

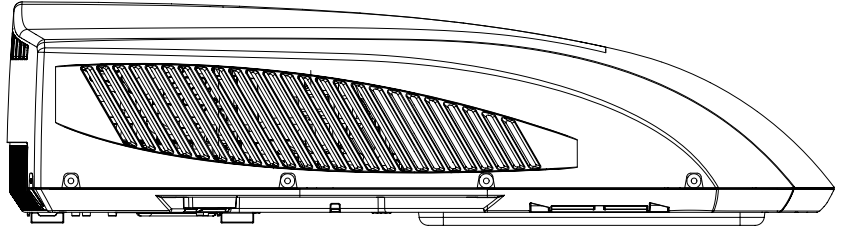
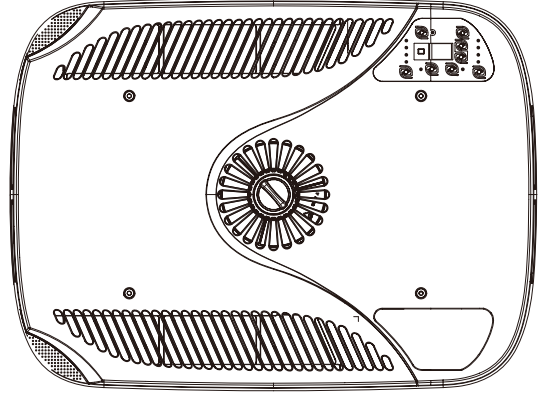
# Service Manual

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Models: GRH085DA-K3NA1A  
GRH120DA-K3NA1A  
(Refrigerant R410A)

## Table of Contents

<b>Part I : Technical Information</b>	1
<b>1. Summary</b>	1
<b>2. Specifications</b>	2
<b>3. Outline Dimension Diagram</b>	4
3.1 Indoor Unit	4
3.2 Outdoor Unit	4
<b>4. Refrigerant System Diagram</b>	5
<b>5. Electrical Part</b>	6
5.1 Wiring Diagram	6
5.2 PCB Printed Diagram	8
<b>6. Function and Control</b>	10
6.1 Introduction of Control Panel	10
6.2 Introduction of Remote Controller	11
6.3 Brief Description of Modes and Functions	15
<b>Part II : Installation and Maintenance</b>	18
<b>7. Notes for Installation and Maintenance</b>	18
<b>8. Installation</b>	19
<b>9. Maintenance</b>	23
9.1 Error Code	23
9.2 Procedure of Troubleshooting	24
<b>10. Exploded View and Parts List</b>	25
10.1 Indoor Unit	25
10.2 Outdoor Unit	27
<b>11. Removal Procedure</b>	29
11.1 Removal Procedure of Indoor Unit	29
11.2 Removal Procedure of Outdoor Unit	33
<b>Appendix:</b>	39
Appendix 1: Reference Sheet of Celsius and Fahrenheit	39
Appendix 2: List of Resistance for Temperature Sensor	40



## 2. Specifications

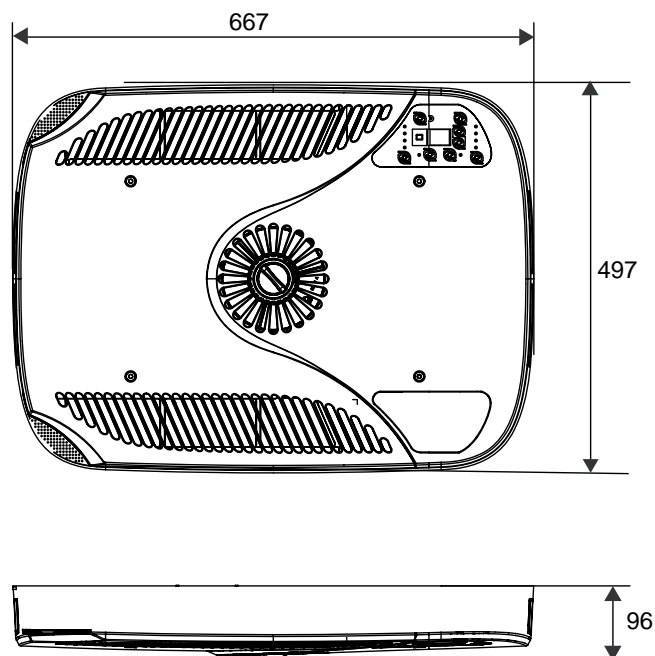
Model			GRH085DA-K3NA1A	GRH120DA-K3NA1A
Product Code			CU050000900	CU050001000
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Cooling Capacity		W	2500	3500
Heating Capacity		W	2200	3200
Cooling Power Input		W	1070	1270
Heating Power Input		W	980	1180
Cooling Current Input		A	4.7	5.6
Heating Current Input			4.2	5.2
Rated Input		W	1400	1550
Rated Current		A	6.6	8
EER		W/W	2.33	2.75
COP		W/W	2.25	2.71
Air Flow Volume(SS/H/M/L)		m <sup>3</sup> /h	340/280/220/190	380/320/260/230
Dehumidifying Volume		L/h	1.0	1.5
Application Area		m <sup>2</sup>	10-17	12-18
Set Temperature Range		°C	16~30	16~30
Cooling Operation Ambient Temperature Range		°C	18~43	18~43
Heating Operation Ambient Temperature Range		°C	2~24	2~24
Indoor Unit	Model		GRH085DA-K3NA1A/I	GRH120DA-K3NA1A/I
	Product Code		CU050N00900	CU050N01000
	Swing Motor Model		MP24BA	MP24BA
	Swing Motor Power Output	W	1.5	1.5
	Fuse Current	A	3.15	3.15
	Dimension (WXHXD)	mm	667X497X96	667X497X96
	Dimension of Carton Box (LXWXH)	mm	735X150X575	735X575X150
	Dimension of Package (LXWXH)	mm	738X153X590	738X578X165
	Net Weight	kg	5.5	5.5
	Gross Weight	kg	8	8
Outdoor Unit	Model		GRH085DA-K3NA1A/O	GRH120DA-K3NA1A/O
	Product Code		CU050W00900	CU050W01000
	Compressor Trademark		GREE	GREE
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QYA-B106Y	QYA-B106Y
	Compressor Oil		POE/RB 68EP	RB 68EP
	Compressor Type		Rotary	Rotary
	Compressor LRA.	A	22.5	22.5
	Compressor RLA	A	4.2	4.2
	Compressor Power Input	W	930	930
	Compressor Overload Protector		Internal	Internal
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ115	Φ115
	Fan Type		Centrifugal	Centrifugal
	Fan Diameter	mm	Φ191	Φ191
	Fan Motor Speed	rpm	2370/1800	2370/1800
	Fan Motor Power Output	W	37	37



