

# Service Manual

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Models: GWH12QB-K3DNA5D(WIFI)  
GWH12QB-K3DNC4D(WIFI)  
GWH12QB-K3DNE2D(WIFI)  
GWH12QB-K3DNA6D(WIFI)  
GWH18QD-K3DNA5E(WIFI)  
GWH18QD-K3DNA6E(WIFI)  
GWH18QD-K3DNC4E(WIFI)  
GWH18QD-K3DNE2E(WIFI)  
(Refrigerant:R410A)

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## 2. Specifications

### 2.1 Specification Sheet

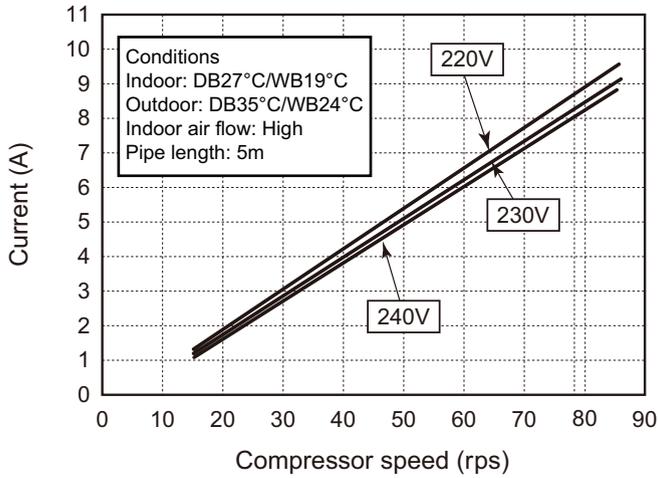
Model			1.GWH12QB-K3DNA6D 2.GWH12QB-K3DNC4D 3.GWH12QB-K3DNE2D 4.GWH12QB-K3DNA5D	1.GWH18QD-K3DNA6E 2.GWH18QD-K3DNA5E 3.GWH18QD-K3DNC4E 4.GWH18QD-K3DNE2E	
Product Code			1.CB427004702 CB427004703 2.CB444001502 3.CB462000201 4.CB425007001	1.CB427006400 CB427006401 2.CB425007100 3.CB444002900 4.CB462000300	
Power Supply	Rated Voltage	V~	220-240	220-240	
	Rated Frequency	Hz	50	50	
	Phases		1	1	
Power Supply Mode			Outdoor	Outdoor	
Cooling Capacity(Min~Max)		W	3200	4600	
Heating Capacity(Min~Max)		W	3400	5000	
Cooling Power Input(Min~Max)		W	997	1430	
Heating Power Input(Min~Max)		W	942	1380	
Cooling Current Input		A	4.50	6.34	
Heating Current Input		A	4.4	6.12	
Rated Input		W	1500	1860	
Rated Current		A	7.2	7.45	
Air Flow Volume(SH/H/ML/SL)		m <sup>3</sup> /h	560/480/410/290/-	850/720/610/520/-	
Dehumidifying Volume		L/h	1.4	1.8	
EER		W/W	3.21	3.22	
COP		W/W	3.61	3.62	
SEER			6.1	6.1	
SCOP			/	/	
Application Area		m <sup>2</sup>	15-22	21-31	
Indoor Unit	Indoor Unit Model		1.GWH12QB-K3DNA6D/I 2.GWH12QB-K3DNC4D/I 3.GWH12QB-K3DNE2D/I 4.GWH12QB-K3DNA5D/I	1.GWH18QD-K3DNA6E/I 2.GWH18QD-K3DNA5E/I 3.GWH18QD-K3DNC4E/I 4.GWH18QD-K3DNE2E/I	
	Indoor Unit Product Code		1.CB427N04702 CB427N04703 2.CB444N01502 3.CB462N00200 4.CB425N07001	1.CB427N06400 CB427N06401 2.CB425N07100 3.CB444N02900 4.CB462N00300	
	Fan Type		Cross-flow	Cross-flow	
	Fan Diameter Length(DXL)		mm	Φ98X580	Φ106X706
	Cooling Speed(SH/H/ML/SL)		r/min	1350/1200/1050/750/-	1230/1130/1030/800/-
	Heating Speed(SH/H/ML/SL)		r/min	1350/1200/1050/850/-	1350/1200/1050/900/-
	Fan Motor Power Output		W	20	/
	Fan Motor RLA		A	0.215	0.35
	Fan Motor Capacitor		μF	1	2.5
	Evaporator Form			Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm	Φ5	Φ7
	Evaporator Row-fin Gap		mm	2-1.4	2-1.4
	Evaporator Coil Length(LXDXW)		mm	584X22.8X266.7	715X25.4X304.8
	Swing Motor Model			MP24AA	MP35CJ
	Swing Motor Power Output		W	1.5	2.5
	Fuse Current		A	3.15	3.15
	Sound Pressure Level(SH/H/ML/SL)		dB (A)	42/37/34/28/-	45/41/37/33/-
	Sound Power Level(SH/H/ML/SL)		dB (A)	55/47/44/38/-	58/53/50/45/-
	Dimension(WXHXD)		mm	790X275X200	970X300X224
	Dimension of Carton Box(LXWXH)		mm	850X339X262	1038X380X305
Dimension of Package(LXWXH)		mm	852X355X273	1041X383X320	
Net Weight		kg	9	13.5	
Gross Weight		kg	11	16.5	

Outdoor Unit	Model of Outdoor Unit		GWH12QB-K3DNA6D/O	GWH18QD-K3DNA6E/O
	Product Code of Outdoor Unit		CB427W04701	CB427W06400
	Compressor Manufacturer/Trademark		Zhuhai Landa Compressor Co.; Ltd.	Zhuhai Landa Compressor Co.; Ltd.
	Compressor Model		QXA-B102zE190	QXA-A091zE190
	Compressor Oil		RB68EP	FVC68D or RB68EP
	Compressor Type		Rotary	Rotary
	L.R.A.	A	35.00	35.00
	Compressor RLA	A	4.80	4.80
	Compressor Power Input	W	1020	1020
	Overload Protector		/	/
	Throttling Method		Capillary	Capillary
	Operation temp	°C	16~30	16~30
	Ambient temp (cooling)	°C	-15~48	-15~48
	Ambient temp (heating)	°C	-22~24	-22~24
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7.94	Φ7
	Rows-fin Gap	mm	1-1.4	1-1.4
	Coil Length (LXDXW)	mm	731X19.05X550	742X38.1X550
	Fan Motor Speed	rpm	900	900
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.4	0.4
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m <sup>3</sup> /h	2200	2200
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ438	Φ438
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IPX4	IPX4
	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
	Sound Pressure Level (H/M/L)	dB (A)	54/-/-	54/-/-
	Sound Power Level (H/M/L)	dB (A)	63/-/-	63/-/-
Dimension (WXHXD)	mm	842X596X320	842X596X320	
Dimension of Carton Box (LXWXH)	mm	878X360X630	878X360X630	
Dimension of Package (LXWXH)	mm	881X363X645	881X363X645	
Net Weight	kg	29.5	33	
Gross Weight	kg	32.5	36	
Refrigerant		R410A	R410A	
Refrigerant Charge	kg	0.90	1.1	
Connection Pipe	Length	m	5	5
	Gas Additional Charge	g/m	20	20
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52	Φ9.52
	Max Distance Height	m	10	10
	Max Distance Length	m	20	25
Note: The connection pipe applies metric diameter.				

