Service Manual

GMV Water III Heat Pump VRF System

(GC202311-I)

Range of cooling capacity:25.2kW~224 kW

Rated frequency:50/60Hz

Range of water inlet temperature:10℃~50℃



GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

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Preface

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

This manual applies to GMV Water 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.

Safety Instructions

Warning symbols

Symbols in this document indicate different severities and possibilities.



DANGER!

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



WARNING!

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



CAUTION!

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



NOTES!

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



INFO

Indicates helpful tips or additional information.



JUMP

Indicates a jump connection.

Chapter 1 Product

1 Unit List

1.1 Basic Modules

HP	Product Code	Model	Power	External View
8	CN854W0190	GMV-W252WM/C-X	380-415V 3N~ 50/60Hz	
10	CN854W0200	GMV-W280WM/C-X	380-415V 3N~ 50/60Hz	
12	CN854W0150	GMV-W335WM/C-X	380-415V 3N~ 50/60Hz	
14	CN854W0170	GMV-W400WM/C-X	380-415V 3N~ 50/60Hz	
16	CN854W0180	GMV-W450WM/C-X	380-415V 3N~ 50/60Hz	
18	CN854W0160	GMV-W504WM/C-X	380-415V 3N~ 50/60Hz	
20	CN854W0140	GMV-W560WM/C-X	380-415V 3N~ 50/60Hz	

1.2 Combined Modules

Model(integrated unit)	GMV-W850WM/C-X	GMV-W900WM/C-X	GMV-W954WM/C-X	GMV-W1008WM/C-X
Model(single unit)	GMV-W400WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X

Model(integrated unit)	GMV-W1064WM/C-X	GMV-W1120WM/C-X	GMV-W1200WM/C-X	GMV-W1250WM/C-X
Model(single unit)	GMV-W504WM/C-X +GMV-W560WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X	GMV-W400WM/C-X +GMV-W400WM/C-X +GMV-W400WM/C-X	GMV-W400WM/C-X +GMV-W400WM/C-X +GMV-W450WM/C-X

Model(integrated unit)	GMV-W1300WM/C-X	GMV-W1350WM/C-X	GMV-W1404WM/C-X	GMV-W1458WM/C-X
Model(single unit)	GMV-W400WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W504WM/C-X	GMV-W450WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X

Model(integrated unit)	GMV-W1512WM/C-X	GMV-W1568WM/C-X	GMV-W1624WM/C-X	GMV-W1680WM/C-X
Model(single unit)	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W560WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W504WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X

Model(integrated unit)	GMV-W1750WM/C-X	GMV-W1800WM/C-X	GMV-W1854WM/C-X	GMV-W1908WM/C-X
Model(single unit)	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W400WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W504WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X

Model(integrated unit)	GMV-W1962WM/C-X	GMV-W2016WM/C-X	GMV-W2072WM/C-X	GMV-W2128WM/C-X
Model(single unit)	GMV-W450WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W560WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X

Model(integrated unit)	GMV-W2184WM/C-X	GMV-W2240WM/C-X
Model(single unit)	GMV-W504WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X

2 Parameters

2.1 Parameters of Basic Modules

Model		-	GMV-W252WM/C-X	GMV-W280WM/C-X	GMV-W335WM/C-X	GMV-W400WM/C-X
Cooling Capacity		kW	25.2	28	33.5	40.0
Heating Capacity		kW	28.5	31.5	37.5	45.0
Noise (sound pressure level)		dB(A)	50	50	52	55
Rated water flow		m^3/h	5.42	6.02	7.2	8.6
Water pressure drop		kPa	37	45	63	35
Power		-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	4.40	5.25	6.05	7.30
Heating power input		kW	4.85	5.85	5.90	6.40
Cooling current input		A	7.4	8.9	10.2	12.3
Heating current input		A	8.2	9.9	10.0	10.8
Rated power input		kW	10.25	10.95	12.02	13.72
Rated current		A	19.3	19.8	20.2	23.1
Outline dimensions (W × D × H)		mm	780×550×1000	780×550×1000	780×550×1000	780×550×1000
Compressor type		-	Inverter scroll	Inverter scroll	Inverter scroll	Inverter scroll
Compressor function		-	EVI	EVI	EVI	EVI
Compressor quantity		N	1	1	1	1
Refrigeration oil charge	Gross	L	3.5	3.5	3.5	4.1
	Compressor charge	L	1.1	1.1	1.1	1.1
	The others	L	2.4	2.4	2.4	3.0
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	6.4	6.4	6.4	6.7
Maximum drive IDU NO.		unit	13	16	19	23
Connecting pipe	Liquid pipe	mm	9.52	9.52	12.7	12.7
	Gas pipe	mm	19.05	22.2	25.4	25.4
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Water pipe	Inlet pipe	mm	DN32	DN32	DN32	DN32
	Outlet pipe	mm	DN32	DN32	DN32	DN32
	Connecting mode		External threaded connection	External threaded connection	External threaded connection	External threaded connection
Net weight		kg	162	164	164	180

Model	-	GMV-W450M/C-X	GMV-W504WM/C-X	GMV-W560WM/C-X
Cooling Capacity	kW	45.0	50.4	56.0
Heating Capacity	kW	50.0	56.5	63.0
Noise (sound pressure level)	dB(A)	55	56	58
Rated water flow	m^3/h	9.68	10.84	12.04
Water pressure drop	kPa	45	56	59
Power	-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input	kW	9.30	10.35	14.40
Heating power input	kW	7.95	8.75	11.65
Cooling current input	A	15.7	17.5	24.3
Heating current input	A	13.4	14.8	19.7
Rated power input	kW	15.32	17.05	18.95
Rated current	A	25.6	28.6	34.9
Outline dimensions (W × D × H)	mm	780×550×1000	780×550×1000	780×550×1000

Model		-	GMV-W450M/C-X	GMV-W504WM/C-X	GMV-W560WM/C-X
Compressor type		-	Inverter scroll	Inverter scroll	Inverter scroll
Compressor function		-	EVI	EVI	EVI
Compressor quantity		N	1	1	1
Refrigeration oil charge	Gross	L	4.1	4.1	4.1
	Compressor charge	L	1.1	1.1	1.1
	The others	L	3.0	3.0	3.0
Refrigerant type		-	R410A	R410A	R410A
Refrigerant charge		kg	6.7	7.0	7.0
Maximum drive IDU NO.		unit	26	29	33
Connecting pipe	Liquid pipe	mm	12.7	15.9	15.9
	Gas pipe	mm	28.6	28.6	28.6
	Connecting mode		Brazed connection	Brazed connection	Brazed connection
Water pipe	Inlet pipe	mm	DN32	DN32	DN32
	Outlet pipe	mm	DN32	DN32	DN32
	Connecting mode		External threaded connection	External threaded connection	External threaded connection
Net weight		kg	180	182	182

Note:

① The executive standard for the design of this unit is ISO 15042.

② The testing conditions for the cooling capacity above: Indoor dry/wet bulb temperature (27/19°C) and water inlet temperature (30°C);

The testing conditions for the heating capacity above: Indoor dry/wet bulb temperature (20/15°C) and water inlet temperature (20°C).

③ Noises are tested based on the national standard 18837 and the representative value of the Company's internal specifications converted in anechoic room. The main body of the unit adopts the maximum converted value. Normally, the value in operation will be higher than the value recorded in this manual due to the actual conditions of engineering installation and application and the influences of objective factors such as surrounding noises and reflected sound.

④ The performance parameters of the unit will change as the product improves. Please refer to the nameplate of the product for specific parameters.

2.2 Table of Composite Module Parameters

Model	-	GMV-W615WM/C-X	GMV-W670WM/C-X	GMV-W735WM/C-X	GMV-W800WM/C-X
Combination mode	-	GMV-W280WM/C-X +GMVW335WM/C-X	GMV-W335WM/C-X +GMV-W335WM/C-X	GMV-W335WM/C-X +GMV-W400WM/C-X	GMV-W400WM/C-X +GMV-W400WM/C-X
Cooling Capacity	kW	61.5	67.0	73.5	80.0
Heating Capacity	kW	69.0	75.0	82.5	90.0
Noise (sound pressure level)	dB(A)	55	56	57	59
Rated water flow	m^3/h	6.02+7.20	7.20+7.20	7.20+8.60	8.60+8.60
Power	-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input	kW	5.25+6.05	6.05+6.05	6.05+7.30	7.30+7.30
Heating power input	kW	5.85+5.90	5.90+5.90	5.90+6.40	6.40+6.40
Cooling current input	A	8.9+10.2	10.2+10.2	10.2+12.3	12.3+12.3
Heating current input	A	9.9+10.0	10.0+10.0	10.0+10.8	10.8+10.8
Rated power input	kW	10.95+12.02	12.02+12.02	12.02+13.72	13.72+13.72

Model		-	GMV-W615WM/C-X	GMV-W670WM/C-X	GMV-W735WM/C-X	GMV-W800WM/C-X
Rated current		A	19.8+20.2	20.2+20.2	20.2+23.1	23.1+23.1
Outline dimensions (W × D × H)		mm	780×550×1000(two sets)	780×550×1000(two sets)	780×550×1000(two sets)	780×550×1000(two sets)
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	6.4+6.4	6.4+6.4	6.4+6.7	6.7+6.7
Maximum drive IDU NO.		unit	36	39	43	46
Connecting pipe	Liquid pipe	mm	15.9	15.9	19.05	19.05
	Gas pipe	mm	28.6	28.6	31.8	31.8
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	164+164	164+164	164+180	180+180

Model		-	GMV-W850WM/C-X	GMV-W900WM/C-X	GMV-W954WM/C-X	GMV-W1008WM/C-X
Combination mode		-	GMV-W400WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X
Cooling Capacity		kW	85.0	90.0	95.4	100.8
Heating Capacity		kW	95.0	100.0	106.5	113.0
Noise (sound pressure level)		dB(A)	59	59	59	60
Rated water flow		m^3/h	8.60+9.68	9.68+9.68	9.68+10.84	10.84+10.84
Power		-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	7.30+9.30	9.30+9.30	9.30+10.35	10.35+10.35
Heating power input		kW	6.40+7.95	7.95+7.95	7.95+8.75	8.75+8.75
Cooling current input		A	12.3+15.7	15.7+15.7	15.7+17.5	17.5+17.5
Heating current input		A	10.8+13.4	13.4+13.4	13.4+14.8	14.8+14.8
Rated power input		kW	13.72+15.32	15.32+15.32	15.32+17.05	17.05+17.05
Rated current		A	23.1+25.6	25.6+25.6	25.6+28.6	28.6+28.6
Outline dimensions (W × D × H)		mm	780×550×1000(two sets)	780×550×1000(two sets)	780×550×1000(two sets)	780×550×1000(two sets)
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	6.7+6.7	6.7+6.7	6.7+7.0	7.0+7.0
Maximum drive IDU NO.		unit	50	53	56	59
Connecting pipe	Liquid pipe	mm	19.05	19.05	19.05	19.05
	Gas pipe	mm	31.8	31.8	31.8	38.1
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	180+180	180+180	180+182	182+182

Model		—	GMV-W1064WM/C-X	GMV-W1120WM/C-X	GMV-W1200WM/C-X	GMV-W1250WM/C-X
Combination mode		—	GMV-W504WM/C-X +GMV-W560WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X	GMV-W400WM/C-X +GMV-W400WM/C-X +GMV-W400WM/C-X	GMV-W400WM/C-X +GMV-W400WM/C-X +GMV-W450WM/C-X
Cooling Capacity		kW	106.4	90.0	120.0	125.0
Heating Capacity		kW	119.5	100.0	135.0	140.0
Noise (sound pressure level)		dB(A)	61	62	60	60
Rated water flow		m^3/h	10.84+12.04	12.04+12.04	8.60+8.60+8.60	8.60+8.60+9.68

Model		—	GMV-W1064WM/C-X	GMV-W1120WM/C-X	GMV-W1200WM/C-X	GMV-W1250WM/C-X
Power		—	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	10.35+14.40	14.40+14.40	7.30+7.30+7.30	7.30+7.30+9.30
Heating power input		kW	8.75+11.65	11.65+11.65	6.40+6.40+6.40	6.40+6.40+7.95
Cooling current input		A	17.5+24.3	24.3+24.3	12.3+12.3+12.3	12.3+12.3+15.7
Heating current input		A	14.8+19.7	19.7+19.7	10.8+10.8+10.8	10.8+10.8+13.4
Rated power input		kW	17.05+18.95	18.95+18.95	13.72+13.72+13.72	13.72+13.72+15.32
Rated current		A	28.6+34.9	34.9+34.9	23.1+23.1+23.1	23.1+23.1+25.6
Outline dimensions (W × D × H)		mm	780×550×1000(two sets)	780×550×1000(two sets)	780×550×1000(three sets)	780×550×1000(three sets)
Refrigerant type		—	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+7.0	7.0+7.0	6.7+6.7+6.7	6.7+6.7+6.7
Maximum drive IDU NO.		unit	63	64	64	64
Connecting pipe	Liquid pipe	mm	19.05	19.05	19.05	19.05
	Gas pipe	mm	38.1	38.1	38.1	38.1
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	182+182	182+182	180+180+180	180+180+180

Model		—	GMV-W1300WM/C-X	GMV-W1350WM/C-X	GMV-W1404WM/C-X	GMV-W1458WM/C-X
Combination mode		—	GMV-W400WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W504WM/C-X	GMV-W450WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X
Cooling Capacity		kW	130.0	135.0	140.4	145.8
Heating Capacity		kW	145.0	150.0	156.5	163.0
Noise (sound pressure level)		dB(A)	60	60	61	61
Rated water flow		m^3/h	8.60+9.68+9.68	9.68+9.68+9.68	9.68+9.68+10.84	9.68+10.84+10.84
Power		—	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	7.30+9.30+9.30	9.30+9.30+9.30	9.30+9.30+10.35	9.30+10.35+10.35
Heating power input		kW	6.40+7.95+7.95	7.95+7.95+7.95	7.95+7.95+8.75	7.95+8.75+8.75
Cooling current input		A	12.3+15.7+15.7	15.7+15.7+15.7	15.7+15.7+17.5	15.7+17.5+17.5
Heating current input		A	10.8+13.4+13.4	13.4+13.4+13.4	13.4+13.4+14.8	13.4+14.8+14.8
Rated power input		kW	13.72+15.32+15.32	15.32+15.32+15.32	15.32+15.32+17.05	15.32+17.05+17.05
Rated current		A	23.1+25.6+25.6	25.6+25.6+25.6	25.6+25.6+28.6	25.6+28.6+28.6
Outline dimensions (W × D × H)		mm	780×550×1000(three sets)	780×550×1000(three sets)	780×550×1000(three sets)	780×550×1000(three sets)
Refrigerant type		—	R410A	R410A	R410A	R410A
Refrigerant charge		kg	6.7+6.7+6.7	6.7+6.7+6.7	6.7+6.7+7.0	6.7+7.0+7.0
Maximum drive IDU NO.		unit	64	64	66	69
Connecting pipe	Liquid pipe	mm	19.05	19.05	19.05	19.05
	Gas pipe	mm	38.1	38.1	41.3	41.3
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	180+180+180	180+180+180	180+180+182	180+182+182

Model		—	GMV-W1512WM/C-X	GMV-W1568WM/C-X	GMV-W1624WM/C-X	GMV-W1680WM/C-X
Combination mode		—	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W560WM/C-X	GMV-W504WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X
Cooling Capacity		kW	151.2	156.8	162.4	168.0
Heating Capacity		kW	169.5	176.0	182.5	189.0
Noise (sound pressure level)		dB(A)	61	62	63	63
Rated water flow		m^3/h	10.84+10.84+10.84	10.84+10.84+12.04	10.84+12.04+12.04	12.04+12.04+12.04
Power		—	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	10.35+10.35+10.35	10.35+10.35+14.40	10.35+14.40+14.40	14.40+14.40+14.40
Heating power input		kW	8.75+8.75+8.75	8.75+8.75+11.65	8.75+11.65+11.65	11.65+11.65+11.65
Cooling current input		A	17.5+17.5+17.5	24.3+17.5+17.5	24.3+24.3+17.5	24.3+24.3+24.3
Heating current input		A	14.8+14.8+14.8	19.7+14.8+14.8	19.7+19.7+14.8	19.7+19.7+19.7
Rated power input		kW	17.05+17.05+17.05	17.05+17.05+18.95	17.05+18.95+18.95	18.95+18.95+18.95
Rated current		A	28.6+28.6+28.6	34.9+28.6+28.6	34.9+34.9+28.6	34.9+34.9+34.9
Outline dimensions (W × D × H)		mm	780×550×1000(three sets)	780×550×1000(three sets)	780×550×1000(three sets)	780×550×1000(three sets)
Refrigerant type		—	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+7.0+7.0	7.0+7.0+7.0	7.0+7.0+7.0	7.0+7.0+7.0
Maximum drive IDU NO.		unit	71	74	77	80
Connecting pipe	Liquid pipe	mm	19.05	19.05	19.05	19.05
	Gas pipe	mm	41.3	41.3	41.3	41.3
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	182+182+182	182+182+182	182+182+182	182+182+182

Model	—	GMV-W1750WM/C-X	GMV-W1800WM/C-X	GMV-W1854WM/C-X	GMV-W1908WM/C-X
Combination mode	—	GMV-W400WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W504WM/C-X	GMV-W450WM/C-X +GMV-W450WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X
Cooling Capacity	kW	175.0	180.0	185.4	190.8
Heating Capacity	kW	195.0	200.0	206.5	213.0
Noise (sound pressure level)	dB(A)	62	62	62	62
Rated water flow	m^3/h	8.60+9.68+9.68+9.68	9.68+9.68+9.68+9.68	9.68+9.68+9.68+10.84	9.68+9.68 +10.84+10.84
Power	—	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input	kW	7.30+9.30+ 9.30+9.30	9.30+9.30+ 9.30+9.30	9.30+9.30+ 9.30+10.35	9.30+9.30+ 10.35+10.35
Heating power input	kW	6.40+7.95+ 7.95+7.95	7.95+7.95+ 7.95+7.95	7.95+7.95+ 7.95+8.75	7.95+7.95+ 8.75+8.75
Cooling current input	A	15.7+15.7+15.7+12.3	15.7+15.7+15.7+15.7	15.7+15.7+15.7+17.5	15.7+15.7+17.5+17.5
Heating current input	A	13.4+13.4+13.4+10.8	13.4+13.4+13.4+13.4	13.4+13.4+13.4+14.8	13.4+13.4+14.8+14.8
Rated power input	kW	13.72+15.32+ 15.32+15.32	15.32+15.32+ 15.32+15.32	15.32+15.32+ 15.32+17.05	15.32+15.32+ 17.05+17.05

Model		—	GMV-W1750WM/C-X	GMV-W1800WM/C-X	GMV-W1854WM/C-X	GMV-W1908WM/C-X
Rated current		A	25.6+25.6+25.6+23.1	25.6+25.6+25.6+25.6	25.6+25.6+25.6+28.6	25.6+25.6+28.6+28.6
Outline dimensions (W × D × H)		mm	780×550×1000(four sets)	780×550×1000(four sets)	780×550×1000(four sets)	780×550×1000(four sets)
Refrigerant type		—	R410A	R410A	R410A	R410A
Refrigerant charge		kg	6.7+6.7+6.7+6.7	6.7+6.7+6.7+6.7	6.7+6.7+6.7+7.0	6.7+6.7+7.0+7.0
Maximum drive IDU NO.		unit	80	80	80	80
Connecting pipe	Liquid pipe	mm	19.05	19.05	19.05	22.2
	Gas pipe	mm	41.3	41.3	41.3	44.5
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	180+180+180+180	180+180+180+180	180+180+180+182	180+180+182+182

Model		—	GMV-W1962WM/C-X	GMV-W2016WM/C-X	GMV-W2072WM/C-X	GMV-W2128WM/C-X
Combination mode		—	GMV-W450WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W560WM/C-X	GMV-W504WM/C-X +GMV-W504WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X
Cooling Capacity		kW	196.2	201.6	207.2	212.8
Heating Capacity		kW	219.5	226.0	232.5	239.0
Noise (sound pressure level)		dB(A)	62	63	63	64
Rated water flow		m^3/h	9.68+10.84 +10.84+10.84	10.84+10.84 +10.84+10.84	10.84+10.84 +10.84+12.04	10.84+10.84 +12.04+12.04
Power		—	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	9.30+10.35+ 10.35+10.35	10.35+10.35+ 10.35+10.35	10.35+10.35+ 10.35+14.40	10.35+10.35+ 14.40+14.40
Heating power input		kW	7.95+8.75+ 8.75+8.75	8.75+8.75+ 8.75+8.75	8.75+8.75+ 8.75+11.65	8.75+8.75+ 11.65+11.65
Cooling current input		A	15.7+17.5+17.5+17.5	17.5+17.5+17.5+17.5	17.5+17.5+17.5+24.3	17.5+17.5+24.3+24.3
Heating current input		A	13.4+14.8+14.8+14.8	14.8+14.8+14.8+14.8	14.8+14.8+14.8+19.7	14.8+14.8+19.7+19.7
Rated power input		kW	15.32+17.05+ 17.05+17.05	17.05+17.05+ 17.05+17.05	17.05+17.05+ 17.05+18.95	17.05+17.05+ 18.95+18.95
Rated current		A	25.6+28.6+28.6+28.6	28.6+28.6+28.6+28.6	28.6+28.6+28.6+34.9	28.6+28.6+34.9+34.9
Outline dimensions (W × D × H)		mm	780×550×1000(four sets)	780×550×1000(four sets)	780×550×1000(four sets)	780×550×1000(four sets)
Refrigerant type		—	R410A	R410A	R410A	R410A
Refrigerant charge		kg	6.7+7.0+7.0+7.0	7.0+7.0+7.0+7.0	7.0+7.0+7.0+7.0	7.0+7.0+7.0+7.0
Maximum drive IDU NO.		unit	80	80	80	80
Connecting pipe	Liquid pipe	mm	22.2	22.2	22.2	22.2
	Gas pipe	mm	44.5	44.5	44.5	44.5
	Connecting mode		Brazed connection	Brazed connection	Brazed connection	Brazed connection
Net weight		kg	180+182+182+182	182+182+182+182	182+182+182+182	182+182+182+182

Model		—	GMV-W2184WM/C-X	GMV-W2240WM/C-X
Combination mode		—	GMV-W504WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X	GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X +GMV-W560WM/C-X
Cooling Capacity		kW	218.4	224.0
Heating Capacity		kW	245.5	252.0
Noise (sound pressure level)		dB(A)	64	65
Rated water flow		m^3/h	10.84+12.04+12.04+12.04	12.04+12.04+12.04+12.04
Power		-	380-415V 3N~ 50/60Hz	380-415V 3N~ 50/60Hz
Cooling power input		kW	10.35+14.40+14.40+14.40	14.40+14.40+14.40+14.40
Heating power input		kW	8.75+11.65+11.65+11.65	11.65+11.65+11.65+11.65
Cooling current input		A	17.5+24.3+24.3+24.3	24.3+24.3+24.3+24.3
Heating current input		A	14.8+19.7+19.7+19.7	19.7+19.7+19.7+19.7
Rated power input		kW	17.05+18.95+18.95+18.95	18.95+18.95+18.95+18.95
Rated current		A	28.6+34.9+34.9+34.9	34.9+34.9+34.9+34.9
Outline dimensions (W × D × H)		mm	780×550×1000(four sets)	780×550×1000(four sets)
Refrigerant type		-	R410A	R410A
Refrigerant charge		kg	7.0+7.0+7.0+7.0	7.0+7.0+7.0+7.0
Maximum drive IDU NO.		unit	80	80
Connecting pipe	Liquid pipe	mm	22.2	22.2
	Gas pipe	mm	44.5	44.5
	Connecting mode		Brazed connection	Brazed connection
Net weight		kg	182+182+182+182	182+182+182+182

Note:

① The executive standard for the design of this unit is ISO 15042.

② The testing conditions for the cooling capacity above: Indoor dry/wet bulb temperature (27/19°C) and water inlet temperature (30°C);
The testing conditions for the heating capacity above: Indoor dry/wet bulb temperature (20/15°C) and water outlet temperature (20°C).

③ Noises are tested based on the national standard 18837 and the representative value of the Company's internal specifications converted in anechoic room. The main body of the unit adopts the maximum converted value. Normally, the value in operation will be higher than the value recorded in this manual due to the actual conditions of engineering installation and application and the influences of objective factors such as surrounding noises and reflected sound.

④ The performance parameters of the unit will change as the product improves. Please refer to the nameplate of the product for specific parameters.

3 The Range of Production Working Temperature

—	Cooling	Heating
Water inlet temperature	10℃~50℃*	10℃~50℃*
Range of water flow rate (basic module)	5.4~18.0m³/h	
Indoor temperature	14℃~25℃WB	15℃~27℃DB
Indoor relative humidity	≤80%	

Note!

① When matching the multi-split fresh air indoor unit, the minimum fresh air inlet temperature shall be 7°C.

② When the cooling and heating water temperature of the unit is 10~15°C and 45~50°C, it's the temperature range of the intermittent operation.

③ Operation beyond the unit's operating temperature range will cause the unit unable to start up or trigger protection and even damage the unit.

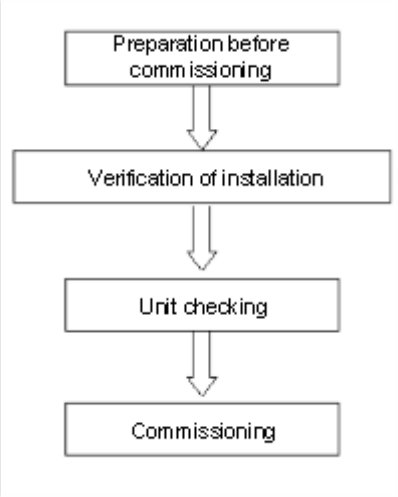
④ The water flow of the water system shall meet the requirements for rated water flow of each basic module (Refer to the nameplate or the design requirements for the water system).

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.

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	Master unit appearance			
	Indoor unit appearance			
	Copper pipe insulation			
Drainage system	Condensate water pipe insulation			
Electrical system	Power cable diameter			
	Power cable layout			
	Air circuit breaker			
Communication system	Communication cable material			
	Communication cable connection			

Commissioning data record form

Project name:				Unit model:	
Debugger:				Date:	
Rated capacity of the master unit (kW):		Rated capacity of the indoor unit (kW):		Total length of the refrigerant pipe (m):	
Maximum drop between the indoor unit and master 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 master 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 GMV Water 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 master unit installation environment, and is the master unit installation location selected correctly?	Refer to the master unit installation.		
	4	Is the master unit foundation firm? Do vibration reduction and drainage meet the requirements?	Refer to the master unit installation.		
	5	Are the master unit basic modules installed at the same level?	Refer to the master unit installation.		
	6	Does the master unit operate with static pressure? Is the corresponding static pressure set?	—		
Refrigerating system	7	Is the rated capacity of the internal and external units of the cooling system within 50%~135%?	50% to 135%		
	8	Is the fresh air unit access capacity within 30%?	≤30%		
	9	Is GMV X connected to master units in other series?	GMV X cannot be connected to master units in other series.		
	10	Does the drop between the indoor and master units meet the unit design requirements?	≤40m with the master unit up ≤50 m with the master unit down		
	11	Does the drop between indoor units meet the unit design requirements?	≤30 m		
	12	Is the length of the pipe from the master unit to the farthest indoor unit less than or equal to 200 m?	≤165m		
	13	Is the total length of the piping less than 1000 m?	≤350m		
	14	Is the length of the master unit to the first branch joint greater than 90 m? If yes, is the pipe diameter increased accordingly?	The pipe diameter needs to be increased when the length is greater than 90 m.		
	15	Is the distance between an indoor unit and the nearest branch joint greater than 15 m? If yes, is the diameter of a liquid pipe whose original diameter is less than or equal to 6.35 mm, or the diameter of a gas pipe whose original diameter is less than or equal to 9.52 mm be increased?	≤15 m. When the length exceeds 10 m, the diameter of a liquid pipe whose original diameter is less than or equal to 6.35 mm, or the diameter of a gas pipe whose original diameter is less than or equal to 9.52 mm needs to be increased.		
	16	The inclination of indoor and outdoor branch joints should not exceed the specified requirements.	Branch joints need to be installed horizontally. Refer to branch joint installation.		
	17	Is the stop valve of each module open to the maximum opening?	—		

Checklist Before GMV Water Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Refrigerating system	18	Is the refrigerant pressure normal? Connect the high pressure gauge of the pressure gauge to the liquid pipe valve of the master 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 master unit leakage.		
	19	Is there any leakage of chiller oil at the valve? If so, immediately check for valve leakage with soap bubbles or a leak detector. If leakage is confirmed, stop subsequent commissioning at once, and continue the work only after the problem is solved.	—		
	20	Is the master unit being warmed up for more than 2 hours before commissioning?	—		
Electrical system	21	Is the power cable connected correctly? Is the terminal block secure?	—		
	22	Is the power cable appearance in good condition and not exposed?	The appearance is in good condition and not exposed.		
	23	Is the power capacity less than the maximum power of the unit?	The power capacity is not less than the maximum power of the unit.		
	24	Is there any poorly connected electrical component detected when the power is off?	All components are reliably connected.		
	25	Do the cable diameters of the indoor and master units meet the unit design requirements?	Refer to electrical installation.		
	26	Do the circuit breaker and leakage switch meet the unit design requirements?	Refer to electrical installation.		
	27	Do the power voltage, phase sequence, and frequency meet the unit requirements?	The power voltage, phase sequence, and frequency are consistent with those on the unit nameplate, and the voltage fluctuates within ±10%.		
	28	Is the power cable more than 1 m away from a TV?	—		
	29	Is there any strong electromagnetic interference, dust, acid and alkaline gas in the environment where the unit is located?	—		

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

3.2 Debugging and Operation

3.2.1 Precautions

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

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

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

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

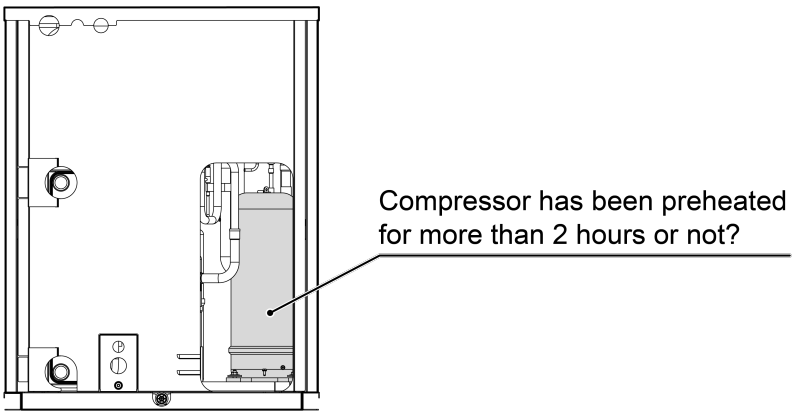
(5) All scattered objects, especially metal chips, wire ends and clamps, should be removed from the body.

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

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

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

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



(10) To start the unit for commissioning, it's required to assure the air conditioner unit is intact (for example, the electrical box cover plate and unit panel shall be tightened) before water supply so as to prevent water splashes from entering the electrical box.

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

(12) Button description:

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

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

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

3.2.2 Basic Introduction for Engineering Debugging

3.2.2.1 Debugging Method

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

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

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

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

3.2.2.2 Basic Operations

Operation	Action	Remarks
Commissioning start	Press and hold the SW3 confirm button on the master unit(main) 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(main) 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(main) to continue to perform commissioning.	—

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

Instruction for each stage progress at the time of debugging							
—	Deubugging code		Progress code		Status code		Meaning
Progress	LED1		LED2		LED3		
	Code	Display status	Code	Display status	Code	Display status	
01_set up master unit(main)	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 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/master unit's "rated capacity ratio is too high".
	db	ON	05	ON	CL	ON	Indoor/master 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_master unit components inspection	db	ON	06	ON	corresponding error code	ON	The system has detected the fault of master unit' components.
	db	ON	06	ON	OC	ON	The system detected that there's no master 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	
07_indoor unit componets inspection	db	ON	07	ON	XXXX/corresponding 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 master unit fault. Enter into the next step automatically.
08_compressor preheat confirmation	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.

3.2.3 Debugging Through the Main Board of Master unit

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

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

Step 2: When the master 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 master 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(main)	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 master 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 “detect internal communication”.

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/master units’ rated capacity ratio is too high.
	db	ON	05	ON	CL	ON	Indoor/master 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 “master unit components 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_ master unit components inspection	db	ON	06	ON	OC	ON	The system detected that there’s no fault for master 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_ master unit components inspection	db	ON	06	ON	Corresponding error code	ON	The system detected that there’s fault for master unit’s parts.

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

Step 10: The unit debugging step 07 is “indoor unit components 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 components 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 components 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	Master unit's pipeline or valve is abnormal.
	db	ON	13/14/15	ON	XXXX/U8	ON	The system detected the indoor unit's pipeline is abnormal. XXXX indicates engineering number of fault indoor unit. 2s later, U8 fault occurred for No. 100 indoor unit. LED3 will display as below: 01 (2s later) 00 (2s later) U8, and it will display like that circularly.

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

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

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

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

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

3.2.4 Unit Commissioning on Commissioning Software

Step 1: Install the commissioning software.

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

Step 2: Before commissioning, it's required to assure the air conditioner unit is intact (for example, the electrical box cover plate and unit panel shall be tightened) before water supply so as to prevent water splashes from entering the electrical box.

Step 3: Set the master module.

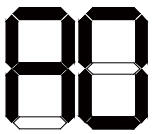
Keep the master unit disconnected from the power and set one module to the master unit(main) as follows:

Master unit setting (SA8):

<table>
<tr><td rowspan="4">Master setting
 
1 2
SA8</td><td>Master and Slave Unit Setting</td><td colspan="2">DIP Switch (Two Digits)</td></tr>
<tr><td>Position</td><td>1</td><td>2</td></tr>
<tr><td>Master unit(main)</td><td>ON</td><td>OFF</td></tr>
<tr><td>Slave unit</td><td>OFF</td><td>OFF</td></tr>
</table>

Step 4: Power on the indoor and master units.

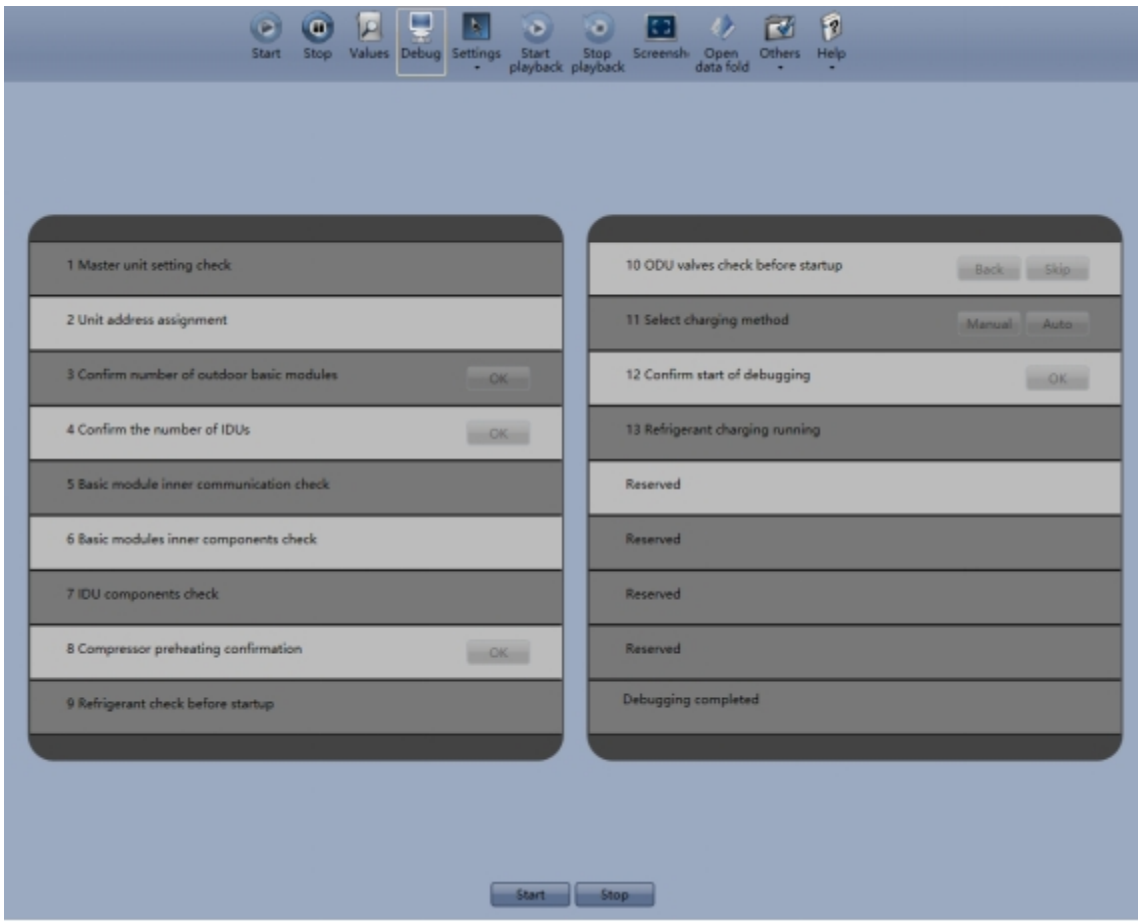
Power on all indoor and master units. In this case, all modules of the master unit indicate that the unit is in "Not commissioning" status.



LED3

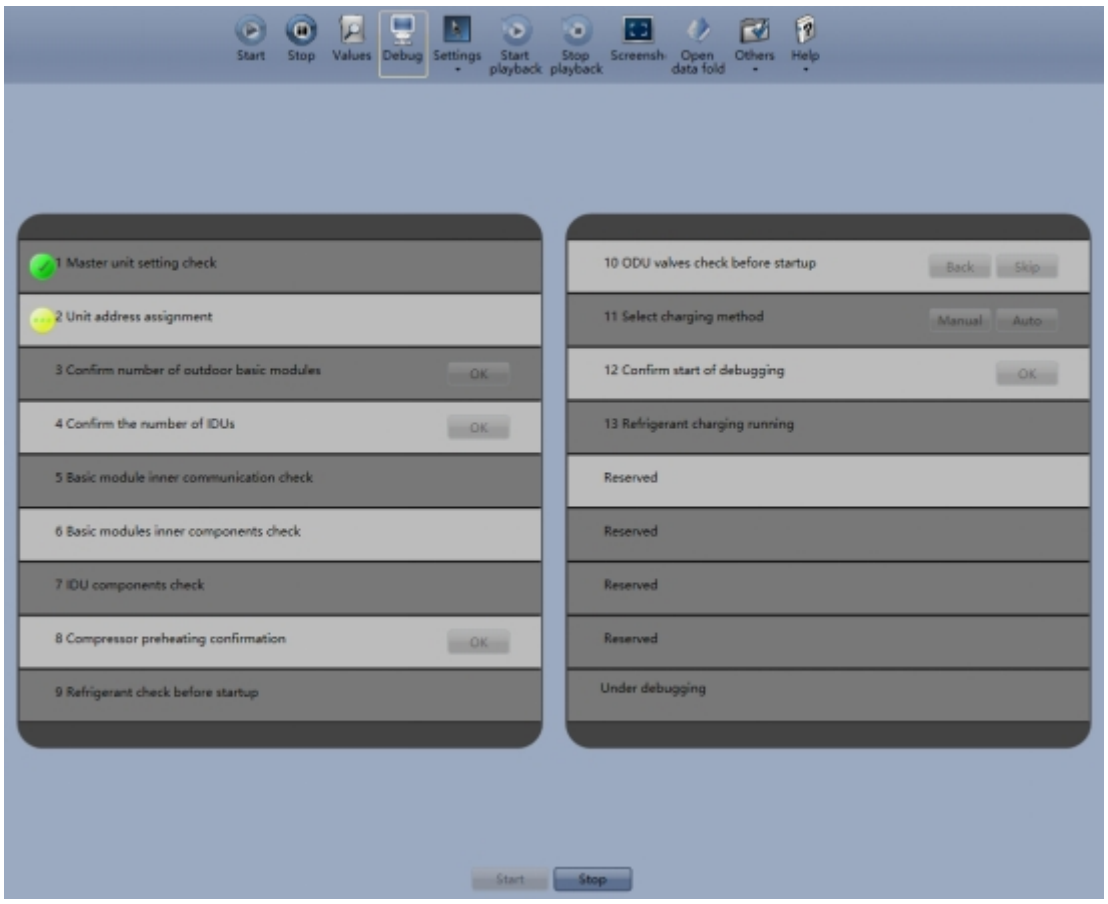
Step 5 Switch the commissioning software to the commissioning control interface.

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.

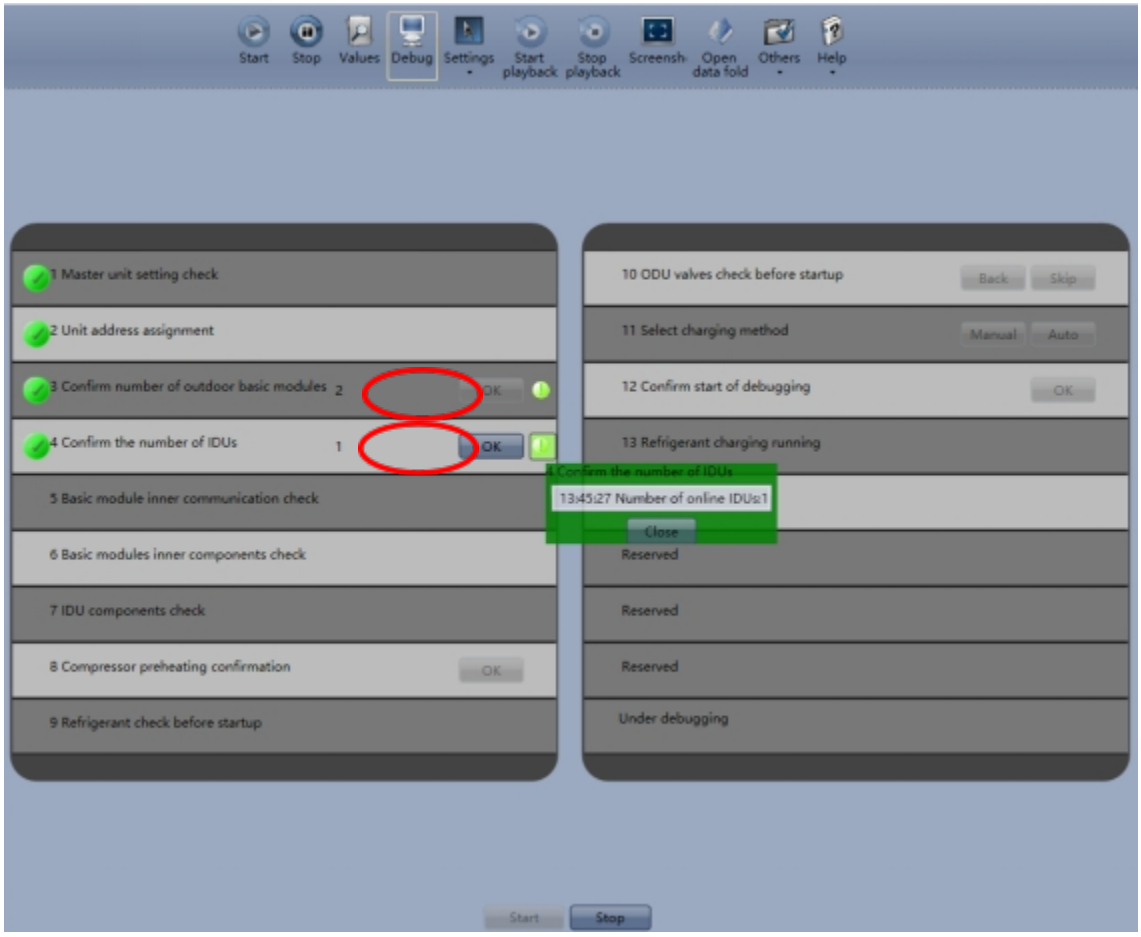


Step 6 Click "Start" to enter the commissioning function

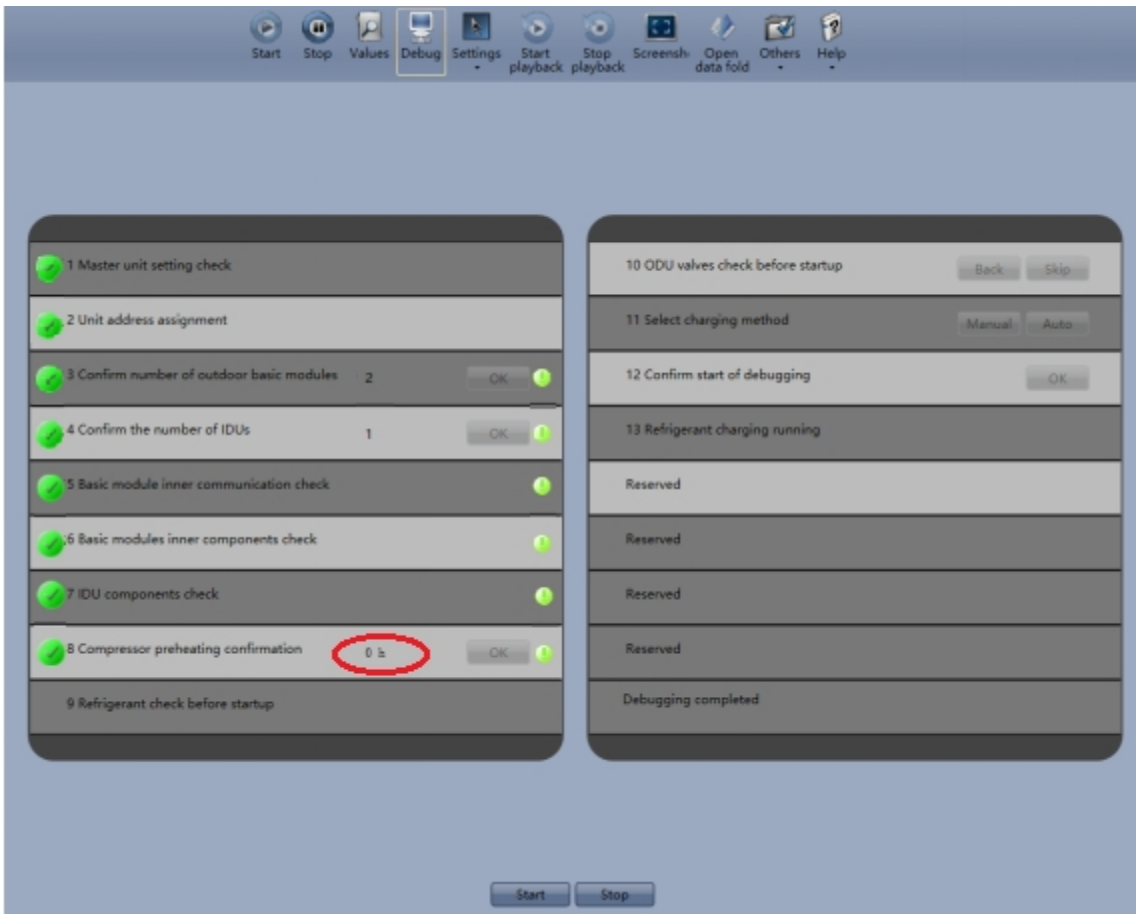
Click "Start" to enter the commissioning function and the software automatically performs commissioning. "" indicates that commissioning is being performed on the phase and "" indicates that commissioning is passed on the phase.



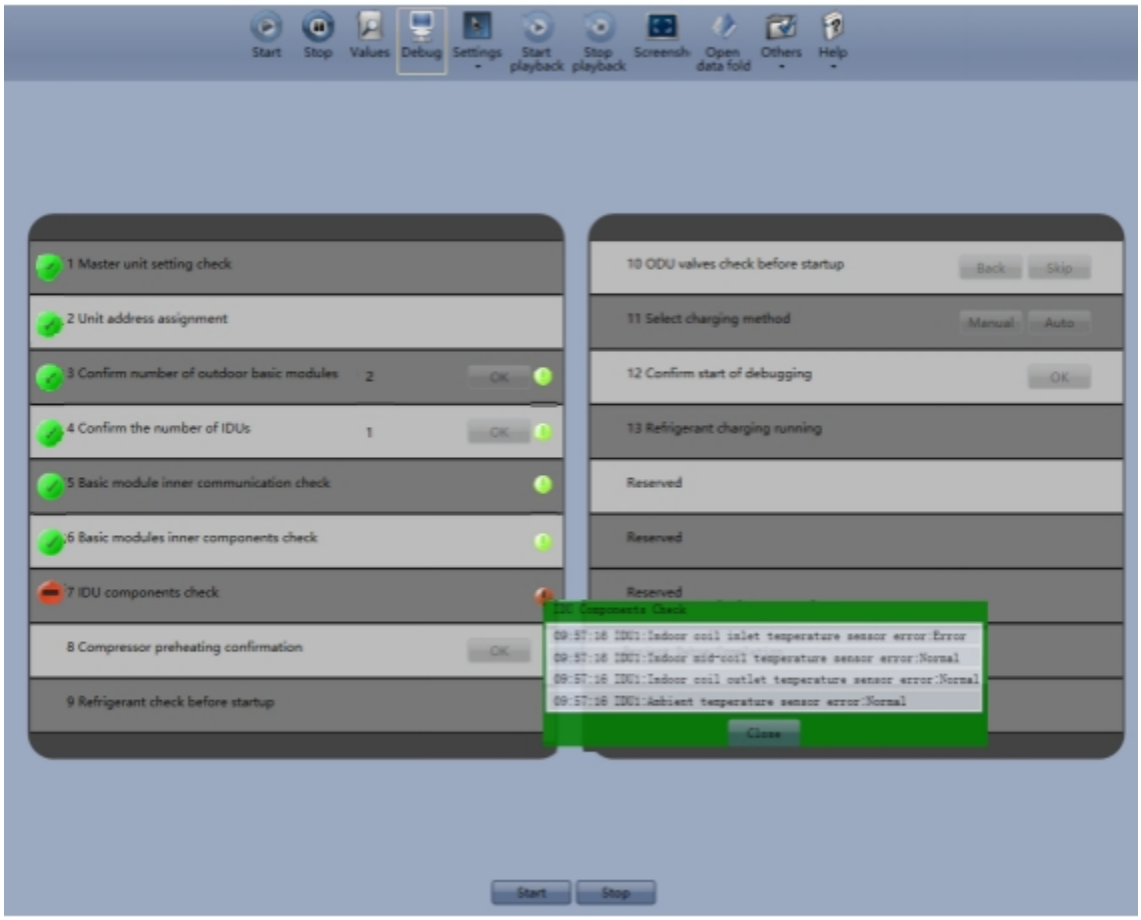
For the phase with "OK" displayed, a manual confirmation is required for entering the next commissioning step. In processes "3 Confirm number of outdoor basic modules" and "4 Confirm the number of IDUs", if the number of online units is consistent with the actual number, click Confirm or wait for 30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



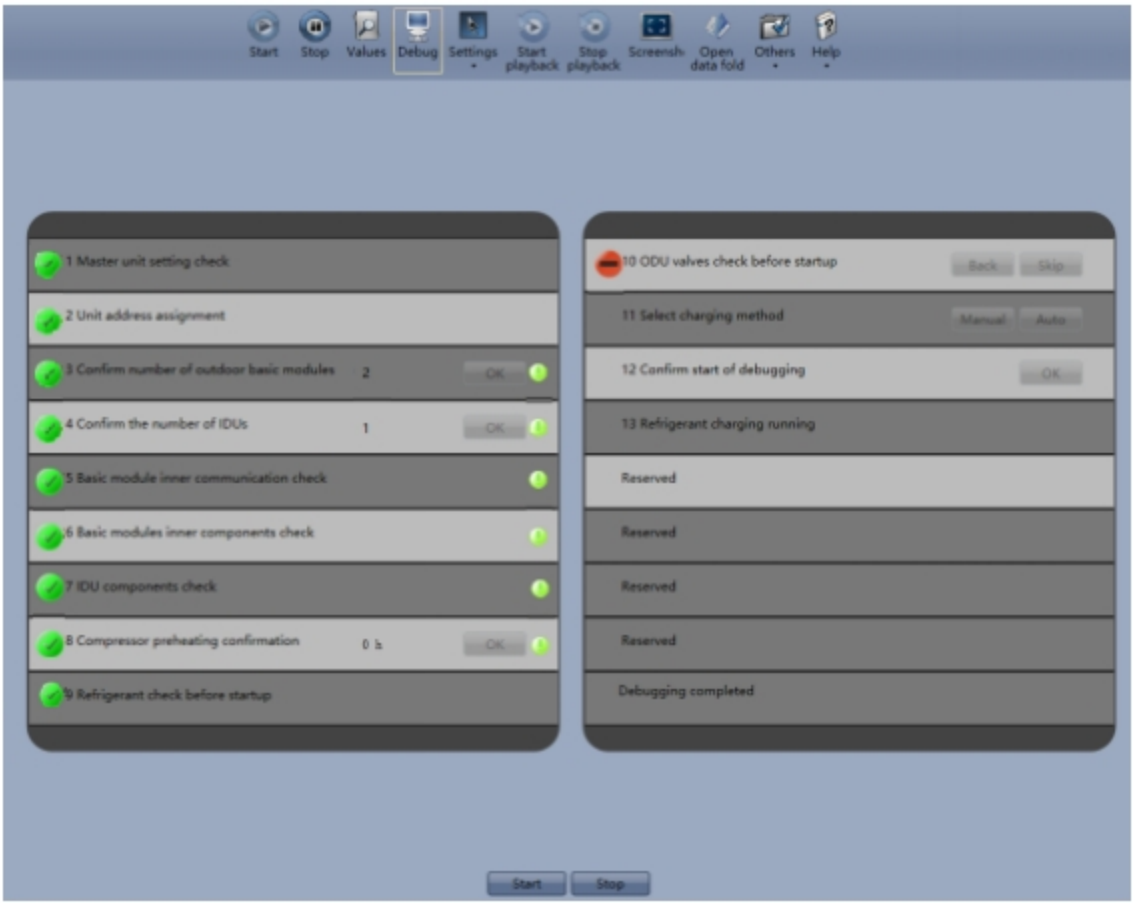
In step “8 Compressor preheating confirmation”, the current preheat time is directly displayed, as shown in the red box in the figure below. If the system currently detects that all the basic modules have been continuously powered on for 2 hours or more, or the previous time when the modules were powered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



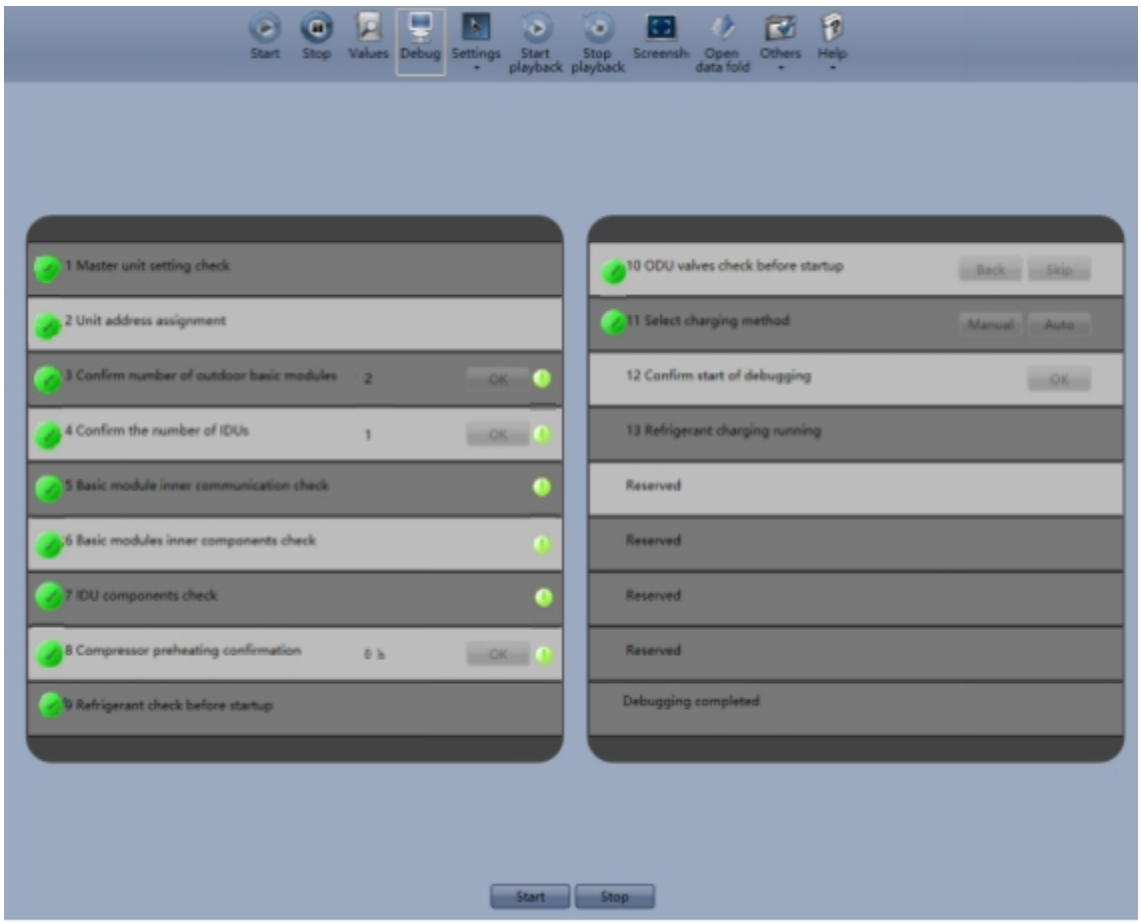
"  " indicates that commissioning is not passed on the phase and troubleshooting is required (after troubleshooting, the unit automatically enters the next step if no "OK" exists or click "OK" to enter the next step). Click "  " to display relevant information detected on this phase, which provides references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



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

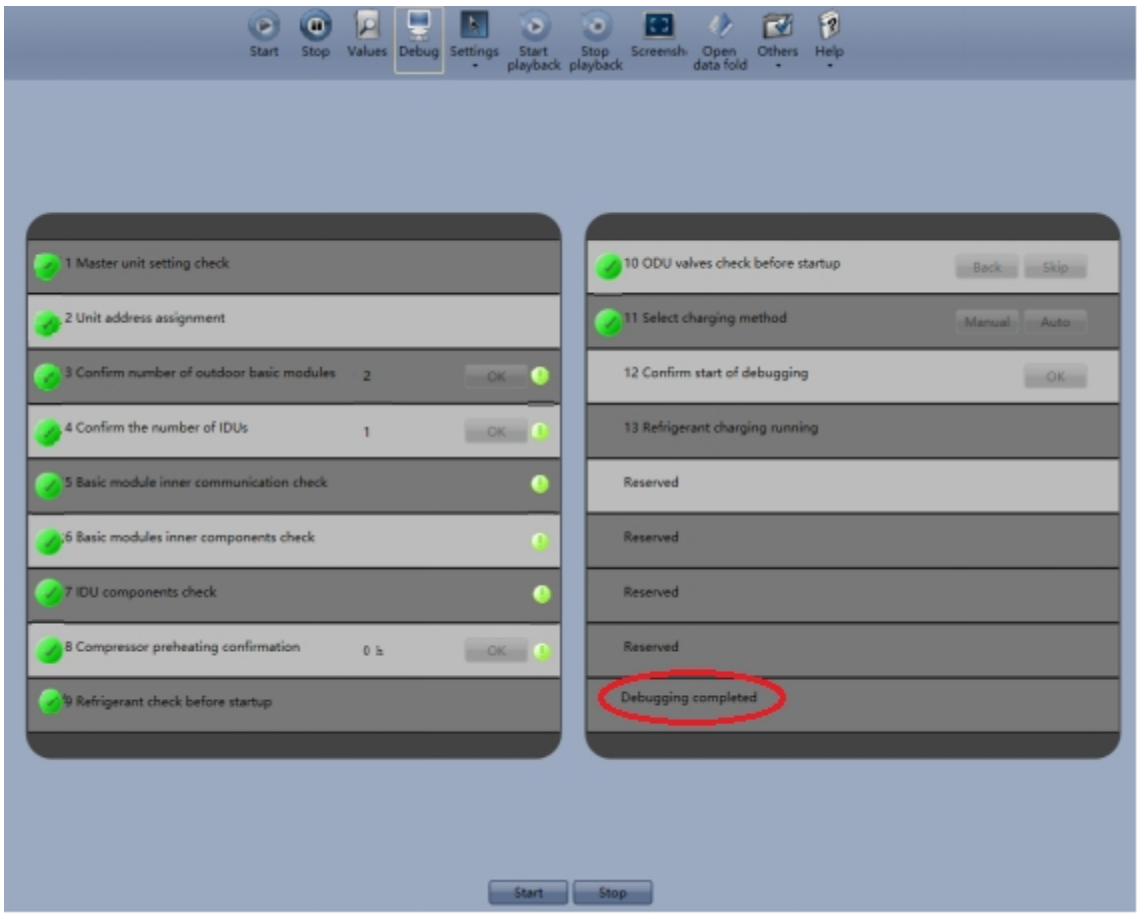


In step "11 Select charging method", the system automatically selects manual or auto charging mode. You can directly choose manual charging. If no operation is performed within 3 minutes, manual charging is automatically entered.



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

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



Note:

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

3.2.5 Unit Commissioning by Using Multi-functional Debugger

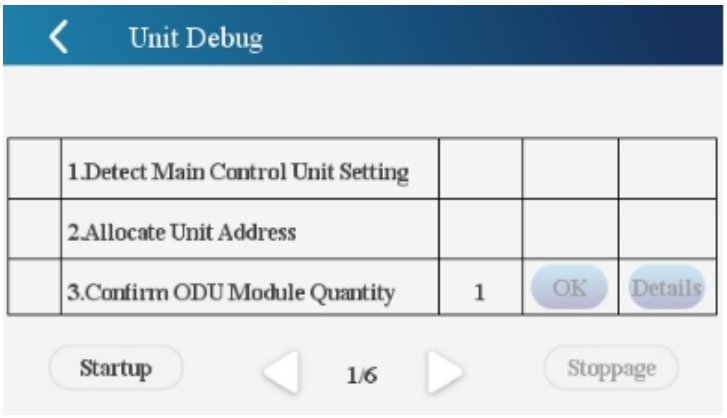
Step 1: Connect multi-functional debugger. For details, see the user manual of multi-functional debugger.

Step 2: Set the address DIP switch (SA8) of the master master 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 master unit displays "01 AC" or "AH OF" (or a fault, if any, or "on" when the unit is started up).

Warning:

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

3.2.6 After Commissioning

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

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

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

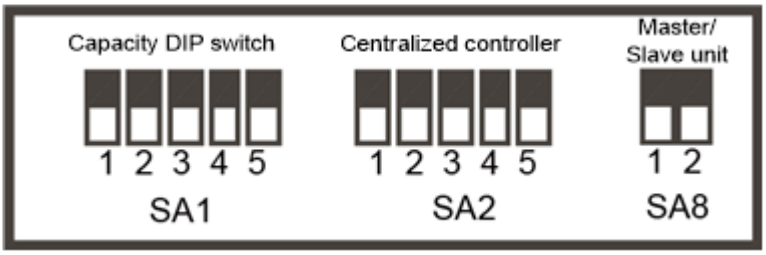
3.2.7 Reference Values of Unit Normal Operation Parameters (Commissioning Check)

Reference Values of Commissioning Parameters of the DC Inverter VRF Air-conditioning Unit						
No.	Commissioning Item		Parameter Name	Unit	Reference Value	Remarks
1	System parameters	Master 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			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.	—
5			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.	—
6			Frequency of DC compressor operation	Hz	●Between 15~ 120Hz	
7			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 adjusted between 0PLS and 3000PLS.	—
8			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.	—
9			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.	—
10		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;	—

Reference Values of Commissioning Parameters of the DC Inverter VRF Air-conditioning Unit						
No.	Commissioning Item		Parameter Name	Unit	Reference Value	Remarks
11	System parameters	Indoor unit parameters	Outlet pipe temperature of the indoor heat exchanger	°C	●In heating mode, the inlet pipe temperature of the same indoor unit is 10°C to 20°C lower than the outlet pipe temperature.	—
12			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.	—
13	Drainage system	—		—	●The indoor unit drains smoothly and thoroughly, and the condensate water pipe has no slope water storage; the master unit can completely drain from the drain pipe, and no water drops directly from the unit foundation.	—
14	Others	—		—	●The compressor and indoor and outdoor fans operate without abnormal noise. The unit operates normally without faults.	—

4 Unit Function Settings

4.1 DIP Switch Settings



Code	Name	Meaning	Default Setting	Remarks
SA1_capacity	Capacity DIP switch	Defines the rated capacity of the unit.	Depending on the model	The DIP switch is set by the factory and cannot be changed.
SA2_Addr-CC	Address DIP switch for centralized control	Defines and distinguishes addresses of different systems for centralized control of multiple systems.	00000	The code is used only for centralized control. Otherwise, keep the default setting. This address can be set only on the master unit(main).
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 master unit is powered off. A DIP switch setting takes effect after the unit is re-powered on.

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

4.1.1 Unit Capacity DIP Switch (SA1_capacity)

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

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

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

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

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

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

(2) Setting this DIP switch on non- master units(main) 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(main) 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(main) of other refrigerating systems as follows:

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

Note:

① DIP switch at the ON end indicates 0;

② DIP switch at the other end indicates 1;

③ × indicates invalid.

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

4.1.3 Master Module Setting DIP Switch (SA8_MASTER-S)

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

follows:

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

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

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

NOTES!

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

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

③ Settings must be performed in power-off status.

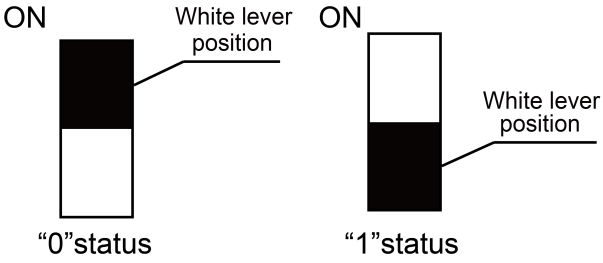
④ When delivered, all modules are in "00" master module status by default.

4.1.4 DIP Switch Examples

(1) DIP switch position description

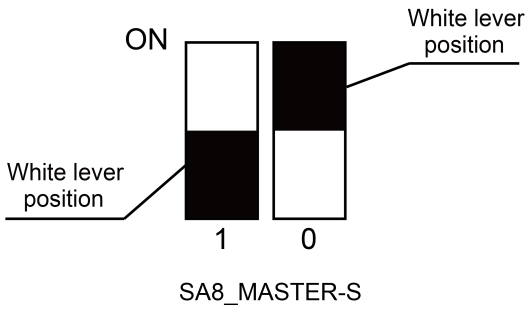
DIP switch at the ON end indicates 0; DIP switch at the other end indicates 1.

The white lever is DIP switch position.



(2) Example

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

Module c (master module)	Modules a and b (submodules)
	

4.2 System Function Operations

CAUTIONS!

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

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

4.2.1 Function Buttons

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



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

4.2.2 Function Description

Function Code	Function Name	Description	Default Setting		Remarks
			Code	Meaning	
A2	Refrigerant recycle	This function is automatically started during maintenance. Based on the system pressure change, this function recycles all or partial refrigerant of the faulty module or the indoor unit pipeline.	—	—	This function can only be set.
A6	Cooling/heating of the entire system	The unit can be set to cooling and heating, cooling only, heating only, or fan mode for centralized management.	nA	Cooling and heating	This function can be set and queried.
A7	Outdoor silence mode	This function sets different silence modes based on the user's needs.	00	No silence	This function can be set and queried.
A8	After-sales vacuum pumping mode	During maintenance, the system automatically turns on all electronic expansion valves and solenoid valves to ensure that all lines can be vacuumed.	—	—	This function can only be set.
n0	Auto energy saving	This function can automatically reduce power consumption of the unit based on system operating parameters.	01	Capability priority control	This function can be set and queried.
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.

Function Code	Function Name	Description	Default Setting		Remarks
			Code	Meaning	
C8	Compressor emergency setting	—	00	Normal operation of the compressor	—
CA	Module emergency setting	—	00	Normal operation of the module	—
4J	Components and parts emergency setting	—	00	Normal operation of the components and parts	—

4.2.3 Function Operations

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

Premise steps for function setting:

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

Step 2: Power on the entire system.

Step 3: Press and hold the SW1 up button on the master unit(main) for over 5 seconds. The system enters the function setting status. The master unit(main) 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	Master 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
n4	Blinks	00	Blinks	00	Blinks	Forced energy saving
n5	Blinks	00	Blinks	00	Blinks	Indoor unit engineering SN offset
C8	Blinks	00	Blinks	00	Blinks	Compressor emergency setting
CA	Blinks	00	Blinks	00	Blinks	Module emergency setting
4J	Blinks	00	Blinks	00	Blinks	emergency setting of components
1F	Blinks	00	Blinks	00	Blinks	SRL low-pressure control
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

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	Master 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
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	drainage function
C8	On	00	Blinks	00	Blinks	Compressor emergency setting
CA	On	00	Blinks	00	Blinks	Module emergency setting
4J	On	00	Blinks	00	Blinks	Components and parts emergency setting
1F	On	00	Blinks	00	Blinks	SRL low-pressure control
1G	On	00	Blinks	00	Blinks	Outdoor static pressure setting
1H	On	00	Blinks	00	Blinks	Efficient module rotation
4n	On	00	Blinks	00	Blinks	Adaptive control of noise
4q	On	00	Blinks	00	Blinks	Forced switch of the electric heater of an indoor unit

Then, set the function/parameter accordingly.

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

4.2.3.1 "A2" Refrigerant Recycle

Introduction:

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

Basic Module Model	Maximum Amount of Refrigerant to Be Recycled(kg)
GMV-W252WM/C-X	6.0
GMV-W280WM/C-X	6.0
GMV-W335WM/C-X	6.0
GMV-W400WM/C-X	8.5
GMV-W450WM/C-X	8.5
GMV-W504WM/C-X	8.5
GMV-W560WM/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 master 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 master unit automatically starts, and recycles the refrigerant to the pipeline of the master 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(main) 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(main) to confirm refrigerant recycle. The entire system will stop immediately. If the high pressure value displayed by LED3 continuously blinks and you do not operate in 3 minutes, the system forcibly stops.

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

Note:

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

4.2.3.2 "A6" Cooling/Heating of the Entire System

Introduction:

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

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

4.2.3.3 A7 Outdoor Silence Mode

Introduction:

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

In smart night silence mode, need to set timer of master 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

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

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

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

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

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

4.2.3.4 A8 After-Sales Vacuum Pumping Mode

Introduction:

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

Setting steps:

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

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

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

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

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

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

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

4.2.3.5 n0 Auto Energy Saving

Introduction:

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

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

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

Setting steps:

Step 1: Enter n0 system energy saving operation, and ensure that the master unit(main) 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(main) 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(main) in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

4.2.3.6 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
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(main) 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(main) in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status. (During setting, press SW4 to return to the previous process. If the setting is completed, press SW4 to resume the unit to the current normal working status.)

4.2.3.7 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(main) displays as follows:

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

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

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

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

4.2.3.8"qJ" One-button Drainage Function

Code	Code Meaning
On	Status of one-button drainage
OF	Not in the status of one-button drainage

Setting operation:

After entering the function setting, the default display of the main control computer is as follows:

LED1		LED2		LED3	
Function Code	Display Mode	Current Module	Display Mode	One-button drainage mark	Display Mode
qJ	On	OF	Flash	00	Flash

Shortly press the SW3 confirmation button to enter the interface below:

LED1		LED2		LED3	
Function Code	Display Mode	Current Module	Display Mode	One-button drainage mark	Display Mode
qJ	On	OF	Flash	00	On

Press SW1 up selection key and SW2 down selection key. After selection, shortly press SW3 for confirmation, and it'll be in the corresponding selection status:

LED1		LED2		LED3	
Function Code	Display Mode	Current Module	Display Mode	One-button drainage mark	Display Mode
qJ	On	On or OF	On	OC	On

If there's no operation in 10s after the setting completes, it will exit this interface and resume to the normal standby state

Description:

One-button drainage function: It works in both whole machine operation state and standby state. Enter the one-button drainage function, and the master unit sends mandatory shutdown command to shut down the indoor unit. Exit the drainage function to cancel the mandatory shutdown command. If the one-button drainage state is set as On (namely in the state of one-button drainage), then the one-button drainage mark will automatically restore to OF in 60min

4.2.3.9 C8 Compressor Failure Emergency Operation

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

Setting steps:

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

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

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

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

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

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

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

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

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

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

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

NOTES!

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

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

③ The default status is 00.

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

4.2.3.10CA Module Failure Emergency Operation

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

Setting steps:

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

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

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

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

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

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

Modules not shielded display as follows:

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

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

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

NOTES!

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

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

③ The default status is 00;

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

4.2.3.11 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.

Note:

① Default is "00" state;

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

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

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

4.2.3.14 1F SRL Low-Pressure Control

Setting steps:

Enter the function setting. The master unit(main) 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(main) memorizes this setting and does not clear it even upon power failure and power-on again. The default value is 00.

4.2.3.13 1H Efficient Module Rotation

Setting steps:

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

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

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

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

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

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

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

4.2.3.14 4n Adaptive Control of Noise

Setting steps:

Enter the function setting. The master unit(main) 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(main) 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(main) memorizes this setting and does not clear it even upon power failure and power-on again.

4.2.3.15 4q Forced Off of the Electric Heater of an Indoor Unit

Setting steps:

Enter the function setting. The master unit(main) 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(main) 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(main) memorizes this setting and does not clear it even upon power failure and power-on again.

4.2.4 Master 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	Master 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(main), press and hold the SW2 down button for over 5 seconds. The master unit(main) 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(main) in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.4.1 n6 Fault Query

Press the SW1 up button and the SW2 down button to select fault query. The master unit(main) 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(main) 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 master unit.

4.2.4.2 n7 Parameter Inquiry

Press the SW1 up button and the SW2 down button to select parameter query. The master unit(main) 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(main) to confirm the selection.