Outdoor Unit

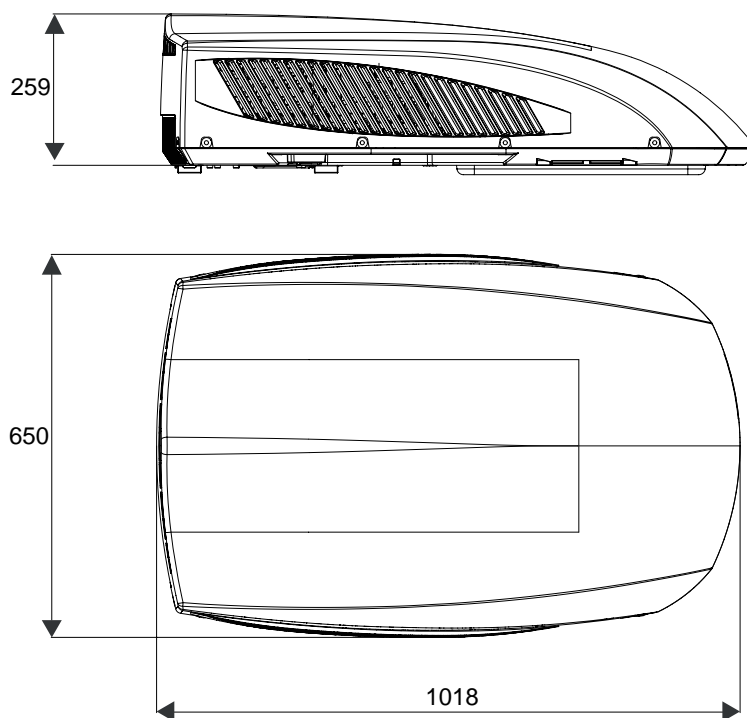
### 3. Outline Dimension Diagram

#### 3.1 Indoor Unit



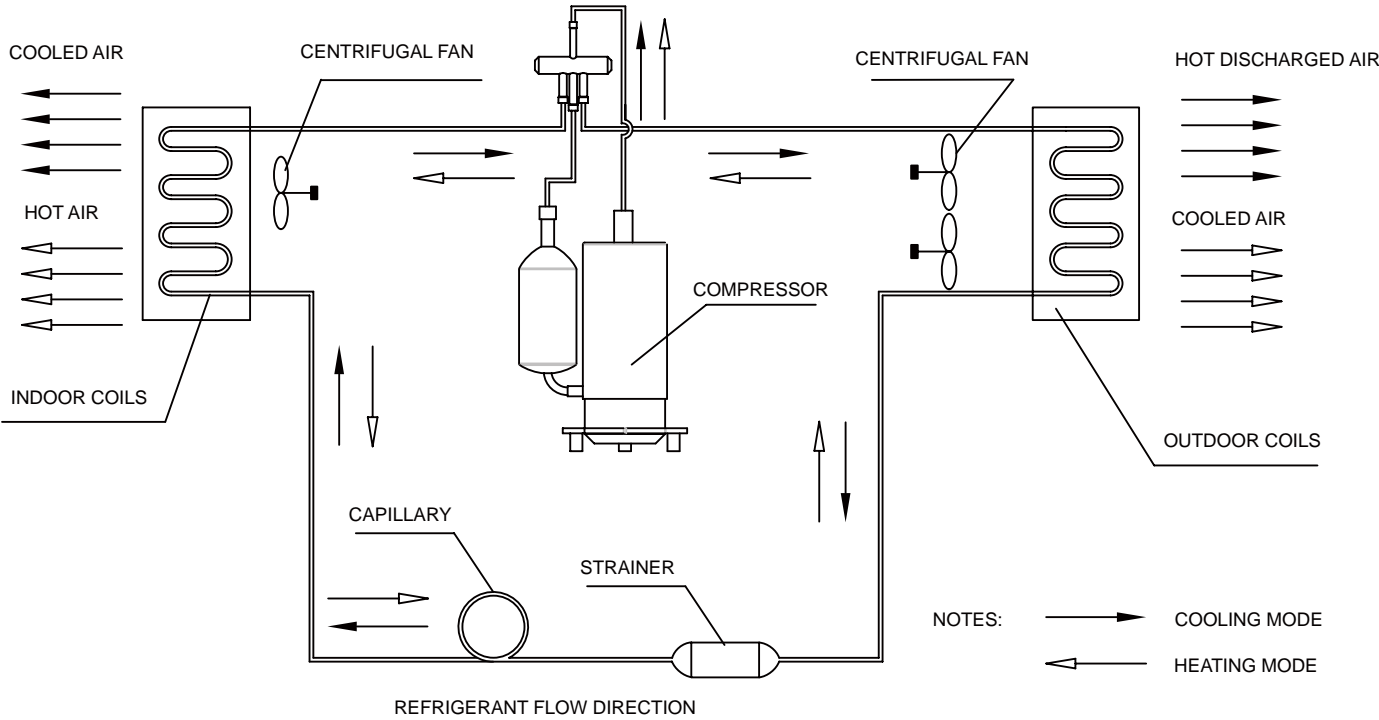
Unit:mm

#### 3.2 Outdoor Unit



Unit:mm

# 4. Refrigerant System Diagram



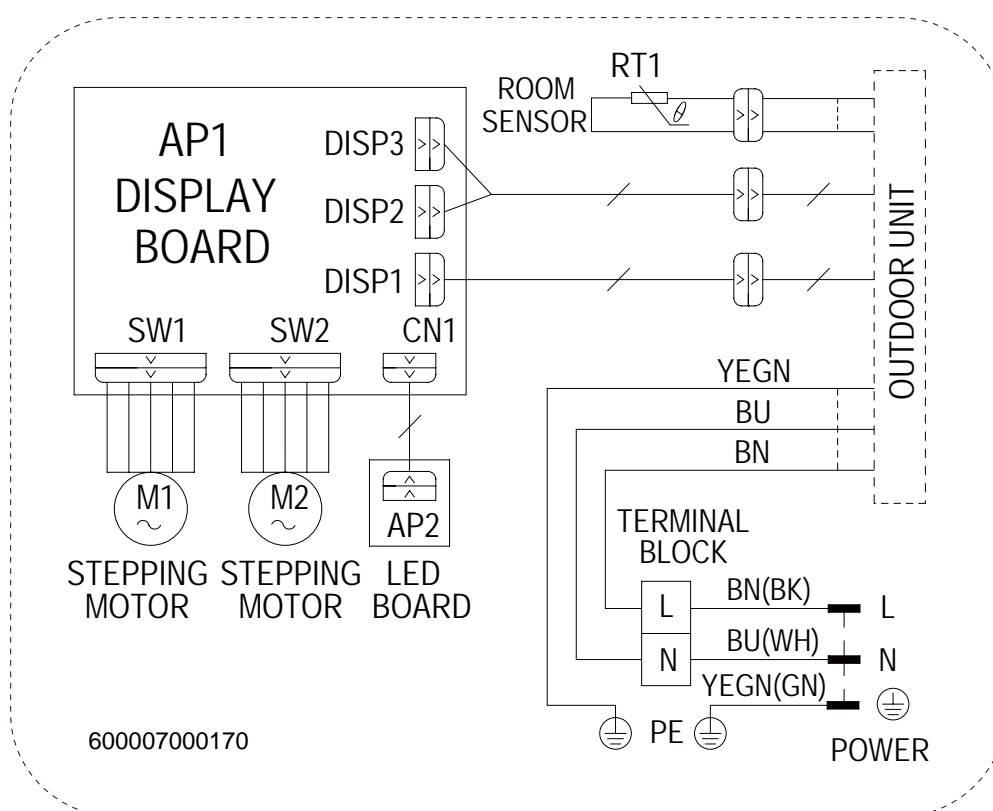
## 5. Electrical Part

### 5.1 Wiring Diagram

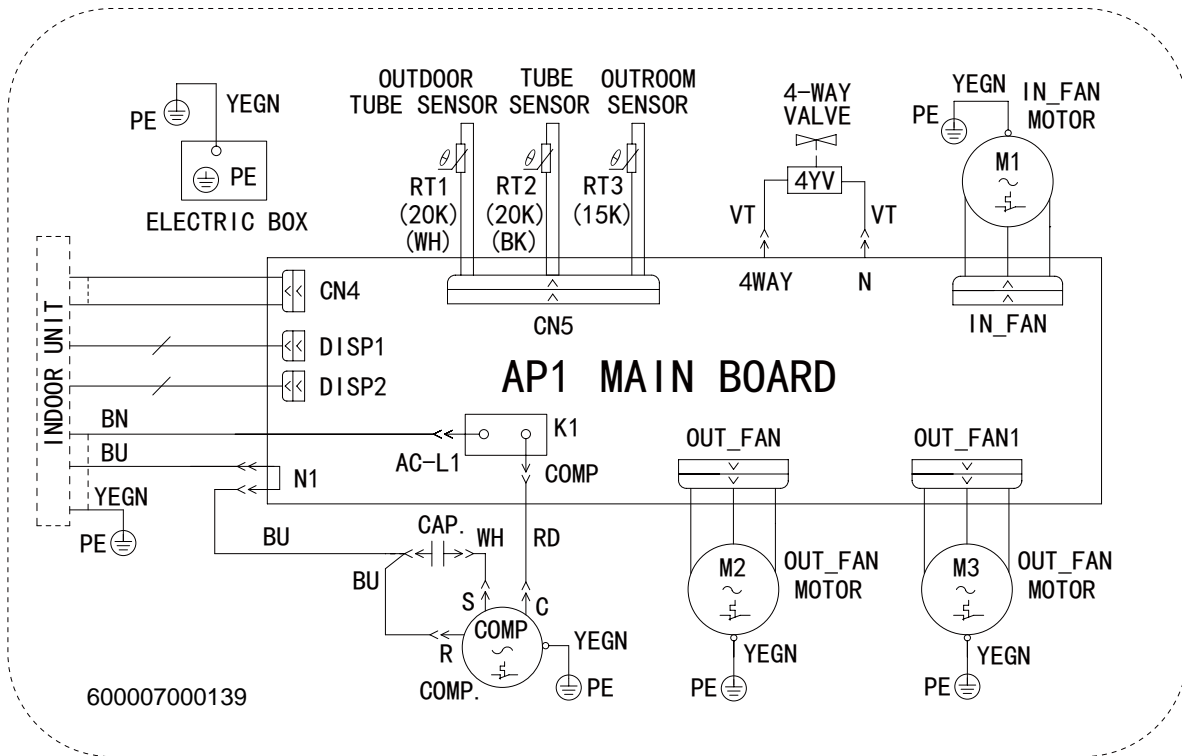
#### • Instruction

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

#### • Indoor Unit



• Outdoor Unit

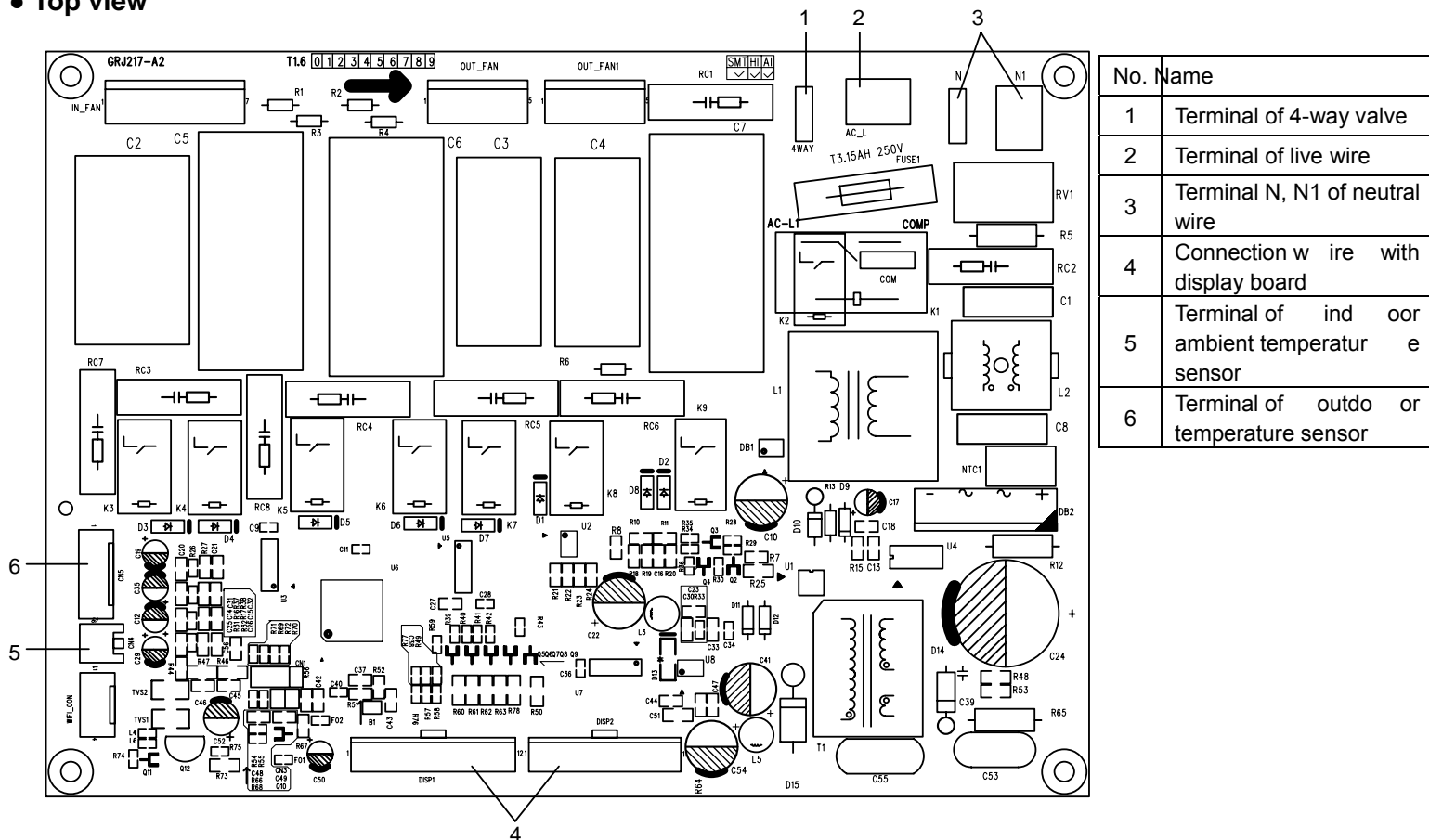


These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

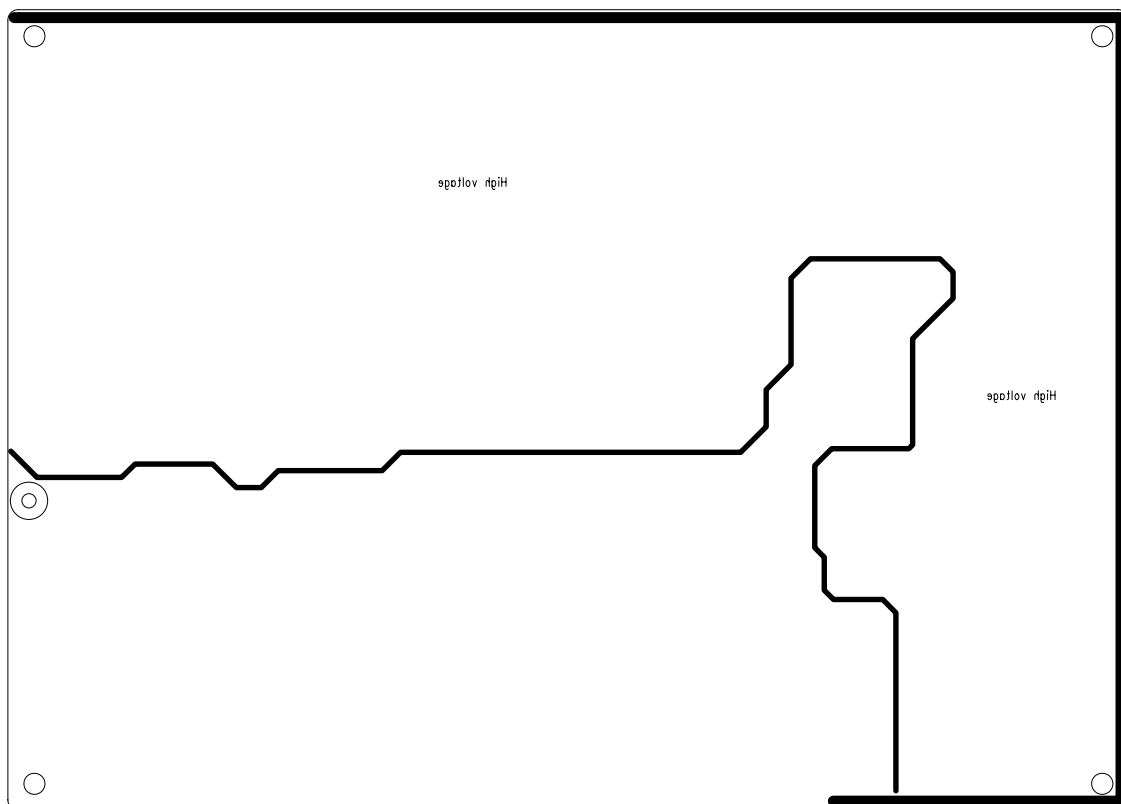
## 5.2 PCB Printed Diagram

### 5.2.1 Silk screen on main board

- **Top view**

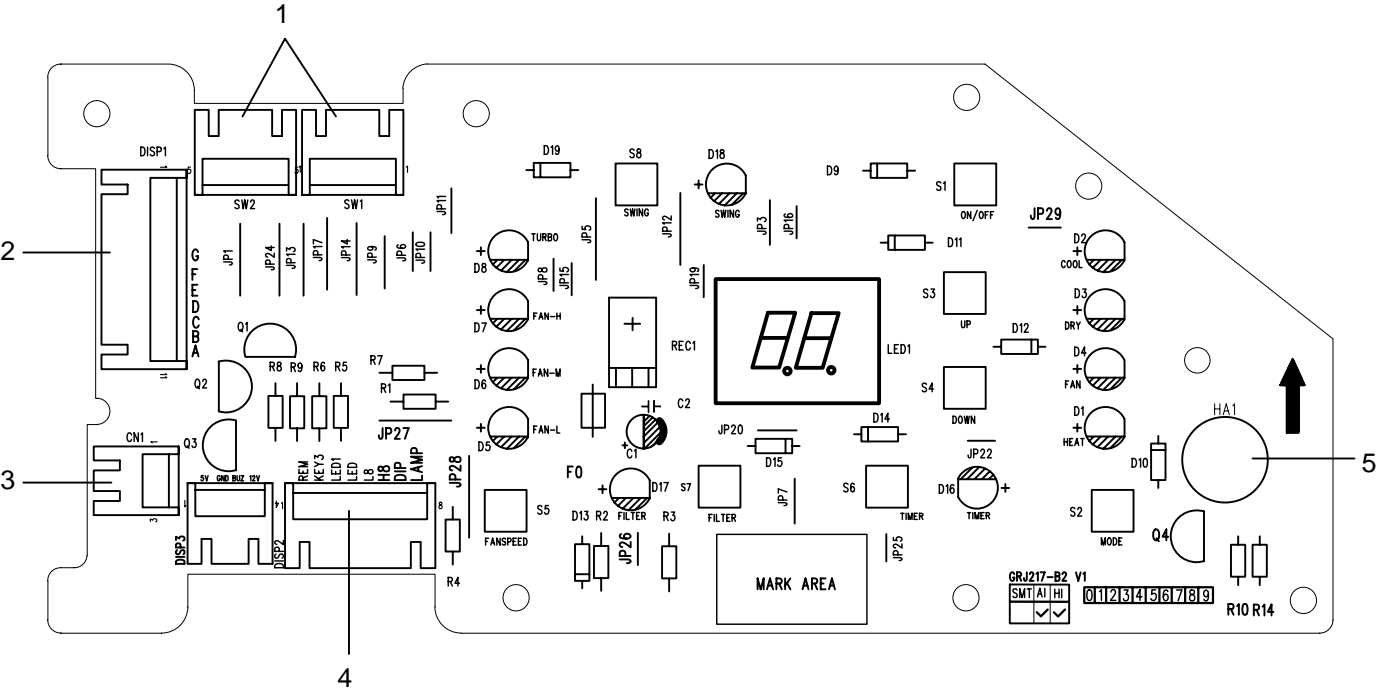


- **Bottom view**



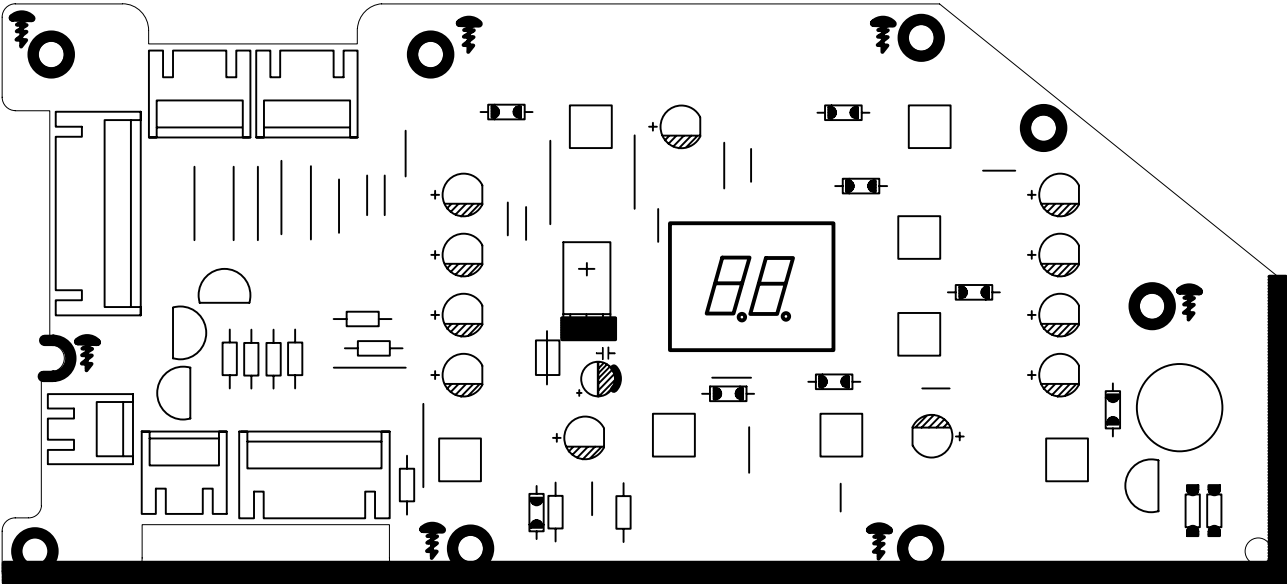
5.2.2 silk screen on display board

• Top view



No.	Name	No.	Name	No.	Name
1	Port of swing motor	2	Port of mainboard connection wire	3	Port of light board
4	Port of display	5	Buzzer		

