GREE
Change for life

Service Manual

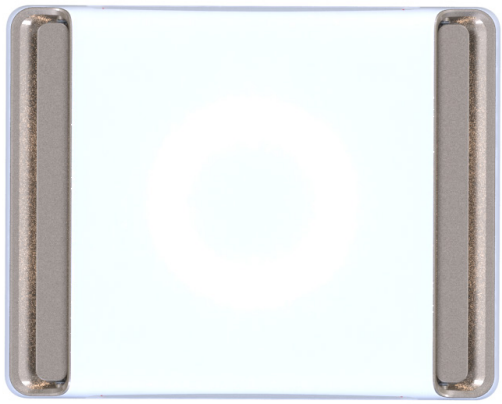
GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Table of Contents

1. Summary

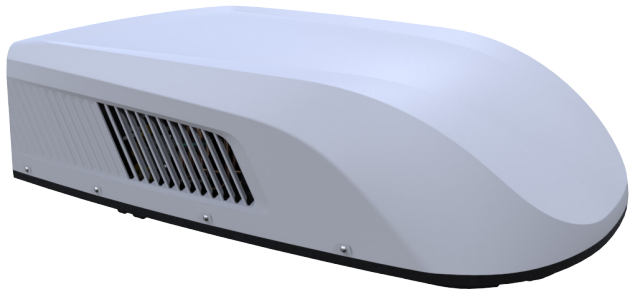
Indoor Unit:

GRH09DB-K6DNA1A
GRH12DB-K6DNA1A



Outdoor Unit:

GRH09DB-K6DNA1A/O
GRH12DB-K6DNA1A/O



Remote Controller:

YAY1F2

Model list:

No	Model	Product code	Indoor model	Indoor product code	Outdoor model	Outdoor product code	Remote Controller
1	GRH09DB-K6DNA1A	CU050001701	GRH09DB-K6DNA1A/I	CU050N01701	GRH09DB-K6DNA1A/O	CU050W01701	YAY1F2
2		CU050001702		CU050N01702		CU050W01702	
3	GRH12DB-K6DNA1A	CU050001601	GRH12DB-K6DNA1A/I	CU050N01601	GRH12DB-K6DNA1A/O	CU050W01601	
4		CU050001602		CU050N01602		CU050W01602	

2. Specifications

Model			GRH09DB-K6DNA1A	GRH09DB-K6DNA1A
Product Code			CU050001701	CU050001702
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Cooling Capacity		W	2650	2650
Heating Capacity		W	2500	2500
Cooling Power Input		W	950	950
Heating Power Input		W	780	780
Cooling Current Input		A	/	/
Heating Current Input		A	/	/
Rated Input		W	1300	1300
Rated Current		A	6.2	6.2
EER		W/W	/	/
COP		W/W	/	/
Air Flow Volume		m^3/h	340/290/225	340/290/225
Dehumidifying Volume		L/h	1	1
Application Area		m^2	10-17	10-17
Set Temperature Range		°C	16~30	16~30
Cooling Operation Ambient Temperature Range		°C	18~46	18~46
Heating Operation Ambient Temperature Range		°C	-5~24	-5~24
Indoor Unit	Model		GRH09DB-K6DNA1A/I	GRH09DB-K6DNA1A/I
	Product Code		CU050N01701	CU050N01702
	Swing Motor Model		/	/
	Swing Motor Power Output	W	/	/
	Fuse Current	A	15	15
	Dimension (WXHXD)	mm	610X485X49	610X485X49
	Dimension of Carton Box (LXWXH)	mm	668X547X109	668X547X109
	Dimension of Package (LXWXH)	mm	678X550X112	678X550X112
	Net Weight	kg	2.7	2.7
	Gross Weight	kg	4	/
	Fan Type		Centrifugal	Centrifugal
	Fan Diameter Length	mm	Φ150x177.5	Φ150x177.5
	Cooling Speed	r/min	1700/1400/1100	1700/1400/1100
	Heating Speed	r/min	1700/1400/1100	1700/1400/1100
	Fan Motor Power Output	W	38	38
	Fan Motor RLA	A	/	/
	Fan Motor Capacitor	μF	/	/
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7	Φ7
	Evaporator Row-fin Gap	mm	2-1.3	2-1.3
	Evaporator Coil Length	mm	666×25.4×152.4	666×25.4×152.4

Outdoor Unit	Model		GRH09DB-K6DNA1A/O	GRH09DB-K6DNA1A/O
	Product Code		CU050W01701	CU050W01702
	Compressor Trademark		GREE	GREE
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD.	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model		QYF-A079zY	QYF-A079zY
	Compressor Oil		FW68DA	FW68DA
	Compressor Type		Rotary	Rotary
	Compressor Locked Rotor Amp	A	19.50	19.50
	Compressor Rated Load Amp	A	3.60	3.60
	Compressor Power Input	W	750	750
	Compressor Overload Protector		/	/
	Fan Type		Centrifugal	Centrifugal
	Fan Diameter	mm	Φ150	Φ150
	Fan Motor Speed	rpm	1600/1400/1100	1600/1400/1100
	Fan Motor Power Output	W	42	42
	Fan Motor RLA	A	/	/
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume	m^3/h	760	760
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7	Φ7
	Condenser Rows-fin Gap	mm	2-1.3	2-1.3
	Condenser Coil Length	mm	552×25.4×228.6	552×25.4×228.6
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Maximum Allowable Pressure	MPa	4.3	4.3
	Throttling Method		Capillary	Capillary
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IPX4	IPX4
	Refrigerant		R32	R32
	Refrigerant Charge	kg	0.37	0.37
	Dimension (WXHXD)	mm	1077X720X283	1077X720X283
	Dimension of Carton Box (LXWXH)	mm	1146×783×322	1146×783×322
	Dimension of Package (LXWXH)	mm	1149×786×355	1149×786×355
	Net Weight	kg	29.5	29.5
	Gross Weight	kg	37.5	/

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

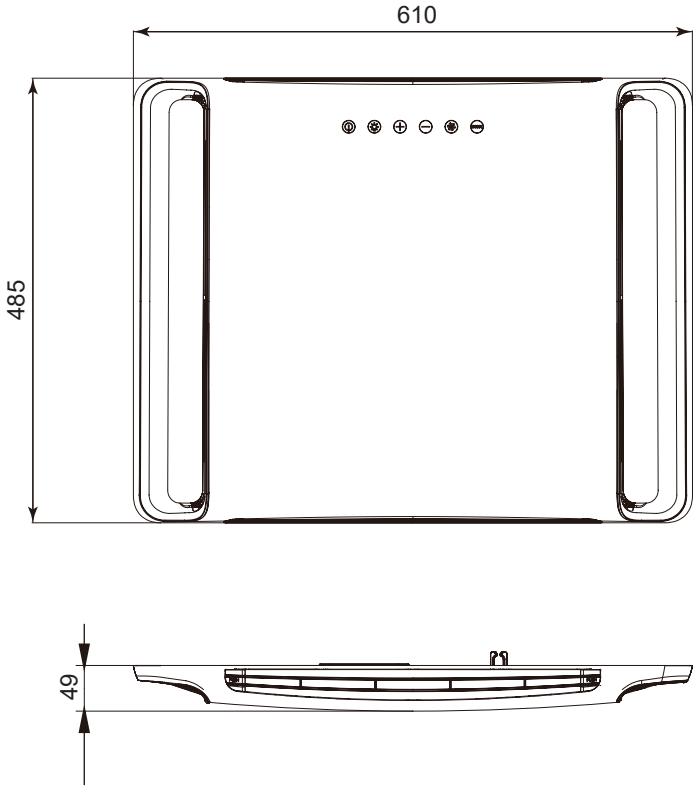
Model			GRH12DB-K6DNA1A	GRH12DB-K6DNA1A
Product Code			CU050001602	CU050001601
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Cooling Capacity		W	3600	3600
Heating Capacity		W	3400	3400
Cooling Power Input		W	1100	1100
Heating Power Input		W	950	950
Cooling Current Input		A	/	/
Heating Current Input		A	/	/
Rated Input		W	1350	1350
Rated Current		A	6.2	6.2
EER		W/W	/	/
COP		W/W	/	/
Air Flow Volume		m^3/h	360/290/225	360/290/225
Dehumidifying Volume		L/h	1	1
Application Area		m^2	10-17	10-17
Set Temperature Range		°C	16~30	16~30
Cooling Operation Ambient Temperature Range		°C	18~46	18~46
Heating Operation Ambient Temperature Range		°C	-5~24	-5~24
Indoor Unit	Model		GRH12DB-K6DNA1A/I	GRH12DB-K6DNA1A/I
	Product Code		CU050N01602	CU050N01601
	Swing Motor Model		/	/
	Swing Motor Power Output	W	/	/
	Fuse Current	A	15	15
	Dimension (WXHXD)	mm	610X485X49	610X485X49
	Dimension of Carton Box (LXWXH)	mm	668X547X109	668X547X109
	Dimension of Package (LXWXH)	mm	678X550X112	678X550X112
	Net Weight	kg	2.7	2.7
	Gross Weight	kg	4	/
	Fan Type		Centrifugal	Centrifugal
	Fan Diameter Length	mm	Φ150x177.5	Φ150x177.5
	Cooling Speed	r/min	1700/1400/1100	1700/1400/1100
	Heating Speed	r/min	1700/1400/1100	1700/1400/1100
	Fan Motor Power Output	W	38	38
	Fan Motor RLA	A	/	/
	Fan Motor Capacitor	μF	/	/
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7	Φ7
	Evaporator Row-fin Gap	mm	2-1.3	2-1.3
	Evaporator Coil Length	mm	666×25.4×152.4	666×25.4×152.4

Outdoor Unit	Model		GRH12DB-K6DNA1A/O	GRH12DB-K6DNA1A/O
	Product Code		CU050W01602	CU050W01601
	Compressor Trademark		GREE	GREE
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD.	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model		QYF-A079zY	QYF-A079zY
	Compressor Oil		FW68DA	FW68DA
	Compressor Type		Rotary	Rotary
	Compressor Locked Rotor Amp	A	19.50	19.50
	Compressor Rated Load Amp	A	3.60	3.60
	Compressor Power Input	W	750	750
	Compressor Overload Protector		/	/
	Fan Type		Centrifugal	Centrifugal
	Fan Diameter	mm	Φ150	Φ150
	Fan Motor Speed	rpm	1600/1400/1100	1600/1400/1100
	Fan Motor Power Output	W	42	42
	Fan Motor RLA	A	/	/
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume	m^3/h	760	760
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7	Φ7
	Condenser Rows-fin Gap	mm	2-1.3	2-1.3
	Condenser Coil Length	mm	552×25.4×228.6	552×25.4×228.6
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Maximum Allowable Pressure	MPa	4.3	4.3
	Throttling Method		Capillary	Capillary
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IPX4	IPX4
	Refrigerant		R32	R32
	Refrigerant Charge	kg	0.37	0.37
	Dimension (WXHXD)	mm	1077X720X283	1077X720X283
	Dimension of Carton Box (LXWXH)	mm	1146×783×322	1146×783×405
	Dimension of Package (LXWXH)	mm	1149×786×355	1149×786×435
	Net Weight	kg	29.5	29.5
	Gross Weight	kg	37.5	/

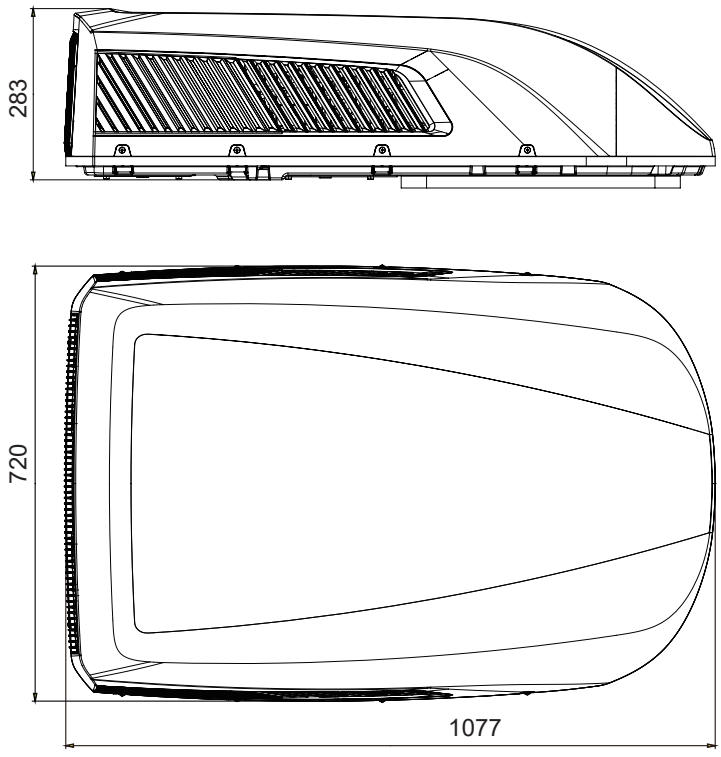
The above data is subject to change without notice. Please refer to the nameplate of the unit.

3. Outline Dimension Diagram

3.1 Indoor Unit

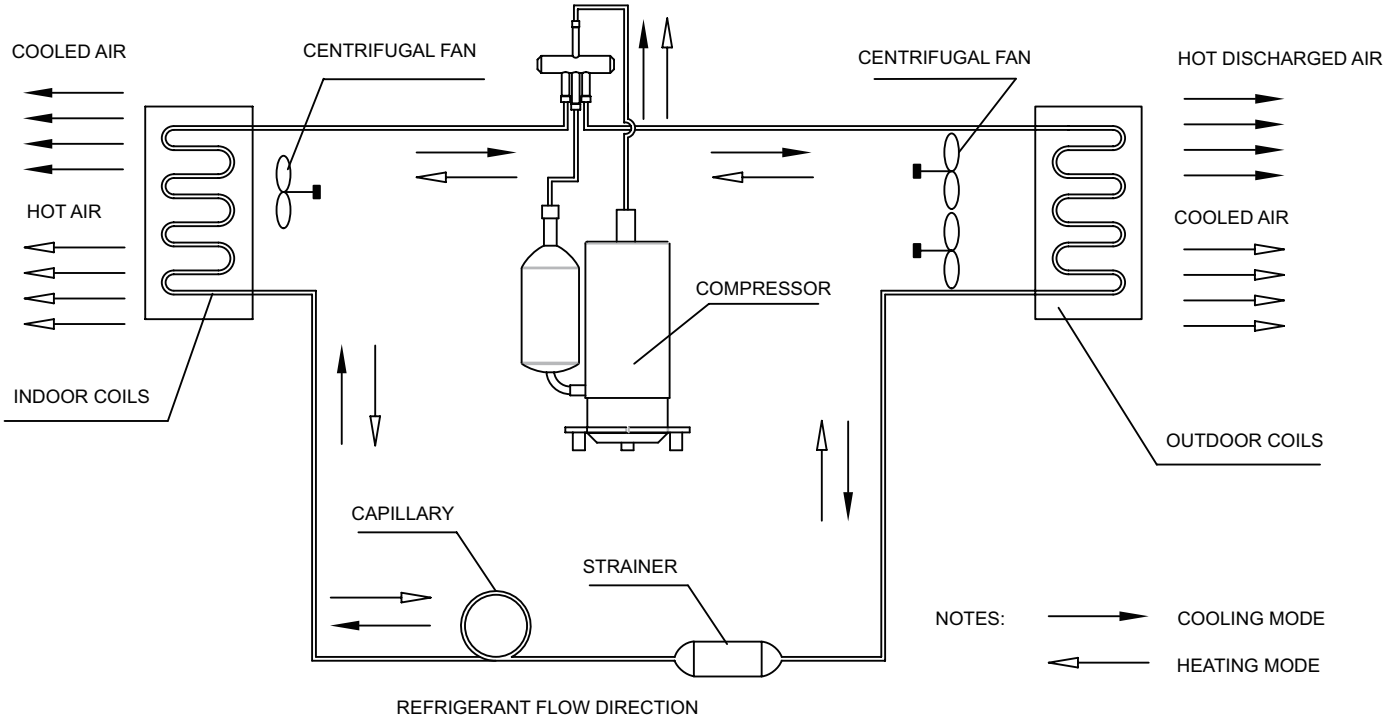


3.2 Outdoor Unit



Unit:mm

4. Refrigerant System Diagram



5. Electrical Part

5.1 Wiring Diagram

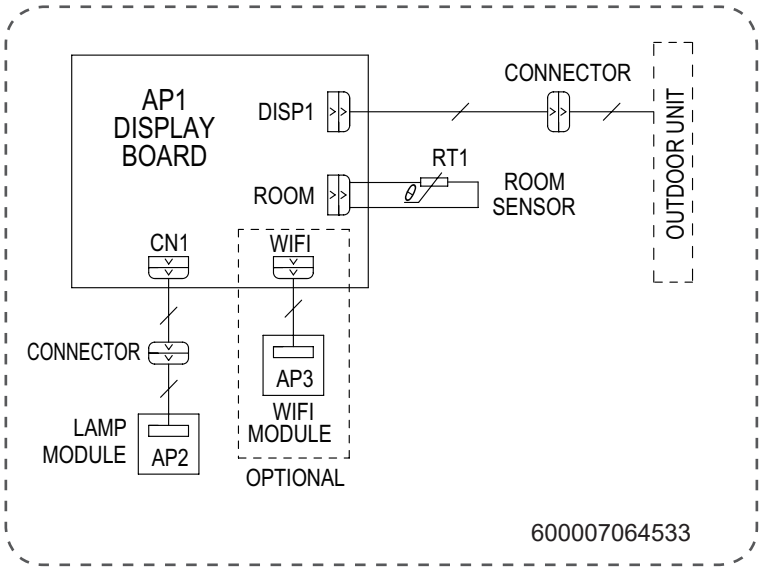
●Instruction

Symbol	Symbol Color
WH	White
YE	Yellow
RD	Red
YEGN	Yellow/Green
VT	Violet

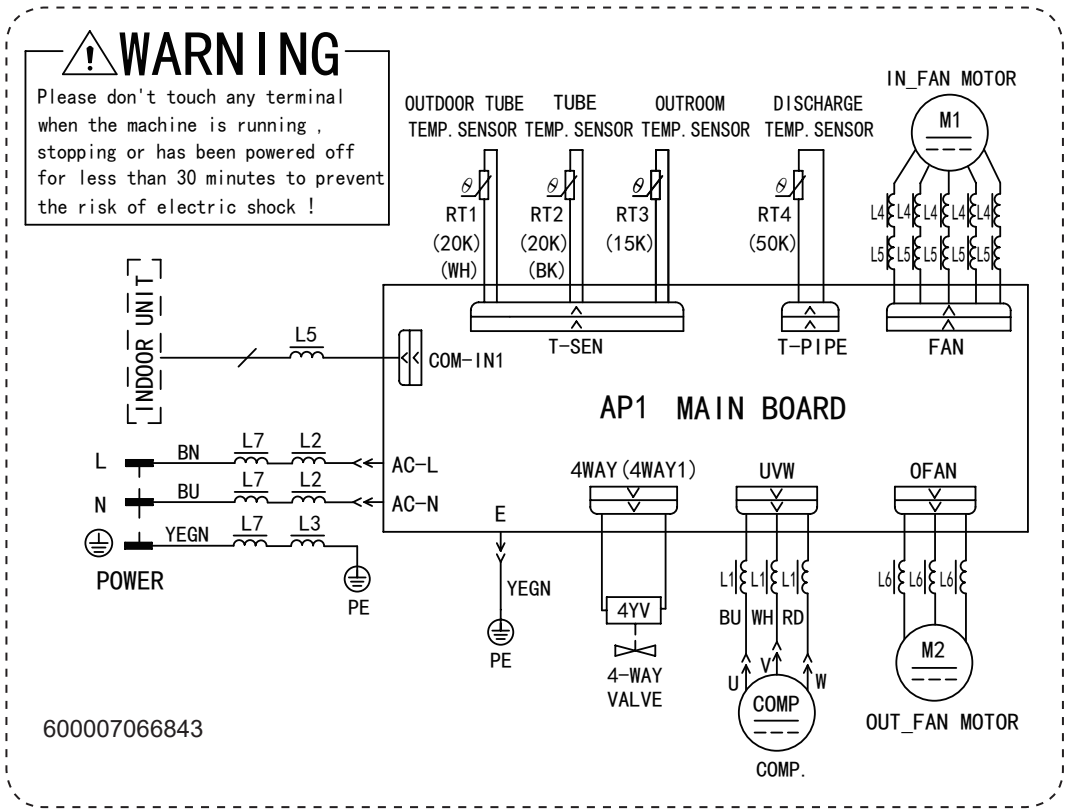
Symbol	Symbol Color
GN	Green
BN	Brown
BU	Blue
BK	Black
OG	Orange

