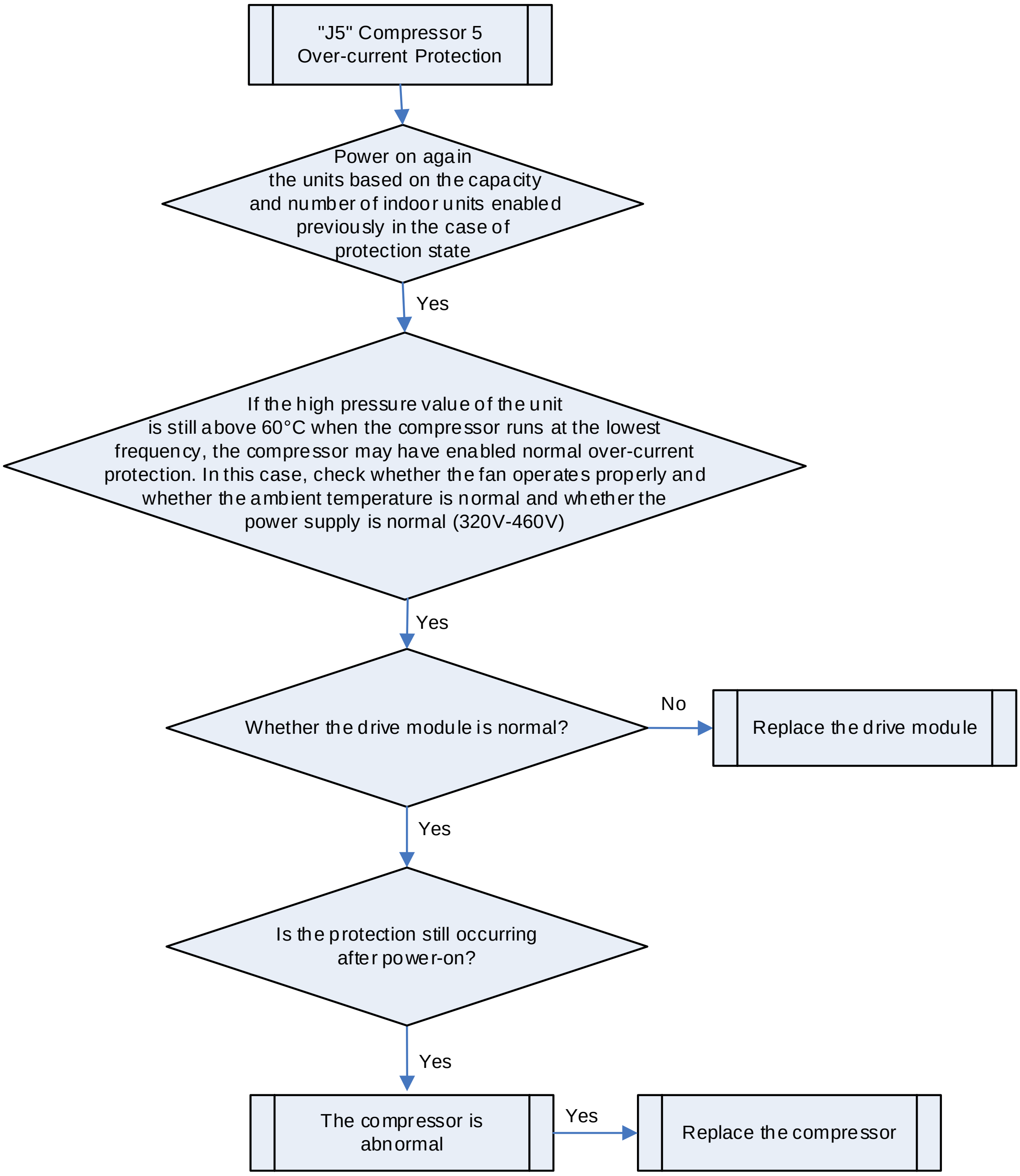
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.114 "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.

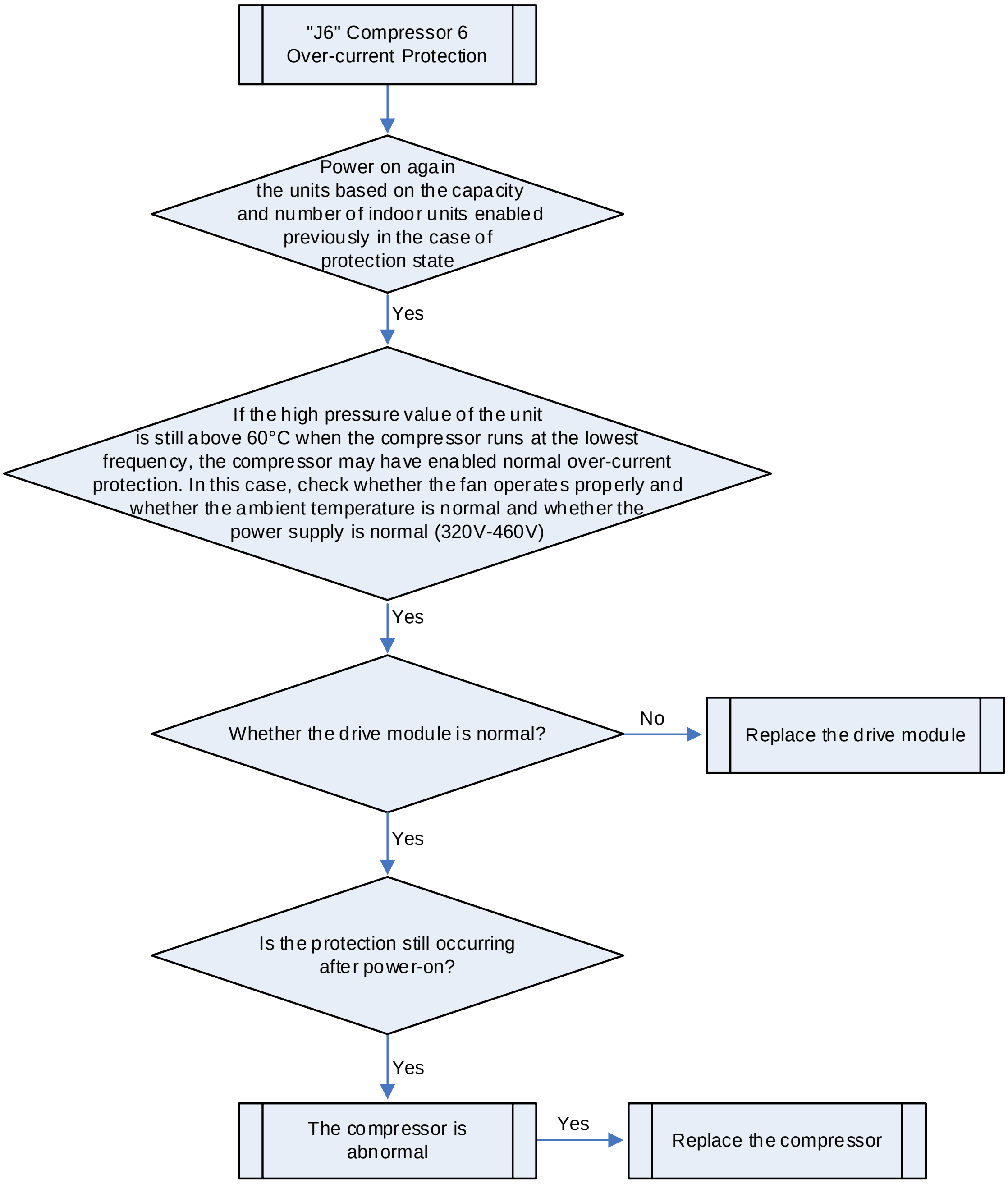
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.115 "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.

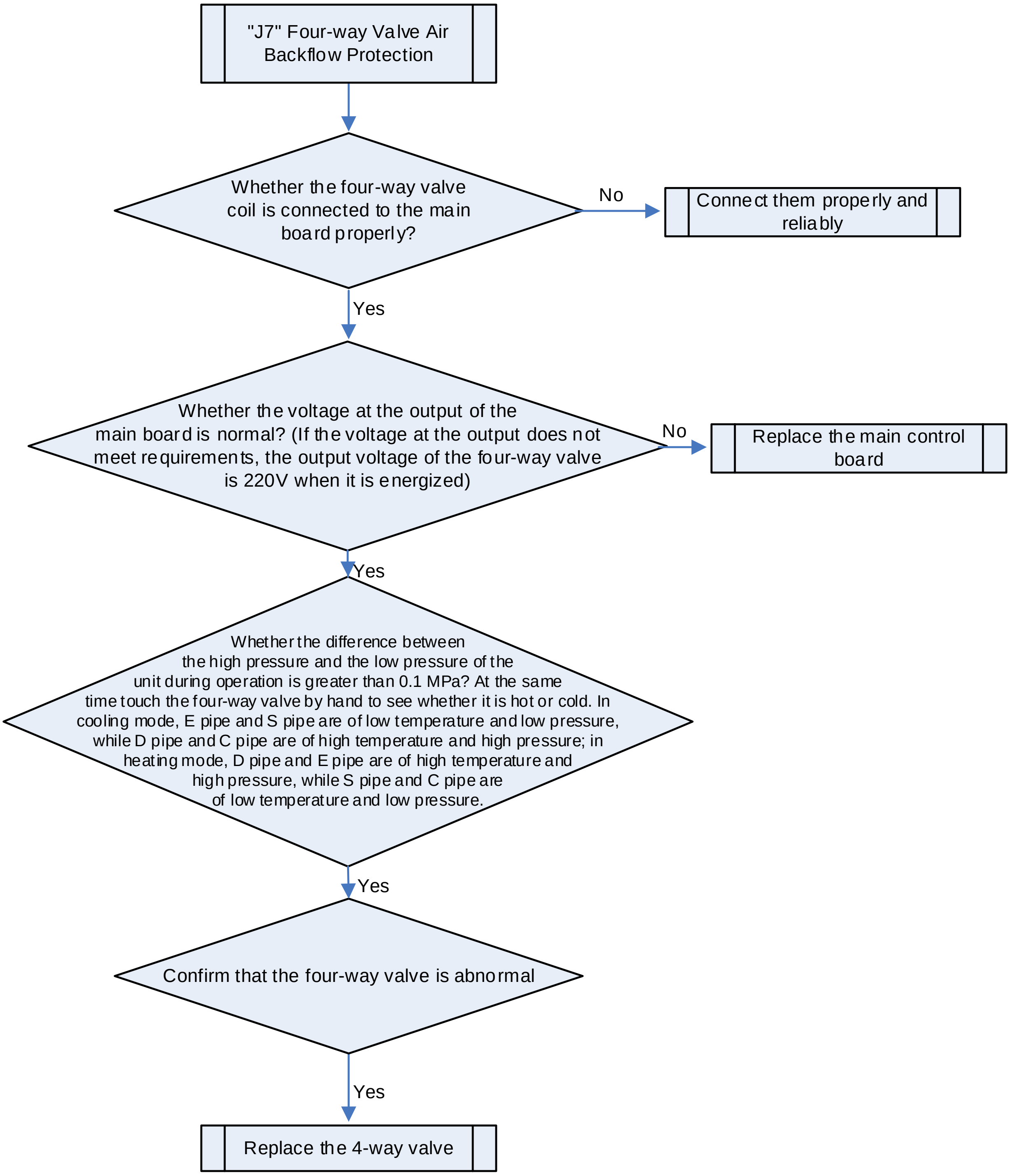
Possible causes:

■ 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

2.116 "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:

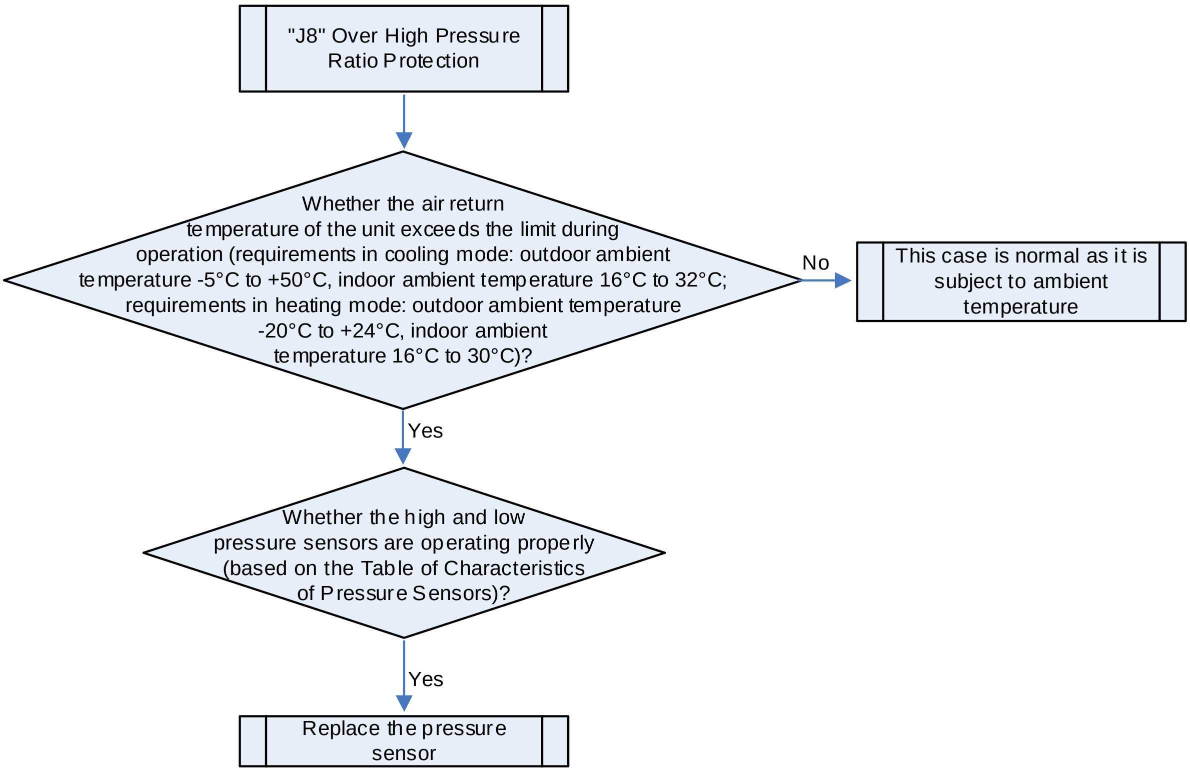
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor exceeds 8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

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

Troubleshooting:



2.117 "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:

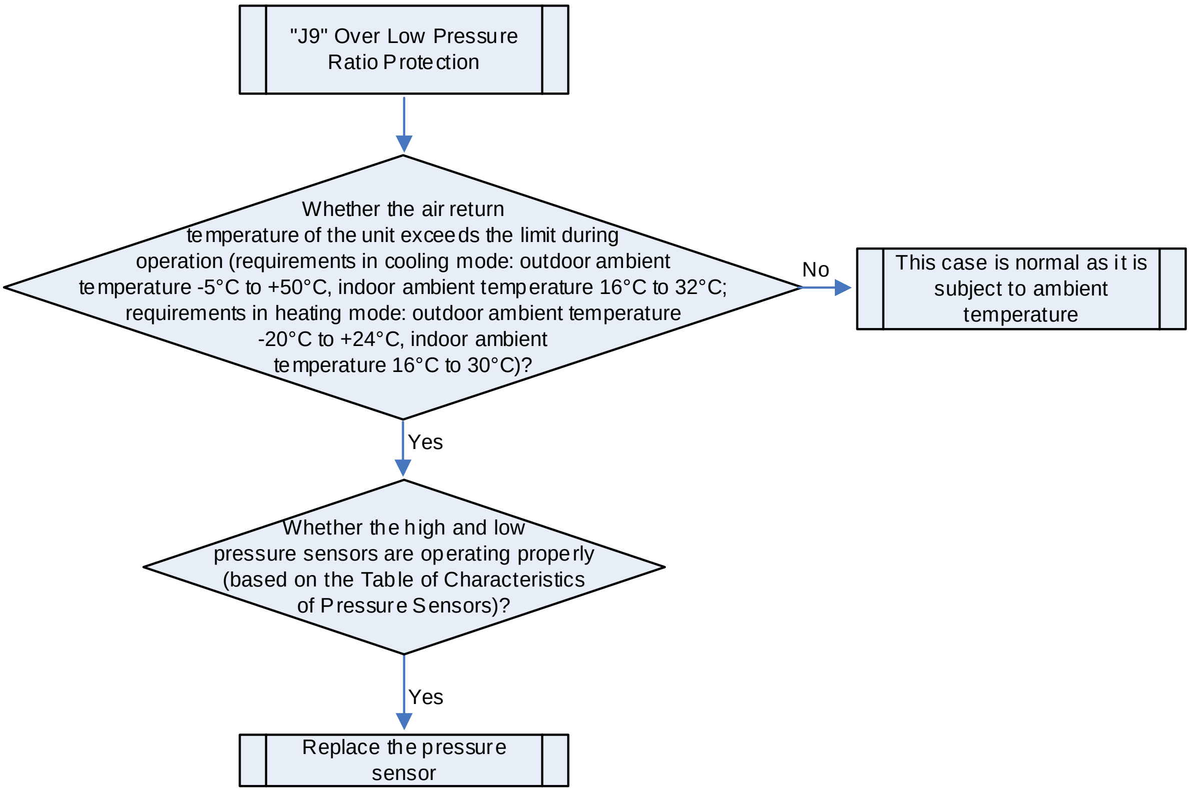
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor is smaller than 1.8, the unit will stop running to ensure safe operation.

Possible causes:

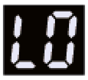
■ The pressure sensor is abnormal;

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

Troubleshooting:



2.118 "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:

Long press FUNCTION for five seconds when the conditioner is on or off to view parameters.

Press “∧” to show parameter code C01.

Press MODE to view indoor units' engineering numbers and failures. The engineering number is shown in the timer area, while the failure code is shown in the temperature area (Note 1). Meanwhile, the corresponding failing indoor unit's buzzer buzzes.

Press “∧” or “∨” to switch between indoor units.

Press ENTER/CANCEL (Note 2) to quit the interface of the indoor unit's engineering number and failure and return to the previous interface.

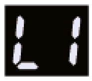
Press ENTER/CANCEL or ON/OFF to quit the parameter interface.

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.

2.119 "L1" Indoor Fan Protection

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

Applicable models: all indoor units

Fault diagnosis:

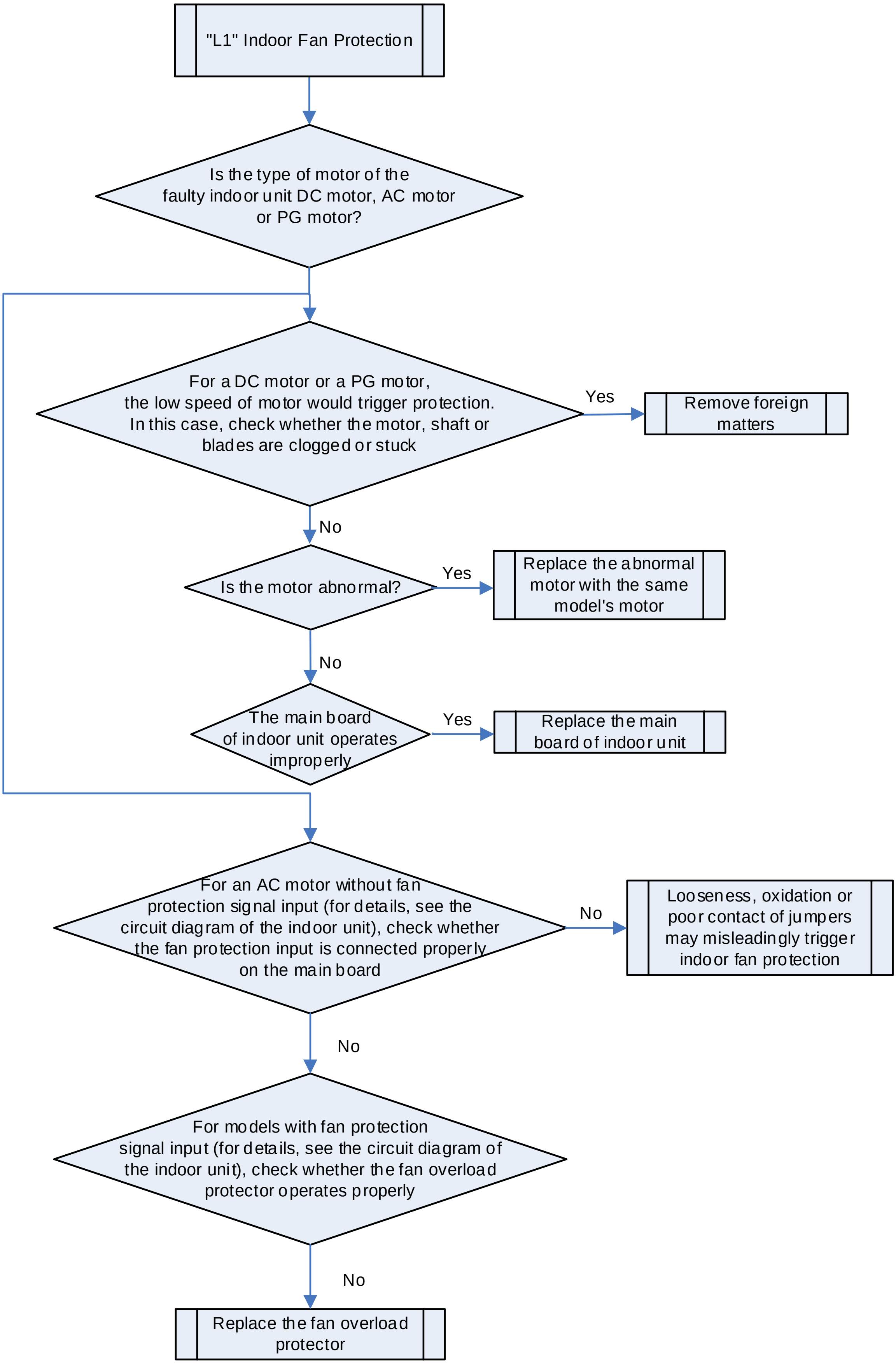
Check whether the indoor unit rotates slowly or stops or whether there exists external fan protection signal. If yes, it indicates the indoor fan protection.

Possible causes:

■ The motor stops or is stuck

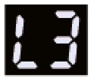
■ The main board of indoor unit operates improperly

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

2.120 "L2" E-heater Protection (Reserved Code, Not Yet Applied)

2.121 "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:

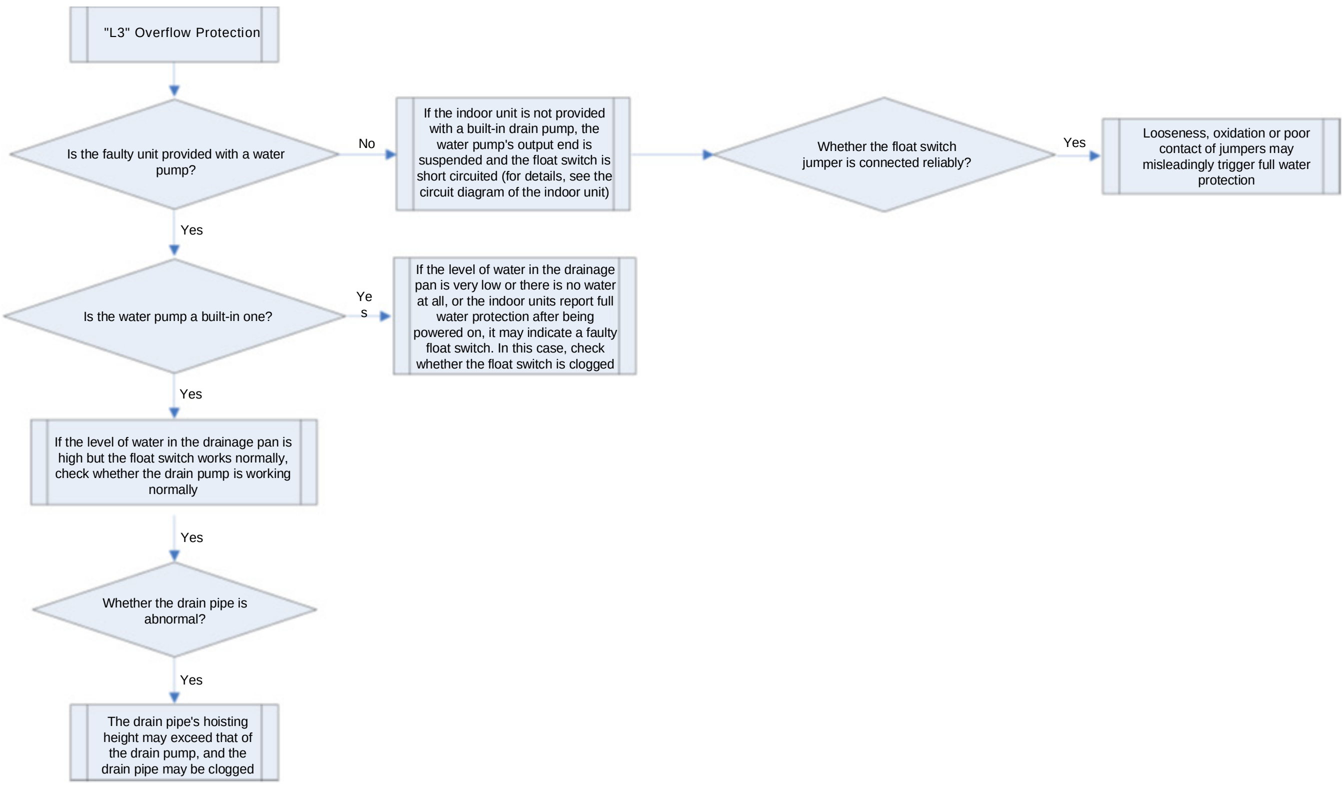
■ The indoor unit is installed improperly;

■ The drain pump is damaged;

■ The float switch operates improperly;

■ The main board of indoor unit operates improperly.

Troubleshooting:



2.122 "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.

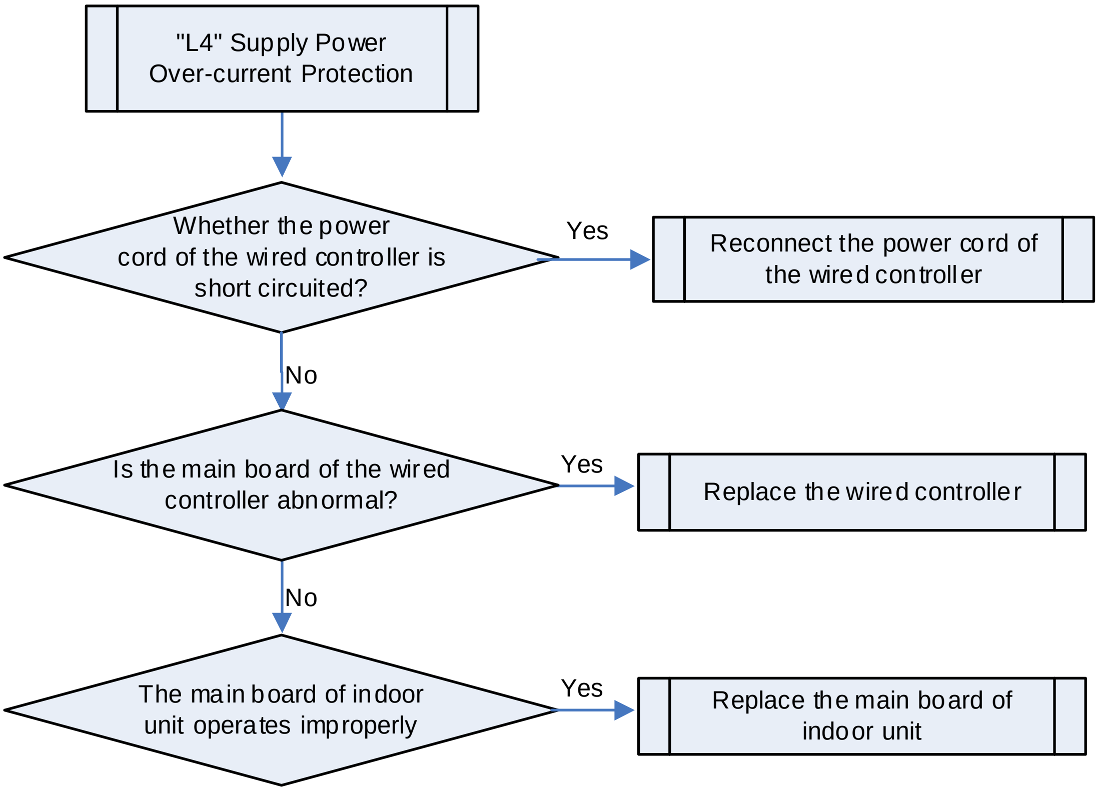
Possible causes:

■ 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:



2.123 "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:

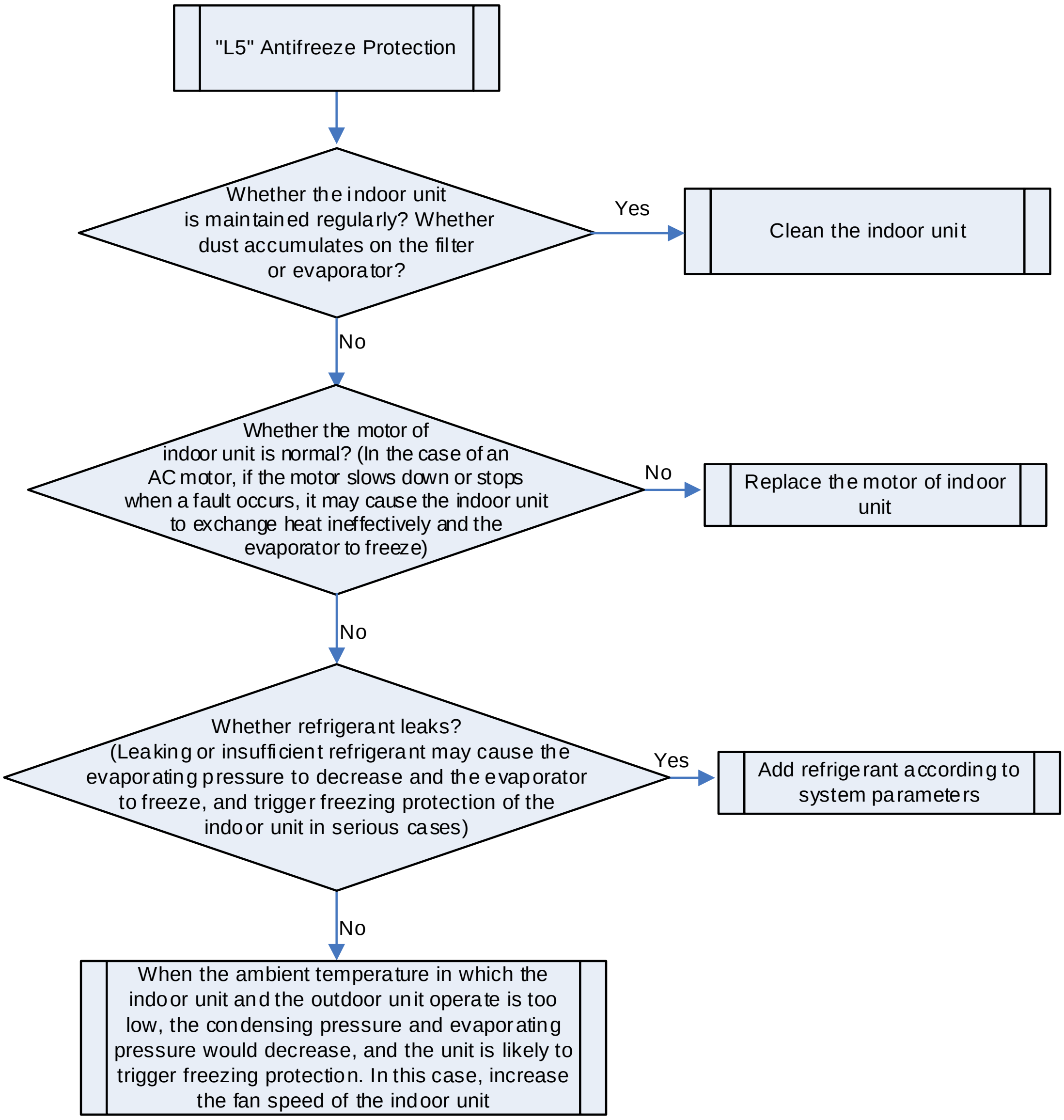
■ The indoor filter and evaporator are dirty;

■ 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:



2.124 "L6" Mode Conflict

2.125 "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.

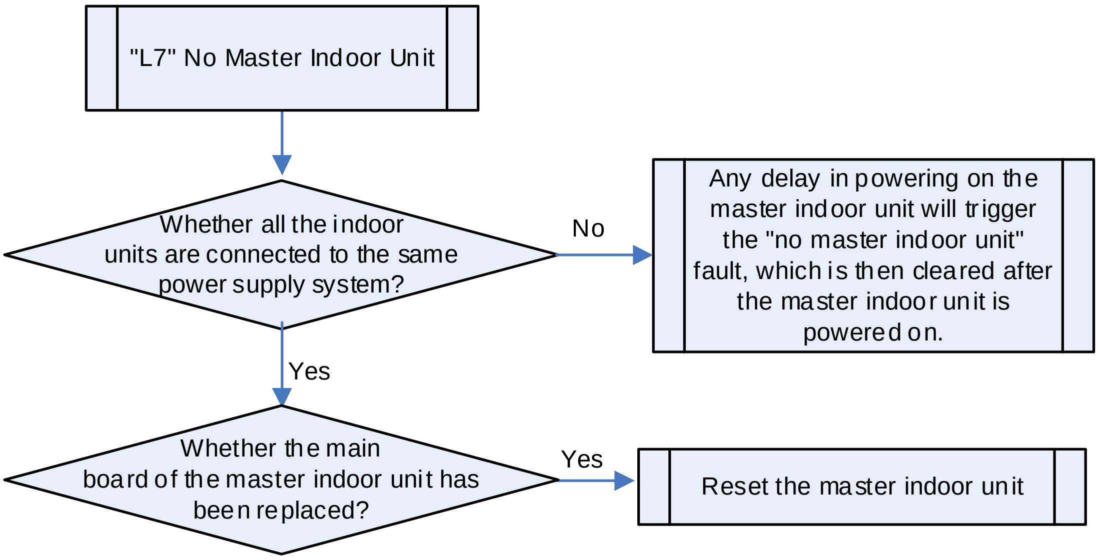
Possible causes:

■ The master indoor unit is disconnected;

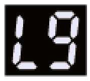
■ The main board of the master indoor unit is replaced;

■ The main board of the master indoor unit is faulty.

Troubleshooting:



2.126 "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:

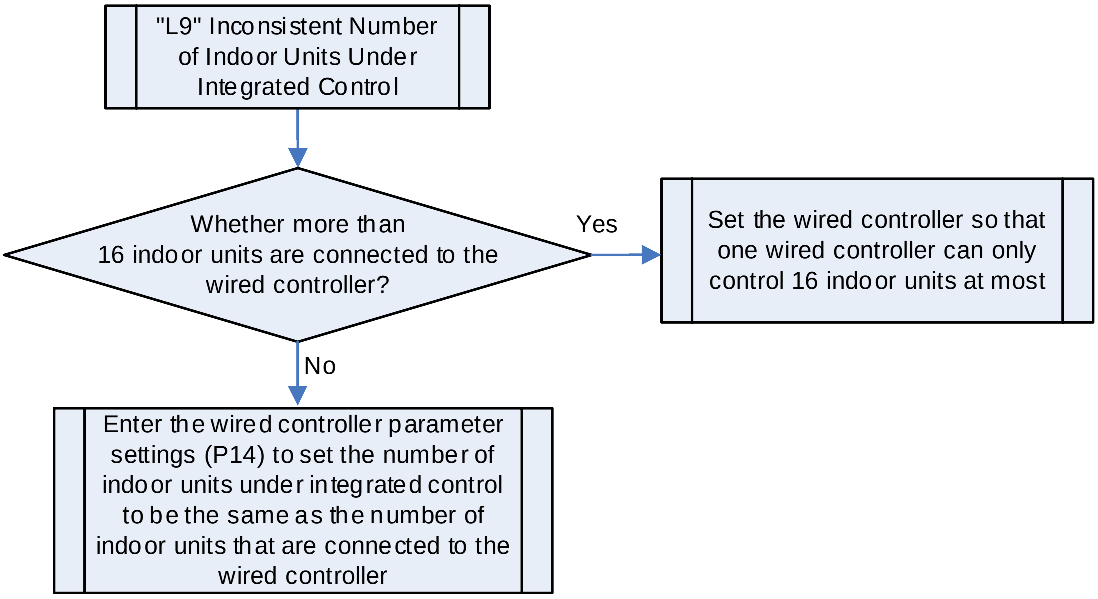
When more than 16 indoor units are connected to the wired controller or the number of indoor units connected to the wired controller is not the same as what is configured under integrated control, the fault is generated.

Possible causes:

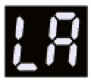
■ More than 16 indoor units are connected to one wired controller;

■ The number of indoor units connected to the wired controller is not the same as what is configured under integrated control.

Troubleshooting:



2.127 "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.

2.128 "LH" Poor Air Quality Alarm (Reserved Code, Not Yet Applied)

2.129 "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.

2.130 “LL” Water flow switch error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

Detect if the protection signal of water flow switch is triggered. After turning on the water pump, waterflow switch protection signal is detected in 15 consecutive seconds, then report alarm.

Possible reasons:

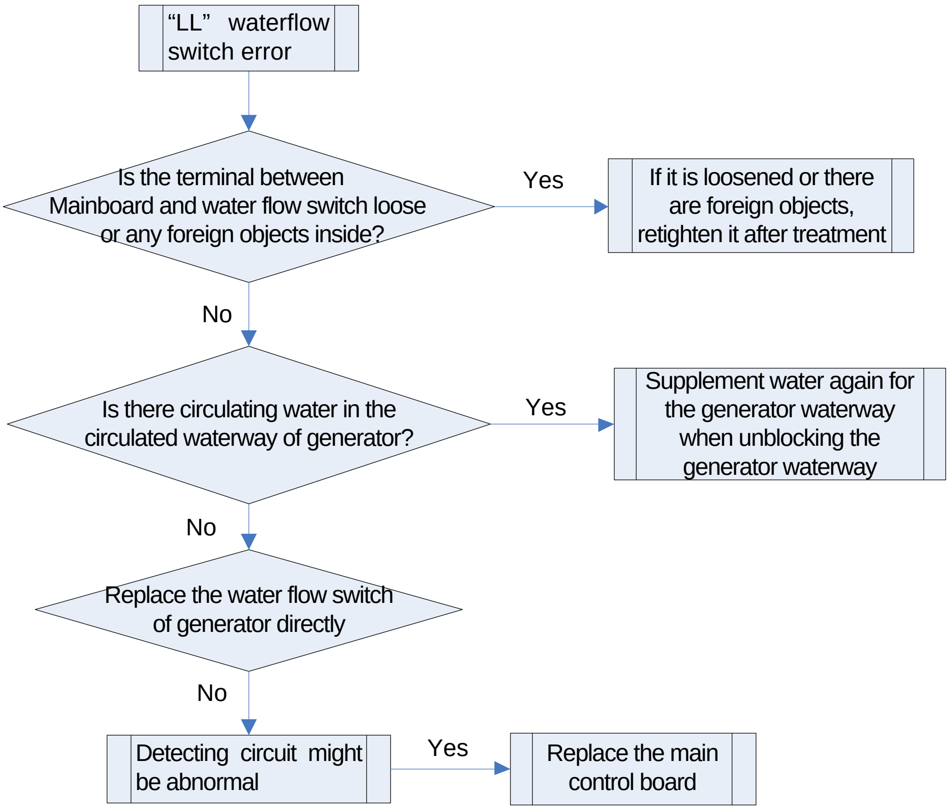
■Poor contact between limit switch and terminal in main board interface

■Water return of generator is not smooth or lacking water

■Water flow switch is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.131 "LF" Shunt valve setting error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

When setting the corresponding relationship for the floor heating shunt valve and IDU, the generator shall detect and judge the project code of IDU to see if the nonexistent project code is set or shunt valve setting error alarm occurs if the same shunt valve is matching with several IDUs (project code)

Possible reasons

■IDU linked with floor heating is offline

■Project code conflict or IP conflict

Troubleshooting

Step 1: check if the IDU corresponding to the shunt valve is offline, if yes, the IDU is deemed offline;

Step 2: check if the project code or IP is conflict, if yes, adjust the relationship between shunt valve and IDU again, allow several shunt valves to match with the same IDU (project code), but never allow the same shunt valve to match with several IDUs (project code).

2.132 "LU" Inconsistent IDU branch connecting to the wired controller which controls multiple indoor units of heat recovery system

Error display: wired controller will display 

Applicable model: wired controller connecting to several IDUs

Error judgment condition and method:

When the controller which controls multiple indoor units is connected to several indoor units, different indoor units are connected under different mode exchangers, or connected under different branches of the same mode exchanger.

Possible reasons:

■Indoor unit connecting to the wired controller which controls multiple indoor units is not in the same branch of the same mode exchanger

■Communication connection between the IDU and mode exchanger connected to the wired controller which controls multiple indoor units is wrong

Troubleshooting:

Step 1: check if the indoor unit connected to the wired controller which controls multiple indoor units in the same branch of the same mode exchanger, if no, please connect the indoor units under different branches to different wired controllers;

Step 2: if the indoor unit connected to the wired controller which controls multiple indoor units is in the same branch of the same mode exchanger, please check if the indoor unit communication cord connected to the communication port of the corresponding branch of mode exchanger, if no, please revise the connection of communication cord;

2.133 “Ln” Lifting panel return air frame reset error

Error display: IDU lamp panel and IDU wired controller will display 

Applicable model: multi VRF indoor unit with the lifting panel

Error judgment condition and method:

Report alarm by judging the status of limit switch 1 and 2.

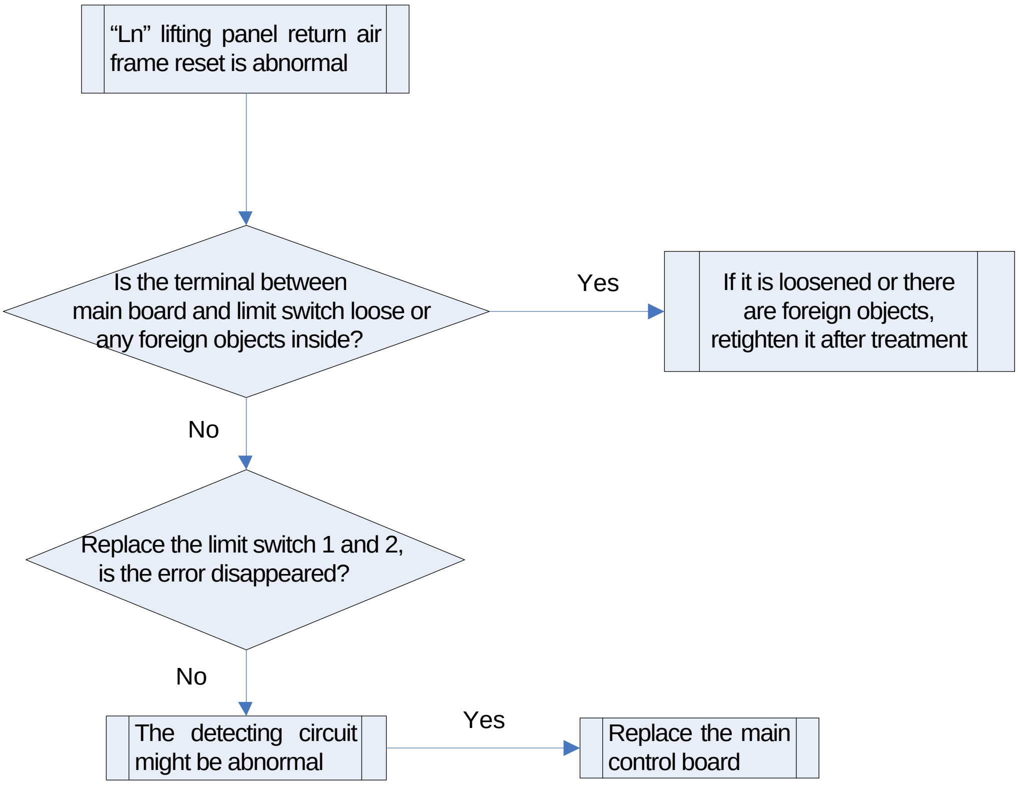
Possible reasons:

■Poor contact between limit switch and terminal in main board interface

■Limit switch is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.134 "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.

2.135 "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 

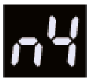
Fault diagnosis:

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.

2.136 "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.

2.137 "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.

2.138 "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.

2.139 "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.

2.140 "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.

2.141 "nA" Heating and Cooling Unit

Fault display: main board of outdoor unit displays 

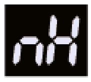
Fault diagnosis:

The code indicates that the indoor unit operates in both heating and cooling modes.

Possible causes: --

Troubleshooting: not required.

2.142 "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.

2.143 "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.

2.144 "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.

2.145 "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.

2.146 “o3” IDU IPM module protection

Error display: ODU main board and IDU wired controller will display 

Applicable model: external drive DC fan

Error judgment condition and method:

Check the error code on the display board, if it displays o3, that’s the IDU IPM module protection.

Possible reasons:

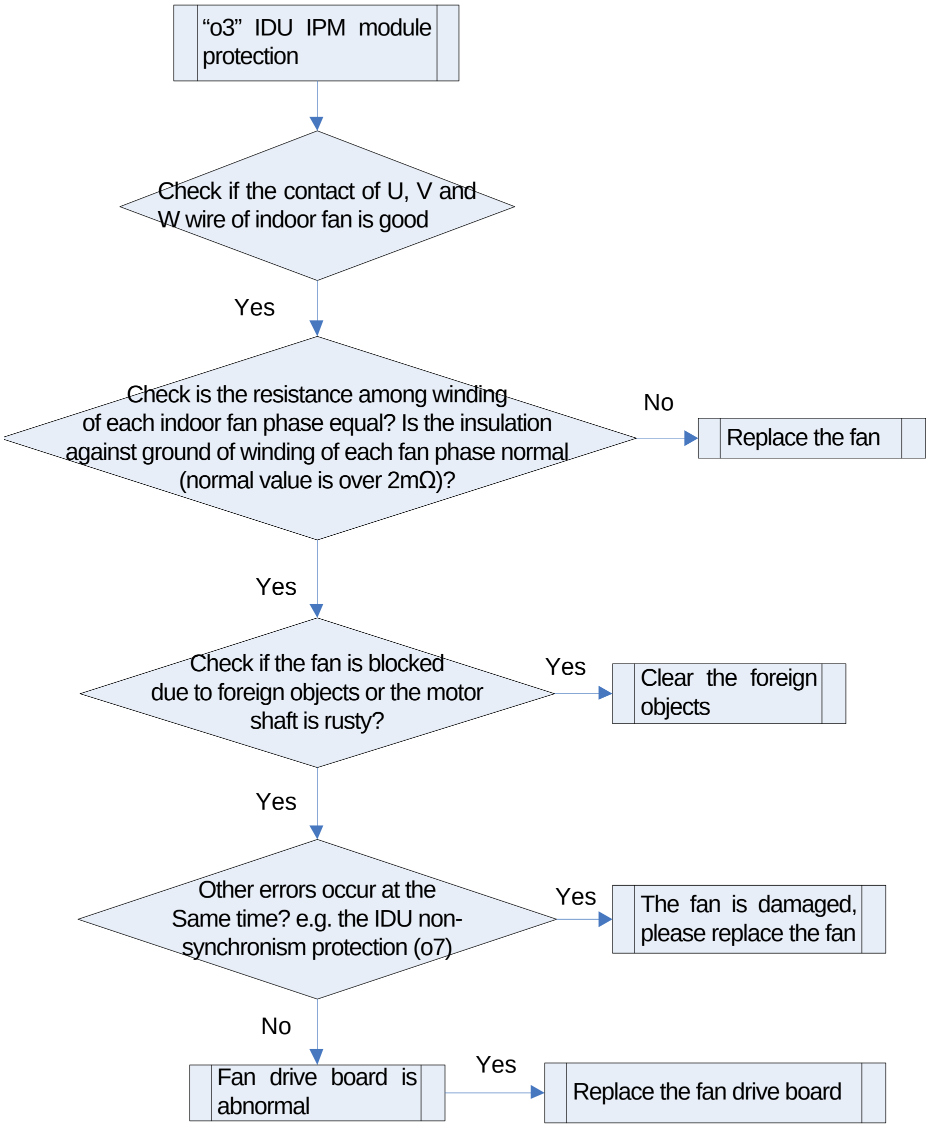
■Contact of the fan UVW wire is poor.

■The fan is damaged;

■The fan blade is blocked (the fan blade is blocked and the motor shaft is rusty)

■The fan drive board is abnormal;

Troubleshooting:



2.147 "o7" IDU non-synchronism protection

Error display: ODU main board and IDU wired controller will display 

Applicable model: external drive DC fan

Error judgment condition and method:

Check the error code on the display board, if it displays o7, that's the IDU non-synchronism protection.

Possible reasons:

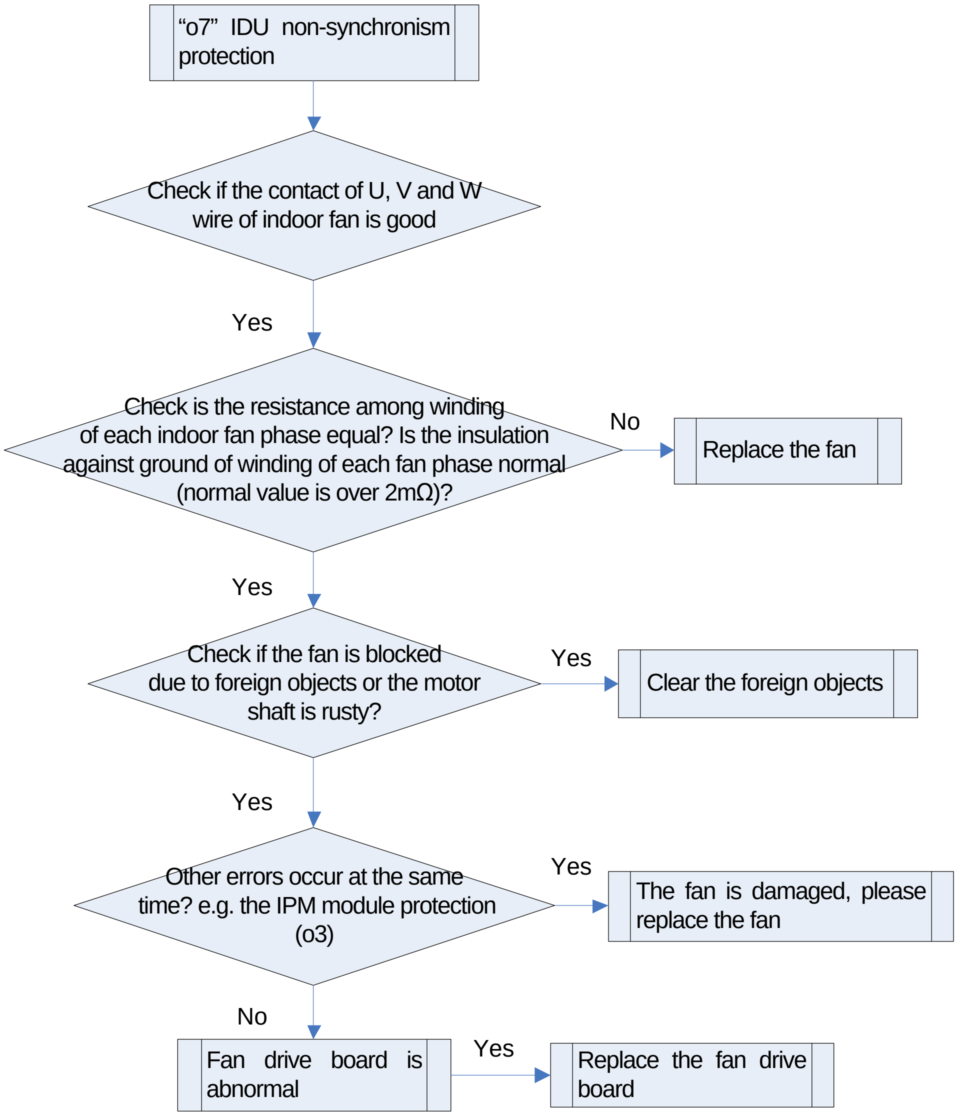
■Contact of the fan UVW wire is poor;

■The fan is damaged;

■The fan blade is blocked (the fan blade is blocked and the motor shaft is rusty)

■Fan drive board is abnormal;

Troubleshooting:



2.148 "o8" IDU drive communication error

Error display: ODU main board and IDU wired controller will display 

Applicable model: external drive DC fan

Error judgment condition and method:

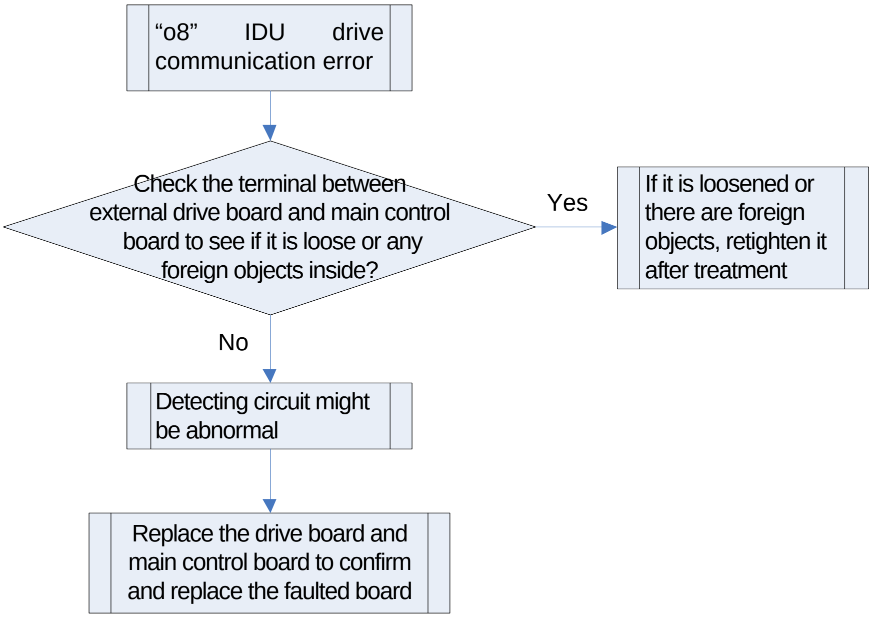
If the drive does not receive main control data in 30 consecutive seconds, it will report communication error.

Possible reasons:

■Poor contact between drive board and main control board communication terminal

■Circuit is abnormal

Troubleshooting:



2.149 "o9" IDU main control communication error

Error display: ODU main board and IDU wired controller will display 

Applicable model: multi VRF IDU with DC motor

Error judgment condition and method:

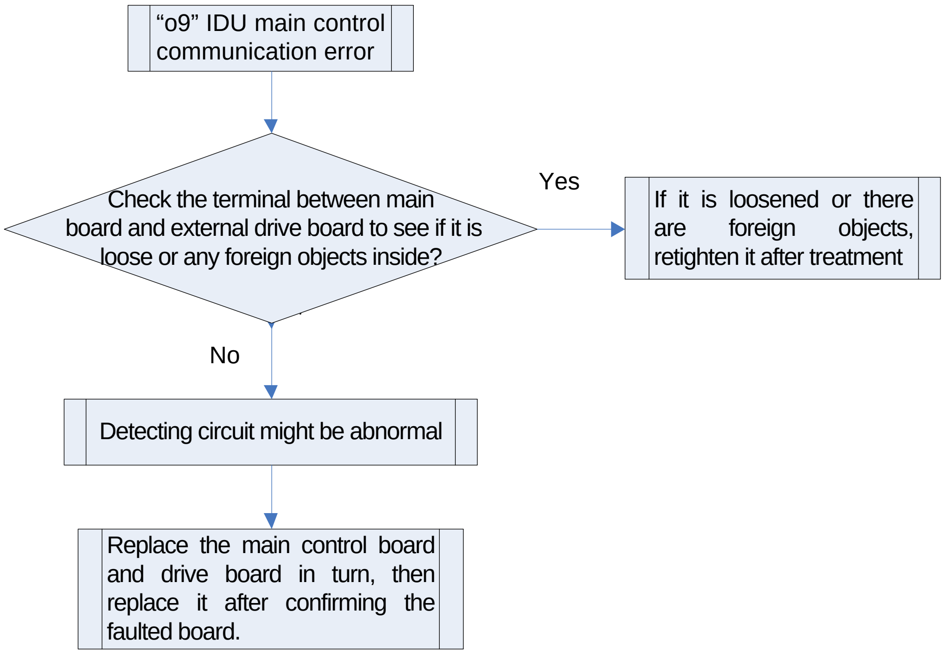
If the main control does not receive data in 30 consecutive seconds, it will report communication error; if the drive does not receive data in 30 consecutive seconds, it will report communication error.

Possible reasons:

■Poor contact between main control board and drive board communication terminal

■Detecting circuit is abnormal

Troubleshooting:



2.150 "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);

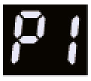
■ Charging loop fault of compressor drive (2-digit digital LED of the main control board of the outdoor unit displays PF);

■ 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.

2.151 "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.

2.152 "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.

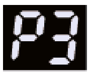
Possible causes:

■ 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.

2.153 "P3" Reset Protection for the Compressor Drive Module

Fault display: main board of outdoor unit displays 

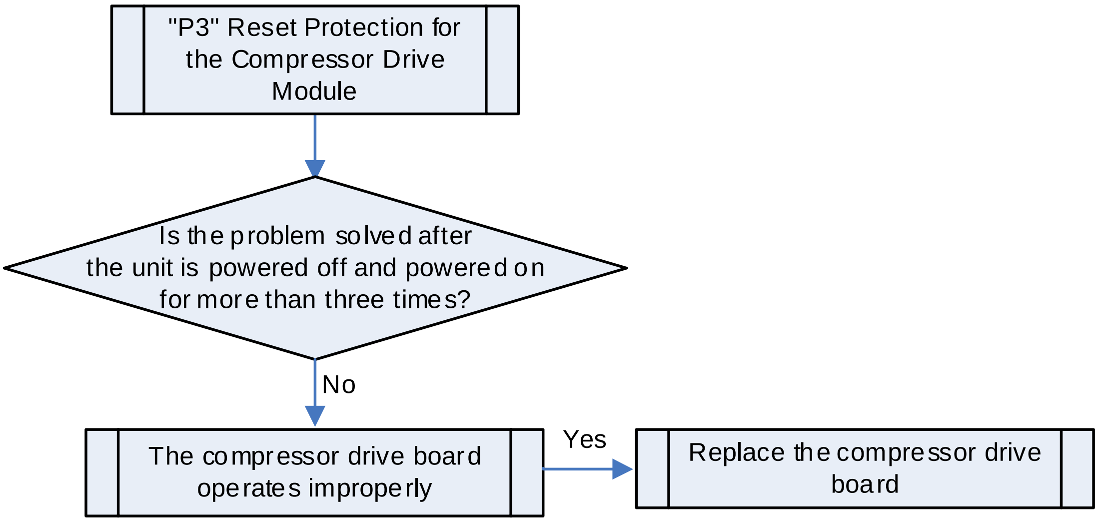
Fault diagnosis:

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:



2.154 "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;

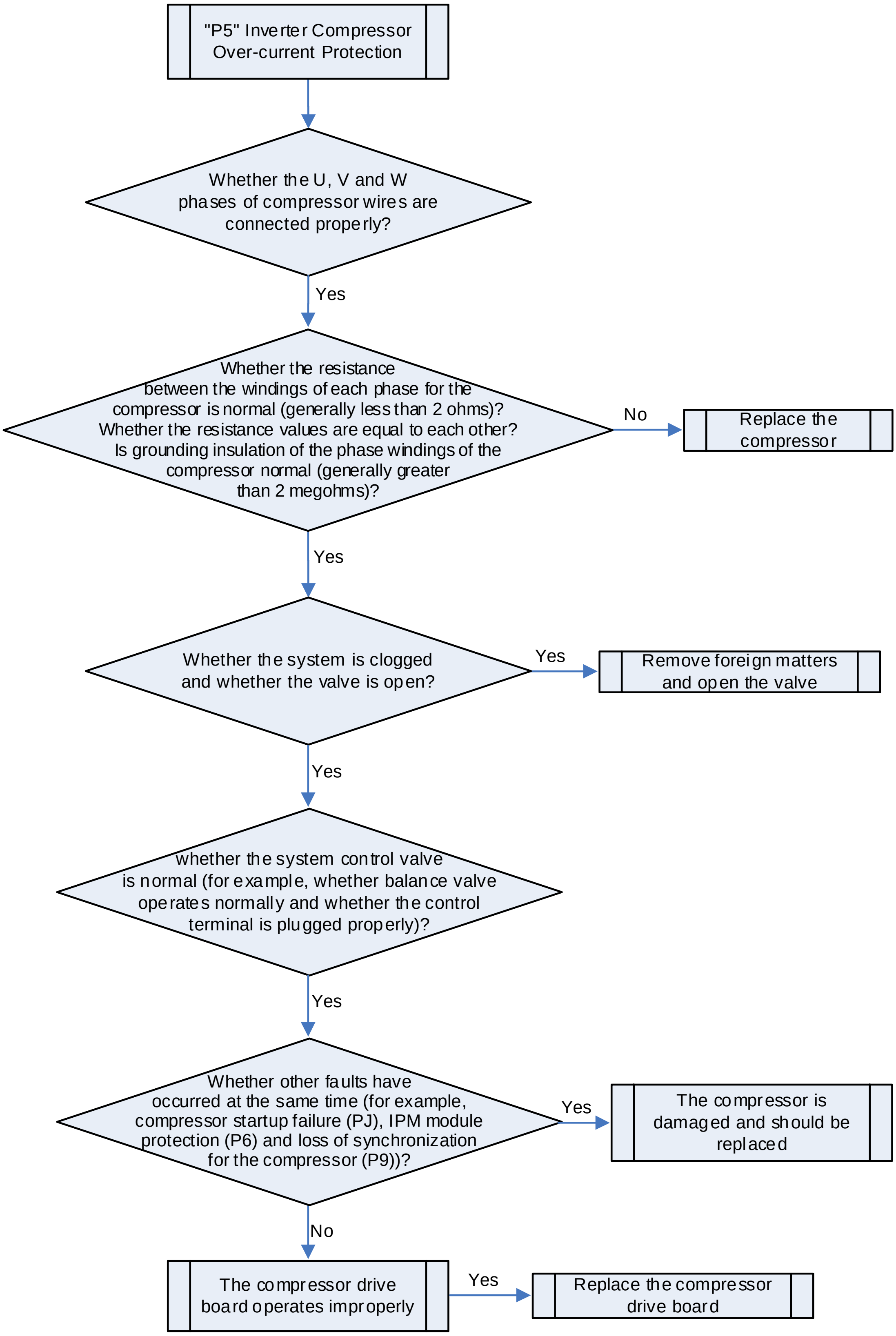
■ The compressor's UVW cables are wrongly connected;

■ The compressor is damaged;

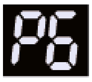
■ The system is blocked;

■ 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

2.155 "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;

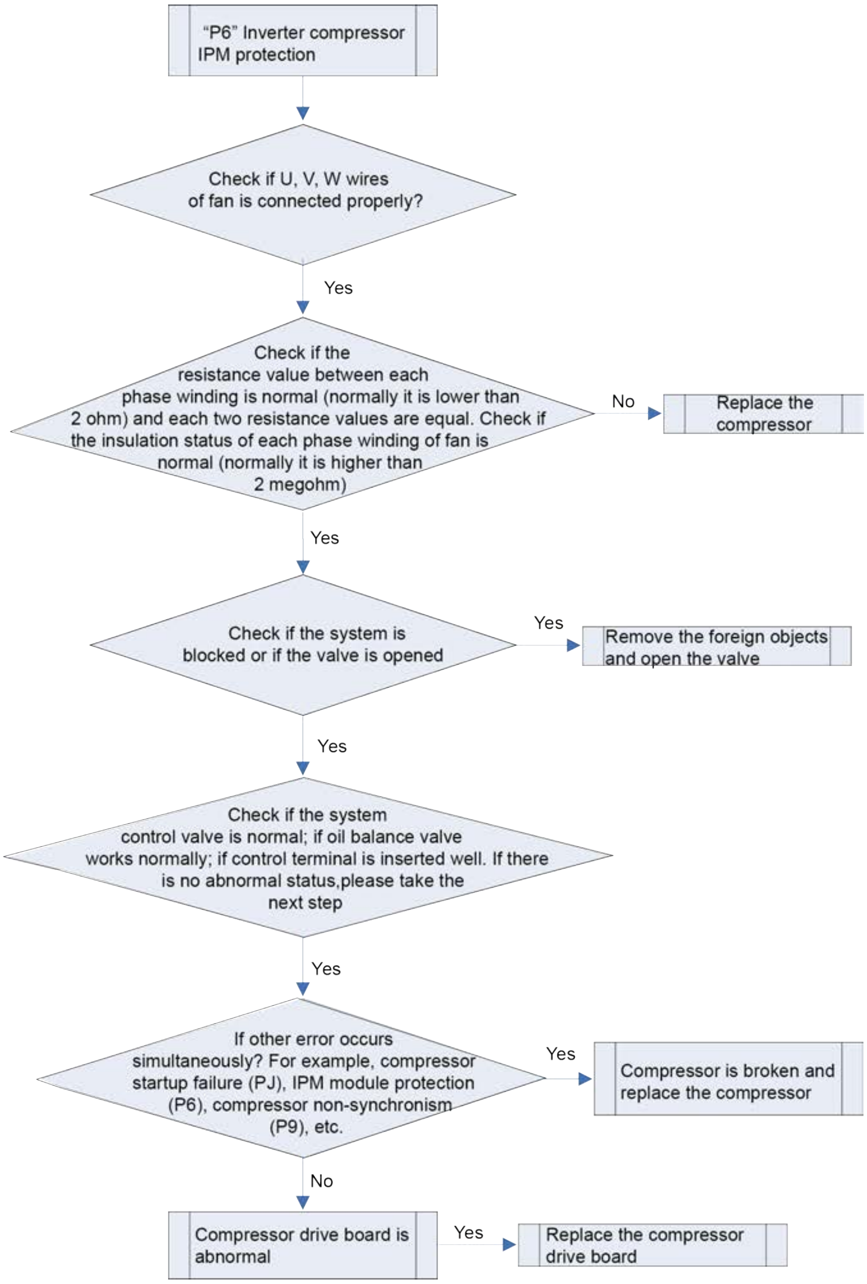
■ The compressor's UVW cables are wrongly connected;

■ The compressor is damaged;

■ The system is blocked;

■ IPM module of the compressor drive board is damaged.

Troubleshooting:



2.156 "P7" Abnormal Temperature Sensor of Compressor Drive Board

Fault display: main board of outdoor unit displays 

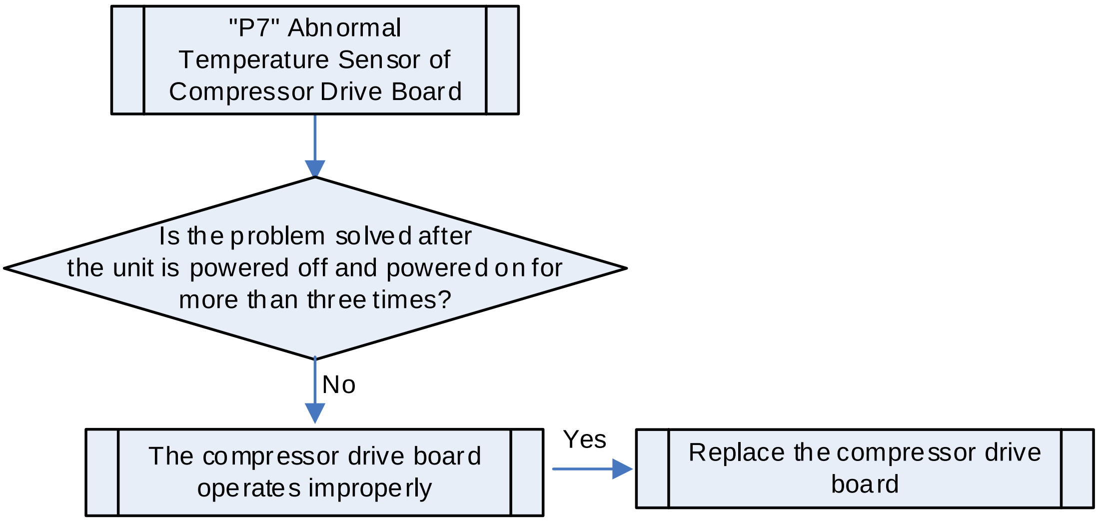
Fault diagnosis:

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:



2.157 "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.

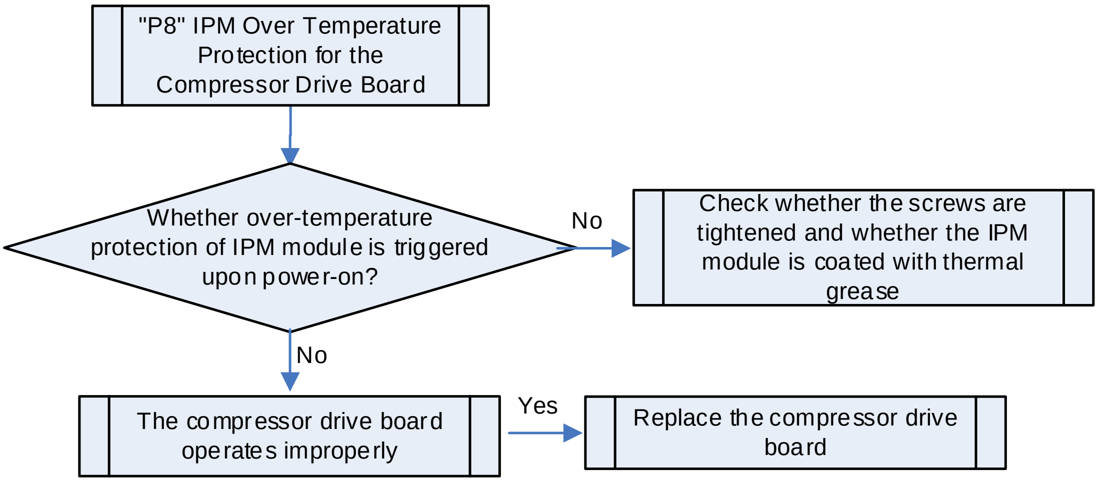
Possible causes:

■ 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:



2.158 "P9" Loss of Synchronization Protection for Inverter Compressor

Fault display: main board of outdoor unit displays 

Fault diagnosis:

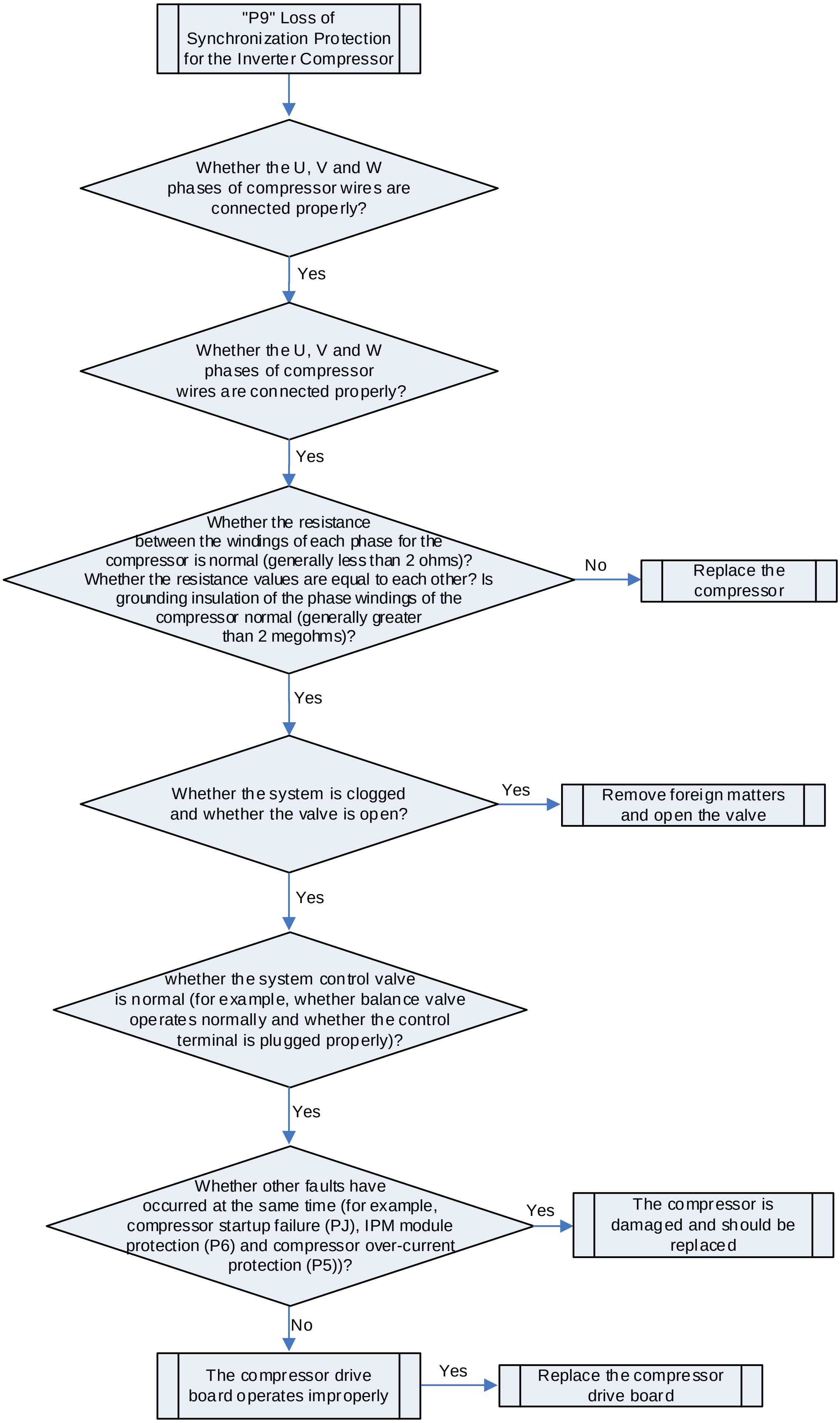
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P9, it indicates the loss of synchronization protection for the inverter compressor.

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

2.159 "PC" Current Detection Circuit Fault of Compressor Drive

Fault display: main board of outdoor unit displays 

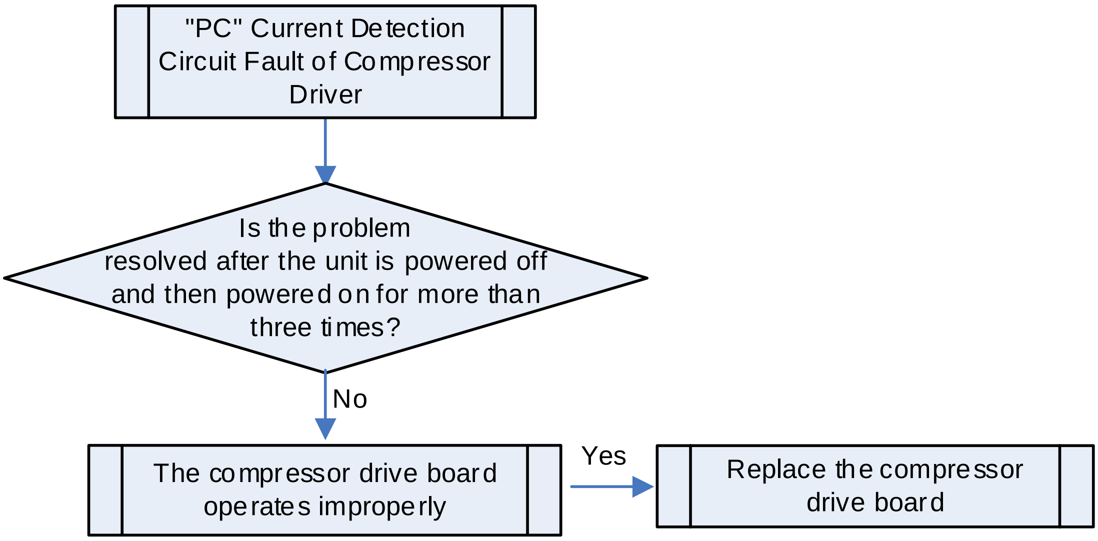
Fault diagnosis:

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:



2.160 "PH" Over Voltage Protection for DC Bus of Compressor Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

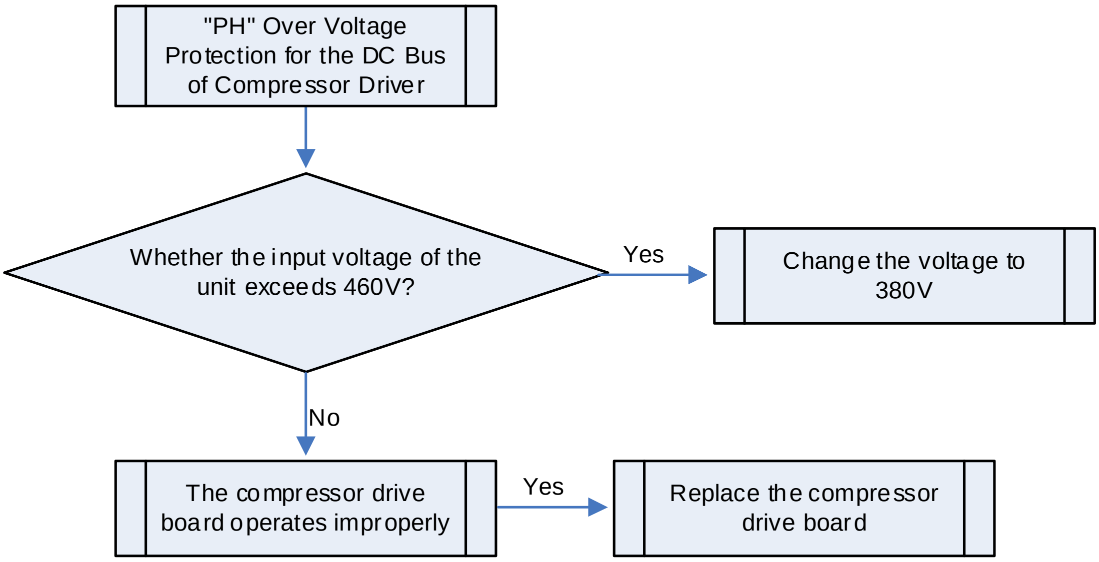
When the input power cable of the main board has a voltage over 460 V, the unit triggers protection against faults.

Possible causes:

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

■ The compressor drive board operates improperly.

Troubleshooting:



2.161 "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:

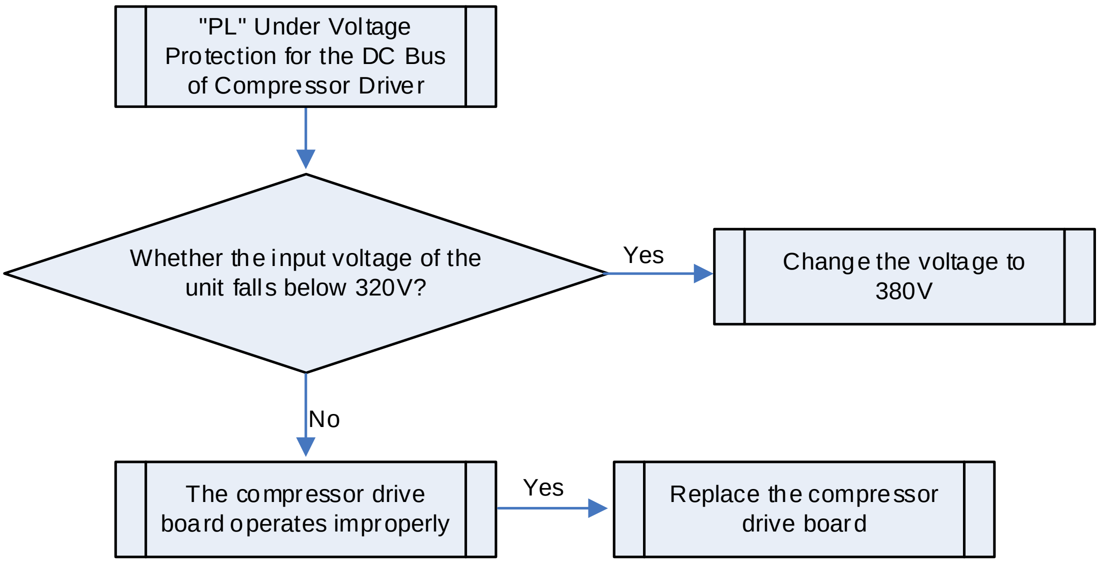
When the input power cable of the main board has a voltage below 320 V, the unit triggers protection against faults.

Possible causes:

■ The unit's input power cable has a voltage below 320V;

■ The compressor drive board operates improperly.

Troubleshooting:



2.162 "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.

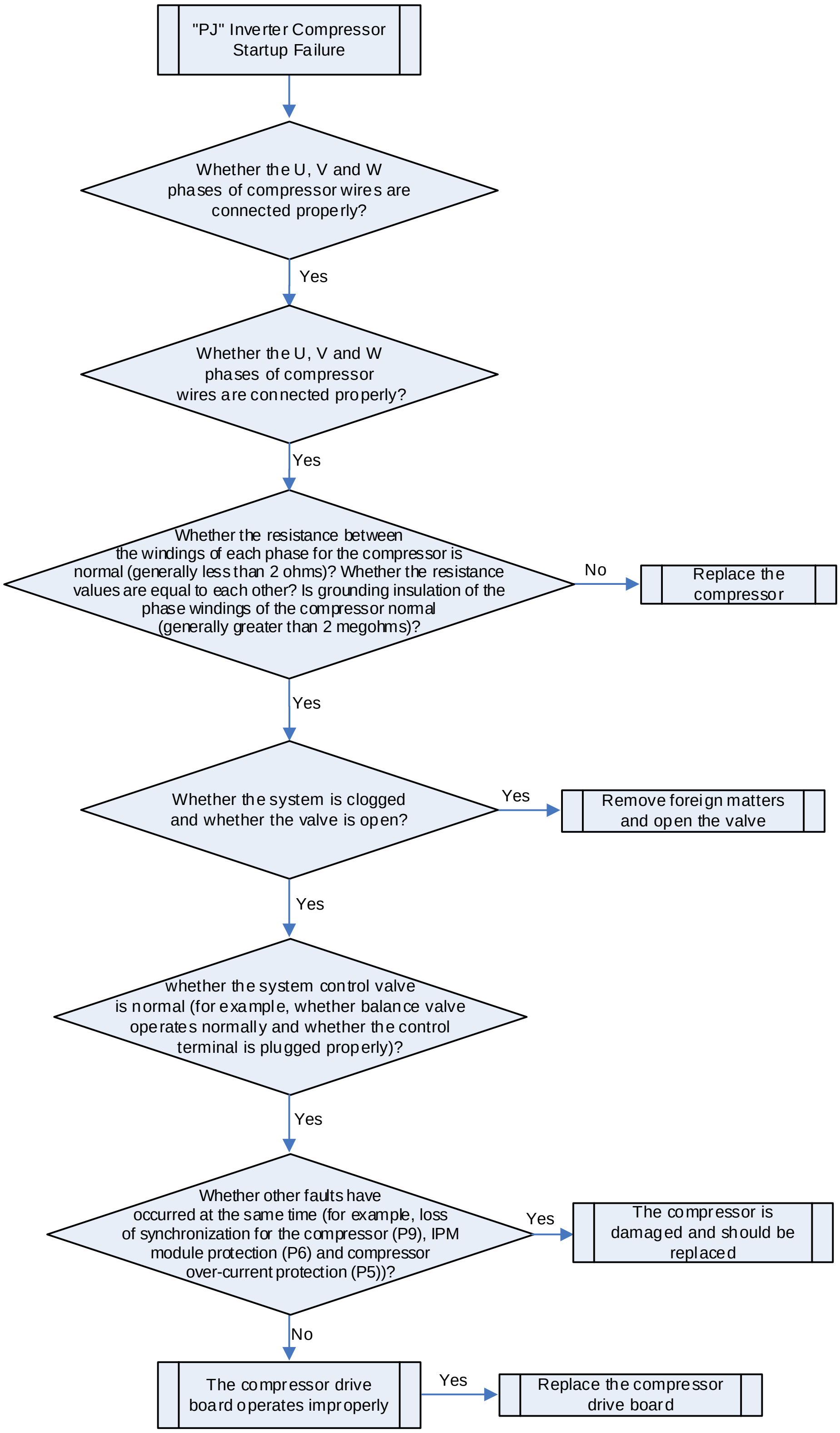
Possible causes:

■ Poor contact of compressor's UVW cables;

■ The compressor is damaged;

■ The compressor drive board operates improperly.

Troubleshooting:



2.163 "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.

2.164 "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.

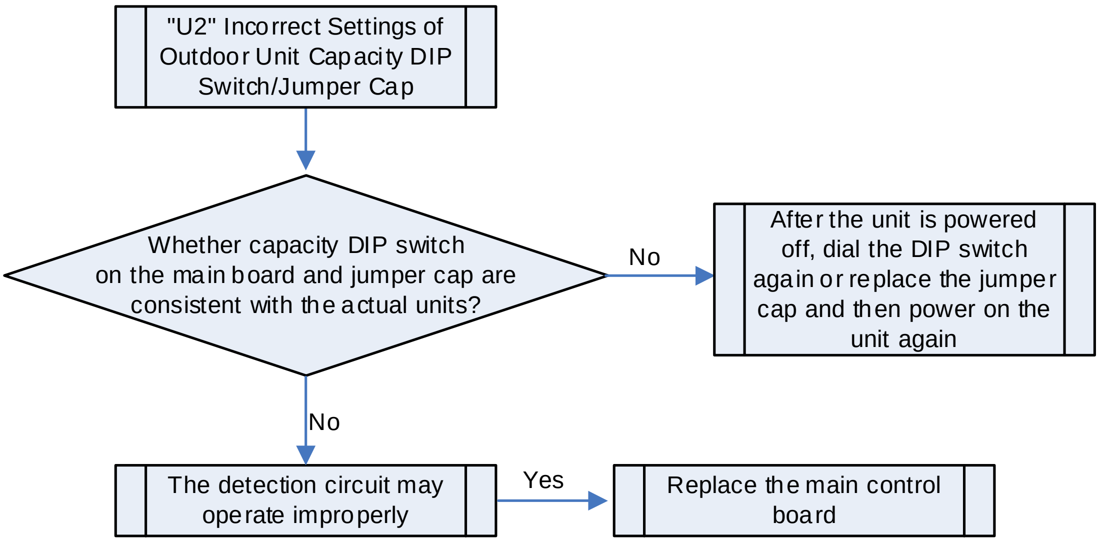
Possible causes:

■ Capacity DIP switch error or jumper cap error (for some models without jumper caps, jumper cap error is not detected)

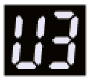
■ DIP switch or jumper cap is broken

■ Abnormal detection circuit

Troubleshooting:



2.165 "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:

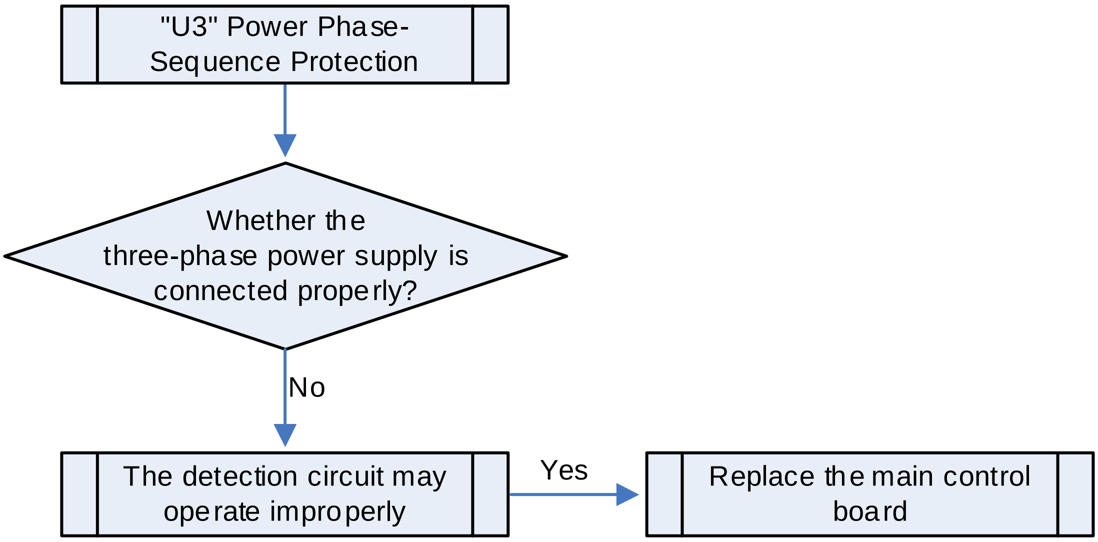
Check the three-phase power of the unit. If the power is connected incorrectly, thereby causing phase loss or reverse phase, the unit generates a fault.