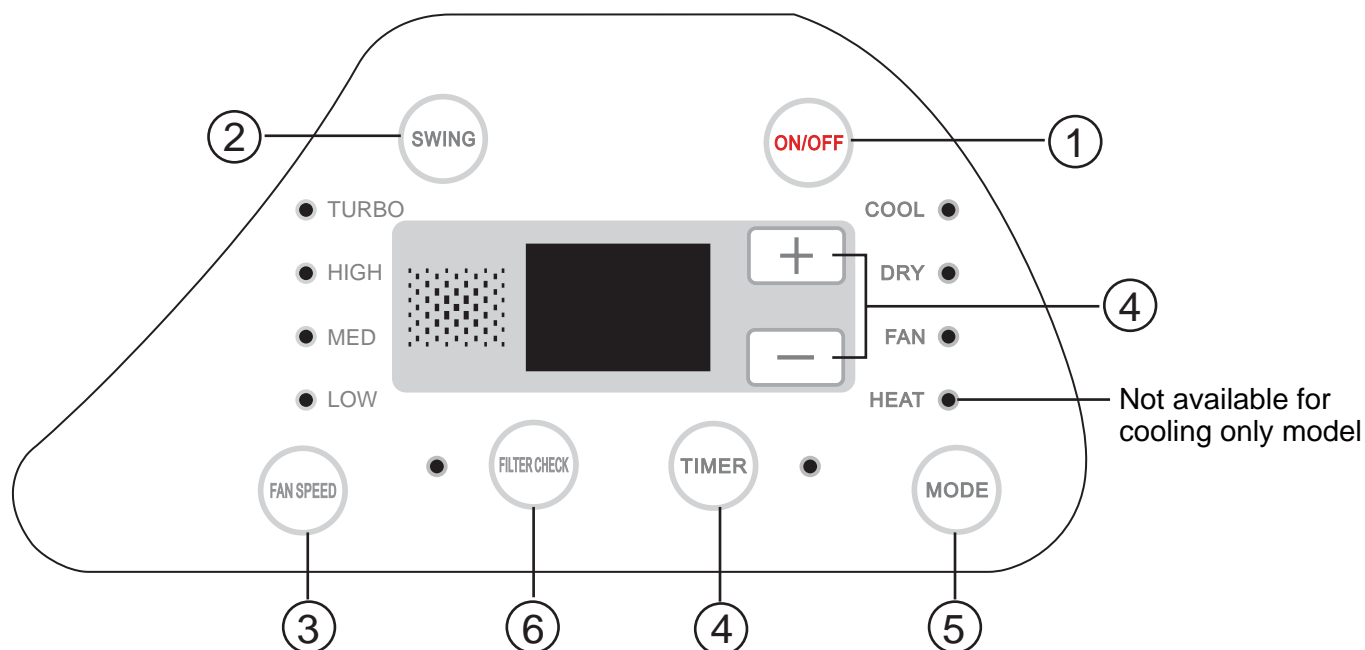
• Bottom view



## 6. Function and Control

### 6.1 Introduction of Control Panel

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



#### 1 ON/OFF button

Operation starts when pressing this button, and stops when pressing this button again.

#### 2 SWING button

Activate the automatic air swing function.

#### 3 FAN SPEED button

Select the fan speed LOW, MED, HIGH and TURBO in sequence.

#### 4 (+/-) / TIMER 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).

Press TIMER button, then press +/- to increase and decrease the time setting. If the time setting is no more than 10 hours, the increment/decrement is 0.5 hour by each press, if more than 10 hours, the increment/decrement is 1 hour by each press. The time setting range is 0.5~24 hours.

#### 5 MODE button

Select the operation mode, COOL, DRY, FAN, HEAT (for heat pump model) or COOL, DRY, FAN (for cooling only model).

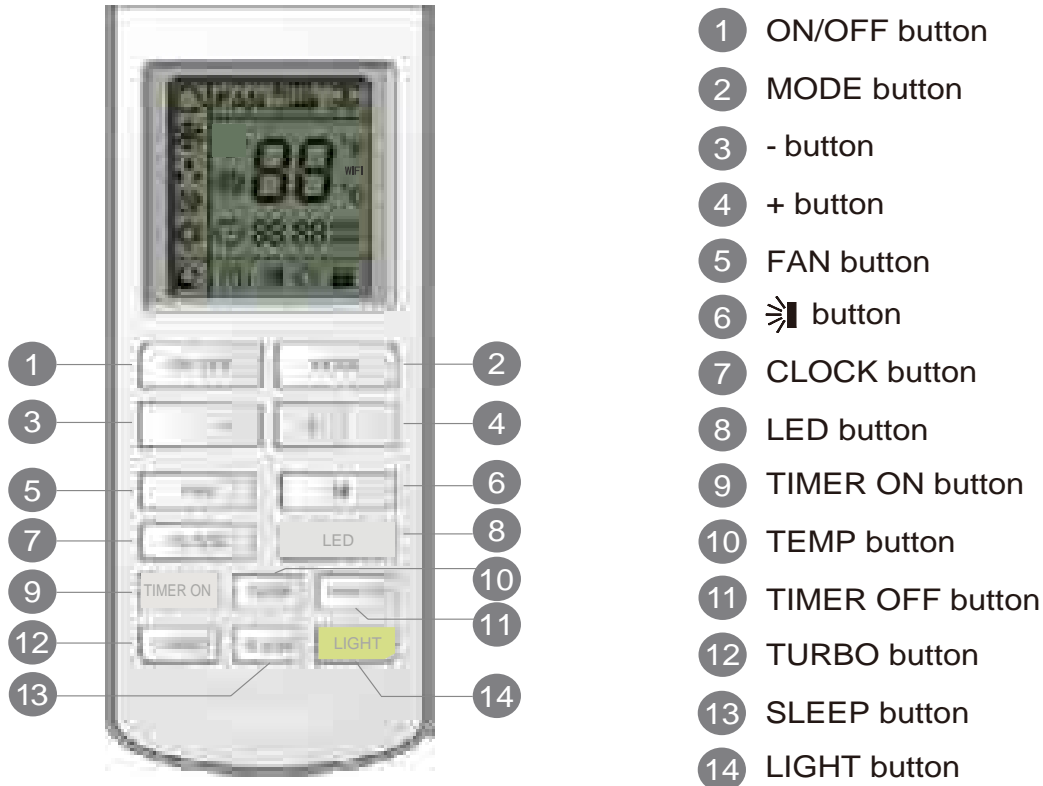
#### 6 FILTER CHECK button

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.

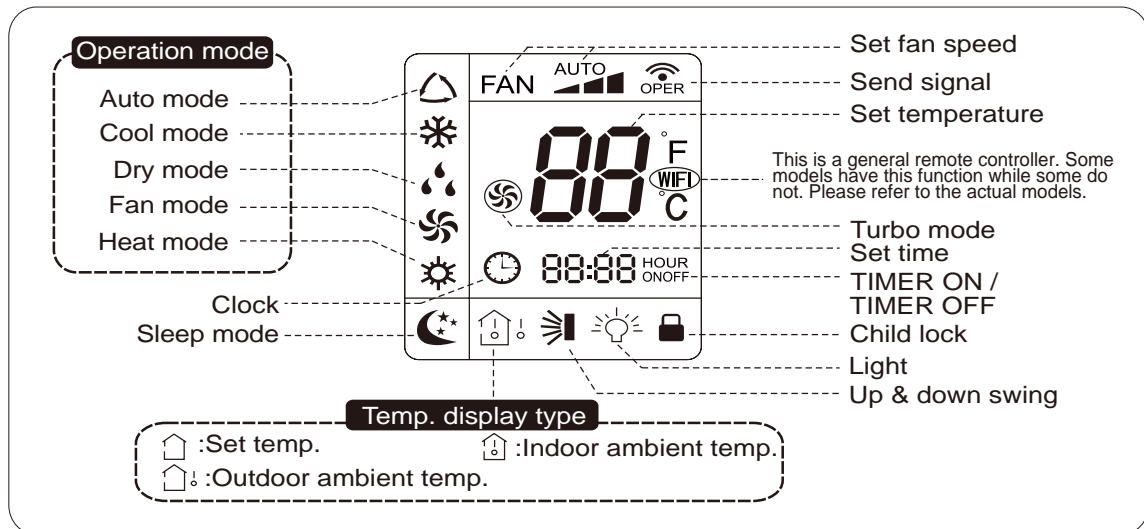


## 6.2 Introduction of Remote Controller

Note: This remote controller is the universal remote controller. Some function is not available for this unit.



### Introduction for icons on display screen



### Introduction for buttons on remote controller

#### Note:

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

### 1. ON/OFF button

Press this button, the unit will be turned on, press it once more, the unit will be turned off. When turning on or turning off the unit, the Timer, Sleep function will be canceled, but the presetting time is still remained.

### 2. MODE button

Press this button, Auto, Cool, Dry, Fan, Heat mode can be selected circularly. Auto mode is default while power on. Under Auto mode, the temperature will not be displayed; Under Heat mode, the initial value is 28°C (82 °F); Under other modes, the initial value is 25°C (77 °F).



(Only for cooling and heating unit. As for cooling only unit, it won't have any action when it receives the signal of heating operation.)

### 3. - button

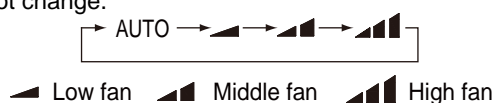
Presetting temperature can be decreased. Press this button, the temperature can be set up, continuously press this button and hold for two seconds, the relative contents can quickly change, until unhold this button and send the order that the °C (°F) signal will be displayed all the time. The temperature adjustment is unavailable under the Auto mode, but the order can be sent by if pressing this button.

### 4. + button

For presetting temperature increasing. Press this button, can set up the temperature, when unit is on. Continuously press and hold this button for more than 2 seconds, the corresponding contents will be changed rapidly, until unpress the button then send the information, °C (°F) is displaying all along. In Auto mode, the temperature can not be set up, but operate this button can send the signal. Centigrade setting range: 16-30; Fahrenheit scale setting range 61-86.

### 5. FAN button

Press this button, Auto, Low, Middle, High speed can be circularly selected. After powered on, Auto fan is not available for this mode. When pressing AUTO button, the fan speed will not change.



Note: Under the Dry mode, the fan speed isn't adjustable, low fan speed is imperative, but when operating this button, the wireless adjustable, low fan speed is imperative.

### 6. Swing button

Press this button turn on swing function; 4s later, press this button to turn off the swing and it will operate like that circularly. Other air conditioners, press this button, to set up swing angle, which circularly changes as below:



This is a universal use remote controller. If remote controller sends the following three kinds of status that the swing status of main unit will be:



### 7. CLOCK button

Press this button, the clock can be set up, signal ⌚ blink and display. Within 5 seconds, the value can be adjusted by pressing + or - button, if continuously press this button for 2 seconds above, in every 0.5 seconds, the value on ten place of Minute will be increased 1. During blinking, repress the Clock button, signal ⌚ will be constantly displayed and it denotes the setting succeeded. After powered on, 12:00 is defaulted to display and signal ⌚ will be displayed. If there is signal ⌚ be displayed that denotes the current time value is Clock value, otherwise is Timer value.


### 8. LED button

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




### 9. TIMER ON button

Timer On setting: Signal "ON" will blink and display, signal ⌚ will conceal, the numerical section will become the timer on setting status. During 5 seconds blink, by pressing + or - button to adjust the time value of numerical section, every press of that button, the value will be increased or decreased 1 minute. Hold pressing + or - button, 2 seconds later, it quickly change, the way of change is: During the initial 2.5 seconds, ten numbers change in the one place of minute, then the one place is constant, ten numbers change in the tens place of minute at 2.5 seconds speed and carry. During 5s blink, press the Timer button, the timer setting succeeds. The Timer On has been set up, repress the timer On button, the Timer On will be canceled. Before setting the Timer, please adjust the Clock to the current actual time.

## 10. TEMP button

Press this button, could select displaying the indoor setting temperature or indoor ambient temperature. When the indoor unit firstly power on it will display the setting temperature, if the temperature's displaying status is changed from other status to "  ", displays the ambient temperature, 5s later or within 5s, it receives other remote control signal that will return to display the setting temperature. if the users haven't set up the temperature displaying status, that will display the setting temperature.(This function is applicable to partial of models)

After powered on, the setting temperature displaying is defaulted, (according to customers requirements to display, if there is no requirement that will default to display the presetting temperature and there is no icon displayed on wireless remote control).

Press this button, (When displaying  ), will display presetting temperature; (when displaying  ) will display indoor ambient temperature,  ! current displaying status will not be changed. If current displays indoor ambient temperature, if received the other remote control signal, it will display presetting temperature, 5s later, will back to display the ambient temperature.(This function is applicable to partial of models)

## 11. TIMER OFF button

Once press this key to enter into TIMER OFF setup, in which case the TIMER OFF icon will blink.  
The method of setting is the same as for TIMER ON.

## 12. TURBO button



In Cool or Heat mode, press this button can turn on or turn off the Turbo function.

After turned on the Turbo function, its signal will be displayed. When switching the mode or changing fan speed, this function will be canceled automatically.

## 13. SLEEP button

Press this button, Sleep On and Sleep Off can be selected. After powered on, Sleep Off is defaulted. After the unit is turned off, the Sleep function is canceled. After Sleep function set up, the signal of Sleep will display. In this mode, the time of timer can be adjusted. Under Fan and Auto modes, this function is not available.

## 14. LIGHT button

Press this button to select LIGHT on or off in the displayer. When the LIGHT on is set, the icon  will be displayed and the indicator light in the displayer will be on. When the LIGHT off is set, the icon  will be displayed and the indicator light in the displayer will be off.

# Introduction for special function

## About AUTO RUN

When AUTO RUN mode is selected, the setting temperature will not be displayed on the LCD, the unit will be in accordance with the room temp. automatically to select the suitable running method and to make ambient comfortable.

## About turbo function

If start this function, the unit will run at super-high fan speed to cool or heat quickly so that the ambient temp. approaches the preset temp. as soon as possible.


## About Blow over heat(This function is applicable to partial of models)

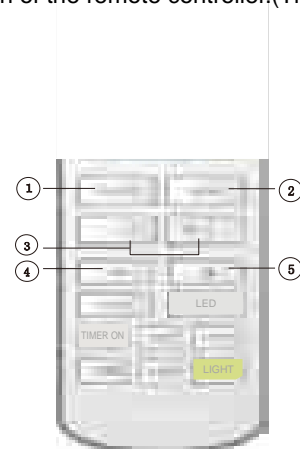
When the unit is running in Heat mode or Auto Heat mode, compressor and indoor fan is running, to turn the unit off, the compressor, outdoor fan will stop running. The upper and lower guide board rotate to horizontal position, then the indoor fan will run at low fan speed, 10s later, the unit will turn off.