Symbol	Name
COMP	Compressor
⏚	Grounding wire
/	/
/	/
/	/

● Indoor Unit



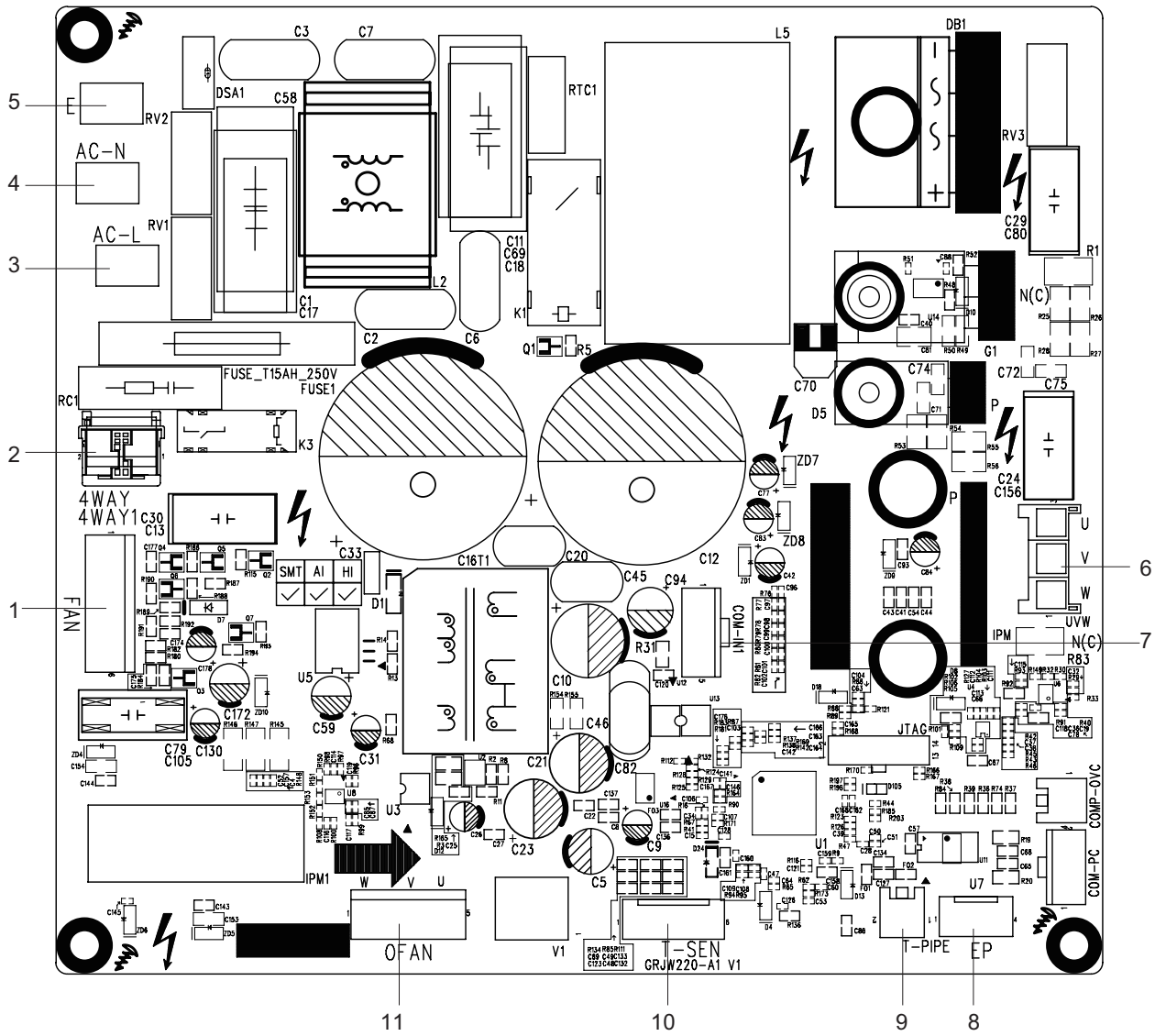
● Outdoor Unit



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

5.2 PCB Printed Diagram

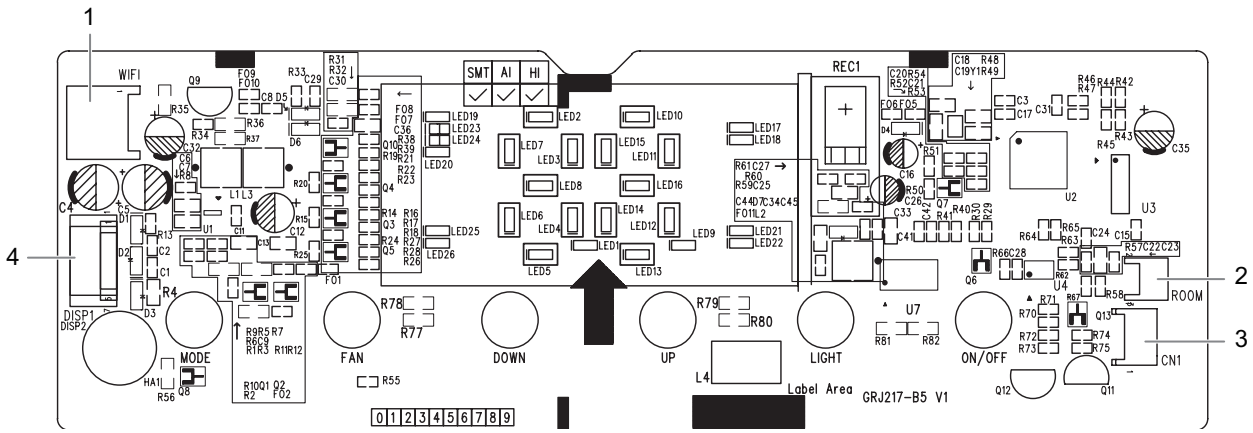
Silk screen on main board



No.	Name
1	Indoor motor terminal
2	Terminal of 4-way valve
3	Terminal of live wire
4	Terminal of neutral wire
5	Terminal of earthing wire

No.	Name
6	Terminal of compressor
7	Interface of display board
8	E disk interface
9	Reserve discharge temperature sensor
10	Outdoor Ambient temperature sensor Indoor Ambient temperature sensor Outdoor Tube temperature sensor
11	Outdoor motor terminal

Silk screen on display board

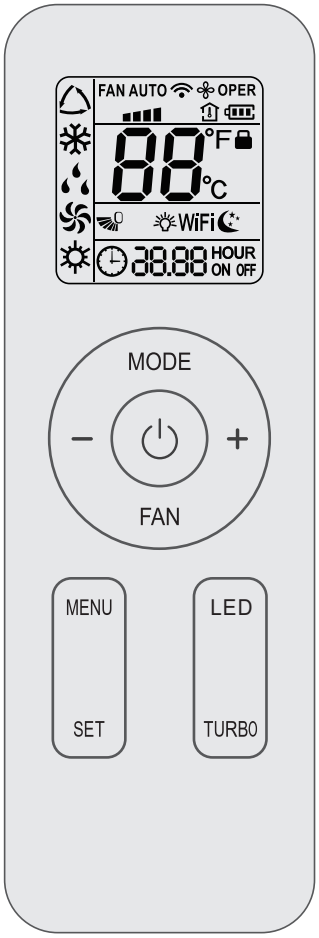


No.	Name
1	Interface of WiFi
2	Interface of temperature sensor

No.	Name
3	Interface of lamp plate
4	Interface of main board

6. Function and Control

6.1 Remote Controller Introduction



Introduction for icons on display screen

FAN AUTO	Set fan speed
	Send signal
Operation mode	Auto mode
	Cool mode
	Dry mode
	Fan mode
	Heat mode
	Sleep mode
	Light
	X-FAN function
	Indoor ambient temp.
	Clock
88°F 88°C	Set temperature
WIFI	WiFi function
88:88	Set time
ON OFF	TIMER ON / TIMER OFF
	Up & down swing
	Child lock

Introduction for buttons on remote controller

Note:

● 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.

● After putting through power, air conditioner will give out a sound and operation indicator " ⏻ " is ON (red indicator,the colout is different for different models). You can operate the air conditioner through the 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 condition-er will give out a sound, which means the signal has been sent to the air conditioner.

⏻ 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.

AUTO → COOL → DRY → FAN → HEAT

●When selecting auto mode, air conditioner will operate automatically according to ambient tem-perature. Set temperature can't be adjusted and will not be displayed as well. Press "FAN" button can adjust fan speed.

●When selecting cool mode, air conditioner will operate under cool mode. Press "+" or "-" button to adjust set temperature. Press "FAN" button to adjust fan speed.

●When selecting dry mode, the air conditioner operates at low speed under dry mode. Under dry mode, fan speed can't be adjusted.

●When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. Press "FAN" button to adjust fan speed.

●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.

*NOTE:

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).

This mode indicator is not available for some models. Cooling only unit won't receive heat mode signal. If setting heat mode with remote controller, press " ⏻ " button can't start up the unit.

FAN button

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

*NOTE:

Fan Speed " ▪▪▪▪ " is not available for some models, Fan Speed " ▪▪▪▪ " is the same with Fan Speed " ▪▪▪ " for some models.

Under AUTO speed, air conditioner will select proper fan speed automatically according to factory default setting.

AUTO speed is only available for some models.

It's low fan speed under dry mode.

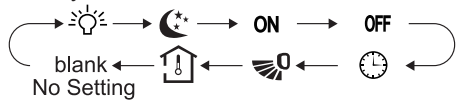
X-FAN function: Holding fan speed button for 2s in cool or dry mode, the icon " " is displayed and the indoor fan will continue operation

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 blowed after the unit i s stopped to avoid mould.
Having set X-FAN function on: After turning off the unit by pressing " ⏻ " button, indoor fan will continue running for a few minutes at low speed. In this period, 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.
X-FAN function is only available for some models.

—/+ button

Press "+" or "-" button once increase or decrease set temperature 1°C(°F). 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 functions).

MENU /SET **button**
Press " MENU /SET " button to functions setting.
Press " MENU " button to select the function setting symbol(the corresponding function symbol flashes). then press " SET " button to turn on or turn off this function. The submenu can be selected circularly as follows:



:Light function :Sleep function
ON : Timer on function OFF :Timer off function
Clock function
:up and down swing function
:Ambient temperature display function

*NOTE:Some menu's function may be unavailable under different models.

LED **button**
Press this button can turn on or turn off the LED light on the panel.

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. If start this function, the unit will run at super-high fan speed to cool or heat quickly so that the ambient tem-perature approaches the preset temperature as soon as possible.
*NOTE:
Fan Speed " ▮▮▮▮ " is not available for some models, Fan Speed " ▮▮▮▮ " is the same with Fan Speed " ▮▮▮ " for some models.

Function introduction for combination buttons

— and +:Child lock function

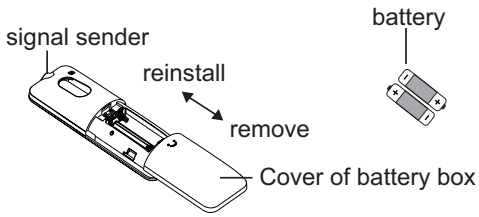
Press "+" and "-" simultaneously to turn on or turn off child lock function. When child lock func-tion is on, " 🔒 " icon is displayed on remote control-ler. If you operate the remote controller, the " " icon will blink three times without sending signal to the unit.

— and MODE :Temperature display switchover function

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

MODE and TURBO :WiFi function
Press "MODE" and "TURBO" button simultane-ously to turn on or turn off WiFi function. When WiFi function is turned on, the "WiFi" icon will be displayed on remote controller; Long press "MODE" and "TURBO" buttons simultaneously for 10s, remote controller will send WiFi reset code and then the WiFi function will be turned on. WiFi function is defaulted ON after energization of the remote controller.
*NOTE:This function is only available for some models.

Introduction for buttons on remote controller

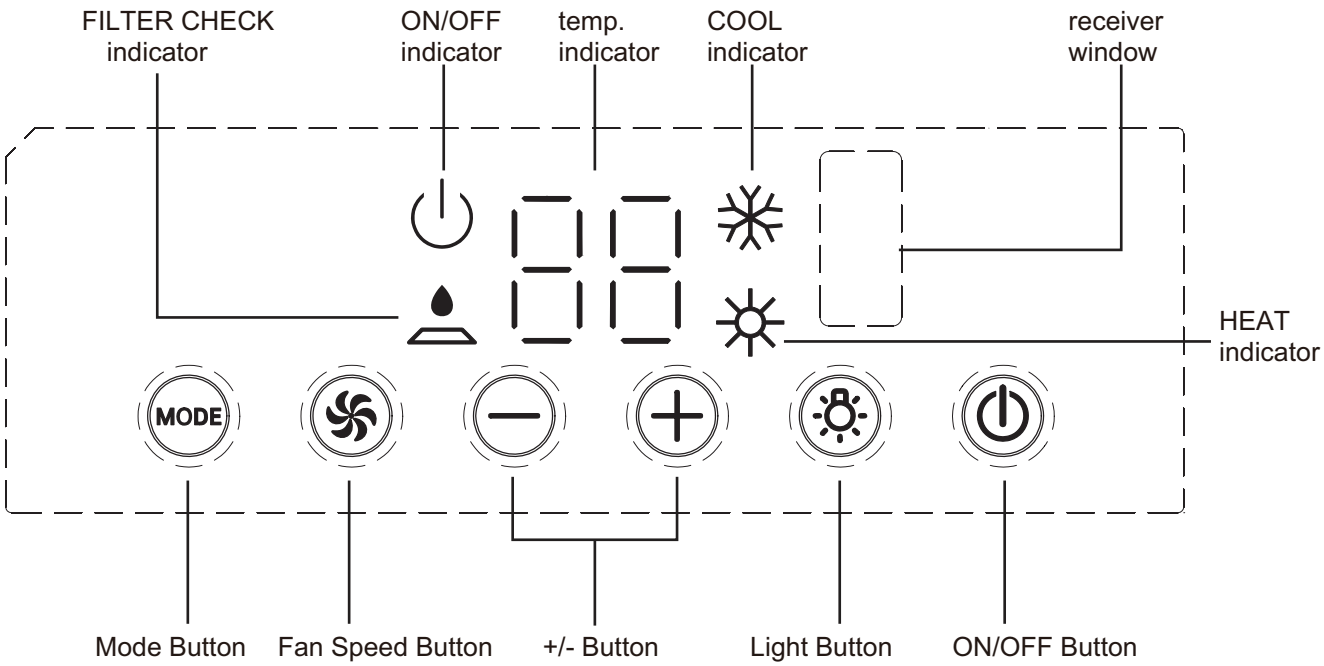


1.Press the back side of remote controller marked with " ◡̈ ", as shown in the fig, and then push out the cover of battery box along the arrow direction.
2.Replace two 7# (AAA 1.5V) dry batteries, and make sure the position of "+" polar and "-" polar are correct.
3.Reinstall the cover of battery box.

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 Control Panel Introduction

Note: If the remote controller is missing, operate on the control panel.



Basic Functions of the Buttons

1.ON/OFF button
Operation starts when pressing this button, and stops when pressing this button again.

2.LIGHT button
Press this button to turn on or turn off display light on indoor unit.

3.(+/-) button
Press the + button to increase the set(operating) temperature of the unit,and press the - button to decrease the set(operating) temperature of the unit. the temperature setting range is from 16~30°C (61~86°F).

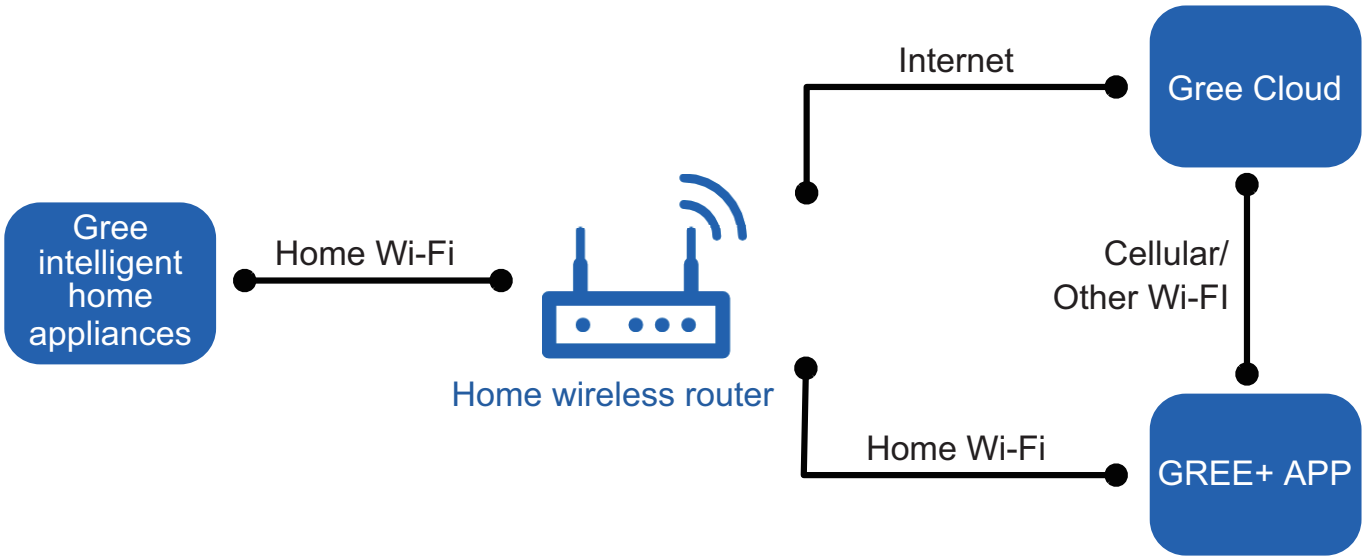
4.FAN SPEED button
Select the fan speed LOW, MED, HIGH and TURBO (This function is applicable to partial of models) in sequence.

5.MODE button
Select the operation mode, COOL,FAN, HEAT.

6.FILTER CHECK indicator
This feature is a reminder of cleaning the air filter(normal maintenance) for more efficient operation. The light will turn on automatically after the fan works more than 250 hours.
If the light is on, turn off and power off the unit, take the air filter out and clean it, then reinstall the air filter, power on and turn on the unit, the light will still be on, press + button for 5s,the light will turn off.

6.3 GREE+ App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:

iOS system
Support iOS7.0 and above version

Android system
Support Android 4.4 and above version

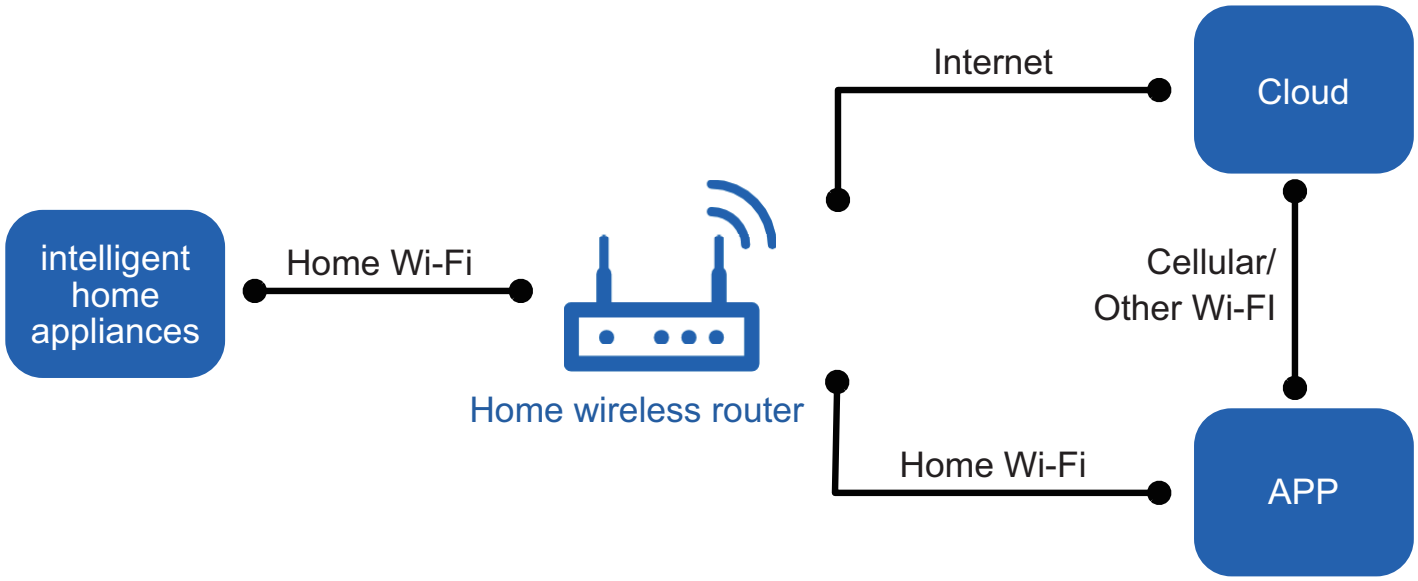
Download and installation

GREE+ App Download Linkage

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

6.4 Ewpe Smart App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:

iOS system
Support iOS7.0 and above version

Android system
Support Android 4.4 and above version

Download and installation

App Download Linkage

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

6.5 Brief Description of Models and Functions

Indoor unit

1. Target

Recreational Vehicles

2. Basic Functions

2.1 Cooling

2.1.1 Operating conditions and procedures

a) Tinner amb ≥ Tpreset +1°C(2°F), cooling mode: compressor cycles on, fan motors will operate in set speed.

b) Tinner amb ≤Tpreset -1°C(2°F), compressor and outdoor fan motors cycle off, indoor fan motor will operate in set speed.

c) Tpreset -1°C(2°F) < Tinner amb < Tpreset +1°C(2°F), operates like before.