Possible causes:

■ The power is connected wrongly or phase loss or reverse phase occurs

■ Abnormal detection circuit

Troubleshooting:



2.166 "U4" Refrigerant Loss Protection

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

Fault diagnosis:

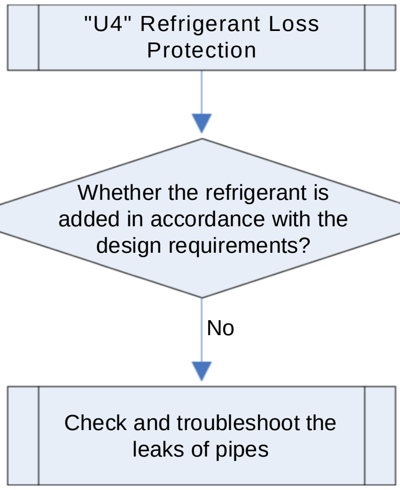
Check the high pressure and the low pressure of the unit by the pressure sensor. If the temperatures corresponding to the high pressure and the low pressure of the unit are below the ambient temperature for over 5, the unit will not start operation for safety purpose.

Possible causes:

■ Insufficient refrigerant in the unit;

■ The pipes leak.

Troubleshooting:



2.167 "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.

2.168 "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:

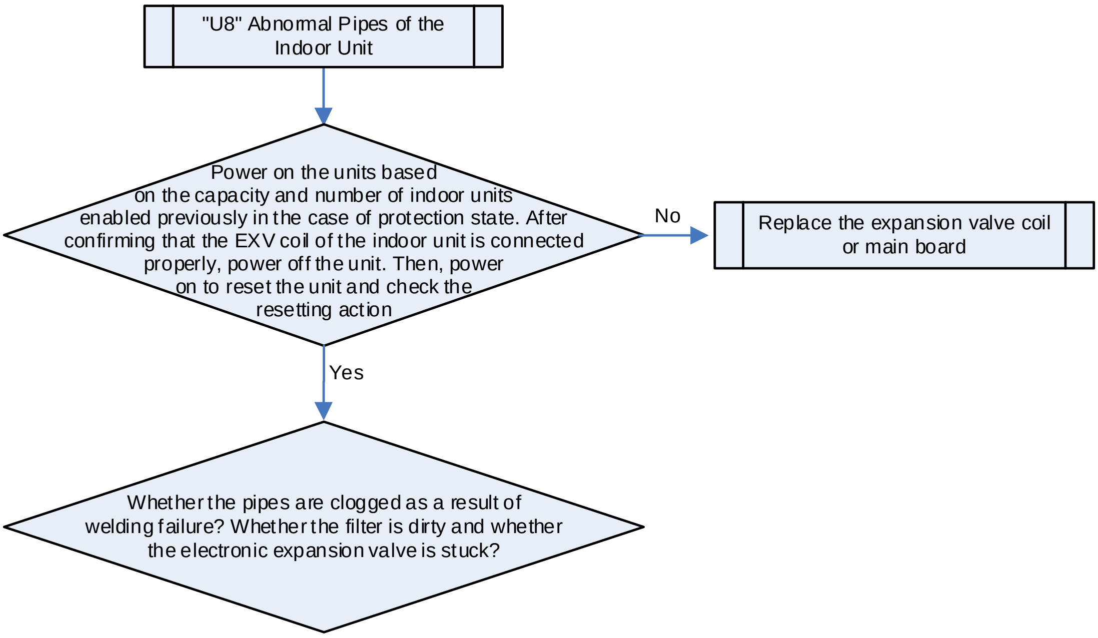
During commissioning process, check the temperature of the indoor unit's pipes to determine whether the pipes are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The indoor unit's pipes are blocked.

Troubleshooting:



2.169 "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:

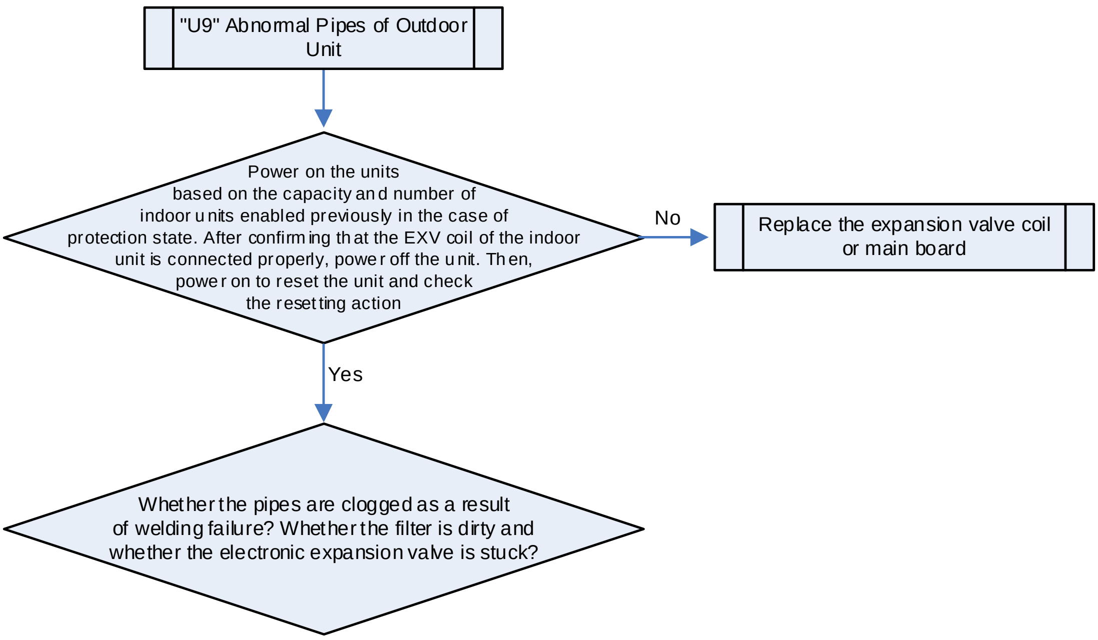
During commissioning process, check the pressure of the unit to determine whether the pipes of the outdoor unit are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The outdoor unit's pipes are blocked.

Troubleshooting:



2.170 "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: --

2.171 "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.

2.172 "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.

2.173 “UF” Mode exchanger IDU identification abnormal

Error display: mode exchanger main board will display 

Applicable mode: mode exchange box

Error judgment condition and method:

IDU main board is not compatible with the mode exchange box main board, which might trigger the identification abnormality error of mode exchanger IDU.

Possible reasons:

■IDU and mode exchanger is not compatible

■Mode exchanger main board is damaged

Troubleshooting:

Step 1: replace mode exchanger main board to see if the error is solved;

Step 2: if UF error still exists after replacing mode exchanger main board, disconnect the communication connection of all IDUs and mode exchangers, connect the IDU communication cord one by one to the communication board of mode exchanger until all the IDUs which have triggered the UF error are tested;

Step 3: update the program for the IDU which triggers UF error or replace the main board.

2.174 “y7” Fresh air inlet temperature sensor error

Error display: ODU main board and IDU wired controller will display 

Applicable model: multi VRF indoor unit with fresh air function

Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value. If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error

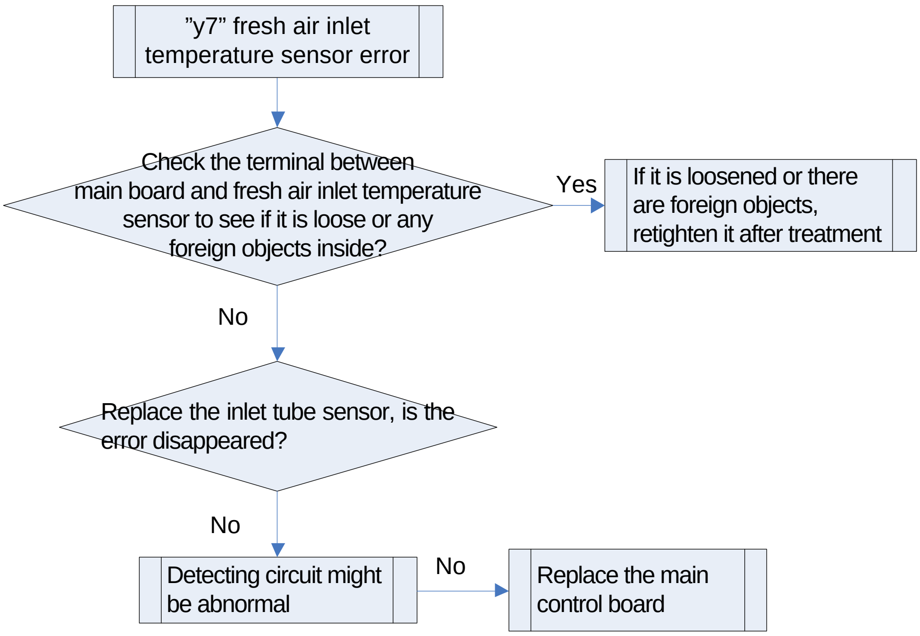
Possible reasons:

■Poor contact between air inlet temperature sensor and main board interface terminal

■Air inlet temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.175 “yA” IFD error

Error display: ODU main board and IDU wired controller will display 

Applicable model: high-end fresh air floor standing unit

Error judgment condition and method:

After turning on the IFD for 60s, start the error feedback test, if the IFU feedback tested in 5 consecutive seconds is low level, it’s deemed that IFD is faulted.

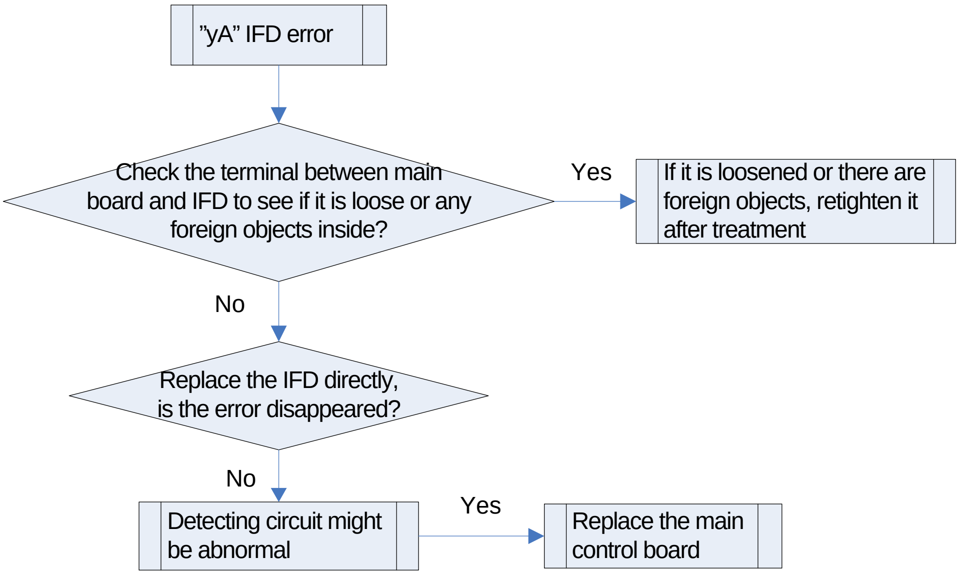
Possible reasons:

■ Poor contact between IFD feedback side and main board interface terminal

■IFD abnormality

■Detecting circuit is abnormal

Troubleshooting:



2.176 "y8" Indoor air box sensor general error

Error display: ODU main board and IDU wired controller will display 

Applicable model: IDU with air box

Error judgment condition and method:

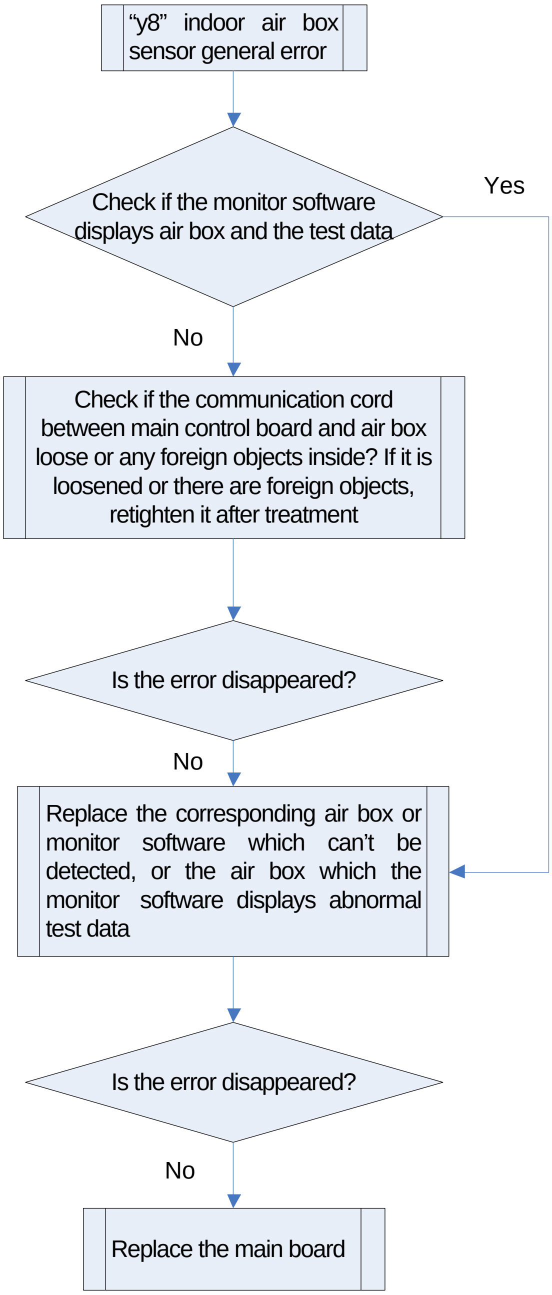
Main board, air box communication abnormality and air box test data (temperature, humidity and CO_2 concentration or PM2.5 concentration) has exceeded the set upper and lower limiting value.

Possible reasons:

■Poor contact between main control board and air box communication terminal

■Air box detection is abnormal

Troubleshooting:



2.177 Ineffective Cooling and Heating

Applicable models: all indoor units

Fault diagnosis:

1) In cooling mode, when the electronic expansion valve is open to 2000PLS or 480PLS, 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.

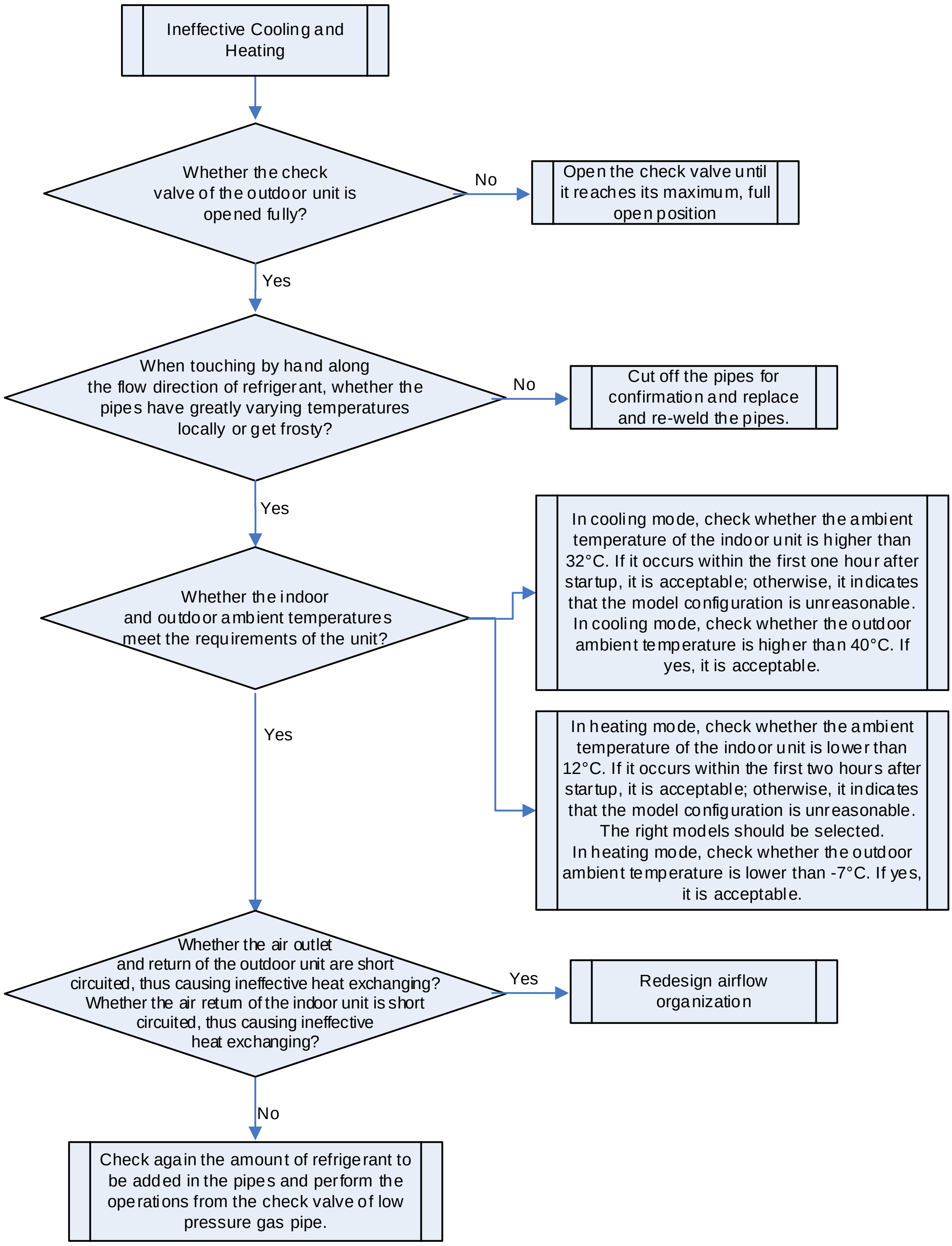
■ The unit pipes are clogged.

■ The unit operates out of the range of required ambient temperature.

■ Airflow organization is set ineffectively.

■ The amount of refrigerant is insufficient.

Troubleshooting:



2.178 No Error Displayed But Compressor Not Starting in Cooling/Heating Mode

Error display: no error displayed but compressor not starting in cooling / heating mode

Applicable model: all ODUs

Error judgment condition and method:

Under shutdown status, the high pressure sensor has detected that the high pressure of the module is 55℃ or higher, or the discharge temperature sensor / shell top temperature sensor has detected that the temperature is 105℃ or higher.

Possible reasons:

■The ambient temperature is 55℃ or higher;

■The temperature of the compressor is 105℃ or higher;

■High pressure sensor is abnormal;

■Temperature sensor is abnormal;

Troubleshooting:

Step 1: confirm the ambient temperature is below 55℃, otherwise the compressor cannot start;

Step 2: detect the temperature of the compressor, if the temperature is over 104℃, the compressor cannot start;

Step 3: if the above inspections are normal, connect the multi-functional debugger;

Step 4: if the high pressure of the module is 55 or higher, replace the high pressure sensor;

Step 5: if the discharge temperature / shell top temperature of the compressor is 105 or higher, replace the temperature sensor.

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 Repair

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.

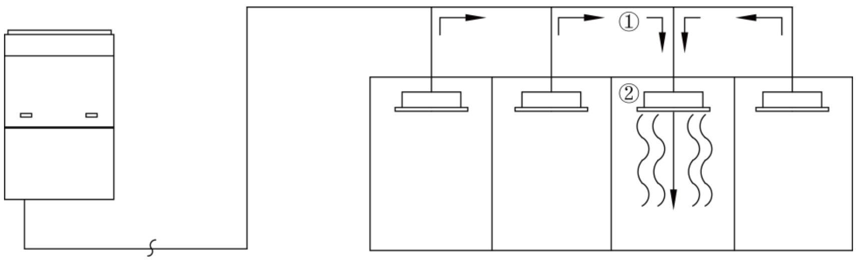
(2) The multi VRF unit adopts R410A refrigerant. When installing in the space with people, the refrigerant amount shall not exceed the max.allowable concentration. Otherwise, suffocation will occur. For example, the max.allowable concentration for refrigerant of European safety standard and regulation 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	1.0	1.0	1.5
70%<C≤90%	<4	0.5	1.0	1.0	2.0	2.0	2.0	2.0	2.0
	≥4	1.0	1.0	1.0	2.0	2.0	3.0	3.0	3.5
90%<C≤105%	<4	1.0	1.0	1.0	2.0	2.0	3.0	3.0	3.5
	≥4	2.0	2.0	2.0	4.0	4.0	5.0	5.0	5.0
105%<C≤135%	<4	2.0	2.0	2.0	3.0	3.0	4.0	4.0	4.0
	≥4	3.5	4.0	4.0	5.0	5.0	6.0	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 Methods for Vacuum Pumping and Charging Refrigerant of System

3.1 System vacuum pumping method

Vacuum pumping method of heat recovery multi VRF unit include vacuum pumping operation for complete system and vacuum pumping operation for the system without outdoor unit.

3.1.1 Selection requirements for vacuum pumps

1) Can’t vacuumize different refrigerant systems with the same vacuum pump.
2) The ultimate vacuum of the vacuum pump should be -0.1MPa.
3) The air displacement of the vacuum pump should be above 4L/S.
4) The accuracy of the vacuum pump should be above 0.02mmHg.
5) The system vacuum pump must have a check valve.

3.1.2 Operating procedures for vacuum pumping

3.1.2.1 Vacuum pumping operation for complete system

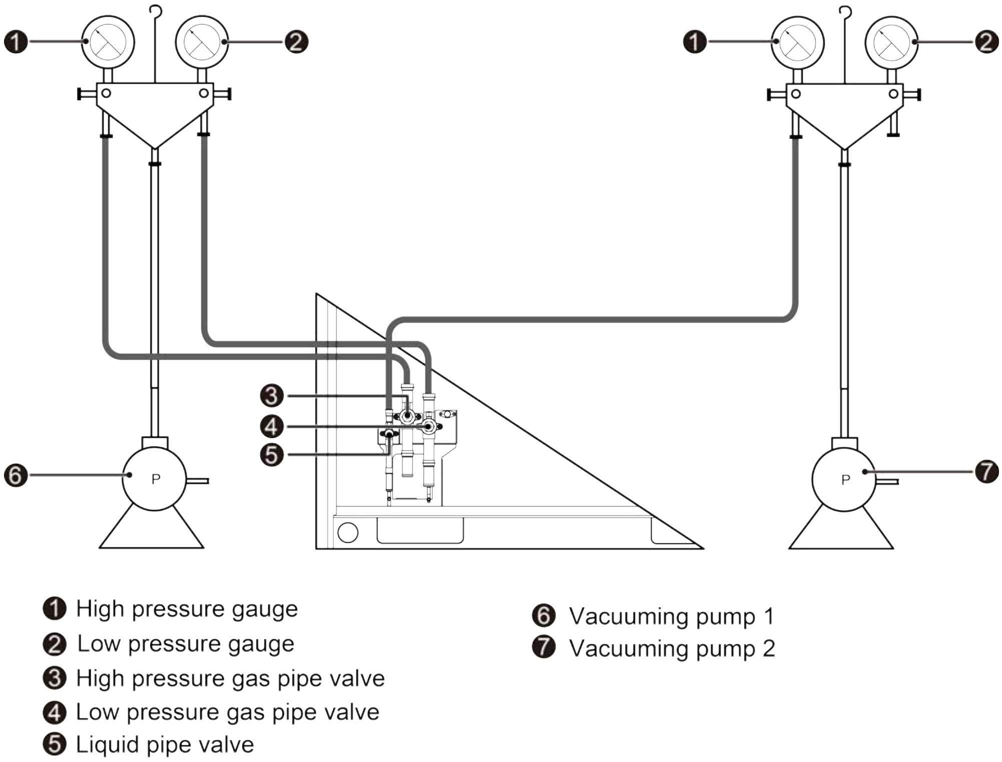
For a complete system including outdoor unit, mode exchange box, and indoor unit, perform vacuuming as follows:

1）Before vacuum pumping, if there is no need to conduct vacuum pumping for the outdoor unit, please confirm that the high-pressure gas pipe, low-pressure gas pipe, and cut-off valve are in close status; if the outdoor unit needs to conduct vacuum pumping, please confirm that the high-pressure gas pipe, low-pressure gas pipe, and cut-off valve are in open status.

2）Ensure that the pipeline connection and communication connection among outdoor unit, mode exchange box and indoor unit are well connected; the outdoor unit, mode exchange box and indoor unit should all be energized and maintain off status.

3）Control the outdoor unit to enter the vacuum pumping mode (A8) through mainboard function buttons of the outdoor unit, debugging software or s multi-functional debugger, at this time the solenoid valve and electronic expansion valve in the system will automatically open.

4）Connect the regulating valve and the vacuum pump to the detection joints of the high-pressure gas pipe valve, low-pressure gas pipe valve and liquid pipe valve with charging pipe.



5） Vacuumize it for 4 hours, and check if the vacuum degree reaches -0.1 MPa or above. If not, there may be a leak. It needs to conduct the leakage test once again. If there is no leak, vacuumize it for another 2 hours.

6）If the vacuum degree cannot be maintained by two times of vacuums, you can confirm that there is water inside the pipeline under the condition that there is no leakage. At this time, the water should be removed by vacuum destruction. The specific method is: fill the pipeline with 0.05MPa nitrogen gas, vacuumize it for 2 hours, and keep vacuum for 1 hour. If it still can’t reach the vacuum degree of -0.1 MPa, repeat this operation until the water is drained.

7） After vacuuming, close the valve of the regulating valve and stop vacuuming for 1 hour. Confirm that the pressure of the regulating valve has not risen.

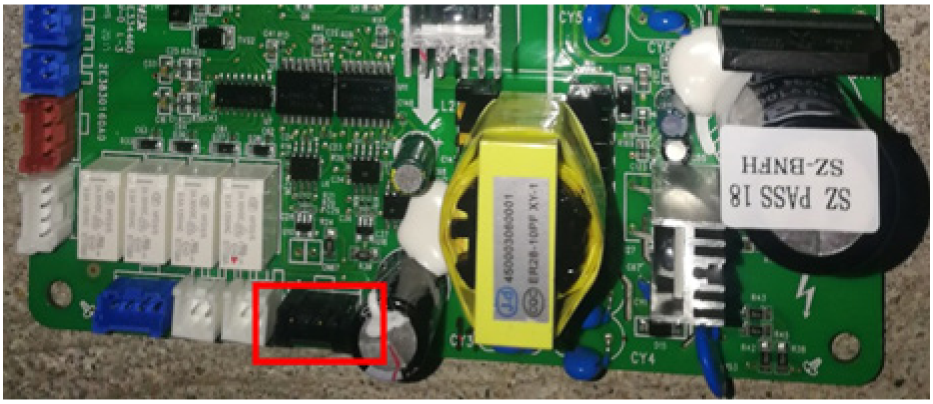
3.1.2.2 Vacuum pumping operation for the system without outdoor unit

For the pipeline only with mode exchange box and indoor unit and without outdoor unit, conduct vacuum pumping according to the following procedures:

1）Before vacuum pumping, make sure that all pipelines on the side of the mode exchange box connected to the outdoor unit are equipped with cut-off valves, and keep the cut-off valves closed. The pipelines between the cut-off valve and the mode converter must be connected with detection joints.

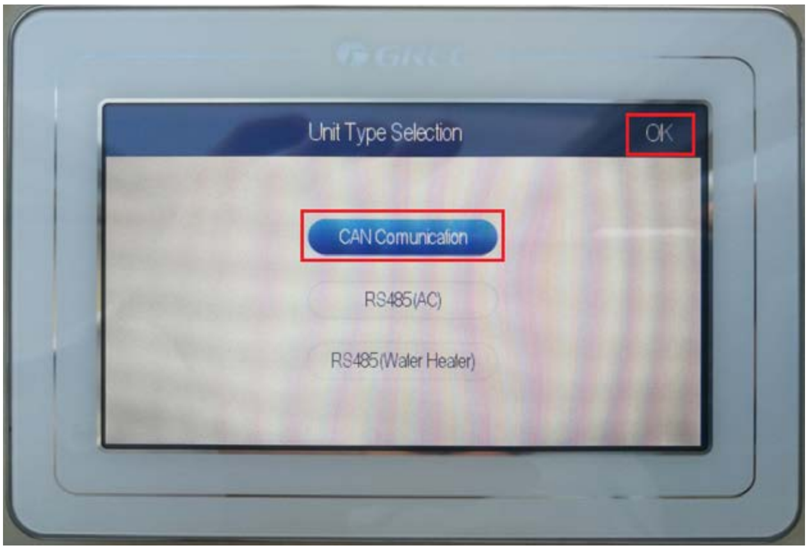
2）Ensure that the pipeline connection and communication connection between outdoor unit and mode exchange box are well connected; the mode exchange box and indoor unit should all be energized and maintain off status.

3）Use the four-core communication cable to connect the multi-functional debugger to the interface CN11 of the mode converter motherboard.



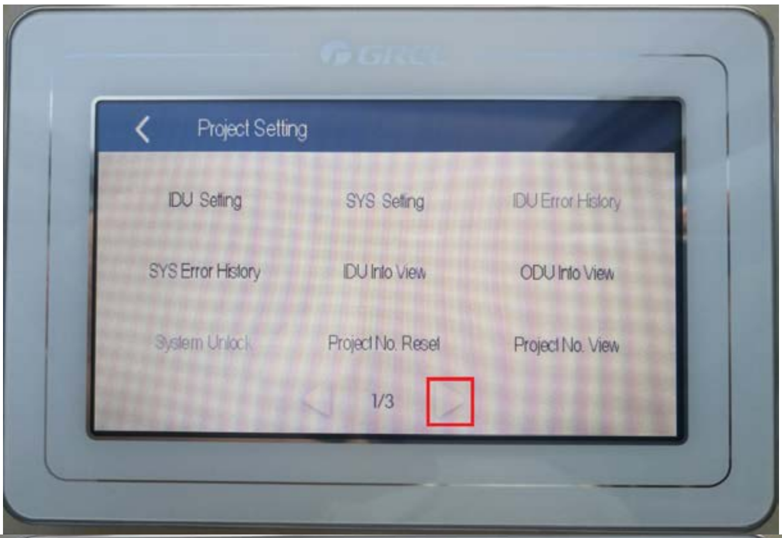
4）Use the outdoor unit simulation function of multi-functional debugger, operating steps are as below:

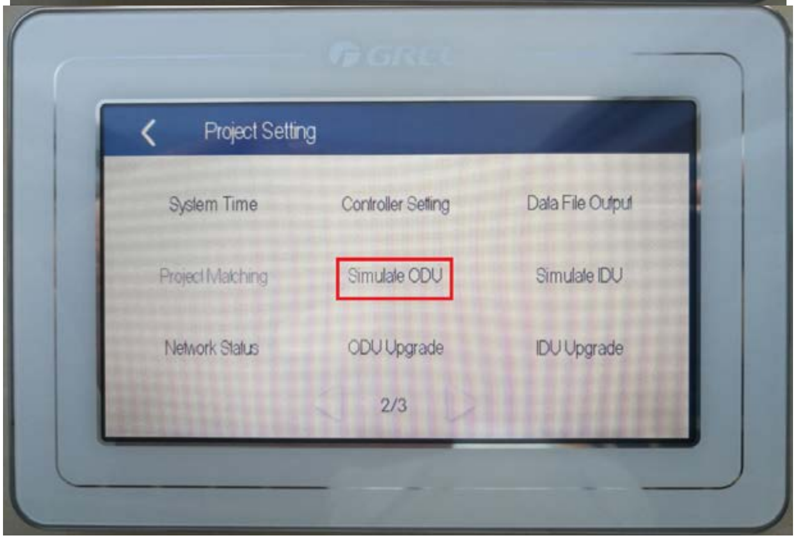
①In the power-on interface of multi-functional debugger, select “CAN Communication” and press “OK” button.



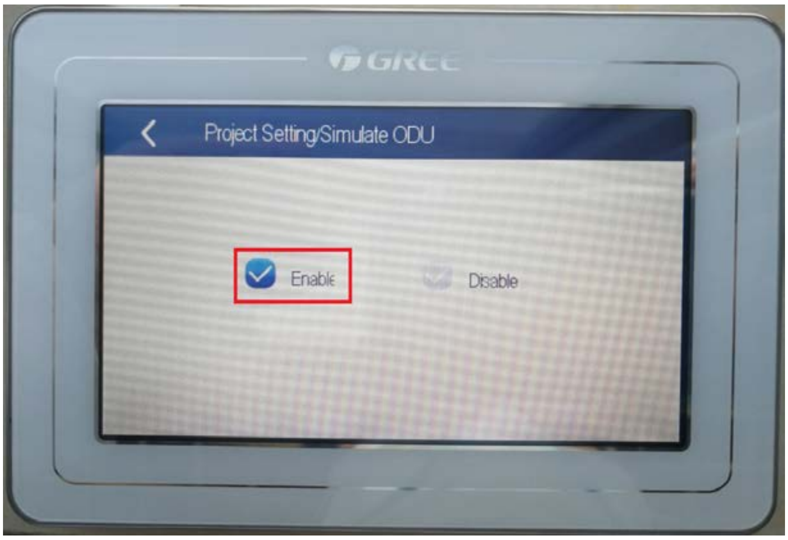
②Select “Project Setting” to enter engineering setting interface.

③Turn to the second page and select “Simulate ODU”.





④Select “Enable”, and then start vacuum pumping.



4）Connect the regulating valve and the vacuum pump to the detection joints of the pipelines for connecting mode converter to outdoor unit side with charging pipe.

5）Vacuumize it for 4 hours, and check if the vacuum degree reaches -0.1 MPa or above. If not, there may be a leak. It needs to conduct the leakage test once again. If there is no leak, vacuumize it for another 2 hours.

6）If the vacuum degree cannot be maintained by two times of vacuums, you can confirm that there is water inside the pipeline under the condition that there is no leakage. At this time, the water should be removed by vacuum destruction. The specific method is: fill the pipeline with 0.05MPa nitrogen gas, vacuumize it for 2 hours, and keep vacuum for 1 hour. If it still can’t reach the vacuum degree of -0.1 MPa, repeat this operation until the water is drained.

7）After vacuuming, close the valve of the regulating valve and stop vacuuming for 1 hour. Confirm that the pressure of the regulating valve has not risen.

8）After maintaining the vacuum, remove the charging pipe, disconnect the mode converter and the power supply of indoor unit, and keep the cut-off valve on the mode exchange box pipeline closed. After connecting the outdoor unit, please open the cut-off valve on the mode exchange box pipeline and perform the vacuum pumping operation of the complete system according to 3.1.2.1.

3.2 Refrigerant Charging Method

Refrigerant charging for multi VRF unit includes two parts: pre-charging and start-up charging.

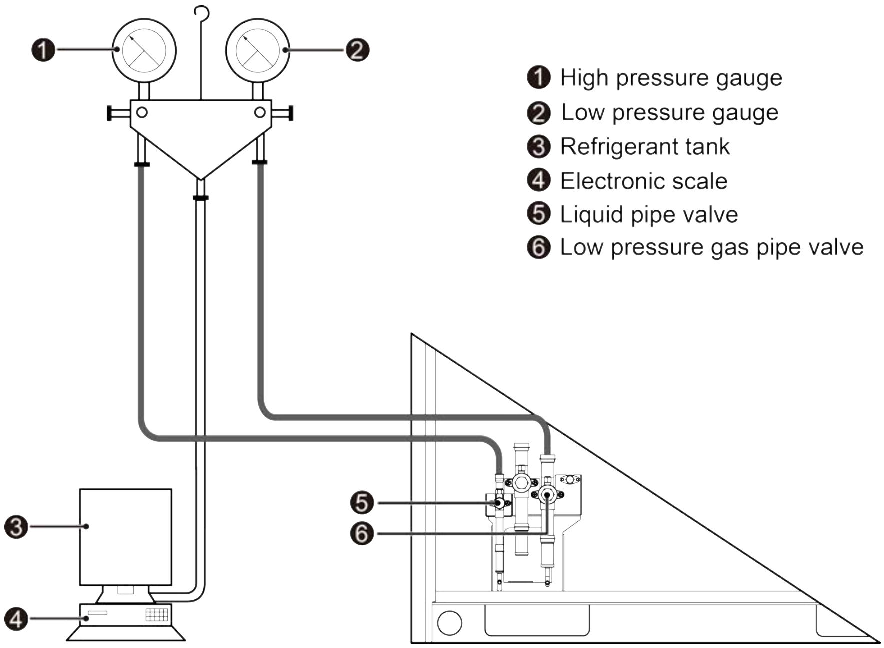
3.2.1 Pre-charging of refrigerant.

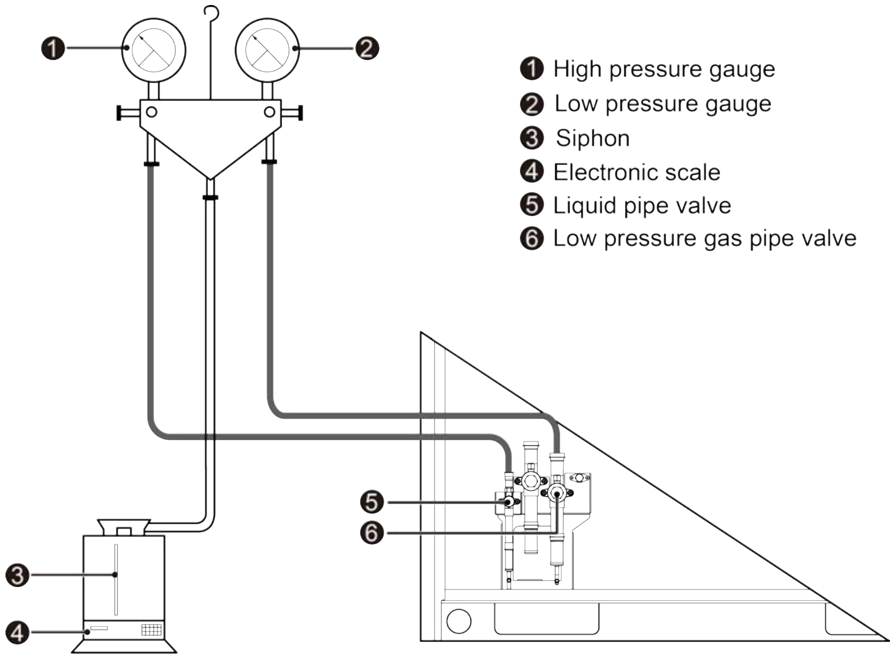
Step 1: Connect the high pressure gauge pipe of pressure gauge 1 to the detection opening of the high pressure gas valve, the low pressure gauge pipe to the detection opening of the low pressure gas valve, and the medium gauge pipe to vacuum pump 1; then connect the high pressure gauge pipe of pressure gauge 2 to the detection opening of the liquid valve, close the low pressure gauge pipe, and connect the medium gauge pipe to vacuum pump 2.

Step 2: Once vacuum drying is completed, close the high and low pressure gauge pipes of pressure gauge 1 as well as the high pressure gauge pipe of pressure gauge 2. Disconnect the medium pressure gauge pipes of the two pressure gauges from the vacuum pumps. Disassemble the double 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

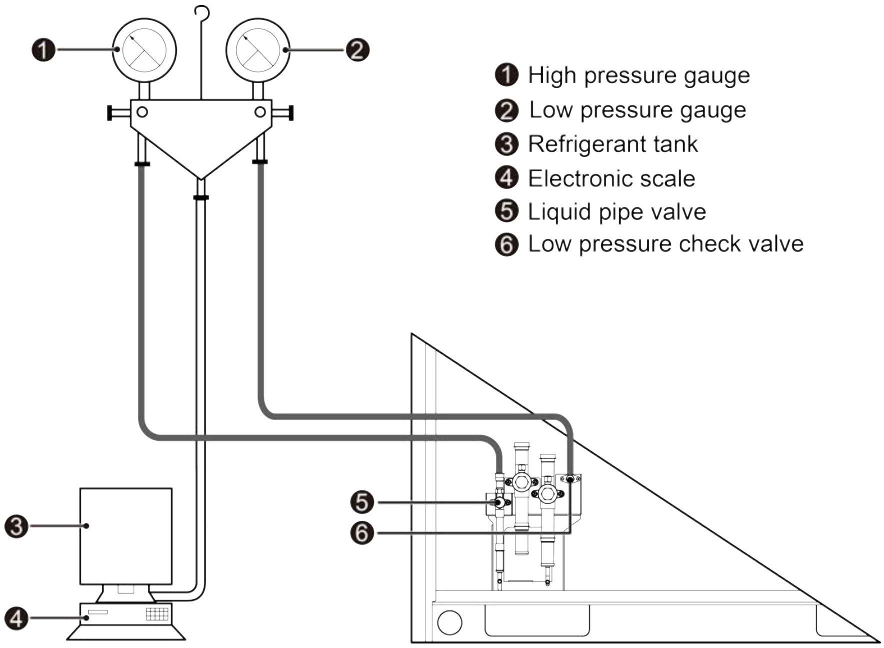
"M" is the calculated total required refrigerant-charging volume.

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.

3.2.2 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 Outdoor Unit

4.1.1 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: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</td></tr>
</table>

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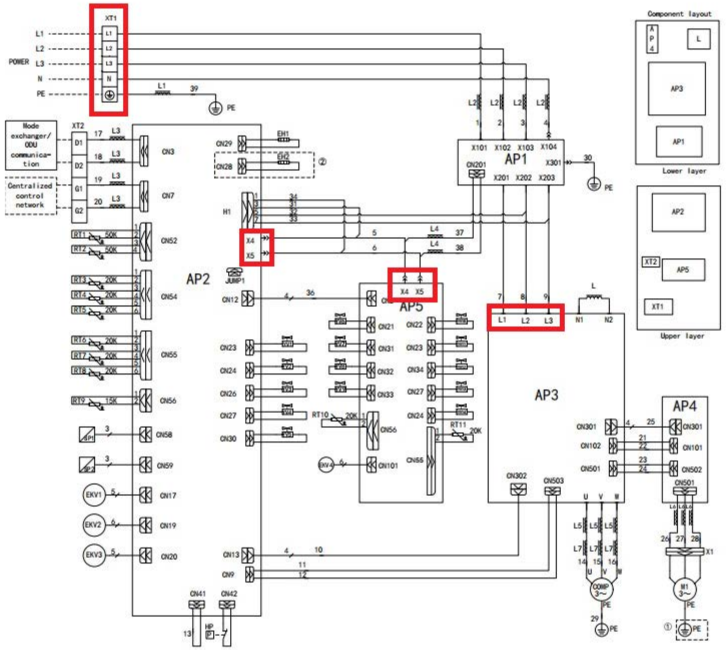

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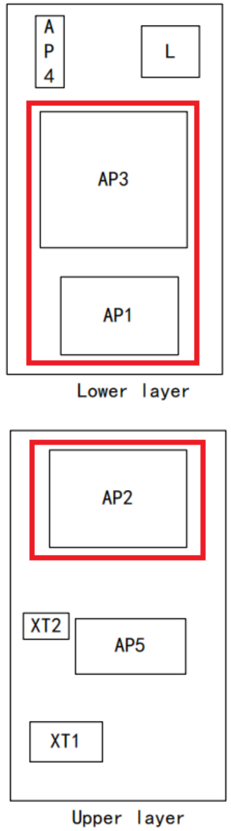
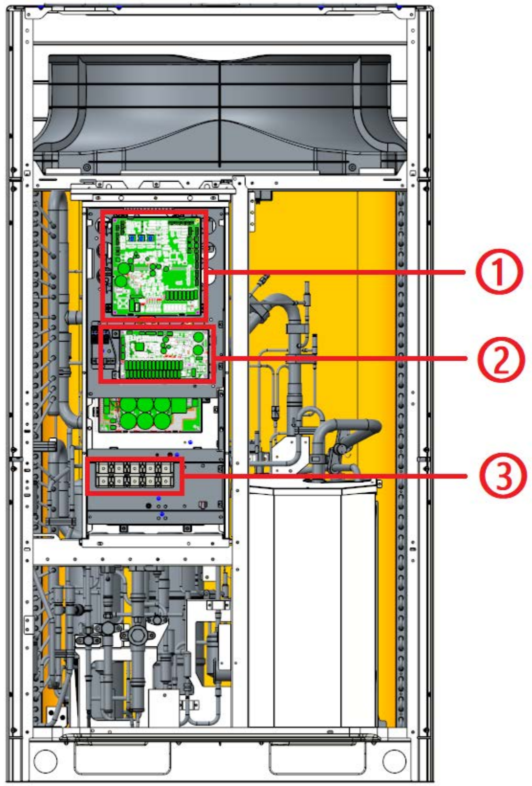


</td><td>



①main board
②function expansion board
③Power terminal block

</td></tr>
</table>

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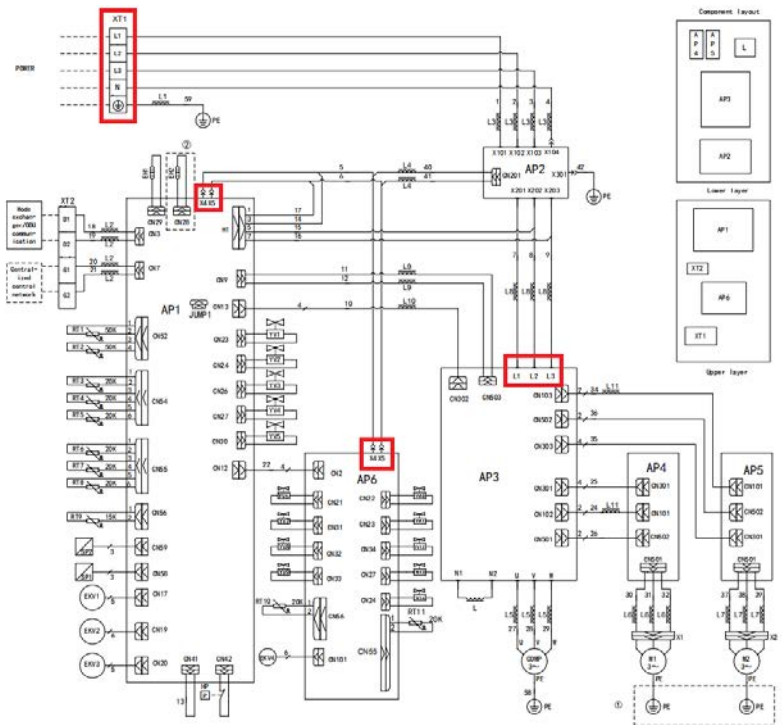
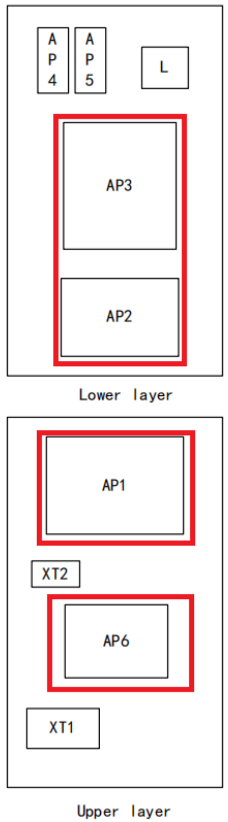
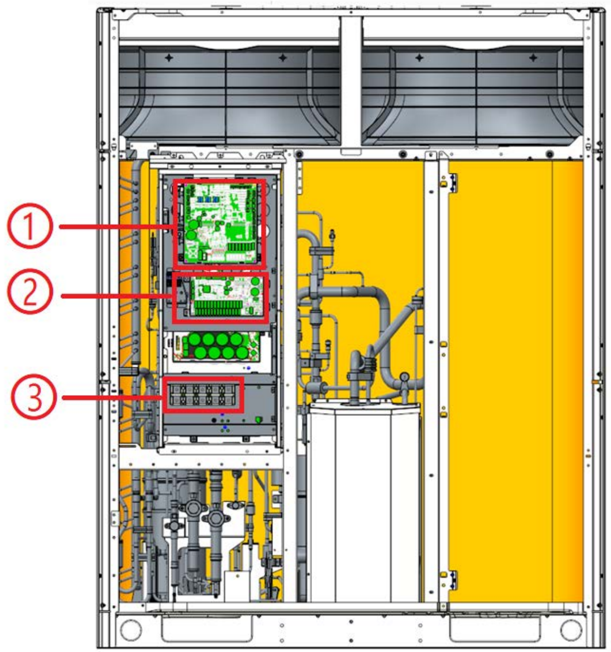
<tr><td></td><td></td><td>①main board
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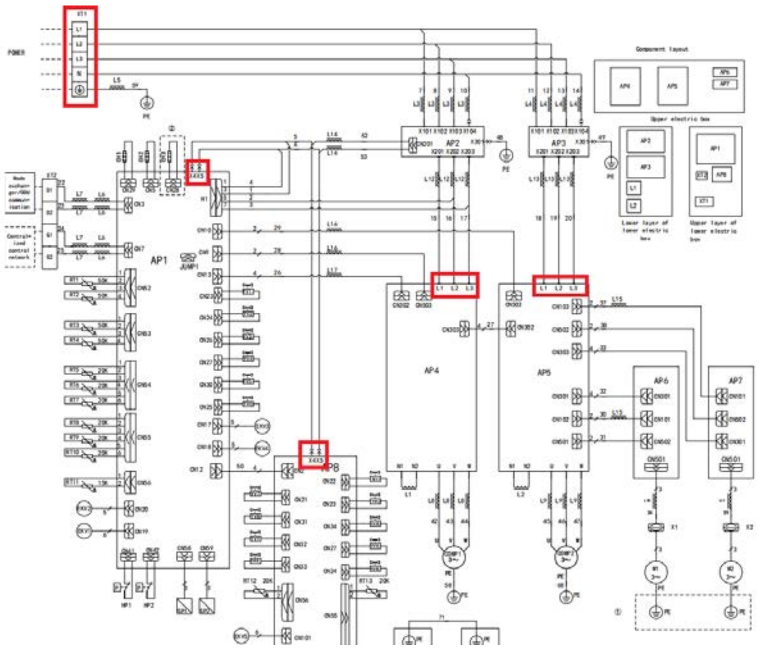
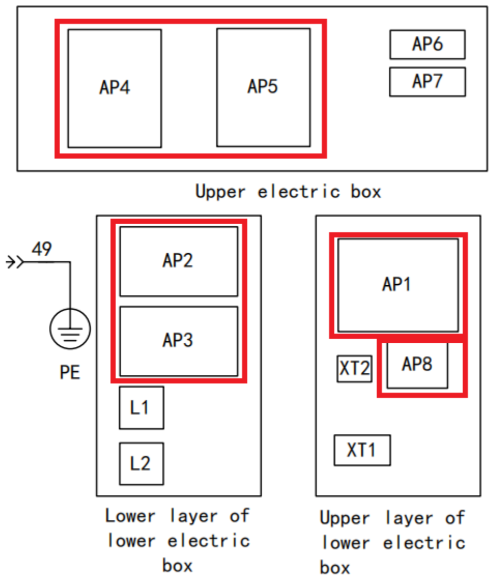
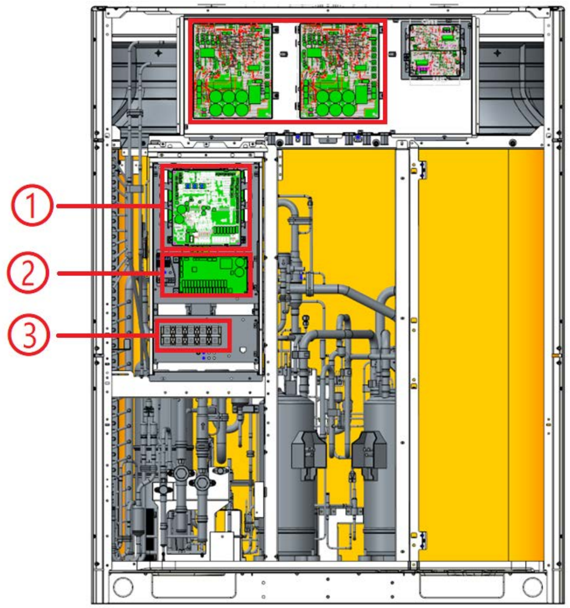
<tr><th colspan="3">Models: ,GMV-VQ504WM/C-X 、GMV-VQ560WM/C-X、 GMV-VQ615WM/C-X</th></tr>
<tr><td></td><td></td><td>
①main board
②function expansion board
③Power terminal block</td></tr>
</table>

4.1.1.1 Mechanical Inspection

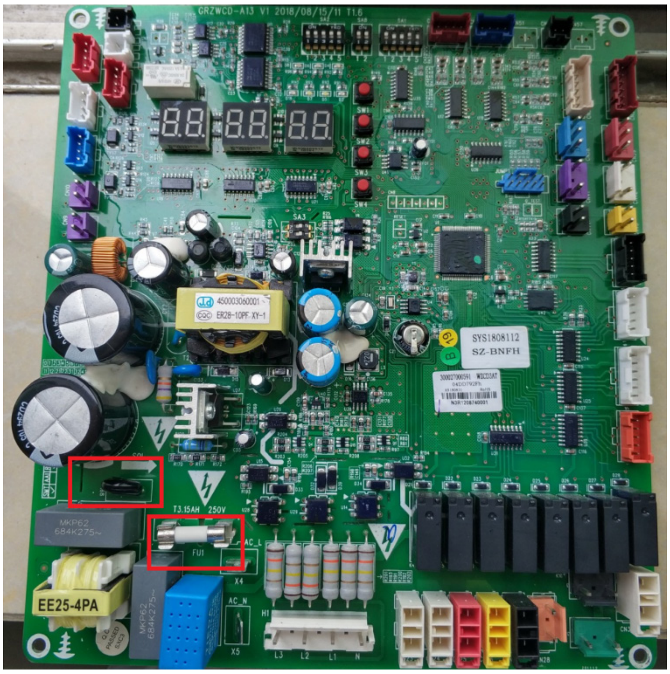
(1) Confirm that the unit power is disconnected.

(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.



4.1.1.2 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:

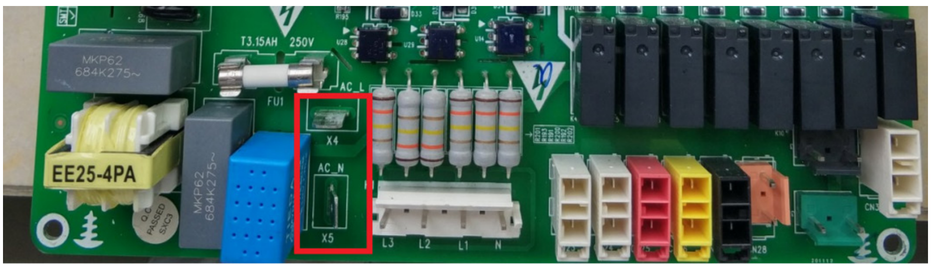
The power voltage between two phases is 380-415VAC±10%.

The unbalance rate of the power between two phases does not exceed 2%.

Voltage between L1 and N: 220-240 VAC.

(3) Check the power on the main control board:

Confirm that the X4 and X5 on the main control board are active.



4.1.2 Temperature Sensors

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
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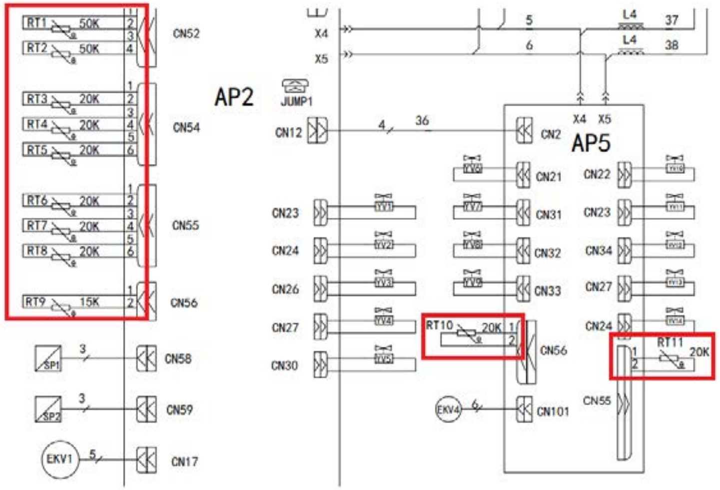
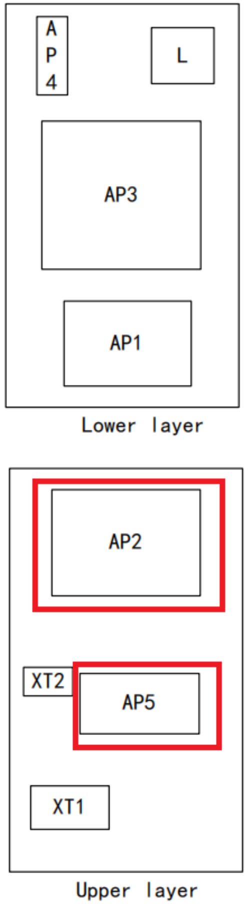
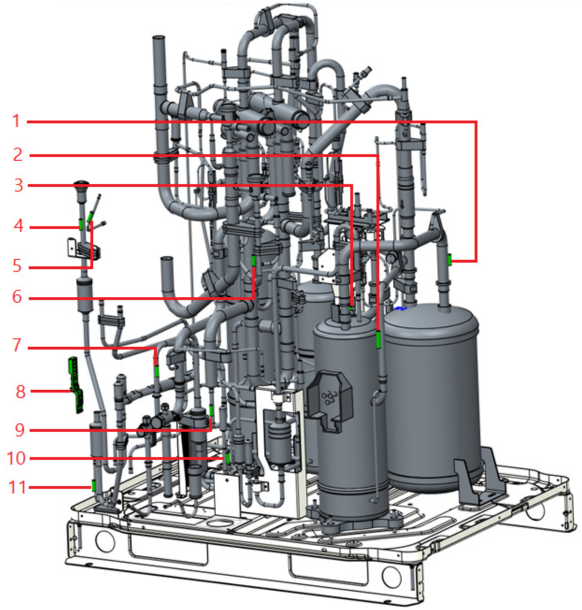
<tr><td></td><td></td><td>1. Gas separator outlet pipe temperature sensor RT3
2. Discharge temperature sensor of inverter compressor RT2
3. Shell top temperature of inverter compress RT1
4. Outlet pipe temperature sensor of condenser RT11
5. Defrosting temperature sensor 1 RT5
6. Gas separator inlet pipe temperature sensor RT4
7. Subcooler liquid outlet temperature sensor RT6
8. Outdoor ambient temperature sensor RT9
9. Air outlet temperature sensor of subcooler RT7
10. Air inlet temperature sensor of subcooler RT8
11. Defrosting temperature sensor 2 RT10</td></tr>
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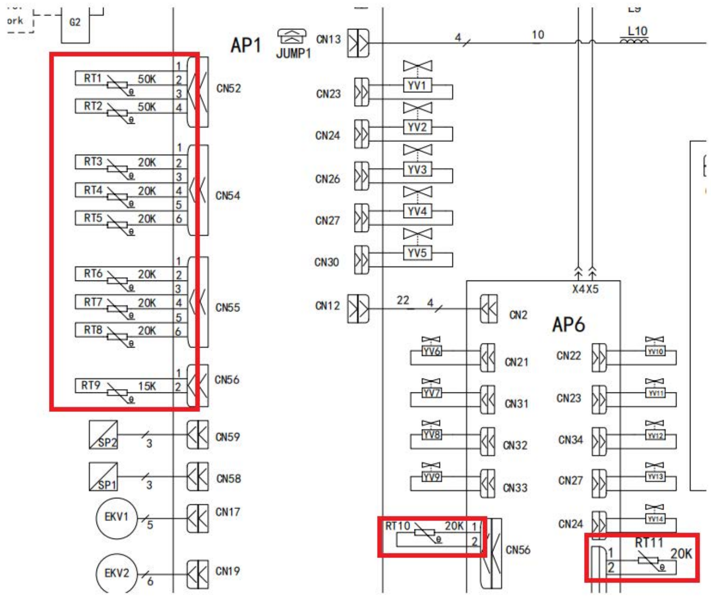
<tr><td>
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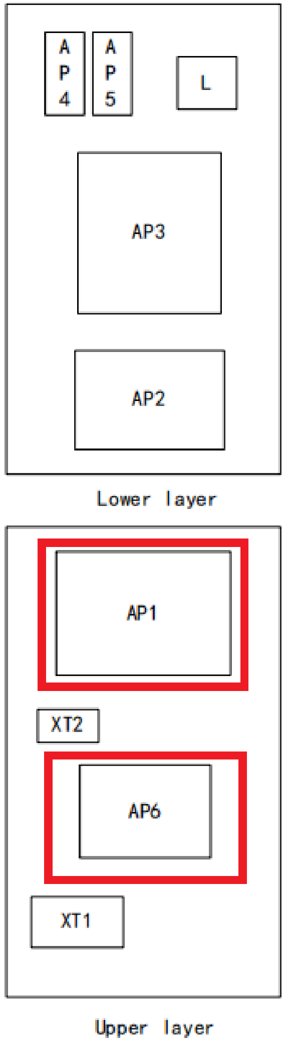
<td>
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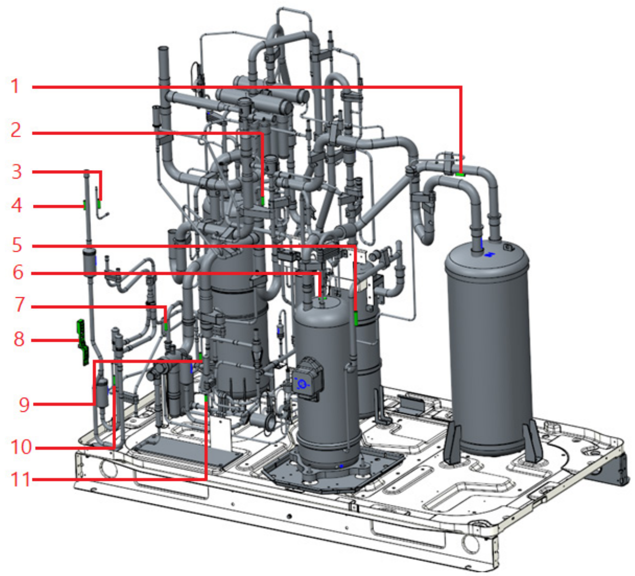
<td>

1. Gas separator outlet pipe temperature sensor RT3
2. Gas separator inlet pipe temperature sensor RT4
3. Defrosting temperature sensor 1 RT5
4. Outlet pipe temperature sensor of condenser RT11
5. Discharge temperature sensor of inverter compressor RT2
6. Shell top temperature of inverter compress RT1
7. Subcooler liquid outlet temperature sensor RT6
8. Outdoor ambient temperature sensor RT9
9. Air outlet temperature sensor of subcooler RT7
10. Defrosting temperature sensor 2 RT10
11. Air inlet temperature sensor of subcooler RT8</td></tr>
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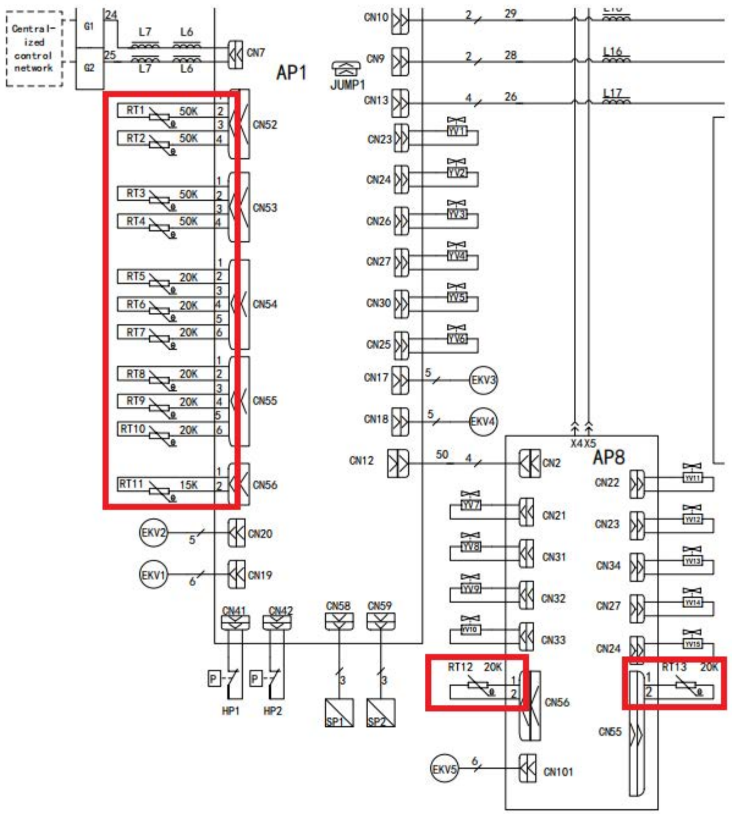

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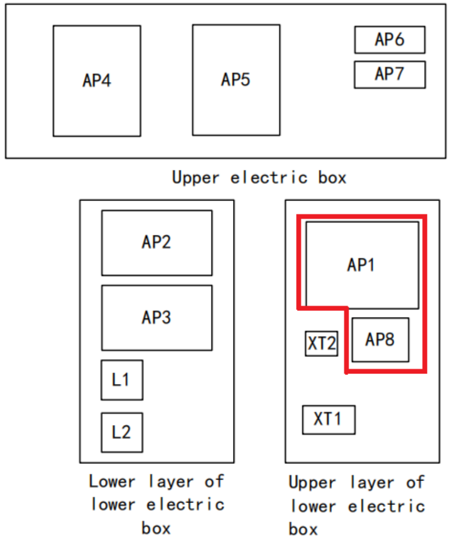

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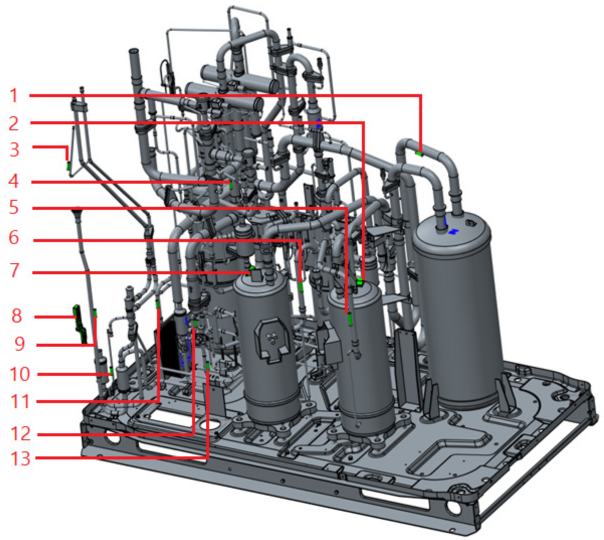


1. Gas separator outlet pipe temperature sensor RT5
2. Shell top temperature of inverter compress1 RT1
3. Defrosting temperature sensor 1 RT7
4. Gas separator inlet pipe temperature sensor RT6
5. Discharge temperature sensor of inverter compressor1 RT2
6. Discharge temperature sensor of inverter compressor2 RT4
7. Shell top temperature of inverter compress2 RT3
8. Outdoor ambient temperature sensor RT11
9. Outlet pipe temperature sensor of condenser RT13
10. Defrosting temperature sensor 2 RT12
11. Subcooler liquid outlet temperature sensor RT8
12. Air outlet temperature sensor of subcooler RT9
13. Air inlet temperature sensor of subcooler RT10

</td></tr>
</table>

4.1.2.1 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.

4.1.2.2 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.

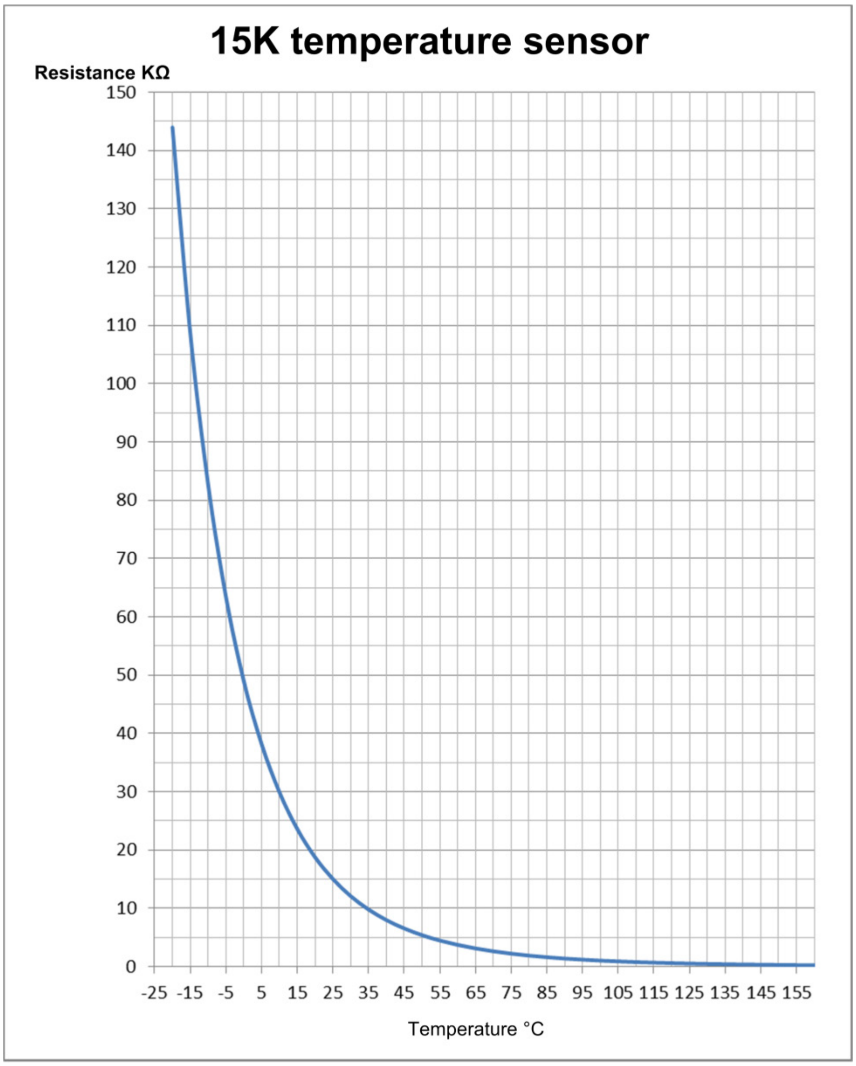
(4) Disconnect the connecting terminal of the corresponding temperature sensor from the main board. Use a multimeter to measure the resistance of the temperature sensors and compare it with the confirmed temperature range.

(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.

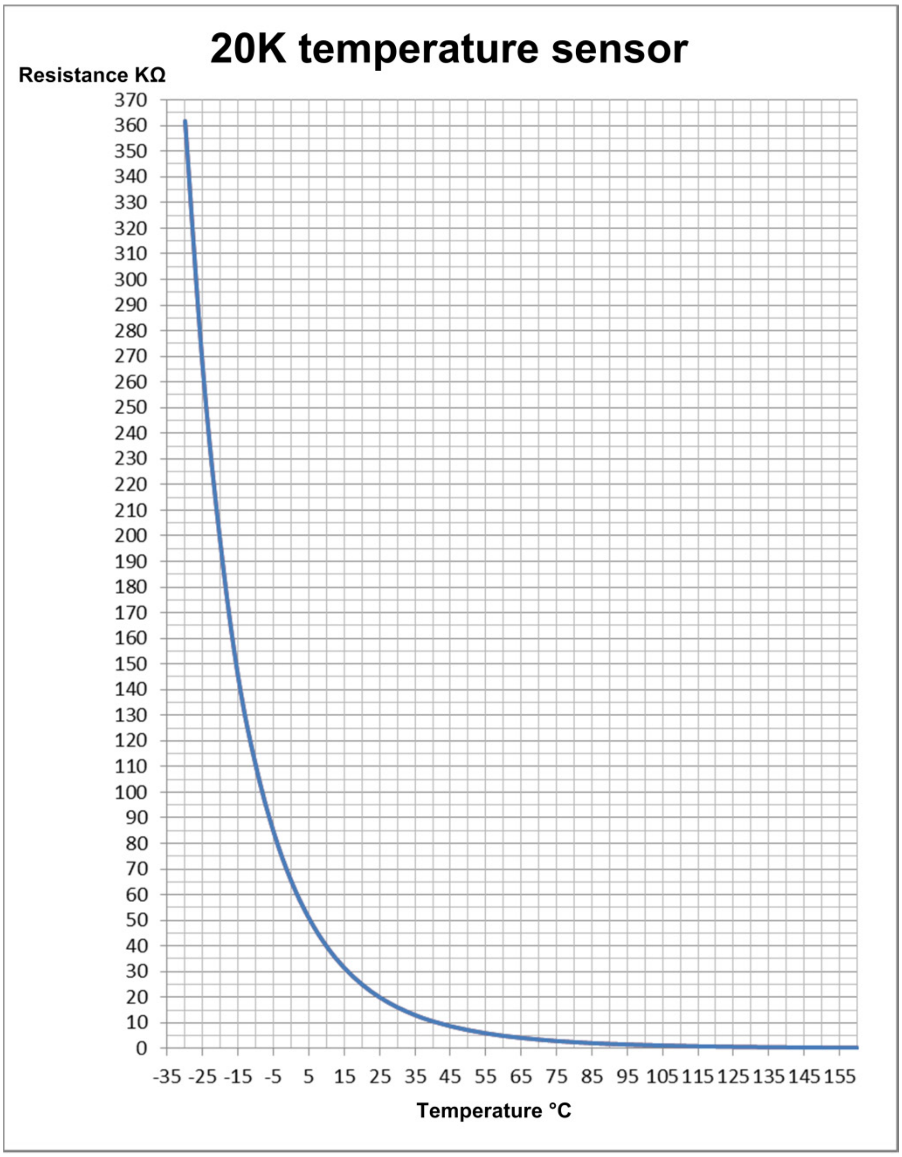
15K temperature sensor resistance - temperature curve

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



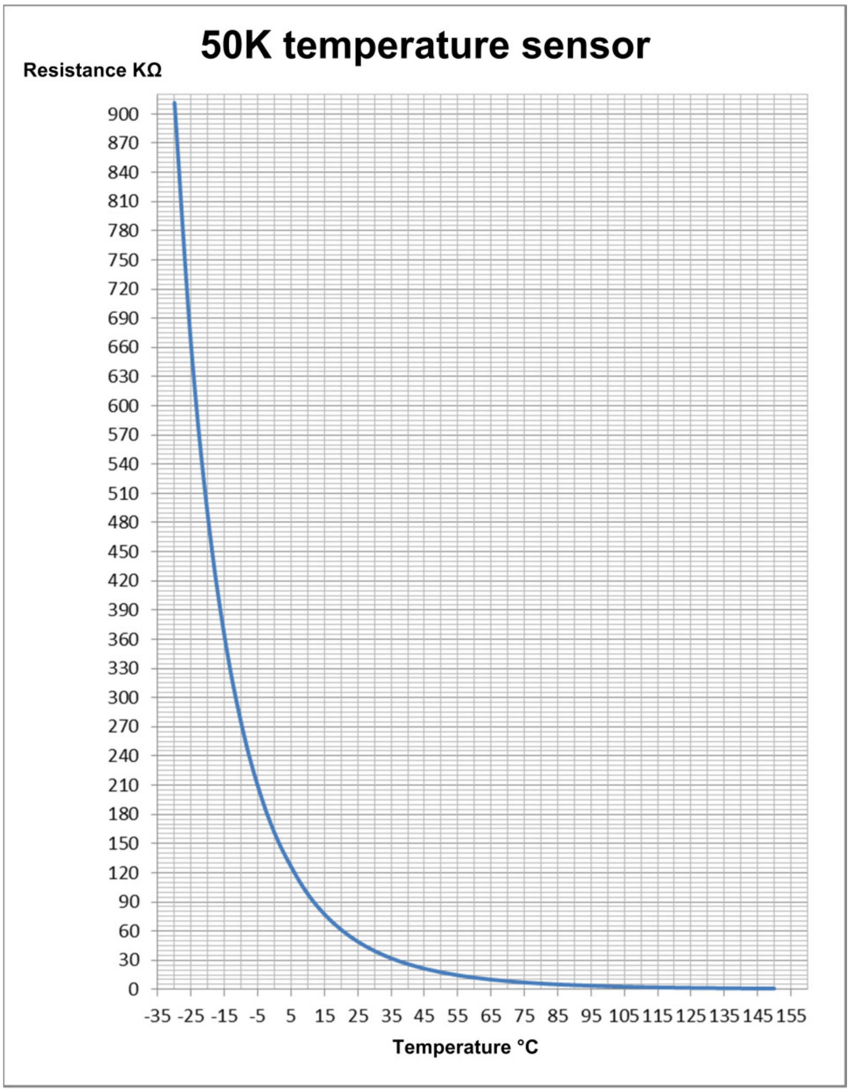
20K temperature sensor resistance - temperature curve

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

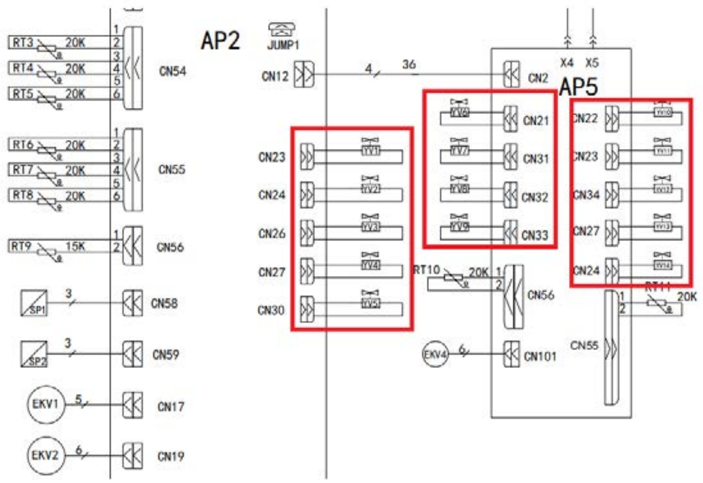
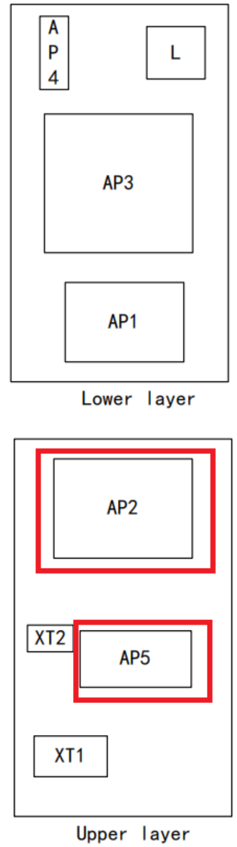
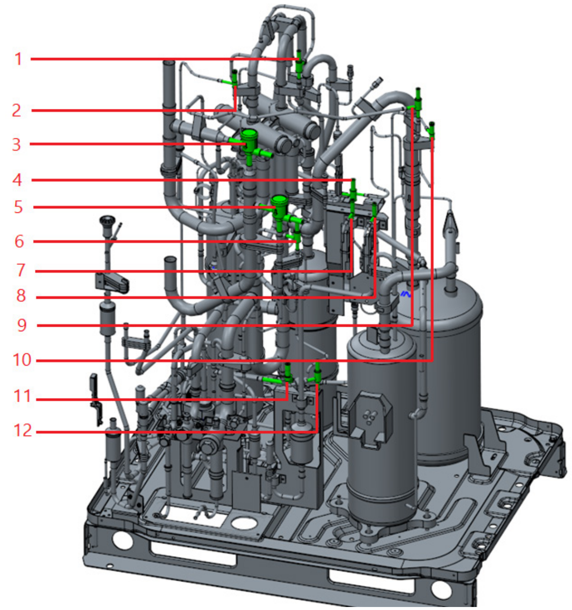


50K temperature sensor resistance - temperature curve

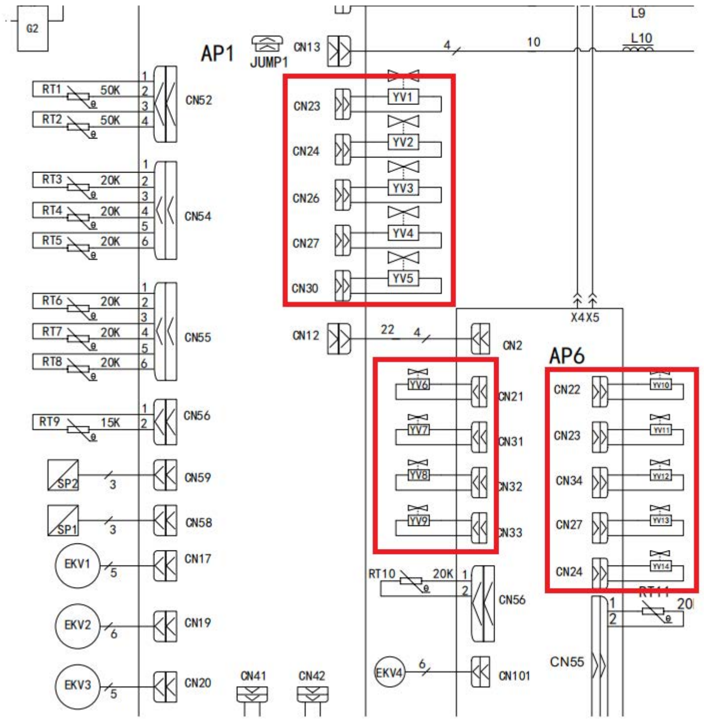
50K	
Temperature \°C	Resistance \KΩ
-30	911.56
-25	660.93
-20	486.55
-15	362.99
-10	274.02
-5	209.05
0	161.02
5	126.17
10	98.006
15	77.349
20	61.478
25	49.191
30	39.61
35	32.088
40	26.147
45	21.425
50	17.651
55	14.618
60	12.168
65	10.178
70	8.5551
75	7.2245
80	6.1288
85	5.2223
90	4.4693
95	3.841
100	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



4.1.3 Solenoid Valve

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The coil is for providing the electromagnetic force for the action of magnet valve;</td><td colspan="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><th colspan="3">Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</th></tr>
<tr><td>
</td><td>
</td><td>

1 Pressure valve YV10
2 Inlet liquid valve YV11
3 High pressure valve YV7
4 Gas balance valve YV12
5 Low pressure valve YV8
6 Low pressure bypass valve YV9
7 Low- temperature oil return solenoid valve YV3
8 Oil return solenoid valve YV2
9 Air by-pass valve YV5
10 Drain valve YV14
11 Valve of subcooler YV4
12 High pressure bypass valve YV13</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The coil is for providing the electromagnetic force for the action of magnet valve;</td><td colspan="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><th colspan="3">Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X</th></tr>
<tr><td>


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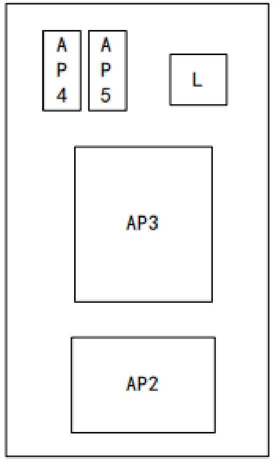
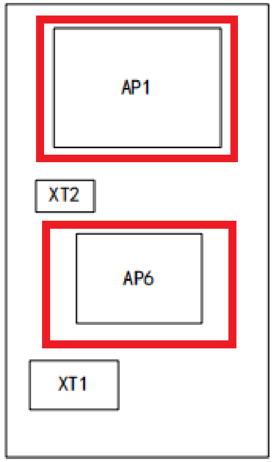
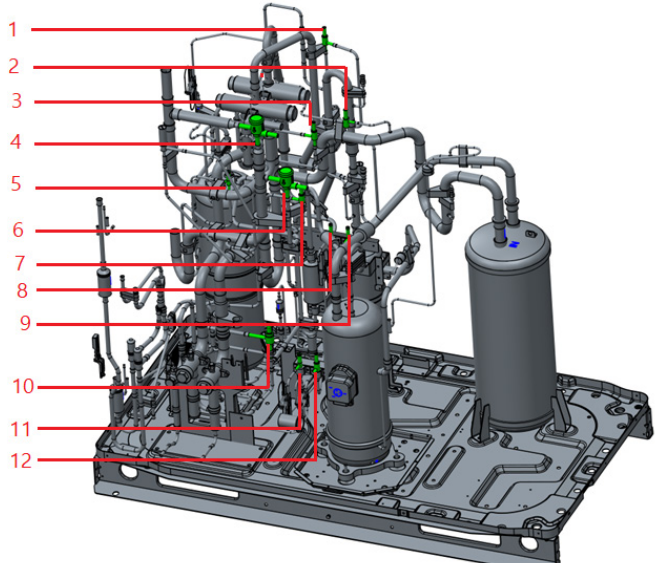
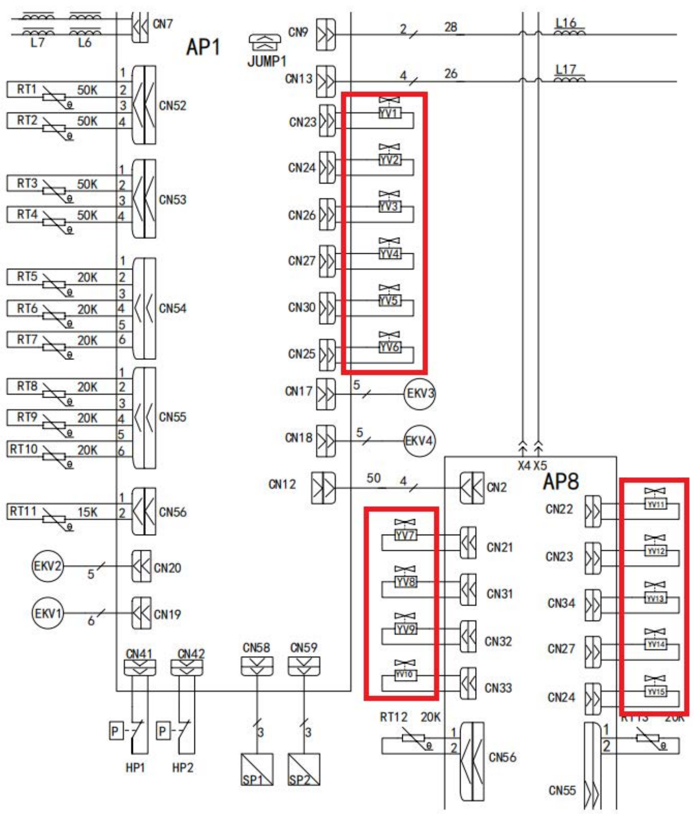
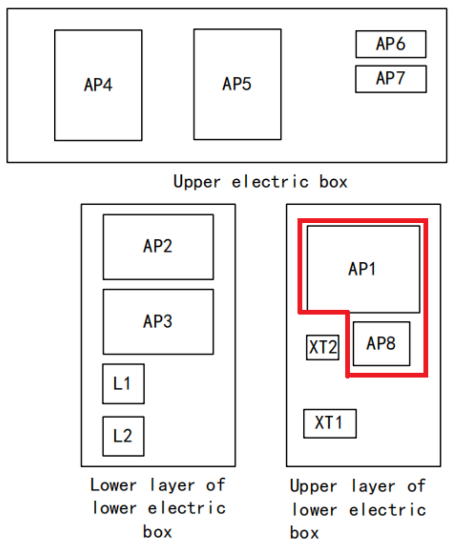
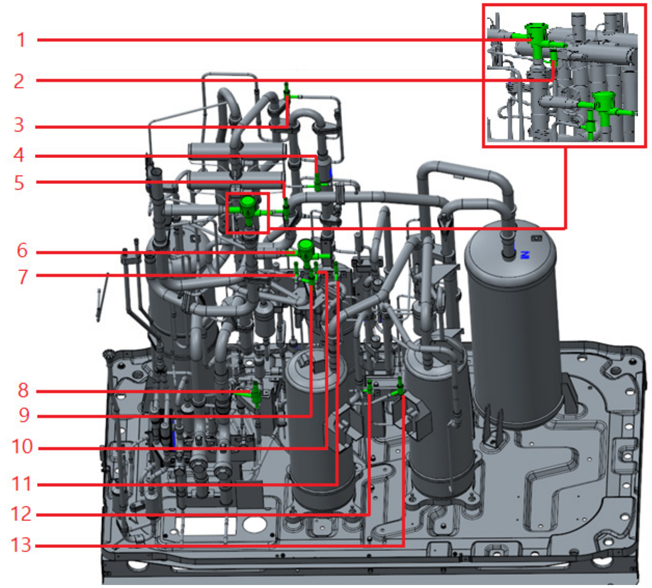


Lower layer


Upper layer
</td><td>


1 Pressure valve YV10
2 Gas balance valve YV12
3 High pressure bypass valve YV13
4 High pressure valve YV7
5 Inlet liquid valve YV11
6 Low pressure valve YV8
7 Low pressure bypass valve YV9
8 Low- temperature oil return solenoid valve YV3
9 Oil return solenoid valve YV2
10 Valve of subcooler YV4
11 Drain valve YV14
12 Air by-pass valve YV5
</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The coil is for providing the electromagnetic force for the action of magnet valve;</td><td colspan="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><th colspan="3">Models: GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X</th></tr>
<tr><td>
</td><td>
</td><td>

1 High pressure valve YV8
2 Inlet liquid valve YV12
3 Pressure valve YV11
4 Gas balance valve YV13
5 High pressure bypass valve YV14
6 Low pressure valve YV9
7 Low- temperature oil return solenoid valve YV3
8 Valve of subcooler YV4
9 Low pressure bypass valve YV10
10 Oil return solenoid valve 1 YV2
11 Oil return solenoid valve 2 YV6
12 Drain valve YV15
13 Air by-pass valve YV5</td></tr>
</table>

4.1.3.1 Mechanical Inspection

(1) Confirm that the unit Power is disconnected.

