



Service Manual

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI



Table of Contents

Part I : Technical Information	1
1. Summary.....	1
2. Specifications.....	3
2.1 Specification Sheet.....	3
2.2 Capacity Variation Ratio According to Temperature	15
2.3 Cooling and Heating Data Sheet in Rated Frequency	16
3. Outline Dimension Diagram.....	18
3.1 Indoor Unit.....	18
3.2 Outdoor Unit.....	19
4. Refrigerant System Diagram	21
5. Electrical Part	23
5.1 Wiring Diagram.....	23
5.2 PCB Printed Diagram.....	27
6. Function and Control	33
6.1 Remote Controller Introduction.....	33
6.2 GREE+ App Operation Manual.....	38
6.3 Ewpe Smart App Operation Manual	39
6.4 Brief Description of Modes and Functions.....	40
Part II : Installation and Maintenance	48
7. Notes for Installation and Maintenance	48
8. Installation	51
8.1 Installation Dimension Diagram	51
8.2 Installation Parts-checking	53
8.3 Selection of Installation Location.....	53
8.4 Electric Connection Requirement	53
8.5 Installation of Indoor Unit.....	53

8.6 Installation of Outdoor Unit.....	55
8.7 Vacuum Pumping and Leak Detection	57
8.8 Check after Installation and Test Operation	57
9. Maintenance	58
9.1 Error Code List.....	58
9.2 Procedure of Troubleshooting.....	64
9.3 Troubleshooting for Normal Malfunction.....	81
10. Exploded View and Parts List.....	83
10.1 Indoor Unit.....	83
10.2 Outdoor Unit.....	89
11. Removal Procedure	95
11.1 Removal Procedure of Indoor Unit.....	95
11.2 Removal Procedure of Outdoor Unit.....	100
Appendix:	113
Appendix 1: Reference Sheet of Celsius and Fahrenheit	113
Appendix 2: Configuration of Connection Pipe	113
Appendix 3: Pipe Expanding Method.....	114
Appendix 4: List of Resistance for Temperature Sensor	115

1. Summary

Indoor Unit:

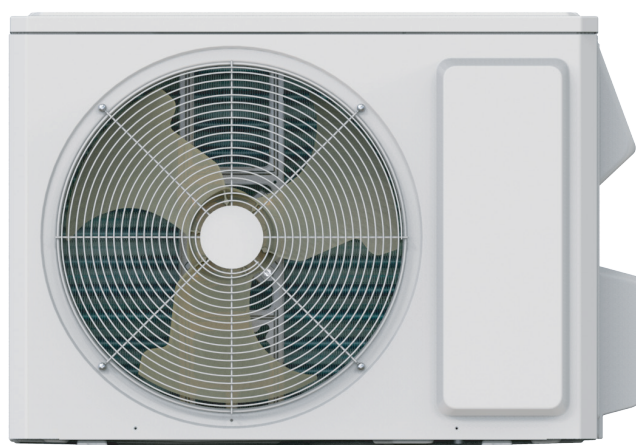
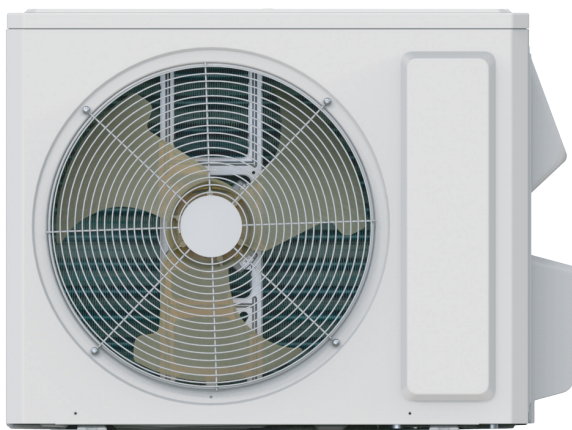


Outdoor Unit:

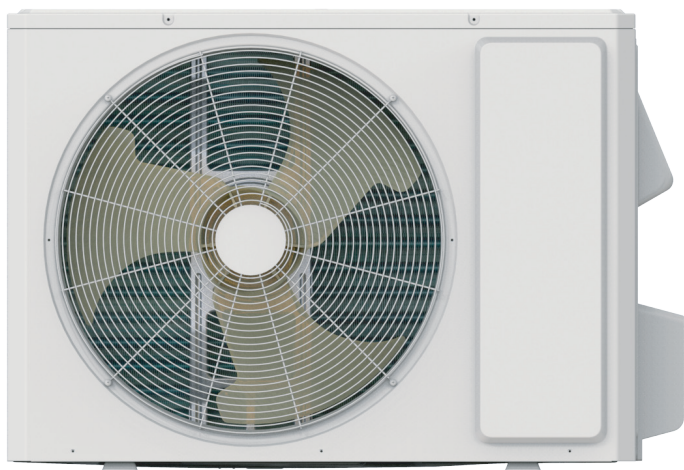
KW09HQ19SAO
KW12HQ19SAO

KW09HQ19SDO
KW12HQ19SDO

KW18HQ19SDO



KW24HQ19SDO



2. Specifications

2.1 Specification Sheet

Model			KW09HQ19SD
Product Code			CB574000900
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	9100
Heating Capacity		Btu/h	10000
Cooling Power Input		W	805
Heating Power Input		W	781
Cooling Current		A	3.75
Heating Current		A	3.9
Rated Input		W	1450
Rated Current		A	6.5
EER		(Btu/h)/W	11.30
COP		(Btu/h)/W	12.80
SEER			19.5(SEER)/19.5(SEER2)
HSPF			10(HSPF)8.8(HSPF2)
Air Flow Volume		CFM	353/282/264/229/211/194/158
Dehumidifying Volume		Pint/d	1.69
Application Area		yd ²	14-22
Indoor Unit	Indoor Unit Model		KW09HQ19SDI
	Product Code of Indoor Unit		CB574N00900
	Fan Type		Cross-flow
	Fan Diameter Length(DXL)	mm	Φ94X630
	Cooling Speed	r/min	1350/1150/1100/1000/950/850/750
	Heating Speed	r/min	1300/1100/1050/1000/950/850/800
	Fan Motor Power Output	W	20
	Fan Motor RLA	A	0.30
	Fan Motor Capacitor	μF	1.5
	Heater Power Input	W	72
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ5
	Evaporator Row-fin Gap	mm	2-1.3
	Evaporator Coil Length (LXDXW)	mm	634X22.8X266.7
	Swing Motor Model		MP24HF
	Swing Motor Power Output	W	1.5
	Fuse Current	A	3.15
	Sound Pressure Level	dB (A)	Cooling:41/37/34/32/31/28/26 Heating:41/36/34/32/31/28/26
	Sound Power Level	dB (A)	Cooling:51/47/44/42/41/38/36 Heating:51/46/44/42/41/38/36
	Dimension (WXHxD)	inch	32 7/8X10 53/64X7 7/8
	Package Carton Dimension (LXWXH)	inch	35 1/32X12 61/64X10 15/64
	Package Dimension (LXWXH)	inch	35 15/64X13 37/64X10 43/64
	Net Weight	lb	19.8
	Gross Weight	lb	24.3

Outdoor Unit	Outdoor Unit Model		KW09HQ19SDO
	Product Code of Outdoor Unit		CB574W00900
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXF-A082zC170
	Compressor Oil		ZE-G;ES RB68GX or equivalent
	Compressor Type		Rotary
	Compressor LRA.	A	/
	Compressor RLA	A	5.20
	Compressor Power Input	W	756.6
	Compressor Overload Protector		/
	Fan Type		Axial-flow
	Fan Diameter	mm	400
	Fan Motor Speed	rpm	850
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1148
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	1-1.2
	Condenser Coil Length (LXDXW)	mm	666X19.05X527
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Maximum Allowable Pressure	MPa	4.3
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	-13~75
	Throttling Method		Capillary
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Sound Pressure Level	dB (A)	51
	Sound Power Level	dB (A)	61
	Dimension (WXHXD)	inch	28 13/16X21 27/32X12 63/64
	Dimension of Carton Box (LXWXH)	inch	31 9/64X14 11/16X23 15/64
	Dimension of Package(LXWXH)	inch	31 17/64X14 51/64X24 7/32
	Net Weight	lb	56
	Gross Weight	lb	61.7
	Refrigerant		R410A
	Refrigerant Charge	oz	24.7
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.215
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max. Height Distance	ft	39.37
	Max. Length Distance	ft	65.62
Note: The connection pipe applies metric diameter.			

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model			KW09HQ19SA
Product Code			CB574001600
Power Supply	Rated Voltage	V~	115
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	9100
Heating Capacity		Btu/h	10000
Cooling Power Input		W	771
Heating Power Input		W	814
Cooling Current		A	8.7
Heating Current		A	9.2
Rated Input		W	1450
Rated Current		A	17.5
EER		(Btu/h)/W	11.3
COP		(Btu/h)/W	12.3
SEER			19.5(SEER)19.5(SEER2)
HSPF			9.8(HSPF)8.6(HSPF2)
Air Flow Volume		CFM	353/282/264/229/211/194/158
Dehumidifying Volume		Pint/d	1.69
Application Area		yd ²	14-22
Indoor Unit	Indoor Unit Model		KW09HQ19SAI
	Product Code of Indoor Unit		CB574N01600
	Fan Type		Cross-flow
	Fan Diameter Length(DXL)	mm	Φ94X630
	Cooling Speed	r/min	1350/1150/1100/1000/950/850/750
	Heating Speed	r/min	1300/1100/1050/1000/950/850/800
	Fan Motor Power Output	W	20
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	4
	Heater Power Input	W	68
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ5
	Evaporator Row-fin Gap	mm	2-1.3
	Evaporator Coil Length (LXDXW)	mm	634X22.8X266.7
	Swing Motor Model		MP24HF
	Swing Motor Power Output	W	1.5
	Fuse Current	A	3.15
	Sound Pressure Level	dB (A)	Cooling:41/37/35/33/31/28/26 Heating:41/36/35/34/31/29/27
	Sound Power Level	dB (A)	Cooling:51/47/45/43/41/38/36 Heating:51/46/45/44/41/39/37
	Dimension (WXHDX)	inch	32 7/8X10 53/64X7 7/8
	Package Carton Dimension (LXWXH)	inch	35 1/32X12 61/64X10 15/64
	Package Dimension (LXWXH)	inch	35 15/64X13 37/64X10 43/64
	Net Weight	lb	19.8
	Gross Weight	lb	24.3

Outdoor Unit	Outdoor Unit Model		KW09HQ19SAO
	Product Code of Outdoor Unit		CB574W01600
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXF-N075zC170A
	Compressor Oil		FW68DA
	Compressor Type		Rotary
	Compressor LRA.	A	/
	Compressor RLA	A	10.50
	Compressor Power Input	W	640
	Compressor Overload Protector		/
	Fan Type		Axial-flow
	Fan Diameter	mm	400
	Fan Motor Speed	rpm	900
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.63
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1148
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	1-1.2
	Condenser Coil Length (LXDXW)	mm	666X19.05X527
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Maximum Allowable Pressure	MPa	4.3
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	-13~75
	Throttling Method		Capillary
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Sound Pressure Level	dB (A)	51
	Sound Power Level	dB (A)	61
	Dimension (WXHXD)	inch	28 13/16X21 27/32X12 63/64
	Dimension of Carton Box (LXWXH)	inch	31 9/64X14 11/16X23 15/64
	Dimension of Package(LXWXH)	inch	31 17/64X14 51/64X24 7/32
	Net Weight	lb	59.5
	Gross Weight	lb	65
	Refrigerant		R410A
	Refrigerant Charge	oz	24.34
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.22
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max. Height Distance	ft	39.37
	Max. Length Distance	ft	65.6
	Note: The connection pipe applies metric diameter.		

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model			KW12HQ19SD
Product Code			CB574001500
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	12000
Heating Capacity		Btu/h	12000
Cooling Power Input		W	1380
Heating Power Input		W	1004
Cooling Current		A	6.2
Heating Current		A	4.5
Rated Input		W	1650
Rated Current		A	6.2
EER		(Btu/h)/W	8.7
COP		(Btu/h)/W	11.95
SEER			17.5(SEER) 17.5(SEER2)
HSPF			10(HSPF) 8.5(HSPF2)
Air Flow Volume		CFM	424/353/324/277/247/224/182
Dehumidifying Volume		Pint/d	2.96
Application Area		yd ²	19-29
Indoor Unit	Indoor Unit Model		KW12HQ19SDI
	Product Code of Indoor Unit		CB574N01500
	Fan Type		Cross-flow
	Fan Diameter Length(DXL)	mm	Φ94X630
	Cooling Speed	r/min	1550/1200/1120/1050/980/920/750/500
	Heating Speed	r/min	1450/1200/1140/1080/1020/960/900
	Fan Motor Power Output	W	15
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	/
	Heater Power Input	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ5
	Evaporator Row-fin Gap	mm	2-1.3
	Evaporator Coil Length (LXDXW)	mm	634X22.8X266.7
	Swing Motor Model		MP24HF
	Swing Motor Power Output	W	1.5
	Fuse Current	A	3.15
	Sound Pressure Level	dB (A)	Cooling:47/39/38/35/33/32/27/25 Heating:44/39/37/36/34/32/30
	Sound Power Level	dB (A)	Cooling:57/49/48/45/43/42/37/35 Heating:54/49/47/46/44/42/40
	Dimension (WXHDX)	inch	32 56/64X10 53/64X7 7/8
	Package Carton Dimension (LXWXH)	inch	35 3/64X12 61/64X10 15/64
	Package Dimension (LXWXH)	inch	35 15/64X13 37/64X10 43/64
	Net Weight	lb	19.8
	Gross Weight	lb	24.3

Outdoor Unit	Outdoor Unit Model		KW12HQ19SDO
	Product Code of Outdoor Unit		CB574W01500
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		FTz-AN108ACBD
	Compressor Oil		FW68DA or equivalent
	Compressor Type		Rotary
	Compressor LRA.	A	/
	Compressor RLA	A	7.30
	Compressor Power Input	W	857
	Compressor Overload Protector		/
	Fan Type		Axial-flow
	Fan Diameter	mm	400
	Fan Motor Speed	rpm	900
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.60
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1148
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	1-1.2
	Condenser Coil Length (LXDXW)	mm	677X19.05X528
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Maximum Allowable Pressure	MPa	4.3
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	-13~75
	Throttling Method		Capillary
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Sound Pressure Level	dB (A)	52
	Sound Power Level	dB (A)	62
	Dimension (WXHXD)	inch	28 13/16X21 27/32X12 63/64
	Dimension of Carton Box (LXWXH)	inch	31 9/64X14 11/16X23 15/64
	Dimension of Package(LXWXH)	inch	31 17/64X14 51/64X24 7/32
	Net Weight	lb	57.33
	Gross Weight	lb	62.8
	Refrigerant		R410A
	Refrigerant Charge	oz	27.5
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.22
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max. Height Distance	ft	32.8
	Max. Length Distance	ft	65.6
	Note: The connection pipe applies metric diameter.		

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model			KW12HQ19SA
Product Code			CB574001400
Power Supply	Rated Voltage	V~	115
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	12000
Heating Capacity		Btu/h	12000
Cooling Power Input		W	1380
Heating Power Input		W	1004
Cooling Current		A	15
Heating Current		A	10.9
Rated Input		W	1650
Rated Current		A	17.9
EER		(Btu/h)/W	8.7
COP		(Btu/h)/W	11.95
SEER			17.5(SEER) 17.5(SEER2)
HSPF			10(HSPF) 8.5(HSPF2)
Air Flow Volume		CFM	424/353/324/277/247/224/182
Dehumidifying Volume		Pint/d	2.96
Application Area		yd ²	19-29
Indoor Unit	Indoor Unit Model		KW12HQ19SAO
	Product Code of Indoor Unit		CB574N01400
	Fan Type		Cross-flow
	Fan Diameter Length(DXL)	mm	Φ94X630
	Cooling Speed	r/min	1550/1200/1120/1050/980/920/750/500
	Heating Speed	r/min	1450/1200/1140/1080/1020/960/900
	Fan Motor Power Output	W	15
	Fan Motor RLA	A	0.40
	Fan Motor Capacitor	μF	/
	Heater Power Input	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ5
	Evaporator Row-fin Gap	mm	2-1.3
	Evaporator Coil Length (LXDXW)	mm	634X22.8X266.7
	Swing Motor Model		MP24HF
	Swing Motor Power Output	W	1.5
	Fuse Current	A	3.15
	Sound Pressure Level	dB (A)	Cooling:47/39/38/35/33/32/27/25 Heating:44/39/37/36/34/32/30
	Sound Power Level	dB (A)	Cooling:57/49/48/45/43/42/37/35 Heating:54/49/47/46/44/42/40
	Dimension (WXHXD)	inch	32 7/8X10 53/64X7 7/8
	Package Carton Dimension (LXWXH)	inch	35 3/64X12 61/64X10 15/64
	Package Dimension (LXWXH)	inch	35 15/64X13 37/64X10 43/64
	Net Weight	lb	19.8
	Gross Weight	lb	24.3

Outdoor Unit	Outdoor Unit Model		KW12HQ19SAO
	Product Code of Outdoor Unit		CB574W01400
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		FTz-AN108ACBD
	Compressor Oil		FW68DA or equivalent
	Compressor Type		Rotary
	Compressor LRA.	A	/
	Compressor RLA	A	15.10
	Compressor Power Input	W	857
	Compressor Overload Protector		/
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ400
	Fan Motor Speed	rpm	900
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.70
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1148
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	1-1.2
	Condenser Coil Length (LXDXW)	mm	677X19.05X528
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Maximum Allowable Pressure	MPa	4.3
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	-13~75
	Throttling Method		Capillary
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Sound Pressure Level	dB (A)	52
	Sound Power Level	dB (A)	62
	Dimension (WXHXD)	inch	28 13/16X21 27/32X12 63/64
	Dimension of Carton Box (LXWXH)	inch	31 9/64X14 11/16X23 15/64
	Dimension of Package(LXWXH)	inch	31 17/64X14 51/64X24 7/32
	Net Weight	lb	59.5
	Gross Weight	lb	65.0
	Refrigerant		R410A
	Refrigerant Charge	oz	24.7
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.22
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	3/8
	Max. Height Distance	ft	32.8
	Max. Length Distance	ft	65.6
Note: The connection pipe applies metric diameter.			

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model			KW18HQ19SD
Product Code			CB574003200
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	17600
Heating Capacity		Btu/h	19100
Cooling Power Input		W	1750
Heating Power Input		W	1750
Cooling Current		A	7.95
Heating Current		A	7.95
Rated Input		W	2300
Rated Current		A	9.5
EER		(Btu/h)/W	10.05
COP		(Btu/h)/W	10.90
SEER			17.5(SEER) 17.5 (SEER2)
HSPF			9(HSPF) 8.5(HSPF2)
Air Flow Volume		CFM	618/512/471/436/395/336/283
Dehumidifying Volume		Pint/d	3.8
Application Area		yd ²	28-41
Indoor Unit	Indoor Unit Model		KW18HQ19SDI
	Product Code of Indoor Unit		CB574N03200
	Fan Type		Cross-flow
	Fan Diameter Length(DXL)		Φ106X706
	Cooling Speed		1350/1200/1120/1050/980/860/750
	Heating Speed		1350/1200/1120/1050/950/850/750
	Fan Motor Power Output		45
	Fan Motor RLA		0.7
	Fan Motor Capacitor		/
	Heater Power Input		/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		Φ5
	Evaporator Row-fin Gap		2-1.2
	Evaporator Coil Length (LXDXW)		700X22.8X381
	Swing Motor Model		MP35CJ
	Swing Motor Power Output		2.5
	Fuse Current		3.15
	Sound Pressure Level		Cooling:50/46/44/42/40/36/32 Heating:49/46/44/41/38/34/30
	Sound Power Level		Cooling:60/56/54/52/50/46/42 Heating:59/56/54/51/48/44/40
	Dimension (WXHXD)		37 1/8X13 7/64X9 11/16
	Package Carton Dimension (LXWXH)		39 7/32X15 5/8X12 9/32
	Package Dimension (LXWXH)		39 13/32X15 15/16X12 43/64
	Net Weight		28.7
	Gross Weight		34.2

Outdoor Unit	Outdoor Unit Model		KW18HQ19SDO
	Product Code of Outdoor Unit		CB574W03200
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO. LTD.
	Compressor Model		QXF-A139zH170A
	Compressor Oil		FW68DA or equivalent
	Compressor Type		Rotary
	Compressor LRA.	A	25.0
	Compressor RLA	A	9.35
	Compressor Power Input	W	1295
	Compressor Overload Protector		/
	Fan Type		Axial-flow
	Fan Diameter	mm	Φ420
	Fan Motor Speed	rpm	940
	Fan Motor Power Output	W	30
	Fan Motor RLA	A	0.9
	Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	CFM	1480
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	2-1.4
	Condenser Coil Length (LXDXW)	mm	787X23X514
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Maximum Allowable Pressure	MPa	4.3
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	0~118
	Heating Operation Ambient Temperature Range	°F	-13~75
	Throttling Method		Capillary
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Sound Pressure Level	dB (A)	57
	Sound Power Level	dB (A)	67
	Dimension (WXHDXD)	inch	31 37/64X21 27/32X13 25/32
	Dimension of Carton Box (LXWXH)	inch	34 7/32X15 35/64X23 25/64
	Dimension of Package(LXWXH)	inch	34 21/64X15 43/64X24 13/32
	Net Weight	lb	71.7
	Gross Weight	lb	77.2
	Refrigerant		R410A
	Refrigerant Charge	oz	44.1
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.2
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	1/2
	Max. Height Distance	ft	32.8
	Max. Length Distance	ft	82
Note: The connection pipe applies metric diameter.			

The above data is subject to change without notice. Please refer to the nameplate of the unit.

Model			KW24HQ19SD
Product Code			CB574002500
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity		Btu/h	22000
Heating Capacity		Btu/h	24000
Cooling Power Input		W	1896
Heating Power Input		W	2051
Cooling Current		A	8.5
Heating Current		A	9.5
Rated Input		W	2400
Rated Current		A	12
EER		(Btu/h)/W	11.6
COP		(Btu/h)/W	11.7
SEER			18(SEER) 18(SEER2)
HSPF			10(HSPF) 8.5(HSPF2)
Air Flow Volume		CFM	677/589/559/500/471/441/412
Dehumidifying Volume		Pint/h	5.28
Application Area		yd ²	28-41
Indoor Unit	Indoor Unit Model		KW24HQ19SDI
	Product Code of Indoor Unit		CB574N02500
	Fan Type		Cross-flow
	Fan Diameter Length(DXL)	mm	Φ111.5X830
	Cooling Speed	r/min	1350/1200/1100/1000/950/900/850
	Heating Speed	r/min	1350/1200/1100/1000/950/900/850
	Fan Motor Power Output	W	45
	Fan Motor RLA	A	0.45
	Fan Motor Capacitor	μF	/
	Heater Power Input	W	/
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	840X25.4X381
	Swing Motor Model		MP35CP
	Swing Motor Power Output	W	2.5
	Fuse Current	A	3.15
	Sound Pressure Level	dB (A)	Cooling: 51/47/45/42/40/38/36 Heating: 52/48/45/42/40/38/37
	Sound Power Level	dB (A)	Cooling: 61/57/55/52/50/48/46 Heating: 62/58/55/52/50/48/47
	Dimension (WXHXD)	inch	42 7/16 X13 7/64 X9 11/16
	Package Carton Dimension (LXWXH)	inch	44 13/32 X15 63/64X12 23/32
	Package Dimension (LXWXH)	inch	44 39/64/32X16 19/64X13 7/64
	Net Weight	lb	33.1
	Gross Weight	lb	39.7

Outdoor Unit	Outdoor Unit Model		KW24HQ19SDO
	Product Code of Outdoor Unit		CB444W15900
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO. LTD.
	Compressor Model		FTz-SM151AXB
	Compressor Oil		FW68DA or equivalent
	Compressor Type		Rotary
	Compressor LRA.	A	35.00
	Compressor RLA	A	10.39
	Compressor Power Input	W	1330
	Compressor Overload Protector		HPC 115/95U1 KSD115 °C
	Fan Type		Axial-flow
	Fan Diameter	mm	520
	Fan Motor Speed	rpm	880
	Fan Motor Power Output	W	60
	Fan Motor RLA	A	0.73
	Fan Motor Capacitor	μF	3.5
	Outdoor Unit Air Flow Volume	CFM	1883
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	2-1.4
	Condenser Coil Length (LXDXW)	mm	839X38.1X616
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Maximum Allowable Pressure	MPa	4.3
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	-0.4~122
	Heating Operation Ambient Temperature Range	°F	19.4~75.2
	Throttling Method		Electron expansion valve
	Defrosting Method		Automatic/Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Sound Pressure Level	dB (A)	57
	Sound Power Level	dB (A)	67
	Dimension (WXHXD)	inch	37 23/32X25 63/64X15 53/64
	Dimension of Carton Box (LXWXH)	inch	40 33/64X17 53/64X28 5/32
	Dimension of Package(LXWXH)	inch	40 5/8X17 61/64X29 1/64
	Net Weight	lb	97
	Gross Weight	lb	106.9
	Refrigerant		R410A
	Refrigerant Charge	oz	52.9
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.5
	Outer Diameter Liquid Pipe	inch	1/4
	Outer Diameter Gas Pipe	inch	5/8
	Max. Height Distance	ft	32.8
	Max. Length Distance	ft	82.0
	Note: The connection pipe applies metric diameter.		

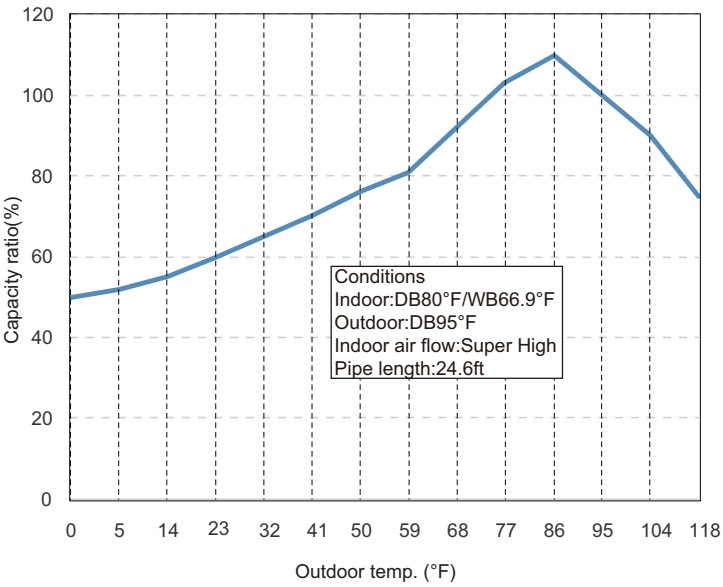
The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Capacity Variation Ratio According to Temperature

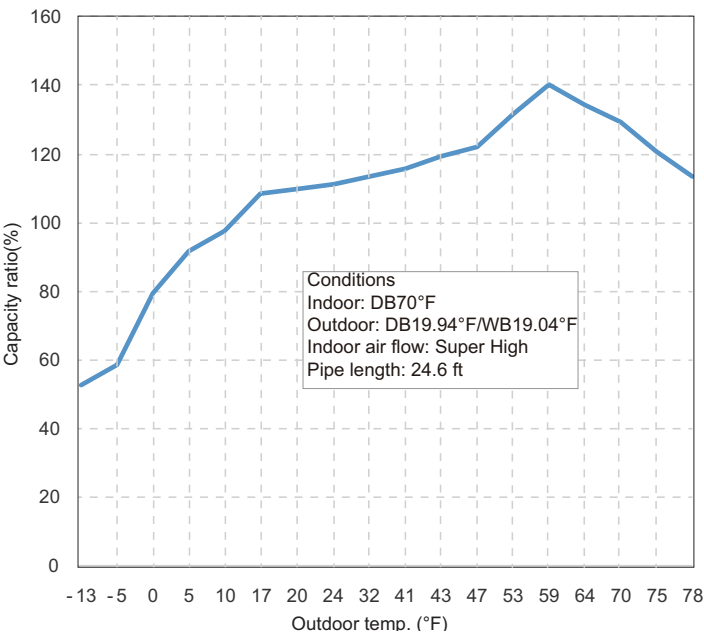
09/12K:(208/230V~)

Cooling operation ambient temperature range is 0°F~118°F.
Heating operation ambient temperature range is -13°F~75°F.

Cooling:

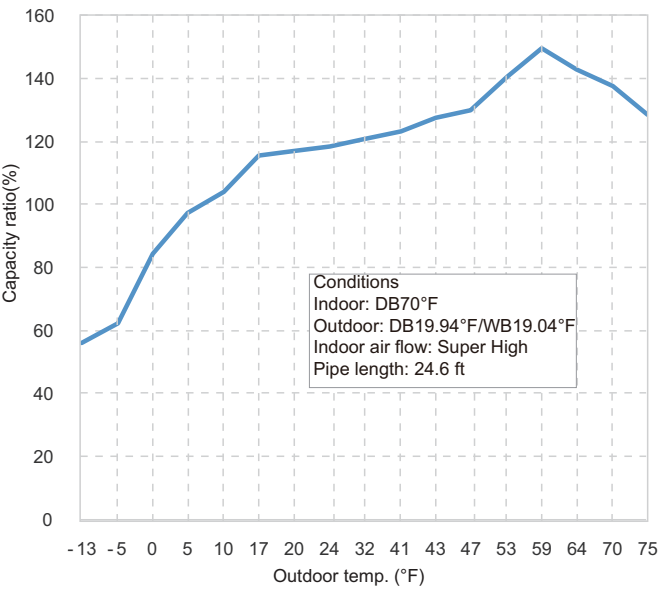
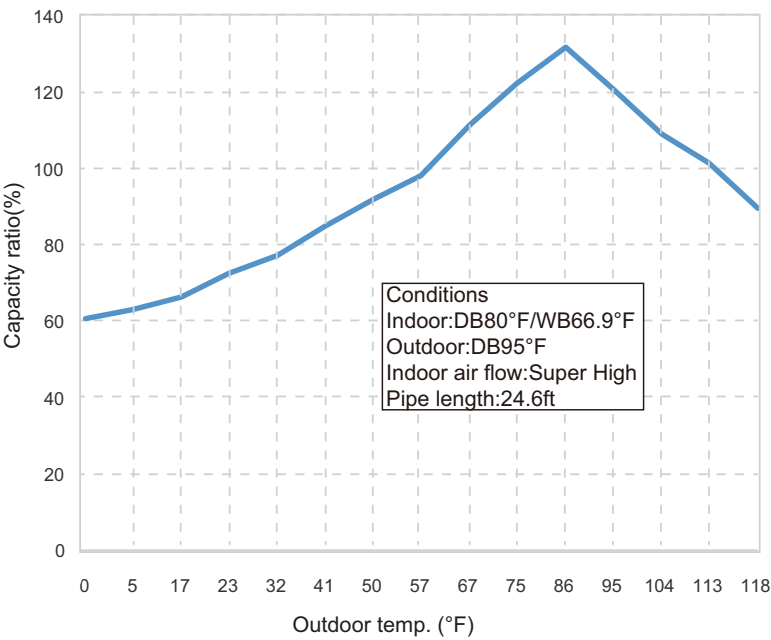


Heating:



09/12K:(115V~)

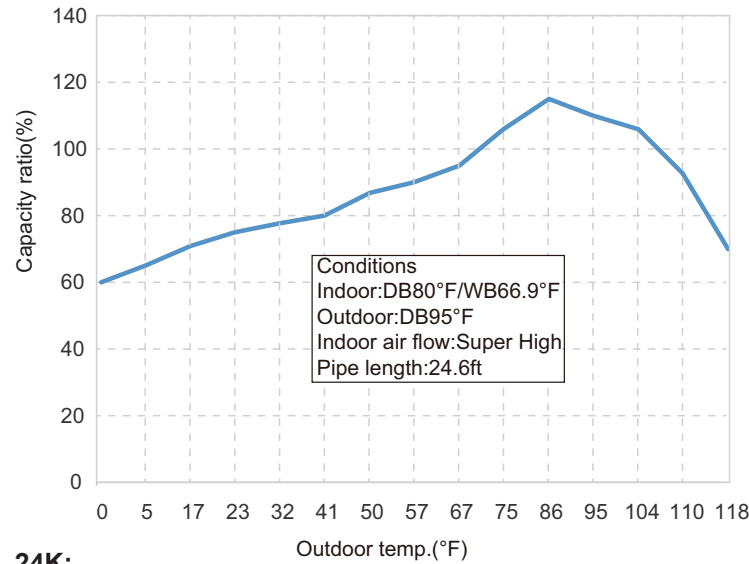
Cooling operation ambient temperature range is 0°F~118°F.
Heating operation ambient temperature range is -13°F~75°F.



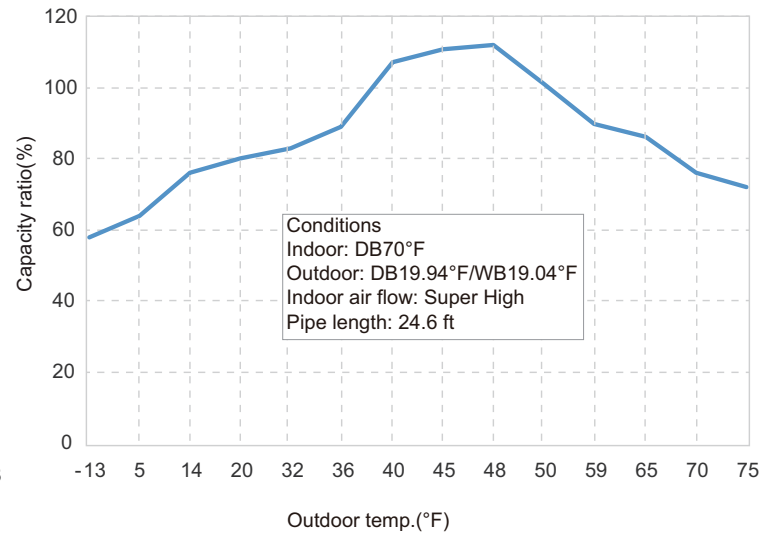
18K:

Cooling operation ambient temperature range is 0°F~118°F.
Heating operation ambient temperature range is -13°F~75°F.

Cooling



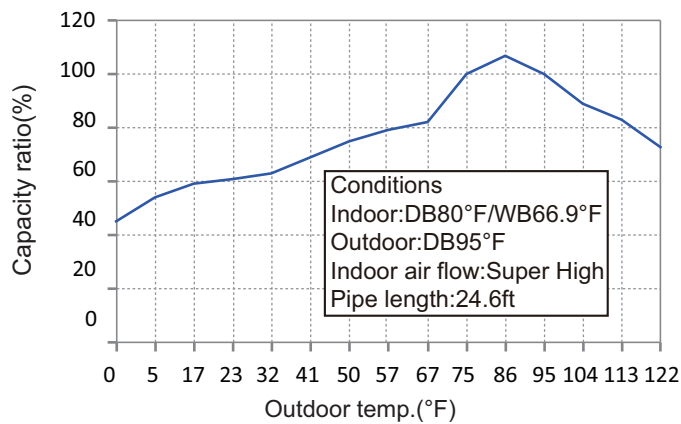
Heating



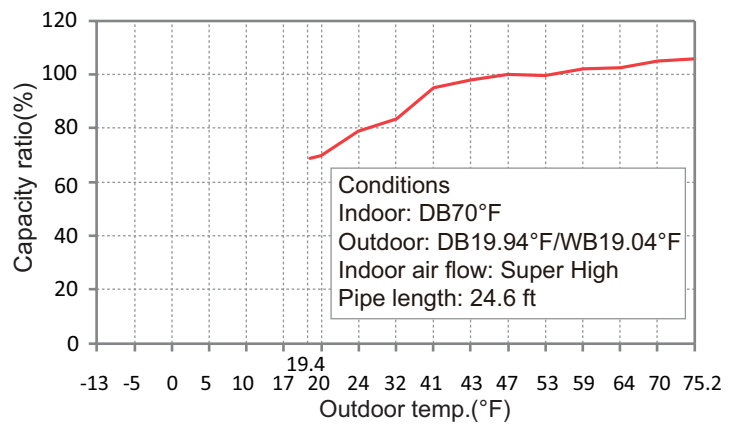
24K:

Cooling operation ambient temperature range is 0.4°F~122°F.
Heating operation ambient temperature range is 19.4°F~75.2°F.

Cooling



Heating



2.3 Cooling and Heating Data Sheet in Rated Frequency

Cooling:

Rated cooling condition(°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit		Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit
Indoor	Outdoor		PSIG		T1 (°F)	T2 (°F)		
80/66.9	95/-	09K	130~142		in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High
		12K	130~142		in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4		
		18K	130~142		in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4		
		24K	130~142		in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4		

Heating:

Rated heating condition(°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit
Indoor	Outdoor			T1 (°F)	T2 (°F)		
70/60	19.94/19.04	09K	362~406	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High
		12K	362~406	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8		
		18K	507~550	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8		
		24K	507~550	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8		

Instruction:

T1: Inlet and outlet pipe temperature of evaporator

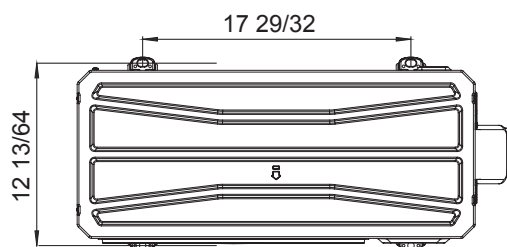
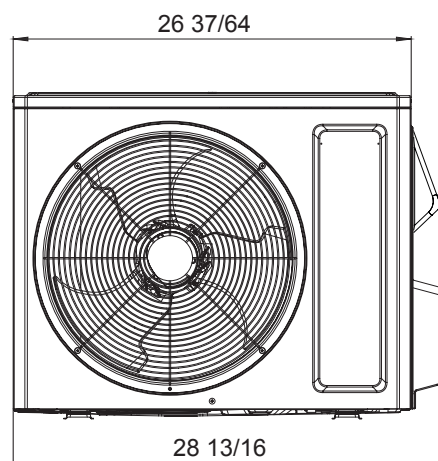
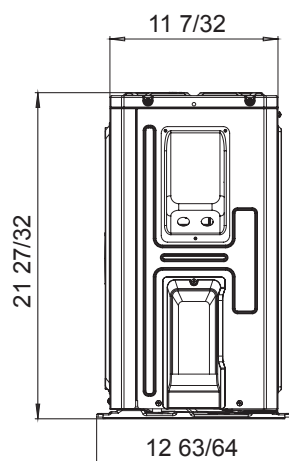
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

Connection pipe length: 24.6 ft.

