Service Manual

GMV9 Flex DC Inverter VRF Units

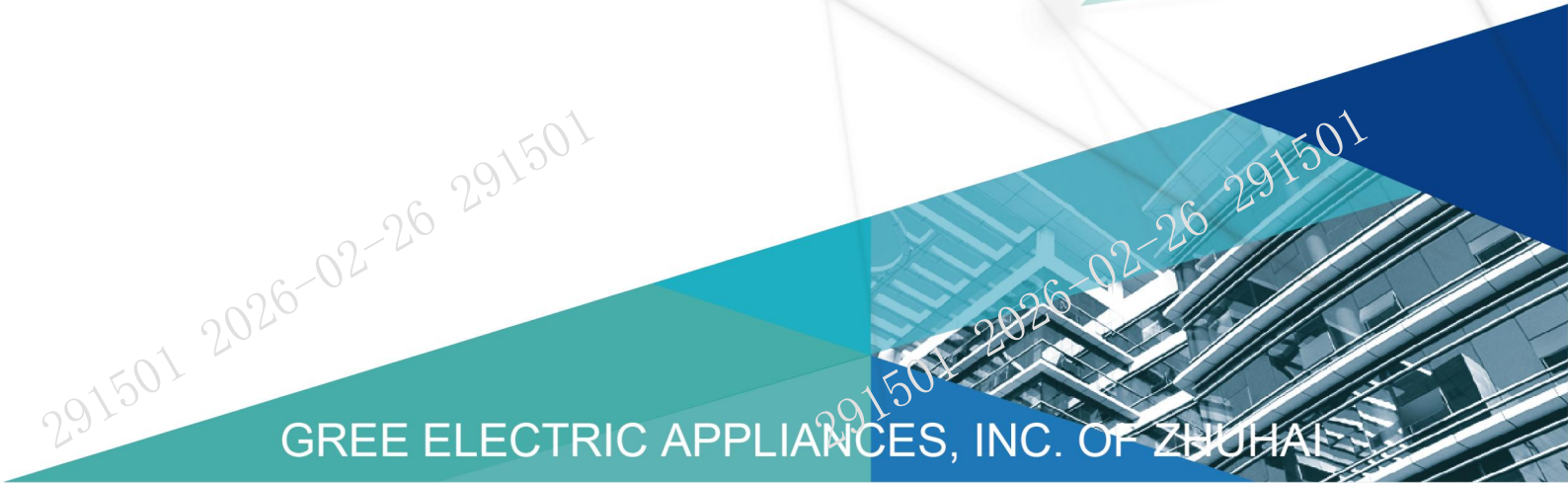
(GC202510-I)

Capacity: 40.0kW~246.0kW

Rated Frequency: 50Hz & 60Hz

Operation Range: Cooling: -5~55°C

Heating: -30~27°C



GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

291501 2026-02-26 291501

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Preface

Thank you for purchasing GMV9 Flex DC Inverter VRF Units. For correct operation, please read this manual carefully.

This manual applies to GMV9 Flex 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
14	CN851W4840	GMV-400WML/A-X	380-415V 3N~ 50Hz/60Hz	
16	CN850W1360	GMV-450WML/A-X	380-415V 3N~ 50Hz/60Hz	
18	CN851W4830	GMV-504WML/A-X	380-415V 3N~ 50Hz/60Hz	
20	CN851W4820	GMV-560WML/A-X	380-415V 3N~ 50Hz/60Hz	
22	CN850W1370	GMV-615WML/A-X	380-415V 3N~ 50Hz/60Hz	

1.2 Combined Modules

HP	Standard Combination	Model	HP	Standard Combination	Model
28	14+14	GMV-800WML/A-X	60	16+22+22	GMV-1680WML/A-X
30	14+16	GMV-850WML/A-X	62	20+20+22	GMV-1735WML/A-X
32	16+16	GMV-900WML/A-X	64	20+22+22	GMV-1790WML/A-X
34	16+18	GMV-954WML/A-X	66	22+22+22	GMV-1845WML/A-X
36	16+20	GMV-1010WML/A-X	68	16+16+16+20	GMV-1910WML/A-X
38	16+22	GMV-1065WML/A-X	70	16+16+16+22	GMV-1965WML/A-X
40	18+22	GMV-1119WML/A-X	72	16+16+20+20	GMV-2020WML/A-X
42	20+22	GMV-1175WML/A-X	74	16+16+20+22	GMV-2075WML/A-X
44	22+22	GMV-1230WML/A-X	76	16+16+22+22	GMV-2130WML/A-X
46	14+16+16	GMV-1300WML/A-X	78	16+20+20+22	GMV-2185WML/A-X
48	16+16+16	GMV-1350WML/A-X	80	16+20+22+22	GMV-2240WML/A-X
50	16+16+18	GMV-1404WML/A-X	82	16+22+22+22	GMV-2295WML/A-X
52	16+16+20	GMV-1460WML/A-X	84	18+22+22+22	GMV-2349WML/A-X
54	16+16+22	GMV-1515WML/A-X	86	20+22+22+22	GMV-2405WML/A-X
56	16+20+20	GMV-1570WML/A-X	88	22+22+22+22	GMV-2460WML/A-X
58	16+20+22	GMV-1625WML/A-X	—	--	—

2 Parameters

2.1 Parameters of Basic Modules

Model		-	GMV-400WML/A-X	GMV-450WML/A-X	GMV-504WML/A-X	GMV-560WML/A-X	GMV-615WML/A-X
HP		HP	14	16	18	20	22
Cooling capacity	Rated	kW	40.0	45.0	50.4	56.0	61.5
	Max.	kW	40.0	45.0	50.4	56.0	61.5
Heating capacity	Rated	kW	40.0	45.0	50.4	56.0	61.5
	Max.	kW	45.0	50.0	56.5	63.0	69.0
Sound pressure level(Cooling)		dB(A)	59	60	60	61	61
Sound power level(Cooling)	Ducted	dB(A)	83	84	84	85	87
	Cassette	dB(A)	83	84	84	85	87
Air flow volume		m³/h	19000	19000	19500	19500	19500

Model		-	GMV-400WML/A-X	GMV-450WML/A-X	GMV-504WML/A-X	GMV-560WML/A-X	GMV-615WML/A-X
Outdoor static pressure		Pa	0-40	0-40	0-40	0-40	0-40
Power Supply		-	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz
Rated current		A	31.5	34.4	38.0	40.5	44.0
Max. fuse current		A	32	40	40	50	50
Moisture protection		-	IPX4	IPX4	IPX4	IPX4	IPX4
Compressor quantity		set	1	1	1	1	1
Refrigeration oil No. of compressor		-	FV68H	FV68H	FV68H	FV68H	FV68H
Refrigeration oil charge	Gross	L	5.6	5.6	6.1	6.1	6.1
	Compressor charge	L	1.1	1.1	1.1	1.1	1.1
	Others	L	4.5	4.5	5.0	5.0	5.0
Refrigerant type		-	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7	7	8	8	8
Maximum drive IDU NO.		unit	28	30	35	39	42
Connection pipe	Gas pipe	mm	Φ12.7	Φ12.7	Φ15.9	Φ15.9	Φ15.9
	Liquid pipe	mm	Φ25.4	Φ28.6	Φ28.6	Φ28.6	Φ28.6
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions (W × D × H)		mm	1250×460×1745	1250×460×1745	1250×460×1745	1250×460×1745	1250×460×1745
Packing dimensions (W × D × H)		mm	1348×593×1915	1348×593×1915	1348×593×1915	1348×593×1915	1348×593×1915
Net weight		kg	210	210	235	235	235
Gross weight		kg	230	230	255	255	255

2.2 Parameters of Combined Modules

Model		-	GMV-800WML/A-X	GMV-850WML/A-X	GMV-900WML/A-X	GMV-954WML/A-X	GMV-1010WML/A-X
HP		HP	28	30	32	34	36
Combination mode		-	14+14	14+16	16+16	16+18	16+20
		-	GMV-400WML/A-X+ GMV-400WML/A-X	GMV-400WML/A-X+ GMV-450WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X	GMV-450WML/A-X+ GMV-504WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X
Cooling capacity		kW	80.0	85.0	90.0	95.4	101.0
Heating capacity		kW	90.0	95.0	100.0	106.5	113.0
Outdoor static pressure		Pa	0-40	0-40	0-40	0-40	0-40
Power Supply		-	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz
Rated current		A	31.5+31.5	31.5+34.4	34.4+34.4	34.4+38.0	34.4+40.0
Max. fuse current		A	32+32	32+40	40+40	40+40	40+50
Refrigerant type		-	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+7.0	7.0+7.0	7.0+7.0	7.0+8.0	7.0+8.0
Maximum drive IDU NO.		unit	52	58	60	65	69
Connection pipe	Gas pipe	mm	Φ31.8	Φ31.8	Φ31.8	Φ31.8	Φ38.1
	Liquid pipe	mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05	Φ19.05
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745
Packing dimensions(W×D×H)		mm	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915
Net weight		kg	210+210	210+210	210+210	210+235	210+235
Gross weight		kg	230+230	230+230	230+230	230+255	230+255

Model		-	GMV-1065WML/A-X	GMV-1119WML/A-X	GMV-1175WML/A-X	GMV-1230WML/A-X	GMV-1300WML/A-X
HP		HP	38	40	42	44	46
Combination mode		-	16+22	18+22	20+22	22+22	14+16+16
		-	GMV-450WML/A-X+ GMV-615WML/A-X	GMV-504WML/A-X+ GMV-615WML/A-X	GMV-560WML/A-X+ GMV-615WML/A-X	GMV-615WML/A-X+ GMV-615WML/A-X	GMV-400WML/A-X+ GMV-450WML/A-X+ GMV-450WML/A-X
Cooling capacity		kW	106.5	111.5	117.0	123.0	130.0
Heating capacity		kW	119.0	125.5	132.0	138.0	145.0
Outdoor static pressure		Pa	0-40	0-40	0-40	0-40	0-40
Power Supply		-	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz
Rated current		A	34.4+44.0	38.0+44.0	40.0+44.0	44.0+44.0	31.5+34.4+34.4
Max. fuse current		A	40+50	40+50	50+50	50+50	32+40+40
Refrigerant type		-	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+8.0	8.0+8.0	8.0+8.0	8.0+8.0	7.0+7.0+7.0
Maximum drive IDU NO.		unit	70	72	72	72	72
Connection pipe	Gas pipe	mm	Φ38.1	Φ38.1	Φ38.1	Φ38.1	Φ38.1
	Liquid pipe	mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05	Φ19.05
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745
Packing dimensions(W×D×H)		mm	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915
Net weight		kg	210+235	235+235	235+235	235+235	210+210+210
Gross weight		kg	230+255	255+255	255+255	255+255	230+230+230

Model		-	GMV-1350WML/A-X	GMV-1404WML/A-X	GMV-1460WML/A-X	GMV-1515WML/A-X	GMV-1570WML/A-X
HP		HP	48	50	52	54	56
Combination mode		-	16+16+16	16+16+18	16+16+20	16+16+22	16+20+20
		-	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-450WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-504WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-560WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-615WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-560WML/A-X
Cooling capacity		kW	135.0	140.4	146.0	151.5	157.0
Heating capacity		kW	150.0	156.5	163.0	169.0	176.0
Outdoor static pressure		Pa	0-40	0-40	0-40	0-40	0-40
Power Supply		-	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz	380-415V 3N~ 50Hz/60Hz
Rated current		A	34.4+34.4+34.4	34.4+34.4+38.0	34.4+34.4+40.0	34.4+34.4+44.0	34.4+40.0+40.0
Max. fuse current		A	40+40+40	40+40+40	40+40+50	40+40+50	40+50+50
Refrigerant type		-	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+7.0+7.0	7.0+7.0+8.0	7.0+7.0+8.0	7.0+7.0+8.0	7.0+8.0+8.0
Maximum drive IDU NO.		unit	72	74	76	78	80
Connection pipe	Gas pipe	mm	Φ38.1	Φ41.3	Φ41.3	Φ41.3	Φ41.3
	Liquid pipe	mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05	Φ19.05
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745

Model	-	GMV-1350WML/A-X	GMV-1404WML/A-X	GMV-1460WML/A-X	GMV-1515WML/A-X	GMV-1570WML/A-X
Packing dimensions(W×D×H)	mm	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915
Net weight	kg	210+210+210	210+210+235	210+210+235	210+210+235	210+235+235
Gross weight	kg	230+230+230	230+230+255	230+230+255	230+230+255	230+255+255

Model		-	GMV-1625WML/A-X	GMV-1680WML/A-X	GMV-1735WML/A-X	GMV-1790WML/A-X	GMV-1845WML/A-X
HP		HP	58	60	62	64	66
Combination mode		-	16+20+22	16+22+22	20+20+22	20+22+22	22+22+22
		-	GMV-450WML/A-X+GMV-560WML/A-X+GMV-615WML/A-X	GMV-450WML/A-X+GMV-615WML/A-X+GMV-615WML/A-X	GMV-560WML/A-X+GMV-560WML/A-X+GMV-615WML/A-X	GMV-560WML/A-X+GMV-615WML/A-X+GMV-615WML/A-X	GMV-615WML/A-X+GMV-615WML/A-X+GMV-615WML/A-X
Cooling capacity		kW	162.5	168.0	173.5	179.0	184.5
Heating capacity		kW	182	188.0	195.0	201.0	207.0
Outdoor static pressure		Pa	0-40	0-40	0-40	0-40	0-40
Power Supply		-	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz
Rated current		A	34.4+40.0+44.0	34.4+44.0+44.0	40.0+40.0+44.0	40.0+44.0+44.0	44.0+44.0+44.0
Max. fuse current		A	40+50+50	40+50+50	50+50+50	50+50+50	50+50+50
Refrigerant type		-	R410A	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+8.0+8.0	7.0+8.0+8.0	8.0+8.0+8.0	8.0+8.0+8.0	8.0+8.0+8.0
Maximum drive IDU NO.		unit	80	80	80	80	80
Connection pipe	Gas pipe	mm	Φ41.3	Φ41.3	Φ41.3	Φ41.3	Φ41.3
	Liquid pipe	mm	Φ19.05	Φ19.05	Φ19.05	Φ19.05	Φ19.05
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+1250×460×1745+1250×460×1745	1250×460×1745+1250×460×1745+1250×460×1745	1250×460×1745+1250×460×1745+1250×460×1745	1250×460×1745+1250×460×1745+1250×460×1745	1250×460×1745+1250×460×1745+1250×460×1745
Packing dimensions(W×D×H)		mm	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915	1348×593×1915+1348×593×1915+1348×593×1915
Net weight		kg	210+235+235	210+235+235	235+235+235	235+235+235	235+235+235
Gross weight		kg	230+255+255	230+255+255	255+255+255	255+255+255	255+255+255

Model	-	GMV-1910WML/A-X	GMV-1965WML/A-X	GMV-2020WML/A-X	GMV-2075WML/A-X
HP	HP	68	70	72	74
Combination mode	-	16+16+16+20	16+16+16+22	16+16+20+20	16+16+20+22
	-	GMV-450WML/A-X+GMV-450WML/A-X+GMV-450WML/A-X+GMV-560WML/A-X	GMV-450WML/A-X+GMV-450WML/A-X+GMV-450WML/A-X+GMV-615WML/A-X	GMV-450WML/A-X+GMV-450WML/A-X+GMV-560WML/A-X+GMV-560WML/A-X	GMV-450WML/A-X+GMV-450WML/A-X+GMV-560WML/A-X+GMV-615WML/A-X
Cooling capacity	kW	191.0	196.5	202.0	207.5
Heating capacity	kW	213.0	219.0	226.0	232.0
Outdoor static pressure	Pa	0-40	0-40	0-40	0-40
Power Supply	-	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz
Rated current	A	34.4+34.4+34.4+40.0	34.4+34.4+34.4+44.0	34.4+34.4+40.0+40.0	34.4+34.4+40.0+44.0
Max. fuse current	A	40+40+40+50	40+40+40+50	40+40+50+50	40+40+50+50
Refrigerant type	-	R410A	R410A	R410A	R410A
Refrigerant charge	kg	7.0+7.0+7.0+8.0	7.0+7.0+7.0+8.0	7.0+7.0+8.0+8.0	7.0+7.0+8.0+8.0
Maximum drive IDU NO.	unit	80	80	80	80

Model		-	GMV-1910WML/A-X	GMV-1965WML/A-X	GMV-2020WML/A-X	GMV-2075WML/A-X
Connection pipe	Gas pipe	mm	Φ44.5	Φ44.5	Φ44.5	Φ44.5
	Liquid pipe	mm	Φ22	Φ22	Φ22	Φ22
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745
Packing dimensions(W×D×H)		mm	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915
Net weight		kg	210+210+210+235	210+210+210+235	210+210+235+235	210+210+235+235
Gross weight		kg	230+230+230+255	230+230+230+255	230+230+255+255	230+230+255+255

Model		-	GMV-2130WML/A-X	GMV-2185WML/A-X	GMV-2240WML/A-X	GMV-2295WML/A-X
HP		HP	76	78	80	82
Combination mode		-	16+16+22+22	16+20+20+22	16+20+22+22	16+22+22+22
		-	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	GMV-450WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X
Cooling capacity		kW	213.0	218.5	224.0	229.5
Heating capacity		kW	238.0	245.0	251.0	257.0
Outdoor static pressure		Pa	0-40	0-40	0-40	0-40
Power Supply		-	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz
Rated current		A	34.4+34.4+44.0+44.0	34.4+40.0+40.0+44.0	34.4+34.4+40.0+40.0	34.4+34.4+40.0+44.0
Max. fuse current		A	40+40+50+50	40+50+40+50	40+50+50+50	40+50+50+50
Refrigerant type		-	R410A	R410A	R410A	R410A
Refrigerant charge		kg	7.0+7.0+8.0+8.0	7.0+8.0+8.0+8.0	7.0+8.0+8.0+8.0	7.0+8.0+8.0+8.0
Maximum drive IDU NO.		unit	80	80	80	80
Connection pipe	Gas pipe	mm	Φ44.5	Φ44.5	Φ44.5	Φ44.5
	Liquid pipe	mm	Φ22	Φ22	Φ22	Φ22
	Connection method	-	Welding connection	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745
Packing dimensions(W×D×H)		mm	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915
Net weight		kg	210+210+235+235	210+235+235+235	210+235+235+235	210+235+235+235
Gross weight		kg	230+230+255+255	230+255+255+255	230+255+255+255	230+255+255+255

Model	-	GMV-2349WML/A-X	GMV-2405WML/A-X	GMV-2460WML/A-X
HP	HP	84	86	88
Combination mode	-	18+22+22+22	16+20+20+22	16+20+22+22
	-	GMV-504WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	GMV-560WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X
Cooling capacity	kW	234.9	240.5	246.0
Heating capacity	kW	263.5	270.0	276.0
Outdoor static pressure	Pa	0-40	0-40	0-40

Model		-	GMV-2349WML/A-X	GMV-2405WML/A-X	GMV-2460WML/A-X
Power Supply		-	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz	380-415V 3N～ 50Hz/60Hz
Rated current		A	38.0+44.0+44.0+44.0	40.0+44.0+44.0+44.0	44.0+44.0+44.0+44.0
Max. fuse current		A	40+50+50+50	50+50+40+50	50+50+50+50
Refrigerant type		-	R410A	R410A	R410A
Refrigerant charge		kg	8.0+8.0+8.0+8.0	8.0+8.0+8.0+8.0	8.0+8.0+8.0+8.0
Maximum drive IDU NO.		unit	80	80	80
Connection pipe	Gas pipe	mm	Φ44.5	Φ44.5	Φ44.5
	Liquid pipe	mm	Φ22	Φ22	Φ22
	Connection method	-	Welding connection	Welding connection	Welding connection
Outline dimensions(W×D×H)		mm	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745	1250×460×1745+ 1250×460×1745+ 1250×460×1745+ 1250×460×1745
Packing dimensions(W×D×H)		mm	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915	1348×593×1915+ 1348×593×1915+ 1348×593×1915+ 1348×593×1915
Net weight		kg	235+235+235+235	235+235+235+235	235+235+235+235
Gross weight		kg	255+255+255+255	255+255+255+255	255+255+255+255

Notes:

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

② Rated heating capacity test conditions: indoor 20˚C DB, outdoor 7˚C DB/6 ˚C WB, without height drop between units

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

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

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

⑥ Sound Pressure Level: Anechoic chamber conversion value, measured at a position in front of the unit in a semi-anechoic room. During actual operation, the value may be higher due to ambient noise and echoes of the installation conditions.

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3 The Range of Production Working Temperature

—	Cooling	Heating
Ambient temperature	-5°C ~55°C DB	-30°C ~27°C DB
Indoor temperature	16°C~32°C DB	15°C ~30°C DB
Indoor humidity	≤80%	

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

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

NOTE!

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

Chapter 2 Commissioning

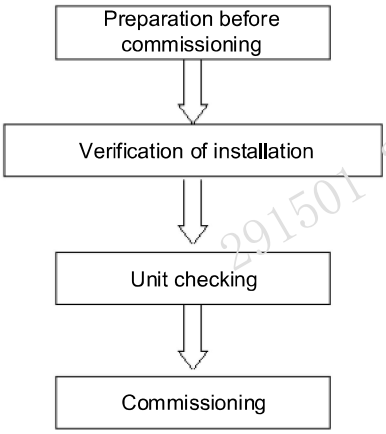
WARNING!

Before performing related operations (such as maintenance inspection etc.) for the equipment, tum off the unit, cut off the power supply and use relevant instrument to detect the voltage at the power input terminal is zero and wait for the power indicators of the main control board and the drive board are off. Otherwise, it may cause electric shock or injury.

NOTE!

The unit has low-power standby function. Under standby status, only the power indicator of the main control board and the drive board are on.

1 Commissioning Process



2 Safety Requirements

WARNING!

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

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

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

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

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

3 Units Commissioning

3.1 Preparation

3.1.1 Tools

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

3.1.2 Files

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

Minutes of the commissioning scheme determining meeting:

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

Checklist of the commissioning system appearance:

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

Commissioning data record form

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

3.1.3 Checking

NOTE!

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

Checklist before commissioning

Checklist Before GMV9 Flex Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Installation drawings	1	Are the engineering design drawings complete?	—		
	2	Is the project constructed according to the design drawings?	—		
Installation environment	3	Is there any pollution source in the outdoor unit installation environment, and is the outdoor unit installation location selected correctly?	Refer to the outdoor unit installation.		
	4	Is the outdoor unit foundation firm? Do vibration reduction and drainage meet the requirements?	Refer to the outdoor unit installation.		
	5	Are the outdoor unit basic modules installed at the same level?	Refer to the outdoor unit installation.		
	6	Does the outdoor unit operate with static pressure? Is the corresponding static pressure set?	—		
Refrigerating system	7	Is the rated capacity of the internal and external units of the cooling system within 50%~135%?	50% to 135%		
	8	Is the fresh air unit access capacity within 30%?	≤30%		
	9	Is GMV9 Flex connected to outdoor units in other series?	GMV9 Flex cannot be connected to outdoor units in other series.		
	10	Does the drop between the indoor and outdoor units meet the unit design requirements?	≤50 m with the outdoor unit up ≤40 m with the outdoor 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 outdoor unit to the farthest indoor unit less than or equal to 150 m?	≤150m		
	13	Is the total length of the piping less than 560 m?	≤560 m		
	14	Is the length of the outdoor unit to the first branch joint greater than 90 m? If yes, is the pipe diameter increased accordingly?	The pipe diameter needs to be increased when the length is greater than 90 m.		
	15	Is the distance between an indoor unit and the nearest branch joint greater than 15 m? If yes, is the diameter of a liquid pipe whose original diameter is less than or equal to 6.35 mm, or the diameter of a gas pipe whose original diameter is less than or equal to 9.52 mm be increased?	≤15 m. When the length exceeds 10 m, the diameter of a liquid pipe whose original diameter is less than or equal to 6.35 mm, or the diameter of a gas pipe whose original diameter is less than or equal to 9.52 mm needs to be increased.		
	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.		

Checklist Before GMV9 Flex Commissioning					
Category	No.	Item	Reference Value	Qualified	Inspector
Refrigerating system	17	Is the stop valve of each module open to the maximum opening?	--		
	18	Is the refrigerant pressure normal? Connect the high pressure gauge of the pressure gauge to the liquid pipe valve of the outdoor unit, connect the low pressure gauge to the gas pipe valve, and read the value.	At this time, the high and low pressures of the system are in balance, and the difference between the saturation temperature corresponding to the balanced pressure value and the ambient temperature (higher one of the indoor and outdoor temperatures) does not exceed 5°C. If it exceeds 5°C, check for the outdoor unit leakage.		
	19	Is there any leakage of chiller oil at the valve? If so, immediately check for valve leakage with soap bubbles or a leak detector. If leakage is confirmed, stop subsequent commissioning at once, and continue the work only after the problem is solved.	—		
	20	Is the outdoor unit being warmed up for more than 2 hours before commissioning?	—		
Electrical system	21	Is the power cable connected correctly? Is the terminal block secure?	—		
	22	Is the power cable appearance in good condition and not exposed?	The appearance is in good condition and not exposed.		
	23	Is the power capacity less than the maximum power of the unit?	The power capacity is not less than the maximum power of the unit.		
	24	Is there any poorly connected electrical component detected when the power is off?	All components are reliably connected.		
	25	Do the cable diameters of the indoor and outdoor units meet the unit design requirements?	Refer to electrical installation.		
	26	Do the circuit breaker and leakage switch meet the unit design requirements?	Refer to electrical installation.		
	27	Do the power voltage, phase sequence, and frequency meet the unit requirements?	The power voltage, phase sequence, and frequency are consistent with those on the unit nameplate, and the voltage fluctuates within ± 10%.		
	28	Is the power cable more than 1 m away from a TV?	—		
	29	Is there any strong electromagnetic interference, dust, acid and alkaline gas in the environment where the unit is located?	—		

Checklist Before GMV9 Flex 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 outdoor unit modules correct?	—		
	32	Is the DIP switch of the master unit of the outdoor unit module correct?	—		
	33	Is the communication between the outdoor master unit and the indoor unit correct?	Serial connection		
	34	Is the communication connection between indoor units correct?	—		
	35	Is the communication connection between the indoor unit and the wired controller correct?	—		
	36	Is the last communication indoor unit installed with a communication build-out resistor?	—		
	37	The communication cable cannot be laid in the same trough as the power cable. It is laid separately in a flame-retardant hard PVC pipe. The parallel spacing between a communication cable and a strong-current cable is greater than 20 cm.	--		
Indoor unit installation	38	Does the indoor unit drain pipe have a slope of 1/100?	—		
	39	Does the height of the indoor unit riser drain pipe meet the requirements?	—		
	40	Does the indoor unit drain smoothly?	—		
	41	Is there a U-shaped trap for indoor unit drainage?	—		
	42	Is there a soft joint at the air outlet and air return vent of the indoor unit? Does the return air have a static pressure box?	—		
	43	Does the indoor unit water pipe have an emptying port?	—		
	44	Is a "main" label attached to the wired controller or panel of the main indoor unit?	—		

3.2 Debugging and Operation

NOTES!

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 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.

3.2.1 Preparation before Test Run

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

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

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

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

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

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

3.2.2 Notices for Unit Debugging

(1) 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.

(2) Do not connect power until all installation work is finished.

(3) All control circuits and wires are correctly and securely connected.

(4) All small pieces, especially metal chips, thread ends and forceps holder, must be removed from the unit.

(5) Check whether unit's appearance and pipeline system has been damaged during transportation.

(6) Calculate the quantity of refrigerant that needs to be added according to the pipe length. Pre-charge the refrigerant. In case that the required charging quantity is not reached while refrigerant can't be added, record the quantity of refrigerant that still needs to add and complement the quantity during test operation. For details of adding refrigerant during test operation, see below.

(7) After refrigerant is added, make sure valves of outdoor unit are completely open.

(8) For the convenience of troubleshooting during debugging, unit shall be connected to a PC with applicable debugging software. Make sure unit's real-time data can be checked through this computer. The installation and connection of debugging software can be found in the Service Manual.

3.2.3 Basic Introduction for Engineering Debugging

3.2.3.1 Debugging Method

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

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

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

(3) Use multi-functional debugger.

Note: As for the detailed operation method for debugging, please refer to corresponding instruction manual.

3.2.3.2 Debugging Through the Main Board of Outdoor Unit

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

Step 1: Cover the front panels of the outdoor unit.

Step 2: When the outdoor unit is powered off, set one of the modules as the master module, suggest using the unit with the latest production date as the master module. For the setting method, see label "Master Module DIP Switch Code Setting (SA8_MASTER-S)".

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

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

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

Description of test operation procedures and main board display of ODU:

Description of each stage of debugging progress			
Progress	Debugging code		Code meaning and operation method
	LED		
	Code	Display status	
01_Set master unit	A0	ON	System is not debugged, hold main board's SW3 button for 5s to start debugging.
	01	ON	2s later, next step starts.
02_ Allocate addresses	02/Ad	Display circularly	System is allocating addresses. 10s later, display as below:
	02/oC	Display circularly	Allocation is finished. 2s later, next step starts.
03_ Confirm the quantity of ODU	03/n	Display circularly	"n" is the number of ODU identified by the system. It needs to manually confirm the module quantity. If the number is correct, press main board's SW3 button to confirm. If not confirmed within 30 seconds, it will auto confirm and proceed to the next step.
	03/oC	Display circularly	System has confirmed the quantity. 2s later, next step starts.
04_ Confirm the quantity of IDU	04/n	Display circularly	"n" is the number of IDU identified by the system. It needs to manually confirm the module quantity. If the number is correct, press main board's SW3 button to confirm. If not confirmed within 30 seconds, it will auto confirm and proceed to the next step.
	04/oC	Display circularly	System has confirmed the quantity. 2s later, next step starts.
05_ Detect ODU's internal communication and capacity ratio	05/C2	Display circularly	Communication between master ODU and driver has error. Check the communication connection of ODU's main board and drive board. When the error is eliminated, start next step. If power is off during troubleshooting, then restart debugging from progress 01 after power is on.
	05/oC	Display	Communication of master ODU and driver is normal. Unit

Description of each stage of debugging progress			
—	Debugging code		Code meaning and operation method
Progress	LED		
	Code	Display status	
05_ Detect ODU's internal communication and capacity ratio		circularly	will display as in the left for 2s and detect the capacity ratio of IDU and ODU. If the ratio is within range, then next step will start 2s later. If the ratio is out of range, unit will display as below.
	05/CH	Display circularly	Rated capacity ratio of IDU is too high. Change the combination way of IDU and ODU to make the ratio within range. And restart debugging from progress 01.
	05/CL	Display circularly	Rated capacity ratio of IDU is too low. Change the combination way of IDU and ODU to make the ratio within range. And restart debugging from progress 01.
06_ Detect outdoor components	06/error code	Display circularly	Outdoor component's error. Besides "06", the other blinking will display the related error code. After errors are eliminated, system will start next step automatically. If power is off during troubleshooting, then restart debugging from progress 01 after power is on.
	06/oC	Display circularly	System detects no error on outdoor component. 10s later, next step starts.
07_ Detect indoor components	07/XX/error code	Display circularly	System detects error on indoor components. XX means the project code of IDU with error, e.g. no.1 IDU has d5 and d6 errors, meanwhile no.3 IDU displays error d6 and d7, then the nixie tube will display "07", "01", "d5", "d6"and "03" circularly. After errors are eliminated, system will start next step automatically. If power is off during troubleshooting, then restart debugging from progress 01 after power is on.
	07/XXXX/error code	Display circularly	If errors occur in IDU which the project code is ≥ 3-digit number, then it will display the 2 big digits of project code first, then the 2 small digits, finally the error code, e.g: L1 error occurs in no.101 IDU, then the nixie tube will display "01","01" and "L1" circularly. Display method is the same for several IDUs with multiple errors.
	07/oC	Display circularly	No error on components of IDU. 5s later, next step starts.
08_ Confirm preheated compressor	08/U0	Display circularly	Preheat time for compressor is less than 2 hours. Display will be as in the left until the preheat time reaches 2 hours. Press main board's SW3 button to confirm manually. Then start next step. (**NOTE:** Compressor may get damaged if it is started without 2 hours of preheat time)
	08/oC	Display circularly	Compressor has been preheated for 2 hours. 2s later, next step starts.
09_ Refrigerant judgments before startup	09/U4	Display circularly	System is lack of refrigerant and display will be as in the left. Please cut off power of IDU and ODU and check if there is leakage on pipeline. Solve the leakage problem and complement refrigerant into the unit. Then connect power and restart debugging from progress 01. (Note: Before re-charging refrigerant, unit must be power off in case system starts progress 10 automatically) .
	09/oC	Display circularly	Refrigerant is normal and unit will display as in the left for 2s.Then next step starts.

Description of each stage of debugging progress			
—	Debugging code		Code meaning and operation method
Progress	LED		
	Code	Display status	
10_ Status judgments of outdoor valves before startup	10/on	Display circularly	Valves of ODU are being inspected. Compressor will start operation for 2min or so and then stop. The opening and closing status of outdoor valves are as below.
	10/U6	Display circularly	Outdoor valves are not fully turned on. Press main board's SW4 button and display shows "09/OC". Then check if the gas and liquid valves of ODU are completely open. After confirmation, press the SW4 button again. Then compressor will start running for about 2min to inspect the status of valves.
	10/oC	Display circularly	Valves status is normal. Unit will display as in the left for 2s and then start next step.
12_ Confirm debugging startup	12/AP	Display circularly	Ready for units to start debugging. Press main board's SW3 button to confirm startup of debugging. 2s later, main board will display as below.
	12/AE	Display circularly	Startup is confirmed. After displaying for 2s, system will choose "15_Cooling debugging" or "16_Heating debugging" according to ambient temperature. If the project requests to add refrigerant but it is not complemented before debugging, then refrigerant can be added in this process through the L-VALVE.
15_ Cooling debugging	15/AC	Display circularly	Debugging for cooling mode. If no malfunction occurs for 30~40min when compressor is running, then the system is certified as normal. After shutting down the unit for 5s, the system will enter normal standby status.
	15/error code	Display circularly	Malfunction occurs when debugging for cooling mode.
16_ Heating debugging(For heat pump units only)	15/AH	Display circularly	Debugging for heating mode. If no malfunction occurs for 30~40min when compressor is running, then the system is certified as normal. After shutting down the unit for 5s, the system will enter normal standby status.
	15/error code	Display circularly	Malfunction occurs when debugging for heating mode.
17_ Debugging finished	oF	ON	The entire unit has finished debugging and under standby-by condition.

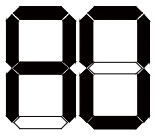
3.2.4 Debugging Through the Main Board of Outdoor Unit

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

Step 1: Remove the front panel of the outdoor unit.

Step 2: When the outdoor unit is powered off, set one of the outdoor units as the master module. Refer to the "Master Unit Setting DIP Switch (SA8)" for the setting method. The outdoor unit is set to the master unit DIP switch by default at the factory. This step can be ignored for just the installation of outdoor units.

Step 3: Power on all indoor units and outdoor units; ensure all indoor units are powered on. At this time, all modules of outdoor units will display that the unit is in an "undebugged state";



When indoor units and outdoor units is powered on and in the undebugged state, set the corresponding static pressure mode according to the design requirements for the outdoor unit's static pressure. There are three static pressure modes, with the factory default static pressure mode 0 representing an external static pressure of 0Pa, static pressure mode 1 representing an external static pressure of 20Pa, and static pressure mode 2 representing an external static pressure of 40Pa. Refer to the "*4.2.3 Chapter "1G" Outdoor Unit Static Pressure Function*" for the setting method. If the unit is not connected to an exhaust duct or has no exhaust static pressure requirements, skip the external static pressure setting section.

Step 4: Press and hold the SW3 confirmation button on the main board of the master unit for more than 5s to enter the unit debugging function. The unit will automatically run debugging steps 01 and 02.

If there is an error in the main module setting at step 01, the following faults will be displayed at step 01:

Progress	Status code/LED		Meaning
	Code	Display status	
01_Main module setting	01/CC	Loop display	The system has not set the main module; resetting main module is required.
	01/CF	Loop display	The system has set more than two main modules; resetting main module is required.
	01/OC	Loop display	The system has successfully set the main module; It automatically proceeds to the next step.

According to the above fault phenomena, reset the main module according to the "Main Control Unit Setting DIP Switch (SA8)" method. It enters into the debugging again after setting is completed.

During the address allocation process, all module digital tubes will display as follows:

Progress	Debugging code/LED	
	Code	Display status
02_Address allocation	02/Ad	Loop display

Step 5: When the unit runs to step 03, it will display the number of connected outdoor modules. At this time, the main boards of each module will display as follows:

Progress	Debugging code/LED	
	Code	Display status
03_Confirmation of module quantity	02/Outdoor unit quantity	Loop display

After 30s, it will automatically display as follows; if the SW3 confirmation button is pressed within 30s, it will directly display as follows. The unit will automatically proceed to the next debugging step:

Progress	Debugging code/LED	
	Code	Display status
03_Confirmation of module quantity	03/oC	Loop display

Note: Ensure that the number of online outdoor modules matches the actual number of modules in the project. Otherwise, re-inspection and debugging are required.

Step 6: When the system runs to step 04, it will display the number of connected indoor units. At this

time, the main boards of each module will display as follows:

Progress	Debugging code/LED	
	Code	Display status
04_ Indoor unit quantity confirmation	04/Online indoor unit quantity	Loop display

After 30 seconds, it will display as follows; if the SW3 confirmation button is pressed within 30 seconds, it will directly display as follows. The system will automatically proceed to the next debugging step:

Progress	Debugging code/LED	
	Code	Display status
04_ Indoor unit quantity confirmation	04/Oc	Loop display

Note: Ensure that the number of online indoor units matches the actual number of units connected in the project. Otherwise, re-inspection and debugging are required.

Step 7: Debugging step 05 of the system is “internal communication confirmation of outdoor unit.”

If no abnormalities are detected, it will display as follows and automatically proceed to the next detection:

Progress	Debugging code/LED		Meaning
	code	Display status	
05_Internal communication confirmation of outdoor unit	05/oC	Loop display	System detection is completed, and it automatically proceeds to the next step.

If abnormalities are detected, it will remain in the current state. It needs to conduct manual fault troubleshooting. The corresponding faults are as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
05_ Internal communication confirmation of outdoor unit	05/C2	Loop display	System detects “main control and compressor driver communication fault.”
	05/C3	Loop display	System detects “main control and fan driver communication fault.”
	05/CH	Loop display	The rated capacity ratio of indoor and outdoor units is too high.
	05/CL	Loop display	The rated capacity ratio of indoor and outdoor units is too low.

Refer to the “Troubleshooting Methods” section for the corresponding fault resolution methods.

Step 8: Debugging step 06 of the system is “outdoor unit component detection.”

If no abnormalities are detected, it will display as follows and it automatically proceeds to the next detection.

Progress	Debugging code/LED		Meaning
	Code	Display status	
06_Outdoor unit component detection	06/oC	Loop display	System detects that there is no outdoor unit component faults, and it will automatically proceed to the next step.

If abnormalities are detected, it will remain in the current state. It needs to conduct manual fault troubleshooting. The corresponding faults are as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
06_Outdoor unit component detection	06/Corresponding error code	Loop display	System detects that there is outdoor unit component faults.

Refer to the “Troubleshooting Methods” section for the corresponding fault resolution methods.

Step 9: Debugging step 07 of the system is “indoor unit component detection.”

If no abnormalities are detected, it will display as follows and it will automatically proceed to the next detection:

Progress	Debugging code/LED		Meaning
	Code	Display status	
07_Indoor unit component detection	07/oC	Loop display	System detects that there is no indoor unit component faults, and it will automatically proceed to the next step.

If abnormalities are detected, it will remain in the current state; It needs to conduct manual fault troubleshooting. The corresponding faults are as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
07_ Internal Component Inspection	07/XX/ error code	Loop display	System detects that there is indoor unit component faults.

XX represents the fault indoor unit’s project number. If the project number of the indoor unit with a fault is three digits or more, it will display as follows

Progress	Debugging code/LED		Meaning
	Code	Display status	
07_Internal Component Inspection	07/XX/ error code	Loop display	System detects that there is indoor unit component faults.

XX represents the fault indoor unit project number. After 3 seconds, the corresponding error code will be displayed. For example, if unit 100 has a D5 fault, the LED will display as follows: 01 (2 seconds later) 00 (2 seconds later) D5, and they will be displayed circularly.

For the corresponding troubleshooting methods, see the “troubleshooting method” section.

Step 10: The 08th step of the unit debugging is “compressor preheating confirmation”.

If the continuous preheating time is more than 2 hours, it will display as follows, and then it automatically enters the next detection step.

Progress	Debugging code/LED		Meaning
	Code	Display status	
08_Compressor preheating confirmation	08/oC	Loop display	If the continuous preheating time is more than 2 hours and it will automatically enters into the next step.

If the continuous preheating time of the compressor is less than 2 hours, abnormally will be displayed as follows.

Progress	Debugging code/LED		Meaning
	Code	Display status	
08_ Compressor preheating confirmation	08/U0	Loop display	The compressor preheating time is less than 2 hours.

Step 11: The 09th step of the unit debugging is “pre-start refrigerant judgment”.

If the refrigerant in the system meets the start-up requirements, it will display as follows, and then it automatically enters into the next detection step.

Progress	Debugging code/LED		Meaning
	Code	Display status	
09_Pre-start refrigerant judgement	09/oC	Loop display	The system refrigerant is normal, and the system will automatically enter into the next step.

If there is no refrigerant in the system or the refrigerant does not meet the start-up requirements, the unit will display U4 “refrigerant shortage protection” as follows, and it cannot proceed to the next step. At this time, check for leaks or add refrigerant until the anomaly is eliminated.

Progress	Debugging code/LED		Meaning
	Code	Display status	
09_Pre-start refrigerant judgement	09/U4	Loop display	Insufficient refrigerant in the system; please pre-inject refrigerant until the fault is eliminated.

Step 12: The 10th step of the unit debugging is “pre-start main pipe status judgment”.

If the main module displays as follows, it indicates that the unit is in the start-up operation judgment process.

Progress	Debugging code/LED		Meaning
	Code	Display status	
10_Pre-start main pipe status judgment	10/on	Loop display	Start-up operation in progress

If the unit detects an abnormal status, it will display as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
10_Pre-start main pipe status judgment	10/U6	Loop display	Main pipeline is abnormal.

At this time, check if the valves are fully open or if there is a blockage in the main pipe. After the inspection, you can press the SW4 to return to the previous step and re-enter the judgment.

If the unit detects that the valve status is normal, it will display as follows, and the unit will automatically proceed to the next step.

Progress	Debugging code/LED		Meaning
	Code	Display status	
10_Pre-start main pipe status judgment	10/oC	Loop display	Main pipe opens normally.

Step 13: The 12th step of the unit debugging is "Unit start-up debugging confirmation".

The main module displays as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
12_Unit start-up debugging confirmation	12/AP	Loop display	Waiting for start-up debugging command

After the unit confirms the start-up, it will display as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
12_Unit start-up debugging confirmation	12/AE	Loop display	Unit start-up has been confirmed

Step 14: After the unit debugging method is confirmed, the system will automatically select the cooling or heating operation mode based on the ambient temperature.

After the system selects the cooling/heating operation mode, the relevant display will be as follows:

Progress	Debugging code/LED		Meaning
	Code	Display status	
15_Trial operation	15/AC	Loop display	Trial operation of cooling mode
	15/ Corresponding error code	Loop display	During the trial operation period, if a fault occurs, the error code will be displayed by the main control board of the faulty module unit.
16_Trial operation	15/AH	Loop display	Trial operation of heating mode
	15/ Corresponding error code	Loop display	There is fault occurred during trial operation

Note: During the trial operation, the unit will display the corresponding steps based on the actual situation.

Step 15: The system automatically starts the debugging operation. After the debugging is completed, it will return to the standby state. The display is as follows:

Progress	Debugging Code/LED		Meaning
	Code	Display status	
17_ Debugging completed status	oF	On	The unit has completed the debugging operation and it is in the standby mode.

After the complete unit debugging is completed, set the relevant functions of the unit according to the actual functional requirements of the project. For specific operation methods, see the unit function setting section in this manual. If there are no special requirements, skip this step.

3.2.5 Unit Commissioning on Commissioning Software

Step 1: Install the commissioning software.

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

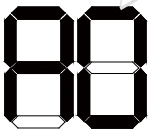
Step 2: Cover all the front panels of the outdoor unit.

Step 3: Set the master module.

In the power-off state of the outdoor unit, set one of the outdoor units as the master module. See the “Master Unit Setting DIP Switch (SA8)” for the setting method. The outdoor unit is set the master unit for DIP switch by default at the factory, and this step can be ignored only for outdoor unit installation.

Step 4: Set the static pressure for the outdoor unit.

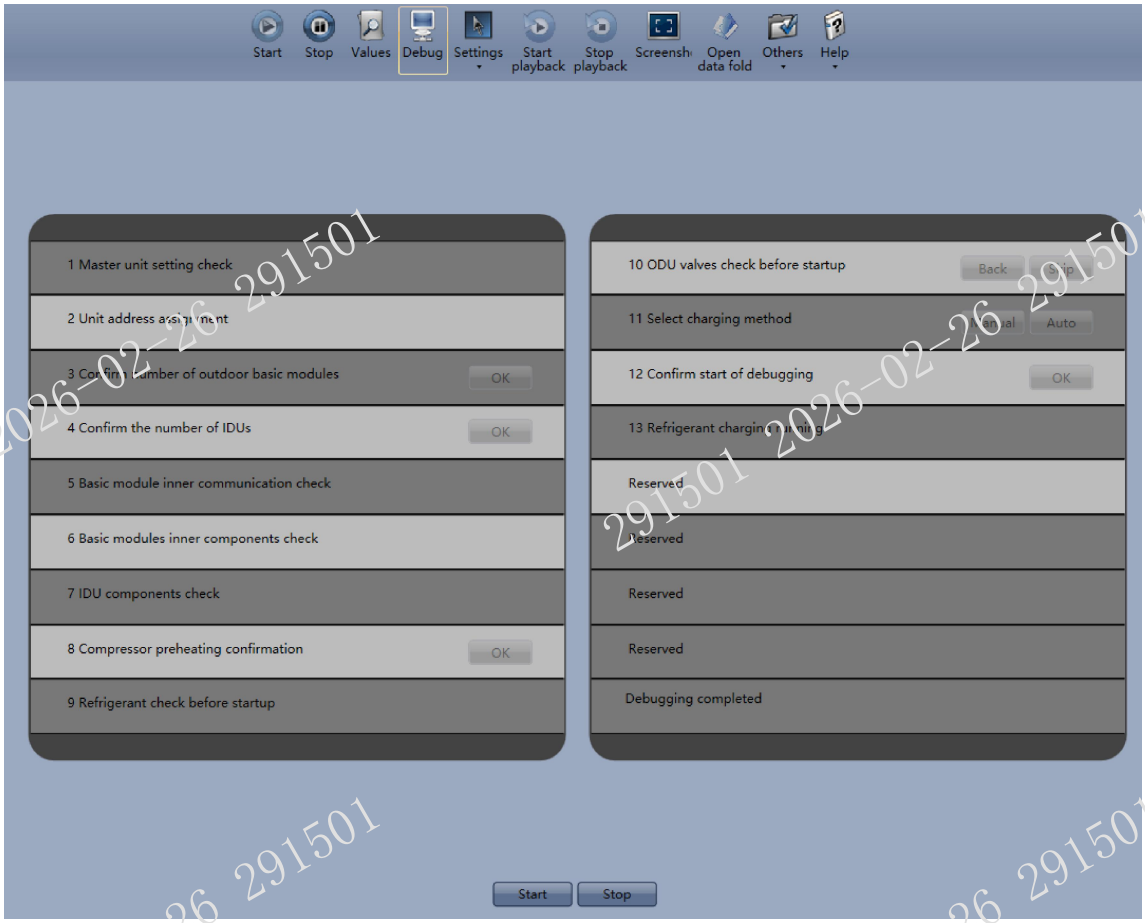
Power on all indoor and outdoor units. Ensure that all indoor units are powered on. In this case, all modules of the outdoor unit indicate that the unit is in "Not commissioning" status.



When the indoor and outdoor units are powered on, and the unit is to be commissioned, set the static pressure mode for the unit according to the design requirements for the outdoor static pressure of the project. Three static pressure modes are available: The factory default static pressure mode 0 represents 0 Pa outdoor static pressure, mode 1 represents 20 Pa, and mode 2 represents 40 Pa. Refer to *Chapter 4.2.3 “1G Outdoor Unit Static Pressure Function for setting method*. If the unit is not connected to an exhaust duct or has no static pressure requirements, skip the chapter of outdoor static pressure settings.

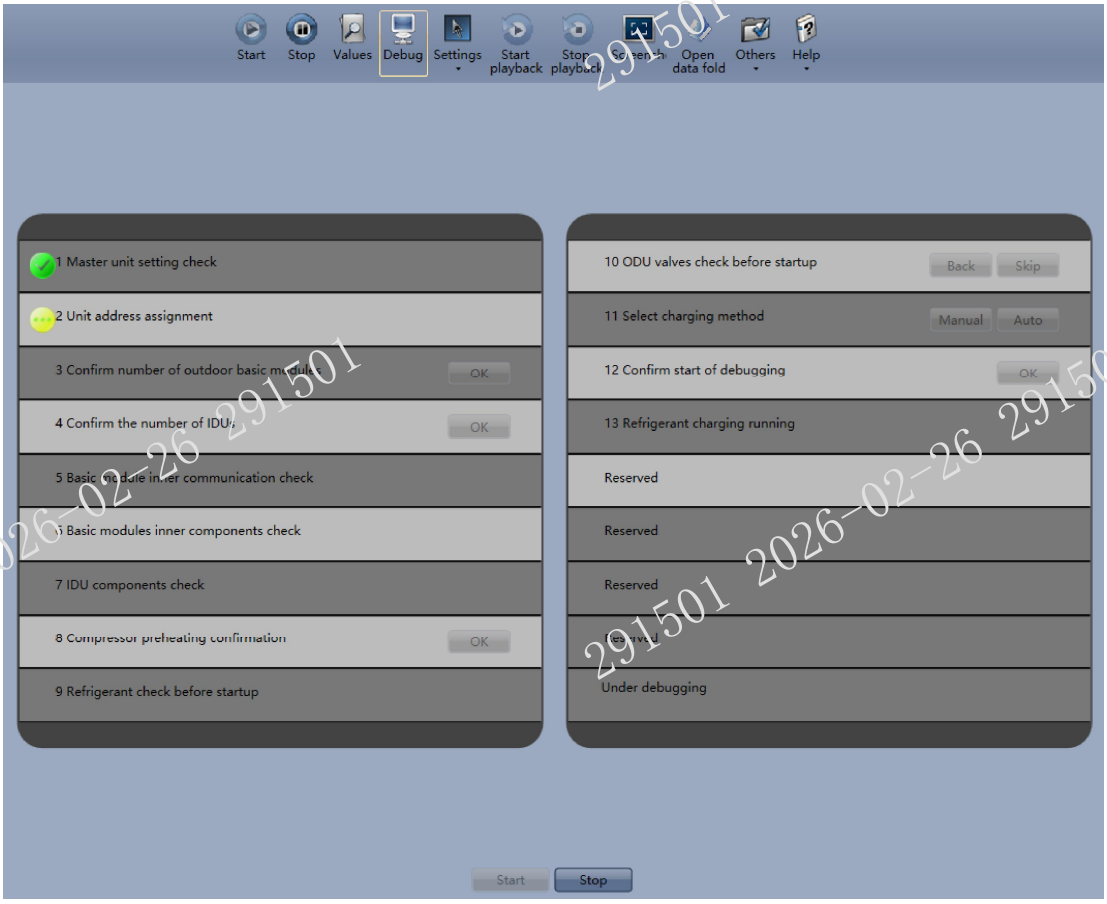
Step 5: Switch the commissioning software to the commissioning control interface.

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.



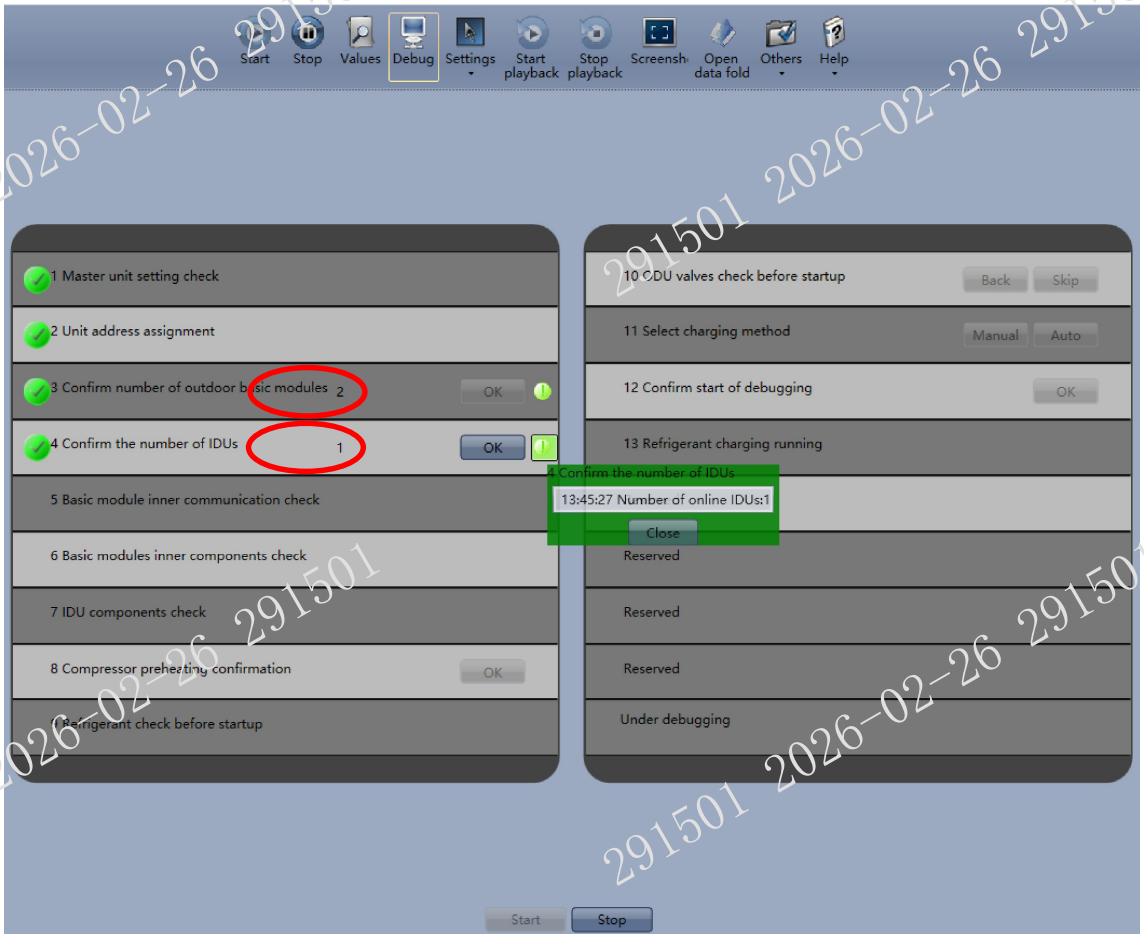
Step 6: Click "Start" to enter the commissioning function

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.

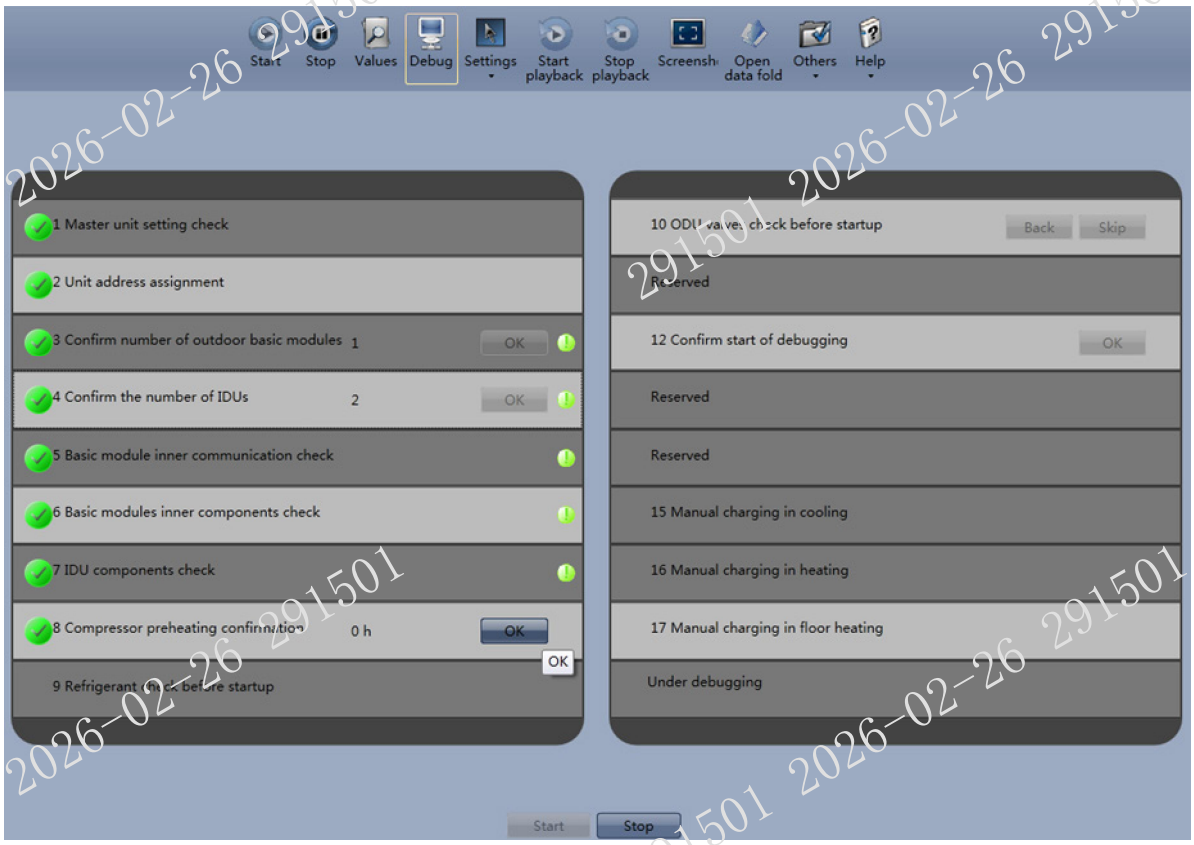


For the phase with "OK" displayed, a manual confirmation is required for entering the next commissioning step.

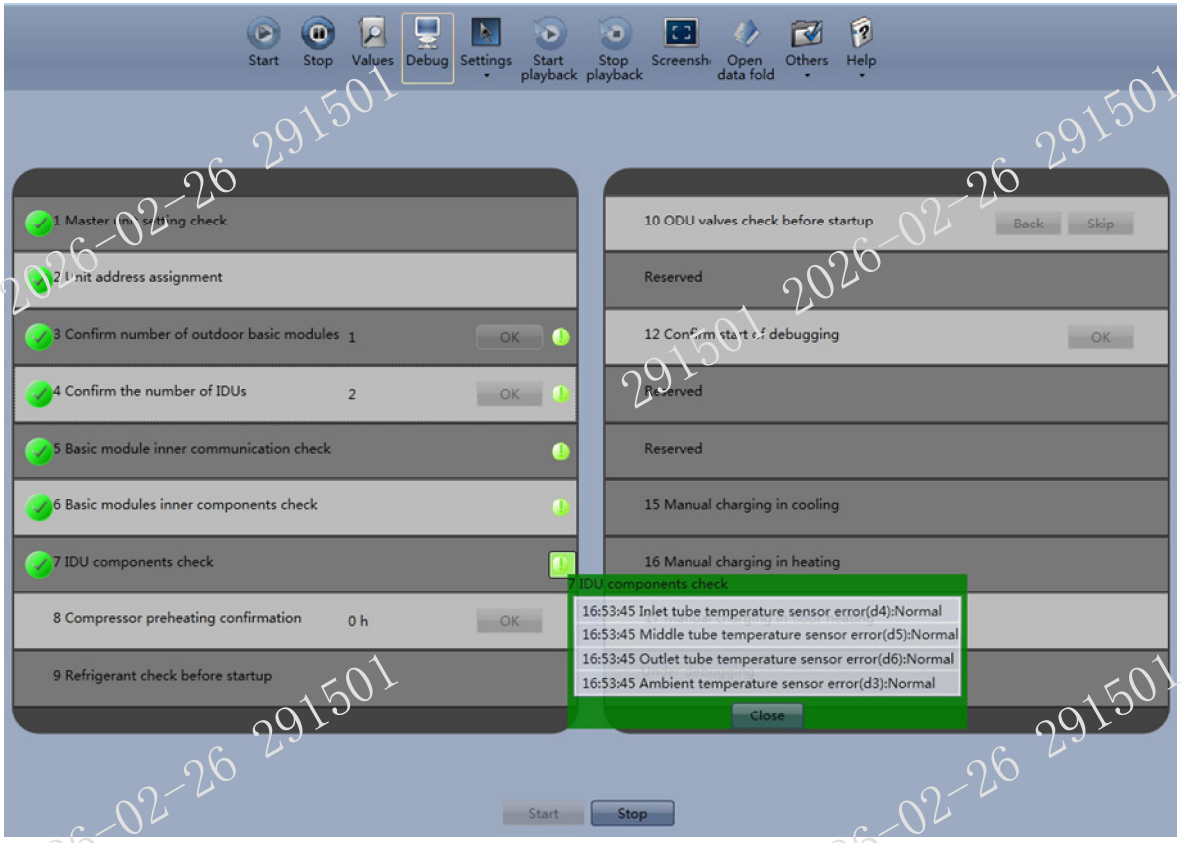
In processes "3 Confirm number of outdoor basic modules" and "4 Confirm the number of IDUs", if the number of online units is consistent with the actual number, click Confirm or wait for 30 seconds to go to the next process. If the displayed number of online units is inconsistent with the actual number 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.)



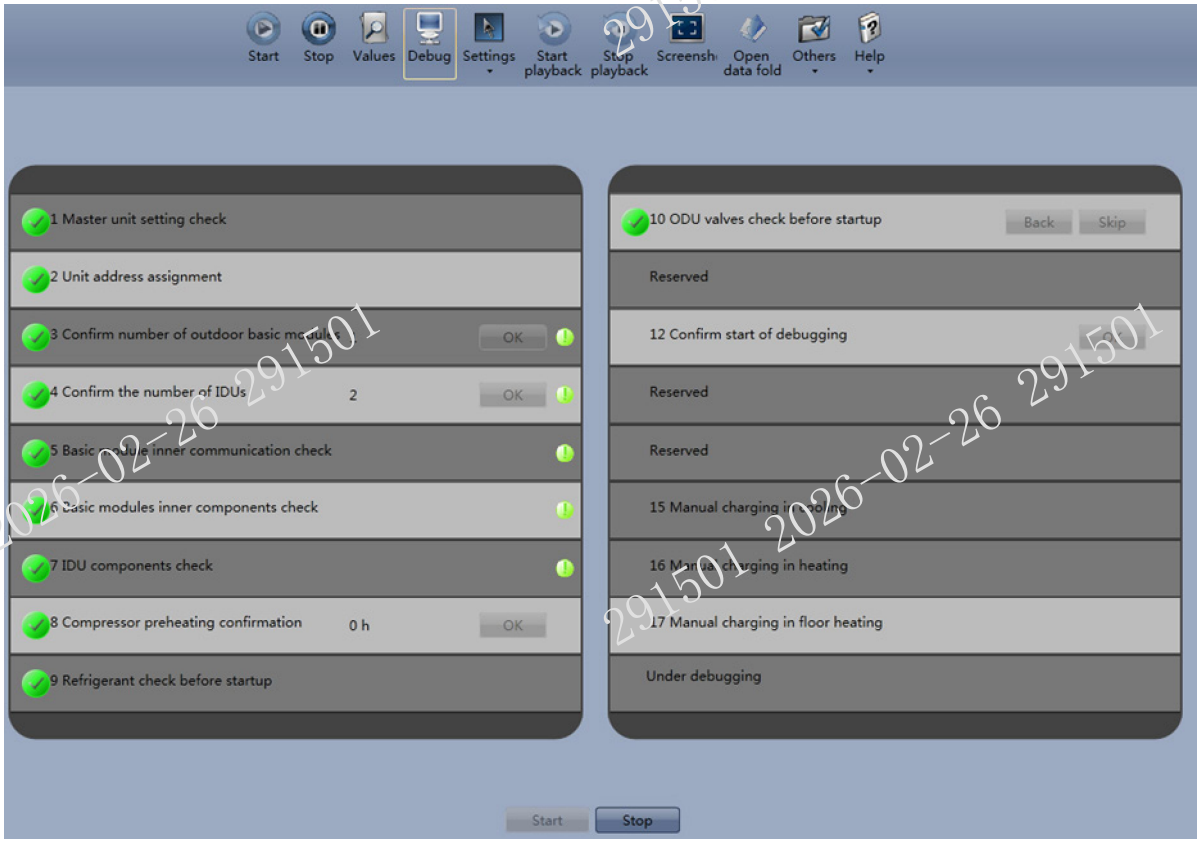
In step “8 Compressor preheating confirmation”, the current preheat time is directly displayed, as shown in the red box in the figure below. If the system currently detects that all the basic modules have been continuously powered on for 2 hours or more, or the previous time when the modules were powered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



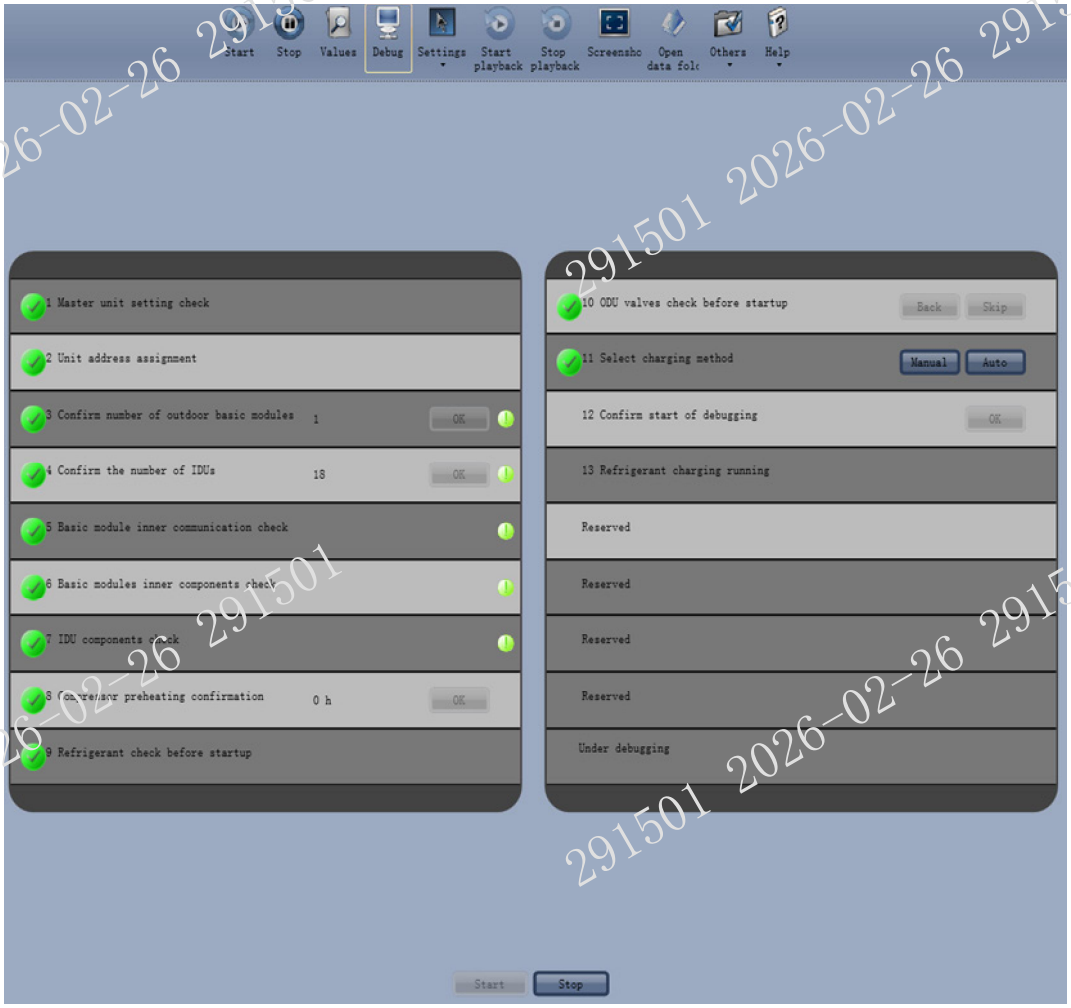
"" indicates that commissioning is not passed on the phase and troubleshooting is required (after troubleshooting, the unit automatically enters the next step if no "OK" exists or click "OK" to enter the next step). Click "" to display relevant information detected on this phase, which provides references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



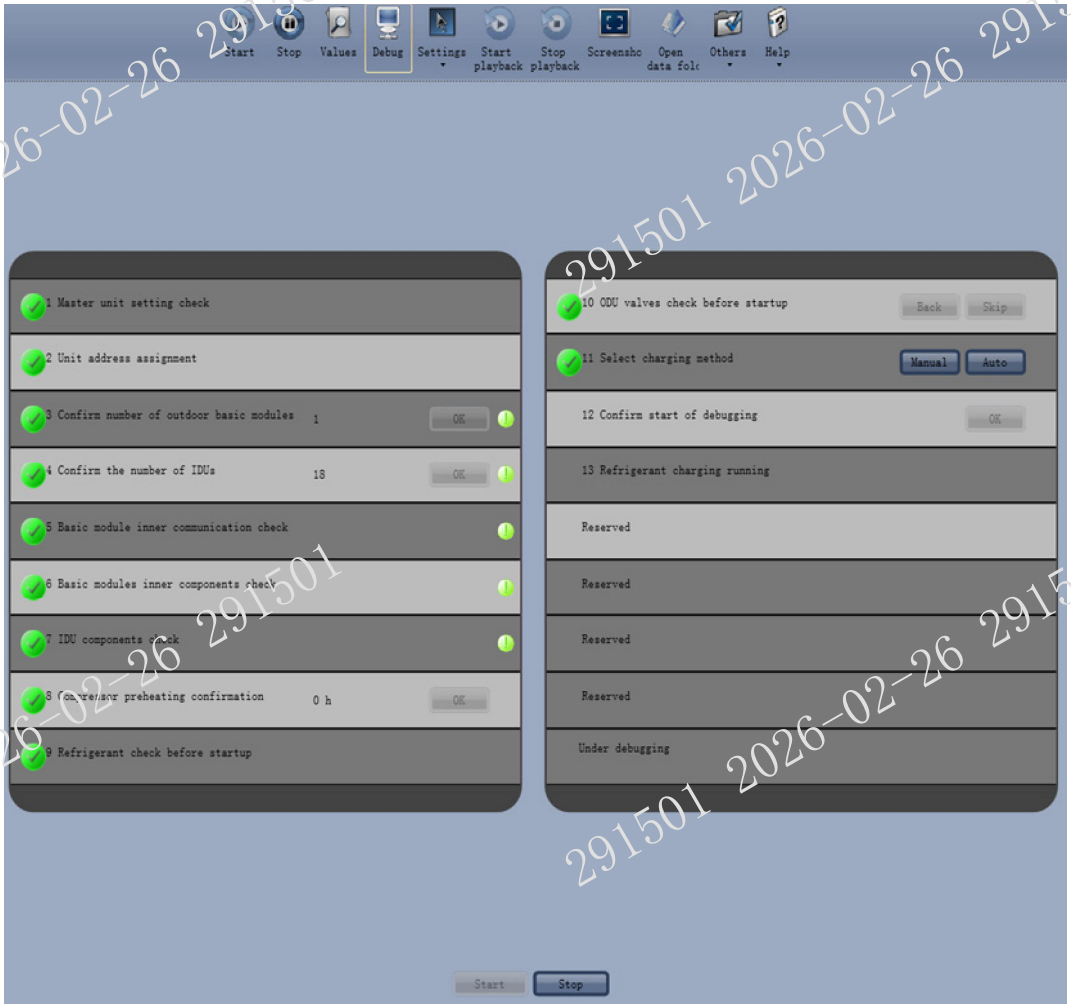
In step "11 Select charging method", the system automatically selects manual or auto charging mode. You can directly choose manual charging. If no operation is performed within 3 minutes, manual charging is automatically entered.



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.

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Note:

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

3.2.6 Unit Commissioning by Using Multi-functional Debugger

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

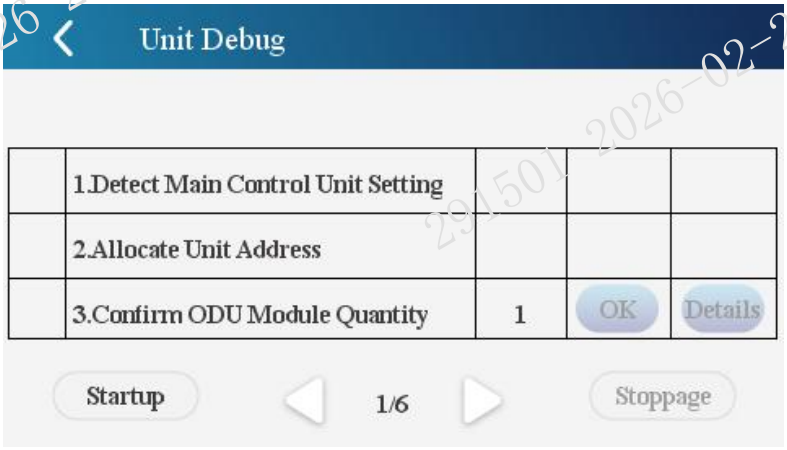
Step 2: Set the address DIP switch (SA8) of the master outdoor unit to 00. Otherwise, it is invalid.

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



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

commissioning.