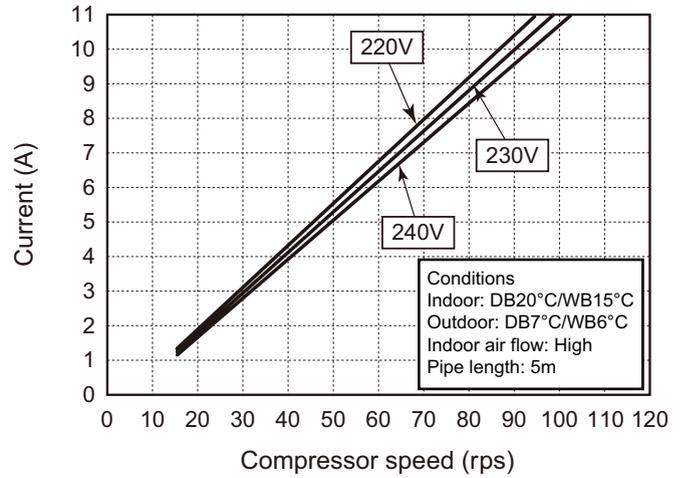
The above data is subject to change without notice; please refer to the nameplate of the unit.

## 2.2 Operation Characteristic Curve

Cooling

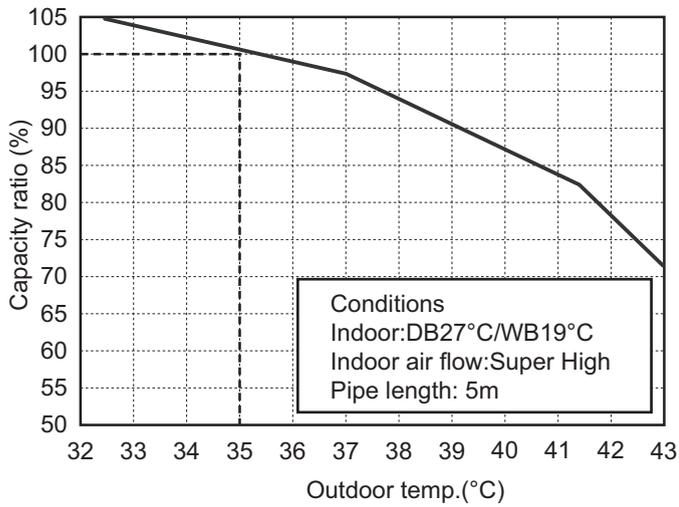


Heating

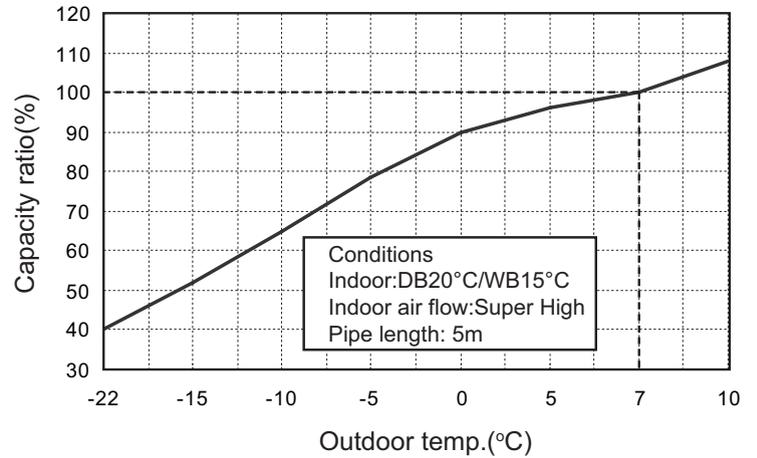


## 2.3 Capacity Variation Ratio According to Temperature

Cooling



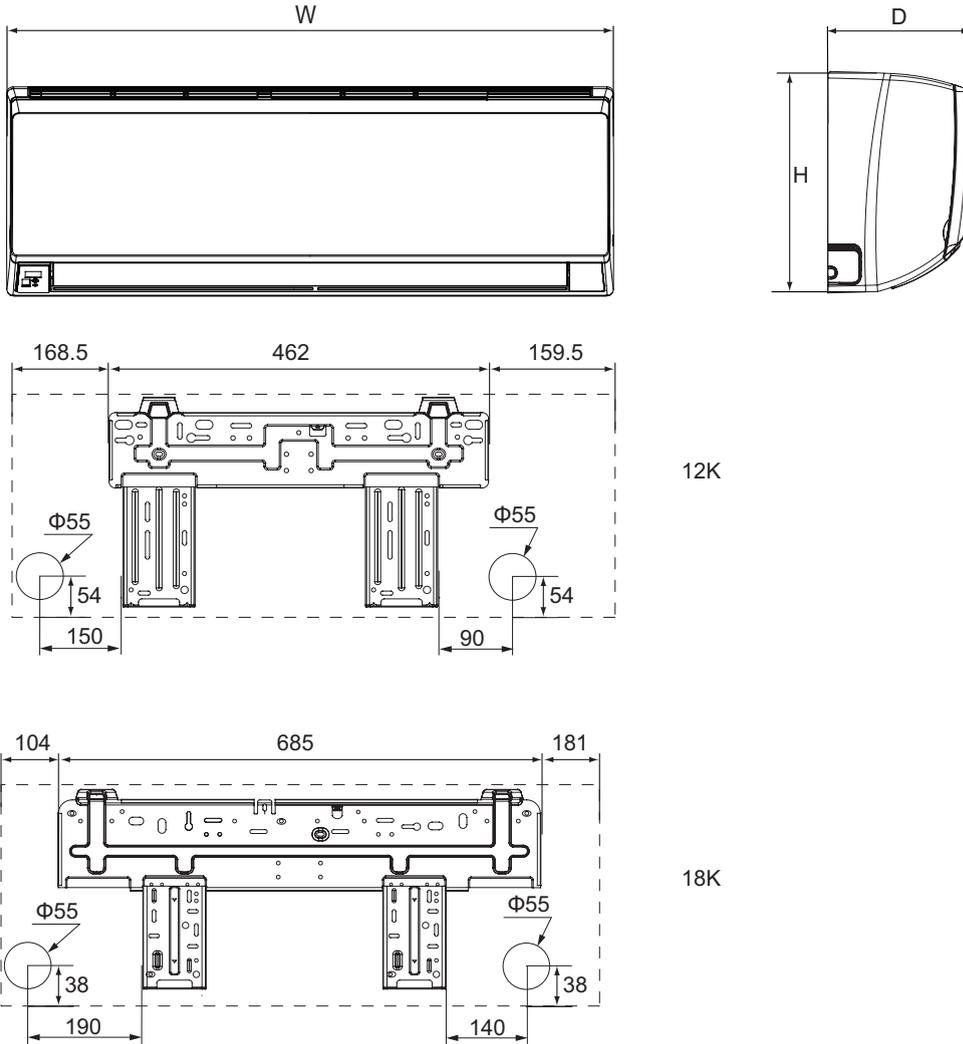
Heating





### 3. Outline Dimension Diagram

#### 3.1 Indoor Unit



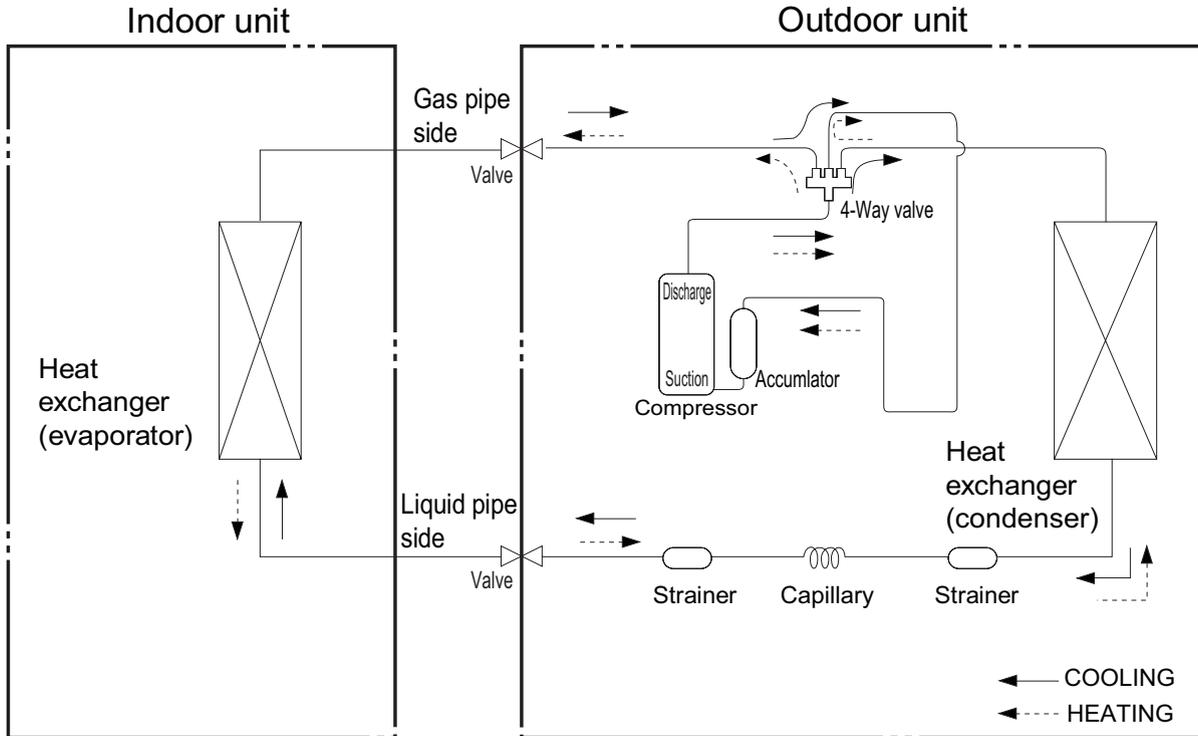