2.1.2 Temperature setting range is 16°C~30°C(61~86°F).

2.2 Fan Only

2.2.1 In Fan Only, compressor and outdoor fan motors cycle off, indoor fan motor will operate in set speed.

2.2.2 Temperature setting range is 16°C~30°C(61~86°F).

2.3 Heating

2.3.1 Heating conditions and process

a) When Tamb. ≤Tset+1°C(2°F), the unit starts heating operation. In this case, the 4-way valve, compressor and outdoor fan motors run simultaneously; the indoor fan motor runs in cold air prevention condition.

b) When Tamb. ≥Tset+3°C(6°F), the compressor and outdoor fan motors stop; the 4-way valve remains energized; the indoor fan motor blows resindooral heat;

c) When Tset +1°C(2°F) < Tamb. < Tset+3°C(6°F), the unit will maintain its previous running status.

2.3.2 Temperature setting range is 16~30°C(61~86°F).

2.4 Dehumidifying

2.4.1 Operating conditions and procedures

a) Tinner amb > Tpreset +2°C(4°F), operates in Cooling mode, fan motors will operate in low speed.

b) Tpreset -2°C(4°F)≤Tinner amb ≤ Tpreset+2°C(4°F), dehumidifier is on, indoor fan motor will operate in low speed. Compressor and outdoor fan motors will firstly on for 6 minutes and off for 4 minutes and then cycle on and off.

c) Tinner amb < Tpreset -2°C(4°F), compressor and outdoor fan motors stop, indoor fan motor will operate in low speed.

2.4.2 Temperature setting range is 16~30°C(61~86°F).

2.5 Auto

2.5.1 Operating conditions and procedures

a) Tinner amb ≥26°C(79°F), cooling mode: Tpreset =25°C(77°F)

b) Tinner amb <22°C(72°F), if it is a Cooling and Warming controller, unit will operate in Warming mode, Tpreset = 20°C(68°F); if it is a Cooling controller, unit will operate in Fan Only, Tpreset =68°F(20°C);

c) 22°C(72°F) ≤Tinner amb < 26°C(79°F), operates like before; if it is turned on for the first time, it will operate in Fan Only.

3. Other Functions

3.1 Buzzer

When a controller is powered on or a signal is received from a remote controller or a button is pressed, buzzer will beep once.

3.2 Sleeping Mode

1. In cooling and dry mode:

1.1 When the initial set temperature is16-23°C(61~74°F),the temperature will rise 1°C(2°F) by every hour after sleep function is set;the temperature will not change after rising 3°C(6°F) ;after running for 7hours,the temperature will decrease1°C(2°F) and it will not change after that.

1.2 When the initial set temperature is 24-27°C(75~81°F),the temperature will rise 1°C(2°F) by every hour after sleep function is set; the temperature will not change after rising 2°C(4°F) ;after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

1.3 When the initial set temperature is 28-29°C(82~84°F),the temperature will rise 1°C(2°F) by every hour after sleep function is set; the temperature will not change after rising 1°C(2°F) ; after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

1.4 When the initial set temperature is 30°C(85~86°F) , the unit will keep on running at this temperature; after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

2. In heating mode:

2.1 When the initial set temperature is 16°C(61~62°F), the unit will keep on running at this temperature;

2.2 When the initial set temperature is 17-20°C(63~68°F), the temperature will decrease 1°C(2°F) by every hour after sleep function is set; the temperature will not change after decreasing 1°C(2°F);

2.3 When the initial set temperature is 21-27°C(69~81°F), the temperature will decrease 1°C(2°F) by every hour after sleep function is set; the temperature will not change after decreasing 2°C(4°F);

2.4 When the initial set temperature is 28-30°C(82~86°F), the temperature will decrease 1°C(2°F) by every hour after sleep function is set; the temperature will not change after decreasing 3°C(6°F);

3.3 Delay Timer

a) Timer On: when the air conditioner is off, it can be set automatically come on in 0.5h ~ 24h at its set mode.

b) Timer Off: when the air conditioner is on, it can be set automatically turn off in 0.5h ~ 24h.

If the time is set within 10 hours, the timing interval is 0.5h; If the time is set more than 10 hours, the timing interval is 1h.

3.4 Memory Function

The system will remember the settings when power is interrupted. The unit will automatically restart in the last setting used after the power is restored. If the air conditioner is on when power is interrupted, it takes 3 minutes for the compressor to restart after the power is restored, If the air conditioner is off when power is interrupted, there is no need to wait after power is restored.

3.5 Lights and Dual-8 Nixie Tube

a. When unit is on and under cooling mode, the Cooling indicator will turn on while tube shows the set temperature. Temperature can be set;

b. Under heating mode, the Heating indicator will turn on while tube shows the set temperature. Temperature can be set.

c. When the power is on but the unit is off, the on/off indicator will turn on, and when unit is turned on, the on/off indicator will turn off.

d. When unit is on and lights of all buttons on the remote controller go off, all set lights (except the LED light) light and dual 8 nixie tubes will go off accordingly (except malfunction indicator and filter indicator). When the controller is receiving signals, the main board will remember the set parameter, which would be displayed after the remote light is turned on.

3.6 Temperature Setting

(1) Temperature can be set by pressing the button +/-. Dual-8 nixie tube will show the temperature while setting.

(2) The tube display can show degree Fahrenheit or degree Celsius. The default temperature reading on the display is degree Celsius. To change the display to degree Celsius, press the button + and - together and hold for 3 seconds. Repeat the process to change back to degree Fahrenheit.

3.7 Controls

(1)ON/OFF: Turn air conditioner on and off. When air conditioner is off, press the button to turn it on. When air conditioner is on, press the button to turn it off;

(2)FAN SPEED: Use to set the fan speed to FANL, FANM or FANH on the unit.

(3)+/-: Use to set temperature and the delay time;

(4)MODE: Use to switch different modes. it can be circulated to COOL,FAN,HEAT,COOL;

(5)WIFI, TIMER and Sleeping mode can only be set by a remote controller.

(6)Auto mode can only be set by a remote controller and displayed on it.

(7) FILTER CHECK: This feature is a reminder of cleaning the air filter(normal maintenance) for more efficient operation. The light will turn on automatically after the fan works more than 250 hours. If the light is on, turn off and power off the unit, take the air filter out and clean it, then re-install the air filter, power on and turn on the unit, the light will still be on, press FILTER CHECK button,the light will turn off.

(8)Light:Turn on or off the control panel display.

(9) LED on the remote controller: As long as the unit is powered regardless of its on or off, press the button once to turn the LED light on or off. LED light can only be set by a remote controller. If the unit is powered the first time, LED light will turn on in the indoor panel.

3.8 Protection

3.8.1 Temperature sensors' malfunctions detected

(1) Indoor ambient temperature sensor is open/short-circuited: dual-8 nixie tube shows F1;

(2) Indoor tube temperature sensor is open/short-circuited: dual-8 nixie tube shows F2;

(3) Outdoor ambient temperature sensor is open/short-circuited: dual-8 nixie tube shows F3;

(4) Outdoor tube temperature sensor is open/short-circuited: dual-8 nixie tube shows F4;

(5)If different malfunctiuons occur at the same time, error codes will show in a circulated way

3.8.2 Alarm Function of Filter

If the total operating time of the fan reaches 250 hours, the filter indicator will turn on to remind user to do the cleaning.

3.8.3 Refrigrant loss protection' malfunctions detected

If the the unit enters refrigrant loss protection 6 times, the dual-8 nixie tube shows F0.

3.8.4 Compressor overload protection' malfunctions detected

If the the unit enters compressor overload protection 6 times, the dual-8 nixie tube shows H3.

3.8.5 Low voltage protection' malfunctions detected

If controller detects that system voltage lower than the limit value for 30s, the dual-8 nixie tube shows PL.

3.8.6 Overload protection' malfunctions detected (in cooling or dehumidifying mode)

If it is detected that the unit enters overload protection 6 times because the condenser tube temperature is superheating in cooling or dehumidifying mode, the dual-8 nixie tube shows E8.

3.8.7 Defrosting' malfunctions detected

For ensusing heating effect, air conditioner will defrost automatically according to defrosting status on outdoor unit. heating indicator flashes, 10 seconds and stop 0.5 seconds circularly.

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4. Troubleshooting

4.1 Problem1: air conditioner does not start and the buzzer does not ring

What to do: check the air conditioner plug or replace the controllers.

4.2 problem2: dual 8 nixie tube shows F1;
What to do: make sure the indoor ambient temperature sensor is securely connected to the controller.
4.3 Problem3: dual-8 nixie tube shows F2;
What to do: the indoor tube temperature sensor is not securely connected with the controller. Install it again or replace it with a new one.
4.4 problem4: dual 8 nixie tube shows F3;
What to do: make sure the outdoor ambient temperature sensor is securely connected to the controller. Install it again or replace it with a new one.
4.5 Problem5: dual-8 nixie tube shows F4;
What to do: the outdoor tube temperature sensor is not securely connected with the controller. Install it again or replace it with a new one.
4.6 Problem6: dual-8 nixie tube shows F0.
What to do: check where the refrigerant leaks, repair the leakage and add the refrigerant according to experience.
4.7 Problem7: dual-8 nixie tube shows H3.
What to do: power off the unit , then power on and turn on the unit again few minutes later.
4.8 Problem8: dual-8 nixie tube shows PL; the unit stops except the LED light; cooling indicator flashes 2 seconds and stop 3 seconds circularly.
What to do: when cooling indicator stops flashing, press ON/OFF button once to turn the unit off and then turn on the unit again 2 minutes later.
4.9 Problem9: dual-8 nixie tube shows E8.
What to do: power off the unit , then power on and turn on the unit again few minutes later.
4.10 Problem10: dual-8 nixie tube shows JF.
What do to: confirm the connection between the WIFI detection board and the main board is correct and firm; install the WIFI inspection board again; replace the WIFI detection board with a new one with the same model;Replace the mainboard with the same model.

Outoor unit

1 适用范围

适用于房车机型。

2 基本功能

2.1 制冷模式

1. 制冷运行的工作条件及过程：

a) 当 T 内环≥ T 设 +1℃（2 ℉ ）时，为制冷运行，此时压缩机开、风机按设定风速运行。

b) 当 T 内环≤ T 设 -1℃（2 ℉ ）时，压缩机停，内风机按设定风速运行。

c) 当 T 设 -1℃（ 2 ℉ ）＜ T 内环＜ T 设 +1℃（2 ℉ ）时，保持前面运行状态。

2. 此模式下，温度设定范围为 16℃～ 30℃（61 ℉ ~86 ℉ ）。

2.2 送风模式

1 此模式压缩机和外风机停止工作，风机按设定风速运行；

2 此模式下，温度设定范围为 16℃～ 30℃（61 ℉ ~86 ℉ ）。

2.3 制热模式

1. 制热运行的工作条件及过程：

a) 当 T 内环≤ T 设 +3℃（6 ℉ ）时，制热运行，四通阀、压缩机、外风机运行，内风机按防冷风条件运行；

b) 当 T 内环≥ T 设 +5℃（9 ℉ ）时，压缩机和外风机停止运行，四通阀保持通电，内风机吹余热；

c) 当 T 设 +3℃（6 ℉ ）＜ T 内环＜ T 设 +3℃（9 ℉ ）时，保持前面的运行状态。

d) 当 T 外环＜ -5℃（23 ℉ ）时，整机不允许进入制热运行。

2. 此模式下，温度设定范围为 16℃～ 30℃（61 ℉ ~86 ℉ ）。

2.4 除湿模式

1. 除湿运行的工作条件及过程：同制冷模式；

2. 此模式下，温度设定范围为 16℃～ 30℃（61 ℉ ~86 ℉ ）。

2.5 自动模式

a) 当 T 内环≥ 26 ℃（79 ℉ ）时，按制冷模式运行，T 设 =25℃（77 ℉ ）；

b) 当 T 内环≤ 22℃（72 ℉ ）时，当为冷暖控制器时按制热模式运行，T 设 =20℃（68 ℉ ）；当为单冷控制器时按送风模式运行，T 设 =20℃（68 ℉ ）；

c) 当 22℃（72 ℉ ）＜ T 内环＜ 26℃（79 ℉ ）时，保持原运行状态；但若为第一次上电，则按送风模式运行。

3 其他功能

3.1 蜂鸣器

控制器加电时或接收到遥控器信号或按键时，蜂鸣器叫一声。

3.2 睡眠

1. 制冷、除湿模式：

a) 当初始温度设置为 16℃～ 23℃（61 ℉～ 74 ℉ ）时，开启睡眠功能后每小时温度升高 1℃（2 ℉ ），升高 3℃（6 ℉ ）后维持此温度，当运行 7h 后，温度降低 1℃（2 ℉ ），此后一直在此温度下运行。

b) 当初始温度设置为 24℃～ 27℃（75 ℉～ 81 ℉ ）时，开启睡眠功能后每小时温度升高 1℃（2 ℉ ），升高 2℃（4 ℉ ）后维持此温度，当运行 7h 后，温度降低 1℃（2 ℉ ），此后一直在此温度下运行。

c) 当初始温度设置为 28℃～ 29℃（82 ℉～ 84 ℉ ）时，开启睡眠功能后每小时温度升高 1℃（2 ℉ ），升高 1℃（2 ℉ ）后维持此温度，当运行 7h 后，温度降低 1℃（2 ℉ ），此后一直在此温度下运行。

d) 当初始温度设置为 30℃（85 ℉～ 86 ℉ ）时，在此温度下运行，当运行 7h 后，温度降低 1℃（2 ℉ ），此后一直在此温度下运行。

2. 制热模式：

a) 当初始温度设置为 16℃（61 ℉～ 62 ℉ ）时，一直在此温度下运行；

b) 当初始温度设置为 17℃～ 20℃（63 ℉～ 68 ℉ ）时，开启后睡眠功能后每小时温度降低 1℃（2 ℉ ），降低 1℃（2 ℉ ）后维持此温度；

c) 当初始温度设置为 21℃～ 27℃（69 ℉～ 81 ℉ ）时，开启睡眠功能后每小时温度降低 1℃（2 ℉ ），降低 2℃（4 ℉ ）后维持此温度；

d) 当初始温度设置为 28℃～ 30℃（82 ℉～ 86 ℉ ）时，开启睡眠功能后每小时温度降低 1℃（2 ℉ ），降低 3℃（6 ℉ ）后维持此温度；

3.3 定时功能

可设定某个时刻开停机，精确度为分钟；例如：上午 8：00 开；下午 17：30 关等。

a) 定时开：如果系统在运行状态时设定定时开，系统继续运行，如果系统在关机状态时设定定时开，当设定定时开时间到时，系统按预先设定的模式开始运行。

b) 定时关：如果系统在关机状态设定定时关，当设定定时关时，系统保持待机状态，系统在开机状态设定定时关，当设定定时关时间到时，系统停止工作。

设定的定时关和定时开的时间相同时，执行关机命令。

3.4 记忆功能

系统记忆掉电前的设定运行状态，在下次来电时自动按掉电前的设定状态运行。断电前为开机状态时，再通电压缩机有 3min 延时保护。

3.5 WIFI 功能

Wifi 可通过遥控器进行开启或关闭。机器上电后，不管是否开机，均可开、关 Wifi；只有打开 Wifi 后，Wifi 才可以开始正常工作。初始状态默认 Wifi 开启。

3.6 指示灯、双八数码管：

a. 在运行状态下，当处于制冷模式，制冷指示灯亮，双八显示设定温度，温度可以调节；

b. 在运行状态下，当处于自动模式，风速指示灯亮，双八显示设定温度，温度不可调；

c. 在运行状态下，当处于制热模式，制热指示灯亮，双八显示设定温度，温度可以调节；

d. 除湿模式及送风模式下显示设定温度，除湿模式下制冷模式灯灭；

e. 在开机下，遥控按键关灯光时，关闭所有的指示灯和数码管（故障显示和过滤网灯除外）。控制器正常接收遥控或按键信号，当有遥控信号输入时，主板记忆遥控调节后的参数，遥控灯光打开后，显示最后设置的参数（包括指示灯和数码管）；

f. 当接收到显示设定温度信号时，数码管显示设定温度；当接收到显示环境温度信号时，则数码管显示 5s 当前室内环境温度，然后转回设定温度显示。环境温度显示范围为 0℃～ 60℃（32 ℉～ 99 ℉），环境温度值小于 0℃（32 ℉ ）则显示 0℃（32 ℉ ），环境温度值大于 60℃（99 ℉ ）则显示 60℃（99 ℉ ）。

3.7 温度设置

(1) 所需要的温度可以用“+/-”按键来设定，设定的温度会在双八上显示；

(2) 双八显示可以切换显示摄氏和华氏温度，同时按下“+”和“-”按键 3S，则可以切换。（默认摄氏温度）

3.8 按键功能设置
(1) 开 / 关 键用于开关机，关机状态下，按开 / 关 键开机，开机下，按开 / 关 键关机；
(2) 风速 键用于风速的调节，按照低档 , 中档 , 高档的循环；
(3) +/- 用于温度的加减；
(4) 模式键用于模式的切换，冷暖机按照制冷、送风、制热循环，单冷机不接收制热按键信号，按照制冷、送风的循环；
(5) 睡眠功能只能通过遥控器上的睡眠键来控制，控制器面板无此按键，不能进入睡眠功能。
(6) 自动模式只能由遥控器设置并显示。
(7) 过滤网清洗指示灯：此功能是提醒清洁空气过滤器（正常维护）以进行更高效的操作。风扇工作超过 250 小时后，灯会自动打开。如果指示灯打开，请关闭机器和电源，将空气过滤器拿出并清洁，然后重新安装空气过滤器，打开电源和机器，灯仍然亮，按滤镜检查按钮，关闭指示灯。
(8) 遥控器上 LED: 通电状态下无论机器是否开机，按按钮一次以打开或关闭 LED 灯。LED 灯能由遥控器和面板按键设置。第一次供电时，室内面板 LED 灯开。
3.9 保护功能
3.9.1 感温包故障检测
(1) 室内环境温度感温包开、短路：双八显示 F1；
(2) 内管温感温包开、短路：双八显示 F2；
(3) 室外环境温度感温包开、短路：双八显示 F3；
(4) 外管温感温包开、短路：双八显示 F4；
(5) 排气感温包开、短路：双八显示 F5；
(6) 多故障同时发生时，以轮流方式循环显示故障保护代码
3.9.2 过滤网报警功能
当风机累计运转 250 小时后，过滤网清洗灯点亮，提醒用户清洗过滤网；
3.9.3 过负荷保护功能
(1) 制冷、除湿模式下过负荷保护功能：若 T 外管≥ T 制冷过负荷停机温度时，则制冷过负荷保护停机；若 T 外管＜ T 制冷过负荷限频温度，且压缩机停机已达 3min，整机才允许恢复运行；
(2) 制冷、除湿模式下若 T 外管≥ T 制冷过负荷限降频温度时，将出现压缩机运行频率下降或压缩机运行频率停止上升的现象；
(3) 制热模式下过负荷保护功能：若 T 内管≥ T 制热过负荷停机温度时，则制热过负荷保护停机；若 T 内管＜ T 制热过负荷限频温度，且压缩机停机已达 3min，整机才允许恢复运行；
(4) 制热模式下若 T 内管≥ T 制热过负荷限降频温度时，将出现压缩机运行频率下降或压缩机运行频率停止上升的现象；
(5) 若连续出现 6 次过负荷保护停机，则不可自动恢复运行，故障持续显示，双 8 显示 E8，需要按开 / 关机键才可以恢复。运行过程中，若压缩机运行时间超过，则过负荷保护停机次数清零累计。关机、送风或转制热模式立即清除故障和故障次数（故障不可恢复后转模式不能清除故障）。
3.9.4 压缩机排气温度保护功能
(1) 若 T 排气≥ T 排气停机温度，则排气保护停机；若 T 排气＜ T 排气限频温度，且压缩机停机已达 3min，整机才允许恢复运行；
(2) 若 T 排气≥ T 排气限降频温度，将出现压缩机运行频率下降或压缩机运行频率停止上升的现象；
(3) 若连续出现 6 次压缩机排气温度保护停机，则不可自动恢复运行，需要按开 / 关机键才可以恢复。运行过程中，若压缩机运行时间超过，则排气保护停机次数清零累计。关机或转送风模式立即清除故障和故障次数（故障不可恢复后转模式不能清除故障）。
3.9.5 IPM 模块保护功能
在压缩机开机后，若由于一些异常原因导致 IPM 模块出现过流或控制电压过低，则 IPM 会像开机后立即检测模块保护信号，一旦检测到模块保护信号，立即 IPM 模块保护停机；若模块保护恢复，且压缩机停机已达 3min，整机才允许恢复运行。
若连续出现 3 次模块保护停机，则不可自动恢复运行，需要按开 / 关机键才可以恢复。运行过程中，若压缩机运行时间超过，则排气保护停机次数清零累计。
3.9.6 模块温度过高保护功能
(1) 若 T 模块≥ T 模块限降频温度，则将出现压缩机运行频率下降或停止上升的现象；
(2) 若 T 模块≥ T 模块停机温度，则系统将保护停机；若 T 模块＜ T 模块限频温度，且压缩机停机已达 3min，整机才允许恢复运行；
(3) 若连续出现 6 次压缩机模块过热保护停机，则不可自动恢复运行，需要按开 / 关机键才可以恢复。运行过程中，若压缩机运行时间超过，则模块过热保护停机次数清零累计。关机或转送风模式立即清除故障和故障次数（故障不可恢复后转模式不能清除故障）。
3.9.7 除霜检测
为了确保制热效果，空调将根据室外单元上的结霜情况自动化霜。化霜期间制热指示灯闪烁（亮 10s 灭 0.5s 循环闪烁）。

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 cant 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 cant be pressed by hard objects.