Introduction:

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

Operations:

In parameter query status, the master unit(main) 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
01	Outdoor water inlet temperature
02	Operating frequency of compressor 1
03	Operating frequency of compressor 2
04	Operating frequency of outer fan
05	Module high pressure
06	Module low pressure
07	Exhaust temperature of compressor 1
08	Exhaust temperature of compressor 2
09	Exhaust temperature of compressor 3
10	Exhaust temperature of compressor 4
11	Exhaust temperature of compressor 5
12	Exhaust temperature of compressor 6
13	Exhaust temperature of compressor 7
14	Current value of compressor 1
15	Current value of compressor 2
16	Current value of compressor 3
17	Current value of compressor 4
18	Current value of compressor 5
19	Current value of compressor 6
20	Reserved
21	Module temperature of compressor 1
22	Module temperature of compressor 2
23	Module temperature of outer fan 1

Parameter Code	Parameter Name
24	Module temperature of outer fan 2
25	Master unit heating EXV1
26	Master unit heating EXV 2
27	Subcooler EXV
28	Defrosting temperature
29	Liquid outlet temperature of subcooler
30	Temperature of branch steam outlet pipe
31	Temperature of return oil
32	Condenser inlet pipe temperature
33	Condenser outlet pipe temperature
34	Compressor 1 enthalpy increasing electronic expansion valve EXV3
35	Water inlet temperature
36	Water outlet temperature
37	Subcooler air inlet temperature wrap
38	Inlet pipe temperature of plate type heat exchanger
39	Outlet pipe temperature of plate type heat exchanger

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(main), 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(main) in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.4.3 n8 Indoor Unit Engineering SN Query

Introduction:

This function makes all indoor units display their SN respectively by performing an operation on the master unit(main), 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(main) to confirm the selection. The master unit(main) 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 master unit.

Press the SW4 back button on the master unit(main) 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(main) 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(main) to exit indoor unit engineering SN query in 30 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.2.4.4 n9 Online Indoor Unit Qty Query

Introduction:

This function directly uses the master 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(main), 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(main) in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

Note:

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

4.2.4.5 nb Master Unit Barcode Query

Introduction:

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

Operations:

Press the SW1 up button and the SW2 down button to select master unit barcode query. The master unit(main) 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(main) 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

LED1		LED2		LED3	
Function Code	Display status	Module address	Display status	Current status	Display status
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(main), 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(main) in 5 minutes, the system will automatically exit the current screen and the unit will resume displaying the current status.

4.3 Restoration to Default Settings

Restoration to default settings 1 (clearing all settings)

On the main board of the master unit(main), 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 master units, quantities of the indoor and master 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(main), 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 master units, but stores quantities of the indoor and master units, and commissioning completion status.

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

On the main board of the master unit(main), 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 master units, quantities of the indoor and master units, and commissioning completion status.

4.4 Fire Alarm Function Setting

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

4.5 Indoor Unit Function Applications

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

Chapter 3 Faults

1 Error Indication

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

—	Error Code	Content	Error Code	Content
Outdoor	E0	Malfunction of ODU	E1	High-pressure protection
	E2	Discharge low-temperature protection	E3	Low-pressure protection
	E4	High discharge temperature protection of compressor	Ed	Drive IPM low temperature protection
	F0	Main board of ODU is poor	F1	Malfunction of high-pressure sensor
	F2	Plate Type Heat Exchanger Inlet Pipe Temperature Sensor Fault	F3	Malfunction of low-pressure sensor
	F4	Plate Type Heat Exchanger Outlet Pipe Temperature Sensor Fault	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	Fy	Water Inlet Temperature Wrap Fault
	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	JJ	Water Inlet Undertemperature Protection
	Jn	Water flow abnormal protection	Jy	Inlet water temperature abnormal protection
	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	by	Water Outlet Temperature Wrap Fault
	P0	Malfunction of driving board of compressor	P1	Driving board of compressor operates abnormally

—	Error Code	Content	Error Code	Content
Outdoor	P2	Voltage protection of driving board power of compressor	P3	Reset protection of driving module of compressor
	P4	Drive PFC protection of compressor	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)	-	-
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

—	Error Code	Content	Error Code	Content
Debugging	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
	Uy	PV module over-temperature protection	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	A9	Set Back function
	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	n1	Defrosting cycle K1 setting
	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
	qA	Heat recovery status	qH	Mainly heating
	qC	Mainly cooling	qP	Export region setting for PV VRF units
	qU	Grid voltage configuration	-	-

2 Troubleshooting

WARNING!

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

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

Fault display: main board of master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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 master 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: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board. 

Applicable model: Models excluding GMV Water series.

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.

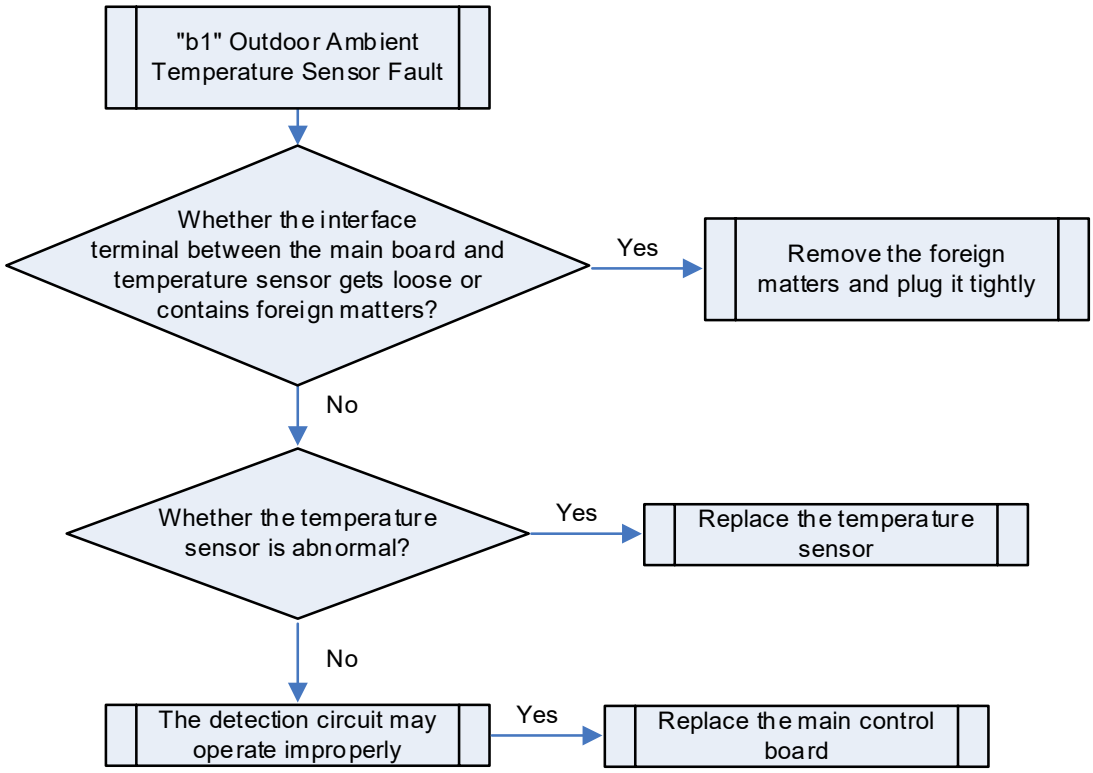
Possible causes:

■ 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 master unit, wired controller of indoor unit and receiver of indoor unit display 

Applicable model: Models excluding GMV Water series.

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.

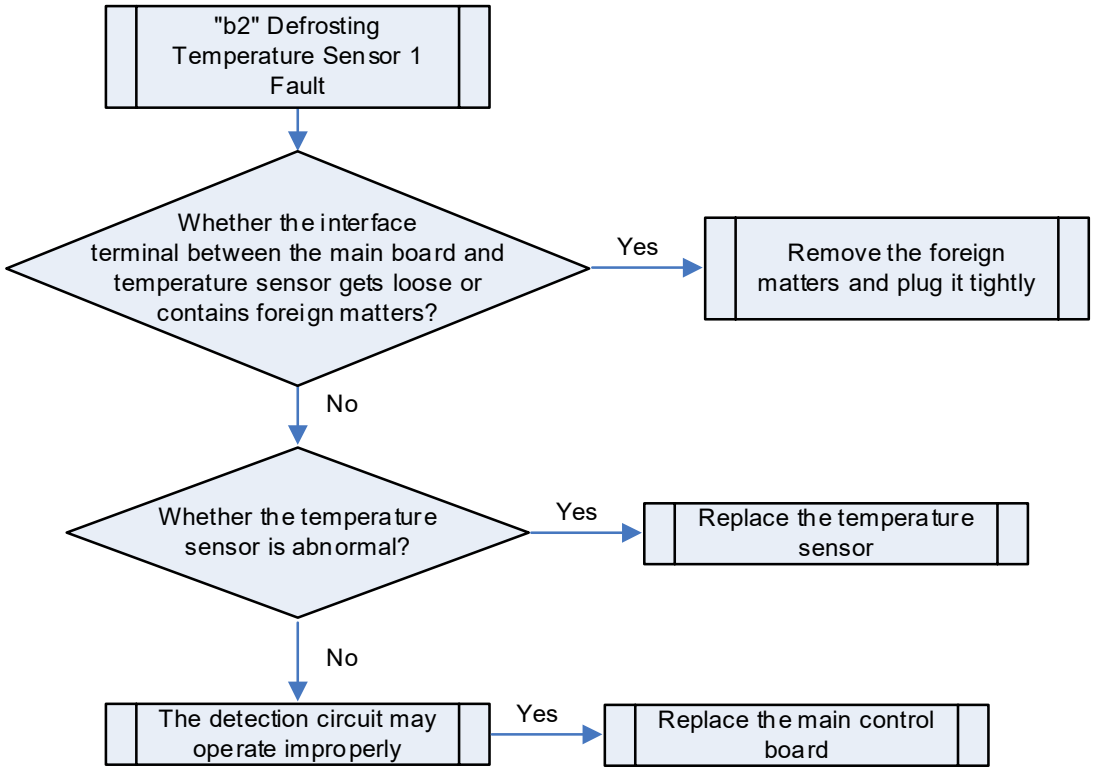
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:


"b2" Defrosting Temperature Sensor 1 Fault
Whether the interface terminal between the main board and temperature sensor gets loose or contains foreign matters?
Yes
Remove the foreign matters and plug it tightly
No
Whether the temperature sensor is abnormal?
Yes
Replace the temperature sensor
No
The detection circuit may operate improperly
Yes
Replace the main control board

2.19 "b3" Defrosting Temperature Sensor 2 Fault

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

Applicable model: Models excluding GMV Water series.

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.

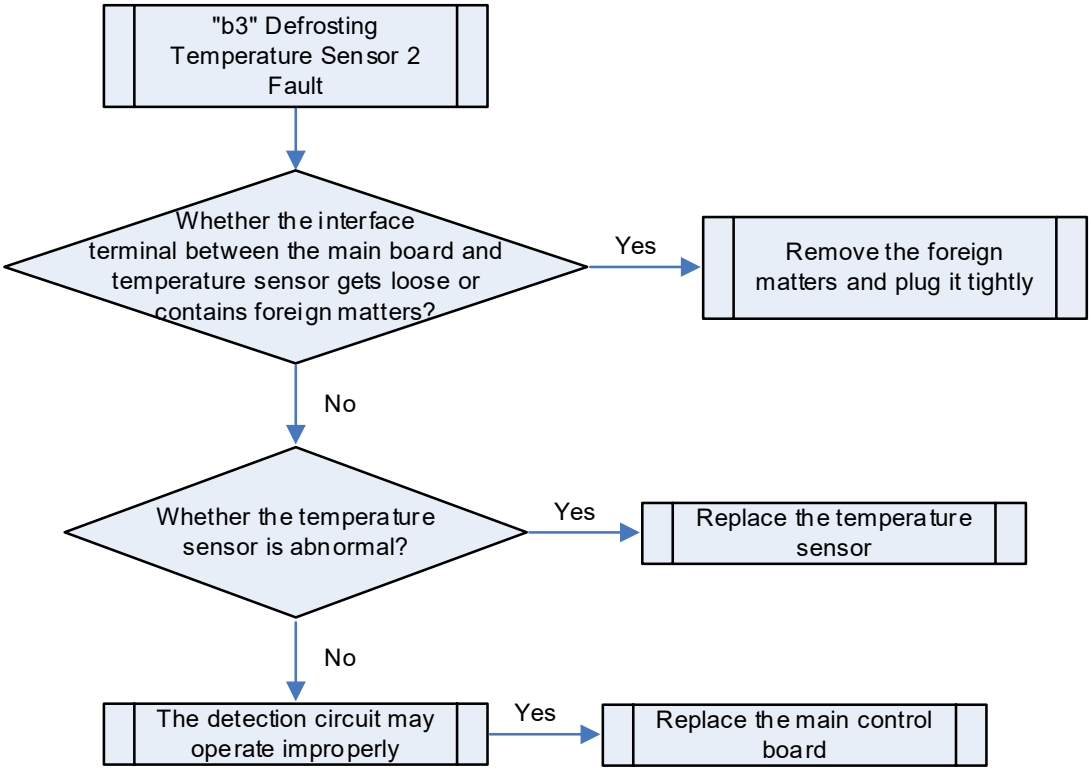
Possible causes:

■ 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 master 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.

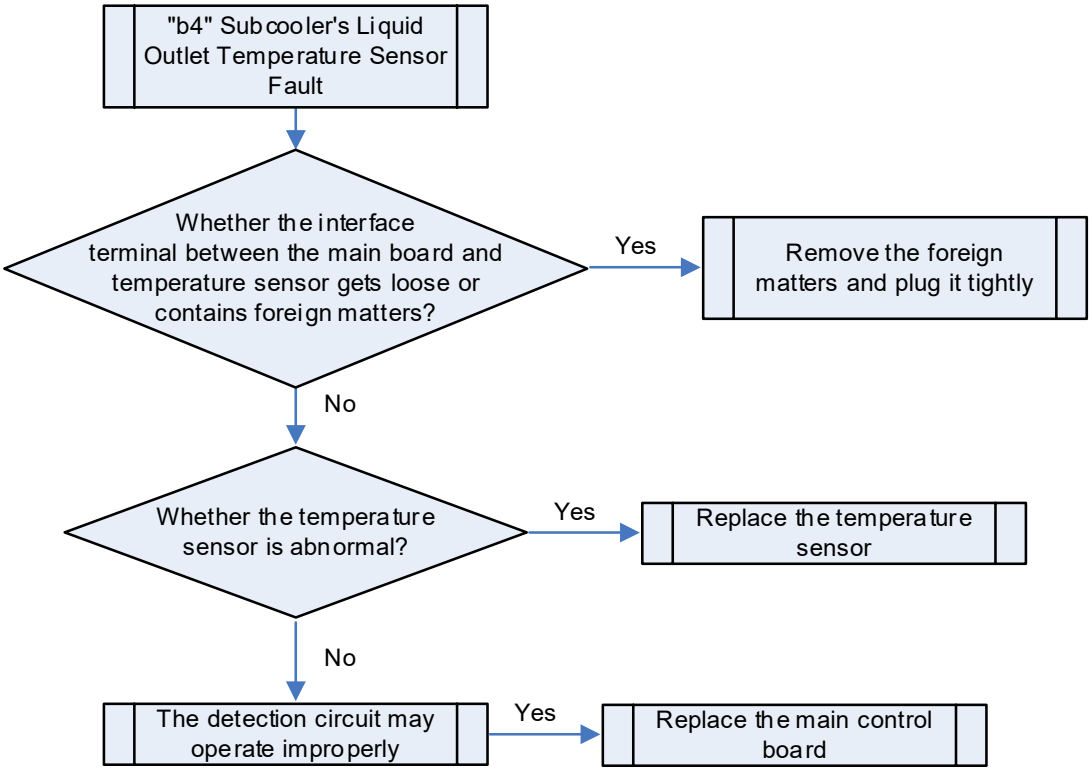
Possible causes:

■ 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 master 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.

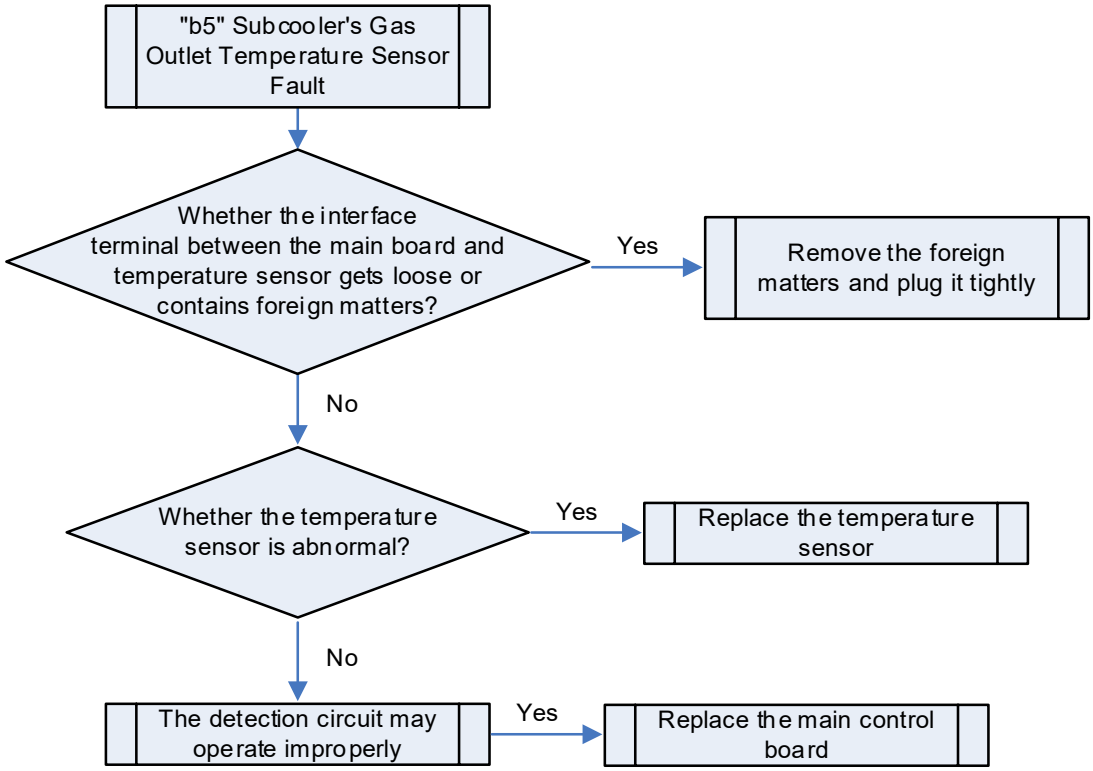
Possible causes:

■ 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 master 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.

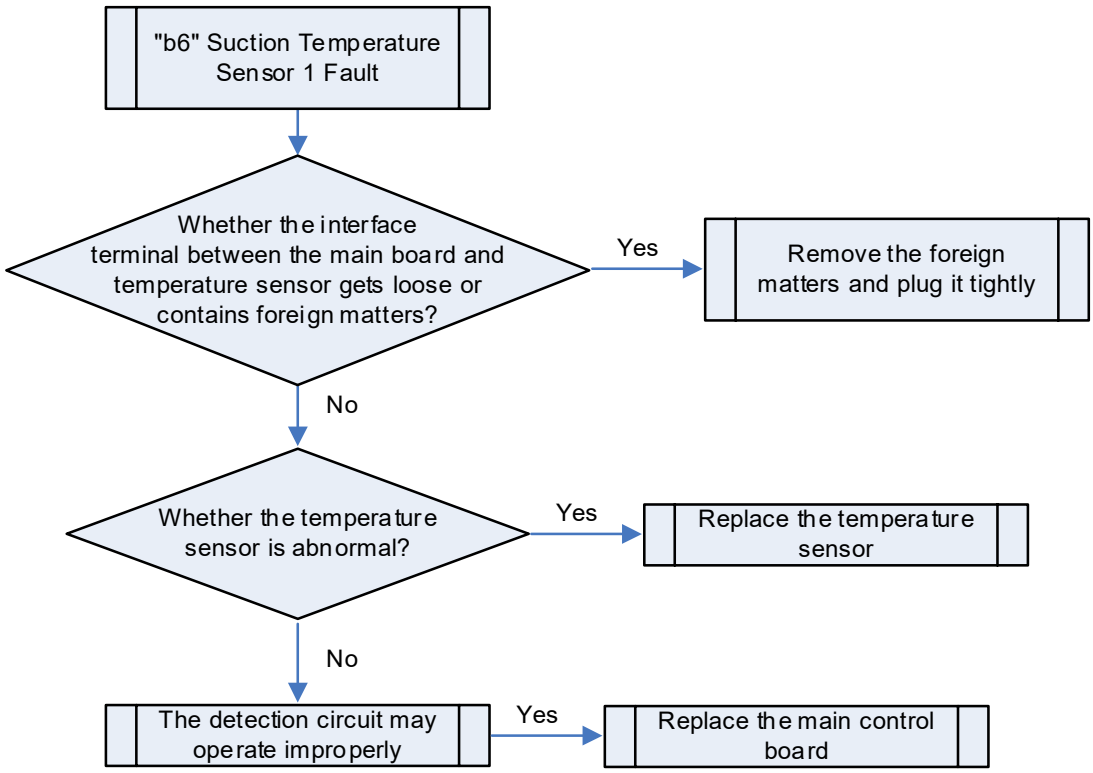
Possible causes:

■ 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 master 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.

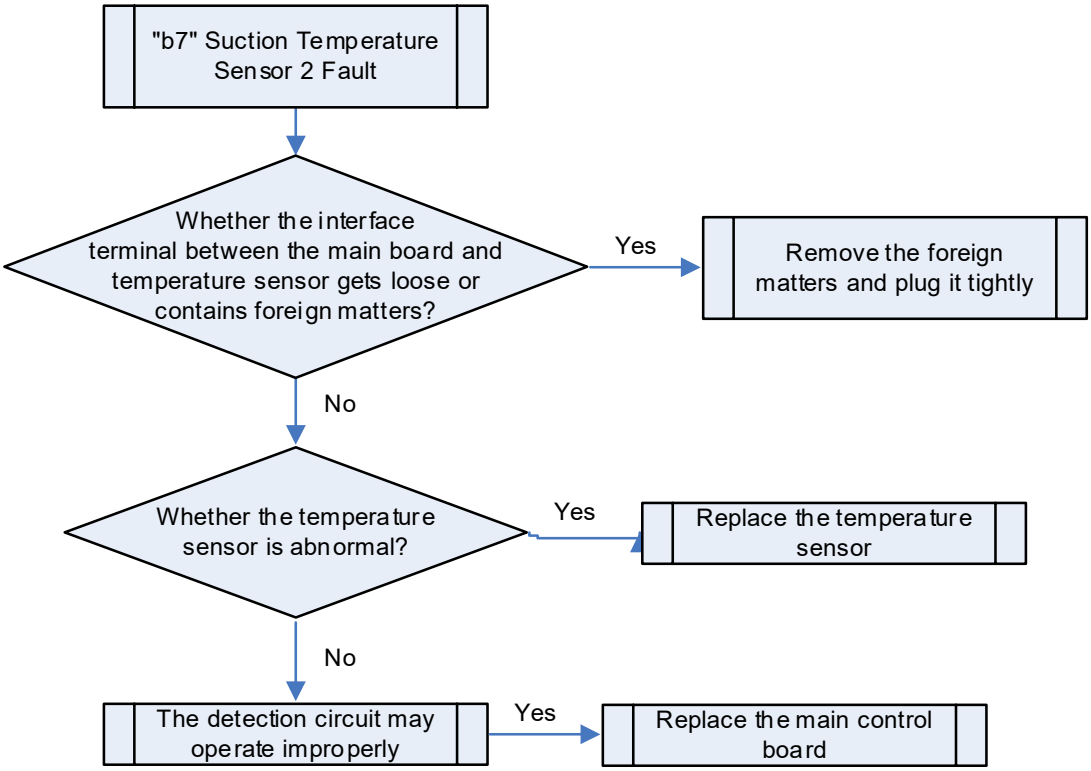
Possible causes:

■ 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 master 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.

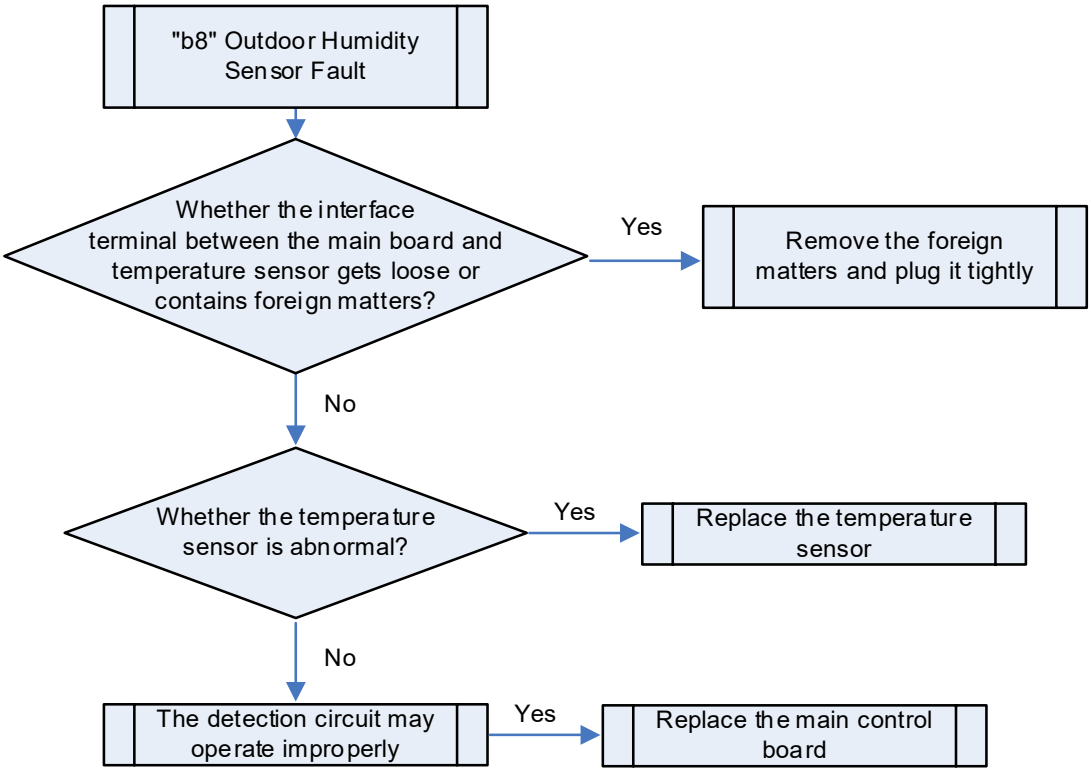
Possible causes:

■ 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 master 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.

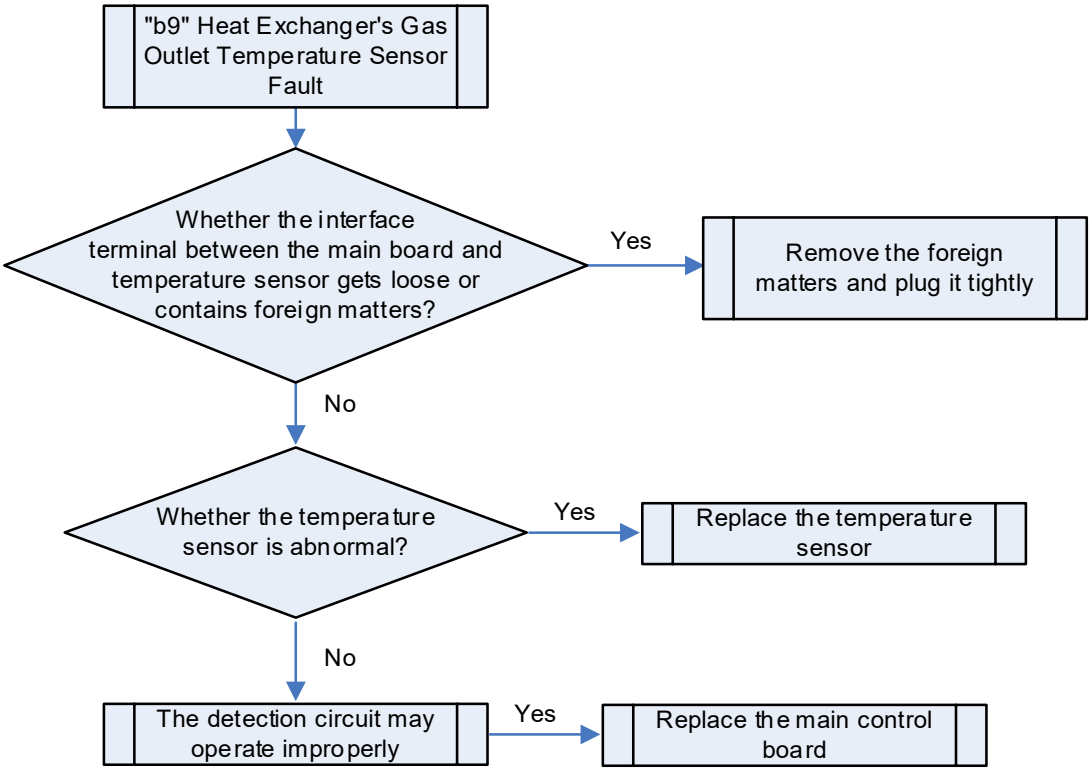
Possible causes:

■ 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 master 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.

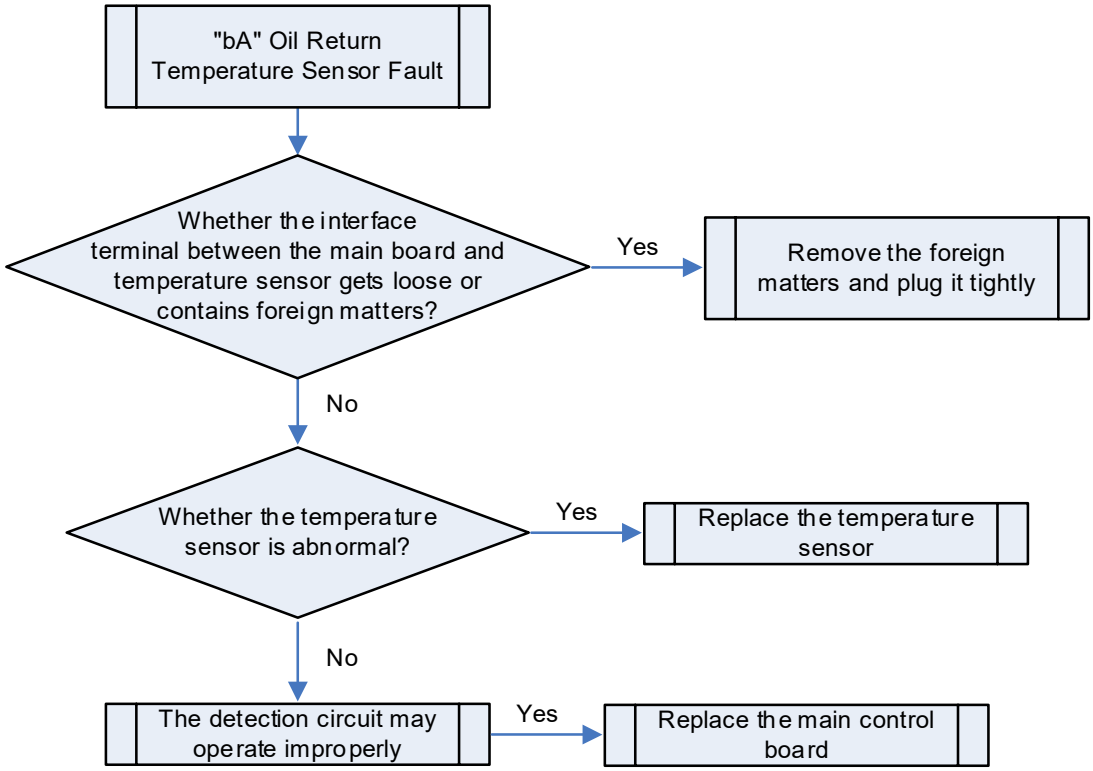
Possible causes:

■ 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

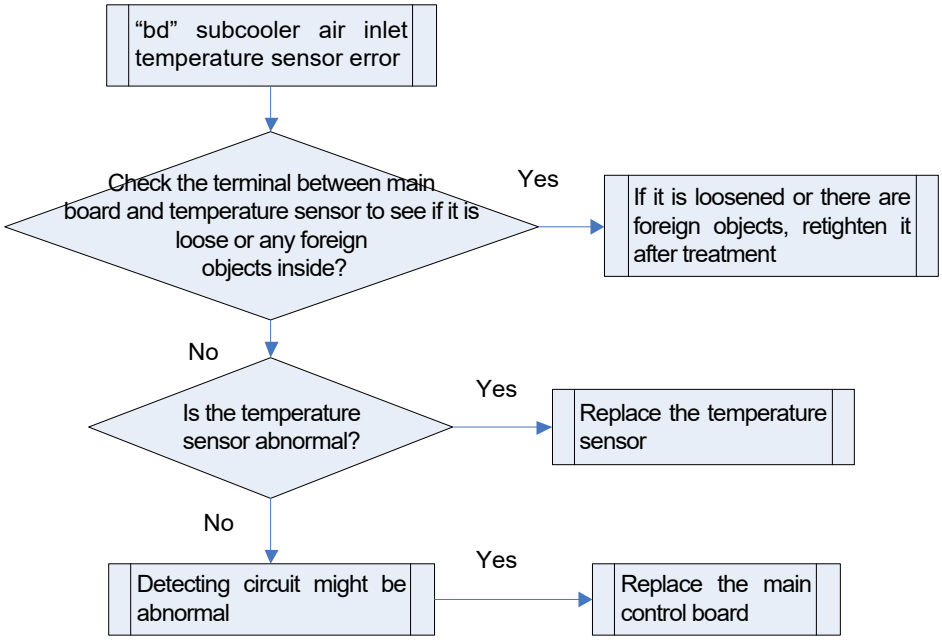
Possible reasons:

■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 "C0" Communication Fault Between Indoor and Master units and Between Indoor Unit and Wired Controller

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

Fault diagnosis:

There is no communication between the master 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;

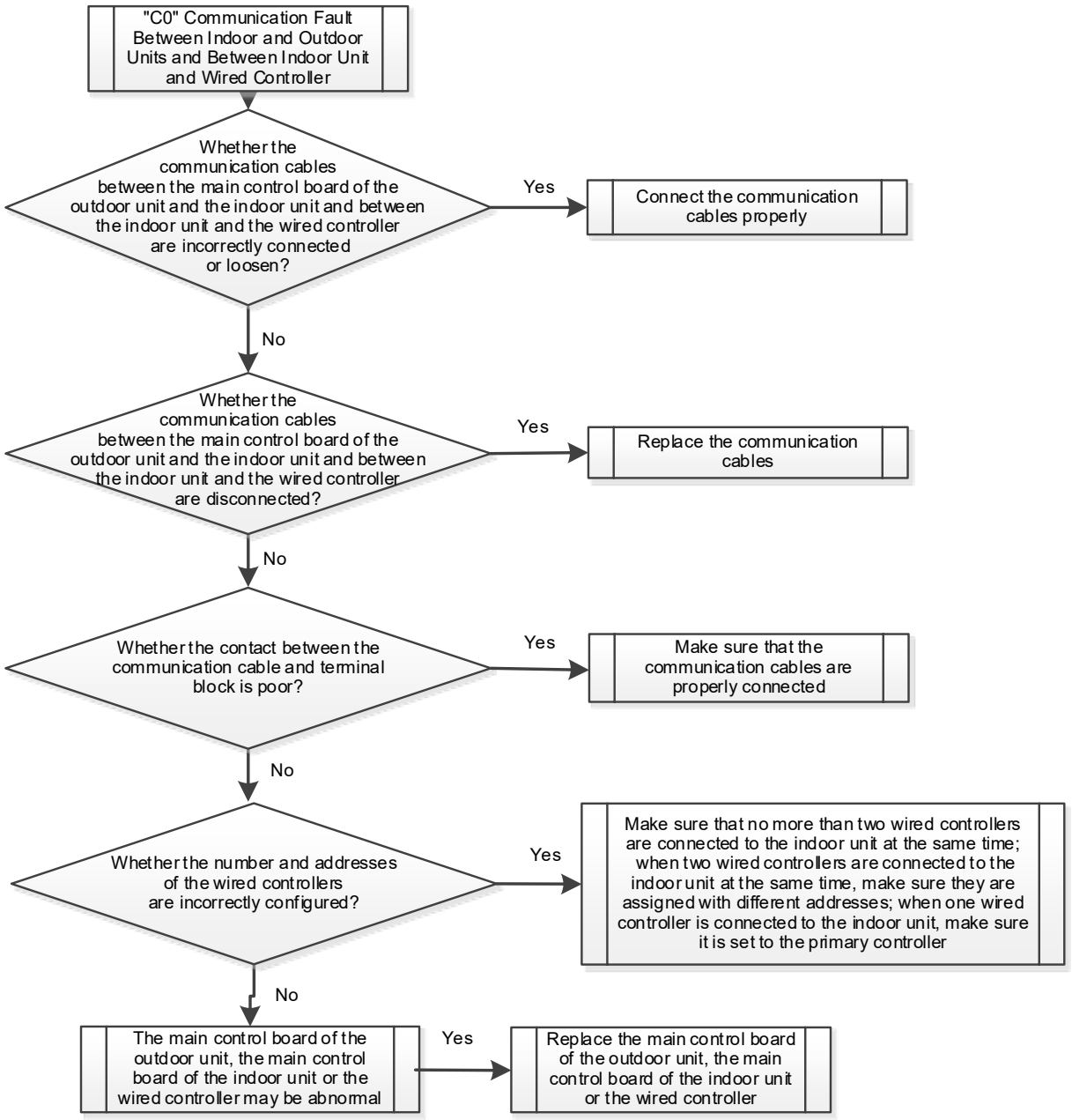
■ Number of wired controllers connected or addresses are set improperly;

■ Controller operates improperly.

Troubleshooting:

If the main control board of master unit does not display C0, check the connection between the indoor unit and the wired controller; if the main control board of master unit, indoor unit's receiver and wired controller display C0, check the connection between the indoor unit and master 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:



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

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

Fault diagnosis:

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

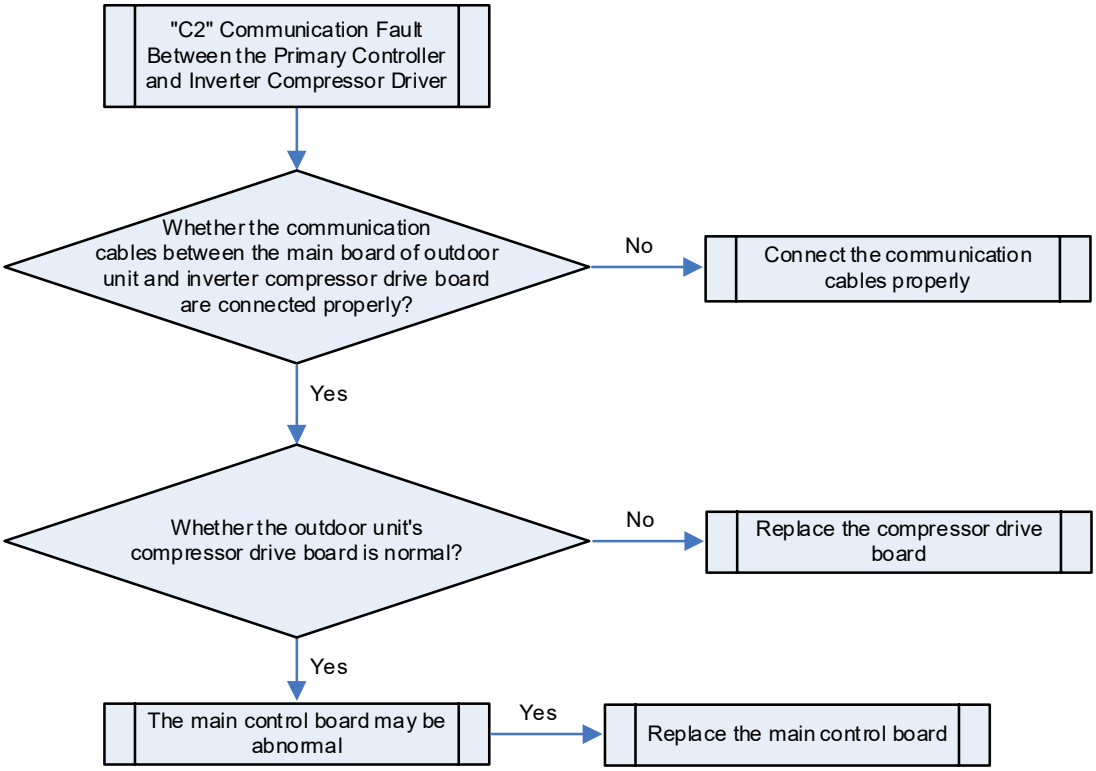
Possible causes:

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

■ The inverter compressor driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



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

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

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

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

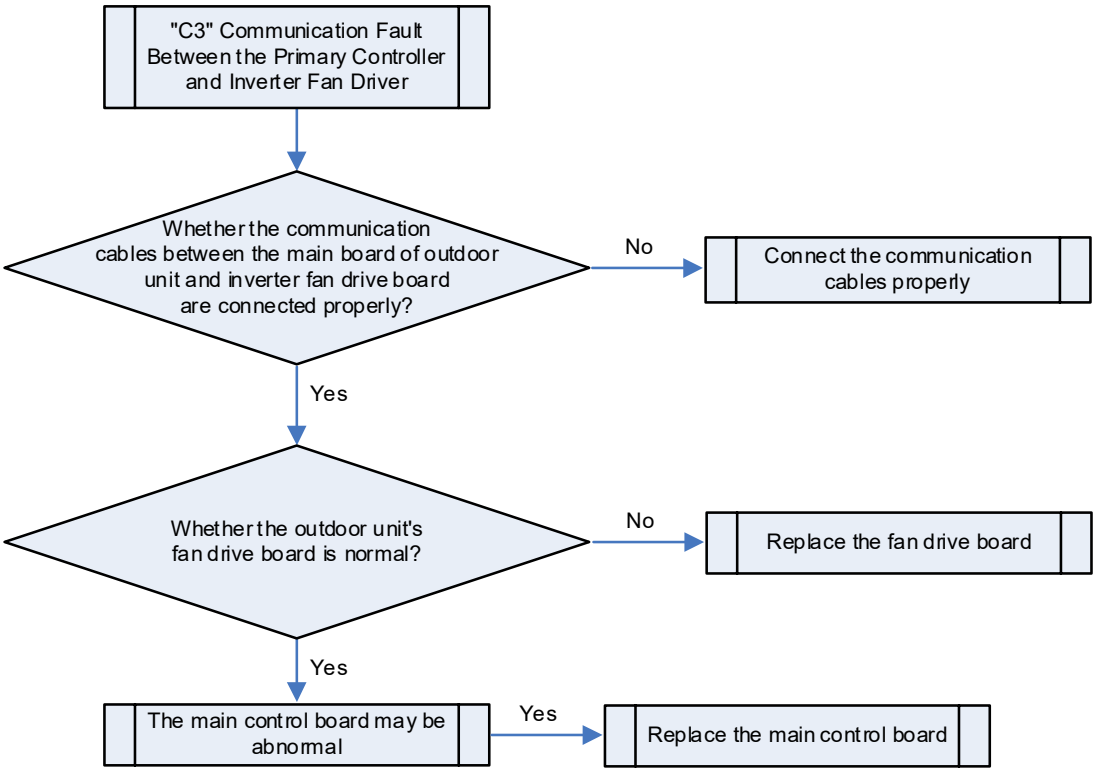
Possible causes:

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

■ The inverter fan driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



2.32 "C4" Indoor Unit Loss Fault

Fault display: main board of master 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.

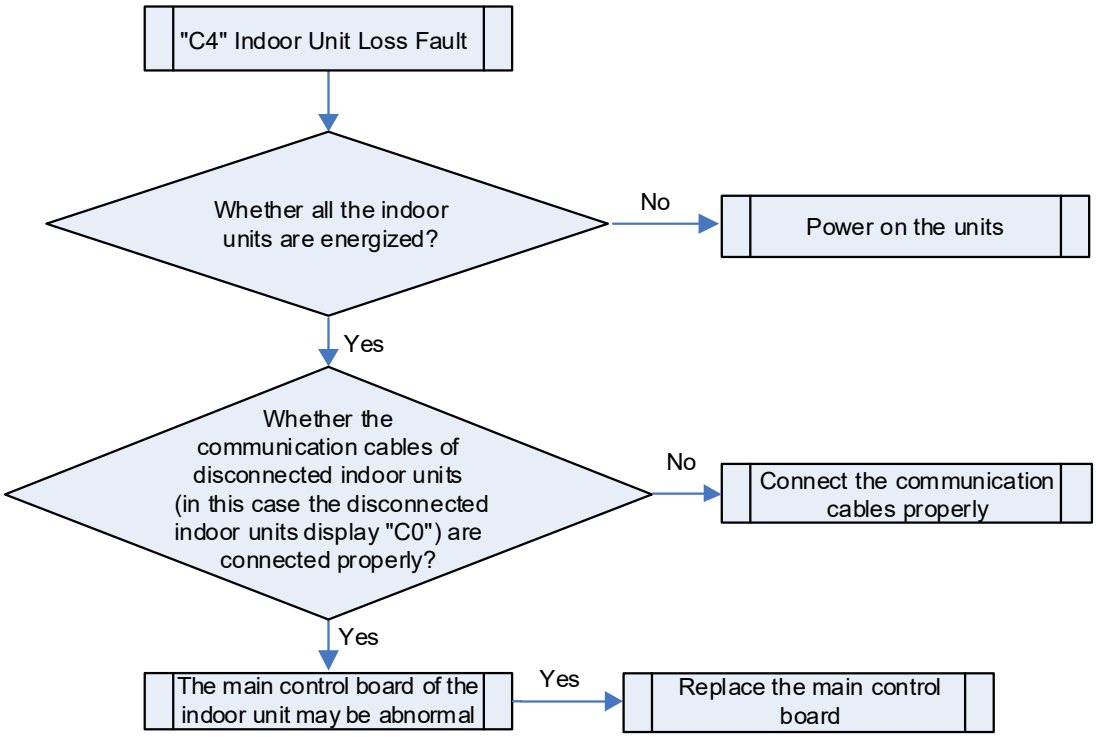
Possible causes:

■ Poor contact of communication cables;

■ The indoor units are powered off;

■ The main board of indoor unit operates improperly.

Troubleshooting:



2.33 "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.

2.34 "C6" Alarm on Inconsistent Number of Master units

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

Fault diagnosis:

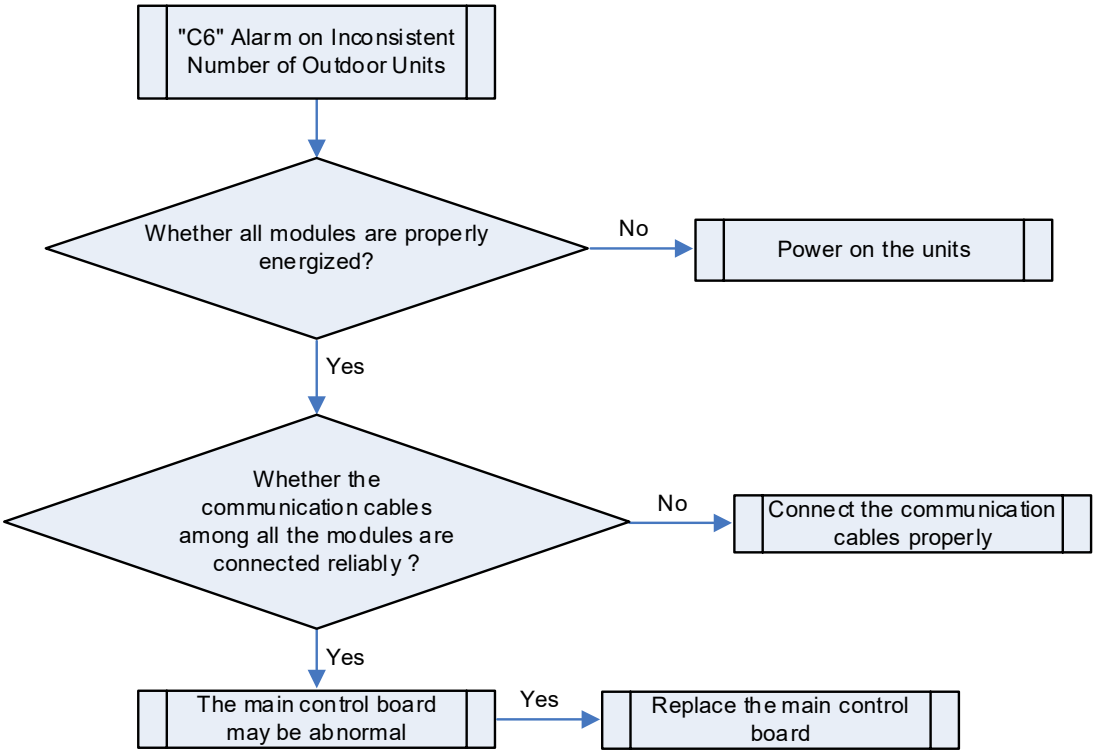
The unit detects the number of online outdoor modules in real time. When it detects that the number of current modules is inconsistent with the number of modules previously commissioned and memorized, the unit will report the fault and stop working.

Possible causes:

■ Abnormal communication among modules;

■ The modules are not powered on.

Troubleshooting:



2.35 "C8" Emergency Operation of Compressor

Fault display: main board of master 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.

2.36 "C9" Emergency Operation of Fan

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

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.

2.37 "CA" Emergency Operation of Module

Fault display: main board of master 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.

2.38 "CH" Too High Rated Capacity Ratio

Fault display: main board of master 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 master units. When the ratio of the total rated capacity of indoor units to the total rated capacity of master 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 master units.

Troubleshooting:

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

2.39 "CL" Too Low Rated Capacity Ratio

Fault display: main board of master 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 master units. When the ratio of the total rated capacity of indoor units to the total rated capacity of master 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 master units.

Troubleshooting:

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

2.40 "CC" No Master Units(Main) Fault

Fault display: main board of master 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(main) is detected in the multi-module communication network, the fault is generated.

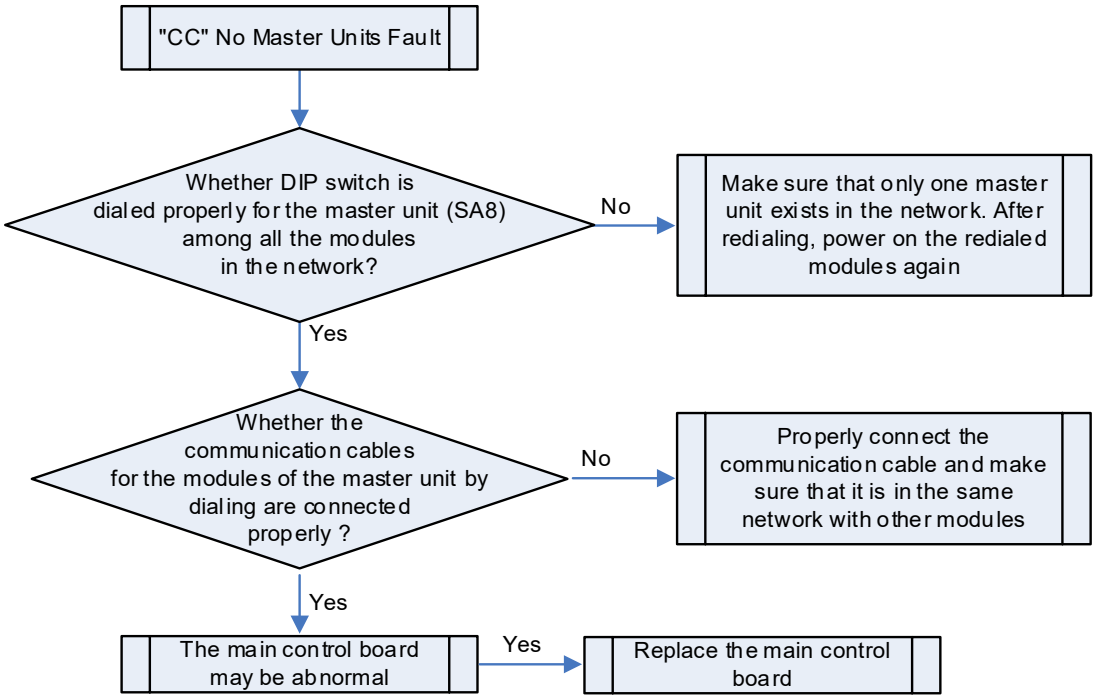
Possible causes:

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

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

■ Abnormal detection circuit.

Troubleshooting:



2.41 "CF" Multi-master Units(Main) Fault

Fault display: main board of master 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.

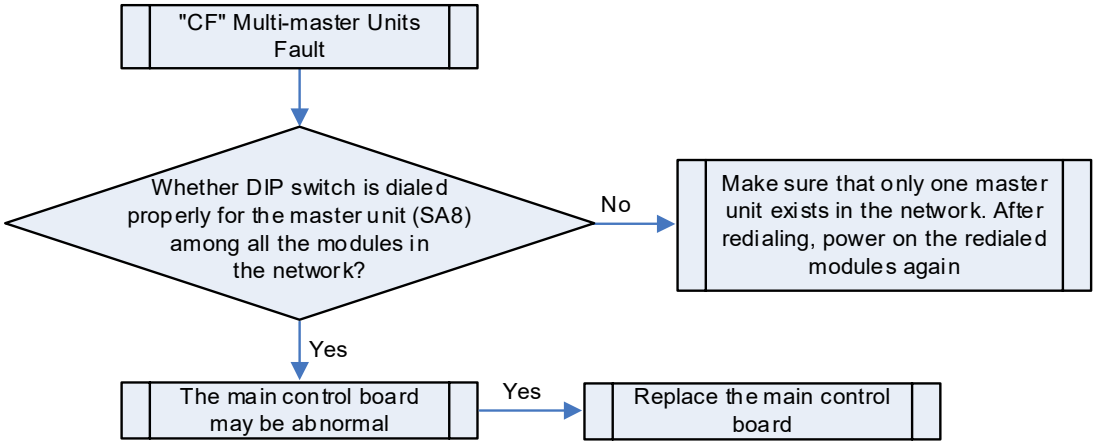
When multiple master units(main) are detected in the multi-module communication network, the fault is generated.

Possible causes:

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

■ Abnormal detection circuit.

Troubleshooting:



2.42 "CJ" System Address Code Conflict

Fault display: main board of master 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.

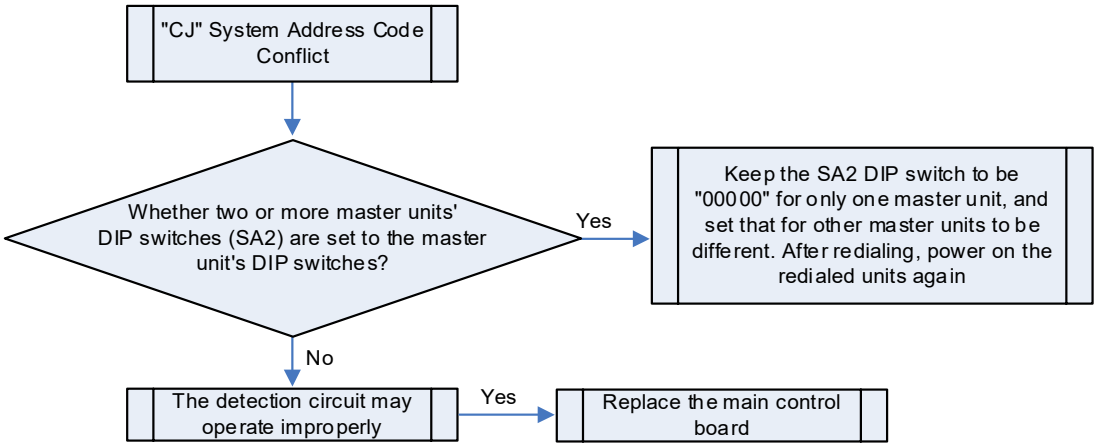
If two or more master units(main)' DIP switches (SA2) are detected to be master unit(main)'s DIP switches in the network (that is, SA2 DIP switch is "00000"), the fault of multiple master units(main) is reported.

Possible causes:

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

■ Abnormal DIP switch or main board.

Troubleshooting:



2.43 "CP" Fault of Multiple Main Wired Controllers

Fault display: main board of master 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).

2.44 "Cb" IP Address Assignment Overflow

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

Fault diagnosis:

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

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

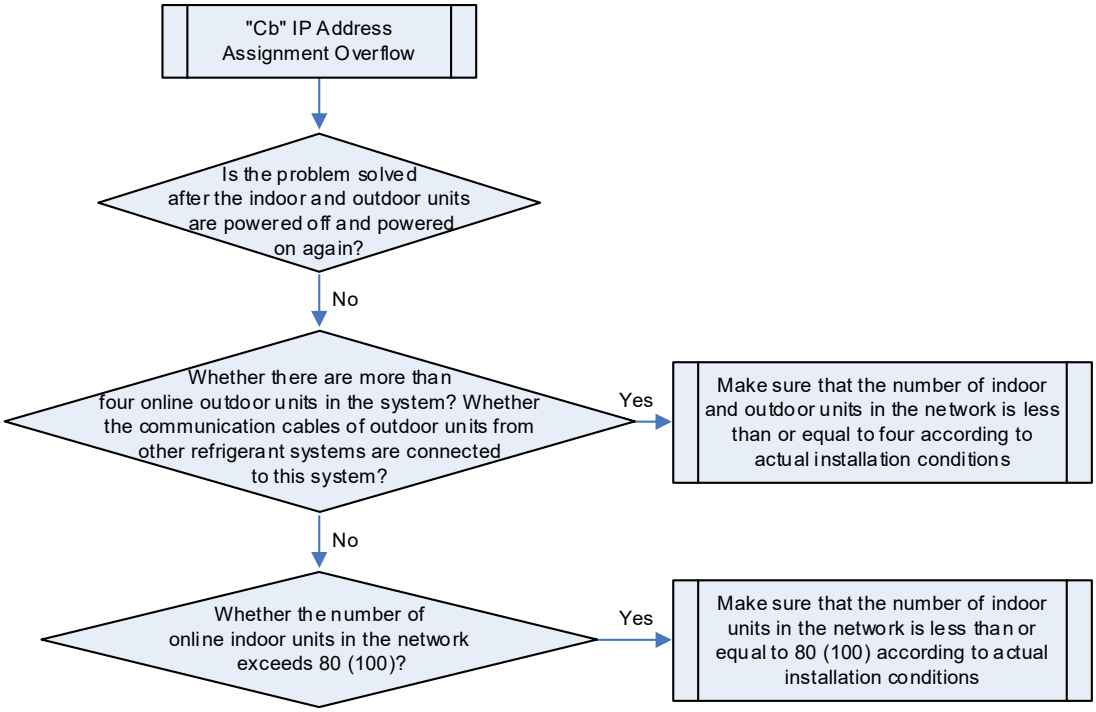
Possible causes:

■ More than four master units exist;

■ More than 80 (100) indoor units exist.

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

Troubleshooting:



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

2.45 "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.

2.46 "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.

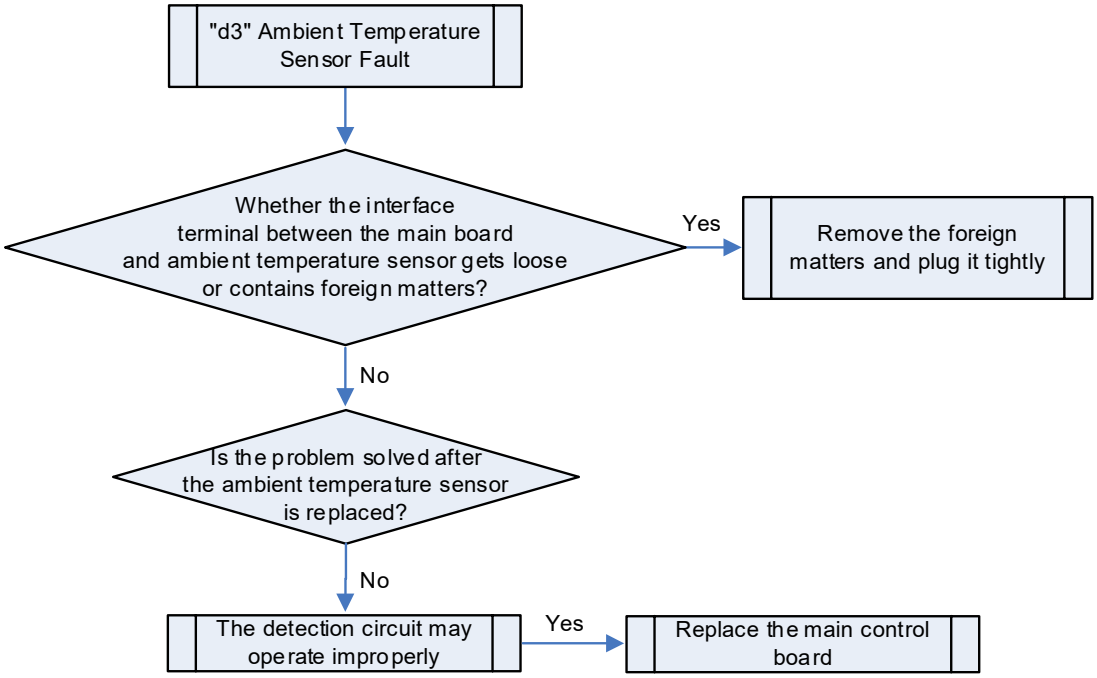
Possible causes:

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

■ Abnormal ambient temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.47 "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.

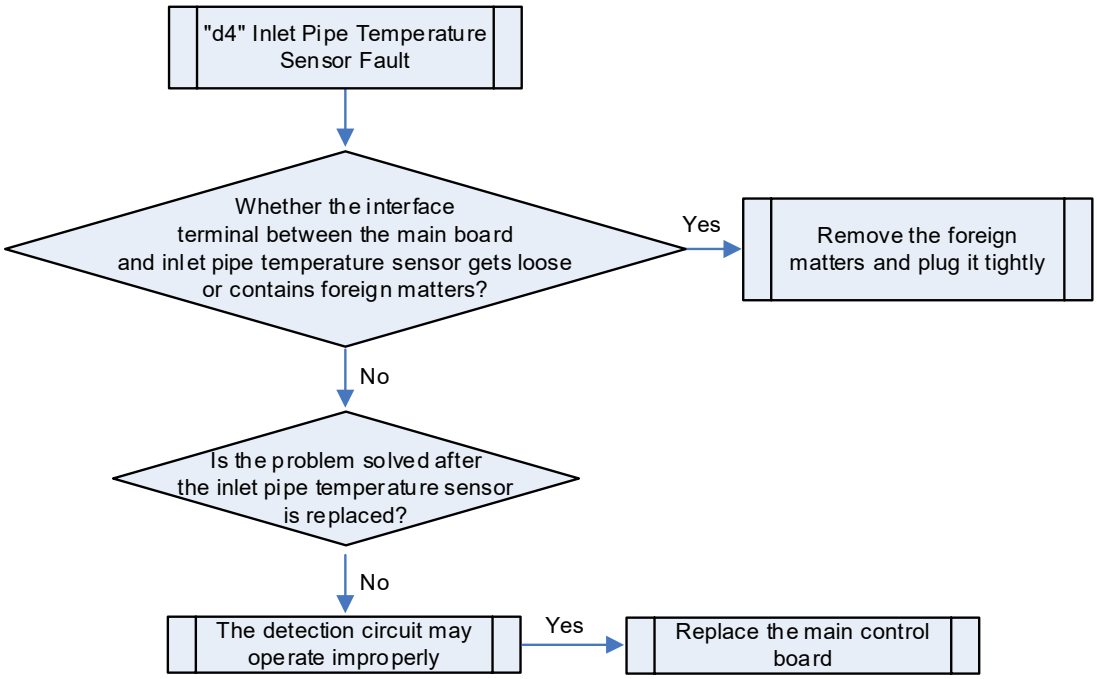
Possible causes:

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

■ Abnormal inlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

2.49 "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.

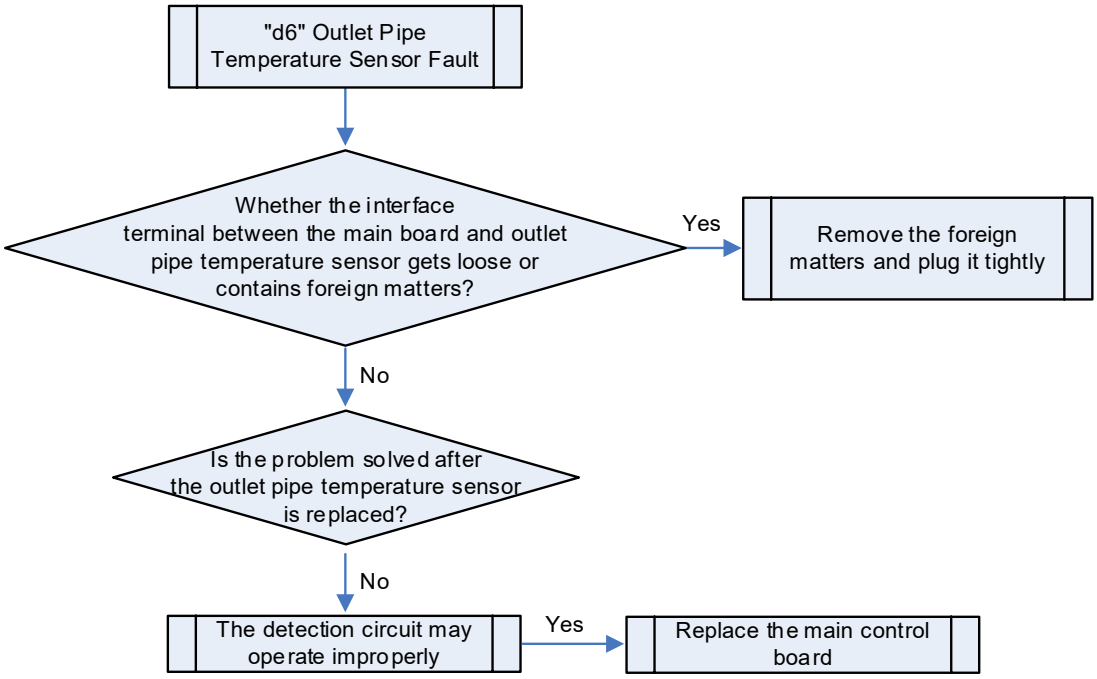
Possible causes:

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

■ Abnormal outlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:


"d6" Outlet Pipe Temperature Sensor Fault
Whether the interface terminal between the main board and outlet pipe temperature sensor gets loose or contains foreign matters?
Yes
Remove the foreign matters and plug it tightly
No
Is the problem solved after the outlet pipe temperature sensor is replaced?
No
The detection circuit may operate improperly
Yes
Replace the main control board

2.50 "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.

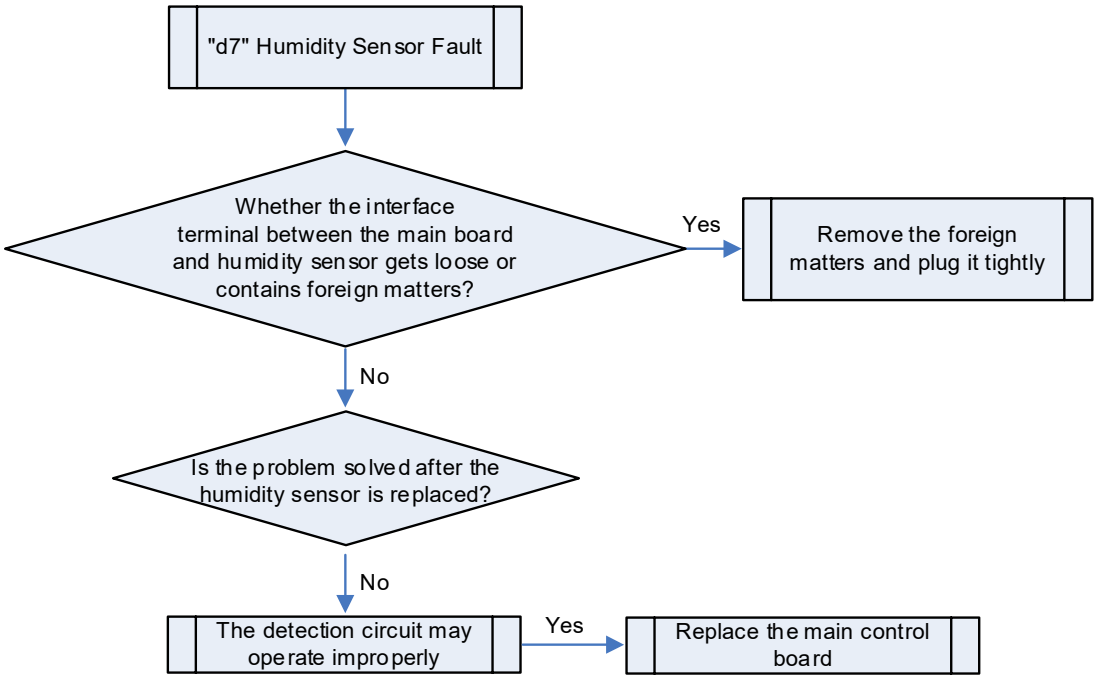
Possible causes:

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

■ Abnormal humidity sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.51 "d8" Water Temperature Sensor Fault (Reserved)

2.52 "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.

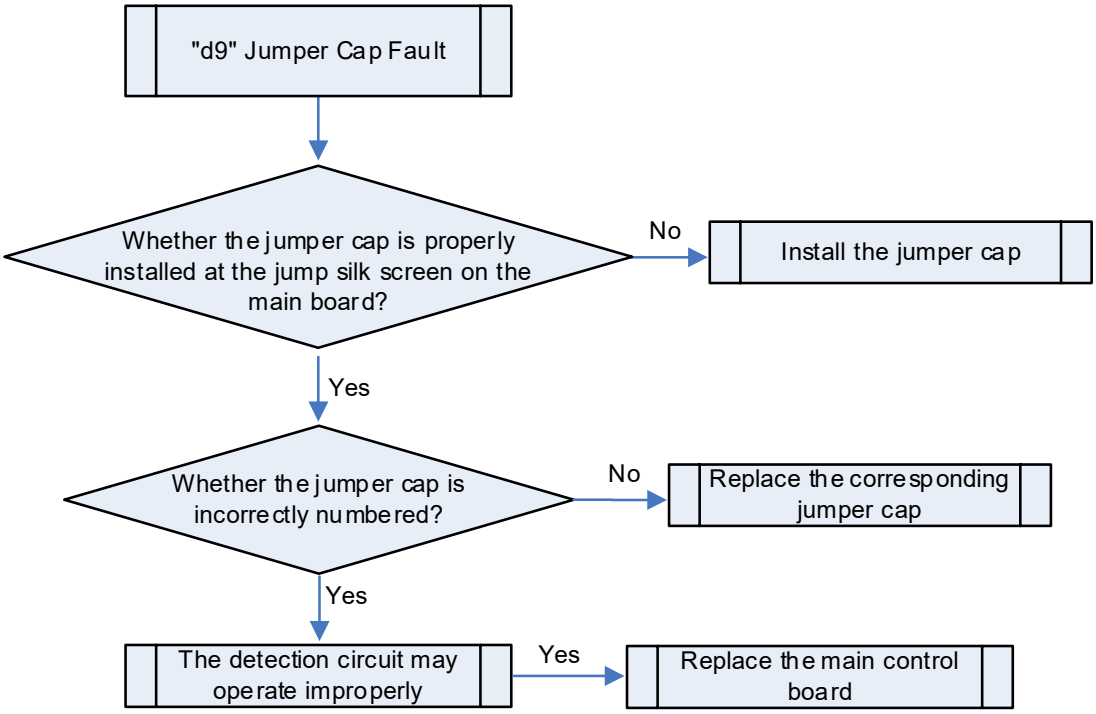
Possible causes:

■ The jumper cap is not installed;

■ The jumper cap is numbered incorrectly;

■ Abnormal detection circuit.

Troubleshooting:



2.53 "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.

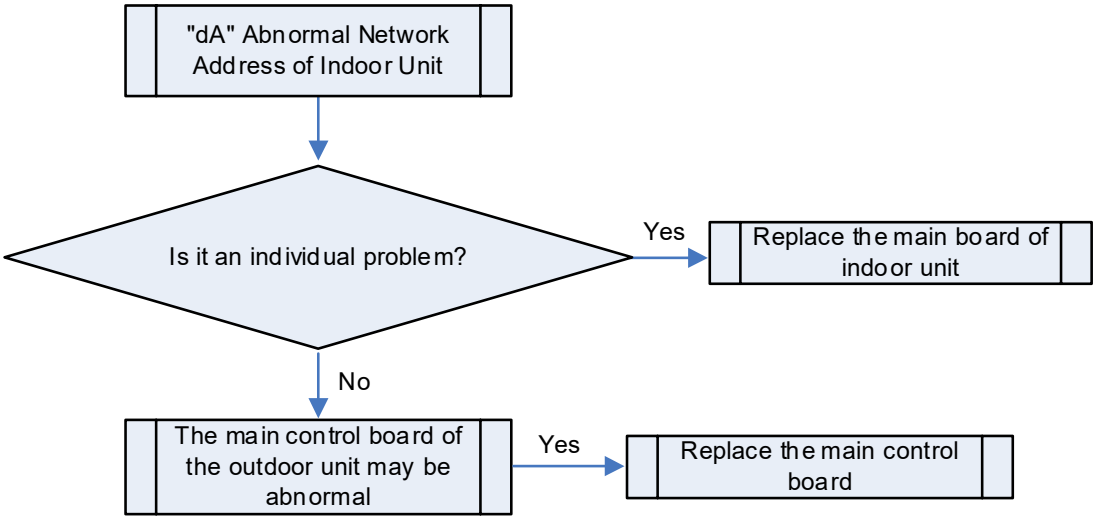
Possible causes:

■ Master units' address are assigned incorrectly;

■ Indoor unit's processing error;

■ Abnormal address chip.