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

Step 6: After the commissioning, outdoor unit circularly displays 01 / OF (or other fault display).

Warning:

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

3.2.7 After Commissioning

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

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

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

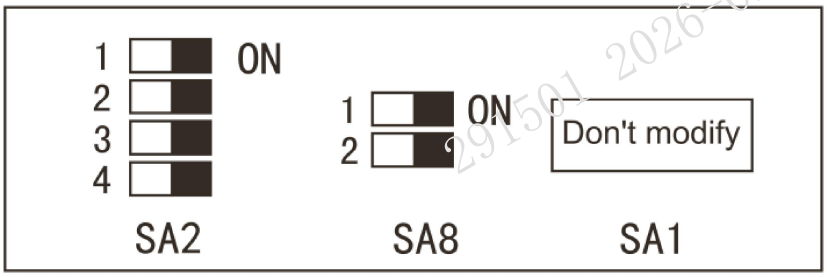
3.2.8 Reference Values of Unit Normal Operation Parameters (Commissioning Check)

Debugging Parameter Reference Value for DC Inverter VRF Unit						
No.	Debugging item		Parameter name	Unit	Reference value	Remark
1	System parameter	Outdoor unit's parameter	Outdoor ambient temperature	°C	—	—
2			Discharge pipe temperature of inverter compressor 1	°C	● When the compressor starts running, the normal discharge pipe of cooling or shell top temperature is 70~95°C, above 10°C higher than the saturation temperature of system high pressure; the normal heating temperature is 65~90 °C, above 10°C higher than the saturation temperature of system high pressure.	—
3			Shell top tube temperature of inverter compressor 1	°C		—
4			Discharge pipe temperature of inverter compressor 2	°C		—
5			Shell top tube temperature of inverter compressor 2	°C		—
6			Temperature of defrosting temperature sensor	°C	● When the system is running in cooling mode, the temperature of defrosting temperature sensor is 5~15°C lower than system high pressure. ● When the system is running in heating mode, the temperature difference between the defrosting temperature sensor and the system low pressure is about 2°C.	—
7			System high pressure	°C	● The normal high pressure value of the system is 20°C~55°C. According to the change of ambient temperature and the change of operating capacity of the system, the high pressure value of the system is 10°C~40°C higher than the ambient temperature. The higher the ambient temperature, the smaller the temperature difference; ● When the unit operating in the cooling mode at the ambient temperature of 25~35°C, the system high pressure value is 36~56°C; ● When the unit operating in the heating mode at the ambient temperature of -5~10°C, the system high pressure value is 40~56°C;	—
8			System low pressure	°C	● When the unit operating in the cooling mode at the ambient temperature of 25~35°C, the system low pressure value is 0~8°C; ● When the unit operating in the heating mode at the ambient temperature of -5~10°C, the system low pressure value is -15~5°C;	—
9			Opening of electronic expansion valve of heating	PLS	● During cooling operation, the electronic expansion valve of heating is 480PLS; ● During heating operation, the adjustable range of the opening of electric expansion valve opening is 70~480PLS.	—

Debugging Parameter Reference Value for DC Inverter VRF Unit					
No.	Debugging item	Parameter name	Unit	Reference value	Remark
10	System parameter / Outdoor unit's parameter	Operation frequency of inverter compressor	Hz	● Change among 20Hz~130Hz	—
11		IPM module temperature of inverter compressor	°C	● IPM module temperature is lower than 85°C. The highest temperature doesn't exceed 95°C.	—
12		Drive bus voltage of inverter compressor	V	●The normal bus voltage is 1.414 times of the power supply voltage. For example, if the three-phase power supply voltage is 390V, then the rectified bus voltage is: 390V×1.414 = 551V. The normal deviation between the measured value and the calculated value within 15V.	—
13		Fan operation frequency	Hz	● Adjust the operation in the range of 0~52Hz according to the system pressure adjustment.	—
14	Indoor unit's parameter	Inlet tube temperature of indoor heat exchanger	°C	● According to the ambient temperature, the inlet temperature is 1°C~7°C lower than the outlet temperature for the same indoor unit under cooling mode. ●The inlet temperature is 10°C~20°C lower than the outlet temperature for the same indoor unit under the heating mode.	—
15		Outlet tube temperature of indoor heat exchanger	°C		—
16		Opening of indoor electronic expansion valve	PLS	● 2000PLS electronic expansion valve: the opening is adjusted automatically in the range of 200~2000PLS; ● 480PLS electronic expansion valve: the opening is adjusted automatically in the range of 64~480PLS.	—
17	Drainage system	—	—	● The indoor unit drains smoothly and thoroughly, and the condensate water pipe has no slope water storage; the outdoor unit can drain water from the drain pipe without dripping directly from the unit foundation.	—
18	Other	—	—	●There is no abnormal noise for the operation of the compressor, indoor fan and outdoor fan. The unit is running normally.	—

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.	0000	The code is used only for centralized control. Otherwise, keep the default setting. This address can be set only on the master unit.
SA8_MASTER-S	Master module setting DIP switch	Defines the master module.	00	Exactly one module must be configured as the master module in a refrigerating system. The master module status is set by default.

NOTES!

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

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

4.1.1 Unit Capacity DIP Switch (SA1_capacity)

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

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

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

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

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

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

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

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

(4) Set the address DIP switch for centralized control (SA2_Addr-CC) on the master units of other refrigerating systems as follows:

SA2				Address No.
DIP1	DIP2	DIP3	DIP4	
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

Notes:

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.

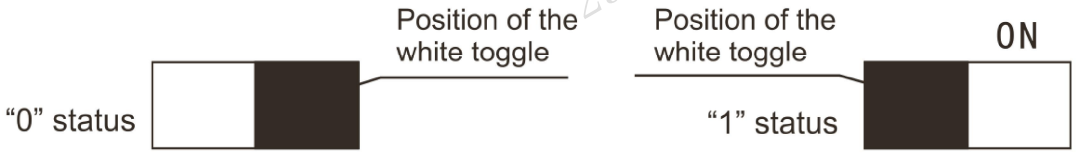
④ When delivered, all modules are in "00" master module status by default.

4.1.4 DIP Switch Examples

(1) DIP switch position description

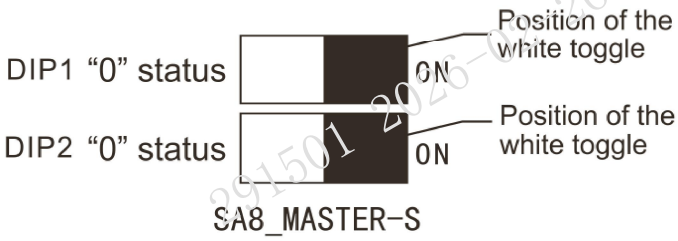
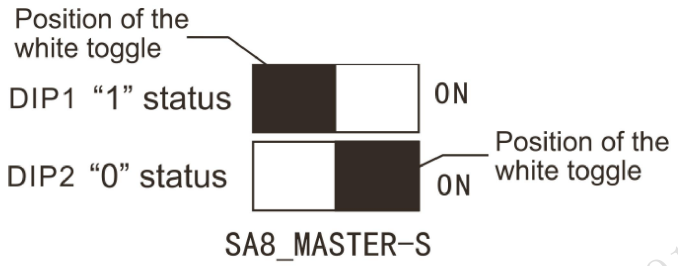
DIP switch at the ON end indicates 0; DIP switch at the other end indicates 1.

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

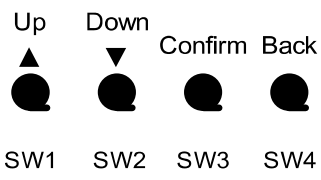
CAUTIONS!

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 outdoor unit, as shown below:



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

4.2.2 Function Description

Function code	Function name	Description	Default setting		Remarks
			Code	Meaning	
A2	Refrigerant recycle	This function is automatically started during maintenance. Based on the system pressure change, this function recycles all or partial refrigerant of the faulty module or the indoor unit pipeline.	—	—	This function can only be set.
A6	Cooling/heating of the entire system	The unit can be set to cooling and heating, cooling only, heating only, or fan mode for centralized management.	nA	Cooling and heating	This function can be set and queried.
A7	Outdoor silence mode	This function sets different silence modes based on the user's needs.	00	No silence	This function can be set and queried.
A8	After-sales vacuum pumping mode	During maintenance, the system automatically turns on all electronic expansion valves and solenoid valves to ensure that all lines can be vacuumed.	—	—	This function can only be set.
n0	Auto energy saving	This function can automatically reduce power consumption of the unit based on system operating parameters.	01	Capability priority control	This function can be set and queried.
n3	Forced defrosting	This function forcibly enables defrosting of the outdoor unit of the system.	—	—	This function can only be set.
n4	Forced energy saving	This function forcibly reduces the maximum power consumption of the unit.	10	100% capability output	This function can be set and queried.
n5	Indoor unit engineering SN offset	When different refrigerating systems are controlled in a centralized manner, this function avoids the conflict of indoor unit engineering numbers.	—	—	This function can only be set.
qF	Forced cooling function	—	—	—	This function can only be set.
C8	Compressor emergency setting	—	00	Normal operation of the compressor	—
CA	Module emergency setting	—	00	Normal operation of the module	—
C9	Fan emergency setting	—	00	Normal operation of the fan	—
4J	Emergency settings for components	It's used for emergency operation of the unit after a sensor failure	00	Function is not effective	It can be set and queried

Function code	Function name	Description	Default setting		Remarks
			Code	Meaning	
1A	Mode priority function	Set the priority selection for cooling and heating modes	00	Master-slave priority	Can be Set and Queried
1F	SRL low pressure control function	Load adaptive control	00	Function is not effective	Can be Set and Queried
1G	Outdoor static pressure setting	—	00	0 Pa static pressure	Can be Set and Queried
4q	Indoor unit forced E-heater Function	—	00	—	Can be Set and Queried
7C	Villa operation mode	It's used for noise reduction in special occasions; noise reduction in full-condition operation	00	Function is not effective	Can be Set and Queried

4.2.3 Function Operations

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

Premise steps for function setting:

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

Step 2: Power on the entire system.

Step 3: Press and hold the SW1 up button on the master unit for over 5 seconds. The system enters the function setting status. Main control unit displays step 1 by default, displaying "A7", through short pressing SW1 and SW2 to select the corresponding function code. After selecting the corresponding function/parameter code, short press SW3 confirmation key to confirm entering the function/parameter setting, the main control unit displays as follows see step 2.

LED	
Function code	Display status
A7	Blinks

After confirming entering the function setting, the main module displays as follows:

Function name	Display steps 1		Display steps 2	
	LED		LED	
Display method	Function code	Display status	Function code	Display status
Outdoor unit silence	A7	Blinks	current value	Blinks
Cooling/heating of the entire system	A6	Blinks	current value	Blinks
Refrigerant recycle	A2	Blinks	current value	Blinks
After-sales vacuum pumping	A8	Blinks	A8	On
Auto energy saving	n0	Blinks	current value	Blinks
Forced defrosting	n3	Blinks	n3	On
Forced energy saving	n4	Blinks	current value	Blinks
Indoor unit engineering SN offset	n5	Blinks	n5	On
Forced cooling function	qF	Blinks	current value	Blinks
Compressor emergency setting	C8	Blinks	current value	Blinks
Fan emergency setting	C9	Blinks	current value	Blinks
Module emergency setting	CA	Blinks	current value	Blinks
Emergency settings for components	4J	Blinks	current value	Blinks
Mode priority function	1A	Blinks	current value	Blinks

Function name	Display steps 1		Display steps 2	
	LED		LED	
Display method	Function code	Display status	Function code	Display status
SRL low pressure control function	1F	Blinks	current value	Blinks
Outdoor static pressure setting	1G	Blinks	current value	Blinks
Indoor unit forced E-heater function	4q	Blinks	current value	Blinks
Villa operation mode	7C	Blinks	current value	Blinks

Then set each 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
GMV-400WML/A-X	6.6
GMV-450WML/A-X	6.6
GMV-504WML/A-X	6.6
GMV-560WML/A-X	9.8
GMV-615WML/A-X	9.8

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

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

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

Setting steps:

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

LED	
Current process	Display status
01	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:

LED	
Current process	Display status
Module low pressure	On

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

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

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

Note:

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

Basic module refrigerant recycle:

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

LED	
Current process	Display status
Module high pressure	On

LED displays the high pressure value of the module.

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

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

Note:

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

4.2.3.2 A6 Cooling/Heating of the Entire System

Introduction:

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

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

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

Setting steps:

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

LED	
Current process	Display status
nC	Blinks

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

LED	
Current process/mode	Display status
nC	Blinks
nH	Blinks
nA	Blinks
nF	Blinks

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

LED	
Current process/mode	Display status
nC	On
nH	On
nA	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 default value is nA cooling and heating mode.

4.2.3.3 A7 Outdoor Silence Mode

Introduction:

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

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

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

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

Note:

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
Mode 13	13	Adaptive Silent Mode

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:

LED	
Silence mode code	Display status
00	Blinks

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

LED	
Silence mode code	Display status
00	Blinks
01	Blinks
02	Blinks
03	Blinks
04	Blinks
05	Blinks
06	Blinks
07	Blinks
08	Blinks
09	Blinks
10	Blinks
11	Blinks
12	Blinks
13	Blinks

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

LED	
Silence mode code	Display status
00	On
01	On
02	On
03	On
04	On
05	On
06	On
07	On
08	On
09	On
10	On
11	On
12	On
13	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:

LED	
Current process	Display status
00	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:

LED	
Current process	Display status
00	On

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

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

4.2.3.5 n0 Auto Energy Saving

Introduction:

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

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

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

Setting steps:

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

LED	
Current process/mode	Display status
01	Blinks

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

LED	
Current process/mode	Display status
01	Blinks
02	Blinks

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

LED	
Current process/mode	Display status
01	On
02	On

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

4.2.3.6 n3 Forced Defrosting

Introduction:

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

Setting steps:

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

LED	
Current process/mode	Display status
00	Blinks

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

LED	
Function code	Display status
n3	On

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

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

4.2.3.7 n4 Forced Energy Saving

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 displays as follows:

LED	
Current process/mode	Display status
10/09/08	Blinks

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

LED	
Current process/mode	Display status
10	Blinks
09	Blinks
08	Blinks

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

LED	
Current process/mode	Display status
10	On
09	On
08	On

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

4.2.3.8 n5 Indoor Unit Engineering SN Offset

Introduction:

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

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

Setting steps:

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

LED	
Current process/mode	Display status
00	Blinks

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

LED	
Function code	Display status
n5	On

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

4.2.3.9 qF Forced Cooling Function

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

LED	
Current process	Display status
Module low pressure	Blinks

Press the SW3 to enter the “system forced cooling state”, and the display is as follows:

LED	
Current process	Display status
Module low pressure	On

The LED displays the low pressure value of the module. If it is negative, it will display the negative code "nE" and the value every 1 second circularly. For example: as for -30℃, first display "nE", and display "30" 1 second later, and it will display like that circularly.

4.2.3.10 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:

LED	
Current process	Display status
00	Blinks

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

LED		Instruction
Current process	Display status	
00	Blinks	Compressors 1 and 2 run normally.
01	Blinks	The operation of compressor 1 is shielded.
02	Blinks	The operation of compressor 2 is shielded.

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

LED	
Mode	Display status
00	On
01	On
02	On

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.

LED Module failure/indoor unit failure	Instruction
C8/On	System running-compressor emergency operation status
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.

4.2.3.11 C9 Fan Failure Emergency Operation

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

Setting steps:

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

LED	
Current process	Display status
00	Blinks

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

LED		Instruction
Current process	Display status	
00	Blinks	Fans 1 and 2 run normally.
01	Blinks	The operation of fan 1 is shielded.
02	Blinks	The operation of fan 2 is shielded.

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

LED	
Mode	Display status
C9/00	On
C9/01	On
C9/02	On

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.

LED
Module failure
C9

NOTES!

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

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

③ The default status is 00.

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

4.2.3.12 CA Module Failure Emergency Operation

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

Setting steps:

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

LED	
Current process	Display status
00	Blinks

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

LED		Instruction
Current process	Display status	
00	Blinks	All basic modules run normally.
01	Blinks	The operation of module 1 is shielded.
02	Blinks	The operation of module 2 is shielded.
03	Blinks	The operation of module 3 is shielded.
04	Blinks	The operation of module 4 is shielded.

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

LED	
Mode	Display status
CA/01	On
CA/02	On

LED	
Mode	Display status
CA/03	On
CA/04	On

Modules not shielded display as follows:

LED	
Mode	Display status
CA/00	On

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

LED	
Mode	Display status
CA	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.

4.2.3.13 4J 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:

On the main board of the master unit, press the SW1 up button for more than 5 seconds to enter the function setting selection state. It defaults to display “A7”; at this time, press the SW1up button for more than 5 seconds again to enter the parameter setting selection state. It defaults to display “n1”;

LED	
Function code	Display status
n1	Blinks

At this time, press SW1 and SW2 can select the corresponding function code. Select the corresponding function/parameter code and find “4J”.

LED	
Function code	Display status
4J	Blinks

Press the SW3 button to enter the function setting, and the display is as follows:

LED	
Current process	Display status
00	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.

LED	
Current process	Display status
00	Blinks
01	Blinks

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

LED	
Current process	Display status
00	On

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

Notes:

① Default is "00" state;

② The 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;

③ At present, the emergency setting of components is only effective for temperature-sensing package fault, overcurrent protection and startup failure.

4.2.3.14 1A Mode Priority Function

The mode priority of the heat pump system includes: cooling priority mode, heating priority mode, indoor unit quantity priority mode, master-slave mode, first-on priority mode, last-on priority mode, and voting mode.

After entering the function setting, the master unit will display as follows:

LED	
Current progress	Display method
00	Blinks

Press SW1up button and SW2 down button to choose the corresponding control method.

LED		Instruction
Current progress	Display method	
00	Blinks	Master-slave mode. When the system has a master indoor unit, the slave indoor unit cannot switch to a mode that is conflicting with the master indoor unit.
01	Blinks	First-on priority mode. The later on indoor unit cannot switch to a mode that is conflicting with the first-on indoor unit.
02	Blinks	Later on priority mode. The system mode is based on the later on indoor unit.
03	Blinks	Cooling priority mode. When any indoor unit starts cooling, the heating indoor unit automatically switches to cooling.
04	Blinks	Heating priority mode. When any indoor unit starts heating, the cooling indoor unit automatically switches to heating
05	Blinks	Indoor unit quantity priority mode. The system mode is based on the mode with more cooling or heating indoor units.
06	Blinks	Indoor unit capacity priority mode. The system mode is based on the mode with larger total capacity of cooling or heating indoor units

Press SW3 button to select the corresponding mode and the display is as below:

LED		Instruction
Current progress	Display method	
00	On	Master-slave mode
01	On	First-on priority mode
02	On	Later on priority mode
03	On	Cooling priority mode
04	On	Heating priority mode
05	On	Indoor unit quantity priority mode
06	On	Indoor unit capacity priority mode

4.2.3.15 1F SRL Low-Pressure Control

Setting steps:

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

LED	
Current process	Display status
00	Blinks

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

LED		Instruction
Current process	Display status	
00	Blinks	Ordinary low-pressure control
01	Blinks	SRL low-pressure control

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

LED	
Current process	Display status
00	On
01	On

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

4.2.3.16 1G Outdoor Unit Static Pressure

Setting steps:

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

LED	
Current process	Display status
01	Blinks

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

LED	
Current process	Display status
00	Blinks
01	Blinks

LED	
Current process	Display status
02	Blinks
03	Blinks
04	Blinks

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

LED	
Mode	Display status
00	Blinks

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

LED		Instruction
Current status	Display status	
00	Blinks	Means 0Pa
01	Blinks	Means 20Pa
02	Blinks	Means 40Pa

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

LED		Instruction
Current status	Display status	
00	On	Means 0Pa
01	On	Means 20Pa
02	On	Means 40Pa

4.2.3.17 4q Forced Off of the Electric Heater of an Indoor Unit

Setting steps:

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

LED	
Current process	Display status
00	Blinks

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

LED		Instruction
Current process	Display status	
00	Blinks	Invalid forced off function of the electric heater of an indoor unit
01	Blinks	Forced off of the electric heater of an indoor unit in full temperature range
02	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:

LED	
Current process	Display status
00	On
01	On

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

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

4.2.3.18 7C Villa Operation Mode

After entering this function setting, the default display is as follows:

LED	
Current progress	Display method
00	Blinks

Press SW1 up button and SW2 down button to choose the corresponding low pressure control method.

LED2		Instruction
Current progress	Display method	
00	Blinks	Invalid villa operation mode
01	Blinks	Valid villa operation mode

Press the SW3 button to select the corresponding mode, and the main module will display as follows:

LED2	
Current progress	Display method
00	On
01	On

The default value is 00.

4.2.4 Outdoor Unit Status Query

The following functions can be queried:

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

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

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

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

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

4.2.4.1 n6 Fault Query

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

LED	
Function code	Display status
n6	Blinks

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

Introduction:

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

Operations:

In fault query status, press the SW1 up button and the SW2 down button. LED circularly displays the code and address of the faulty module in history in the order of time (at an interval of 1s), and LED displays the fault sequence number. If there is no historical fault, LED 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.

LED	
Current status	Display status
Historical fault/module address	Alternated
	Alternated
	Alternated
	Alternated
	Alternated

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

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

4.2.4.2 n7 Parameter Query

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

LED	
Function code	Display status
n7	Blinks

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

Introduction:

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

Operations:

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

LED	
Function code	Display status
n7	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:

LED	
Function code	Display status
n7	On

LED displays the module parameter code, and LED 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 ambient temperature
02	Operating frequency of compressor 1
03	Operating frequency of compressor 2
04	Operating frequency of the outdoor fan
05	Module high pressure
06	Module low pressure
07	Discharge temperature of compressor 1
08	Discharge temperature of compressor 2

Parameter code	Parameter name
09	Discharge temperature of compressor 3
10	Discharge temperature of compressor 4
11	Discharge temperature of compressor 5
12	Discharge temperature of compressor 6
13	Operating frequency of compressor 3
14	Current of compressor 1
15	Current of compressor 2
16	Current of compressor 3
17	Current of compressor 4
18	Current of compressor 5
19	Current of compressor 6
20	Reserved
21	Module temperature of compressor 1
22	Module temperature of compressor 2
23	Module temperature of outdoor fan 1
24	Module temperature of outdoor fan 2
25	Outdoor unit heating EEV 1
26	Outdoor unit heating EEV 2
27	Subcooler EEV
28	Defrost temperature
29	Subcooler's liquid outlet temperature
30	Outlet temperature of accumulator
31	Oil return temperature
32	Inlet pipe temperature of the condenser
33	Outlet pipe temperature of the condenser

Note:

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

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

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

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

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

4.2.4.3 n8 Indoor Unit Engineering SN Query

Introduction:

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

Operations:

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

LED	
Function code	Display status
n8	Blinks

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

LED	
Function code	Display status
n8/00	Loop display

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

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

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

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

4.2.4.4 n9 Online Indoor Unit Qty Query

Introduction:

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

Operations:

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

LED	
Function code	Display status
n9	On

The digital tube LED alternately displays n9 and the number of indoor units.

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

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

Note:

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

4.2.4.5 nb Outdoor Unit Barcode Query

Introduction:

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

Operations:

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

LED	
Function code	Display status
nb	Blinks

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

LED	
Function code	Display status
nb/01	On
nb/02	On
nb/03	On
nb/04	On

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:

LED	
Parameter code	Display status
Un/Pc	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:

LED	
Parameter code	Display status
Barcode	Blinks

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

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

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

4.3 Restoration to Default Settings

Restoration to default settings 1 (clearing all settings)

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

LED	
Status code	Display status
0C	Blinks for 3 seconds

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

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

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

LED	
Status code	Display status
0C	Blinks for 5 seconds

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

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

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

LED	
Status code	Display status
0C	Blinks for 7 seconds

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

4.4 Fire Alarm Function Setting

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

4.5 Indoor Unit Function Applications

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

Chapter 3 Faults

1 Error Indication

---	Error code	Content	Error code	Content
Indoor	L0	Malfunction of IDU	L1	Protection of indoor fan
	L2	Auxiliary heating protection	L3	Water-full protection
	L4	Abnormal power supply for wired controller	L5	Freeze prevention protection
	L6	Mode conflict	L7	No main IDU
	L8	Power supply is insufficient	L9	For single control over multiple units, number of IDU is inconsistent (HBS network)
	LA	For single control over multiple units, IDU series is inconsistent (HBS network)	LH	Alarm due to bad air quality
	LC	IDU is not matching with outdoor unit	LL	Malfunction of water flow switch
	LE	Rotation speed of EC DC water pump is abnormal	LF	Malfunction of shunt valve setting
	LJ	Setting of functional DIP switch code is wrong	LP	Zero-crossing malfunction of PG motor
	LU	Indoor unit's branch is not inconsistent for one-to-more unit of heat recovery system	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-voltage protection of IDU's bus bar
	o2	High-voltage protection of IDU's bus bar	o3	IPM module protection of IDU
	o4	Failure startup of IDU	o5	Over-current protection of IDU
	o6	Malfunction of current detection circuit of IDU	o7	Desynchronizing protection of IDU
	o8	Communication malfunction of IDU's driver	o9	Communication malfunction of IDU's main control
	oA	Drive IPM high temperature protection of IDU	ob	Malfunction of drive temperature sensor of IDU
	oC	Malfunction of charging loop of IDU	o0	Other malfunction of drive

—	Error code	Content	Error code	Content
Outdoor	E0	Malfunction of ODU	E1	High-pressure protection
	E2	Discharge low-temperature protection	E3	Low-pressure protection
	E4	High discharge temperature protection of compressor	Ed	Drive IPM low temperature protection
	F0	Main board of ODU is poor	F1	Malfunction of high-pressure sensor
	F3	Malfunction of low-pressure sensor	F5	Malfunction of discharge temperature sensor of compressor 1
	F6	Malfunction of discharge temperature sensor of compressor 2	F7	Malfunction of discharge temperature sensor of compressor 3
	F8	Malfunction of discharge temperature sensor of compressor 4	F9	Malfunction of discharge temperature sensor of compressor 5
	FA	Malfunction of discharge temperature sensor of compressor 6	FC	Current sensor of compressor 2 is abnormal
	FL	Current sensor of compressor 3 is abnormal	FE	Current sensor of compressor 4 is abnormal
	FF	Current sensor of compressor 5 is abnormal	FJ	Current sensor of compressor 6 is abnormal
	FP	Malfunction of DC motor	FU	Malfunction of casing top temperature sensor of compressor 1
	Fb	Malfunction of casing top temperature sensor of compressor 2	Fd	Malfunction of exit tube temperature sensor of mode exchanger
	Fn	Malfunction of inlet tube temperature sensor of mode exchanger	J0	Protection for other modules
	J1	Over-current protection of compressor 1	J2	Over-current protection of compressor 2
	J3	Over-current protection of compressor 3	J4	Over-current protection of compressor 4
	J5	Over-current protection of compressor 5	J6	Over-current protection of compressor 6
	J7	Gas-mixing protection of 4-way valve	J8	High pressure ratio protection of system
	J9	Low pressure ratio protection of system	JA	Protection because of abnormal pressure
	JC	Water flow switch protection	JL	Protection because high pressure is too low
	JE	Oil-return pipe is blocked	JF	Oil-return pipe is leaking
	b1	Malfunction of outdoor ambient temperature sensor	b2	Malfunction of defrosting temperature sensor 1
	b3	Malfunction of defrosting temperature sensor 2	b4	Malfunction of liquid outlet temperature sensor of sub-cooler
	b5	Malfunction of gas outlet temperature sensor of sub-cooler	b6	Malfunction of inlet tube temperature sensor of vapor liquid separator
	b7	Malfunction of exit tube temperature sensor of vapor liquid separator	b8	Malfunction of outdoor humidity sensor
	b9	Malfunction of gas temperature sensor of heat exchanger	bA	Malfunction of oil-return temperature sensor 1
	bH	Clock of system is abnormal	bE	Malfunction of inlet tube temperature sensor of condenser
	bF	Malfunction of outlet tube temperature sensor of condenser	bJ	High-pressure sensor and low-pressure sensor are connected reversely
	bP	Malfunction of temperature sensor of oil-return 2	bU	Malfunction of temperature sensor of oil return 3
	bb	Malfunction of temperature sensor of oil return 4	bd	Malfunction of gas inlet temperature sensor of sub-cooler
	bn	Malfunction of liquid inlet temperature sensor of sub-cooler	P0	Malfunction of driving board of compressor
	P1	Driving board of compressor operates abnormally	P2	Voltage protection of driving board power of compressor
	P3	Reset protection of driving module of compressor	P4	Drive PFC protection of compressor
	P5	Over-current protection of inverter compressor	P6	Drive IPM module protection of compressor

—	Error code	Content	Error code	Content
Outdoor	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/underfrequency 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 supply phase sequence protection	U4	Refrigerant-lacking protection
	U5	Wrong address for driving board of compressor	U6	Alarm because valve is abnormal
	U8	Malfunction of pipeline for IDU	U9	Malfunction of pipeline for ODU
	UC	Setting of main IDU is succeeded	UL	Emergency operation DIP switch code of compressor is wrong
	UE	Charging of refrigerant is invalid	UF	Identification malfunction of IDU of mode exchanger

—	Error code	Content	Error code	Content
Debugging	Ud	Drive board of grid-connection is abnormal	Un	Communication malfunction between the drive board of grid-connection and the main board
	C0	Communication malfunction between IDU, ODU and IDU's wired controller	C1	Communication malfunction between main control and DC-DC controller
	C2	Communication malfunction between main control and inverter compressor driver	C3	Communication malfunction between main control and inverter fan driver
	C4	Malfunction of lack of IDU	C5	Alarm because project code of IDU is inconsistent
	C6	Alarm because ODU quantity is inconsistent	C7	Abnormal communication of converter
	C8	Emergency status of compressor	C9	Emergency status of fan
	CA	Emergency status of module	CH	Rated capacity is too high
	CC	No main unit	CL	The matching ratio of rated capacity for IDU and ODU is too low
	CE	Communication malfunction between mode exchanger and IDU	CF	Malfunction of multiple main control units
	CJ	Address DIP switch code of system is shocking	CP	Malfunction of multiple wired controller
	CU	Communication malfunction between IDU and the receiving lamp	Cb	Overflow distribution of IP address
	Cd	Communication malfunction between mode exchanger and ODU	Cn	Malfunction of network for IDU and ODU of mode exchanger
	Cy	Communication malfunction of mode exchanger	--	—
Status	A0	Unit waiting for debugging	A2	Refrigerant recovery operation of after-sales
	A3	Defrosting	A4	Oil-return
	A6	Heat pump function setting	A7	Quiet mode setting
	A8	Vacuum pump mode	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 outdoor units are powered off and powered on at the same time. Avoid doing so to only some of the outdoor units.

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

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.2 "A2" Refrigerant Recycle Running State

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.3 "A3" Defrosting State

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.4 "A4" Oil Return State

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

Fault diagnosis:

This is a status code. It indicates that the system has entered oil return state. In case of oil return in heating mode, the indoor fan will stop working for 5 to 10 minutes.

Possible causes: –

Troubleshooting: not required.

2.5 "A6" Cooling and Heating Function Settings State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.6 "A7" Silent Mode Settings State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.7 "A8" Vacuum Pumping Mode

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.8 "AH" Heating State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.9 "AC" Cooling State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.10 "AF" Fan State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.11 "AE" Artificial Refrigerant Charging State

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.12 "AJ" Filter Clean Prompt

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

Applicable models: all indoor units

Fault diagnosis:

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

Possible causes: –

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

2.13 "AP" Unit Commissioning Startup Confirmation

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.14 "AU" Remote Control for Emergency Stop

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.15 "Ab" Emergency Stop

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.16 "Ad" Restricted Running State

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.17 "b1" Outdoor Ambient Temperature Sensor Fault

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

Fault diagnosis:

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

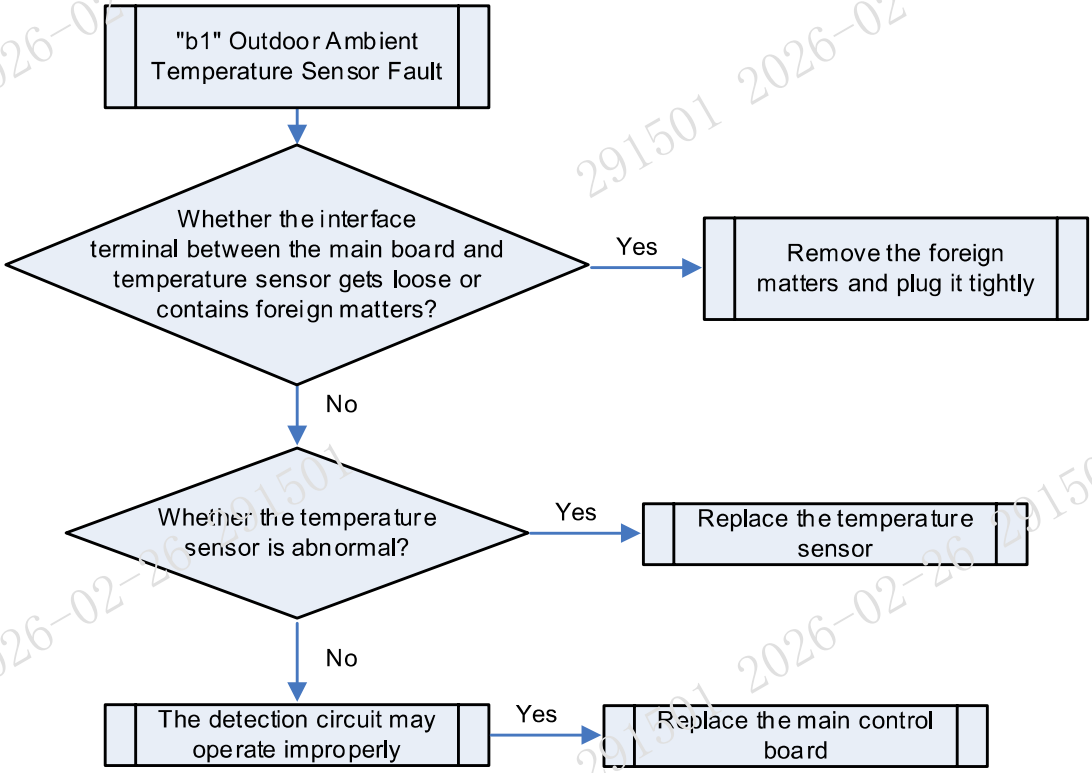
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.18 "b2" Defrosting Temperature Sensor 1 Fault

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

Fault diagnosis:

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

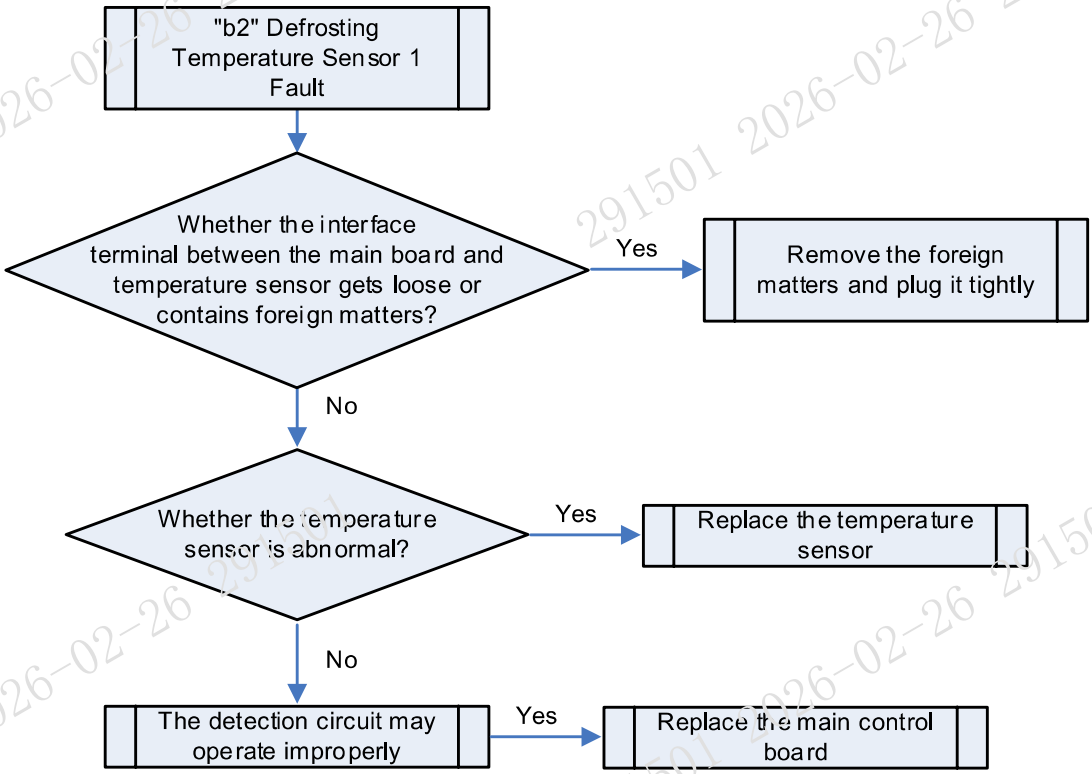
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.19 "b3" Defrosting Temperature Sensor 2 Fault

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

Fault diagnosis:

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

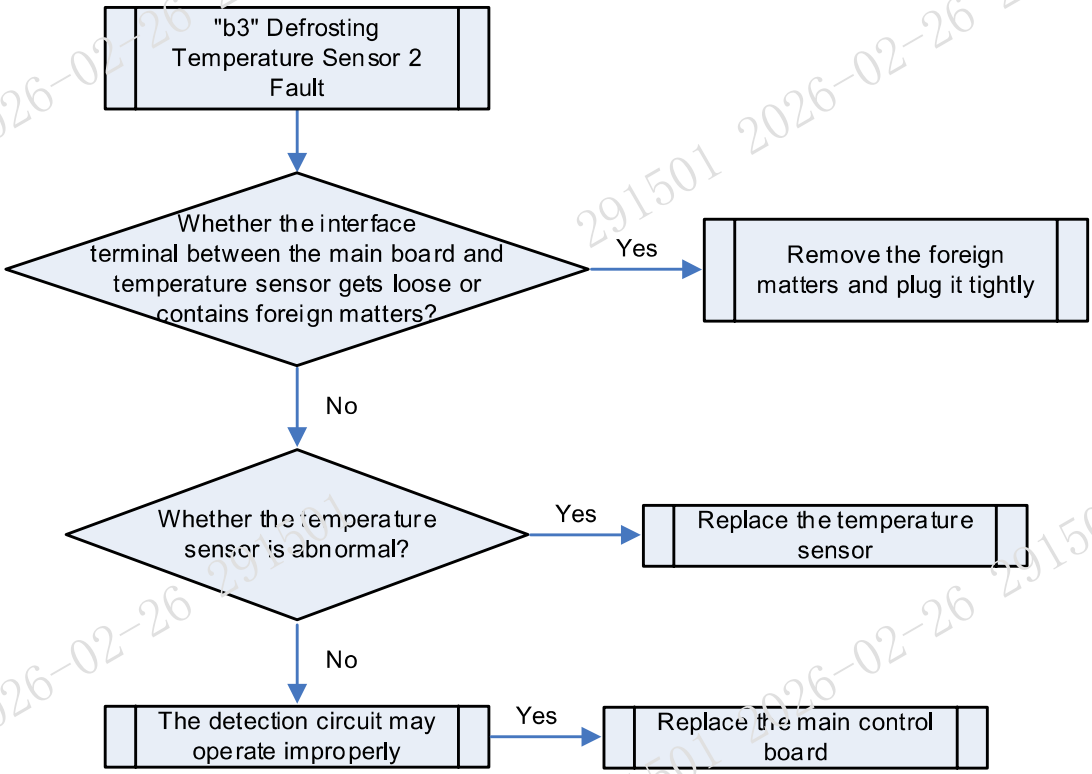
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

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

Fault diagnosis:

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

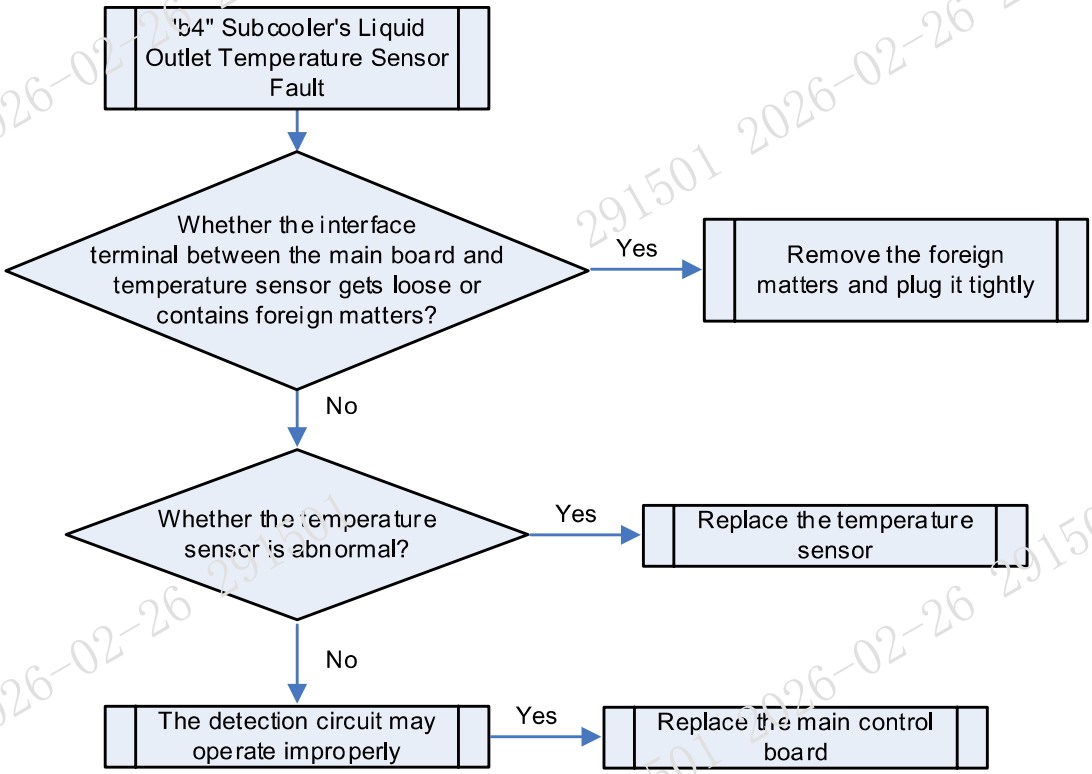
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

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

Fault diagnosis:

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

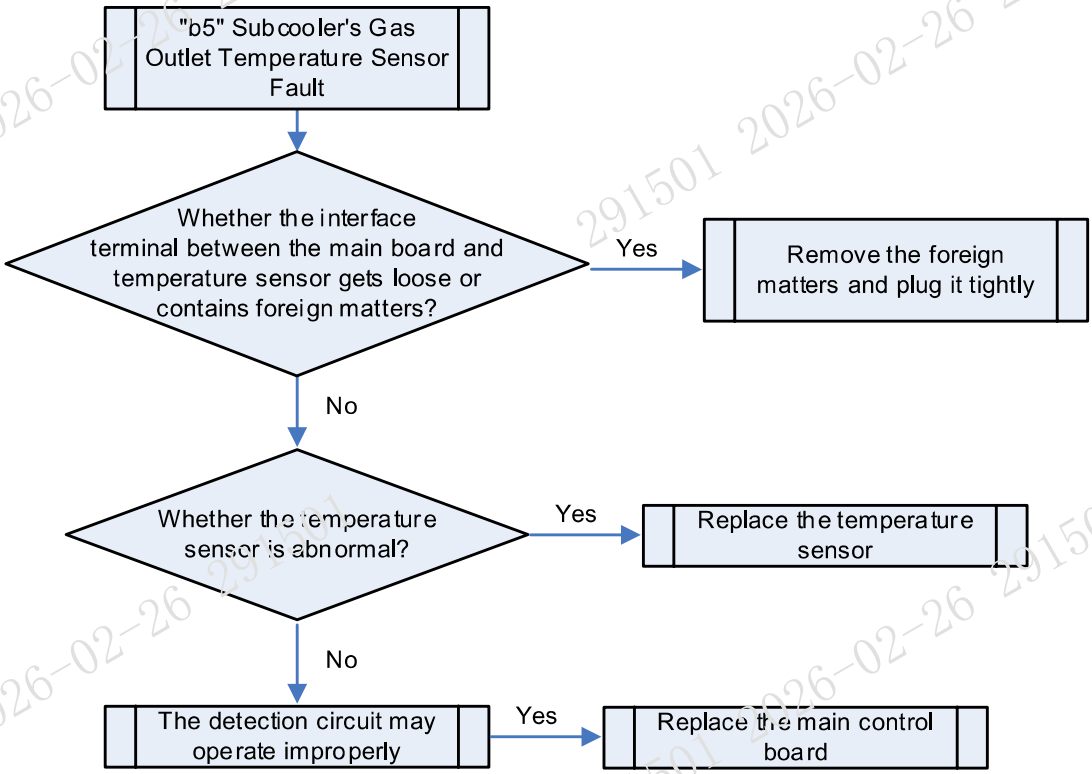
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.22 "b6" Suction Temperature Sensor 1 Fault

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

Fault diagnosis:

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

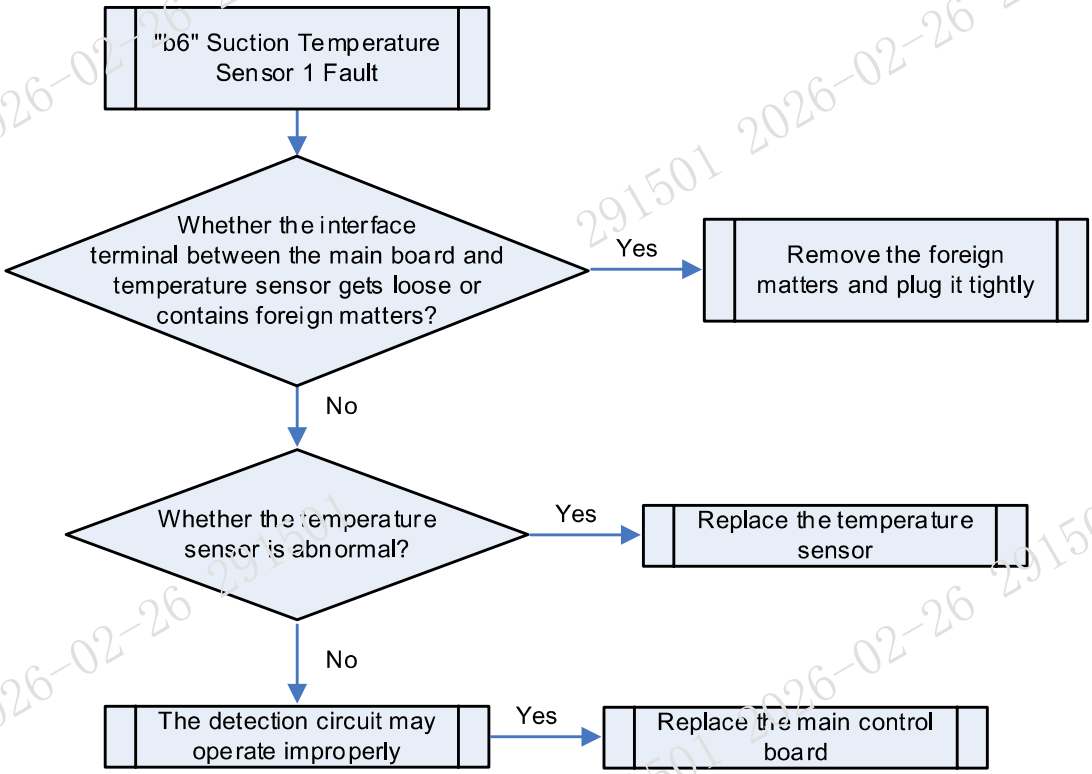
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.23 "b7" Suction Temperature Sensor 2 Fault

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

Fault diagnosis:

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

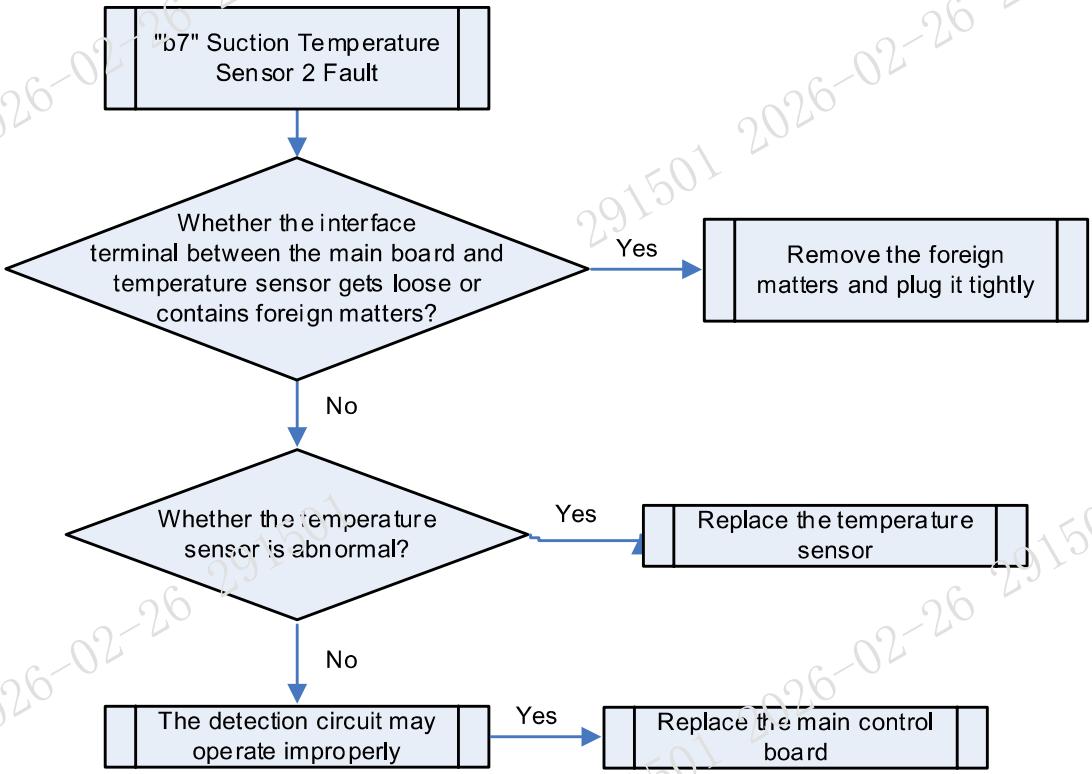
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.24 "b8" Outdoor Humidity Sensor Fault

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

Fault diagnosis:

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

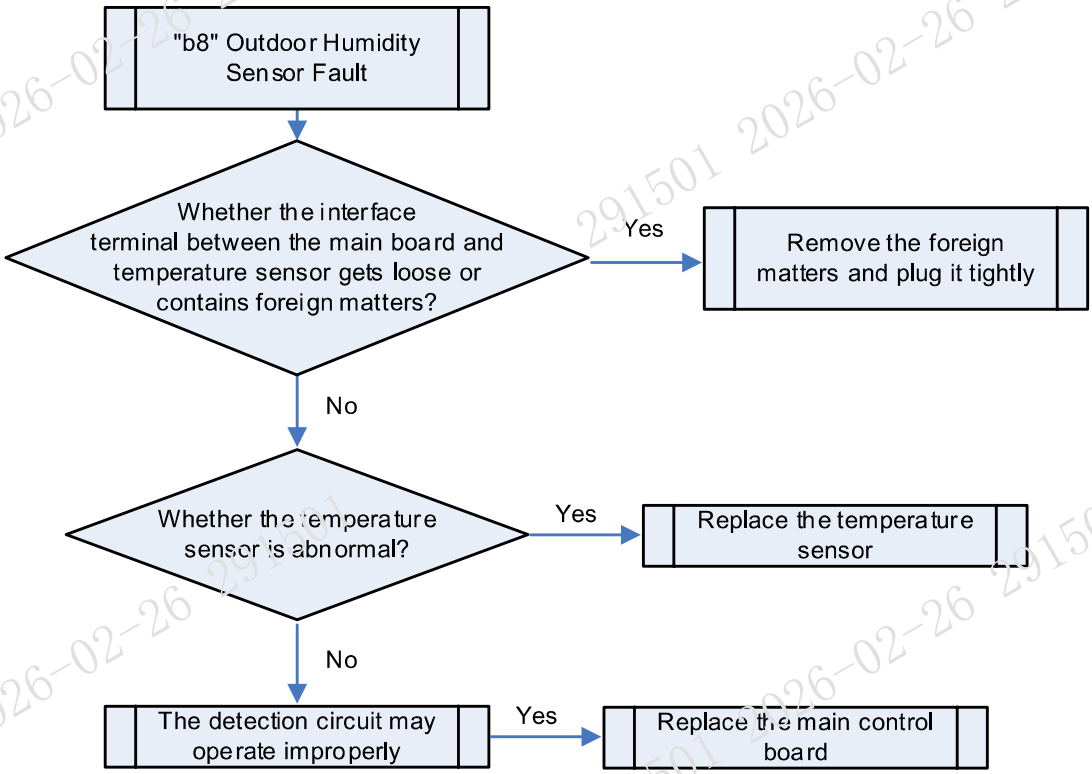
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

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

Fault diagnosis:

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

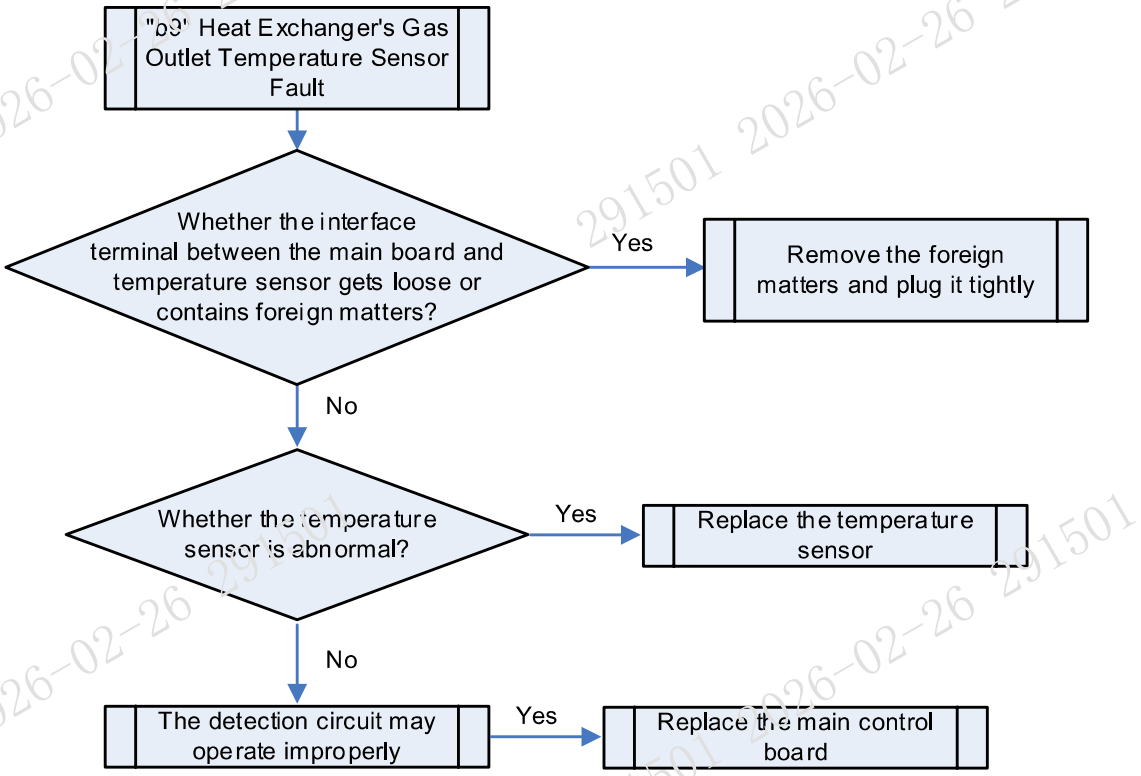
Possible causes:

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

■ Abnormal temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.26 "bA" Oil Return Temperature Sensor Fault

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

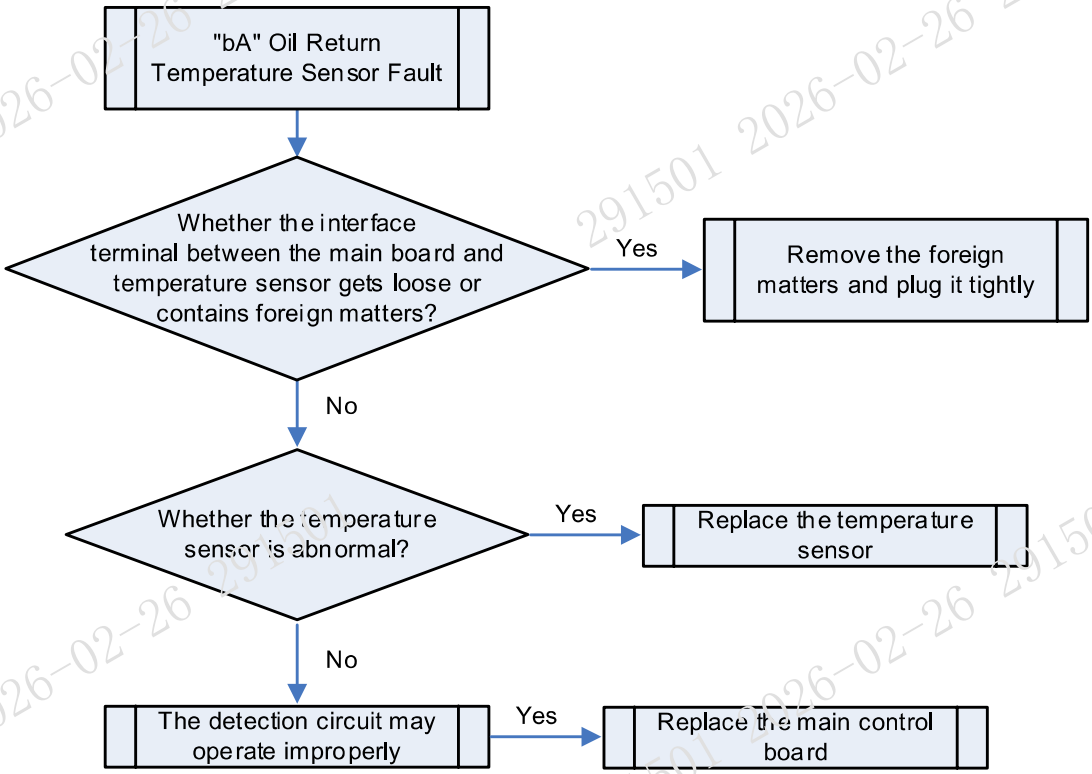
Fault diagnosis:

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

Possible causes:

- Poor contact between the temperature sensor and the main board interface;
- Abnormal temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.27 "bd" Subcooler Air Inlet Temperature Sensor Error

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

Applicable model: all ODUs

Error judgment condition and method:

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

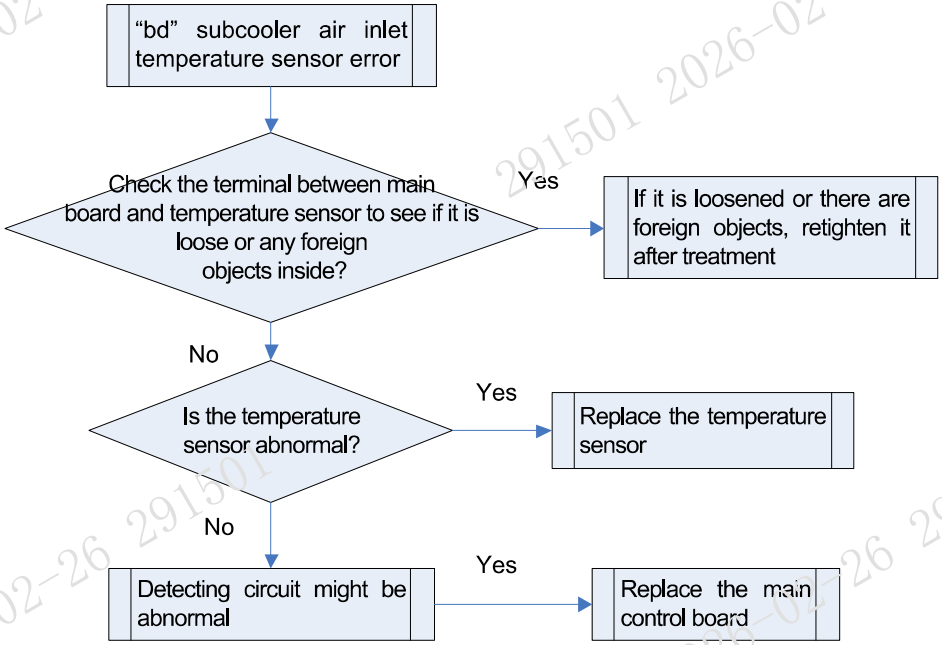
Possible reasons:

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

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.28 "bJ" High and Low Pressure Sensor is Wrongly Connected

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

Applicable model: all ODUs

Error judgment condition and method:

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

Possible reasons:

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

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

■High and low pressure sensor is wrongly connected.

Troubleshooting:

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

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

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

2.29 "bn" Subcooler Liquid Temperature Sensor Error

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

Applicable model: all ODUs

Error judgment condition and method:

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

Possible reasons:

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

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

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

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

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

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

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

Fault diagnosis:

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

Possible causes:

■ Communication cables are connected wrongly or get loose;

■ Communication cables are broken;

■ Poor contact of communication cables;

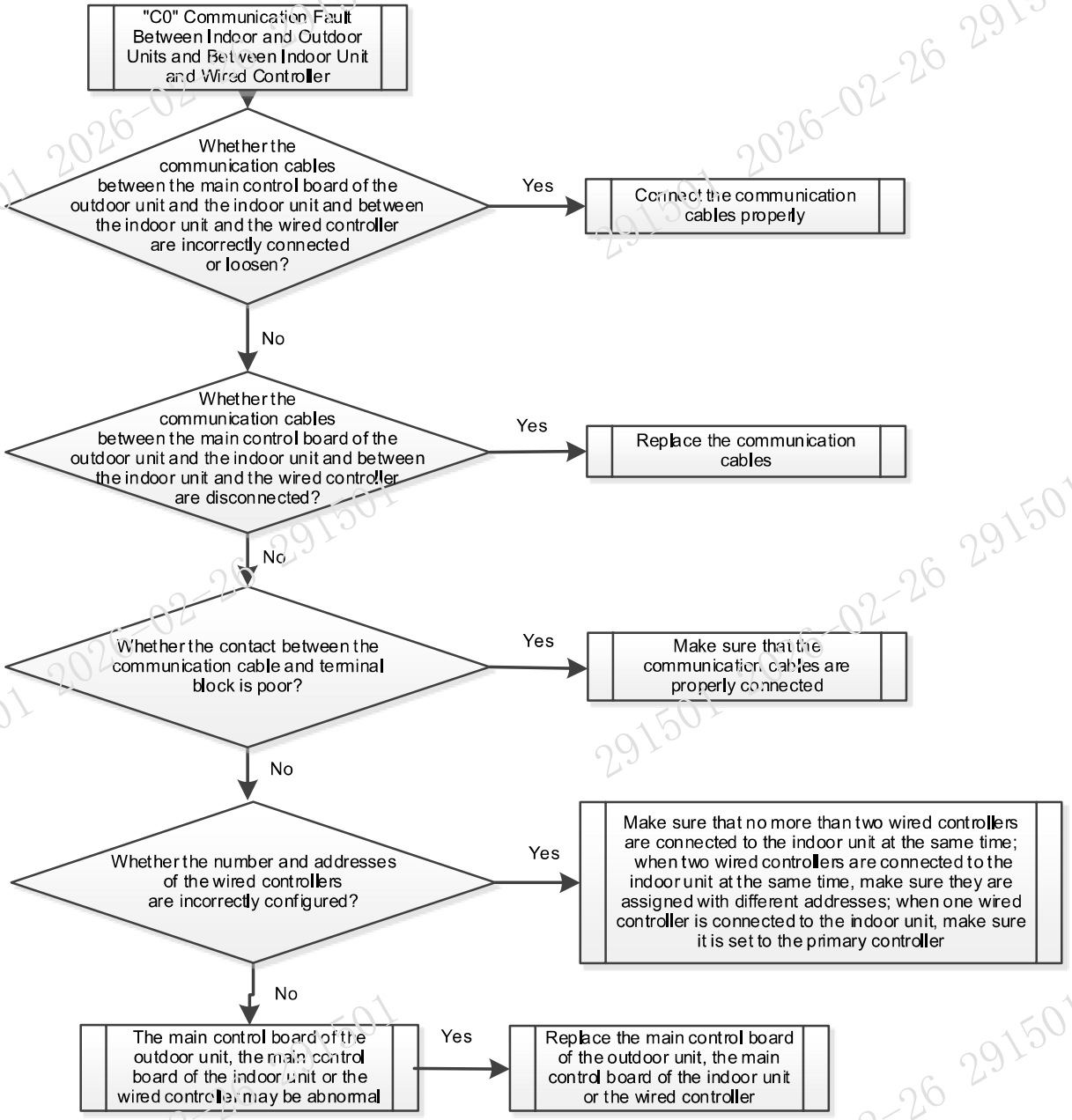
■ Number of wired controllers connected or addresses are set improperly;

■ Controller operates improperly.

Troubleshooting:

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

Perform the troubleshooting as follows:



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

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

Fault diagnosis:

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

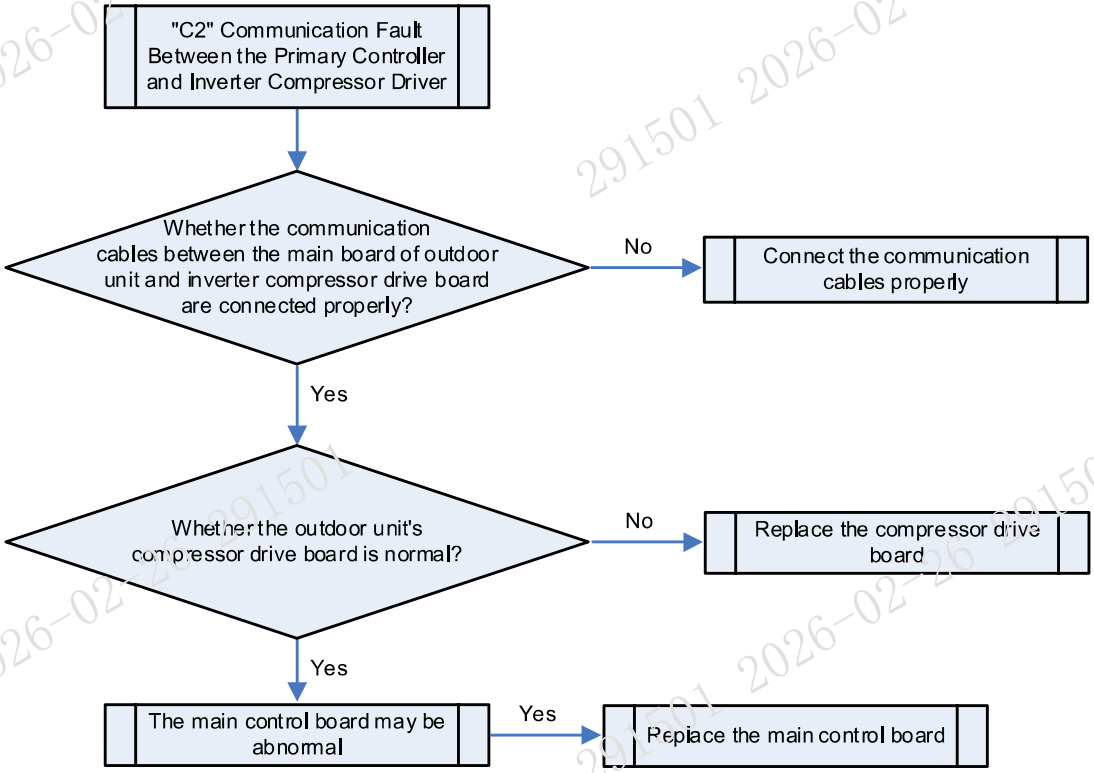
Possible causes:

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

■ The inverter compressor driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



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

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

Fault diagnosis:

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

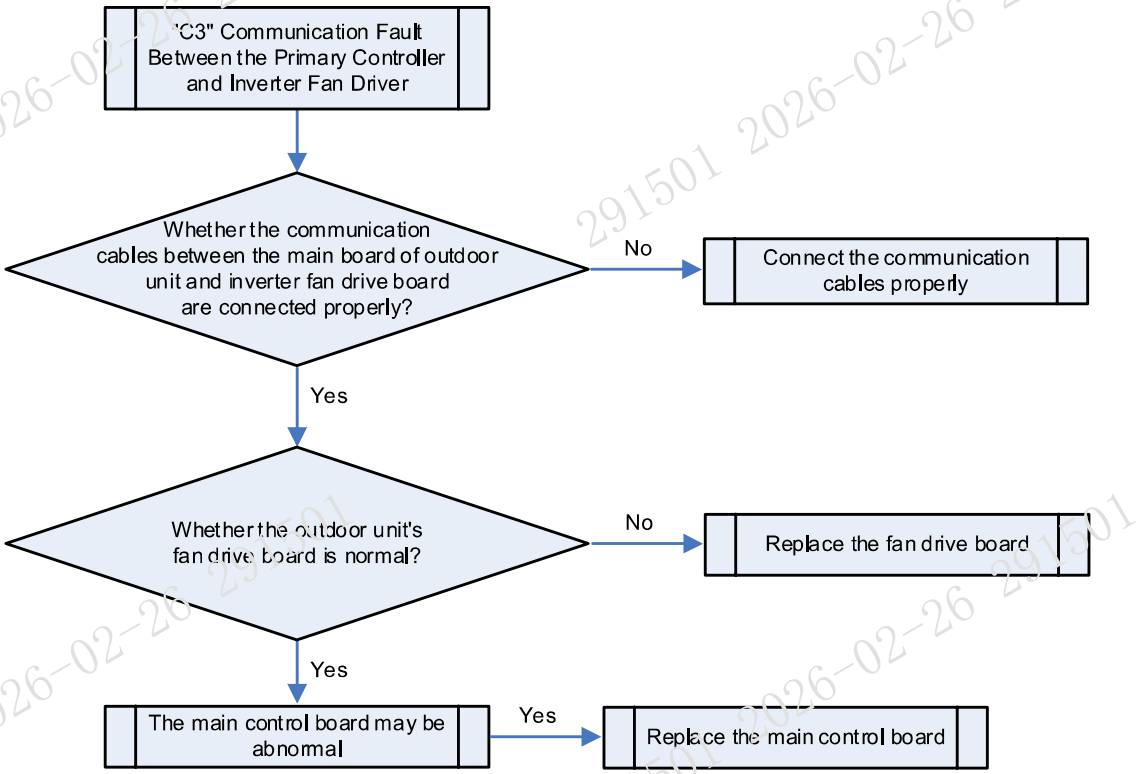
Possible causes:

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

■ The inverter fan driver operates improperly;

■ The main board operates improperly.

Troubleshooting:



2.33 "C4" Indoor Unit Loss Fault

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

Fault diagnosis:

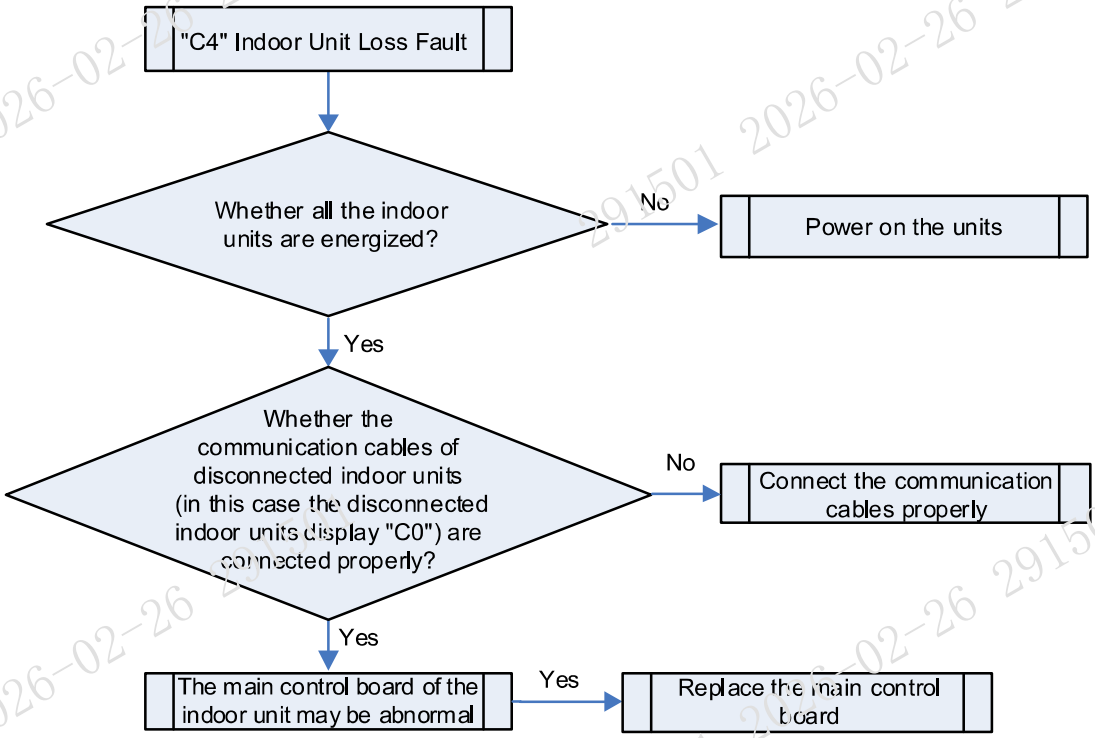
When the unit identifies that more than three indoor units are disconnected, it will stop for protection.