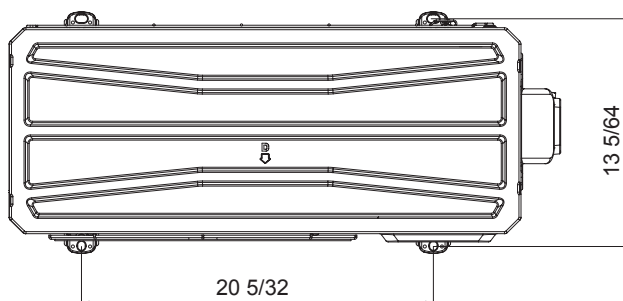
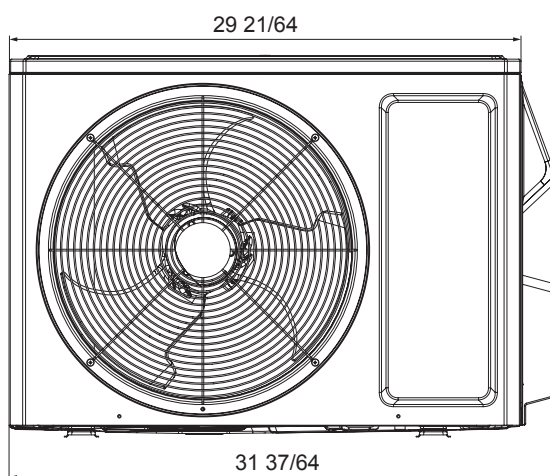
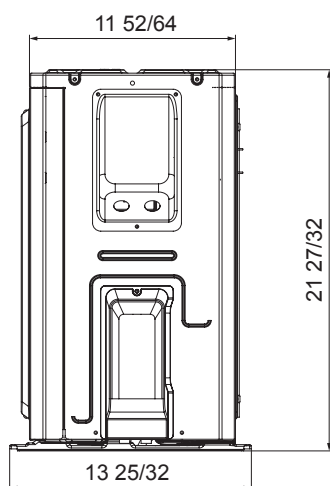
3.2 Outdoor Unit

9K&12K



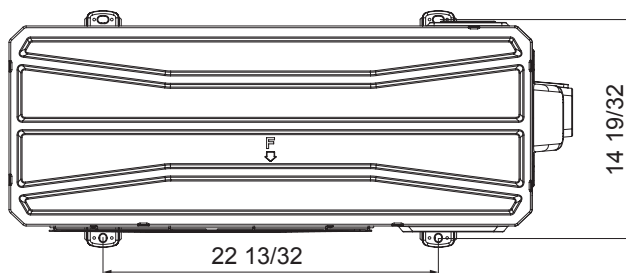
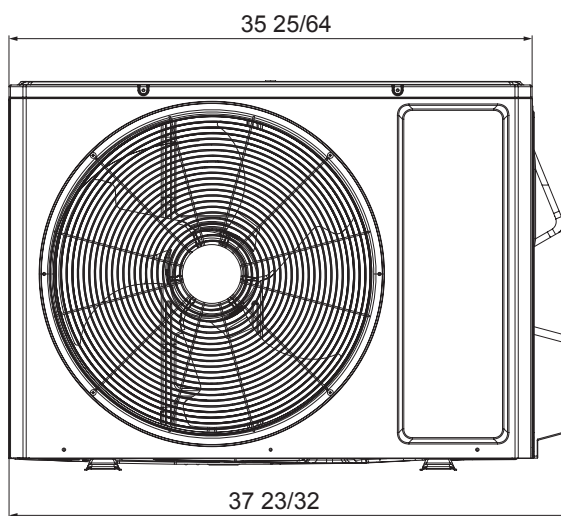
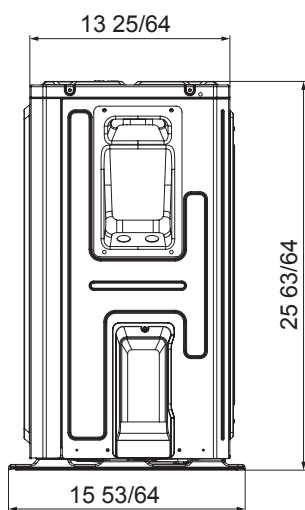
Unit:inch

18K



Unit:inch

24K

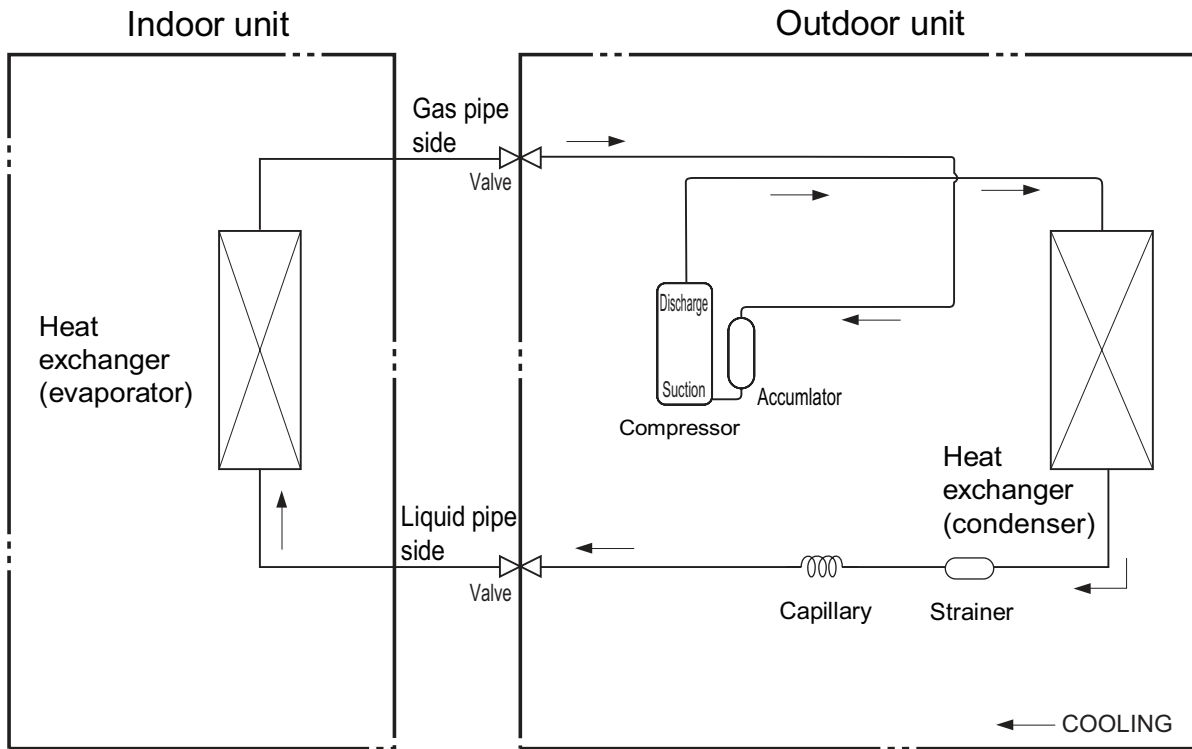


Unit:inch

4. Refrigerant System Diagram

Cooling models

09/12/18/24K



Connection pipe specification:

Liquid pipe: 1/4"

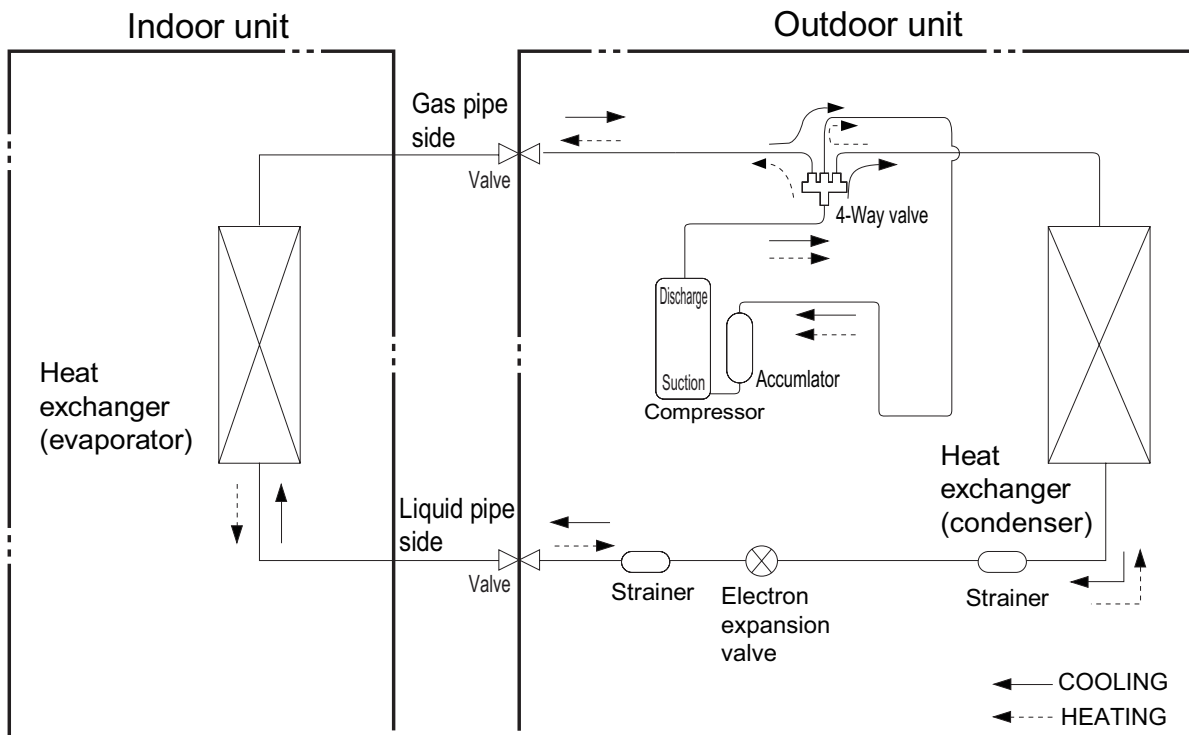
Gas pipe: 3/8" 09/12K

Gas pipe: 1/2" 18K

Gas pipe: 5/8" (24K)

Cooling and Heating models

24K



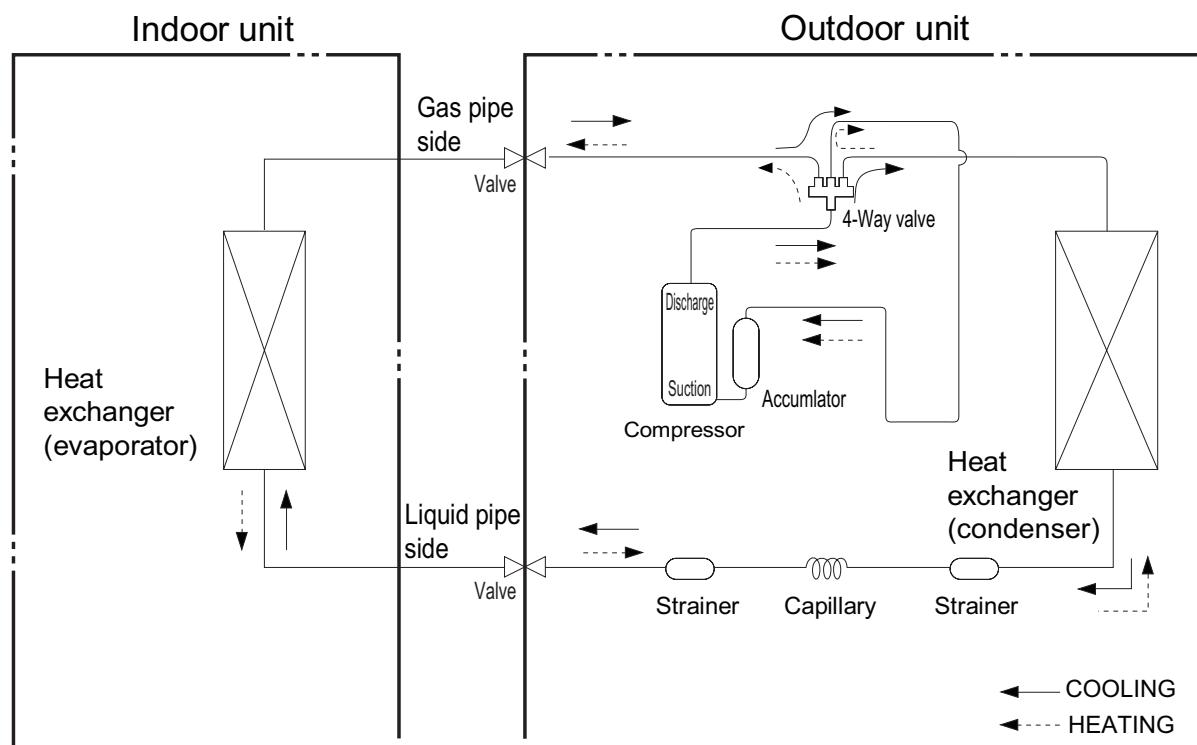
Connection pipe specification:

Liquid pipe: 1/4"

Gas pipe: 5/8" (24K)

Cooling and Heating models

09/12/18K



Connection pipe specification:

Liquid pipe: 1/4"

Gas pipe: 3/8" (09/12K)

Gas pipe: 1/2" (18K)

5. Electrical Part

5.1 Wiring Diagram

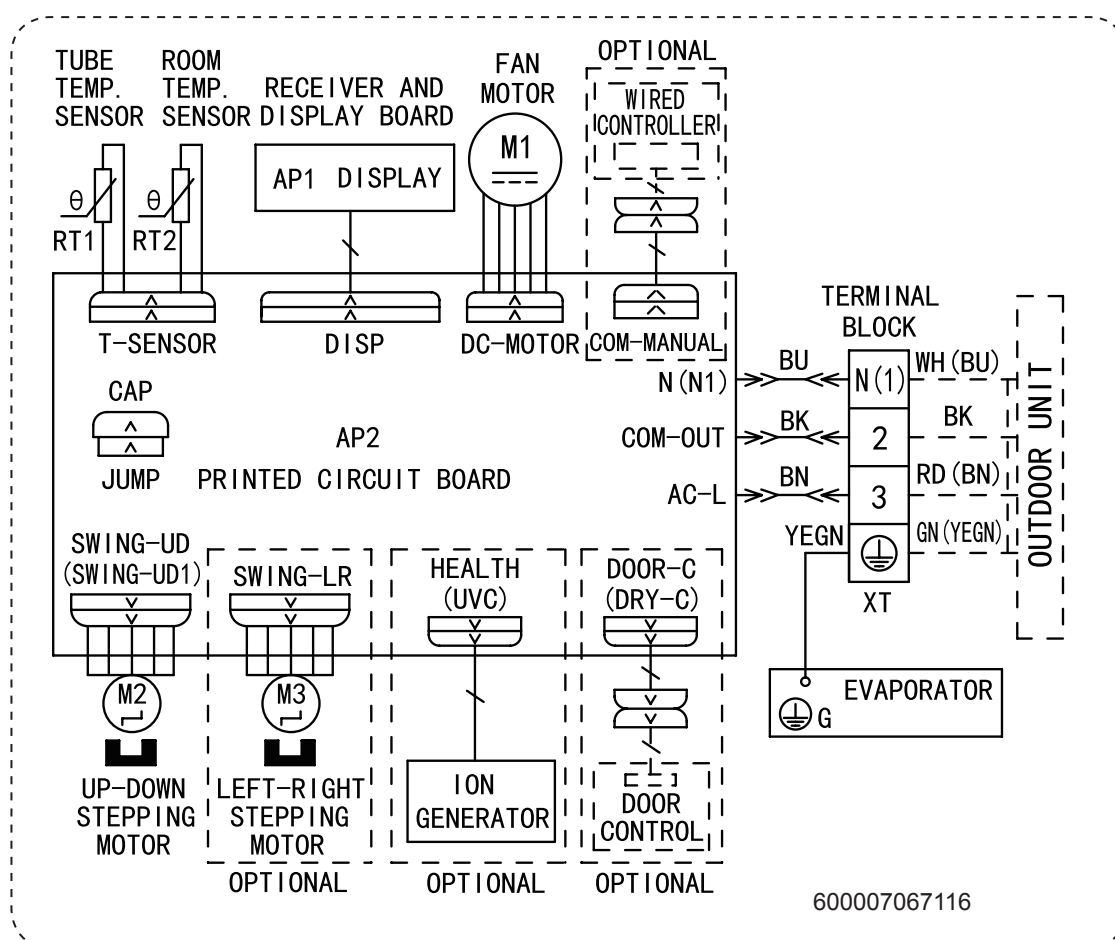
•Instruction

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

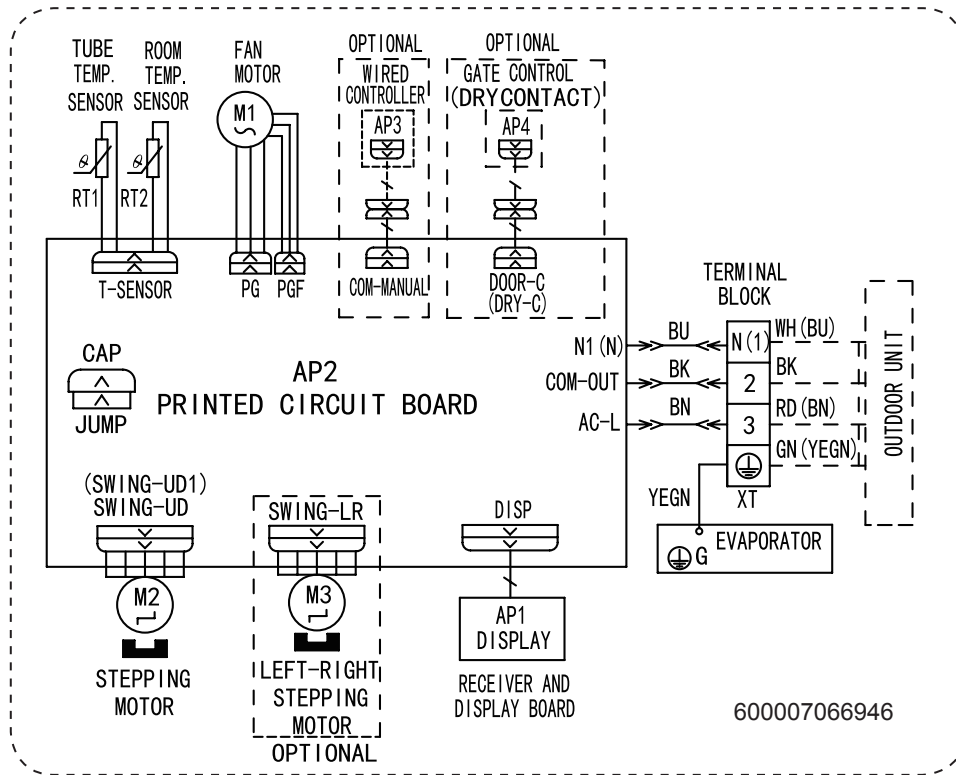
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

• Indoor Unit

12K/18K/24K

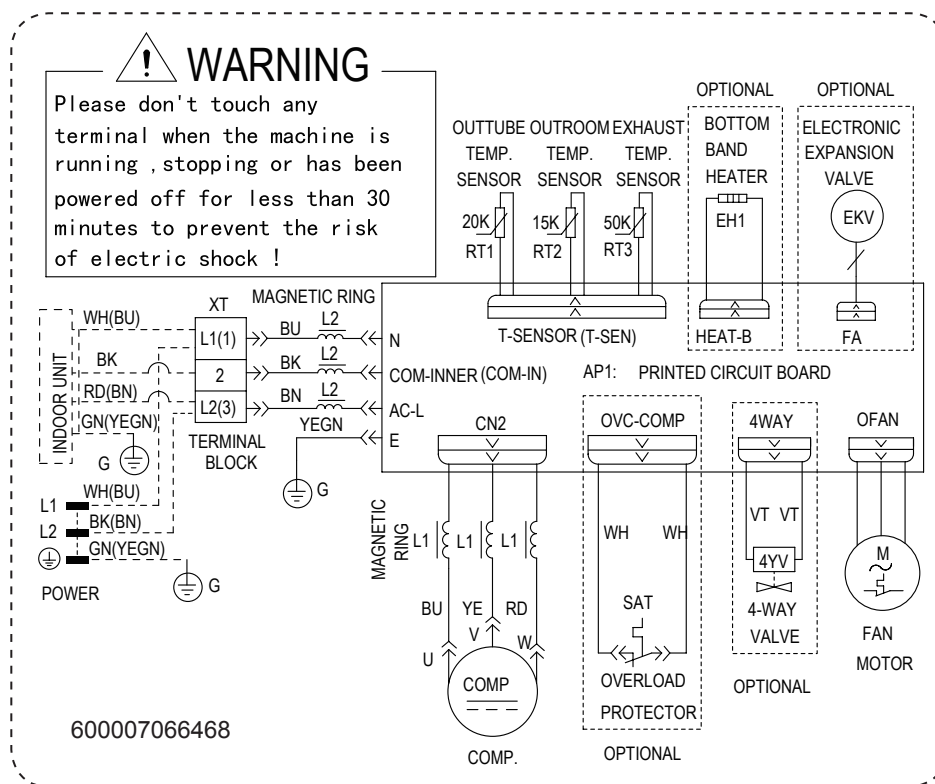


600007067116

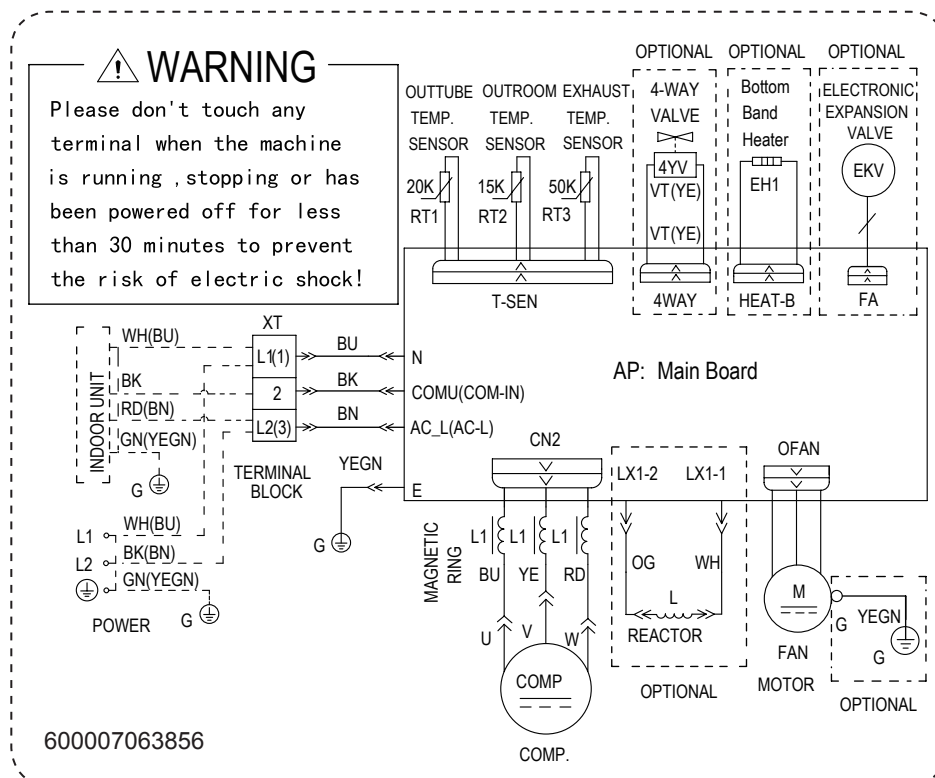


• Outdoor Unit

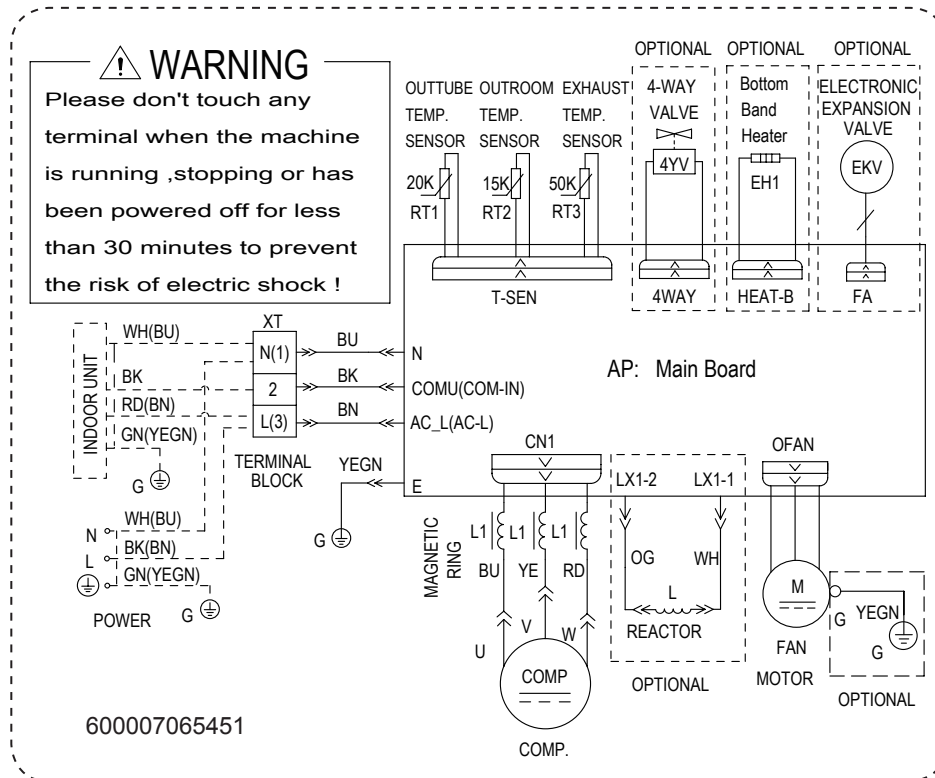
24K



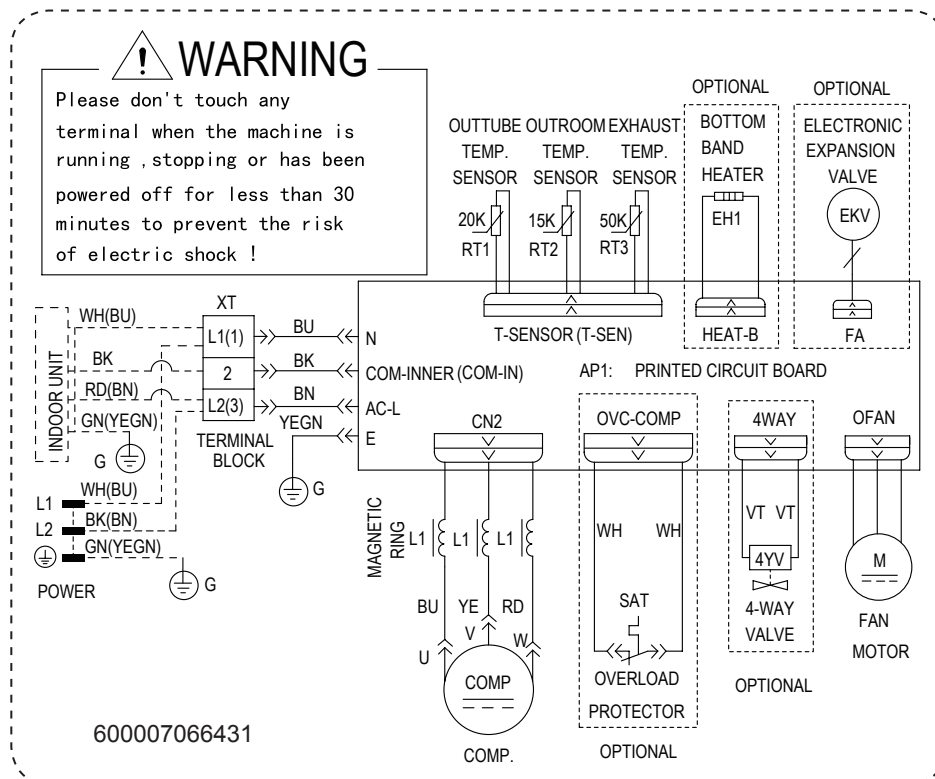
9K/12K



9K/12K 115V ODU



18K 230V ODU

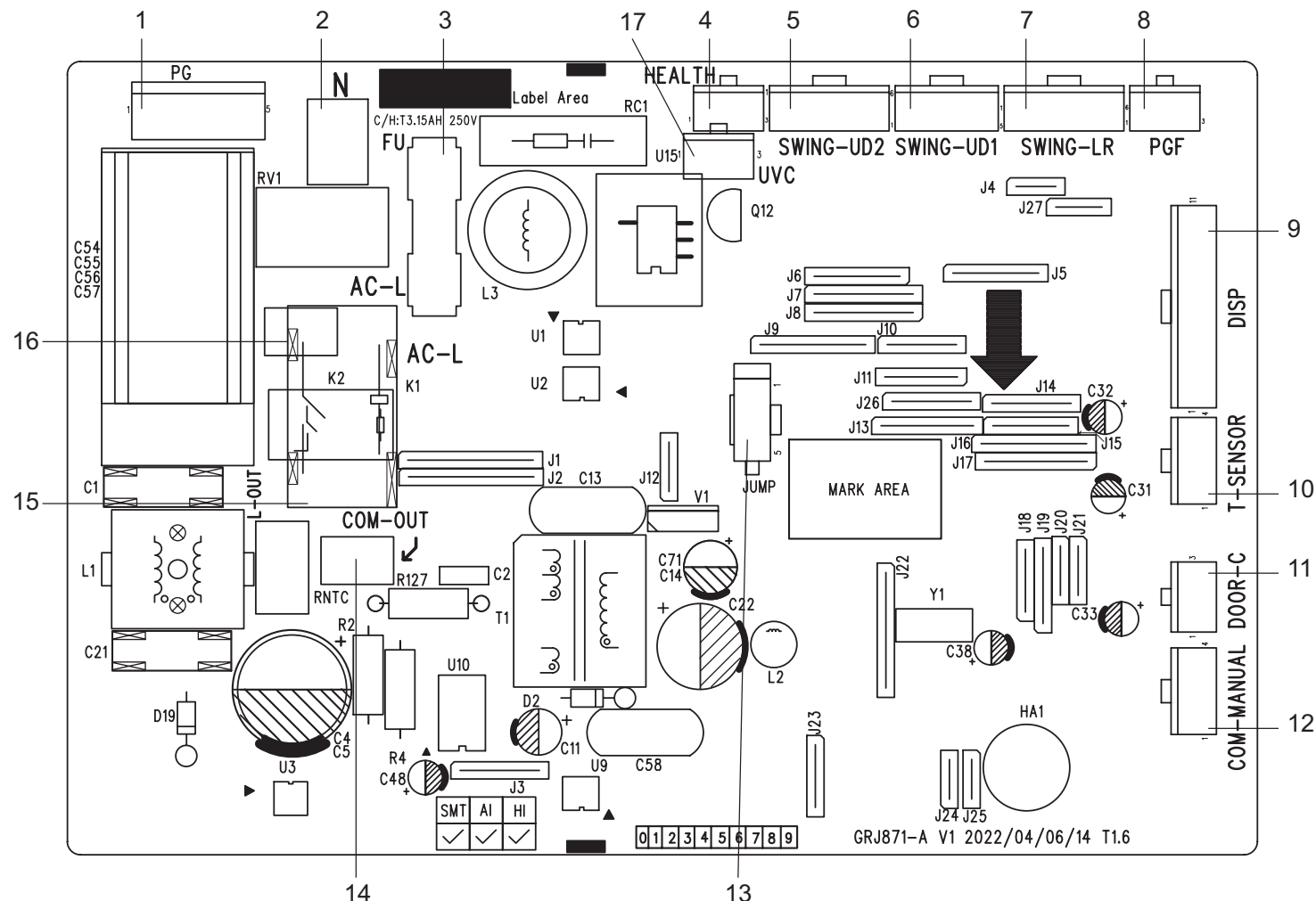


These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

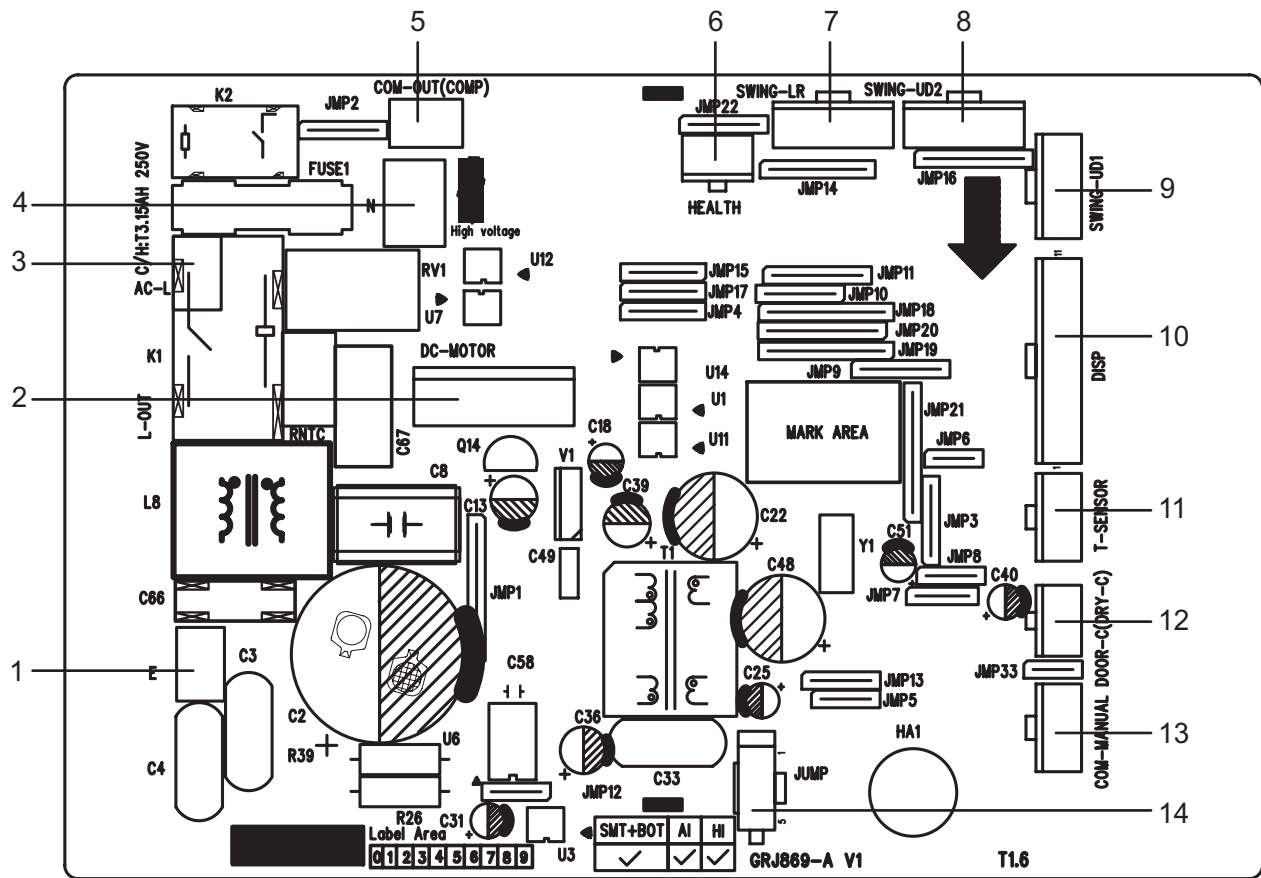
Indoor Unit

09K



No.	Name
1	Interface of fan
2	Interface of neutral wire
3	Fuse
4	Interface of health function(only for the mode with this function)
5	Up&down 2 swing interface
6	Up&down 1 swing interface
7	Left&right swing interface(only for the mode with this function)
8	Interface of PG feedback
9	Display board

No.	Name
10	Needle stand for temperature sensor
11	Interface of gate-control (only for the model with thisfunction)
12	Wired controller (only for the mode with this function)
13	Jump
14	Communication interface
15	Terminal of live wire used for supplying power for outdoor unit
16	Live wire terminal
17	Interface of ultraviolet clean

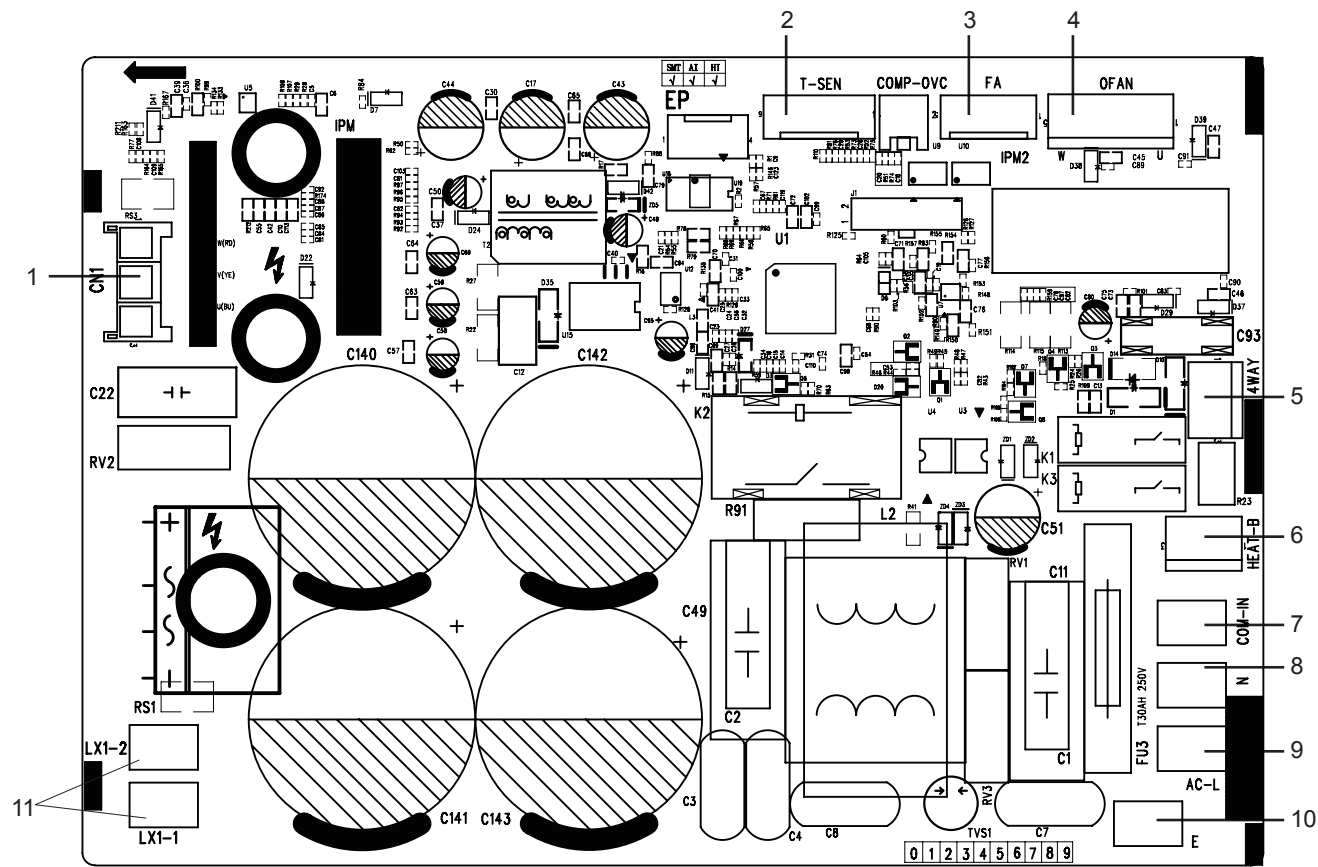


No.	Name
1	Grounding wire
2	DC fan interface
3	Live wire
4	Neutral wire
5	Communication wire
6	Interface of cold plasma
7	Left&right swing interface

No.	Name
8	Up&down swing interface 2
9	Up&down swing interface 1
10	Display interface
11	Interface of temperature sensor
12	Interface of gate control
13	Wired controller
14	Jumper cap