(2) Find the solenoid valve, check whether the fixing screw is loose and whether the valve and coil have any apparent exceptions.

4.1.3.2 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

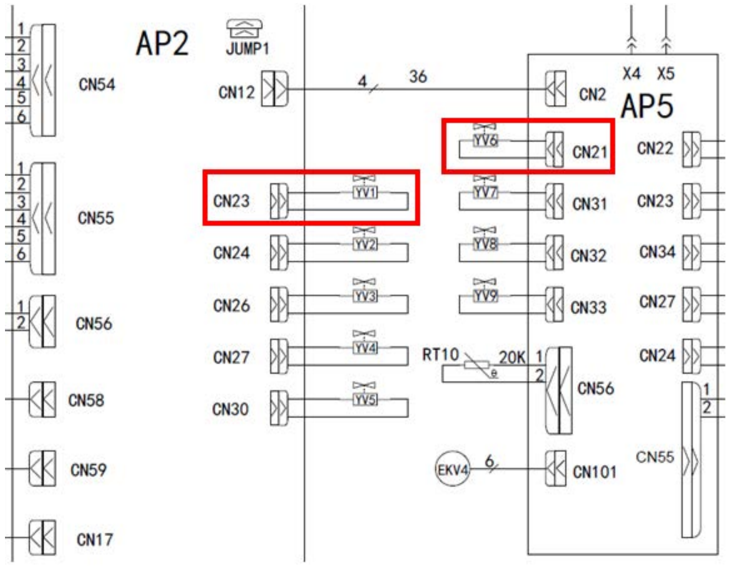
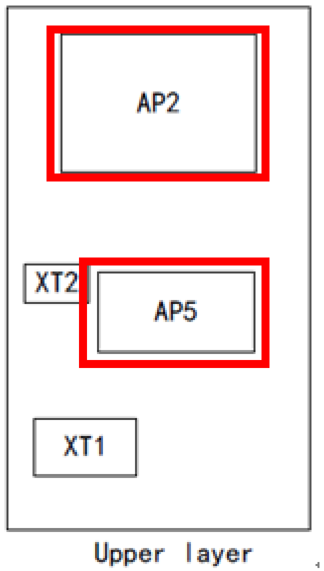
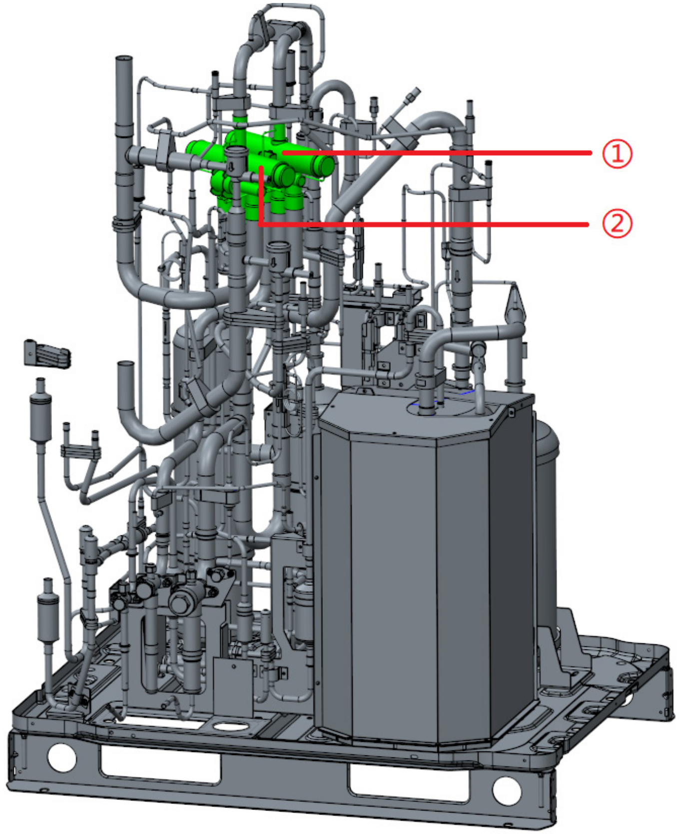
(2) Remove the electrical appliance cover and check whether the connecting terminal of the solenoid valve is firm.

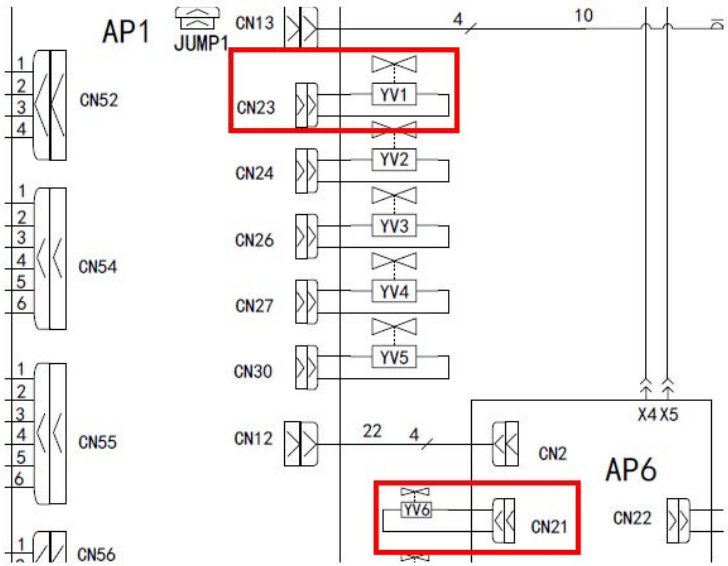
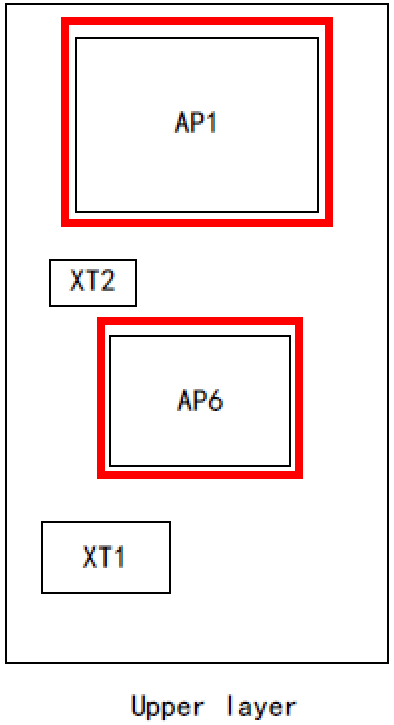
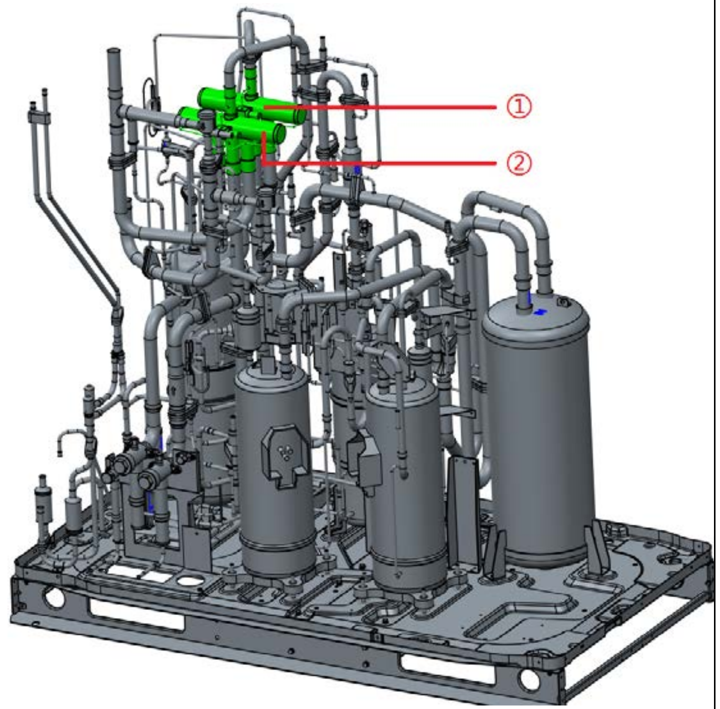
(3) Disconnect the corresponding valve's coil terminal from the main board and use a multimeter to measure the coil resistance.

(4) If the measured resistance does not match with that in the following table, the coil needs to be replaced.

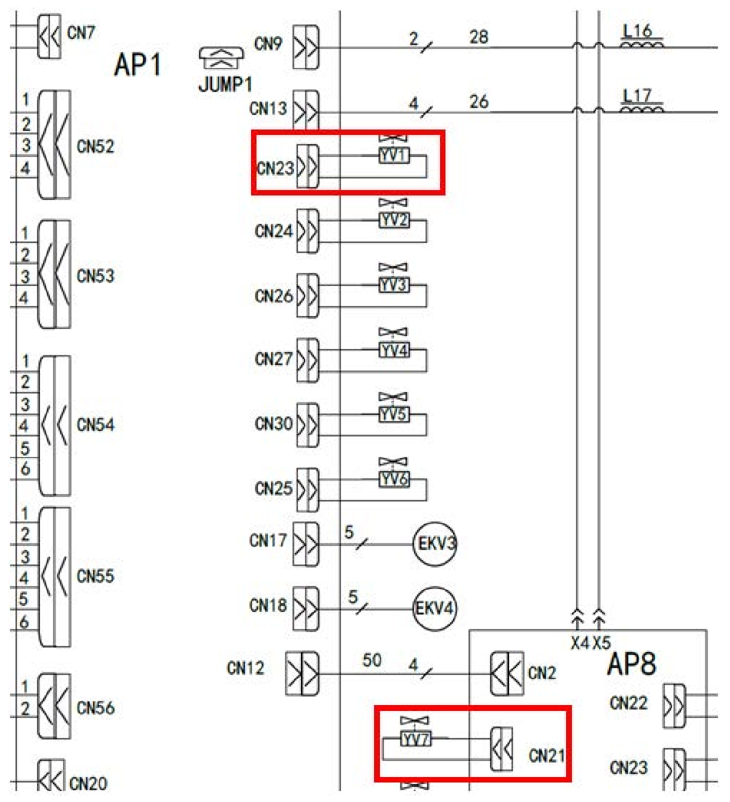
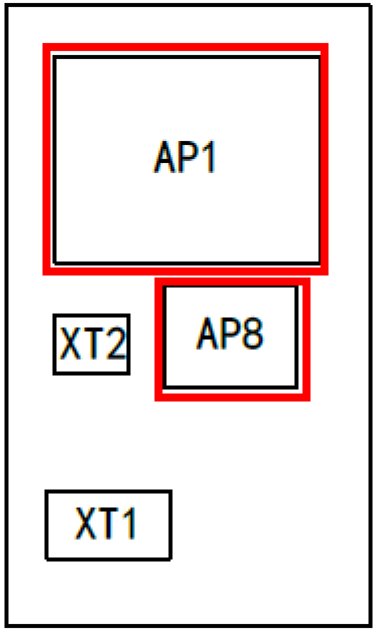
Coil	Resistance (Ω)			Normal range of deviation
	ODU capacity (HP)			
	8、10、12	14、16	18、20,、22	
Oil-return solenoid valve 1	2085			±10%
Oil-return solenoid valve 2	—		2085	±10%
Low-temperature oil-return solenoid valve	2085			±10%
Subcooler solenoid valve	1273			±10%
Gas bypass valve	2085			±10%
High pressure valve	2085			±10%
Low pressure valve	2085			±10%
Low pressure bypass valve	2085			±10%
Pressure valve	2085			±10%
Inlet liquid valve	2085			±10%
Gas balance valve	2085			±10%
High pressure bypass valve	2085			±10%
Drain valve	2085			±10%

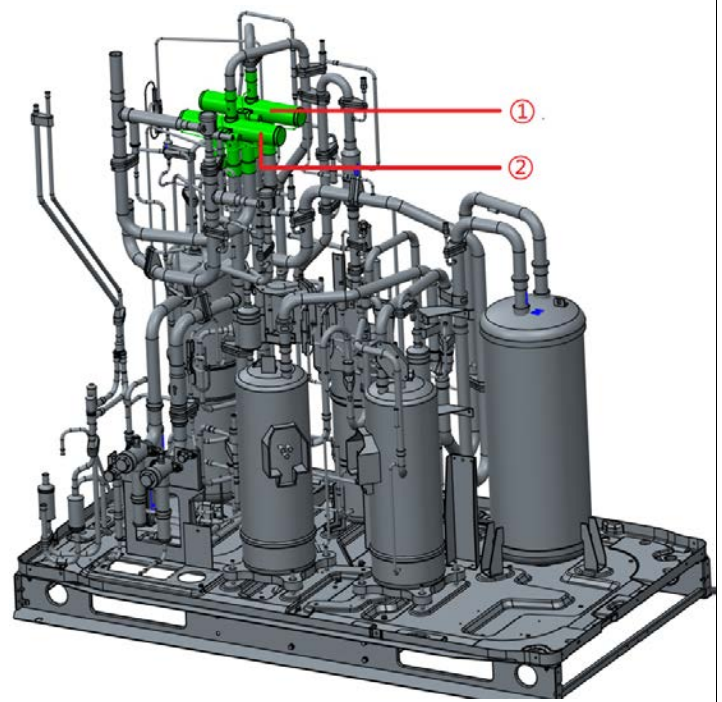
4.1.4 4-Way Valve

Specifications	Description	
The unit is with two 4-way valves, which adopts the coil with unified specification.	The 4-way valve is used for switching cooling and heating operation, if the cooling 4-way valve is energized, it will conduct heating operation; if the cooling 4-way valve is not energized, it will conduct cooling operation. The heating 4-way valve will be always in energization status.	
Circuit diagram	Layout of electrical appliance box	Physical position
Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X		
		① 4-way valve for heating ② Main 4-way valve for cooling

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The unit is with two 4-way valves, which adopts the coil with unified specification.</td><td colspan="2">The 4-way valve is used for switching cooling and heating operation, if the cooling 4-way valve is energized, it will conduct heating operation; if the cooling 4-way valve is not energized, it will conduct cooling operation. The heating 4-way valve will be always in energization status.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X</th></tr>
<tr><td>
</td><td>
</td><td>

① 4-way valve for heating
② Main 4-way valve for cooling</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The unit is with two 4-way valves, which adopts the coil with unified specification.</td><td colspan="2">The 4-way valve is used for switching cooling and heating operation, if the cooling 4-way valve is energized, it will conduct heating operation; if the cooling 4-way valve is not energized, it will conduct cooling operation. The heating 4-way valve will be always in energization status.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X</th></tr>
<tr><td>
</td><td>

Upper layer of lower electric box</td><td>

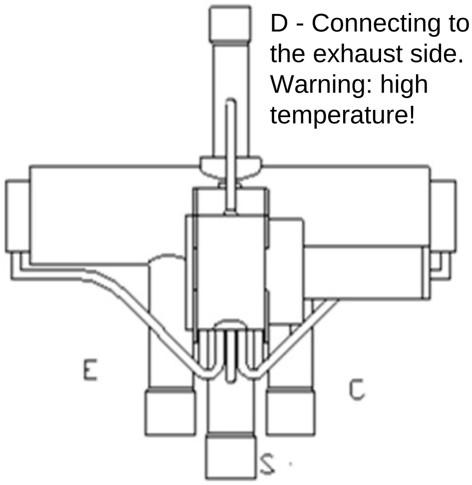
① 4-way valve for heating
② Main 4-way valve for cooling</td></tr>
</table>

4.1.4.1 Mechanical Inspection

Step 1: Confirm that the unit Power is disconnected.

Step 2: Find the 4-way valve coil, check whether the fixing screw is loose and whether the valve and coil have any apparent exceptions.

Step 3: Energize and turn on the unit, check the temperature of pipelines of 4-way valve under operating status:



There are labels in the 4-way valve, D refers to connecting exhaust side, S refers to connecting inhalation side of gas-liquid separator. When the system is operating, check if the temperature of the pipelines are the same with that of the following table. Note that do not directly touch the pipeline for avoiding scald!

Operating mode	4-way valve	Pipeline status			
		S pipe	E pipe	C pipe	D pipe
Cooling operation	Cooling 4-way valve	Low temperature	Low temperature	High temperature	High temperature
	Heating 4-way valve	Low temperature	High temperature	Low temperature	High temperature
Heating operation	Cooling 4-way valve	Low temperature	High temperature	Low temperature	High temperature
	Heating 4-way valve	Low temperature	High temperature	Low temperature	High temperature

4.1.4.2 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 is firm.

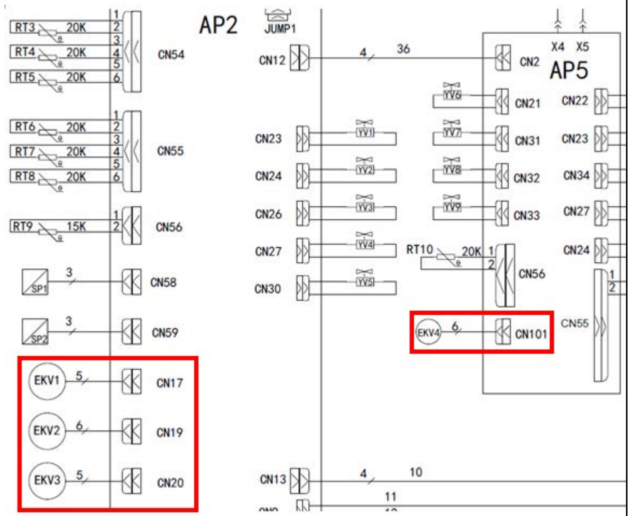
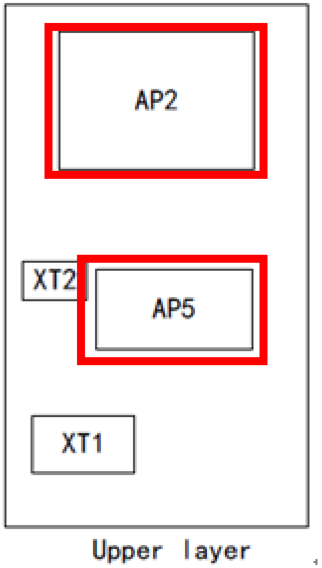
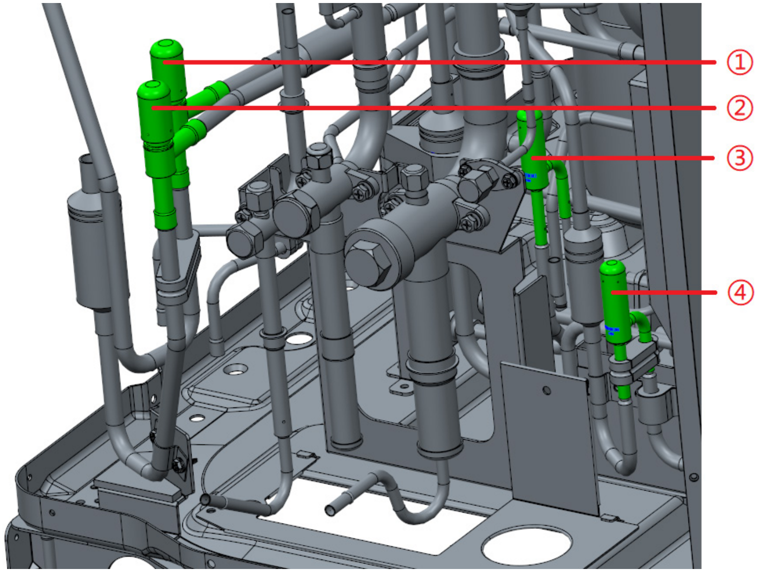
(3) Disconnect the corresponding valve's coil terminal from the main board and use a multimeter to measure the coil resistance.

（4） If the measured resistance does not match with that in the following table, the coil needs to be replaced.

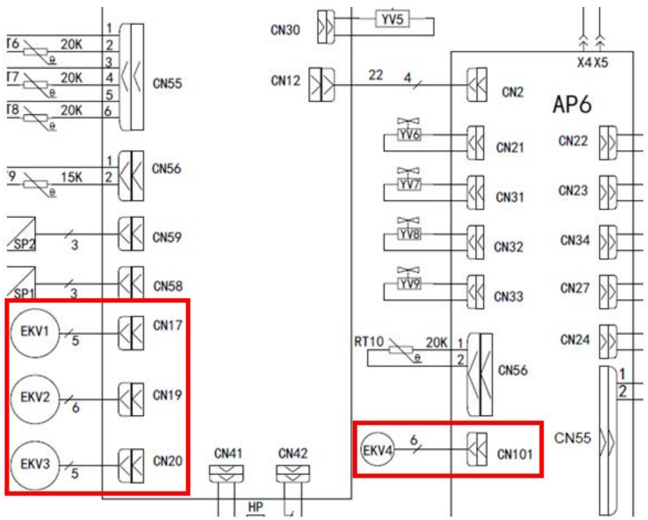
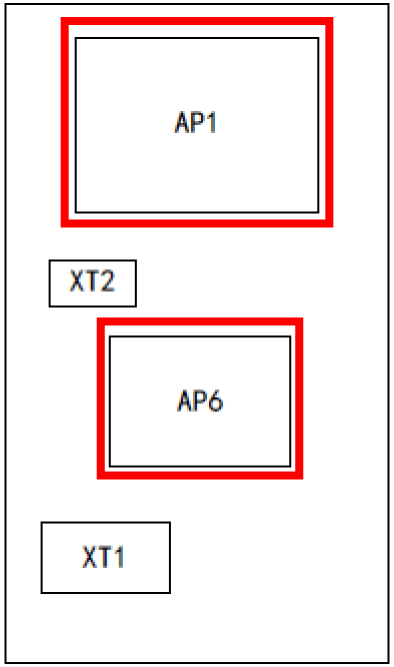
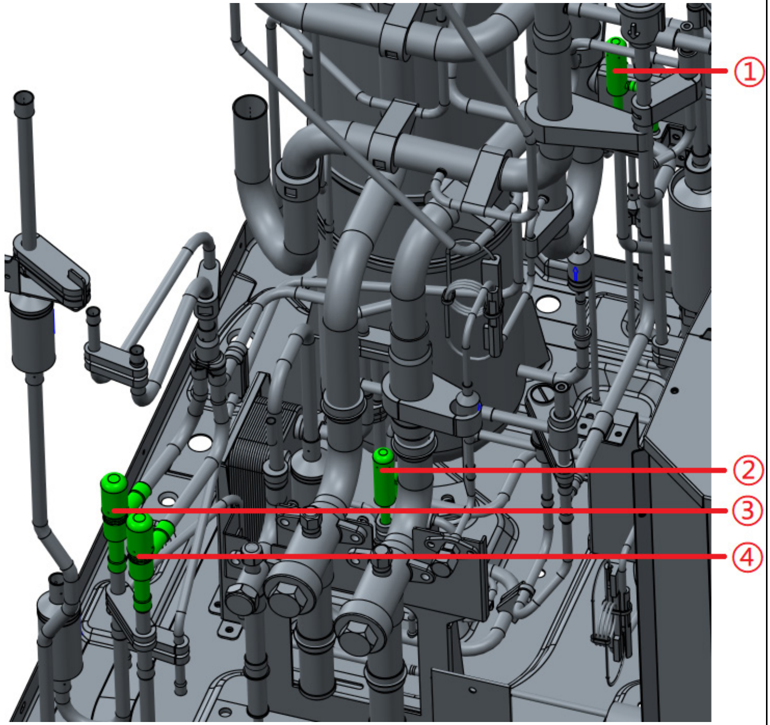
Coil	Interface No.	Resistance (Ω)	Normal range of deviation
Main cooling 4-way valve	CN23	2085	±10%
Heating 4-way valve	CN21	2085	±10%

4.1.5 Electronic Expansion Valve

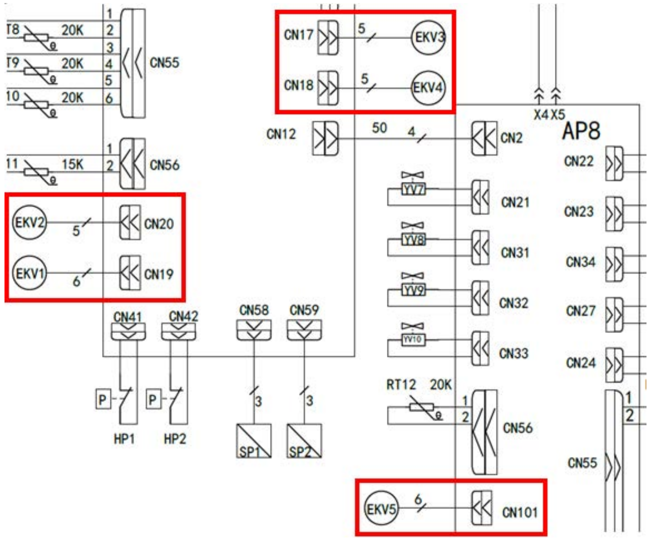
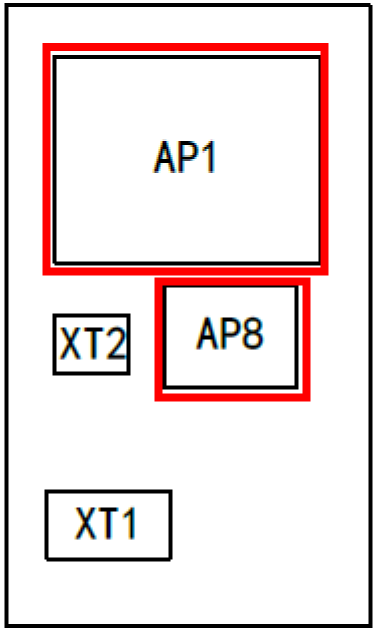
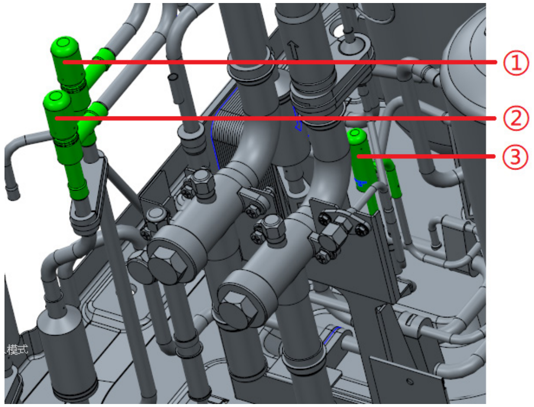
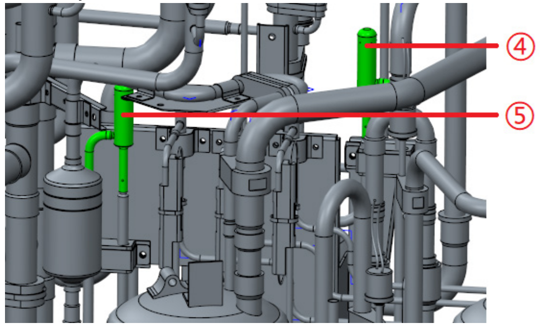
Specifications	Description
Two types of electronic expansion valves are adopted by the unit: ① Heating electronic expansion valve with the largest openness of 3000 pls and 6-core coil. ② Subcooling electronic expansion valve and EVI electronic expansion valve with the largest openness of 480 pls and 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: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X		
		 ①Main electronic expansion valve for heating ②Auxiliary electronic expansion valve for heating ③Electronic expansion valve of subcooler ④EVI electronic expansion valve

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: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X		
	 Upper layer	 ①EVI electronic expansion valve ②Electronic expansion valve of subcooler ③Auxiliary electronic expansion valve for heating ④Main electronic expansion valve for heating

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: GMV-VQ504WM/C-X 、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X		
	 Upper layer of lower electric box	 ①Auxiliary electronic expansion valve for heating ②Main electronic expansion valve for heating ③Electronic expansion valve of subcooler  ④EVI electronic expansion valve 1 ⑤EVI electronic expansion valve 2

4.1.5.1 Mechanical Inspection

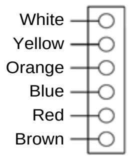
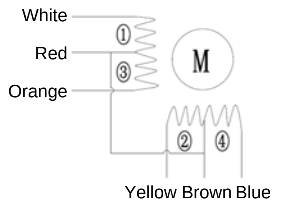
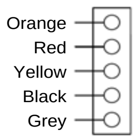
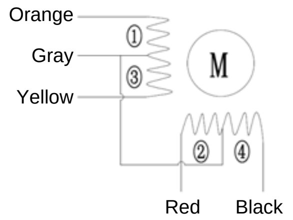
Step 1: Switch off the power of the ODU.

Step 2: Check whether the coil of the electronic expansion valve is firmly fixed on the electronic expansion valve.

4.1.5.2 Electrical Inspection

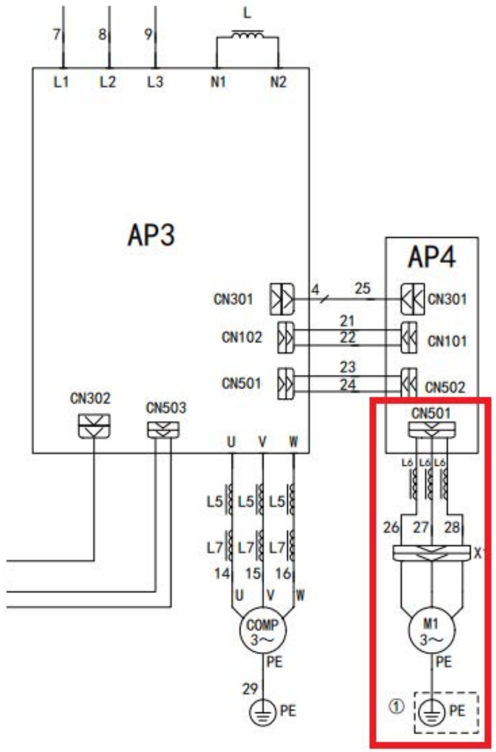
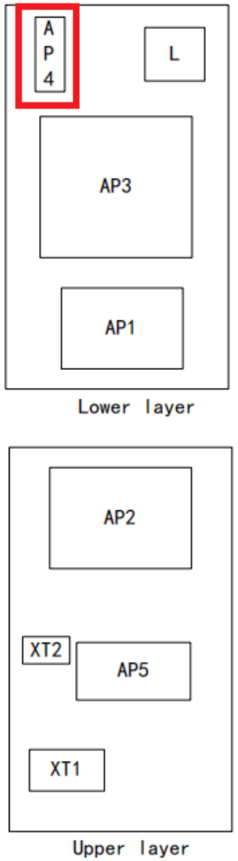
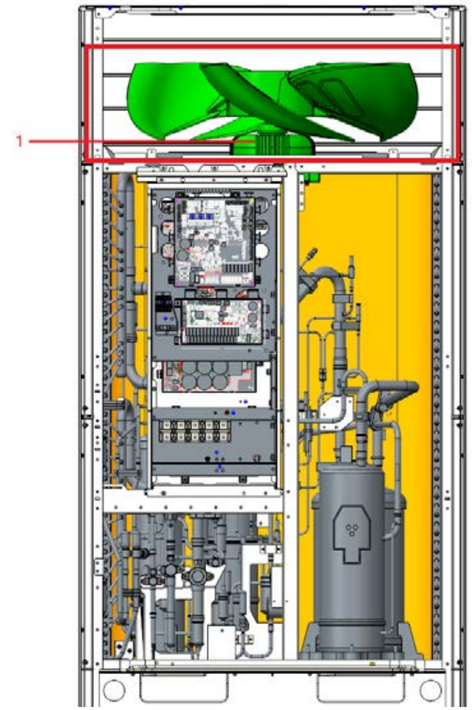
Step 1: Power off the ODU and power on it. When the ODU is powered on again, the electronic expansion valve should be reset. When the electronic expansion valve is reset, touch the valve with a hand to check if the valve core rotates. In the second half of the resetting process, the valve core will click 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.

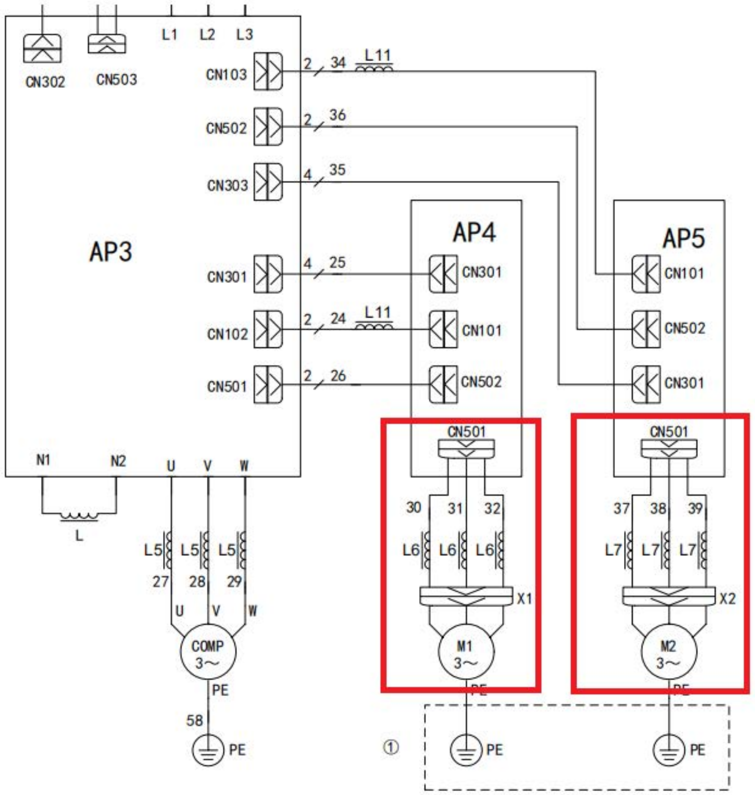
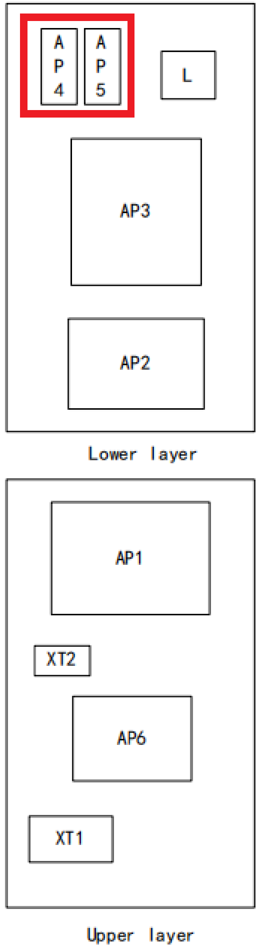
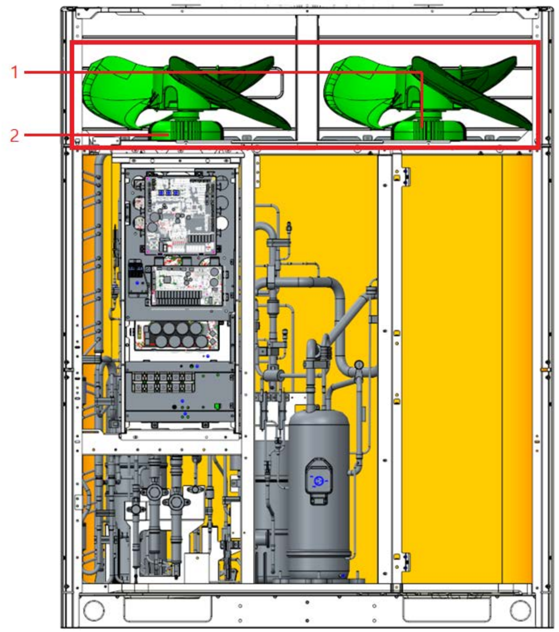
Coil	Interface No.	Color	Port specifications	Max. number of steps	Terminal layout	Diagram of internal coils	Coil resistance range
Heating electronic expansion valve1	CN19	White	6 cores	3000			100Ω±10Ω
Heating electronic expansion valve2	CN101	Red	6 cores	3000			
Subcooler electronic expansion valve	CN20	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			

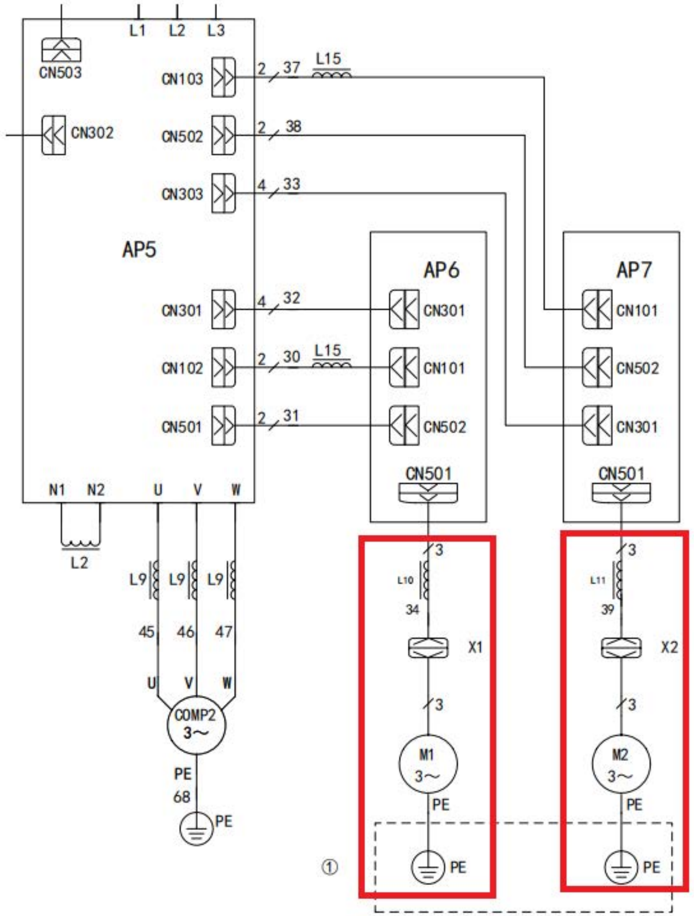
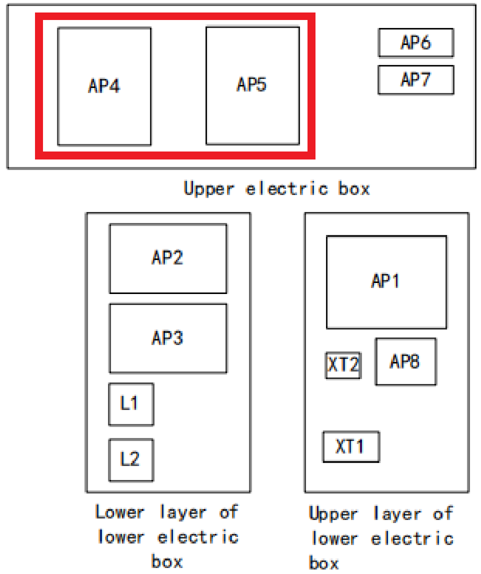
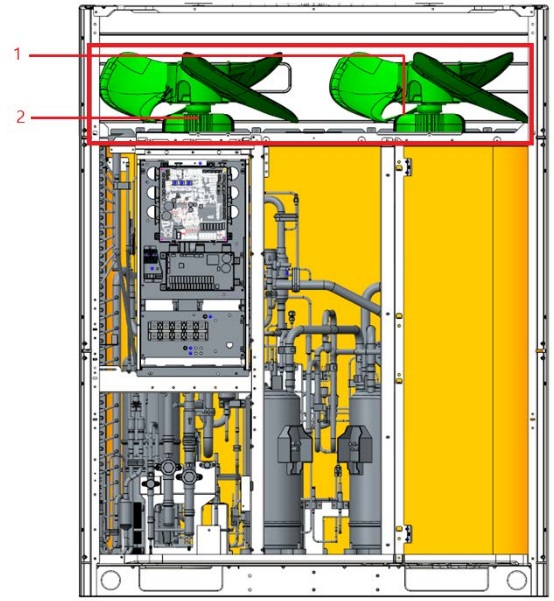
4.1.6 Fans

Specifications	Description
The unit of 8HP-12HP is equipped with one fan, while the unit of 14HP-22HP 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.

<table>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><td colspan="3">Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</td></tr>
<tr><td>
</td><td>
</td><td>

1 Fan</td></tr>
</table>

Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		 1 Fan 1 2 Fan 2

Models: GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		 1 Fan 1 2 Fan 2

4.1.6.1 Mechanical Inspection

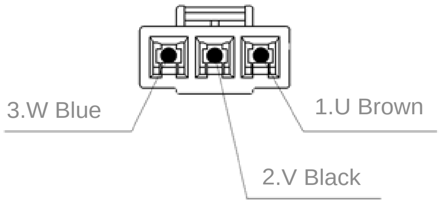
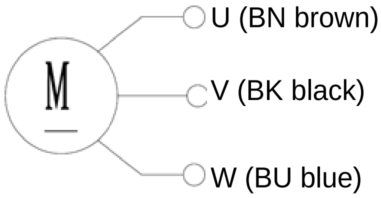
Step 1: Switch off the power of the ODU.

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.

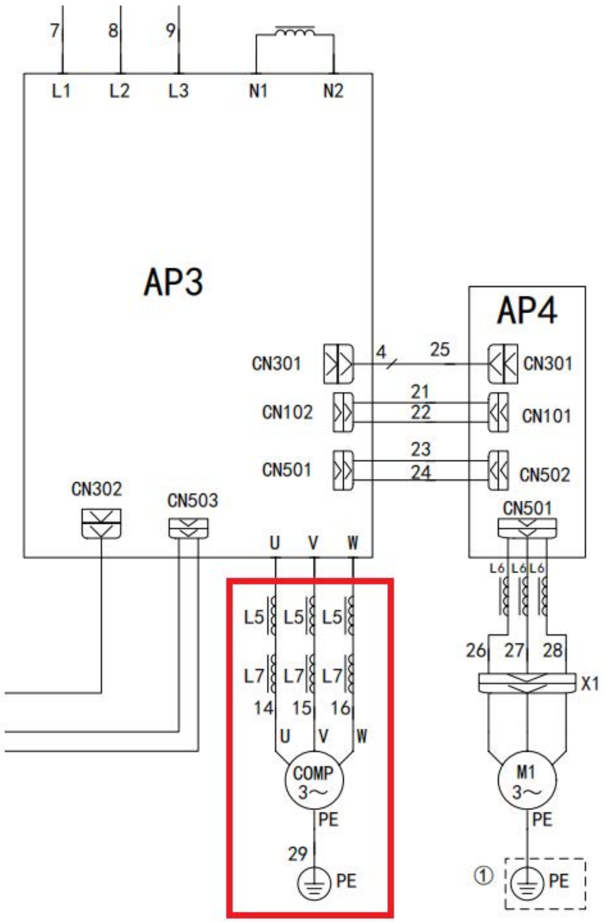
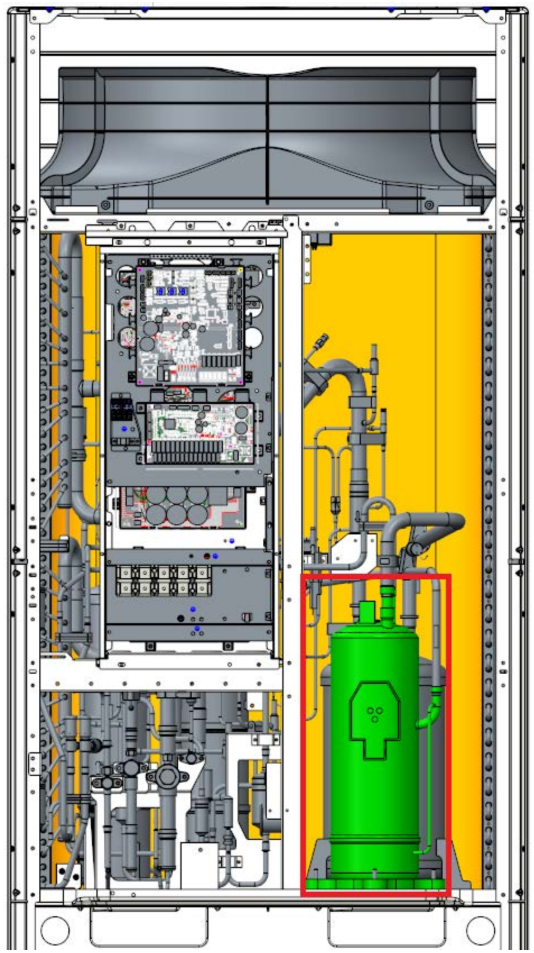
4.1.6.2 Electrical Inspection

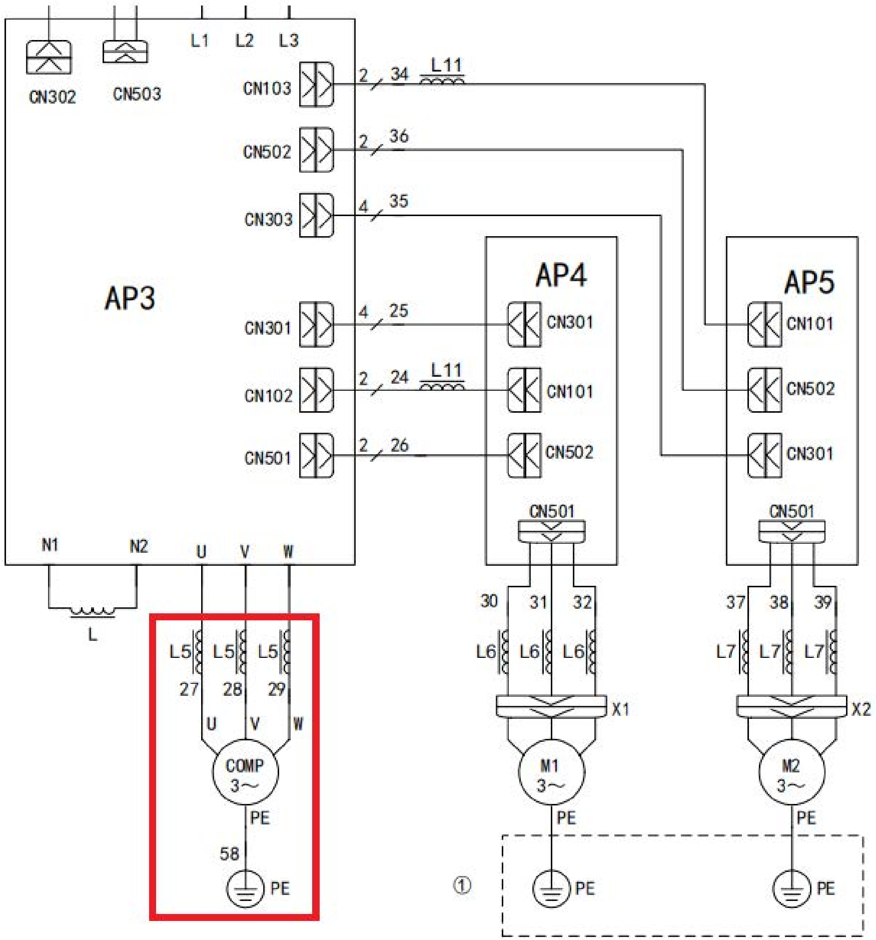
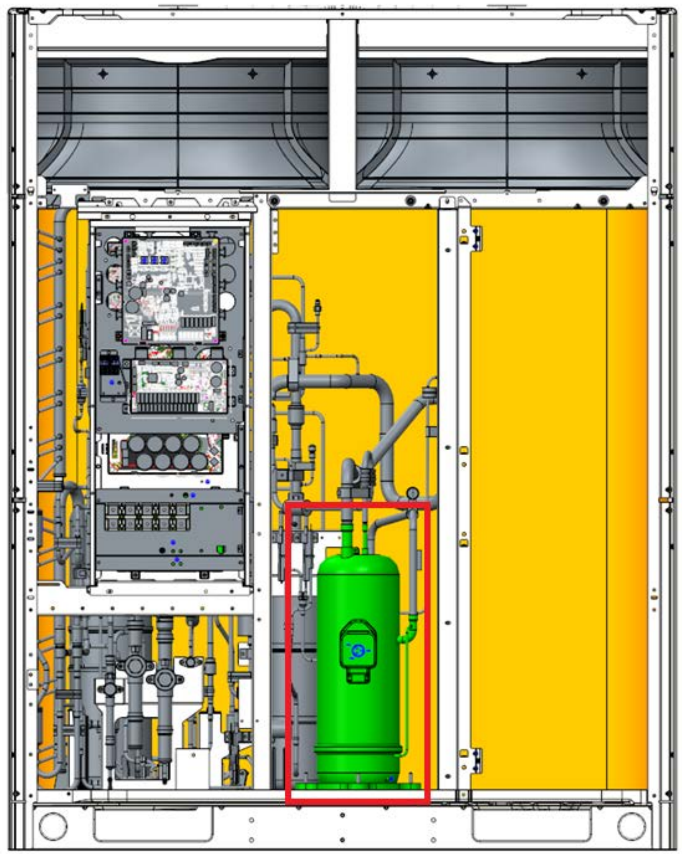
Switch off the power of the ODU. Disconnect the connector between the fan motor and fan drive board. Use a multimeter to measure the resistance of each contact point of the motor terminal. The normal range of the resistance is shown in the following table. If any value is beyond the normal range, the motor is damaged and needs to be replaced.

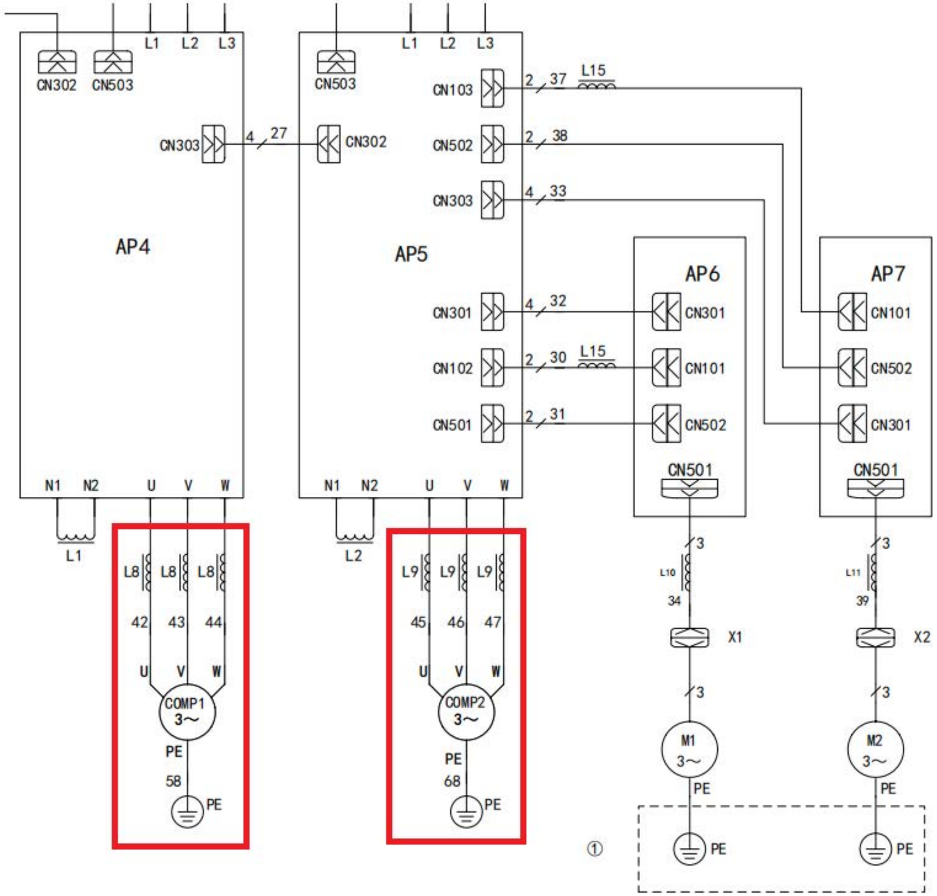
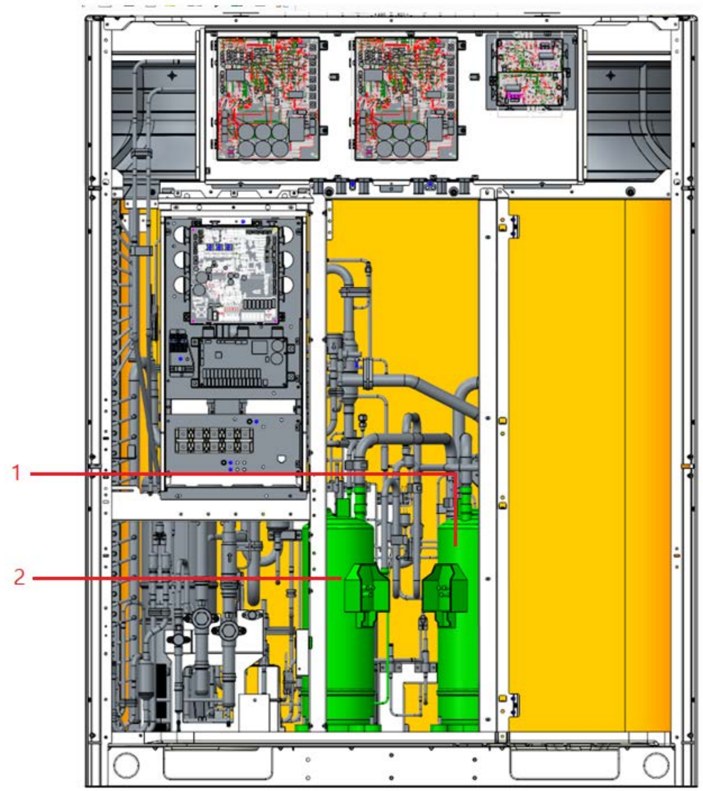
Terminal layout	Diagram of internal coils	Range of coil resistance between any two phases
		10.2Ω±7%

4.1.7 Compressor

Specifications	Description
Models: AA55PHDG-D1Y2, DA80PHDG-D1Y2	Compression refrigerant, recycling refrigerant.

Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X	
Circuit diagram	Physical position
	

Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X	
Circuit diagram	Physical position
	

Models: GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X	
Circuit diagram	Physical position
	 1 Compressor 1 2 Compressor 2

4.1.7.1 Diagnosis of Compressor Failures

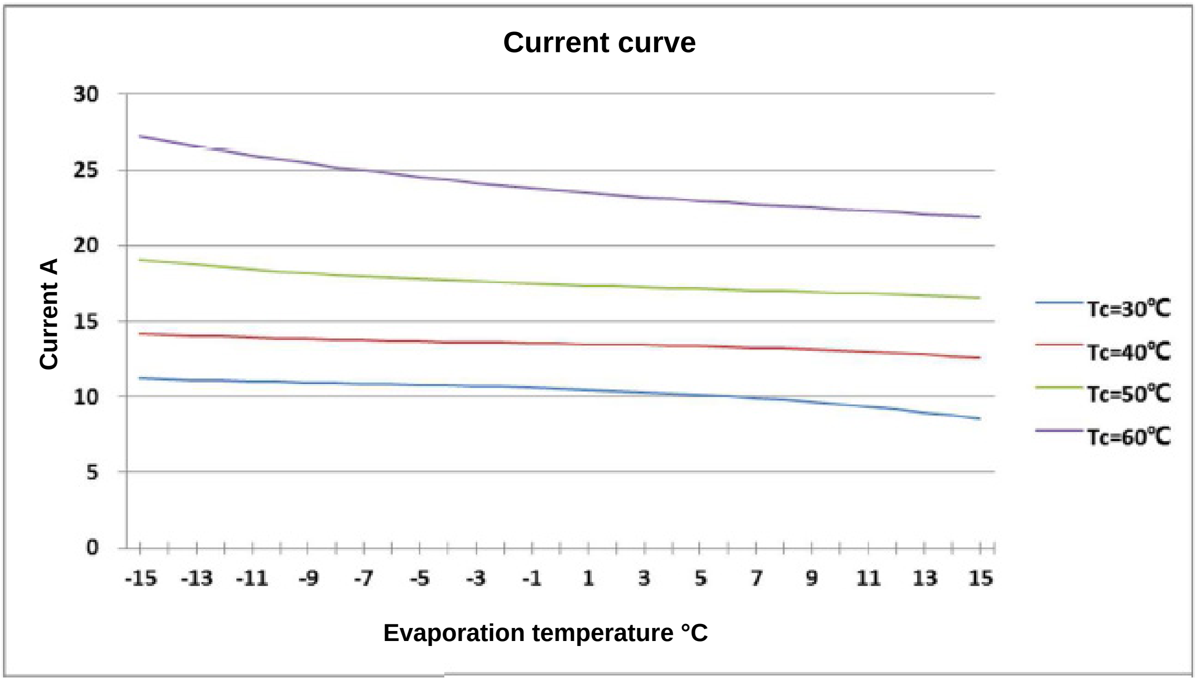
4.1.7.1.1 When the unit can be started

Step 1:

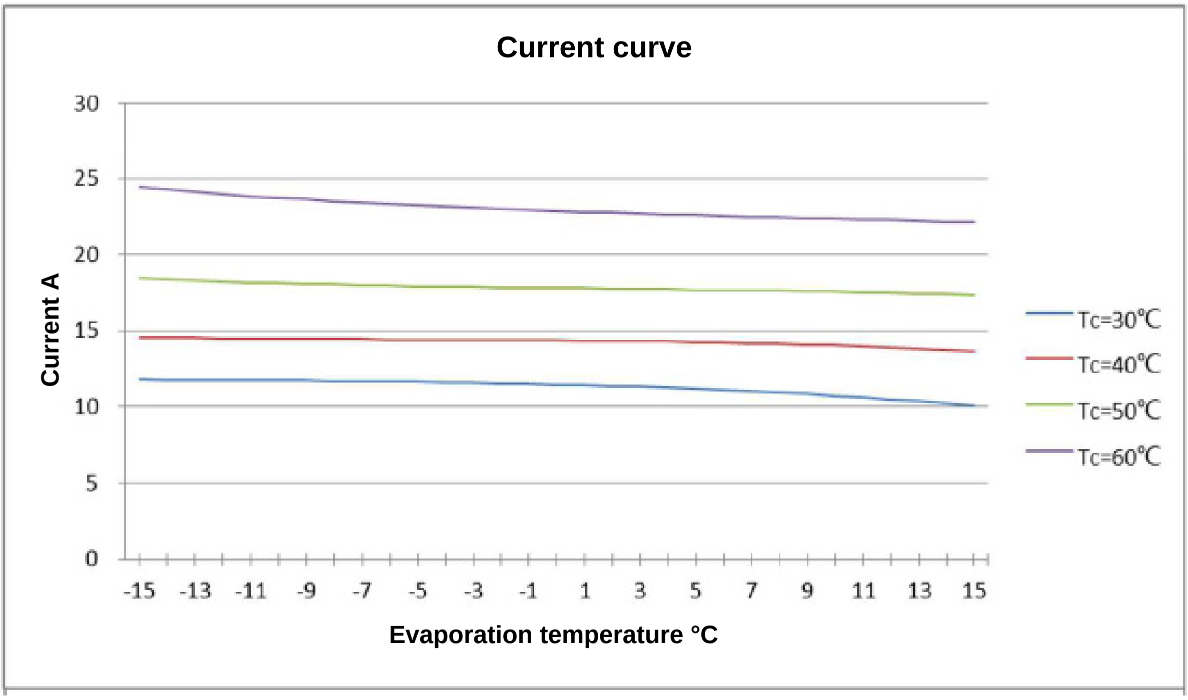
If the unit can be started, check the faulty compressor's line current. Use a pressure gauge to measure the gas and liquid valve pressure and monitor the measured data on a PC. Compare the data to the following table of recommended current. The current may deviates by about 10% depending on the inverter compressor's speed and working condition.

(1) Inverter compressor AA55PHDG-D1Y2:

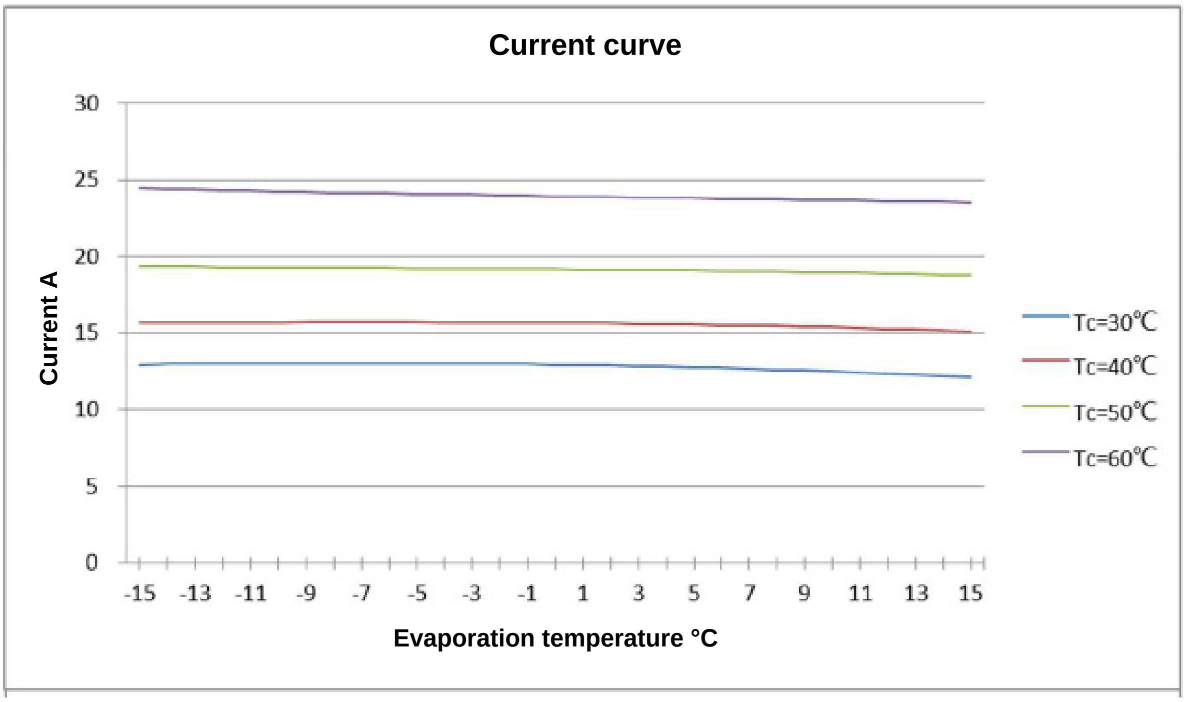
When the compressor frequency is 30 Hz, the current curve under different evaporation temperature and condensation temperature is shown as follows:



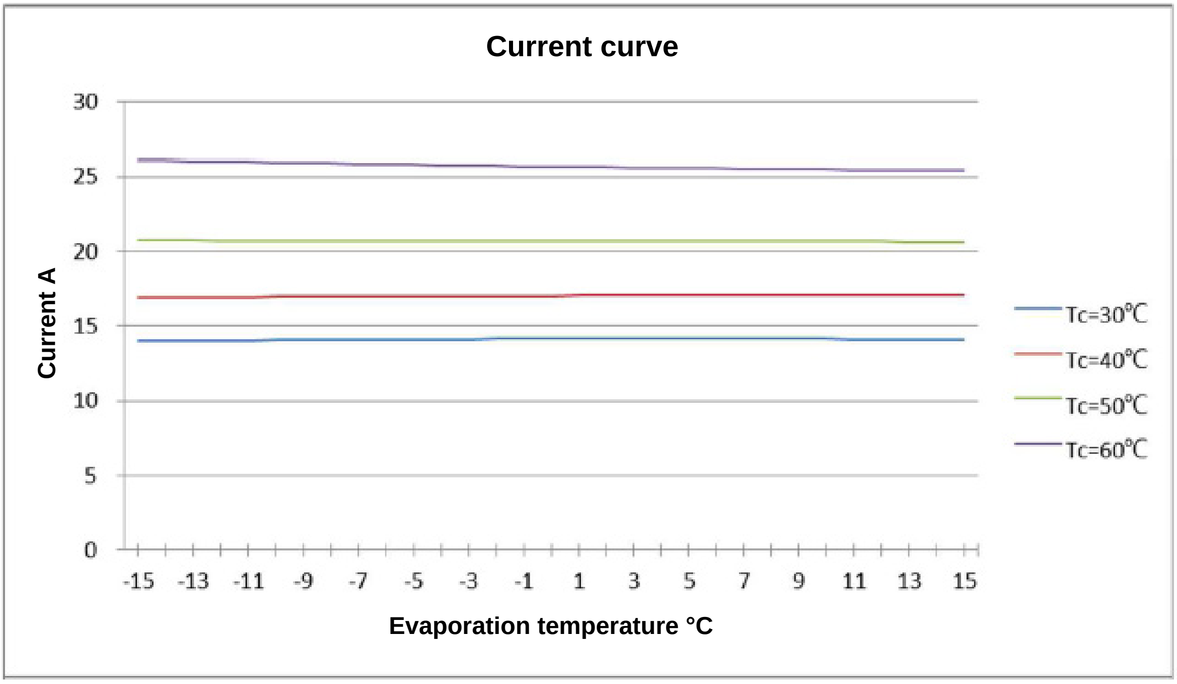
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



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:

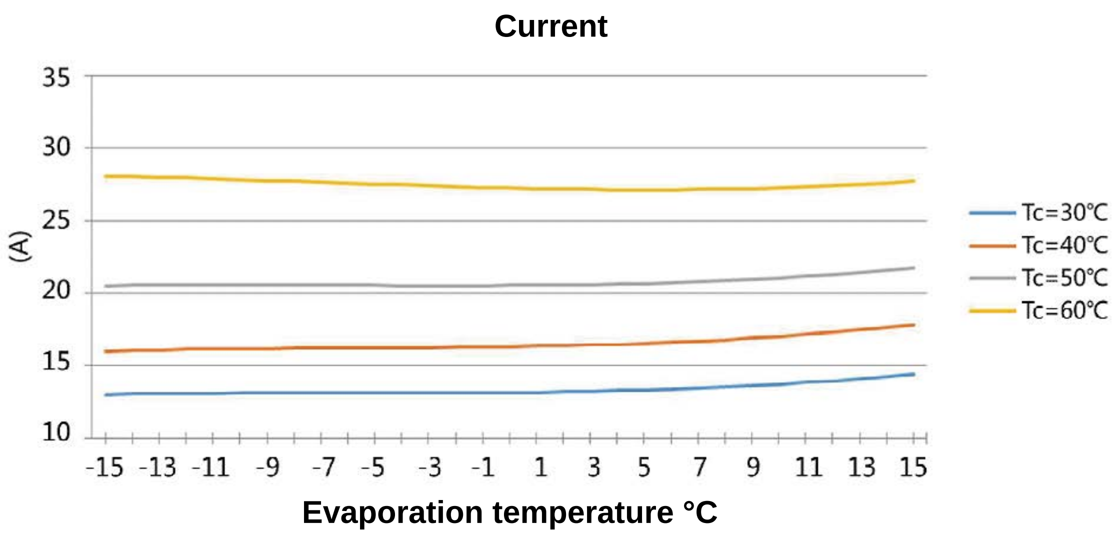


NOTE!

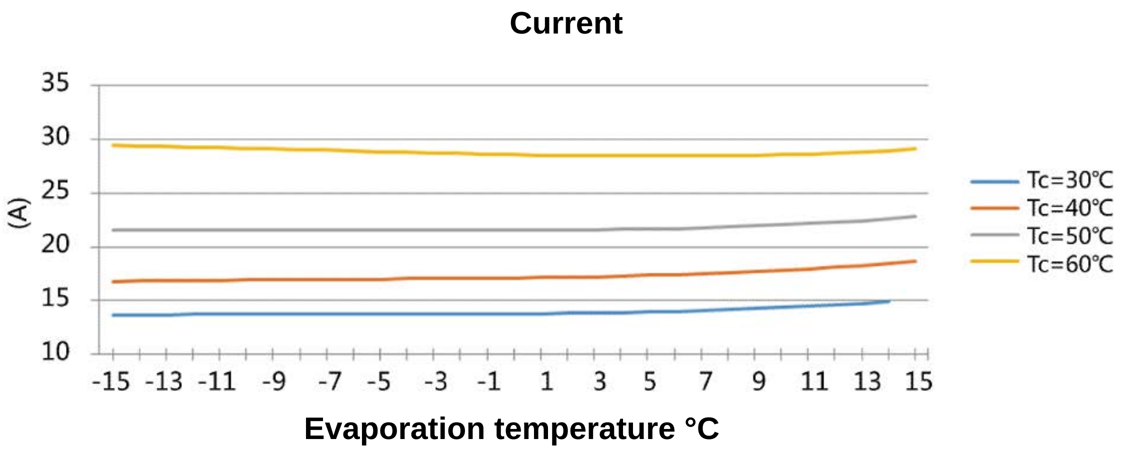
When the compressor is working at another frequency, the current curve can be obtained through interpolation calculation of the above frequency.

(2) Inverter compressor DA80PHDG-D1Y2:

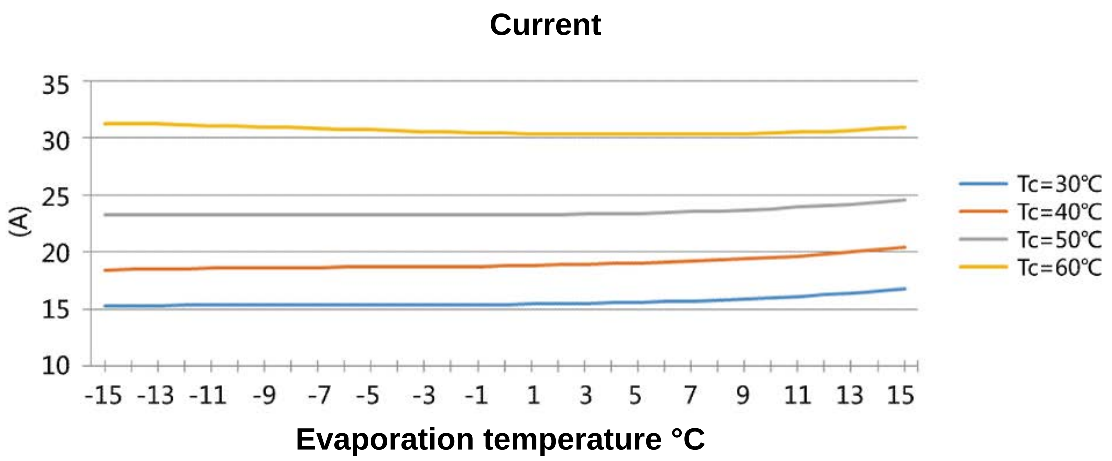
When the compressor frequency is 30 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



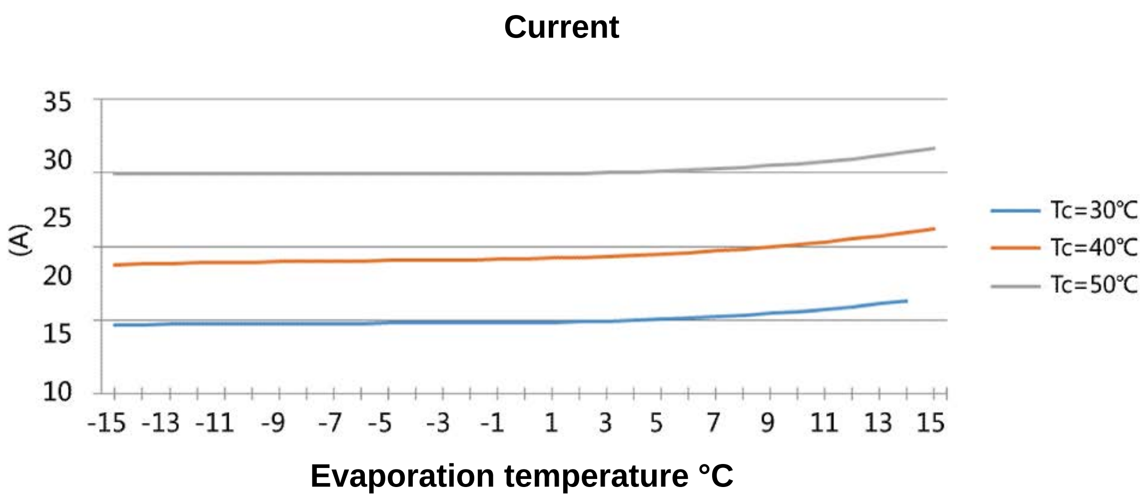
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



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:

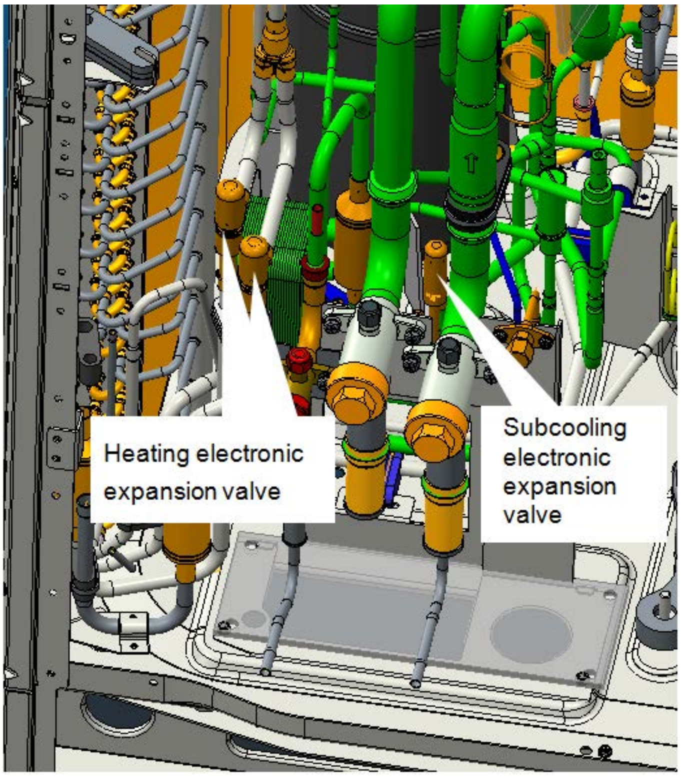
Check whether the running sound of the compressor is normal and whether any high-pitched sound or obvious scratch can be heard. If there is a nearby unit running properly, compare the sound of the compressor under inspection with that of the normally running unit.

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.



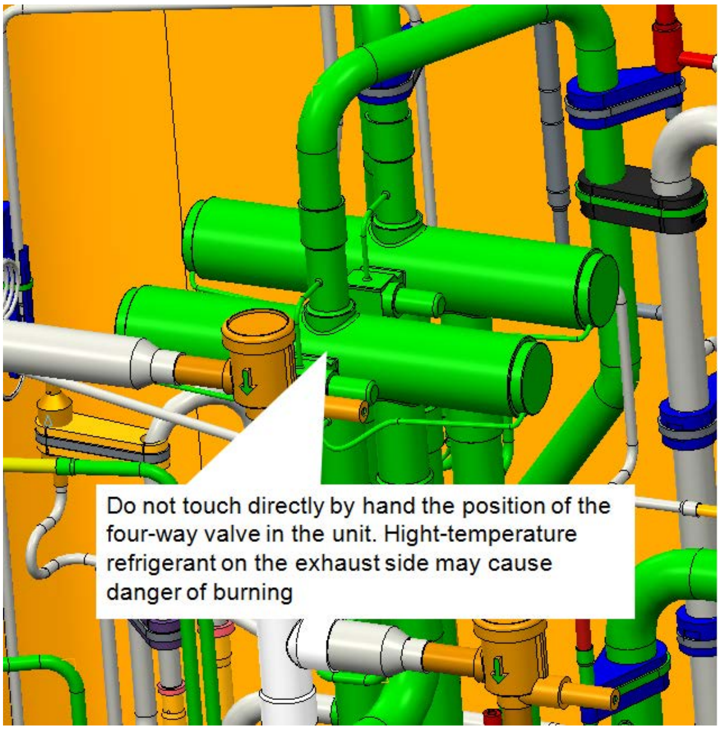
Note on touching the electronic expansion valve:

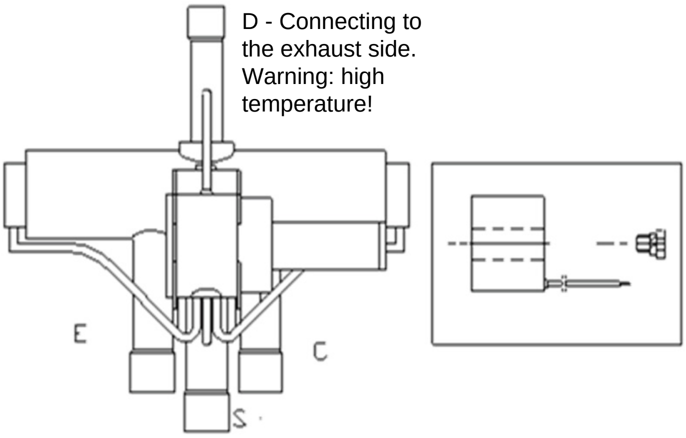
Notes:

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.

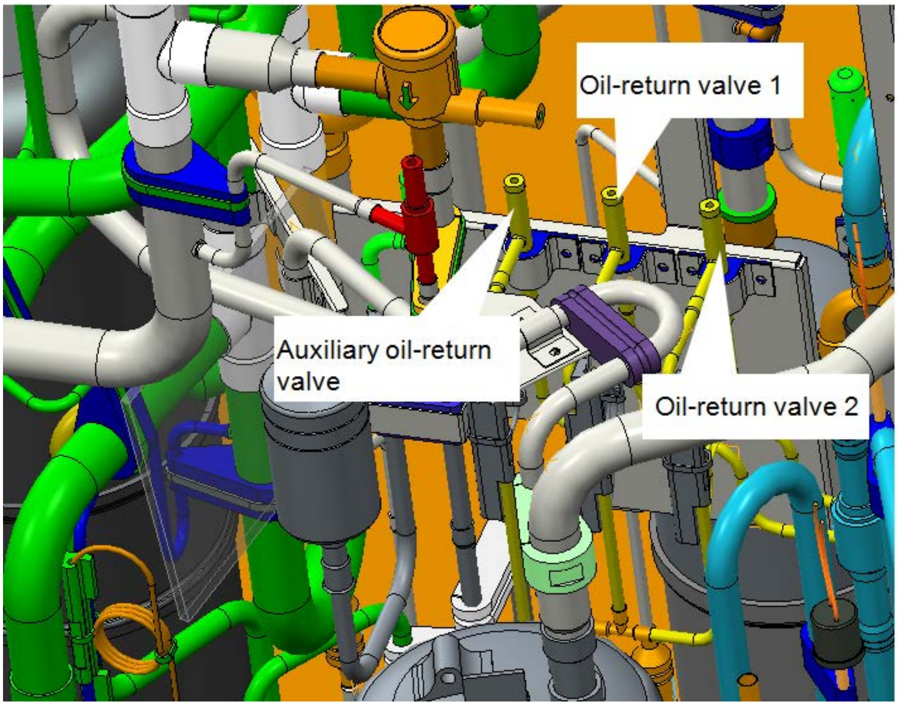
2) 4-way valve: When it is normal, the temperature different between it and the four copper tubes connecting to the valve is obvious. When the 4-way valve works, obvious sound and vibration can be heard and felt.





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.

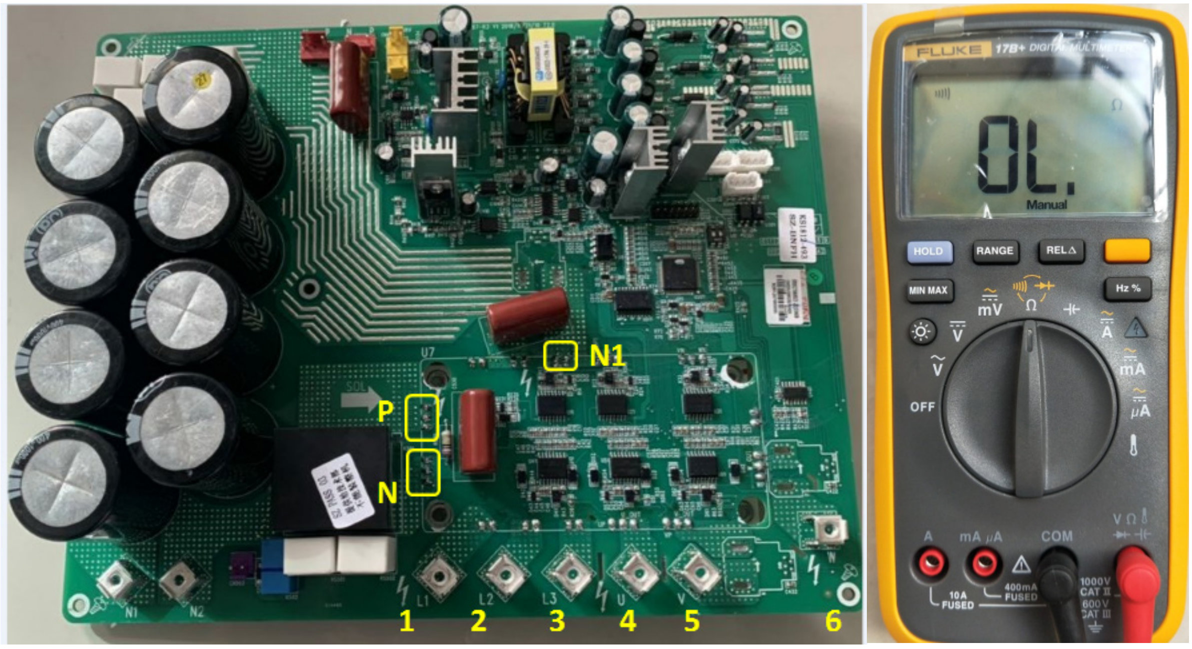


Step 4:

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.

4.1.7.1.2 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 0.172±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:

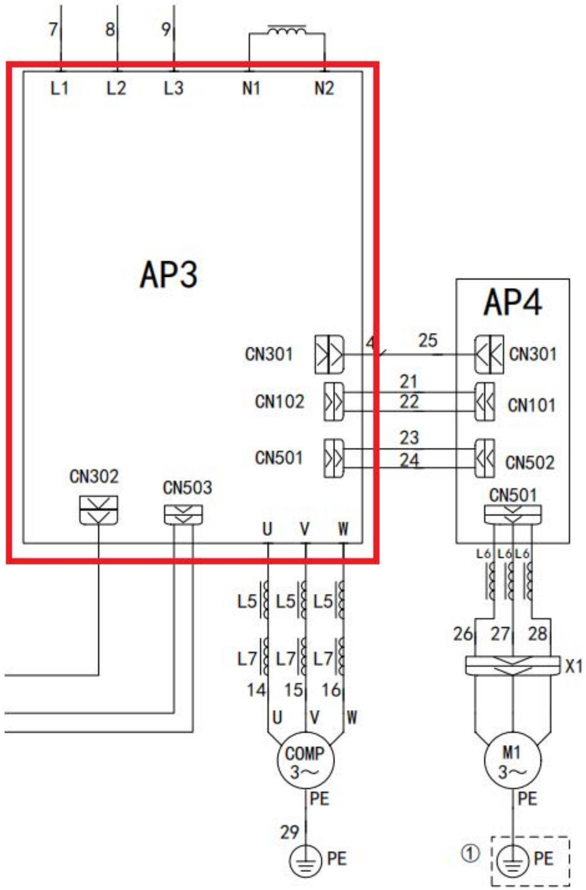
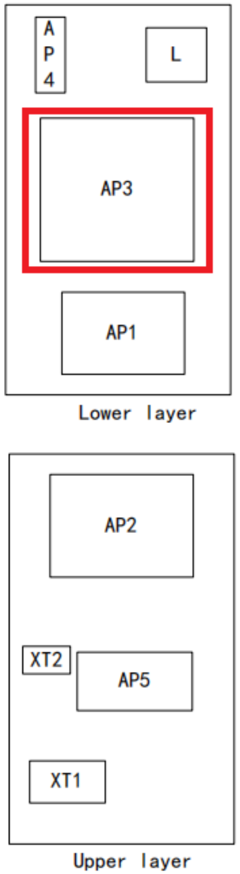
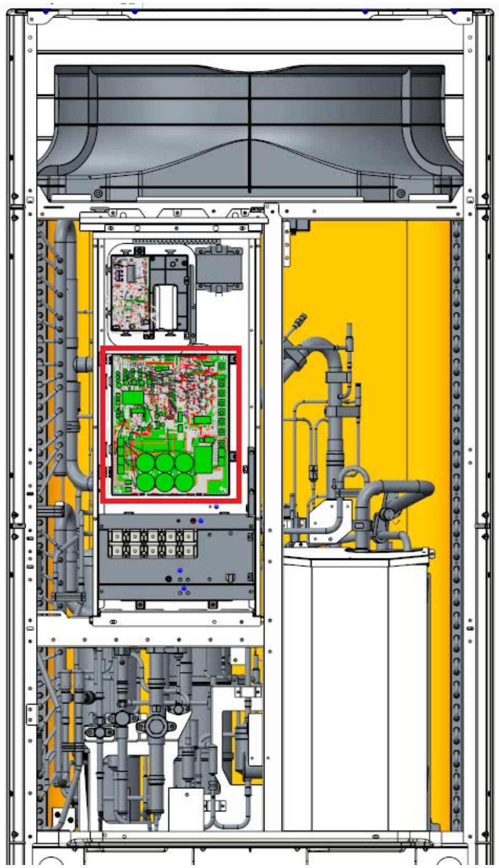
When the unit cannot be started properly, the solenoid valves of the system, including the electronic expansion valve and oil-return valve, need to be checked using the same method described above.