Models	W	H	D
12K	790	275	200
18K	970	300	224

Unit:mm



# 4. Refrigerant System Diagram

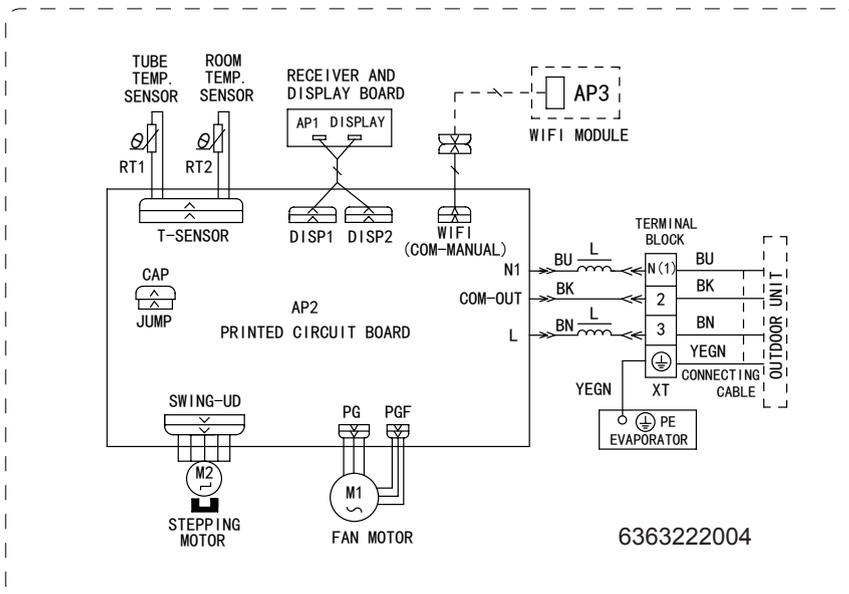
## Cooling and heating model



Connection pipe specification:  
 Liquid pipe: 1/4" (6mm)  
 Gas pipe: 3/8" (9.52mm)

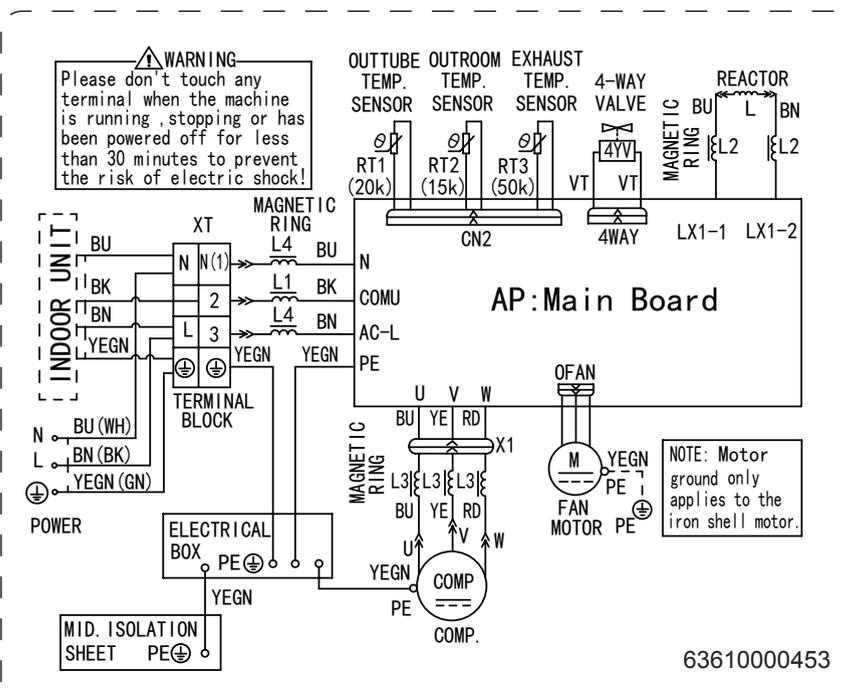


GWH12QB-K3DNC4D/I GWH12QB-K3DNE2D/I GWH18QD-K3DNC4E/I GWH18QD-K3DNE2E/I  
 GWH12QB-K3DNA6D/I(CB427N04703) GWH18QD-K3DNA6E/I(CB427N06401)

