



# Service Manual

LIVV09HP115V1AH  
LIVV12HP115V1AH  
LIVV09HP115V1AO  
LIVV12HP115V1AO

**GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI**

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# Part I : Technical Information

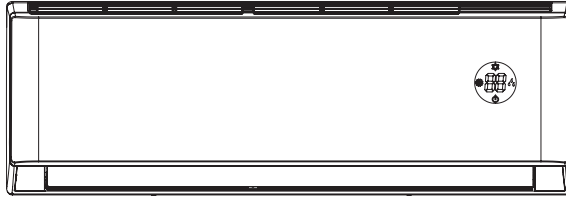
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## 1. Summary

Indoor Unit

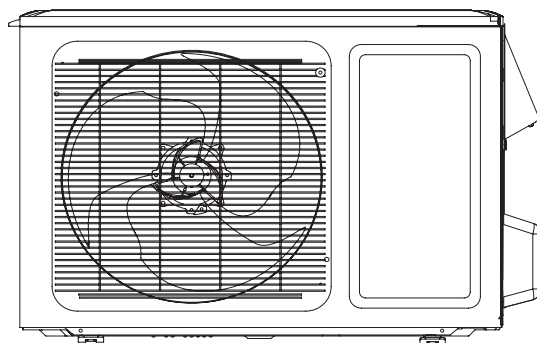
LIVV09HP115V1AH  
LIVV12HP115V1AH

B2 Panel



## Outdoor Unit

LIVV09HP115V1AO  
LIVV12HP115V1AO



## Remote Controller

YAN1F6F(WiFi)



YAP1F7F(WiFi)



**Model List:**

No.	Model	Product code	Indoor model	Indoor product code	Outdoor model	Outdoor product code	Remote Controller
1	LIVV09HP115V1A	CB434018400	LIVV09HP115V1AH	CB432N26500	LIVV09HP115V1AO	CB425W08201	YAN1F6F (WiFi)
2	GWH12QC-A3DNB4K	CB434018500	LIVV12HP115V1AH	CB432N09100	LIVV12HP115V1AO	CB425W07902	

## 2. Specifications

### 2.1 Specification Sheet

Model			GWC09QB-A3DNA5E GWC09QB-A3DNA6E	GWC09QB-A3DNB8E
Product Code			CB425006500 CB427004001	CB438003801
Power Supply	Rated Voltage	V~	115	115
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity(Min~Max)		Btu/h	9000(2764~10918)	9000(2764~10918)
Heating Capacity(Min~Max)		Btu/h	/	/
Cooling Power Input(Min~Max)		W	823(350~1270)	823(350~1270)
Heating Power Input(Min~Max)		W	/	/
Cooling Power Current		A	10.93	10.93
Heating Power Current		A	/	/
Rated Input		W	1270	1270
Rated Current		A	11.27	11.27
Air Flow Volume(SH/H/M/L)		CFM	318/288/241/171	318/288/241/171
Dehumidifying Volume		Pint/h	1.69	1.69
EER		(Btu/h)/W	11.05	11.05
COP		(Btu/h)/W	/	/
SEER			16.00	16.00
HSPF			/	/
Application Area		yd <sup>2</sup>	14.35-21.53	14.35-21.53
Indoor Unit	Model of indoor unit		GWC09QB-A3DNA5E/I GWC09QB-A3DNA6E/I	GWC09QB-A3DNB8E/I
	Indoor Unit Product Code		CB425N06500 CB427N04001	CB438N03801
	Fan Type		Cross-flow	Cross-flow
	Diameter Length(DXL)		inch	Φ3 7/8X22 13/16
	Fan Motor Cooling Speed(SH/H/M/L)		r/min	1350/1200/1050/750
	Fan Motor Heating Speed(SH/H/M/L)		r/min	/
	Output of Fan Motor		W	20
	Fan Motor RLA		A	0.24
	Fan Motor Capacitor		μF	4
	Evaporator Form			Aluminum Fin-copper Tube
	Pipe Diameter		inch	Φ3/16
	Row-fin Gap		inch	2-1/16
	Coil Length (LXD <sub>X</sub> W)		inch	23X7/8X10 8/16
	Swing Motor Model			MP24AA
	Output of Swing Motor		W	1.5
	Fuse		A	3.15
	Sound Pressure Level(SH/H/M/L)		dB (A)	42/38/34/28
	Sound Power Level(SH/H/M/L)		dB (A)	52/49/45/39
	Dimension (WXHXD)		inch	31 1/8X10 13/16X7 7/8
	Dimension of Carton Box (LXWXH)		inch	34X10 9/16X13 7/8
	Dimension of Package (LXWXH)		inch	34 1/8X10 11/16X14 7/16
Net Weight		lb	20.94	
Gross Weight		lb	25.35	

Outdoor Unit	Model of Outdoor Unit		GWC09QB-A3DNA6E/O(LC)
	Outdoor Unit Product Code		CB427W04000
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-A091zE190
	Compressor Oil		FVC68D or RB 68EP
	Compressor Type		Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	/
	Compressor RLA	A	12.62
	Compressor Power Input	W	980
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Capillary
	Operation temp	°F	61~86
	Ambient temp (cooling)	°F	0~115
	Ambient temp (heating)	°F	/
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	inch	Φ1/4
	Rows-fin Gap	inch	2-1/16
	Coil Length (LXDXW)	inch	29 3/4X1/2X20
	Fan Motor Speed	rpm	850
	Output of Fan Motor	W	30
	Fan Motor RLA	A	0.24
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	CFM	1059
	Fan Type		Axial-flow
	Fan Diameter	inch	Φ15 3/4
	Defrosting Method		/
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	PSIG	550
	Permissible Excessive Operating Pressure for the Suction Side	PSIG	240
	Sound Pressure Level (H/M/L)	dB (A)	51/-/-
	Sound Power Level (H/M/L)	dB (A)	61/-/-
Dimension (WXHXD)	inch	33 3/8X21 1/4X12 5/8	
Dimension of Carton Box (LXWXH)	inch	34 9/16X14 3/16X22 13/16	
Dimension of Package (LXWXH)	inch	34 11/16X14 5/16X23 7/16	
Net Weight	lb	59.52	
Gross Weight	lb	65.04	
Refrigerant		R410A	
Refrigerant Charge	oz	26.5	
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.2
	Outer Diameter Liquid Pipe	inch	Φ1/4
	Outer Diameter Gas Pipe	inch	Φ3/8
	Max Distance Height	ft	32.8
	Max Distance Length	ft	49.2
	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			GWH09QB-A3DNA5E GWH09QB-A3DNC2E	GWH09QB-A3DNB8E GWH09QB-A3DNB2E GWH09QB-A3DNB6E	
Product Code			CB425006400 CB439006001	CB438003702 CB432006002 CB435002001	
Power Supply	Rated Voltage	V~	115	115	
	Rated Frequency	Hz	60	60	
	Phases		1	1	
Power Supply Mode			Outdoor	Outdoor	
Cooling Capacity(Min~Max)		Btu/h	9000(2764~10918)	9000(2764~10918)	
Heating Capacity(Min~Max)		Btu/h	9600(2081~12263)	9600(2081~12263)	
Cooling Power Input(Min~Max)		W	895(350~1270)	895(350~1270)	
Heating Power Input(Min~Max)		W	852(280~1250)	852(280~1250)	
Cooling Power Current		A	10.93	10.93	
Heating Power Current		A	10.20	10.20	
Rated Input		W	1270	1270	
Rated Current		A	11.27	11.27	
Air Flow Volume(SH/H/M/L)		CFM	318/288/241/171	318/288/241/171	
Dehumidifying Volume		Pint/h	1.69	1.69	
EER		(Btu/h)/W	10.06	10.06	
COP		(Btu/h)/W	11.25	11.25	
SEER			16.00	16.00	
HSPF			9.00	9.00	
Application Area		yd <sup>2</sup>	14.35-21.53	14.35-21.53	
Indoor Unit	Model of indoor unit		GWH09QB-A3DNA5E/I GWH09QB-A3DNC2E/I	GWH09QB-A3DNB8E/I GWH09QB-A3DNB2E/I GWH09QB-A3DNB6E/I	
	Indoor Unit Product Code		CB425N06400 CB439N06001	CB438N03702 CB432N06002 CB435N02001	
	Fan Type		Cross-flow	Cross-flow	
	Diameter Length(DXL)		inch	Φ3 7/8X22 13/16	Φ3 7/8X22 13/16
	Fan Motor Cooling Speed(SH/H/M/L)		r/min	1350/1200/1050/750	1350/1200/1050/750
	Fan Motor Heating Speed(SH/H/M/L)		r/min	1350/1200/1050/850	1350/1200/1050/850
	Output of Fan Motor		W	20	20
	Fan Motor RLA		A	0.24	0.24
	Fan Motor Capacitor		μF	4	4
	Evaporator Form			Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter		inch	Φ3/16	Φ3/16
	Row-fin Gap		inch	2-1/16	2-1/16
	Coil Length (LXDXW)		inch	23X7/8X10 8/16	23X7/8X10 8/16
	Swing Motor Model			MP24AA	MP24AA
	Output of Swing Motor		W	1.5	1.5
	Fuse		A	3.15	3.15
	Sound Pressure Level(SH/H/M/L)		dB (A)	42/38/34/28	42/38/34/28
	Sound Power Level(SH/H/M/L)		dB (A)	52/49/45/39	52/49/45/39
	Dimension (WXHXD)		inch	31 1/8X10 13/16X7 7/8	31 1/8X10 13/16X7 7/8
	Dimension of Carton Box (LXWXH)		inch	34X10 9/16X13 7/8	34X10 9/16X13 7/8
Dimension of Package (LXWXH)		inch	34 1/8X10 11/16X14 7/16	34 1/8X10 11/16X14 7/16	
Net Weight		lb	20.94	19.84	
Gross Weight		lb	25.35	24.25	

Outdoor Unit	Model of Outdoor Unit		GWH09QB-A3DNA6E/O(LCLH)
	Outdoor Unit Product Code		CB427W03900
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-A091zE190
	Compressor Oil		FVC68D or RB 68EP
	Compressor Type		Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	/
	Compressor RLA	A	12.62
	Compressor Power Input	W	980
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Capillary
	Operation temp	°F	61~86
	Ambient temp (cooling)	°F	0~115
	Ambient temp (heating)	°F	-4~75
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	inch	Φ1/4
	Rows-fin Gap	inch	2-1/16
	Coil Length (LXDXW)	inch	29 3/4X3/4X20
	Fan Motor Speed	rpm	850
	Output of Fan Motor	W	30
	Fan Motor RLA	A	0.24
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	CFM	1059
	Fan Type		Axial-flow
	Fan Diameter	inch	Φ15 3/4
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	PSIG	550
	Permissible Excessive Operating Pressure for the Suction Side	PSIG	240
	Sound Pressure Level (H/M/L)	dB (A)	53/-/-
Sound Power Level (H/M/L)	dB (A)	63/-/-	
Dimension (WXHXD)	inch	33 3/8X21 1/4X12 5/8	
Dimension of Carton Box (LXWXH)	inch	34 9/16X14 3/16X22 13/16	
Dimension of Package (LXWXH)	inch	34 11/16X14 5/16X23 7/16	
Net Weight	lb	62.83	
Gross Weight	lb	68.34	
Refrigerant		R410A	
Refrigerant Charge	oz	24.7	
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft	0.2
	Outer Diameter Liquid Pipe	inch	Φ1/4
	Outer Diameter Gas Pipe	inch	Φ3/8
	Max Distance Height	ft	32.8
	Max Distance Length	ft	49.2
	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			GWC12QC-A3DNA5E	GWC12QC-A3DNB8E	
			GWC12QC-A3DNC8E	GWC12QC-A3DNA6E	
Product Code			CB425006201	CB438004001	
			CB456002901	CB427003801	
Power Supply	Rated Voltage	V~	115		
	Rated Frequency	Hz	60		
	Phases		1		
Power Supply Mode			Outdoor		
Cooling Capacity(Min~Max)		Btu/h	12000(3753~12500)		
Heating Capacity(Min~Max)		Btu/h	/		
Cooling Power Input(Min~Max)		W	1155(380~1300)		
Heating Power Input(Min~Max)		W	/		
Cooling Power Current		A	12.40		
Heating Power Current		A	/		
Rated Input		W	1300		
Rated Current		A	13.00		
Air Flow Volume(SH/H/M/L)		CFM	400/318/241/194		
Dehumidifying Volume		Pint/h	2.96		
EER		(Btu/h)/W	10.39		
COP		(Btu/h)/W	/		
SEER			16		
HSPF			/		
Application Area		yd <sup>2</sup>	19.14-28.70		
Indoor Unit	Model of indoor unit		GWC12QC-A3DNA5E/I	GWC12QC-A3DNB8E/I	
			GWC12QC-A3DNC8E/I	GWC12QC-A3DNA6E/I	
	Indoor Unit Product Code		CB425N06201	CB438N04001	
			CB456N02901	CB427N03801	
	Fan Type		Cross-flow		
	Diameter Length(DXL)		inch	Φ3 7/8X24 15/16	
	Fan Motor Cooling Speed(SH/H/M/L)		r/min	1350/1200/1000/800	
	Fan Motor Heating Speed(SH/H/M/L)		r/min	/	
	Output of Fan Motor		W	20	
	Fan Motor RLA		A	0.25	
	Fan Motor Capacitor		μF	4	
	Evaporator Form		Aluminum Fin-copper Tube		
	Pipe Diameter		inch	Φ3/16	
	Row-fin Gap		inch	2-1/16	
	Coil Length (LXDXW)		inch	25X7/8X12 1/16	
	Swing Motor Model		MP24BA		
	Output of Swing Motor		W	1.5	
	Fuse		A	3.15	
	Sound Pressure Level(SH/H/M/L)		dB (A)	43/39/35/29	
	Sound Power Level(SH/H/M/L)		dB (A)	53/49/45/39	
	Dimension (WXHXD)		inch	33 1/4X11 3/8X8 1/4	
Dimension of Carton Box (LXWXH)		inch	36 1/8X10 15/16X14 5/16		
Dimension of Package (LXWXH)		inch	36 1/4X11 1/16X14 15/16		
Net Weight		lb	23.15		
Gross Weight		lb	27.56		

Model			LIVV12HP115V1A	
Product Code			CB425007902	
Power Supply	Rated Voltage	V~	115	
	Rated Frequency	Hz	60	
	Phases		1	
Power Supply Mode			Outdoor	
Cooling Capacity(Min~Max)		Btu/h	12000(3753~12500)	
Heating Capacity(Min~Max)		Btu/h	13000(3412~15013)	
Cooling Power Input(Min~Max)		W	1193(380~1300)	
Heating Power Input(Min~Max)		W	1250(350~1350)	
Cooling Power Current		A	13.5	
Heating Power Current		A	13.8	
Rated Input		W	1350	
Rated Current		A	13.5	
Air Flow Volume(SH/H/M/L)		CFM	400/318/241/194	
Dehumidifying Volume		Pint/h	2.96	
EER		(Btu/h)/W	10.06	
COP		(Btu/h)/W	10.40	
SEER			16	
HSPF			9	
Application Area		yd <sup>2</sup>	19.14-28.70	
Indoor Unit	Model of indoor unit		LIVV12HP115V1AH	
	Indoor Unit Product Code		CB432N09100	
	Fan Type		Cross-flow	
	Diameter Length(DXL)		inch	Φ3 7/8X24 15/16
	Fan Motor Cooling Speed(SH/H/M/L)		r/min	1350/1200/1000/800
	Fan Motor Heating Speed(SH/H/M/L)		r/min	1350/1200/1000/900
	Output of Fan Motor		W	20
	Fan Motor RLA		A	0.25
	Fan Motor Capacitor		μF	4
	Evaporator Form			Aluminum Fin-copper Tube
	Pipe Diameter		inch	Φ3/16
	Row-fin Gap		inch	2-1/18
	Coil Length (LXDXW)		inch	25X7/8X12 1/16
	Swing Motor Model			MP24BA
	Output of Swing Motor		W	1.5
	Fuse		A	3.15
	Sound Pressure Level(SH/H/M/L)		dB (A)	43/39/35/29
	Sound Power Level(SH/H/M/L)		dB (A)	53/49/45/39
	Dimension (WXHXD)		inch	33 1/4X11 3/8X8 1/4
	Dimension of Carton Box (LXWXH)		inch	36 1/8X10 15/16X14 5/16
Dimension of Package (LXWXH)		inch	36 1/4X11 1/16X14 15/16	
Net Weight		lb	23.15	
Gross Weight		lb	27.56	

Outdoor Unit	Model of Outdoor Unit		LIVV12HP115V1AO	
	Outdoor Unit Product Code		CB425W07902	
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXA-A091zE190	
	Compressor Oil		FVC68D or RB 68EP	
	Compressor Type		Rotary	
	Compressor Locked Rotor Amp (L.R.A)	A		40
	Compressor RLA	A		15.23
	Compressor Power Input	W		980
	Overload Protector			1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method			Electric Expansion Valve
	Operation temp	°F		61~86
	Ambient temp (cooling)	°F		0~115
	Ambient temp (heating)	°F		-4~75
	Condenser Form			Aluminum Fin-copper Tube
	Pipe Diameter	inch		Φ1/4
	Rows-fin Gap	inch		2-1/18
	Coil Length (LXD <sub>X</sub> W)	inch		28X1 1/2X20
	Fan Motor Speed	rpm		900
	Output of Fan Motor	W		30
	Fan Motor RLA	A		0.23
	Fan Motor Capacitor	μF		/
	Air Flow Volume of Outdoor Unit	CFM		1059
	Fan Type			Axial-flow
	Fan Diameter	inch		Φ15 3/4
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	PSIG		550
	Permissible Excessive Operating Pressure for the Suction Side	PSIG		240
	Sound Pressure Level (H/M/L)	dB (A)		53/-/-
	Sound Power Level (H/M/L)	dB (A)		63/-/-
Dimension (WXHXD)	inch		33 3/8X21 1/4X12 5/8	
Dimension of Carton Box (LXWXH)	inch		34 9/16X14 3/16X22 13/16	
Dimension of Package (LXWXH)	inch		34 11/16X14 5/16X23 7/16	
Net Weight	lb		67.3	
Gross Weight	lb		72.8	
Refrigerant			R410A	
Refrigerant Charge	oz		31.8	
Connection Pipe	Length	ft	24.6	
	Gas Additional Charge	oz/ft	0.2	
	Outer Diameter Liquid Pipe	inch	Φ1/4	
	Outer Diameter Gas Pipe	inch	Φ3/8	
	Max Distance Height	ft	49.2	
	Max Distance Length	ft	98.4	
	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			LIVV09HP115V1A
Product Code			CB464004100 CB434018400
Power Supply	Rated Voltage	V~	115
	Rated Frequency	Hz	60
	Phases		1
Power Supply Mode			Outdoor
Cooling Capacity(Min~Max)		Btu/h	9000
Heating Capacity(Min~Max)		Btu/h	9500
Cooling Power Input(Min~Max)		W	900
Heating Power Input(Min~Max)		W	870
Cooling Power Current		A	10.87
Heating Power Current		A	10.36
Rated Input		W	1270
Rated Current		A	12.66
Air Flow Volume(SH/H/M/L)		CFM	318/288/241/171
Dehumidifying Volume		Pint/h	1.69
EER		(Btu/h)/W	10.00
COP		(Btu/h)/W	10.92
SEER			18.00
HSPF			9.00
Application Area		yd <sup>2</sup>	14.35-21.53
Indoor Unit	Model of indoor unit		I LIVV09HP115V1AH
	Indoor Unit Product Code		CB464N04100 CB434N18400
	Fan Type		Cross-flow
	Diameter Length(DXL)		inch Φ3 7/8X24 15/16
	Fan Motor Cooling Speed(SH/H/M/L)		r/min 1350/1200/1050/750
	Fan Motor Heating Speed(SH/H/M/L)		r/min 1350/1200/1050/850
	Output of Fan Motor		W 20
	Fan Motor RLA		A 0.24
	Fan Motor Capacitor		μF 4
	Evaporator Form		Aluminum Fin-copper Tube
	Pipe Diameter		inch Φ3/16
	Row-fin Gap		inch 2-1/18
	Coil Length (LXDXW)		inch 23X7/8X10 1/2
	Swing Motor Model		MP24AA
	Output of Swing Motor		W 1.5
	Fuse		A 3.15
	Sound Pressure Level(SH/H/M/L)		dB (A) 43/38/34/28
	Sound Power Level(SH/H/M/L)		dB (A) 53/48/44/28
	Dimension (WXHXD)		inch 31 1/8X10 13/16X7 7/8
	Dimension of Carton Box (LXWXH)		inch 34X10 9/16X13 7/8
Dimension of Package (LXWXH)		inch 34 1/8X10 11/16X14 7/16	
Net Weight		lb 19.84	
Gross Weight		lb 24.25	

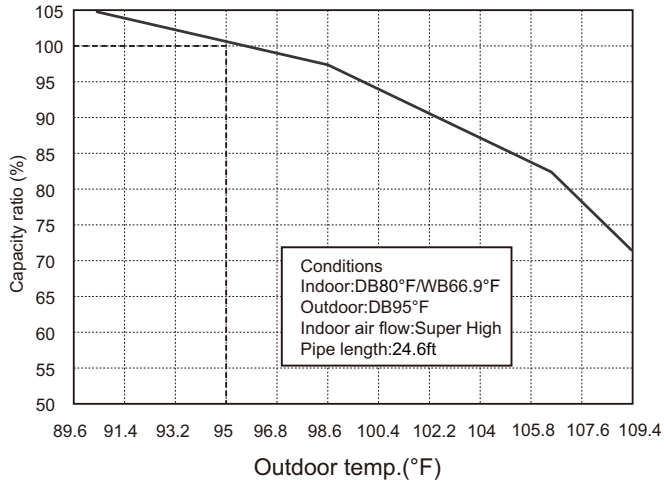
Outdoor Unit	Model of Outdoor Unit		LIVV09HP115V1AO	
	Outdoor Unit Product Code		CB425W08201	
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXA-A091zE190	
	Compressor Oil		FVC68D or RB 68EP	
	Compressor Type		Rotary	
	Compressor Locked Rotor Amp (L.R.A)	A		40
	Compressor RLA	A		12.62
	Compressor Power Input	W		980
	Overload Protector			1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method			Electric Expansion Valve
	Operation temp	°F		61~86
	Ambient temp (cooling)	°F		0~115
	Ambient temp (heating)	°F		-4~75
	Condenser Form			Aluminum Fin-copper Tube
	Pipe Diameter	inch		Φ1/4
	Rows-fin Gap	inch		1-1/18
	Coil Length (LXD <sub>X</sub> W)	inch		29 3/4X3/4X20
	Fan Motor Speed	rpm		850
	Output of Fan Motor	W		30
	Fan Motor RLA	A		0.24
	Fan Motor Capacitor	μF		/
	Air Flow Volume of Outdoor Unit	CFM		1059
	Fan Type			Axial-flow
	Fan Diameter	inch		Φ15 3/4
	Defrosting Method			/
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	PSIG		550
	Permissible Excessive Operating Pressure for the Suction Side	PSIG		240
	Sound Pressure Level (H/M/L)	dB (A)		52/-/-
	Sound Power Level (H/M/L)	dB (A)		62/-/-
Dimension (WXHXD)	inch		33 3/8X21 1/4X12 5/8	
Dimension of Carton Box (LXWXH)	inch		34 9/16X14 3/16X22 13/16	
Dimension of Package (LXWXH)	inch		34 11/16X14 5/16X23 7/16	
Net Weight	lb		62.8	
Gross Weight	lb		68.4	
Refrigerant			R410A	
Refrigerant Charge	oz		24.7	
Connection Pipe	Length	ft	24.6	
	Gas Additional Charge	oz/ft	0.2	
	Outer Diameter Liquid Pipe	inch	Φ1/4	
	Outer Diameter Gas Pipe	inch	Φ3/8	
	Max Distance Height	ft	32.8	
	Max Distance Length	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.