Troubleshooting:



2.54 "dH" Abnormal Circuit Board of Wired Controller

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

Fault diagnosis:

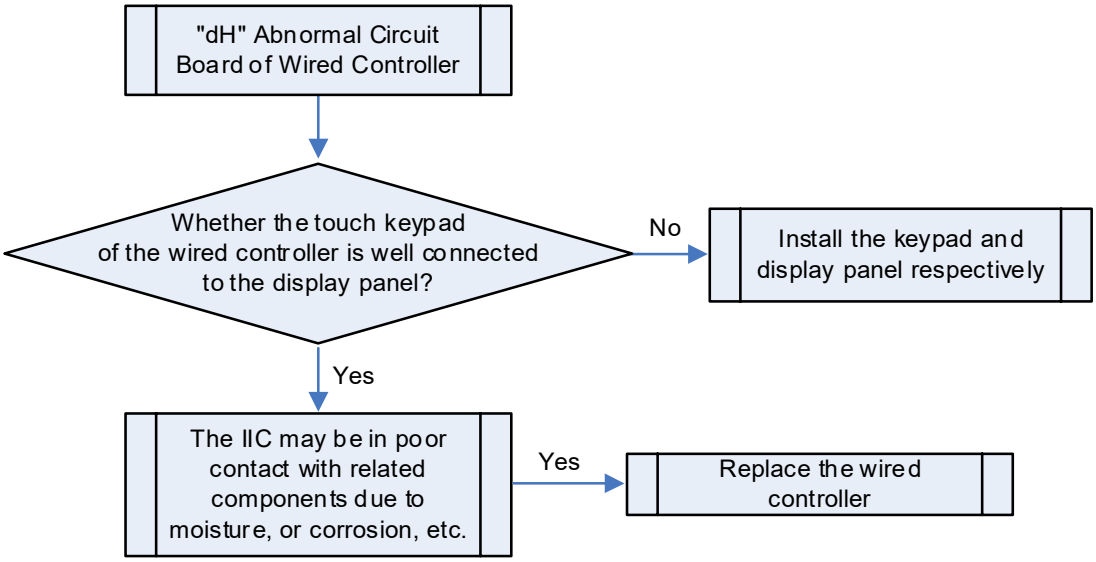
The wired controller's IIC communication is abnormal.

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:



2.55 "dC" Abnormal Settings of DIP Switch for Capacity

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

Fault diagnosis:

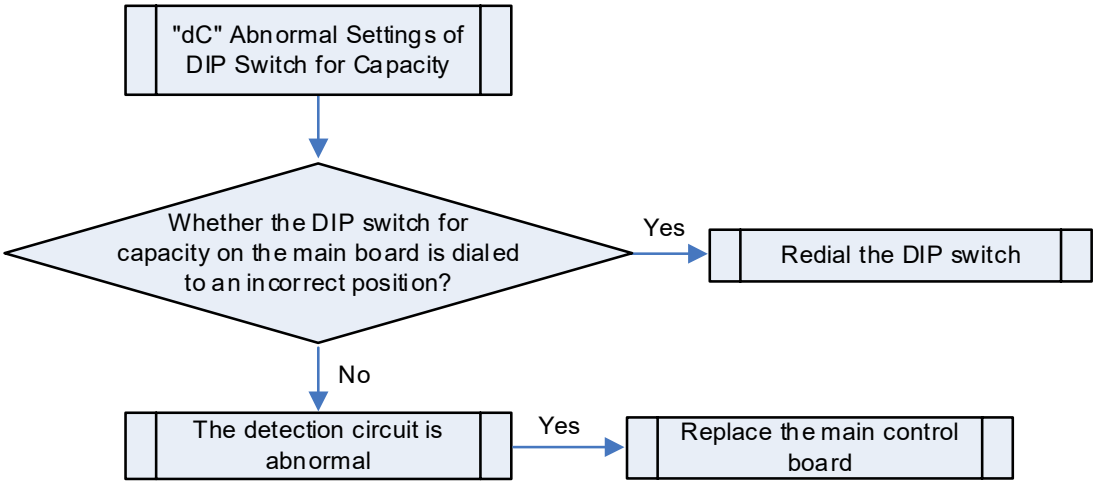
If DIP switch for capacity is set to the wrong position, the fault is generated.

Possible causes:

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

■ Abnormal detection circuit.

Troubleshooting:



2.56 "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.

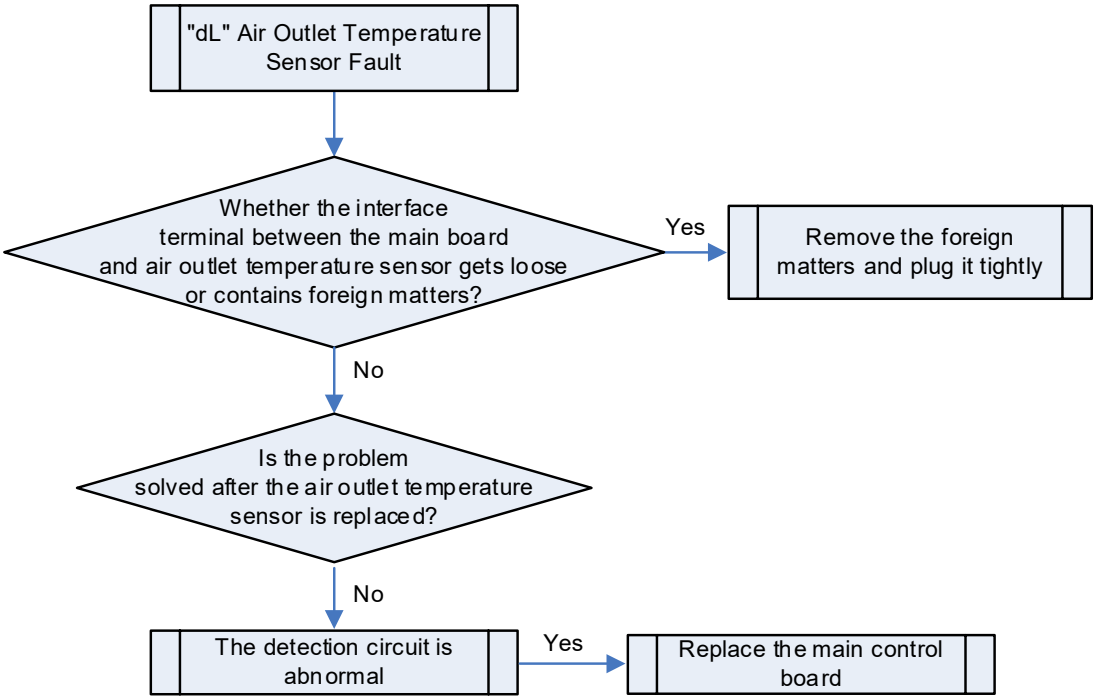
Possible causes:

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

■ Abnormal air outlet temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.57 "dE" Indoor CO2 Sensor Fault (Reserved)

2.58 "db" Engineering Commissioning

Fault display: main board of master 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: --

2.59 “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:

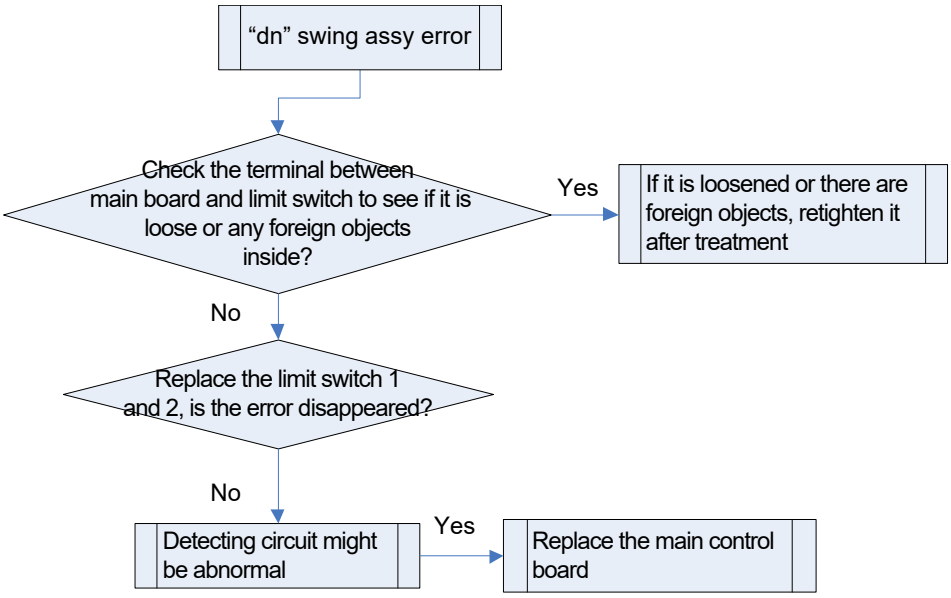
Report alarm through judging the status of limit switch 1 and 2, When the swing structure is faulted, the indoor unit will not stop, the display board does not display error code (the error will only be embodied in CAN communication data)

Possible reasons:

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

■Detecting circuit is abnormal

Troubleshooting:



2.60 "E1" Protection in Case of Too High Pressure

Fault display: main board of master 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 master 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);

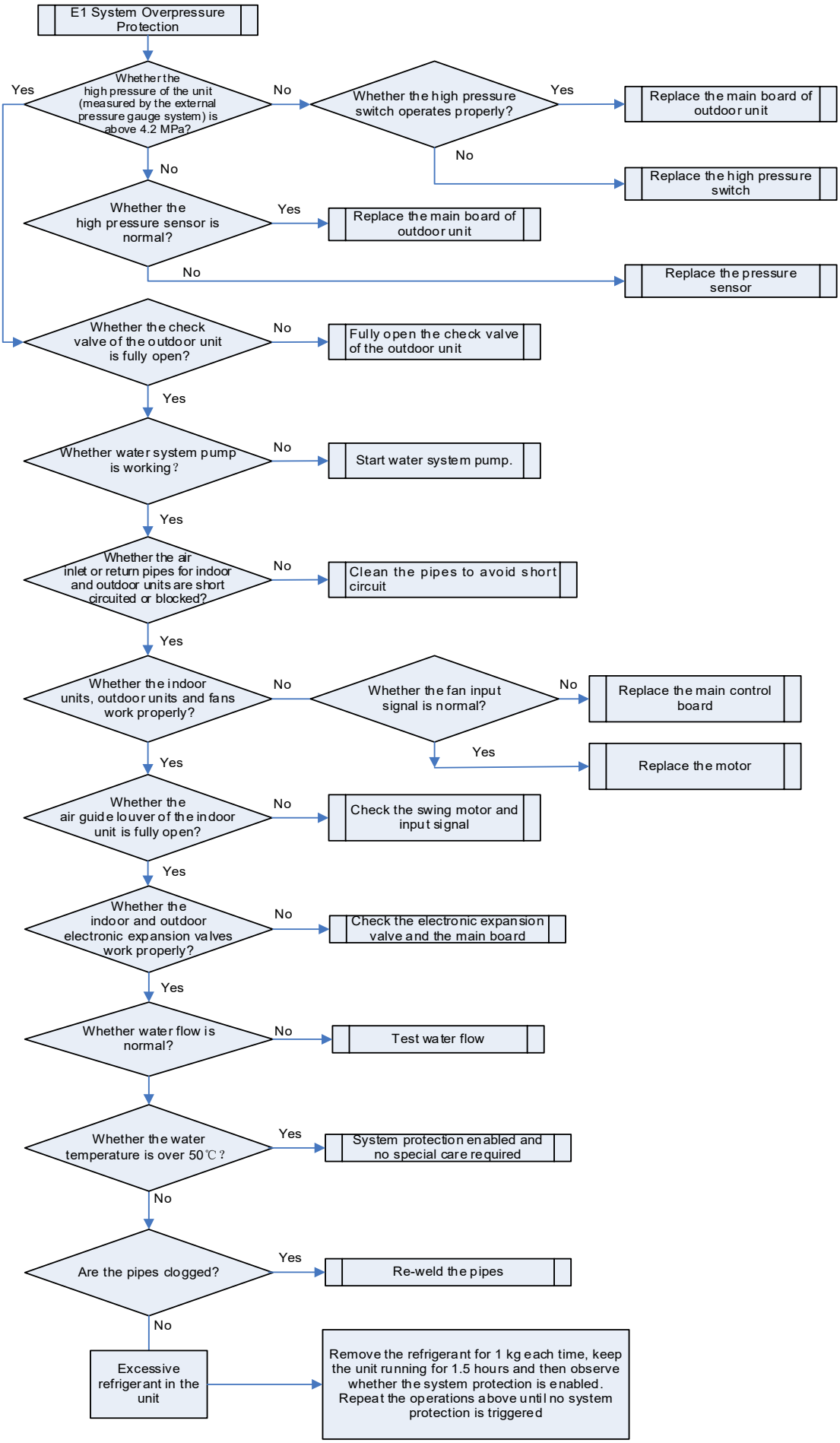
■ The ambient temperature where the unit operates is too high;

■The water flow where the unit operates is too low;

■ Excessive refrigerant in the unit;

■ Clogging of unit pipes.

Troubleshooting:


E1 System Overpressure Protection
Whether the high pressure of the unit (measured by the external pressure gauge system) is above 4.2 MPa?
Yes
No
Whether the high pressure switch operates properly?
Yes
Replace the main board of outdoor unit
No
Replace the high pressure switch
Whether the high pressure sensor is normal?
Yes
Replace the main board of outdoor unit
No
Replace the pressure sensor
Whether the check valve of the outdoor unit is fully open?
No
Fully open the check valve of the outdoor unit
Yes
Whether water system pump is working?
No
Start water system pump.
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 water flow is normal?
No
Test water flow
Whether the water temperature is over 50℃?
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

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

Fault display: main board of master 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 master 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 master 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.

2.62 "E3" System Low Pressure Protection

Fault display: main board of master 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 master unit is closed;

■ Abnormal low pressure sensor;

■ Abnormal outdoor or indoor fans;

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

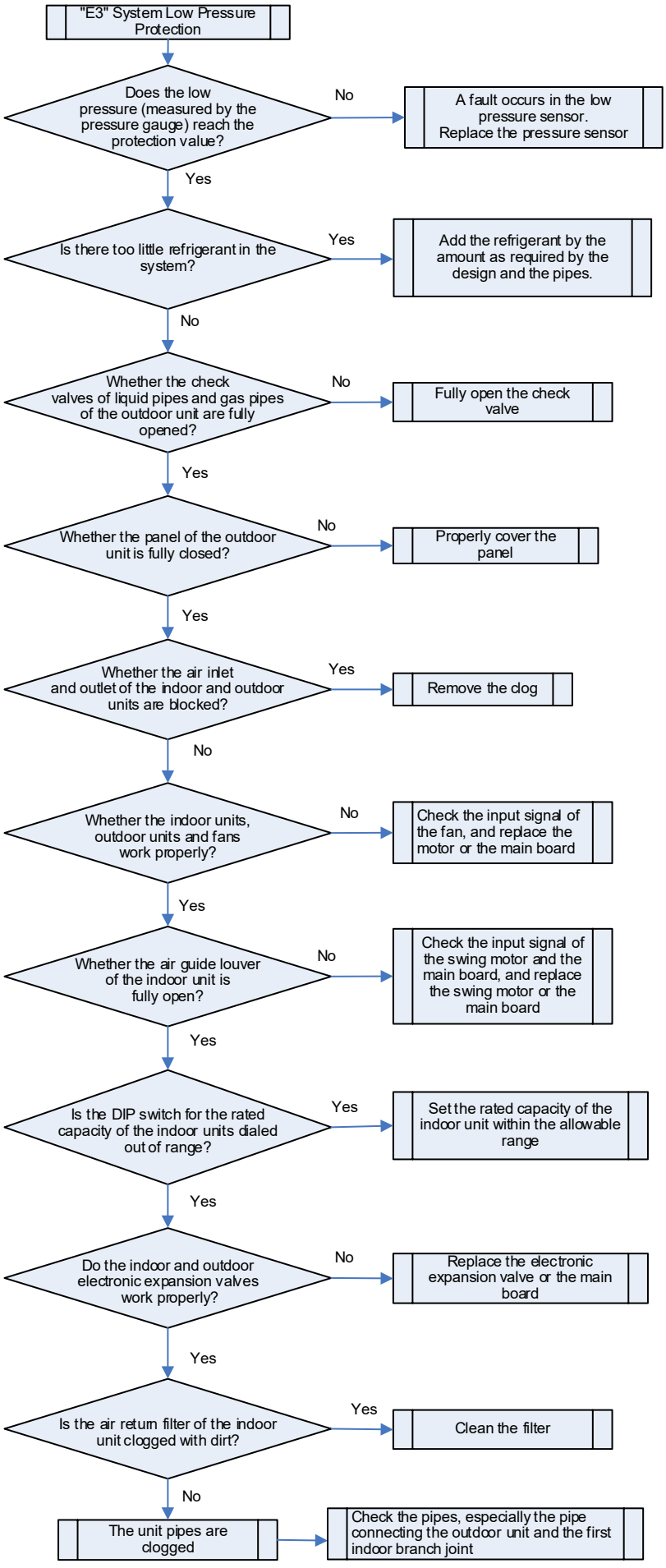
■ The ambient temperature where the unit operates is too low;

■The water flow 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

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

Fault display: main board of master 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 master 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 master 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 master units and the temperature of the pipelines (touch with hands).

2.64 “Ed” Low Drive Module Temperature Protection

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

Applicable model: GMV6, GMV X, GMV Water 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.

2.65 "F0" Poor Main Board of Master unit

Fault display: main board of master 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 master unit can be read properly. If not, the fault is generated.

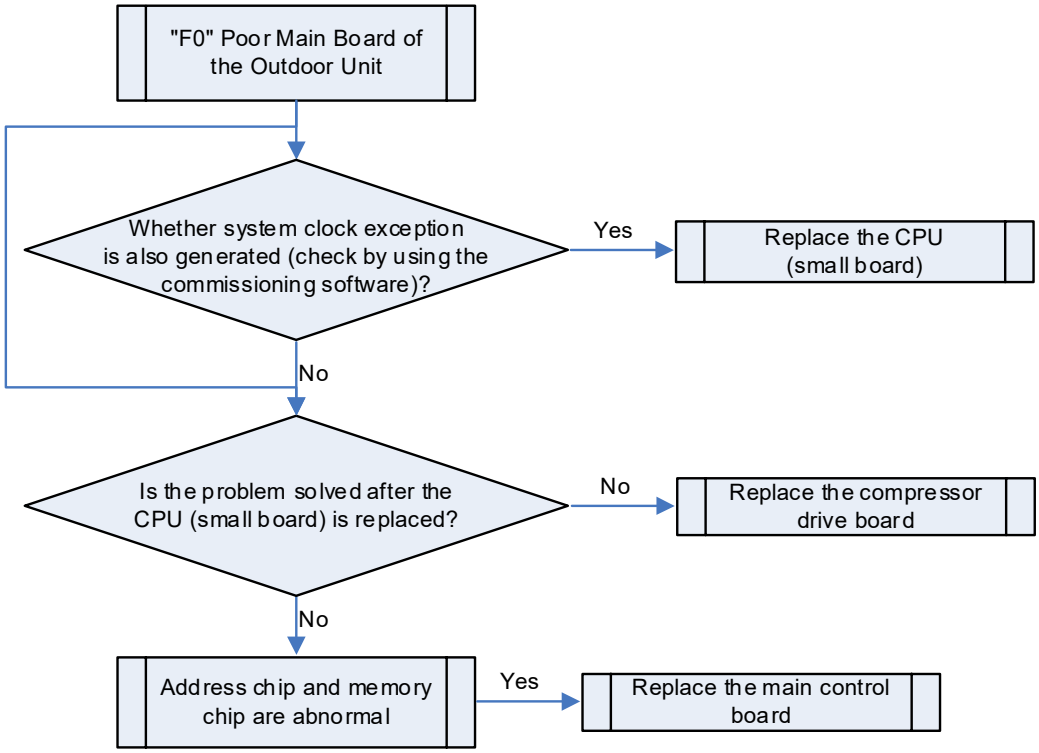
Possible causes:

■ 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

2.66 "F1" High-pressure Sensor Fault

Fault display: main board of master 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:

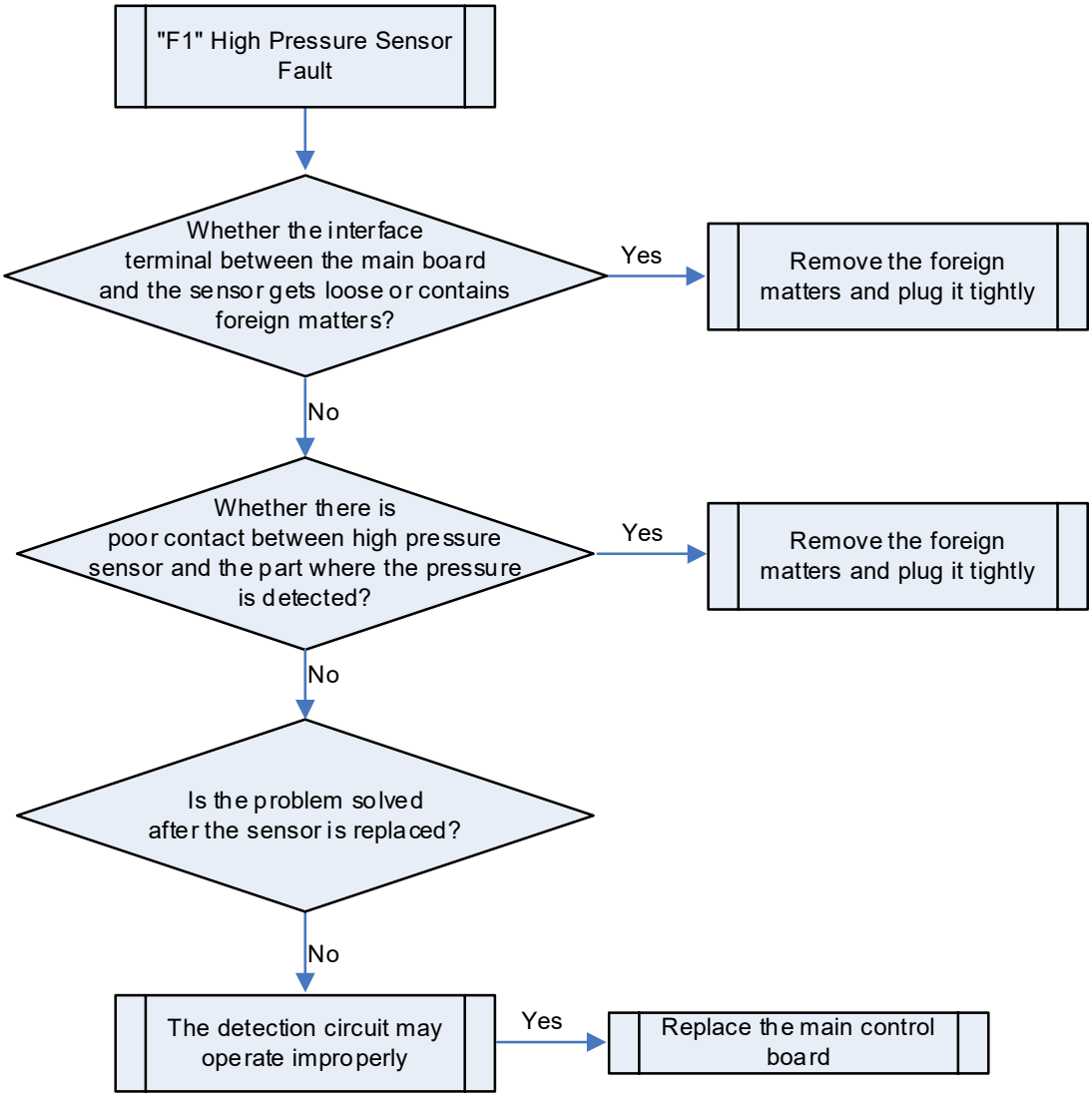
■ Poor contact between the high pressure sensor and the main board interface;

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

■ Abnormal high pressure sensor;

■ Abnormal sensor detection circuit.

Troubleshooting:



2.67 "F3" Low Pressure Sensor Fault

Fault display: main board of master 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:

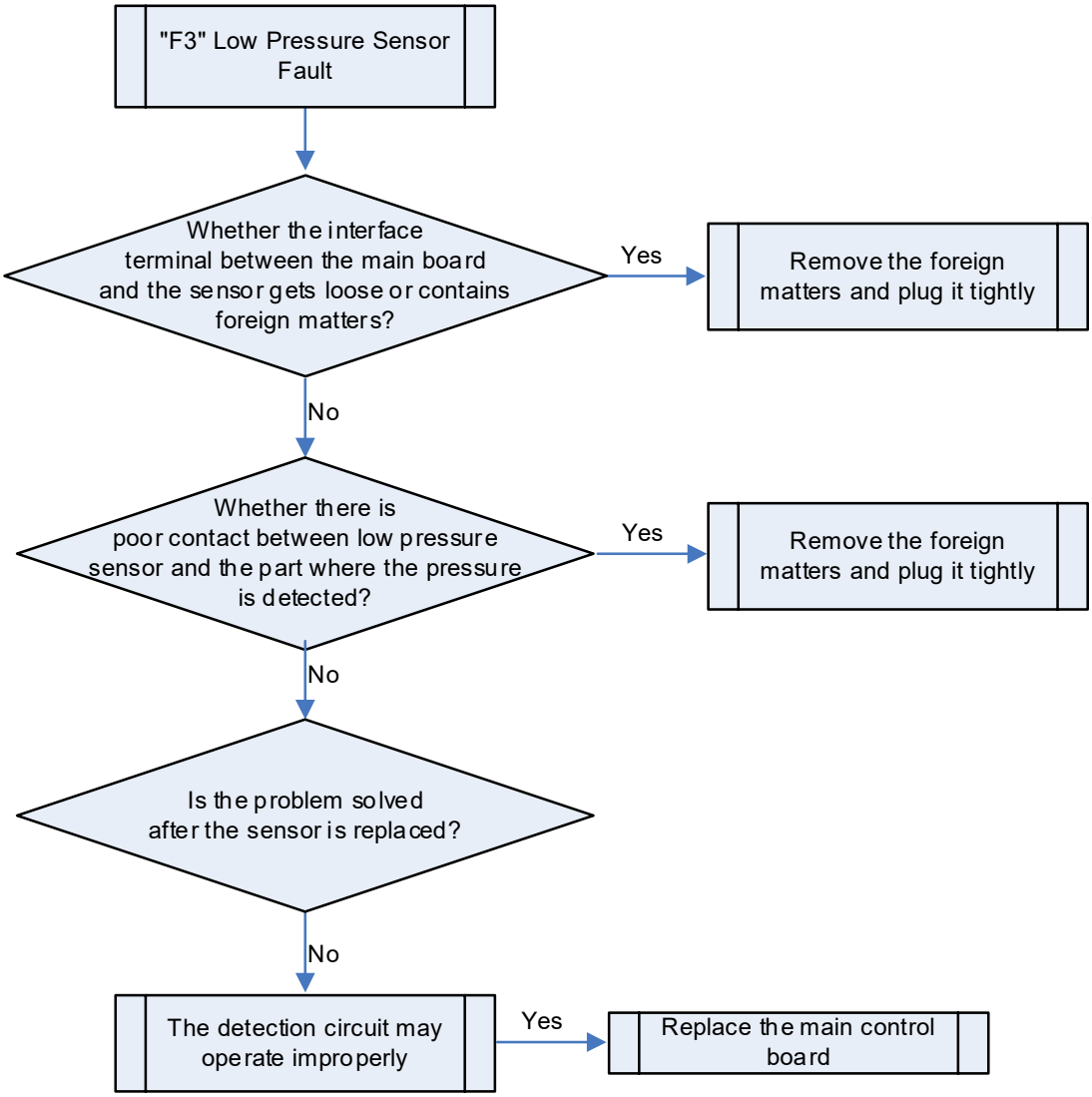
■ Poor contact between the low pressure sensor and the main board interface;

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

■ Abnormal low pressure sensor;

■ Abnormal low pressure sensor detection circuit.

Troubleshooting:



2.68 "F5" Discharge Temperature Sensor Fault of Compressor 1

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

Fault diagnosis:

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

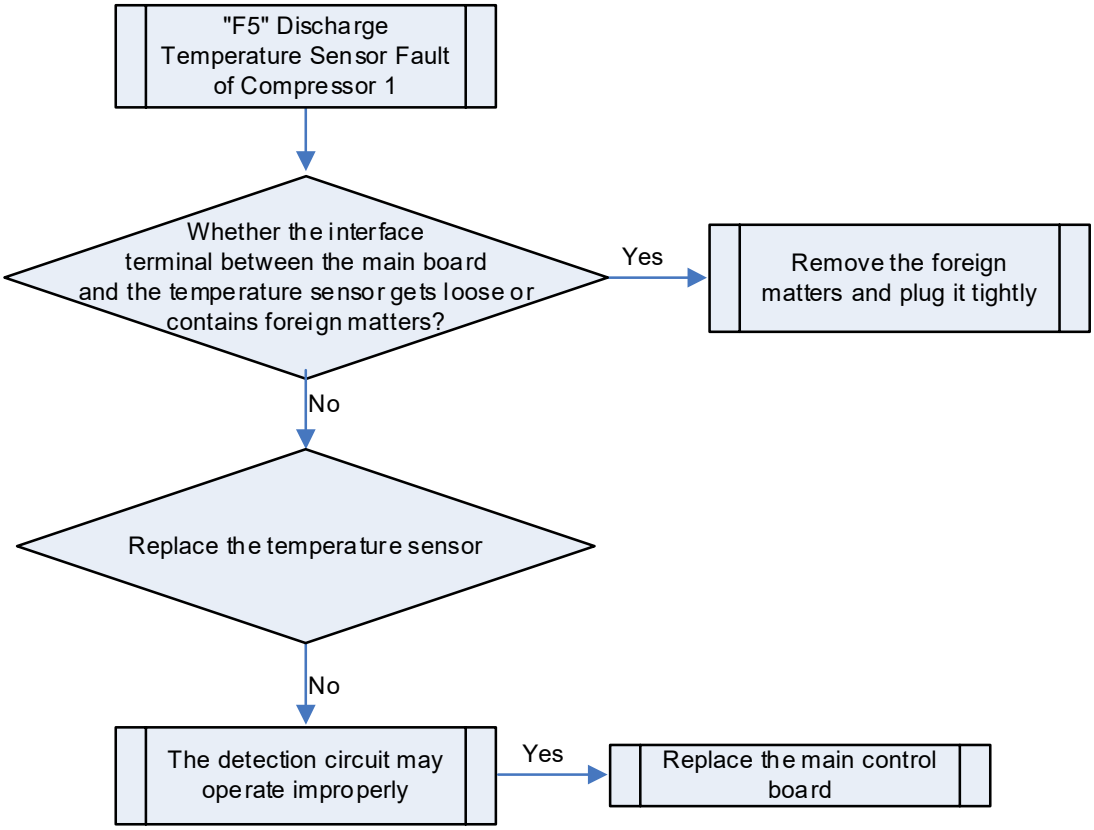
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.69 "F6" Discharge Temperature Sensor Fault of Compressor 2

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

Fault diagnosis:

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

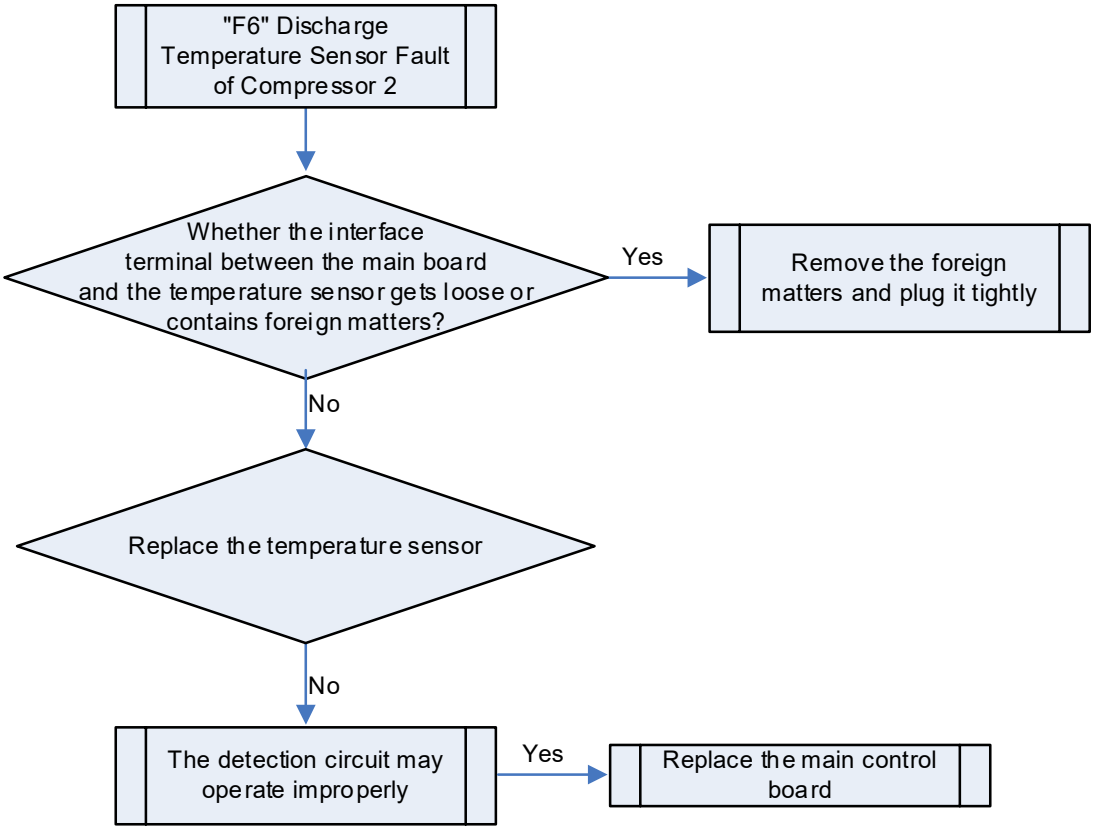
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.70 "F7" Discharge Temperature Sensor Fault of Compressor 3

Fault display: main board of master 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.

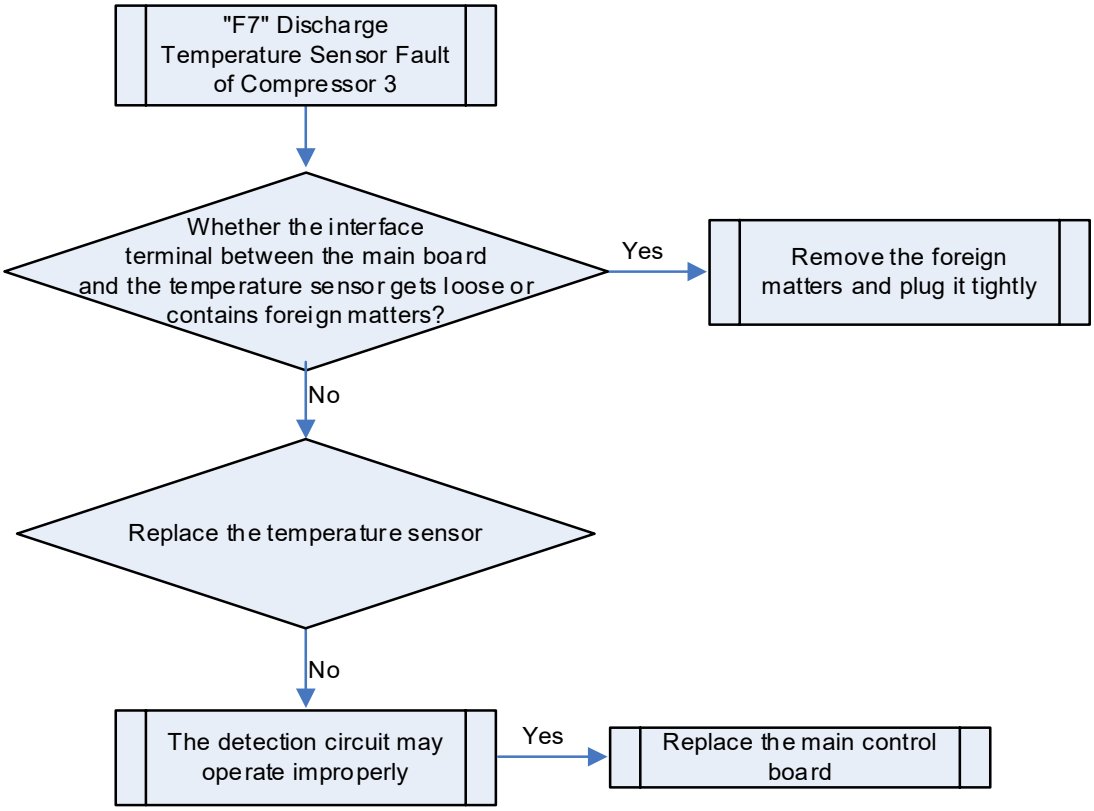
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.71 "F8" Discharge Temperature Sensor Fault of Compressor 4

Fault display: main board of master 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.

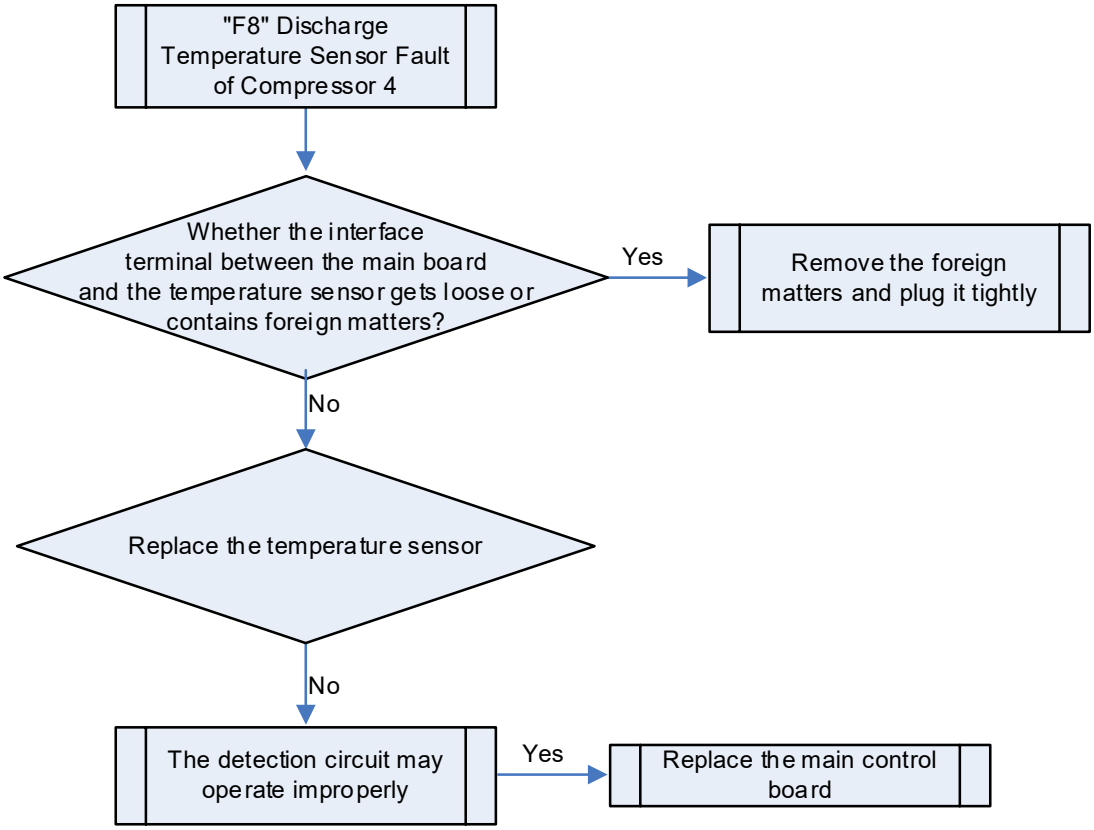
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.72 "F9" Discharge Temperature Sensor Fault of Compressor 5

Fault display: main board of master 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.

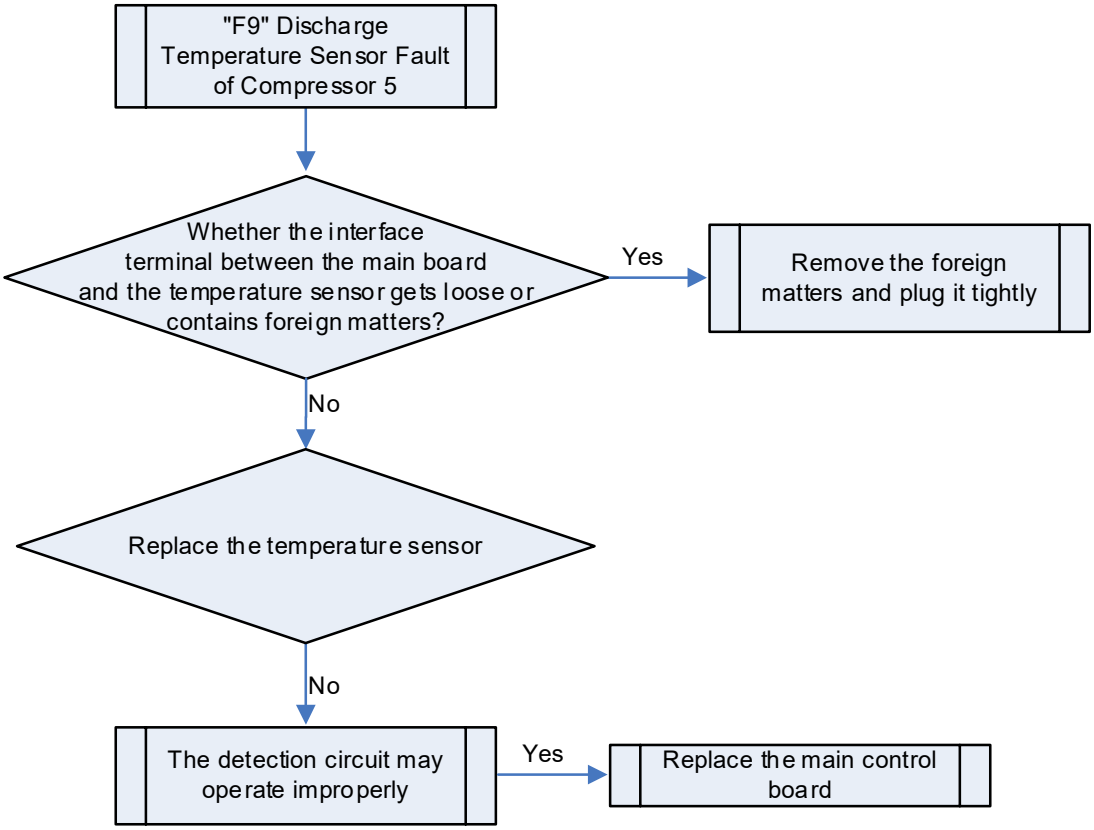
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.73 "FA" Discharge Temperature Sensor Fault of Compressor 6

Fault display: main board of master 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.

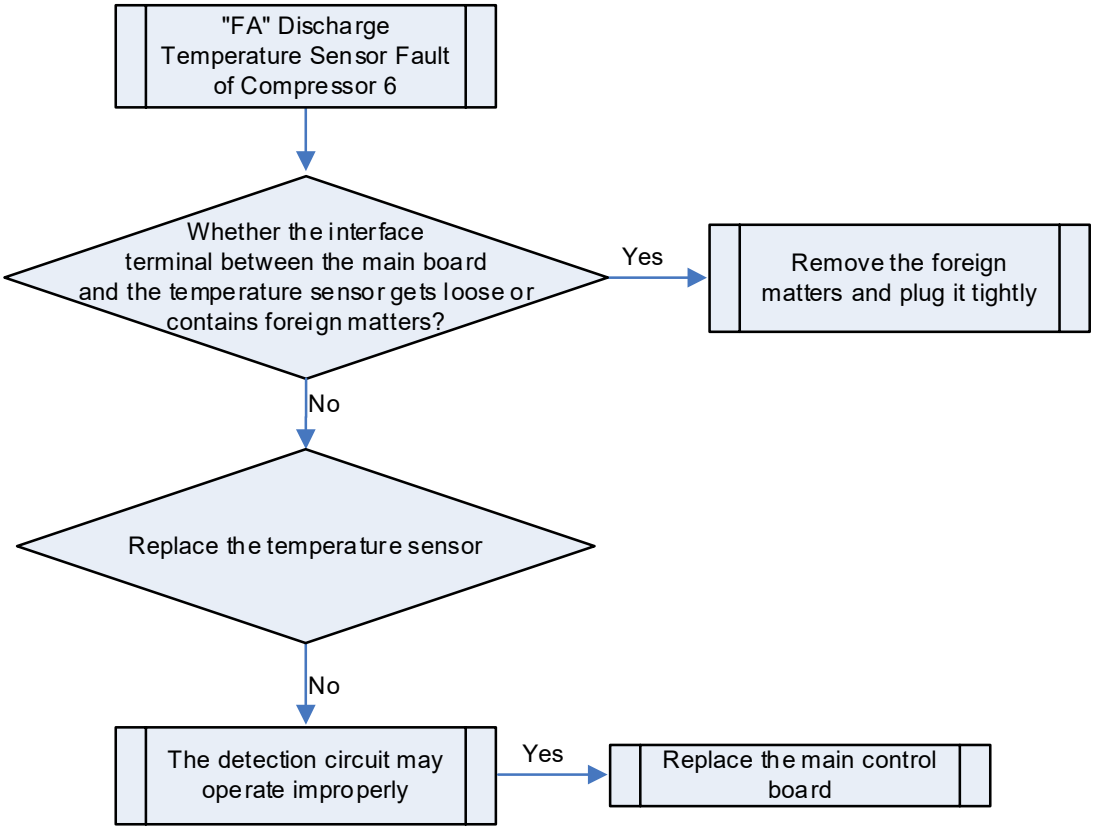
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.74 "FH" Abnormal Current Sensor of Compressor 1

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

Fault diagnosis:

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

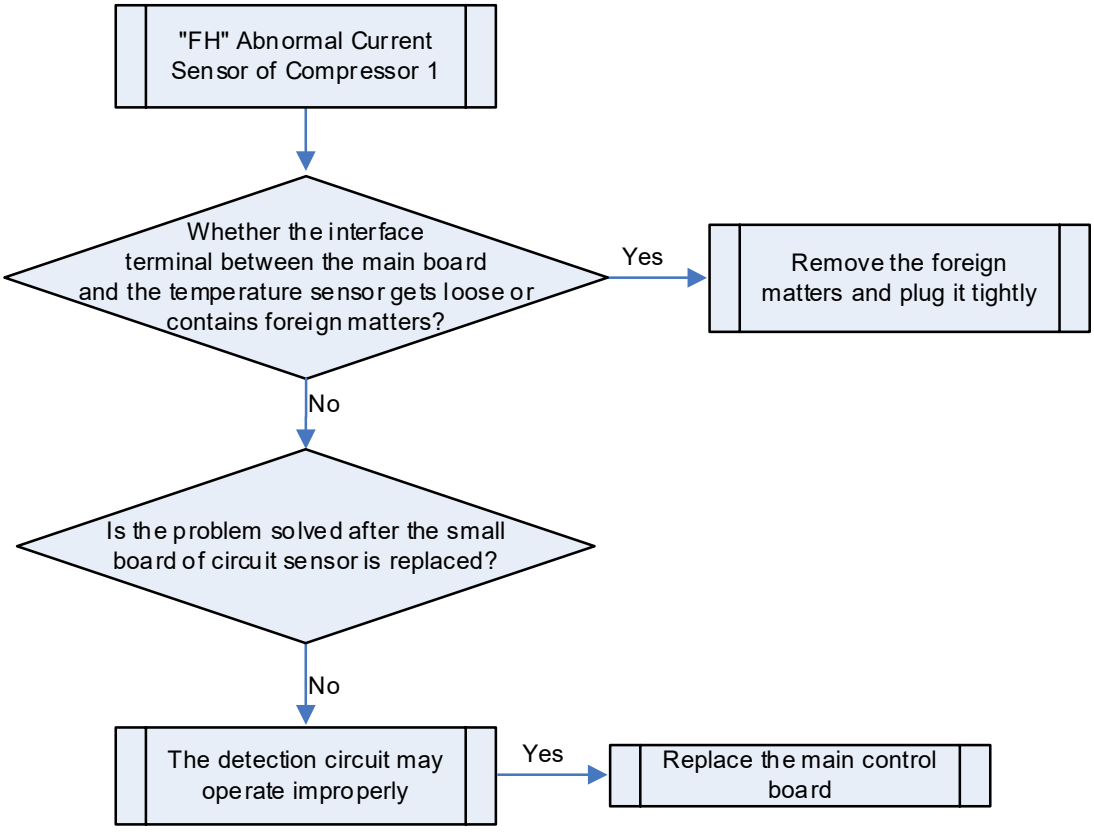
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.75 "FC" Abnormal Current Sensor of Compressor 2

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

Fault diagnosis:

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

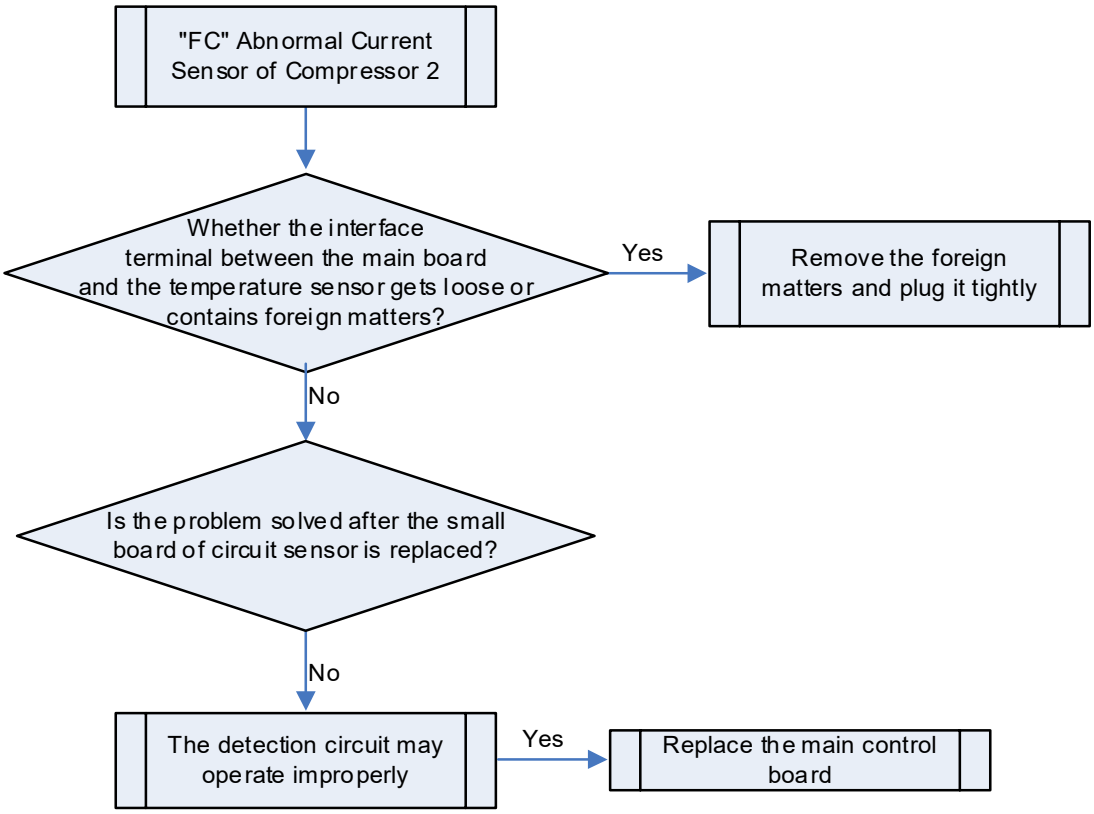
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.76 "FL" Abnormal Current Sensor of Compressor 3

Fault display: main board of master 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.

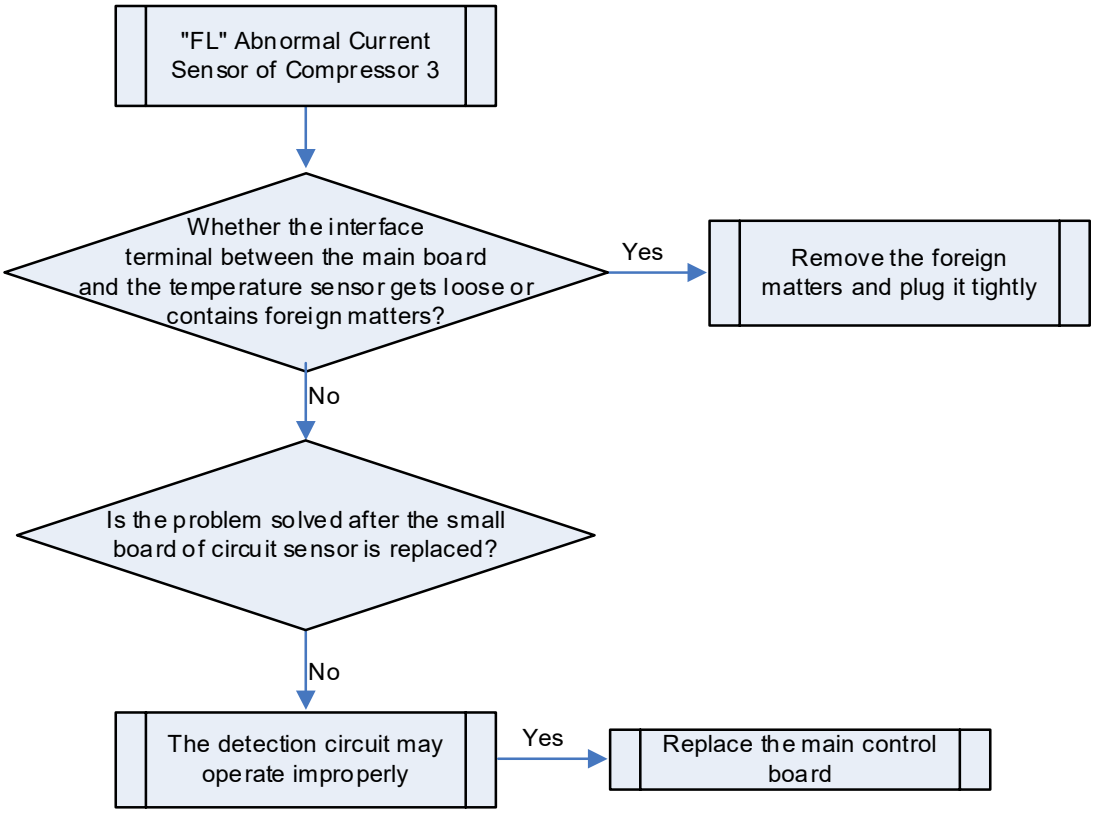
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.77 "FE" Abnormal Current Sensor of Compressor 4

Fault display: main board of master 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.

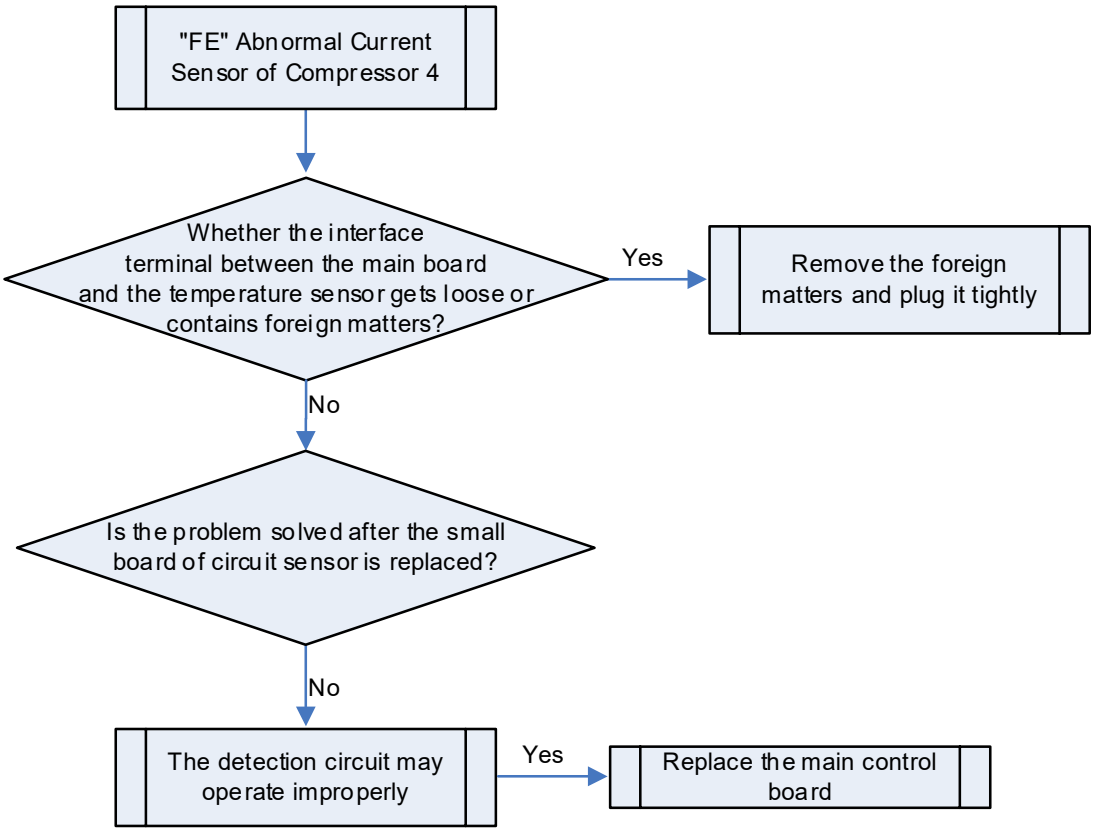
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.78 "FF" Abnormal Current Sensor of Compressor 5

Fault display: main board of master 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.

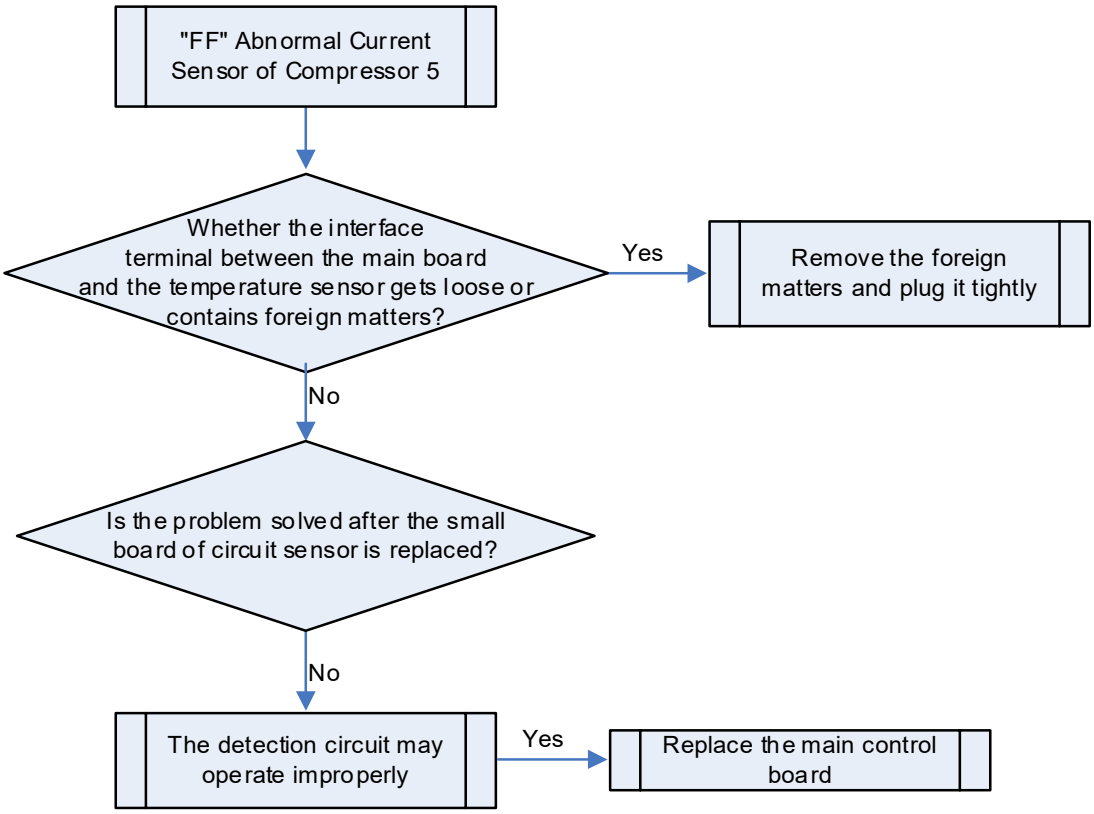
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.79 "FJ" Abnormal Current Sensor of Compressor 6

Fault display: main board of master 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.

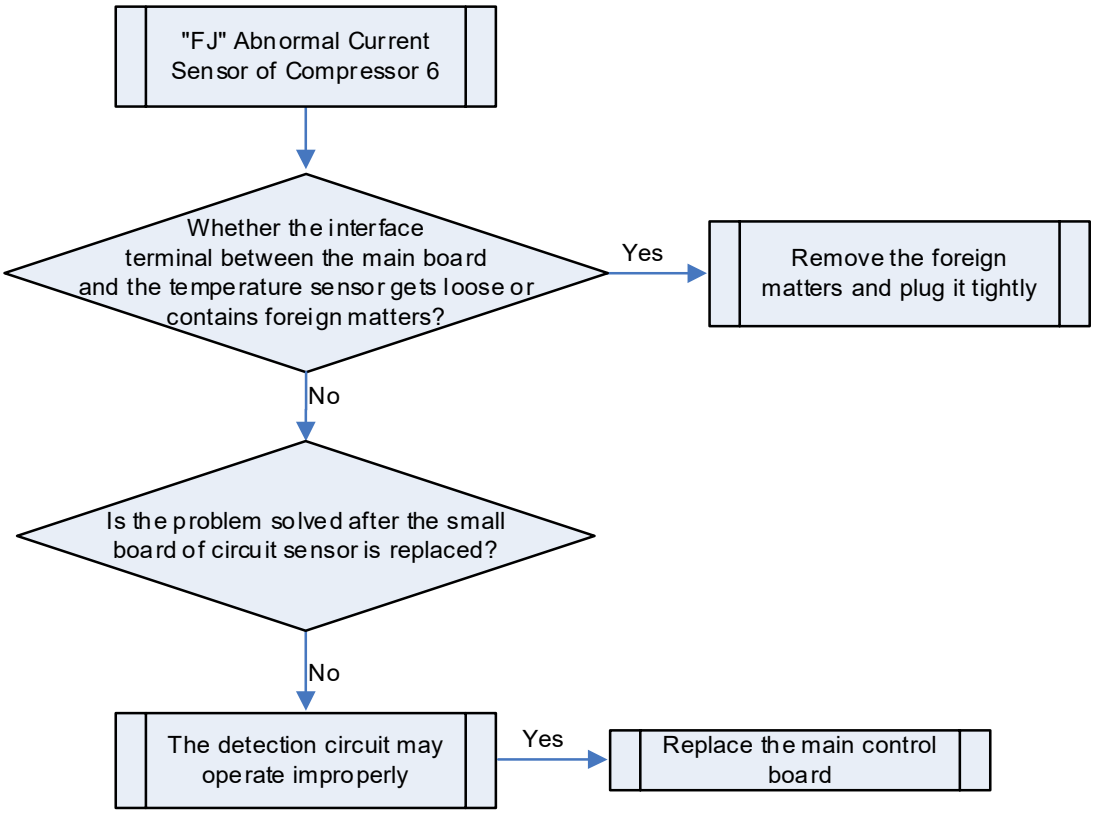
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

Fault display: main board of master 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.

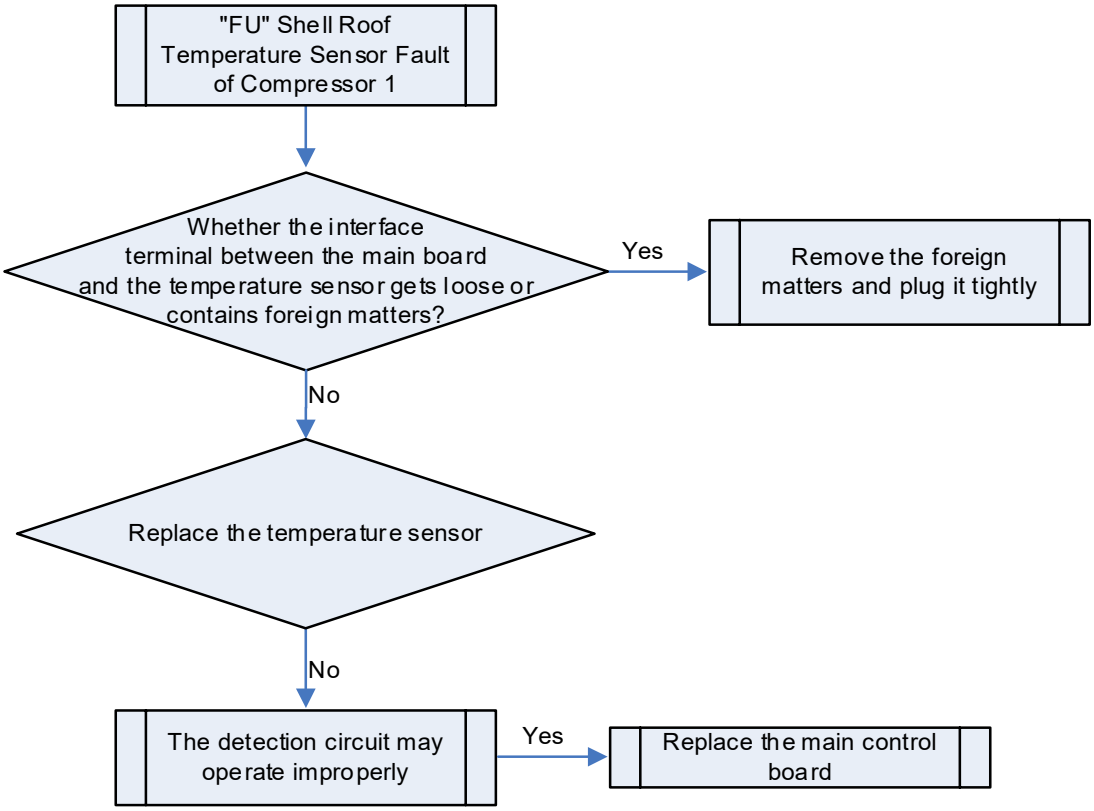
Possible causes:

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

■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

Fault display: main board of master 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.

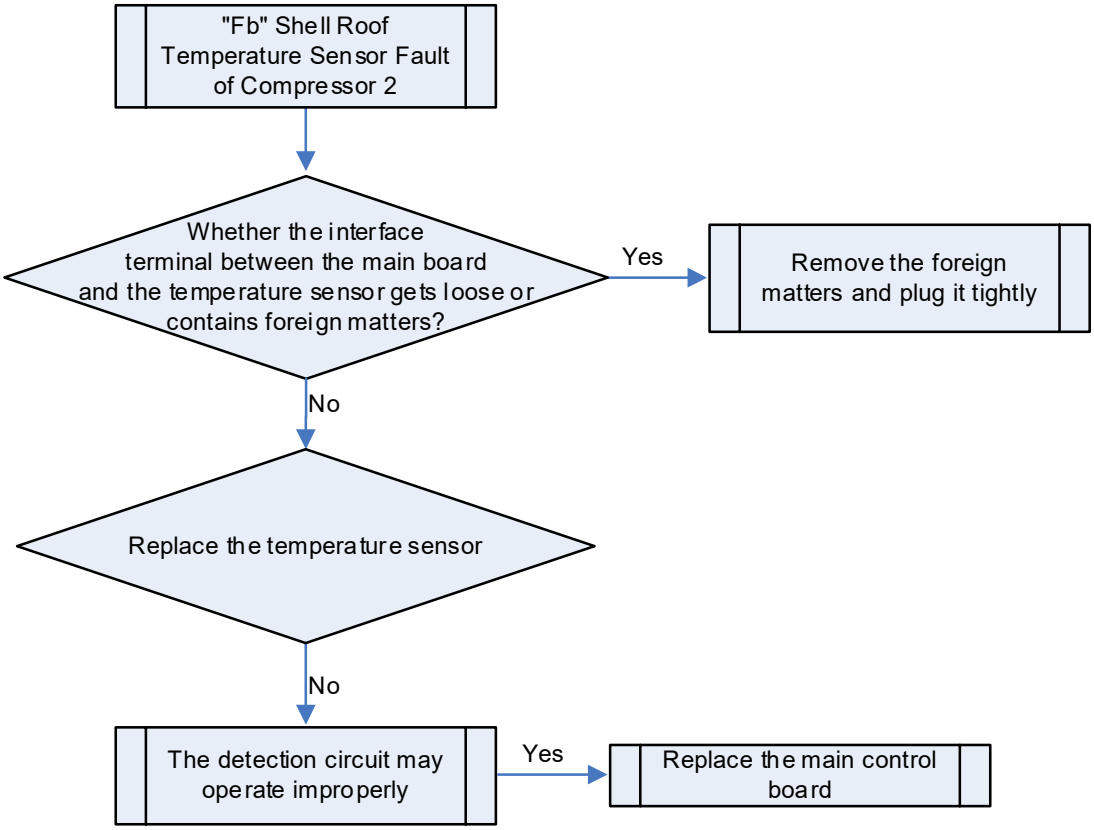
Possible causes:

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

■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.82 "H0" Fan Drive Board Fault

Fault display: wired controller of indoor unit displays 

Applicable model: Models excluding GMV Water series

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 master 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 master unit displays H3);

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

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

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

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

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

■ Inverter fan startup failure (2-digit digital LED of the main control board of the master 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 master unit at the same time.

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

2.83 "H1" Abnormal Fan Drive Board

Fault display: wired controller of indoor unit displays 

Applicable model: Models excluding GMV Water series.

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 master 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 master unit displays H6);

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

■ Communication fault of fan drive (2-digit digital LED of the main control board of the master 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 master unit at the same time.

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

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

Fault display: wired controller of indoor unit displays 

Applicable model: Models excluding GMV Water series.

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 master 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 master unit displays HH);

■ Under voltage protection for the DC bus of fan drive (2-digit digital LED of the main control board of the master 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 master unit at the same time.

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

Possible causes:

■ Fan-driven DC busbar overvoltage protection (the double-digit nixie tube on master unit main control board displays HH)

■ Fan-driven DC busbar undervoltage protection (the double-digit nixie tube on master unit main control board displays HL).

Troubleshooting:

Step 1: Check the fault code of the indoor unit line controller.

Step 2: At the same time, check the fault code on the double-digit nixie tube of the master unit.

Step 3: Conduct fault troubleshooting according to the fault code on the double-digit nixie tube of

the master unit (see the troubleshooting steps of specific faults).

2.85 "H3" Reset Protection for the Fan Drive Module

Fault display: wired controller of indoor unit displays 

Applicable model: Models excluding GMV Water series.