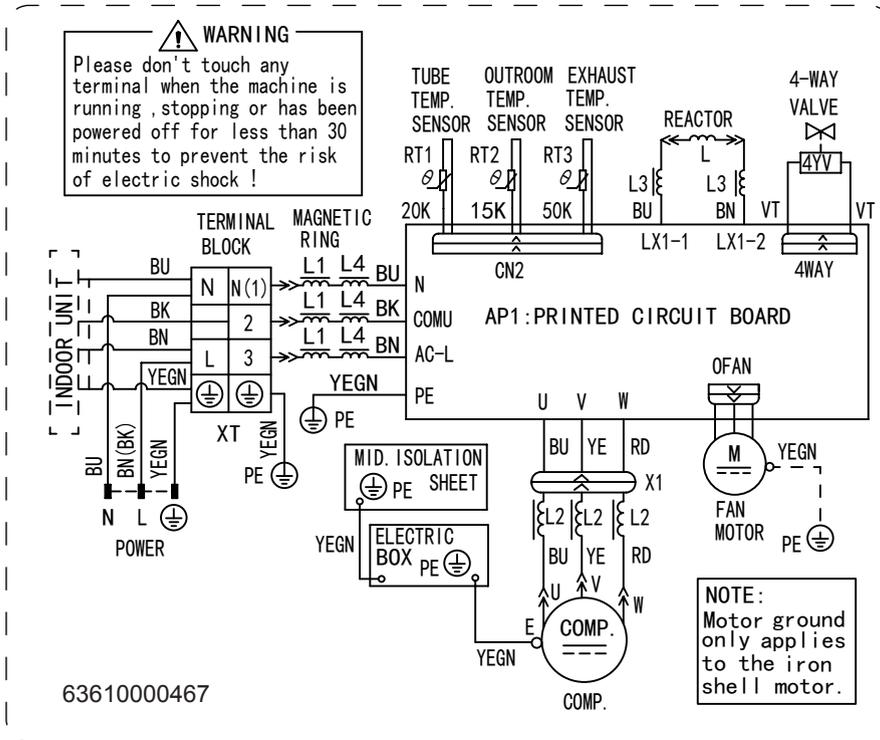


• Outdoor Unit

GWH12QB-K3DNA6D/O



GWH18QD-K3DNA6E/O



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





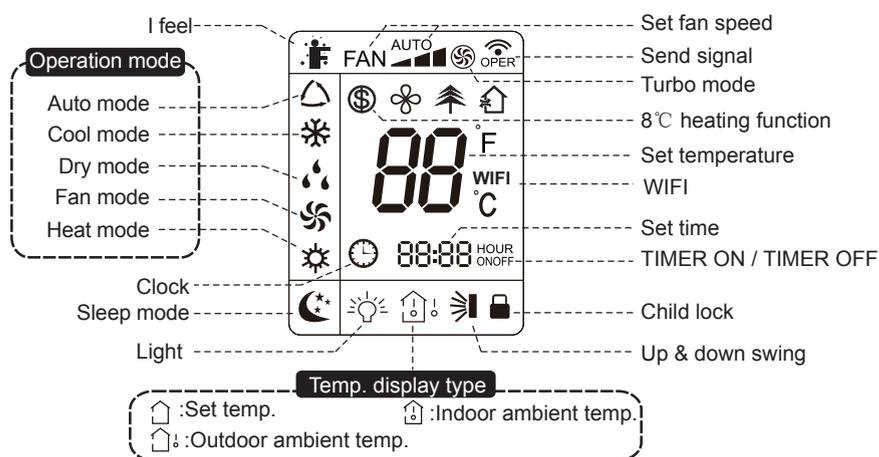
## 6. Function and Control

### 6.1 Remote Controller Introduction



- 1 ON/OFF button
- 2 MODE button
- 3 FAN button
- 4 SWING button
- 5 TURBO button
- 6 ▲/ ▼button
- 7 SLEEP button
- 8 TEMP button
- 9 I FEEL button
- 10 LIGHT button
- 11 CLOCK button
- 12 TIMER ON / TIMER OFF button

#### Introduction for icons on display screen



#### Introduction for buttons on remote controller

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



**12. TURBO button**

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

**13. X-FAN |  button**

X-FAN function: In COOL or DRY mode, the icon  is displayed and the indoor fan will continue operation for 2 minutes in order to dry the indoor unit even though you have returned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

 function: turn on the display's light and press this button again to turn off the display's light. If the light is turned on,  is displayed. If the light is turned off,  disappears.

**14. I FEEL button**

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel I FEEL function.

**15.  /  button**

Press this button to achieve the on and off of healthy and scavenging functions in operation status. Press this button for the first time to start scavenging function; LCD displays "". Press the button for the second time to start healthy and scavenging functions simultaneously; LCD displays "" and "". Press this button for the third time to quit healthy and scavenging functions simultaneously. Press the button for the fourth time to start healthy function; LCD display "". Press this button again to repeat the operation above. (This function is applicable to partial of models)

**Function introduction for combination buttons****Combination of "▲" and "▼" buttons: About lock**

Press "▲" and "▼" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked,  is displayed. In this case, pressing any button,  blinks three times.

**Combination of "MODE" and "▼" buttons:****About switch between Fahrenheit and centigrade**

At unit OFF, press "MODE" and "▼" buttons simultaneously to switch between °C and °F .

**Combination of "TEMP" and "CLOCK" buttons:****About Energy-saving Function**

Press "TEMP" and "CLOCK" simultaneously in COOL mode to start energy-saving function. Nixie tube on the remote controller displays "SE". Repeat the operation to quit the function.

**Combination of "TEMP" and "CLOCK" buttons:****About 8°C Heating Function**

Press "TEMP" and "CLOCK" simultaneously in HEAT mode to start 8°C Heating Function Nixie tube on the remote controller displays "" and a selected temperature of "8°C ". (46 °F if Fahrenheit is adopted). Repeat the operation to quit the function.

**About Back-lighting Function**

The unit lights for 4s when energizing for the first time, and 3s for later press.

**Combination "MODE" and "TURBO" buttons: About 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.

**Operation guide**

1. After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
2. Press "MODE" button to select your required mode: AUTO, COOL, DRY, FAN, HEAT.
3. Press "▲" or "▼" button to set your required temperature. (Temperature can't be adjusted under auto mode).
4. Press "FAN" button to set your required fan speed: auto, low, medium and high speed.
5. Press "SWING" button to select fan blowing angle.



## 6.2 Operation of Smart Control (Smart Phone, Tablet PC) For Gree

### Operation Instructions

#### Download and install APP

Scan the following QR code with your smart phone and download Wifi Smart.



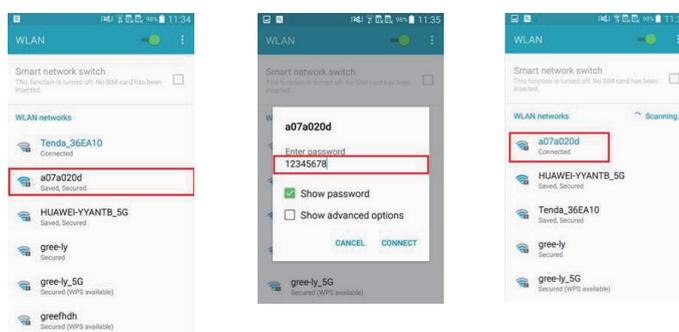
Install the App according to its guidance. When successfully installed, your smart phone homepage will show this icon



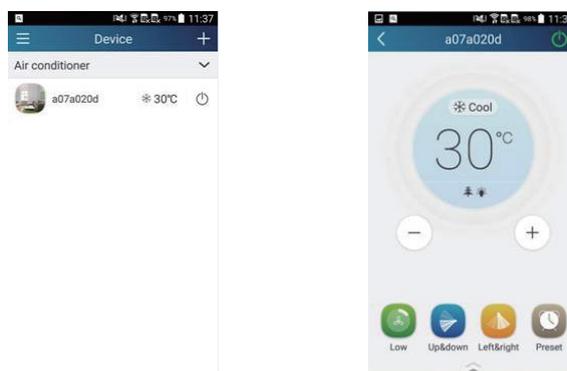
### Configuration

Before operation, please finish the following configuration in order to realize Wifi control and the connection between air conditioner and intelligent device.

1.Short-distance control setting for air conditioner using wifi hotspot  
Step 1: Air conditioner wifi is set to AP mode in factory. You can search the air conditioner wifi hotspot through your smart phone. The name of wifi hotspot is the last 8 numbers of the air conditioner mac address. Password is 12345678.



Step 2: Open App and the screen will show the air conditioner that you just connected. Click this air conditioner to enter and realize short-distance control, as shown below. Please refer to "Functions introduction" for specific control methods.



NOTE:One AC can be controlled by 4 cell phone in maximun at the same time.