Possible causes:

- Poor contact of communication cables;
- The indoor units are powered off;
- The main board of indoor unit operates improperly.

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Troubleshooting:



2.34 "C5" Indoor Unit Engineering SN Conflict

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

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

Fault diagnosis:

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

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

Possible causes:

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

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

Troubleshooting:

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

by commissioning software;

by wired controller;

by commissioning the remote controller;

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

2.35 "C6" Alarm on Inconsistent Number of Outdoor Units

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

Fault diagnosis:

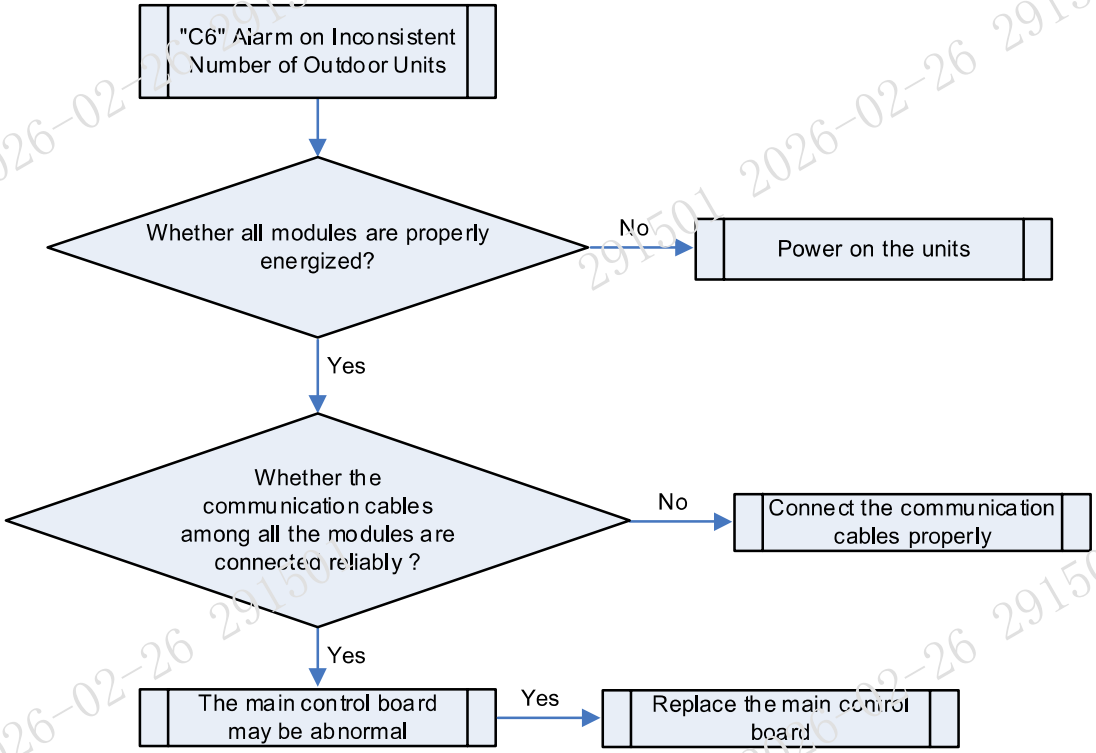
The unit detects the number of online outdoor modules in real time. When it detects that the number of current modules is inconsistent with the number of modules previously commissioned and memorized, the unit will report the fault and stop working.

Possible causes:

■ Abnormal communication among modules;

■ The modules are not powered on.

Troubleshooting:



2.36 "C8" Emergency Operation of Compressor

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.37 "C9" Emergency Operation of Fan

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.38 "CA" Emergency Operation of Module

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.39 "CH" Too High Rated Capacity Ratio

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

Fault diagnosis:

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

Possible causes:

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

Troubleshooting:

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

2.40 "CL" Too Low Rated Capacity Ratio

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

Fault diagnosis:

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

Possible causes:

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

Troubleshooting:

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

2.41 "CC" No Master Units Fault

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

Fault diagnosis:

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

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

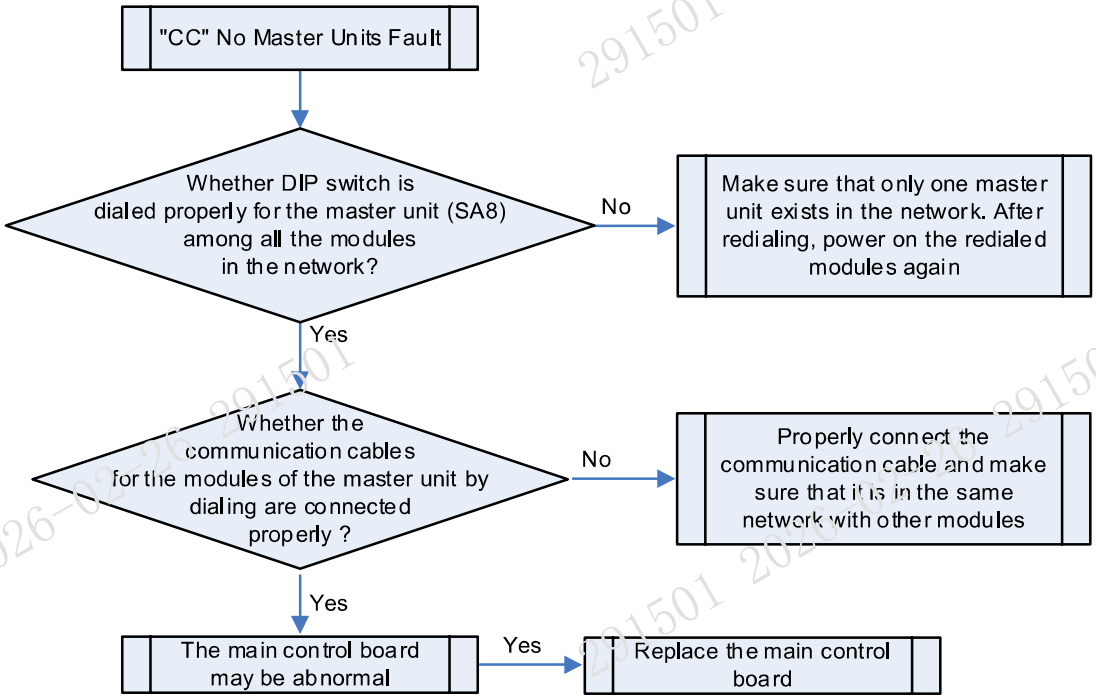
Possible causes:

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

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

■ Abnormal detection circuit.

Troubleshooting:



2.42 "CE" Mode Exchanger and IDU Communication Error

Error display: mode exchanger main board will display 

Applicable model: all mode exchangers

Error judgment condition and method:

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

Possible reasons:

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

■Communication cord is abnormal

■Circuit is abnormal

Troubleshooting:

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

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

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

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

2.43 "CF" Multi-master Units Fault

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

Fault diagnosis:

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

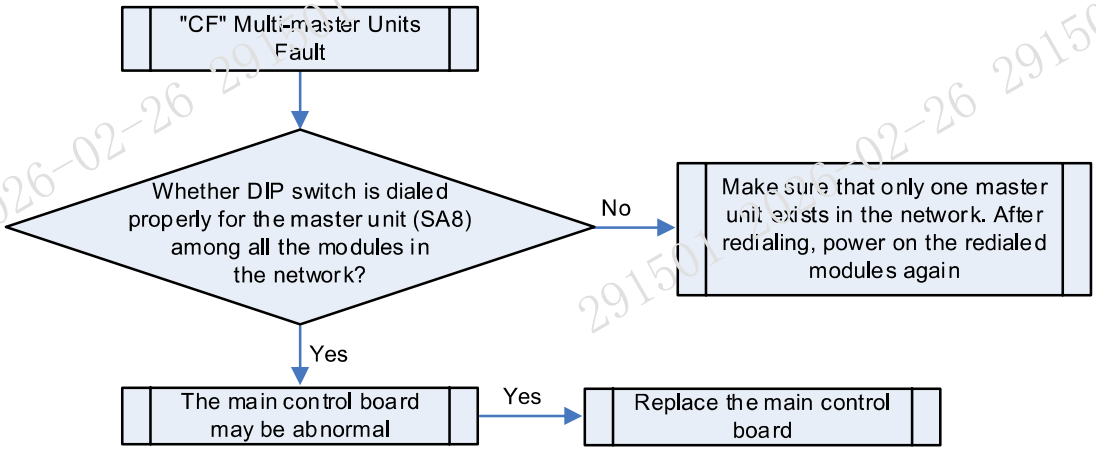
When multiple master units are detected in the multi-module communication network, the fault is generated.

Possible causes:

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

■ Abnormal detection circuit.

Troubleshooting:



2.44 "CJ" System Address Code Conflict

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

Fault diagnosis:

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

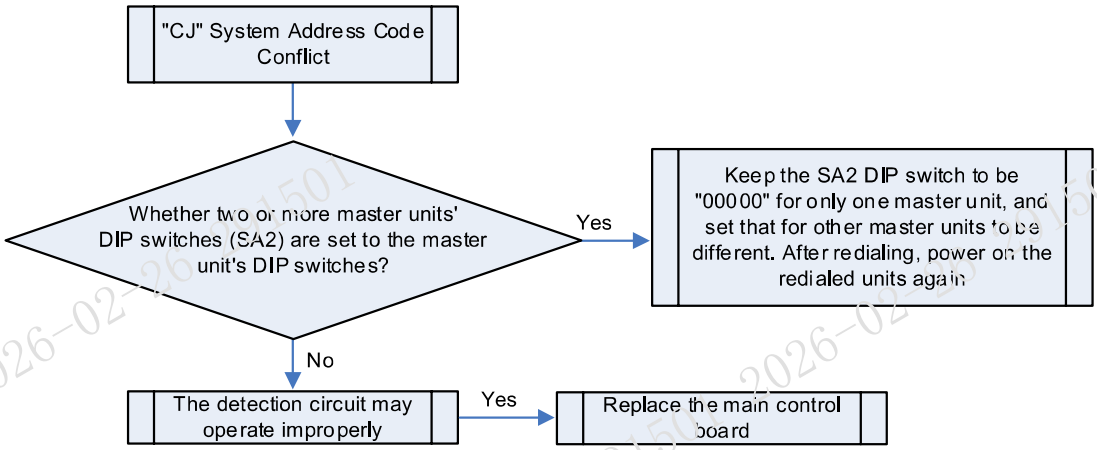
If two or more master units' DIP switches (SA2) are detected to be master unit's DIP switches in the network (that is, SA2 DIP switch is "00000"), the fault of multiple master units is reported.

Possible causes:

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

■ Abnormal DIP switch or main board.

Troubleshooting:



2.45 "CP" Fault of Multiple Main Wired Controllers

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

Fault diagnosis:

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

Possible causes:

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

Troubleshooting:

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

2.46 "Cb" IP Address Assignment Overflow

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

Fault diagnosis:

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

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

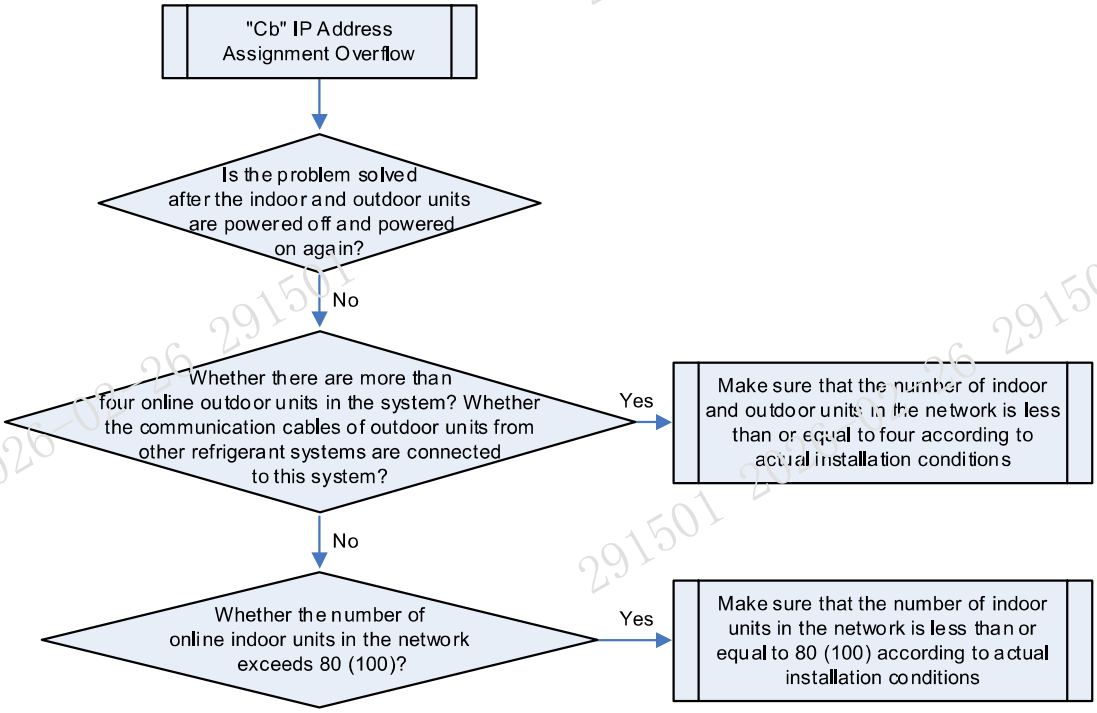
Possible causes:

■ More than four outdoor units exist;

■ More than 80 (100) indoor units exist.

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

Troubleshooting:



2.47 "Cd" Mode Exchanger and ODU Communication Error

Error display: mode exchanger main board will display 

Applicable model: all mode exchangers

Error judgment condition and method:

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

Possible reasons:

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

■Communication cord is abnormal

■Circuit is abnormal

Troubleshooting:

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

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

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

2.48 "Cn" Mode Exchanger IDU and ODU Network Abnormality Error

Error display: mode exchanger main board will display 

Applicable mode: mode exchanger

Error judgment condition and method:

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

Possible reasons:

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

■Mode exchanger main board is damaged.

Troubleshooting:

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

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

2.49 "Cy" no Communication Error on the Mode Exchanger

Error display: mode exchanger main board will display 

Applicable model: all mode exchangers

Error judgment condition and method:

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

Possible reasons:

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

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

■Circuit is abnormal

Troubleshooting:

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

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

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

For the mode exchanger with several main boards

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

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

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

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

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

2.50 "d1" Poor Indoor Circuit Board

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

Fault diagnosis:

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

Possible causes:

■ Abnormal address chip;

■ Abnormal memory chip.

Troubleshooting:

Replace the main control board.

2.51 "d2" Water Tank Temperature Sensor Error

Error display: wired controller of hydro box displays 

Applicable model: hydro box

Error judgment condition and method:

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

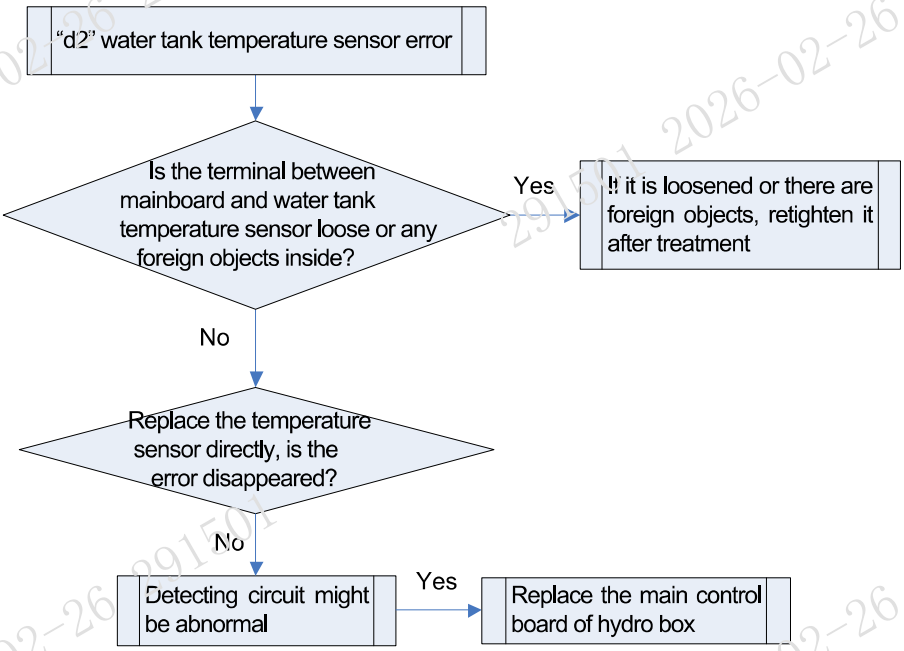
Possible reasons:

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

■Water tank temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.52 "d3" Ambient Temperature Sensor Fault

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

Fault diagnosis:

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

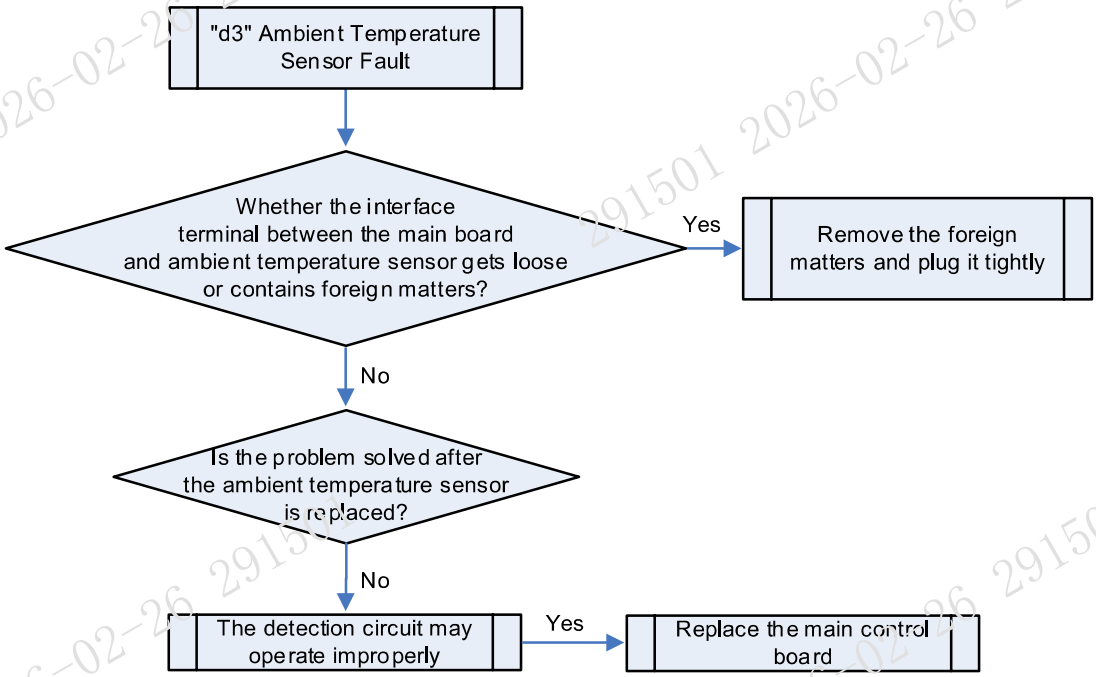
Possible causes:

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

■ Abnormal ambient temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.53 "d4" Inlet Pipe Temperature Sensor Fault

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

Fault diagnosis:

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

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

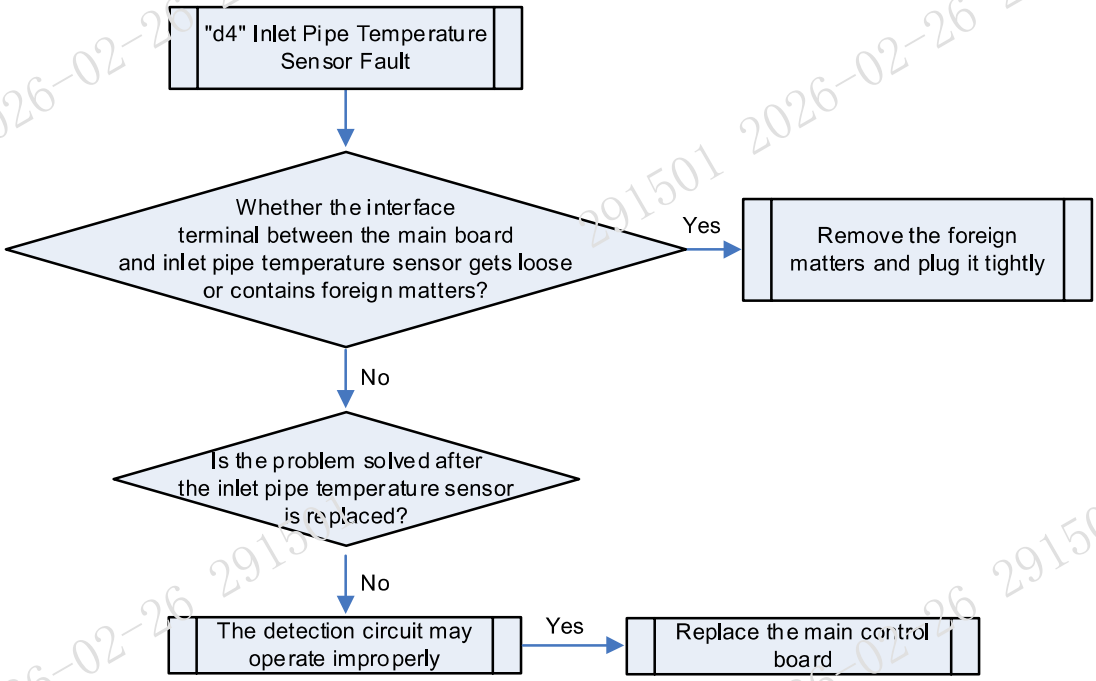
Possible causes:

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

■ Abnormal inlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

2.55 "d6" Outlet Pipe Temperature Sensor Fault

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

Fault diagnosis:

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

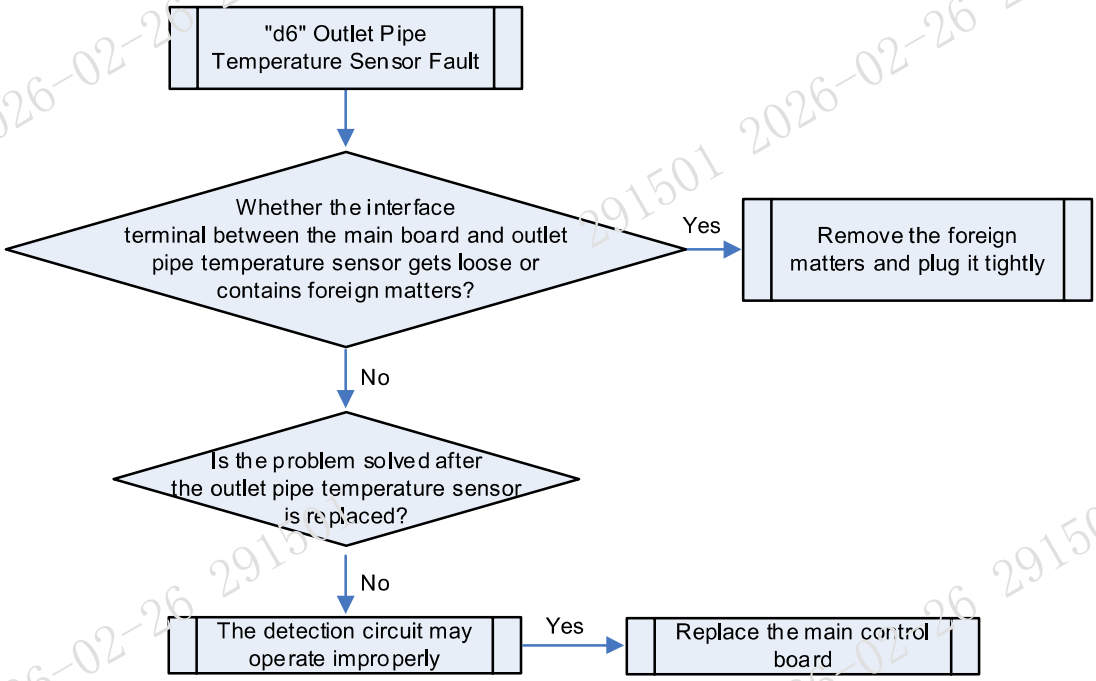
Possible causes:

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

■ Abnormal outlet pipe temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.56 "d7" Humidity Sensor Fault

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

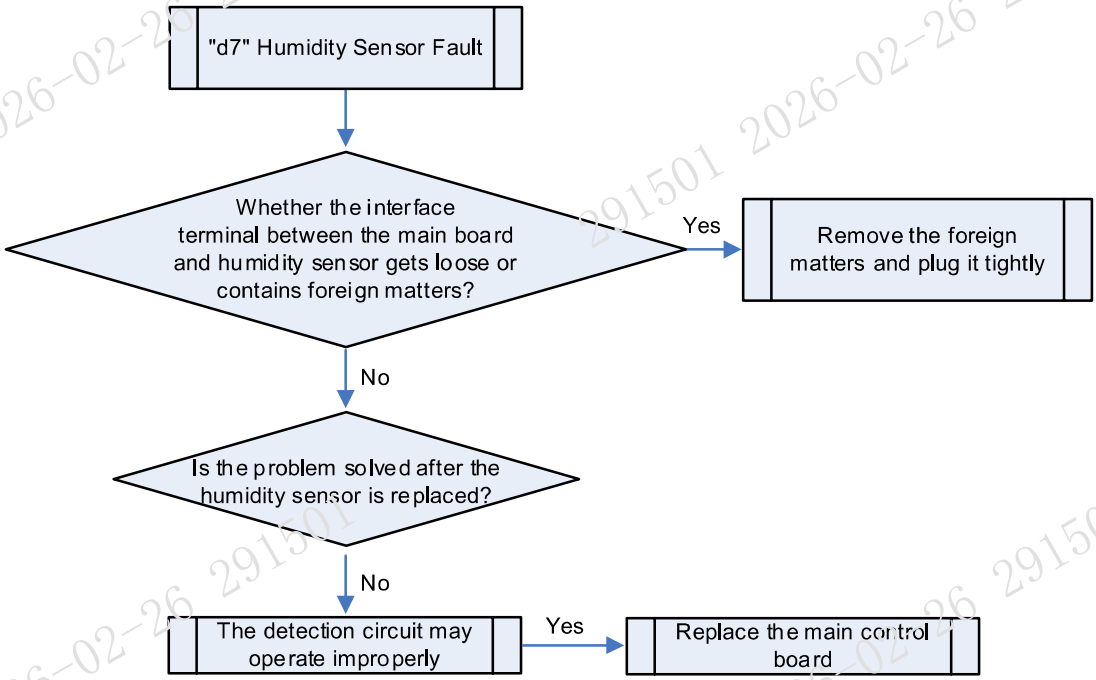
Fault diagnosis:

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

Possible causes:

- Poor contact between the humidity sensor and the main board interface;
- Abnormal humidity sensor;
- Abnormal detection circuit.

Troubleshooting:



2.57 "d8" Water Temperature Sensor Fault (Reserved)

2.58 "d9" Jumper Cap Fault

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

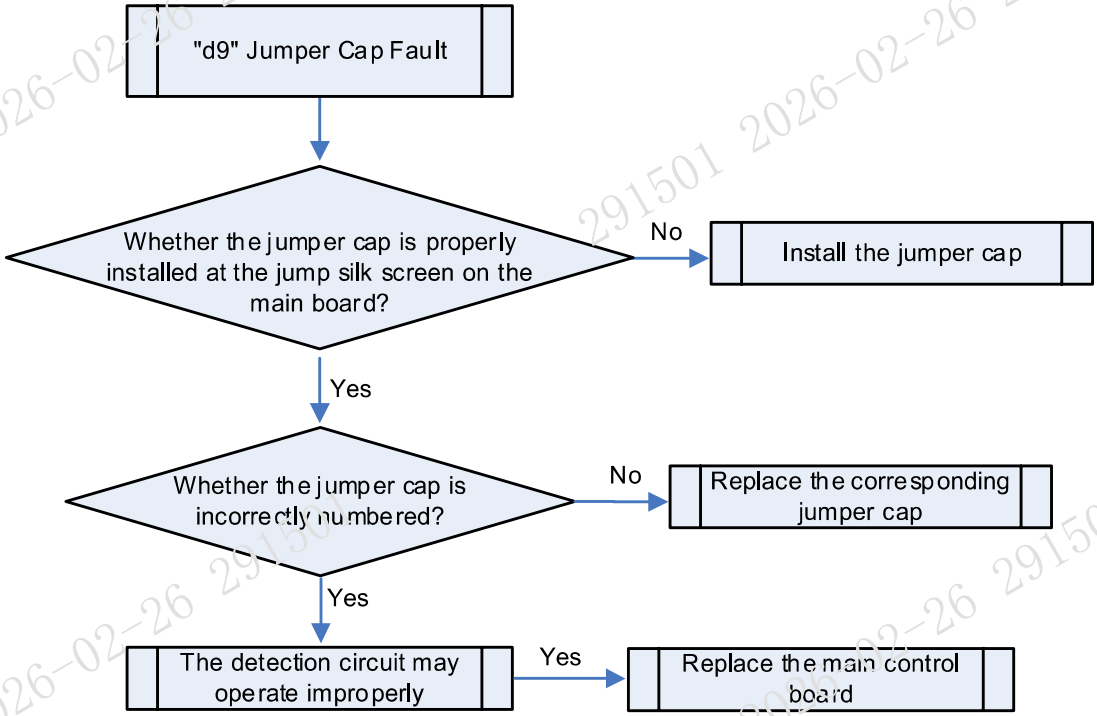
Fault diagnosis:

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

Possible causes:

- The jumper cap is not installed;
- The jumper cap is numbered incorrectly;
- Abnormal detection circuit.

Troubleshooting:



2.59 "dA" Abnormal Network Address of Indoor Unit

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

Fault diagnosis:

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

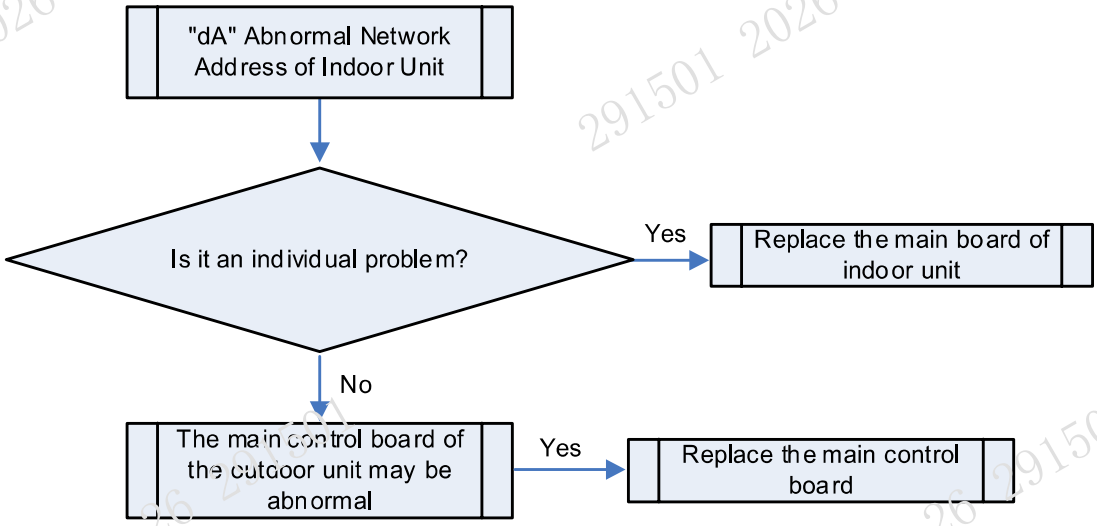
Possible causes:

■ Outdoor units' address are assigned incorrectly;

■ Indoor unit's processing error;

■ Abnormal address chip.

Troubleshooting:



2.60 "dH" Abnormal Circuit Board of Wired Controller

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

Fault diagnosis:

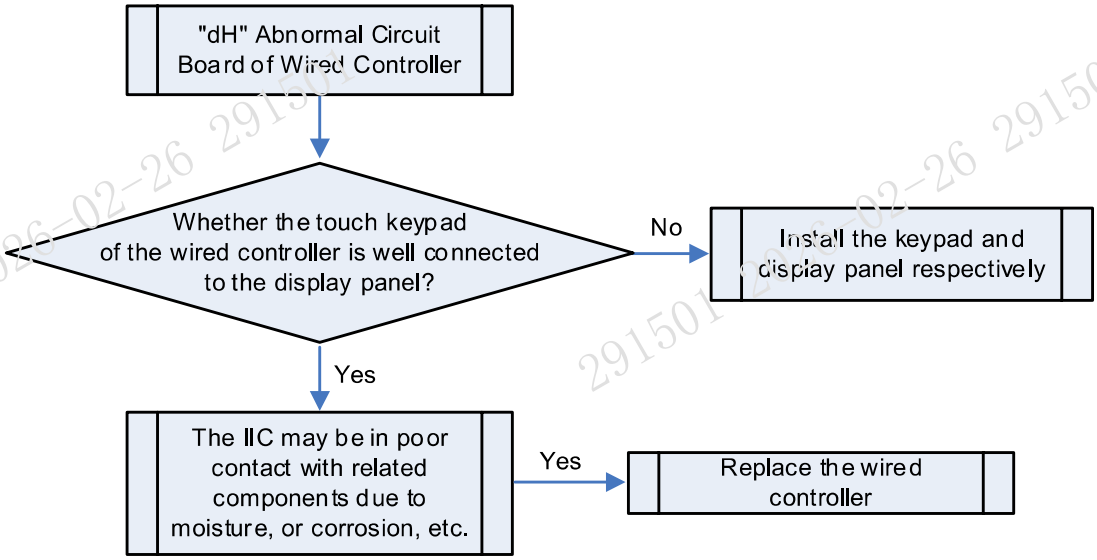
The wired controller's IIC communication is abnormal.

Possible causes:

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

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

Troubleshooting:



2.61 "dC" Abnormal Settings of DIP Switch for Capacity

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

Fault diagnosis:

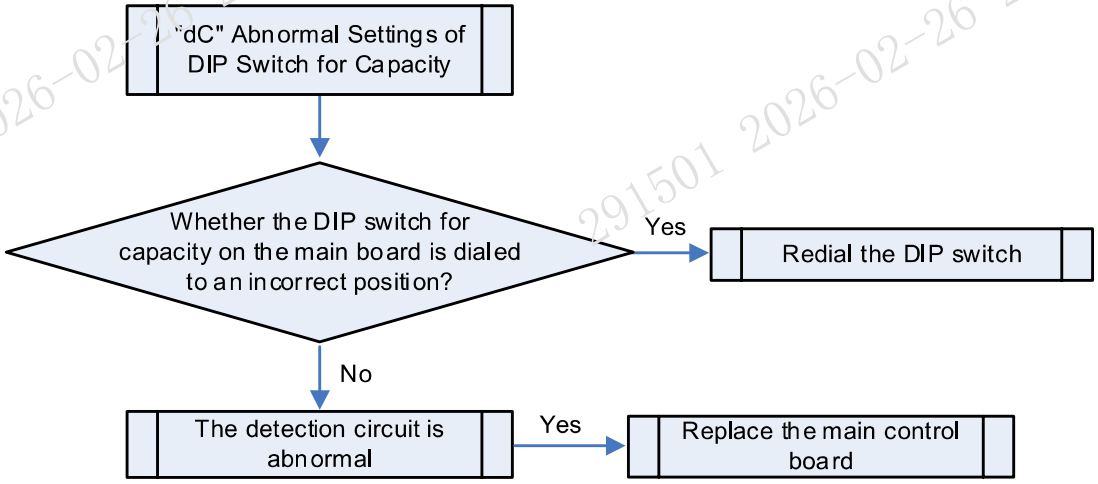
If DIP switch for capacity is set to the wrong position, the fault is generated.

Possible causes:

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

■ Abnormal detection circuit.

Troubleshooting:



2.62 "dL" Air Outlet Temperature Sensor Fault

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

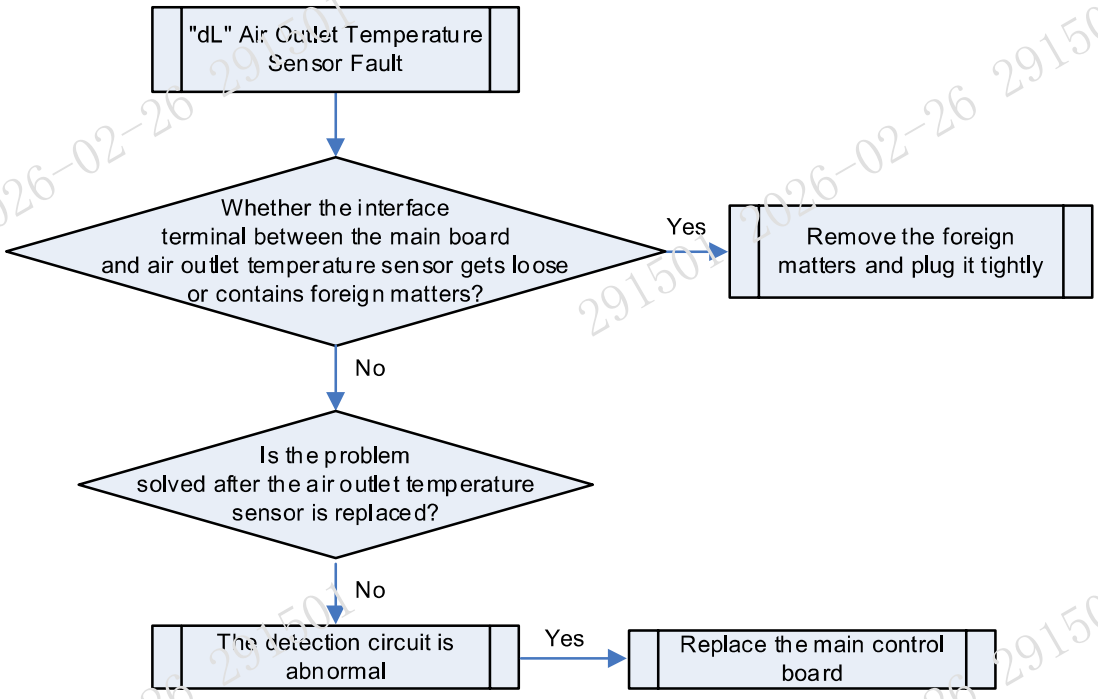
Fault diagnosis:

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

Possible causes:

- Poor contact between the air outlet temperature sensor and the main board interface;
- Abnormal air outlet temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.63 "dE" Indoor CO2 Sensor Fault (Reserved)

2.64 "dF" Temperature Sensor Error

Error display: hydro box wired controller will display 

Applicable mode: all hydro boxes

Error judgment condition and method:

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

Possible reasons:

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

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

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

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

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

2.65 "dJ" Water Return Temperature Sensor Error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

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

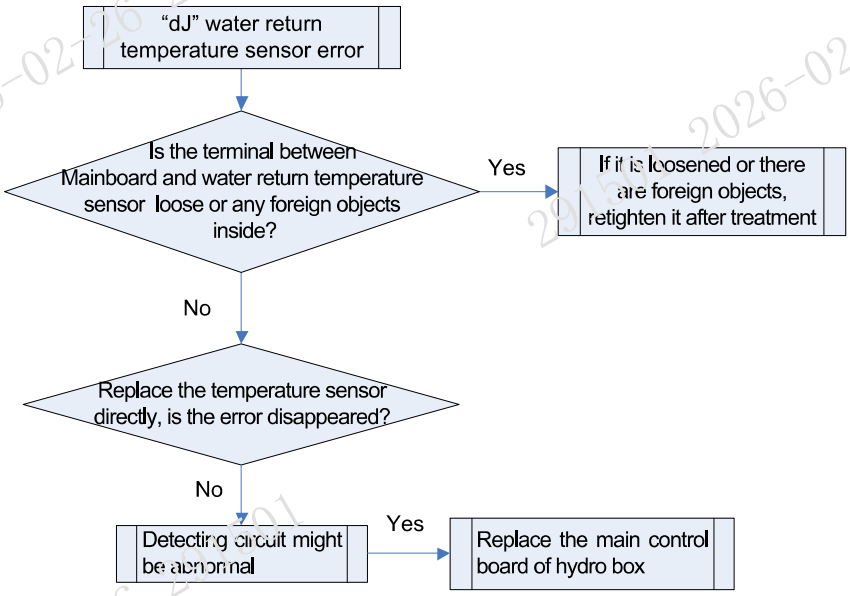
Possible reasons:

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

■Water return temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.66 "dP" Floor Heating Water Inlet Temperature Sensor Error

Error display: hydro box wired controller 

Applicable model: all hydro boxes

Error judgment condition and method:

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

Possible reasons:

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

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

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

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

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

2.67 "dU" Floor Heating Water Outlet Pipe Temperature Sensor Error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

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

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

Possible reasons:

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

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

■The circulating water in generator is not drained completely

■Detecting circuit is abnormal

Troubleshooting:

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

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

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

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

2.68 "db" Engineering Commissioning

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

Fault diagnosis:

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

Possible causes: –

Troubleshooting: –

2.69 "dd" Solar Energy Temperature Sensor Error

Error display: wired controller of hydro box will display 

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

Error judgment condition and method:

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

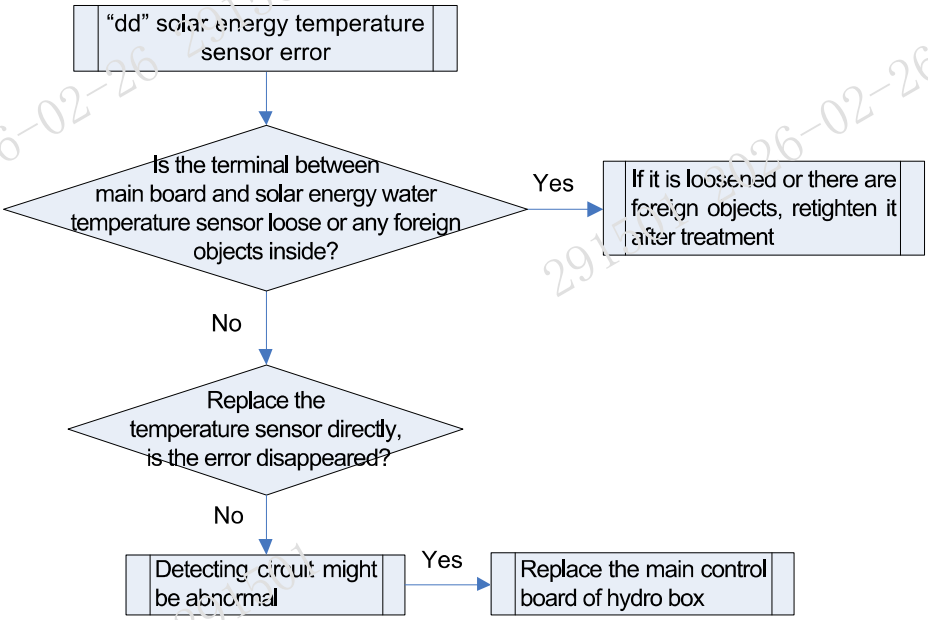
Possible reasons:

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

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.70 "dn" Swing Assy Error

Error display: display in the monitor software only 

Applicable model: Multi VRF indoor unit with swing assy

Error judgment condition and method:

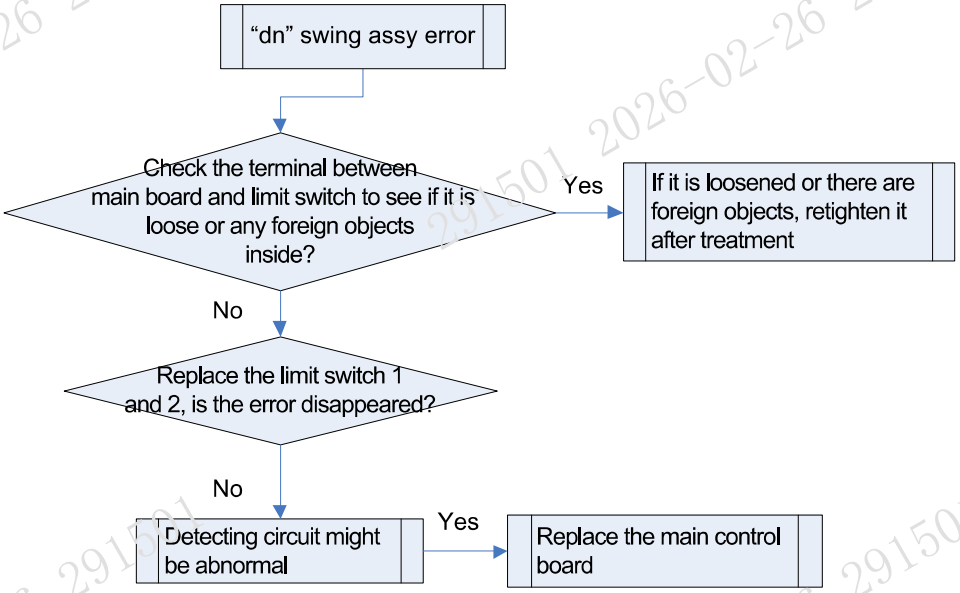
Report alarm through judging the status of limit switch 1 and 2, When the swing structure is faulted, the indoor unit will not stop, the display board does not display error code (the error will only be embodied in CAN communication data)

Possible reasons:

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

■Detecting circuit is abnormal

Troubleshooting:



2.71 "E1" Protection in Case of Too High Pressure

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

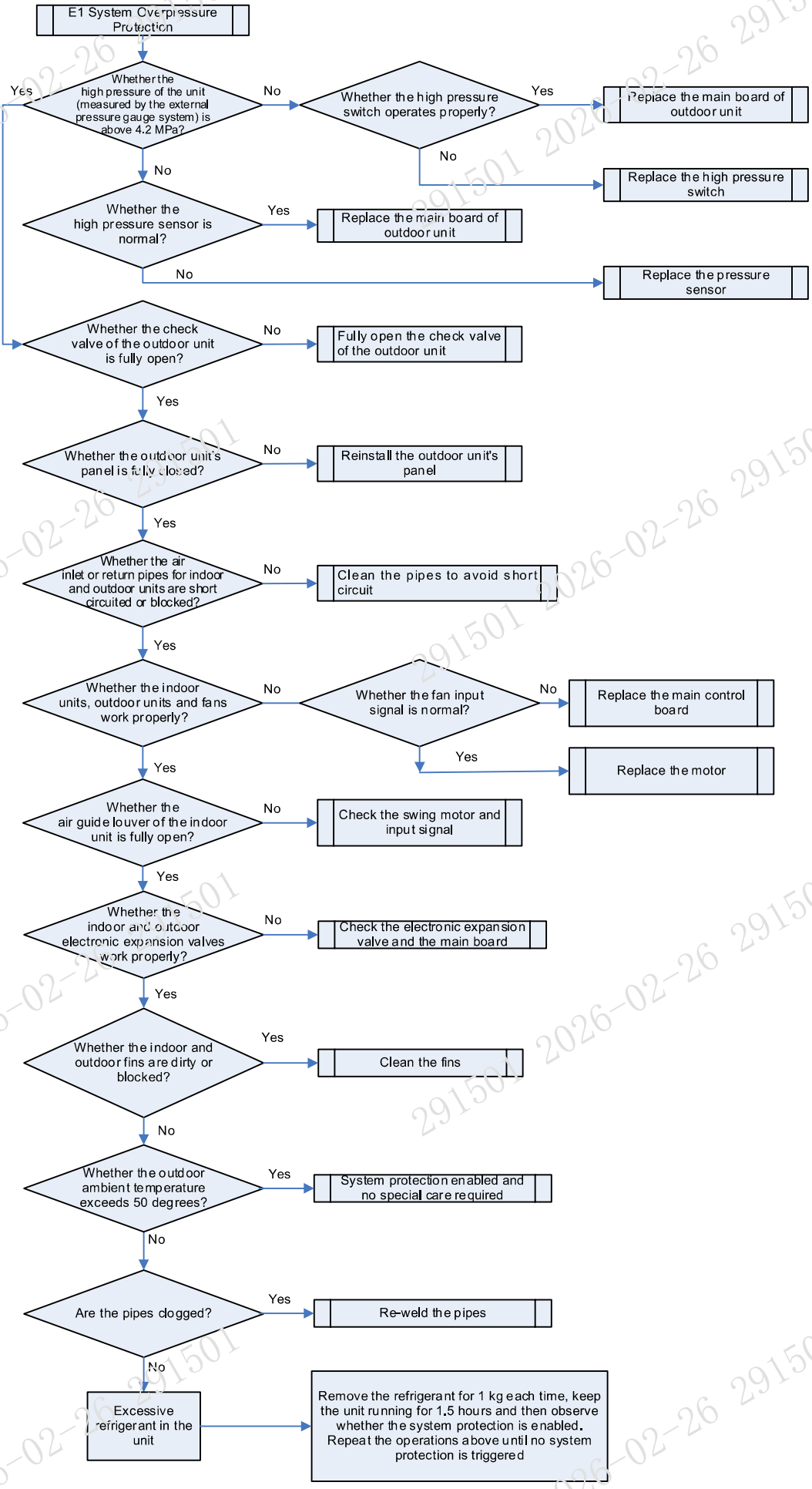
Fault diagnosis:

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

Possible causes:

- Check valve of the outdoor unit is closed;
- Abnormal high pressure sensor;
- The high pressure switch operates improperly;
- Abnormal outdoor or indoor fans;
- Clogging of indoor filter or air duct (heating mode);
- The ambient temperature where the unit operates is too high;
- Excessive refrigerant in the unit;
- Clogging of unit pipes.

Troubleshooting:


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

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

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

Fault diagnosis:

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

Possible causes:

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

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

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

■ Excessive refrigerant in the unit.

Troubleshooting:

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

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

Step 2: If the unit is in cooling mode:

First, inspect the indoor electronic expansion valve:

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

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

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

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

Next, inspect the outdoor subcooler electronic expansion valve:

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

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

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

able to reset the unit normally, inspect other parts of the unit.

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

Solution: Add refrigerant in accordance with the design requirements.

2.73 "E3" System Low Pressure Protection

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

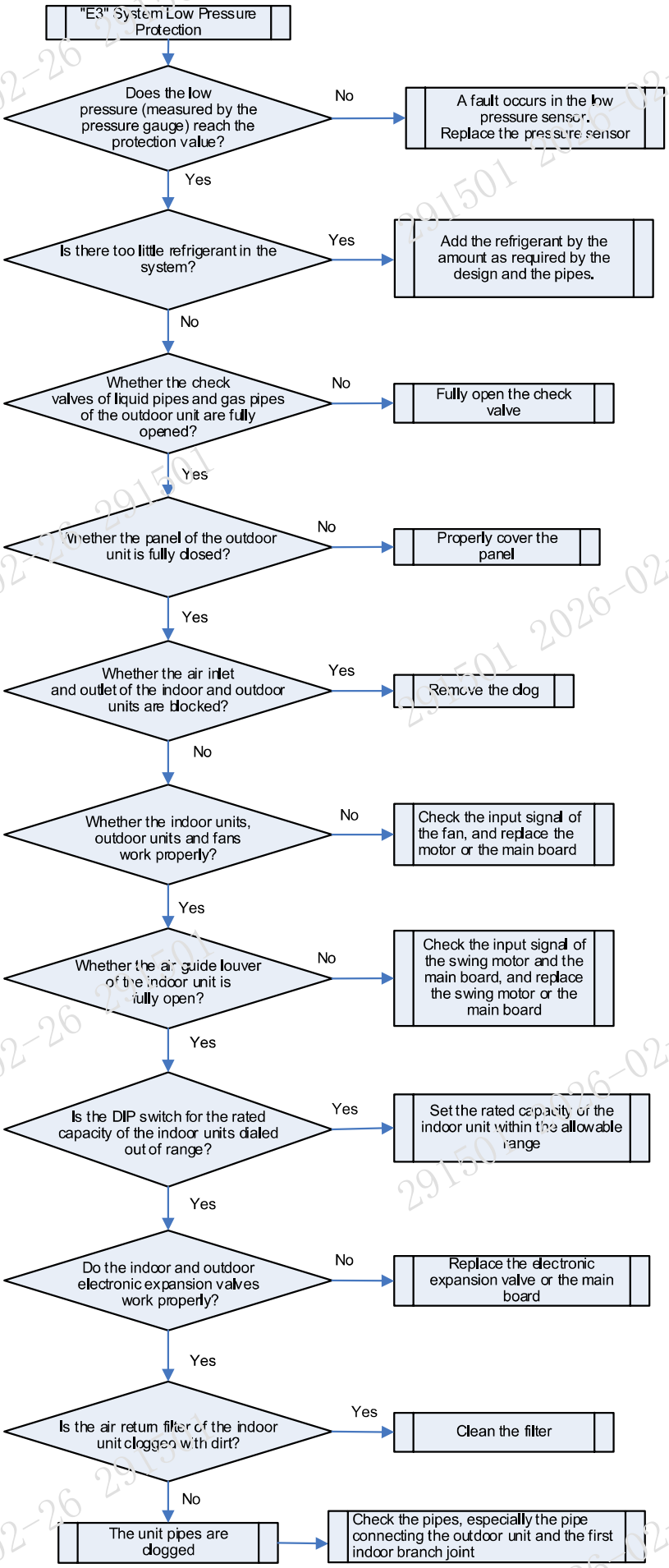
Fault diagnosis:

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

Possible causes:

- Check valve of the outdoor unit is closed;
- Abnormal low pressure sensor;
- Abnormal outdoor or indoor fans;
- Clogging of indoor filter or air duct (cooling mode);
- The ambient temperature where the unit operates is too low;
- Insufficient refrigerant in the unit;
- Clogging of unit pipes.

Troubleshooting:


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

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

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

Fault diagnosis:

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

Possible causes:

■ Check valve of the outdoor unit is closed;

■ The electronic expansion valve operates improperly;

■ Abnormal outdoor or indoor fans;

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

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

■ Insufficient refrigerant in the unit;

■ Clogging of unit pipes.

Troubleshooting:

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

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

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

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

Step 5: Check whether the air return temperature of the unit exceeds the limit during operation (requirements in cooling mode: outdoor ambient temperature -15*°C to +55°C, indoor ambient temperature 14°C to 25°C; requirements in heating mode: outdoor ambient temperature -30°C to +24°C, indoor ambient temperature 15°C to 27°C).

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

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

*Note: Cooling at -15~-5°C is conditional. Please inquire our engineers for more information. Generally, the lowest operating temperature for cooling is -5°C.

2.75 "Ed" Low Drive Module Temperature Protection

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

Applicable model: GMV9 Flex series

Error judgment condition and method:

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

Possible reasons:

■Insufficient system refrigerant

■Electronic expansion valve is abnormal

■Drive board is damaged

Troubleshooting:

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

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

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

2.76 "F0" Poor Main Board of Outdoor Unit

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

Fault diagnosis:

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

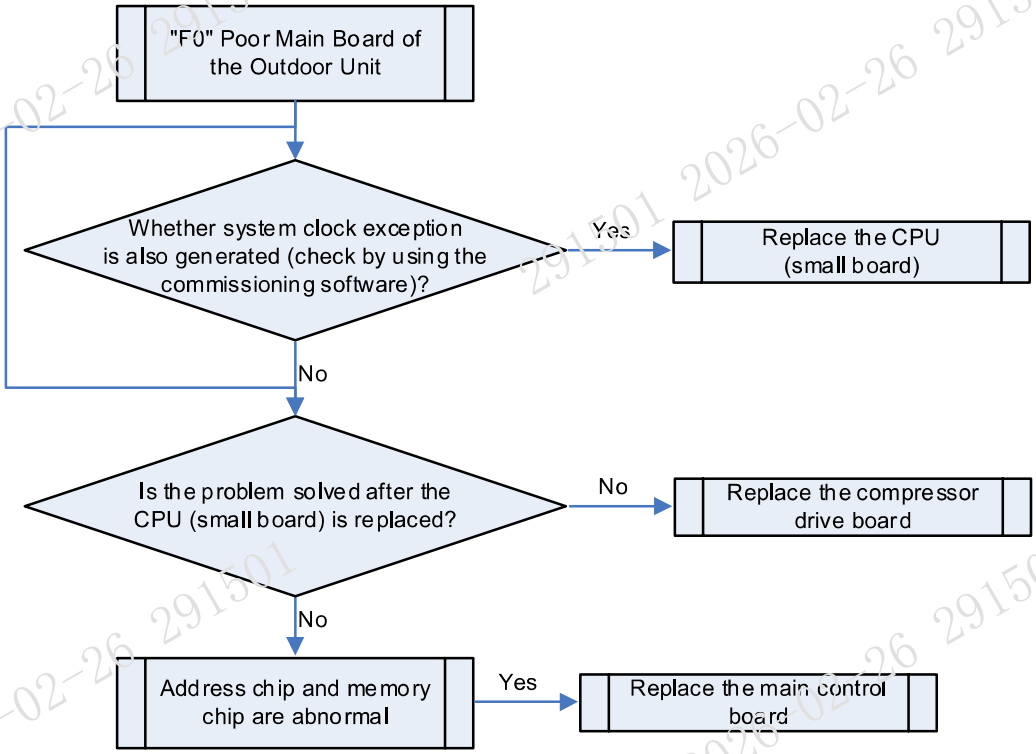
Possible causes:

■ Abnormal address chip;

■ Abnormal memory chip;

■ Abnormal clock chip.

Troubleshooting:



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2.77 "F1" High-pressure Sensor Fault

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

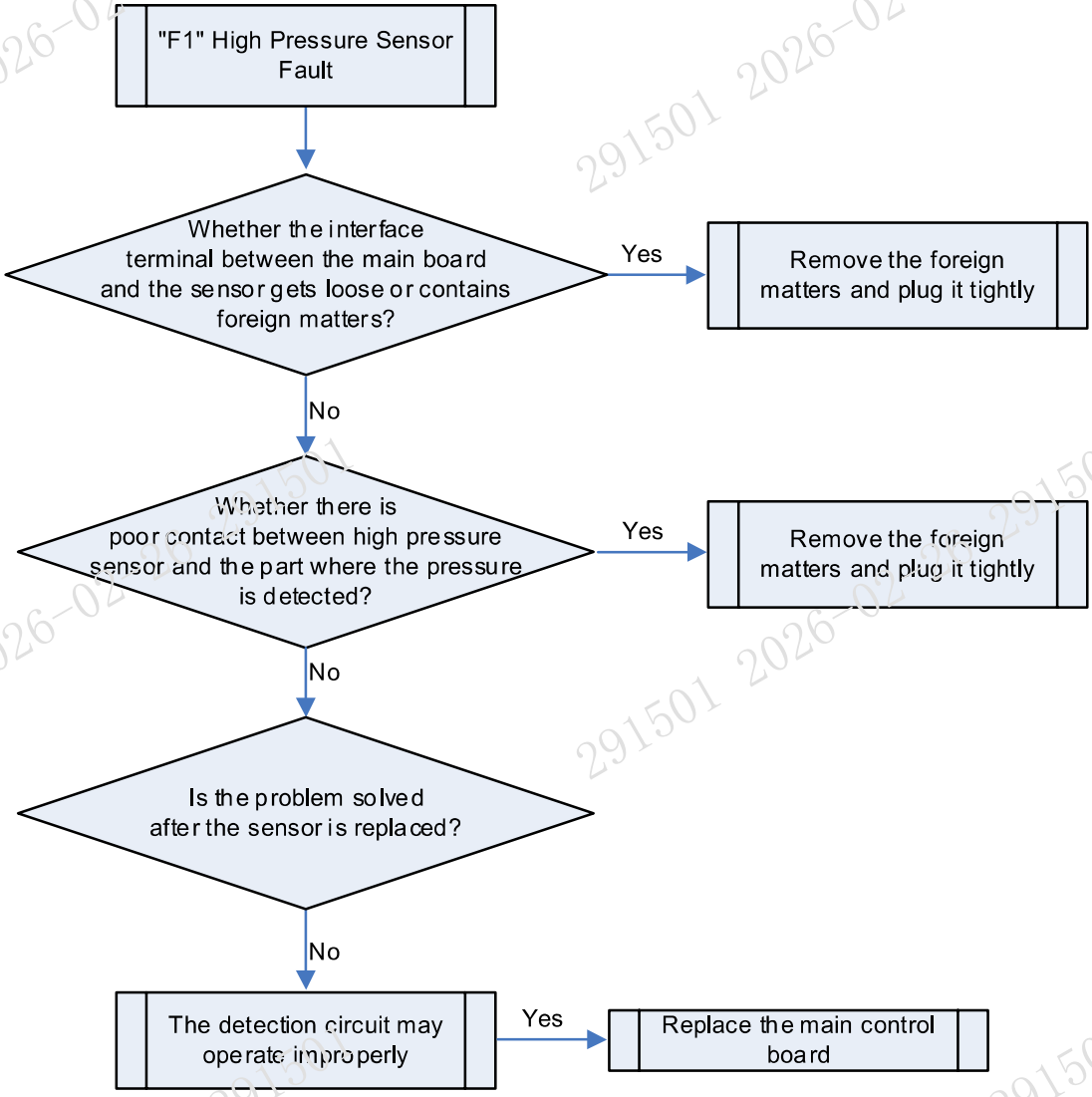
Fault diagnosis:

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

Possible causes:

- Poor contact between the high pressure sensor and the main board interface;
- Poor contact between high pressure sensor and part where the pressure is detected;
- Abnormal high pressure sensor;
- Abnormal sensor detection circuit.

Troubleshooting:



2.78 "F3" Low Pressure Sensor Fault

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

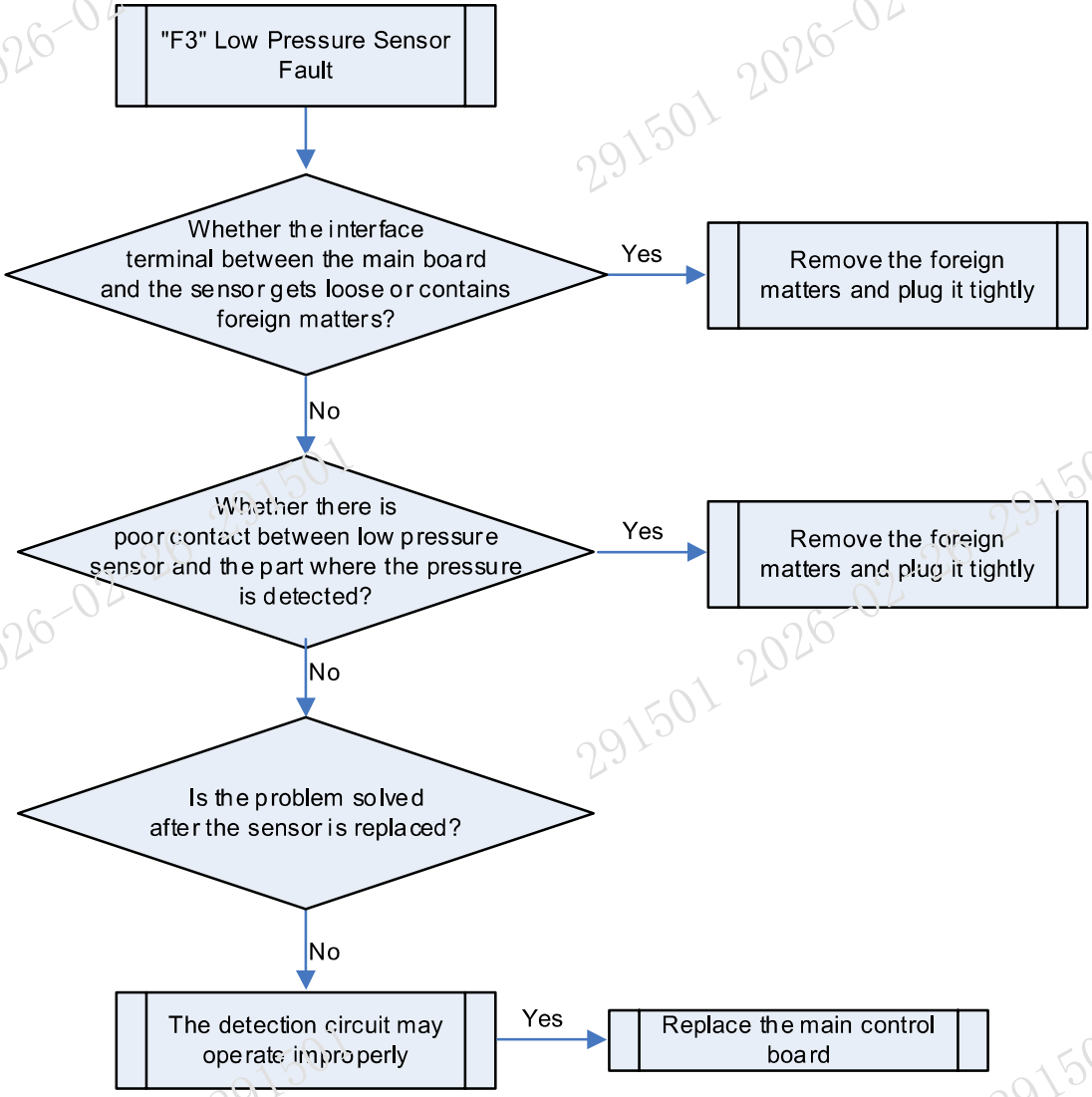
Fault diagnosis:

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

Possible causes:

- Poor contact between the low pressure sensor and the main board interface;
- Poor contact between low pressure sensor and part where the pressure is detected;
- Abnormal low pressure sensor;
- Abnormal low pressure sensor detection circuit.