Outdoor Unit

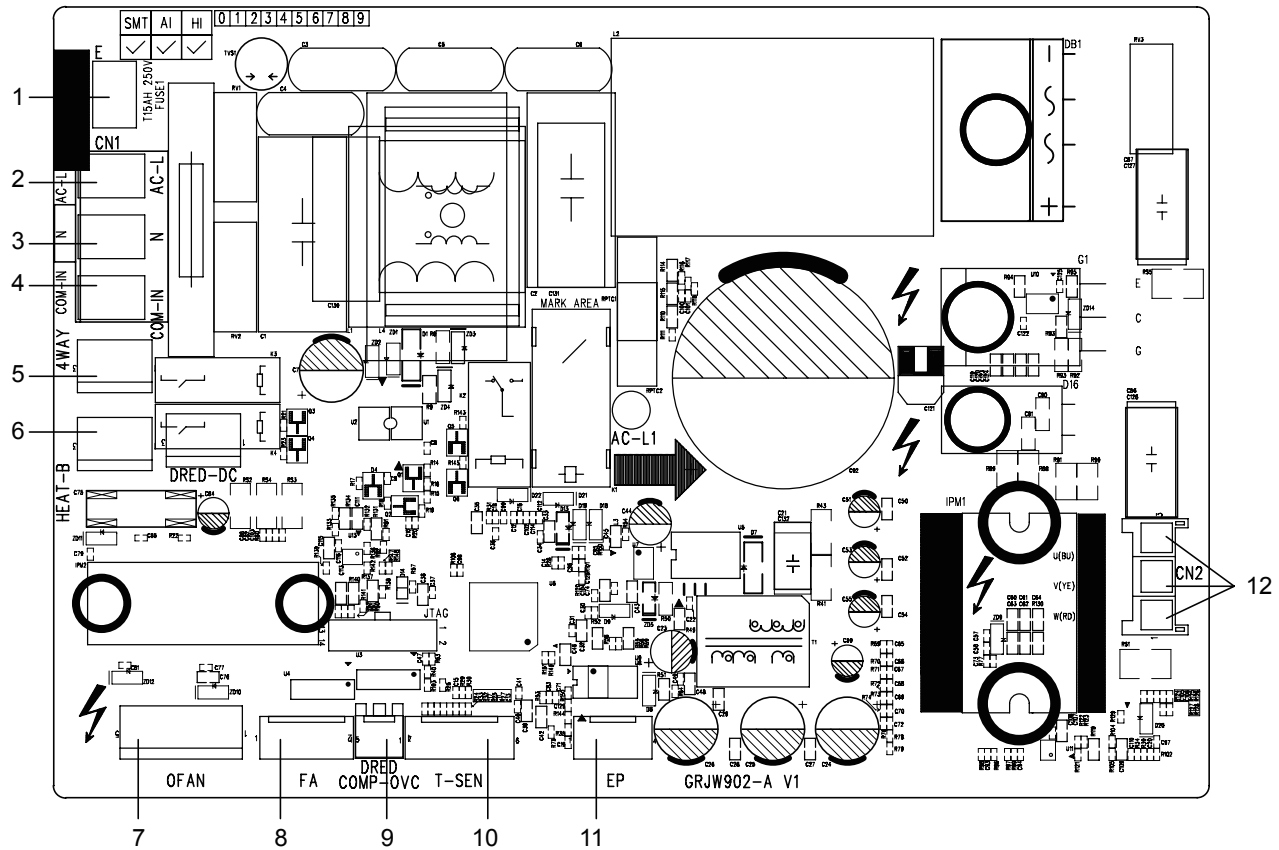
9K/12K 115V ODU



No.	Name
1	Three-phase terminal of compressor
2	Temperature sensor
3	Electronic expansion valve
4	Outdoor fan
5	4-way valve
6	Electric heating of chassis

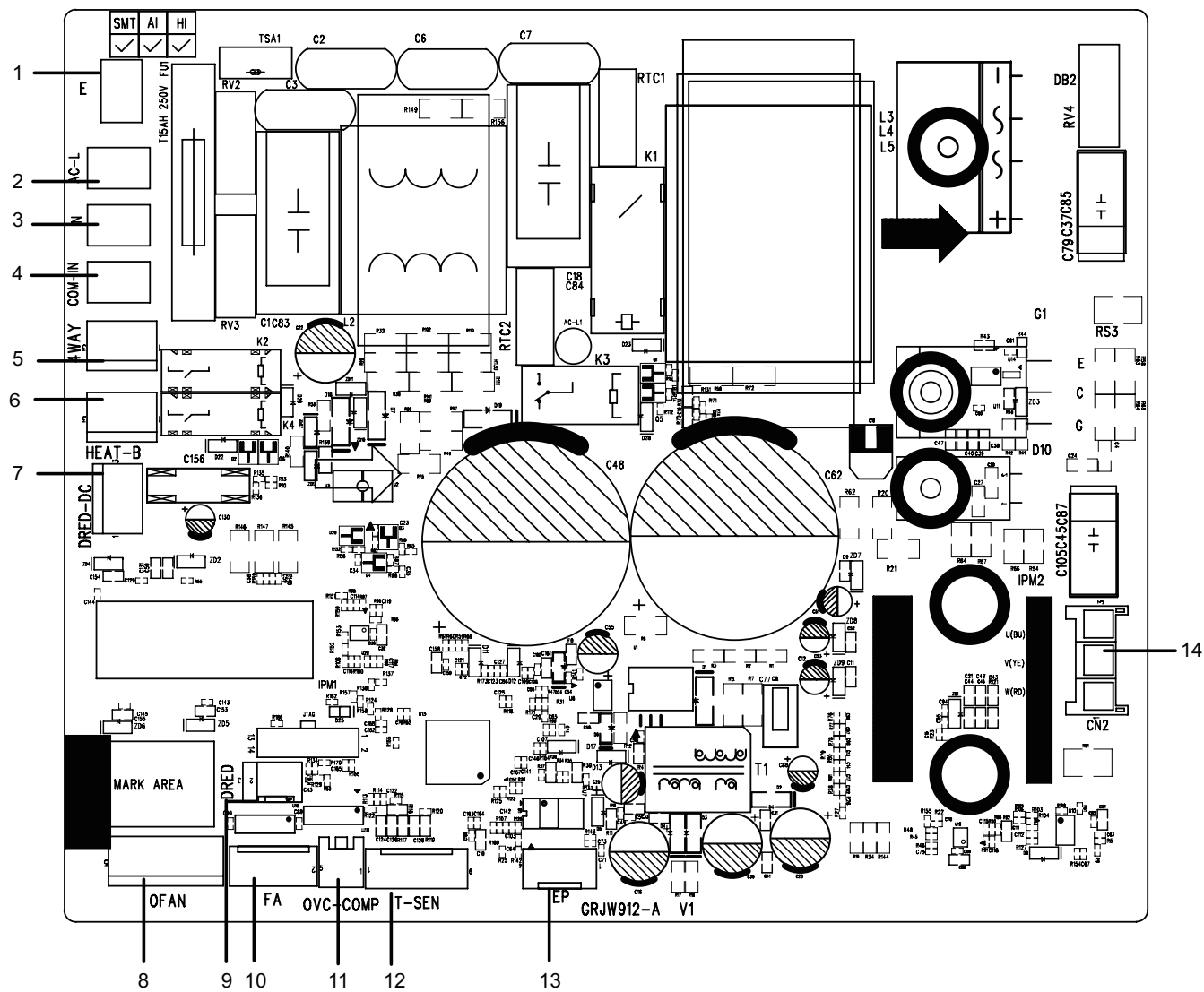
No.	Name
7	Terminal of communication wire
8	Neutral wire
9	Live wire
10	Earthing wire
11	Needle stand of Connect reactor

9K/12K 230V ODU



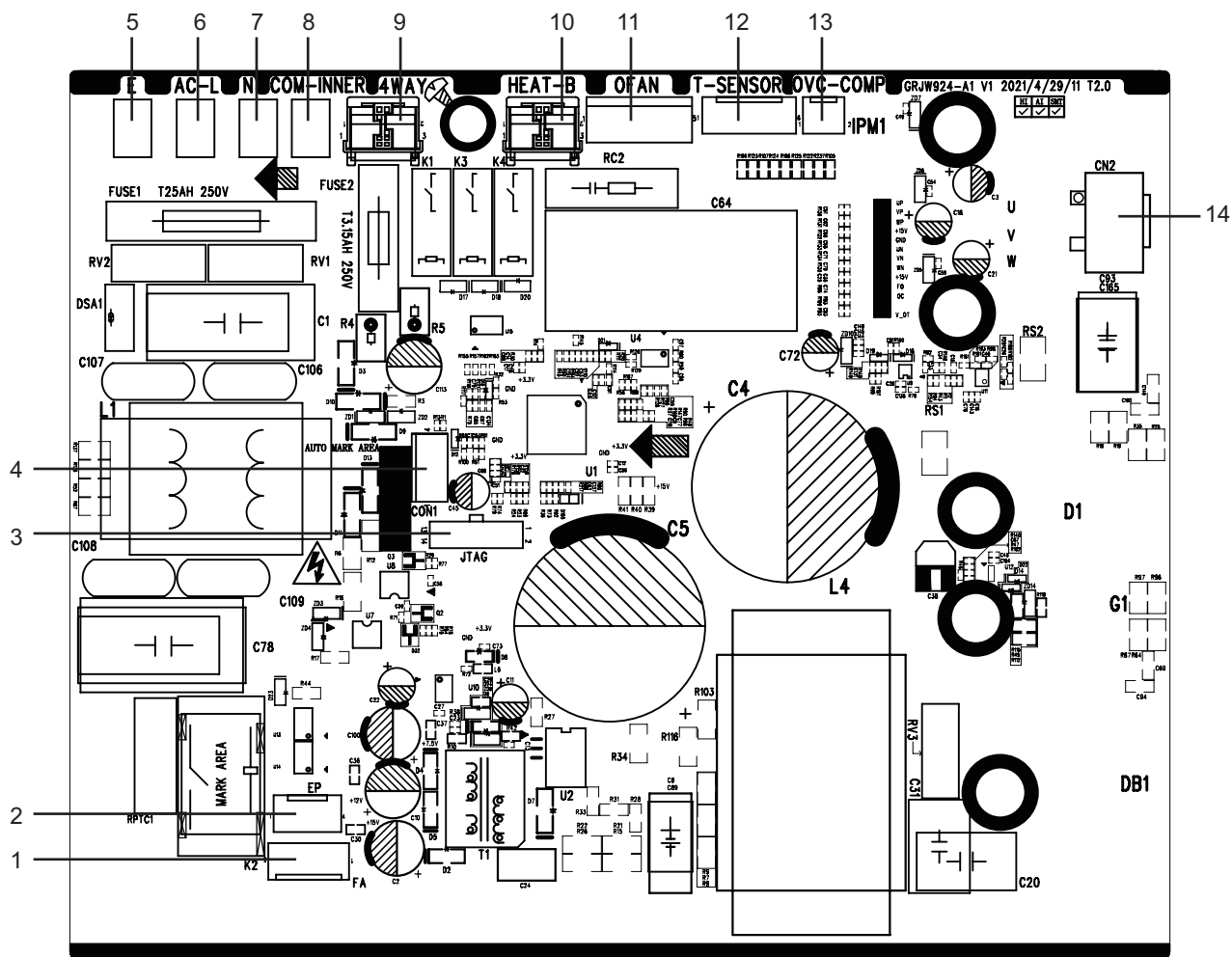
No.	Name
1	Earthing wire terminal
2	Live wire terminal
3	Neutral wire terminal
4	Communication terminal
5	4-way valve terminal
6	Electric heating terminal of chassis

No.	Name
7	Fan motor terminal
8	Electron expansion valve terminal
9	Compressor overload terminal
10	Temperature sensor terminal
11	E store terminal
12	Compressor terminal



No.	Name
1	Earthing wire
2	Live wire
3	Neutral wire
4	Communication wire
5	4-way valve
6	Electric heating of chassis
7	DRED-DC(Reserved)

No.	Name
8	Outdoor fan
9	DRED(Reserved)
10	Electronic expansion valve
11	Compressor Overload
12	Temperature sensor
13	EE Flash drives
14	Compressor

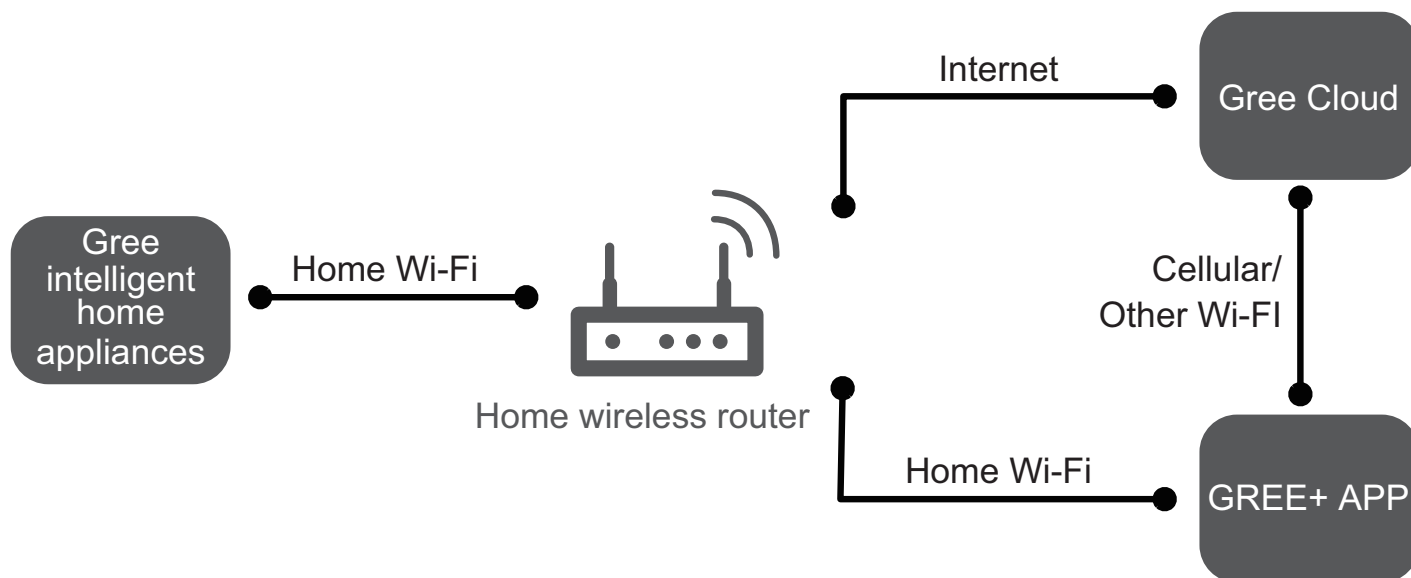


No.	Name
1	Electronic expansion valve
2	E disk
3	Program debug interface
4	Interface monitoring
5	Earthing wire
6	Live wire
7	Neutral wire

No.	Name
8	Communication wire
9	4-way valve
10	Electric heating of chassis
11	AC fan
12	Temperature sensor
13	Overload of compressor
14	Compressor terminal

6.2 GREE+ App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation

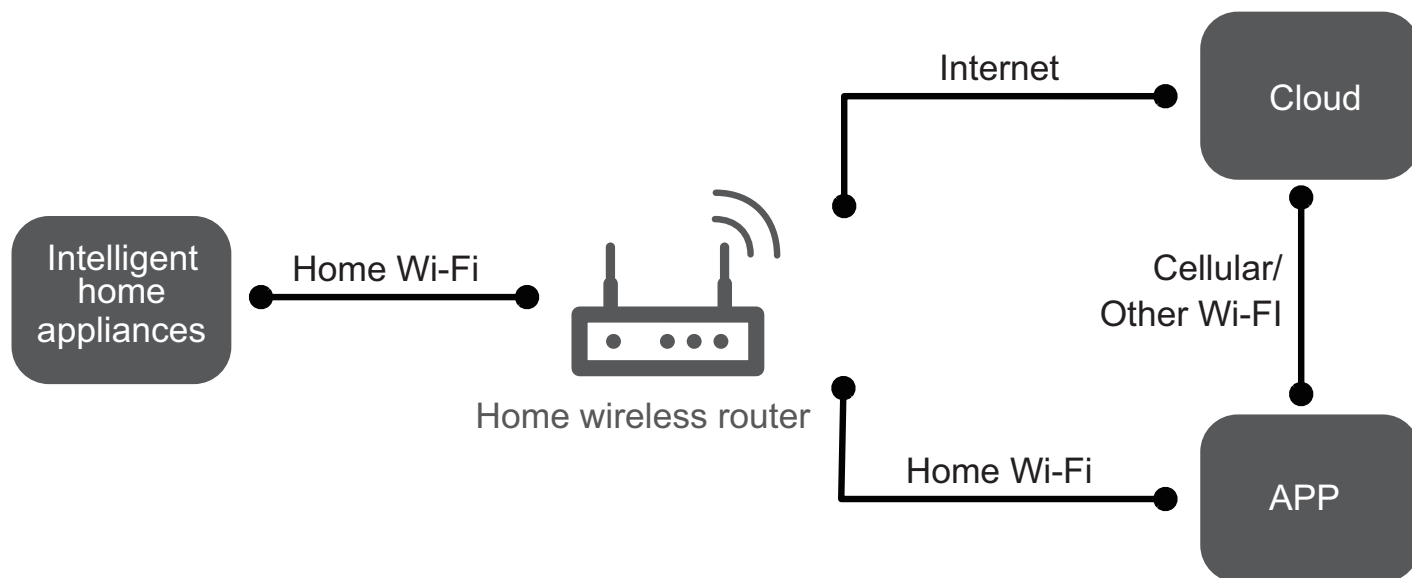


GREE+ App Download Linkage

Scan the QR code or search "GREE+" in the application market to download and install it. When "GREE+" App is installed, register the account and add the device to achieve long-distance control and LAN control of Gree smart home appliances. For more information, please refer to "Help" in App.

6.3 Ewpe Smart App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation



App Download Linkage

Scan the QR code or search "Ewpe Smart" in the application market to download and install it. When "Ewpe Smart" App is installed, register the account and add the device to achieve long-distance control and LAN control of smart home appliances. For more information, please refer to "Help" in App.

6.4 Brief Description of Modes and Functions

1. Basic function of system

(1) Cooling mode

(1) Under this mode, fan and swing operates at setting status. Temperature setting range is 60.8~86.0°F.

(2) During malfunction of outdoor unit or the unit is stopped because of protection, indoor unit keeps original operation status.

(2) Drying mode

(1) Under this mode, fan operates at low speed and swing operates at setting status. Temperature setting range is 60.8~86.0°F.

(2) During malfunction of outdoor unit or the unit is stopped because of protection, indoor unit keeps original operation status.

(3) Protection status is same as that under cooling mode.

(4) Sleep function is not available for drying mode.

(3) Heating mode

(1) Under this mode, Temperature setting range is 60.8~86.0°F.

(2) Working condition and process for heating mode:

When turn on the unit under heating mode, indoor unit enters into cold air prevention status. When the unit is stopped or at OFF status, and indoor unit has been started up just now, the unit enters into residual heat-blowing status.

(4) Working method for AUTO mode:

1. Working condition and process for AUTO mode:

a. Under auto mode set temperature can be adjusted. The unit switch mode automatically according to ambient temperature.

2. Protection function

a. During cooling operation, protection function is same as that under cooling mode.

b. During heating operation, protection function is same as that under heating mode.

3. Display: Set temperature is the set value under each condition. Ambient temperature is (Tamb.-Tcompensation) for heat pump unit and Tamb. for cooling only unit.

4. If there's I feel function, Tcompensation is 0. Others are same as above.

(5) Fan mode

Under this mode, indoor fan operates at set fan speed. Compressor, outdoor fan, 4-way valve and electric heating tube stop operation. Indoor fan can select to operate at high, medium, low or auto fan speed. Temperature setting range is 60.8~86.0°F.

2. Other control

(1) Buzzer

Upon energization or availably operating the unit or remote controller, the buzzer will give out a beep.

(2) Auto fan

Heating mode: During auto heating mode or normal heating mode, auto fan speed will adjust the fan speed automatically according to ambient temperature and set temperature.

(3) Sleep function

After setting sleep function for a period of time, system will adjust set temperature automatically.

(4) Timer function

General timer and clock timer functions are compatible by equipping remote controller with different functions.

(5) Memory function

Memorize compensation temperature, off-peak energization value. Memory content: mode, up&down swing, light, set temperature, set fan speed, general timer (clock timer can't be memorized). After power recovery, the unit will be turned on automatically according to memory content.

(6) Health function

During operation of indoor fan, set health function by remote controller. Turn off the unit will also turn off health function.

Turn on the unit by pressing auto button, and the health is defaulted ON.

(7) I feel control mode

After controller received I feel control signal and ambient temperature sent by remote controller, controller will work according to the ambient temperature sent by remote controller.

(8) Compulsory defrosting function

a. Start up compulsory defrosting function

Under ON status, set heating mode with remote controller and adjust the temperature to 60.8°F. Press “+, -, +, -, +, - (▲, ▼, ▲, ▼, ▲, ▼,)” button successively within 5s and the complete unit will enter into compulsory defrosting status. Meanwhile, heating indicator on indoor unit will ON 10s and OFF 0.5s successively. (Note: If complete unit has malfunction or stops operation due to protection, compulsory defrosting function can be started up after malfunction or protection is resumed.

b. Exit compulsory defrosting mode

After compulsory defrosting is started up, the complete unit will exit defrosting operation according to the actual defrosting result, and the complete unit will resume normal heating operation.

(9) Refrigerant recovery function:

a. Enter refrigerant recycling function

Within 5min after energizing (unit ON or OFF status is ok), continuously press LIGHT button for 3 times within 3s to enter refrigerant recycling mode; Fo is displayed and refrigerant recycling function is started. At this moment, the maintenance people closes liquid valve. After 5min, stick the thimble of

maintenance valve with a tool. If there is no refrigerant spraying out, close the gas valve immediately and then turn off the unit to remove the connection pipe.

b. Exit refrigerant recycling function

After entering refrigerant recycling mode, when receive any remote control signal or enter refrigerant recycling mode for 25min, the unit will exit refrigerant recycling mode automatically. If the unit is in standby mode before refrigerant recycling, it will be still in standby mode after finishing refrigerant recycling; if the unit is in ON status before refrigerant recycling, it will still run in original operation mode.

(10) Ambient temperature display control mode

a. When user set the remote controller to display set temperature (corresponding remote control code: 01), current set temperature will be displayed.

b. Only when remote control signal is switched to indoor ambient temperature display status (corresponding remote control code: 10) from other display status (corresponding remote control code: 00, 01, 11), controller will display indoor ambient temperature for 3s and then turn back to display set temperature.

Under this mode, indoor fan operates at set fan speed. Compressor, outdoor fan, 4-way valve and electric heating tube stop operation. Indoor fan can select to operate at high, medium, low or auto fan speed. Temperature setting range is 60.8~86.0°F.

(11) Off-peak energization function:

Adjust compressors minimum stop time. The original minimum stop time is 180s and then we change to:

The time interval between two start-ups of compressor can't be less than $180+T$ s ($0 \leq T \leq 15$). T is the variable of controller. That's to say the minimum stop time of compressor is 180s~195s. Read-in T into memory chip when refurbish the memory chip each time. After power recovery, compressor can only be started up after $180+T$ s at least.

(12) SE control mode

The unit operates at SE status.

(13) X-fan mode

When X-fan function is turned on, after turn off the unit, indoor fan will still operate at low speed for 2min and then the complete unit will be turned off. When x-fan function is turned off, after turn

off the unit, the complete unit will be turned off directly.

(14) 46.4°F heating function

Under heating mode, you can set 46.4°F heating function by remote controller. The system will operate at 46.4°F set temperature.

(15) Turbo fan control function

Set turbo function under cooling or heating mode to enter into turbo fan speed. Press fan speed button to cancel turbo wind.

No turbo function under auto, dry or fan mode.

(16) Auto cleaning function (only available on some models)

The automatic cleaning function of the indoor heat exchanger can be dedusted and sterilized by the condensation, frosting, defrosting and high temperature stages of the evaporator.

1. Under the power off, press and hold the "Internal Clean" button for 3 seconds while holding down the "MODE" and "FAN" buttons for 5 seconds to turn on the Auto Clean function. After the function is turned on, the air conditioner displays "CL".

2. The evaporator will be rapidly cooled or heated during the automatic cleaning process. There may be noise or even noise. The noise generated by the plastic parts due to thermal expansion and contraction is normal. During the cleaning and disinfection process, the room temperature may increase slightly, please keep the room well ventilated.

Tips:

The automatic cleaning function can only be started under normal environmental conditions. If the indoor environment is easy to dust, it is recommended to clean it once a month. If the indoor environment is not so dusty, it is recommended to clean it once every three months.

After turning on the automatic cleaning mode, the user can leave the room. When cleaning is complete, the unit will automatically enter standby mode.

Outdoor Units

1. Input Parameter Compensation and Calibration

(1) Check the ambient temperature compensation function Indoor ambient temperature compensation

function.

a. In cooling mode, the indoor ambient temperature participating in computing control = $(T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})$

b. In heating mode, the indoor ambient temperature participating in computing control = $(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}})$

(2) Check effective judgment controls of parameters

Effective judgment function of the outdoor exhaust temperature thermo-bulb When conditions a and b are satisfied, the outdoor exhaust temperature thermo-bulb is judged not to be connected into place, the mainboard of outer units will display failure of the outdoor exhaust temperature thermo-bulb (not connected into place), stop the machine for repairing, and resume the machine by remote controls of ON/OFF.

a. Judgment of exhaust detection temperature change:

After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and the rising value T_{exhaust} (T_{exhaust} (after start-up for 10 minutes) - T_{exhaust} (before start-up)) $< 35.6^\circ\text{F}$, the outdoor exhaust temperature thermo-bulb can be judged not to be connected into place (judging once when the power is on the first time).

b. Comparative judgment of exhaust detection temperature and condenser detection temperature ($T_{\text{pipe temperature}} = T_{\text{outdoor pipe temperature in cooling mode}}$, $T_{\text{pipe temperature}} = T_{\text{indoor pipe temperature in heating mode}}$):

After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and $T_{\text{pipe temperature}} \geq (T_{\text{exhaust}} + 37.4)$, the outdoor exhaust temperature thermobulb can be judged not to be connected into place (judging once when power is on the first time).

2. Basic Functions

(1) Cooling Mode

1. Conditions and processes of cooling operation:

(1) If the compressor is shut down, and $[T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] \leq 32.9^\circ\text{F}$, start up the machine for cooling, the cooling operation will start;

(2) During operations of cooling, if $32^\circ\text{F} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 35.6^\circ\text{F}$, the cooling operation will be still running;

(3) During operations of cooling, if $35.6^\circ\text{F} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})]$, the cooling operation will stop after reaching the temperature point.

2. Temperature setting range

(1) If $T_{\text{outdoor ambient temperature}} \geq [T_{\text{low-temperature cooling temperature}}]$, the temperature can be set at: $60.8 \sim 86^\circ\text{F}$ (Cooling at room temperature);

(2) If $T_{\text{outdoor ambient temperature}} < [T_{\text{low-temperature cooling temperature}}]$, the temperature can be set at: $77 \sim 86^\circ\text{F}$ (Cooling at low temperature), that is, the minimum setting temperature for outer units judgment is 77°F .

(2) Dehumidifying Mode

1. Conditions and processes of dehumidifying operations: Same as the cooling mode;

2. The temperature setting range is: $60.8 \sim 86^\circ\text{F}$;

(3) Air-supplying Mode

1. The compressor, outdoor fans and four-way valves are switched off;

2. The temperature setting range is: $60.8 \sim 86^\circ\text{F}$.

(4) Heating Mode

1. Conditions and processes of heating operations: ($T_{\text{indoor ambient temperature}}$ is the actual detection temperature of indoor environment thermo-bulb, $T_{\text{heating indoor ambient temperature compensation}}$ is the indoor ambient temperature compensation during heating operations)

(1) If the compressor is shut down, and $[(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] \leq 32.9^\circ\text{F}$, start the machine to enter into heating operations for heating;

(2) During operations of heating, if $32^\circ\text{F} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] < 35.6^\circ\text{F}$, the heating operation will be still running;

(3) During operations of heating, if $35.6^\circ\text{F} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}]$, the heating operation will stop after reaching the temperature point.

2. The temperature setting range in this mode is: $60.8 \sim 86^\circ\text{F}$.

3. Special Functions

Defrosting Control

① Conditions for starting defrosting

After the time for defrosting is judged to be satisfied, if the temperature for defrosting is satisfied after detections for continuous 3minutes, the defrosting operation will start.

② Conditions of finishing defrosting

The defrosting operation can exit when any of the conditions below is satisfied:

③ $T_{\text{outdoor pipe temperature}} \geq (T_{\text{outdoor ambient temperature}} - [T_{\text{temperature 1 of finishing defrosting}}])$;

④ The continuous running time of defrosting reaches $[t_{\text{max. defrosting time}}]$.

4. Control Logic

(1) Compressor Control

Start the compressor after starting cooling, heating, dehumidifying operations, and the outer fans start for 5s; When the machine is shutdown, in safety stops and when switching to air-supplying mode, the compressor will stop immediately. In all modes: once the compressor starts up, it will not be allowed to stop until having run for the $[t_{\text{min. compressor running time}}]$ (Note: including cases of shutdown when the temperature point is reached; except the cases requiring stopping the compressor such as fault protection, remote shutdown, mode switching etc.); In all modes: once the compressor stops, it will be allowed be restart after 3-minute delay (Note: The indoor units have a function of power memory, the machine can be restarted after remote shutdown and powering up again without delay).

1. Cooling mode

Start the machine to enter into cooling operation for cooling, the compressor is switched on.

2. Dehumidifying mode

Same as the cooling mode.

3. Air-supplying mode

The compressor is switched off.

4. Heating mode

(1) Start the machine to enter into heating operation for heating, the compressor is switched on.

(2) Defrosting:

a. Defrosting starts: the compressor is shut down, and restarts it after 55-second delay.

b. Defrosting ends: the compressor stops, then starts it after 55-second delay.

(2) Outer Fans Control

Notes:

Only the outer fans run for at least 80s in each air flow speed can the air flow be switched;

After the outer fans run compulsively in high speed for 80s when the machine starts up, control the air flow according to the logic.

After remote shutdown, safety stops, and when the machine stops after reaching the temperature point, as well as after the compressor stops, extend 1 minute, the outer fans will stop (During the period in the 1 minute, the air flow of outer fans can be changed according to the outdoor ambient temperature changes); When running with force, the outdoor fans shall run in the highest air flow.

(3) 4-way valve control

1. The 4-way valve control under the modes of Cooling, dehumidification and supplying air: closing;

2. The status of 4-way valve control under the heating mode: getting power;

(1) 4-way valve power control under heating mode

a. Starts the machine under heating mode, the 4-way valve will get power immediately.

(2) 4-way valve power turn-off control under heating mode

a. When you should turn off the power or switch to other mode under heating mode, the power of 4-way valve will be cut after 2 minutes of the compressor stopped.

b. When all kinds of protection stops, the power of 4-way valve will be cut after delaying 4 minutes.

(3) Defrosting control under heating mode:

a. Defrosting begins: The power of 4-way valve will be cut after 50s of entering into the defrosting compressor.

b. Defrosting stops: The 4-way valve will get power after 50s of exiting the defrosting compressor.

(4) Evaporator frozen-preventing protection function

At the mode of Cooling, dehumidifying:

Evaporator frozen-preventing protection function is allowed to begin after 6 min of starting the compressor.

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{inner pipe}} > [T_{\text{frozen-preventing frequency-limited temperature}}]$ (the temperature of hysteresis is 35.6°F), the machine is only allowed to start for operating,

otherwise it should not be started, and should be stopped to treat according to the frozen-preventing protection: Clear the trouble under the mode of power turn-off / heating, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{frozen-preventing normal speed frequency-reducing temperature}}] \leq [T_{\text{inner pipe}} T_{\text{frozen-preventing frequency-limited temperature}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed:

If $[T_{\text{frozen-preventing high speed frequency-reducing temperature}}] \leq [T_{\text{inner pipe}} T_{\text{frozen-preventing normal speed frequency-reducing temperature}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit;

4. Reducing frequency at high speed:

If $[T_{\text{frozen-preventing power turn-off temperature}}] \leq T_{\text{inner pipe}} [T_{\text{frozen-preventing high speed frequency-reducing temperature}}]$ you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit;

5. Power turn-off:

If the $T_{\text{inner pipe}} < [T_{\text{frozen-preventing power turn-off temperature}}]$, then frozen-preventing protect to stop the machine; If $T_{\text{frozen-preventing frequency-limited temperature}} < T_{\text{inner pipe}}$, and the compressor has stopped working for 3 minutes, the whole machine should be allowed to operate.

6. If the frozen-preventing protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the $t_{\text{evaporator frozen-preventing protection times zero clearing time}}$, the times of frozen-preventing power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, mode transferring will not clear it).

(5) Overload protection function

Overload protection function at the mode of Cooling and dehumidifying

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{outer pipe}} < [T_{\text{Cooling overload frequency-limited temperature}}]$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection: Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Cooling overload frequency-limited temperature}}] \leq [T_{\text{outer pipe}} T_{\text{Cooling overload frequency reducing temperature at normal speed}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and power turn-off:

If $[T_{\text{Cooling overload frequency reducing temperature at high speed}}] \leq T_{\text{outer pipe}} < [T_{\text{Cooling overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{Cooling overload frequency reducing temperature at normal speed}}] \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping;

4. Reducing frequency at high speed and stop machine:

If $[T_{\text{Cooling overload frequency reducing temperature at high speed}}] \leq T_{\text{outer pipe}} [T_{\text{Cooling overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{Cooling overload frequency reducing temperature at normal speed}}] \leq [T_{\text{outer pipe}}]$, then Cooling overload protects machine stopping;

5. Power turn-off:

If the $[T_{\text{Cooling overload power turn-off temperature}}] \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping; If $[T_{\text{outer pipe}}] < [T_{\text{Cooling overload frequency-limited temperature}}]$ and the compressor has been stopped working for 3 minutes, the machine should be allowed to operate.

6. If the Cooling overload protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t overload protection times zero clearing time, the times of overload protection power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, transferring mode will not clear it).

Overload protection function at the mode of heating

Starting estimation :

After the compressor stopped working for 180s, if $T_{\text{inner pipe}}$ $T_{\text{heating overload frequency-limited temperature}}$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection:

Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

1. Frequency limited

If $[T_{\text{heating overload frequency-limited temperature}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload frequency reducing temperature at normal speed}}]$, you should limit the frequency raising of compressor.

2. Reducing frequency at normal speed and stopping machine:

If $[T_{\text{heating overload frequency reducing temperature at normal speed}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload frequency reducing temperature at high speed}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $T_{\text{heating overload frequency reducing temperature at normal speed}} \leq T_{\text{inner pipe}}$, then overload protects machine stopping;

3. Reducing frequency at high speed and power turn-off:

If $[T_{\text{heating overload frequency reducing temperature at high speed}}] \leq T_{\text{inner pipe}} < [T_{\text{heating overload power turn-off temperature}}]$, you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $T_{\text{heating overload frequency reducing temperature at normal speed}} \leq T_{\text{outer pipe}}$, then Cooling overload protects machine stopping;

4. Power turn-off:

If the $[T_{\text{heating overload power turn-off temperature}}] \leq T_{\text{inner pipe}}$, then overload protects machine stopping; If $T_{\text{inner pipe}} T_{\text{heating overload}}$

frequency-limited temperature and the compressor has been stopped working for 3 minutes, the machine should be allowed to operate.

5. If the overload protection power turn-off continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume if the fault keeps on. During the process of running, if the running time of compressor exceeds the t overload protection times zero clearing time, the times of overload protection power turn-off should be cleared to recount. The mode of stopping the machine or transferring to supply air will clear the trouble times immediately (if the trouble can not be resumed, transferring mode will not clear it). Protective function for discharge temperature of compressor

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{Discharge}} < T_{\text{Discharge limited temperature}}$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the discharge temperature:

The machine should be stopped or transferred to supply air, the trouble should be cleared immediately, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Limited frequency temperature during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{frequency reducing temperature at normal speed during discharging}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and stopping machine:

If $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{frequency reducing temperature at high speed during discharging}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping;

4. Reducing frequency at high speed and power turn-off:

If $[T_{\text{frequency reducing temperature at high speed during discharging}}] \leq T_{\text{Discharge}} < [T_{\text{Stop temperature during discharging}}]$, you should adjust

the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping;

5. Power turn-off:

If the $[T_{\text{Power turn-off temperature during discharging}}] \leq T_{\text{Discharge}}$, you should discharge to protect machine stopping; If $[T_{\text{Discharge}}] < [T_{\text{Limited frequency temperature during discharging}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

6. If the discharging temperature protection of compressor continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the t Protection times clearing of discharge, the discharge protection is cleared to recount. Stopped or transferred to supply air mode will clear the trouble times

immediately (if the trouble can not be resumed, mode transferring also will not clear it).

7. Frequency limited

If $[I_{\text{Limited frequency when overcurrent}}] \leq [I_{\text{AC Electric current}}] < [I_{\text{frequency reducing when overcurrent}}]$, you should limit the frequency raising of compressor.

8. Reducing frequency:

If $[I_{\text{Frequency reducing when overcurrent}}] \leq [I_{\text{AC Electric current}}]$ | Power turn-off when overcurrent], you should reduce the compressor frequency till the lower limit or exit the frequency reducing condition;

9. Power turn-off:

If $[I_{\text{Power turn-off machine when overcurrent}}] \leq [I_{\text{AC Electric current}}]$, you should carry out the overcurrent stopping protection; If $I_{\text{AC Electric current}} < [I_{\text{Limited frequency when overcurrent}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

10. If the overcurrent protection continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $[t_{\text{Protection times clearing of over current}}]$, the discharge protection is cleared to recount.

(6) Voltage sag protection

After start the compressor, if the time of DC link Voltage sag $[U_{\text{Sagging protection voltage}}]$ is measured to be less than $t_{\text{Voltage sag protection time}}$, the machine should be stop at once, hand on the voltage sag trouble, reboot automatically after 30 minutes.

(7) Communication fault

When you have not received any correct signal from the inner machine in three minutes, the machine will stop for communication fault. When you have not received any correct signal from driver IC (aim to the controller for the separating of main control IC and driver IC), and the machine will stop for communication fault. If the communication is resumed, the machine will be allowed to operate.

(8) Module protection

Testing the module protective signal immediately after started, once the module protective signal is measured, stop the machine with module protection immediately. If the module protection is resumed, the machine will be allowed to operate. If the module protection continuously occurs for three times, it should not be resumed automatically, and you should press the ON/OFF button to resume. If the running time of compressor exceeds the $[t_{\text{Protection times clearing of module}}]$, the module protection is cleared to recount.

(9) Module overheating protection

1. Starting estimation:

After the compressor stopped working for 180s, if $T_{\text{Module}} < [T_{\text{Module frequency limited temperature}}]$ (the temperature of hysteresis is 35.6°F), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the module overheating protection: The machine should be stopped or transferred to supply air, the trouble should be cleared immediately, and the protection times are not counted.

2. Frequency limited

If $[T_{\text{Limited frequency temperature of module}}] \leq T_{\text{Module}} < [T_{\text{frequency reducing temperature at normal speed of module}}]$, you should limit the frequency raising of compressor.

3. Reducing frequency at normal speed and power turn-off:

If $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}} < [T_{\text{frequency reducing temperature at high speed of module}}]$, you should adjust the compressor frequency by reducing 8Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection;

4. Reducing frequency at high speed and power turn-off:

If $[T_{\text{frequency reducing temperature at high speed of module}}] \leq T_{\text{Module}} < [T_{\text{Power turn-off temperature of module}}]$ you should adjust the compressor frequency by reducing 30Hz/90s till the lower limit; After it was running 90s at the lower limit, if $[T_{\text{frequency reducing temperature at normal speed of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection;

5. Power turn-off:

If the $[T_{\text{Power turn-off temperature of module}}] \leq T_{\text{Module}}$, you should stop the machine for module overheating protection; If $T_{\text{Module}} < [T_{\text{Limited frequency temperature of module}}]$ and the compressor has been stopped for 3 minutes, the machine should be allowed to operate.

6. If protection continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the $[t_{\text{Protection times clearing of module}}]$, the discharge protection is cleared to recount. Stopped or transferred to supply air mode will clear the trouble times immediately (if the trouble can not be resumed, mode transferring also will not clear it).

(10) Compressor overloads protection

If you measure the compressor overload switch action in 3s, the compressor should be stopped for overloading. The machine should be allowed to operate after overload protection was measured to resume. If the overloading protection continuously occurs for three times, it should not be resumed automatically, and you should press the ON/OFF button to resume. The protection times of compressor is allowed to clear after the compressor run $[t_{\text{Protection times clearing of compressor overloading}}]$ 30 minutes.

(11) Phase current overcurrent protection of compressor

During the running process of compressor, you could measure the phase current of the compressor, and control it according to the following steps:

1. Frequency limited

If $[I_{\text{Limited frequency phase current}}] \leq [I_{\text{Phase current}}] < [I_{\text{frequency reducing phase current}}]$, you should limit the frequency raising of compressor.