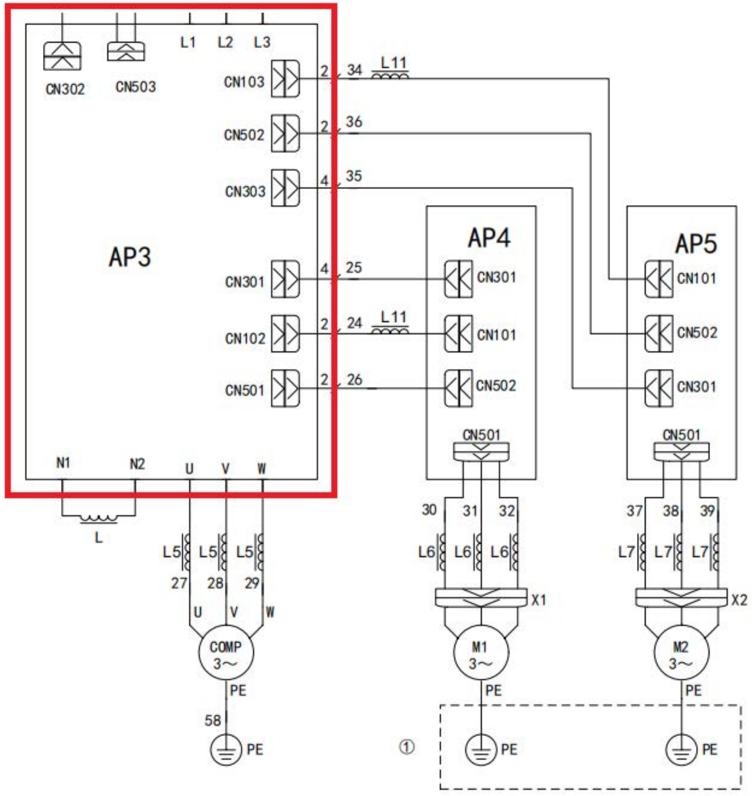
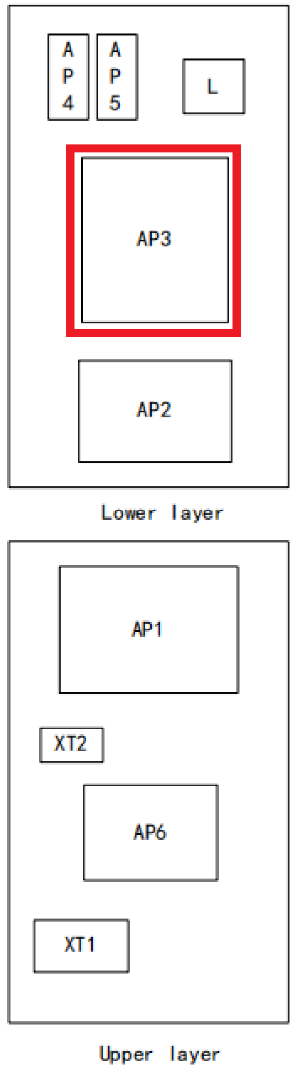
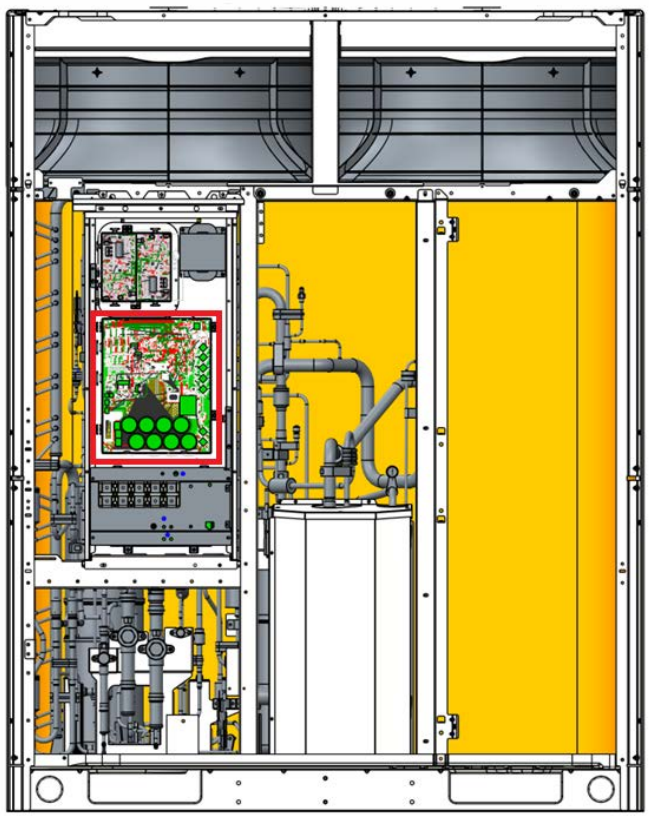
Step 4:

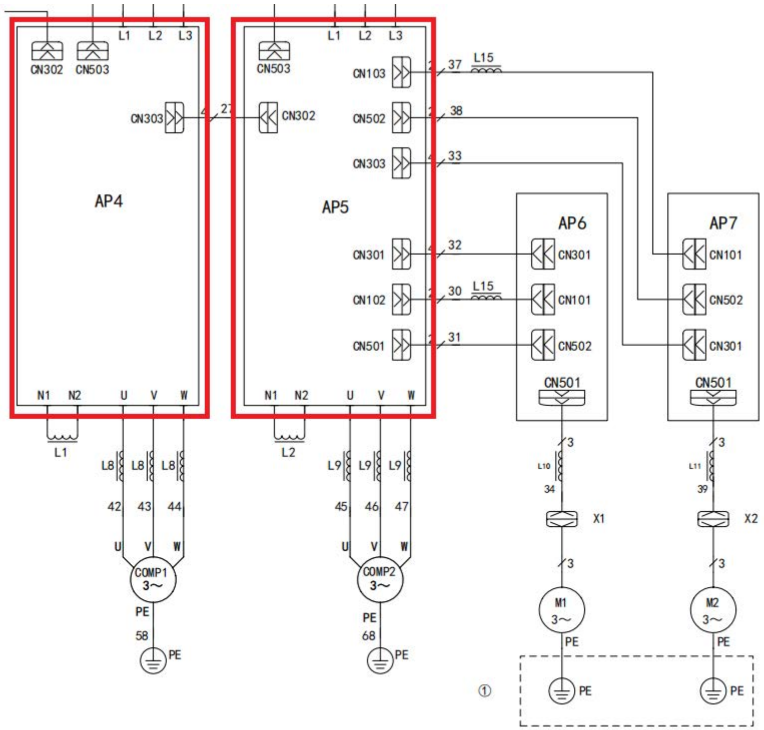
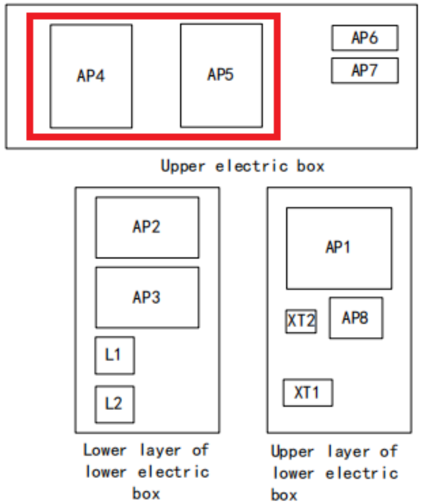
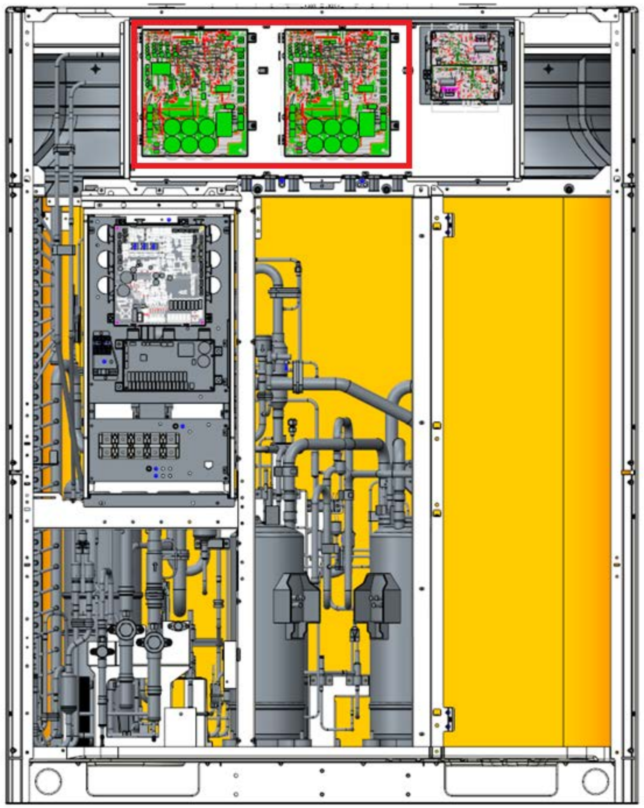
Check the IPM module using the same method described above.

4.1.8 Compressor Drive Board

The compressor drive board is used to control the operation of the compressor.

<table>
<tr><th colspan="2">Specifications</th><th>Description</th></tr>
<tr><td colspan="2">—</td><td>The compressor drive board is used to control the operation of the compressor.</td></tr>
<tr><td colspan="3">Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</td></tr>
<tr><td>Circuit diagram</td><td>Layout of electrical appliance box</td><td>Physical position</td></tr>
<tr><td>
</td><td>
</td><td></td></tr>
</table>

Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		

Models: GMV-VQ504WM/C-X 、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		

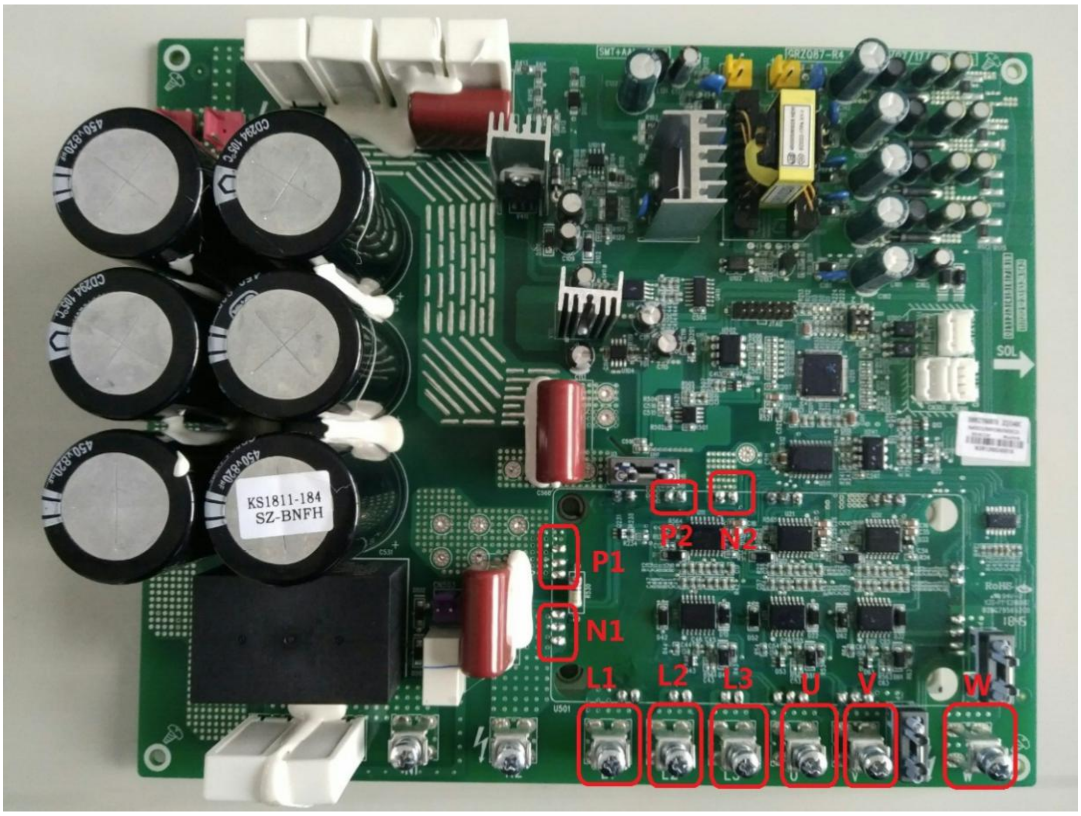
(1) Before the inspection: Find a correct digital multimeter and switch it to the diode gear. Power off the unit and wait two minutes. Disconnect the U, V and W cables of the compressor and L1, L2 and L3 power cables from the drive board. Do not operate without waiting two minutes after the unit is powered 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.

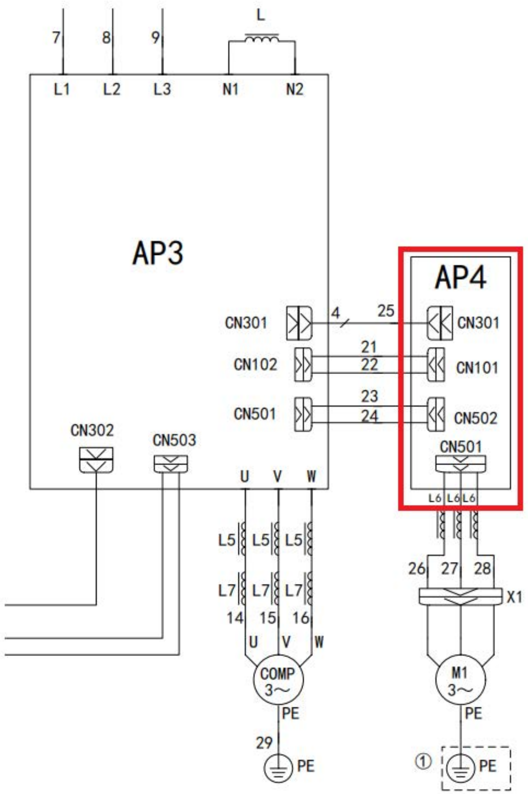
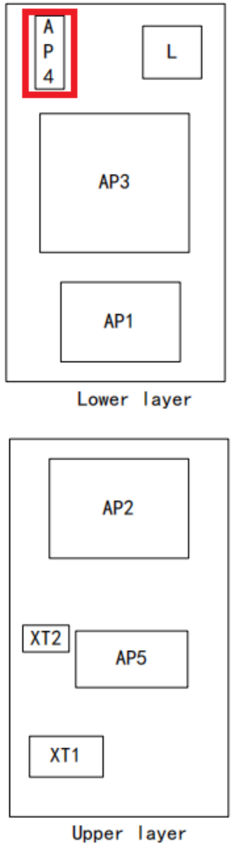
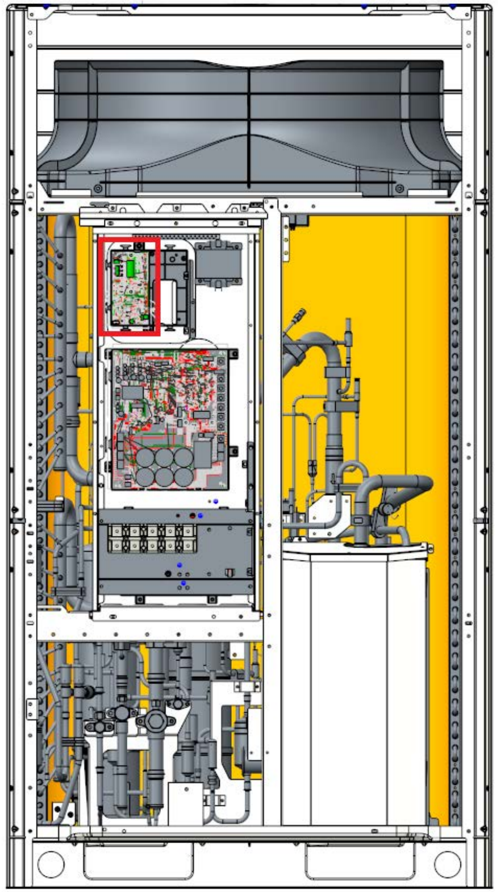
② Point the black probe of the multimeter to the P2 bonding pad shown in the following figure and the red probe to U, V and W wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N2 bonding pad shown in the following figure and the black probe to U, V and W wiring terminal respectively and check the readings of the multimeter.

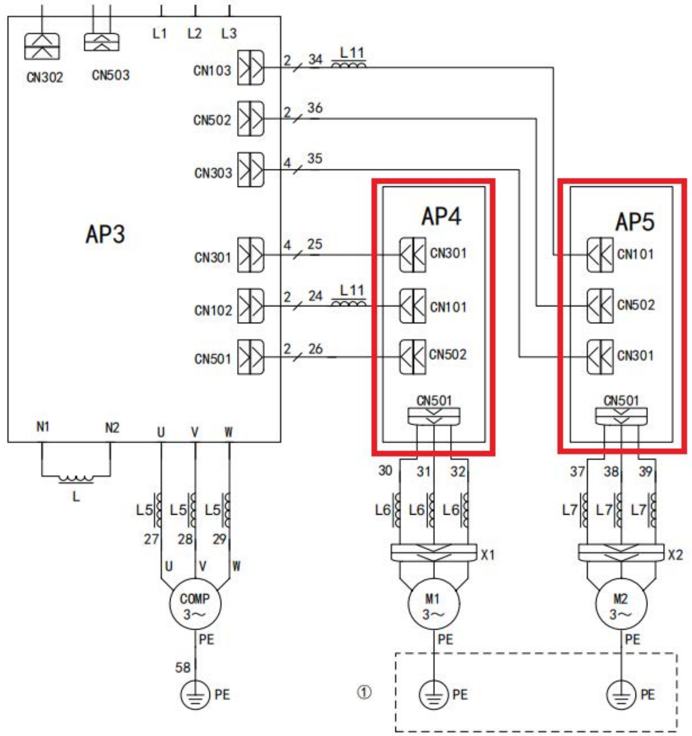
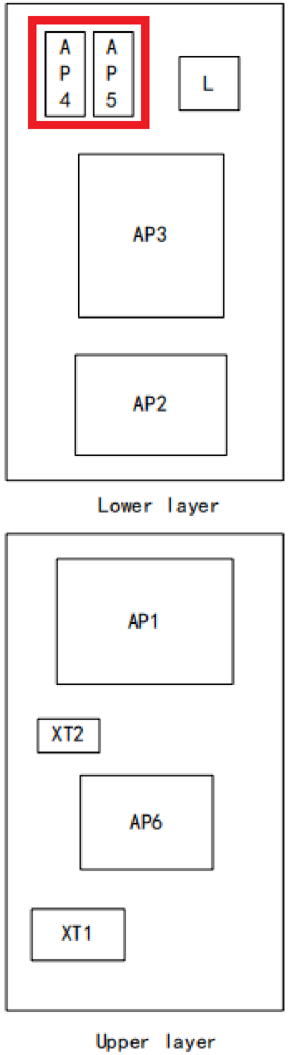
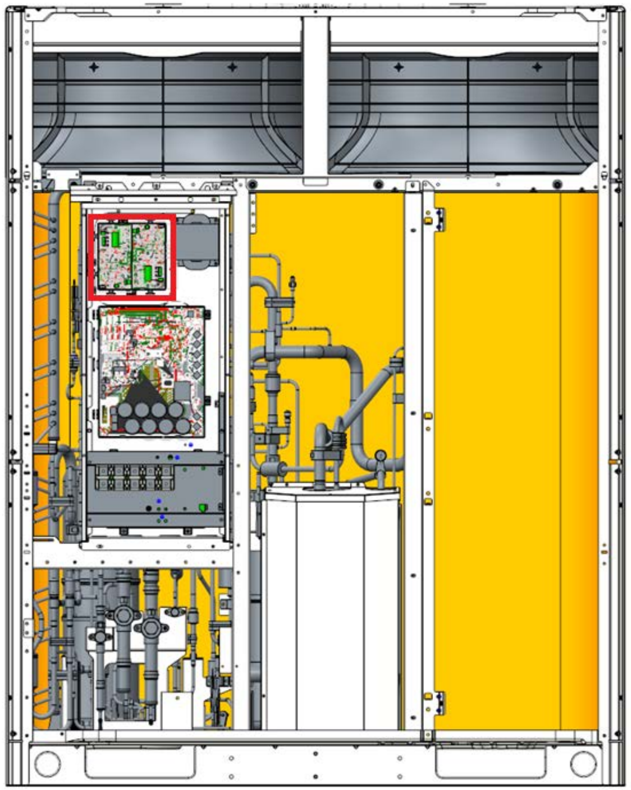
(3) Result analysis: If all the readings of the multimeter are between 0.3 V and 0.7 V in the above 12 conditions, the module is normal; if any of the readings is 0, the module is damaged.



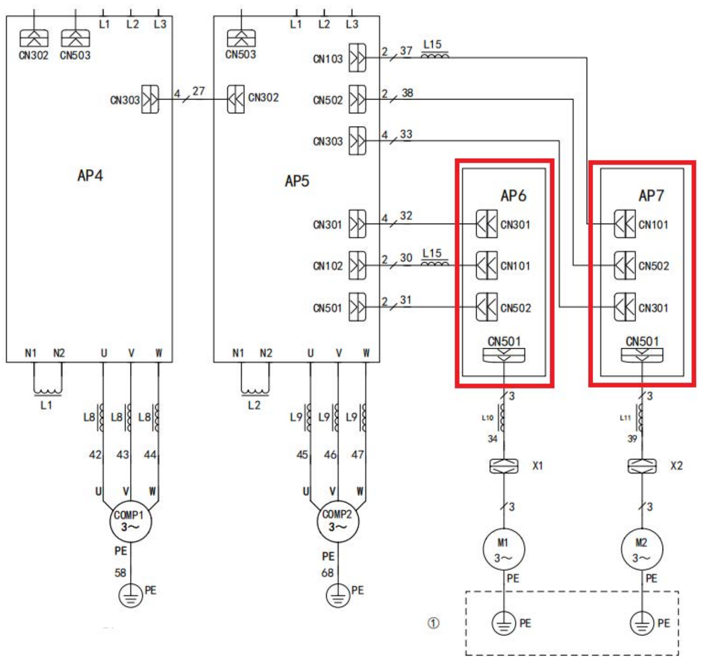
4.1.9 Fan Drive Board

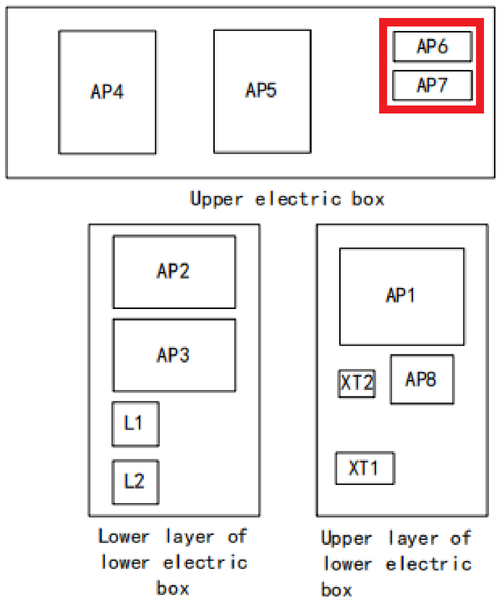
The fan drive board is used to control the operation of the fan(s).

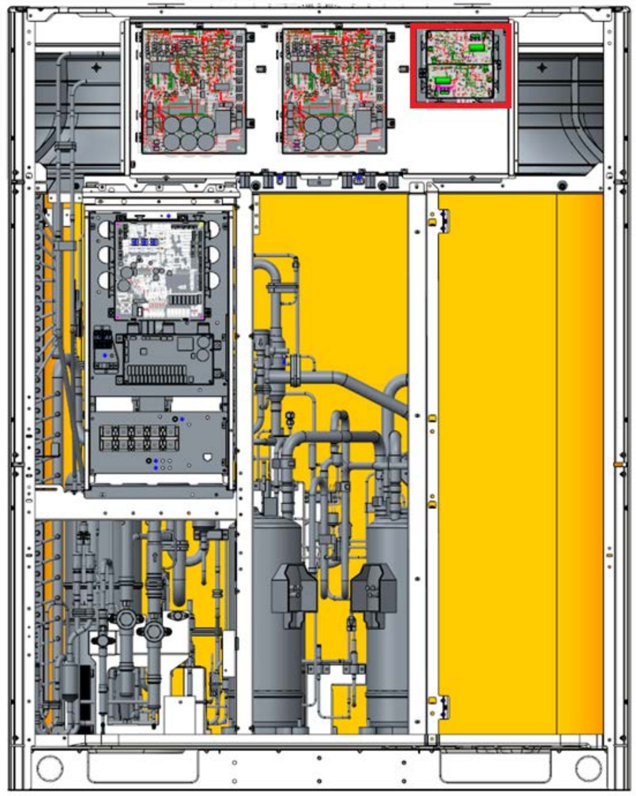
<table>
<tr><td colspan="2">Specifications</td><td>Description</td></tr>
<tr><td colspan="2">—</td><td>The compressor drive board is used to control the operation of the compressor.</td></tr>
<tr><td colspan="3">Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</td></tr>
<tr><td>Circuit diagram</td><td>Layout of electrical appliance box</td><td>Physical position</td></tr>
<tr><td>
</td><td>
</td><td></td></tr>
</table>

Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		

Models: GMV-VQ504WM/C-X 、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position



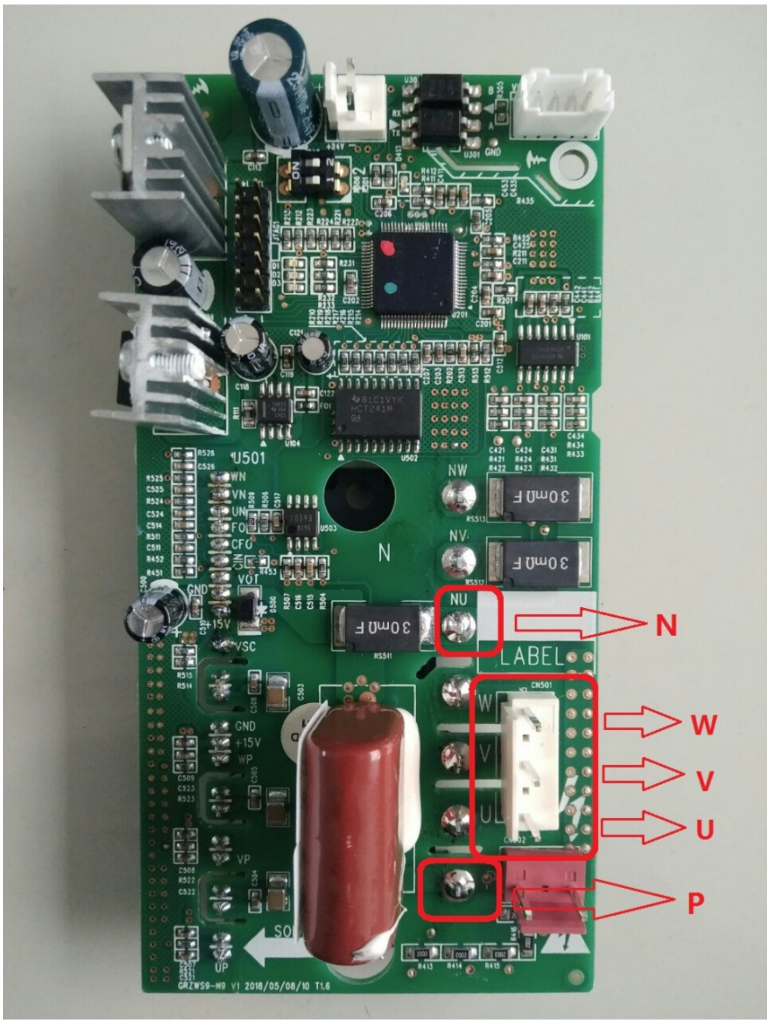




(1) Before the inspection: Find a correct digital multimeter and switch it to the diode gear. Power off the unit and wait two minutes. Disconnect the U, V and W cables of the fans from the drive board. Do not operate without waiting two minutes after the unit is powered off.

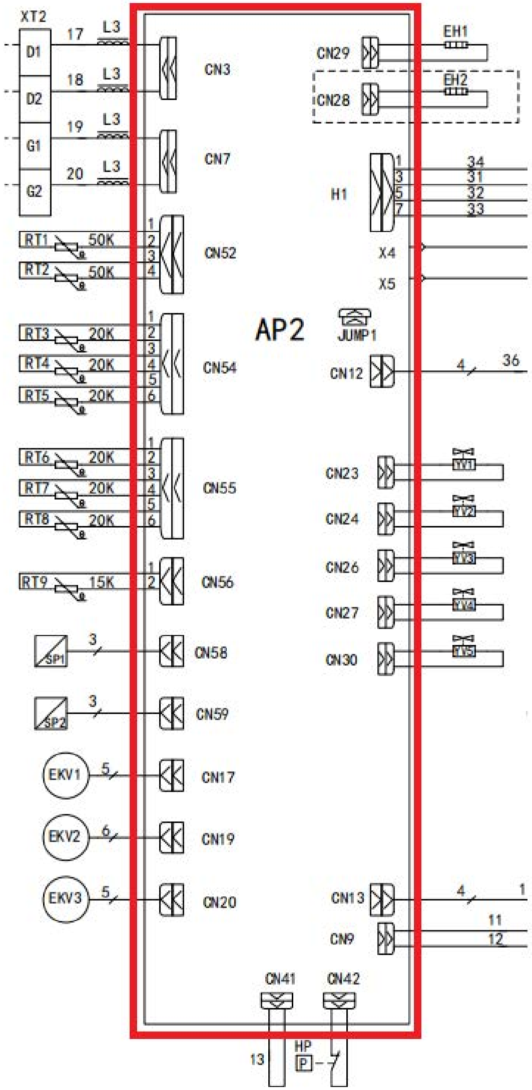
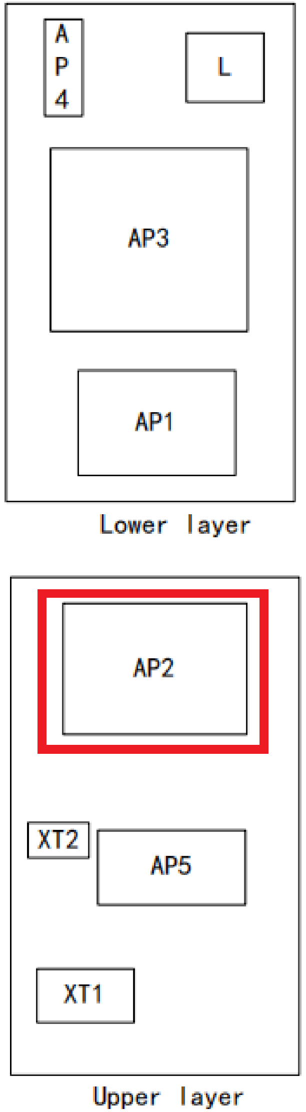
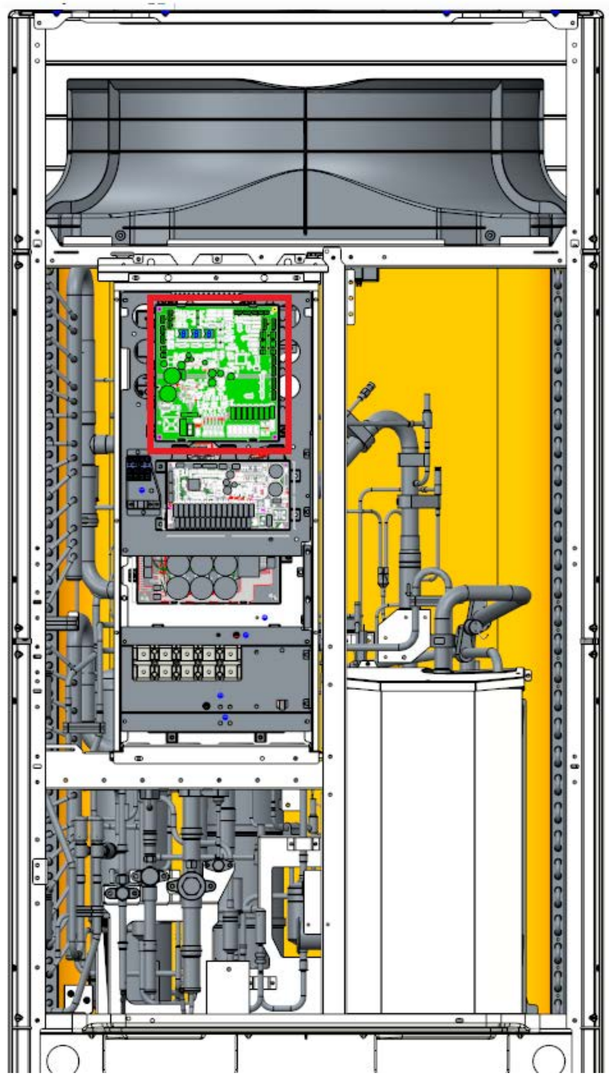
(2) Testing method: Point the black probe of the multimeter to the P bonding pad shown in the following figure and the red probe to U, V and W wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N bonding pad shown in the following figure and the black probe to U, V and W wiring terminal respectively and check the readings of the multimeter.

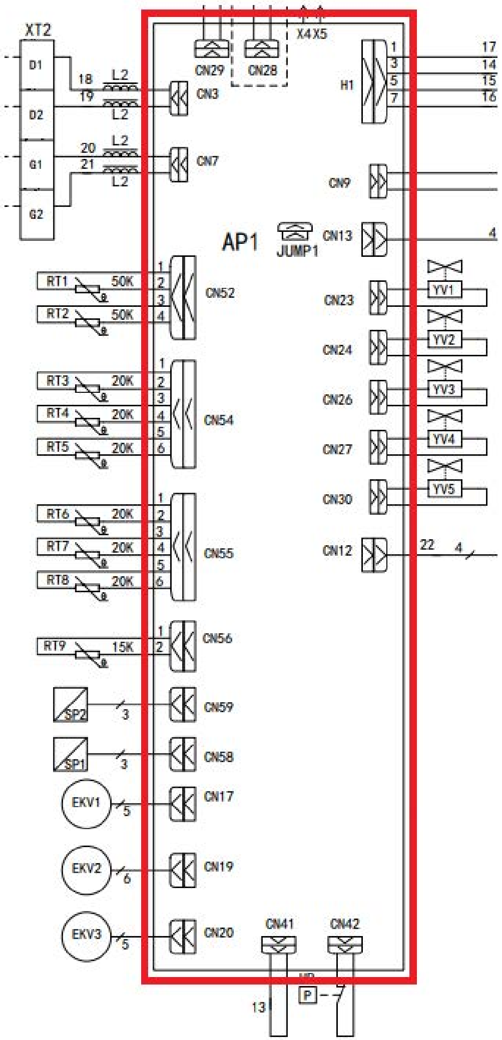
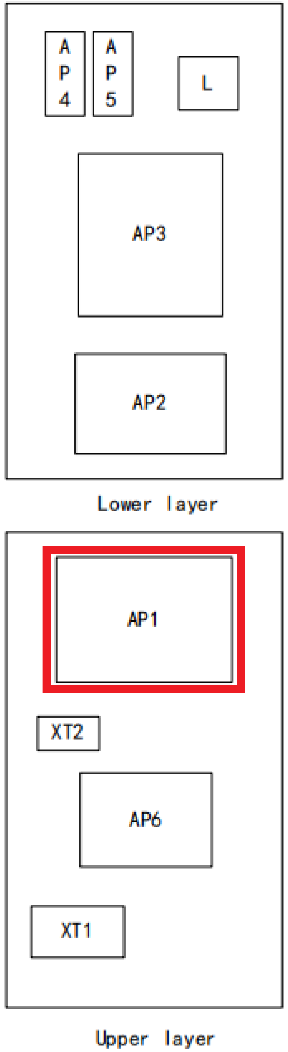
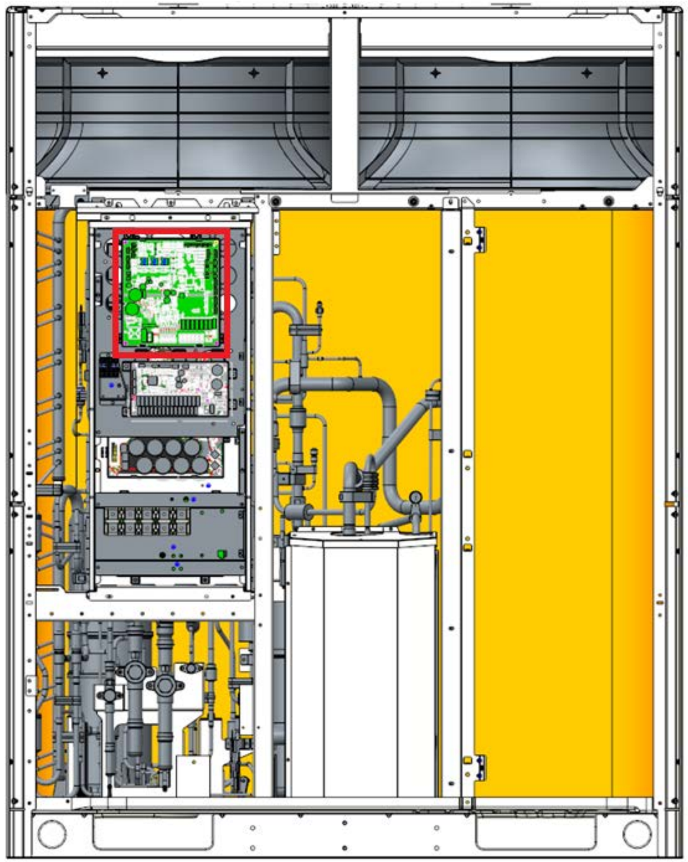
(3) Result analysis: If all the readings of the multimeter are between 0.3 V and 0.7 V in the above six conditions, the module is normal; if any of the readings is 0, the module is damaged.



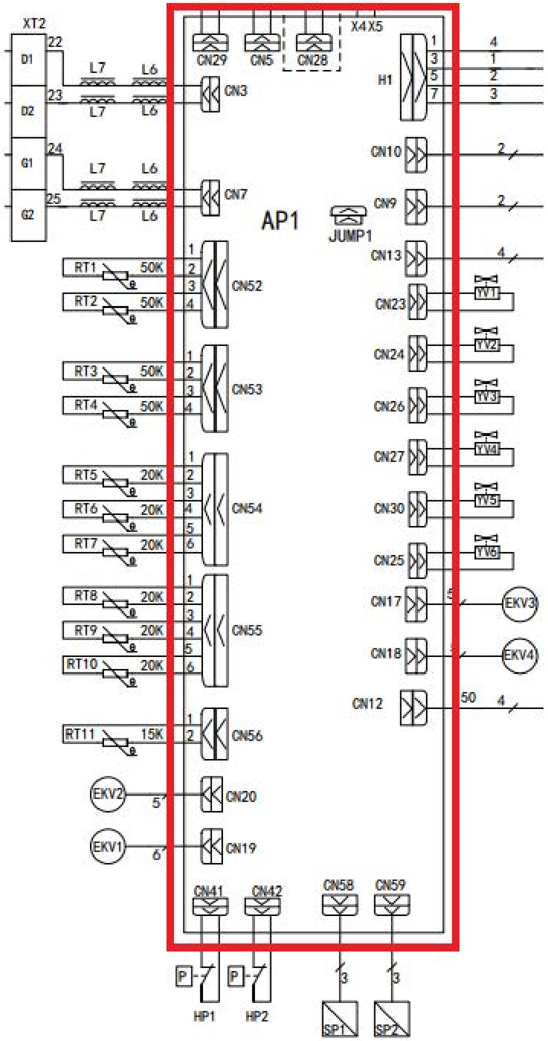
4.1.10 Main Board

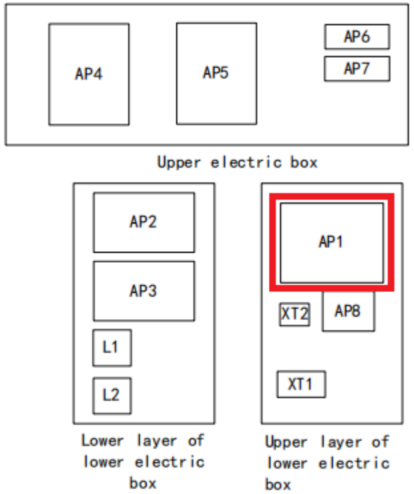
The main board is used to control the load of the ODU.

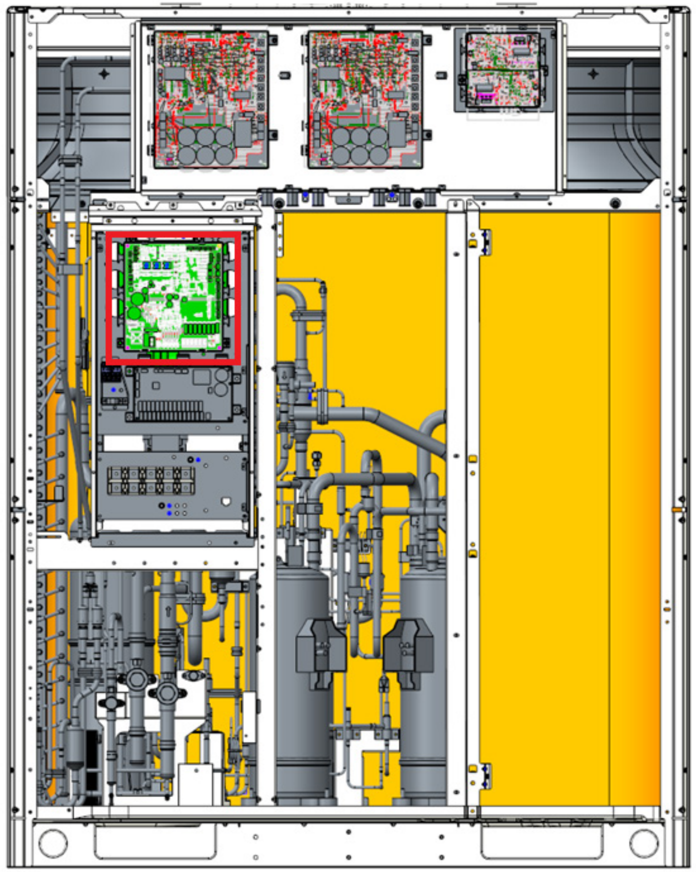
<table>
<tr><th colspan="3">Models: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</th></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr>
<td>
</td>
<td>
</td>
<td></td>
</tr>
</table>

Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		

Models: GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position

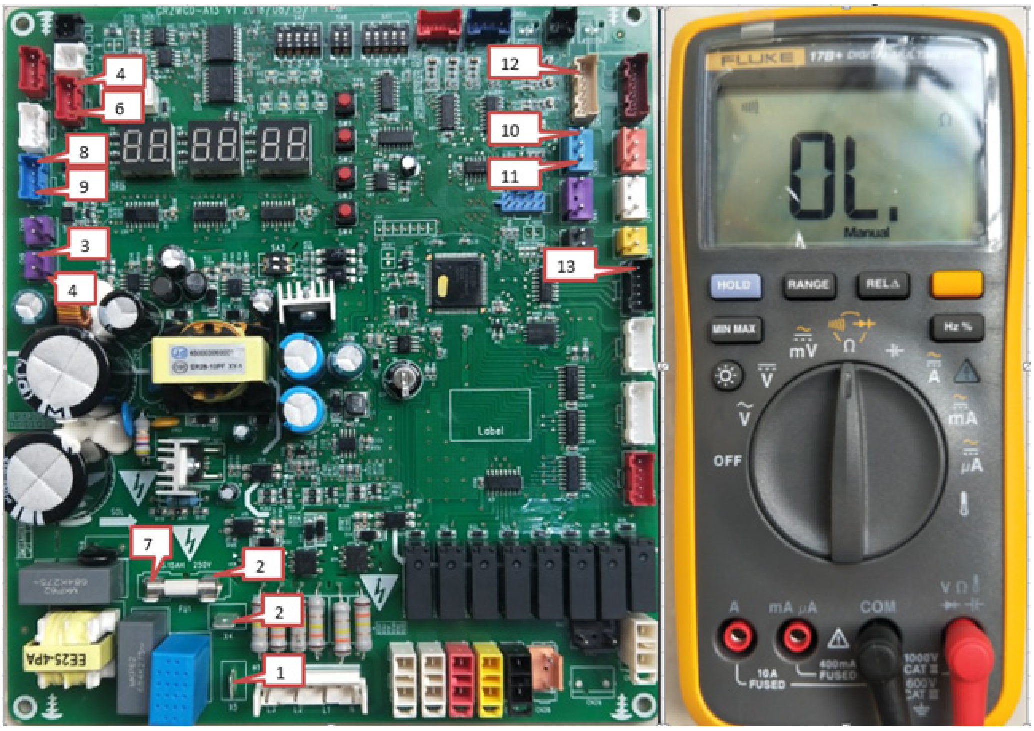






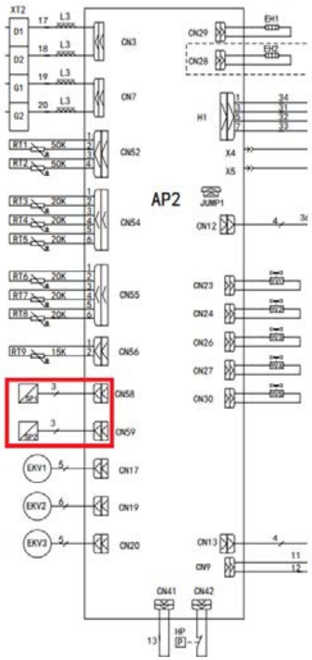
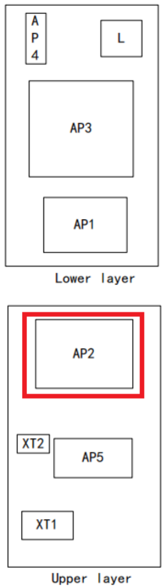
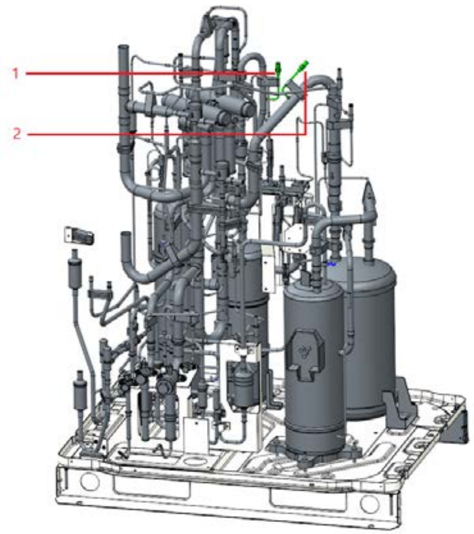
Step 1: Disconnect the power and wait five minutes.

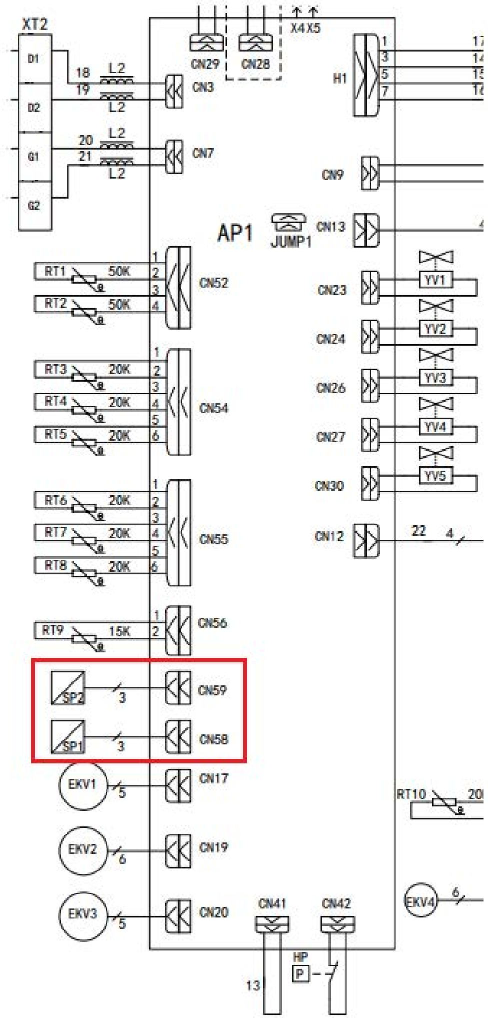
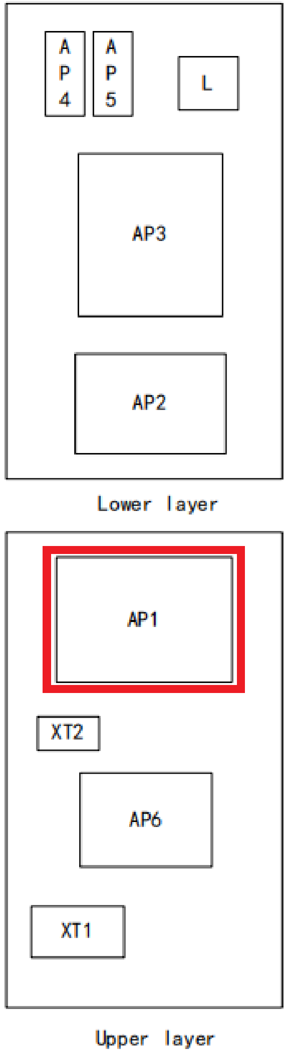
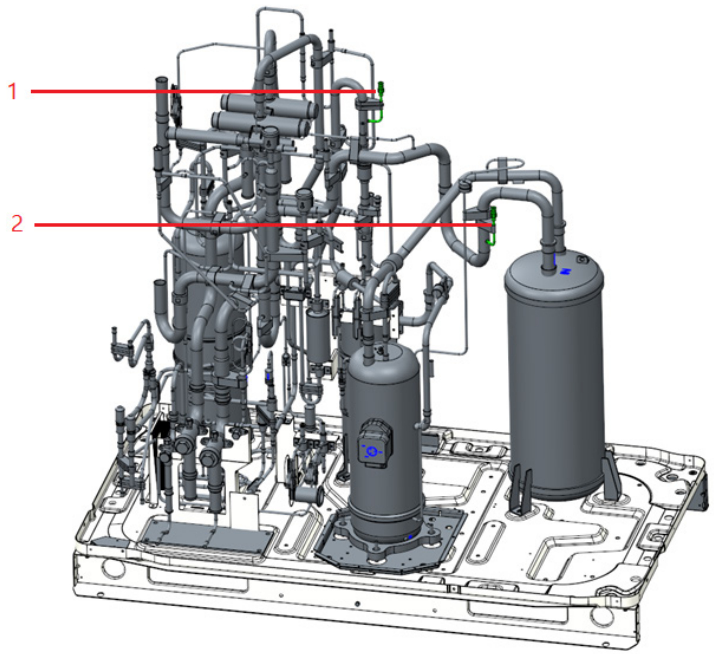
Step 2: As shown in the figure, switch the multimeter to the diode gear. Point the black and red probes to the following positions to check if the main board is normal.

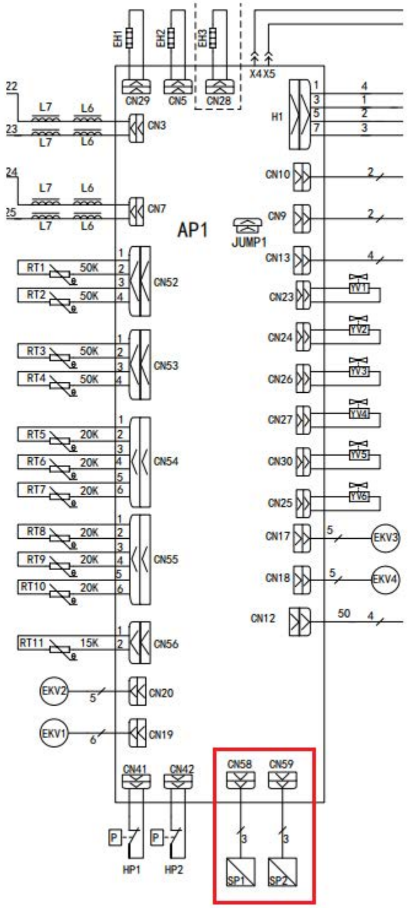
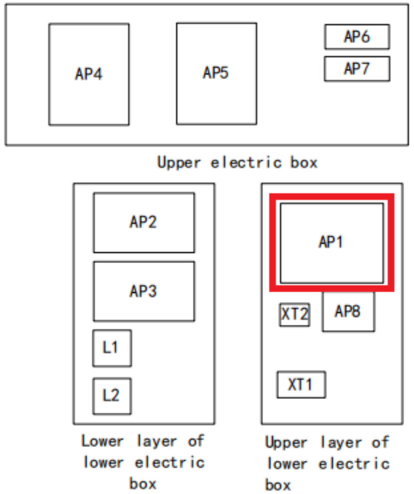


Black probe	Red probe	Symptom
X5 (1)	X4 (2)	The main board is normal if the multimeter does not beep.
CN9 (3)	CN9 (4)	The main board is normal if the multimeter does not beep.
Anode of fuse (2)	Cathode of fuse (7)	The fuse is damaged and needs to be replaced if the multimeter does not beep.
CN1 (4)	CN1 (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.

4.1.11 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: GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X</td></tr>
<tr><td>Circuit diagram</td><td>Layout of electrical appliance box</td><td>Physical position</td></tr>
<tr><td></td><td></td><td>1 High-pressure sensor SP2
2 Low-pressure sensor SP1</td></tr>
</table>

Models: GMV-VQ400WM/C-X、GMV-VQ450WM/C-X		
Circuit diagram	Layout of electrical appliance box	Physical position
		 1 High-pressure sensor SP2 2 Low-pressure sensor SP1

<table>
<tr><th colspan="3">Models: GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X</th></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr>
<td>
</td>
<td>
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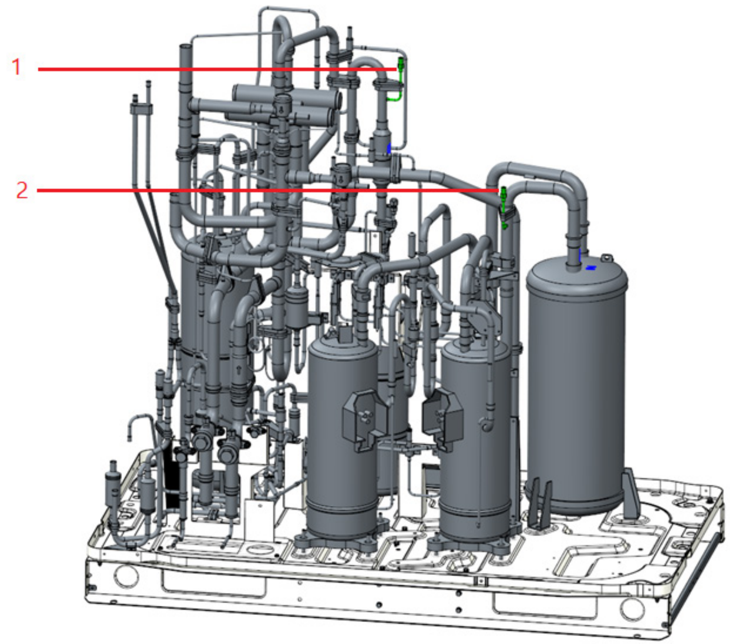
<td>

1 High-pressure sensor SP2
2 Low-pressure sensor SP1</td>
</tr>
</table>

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

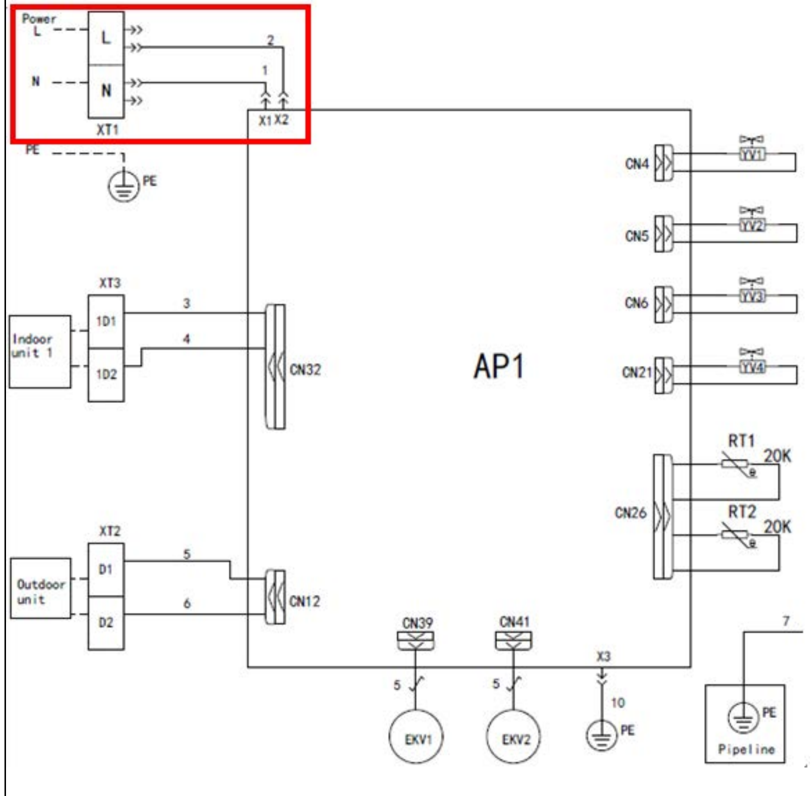
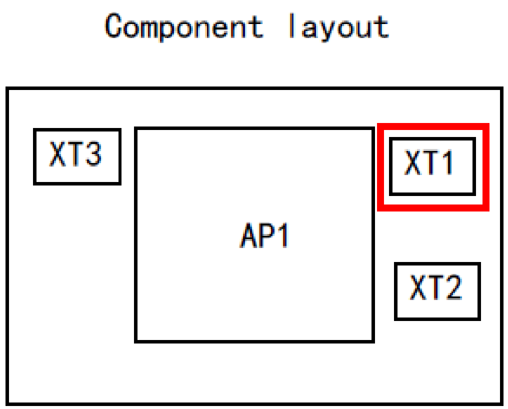
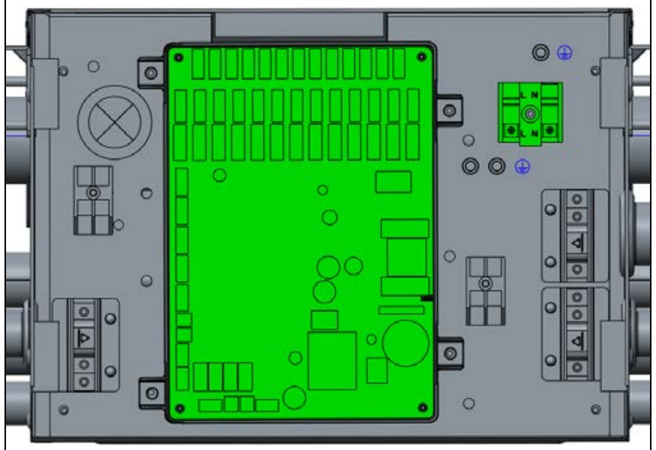
(1) Connect the pressure gauge to the gas valve and check if the gas and liquid valves are open.

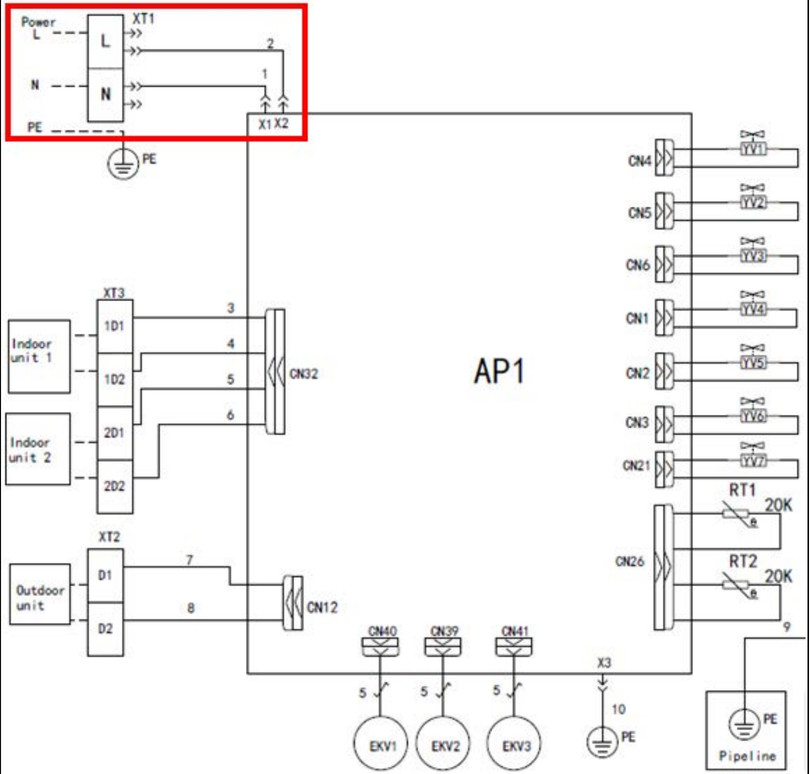
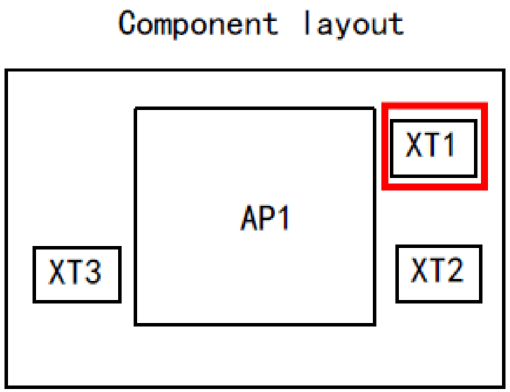
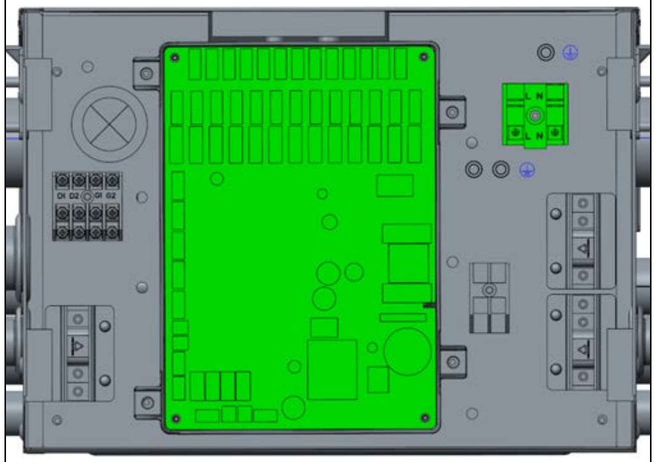
(2) Switch the unit to the heating mode. After the system stabilizes, check the reading of the pressure gauge.

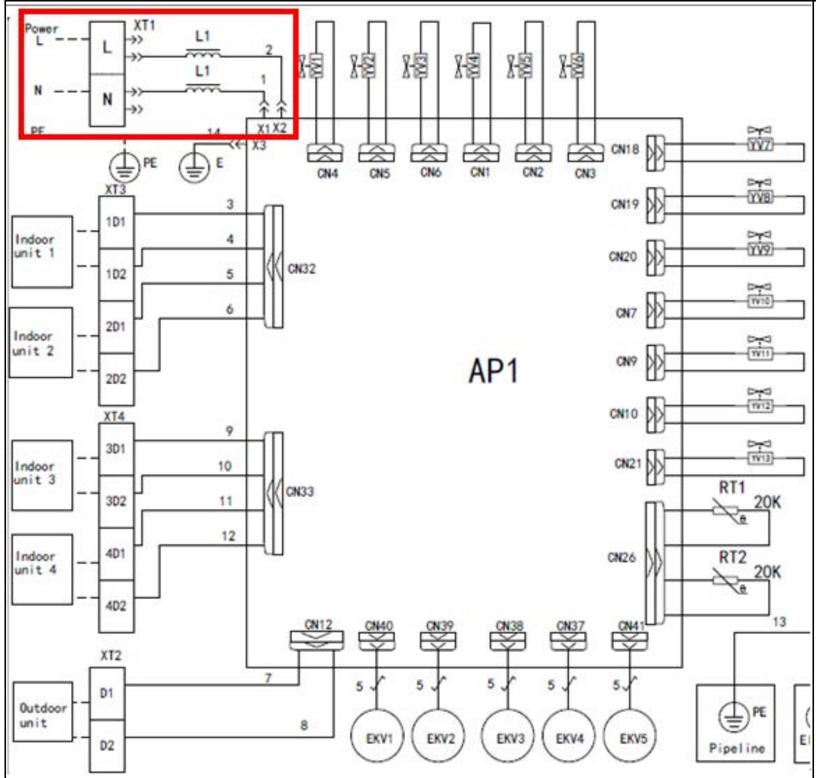
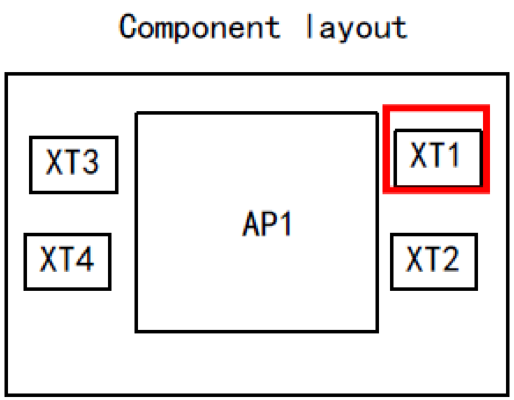
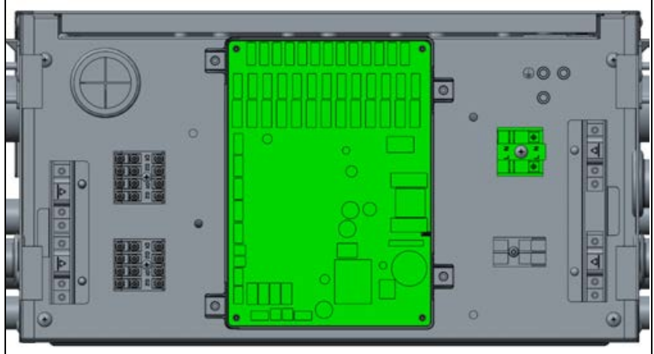
4. Check the unit's exhaust pressure via the wired controller and compare it with the reading of the pressure gauge on the gas valve. If the value shown on the wired controller is within the range of ±10% of the reading of the pressure gauge, the pressure sensor is normal. Otherwise, it is abnormal.

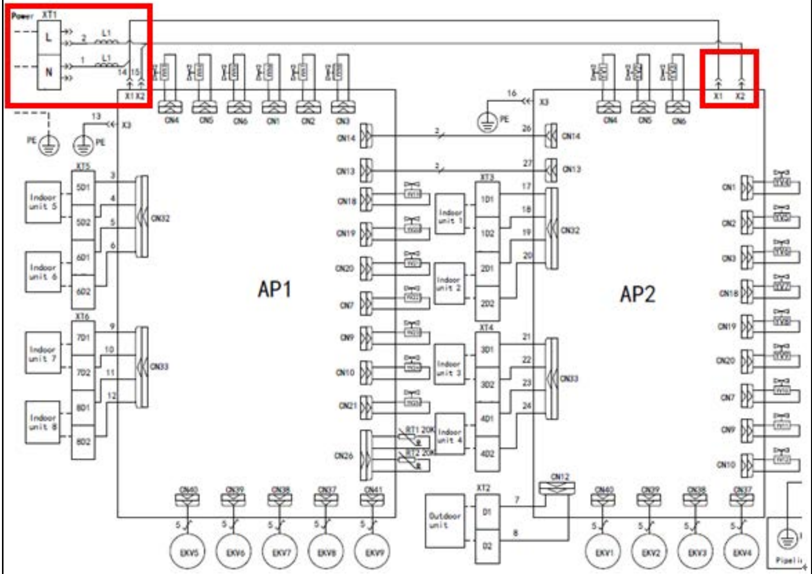
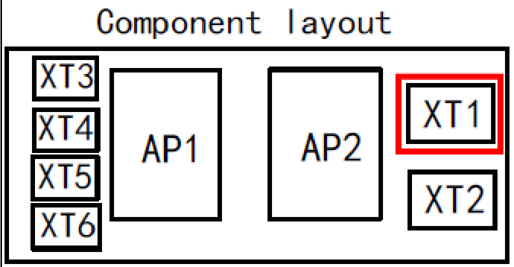
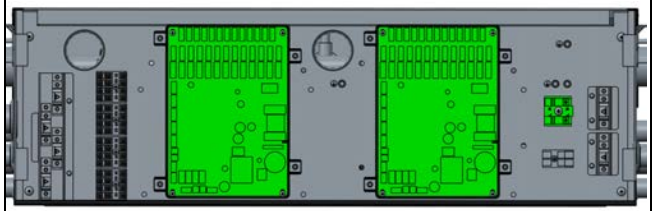
4.2 Mode Exchange Box

4.2.1 Power

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>Specification of power source connected to mode switch is 220~240V~50/60Hz;</td><td colspan="2">Use of power to the main control board:
①Providing 220V AC power for the solenoid valve coil and electronic expansion valve coil.
② 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><th colspan="3">Models: NCHS1D</th></tr>
<tr><td>
</td><td>
</td><td></td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>Specification of power source connected to mode switch is 220~240V~50/60Hz;</td><td colspan="2">Use of power to the main control board:
①Providing 220V AC power for the solenoid valve coil and electronic expansion valve coil.
② 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><th colspan="3">Models: NCHS2D</th></tr>
<tr><td></td><td></td><td></td></tr>
</table>

Specifications	Description	
Specification of power source connected to mode switch is 220~240V~50/60Hz;	Use of power to the main control board: ①Providing 220V AC power for the solenoid valve coil and electronic expansion valve coil. ② Generating the low-voltage DC power.	
Circuit diagram	Layout of electrical appliance box	Physical position
Models: NCHS4D		
		

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>Specification of power source connected to mode switch is 220~240V~50/60Hz;</td><td colspan="2">Use of power to the main control board:
①Providing 220V AC power for the solenoid valve coil and electronic expansion valve coil.
② 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><th colspan="3">Models: NCHS8D</th></tr>
<tr><td></td><td></td><td></td></tr>
</table>

4.2.1.1 Mechanical Inspection

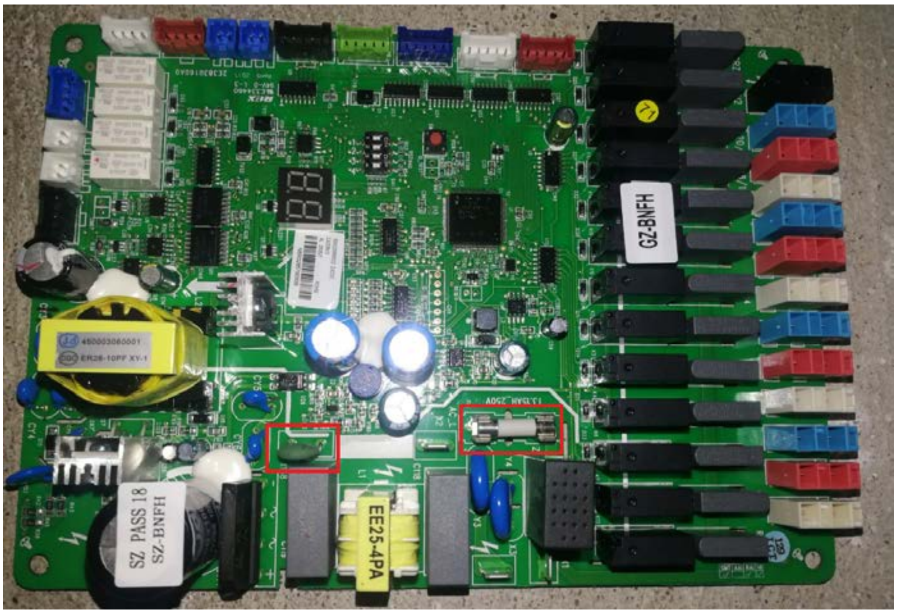
（1） Confirm that the unit power is disconnected.

（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 are damaged.

（5） Check whether the varistors on the main board board are damaged.



4.2.1.2 Electrical Inspection

（1） Check the power cord from the power source to mode exchange box: 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

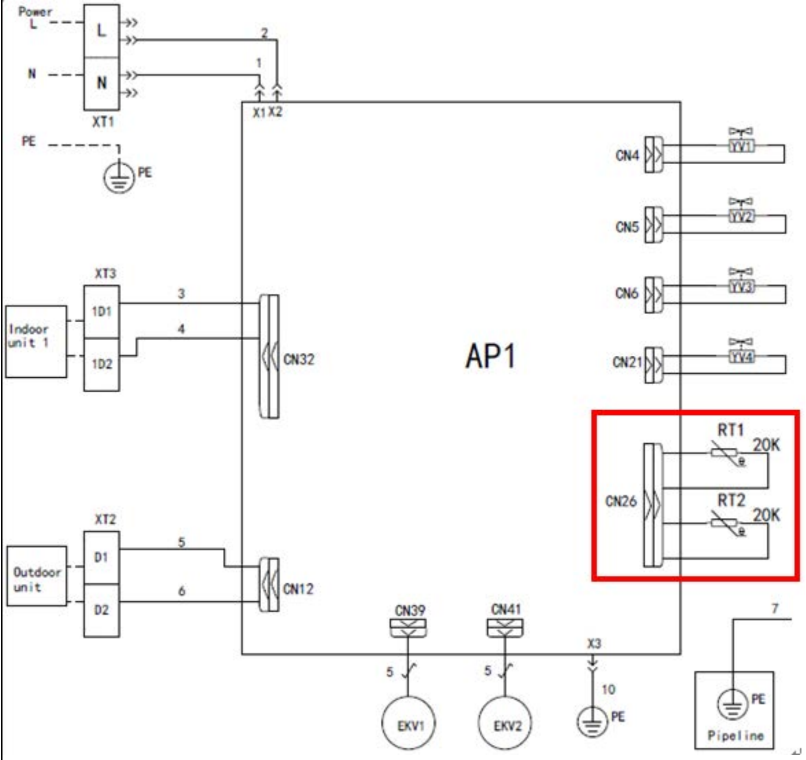
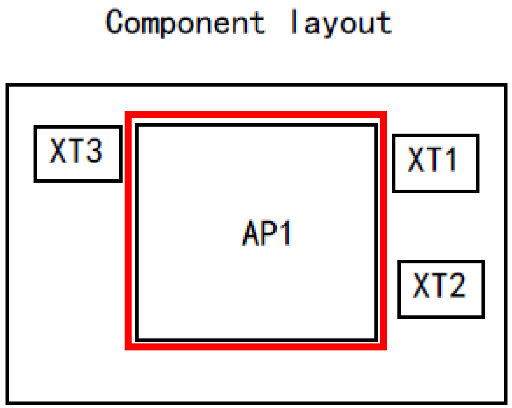
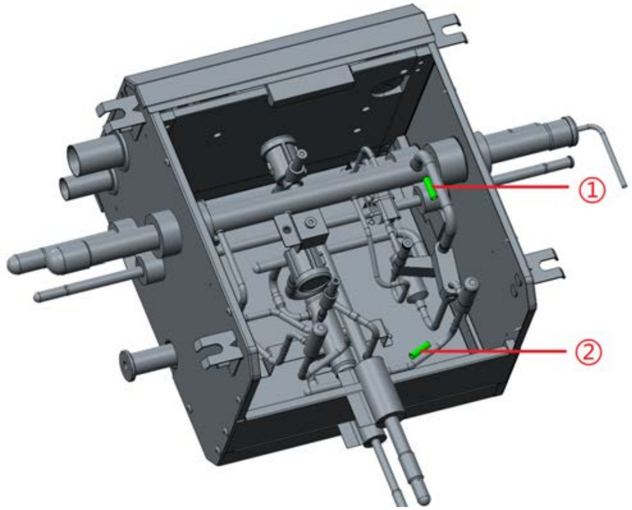
（2） After the checking, connect the power and verify that the voltage of the power terminals is correct:

The power voltage is between 220~240VAC±10%.

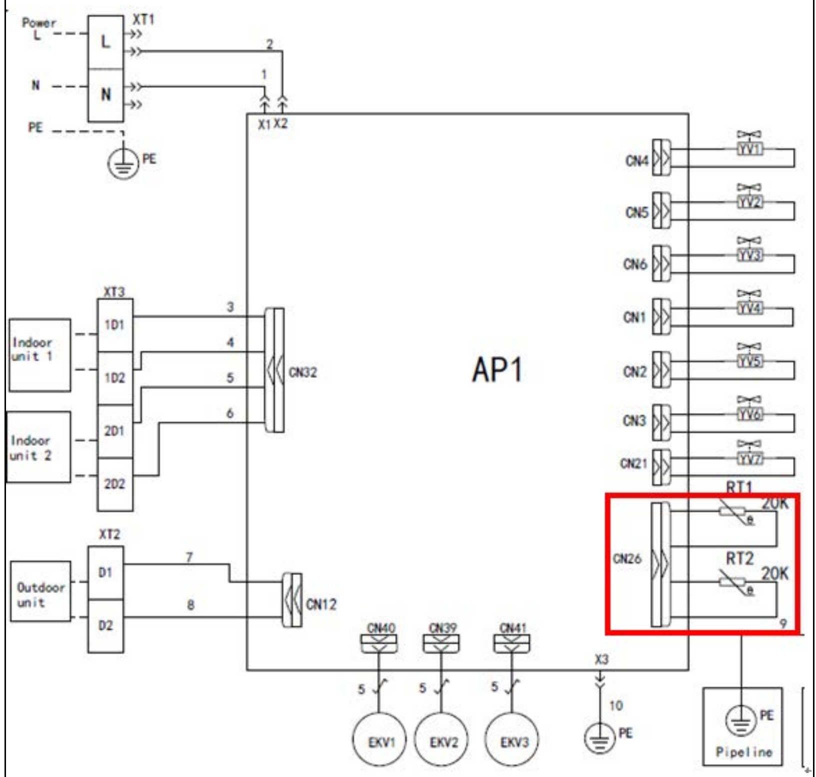
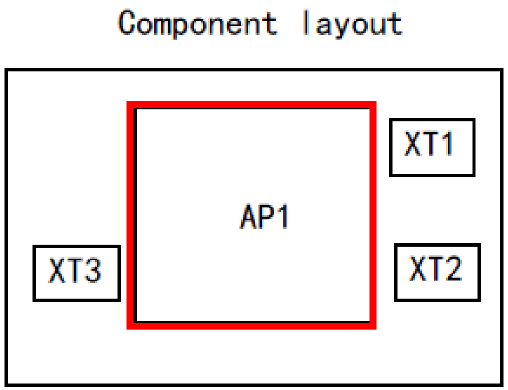
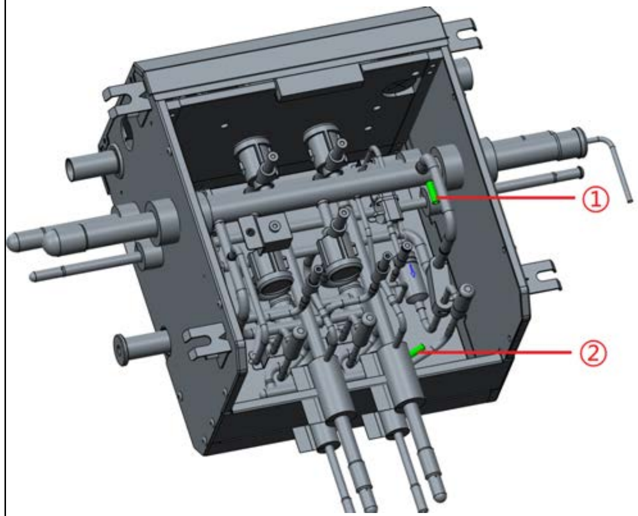
（3） Check the power on the main control board:

Confirm that the X1 and X2 on the main control board are active.

4.2.2 Temperature Sensors

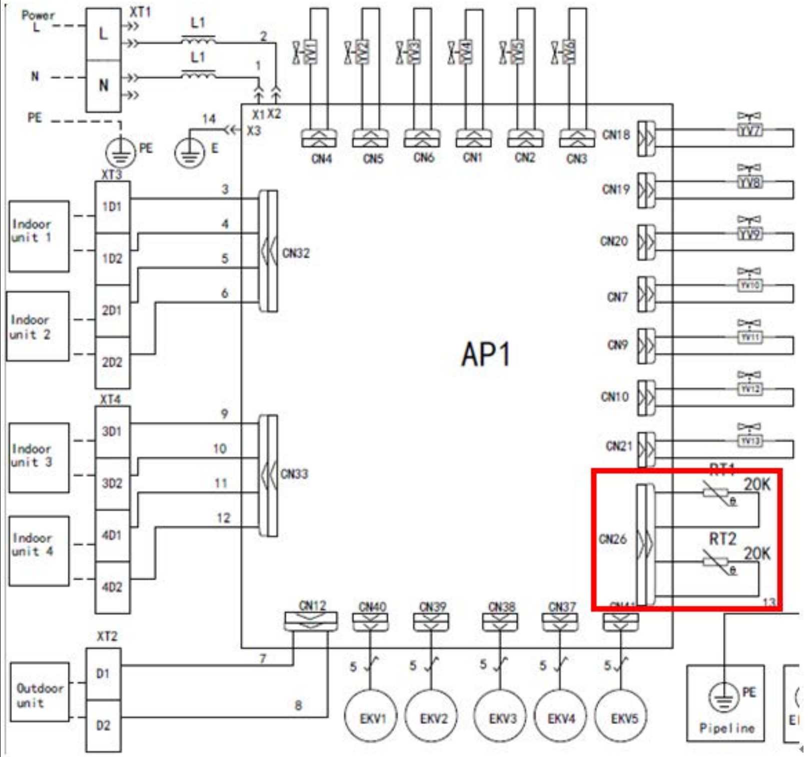
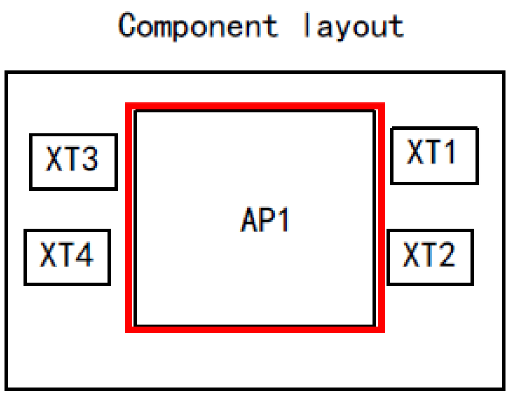
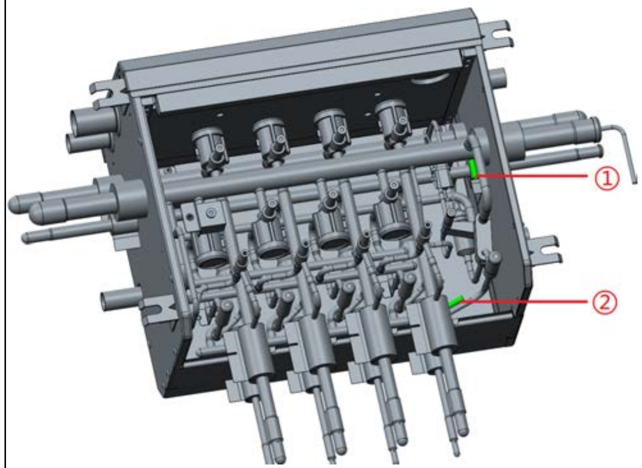
<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The type of temperature sensors of mode exchange box are 20K.</td><td colspan="2">The sensors are used to measure the temperature of the unit at different positions.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models：NCHS1D</th></tr>
<tr><td>
</td><td>
</td><td>

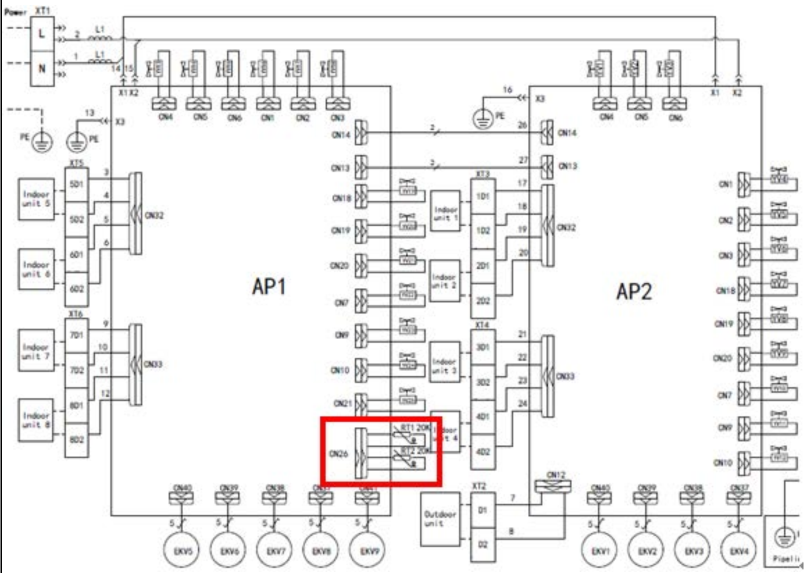
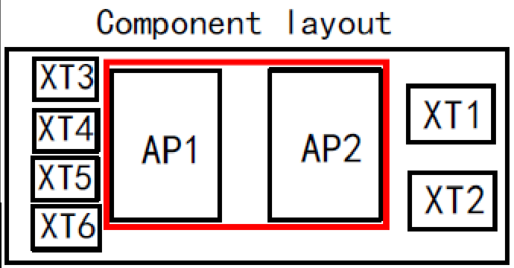
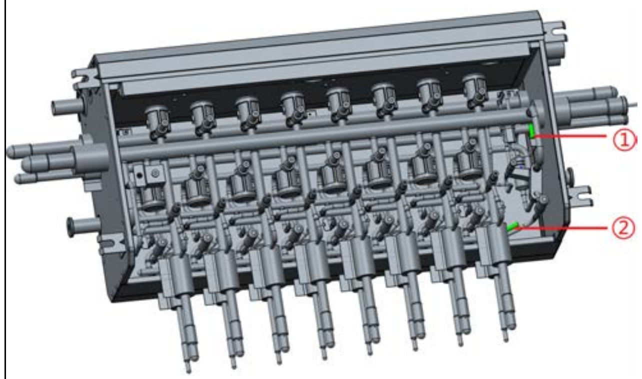
①Air outlet temperature sensor of subcooler
②Air inlet temperature sensor of subcooler</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The type of temperature sensors of mode exchange box are 20K.</td><td colspan="2">The sensors are used to measure the temperature of the unit at different positions.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models：NCHS2D</th></tr>
<tr><td>
</td><td>
</td><td>

①Air outlet temperature sensor of subcooler
②Air inlet temperature sensor of subcooler</td></tr>
<tr><th colspan="3">Models：NCHS4D</th></tr>
</table>

Specifications	Description
The type of temperature sensors of mode exchange box are 20K.	The sensors are used to measure the temperature of the unit at different positions.

Circuit diagram	Layout of electrical appliance box	Physical position
		 ①Air outlet temperature sensor of subcooler ②Air inlet temperature sensor of subcooler

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>The type of temperature sensors of mode exchange box are 20K.</td><td colspan="2">The sensors are used to measure the temperature of the unit at different positions.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models：NCHS8D</th></tr>
<tr><td></td><td></td><td>①Air outlet temperature sensor of subcooler
②Air inlet temperature sensor of subcooler</td></tr>
</table>

4.2.2.1 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.

4.2.2.2 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.

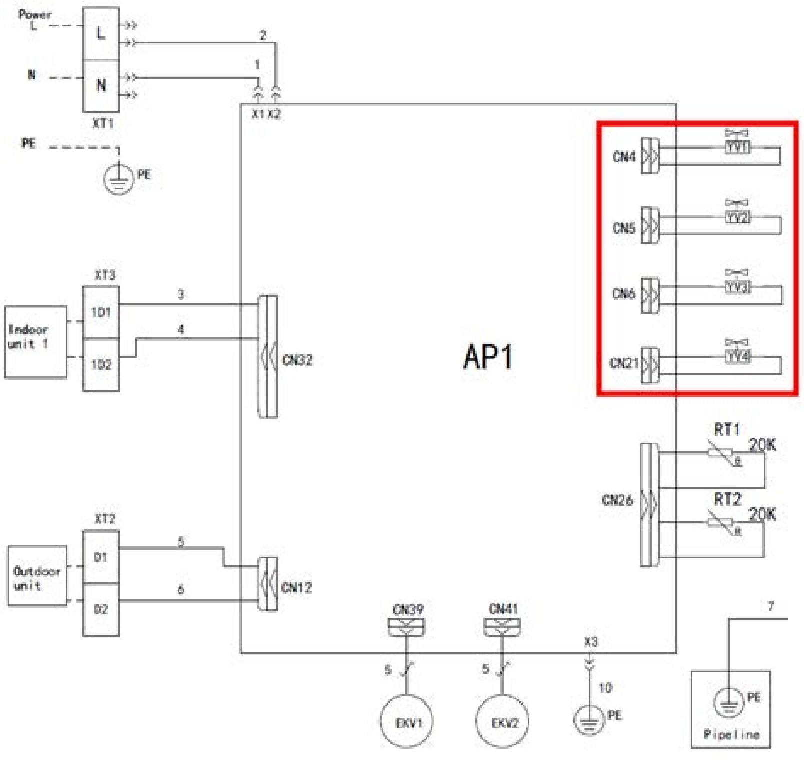
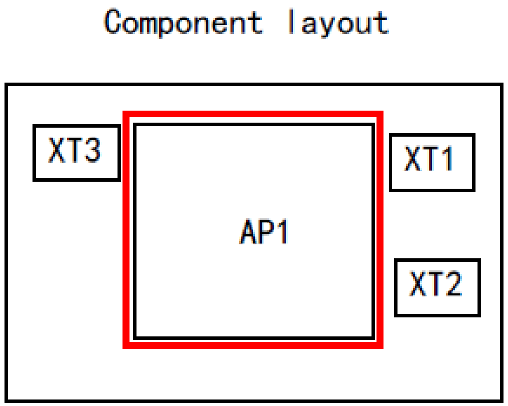
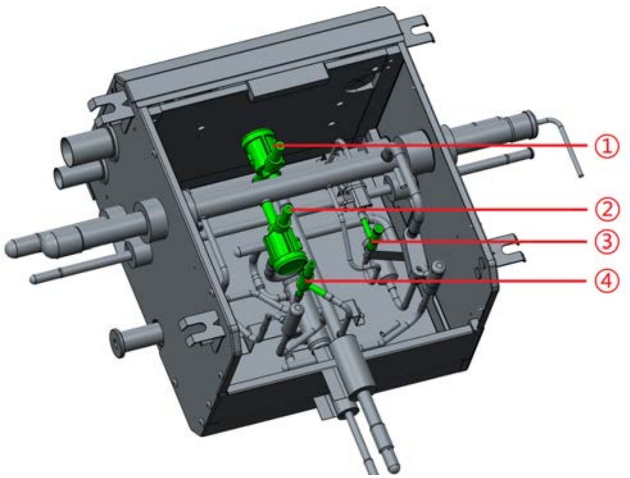
(4) Disconnect the connecting terminal of the corresponding temperature sensor from the main board. Use a multimeter to measure the resistance of the temperature sensors and compare it with the confirmed temperature range.