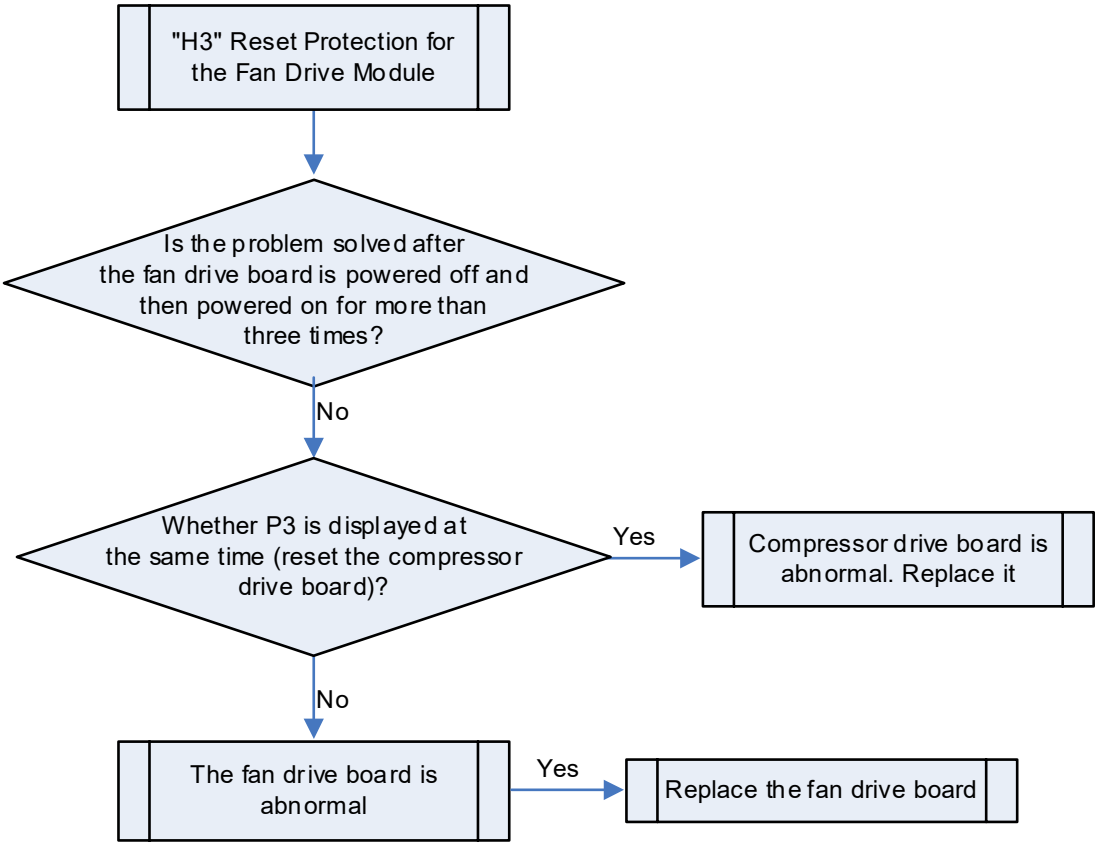
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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:



2.86 "H5" Inverter Fan Over-current Protection

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

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

Possible causes:

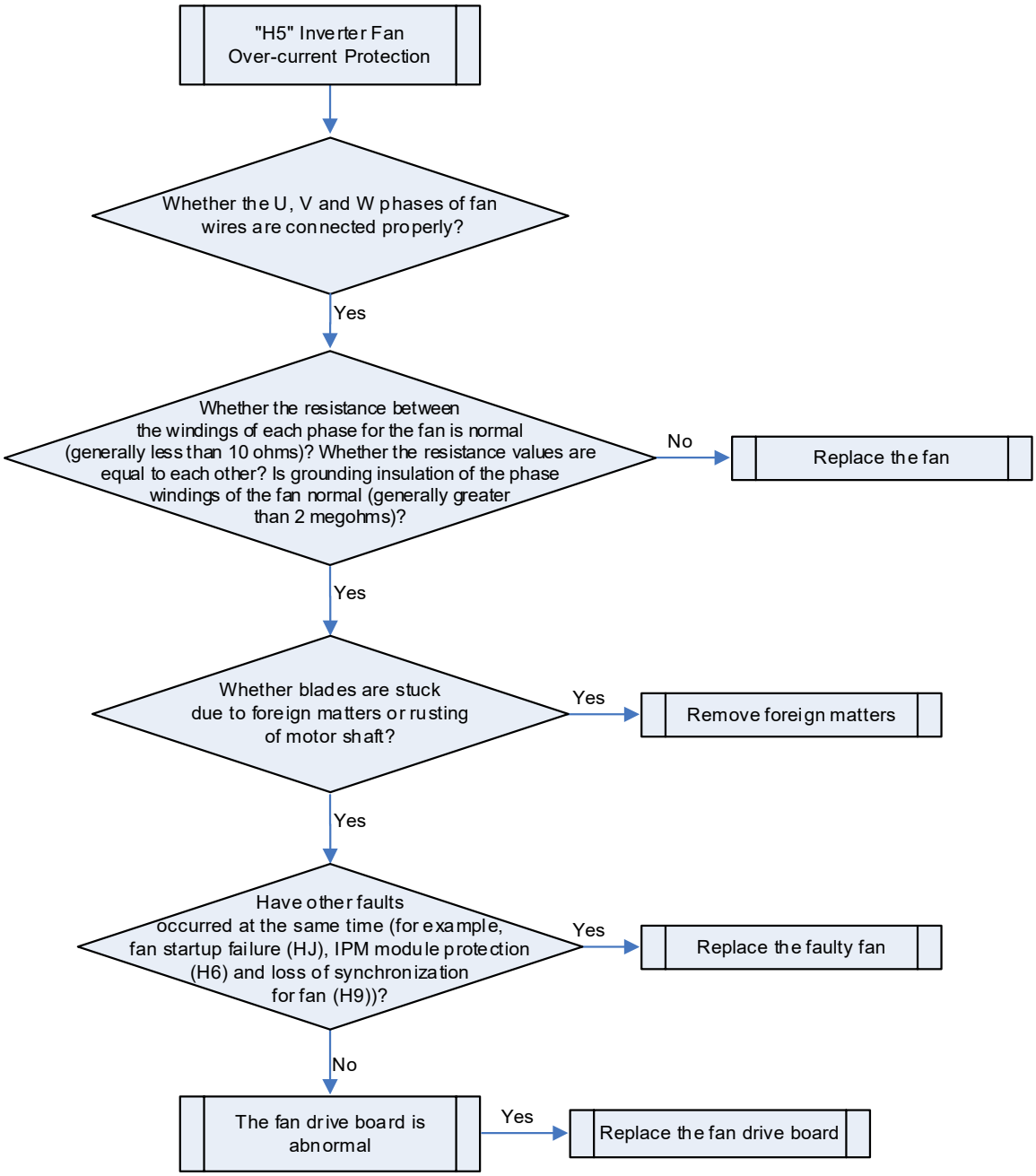
■ Poor contact of fan's UVW cables;

■ 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:



2.87 "H6" IPM Module Protection for Fan Drive

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

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

Possible causes:

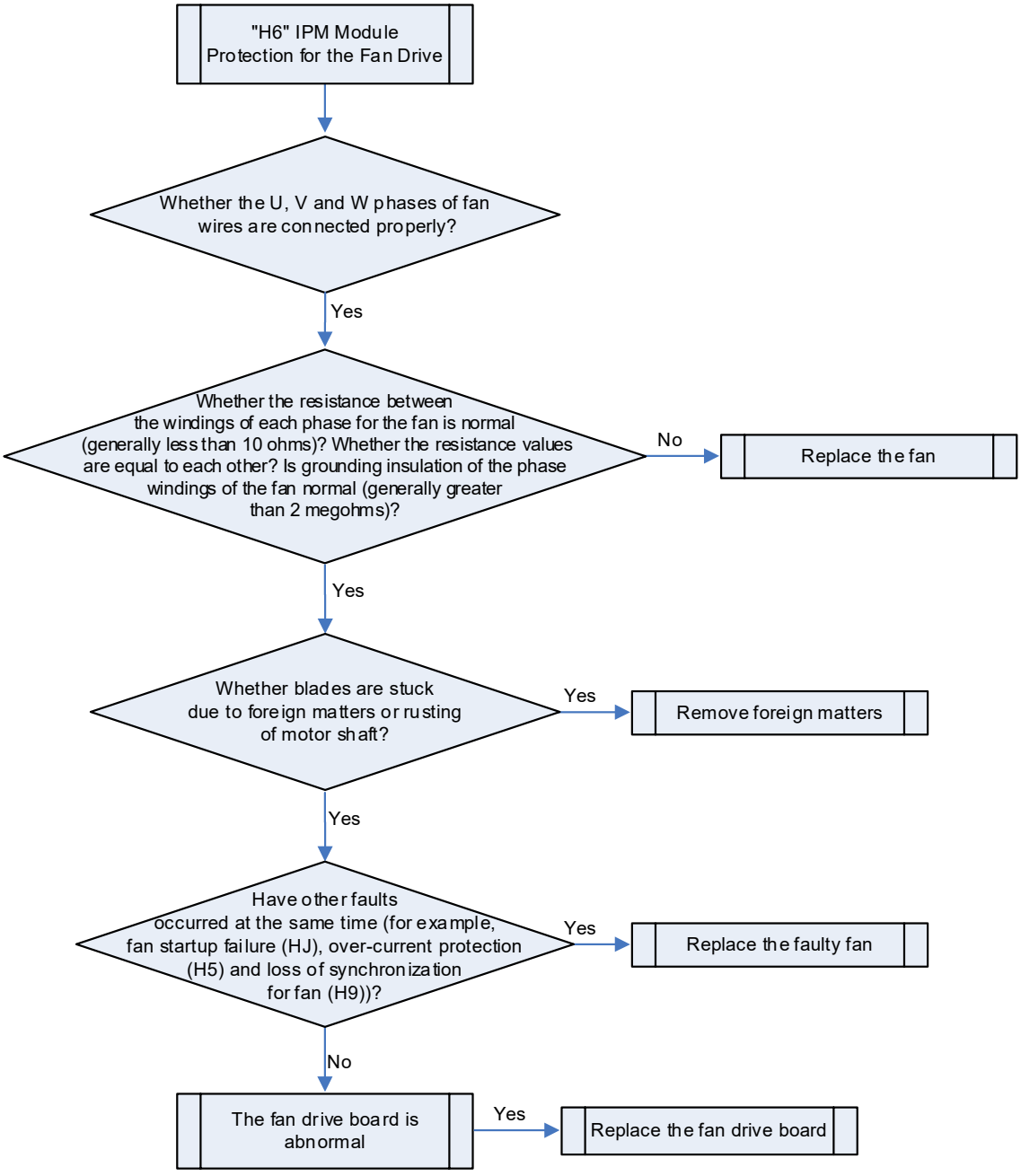
■ Poor contact of fan's UVW cables;

■ 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:


"H6" IPM Module Protection for the Fan Drive
Whether the U, V and W phases of fan wires are connected properly?
Yes
Whether the resistance between the windings of each phase for the fan is normal (generally less than 10 ohms)? Whether the resistance values are equal to each other? Is grounding insulation of the phase windings of the fan normal (generally greater than 2 megohms)?
No
Replace the fan
Yes
Whether blades are stuck due to foreign matters or rusting of motor shaft?
Yes
Remove foreign matters
Yes
Have other faults occurred at the same time (for example, fan startup failure (HJ), over-current protection (H5) and loss of synchronization for fan (H9))?
Yes
Replace the faulty fan
No
The fan drive board is abnormal
Yes
Replace the fan drive board

2.88 "H7" Temperature Sensor Fault of Fan Drive

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

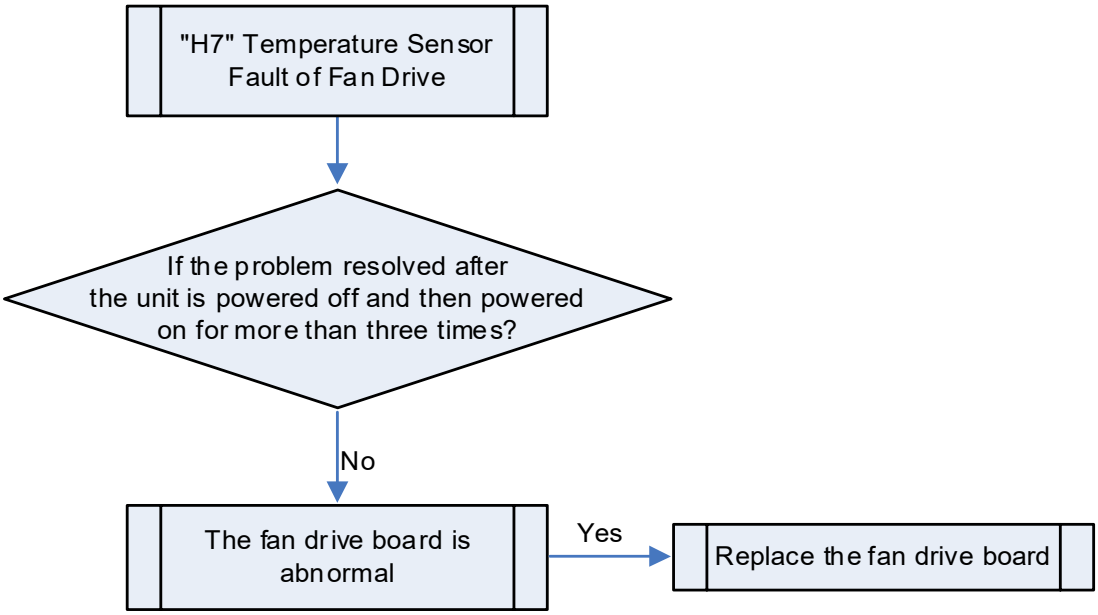
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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:



2.89 "H8" IPM Over Temperature Protection for Fan Drive

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

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

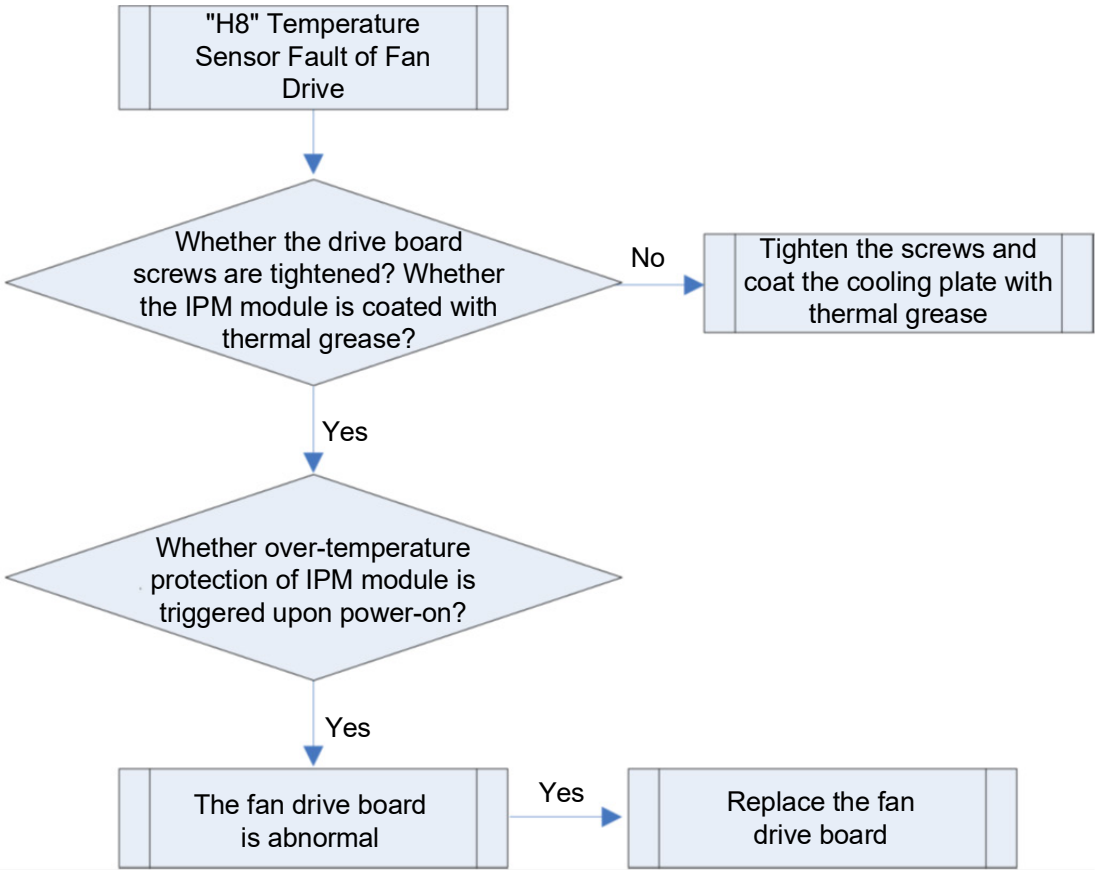
Possible causes:

■ 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:



2.90 "H9" Loss of Synchronization Protection for Inverter Fan

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

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

Possible causes:

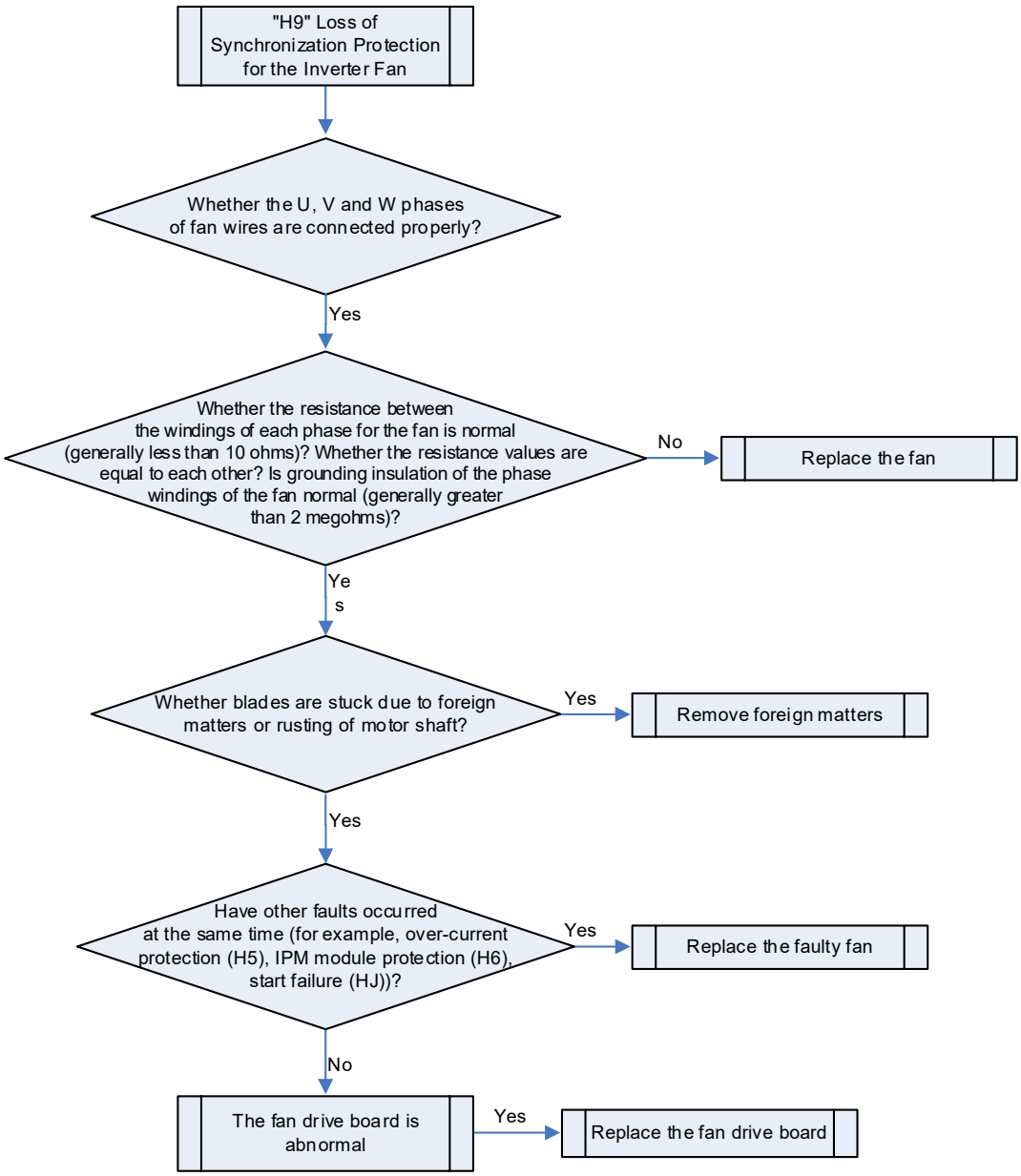
■ Poor contact of fan's UVW cables;

■ 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:



2.91 "HC" Current Detection Circuit Fault of Fan Drive

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

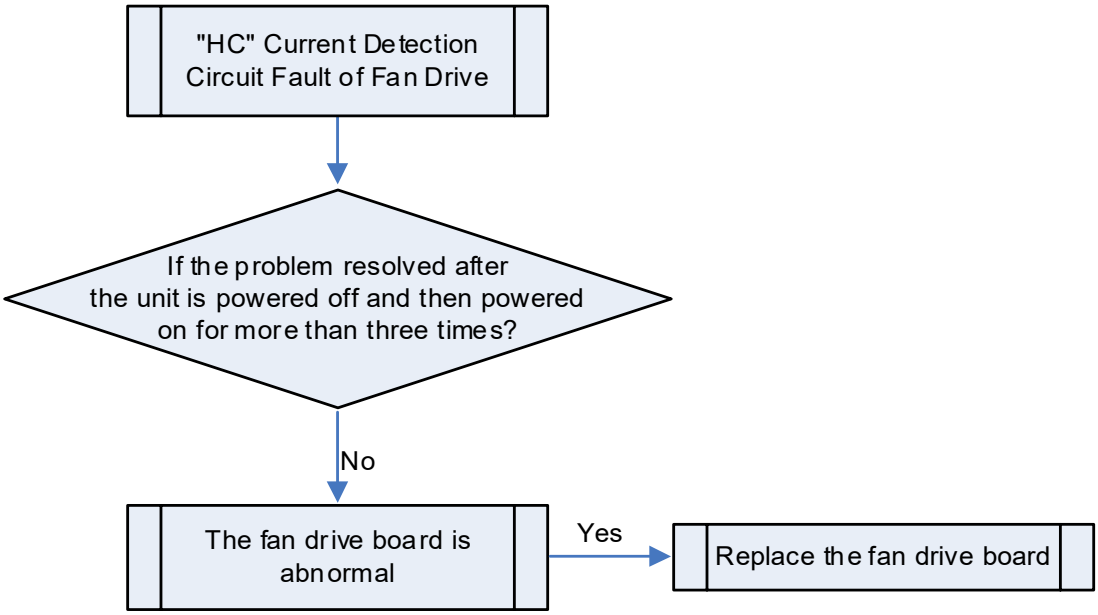
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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:



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

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

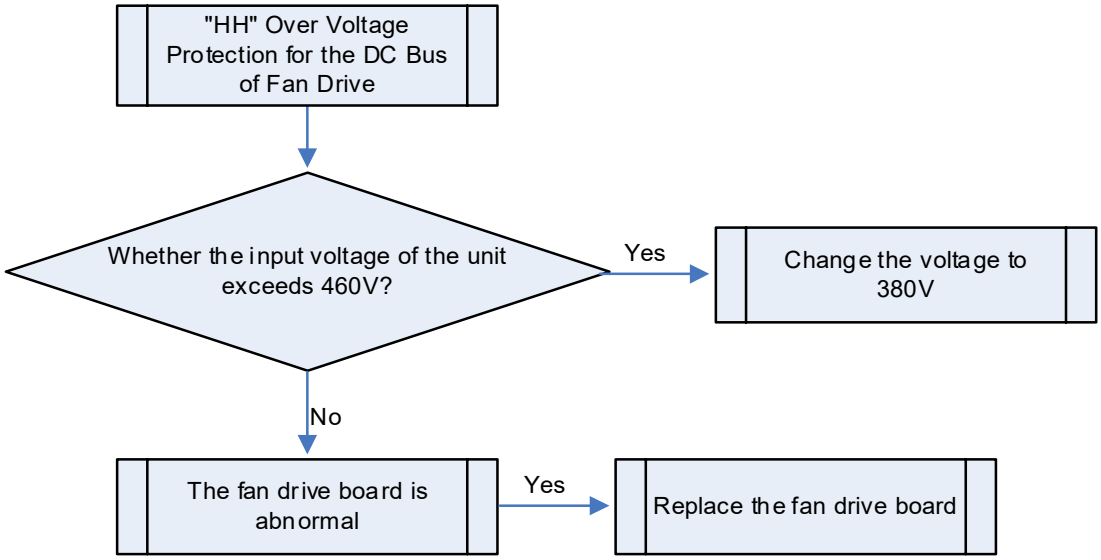
If the fault code displayed on the 2-digit digital LED of the master unit's main control board is HH, it indicates the over voltage protection for the DC bus of fan drive.

Possible causes:

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

■ The fan drive board operates improperly.

Troubleshooting:



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

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

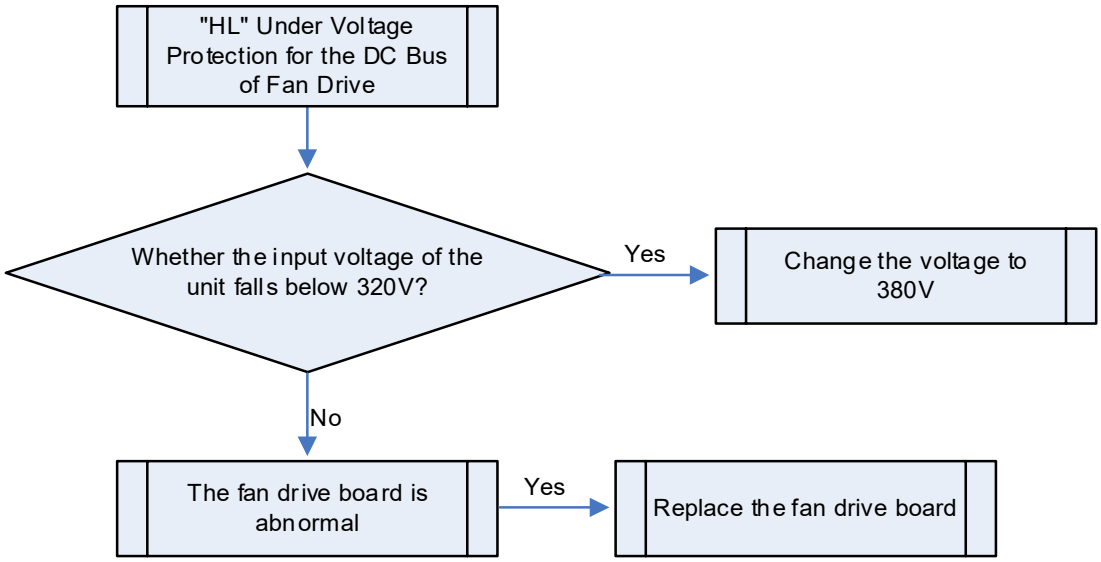
If the fault code displayed on the 2-digit digital LED of the master unit's main control board is HL, it indicates the under voltage protection for the DC bus of fan drive.

Possible causes:

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

■ The fan drive board operates improperly.

Troubleshooting:



2.94 "HJ" Inverter Fan Startup Failure

Fault display: main board of master unit displays 

Applicable model: Models excluding GMV Water series.

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master unit's main control board is HJ, it indicates the inverter fan startup failure.

Possible causes:

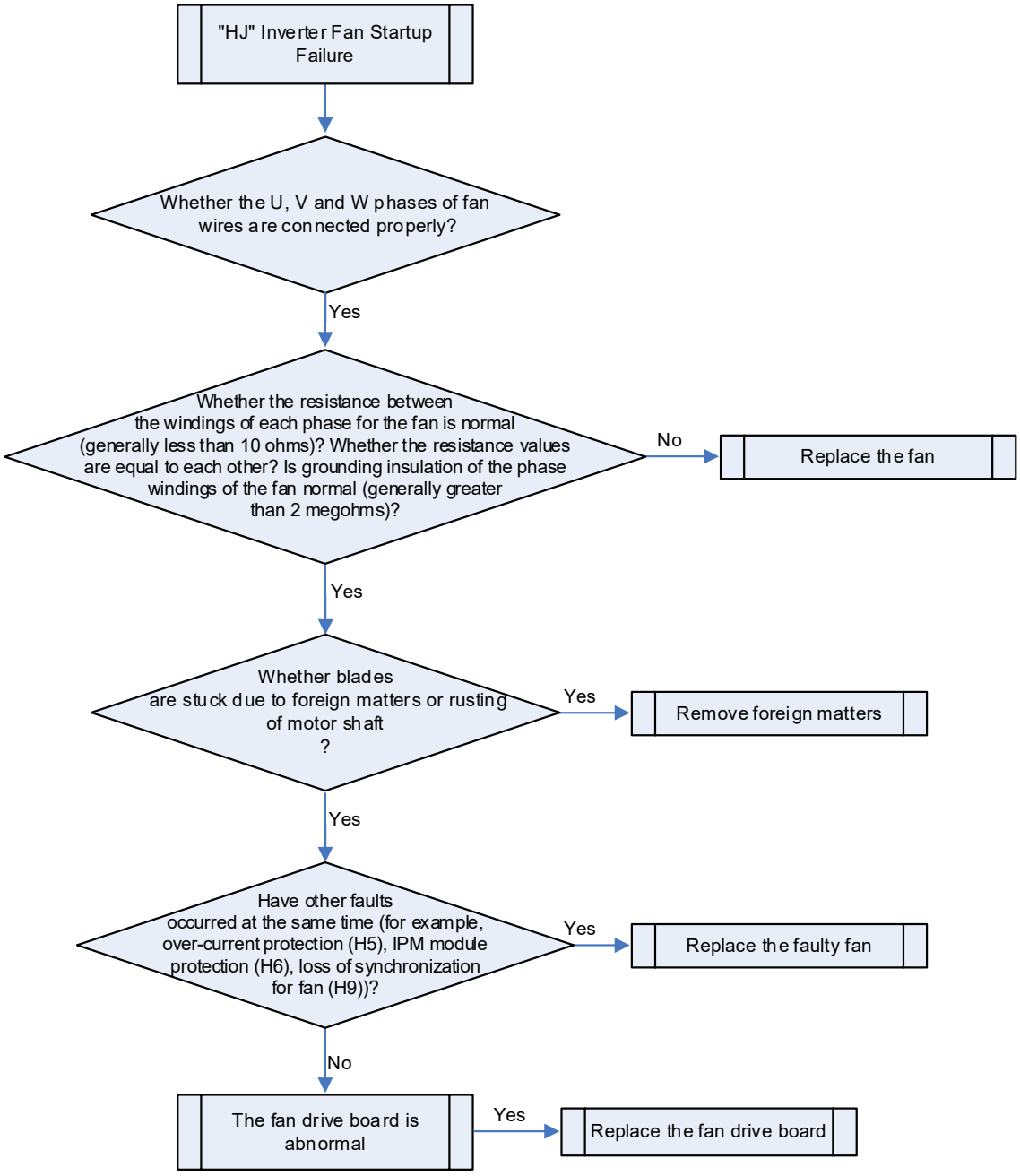
■ Poor contact of fan's UVW cables;

■ 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:


"HJ" Inverter Fan Startup Failure
Whether the U, V and W phases of fan wires are connected properly?
Yes
Whether the resistance between the windings of each phase for the fan is normal (generally less than 10 ohms)? Whether the resistance values are equal to each other? Is grounding insulation of the phase windings of the fan normal (generally greater than 2 megohms)?
No
Replace the fan
Yes
Whether blades are stuck due to foreign matters or rusting of motor shaft ?
Yes
Remove foreign matters
Yes
Have other faults occurred at the same time (for example, over-current protection (H5), IPM module protection (H6), loss of synchronization for fan (H9))?
Yes
Replace the faulty fan
No
The fan drive board is abnormal
Yes
Replace the fan drive board

2.95 "J0" Protection for Other Modules

Fault display: main board of master unit displays  while the indoor unit and receiver of indoor unit do not.

Applicable models: GMV6, GMV X, 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.

2.96 "J1" Compressor 1 Over-current Protection

Fault display: main board of master 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.

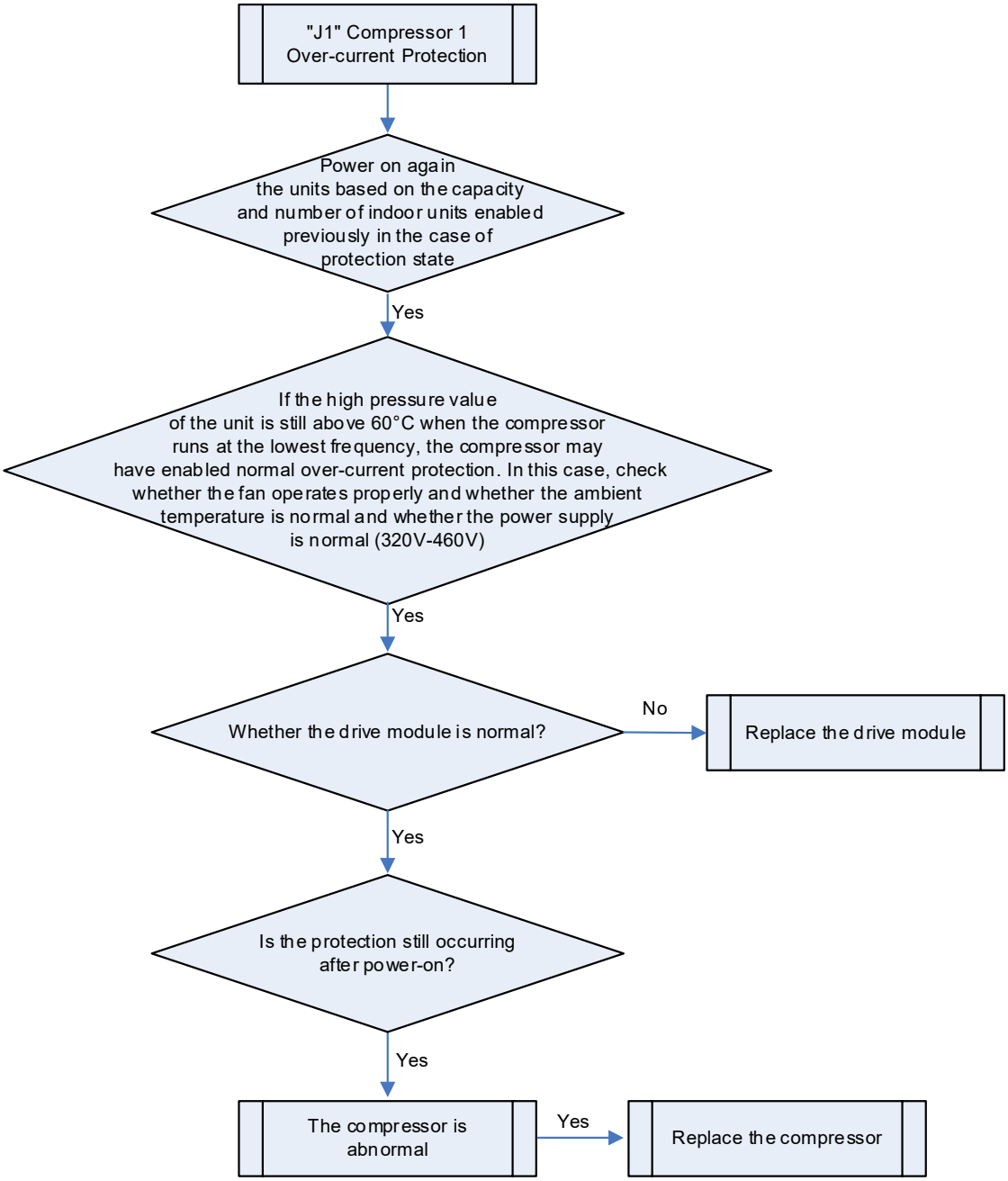
Possible causes:

■ 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

2.97 "J2" Compressor 2 Over-current Protection

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

Fault diagnosis:

When the operating current of the compressor detected by the current sensor or circuit exceeds the limit, the unit will stop working.

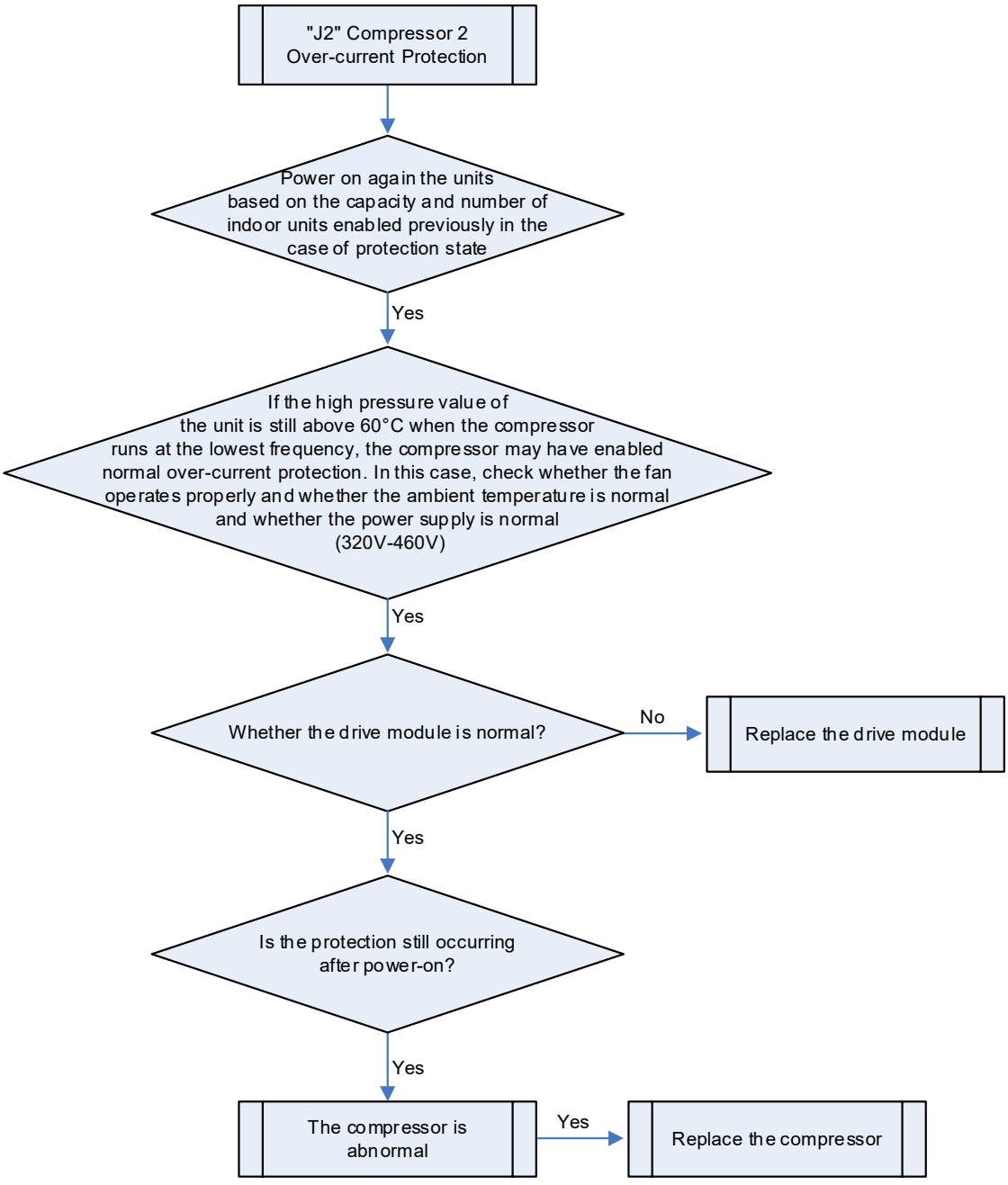
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.98 "J3" Compressor 3 Over-current Protection

Fault display: main board of master 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.

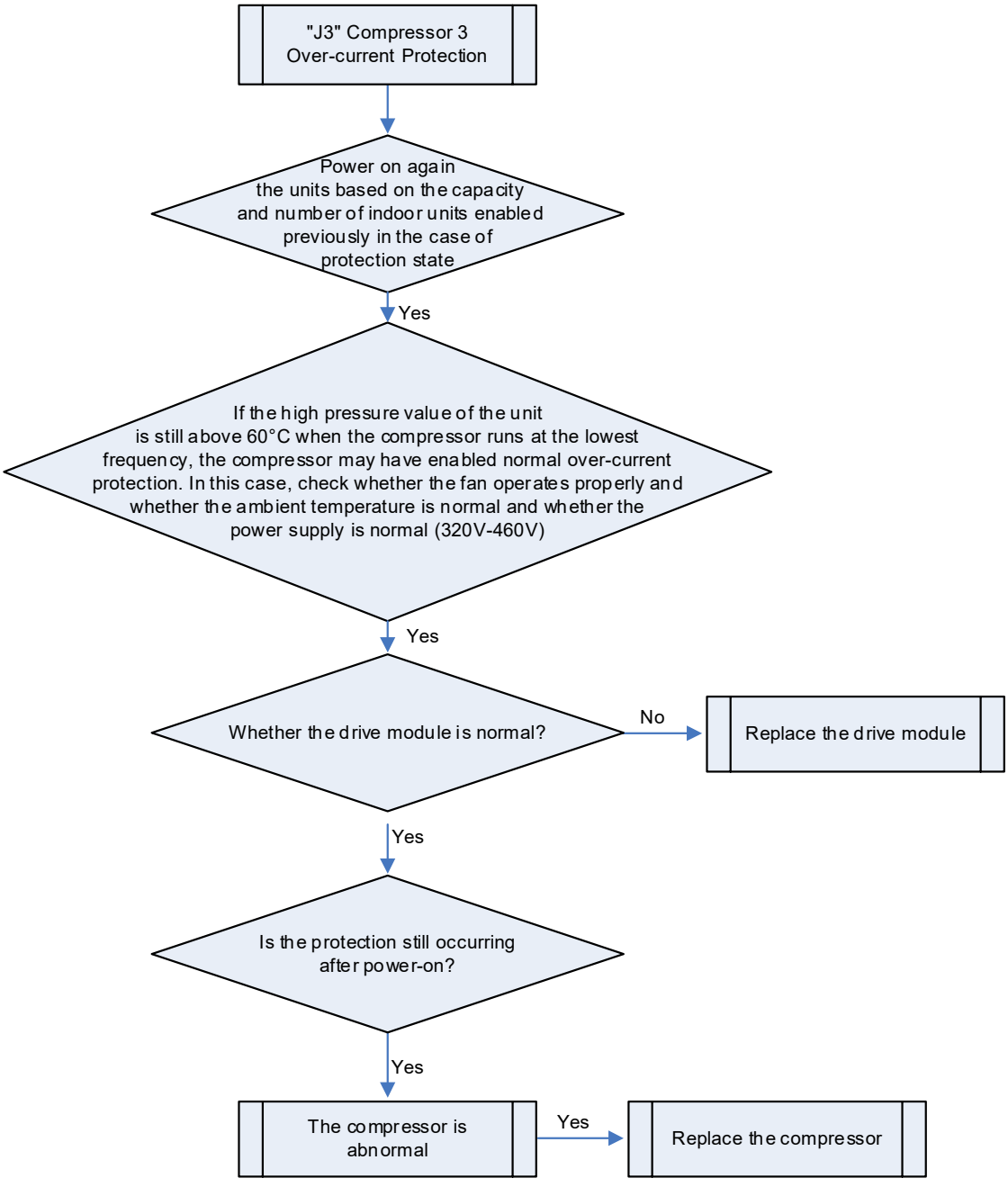
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.99 "J4" Compressor 4 Over-current Protection

Fault display: main board of master 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.

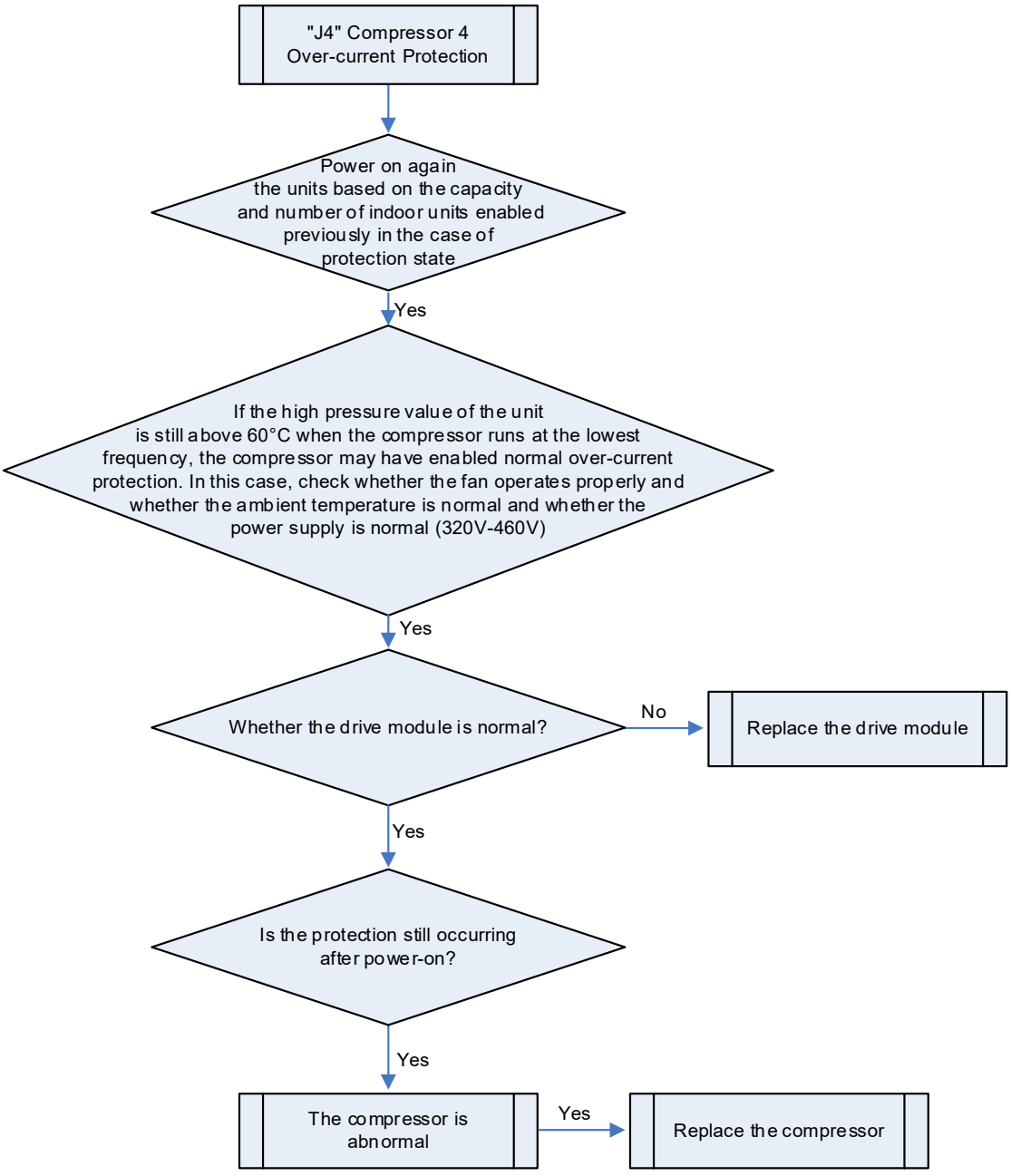
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.100 "J5" Compressor 5 Over-current Protection

Fault display: main board of master 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.

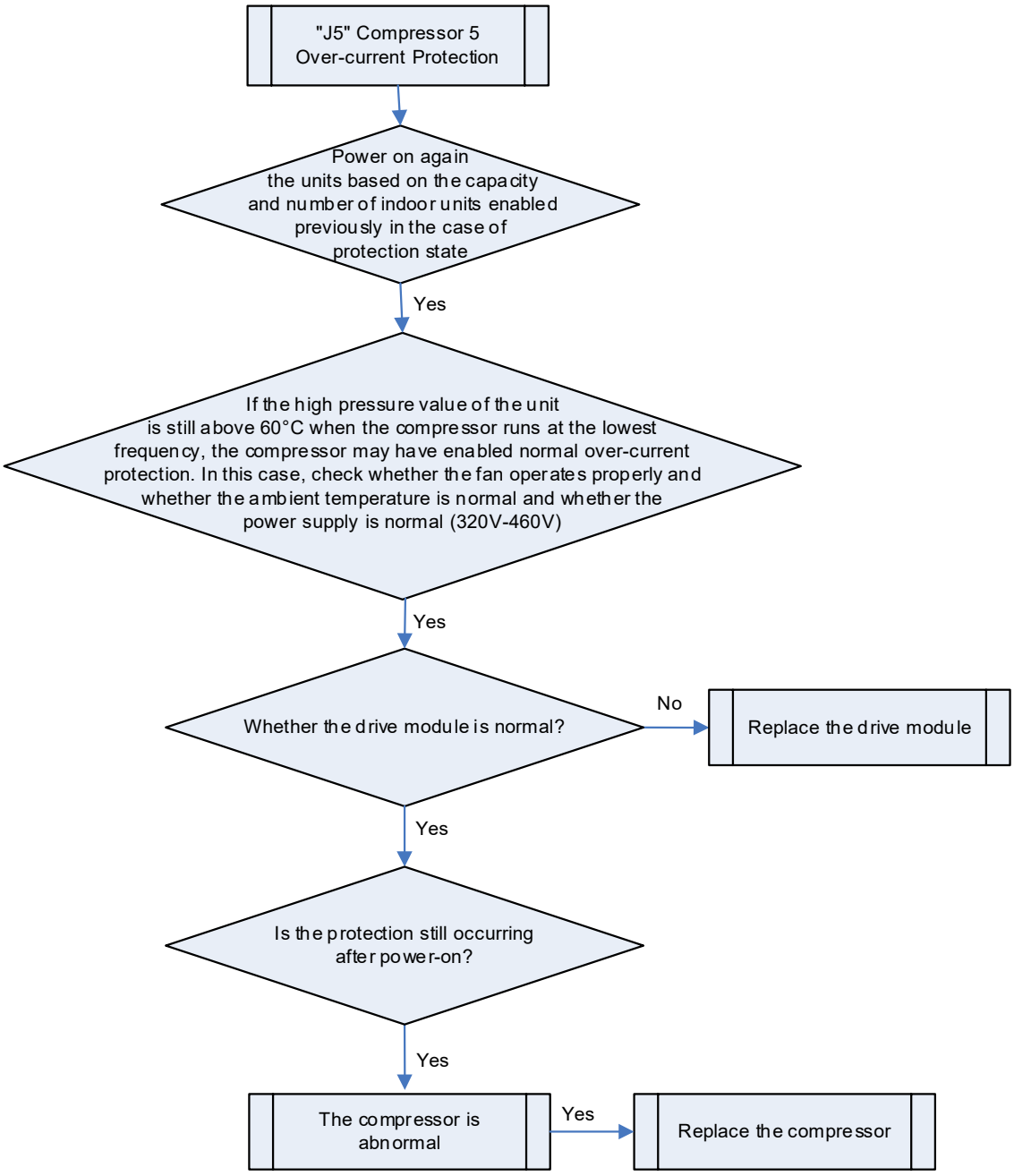
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.101 "J6" Compressor 6 Over-current Protection

Fault display: main board of master 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.

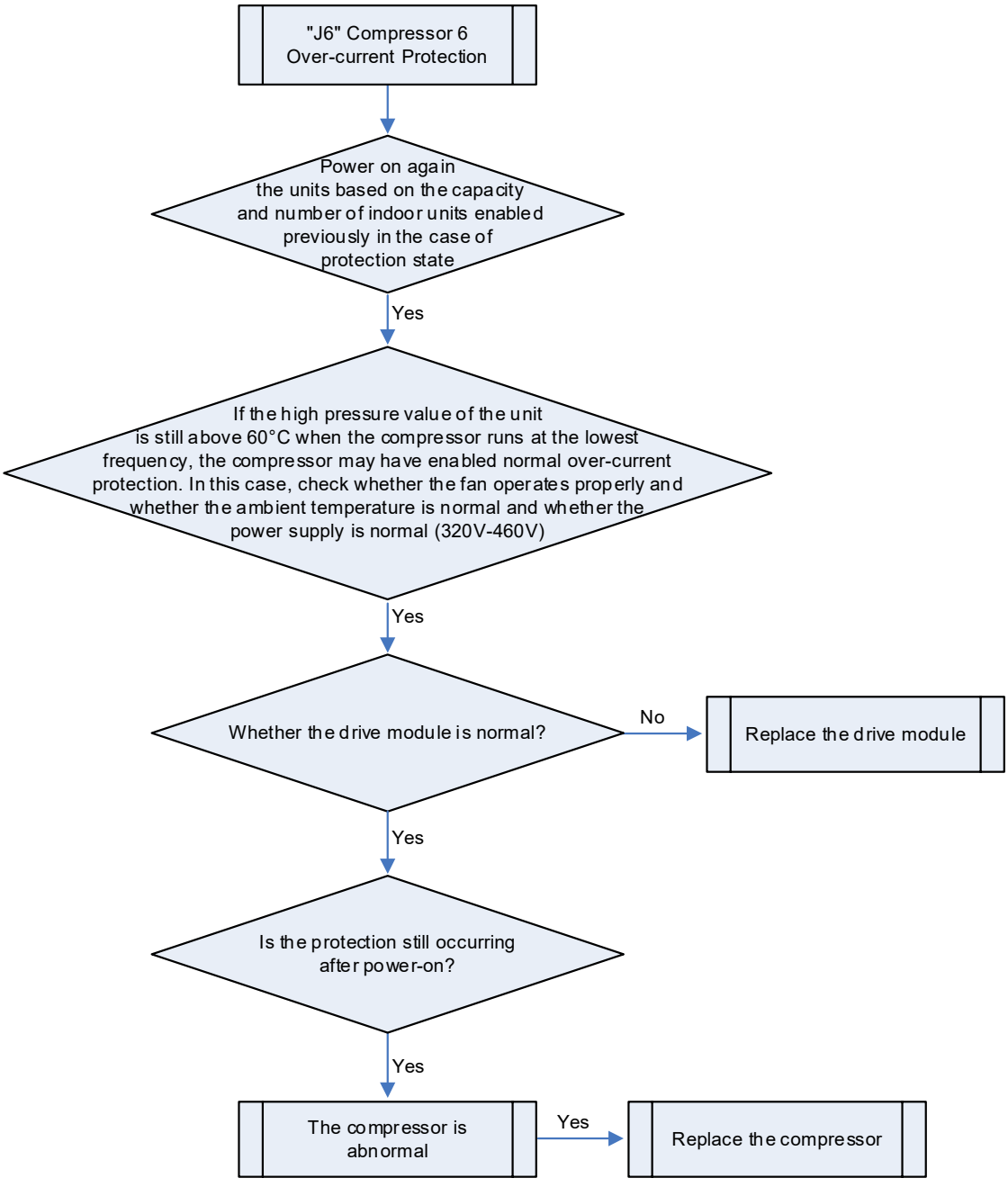
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



2.102 "J7" Four-way Valve Air Backflow Protection

Fault display: main board of master 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.

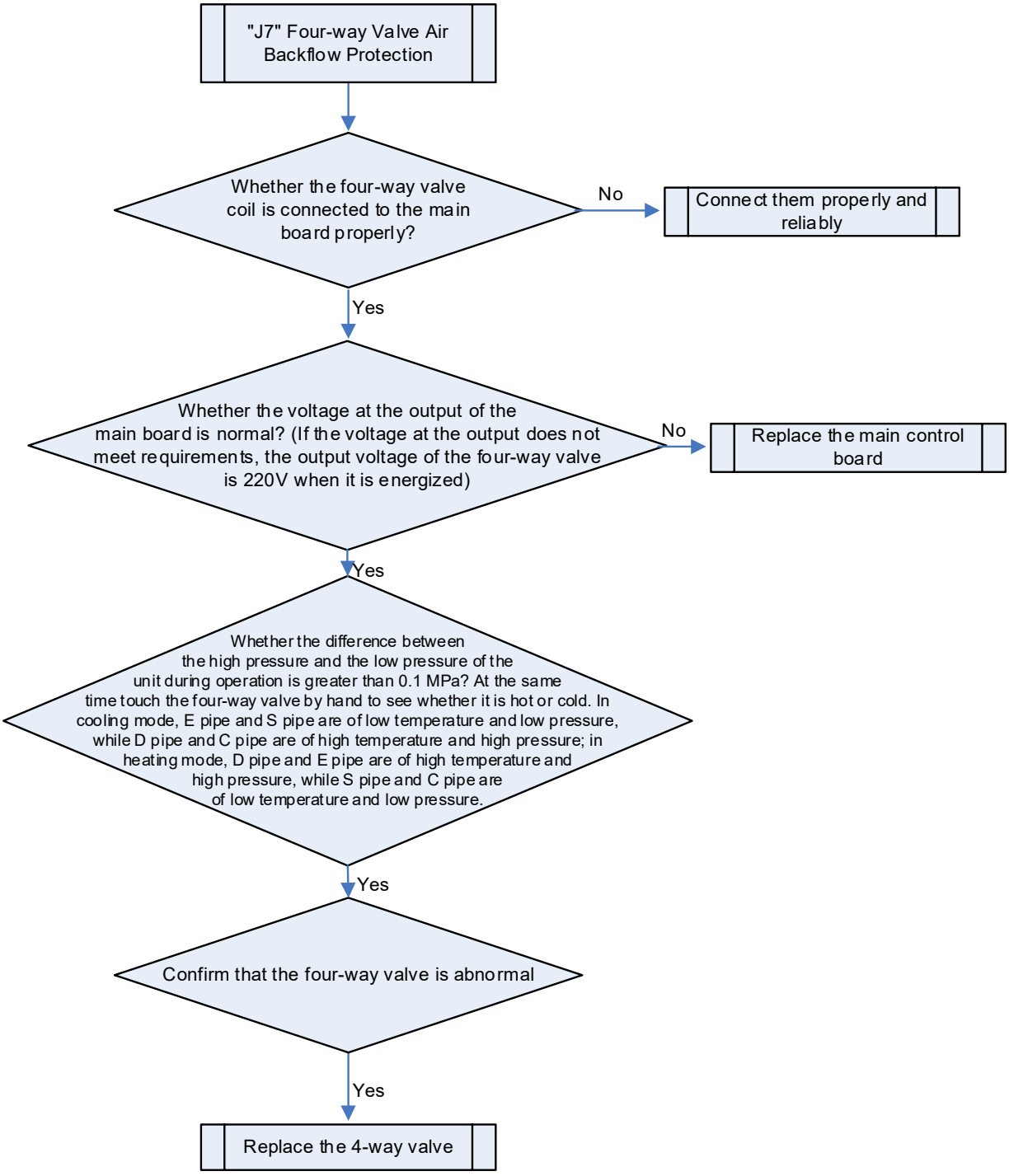
Possible causes:

■ 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

2.103 "J8" High Pressure Ratio Protection

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

Fault diagnosis:

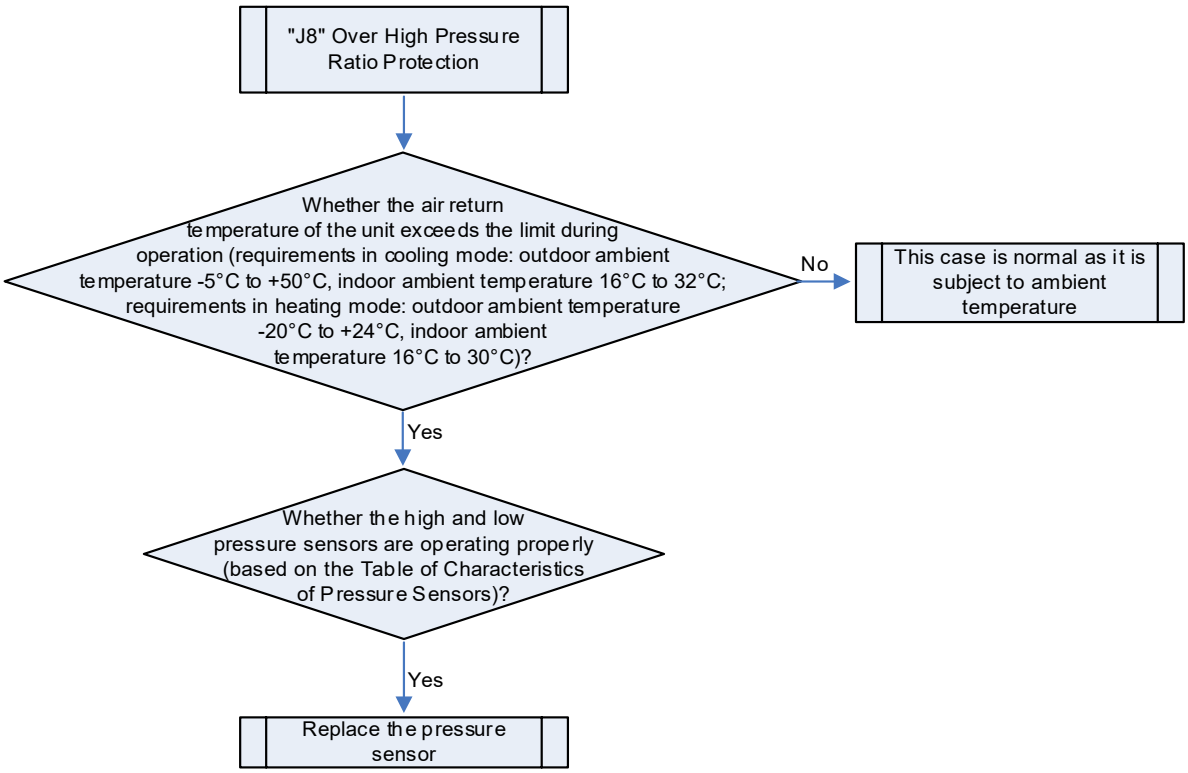
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor exceeds 8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

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

Troubleshooting:



2.104 "J9" Low Pressure Ratio Protection

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

Fault diagnosis:

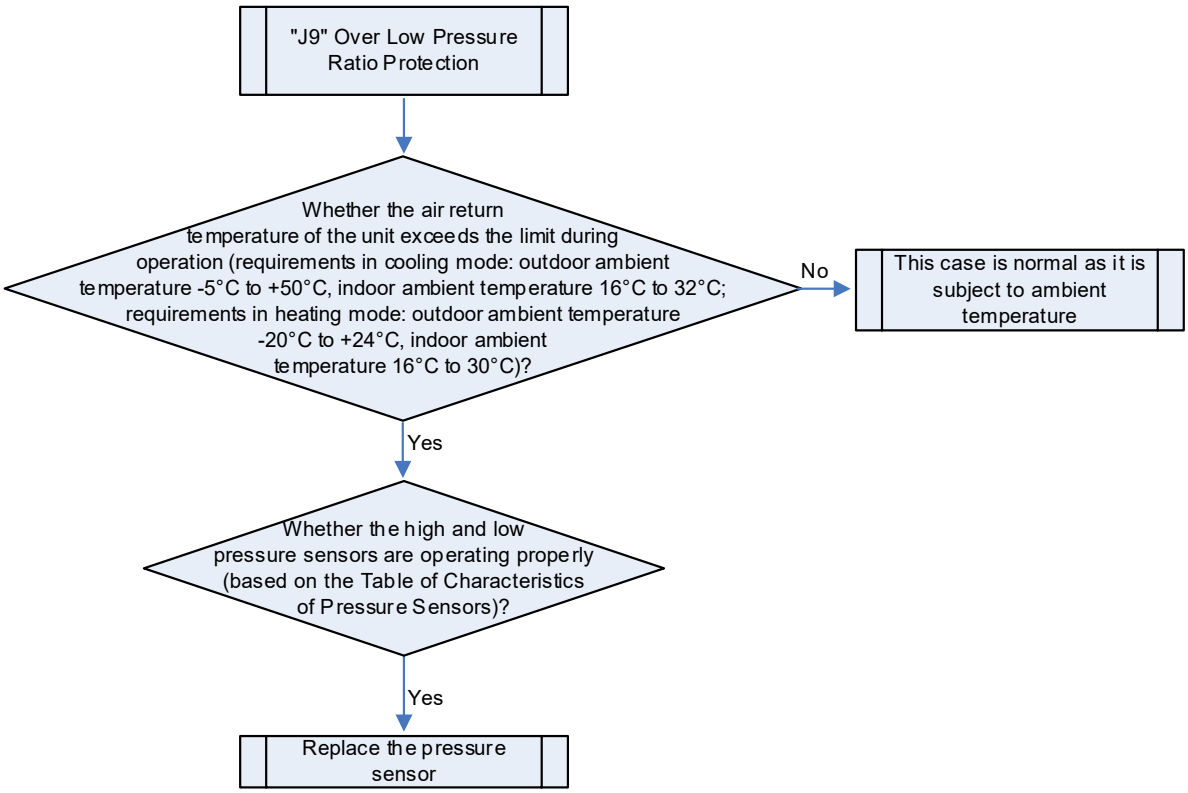
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor is smaller than 1.8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

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

Troubleshooting:



2.105 "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.

2.106 "L1" Indoor Fan Protection

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

Applicable models: all indoor units

Fault diagnosis:

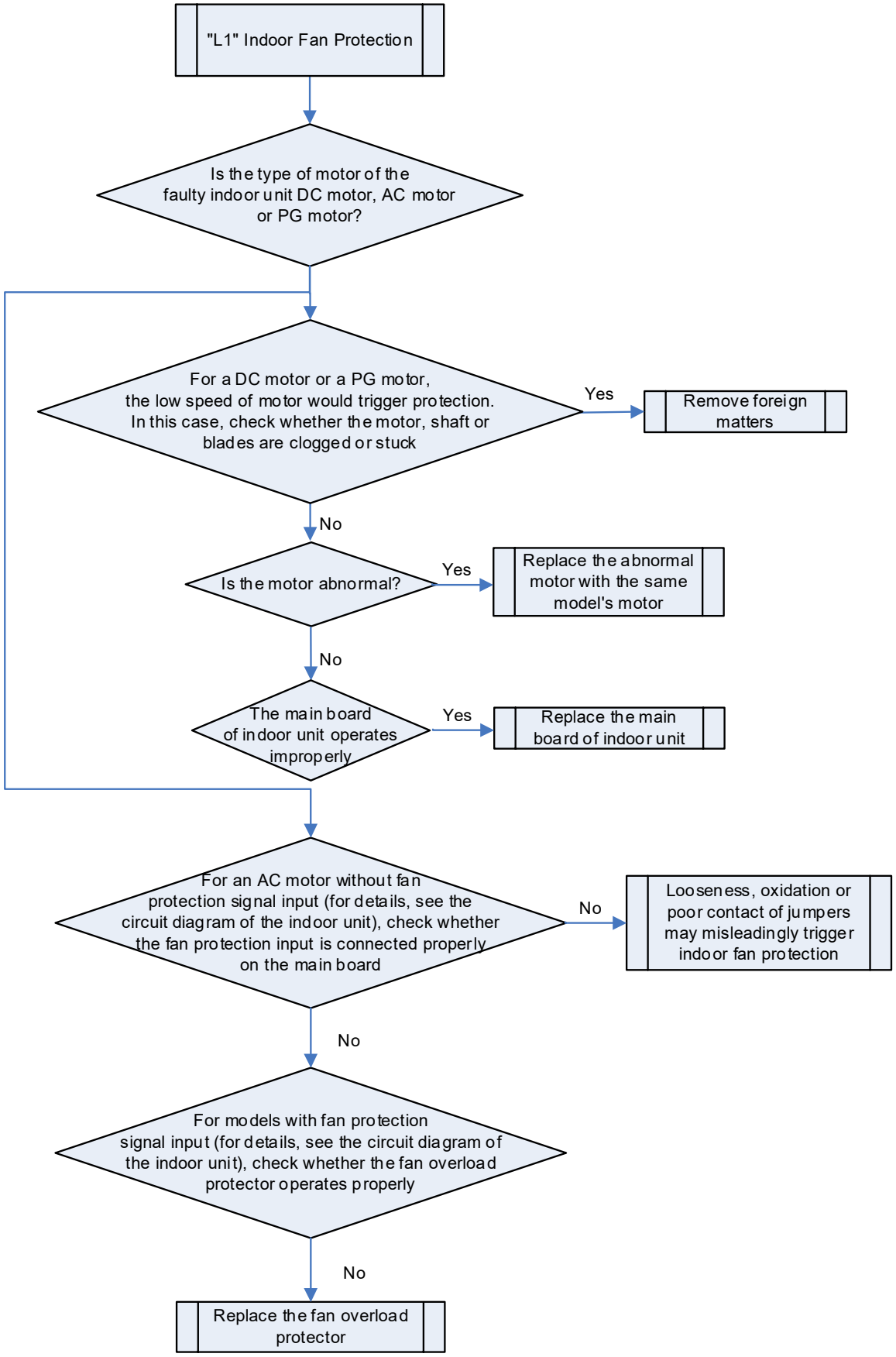
Check whether the indoor unit rotates slowly or stops or whether there exists external fan protection signal. If yes, it indicates the indoor fan protection.

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

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

2.108 "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:

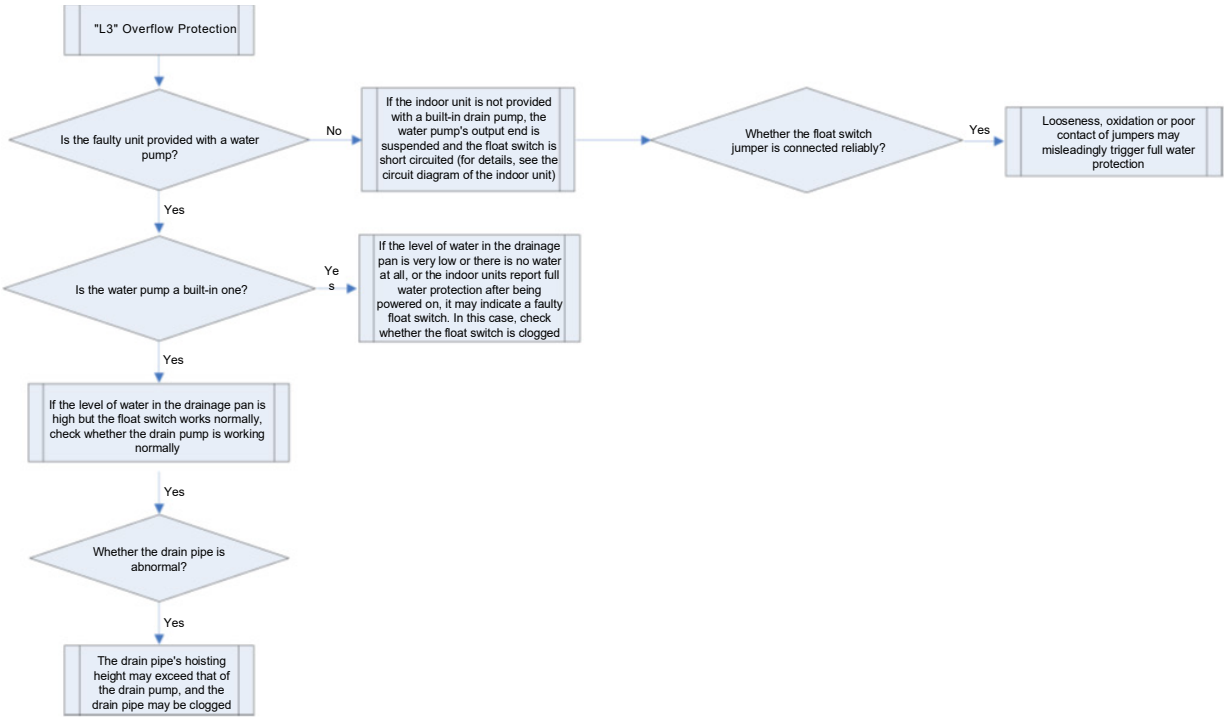
■ The indoor unit is installed improperly;

■ The drain pump is damaged;

■ The float switch operates improperly;

■ The main board of indoor unit operates improperly.

Troubleshooting:



2.109 "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.

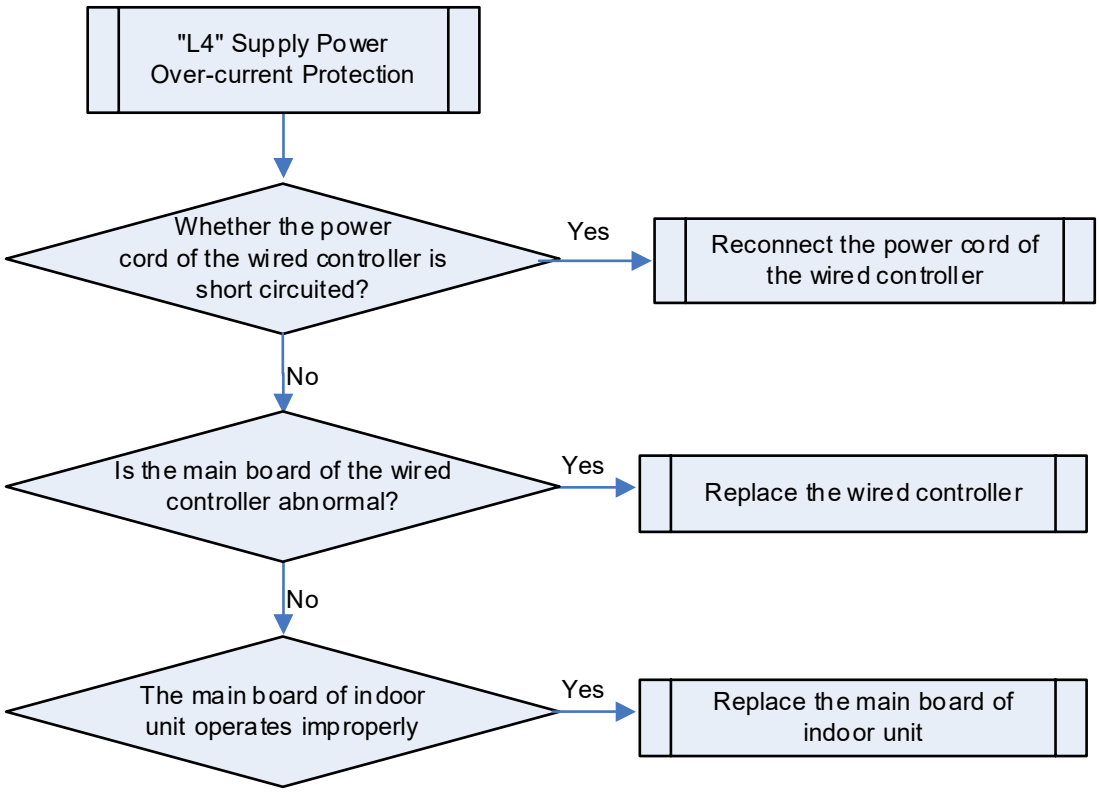
Possible causes:

■ 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:



2.110 "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:

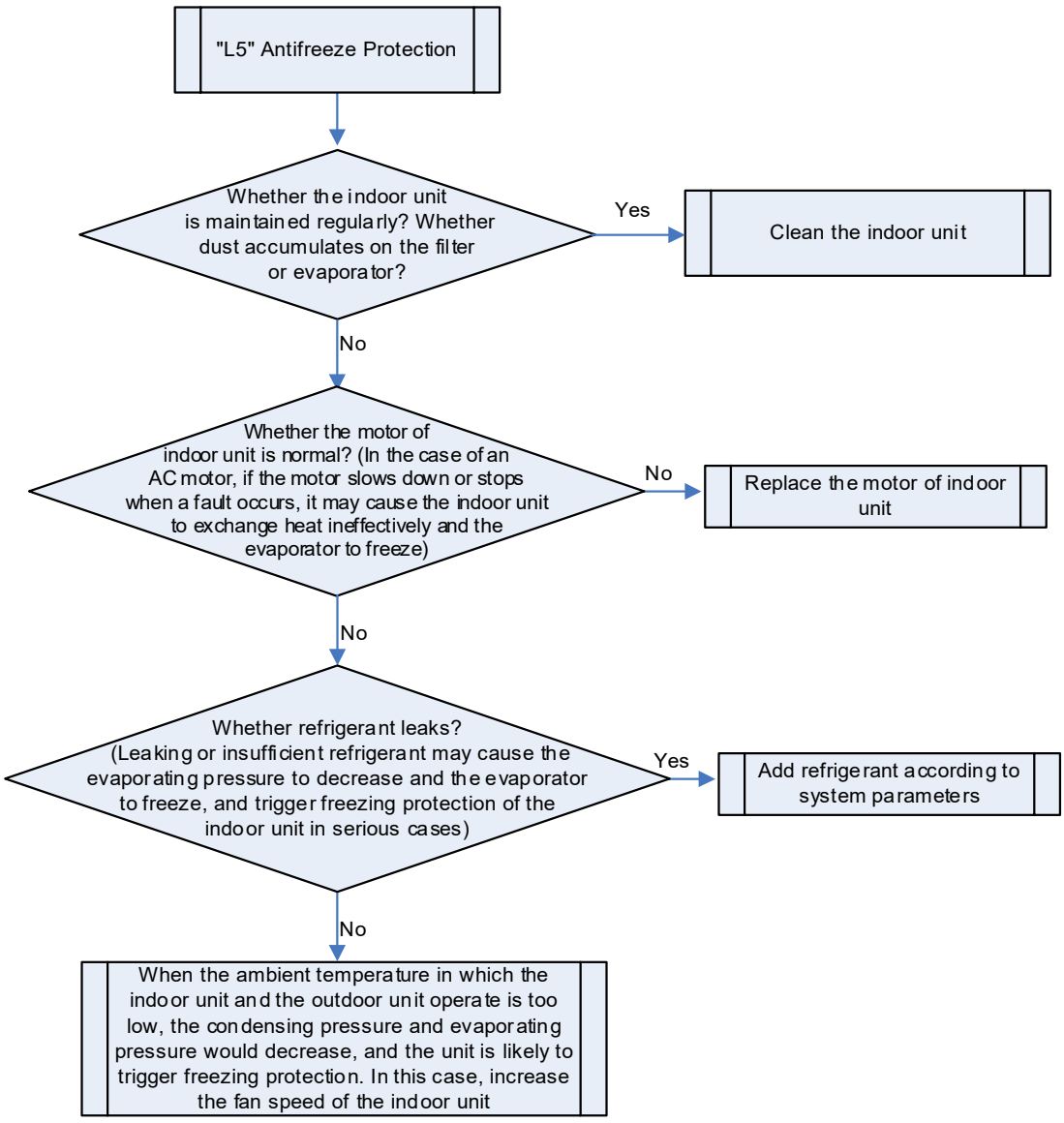
■ The indoor filter and evaporator are dirty;

■ The indoor motor is stuck;

■ Insufficient refrigerant in the unit;

■ The ambient temperature where the indoor unit and master unit operate is too low.