## WIFI Function

Press "MODE" and "TURBO" button simultaneously 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.(This function only applicable for some models.)

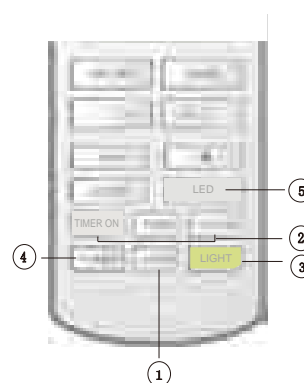
# General guide

1. After powered on, press ON/OFF button, the unit will start to run.  
(Note: when it is powered on, the guide louver of main unit will close automatically.)
2. Press MODE button, select desired running mode.
3. Pressing + or - button, to set the desired temperature.  
(It is unnecessary to set the temp. at AUTO mode.)
4. Pressing FAN button, set fan speed, can select LOW, MID and HIGH.
5. Pressing  button, to select the swing.




## Operation guide

1. Press SLEEP button, to set sleep.
2. Press TIMER ON and TIMER OFF button, can set the scheduled timer on or timer off.
3. Press LIGHT button, to control the on and off of the displaying part of the unit  
(This function may be not available for some units).
4. Press TURBO button, can realize the ON and OFF of TURBO function.
5. Press LED button, can open or close the light on the panel.

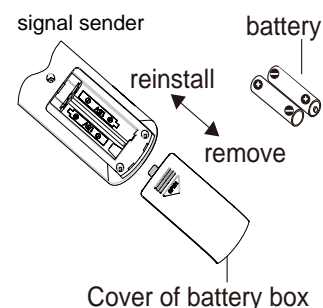


## Replacement of batteries in remote controller

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

### Note:

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



## 6.3 Brief Description of Modes and Functions

### 1. Target

Recreational Vehicles

### 2. Basic Functions

#### 2.1 Cooling

2.1.1 Operating conditions and procedures

- a) Tinner amb  $\geq$  Tpreset +1°C (2 °F ), cooling mode: compressor cycles on, fan motors will operate in set speed.
- b) Tinner amb  $\leq$  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 °F ~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 °F ~86 °F ).

#### 2.3 Heating

2.3.1 Heating conditions and process

- a) When Tamb.  $\leq$  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.  $\geq$  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°C ~30°C (61 °F ~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 )  $\leq$  Tinner amb  $\leq$  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°C ~30°C (61 °F ~86 °F ).

#### 2.5 Auto

2.5.1 Operating conditions and procedures

- a) Tinner amb  $\geq$  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 )  $\leq$  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

- a) In Cooling , dehumidifying, 1 h after Sleeping mode is set, Tpreset will be 1°C (2 °F ) higher; 2 h later, Tpreset will be 2°C (4 °F ) higher and rise no more; Also, the maximum of set temperature is 30°C (86 °F ).
- b) In Warming, 1 h after Sleeping Mode is set, Tpreset will be 1°C (2 °F ) lower; 2 h later, Tpreset will be 2°C (4 °F ) lower and fall no more; Also, the minimum of set temperature is 16°C (61 °F ).
- c) In Auto or Fan Only, Sleeping mode cannot be used;

#### 3.3 Delay Timer

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

- a) In normal working, it will swing within a set angle;
- b) When stopped, it will stay as it is.

#### 3.5 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 off when power is interrupted, it takes 3 minutes for the compressor to restart after the power is restored.

#### 3.6 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. When unit is on and under Auto mode, the Fan Speed indicator will turn on while tube shows the set temperature. Temperature cannot be set; Temperature can be set;
- c. Under Fan Only mode, the Fan indicator and the Fan Speed indicator will turn on;
- d. Under Dehumidifying mode, the Dehumidifying indicator will turn on;
- e. When fan speed is at low, medium, high or super high, lights will turn on respectively.
- f. For unit without WIFI function, When Delay Timer is on, the Delay Timer light will turn on. For unit with WIFI function, the WIFI light replaces the Delay Timer light at the same position. When the WIFI is on, the WIFI light will turn on regardless of the unit's on or off.
- g. Under Warming mode, the Heating indicator will turn on while tube shows the set temperature. Temperature can be set.
- h. 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.

### 3.7 Temperature Setting

- (1) Temperature can be set by pressing the button UP/DOWN. Dual-8 nixie tube will show the temperature while setting. To quickly set a temperature, press the button UP/DOWN continuously until it reaches the temperature you want. In this case, buzzer will ring continuously;
- (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 UP and DOWN together and hold for 3 seconds. Repeat the process to change back to degree Fahrenheit.

### 3.8 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)SWING: Use to turn the Swing on and off. When Swing is on, press the button to turn it off. When Swing is off, press the button to turn it on;
- (3)FANSPEED: Use to set the fan speed to FANL, FANM, FANH or FANSH on the unit. In Dehumidifying mode, only FANL can be set.
- (4)UP,DOWN: Use to set temperature and the delay time;
- (5)MODE: Use to switch different modes. Heat Pump unit can be circulated to COOL, DRY, FAN, HEAT; Cooling Only unit can be circulated to COOL, DRY, FAN.
- (6)Sleeping mode can only be set by a remote controller.
- (7)Auto mode can only be set by a remote controller and displayed on it.
- (8)WIFI or TIMER: This button is decided by chip interface. It is the WIFI button on unit with WIFI function; it is the TIMER button on unit without WIFI function. Use to turn the WIFI on and off, when it is WIFI button. As long as the unit is powered regardless of its on or off, press the button once to turn the WIFI on and off. Use to turn timer on and off, when it is TIMER button. If air conditioner is off, press the button to timer on. If air conditioner is on, press the button to timer off.
- (9) 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.
- (10) 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.

### 3.9 Protection

#### 3.9.1 Temperature sensors' malfunctions detected

- (1) Indoor ambient temperature sensor is open/short-circuited: dual-8 nixie tube shows F1; cooling indicator flashes once;
- (2) Indoor tube temperature sensor is open/short-circuited: dual-8 nixie tube shows F2; cooling indicator flashes twice;
- (3) Outdoor ambient temperature sensor is open/short-circuited: dual-8 nixie tube shows F3; cooling indicator flashes 3 times;
- (4) Outdoor tube temperature sensor is open/short-circuited: dual-8 nixie tube shows F4; cooling indicator flashes 4 times;
- (5) If different malfunctions occur at the same time, error codes will show in a circulated way

#### 3.9.2 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.

#### 3.9.3 Refrigerant loss protection' malfunctions detected

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

#### 3.9.4 Compressor overload protection' malfunctions detected

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

#### 3.9.5 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.

#### 3.9.6 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.

#### 3.9.7 Defrosting' malfunctions detected

For ensuring heating effect, air conditioner will defrost automatically according to defrosting status on outdoor unit. Dual-8 nixie tube displays H1 during defrosting.

### 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; cooling indicator flashes once

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; cooling indicator flashes twice

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; cooling indicator flashes 3 times

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; cooling indicator flashes 4 times

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.



# Part II : Installation and Maintenance

## 7. Notes for Installation and Maintenance

### Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

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



### Warnings

#### Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.

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

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

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

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

14. Replace the fuse with a new one of the same specification if it is burnt down; don't replace it with a cooper wire or conducting wire.

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

#### Installation Safety Precautions:

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

#### Refrigerant Safety Precautions:

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

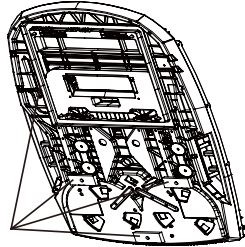
Improper installation may lead to fire hazard, explosion, electric shock or injury.



## 8. Installation

### BEFORE INSTALLATION

Testrun 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.



- Before installation, please check whether the unit is assembled with three pieces of rubber pads and square sealing strip.

#### ⚠ WARNING

- Moving parts may cause personal injury. Be careful when test the unit. Do not operate the unit with exterior cover removed.

### STEP 1-SELECTING AN INSTALLATION LOCATION & INSTALLINGTHE ROOF TOPAIR CONDITIONER

Your 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 your air conditioner has been determined. A reinforced and framed roof hole opening must be cut (if there is no hole) or you may use existing vent holes.

#### CASEA.

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 356x356mm, the opening must be enlarged. If the opening exceeds 356x356mm, a mounting plate (frame) must be fabricated to reduce the opening size (See Figure 1).

#### CASEB.

If a roof vent opening is not used,a new opening(see figure 1)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 Figure 1.

- 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.

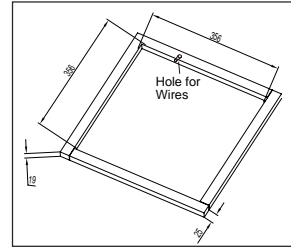


Figure 1

#### 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. Figure 2 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 Figure 3.
- 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 point end (nose) of the shroud must face toward the front of the vehicle.

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 5° for preventing water leakage.

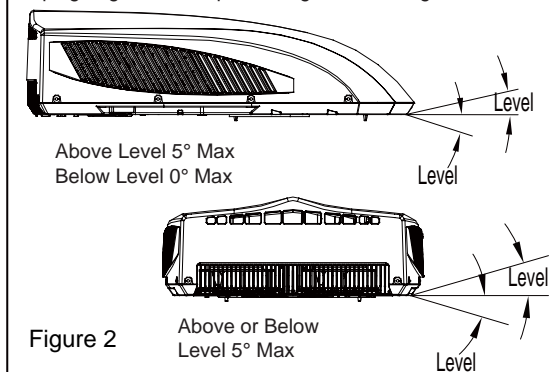


Figure 2

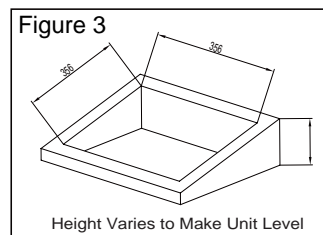
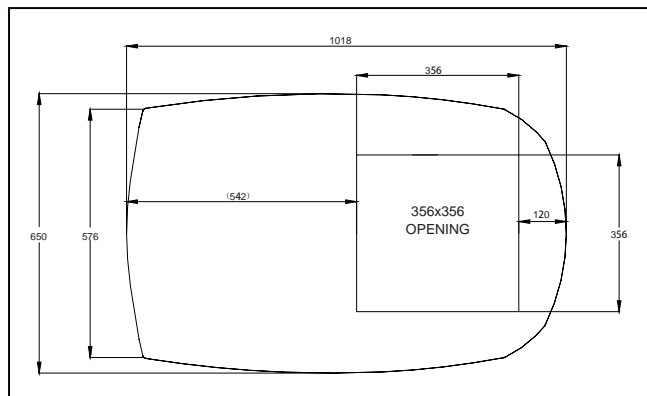


Figure 3

**NOTE AIR CONDITIONER DIMENSIONS (ROOF OF UNIT)****STEP 2-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 Figure 4-1).
  2. Fix the outdoor unit at the roof of vehicle and then drill holes.
    - 1) Place the outdoor unit at the roof of vehicle; lift the outdoor unit and then place the outdoor unit after drilling holes at the roof of vehicle. Do not drag the outdoor unit. Otherwise, the sealing strip may fall off (see Figure 4-2).

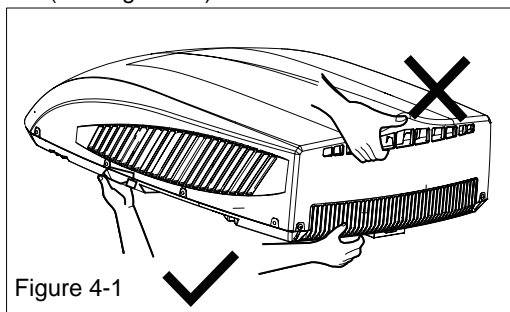


Figure 4-1

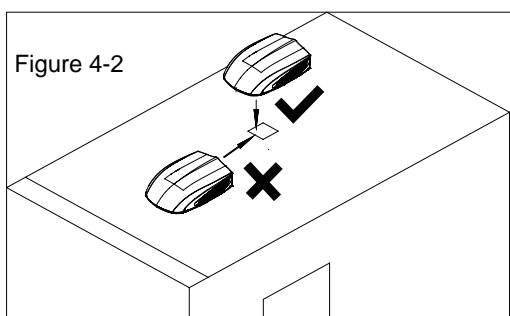


Figure 4-2

**STEP 3-ELECTRICAL WIRING**

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 30~80mm.
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 (The remote control packed with the ceiling assembly).
2. Remove the ceiling grille from the ceiling assembly.
3. Before the ceiling assembly can be mounted to the roof top air conditioner, the fabric duct collar must be fastened to the basepan of the roof top air conditioner with 4 screws by upper duct plate (see Figure 5-2, Figure 6-1, Figure 5, Figure 5-1).
4. Before lifting the ceiling assembly, pull the fabric duct collar so it hangs out of the way and does not get caught under the ceiling assembly frame.

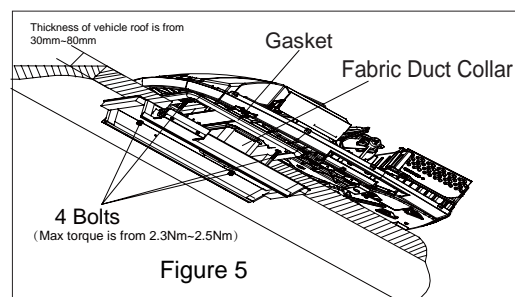


Figure 5

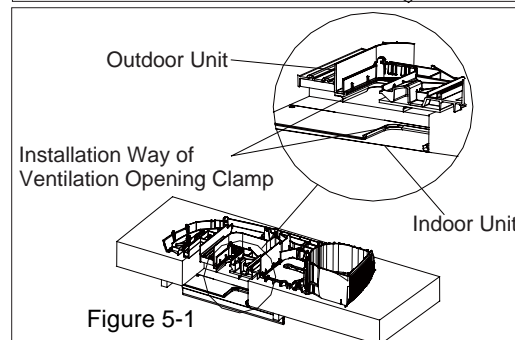


Figure 5-1

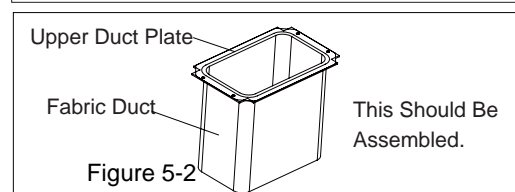


Figure 5-2

5) Secure the ceiling assembly frame to the roof top air conditioner with the mounting bolts (see Figure 5). 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.