Troubleshooting:



2.79 "F5" Discharge Temperature Sensor Fault of Compressor 1

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

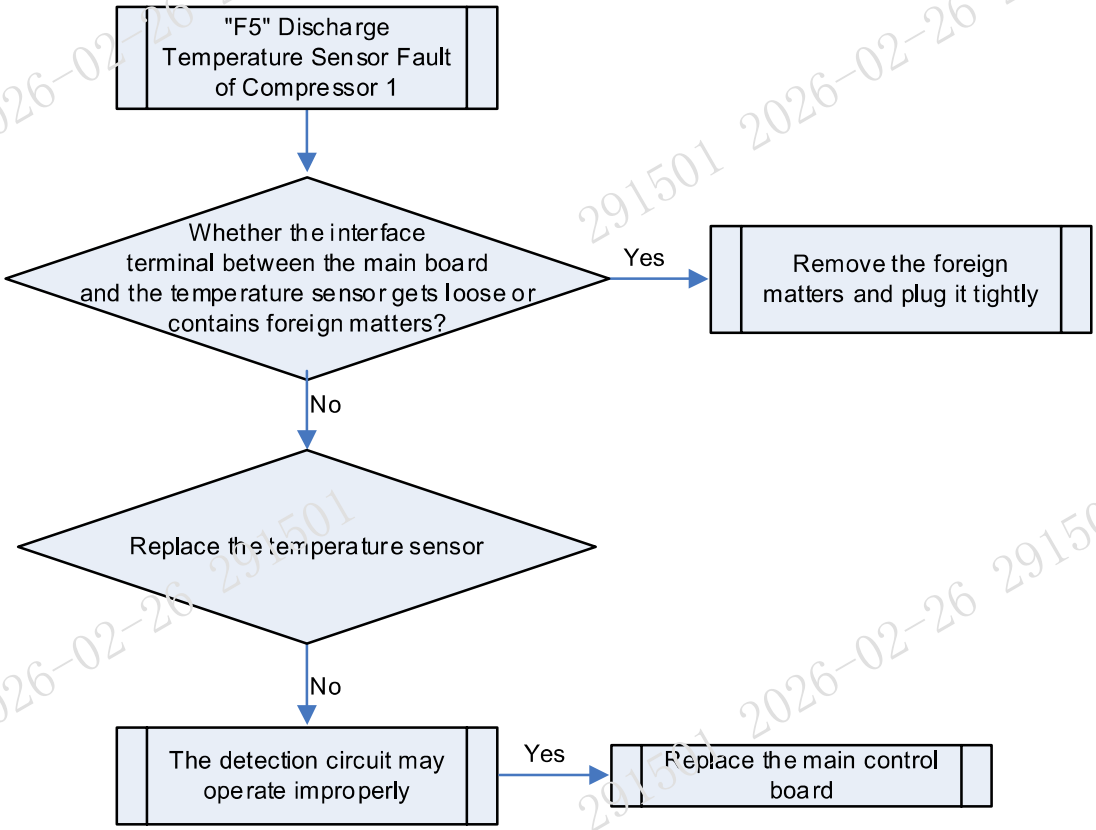
Fault diagnosis:

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

Possible causes:

- Poor contact between the discharge temperature sensor and the main board interface;
- Abnormal discharge temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.80 "F6" Discharge Temperature Sensor Fault of Compressor 2

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

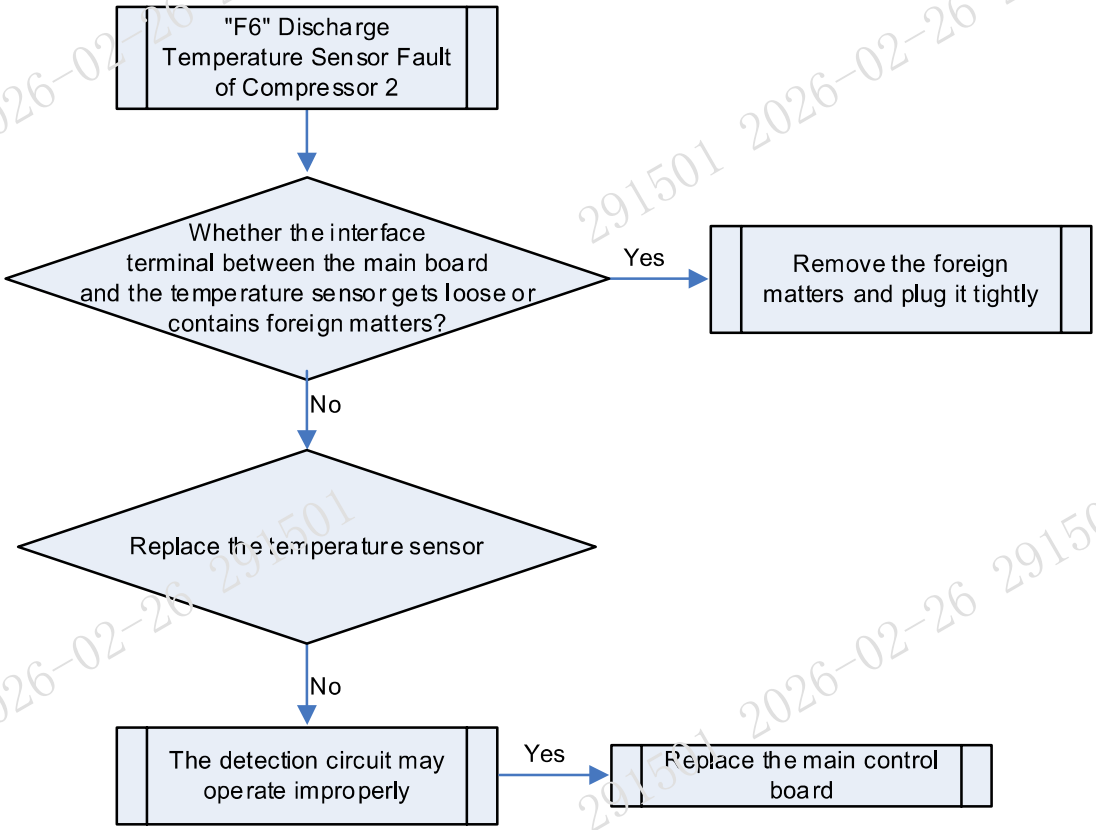
Fault diagnosis:

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

Possible causes:

- Poor contact between the discharge temperature sensor and the main board interface;
- Abnormal discharge temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.81 "F7" Discharge Temperature Sensor Fault of Compressor 3

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

Fault diagnosis:

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

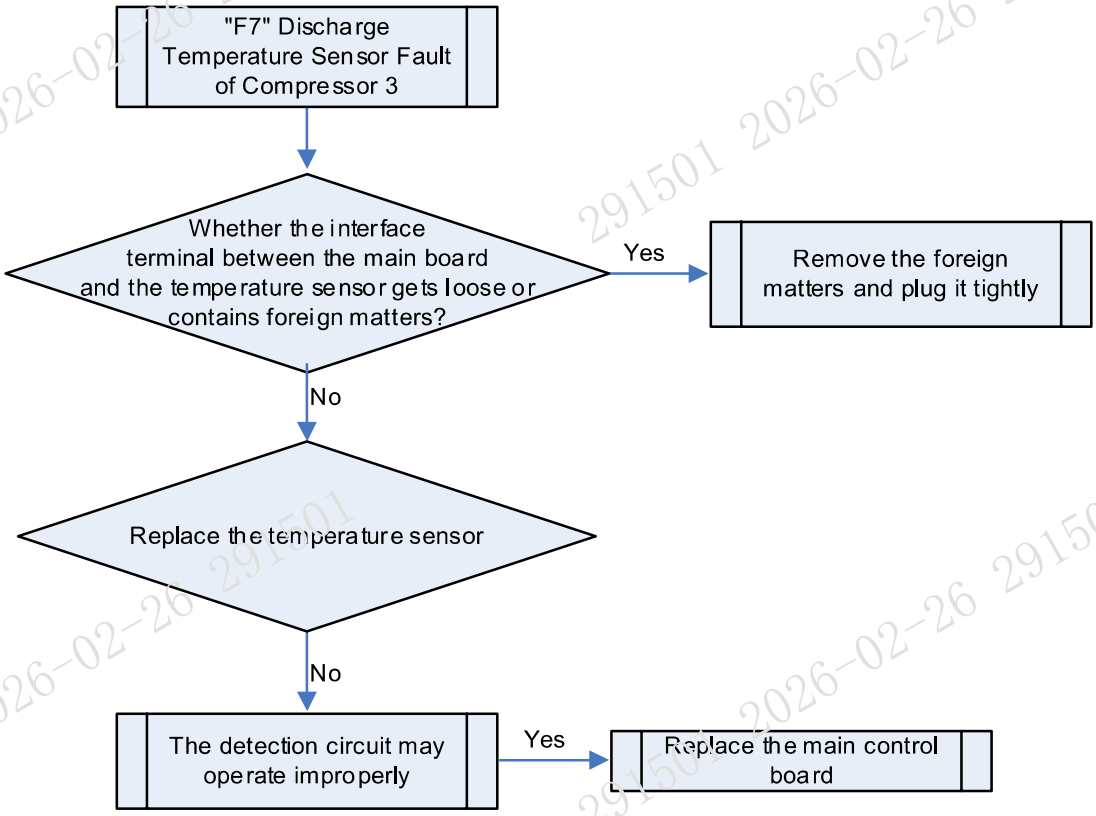
Possible causes:

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

■ Abnormal discharge temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.82 "F8" Discharge Temperature Sensor Fault of Compressor 4

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

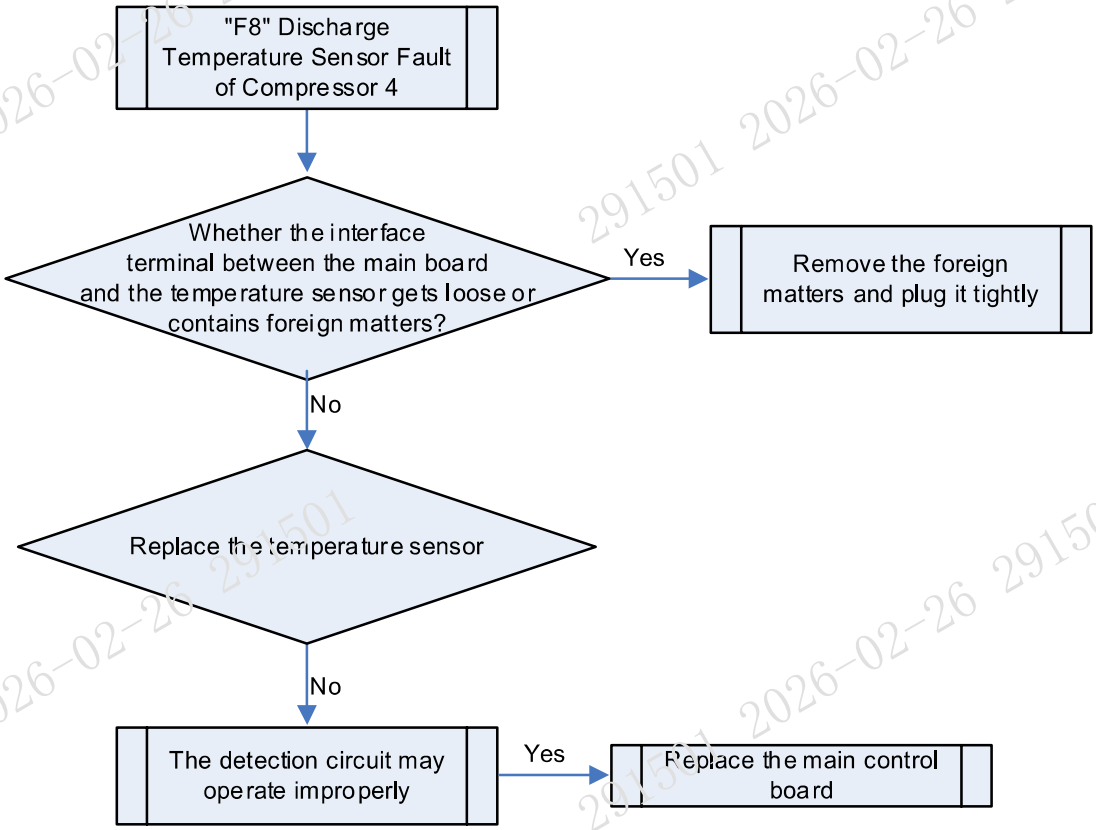
Fault diagnosis:

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

Possible causes:

- Poor contact between the discharge temperature sensor and the main board interface;
- Abnormal discharge temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.83 "F9" Discharge Temperature Sensor Fault of Compressor 5

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

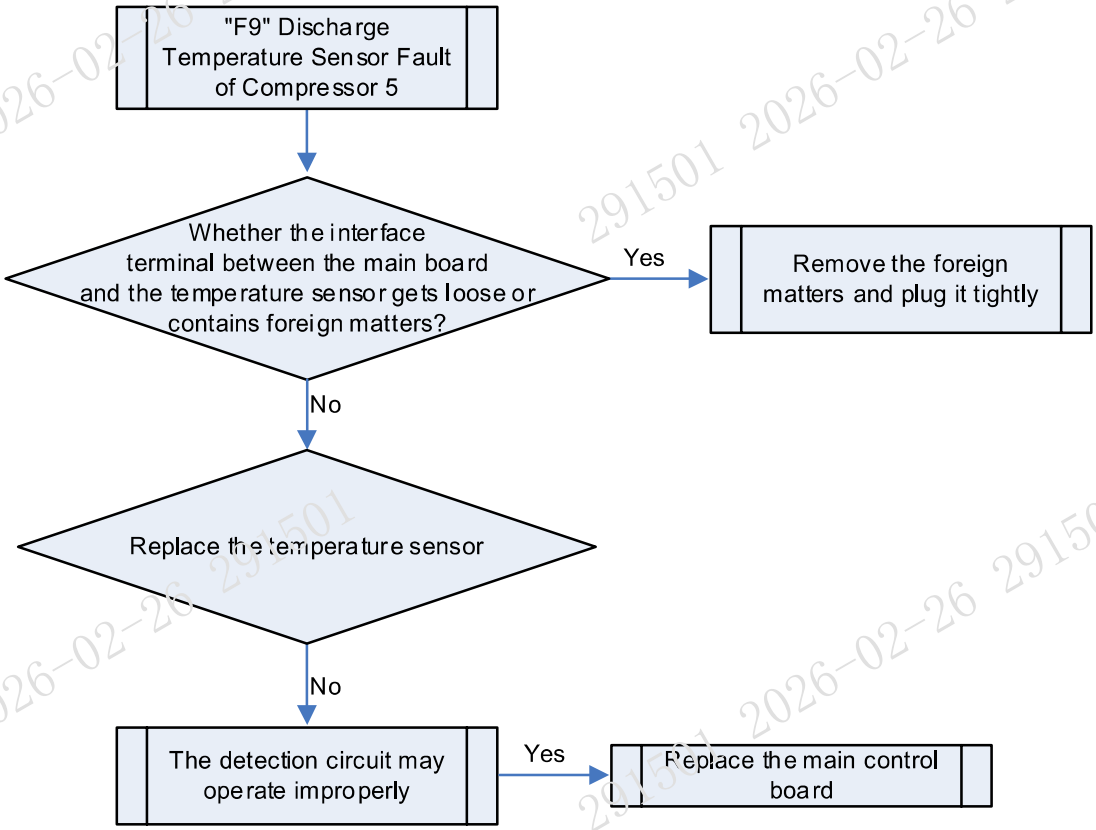
Fault diagnosis:

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

Possible causes:

- Poor contact between the discharge temperature sensor and the main board interface;
- Abnormal discharge temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.84 "FA" Discharge Temperature Sensor Fault of Compressor 6

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

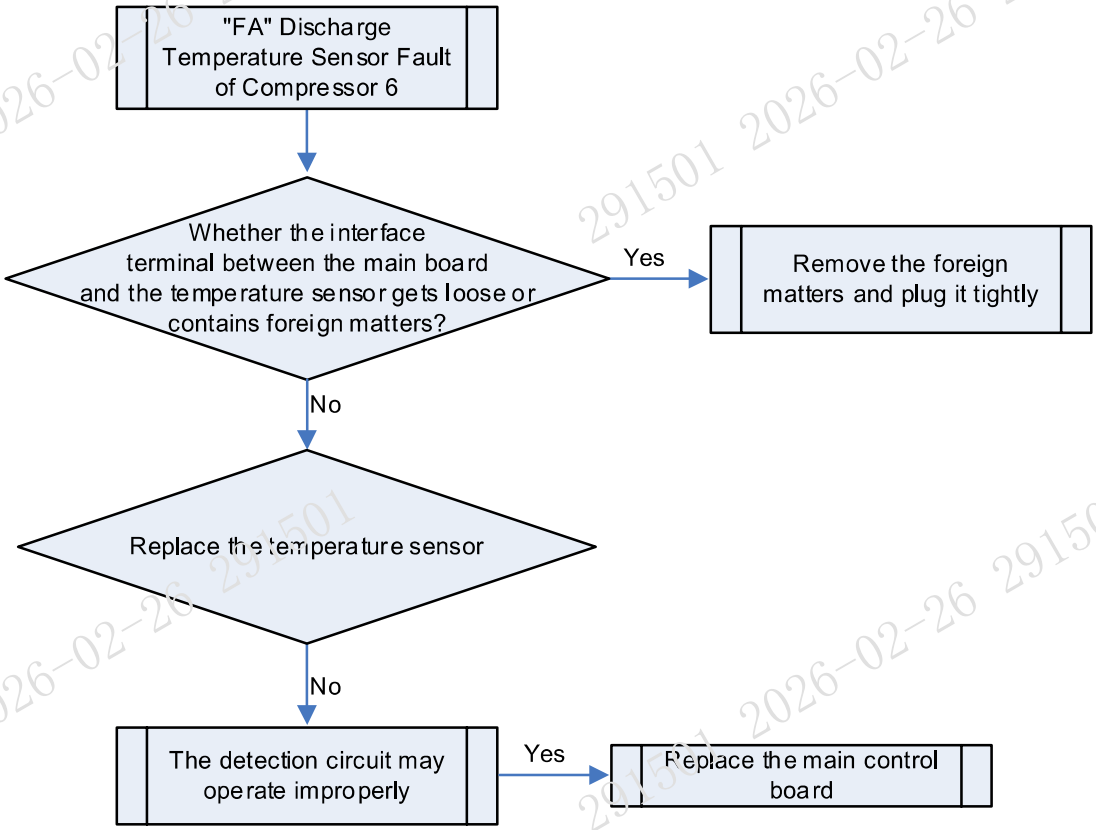
Fault diagnosis:

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

Possible causes:

- Poor contact between the discharge temperature sensor and the main board interface;
- Abnormal discharge temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



2.85 "FC" Abnormal Current Sensor of Compressor 2

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

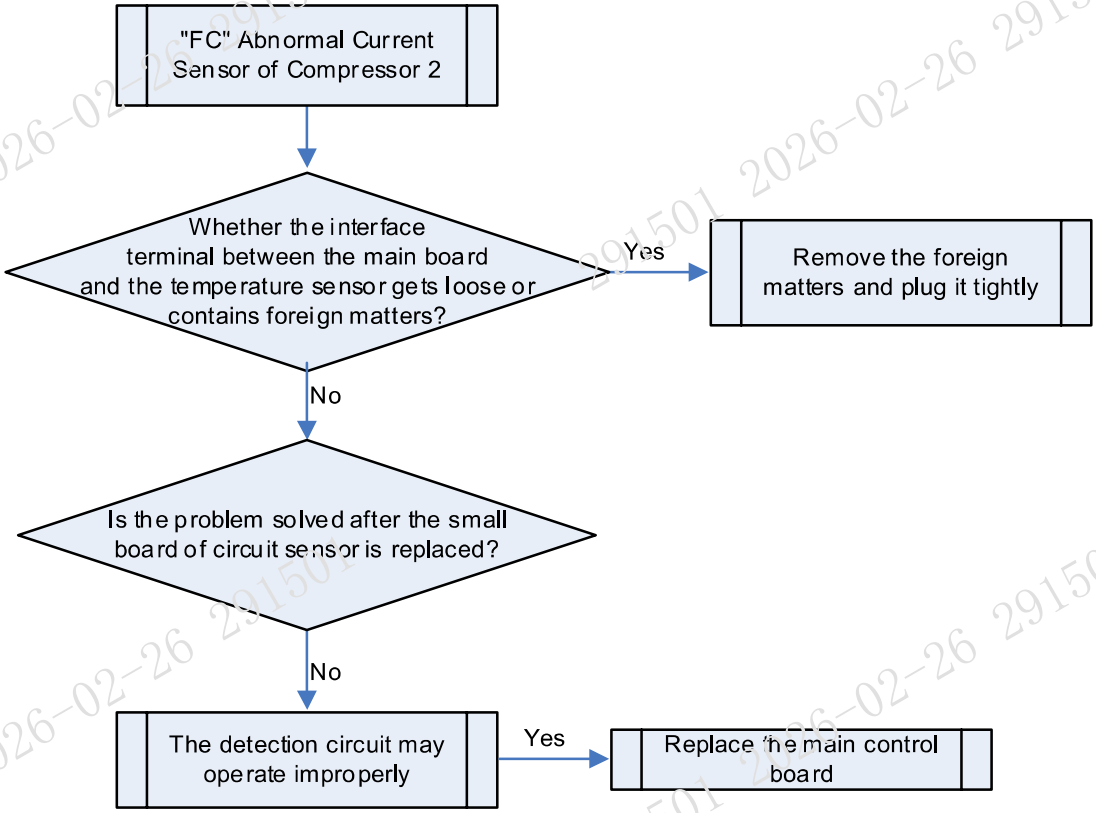
Fault diagnosis:

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

Possible causes:

- Poor contact between the circuit sensor and the main board interface;
- Abnormal small board of circuit sensor;
- Abnormal detection circuit.

Troubleshooting:



2.86 "FL" Abnormal Current Sensor of Compressor 3

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

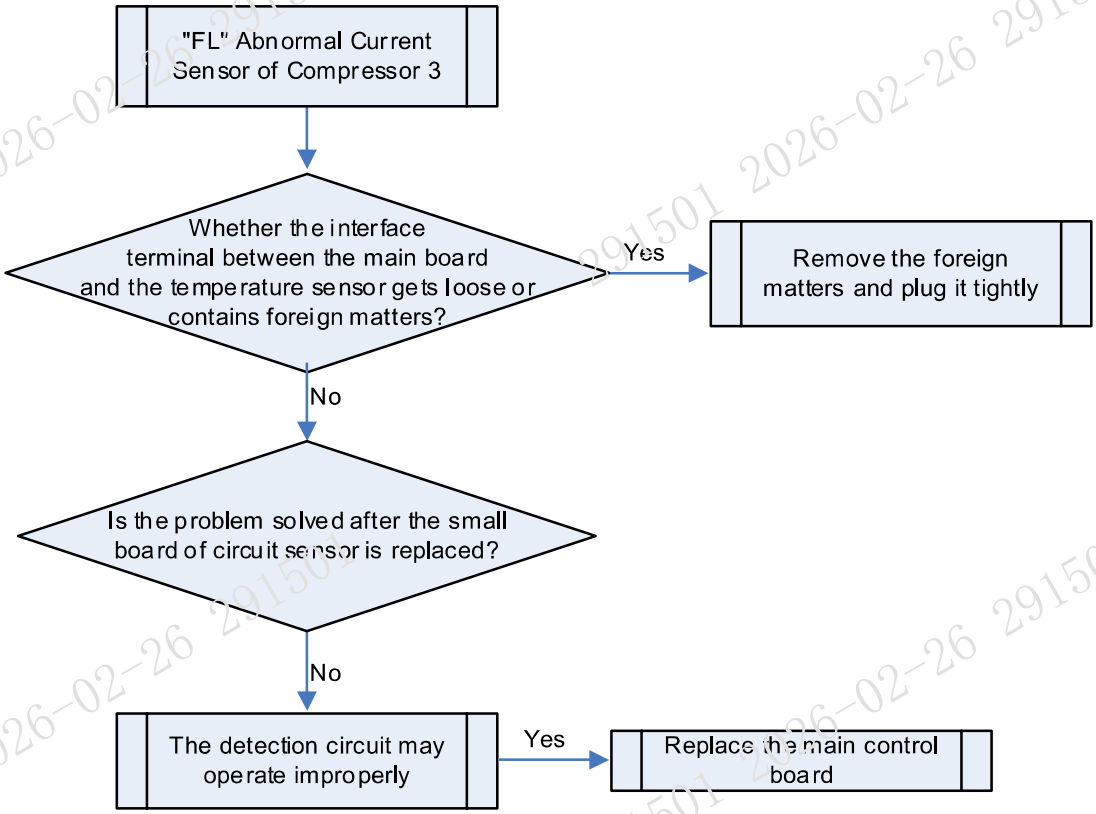
Fault diagnosis:

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

Possible causes:

- Poor contact between the circuit sensor and the main board interface;
- Abnormal small board of circuit sensor;
- Abnormal detection circuit.

Troubleshooting:



2.87 "FE" Abnormal Current Sensor of Compressor 4

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

Fault diagnosis:

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

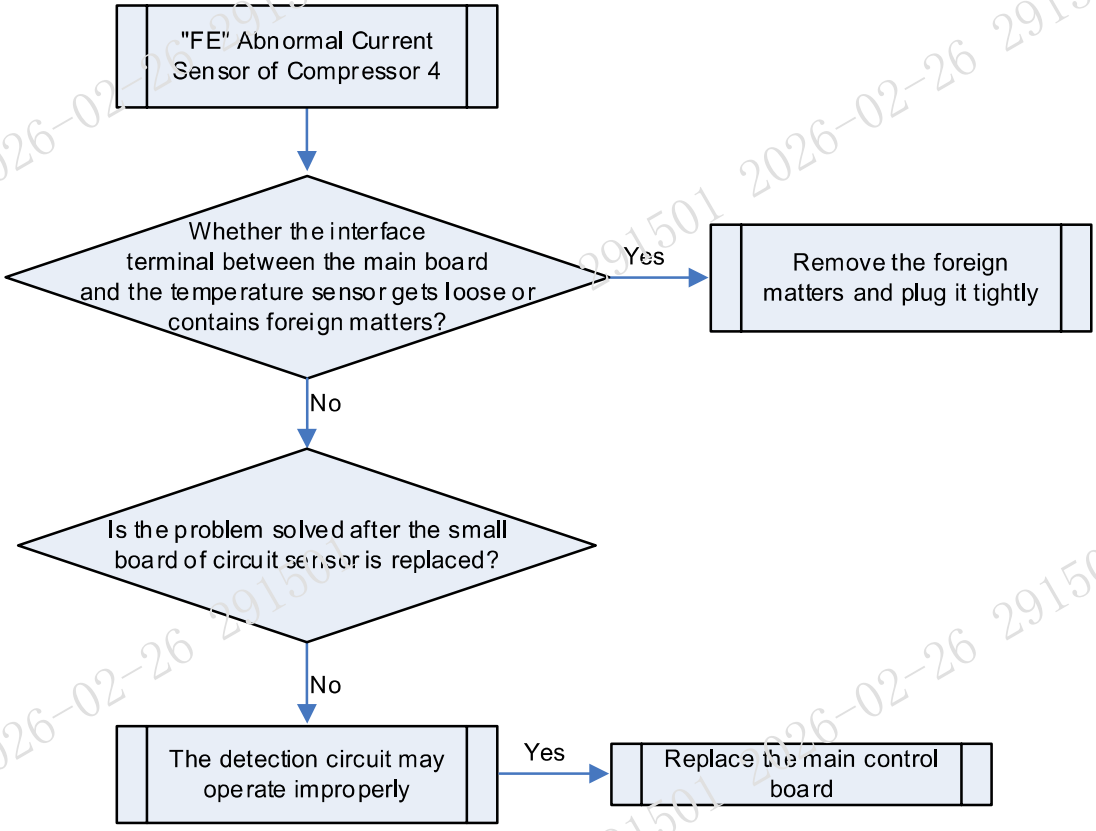
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.88 "FF" Abnormal Current Sensor of Compressor 5

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

Fault diagnosis:

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

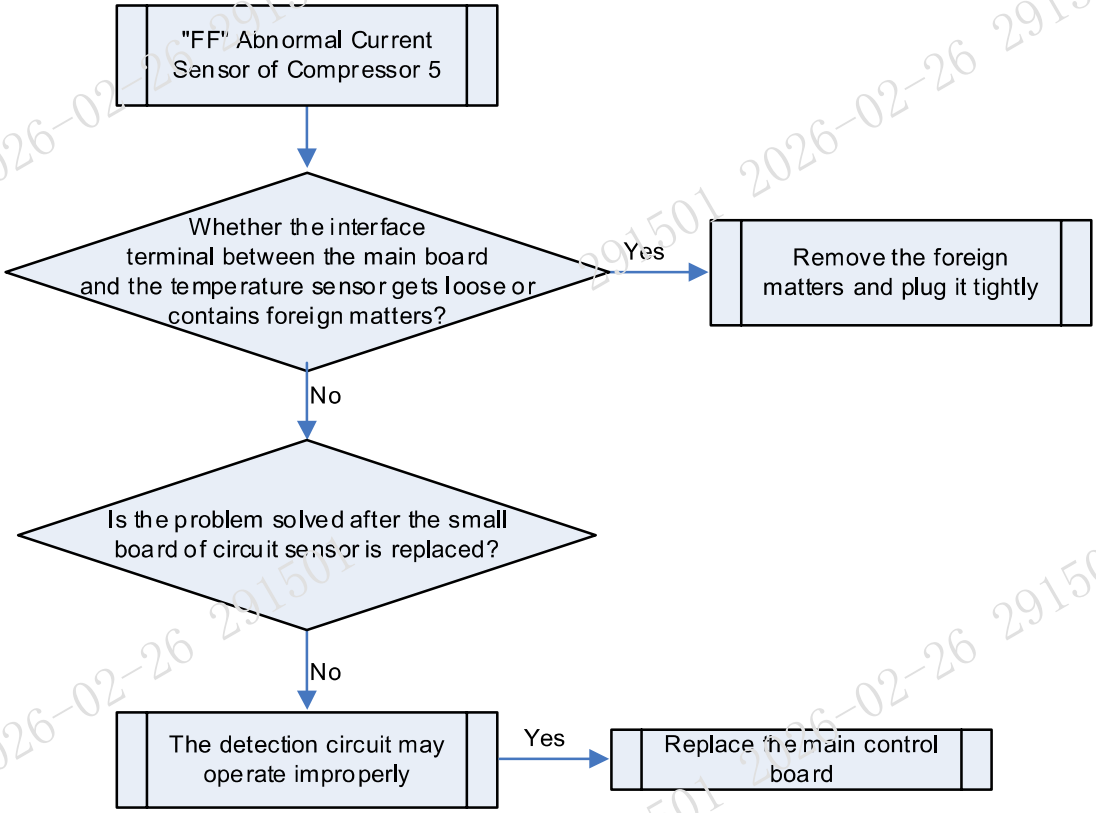
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.89 "FJ" Abnormal Current Sensor of Compressor 6

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

Fault diagnosis:

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

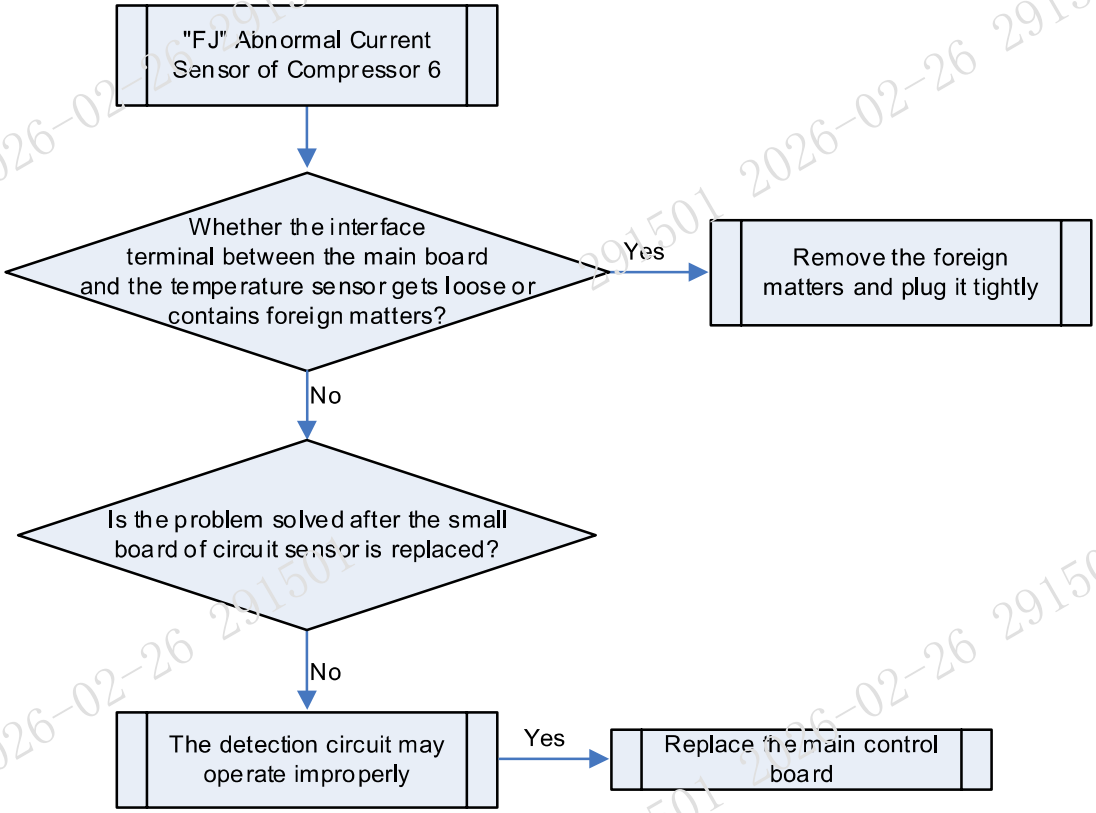
Possible causes:

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

■ Abnormal small board of circuit sensor;

■ Abnormal detection circuit.

Troubleshooting:



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

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

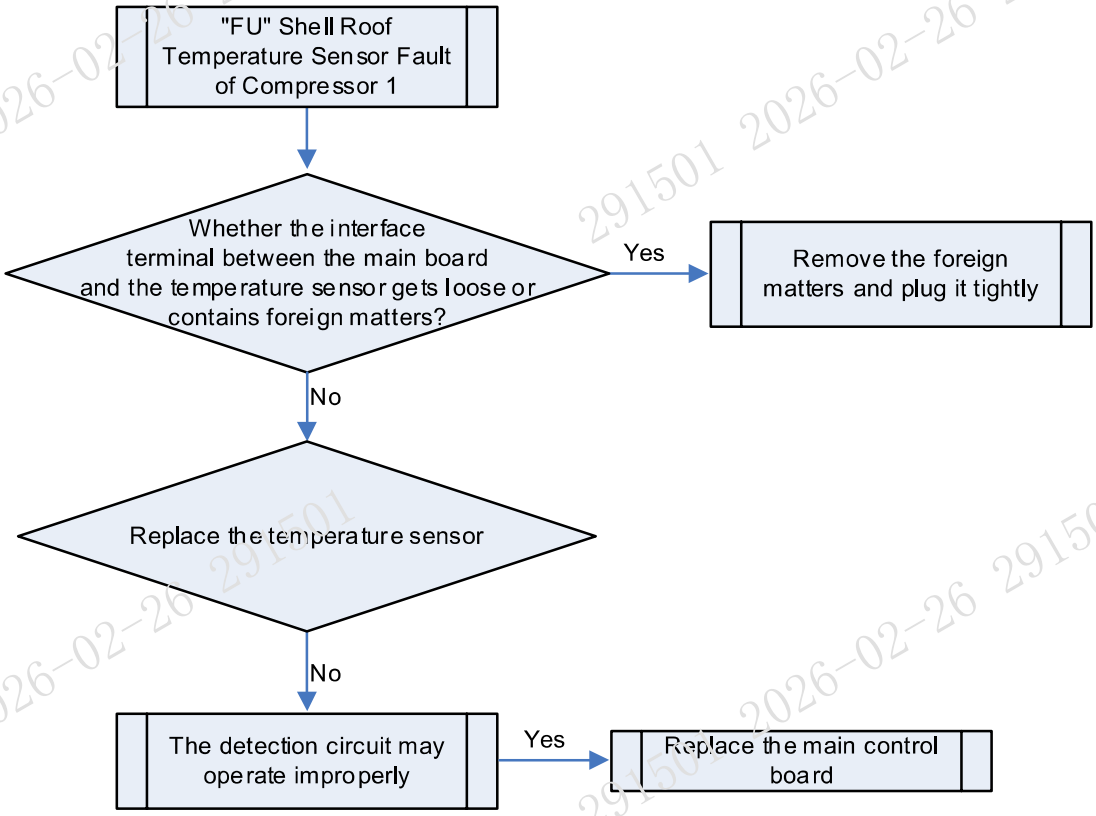
Fault diagnosis:

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

Possible causes:

- Poor contact between the shell roof temperature sensor and the main board interface;
- Abnormal shell roof temperature sensor;
- Abnormal detection circuit.

Troubleshooting:



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

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

Fault diagnosis:

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

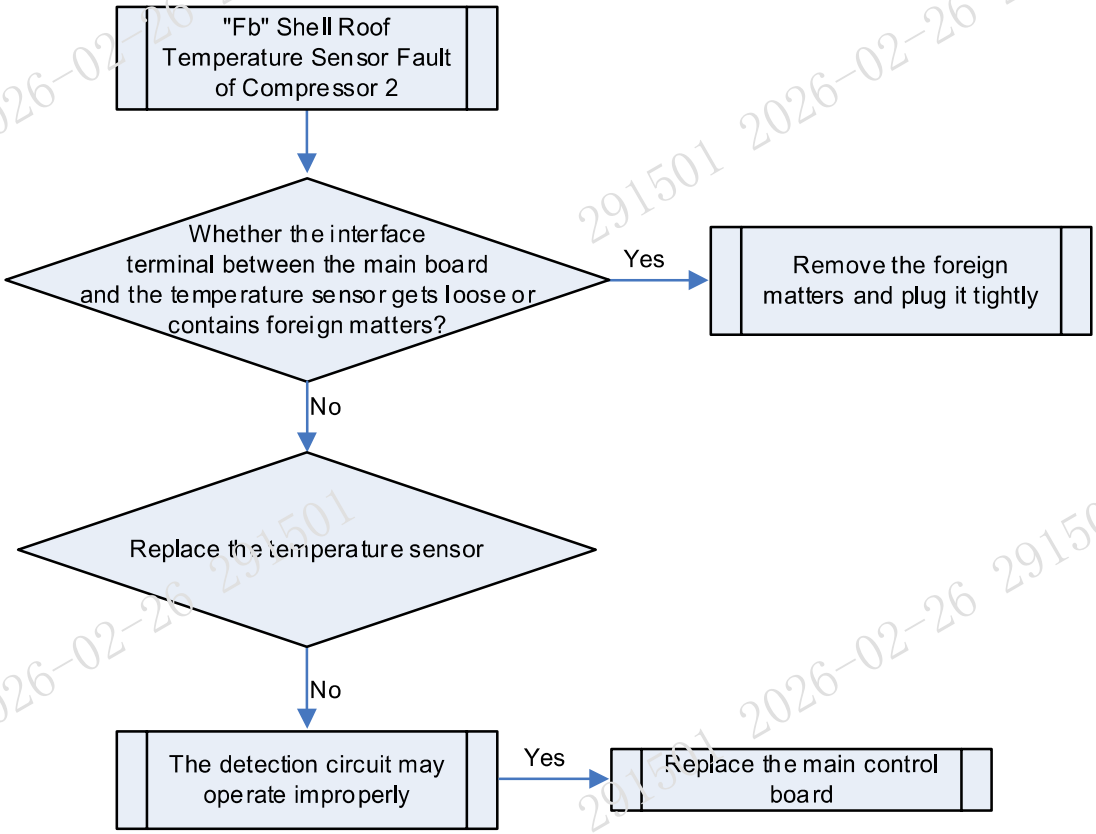
Possible causes:

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

■ Abnormal shell roof temperature sensor;

■ Abnormal detection circuit.

Troubleshooting:



2.92 "Fd" Mode Exchanger Outlet Pipe Temperature Sensor Error

Error display: main board of mode exchanger will display 

Applicable mode: mode exchanger

Error judgment condition and method:

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

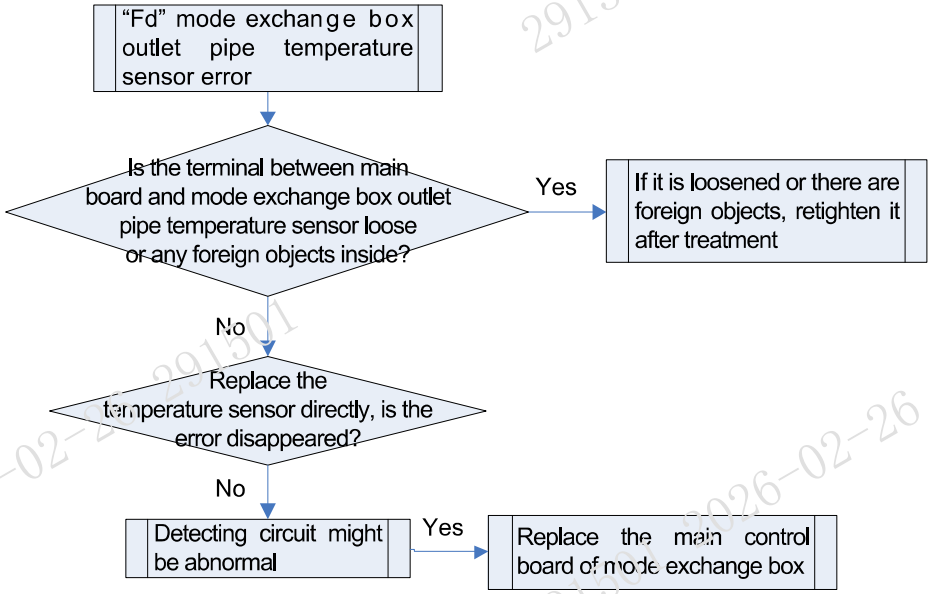
Possible reasons:

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

■Temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.93 "Fn" Mode Exchanger Inlet Pipe Temperature Sensor Error

Error display: mode exchanger main board will display 

Applicable mode: all mode exchangers

Error judgment condition and method:

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

Possible reasons:

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

■Inlet pipe temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:

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

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

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

2.94 "H0" Fan Drive Board Fault

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

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

Possible causes:

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

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

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

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

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

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

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

Troubleshooting:

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

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

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

2.95 "H1" Abnormal Fan Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

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

Possible causes:

■ IPM module protection for the fan drive (2-digit digital LED of the main control board of the outdoor unit displays H6);

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

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

Troubleshooting:

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

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

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

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

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

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

Possible causes:

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

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

Troubleshooting:

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

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

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

2.97 "H3" Reset Protection for the Fan Drive Module

Fault display: wired controller of indoor unit displays 

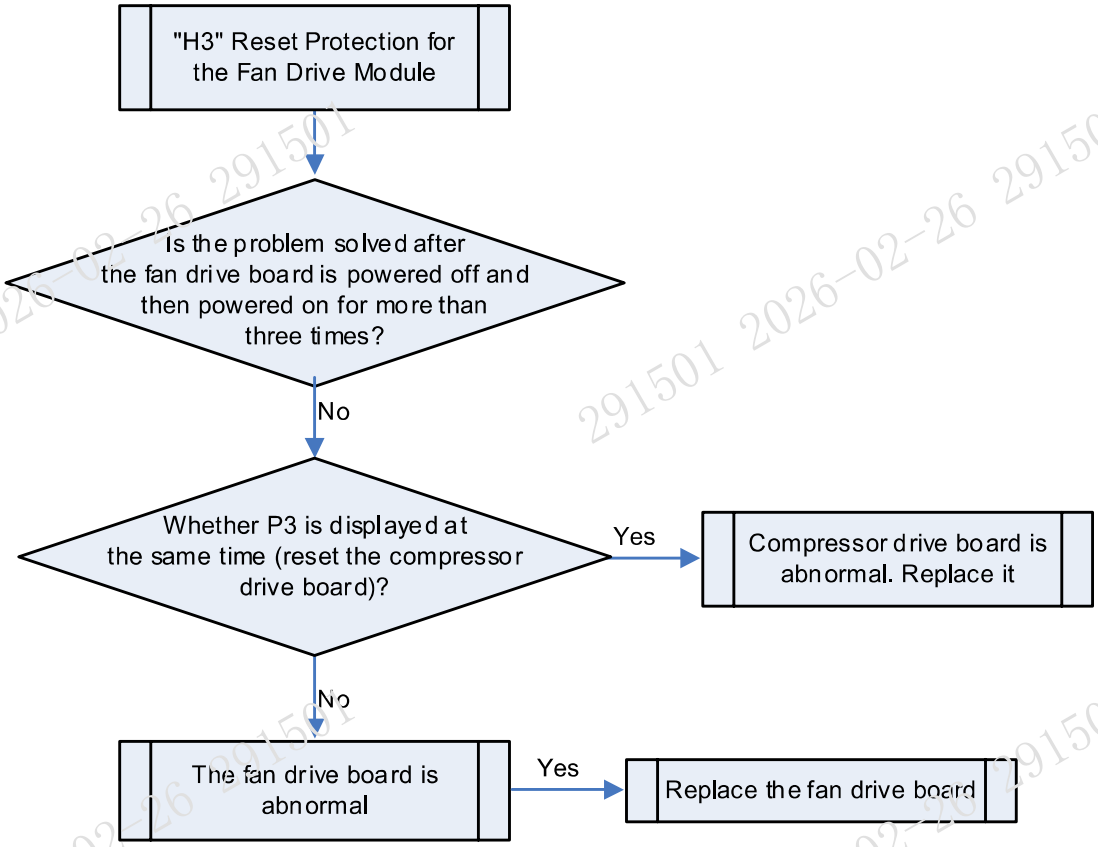
Fault diagnosis:

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

Possible causes:

■ The fan drive board operates improperly

Troubleshooting:



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2.98 "H5" Inverter Fan Over-current Protection

Fault display: main board of outdoor unit displays 

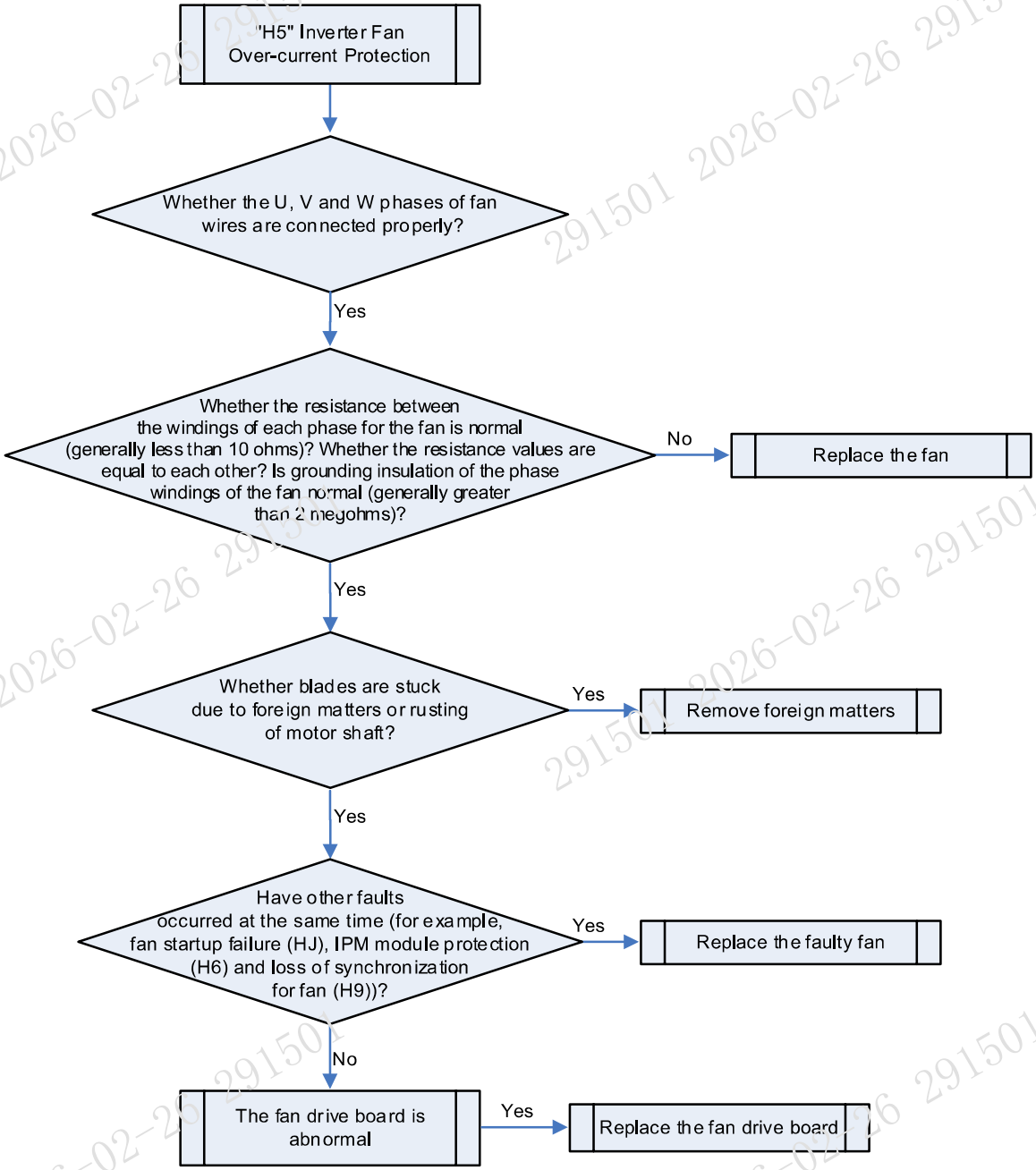
Fault diagnosis:

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

Possible causes:

- Poor contact of fan's UVW cables;
- The fan is damaged;
- The blades are stuck (the blades are blocked or the motor shaft gets rusty);
- The fan drive board operates improperly.

Troubleshooting:



2.99 "H6" IPM Module Protection for Fan Drive

Fault display: main board of outdoor unit displays 

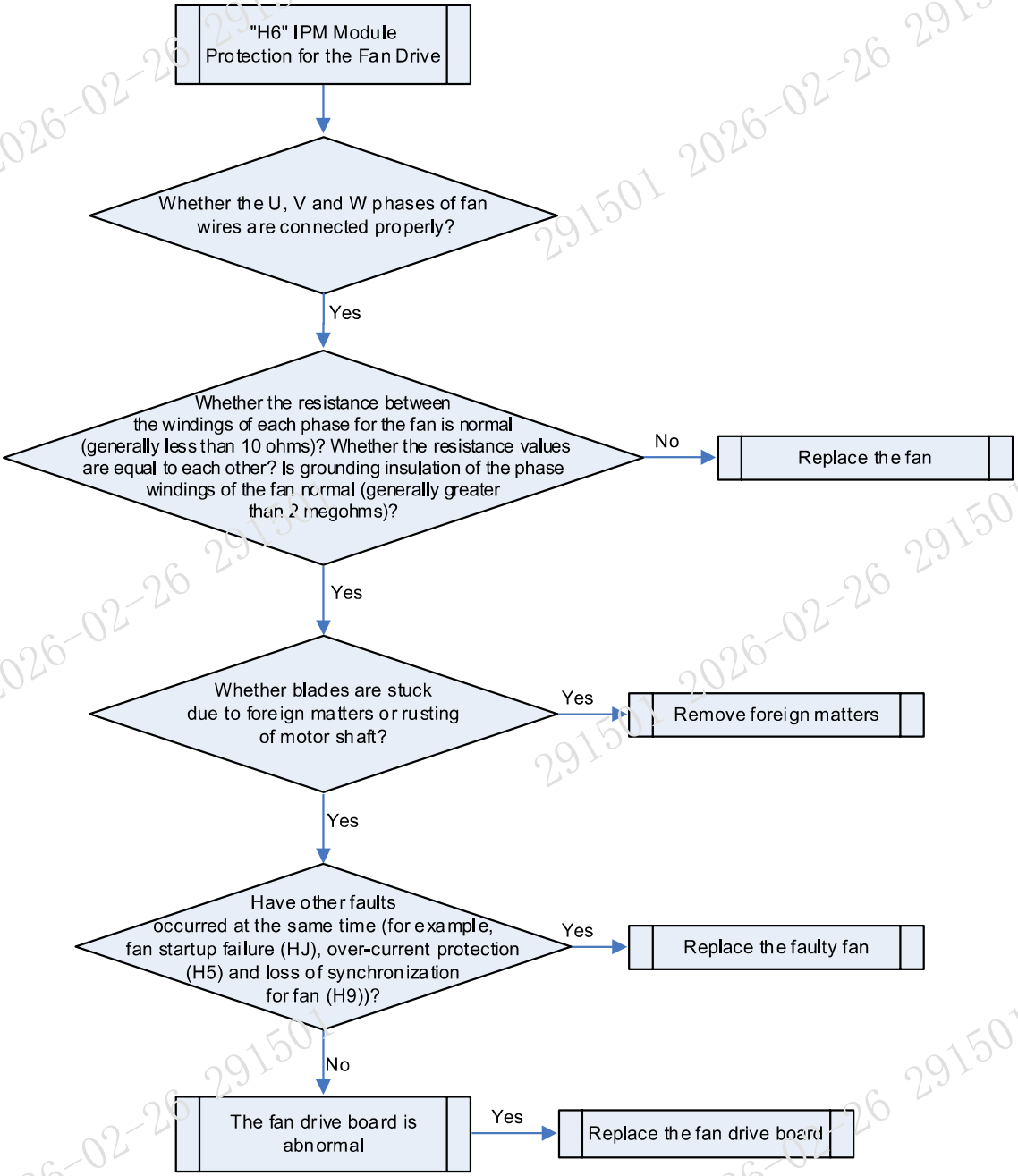
Fault diagnosis:

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

Possible causes:

- Poor contact of fan's UVW cables;
- The fan is damaged;
- The blades are stuck (the blades are blocked or the motor shaft gets rusty);
- The fan drive board operates improperly.

Troubleshooting:



2.100 "H7" Temperature Sensor Fault of Fan Drive

Fault display: main board of outdoor unit displays 

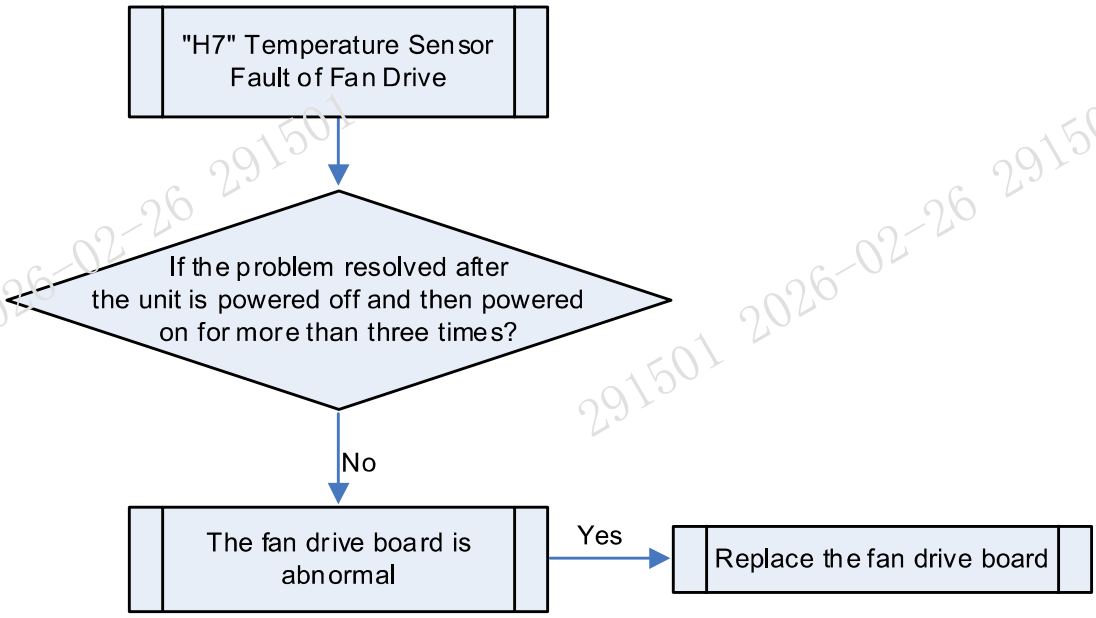
Fault diagnosis:

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

Possible causes:

■ The fan drive board operates improperly.

Troubleshooting:



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2.101 "H8" IPM Over Temperature Protection for Fan Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

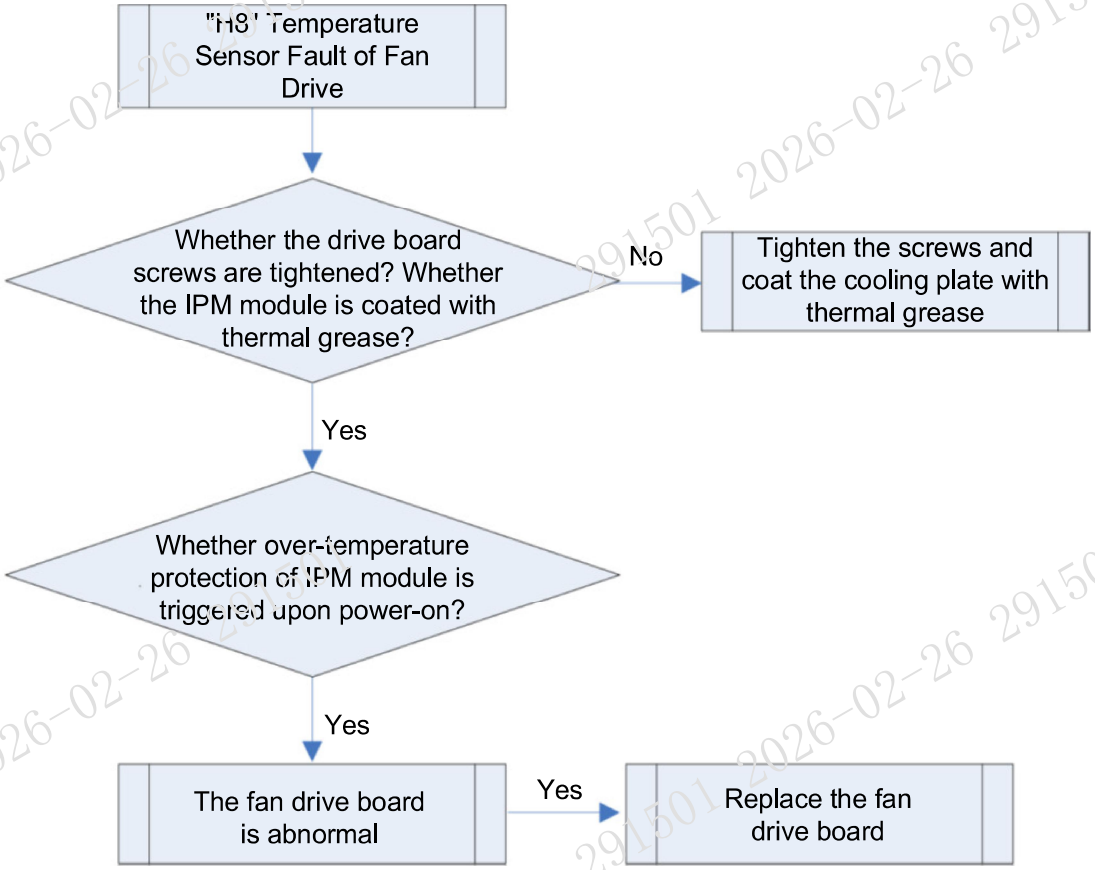
Possible causes:

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

■ The IPM module's screws are not tightened;

■ The fan drive board operates improperly.

Troubleshooting:



2.102 "H9" Loss of Synchronization Protection for Inverter Fan

Fault display: main board of outdoor unit displays 

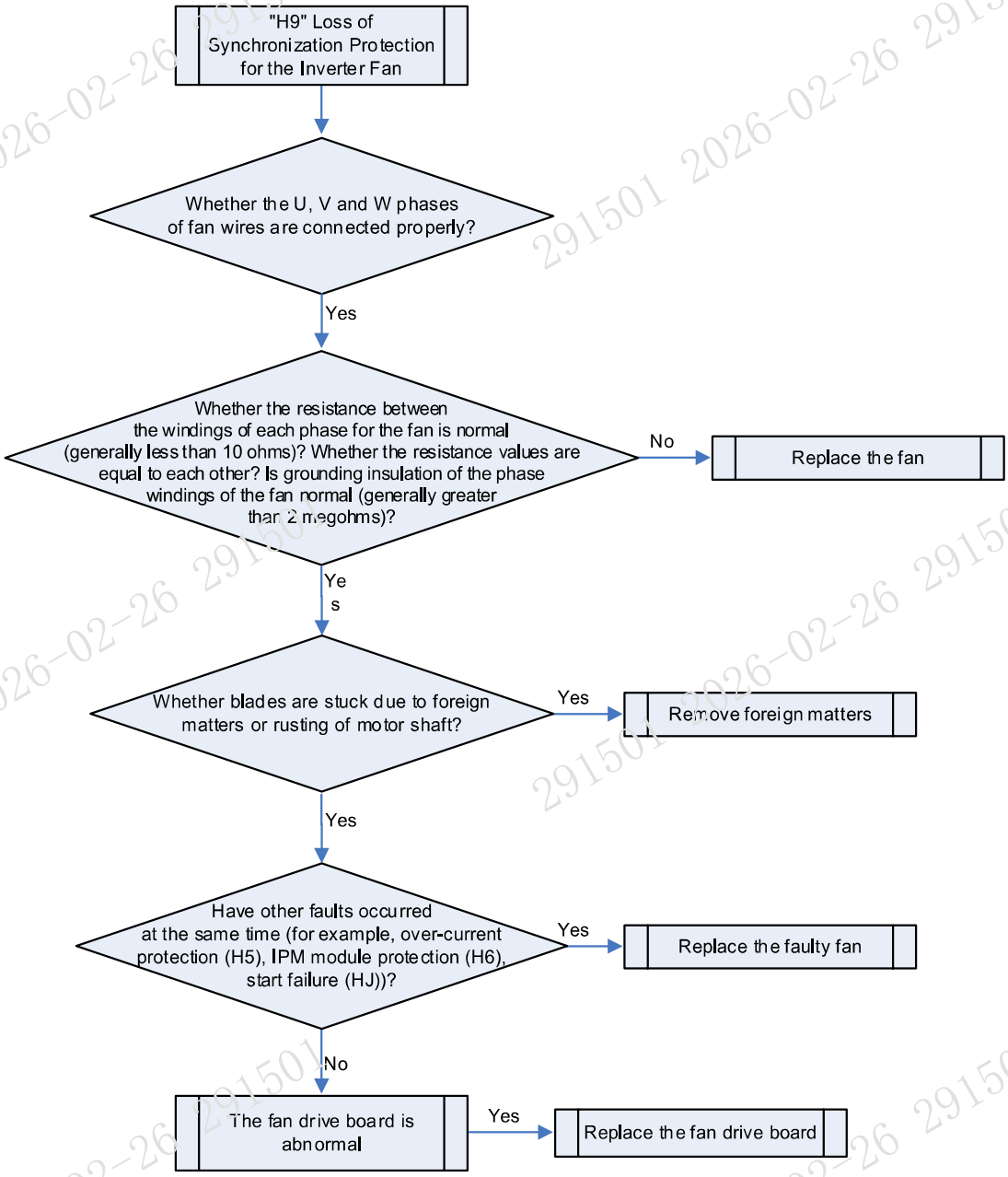
Fault diagnosis:

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

Possible causes:

- Poor contact of fan's UVW cables;
- The fan is damaged;
- The blades are stuck (the blades are blocked or the motor shaft gets rusty);
- The fan drive board operates improperly.

Troubleshooting:



2.103 "HC" Current Detection Circuit Fault of Fan Drive

Fault display: main board of outdoor unit displays 

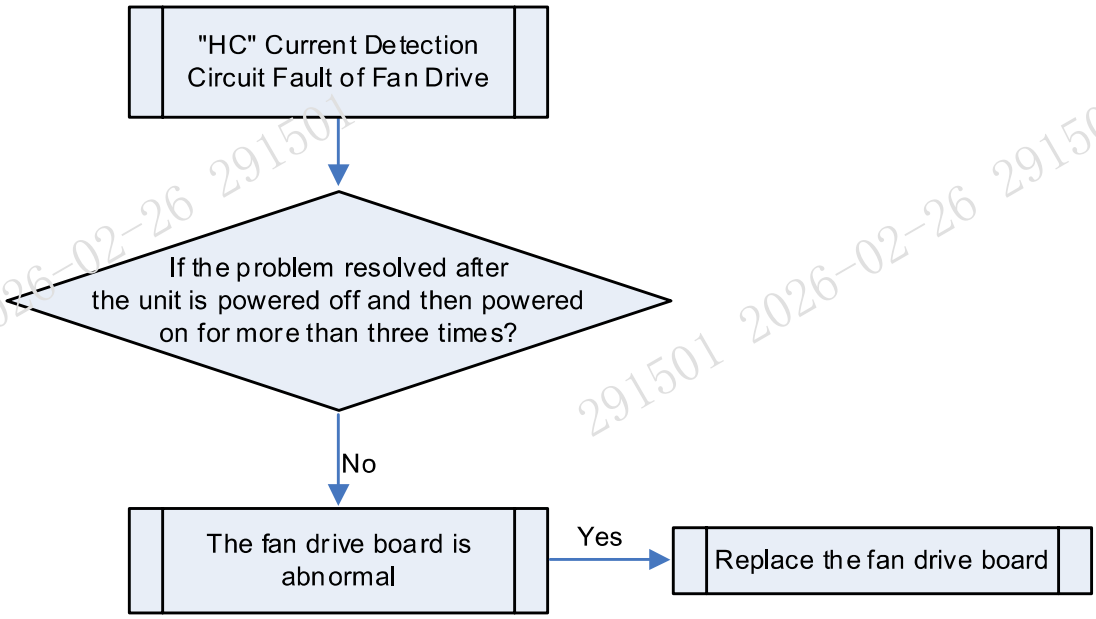
Fault diagnosis:

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

Possible causes:

■ The fan drive board operates improperly.

Troubleshooting:



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

Fault display: main board of outdoor unit displays 

Fault diagnosis:

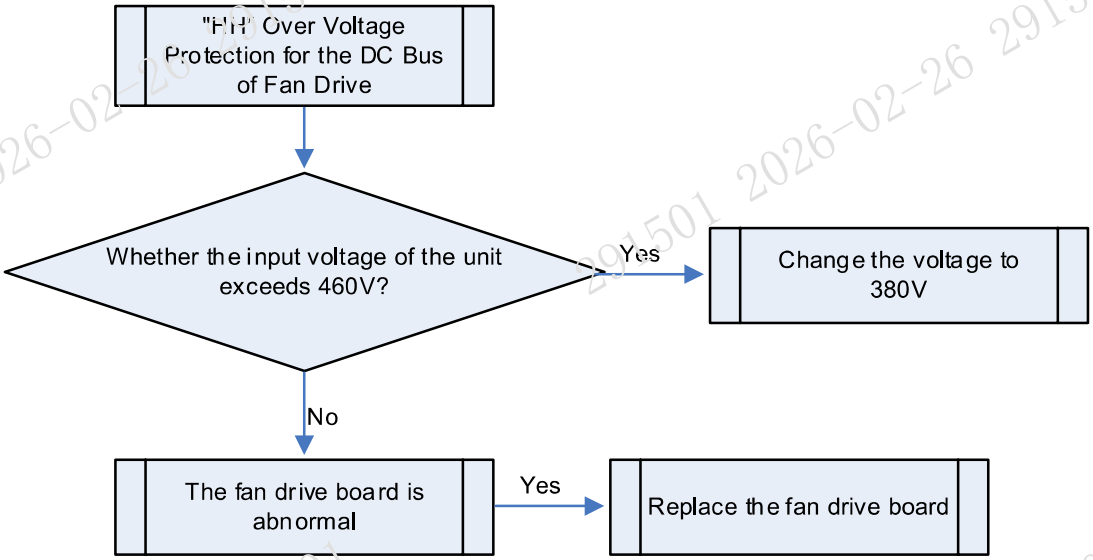
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HH, it indicates the over voltage protection for the DC bus of fan drive.

Possible causes:

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

■ The fan drive board operates improperly.

Troubleshooting:



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

Fault display: main board of outdoor unit displays 

Fault diagnosis:

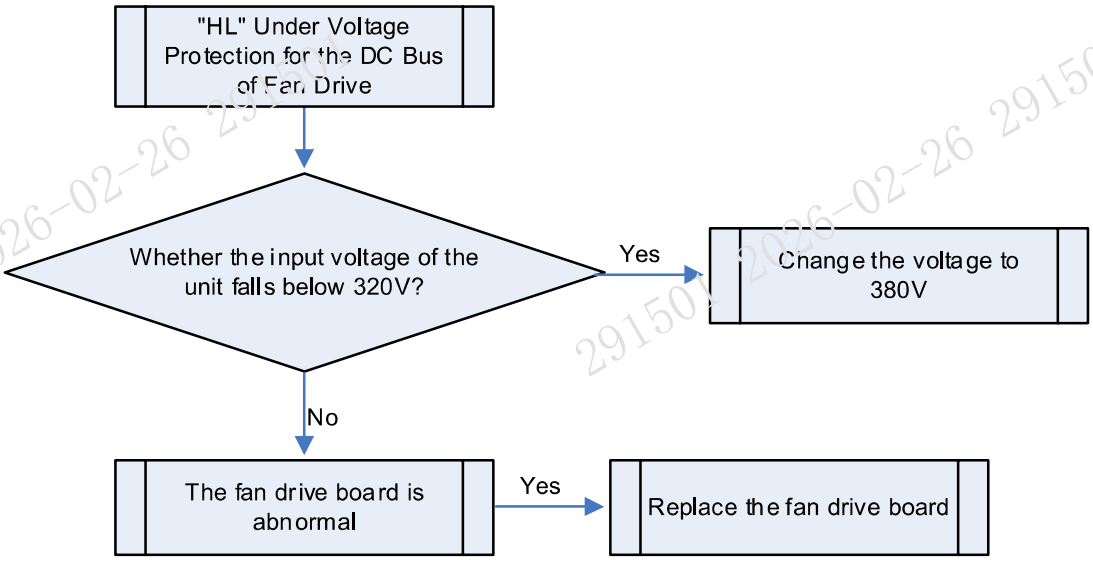
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is HL, it indicates the under voltage protection for the DC bus of fan drive.

Possible causes:

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

■ The fan drive board operates improperly.

Troubleshooting:



2.106 "HJ" Inverter Fan Startup Failure

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes:

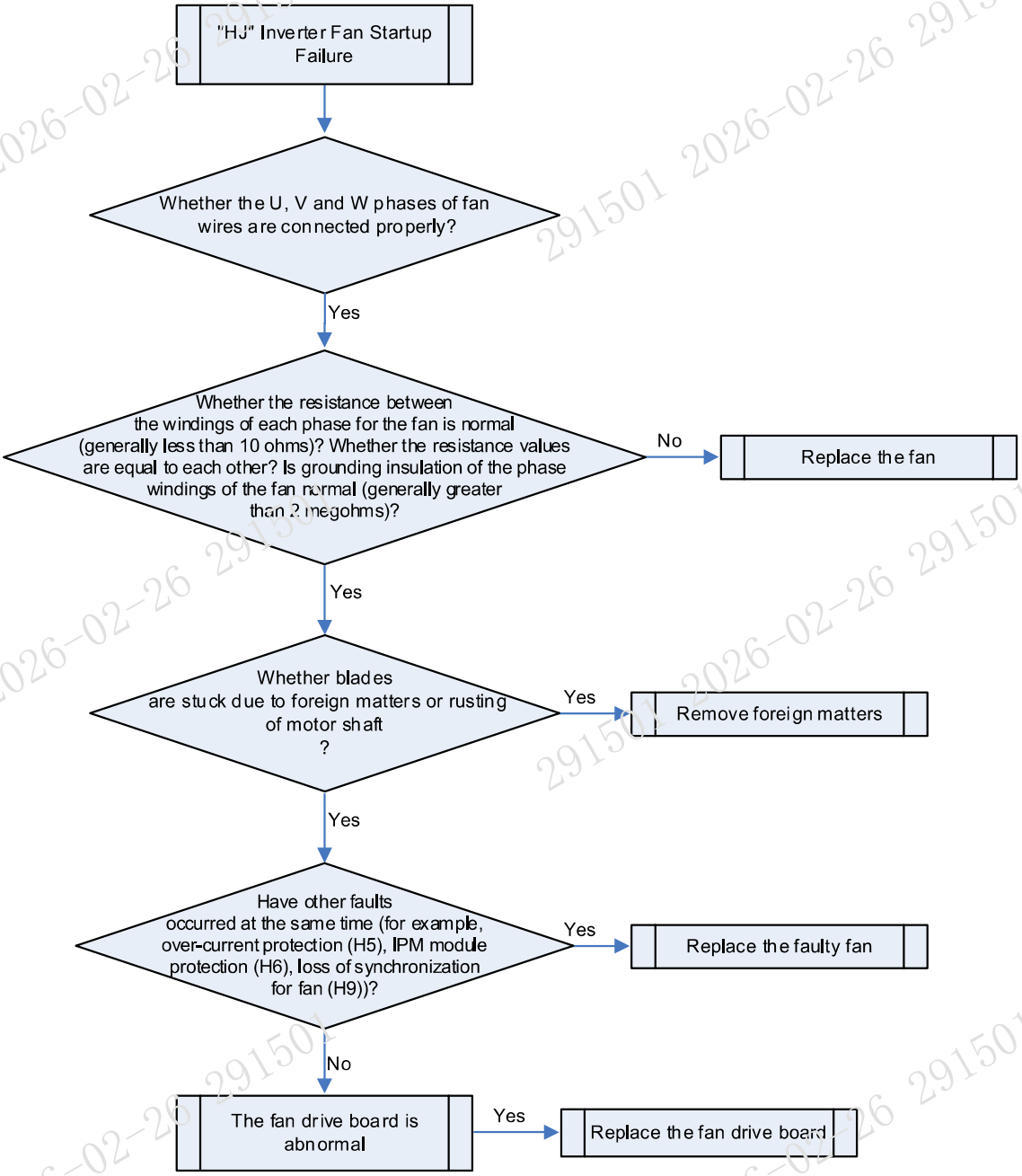
■ Poor contact of fan's UVW cables;

■ The fan is damaged;

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

■ The fan drive board operates improperly.

Troubleshooting:



2.107 "J0" Protection for Other Modules

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

Applicable models: GMV9 Flex, 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.

2.108 "J1" Compressor 1 Over-current Protection

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

Fault diagnosis:

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

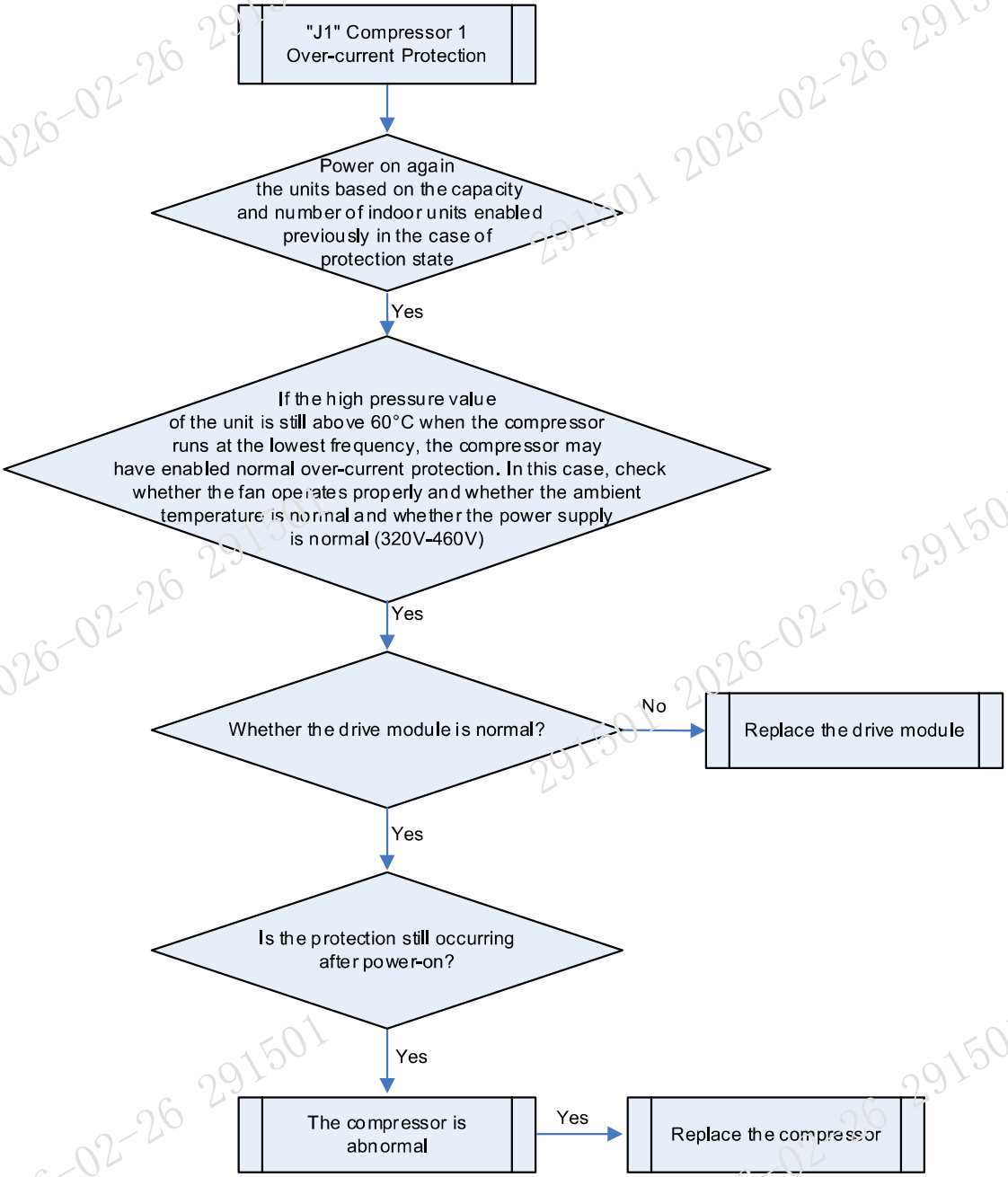
Possible causes:

■ The unit's parameters are abnormal;

■ The drive module is abnormal;

■ The compressor is abnormal.

Troubleshooting:



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2.109 "J2" Compressor 2 Over-current Protection

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

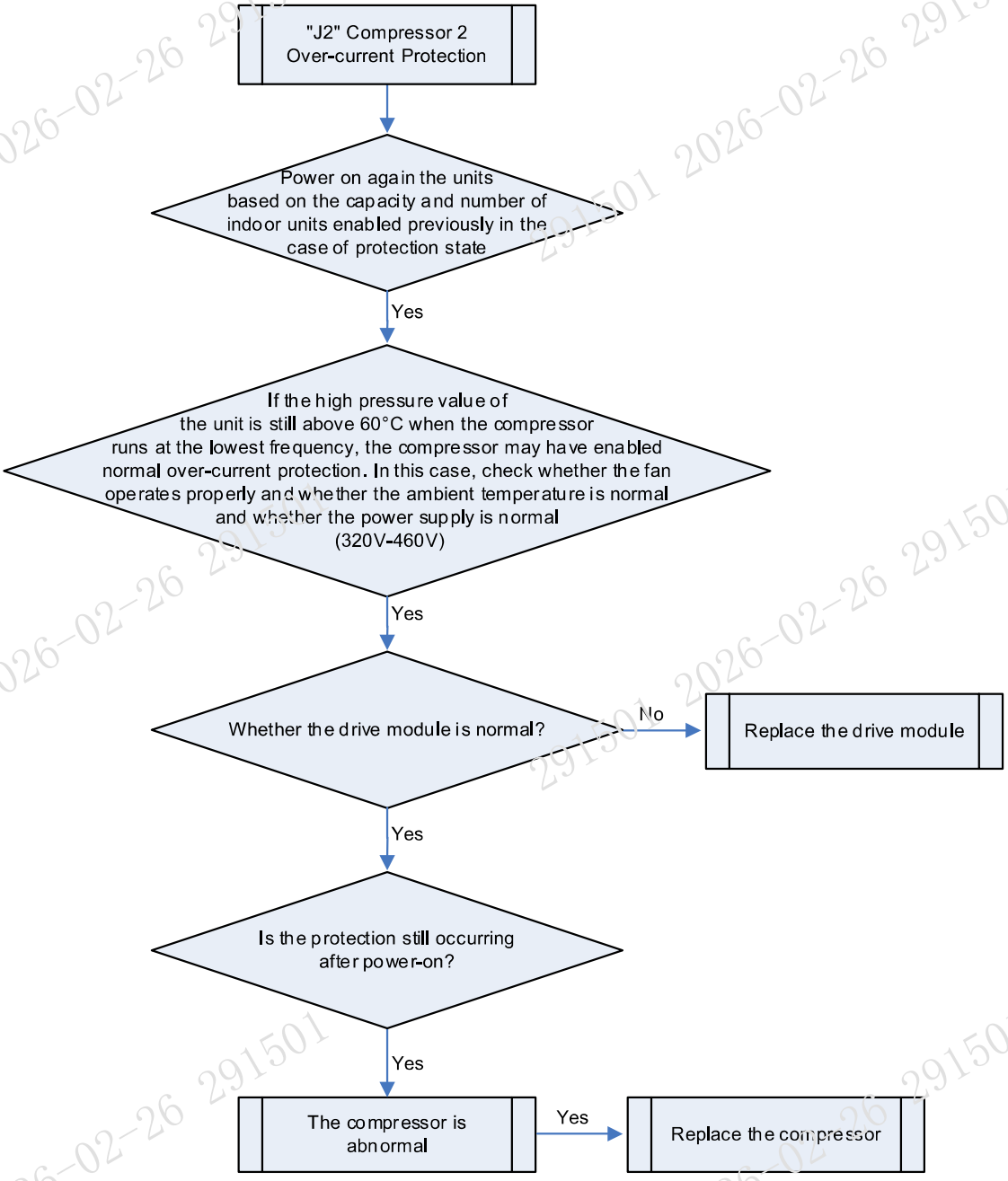
Fault diagnosis:

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

Possible causes:

- The unit's parameters are abnormal;
- The drive module is abnormal;
- The compressor is abnormal.