2.Short-distance and long-distance control setting for air conditioner connecting router

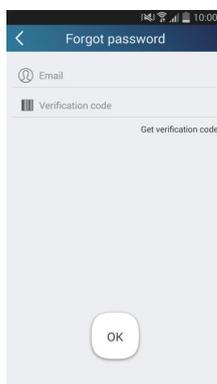
Step 1: Under short-distance control, return to the homepage "Home Control". Tap **+** at the top right corner of the homepage "Home control". Select "Add device" and enter the page of "Add device". Tap "Manual configuration" and enter the page "Manual configuration".

Step 2: Select the correct network name and enter the password,select the server (The server setting here must keep the same as the server setting in "Settings" mentioned below.Otherwise, remote control will be failed.),then tap the button "Add device" for configuration. If configuration succeeds, App will notify user that configuration is successful and return to homepage.



(4) If password is forgotten, you can reset the password with your email address.

Tap "Forgot password" and enter the page "Forgot password". Tap "Get verification code" to get a email verification code. Enter a new password and tap "OK" to log in.

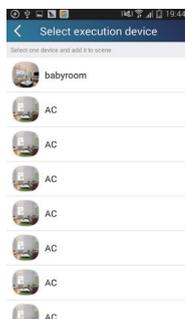


## 2. Personal settings

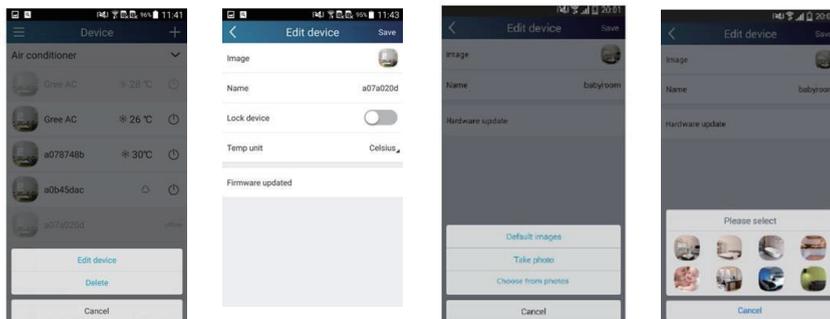
Purpose: Set name (device name, preset name, etc.) and images (device image) in order to identify a user easily.

### (1) Set device name

After quick configuration, a list of controllable smart devices will be generated. Default name for air conditioner is the last 8 numbers of the air conditioner mac address.



Step 1: Tap and hold "babyroom" to enter the page "Edit device". Tap "Image" to select the source of image. Select from "Default images" or "Take photo" or "Choose from photos" and save an image.

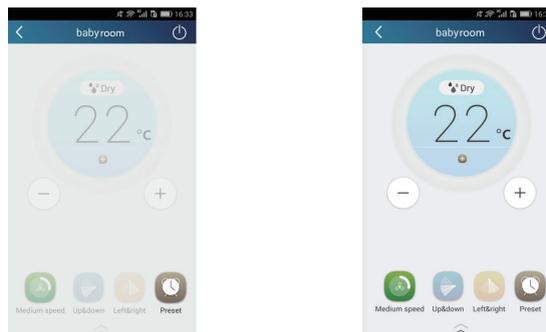


Step 2: Tap "Name" to change device name, Save it and the new device name will be shown. enable button Lock device to lock the device other smart phone cant search the device now. Tap "Temp unit" to change the temperature unit.

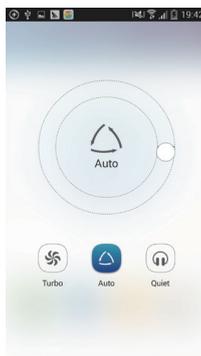


Step 3: Tap "Firmware updated" to upgrade the Firmware of the device, Tap"1.8" the device will upgraded auto.

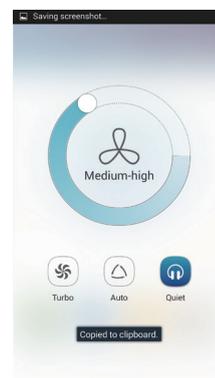
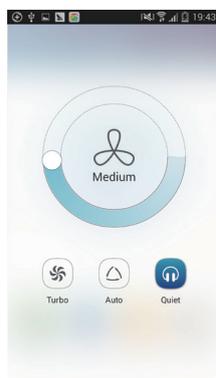




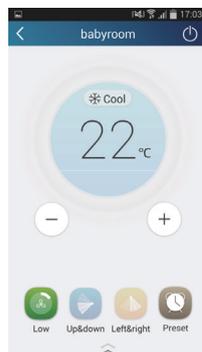
Tap or to increase or decrease temperature. Tap to change working mode. Tap to enter the page of fan speed adjustment.



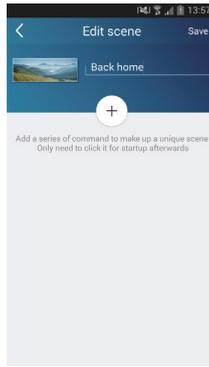
Tap and go around the circle to adjust fan speed.



Step 2: Advanced settings Tap to enter advanced settings. You may select "Air", "Dry", "Health", "Light", "Sleep" or "Energy saving".

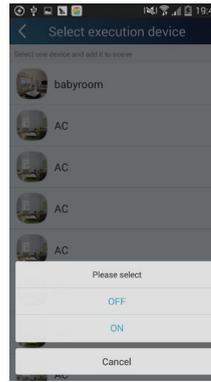
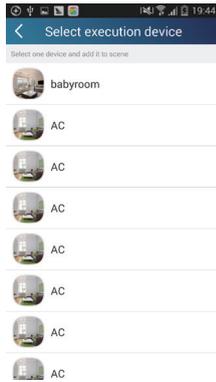


(2) Advanced control functions: Set scene; Preset; Link: Infrared control (only applicable to smart phone with infrared emitter)  
 Set scene: Preset the operation of several smart devices by one tap.  
 On the page "Home control", tap the image of "Home control" to enter the page "Edit scene".

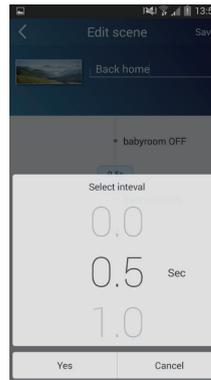
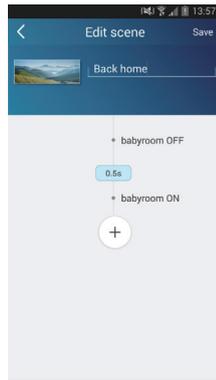


Tap "Add scene" and edit the scene name, for example, "Back home". Add execution devices.

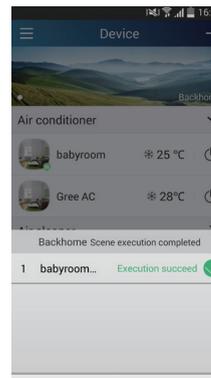
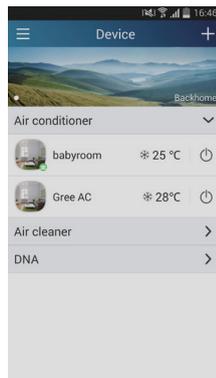
Tap  to add commands. On the page "Select execution device", select the air conditioner named "babyroom". Then select "ON" or "OFF".



Continue to select the next execution device as instructed above. Tap  to set the interval.