6) Set the fabric air duct into the duct opening of installation plate sub-assy and cut off four corner of fabric air duct. Because the thickness of vehicle top is different, the distance between the opening and the installation plate sub-assy is shown in figure 6.

7) Fasten each side of the fabric duct with fitting the bottom duct plate to the ceiling assembly frame with 4 screws (see Figure 6). Trim any excess fabric that may extend beyond edge of bottom duct plate.

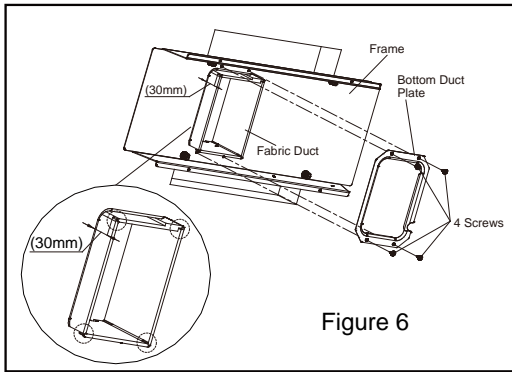


Figure 6

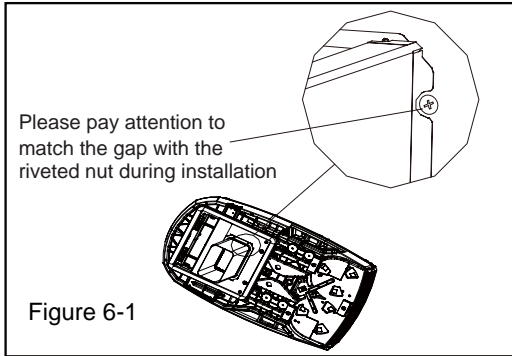


Figure 6-1

## STEP 4-ELECTRICAL WIRING

### ROUTING 220-240V AC 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. After the interior ceiling assembly frame is properly secured to the roof top air conditioner, the following electrical connections must be performed.

1. Route a copper, with ground, supply wiring with minimum 1.5mm, the wiring from its power source to the junction box. Do not attach them at this time.
2. Take the roof top air conditioner power cord to connect to the side of the junction box.
3. Remove the junction box cover (2 screws). Take the power cord and make it get into the box through the strain relief that is provided (see Figure 7).
4. Connect the power cord to the brown, blue and ground wires found in the junction box with a terminal board. CAUTION Connect brown wire to brown wire, blue wire to blue wire and the ground wire to earth. (see Figure 8).
5. Tighten the strain relief clamp to secure the supply power cord. DO NOT OVERTIGHTEN. Reinstall the junction box cover.
6. Connect the three connector (four connector) and secure the clamp (see Figure 9 and Figure 9-1). The connector should be placed above the mounted plate of indoor unit, and it should be higher than the clamp.

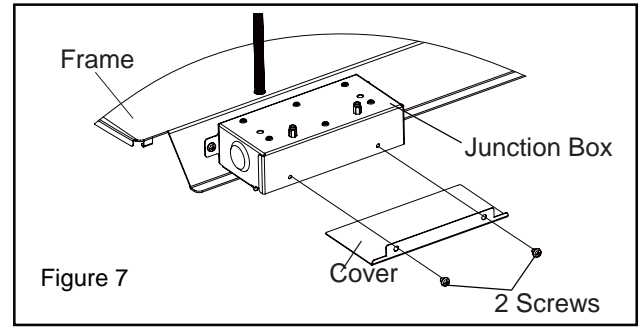


Figure 7

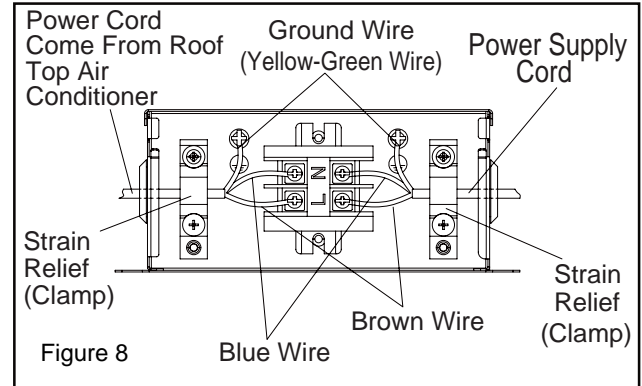


Figure 8

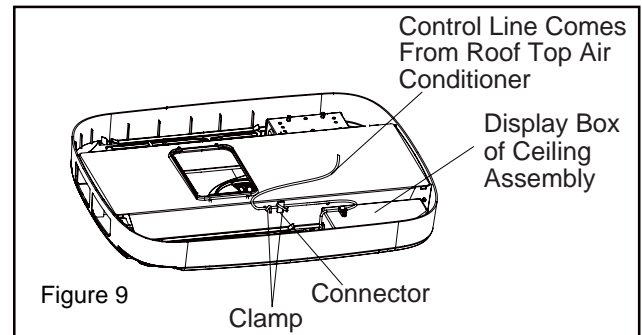


Figure 9

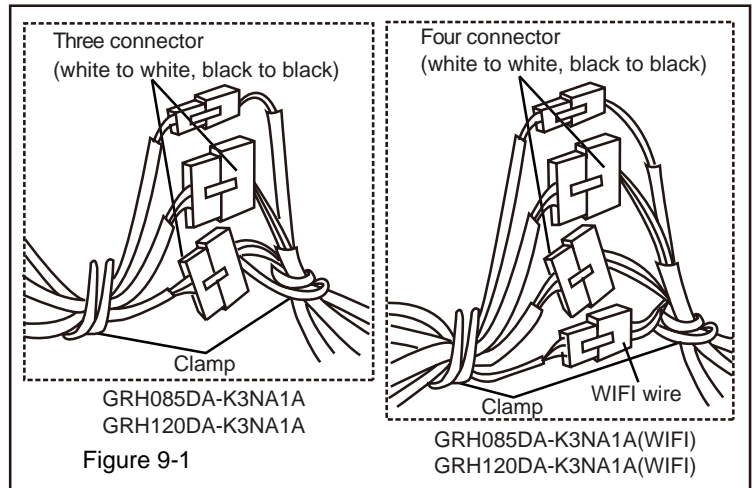


Figure 9-1

GRH085DA-K3NA1A(WIFI)  
GRH120DA-K3NA1A(WIFI)

## STEP 5-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. Make sure the guide louver and the filters are properly positioned in the ceiling grille.
3. Secure the ceiling grille to the ceiling assembly frame with 4 screws. (see Figure 10).
4. Install screw caps into four screw holes.
5. Switch on the power supply and check the unit work or not.

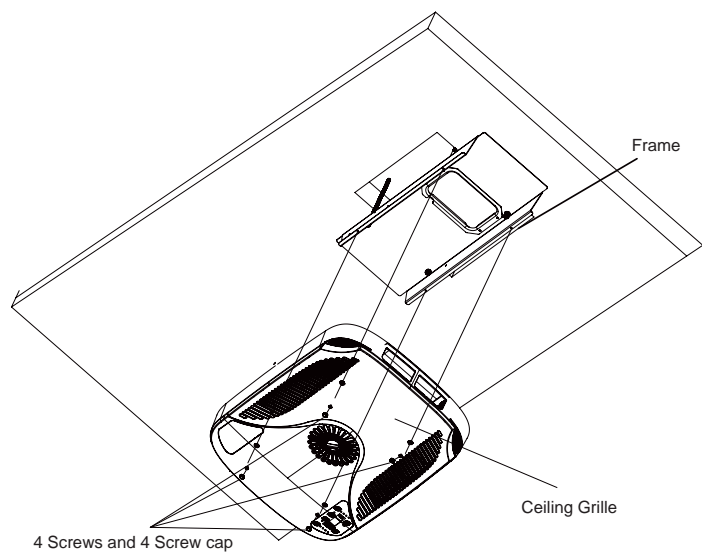


Figure 10

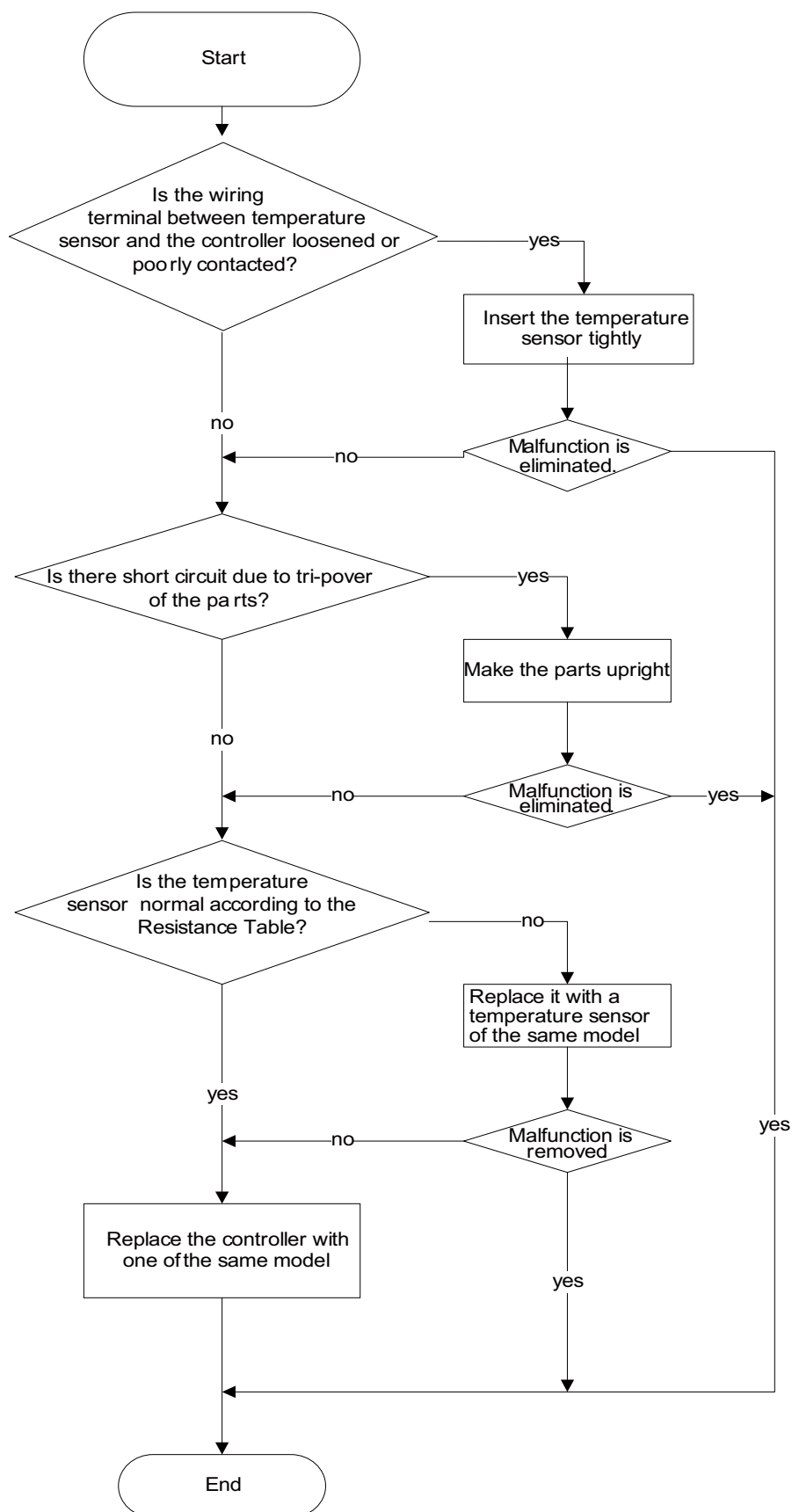
## 9. Maintenance

### 9.1 Error Code

No.	Malfunction Name	Display Method of Indoor Unit (Error Code)	A/C Status	Possible Causes
1	Indoor ambient temperature sensor is open/shortcircuited	F1	When temperature sensor is open/shortcircuited, under cooling, SAVE or heating mode, the unit will stop operation as it reaches the temperature point. Under fan mode, the unit operates according to original status.	1. The wiring terminal between indoor ambient temperature sensor and controller is loosened or poorly contacted; 2. There's short circuit due to trip-over of the parts on controller; 3. Indoor ambient temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.
2	Indoor evaporator temperature sensor is open/short-circuited	F2	When temperature sensor is open/shortcircuited, under cooling, SAVE or heating mode, the unit will stop operation as it reaches the temperature point. Under fan mode, the unit operates according to original status.	1. The wiring terminal between indoor evaporator temperature sensor and controller is loosened or poorly contacted; 2. There's short circuit due to the trip-over of the parts on controller; 3. Indoor evaporator temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.
3	Outdoor condenser temperature sensor is open/short-circuited	F4	When temperature sensor is open/shortcircuited, under cooling, SAVE or heating mode, the unit will stop operation as it reaches the temperature point. Under fan mode, the unit operates according to original status.	1. The wiring terminal between outdoor condenser temperature sensor and controller is loosened or poorly contacted; 2. There's short circuit due to the trip-over of the parts on controller; 3. Outdoor condenser temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor) 4. Main board is broken.