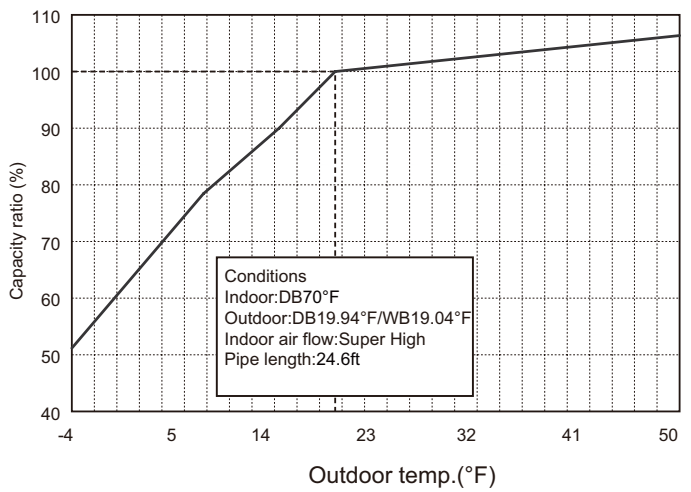
## 2.2 Capacity Variation Ratio According to Temperature

09K & 12K for some models

### Cooling

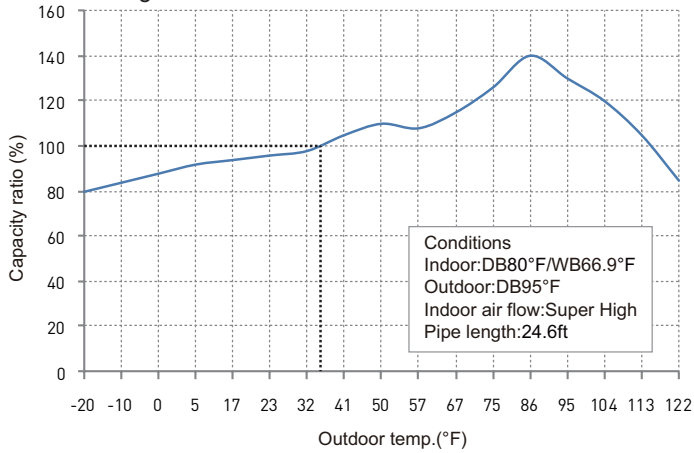


### Heating

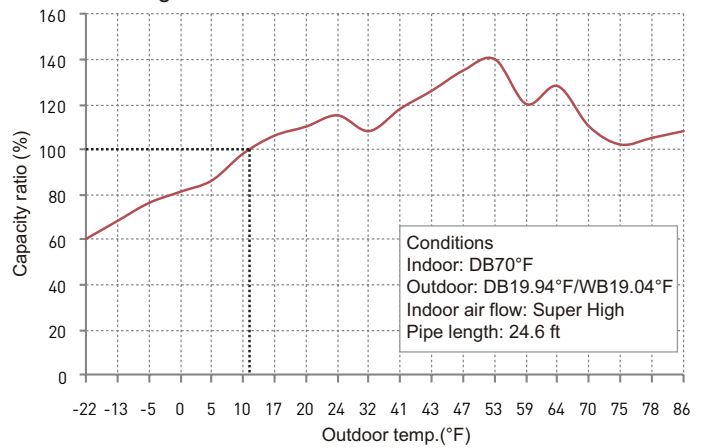


09K for some models

### Cooling:

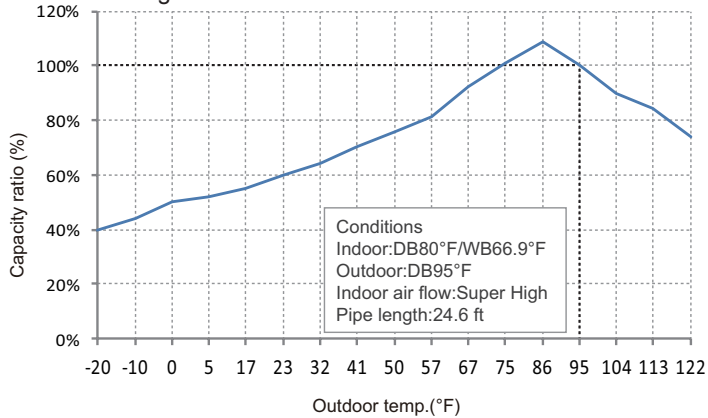


### Heating:

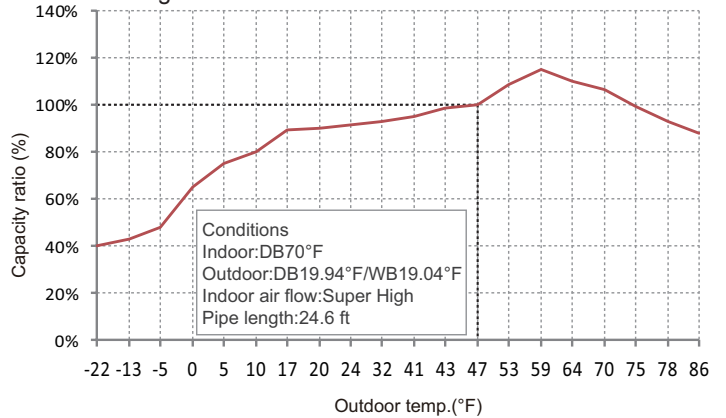


12K for some models

### 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	Compressor revolution (rps)
Indoor	Outdoor			T1 (°F)	T2 (°F)			
80/66.9	95/-	09K	130.44~144.93	in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High	52
80/66.9	95/-	12K	130.44~144.93	in:46.4~51.8 out:51.8~57.2	in:167~181.4 out:98.6~118.4	Super High	High	72

### 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	Compressor revolution (rps)
Indoor	Outdoor			T1 (°F)	T2 (°F)			
70/60	19.94/19.04	09K	362.32~405.80	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High	65
70/60	19.94/19.04	12K	362.32~405.80	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High	77

### Instruction:

T1: Inlet and outlet pipe temperature of evaporator

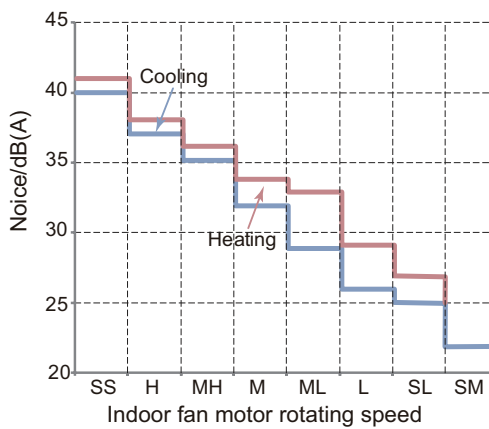
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

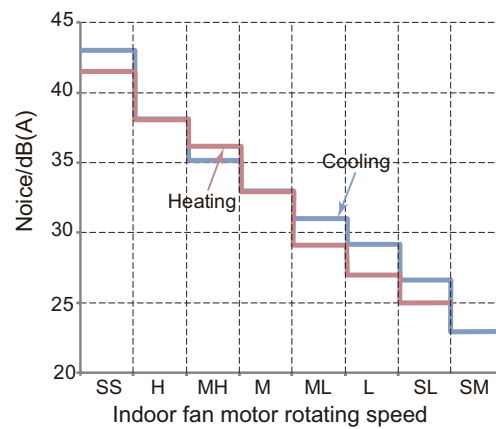
Connection pipe length: 24.6ft.

## 2.4 Noise Curve

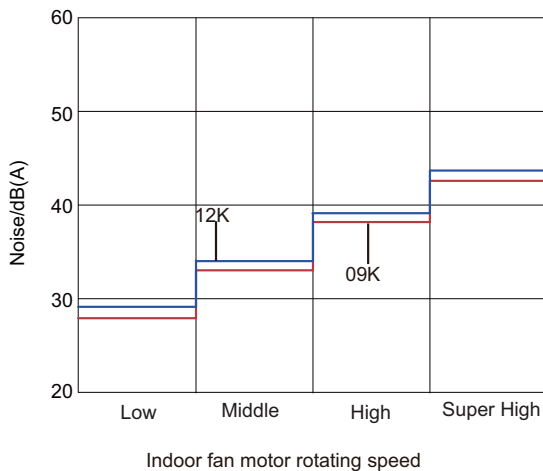
09K for some models  
Indoor side noise when blowing



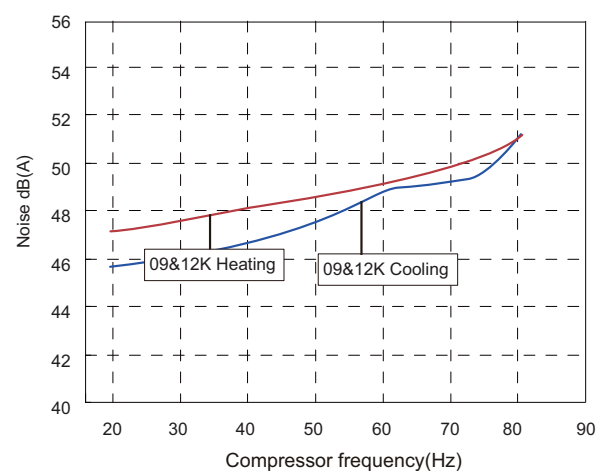
12K for some models  
Indoor side noise when blowing



09K /12K for some models  
Indoor side noise when blowing

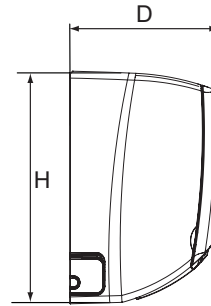
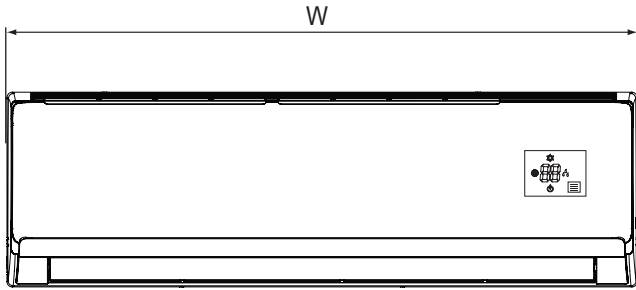


Outdoor side noise when blowing

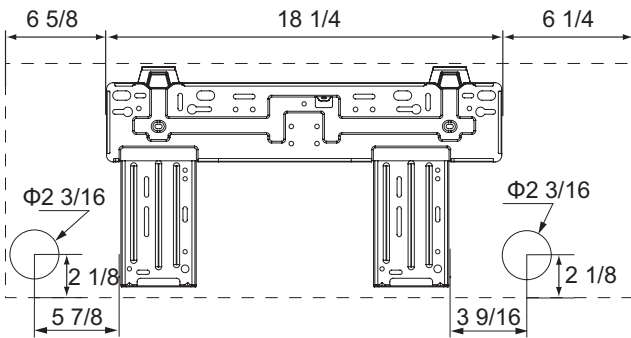


### 3. Outline Dimension Diagram

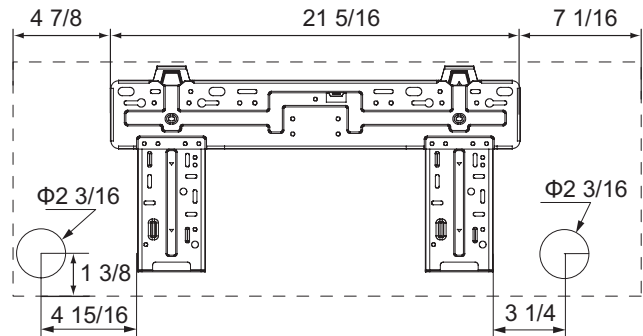
#### 3.1 Indoor Unit



**QB**



**QC**

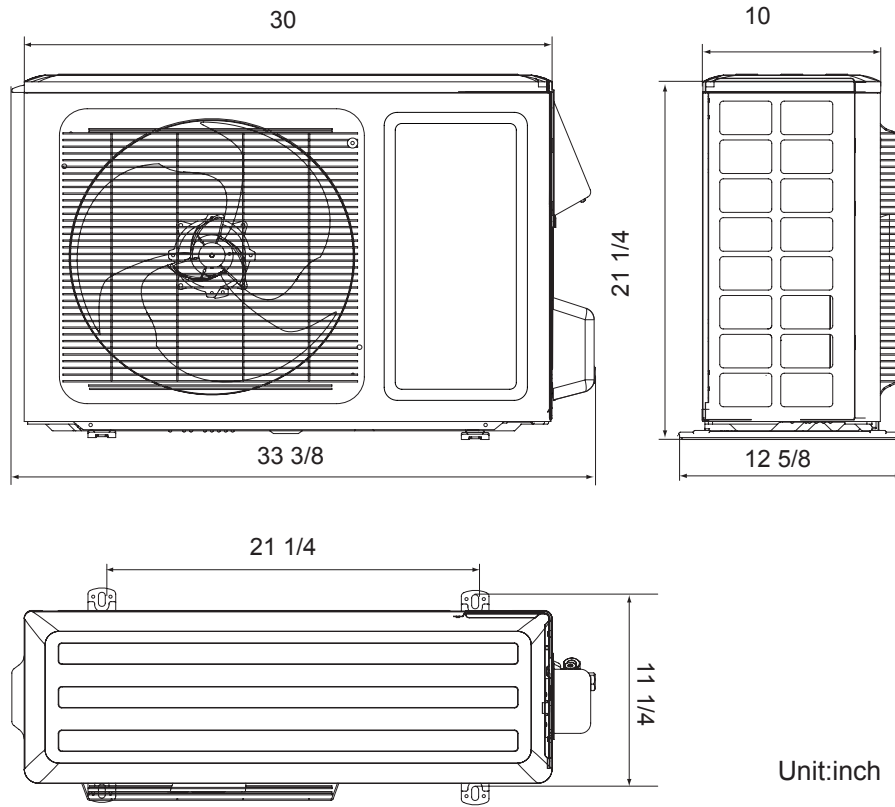


Models	W	H	D
QB	31 1/8	10 13/16	7 7/8
QC	33 1/4	11 3/8	8 1/4

Unit:inch

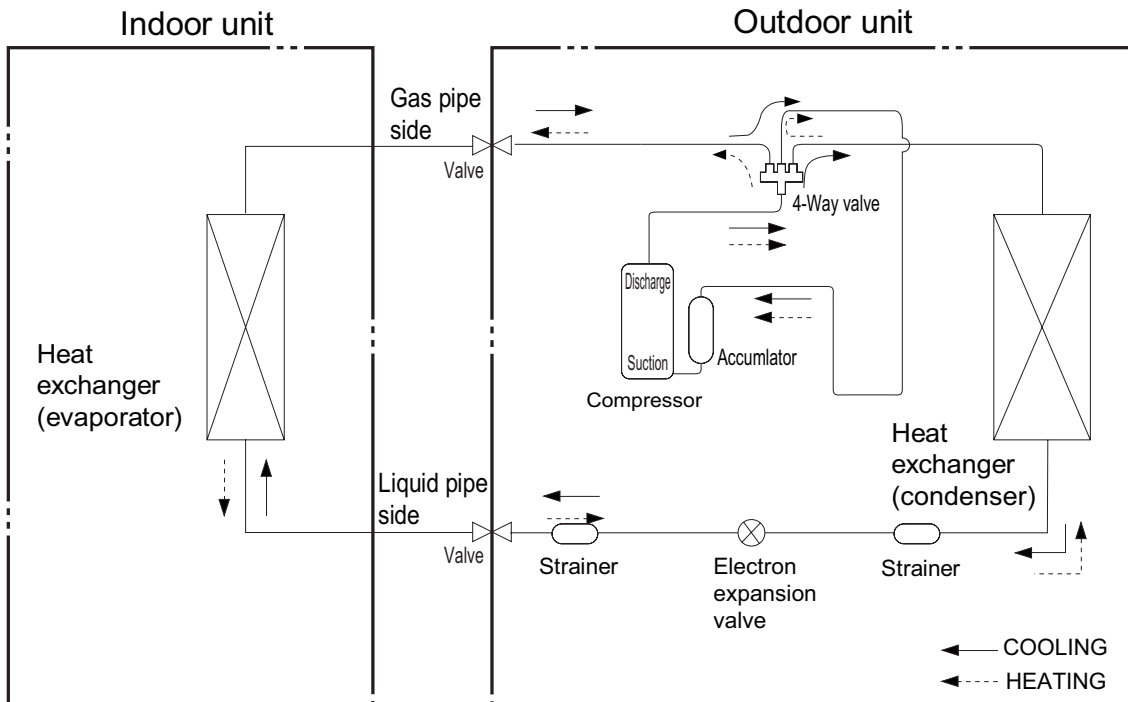
### 3.2 Outdoor Unit

LIVV09HP115V1AO  
LIVV12HP115V1AO



Cooling and heating unit  
LIVV09HP115V1A

LIVV12HP115V1A



Connection pipe specification:  
Liquid pipe: 1/4"  
Gas pipe: 3/8" / 1/2"

## 5. Electrical Parts

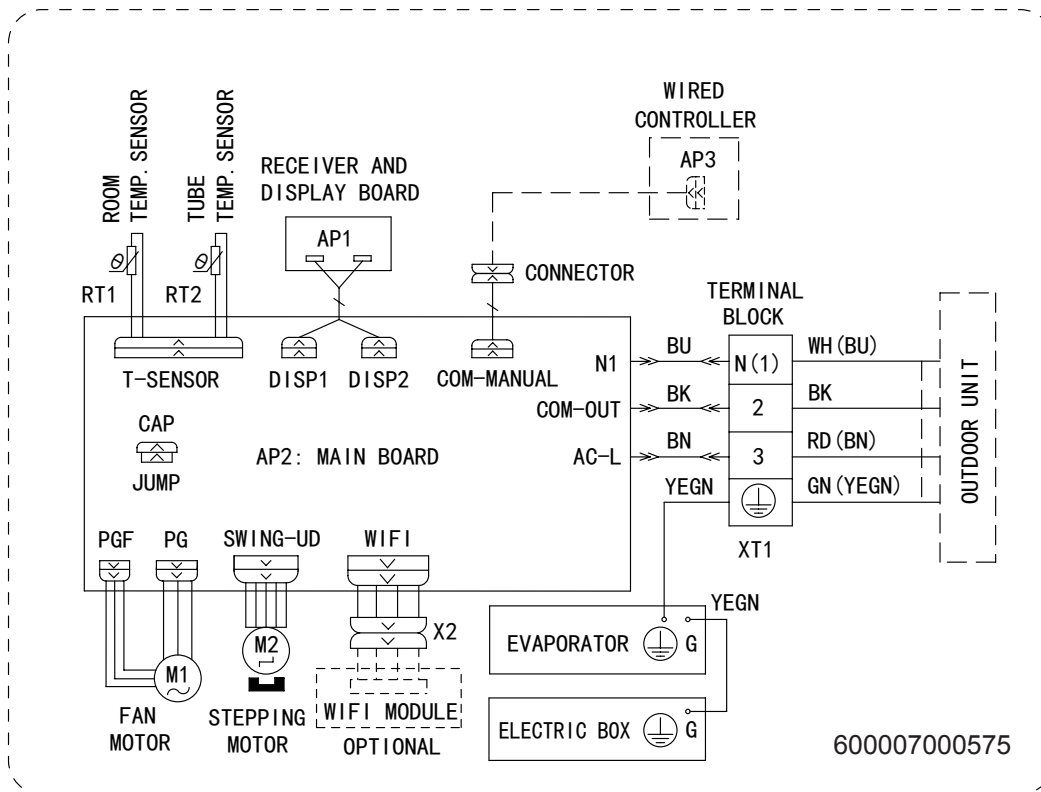
### 5.1 Wiring Diagram

- Instruction

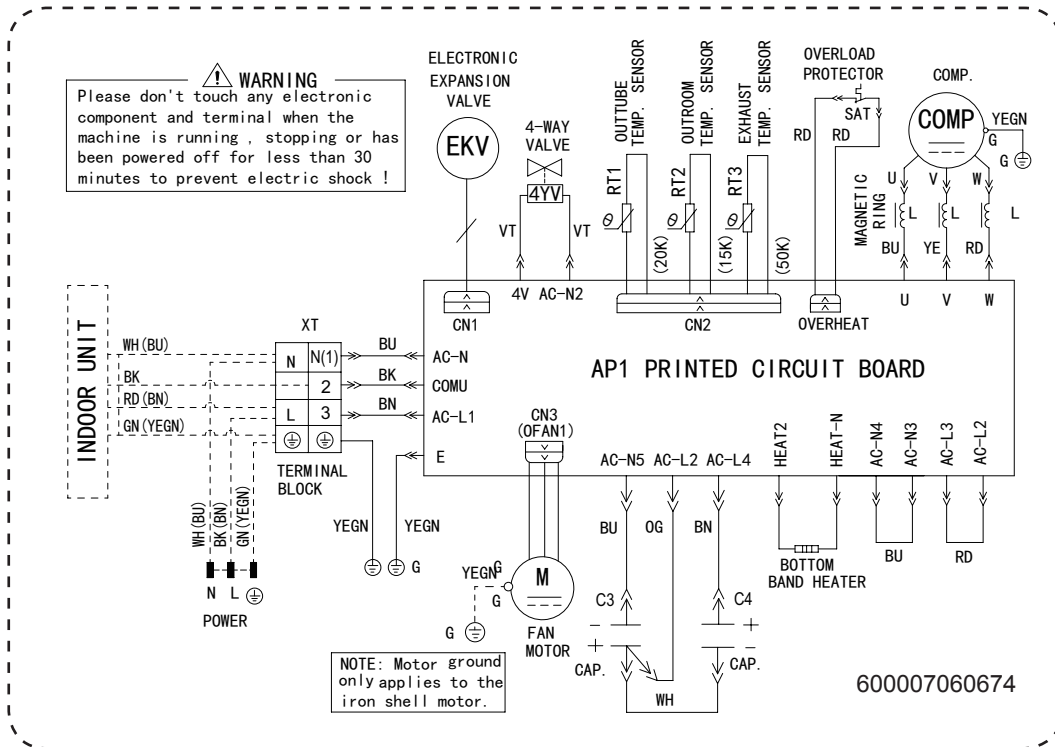
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

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

- Indoor Unit

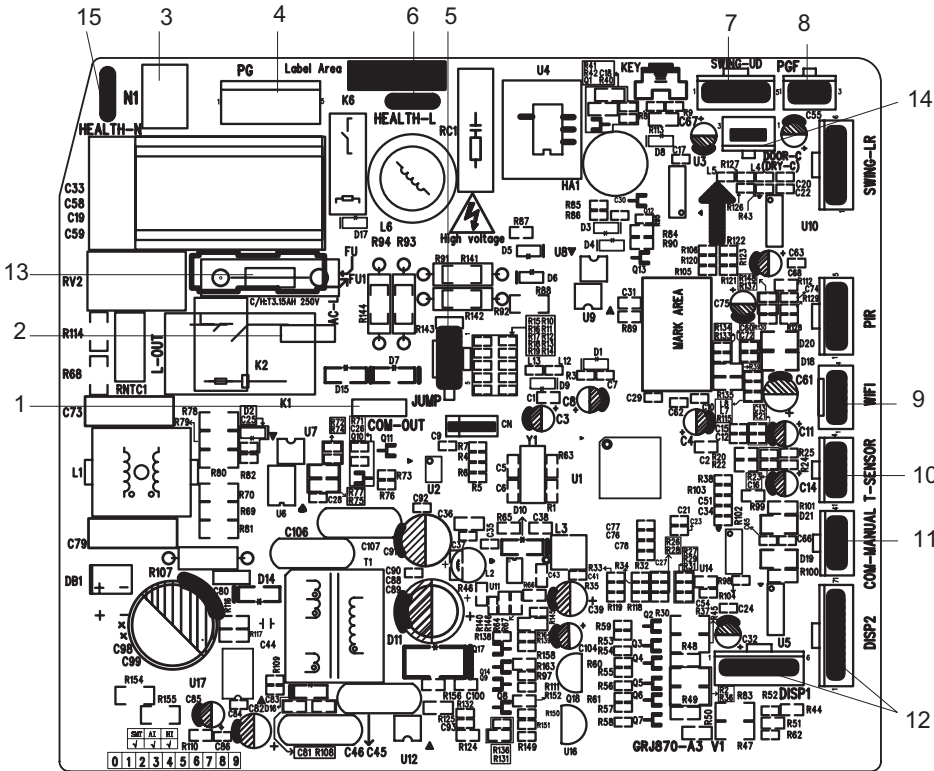


LIVV09HP115V1AO(CB425W08200) LIVV12HP115V1AO(CB425W07900)



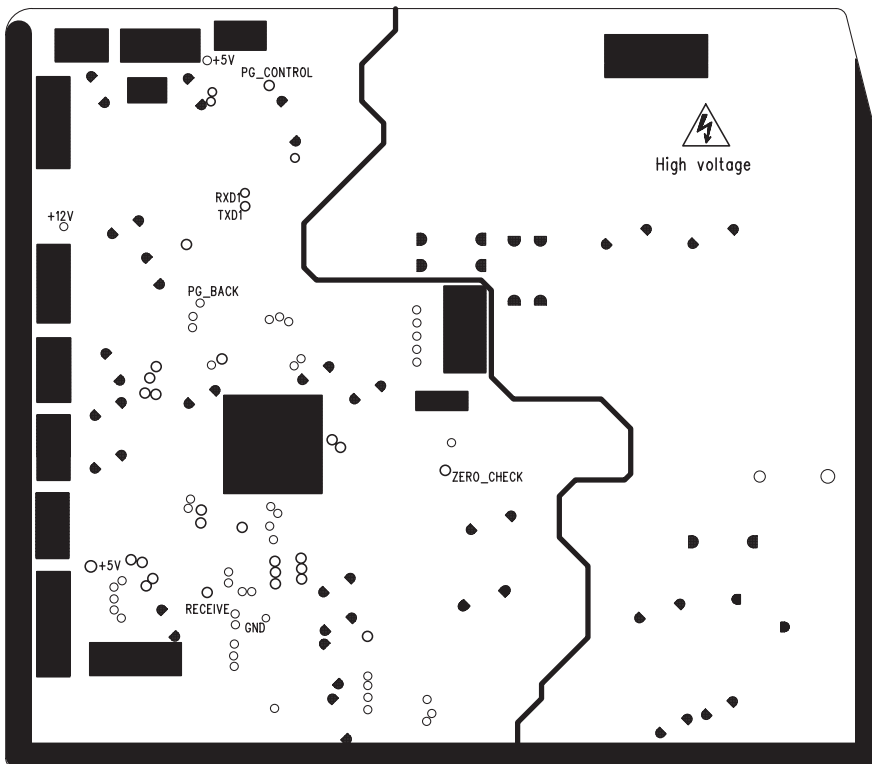
## 5.2 PCB Printed Diagram Indoor Unit

### • Top view



No	Name
1	Interface of communication wire for indoor unit and outdoor unit
2	Interface of live wire
3	Interface of neutral wire
4	Interface of fan
5	Jumper cap
6	Interface of health function live wire (only for the mode with this function)
7	Up&down swing interface
8	Feedback interface of indoor unit
9	Interface of wifi
10	Interface of tube temperature sensor
11	Wired controller (only for the mode with this function)
12	Display interface
13	Fuse
14	Interface of gate control (only for the mode with this function)
15	Interface of health function neutral wire (only for the mode with this function)

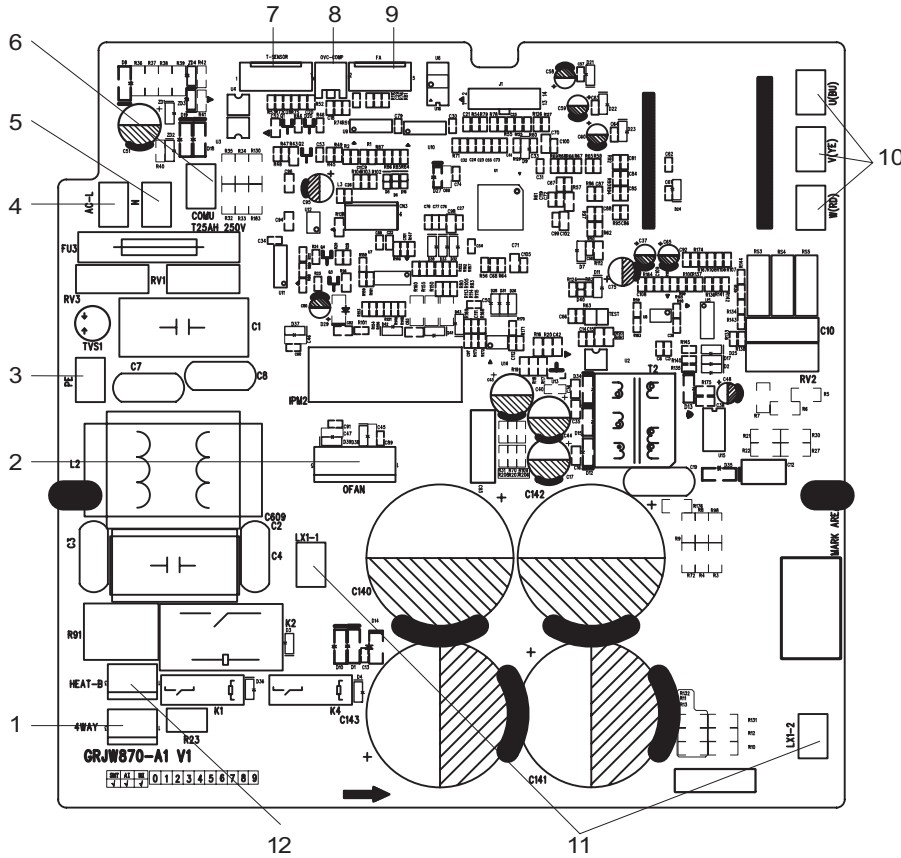
### • Bottom view



LIVV09HP115V1AO(CB425W08201)