(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.

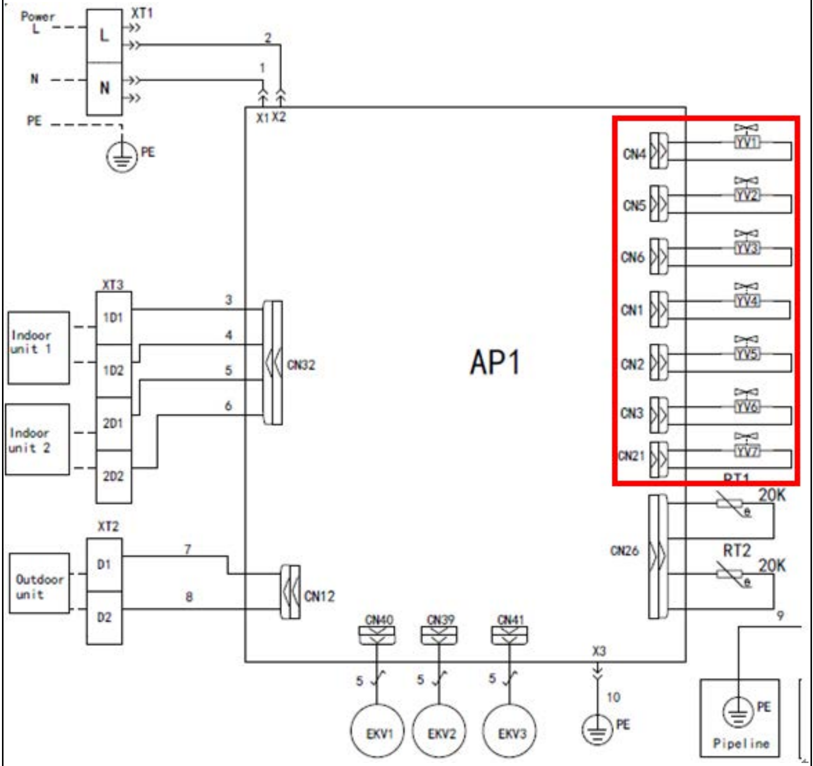
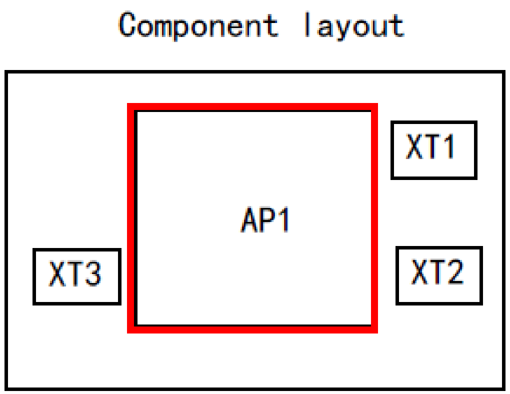
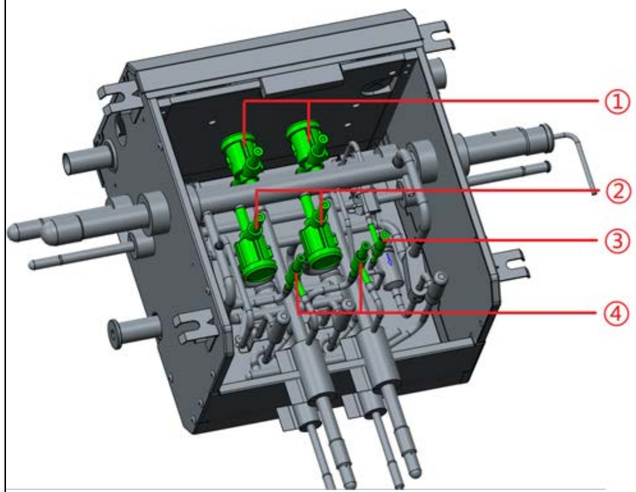
(6) If the measured resistance and temperature match with the resistance and temperature in the characteristic curve of the temperature sensor, but the temperature of the spot is abnormal according to the monitoring of the unit, the main board needs to be replaced.

NOTE: Please refer to Appendix 1 for the corresponding relationship between the resistance value of the temperature sensor and the temperature.

4.2.3 Solenoid Valve

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>All the magnet valves of the unit adopt the coil with unified specification.</td><td colspan="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><th colspan="3">Models: NCHS1D</th></tr>
<tr><td>
</td><td>
</td><td>

①Heating solenoid valve
②Cooling solenoid valve
③Gas bypass valve
④Cooling balance solenoid valve</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>All the magnet valves of the unit adopt the coil with unified specification.</td><td colspan="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><th colspan="3">Models: NCHS2D</th></tr>
<tr><td>
</td><td>
</td><td>

①Heating solenoid valve (1 to 2 from left to right)
②Cooling solenoid valve (1 to 2 from left to right)
③Gas bypass valve
④Cooling balance solenoid valve (1 to 2 from left to right)</td></tr>
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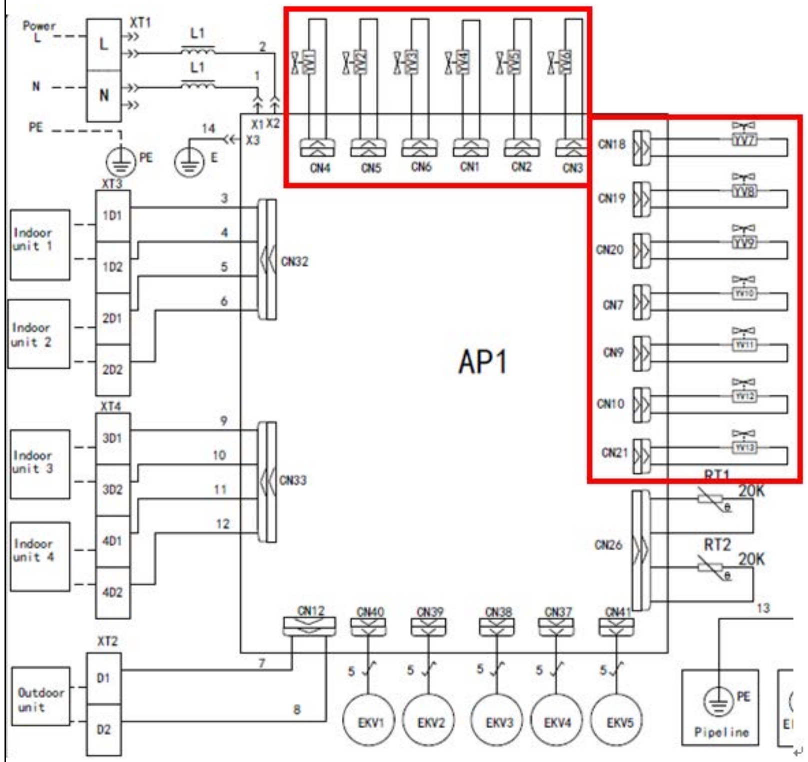
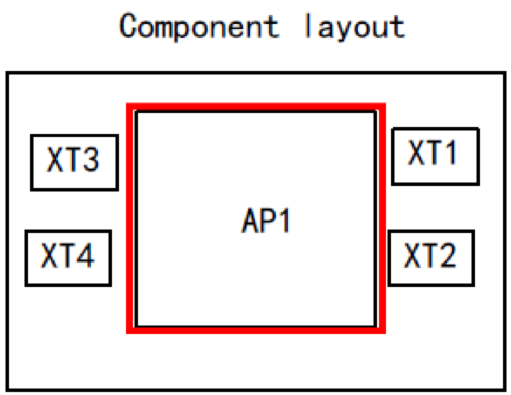
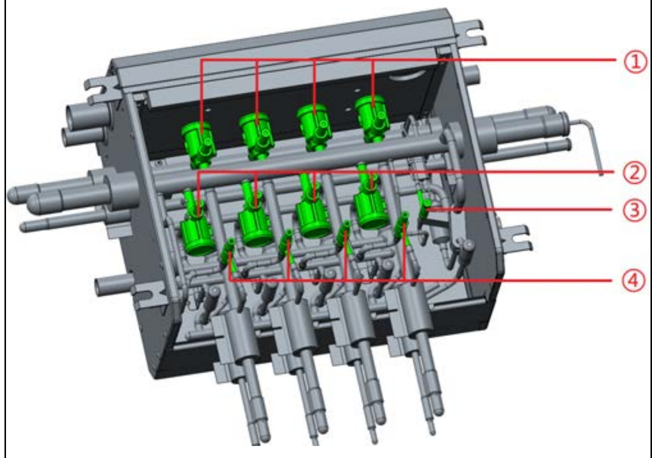
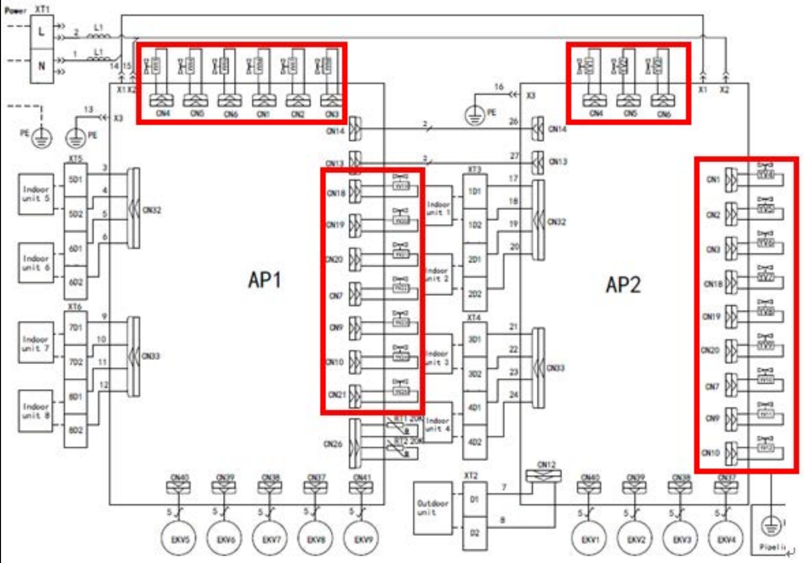
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: NCHS4D</th></tr>
<tr><td>
</td><td>
</td><td>

①Heating solenoid valve (1 to 4 from left to right)
②Cooling solenoid valve (1 to 4 from left to right)
③Gas bypass valve
④Cooling balance solenoid valve (1 to 4 from left to right)</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>All the magnet valves of the unit adopt the coil with unified specification.</td><td colspan="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: NCHS8D</td></tr>
<tr><td>



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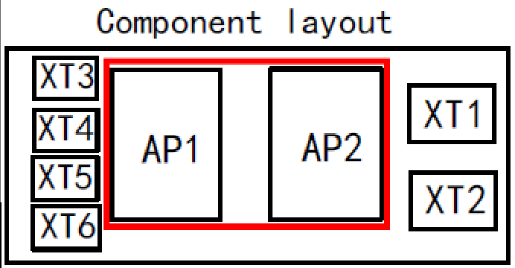

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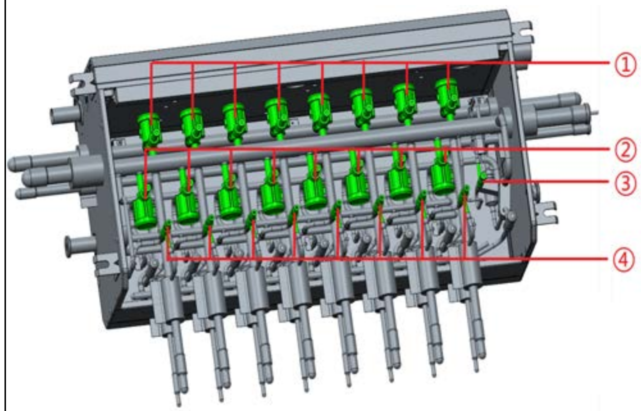


①Heating solenoid valve (1 to 8 from left to right)
②Cooling solenoid valve (1 to 8 from left to right)
③Gas bypass valve
④Cooling balance solenoid valve (1 to 8 from left to right)

</td></tr>
</table>

4.2.3.1 Mechanical Inspection

（1） Confirm that the unit Power is disconnected.

（2） Find the solenoid valve coil, check whether the fixing screw is loose and whether the valve and coil have any apparent exceptions.

4.2.3.2 Electrical Inspection

Compare the measured coil resistance with the normal coil resistance to check whether the coil is damaged.

（1） Power off the mode exchange box. Remove the electrical appliance cover.

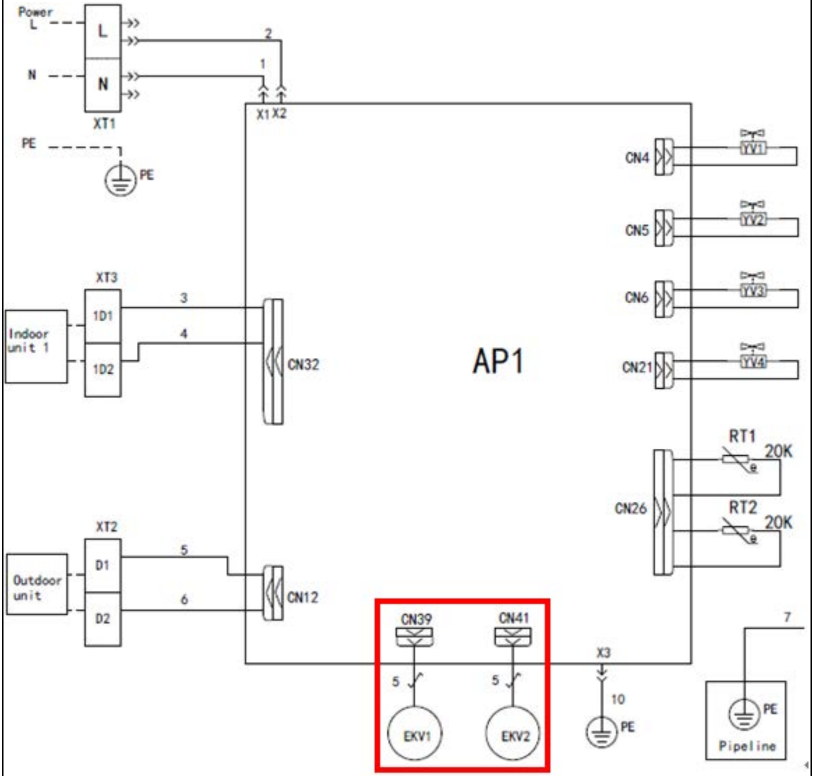
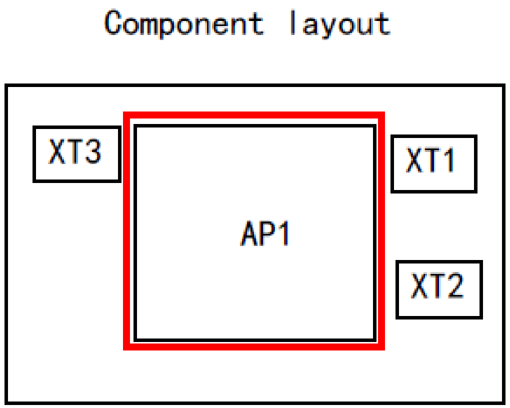
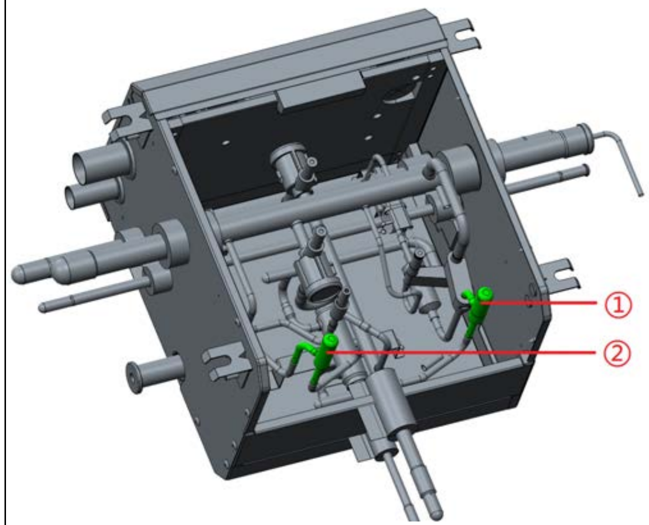
（2） check whether the connecting terminal of the solenoid valve is firm.

（3） Disconnect the corresponding valve's coil terminal from the main board and use a multimeter to measure the coil resistance.

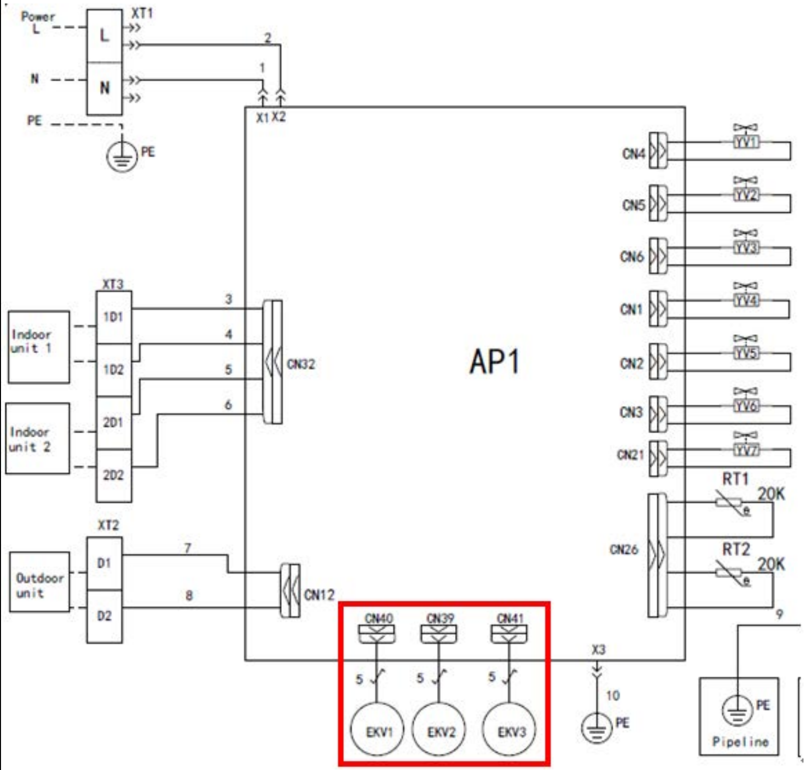
（4） If the measured resistance does not match with that in the following table, the coil needs to be replaced.

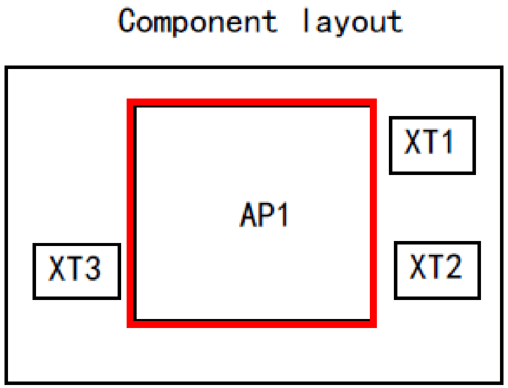
Coil	Interface No.	Color	Resistance (Ω)	Normal range of deviation
Cooling solenoid valve	CN2、CN5、CN9、CN19	Red	2085	±10%
Heating solenoid valve	CN1、CN4、CN7、CN18	Blue	2085	±10%
Cooling balance solenoid valve	CN3、CN6、CN10、CN20	White	2085	±10%
Gas bypass valve	CN21	Black	2085	±10%

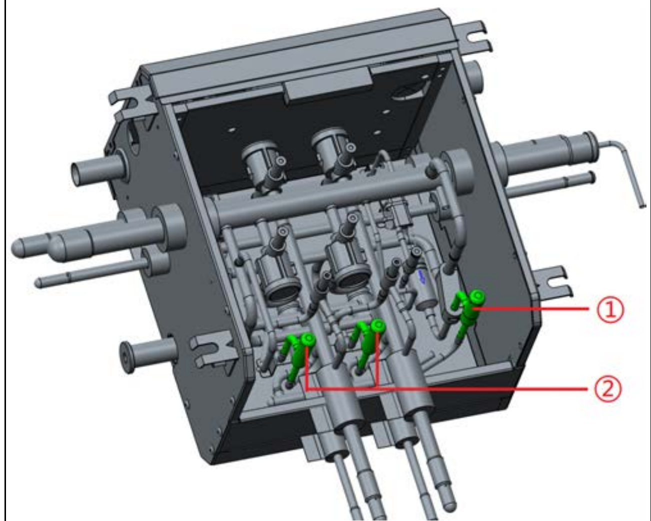
4.2.4 Electronic Expansion Valve

Specifications	Description	
the largest openness of the electronic expansion valve of subcooler and the electronic expansion balance valve for heating are 480pls. The coil of them are 5 cores.	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: NCHS1D		
		 ①Electronic expansion valve of subcooler ②Electronic expansion balance valve for heating

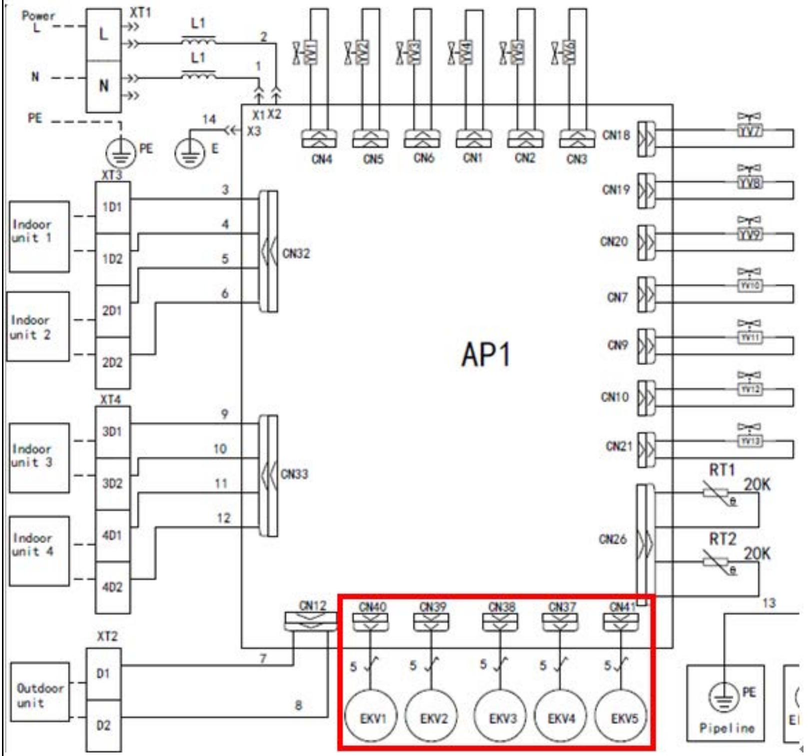
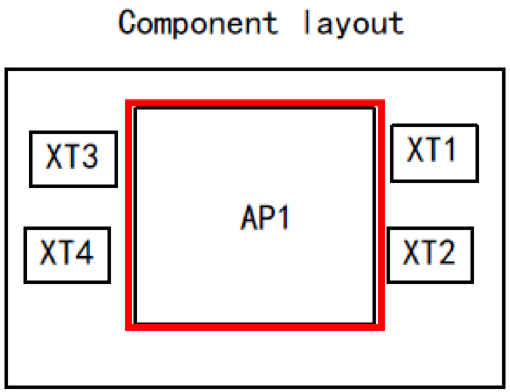
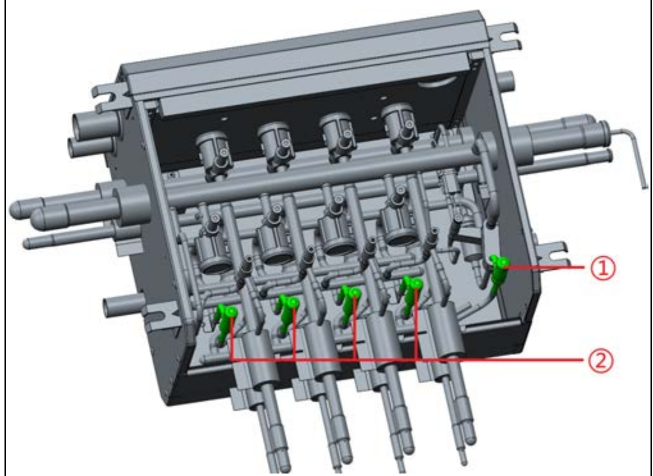
Specifications	Description	
the largest openness of the electronic expansion valve of subcooler and the electronic expansion balance valve for heating are 480pls. The coil of them are 5 cores.	The electronic expansion valve is used to control the flow. When the electronic expansion valve is closed (the openness is 0 pls), the flow is stopped.	
Circuit diagram	Layout of electrical appliance box	Physical position
Models: NCHS2D		



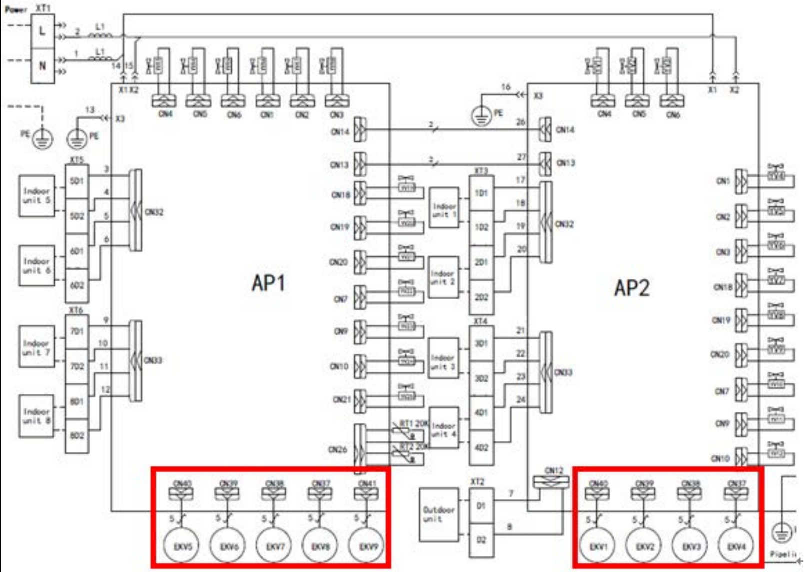
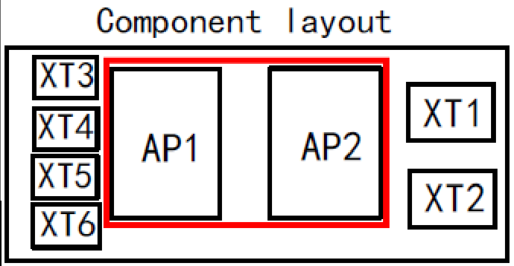
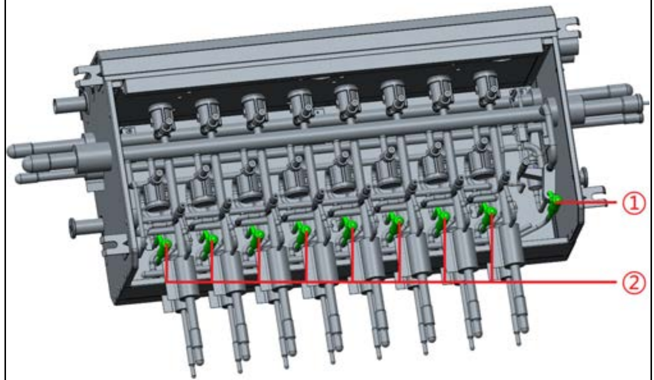




①Electronic expansion valve of subcooler
②Electronic expansion balance valve for heating(1 to 2 from left to right)

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>the largest openness of the electronic expansion valve of subcooler and the electronic expansion balance valve for heating are 480pls. The coil of them are 5 cores.</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><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: NCHS4D</th></tr>
<tr><td>
</td><td>
</td><td>

①Electronic expansion valve of subcooler
②Electronic expansion balance valve for heating(1 to 4 from left to right)</td></tr>
</table>

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>the largest openness of the electronic expansion valve of subcooler and the electronic expansion balance valve for heating are 480pls. The coil of them are 5 cores.</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><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: NCHS8D</th></tr>
<tr><td>
</td><td>
</td><td>

①Electronic expansion valve of subcooler
②Electronic expansion balance valve for heating(1 to 8 from left to right)</td></tr>
</table>

4.2.4.1 Mechanical Inspection

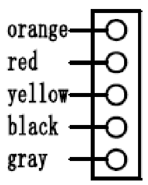
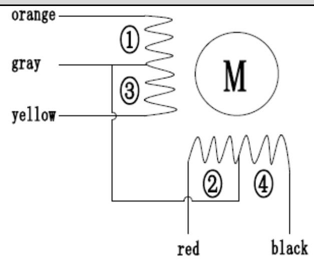
Step 1: Switch off the power of the mode exchange box.

Step 2: Check whether the coil of the electronic expansion valve is firmly fixed on the electronic expansion valve.

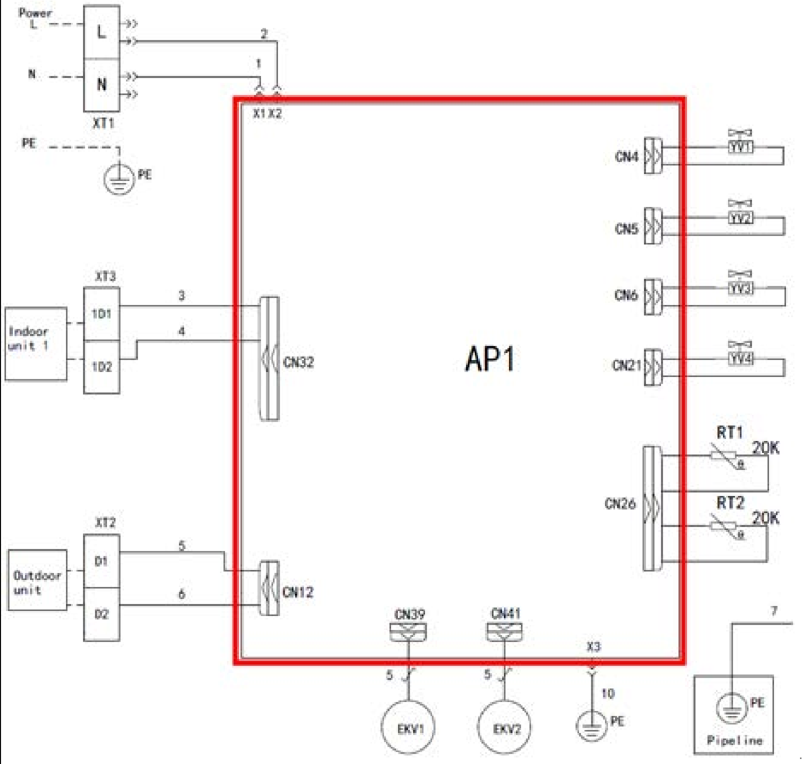
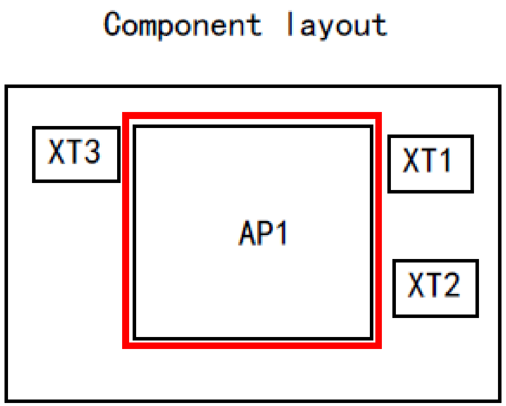
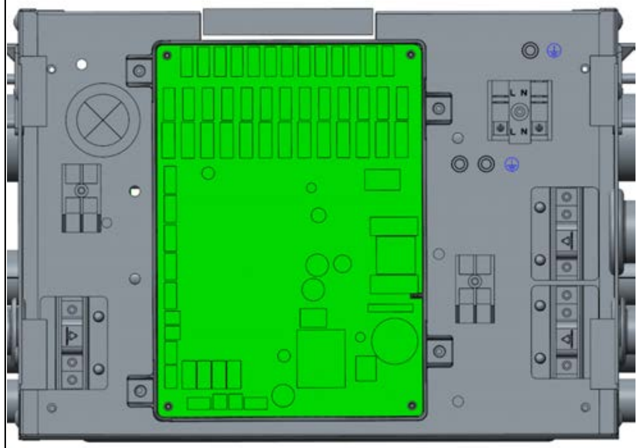
4.2.4.2 Electrical Inspection

Step 1: Power off the mode exchange box and power on it. When the mode exchange box 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 mode exchange box, 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
Electronic expansion balance valve for heating	CN37 CN38 CN39 CN40	Green Blue White Red	5 cores	480			46Ω±3Ω
Electronic expansion valve of subcooler	CN41	Black	5 cores	480			46Ω±3Ω

4.2.5 Main Board

<table>
<tr><th colspan="1">Specifications</th><th colspan="2">Description</th></tr>
<tr><td>①NCHS1D, NCHS2D, NCHS4D models adopt one piece of main board;
②NCHS8D adopts two pieces of same main boards.</td><td colspan="2">It is used for controlling the status of each load in the mode switch.</td></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: NCHS1D</th></tr>
<tr><td>
</td><td>
</td><td></td></tr>
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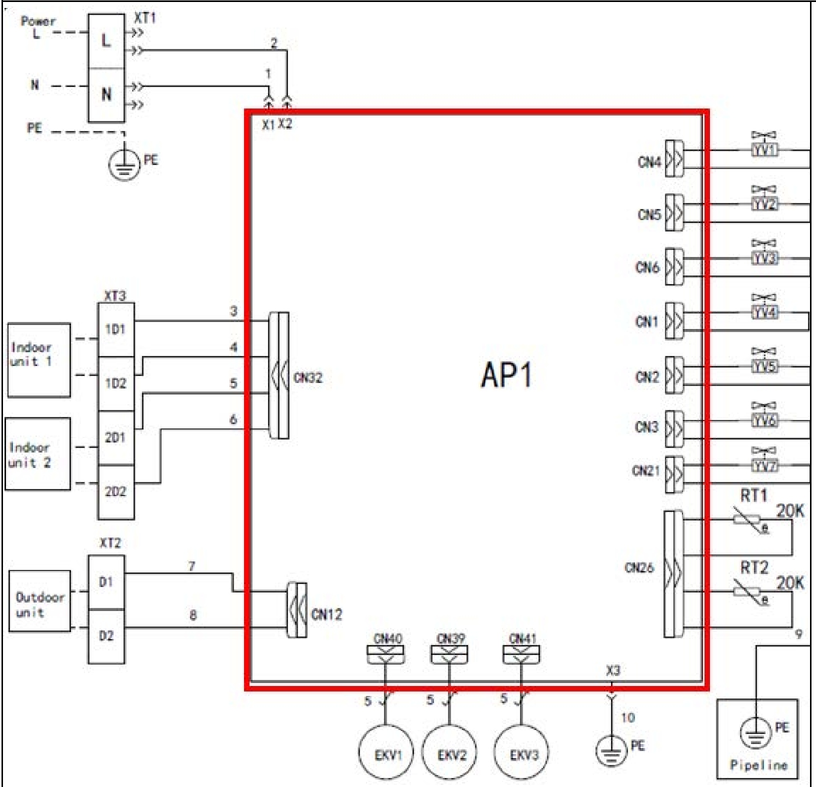
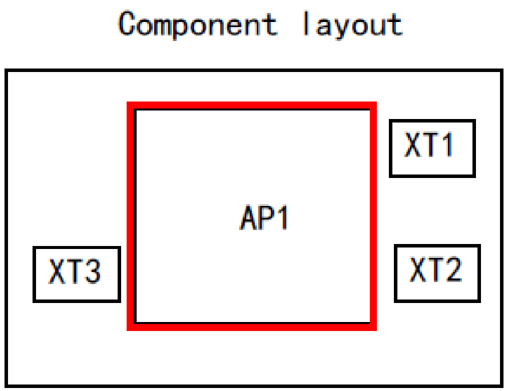
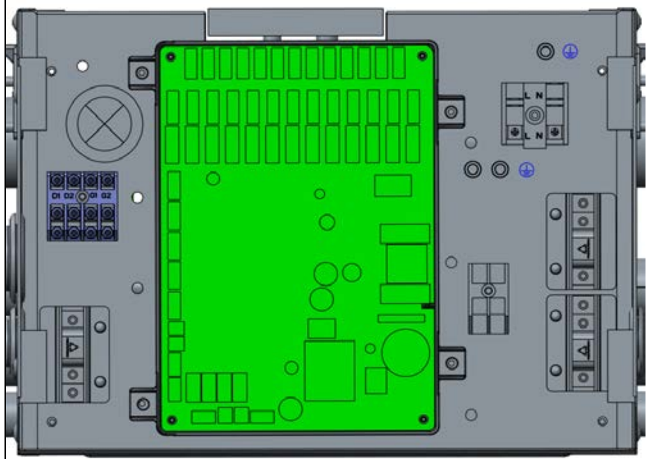
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: NCHS2D</th></tr>
<tr><td>
</td><td>
</td><td></td></tr>
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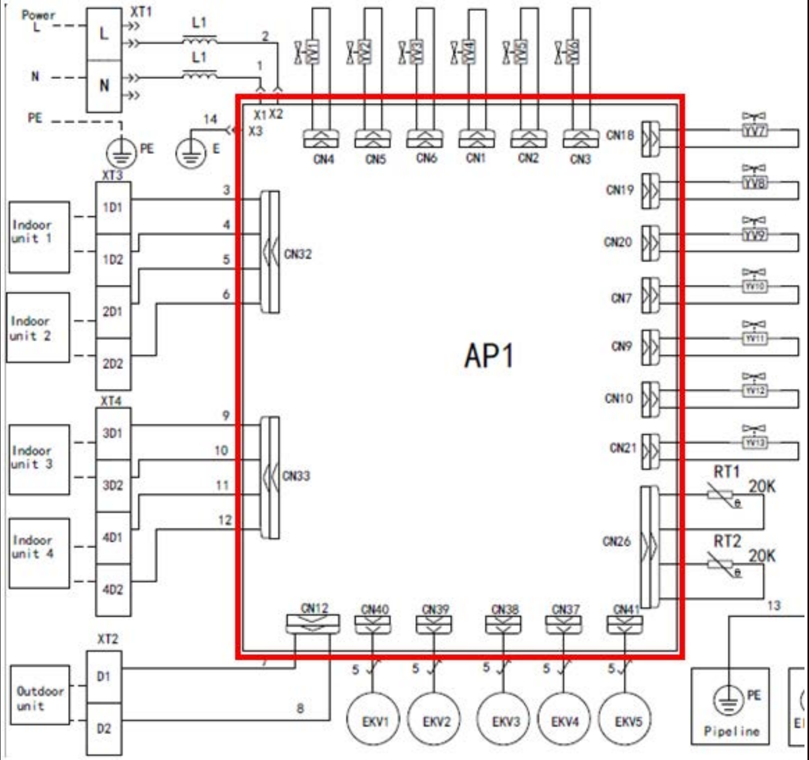
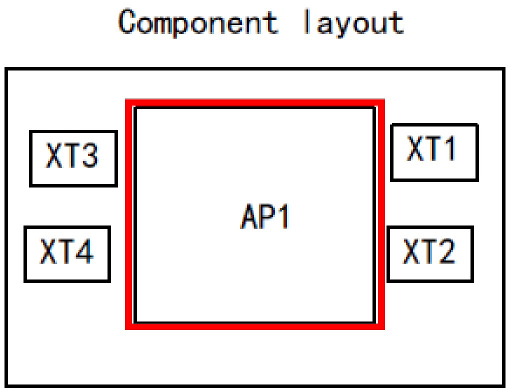
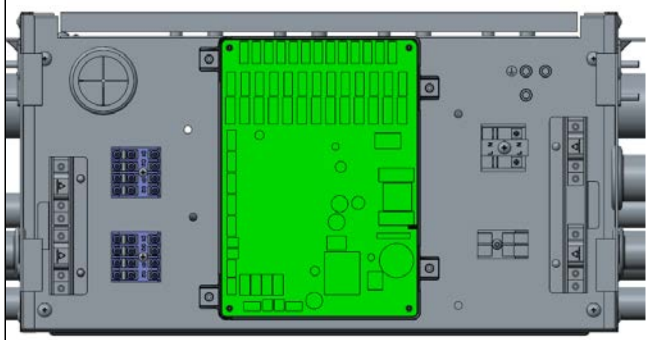
<tr><th colspan="3">Models: NCHS4D</th></tr>
<tr><td>
</td><td>
</td><td></td></tr>
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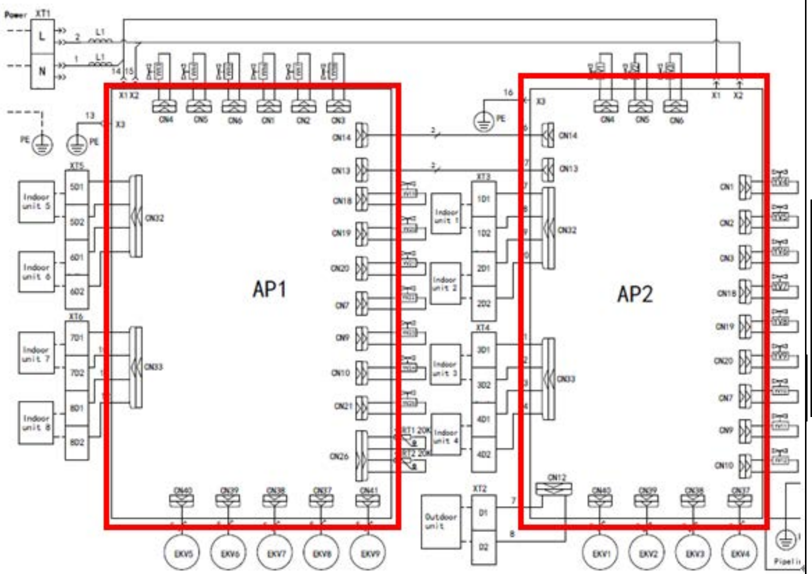
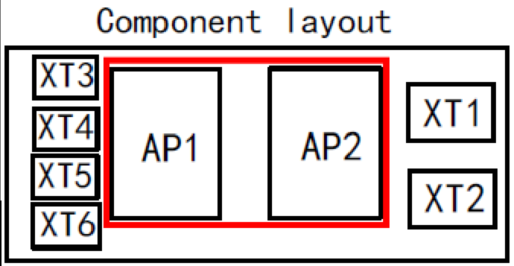
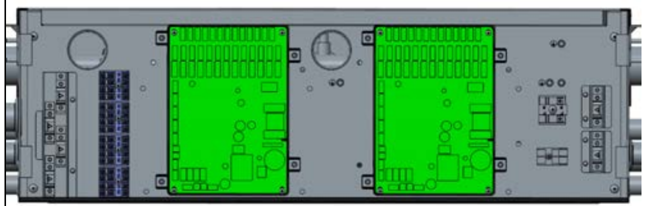
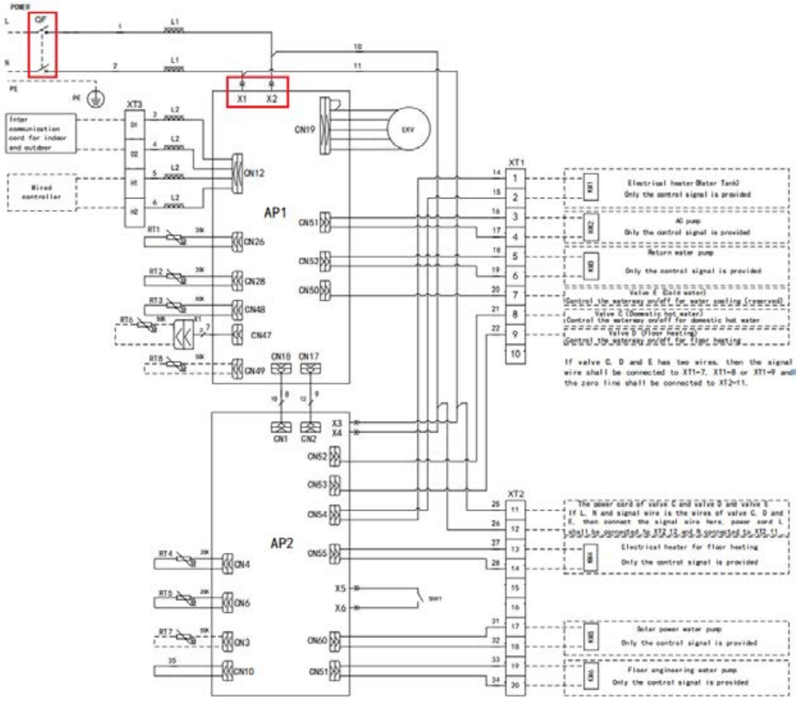
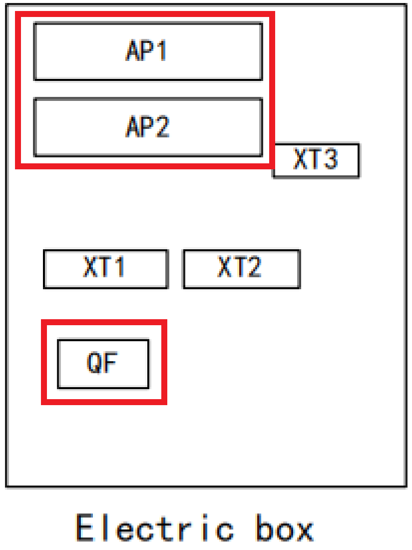
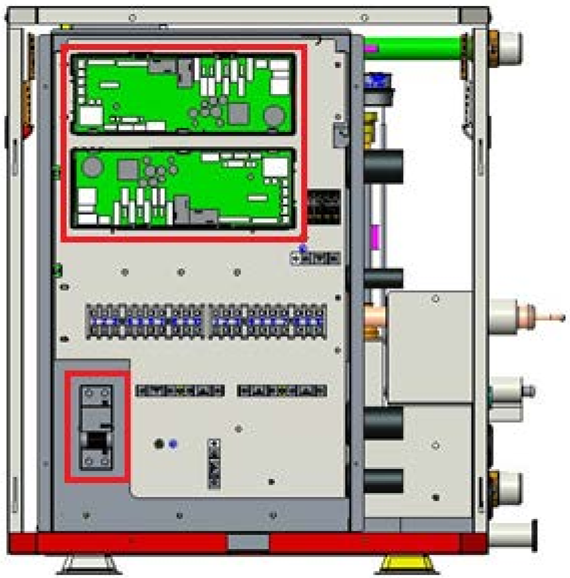
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><th colspan="3">Models: NCHS8D</th></tr>
<tr><td>
</td><td>
</td><td></td></tr>
</table>

4.3 Hydro Box

4.3.1 Power

Specifications	Description	
—	Use of power to the main control board: ①Providing DC power for the electronic expansion valve coil. ②Generating the low-voltage DC power.	
Circuit diagram	Layout of electrical appliance box	Physical position
Models: NRQR16L/A-T、NRQR30L/A-T		
		

4.3.1.1 Mechanical Inspection

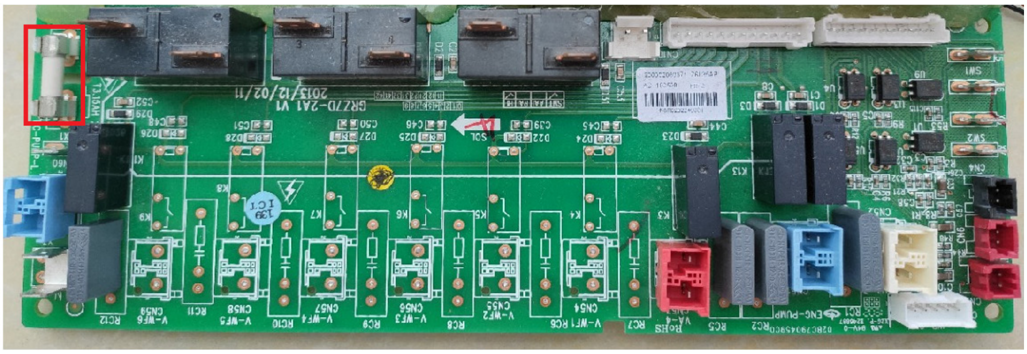
（1） Confirm that the unit power is disconnected.

（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 expansion board are damaged.

（5） Check whether the varistors on the main board and expansion board are damaged.



4.3.1.2 Electrical Inspection

Check the power cable from the main switch board to the hydro box:

（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

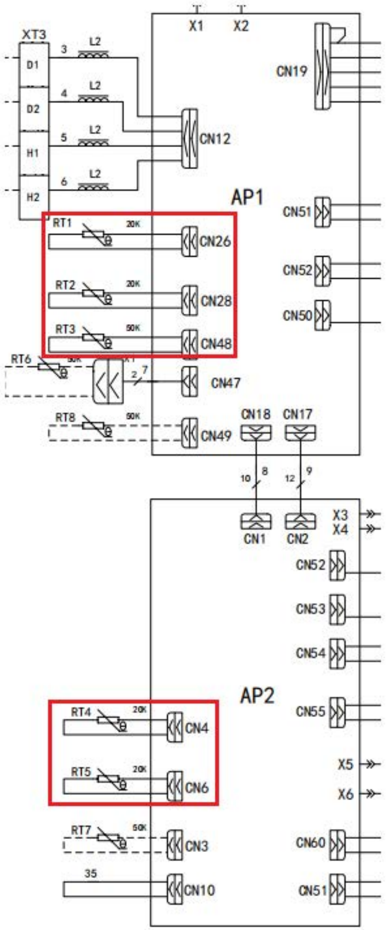
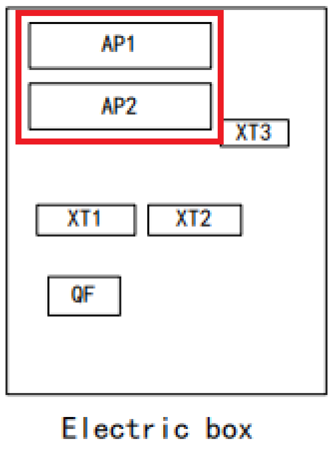
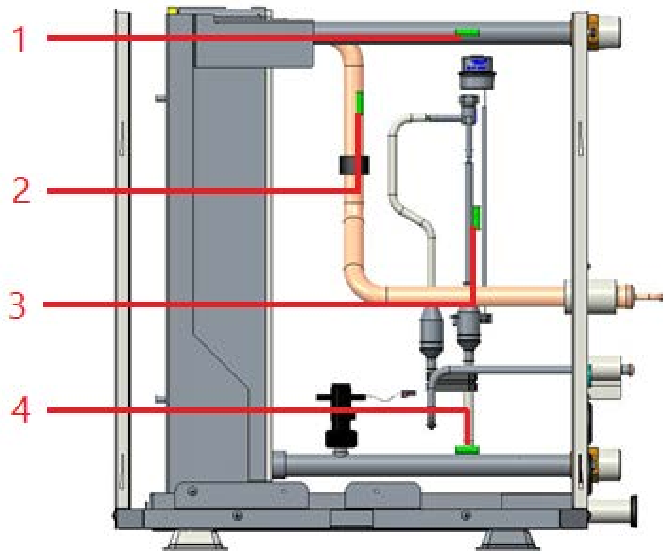
（2） After the checking, connect the power and verify that the voltage of the power terminals is correct:

Voltage between L and N: 220-240 VAC.

（3） Check the power on the main control board:

Confirm that the X1 and X2 on the main control board are active.

4.3.2 Temperature Sensors

<table>
<tr><th>Specifications</th><th colspan="2">Description</th></tr>
<tr><td>Two types of temperature sensors of different specifications are used, including 50K and 20K.</td><td colspan="2">The sensors are used to measure the temperature of the unit at different positions.</td></tr>
<tr><td colspan="3">Models: NRQR16L/A-T、NRQR30L/A-T</td></tr>
<tr><td>Circuit diagram</td><td>Layout of electrical appliance box</td><td>Physical position</td></tr>
<tr><td></td><td></td><td>1 Water outlet temperature sensor RT5
2 Pipe-out temperature sensor RT2
3 Pipe-in temperature sensor RT1
4 Water inlet temperature sensor RT4</td></tr>
</table>

4.3.2.1 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.

4.3.2.2 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 hydro box 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.

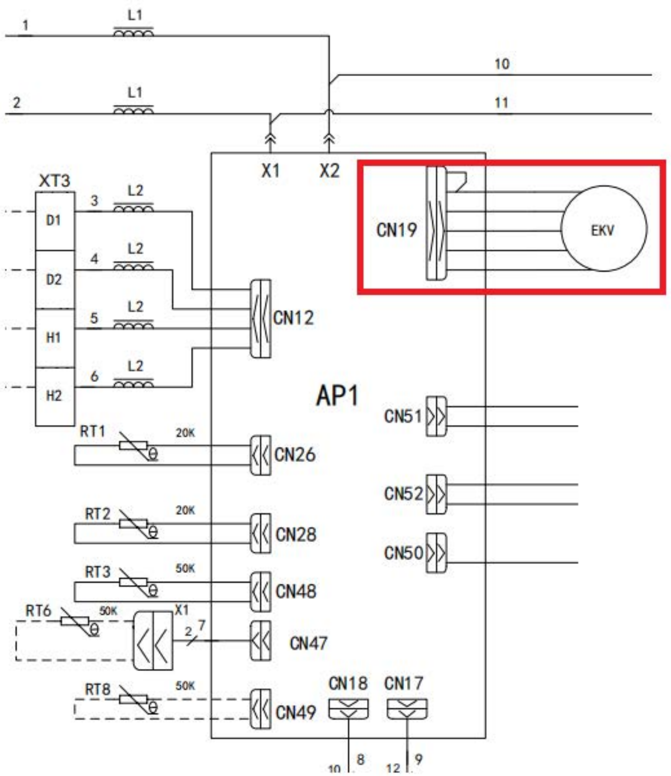
（5） If the measured resistance and temperature do not match with the resistance and temperature in the characteristic curve of the temperature sensor, the temperature sensor needs to be replaced.

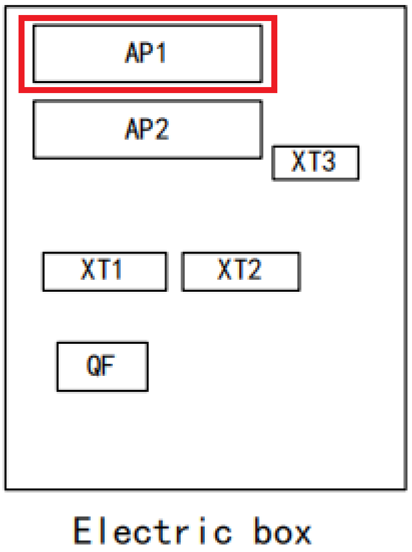
（6） If the measured resistance and temperature match with the resistance and temperature in the characteristic curve of the temperature sensor, but the temperature of the spot is abnormal according to the monitoring of the unit, the main board needs to be replaced.

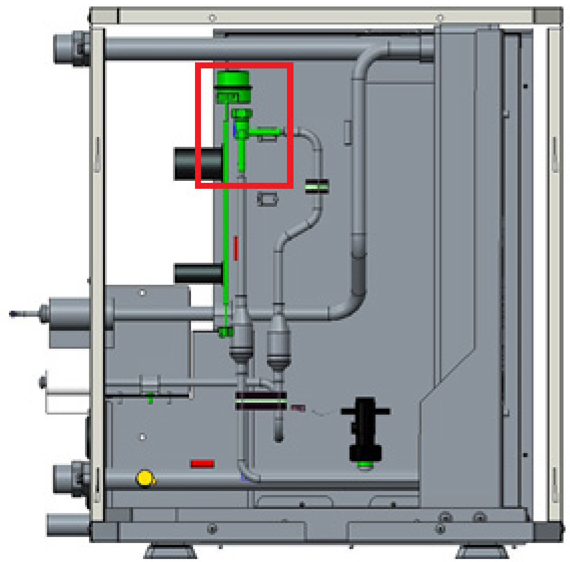
NOTE: Please refer to Appendix 1 for the corresponding relationship between the resistance value of the temperature sensor and the temperature.

4.3.3 Electronic Expansion Valve

Specifications	Description	
Electronic expansion valve of the hydro box with the largest openness of 2000 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.	
Models: NRQR16L/A-T、NRQR30L/A-T		
Circuit diagram	Layout of electrical appliance box	Physical position







4.3.3.1 Mechanical inspection

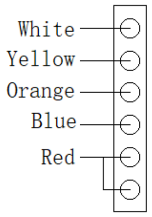
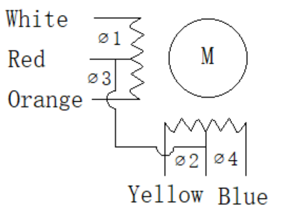
Step 1: Switch off the power of the hydro box.

Step 2: Check if the threaded connection between the electronic expansion valve coil and the electronic expansion valve is normal.

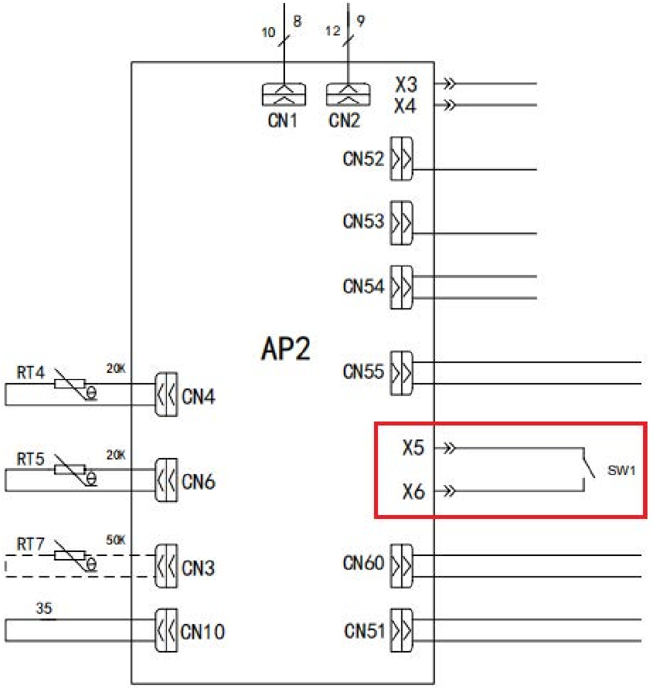
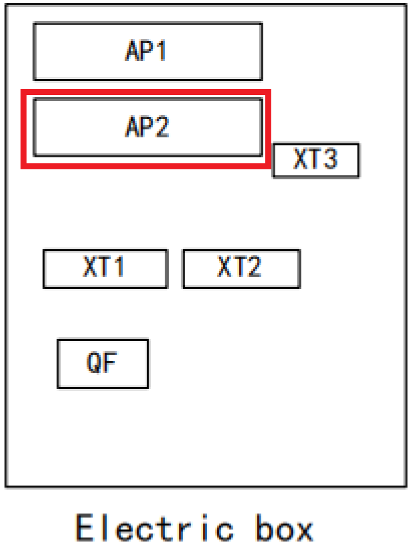
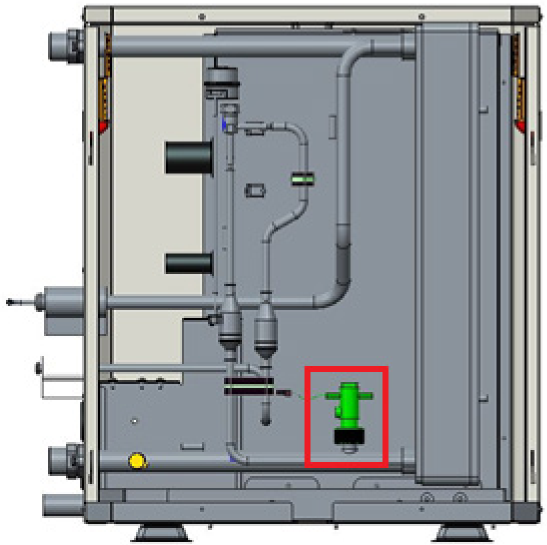
4.3.3.2 Electrical inspection

Step 1: Power off the ODU and power on it. When the hydro box 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 hydro box, 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	2000			100Ω±10Ω

4.3.4 Water Flow switch

Specifications	Description	
—	—	
Models: NRQR16L/A-T、NRQR30L/A-T		
Circuit diagram	Layout of electrical appliance box	Physical position
		

4.3.4.1 Mechanical inspection

Step1: Disconnect the power supply switch of the hydro box;

Step2: Check the water flow guiding direction in the top of water flow switch is vertical to the plate heat exchanger.

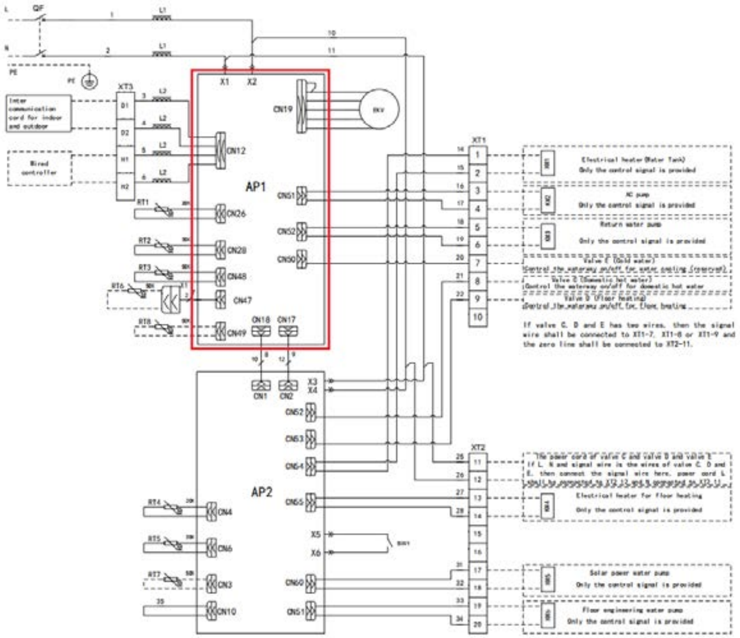
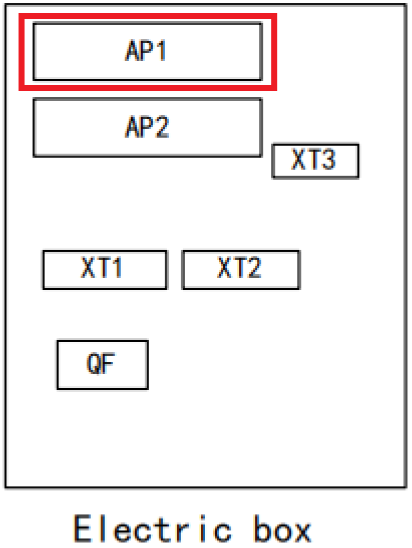
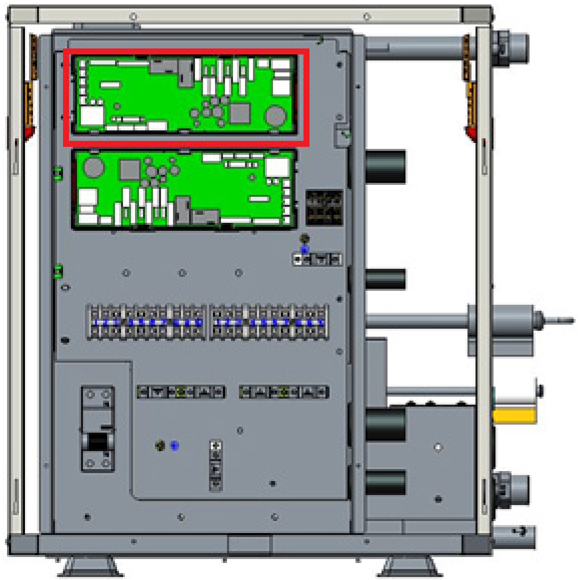
Step3: Check if the water flow switch can normally reset after being dialed.

4.3.4.2 Electrical inspection

The water flow switch used by the hydro box is normally open, use a universal meter to adjust to the diode position, put the red and black probes on the two leads of the water flow switch respectively, and dial the baffle of the water flow switch to check whether the water flow switch is normal.

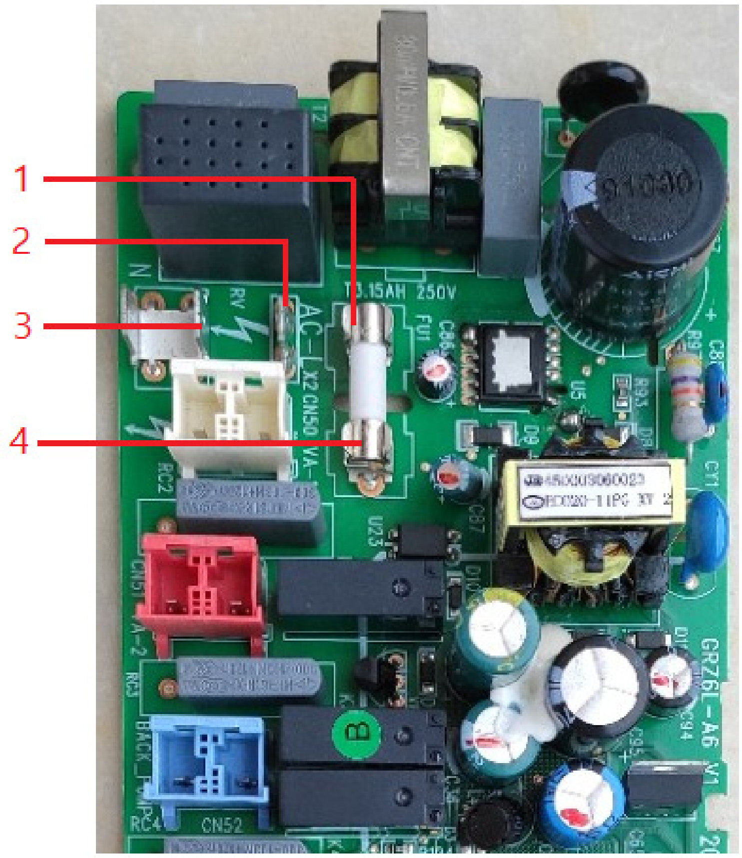
If the universal meter beeps, the water flow switch is normal, otherwise the water flow switch is abnormal.

4.3.5 Main Board

<table>
<tr><th colspan="3">Models: NRQR16L/A-T、NRQR30L/A-T</th></tr>
<tr><th>Circuit diagram</th><th>Layout of electrical appliance box</th><th>Physical position</th></tr>
<tr><td>
</td><td>
</td><td></td></tr>
</table>

Step 1: Dsconnect the power cable after power off the hydro box.

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
X2(3)	X1(2)	The main board is normal if the multimeter does not beep.
Cathode of fuse（4）	Anode of fuse (1)	The fuse is damaged and needs to be replaced if the multimeter does not beep.

5 Replacement of Key Unit Parts

5.1 Outdoor Unit

5.1.1 Preliminary Removing Procedure of the Main Body

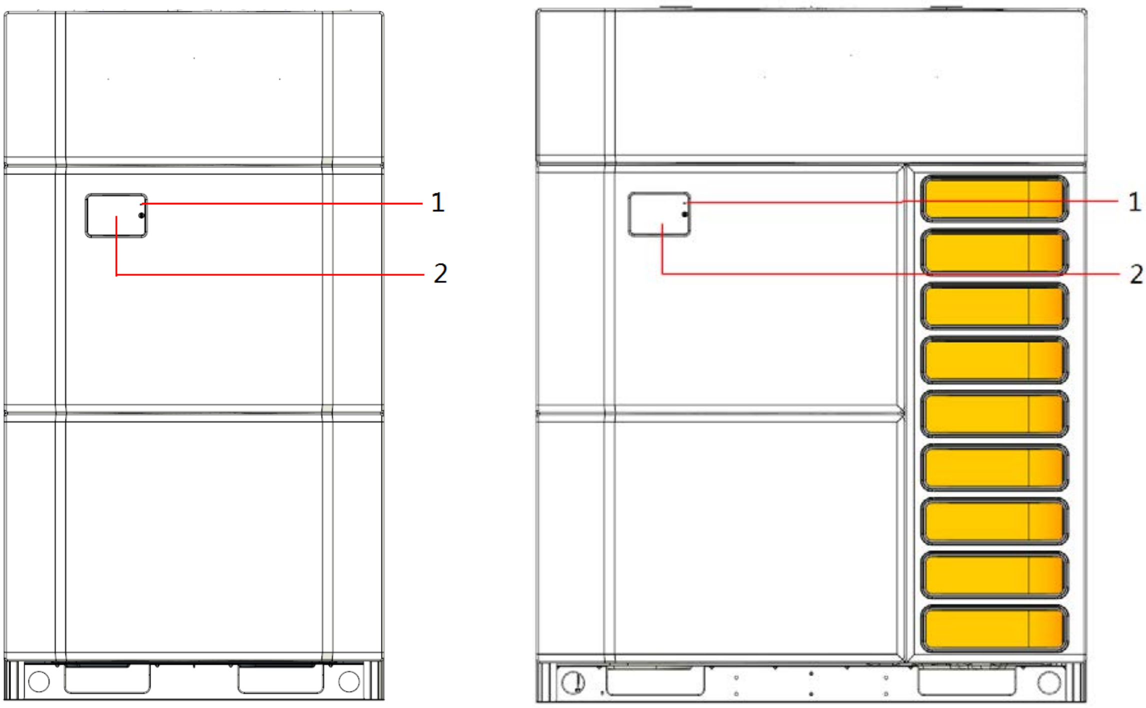
5.1.1.1 Removing the Unit Panel

5.1.1.1.1 Removing the maintenance port panel

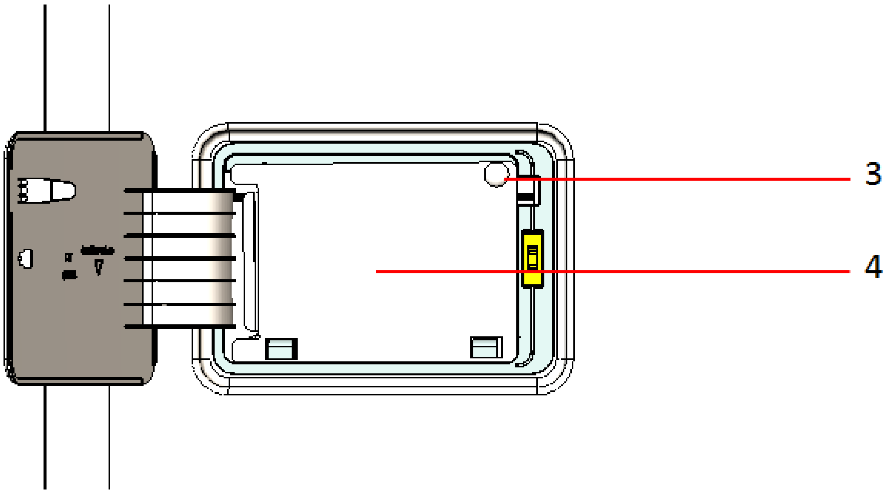
(1) Press the window in the bulkhead cover to open the window.

(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

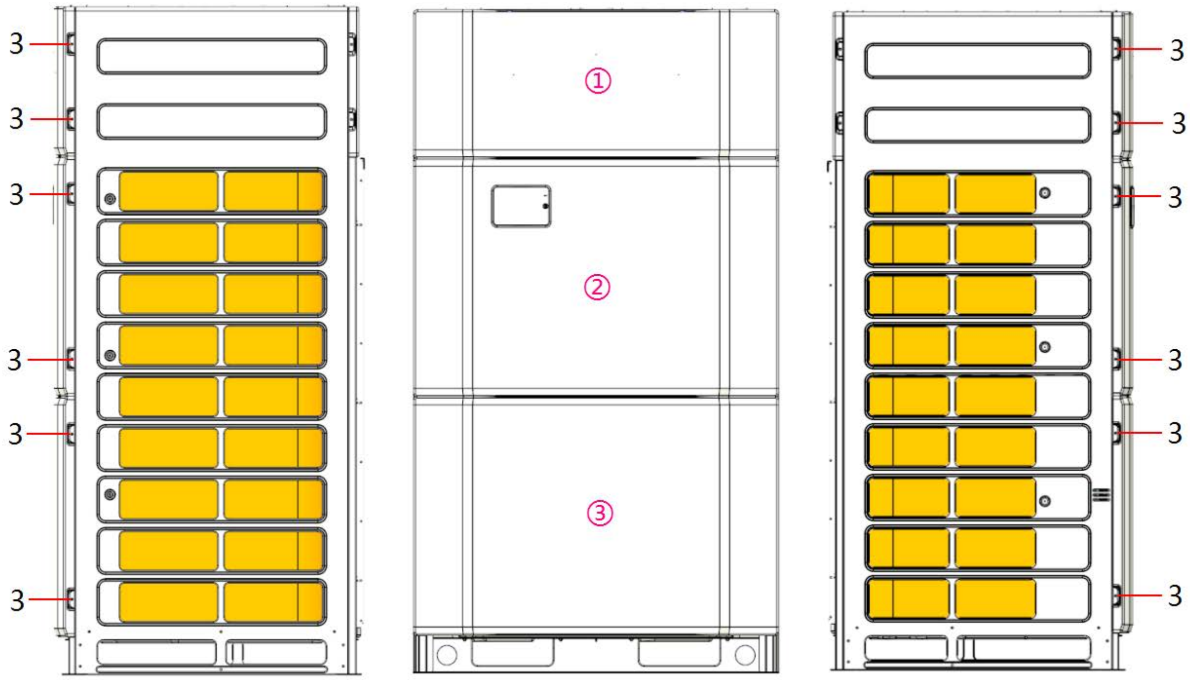


3 – Screw 4 - Service seal plate

5.1.1.1.2 Remove the unit cover plate (front), panel component (upper), panel (lower) (GMV-VQ224/280/335WM/C-X)

（1） Use screwdriver to remove the screws shown in Fig. ①②③.

（2） Remove the cover plate (front) ①, panel component (upper) ②, panel (lower) ③ of the unit.

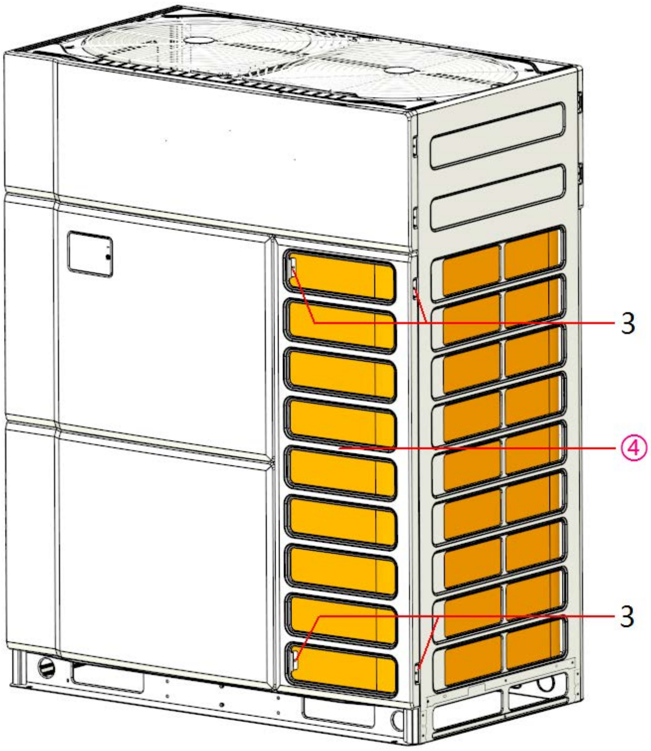


3—screw ①—cover plate (front) ②—panel component (upper) ③—panel (lower)

5.1.1.1.3 Remove the right panel of unit (GMV-VQ400/450/504/560/615WM/C-X)

（1） Use screwdriver to remove the screw of right panel④.

（2） Remove the right panel④ from the unit.

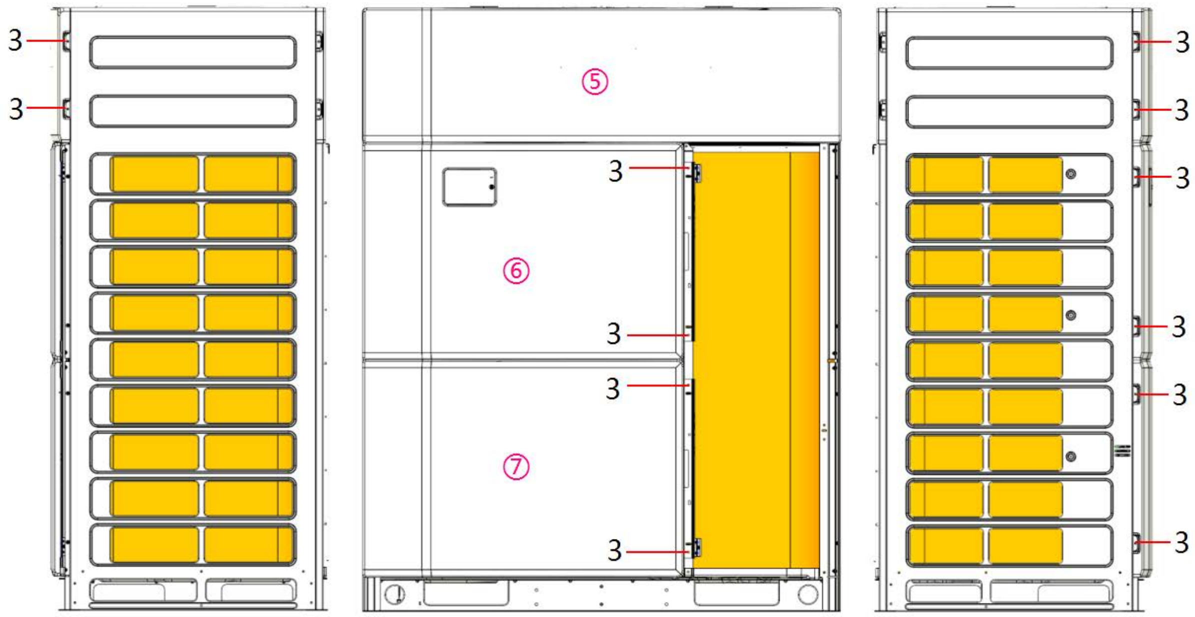


3—screw ④—right panel

5.1.1.1.4 Remove the unit cover plate (front), panel component (double fans), left panel (lower) (GMV-VQ400/450/504/560/615WM/C-X)

（1）Use screwdriver to remove the screws as shown in Fig. ⑤⑥⑦.

（2）Remove the cover plate (front) ⑤, panel component (double fans) ⑥, left panel (lower) ⑦ of the unit respectively.



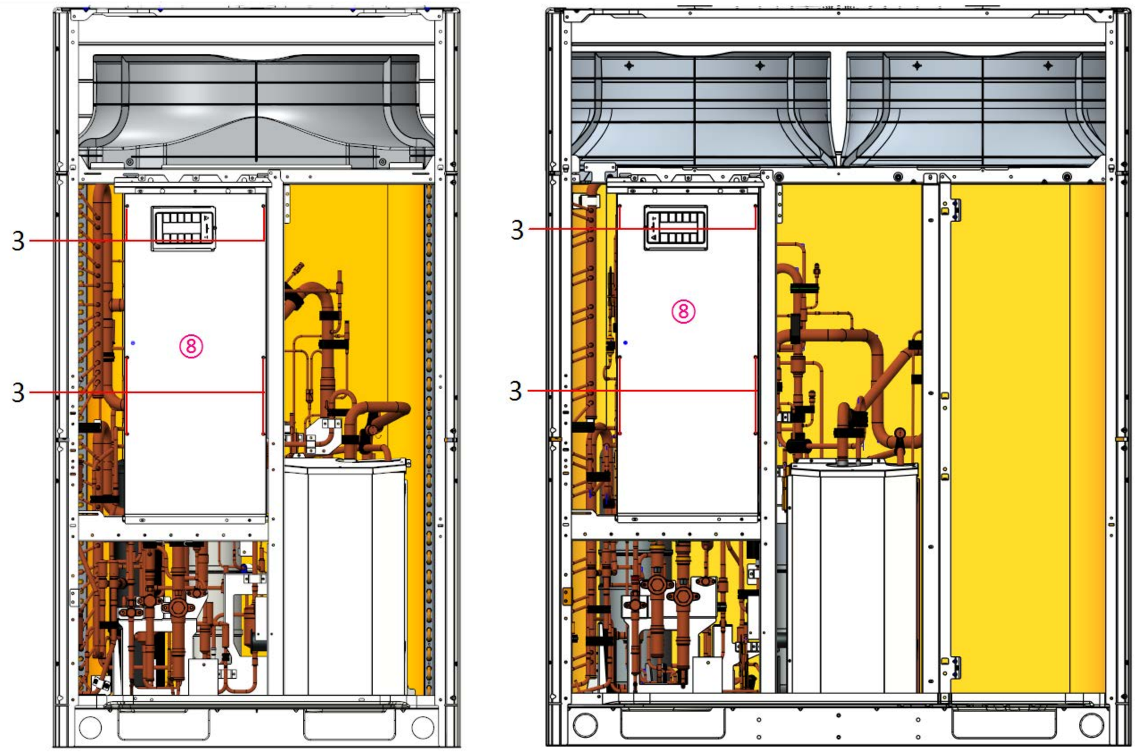
3—screw ⑤—cover plate (front) ⑥—panel component (double fans) ⑦—left panel (lower)

5.1.1.2 Remove the electric box cover

5.1.1.2.1 GMV-VQ224/280/335/400/450WM/C-X

（1） Use screwdriver to remove the screw as shown in ⑧electric box cover.

（2） Remove the electric box cover⑧.

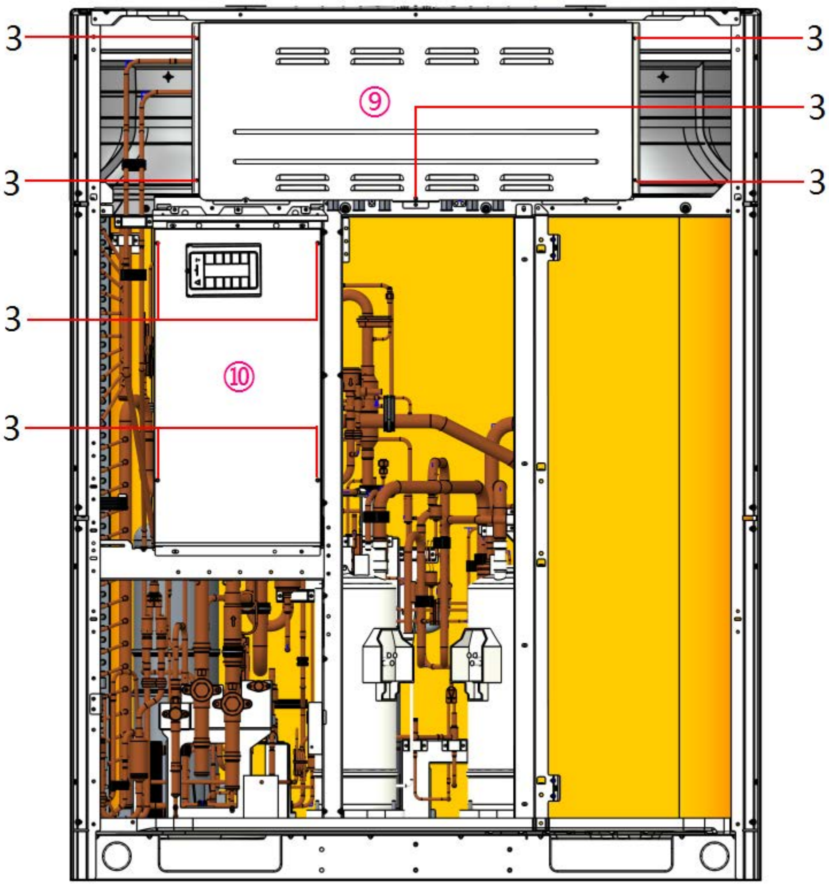


3—screw ⑧—electric box cover

5.1.1.2.2 GMV-VQ504/560/615WM/C-X

（1）Use screwdriver to remove the screws as shown in ⑨⑩ electric box cover.

（2）Remove electric box cover⑨⑩ from the unit.



3—screw ⑨—upper electric box cover ⑩—lower electric box cover

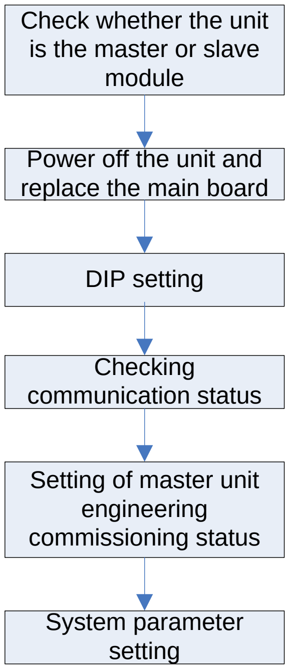
5.1.2 Removing the ODU Main Board

Preparations

(1) Use the Power circuit breaker to switch off the Power of the GMV6 HR 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.



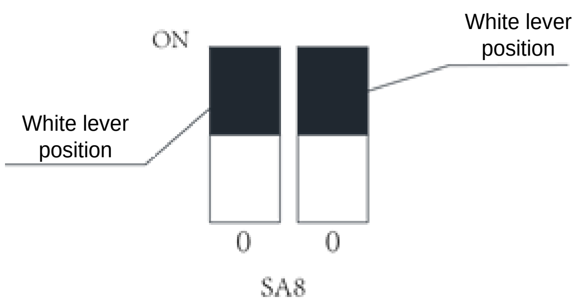
Removing procedure

(1) Check whether the unit is the master or slave module.

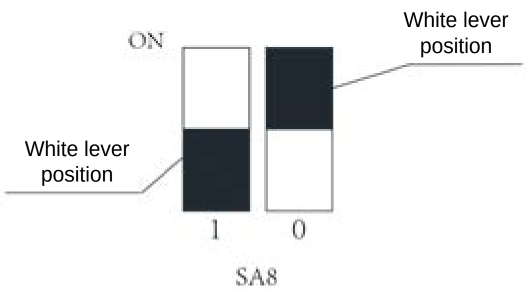
① It can be checked by the "master module setting DIP SA8" of the ODU.

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).

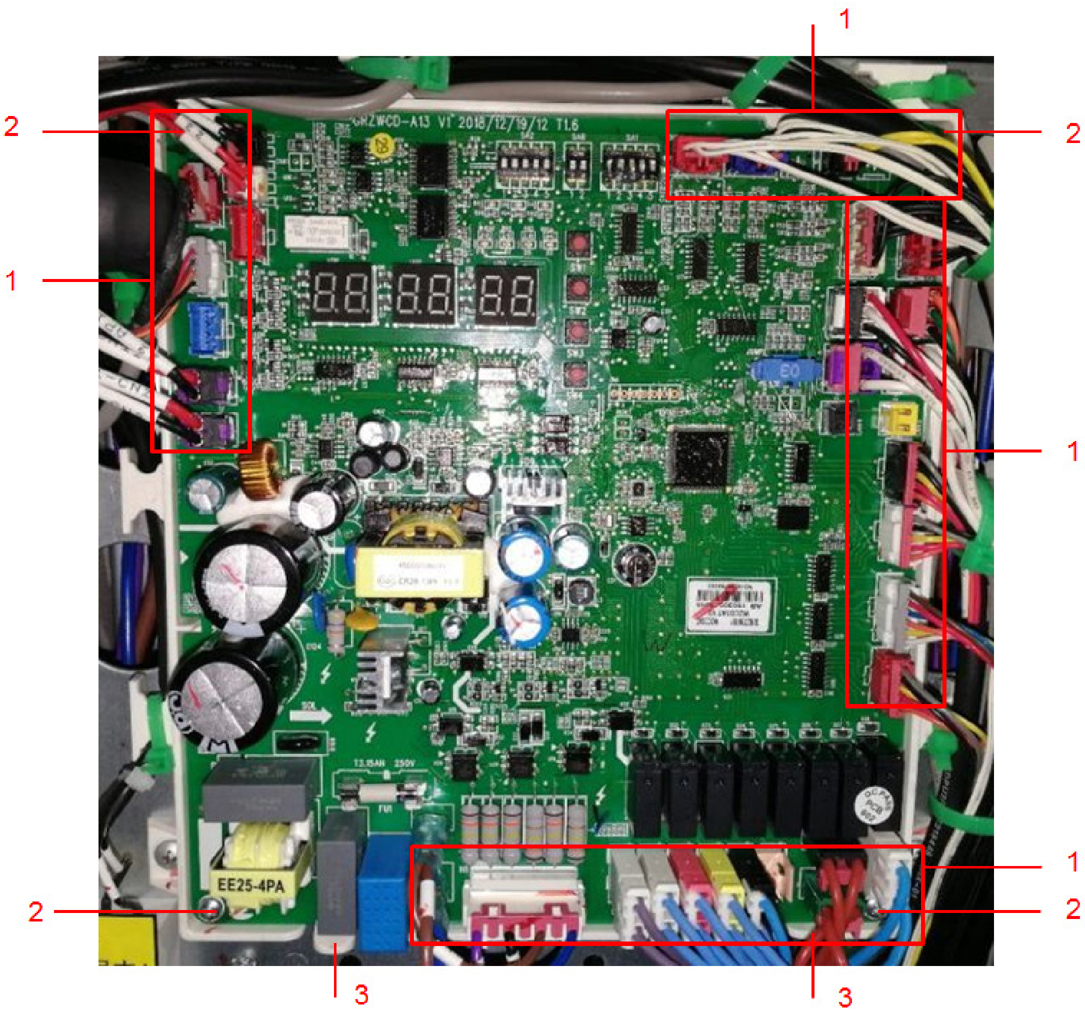
 Display status of LED1 Master module status	 Or  Or  Display status of LED1 Display status of LED1 Display status of LED1 Slave module status Slave module status Slave module status

(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.