2. Reducing Frequency

If $[I_{\text{Frequency Reducing Phase Current}}] \leq [I_{\text{Phase Current}}] < [I_{\text{Power Turn-Off Phase Current}}]$, the compressor shall continue to reduce frequency till the lowest frequency limit or out of the condition of reducing frequency;

3. Power turn-off

If $[I_{\text{Phase Current}}] \geq [I_{\text{Power Turn-Off Phase Current}}]$, the compressor phase current shall stop working for overcurrent protection; if $[I_{\text{Phase Current}}] \leq [I_{\text{Frequency Reducing Phase Current}}]$, and the compressor have stopped working for 3 min, the machine shall be allowed to operate;

4. If the overcurrent protection of compressor phase current continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to

resume. During the process of running, if the running time of compressor exceeds the [t_{Clearing Time of Compressor Phase Current Times}], the overcurrent protection is cleared to recount.

(12) Starting-up Failure Protection for Compressor

Stop the compressor after its starting-up fails, restart it after 20s if the fault doesn't show, and if they are all failing for the successive start 3 times, it shall be reported as Starting-up Failure, and then restart up it after 3 min. When it still not be able to operate through carry out the above process for 5 times, it is available if press ON/OFF. And the compressor should be cleared the times after it run 2 min.

(13) Out-of-Step Protection for Compressor

The out-of-step protection signal should be detected immediately after starting-up compressor, and once find the out-of-step protection signal, the out-of-step protection shall be stopped; if it can run for lasting power turn-off 3 min, the machine shall be allowed to operate. If it still can't run automatically when the out-of-step protection for compressor happens to stop working for 6 times in succession, it needs to press ON/OFF to operate. And if the running time is more than 10 min, the power turn-off times for out-of-step protection shall be cleared and recounted.

(14) Voltage Abnormity Protection for DC Bus

To detect voltage abnormity protection for dc bus after completing the pre-charge:

1. Over-High Voltage Protection for DC Bus:

If it found the DC bus voltage $U_{DC} > [U_{DC}^{\text{Jiekuangchun Protection}}]$, turn off PFC and stop the compressor at once, and it shall show the DC over-high voltage failure; it should clear out the failure when the voltage dropped to $U_{DC} < [U_{DC}^{\text{Jiekuangchun Recovery}}]$ and the compressor stopped for 3 min.

2. Over-Low Voltage Protection for DC Bus:

If it found the DC bus voltage $U_{DC} < [U_{DC}^{\text{Wantuochun Protection}}]$, turn off PFC and stop the compressor at once, and it shall show the DC over-low voltage; and it should clear out the failure when the voltage raised to $U_{DC} > [U_{DC}^{\text{Wantuochun Recovery}}]$ and the compressor stopped for 3 min.

3. To detect voltage abnormity protect for DC bus when getting electricity:

If it found the DC bus voltage $U_{DC} > [U_{DC}^{\text{Over-High Voltage}}]$, turn off the relay at once, and shows voltage abnormity failure for DC Bus. And the failure can't recover except to break off and get the electricity.

(15) Abnormity Protection for Four-way Valve

Under the model of heating operation in good condition: the compressor is detected [$T_{\text{Inner Tube}} < (T_{\text{Inner Ring}} - T_{\text{Abnormity Temperature Difference}})$ For Four-Way Valve Reversion)], during the running, it should be regarded as four-way valve reversion abnormity. And then it can run if stop the reversion abnormity protection for four-way valve 3 min; and if it still can't run when the reversion abnormity protection for four-way valve happens to stop working for 3 times in succession, it is available if presses ON/OFF.

Attention: the protection shall be shielded during the testing mode and defrosting process, and it shall be cleared out the failure and

its times immediately when turning off or delivering wind / cooling / dehumidifying mode conversed (the inverted mode don't clear out the failure when it can't recover to operate).

(16) PFC Protection

1. After start up the PFC, it should detect the protection signal of PFC immediately; under the condition of PFC protection, it should turn off the PFC and compressor at one time;
2. It shows the failure is cleared out if PFC Protection stopped working 3 min and recovers to run automatically;
3. If it still can't run when it occurs PFC protection for 3 times in succession, it is available if presses ON/OFF; and clear the PFC Protection times when start up PFC for 10min.

(17) Failure Detection for Sensor

1. Outdoor Ambient Sensor: detect the failure of sensor at all times.
2. Outdoor Tube Sensor: You should not detect the failure of outdoor tube sensor within 10 minutes heating operation compressor except the defrosting, and you could detect it at other time.
3. Outdoor Exhaust Sensor:
 - (a) The compressor only detect the sensor failure after it start up 3 min in normal mode;
 - (b) It should detect the exhaust sensor failure immediately in the testing mode.
4. Module Temperature Sensor:
 - (a) Short-Circuit Detection: the compressor should be detected immediately when the module temperature sensor occurs short-circuits;
 - (b) Open-Circuit Detection: the compressor should be detected on open-circuit when it runs 3min (it needn't 30s avoiding the module over-heated).
 - (c) Detect the sensor failure at all times in the testing mode.
5. Disposal for Sensor Protection
 - (1) When the short-circuit of sensor is detected within 30s, It is regarded as the temperature of sensor over-high (or infinitely high), and now according to the over-high sensor, the machine should carry out the corresponding protection to stop working, and show the corresponding temperature shutdown protection and sensor failure at the same time (for example: the compressor stops immediately when the outdoor tube sensor short-circuit, and the machine shall show the overload protection and outdoor tube sensor failure).
 - (2) When the open-circuit of sensor is detected within 30s, The protection shall be stopped and it shall show the corresponding sensor failure.
6. Electric Heating Function of Chassis
 - (1) When Toutdoor amb. $\leq 32^{\circ}\text{F}$, the electric heating of chassis will operate;
 - (2) When Toutdoor amb. $> 35.6^{\circ}\text{F}$, the electric heating of chassis will stop operation;
 - (3) When $32^{\circ}\text{F} < \text{Toutdoor amb.} \leq 35.6^{\circ}\text{F}$, the electric heating of chassis will keep original status.
7. Electric Heating Function of Compressor

- (1) When Toutdoor amb. $\leq 23^{\circ}\text{F}$, compressor stops operation, while the electric heating of compressor starts operation;
- (2) When Toutdoor amb. $> 28.4^{\circ}\text{F}$, the electric heating of compressor stops operation;
- (3) When $23^{\circ}\text{F} < \text{Toutdoor amb.} \leq 28.4^{\circ}\text{F}$, the electric heating of compressor will keep original status.

6. Electric Heating Function of Chassis

- (1) When Toutdoor amb. $\leq 32^{\circ}\text{F}$, the electric heating of chassis will operate;
- (2) When Toutdoor amb. $> 35.6^{\circ}\text{F}$, the electric heating of chassis will stop operation;
- (3) When $32^{\circ}\text{F} < \text{Toutdoor amb.} \leq 35.6^{\circ}\text{F}$, the electric heating of chassis will keep original status.

7. Electric Heating Function of Compressor

- (1) When Toutdoor amb. $\leq 23^{\circ}\text{F}$, compressor stops operation, while the electric heating of compressor starts operation;
- (2) When Toutdoor amb. $> 28.4^{\circ}\text{F}$, the electric heating of compressor stops operation;
- (3) When $23^{\circ}\text{F} < \text{Toutdoor amb.} \leq 28.4^{\circ}\text{F}$, the electric heating of compressor will keep original status.

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

- The installation or maintenance must accord with the instructions.
- Comply with all national electrical codes and local electrical codes.
- Pay attention to the warnings and cautions in this manual.
- All installation and maintenance shall be performed by distributor or qualified person.
- All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
- Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.



WARNINGS

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.
10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.
11. For the air conditioner without plug, an air switch must

be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; Don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)
2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 20kg.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Wear safety belt if the height of working is above 2m.
5. Use equipped components or appointed components during installation.
6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. When refrigerant leaks or requires discharge during installation, maintenance, or disassembly, it should be handled by certified professionals or otherwise in compliance with local laws and regulations.
2. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
3. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.
4. Make sure no refrigerant gas is leaking out when installation is completed.
5. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
6. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

Improper installation may lead to fire hazard, explosion, electric shock or injury.

Safety Precautions for Installing and Relocating the Unit:

To ensure safety, please be mindful of the following precautions.

WARNINGS

1. When installing or relocating the unit, be sure to keep the refrigerant circuit free from air or substances other than the specified refrigerant.

Any presence of air or other foreign substance in the refrigerant circuit will cause system pressure rise or compressor rupture, resulting in injury.

2. When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant.

Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.

3. When refrigerant needs to be recovered during relocating or repairing the unit, be sure that the unit is running in cooling mode. Then, fully close the valve at high pressure side (liquid valve). About 30-40 seconds later, fully close the valve at low pressure side (gas valve), immediately stop the unit and disconnect power. Please note that the time for refrigerant recovery should not exceed 1 minute.

If refrigerant recovery takes too much time, air may be sucked in and cause pressure rise or compressor rupture, resulting in injury.

4. During refrigerant recovery, make sure that liquid valve and gas valve are fully closed and power is disconnected before detaching the connection pipe.

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

5. When installing the unit, make sure that connection pipe is securely connected before the compressor starts running.

If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.

6. Prohibit installing the unit at the place where there may be leaked corrosive gas or flammable gas.

If there leaked gas around the unit, it may cause explosion and other accidents.

7. Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire.

Poor connections may lead to electric shock or fire.

8. Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses.

Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

Main Tools for Installation and Maintenance



Level meter



Measuring tape



Screw driver



Impact drill



Drill head



Electric drill



Electroprobe



Universal meter



Torque wrench



Open-end wrench



Inner hexagon spanner



Electronic leakage detector



Vacuum pump



Pressure meter



Pipe pliers



Pipe pliers



Pipe cutter



Pipe expander



Pipe bender



Soldering appliance



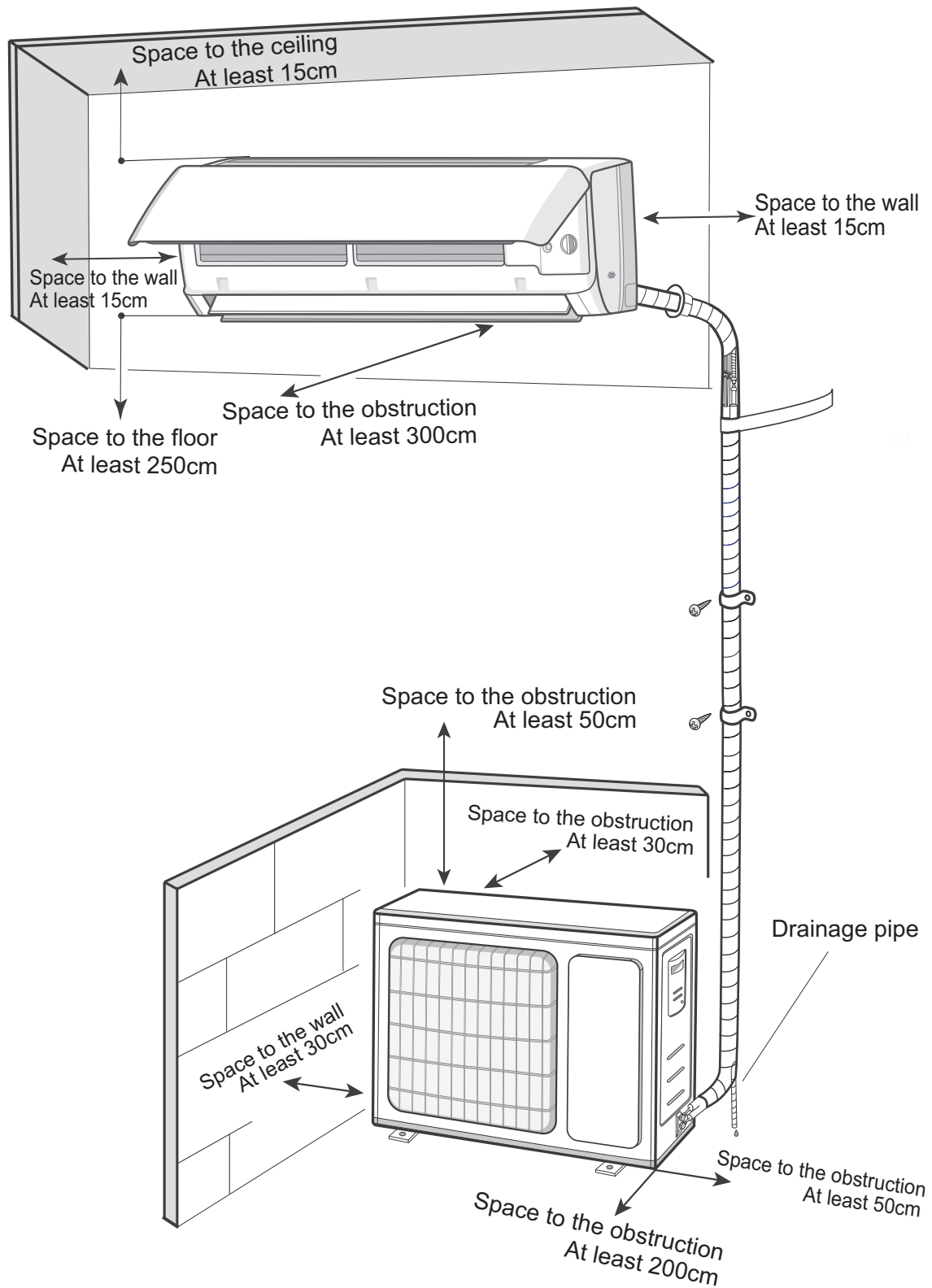
Refrigerant container



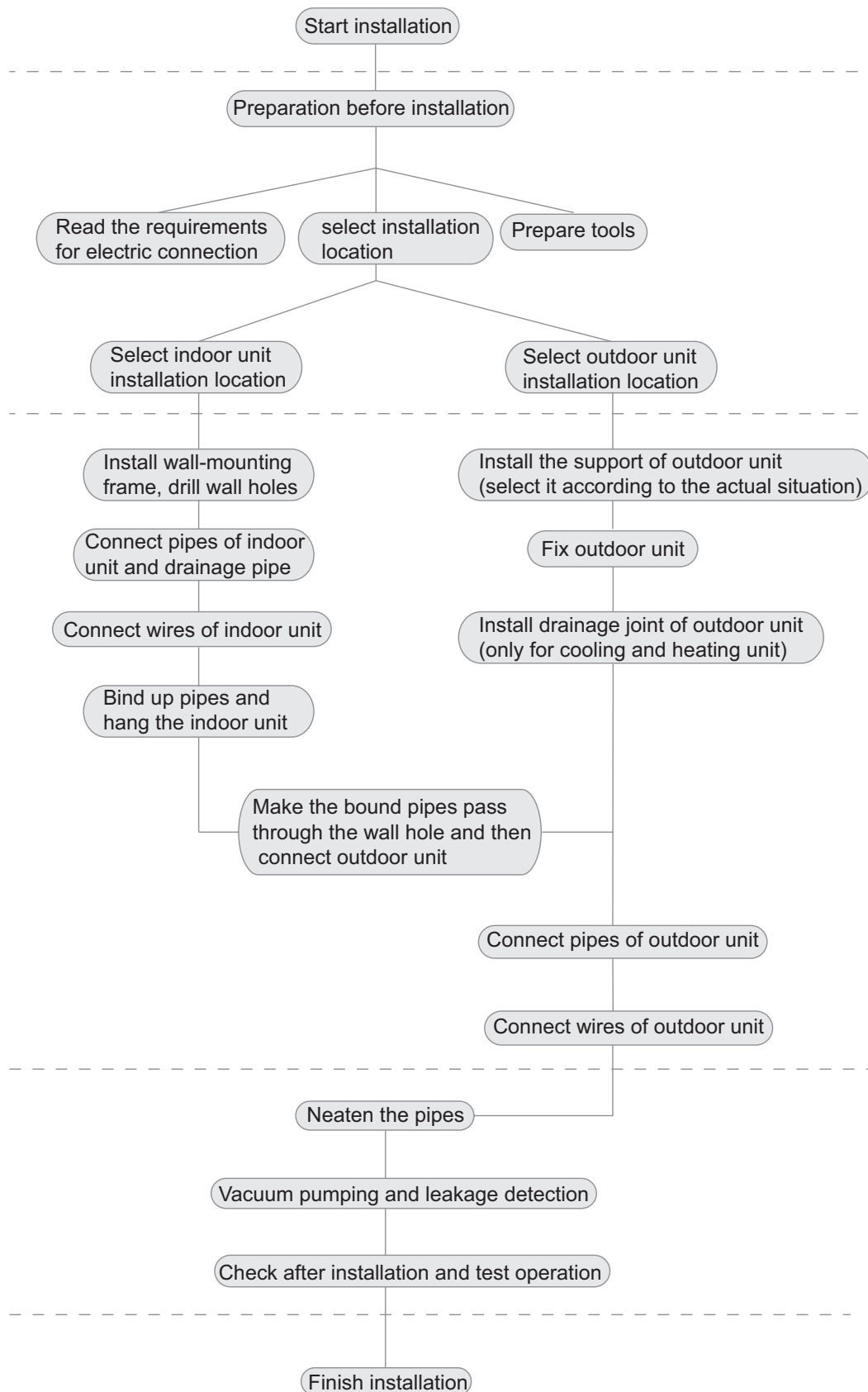
Electronic scale

8. Installation

8.1 Installation Dimension Diagram



Installation Procedures



Note: this flow is only for reference; please find the more detailed installation steps in this section.

8.2 Installation Parts-checking

No.	Name
1	Indoor unit
2	Outdoor unit
3	Connection pipe
4	Drainage pipe
5	Wall-mounting frame
6	Connecting cable(power cord)
7	Wall pipe
8	Sealing gum
9	Wrapping tape
10	Support of outdoor unit
11	Fixing screw
12	Drainage plug(cooling and heating unit)
13	Owners manual, remote controller

Note:

- 1.Please contact the local agent for installation.
- 2.Don't use unqualified power cord.

8.3 Selection of Installation Location

1. Basic Requirement:

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:

- (1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
- (2) The place with high-frequency devices (such as welding machine, medical equipment).
- (3) The place near coast area.
- (4) The place with oil or fumes in the air.
- (5) The place with sulfured gas.
- (6) Other places with special circumstances.
- (7) The appliance shall not be installed in the laundry.
- (8) It's not allowed to be installed on the unstable or motive base structure (such as truck) or in the corrosive environment (such as chemical factory).

2. Indoor Unit:

- (1) There should be no obstruction near air inlet and air outlet.
- (2) Select a location where the condensation water can be dispersed easily and won't affect other people.
- (3) Select a location which is convenient to connect the outdoor unit and near the power socket.
- (4) Select a location which is out of reach for children.
- (5) The location should be able to withstand the weight of indoor unit and won't increase noise and vibration.
- (6) The appliance must be installed 2.5m above floor.
- (7) Don't install the indoor unit right above the electric appliance.
- (8) Please try your best to keep away from fluorescent lamp.

3. Outdoor Unit:

- (1) Select a location where the noise and outflow air emitted by the outdoor unit will not affect neighborhood.
- (2) The location should be well ventilated and dry, in which the outdoor unit won't be exposed directly to sunlight or strong wind.
- (3) The location should be able to withstand the weight of outdoor

unit.

(4) Make sure that the installation follows the requirement of installation dimension diagram.

(5) Select a location which is out of reach for children and far away from animals or plants. If it is unavoidable, please add fence for safety purpose.

8.4 Electric Connection Requirement

1. Safety Precaution

(1) Must follow the electric safety regulations when installing the unit.

(2) According to the local safety regulations, use qualified power supply circuit and air switch.

(3) Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring may result in electric shock, fire hazard or malfunction. Please install proper power supply cables before using the air conditioner.

(4) Properly connect the live wire, neutral wire and grounding wire of power socket.

(5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.

(6) Do not put through the power before finishing installation.

(7) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

(8) The appliance shall be installed in accordance with national wiring regulations.

2. Grounding Requirement:

(1) The air conditioner is I class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.

(2) The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.

(3) The grounding resistance should comply with national electric safety regulations.

(4) The appliance must be positioned so that the plug is accessible.

(5) An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

8.5 Installation of Indoor Unit

1. Choosing Installation location

Recommend the installation location to the client and then confirm it with the client.

2. Install Wall-mounting Frame

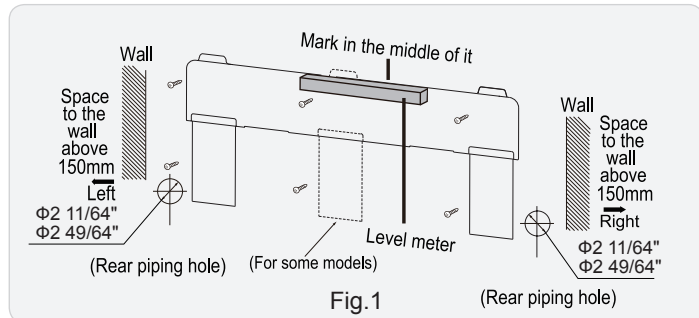
(1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.

(2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles in the holes.

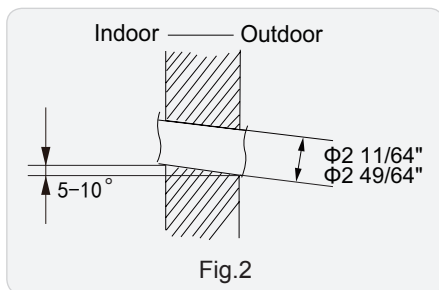
(3) Fix the wall-mounting frame on the wall with tapping screws and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. Drill piping hole

(1) Choose the position of piping hole according to the direction of outlet pipe. The position of piping hole should be a little lower than the wall-mounted frame. (As show in Fig.1)



(2) Drill a piping hole with the diameter of Φ2 11/64"/Φ2 49/64" on the selected outlet pipe position. In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°. (As show in Fig.2)

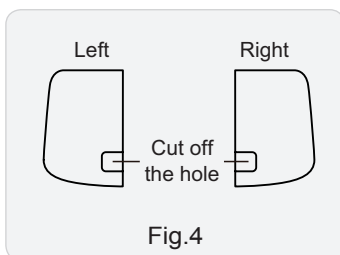
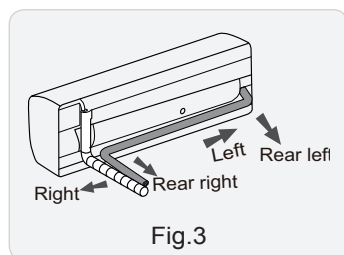


⚠ Note:

Pay attention to dust prevention and take relevant safety measures when drill the hole.

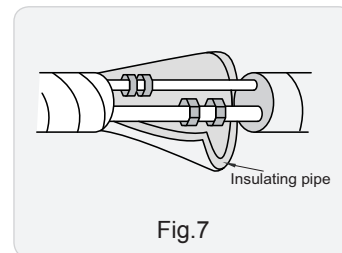
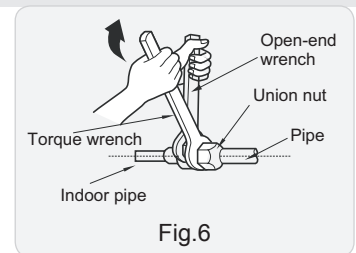
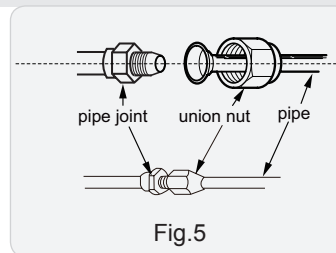
4. Outlet Pipe

(1) The pipe can be led out in the direction of right, rear right, left or rear left. (As show in Fig.3)
(2) When selecting leading out the pipe from left or right, please cut off the corresponding hole on the bottom case. (As show in Fig.4)



5. Connect the Pipe of Indoor Unit

(1) Aim the pipe joint at the corresponding bellmouth. (As show in Fig.5)
(2) Pretightening the union nut with hand.
(3) Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench. (As show in Fig.6)
(4) Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape. (As show in Fig.7)

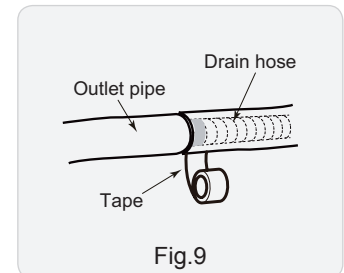
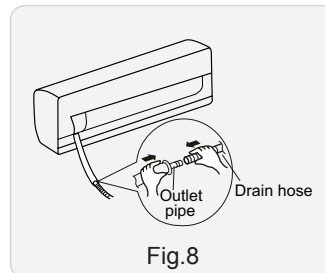


Refer to the following table for wrench moment of force:

Piping size (inch)	Tightening torque (N·m)
1/4	15~20
3/8	30~40
1/2	45~55
5/8	60~65
3/4	70~75

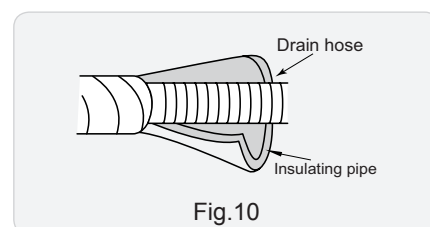
6. Install Drain Hose

(1) Connect the drain hose to the outlet pipe of indoor unit. (As show in Fig.8)
(2) Bind the joint with tape. (As show in Fig.9)



⚠ Note:

(1) Add insulating pipe in the indoor drain hose in order to prevent condensation.
(2) The plastic expansion particles are not provided. (As show in Fig.10)



7. Connect Wire of Indoor Unit

(1) Open the panel, remove the screw on the wiring cover and then take down the cover. (As show in Fig.11)

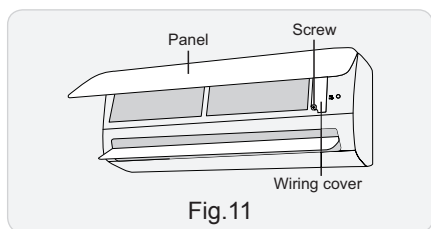


Fig.11

(2) Make the power connection wire go through the cable-cross hole at the back of indoor unit and then pull it out from the front side. (As show in Fig.12)

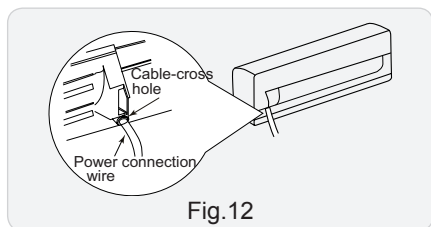


Fig.12

(3) Remove the wire clip; connect the power connection wiresignal control wire (only for cooling and heating unit) to the wiring terminal according to the color; tighten the screw and then fix the power connection wire with wire clip. (As show in Fig.13)

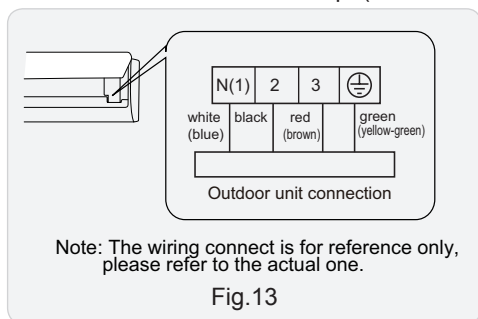


Fig.13

(4) Put wiring cover back and then tighten the screw.
(5) Close the panel.

⚠ Note:

- (1) All wires of indoor unit and outdoor unit should be connected by a professional.
- (2) If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.
- (3) For the air conditioner with plug, the plug should be reachable after finishing installation.
- (4) For the air conditioner without plug, an air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

8. Bind up Pipe

- (1) Bind up the connection pipe, power cord and drain hose with the band. (As show in Fig.14)
- (2) Reserve a certain length of drain hose and power cord for installation when binding them. When binding to a certain degree, separate the indoor power and then separate the drain hose. (As show in Fig.15)
- (3) Bind them evenly.
- (4) The liquid pipe and gas pipe should be bound separately at the end.

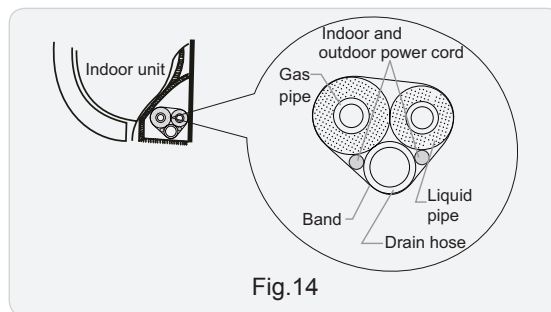


Fig.14

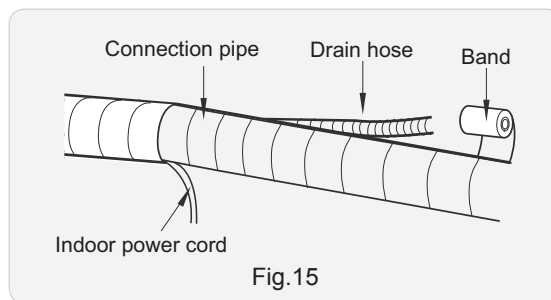


Fig.15

⚠ Note:

- (1) The power cord and control wire can't be crossed or winding.
- (2) The drain hose should be bound at the bottom.

9. Hang the Indoor Unit

- (1) Put the bound pipes in the wall pipe and then make them pass through the wall hole.
- (2) Hang the indoor unit on the wall-mounting frame.
- (3) Stuff the gap between pipes and wall hole with sealing gum.
- (4) Fix the wall pipe. (As show in Fig.16)
- (5) Check if the indoor unit is installed firmly and closed to the wall. (As show in Fig.17)

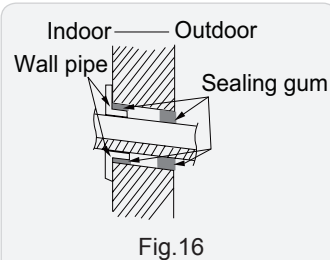


Fig.16

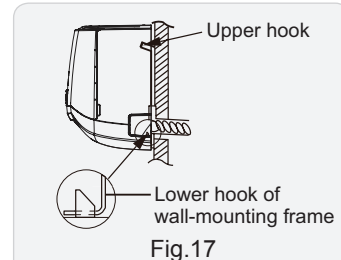


Fig.17

⚠ Note:

Do not bend the drain hose too excessively in order to prevent blocking.

8.6 Installation of Outdoor Unit

1. Fix the Support of Outdoor Unit(Select it according to the actual installation situation)

- (1) Select installation location according to the house structure.
- (2) Fix the support of outdoor unit on the selected location with expansion screws.

⚠ Note:

- (1) Take sufficient protective measures when installing the outdoor unit.
- (2) Make sure the support can withstand at least four times the unit weight.
- (3) The outdoor unit should be installed at least 3cm above the floor in order to install drain joint.(As show in Fig.18)

(4) For the unit with cooling capacity of 2300W~5000W, 6 expansion screws are needed; for the unit with cooling capacity of 6000W~8000W, 8 expansion screws are needed; for the unit with cooling capacity of 10000W~16000W, 10 expansion screws are needed.

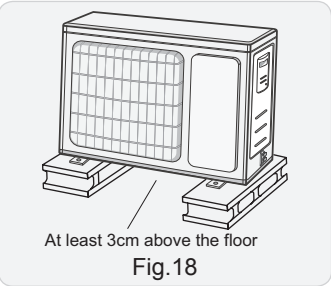


Fig.18

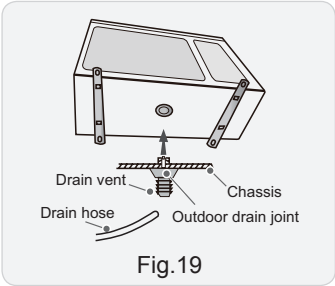


Fig.19

2. Install Drain Joint(Only for cooling and heating unit)

- (1) Connect the outdoor drain joint into the hole on the chassis.
- (2) Connect the drain hose into the drain vent.(As show in Fig.19)

3. Fix Outdoor Unit

- (1) Place the outdoor unit on the support.
- (2) Fix the foot holes of outdoor unit with bolts.(As show in Fig.20)

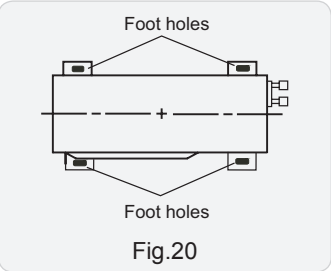


Fig.20

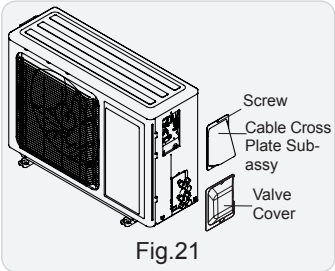


Fig.21

4. Connect Indoor and Outdoor Pipes

- (1) Remove the screw on the right valve cover of outdoor unit and then remove the valve cover. (As show in Fig.21)
- (2) Remove the screw cap of valve and aim the pipe joint at the bellmouth of pipe.
- (3) Pretighten the union nut with hand.(As show in Fig.22)

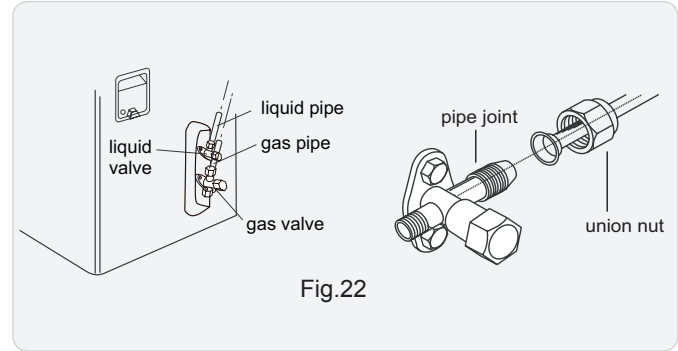


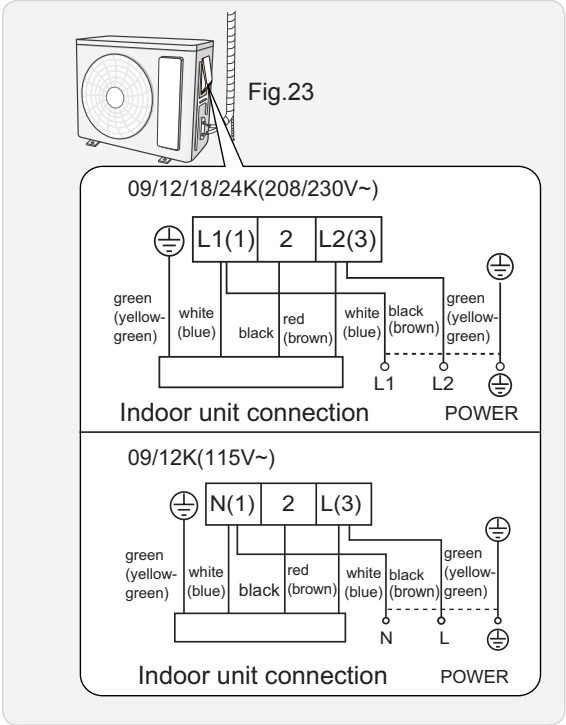
Fig.22

- (4) Tighten the union nut with torque wrench by referring to the sheet below.

Piping size (inch)	Tightening torque (N·m)
1/4	15~20
3/8	30~40
1/2	45~55
5/8	60~65
3/4	70~75

5. Connect Outdoor Electric Wire

- (1) Remove the wire clip; connect the power connection wire and signal control wire (only for cooling and heating unit) to the wiring terminal according to the color; fix them with screws. (As show in Fig.23)

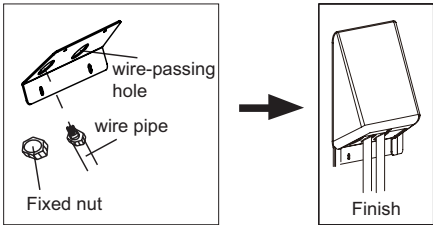


Note: the wiring connect is for reference only,please refer to the actual one.

Note:

- (1) After tightening the screw, pull the power cord slightly to check if it is firm.
- (2) Never cut the power connection wire to prolong or shorten the distance.
- (3) The connecting wire and connection pipe cannot touch each other.
- (4) Top cover of outdoor unit and electric box assembly should be fixec by the screw. Otherwise, it can cause a fire, or short circuit caused by water or dust.

Install the over line pipe



6. Neaten the Pipes

- (1) The pipes should be placed along the wall, bent reasonably and hidden possibly. Min. semidiameter of bending the pipe is 10cm.
- (2) If the outdoor unit is higher than the wall hole, you must set a U-shaped curve in the pipe before pipe goes into the room, in order to prevent rain from getting into the room. (As show in Fig.24)

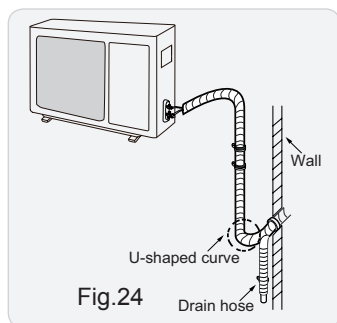


Fig.24

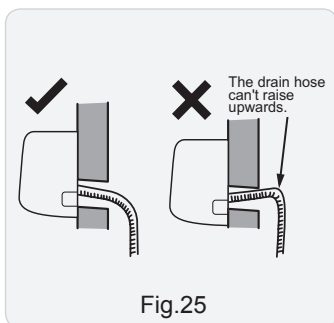


Fig.25

⚠ Note:

- (1) The through-wall height of drain hose shouldnt be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose can't be curved, raised and fluctuant, etc.(As show in Fig.26)
- (3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)

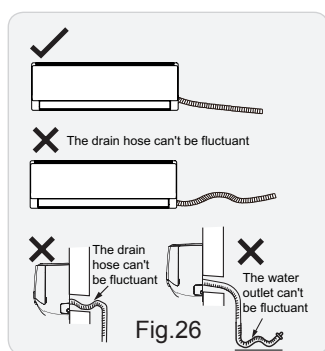


Fig.26

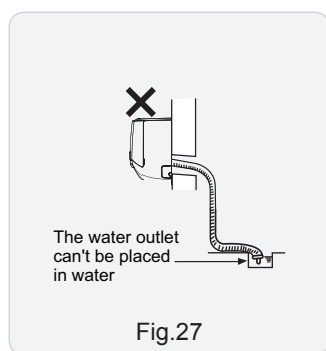
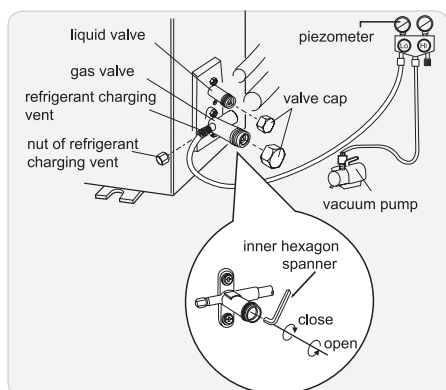


Fig.27

8.7 Vacuum Pumping and Leak Detection

1. Use vacuum pump

1. Remove the valve caps on the liquid valve and gas valve and the nut of refrigerant charging vent.
2. Connect the charging hose of piezometer to the refrigerant charging vent of gas valve and then connect the other charging hose to the vacuum pump.
3. Open the piezometer completely and operate for 10-15min to check if the pressure of piezometer remains in -0.1MPa.
4. Close the vacuum pump and maintain this status for 1-2min to check if the pressure of piezometer remains in -0.1MPa. If the pressure decreases, there may be leakage.
5. Remove the piezometer, open the valve core of liquid valve and gas valve completely with inner hexagon spanner.
6. Tighten the screw caps of valves and refrigerant charging vent.
7. Reinstall the handle.



2. Leakage Detection

(1) With leakage detector:

Check if there is leakage with leakage detector.

(2) With soap water:

If leakage detector is not available, please use soap water for leakage detection. Apply soap water at the suspected position and keep the soap water for more than 3min. If there are air bubbles coming out of this position, There's a leakage.

8.8 Check after Installation and Test Operation

1. Check after Installation

Check according to the following requirement after finishing installation.