Troubleshooting:



2.110 "J3" Compressor 3 Over-current Protection

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

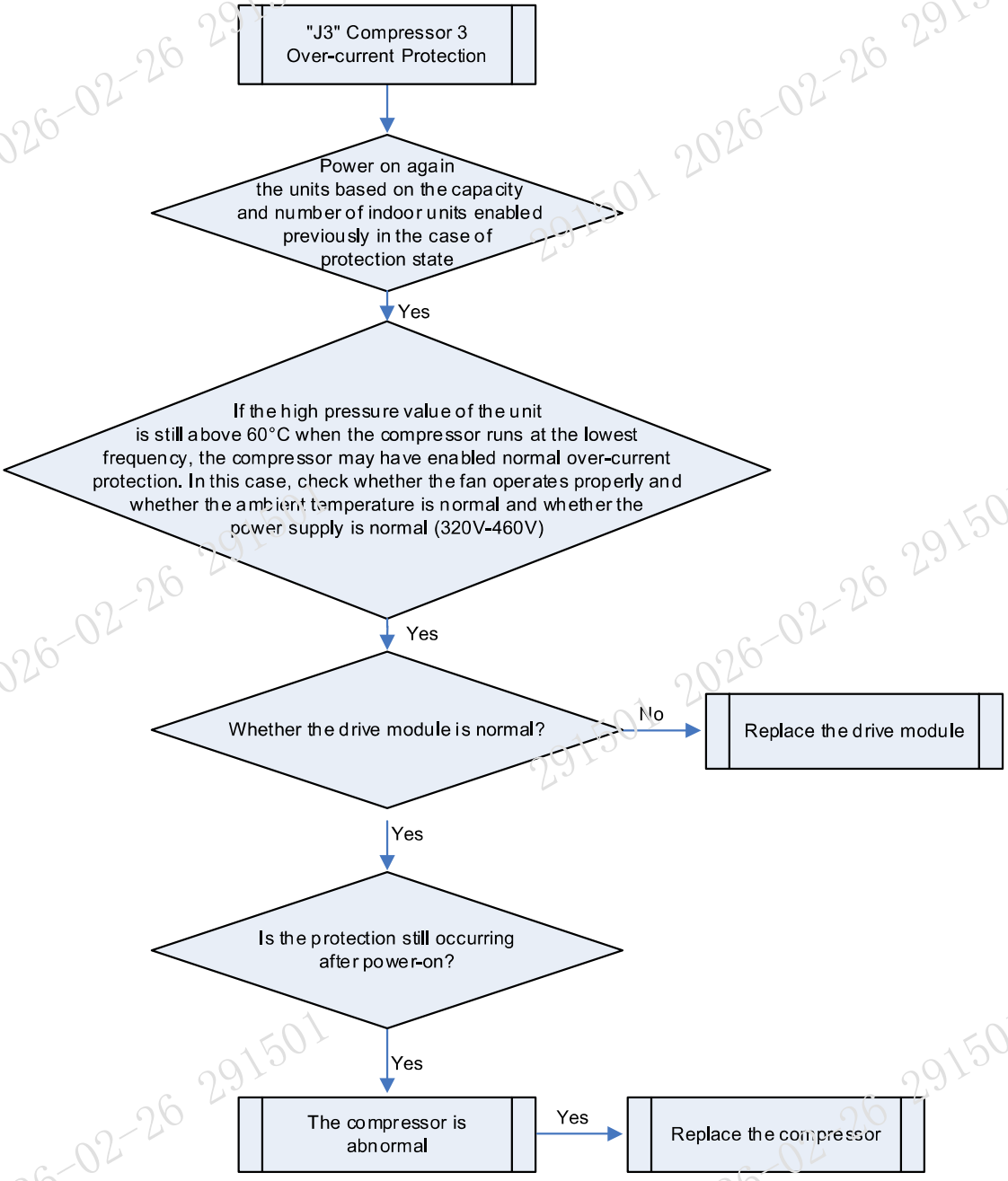
Fault diagnosis:

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

Possible causes:

- The unit's parameters are abnormal;
- The drive module is abnormal;
- The compressor is abnormal.

Troubleshooting:



2.111 "J4" Compressor 4 Over-current Protection

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

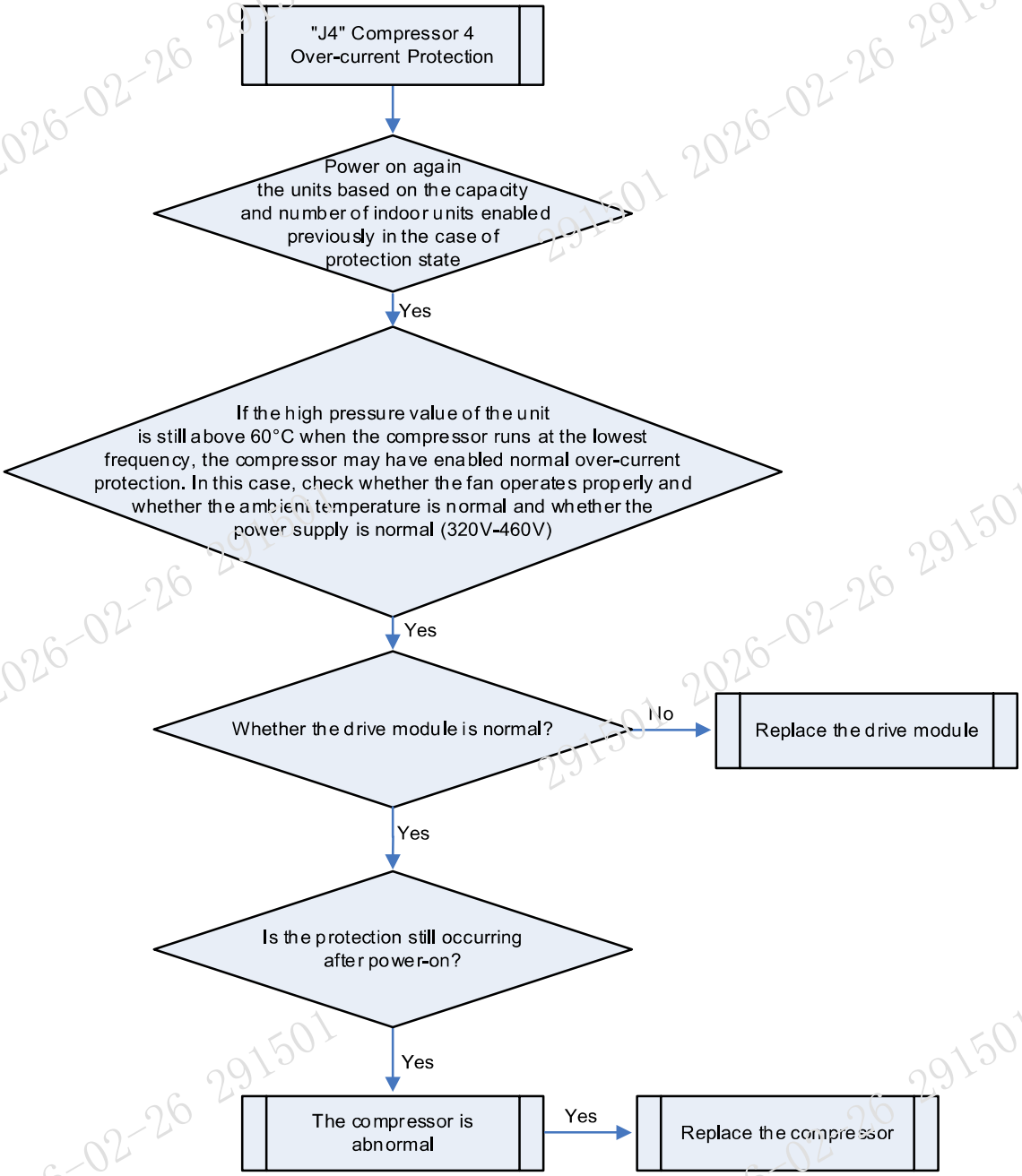
Fault diagnosis:

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

Possible causes:

- The unit's parameters are abnormal;
- The drive module is abnormal;
- The compressor is abnormal.

Troubleshooting:



2.112 "J5" Compressor 5 Over-current Protection

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

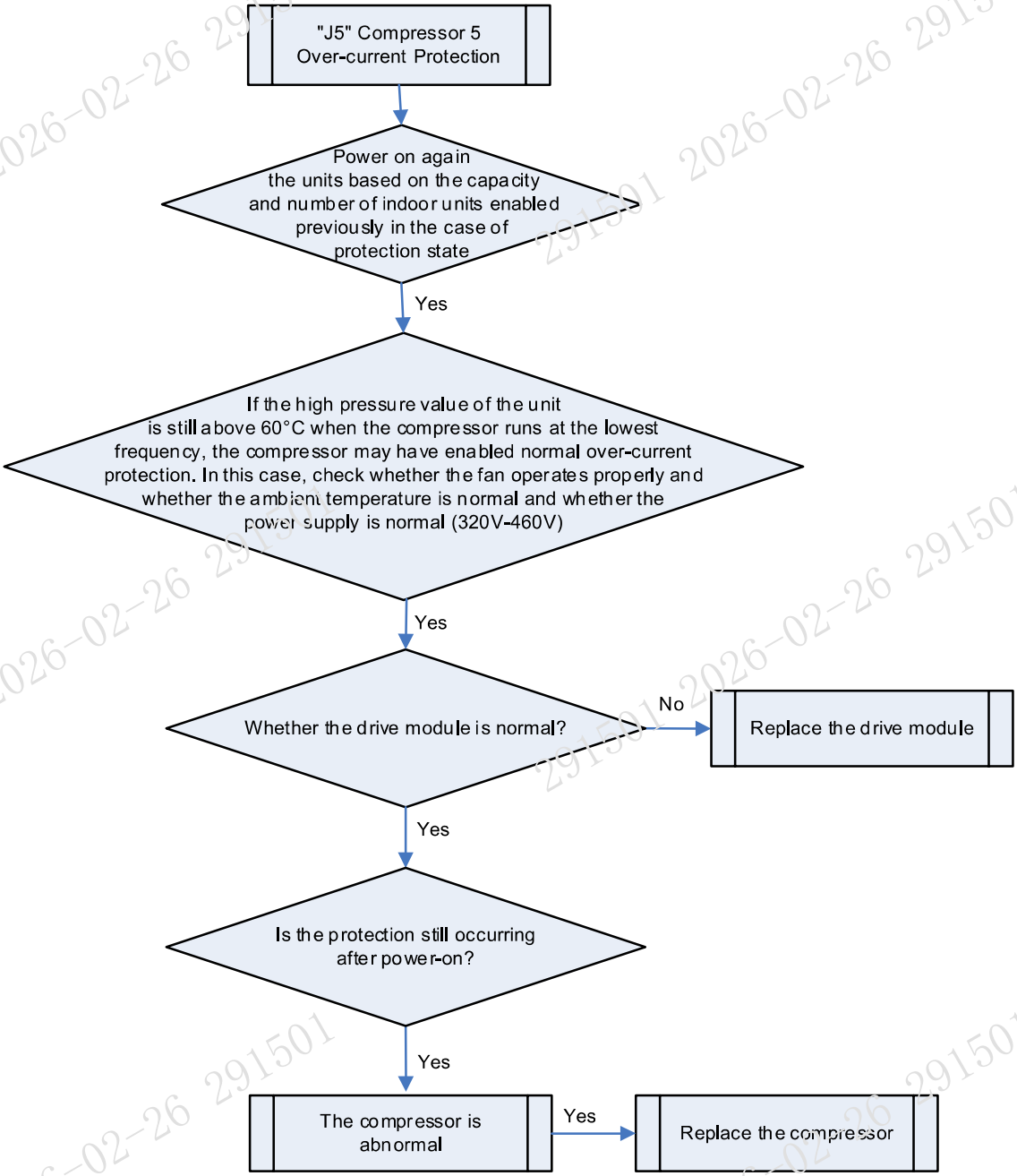
Fault diagnosis:

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

Possible causes:

- The unit's parameters are abnormal;
- The drive module is abnormal;
- The compressor is abnormal.

Troubleshooting:



2.113 "J6" Compressor 6 Over-current Protection

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

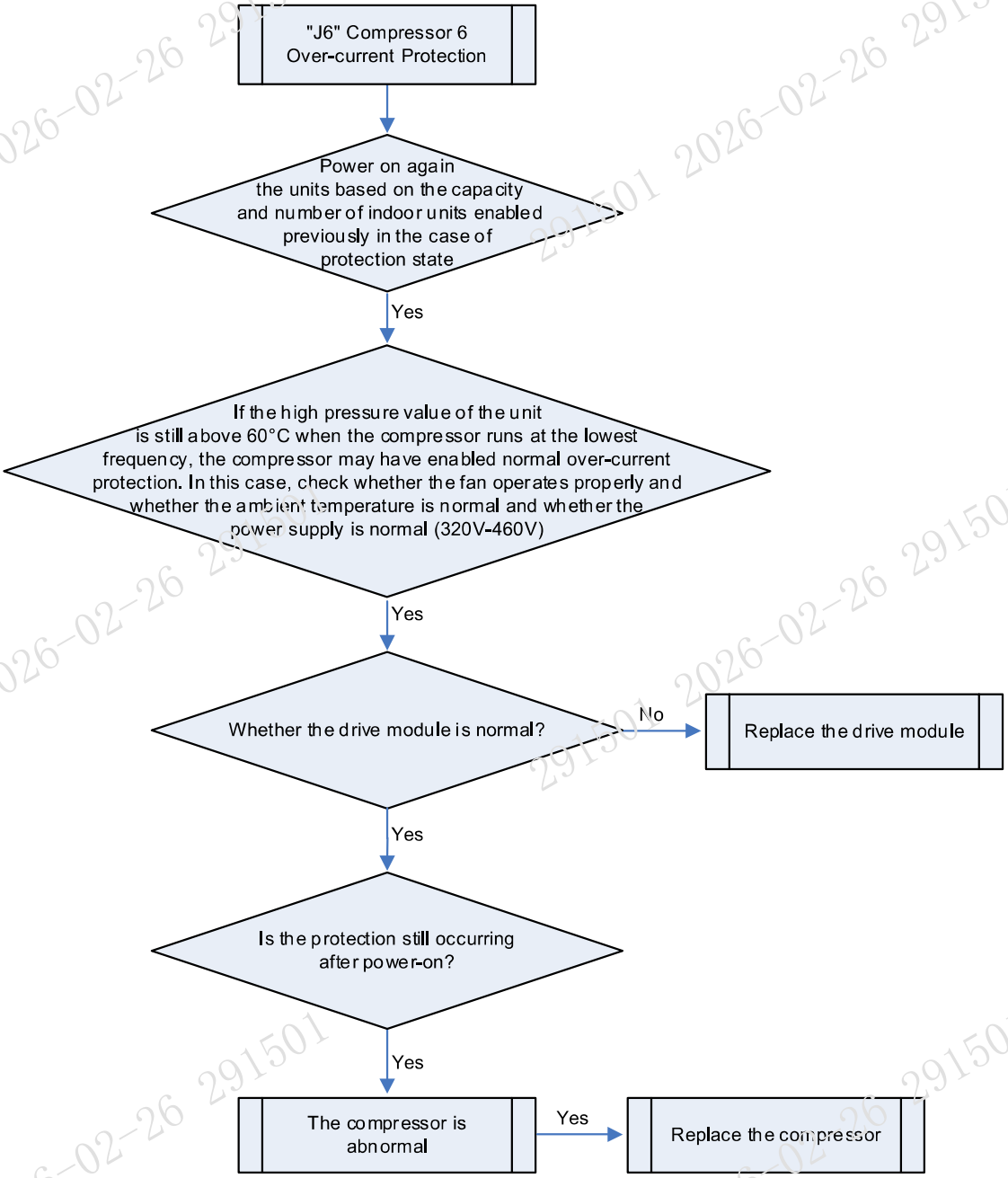
Fault diagnosis:

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

Possible causes:

- The unit's parameters are abnormal;
- The drive module is abnormal;
- The compressor is abnormal.

Troubleshooting:



2.114 "J7" Four-way Valve Air Backflow Protection

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

Fault diagnosis:

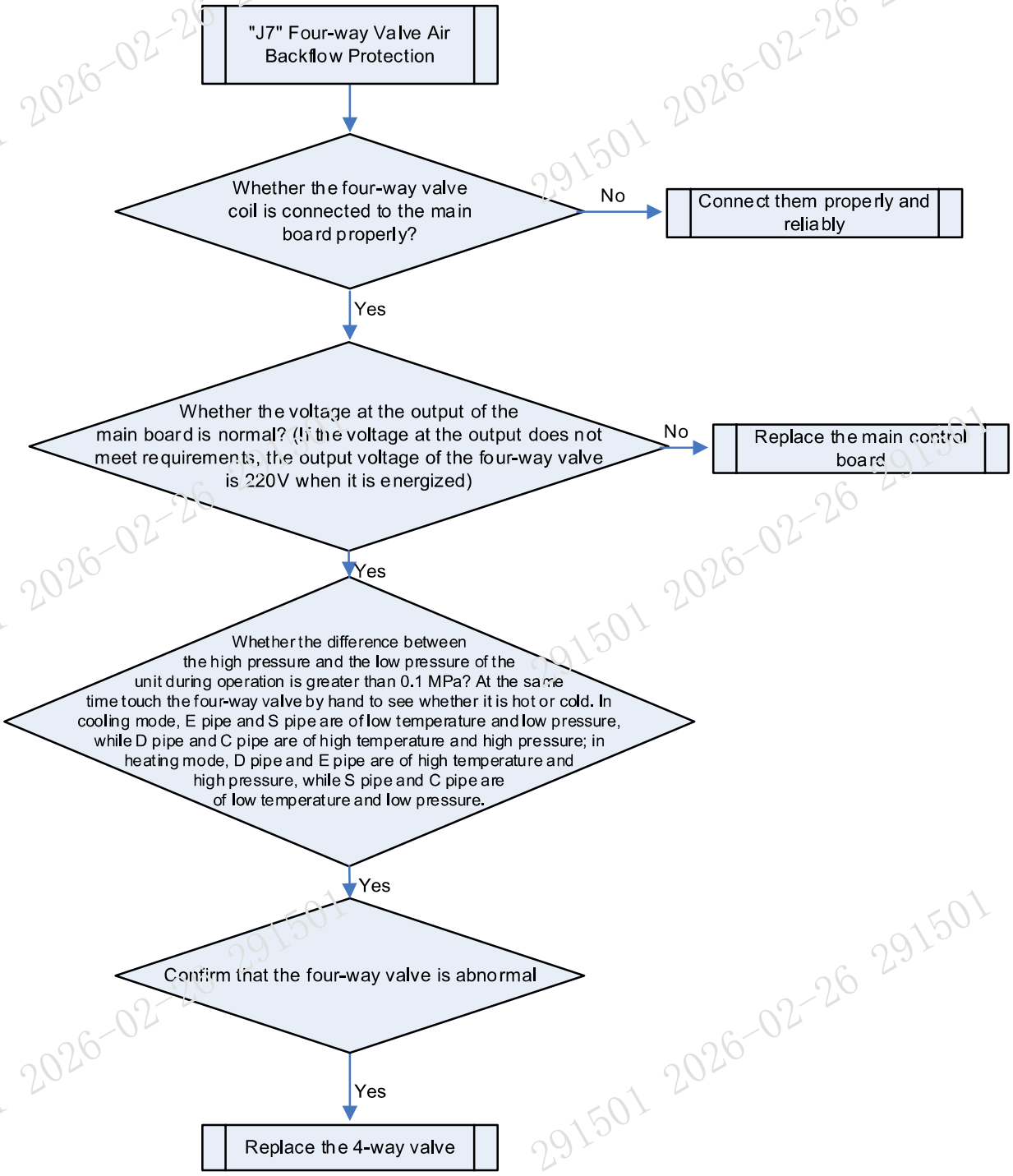
When the difference between the system high pressure and low pressure during operation detected by the pressure sensor is less than 0.1 MPa, the unit will stop running to ensure safe operation.

Possible causes:

- The coil or connecting wire is abnormal;
- The main board is abnormal;
- The four-way valve is abnormal.

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Troubleshooting:



2.115 "J8" High Pressure Ratio Protection

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

Fault diagnosis:

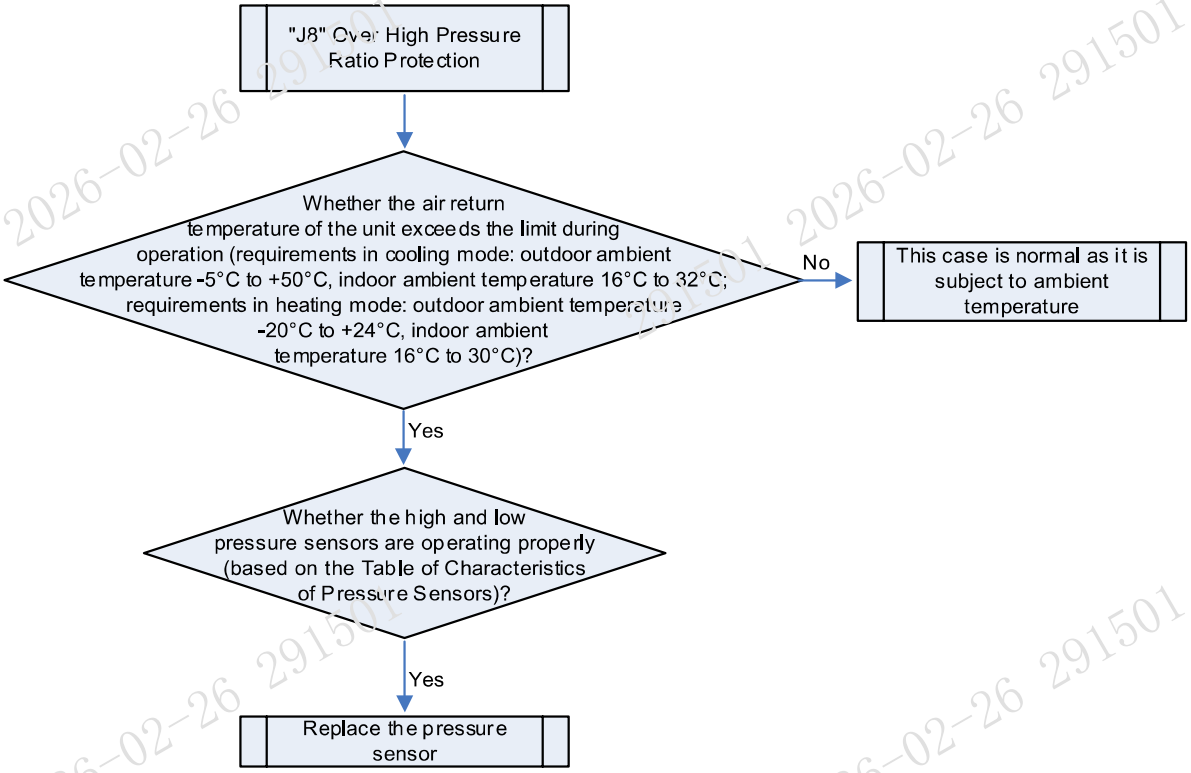
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor exceeds 8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

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

Troubleshooting:



2.116 "J9" Low Pressure Ratio Protection

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

Fault diagnosis:

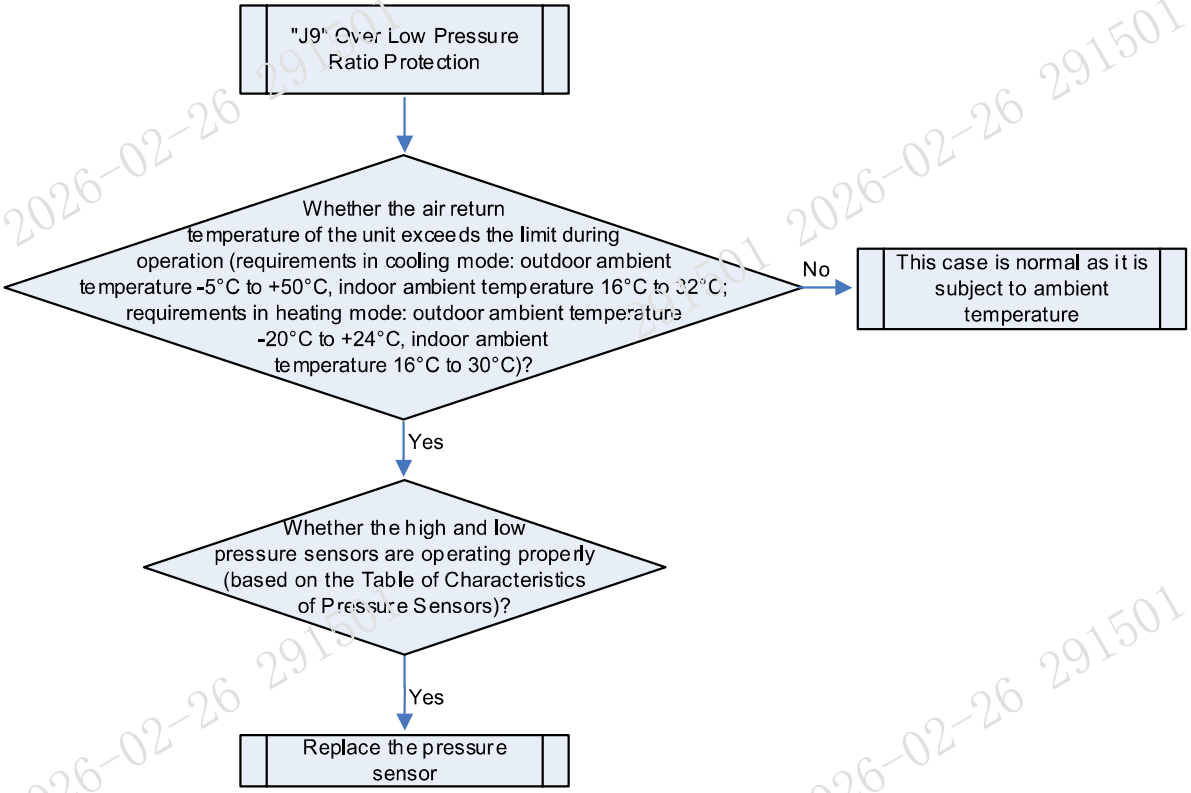
When the ratio between the system high pressure and the low pressure during operation detected by the pressure sensor is smaller than 1.8, the unit will stop running to ensure safe operation.

Possible causes:

■ The pressure sensor is abnormal;

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

Troubleshooting:



2.117 "L0" Indoor Unit Fault (Unified)

Fault display: wired controller of indoor unit displays 

Applicable models: all indoor units

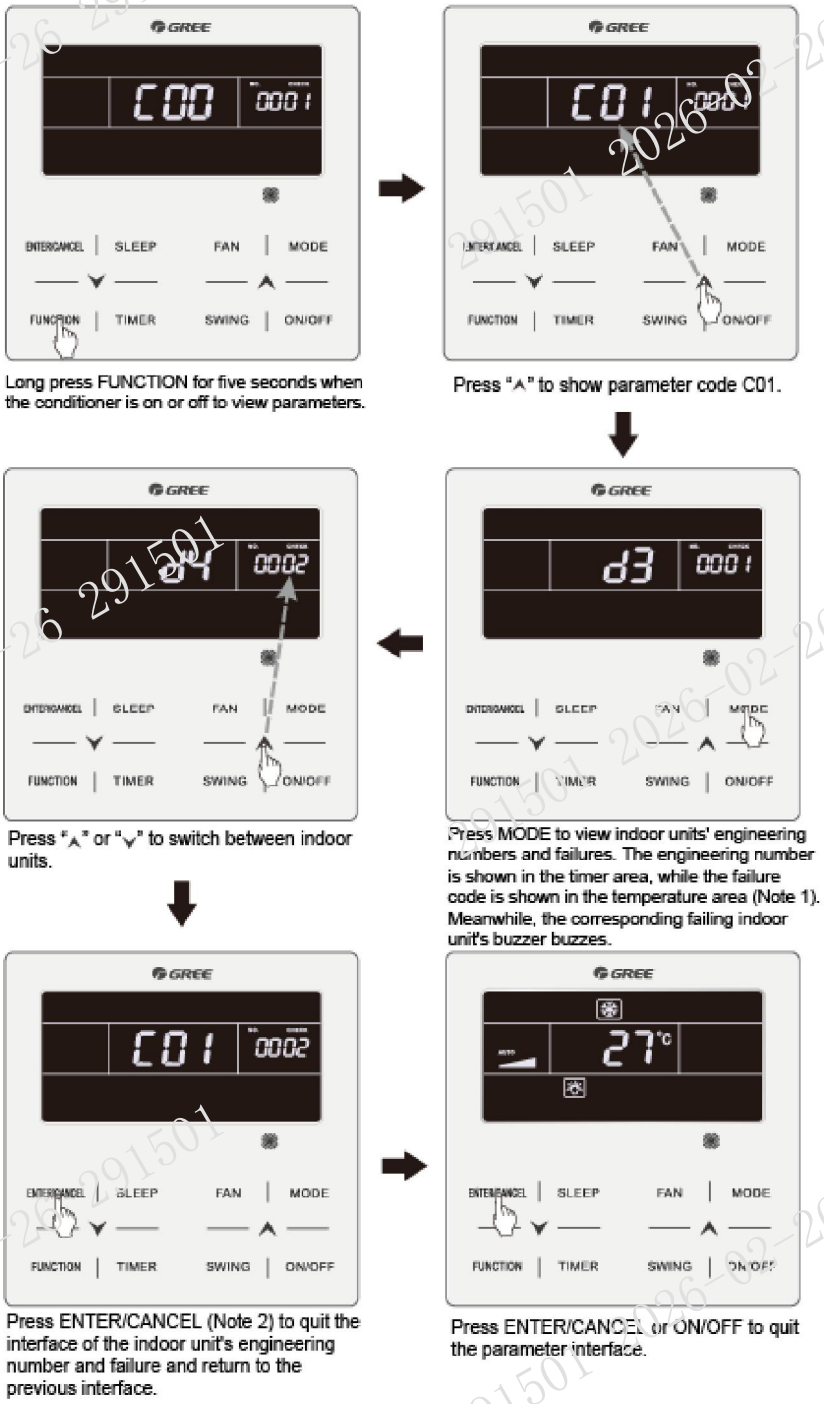
Possible causes:

■ The indoor unit is faulty.

Troubleshooting:

When multiple indoor units are installed in the same place, you can use the function of "indoor unit engineering SN query and fault indoor unit identification" to fast locate the faulty indoor unit or the corresponding indoor unit controlled by a wired controller. The detailed operations are as follows:

"C01" indoor unit engineering SN and fault query:



NOTES!

① If the enquired IDU is normal, no fault code will be displayed in the temperature area; if the unit indoor has multiple faults, fault codes will be displayed in the temperature area at an interval of 3 seconds.

② Press the "ON/OFF" button on the interface of IDU project number and fault enquiry to exist the parameter enquiry interface.

2.118 "L1" Indoor Fan Protection

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

Applicable models: all indoor units

Fault diagnosis:

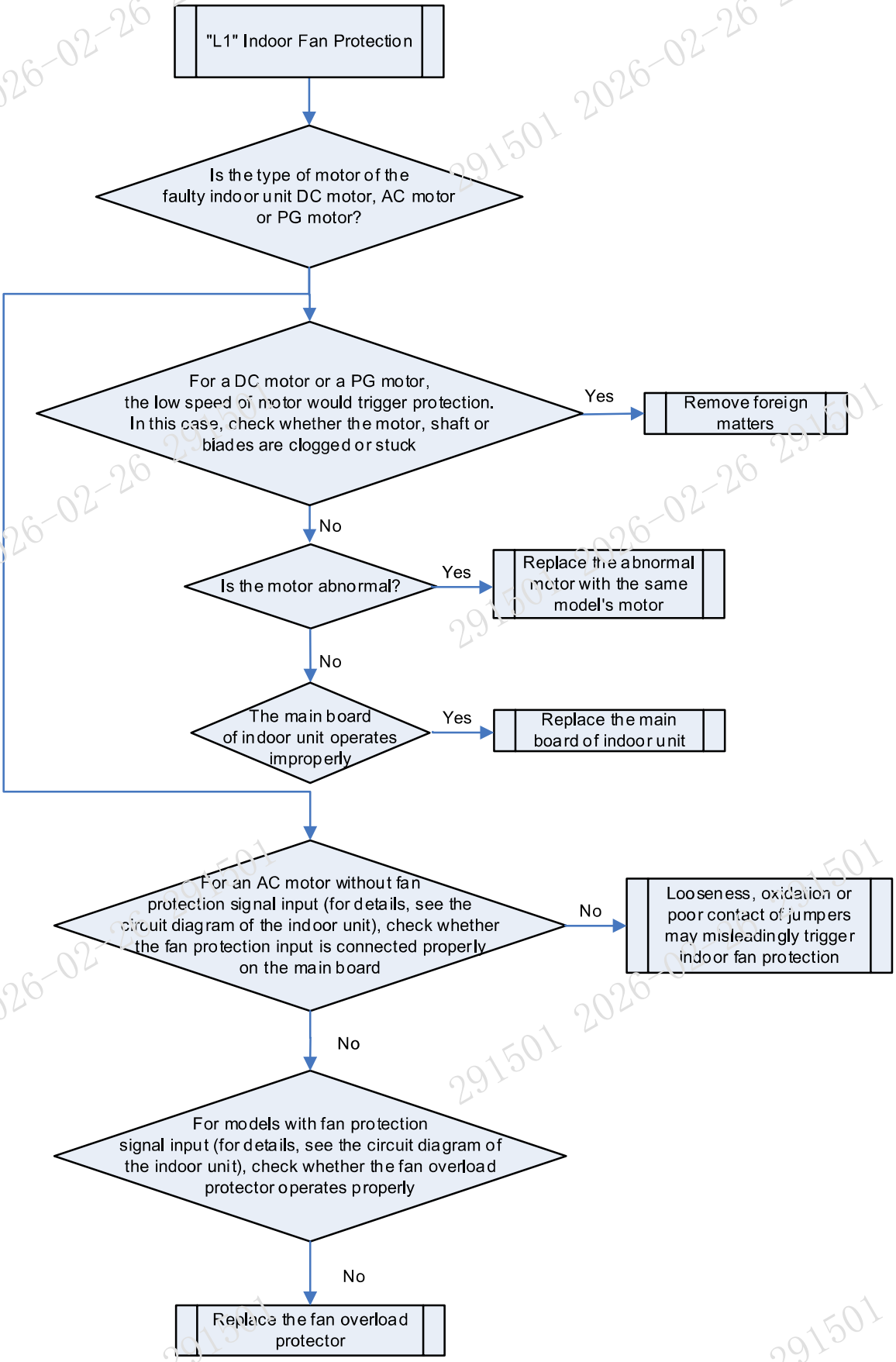
Check whether the indoor unit rotates slowly or stops or whether there exists external fan protection signal. If yes, it indicates the indoor fan protection.

Possible causes:

- The motor stops or is stuck
- The main board of indoor unit operates improperly

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Troubleshooting:



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

2.120 "L3" Overflow Protection

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

Applicable models: all indoor units

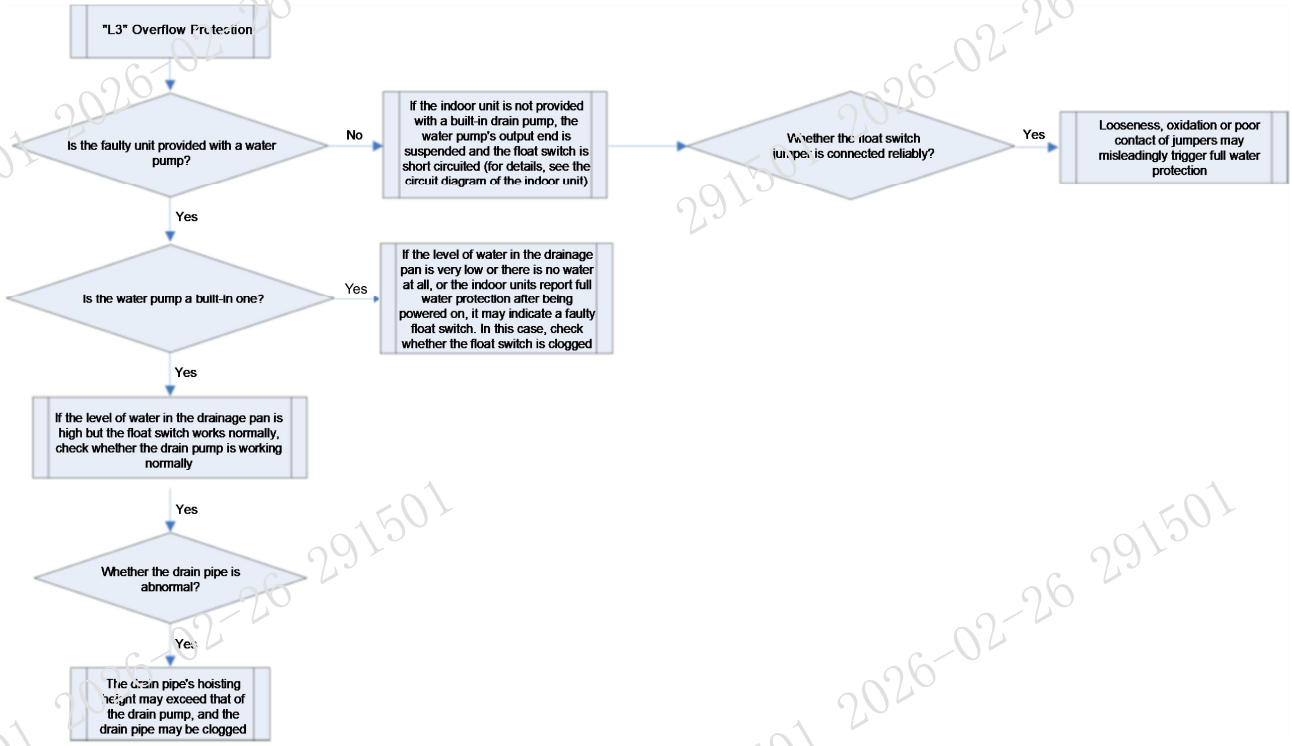
Fault diagnosis:

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:



2.121 "L4" Supply Power Over-current Protection

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

Applicable models: all indoor units

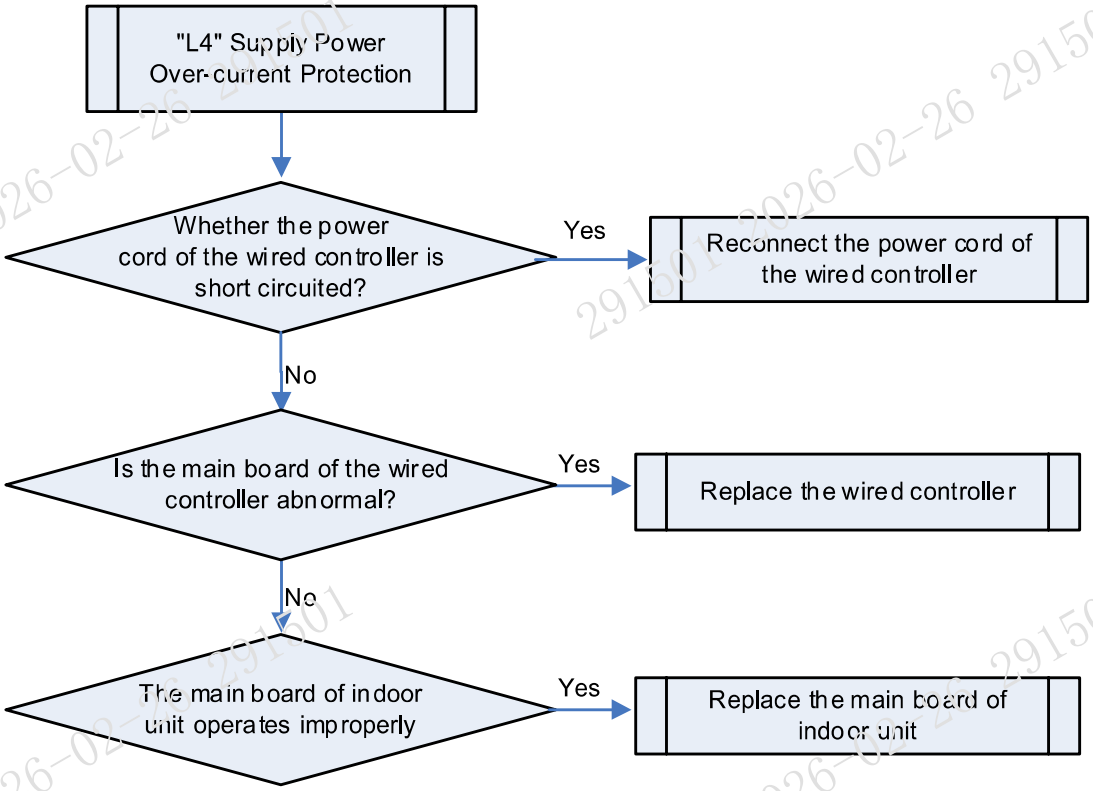
Fault diagnosis:

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:



2.122 "L5" Antifreeze Protection

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

Applicable models: all indoor units

Fault diagnosis:

When the pipe temperature of the indoor unit is too low, the unit will trigger antifreeze protection to prevent the evaporator from freezing.

Possible causes:

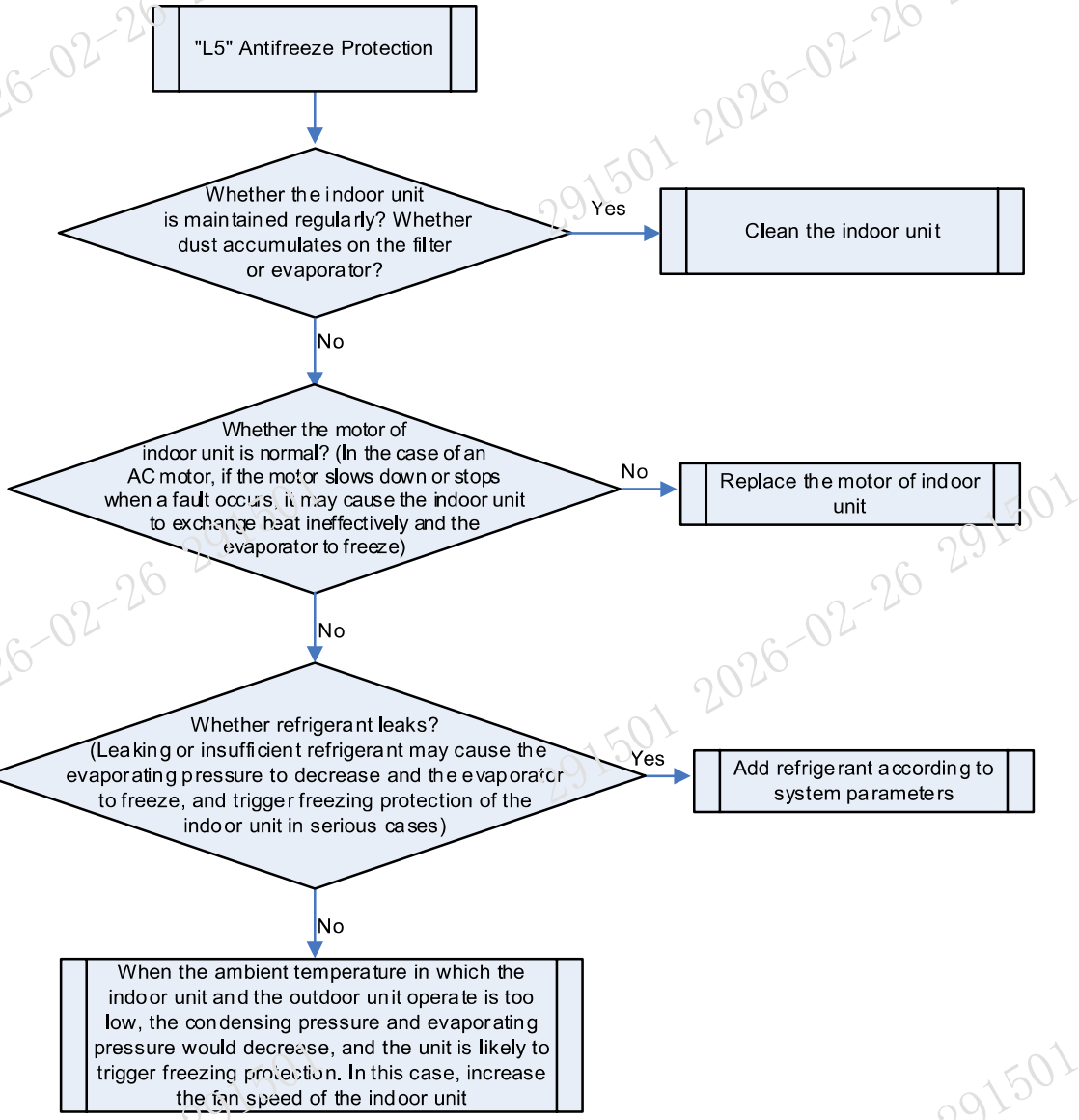
■ The indoor filter and evaporator are dirty;

■ The indoor motor is stuck;

■ Insufficient refrigerant in the unit;

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

Troubleshooting:



2.123 "L6" Mode Conflict (Reserved)

2.124 "L7" No Master Indoor Unit

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

Applicable models: all indoor units

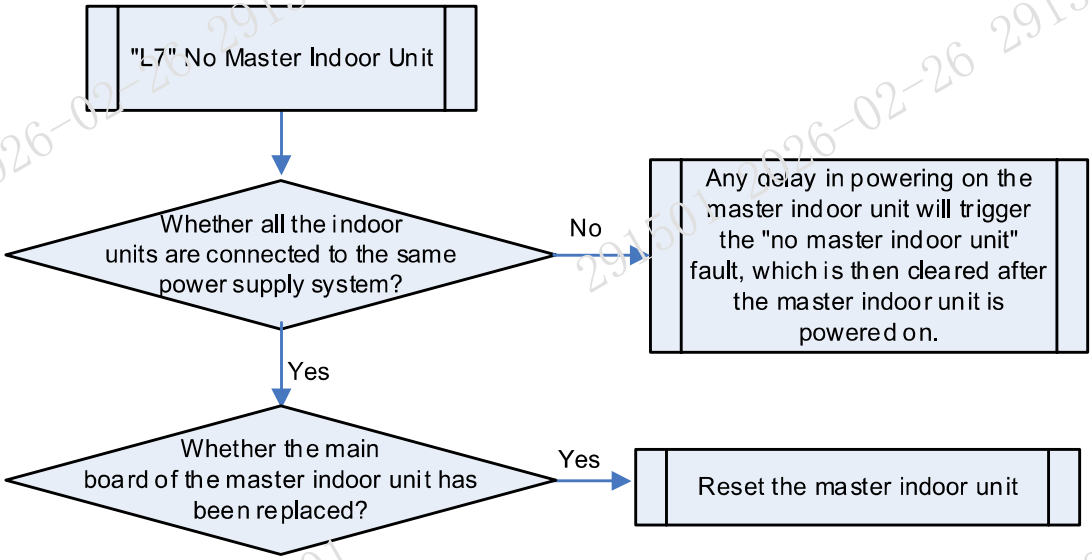
Fault diagnosis:

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:



2.125 "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:

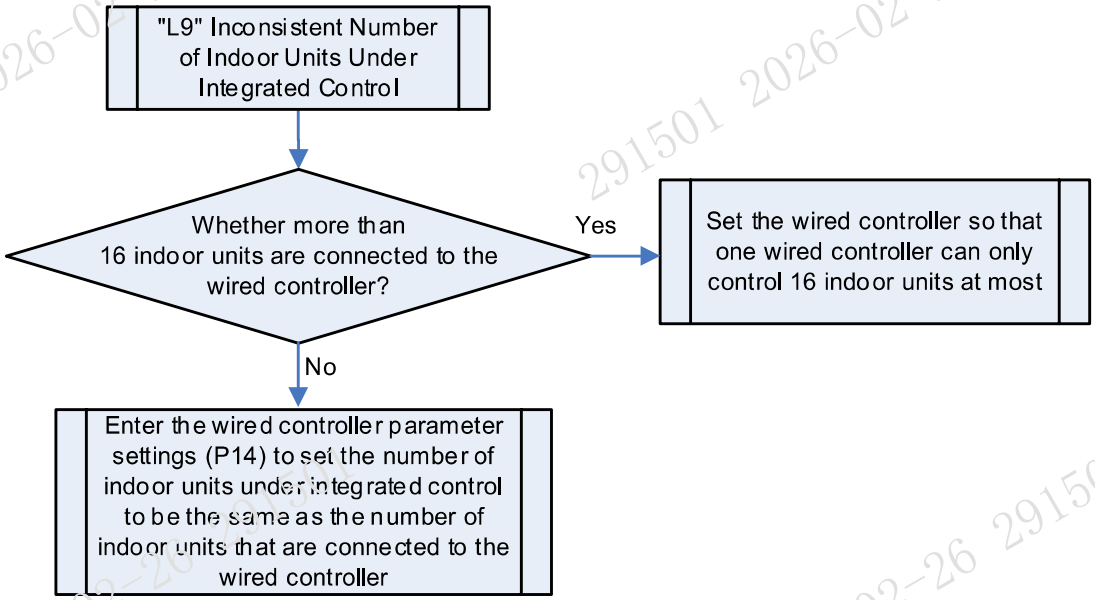
When more than 16 indoor units are connected to the wired controller or the number of indoor units connected to the wired controller is not the same as what is configured under integrated control, the fault is generated.

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:



2.126 "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.

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

2.128 "LC" Unmatched Models of Indoor and Outdoor Units

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

Applicable models: some indoor units

Fault diagnosis:

The unit triggers the fault of "unmatched indoor and outdoor units" when it fails to recognize some indoor units or equipment.

Possible causes:

■ The indoor unit is incompatible with the outdoor unit.

Troubleshooting:

The unit triggers the fault when it is connected to indoor units or equipment that it cannot recognize, such as floor heating in a modular DC inverter VRF system. In this case, to troubleshoot this fault, you can remove the involved indoor units or change the outdoor unit to make it match the indoor units.

2.129 "LL" Water Flow Switch Error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

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

Possible reasons:

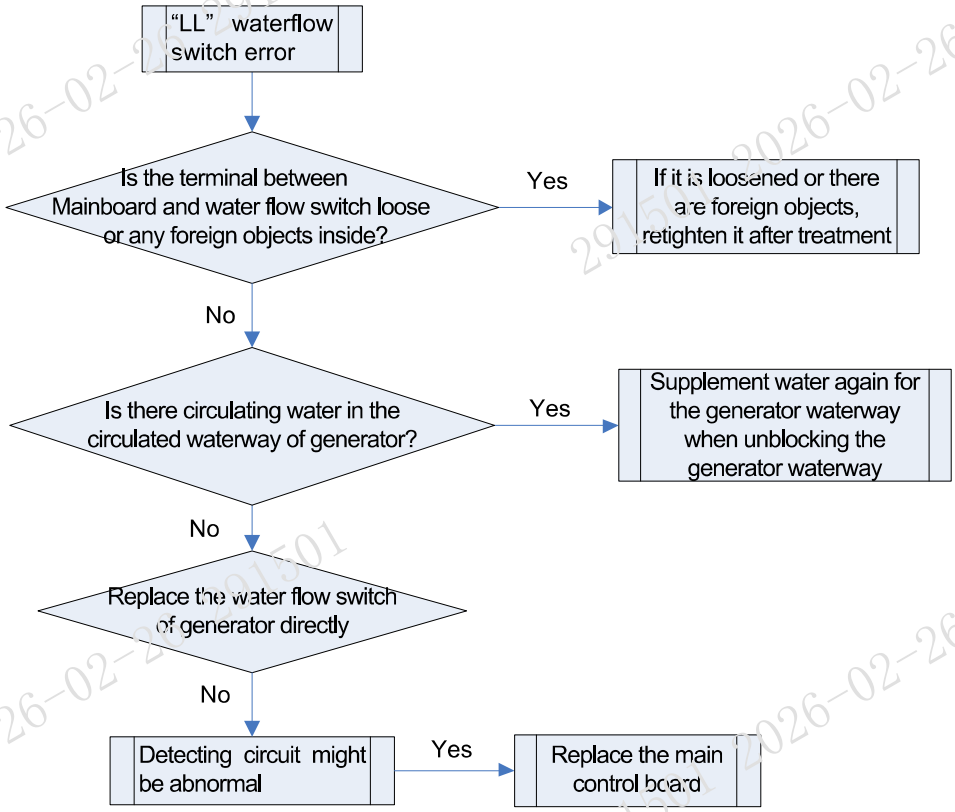
■Poor contact between limit switch and terminal in main board interface

■Water return of generator is not smooth or lacking water

■Water flow switch is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.130 "LF" Shunt Valve Setting Error

Error display: wired controller of hydro box will display 

Applicable model: hydro box

Error judgment condition and method:

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

Possible reasons

■IDU linked with floor heating is offline

■Project code conflict or IP conflict

Troubleshooting

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

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

2.131 "LU" Inconsistent IDU Branch Connecting to the Wired Controller Which Controls Multiple Indoor Units of Heat Recovery System

Error display: wired controller will display 

Applicable model: wired controller connecting to several IDUs

Error judgment condition and method:

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

Possible reasons:

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

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

Troubleshooting:

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

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

2.132 "n0" System Energy Efficiency Running Settings Status

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

Fault diagnosis:

This is a status code of a function. It indicates that the unit has entered energy efficiency state. "00" indicates comfort as priority; "01" indicates energy efficiency as priority, in which case the unit is up to 15% more efficient.

Possible causes: –

Troubleshooting: not required.

2.133 "n4" Settings Status of Maximum Output Capacity

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

Fault diagnosis:

This is a status code of a function. It indicates that the unit has entered settings status of maximum output capacity. "10" indicates the maximum output capacity of 100%; "09" indicates the maximum output

capacity of 90%; and "08" indicates the maximum output capacity of 80%.

Possible causes: –

Troubleshooting: not required.

2.134 "n6" Unit Fault Query Status

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

Fault diagnosis:

The code is a query status code. It indicates that the unit has entered unit fault query state. In this case, you can query five historical faults of indoor and outdoor units. Keep in mind that you have to query the faults respectively for indoor units and outdoor units.

Possible causes: –

Troubleshooting: not required.

2.135 "n7" Unit Parameter Query Status

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

Fault diagnosis:

The code is a query status code. It indicates that the unit has entered unit parameter query state.

Possible causes: –

Troubleshooting: not required.

2.136 "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.

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

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code is a query status code, in which case you can query the number of online indoor units.

Possible causes: –

Troubleshooting: not required.

2.138 "nA" Heating and Cooling Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.139 "nH" Heating Only Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.140 "nC" Cooling Only Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.141 "nE" Negative Number Code

Fault display: main board of outdoor unit displays 

Fault diagnosis:

The code is a negative number code. It indicates that the number following the code is a negative one.

Possible causes: –

Troubleshooting: not required.

2.142 "nF" Fan Type Unit

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes: –

Troubleshooting: not required.

2.143 "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:

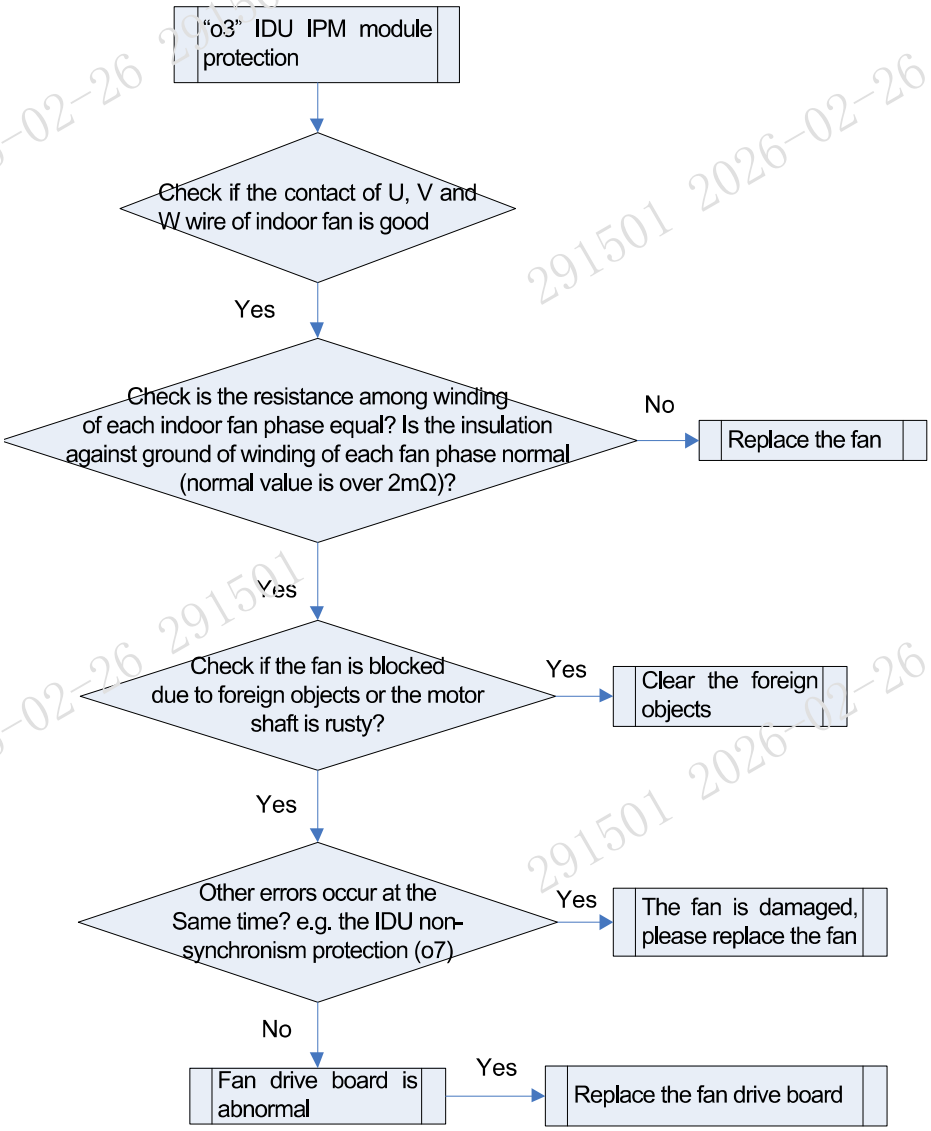
■Contact of the fan UVW wire is poor.

■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:



2.144 "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:

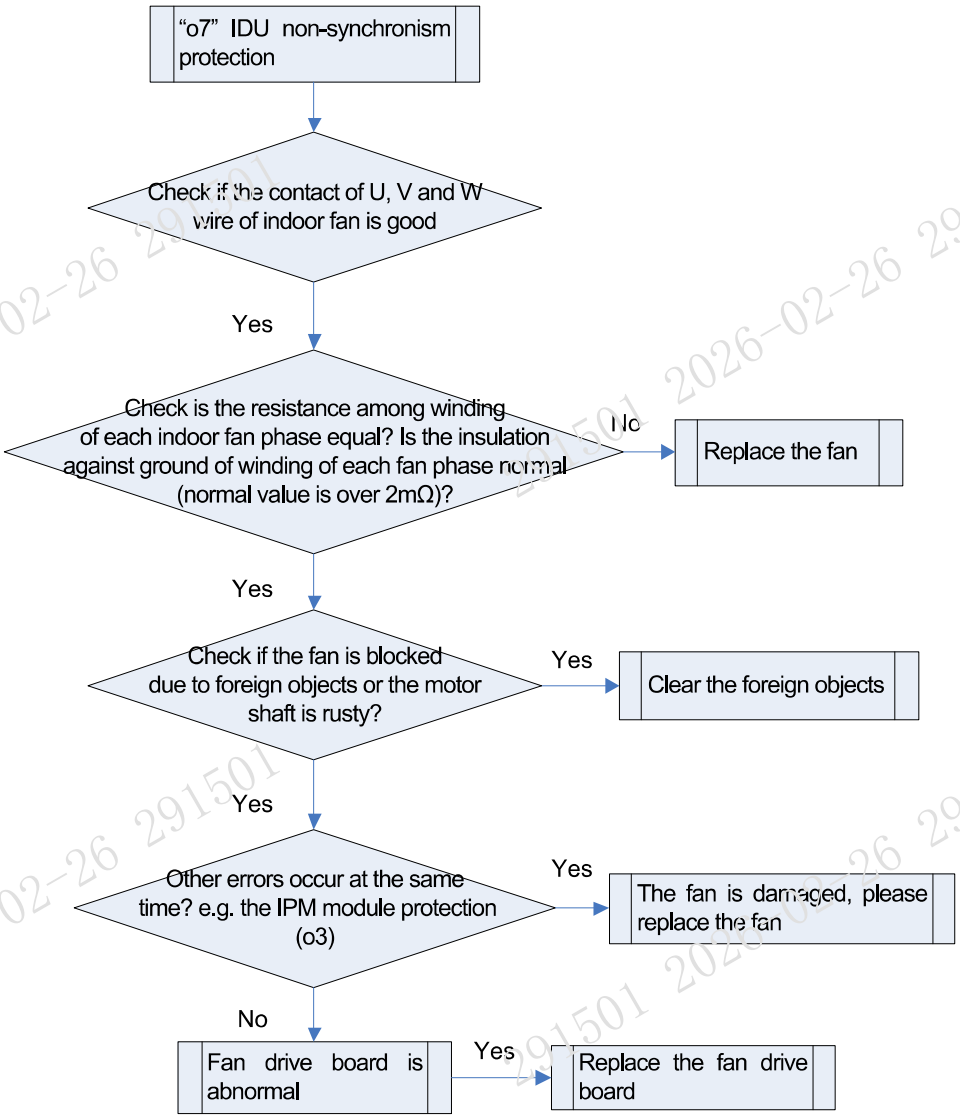
■Contact of the fan UVW wire is poor;

■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:



2.145 "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:

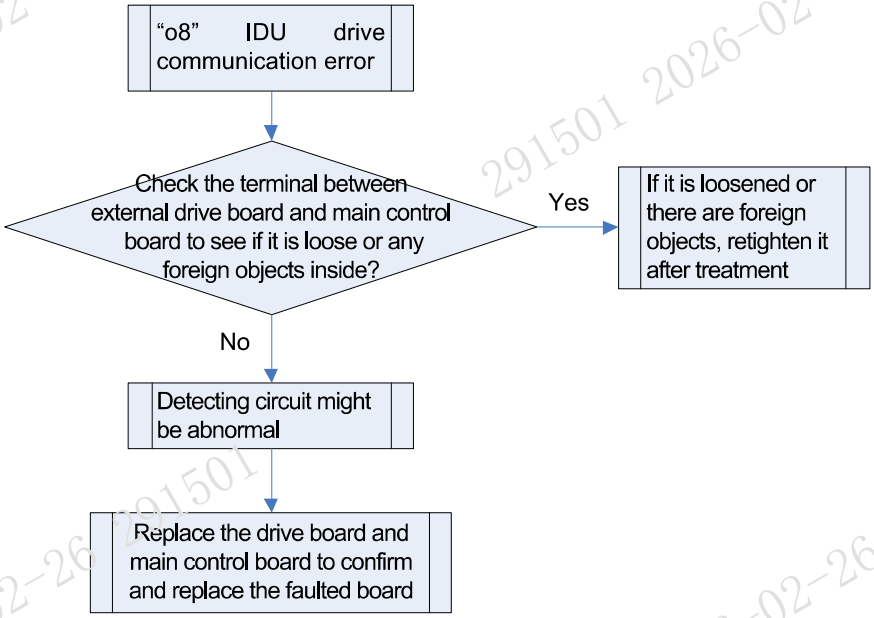
If the drive does not receive main control data in 30 consecutive seconds, it will report communication error.

Possible reasons:

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

■Circuit is abnormal

Troubleshooting:



2.146 "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:

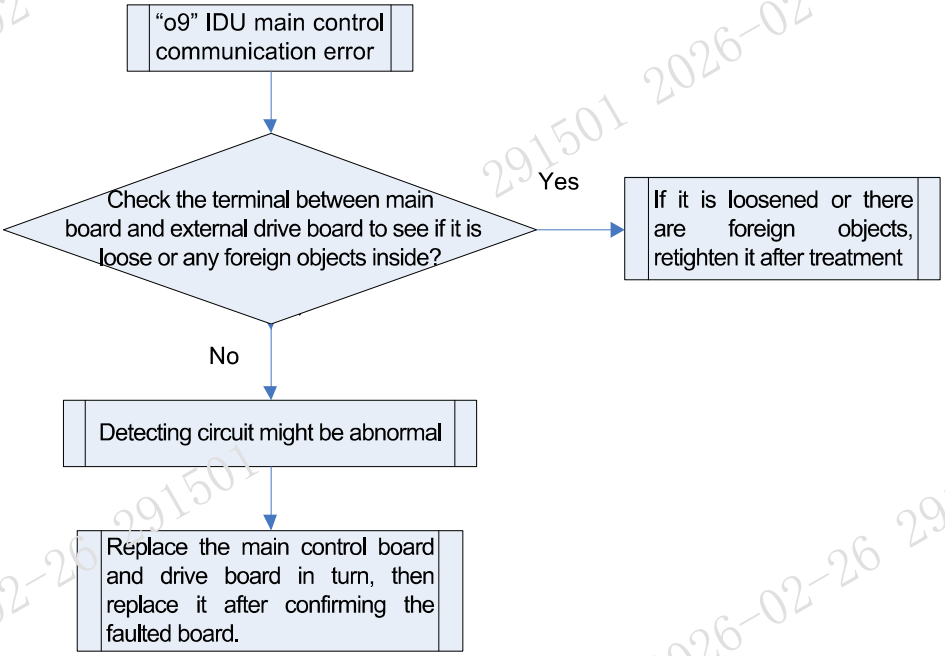
If the main control does not receive data in 30 consecutive seconds, it will report communication error; if the drive does not receive data in 30 consecutive seconds, it will report communication error.

Possible reasons:

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

■Detecting circuit is abnormal

Troubleshooting:



2.147 "P0" Compressor Drive Board Fault

Fault display: wired controller of indoor unit displays 

Fault diagnosis: If the fault code displayed on the wired controller of the indoor unit is PO, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the compressor drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Compressor drive module reset protection (2-digit digital LED of the main control board of the outdoor unit displays P3);

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

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

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

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

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

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

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

2.148 "P1" Malfunctioning Compressor Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

If the fault code displayed on the wired controller of the indoor unit is P1, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the compressor drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

■ Inverter compressor over-current protection (2-digit digital LED of the main control board of the outdoor unit displays P5);

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

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

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

2.149 "P2" Input Voltage Protection for the Compressor Drive Board

Fault display: wired controller of indoor unit displays 

Fault diagnosis:

If fault code displayed on the wired controller of the indoor unit is P2, check the fault code displayed on the 2-digit digital LED of the main control board of the outdoor unit, based on which you are able to identify the specific fault of the compressor drive board. Then, troubleshoot the fault according to the corresponding troubleshooting methods.

Possible causes:

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

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

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

2.150 "P3" Reset Protection for the Compressor Drive Module

Fault display: main board of outdoor unit displays 

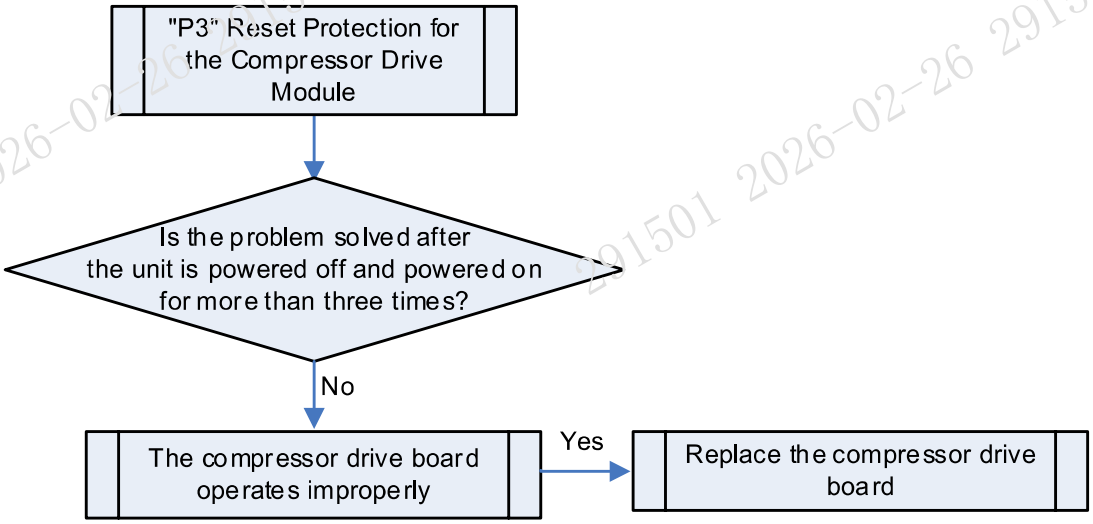
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P3, it indicates the reset protection for the compressor drive board.

Possible causes:

■ The compressor drive operates improperly

Troubleshooting:



2.151 "P5" Inverter Compressor Over-current Protection

Fault display: main board of outdoor unit displays 

Fault diagnosis:

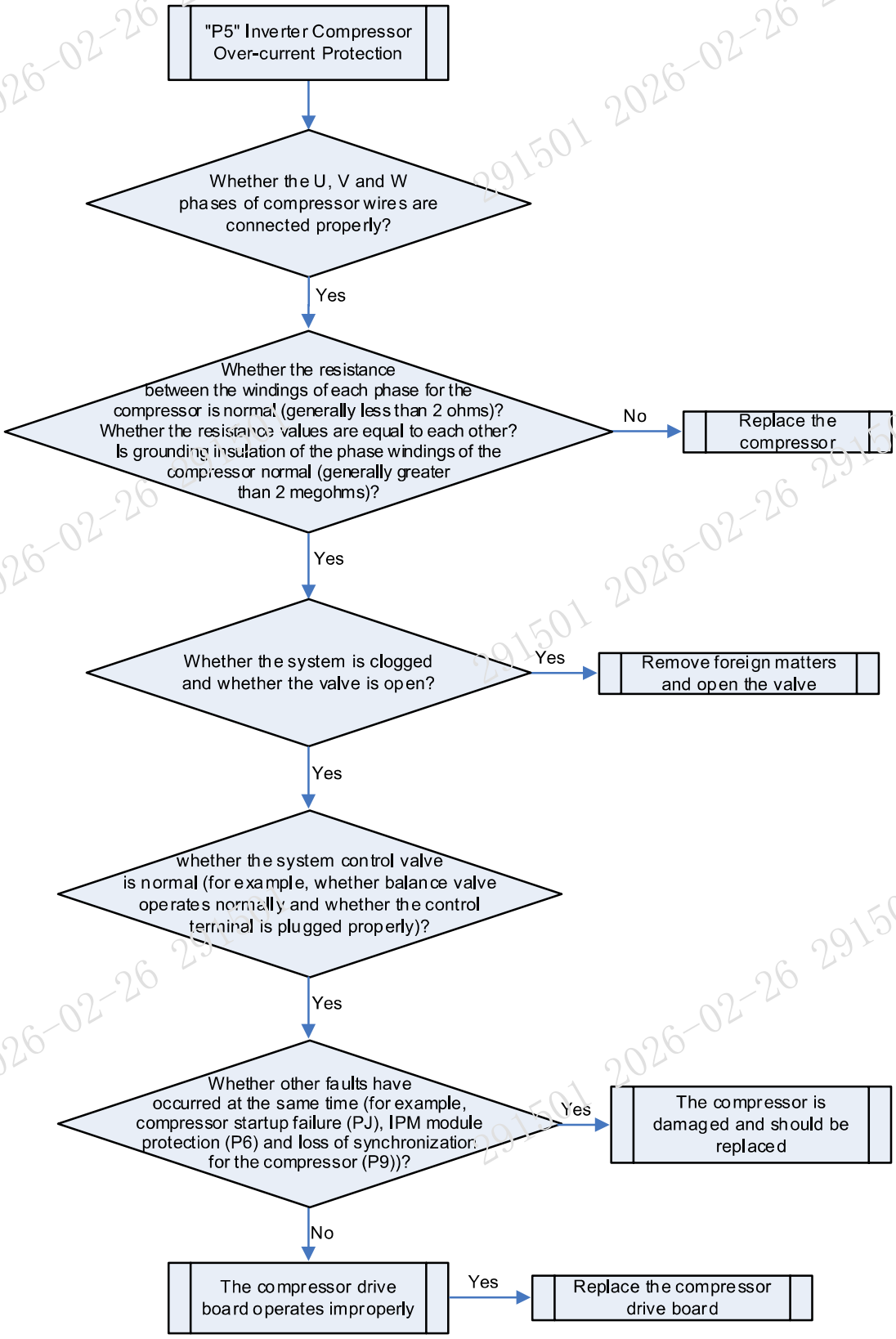
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P5, it indicates the over-current protection for the inverter compressor.

Possible causes:

- Poor contact of compressor's UVW cables;
- The compressor's UVW cables are wrongly connected;
- The compressor is damaged;
- The system is blocked;
- IPM module of the compressor drive board is damaged.