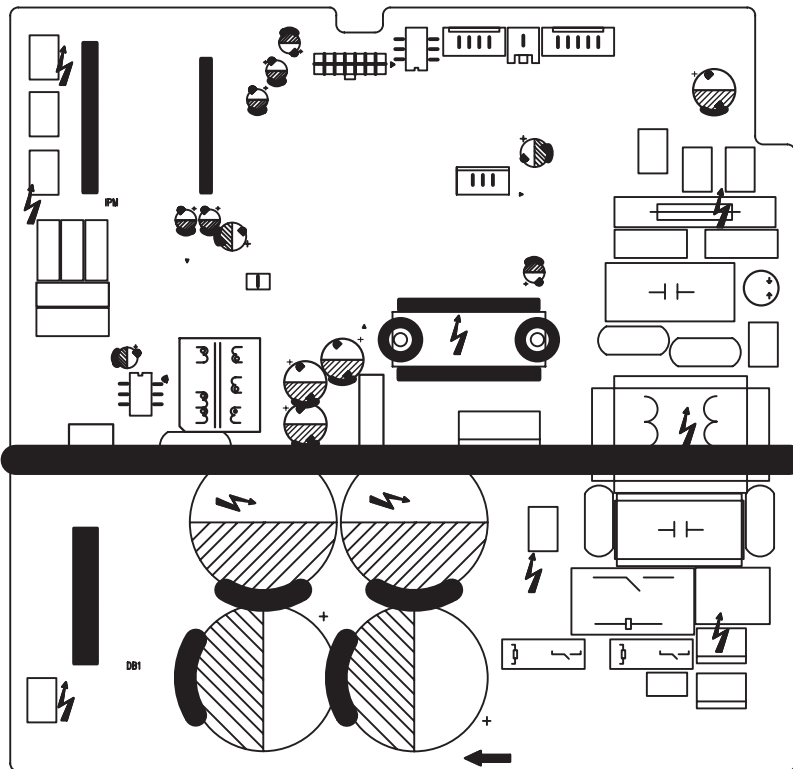
LIVV12HP115V1AO(CB425W07902)

• Top view



No.	Name
1	4-way valve terminal
2	Terminal of outdoor fan
3	Grounding wire
4	Terminal of power supply live wire terminal
5	Terminal of power supply neutral wire
6	Communication wire
7	Terminal of outdoor unit temperature sensor
8	Compressor overload protection terminal
9	Interface of electronic expansion
10	Compressor wiring terminal
11	Reactor wiring terminal
12	Interface of electric heating for chassis

• Bottom view





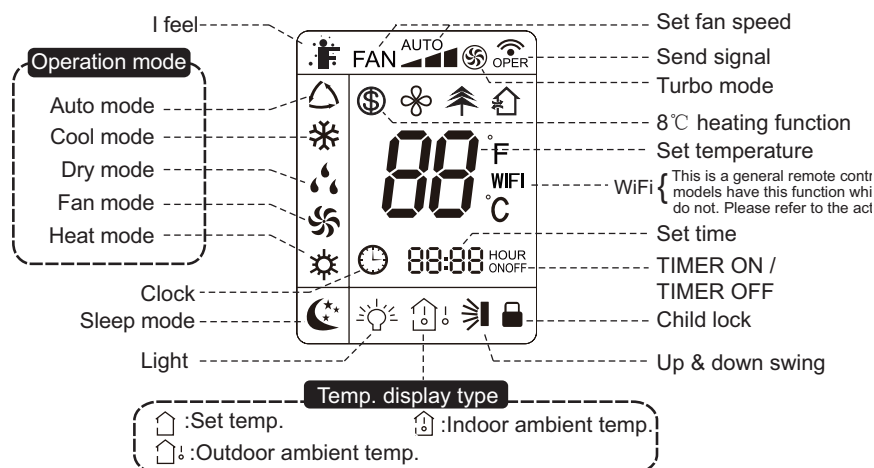
## 6. Function and Control

### 6.1 Remote Controller Introduction

#### YAN1F6F(WiFi)



#### Introduction for icons on display screen



#### Introduction for buttons on remote controller

##### Note:

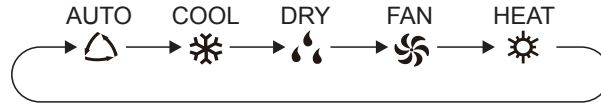
- This is a general use remote controller, it could be used for the air conditioners with multifunction; For some function, which the model doesn't have, if press the corresponding button on the remote controller that the unit will keep the original running status.
- After putting through the power, the air conditioner will give out a sound. Operation indicator "⏻" is ON (red indicator, the colour is different for different models). After that, you can operate the air conditioner by using remote controller.
- Under on status, pressing the button on the remote controller, the signal icon "📶" on the display of remote controller will blink once and the air conditioner will give out a "de" sound, which means the signal has been sent to the air conditioner.
- Under off status, set temperature and clock icon will be displayed on the display of remote controller (If timer on, timer off and light functions are set, the corresponding icons will be displayed on the display of remote controller at the same time); Under on status, the display will show the corresponding set function icons.

### 1. ON/OFF button

Press this button to turn on the unit. Press this button again to turn off the unit.

### 2. MODE button

Press this button to select your required operation mode.



- When selecting auto mode, air conditioner will operate automatically according to ex-factory setting. Set temperature can't be adjusted and will not be displayed as well. Press "FAN" button can adjust fan speed. Press "SWING" button can adjust fan blowing angle.
- After selecting cool mode, air conditioner will operate under cool mode. Cool indicator on indoor unit is ON. (This indicator is not available for some models). Press "▲" or "▼" button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "SWING" button to adjust fan blowing angle.
- When selecting dry mode, the air conditioner operates at low speed under dry mode. Dry indicator "💧" on indoor unit is ON. (This indicator is not available for some models). Under dry mode, fan speed can't be adjusted. Press "SWING" button to adjust fan blowing angle.
- When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. All indicators are OFF. Press "FAN" button to adjust fan speed. Press "SWING" button to adjust fan blowing angle.
- When selecting heating mode, the air conditioner operates under heat mode. Heat indicator on indoor unit is ON. (This indicator is not available for some models). Press "▲" or "▼" button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "SWING" button to adjust fan blowing angle. (Cooling only unit won't receive heating mode signal. If setting heat mode with remote controller, press ON/OFF button can't start up the unit).

**Note:**

- For preventing cold air, after starting up heating mode, indoor unit will delay 1~5 minutes to blow air (actual delay time is depend on indoor ambient temperature).
- Set temperature range from remote controller: 16~30°C ; Fan speed: auto, low speed, medium speed, high speed.

### 3. FAN button

Pressing this button can set fan speed circularly as: auto (AUTO), low(▲), medium(▲▲), high(▲▲▲).



**Note:**

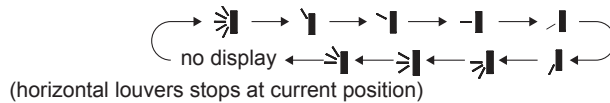
- Under AUTO speed, air conditioner will select proper fan speed automatically according to ex-factory setting.
- Fan speed under dry mode is low speed.
- X-FAN function: Hold fan speed button in COOL or DRY mode, the icon "⊗" is displayed and the indoor fan will continue operation for a few minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

This function indicates that moisture on evaporator of indoor unit will be blowed after the unit is stopped to avoid mould.

- Having set X-FAN function on: After turning off the unit by pressing ON/OFF button indoor fan will continue running for a few minutes at low speed. In this period, Hold fan speed button to stop indoor fan directly.
- Having set X-FAN function off: After turning off the unit by pressing ON/OFF button, the complete unit will be off directly.

### 4. SWING button

Press this button can select up&down swing angle. Fan blow angle can be selected circularly as below:



- When selecting "⌘" icon, air conditioner is blowing fan automatically. Horizontal louver will automatically swing up & down at maximum angle.
- When selecting "⌚", "⌚", "⌚", "⌚", "⌚", air conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.
- When selecting "⌚", "⌚", "⌚", air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.
- Hold "⌚" button above 2s to set your required swing angle. When reaching your required angle, release the button.

**Note:**

- "⌚", "⌚", "⌚" may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.

### 5. TURBO button

Under COOL or HEAT mode, press this button to turn to quick COOL or quick HEAT mode. "⊗" icon is displayed on remote controller. Press this button again to exit turbo function and "⊗" icon will disappear.

## 6. ▲/▼ button

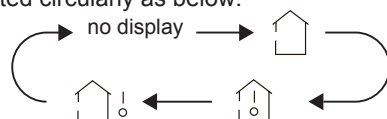
- Press "▲" or "▼" button once increase or decrease set temperature 1°C . Holding "▲" or "▼" button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly. (Temperature can't be adjusted under auto mode)
- When setting TIMER ON, TIMER OFF or CLOCK, press "▲" or "▼" button to adjust time. (Refer to CLOCK, TIMER ON, TIMER OFF buttons)

## 7. SLEEP button

Under COOL, HEAT mode, press this button to start up sleep function. "☾" icon is displayed on remote controller. Press this button again to cancel sleep function and "☾" icon will disappear.

## 8. TEMP button

By pressing this button, you can see indoor set temperature, indoor ambient temperature or outdoor ambient temperature on indoor units display. The setting on remote controller is selected circularly as below:



- When selecting "no display" or no display with remote controller, temperature indicator on indoor unit displays set temperature.
- When selecting "house with thermometer" with remote controller, temperature indicator on indoor unit displays indoor ambient temperature.
- When selecting "house with thermometer and exclamation mark" with remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.

### Note:

- Outdoor temperature display is not available for some models. At that time, indoor unit receives "house with thermometer and exclamation mark" signal, while it displays indoor set temperature.
- It's defaulted to display set temperature when turning on the unit. There is no display in the remote controller.
- Only for the models whose indoor unit has dual-8 display.
- When selecting displaying of indoor or outdoor ambient temperature, indoor temperature indicator displays corresponding temperature and automatically turn to display set temperature after three or five seconds.

## 9. WIFI button

Press "WiFi" button to turn on WiFi function, "WiFi" icon will be displayed on the remote controller; Hold "WiFi" button for 5s to turn off WiFi function and "WiFi" icon will disappear.

Under off status, press "MODE" and "WiFi" buttons simultaneously for 1s, WiFi module will restore factory settings.

- This function is only available for some models.

## 10. LIGHT button

Press this button to turn off display light on indoor unit. "☹️" icon on remote controller disappears. Press this button again to turn on display light. "☺️" icon is displayed.

## 11. CLOCK button

Press this button to set clock time. "🕒" icon on remote controller will blink. Press "▲" or "▼" button within 5s to set clock time. Each pressing of "▲" or "▼" button, clock time will increase or decrease 1 minute. If hold "▲" or "▼" button, 2s later, time will change quickly. Release this button when reaching your required time. Press "CLOCK" button to confirm the time. "🕒" icon stops blinking.

### Note:

- Clock time adopts 24-hour mode.
- The interval between two operation can't exceeds 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.

## 12. TIMER ON / TIMER OFF button

### ● TIMER ON button

"TIMER ON" button can set the time for timer on. After pressing this button, "🕒" icon disappears and the word "ON" on remote controller blinks. Press "▲" or "▼" button to adjust TIMER ON setting. After each pressing "▲" or "▼" button, TIMER ON setting will increase or decrease 1min. Hold "▲" or "▼" button, 2s later, the time will change quickly until reaching your required time. Press "TIMER ON" to confirm it. The word "ON" will stop blinking. "🕒" icon resumes displaying. Cancel TIMER ON: Under the condition that TIMER ON is started up, press "TIMER ON" button to cancel it.

### ● TIMER OFF button

"TIMER OFF" button can set the time for timer off. After pressing this button, "🕒" icon disappears and the word "OFF" on remote controller blinks. Press "▲" or "▼" button to adjust TIMER OFF setting. After each pressing "▲" or "▼" button, TIMER OFF setting will increase or decrease 1min. Hold "▲" or "▼" button, 2s later, the time will change quickly until reaching your required time. Press "TIMER OFF" word "OFF" will stop blinking. "🕒" icon resumes displaying. Cancel TIMER OFF. Under the condition that TIMER OFF is started up, press "TIMER OFF" button to cancel it.

**Note:**

- Under on and off status, you can set TIMER OFF or TIMER ON simultaneously.
- Before setting TIMER ON or TIMER OFF, please adjust the clock time.
- After starting up TIMER ON or TIMER OFF, set the constant circulating valid. After that, air conditioner will be turned on or turned off according to setting time. ON/OFF button has no effect on setting. If you Don't need this function, please use remote controller to cancel it.

## Function introduction for combination buttons

### 1. Energy-saving function

Under cooling mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off energy-saving function. When energy-saving function is started up, "SE" will be shown on remote controller, and air conditioner will adjust the set temperature automatically according to ex-factory setting to reach to the best energy-saving effect. Press "TEMP" and "CLOCK" buttons simultaneously again to exit energy-saving function.

**Note:**

- Under energy-saving function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under energy-saving function, set temperature can't be adjusted. Press "TURBO" button and the remote controller won't send signal.
- Sleep function and energy-saving function can't operate at the same time. If energy-saving function has been set under cooling mode, press sleep button will cancel energy-saving function. If sleep function has been set under cooling mode, start up the energy-saving function will cancel sleep function.

### 2. 46°F / 8 °C heating function

Under heating mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off 46°F (8°C) heating function. When this function is started up, " " and "8C" will be shown on remote controller, and the air conditioner keep the heating statuat 8C . Press "TEMP" and "CLOCK" buttons simultaneously again to exit 8C heating function.

**Note:**

- Under 46°F (8°C) heating function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under 46°F (8°C) heating function, set temperature can't be adjusted. Press "TURBO" button and the remote controller won't send signal.
- Sleep function and 46°F (8°C) heating function can't operate at the same time. If 46°F (8°C) heating function has been set under cooling mode, press sleep button will cancel 46°F (8°C) heating function. If sleep function has been set under cooling mode, start up the 46°F (8°C) heating function will cancel sleep function.
- Under °F temperature display, the remote controller will display 46 °F heating.

### 3. Child lock function

Press "▲" and "▼" simultaneously to turn on or turn off child lock function. When child lock function is on, " " icon is displayed on remote controller. If you operate the remote controller, the " " icon will blink three times without sending signal to the unit.

### 4. Temperature display switchover function

Under OFF status, press "▼" and "MODE" buttons simultaneously to switch temperature display between °C and °F .

### 5. I FEEL Function

Press "▲" and "MODE" buttons simultaneously to start I FEEL function and " " will be displayed on the remote controller. After this function is set, the remote controller will send the detected ambient temperature to the controller and the unit will automatically adjust the indoor temperature according to the detected tempera-ture. Press this two buttons simultaneously again to close I FEEL function and " " will disappear.

- Please put the remote controller near user when this function is set. Do not put the remote controller near the object of high temperature or low temperature in order to avoid detecting inaccurate ambient temperature. When I FEEL function is turned on, the remote controller should be put within the area where indoor unit can receive the signal sent by the remote controller.


If "H1" is displayed on the remote controller while it's not operated by the professional person/after-sales person, it belongs to the misoperation.

Please operate it as below to cancel it. Under the OFF status of remote controller, hold the Mode button for 5s to cancel "H1" display.

**Note:**

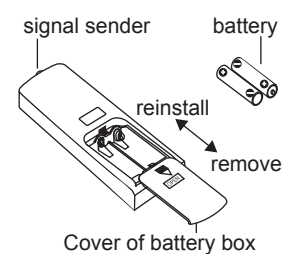
- If remote controller displays "H1", it belongs to the normal function reminder. If the unit is defrosting under heating mode, it operates according to H1 defrosting mode. "H1" won't be displayed on the panel of indoor unit;
- Once you set H1 mode, if you turn off unit by remote controller, H1 will display 3 times on the remote controller and then disappear;
- Also, when you set H1 mode, when you change to heating mode, H1 will display 3 times on the remote controller and then disappear.

## Replacement of batteries in remote controller

1. Press the back side of remote controller marked with "  ", as shown in the fig, and then push out the cover of battery box along the arrow direction.
2. Replace two 7# (AAA 1.5V) dry batteries, and make sure the position of "+" polar and "-" polar are correct.
3. Reinstall the cover of battery box.



### Note:

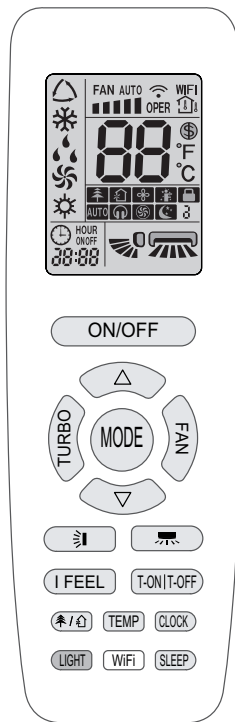
- During operation, point the remote control signal sender at the receiving window on indoor unit.
- The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.
- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace new batteries of the same model when replacement is required.
- When you Don't use remote controller for a long time, please take out the batteries.
- If the display on remote controller is fuzzy or there's no display, please replace batteries.



## 6.1 Remote Controller Introduction of YAP1F7F(WiFi)

### Notice:

- 1.This is a general use remote controller. It could be used for the air conditioner with multifunction. For the functions which the model doesn't have, if press the corresponding button on the remote controller, the unit will keep the original running status.
- 2.After putting through the power, the air conditioner will give out a sound. Operation indicator "  " is ON (red indicator, the colour is different for different models). After that, you can operate the air condition-er by using remote controller.
- 3.Under on status, pressing the button on the remote controller, the signal icon "  " on the display of remote controller will blink once and the air condition-er will give out a " di " sound, which means the signal has been sent to the air conditioner.
- 4.As for the models with functions of WiFi or wired controller, the indoor unit must has been controlled by standard remote controller under auto mode first, and then the function of adjustable temperature under auto mode can be realized by APP or the wired controller.
- 5.This remote controller can adjust the temperature under auto mode. When matching with the unit which is without the function of adjustable temperature under auto mode, the set temperature under auto mode may be invalid, or the displayed set temperature on the unit is not same as that on the remote controller under auto mode.







### ON/OFF button


Press this button to turn on the unit. Press this button again to turn off the unit.





### MODE button





Press this button to select your required operation mode :



- When selecting auto mode, air conditioner will operate automatically according to the sensed temperature. Set temperature can't be adjusted and will not be displayed as well. Press "FAN" button can adjust fan speed. Press "  " button can adjust fan blowing angle.
- After selecting cool mode, air conditioner will operate under cool mode. Press "  " or "  " button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "  " button to adjust fan blowing angle.
- When selecting dry mode, the air conditioner operates at low

speed under dry mode. Under dry mode, fan speed can't be adjusted. Press "  " button to adjust fan blowing angle.








- When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. Press "FAN" button to adjust fan speed. Press "  " button to adjust fan blowing angle. When selecting heat mode, the air conditioner operates under heat mode. Press "  " or "  " button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "  " button to adjust fan blowing angle.

- When selecting heating mode, the air conditioner operates under heat mode. Press "  " or "  " button to adjust set temperature. Press "FAN" button to adjust fan speed. Press "  " / "  " button to adjust fan blowing angle. (Cooling only unit won't receive heating mode signal. If setting heat mode with remote controller, press ON/OFF button can't start up the unit).


### Notice:

- For preventing cold air, after starting up heat mode, indoor unit will delay 1~5 minutes to blow air (Actual delay time depends on indoor ambient temperature).
- Set temperature range from remote controller: 16~30°C(61-86°F).
- Under auto mode, temperature can be displayed; Under auto mode, set temperature can be adjusted.
- This mode indicator is not available for some models.

### FAN button

This button is used for setting Fan Speed in the sequence that goes from AUTO,  ,  ,  ,  ,  ,  ,  , then back to Auto.

### \*Note:

- Under AUTO speed, air conditioner will select proper fan speed automatically according to factory default setting.
- It's low fan speed under dry mode.
- X-FAN function Hold fan speed button for 2s in cool or dry mode, the icon "  " is displayed and the indoor fan will continue operation for a few minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in auto, fan or heat mode.
- This function indicates that moisture on evaporator of indoor unit will be blown after the unit is stopped to avoid mould.
- Having set X-FAN function on: After turning off the unit by pressing " ON/OFF " button indoor fan will continue running for a few minutes. at low speed. In this per-iod,

Hold fan speed button for 2s to stop indoor fan directly. Having set X-FAN function off: After turning off the unit by pressing " " button, the complete unit will be off directly.

**Turbo button**

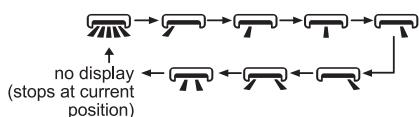
Under COOL or HEAT mode, press this button to turn to quick COOL or quick HEAT mode. " " icon is displayed on remote controller. Press this button again to exit turbo function and " " icon will disappear. If start this function, the unit will run at super-high fan speed to cool or heat quickly so that the ambient temperature approaches the preset temperature as soon as possible.

**button**

- Press " Δ " or " ▽ " button once increase or decrease set temperature 1°C (°F). Holding " Δ " or " ▽ " button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly.
- When setting T-ON, T-OFF or CLOCK, press " Δ " or " ▽ " button to adjust time. (Refer to CLOCK, TON, T-OFF buttons)

**button**

Press this button can select left & right swing angle. Fan blow angle can be selected circularly as below:

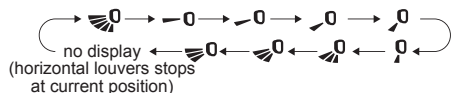


Notice:

- Press this button continuously more than 2s, the main unit will swing back and forth from left to right, and then loosen the button, the unit will stop swinging and present position of guide louver will be kept immediately.
- Under left and right swing mode, when the status is switched from off to " " , if press this button again 2s later, " " status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.
- The function is only available for some models.

**button**

Press this button can select left & right swing angle. Fan blow angle can be selected circularly as below:



- When selecting " " , air conditioner is blowing fan automatically. Horizontal louver will automatically swing up & down at maximum angle.
- When selecting " " , air conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.
- When selecting " " , air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.
- Hold " " button above 2s to set your required swing angle. When reaching your required angle, release the button.

Notice:

- " " may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.
- Press this button continuously for more than 2s, the main

unit will swing back and forth from up to down, and then loosen the button, the unit present position of guide louver will be kept immediately.

- Under up and down swing mode, when the status is switched from off to " " , if press this button again 2s later, " " status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.

**T-ON|T-OFF button**

- T-ON button

"T-ON" button can set the time for timer on. After pressing this button, " " icon disappears and the word "ON" on remote controller blinks. Press "▲" or "▼" button to adjust T-ON setting. After each pressing "▲" or "▼" button, T-ON setting will increase or decrease 1min. Hold "▲" or "▼" button, 2s later, the time will change quickly until reaching your required time. Press "T-ON" to confirm it. The word "ON" will stop blinking. " " icon resumes displaying. Cancel T-ON: Under the condition that T-ON is started up, press "T-ON" button to cancel it.

- T-OFF button

"T-OFF" button can set the time for timer off. After pressing this button, " " icon disappears and the word "OFF" on remote controller blinks. Press "▲" or "▼" button to adjust T-OFF setting. After each pressing "▲" or "▼" button, T-OFF setting will increase or decrease 1min. Hold "▲" or "▼" button, 2s later, the time will change quickly until reaching your required time. Press "T-OFF" word "OFF" will stop blinking.

" " icon resumes displaying. Cancel T-OFF. Under the condition that T-OFF is started up, press "T-OFF" button to cancel it.

**Notice:**

- Under on and off status, you can set T-OFF or T-ON simultaneously.
- Before setting T-ON or T-OFF, please adjust the clock time.
- After starting up T-ON or T-OFF, set the constant circulating valid.
- After that, air conditioner will be turned on or turned off according to setting time. ON/OFF button has no effect on setting. If you don't need this function, please use remote controller to cancel it.

**I FEEL button**

Press this button to start I FEEL function and " " will be displayed on the remote controller. After this function is set, the remote controller will send the detected ambient temperature to the controller and the unit will automatically adjust the indoor temperature according to the detected temperature. Press this button again to cancel I FEEL function and " " will disappear.

- Please put the remote controller near user when this function is set. Do not put the remote controller near the object of high temperature or low temperature in order to avoid detecting inaccurate ambient temperature.

When I FEEL function is turned on, the remote controller should be put within the area where indoor unit can receive the signal sent by the remote controller.

**CLOCK button**

Press this button to set clock time. "⌚" icon on remote controller will blink. Press "▲" or "▼" button within 5s to set clock time. Each pressing of "▲" or "▼" button, clock time will increase or decrease 1 minute. If hold "▲" or "▼" button, 2s later, time will change quickly. Release this button when reaching your required time. Press "CLOCK" button to confirm the time. "⌚" icon stops blinking.

**Notice:**

- Clock time adopts 24-hour mode.
- The interval between two operations can't exceed 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.