5.1.3 Removing and Installing Electric Heating Belt

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6HR 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

5.1.4 Removing the Compressor

Step 1: Preparations before replacing

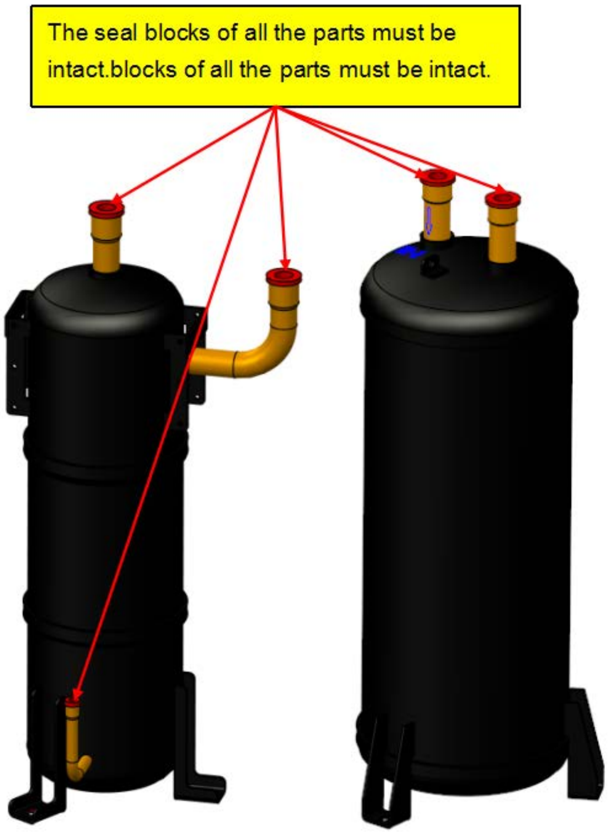
(1) Make sure that all the spare parts for replacement are in place.

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: Remove panel and electric box cover

（1） Operate according to Article 5.1.1.

（2） After removing the electric box cover, disconnect the power cord of outdoor unit and seal with insulated tape.

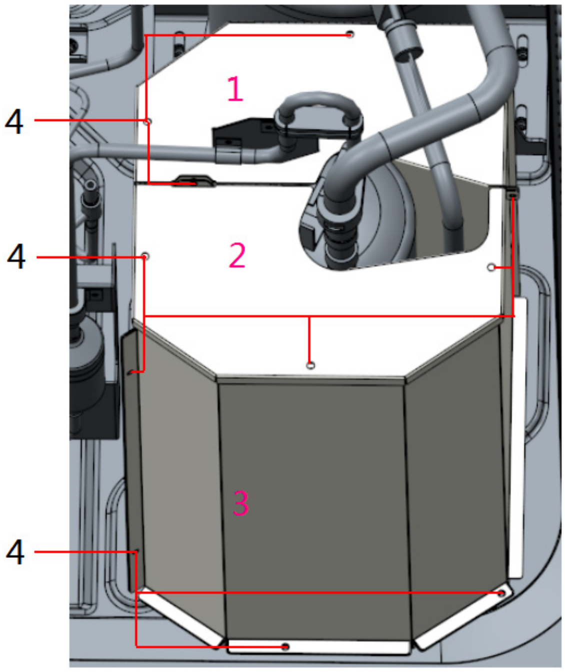
Step 4: Remove the sound insulation cover and sound insulation cotton

（1） Remove the sound insulation cover.

A. Applicable model: GMV-VQ224/280/335WM/C-X

①. Use cross screwdriver to remove screw 4.

②. Remove 1-upper cover plate 1, 2-upper cover plate 2, 3- side plate 3.

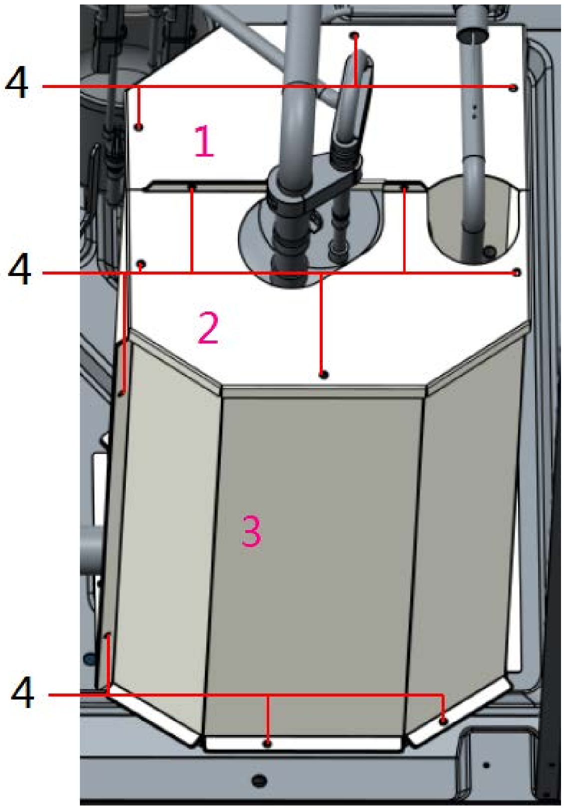


1—upper cover plate 1 2-upper cover plate 2 3- side plate 3 4—screw

B. Applicable model: GMV-VQ400/450WM/C-X

①. Use cross screwdriver to remove screw 4.

②. Remove 1-upper cover plate 3, 2-upper cover.



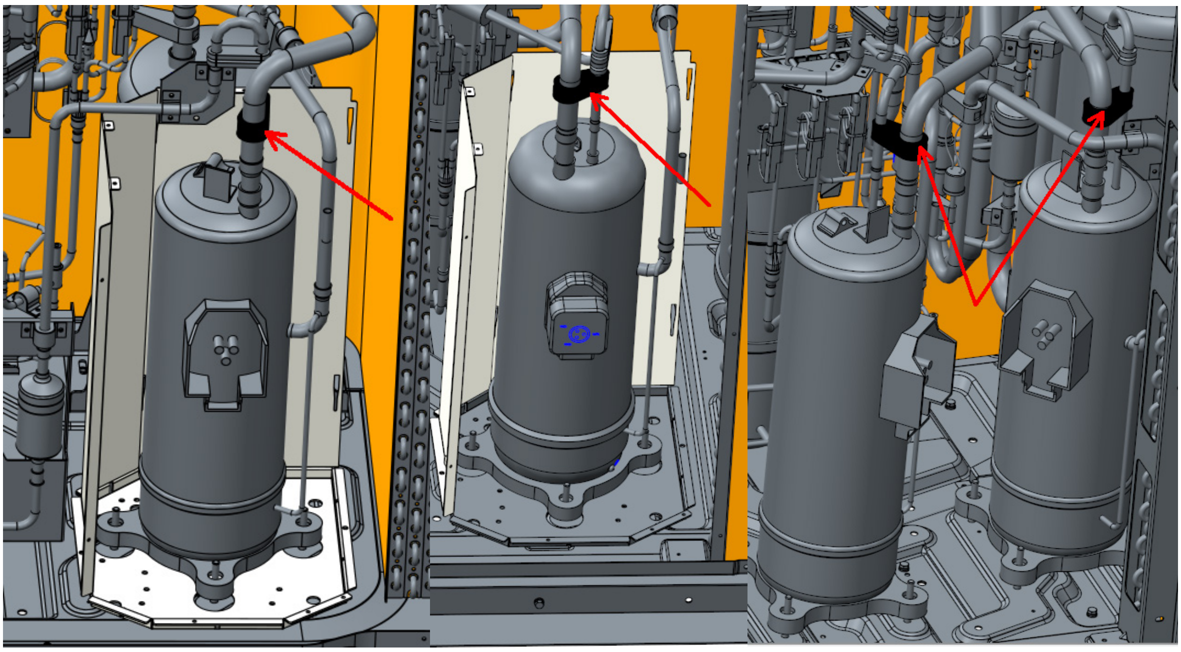
1—upper cover plate 3　　2—upper cover plate 4　　3—side plate 3　　4—screw

（2） Remove the sound insulation cotton

Step 5: Clean the electric components and pipe fixing block

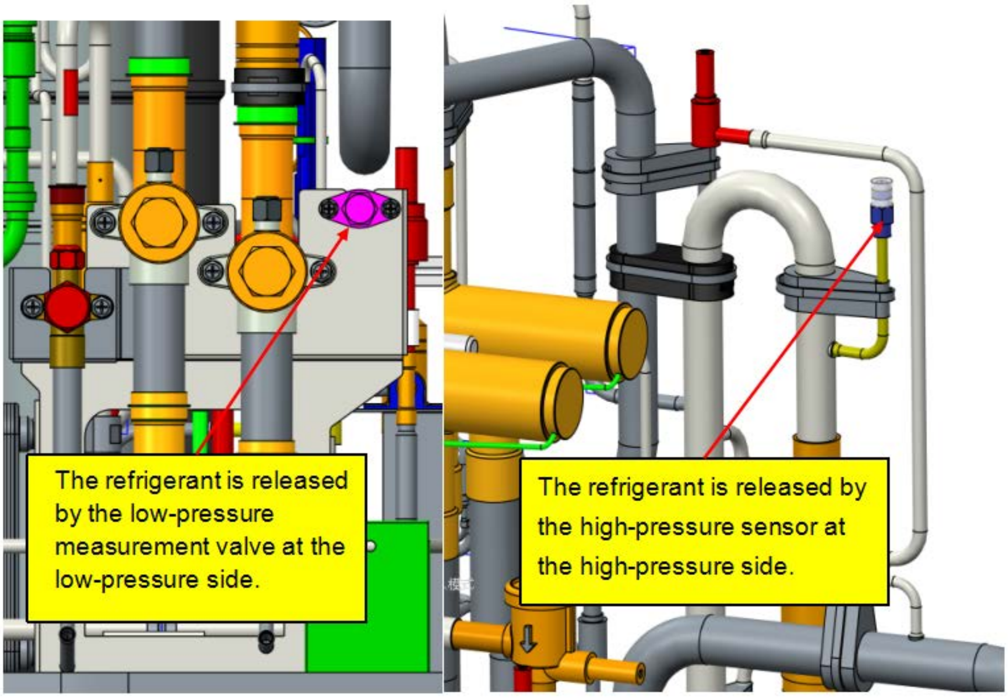
（1）When removing compressor wire, temperature sensor and electric heater, please make corresponding mark for re-wiring after replacement.

（2）Remove the fixing block between the inhalation pipe and enthalpy-adding pipe, to prevent burning the pipe fixing block when welding the nozzle.



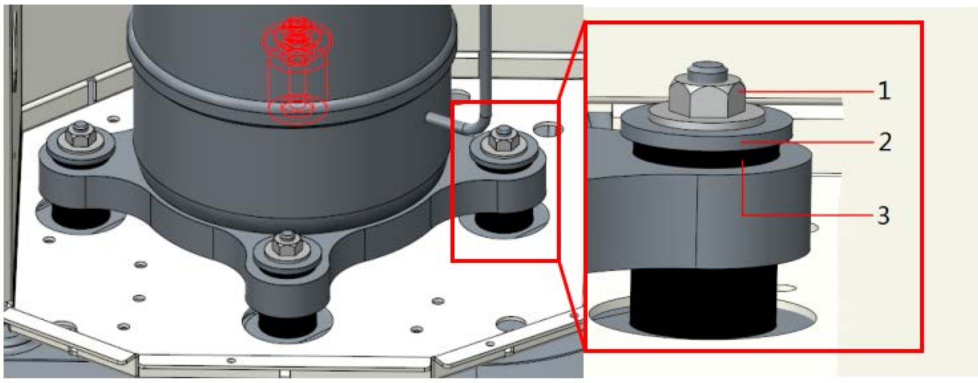
Step 6: Discharging refrigerant

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 7: Removing compressors

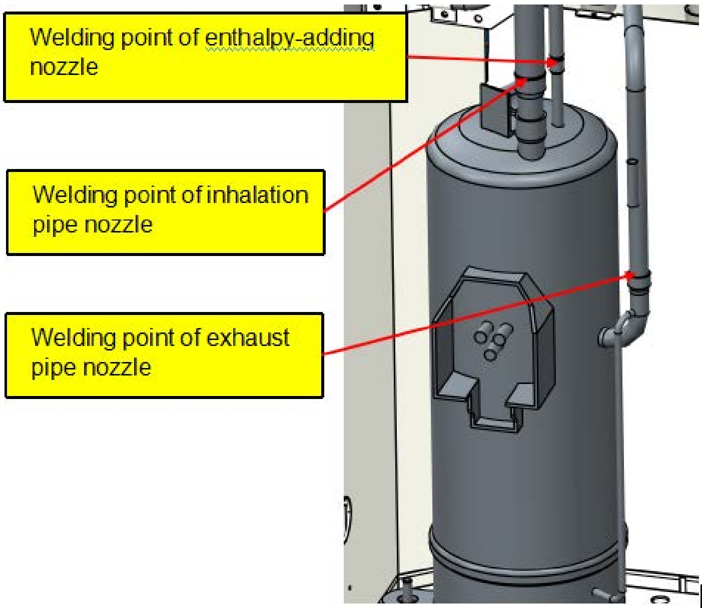
（1）Remove the fixing nut, gasket and damping washer of compressor.



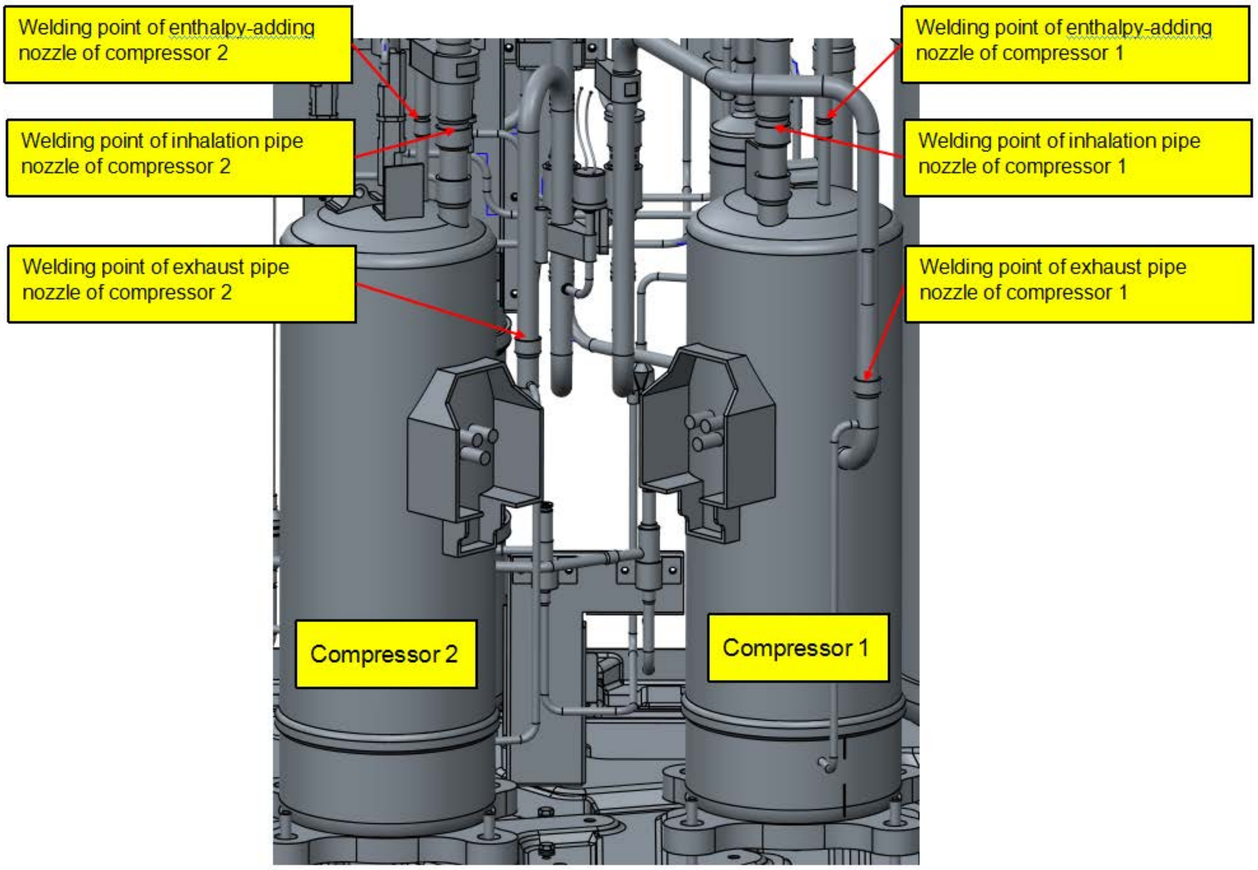
1—nut　　2—gasket　　3—damping washer

（2）Weld the welding point for nozzle

A. Applicable model: GMV-VQ224/280/335/400/450WM/C-X



B. Applicable model: GMV-VQ504/560/615WM/C-X



Warning!

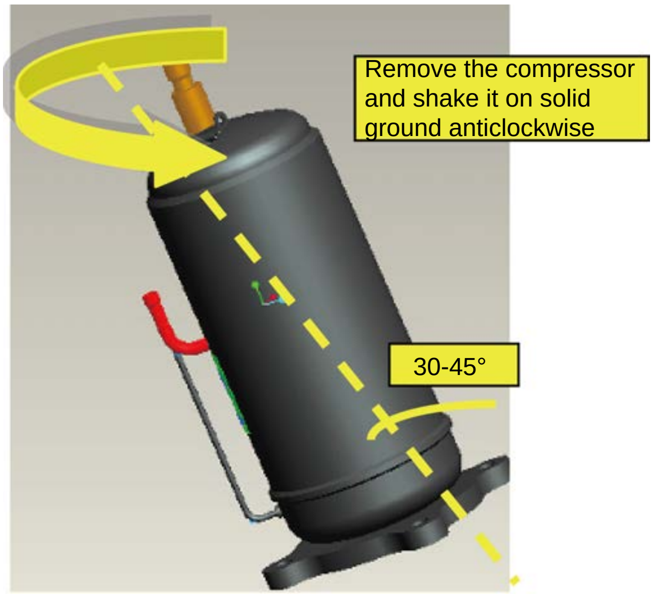
①During welding, please make good protection.

②After unsoldering the welding point, separate the pipe nozzle and the compressor nozzle for ten seconds to prevent the two nozzles from sticking together.

After removing the compressor, check the oil quality. If the oil is clear and free of impurities, it can be considered that the oil quality in the system is not contaminated. At the same time, if the valve parts and oil circuit of the unit are normal, only the compressor needs to be replaced.

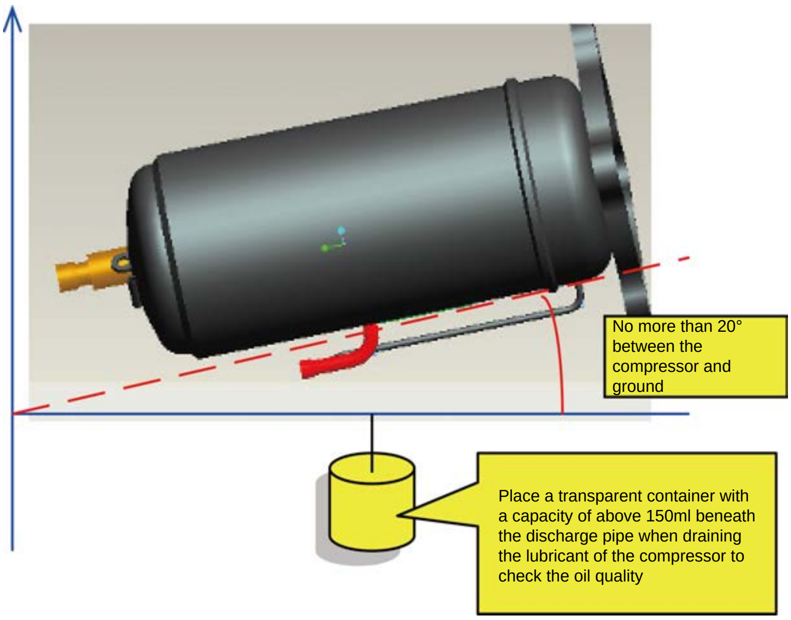
The procedure of checking oil quality is described as follows:

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 8: Remove the gas-liquid separator and oil separator

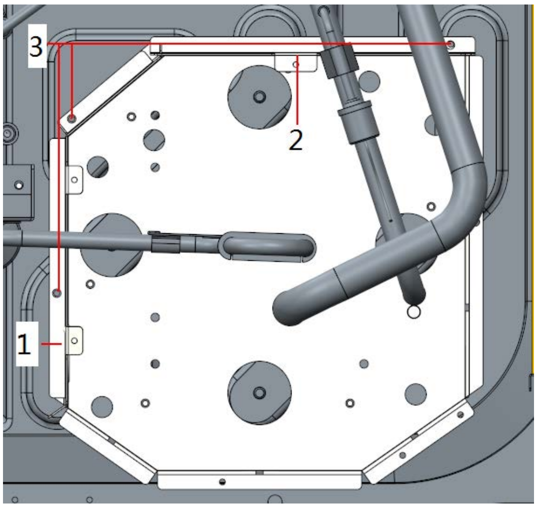
When the oil of system is contaminated, please check the components of the unit, including the condition of gas-liquid separator and oil separator.

1）Remove the confirmed gas-liquid separator

（1）Remove the sound insulation cover side plate 1 and side plate 2 (applicable to model GMV-VQ224/280/335/400/450WM/C-X).

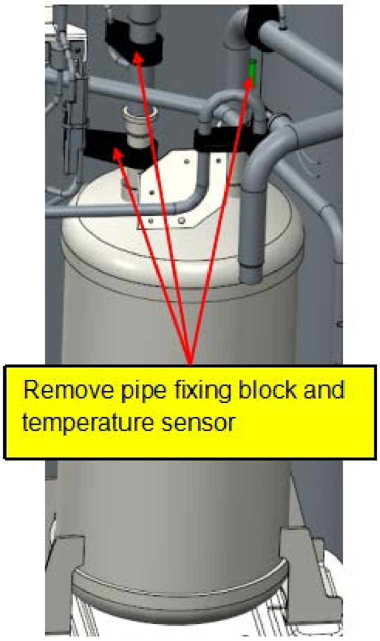
①. Use cross screwdriver to remove screw 3.

②. Remove 1-side plate 1, 2-side plate 2.



1-side plate 1 2-side plate 2 3—screw

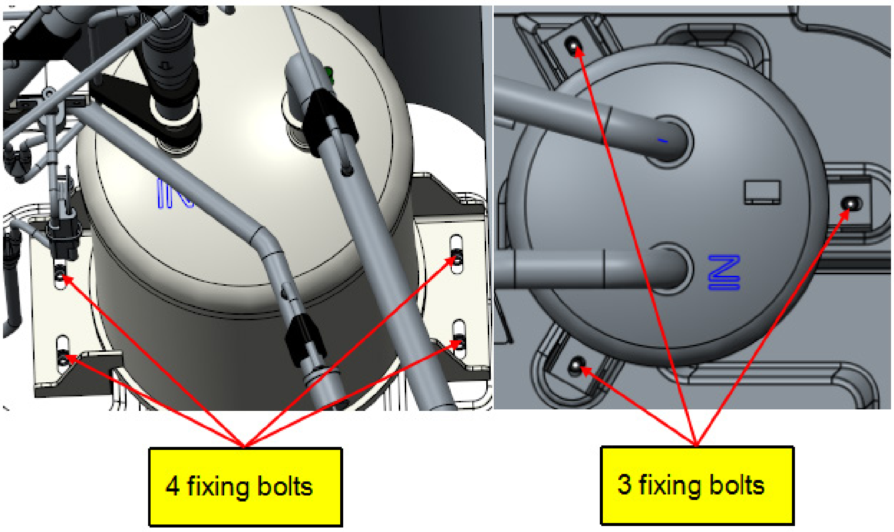
（2）Remove temperature sensor and pipe fixing block, prevent burning when welding the pipe nozzle (applicable to model GMV-VQ224/280/335WM/C-X).



(3) Remove the fixing bolt, take away the gas-liquid separator.

①. Remove 4 fixing bolts (applicable to model GMV-VQ224/280/335WM/C-X).

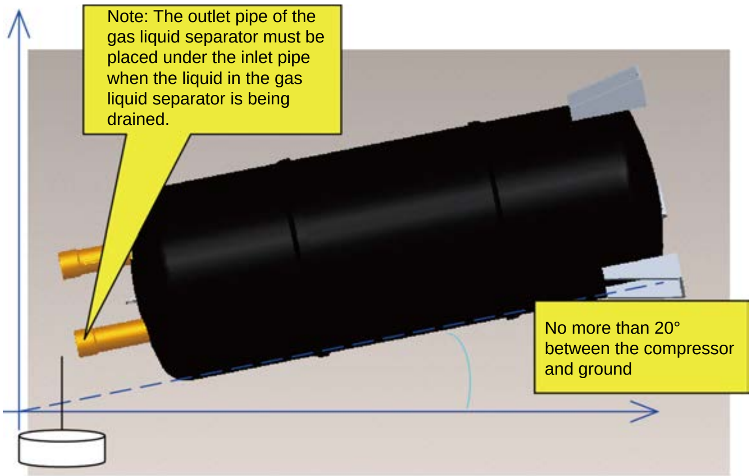
②. Remove 3 fixing bolts (applicable to model GMV-VQ400/450/504/560/615WM/C-X).



Warning!

①. Safety protection must be done during welding.

②. After unsoldering the welding point, separate the pipe nozzle and the gas-liquid separator nozzle for ten seconds to prevent the two nozzles from sticking together. After taking out the gas-liquid separator, check whether there are impurities and other substances in the gas-liquid separator. For the checking process, please refer to the compressor oil quality confirmation.



It is also necessary to use a transparent container to contain the impurities in the gas-liquid separator, observe the color of the impurities and seal them, and return to the factory to check the impurities.

Notes:

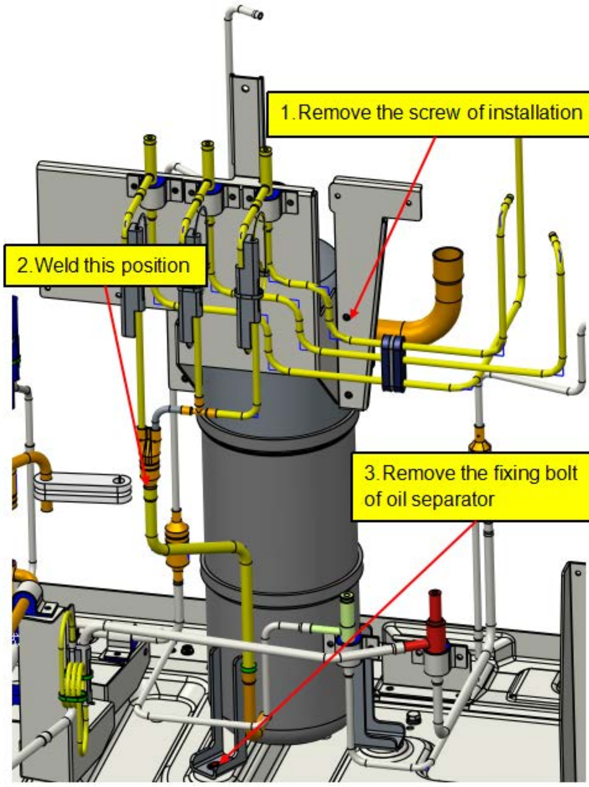
If the compressor is damaged and needs to be replaced, the gas-liquid separator must be replaced at the same time! Regardless of whether the gas-liquid separator contains impurities or other abnormal conditions.

2）Remove the confirmed oil separator.

（1）The four-way valve pipeline needs to be removed before removing the oil separator. Refer to 5.1.9 for the removal method.

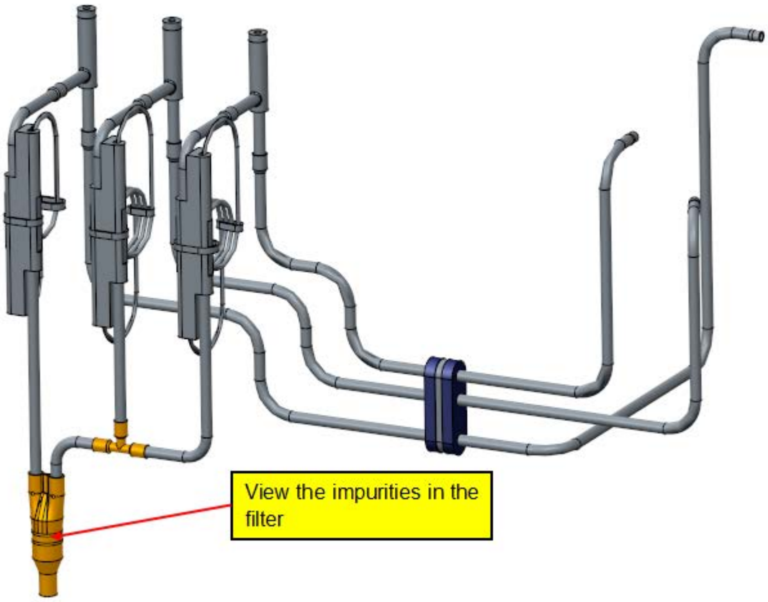
（2）Remove the pipes connected with the four-way valve pipe and the oil separator (except the oil return pipe).

（3）Remove the oil separator as follows, pour the oil separator, use a container to collect, and seal it for inspection.



3）Confirm the compressor oil return pipe.

Remove the compressor oil return pipeline and check the impurities in the pipeline.



 **CAUTION!**

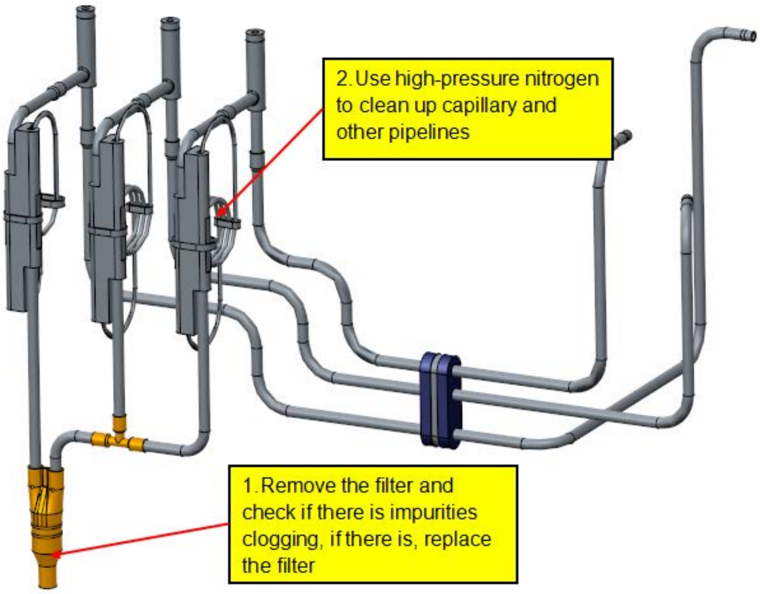
Check the system components that need to be replaced, and ensure that pipe openings of the damaged components are sealed with tape or the like in time to ensure that they are in good condition for further analysis.

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.

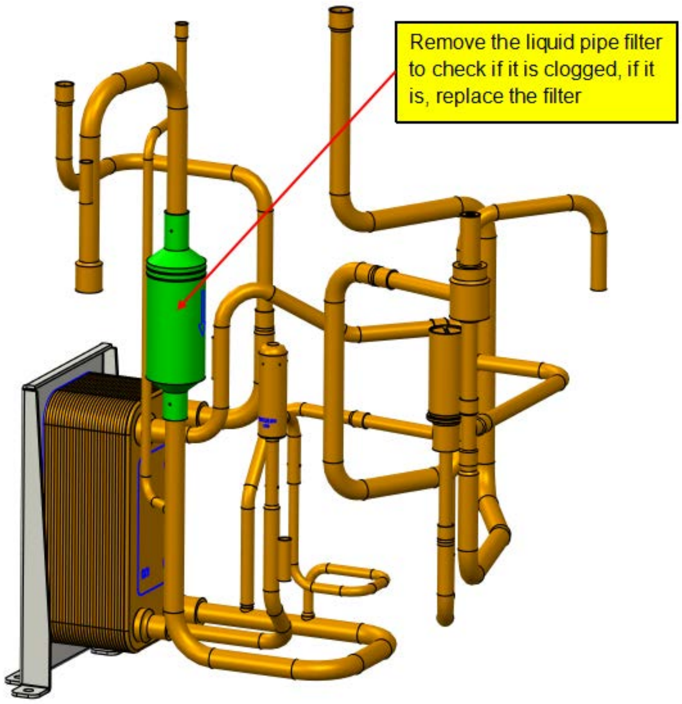
Step 9: Removing pipeline system

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. (The liquid pipe filter is in the plate heat exchanger assembly, see 5.1.11 for the specific disassembly method)



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.

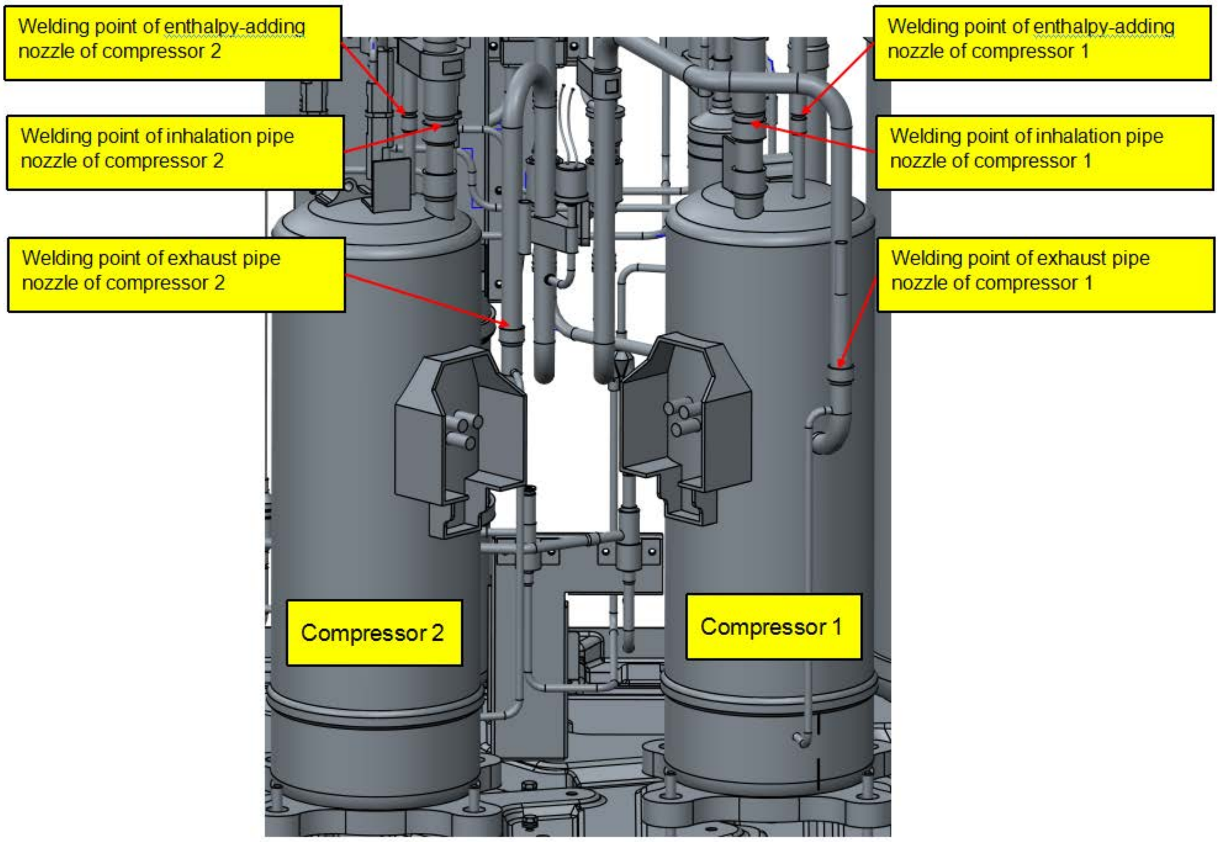
Step 10: Replacing compressors

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, GMV-VQ615WM/C-X 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.

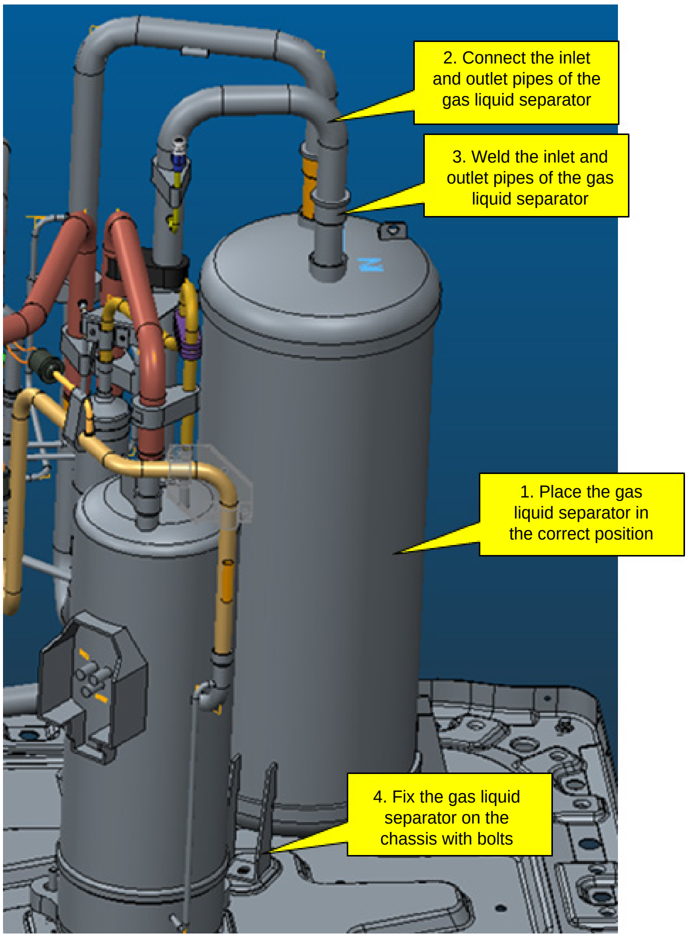
CAUTION!

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 11: Checking/replacing gas-liquid separator

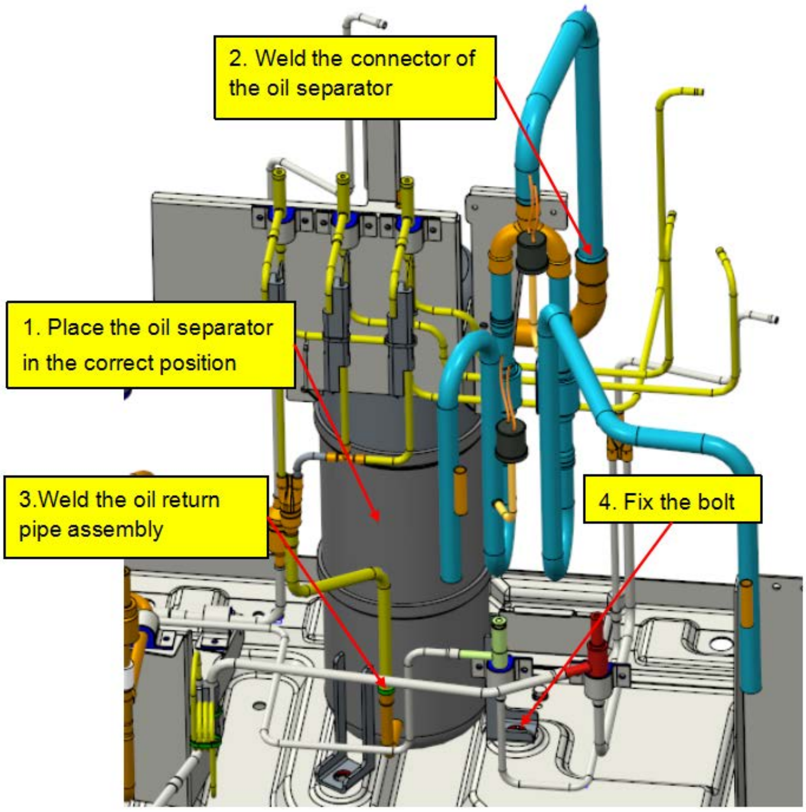
※ **Note:** If a damaged compressor in the system needs to be replaced, the gas-liquid separator must be replaced at the same time to avoid abnormal conditions inside the gas-liquid separator, which may affect the safety and reliability of the system.

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 GMV-VQ450WM/C-X 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 GMV-VQ280WM/C-X. 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.

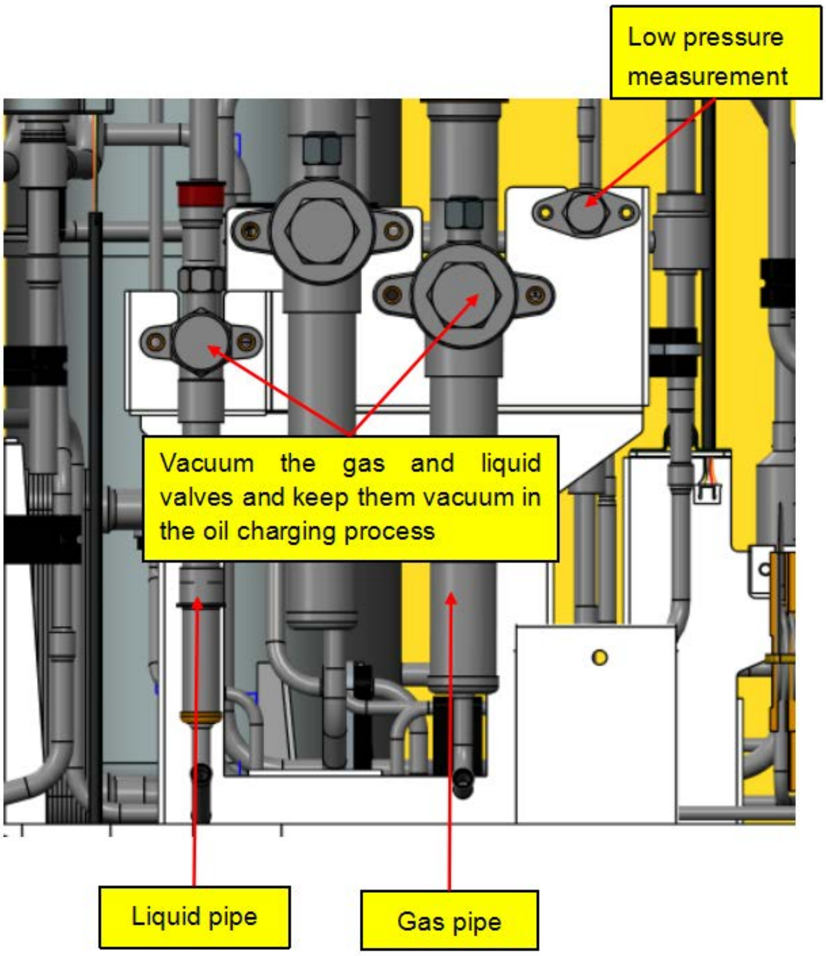
2) Connect the gas and liquid valves of the unit and vacuum the unit for over 30 minutes.

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.

5.1.5 Removing and Installing Blades

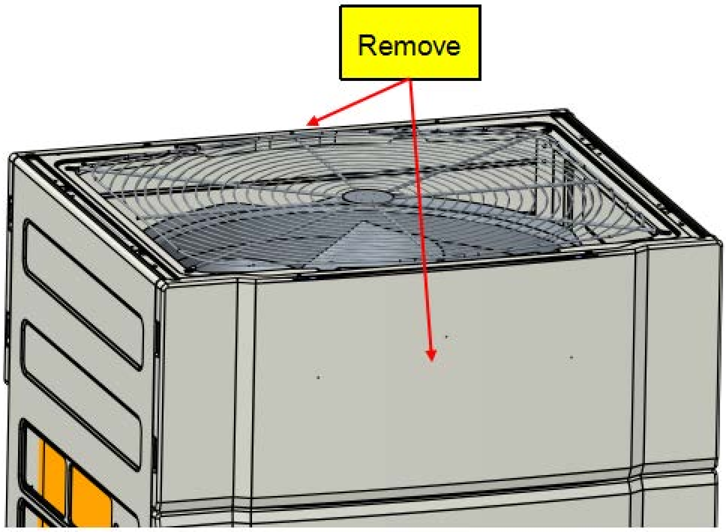
Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.

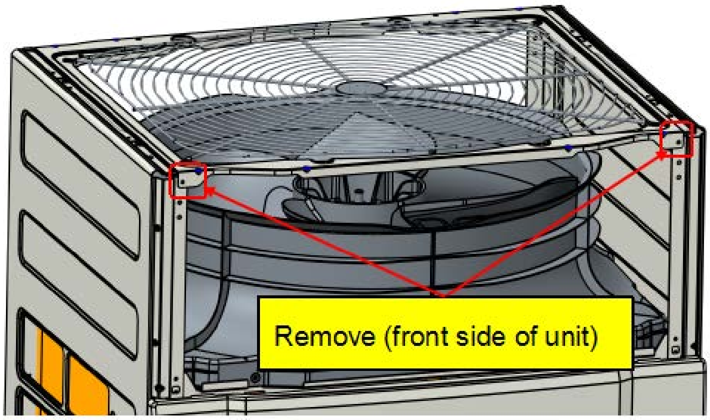
(2) Remove the unit top cover assembly.

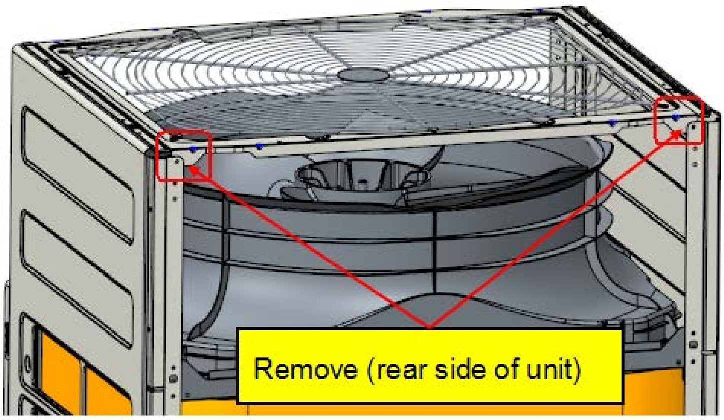
A. Applicable to model GMV-VQ224/280/335WM/C-X.

①Remove the front and rear cover plate

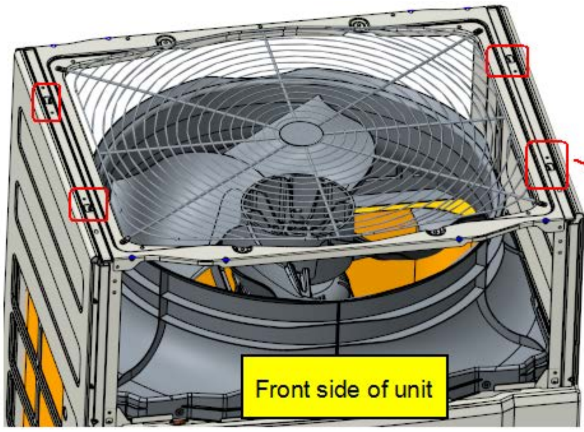


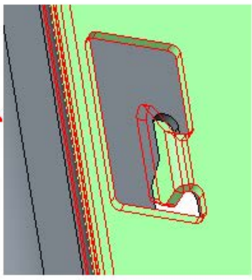
②. Remove the fixing screws





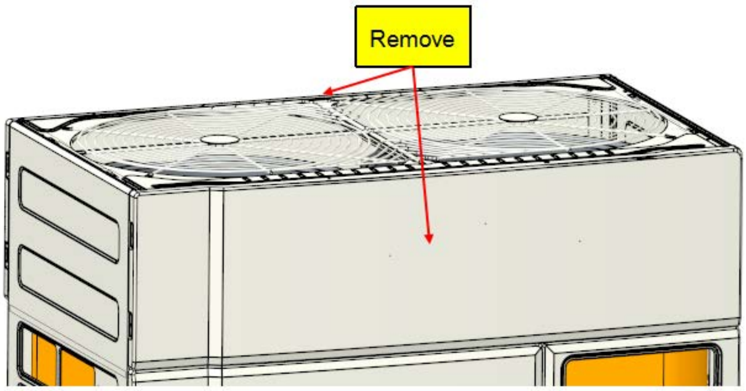
③. Remove the top cover sub-assy and 4 buchkes





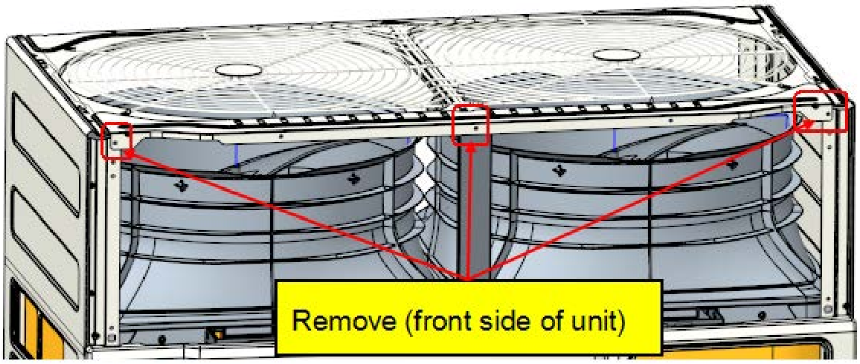
B. Applicable to model GMV-VQ400/450/504/560/615WM/C-X.

①Remove the front and rear cover plate

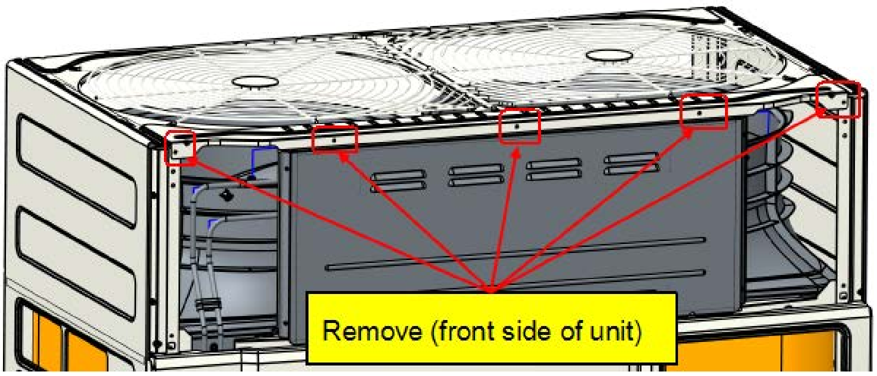


②. Remove the fixing screws.

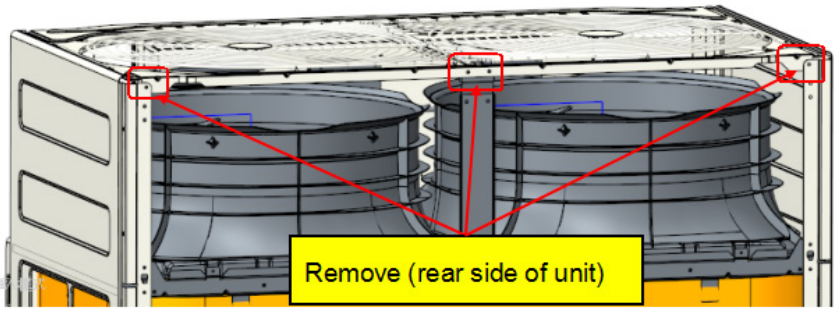
a. Applicable to model GMV-VQ400/450WM/C-X.



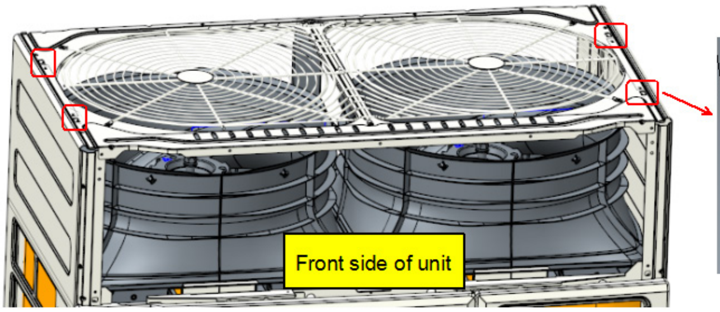
b. Applicable to model GMV-VQ504/560/615WM/C-X.

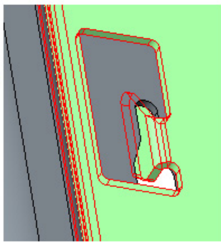


c. Applicable to model GMV-VQ400/450/504/560/615WM/C-X.



③. Remove the top cover sub-assy and 4 buchkes





Removing procedure

(1) Use a wrench to remove the fastening nut, spring washer, and flat piece in sequence.

(2) Take off the blade ⑦.

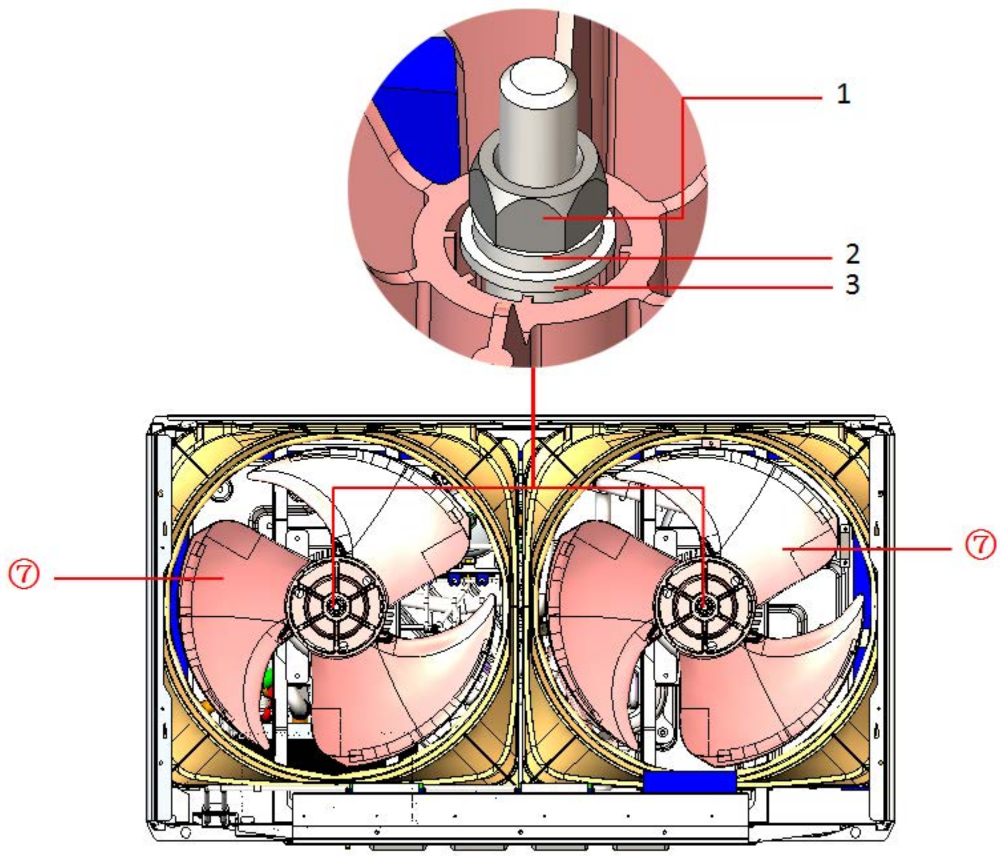
Installation procedure

(1) Use the power circuit breaker to switch off the power of the GMV6 HR 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.

5.1.6 Removing and Installing Fan

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.

(2) Remove the unit's panel, top cover and upper electrical appliance cover by referring to 5.1.5 Removing and Installing Blades.

Removing procedure

(1) Disconnect the fan connection port.

(2) Remove the blades by referring to the 5.1.5 Removing and Installing Blades.

(3) Remove the bolts as shown in the figure and remove the fan.

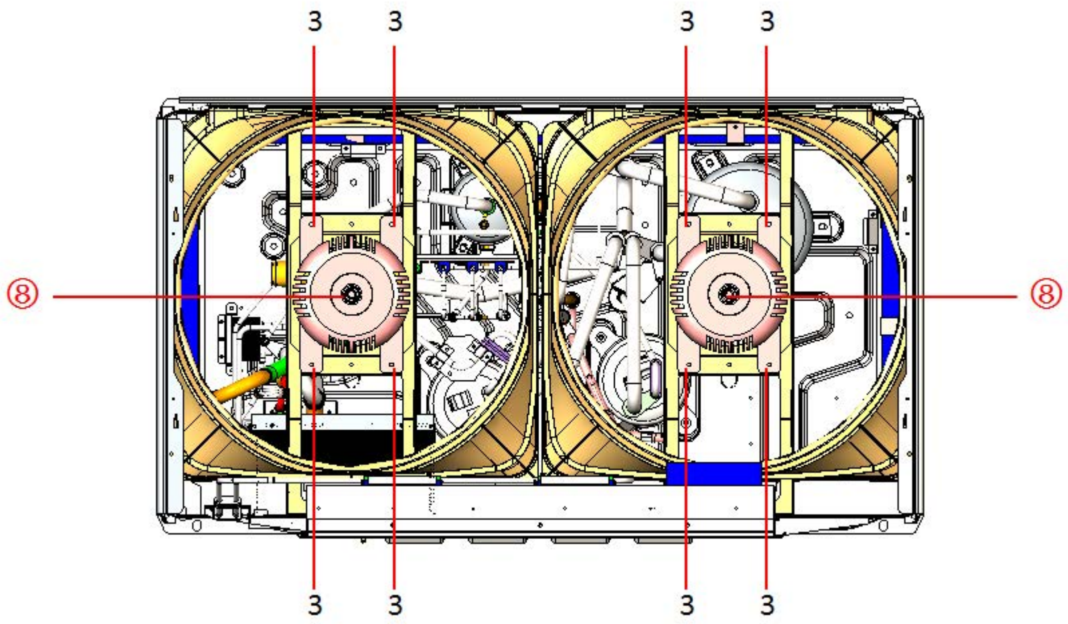
Installation procedure

(1) Install a new fan on the motor bracket and fix the fan feet.

(2) Install the blades by referring to the 5.1.5 Removing and Installing Blades.

(3) Connect the fan according to the original wiring.

(4) Install the unit's top cover assembly and panel.



3 - bolt; ⑧ - blade.

5.1.7 Removing and Installing Condenser

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.

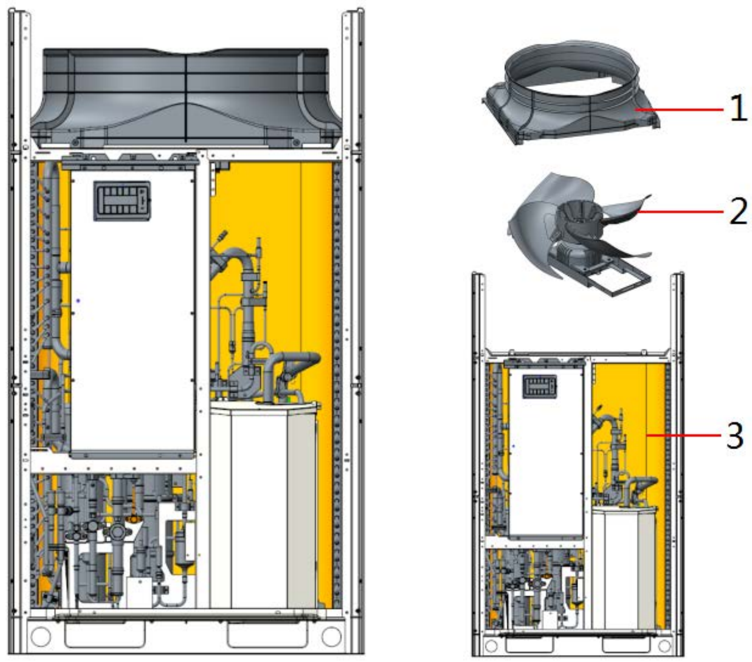
(2) Make sure that the unit pipeline system is free of refrigerant.

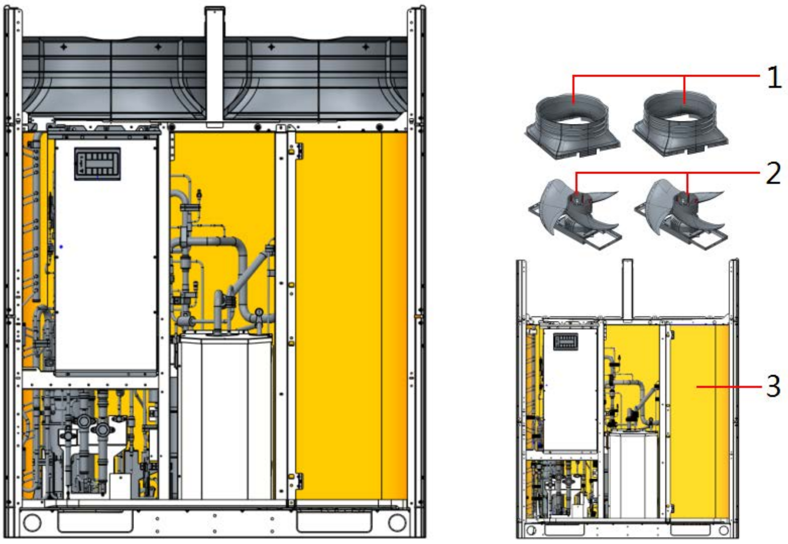
(3) Remove the unit's panel by referring to 5.1.1 Removing and Installing the Unit Panel.

(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.

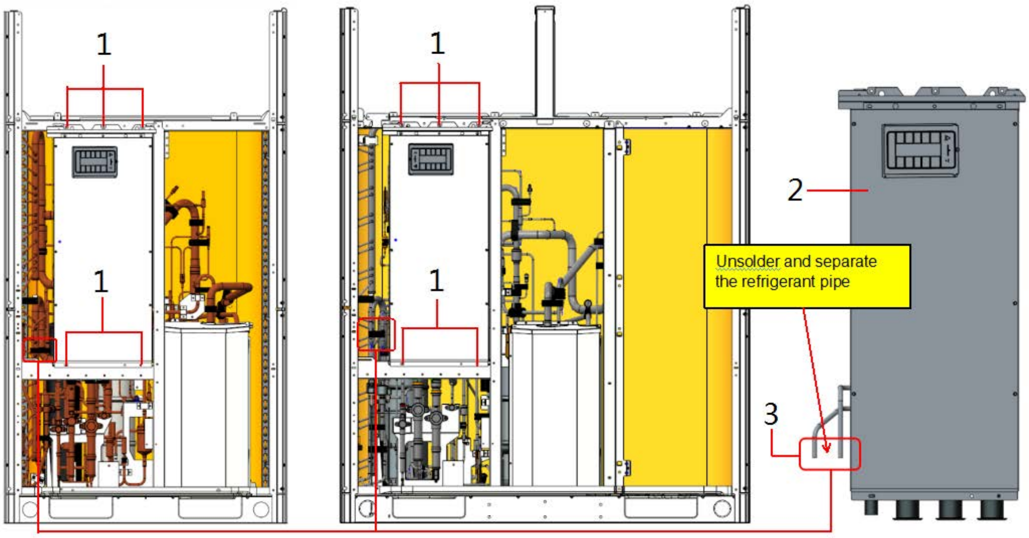




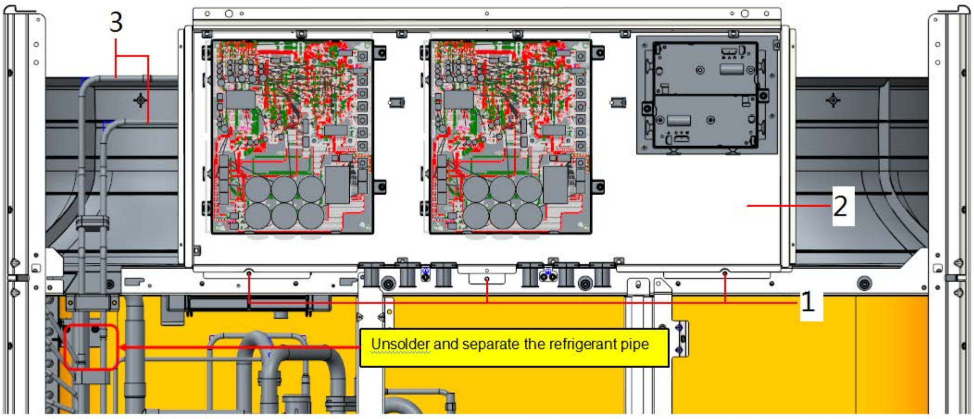
(2) Remove the electrical appliance box: Use a screwdriver to remove the screw that secures the electrical appliance box and remove the electrical appliance box 2.

Notes:

①Before removing the electric box of GMV-VQ224/280/335/400/450WM/C-X model, please unsolder and pull out the two refrigerant pipes of radiator of electric box.



②Before 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.

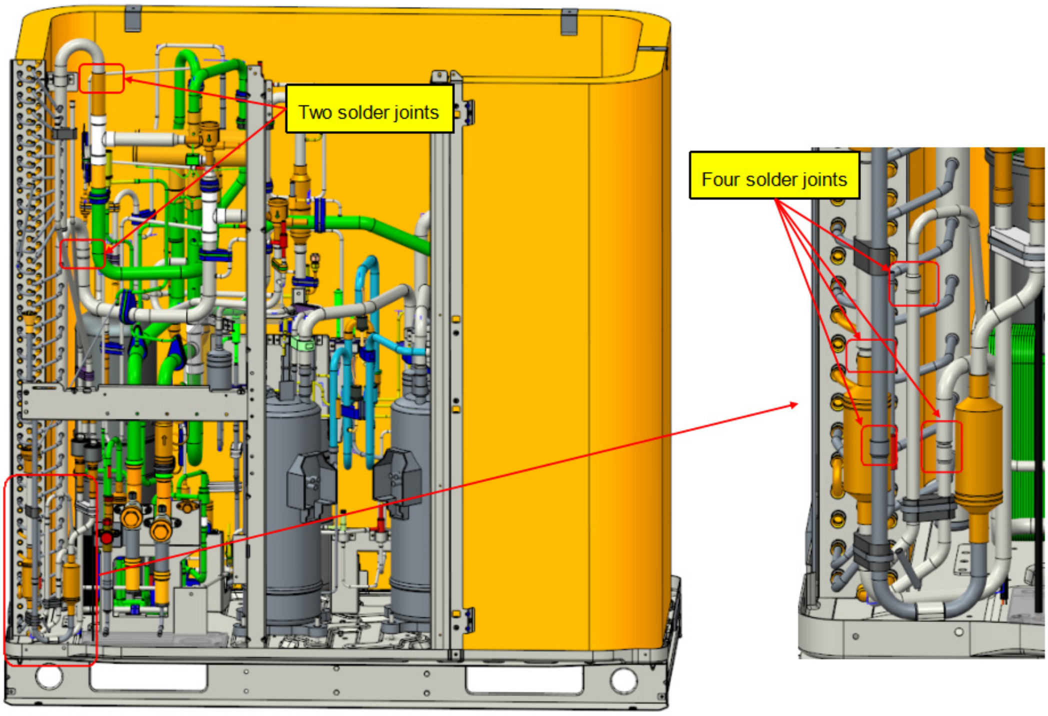
(4) Use a screwdriver to remove the two screws that connect the condenser to the chassis.

(5) Before removing the electric box of GMV-VQ224/280/335/400/450WM/C-X model, please unsolder and pull out the two refrigerant pipes of radiator of electric box.

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 six 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 scre.

5.1.8 Removing and Installing Four-way Valve Coil

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR 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
2
3

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.

5.1.9 Removing and Installing Four-way Valve and pipeline

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR 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.

(4) To remove the electric box of the unit, please refer to section 5.1.7 Remove the Condenser.

(5) Remove the upright column and middle beam of the unit.

NOTE: There is no need to remove the electric box of GMV-VQ504/560/615WM/C-X model.

Removing procedure

(1) Remove the 4-way valve coil by referring to 5.1.8 Replacing 4-way Valve Coil.

(2) Remove the pipe fixing blocks near the connection of the four-way valve and pipeline and the pressure vessel (gas-liquid separator, oil separator), condenser gas collection pipe, check valve (high and low pressure gas pipe, liquid pipe), and the fixing blocks and sheet metal brackets that fix other pipelines on four-way valves and pipelines. Prevent the pipe fixing blocks from being burnt during welding.

(3) Use gas welding to heat up the connections between the four-way valve and pipeline and the pressure vessel (gas-liquid separator, oil separator), condenser gas collection pipe, and check valve (high and low pressure gas pipe, liquid pipe), and then pull out the four-way valve and pipes, it should be filled with nitrogen for protection during welding. Refer to Table 1 for nitrogen pressure.

Table 1 Nitrogen Pressure for Pipeline Assembly Welding

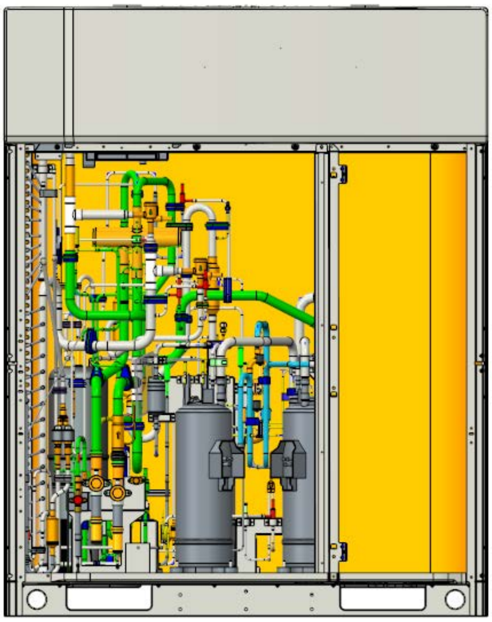
Pipe diameter range (mm)	Nitrogen pressure range (MPa)	Pipe length (m)	Shortest pre-charge time (s)	Shortest hysteresis nitrogen charging time (s)
Φ6~Φ9.52	0.01~0.05	≤2	10	10
Φ12~Φ16	0.01~0.08	≤2	15	20
Φ19~Φ22	0.03~0.1	≤3	30	20
Φ25~Φ28	0.03~0.1	≤3	30	30
Φ34.9~Φ41.3	0.03~0.1	≤3	35	60
Φ53.9~Φ104.8	0.03~0.1	≤3	75	400

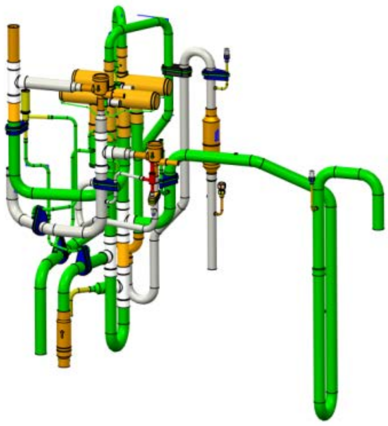
(1) Before the 4-way valve is welded, record the direction of the 4-way valve and the installation position of each nozzle.

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.





Installation procedure

(1) Install the new 4-way valve and pipeline to the correct position.

(2) Nitrogen protection should be applied during welding. Refer to Table 1 for nitrogen

pressure.

(3) Install the 4-way valve coil by referring to 5.1.8 Installing 4-way Valve Coil.

(4) Install other components.

(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) After checking that there is no problem, buckle the front panel and tighten the screws.

5.1.10 Removing and Installing Electronic Expansion Valve

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR 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 or rubber sleeve on the electronic expansion valve.

(2) Rotate the electronic expansion valve coil counterclockwise until it is released and then remove it.

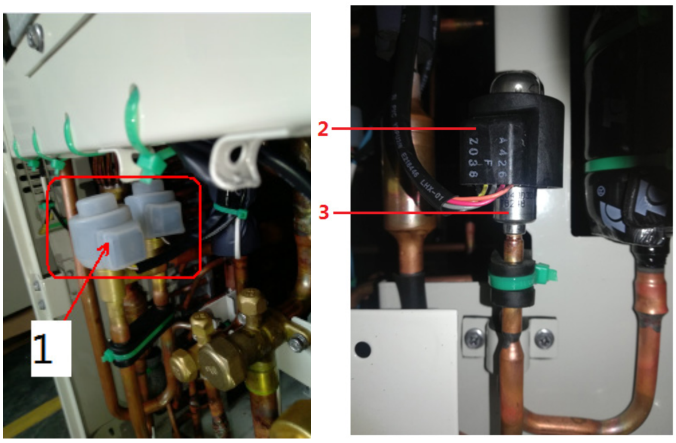
(3) Cut the electronic expansion valve inlet and outlet pipes to ensure that there is no residual refrigerant in the unit. Remove the old electronic expansion valve.

(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 or rubber sleeve 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 or the rubber sleeve.

(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.

5.1.11 Removing and Installing Plate Heat Exchanger

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR 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.

(4) To remove the unit condenser, please refer to section 5.1.7 Remove the Condenser.

Removing procedure

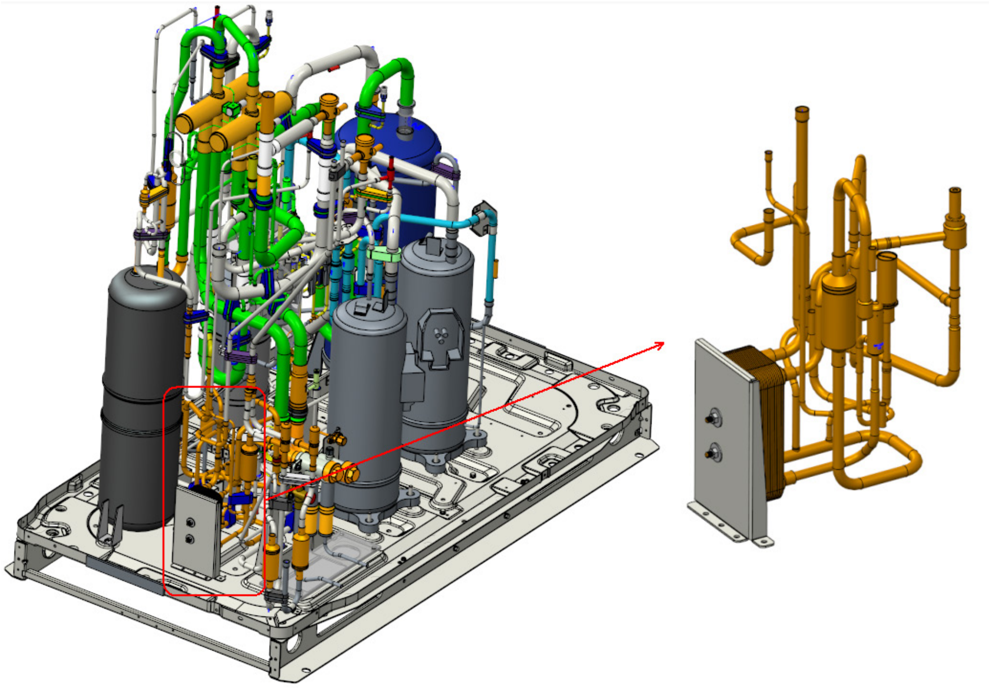
(1) Remove the temperature sensor near the nozzle and the bound pipe fixing block and pipe clamp.

(2) Unsolder the pipe nozzle between plate heat exchanger and other pipelines, 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 fixing screws of the plate heat exchanger assembly bracket 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) Match the nozzles of the plate heat exchanger assembly with the nozzles of other matching pipelines, and weld the nozzles.

(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, install other components and then buckle the front panel and tighten the screws.

5.1.12 Removing and Installing Pressure Sensor

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.

(2) Remove the unit's upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

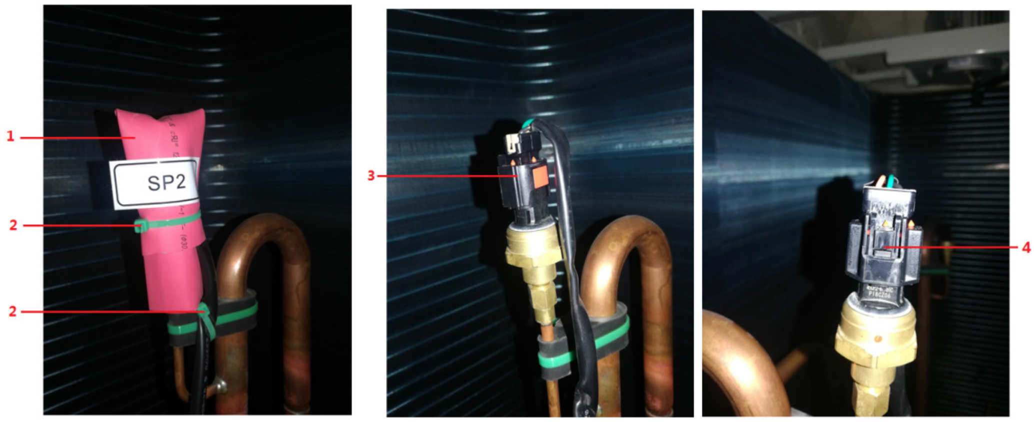
Removing procedure

(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.

5.1.13 Removing and Installing Temperature Sensor

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.

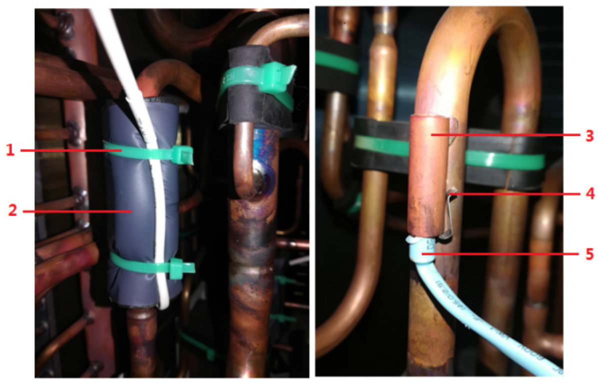
(2) Remove the unit’s upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

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.

5.1.14 Removing and Installing Pressure Switch

Preparations

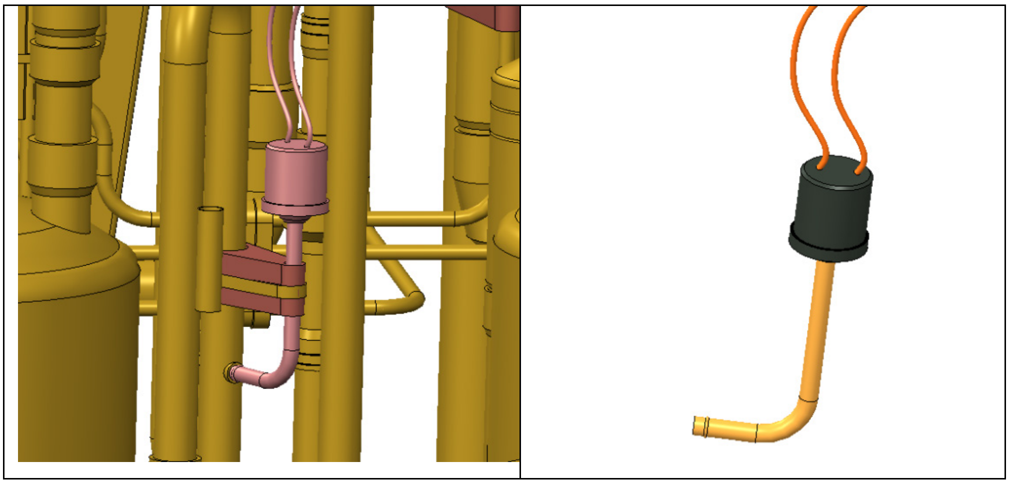
(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.
(2) Make sure that the unit pipeline system is free of refrigerant.
(3) Remove the unit’s upper and bottom panels by referring to 5.1.1 Removing the Unit Panel.

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.



5.1.15 Preparation for Removing and Installing Solenoid Valve

Steps:

(1) Use the power circuit breaker to switch off the power of the GMV6 HR VRF system.

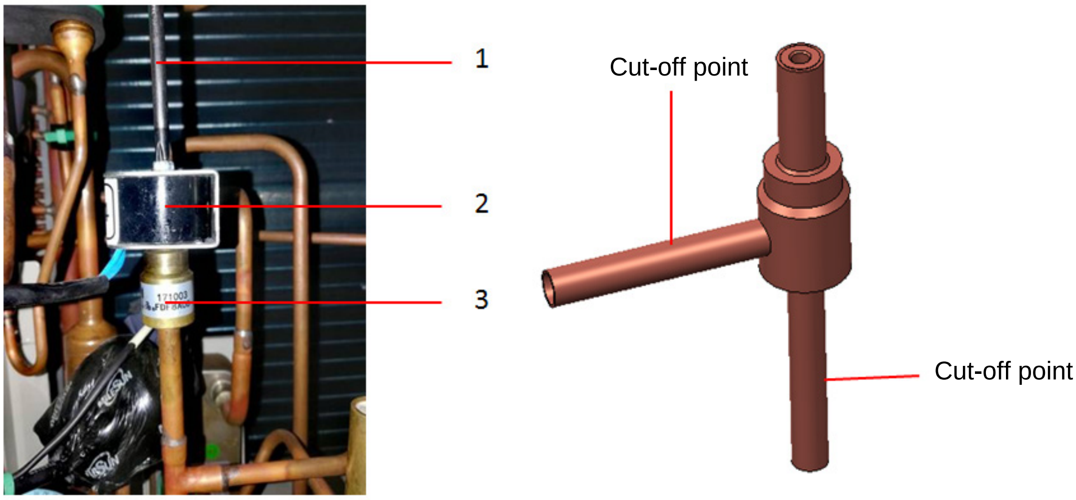
(2) Make sure that the unit pipeline system is free of refrigerant.

(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.

5.1.16 Disassembly and assembly operation

Preparation

（1）Use the on-site power supply circuit breaker to turn off the power of the GMV6HR multi VRF system.

（2）Ensure that there is no refrigerant in the piping system of the unit.

（3）To remove the upper and lower panels of the unit, please refer to section 5.1.1 Remove the Panel.

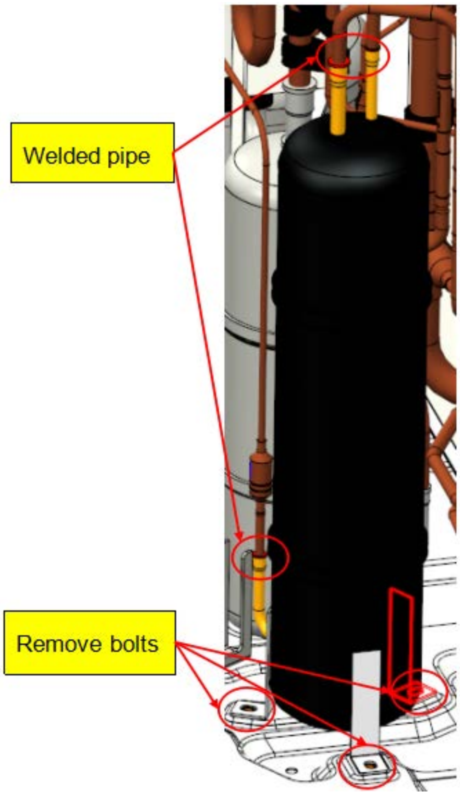
（4）To remove the unit condenser, please refer to section 5.1.7 Remove the Condenser.

Disassembly steps

（1）Remove the pipe fixing blocks near the nozzle of the refrigerant adjustment tank;

（2）Unsolder the pipe nozzle to separate the connecting pipe from the refrigerant adjustment tank;

（3）Use tools to remove 3 fixing bolts and remove the refrigerant adjustment tank;



Installation steps

（1）Install the new refrigerant adjustment tank to a correct position.

（2）Weld the pipe nozzle.

（3）Nitrogen protection should be adopted when welding, and the nitrogen pressure should be 0.5±0.1kgf/cm2 (relative pressure).

（4）Check whether the components and connecting wires are well connected.

（5）After checking that there is no problem, install other parts, buckle the front panel, and fix the fixing screws.

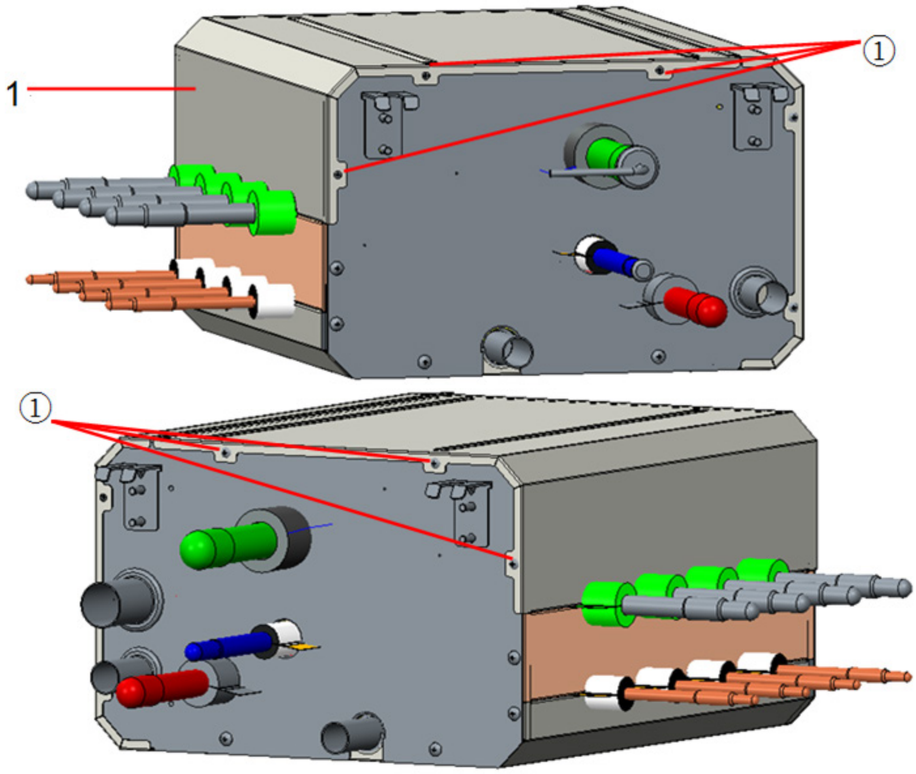
5.2 Mode Exchange Box

5.2.1 Primary disassembly steps

5.2.1.1 Remove the cover plate

(1) Use screwdriver to remove the screw① as shown in the unit;

(2) Remove the cover plate 1 from the unit.