9. If power cord or connection wire is broken, it must be replaced by a qualified person.

10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.

11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.

13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.

14. Replace the fuse with a new one of the same specification if it is burnt down; dont replace it with a cooper wire or conducting wire.

15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)

2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 20kg.

3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.

4. Ware safety belt if the height of working is above 2m.

5. Use equipped components or appointed components during installation.

6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. When refrigerant leaks or requires discharge during installation, maintenance, or disassembly, it should be handled by certified professionals or otherwise in compliance with local laws and regulations.

2.Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.

3. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.

4. Make sure no refrigerant gas is leaking out when installation is completed.

5. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.

6. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

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

Safety Precautions for Refrigerant

●To realize the function of the unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R32, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can lead to explosion under certain conditions.But the flammability of the refrigerant is very low. It can be ignited only by fire.

●Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the greenhouse effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.

WARNING:

●Appliance filled with flammable gas R32.

●Appliance shall be installed, operated and stored in a room with a floor area larger than 4 m^2.

●The appliance shall be stored in a room without continuously operating ignition sources .

(for example: open flames, an operating gas appliance or an operating electric heater.)

●The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.

●The appliance shall be stored so as to prevent mechanical damage from occurring.

●Ducts connected to an appliance shall not contain an ignition source.

●Keep any required ventilation openings clear of obstruction.

●Do not pierce or burn.

●Be aware that refrigerants may not contain an odour.

●Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

●Servicing shall be performed only as recommended by the manufacturer.

●Should repair be necessary, contact your nearest authorized Service Centre.

●Any repairs carried out by unqualified personnel may be dangerous.

●Compliance with national gas regulations shall be observed.

Read specialist's manual.

Aptitude requirement for maintenance man(repairs should be done only be specialists).

a. Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.

b.Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

Safety preparation work

The maximum refrigerant charge amount is shown on the following table a.

(Note:Please refer to the nameplate for the charging quantity of R32).

table a - Maximum charge (kg)

Room area (m^2)	/	4	7	10	15
Maximum charge (kg)	<1.224	2.50	3.31	3.96	4.85

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

●Work procedure

Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

●General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material

●Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

●Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

●No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. " NO Smoking " signs shall be displayed.

●Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period

that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

●Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

---The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;

---The ventilation machinery and outlets are operating adequately and are not obstructed;

---If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

---Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

---Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

●Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

1.That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;

2.That no live electrical components and wiring are exposed while charging, recovering or purging the system;

3.That there is continuity of earth bonding.

●Repairs to sealed components

1. During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

2. Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected.This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE : The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

●Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

●Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

●Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

●Leak detection methods

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration.

(Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.

Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/ extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. For appliances containing flammable refrigerants, oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

●Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose –conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

1.remove refrigerant;

2.purge the circuit with inert gas; evacuate;

3.purge again with inert gas;

4.open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders.

For appliances containing flammable refrigerants, the system shall be "flushed" with OFN to render the unit safe. This process may need to be repeated several times.Compressed air or oxygen

shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
This process shall be repeated until no refrigerant is within the system.When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.
Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.

●Charging procedures
In addition to conventional charging procedures, the following requirements shall be followed.
1.Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
2.Cylinders shall be kept upright.
3.Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
4.Label the system when charging is complete (if not already).
5.Extreme care shall be taken not to overfill the refrigeration system.
Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.
The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

●Decommissioning
Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.
a. Become familiar with the equipment and its operation.
b. Isolate system electrically.
c. Before attempting the procedure, ensure that:
- ●mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- ●all personal protective equipment is available and being used correctly;
- ●the recovery process is supervised at all times by a competent person;
- ●recovery equipment and cylinders conform to the appropriate standards.

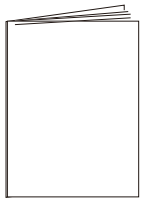
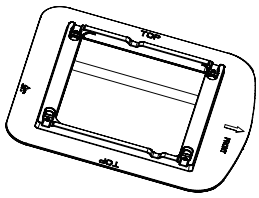
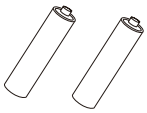
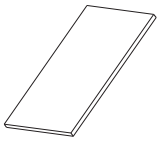
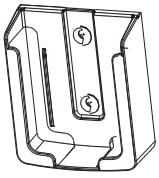
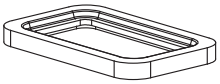
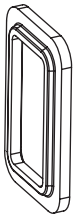
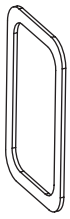
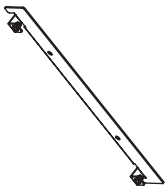
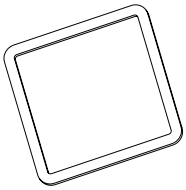
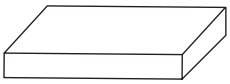
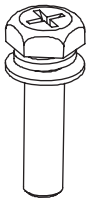
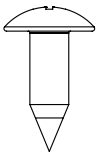
d. Pump down refrigerant system, if possible.
e. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f. Make sure that cylinder is situated on the scales before recovery takes place.
g.Start the recovery machine and operate in accordance with manufacturer's instructions.
h. Do not overfill cylinders. (No more than 80 % volume liquid charge).
i. Do not exceed the maximum working pressure of the cylinder, even temporarily.
j. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

●Labelling
Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

●Recovery
When removing refrigerant from a system, either for servicing or decommissioning,
it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shutoff valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely

8. Installation

8.1 Accessory list

 owner's manual	 Mounting plate	 remote controller	 battery (AAA 1.5V)
 Double-sided gummed paper	 Remote controller holder	 Sunk screw (remote controller holder)	 foam(under)
 Foam (accessory)	 Sponge (foam accessory)	 Mounting plate sub-assy	 Bolt sub-assy M8X135
 Sponge (sealing strip)	 Sponge	 Insulating sheath	 Bundle
 Bolt sub-assy M6X25	 Tapping screw		

8.2 Before installation

Test run the unit with proper power supply. Refer to the operation instruction section in the Owner's Manual Operation & Installation. Make sure all the controls operate correctly then disconnect the power supply of the unit.

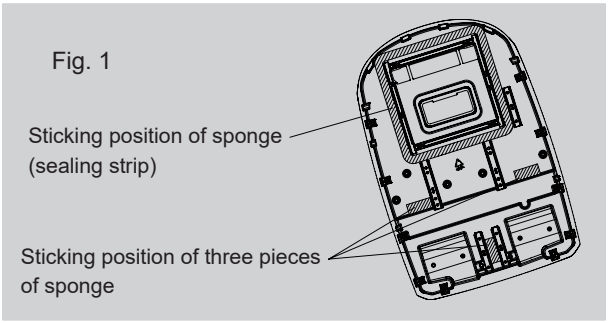
⚠ **WARNING**

1. Moving parts may cause personal injury. Be careful when test the unit. Do not operate the unit with exterior cover removed.
2. Outdoor unit can't be installed at the low recess of the roof of vehicle. It must be mounted at the flat surface on the roof of vehicle to make sure the rain, car-washing water, condensate water,etc. can be drained smoothly. No water is allowed to be accumulated around the outdoor unit; otherwise, it will cause malfunction or safety hazards as the water will pour into the air conditioner.
3.Please use the equipped mounting Plate for installation; otherwise, it may cause malfunction or damage.

8.3 Stick Sponge (Sealing Strip) And Sponge

1.Before sticking, clean up the sundries at the sticking position (as shown in Fig.1) of the chassis of the outdoor unit to ensure that the sticking position is clean;
2.Take out one piece of sponge (sealing strip) and three pieces of sponge from the accessories, and tear off the paper on the glue surface and align at the edge of the position as shown in Fig.1 to stick the sponge.
If the sponge (sealing strip) is damaged or not stuck on the proper position, you must replace it with a new one and stick it properly;
3.Check whether the sponge (sealing strip) and the sponge are tightly adhered, and ensure that they will not fall off.

Fig. 1



8.4 Selecting an installation location

The air conditioner has been designed for use in recreational vehicles.
Check the roof of the vehicle to determine if it can support both the roof top unit and the ceiling assembly without additional support. Make sure the interior ceiling mounting area will not interfere with existing structures.
Once the location for the air conditioner has been determined. A reinforced and framed roof hole opening must be cut (if there is no hole,please refer to CASE B) or you may use existing vent holes (See CASE A).

CASE A.

If a roof vent is already present in the desired mounting location for the air conditioner, the following steps must be performed:
1.Remove all screws which secure the roof vent to the vehicle. Remove the vent and any additional trim. Carefully remove all chalking from around the opening so the surface is clear.
2.It may be necessary to seal some of the old roof vent mounting screw holes which may fall outside of the air conditioner basepan gasket.
3.Examine the roof opening size, if the opening is small than 400x400mm, the opening must be enlarged.

CASE B.

If a roof vent opening is not used,a new opening(see Fig.2)will be cut into the vehicl roof.A matching opening will also have to be cut into the interior vehicle ceiling,be careful when cutting the ceiling opening because if the ceiling opening is carpeted,snagging could occur. After the opening in the roof and interior ceiling are the correct size,a framed support structure must be placed between the exterior roof top and interior ceiling.The reinforced framed structure must follow the follwing guidelines:
1.It must be capable of supporting both the weight of the roof top air conditioner and the interior ceiling assembly.
2.It must be capable of holding the roof outer surface and interior ceiling apart and supporting them, so that when the roof top air conditioner and ceiling assembly are bolted together,no collapsing occurs. A typical support frame is shown in Fig. 2.
3.There must be an opening through the frame for the power supply wiring. Route the supply wiring through the frame at the same time the support frame is being installed.

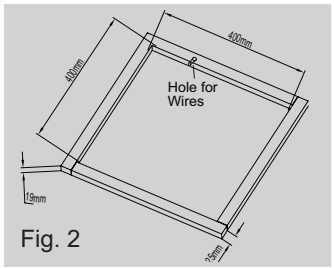


Fig. 2

Installation method for mounting plat

If the roof already has a 400x400mm opening.
Select the installation position for the recreational vehicle air conditioner
This mounting plat of switchover opening is applicable for Gree recreational vehicle air conditioner.
The opening size of installation port on the top of the vehicle must be 400×400mm.

Operation method:

1.Eliminate the sundries around the installation port on the top of the vehicle and keep the installation surface flat;
2.Check whether there are holes or grooves on surface of installation position. If yes, conduct the sealing treatment to prevent water leakage;
3.Fill the groove on the surface where the mount-ing plate is contacting the top part of the vehicle with the unhardened sealant (the maximum thickness is 1cm); When the mounting plat is installed on the top of vehicle, fill the sealant in the gap between the mounting plat and the vehicle roof. The mounting plat should be tightly sealed with the roof of the vehicle to prevent water leakage.
4.Install it into the opening on the top of the vehicle according to the indicate direction by the arrow (the direction of arrow should be the same with the head of the vehicle).

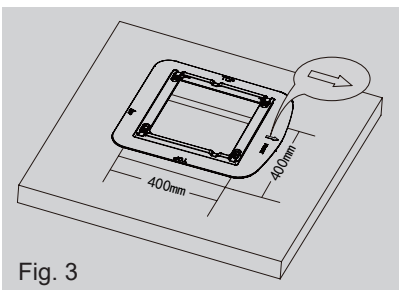


Fig. 3

⚠ **CAUTION**

1. The roof top air conditioner must be mounted on a level plane from front to rear and side to side when the vehicle is parked on a level plane. Fig. 4 shows maximum allowable degrees that the unit can be mounted above or below level.

2.If the roof of the vehicle is sloped (not level) such that the roof top air conditioner cannot be mounted within the maximum allowable degree specifications, an exterior leveling shim will need to be added to make the unit level. A typical leveling shim is shown in Fig. 5.

3.Once the roof top air conditioner has been leveled, some additional shimming may be required above the interior ceiling assembly. The roof top air conditioner and the interior ceiling assembly must be square with each other before they are secured together.

4.After the mounting hole area is properly prepared, remove the carton and shipping pads from around the roof top air conditioner. Carefully lift the unit on top of the vehicle. Do not use the outer plastic shroud for lifting. Place the roof top air conditioner over the prepared mounting hole.

5.The front section of outdoor unit of air conditioner must be in the same direction as the vehicle,which is useful for reducing wind resistance.

Note: Try you best to put the unit on the horizontal surface for operation. The unit can only operate for a short time at the maximum sloping angle of 5º for preventing water leakage.

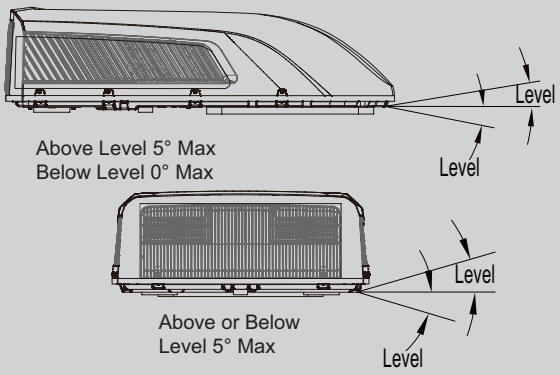
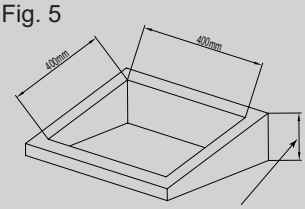


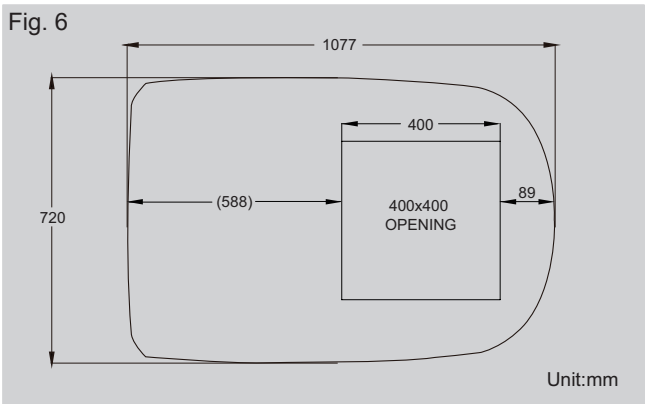
Fig.4

Fig. 5



NOTE:AIR CONDITIONER DIMENSIONS (ROOF OF UNIT)

Fig. 6



8.5 Mounting Outdoor Unit

1.Open the package and take out the outdoor unit.

1) When taking out the outdoor unit after unpacking, do not lift the air outlet grille at the back of outer case(see Fig.7).

2.Put the outdoor unit at the mounting plat of switchover opening.

1) Lift the outdoor unit. During the movement, it is strictly forbidden to hoist the plastic outer caser of outer unit of the air conditioner.

2) Put it on the mounting plat of the prepared switchover opening to make the sealing strip of outdoor unit match with the groove on the surface of the mounting plat. Do not drag the outdoor unit. Otherwise, the seal may fall off.

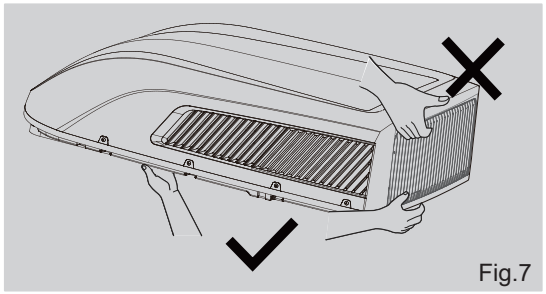


Fig.7

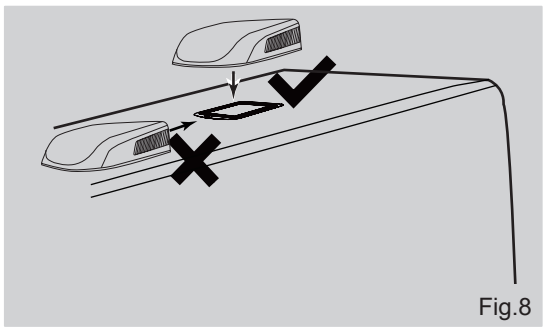


Fig.8

8.6 Installing The Ceiling Assembly

Make sure that you have properly matched the roof top air conditioner and interior ceiling assembly.

Caution before tightening bolts:

1.The applicable thickness of vehicle roof ranges from 30mm~80mm.

2.Before tightening bolts, screw in the four bolts manually and prohibit screwing forcibly.

3.When screwing bolts, you can use automatic tool. Do not tighten one bolt completely and then tighten other bolts, in order to prevent sticking of screw thread.

4.The max torque for tightening ranges from 2.3Nm~2.5Nm.

The following step by step instructions must be performed in the following sequence to ensure proper installation.

1.Carefully take the ceiling assembly out of the carton.

2.Remove the ceiling grille from the ceiling assembly.

3.Then carry the outdoor unit to the vehicle's top and align with the openings on the vehicle's top. Use 2 sets of mounting plat assembly and 4 screw bolts to mount the outdoor unit (See Fig. 9).

4.You must start (thread) the mounting bolts by hand to avoid cross-threading. DO NOT START THE MOUNTING BOLTS WITH AN AIR GUN. The mounting bolts should be tightened, process is completed when the basepan gasket has been evenly compressed.

5.Before installing the air duct assembly of the indoor unit of recreational vehicle air conditioner, assemble the foam assembly according to the thickness of the vehicle's top. After simulated installation, use an appropriate amount of sponge and foam

assembly. Stick the sponge and foam assembly with double faced adhesive tape (prepared by user) (See Fig.10, Fig.11).
6.Install the foam assembly on the air duct assembly. Use 4 screw bolts to fix the air duct assembly onto the mounting plat.
After connecting the outdoor unit with indoor unit, check whether the foam assembly has come loose (See Fig. 9).