**SLEEP button**

- Press this button, can select Sleep 1 (☾ 1), Sleep 2 (☾ 2), Sleep 3 (☾ 3) and cancel the Sleep, circulate between these, after electrified, Sleep Cancel is defaulted.
- Sleep 1 is Sleep mode 1, in Cool modes; sleep status after run for one hour, the main unit setting temperature will increase 1, two hours, setting temperature increased 2℃, then the unit will run at this setting temperature; In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1, two hours, setting temperature will decrease 2, then the unit will run at this setting temperature.
- Sleep 2 is sleep mode 2, that is air conditioner will run according to the presetting a group of sleep temperature curve.
- Sleep 3-the sleep curve setting under Sleep mode by DIY;
  - (1) Under Sleep 3 mode, press "Turbo" button for a long time, remote controller enters into user individuation sleep setting status, at this time, the time of remote controller will display "1hour", the setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink (The first entering will display according to the initial curve setting value of original factory);
  - (2) Adjust "+" and "-" button, could change the corresponding setting temperature, after adjusted, press "Turbo" button for confirmation;
  - (3) At this time, 1hour will be automatically increased at the timer position on the remote control, (that are "2hours" or "3hours" or "8hours"), the place of setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink;
  - (4) Repeat the above step (2)~(3) operation, until 8 hours temperature setting finished, sleep, curve setting finished, at this time, the remote controller will resume the original timer display; temperature display will resume to original setting temperature.
- Sleep3- the sleep curve setting under Sleep mode by DIY could be inquired:

The user could accord to sleep curve setting method to inquire the presetting sleep curve, enter into user individuation sleep setting status, but do not change the temperature, press "Turbo" button directly for confirmation. Note: In the above presetting or enquiry procedure, if continuously within 10s, there is no button pressed, the sleep curve setting within 10s, there is no button pressed, the sleep curve setting status will be automatically quit and resume to display the original displaying. In the presetting

or enquiry procedure, press "ON/OFF" button, "Mode" button, "Sleep" button, the sleep curve setting or enquiry status will quit similarly.

**WiFi button**

Press "WiFi" button to turn on WiFi function, "WiFi" icon will be displayed on the remote controller; Hold "WiFi" button for 5s to turn off WiFi function and "WiFi" icon will disappear. Under off status, press "MODE" and "WiFi" buttons simultaneously for 1s, WiFi module will restore factory settings.

- This function is only available for some models.

**🏠/🏡 button**

Press this button to achieve the on and off of health and scavenging functions in operation station. Press this button for the first time to start scavenging function; LCD displays "🏠". Press the button for the second time to start health and scavenging functions simultaneously; LCD displays "🏠" and "🏡". Press this button for the third time to quit health and scavenging functions simultaneously. Press the button for the fourth time to start health function; LCD display "🏡". Press this button again to repeat the operation above.

- This function is applicable to partial of models.

**LIGHT button**

Press this button to turn off display light on indoor unit. "💡" icon on remote controller disappears.

Press this button again to turn on display light. "💡" icon is displayed.



























**TEMP button**

Press this button, you can see indoor set temperature, indoor ambient temperature on indoor unit's display. The setting on remote controller is selected circularly as below:





## Introduction for icons on display screen

	I feel	
	Set fan speed	
	Turbo mode	
	Send signal	
Operation mode		Auto mode
		Cool mode
		Dry mode
		Fan mode
		Heat mode
		Sleep mode
	8°C heating function	
	Health mode	
	Scavenging function	
	Quiet	
	X-FAN function	
Temp. display type		Set temp.
		Indoor ambient temp.
		Outdoor ambient temp.
	Clock	
	Set temperature	
	WiFi function	
	Set time	
	TIMER ON / TIMER OFF	
	Left & right swing	
	Up & down swing	
	Child lock	

## Function introduction for combination buttons

## Energy-saving function

Under cooling mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off energysaving function. When energy-saving function is started up, "SE" will be shown on remote controller, and air conditioner will adjust the set temperature automatically according to ex-factory setting to reach to the best energy-saving effect.

Press "TEMP" and "CLOCK" buttons simultaneously again to exit energysaving function.

**Notice**

- Under energy-saving function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under energy-saving function, set temperature can't be adjusted. Press "TURBO" button and the remote controller won't send signal.
- Sleep function and energy-saving function can't operate at the same time. If energy-saving function has been set under cool mode, press sleep button will cancel energy-saving function. If sleep function has been set under cool mode, start up the energy-saving function will cancel sleep function.

## 8°C heating function

Under heat mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off 8°C heating function. When

this function is started up, "8°C" and "8°C" will be shown on remote controller, and the air conditioner keep the heating status at 8°C. Press "TEMP" and "CLOCK" buttons simultaneously again to exit 8°C heating function.

**Notice**

- Under 8°C heating function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under 8°C heating function, set temperature can't be adjusted. Press "TURBO" button and the remote controller won't send signal.
- Sleep function and 8°C heating function can't operate at the same time. If 8°C heating function has been set under heat mode, press sleep button will cancel 8°C heating function. If sleep function has been set under heat mode, start up the 8°C heating function will cancel sleep function.
- Under °F temperature display, the remote controller will display 46°F heating.

## Child lock function

Press "▲" and "▼" simultaneously to turn on or turn off child lock function. When child lock function is on, "🔒" icon is displayed on remote controller. If you operate the remote controller, the "🔒" icon will blink three times without sending signal to the unit.

## Temperature display switchover function

Under OFF status, press "▼" and "MODE" buttons simultaneously to switch temperature display between °C and °F.

## Auto clean function

Under unit off status, hold "Mode" and "Fan" buttons simultaneously for 5s to turn on or turn off the auto clean function. When the auto clean function is turned on, indoor unit displays "CL". During the auto clean process of evaporator, the unit will perform fast cooling or fast heating. There may be some noise, which is the sound of flowing liquid or thermal expansion or cold shrinkage. The air conditioner may blow cool or warm air, which is a normal phenomenon. During cleaning process, please make sure the room is well ventilated to avoid affecting the comfort.

**Notice**

- The auto clean function can only work under normal ambient temperature. If the room is dusty, clean it once a month; if not, clean it once every three months. After the auto clean function is turned on, you can leave the room. When auto clean is finished, the air conditioner will enter standby status.
- This function is only available for some models.

## Replacement of batteries in remote controller

1. Lift the cover along the direction of arrow (as shown in Fig 1 ①).
2. Take out the original batteries (as shown in Fig 1 ②).
3. Place two 7# (AAA 1.5V) dry batteries, and make sure the position of "+" polar and "-" polar is correct (as shown in Fig 2 ③).
4. Reinstall the cover (as shown in Fig 2 ④).

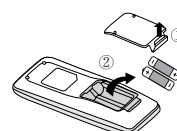


Fig.1

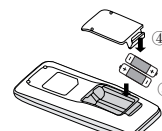


Fig.2

**NOTICE:**

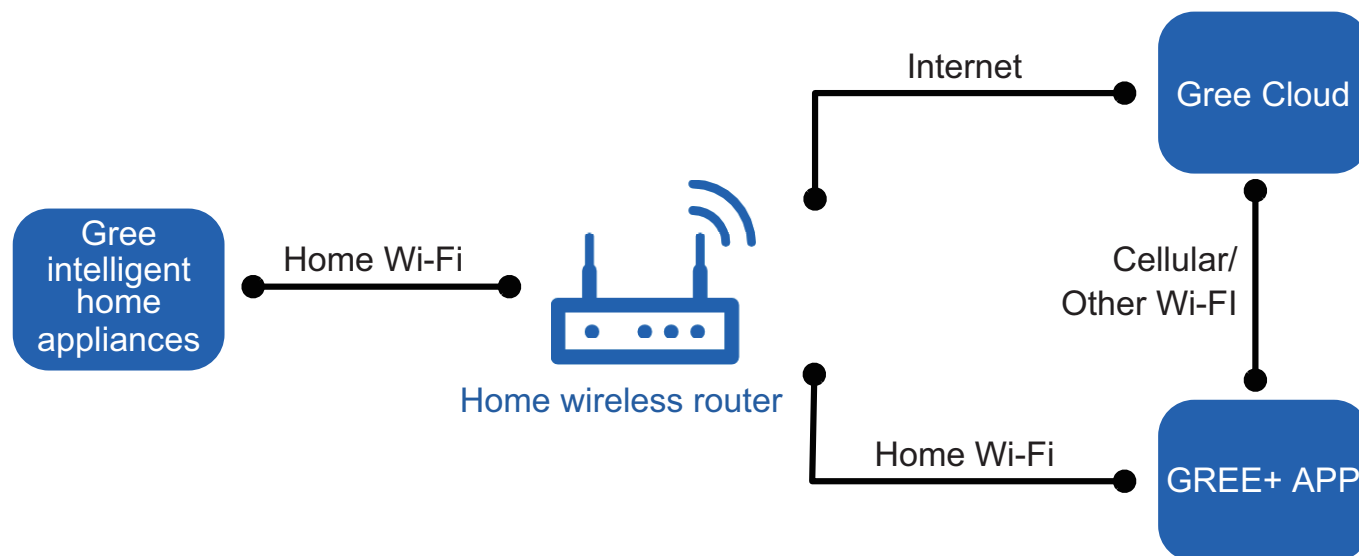
- During operation, point the remote control signal sender at the receiving window on indoor unit.

The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.

- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace new batteries of the same model when replacement is required.
- When you don't use remote controller for a long time, please take out the batteries.
- If the display on remote controller is fuzzy or there's no display, please replace batteries.

## 6.2 GREE+ App Operation Manual

### Control Flow Chart



### Operating Systems

Requirement for Users smart phone:



iOS system  
Support iOS7.0 and  
above version



Android system  
Support Android 4.4 and  
above version

### Download and installation



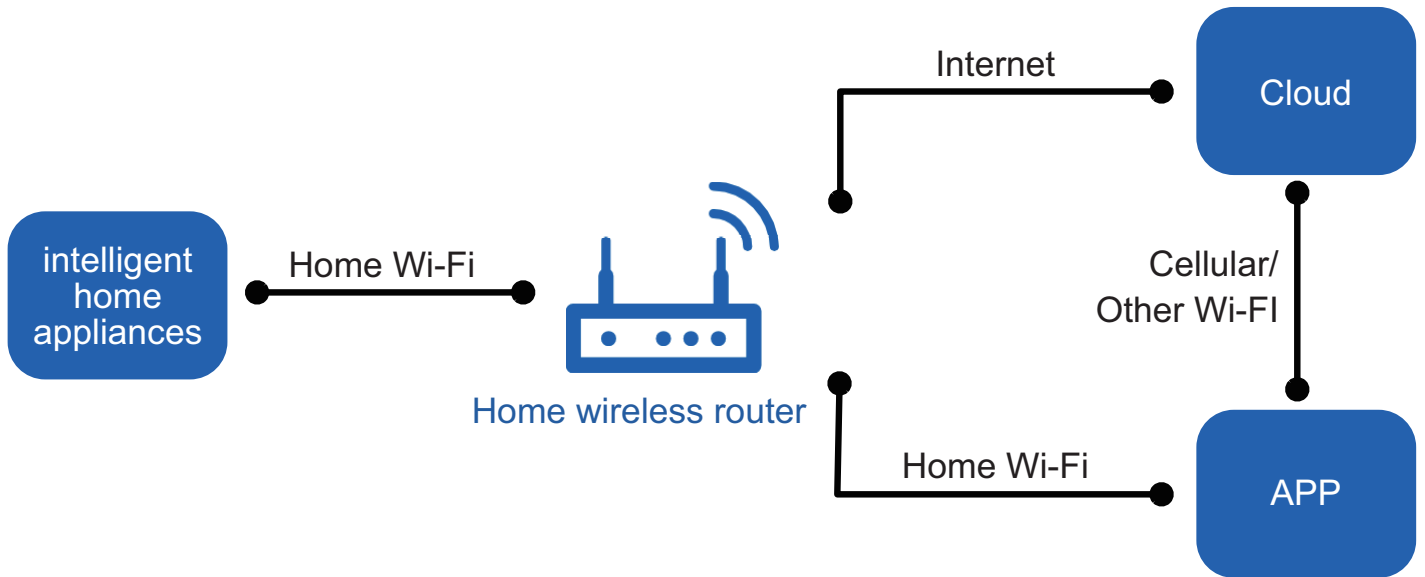
GREE+ App Download Linkage

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 Users 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

### ● Indoor Unit

#### 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, standard heating  $T_{\text{preset}}=68.0^{\circ}\text{F}$  and standard cooling  $T_{\text{preset}}=77.0^{\circ}\text{F}$ . The unit will 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 ( $T_{\text{amb.}}-T_{\text{compensation}}$ ) for heat pump unit and  $T_{\text{amb.}}$  for cooling only unit.

4. If there's I feel function,  $T_{\text{compensation}}$  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 button

If press this auto button when turning off the unit, the complete unit will operate at auto mode. Indoor fan operates at auto fan speed and swing function is turned on. Press this auto button at ON status to turn off the unit.

#### (3) 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.

#### (4) Sleep

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

#### (5) Timer function:

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

#### (6) 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.

#### (7) 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.

### **(8) 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.

### **(9) Compulsory defrosting function**

(1) 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.

(2) 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.

### **(10) Refrigerant recovery function:**

(1) 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.

(2) 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.

### **(11) Ambient temperature display control mode**

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

2. 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.

### **(12) 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.

### **(13) SE control mode**

The unit operates at SE status.

### **(14) 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.

### **(15) 8° heating function**

Under heating mode, you can set 8° heating function by remote controller. The system will operate at 8° set temperature.

### **(16) 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.

## 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<sub>indoor ambient temperature</sub> - Δ T<sub>cooling indoor ambient temperature compensation</sub>)

b. In heating mode, the indoor ambient temperature participating in computing control = (T<sub>indoor ambient temperature</sub> - Δ T<sub>heating indoor ambient temperature compensation</sub>)

#### (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  $T_{\text{exhaust}}$  ( $T_{\text{exhaust}}$  (after start-up for 10 minutes) -  $T_{\text{exhaust}}$  (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:  $61\sim 86^{\circ}\text{F}$  (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  $77^{\circ}\text{F}$ .

#### (2) Dehumidifying Mode

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

2. The temperature setting range is:  $61\sim 86^{\circ}\text{F}$ ;

#### (3) Air-supplying Mode

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

2. The temperature setting range is:  $61\sim 86^{\circ}\text{F}$ .

#### (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:  $61\sim 86^{\circ}\text{F}$ .

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

**3. Reducing frequency at normal speed:**

If  $[T_{\text{frozen-preventing high speed frequency-reducing temperature}}] \leq [T_{\text{inner pipe T frozen-preventing normal speed frequency-reducing temperature}}]$ , 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 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  $[T_{\text{Cooling overload frequency-limited temperature}}] \leq [T_{\text{outer pipe T Cooling overload frequency reducing temperature at normal speed}}]$ , 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  $t_{\text{overload protection times zero clearing time}}$  , 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  $t_{\text{Protection times clearing of discharge}}$  , 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  $[I_{\text{frequency reducing when overcurrent}}] \leq [I_{\text{AC Electric current}} \text{ I Power turn-off when overcurrent}]$  , 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 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 [ $I_{\text{Limited frequency phase current}} \leq [I_{\text{Phase current T frequency reducing phase current}}]$ ], 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 [ $t_{\text{Clearing Time of Compressor Phase Current Times}}$ ] , 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 DCbus 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 neednt 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  $T_{\text{outdoor amb.}} \leq 32^{\circ}\text{F}$ , the electric heating of chassis will operate;
- (2) When  $T_{\text{outdoor amb.}} > 35.6^{\circ}\text{F}$ , the electric heating of chassis will stop operation;
- (3) When  $32^{\circ}\text{F} < T_{\text{outdoor amb.}} \leq 35.6^{\circ}\text{F}$ , the electric heating of chassis will keep original status.

## 7. Electric Heating Function of Compressor

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

# Part II : Installation and Maintenance

## 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 1/8 inch.
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 44.09lb.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Ware safety belt if the height of working is above 78 3/4 inch.
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:

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.

1. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
2. 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.
3. Make sure no refrigerant gas is leaking out when installation is completed.
4. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
5. 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.

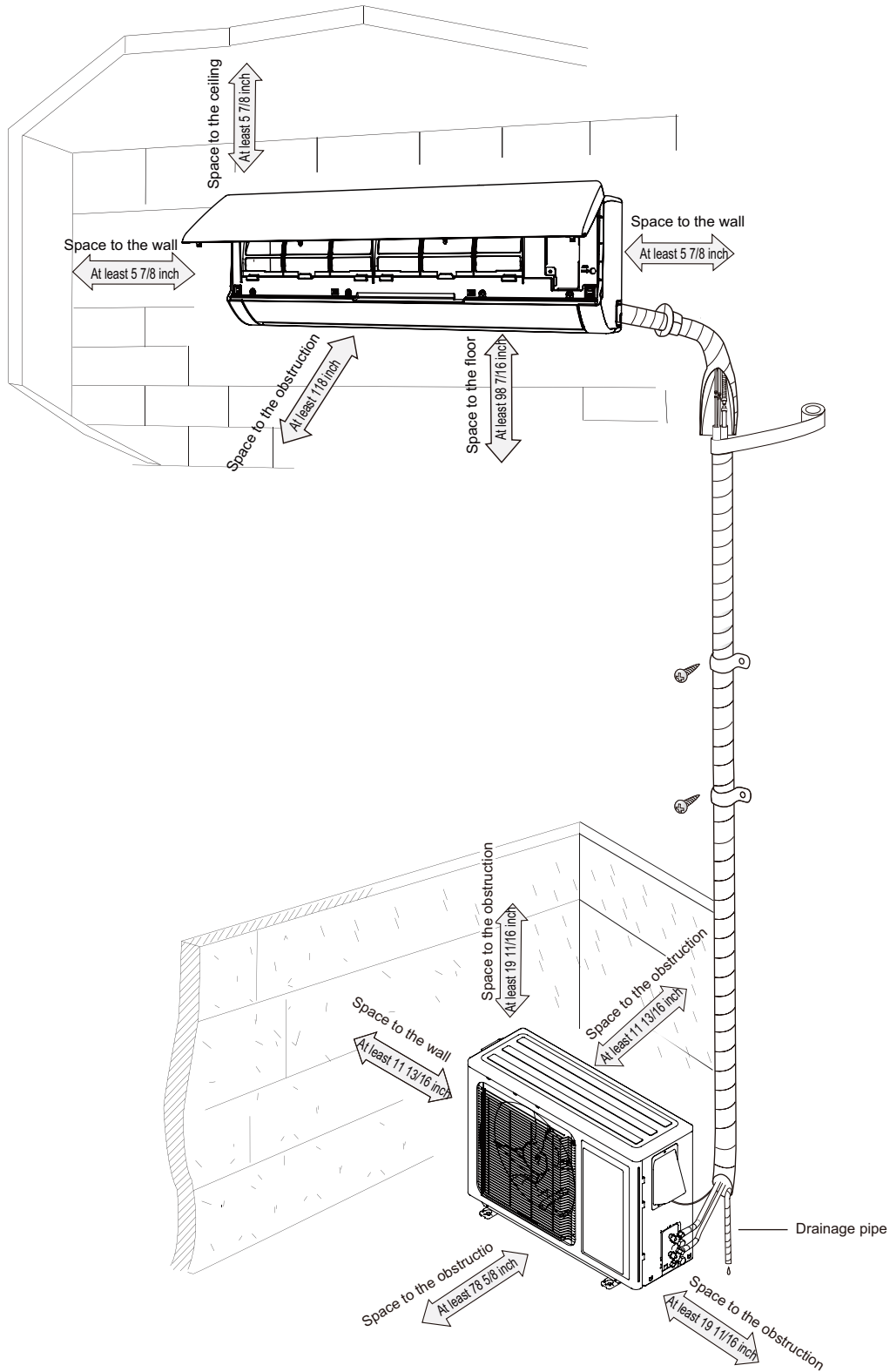
## Main Tools for Installation and Maintenance

<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure meter</p> 
<p>10. Pipe pliers, pipe cutter</p> 	<p>11. Pipe expander, pipe bender</p> 	<p>12. Soldering appliance, refrigerant container, electronic scale</p> 



# 8. Installation

## 8.1 Installation Dimension Diagram





## 8.2 Installation Parts-checking

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

### ⚠ 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 way 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 away from 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 Requirements for electric connection

### 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) If the supply cord is damaged,it must be replaced by the manufacturer,its service agent or similarly qualified persons in order to avoid a hazard.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- (9) The appliance shall be installed in accordance with national wiring regulations.
- (10) Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only

### 2. Grounding Requirement:

- (1) The air conditioner is first 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 1/8 inch 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. Install Wall-mounting Frame

(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)

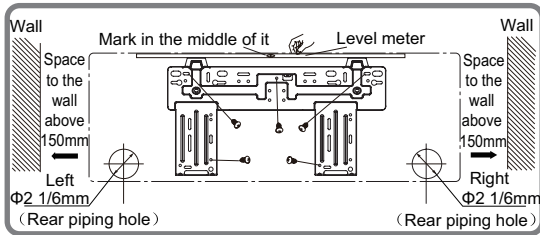


Fig.1

(2) Open a piping hole with the diameter of Φ2 1/6inch 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)

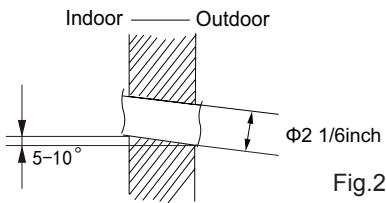


Fig.2

#### ⚠ Note:

(1) Pay attention to dust prevention and take relevant safety measures when opening 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)

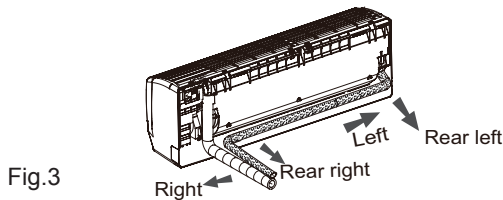


Fig.3

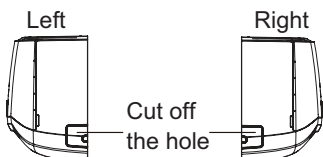


Fig.4

### 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)

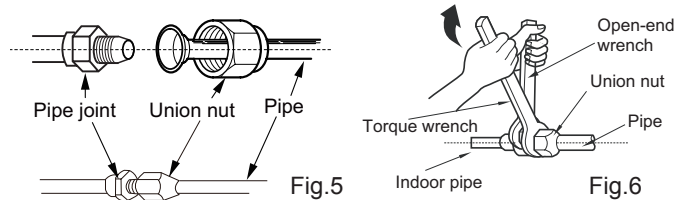


Fig.5

Fig.6

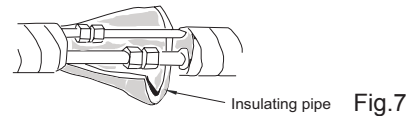


Fig.7

Refer to the following table for wrench moment of force:

Hex nut diameter(inch)	Tightening torque(ft·lbf)
Φ1/4	11.10~14.75
Φ3/8	22.82~29.50
Φ1/2	33.19~40.56
Φ5/8	44.24~47.94
Φ3/4	51.32~55.31

### 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)

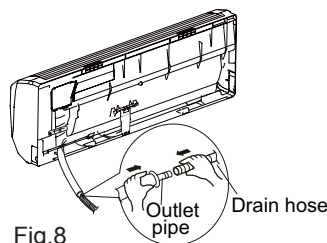


Fig.8

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)

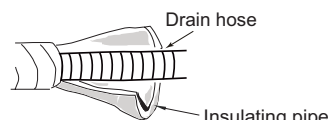


Fig.10

## 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)

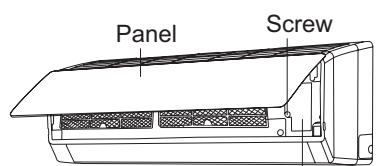


Fig.11 Wiring cover

(2) Fix the wire crossing board on connection wire sleeve at the bottom case; let the connection wire sleeve go through the wire crossing hole at the back of indoor unit, and then pull it out from the front.(As show in Fig.12)

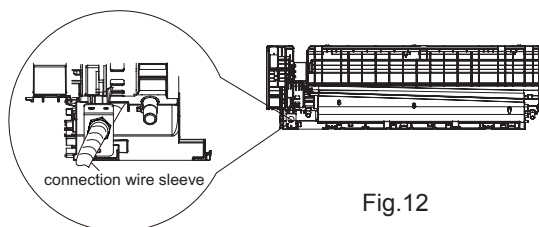


Fig.12

(3) Remove the wire clip; connect the power connection wire 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)

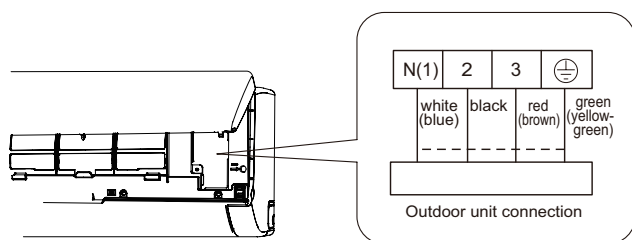


Fig.13

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

(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 1/8inch.

## 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.

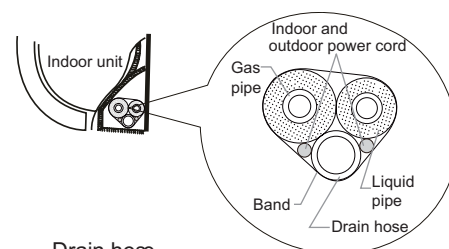


Fig.14

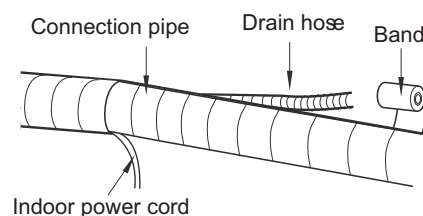


Fig.15

### ⚠ 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)

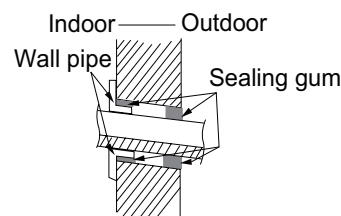


Fig.16

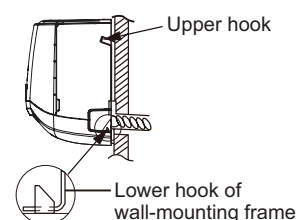


Fig.17

### ⚠ 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 1 1/6inch 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.