Troubleshooting:



2.111 "L6" Mode Conflict (Reserved)

2.112 "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.

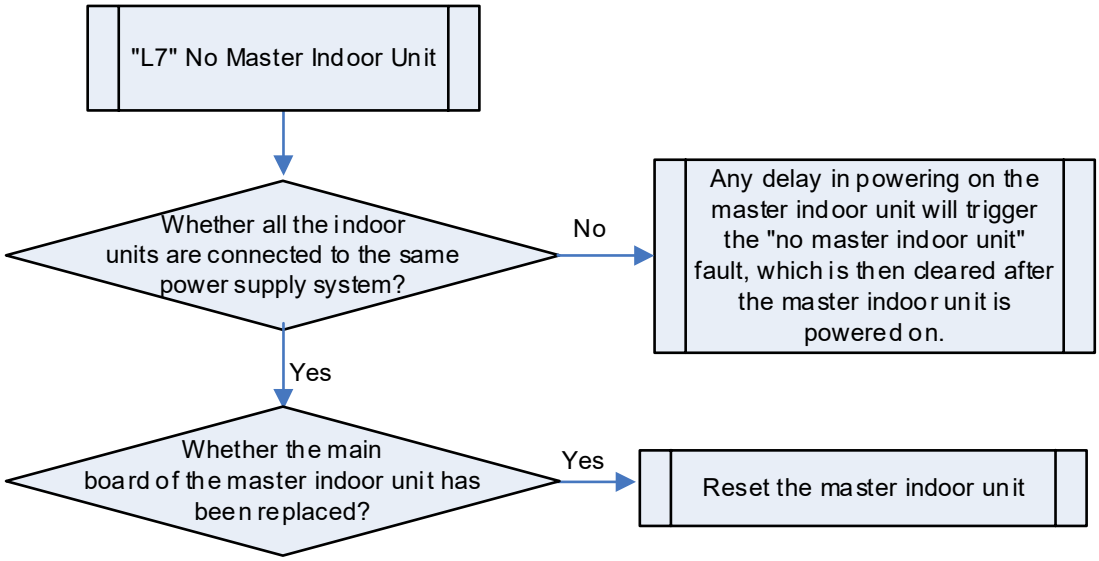
Possible causes:

■ 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:



2.113 "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:

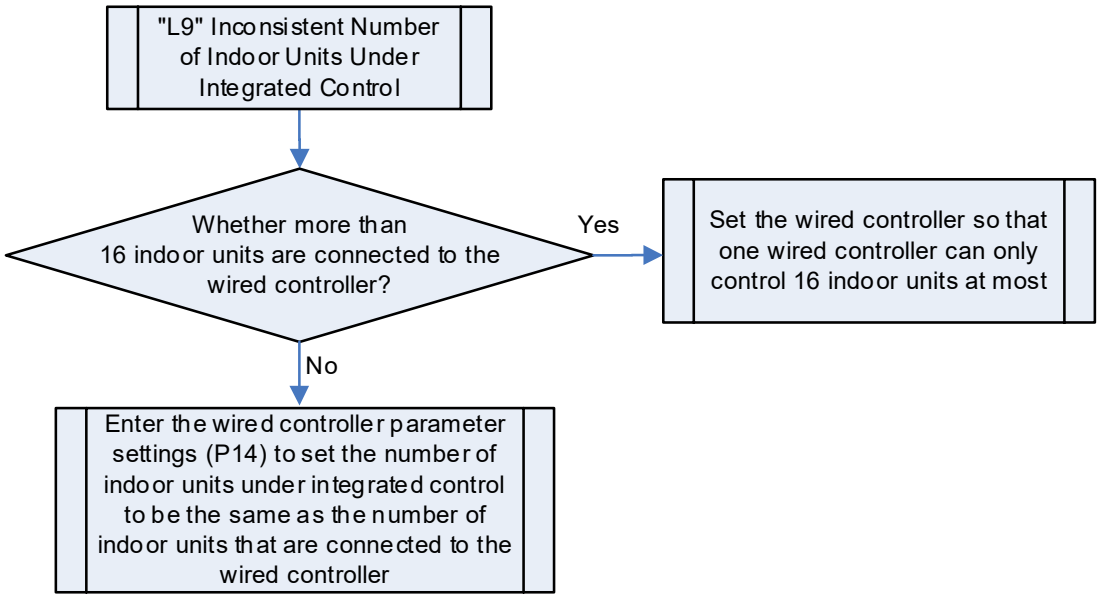
When more than 16 indoor units are connected to the wired controller or the number of indoor units connected to the wired controller is not the same as what is configured under integrated control, the fault is generated.

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:



2.114 "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.

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

2.116 "LC" Unmatched Models of Indoor and Master 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 master units" when it fails to recognize some indoor units or equipment.

Possible causes:

■ The indoor unit is incompatible with the master 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 master unit to make it match the indoor units.

2.117 "n0" System Energy Efficiency Running Settings Status

Fault display: main board of master 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.

2.118 "n2" Settings Status of Maximum Capacity Configuration Rate for Indoor and Master units

Fault display: main board of master 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 master units.

Possible causes: --

Troubleshooting: not required.

2.119 "n4" Settings Status of Maximum Output Capacity

Fault display: main board of master 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.

2.120 "n6" Unit Fault Query Status

Fault display: main board of master 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 master units. Keep in mind that you have to query the faults respectively for indoor units and master units.

Possible causes: --

Troubleshooting: not required.

2.121 "n7" Unit Parameter Query Status

Fault display: main board of master 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.

2.122 "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.

2.123 "n9" Status of Querying Number of Online Indoor Units

Fault display: main board of master 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.

2.124 "nA" Heating and Cooling Unit

Fault display: main board of master unit displays 

Fault diagnosis:

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

Possible causes: --

Troubleshooting: not required.

2.125 "nH" Heating Only Unit

Fault display: main board of master unit displays 

Fault diagnosis:

The code indicates that the indoor unit only operates in heating mode.

Possible causes: --

Troubleshooting: not required.

2.126 "nC" Cooling Only Unit

Fault display: main board of master unit displays 

Fault diagnosis:

The code indicates that the indoor unit only operates in cooling mode.

Possible causes: --

Troubleshooting: not required.

2.127 "nE" Negative Number Code

Fault display: main board of master 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.

2.128 "nF" Fan Type Unit

Fault display: main board of master unit displays 

Fault diagnosis:

The code indicates that the indoor unit only operates in fan mode.

Possible causes: --

Troubleshooting: not required.

2.129 “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:

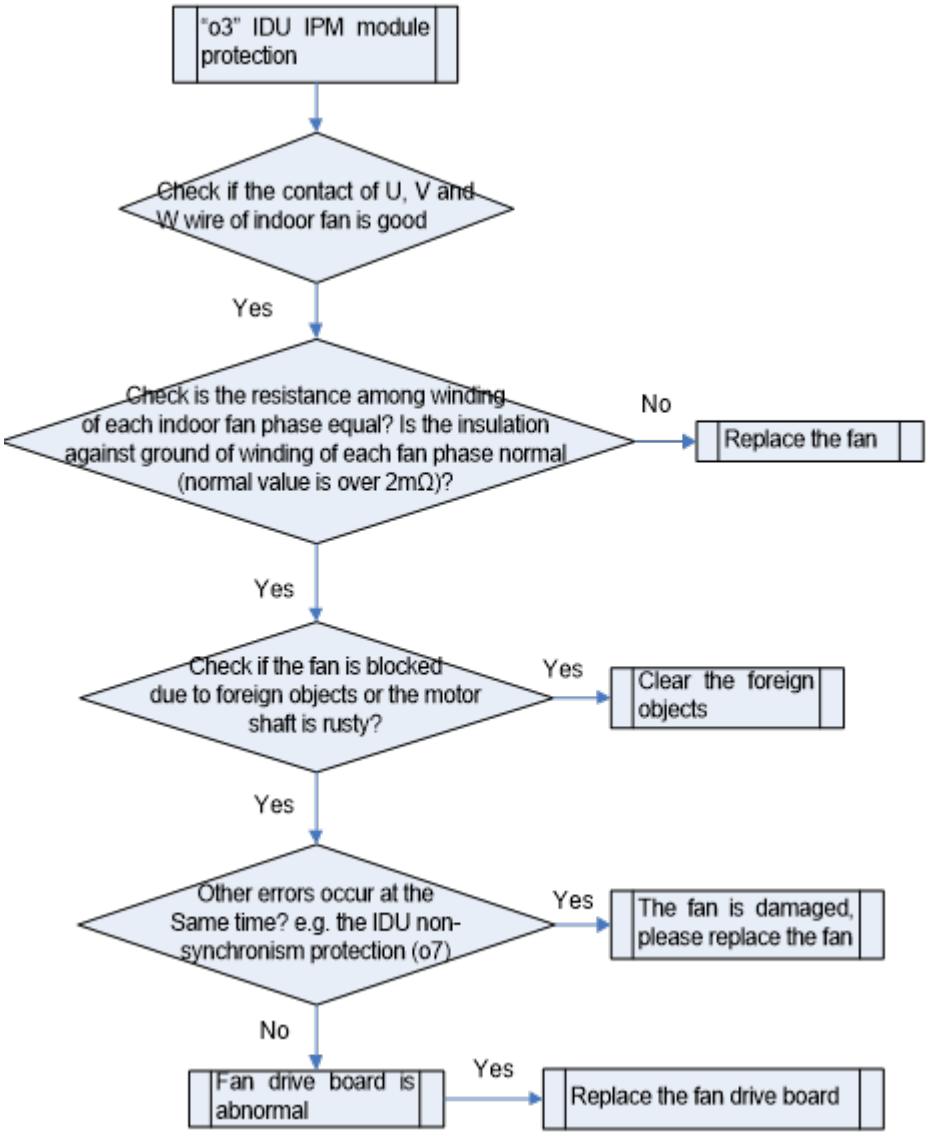
■Contact of the fan UVW wire is poor.

■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:



2.130 "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:

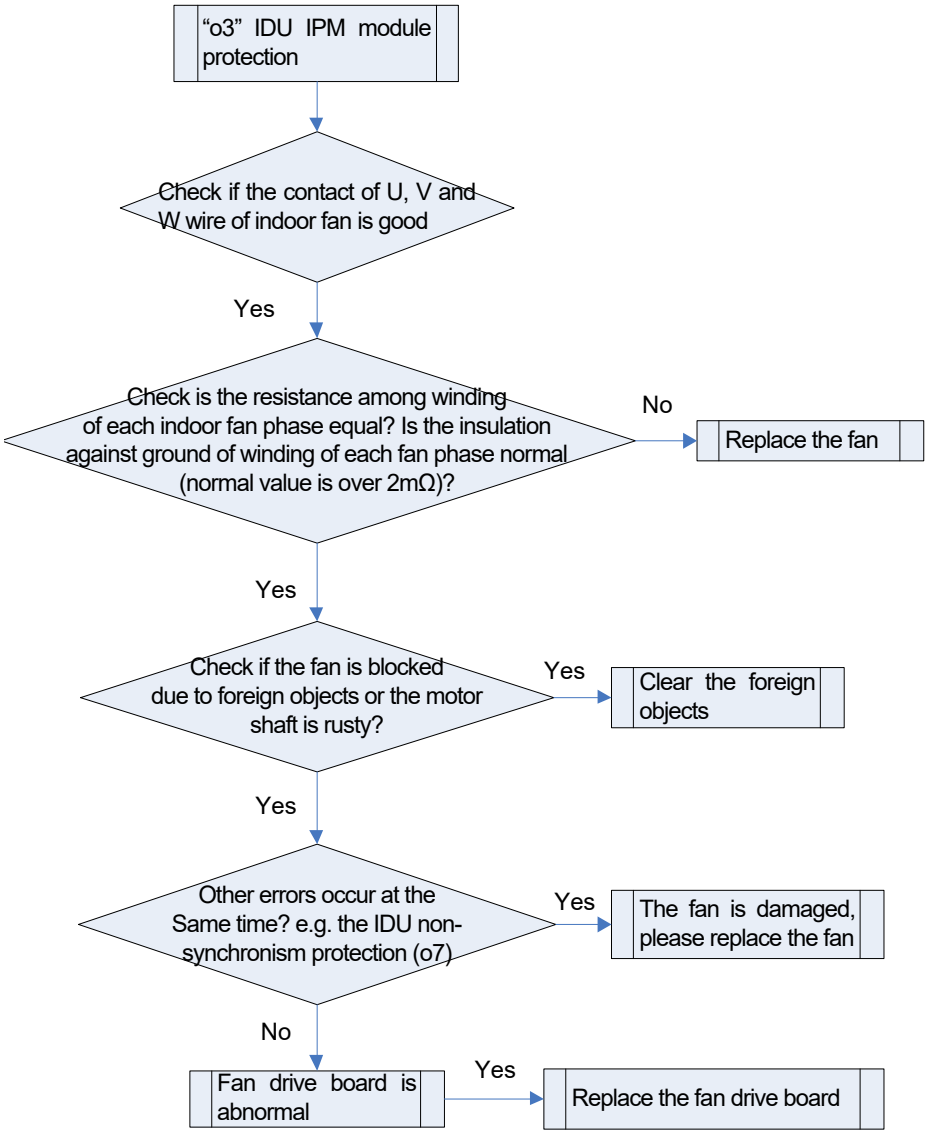
■Contact of the fan UVW wire is poor;

■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:



2.131 "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:

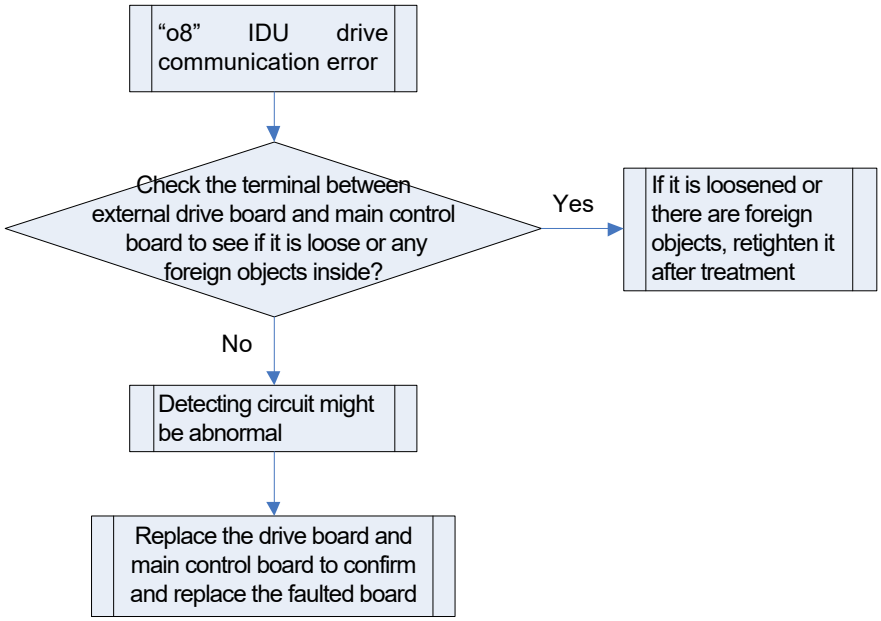
If the drive does not receive main control data in 30 consecutive seconds, it will report communication error.

Possible reasons:

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

■Circuit is abnormal

Troubleshooting:



2.132 "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:

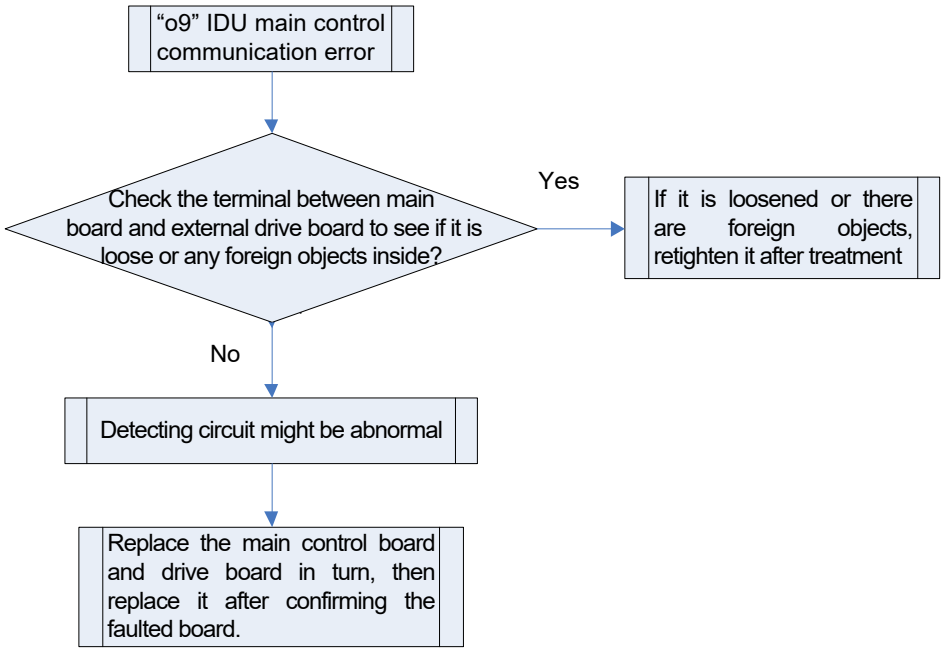
If the main control does not receive data in 30 consecutive seconds, it will report communication error; if the drive does not receive data in 30 consecutive seconds, it will report communication error.

Possible reasons:

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

■Detecting circuit is abnormal

Troubleshooting:



2.133 "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 master 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 master unit displays P3);

■ Temperature sensor fault of compressor drive (2-digit digital LED of the main control board of the master unit displays P7);

■ IPM over temperature protection for the compressor drive (2-digit digital LED of the main control board of the master unit displays P8);

■ Current detection circuit fault of compressor drive (2-digit digital LED of the main control board of the master unit displays PC);

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

■ Loss of synchronization protection for the inverter compressor (2-digit digital LED of the main control board of the master unit displays P9);

■ Inverter compressor startup failure (2-digit digital LED of the main control board of the master unit displays PJ).

Troubleshooting: based on the faults displayed on the main board of the master unit.

2.134 "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 master 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 master unit displays P5);

■ IPM module protection for the compressor drive (2-digit digital LED of the main control board of the master unit displays P6);

■ Communication fault of compressor drive (2-digit digital LED of the main control board of the master unit displays C2).

Troubleshooting: based on the faults displayed on the main board of the master unit.

2.135 "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 master 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 master unit displays PH);

■ Under voltage protection for the DC bus of compressor drive (2-digit digital LED of the main control board of the master unit displays PL).

Troubleshooting: based on the faults displayed on the main board of the master unit.

2.136 "P3" Reset Protection for the Compressor Drive Module

Fault display: main board of master unit displays 

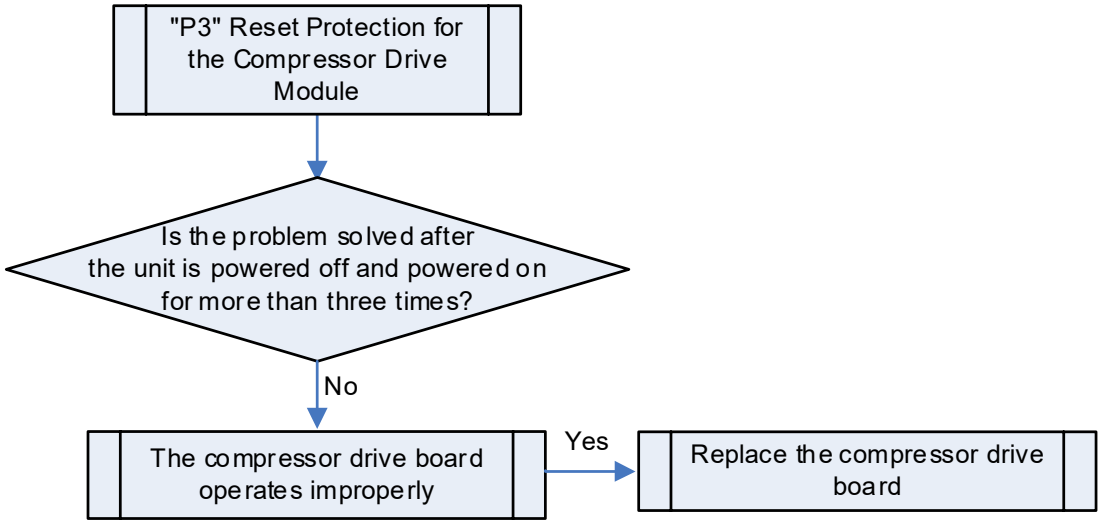
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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:



2.137 "P5" Inverter Compressor Over-current Protection

Fault display: main board of master unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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;

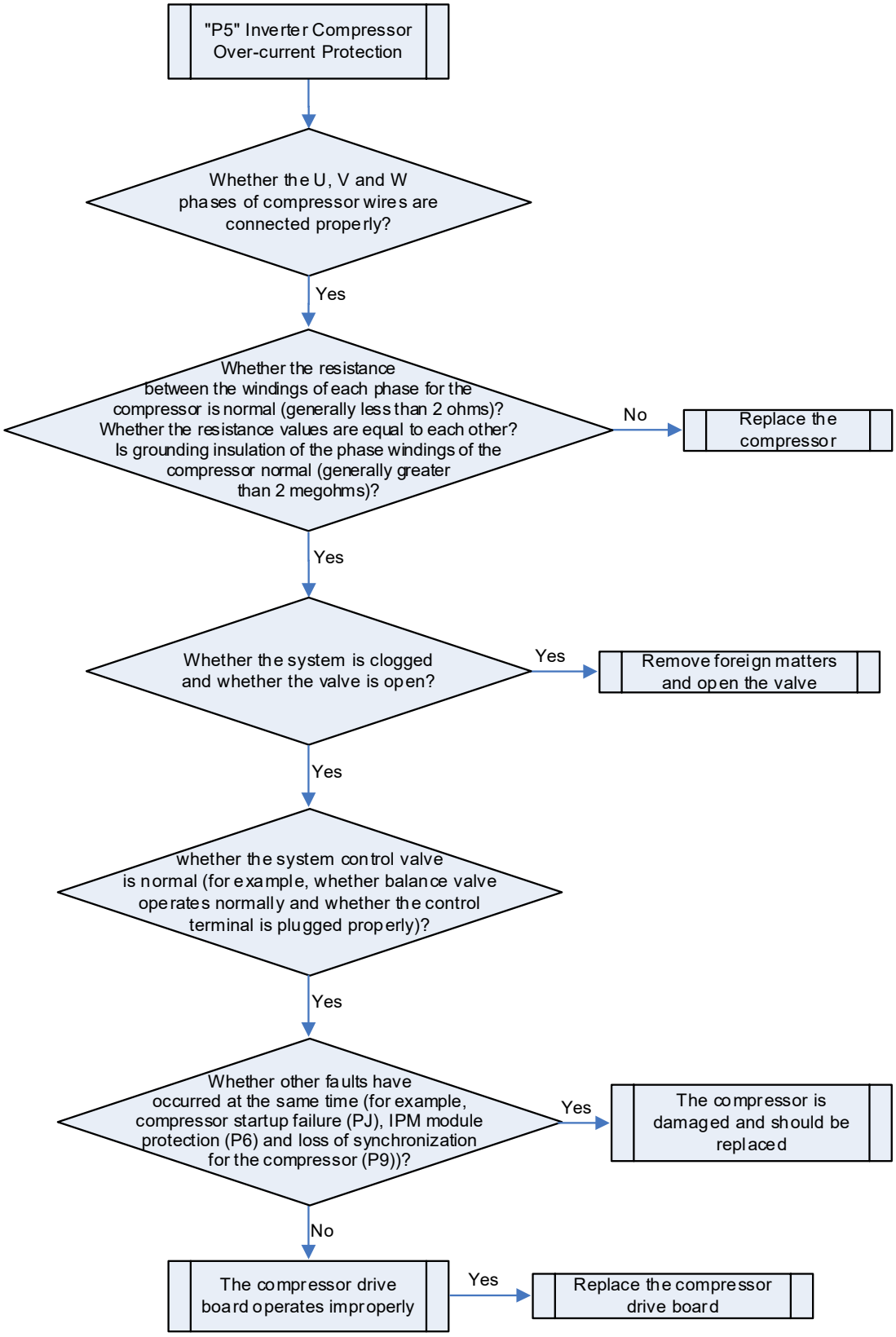
■ The compressor's UVW cables are wrongly connected;

■ The compressor is damaged;

■ The system is blocked;

■ IPM module of the compressor drive board is damaged.

Troubleshooting:



2.138 "P6" IPM Module Protection for the Compressor Drive

Fault display: main board of master unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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;

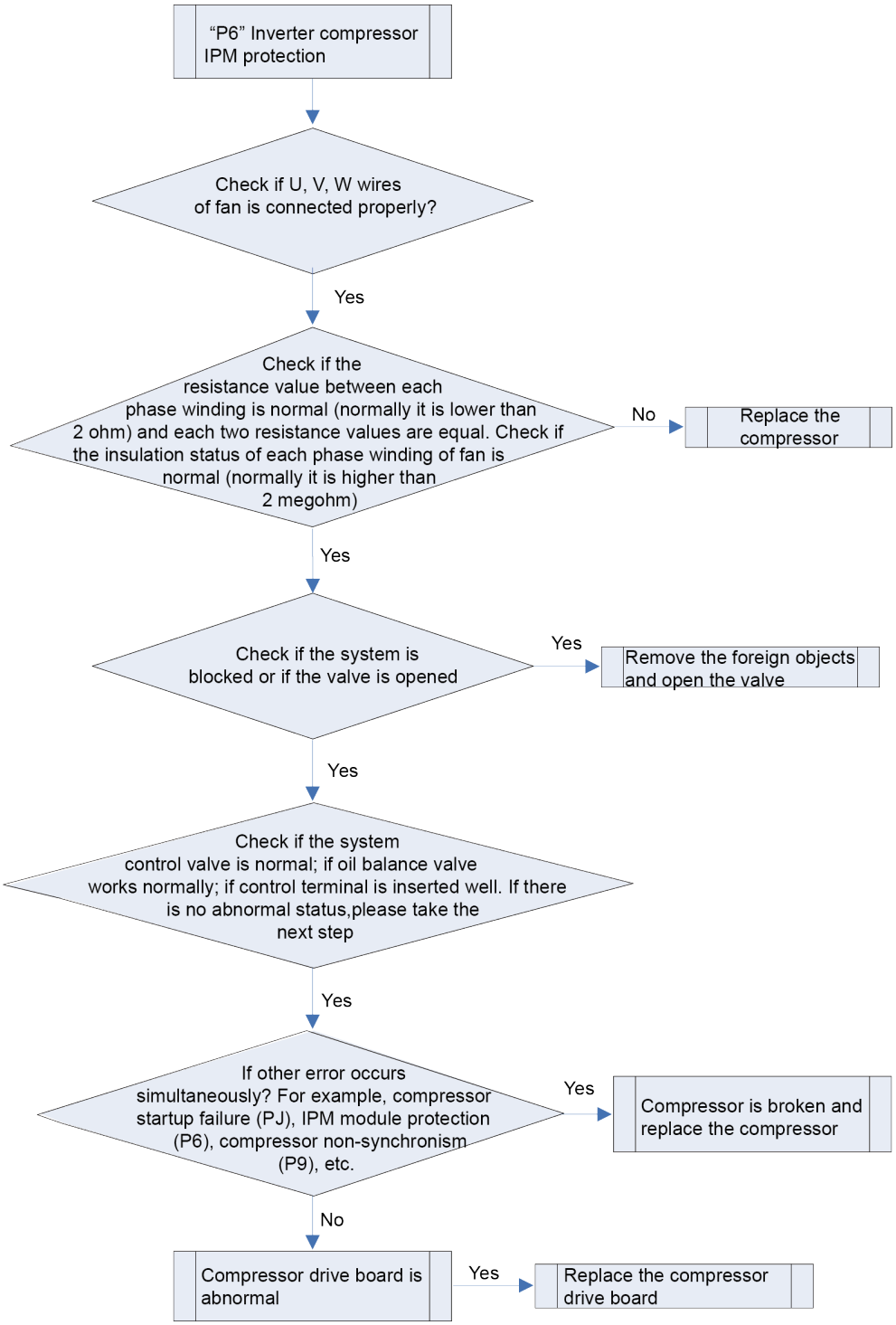
■ The compressor's UVW cables are wrongly connected;

■ The compressor is damaged;

■ The system is blocked;

■ IPM module of the compressor drive board is damaged.

Troubleshooting:



2.139 "P7" Abnormal Temperature Sensor of Compressor Drive Board

Fault display: main board of master unit displays 

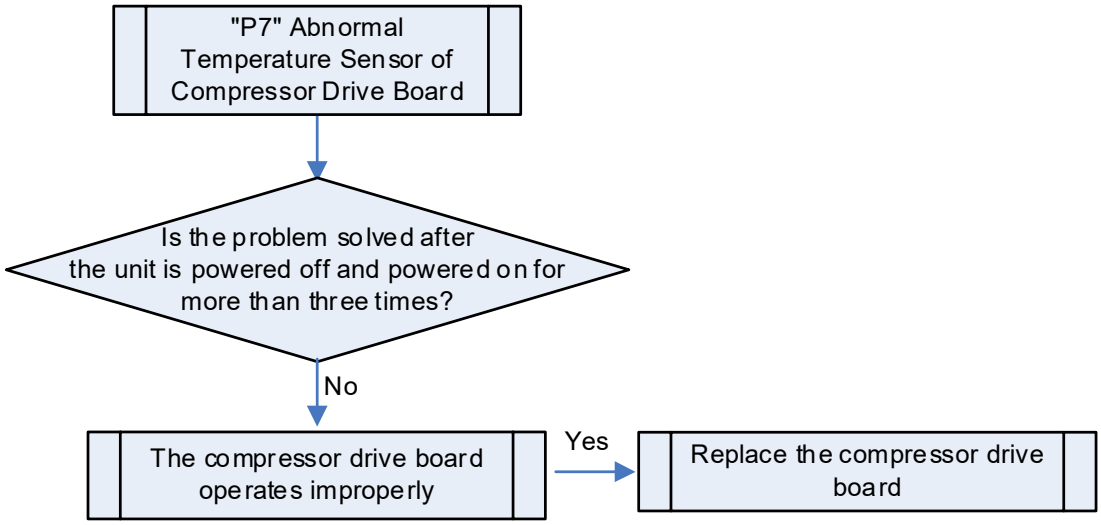
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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:



2.140 "P8" IPM Over Temperature Protection for Compressor Drive Board

Fault display: main board of master unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master unit's main control board is P8, it indicates the IPM over temperature protection for the compressor drive.

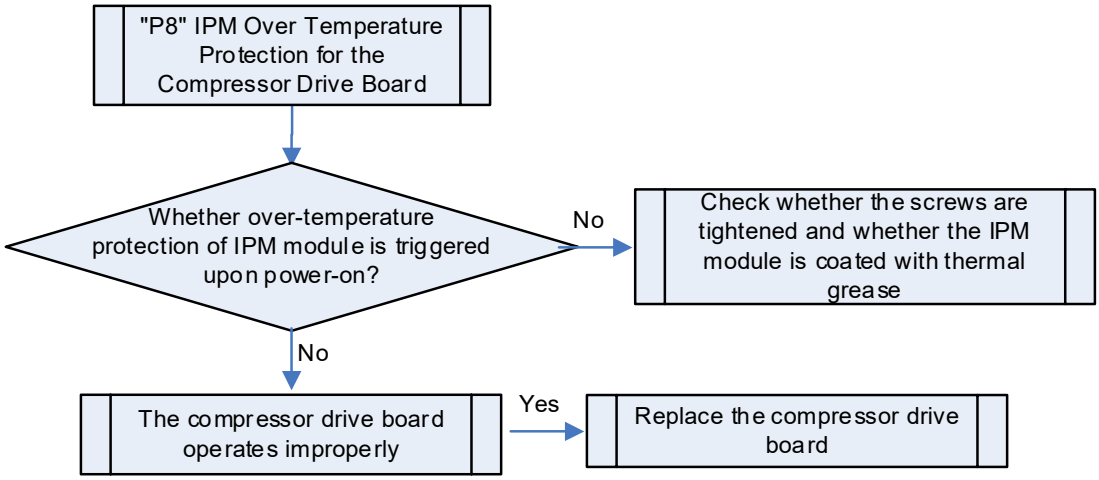
Possible causes:

■ 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:



2.141 "P9" Loss of Synchronization Protection for Inverter Compressor

Fault display: main board of master unit displays 

Fault diagnosis:

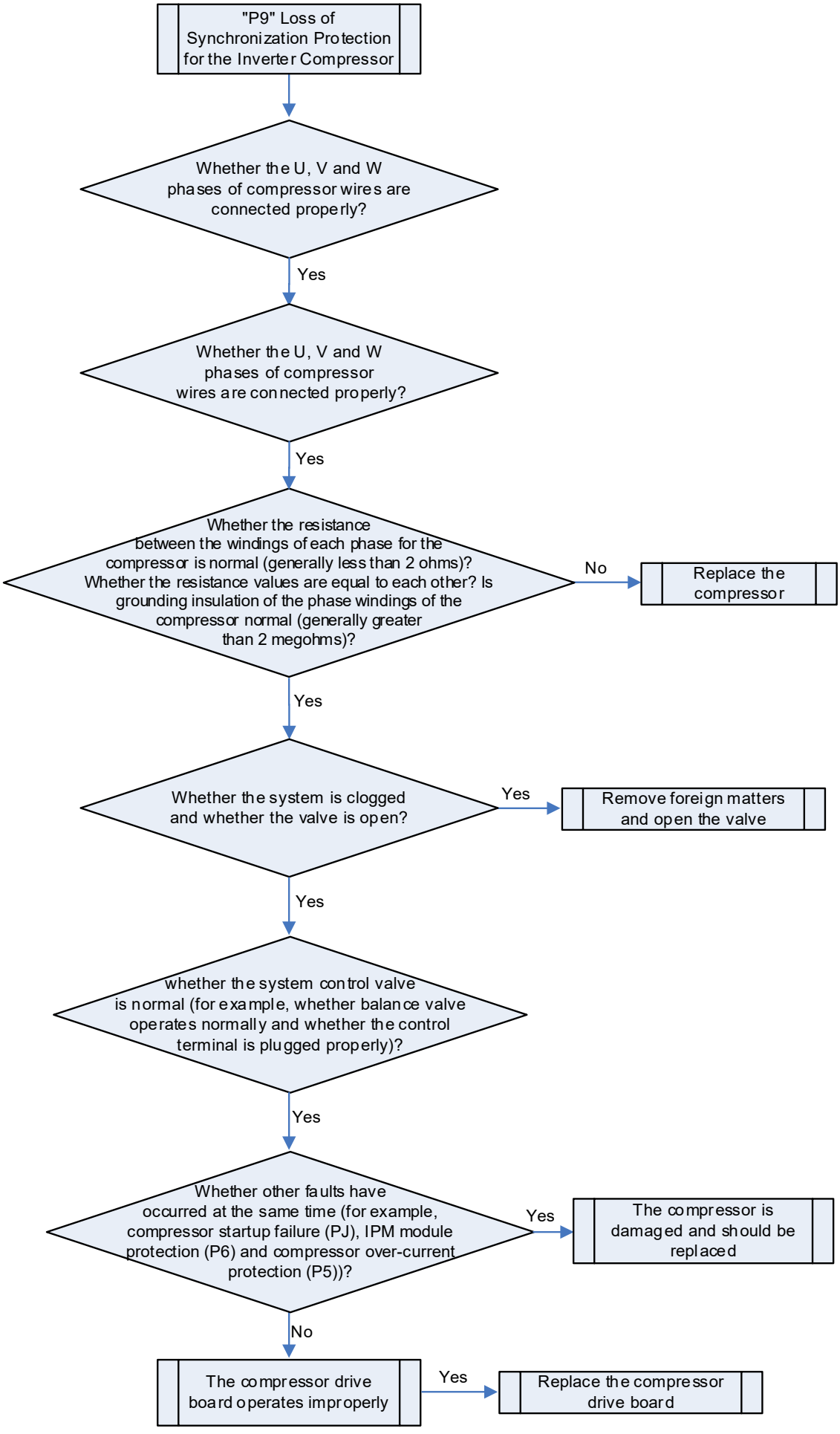
If the fault code displayed on the 2-digit digital LED of the master unit's main control board is P9, it indicates the loss of synchronization protection for the inverter compressor.

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

2.142 "PC" Current Detection Circuit Fault of Compressor Drive

Fault display: main board of master unit displays 

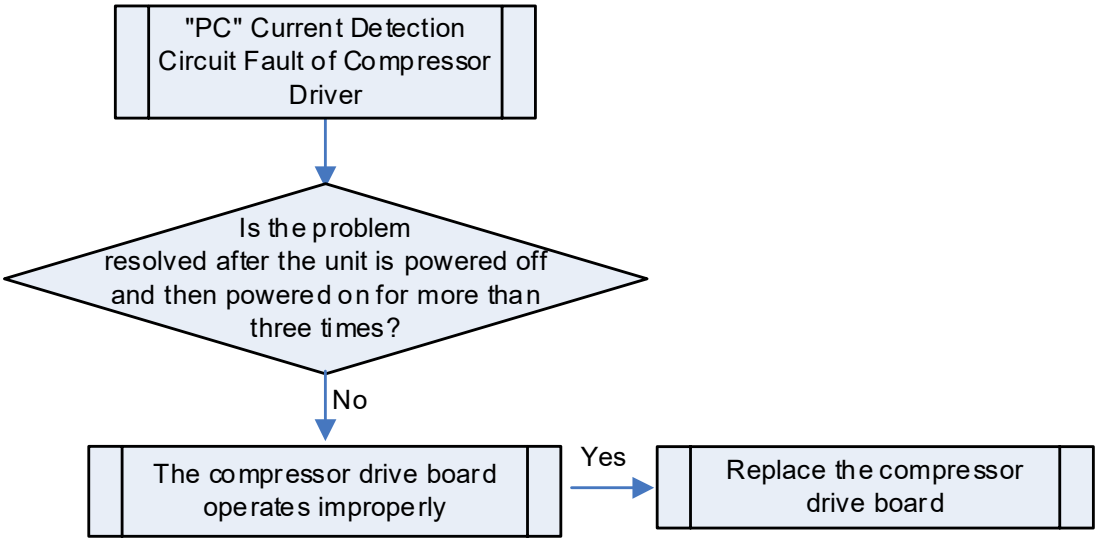
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master 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:



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

Fault display: main board of master unit displays 

Fault diagnosis:

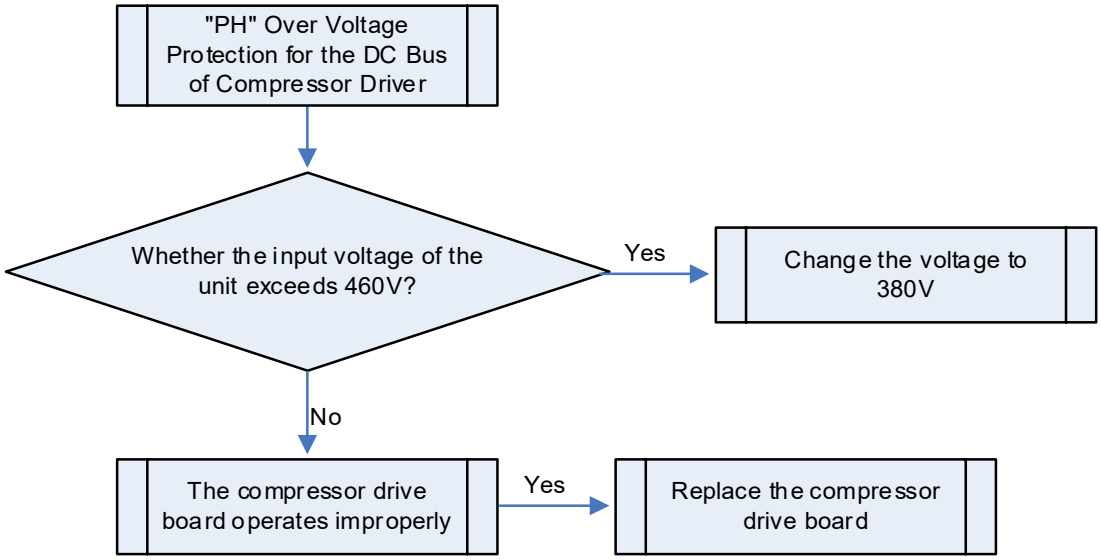
When the input power cable of the main board has a voltage over 460 V, the unit triggers protection against faults.

Possible causes:

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

■ The compressor drive board operates improperly.

Troubleshooting:



2.144 "PL" Under Voltage Protection for DC Bus of Compressor Drive

Fault display: main board of master unit displays 

Applicable models: GMV6, GMV X, GMV5, GMV5S series

Fault diagnosis:

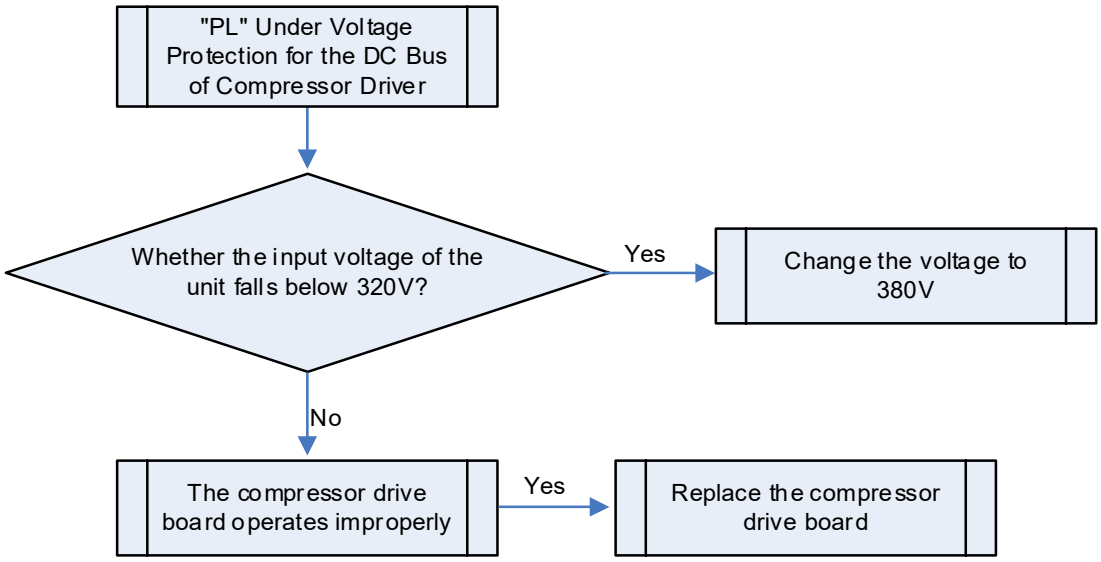
When the input power cable of the main board has a voltage below 320 V, the unit triggers protection against faults.

Possible causes:

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

■ The compressor drive board operates improperly.

Troubleshooting:



2.145 "PJ" Inverter Compressor Startup Failure

Fault display: main board of master unit displays 

Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the master unit's main control board is PJ, it indicates the inverter compressor startup failure.

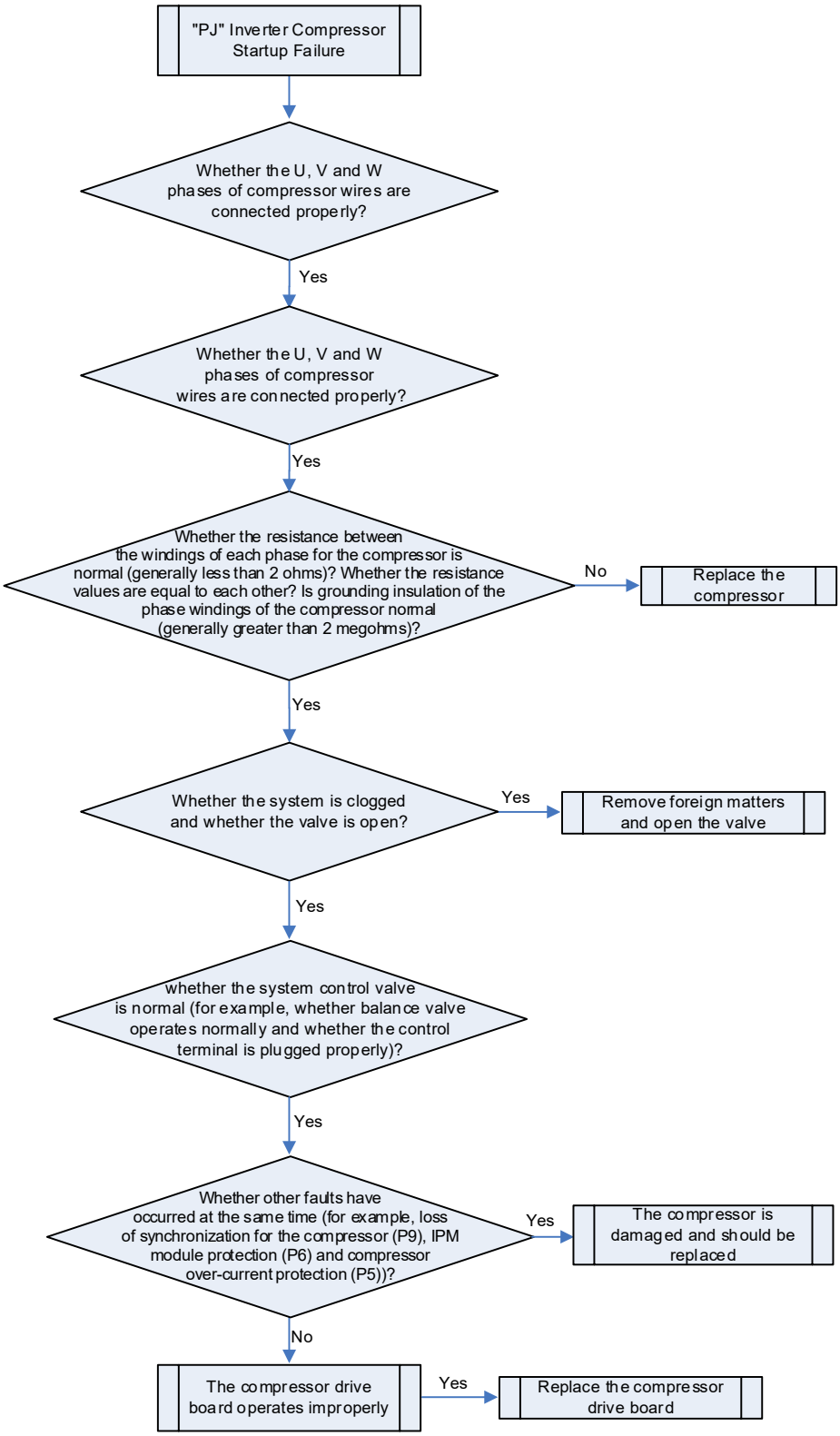
Possible causes:

■ Poor contact of compressor's UVW cables;

■ The compressor is damaged;

■ The compressor drive board operates improperly.

Troubleshooting:



2.146 "U0" Insufficient Warm-up Time for Compressor

Fault display: main board of master 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.

2.147 "U2" Incorrect Settings of Master unit Capacity DIP Switch/Jumper Cap

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

Applicable models: all master units

Fault diagnosis:

When the capacity DIP switch detected by the master unit's main board is inconsistent with the unit's actual capacity, or the jumper cap value detected by the master unit's main board is inconsistent with the actual unit, the fault is generated.

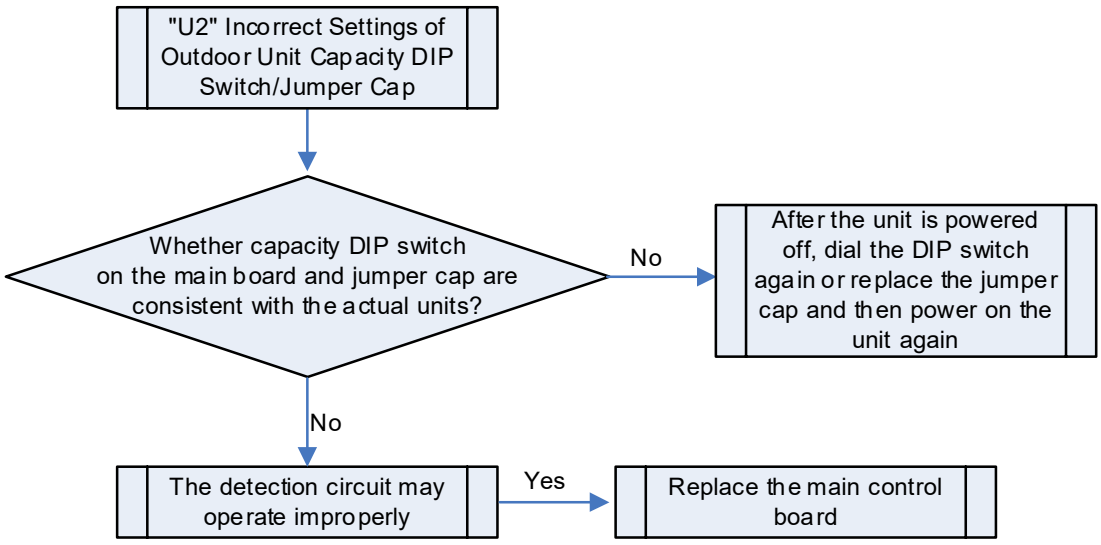
Possible causes:

■ 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:



2.148 "U3" Power Phase-Sequence Protection

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

Fault diagnosis:

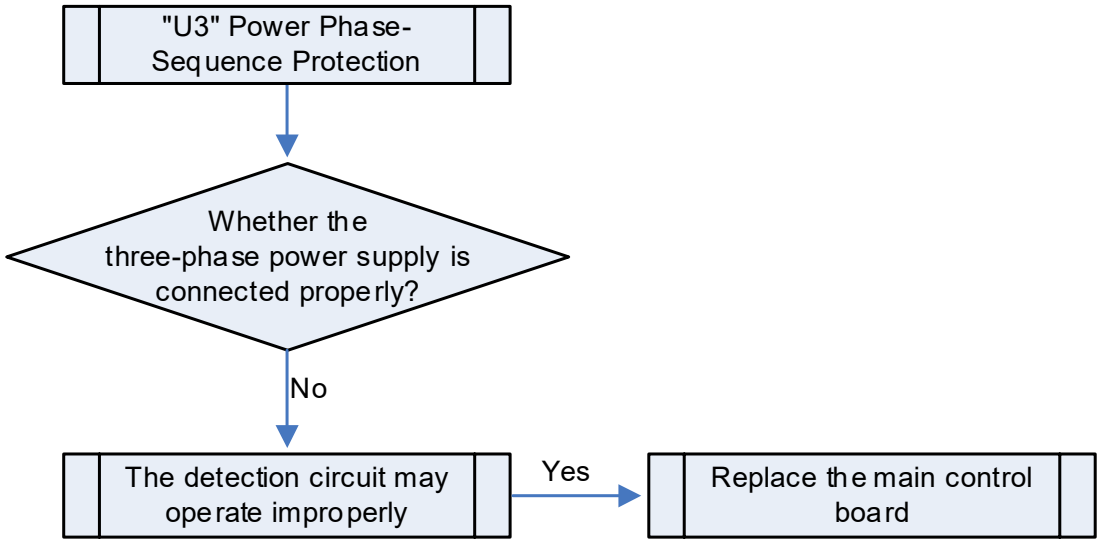
Check the three-phase power of the unit. If the power is connected incorrectly, thereby causing phase loss or reverse phase, the unit generates a fault.

Possible causes:

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

■ Abnormal detection circuit

Troubleshooting:



2.149 "U4" Refrigerant Loss Protection

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

Fault diagnosis:

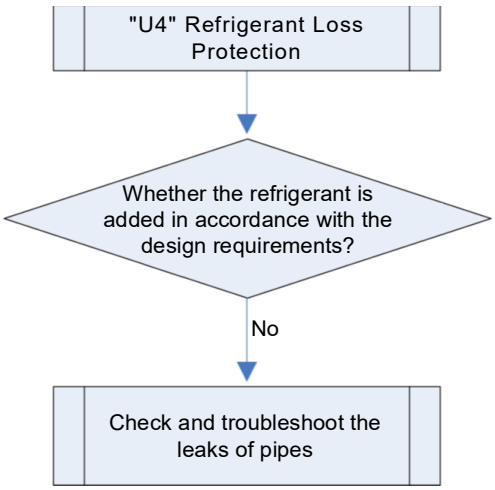
The system implements continuous statistics over 4 hours and detects the system's HP and branch air inlet and outlet temperature wrap issues through the pressure sensor. If the system high pressure (namely the corresponding saturation temperature) is below a certain value, the unit will trigger protection and limit startup and operation.

Possible causes:

■ Insufficient refrigerant in the unit;

■ The pipes leak.

Troubleshooting:



2.150 "U6" Abnormal Valve Prompt

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

Fault diagnosis:

During commissioning process, determine whether the check valve of the master 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 master unit is not open.

Troubleshooting: Reconfirm and open the check valve of the master unit.

2.151 "U8" Abnormal Pipes of the Indoor Unit

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

Fault diagnosis:

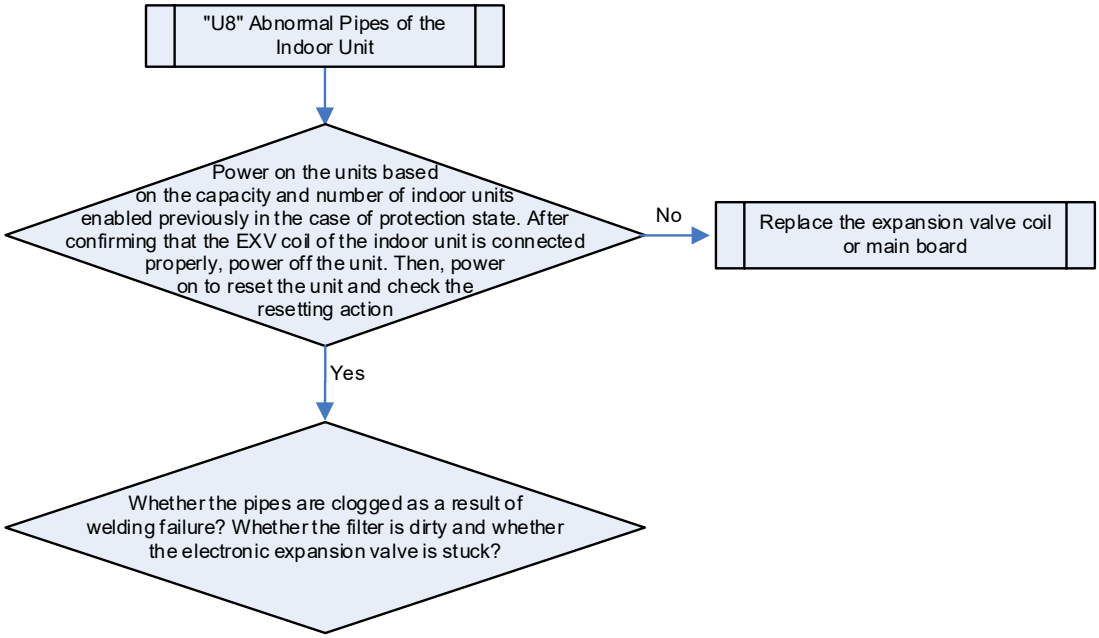
During commissioning process, check the temperature of the indoor unit's pipes to determine whether the pipes are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The indoor unit's pipes are blocked.

Troubleshooting:



2.152 "U9" Abnormal Pipes of Master Unit

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

Fault diagnosis:

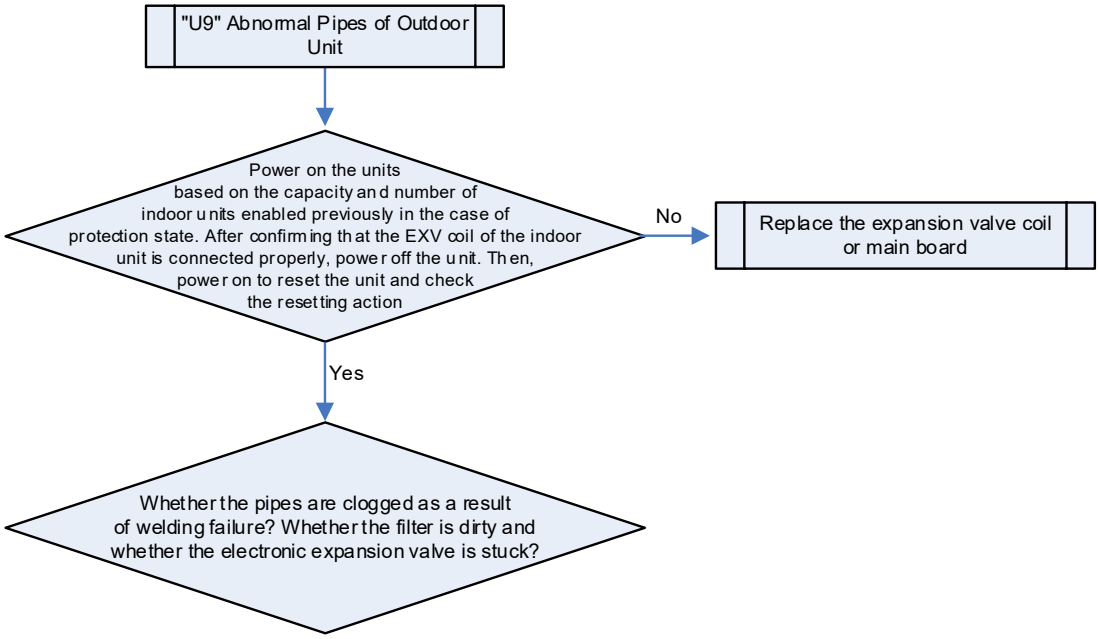
During commissioning process, check the pressure of the unit to determine whether the pipes of the master unit are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The master unit's pipes are blocked.

Troubleshooting:



2.153 "UC" Master Indoor Unit Set Successfully

Fault display: main board of master 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: --

2.154 "UL" DIP Switch Error of Compressor Emergency Operation

Fault display: main board of master 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.

2.155 "UE" Auto Refrigerant Charging Void

Fault display: main board of master 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.

2.156 “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

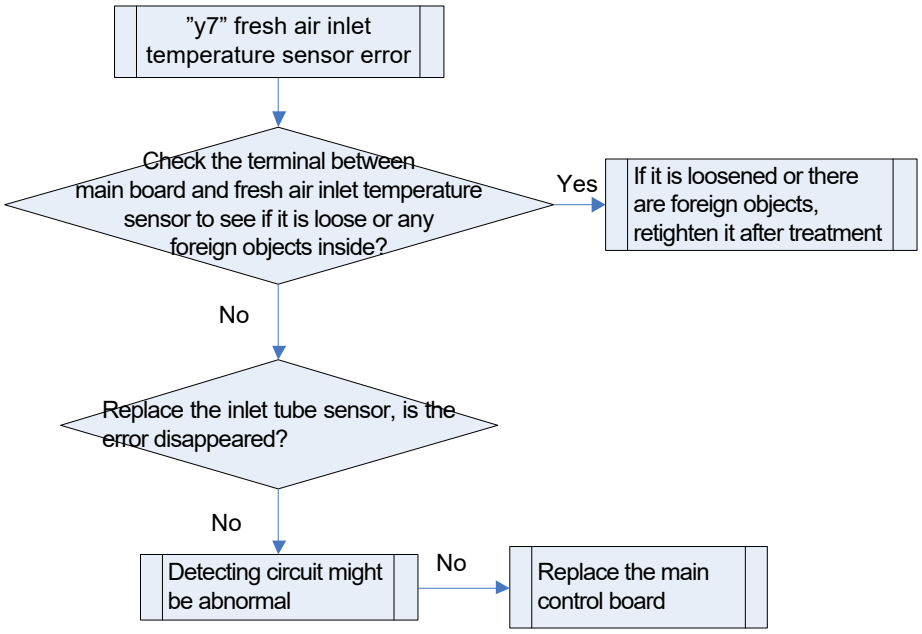
Possible reasons:

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

■Air inlet temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.157 “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.

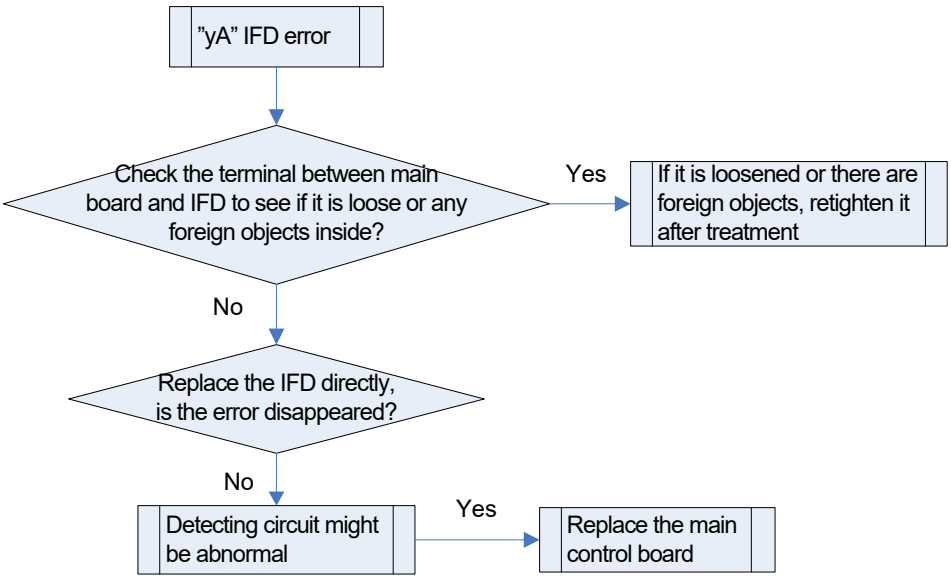
Possible reasons:

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

■IFD abnormality

■Detecting circuit is abnormal

Troubleshooting:



2.158 “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:

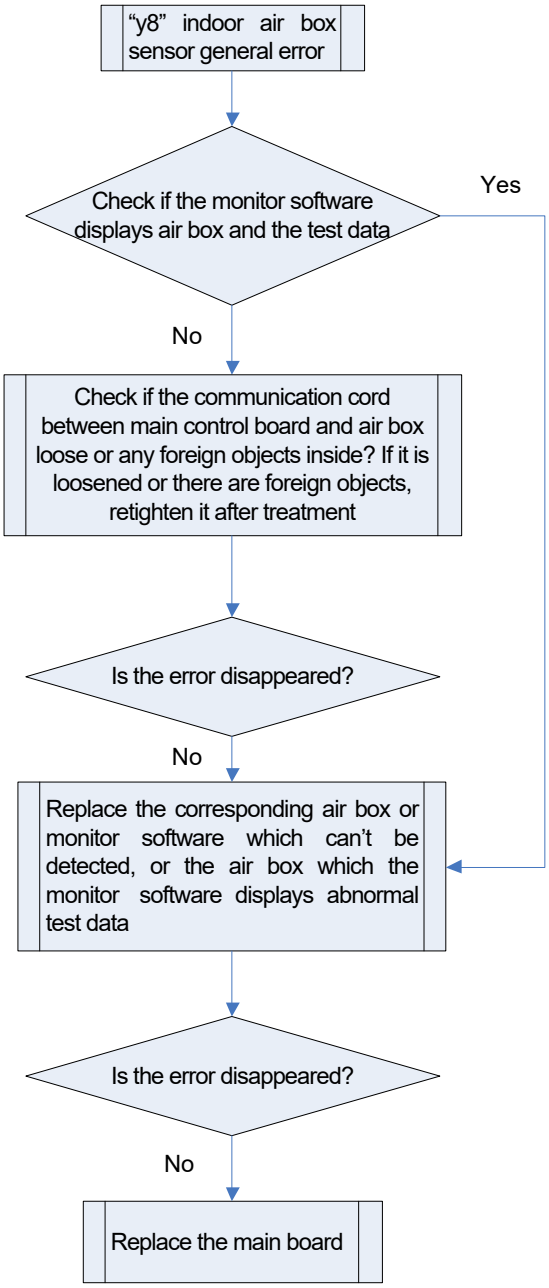
Main board, air box communication abnormality and air box test data (temperature, humidity and CO_2 concentration or PM2.5 concentration) has exceeded the set upper and lower limiting value.

Possible reasons:

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

■Air box detection is abnormal

Troubleshooting:



2.159 Ineffective Cooling and Heating

Applicable models: all indoor units

Fault diagnosis:

1) In cooling mode, when the electronic expansion valve is open to 2000PLS, the temperature of outlet pipes of the indoor unit coil is over 5°C greater than the temperature of inlet pipes of the indoor unit coil;
2) In heating mode, when the electronic expansion valve is open to 2PLS, the temperature of inlet pipes of the indoor unit coil is over 12°C less than the saturation temperature corresponding to the high pressure;

Possible causes:

■ The check valve of the master unit is not opened fully as required.

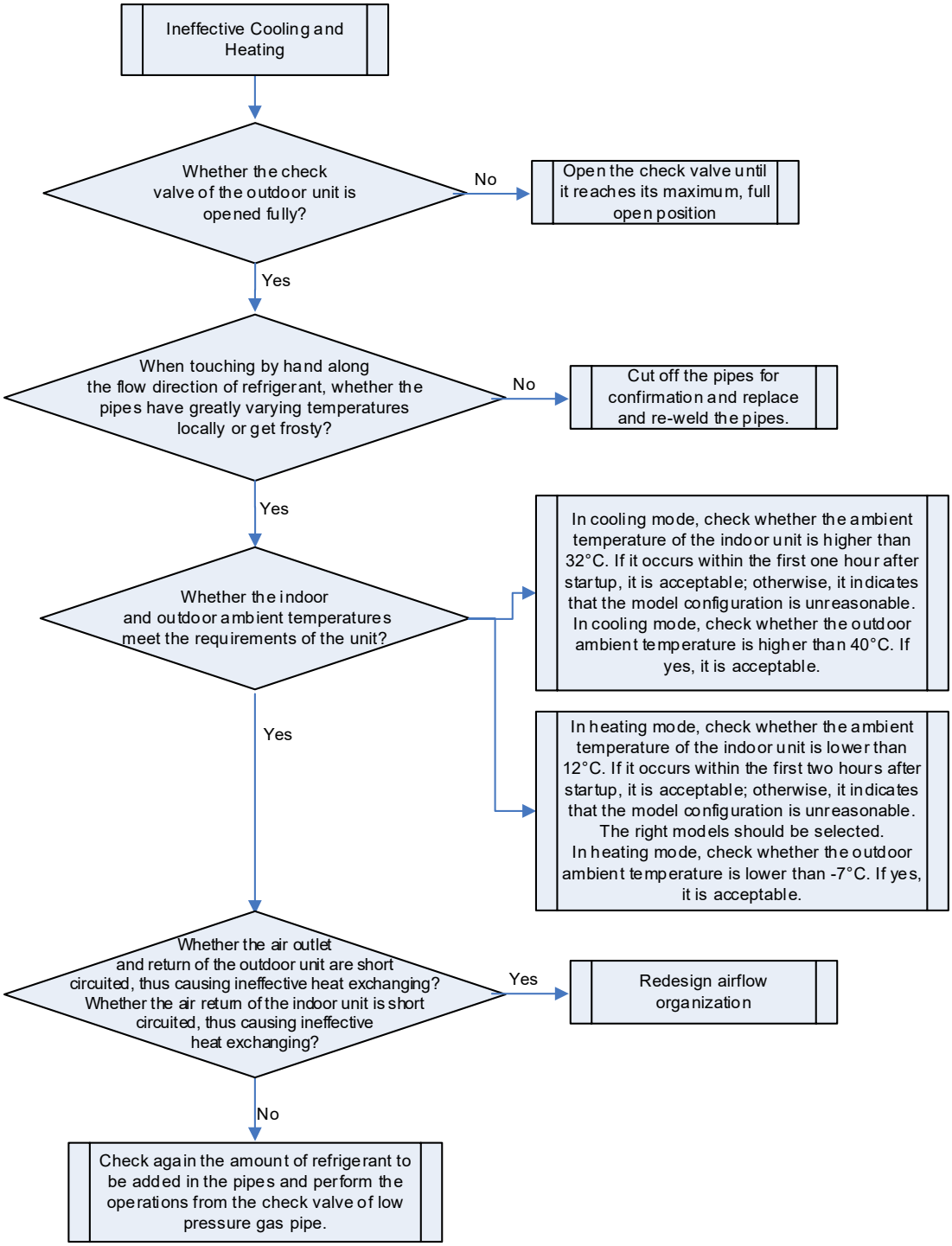
■ The unit pipes are clogged.

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

■ Airflow organization is set ineffectively.

■ The amount of refrigerant is insufficient.

Troubleshooting:



2.160 No Faults 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.

2.161"F2" Plate Type Heat Exchanger Inlet Pipe Temperature Sensor Fault

Fault display: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board. 

Fault Judgment Conditions and Methods:

Through the temperature wrap, inspect the AD value of the circuit sampling temperature wrap and judge the range of the AD value. Fault will be reported if the sampled AD value exceeds the upper or lower limit of the range within a continuous 30s.

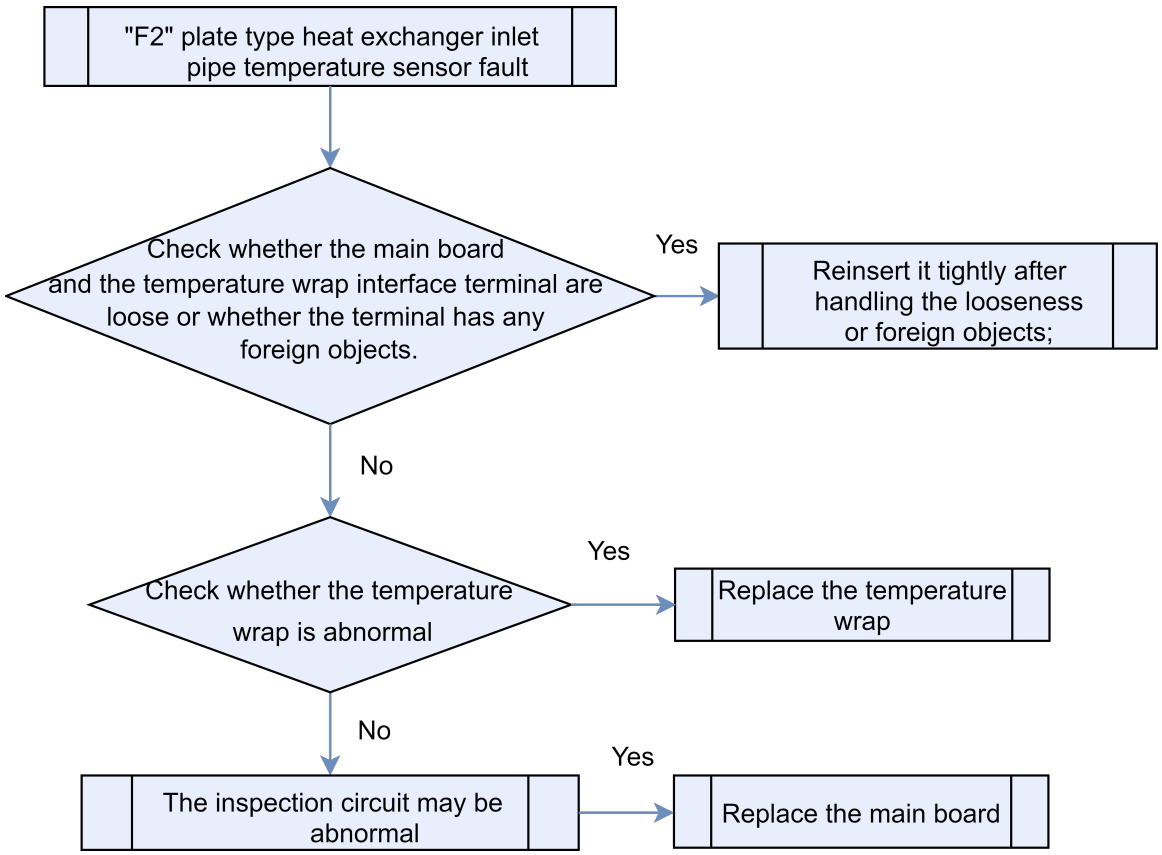
Possible causes:

■Bad contact between the temperature wrap and the main board interface terminal.

■Abnormal temperature wrap

■Abnormal inspection circuit

Troubleshooting:



2.162 "F4" Plate Type Heat Exchanger Outlet Pipe Temperature Sensor Fault

Fault display: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board. 

Fault Judgment Conditions and Methods:

Through the temperature wrap, inspect the AD value of the circuit sampling temperature wrap and judge the range of the AD value. Fault will be reported if the sampled AD value exceeds the upper or lower limit of the range within a continuous 30s.