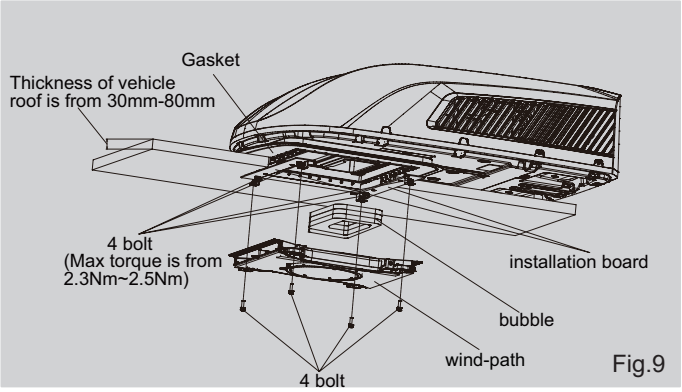


Fig.9

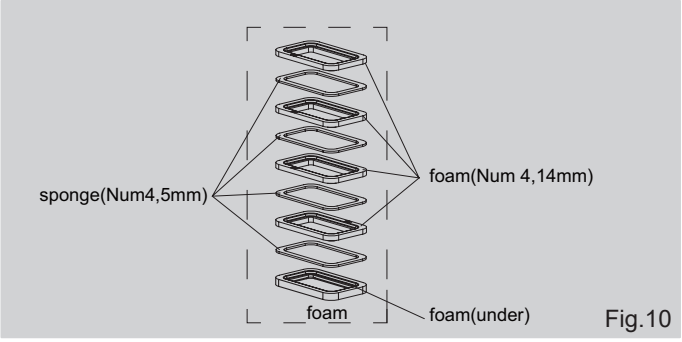


Fig.10

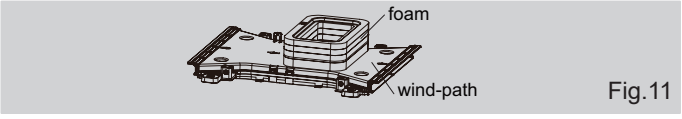


Fig.11

8.7 Electrical Wiring

⚠ **WARNING**

Make sure that all power supply to the unit is disconnected before performing any work on the unit to avoid the possibility of shock or injury and/or damage to the equipment. When the interior ceiling assembly frame is properly secured to the roof top air conditioner, the following electrical connections must be performed.

1. As shown in Fig.12, the outdoor unit has two sets of outgoing wires, which are power cord (high current) and the control signal wires respectively. The former one should be directly connected to the power supply terminal while the latter one should be connected to the control signal wire of the indoor unit.

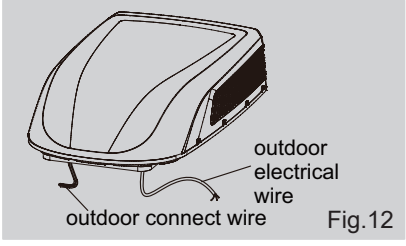


Fig.12

2. As shown in Fig.13, the indoor unit has one set of control signal wires, with 1 wiring terminals in total.
3. Connect the docking terminals of indoor unit and outdoor unit, see Fig.14.

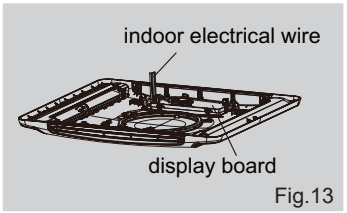


Fig.13

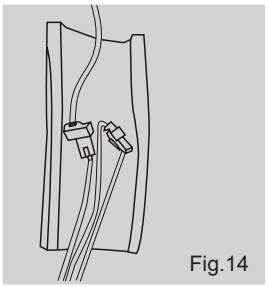


Fig.14

4. Use protective sleeve to wrap the wiring terminal, stick the protective sleeve and then use cable tie to bundle them tightly.
Note:
1. The fixing position of cable must be at both ends of wiring terminal.
2. Before installing the front panel of indoor unit, put the thermal insulating jacket on top of the air duct.

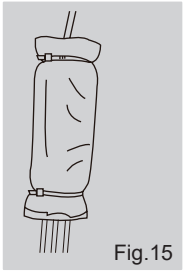


Fig.15

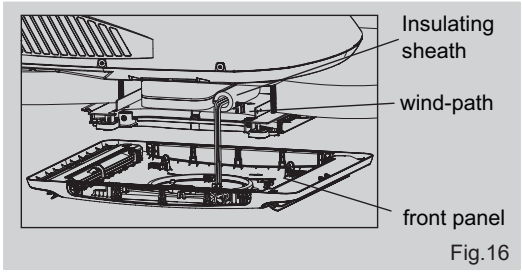
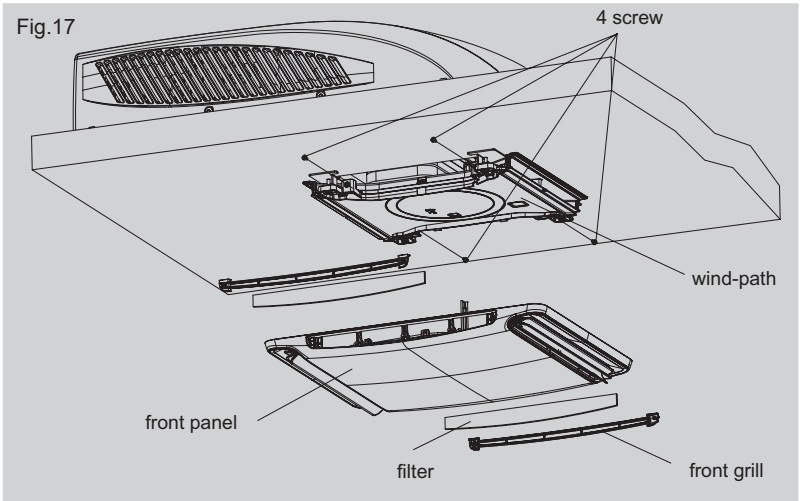


Fig.16

8.8 Completing The Installation

To complete the installation and system checkout requirements, the following steps must be performed.
1. Check the thermostat position. Make sure the thermostat is routed through the holding guide and is not touching any metal surface.
2. Secure the ceiling grille to the ceiling assembly wind-path with 4 screws. (see Fig.17).
3. Install the healthy filter and air intake grill. Press “PUSH” and lock with clasps.
4. Switch on the power supply and check the unit work or not.
5. Once the indoor unit is assembled, if the gap between the panel and the top of vehicle is not even, please ask the manufacturer to adjust it according to the assembly status.

Fig.17



9. Maintenance

9.1 Error Code List

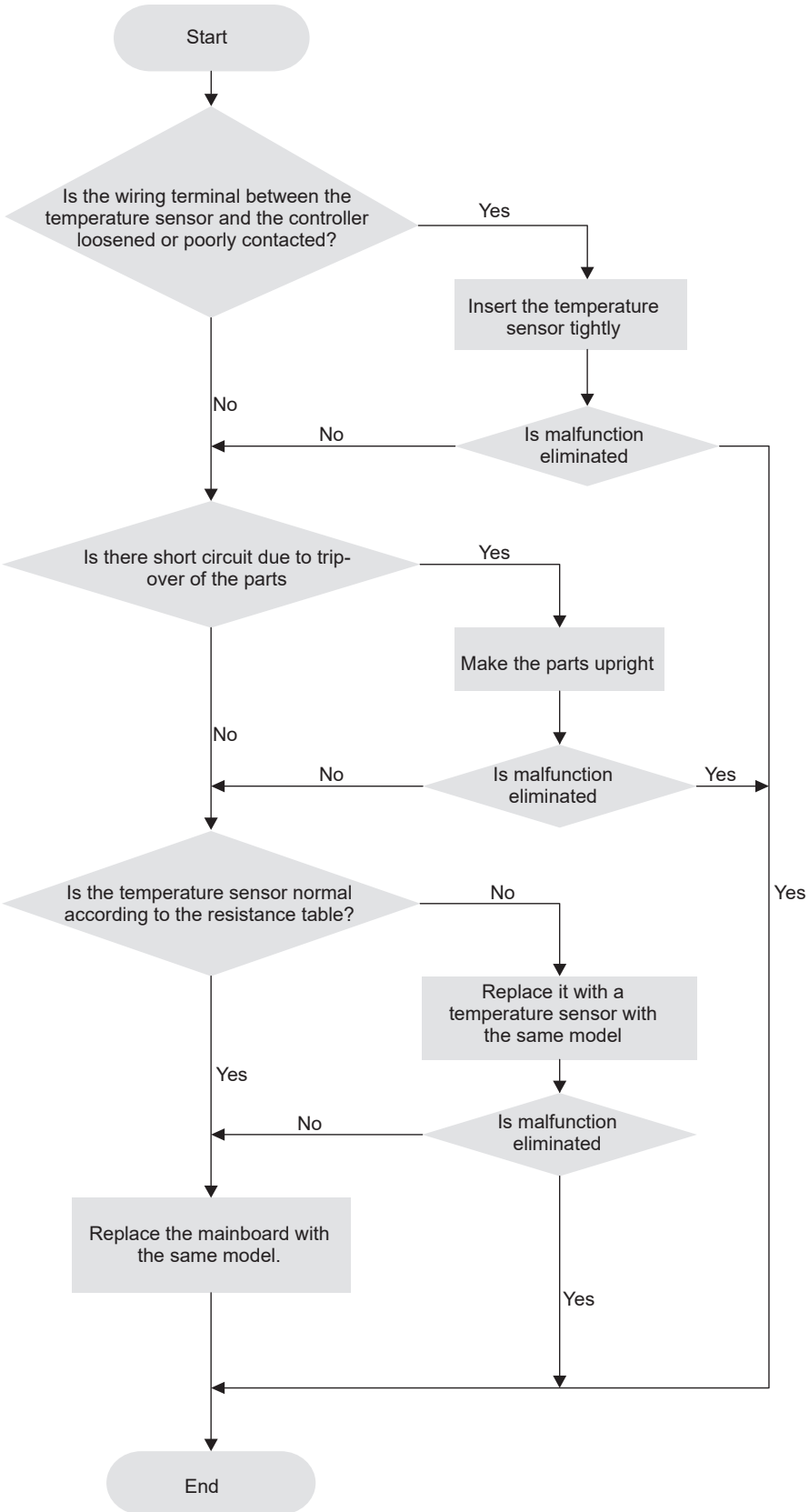
序号	故障名称	双八代码显示	空调状态	故障可能原因
1	蒸发器防冻结保护	E2	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、内机回风不良？ 2、内风机转速异常？ 3、蒸发器脏堵或过滤网脏？ 4、内机管温感温包异常？ 5、毛细管堵或电子膨胀阀异常？ 6、系统制冷剂是否出现泄漏？ 7、制冷运行环境温度过低？
2	压缩机排气温度保护	E4	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、排气感温包是否损坏？ 2、制冷剂泄漏？ 3、毛细管堵或电子膨胀阀异常？ 4、换热器脏堵、过滤网脏堵、机组通风不良？ 5、外风机故障？ 6、外侧环境温度过高？
3	整机电流过流保护	E5	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、电源电压不稳定，波动过大？ 2、电源电压过低，负荷过大？ 3、系统负荷过大，换热器脏堵、过滤网脏堵、 机组通风不良，环境温度过高？
4	内外机通讯故障	E6	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、内外机连接线以及内机外机的机内配线是 否正常连接或有无破损？ 2、内机主板或外机主板已损坏，外机电源指 示灯未亮？
5	防高温保护	E8	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、内、外机环境温度过高？ 2、内、外风机运转异常？ 3、过滤网或冷凝器脏堵？ 4、内、外机管温感温包是否正常？
6	EEPROM 故障	EE	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、初次上电电源有抖动，重 新断电后 5 分钟后再上电？ 2、室外机读 EEPROM 数据错误，更换室外控 制板？
7	室内环境感温包故障	F1	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、室内环境感温包端子是否松脱？ 2、室内环境感温包是否损坏？ 3、内机主板损坏？
8	室内蒸发器感温包故障	F2		1、室内蒸发器感温包端子是否松脱？ 2、室内蒸发器感温包是否损坏？ 3、内机主板损坏？
9	室外环温感温包故障	F3	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、室外环境感温包是否松脱？ 2、室外环境感温包损坏？ 3、外机主板损坏？
10	室外管温感温包故障	F4	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、室外管温感温包是否松脱？ 2、室外管温感温包损坏？ 3、外机主板损坏？
11	室外排气温度感温包失效故障	F5	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、室外排气感温包未插到铜管中？ 2、室外排气感温包阻值是否正常？ 3、内、外机管温感温包没有插接好？ 4、四通阀线圈没有上电？
12	室外排气感温包故障		制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、室外排气感温包是否松脱？ 2、室外排气感温包损坏？ 3、外机主板损坏？
13	缺氟保护、冷媒循环截止保护	F0	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、制冷剂泄漏？ 2、室外机大小阀门是否完全打开？ 3、毛细管堵或电子膨胀阀卡死？ 4、内机蒸发器感温包脱落？ 5、外机冷凝器感温包脱落？ 6、系统制冷是否处于高湿环境，导致换热温差小？

14	压缩机过载保护（仅限有过载机型）	H3	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、制冷剂泄漏？ 2、毛细管堵或电子膨胀阀卡死？ 3、内机蒸发器感温包脱落？ 4、外机冷凝器感温包脱落？ 5、系统制冷是否处于高湿环境，导致换热温差小？
15	IPM 模块保护（包括过热退磁）	H5	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、控制板与压缩机是否可靠连接？是否有松脱？连接顺序是否正确？ 2、压缩机线圈电阻是否正常？压缩机线圈对铜管的绝缘是否好？ 3、外风机异常？ 4、系统堵、冷凝器脏堵、通风不良？ 6、主板电源模块是否损坏，电源模块是否打紧？ 7、室内外温度过高？ 8、压缩机卡死？
16	电机堵转保护	H6	制冷：压缩机停、外风机停、内风机停 制热：压缩机停、外风机停、内风机停	1、电机端子松脱？ 2、电机损坏？ 3、与电机连接线损坏？ 4、主板器件损坏？ 5、风叶卡死？
17	压缩机失步（堵转）	H7	制冷：压缩机停，外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、控制板与压缩机是否可靠连接？是否有松脱？连接顺序是否正确？ 2、压缩机线圈电阻是否正常？压缩机线圈对铜管的绝缘是否好？ 3、外风机异常？ 4、系统堵、冷凝器脏堵、通风不良？ 5、机组电压输入是否在正常范围内（L.N 之间的电压）？ 6、主板电源模块是否损坏？ 7、室内外温度过高？ 8、压缩机卡死？
18	PFC 保护	HC	制冷：压缩机停，外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	PFC 电流偏置电压错误，更换室外控制板？ 1、检查外机主板有无损坏？ 2、电网电压是否有问题，电网电压不稳，有畸变？
19	内机与检测板通讯故障	JF	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、内机显示板和检测板连接端子松脱？ 2、内机显示板和检测板连接线不可靠？
20	室外风机故障	L3	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、外风机风叶是否被杂物卡住或碰面板？ 2、外风机端子连接是否可靠？ 3、主板损坏？ 4、外界风力是否过大？
21	启动失败	Lc	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、控制板与压缩机是否可靠连接？是否有松脱？连接顺序是否正确？ 2、压缩机线圈电阻是否正常？压缩机线圈对铜管的绝缘是否好？ 3、外风机异常？ 4、系统堵、冷凝器脏堵、通风不良？ 5、机组电压输入是否在正常范围内（L.N 之间的电压）？ 6、主板电源模块是否损坏？ 7、室内外温度过高？ 8、压缩机卡死？
22	压缩机相电流过流保护	P5	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、控制板与压缩机是否可靠连接？是否有松脱？连接顺序是否正确？ 2、压缩机线圈电阻是否正常？压缩机线圈对铜管的绝缘是否好？ 3、外风机异常？ 4、大、小阀门未打开、系统堵、冷凝器脏堵、通风不良？ 5、机组电压输入是否在正常范围内（L.N 之间的电压）？ 6、主板电源模块是否损坏？ 7、室内外温度过高？ 8、压缩机卡死？
23	模块感温包电路故障	P7	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	模块温度感温包故障，更换主板。

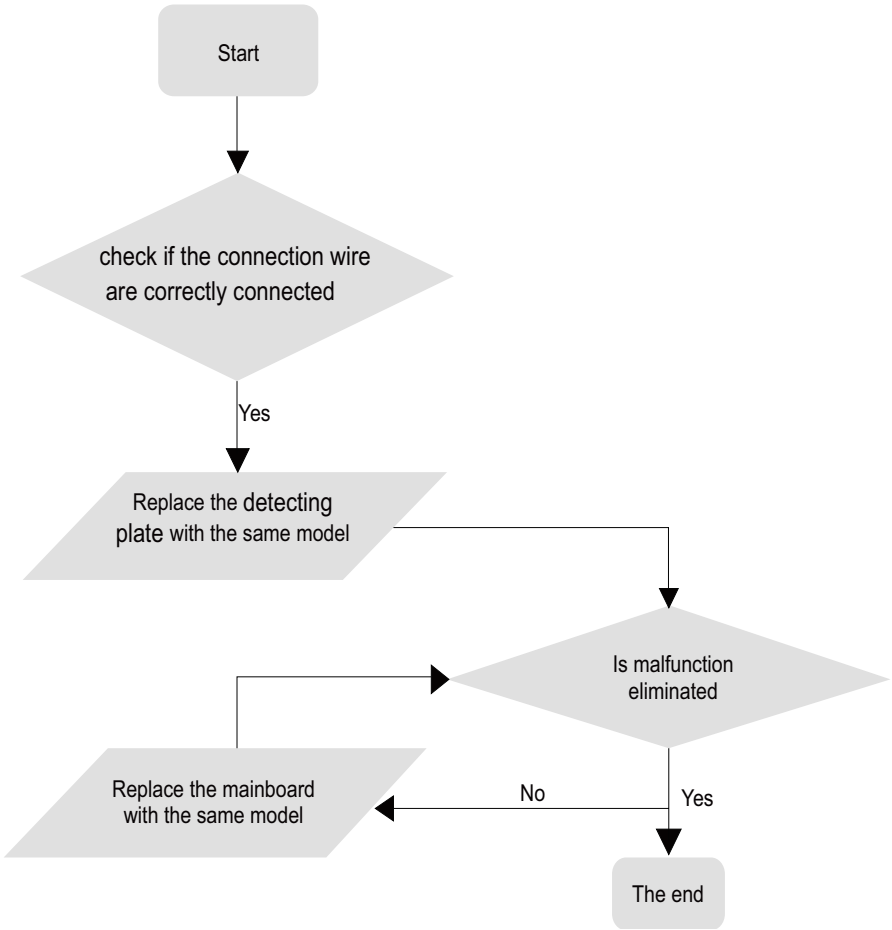
24	模块温度过高保护	P8	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、检查散热器通风是否正常？若不正常请改善。 2、整机断电 20 分钟后，检查外机控制板上的 IPM 模块的散热膏是否干涸，散热器是否打紧？ 3、如以上确认没有问题请更换外机控制板。
25	电压过低保护	PL	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、测量电源电压，是否过低或电源容量不够被拉低？ 2、有电抗器机型检查电抗器连接是否有问题？ 3、主板损坏？
26	电压过高保护	PH	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	1、测量电源电压，是否过高或存在波动？ 2、主板损坏？
27	压缩机相电流偏置电压错误	U1	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	主板损坏，更换室外控制板。
28	直流母线电压跌 落故障	U3	制冷：压缩机停、外风机停、内风机运行 制热：压缩机停、外风机停、内风机停	电源电压不稳定，波动较大。