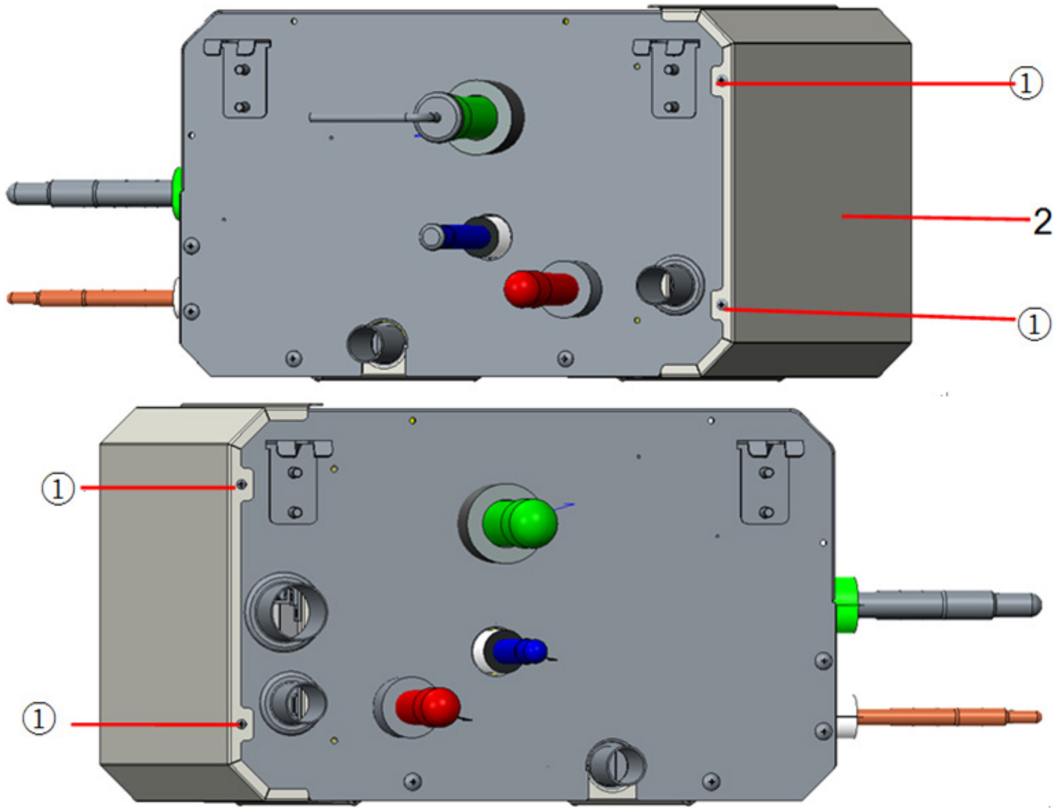


1-upper cover plate ①-screw

5.2.1.2 Remove the electric box cover

（1） Use screwdriver to remove the screw① that fixes electric box cover as shown in the figure.

（2） Remove the electric box cover 2 from the unit.



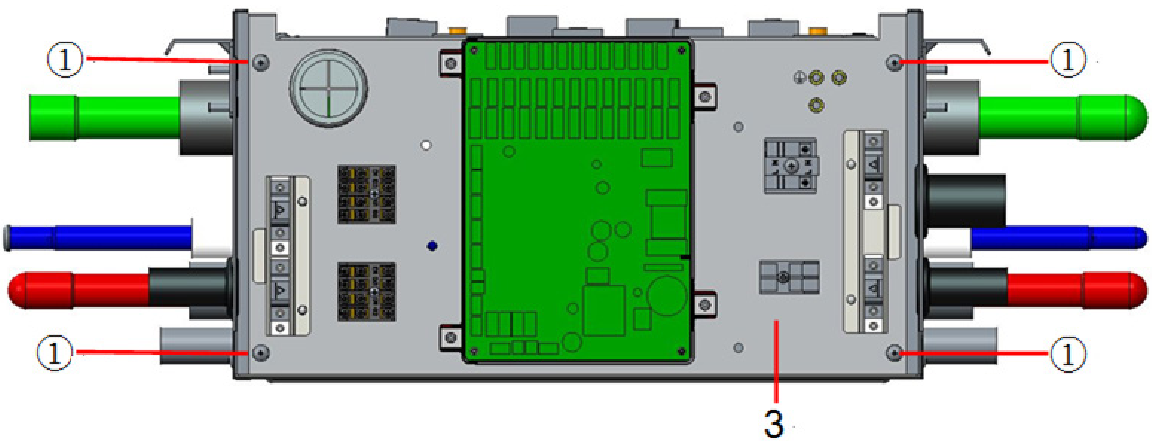
2-electric box cover ①-screw

5.2.1.3 Remove the mounting plate for electric components of unit

(1) Before removing the mounting plate, cut off the power supply of unit, and unplug all the plugs of main board;

(2) Use screwdriver to remove the screw① that fixes mounting plate of electric components as shown in the figure;

(3) Take away the mounting plate 3 of electric components.

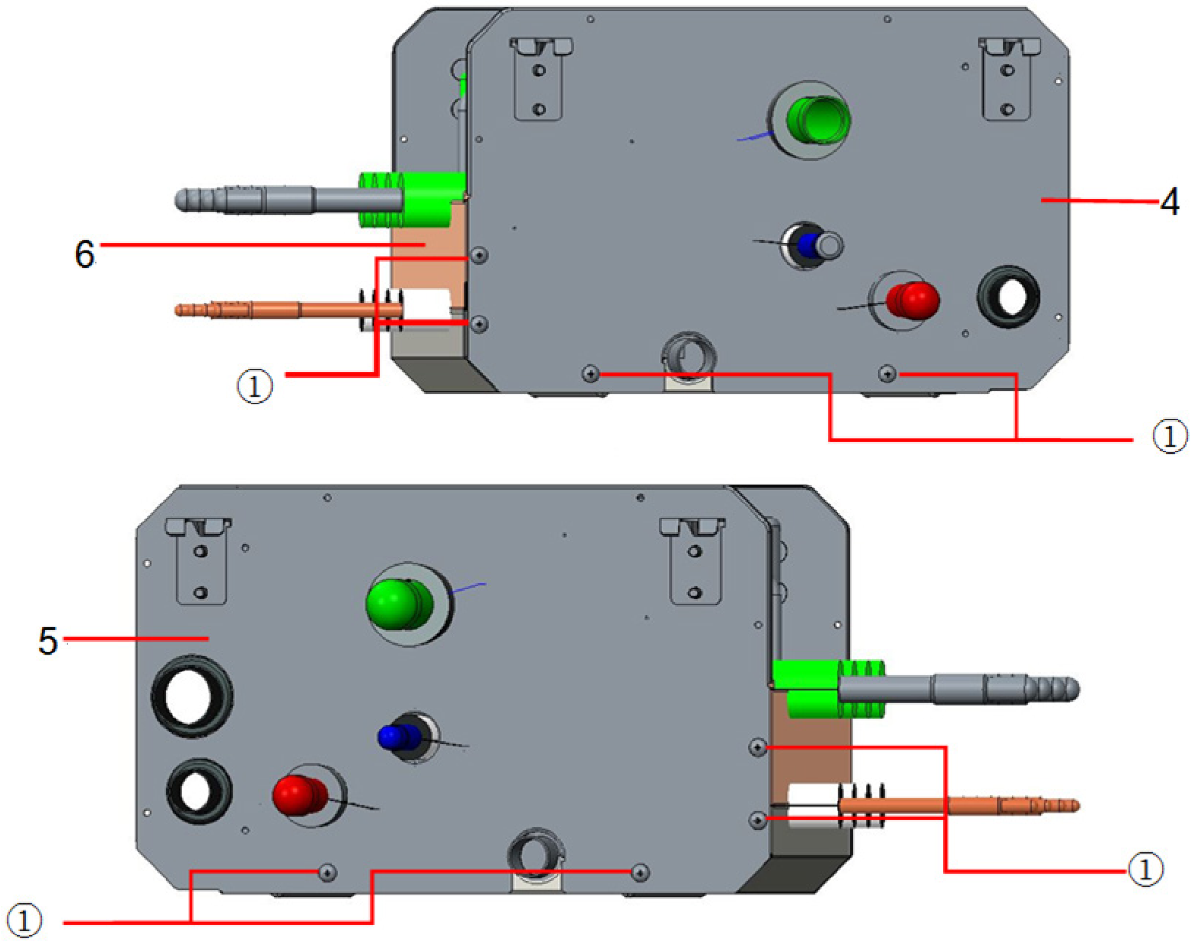


3-mounting plate of electric components ①-screw

5.2.1.4 Remove the side plate of unit

（1）Use screwdriver to remove the three screws① of side plate as shown in the figure;

（2）Remove the side plate sub-assy 4/5/6 from the unit.



4-side plate sub-assy 2 5-side plate sub assy 1 6-side plate sub assy ①-screw

5.2.2 Disassembly operation of main board of mode switch

Preparation

（1）Cut off the power supply.

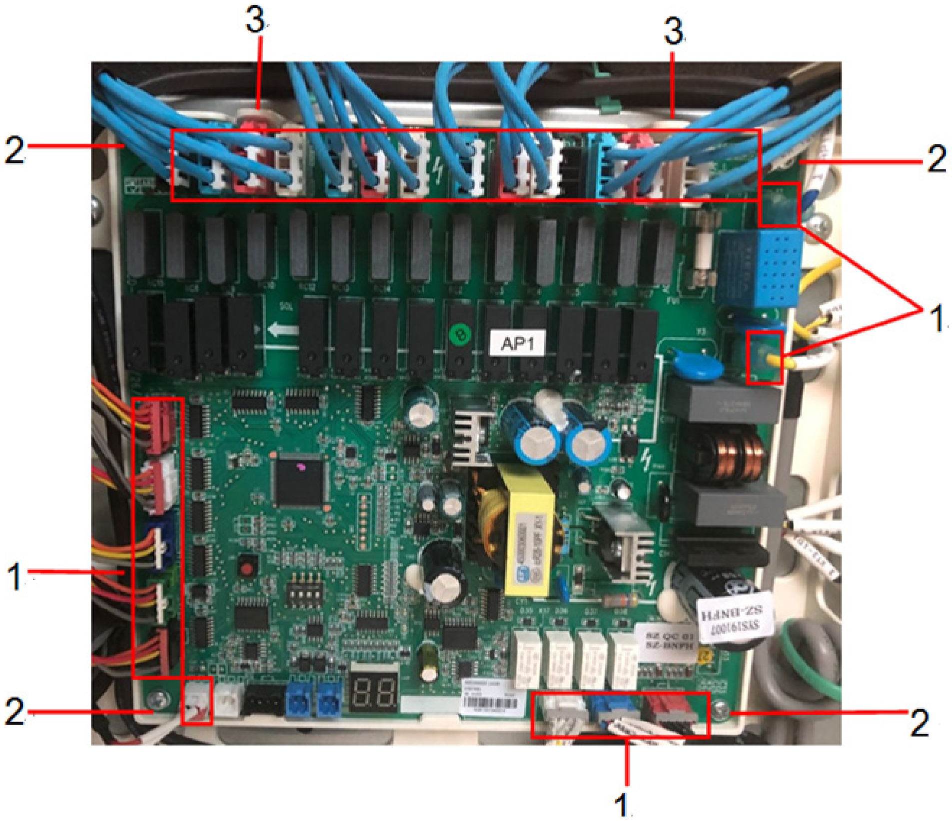
（2）Remove the electric box cover of unit, please refer to section 5.2.1.2 Remove the Electric Box Cover;

Disassembly steps

（1）Unplug all the plugs 1 of main board as shown in the figure;

（2）Use screwdriver to remove the screw 2 that fixes main board as shown in the figure;

（3）Push the buckle 3 of fixing board slightly, and take away the main board from the unit.



5.2.3 Disassembly and assembly operation of magnet valve

Preparation

（1）Turn off the power supply of the unit system;

（2）Ensure that there is no refrigerant in the piping system of the unit;

（3）To remove the unit cover, please refer to section 5.2.1.1 Remove the Unit Cover;

（4）To remove the electric box cover of the unit, please refer to section 5.2.1.2 Remove the Electric Box Cover;（5）To remove the mounting plate of electric component of the unit, please refer to section 5.2.1.3 Remove the Mounting Plate of Electrical Component;

（6）To remove the side plate of the unit, please refer to section 5.2.1.4 Remove the Side Plate.

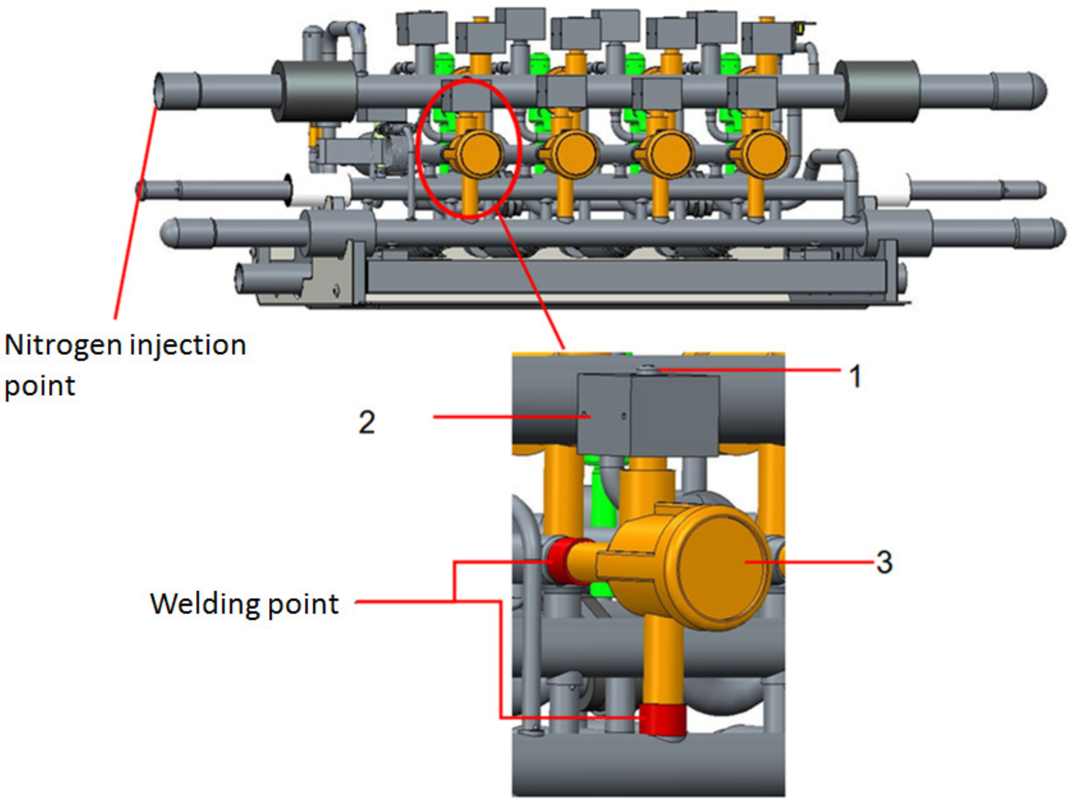
Disassembly steps

（1）Use a screwdriver to remove the screw 1 used to fix the magnet valve coil;

（2）Remove magnet valve coil 2;

（3）Unsolder the connecting pipe of the magnet valve, and then remove the valve body 3;

Note: Wrap the surrounding magnet valve and important components with a damp cloth during welding.



1- screw 2- magnet valve coil 3- magnet valve

Installation steps

（1）Install the new magnet valve to a correct position;

（2）Wrap the new valve body and surrounding magnet valves and important components with a wet cloth;

（3）When welding, fill the pipeline with nitrogen for protection, and the nitrogen pressure is 0.5±0.1kgf/cm2 (unsolder the outside air pipe connecting pipe of the unit for nitrogen charging protection);

（4）Install the magnet valve coil to a correct position, and use torque to tighten the screws that fix the magnet valve coil;

（5）Check whether the components and connecting wires are well connected;

（6）Install the mounting plate of electric component, electrical box cover and unit cover plate.

Note: The disassembly of other electronic valves on the unit are all carried out according to the above steps.

5.2.4 Disassembly and assembly operation of electronic expansion valve

Preparation

(1) Turn off the power supply of the unit system;

(2) Ensure that there is no refrigerant in the piping system of the unit;

(3) To remove the unit cover, please refer to section 5.2.1.1 Remove the Unit Cover;

(4) Remove the side panel assembly without removing the mounting plate of electric component, side plate sub-assy 1, and side plate sub-assy 2. Please refer to section 5.2.1.4 Remove the Side Plate.

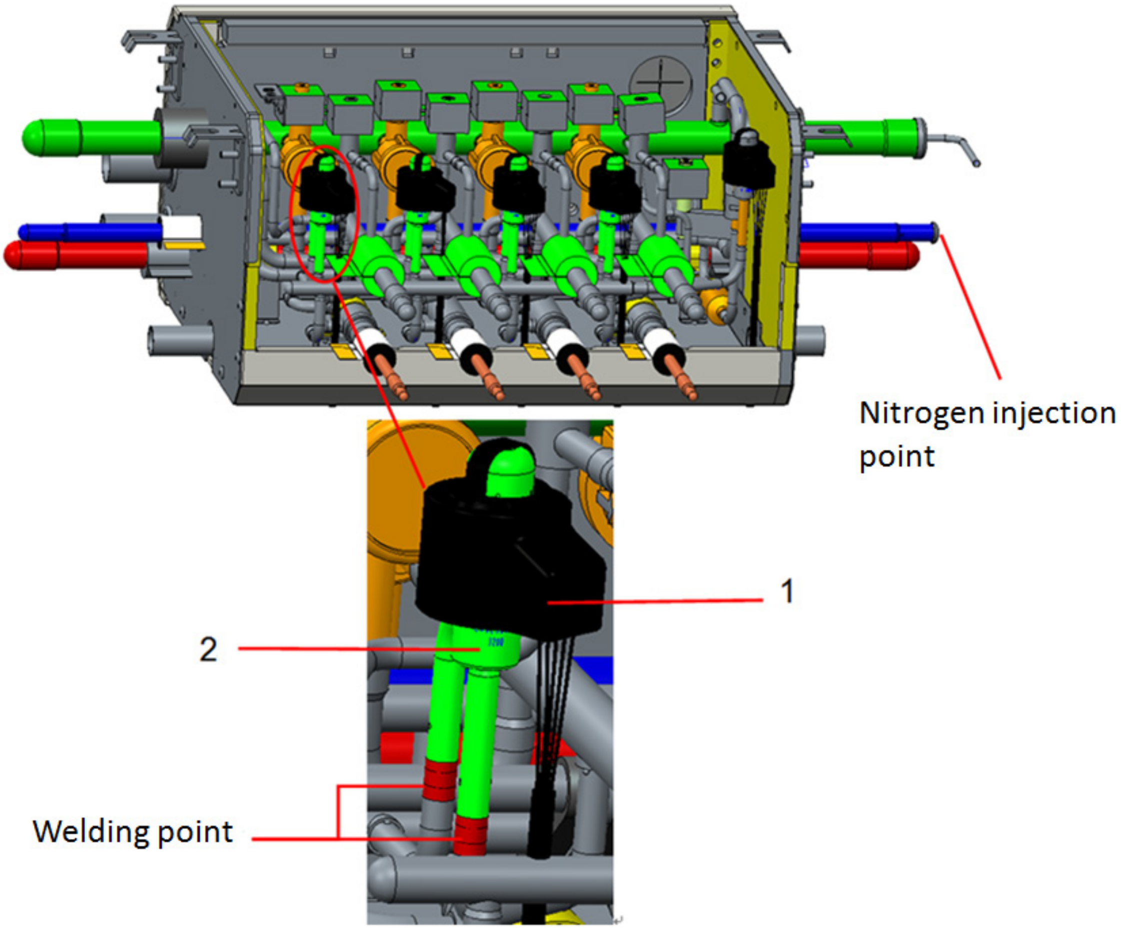
Disassembly steps

(1) Remove the rubber materials such as the insulation sleeve and pipe fixing block near the electronic expansion valve that need to be replaced;

(2) Unscrew the electronic expansion valve coil to loosen it and then remove it;

(3) Unsolder the connecting pipe of the electronic expansion valve and take out the old electronic expansion valve;

NOTE: When welding, use a damp cloth to wrap the surrounding electronic expansion valve and important components.



1- electronic expansion valve coil 2- electronic expansion valve

Installation steps

(1) Install the new electronic expansion valve to a correct position;

(2) Weld the connecting pipe of electronic expansion valve and fill it with nitrogen for protection during welding (unsolder the connecting pipe of the liquid pipe outside the unit for nitrogen charging protection);

NOTE: When welding, wrap the valve body with a damp cloth. The electronic expansion valve and important components near the welding point also need to be wrapped with a damp cloth.

(3) Install the electronic expansion valve coil to the correct position, and press the electronic expansion valve coil until hearing a “da” sound, which means the installation is in place;

(4) The wiring is fixed according to the original requirements, please refer to the wiring diagram;

(5) Check whether the components and connecting wires are well connected;

(6) Install the side plate sub-assy and the unit cover plate, and tighten the screws.

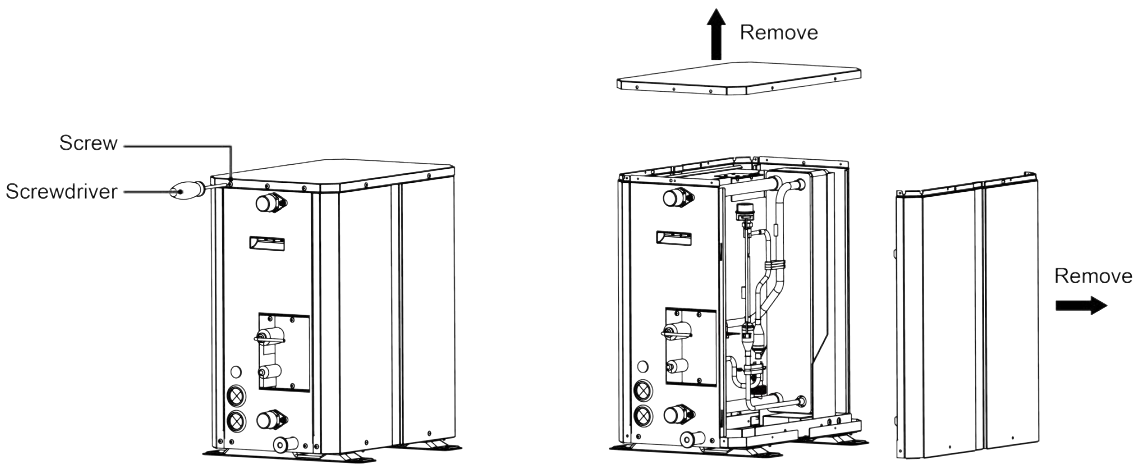
NOTE: The disassembly of other electronic expansion valves on the unit are all carried out according to the above steps.

5.3 Hydro Box

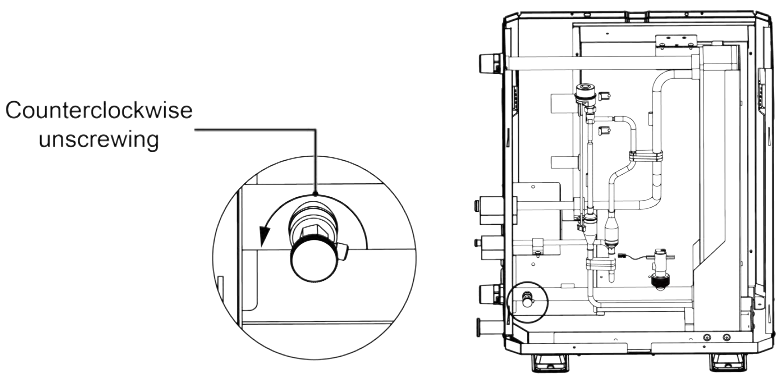
5.3.1 Water discharge of hydro box

It need to drain off the water inside the hydro box at first before replacing the flow switch and the plate heat exchanger. The operation method is as follow:

(1) Use a screwdriver to unscrew the 9 screws of the top cover of the hydro box and the 4 screws at the bottom of the rear panel (the side panel without the GREE logo), and then remove the top cover and the rear panel.



(2) Operate from the direction shown in the figure below. Loosen the drain valve.

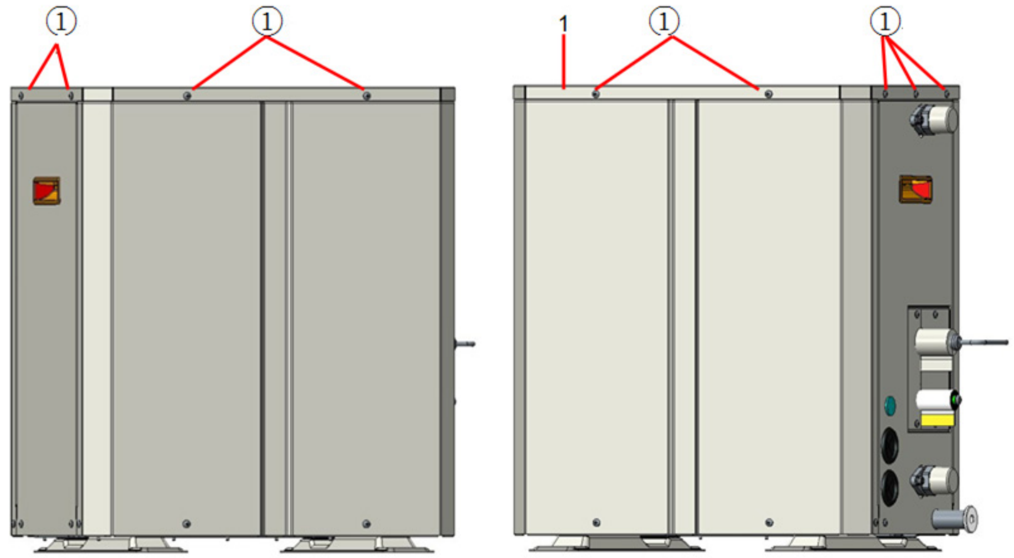


5.3.2 Preliminary disassembly steps of unit body

5.3.2.1 Remove cover plate of unit

(1) Use screwdriver to remove the screw① that fixes top cover;

(2) Remove the top cover 1 from the unit.

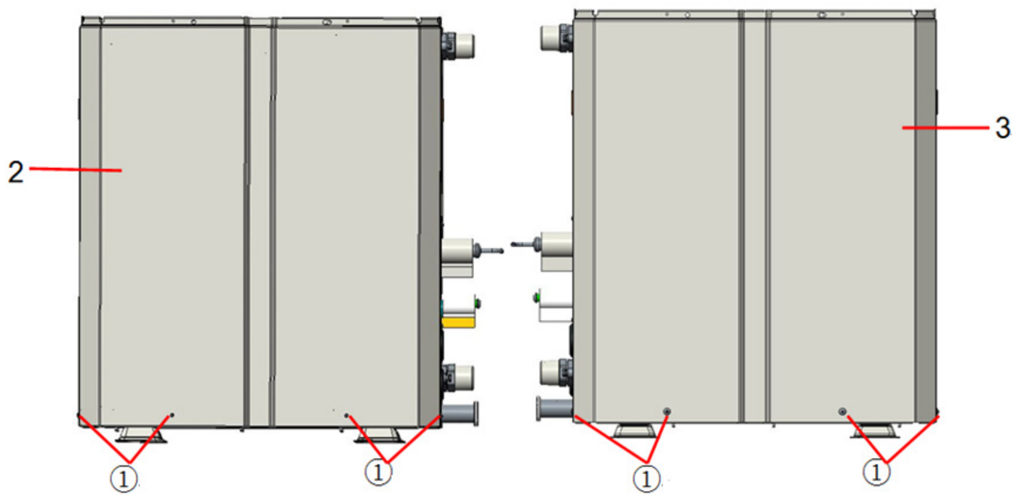


1- top cover ①- screw

5.3.2.2 Remove the front panel and rear panel of unit

（1）Use screwdriver to remove the screws①that fix front and rear panels;

（2）Remove the front panel 2 and rear panel 3 from the unit.

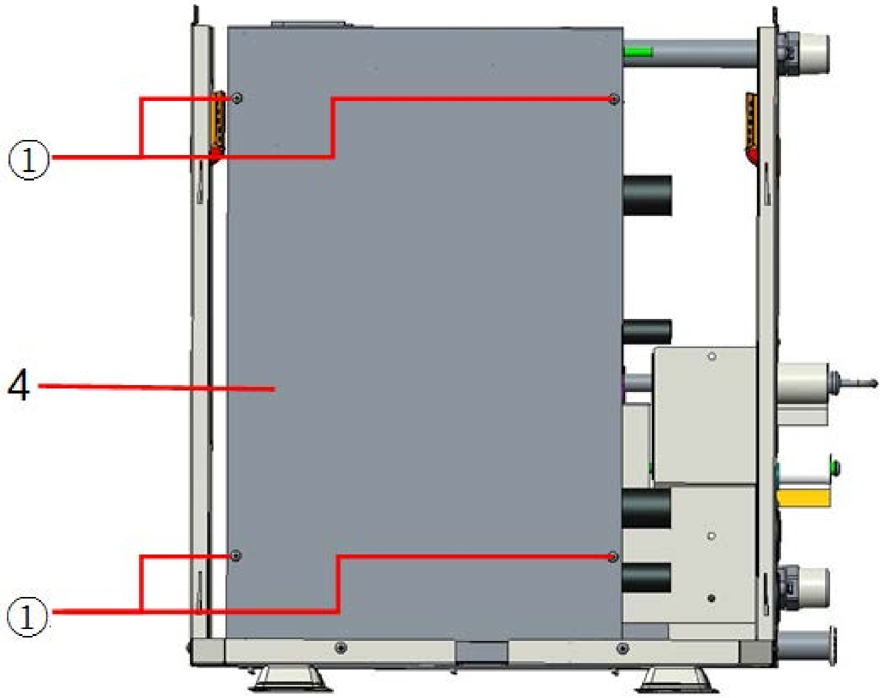


2-front panel 3-rear panel ①-screw

5.3.2.3 Remove the electric box cover

(1) Use screwdriver to remove the screws①that fix front and rear panels;

(2) Remove the electric box cover 4 from the unit.



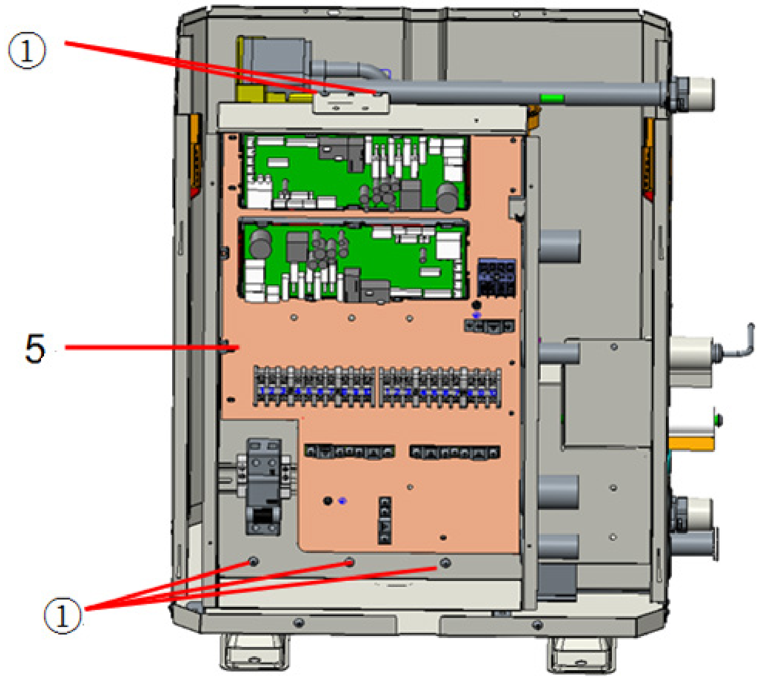
4-electric box cover ①-screw

5.3.2.4 Remove the electric box

(1)Before the removal, cut off the power supply of unit, and unplug all the plugs of main board;

(2) Use screwdriver to remove the screw① that fixes electric box;

(3) Remove the electric box from the unit.



5-electric box ①-screw

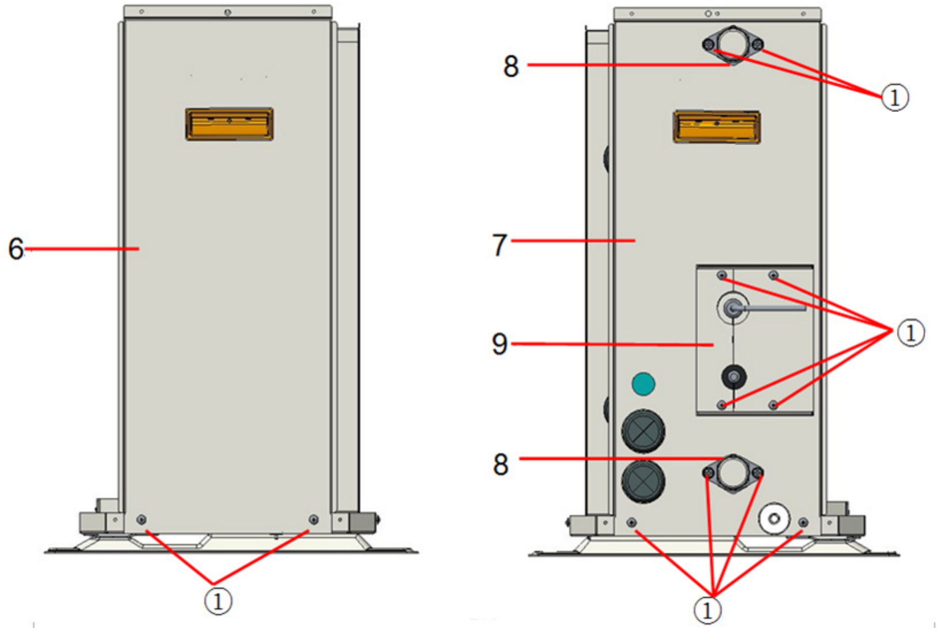
5.3.2.5 Remove the side plate, water pipe joint, sealing plate

(1) Use screwdriver to remove the screws① that fix side plate, water pipe joint, sealing plate;

(2) Remove the left side plate 6 from the unit;

(3) Remove the water pipe joint 8 and sealing plate 9 from the right side plate;

(4) Remove the right side plate 7 from the unit.



6-left side plate 7-right side plate 8-water pipe joint 9-sealing plate ①-screw

5.3.3 Disassembly and assembly operation of main board of hydro box

Preparation

(1) Cut off the power supply of unit system.

(2) Remove the top cover, please refer to section 5.3.2.1 Remove the Top Cover.

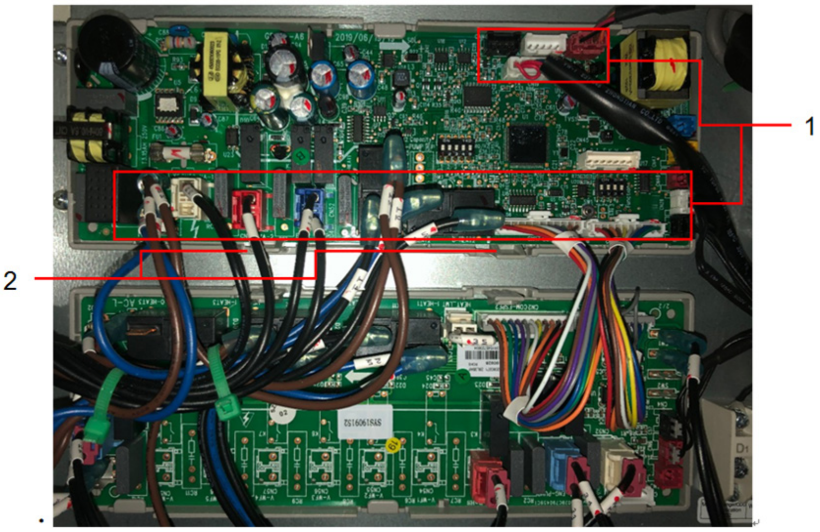
(3) Remove the front panel, please refer to section 5.3.2.2 Remove the Front Panel and Rear Panel of Unit.

(4) Remove the electric box cover, please refer to section 5.3.2.3 Remove the Electric Box Cover.

Removing procedure

(1) Unplug all the plugs1 on the main board as shown in the figure.

(2) Carefully push the buckle 2 of fixing block as shown in the figure, remove the main board from the fixing block.



Installation procedure

(1) Install according to the reverse order of disassembly.

(2) For wiring of terminals please refer to the wiring diagram of unit.

(3) Setting of dial code: Setting of the new main board should be the same as that of the former faulted main board, and the setting should be done under power-off status of unit; it will come into valid after it is re-energized, otherwise it will be invalid if the setting is done in power-on status of unit.

5.3.4 Disassembly operation of electronic expansion valve

Preparation

(1) Cut off the power supply of unit system.

(2) Ensure that there is no refrigerant inside the pipeline system of unit;

(3) To remove top cover of unit please refer to section 5.3.2.1;

(4) To remove the front panel of unit please refer to section 5.3.2.2;

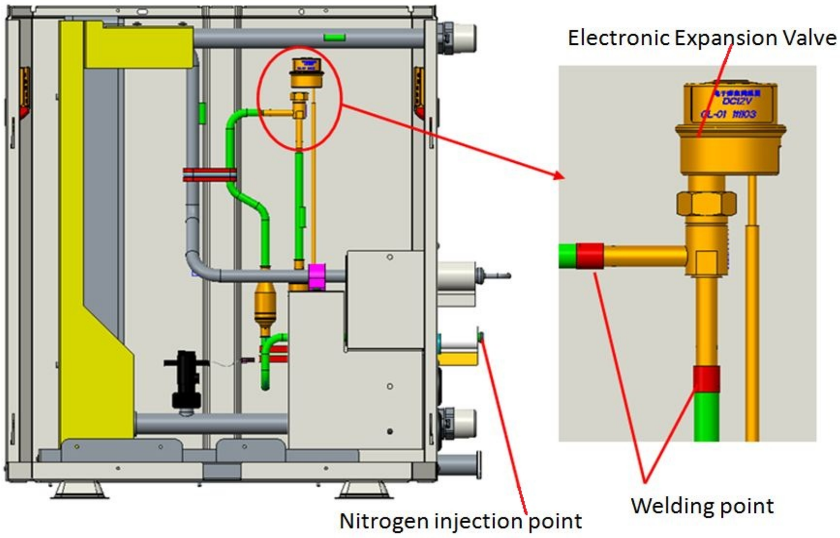
(5) To remove the electric box please refer to section 5.3.2.4.

Removing procedure

(1) Remove the rubber materials such as the insulation sleeve and tube fixing block near the electronic expansion valve that need to be replaced;

(2) Unsolder the connecting pipe of electronic expansion valve and take out the old electronic expansion valve;

NOTE: During welding, use a wet cloth to wrap the surrounding electronic expansion valves and important components.



5.3.5 Disassembly and assembly operation of plate heat exchanger

Preparation

(1) Cut off the power supply of unit system.

(2) Ensure that there is no refrigerant inside the pipeline system of unit.

(3) Remove the top cover, please refer to section 5.3.2.1 Remove the Top Cover.

(4) Remove the panel of unit, please refer to section 5.3.2.2 Remove the Front Panel and Rear Panel of Unit.

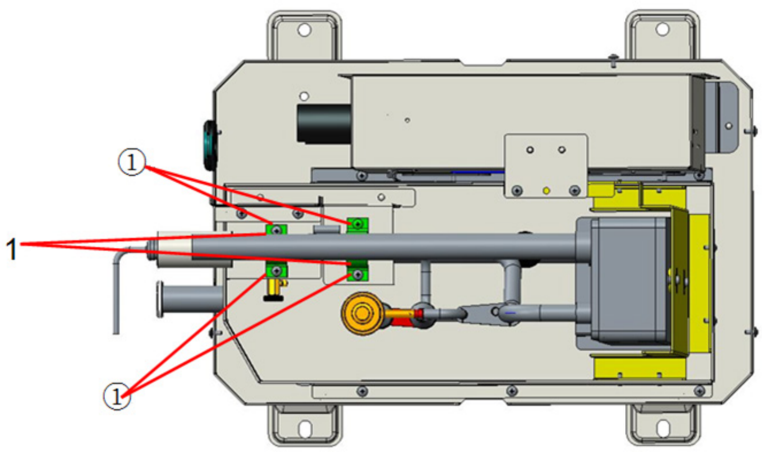
(5) Please refer to section 5.3.1 Drain the hydro box.

(6) Remove the electric box cover, please refer to section 5.3.2.3 Remove the Electric Box Cover.

(7) To remove the side plate, water pipe joint, sealing plate, please refer to section 5.3.2.4.

(8) Unsolder the pipelines connected to the gas pipe and liquid pipe outside the unit.

(9) Remove the pipe clamp block that fixes the gas pipe and liquid pipe inside the unit as shown below, use a screwdriver to remove the screw ① that fixes the pipe clamp, and remove the pipe clamp 1.



Removing procedure

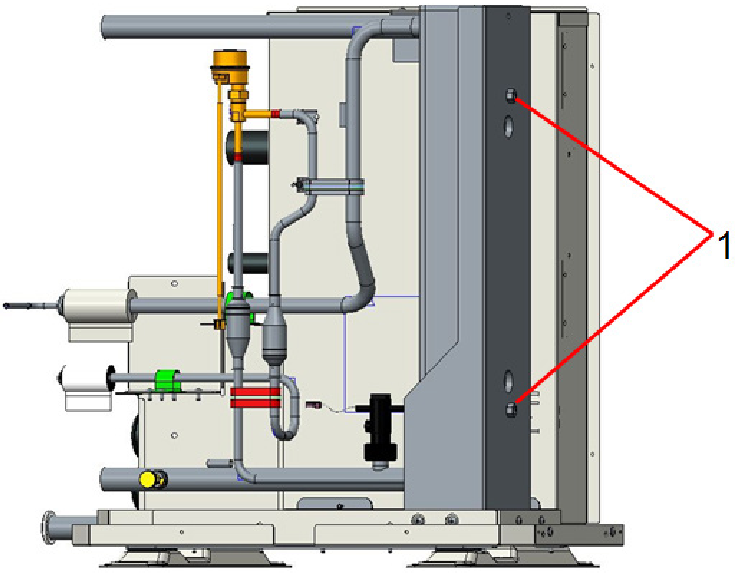
(1) Remove the connecting wires between the components and main board.

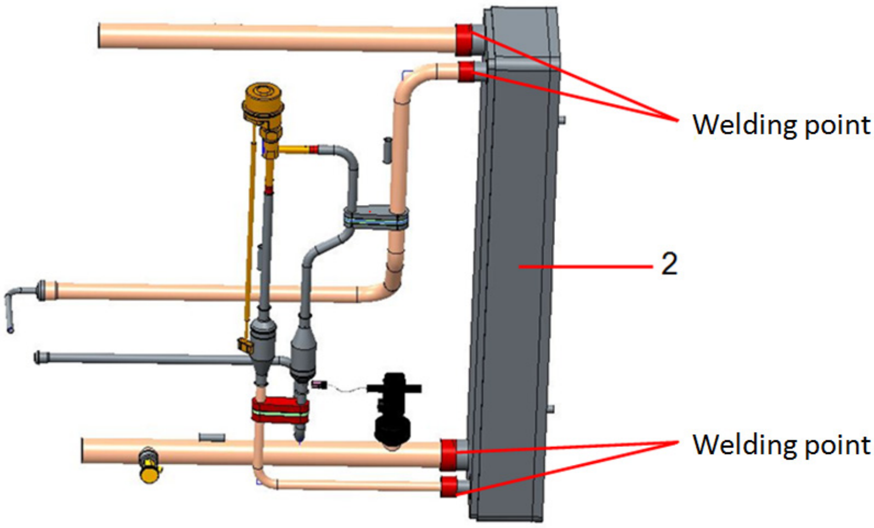
(2) Remove the nut 1 that fixes the plate heat exchanger in the heat exchanger bracket.

(3) Remove the plate heat exchanger sub-assy 2.

(4) Unsolder the connecting pipes of the 4 nozzles of plate heat exchanger, and then remove the connecting pipes.

NOTE: During welding, use a wet cloth to wrap the surrounding important components; the welding point of plate heat exchanger is steel and copper welding, pay attention to ensure the welding quality.





1-screw 2-plate heat exchanger sub-assy

Installation procedure

(1) Assemble according to the position of the inlet and outlet pipes of the plate heat exchanger, weld the 4 connecting points on the plate heat exchanger, and fill with nitrogen when welding.

(2) Install the plate heat exchanger back to the unit, tighten the connecting nuts of the plate heat exchanger with the bracket, and assemble the pipe clamps for fixing the gas pipe and liquid pipe.

(3) Check whether the components and connecting wires are well connected.

(4) Install the side plate, electric box cover, panel top cover, tighten the screws, and weld the connection pipes for gas pipe and liquid pipe.

5.3.6 Disassembly and assembly operation of water flow switch

Preparation

(1) Cut off the power supply of unit system.

(2) Drain the water inside the hydro box.

(3) Remove the top cover, please refer to section 5.3.2.1 Remove the Top Cover.

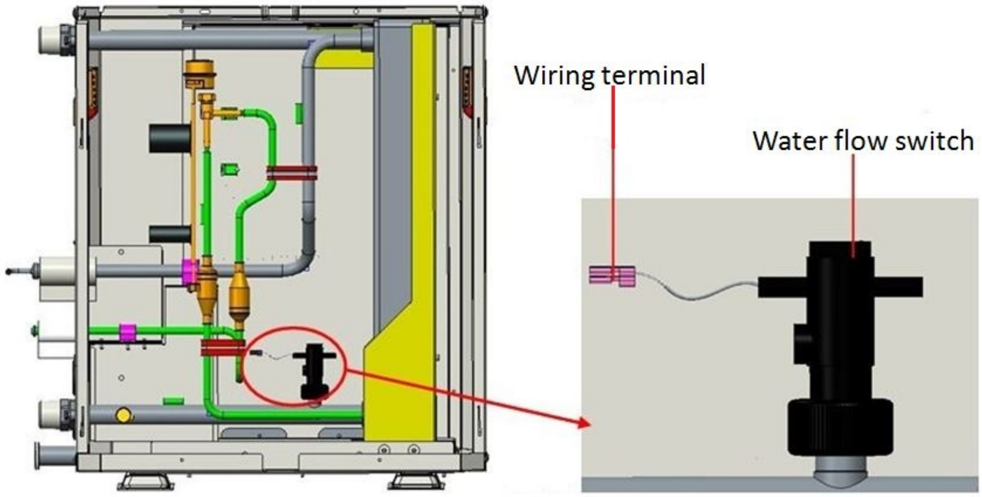
(4) Remove the panel of unit, please refer to section 5.3.2.2 Remove the Front Panel and Rear Panel of Unit.

(5) Remove the electric box cover, please refer to section 5.3.2.3 Remove the Electric Box Cover..

Removing procedure

(1) Disconnect the wiring terminal of water switch;

(2) Turn the plastic fastener on the water flow switch counterclockwise to unscrew the water flow switch.



Installation procedure

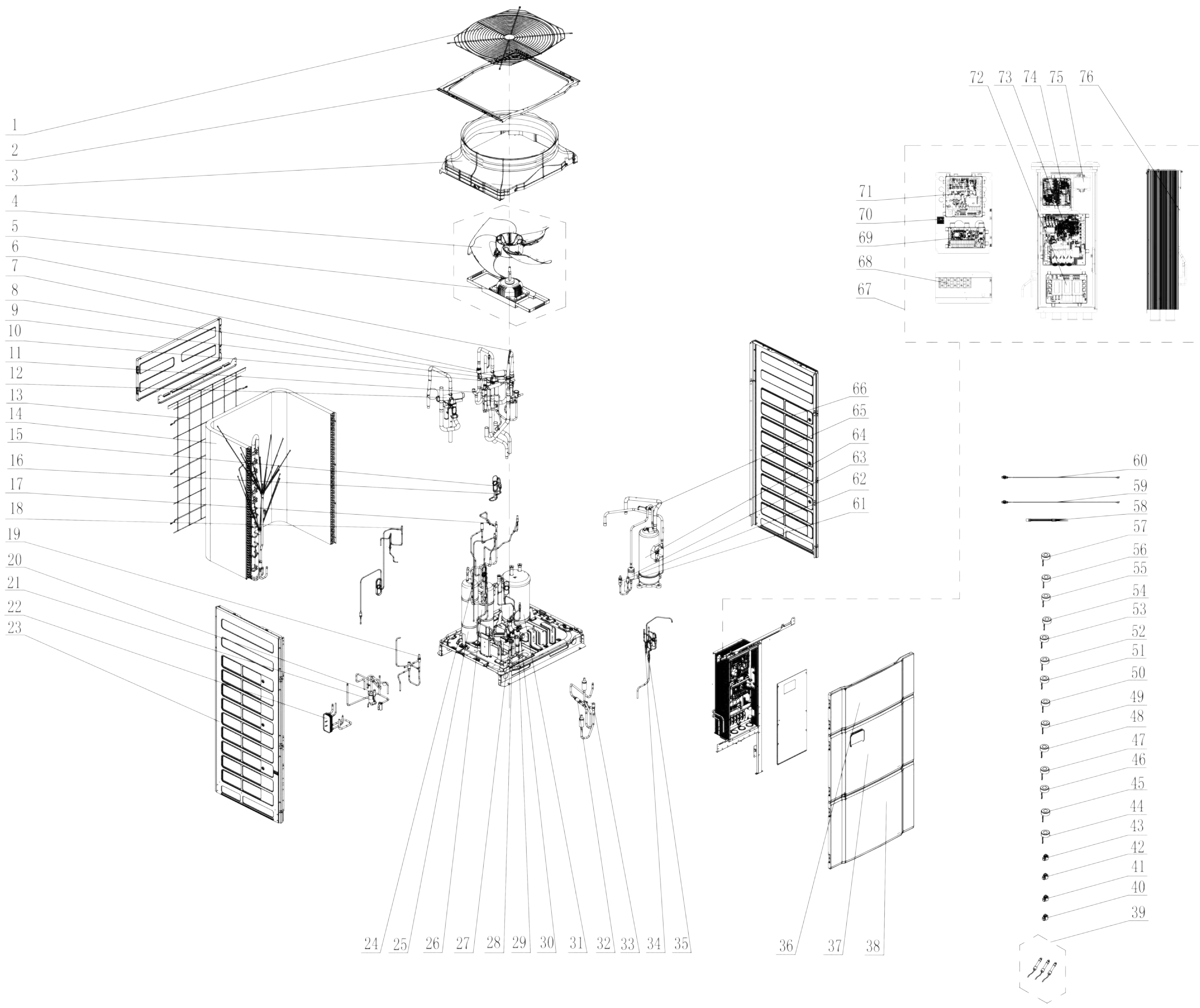
(1) Install the new water flow switch to the correct position (the arrow on the top of the water flow switch is vertical to the plate heat exchanger).

(2) Connect the wiring terminal of water switch.

(3) Install the electric box cover, panel and top cover.

6 Explosive View and Parts List

6.1 Explosive View and Parts List of GMV-VQ224WM/C-X, GMV-VQ280WM/C-X and GMV-VQ335WM/C-X

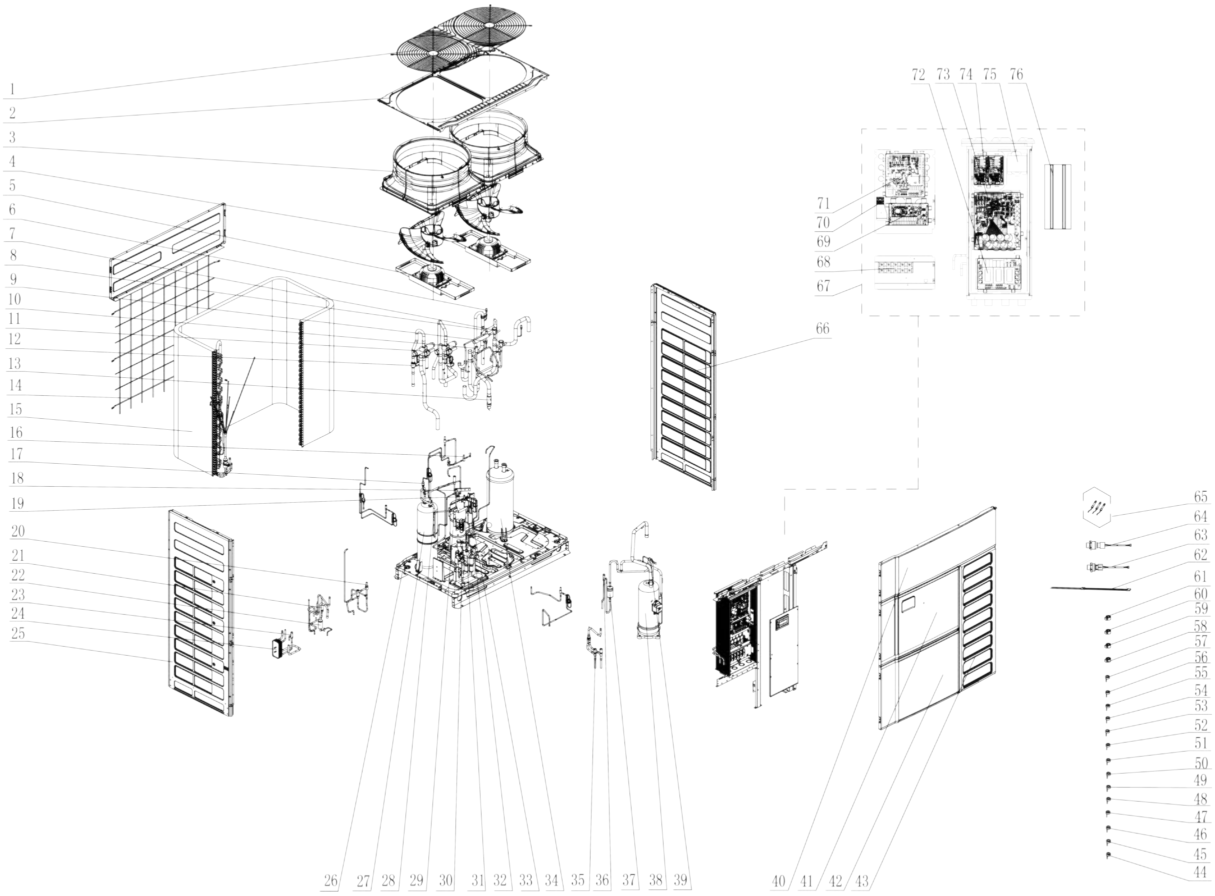


No	Name	Material code	Vulnerable part *	Qty
1	Rear Grill	016001060007	*	1
2	Coping	012049000050		1
3	Diversion Circle	200150060002	*	1
4	Axial fan blade	103002000007	*	1
5	Brushless DC Motor	1570412406	*	1
6	Nozzle for Adding Freon	06120012	*	2
7	One way Valve	071001060007	*	2
8	Filter	07218603	*	1
9	Electromagnetic Valve	43000073	*	2
10	Nozzle for Adding Freon	06123006	*	1
11	Discharge Charge Valve	07334100002	*	2
12	4-way Valve	43000339	*	2
13	Rear Grill	016001060006	*	1
14	Condenser Assy	VQ224/280：011002061181 VQ335：011002060667	*	1
15	Filter	07415200002	*	4
16	Electromagnetic Valve	43000055	*	1

No	Name	Material code	Vulnerable part *	Qty
17	Electromagnetic Valve	43000072	*	4
18	Electromagnetic Valve	43044100144	*	2
19	Electromagnetic Valve	43044100224	*	1
20	Electronic Expansion Valve	43044100172	*	1
21	Gas Tube Filter	072190511	*	2
22	Plate-type Heat Exchanger	010007060008	*	1
23	Left Side Plate Sub-Assy	017037060016P		1
24	One way Valve	07130101	*	2
25	Liquid accumulator	07424100037	*	1
26	Oil Separator	035028060002	*	1
27	Cut off Valve	0733410001301	*	1
28	Cut off Valve	0733410005401	*	1
29	Cut off Valve	0733410001401	*	1
30	Nozzle for Adding Freon	06130002	*	1
31	Gas-liquid Separator	035027060002	*	1
32	Filter	03410107	*	1
33	Electronic Expansion Valve	072009060013	*	2
34	Electromagnetic Valve	072008000005	*	2
35	Filter	07222025	*	1
36	Cover Plate	012035000237P		1
37	Panel component	000003060146		1
38	Front Panel	012073000245P		1
39	Sensor Sub-assy	390002060061	*	1
40	Magnet Coil（Electronic Expansion Valve） UKV	4304413274	*	1
41	Magnet Coil（Electronic Expansion Valve）	07200200001102	*	1
42	Magnet Coil（Electronic Expansion Valve）	072002000011	*	1
43	Magnet Coil（Electronic Expansion Valve） UKV	4304413248	*	1
44	Magnet Coil (electromagnetic valve)	07200106000811	*	1
45	Magnet Coil (electromagnetic valve)	072001060007	*	1
46	4 Way Valve Coil	07201006000204	*	1
47	4 Way Valve Coil	07201006000201	*	1
48	Magnet Coil (electromagnetic valve)	07200106000801	*	1
49	Magnet Coil (electromagnetic valve)	07200106000802	*	1
50	Magnet Coil (electromagnetic valve)	07200106000803	*	1
51	Magnet Coil (electromagnetic valve)	07200106000804	*	1
52	Magnet Coil (electromagnetic valve)	07200106000805	*	1
53	Magnet Coil (electromagnetic valve)	07200106000808	*	1
54	Magnet Coil (electromagnetic valve)	07200106000806	*	1
55	Magnet Coil (electromagnetic valve)	072001060006	*	1
56	Magnet Coil (electromagnetic valve)	07200106000812	*	1
57	Magnet Coil (electromagnetic	07200106000807	*	1

No	Name	Material code	Vulnerable part *	Qty
	valve)			
58	Electric Heater(Compressor)	7651521244	*	1
59	Pressure Sensor	32218000008	*	1
60	Pressure Sensor	32218000009	*	1
61	Electronic Expansion Valve	43044100190	*	1
62	Bidirectional Strainer	07220016	*	1
63	Silencer	07245008	*	1
64	Compressor and Fittings	009001000190	*	1
65	Pressure Protect Switch	4602000911	*	1
66	Right Side Plate Sub-Assy	017038060017P		1
67	Electric Box Assy	100002065119	*	1
68	Terminal Board	422000060055	*	1
69	Function expansion board	300027060098	*	1
70	Terminal Board	422000060004	*	1
71	Main Board	300027060136	*	1
72	Filter Board	300020060006	*	1
73	Main Board	300027060076	*	1
74	Main Board	300027000583	*	1
75	Reactor	450004060009	*	1
76	Radiator	4901800008801	*	1

6.2 Explosive View and Parts List of GMV-VQ400WM/C-X, GMV-VQ450WM/C-X

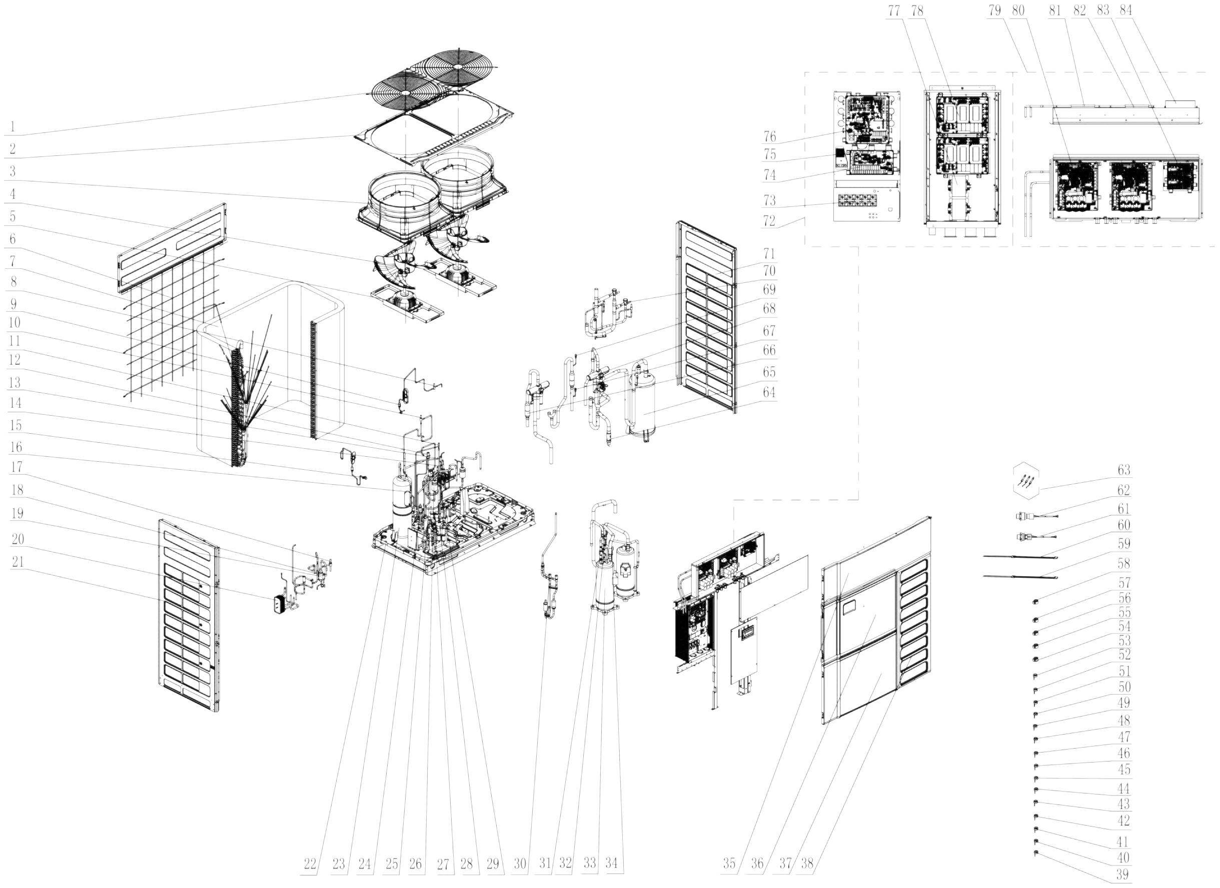


No	Name	Material code	Vulnerable part *	Qty
1	Rear Grill	016001060013	*	1
2	Coping	012049000059P		1
3	Diversion Circle	200150000011	*	2
4	Axial fan blade	10434100002	*	2
5	Brushless DC Motor	1570412406	*	2
6	Nozzle for Adding Freon	06120012	*	2
7	Electromagnetic Valve	43000073	*	1
8	Electromagnetic Valve	43000072	*	4
9	Nozzle for Adding Freon	061200101	*	1
10	Discharge Charge Valve	07334100002	*	3
11	4-way Valve	43000339	*	2
12	One way Valve	071001060007	*	2
13	Filter	07414100024	*	1
14	Rear Grill	016001060012	*	1
15	Condenser Assy	011002060784	*	1
16	Electromagnetic Valve	43000055	*	1
17	Filter	07415200002	*	3
18	Electromagnetic Valve	43044100144	*	2
19	Electromagnetic Valve	072008000005	*	2
20	Electromagnetic Valve	43044100224	*	1
21	Bidirectional Strainer	07220016	*	1
22	Gas Tube Filter	072190511	*	3

No	Name	Material code	Vulnerable part *	Qty
23	Electronic Expansion Valve	43044100172	*	1
24	Plate-type Heat Exchanger	010007060007	*	1
25	Left Side Plate Sub-Assy	017037060016P		1
26	Chassis Sub-assy	017000060119P		1
27	Liquid accumulator	07424100036	*	1
28	One way Valve	07130101	*	2
29	Oil Separator	035028060002	*	1
30	Cut off Valve	0733410005301	*	1
31	Cut off Valve	0733410001401	*	2
32	Nozzle for Adding Freon	06130002	*	1
33	Filter	07222025	*	1
34	Gas-liquid Separator	035027060004	*	1
35	Electronic Expansion Valve	072009060012	*	2
36	Electronic Expansion Valve	43044100190	*	1
37	Silencer	07245008	*	1
38	Compressor and Fittings	009001060198	*	1
39	Pressure Protect Switch	4602000911	*	1
40	cover plate (front)	012035000246P		1
41	Panel component	000003060148		1
42	Low panel (lower)	012062000016P		1
43	Right panel	012167000014P		1
44	4 Way Valve Coil	07201006000204	*	1
45	4 Way Valve Coil	07201006000201	*	1
46	Magnet Coil (electromagnetic valve)	07200106000801	*	1
47	Magnet Coil (electromagnetic valve)	07200106000802	*	1
48	Magnet Coil (electromagnetic valve)	07200106000803	*	1
49	Magnet Coil (electromagnetic valve)	07200106000807	*	1
50	Magnet Coil (electromagnetic valve)	07200106000811	*	1
51	Magnet Coil (electromagnetic valve)	072001060007	*	1
52	Magnet Coil (electromagnetic valve)	072001060006	*	1
53	Magnet Coil (electromagnetic valve)	07200106000812	*	1
54	Magnet Coil (electromagnetic valve)	07200106000804	*	1
55	Magnet Coil (electromagnetic valve)	07200106000806	*	1
56	Magnet Coil (electromagnetic valve)	07200106000808	*	1
57	Magnet Coil (electromagnetic valve)	07200106000805	*	1
58	Magnet Coil (Electronic Expansion Valve) UKV	4304413248	*	1
59	Magnet Coil (Electronic Expansion Valve) UKV	4304413274	*	1
60	Magnet Coil (Electronic Expansion Valve)	072002000011	*	1
61	Magnet Coil (Electronic	0720020001102	*	1

No	Name	Material code	Vulnerable part *	Qty
	Expansion Valve)			
62	Electric Heater(Compressor)	7651540714	*	1
63	Pressure Sensor	32218000009	*	1
64	Pressure Sensor	32218000008	*	1
65	Sensor Sub-assy	390002060061	*	1
66	Right Side Plate Sub-Assy	017038060026P	*	1
67	Electric Box Assy	100002065117	*	1
68	Terminal Board	422000060055	*	1
69	Patching board	300027060098	*	1
70	Terminal Board	422000060004	*	1
71	Main Board	300027060136	*	1
72	Filter Board	300020060004	*	1
73	Main Board	300027060023	*	1
74	Main Board	300027000583	*	2
75	Reactor	450004060005	*	1
76	Radiator	4901800008801	*	1

6.3 Explosive View and Parts List of GMV-VQ504WM/C-X, GMV-VQ560WM/C-X and GMV-VQ615WM/C-X

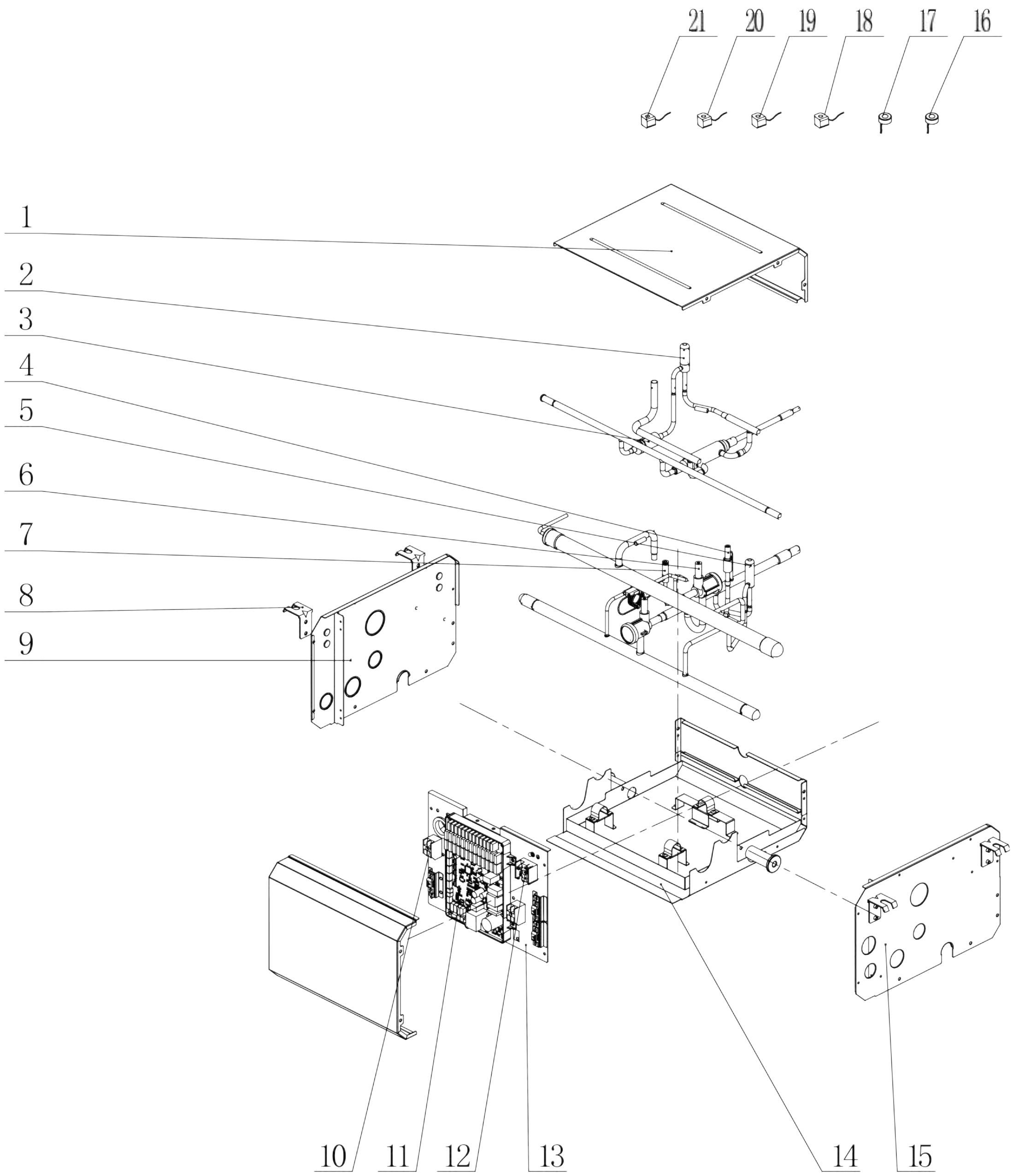


No.	Name	Material code	Vulnerable part *	Qty
1	Rear Grill	016001060013	*	1
2	Coping	012049000059P		1
3	Diversion Circle	200150000011	*	2
4	Axial fan blade	10434100002	*	2
5	Brushless DC Motor	1570412405	*	2
6	Rear Grill	016001060012	*	1
7	Condenser Assy	011002060733	*	1
8	Electromagnetic Valve	43000055	*	1
9	Filter	07415200002	*	1
10	Electromagnetic Valve	43000072	*	4
11	Electromagnetic Valve	43044100144	*	2
12	Discharge Charge Valve	07334100002	*	3
13	Electronic Expansion Valve	43044100190	*	2
14	Electromagnetic Valve	072008000005	*	1
15	Nozzle for Adding Freon	06130002	*	1
16	One way Valve	07130101	*	2
17	Electromagnetic Valve	43044100224	*	1
18	Electronic Expansion Valve	43044100173	*	1
19	Gas Tube Filter	072190511	*	3
20	Plate-type Heat Exchanger	010007060006	*	1
21	Left Side Plate Sub-Assy	017037060016P		1
22	Chassis Sub-assy	017000060477P		1
23	Liquid accumulator	07424100036	*	1

No.	Name	Material code	Vulnerable part *	Qty
24	Bidirectional Strainer	07220016	*	1
25	Oil Separator	035028060002	*	1
26	Silencer	07245008	*	2
27	Cut off Valve	0733410005301	*	1
28	Cut off Valve	0733410001401	*	2
29	Filter	07222025	*	1
30	Electronic Expansion Valve	072009060012	*	2
31	One way Valve	07333700032	*	2
32	Pressure Protect Switch	4602000910	*	1
33	Compressor and Fittings	009001000190	*	2
34	Pressure Protect Switch	4602000911	*	1
35	cover plate	012035000246P		1
36	Panel component	000003060148		1
37	Left panel	012062000016P		1
38	Right panel	012167000014P		1
39	Magnet Coil (electromagnetic valve)	07200106000812	*	1
40	Magnet Coil (electromagnetic valve)	07200106000804	*	1
41	Magnet Coil (electromagnetic valve)	07200106000806	*	1
42	Magnet Coil (electromagnetic valve)	07200106000805	*	1
43	Magnet Coil (electromagnetic valve)	07200106000808	*	1
44	4 Way Valve Coil	072010060002	*	1
45	4 Way Valve Coil	07201006000201	*	1
46	Magnet Coil (electromagnetic valve)	07200106000801	*	1
47	Magnet Coil (electromagnetic valve)	07200106000802	*	1
48	Magnet Coil (electromagnetic valve)	07200106000803	*	1
49	Magnet Coil (electromagnetic valve)	07200106000807	*	1
50	Magnet Coil (electromagnetic valve)	07200106000811	*	1
51	Magnet Coil (electromagnetic valve)	072001060010	*	1
52	Magnet Coil (electromagnetic valve)	072001060007	*	1
53	Magnet Coil (electromagnetic valve)	072001060006	*	1
54	Magnet Coil (Electronic Expansion Valve)	072002000011	*	1
55	Magnet Coil (Electronic Expansion Valve)	07200200001102	*	1
56	Magnet Coil (Electronic Expansion Valve) UKV	4304413274	*	1
57	Magnet Coil (Electronic Expansion Valve) UKV	4304413269	*	1
58	Magnet Coil (Electronic Expansion Valve) UKV	4304413248	*	1
59	Electric Heater(Compressor)	7651521243	*	1
60	Electric Heater(Compressor)	7651521244	*	1
61	Pressure Sensor	32218000009	*	1
62	Pressure Sensor	32218000008	*	1
63	Sensor Sub-assy	390002060060	*	1
64	Filter	07414100024	*	1
65	Gas-liquid Separator	035027060004	*	1
66	One way Valve	071001060008	*	2
67	Nozzle for Adding Freon	035114060003	*	1
68	4-way Valve	43000412	*	2
69	Nozzle for Adding Freon	06120012	*	2
70	Electromagnetic Valve	072008060007	*	2
71	Righ Side Plate Sub-Assy	017038060026P		1
72	Electric Box Assy	100002065118	*	1
73	Terminal Board	422000060055	*	1

No.	Name	Material code	Vulnerable part *	Qty
74	Patching board	300027060098	*	1
75	Terminal Board	422000060004	*	1
76	Main Board	300027060136	*	1
77	Reactor	45000406000901	*	2
78	Filter Board	300020060006	*	2
79	Electric Box Assy	100002067747	*	1
80	Main Board	300027060076	*	2
81	Radiator	49018000088	*	2
82	Radiator	4901800008002	*	2
83	Main Board	300027000583	*	2
84	Radiator	43003406003301	*	1

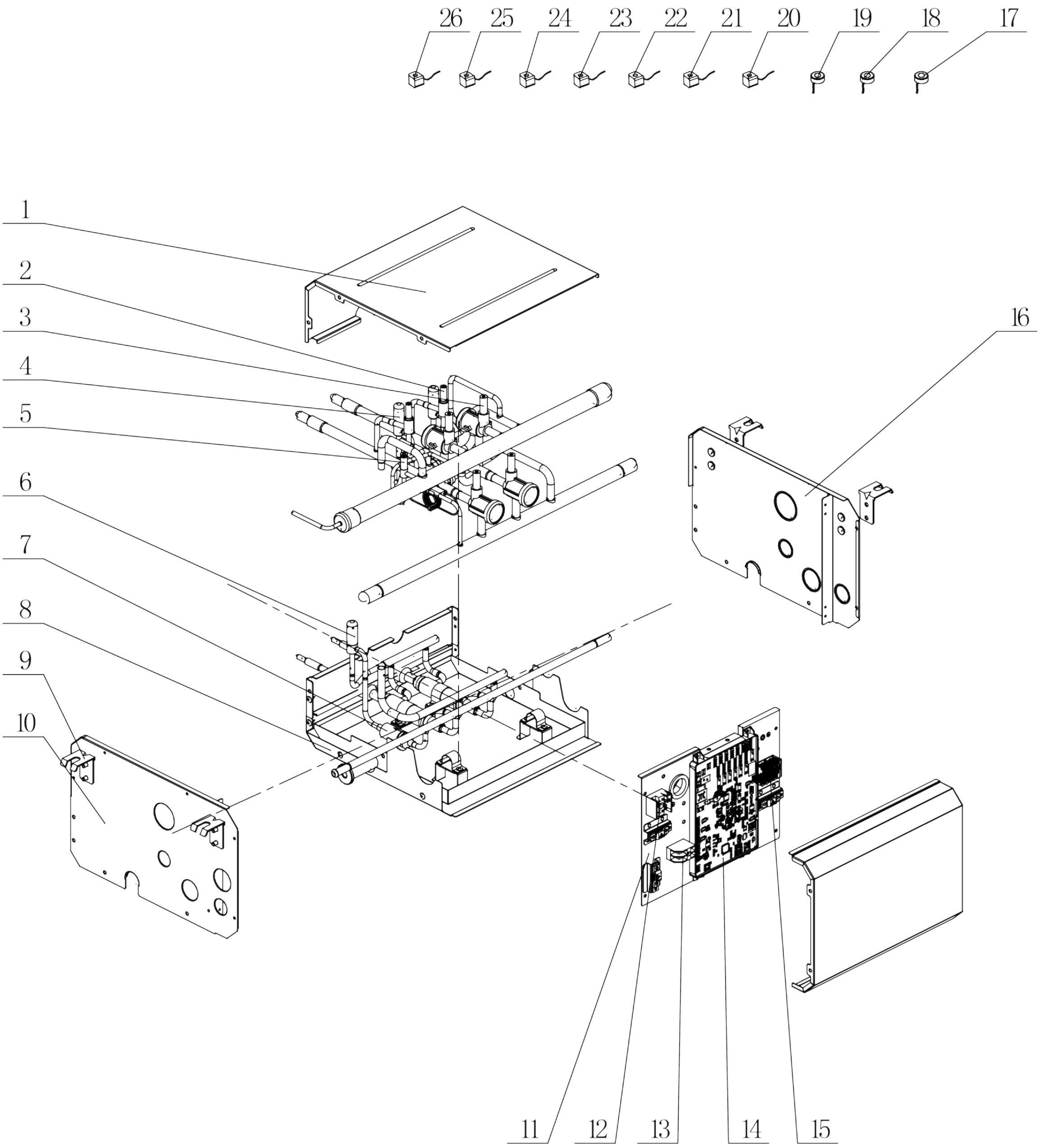
6.4 Explosive View and Parts List of NCHS1D



No.	Name	Material code	Vulnerable part *	Qty
1	Upper cover plate	012148060250P		1
2	Electronic Expansion Valve	072009000001	*	1
3	Filter	0741410000601	*	1
4	Electromagnetic Valve	43000072	*	1
5	Electronic Expansion Valve	43044100172	*	1
6	Electromagnetic Valve	43000073	*	2
7	Electromagnetic Valve	43044100144	*	1
8	Pothook	0211244601P	*	4
9	Side plate sub-assy 2	017110060028P		1
10	Terminal Board	420001000019	*	1
11	Patching board	300023060022	*	1
12	Terminal Board	42011106	*	1
13	Electric Box Assy	100002069915	*	1

No.	Name	Material code	Vulnerable part *	Qty
14	Bottom case	012261060007P		1
15	Side plate sub-assy 1	017110060029P		1
16	Magnet Coil (Electronic Expansion Valve) UKV	4304413252	*	1
17	Magnet Coil (Electronic Expansion Valve) UKV	4304413217	*	1
18	Magnet Coil (electromagnetic valve)	07200106000824	*	1
19	Magnet Coil (electromagnetic valve)	07200106000815	*	1
20	Magnet Coil (electromagnetic valve)	07200106000826	*	1
21	Magnet Coil (electromagnetic valve)	07200106000827	*	1

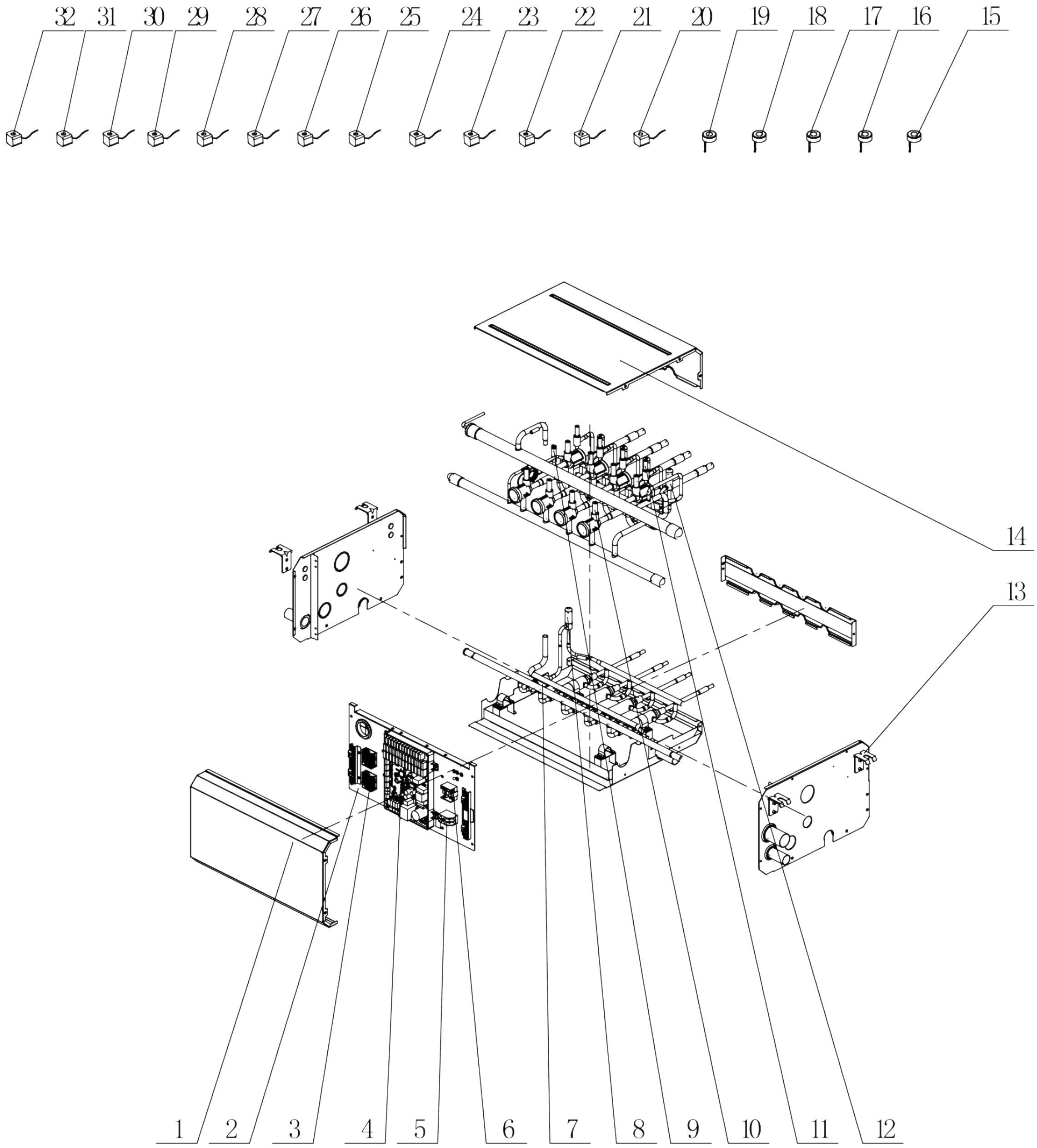
6.5 Explosive View and Parts List of NCHS2D



No.	Name	Material code	Vulnerable part *	Qty
1	Upper cover plate	012148060201P		1
2	Electromagnetic Valve	43000072	*	2
3	Electromagnetic Valve	43000073	*	4

No.	Name	Material code	Vulnerable part *	Qty
4	Electronic Expansion Valve	43044100172	*	2
5	Electromagnetic Valve	43044100144	*	1
6	Electronic Expansion Valve	072009000001	*	1
7	Filter	0741410000601	*	1
8	Bottom case	012261060004		1
9	pothook	0211244601P	*	4
10	Side plate sub-assy 2	017110060028P		1
11	Electric Box Assy	100002067942	*	1
12	Terminal Board	420001000019	*	1
13	Terminal Board	42011106	*	1
14	Patching board	300023060022	*	1
15	Terminal Board	422000060004	*	1
16	Side plate sub-assy 1	017110060029P		1
17	Magnet Coil (Electronic Expansion Valve) UKV	4304413251	*	1
18	Magnet Coil (Electronic Expansion Valve) UKV	4304413252	*	1
19	Magnet Coil (Electronic Expansion Valve) UKV	4304413217	*	1
20	Magnet Coil (electromagnetic valve)	07200106000815	*	1
21	Magnet Coil (electromagnetic valve)	07200106000821	*	1
22	Magnet Coil (electromagnetic valve)	07200106000822	*	1
23	Magnet Coil (electromagnetic valve)	07200106000823	*	1
24	Magnet Coil (electromagnetic valve)	07200106000824	*	1
25	Magnet Coil (electromagnetic valve)	07200106000826	*	1
26	Magnet Coil (electromagnetic valve)	07200106000827	*	1

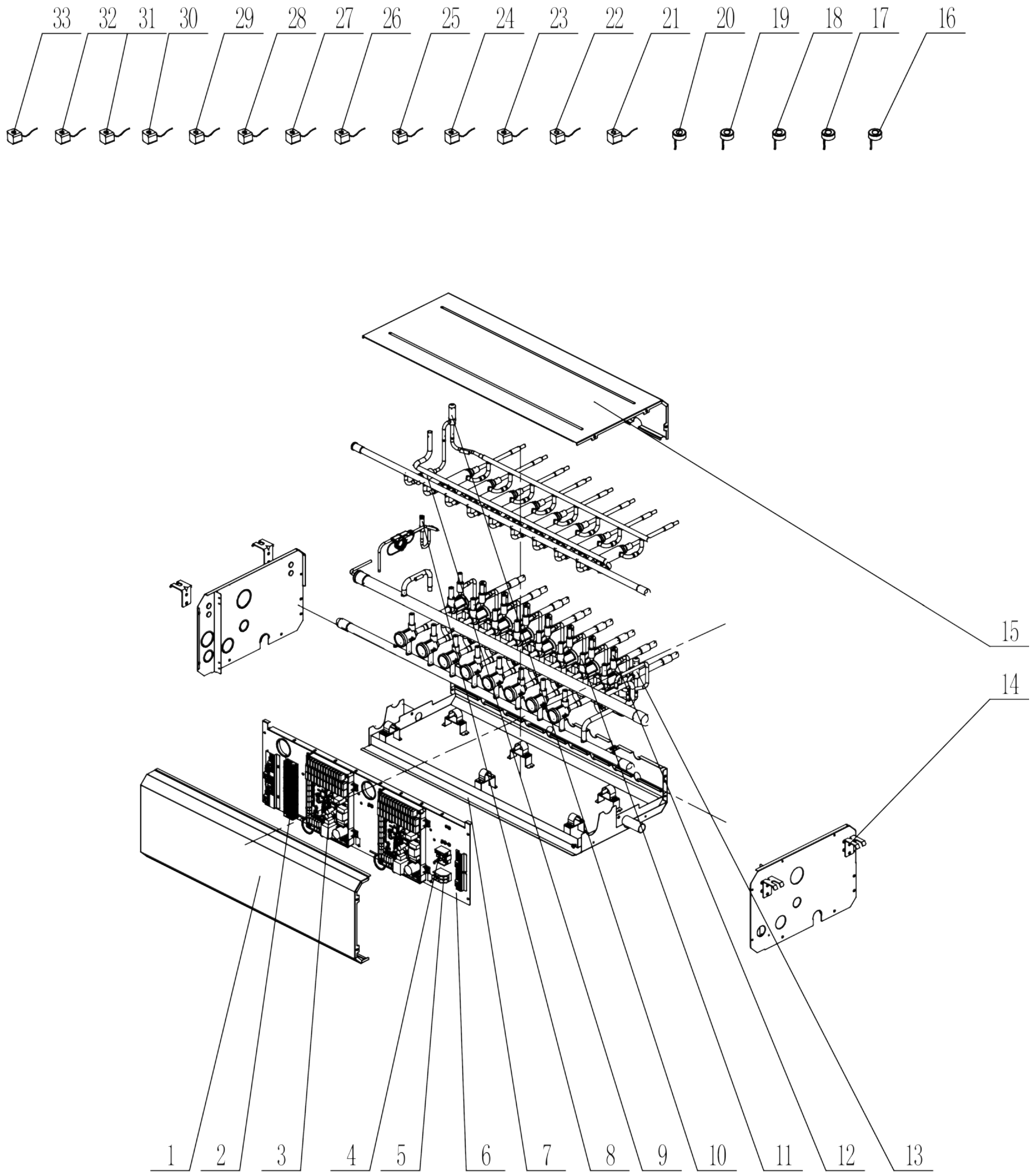
6.6 Explosive View and Parts List of NCHS4D



No.	Name	Material code	Vulnerable part *	Qty
1	Electric box cover	012020060117P		1
2	Electric Box Assy	100002062901	*	1
3	Terminal Board	422000060004	*	1
4	Patching board	300023060022	*	1
5	Terminal Board	420001000019	*	1
6	Terminal Board	42011106	*	1
7	Filter	0741410000601	*	1
8	Electronic Expansion Valve	072009000001	*	1
9	Electromagnetic Valve	43044100144	*	1
10	Electromagnetic Valve	43000073	*	8
11	Electromagnetic Valve	43000072	*	4
12	Electronic Expansion Valve	43044100172	*	4
13	Pothook	0211244601P	*	4
14	Upper cover plate	012148060035P		1

No.	Name	Material code	Vulnerable part *	Qty
15	Magnet Coil (Electronic Expansion Valve) UKV	4304413251	*	1
16	Magnet Coil (Electronic Expansion Valve) UKV	4304413252	*	1
17	Magnet Coil (Electronic Expansion Valve) UKV	4304413234	*	1
18	Magnet Coil (Electronic Expansion Valve) UKV	4304413235	*	1
19	Magnet Coil (Electronic Expansion Valve) UKV	4304413217	*	1
20	Magnet Coil (electromagnetic valve)	07200106000815	*	1
21	Magnet Coil (electromagnetic valve)	07200106000816	*	1
22	Magnet Coil (electromagnetic valve)	07200106000817	*	1
23	Magnet Coil (electromagnetic valve)	07200106000818	*	1
24	Magnet Coil (electromagnetic valve)	07200106000819	*	1
25	Magnet Coil (electromagnetic valve)	07200106000820	*	1
26	Magnet Coil (electromagnetic valve)	07200106000821	*	1
27	Magnet Coil (electromagnetic valve)	07200106000822	*	1
28	Magnet Coil (electromagnetic valve)	07200106000823	*	1
29	Magnet Coil (electromagnetic valve)	07200106000824	*	1
30	Magnet Coil (electromagnetic valve)	07200106000825	*	1
31	Magnet Coil (electromagnetic valve)	07200106000826	*	1
32	Magnet Coil (electromagnetic valve)	07200106000827	*	1

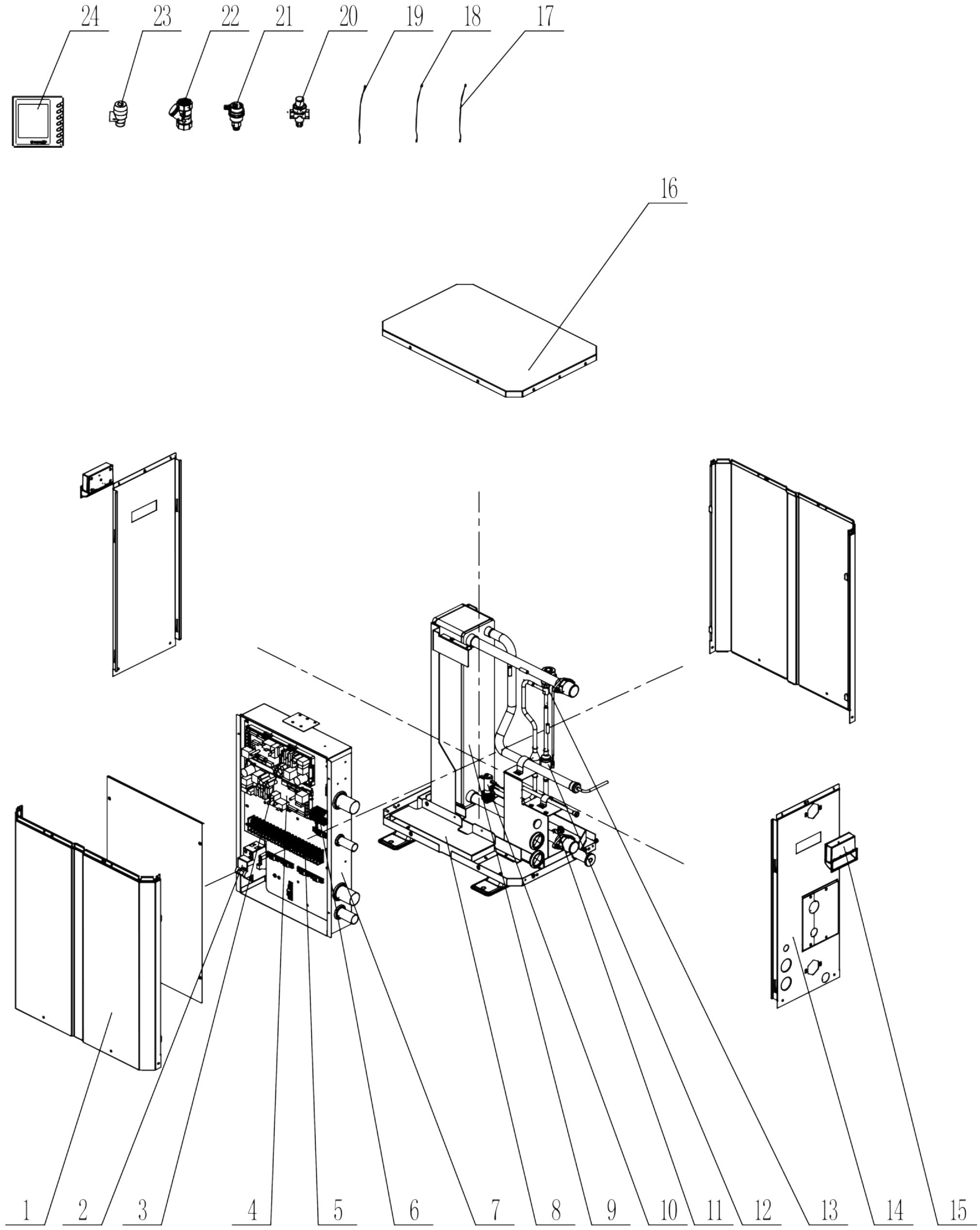
6.7 Explosive View and Parts List of NCHS8D



No.	Name	Material code	Vulnerable part *	Qty
1	Electric box cover	012020060509P		1
2	Terminal Board	422000060004	*	1
3	Patching board	300023060022	*	1
4	Terminal Board	420001000019	*	1
5	Terminal Board	42011106	*	1
6	Electric Box Assy	100002067943	*	1
7	Bottom case	012261060005P		1
8	Electromagnetic Valve	43044100144	*	1
9	Filter	0741410000601	*	1
10	Electronic Expansion Valve	072009000001	*	1
11	Electromagnetic Valve	43000072	*	8
12	Electromagnetic Valve	43000073	*	16
13	Electronic Expansion Valve	43044100172	*	8
14	Pothook	0211244601P	*	4

No.	Name	Material code	Vulnerable part *	Qty
15	Upper cover plate	012148060214P		1
16	Magnet Coil (Electronic Expansion Valve) UKV	4304413251	*	2
17	Magnet Coil (Electronic Expansion Valve) UKV	4304413252	*	2
18	Magnet Coil (Electronic Expansion Valve) UKV	4304413234	*	2
19	Magnet Coil (Electronic Expansion Valve) UKV	4304413235	*	2
20	Magnet Coil (Electronic Expansion Valve) UKV	4304413217	*	1
21	Magnet Coil (electromagnetic valve)	07200106000815	*	2
22	Magnet Coil (electromagnetic valve)	07200106000826	*	2
23	Magnet Coil (electromagnetic valve)	07200106000816	*	2
24	Magnet Coil (electromagnetic valve)	07200106000824	*	2
25	Magnet Coil (electromagnetic valve)	07200106000820	*	2
26	Magnet Coil (electromagnetic valve)	07200106000819	*	2
27	Magnet Coil (electromagnetic valve)	07200106000825	*	2
28	Magnet Coil (electromagnetic valve)	07200106000823	*	2
29	Magnet Coil (electromagnetic valve)	07200106000822	*	2
30	Magnet Coil (electromagnetic valve)	07200106000827	*	1
31	Magnet Coil (electromagnetic valve)	07200106000817	*	2
32	Magnet Coil (electromagnetic valve)	07200106000821	*	2
33	Magnet Coil (electromagnetic valve)	07200106000818	*	2

6.8 Explosive View and Parts List of NRQR16L/A-T、NRQR30L/A-T



No.	Name	Material code	Vulnerable part *	Qty
1	Panel	012073060278P		1
2	Electric leakage circuit breaker	4602800301	*	1
3	Main Board	300002060336	*	1
4	Main Board	300002060371	*	1
5	Terminal Board	422000060011	*	1
6	Terminal Board	42200006000401	*	1
7	Electric Box Assy	100002062065	*	1
8	Chassis Sub-assy	017000060136P		1
9	Plate heat exchanger	NRQR16L/A-T:010007060015 NRQR30L/A-T:010007060014	*	1
10	Water flow swicth	45028065	*	1
11	Release valve	07108206	*	1
12	Strainer	035021060012	*	1
13	Electronic Expansion Valve	07334503	*	1

No.	Name	Material code	Vulnerable part *	Qty
14	Right side plate	012056060047P		1
15	Handle	200149060003	*	2
16	Top cover	012049060026P		1
17	Sensor Sub-assy	390002060114	*	1
18	Temperature sensor	39000283	*	1
19	Temperature sensor	3900028301	*	1
20	Pressure maintaining valve	07333700052	*	1
21	Automatic release valve	07108208	*	1
22	Filter (water circuit)	00262802	*	1
23	Safety valve	07382814	*	1
24	Display panel	300001060361	*	1

Chapter 5 Maintenance

1 Outdoor Unit

Routine checkup and maintenance can prolong service life of unit, please ask for professional personnel to conduct maintenance.