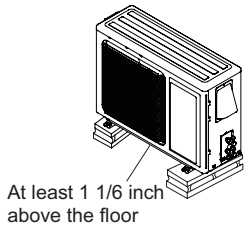


Fig.18

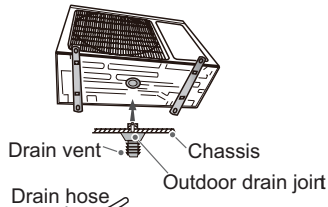


Fig.19

**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)

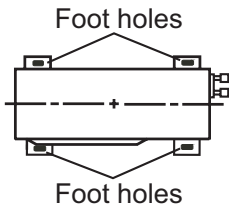


Fig.20

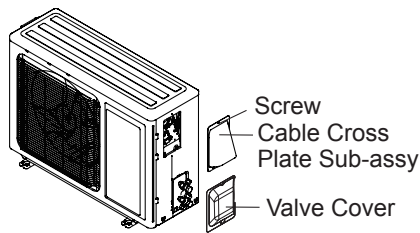


Fig.21

**4. Connect Indoor and Outdoor Pipes**

- (1) Remove the screw on the right cable cross plate sub-assy and valve cover of outdoor unit and then remove the cable cross plate sub-assy and valve cover.(As show in Fig.21)
- (2) Remove the screw cap of valve and aim the pipe joint at the bellmouth of pipe.(As show in Fig.22)

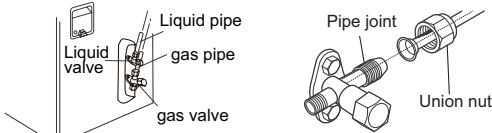


Fig.22

- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force :

Hex nut diameter (inch)	Tightening torque (ft.lbf)
Φ1/4	11.10~14.75
Φ3/8	22.82~29.50
Φ1/2	33.19~40.56
Φ5/8	44.24~47.94
Φ3/4	51.32~55.31

**5. Connect Outdoor Electric Wire**

- (1) Put power connection wire and power wire through the wire-passing hole.
- (2) Remove the wire clip; connect the power connection wire and power wire to the wiring terminal; fix them with screws.(As show in Fig.23)
- (3) Fix the power connection wire and power wire with wire clip.
- (4) Install the cable cross plate sub-assy.

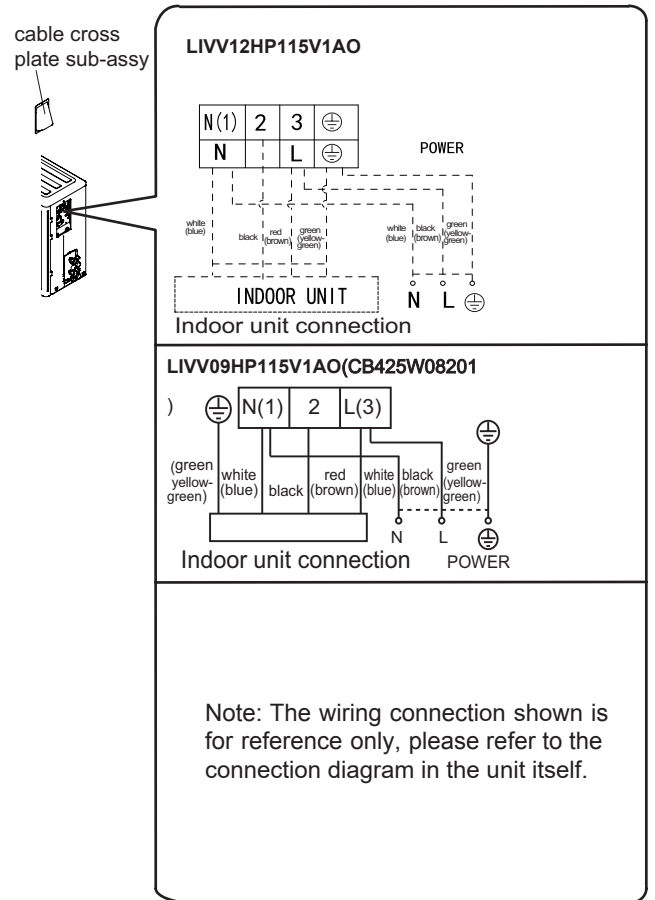
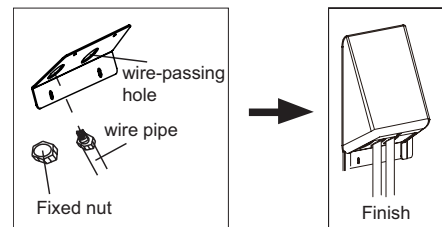


Fig.23

**⚠ 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 fixed 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 4inch.
- (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)

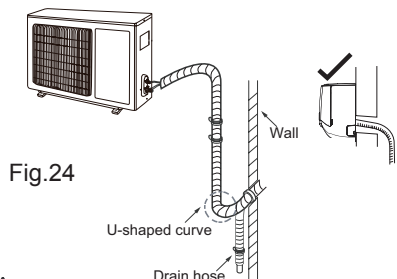


Fig.24

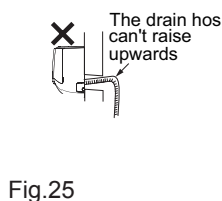


Fig.25

**Note:**

- (1) The through-wall height of drain hose shouldn't 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)

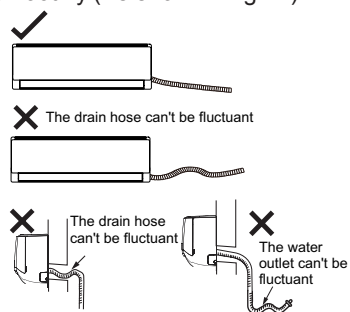


Fig.26

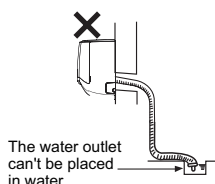


Fig.27

## 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.(As show in Fig.28)

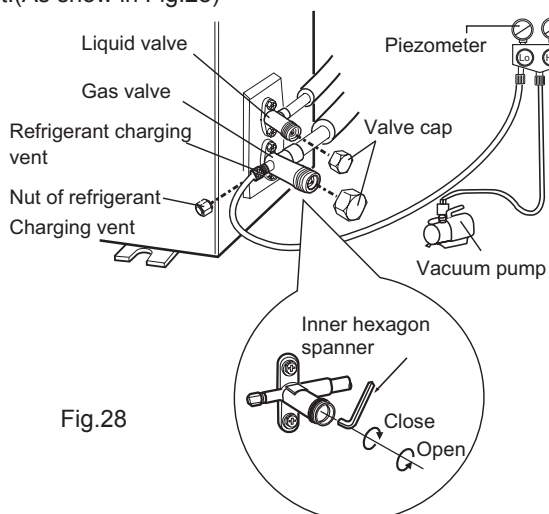


Fig.28

### 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 60.8°F, the air conditioner can't start cooling.

# 9. Maintenance

## 9.1 Error Code List

Name of malfunction	Display of indoor unit	Display of lamp (the # of flashes)					
		Indoor			Outdoor		
		R	C	H	Y	R	G
Anti-freezing protection	E2	2			3		
Block or Low pressure of refrigerant system	E3	3				9	
Compressor exhaust high temperature protection	E4	4			7		
AC over-current protection	E5	5			5		
Communication failure between indoor unit and outdoor unit	E6	6					O/U
Anti-high temperature protection	E8	8			6		
	H4			4	6		
No feedback of indoor fan motor	H6	11					
Jumper cap malfunction protection	C5	15					
Indoor unit and outdoor unit doesn't match	LP	19			16		
Outdoor DC fan motor malfunction	L3	23				14	
Power protection	L9	20			9		
Gathering refrigerant	Fo	1	1				
Indoor ambient sensor open or short circuit	F1		1				
Indoor tube sensor open or short circuit	F2		2				
Outdoor ambient sensor open or short circuit	F3		3			6	
Outdoor tube sensor open or short circuit	F4		4			5	
Exhaust sensor open or short circuit	F5		5			7	
Overload limit / drop frequency	F6		6			3	
Over current limit / drop frequency	F8		8			1	
High exhaust temperature limit / drop frequency	F9		9			2	
Refrigerant leakage protection	F0		10			9	
Anti-freezing limit / drop frequency	FH		2	2		4	
Defrosting	H1			1	2		
Compressor overload protection	H3			3	8		
IPM protection	H5			5	4		
Module temperature is too high	H5			5	10		
PFC protection	HC			6	14		
Loading EEPROM malfunction	EE			15	11		
High PN voltage protection	PH		11		13		
Low PN voltage protection	PL			21	12		
4-way valve reversal abnormal	U7		20				
DRED1 / DRED2 / DRED3	d1/d2/d3						
Compressor Min frequency in test state	P0						
Compressor rated frequency in test state	P1						
Compressor maximum frequency in test state	P2						
Compressor intermediate frequency in test state	P3						
Compressor is running(normal)					1		
The temperature for turning on the unit is reached(normal)						8	
Frequency limiting (module temperature )	EU		6	6		11	
Frequency limiting (power)	LU		24			13	
Malfunction of detecting plate(WIFI)	JF						

Notes: R(Indoor)--Running C--Cooling H--Heating Y--Yellow R(Outdoor)--Red G--Green  
O/U--OFF or Unblink The display difference between Fo and F0 is 'o' is the bottom part of figure 8



## 9.2 Procedure of Troubleshooting

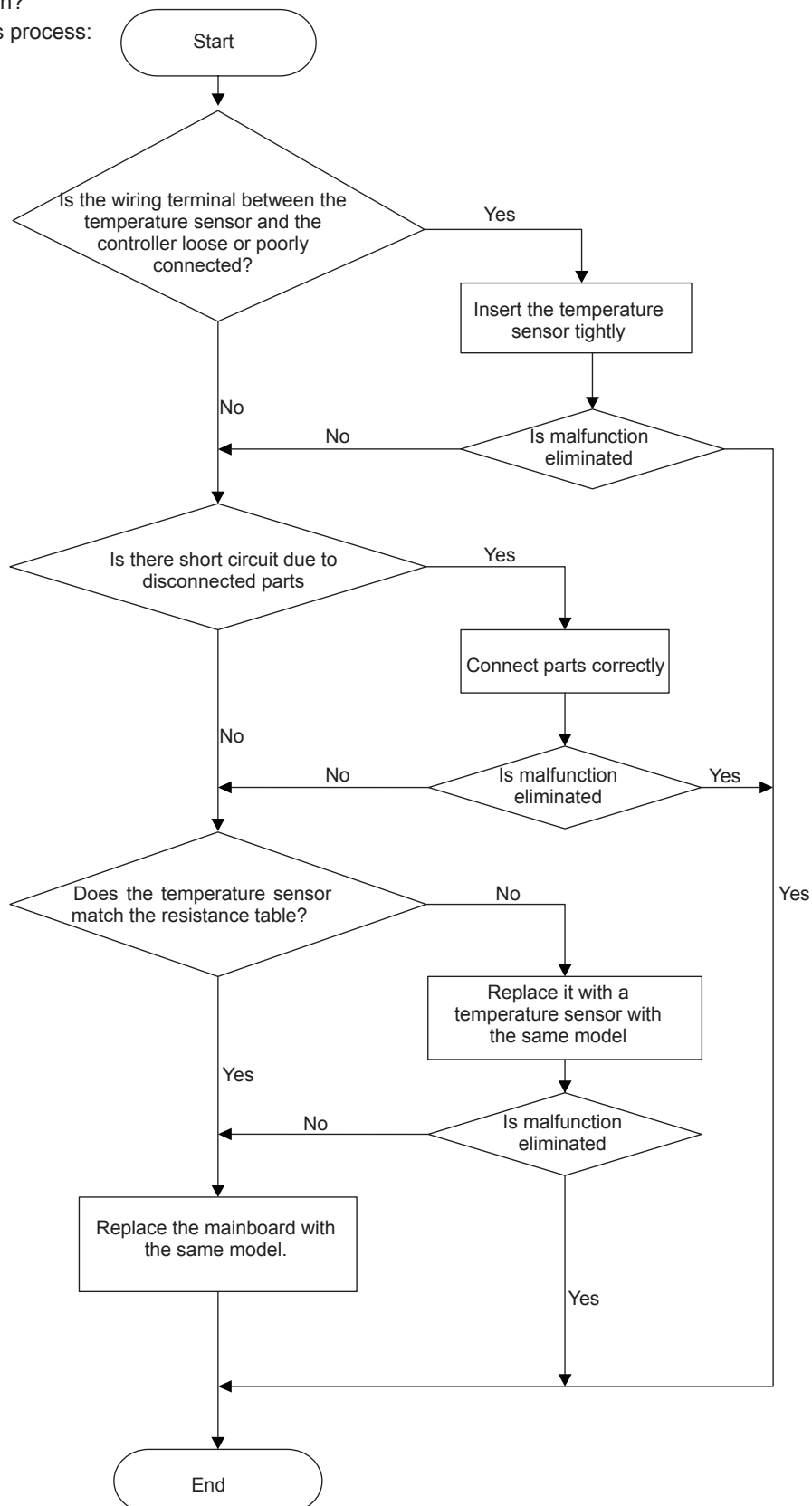
### Indoor unit

#### (1) Malfunction of Temperature Sensor F1, F2

Main detection points:

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

Malfunction diagnosis process:

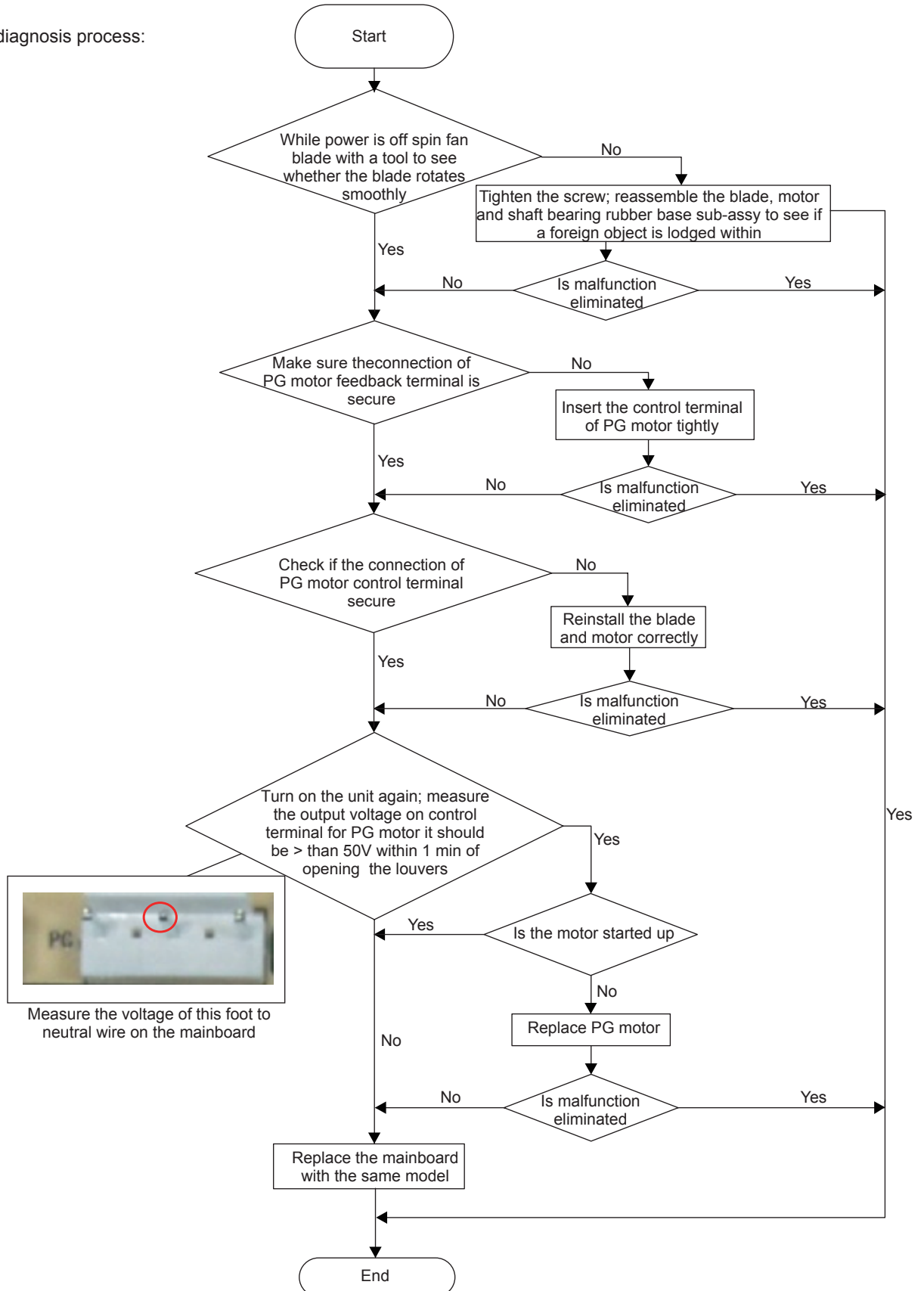


## (2) Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

- Is the control terminal of PG motor connected tightly?
- Is the feedback interface of PG motor connected tightly?
- The fan motor doesn't operate?
- Is the motor is damaged?
- Is the detection circuit of the mainboard abnormal?

- Malfunction diagnosis process:

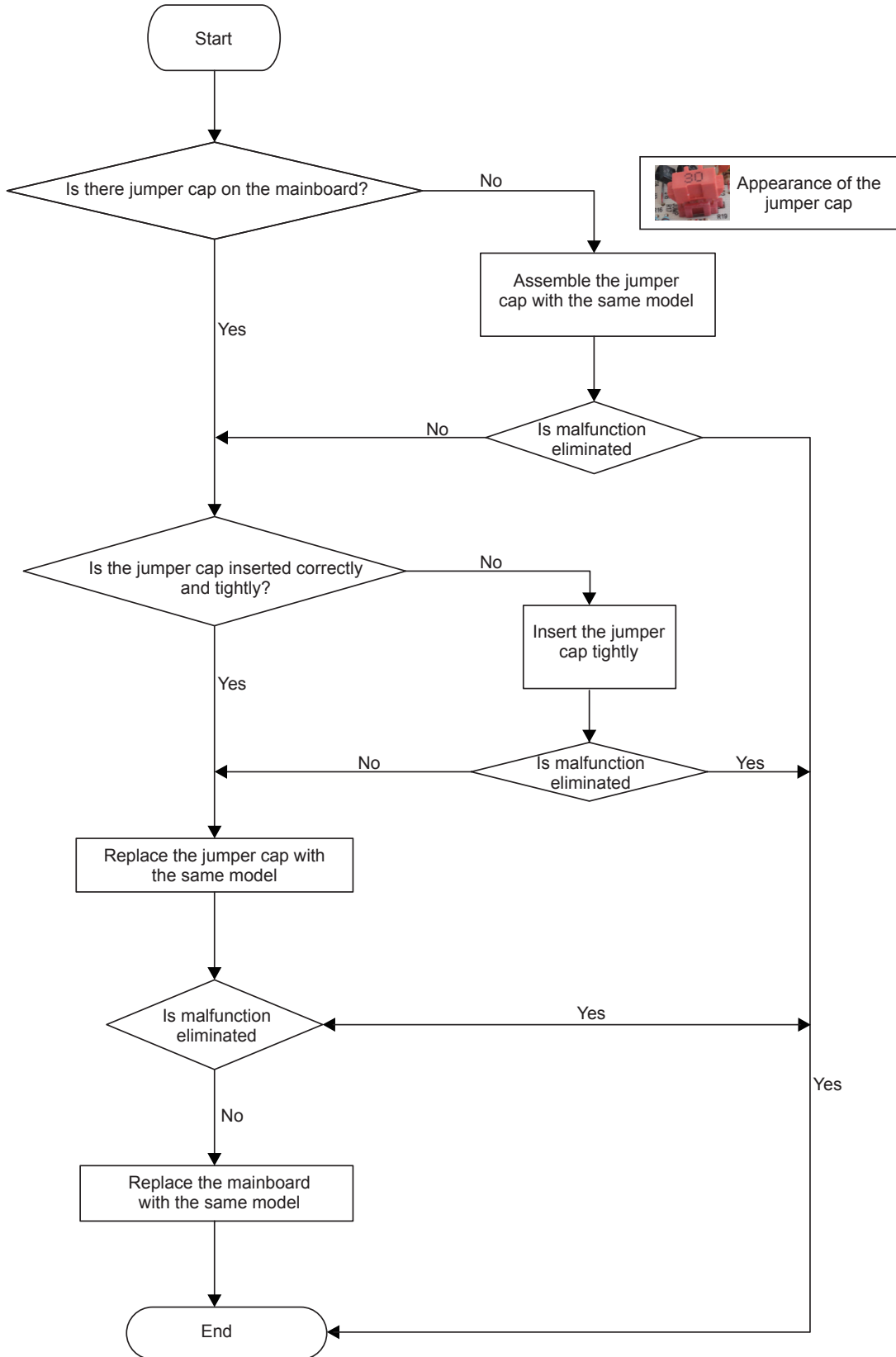


**(3) Malfunction of Protection of Jumper Cap C5**

Main detection points:

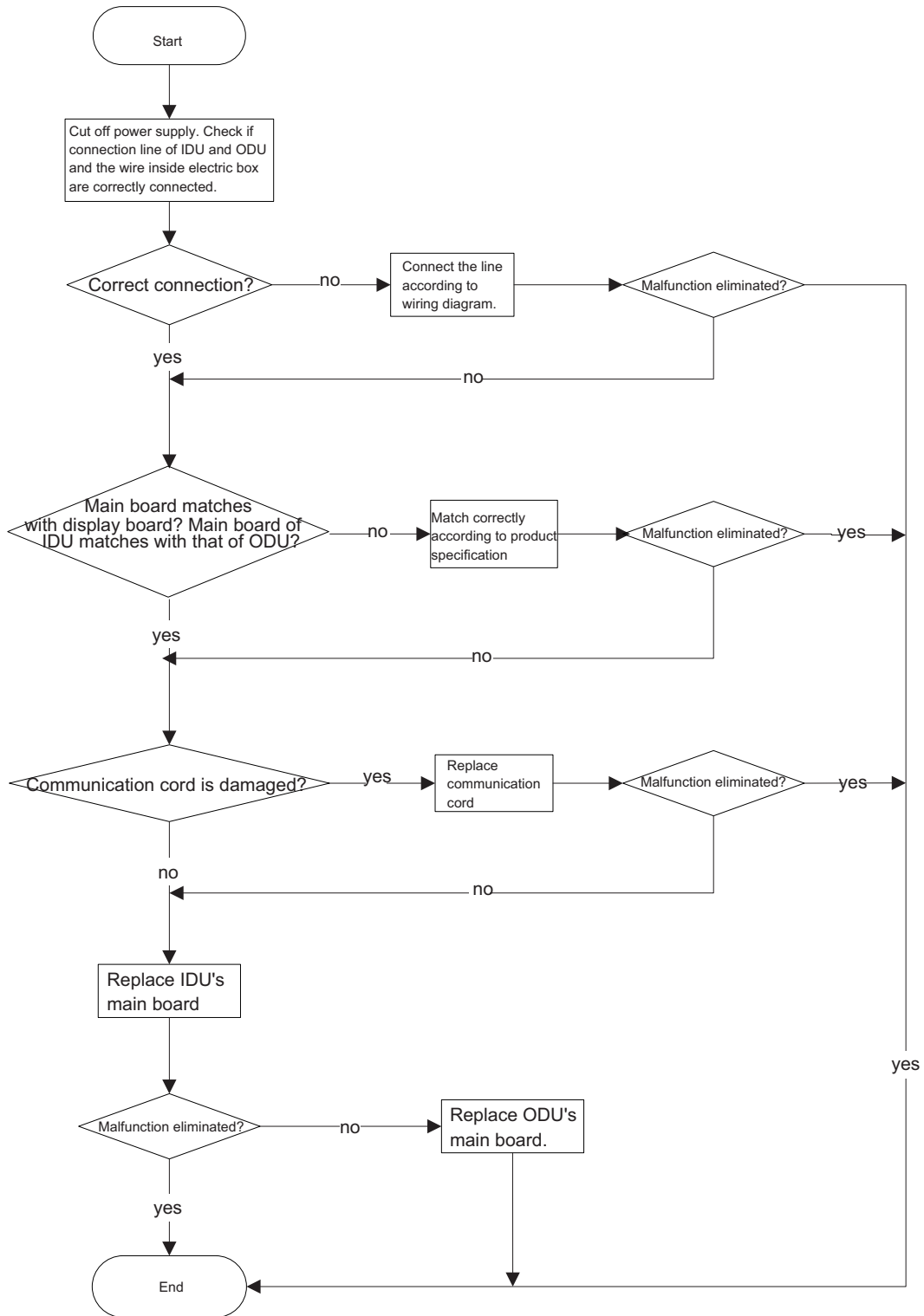
- Is there jumper cap on the mainboard?
- Is the jumper cap inserted correctly and tightly?
- Is the jumper broken?
- Is the motor working properly?
- Is the detection circuit of the main board abnormal?