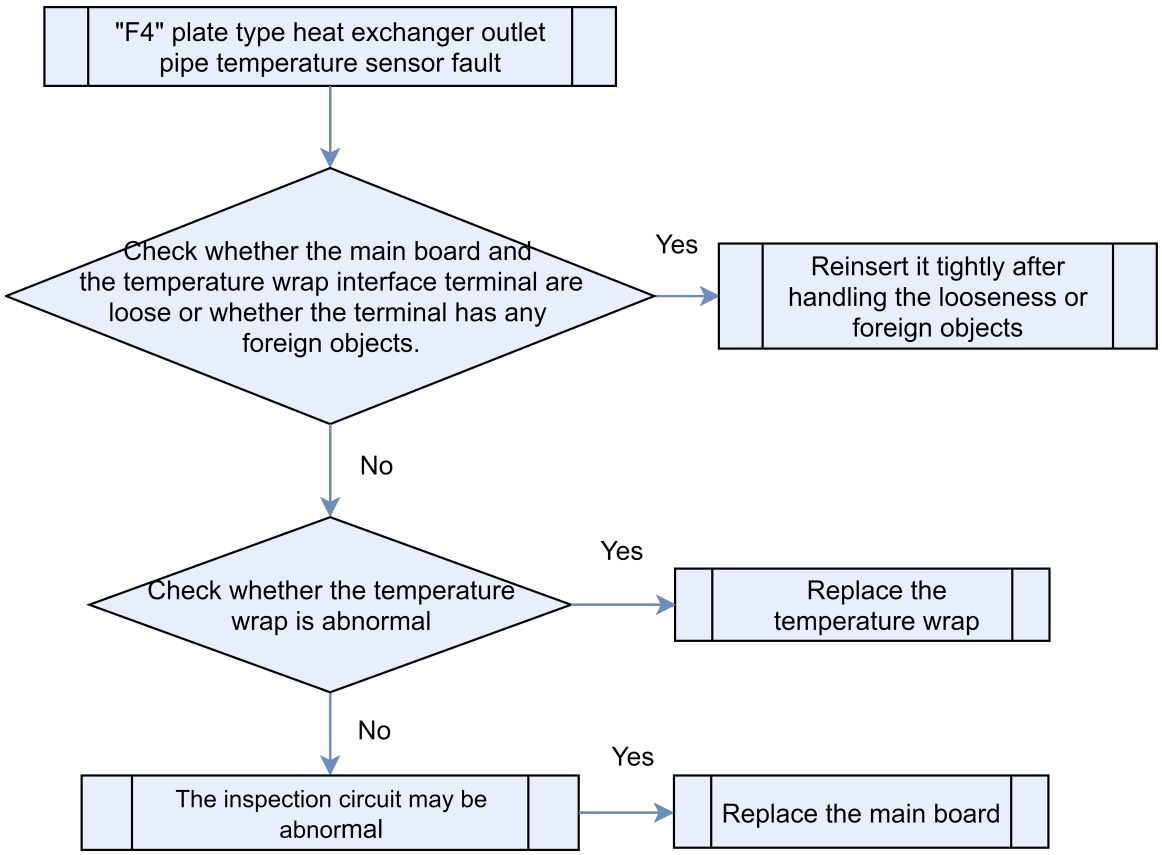
Possible causes:

■Bad contact between the temperature wrap and the main board interface terminal.

■Abnormal temperature wrap

■Abnormal inspection circuit

Troubleshooting:



2.163 "Fy" Water Inlet Temperature Wrap Fault

Fault display: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board. 

Fault Judgment Conditions and Methods:

Through the temperature wrap, inspect the AD value of the circuit sampling temperature wrap and judge the range of the AD value. Fault will be reported if the sampled AD value exceeds the upper or lower limit of the range within a continuous 30s.

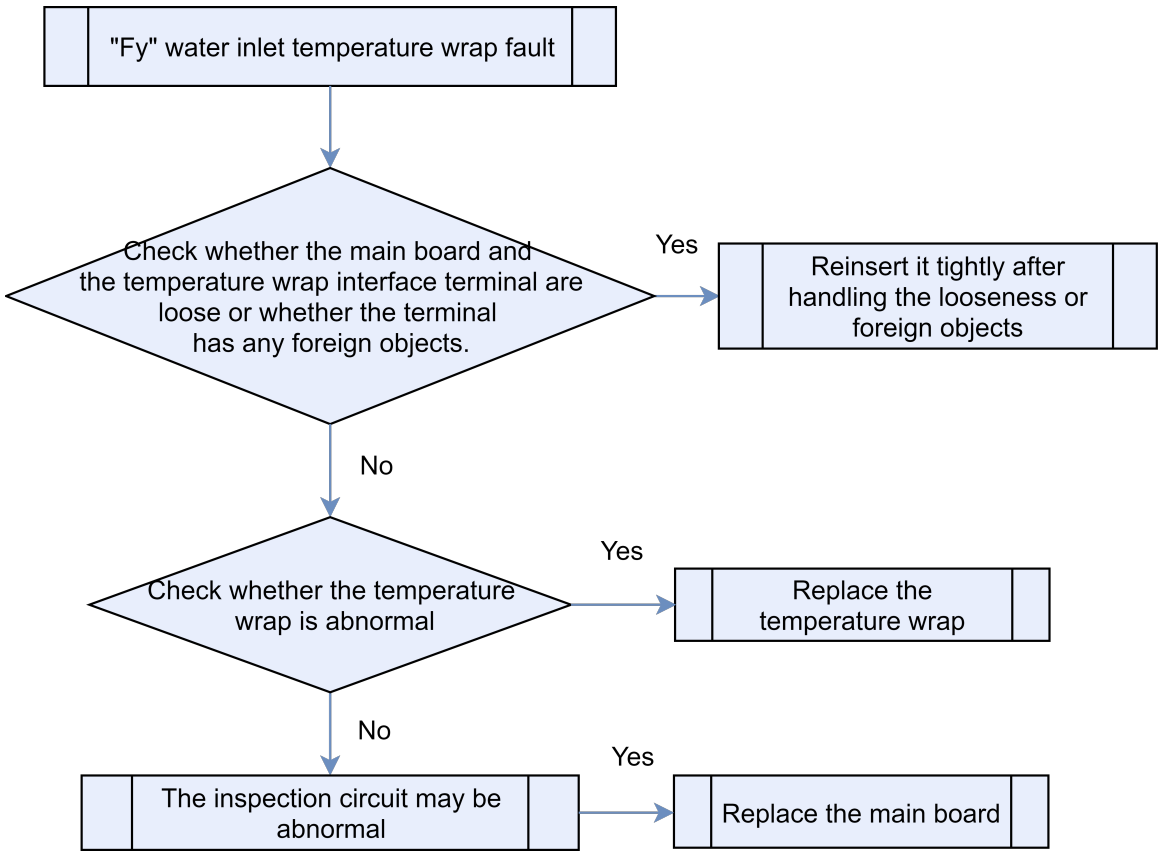
Possible causes:

■Bad contact between the temperature wrap and the main board interface terminal.

■Abnormal temperature wrap

■Abnormal inspection circuit

Troubleshooting:



2.164 "by" Water Outlet Temperature Wrap Fault

Fault display: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board. 

Fault Judgment Conditions and Methods:

Through the temperature wrap, inspect the AD value of the circuit sampling temperature wrap and judge the range of the AD value. Fault will be reported if the sampled AD value exceeds the upper or lower limit of the range within a continuous 30s.

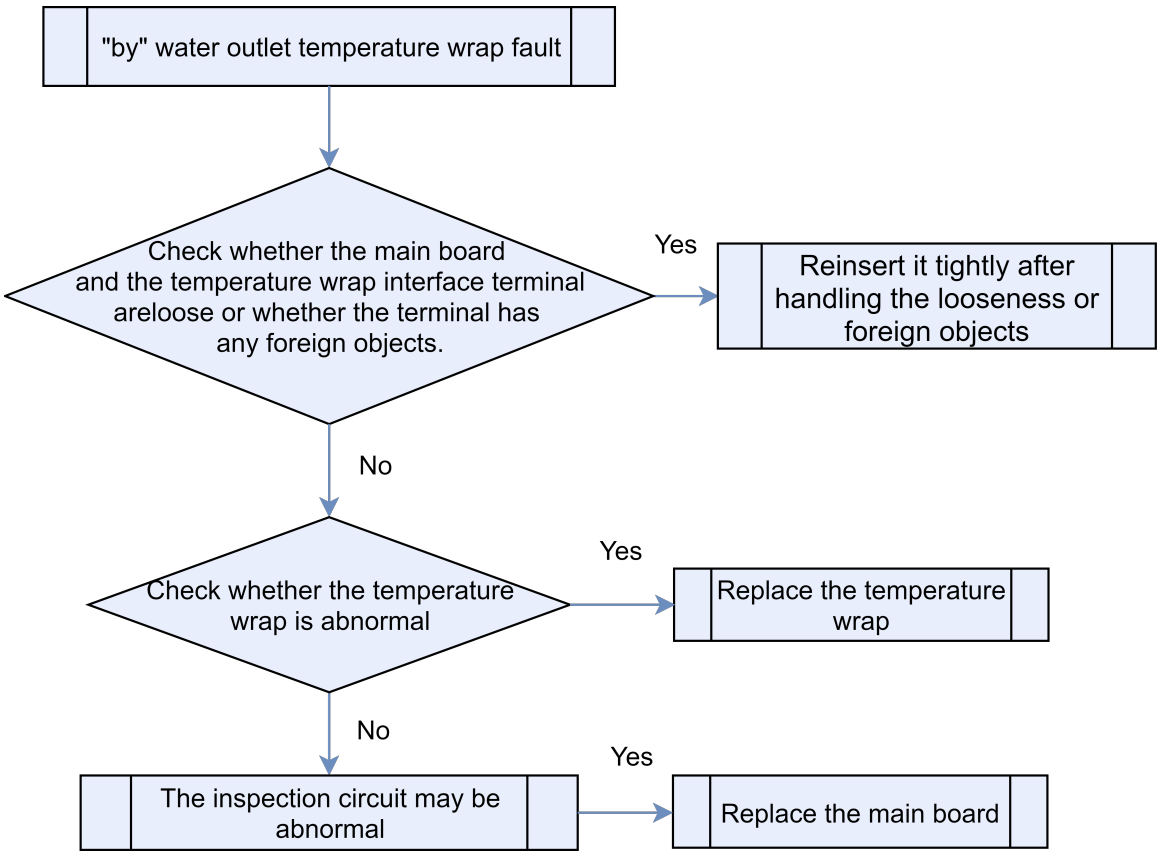
Possible causes:

■Bad contact between the temperature wrap and the main board interface terminal.

■Abnormal temperature wrap.

■Abnormal inspection circuit.

Troubleshooting:



2.165 "JJ" Water Inlet Undertemperature Protection

Fault display: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board. 

Fault Judgment Conditions and Methods:

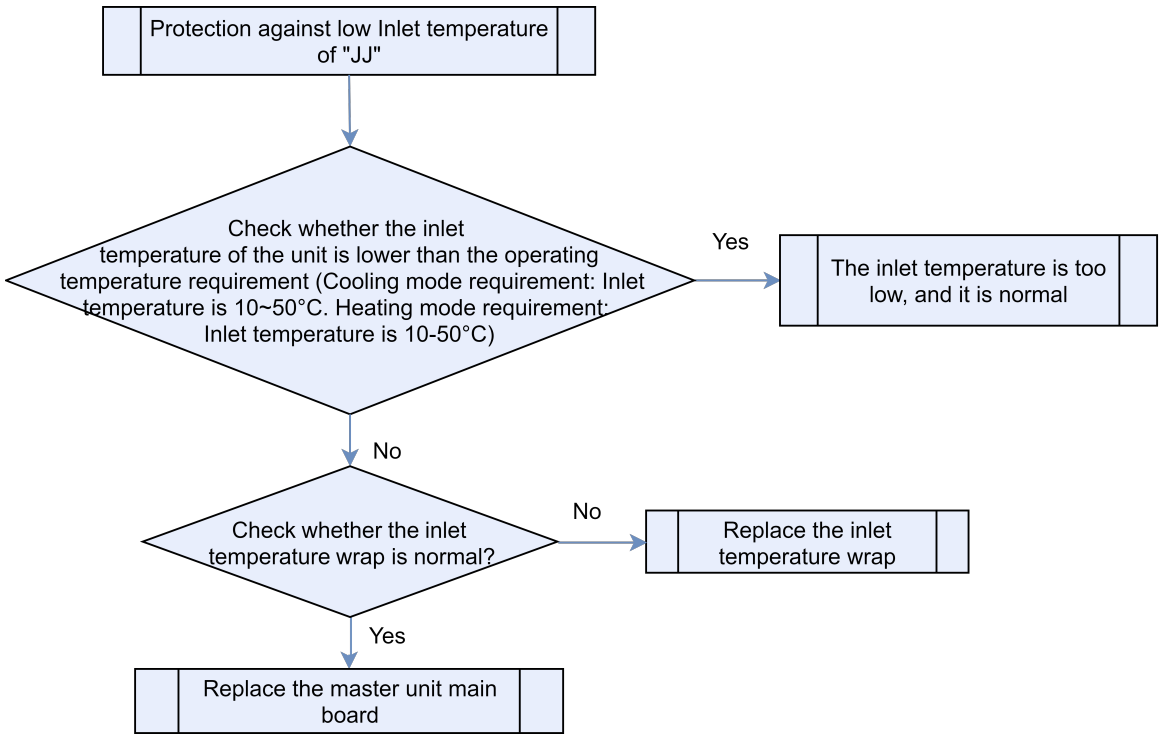
The inlet temperature is detected through the inlet temperature wrap. If the detection value stays below the range value for 3 seconds, the system will shut down for protection.

Possible causes:

■Abnormal temperature wrap.

■The inlet temperature is too low.

Troubleshooting:



2.166 "JC" Water Flow Switch Protection

Fault display: Display of the master unit main board, indoor unit line controller, and indoor unit receiving light board 

Fault Judgment Conditions and Methods:

The inlet temperature is detected through the inlet temperature wrap. If the detection value falls below the range value for 3 seconds, the system protection will shut down. Determine by detecting whether the water flow switch is operating. If the water flow switch is disconnected, it is judged that the water flow is too low and the system protection will shut down.

Possible causes:

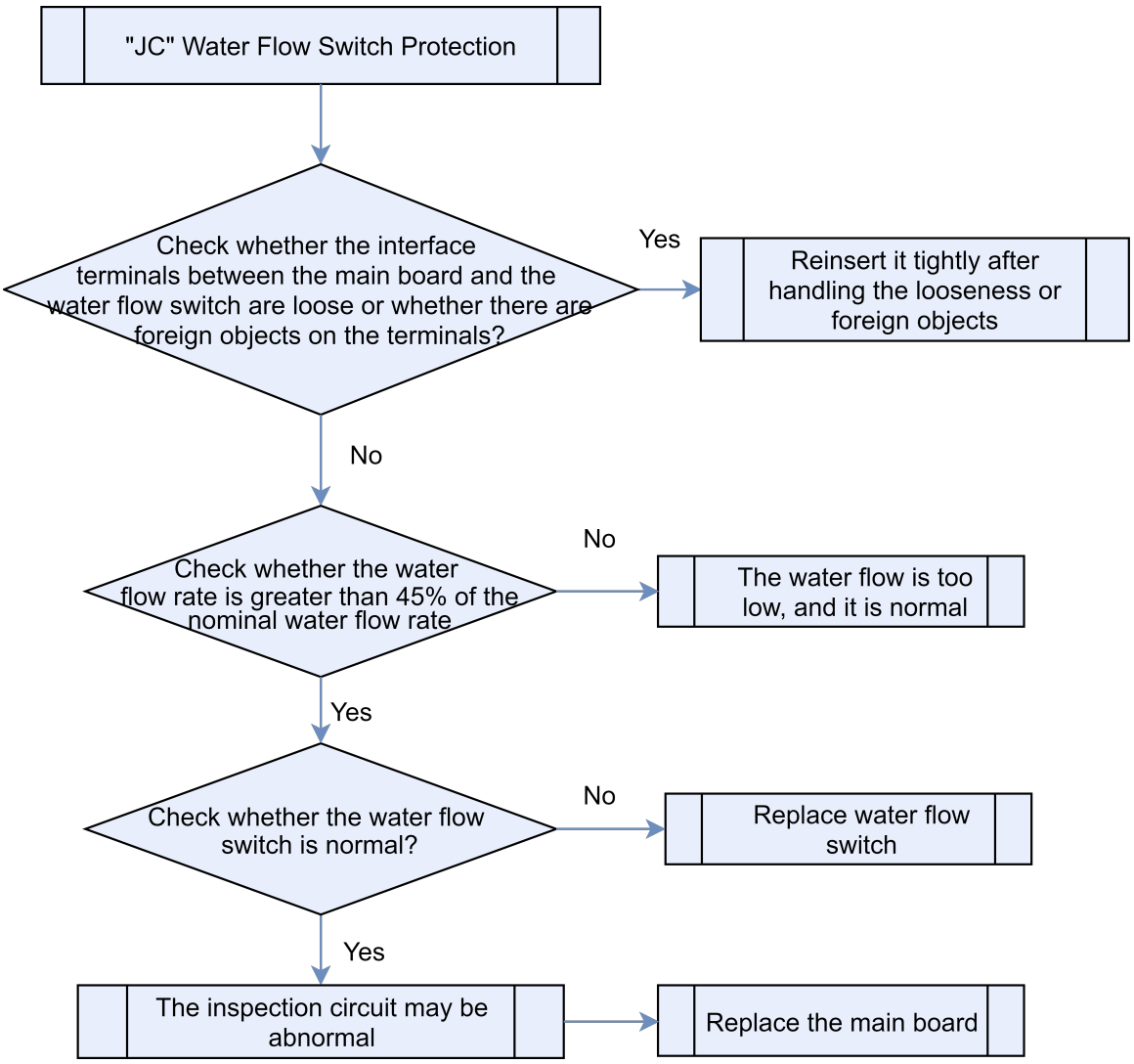
■Poor contact between the water flow switch and the main board interface terminal.

■The water flow switch does not work normally.

■Abnormal inspection circuit.

■The water flow is too low.

Troubleshooting:



2.167 "Jn" Water Flow Abnormality Protection

Fault display: Display of the host main board, indoor unit line controller, and indoor unit receiving light. 

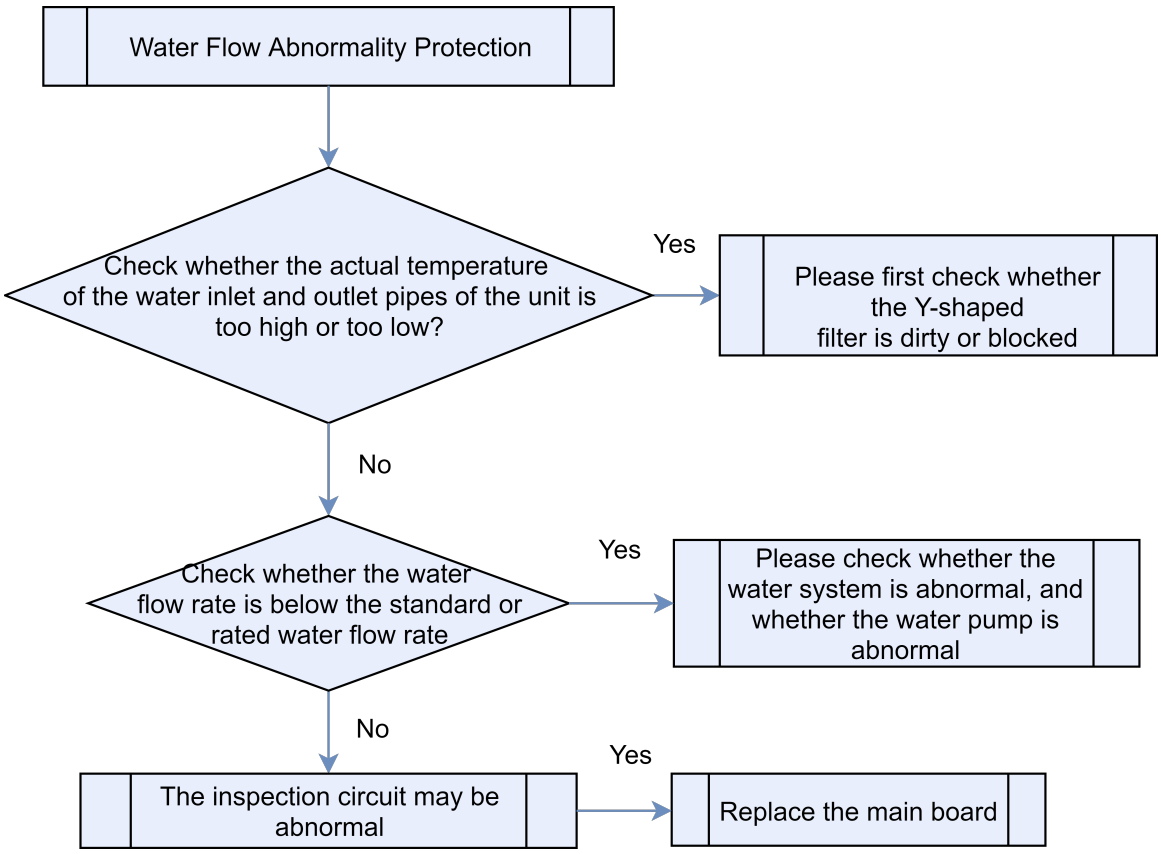
Fault Judgment Conditions and Methods:

Detect the temperature difference between the inlet and outlet of the unit through the inlet and outlet temperature wraps provided by the unit, to determine whether the water flow of the unit is abnormal. During the operation of the unit, if the temperature difference between the inlet and outlet of the unit exceeds 15°C for 60 seconds, the system protection will shut down.

Possible causes:

■The water flow rate is too low (such as dirty or blocked Y-shaped filter or abnormal water pump that has shut down)

Troubleshooting:



2.168 "Jy" Inlet Water Temperature Abnormal Protection

Fault display: Display of the host main board, indoor unit line controller, and indoor unit receiving light 

Fault Judgment Conditions and Methods:

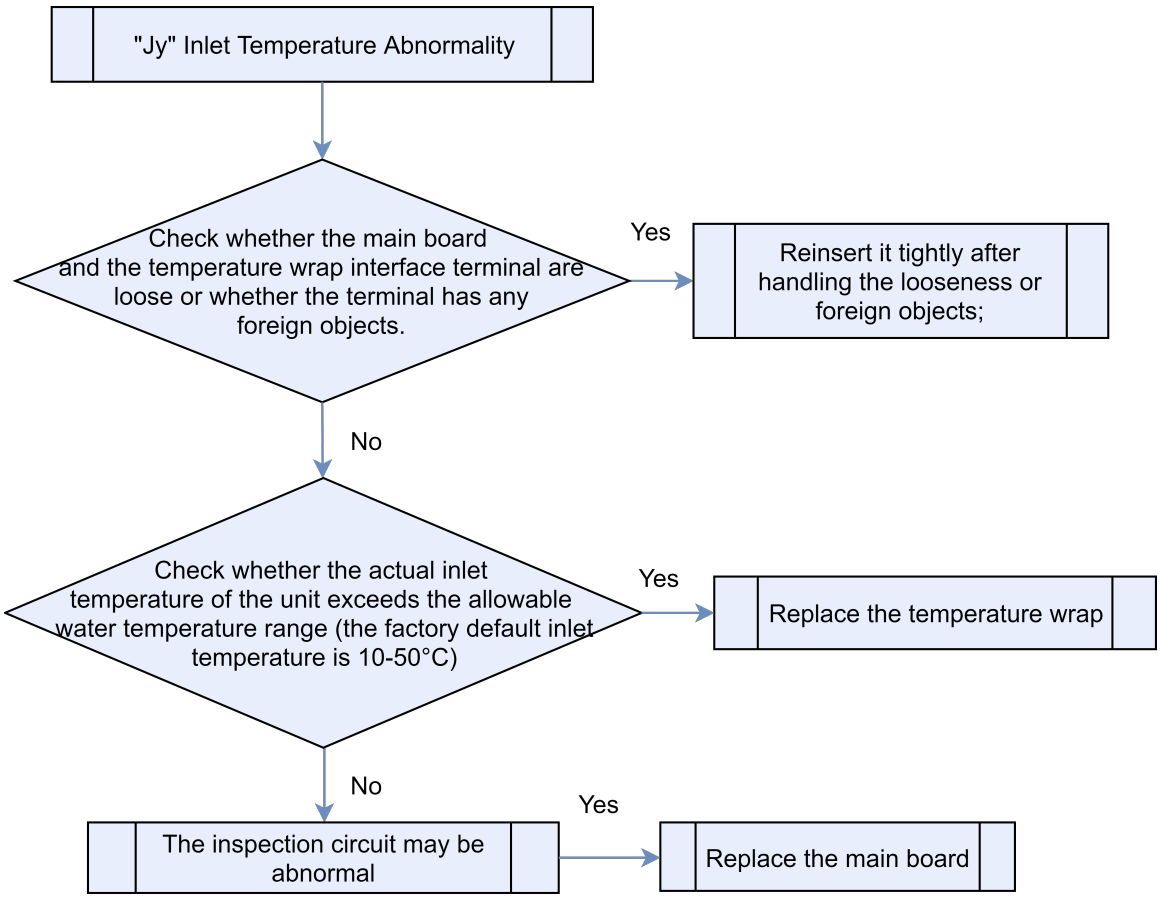
The inlet temperature of the unit is detected through the inlet temperature wrap provided by the unit to determine whether it is within the allowable operating water temperature range (the factory default inlet temperature range is 10~50°C), in order to avoid affecting the reliability of the unit after long-term overload operation. During the operation of the unit, if the inlet temperature of the unit is below 5°C or above 55°C for 60 seconds, the system protection will shut down (the protection value can be adjusted and set).

Possible causes:

■Abnormal temperature wrap.

■The inlet temperature shall be below or above the factory default allowable inlet temperature range (10~50°C).

Troubleshooting:


"Jy" Inlet Temperature Abnormality
Check whether the main board and the temperature wrap interface terminal are loose or whether the terminal has any foreign objects.
Yes
Reinsert it tightly after handling the looseness or foreign objects;
No
Check whether the actual inlet temperature of the unit exceeds the allowable water temperature range (the factory default inlet temperature is 10-50°C)
Yes
Replace the temperature wrap
No
The inspection circuit may be abnormal
Yes
Replace the main board

3 Non-fault Type Troubleshooting

WARNING:

① If an abnormal situation (such as peculiar smell) occurs, please stop the operation immediately and turn off the main power supply, and then contact Gree authorized maintenance center. If the unit continues to operate under abnormal situation, the air conditioner will be damaged and an electric shock or fire accident may result.

② Do not maintain the air conditioner by yourself, misoperation may cause electric shock or fire hazard. Please contact professional personnel of Gree authorized maintenance center to maintain.

● Before asking for maintenance, please check the following issues first.

Problems	Causes	What to do
Unit doesn't work.	Fuse or circuit breaker is cut off.	Replace fuse or reset the circuit breaker.
	Power failure.	Restart unit when power is restored.
	Power supply is not connected	Connect the power.
	Remote controller's power is not enough.	Replace new battery.
	Remote controller is out of the control range.	Control range is within 8m.
Unit runs but stops immediately.	Air inlet or air outlet of indoor and master units is blocked.	Clear obstructions.
Abnormal cooling or heating.	Air inlet or air outlet of indoor and master units is blocked.	Clear obstructions.
	Improper temp setting.	Adjust setting at remote controller or wired controller.
	Fan speed is set too low.	Adjust setting at remote controller or wired controller.
	Wind direction is not correct.	Adjust setting at remote controller or wired controller.
	Door or window is open.	Close the door or window.
	Direct sunshine.	Draw curtain or louver.
	Too many people in the room.	—
	Too many heat resources in the room.	Reduce heat resources.
	Filter is blocked and dirty.	Clean the filter.

NOTE:

If problem cannot be solved after checking the above items, please contact Gree service center and describe the cases and models.

● Following circumstances are not malfunctions.

Phenomenon		Causes
Unit doesn't run	When unit is started immediately after it is just turned off	Overload protection switch makes it run after 3 minutes delay
	When power is turned on	Standby operating for about 1 minute
Mist comes from the unit	Under cooling	Indoor high humidity air is cooled rapidly
Noise is emitted	When the power supply is connected, there is small "dada" sound.	It is the sound of startup action of electronic expansion valve.
	When the system is conducting cooling , defrosting or oil return, there is continuous "sa——" sound.	This is the sound of refrigerant flowing inside the unit.

Phenomenon		Causes
Noise is emitted	When the system is switching cooling and heating modes; during heating operation, the unit enters or quits defrosting operation or oil return operation, there is “chi——” sound.	This is the sound for direction reversal of 4-way valve.
	When the system is started or stopped for a short time, you can hear the sound of “sa——”; you can also hear this sound for a short time after the start or stop of the defrosting operation.	This is the sound produced when the refrigerant stops or changes the flow.
	When the system is in cooling operation or after it stops running, a continuous “sa——” sound can be heard	This is the operation sound of drain system.
	When the system is running or after it stops running, a “creaking” sound can be heard.	This is the sound produced when plastic parts such as panel expansion and contraction due to temperature changes.
	When the system is in heating operation, after the indoor unit stops running, the sound like running water can be heard.	The unit is melting the frost on the master unit, please wait about 10 minutes (due to different unit models, the waiting time will vary).
	When the indoor unit stops running, a faint “sa——” sound or “gurgling” sound can be heard.	This sound can be heard when other indoor units are running. This is to prevent oil and refrigerant from staying in the indoor unit, and to keep a small amount of refrigerant flowing.
	When the unit is running, the operating sound of the compressor changes.	This is caused by changes in compressor operating frequency.
	During the operation of the unit or after the operation is started or stopped, a continuous “sa——” sound can be heard.	This is the sound produced when the refrigerant bypass valve operates.
	When the operating mode of the unit changes, the indoor unit and master unit will produce “sa——” and “gurgling” sounds.	This is the sound produced when the refrigerant stops or changes flow.
	The sound from the master unit can be heard indoors	This is because the master unit is installed close to the window or wall, and the sound insulation is poor, and the external noise is transmitted in.
There is dust blowing out from the unit	Start operation after it is not used for a long time	Dust in indoor unit is blew out
The unit emits odor	Operating	The odor of the air conditioner is sucked into the room and then blown out
The indoor unit is still running after shutting down	The indoor unit is still running after shutting down	The fan of indoor unit will continue to work for 20 to 70 seconds to fully use the residual cooling or heat of the heat exchanger, and to prepare for the next use.
Mode conflict	Cooling or heating mode cannot start up	When the selected operation mode of the indoor unit conflicts with the operation mode of the master unit, after five seconds, the indoor unit error indicator flashes or the remote controller displays the operation conflict, and the indoor unit shuts down. At this time, the indoor unit can be converted to run with the master unit. The mode can be restored to normal without conflict. The cooling mode and dry mode do not conflict, and the air supply does not conflict with any mode.

Chapter 4 Maintenance

WARNING!

During the maintenance of a modular unit, all the outside units must be powered on and off concurrently. Avoid doing so to only some of the master 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.

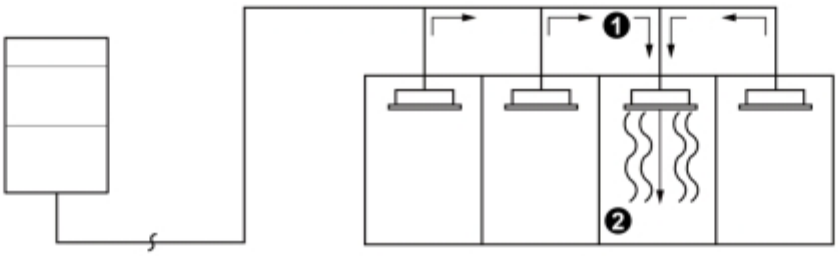
(2) The multi VRF unit adopts R410A refrigerant. When installing in the space with people, the refrigerant amount shall not exceed the max.allowable concentration. Otherwise, suffocation will occur. For example, the max.allowable concentration for refrigerant of European safety standard and regulation is 0.44kg/m^3.

Max. refrigerant charge (kg) = Room volume (m^3) × 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.



❶ Flow direction of refrigerant leakage

❷ Room for refrigerant leakage.

Since the concentration of refrigerant is greater than that of air, pay attention to the spaces where the refrigerant may residue, for example, the 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

Additional charging amount of ODU refrigerant B(kg)②		ODU capacity(kW)						
IDU/ODU rated capacity connection ratio C①	Total quantities of IDU	25.2	28	33.5	40	45	50.4	56
50%≤C≤90%	N <4	0	0	0	0	0	0	0
	N≥4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
90%<C≤135%	N<4	0	0	0	0.5	0.5	0.5	0.5
	8>N≥4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	N≥8	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Notes:

① Rated capacity configuration rate of indoor unit and master unit C = sum of indoor unit rated cooling capacity / sum of master 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:

Master 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 0.5 kg.

Additional refrigerant quantity B for 45kw module is 0.5 kg.

So, ∑Refrigerant charging amount B of every module=0.5+0.5=1 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+1=21kg.

For example 2:

Master 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 master unit subjects to combinations that is currently available.

3 Refrigerant Charging Method

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

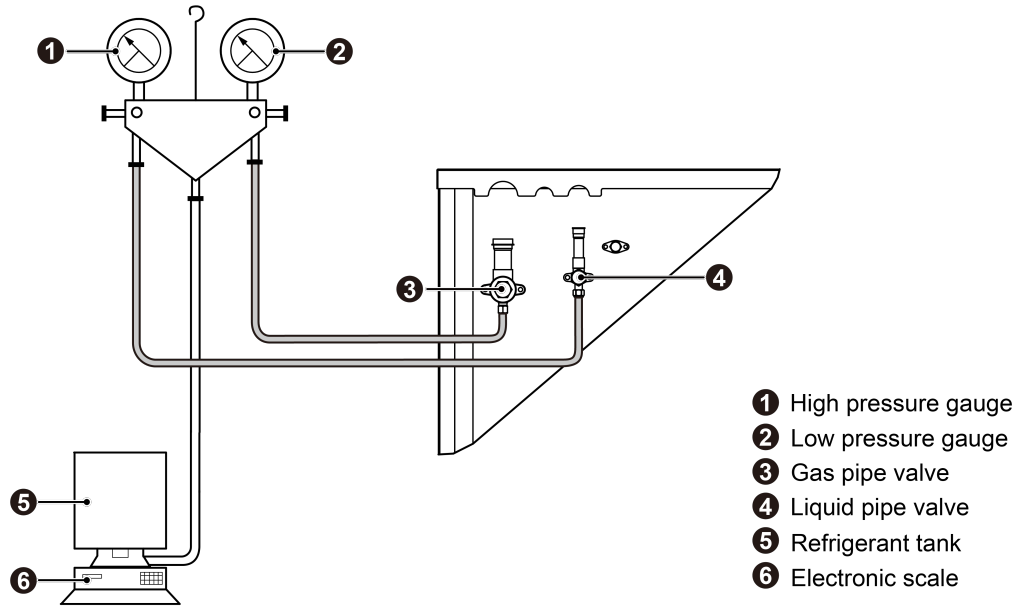
3.1 Pre-charging of Refrigerant.

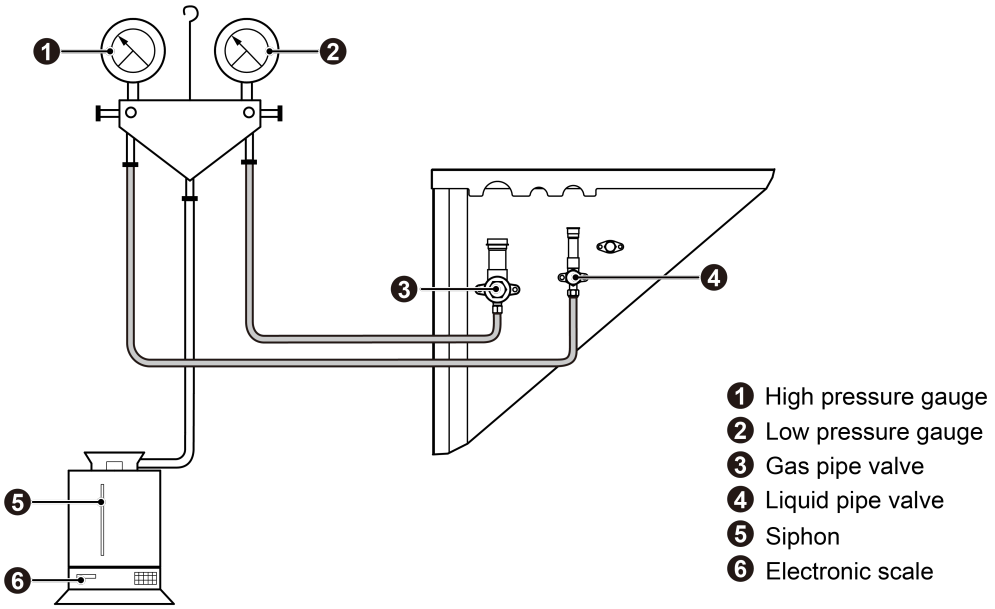
Step 1: Connect the pipe of high pressure gauge of the pressure gauge to the detection port of liquid pipe, the pipe of low pressure gauge to the detection port of gas pipe valve, and the pipe of intermediate pressure gauge to the vacuum pump. Put through the power for the vacuum pump to conduct the vacuum drying work.

Step 2: Once vacuum drying is completed, close the high pressure gauge valve and the low pressure gauge valve. Disassemble the intermediate gauge pipe and the vacuum pump connection end, and then connect the refrigerant tank.

Step 3: Properly loosen the pipe of intermediate gauge and the connection end of pressure gauge, slightly open the refrigerant tank valve, and empty the pipe of intermediate gauge. After that, retighten the joint and open the refrigerant tank valve.

Step 4: If the refrigerant tank itself does not have a siphon, then the refrigerant tank needs to be inverted and placed on the electronic scale to record the current weight of m1; if the refrigerant tank itself has a siphon, the refrigerant tank should be kept in an upright state, and record the current weight of m1.





Step 5: Open the high pressure gauge valve (the low pressure gauge valve remains closed), charge the system with refrigerant, and record the weight change of the refrigerant tank.

Step 6: When refrigerant tank is over and the refrigerant can't be charged to the system any more, record the current weight of m2.

Step 7: Close the high pressure gauge valve and replace the refrigerant tank.

Step 8: Re-execute "step 3".

Step 9: Repeat "step 5" and "step 6" to record the weight of m3 before charging refrigerant and the weight of m4 after charging refrigerant.

Step 10: If the refrigerant cannot be continuously charged into the system and the calculated added amount of refrigerant has not been fully charged into the system, record current total pre-charging amount:

m= (m1-m2) + (m3-m4) +…+ (mn-1-mn)

Remained refrigerant for start-up charging m`=M-m

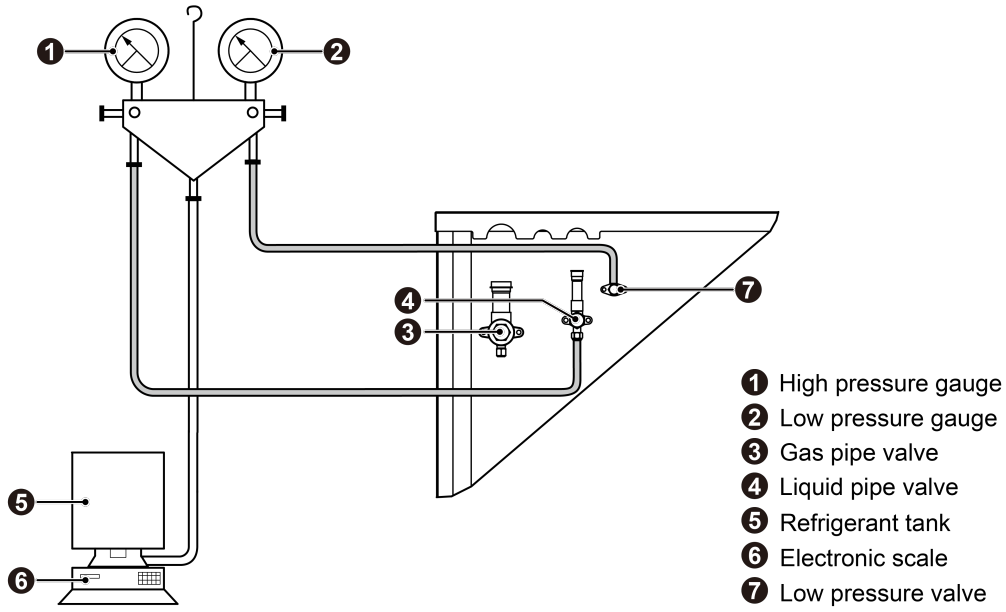
"M" is the calculated total required refrigerant-charging volume.

If the amount of pre-charging refrigerant "m" has reached the total added amount of refrigerant for the system, close the refrigerant tank valve immediately to complete the refrigerant-charging work. Skip to the "step 11".

Step 11: Complete the refrigerant-charging work and remove the pressure gauge, etc.

3.2 Start-up Charging of Refrigerant

Step 1: Close the refrigerant tank valve and reconnect the pipe of pressure gauge. Remove the pipe of low pressure gauge from the check port of gas pipe valve and connect it to the low pressure check valve (as shown in the following figure).



Step 2: Fully open the liquid pipe valve and gas pipe valve of each module.

Step 3: Make the complete unit enter into debugging operation by the debugging software or the main board of master unit. (see the debugging part for the specific operation).

Step 4: When it comes to the procedure of charging refrigerant, open the refrigerant tank valve and charge the residual refrigerant “m`”.

Step 5: When all refrigerant has been charged, close the refrigerant tank valve and wait until the automatic debugging for the complete unit is finished.

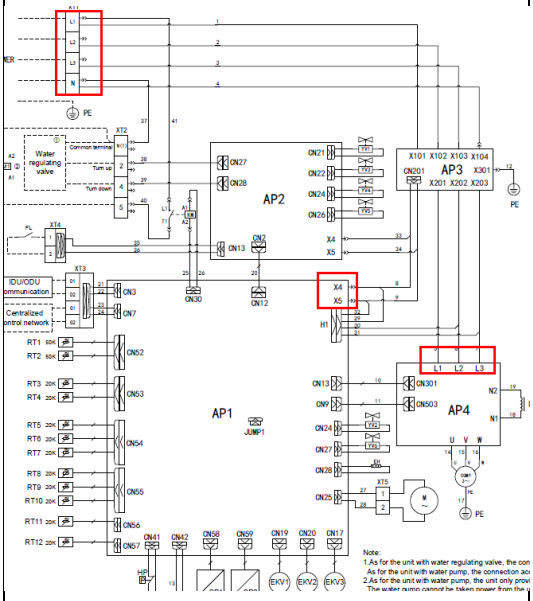
Step 6: Once debugging is finished, disassemble the pressure gauge, etc., to complete the refrigerant-charging work.

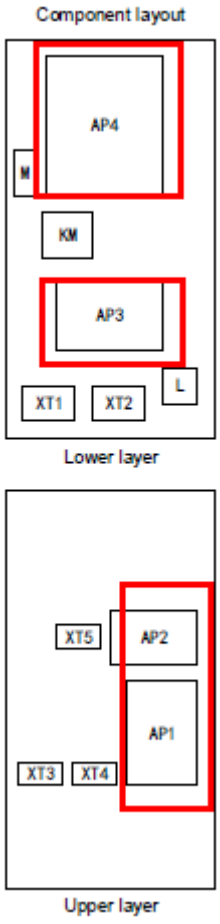
4 Inspection of Key Parts

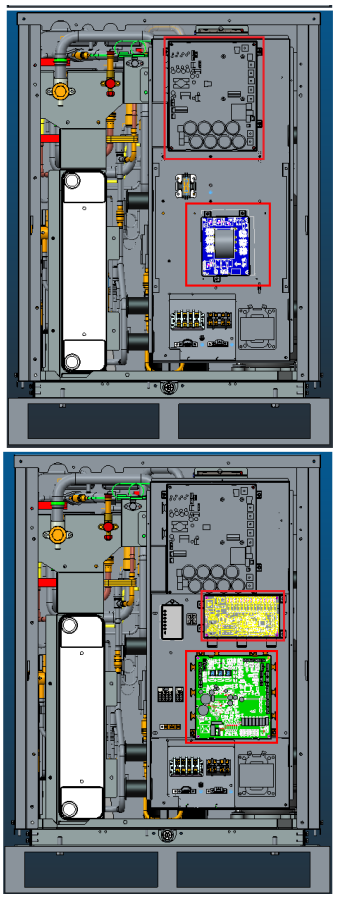
4.1 Power

Specifications	Description
The power supplies of the compressor and fan comprise the following three parts: ① The specifications of the input power are 380-415V 3N~ 50/60Hz+ neutral line and earth line. ② The drive board can convert AC power to DC power of about 540 V (1.41 x power voltage). ③ DC-AC three-phase inverter.	Use of power to the main control board: ① Phase protection. ② Providing 220V AC power for the solenoid valve coil and 4-way valve coil. ③ Generating the low-voltage DC power.

Circuit diagram	Layout of electrical appliance box	Physical position
Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X		







4.1.1 Mechanical Inspection

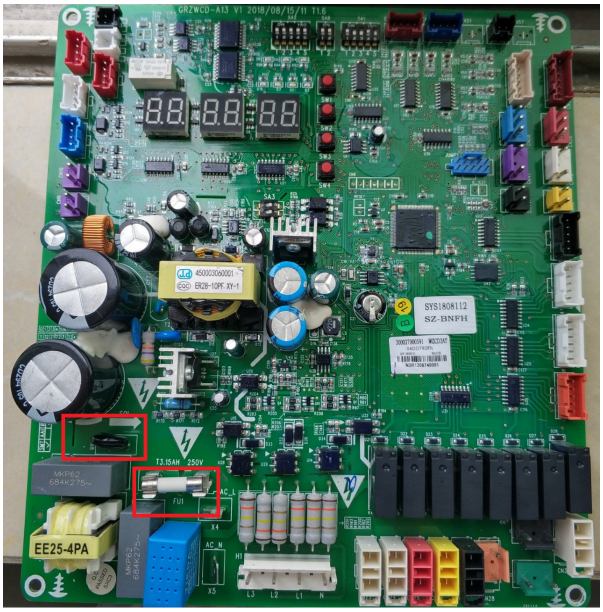
(1) Confirm that the unit power is disconnected.

(2) Remove the electrical appliance cover.

(3) Check whether the power cable is fixed on the wiring board.

(4) Check whether the fuses on the main board and filter board are damaged.

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



4.1.2 Electrical Inspection

Check the power cable from the main switch board to the ODU:

(1) Use an ohmmeter of at least 500V DC to check whether the insulation resistance between each phase and the ground reaches at least 1 megohm. Small insulation resistance indicates a potential electric leakage.

Warning: Electric shock

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

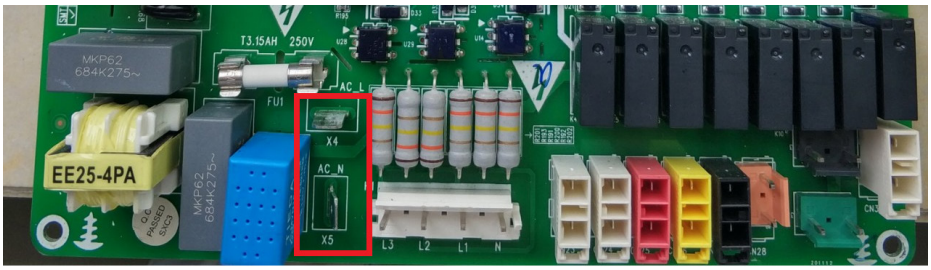
The power voltage between two phases is 380VAC±10%.

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

Voltage between L1 and N: 220 VAC.

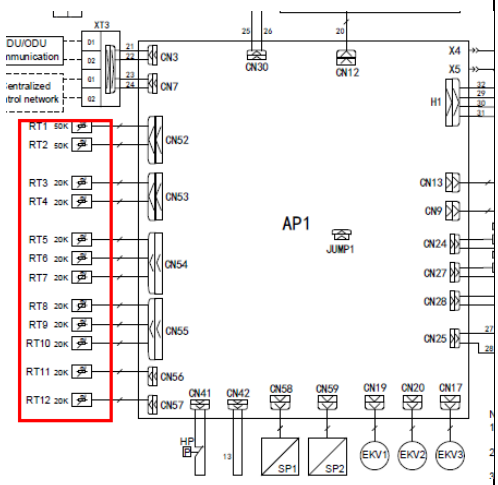
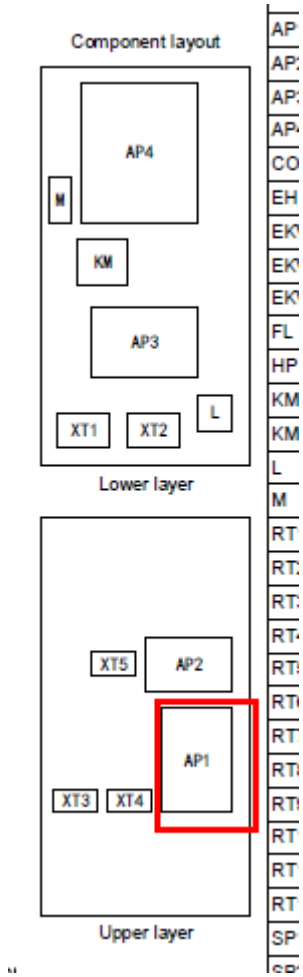
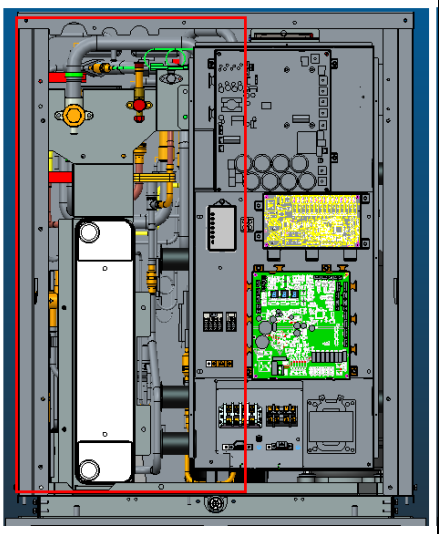
(3) Check the power on the main control board:

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



4.2 Temperature Sensors

Specifications	Description
Two types of temperature sensors of different specifications are used, including 50K and 20K	The sensors are used to measure the temperature of the unit at different positions.
Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X	

Circuit diagram	Layout of electrical appliance box	Physical position
		

4.2.1 Mechanical Inspection

(1) Confirm that the unit Power is disconnected.

(2) Find the place corresponding to each sensor on the unit and check if the sensors are firmly fixed on the unit.

4.2.2 Electrical Inspection

Measure the actual temperature and resistance of the temperature sensors, and compare it with the characteristic curve of the temperature sensors to determine whether the thermocouple is normal.

(1) Power off the unit. Remove the electrical appliance cover after the ODU stops.
Warning: Electric shock

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

(3) Use a thermometer to measure the temperature of the spot sensed by the temperature sensors.

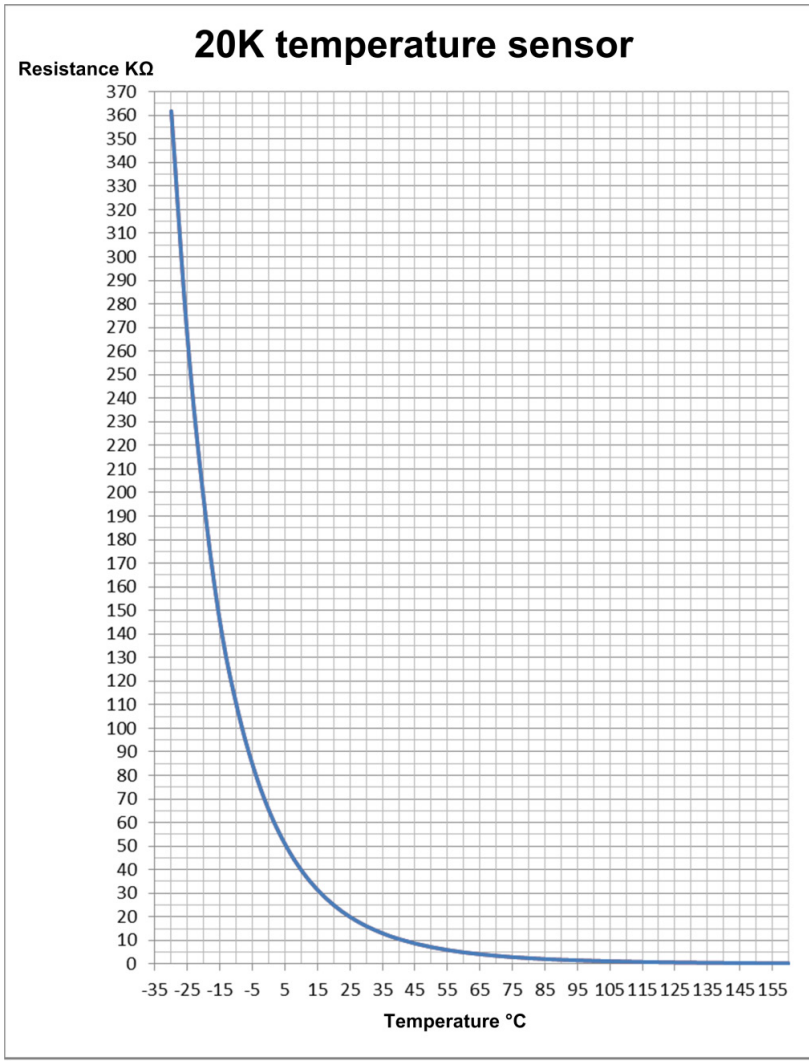
(4) Disconnect the connecting terminal of the corresponding temperature sensor from the main board. Use a multimeter to measure the resistance of the temperature sensors and compare it with the confirmed temperature range.

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

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.

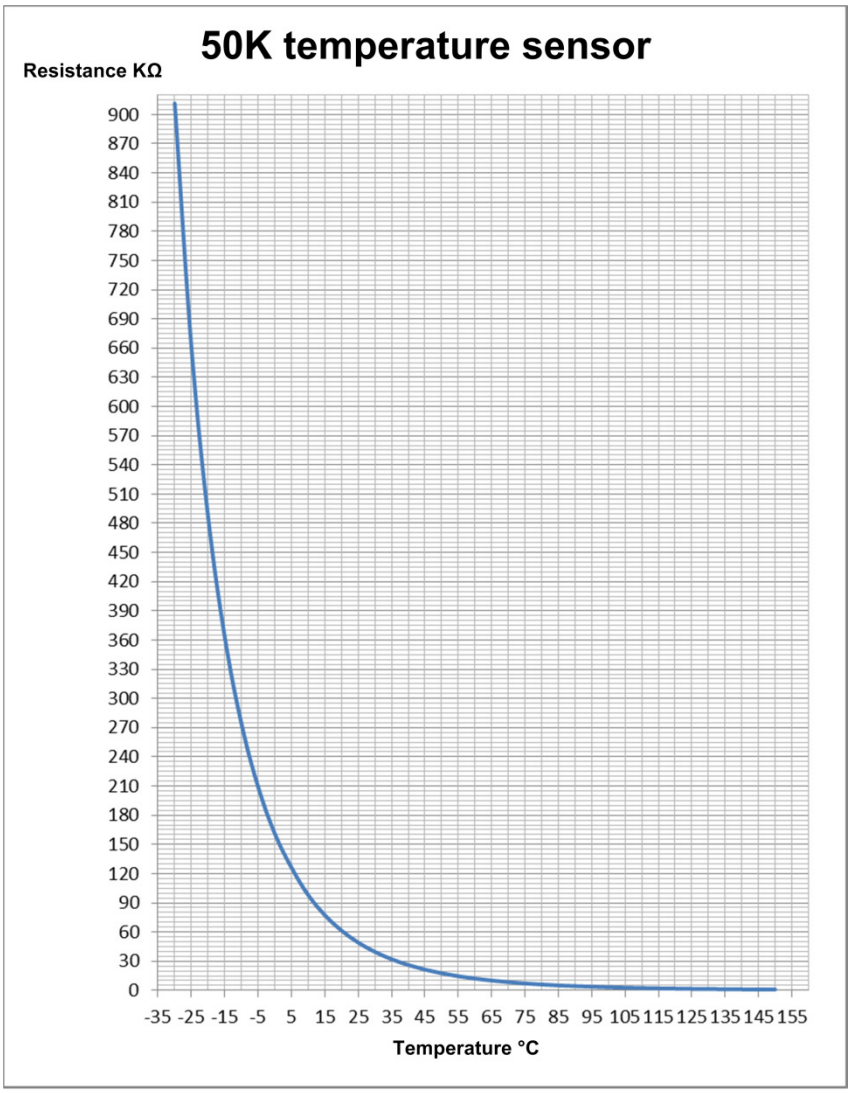
20K temperature sensor resistance - temperature curve

20K	
Temperature\°C	Resistance\KΩ
-30	361.8
-25	265.5
-20	196.9
-15	145
-10	110.3
-5	84.61
0	65.37
5	50.87
10	39.87
15	31.47
20	25.01
25	20
30	16.1
35	13.04
40	10.62
45	8.705
50	7.173
55	5.942
60	4.948
65	4.14
70	3.481
75	2.94
80	2.495
85	2.125
90	1.818
95	1.561
100	1.346
105	1.164
110	1.01
115	0.8799
120	0.7687
125	0.6736
130	0.5921
135	0.5219
140	0.4613
145	0.4088
150	0.3633
155	0.3237
160	0.2891



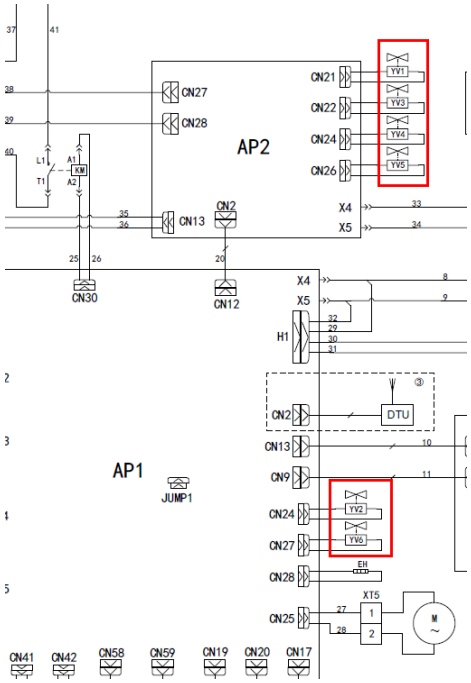
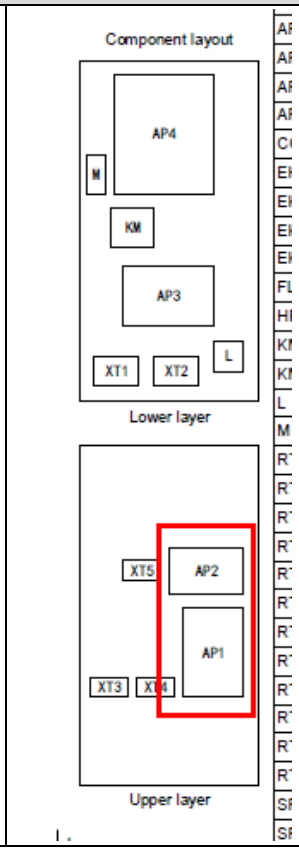
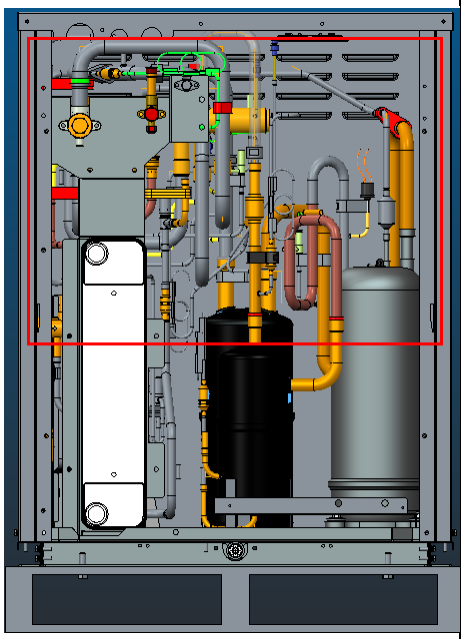
50K temperature sensor resistance - temperature curve

50K	
Temperature\°C	Resistance\KΩ
-30	911.56
-25	660.93
-20	486.55
-15	362.99
-10	274.02
-5	209.05
0	161.02
5	126.17
10	98.006
15	77.349
20	61.478
25	49.191
30	39.61
35	32.088
40	26.147
45	21.425
50	17.651
55	14.618
60	12.168
65	10.178
70	8.5551
75	7.2245
80	6.1288
85	5.2223
90	4.4693
95	3.841
100	3.3147
105	2.8721
110	2.4983
115	2.1816
120	1.9123
125	1.6821
130	1.485
135	1.3155
140	1.1694
145	1.0429
150	0.9331



4.3 Solenoid Valve

Specifications	Description
Coils of different types are used on: ① Solenoid valve. ② 4-way valve.	① The 4-way valve is used to switch between cooling mode and heating mode. If the 4-way valve is active, the unit works in heating mode, if the 4-way valve is inactive, the unit works in cooling mode. ② The solenoid valve is used to control the on-and-off of the pipeline. The valve of the unit is solid closed. That is, the valve is closed when it is inactive, open when it is active.

Circuit diagram	Layout of electrical appliance box	Physical position
Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X		
		

4.3.1 Mechanical Inspection

(1) Confirm that the unit Power is disconnected.

(2) Find the 4-way valve or solenoid valve, check whether the fixing screw is loose and whether the valve and coil have any apparent exceptions.

4.3.2 Electrical Inspection

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

(1) Power off the unit. Remove the electrical appliance cover after the ODU stops.
Warning: Electric shock

(2) Remove the electrical appliance cover and check whether the connecting terminal of the 4-way valve or solenoid valve is firm.

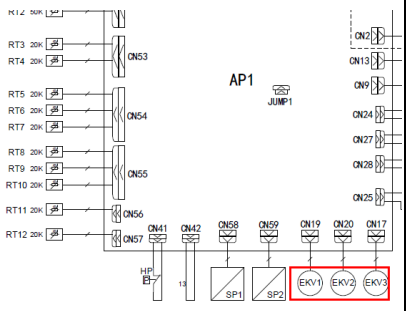
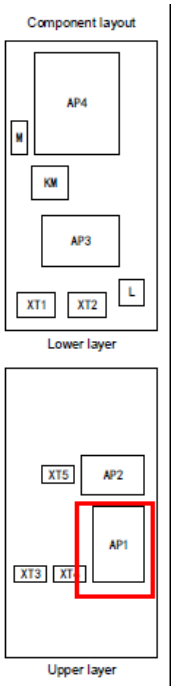
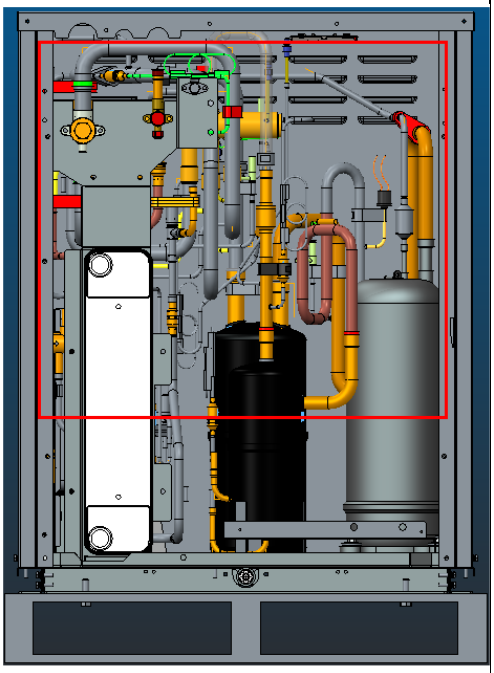
(3) Disconnect the corresponding valve's coil terminal from the main board and use a multimeter to measure the coil resistance.

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

Coil	Bolt on the main board	Resistance (Ω)		Normal range of deviation
		ODU capacity (HP)		
		8、10、12	14、16、18、20	
Cooling 4-way valve	CN21 (AP2)	2085		±10%
Oil return solenoid valve	CN24(AP1)	2085		±10%
Pressure regulating solenoid valve	CN22(AP2)	2085		±10%
Gas bypass solenoid valve	CN24(AP2)	2085		±10%
Refrigerant system valve	CN26(AP2)	2085		±10%
Subcooler solenoid valve	CN27(AP1)	1273		±10%

4.4 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-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X		
		

4.4.1 Mechanical Inspection

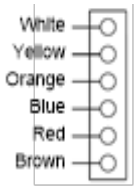
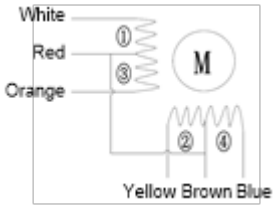
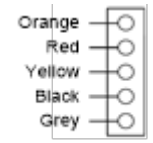
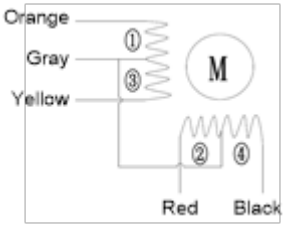
Step 1: Switch off the power of the ODU.

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

4.4.2 Electrical Inspection

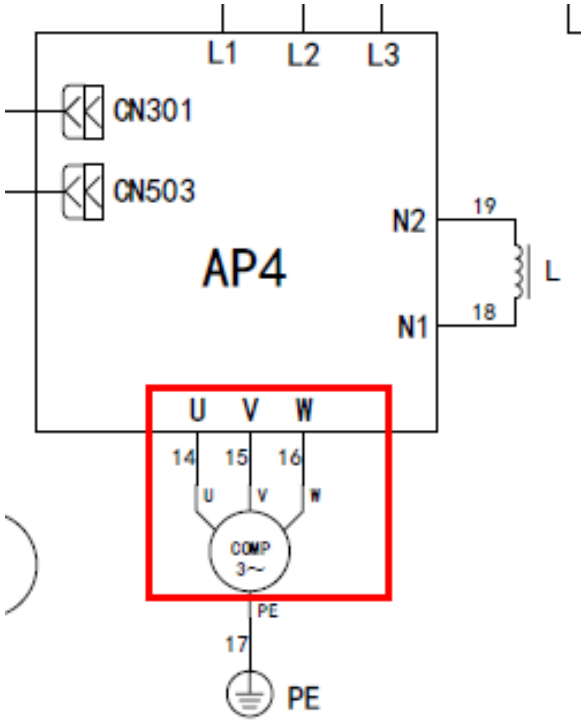
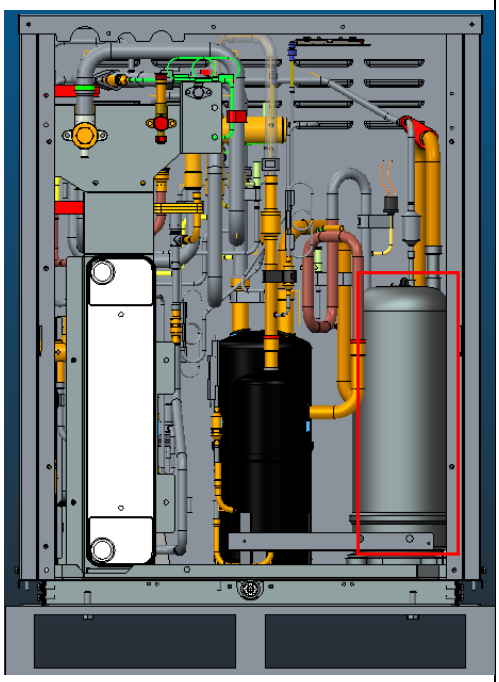
Step 1: Power off the ODU and power on it. When the ODU is powered on again, the electronic expansion valve should be reset. When the electronic expansion valve is reset, touch the valve with a hand to check if the valve core rotates. In the second half of the resetting process, the valve core will click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

Step 2: Switch off the power of the ODU, disconnect the coil terminal of the electronic expansion valve from the main board and use a multimeter to measure the resistance of each contact point of the terminal. The normal range of the resistance is shown in the following table. If any value is beyond the normal range, the coil is damaged and needs to be replaced.

Coil	Interface No.	Color	Port specifications	Max. number of steps	Terminal layout	Diagram of internal coils	Coil resistance range
heating electronic expansion valve	CN19(AP1)	White	6 cores	3000			100Ω±10Ω
Subcooler electronic expansion valve	CN20 (AP1)	Red	5 cores	480			46Ω±3Ω
Vapor injection electronic expansion valve	CN17 (AP1)	Black	5 cores	480			

4.5Compressor

Specifications	Description
Models: AD55PHDG5-D1Y2, DD80PHDG5-D1Y2	Compression refrigerant, recycling refrigerant.

Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X	
Circuit diagram	Physical position
	

4.5.1Diagnosis of Compressor Failures

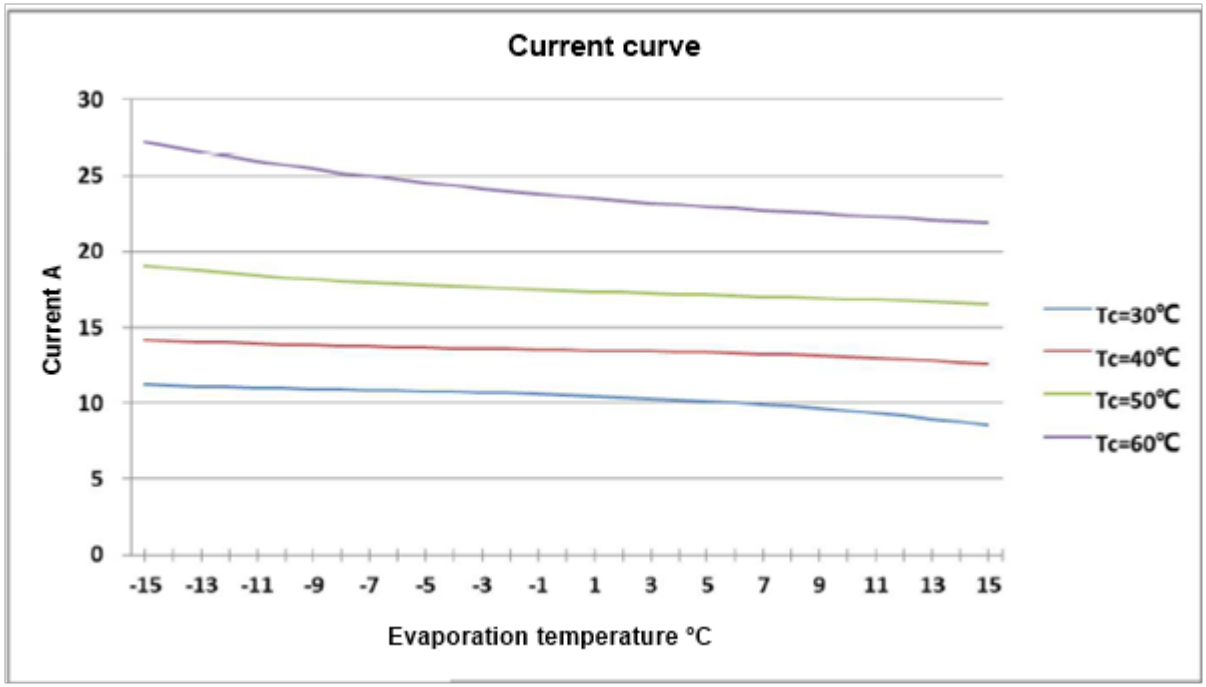
4.5.1.1 When the unit can be started

Step 1:

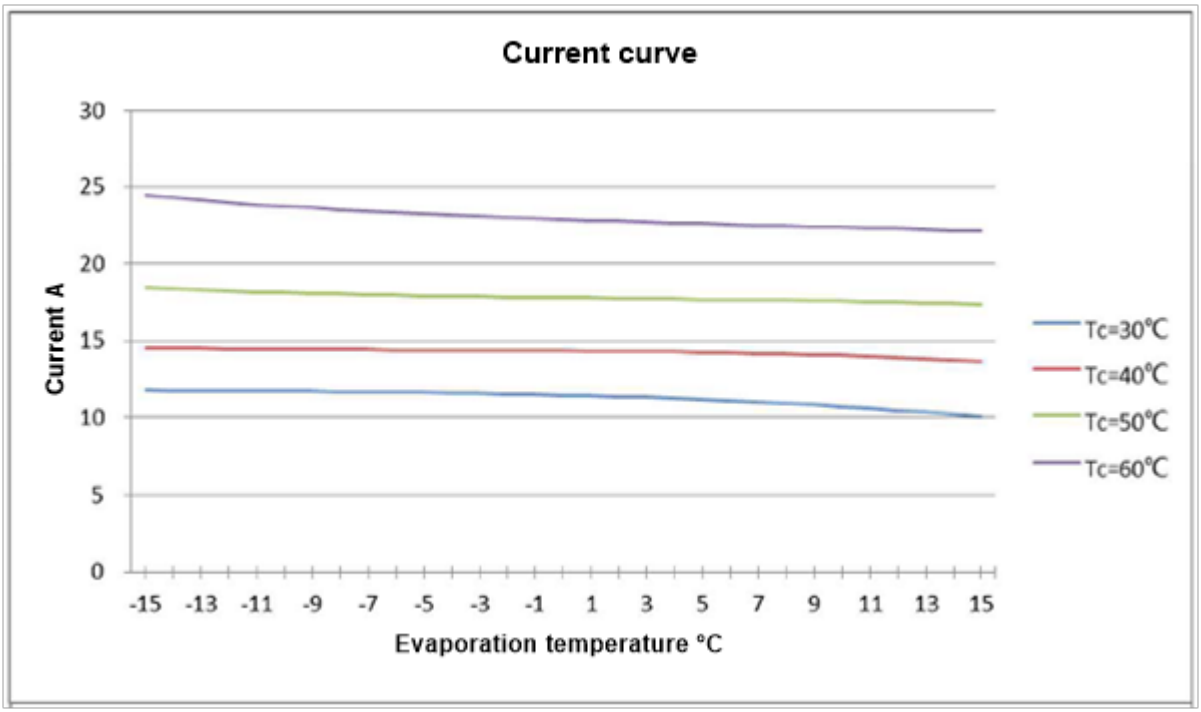
If the unit can be started, check the faulty compressor's line current. Use a pressure gauge to measure the gas and liquid valve pressure and monitor the measured data on a PC. Compare the data to the following table of recommended current. The current may deviates by about 10% depending on the inverter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

(1) Inverter compressor AD55PHDG5-D1Y2:

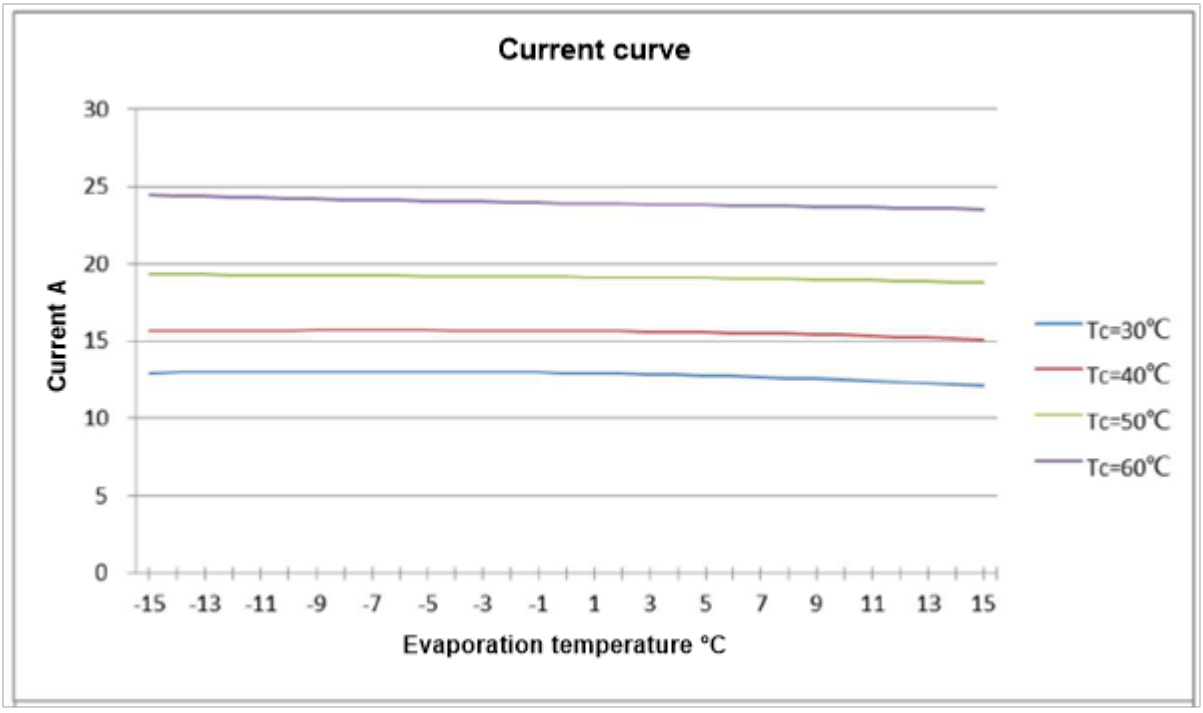
When the compressor frequency is 30 Hz, the current curve under different evaporation temperature and condensation temperature is shown as follows:



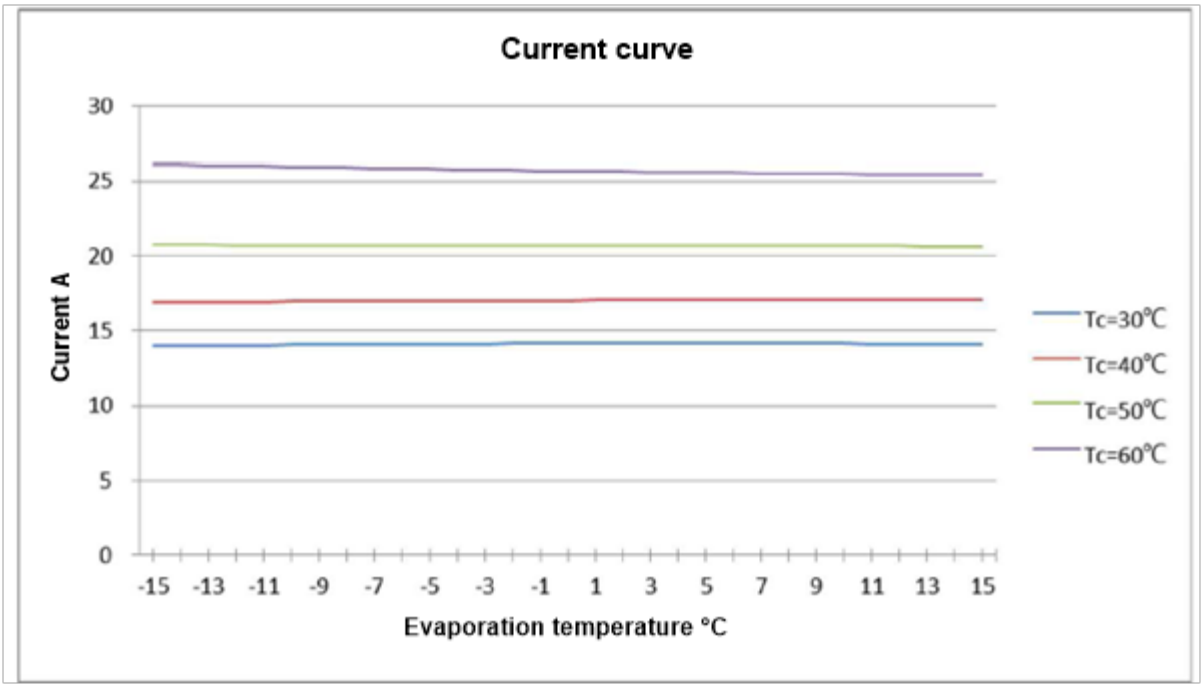
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



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:

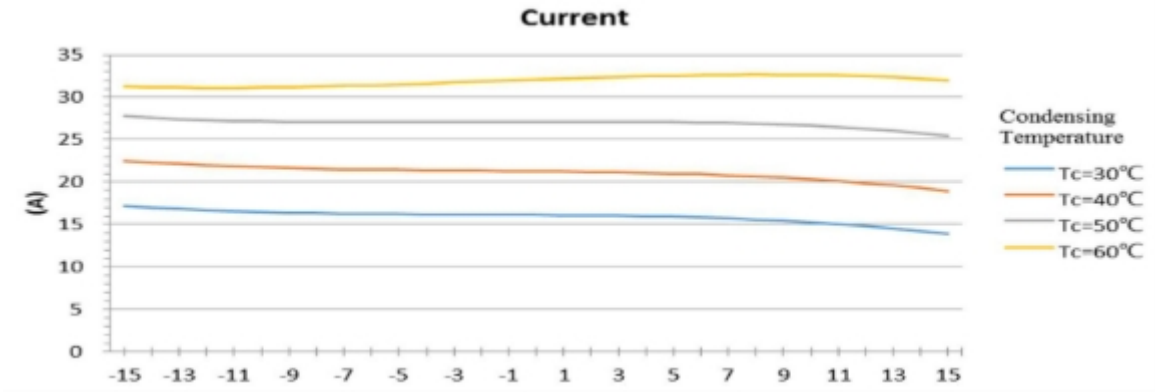


NOTE!

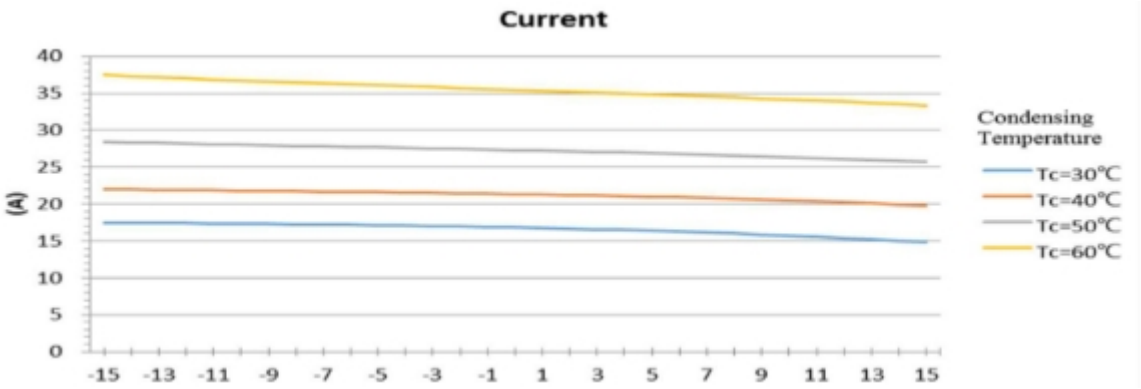
When the compressor is working at another frequency, the current curve can be obtained through interpolation calculation of the above frequency.

(2) Inverter compressor DD80PHDG5-D1Y2:

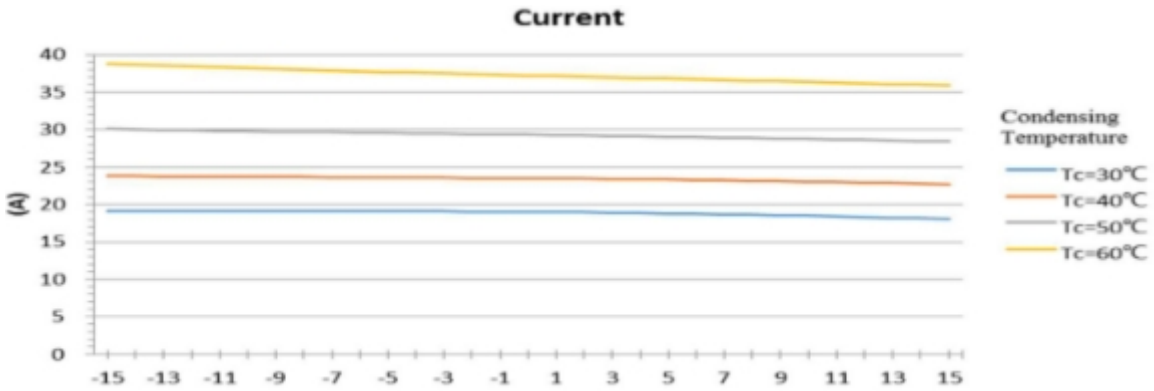
When the compressor frequency is 30 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



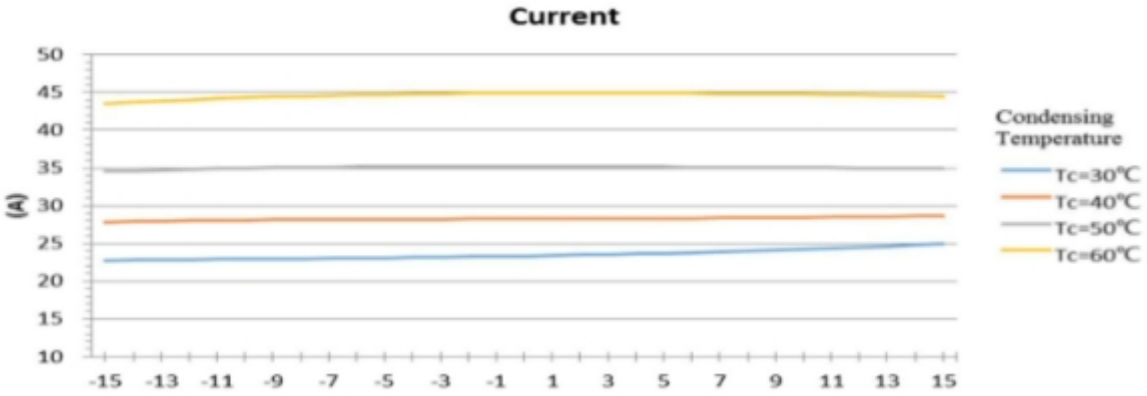
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



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:

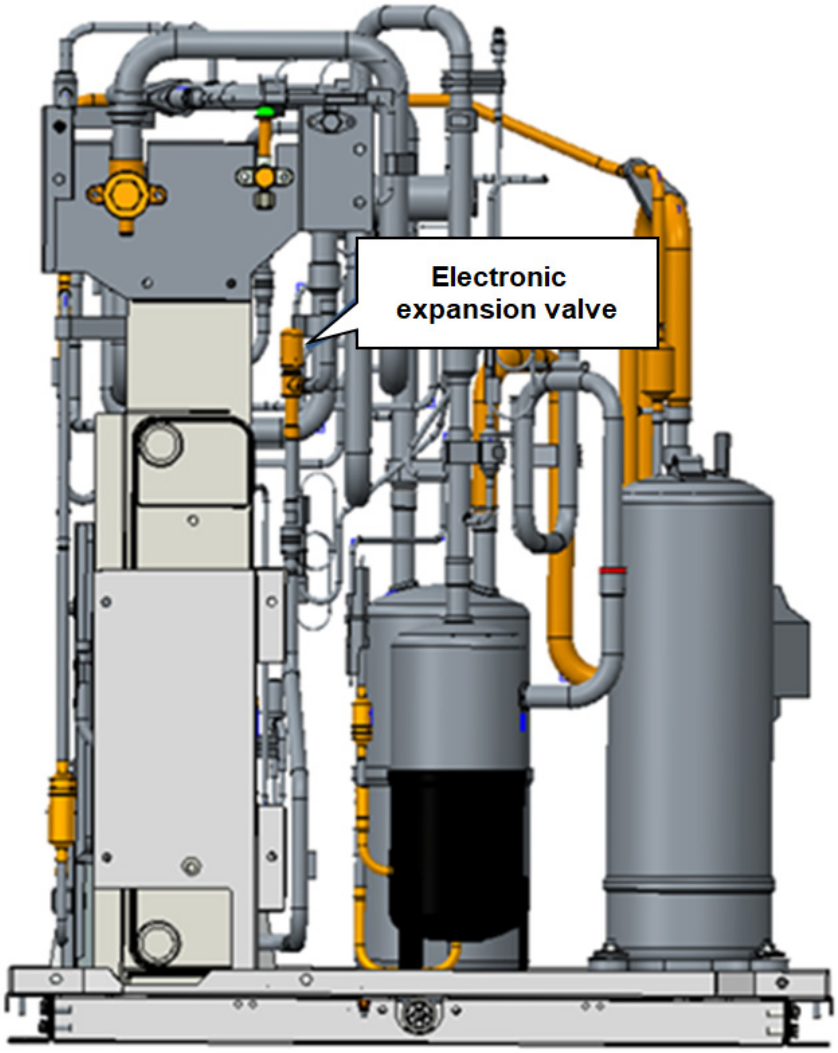
Check whether the running sound of the compressor is normal and whether any high-pitched sound or obvious scratch can be heard. If there is a nearby unit running properly, compare the sound of the compressor under inspection with that of the normally running unit.

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:



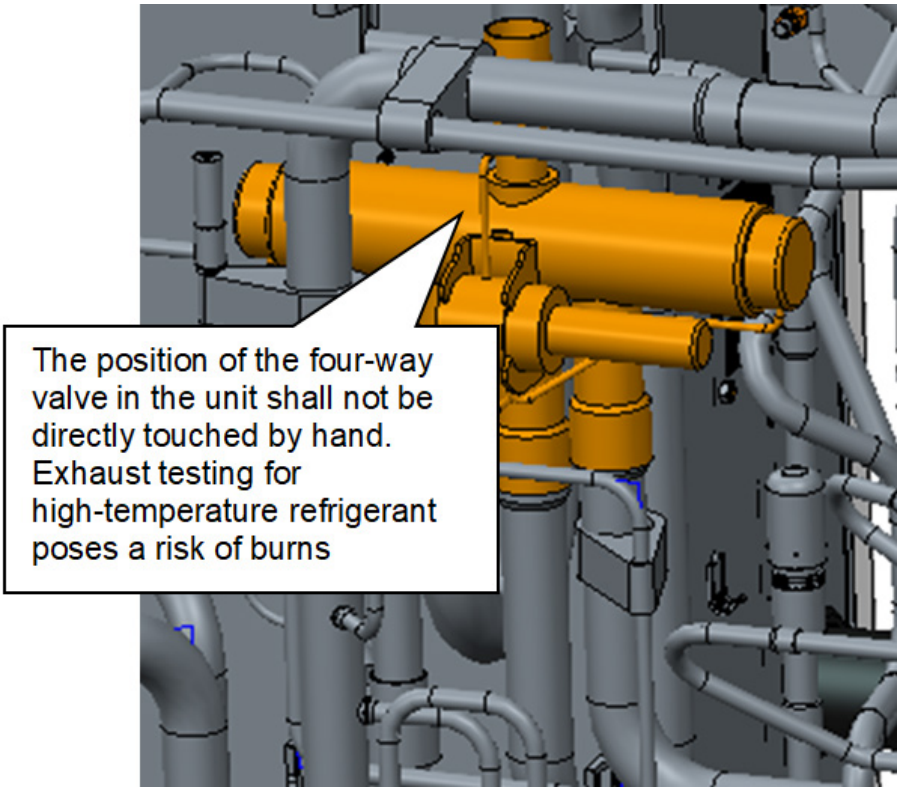


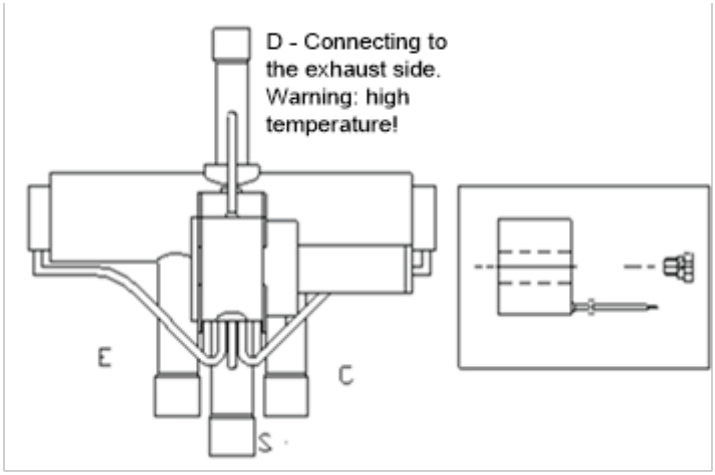
Notes:

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.

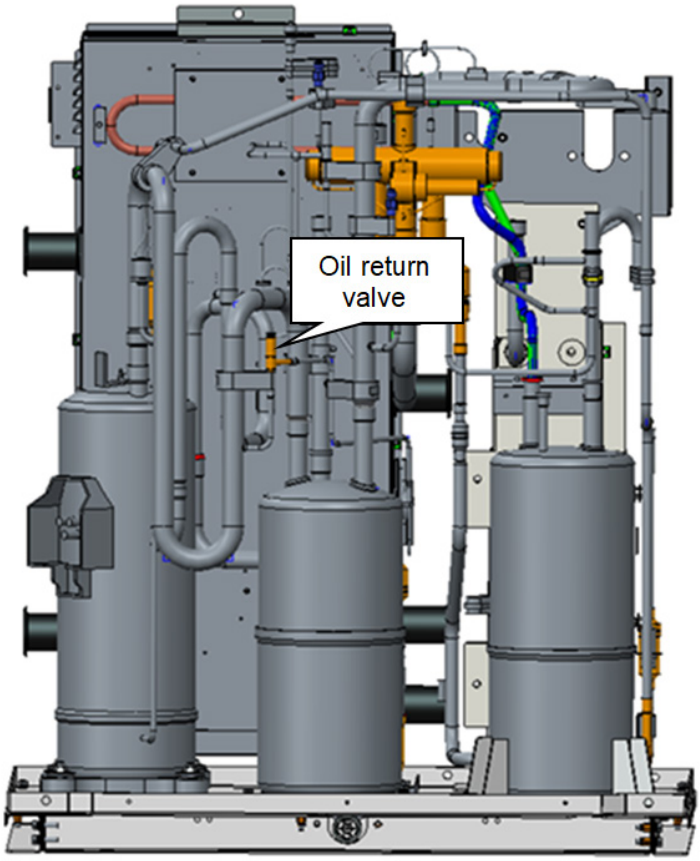
1) 4-way valve: When it is normal, the temperature different between it and the four copper tubes connecting to the valve is obvious. When the 4-way valve works, obvious sound and vibration can be heard and felt.





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.

1) 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.

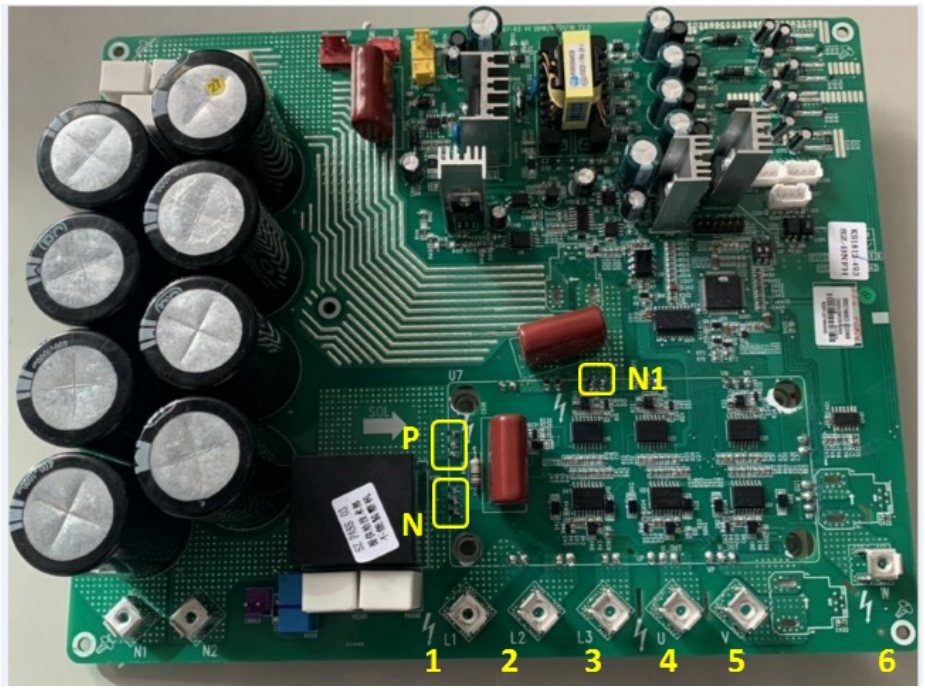


Step 4:

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.

4.5.1.2 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 AD55PHDG5-D1Y2 is 0.197±7% Ω. The resistance between two wiring terminals of DD80PHDG5-D1Y2 is 0.137±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:

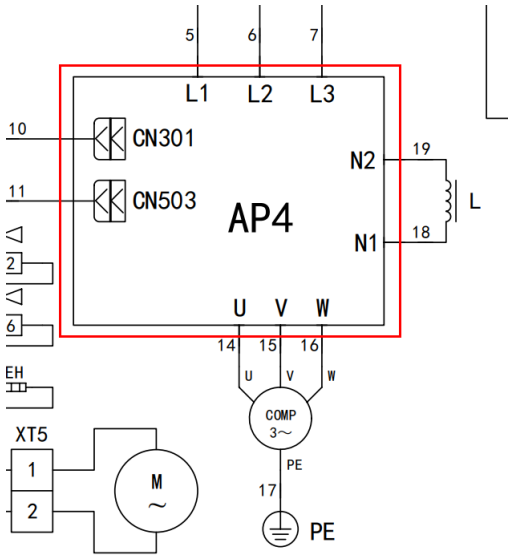
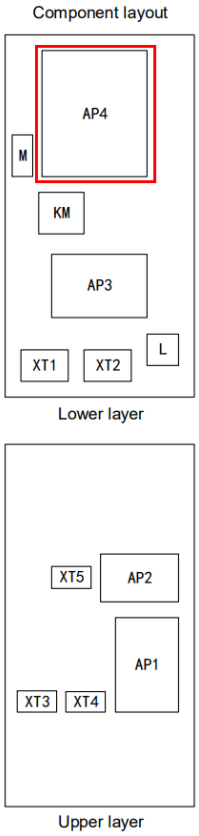
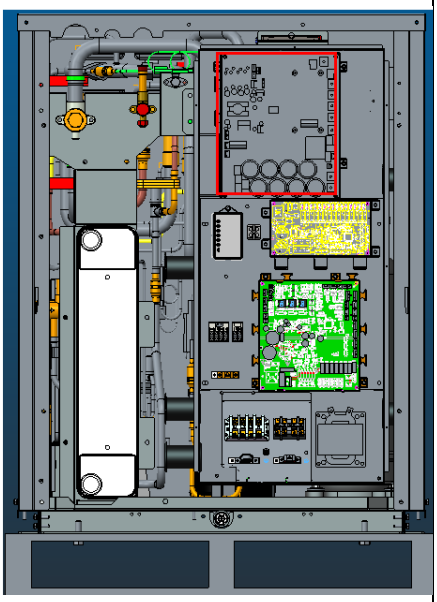
When the unit cannot be started properly, the solenoid valves of the system, including the electronic expansion valve and oil-return valve, need to be checked using the same method described above.

Step 4:

Check the IPM module using the same method described above.

4.6 Compressor Drive Board

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

Specifications	Description
—	The compressor drive board is used to control the operation of the compressor.
Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X	
Circuit diagram	Layout of electrical appliance box
	
Physical position	
	

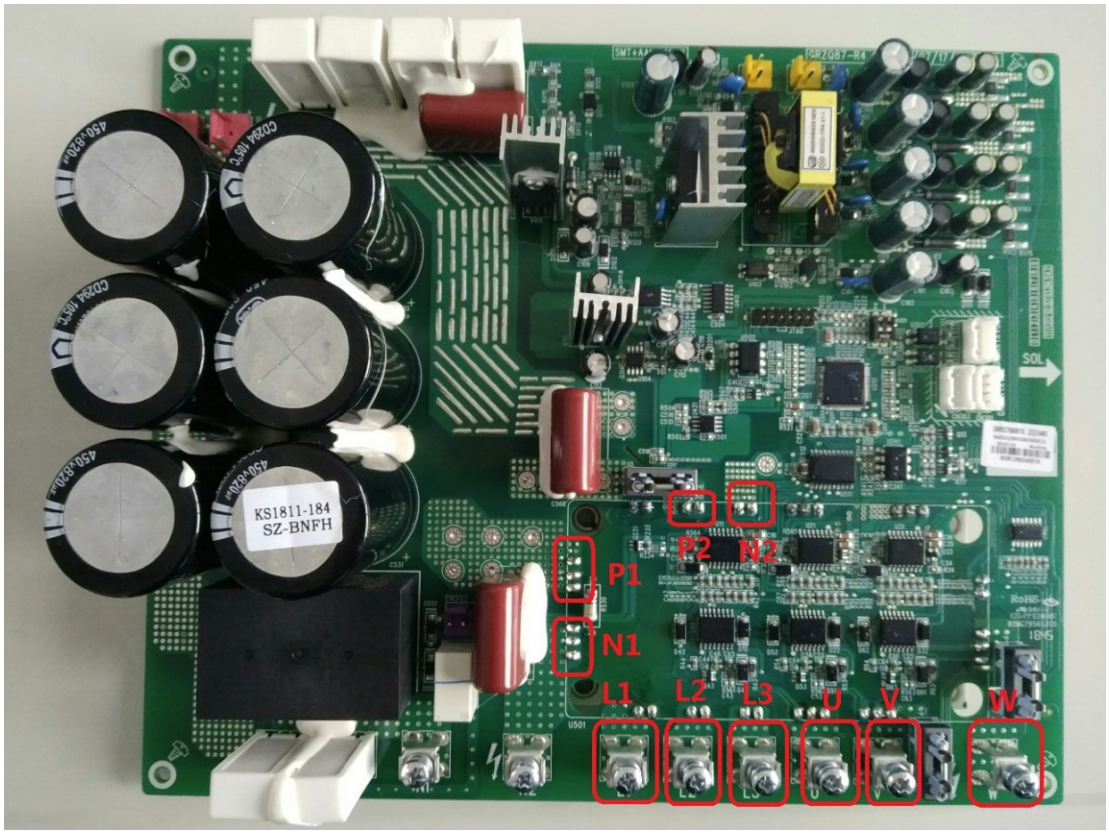
(1) Before the inspection: Find a correct digital multimeter and switch it to the diode gear. Power off the unit and wait two minutes. Disconnect the U, V and W cables of the compressor and L1, L2 and L3 power cables from the drive board. Do not operate without waiting two minutes after the unit is powered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

(2) Testing method:

①Point 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.

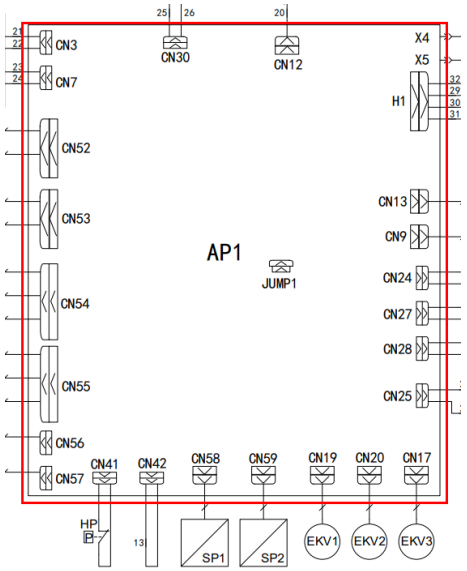
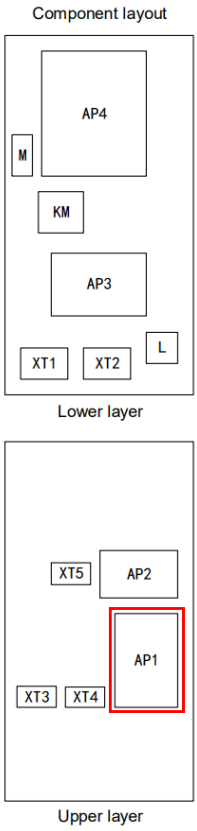
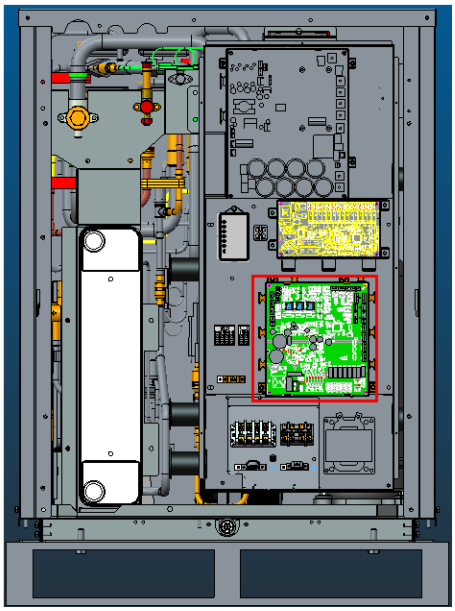
②Point the black probe of the multimeter to the P2 bonding pad shown in the following figure and the red probe to U, V and W wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N2 bonding pad shown in the following figure and the black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



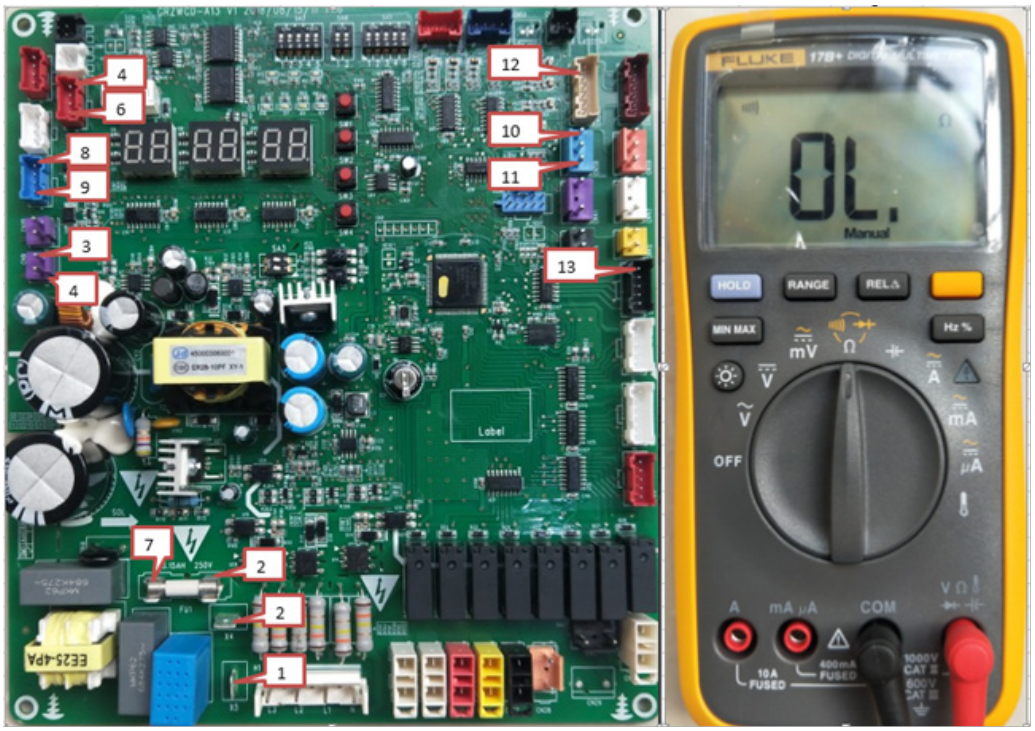
4.7 Main Board

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

Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/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.

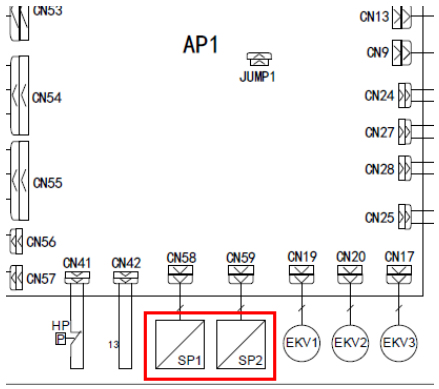
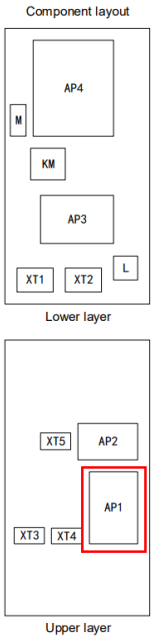
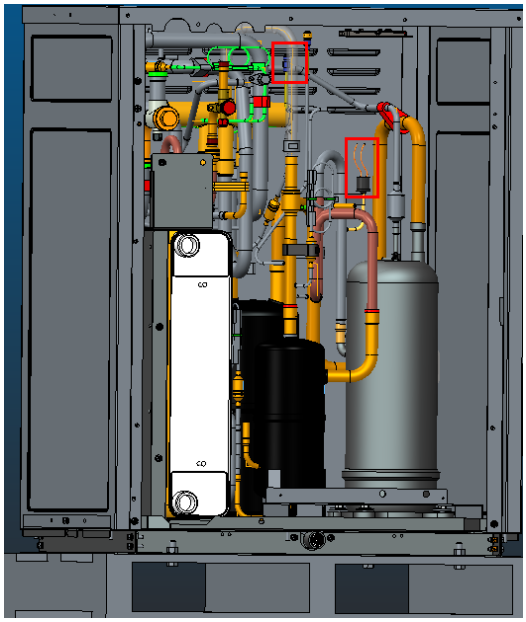


Black probe	Red probe	Symptom
X5(1)	X4(2)	The main board is normal if the multimeter does not beep.
CN9(3)	CN9(4)	The main board is normal if the multimeter does not beep.
Anode of fuse (2)	Cathode of fuse (7)	The fuse is damaged and needs to be replaced if the multimeter does not beep.
CN1(4)	CN1(6)	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.

4.8 Pressure Sensor

Specifications	Description	
—	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

Models:GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X

Circuit diagram	Layout of electrical appliance box	Physical position
		

Inspection procedure

1. Preparations
   (1) Use the wired controller or remote controller to shut down the unit.
   (2) Remove the front cover and open the electrical appliance box.
2. Inspection of low-pressure sensor
   (1) Connect the pressure gauge to the gas valve and check if the gas and liquid valves are open.
   (2) Switch the unit to the cooling mode. After the system stabilizes, check the reading of the pressure gauge.
   (3) Check the unit's suction pressure via the wired controller and compare it with the reading of the pressure gauge on the gas valve. If the value shown on the wired controller is within the range of ±10% of the reading of the pressure gauge, the pressure sensor is normal. Otherwise, it is abnormal.
3. Inspection of high-pressure sensor
   (1) Connect the pressure gauge to the gas valve and check if the gas and liquid valves are open.
   (2) Switch the unit to the heating mode. After the system stabilizes, check the reading of the pressure gauge.
4. Check the unit's exhaust pressure via the wired controller and compare it with the reading of the pressure gauge on the gas valve. If the value shown on the wired controller is within the range of ±10% of the reading of the pressure gauge, the pressure sensor is normal. Otherwise, it is abnormal.

5. Replacement of Key Unit Parts

5.1 Preliminary Removing Procedure of the Main Body

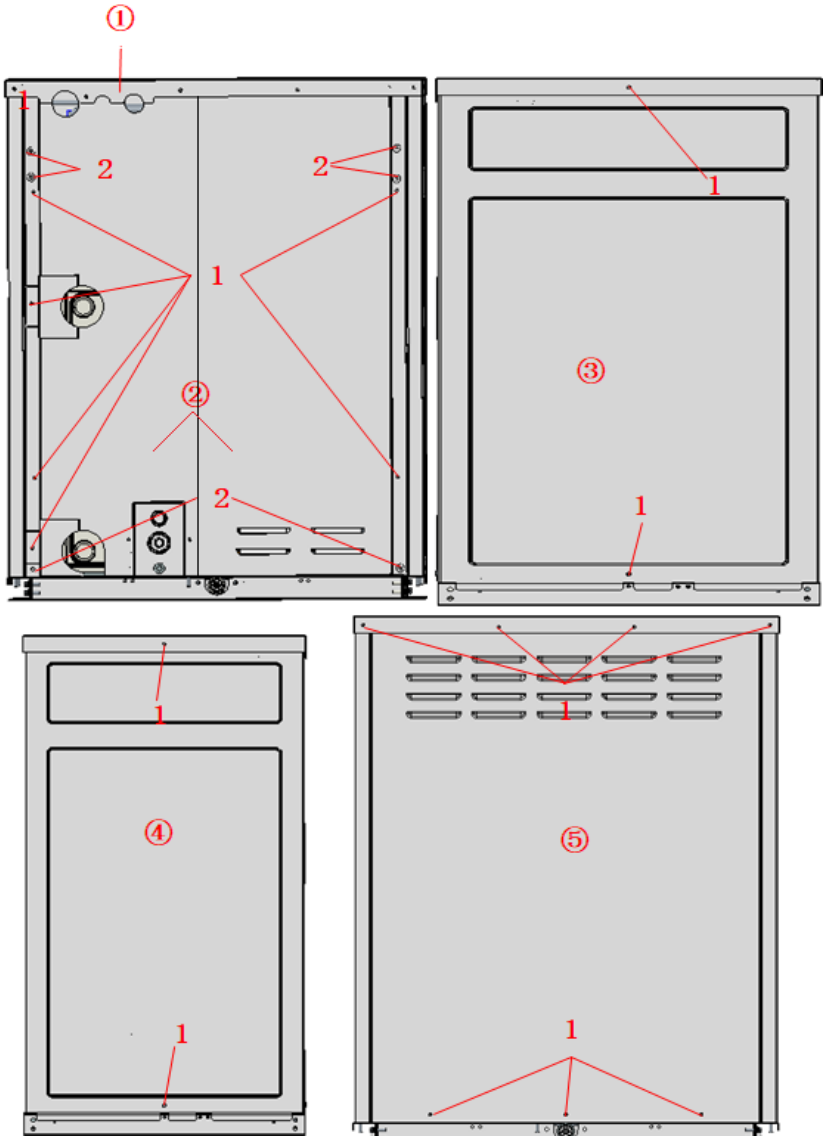
5.1.1 Removing the Unit Panel

(1) Use a screwdriver to remove the screws shown in 1 on the top cover plate;

(2) Remove the top cover plate from the unit;

(3) Then use a screwdriver to remove the screws shown in 1 and the bolts shown in 2 on the remaining panels;

(4) Remove other panels from the unit;



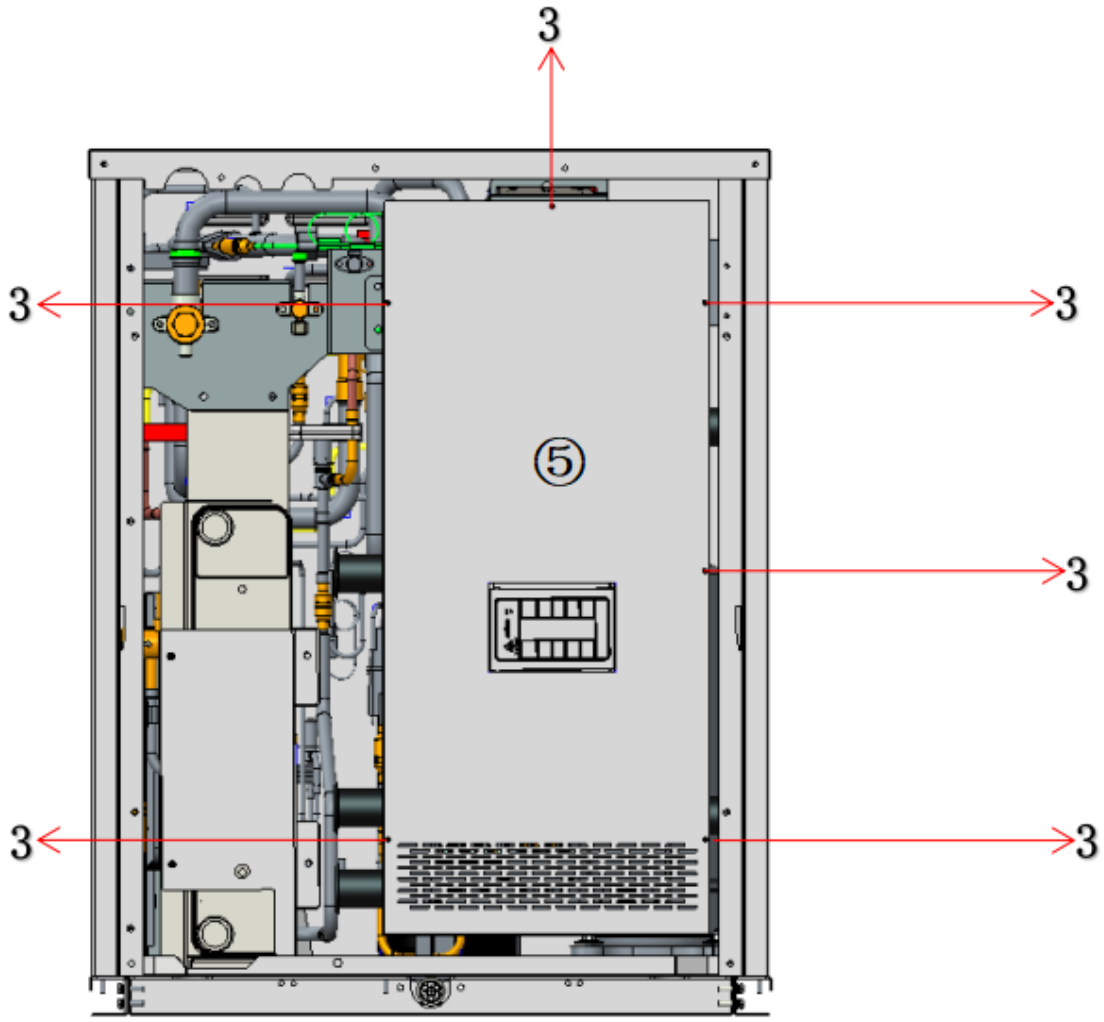
1—Screw 2—Bolt

①—Top cover ②—Front panel ③—Left panel ④—Right panel ⑤—Rear panel

5.1.2 Removing the Cover of Electrical Appliance Box

(1) Use a screwdriver to remove the screws shown on the ⑤ electrical box cove

(2) Remove the electrical box cover from the unit



3—Screw； ⑤—Electrical box cover;

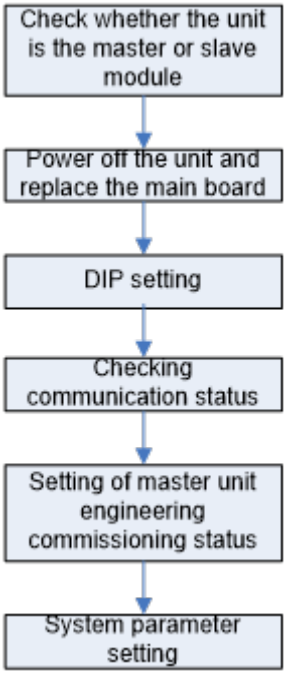
5.2 Removing the ODU Main Board

Preparations

(1) Use the Power circuit breaker to switch off the Power of the GMV X 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.



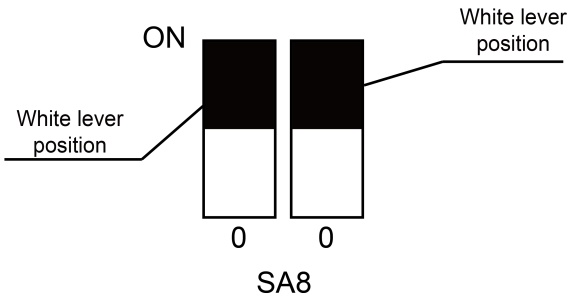
Removing procedure

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

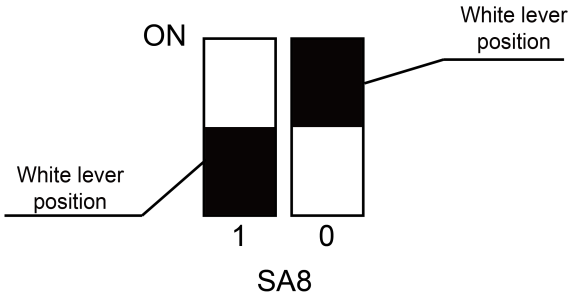
① It can be checked by the “master module setting DIP SA8” of the ODU.

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

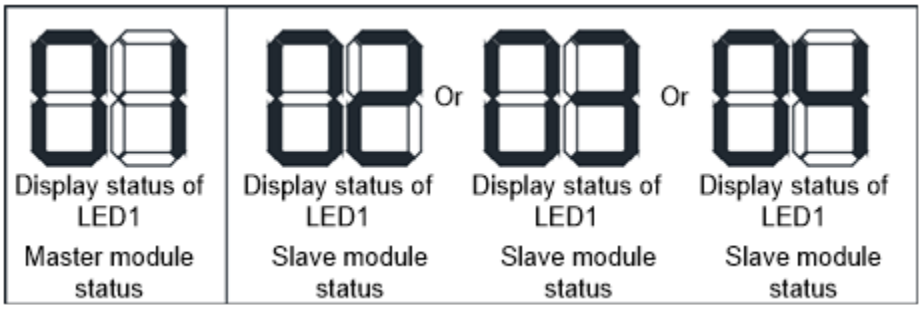


Slave module status



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).

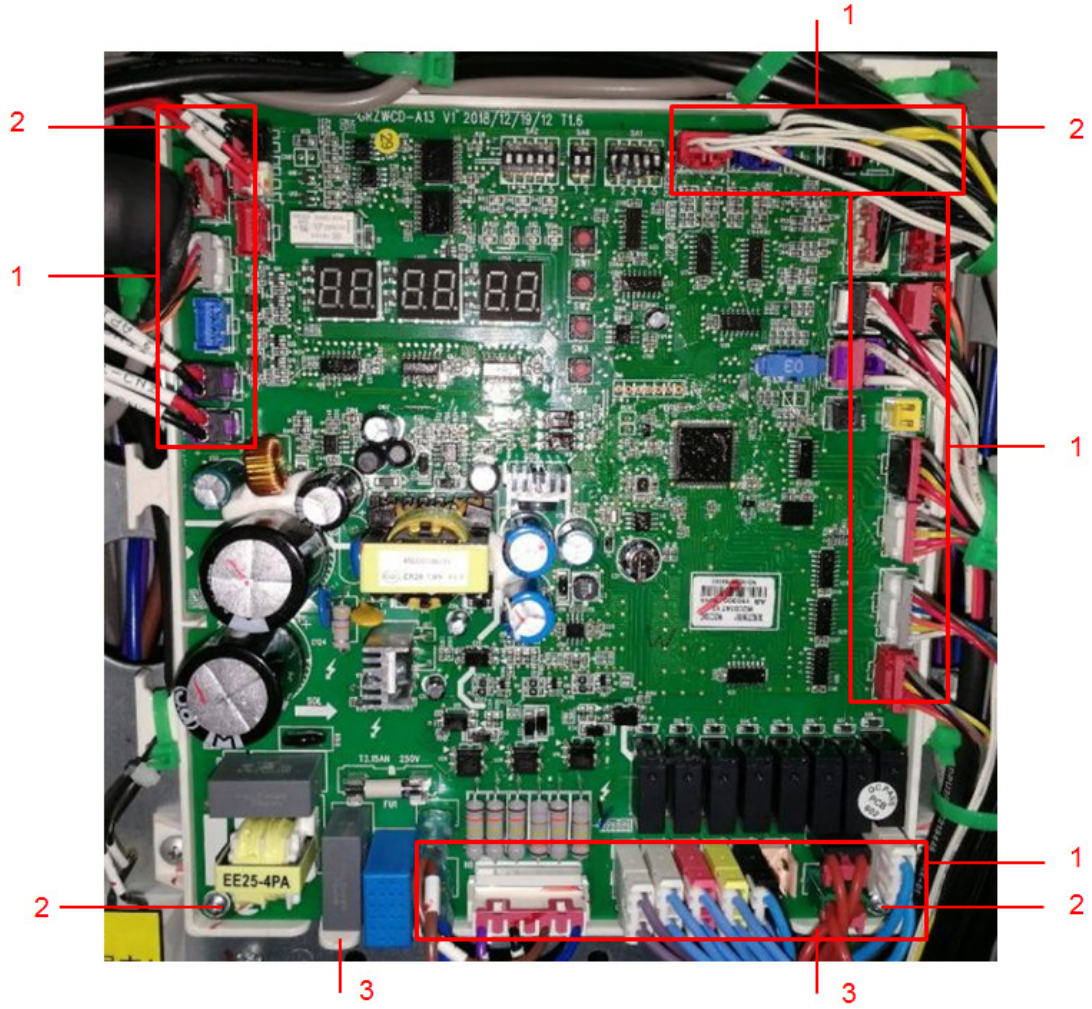


(2) Powering off and replacing the main board

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(main) engineering commissioning status

After the main board of the master module is replaced, engineering commissioning needs to be performed on the master unit(main).

(6) System parameter setting

After the engineering commissioning, system parameters need to be set to be consistent with the previous system parameters. Read *ODU Function Setting* for the setting method.

5.3 Removing the Compressor

Step 1: Preparations before replacing

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

During the handling of the old and new compressors, do not place the compressor flat or place it upside down. The compressor needs to be placed with an angle of less than ±30°. The lubricant of the compressor must not outflow from the pipe. Make sure that the compressor air inlet, air outlet and vapor injection tube opening are sealed. If the sealing rubber block is missing, use rubber tap to seal it to prevent direct contact between oil in the compressor and air.



WARNING!

Check whether the models of the new and old compressors on the nameplates are the same.



Check the sealing rubber blocks of components such as the oil separator and gas separator. If any sealing rubber block is missing, use rubber tap to seal it in order to make sure that the vessel is dry and sealed.



WARNING!

Make sure that the compressor's lubricant is sealed reliably. Hitachi compressors adopt the FVC68D dedicated lubricant, which is highly hygroscopic. Therefore, the lubricant has a strict requirement on lubricant sealing.

(1) Tools

1) Get nitrogen ready. Comply with the nitrogen charging and welding regulations during the welding. Make sure that the nitrogen is sufficient. The suggested nitrogen pressure is above 2.0 MPa.

2) Get welding rods ready. In addition, special welding rods with the silver content of above 5% are required to weld the compressor as the compressor air inlet and outlet adopt copper-coated steel pipes, which require special welding rods and welding flux.

3) Get welding tools ready. Assess the nitrogen and acetylene quantity necessary for the welding according to the part to be welded. Prevent repeated welding of the same places.

4) Get all the auxiliary service tools ready, including hex key, diagonal pliers, pincer pliers, needle-nosed pliers, multimeter, pressure gauge, Phillips screwdriver, slotted screwdriver, at least two wrenches, insulating tape, and cable ties.

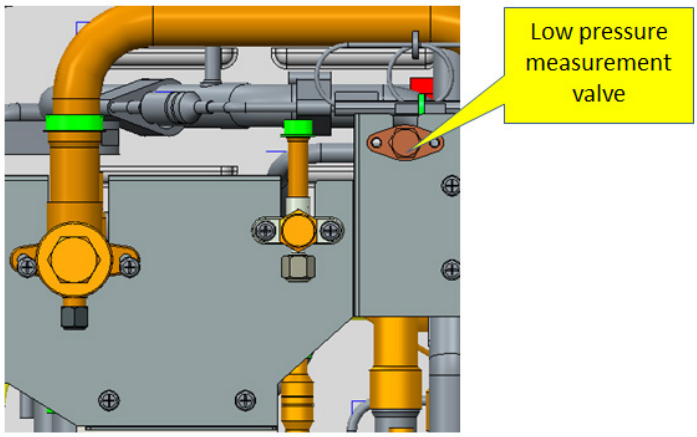
Step 2: Power-off

If the replacement of the compressor is necessary according to the above-mentioned conditions, switch off the power of the ODU, disconnect the power cable, disconnect the ODU from the power and wrap the power cables with insulating tapes, and put a warning sign at the power switch to prevent electric shocks.

Step 3: Removing electric parts

Mark the compressor cables, temperature sensors and auxiliary electric heater properly while removing them so that the parts can be rewired correctly later.

Step 4: Checking lubricant quality

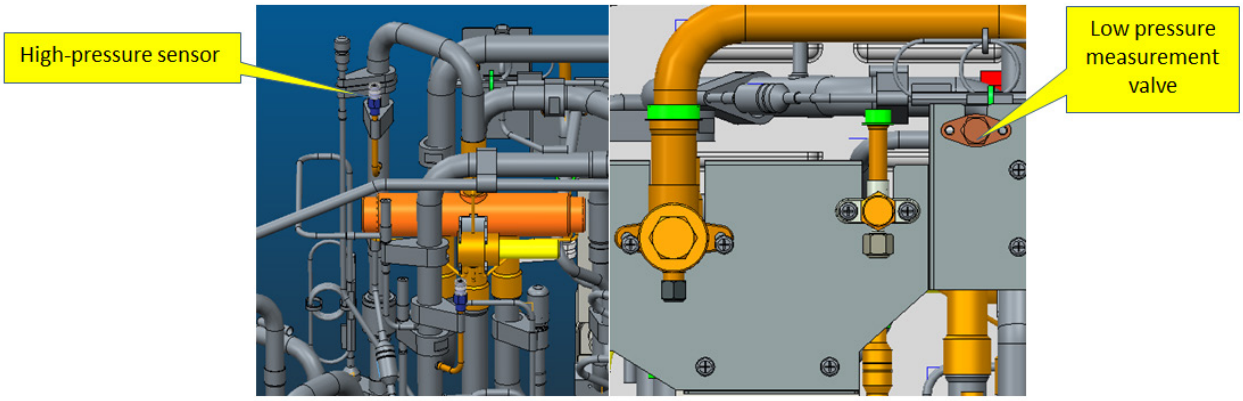


Before discharging refrigerant and dismantling the unit, collect the refrigeration oil in the system from the low-pressure measurement valve using the following method. Connect one end of a rubber hose to the low-pressure measurement valve and the other one to a transparent container. Since that the container contains the mixture of the refrigerant and lubricant and the refrigerant volatilizes, do not seal the container. Otherwise, the high pressure in the container may lead to breaking of the container or even an explosion.

Record the oil quantity after the lubricant is fully discharged.

Step 5: Discharging refrigerant

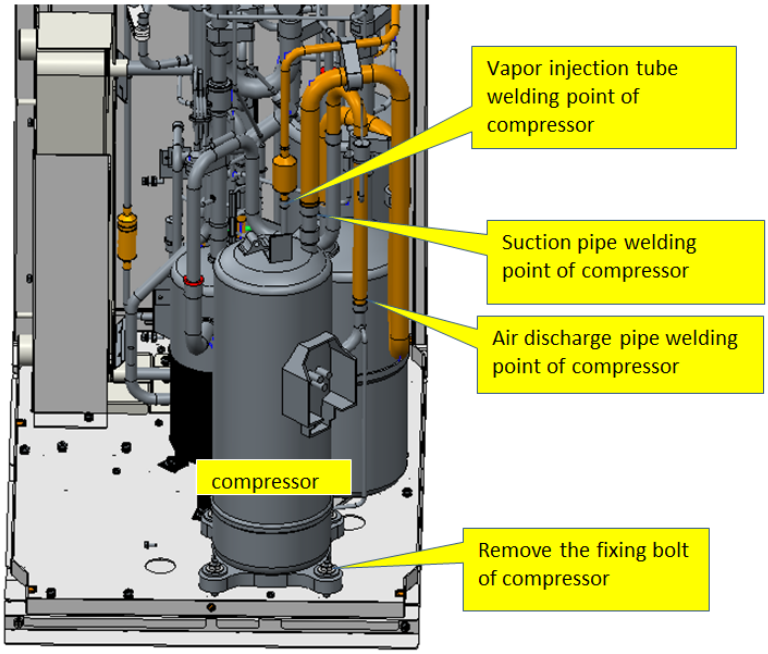
The refrigerant in the system needs to be discharged from the high and low pressure sides of the system concurrently. If the refrigerant is discharged from one side only, the sealed scroll will hinder the refrigerant from being fully discharged. Do not discharge the refrigerant too fast (in no shorter than 12h). Otherwise, a large amount of lubricant will be discharged together with the refrigerant as well.



Step 6: Removing compressors

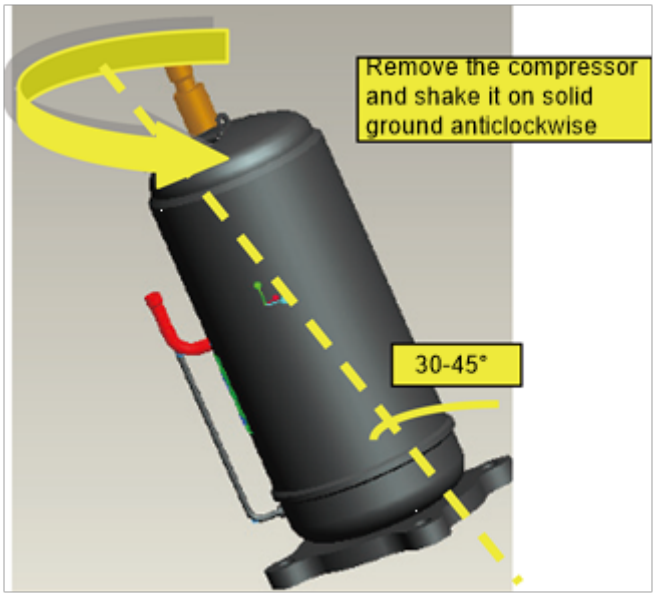
Check the damage of compressors, including the number of damaged compressors, positions and models.

After confirming the compressor information, remove the compressors and confirm the oil quality. If the oil is clear with no impurity, it can be considered that the oil in the system is not polluted. When the valves and oil passages of the unit are normal, only the compressors need to be replaced.



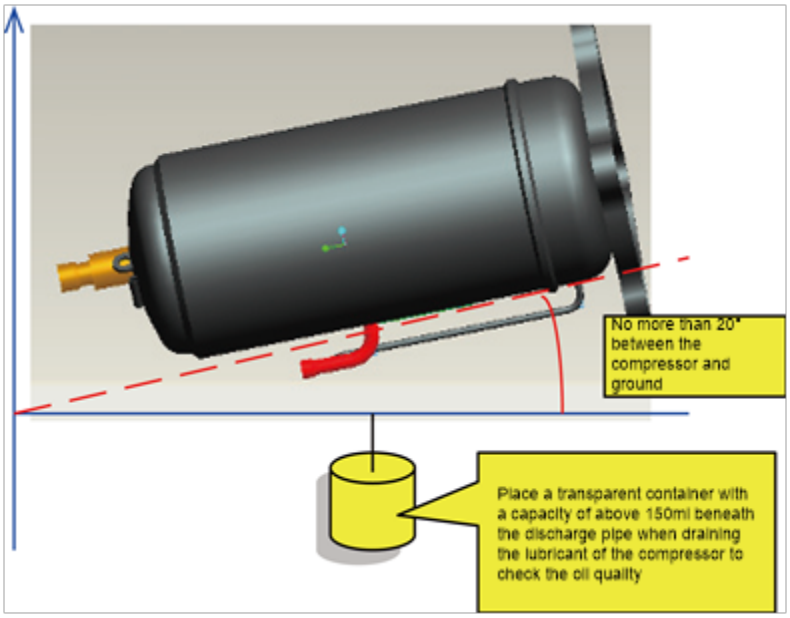
The procedure of checking oil quality is described as follows:

① After removing a compressor, shake the compressor on a solid ground in the sway angle of 30 to 45 degrees to ensure that the pollutants deposited on the bottom of the compressor can be poured out.



② Place the compressor at a position above the level of the ground, pour oil from the compressor exhaust port, and use a beverage bottle or other transparent container (with a volume of over 150 ml) to store oil.

Note that the angle between the axial position of the compressor and the horizontal plane should not exceed 20 degrees to prevent the compressor from falling and injuring people.



③ Place the collected compressor oil in a bright place to check if it contains impurities and discolors, and smell the compressor oil. Normal lubricant has no obvious pungent odor.

After removing the compressor and oil, check the oil quality separately. If it is contaminated, replace the compressor, oil separator and gas-liquid separator. If the color of the oil turns black, check the other modules in the system using the same method.

Note:

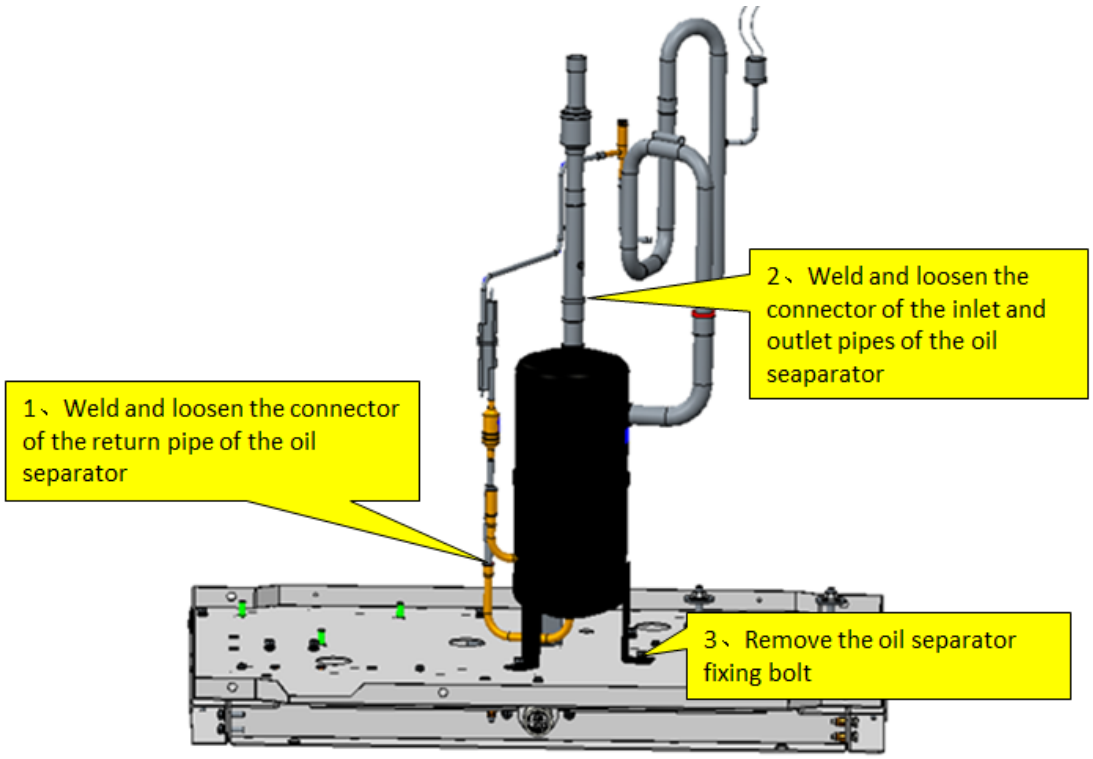
Check the compressor that needs to be replaced, and ensure that pipe openings of the damaged compressor are sealed with tape or the like in time to ensure that the compressor is in good condition for further analysis.

Step 7: Checking system parts

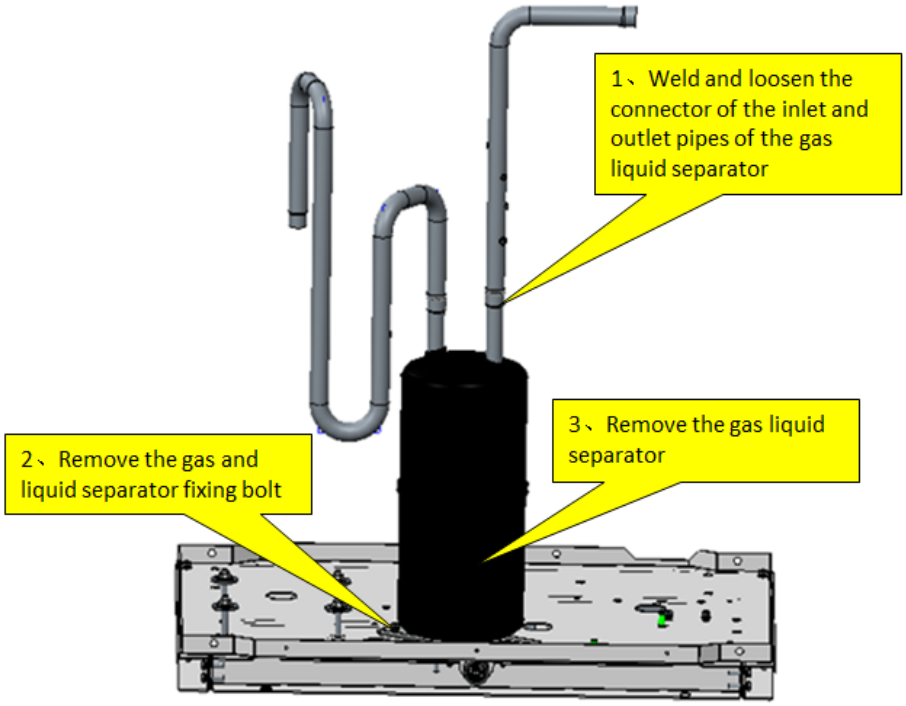
When the system oil is polluted, it is necessary to confirm the parts of the unit, including the oil separator, gas-liquid separator and storage tank.

1) Checking oil separator

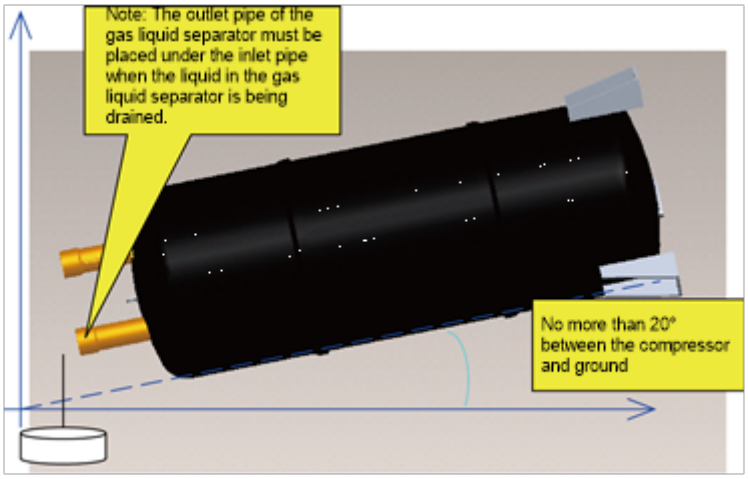
Remove the oil separator according to the procedure of step 4, discharge oil from the oil separator, use the container to hold the oil, and seal the container for return to the factory for inspection.



2) Checking gas-liquid separator



After removing the gas-liquid separator, check whether the gas-liquid separator contains impurities or other substances. The checking procedure is described as follows:



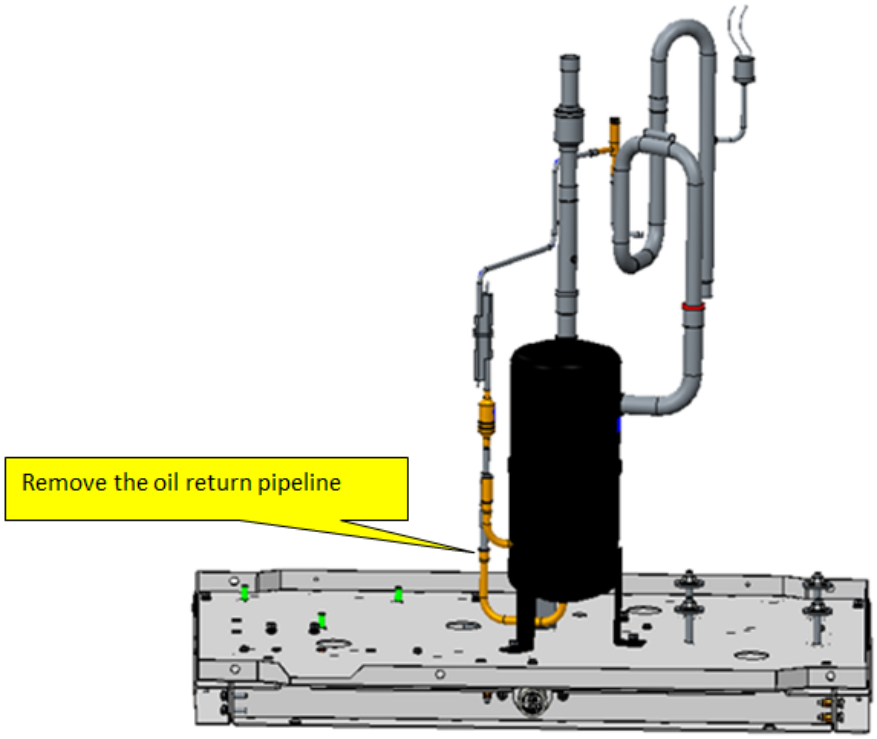
It is also necessary to use a transparent container to hold the impurities in the gas-liquid separator, observe the impurity color and seal the container, and return it to the factory to check the impurity composition.

Note:

If the compressor is damaged and needs to be replaced, the gas-liquid separator must be replaced at the same time. It needs to be replaced regardless of whether it contains impurities or has any other exceptions.

3) Checking the compressor oil-return pipeline

Remove the compressor oil-return pipeline and check the amount of oil and impurities in the pipeline.



CAUTION!

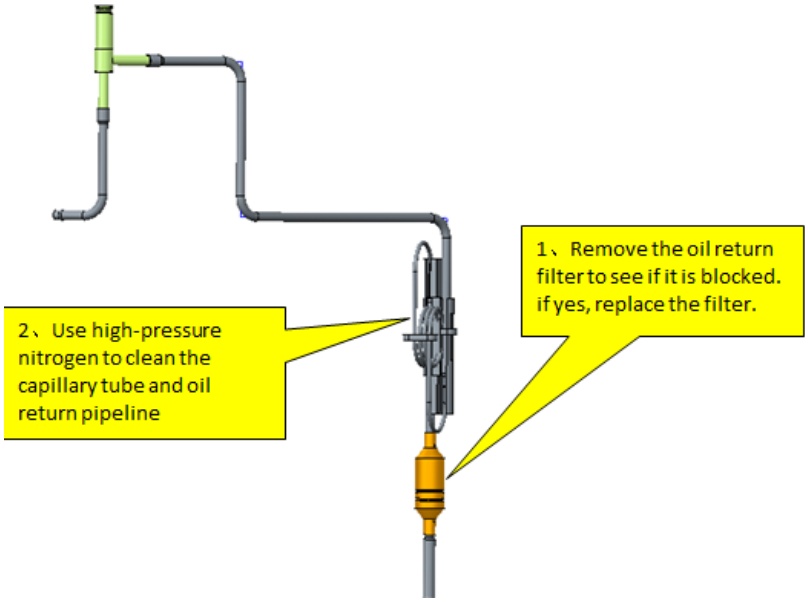
Check the system components that need to be replaced, and ensure that pipe openings of the damaged components are sealed with tape or the like in time to ensure that they are in good condition for further analysis.

Collect the amount of compressor oil poured out from the oil separator, gas-liquid separator and oil equalizer, and make relevant records to facilitate the replacement of compressors, gas-liquid separator and other components, and adding of lubricant to the system. The total amount of oil that is poured out of the system needs to be supplemented with additional oil after repair.

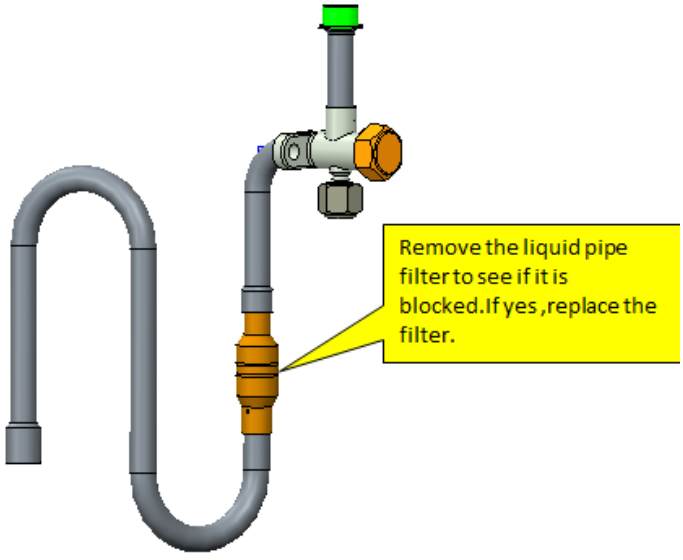
Step 8: Removing pipeline system

After checking the parts that need to be replaced, check whether there is any abnormality in the system pipeline. Use nitrogen to blow the main pipeline and focus on detecting and removing the oil passages.