9.2 Procedure of Troubleshooting

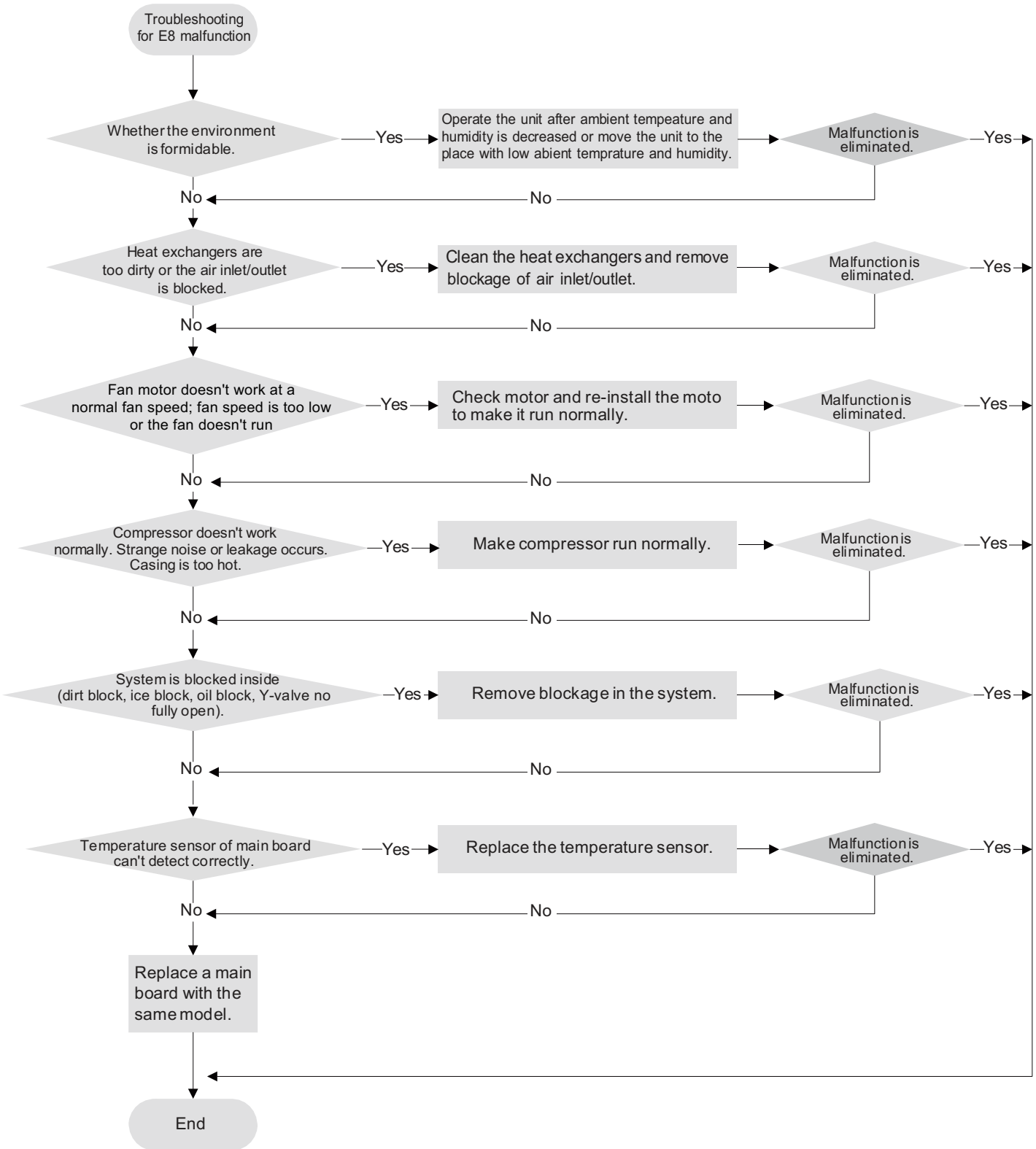
1. Malfunction of Temperature Sensor F1~F5



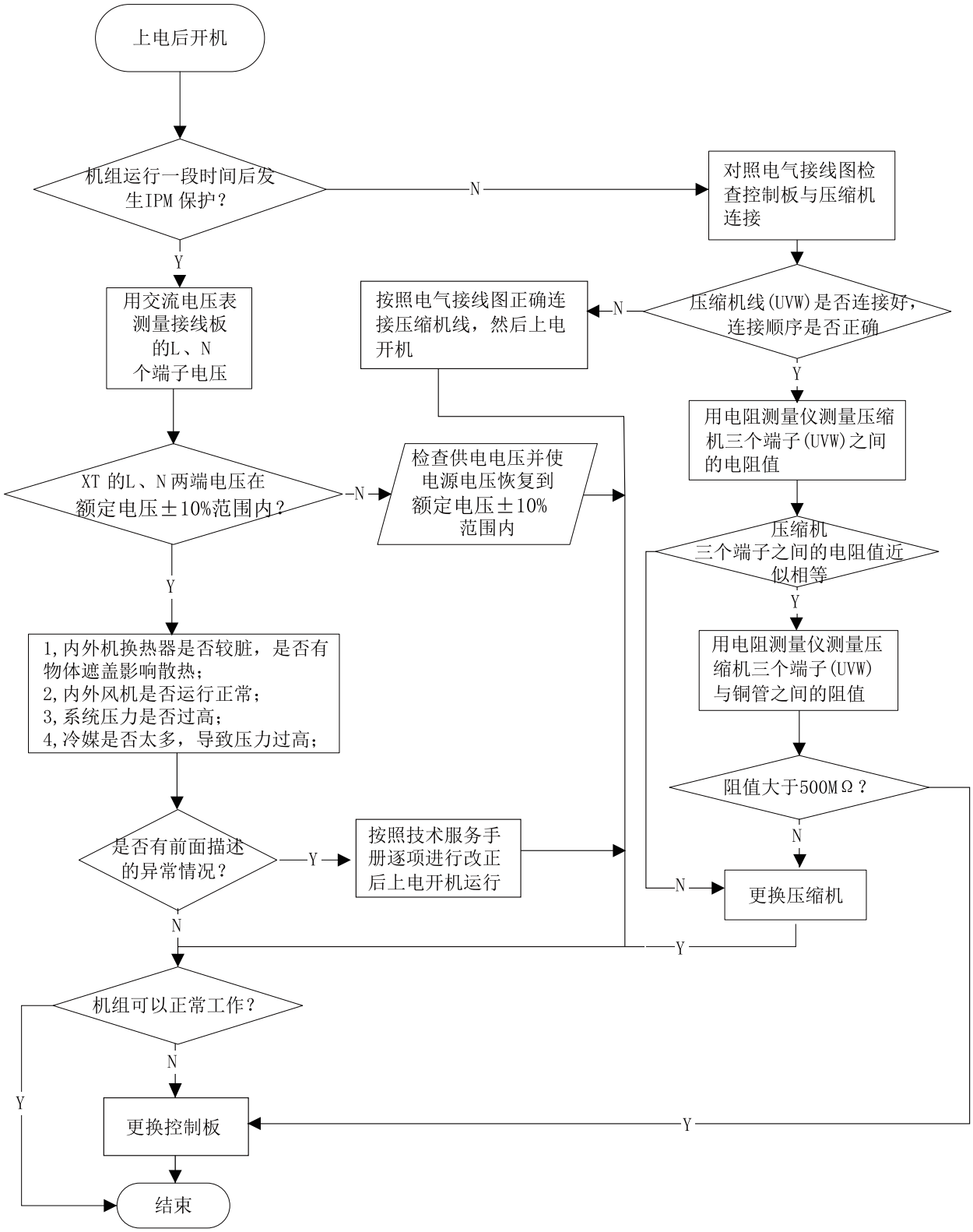
2. Malfunction of detecting plate(WIFI) JF



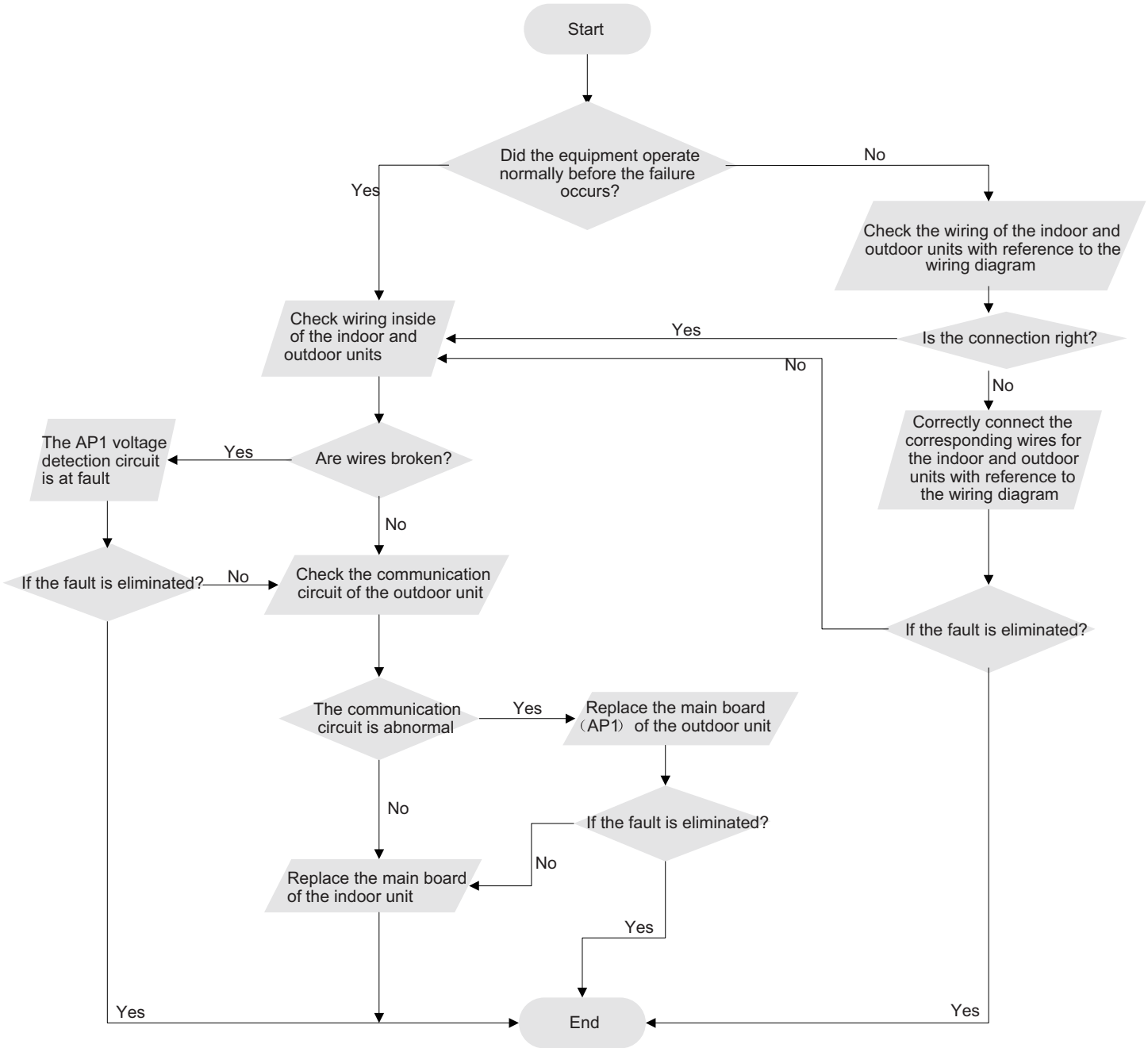
3. Overload malfunction E8



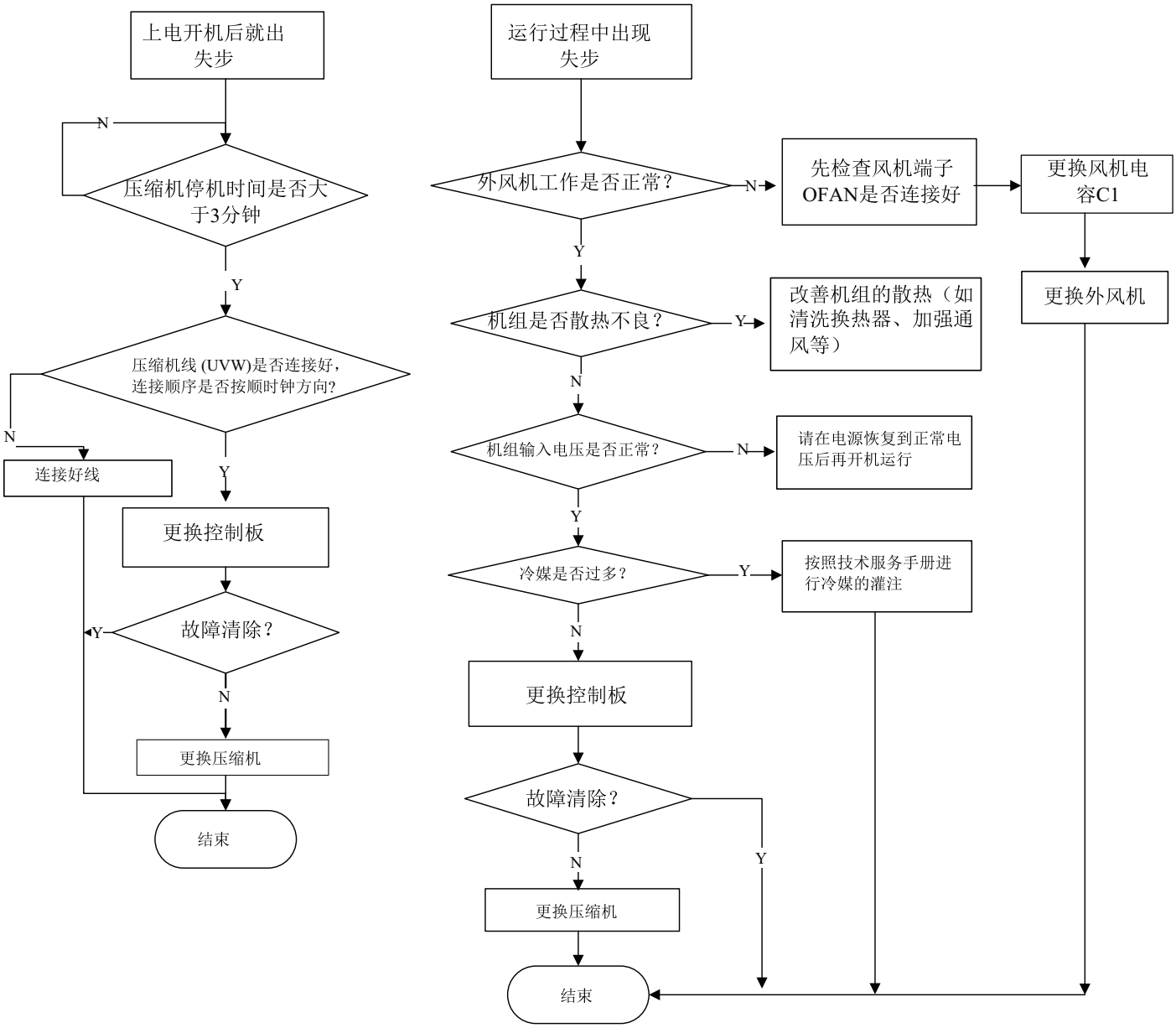
4. IPM 保护 H5、压缩机相电流过流 P5



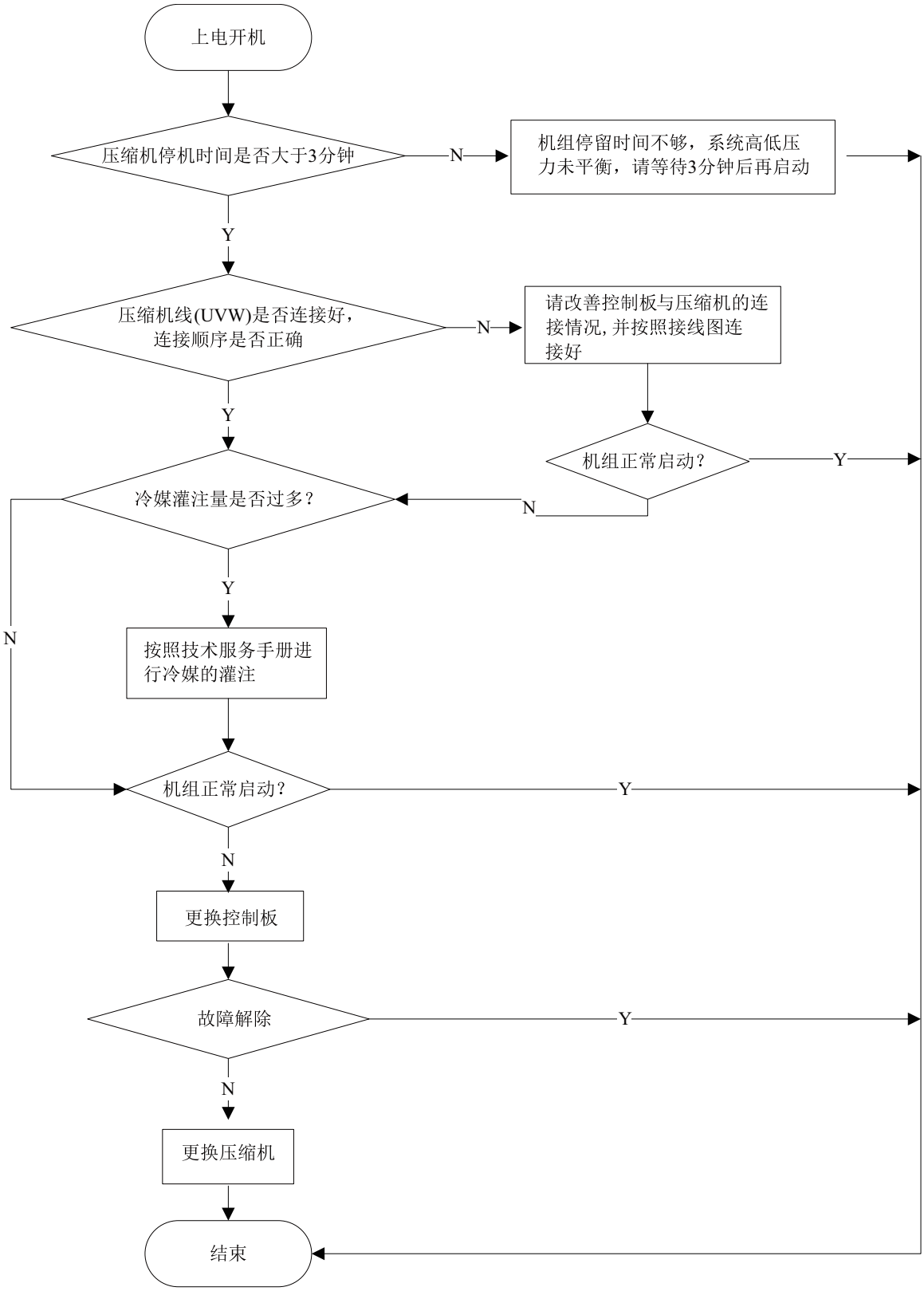
5. Communication malfunction E6



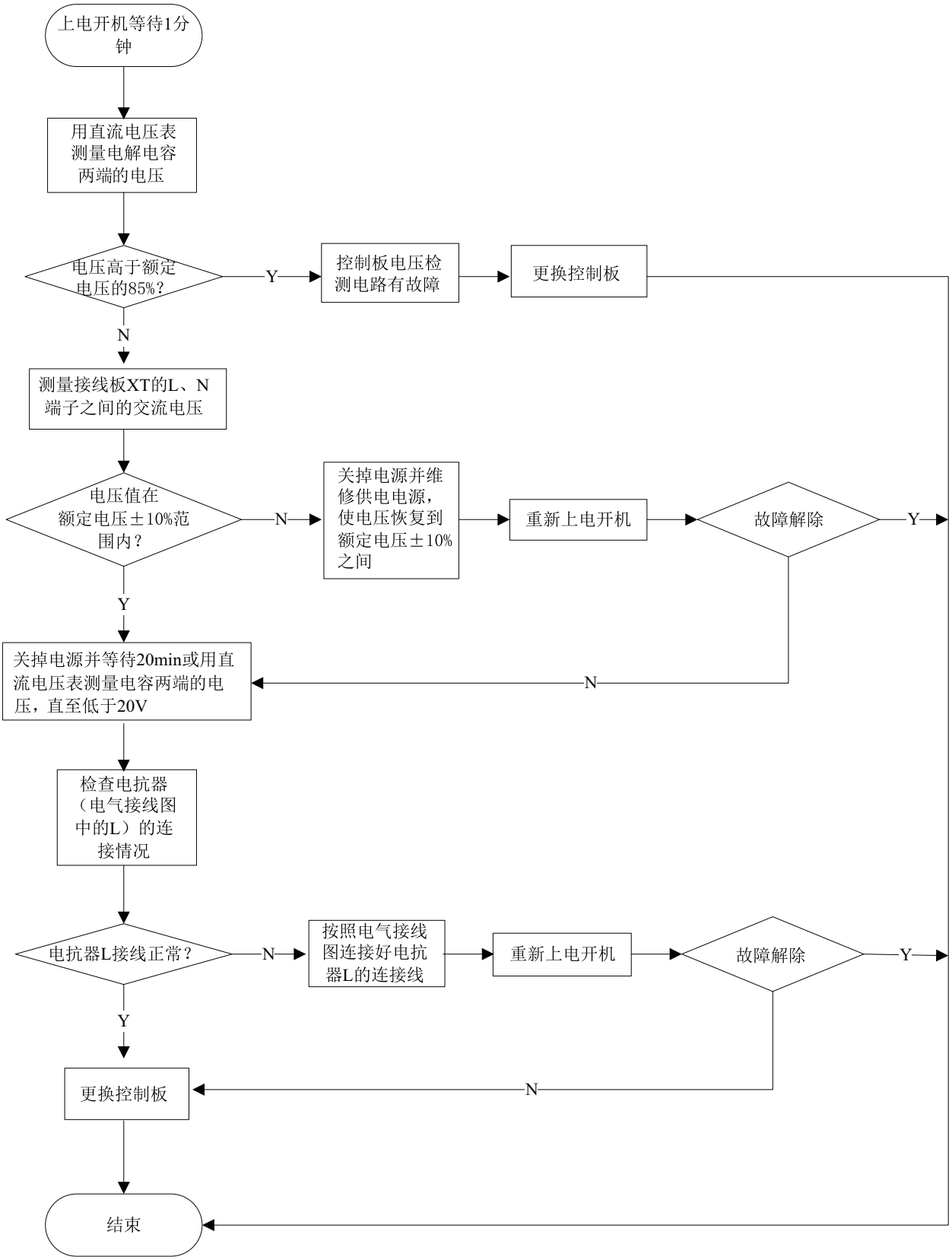
6. 压缩机失步保护 H7


上电开机后就出失步
N
压缩机停机时间是否大于3分钟
Y
压缩机线 (UVW)是否连接好，连接顺序是否按顺时钟方向?
N
连接好线
Y
更换控制板
Y
故障清除？
N
更换压缩机
结束
运行过程中出现失步
外风机工作是否正常？
N
先检查风机端子OFAN是否连接好
更换风机电容C1
Y
机组是否散热不良？
Y
改善机组的散热（如清洗换热器、加强通风等）
更换外风机
N
机组输入电压是否正常？
N
请在电源恢复到正常电压后再开机运行
Y
冷媒是否过多？
Y
按照技术服务手册进行冷媒的灌注
N
更换控制板
故障清除？
Y
N
更换压缩机
结束