NO.	Items to be checked	Possible malfunction
1	Has the unit been installed firmly?	The unit may drop, shake or emit noise.
2	Have you done the refrigerant leakage test?	It may cause insufficient cooling (heating) capacity.
3	Is heat insulation of pipeline sufficient?	It may cause condensation and water dripping.
4	Is water drained well?	It may cause condensation and water dripping.
5	Is the voltage of power supply according to the voltage marked on the nameplate?	It may cause malfunction or damage the parts.
6	Is electric wiring and pipeline installed correctly?	It may cause malfunction or damage the parts.
7	Is the unit grounded securely?	It may cause electric leakage.
8	Does the power cord follow the specification?	It may cause malfunction or damage the parts.
9	Is there any obstruction in air inlet and air outlet?	It may cause insufficient cooling (heating) capacity.
10	The dust and sundries caused during installation are removed?	It may cause malfunction or damaging the parts.
11	The gas valve and liquid valve of connection pipe are open completely?	It may cause insufficient cooling (heating) capacity.
12	Is the inlet and outlet of piping hole been covered?	It may cause insufficient cooling(heating) capacity or waster eletricity.

2. Test Operation

(1) Preparation of test operation

- The client approves the air conditioner installation.
- Specify the important notes for air conditioner to the client.

(2) Method of test operation

- Put through the power, press ON/OFF button on the remote controller to start operation.
- Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
- If the ambient temperature is lower than 16°C , the air conditioner can't start cooling.

Maintenance

9.1 Error Code List

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
1	High pressure protection of system	E1	During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment); Ambient temperature is too high.
2	Low pressure protection of system	E3	The Dual-8 Code Display will show E3 until the low pressure switch stop operation.	1.Low-pressure protection 2.Low-pressure protection of system 3.Low-pressure protection of compressor
3	High discharge temperature protection of compressor	E4	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).
4	Overcurrent protection	E5	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1. Supply voltage is unstable; 2. Supply voltage is too low and load is too high; 3. Evaporator is dirty.
5	Communication Malfunction	E6	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
6	High temperature resistant protection	E8	During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).
7	EEPROM malfunction	EE	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
8	Limit/decrease frequency due to high temperature of module	EU	All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If it's no use, please replace control panel AP1.
9	Malfunction protection of jumper cap	C5	Wireless remote receiver and button are effective, but can not dispose the related command	1. No jumper cap insert on mainboard. 2. Incorrect insert of jumper cap. 3. Jumper cap damaged. 4. Abnormal detecting circuit of mainboard.
10	Gathering refrigerant	Fo	When the outdoor unit receive signal of Gathering refrigerant ,the system will be forced to run under cooling mode for gathering refrigerant	Nominal cooling mode

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
11	Indoor ambient temperature sensor is open/short circuited	F1	During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. 2. Components in mainboard fell down leads short circuit. 3. Indoor ambient temp. sensor damaged.(check with sensor resistance value chart) 4. Mainboard damaged.
12	Indoor evaporator temperature sensor is open/short circuited	F2	AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged. (check temp. sensor value chart for testing) 4. Mainboard damaged.
13	Outdoor ambient temperature sensor is open/short circuited	F3	During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
14	Outdoor condenser temperature sensor is open/short circuited	F4	During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
16	Outdoor discharge temperature sensor is open/short circuited	F5	During cooling and drying operation, compressor will stop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	1.Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) 2.The head of temperature sensor hasn't been inserted into the copper tube
17	Limit/decrease frequency due to overload	F6	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
18	Decrease frequency due to overcurrent	F8	All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload
19	Decrease frequency due to high air discharge	F9	All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
20	Limit/decrease frequency due to antifreezing	FH	All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
21	Voltage for DC bus-bar is too high	PH	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if it's normal, There's malfunction for the circuit, please replace the control panel (AP1)
22	Voltage of DC bus-bar is too low	PL	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if it's normal, There's malfunction for the circuit, please replace the control panel (AP1)
23	Compressor Min frequency in test state	P0		Showing during min. cooling or min. heating test
24	Compressor rated frequency in test state	P1		Showing during nominal cooling or nominal heating test
25	Compressor maximum frequency in test state	P2		Showing during max. cooling or max. heating test
26	Compressor intermediate frequency in test state	P3		Showing during middle cooling or middle heating test
27	Overcurrent protection of phase current for compressor	P5	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
28	Charging malfunction of capacitor	PU	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor
29	Malfunction of module temperature sensor circuit	P7	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
30	Module high temperature protection	P8	During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If it's no use, please replace control panel AP1.
31	Overload protection for compressor	H3	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 1ohm. 2.Refer to the malfunction analysis (discharge protection, overload)
32	IPM protection	H5	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
33	Module temperature is too high	P8	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Radiating grease on IPM module of outdoor unit main board is not enough; screws have not been fixed tightly; Hardware malfunction of outdoor unit main board;
34	Internal motor (fan motor) do not operate	H6	Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard revdetecting circuit.
35	Desynchro-nizing of compressor	H7	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
36	Outdoor DC fan motor malfunction	L3	Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
37	power protection	L9	compressor stop operation and Outdoor fan motor will stop 30s latter , 3 minutes latter fan motor and compressor will restart	To protect the electronical components when detect high power
38	Indoor unit and outdoor unit doesn't match	LP	compressor and Outdoor fan motor can't work	Indoor unit and outdoor unit doesn't match
39	Failure start-up	LC	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
40	Cold air prevention protection	E9		Not the error code. It's the status code for the operation.
41	Anti-freezing rotection for evaporator	E2		Not the error code. It's the status code for the operation.
42	Malfunction of phase current detection circuit for compressor	U1	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
43	Malfunction of voltage dropping for DC bus-bar	U3	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
44	Malfunction of complete unit's current detection	U5	During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	There's circuit malfunction on outdoor unit control panel AP1, please replace the outdoor unit control panel AP1.
45	The four-way valve is abnormal	U7	If this malfunction occurs during heating operation, the complete unit will stop operation.	1.Supply voltage is lower than AC175V; 2.Wiring terminal 4V is loosened or broken; 3.4V is damaged, please replace 4V.
46	Malfunction of zero-cross detection circuit	U8	The complete unit stops	1.Power supply is abnormal; 2.Detection circuit of indoor control mainboard is abnormal.

No.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
47	Malfunction of detecting plate(WIFI)	JF	Loads operate normally, while the unit can't be normally controlled by APP.	1. Main board of indoor unit is damaged; 2. Detection board is damaged; 3. The connection between indoor unit and detection board is not good;
48	Refrigerant recovery mode	Fo		Refrigerant recovery. The Serviceman operates it for maintenance.
49	Undefined outdoor unit error	oE	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stop operation.	1. Outdoor ambient temperature exceeds the operation range of unit (eg: less than -20°C or more than 60°C for cooling; more than 30°C for heating); 2. Failure startup of compressor? 3. Are wires of compressor not connected tightly? 4. Is compressor damaged? 5. Is main board damaged?

9.2 Procedure of Troubleshooting

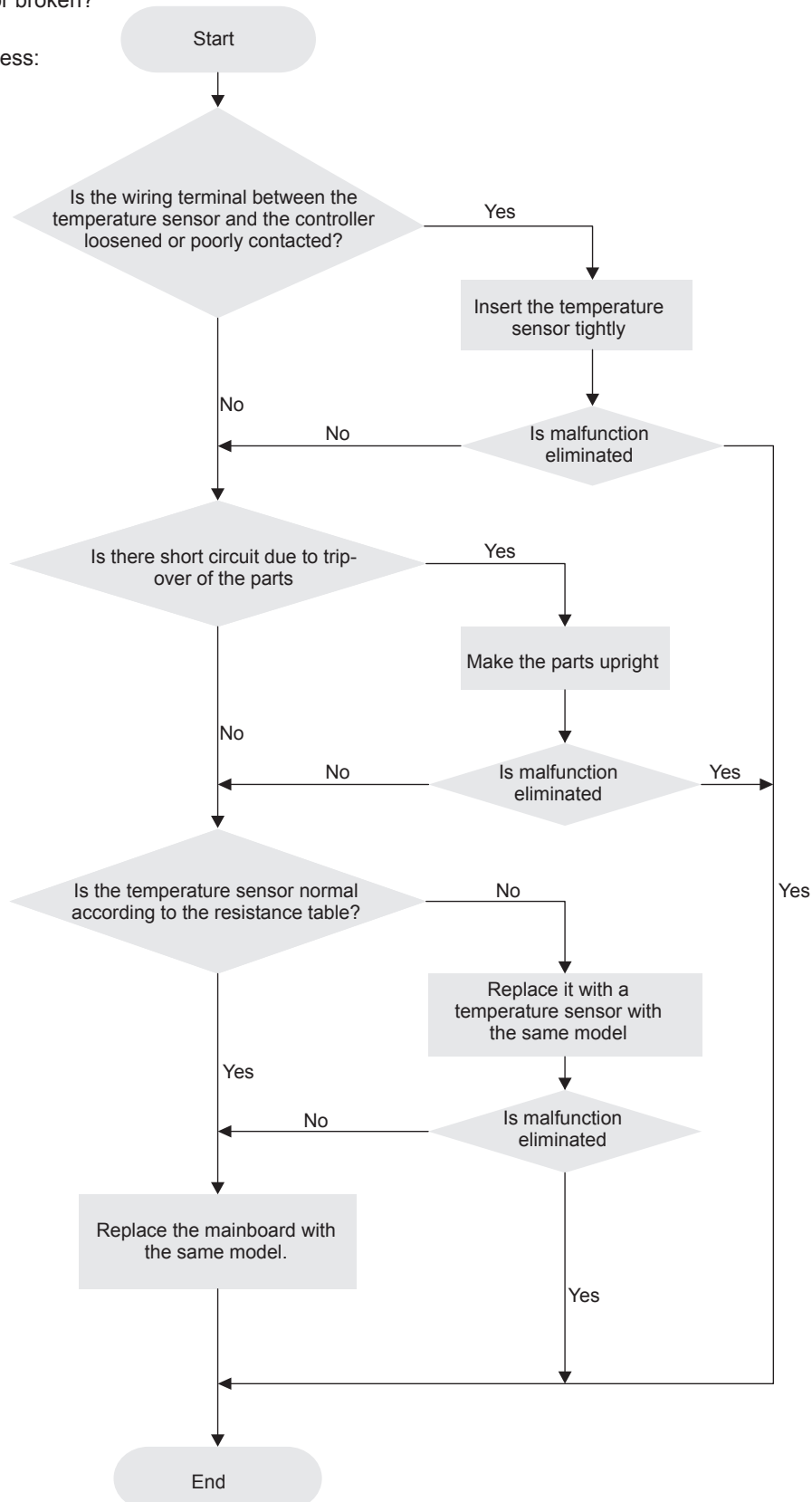
• Indoor unit:

1. Malfunction of Temperature Sensor F1, F2

Main detection points:

- Is the wiring terminal between the temperature sensor and the controller loosened or poorly contacted?
- Is there short circuit due to trip-over of the parts?
- Is the temperature sensor broken?
- Is mainboard broken?

Malfunction diagnosis process:

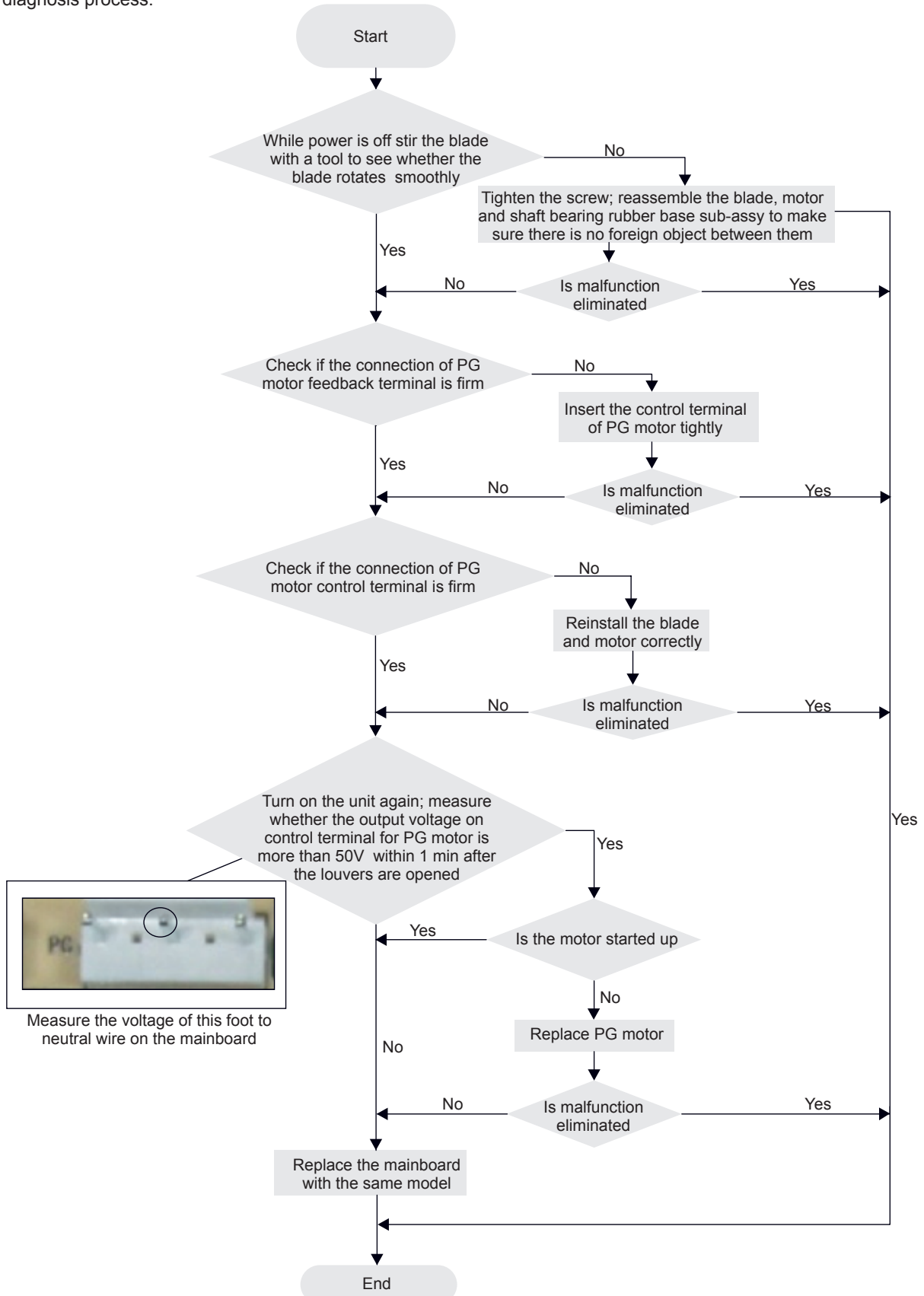


2. Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

- Smoothly Is the control terminal of PG motor connected tightly?
- Smoothly Is the feedback interface of PG motor connected tightly?
- The fan motor can't operate?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:

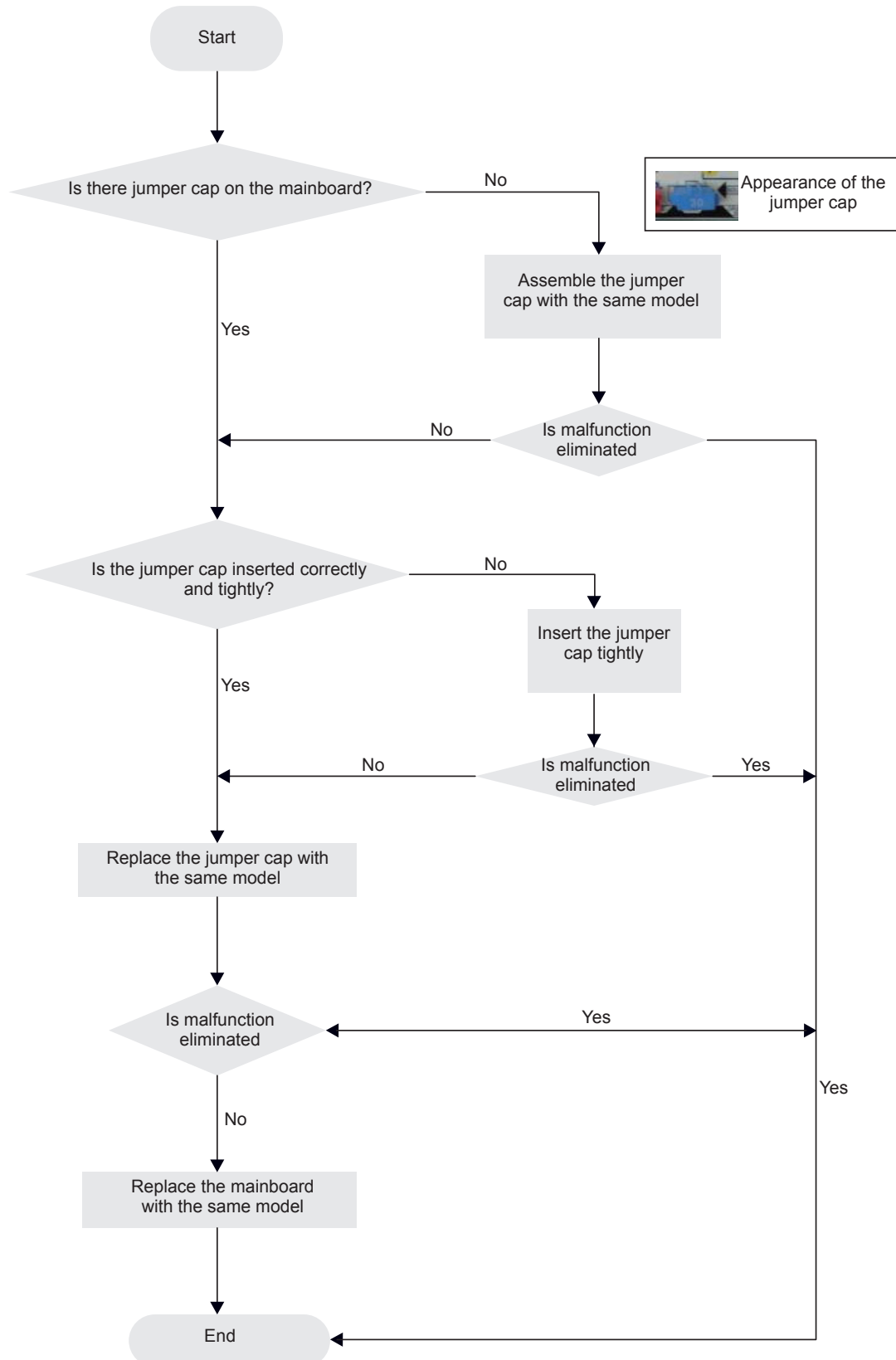


3. Malfunction of Protection of Jumper Cap C5

Main detection points:

- Is there jumper cap on the mainboard?
- Is the jumper cap inserted correctly and tightly?
- The jumper is broken?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:

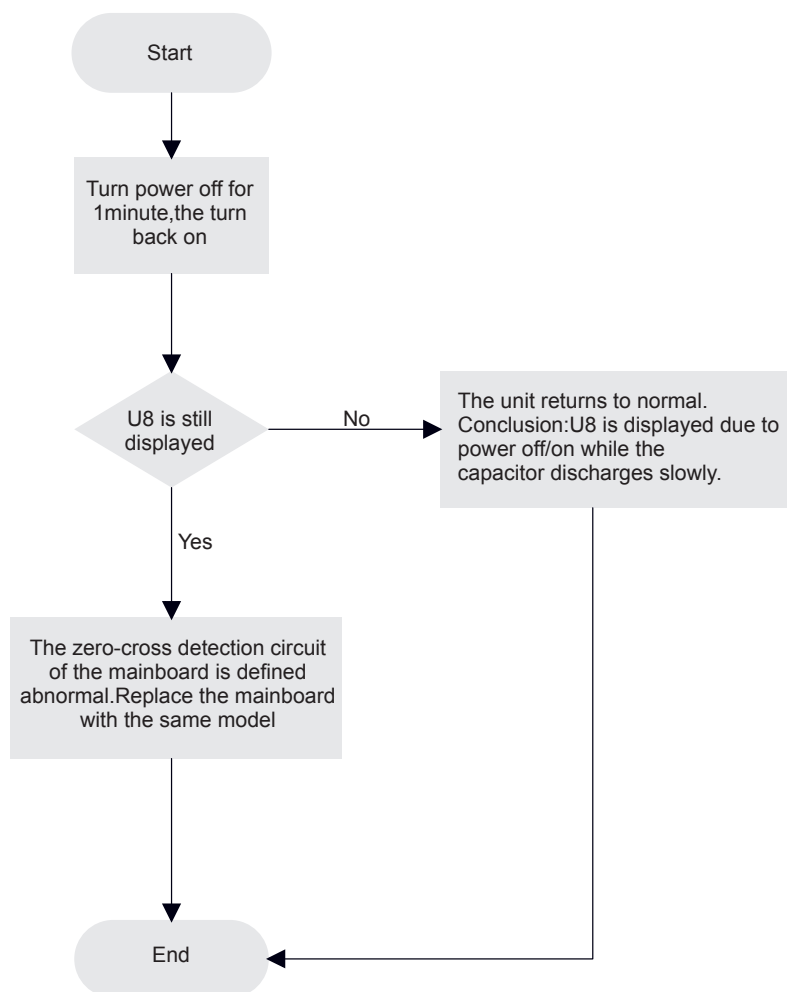


4. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8

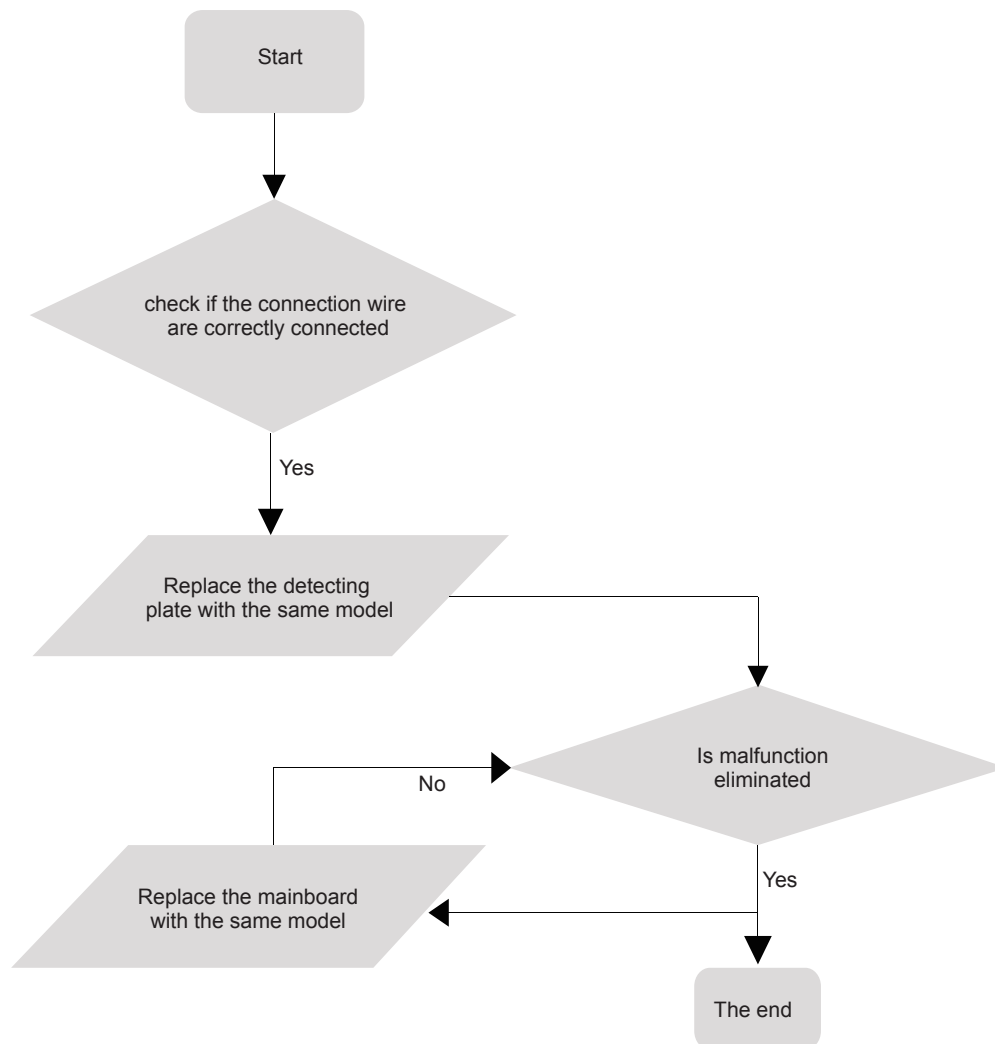
Main detection points:

- Instant energization after de-energization while the capacitor discharges slowly?
- The zero-cross detection circuit of the mainboard is defined abnormal?

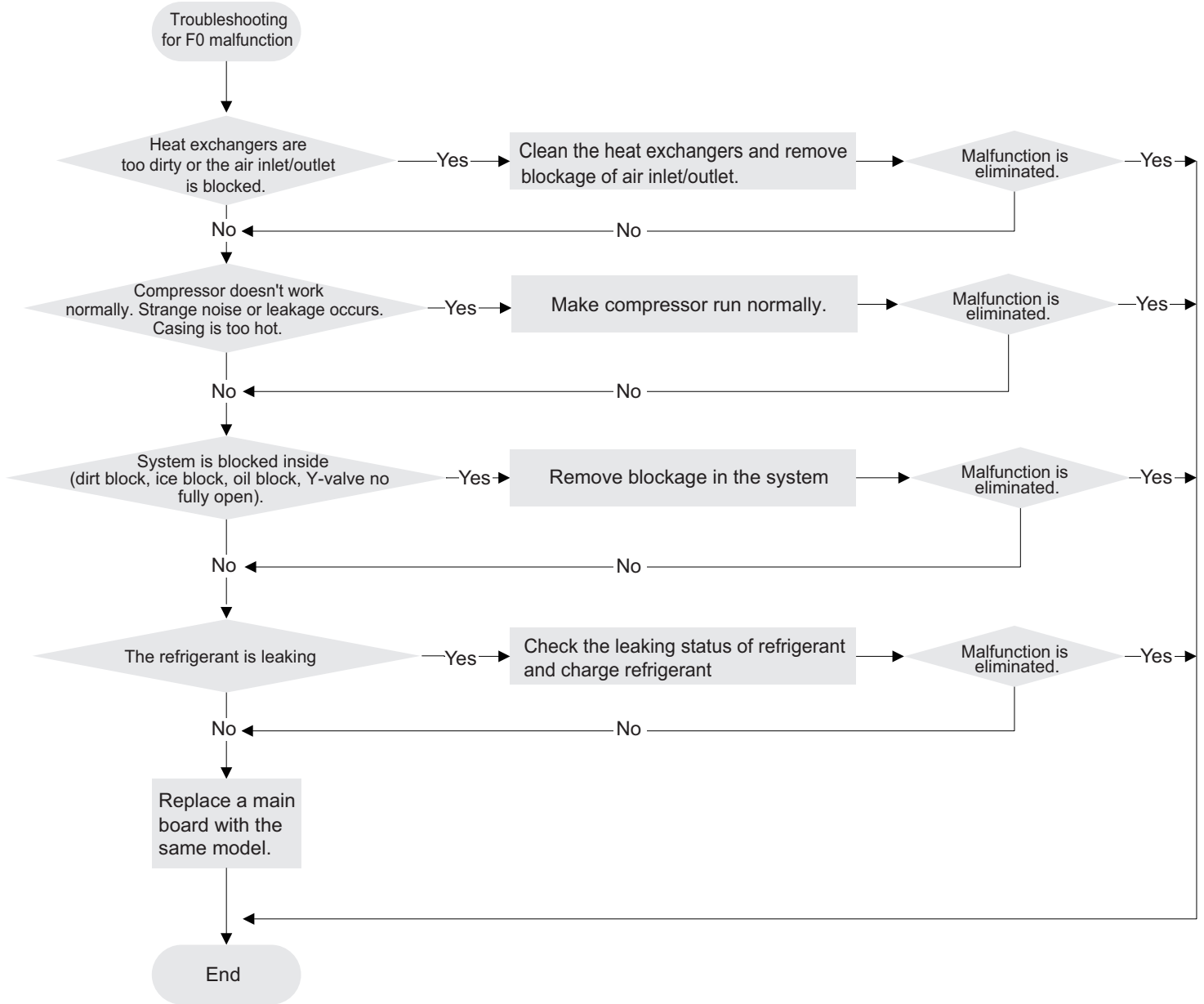
Malfunction diagnosis process:



5. Malfunction of detecting plate(WIFI) JF



6. Malfunction of Insufficient fluorine protection F0

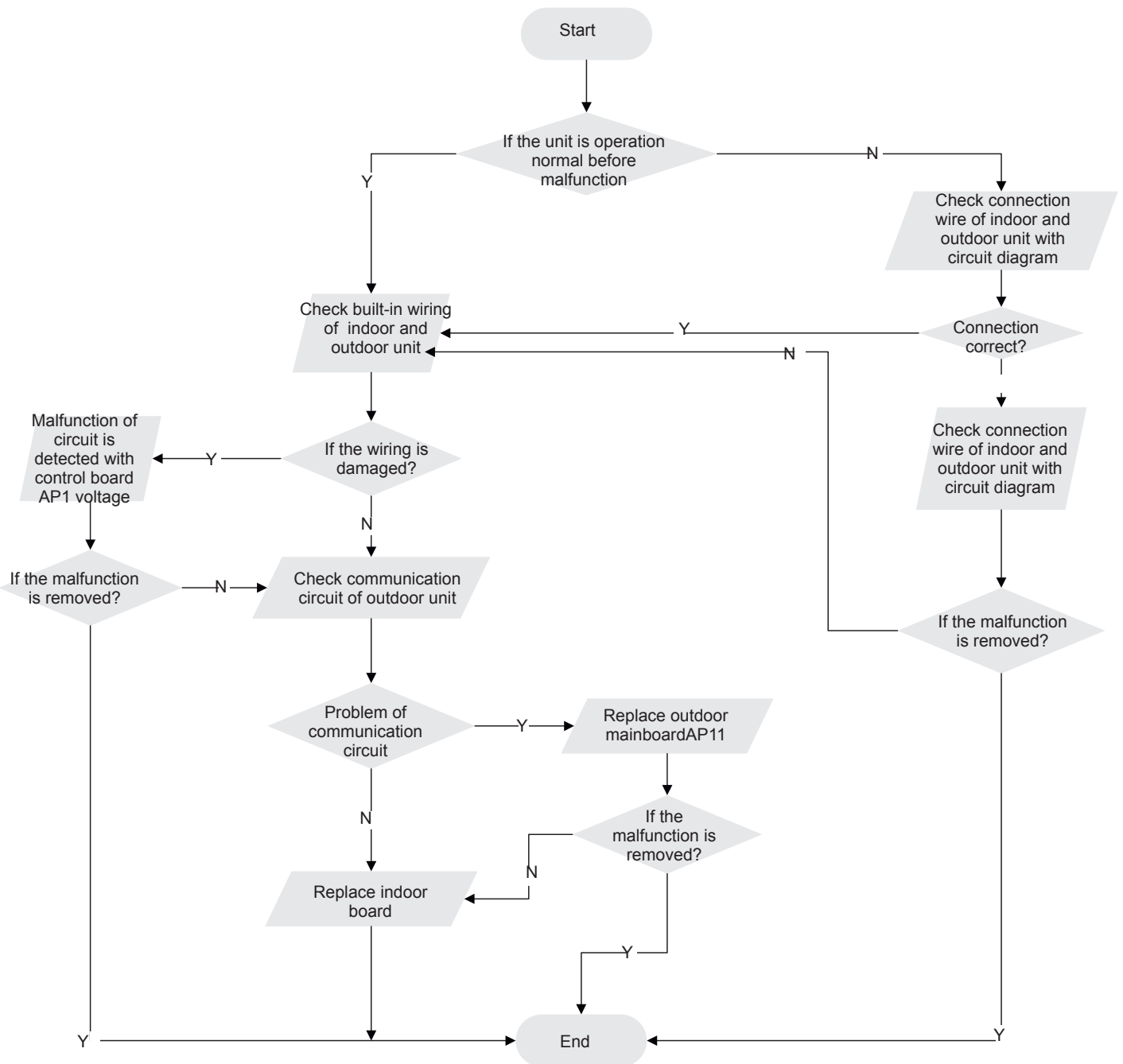


7. Communication malfunction E6

Main detection points:

- Check if the connection wire and the built-in wiring of indoor and outdoor unit are connected well and without damage;
- If the communication circuit of indoor mainboard is damaged? If the communication circuit of outdoor mainboard (AP1) is damaged?

Malfunction diagnosis process:



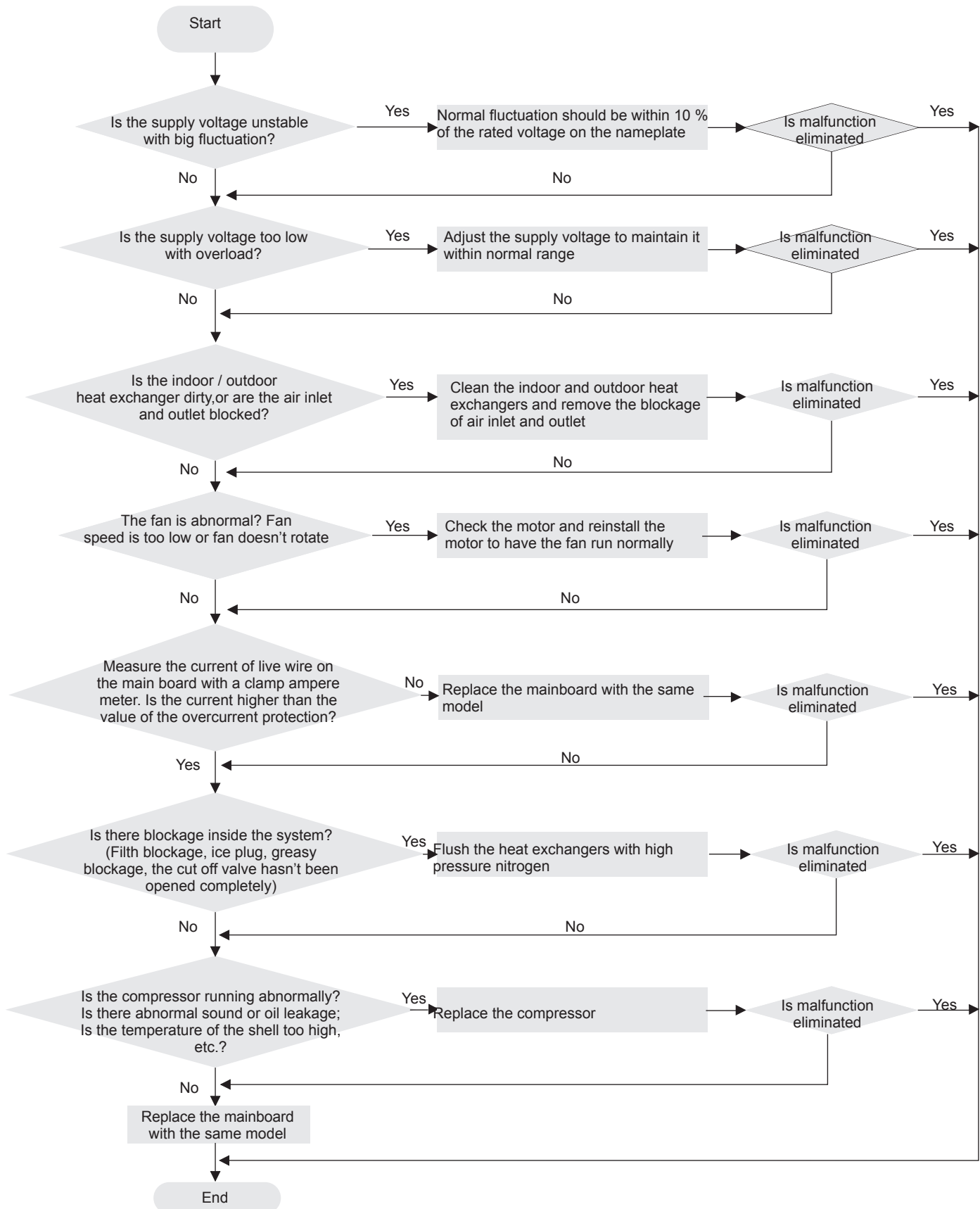
Note: method for checking the communication circuit of outdoor unit: cut off the communication wires of indoor/outdoor unit, and then measure the voltage between COM and N of the control board of outdoor unit (DC notch, about 56V)

8. Malfunction of Overcurrent Protection E5

Main detection points:

- Is the supply voltage unstable with big fluctuation?
- Is the supply voltage too low with overload?
- Hardware trouble?

Malfunction diagnosis process:



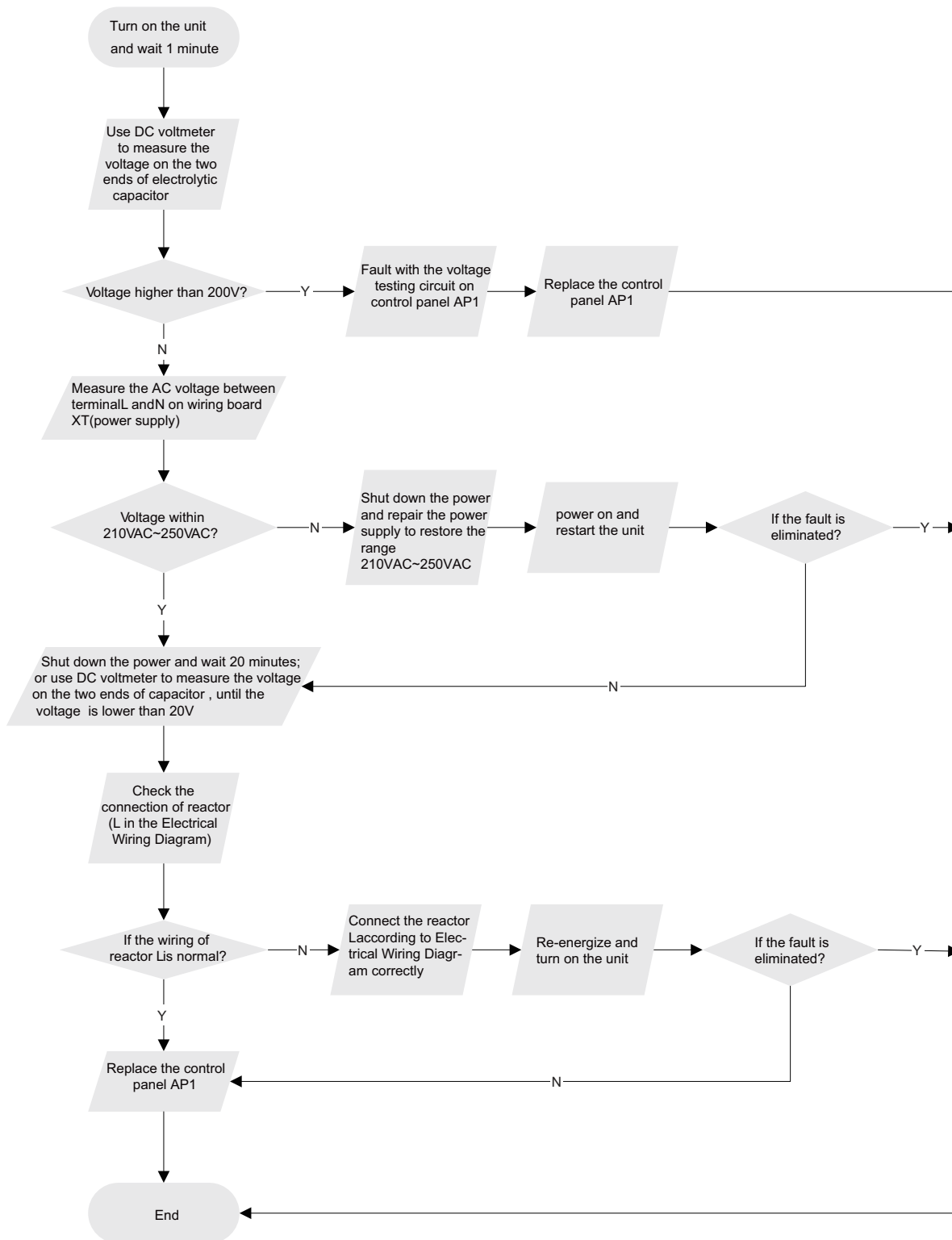
●Outdoor unit:

1. Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)

Main Check Points:

- Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.
- Is the reactor (L) correctly connected? Is the connection loose or fallen? Is the reactor (L) damaged?