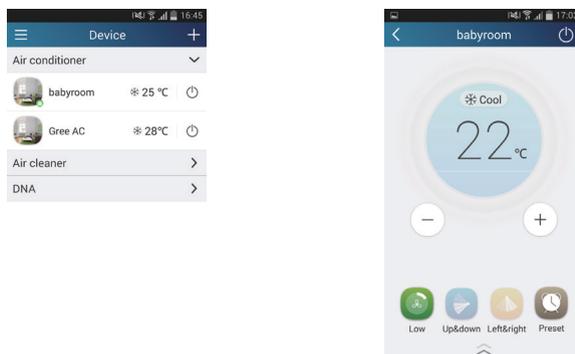


Tap "Save". Then the scene "Back home" will be in execution. You may view the execution condition of the scene.

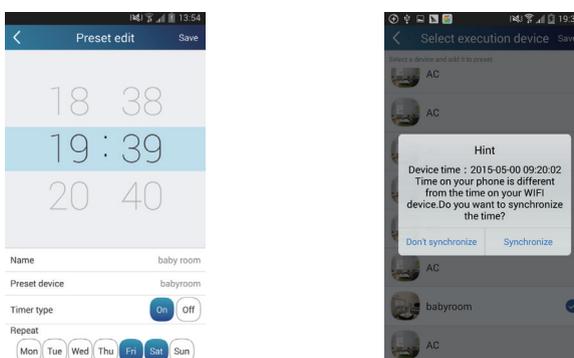


(3) Preset includes single-device preset and multi-device preset Single-device preset: This can preset a certain device to be On/Off at a specific time.

On the homepage "Device", take air conditioner "babyroom" as an example. Tap  at the bottom of the page "babyroom". Then you will enter the page "Preset edit".

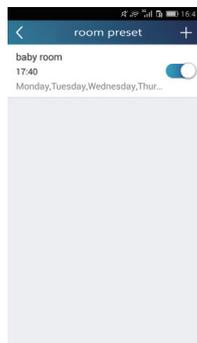


Slide up and down to set the time. If you want to synchronize the time, tap "synchronize".



Tap "Name" to customize the preset name.

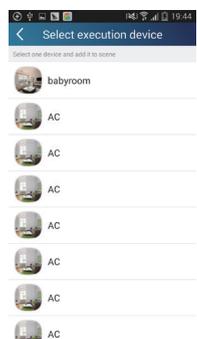
Preset device cant be selected and it will default to "babyroom". Select "On" for the timer type. Select repeating days to complete the preset.



Multi-device preset: This can preset multiple devices to execute a command at a specific time.

Please refer to the instructions as how to set preset time, name, timer type and repeating days for a single device.

Tap "Preset device" to select one or more devices. Then return to the page "Device".

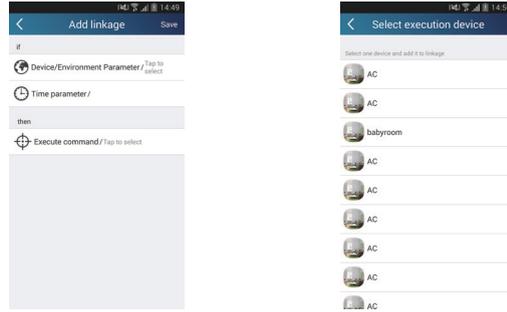


(4) Link(This function is applicable to partial of models)

set in the master device, slave devices will execute commands to realize devices Select a master device. When the environment has satisfied the parameters as linkage.

Step 1: Set the parameters of master device (Select master device, select environment parameters, select master device status).

Tap **+** at the top right corner of the homepage "Home control". Select "Link" and enter the page "Add linkage". Tap "Device parameter" to enter the page "Select device". Take "baby room" as an example. Tap "baby room".

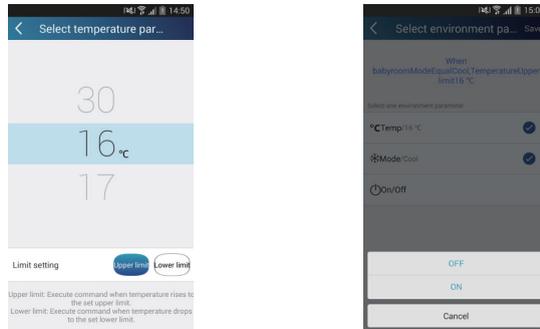


Enter the page "Select environment parameters".

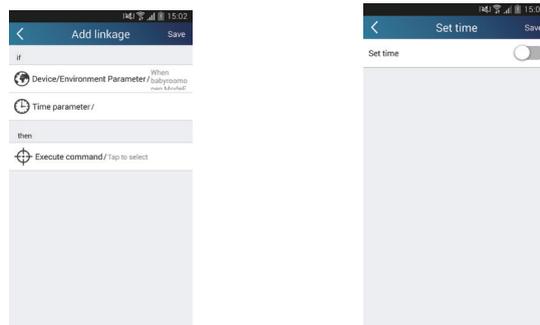


Tap "Temperature" to enter the page "Select temperature parameter". Slide up or down to adjust temperature. Tap "Upper limit" or "Lower limit".

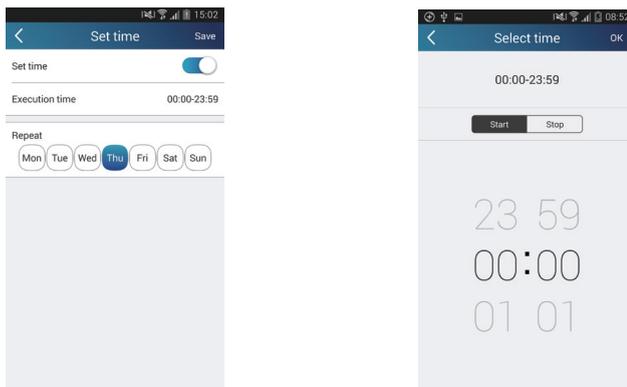
Tap "Mode" and "On/Off" to select the status of master device. Then tap "Save".



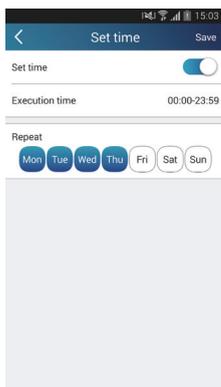
Step 2: Set time parameter for linkage. Tap "Time parameter" to enter the page "Set time". Slide  rightwards to turn on the setting time.



Tap "Execution time"; Then tap "Start" and "Stop" to set start time and stop time respectively. Tap "OK" at the top right corner to save the setting.

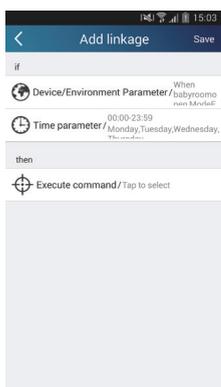


Tap the days below "Repeat" to select the repeating days. Then tap "Save".

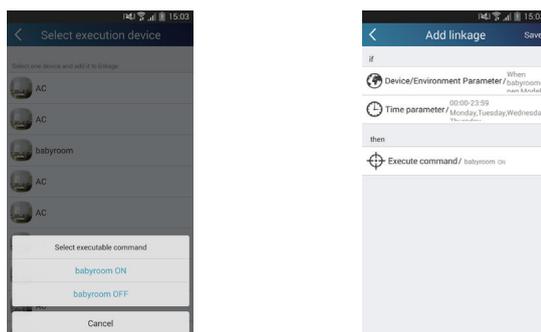


Step 3: Select "Execute command"

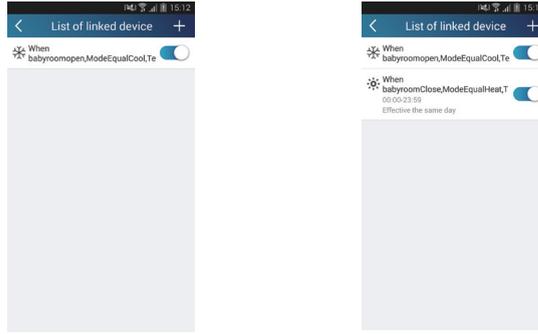
Tap "Execute command" and enter the page "Select device".