Malfunction diagnosis process:





4. Communication malfunction E6





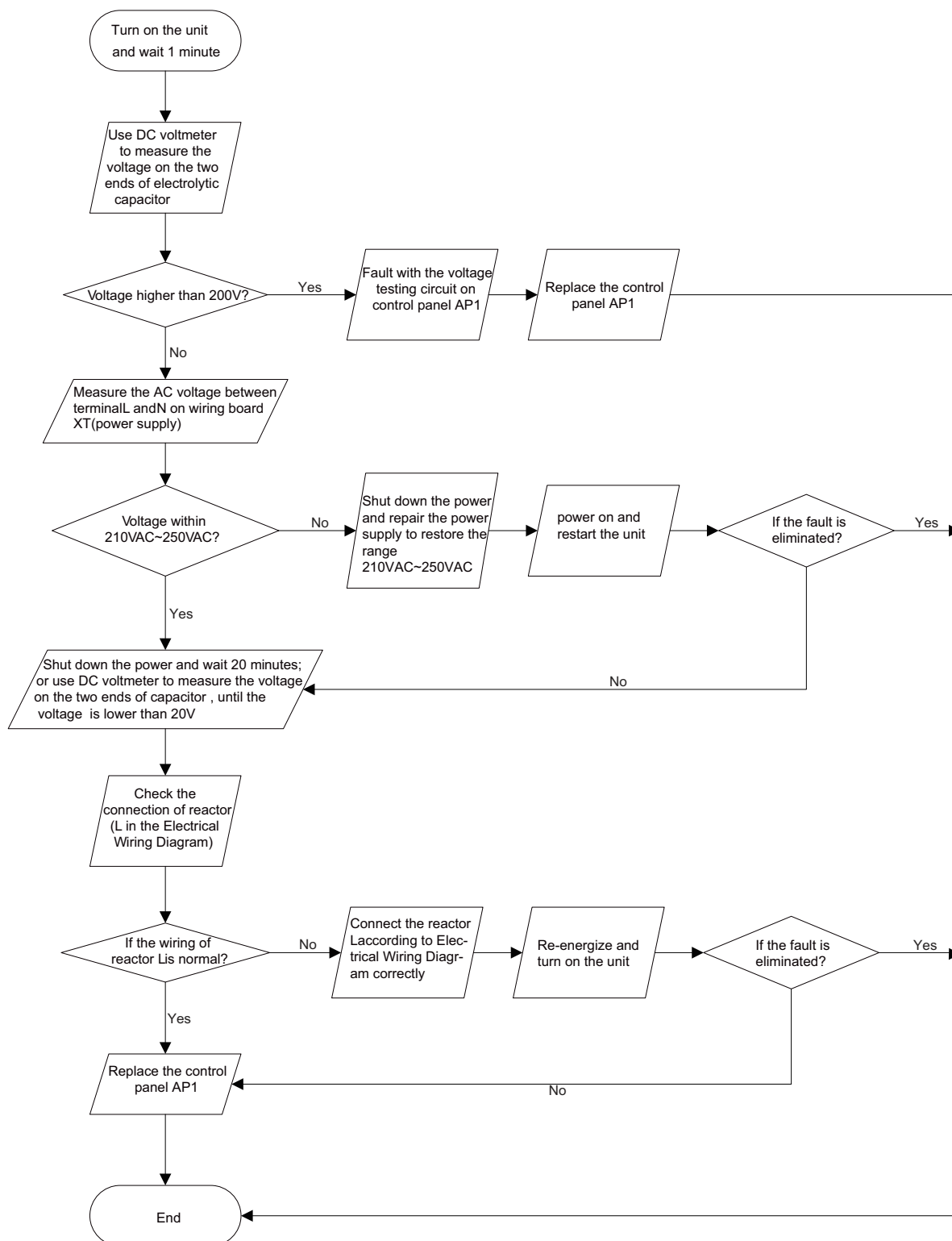
●Outdoor unit:

**(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:

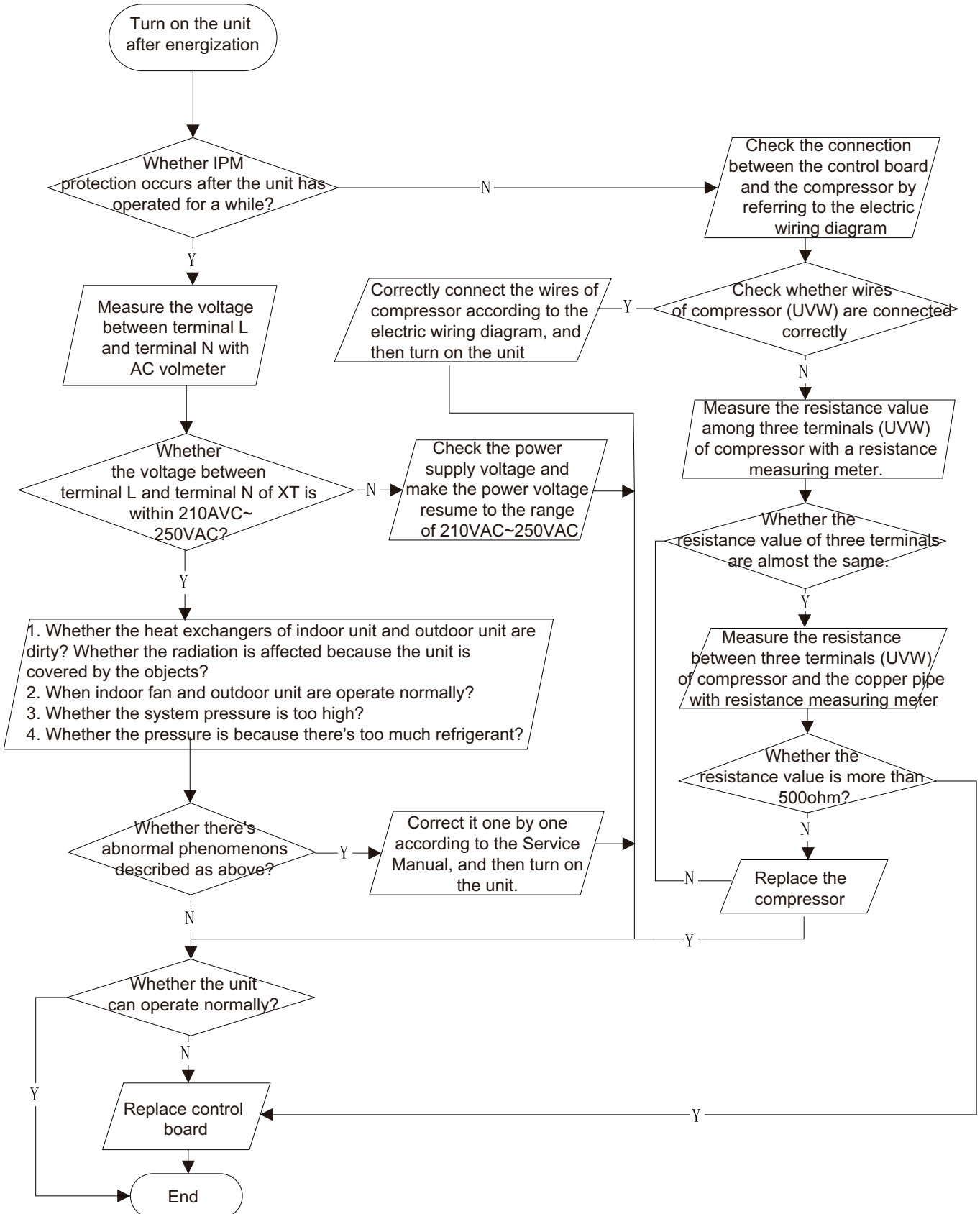


## 2. IPM protection, phase current overcurrent (the control board as below indicates the control board of outdoor unit) H5/P5

Mainly detect:

- (1) Compressor COMP terminal (2) voltage of power supply (3) compressor
- (4) Refrigerant-charging volume (5) air outlet and air inlet of outdoor/indoor unit

Troubleshooting:



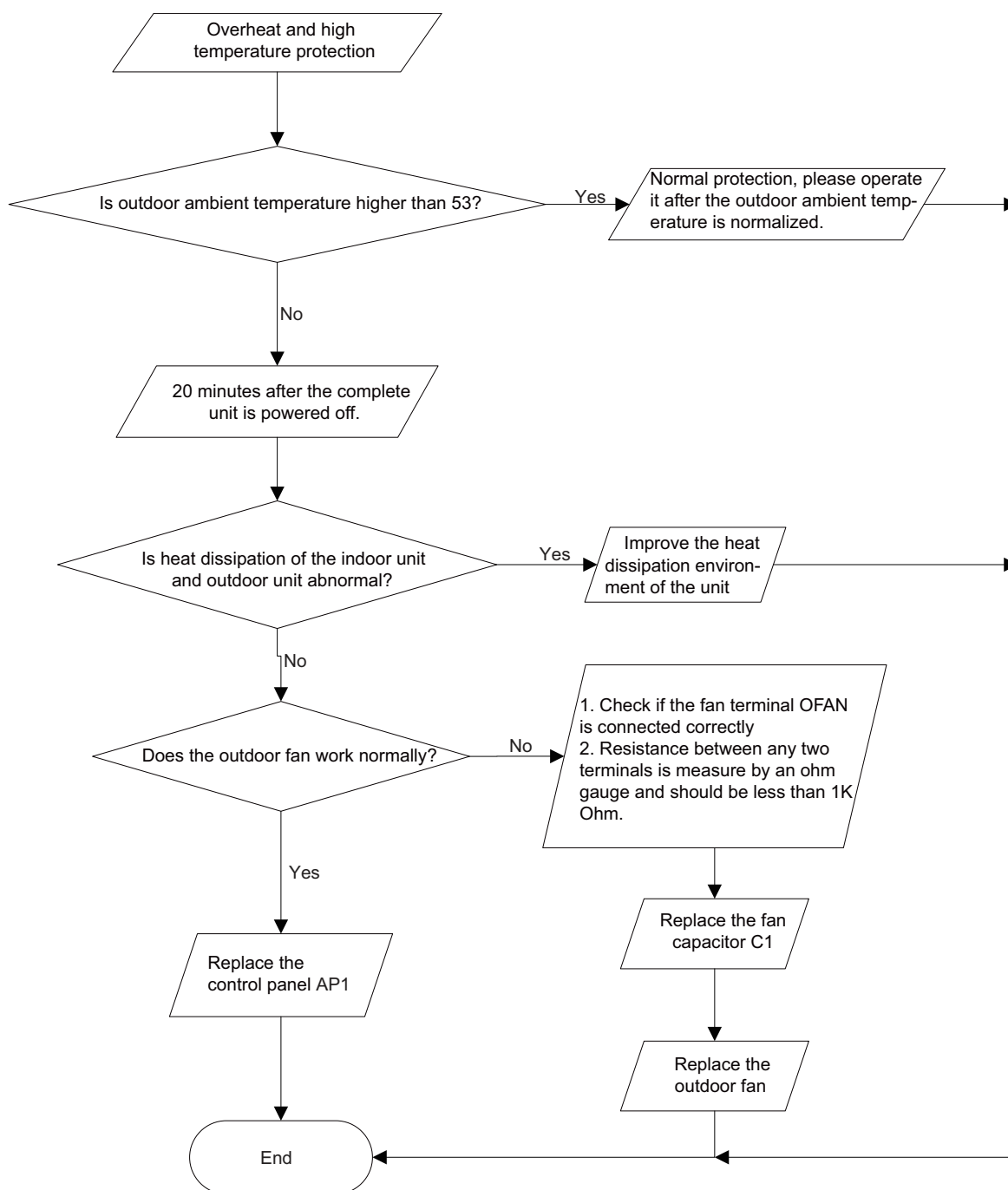


**(3) High temperature and overload protection diagnosis (AP1 hereinafter refers to the control board of the outdoor unit)**

Mainly detect:

- Is outdoor ambient temperature in normal range?
- Are the outdoor and indoor fans operating normally?
- Is the heat dissipation environment inside and outside the unit good?

Fault diagnosis process:



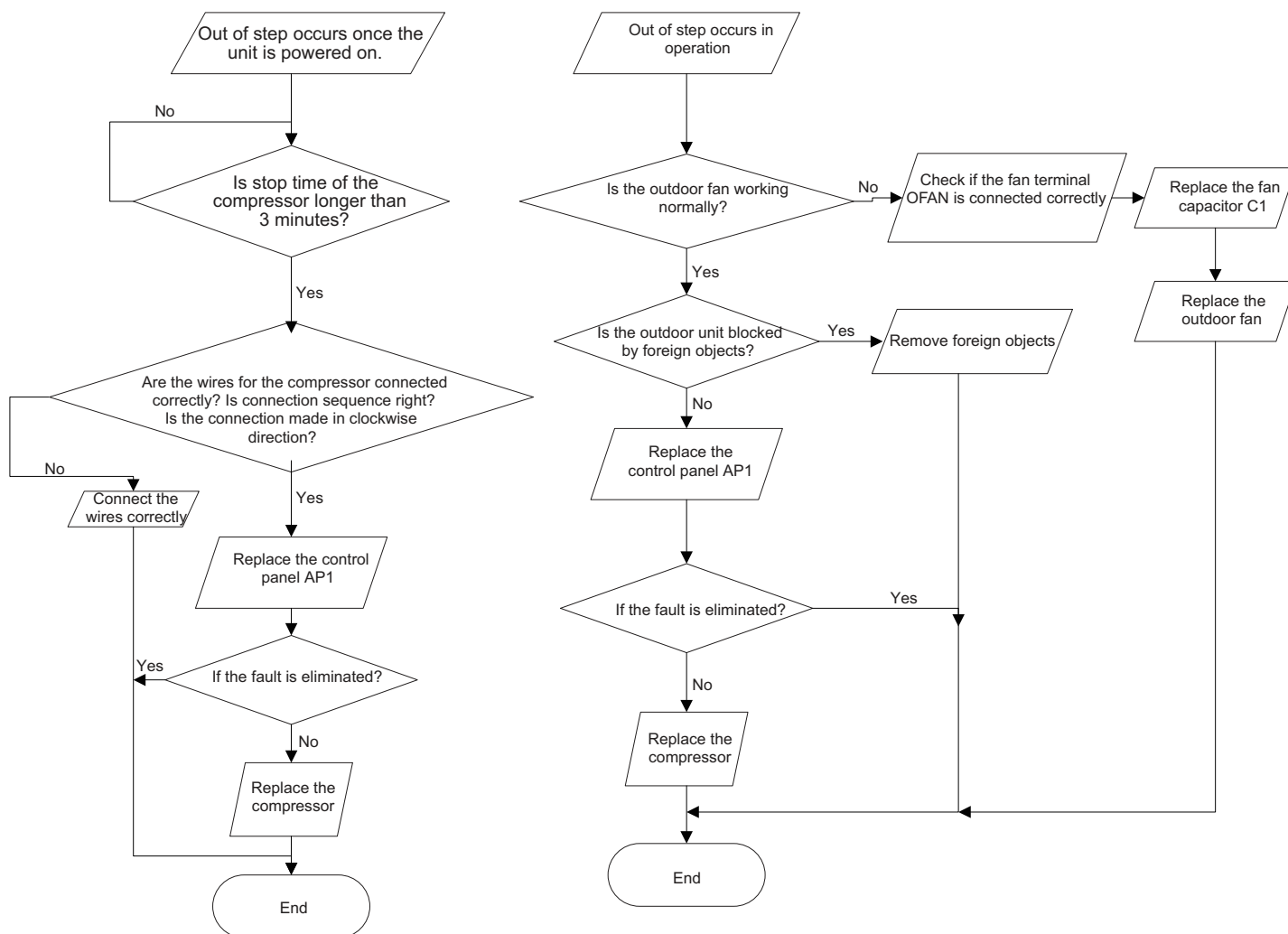


**(5) Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit)**

Mainly detect:

- Is the system pressure too high?
- Is the input voltage too low?

Fault diagnosis process:



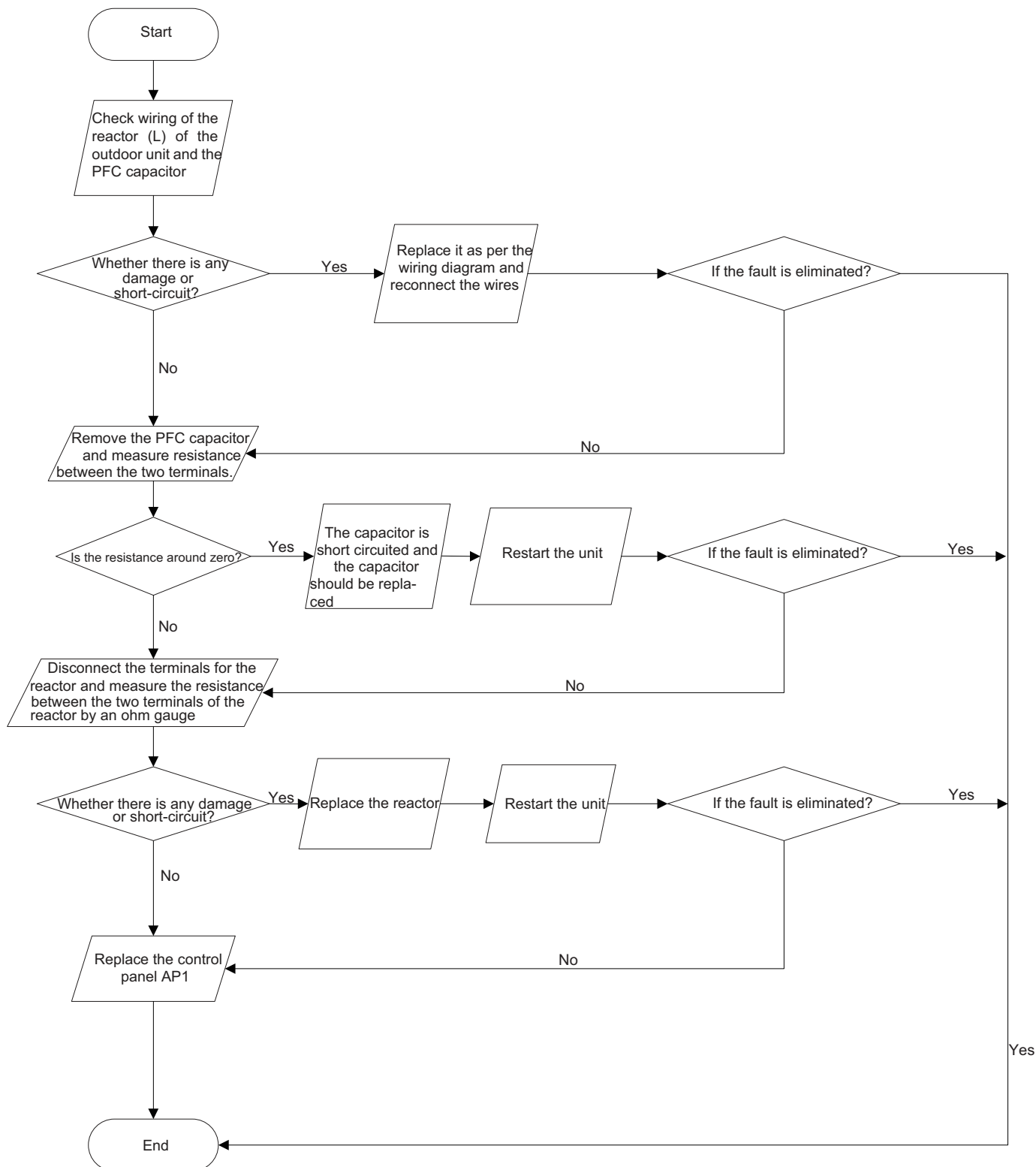


**(7) Power factor correct or (PFC) fault (a fault of outdoor unit) (AP1 hereinafter refers to the control board of the outdoor unit)**

Mainly detect:

- Check if the reactor (L) of the outdoor unit and the PFC capacitor are broken

Fault diagnosis process:

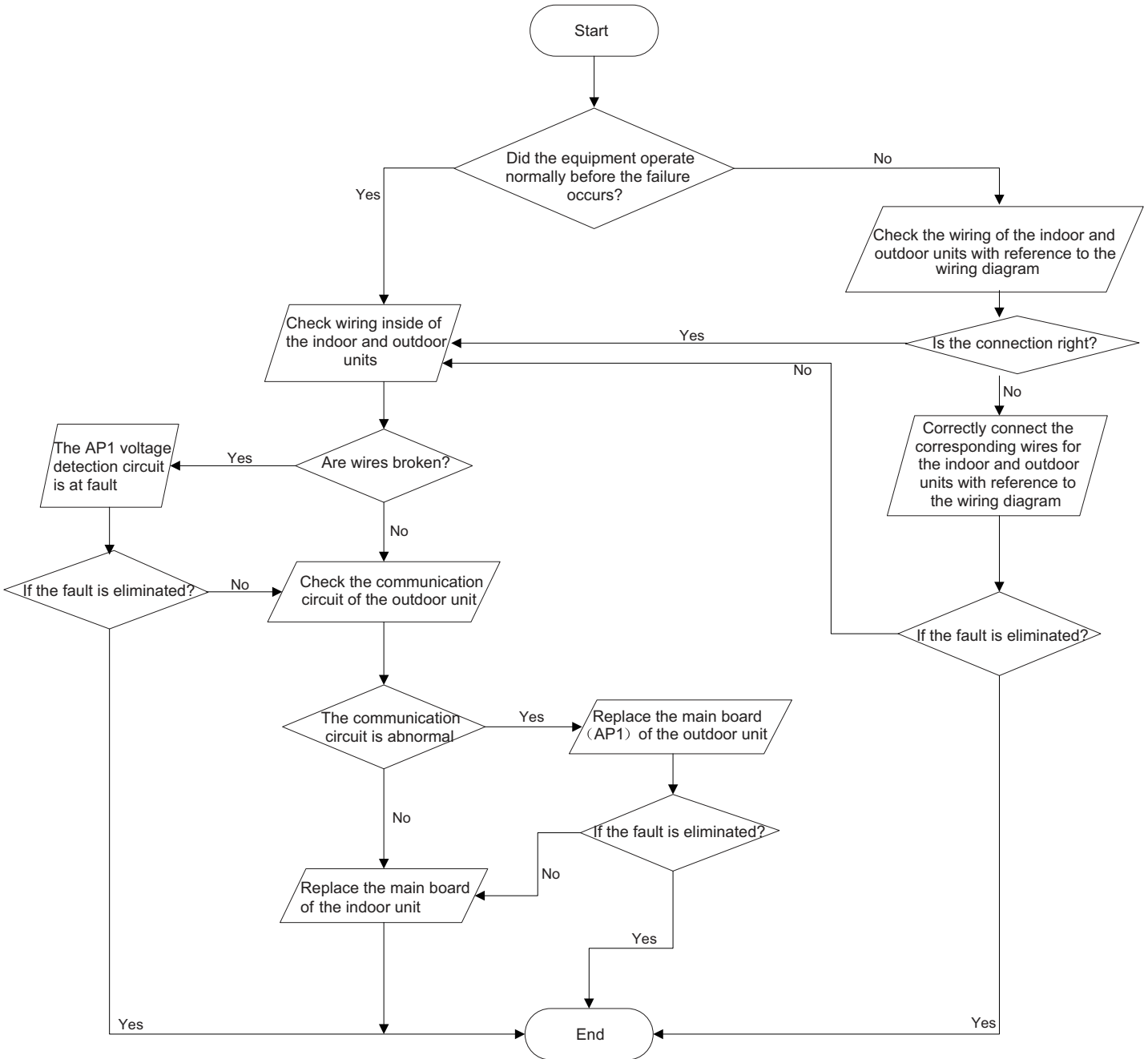


**(8) Communication malfunction: (following AP1 for outdoor unit control board)**

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:

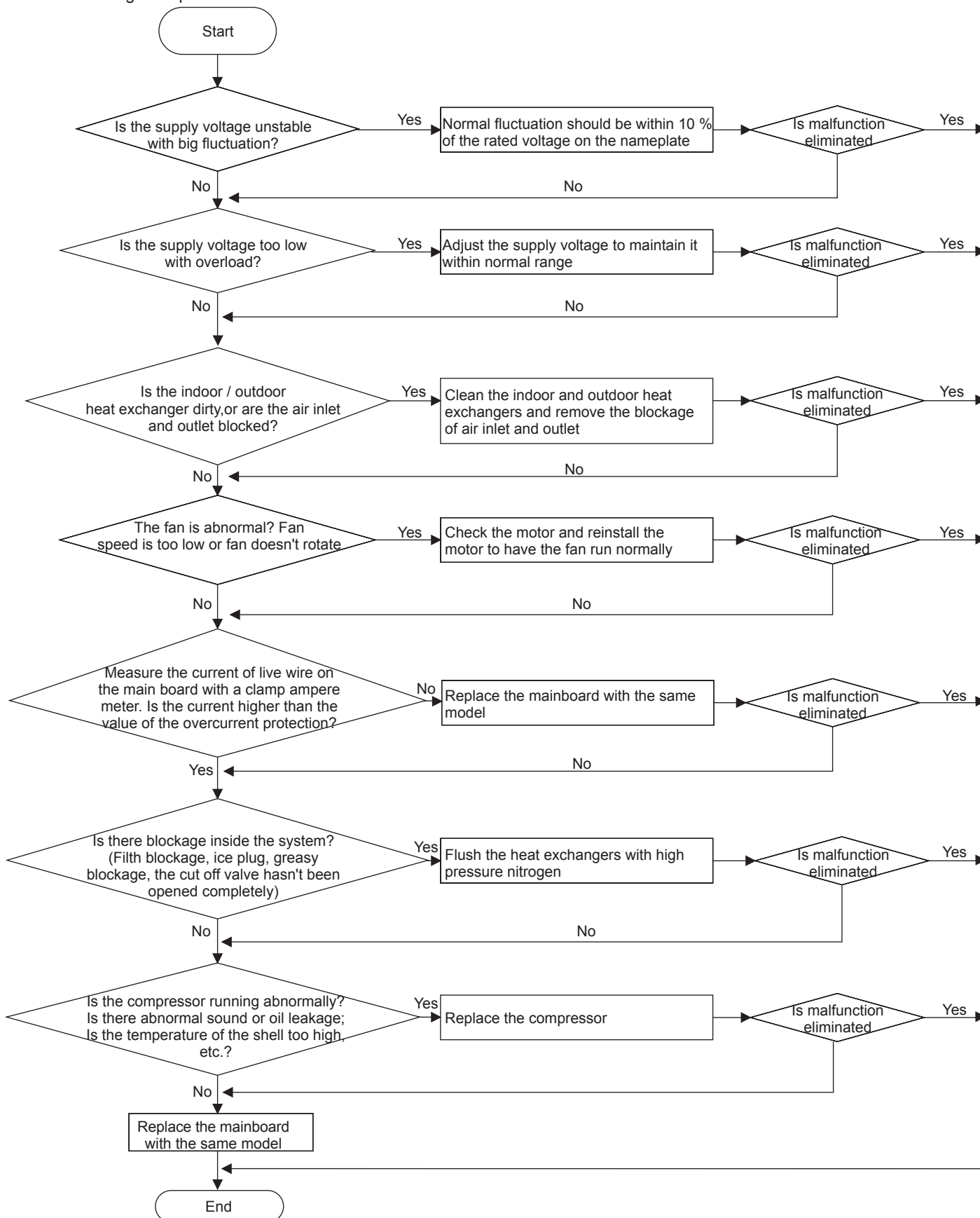


### (9) Malfunction of Overcurrent Protection

Main detection points:

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

Malfunction diagnosis process:



## 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 its 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 its 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 its 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor can't operate	Repair or replace compressor