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Troubleshooting:



2.152 "P6" IPM Module Protection for the Compressor Drive

Fault display: main board of outdoor unit displays 

Fault diagnosis:

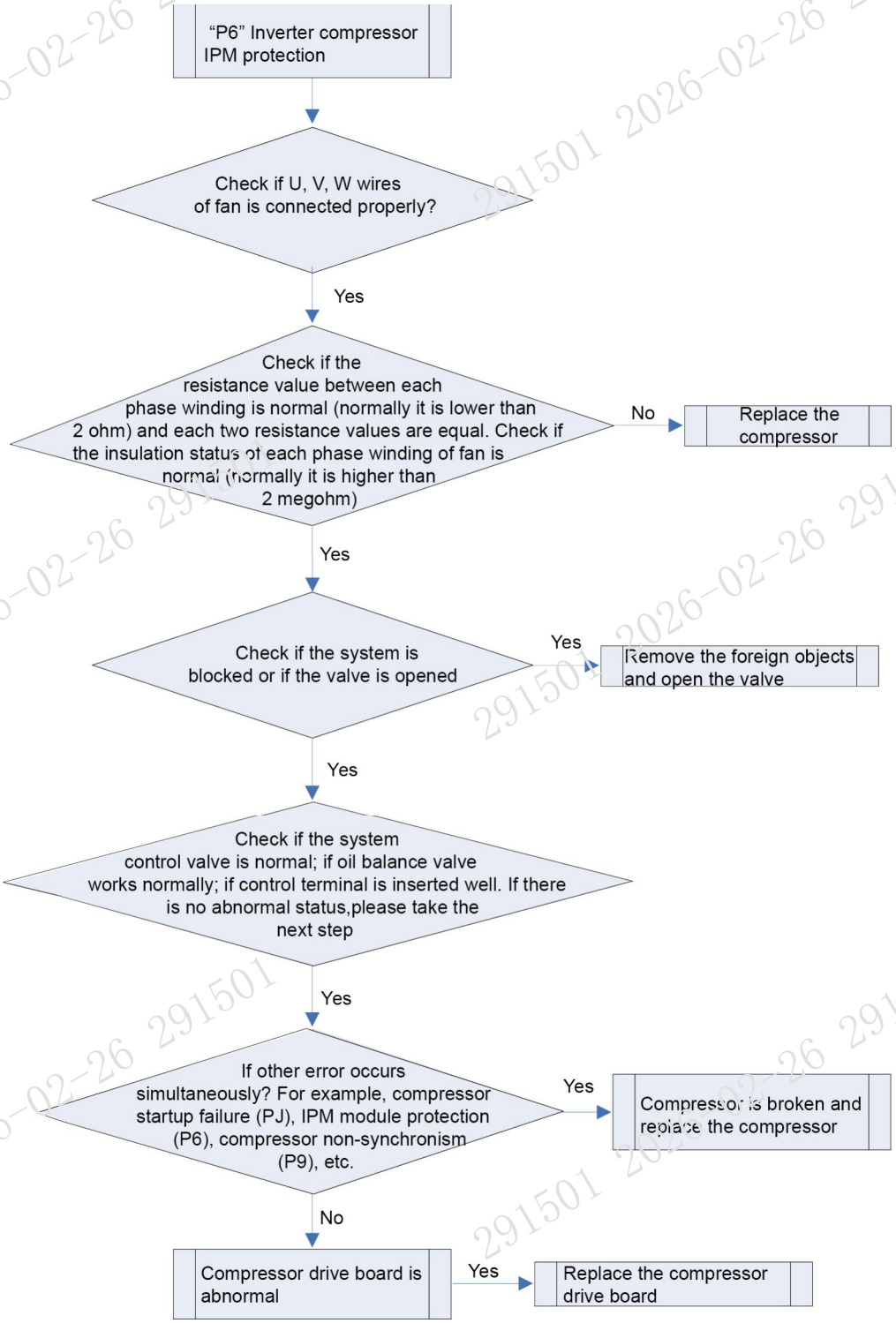
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P6, it indicates the IPM module protection for the compressor drive.

Possible causes:

- Poor contact of compressor's UVW cables;
- The compressor's UVW cables are wrongly connected;
- The compressor is damaged;
- The system is blocked;
- IPM module of the compressor drive board is damaged.

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Troubleshooting:



2.153 "P7" Abnormal Temperature Sensor of Compressor Drive Board

Fault display: main board of outdoor unit displays 

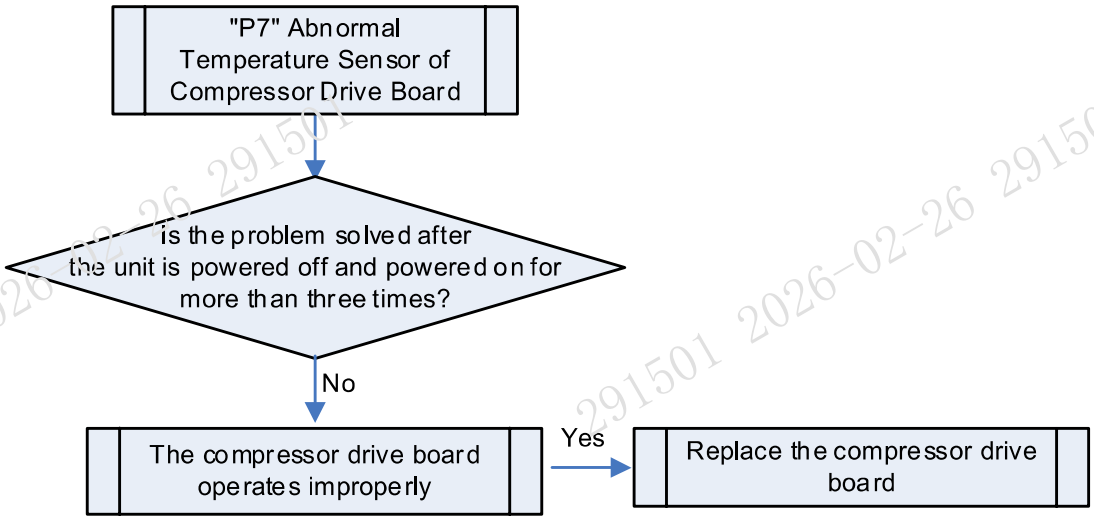
Fault diagnosis:

If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P7, it indicates the abnormal temperature sensor of compressor drive board.

Possible causes:

■ The compressor drive board operates improperly.

Troubleshooting:



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

Fault display: main board of outdoor unit displays 

Fault diagnosis:

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

Possible causes:

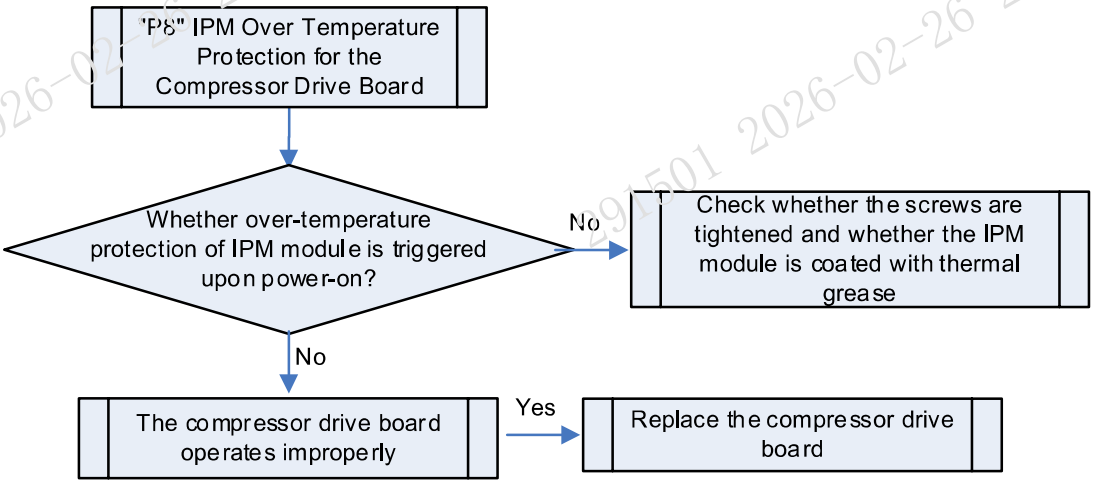
■ The IPM module's screws are not tightened;

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

■ The compressor drive board operates improperly.

■ Insufficient refrigerant in the unit;

Troubleshooting:



■ If the drive board of compressor shows no abnormalities, refer to the "Reference Values for Judging Normal Operating Parameters of the Unit" in the Ower's Manual or Service Manual to determine if the system is lacking the refrigerant; if so, calculate the amount of refrigerant and add the refrigerant according to the requirements in the manual until the parameters are within a reasonable range.

2.155 "P9" Loss of Synchronization Protection for Inverter Compressor

Fault display: main board of outdoor unit displays 

Fault diagnosis:

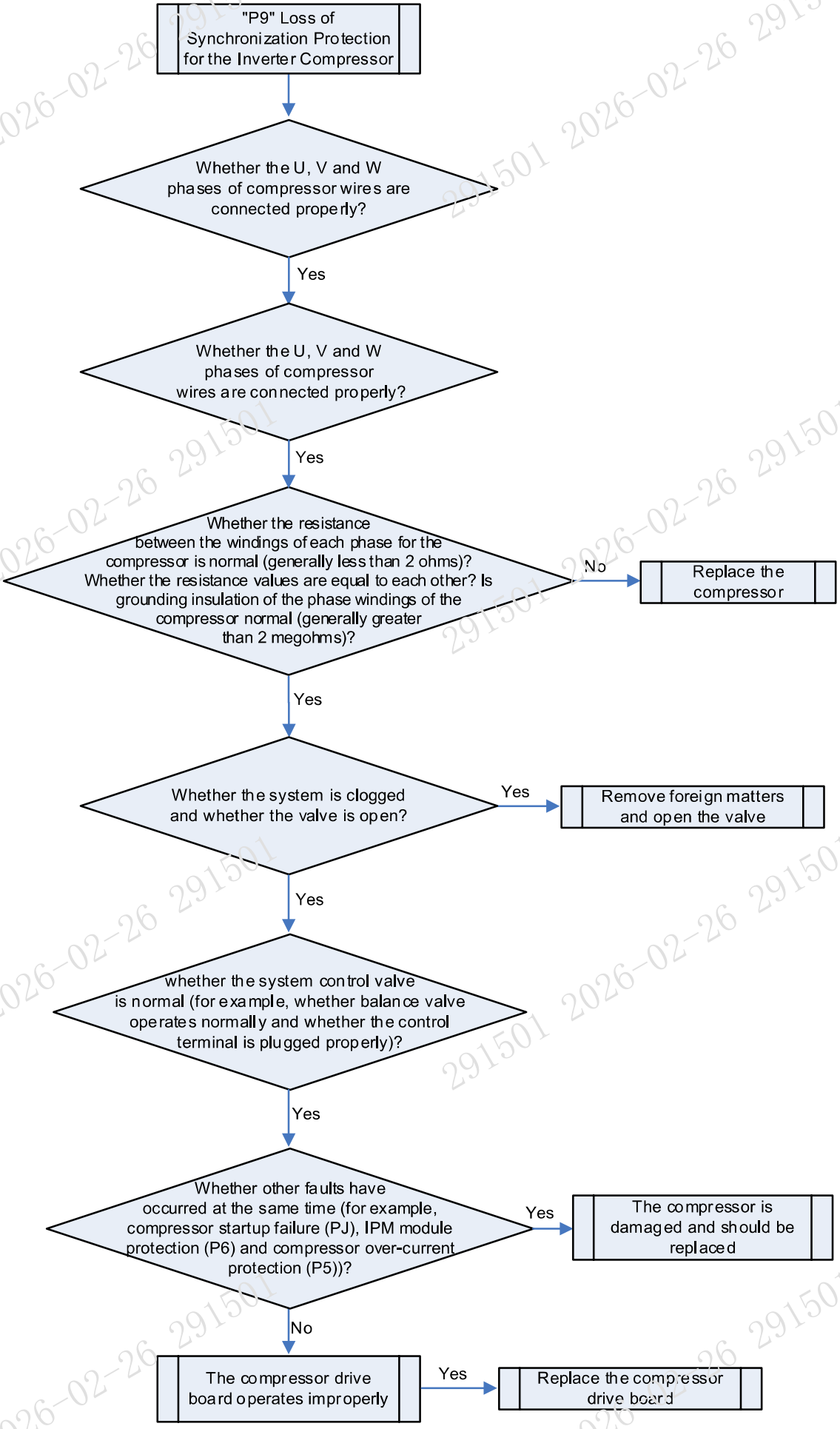
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is P9, it indicates the loss of synchronization protection for the inverter compressor.

Possible causes:

■ The compressor drive board operates improperly.

■ The compressor is damaged.

Troubleshooting:


"P9" Loss of Synchronization Protection for the Inverter Compressor
Whether the U, V and W phases of compressor wires are connected properly?
Yes
Whether the U, V and W phases of compressor wires are connected properly?
Yes
Whether the resistance between the windings of each phase for the compressor is normal (generally less than 2 ohms)? Whether the resistance values are equal to each other? Is grounding insulation of the phase windings of the compressor normal (generally greater than 2 megohms)?
No
Replace the compressor
Yes
Whether the system is clogged and whether the valve is open?
Yes
Remove foreign matters and open the valve
Yes
whether the system control valve is normal (for example, whether balance valve operates normally and whether the control terminal is plugged properly)?
Yes
Whether other faults have occurred at the same time (for example, compressor startup failure (PJ), IPM module protection (P6) and compressor over-current protection (P5))?
Yes
The compressor is damaged and should be replaced
No
The compressor drive board operates improperly
Yes
Replace the compressor drive board

2.156 "PC" Current Detection Circuit Fault of Compressor Drive

Fault display: main board of outdoor unit displays 

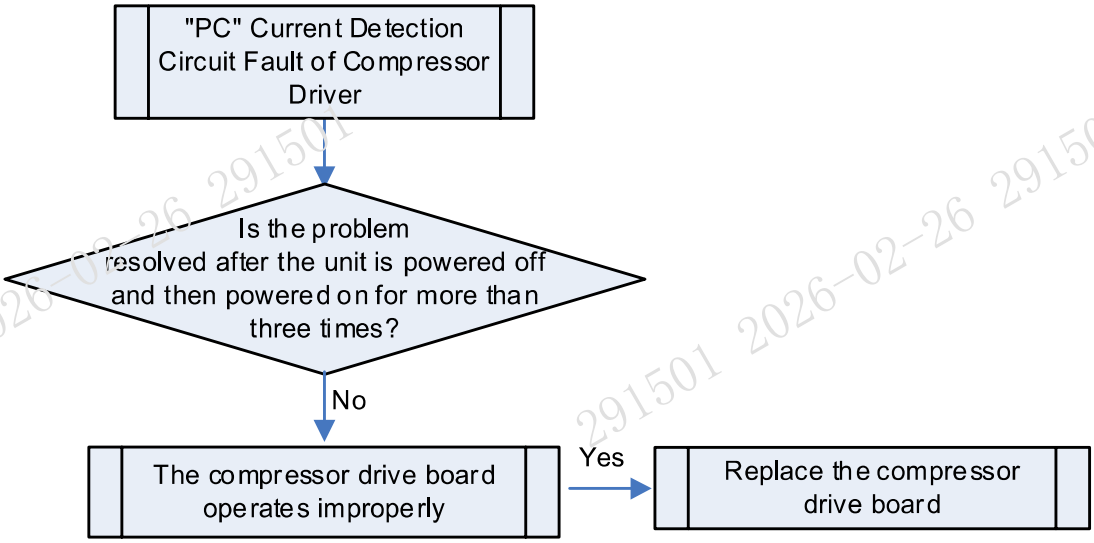
Fault diagnosis:

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

Possible causes:

■ The compressor drive board operates improperly.

Troubleshooting:



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

Fault display: main board of outdoor unit displays 

Fault diagnosis:

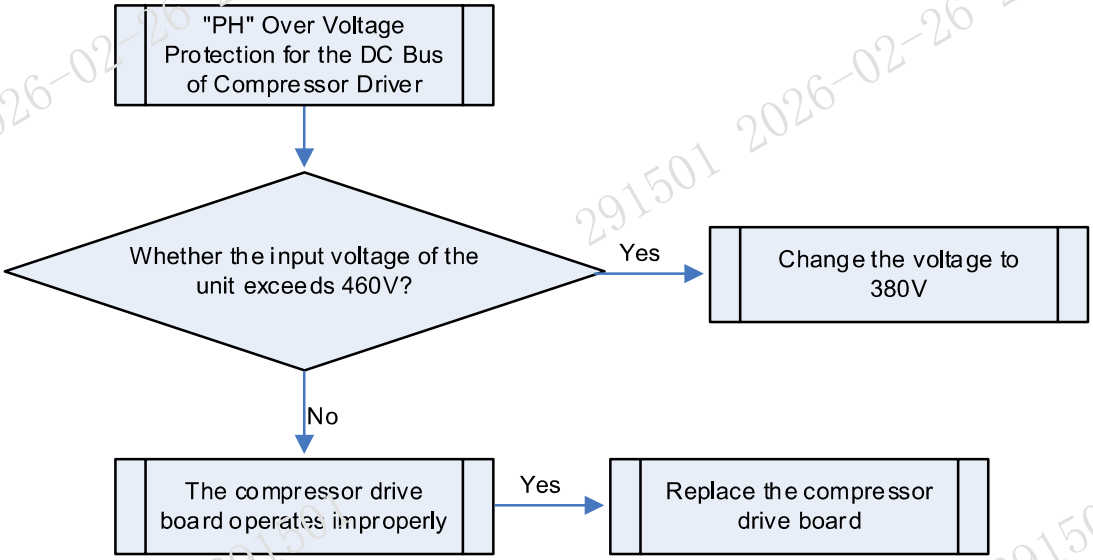
When the input power cable of the main board has a voltage over 460 V, the unit triggers protection against faults.

Possible causes:

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

■ The compressor drive board operates improperly.

Troubleshooting:



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

Fault display: main board of outdoor unit displays 

Applicable models: GMV9 Flex, GMV5, GMV5S series

Fault diagnosis:

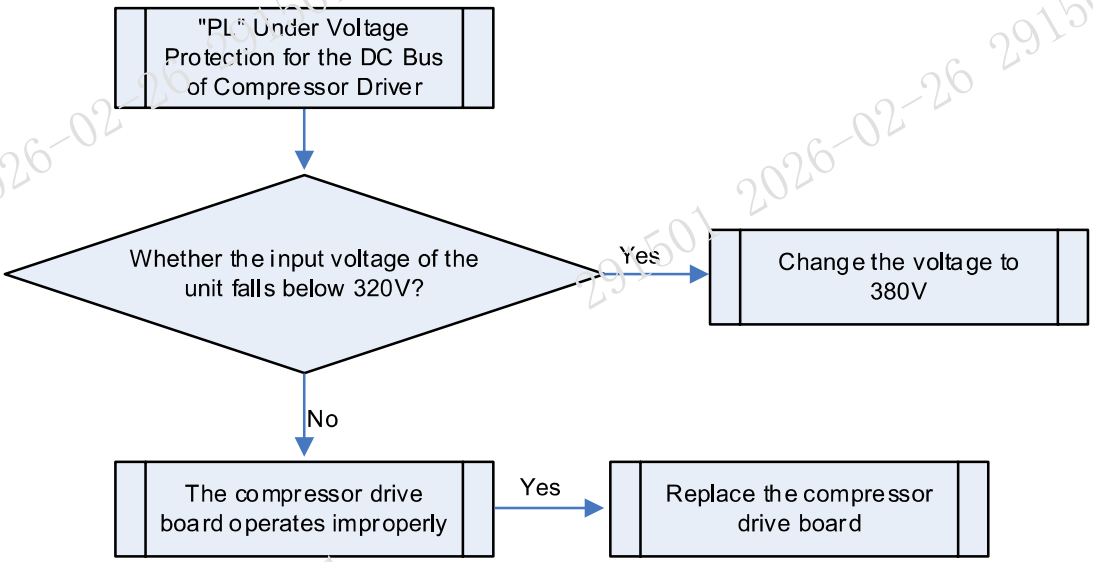
When the input power cable of the main board has a voltage below 320 V, the unit triggers protection against faults.

Possible causes:

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

■ The compressor drive board operates improperly.

Troubleshooting:



2.159 "PJ" Inverter Compressor Startup Failure

Fault display: main board of outdoor unit displays 

Fault diagnosis:

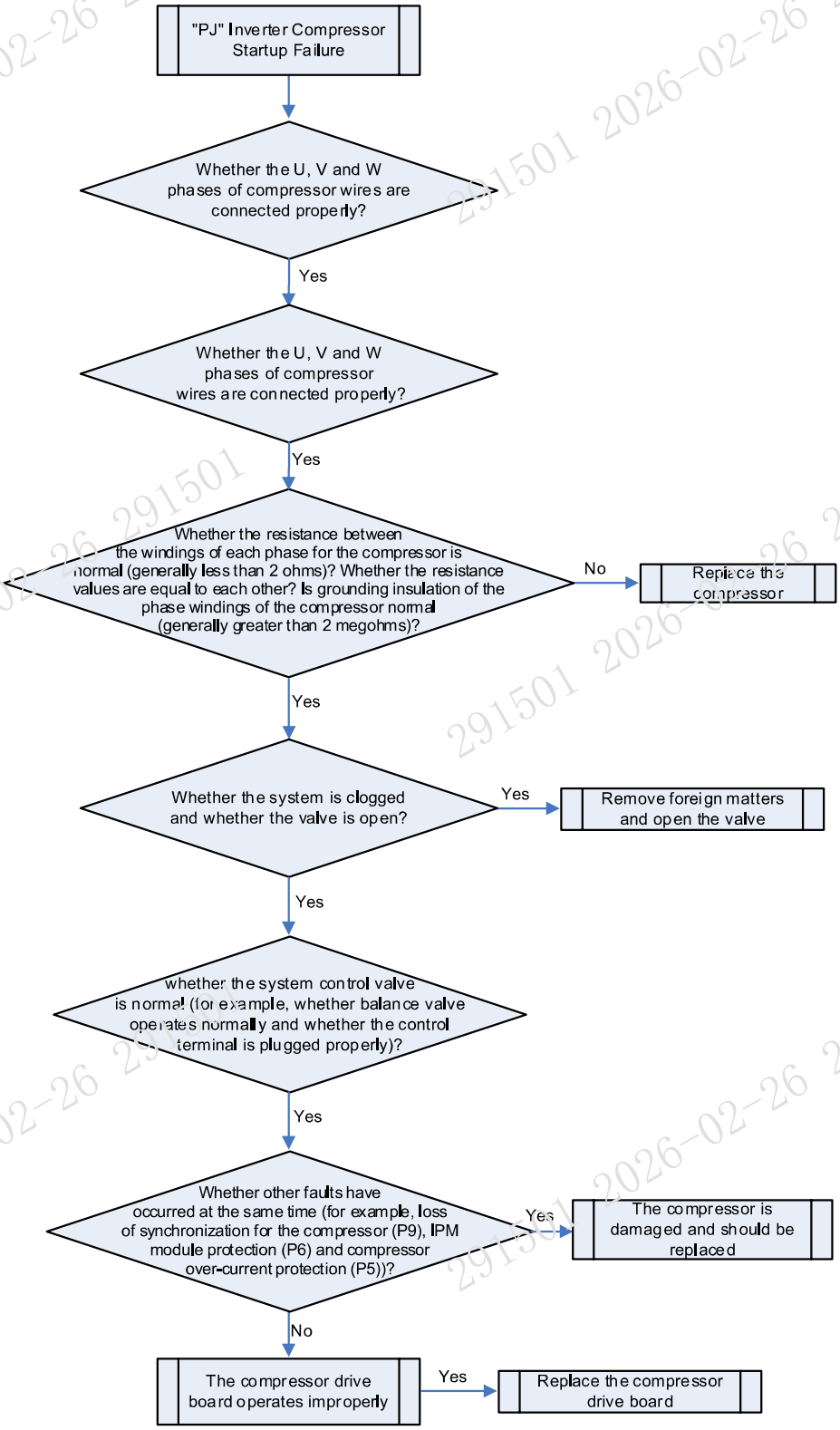
If the fault code displayed on the 2-digit digital LED of the outdoor unit's main control board is PJ, it indicates the inverter compressor startup failure.

Possible causes:

- Poor contact of compressor's UVW cables;
- The compressor is damaged;
- The compressor drive board operates improperly.

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Troubleshooting:



2.160 "U0" Insufficient Warm-up Time for Compressor

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

Fault diagnosis:

When the oil preheating period of time before compressor starts is less than eight hours, the unit generates a fault.

Possible causes: –

Troubleshooting: Warm up the whole unit for more than eight hours before startup.

2.161 "U2" Incorrect Settings of Outdoor Unit Capacity DIP Switch/Jumper Cap

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

Applicable models: all outdoor units

Fault diagnosis:

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

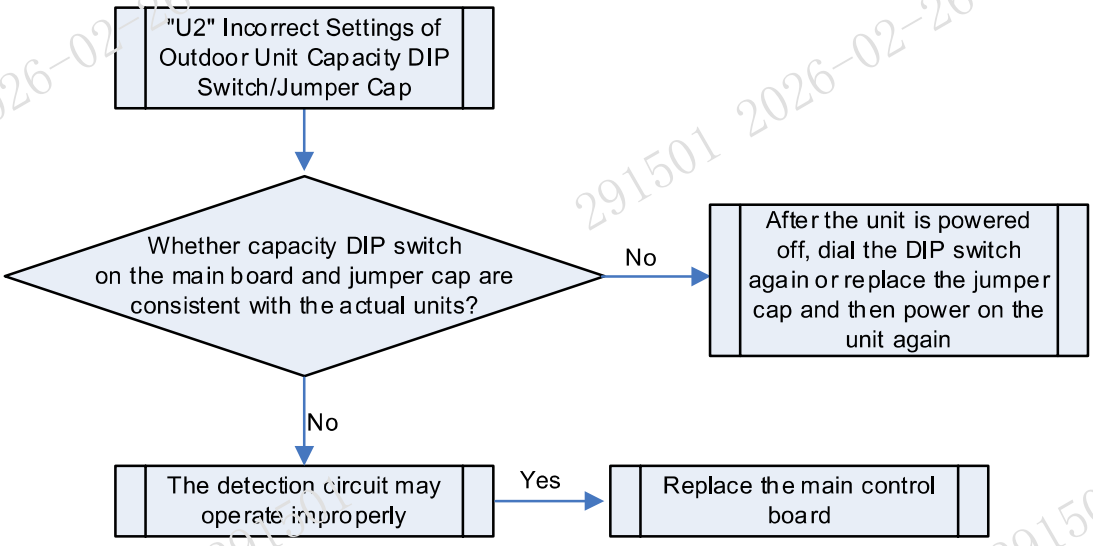
Possible causes:

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

■ DIP switch or jumper cap is broken

■ Abnormal detection circuit

Troubleshooting:



2.162 "U3" Power Phase-Sequence Protection

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

Fault diagnosis:

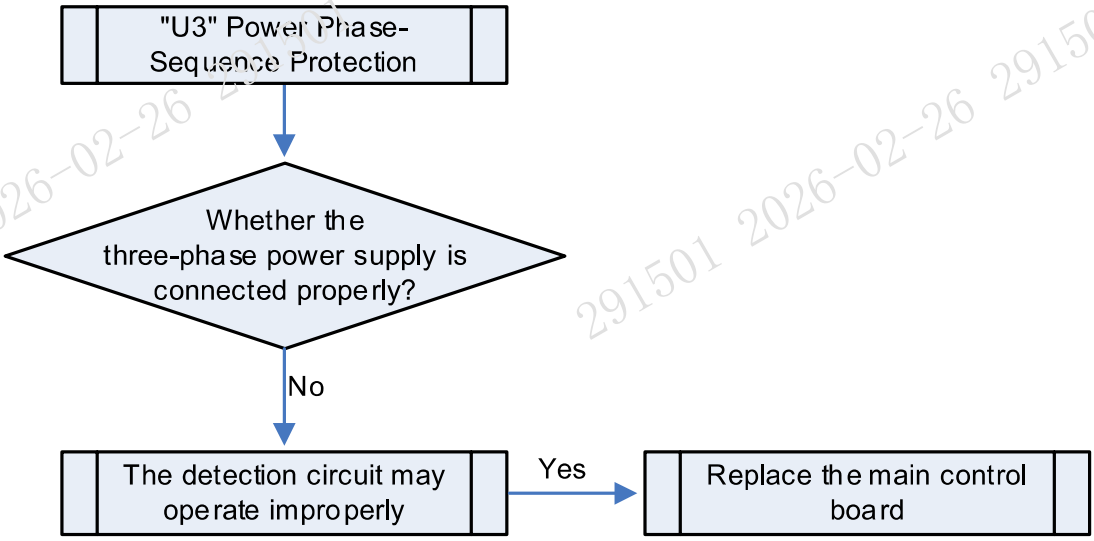
Check the three-phase power of the unit. If the power is connected incorrectly, thereby causing phase loss or reverse phase, the unit generates a fault.

Possible causes:

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

■ Abnormal detection circuit

Troubleshooting:



2.163 "U4" Refrigerant Loss Protection

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

Fault diagnosis:

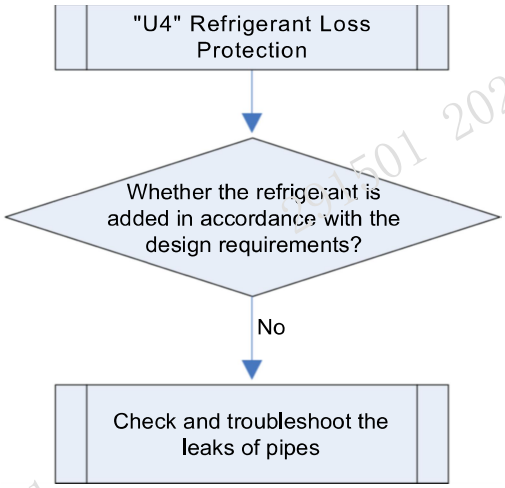
Check the high pressure and the low pressure of the unit by the pressure sensor. If the temperatures corresponding to the high pressure and the low pressure of the unit are below the ambient temperature for over 5, the unit will not start operation for safety purpose.

Possible causes:

■ Insufficient refrigerant in the unit;

■ The pipes leak.

Troubleshooting:



2.164 "U6" Abnormal Valve Prompt

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

Fault diagnosis:

During commissioning process, determine whether the check valve of the outdoor unit is open by detecting the unit's parameters by the pressure sensor. If the parameters are abnormal, the unit prompts you to confirm whether you want to open the check valve again. After confirmation, press SW4 to proceed.

Possible causes:

■ The check valve of the outdoor unit is not open.

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

2.165 "U8" Abnormal Pipes of the Indoor Unit

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

Fault diagnosis:

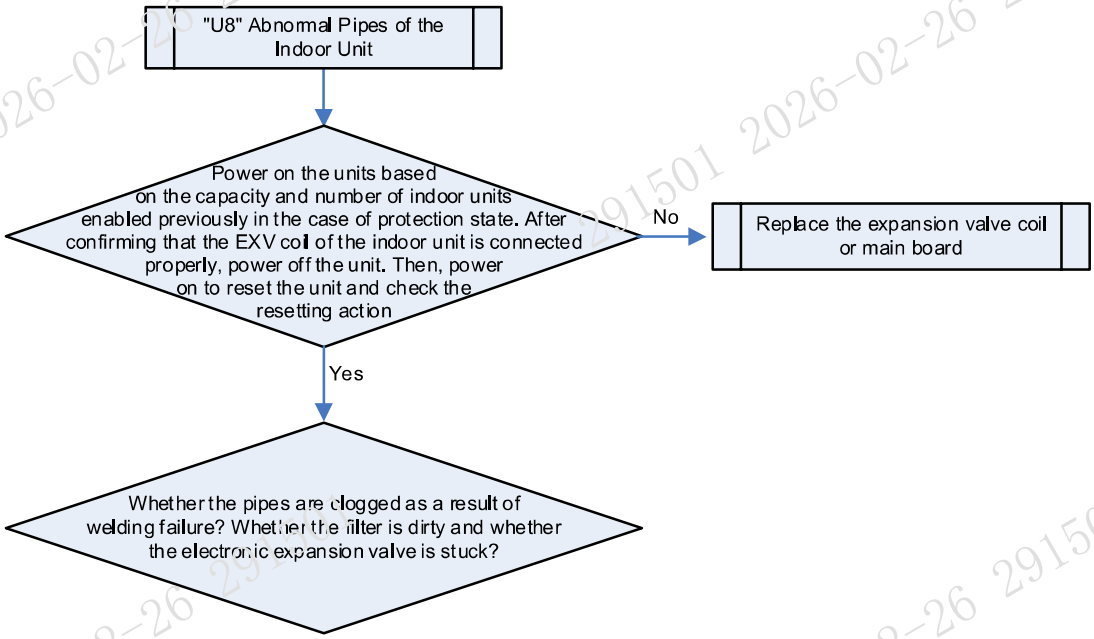
During commissioning process, check the temperature of the indoor unit's pipes to determine whether the pipes are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The indoor unit's pipes are blocked.

Troubleshooting:



2.166 "U9" Abnormal Pipes of Outdoor Unit

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

Fault diagnosis:

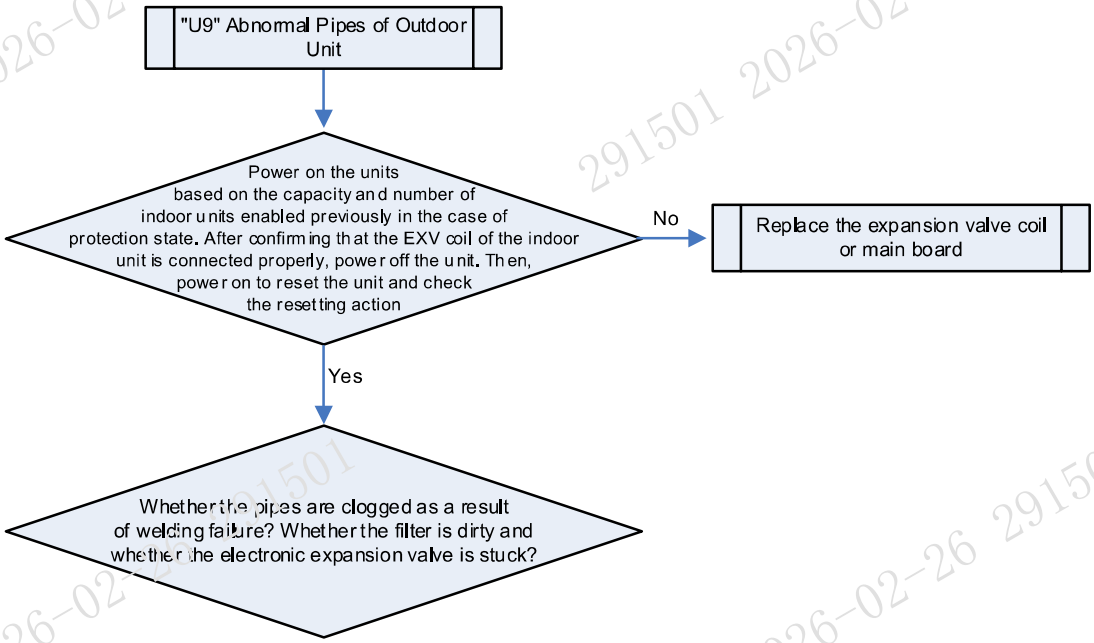
During commissioning process, check the pressure of the unit to determine whether the pipes of the outdoor unit are blocked. Any abnormal parameters found would indicate that the unit has the fault.

Possible causes:

■ The electronic expansion valve operates improperly;

■ The outdoor unit's pipes are blocked.

Troubleshooting:



2.167 "UC" Master Indoor Unit Set Successfully

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

Fault diagnosis:

The code indicates the state of the unit rather than the fault. During the commissioning process, the unit prompts that the master indoor unit is already set successfully.

Possible causes: –

Troubleshooting: –

2.168 "UL" DIP Switch Error of Compressor Emergency Operation

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

Fault diagnosis:

The fault is displayed when the DIP switch of compressor emergency operation is not set within the reasonable range.

Possible causes: –

Troubleshooting: Re-dial the DIP switch according to the DIP switch table.

2.169 "UE" Auto Refrigerant Charging Void

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

Fault diagnosis:

The code is displayed when the outdoor ambient temperature exceeds the range of auto refrigerant charging (the normal range of charging refrigerant automatically is 0-40°C).

Possible causes: –

Troubleshooting: Disable the auto refrigerant charging. Instead, charge the refrigerant manually.

2.170 "UF" Mode exchanger IDU Identification Abnormal

Error display: mode exchanger main board will display 

Applicable mode: mode exchange box

Error judgment condition and method:

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

Possible reasons:

■IDU and mode exchanger is not compatible

■Mode exchanger main board is damaged

Troubleshooting:

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

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

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

2.171 "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

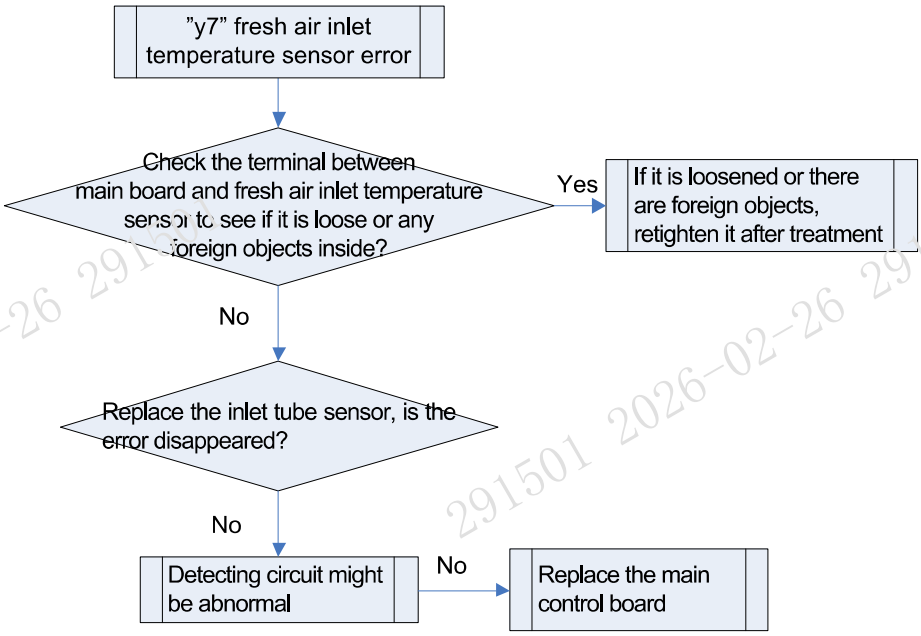
Possible reasons:

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

■Air inlet temperature sensor is abnormal

■Detecting circuit is abnormal

Troubleshooting:



2.172 "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.

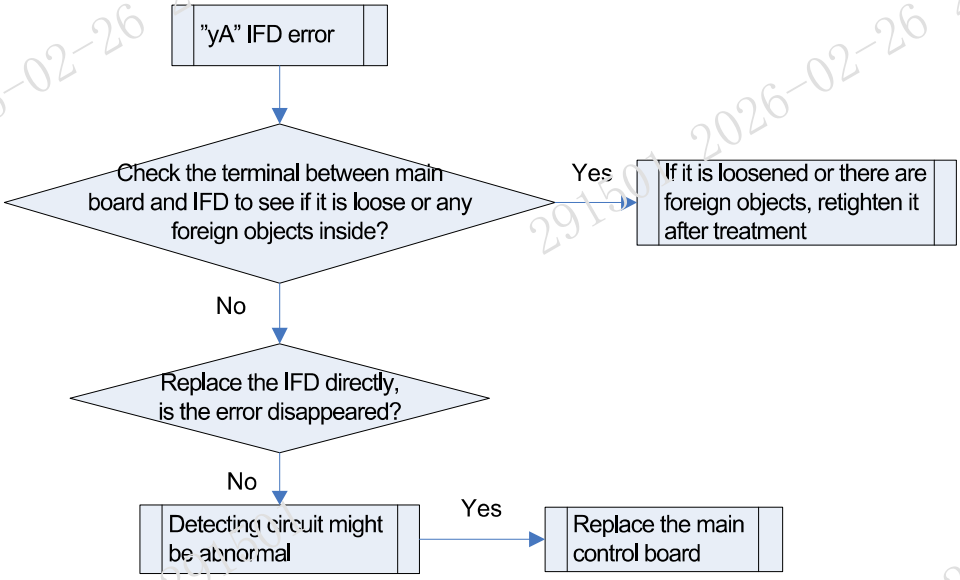
Possible reasons:

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

■IFD abnormality

■Detecting circuit is abnormal

Troubleshooting:



2.173 "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:

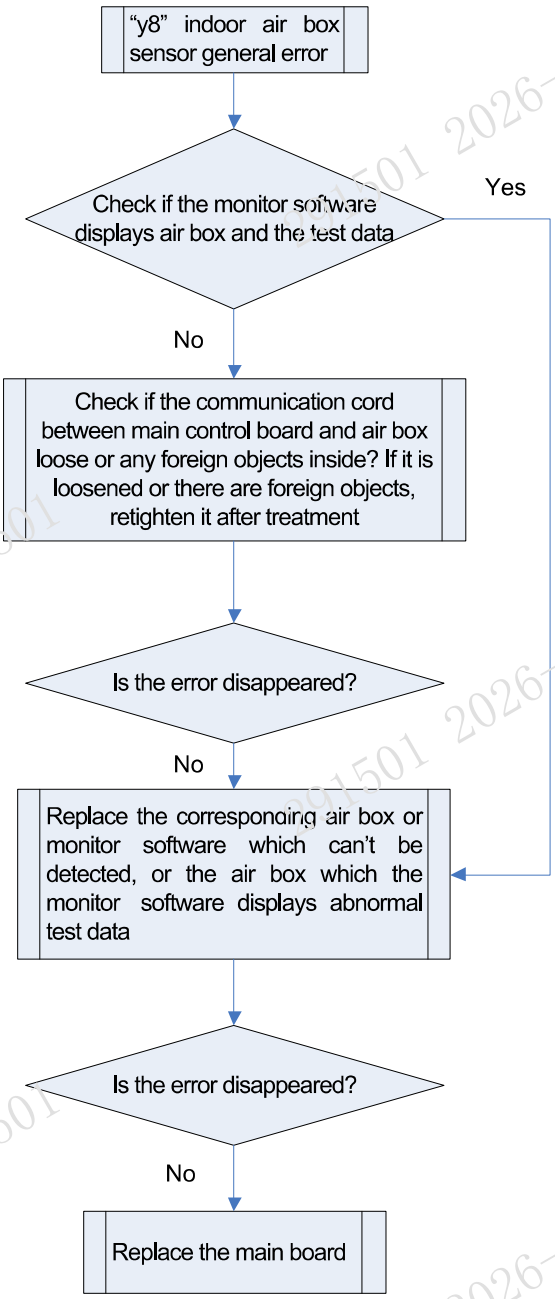
Main board, air box communication abnormality and air box test data (temperature, humidity and CO_2 concentration or PM2.5 concentration) has exceeded the set upper and lower limiting value.

Possible reasons:

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

■Air box detection is abnormal

Troubleshooting:



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2.174 Ineffective Cooling and Heating

Applicable models: all indoor units

Fault diagnosis:

(1) In cooling mode, when the electronic expansion valve is open to 2000PLS, the temperature of outlet pipes of the indoor unit coil is over 5°C greater than the temperature of inlet pipes of the indoor unit coil;

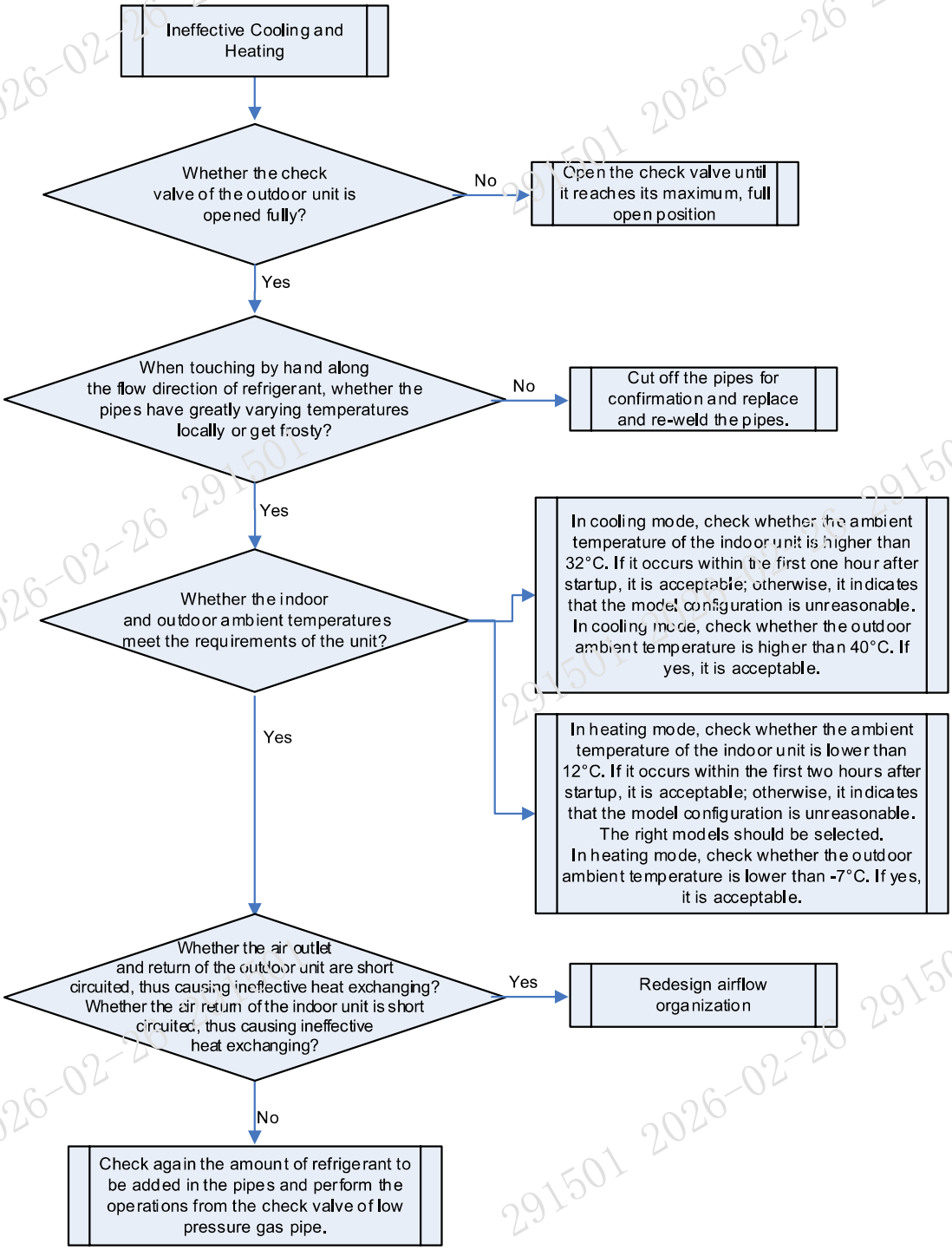
(2) In heating mode, when the electronic expansion valve is open to 2PLS, the temperature of inlet pipes of the indoor unit coil is over 12°C less than the saturation temperature corresponding to the high pressure;

Possible causes:

- The check valve of the outdoor unit is not opened fully as required.
- The unit pipes are clogged.
- The unit operates out of the range of required ambient temperature.
- Airflow organization is set ineffectively.
- The amount of refrigerant is insufficient.

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Troubleshooting:



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

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

Applicable model: all ODUs

Error judgment condition and method:

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

Possible reasons:

■The ambient temperature is 55°C or higher;

■The temperature of the compressor is 105°C or higher;

■High pressure sensor is abnormal;

■Temperature sensor is abnormal;

Troubleshooting:

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

Step 2: detect the temperature of the compressor, if the temperature is over 104°C, 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.

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3 Common Malfunctions and 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 outdoor units is blocked.	Clear obstructions.
Abnormal cooling or heating.	Air inlet or air outlet of indoor and outdoor 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.
	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 outdoor 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 outdoor unit will produce “sa——” and “gurgling” sounds.	This is the sound produced when the refrigerant stops or changes flow.
	The sound from the outdoor unit can be heard indoors	This is because the outdoor 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

Phenomenon		Causes
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 outdoor 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 outdoor 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.

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Chapter 4 Maintenance

WARNING!

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

1 Precautions for Refrigerant Leakage

(1) AC project designers and installers shall obey the local laws and regulations on the safety requirement of the usage and leakage of refrigerant.

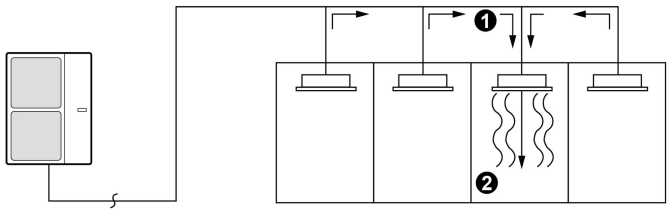
(2) The multi VRF unit adopts R410A refrigerant. When installing in the space with people, the refrigerant amount shall not exceed the max.allowable concentration. Otherwise, suffocation will occur. For example, the max.allowable concentration for refrigerant of European safety standard and regulation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

Max. refrigerant charge(kg)= Room volume(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

Refrigerant charging amount B of every module (kg) ②		Module capacity(kW)				
IDU/ODU rated capacity collocation ratio C ①	Quantity of indoor unit	40.0	45.0	50.4	56.0	61.5
50%≤C≤70%	<4	0	0	0	0	0
	≥4	0	0	1	1	1.5
70%<C≤90%	<4	0.5	0.5	2	2	2
	≥4	1.5	1.5	3	3	3.5
90%<C≤105%	<4	1.5	1.5	3	3	3.5
	≥4	2	2	4	4	5
105%<C≤135%	<4	2	2	4	4	4
	≥4	2.5	2.5	5	5	6

Notes:

① Rated capacity configuration rate of indoor unit and outdoor unit C = sum of indoor unit rated cooling capacity / sum of outdoor unit rated cooling capacity.

② If all indoor units are all fresh air indoor units, the added refrigerant amount for each module B is 0kg.

③ If all fresh air indoor units are mixed with the general VRF indoor units, charge the refrigerant according to the refrigerant-charging method of the general indoor unit.

For example1:

Outdoor unit consists of one 40kW module and one 45kW module. Six 14kW duct type units are used as indoor units.

IDU/ODU rated capacity collocation ratio C= 14.0×6/(40.0+45.0)=99%. The quantity of included IDUs is more than 4 sets. Please refer to the above table.

Additional refrigerant quantity B for 40kW module is 2.0 kg.

Additional refrigerant quantity B for 45kw module is 2.0 kg.

So, ∑Refrigerant charging amount B of every module=2.0+2.0=4.0 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+4.0=24.0kg

For example 2:

Outdoor unit is a 45kW module and the indoor unit is a 45kW fresh air unit. The quantity (B) of refrigerant added to this module is 0kg.

So, ∑Refrigerant charging amount B of every module= 0kg

Suppose the Pipeline charging amount A=∑Liquid pipe length × refrigerant charging amount of every 1m liquid pipe = 5kg

Total refrigerant charging amount R = 5+0=5kg

Modular combination of outdoor unit subjects to combinations that is currently available.

2.3 Limit of Additional Refrigerant Charge Amount

If the additional refrigerant charge amount exceeds the recommended maximum amount, please shorten the connection pipe construction scheme, or split the system design scheme and recalculate the additional refrigerant charge amount.

The additional refrigerant charge amount to the system shall be exceed the maximum allowable value. Otherwise, the unit may be damaged.

Model	Recommended value for the maximum additional refrigerant of the system (kg)	Allowable value for the maximum additional refrigerant of the system (kg)
GMV-400WML/A-X	18.5	27.5
GMV-450WML/A-X	19.2	27.9
GMV-504WML/A-X	20.0	29.5
GMV-560WML/A-X	20.5	30.0
GMV-615WML/A-X	21.0	30.5
GMV-800WML/A-X	38.4	55.8
GMV-850WML/A-X	38.4	55.8
GMV-900WML/A-X	38.4	55.8
GMV-954WML/A-X	39.7	57.9
GMV-1010WML/A-X	39.7	57.9
GMV-1065WML/A-X	39.7	57.9
GMV-1119WML/A-X	41.0	60.0
GMV-1175WML/A-X	41.0	60.0
GMV-1230WML/A-X	41.0	60.0
GMV-1300WML/A-X	57.5	83.7
GMV-1350WML/A-X	57.5	83.7
GMV-1404WML/A-X	58.9	79.1
GMV-1460WML/A-X	58.9	79.1
GMV-1515WML/A-X	58.9	79.1
GMV-1570WML/A-X	60.2	81.0
GMV-1625WML/A-X	60.2	81.0
GMV-1680WML/A-X	60.2	81.0
GMV-1735WML/A-X	61.6	82.9
GMV-1790WML/A-X	61.6	82.9
GMV-1845WML/A-X	61.6	82.9
GMV-1910WML/A-X	78.1	104.8
GMV-1965WML/A-X	78.1	104.8
GMV-2020WML/A-X	79.4	106.7
GMV-2075WML/A-X	79.4	106.7
GMV-2130WML/A-X	79.4	106.7
GMV-2185WML/A-X	80.7	108.7
GMV-2240WML/A-X	80.7	108.7
GMV-2295WML/A-X	80.7	108.7
GMV-2349WML/A-X	82.1	110.6
GMV-2405WML/A-X	82.1	110.6
GMV-2460WML/A-X	82.1	110.6

Note: The limit of the above additional refrigerant charge amount does not include the refrigerant amount in the unit when ex-factory.

3 Refrigerant Charging Method

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

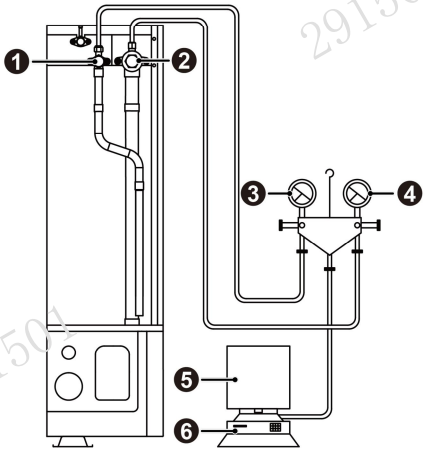
3.1 Pre-charging of Refrigerant.

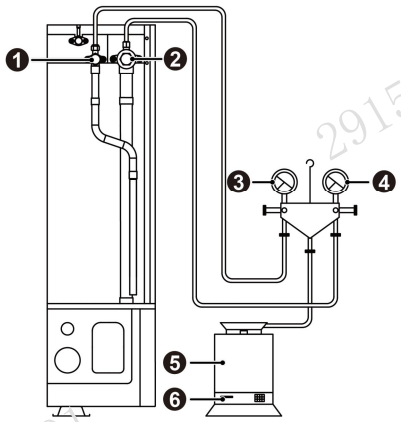
Step 1: Connect the pipe of high pressure gauge of the pressure gauge to the detection port of liquid pipe, the pipe of low pressure gauge to the detection port of gas pipe valve, and the pipe of intermediate pressure gauge to the vacuum pump. Put through the power for the vacuum pump to conduct the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

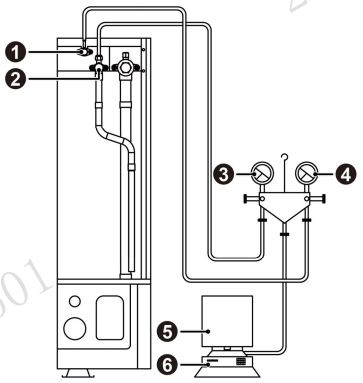
“M” is the calculated total required refrigerant-charging volume.

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 Fig.3.6.3).



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

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

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

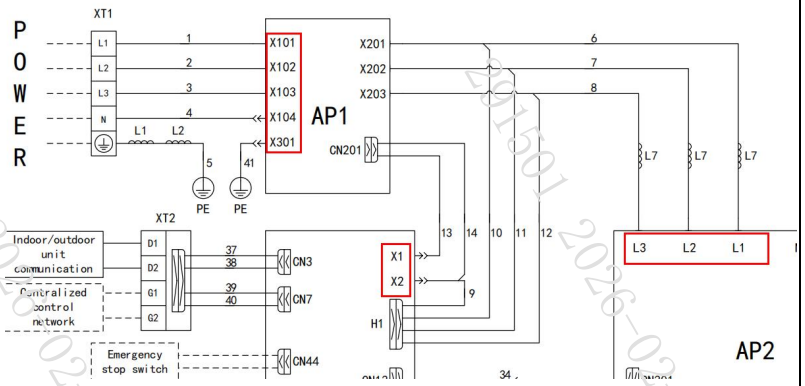
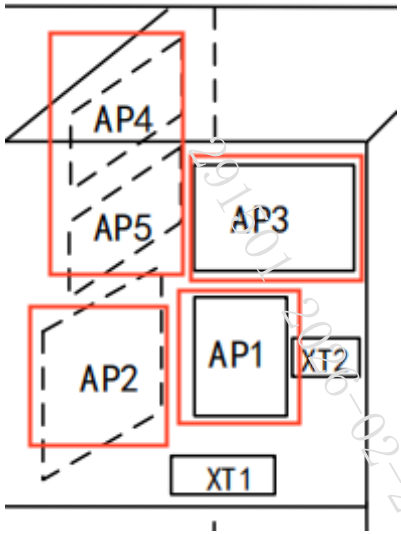
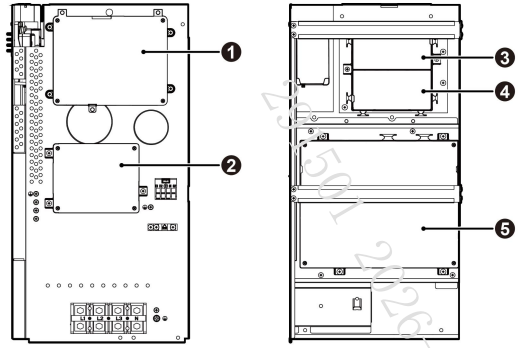
Step 5: When all refrigerant has been charged, close the refrigerant tank valve and wait until the automatic debugging for the complete unit is finished.

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

4 Inspection of Key Parts

4.1 Power

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~ 50Hz/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
		

4.1.1 Mechanical Inspection

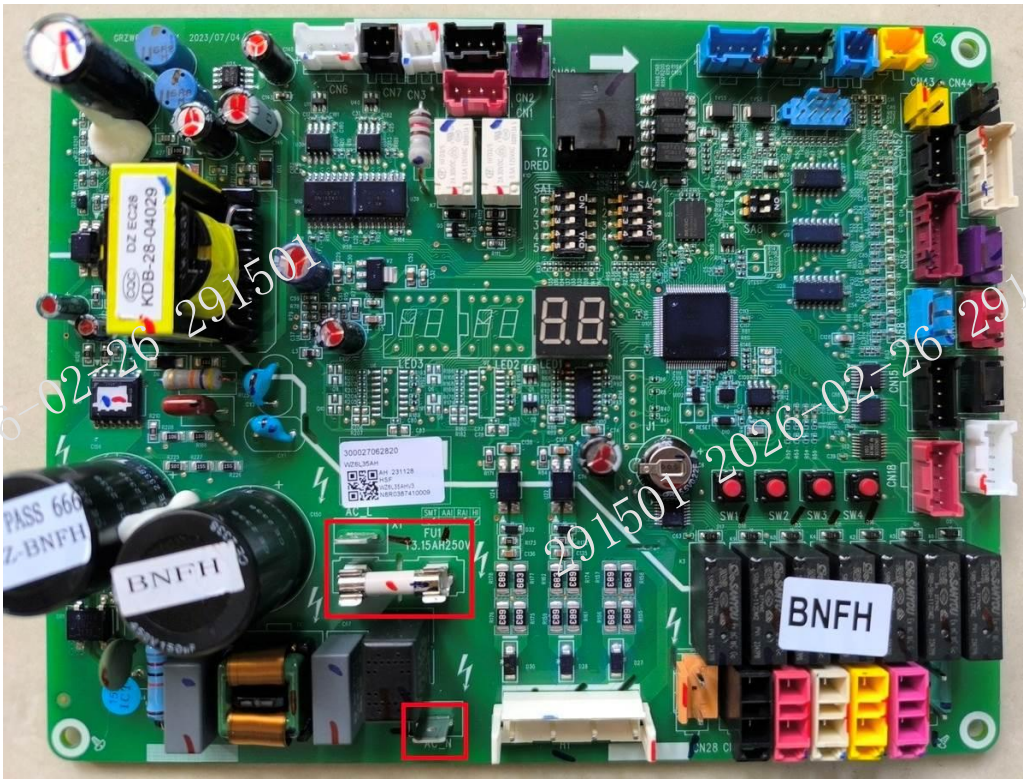
(1) Confirm that the unit power is disconnected.

(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:

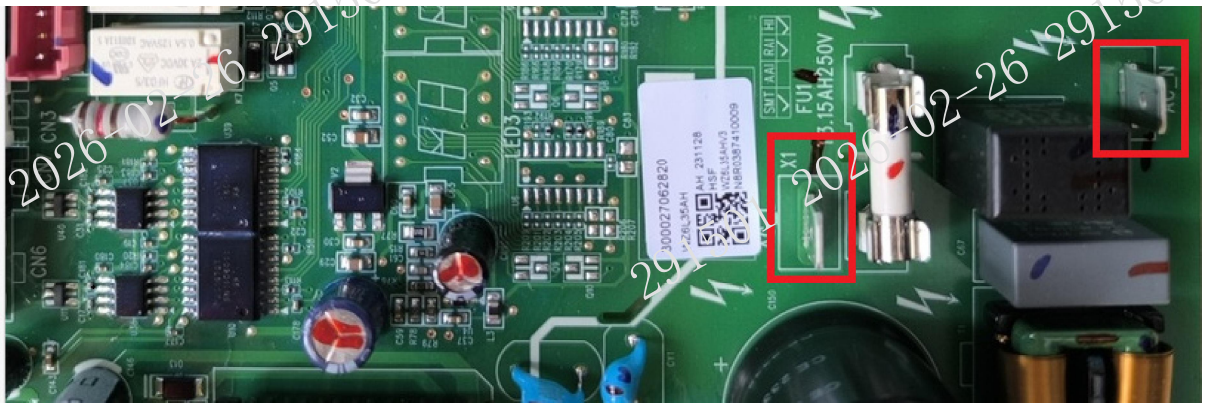
The power voltage between two phases is 380VAC±10%.

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 X1 and X2 on the main control board are active.

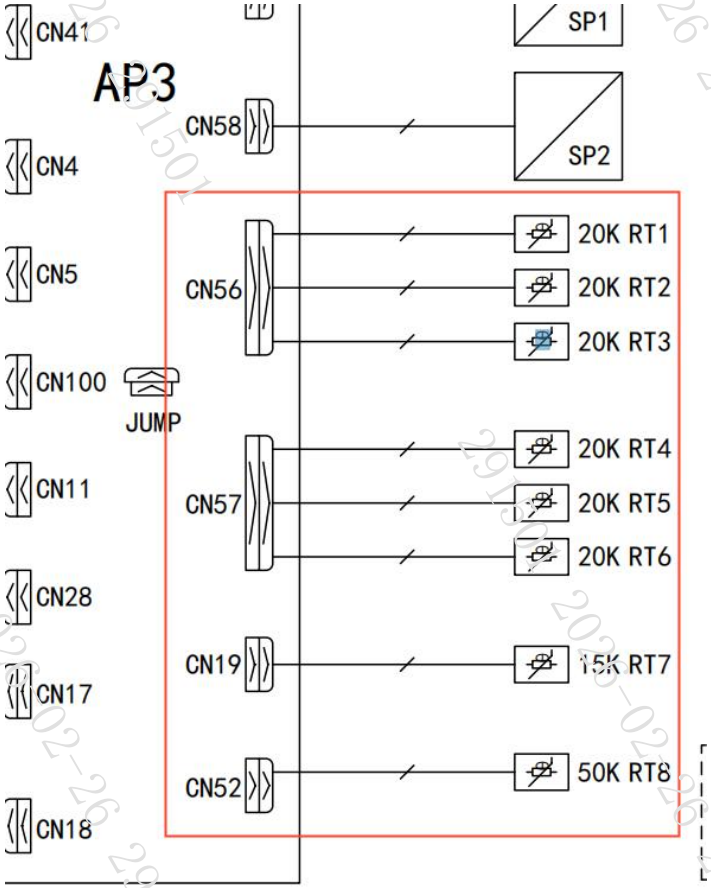


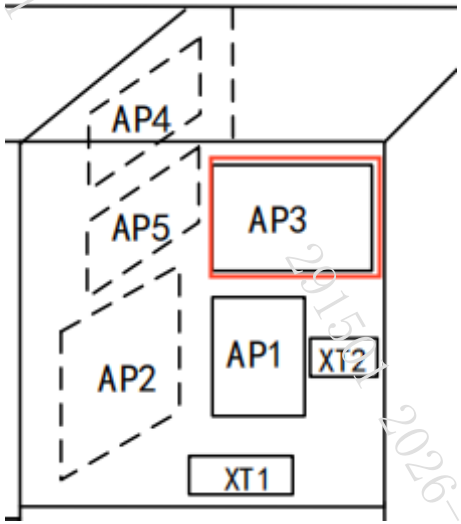
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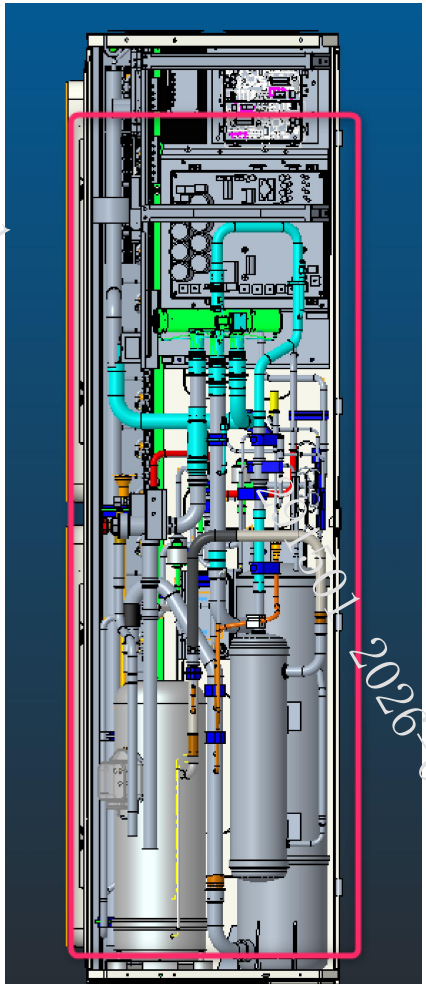
4.2 Temperature Sensors

Specifications	Description
Three types of temperature sensors of different specifications are used, including 50K, 20K and 15K.	The sensors are used to measure the temperature of the unit at different positions.

Circuit diagram	Layout of electrical appliance box	Physical position







4.2.1 Mechanical Inspection

(1) Confirm that the unit Power is disconnected.

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

4.2.2 Electrical Inspection

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

(1) Power off the unit. Remove the electrical appliance cover after the ODU stops.

Warning: Electric shock

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

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

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

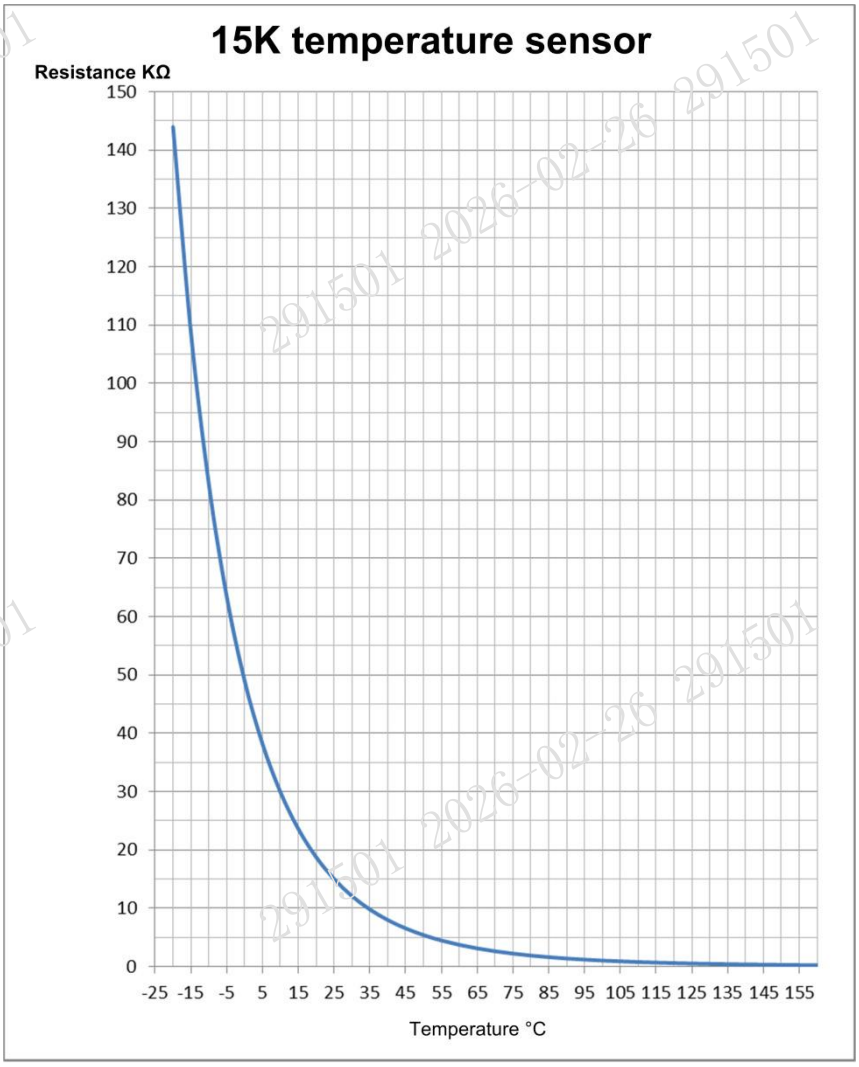
(5) If the measured resistance and temperature do not match with the resistance and temperature in the characteristic curve of the temperature sensor, the temperature sensor needs to be replaced.