Tap the name of device that you want to control. Tap "ON" or "OFF" and then tap "Save" to complete the linkage.



Tap "Save" and then repeat the above steps to set linkage of several scenes.



(5) Infrared control (only applicable to smart phone with infrared emitter).

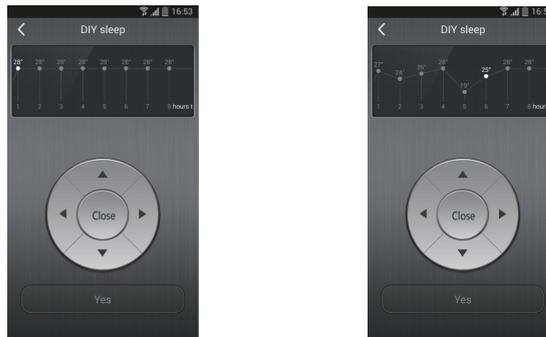
Function: Smart phone can be used as a remote controller.

Tap  at the top right corner of the homepage "Device". Select "Infrared" and enter the page "Remote controller". Tap  and slide up to enter the page of advanced functions



Tap  to turn on the device. Tap  to select mode. Tap  to adjust fan speed and swing angle. Tap "Health", "Energy saving", "Sleep" etc. to set advanced functions.

Tap "Sleep" to enter the page "Sleep". You can select "Traditional sleep", "Expert sleep" or "DIY sleep". Tap "DIY sleep" and then tap the left and right arrows to set sleep time. Tap up and down arrows to adjust temperature at a specific sleep time.



#### 4.Menu functions

Menu functions (Share, Set, History, Feedback)

(1) Share: To share quick configuration information and units information, including local export and local import. For local import, you just need to tap "Local import" and wait for the data download.

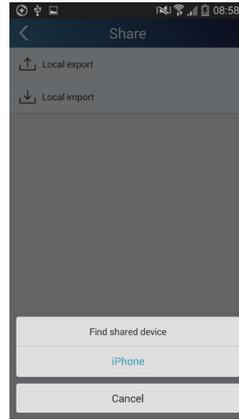
Local export

Step 1: Export local data to another smart phone.

Enter "Menu" on the left side and tap "Share" to enter the page "Share". Then tap "Local export".



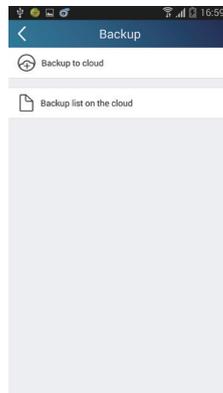
Step 2: Another smart phone to be imported.  
Tap the model name and wait for the download.



(2) Backup: To keep backup of the quick configuration information and units information, including backup to cloud and backup list on the cloud.

Backup to cloud

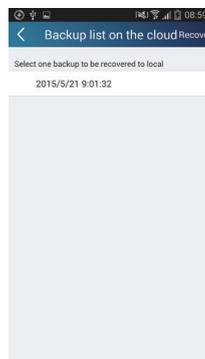
Enter the "Menu" on the left and tap "Backup".



Tap "Backup to cloud" and then tap "Yes". Then wait for the data download.



Select "Backup list on the cloud". Then backup records will appear. Tap "Record" to download data and recover data to local unit.





## 6.3 Operation of Smart Control (Smart Phone, Tablet PC)

### Operation Instructions

#### Download and install APP

Scan the following QR code with your smart phone and download Wifi Smart.



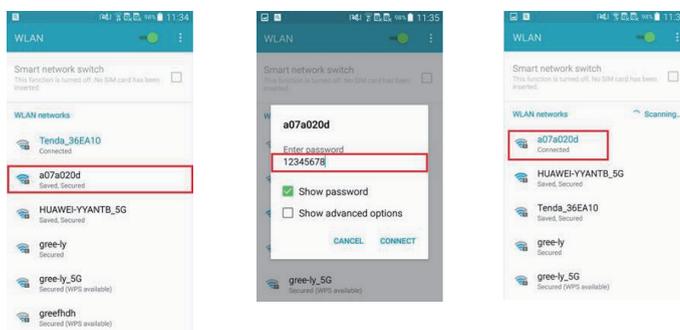
Install the App according to its guidance. When successfully installed, your smart phone homepage will show this icon



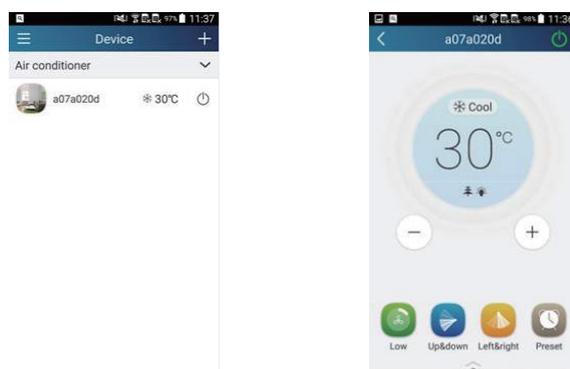
### Configuration

Before operation, please finish the following configuration in order to realize Wifi control and the connection between air conditioner and intelligent device.

1.Short-distance control setting for air conditioner using wifi hotspot Step 1: Air conditioner wifi is set to AP mode in factory. You can search the air conditioner wifi hotspot through your smart phone. The name of wifi hotspot is the last 8 numbers of the air conditioner mac address. Password is 12345678.



Step 2: Open App and the screen will show the air conditioner that you just connected. Click this air conditioner to enter and realize short-distance control, as shown below. Please refer to "Functions introduction" for specific control methods.



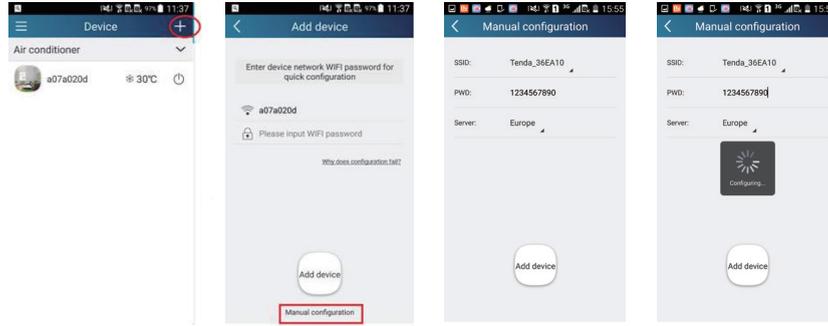
NOTE:One AC can be controlled by 4 cell phone in maximun at the same time.

2.Short-distance and long-distance control setting for air conditioner connecting router Step 1: Under short-distance control, return to the homepage "Home Control". Tap **+** at the top right corner of the homepage "Home control". Select "Add device"and enter the page of "Add device". Tap "Manual configuration" and enter the page "Manual configuration".

Step 2: Select the correct network name and enter the password,select the server (The server setting here must keep the same as the server setting in "Settings" mentioned below.Otherwise, remote control will be failed.),then tap the button "Add device" for configuration. If configuration succeeds, App will notify user that configuration is successful and return to homepage.

NOTICE:

Please select the encrypt mode "empty" if your wifi has been set without password.