Fault diagnosis process:



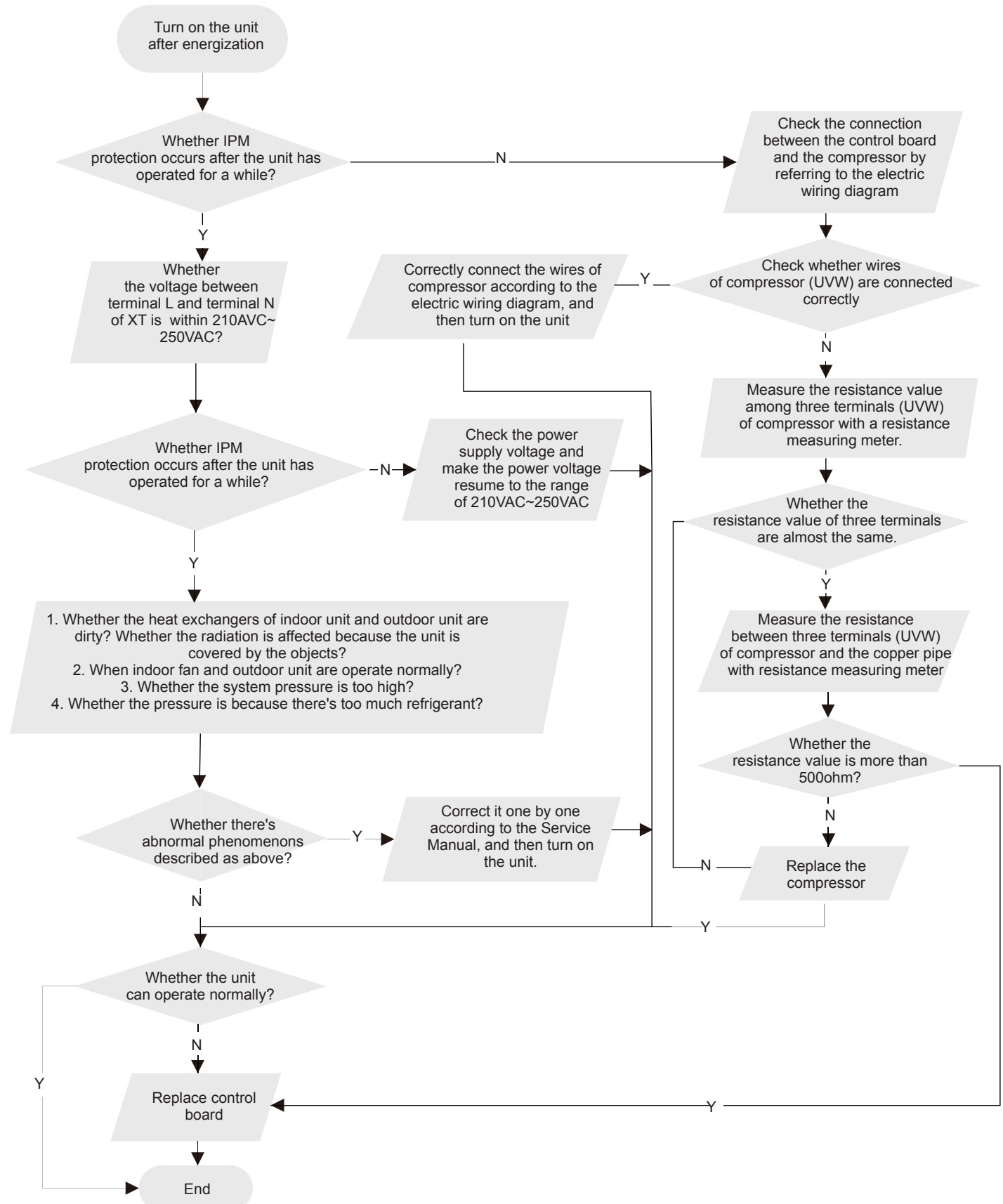
2. IPM protection H5 , over-phase current of compressor P5

(AP1 hereinafter refers to the control board of the outdoor unit)

Main detection points:

(1) compressor COMP terminal (2) power supply voltage (3) compressor (4) charging amount of refrigerant (5) air inlet and air outlet of indoor/outdoor unit

Malfunction diagnosis process:

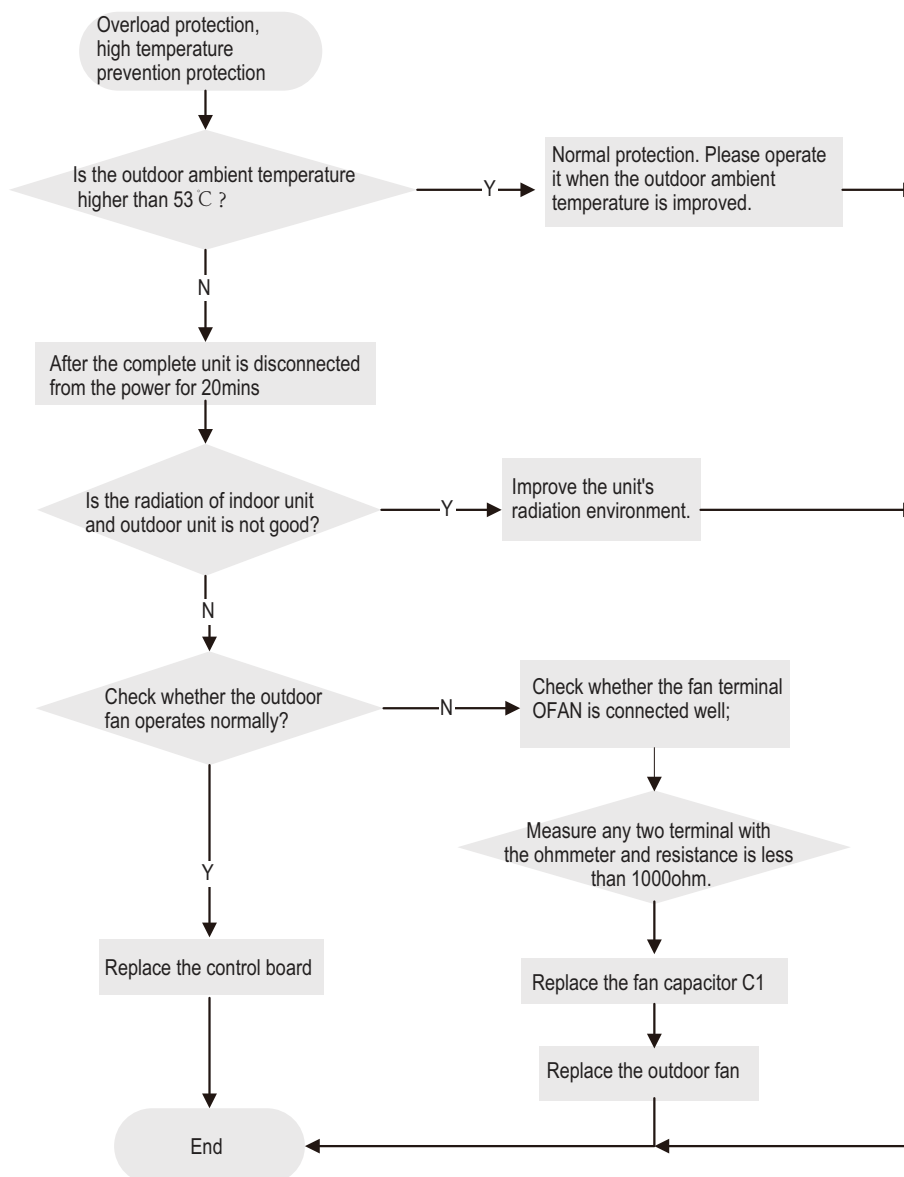


3. High temperature and overload protection (E8)(AP1 below means control board of outdoor unit)

Main detection points:

(1) outdoor temperature (2) fan (3)air inlet and air outlet of indoor/outdoor unit

Malfunction diagnosis process:

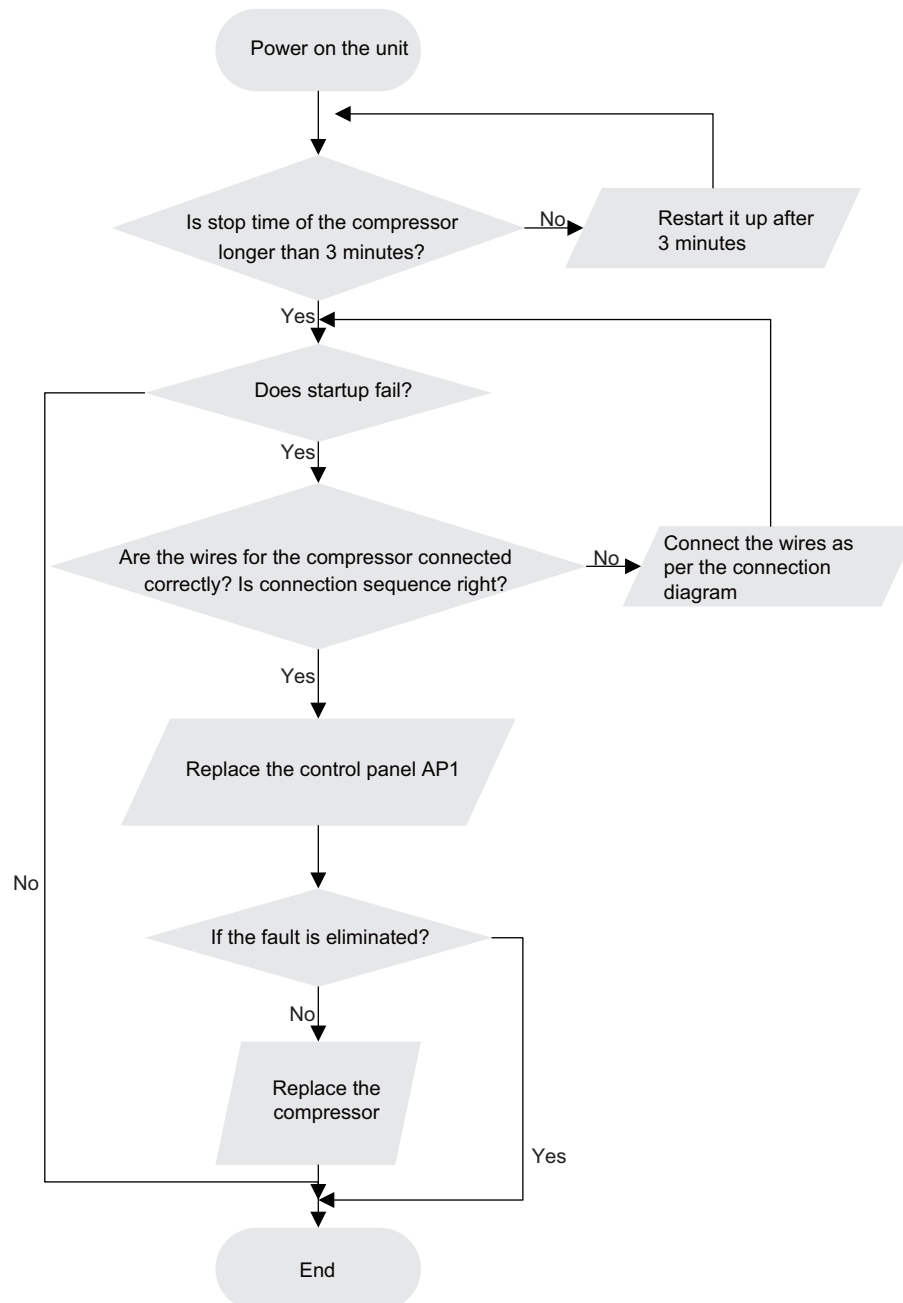


4. Start-up failure LC (following AP1 for outdoor unit control board)

Main detection points:

(1) compressor wire (2) compressor (3) charging amount of refrigerant

Malfunction diagnosis process:



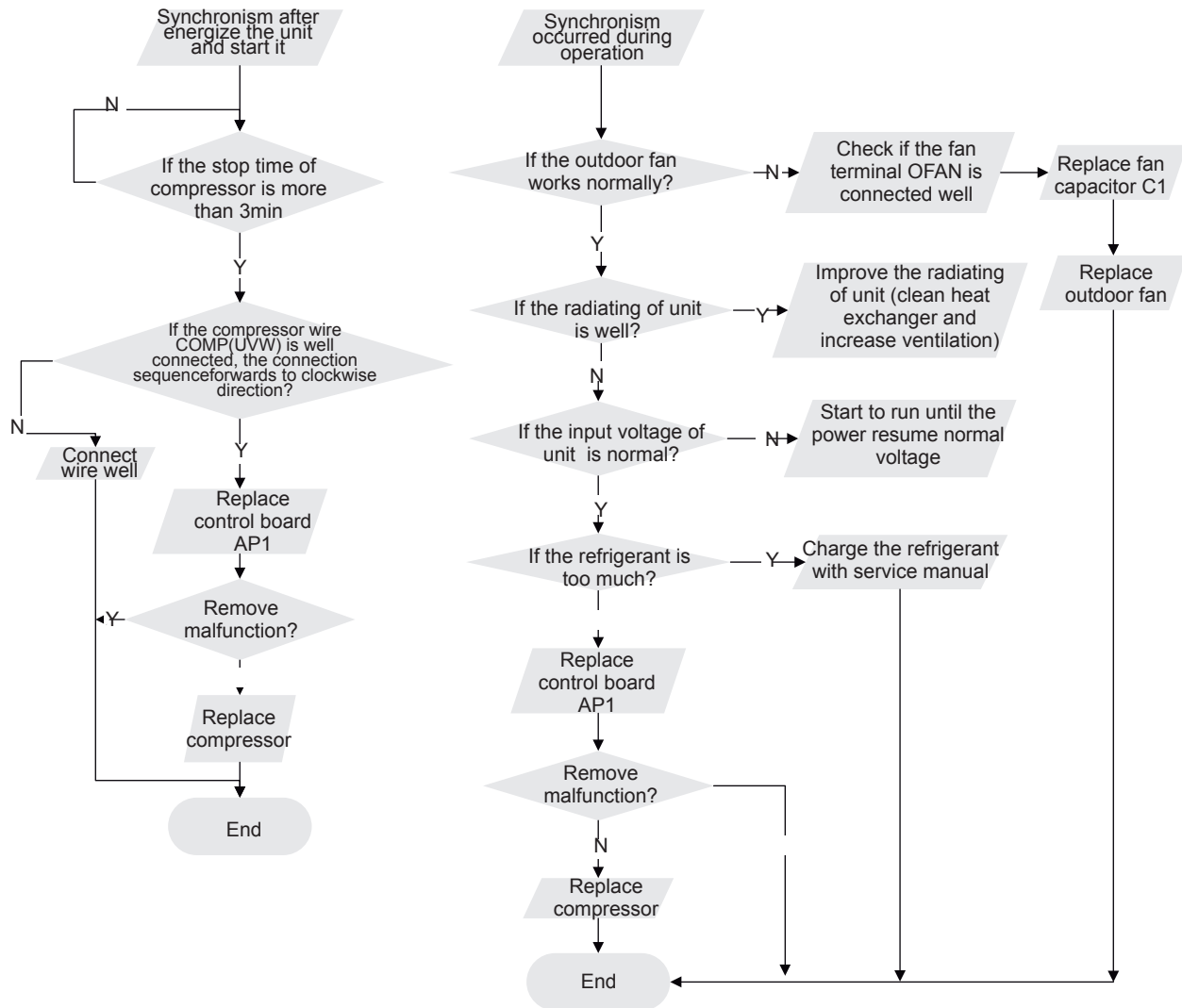
5. Desynchronization diagnosis for compressor H7

(AP1 hereinafter refers to the control board of the outdoor unit)

Main detection points:

(1) system pressure (2) power supply voltage

Malfunction diagnosis process:

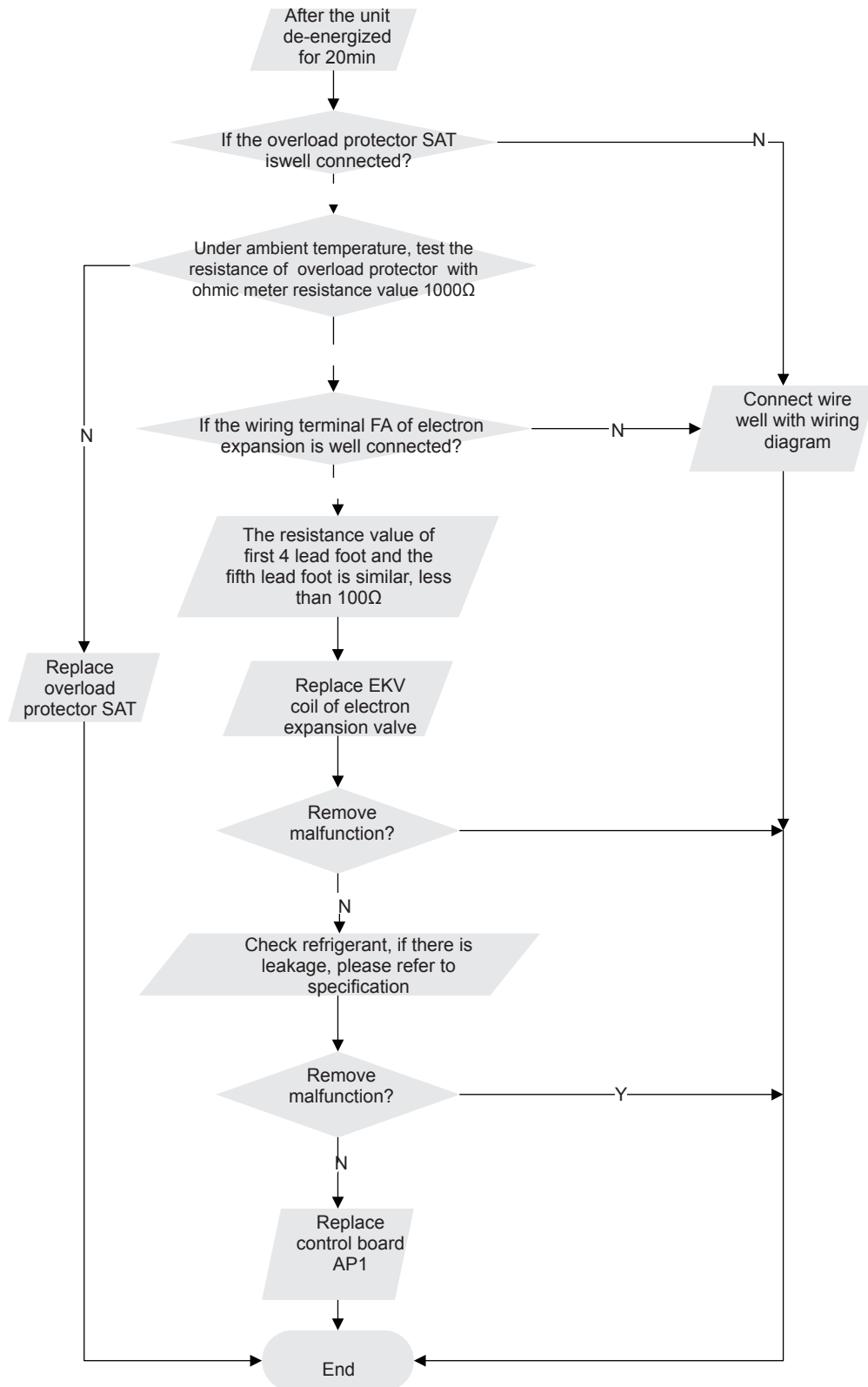


6. Overload protection of compressor H3, high discharge temperature protection of compressor E4 (AP1 hereinafter refers to the control board of the outdoor unit)

Main detection points:

(1) electronic expansion valve (2) expansion valve terminal (3) charging amount of refrigerant (4) overload protector

Malfunction diagnosis process:

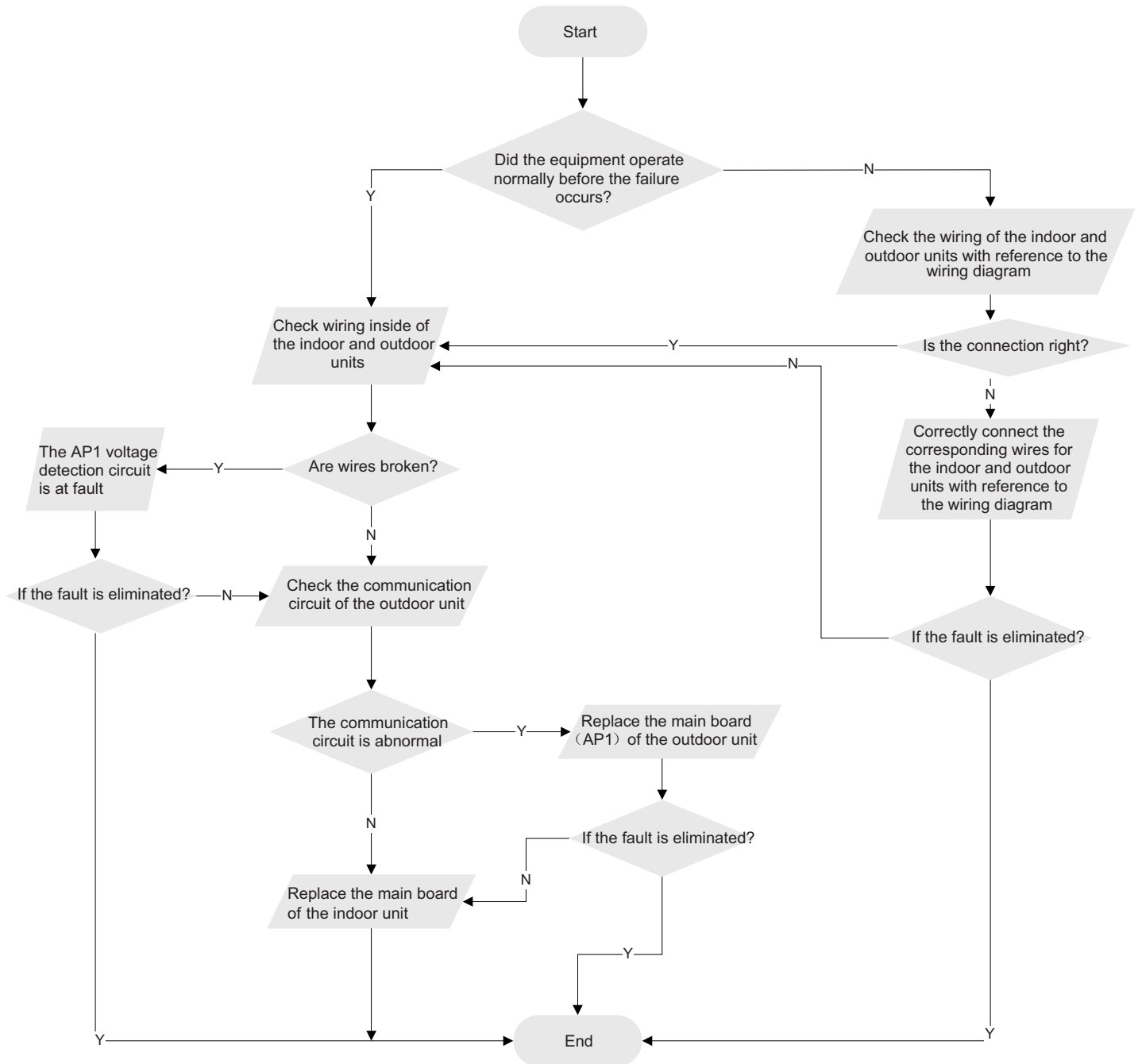


7 Communication malfunction: (following AP1 for outdoor unit control board)

Mainly detect:

- Is there any damage for the indoor unit mainboard communication circuit? Is communication circuit damaged?
- Detect the indoor and outdoor units connection wire and indoor and outdoor units inside wiring is connect well or not, if is there any damage?

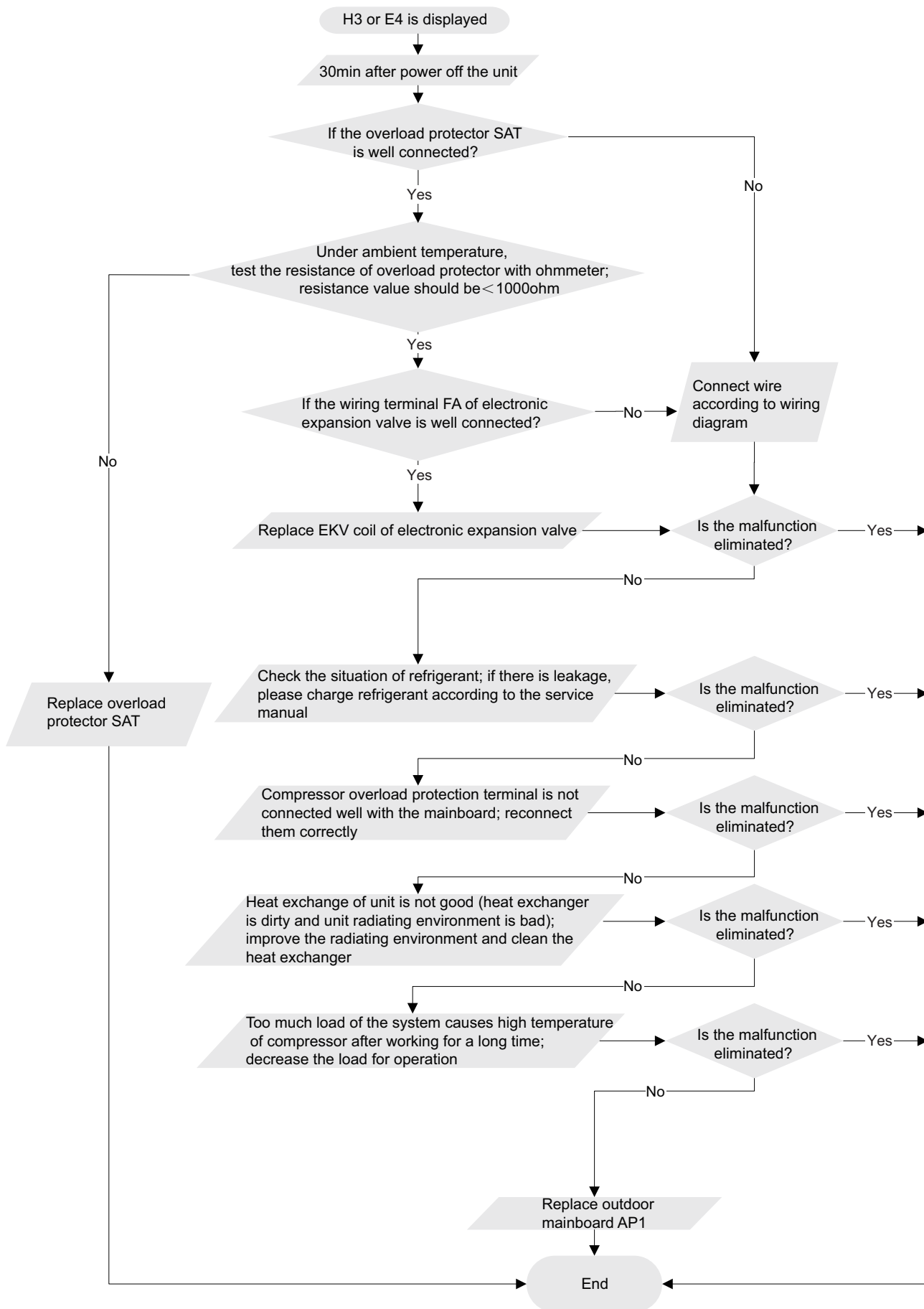
Fault diagnosis process:



8. Overload and high discharge temperature malfunction

Main detection points:

- If the electronic expansion valve is connected well? Is the electronic expansion valve damaged?
- If the refrigerant is leaked?
- The compressor overload protection terminal is not connected well with the mainboard?
- If the overload protector is damaged?
- Heat exchange of unit is not good? (heat exchanger is dirty and unit radiating environment is bad)
- Too much load of the system causes high temperature of compressor after working for a long time?
- Malfunction of discharge temperature sensor?



9.3 Troubleshooting for Normal Malfunction

1. Air Conditioner can't be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes, wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Wrong wire connection between indoor unit and outdoor unit, or poor connection for wiring terminals	Under normal power supply circumstances, operation indicator isn't bright after energization	Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firmly
Electric leakage for air conditioner	After energization, room circuit breaker trips off at once	Make sure the air conditioner is grounded reliably Make sure wires of air conditioner is connected correctly Check the wiring inside air conditioner. Check whether the insulation layer of power cord is damaged; if yes, place the power cord.
Model selection for air switch is improper	After energization, air switch trips off	Select proper air switch
Malfunction of remote controller	After energization, operation indicator is bright, while no display on remote controller or buttons have no action.	Replace batteries for remote controller Repair or replace remote controller

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see it's blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver can't swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor can't operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor can't operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver can't Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor can't operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver can't operate	Replace the main board with the same model

4. ODU Fan Motor can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of the ODU fan motor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the capacity of fan
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Motor of outdoor unit is damaged	When unit is on, cooling/heating performance is bad and ODU compressor generates a lot of noise and heat.	Change compressor oil and refrigerant. If no better, replace the compressor with a new one

5. Compressor can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and it's 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor can't operate	Repair or replace compressor

6. Air Conditioner is Leaking

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe connection place of indoor unit	Wrap it again and bundle it tightly

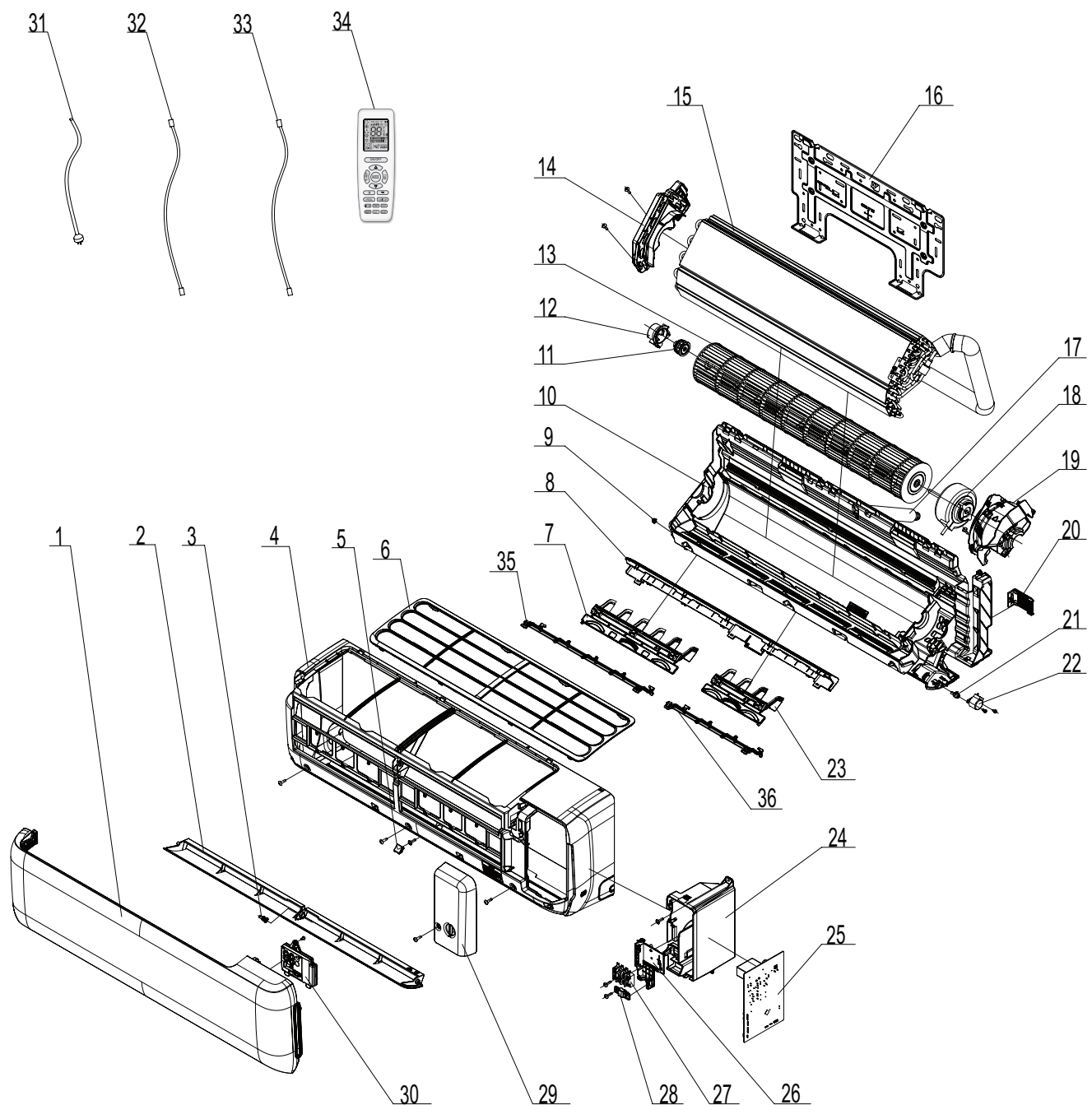
7. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and There's abnormal sound	There's the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, There's abnormal sound due to flow of refrigerant inside air conditioner	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
Foreign objects inside the indoor unit or there're parts touching together inside the indoor unit	There's abnormal sound fro indoor unit	Remove foreign objects. Adjust all parts position of indoor unit, tighten screws and stick damping plaster between connected parts
Foreign objects inside the outdoor unit or there're parts touching together inside the outdoor unit	There's abnormal sound fro outdoor unit	Remove foreign objects. Adjust all parts position of outdoor unit, tighten screws and stick damping plaster between connected parts
Short circuit inside the magnetic coil	During heating, the way valve has abnormal electromagnetic sound	Replace magnetic coil
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

10. Exploded View and Parts List

10.1 Indoor Unit

ATC

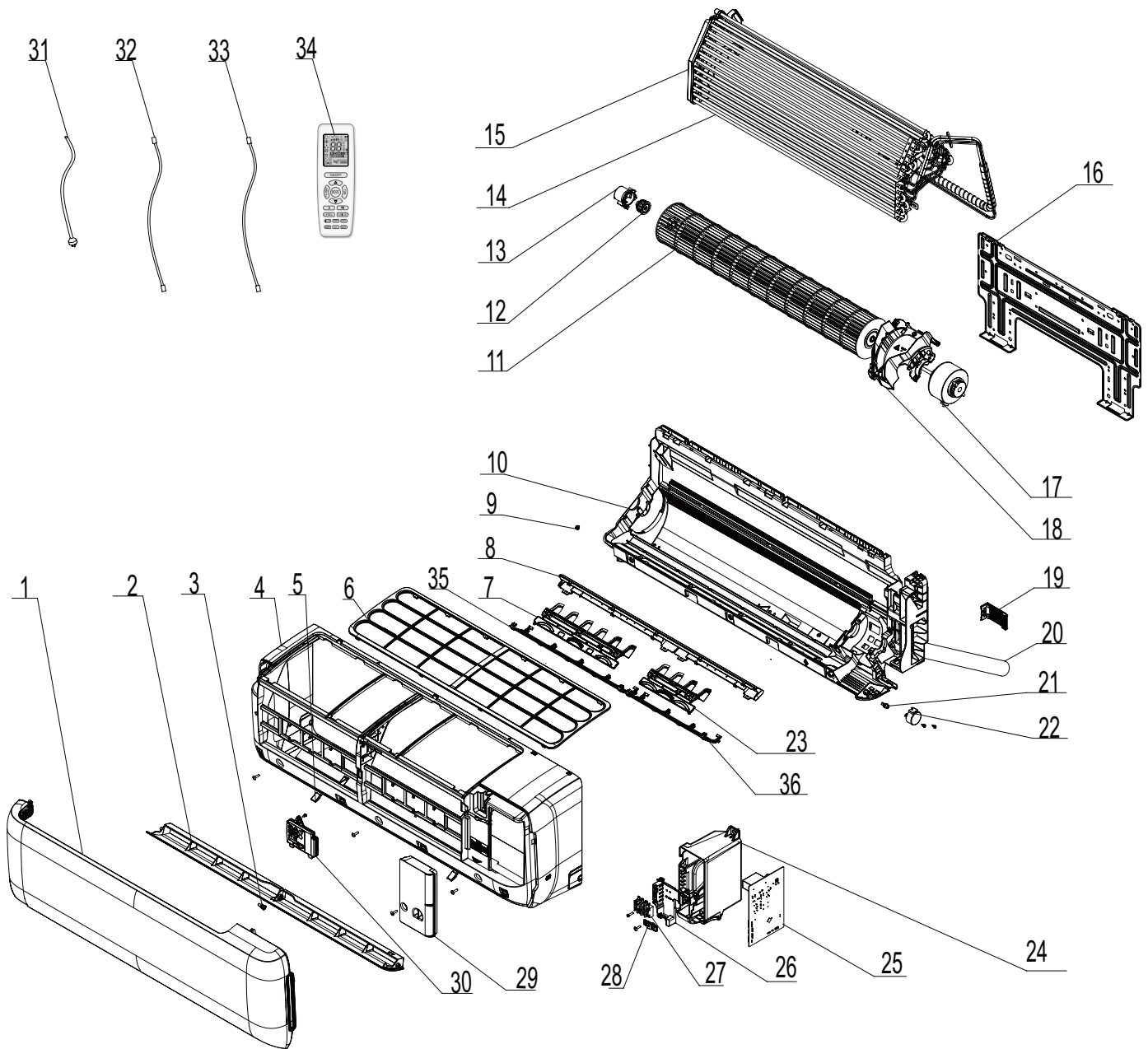


The component picture is only for reference; please refer to the actual product.

NO.	Description
1	Front Panel
2	Guide Louver
3	Axile Bush
4	Front Case
5	Screw Cover
6	Filter Sub-Assy
7	Air Louver (left)
8	Helicoid Tongue
9	Left Axile Bush
10	Rear Case Sub-Assy
11	O-Gasket sub-assy of Bearing
12	Ring of Bearing
13	Cross Flow Fan
14	Evaporator Support
15	Evaporator Assy
16	Wall Mounting Frame
17	Drainage Hose
18	Fan Motor

NO.	Description
19	Motor Press Plate
20	Connecting pipe clamp
21	Crank
22	Stepping Motor
23	Air Louver(right)
24	Electric Box Assy
25	Main Board
26	Supporter(Electric Box)
27	Terminal Board
28	Cable Clamp
29	Electric Box Cover
30	Display Board
31	Power Cord
32	Connecting Cable
33	Connecting Cable
34	Remote Controller
35	Rear Grill Sub-assy
36	Rear Grill Sub-assy

Some models may not contain some parts, please refer to the actual product.