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

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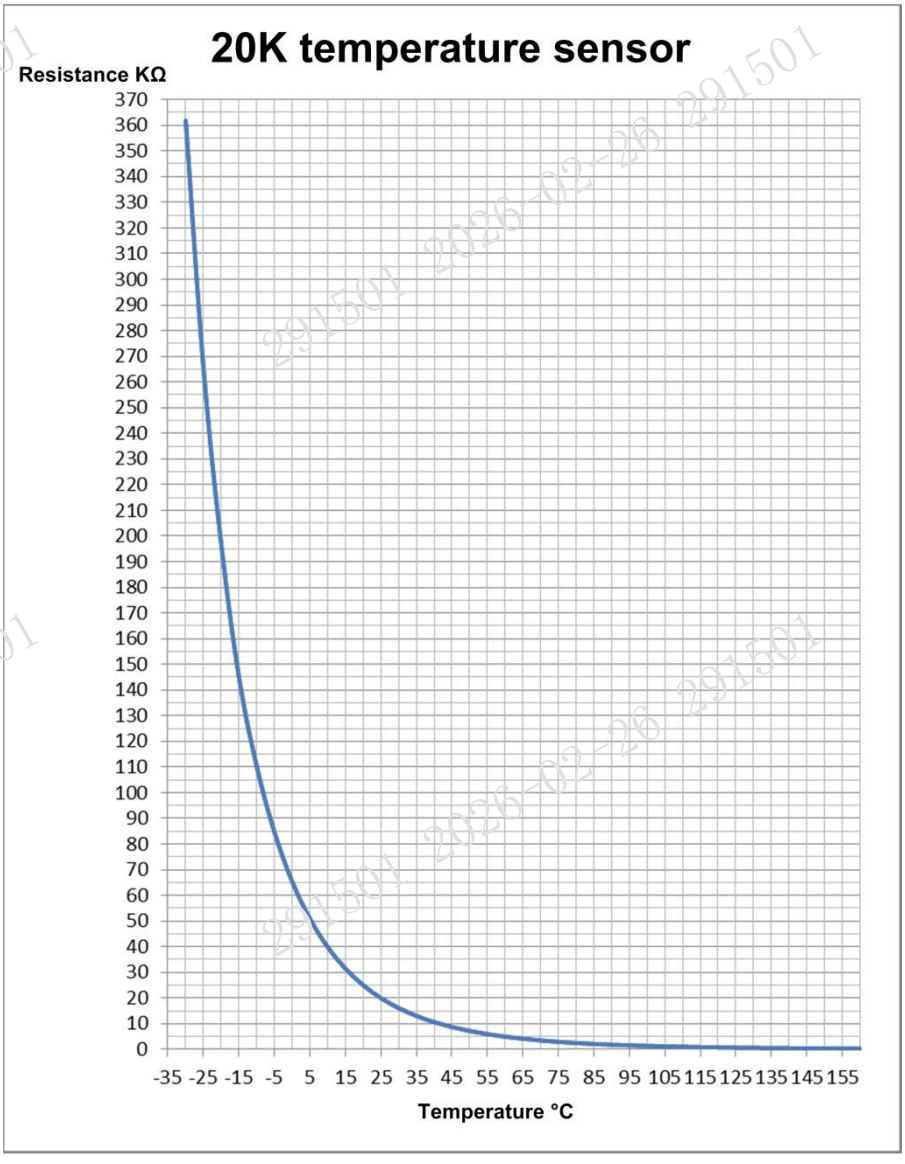
15K temperature sensor resistance - temperature curve

15K	
Temperature \℃	Resistance \K Ω
-20	144
-15	108.7
-10	82.75
-5	63.46
0	49.02
5	38.15
10	29.9
15	23.6
20	18.75
25	15
30	12.07
35	9.779
40	7.967
45	6.529
50	5.379
55	4.456
60	3.711
65	3.105
70	2.611
75	2.205
80	1.871
85	1.594
90	1.363
95	1.171
100	1.009
105	0.873
110	0.7577
115	0.6599
120	0.5765
125	0.5052
130	0.4441
135	0.3914
140	0.346
145	0.3066
150	0.2725
155	0.2427
160	0.2166



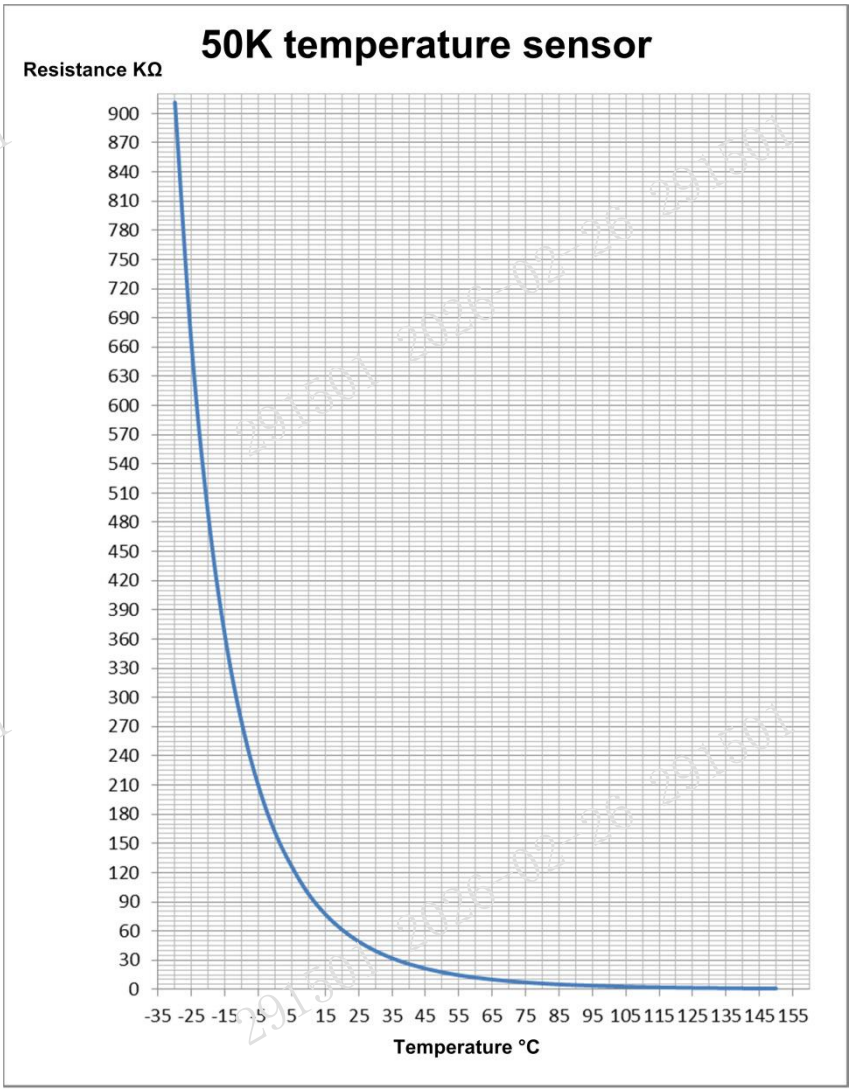
20K temperature sensor resistance - temperature curve

20K	
Temperature \℃	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



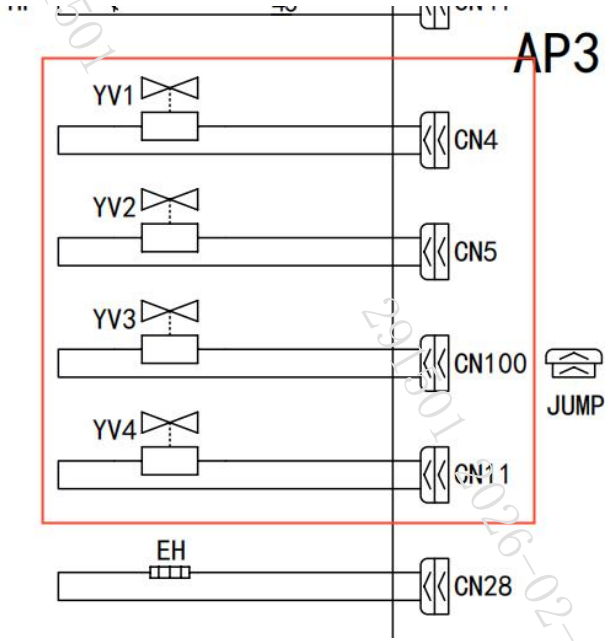
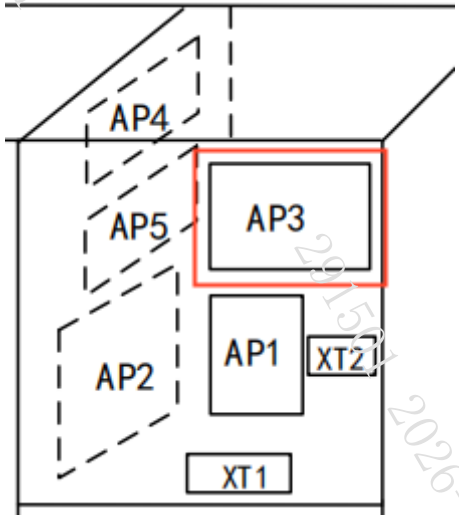
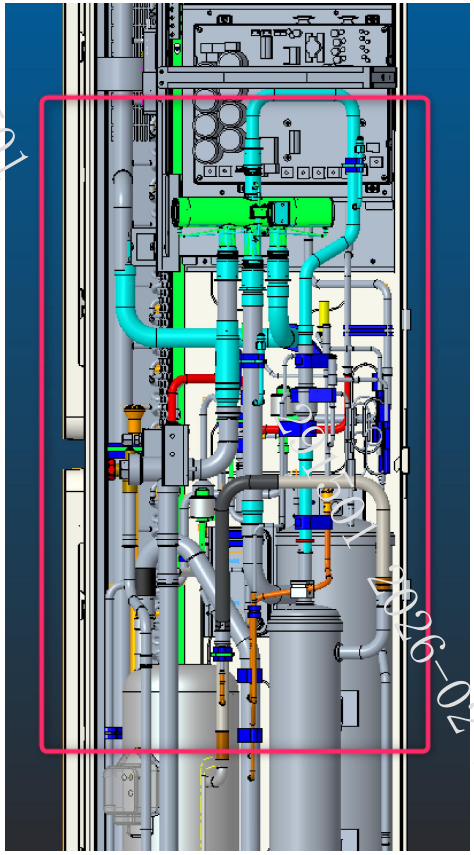
50K temperature sensor resistance - temperature curve

50K	
Temperature \℃	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
		

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.

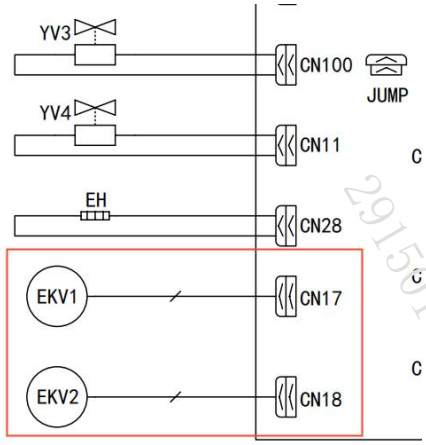
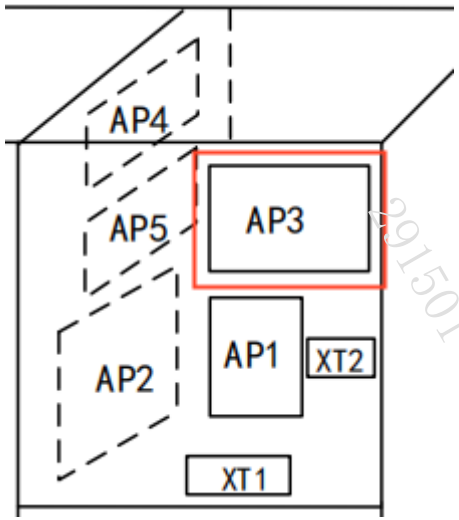
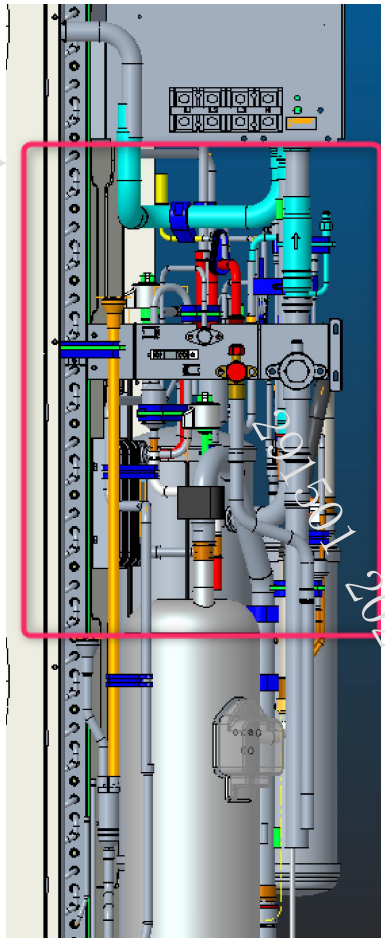
(3) Disconnect the corresponding valve's coil terminal from the main board and use a multimeter to measure the coil resistance.

(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
4-way valve	CN4	2085	±10%
Oil-return solenoid valve	CN100	2085	±200Ω
Low-temperature oil-return solenoid valve	CN5	2085	±200Ω
Subcooler solenoid valve	CN11	1273	±200Ω

4.4 Electronic Expansion Valve

Specifications	Description
Two types of electronic expansion valves are adopted by the unit: Heating electronic expansion valve and subcooling 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
		

4.4.1 Mechanical Inspection

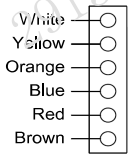
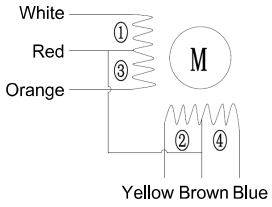
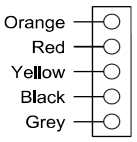
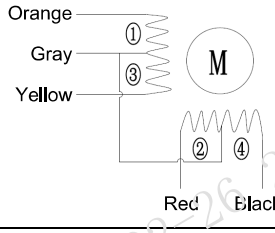
Step 1: Switch off the power of the ODU.

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

4.4.2 Electrical Inspection

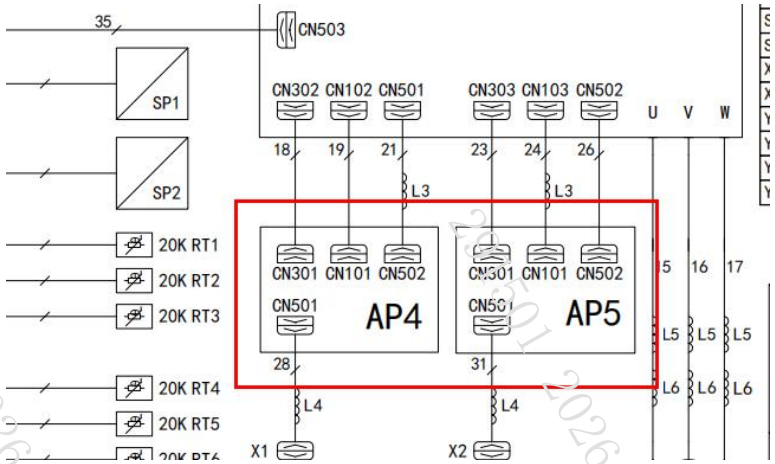
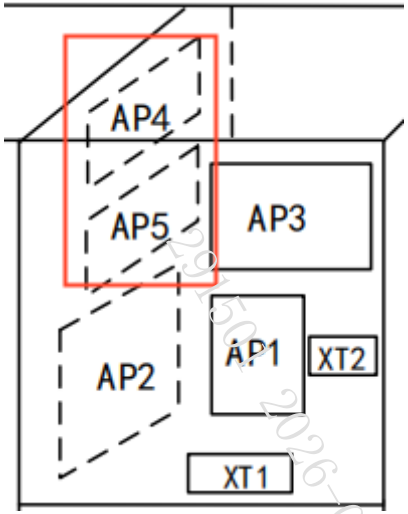
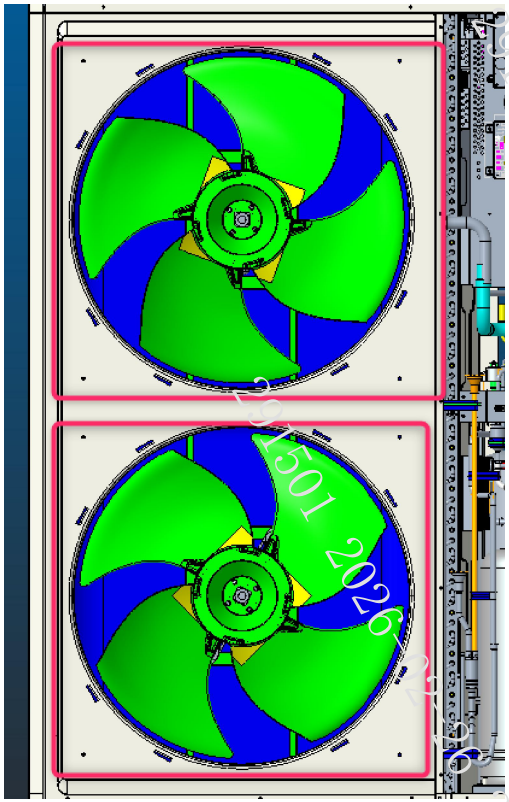
Step 1: Power off the ODU and power on it. When the ODU is powered on again, the electronic expansion valve should be reset. When the electronic expansion valve is reset, touch the valve with a hand to check if the valve core rotates. In the second half of the resetting process, the valve core will click 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	CN17	White	5 cores	480			46Ω±3.7Ω
Subcooler electronic expansion valve	CN18	Red	5 cores	480			46Ω±3.7Ω

4.5 Fans

Specifications	Description
The fans are connected to the fan drive board by a group of three power cables.	The fans are powered by a DC inverter motor and can adjust the speed automatically according to the environmental temperature and load, thus adapting to the demand of the unit operation.

Circuit diagram	Layout of electrical appliance box	Physical position
		

4.5.1 Mechanical Inspection

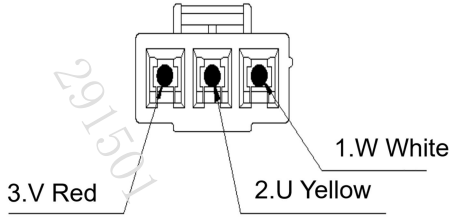
Step 1: Switch off the power of the ODU.

Step 2: Check whether the connector between the fan motor and fan drive board is firmly connected.

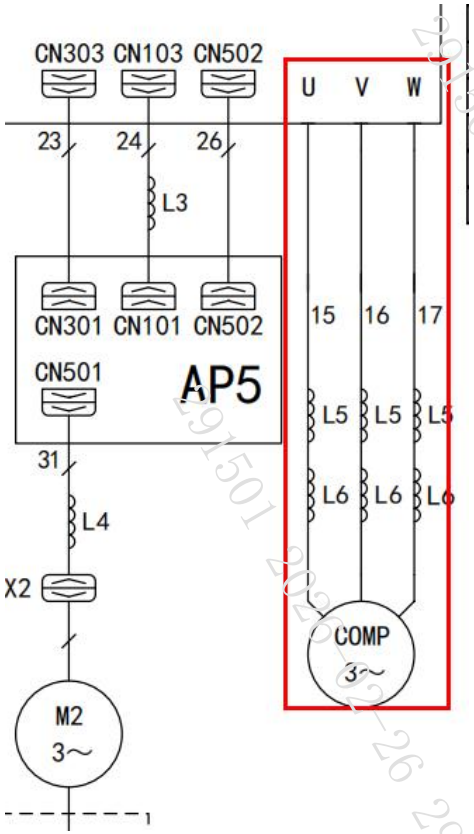
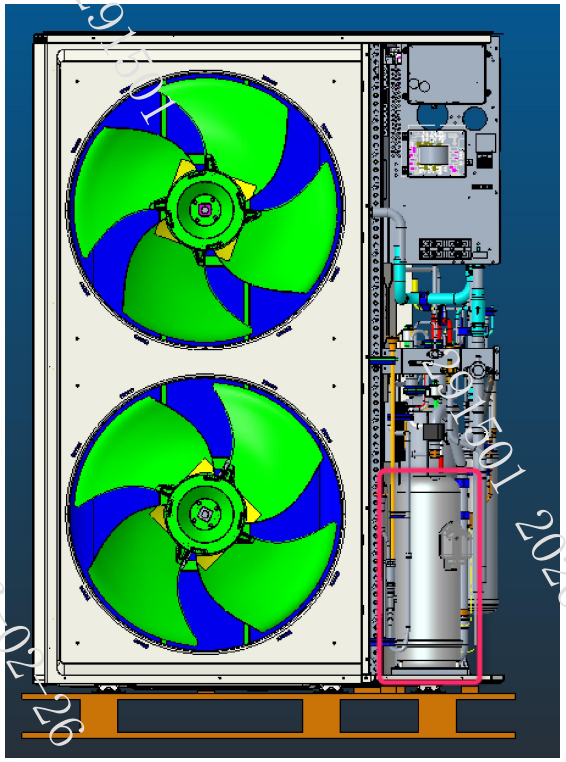
Step 3: Rotate the blades with a hand to check whether they can rotate smoothly and whether the blades rub the baffle ring during rotation. If the blades are blocked during rotation, the motor needs to be replaced; if the blades rub the baffle ring during rotation, check whether the blades and baffle ring deform and needs to be replaced.

4.5.2 Electrical Inspection

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

Terminal layout	Range of coil resistance between any two phases
	14.5Ω±8%

4.6 Compressor

Specifications	Description
Models: DD98CHDG5-D1Y2, DD80PHDG5-D1Y2	Compression refrigerant, recycling refrigerant.
Circuit diagram	Physical position
	

4.6.1 Diagnosis of Compressor Failures

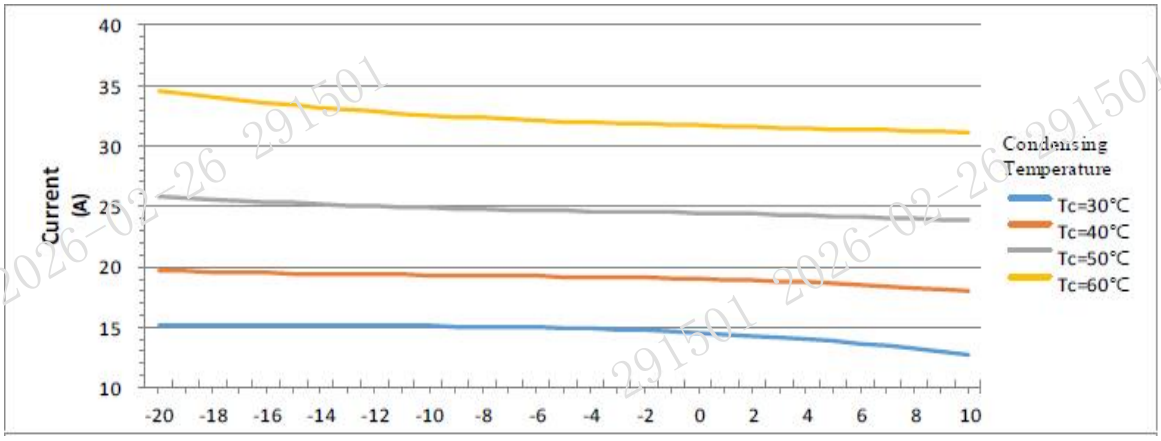
4.6.1.1 When the Unit Can be Started

Step 1:

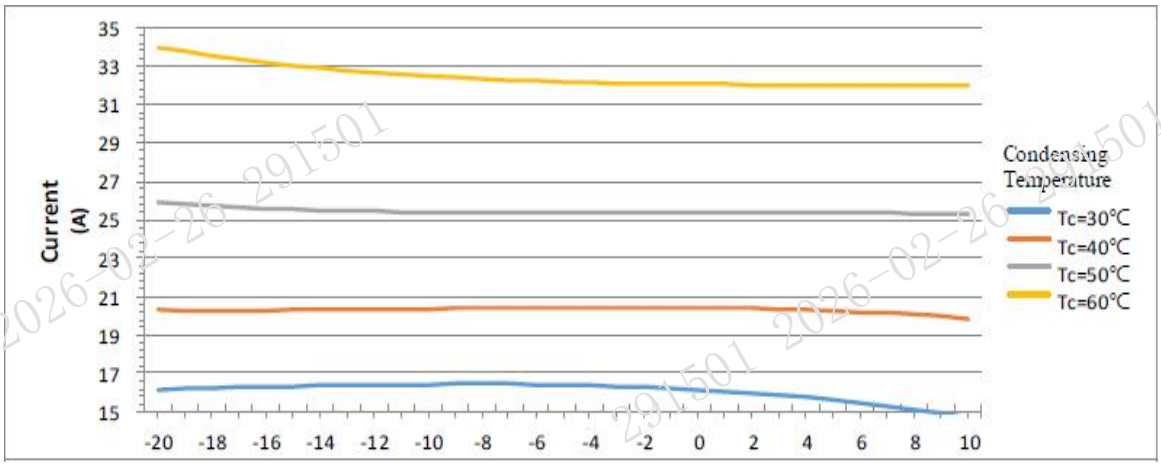
If the unit can be started, check the faulty compressor's line current. Use a pressure gauge to measure the gas and liquid valve pressure and monitor the measured data on a PC. Compare the data to the following table of recommended current. The current may deviates by about 10% depending on the inverter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

(1) Inverter compressor DD80PHDG5-D1Y2

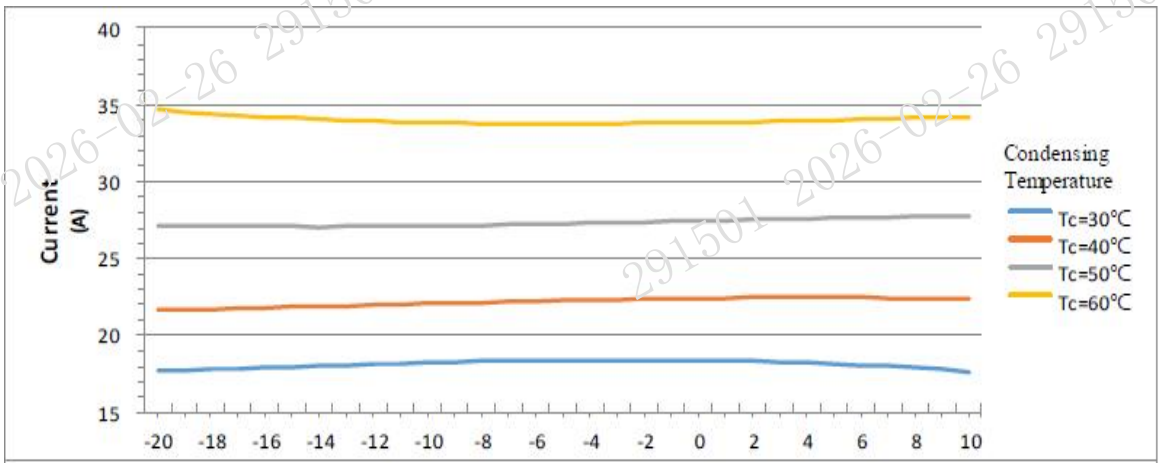
When the compressor frequency is 30 Hz, the current curve under different evaporation temperature and condensation temperature is shown as follows:



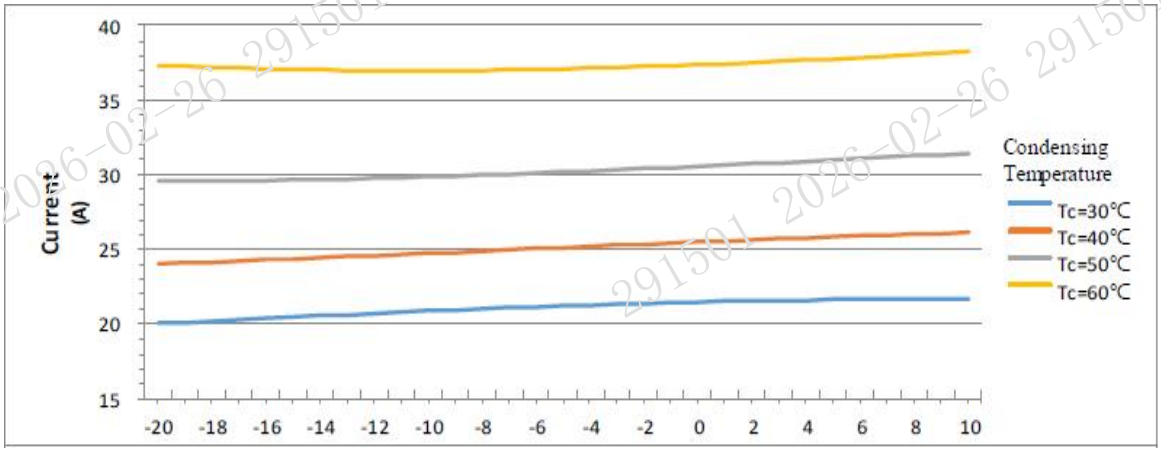
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



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:

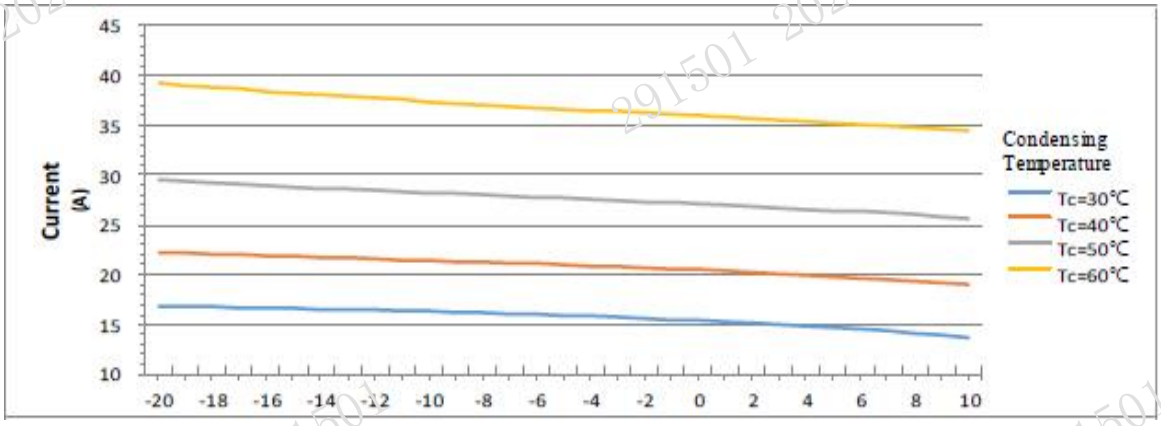


NOTE!

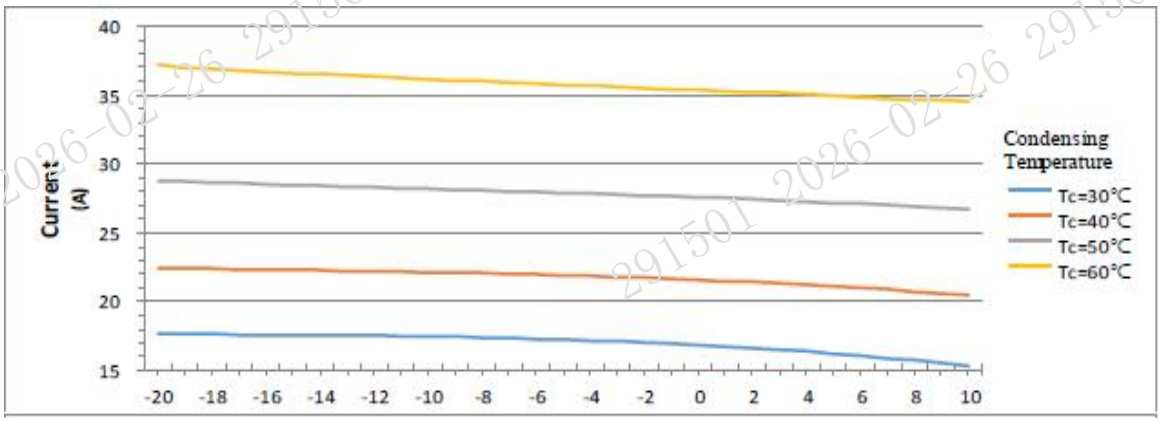
When the compressor is working at another frequency, the current curve can be obtained through interpolation calculation of the above frequency.

(2) Inverter compressor DD98CHDG5-D1Y2:

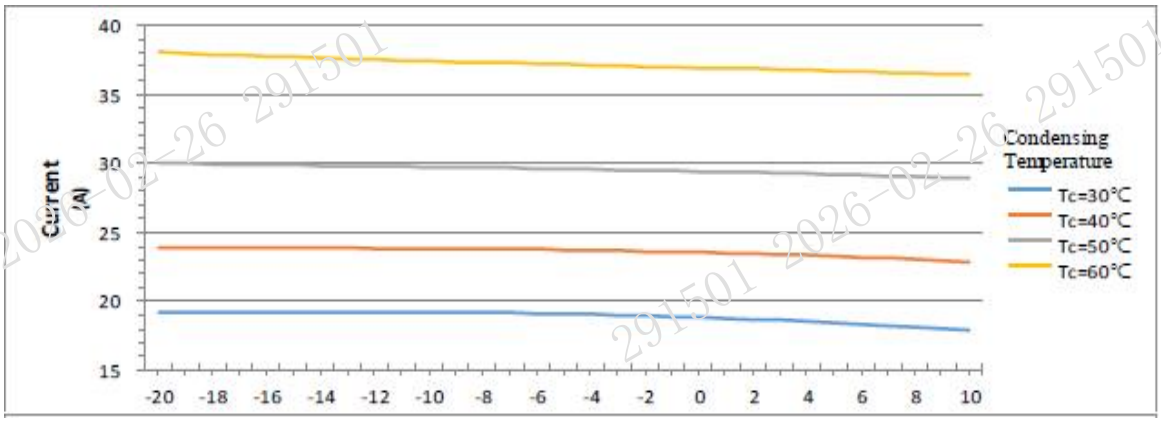
When the compressor frequency is 30 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



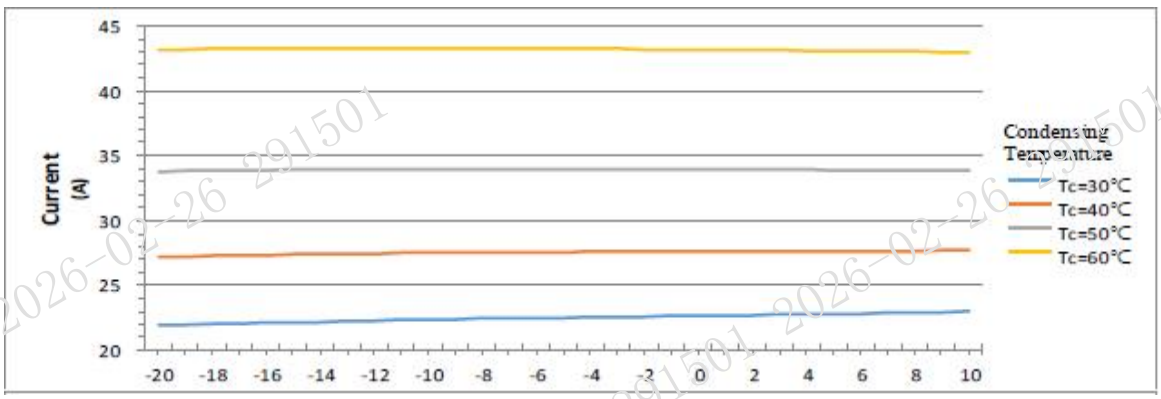
When the compressor frequency is 60 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



When the compressor frequency is 90 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



When the compressor frequency is 120 Hz, the current curve corresponding to the evaporation temperature and condensation temperature is shown as follows:



NOTE!

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

Step 2:

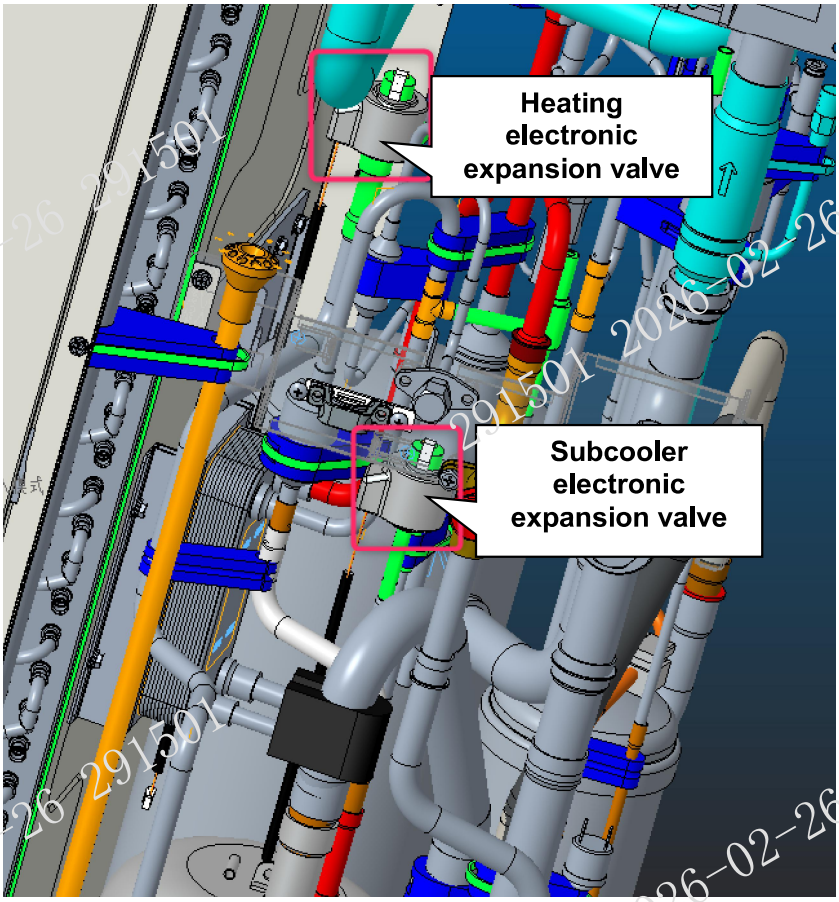
Check whether the running sound of the compressor is normal and whether any high-pitched sound or obvious scratch can be heard. If there is a nearby unit running properly, compare the sound of the compressor under inspection with that of the normally running unit.

Step 3:

Check whether the electronic expansion valve of the ODU and 4-way valve work properly, and whether the oil-return pipeline and oil-return valve are normal. Touch the oil-return capillary tube with a hand to check whether oil flows in the tube and check the pipeline temperature.

Diagnosis method:

(1) Electronic expansion valve: When the unit is powered on and off each time, the electronic expansion valve needs to reset. Touch the valve with a hand to check if the valve core rotates. In the second half of the resetting process, the valve core will click and vibrate obviously.



Note on touching the electronic expansion valve:

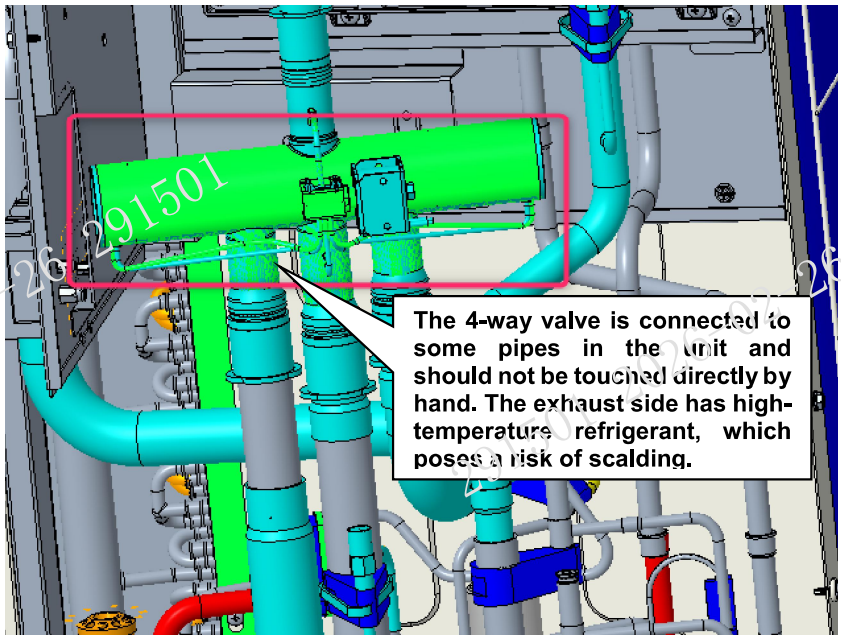


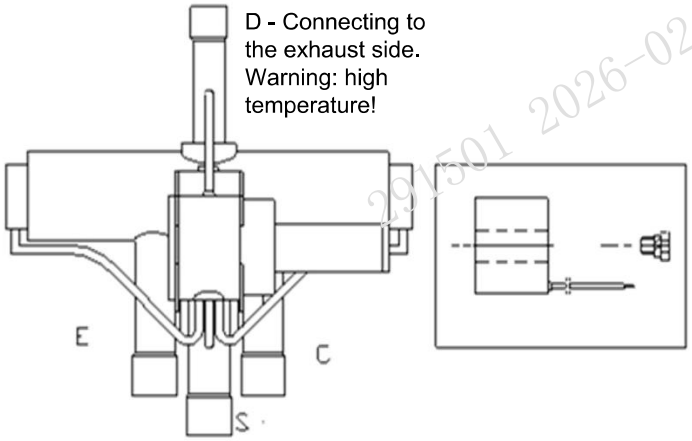
Notes:

① Check whether the coil is firmly fixed.

② Touch the upper part of the electronic expansion valve and check whether the resetting of the unit can be clearly felt.

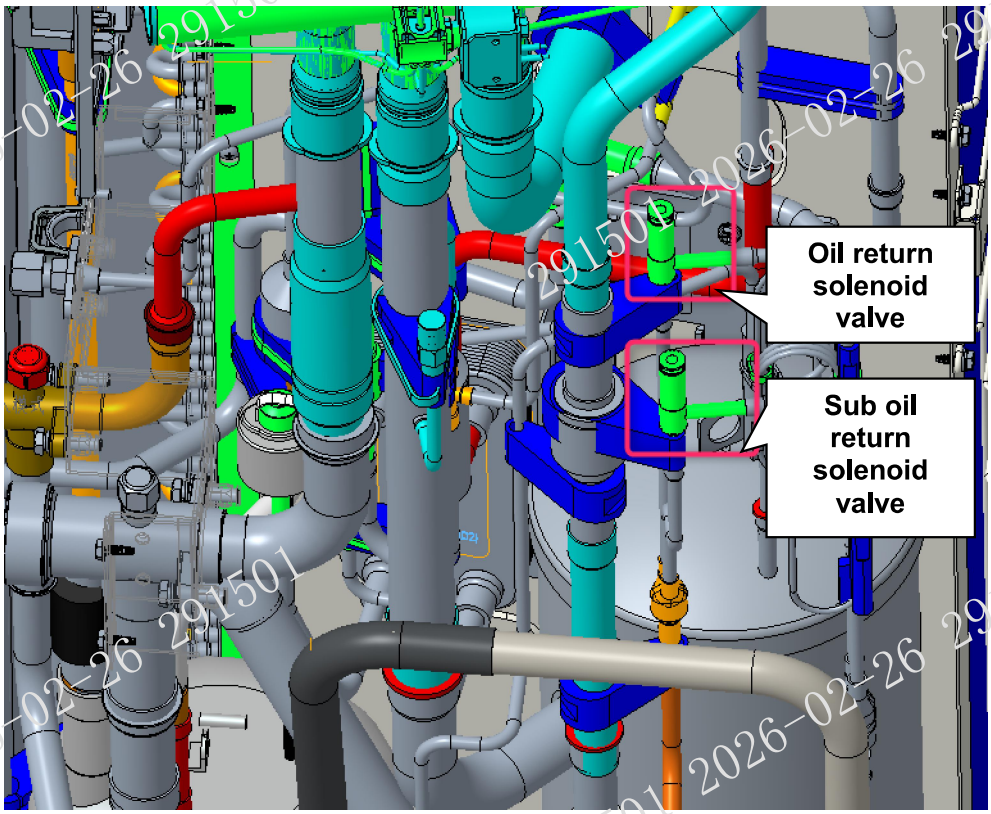
(2) 4-way valve: When it is normal, the temperature different between it and the four copper tubes connecting to the valve is obvious. When the 4-way valve works, obvious sound and vibration can be heard and felt.





Marks are made on the 4-way valve: D indicates connection to the exhaust side, E indicates connection to the IDU evaporator, S indicates connection to the air inlet of gas-liquid separator, C indicates connection to the condenser; when the system runs in the cooling mode, C indicates that the pipeline is in the high-pressure and high-temperature status, while E and S indicate that the pipeline is in the low-pressure and low-temperature status; when the system runs in the heating mode, E indicates that the pipeline is in the high-pressure and high-temperature status, while C and S indicate that the pipeline is in the low-pressure and low-temperature status; the pipe marked by D is connected to the air outlet and remains in the high-pressure and high-temperature status. When the unit is being started, defrosting and conducting oil return, the 4-way valve produces obvious valve pushing sound. Do not touch the pipeline with hands. Otherwise, you may get scalded.

(3) Oil-return solenoid valve, sub 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.

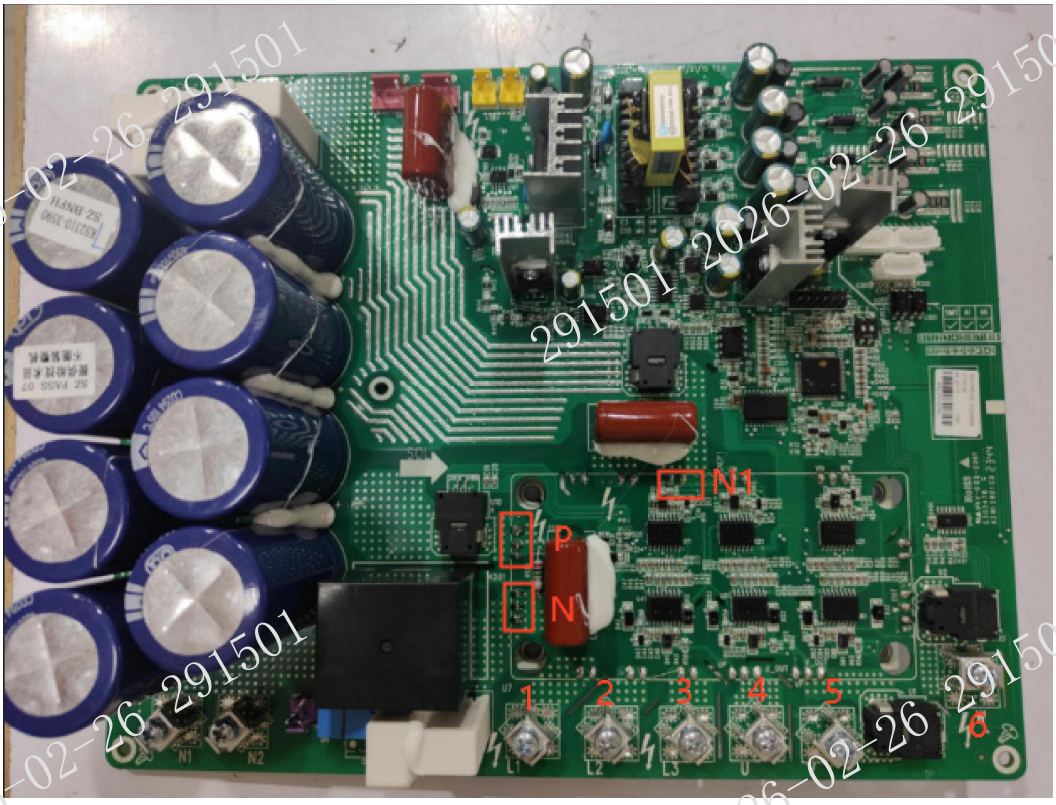


Step 4:

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 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.

6: Point the black probe to the P bonding pad and the red probe to V wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

7: Point the black probe to the P bonding pad and the red probe to the W wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

8: Point the black probe to the N bonding pad and the red probe to the L1 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

9: Point the black probe to the N bonding pad and the red probe to the L2 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

10: Point the black probe to the N bonding pad and the red probe to the L3 wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

11: Point the black probe to the N1 bonding pad and the red probe to U wiring terminal. In the normal

condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

12: Point the black probe to the N1 bonding pad and the red probe to V wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

13: Point the black probe to the N1 bonding pad and the red probe to W wiring terminal. In the normal condition, the multimeter will not beep. If it does, the drive board is damaged and needs to be replaced.

4.6.1.2 When the Unit Cannot be Started Properly

Step 1:

Disconnect the unit from power. Remove the terminal box cover and check whether the compressor is wired correctly.

Step 2:

Measure the resistance between any two of the wiring terminals of the compressor (U, V and W). The resistance between two wiring terminals of DD98CHDG5-D1Y2 is 0.137±7% Ω. The resistance between two wiring terminals of DD80PHDG5-D1Y2 is 0.130±7% Ω.



Measure the grounding resistance of each wiring terminal, which should be greater than 10 MΩ; otherwise, the compressor has an internal fault.

Step 3:

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

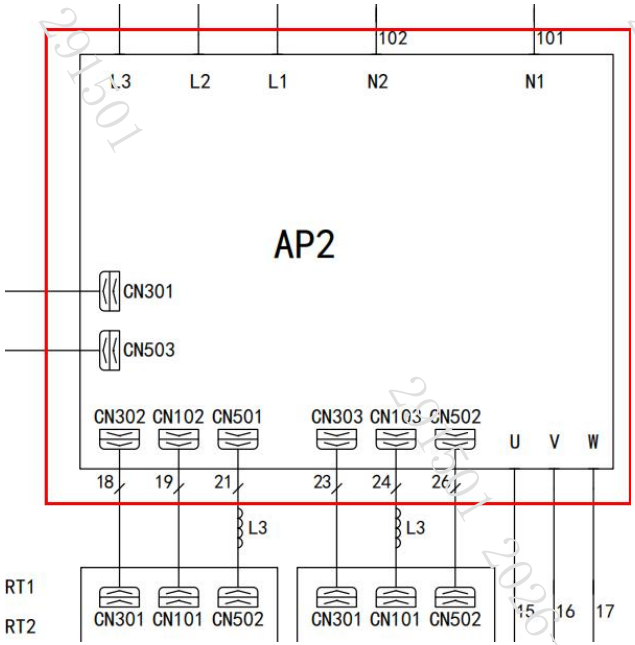
Step 4:

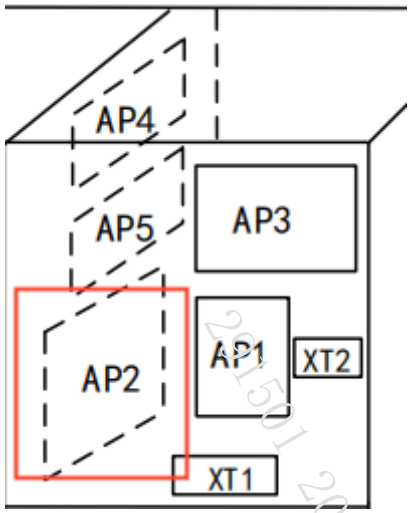
Check the IPM module using the same method described above.

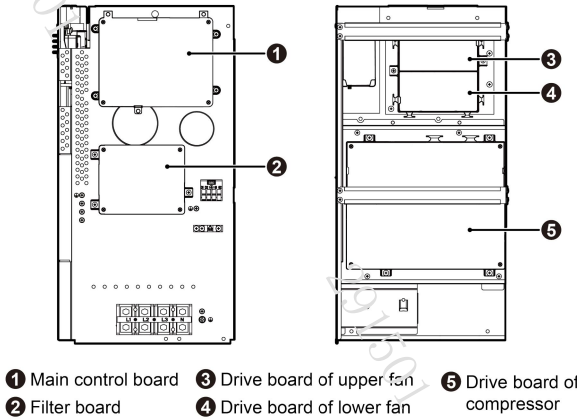
4.7 Compressor Drive Board

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

Specifications		Description
		The compressor drive board is used to control the operation of the compressor.
Circuit diagram	Layout of electrical appliance box	Physical position







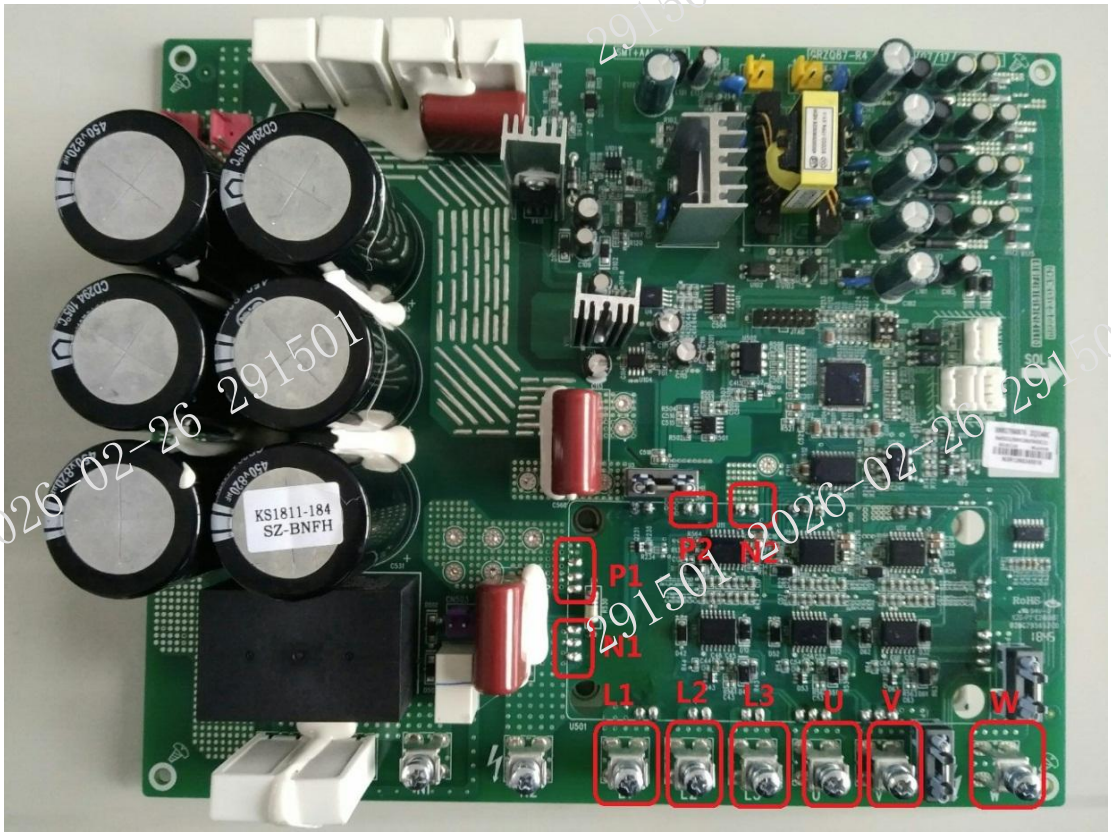
(1) Before the inspection: Find a correct digital multimeter and switch it to the diode gear. Power off the unit and wait two minutes. Disconnect the U, V and W cables of the compressor and L1, L2 and L3 power cables from the drive board. Do not operate without waiting two minutes after the unit is powered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

(2) Testing method:

1) Point the black probe of the multimeter to the P1 bonding pad shown in the following figure and the red probe to L1, L2 and L3 wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N1 bonding pad shown in the following figure and the black probe to L1, L2 and L3 wiring terminals respectively and check the readings of the multimeter.

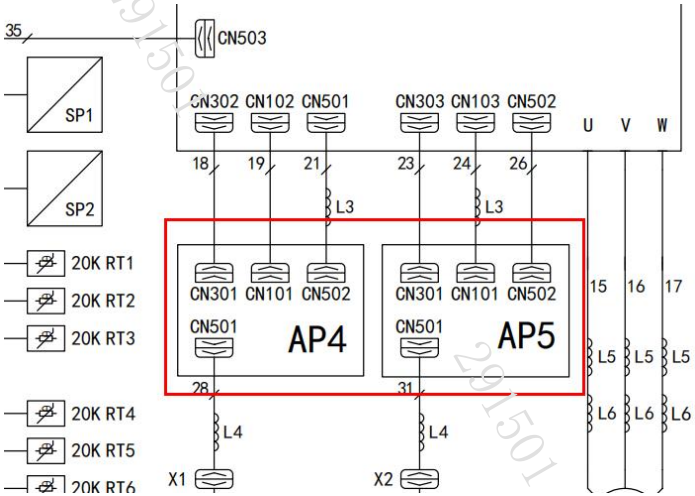
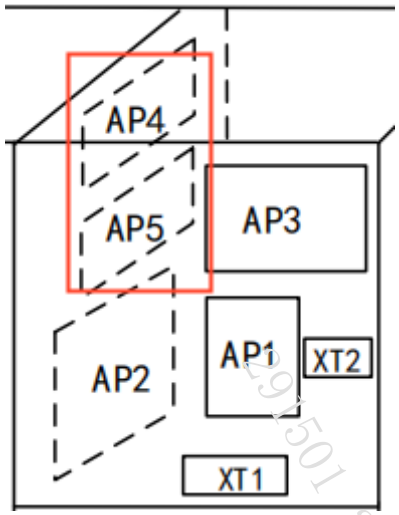
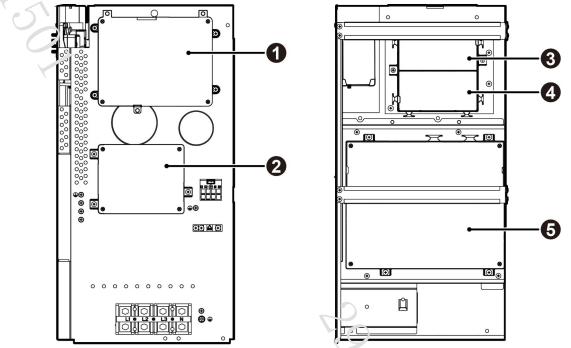
2) Point the black probe of the multimeter to the P2 bonding pad shown in the following figure and the red probe to U, V and W wiring terminals respectively and check the readings of the multimeter; point the red probe of the multimeter to the N2 bonding pad shown in the following figure and the black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

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



4.8 Fan Drive Board

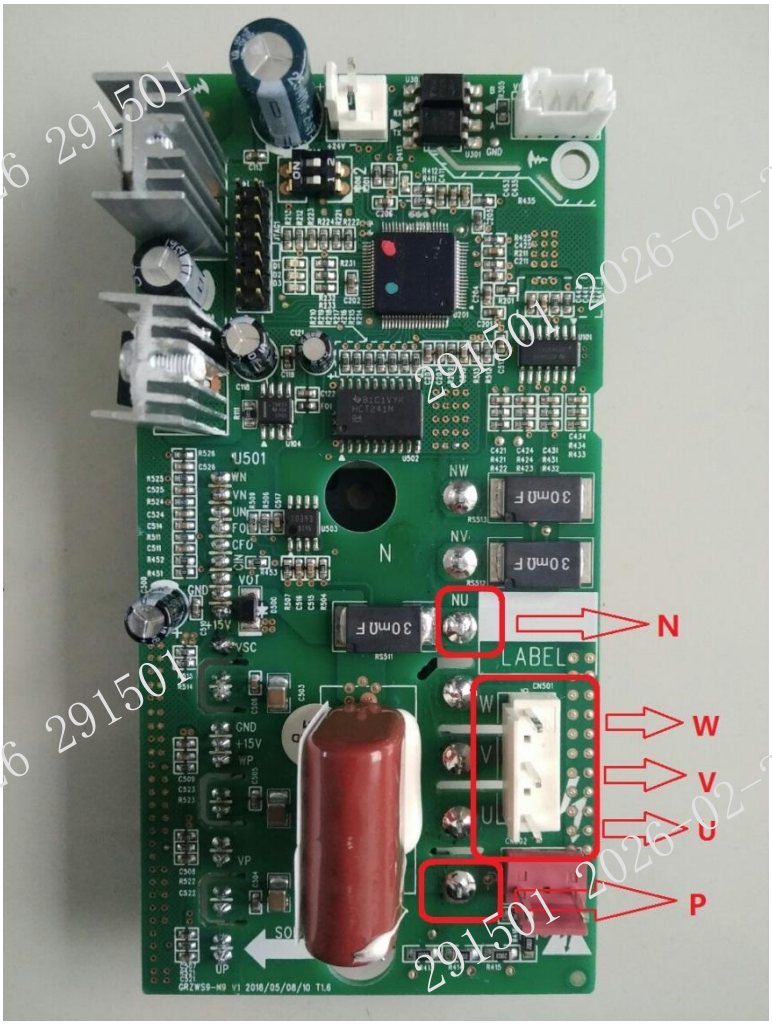
The fan drive board is used to control the operation of the fan(s).

Specifications		Description
		The compressor drive board is used to control the operation of the compressor.
Circuit diagram	Layout of electrical appliance box	Physical position
		

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

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

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

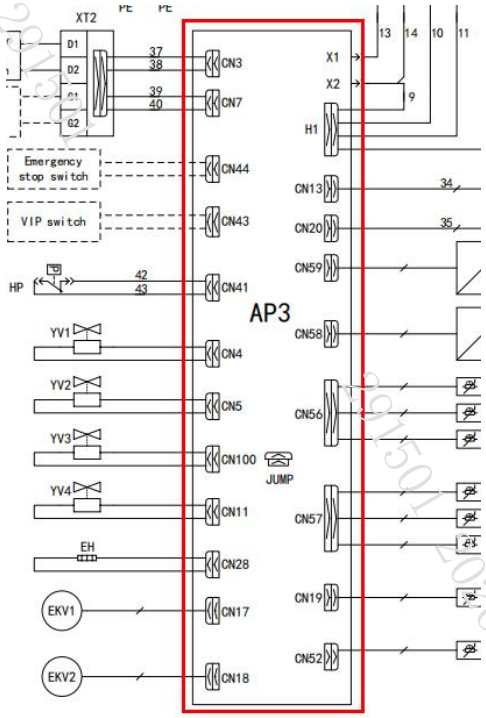


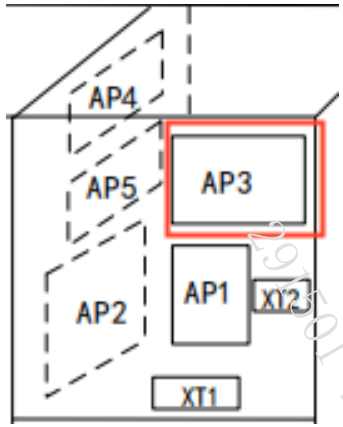
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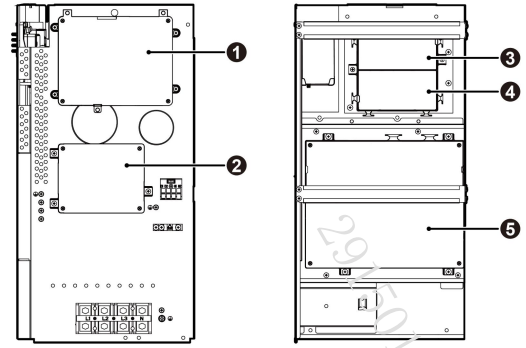
4.9 Main Board

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

Circuit diagram	Layout of electrical appliance box	Physical position



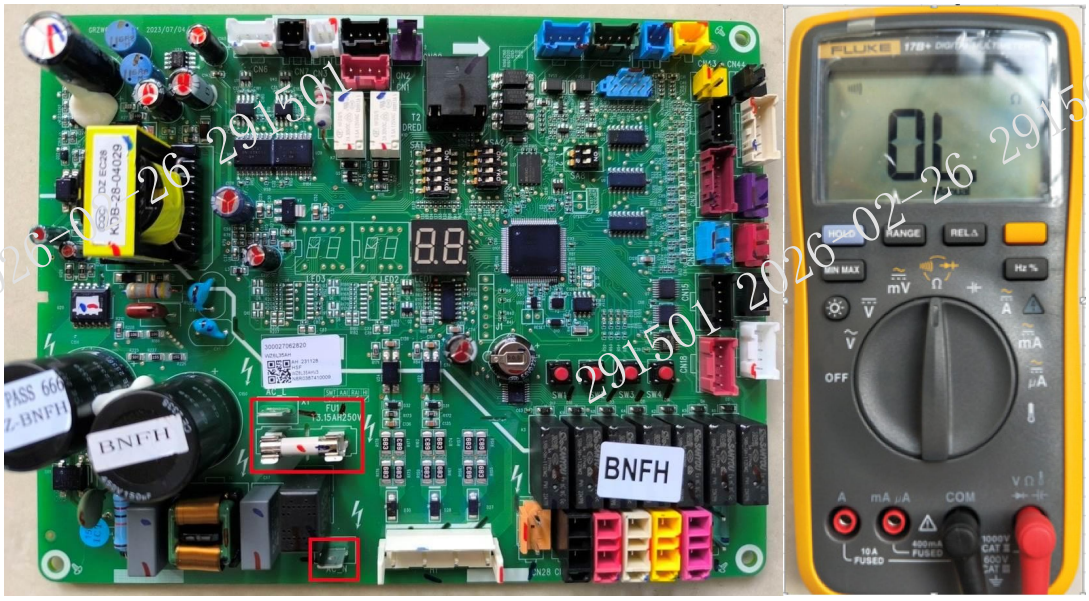




Step 1: Disconnect the power and wait five minutes.

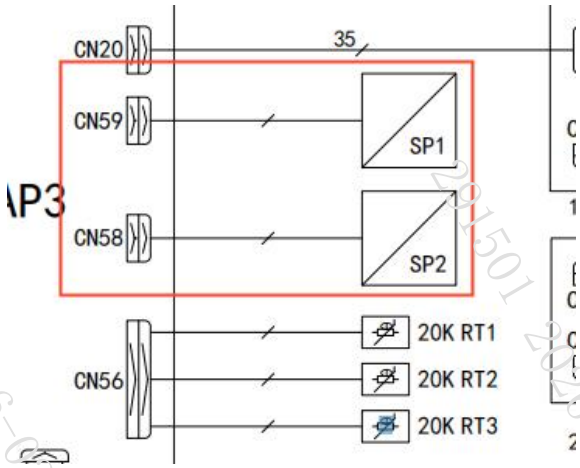
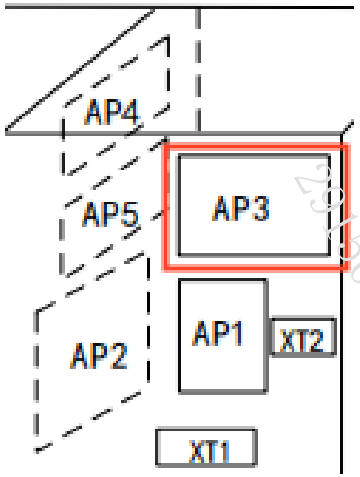
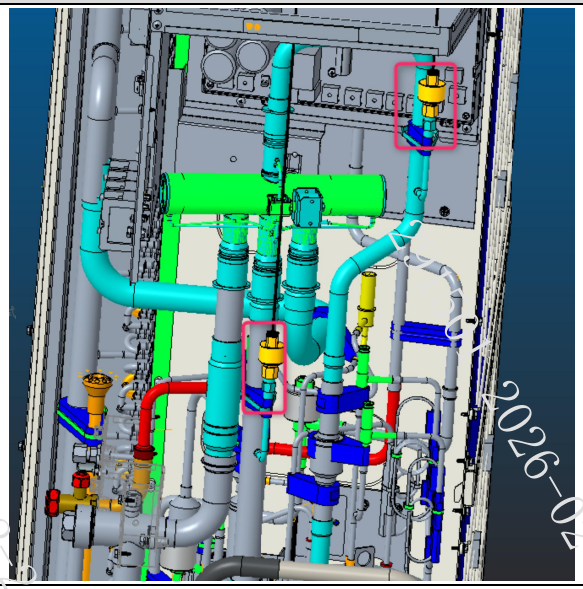
Step 2: As shown in the figure, switch the multimeter to the diode gear. Point the black and red probes to the following positions to check if the main board is normal.

When the main board fails, the numeric display does not show normally. First, under power-off conditions, use the red and black probes of the multimeter to touch one end of the fuse respectively. If the multimeter emits a beeping sound, the fuse is normal. If there is no beeping sound, the fuse is open circuit, and the fuse should be replaced according to the specifications of the main board fuse; if the fuse measurement is normal, use the multimeter's AC voltage setting to measure whether the power supply to the unit's power connection board is normal. If the power supply is normal, it can be preliminarily determined that the main board is abnormal and needs to be replaced.



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4.10 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-400WML/A-X、GMV-450WML/A-X、GMV-504WML/A-X、GMV-560WML/A-X、GMV-615WML/A-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.

3) 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.

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5 Major component maintenance of the unit

5.1 Key Component Introduction

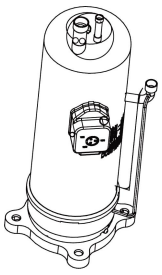
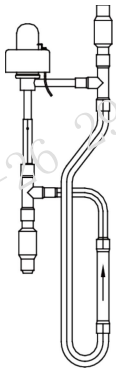
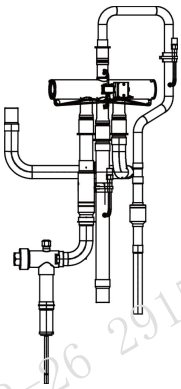
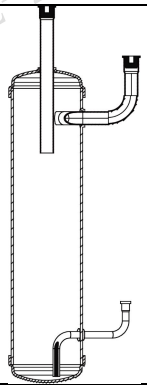
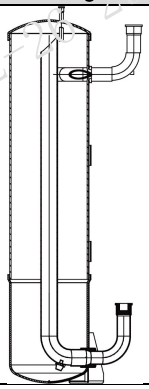
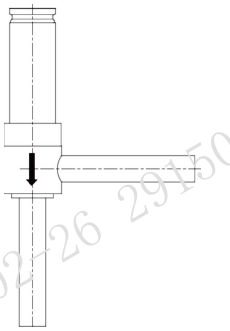
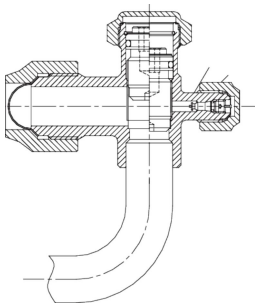
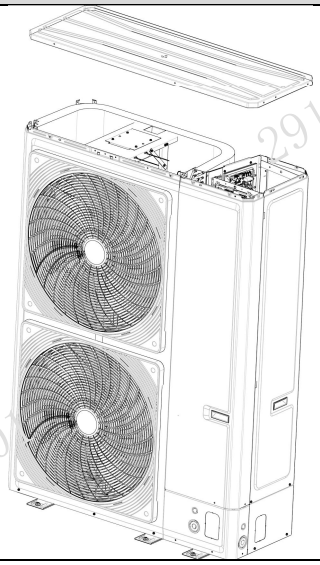
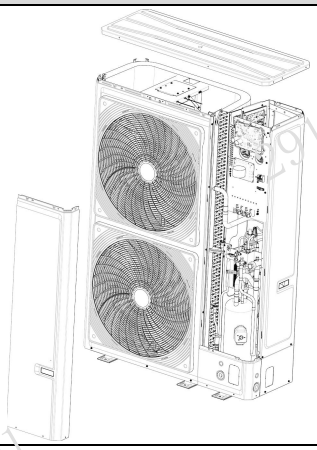
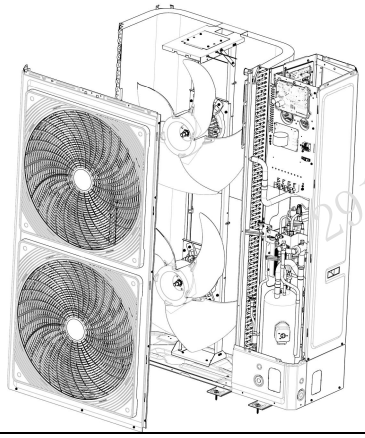
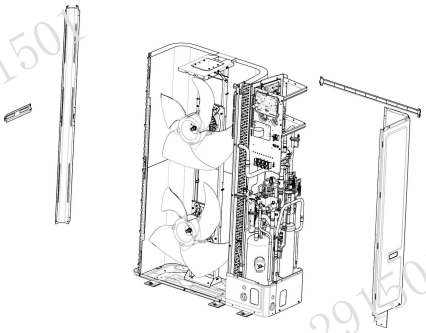
Image	Name	Function
	Compressor	The core component of the air conditioning system.It absorb the low-temperature and low-pressure gas and then compress it into high-temperature and high-pressure gas, and then exhaust it.
	Electronic expansion valve	It's the throttling device. It converts high-pressure refrigerant liquid into low-pressure vapor.
	4-way valve	Change the flow of refrigerant to achieve the conversion between cooling and heating.
	Oil separator	It's located between the exhaust port of compressor and the inlet of the condenser; it's used to separate the compressor lubricating oil carried by the high-temperature, high-pressure and high-speed refrigerant gas discharging from the compressor.

Image	Name	Function
	Gas-liquid Separator	It's located between the evaporator outlet and the compressor suction port. It's used to separate low-temperature and low-pressure refrigerant.
	Solenoid valve	It's controlled by the strong current. It opens when it energized and closes when it's de-energized.
	Cut-off valve	It's used for connecting indoor units and outdoor units as well as maintenance and installation

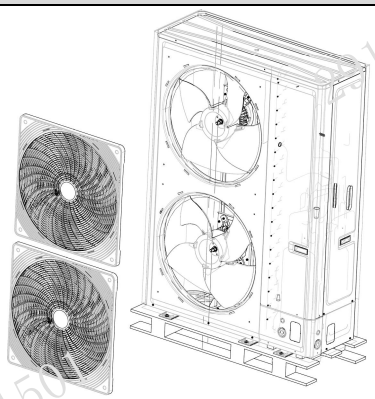
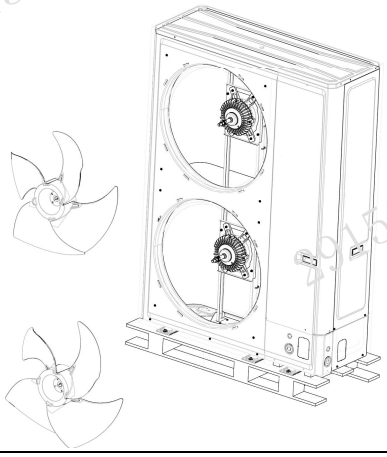
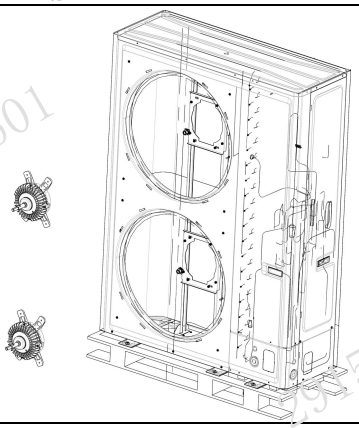
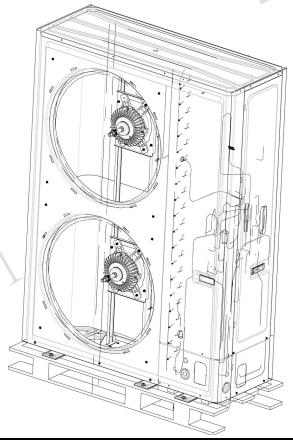
5.2 Key Component Disassembly and Assembly

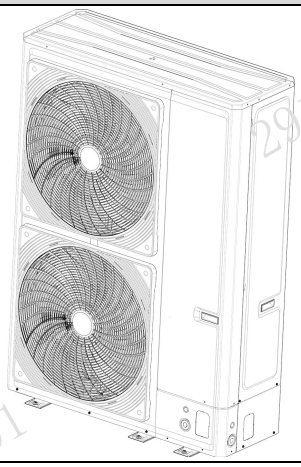
5.2.1 Panel Disassembly and Assembly

Remove the panel		
Note: Please make sure the power is cut off before disassembling the panel.		
Step	Photo	Operation instruction
1. Remove the top cover plate		• First, loosen the screws fixing the front side plate with a screwdriver. • Then lift the front side plate and place it flatly on the ground.

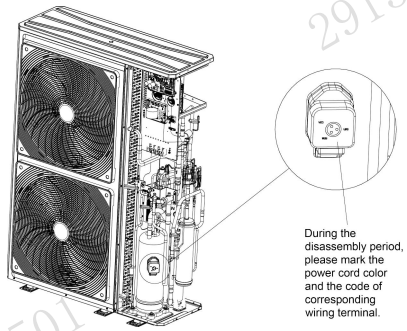
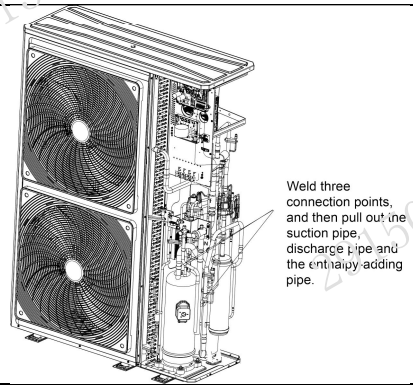
Remove the panel		
Note: Please make sure the power is cut off before disassembling the panel.		
Step	Photo	Operation instruction
2. Remove the front side plate		• First, loosen the screws fixing the front side plate with a screwdriver. • Then lift the front side plate and place it flatly on the ground.
3. Remove front panel and grille		• First, loosen the screws fixing the front panel and grille with a screwdriver. • Place the front panel and the grille flatly on the ground.
4. Remove left side plate and right side plate sub-assy		• First, loosen the screws fixing the left side plate and the right side plate with a screwdriver. • Remove the side plates.