7. 启动失败故障 Lc

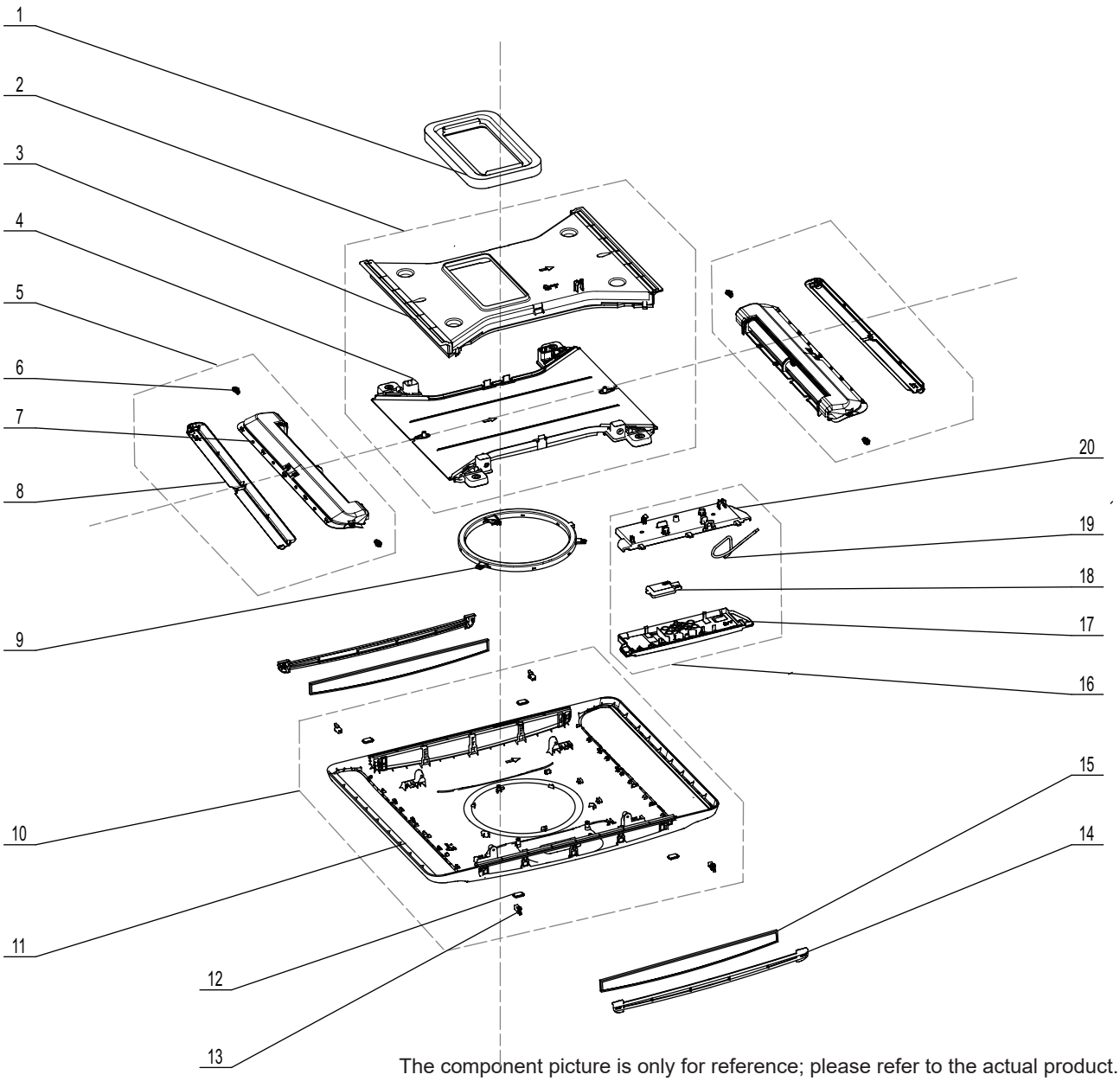

上电开机
压缩机停机时间是否大于3分钟
N
机组停留时间不够，系统高低压力未平衡，请等待3分钟后再启动
Y
压缩机线(UVW)是否连接好，连接顺序是否正确
N
请改善控制板与压缩机的连接情况，并按照接线图连接好
Y
机组正常启动？
Y
冷媒灌注量是否过多？
N
Y
N
按照技术服务手册进行冷媒的灌注
机组正常启动？
Y
N
更换控制板
故障解除
Y
N
更换压缩机
结束

8. 电容充电故障 PU


上电开机等待1分钟
用直流电压表测量电解电容两端的电压
电压高于额定电压的85%?
Y
控制板电压检测电路有故障
更换控制板
N
测量接线板XT的L、N端子之间的交流电压
电压值在额定电压±10%范围内?
N
关掉电源并维修供电电源，使电压恢复到额定电压±10%之间
重新上电开机
故障解除
Y
Y
关掉电源并等待20min或用直流电压表测量电容两端的电压，直至低于20V
N
检查电抗器（电气接线图中的L）的连接情况
电抗器L接线正常?
N
按照电气接线图连接好电抗器L的连接线
重新上电开机
故障解除
Y
Y
更换控制板
N
结束

10. Exploded View and Parts List

10.1 Indoor Unit



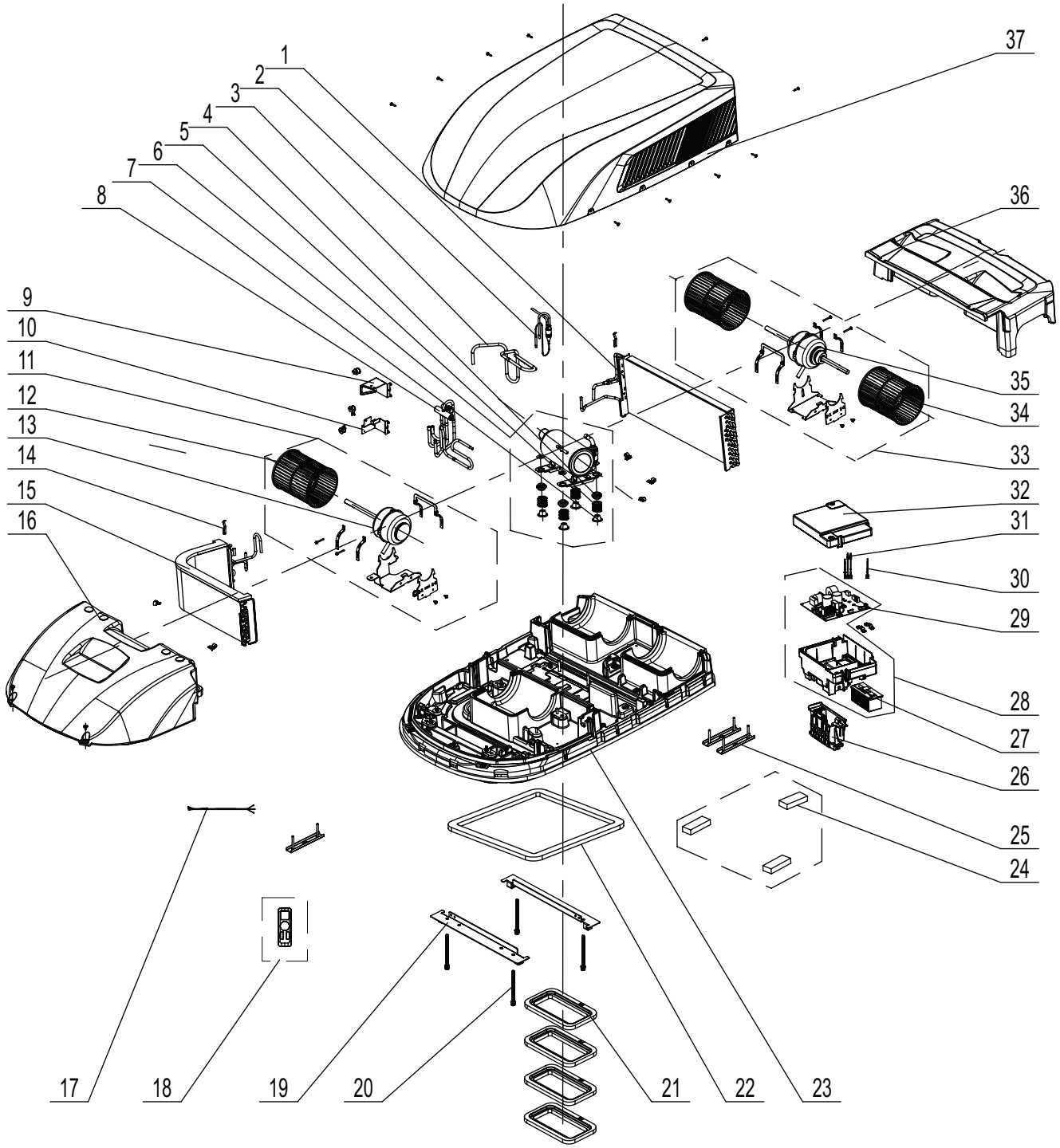
The component picture is only for reference; please refer to the actual product.

NO.	Description	Qty
1	Foam	1
2	Air Duct Sub-assy	1
3	Air Outlet Mid-panel	1
4	Base Plate	1
5	Air Outlet Frame Sub-assy	2
6	Shaft of Guide Louver	1
7	Air Outlet Frame	1
8	Guide Louver	1
9	Display Module	1
10	Front Panel Sub-Assy	1

NO.	Description	Qty
11	Front Panel	1
12	Magnet Sub-assy	4
13	Latch	4
14	Front Grill	2
15	Healthy Filter	2
16	Display Board	1
17	Display Box	1
18	Detecting Plate	1
19	Temperature Sensor	1
20	Display Box Cover	1

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

10.2 Outdoor Unit



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

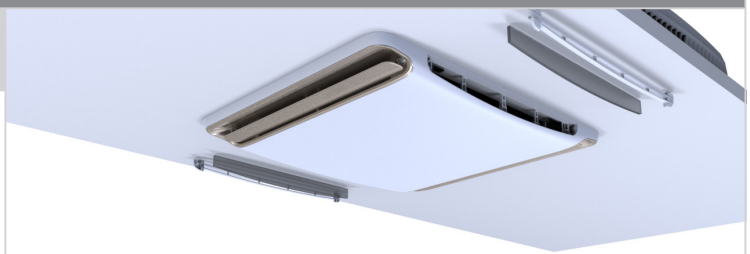
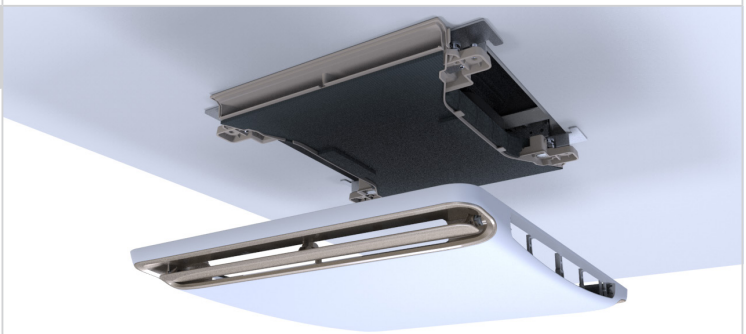
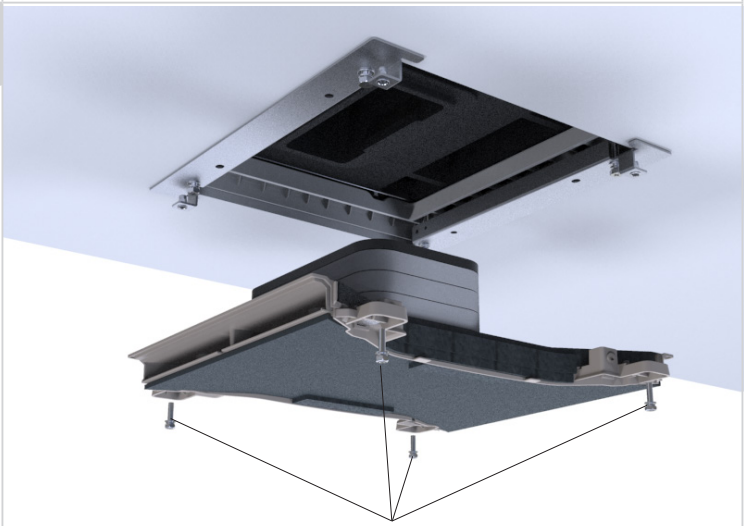
No.	Description	Qty
1	Condenser Assy	1
2	Capillary Sub-assy	1
3	Inhalation Tube Sub-assy	1
4	Compressor Gasket	1
5	Spring	4
6	Compressor and Fittings	1
7	Compressor Gasket	1
8	4-Way Valve Assy	1
9	Water baffle (4-way valve)	1
10	Water baffle (fixing pipe)	1
11	Centrifugal fan assy (inside)	1
12	Centrifugal fan blade	1
13	Brushless DC Motor	1
14	Sensor Insert	2
15	Evaporator Assy	1
16	Foam (inner side)	1
17	Connecting Cable	1
18	Remote Controller	1
19	Mounting Plate Sub-Assy	2
20	Bolt	4

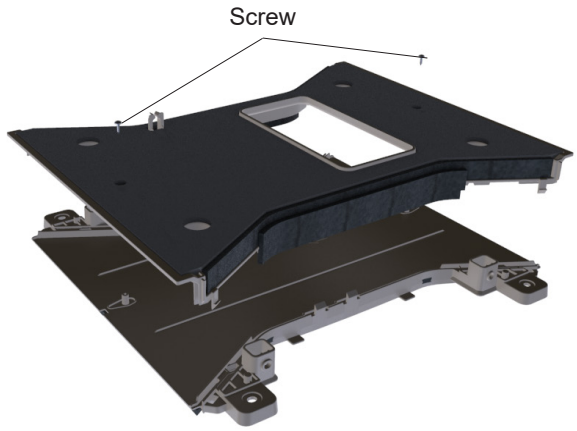
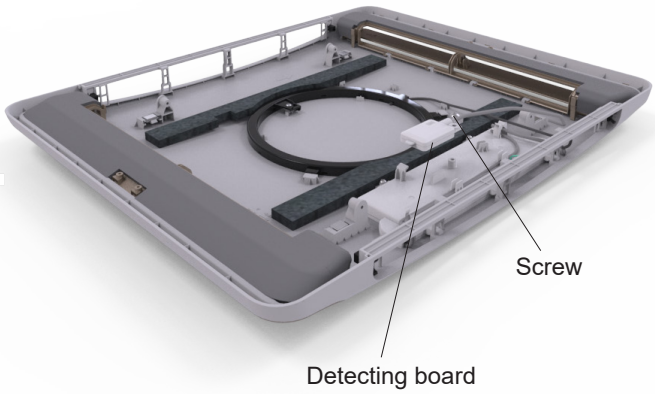
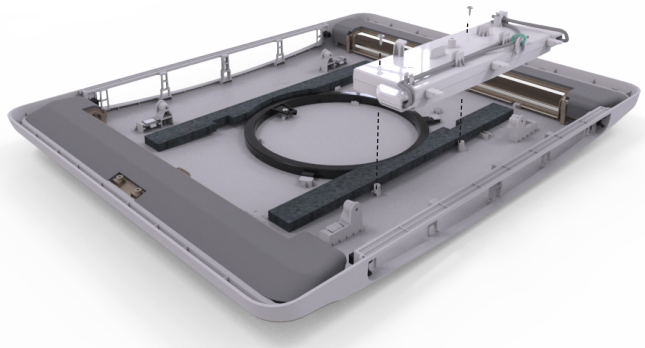
No.	Description	Qty
21	Foam	4
22	Sponge (sealing strip)	1
23	Chassis Assy	1
24	Sponge	3
25	Motor base Assy	3
26	Support (Electric box assy)	1
27	Radiator	1
28	Electric Box Assy	1
29	Main Board	1
30	Temperature Sensor	1
31	Temperature Sensor	1
32	Electric Box Cover	1
33	Centrifugal fan assy(outside)	1
34	Centrifugal fan blade	2
35	Brushless DC Motor	1
36	Foam (outside)	1
37	Cabinet	1

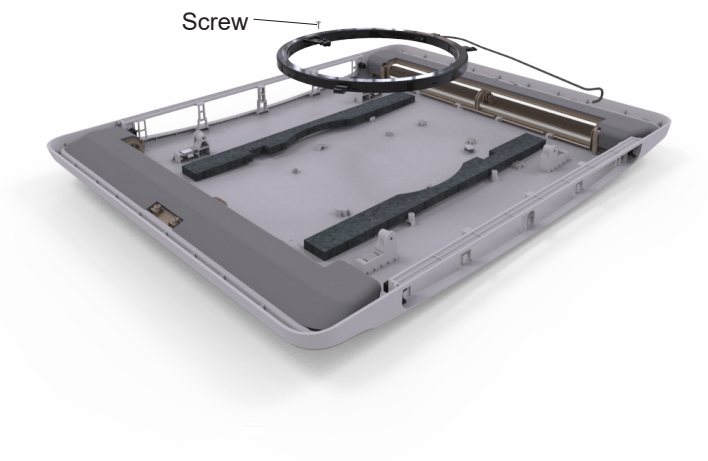
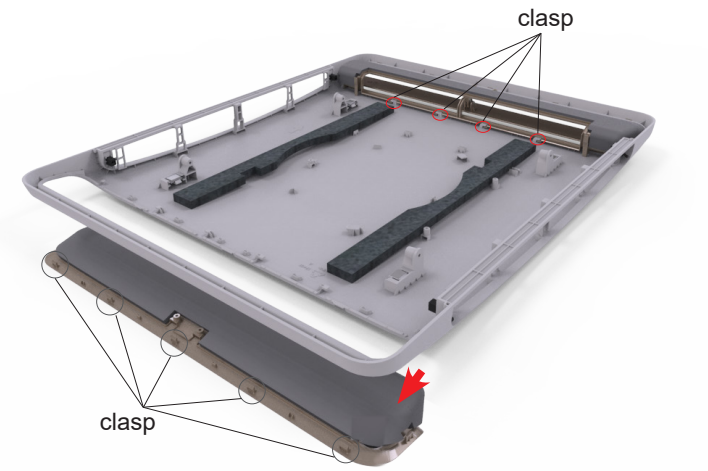
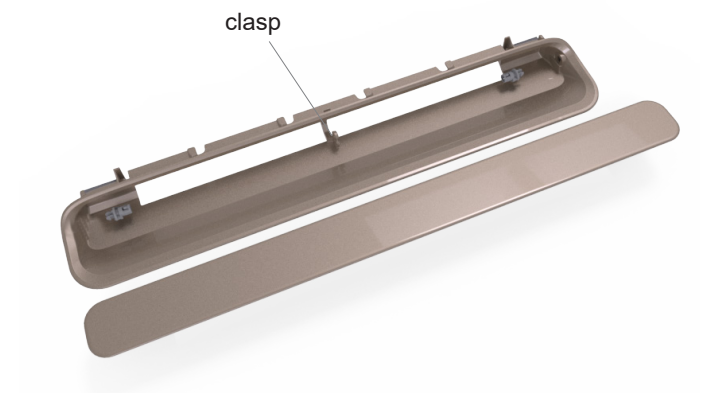
Some models may not contain some parts,
please refer to the actual product.