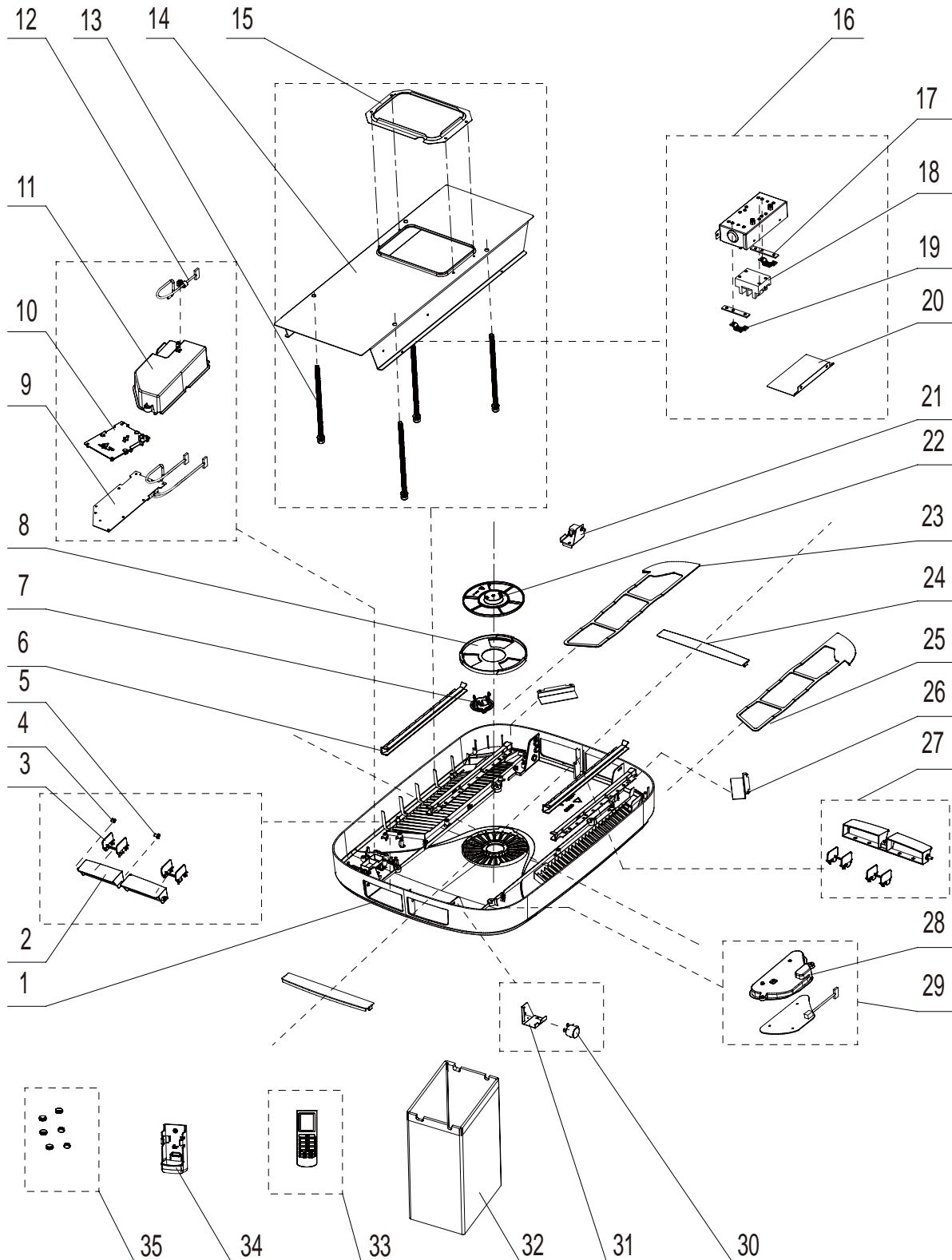
## 9.2 Procedure of Troubleshooting

### Malfunction of Temperature Sensor



### 10.1 Indoor Unit

12      12      14



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

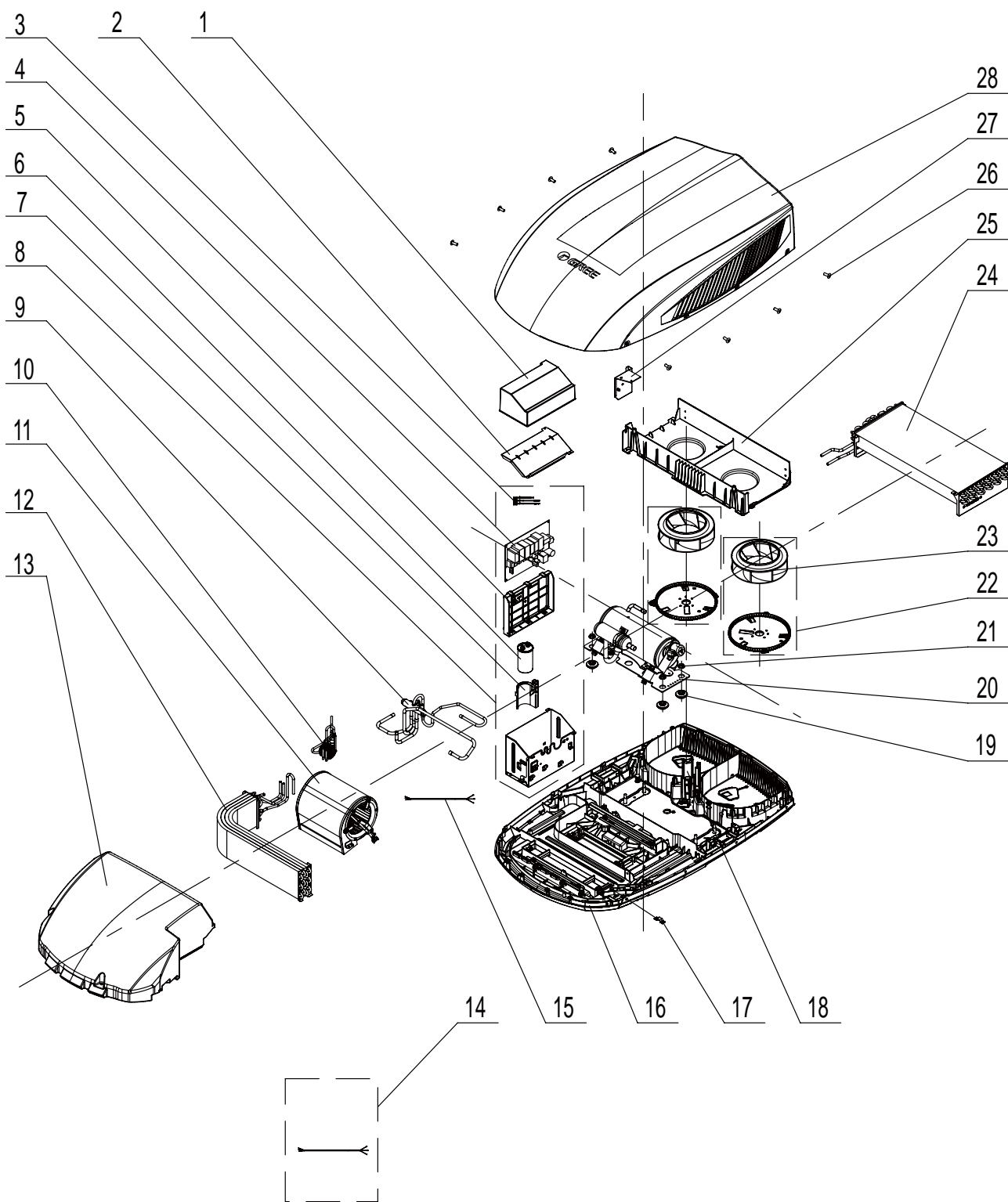


NO.	Description	Part Code		Qty
		GRH085DA-K3NA1A/I	GRH120DA-K3NA1A/I	
	Product Code	CU050N00900	CU050N01000	
1	Front Panel Assy	000003000047	000003000047	1
2	Guide Blade	10512269	10512269	1
3	Air Louver	10512270	10512270	2
4	Axile Bush	10542704	10542704	2
5	Axile Bush	10542037	10542037	1
6	Filter Guide	24242020	24242020	4
7	Swivel Switch	45052001	45052001	1
8	Air Intake Cover Sub-assy 1	22242206	22242206	1
9	Display Board	30562095	30562095	1
10	Cover Plate	200050000003	200050000003	1
11	Display box Sub-Assy	20302633	20302633	1
12	Temperature Sensor	390001997	390001997	1
13	Bolt	7021201701	7021201701	4
14	Mounting Plate Assy	01332030	01332030	1
15	Press plate of air vent	01383008	01383008	1
16	Electric Box Assy	20402472	20402472	1
17	Insulation Gasket	70410503	70410503	2
18	Terminal Board	42018094	42018094	1
19	Wire Clamp	71010103	71010103	2
20	Electric Box Cover	01252034	01252034	1
21	Louver Motor Assy	15002018	15002018	2
22	Air Intake Cover Sub-assy 2	22242207	22242207	1
23	Filter Sub-assy(Right)	11122149	11122149	1
24	Baffle Plate Sub-assy	01362019	01362019	2
25	Filter Sub-assy(Left)	11122148	11122148	1
26	Baffle Plate 2	01362020	01362020	2
27	Guide Louver	10512489	10512489	2
28	Display cover plate (LED)	200128000006	200128000006	1
29	Display Board	30562095	30562095	1
30	SteppingMotor	1521210702	1521210702	1
31	Motor Mounting Rack	01332027	01332027	1
32	Sponge (Air Flue)	12123237	12123237	1
33	Remote Controller	305001000034	305001000034	1
34	Remote Controll Holder	20120041	20120041	1
35	Screw Cover	760042000002	760042000002	6

Above data is subject to change without notice.



## 10.2 Outdoor Unit



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

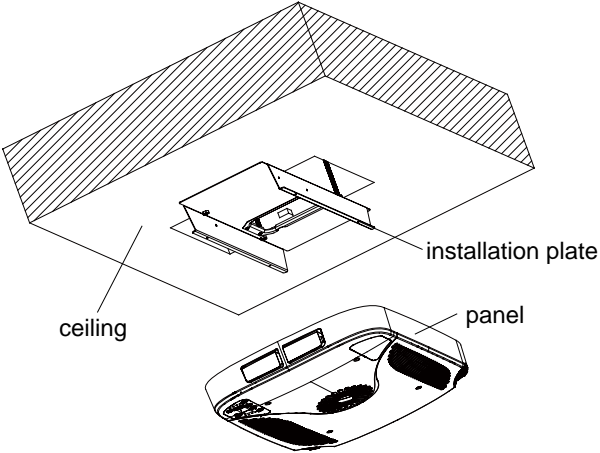
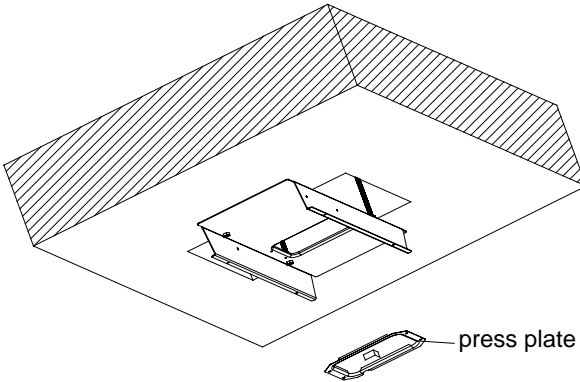
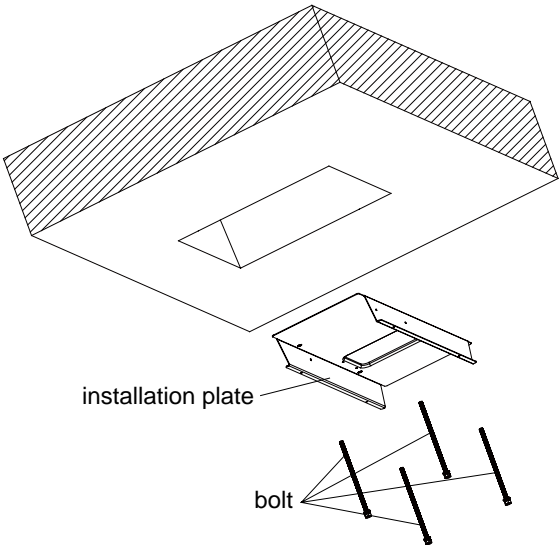
NO.	Description	Part Code		Qty
		GRH085DA-K3NA1A/O	GRH120DA-K3NA1A/O	
	Product Code	CU050W00900	CU050W01000	
1	Electric Box	500026000001	500026000001	1
2	Electric Box Cover	012020000023	012020000023	1
3	Temperature Sensor	3900040301	3900040301	1
4	Main Board	30132227	30132227	1
5	Supporter(PCB)	200114000006	200114000006	1
6	Capacitor Box	20116069	20116069	1
7	Capacitor CBB65	3300008102	3300008102	1
8	Electric Box Assy	100002000167	100002000167	1
9	4-Way Valve Assy	030152000101	030152000101	1
10	Capillary Sub-Assy	030006000142	030006000142	1
11	Centrifugal Blower sub-assy	150108000005	150108000005	1
12	Evaporator Assy	011001000075	011001000075	1
13	Foam Sub-Assy	120011000003	120011000003	1
14	Power Cord	4002028908	4002028908	1
15	Connecting Cable	4002050422	4002050422	1
16	Chassis Assy	209058000010	209058000010	1
17	Wire Clamp	71010103	71010103	1
18	Rubber Block	760005000003	760005000003	2
19	Compressor Gasket	009012000005	009012000005	4
20	Compressor and Fittings	00106113	00106113	1
21	Nut with Washer	70310014	70310014	4
22	Centrifugal fan assy	000052000021	000052000021	2
23	Centrifugal Blower sub-assy	150109000002	150109000002	1
24	Condenser Assy	011002000132	011002000132	1
25	Rear Clapboard	200030000001	200030000001	1
26	Fastener	200108000003	200108000003	8
27	Breakwater Sub-Assy	017061000002	017061000002	1
28	Cabinet	200173000001S	200173000001S	1

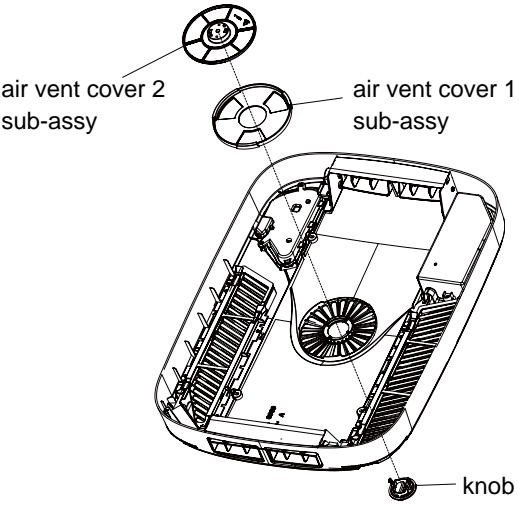
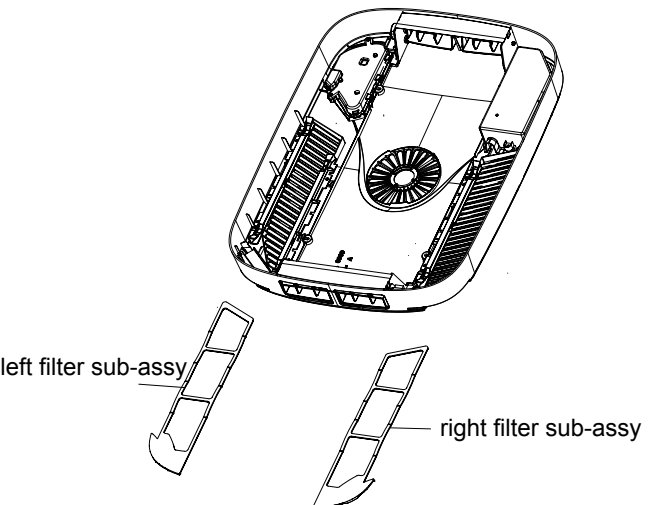
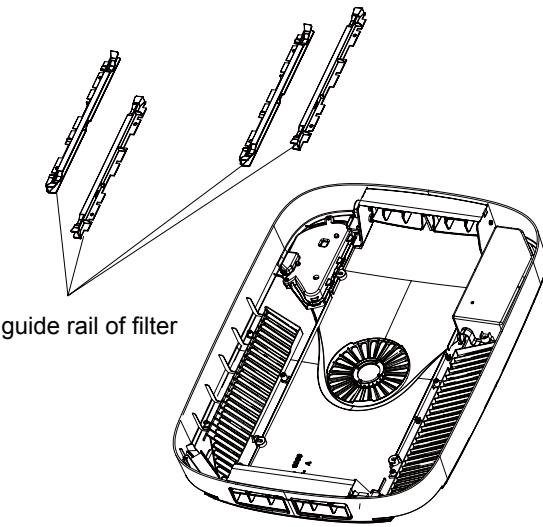
Above data is subject to change without notice.