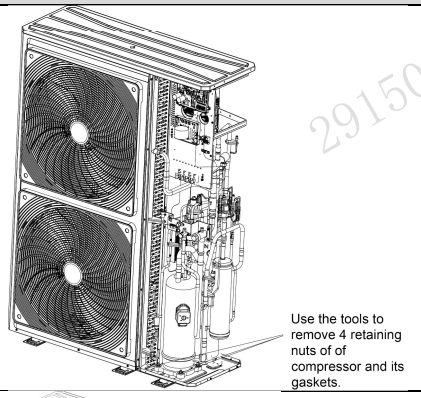
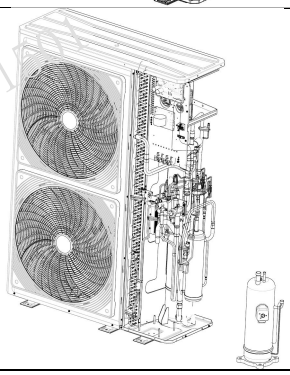
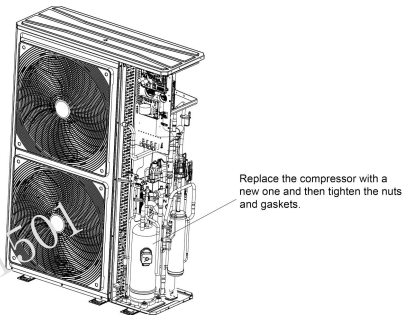
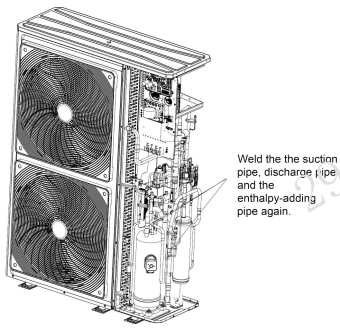
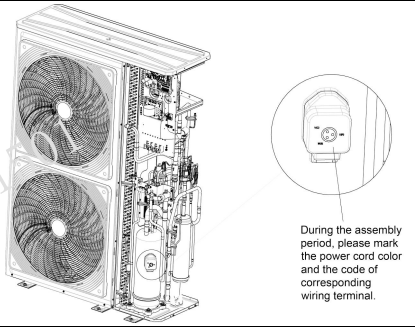
5.2.2 Fan Blade Disassembly and Assembly

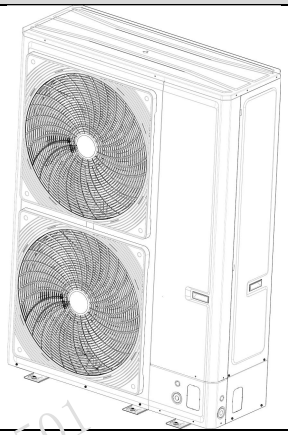
Blade disassembly and assembly		
Note: Please make sure the power is cut off before disassembling the motor.		
Step	Photo	Operation instruction
1.Remove the panel grille		● First, loosen the screws fixing the panel with a screwdriver. ● Remove the panel grille.
2.Remove the blade		● Loosen the nuts fixing the blade with a wrench. ● Remove the blade and then place it on the ground.
3.Remove the motor.		● Loosen the screws fixing the motor with a screwdriver. ● Remove the motor wires. ● Take out the damaged motor.
4.Install the motor		● Replace a new motor, use a screwdriver to the fix the screws and then connect the motor wires.

Blade disassembly and assembly		
Note: Please make sure the power is cut off before disassembling the motor.		
Step	Photo	Operation instruction
5.Assemble the unit		● Assemble the unit in an anti-clockwise direction.

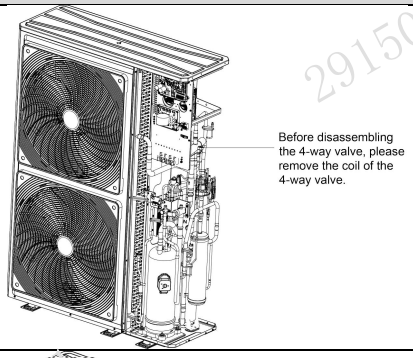
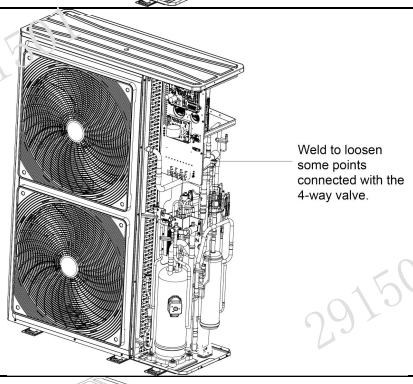
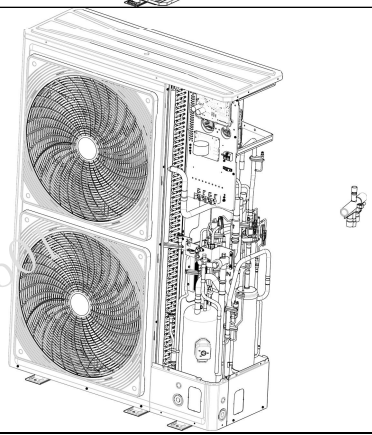
5.2.3 Compressor Assembly and Disassembly

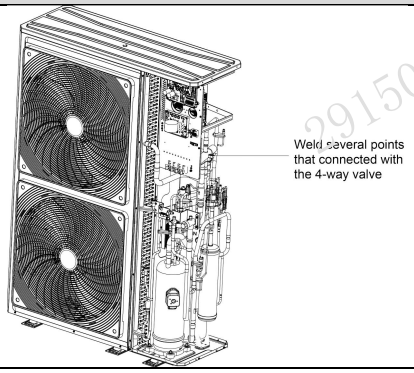
Assemble and disassemble the compressor		
Note: Ensure the refrigerant is removed from the unit's piping system and the power is cut off before removing the compressor.		
Step	Photo	Operation instructions
1. Remove the compressor wiring cover		● First, use a screwdriver to loosen the screws fixing the compressor cover. ● Pull out the power cord. **Note:** When disconnecting the power cord, mark the power cord color with the corresponding wiring terminal code to avoid errors when reconnecting.
2. Disconnect the compressor from the connected pipe		● First, weld compressor suction and exhaust pipes ● Disconnect the connecting pipes from the compressor. **Note:** During welding process, do not let the flame burn other components.

Assemble and disassemble the compressor		
Note: Ensure the refrigerant is removed from the unit's piping system and the power is cut off before removing the compressor.		
Step	Photo	Operation instructions
3. Loosen the nuts fixing the foot of the compressor		● Use a wrench to loosen the compressor nuts.
4. Remove the compressor from the base		● Remove the compressor and replace it **Note:** When replacing the compressor, do not damage the nearby pipes and other components.
5. Secure the new compressor to the base		● After replacing the compressor, tighten the nuts at the bottom.
6. Reconnect suction and exhaust pipes of compressor to the system piping.		● Weld the compressor's connecting pipes and connect the piping components to the compressor. **Note:** During welding process, do not let the flame burn other components.
7. Reconnect the power cord of compressor.		● First, use a screwdriver to tighten the screws of the power cord. ● Reconnect the power cord. **Note:** When connecting the power cord, please mark the color of the power cord with the corresponding terminal.

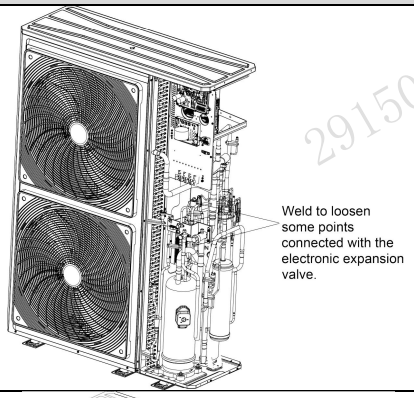
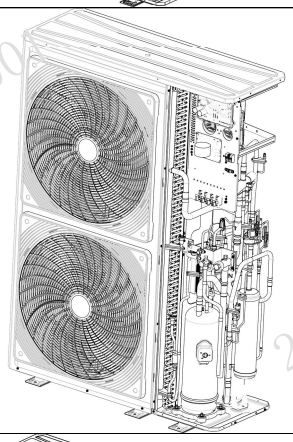
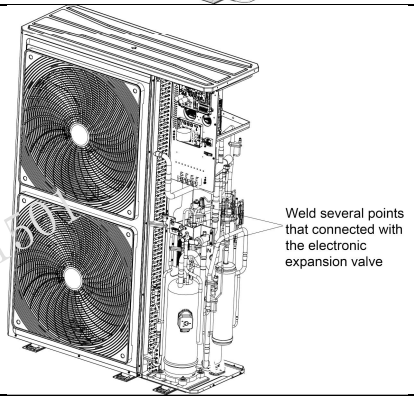
Assemble and disassemble the compressor		
Note: Ensure the refrigerant is removed from the unit's piping system and the power is cut off before removing the compressor.		
Step	Photo	Operation instructions
8. Check and install the the cover plate		● Check if the pipes are properly connected. ● Check if all components and connecting wires are properly connected. ● If there is no problem after checking, tighten the screws of front and rear cover plates.

5.2.4 4-way Valve Assembly and Disassembly

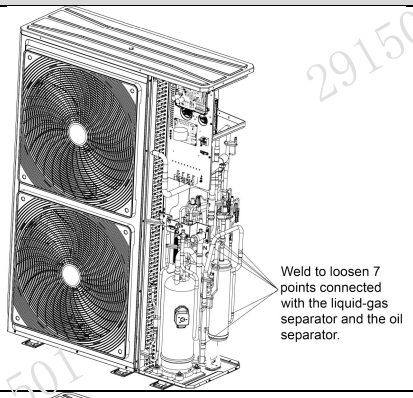
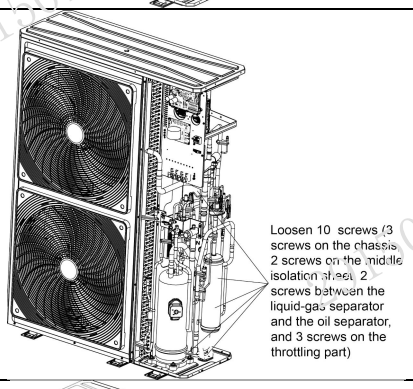
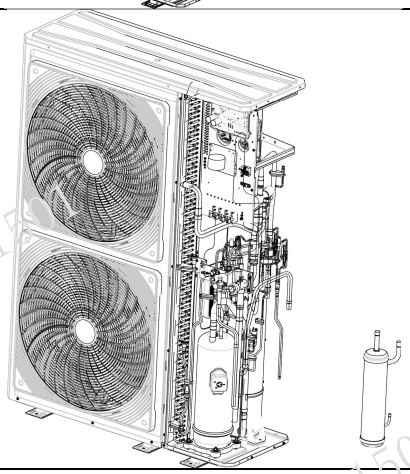
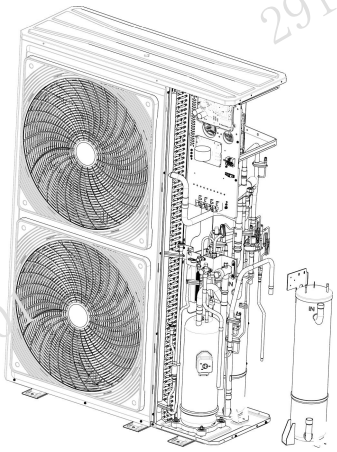
Assemble and disassemble the 4-way valve		
Note: Before disassembling the four-way valve, please make sure there is no refrigerant in the piping system of the unit and the power has been cut off.		
Step	Photo	Operation Instructions
1. Disconnect the 4-way valve coil from the four-way valve.		● First, take out the 4-way valve coil.
2. Disconnect the 4-way valve from the connecting pipe.		● Weld to loosen the 4 connection points on the 4-way valve assembly, and then pull out the connecting pipes. **Note:** During welding process, do not let the flame burn other components.
3. Replace 4-way valve.		● Replace the 4-way valve **Note:** During welding process, do not let the flame burn other components.

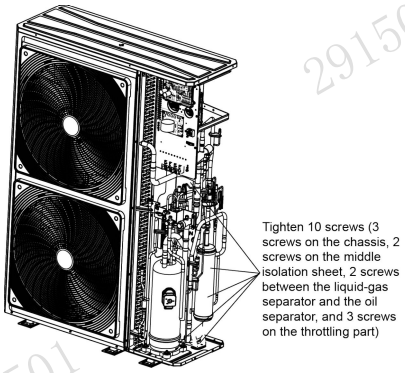
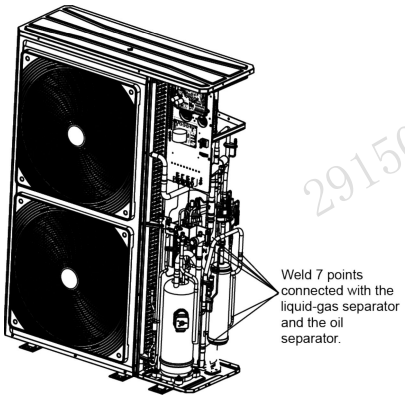
Assemble and disassemble the 4-way valve		
Note: Before disassembling the four-way valve, please make sure there is no refrigerant in the piping system of the unit and the power has been cut off.		
Step	Photo	Operation Instructions
4. Replace the 4-way valve.		● Weld the 4-way valve with the pipelines. **Note:** During welding process, do not let the flame burn other components.

5.2.5 Electronic Expansion Valve Assembly and Disassembly

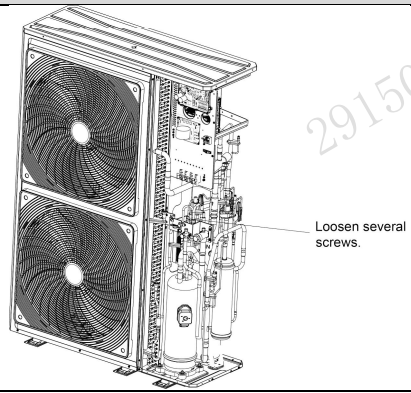
Assemble and disassemble electronic expansion valve		
Note: Before disassembling the electronic expansion valve, please make sure there is no refrigerant in the piping system of the unit and the power has been cut off.		
Step	Photo	Operation instructions
1. Disconnect the electronic expansion valve from the pipelines.		● First, disassemble the coil of the electronic expansion valve. ● Weld to loosen the connecting pipe of the electronic expansion valve, and then pull out the connecting pipe. **Note:** During welding process, do not let the flame burn other components.
2. Take out the electronic expansion valve and then replace it.		● Take out the electronic expansion valve and then replace it.
3. Weld the connecting pipe and install the coil of electronic expansion valve.		● Weld the connecting pipe of the electronic expansion valve. ● Install the coil of electronic expansion valve. **Note:** During welding process, do not let the flame burn other components.

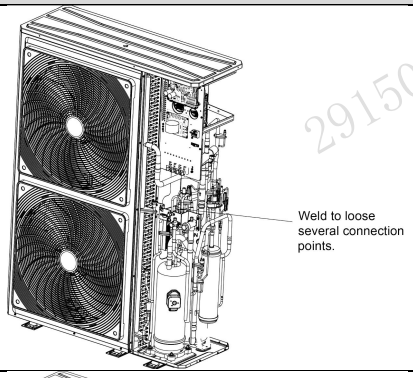
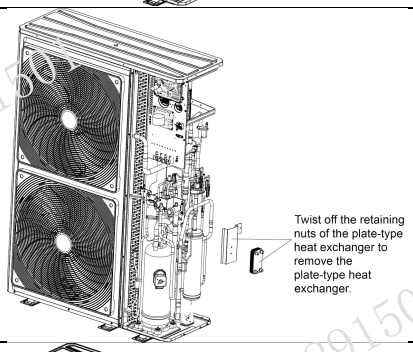
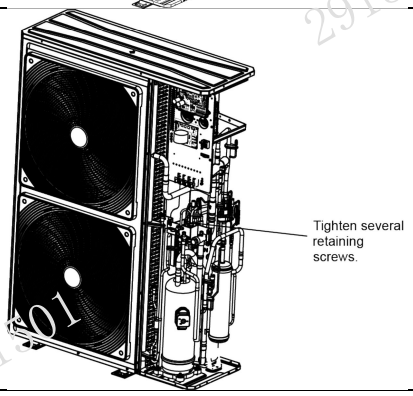
5.2.6 Oil Separator And Gas-liquid Separator Assembly and Disassembly

Assemble and disassemble oil separator and gas-liquid separator		
Note: Before disassembling the oil separator and the gas-liquid separator, please ensure that there is no refrigerant in the piping system of the unit and the power must be cut off.		
Step	Illustration	Operation Instructions
1. Disconnect the inlet and outlet pipe of the oil separator and the gas-liquid separator.		● Weld to loose the 7 connection points on the oil separator and the gas-liquid separator, and pull out the connecting pipe. **Note:** During welding process, do not let the flame burn other components.
2. Loosen the connecting screws		● Loosen the screws between the base plate, the middle partition plate, the throttling component, the gas-liquid separator, and the oil separator.
3. Replace the oil separator.		● Disassemble the oil separator. ● Replace the oil separator.
4. Replace the gas separator		● Disassemble the gas separator. ● Replace the gas separator.

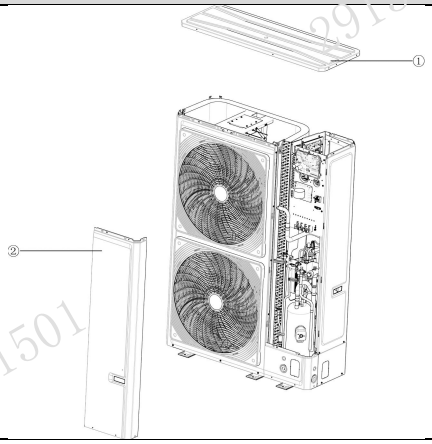
Assemble and disassemble oil separator and gas-liquid separator		
Note: Before disassembling the oil separator and the gas-liquid separator, please ensure that there is no refrigerant in the piping system of the unit and the power must be cut off.		
Step	Illustration	Operation Instructions
5. Tighten the connecting screws		● Loosen the screws between the chassis, the middle partition plate, the throttling component, the gas-liquid separator, and the oil separator.
6. Weld the pipeline		● Weld the connecting pipe to the gas separator. ● Use a screwdriver to tighten the screws of the gas separator, resecure it, and complete the replacement. **Note:** During welding process, do not let the flame burn other components.

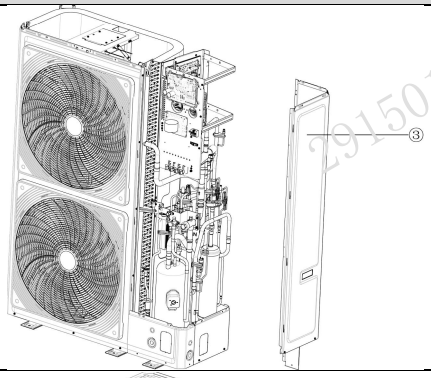
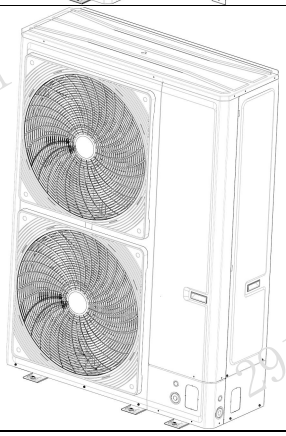
5.2.7 Plate-type Heat Exchanger Assembly and Disassembly

Assemble and disassemble the plate-type heat exchanger		
Note: Before disassembling the plate-type heat exchanger, please ensure that there is no refrigerant in the piping system of the unit and the power must be cut off.		
Step	Photo	Operation instructions
1. Remove the bracket of the plate-type heat exchanger		● Twist off the screws used for fixing the plate-type heat exchagner.

Assemble and disassemble the plate-type heat exchanger		
Note: Before disassembling the plate-type heat exchanger, please ensure that there is no refrigerant in the piping system of the unit and the power must be cut off.		
Step	Photo	Operation instructions
2. Weld the connection point of the plate-type heat exchanger.		● Weld several solder joints and the plate-type heat exchanger can be removed backwards. **Note:** During welding process, do not let the flame burn other components.
3. Twist off the screws and then remove the plate-type heat exchanger		● Twist off the screws and then remove the plate-type heat exchanger. **Note:** During welding process, do not let the flame burn other components.
4. Replace the new plate-type heat exchanger , install the bracket of the heat exchanger and then install front and right side plates.		● Replace the new plate-type heat exchanger , install the bracket of the heat exchanger, and install front and right side plates. **Note:** During welding process, do not let the flame burn other components.

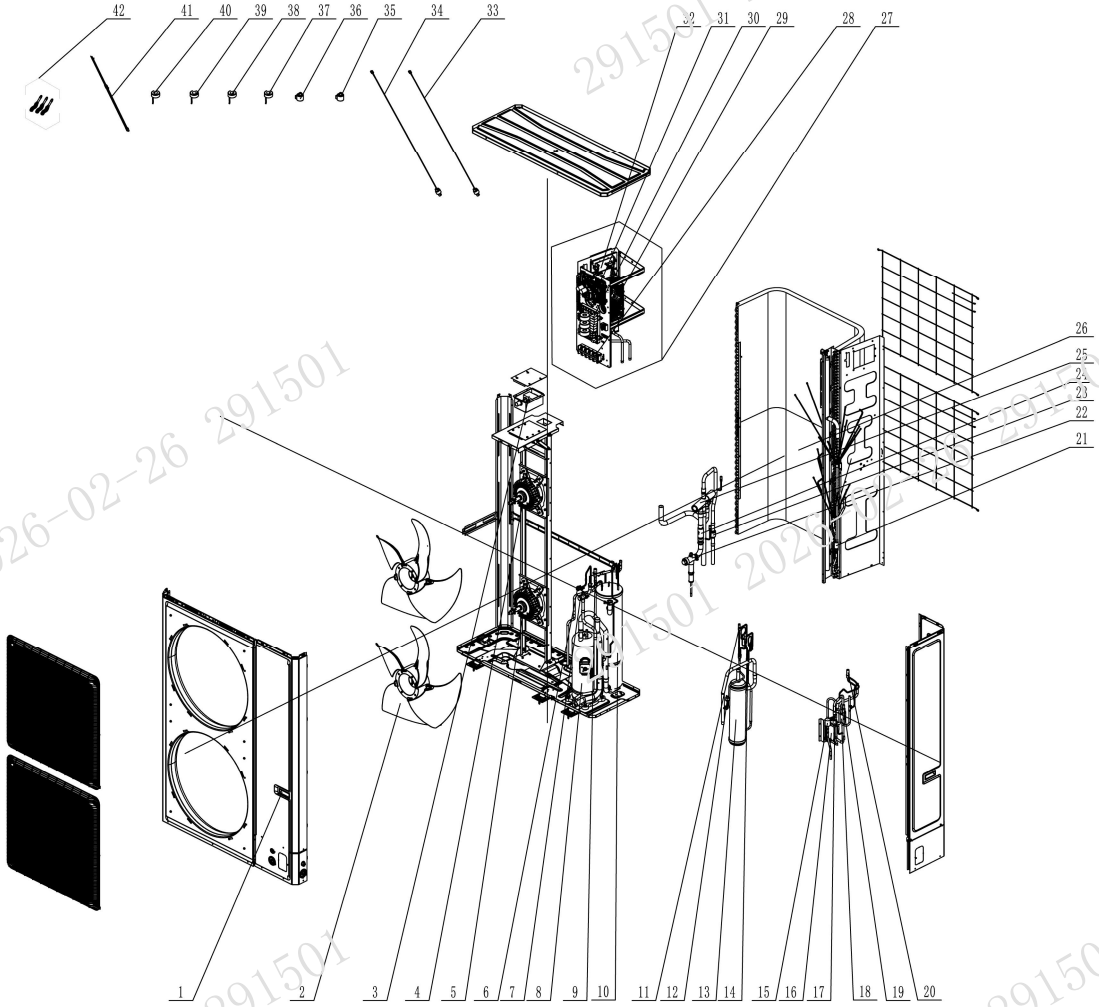
5.2.8 Electric Box Assembly And Disassembly

Assemble and disassemble the electric box		
Note: Before dissembling the electric box, the power must be cut off.		
Step	Photo	Operation Instructions
1. Remove the top cover and the front side plate.		● Twist off the screws between the top cover and the front side panel with a screwdriver, remove the top cover ① and the front side panel ② and then place them flat on the ground.

Assemble and disassemble the electric box		
Note: Before dissembling the electric box, the power must be cut off.		
Step	Photo	Operation Instructions
2. Remove the side plate of the electric box.		● Remove the side panel ③ of the electrical box. ● Remove the electric box.
3. Check and re-install the unit according to the procedures.		● Check if all electrical components are intact. ● Check if all components and connecting wires are correctly and properly connected. ● After inspection, reinstall the panels and side panels.

6 Explosive View and Parts List

6.1 Explosive View and Parts List of GMV-400WML/A-X and GMV-450WML/A-X

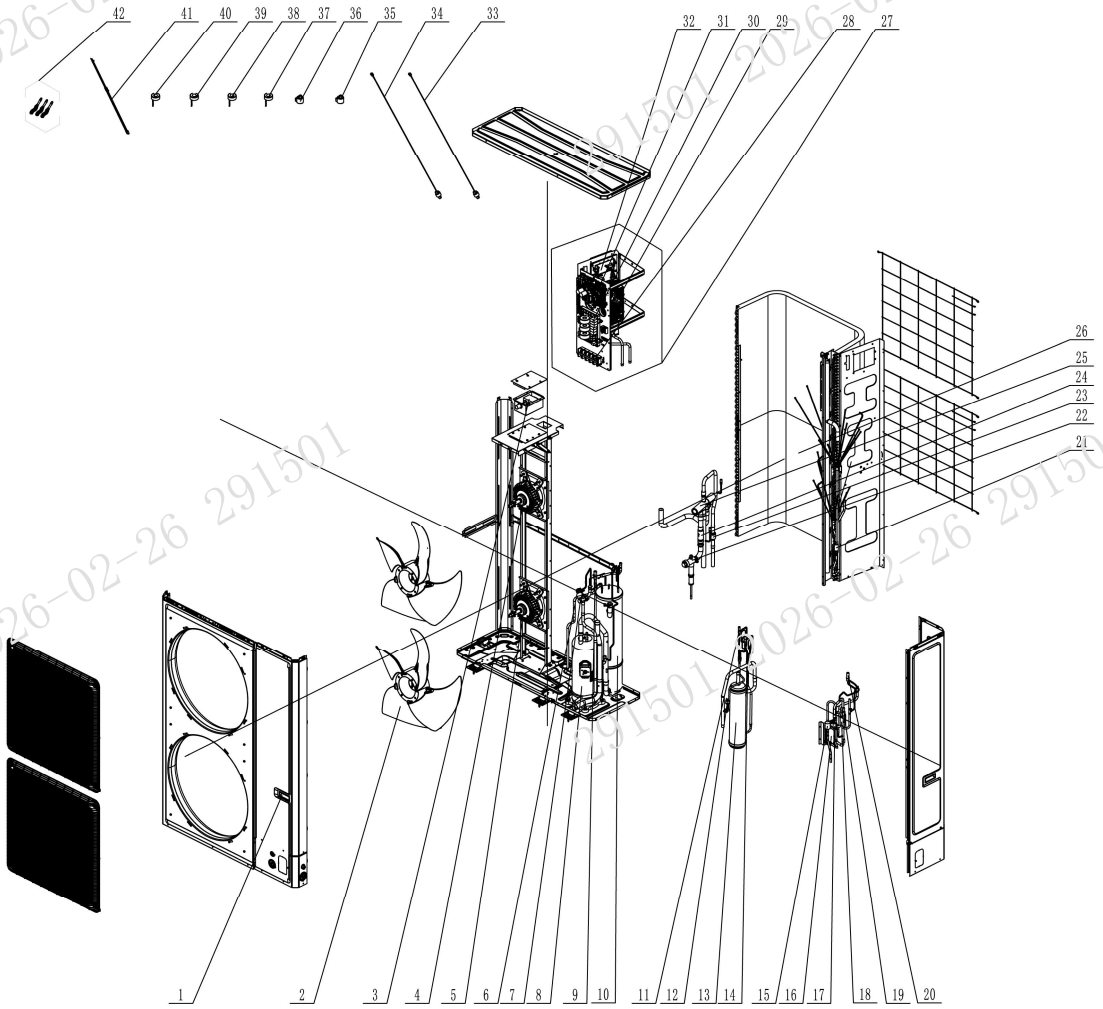


No.	Name	Vulnerable part *	Qty
1	Controller Holder	*	2
2	Axial Flow Fan	*	2
3	Reactor	*	1
4	Brushless DC Motor		1
5	Brushless DC Motor		1
6	Nozzle for Adding Freon	*	1
7	Cut off Valve	*	1
8	Compressor and Fittings	*	1
9	Electronic Expansion Valve	*	1
10	Gas-liquid Separator	*	1
11	Electromagnetic Valve	*	2
12	Pressure Protect Switch	*	1

No.	Name	Vulnerable part *	Qty
13	Oil Separator	*	1
14	Strainer	*	1
15	Silencer	*	1
16	Plate-type Heat Exchanger	*	1
17	Electronic Expansion Valve	*	1
18	Gas Tube Filter	*	1
19	Electromagnetic Valve	*	1
20	Discharge Charge Valve	*	1
21	Filter	*	1
22	Cut off Valve	*	1
23	One Way Valve	*	1
24	Strainer	*	1
25	4-Way Valve	*	1
26	Condenser Assy		1
27	Electric Box Assy		1
28	Terminal Board	*	1
29	Drive Board		1
30	Filter Board	*	1
31	Main Board	*	1
32	Fan Board	*	2
33	Pressure Sensor	*	1
34	Pressure Sensor	*	1
35	Electric Expand Valve Fitting	*	1
36	Electric Expand Valve Fitting	*	1
37	Magnet Coil (Electromagnetic Valve)	*	1
38	4 Way Valve Coil	*	1
39	Magnet Coil (Electromagnetic Valve)	*	1
40	Magnet Coil (Electromagnetic Valve)	*	1
41	Electrical Heater	*	1
42	Sensor Sub-Assy	*	1

Above data is subject to change without notice,pls reference the SP in global service website.

6.2 Explosive View and Parts List of GMV-504WML/A-X, GMV-560WML/A-X and GMV-615WML/A-X



No.	Name	Vulnerable part *	Qty
1	Controller Holder	*	2
2	Axial Flow Fan	*	2
3	Reactor	*	1
4	Brushless DC Motor		1
5	Brushless DC Motor		1
6	Nozzle for Adding Freon	*	1
7	Cut off Valve	*	1
8	Compressor and Fittings	*	1
9	Electronic Expansion Valve	*	1
10	Gas-liquid Separator	*	1
11	Electromagnetic Valve	*	2
12	Pressure Protect Switch	*	1
13	Oil Separator	*	1
14	Strainer	*	1

No.	Name	Vulnerable part *	Qty
15	Silencer	*	1
16	Plate-type Heat Exchanger	*	1
17	Electronic Expansion Valve	*	1
18	Gas Tube Filter	*	1
19	Electromagnetic Valve	*	1
20	Discharge Charge Valve	*	1
21	Filter	*	1
22	Cut off Valve	*	1
23	One Way Valve	*	1
24	Strainer	*	1
25	4-Way Valve	*	1
26	Condenser Assy		1
27	Electric Box Assy		1
28	Terminal Board	*	1
29	Drive Board		1
30	Filter Board	*	1
31	Main Board	*	1
32	Fan Board	*	2
33	Pressure Sensor	*	1
34	Pressure Sensor	*	1
35	Electric Expand Valve Fitting	*	1
36	Electric Expand Valve Fitting	*	1
37	Magnet Coil (Electromagnetic Valve)	*	1
38	4 Way Valve Coil	*	1
39	Magnet Coil (Electromagnetic Valve)	*	1
40	Magnet Coil (Electromagnetic Valve)	*	1
41	Electrical Heater	*	1
42	Sensor Sub-Assy	*	1

Above data is subject to change without notice,pls reference the SP in global service website.

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Appendixes

Appendix 1 Temperature Senor Resistance and Temperature Relationship Table

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

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-20	144	0.311	71	2.523	2.825
-19	138.1	0.323	72	2.439	2.838
-18	128.6	0.345	73	2.358	2.852
-17	121.6	0.362	74	2.28	2.865
-16	115	0.381	75	2.205	2.877
-15	108.7	0.4	76	2.133	2.889
-14	102.9	0.42	77	2.064	2.901
-13	97.4	0.44	78	1.997	2.912
-12	92.22	0.462	79	1.933	2.923
-11	87.35	0.484	80	1.871	2.934
-10	82.75	0.506	81	1.811	2.945
-9	78.43	0.53	82	1.754	2.955
-8	74.35	0.554	83	1.699	2.964
-7	70.5	0.579	84	1.645	2.974
-6	66.88	0.605	85	1.594	2.983
-5	63.46	0.631	86	1.544	2.992
-4	60.23	0.658	87	1.497	3.001
-3	57.18	0.686	88	1.451	3.009
-2	54.31	0.714	89	1.408	3.017
-1	51.59	0.743	90	1.363	3.025
0	49.02	0.773	91	1.322	3.033
1	46.8	0.801	92	1.282	3.04
2	44.31	0.835	93	1.244	3.047
3	42.14	0.866	94	1.207	3.054
4	40.09	0.899	95	1.171	3.061
5	38.15	0.931	96	1.136	3.068
6	36.32	0.965	97	1.103	3.074
7	34.58	0.998	98	1.071	3.08
8	32.94	1.033	99	1.039	3.086
9	31.38	1.067	100	1.009	3.092
10	29.9	1.102	101	0.98	3.098
11	28.51	1.138	102	0.952	3.103
12	27.18	1.174	103	0.925	3.108
13	25.92	1.21	104	0.898	3.114
14	24.73	1.246	105	0.873	3.119
15	23.6	1.282	106	0.848	3.123
16	22.53	1.319	107	0.825	3.128
17	21.51	1.356	108	0.802	3.133

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
18	20.54	1.393	109	0.779	3.137
19	19.63	1.429	110	0.758	3.141
20	18.75	1.467	111	0.737	3.145
21	17.93	1.503	112	0.717	3.15
22	17.14	1.54	113	0.697	3.153
23	16.39	1.577	114	0.678	3.157
24	15.68	1.613	115	0.66	3.161
25	15	1.65	116	0.642	3.165
26	14.36	1.686	117	0.625	3.168
27	13.74	1.722	118	0.608	3.171
28	13.16	1.758	119	0.592	3.175
29	12.6	1.793	120	0.577	3.178
30	12.07	1.829	121	0.561	3.181
31	11.57	1.863	122	0.547	3.184
32	11.09	1.897	123	0.532	3.187
33	10.63	1.931	124	0.519	3.19
34	10.2	1.964	125	0.505	3.192
35	9.779	1.998	126	0.492	3.195
36	9.382	2.03	127	0.48	3.198
37	9.003	2.062	128	0.467	3.2
38	8.642	2.094	129	0.456	3.203
39	5.997	2.125	130	0.444	3.205
41	7.653	2.185	131	0.433	3.207
42	7.352	2.215	132	0.422	3.21
43	7.065	2.243	133	0.412	3.212
44	6.791	2.272	134	0.401	3.214
45	6.529	2.299	135	0.391	3.216
46	6.278	2.326	136	0.382	3.218
47	6.038	2.353	137	0.372	3.22
48	5.809	2.379	138	0.363	3.222
49	5.589	2.404	139	0.355	3.224
50	5.379	2.429	140	0.346	3.226
51	5.179	2.453	141	0.338	3.227
52	4.986	2.477	142	0.33	3.229
53	4.802	2.5	143	0.322	3.231
54	4.625	2.522	144	0.314	3.232
55	4.456	2.544	145	0.307	3.234
56	4.294	2.566	146	0.299	3.235
57	4.139	2.586	147	0.292	3.237
58	3.99	2.607	148	0.286	3.238
59	3.848	2.626	149	0.279	3.24
60	3.711	2.646	150	0.273	3.241
61	3.579	2.664	151	0.266	3.242
62	3.454	2.682	152	0.261	3.244
63	3.333	2.7	153	0.254	3.245

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
64	3.217	2.717	154	0.248	3.246
65	3.105	2.734	155	0.243	3.247
66	2.998	2.75	156	0.237	3.249
67	2.898	2.766	157	0.232	3.25
68	2.797	2.781	158	0.227	3.251
69	2.702	2.796	159	0.222	3.252
70	2.611	2.811	160	0.217	3.253

Pipeline temperature sensor 20kΩ resistance ~ voltage correspondence table (including defrosting temperature sensor, subcooler temperature sensor, gas-liquid separator temperature sensor, IDU inlet and outlet tube temperature sensor)

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30	361.8	0.173	66	3.998	2.75
-29	339.8	0.183	67	3.861	2.766
-28	319.2	0.195	68	3.729	2.781
-27	300	0.206	69	3.603	2.796
-26	282.2	0.218	70	3.481	2.811
-25	265.5	0.231	71	3.364	2.825
-24	249.9	0.245	72	3.252	2.838
-23	235.3	0.259	73	3.144	2.852
-22	221.6	0.273	74	3.04	2.865
-21	208.9	0.288	75	2.94	2.877
-20	196.9	0.304	76	2.844	2.889
-19	181.4	0.328	77	2.752	2.901
-18	171.4	0.345	78	2.663	2.912
-17	162.1	0.362	79	2.577	2.923
-16	153.3	0.381	80	2.495	2.934
-15	145	0.4	81	2.415	2.944
-14	137.2	0.42	82	2.339	2.954
-13	129.9	0.44	83	2.265	2.964
-12	123	0.462	84	2.194	2.974
-11	116.5	0.484	85	2.125	2.983
-10	110.3	0.507	86	2.059	2.992
-9	104.6	0.53	87	1.996	3.001
-8	99.13	0.554	88	1.934	3.009
-7	94	0.579	89	1.875	3.017
-6	89.17	0.605	90	1.818	3.025
-5	84.61	0.631	91	1.763	3.033
-4	80.31	0.658	92	1.71	3.04
-3	76.24	0.686	93	1.658	3.047
-2	72.41	0.714	94	1.609	3.054
-1	68.79	0.743	95	1.561	3.061
0	65.37	0.773	96	1.515	3.068
1	62.13	0.804	97	1.47	3.074
2	59.08	0.835	98	1.427	3.08

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
3	56.19	0.866	99	1.386	3.086
4	53.46	0.898	100	1.346	3.092
5	50.87	0.931	101	1.307	3.098
6	48.42	0.965	102	1.269	3.103
7	46.11	0.998	103	1.233	3.108
8	43.92	1.033	104	1.198	3.114
9	41.84	1.067	105	1.164	3.119
10	39.87	1.102	106	1.131	3.123
11	38.01	1.138	107	1.099	3.128
12	36.24	1.174	108	1.069	3.133
13	34.57	1.209	109	1.039	3.137
14	32.98	1.246	110	1.01	3.141
15	31.47	1.282	111	0.9825	3.145
16	30.04	1.319	112	0.9556	3.15
17	28.68	1.356	113	0.9295	3.153
18	27.39	1.393	114	0.9043	3.157
19	26.17	1.429	115	0.8799	3.161
20	25.01	1.466	116	0.8562	3.165
21	23.9	1.503	117	0.8333	3.168
22	22.85	1.54	118	0.8111	3.171
23	21.85	1.577	119	0.7895	3.175
24	20.9	1.614	120	0.7687	3.178
25	20	1.65	121	0.7485	3.181
26	19.14	1.686	122	0.7289	3.184
27	18.32	1.722	123	0.7099	3.187
28	17.55	1.758	124	0.6915	3.19
29	16.8	1.793	125	0.6736	3.192
30	16.1	1.828	126	0.6563	3.195
31	15.43	1.863	127	0.6395	3.198
32	14.79	1.897	128	0.6232	3.2
33	14.18	1.931	129	0.6074	3.203
34	13.59	1.965	130	0.5921	3.205
35	13.04	1.998	131	0.5772	3.207
36	12.51	2.03	132	0.5627	3.21
37	12	2.063	133	0.5487	3.212
38	11.52	2.094	134	0.5351	3.214
39	11.06	2.125	135	0.5219	3.216
40	10.62	2.155	136	0.509	3.218
41	10.2	2.185	137	0.4966	3.22
42	9.803	2.215	138	0.4845	3.222
43	9.42	2.243	139	0.4727	3.224
44	9.054	2.272	140	0.4613	3.226
45	8.705	2.299	141	0.4502	3.227
46	8.37	2.326	142	0.4394	3.229
47	8.051	2.353	143	0.4289	3.231

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
48	7.745	2.379	144	0.4187	3.232
49	7.453	2.404	145	0.4088	3.234
50	7.173	2.429	146	0.3992	3.235
51	6.905	2.453	147	0.3899	3.237
52	6.648	2.477	148	0.3808	3.238
53	6.403	2.5	149	0.3719	3.24
54	6.167	2.522	150	0.3633	3.241
55	5.942	2.544	151	0.3549	3.242
56	5.726	2.565	152	0.3468	3.244
57	5.519	2.586	153	0.3389	3.245
58	5.32	2.607	154	0.3312	3.246
59	5.13	2.626	155	0.3237	3.247
60	4.948	2.646	156	0.3164	3.249
61	4.773	2.664	157	0.3093	3.25
62	4.605	2.682	158	0.3024	3.251
63	4.443	2.7	159	0.2956	3.252
64	4.289	2.717	160	0.2891	3.253
65	4.14	2.734	—	—	—

Exhaust temperature sensor 50kΩ resistance ~ voltage correspondence table (including compressor top shell temperature sensor and air exhaust pipe temperature sensor)

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-30	911.56	0.036	61	11.736	1.518
-29	853.66	0.038	62	11.322	1.548
-28	799.98	0.041	63	10.925	1.577
-27	750.18	0.043	64	10.544	1.606
-26	703.92	0.046	65	10.178	1.635
-25	660.93	0.049	66	9.8269	1.664
-24	620.94	0.052	67	9.4896	1.693
-23	583.72	0.056	68	9.1655	1.722
-22	549.04	0.059	69	8.9542	1.741
-21	516.71	0.063	70	8.5551	1.778
-20	486.55	0.066	71	5.9676	1.806
-19	458.4	0.07	72	7.9913	1.834
-18	432.1	0.075	73	7.7257	1.862
-17	407.51	0.079	74	7.4702	1.889
-16	384.51	0.084	75	7.2245	1.916
-15	362.99	0.088	76	6.9882	1.943
-14	342.83	0.094	77	6.7608	1.969
-13	323.94	0.099	78	6.542	1.995
-12	306.23	0.104	79	6.3315	2.021
-11	289.61	0.11	80	6.1288	2.046
-10	274.02	0.116	81	5.9336	2.071
-9	259.37	0.123	82	5.7457	2.096
-8	245.61	0.129	83	5.5647	2.12

Temperature (°C)	Resistance (kΩ)	Voltage (V)	Temperature (°C)	Resistance (kΩ)	Voltage (V)
-7	232.67	0.136	84	5.3903	2.144
-6	220.5	0.143	85	5.2223	2.168
-5	209.05	0.151	86	5.0605	2.191
-4	195.97	0.158	87	4.9044	2.214
-3	188.12	0.167	88	4.7541	2.237
-2	178.65	0.175	89	4.6091	2.259
-1	169.68	0.184	90	4.4693	2.281
0	161.02	0.193	91	4.3345	2.302
1	153	0.202	92	4.2044	2.323
2	145.42	0.212	93	4.0789	2.344
3	135.96	0.223	94	3.9579	2.364
4	131.5	0.233	95	3.841	2.384
5	126.17	0.242	96	3.7283	2.404
6	119.08	0.256	97	3.6194	2.423
7	113.37	0.267	98	3.5143	2.442
8	107.96	0.28	99	3.4128	2.46
9	102.85	0.292	100	3.3147	2.478
10	98.006	0.306	101	3.22	2.496
11	93.42	0.319	102	3.1285	2.514
12	89.075	0.333	103	3.0401	2.531
13	84.956	0.348	104	2.9547	2.547
14	81.052	0.362	105	2.8721	2.564
15	77.349	0.378	106	2.7922	2.58
16	73.896	0.393	107	2.715	2.595
17	70.503	0.41	108	2.6404	2.611
18	67.338	0.427	109	2.5682	2.626
19	64.333	0.444	110	2.4983	2.64
20	61.478	0.462	111	2.4308	2.655
21	58.766	0.48	112	2.3654	2.669
22	56.189	0.499	113	2.3021	2.682
23	53.738	0.518	114	2.2409	2.696
24	51.408	0.537	115	2.1816	2.709
25	49.191	0.558	116	2.1242	2.722
26	47.082	0.578	117	2.0686	2.734
27	45.074	0.599	118	2.0148	2.747
28	43.163	0.621	119	1.9626	2.759
29	41.313	0.643	120	1.9123	2.77
30	39.61	0.665	121	1.8652	2.781
31	37.958	0.688	122	1.8158	2.793
32	36.384	0.711	123	1.7698	2.804
33	34.883	0.735	124	1.7253	2.814
34	33.453	0.759	125	1.6821	2.825
35	32.088	0.784	126	1.6402	2.835
36	30.787	0.809	127	1.5996	2.845
37	29.544	0.835	128	1.5602	2.855

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

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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

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Appendix 3 Pressure Sensor Voltage and Pressure Table

High-pressure sensor features (R410A)

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-40	176	0.102	16	1300	1.3
-39	184	0.111	17	1337	1.34
-38	193	0.12	18	1375	1.38
-37	202	0.13	19	1413	1.421
-36	211	0.139	20	1453	1.463
-35	220	0.149	21	1493	1.506
-34	230	0.16	22	1535	1.551
-33	240	0.17	23	1577	1.596
-32	250	0.181	24	1620	1.641
-31	261	0.193	25	1664	1.688
-30	273	0.206	26	1708	1.735
-29	283	0.216	27	1754	1.784
-28	295	0.229	28	1801	1.834
-27	307	0.242	29	1848	1.884
-26	319	0.255	30	1897	1.937
-25	332	0.268	31	1946	1.989
-24	345	0.282	32	1996	2.042
-23	359	0.297	33	2048	2.098
-22	373	0.312	34	2100	2.153
-21	388	0.328	35	2153	2.21
-20	403	0.344	36	2208	2.268
-19	418	0.36	37	2263	2.327
-18	434	0.377	38	2320	2.388
-17	450	0.394	39	2377	2.448
-16	467	0.412	40	2436	2.511
-15	484	0.43	41	2495	2.574
-14	502	0.45	42	2556	2.639
-13	520	0.469	43	2618	2.705
-12	538	0.488	44	2681	2.772
-11	558	0.509	45	2745	2.841
-10	577	0.53	46	2810	2.91
-9	597	0.551	47	2876	2.98
-8	618	0.573	48	2944	3.053
-7	639	0.596	49	3013	3.126
-6	661	0.619	50	3083	3.201
-5	684	0.644	51	3154	3.277
-4	707	0.668	52	3226	3.353
-3	730	0.693	53	3300	3.432
-2	754	0.718	54	3374	3.511
-1	779	0.745	55	3450	3.592
0	804	0.772	56	3528	3.675
1	830	0.799	57	3606	3.759

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
2	857	0.828	58	3686	3.844
3	884	0.857	59	3767	3.93
4	912	0.887	60	3849	4.018
5	940	0.917	61	3932	4.106
6	969	0.947	62	4017	4.197
7	999	0.979	63	4103	4.288
8	1030	1.012	64	4190	4.381
9	1061	1.046	65	4278	4.475
10	1093	1.08	66	4367	4.57
11	1125	1.114	67	4457	4.666
12	1159	1.15	68	4548	4.763
13	1193	1.186	69	4639	4.86
14	1228	1.224	70	4731	4.958
15	1263	1.261	71	4893	5.13

Low-pressure sensor features (R410A)

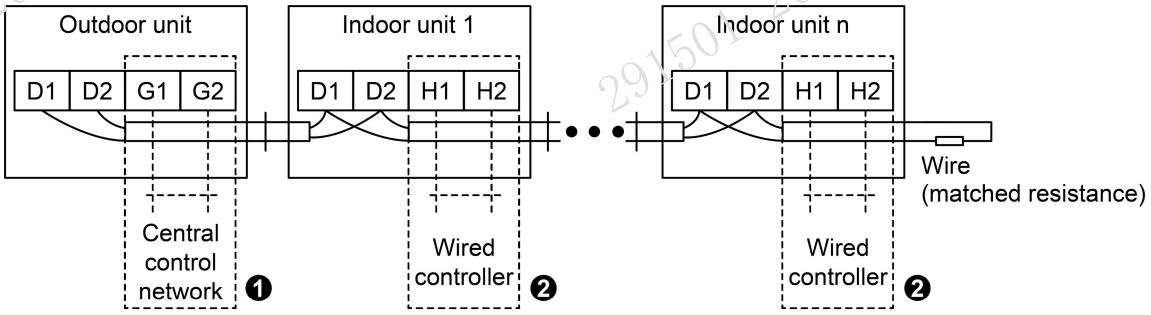
Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-70	36	0.369	-14	502	1.301
-69	38	0.373	-13	520	1.337
-68	40	0.377	-12	538	1.373
-67	43	0.383	-11	558	1.413
-66	46	0.389	-10	577	1.451
-65	48	0.393	-9	597	1.491
-64	51	0.399	-8	618	1.533
-63	54	0.405	-7	639	1.575
-62	57	0.411	-6	661	1.619
-61	61	0.419	-5	684	1.665
-60	64	0.425	-4	707	1.711
-59	68	0.433	-3	730	1.757
-58	72	0.441	-2	754	1.805
-57	76	0.449	-1	799	1.895
-56	80	0.457	0	804	1.905
-55	84	0.465	1	830	1.957
-54	89	0.475	2	857	2.011
-53	94	0.485	3	884	2.065
-52	99	0.495	4	912	2.121
-51	104	0.505	5	940	2.177
-50	109	0.515	6	969	2.235
-49	115	0.527	7	999	2.295
-48	121	0.539	8	1030	2.357
-47	127	0.551	9	1061	2.419
-46	133	0.563	10	1096	2.489
-45	140	0.577	11	1125	2.547
-44	146	0.589	12	1159	2.615
-43	154	0.605	13	1193	2.683

Temperature (°C)	Absolute pressure (kPA)	Voltage (V)	Temperature (°C)	Absolute pressure (kPA)	Voltage (V)
-42	161	0.619	14	1228	2.753
-41	168	0.633	15	1263	2.823
-40	176	0.649	16	1300	2.897
-39	184	0.665	17	1337	2.971
-38	193	0.683	18	1375	3.047
-37	202	0.701	19	1413	3.123
-36	211	0.719	20	1453	3.203
-35	220	0.737	21	1493	3.283
-34	230	0.757	22	1535	3.367
-33	240	0.777	23	1577	3.451
-32	250	0.797	24	1620	3.537
-31	261	0.819	25	1664	3.625
-30	272	0.841	26	1708	3.713
-29	283	0.863	27	1754	3.805
-28	295	0.887	28	1801	3.899
-27	307	0.911	29	1848	3.993
-26	319	0.935	30	1897	4.091
-25	332	0.961	31	1946	4.189
-24	345	0.987	32	1996	4.289
-23	359	1.015	33	2048	4.393
-22	373	1.043	34	2100	4.497
-21	388	1.073	35	2153	4.603
-420	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	—	—	—

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Appendix 4 Electric Specifications

Connection of power cord and communication cord. Supply power for each unit separately. Each unit shall be equipped with a circuit breaker for short circuit and abnormal overload protection.



Note: (1) Whether the unit is with centralized network control function or wired controller function, please refer to the circuit diagram. For outdoor units equipped with the function of central control, connect wires according to drawing ❶. For indoor units with the function of wired control, connect wires according to drawing ❷.

(2) n represents the maximum number of connectable indoor units, which is determined by the capacity of the outdoor unit. For details, please refer to the capacity configuration instructions of the unit.

Selection of circuit breaker and power cord.

Model	Combination method	Power supply	Capacity of circuit breaker of each combination module (A)	Minimum cross-sectional area of grounding wire (mm^2)	Recommended wire (cross-sectional area) (mm^2)
GMV-400WML/A-X	—	380-415V 3N~ 50/60Hz	32	4.0	4.0×5
GMV-450WML/A-X	—	380-415V 3N~ 50/60Hz	40	6.0	6.0×5
GMV-504WML/A-X	—	380-415V 3N~ 50/60Hz	40	6.0	6.0×5
GMV-560WML/A-X	—	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
GMV-615WML/A-X	—	380-415V 3N~ 50/60Hz	50	10.0	10.0×5
GMV-800WML/A-X	GMV-400WML/A-X+ GMV-400WML/A-X	380-415V 3N~ 50/60Hz	32+32	4.0+4.0	4.0×5+4.0×5
GMV-850WML/A-X	GMV-400WML/A-X+ GMV-450WML/A-X	380-415V 3N~ 50/60Hz	32+40	4.0+6.0	4.0×5+6.0×5
GMV-900WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X	380-415V 3N~ 50/60Hz	40+40	6.0+6.0	6.0×5+6.0×5
GMV-954WML/A-X	GMV-450WML/A-X+ GMV-504WML/A-X	380-415V 3N~ 50/60Hz	40+40	6.0+6.0	6.0×5+6.0×5
GMV-1010WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X	380-415V 3N~ 50/60Hz	40+50	6.0+10.0	6.0×5+10.0×5
GMV-1065WML/A-X	GMV-450WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50	6.0+10.0	6.0×5+10.0×5
GMV-1119WML/A-X	GMV-504WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50	6.0+10.0	6.0×5+10.0×5
GMV-1175WML/A-X	GMV-560WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50	10.0+10.0	10.0×5+10.0×5

Model	Combination method	Power supply	Capacity of circuit breaker of each combination module (A)	Minimum cross-sectional area of grounding wire (mm^2)	Recommended wire (cross-sectional area) (mm^2)
GMV-1230WML/A-X	GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50	10.0+10.0	10.0×5+10.0×5
GMV-1300WML/A-X	GMV-400WML/A-X+ GMV-450WML/A-X+ GMV-450WML/A-X	380-415V 3N~ 50/60Hz	32+40+40	4.0+6.0+6.0	4.0×5+6.0×5+6.0×5
GMV-1350WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X +GMV-450WML/A-X	380-415V 3N~ 50/60Hz	40+40+40	6.0+6.0+6.0	6.0×5+6.0×5+6.0×5
GMV-1404WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-504WML/A-X	380-415V 3N~ 50/60Hz	40+40+40	6.0+6.0+6.0	6.0×5+6.0×5+6.0×5
GMV-1460WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-560WML/A-X	380-415V 3N~ 50/60Hz	40+40+50	6.0+6.0+10.0	6.0×5+6.0×5+10.0×5
GMV-1515WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+40+50	6.0+6.0+10.0	6.0×5+6.0×5+10.0×5
GMV-1570WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-560WML/A-X	380-415V 3N~ 50/60Hz	40+50+50	6.0+10.0+10.0	6.0×5+10.0×5+10.0×5
GMV-1625WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50+50	6.0+10.0+10.0	6.0×5+10.0×5+10.0×5
GMV-1680WML/A-X	GMV-450WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50+50	6.0+10.0+10.0	6.0×5+10.0×5+10.0×5
GMV-1735WML/A-X	GMV-560WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50+50	10.0+10.0+10.0	10.0×5+10.0×5+10.0×5
GMV-1790WML/A-X	GMV-560WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50+50	10.0+10.0+10.0	10.0×5+10.0×5+10.0×5
GMV-1845WML/A-X	GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50+50	10.0+10.0+10.0	10.0×5+10.0×5+10.0×5
GMV-1910WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-560WML/A-X	380-415V 3N~ 50/60Hz	40+40+40+50	6.0+6.0+6.0+10.0	6.0×5+6.0×5+6.0×5+10.0×5
GMV-1965WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+40+40+50	6.0+6.0+6.0+10.0	6.0×5+6.0×5+6.0×5+10.0×5
GMV-2020WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-560WML/A-X	380-415V 3N~ 50/60Hz	40+40+50+50	6.0+6.0+10.0+10.0	6.0×5+6.0×5+10.0×5+10.0×5
GMV-2075WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+40+50+50	6.0+6.0+10.0+10.0	6.0×5+6.0×5+10.0×5+10.0×5
GMV-2130WML/A-X	GMV-450WML/A-X+ GMV-450WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+40+50+50	6.0+6.0+10.0+10.0	6.0×5+6.0×5+10.0×5+10.0×5

Model	Combination method	Power supply	Capacity of circuit breaker of each combination module (A)	Minimum cross-sectional area of grounding wire (mm^2)	Recommended wire (cross-sectional area) (mm^2)
GMV-2185WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50+50+50	6.0+10.0+10.0+10.0	6.0×5+10.0×5+10.0×5+10.0×5
GMV-2240WML/A-X	GMV-450WML/A-X+ GMV-560WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50+50+50	6.0+10.0+10.0+10.0	6.0×5+10.0×5+10.0×5+10.0×5
GMV-2295WML/A-X	GMV-450WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50+50+50	6.0+10.0+10.0+10.0	6.0×5+10.0×5+10.0×5+10.0×5
GMV-2349WML/A-X	GMV-504WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	40+50+50+50	6.0+10.0+10.0+10.0	6.0×5+10.0×5+10.0×5+10.0×5
GMV-2405WML/A-X	GMV-560WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50+50+50	10.0+10.0+10.0+10.0	10.0×5+10.0×5+10.0×5+10.0×5
GMV-2460WML/A-X	GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X+ GMV-615WML/A-X	380-415V 3N~ 50/60Hz	50+50+50+50	10.0+10.0+10.0+10.0	10.0×5+10.0×5+10.0×5+10.0×5

NOTES!

① 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.

⑥ Supply cords of parts of appliances for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (cord designation 60245 IEC 57).

Engineering Wiring of Power Cord and Communication Cable

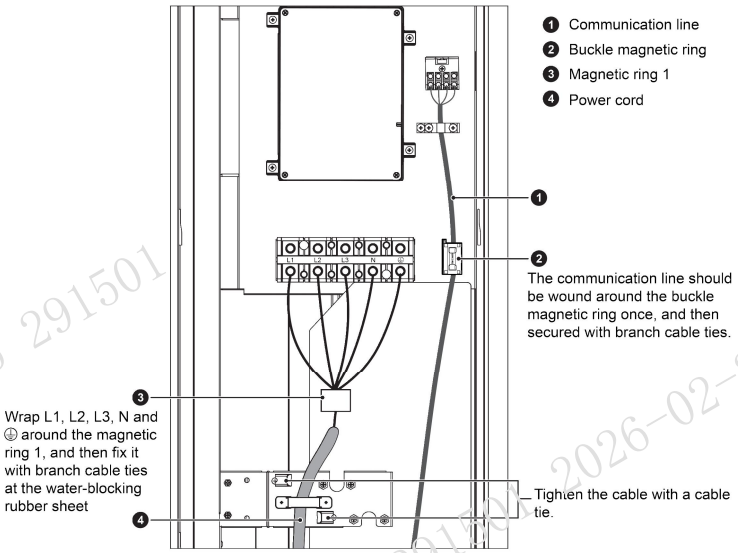
(1) Refer to the following parts for engineering wiring. Connect the power cord and communication cable to the terminal board and grounding screws respectively according to the wiring diagram. Press and fix the sheath part of the power cord and communication cable with the corresponding fixing clamp.

(2) Pay attention that the engineering wiring and the magnetic ring cannot touch the pipe or the device.

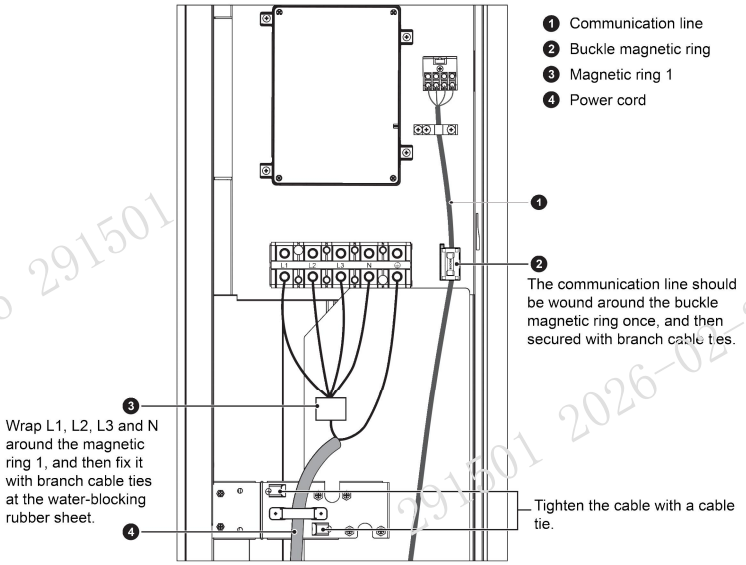
(3) This drawing is only for reference of the wiring of power cord and communication cable. If it is different from the unit, please refer to the actual unit.

(4) The engineering wiring shall be subject to the wiring diagram on the unit.

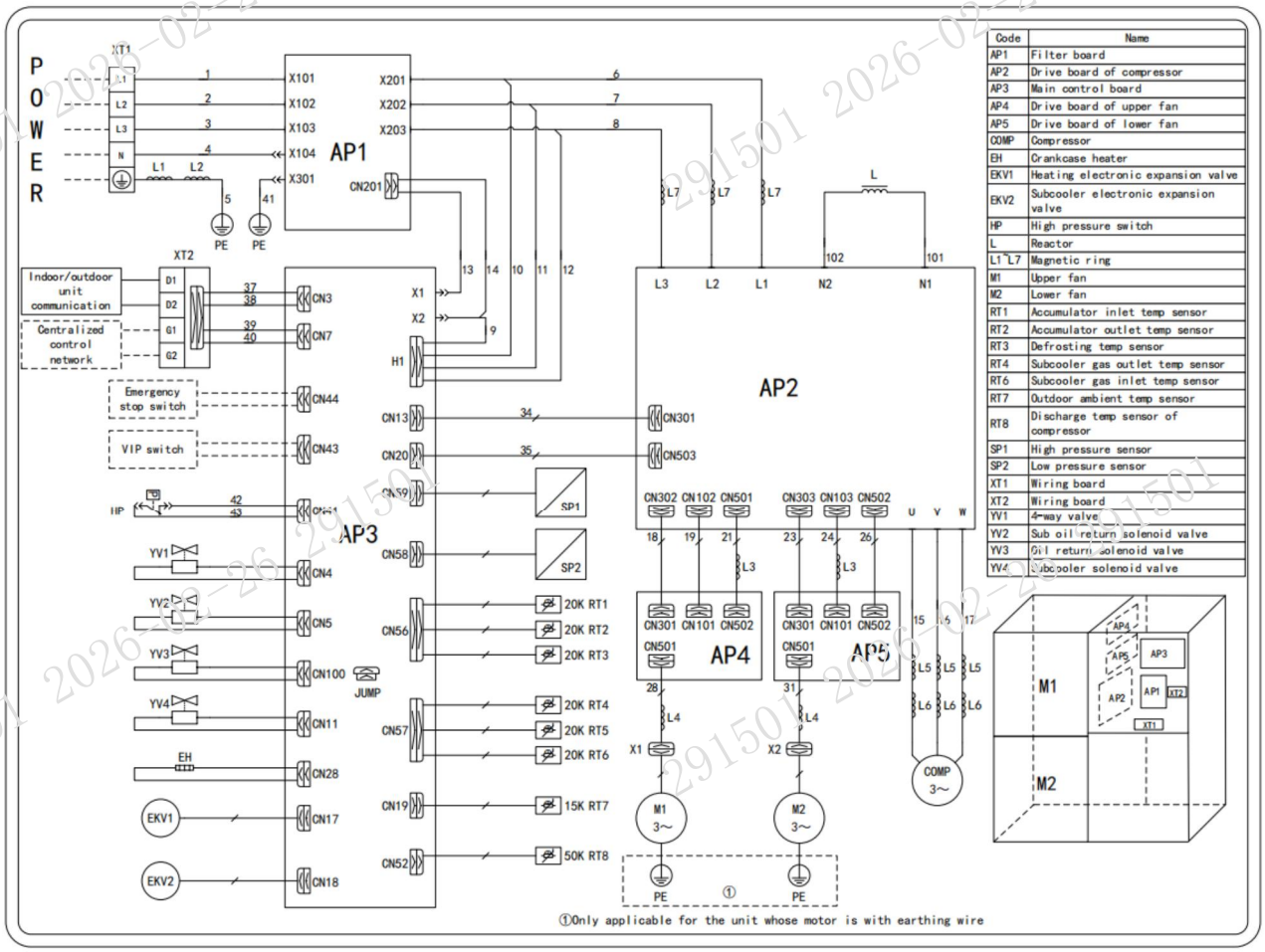
For GMV-400WML/A-X and GMV-450WML/A-X unit:



For GMV-504WML/A-X、GMV-560WML/A-X and GMV-615WML/A-X unit:



Appendix 5 Circuit Diagram



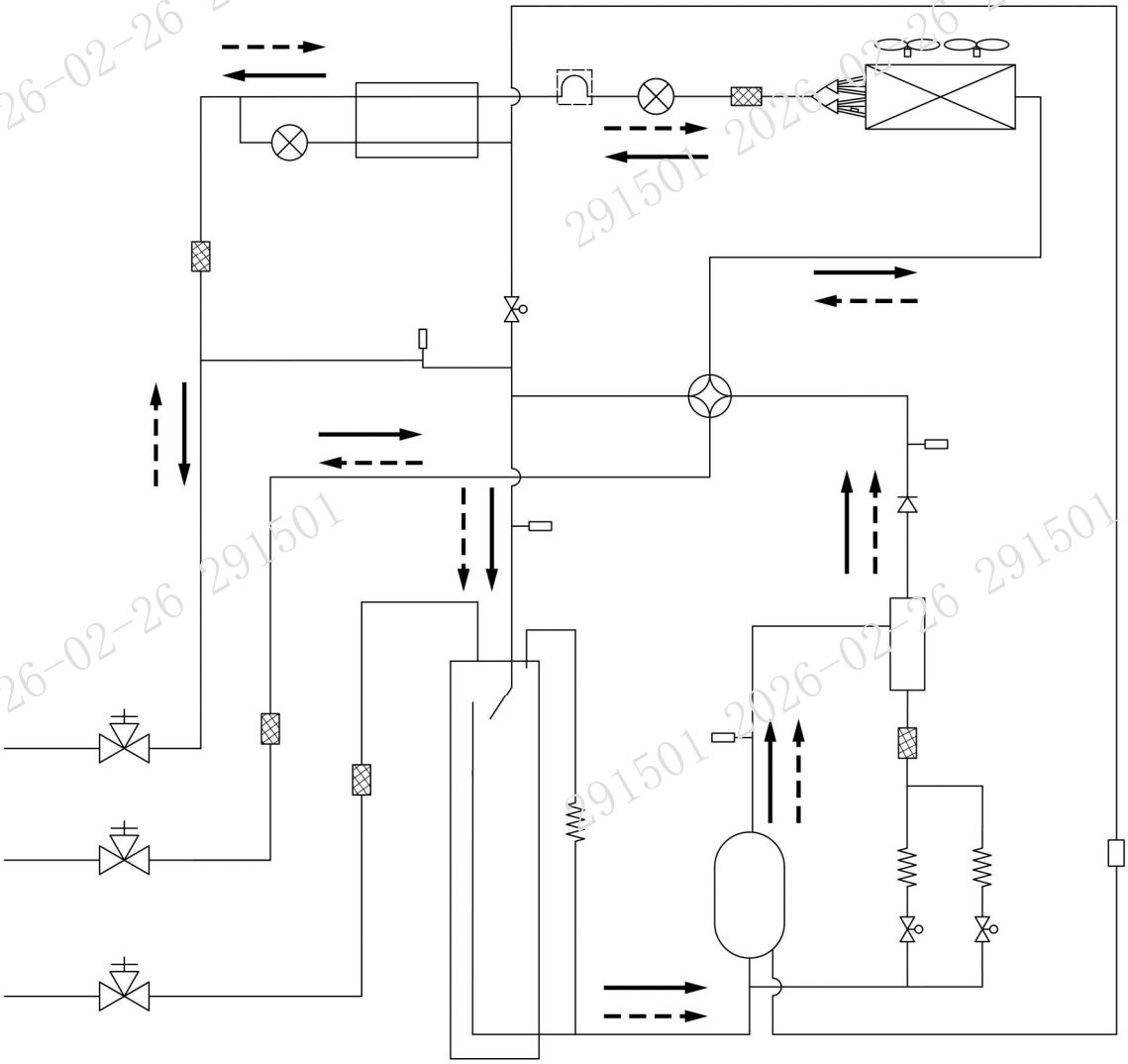
Code	Name
AP1	Filter board
AP2	Drive board of compressor
AP3	Main control board
AP4	Drive board of upper fan
AP5	Drive board of lower fan
COMP	Compressor
EH	Crankcase heater
EKV1	Heating electronic expansion valve
EKV2	Subcooler electronic expansion valve
HP	High pressure switch
L	Reactor
L1 L7	Magnetic ring
M1	Upper fan
M2	Lower fan
RT1	Accumulator inlet temp sensor
RT2	Accumulator outlet temp sensor
RT3	Defrosting temp sensor
RT4	Subcooler gas outlet temp sensor
RT6	Subcooler gas inlet temp sensor
RT7	Outdoor ambient temp sensor
RT8	Discharge temp sensor of compressor
SP1	High pressure sensor
SP2	Low pressure sensor
XT1	Wiring board
XT2	Wiring board
YV1	4-way valve
YV2	Sub oil return solenoid valve
YV3	Oil return solenoid valve
YV4	Subcooler solenoid valve

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

Appendix 6 Schematic Diagram

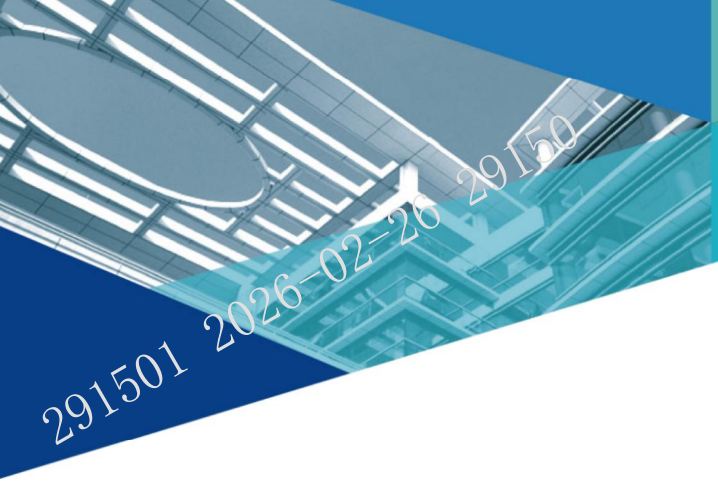
The working principle of the outdoor unit: When the indoor unit is operating in cooling mode, the outdoor unit starts running according to the load requirements of the indoor unit. The outdoor heat exchanger acts as the condenser of the system, and the heat exchangers of each indoor unit are connected in parallel as the evaporators of the system. Indoor air temperature and humidity are regulated through the supply and return air circulation of the indoor unit. When the indoor unit is operating in heating mode, the four-way valve of the outdoor unit switches to the powered state, the outdoor heat exchanger acts as the evaporator of the system, and the heat exchanger of the indoor unit acts as the condenser of the system. The indoor air temperature and humidity are regulated through the supply and return air circulation of the indoor unit.

System principle diagram of GMV-400WML/A-X, GMV-450WML/A-X, GMV-504WML/A-X, GMV-560WML/A-X, and GMV-615WML/A-X.



Appendix 7 Names and Functions of Components

No.	Name	Main Functions
1	Compressor	The compressor changes its speed according to the actual system need for capacity adjustment.
2	Electrical heating belt of the compressor	In the standby state, the oil temperature of the compressor is guaranteed to prevent backflow.
3	High pressure switch	When the exhaust pressure of the compressor exceeds the action value of the high-pressure switch, the feedback signal immediately stops the operation of the whole unit to achieve the purpose of protecting the compressor.
4	Oil separator	It separates the system's gas and oil to ensure the reliability of the compressor.
5	Oil return solenoid valve	It is used to control the connection of the compressor return oil pipeline.
6	Low-temperature oil-return solenoid valve	It is used to control the connection of the compressor return oil pipeline.
7	Capillary	It throttles flows and reduces pressure.
8	One-way valve	It is used to control the flow direction of refrigerant.
9	4-way valve	It is used for cooling and heating switching of the IDU.
10	Heat exchanger	It is used for outdoor heat exchange.
11	Fan	It improves the heat exchange efficiency.
12	Heating electronic expansion valve	It adjusts the refrigerant in heating mode
13	Electronic expansion valve of the sub-cooler	It is used to control the liquid pipe refrigerant subcooling degree during the cooling operation of the system and reduce the loss of the pipeline capacity.
14	Sub-cooler	It is used to control the liquid pipe subcooling degree.
15	Solenoid valve of the sub-cooler	It is used to control the flow direction of refrigerant for the enthalpy injection of the sub-cooler.
16	Gas-liquid separator	It separates the gas and liquid and prevents liquid refrigerant from entering the compressor.
17	Liquid valve	It is closed after the unit is delivered from the factory.
18	Gas valve	It is closed after the unit is delivered from the factory.
19	Low pressure measuring valve	It is used to detect the system's operation low pressure value and refrigerant charging.
20	Unloading valve	It prevents a dead zone in the pipeline, which may cause over high pressure.
21	High pressure sensor	It detects real-time high voltage values of the system, protects the compressor and realizes other control purposes.
22	Low pressure sensor	It is used to detect the low pressure of the system and prevent the operation pressure from being too low.
23	Outdoor ambient temperature sensor	It is used to detect ambient temperature.
24	Defrosting temperature sensor	It is used to detect defrosting.
25	Liquid outlet temperature sensor of the sub-cooler	It is used to detect the liquid pipe temperature.
26	Gas inlet temperature sensor of the sub-cooler	It is used to detect the gas pipe temperature.
27	Gas outlet temperature sensor of the sub-cooler	It is used to detect the gas pipe temperature.
28	Inlet temperature sensor of the gas-liquid separator	It is used to check the inlet temperature of the gas-liquid separator to prevent liquid refrigerant from entering the system.
29	Outlet temperature sensor of the gas-liquid separator	It is used to detect the internal state of the gas-liquid separator and further control the suction state of the compressor.
30	Discharge temperature sensor of the inverter compressor	The exhaust temperature of the compressor is detected to achieve the purpose of controlling and protecting the compressor.



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