11. Removal Procedure

11.1 Removal Procedure of Indoor Unit

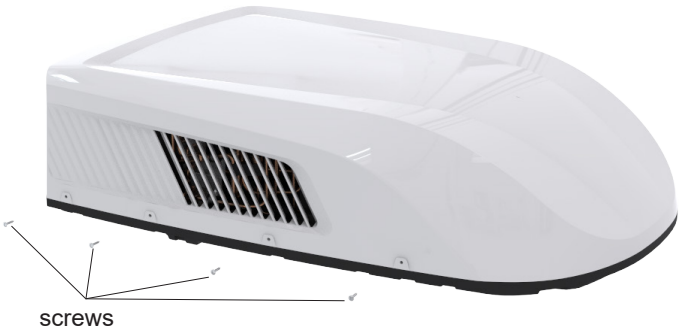
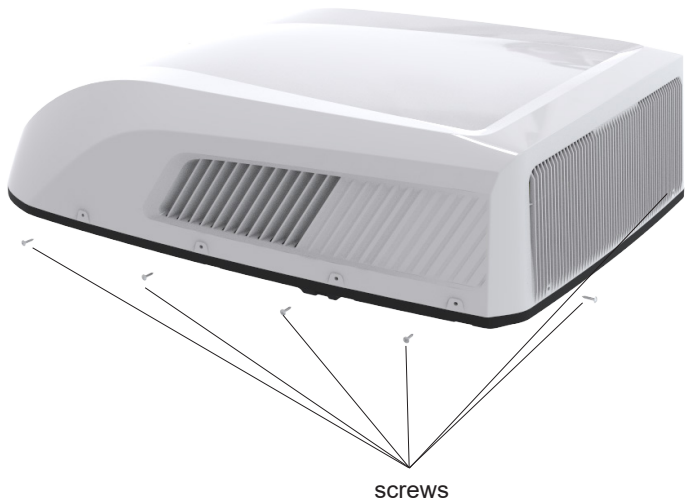
Step	Procedure
1.Remove air-in grille and the filter	
Press both ends of air-outlet grille to unlock the door switch and then remove the air-in grille and the filter.	
2. Remove front panel sub-assy	
Loose 4 screws at both ends and then remove the panel sub-assy downwards.	
3. Remove air duct sub-assy	
Loose 4 bolts as shown in the figure and then remove the air duct sub-assy downwards.	

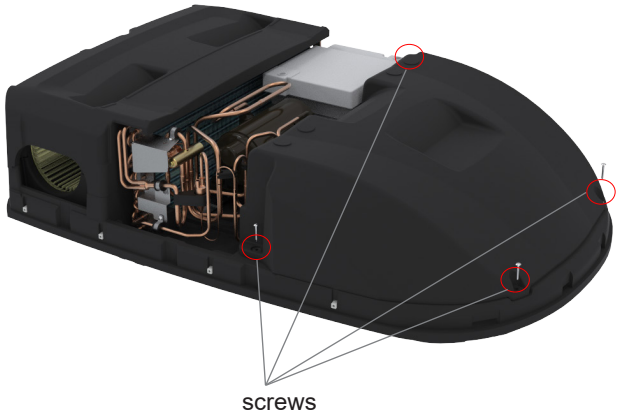
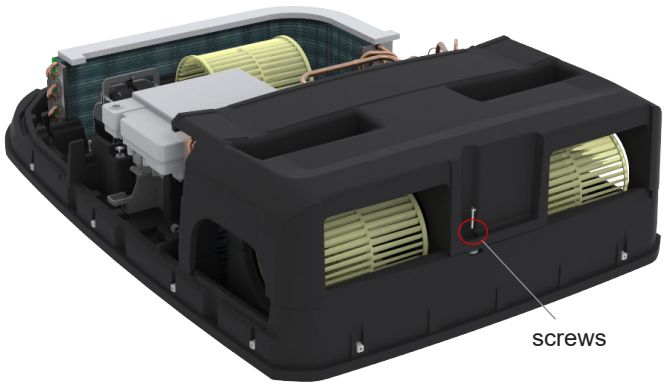
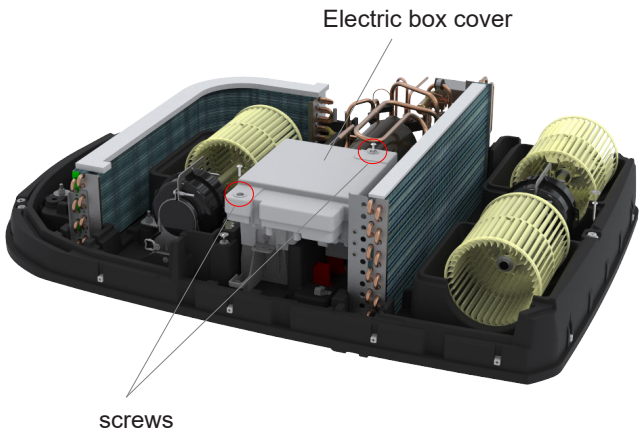
Step	Procedure
4. Remove base plate and the middle air-outlet panel	
Loose 2 screws at both ends; loose 7 clasps at both sides and then separate the base plate and the middle air-outlet panel.	
5. Remove detecting board	
Loose 1 screw on the top; remove the detecting board.	
6. Remove display board	
Loose 2 screws as shown in the figure and the remove the display board.	

Step	Procedure
7.Remove display module	
Loose 1 screw as shown in the figure, and rotate the display module in clockwise direction to remove it.	
8. Remove air-outlet frame sub-assy	
Press inwards to press out the 5 clasps on the outside of the air-outlet frame sub-assy, so that the clasps out of the panel and pull down, so that the inside 4 limit clasps out can remove the air-outlet frame sub-assy. Remove another air-outlet frame sub-assy in the same way.	
9. Remove guide louver and shaft of guide louver	
Loose the middle clasp, remove the horizontal louver outwards and then remove the shaft of horizontal louver at both ends.	

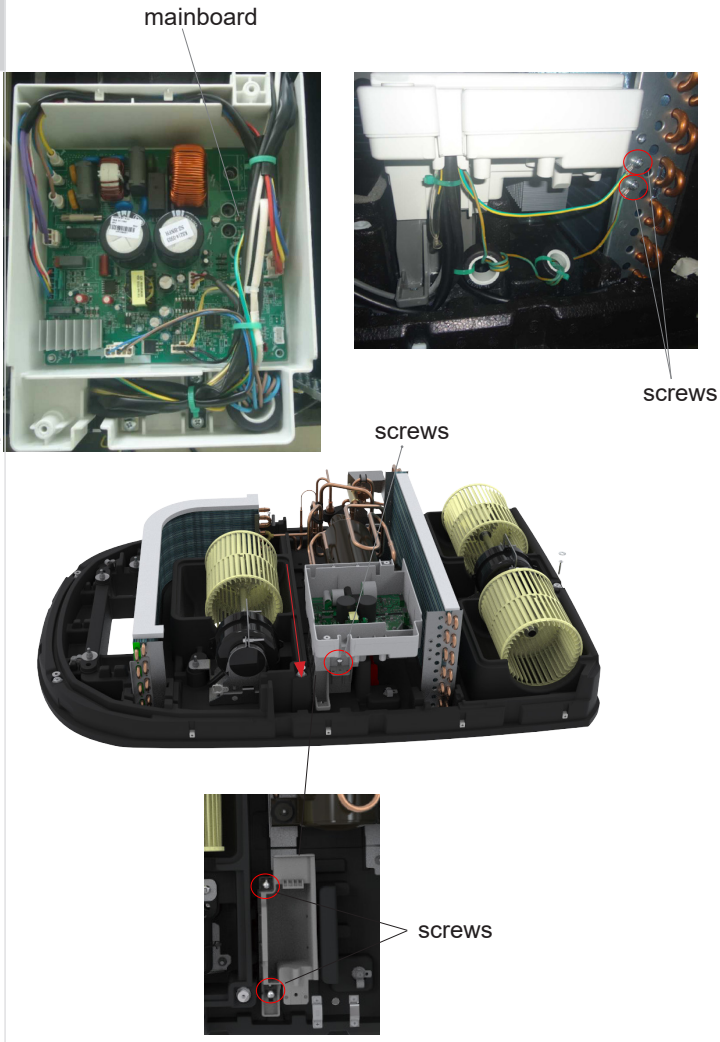
11.2 Removal Procedure of Outdoor Unit

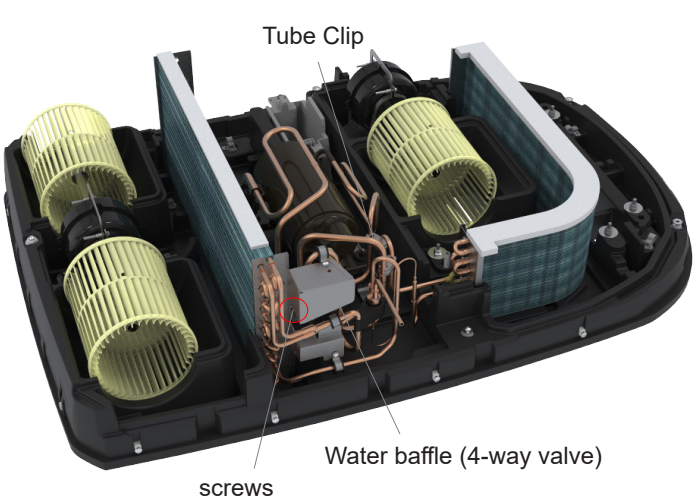
Caution: discharge the refrigerant completely before removal.

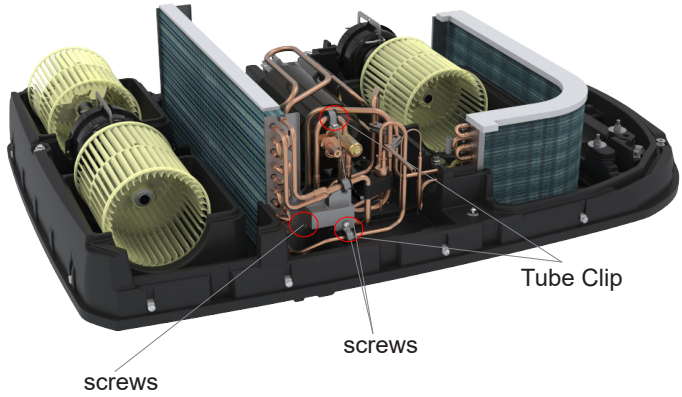
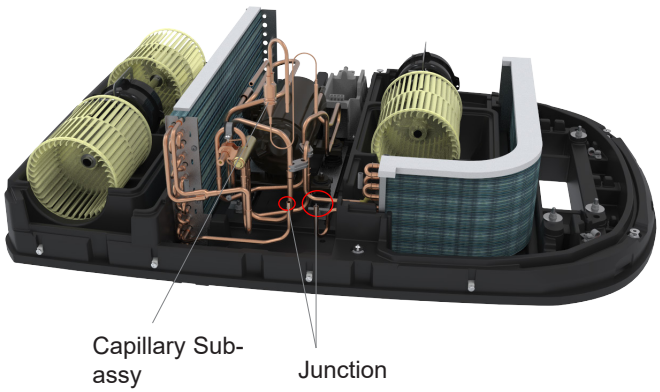
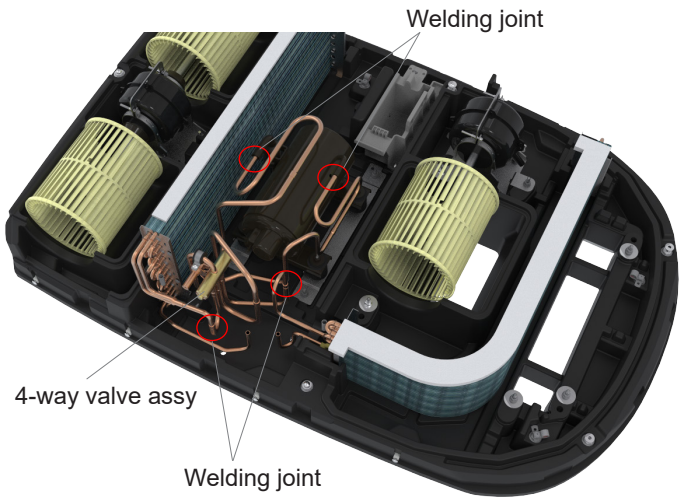
Step	Procedure
1. Outdoor unit diagram	
2.Remove outer case Remove screws fixing outer case. Lift up to remove the outer case.	 

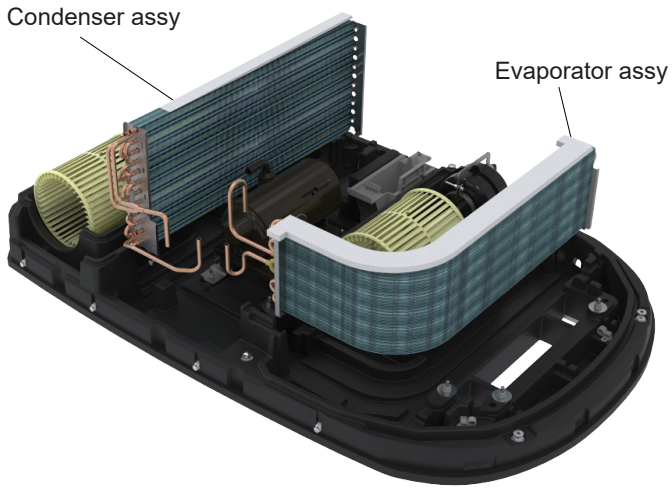
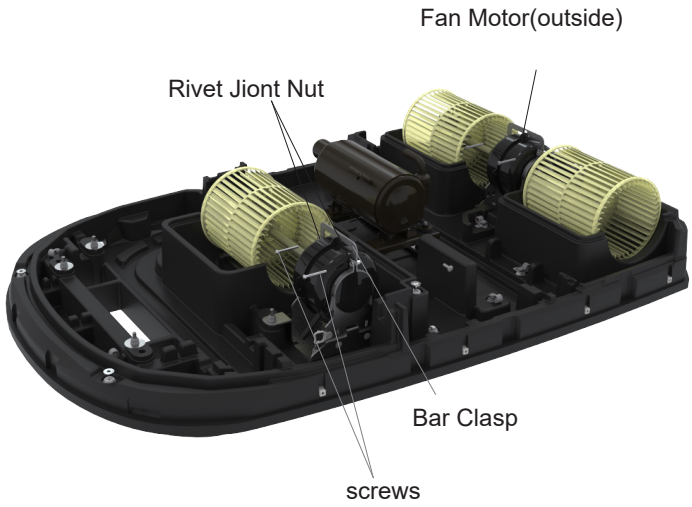
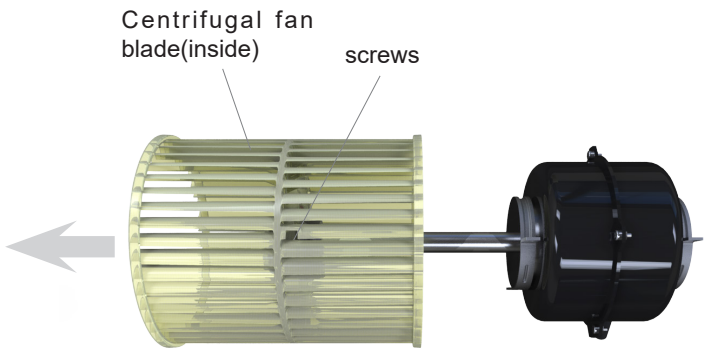
Step	Procedure
3.Remove foam(inner side)	
	Remove screws fixing the foam(inner side) and then remove the foam(inner side).
	
4.Remove foam(outside)	
	Remove screws fixing the foam(outside) and then remove the foam(outside).
	
5.Remove Electric Box Cover	
	Remove screws fixing the electric box cover and then remove the electric box cover.
	

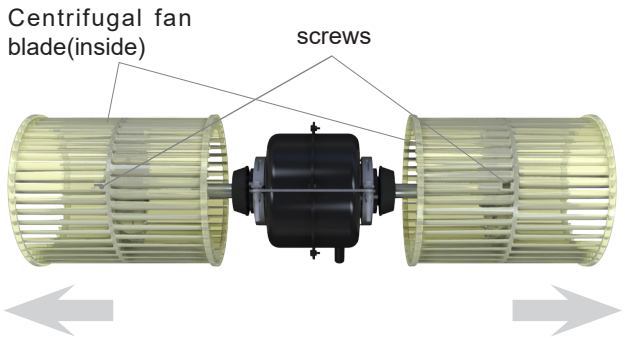
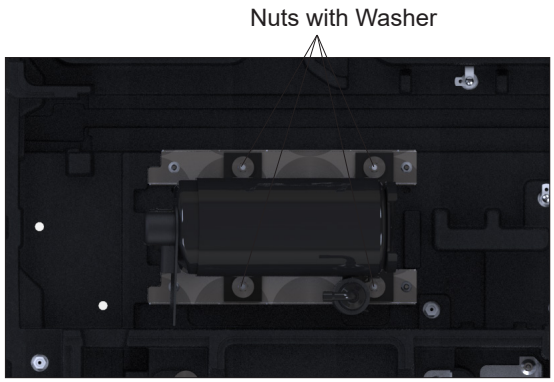
Step	Procedure
6.Remove electric box assy、Support (Electric box assy)	
	Lift the mainboard, disconnect each wiring terminal on the mainboard; Remove screws fixing the electric box assy, remove the ground screw on the condenser and then lift the electric box assy to remove it. Remove screws fixing the Support (Electric box assy) and then remove the Support (Electric box assy).
7.Remove water baffle	
a	Remove screw fixing the water baffle (4-way valve); remove screw fixing the tube clip, then remove the water baffle (4-way valve).





Step	Procedure	
b	Remove screw fixing the water baffle (fixing pipe); remove screws fixing the tube clip, then remove the water baffle(fixing pipe).	
8. Remove Capillary Sub-assy		
	Cut the cable tie and remove the fixed block of tube. Unsolder the welding joint between the capillary subassy and then remove the capillary sub-assy. Note: 1.Before unsoldering the welding joint, please make sure the refrigerant is discharged completely. 2.Before unsoldering the welding joint of capillary, wrap the capillary with a wet cloth completely to avoid damage to the capillary caused by high temperature. Seal the discharge pipe port and suction pipe port of compressor with rubber plug or rubber paper to avoid impurities getting into the pipe.	
9. Remove 4-way valve assy		
	Unsolder the welding joint connecting the 4-way valve assy and then unsolder the 4-way valve assy. Note: 1.Before unsoldering the welding joint, please make sure the refrigerant is discharged completely. 2.Before unsoldering the welding joint connecting the 4-way valve, wrap the 4-way valve assy with a wet cloth completely to avoid damage to the valve caused by high temperature.	

Step	Procedure
10.Remove condenser assy, evaporator assy	
Lift up, remove the condenserassy and evaporator assy.	
11.Remove Fan Motor and Centrifugal Fan Blade	
Remove Screws fixing the bar clasp, remove the fan motor and centrifugal fan blade.	
12.Remove Centrifugal Fan Blade	
a Remove screws fixing the centrifugal fan; Pull out in the direction of the arrow, remove the centrifugal fan.	

Step	Procedure	
b		
13.Remove Compressor		
	Remove nuts with washer fixing the compressor; remove the compressor.	

Appendix

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: Tf=Tcx1.8+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: List of Resistance for Temperature Sensor

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

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

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

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

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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