**6. Air Conditioner is Leaking**

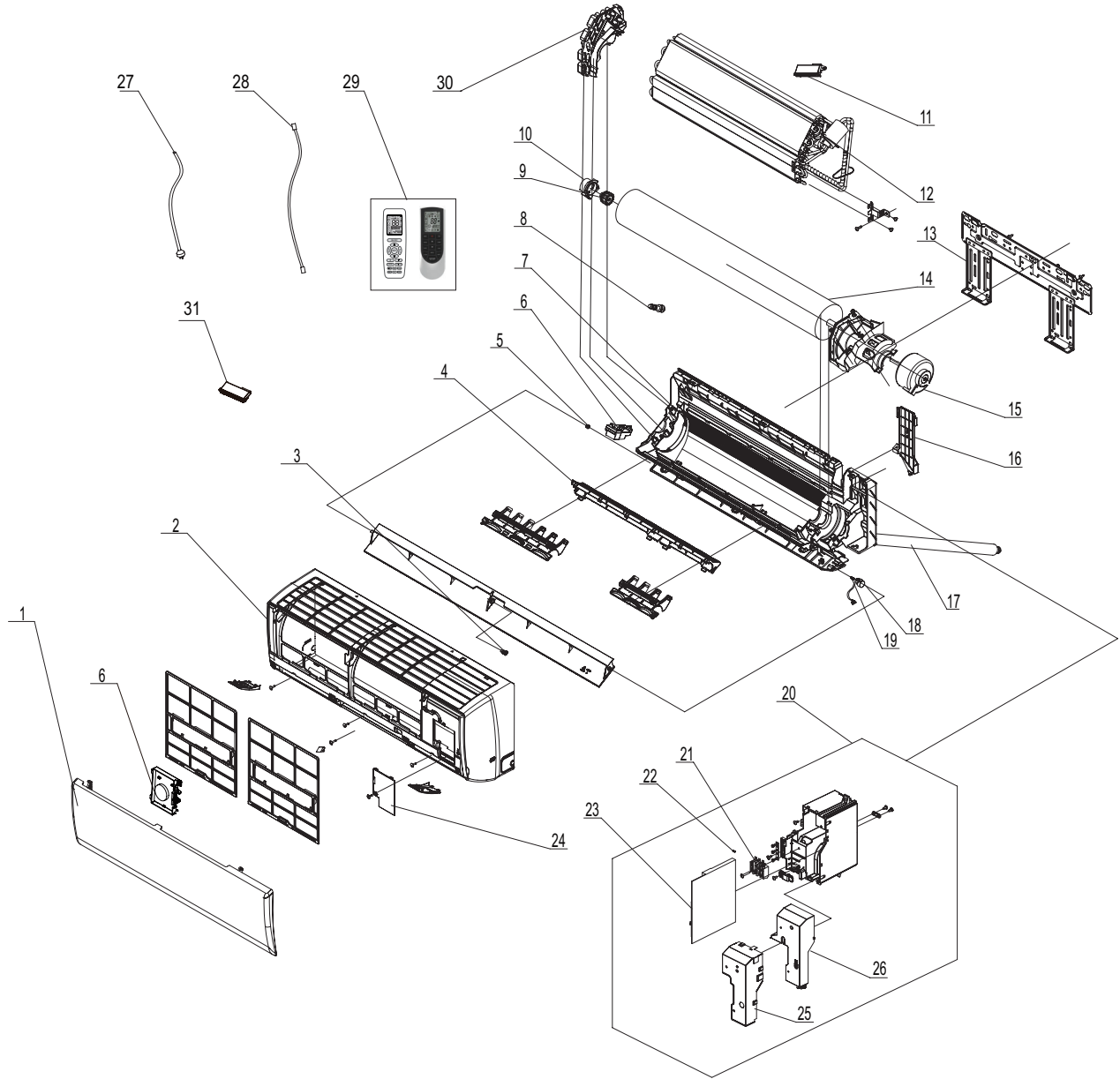
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe 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



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

No.	Description
1	Front Panel
2	Front Case
3	Axile Bush
4	Helicoid Tongue
5	Left Axile Bush
6	Display Board
7	Rear Case assy
8	Rubber Plug (Water Tray)
9	O-Gasket sub-assy of Bearing
10	Ring of Bearing
11	Cold Plasma Generator

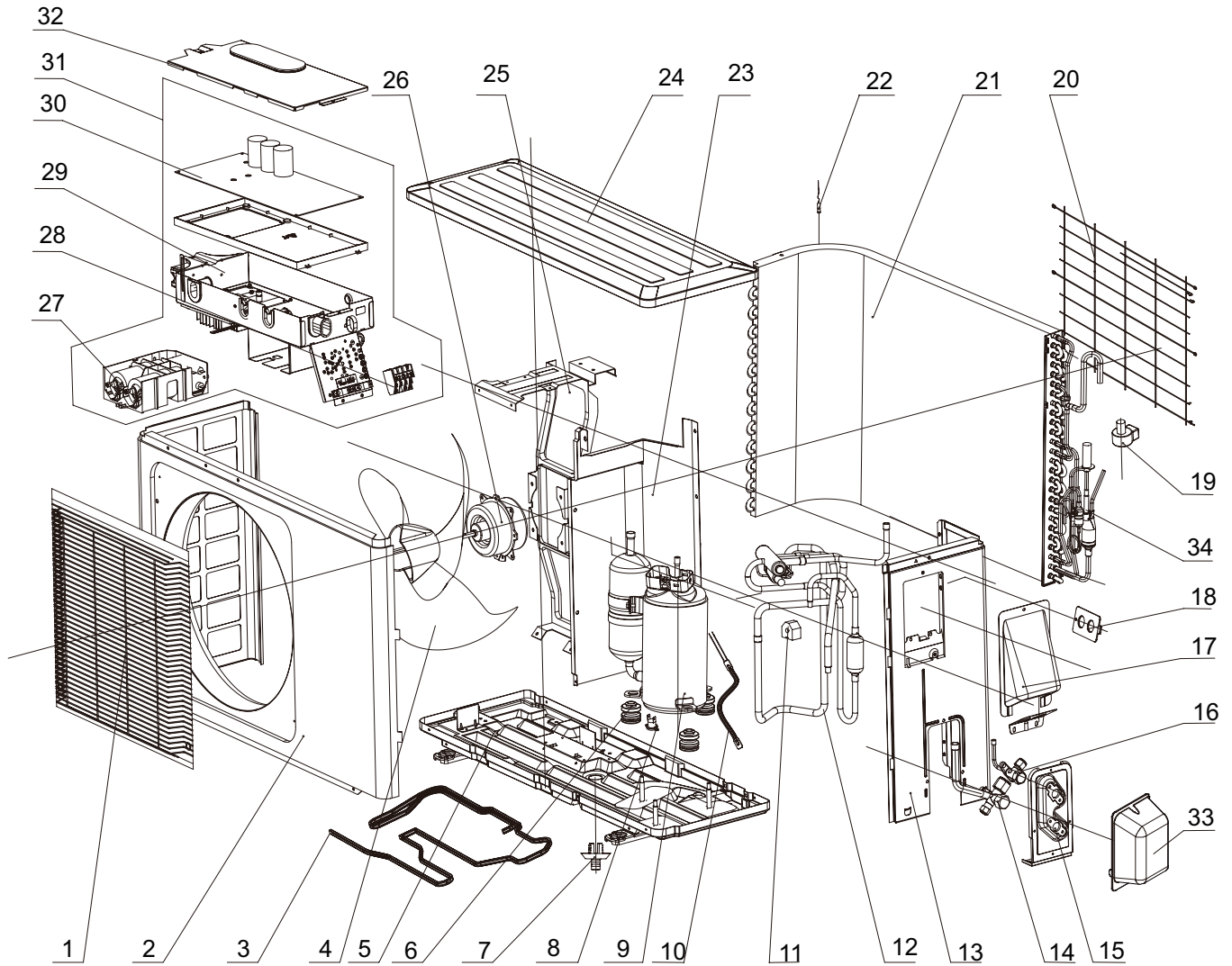
No.	Description
12	Evaporator Assy
13	Wall Mounting Frame
14	Cross Flow Fan
15	Fan Motor
16	Connecting pipe clamp
17	Drainage Hose
18	Stepping Motor
19	Crank
20	Electric Box Assy
21	Terminal Board

No.	Description
22	Jumper
23	Main Board
24	Electric Box Cover Sub-Assy
25	Shield Cover of Electric Box Cover
26	Electric Box Cover
27	Power Cord
28	Connecting Cable
29	Evaporator Support
30	Remote Controller
31	Detecting plate(WIFI)

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

LIVV09HP115V1AO(CB425W08200)

LIVV12HP115V1AO(CB425W07900)



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

NO.	Description
1	Front Grill
2	Cabinet
3	Electrical heater (Chassis)
4	Axial Flow Fan
5	Chassis Sub-assy
6	Compressor Gasket
7	Drainage Connector
8	Overload Protector
9	Compressor and fittings
10	Electrical heater
11	Magnet Coil
12	4-Way Valve Assy

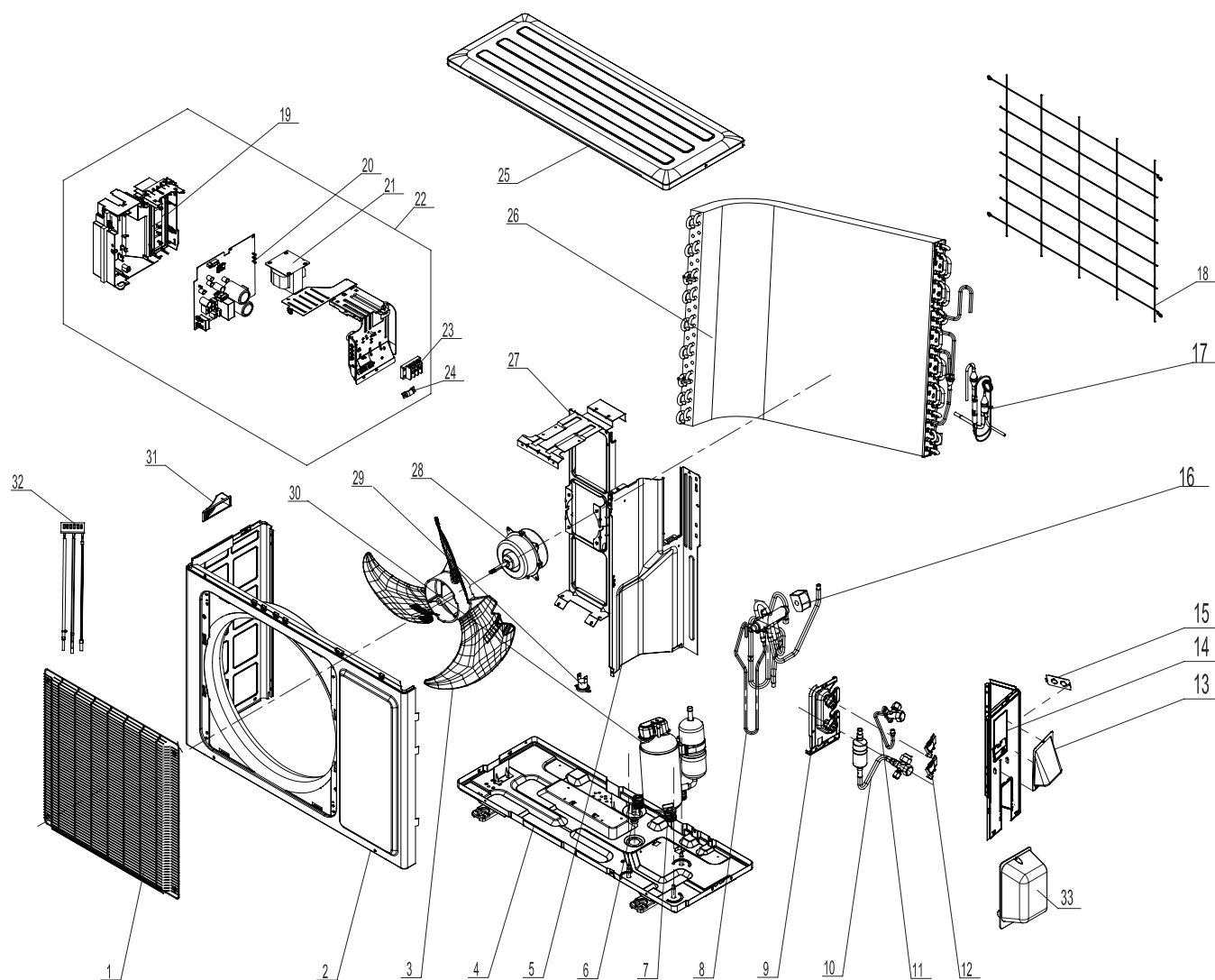
NO.	Description
13	Right Side Plate Assy
14	Valve
15	Valve Support
16	Valve
17	Cable Cross Plate sub-assy
18	Cover of pass wire
19	Electric Expand Valve Fitting
20	Rear Grill
21	Condenser Assy
22	Temperature Sensor
23	Clapboard Sub-Assy
24	Top Cover Plate

NO.	Description
25	Motor suport spot welding sub-assy
26	Fan Motor
27	Capacitor Box Sub-Assy
28	Terminal Board
29	Electric box 1
30	Main Board
31	Electric Box Assy
32	Electric Box Cover Sub-Assy
33	Valve Cover
34	Electric Expansion Valve Sub-Assy

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

LIVV09HP115V1AO(CB425W08201)

LIVV12HP115V1AO(CB425W07902)



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

NO.	Description
1	Front Grill
2	Front Panel Assy
3	Axial Flow Fan
4	Chassis Sub-assy
5	Clapboard Sub-Assy
6	Drainage Connector
7	Compressor Gasket
8	4-Way Valve Assy
9	Valve Support
10	Cut off Valve Assy
11	Valve
12	Valve Support Block

NO.	Description
13	Cover of Pass Wire
14	Right Side Plate Assy
15	Cable Cross Plate 2
16	Magnet Coil
17	Capillary Sub-assy
18	Rear Grill
19	Electric Box
20	Main Board
21	Reactor
22	Electric Box Assy
23	Terminal Board
24	Wire Clamp

NO.	Description
25	Top Cover Sub-Assy
26	Condenser Assy
27	Motor Support
28	Fan Motor
29	Compressor Overload Protector(External)
30	Compressor and Fittings
31	Small Handle
32	Temperature Sensor
33	valve cover

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

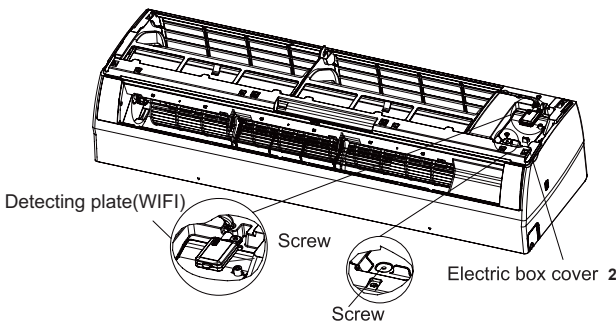
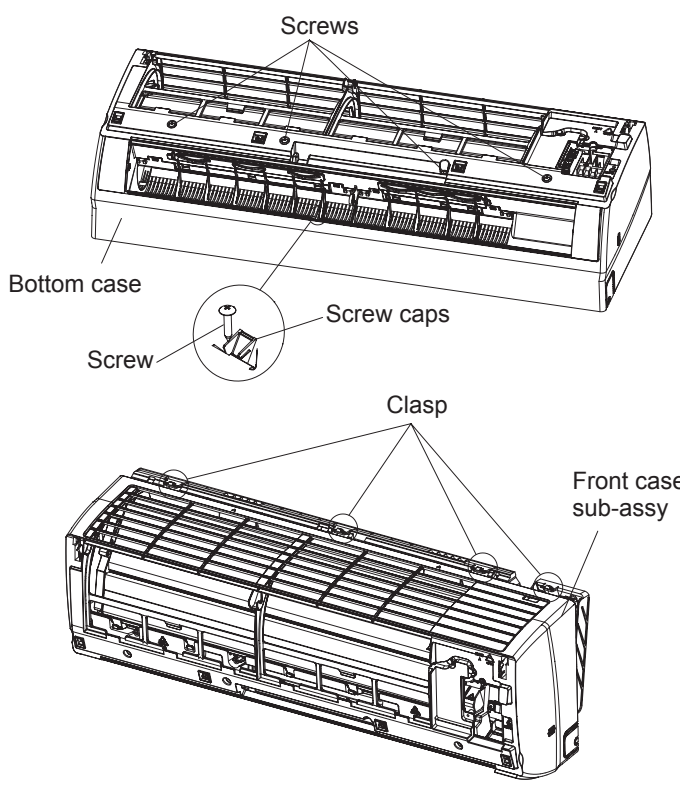
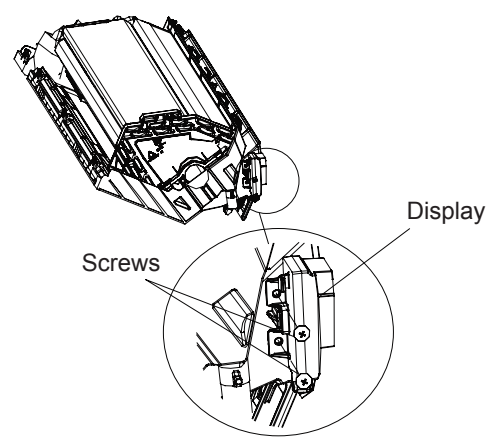
# 11. Removal Procedure

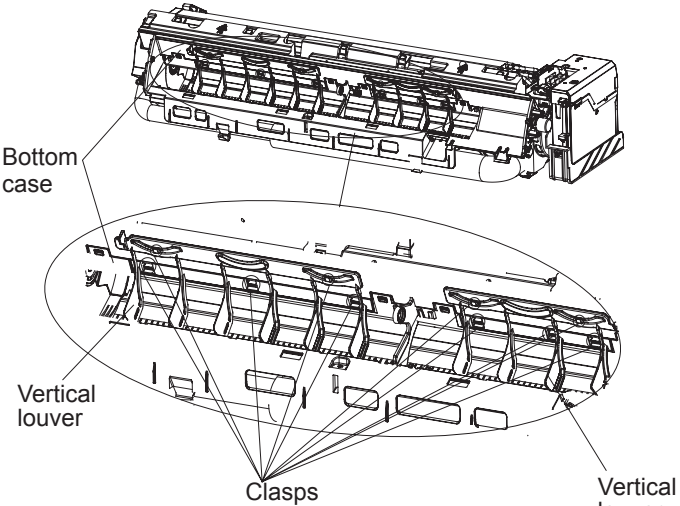
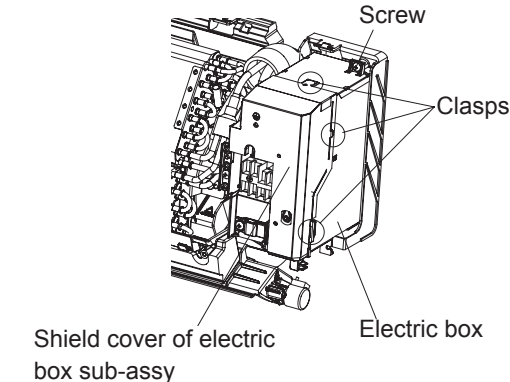
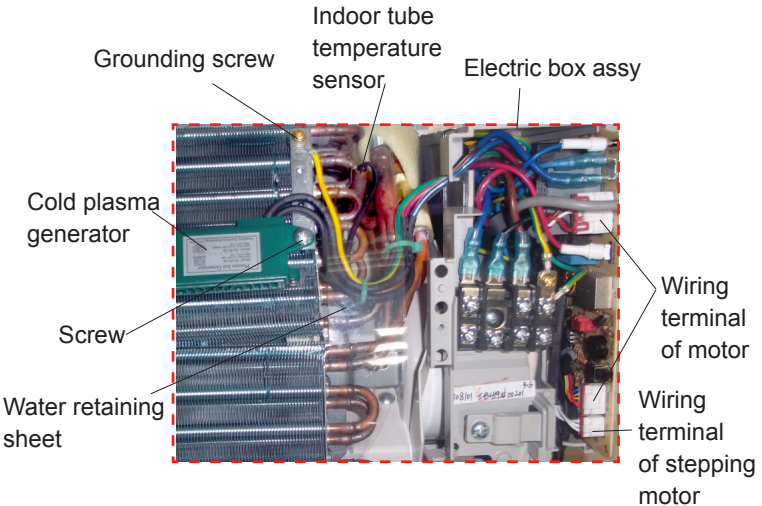
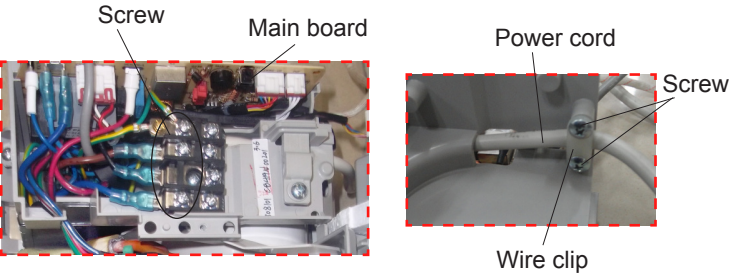
**⚠ Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.**


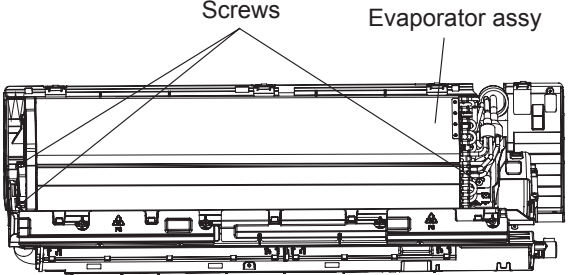
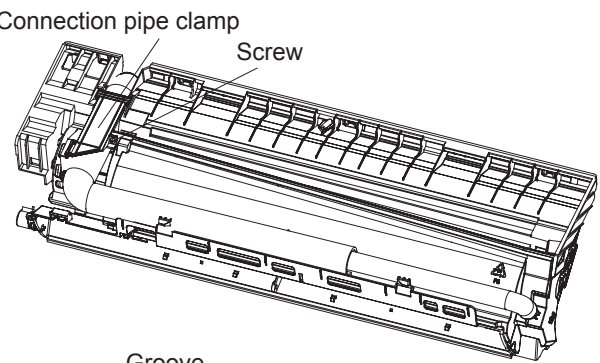
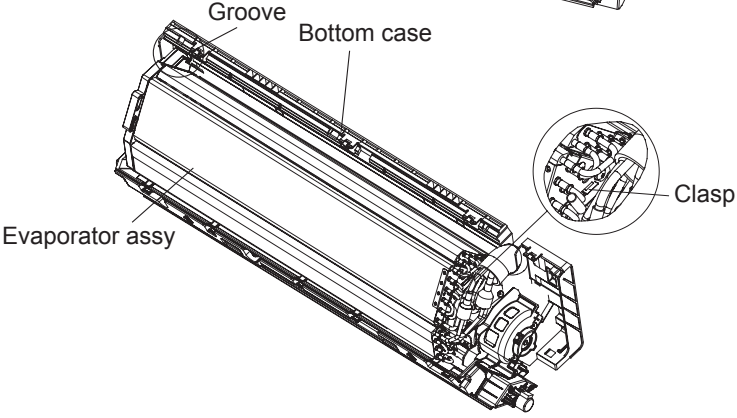
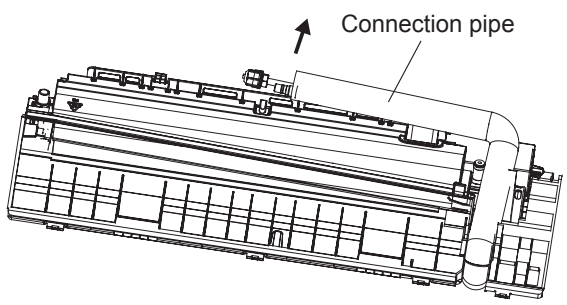
## 11.1 Removal Procedure of Indoor Unit

NOTE: Take A5 panel for an example.