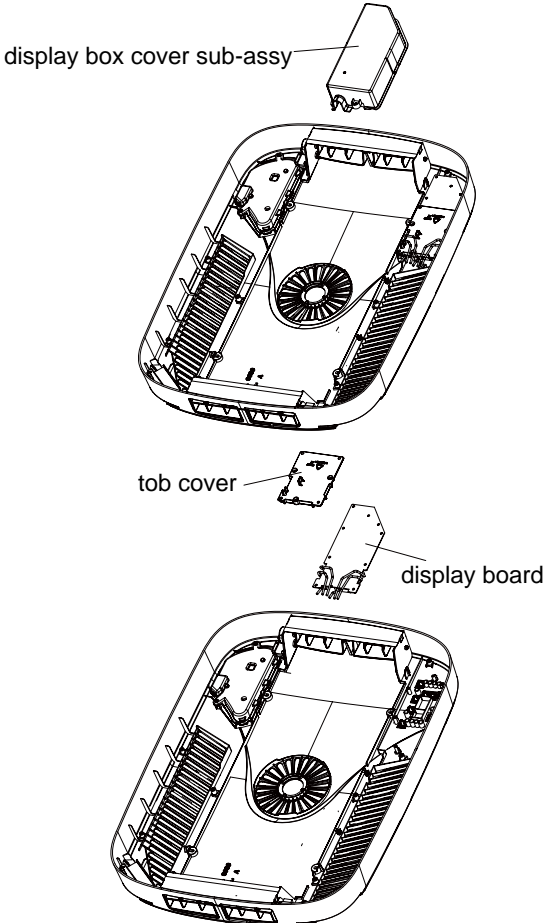
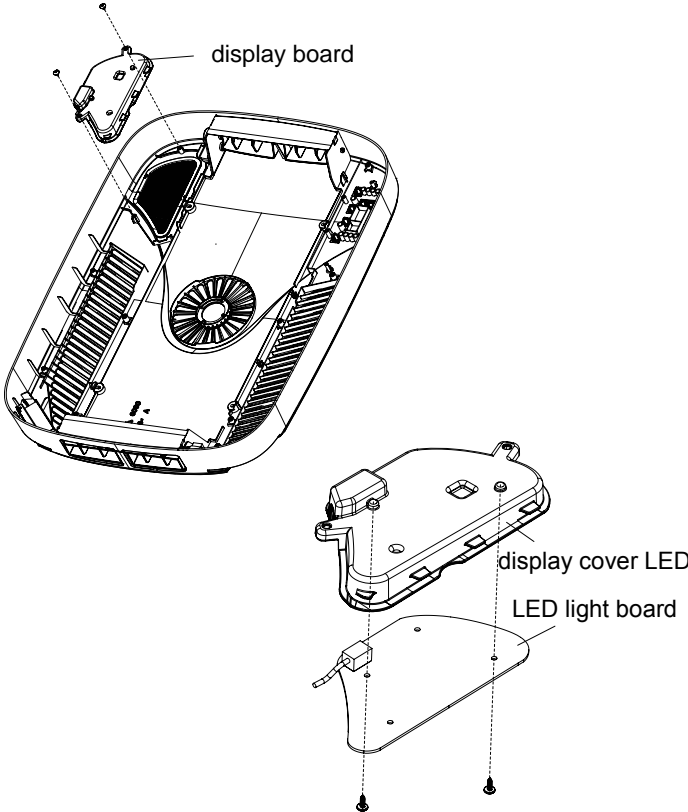
# 11. Removal Procedure

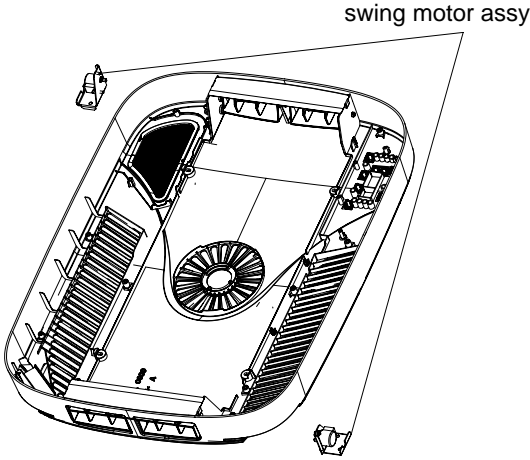
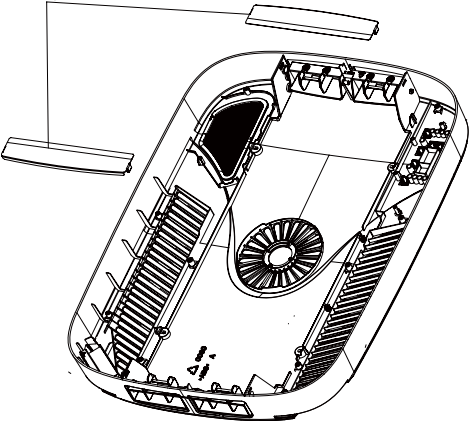
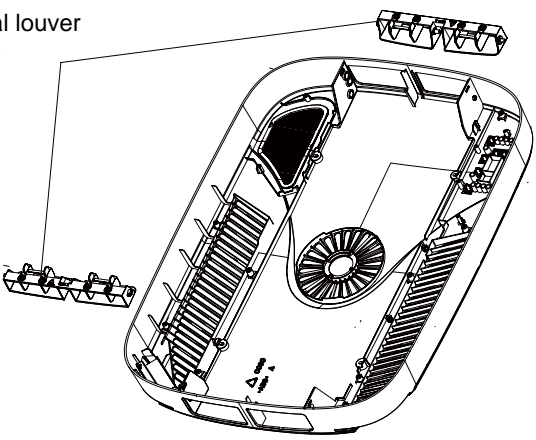
 **Caution:** discharge the refrigerant completely before removal.

## 11.1 Removal Procedure of Indoor Unit

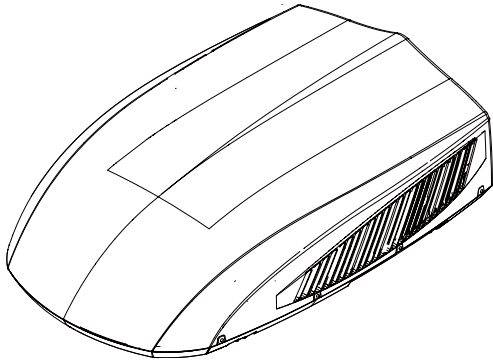
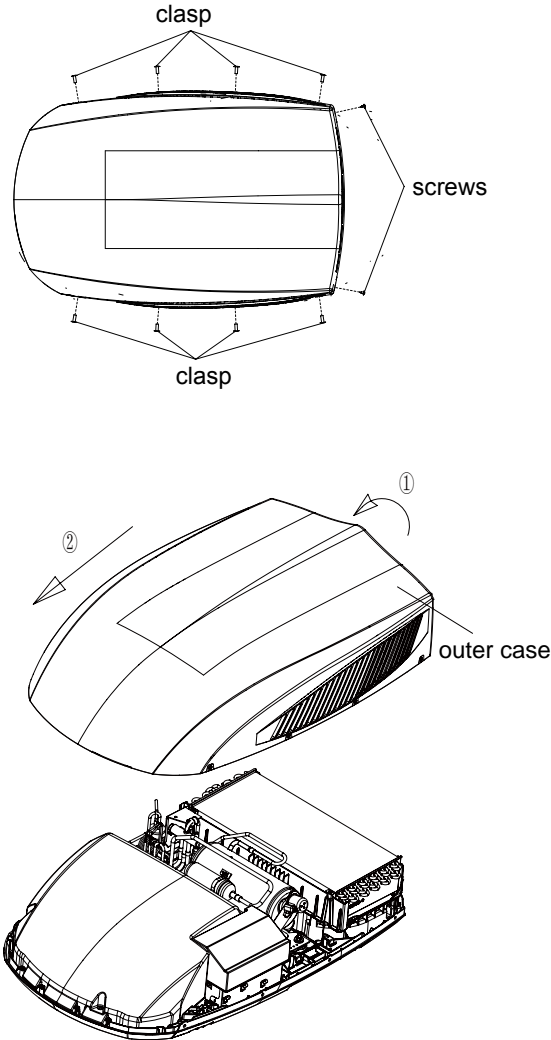
Step	Procedure
1.Remove panel	<div><p>Remove 4 screws on panel, disassemble the butted terminal, separate panel and installation plate, and then remove the panel.</p></div> <div></div>
2. Remove installation plate	<div><p>Remove screws fixing the pressing plate, and then remove the press plate.</p></div> <div></div> <div><p>Remove 4 bolts fixing the installation plate with wrench, and then remove the installation plate.</p></div> <div></div>

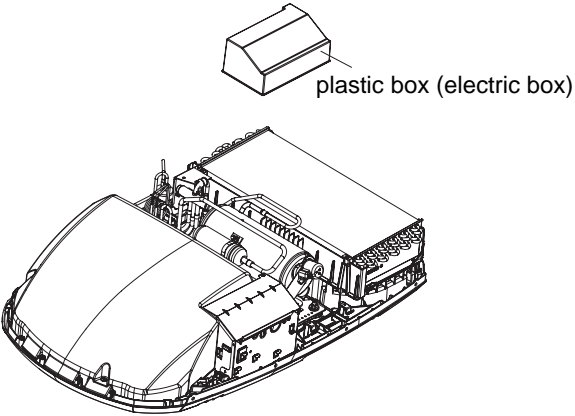
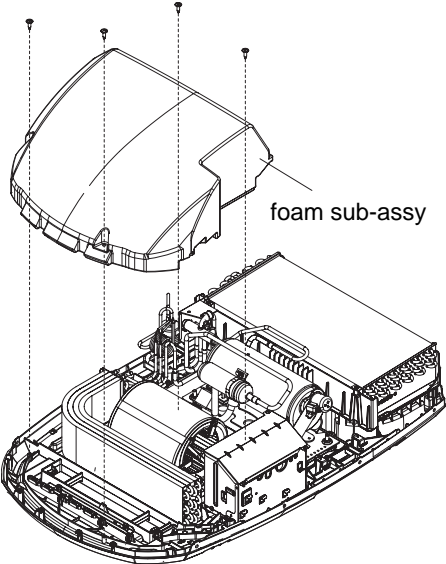
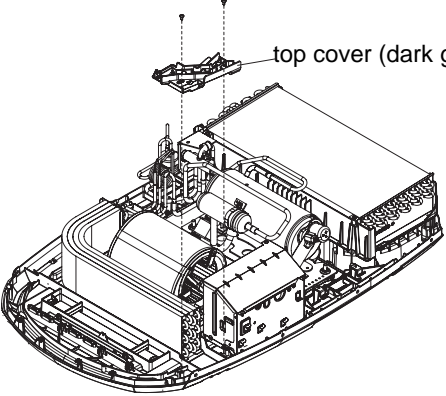
Step	Procedure
3. Remove knob, air vent cover 1 and air vent cover 2 sub-assy	<p data-bbox="224 410 706 476">Loosen the clasps on knob, and then remove knob, air vent cover 1 and air vent cover 2.</p>  <p data-bbox="803 345 966 410">air vent cover 2 sub-assy</p> <p data-bbox="1153 345 1315 410">air vent cover 1 sub-assy</p> <p data-bbox="1258 742 1315 775">knob</p>
4. Remove left and right filters sub-assy	<p data-bbox="224 984 706 1017">Remove left and right filters sub-assy directly.</p>  <p data-bbox="787 1168 966 1201">left filter sub-assy</p> <p data-bbox="1226 1233 1437 1266">right filter sub-assy</p>
5. Remove guide rail of filter	<p data-bbox="224 1583 738 1648">Remove screws fixing the guide rail of filter, and then remove the guide rail of filter.</p>  <p data-bbox="860 1703 1039 1736">guide rail of filter</p>

Step	Procedure
<p data-bbox="126 224 495 253">6. Remove display board sub-assy</p> <p data-bbox="240 377 748 476">Remove screws fixing the display box sub-assy, and then remove the display box sub-assy cover.</p> <p data-bbox="240 792 737 891">Remove 6 screws fixing the display board, pull out the motor terminal and then remove the display board.</p>	 <p>The diagram illustrates the removal of the display box sub-assembly cover and the display board. It shows two views of the device's internal components. In the top view, the 'display box cover sub-assy' is shown being removed from the top of the device. In the bottom view, the 'display board' is shown being removed from the device, with the 'top cover' also indicated.</p>
<p data-bbox="126 1174 397 1203">7. Remove display board</p> <p data-bbox="240 1338 732 1404">Remove screws fixing the display board and then remove the display board.</p> <p data-bbox="240 1594 732 1659">Remove the LED light board from the display board.</p>	 <p>The diagram illustrates the removal of the display board and the LED light board. It shows two views of the device's internal components. In the top view, the 'display board' is shown being removed from the device. In the bottom view, the 'display cover LED' and the 'LED light board' are shown being removed from the device.</p>