① Removing the oil return pipeline.



② Checking the liquid pipe filter.



Remove the other piping components according to the actual conditions. If the components are not replaced immediately after removing the pipeline, use tape to seal the pipeline to prevent moisture and impurities from contaminating the system.

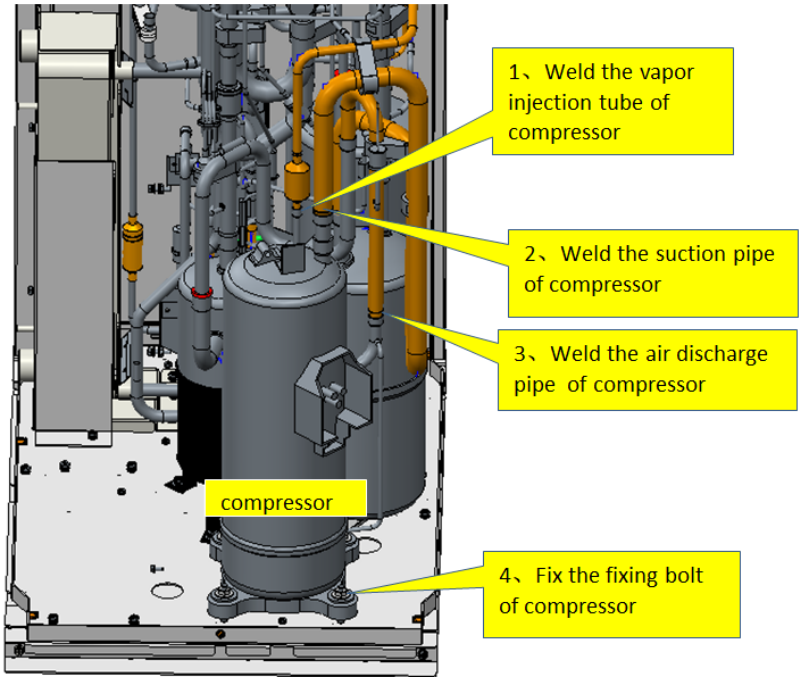
Step 9: Replacing compressors

Pay attention to the following items when replacing the compressors:

1) Remove the sealing rubber block before replacing the compressor and weld the compressor and the corresponding pipeline. Nitrogen is required during the welding process. Since the compressor suction and exhaust ports are all copper-plated steel pipes, it is necessary to use solder with at least 5% silver. The welding gap should be 0.1~0.3mm to prevent blocking or insufficient welding. Do not overheat the nozzles during the welding process.

2) After the pipeline system is welded, use special foot pads and bolts to fix the compressor to ensure the stability of the compressor during operation.

3) When the compressor is connected to the power cables, it must be connected according to the connection condition of the unit at the factory and based on the electrical circuit diagram. The wires of the compressor must be connected in the correct phase sequence. In particular, make sure that the two full inverter compressors are wired correctly. If the power lines of compressor 1 and compressor 2 are reversed, it may cause unit failure, which may cause damage to the compressors in severe cases; (Compressor 1 and compressor 2 are of the same type. If compressor 1 and the compressor 2 power lines are reversed, the temperature sensor package is correctly installed, and the unit may malfunction when the unit is running;)



Before replacing the compressors, make sure that the models of the compressors to be replaced are same as the models of the new compressors. The new compressors must be installed at the same places of the respective old compressors and wired correctly. We recommend you replace the compressors one by one.

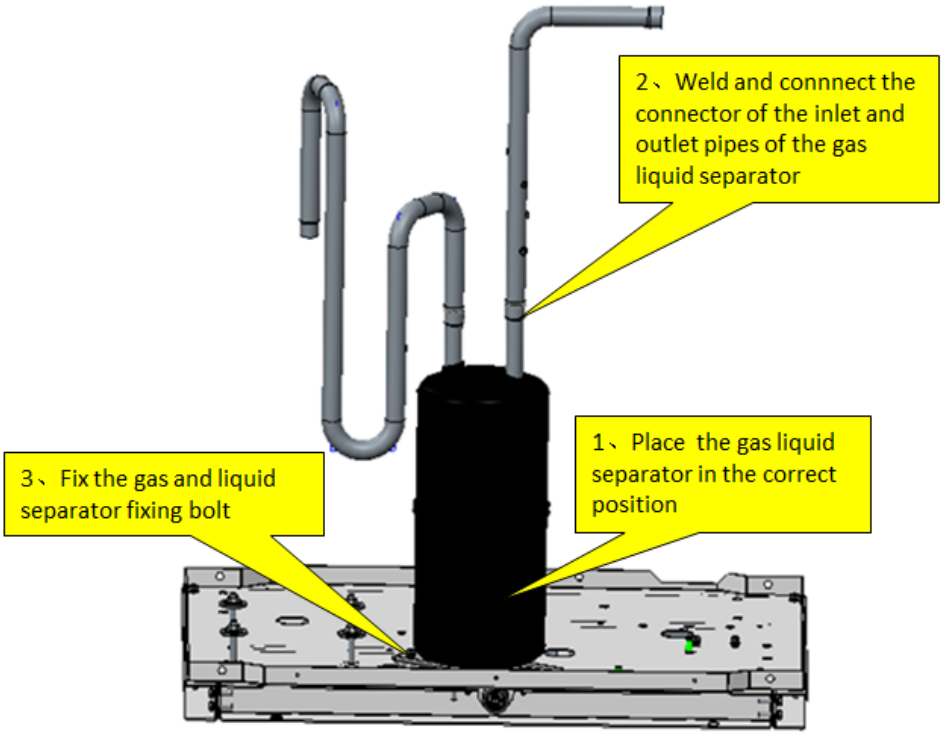
CAUTION!

The compressors must be wired in accordance with the wiring at the factory. The control varies by compressors. If the wiring is incorrect or the two compressors are reversed, the unit may be damaged.

Step 10: Checking/replacing gas-liquid separator

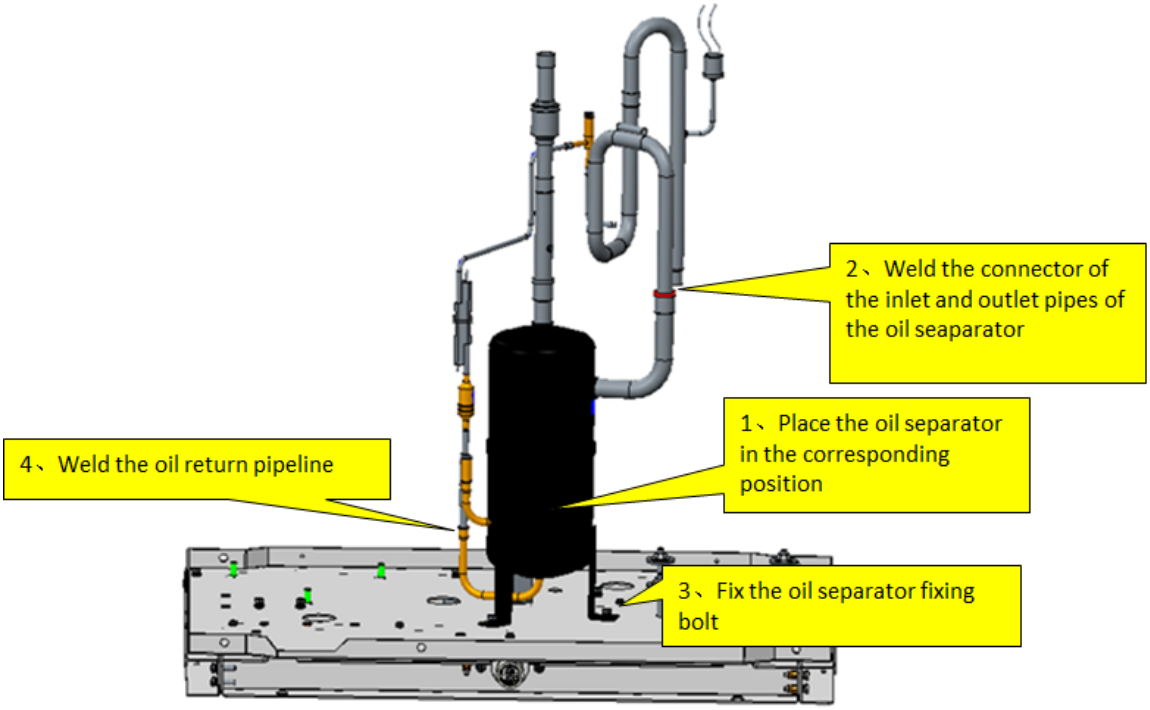
※ **Note:** If a damaged compressor in the system needs to be replaced, the gas-liquid separator must be replaced at the same time to avoid abnormal conditions inside the gas-liquid separator, which may affect the safety and reliability of the system.

Place the gas-liquid separator in a suitable position on the chassis, connect the gas-liquid separator inlet and outlet pipes, and then connect the nitrogen port on the gas-liquid separator connection pipe. The nitrogen position can be selected according to the site conditions. Use the bypass interface or directly connect it to the inlet and outlet pipes of the gas-liquid separator. When the pipelines are large, they can be fixed by tape. Make sure that the nitrogen can flow smoothly through the gas-liquid separator.



Step 11: 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 12: 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 13: 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-W450WM/C-Xand 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-W280WM/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.

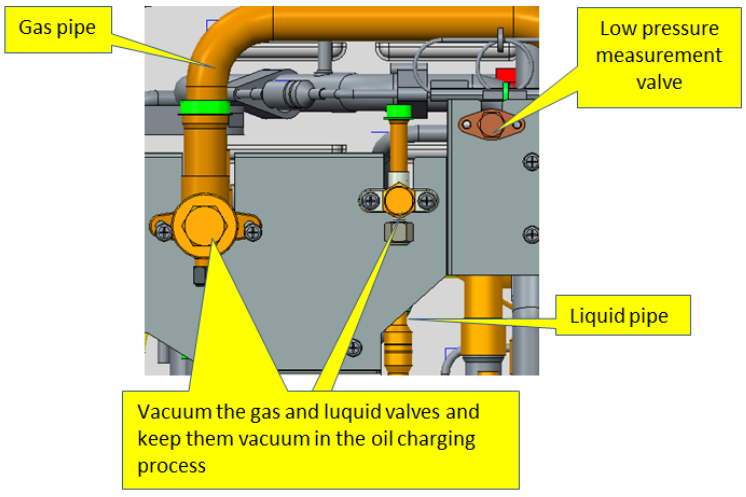
2) Connect the gas and liquid valves of the unit and vacuum the unit for over 30 minutes.

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 14: 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 15: 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 16: 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 17: Startup commissioning

Perform the startup commissioning separately when the unit is working in cooling mode with full load, in cooling mode only, in heating mode with full load, and in heating mode only. In each case, run the unit for more than 30 minutes, analyze the data, adjust the unit system and make sure that all parameters are correct. For specific parameters, contact after-sales engineers or Gree's technicians.

5.4 Removing and Installing Four-way Valve Coil

Preparations

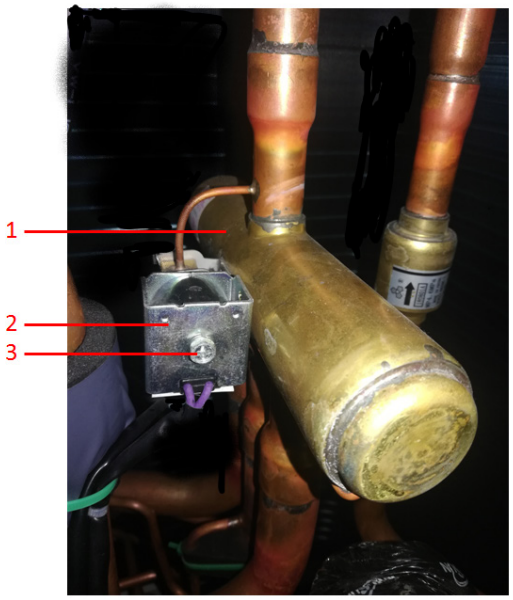
(1) Use the power circuit breaker to switch off the power of the GMV Water VRF system.

(2) Remove the unit's front panel by referring to 5.1.1 Removing the Unit Panel.

Removing procedure

(1) Use a screwdriver to remove the fixing screw of the 4-way valve coil.

(2) Remove the 4-way valve coil.



1 --- 4-way valve 2 --- 4-way valve coil 3 --- Screw

Installation procedure

(1) Install the new 4-way valve coil to the exact position.

(2) Tighten the screw with a screwdriver to ensure that the 4-way valve coil does not rotate.

5.5 Removing and Installing Four-way Valve

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV Water VRF system.

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

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

Removing procedure

(1) Remove the 4-way valve coil by referring to 5.4 Replacing 4-way Valve Coil (YV1).

(2) Use gas welding to heat the four-port (DESC) connecting pipe of the 4-way valve and pull them off the 4-way valve. Nitrogen protection should be applied during welding. Refer to Table 1 for nitrogen pressure.

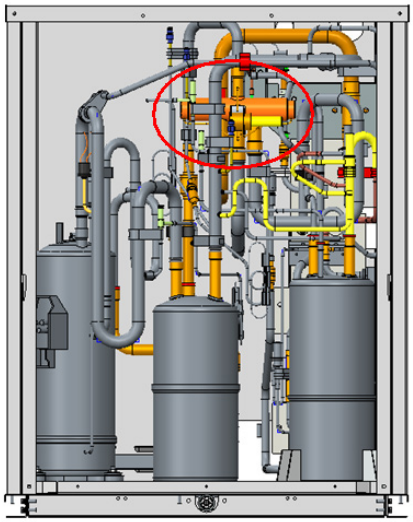
Table 1 Nitrogen Pressure for Pipeline Assembly Welding

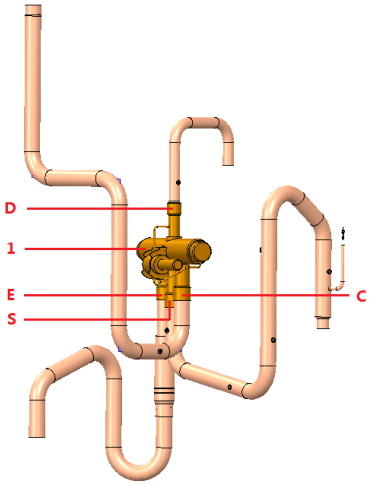
Pipe diameter range (mm)	Nitrogen pressure range (MPa)	Pipe length (m)	Shortest pre-charge time (s)	Shortest hysteresis nitrogen charging time (s)
Φ6~Φ9.52	0.01~0.05	≤2	10	10
Φ12~Φ16	0.01~0.08	≤2	15	20
Φ19~Φ22	0.03~0.1	≤3	30	20
Φ25~Φ28	0.03~0.1	≤3	30	30
Φ34.9~Φ41.3	0.03~0.1	≤3	35	60
Φ53.9~Φ104.8	0.03~0.1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

(3) 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.

(4) Remove the old 4-way valve from the pipeline.





1 ---- 4-way valve

D - Gas pipe, connecting to the exhaust pipe of the cooling compressor;
C - Gas pipe, connecting to the inlet pipe of the condenser.

S - Gas pipe, connecting to the suction pipe of the cooling compressor;
E - Gas pipe, connecting to the air return pipe of the evaporator.

Installation procedure

(1) Install the new 4-way valve to the exact position.

(2) Connect the new 4-way valve to the pipeline.

(3) When welding the 4-way valve, wrap the valve body with a damp cloth to prevent the slider in the valve from being burned out and the water from flowing into the pipe.

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

(5) Install the 4-way valve coil by referring to 5.4 Installing 4-way Valve Coil (YV1).

(6) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(7) Make sure that the components and cables are properly connected.

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

5.6 Removing and Installing Electronic Expansion Valve

Preparations

(1) Use the power circuit breaker to switch off the power of the GMV Water VRF system. Make sure that the unit pipeline system is free of refrigerant.

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

Removing procedure

(1) Remove the damping block wrapped on the electronic expansion valve.

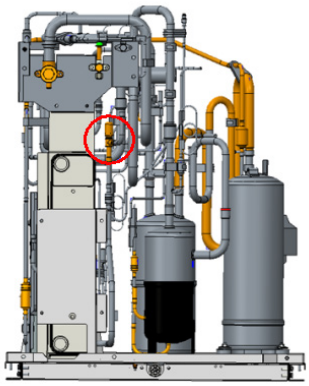
(2) Rotate the electronic expansion valve coil counterclockwise until it is released and then remove it.

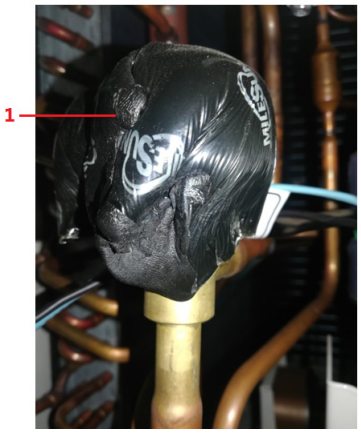
(3) Cut the electronic expansion valve inlet and outlet pipes to ensure that there is no residual refrigerant in the unit. Remove the old electronic expansion valve.

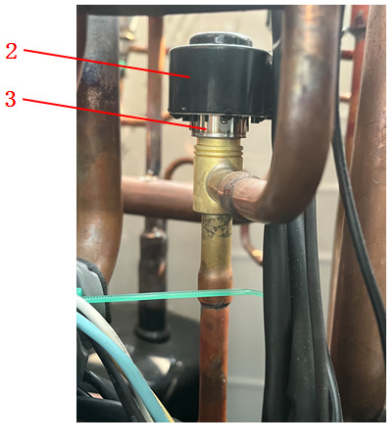
(4) Weld and loosen the connecting tube of the electronic expansion valve and then pull the connecting tube off.

Note: When welding, do not get the other components burnt.

(5) Remove the old electronic expansion valve.







1 --- Damper block 2 --- Electronic expansion valve coil 3 --- Electronic expansion valve

Installation procedure

(1) Install the new electronic expansion valve to the exact position.

(2) Weld the connecting tube of the electronic expansion valve.

(3) When welding the electronic expansion valve, wrap the valve body with a damp cloth.

(4) Nitrogen protection should be applied. Refer to Table 1 for nitrogen pressure.

Note: When welding, do not get the other components burnt.

(5) Install the electronic expansion valve coil to the correct position and turn it clockwise until a click is heard, indicating that it is in place.

(6) Wrap the damping block.

(7) Fix the wires according to the original requirements. Refer to the unit wiring diagram.

(8) Make sure that the components and cables are properly connected.

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

5.7 Removing and Installing Oil Separator

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV.

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

(3) Remove all panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

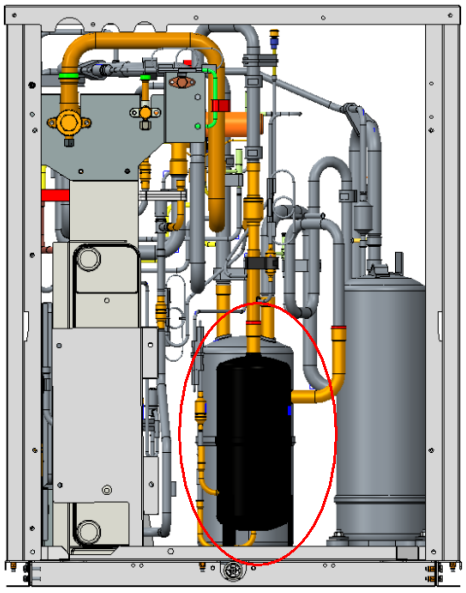
Removing procedure

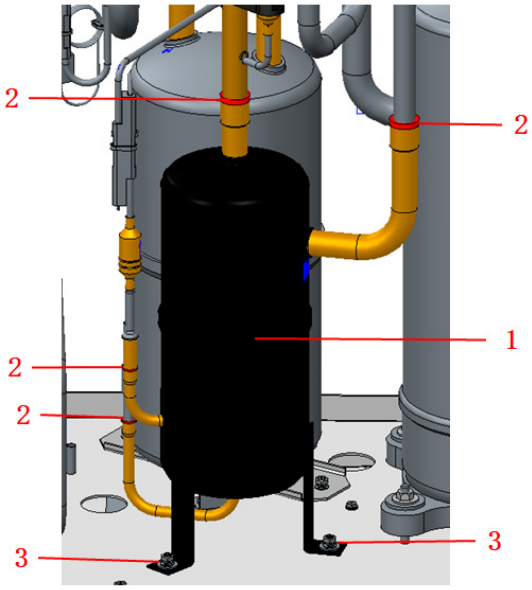
(1) Use a screwdriver to unscrew the screw connecting the oil separator and the oil separator bracket, and remove the bracket or pipe clamp on the bracket.

(2) Loosen the three connection points on the oil separator and then pull off the connecting pipe. Note: When welding, do not let the flame burn onto other components.

(3) Use a screwdriver to loosen the fixing bolt of the oil separator.

(4) Remove the oil separator from the chassis.





1--- Oil separator 2--- Connection point

3--- Bolts and washers

Installation procedure

(1) Install the oil separator in place and tighten the anchor bolts of the oil separator.

(2) Weld the connection points on the oil separator. Nitrogen filling for welding, refer to Table 1 for nitrogen pressure.

Note: When welding, do not let the flame burn onto other components.

(3) Tighten the fixing screws with a screwdriver and fasten the bracket.

(4) Check whether all components and connecting wires are properly connected.

(5) If there is no problem, fasten the front panel and tighten the fixing screws.

5.8 Removing and Installing Steam-liquid Separator

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV.

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

(3) Remove all panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

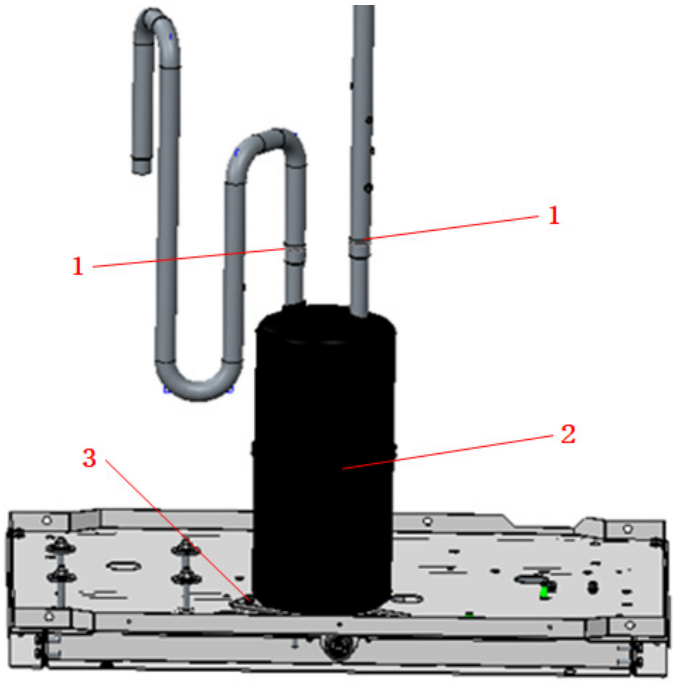
Removing procedure

(1) Loosen the two connection points on the steam-liquid separator and then pull off the connecting pipe.

Note: When welding, do not let the flame burn onto other components.

(2) Loosen the fixing bolts of the steam-liquid separator.

(3) Remove the steam-liquid separator from the chassis.



1--- Connection point 2--- Steam-liquid separator 3--- Bolts and washers

Installation procedure

(1) Install the steam-liquid separator in place and tighten the anchor bolts of the steam-liquid separator.

(2) Weld the two connection points on the steam-liquid separator. Nitrogen filling for welding, refer to Table 1 for nitrogen pressure.

Note: When welding, do not let the flame burn onto other components.

(3) Check whether all components and connecting wires are properly connected.

(4) If there is no problem, fasten the front panel and tighten the fixing screws.

5.9 Removing and Installing Reservoir

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV.

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

(3) Remove all panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

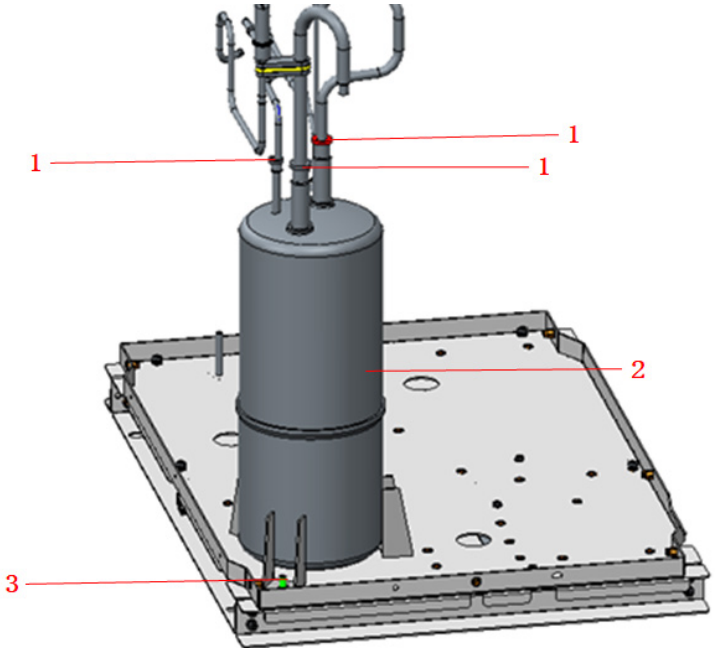
Removing procedure

(1) Loosen the three connection points on the reservoir and then pull off the connecting pipe.

Note: When welding, do not let the flame burn onto other components.

(2) Loosen the fixing bolts of the reservoir.

(3) Remove the reservoir from the chassis.



1--- Connection point 2--- Reservoir 3--- Bolts and washers

Removing procedure

(1) Install the reservoir in place and tighten the anchor bolts of the reservoir.

(2) Weld the three connection points on the reservoir. Nitrogen filling for welding, refer to Table 1 for nitrogen pressure.

Note: When welding, do not let the flame burn onto other components.

(3) Check whether all components and connecting wires are properly connected.

(4) If there is no problem, fasten the front panel and tighten the fixing screws.

5.10 Removing and Installing Plate Heat Exchanger

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV.

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

(3) Remove all panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

Removing procedure

(1) Remove the temperature wrap near the pipe orifice.

(2) Loosen the connecting pipes of the four pipe orifices of the plate heat exchanger, and then pull off the connecting pipes.

Note: When welding, do not let the flame burn onto other components. The solder joint of the plate heat exchanger are made of steel and copper, and the welding quality shall be ensured.

(3) Loosen the fixing screws of the plate heat exchanger bracket and remove the plate heat exchanger and bracket as a whole.

Installation procedure

(1) Fix the screws of the plate heat exchanger and the bracket, and then fix the whole body on the chassis.

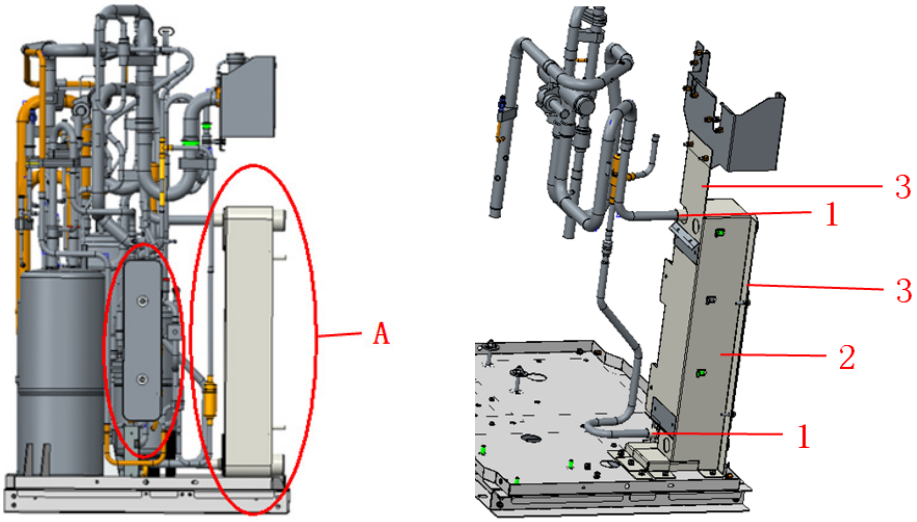
(2) Assemble according to the position of the inlet and outlet pipes of the plate heat exchanger, and weld the four connection points on the plate heat exchanger.

(3) Nitrogen filling for welding, refer to Table 1 for nitrogen pressure.

Note: When welding, do not let the flame burn onto other components.

(4) Check whether all components and connecting wires are properly connected.

(5) If there is no problem, fasten the front panel and tighten the fixing screws.



A--- Plate heat exchanger components

1--- Connection point 2--- Plate heat exchanger 3--- Plate heat exchanger bracket

5.11 Removing and Installing Pressure Sensor

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV.

(2) Remove the upper and lower panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

Removing procedure

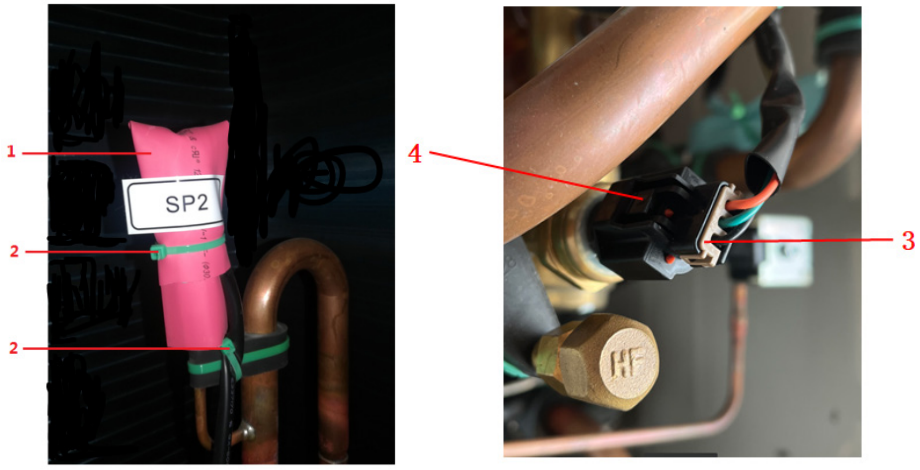
(1) Use the diagonal pliers to cut off the high-temperature wiring harness tied to the heat shrink tube of the pressure sensor.

(2) Remove the heat shrink tube wrapped on the pressure sensor.

(3) Pinch the pressing point on the pressure sensor plastic plug, and pull out the plastic plug of the pressure sensor.

(4) Prepare two wrenches. One is used to secure the fluorine injection nozzle, and the other is used

to unscrew the metal interface of the pressure sensor.



1--- Heat shrink tube 2--- High temperature wiring harness 3--- Pressure sensor 4--- Pressing point

Installation procedure

(1) Prepare a new pressure sensor, first install the metal interface of the pressure sensor in the correct position, fix the fluorine injection nozzle with a wrench, and tighten it with another wrench.

(2) Insert the plastic plug of the pressure sensor into the correct position. It indicates that it is installed in place after hearing a "click" sound.

(3) Put on the heat shrink tube and tie the high-temperature wiring harness based on the original position.

(4) Fix the wiring according to the original requirements, and refer to the unit wiring diagram.

(5) Check whether all components and connecting wires are properly connected.

(6) If there is no problem, fasten the upper and lower panels and tighten the fixing screws.

5.12 Removing and Installing Temperature Wrap

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV.

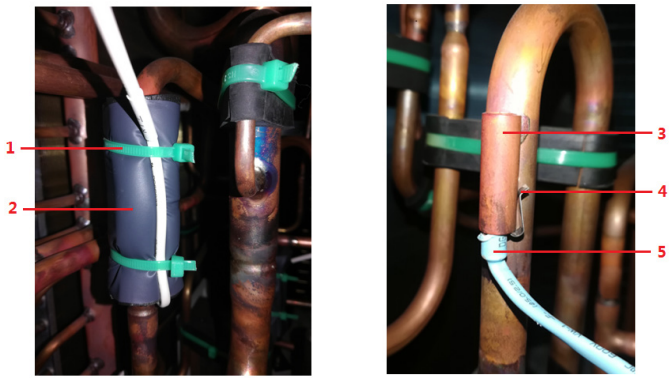
(2) Remove the upper and lower panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

Removing procedure

(1) Use the diagonal pliers to cut off the wiring harness of the insulation cotton.

(2) Remove the insulation cotton wrapped on the temperature wrap sleeve.

(3) Remove the temperature wrap.



1--- High temperature wiring harness 2—Insulation cotton 3--- Temperature wrap sleeve
4--- Temperature wrap insert 5--- Temperature wrap

Installation procedure

(1) Insert the temperature wrap insert into the temperature wrap sleeve.

(2) Apply heat dissipating silicone grease on the surface of the temperature wrap, and insert the temperature wrap into the temperature wrap sleeve (from bottom to top).

(3) Wrap the insulation cotton and tie it with high-temperature wiring harness.

(4) Fix the wiring according to the original requirements, and refer to the unit wiring diagram.

(5) Check whether all components and connecting wires are properly connected.

(6) If there is no problem, fasten the upper and lower panels and tighten the fixing screws.

5.13 Removing and Installing Pressure Switch

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV;

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

(3) Remove the upper and lower panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

Removing procedure

(1) Remove the pipe fixing block and wiring harness on the pressure switch

(2) Wrap the pressure switch with a wet cloth;

(3) Heat the pressure switch connection port with gas welding and unplug the pressure switch. When welding, nitrogen shall be filled for protection;

(4) Remove the old pressure switch from the pipeline and record the wiring position of the pressure switch

Installation procedure

(1) Install the new pressure switch in the correct position.

(2) When welding the pressure switch, the valve body shall be wrapped with a wet cloth to prevent it from being burnt out and prevent water from flowing into the pipeline.

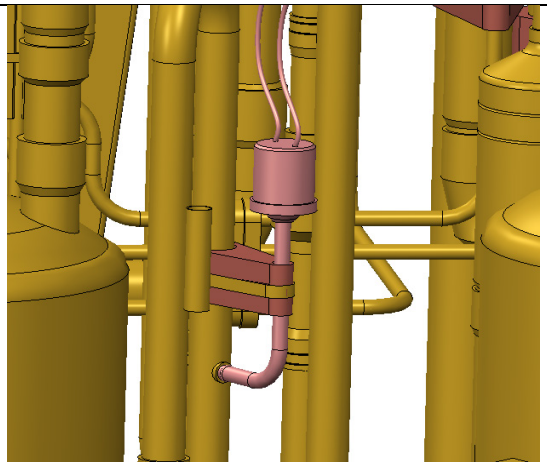
(3) When welding, nitrogen shall be filled for protection, with a nitrogen pressure of 0.5 ±0.1kgf/cm2 (relative pressure)

(4) Install the pipe fixing block and wiring harness.

(5) Fix the wiring according to the original requirements, and refer to the unit wiring diagram.

(6) Check whether all components and connecting wires are properly connected.

(7) Install the unit panel.





5.14 Preparations for Removing and Installing Solenoid Valve

(1) Preparations

(2) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV;

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

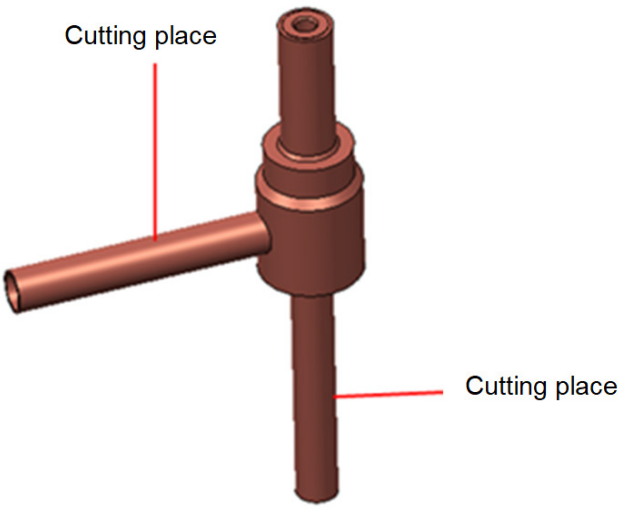
(4) Remove the upper and lower panels of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels.

Removing procedure

(1) Use tools to remove the solenoid valve coil;

(2) Use a pipe cutter to cut off the inlet and outlet pipes of the solenoid valve and remove the valve body;





(3) Heat the pressure switch connection port with gas welding and unplug the inlet and outlet pipes of the solenoid valve. When welding, nitrogen shall be filled for protection, with a nitrogen

pressure of 0.5 ± 0.1kgf/cm^2 (relative pressure);

(4) Remove the inlet and outlet pipes of the old solenoid valve from the pipeline.

Installation procedure

(1) Install the new solenoid valve in the correct position;

(2) Wrap the solenoid valve body with a wet cloth;

(3) When welding, nitrogen shall be filled for protection, with a nitrogen pressure of 0.5 ±0.1kgf/cm^2 (relative pressure);

(4) Install the solenoid valve coil in the correct position;

(5) Use the torque solenoid valve coil to tighten it;

(6) Refer to the unit wiring diagram, and fix the wiring according to the original requirements;

(7) Check whether all components and connecting wires are properly connected;

(8) Install the panel.

5.15 Removing and Installing Electric Heating Belt

Preparations

(1) Use the on-site power supply circuit breaker to turn off the system power supply of the GMV Water VRV;

(2) Remove the front panel of the unit, please refer to the Chapter 5.1.1 Removing Unit Panels;

(3) Remove the soundproof cotton and soundproof cap of the compressor (if there is a soundproof cover, please remove the front panel of the soundproof cover). Please refer to the instructions and steps.

Removing procedure

(1) Release the spring hook electrically heated on the compressor;

(2) Remove the electric heating belt;

Installation procedure

(1) Install the electric heating belt on the press shaft, as shown in the figure;

(2) Fasten the snap ring buckle of the electric heating belt;

(3) Connect the fan cable and restore the original wiring;

(4) Install the soundproof cotton;

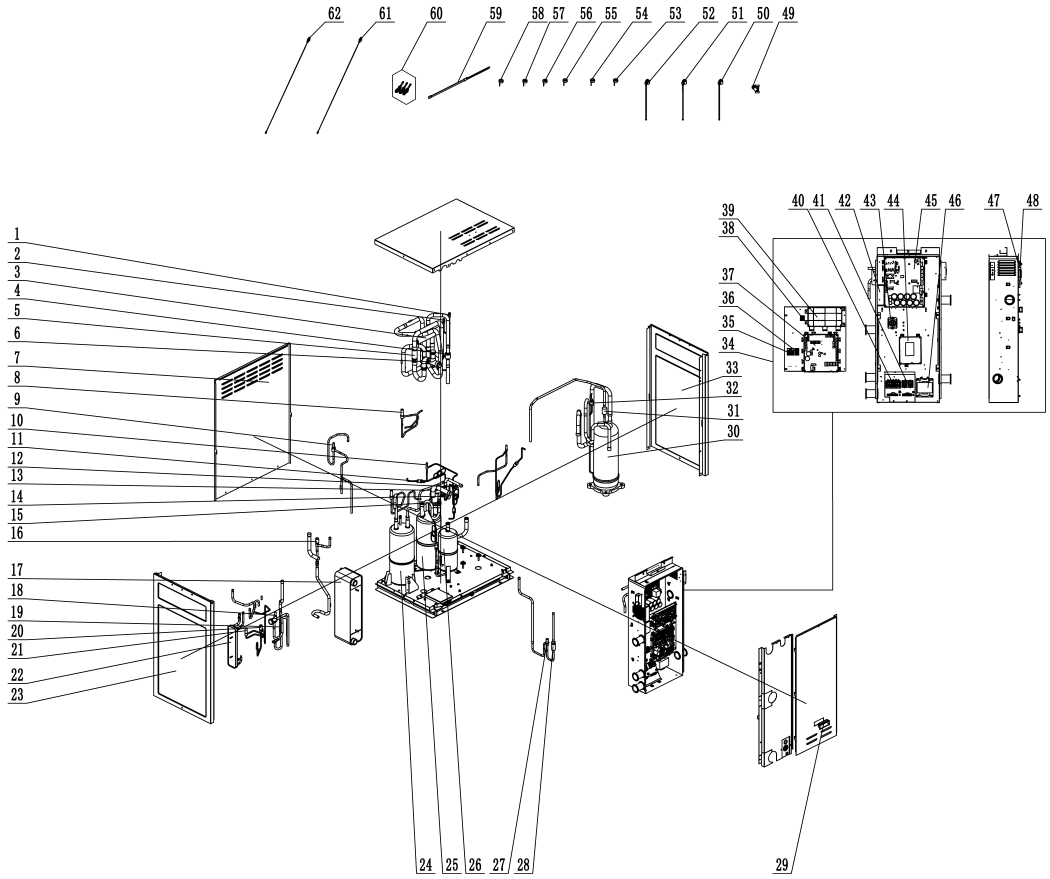
(5) Reinstall the unit panel, please refer to the Chapter 5.1.1 Installing Unit Panel.



1—Snap 2—Spring hook

6 Explosive View and Parts List

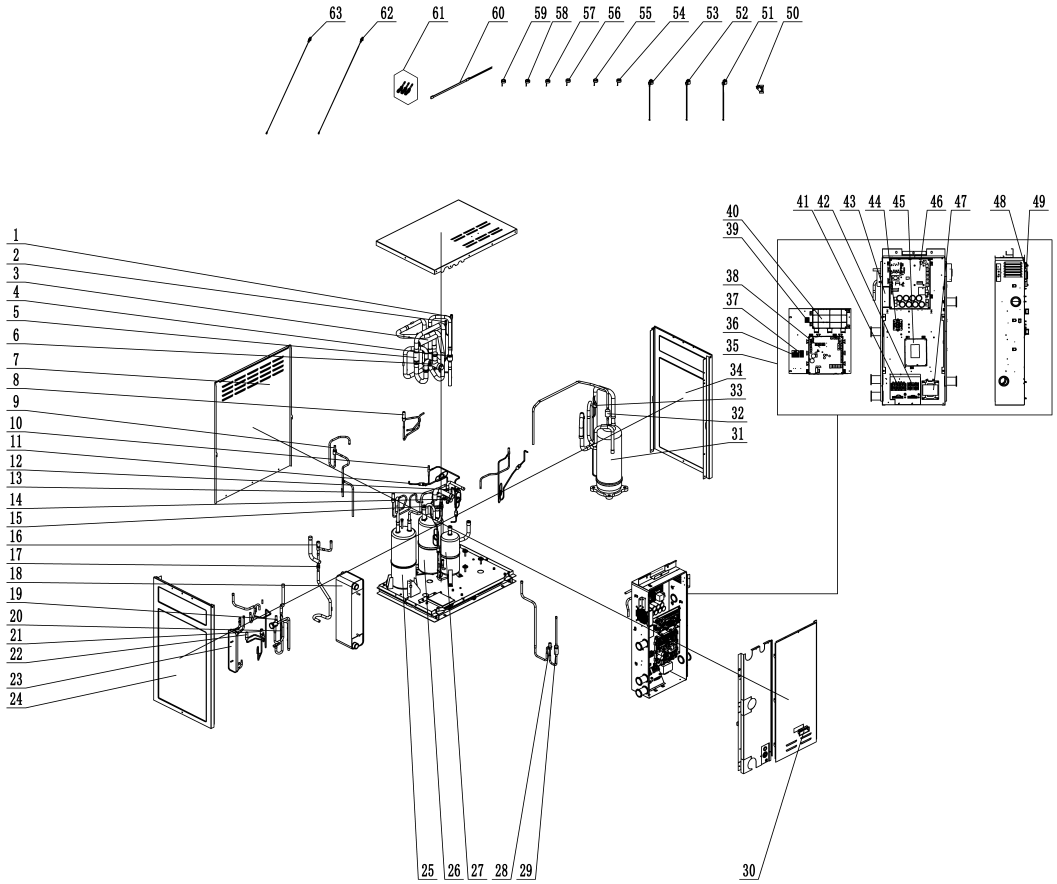
6.1 Explosive View and Parts List of GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-335WM/C-X



No.	Name	Material code	Qty
1	Nozzle for Adding Freon(R410A)	06123006	1
2	Nozzle for Adding Freon	06120012	2
3	4-Way Valve	43000339	1
4	One Way Valve	071001060007	1
5	Filter	07218603	1
6	Cut off Valve	07334100014	1
7	Rear Panel	01544100008P	1
8	Unloading Valve	07334100002	2
9	Electromagnetic Valve	43044100224	1
10	Electromagnetic Valve	43000054	2
11	Strainer	07415200002	4
12	Nozzle for Adding Freon	06130002	1
13	Electromagnetic Valve	43044100144	1
14	Cut off Valve	07334100013	1
15	Strainer	0721212101	2
16	Electronic Expansion Valve	072009060012	1
17	Plate-type Heat Exchanger	010007000016	1
18	Electromagnetic Valve	43000073	1
19	One way Valve	04324001	2
20	Electronic Expansion Valve	072009060040	1
21	Discharge Charge Valve	07133771	1

No.	Name	Material code	Qty
22	Plate-type Heat Exchanger	00904100005	1
23	Left Side Plate	01314100017P	1
24	Accumulator	0742417301	1
25	Gas-liquid Separator	0742414701	2
26	Oil Separator	07424100019	1
27	Electronic Expansion Valve	072009060041	2
28	Bidirection Strainer	07220016	4
29	Controller holder	2690410001603	1
30	Compressor and Fittings	009001060839	1
31	Silencer	035023000007	1
32	Pressure Protect Switch	4602000910	2
33	Right Side Plate	01314100015P	1
34	Electric Box Assy	100002080427	1
35	Terminal Board	42200006005403	1
36	Terminal Board	422000060056	2
37	Main Board	300027060024	1
38	Terminal Board	420101852	1
39	Main Board	300027060289	1
40	Terminal Board	42010052	1
41	Terminal Board	420001000003	1
42	Fan(radiation)	49010501	1
43	AC Contactor	44010245	1
44	Filter Board	300020060087	1
45	Drive Board	300078060270	1
46	Reactor	450004060018	1
47	Radiator	4901800008003	1
48	Radiator	4901800008802	1
49	Strainer	07414100007	1
50	Electric Expand Valve Fitting	072002000011	1
51	Electric Expand Valve Fitting	4304413264	1
52	Electric Expand Valve Fitting	4304413274	1
53	Magnet Coil (electromagnetic valve)	07200106000831	1
54	4 Way Valve Coil	07201006000205	1
55	Magnet Coil (electromagnetic valve)	07200106000829	1
56	Magnet Coil (electromagnetic valve)	07200106000830	1
57	Magnet Coil (electromagnetic valve)	07200106000811	1
58	Magnet Coil (electromagnetic valve)	07200106000603	1
59	Electrical Heater	7651521251	1
60	Sensor Sub-assy	390002060342	1
61	Pressure Sensor(High Pressure)	3221800000901	1
62	Pressure sensor	3221800000801	1

6.2 Explosive View and Parts List of GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C、GMV-W560WM/C-X



No.	Name	Material code	Qty
1	Nozzle for Adding Freon(R410A)	06123006	1
2	Nozzle for Adding Freon	06120012	1
3	4-Way Valve	43000412	2
4	One Way Valve	071001060007	1
5	Filter	07218603	1
6	Cut off Valve	07334100014	1
7	Rear Panel	01544100008P	1
8	Unloading Valve	07334100002	1
9	Electromagnetic Valve	43044100224	2
10	Electromagnetic Valve	43000054	1
11	Strainer	07415200002	2
12	Nozzle for Adding Freon	06130002	4
13	Electromagnetic Valve	43044100144	1
14	Cut off Valve	07334100053	1
15	Strainer	0721520101	1
16	Electronic Expansion Valve	072009060012	1
17	Strainer	0721212101	1
18	Plate-type Heat Exchanger	010007060050	1
19	Electromagnetic Valve	43000073	1
20	One way Valve	04324001	1
21	Electronic Expansion Valve	072009060040	2
22	Discharge Charge Valve	07133771	1
23	Plate-type Heat Exchanger	00904100005	1
24	Left Side Plate	01314100017P	2

No.	Name	Material code	Qty
25	Accumulator	0742417301	1
26	Gas-liquid Separator	07425215	1
27	Oil Separator	07424100019	1
28	Electronic Expansion Valve	072009060041	1
29	Bidirection Strainer	07220016	1
30	Controller holder	2690410001603	2
31	Compressor and Fittings	009001060834	1
32	Silencer	035023000007	2
33	Pressure Protect Switch	4602000910	4
34	Right Side Plate	01314100015P	1
35	Electric Box Assy	100002077119	1
36	Terminal Board	42200006005403	1
37	Terminal Board	422000060056	1
38	Main Board	300027060024	1
39	Terminal Board	420101852	1
40	Main Board	300027060289	1
41	Terminal Board	42010052	2
42	Terminal Board	420001000003	1
43	Fan(radiation)	49010501	1
44	AC Contactor	44010245	1
45	Filter Board	300020060086	1
46	Drive Board	300078060269	1
47	Reactor	450004060018	1
48	Radiator	4901800008003	1
49	Radiator	4901800008802	1
50	Strainer	07414100007	1
51	Electric Expand Valve Fitting	072002000011	1
52	Electric Expand Valve Fitting	4304413264	1
53	Electric Expand Valve Fitting	4304413274	1
54	Magnet Coil (electromagnetic valve)	07200106000831	1
55	4 Way Valve Coil	07201006000205	1
56	Magnet Coil (electromagnetic valve)	07200106000829	1
57	Magnet Coil (electromagnetic valve)	07200106000830	1
58	Magnet Coil (electromagnetic valve)	07200106000811	1
59	Magnet Coil (electromagnetic valve)	07200106000603	1
60	Electrical Heater	7651540737	1
61	Sensor Sub-assy	390002060342	1
62	Pressure Sensor(High Pressure)	3221800000901	1
63	Pressure sensor	3221800000801	1

Appendixes

Appendix 1 Temperature Senor Resistance and Temperature Relationship Table

Environmental temperature sensor 15kΩ resistance ~ voltage correspondence table (including outdoor and indoor environment temperature sensors)

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-20	144	0.311	**71**	2.523	2.825
-19	138.1	0.323	**72**	2.439	2.838
-18	128.6	0.345	**73**	2.358	2.852
-17	121.6	0.362	**74**	2.28	2.865
-16	115	0.381	**75**	2.205	2.877
-15	108.7	0.4	**76**	2.133	2.889
-14	102.9	0.42	**77**	2.064	2.901
-13	97.4	0.44	**78**	1.997	2.912
-12	92.22	0.462	**79**	1.933	2.923
-11	87.35	0.484	**80**	1.871	2.934
-10	82.75	0.506	**81**	1.811	2.945
-9	78.43	0.53	**82**	1.754	2.955
-8	74.35	0.554	**83**	1.699	2.964
-7	70.5	0.579	**84**	1.645	2.974
-6	66.88	0.605	**85**	1.594	2.983
-5	63.46	0.631	**86**	1.544	2.992
-4	60.23	0.658	**87**	1.497	3.001
-3	57.18	0.686	**88**	1.451	3.009
-2	54.31	0.714	**89**	1.408	3.017
-1	51.59	0.743	**90**	1.363	3.025
0	49.02	0.773	**91**	1.322	3.033
1	46.8	0.801	**92**	1.282	3.04
2	44.31	0.835	**93**	1.244	3.047
3	42.14	0.866	**94**	1.207	3.054
4	40.09	0.899	**95**	1.171	3.061
5	38.15	0.931	**96**	1.136	3.068
6	36.32	0.965	**97**	1.103	3.074
7	34.58	0.998	**98**	1.071	3.08
8	32.94	1.033	**99**	1.039	3.086
9	31.38	1.067	**100**	1.009	3.092
10	29.9	1.102	**101**	0.98	3.098
11	28.51	1.138	**102**	0.952	3.103
12	27.18	1.174	**103**	0.925	3.108
13	25.92	1.21	**104**	0.898	3.114
14	24.73	1.246	**105**	0.873	3.119

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
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
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

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
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
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

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
0	65.37	0.773	**96**	1.515	3.068
1	62.13	0.804	**97**	1.47	3.074
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

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
45	8.705	2.299	**141**	0.4502	3.227
46	8.37	2.326	**142**	0.4394	3.229
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

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-10	274.02	0.116	**81**	5.9336	2.071
-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

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
35	32.088	0.784	**126**	1.6402	2.835
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

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
0	804	0.772	56	3528	3.675
1	830	0.799	57	3606	3.759
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

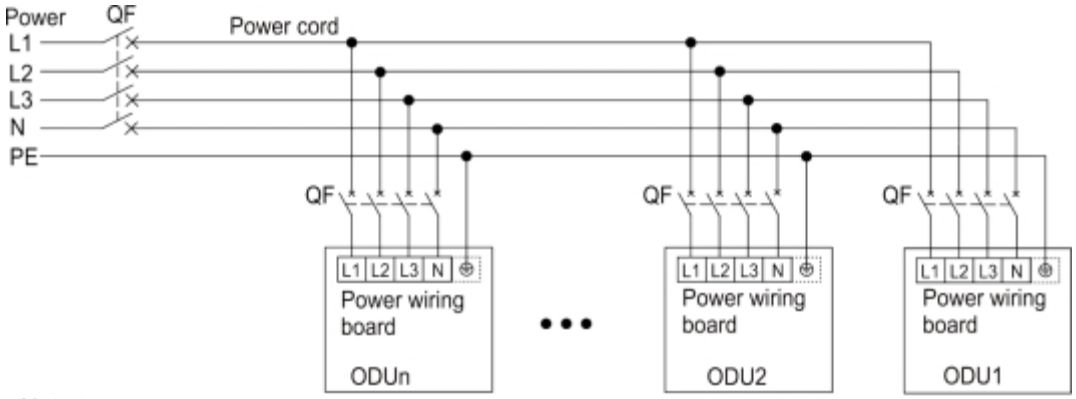
Low-pressure sensor features (R410A)

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

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-44	146	0.589	12	1159	2.615
-43	154	0.605	13	1193	2.683
-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

Each unit should be equipped with a circuit breaker for short circuit and abnormal overload protection. And also a main circuit breaker is required to control power supply or disconnection. The circuit breaker is normally closed.



Notes:
The maximum outdoor unit quantity "n" is decided by the combination from of outdoor unit.
Please refer to the actual requirement of unit for the earthing position.

Please refer to the following table for master unit power cord specifications and circuit breakers.

Model	Combination method	Circuit breaker capacity (A) of each combined module	Minimum sectional area of ground lead(mm^2)	Recommended wire (sectional area mm^2×quantity)	Model
GMV-W252WM/C-X	380-415V 3N~ 50/60Hz	—	25	2.5	2.5×5
GMV-W280WM/C-X	380-415V 3N~ 50/60Hz	—	25	2.5	2.5×5
GMV-W335WM/C-X	380-415V 3N~ 50/60Hz	—	25	2.5	2.5×5
GMV-W400WM/C-X	380-415V 3N~ 50/60Hz	—	32	4.0	4.0×5
GMV-W450WM/C-X	380-415V 3N~ 50/60Hz	—	32	4.0	4.0×5
GMV-W504WM/C-X	380-415V 3N~ 50/60Hz	—	32	4.0	4.0×5
GMV-W560WM/C-X	380-415V 3N~ 50/60Hz	—	40	6.0	6.0×5
GMV-W615WM/C-X	380-415V 3N~ 50/60Hz	280+335	25+25	2.5+2.5	2.5×5+2.5×5
GMV-W670WM/C-X	380-415V 3N~ 50/60Hz	335+335	25+25	2.5+2.5	2.5×5+2.5×5
GMV-W735WM/C-X	380-415V 3N~ 50/60Hz	335+400	25+32	2.5+4.0	2.5×5+4.0×5
GMV-W800WM/C-X	380-415V 3N~ 50/60Hz	335+450	25+32	2.5+4.0	2.5×5+4.0×5
GMV-W850WM/C-X	380-415V 3N~ 50/60Hz	400+450	32+32	4.0+4.0	4.0×5+6.0×5
GMV-W900WM/C-X	380-415V 3N~ 50/60Hz	450+450	32+32	4.0+4.0	4.0×5+4.0×5
GMV-W954WM/C-X	380-415V 3N~ 50/60Hz	450+504	32+32	4.0+4.0	4.0×5+4.0×5
GMV-W1008WM/C-X	380-415V 3N~ 50/60Hz	504+504	32+32	4.0+4.0	4.0×5+4.0×5
GMV-W1064WM/C-X	380-415V 3N~ 50/60Hz	504+560	32+40	4.0+6.0	4.0×5+6.0×5

Model	Combination method	Circuit breaker capacity (A) of each combined module	Minimum sectional area of ground lead(mm^2)	Recommended wire (sectional area mm^2×quantity)	Model
GMV-W1120WM/C-X	380-415V 3N~ 50/60Hz	560+560	40+40	6.0+6.0	6.0×5+6.0×5
GMV-W1200WM/C-X	380-415V 3N~ 50/60Hz	400+400+400	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1250WM/C-X	380-415V 3N~ 50/60Hz	400+400+450	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1300WM/C-X	380-415V 3N~ 50/60Hz	400+450+450	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1350WM/C-X	380-415V 3N~ 50/60Hz	450+450+450	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1404WM/C-X	380-415V 3N~ 50/60Hz	450+450+504	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1458WM/C-X	380-415V 3N~ 50/60Hz	450+504+504	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1512WM/C-X	380-415V 3N~ 50/60Hz	504+504+504	32+32+32	4.0+4.0+4.0	4.0×5+4.0×5+4.0×5
GMV-W1568WM/C-X	380-415V 3N~ 50/60Hz	504+504+560	32+32+40	4.0+4.0+6.0	4.0×5+4.0×5+6.0×5
GMV-W1624WM/C-X	380-415V 3N~ 50/60Hz	504+560+560	32+40+40	4.0+6.0+6.0	4.0×5+6.0×5+6.0×5
GMV-W1680WM/C-X	380-415V 3N~ 50/60Hz	560+560+560	40+40+40	6.0+6.0+6.0	6.0×5+6.0×5+6.0×5
GMV-W1750WM/C-X	380-415V 3N~ 50/60Hz	400+450+450+450	32+32+32+32	4.0+4.0+4.0+4.0	4.0×5+4.0×5+4.0×5+4.0×5
GMV-W1800WM/C-X	380-415V 3N~ 50/60Hz	450+450+450+450	32+32+32+32	4.0+4.0+4.0+4.0	4.0×5+4.0×5+4.0×5+4.0×5
GMV-W1854WM/C-X	380-415V 3N~ 50/60Hz	450+450+450+504	32+32+32+32	4.0+4.0+4.0+4.0	4.0×5+4.0×5+4.0×5+4.0×5
GMV-W1908WM/C-X	380-415V 3N~ 50/60Hz	450+450+504+504	32+32+32+32	4.0+4.0+4.0+4.0	4.0×5+4.0×5+4.0×5+4.0×5
GMV-W1962WM/C-X	380-415V 3N~ 50/60Hz	450+504+504+504	32+32+32+32	4.0+4.0+4.0+4.0	4.0×5+4.0×5+4.0×5+4.0×5
GMV-W2016WM/C-X	380-415V 3N~ 50/60Hz	504+504+504+504	32+32+32+32	4.0+4.0+4.0+4.0	4.0×5+4.0×5+4.0×5+4.0×5
GMV-W2072WM/C-X	380-415V 3N~ 50/60Hz	504+504+504+560	32+32+32+40	4.0+4.0+4.0+6.0	4.0×5+4.0×5+4.0×5+6.0×5
GMV-W2128WM/C-X	380-415V 3N~ 50/60Hz	504+504+560+560	32+32+40+40	4.0+4.0+6.0+6.0	4.0×5+4.0×5+6.0×5+6.0×5
GMV-W2184WM/C-X	380-415V 3N~ 50/60Hz	504+560+560+560	32+40+40+40	4.0+6.0+6.0+6.0	4.0×5+6.0×5+6.0×5+6.0×5
GMV-W2240WM/C-X	380-415V 3N~ 50/60Hz	560+560+560+560	40+40+40+40	6.0+6.0+6.0+6.0	6.0×5+6.0×5+6.0×5+6.0×5

NOTES!

① Selection of circuit breaker and power cord is based upon unit's maximum power (maximum current).

② Specification of power cord is based on the working condition where ambient temperature is 40℃ 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.

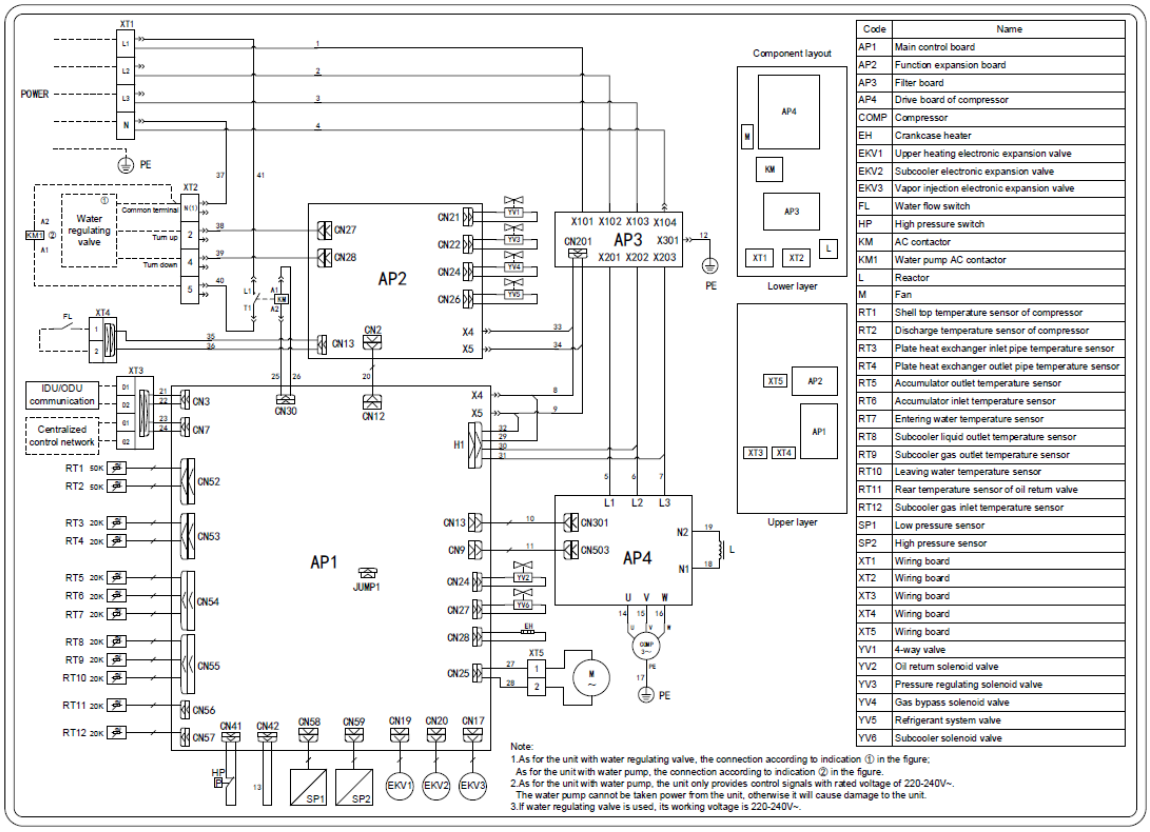
③ Copper-core cable which complies with local regulations must be applied.

④ The engineering wiring should meet IEC 60364-5-52 regulations. Ensure that the circuit voltage drop meets the requirements and the voltage of the equipment is not lower than the lower declared limit of the equipment.

⑤ Specification of circuit breaker is based on the working condition where ambient temperature of circuit breaker is 40℃. If working condition changes, please adjust according to the circuit breaker specification.

Appendix 5 Circuit Diagram

GMV-W252WM/C-X、GMV-W280WM/C-X、GMV-W335WM/C-X、GMV-W400WM/C-X、GMV-W450WM/C-X、GMV-W504WM/C-X、GMV-W560WM/C-X



Code	Name
AP1	Main control board
AP2	Function expansion board
AP3	Filter board
AP4	Drive board of compressor
COMP	Compressor
EH	Crankcase heater
EKV1	Upper heating electronic expansion valve
EKV2	Subcooler electronic expansion valve
EKV3	Vapor injection electronic expansion valve
FL	Water flow switch
HP	High pressure switch
KM	AC contactor
KM1	Water pump AC contactor
L	Reactor
M	Fan
RT1	Shell top temperature sensor of compressor
RT2	Discharge temperature sensor of compressor
RT3	Plate heat exchanger inlet pipe temperature sensor
RT4	Plate heat exchanger outlet pipe temperature sensor
RT5	Accumulator outlet temperature sensor
RT6	Accumulator inlet temperature sensor
RT7	Entering water temperature sensor
RT8	Subcooler liquid outlet temperature sensor
RT9	Subcooler gas outlet temperature sensor
RT10	Leaving water temperature sensor
RT11	Rear temperature sensor of oil return valve
RT12	Subcooler gas inlet temperature sensor
SP1	Low pressure sensor
SP2	High pressure sensor
XT1	Wiring board
XT2	Wiring board
XT3	Wiring board
XT4	Wiring board
XT5	Wiring board
YV1	4-way valve
YV2	Oil return solenoid valve
YV3	Pressure regulating solenoid valve
YV4	Gas bypass solenoid valve
YV5	Refrigerant system valve
YV6	Subcooler solenoid valve

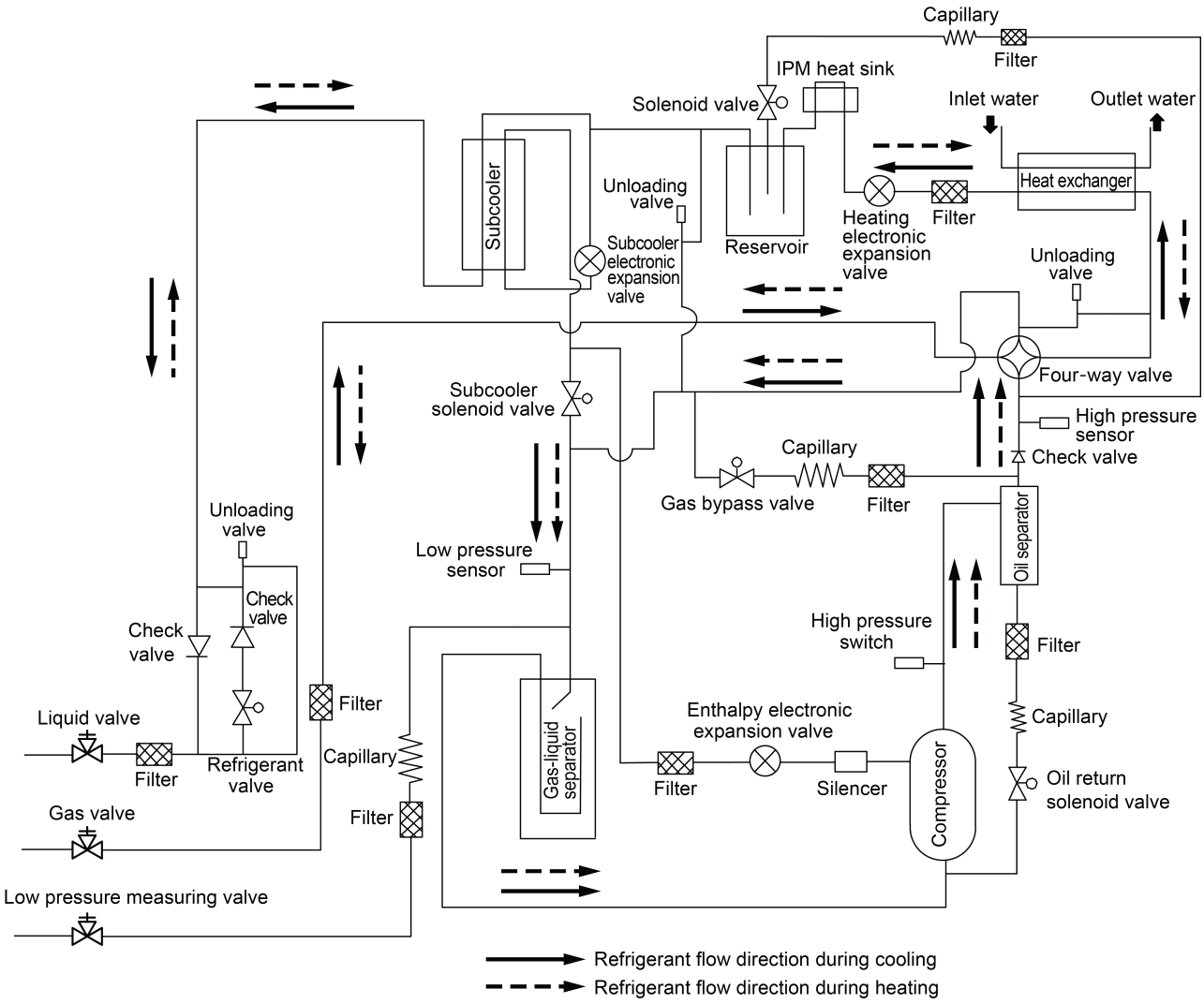
Note: Refer to the mark on the unit for the actual circuit diagram.

Appendix 6 Unit Schematic Diagram

The master unit of the GMV Water source heat pump multiple air conditioning unit can be achieved through module combination and parallel connection, and the indoor unit can also be composed of multiple units in parallel. The working principle is as follows: When theindoor unit operates in refrigeration mode, the master unit shall start the outdoor module according to the operating load demand of the indoor unit. The outdoor heat exchanger serves as the condenser of the system, and the heat exchangers of each refrigeration indoor unit are connected in parallel as the evaporator of the system. The air temperature and humidity of the indoor space are adjusted through the supply and return air circulation of the indoor unit. When the indoor unit operates in heating mode, all four-way valves of the master unit module are switched to the powered on state. The outdoor heat exchanger serves as the evaporator of the system, and the indoor heat exchanger serves as the condenser of the system. The air temperature and humidity of the indoor space are adjusted through the supply and return air circulation of the indoor unit.

Working Schematic Diagram:

System schematic diagrams of GMV-W252WM/C-X, GMV-W280WM/C-X, GMV-W335WM/C-X, GMV-W400W/C-X, GMV-W450WM/C-X, GMV-W504WM/C-X, and GMV-W560WM/C-X.


Capillary
Filter
IPM heat sink
Solenoid valve
Inlet water
Outlet water
Heat exchanger
Subcooler
Unloading valve
Subcooler electronic expansion valve
Reservoir
Heating electronic expansion valve
Filter
Unloading valve
Four-way valve
Subcooler solenoid valve
High pressure sensor
Check valve
Capillary
Gas bypass valve
Filter
Unloading valve
Low pressure sensor
Oil separator
Check valve
Check valve
High pressure switch
Filter
Liquid valve
Filter
Refrigerant valve
Filter
Capillary
Gas-liquid separator
Enthalpy electronic expansion valve
Capillary
Gas valve
Filter
Silencer
Compressor
Oil return solenoid valve
Low pressure measuring valve
Refrigerant flow direction during cooling
Refrigerant flow direction during heating

Appendix 7 Name and Main Function of Each Part

S/N	Name	Main functions
1	Compressor	The compressor shall adjust its speed according to the actual system needs to achieve capacity adjustment.
2	Compressor electric heating belt	In standby mode, ensure the oil temperature of the compressor to prevent liquid return.
3	Compressor casing top temperature wrap	Detect the exhaust temperature of the compressor to control and protect the compressor.
4	Compressor exhaust temperature wrap	Detect the exhaust temperature of the compressor to control and protect the compressor.
5	High pressure switch	When the exhaust pressure of the compressor exceeds the action value of the high-pressure switch, a signal shall be immediately fed back and the operation of the whole machine shall be stopped, to protect the compressor.
6	Oil separator	Separate the gas and oil from the system to ensure the reliability of the compressor.
7	Oil return solenoid valve	Used for on-off control of the compressor return oil pipeline.
8	Enthalpy electronic expansion valve	Used for controlling the injection enthalpy of the compressor.
9	Check valve	Prevent high pressure gas from entering the compressor and quickly balance the suction and exhaust pressure of the compressor.
10	High pressure sensor	Detect the real-time high pressure value of the system, protect the compressor, and use it for other control purposes.
11	Four - way valve	Used for switching between indoor mechanism cooling and heating in the system.
12	Heat exchanger	Used for outdoor heat exchange.
13	Heating electronic expansion valve	Heating mode refrigerant regulation control.
14	Check valve	Used for controlling the flow direction of refrigerant.
15	Subcooler electronic expansion valve	Control the undercooling of the liquid pipe refrigerant during the refrigeration operation of the system, and reduce the loss of pipeline capacity.
16	Subcooler	Used for controlling the subcooling of liquid pipes.
17	Subcooler liquid outlet temperature wrap	Detect the temperature of the liquid pipe.
18	Gas-liquid separator inlet pipe temperature wrap	Detect the inlet temperature of the gas-liquid separator to avoid wet operation of the system.
19	Subcooler air inlet temperature wrap	Detect the temperature on the gas side of the subcooler.
20	Low pressure sensor	Detect the low pressure in the system to avoid low operating pressure.
21	Gas-liquid separator	Gas-liquid separation is used to avoid wet operation of the compressor.
22	Gas-liquid separator outlet pipe temperature wrap	Detect the internal status of the gas-liquid separator and further control the suction status of the compressor.
23	Capillary	Throttling and depressurization.
24	Liquid valve	End of use at the factory.
25	Gas valve	End of use at the factory.
26	Low pressure measuring valve	Used to detect the low pressure values during system operation or to inject refrigerant during operation.
27	Unloading valve	Avoid dead zones in the pipeline, which can cause excessive pressure.
28	Gas bypass valve	Avoid too high or too low operating pressure.
29	Subcooler solenoid valve	Used to control the refrigerant flow direction of the subcooler injection enthalpy in the system.
30	Low temperature oil return solenoid valve	Used for on-off control of the compressor return oil pipeline.
31	Reservoir	Used to store excess refrigerant in the system.
32	Refrigerant valve	Used to prevent the refrigerant backflow from the shutdown module during modular heating.



GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI 519070

Add: West Jinji Rd,Qianshan Zhuhai,Guangdong,China
Tel: (+86-756)8522218
Fax: (+86-756)8669426
E-mail: global@cn.gree.com www.gree.com

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