Step	Procedure	
1. Remove filter assembly	<p>Open the front panel. Push the left filter and right filter until they are separate from the groove on the front panel. Remove the left filter and right filter respectively.</p>	
2. Remove horizontal louver	<p>Push out the axle bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p>	
3. Remove panel	<p>a (1)A1 display: Screw off the 2 screws that are locking the display board. Separate the display board from the front panel. (2)A3/A5 display: Screw off the 2 screws that are locking the display board.</p> <p>b Separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p>	

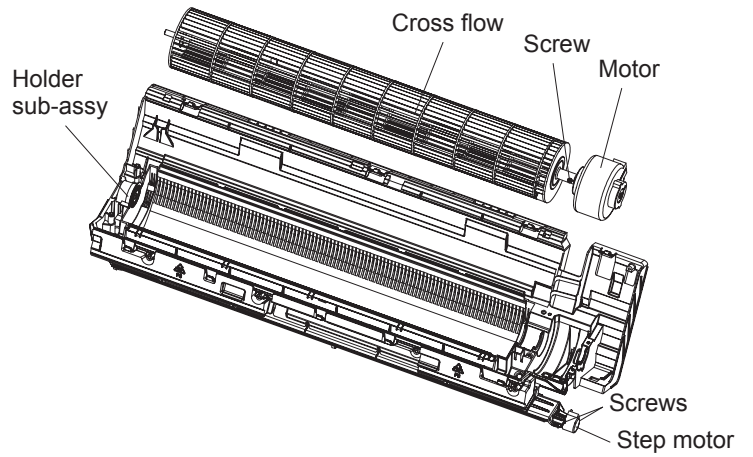
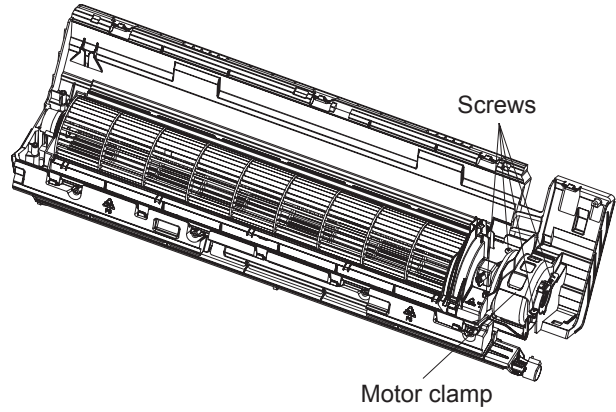
Step	Procedure	
4. Remove electric box cover 2 and detecting plate(WIFI)	<p>Remove the screws on the electric box cover 2 and detecting plate(WIFI), then remove the electric box cover 2 and detecting plate(WIFI).</p> <p>Note:the position of detection board(WIFI) may be different for different models.</p>	 <p>Labels: Detecting plate(WIFI), Screw, Electric box cover 2, Screw</p>
5. Remove front case sub-assy	<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 connection clasps between front case sub-assy and bottom case. Lift up the front case sub-assy and take it out.</p>	 <p>Labels: Screws, Bottom case, Screw caps, Screw, Clasp, Front case sub-assy</p>
6. Remove display	<p>Screw off the 2 screws that are locking the display board.</p>	 <p>Labels: Display, Screws</p>

Steps	Procedure	
7. Remove vertical louver	<p data-bbox="248 336 699 428">Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p> 	
8. Remove electric box assy	<p data-bbox="126 908 711 1065">a Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then remove the shield cover of electric box sub-assy. Remove the screw fixing electric box assy .</p>  <p data-bbox="126 1297 727 1611">b ① Take off the water retaining sheet. Remove the cold plasma generator by screwing off the locking screw on the generator. ② Take off the indoor tube temperature sensor. ③ Screw off 1 grounding screw. ④ Remove the wiring terminals of motor and stepping motor. ⑤ Remove the electric box assy.</p>  <p data-bbox="126 1808 672 2026">c Twist off the screws that are locking each lead wire and rotate the electric box assy. Twist off the screws that are locking the wire clip. Loosen the power cord and remove it's wiring terminal. Lift up the main board and take it off.</p> 	

Steps	Procedure	
	<p>Instruction: Some wiring terminal of this product 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>	 <p>Circlip</p> <p>Soft sheath</p> <p>Holder</p> <p>Connector</p>
<p>9. Remove evaporator assy</p>		
<p>a</p>	<p>Remove 3 screws fixing evaporator assy.</p>	 <p>Screws</p> <p>Evaporator assy</p>
<p>b</p>	<p>At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.</p>	 <p>Connection pipe clamp</p> <p>Screw</p>
<p>c</p>	<p>First remove the left side of the evaporator from the groove of bottom case and then remove the right side from the clasp on the bottom case.</p>	 <p>Groove</p> <p>Bottom case</p> <p>Evaporator assy</p> <p>Clasp</p>
<p>d</p>	<p>Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.</p>	 <p>Connection pipe</p>

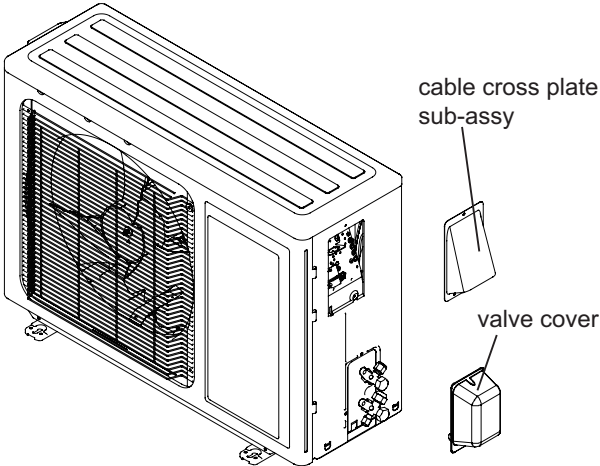
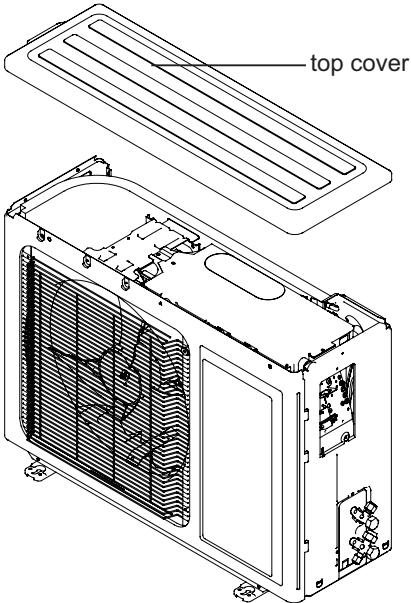
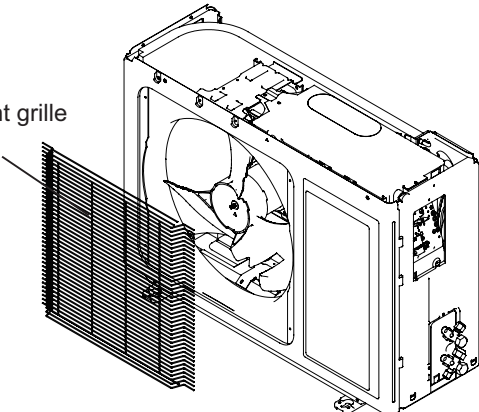


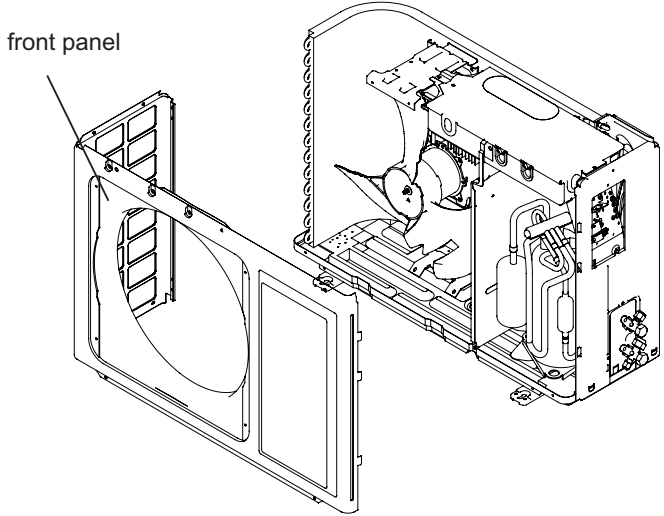
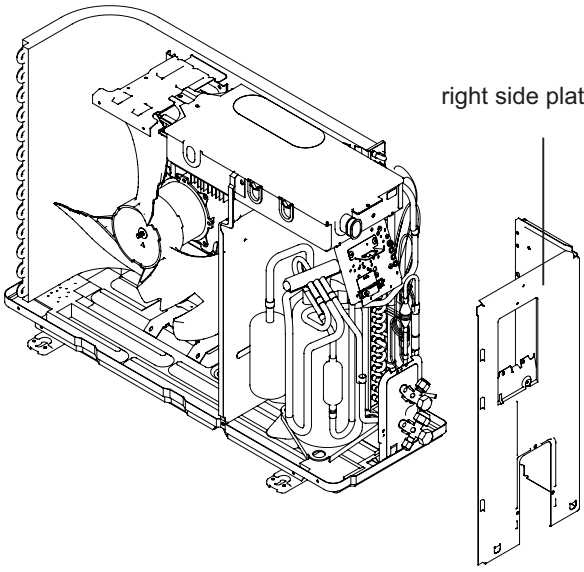
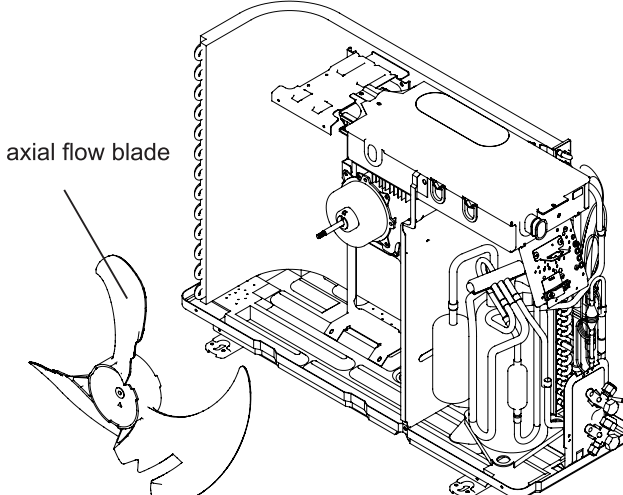
Steps	Procedure
10. Remove motor and cross flow blade	
a	<p>Remove the screws fixing motor clamp and then remove the motor clamp.</p>
b	<p>Remove the screws at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them.                      Remove the bearing holder sub-assy.                      Remove the screw fixing step motor and then remove the step motor.</p>

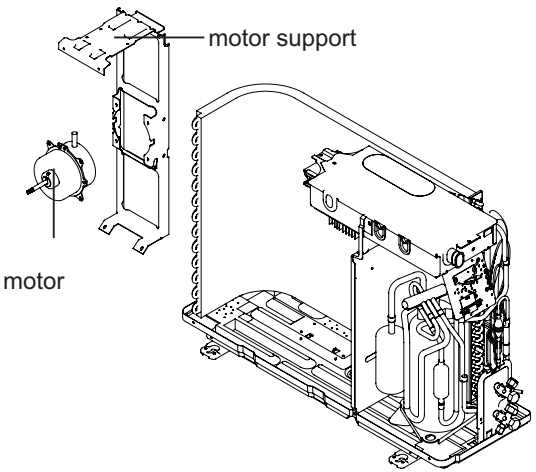
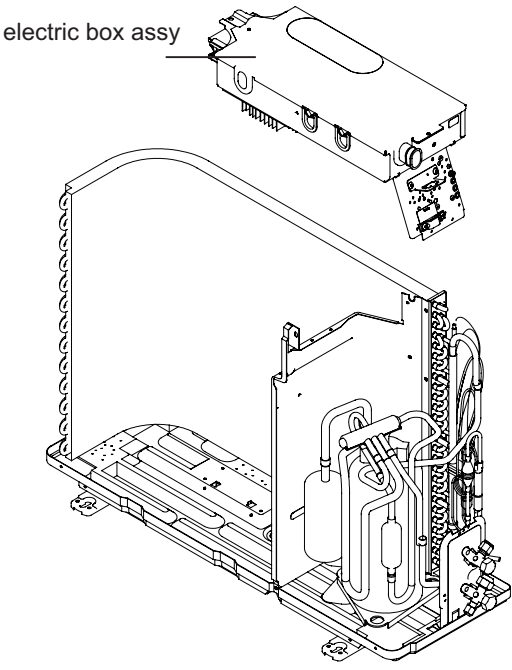
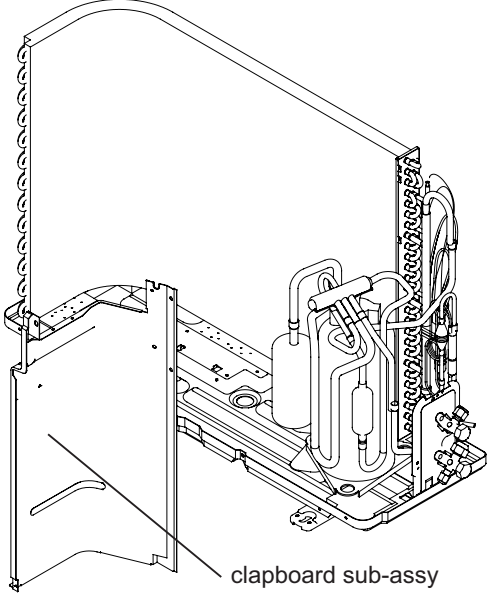


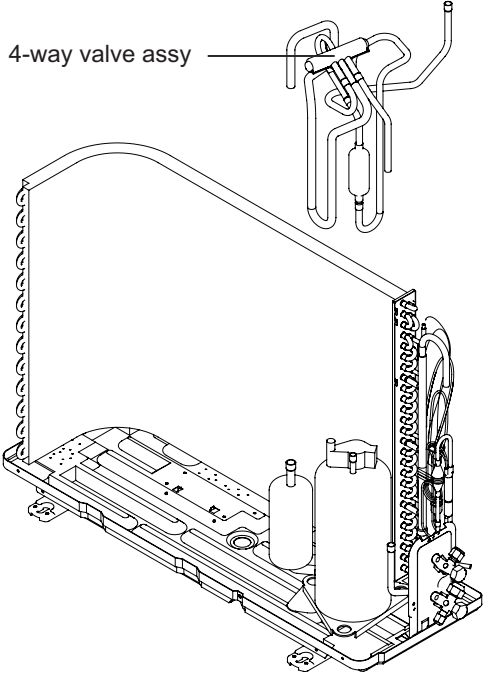
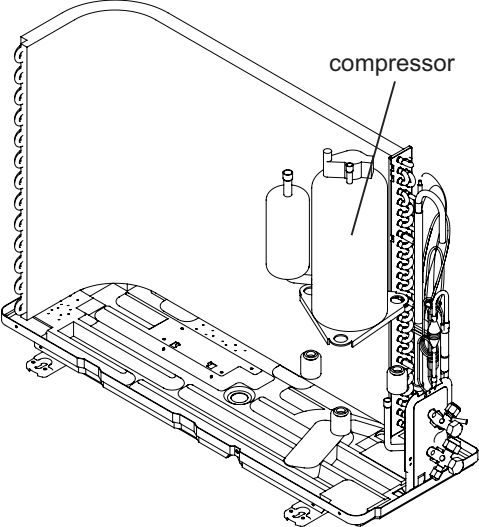
## 11.2 Removal Procedure of Outdoor Unit

**⚠ Warning:** Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

Steps	Procedure
<p><b>1.Remove cable cross plate sub-assy and valve cover</b></p>	<p>Remove the screws fixing cable cross plate sub-assy and then remove the cable cross plate sub-assy.</p> <p>Remove the screws fixing valve cover and then remove the valve cover.</p>  <p>Labels: cable cross plate sub-assy, valve cover</p>
<p><b>2.Remove top cover</b></p>	<p>Remove connection screws connecting the top cover plate with the front panel and the right side plate, and then remove the top cover.</p>  <p>Label: top cover</p>
<p><b>3.Remove front grille</b></p>	<p>Remove connection screws between the front grille and the front panel. Then remove the front grille.</p>  <p>Label: front grille</p>

Steps	Procedure
<p><b>4.Remove front panel</b></p>	<p>Remove connection screws connecting the front panel with the chassis and the motor support, and then remove the front panel.</p>  <p>front panel</p>
<p><b>5.Remove right side plate</b></p>	<p>Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.</p>  <p>right side plate</p>
<p><b>6.Remove axial flow blade</b></p>	<p>Remove the nut fixing the blade and then remove the axial flow blade.</p>  <p>axial flow blade</p>

Steps	Procedure
<p><b>7.Remove motor and motor support</b></p>	<p>Remove the 4 tapping screws fixing the motor. Pull out the lead-out wire and remove the motor. Remove the 2 tapping screws fixing the motor support. Lift motor support to re-move it.</p> 
<p><b>8.Remove electric box assy</b></p>	<p>Remove the 2 screws fixing the cover of electric box. Lift to remove the cover. Loosen the wire and disconnect the terminal. Lift to re-move the electric box assy.</p> <p>Note: The position of the electric box assy for the following models are based on the actual. LIVV09HP115V1AO(CB425W08201) LIVV12HP115V1AO(CB425W07902)</p> 
<p><b>9.Remove clapboard sub-assy</b></p>	<p>Loosen the screws of the clapboard sub-assy. The clapboard sub-assy has a hook on the lower side. Lift and pull the clapboard sub-assy to remove.</p> 

Steps	Procedure
<p data-bbox="159 253 526 286"><b>10.Remove 4-way valve assy</b></p> <p data-bbox="233 329 716 690">Unscrew the fastening nut of the 4-way Valve Assy coil and remove the coil. Wrap the 4-way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way Valve Assy to take it out (Note: Refrigerant should be discharged firstly.) Welding process should be as quickly as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.</p>	 <p data-bbox="967 318 1149 340">4-way valve assy</p>
<p data-bbox="159 1017 461 1050"><b>11.Remove compressor</b></p> <p data-bbox="233 1105 716 1170">Remove the 3 footing screws of the compressor and remove the compressor.</p>	 <p data-bbox="1260 1083 1382 1105">compressor</p>

## 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(See the specification)
- Min. length of connection pipe is 9.84ft.
- Max. length of connection pipe and max. high difference.(See the specification)
- The additional refrigerant oil and refrigerant charging required after prolonging connection pipe
  - After the length of connection pipe is prolonged for 32.81ft at the basis of standard length, you should add 0.0013gal of refrigerant oil for each additional 16.40ft 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(inch)	Gas pipe(inch)	Cooling only(oz/ft.)	Cooling and heating(oz/ft.)
Φ1/4	Φ3/8or Φ1/2	0.2	0.2
Φ1/4 or Φ3/8	Φ5/8 or Φ3/4	0.2	0.6
Φ1/2	Φ3/4 or Φ7/8	0.3	1.3
Φ5/8	Φ1 or Φ1 1/4	0.7	1.3
Φ3/4	/	2.7	2.7
Φ7/8	/	3.8	3.8

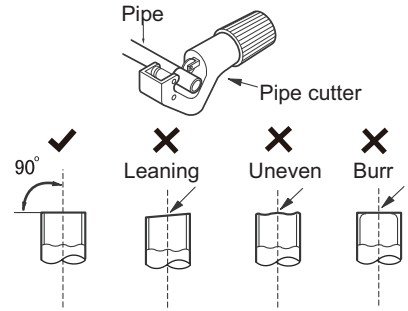
## Appendix 3: Pipe Expanding Method

**⚠ Note:**

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

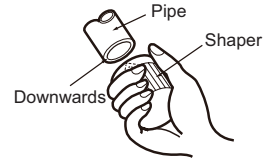
**A:** Cut the pipe

- 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

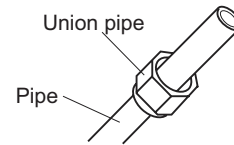
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



**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.



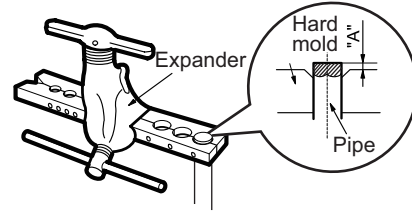
**E:** Expand the port

- Expand the port with expander.

**⚠ Note:**

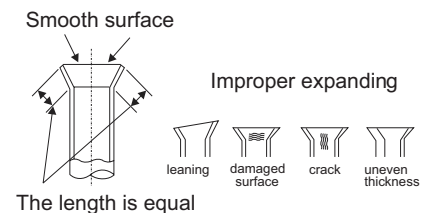
- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(inch)	A(inch)	
	Max	Min
Φ0.24 - 0.25 (1/4")	0.05	0.03
Φ0.37 (3/8")	0.06	0.04
Φ0.47 - 0.50 (1/2")	0.07	0.04
Φ0.63 - 0.625 (5/8")	0.09	0.09



**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(15K)

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-2.2	138.1	68	18.75	138.2	3.848	208.4	1.071
-0.4	128.6	69.8	17.93	140	3.711	210.2	1.039
1.4	121.6	71.6	17.14	141.8	3.579	212	1.009
3.2	115	73.4	16.39	143.6	3.454	213.8	0.98
5	108.7	75.2	15.68	145.4	3.333	215.6	0.952
6.8	102.9	77	15	147.2	3.217	217.4	0.925
8.6	97.4	78.8	14.36	149	3.105	219.2	0.898
10.4	92.22	80.6	13.74	150.8	2.998	221	0.873
12.2	87.35	82.4	13.16	152.6	2.896	222.8	0.848
14	82.75	84.2	12.6	154.4	2.797	224.6	0.825
15.8	78.43	86	12.07	156.2	2.702	226.4	0.802
17.6	74.35	87.8	11.57	158	2.611	228.2	0.779
19.4	70.5	89.6	11.09	159.8	2.523	230	0.758
21.2	66.88	91.4	10.63	161.6	2.439	231.8	0.737
23	63.46	93.2	10.2	163.4	2.358	233.6	0.717
24.8	60.23	95	9.779	165.2	2.28	235.4	0.697
26.6	57.18	96.8	9.382	167	2.206	237.2	0.678
28.4	54.31	98.6	9.003	168.8	2.133	239	0.66
30.2	51.59	100.4	8.642	170.6	2.064	240.8	0.642
32	49.02	102.2	8.297	172.4	1.997	242.6	0.625
33.8	46.6	104	7.967	174.2	1.933	244.4	0.608
35.6	44.31	105.8	7.653	176	1.871	246.2	0.592
37.4	42.14	107.6	7.352	177.8	1.811	248	0.577
39.2	40.09	109.4	7.065	179.6	1.754	249.8	0.561
41	38.15	111.2	6.791	181.4	1.699	251.6	0.547
42.8	36.32	113	6.529	183.2	1.645	253.4	0.532
44.6	34.58	114.8	6.278	185	1.594	255.2	0.519
46.4	32.94	116.6	6.038	186.8	1.544	257	0.505
48.2	31.38	118.4	5.809	188.6	1.497	258.8	0.492
50	29.9	120.2	5.589	190.4	1.451	260.6	0.48
51.8	28.51	122	5.379	192.2	1.408	262.4	0.467
53.6	27.18	123.8	5.197	194	1.363	264.2	0.456
55.4	25.92	125.6	4.986	195.8	1.322	266	0.444
57.2	24.73	127.4	4.802	197.6	1.282	267.8	0.433
59	23.6	129.2	4.625	199.4	1.244	269.6	0.422
60.8	22.53	131	4.456	201.2	1.207	271.4	0.412
62.6	21.51	132.8	4.294	203	1.171	273.2	0.401
64.4	20.54	134.6	4.139	204.8	1.136	275	0.391
66.2	19.63	136.4	3.99	206.6	1.103	276.8	0.382




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


Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-2.2	181.4	68	25.01	138.2	5.13	208.4	1.427
-0.4	171.4	69.8	23.9	140	4.948	210.2	1.386
1.4	162.1	71.6	22.85	141.8	4.773	212	1.346
3.2	153.3	73.4	21.85	143.6	4.605	213.8	1.307
5	145	75.2	20.9	145.4	4.443	215.6	1.269
6.8	137.2	77	20	147.2	4.289	217.4	1.233
8.6	129.9	78.8	19.14	149	4.14	219.2	1.198
10.4	123	80.6	18.13	150.8	3.998	221	1.164
12.2	116.5	82.4	17.55	152.6	3.861	222.8	1.131
14	110.3	84.2	16.8	154.4	3.729	224.6	1.099
15.8	104.6	86	16.1	156.2	3.603	226.4	1.069
17.6	99.13	87.8	15.43	158	3.481	228.2	1.039
19.4	94	89.6	14.79	159.8	3.364	230	1.01
21.2	89.17	91.4	14.18	161.6	3.252	231.8	0.983
23	84.61	93.2	13.59	163.4	3.144	233.6	0.956
24.8	80.31	95	13.04	165.2	3.04	235.4	0.93
26.6	76.24	96.8	12.51	167	2.94	237.2	0.904
28.4	72.41	98.6	12	168.8	2.844	239	0.88
30.2	68.79	100.4	11.52	170.6	2.752	240.8	0.856
32	65.37	102.2	11.06	172.4	2.663	242.6	0.833
33.8	62.13	104	10.62	174.2	2.577	244.4	0.811
35.6	59.08	105.8	10.2	176	2.495	246.2	0.77
37.4	56.19	107.6	9.803	177.8	2.415	248	0.769
39.2	53.46	109.4	9.42	179.6	2.339	249.8	0.746
41	50.87	111.2	9.054	181.4	2.265	251.6	0.729
42.8	48.42	113	8.705	183.2	2.194	253.4	0.71
44.6	46.11	114.8	8.37	185	2.125	255.2	0.692
46.4	43.92	116.6	8.051	186.8	2.059	257	0.674
48.2	41.84	118.4	7.745	188.6	1.996	258.8	0.658
50	39.87	120.2	7.453	190.4	1.934	260.6	0.64
51.8	38.01	122	7.173	192.2	1.875	262.4	0.623
53.6	36.24	123.8	6.905	194	1.818	264.2	0.607
55.4	34.57	125.6	6.648	195.8	1.736	266	0.592
57.2	32.98	127.4	6.403	197.6	1.71	267.8	0.577
59	31.47	129.2	6.167	199.4	1.658	269.6	0.563
60.8	30.04	131	5.942	201.2	1.609	271.4	0.549
62.6	28.68	132.8	5.726	203	1.561	273.2	0.535
64.4	27.39	134.6	5.519	204.8	1.515	275	0.521
66.2	26.17	136.4	5.32	206.6	1.47	276.8	0.509

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

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-20.2	853.5	50	98	120.2	18.34	190.4	4.754
-18.4	799.8	51.8	93.42	122	17.65	192.2	4.609
-16.6	750	53.6	89.07	123.8	16.99	194	4.469
-14.8	703.8	55.4	84.95	125.6	16.36	195.8	4.334
-13	660.8	57.2	81.05	127.4	15.75	197.6	4.204
-11.2	620.8	59	77.35	129.2	15.17	199.4	4.079
-9.4	580.6	60.8	73.83	131	14.62	201.2	3.958
-7.6	548.9	62.6	70.5	132.8	14.09	203	3.841
-5.8	516.6	64.4	67.34	134.6	13.58	204.8	3.728
-4	486.5	66.2	64.33	136.4	13.09	206.6	3.619
-2.2	458.3	68	61.48	138.2	12.62	208.4	3.514
-0.4	432	69.8	58.77	140	12.17	210.2	3.413
1.4	407.4	71.6	56.19	141.8	11.74	212	3.315
3.2	384.5	73.4	53.74	143.6	11.32	213.8	3.22
5	362.9	75.2	51.41	145.4	10.93	215.6	3.129
6.8	342.8	77	49.19	147.2	10.54	217.4	3.04
8.6	323.9	78.8	47.08	149	10.18	219.2	2.955
10.4	306.2	80.6	45.07	150.8	9.827	221	2.872
12.2	289.6	82.4	43.16	152.6	9.489	222.8	2.792
14	274	84.2	41.34	154.4	9.165	224.6	2.715
15.8	259.3	86	39.61	156.2	8.854	226.4	2.64
17.6	245.6	87.8	37.96	158	8.555	228.2	2.568
19.4	232.6	89.6	36.38	159.8	8.268	230	2.498
21.2	220.5	91.4	34.88	161.6	7.991	231.8	2.431
23	209	93.2	33.45	163.4	7.726	233.6	2.365
24.8	198.3	95	32.09	165.2	7.47	235.4	2.302
26.6	199.1	96.8	30.79	167	7.224	237.2	2.241
28.4	178.5	98.6	29.54	168.8	6.998	239	2.182
30.2	169.5	100.4	28.36	170.6	6.761	240.8	2.124
32	161	102.2	27.23	172.4	6.542	242.6	2.069
33.8	153	104	26.15	174.2	6.331	244.4	2.015
35.6	145.4	105.8	25.11	176	6.129	246.2	1.963
37.4	138.3	107.6	24.13	177.8	5.933	248	1.912
39.2	131.5	109.4	23.19	179.6	5.746	249.8	1.863
41	125.1	111.2	22.29	181.4	5.565	251.6	1.816
42.8	119.1	113	21.43	183.2	5.39	253.4	1.77
44.6	113.4	114.8	20.6	185	5.222	255.2	1.725
46.4	108	116.6	19.81	186.8	5.06	257	1.682
48.2	102.8	118.4	19.06	188.6	4.904	258.8	1.64



JF00302771



CAT NO. GREE\_LIVO GEN3\_115V\_SERVICE\_04112022



GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Add: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China, 519070

Tel: (+86-756) 8522219

Fax: (+86-756) 8669426

E-mail: [global@cn.gree.com](mailto:global@cn.gree.com) [www.gree.com](http://www.gree.com)

**For product improvement, specifications and appearance in this manual are subject to change without prior notice.**