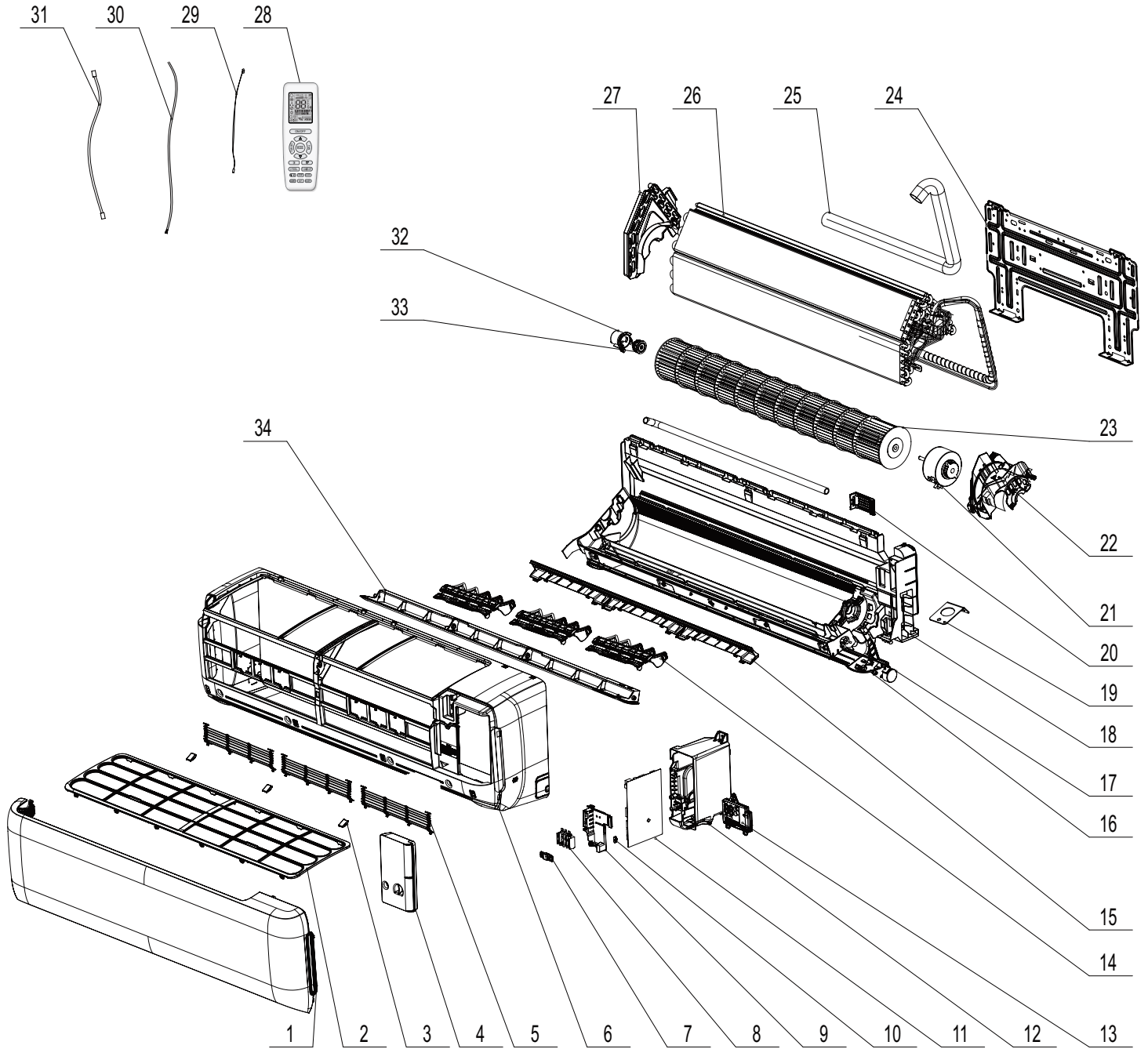
The component picture is only for reference; please refer to the actual product.

NO.	Description
1	Front Panel
2	Guide Louver
3	Axile Bush
4	Front Case
5	Screw Cover
6	Filter Sub-Assy
7	Air Louver (left)
8	Helicoid Tongue
9	Left Axile Bush
10	Rear Case Sub-Assy
11	Cross Flow Fan
12	Ring of Bearing
13	O-Gasket sub-assy of Bearing
14	Evaporator Assy
15	Evaporator Support
16	Wall Mounting Frame
17	Fan Motor
18	Motor Press Plate

NO.	Description
19	Connecting pipe Clamp
20	Drainage Hose
21	Crank
22	Stepping Motor
23	Air Louver(right)
24	Electric Box Assy
25	Main Board
26	Supporter(Electric Box)
27	Terminal Board
28	Cable Clamp
29	Electric Box Cover
30	Display Board
31	Power Cord
32	Connecting Cable
33	Connecting Cable
34	Remote Controller
35	Rear Grill Sub-assy 2
36	Rear Grill Sub-assy 1

Some models may not contain some parts, please refer to the actual product.

ATE



The component picture is only for reference; please refer to the actual product.

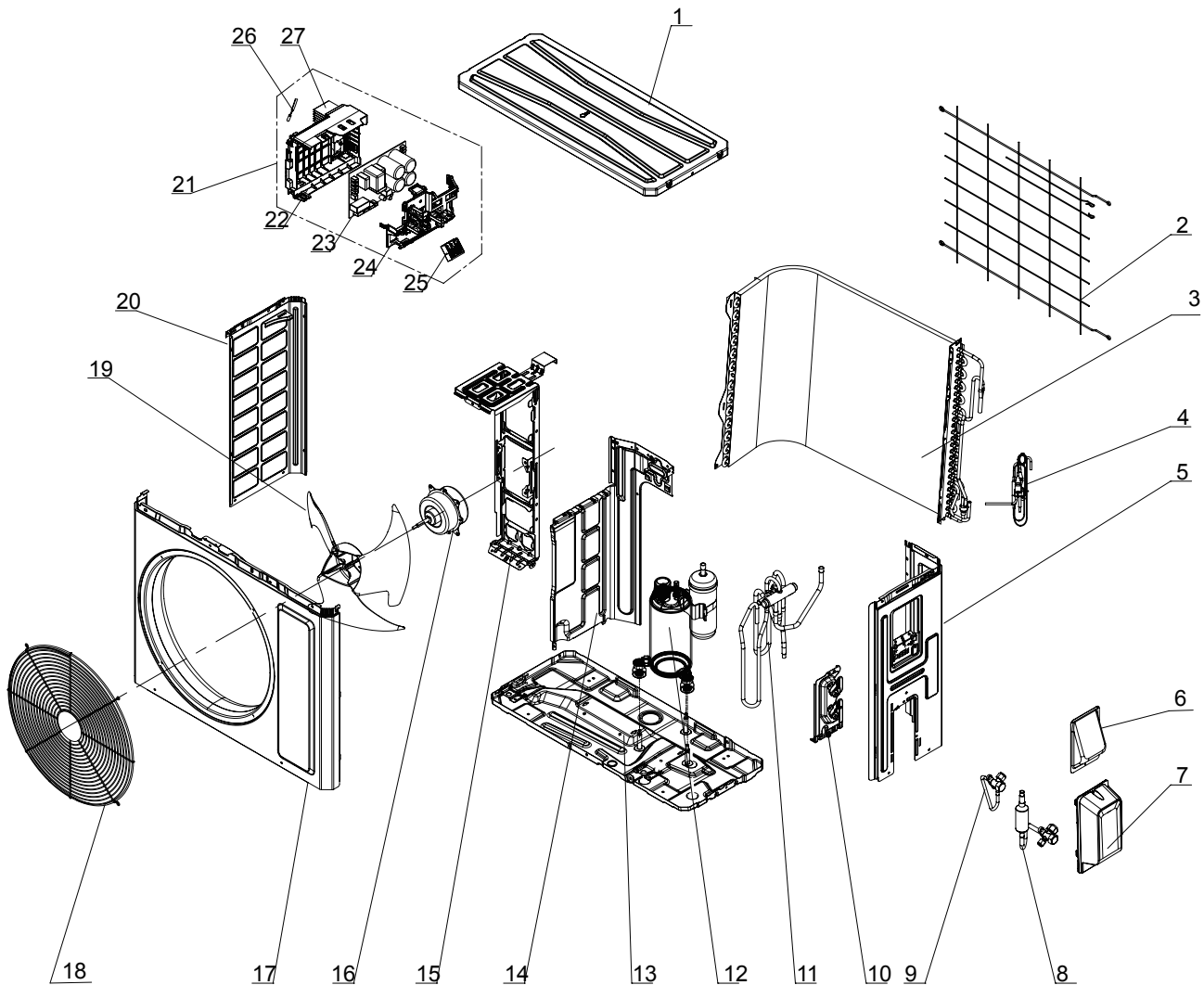
NO.	Description
1	Front Panel
2	Filter Sub-Assy
3	Screw Cover
4	Electric Box Cover
5	Rear Grill Sub-assy
6	Front Case
7	Cable Clamp 2
8	Terminal Board
9	Supporter
10	Jumper
11	Main Board
12	Electric Box
13	Display Board
14	Air Louver
15	Helicoid Tongue
16	Crank
17	Stepping Motor

NO.	Description
18	Rear Case
19	Cable Cross Plate
20	Connecting pipe clamp
21	Fan Motor
22	Motor Press Plate
23	Cross Flow Fan
24	Wall Mounting Frame
25	Heat Insulating Hose
26	Evaporator Assy
27	Evaporator Support
28	Remote Controller
29	Temperature Sensor
30	Connecting Cable
31	Connecting Cable
32	O-Gasket sub-assy of Bearing
33	Ring of Bearing
34	Guide Louver

Some models may not contain some parts, please refer to the actual product.

10.2 Outdoor Unit

9K/12K ODU



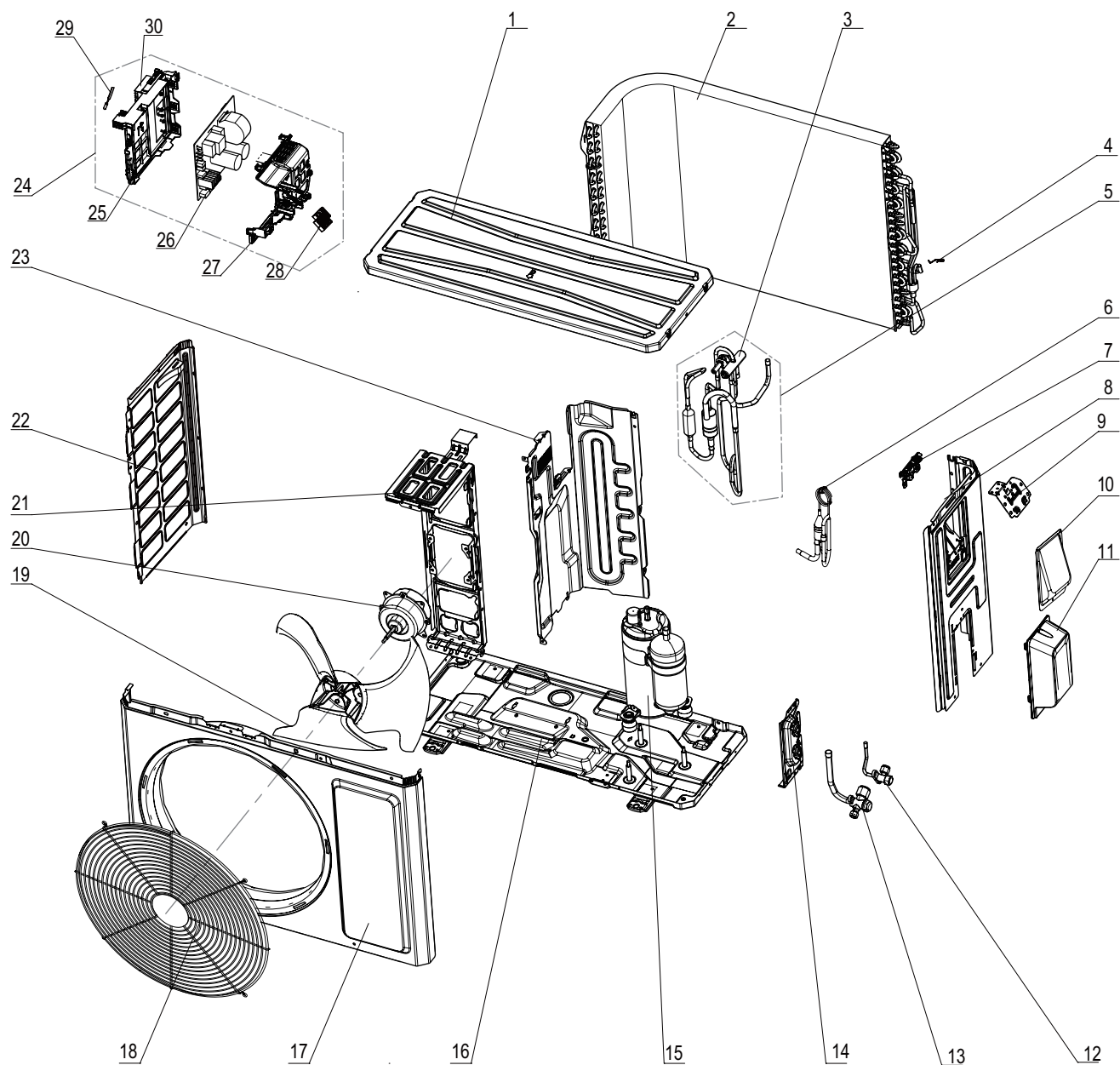
The component picture is only for reference; please refer to the actual product.

NO.	Description
1	Coping
2	Rear Grill
3	Condenser Assy
4	Capillary Sub-Assy
5	Right Side Plate
6	Cover of Pass Wire
7	Valve Cover
8	Cut-off valve Sub-Assy
9	Cut-off valve

NO.	Description
10	Valve Support
11	4-way valve assy
12	Compressor and Fittings
13	Chassis Sub-Assy
14	Clapboard
15	Motor Support
16	Brushless DC Motor
17	Cabinet
18	Front Grill

NO.	Description
19	Axial Flow Fan
20	Left Side Plate
21	Electric Box Assy
22	Electric Box
23	Main Board
24	Electric Box Cover
25	Terminal Board
26	Temperatue Sensor
27	Radiator

Some models may not contain some parts, please refer to the actual product.



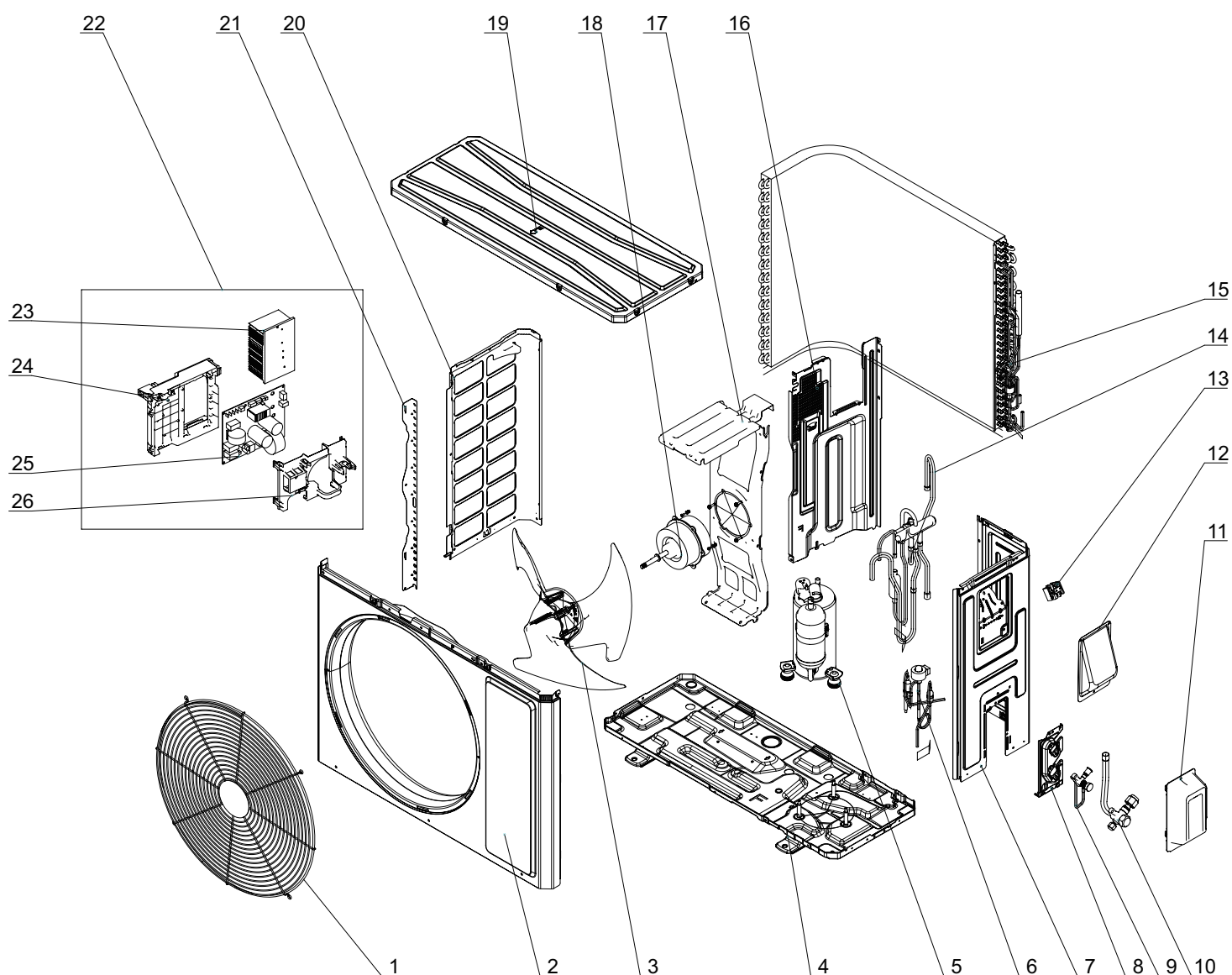
The component is only for reference; please refer to the actual product

NO.	Description
1	Top Cover Assy
2	Condenser Assy
3	4-Way Valve
4	Tempreture Sensor clamp
5	4-Way Valve Assy
6	Capillary Sub-assy
7	Wire Clamp
8	Right Side Plate
9	Earthing Plate Sub-assy
10	Cover of Pass Wire

NO.	Description
11	Valve Cover
12	Cut-off valve 1/4(N)
13	Cut-off valve 1/2(N)
14	Valve Support
15	Compressor and Fittings
16	Chassis Sub-assy
17	Cabinet
18	Front Grill
19	Axial Flow Fan
20	Brushless DC Motor

NO.	Description
21	Motor Support
22	Left Side Plate
23	Clapboard Assy
24	Electric Box Assy
25	Electric Box
26	Main Board
27	Electric Box Cover
28	Terminal Board
29	Temperature Sensor
30	Radiator

Some models may not contain some parts, please refer to the actual product.



The component is only for reference; please refer to the actual product

NO.	Description
1	Front Grill
2	Front Panel
3	Axial Flow Fan
4	Chassis Sub-assy
5	Compressor and Fittings
6	Electronic Expansion Valve
7	Right Side Plate
8	Valve Support
9	Cut-off valve 1/4(N)
10	Cut-off valve 5/8(N)
11	Valve Cover
12	Cover of Pass Wire
13	Terminal Board

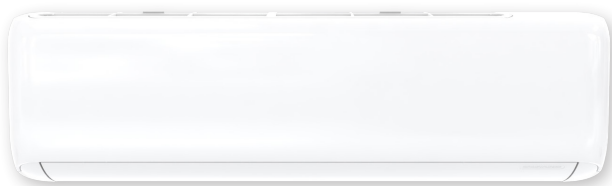
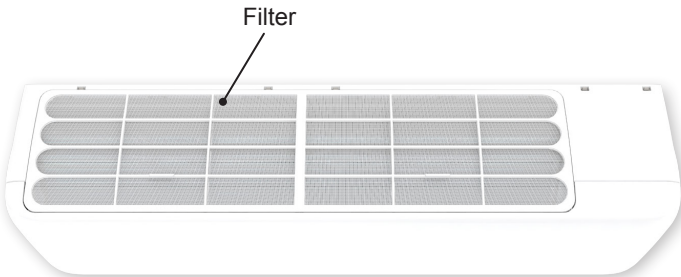
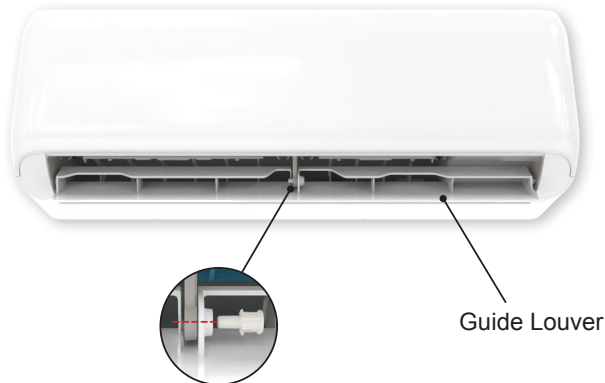
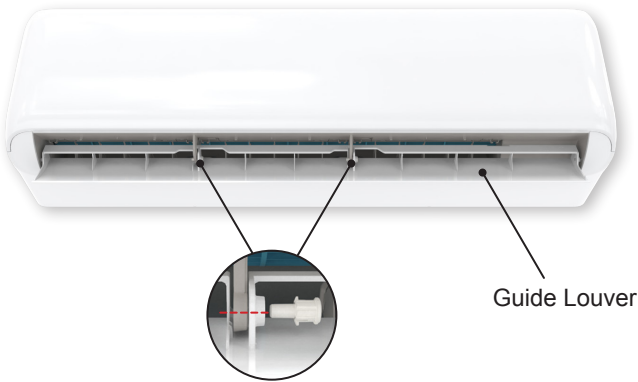
NO.	Description
14	4-Way Valve Assy
15	Condenser Assy
16	Clapboard Assy
17	Motor Support
18	Motor
19	Top Cover Assy
20	Left Side Plate
21	Condenser Left Border Plate
22	Electric Box Assy
23	Radiator
24	Electric Box
25	Main Board
26	Electric Box Cover

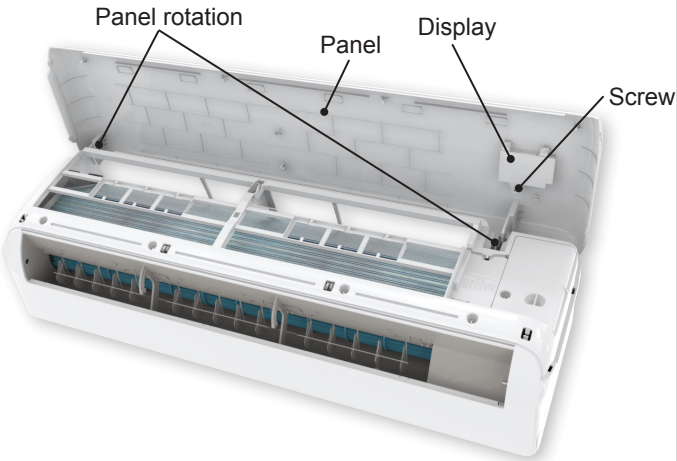
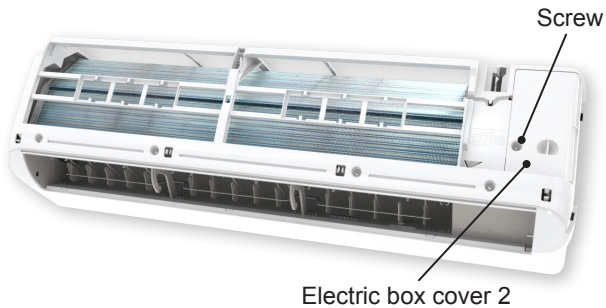
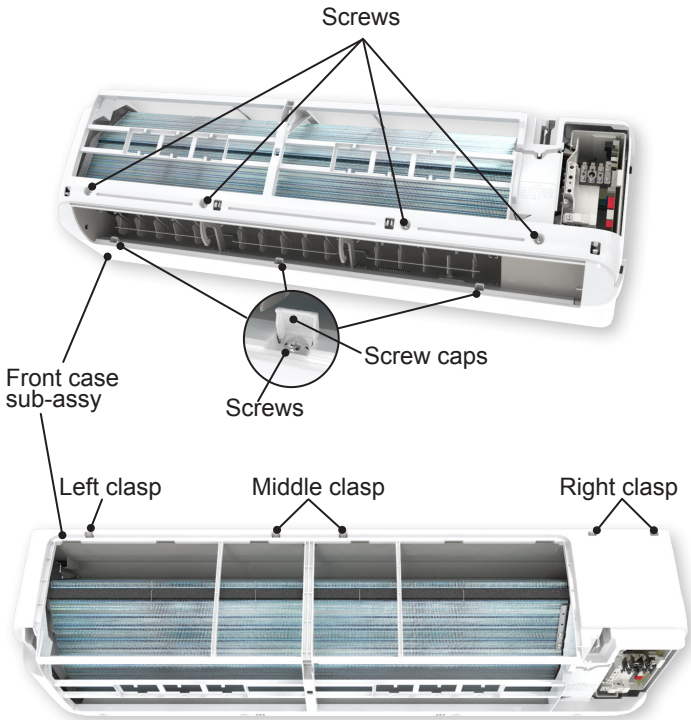
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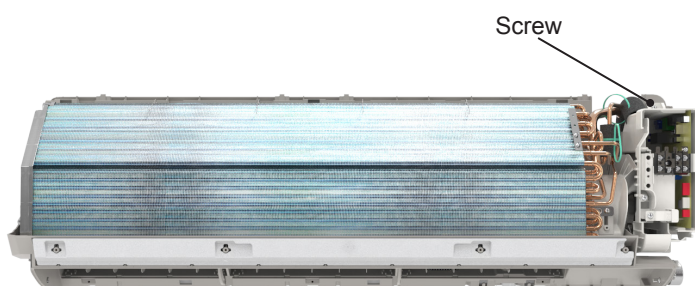
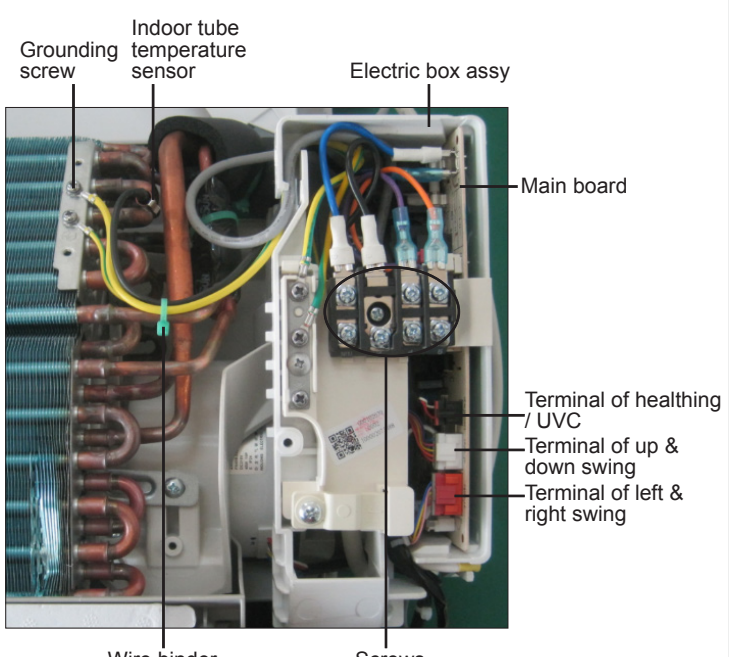
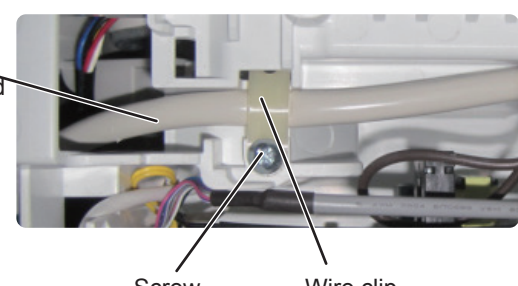
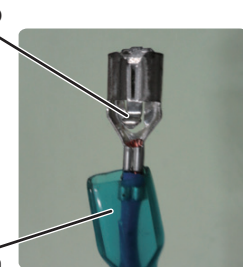
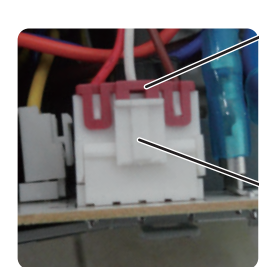
11. Removal Procedure


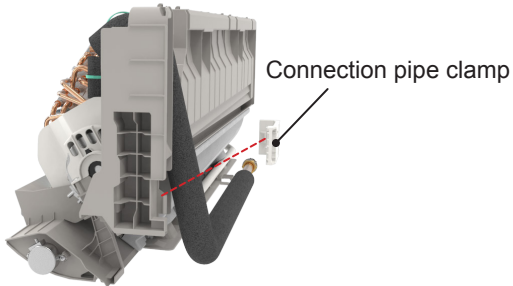
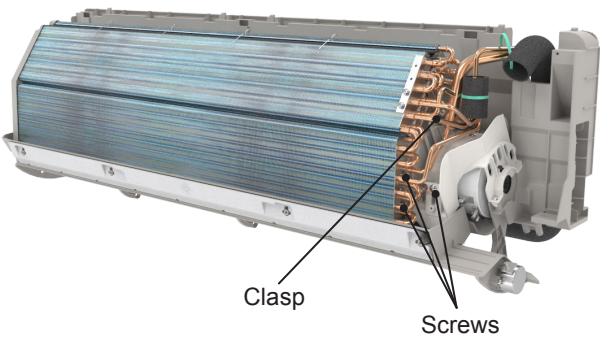
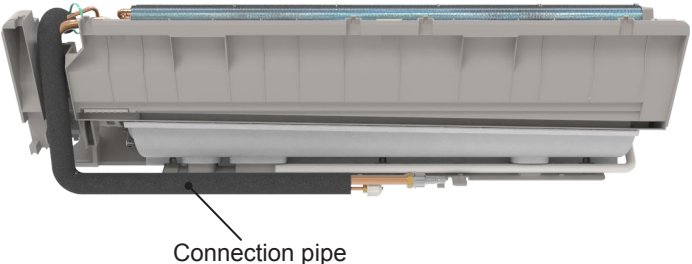
11.1 Removal Procedure of Indoor Unit

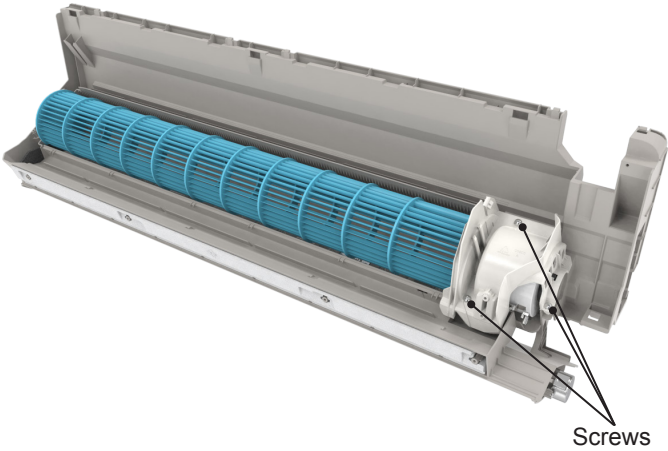
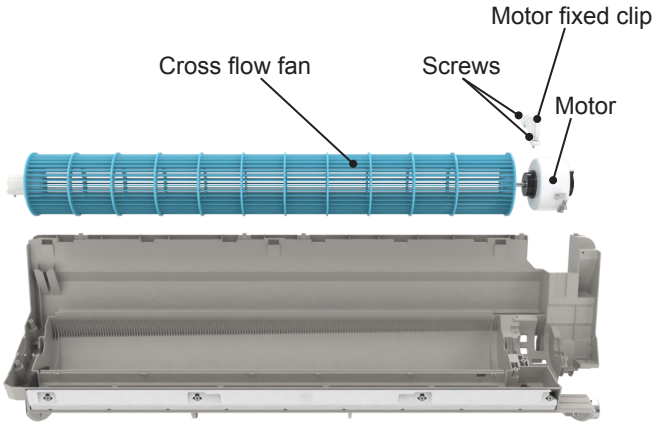
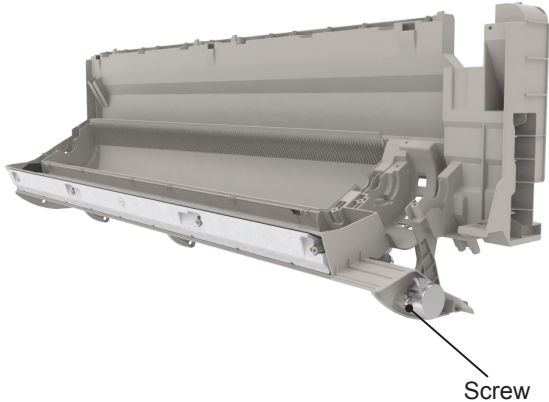
 **Caution:** discharge the refrigerant completely before removal.

Step	Procedure
Before disassemble	<div><p>Turn off the air conditioner and disconnect the power before disassemble the air conditioner.</p></div> <div></div>
1. Remove filter	<div><p>Hold the handle on the filter, pull it upwards to let the clasp at the top part of the filter loose, push it forwards and then the filter can be pulled out.</p></div> <div></div>
2. Remove guide louver	<div><p>Push out the plug pin on guide louver, bend the guide louver with hand and then separate the guide louver from the crank shaft of step motor to remove it.</p></div> <div><div><p>ATC</p></div><div><p>ATD/ATE</p></div></div>

Step	Procedure
<p>3. Remove panel</p> <p>Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> <p>Note: The display of some models is fixed on the panel; unscrew the screws fixing the display on the panel before removing the panel.</p>	
<p>4. Remove electric box cover 2</p> <p>Remove the screws on the electric box cover 2 to remove the electric box cover 2.</p>	
<p>5. Remove front case sub-assy</p> <p>a Remove the screws fixing front case.</p> <p>Note: (1) Open the screw caps before removing the screws around the air outlet. (2) The quantity of screws fixing the front case sub-assy is different for different models.</p> <p>b Loosen the clasps at left, middle and right sides of front case. Life the front case sub-assy upwards to remove it.</p>	

Step	Procedure	
6. Remove electric box assy		
a	Remove the screw fixing electric box assy.	
b	<p>① Cut off the wire binder and pull out the indoor tube temperature sensor.</p> <p>② Screw off one grounding screw.</p> <p>③ Remove the wiring terminals of heating / UVC, up & down swing, left & right swing.</p> <p>④ Remove the electric box assy.</p> <p>⑤ Screw off the screws that are locking each.</p>	
c	<p>Rotate the electric box assy. Twist off the screws that are locking the wire clip and loosen the power cord. Remove the wiring terminal of power cord. Lift up the main board and take it off.</p> <p>Instruction:Some wiring terminal of this products is with lock catch and other devices.The pulling method is as below:</p> <p>1.Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals,</p> <p>2.Pull out the holder for some terminals at first(holder is not available for some wiring terminal).hold the connector and then pull the terminal.</p>	  

Step	Procedure
7. Remove evaporator assy	
a	<p>Remove 2 screws fixing evaporator assy.</p>  <p>The diagram shows a side view of the evaporator assembly. Two screws are indicated by lines pointing to them, labeled 'Screws'.</p>
b	<p>At the back of the unit, Loosen the clasp of the connection pipe clamp and then remove the connection pipe clamp.</p>  <p>The diagram shows the back of the unit. A connection pipe clamp is shown being loosened, indicated by a red dashed line and a label 'Connection pipe clamp'.</p>
c	<p>First remove 3 screws fixing evaporator assy and motor press plate. And then remove the left side of evaporator from the groove of bottom shell. At the last, remove the right side from the clasp on the bottom shell.</p>  <p>The diagram shows the evaporator assembly being removed from the bottom shell. Three screws are indicated by lines pointing to them, labeled 'Screws'. A clasp is also indicated by a line pointing to it, labeled 'Clasp'.</p>
d	<p>Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.</p>  <p>The diagram shows the connection pipe being adjusted and the evaporator being lifted upwards. The connection pipe is labeled 'Connection pipe'.</p>

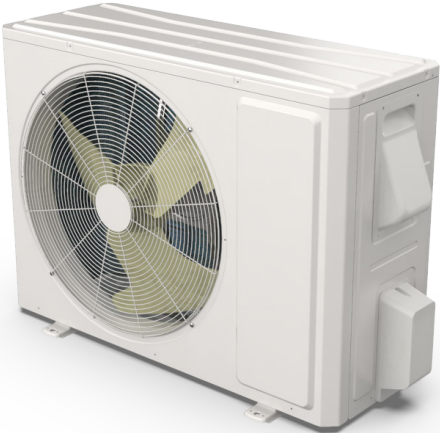


Step	Procedure
8. Remove motor and cross flow fan	
a	Remove 3 screws fixing motor clamp and then remove the motor clamp.
b	Remove 2 screws fixing motor fixed clip and then remove motor fixed clip, cross flow fan and motor.
9. Remove swing motor	
	Screw off the screw that are locking the swing motor and take the motor off.
	