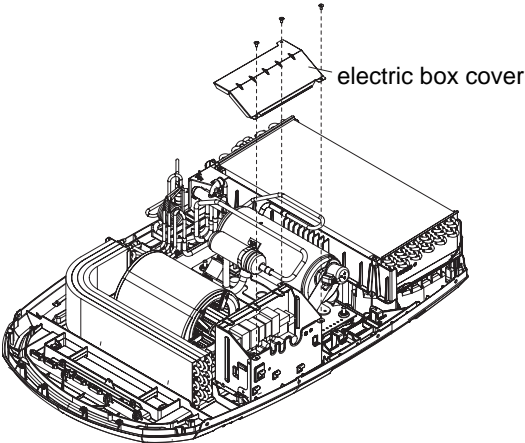
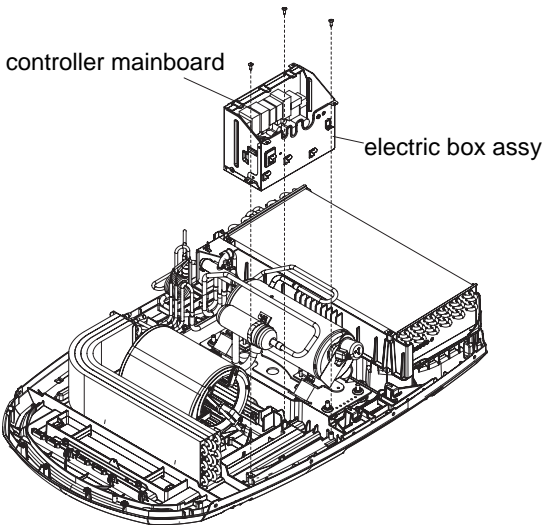
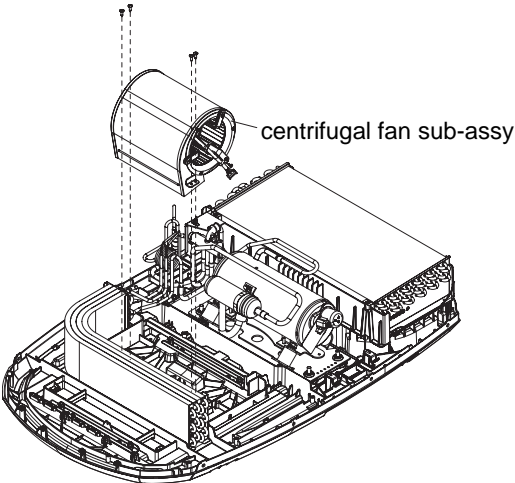
Step	Procedure	
8. Remove swing motor assy	<p>Remove screws fixing the swing motor assy, and then remove the swing motor assy.</p>	 <p>swing motor assy</p>
9. Remove damper sub-assy		 <p>damper sub-assy</p>
10. Remove horizontal louver sub-assy	<p>Remove horizontal louver sub-assy directly.</p>	 <p>horizontal louver sub-assy</p>

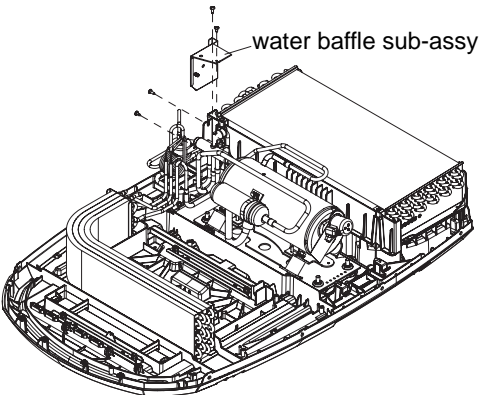
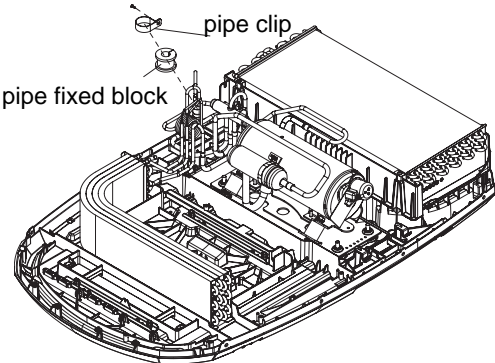
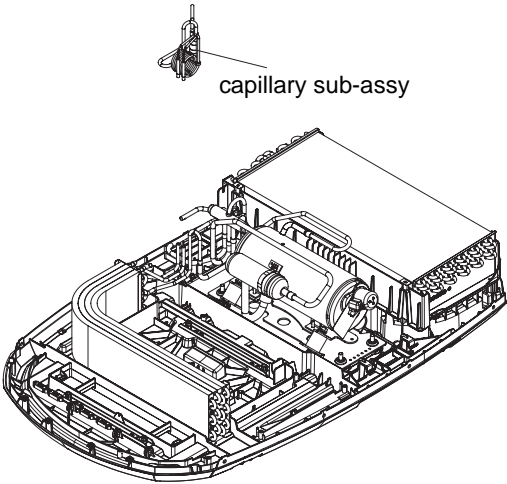
# 11.2 Removal Procedure of Outdoor Unit

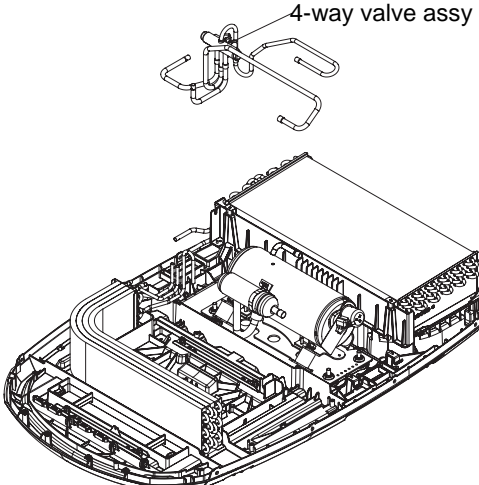
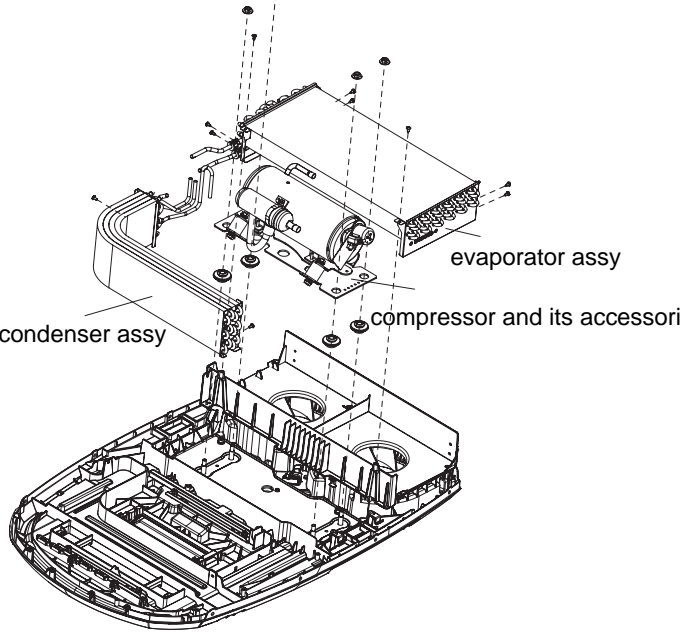
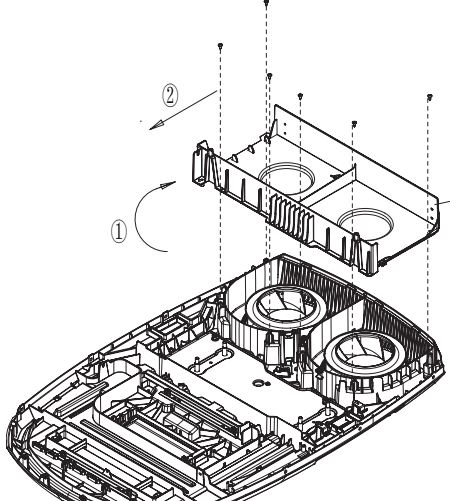
Step	Procedure
1. Outdoor unit diagram	
2. Remove outer case	<p>Press the tool which is suitable for the size of clasp center hole into about 3mm from the center point fixing outer case clasp; pluck out the clasp forcibly; remove screws fixing outer case.</p> <p>(Note: when pressing the tool into the center of the clasp fixing outer case, the clasp may be locked if the tool is pressed too deeply)</p> <p>Hold the handle at the rear part of outer case; push the outer case forward after lifting the outer case; then remove the outer case.</p> 

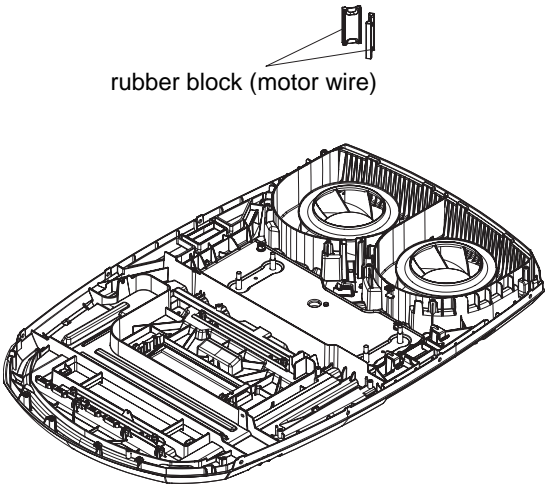
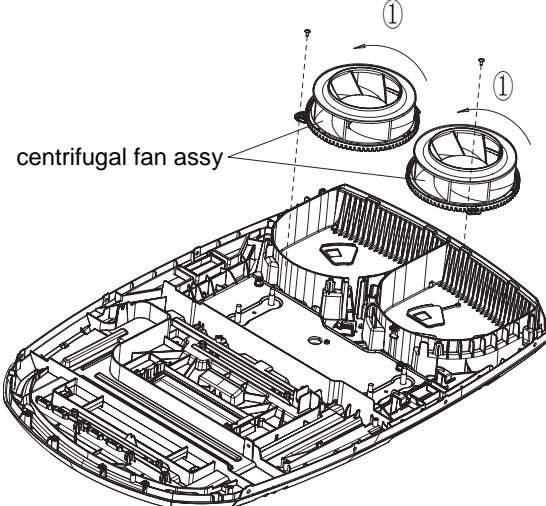
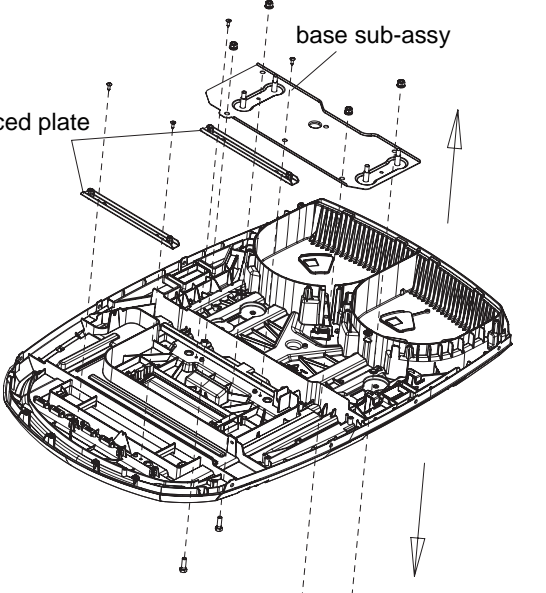
Step	Procedure
3. Remove plastic box (electric box)	<p data-bbox="212 345 643 373">Lift the plastic box upwards to remove it.</p>  <p data-bbox="1235 345 1498 373">plastic box (electric box)</p>
4. Remove foam sub-assy	<p data-bbox="220 926 716 995">Remove screws fixing the foam sub-assy and then remove the foam sub-assy.</p>  <p data-bbox="1174 984 1333 1013">foam sub-assy</p>
5. Remove top cover (dark grey)	<p data-bbox="217 1487 716 1803">Remove screws fixing the top cover and then remove the top cover. (Note: Before removing the top cover, please remove screws of wire clip fixing the power cord and connection wire between boards; remove the wire clip; cut off each wire binder and then remove the conductive wire from the wire groove)</p>  <p data-bbox="1182 1458 1409 1487">top cover (dark grey)</p>



Step		Procedure
6. Remove electric box cover		
	Remove screws fixing electric box cover and then remove the electric box cover; cut off the wire binder.	
7. Remove electric box assy, controller mainboard		
	Remove screws fixing the electric box assy and then lift the electric box assy to remove it. Disconnect each wiring terminal on the mainboard; remove screws fixing the mainboard which is located at the left side of electric box assy; lift the controller mainboard to remove it.	
8. Remove centrifugal fan sub-assy		
	Remove screws fixing the centrifugal fan sub-assy and then remove the centrifugal fan sub-assy.	

Step	Procedure
9. Remove water baffle sub-assy	<p>Remove screws fixing the water baffle sub-assy; cut off the connected wire binder and then remove the water baffle sub-assy.</p> 
10. Remove capillary sub-assy	<p>Remove screws fixing the pipe clip and pipe fixed block; remove the pipe clip and pipe fixed block connected with the capillary.</p>  <p>Unsolder the welding joint between the capillary sub-assy with condenser assy and evaporator assy, and then remove the capillary sub-assy.</p> <p>Note:</p> <ol style="list-style-type: none"> <li>1. Before unsoldering the welding joint, please make sure the refrigerant is discharged completely.</li> <li>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.</li> </ol> 

Step	Procedure
<p>11. Remove 4-way valve assy</p> <p>Unsolder the welding joint connecting the 4-way valve assy and then unsolder the 4-way valve assy.</p> <p>Note:</p> <p>1. 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.</p>	 <p>4-way valve assy</p>
<p>12. Remove condenser assy, evaporator assy and compressor and its accessories</p> <p>Remove screws fixing the condenser assy and evaporator assy; remove screws with washers fixing the compressor; remove the condenser assy, evaporator assy and compressor and its accessories.</p>	 <p>condenser assy</p> <p>evaporator assy</p> <p>compressor and its accessories</p>
<p>13. Remove rear isolation plate</p> <p>Remove screws fixing the rear isolation plate; hold one side in the isolation plate and lift it (as shown in ①); push the isolation plate frontward (as shown in ②) to remove it.</p>	 <p>rear isolation plate</p>

Step	Procedure
14. Remove rubber block (motor wire)	<p data-bbox="224 395 716 423">Remove the rubber block (motor wire) directly.</p>  <p data-bbox="980 314 1252 342">rubber block (motor wire)</p>
15. Remove centrifugal fan assy	<p data-bbox="224 904 716 1013">Remove screws fixing the centrifugal fan assy; rotate the motor base anti-clockwise to remove the centrifugal fan assy.</p>  <p data-bbox="889 936 1094 965">centrifugal fan assy</p>
16. Remove reinforced plate and base sub-assy	<p data-bbox="224 1552 716 1662">Remove screws and bolts fixing the reinforced plate and base sub-assy; then remove the reinforced plate and base sub-assy.</p>  <p data-bbox="1167 1406 1321 1434">base sub-assy</p> <p data-bbox="797 1493 964 1522">reinforced plate</p>

# Appendix:

## Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

### Set temperature

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

### Ambient temperature

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

## Appendix 2: 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	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(20K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

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

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

Tel: (+86-756) 8522218 Fax: (+86-756) 8669426

Email: [gree@gree.com.cn](mailto:gree@gree.com.cn) Http: [www.gree.com](http://www.gree.com)

**HONG KONG GREE ELECTRIC APPLIANCES SALES LIMITED**

Add: Unit 2612, 26/F., Miramar Tower 132 Nathan Road, TST, Kowloon, HK

Tel: (852) 31658898 Fax: (852) 31651029

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