1.1 Outdoor Unit Heat Exchanger

Heat exchanger of outdoor unit should be washed regularly that at least once in two months. Use cleaner and nylon brush to remove dust and impurities; if there is compressed air source, use compressed air to remove the dust in the surface of heat exchanger. Please do not wash with tap water.

1.2 Notices at the Beginning of Use Season

(1) Check if there is blockage in air inlet and outlet of indoor and outdoor units;

(2) Check if the grounding is reliable;

(3) Check if the batteries of remote controller have been replaced;

(4) Check if the air filter has been well installed;

(5) After long-term closedown of unit, before restarting the unit, turn on the power switch of air conditioner 8 hours before starting operation, so as to conduct preheating of crankcase of outdoor compressor;

(6) Check if outdoor unit is firmly installed, if there is any faults, please contact with Gree maintenance center.

1.3 Notices at the End of Use Season

(1) Cut off general supply source of air conditioner unit;

(2) Clean the filter and case of indoor and outdoor units;

(3) Remove the dust and impurities of indoor and outdoor units;

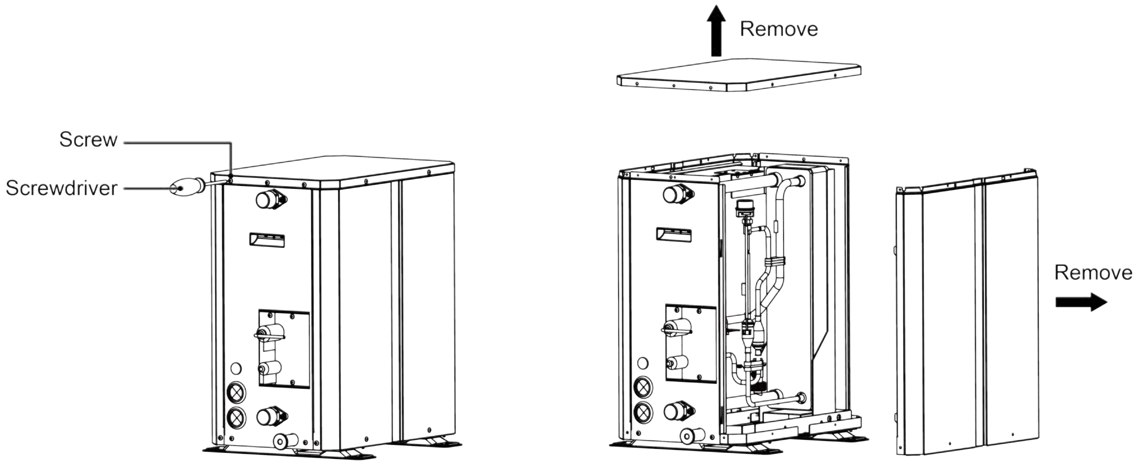
(4) If the outdoor unit gets rusty, smear with paint in rusty place to prevent it from expanding.

2 Hydro Box

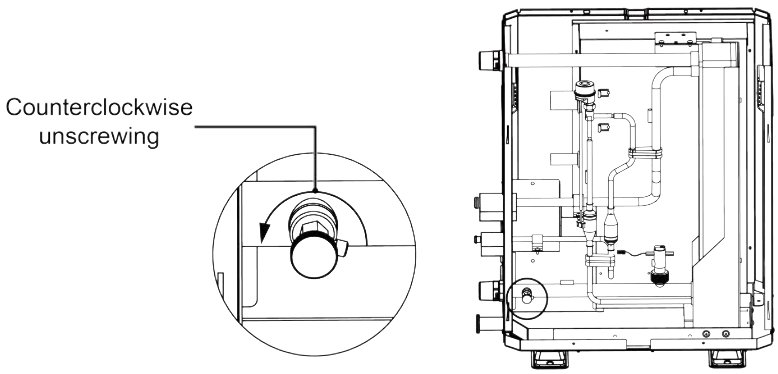
If the unit is not used for a long time or the hydro box is in power-off status, please drain the water inside the hydro box, pipeline of floor heating and water tank. Of add anti-freeze fluid into the hydro box, pipeline of floor heating and water tank to improve anti-freeze capacity.

2.1 Drainage Method of Hydro Box and Floor Heating

(1) Use a screwdriver to unscrew the 9 screws of the top cover of the hydro box and the 4 screws at the bottom of the rear panel (the side panel without the GREE logo), and then remove the top cover and the rear panel.



(2) Operate from the direction shown in the figure below. Loosen the drain valve and the exhaust valve installed on the outlet water pipe.



(3) (1) Meanwhile, open the drain valve for engineering installation.

2.2 Anti-freezing measure

In countries where the inlet water temperature can be lower than 15℃, it's necessary to use approved antifreeze in the circulating water to protect the water pipes. Please consult your hydro box supplier for a locally approved solution. Calculate the approximate volume of circulating water in the system. (The hydro box is not included.) Calculate the required amount of antifreeze according to the volume ratio recommended in the following table and add it to the circulating water.

Type of antifreeze	Minimum temperature for freeze protection				
	15℃~ -5℃	-10℃	-15℃	-20℃	-25℃
Ethylene glycol	12%	20%	30%	-	-
Propylene glycol	17%	25%	33%	-	-
Methanol	6%	12%	16%	24%	30%

Notes:

① Use only one of the above antifreeze.

② If antifreeze is used, pressure drop and capability degradation of the system can occur.

③ If antifreeze is used, corrosion may occur to the circulating water pipes, so be sure to use corrosion inhibitors.

④ Please ensure that the antifreeze is used in accordance with local laws and regulations.

⑤ Antifreeze may be toxic and it is strictly forbidden to mix with domestic water.

⑥ If this hydro box is only used for making hot water, the anti-freeze liquid should be added only when the water-in temperature is less than 5℃.

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

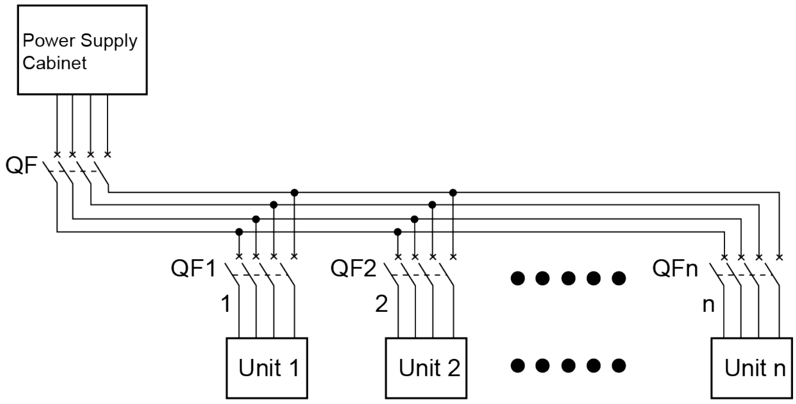
Low-pressure sensor features (R410A)

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 (mm²)	Recommended wire (cross-sectional area) (mm²)
GMV-VQ224WM/C-X	-	380-415V 3N~ 50/60Hz	25	2.5	2.5×5
GMV-VQ280WM/C-X	-	380-415V 3N~ 50/60Hz	25	2.5	2.5×5
GMV-VQ335WM/C-X	-	380-415V 3N~ 50/60Hz	25	4.0	4.0×5
GMV-VQ400WM/C-X	-	380-415V 3N~ 50/60Hz	40	6.0	6.0×5
GMV-VQ450WM/C-X	-	380-415V 3N~ 50/60Hz	40	6.0	6.0×5
GMV-VQ504WM/C-X	-	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
GMV-VQ560WM/C-X	-	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
GMV-VQ615WM/C-X	-	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
GMV-VQ680WM/C-X	280+400	380-415V 3N~ 50/60Hz	25+40	2.5+6.0	2.5×5+6.0×5
GMV-VQ730WM/C-X	280+450	380-415V 3N~ 50/60Hz	25+40	2.5+6.0	2.5×5+6.0×5
GMV-VQ784WM/C-X	280+504	380-415V 3N~ 50/60Hz	25+50	2.5+10.0	2.5×5+10.0×5
GMV-VQ840WM/C-X	280+560	380-415V 3N~ 50/60Hz	25+50	2.5+10.0	2.5×5+10.0×5
GMV-VQ895WM/C-X	280+615	380-415V 3N~ 50/60Hz	25+50	2.5+10.0	2.5×5+10.0×5
GMV-VQ950WM/C-X	335+615	380-415V 3N~ 50/60Hz	25+50	4.0+10.0	4.0×5+10.0×5
GMV-VQ1015WM/C-X	400+615	380-415V 3N~ 50/60Hz	40+50	6.0+10.0	6.0×5+10.0×5
GMV-VQ1065WM/C-X	450+615	380-415V 3N~ 50/60Hz	40+50	6.0+10.0	6.0×5+10.0×5
GMV-VQ1119WM/C-X	504+615	380-415V 3N~ 50/60Hz	50+50	10.0+10.0	10.0×5+10.0×5

Model	Combination method	Power supply	Capacity of circuit breaker of each combination module (A)	Minimum cross-sectional area of grounding wire (mm²)	Recommended wire (cross-sectional area) (mm²)
GMV-VQ1175WM/C-X	560+615	380-415V 3N~ 50/60Hz	50+50	10.0+10.0	10.0×5+10.0×5
GMV-VQ1230WM/C-X	615+615	380-415V 3N~ 50/60Hz	50+50	10.0+10.0	10.0×5+10.0×5
GMV-VQ1290WM/C-X	280+450+560	380-415V 3N~ 50/60Hz	25+40+50	2.5+6.0+10.0	2.5×5+6.0×5+10.0×5
GMV-VQ1345WM/C-X	280+450+615	380-415V 3N~ 50/60Hz	25+40+50	2.5+6.0+10.0	2.5×5+6.0×5+10.0×5
GMV-VQ1400WM/C-X	335+450+615	380-415V 3N~ 50/60Hz	25+40+50	4.0+6.0+10.0	4.0×5+6.0×5+10.0×5
GMV-VQ1455WM/C-X	280+560+615	380-415V 3N~ 50/60Hz	25+50+50	2.5+10.0+10.0	2.5×5+10.0×5+10.0×5
GMV-VQ1510WM/C-X	280+615+615	380-415V 3N~ 50/60Hz	25+50+50	2.5+10.0+10.0	2.5×5+10.0×5+10.0×5
GMV-VQ1565WM/C-X	335+615+615	380-415V 3N~ 50/60Hz	25+50+50	4.0+10.0+10.0	4.0×5+10.0×5+10.0×5
GMV-VQ1630WM/C-X	400+615+615	380-415V 3N~ 50/60Hz	40+50+50	6.0+10.0+10.0	6.0×5+10.0×5+10.0×5
GMV-VQ1680WM/C-X	450+615+615	380-415V 3N~ 50/60Hz	40+50+50	6.0+10.0+10.0	6.0×5+10.0×5+10.0×5
GMV-VQ1734WM/C-X	504+615+615	380-415V 3N~ 50/60Hz	50+50+50	10.0+10.0+10.0	10.0×5+10.0×5+10.0×5
GMV-VQ1790WM/C-X	560+615+615	380-415V 3N~ 50/60Hz	50+50+50	10.0+10.0+10.0	10.0×5+10.0×5+10.0×5
GMV-VQ1845WM/C-X	615+615+615	380-415V 3N~ 50/60Hz	50+50+50	10.0+10.0+10.0	10.0×5+10.0×5+10.0×5
GMV-VQ1905WM/C-X	280+450+560+615	380-415V 3N~ 50/60Hz	25+40+50+50	2.5+6.0+10.0+10.0	2.5×5+6.0×5+10.0×5+10.0×5
GMV-VQ1959WM/C-X	280+504+560+615	380-415V 3N~ 50/60Hz	25+50+50+50	2.5+10.0+10.0+10.0	2.5×5+10.0×5+10.0×5+10.0×5
GMV-VQ2015WM/C-X	280+560+560+615	380-415V 3N~ 50/60Hz	25+50+50+50	2.5+10.0+10.0+10.0	2.5×5+10.0×5+10.0×5+10.0×5
GMV-VQ2070WM/C-X	280+560+615+615	380-415V 3N~ 50/60Hz	25+50+50+50	2.5+10.0+10.0+10.0	2.5×5+10.0×5+10.0×5+10.0×5
GMV-VQ2125WM/C-X	280+615+615+615	380-415V 3N~ 50/60Hz	25+50+50+50	2.5+10.0+10.0+10.0	2.5×5+10.0×5+10.0×5+10.0×5
GMV-VQ2180WM/C-X	335+615+615+615	380-415V 3N~ 50/60Hz	25+50+50+50	4.0+10.0+10.0+10.0	4.0×5+10.0×5+10.0×5+10.0×5
GMV-VQ2245WM/C-X	400+615+615+615	380-415V 3N~ 50/60Hz	40+50+50+50	6.0+10.0+10.0+10.0	6.0×5+10.0×5+10.0×5+10.0×5
GMV-VQ2295WM/C-X	450+615+615+615	380-415V 3N~ 50/60Hz	40+50+50+50	6.0+10.0+10.0+10.0	6.0×5+10.0×5+10.0×5+10.0×5
GMV-VQ2349WM/C-X	504+615+615+615	380-415V 3N~ 50/60Hz	50+50+50+50	10.0+10.0+10.0+10.0	10.0×5+10.0×5+10.0×5+10.0×5
GMV-VQ2405WM/C-X	560+615+615+615	380-415V 3N~ 50/60Hz	50+50+50+50	10.0+10.0+10.0+10.0	10.0×5+10.0×5+10.0×5+10.0×5
GMV-VQ2460WM/C-X	615+615+615+615	380-415V 3N~ 50/60Hz	50+50+50+50	10.0+10.0+10.0+10.0	10.0×5+10.0×5+10.0×5+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℃ and multi-core copper cable with working temperature of 90℃ is lying on the surface of slot. If working condition changes, please adjust the specification according to national standard.

③ Copper-core cable which complies with local regulations must be applied.

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.

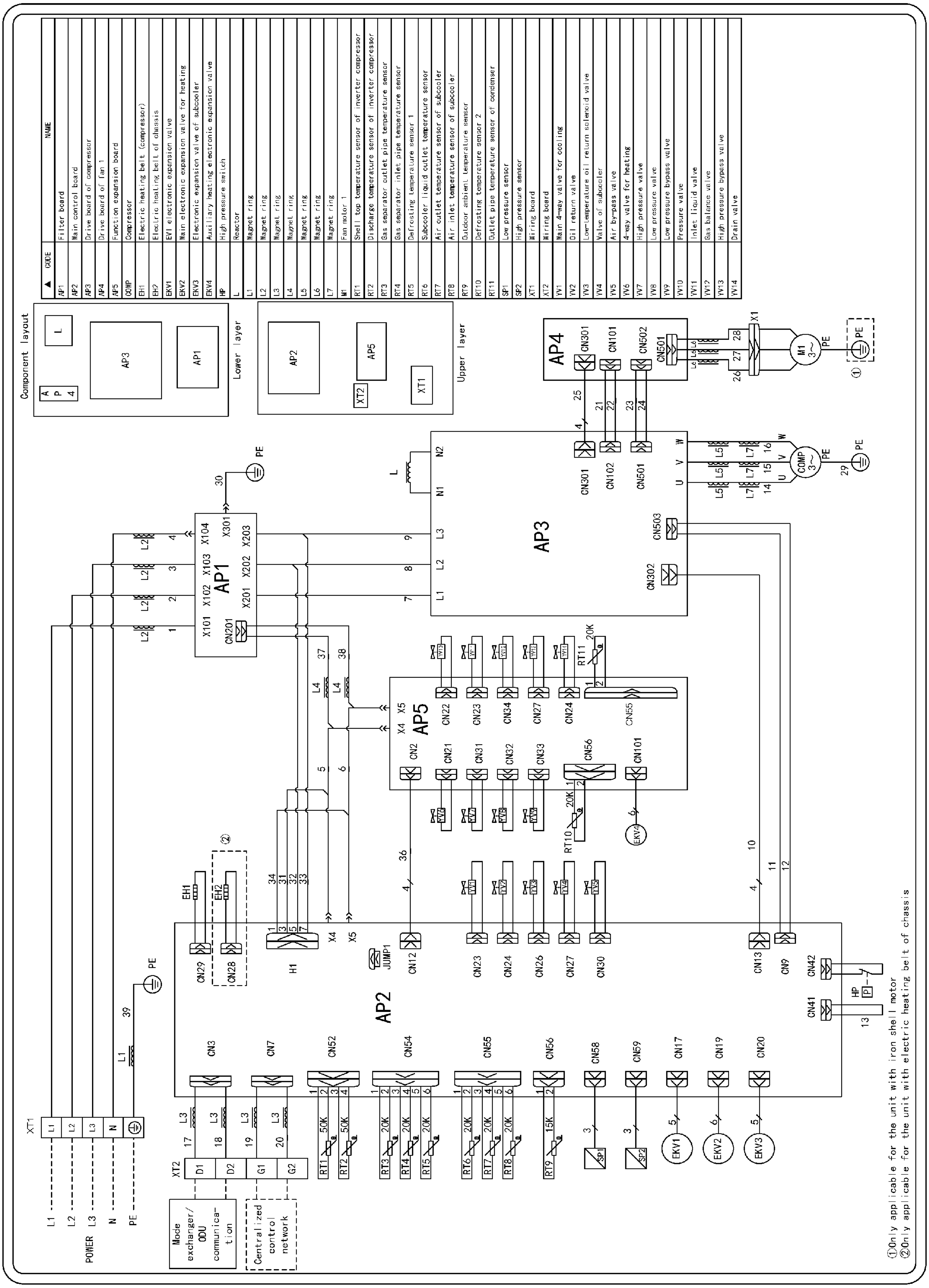
⑤ Specification of circuit breaker is based on the working condition where the ambient temperature of circuit breaker is 40°C. If working condition is different, please adjust the specification according to national standard

⑥ The circuit breaker should include magnetic trip function and thermal trip function so that system can be protected from short circuit and overload.

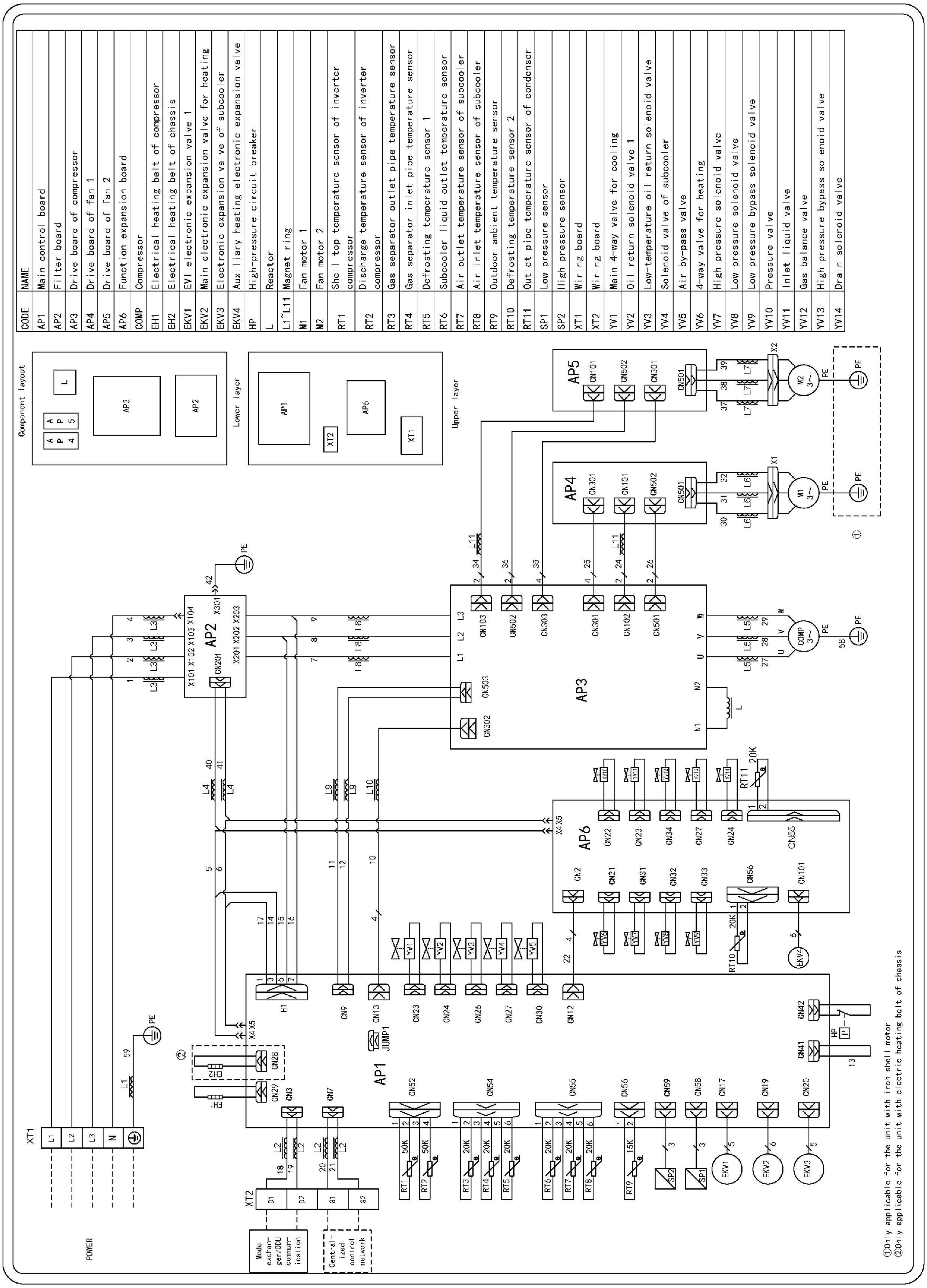
⑦ An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Appendix 5 Circuit Diagram

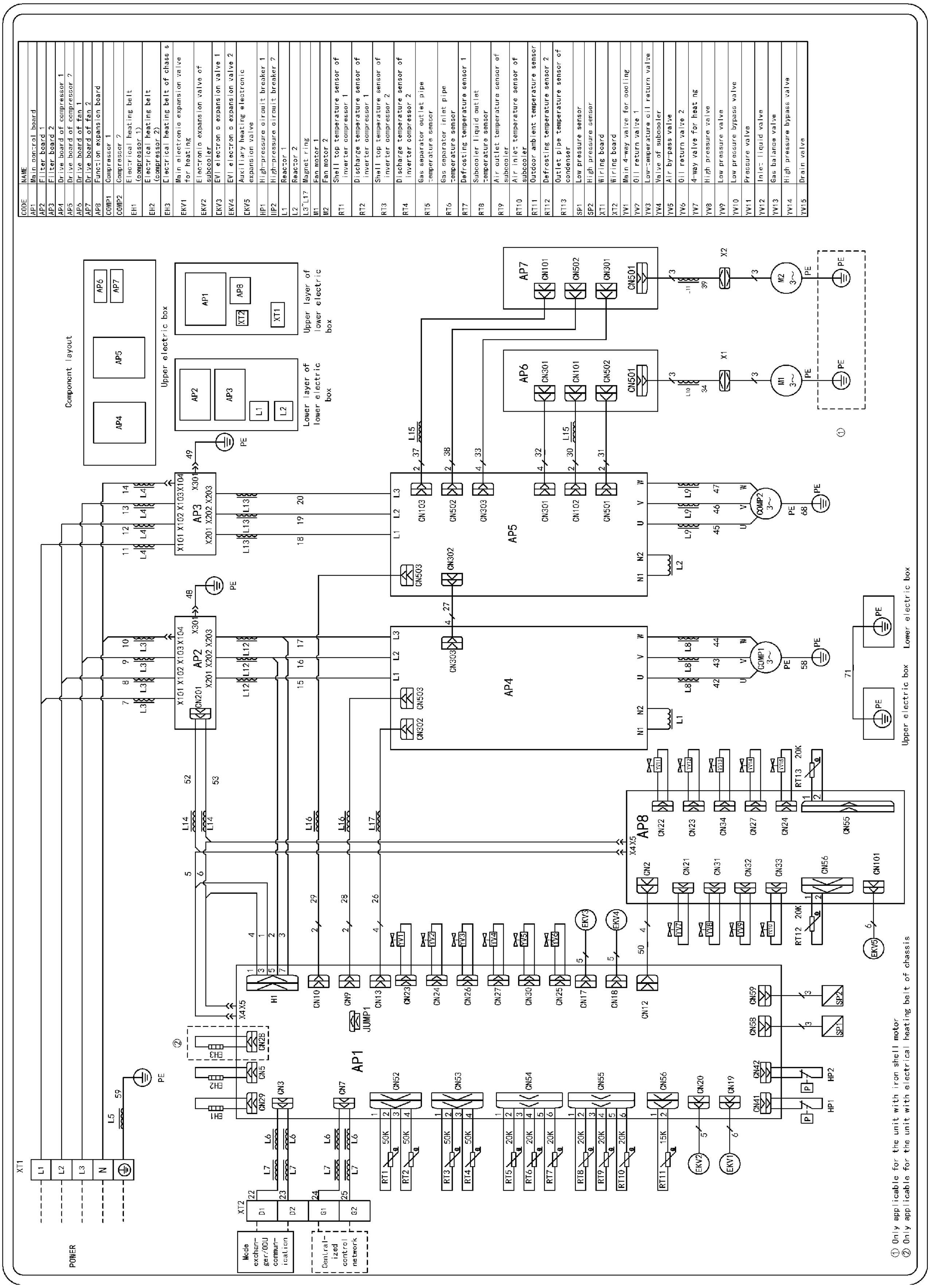
GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X



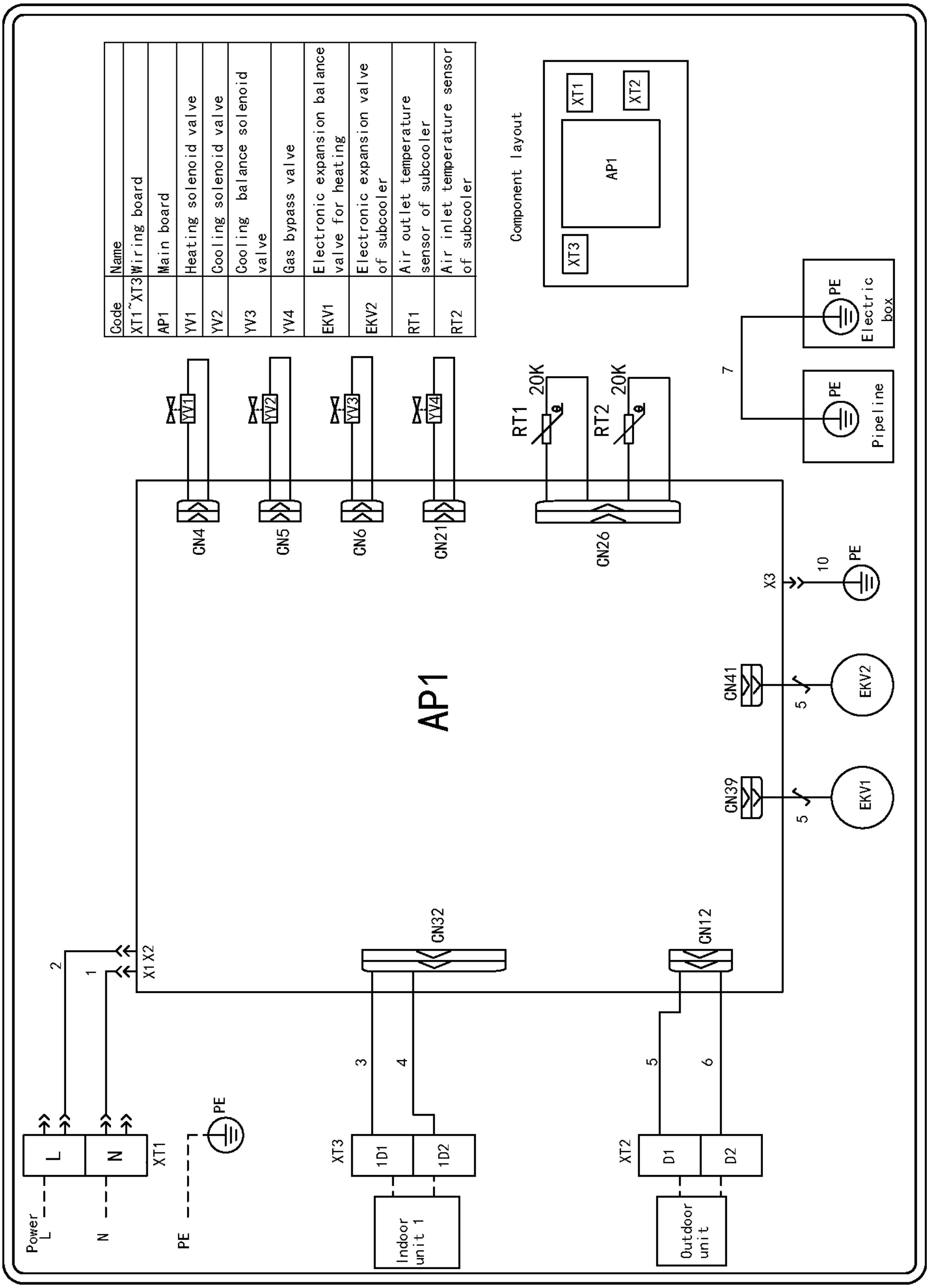
GMV-VQ400WM/C-X、GMV-VQ450WM/C-X



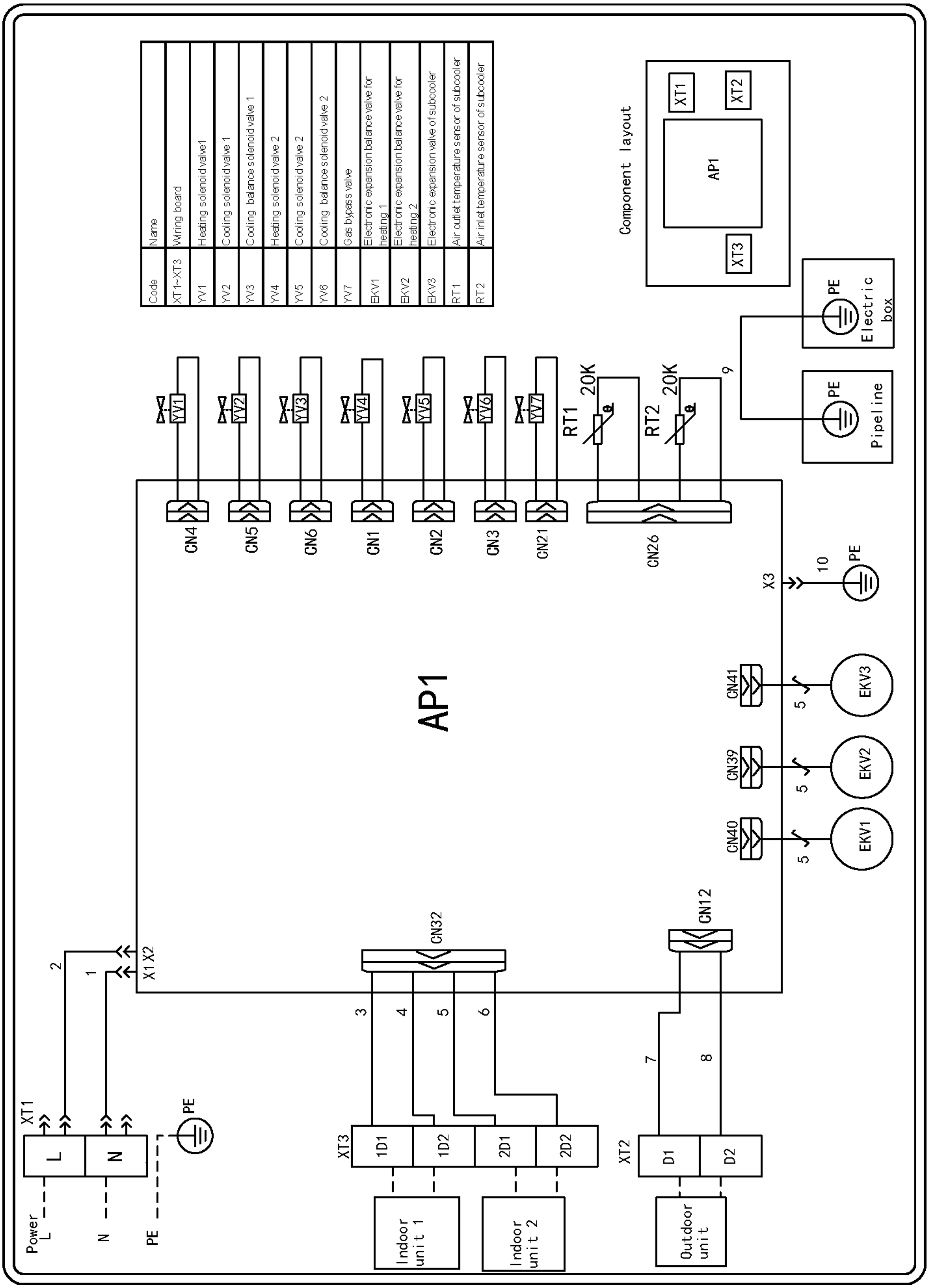
GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X



NCHS1D

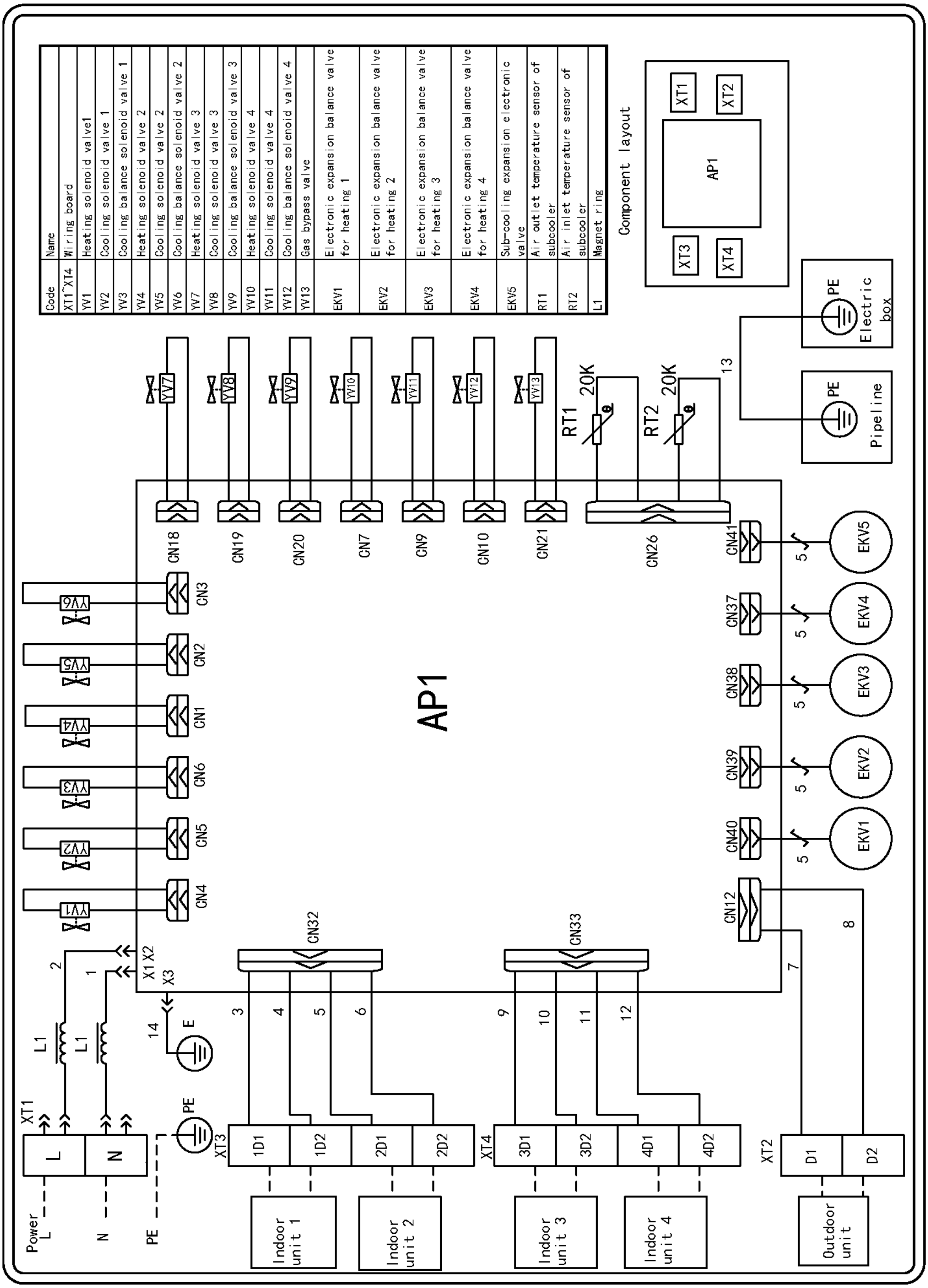

Code Name
XT1~XT3 Wiring board
AP1 Main board
YV1 Heating solenoid valve
YV2 Cooling solenoid valve
YV3 Cooling balance solenoid valve
YV4 Gas bypass valve
EKV1 Electronic expansion balance valve for heating
EKV2 Electronic expansion valve of subcooler
RT1 Air outlet temperature sensor of subcooler
RT2 Air inlet temperature sensor of subcooler
Component layout
XT1
XT2
AP1
XT3
PE
Electric box
PE
Pipeline
7
YV1
YV2
YV3
YV4
RT1 20K
RT2 20K
CN4
CN5
CN6
CN21
CN26
X3
10
PE
CN41
5
EKV2
CN39
5
EKV1
AP1
CN32
CN12
X1 X2
2
1
3
4
5
6
L
N
XT1
PE
XT3
1D1
1D2
XT2
D1
D2
Power L
N
PE
Indoor unit 1
Outdoor unit

NCHS2D

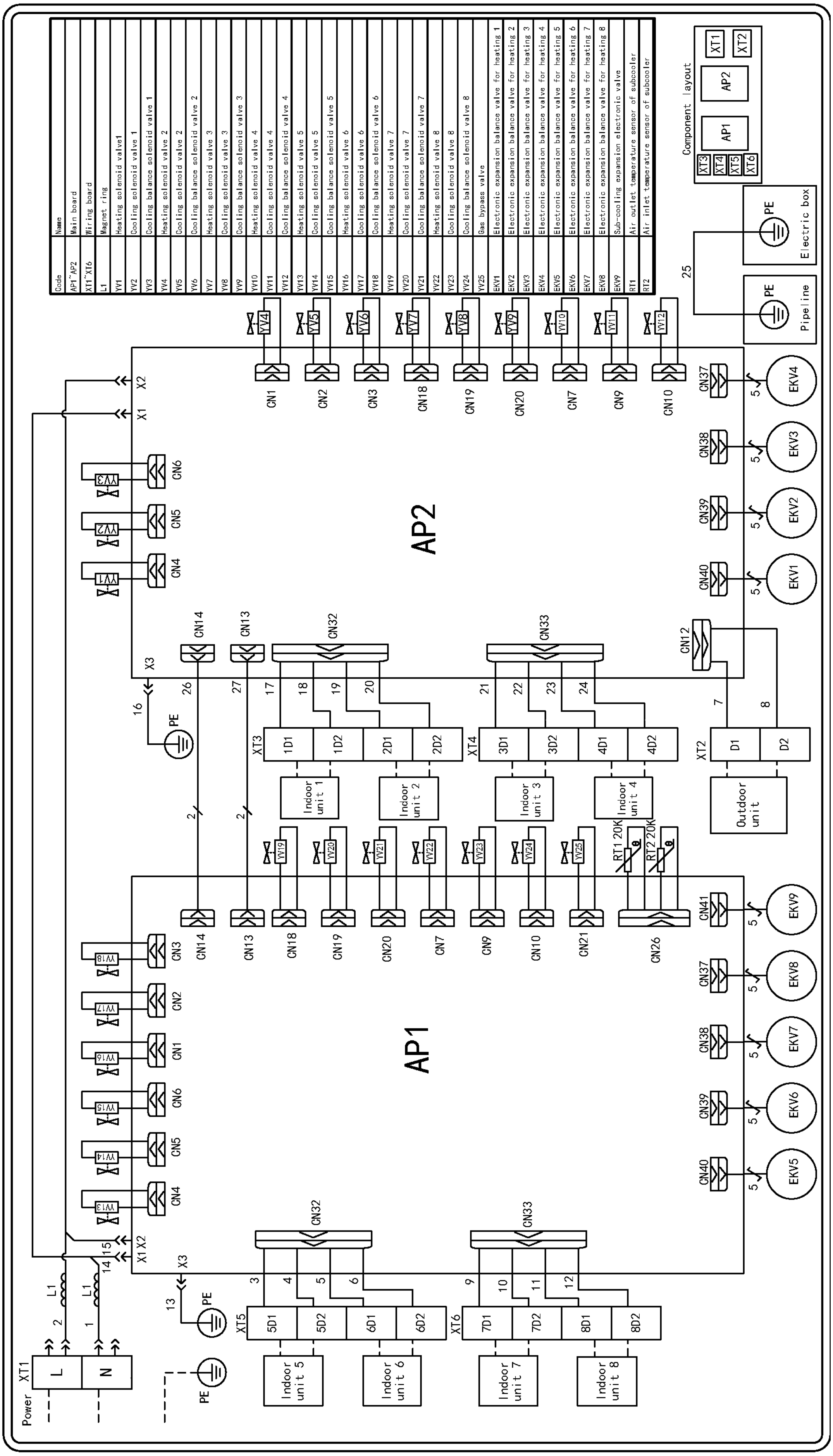


Code	Name
XT1~XT3	Wiring board
YV1	Heating solenoid valve1
YV2	Cooling solenoid valve 1
YV3	Cooling balance solenoid valve 1
YV4	Heating solenoid valve 2
YV5	Cooling solenoid valve 2
YV6	Cooling balance solenoid valve 2
YV7	Gas bypass valve
EKV1	Electronic expansion balance valve for heating 1
EKV2	Electronic expansion balance valve for heating 2
EKV3	Electronic expansion valve of subcooler
RT1	Air outlet temperature sensor of subcooler
RT2	Air inlet temperature sensor of subcooler

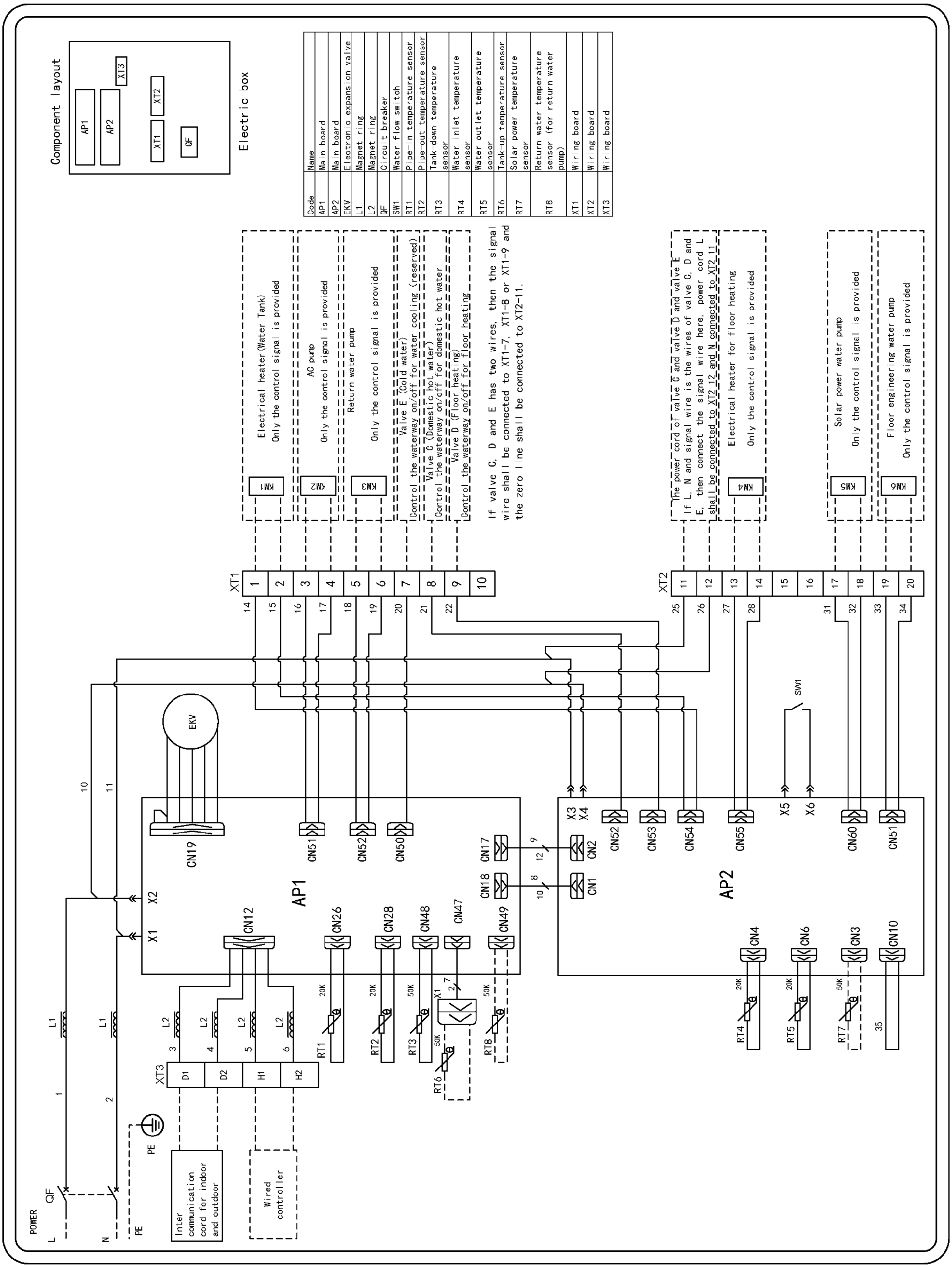
NCHS4D


Code Name
XT1~XT4 Wiring board
YV1 Heating solenoid valve1
YV2 Cooling solenoid valve 1
YV3 Cooling balance solenoid valve 1
YV4 Heating solenoid valve 2
YV5 Cooling solenoid valve 2
YV6 Cooling balance solenoid valve 2
YV7 Heating solenoid valve 3
YV8 Cooling solenoid valve 3
YV9 Cooling balance solenoid valve 3
YV10 Heating solenoid valve 4
YV11 Cooling solenoid valve 4
YV12 Cooling balance solenoid valve 4
YV13 Gas bypass valve
EKV1 Electronic expansion balance valve for heating 1
EKV2 Electronic expansion balance valve for heating 2
EKV3 Electronic expansion balance valve for heating 3
EKV4 Electronic expansion balance valve for heating 4
EKV5 Sub-cooling expansion electronic valve
RT1 Air outlet temperature sensor of subcooler
RT2 Air inlet temperature sensor of subcooler
L1 Magnet ring
Component layout
XT1
XT2
AP1
XT3
XT4
PE
Electric box
PE
Pipeline
RT1 20K
RT2 20K
AP1
Indoor unit 1
Indoor unit 2
Indoor unit 3
Indoor unit 4
Outdoor unit
Power L
N
PE

NCHS8D


Code Name
AP1~AP2 Main board
XT1~XT6 Wiring board
L1 Magnet ring
YV1 Heating solenoid valve1
YV2 Cooling solenoid valve 1
YV3 Cooling balance solenoid valve 1
YV4 Heating solenoid valve 2
YV5 Cooling solenoid valve 2
YV6 Cooling balance solenoid valve 2
YV7 Heating solenoid valve 3
YV8 Cooling solenoid valve 3
YV9 Cooling balance solenoid valve 3
YV10 Heating solenoid valve 4
YV11 Cooling solenoid valve 4
YV12 Cooling balance solenoid valve 4
YV13 Heating solenoid valve 5
YV14 Cooling solenoid valve 5
YV15 Cooling balance solenoid valve 5
YV16 Heating solenoid valve 6
YV17 Cooling solenoid valve 6
YV18 Cooling balance solenoid valve 6
YV19 Heating solenoid valve 7
YV20 Cooling solenoid valve 7
YV21 Cooling balance solenoid valve 7
YV22 Heating solenoid valve 8
YV23 Cooling solenoid valve 8
YV24 Cooling balance solenoid valve 8
YV25 Gas bypass valve
EKV1 Electronic expansion balance valve for heating 1
EKV2 Electronic expansion balance valve for heating 2
EKV3 Electronic expansion balance valve for heating 3
EKV4 Electronic expansion balance valve for heating 4
EKV5 Electronic expansion balance valve for heating 5
EKV6 Electronic expansion balance valve for heating 6
EKV7 Electronic expansion balance valve for heating 7
EKV8 Electronic expansion balance valve for heating 8
EKV9 Sub-cooling expansion electronic valve
RT1 Air outlet temperature sensor of subcooler
RT2 Air inlet temperature sensor of subcooler
Component layout
Electric box
Pipeline
AP1
AP2
Power
Outdoor unit

NRQR16L/A-T、NRQR30L/A-T

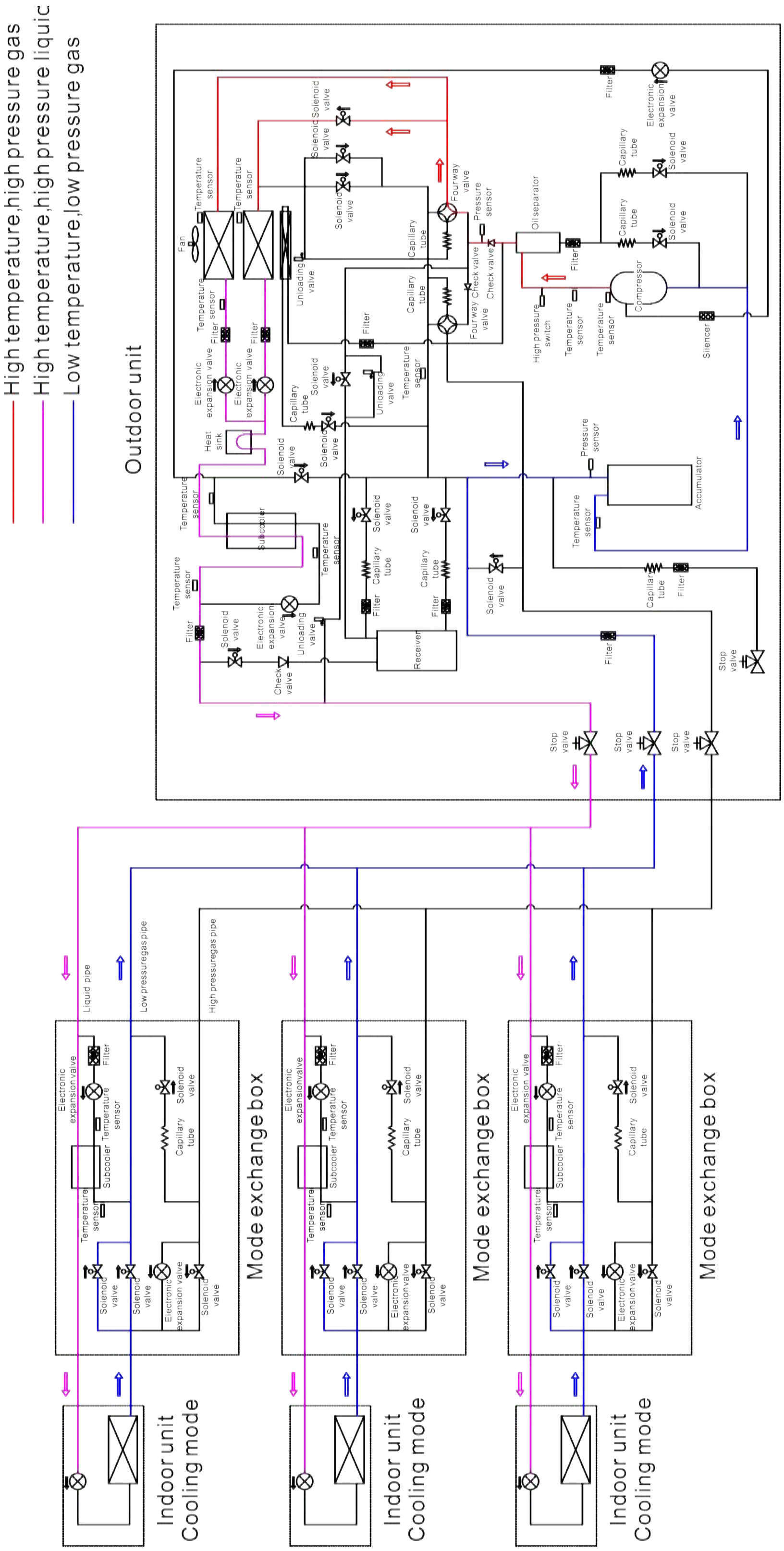


Note: Refer to the mark on the unit for the actual circuit diagram.

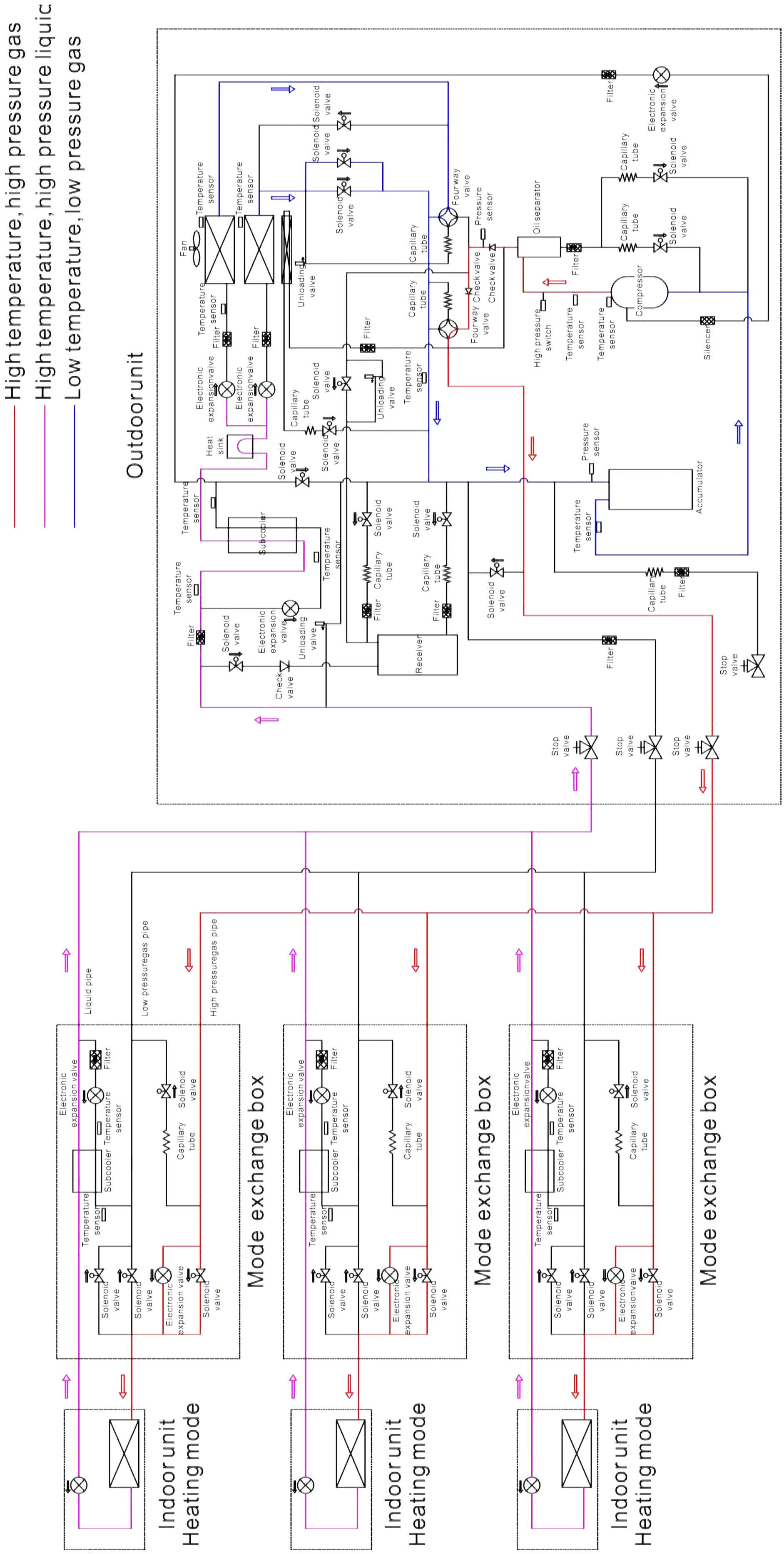
Appendix 6 Refrigerant Flow for Each Operation Mode

6.1 GMV-VQ224WM/C-X、GMV-VQ280WM/C-X、GMV-VQ335WM/C-X、GMV-VQ400WM/C-X、GMV-VQ450WM/C-X

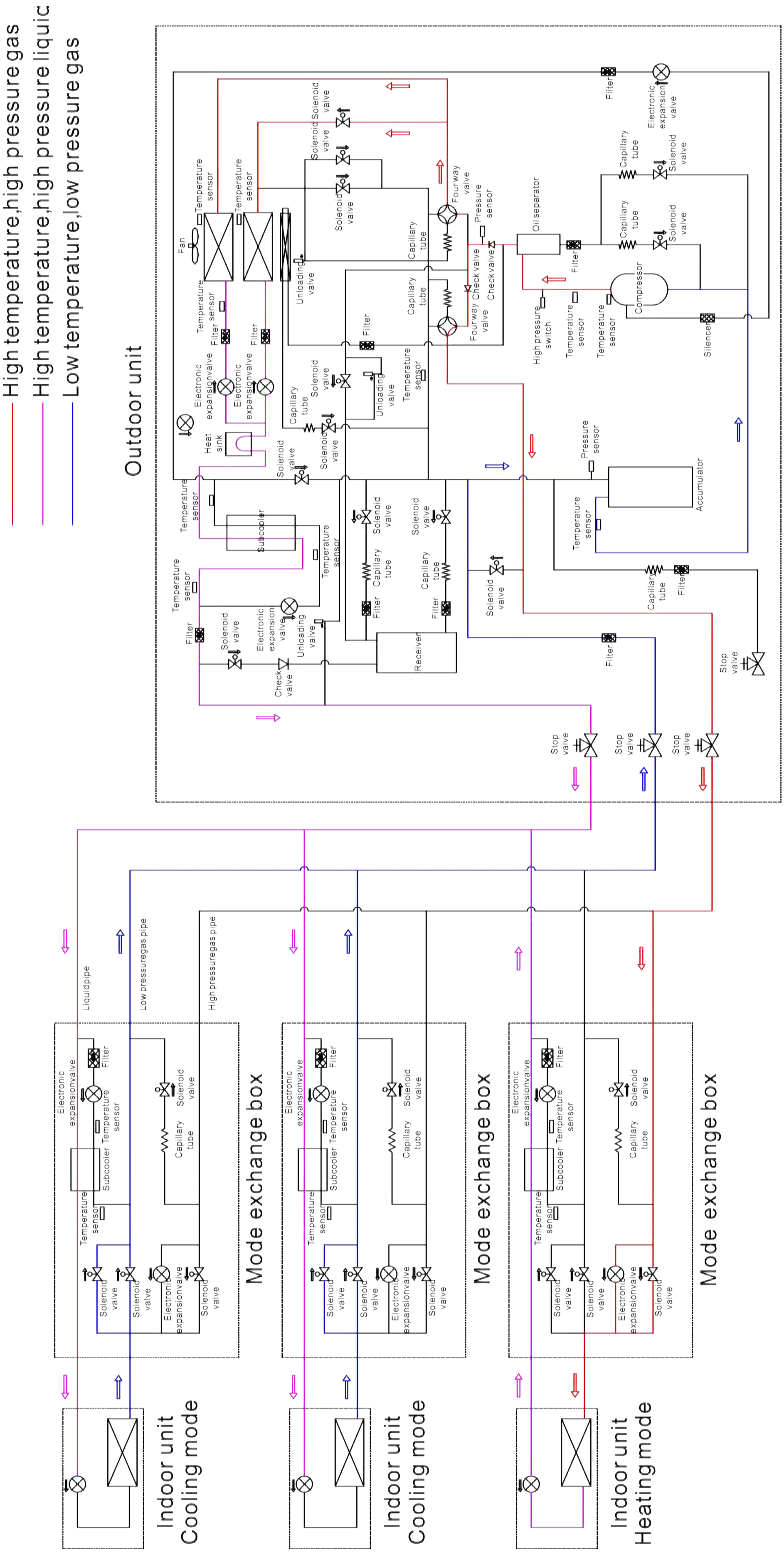
6.1.1 Cooling Operation



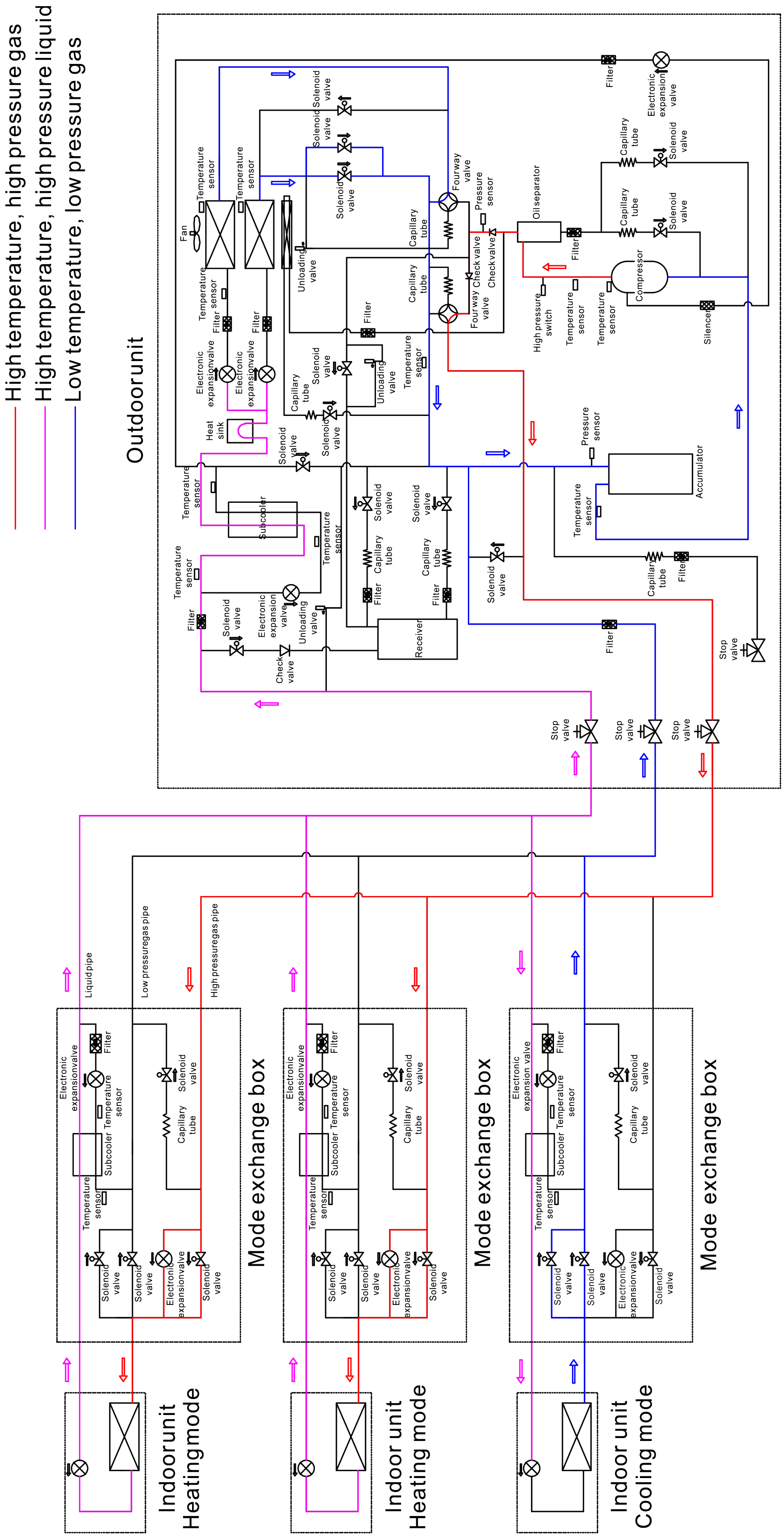
6.1.2 Heating Operation



6.1.3 Main body Cooling

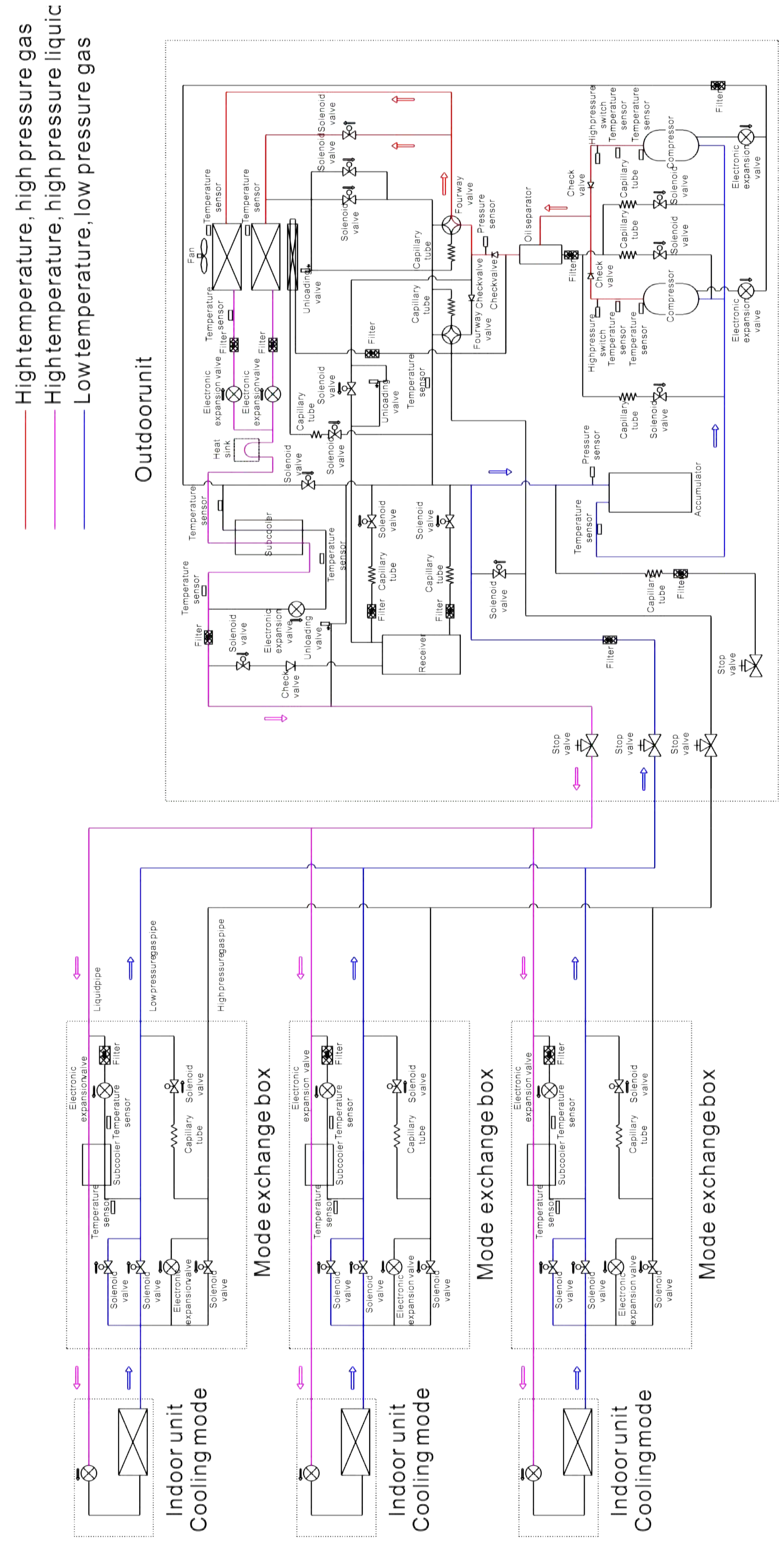


6.1.4 Main body Heating

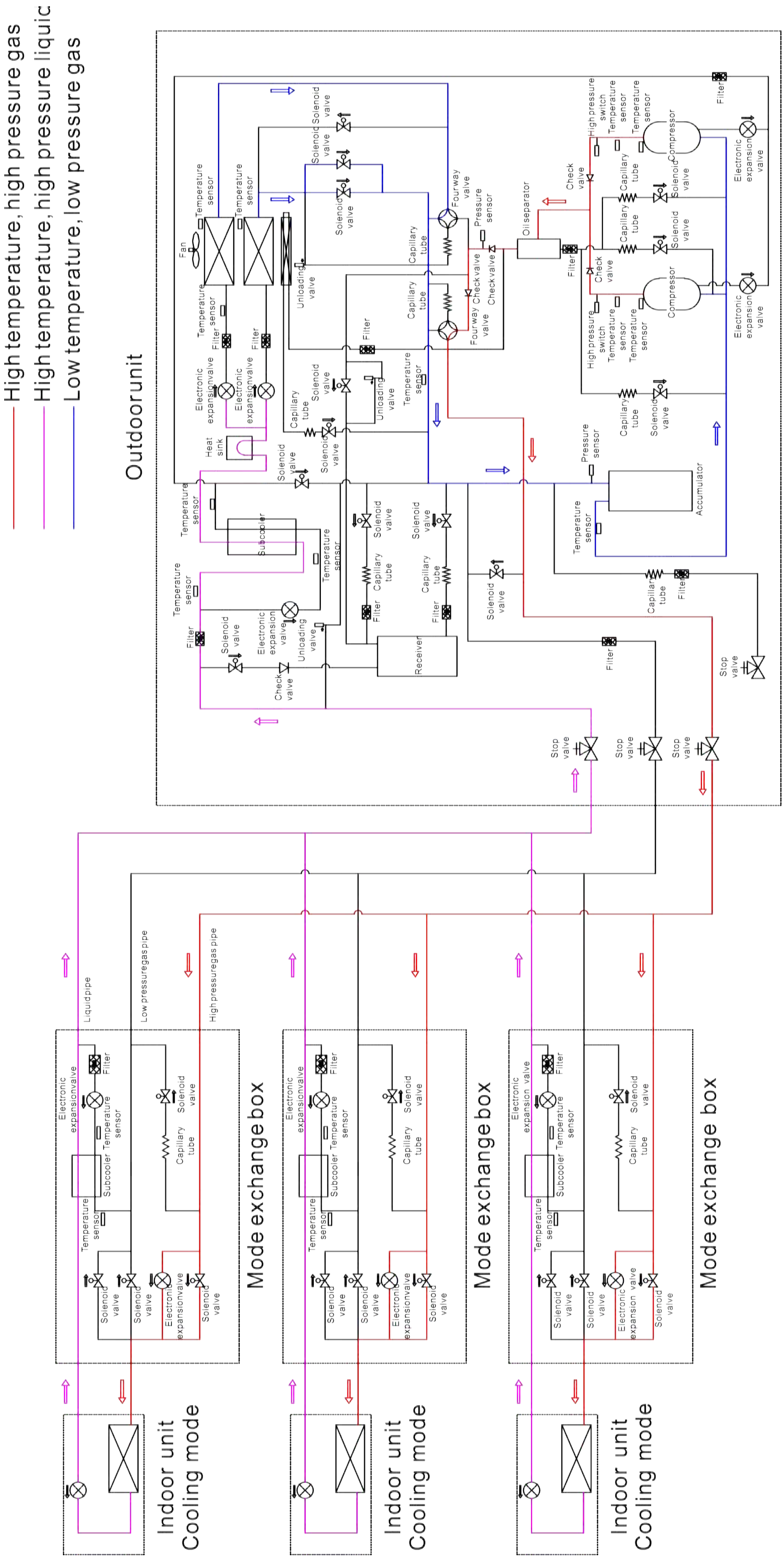


6.2 GMV-VQ504WM/C-X、GMV-VQ560WM/C-X、GMV-VQ615WM/C-X

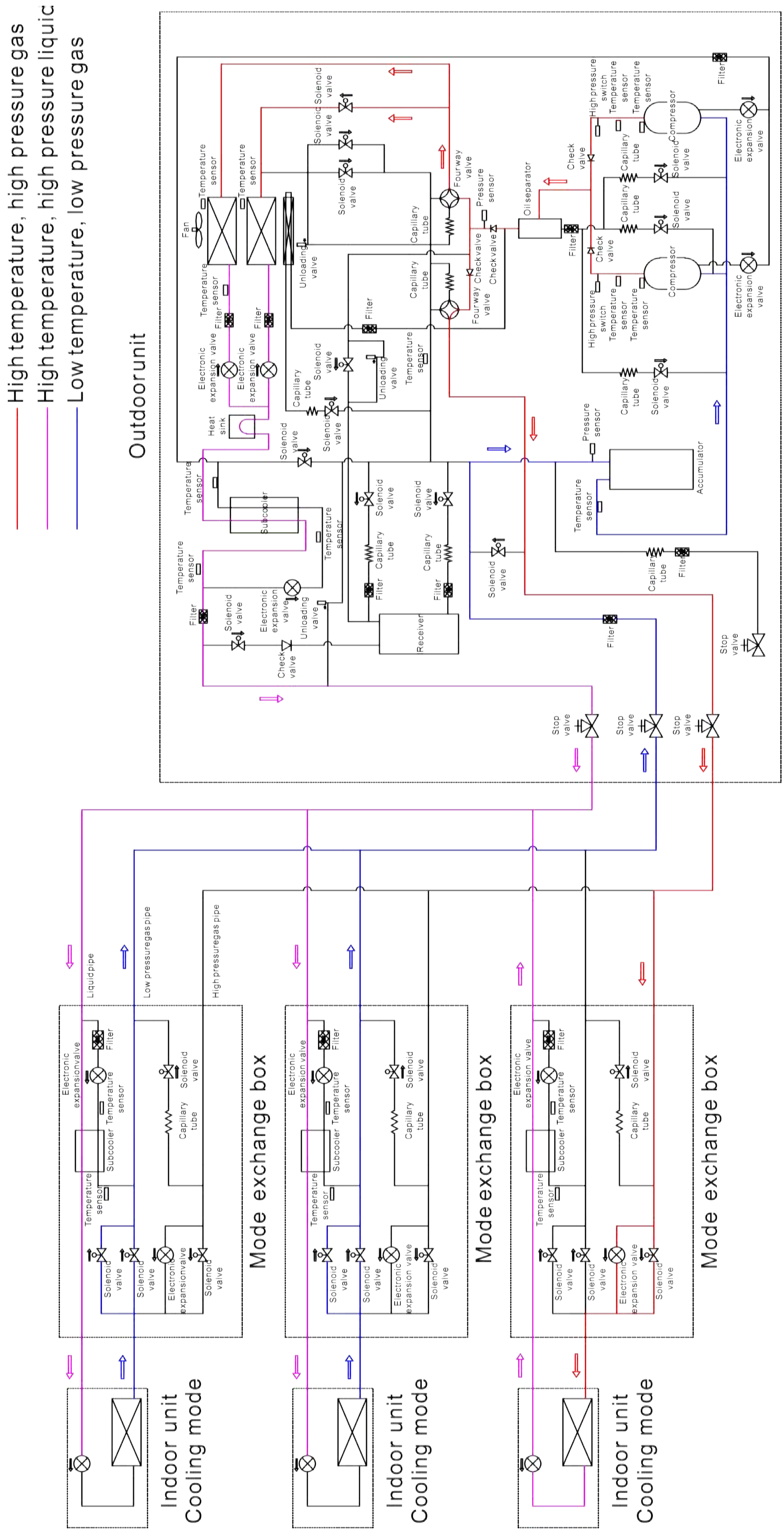
6.2.1 Cooling Operation



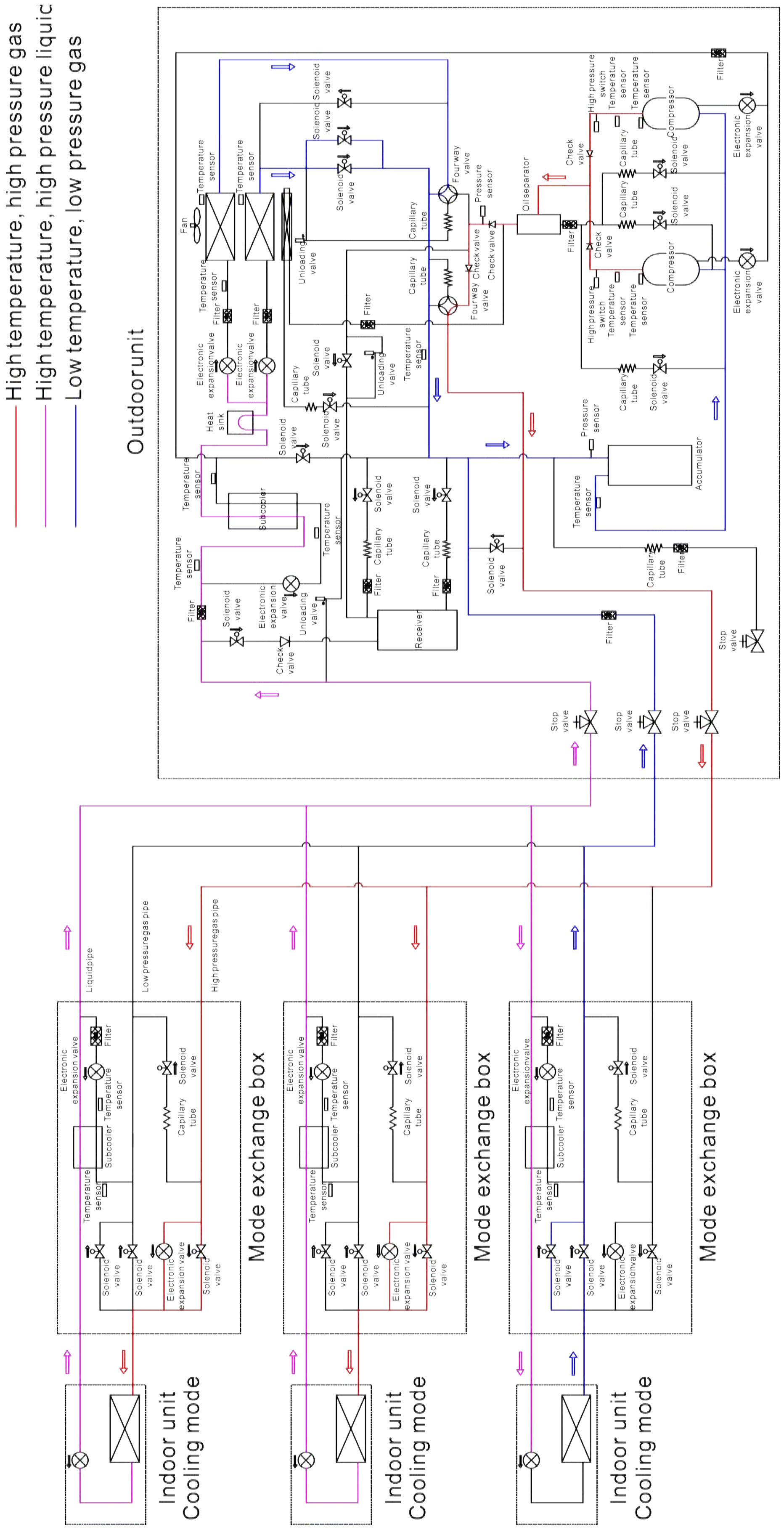
6.2.2 Heating Operation



6.2.3 Main body Cooling



6.2.4 Main body Heating



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