	
	

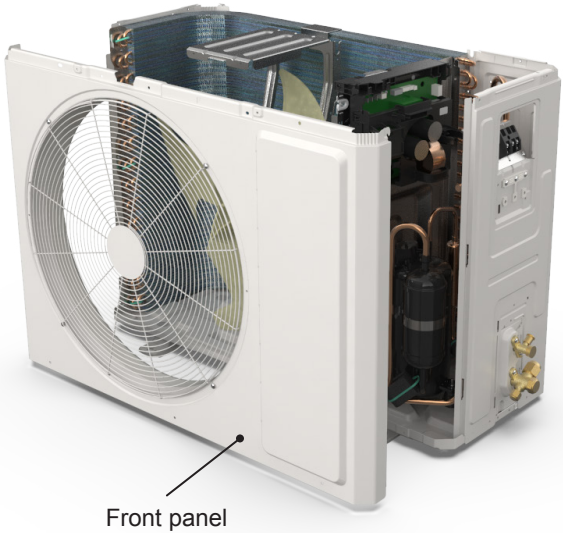
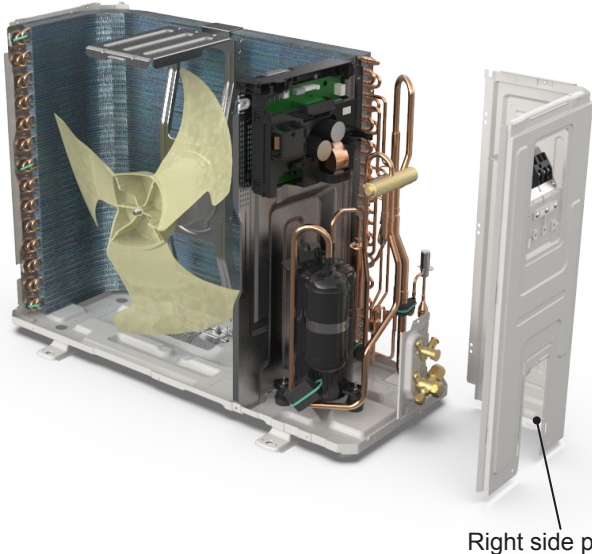
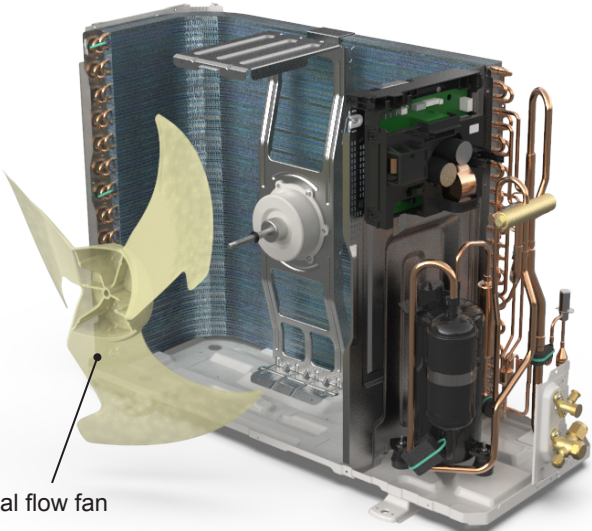
11.2 Removal Procedure of Outdoor Unit

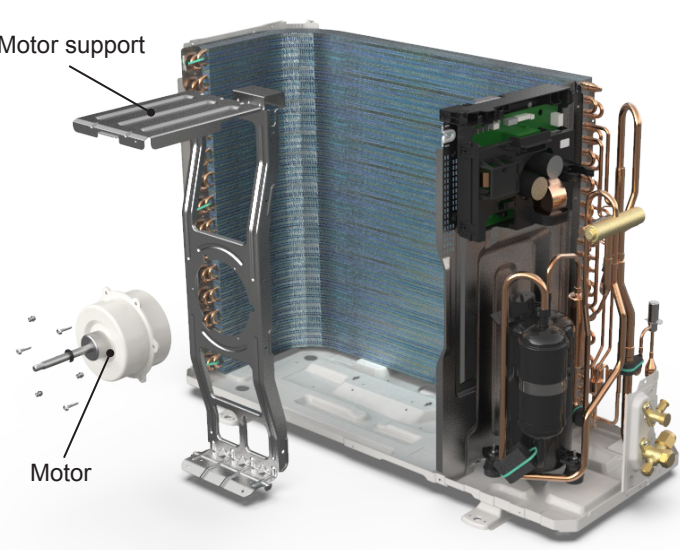

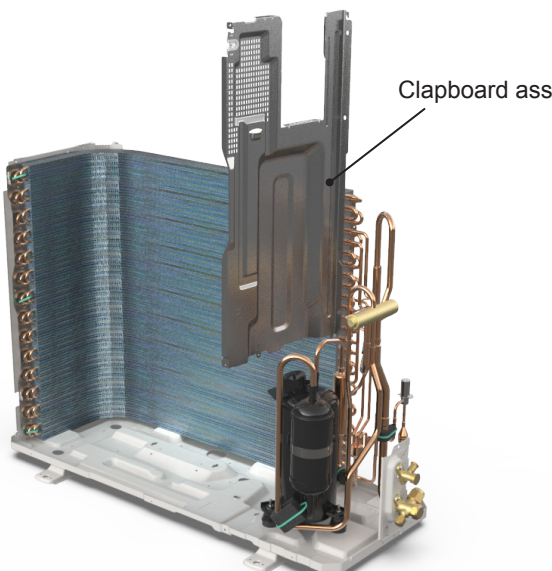
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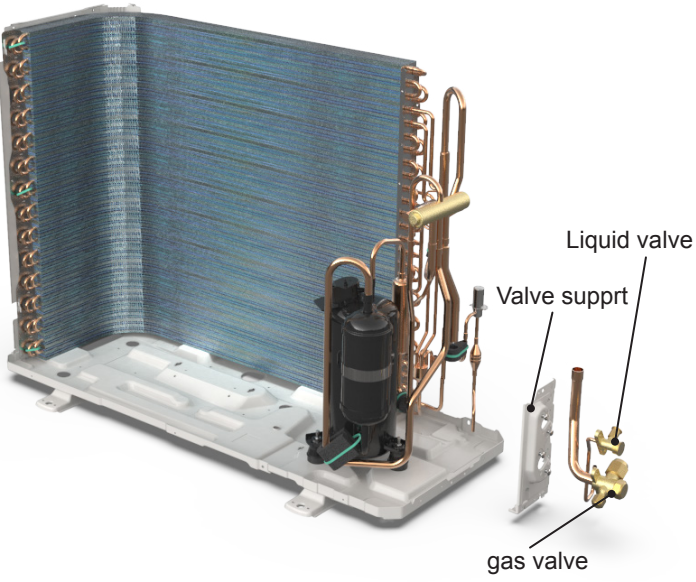
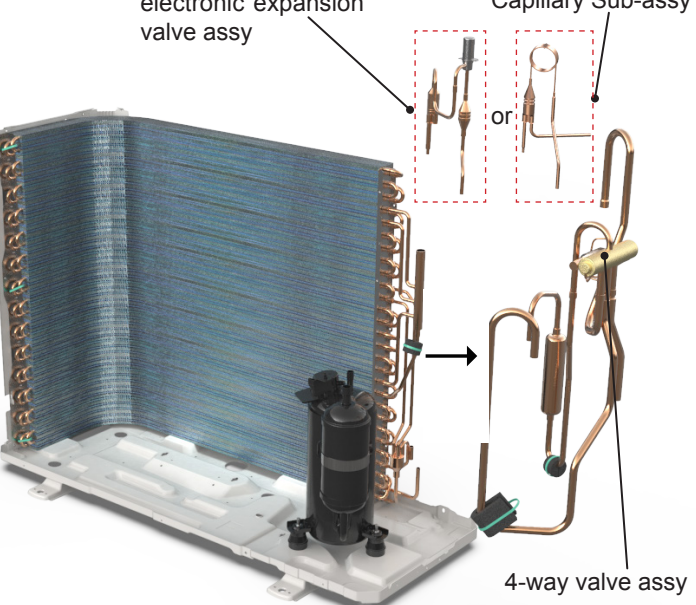
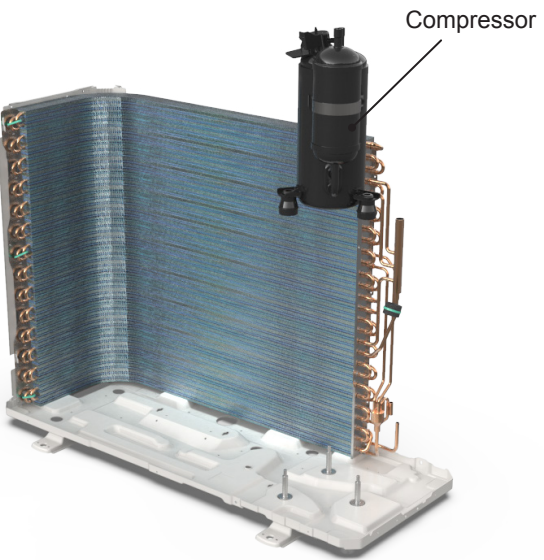
NOTE:Take heat pump for example.




 **Caution: discharge the refrigerant completely before removal.**

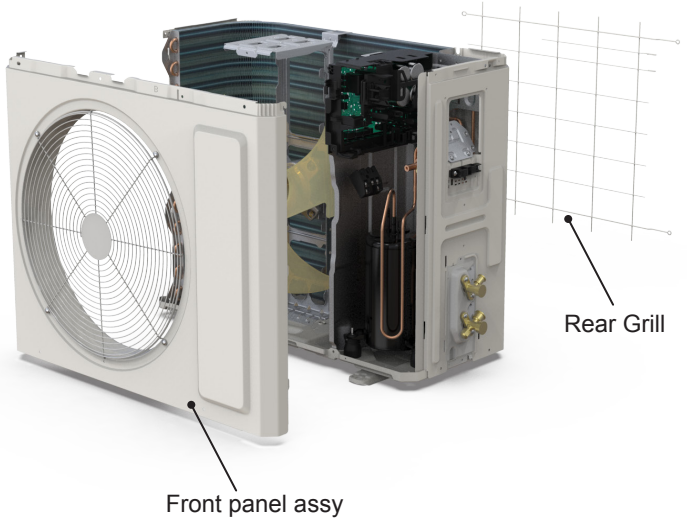
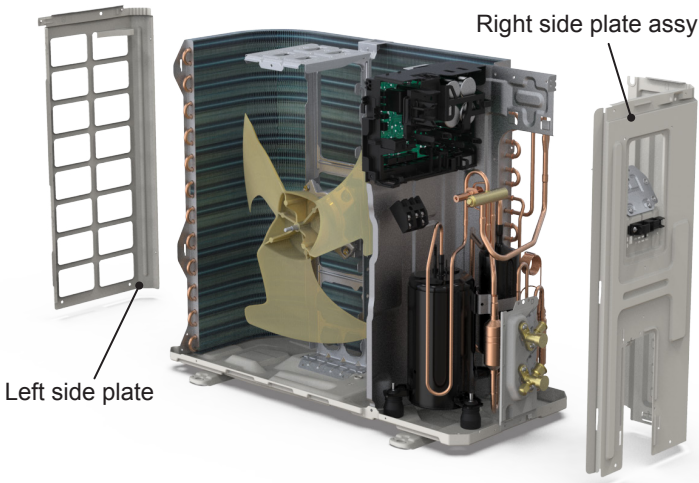
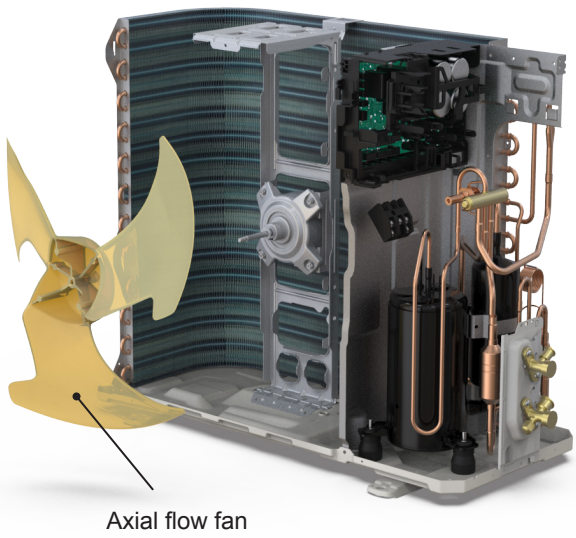
Step	Procedure
1. Before disassembly	
2. Remove Cover of Pass Wire and valve cover	<p>Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p> 
3. Remove top cover	<p>Remove the screws fixing top panel and then remove the top panel.</p> 

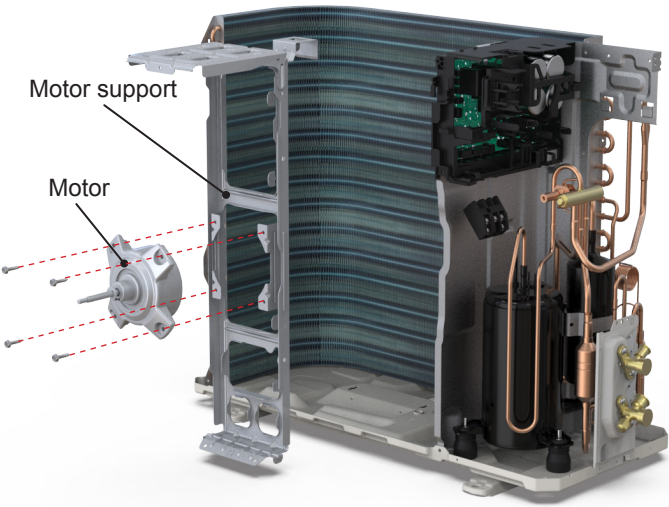
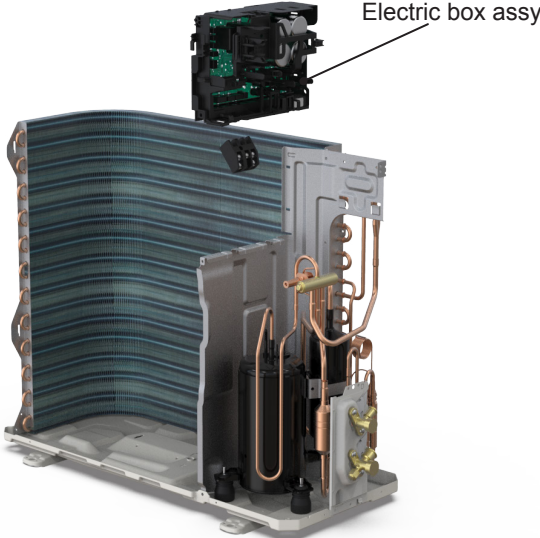
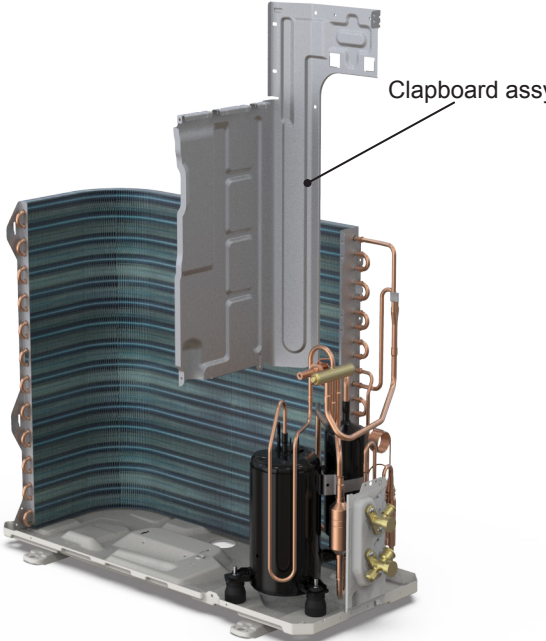
Step	Procedure
4. Remove front panel assy	<p>Remove connection screws connecting the front panel assy, and then remove the front panel assy.</p> 
5. Remove right side plate assy	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy.</p> 
6. Remove axial flow fan	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

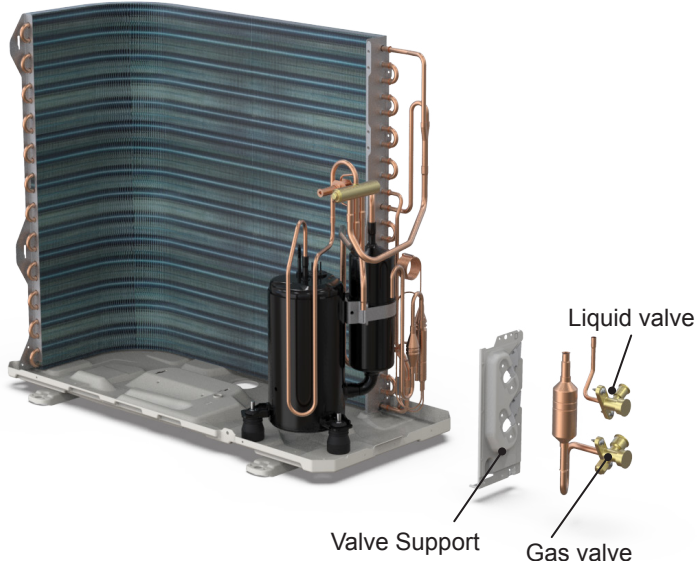
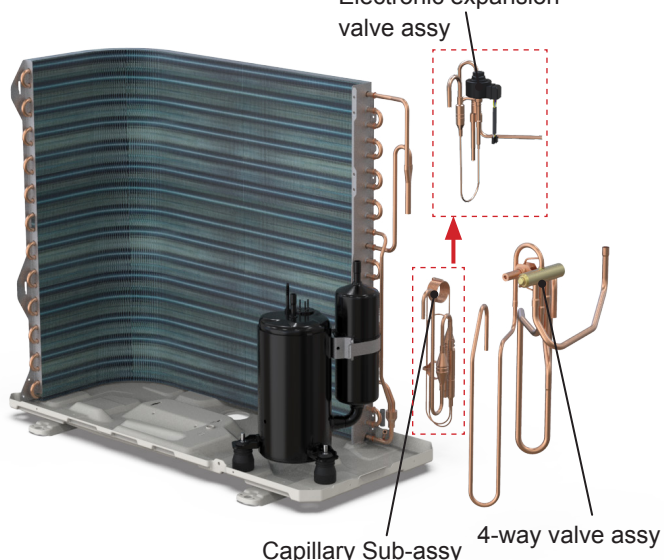
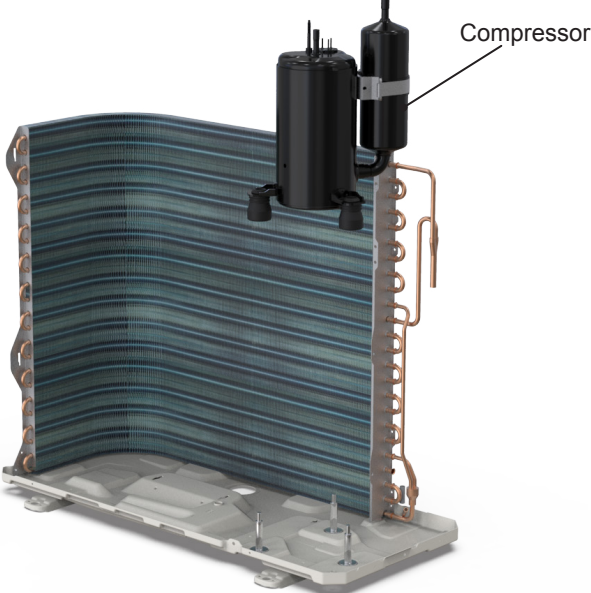
Step	Procedure
7. Remove motor and motor support	<p>Remove the screws fixing the motor and then remove the motor. Remove the screws fixing the motor support and lift the motor support to remove it.</p> 
8. Remove electric box assy	<p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p> 
9. Remove clapboard assy	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 

Step	Procedure
<p>10. Remove gas valve, liquid valve and valve support</p>	<p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> <p>Remove the screws fixing valve support, then remove the valve support.</p> 
<p>11. Remove 4-way valve assy, electronic expansion valve assy(Capillary Sub-assy)</p>	<p>Unsolder the welding joints connecting the 4-way valve assy, remove the 4-way valve.</p> <p>Unsolder the spot weld of Capillary Sub-assy and condenser, and then remove the Capillary Sub-assy.</p> <p>Unsolder the spot weld of electronic expansion valve assy and condenser, and then remove the electronic expansion valve assy.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>12. Remove compressor</p>	<p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p> 


Step	Procedure
1. Before disassembly	
2. Remove Cover of Pass Wire and valve cover	<p>Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p> 
3. Remove top cover	<p>Remove the screws fixing top panel and then remove the top panel.</p> 


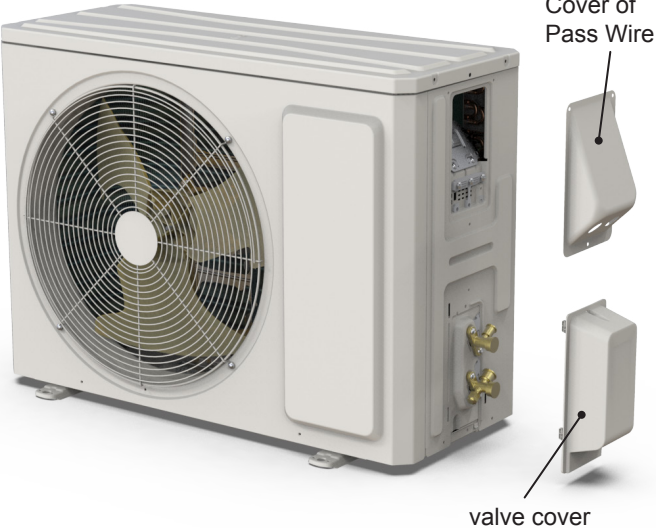

Step	Procedure
4. Remove front panel assy and Rear Grill	<p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p> 
5. Remove right side plate assy and left side plate	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy. Rescrew the screws fixing the left side plate, and remove the left side plate assy.</p> 
6. Remove axial flow fan	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

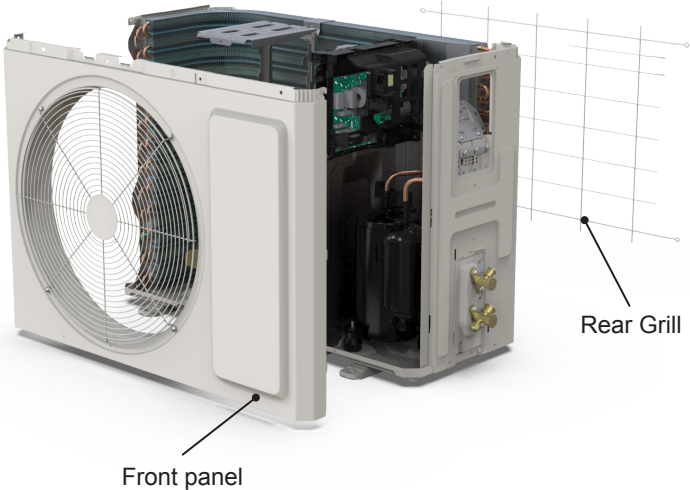
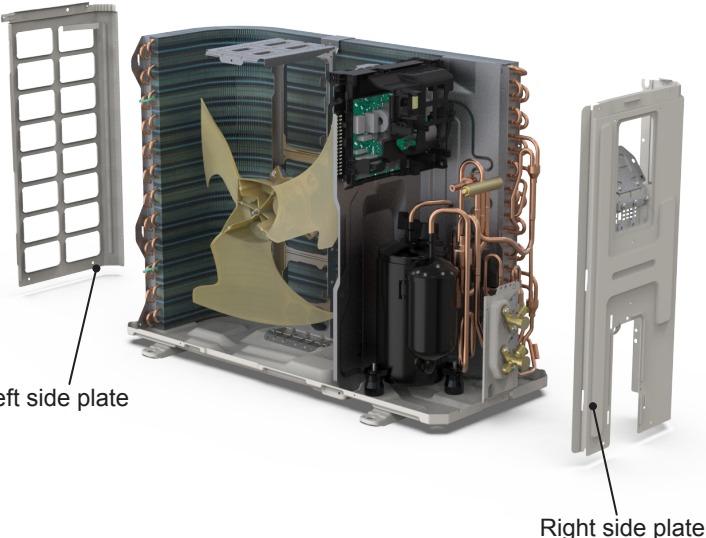
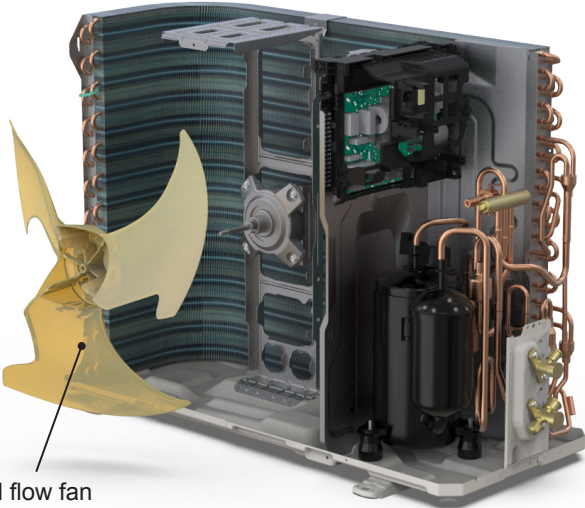
Step	Procedure
<p>7. Remove motor support and motor</p> <p>Remove the screws fixing the motor support and lift the motor support to remove it. Remove the screws fixing the motor and then remove the motor.</p>	 <p>Motor support</p> <p>Motor</p>
<p>8. Remove electric box assy</p> <p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p>	 <p>Electric box assy</p>
<p>9. Remove clapboard assy</p> <p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p>	 <p>Clapboard assy</p>

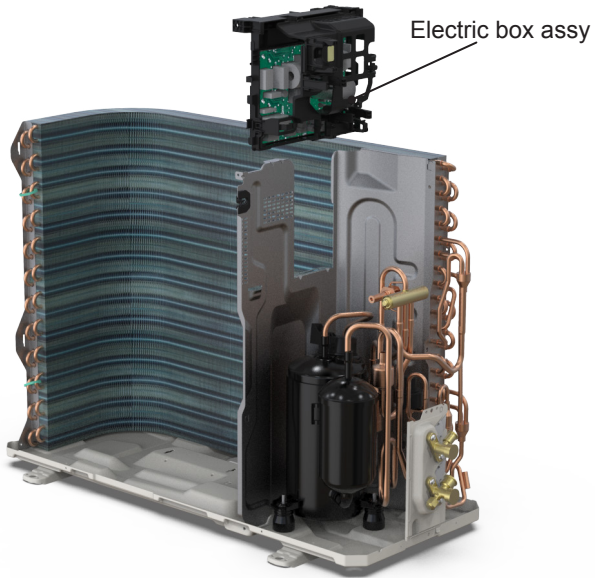
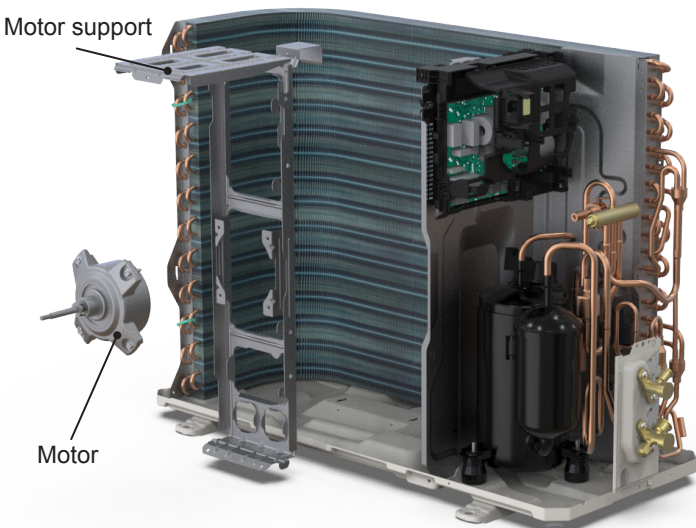
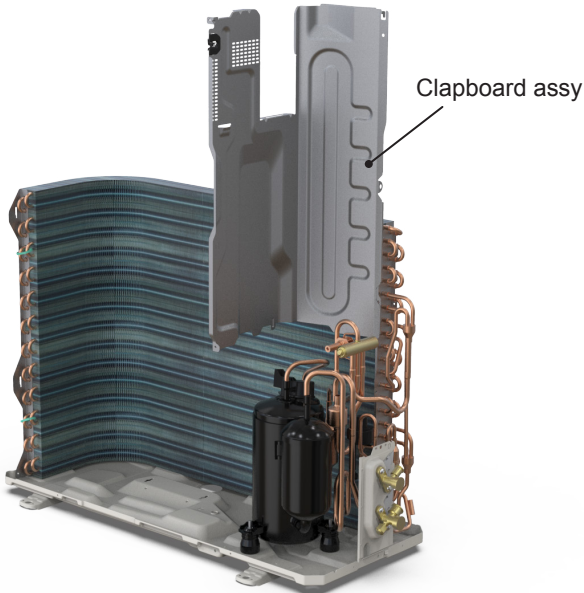
Step	Procedure
<p>10. Remove gas valve and liquid valve</p>	<p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>11. Remove 4-way valve and capillary Sub-assy(electronic expansion valve assy)</p>	<p>Unsolder the welding joints connecting capillary Sub-assy(electronic expansion valve assy), and then remove it.</p> <p>Unsolder the welding joints connecting the 4-way valve assy with capillary sub-assy(electronic expansion valve assy), compressor and condenser; remove the 4-way valve and capillary Sub-assy(electronic expansion valve assy). Cooling only unit removes Discharge Tube and Inhalation Tube.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>12. Remove compressor</p>	<p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p> 

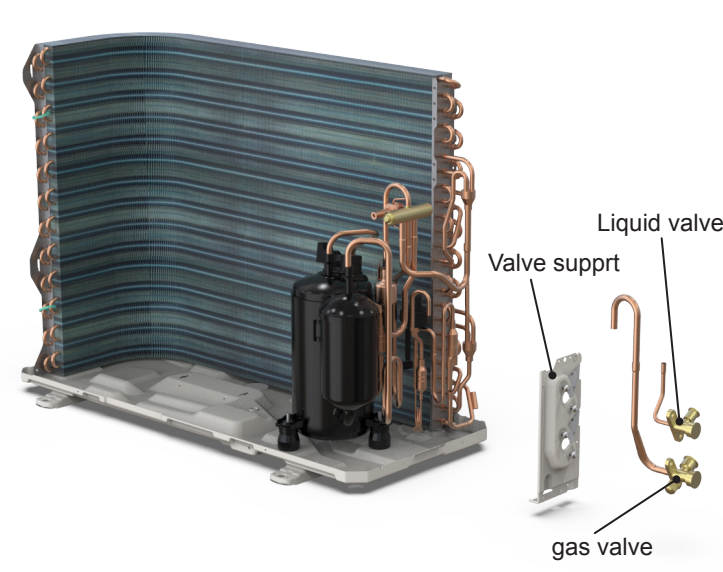
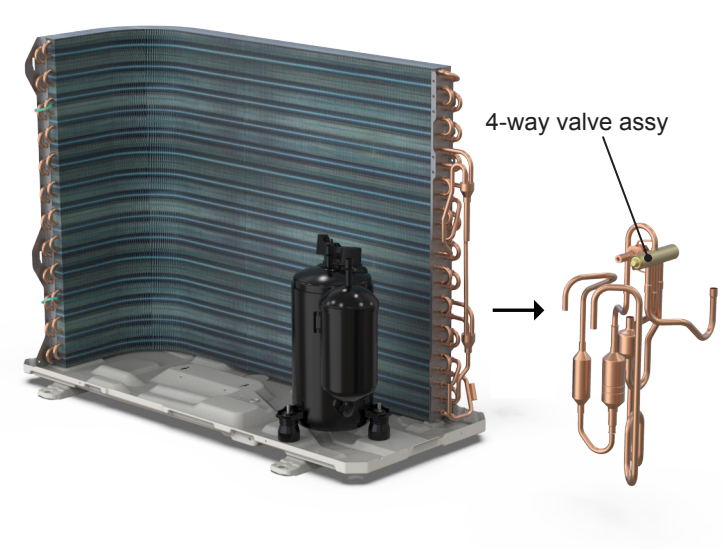
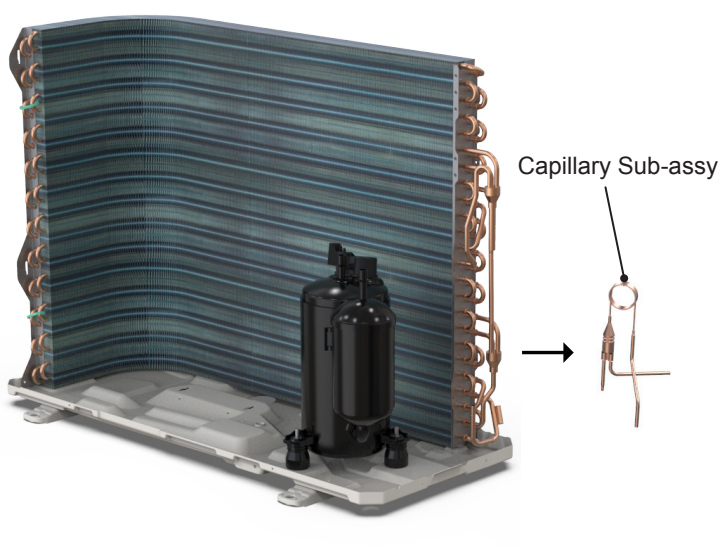
18K
NOTE:Take heat pump for example.

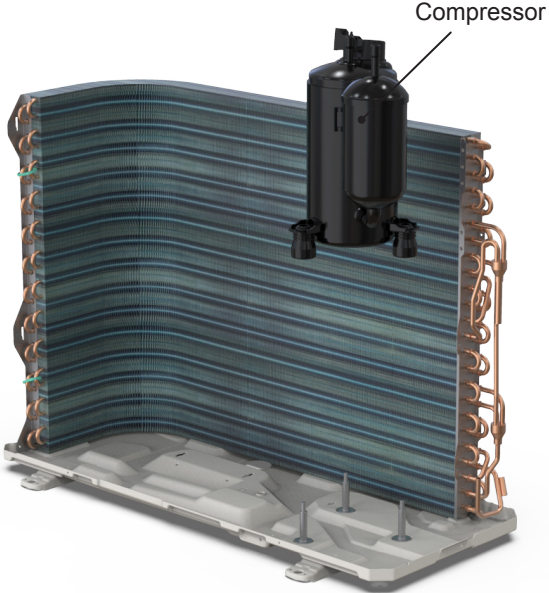
 **Caution: discharge the refrigerant completely before removal.**

Step	Procedure
1. Before disassembly	
2. Remove Cover of Pass Wire and valve cover	<p>Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p> 
3. Remove top cover	<p>Remove the screws fixing top panel and then remove the top panel.</p> 

Step	Procedure
<p>4. Remove front panel assy and Rear Grill</p> <p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p>	
<p>5. Remove right side plate assy and left side plate</p> <p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy. Rescrew the screws fixing the left side plate, and remove the left side plate assy.</p>	
<p>6. Remove axial flow fan</p> <p>Remove the nut on the fan and then remove the axial flow fan.</p>	

Step	Procedure
7. Remove electric box assy	<p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p> 
8. Remove motor and motor support	<p>Remove the screws fixing the motor and then remove the motor. Remove the screws fixing the motor support and lift the motor support to remove it.</p> 
9. Remove clapboard assy	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 

Step	Procedure
10. Remove gas valve, liquid valve and valve support	<p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature. Remove the screws fixing valve support, then remove the valve support.</p>  <p>Liquid valve Valve support gas valve</p>
11. Remove 4-way valve assy	<p>Unsolder the welding joints connecting the 4-way valve assy, remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>  <p>4-way valve assy</p>
12. Remove Capillary Sub-assy	<p>Unsolder the spot weld of Capillary Sub-assy and condenser, and then remove the Capillary Sub-assy.</p> <p>Note: When unsoldering the spot weld, wrap the Capillary Sub-assy with wet cloth completely to avoid damaging the valve due to high temperature.</p>  <p>Capillary Sub-assy</p>

Step	Procedure
13. Remove compressor	
Remove the 3 foot nuts on the compressor and then remove the compressor.	

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: $T_f = T_c \times 1.8 + 32$

Set temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
61	60.8	16	69/70	69.8	21	78/79	78.8	26
62/63	62.6	17	71/72	71.6	22	80/81	80.6	27
64/65	64.4	18	73/74	73.4	23	82/83	82.4	28
66/67	66.2	19	75/76	75.2	24	84/85	84.2	29
68	68	20	77	77	25	86	86	30

Ambient temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
32/33	32	0	55/56	55.4	13	79/80	78.8	26
34/35	33.8	1	57/58	57.2	14	81	80.6	27
36	35.6	2	59/60	59	15	82/83	82.4	28
37/38	37.4	3	61/62	60.8	16	84/85	84.2	29
39/40	39.2	4	63	62.6	17	86/87	86	30
41/42	41	5	64/65	64.4	18	88/89	87.8	31
43/44	42.8	6	66/67	66.2	19	90	89.6	32
45	44.6	7	68/69	68	20	91/92	91.4	33
46/47	46.4	8	70/71	69.8	21	93/94	93.2	34
48/49	48.2	9	72	71.6	22	95/96	95	35
50/51	50	10	73/74	73.4	23	97/98	96.8	36
52/53	51.8	11	75/76	75.2	24	99	98.6	37
54	53.6	12	77/78	77	25			

Appendix 2: Configuration of Connection Pipe

- Standard length of connection pipe (More details please refer to the specifications.)
- Min length of connection pipe for the unit with standard connection pipe of 5m, there is no limitation for the min length of connection pipe. For the unit with standard connection pipe of 7.5m and 8m, the min length of connection pipe is 3m.
- Max. length of connection pipe and max. high difference. (More details please refer to the specifications.)
- The additional refrigerant oil and refrigerant charging required after prolonging connection pipe
 - After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.
 - The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):
 - Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.
 - Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe	Gas pipe	Cooling only(g/m)	Cooling and heating(g/m)
1/4"	3/8" or 1/2"	15	20
1/4" or 3/8"	5/8" or 3/4"	15	50
1/2"	3/4" or 7/8"	30	120
5/8"	1" or 1 1/4"	60	120

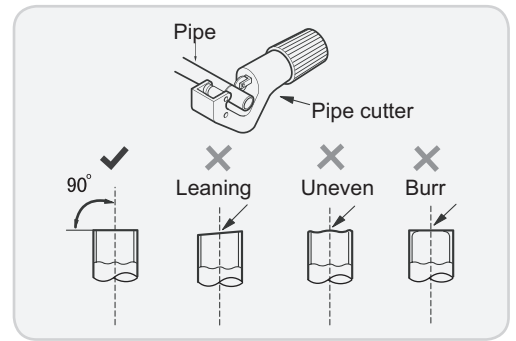
Appendix 3: Pipe Expanding Method

⚠ Note:

Improper pipe expanding is the main cause of refrigerant leakage. Please expand the pipe according to the following steps:

A: Cut the pipe

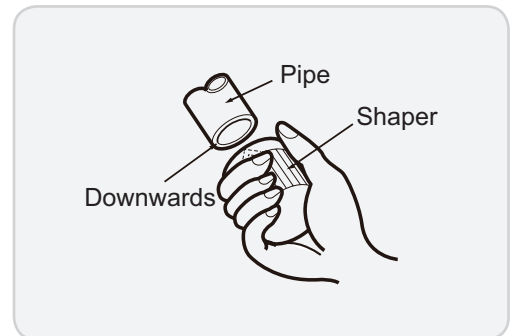
- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.



B: Remove the burrs

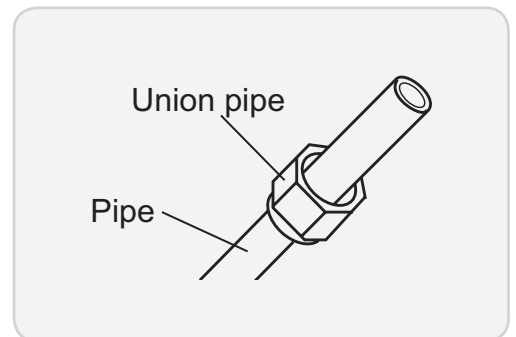
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.

C: Put on suitable insulating pipe.



D: Put on the union nut

- Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.



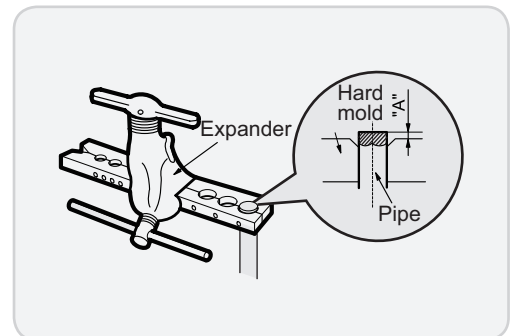
E: Expand the port

- Expand the port with expander.

⚠ Note:

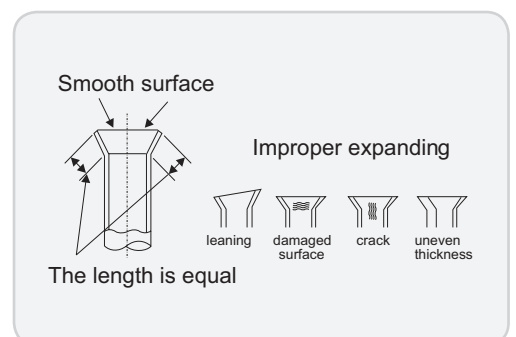
- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(mm)	A(mm)	
	Max	Min
Φ6 - 6.35 (1/4")	1.3	0.7
Φ9.52 (3/8")	1.6	1.0
Φ12 - 12.70 (1/2")	1.8	1.0
Φ16 - 15.88 (5/8")	2.4	2.2



F: Inspection

- Check the quality of expanding port. If there is any blemish, expand the port again according to the steps above.



Appendix 4: List of Resistance for Temperature Sensor

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)


Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	138.10	0	49.02	20	18.75	40	7.97
-18	128.60	2	44.31	22	17.14	42	7.35
-16	115.00	4	40.09	24	15.68	44	6.79
-14	102.90	6	36.32	26	14.36	46	6.28
-12	92.22	8	32.94	28	13.16	48	5.81
-10	82.75	10	29.90	30	12.07	50	5.38
-8	74.35	12	27.18	32	11.09	52	4.99
-6	66.88	14	24.73	34	10.20	54	4.63
-4	60.23	16	22.53	36	9.38	56	4.29
-2	54.31	18	20.54	38	8.64	58	3.99

Resistance Table of Tube Temperature Sensors for Indoor and Outdoor (20K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	181.40	20	25.01	60	4.95	100	1.35
-15	145.00	25	20.00	65	4.14	105	1.16
-10	110.30	30	16.10	70	3.48	110	1.01
-5	84.61	35	13.04	75	2.94	115	0.88
0	65.37	40	10.62	80	2.50	120	0.77
5	50.87	45	8.71	85	2.13	125	0.67
10	39.87	50	7.17	90	1.82	130	0.59
15	31.47	55	5.94	95	1.56	135	0.52

Resistance Table of Discharge Temperature Sensor for Outdoor(50K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-30	911.400	10	98	50	17.65	90	4.469
-25	660.8	15	77.35	55	14.62	95	3.841
-20	486.5	20	61.48	60	12.17	100	3.315
-15	362.9	25	49.19	65	10.18	105	2.872
-10	274	30	39.61	70	8.555	110	2.498
-5	209	35	32.09	75	7.224	115	2.182
0	161	40	26.15	80	6.129	120	1.912
5	125.1	45	21.43	85	5.222	125	1.682



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