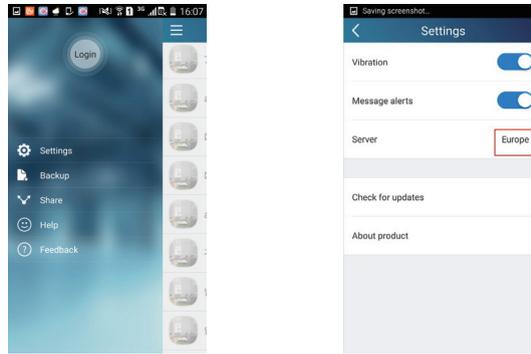
Functions introduction

1. User registration

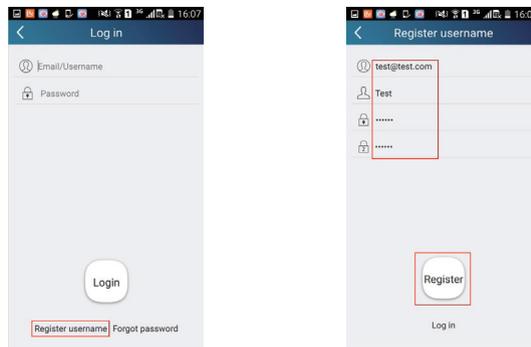
Operation instruction: For the first time login, you have to register a new username. If you already have a username, skip the registration step and enter email address and password on the "Login Page" to log in. If password is forgotten, you can reset the password.

Operation steps:

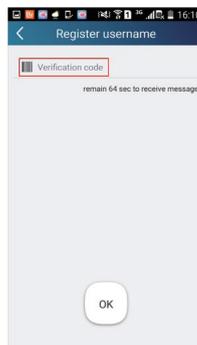
(1) Select the sever address



(2) Account login: Slide the page "Device". and enter the page "Menu" on the left. Tap "Login" to enter the page "Register username". New user must first register a username. Tap "Register".

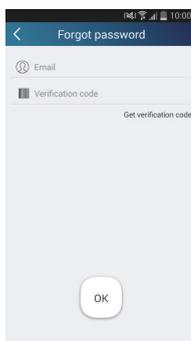


(3) Enter your email address. Wait until you receive the verification code. Enter the code and then tap "OK" to log in. Username will appear. As shown here, the username is "test".



(4) If password is forgotten, you can reset the password with your email address.

Tap "Forgot password" and enter the page "Forgot password". Tap "Get verification code" to get a email verification code. Enter a new password and tap "OK" to log in.

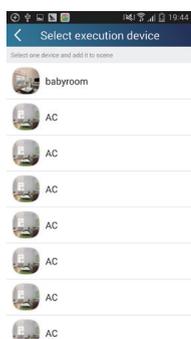


## 2. Personal settings

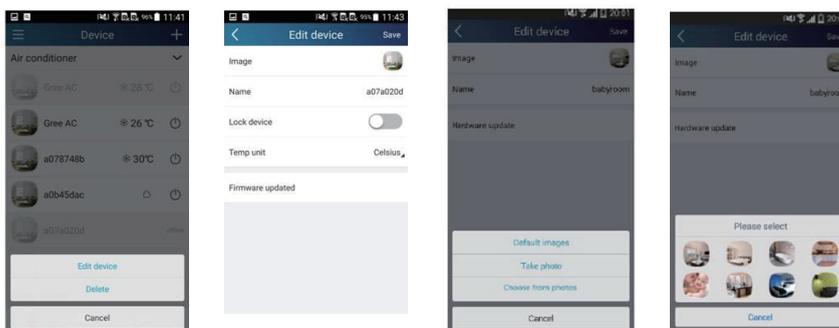
Purpose: Set name (device name, preset name, etc.) and images (device image) in order to identify a user easily.

### (1) Set device name

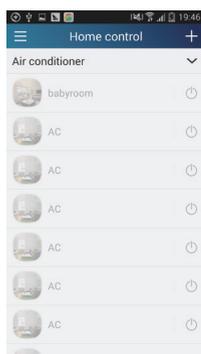
After quick configuration, a list of controllable smart devices will be generated. Default name for air conditioner is the last 8 numbers of the air conditioner mac address.



Step 1: Tap and hold "babyroom" to enter the page "Edit device". Tap "Image" to select the source of image. Select from "Default images" or "Take photo" or "Choose from photos" and save an image.

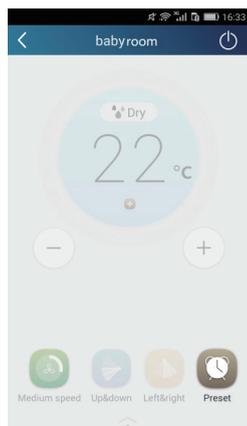


Step 2: Tap "Name" to change device name, Save it and the new device name will be shown. enable button Lock device to lock the device, other smart phone cant search the device now. Tap "Temp unit" to change the temperature unit.

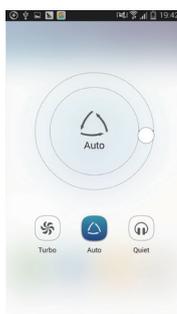


Step 3: Tap "Firmware updated" to upgrade the Firmware of the device, Tap "1.8" the device will upgraded auto.

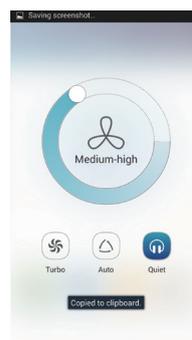
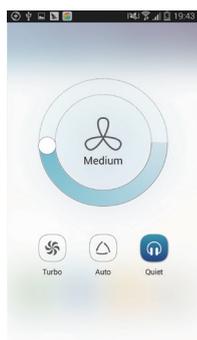




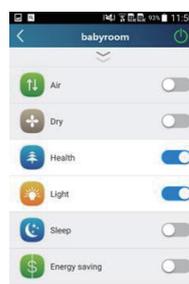
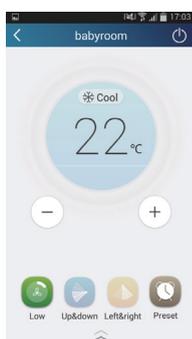
Tap or to increase or decrease temperature. Tap to change working mode. Tap to enter the page of fan speed adjustment.



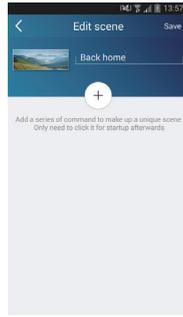
Tap and go around the circle to adjust fan speed.



Step 2: Advanced settings Tap to enter advanced settings. You may select "Air", "Dry", "Health", "Light", "Sleep" or "Energy saving".

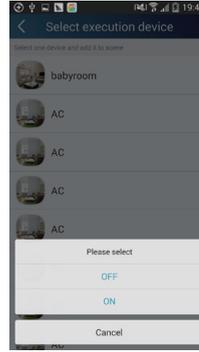
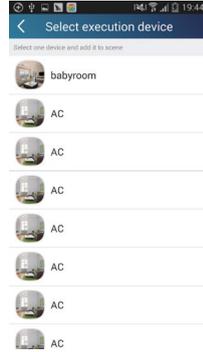


(2) Advanced control functions: Set scene; Preset; Link: Infrared control (only applicable to smart phone with infrared emitter)  
 Set scene: Preset the operation of several smart devices by one tap.  
 On the page "Device", tap the image of "Device" to enter the page "Edit scene".

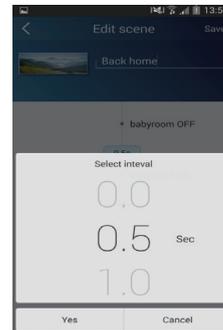
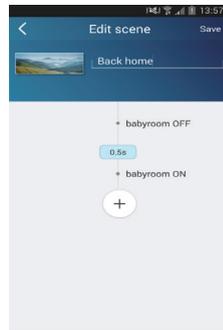


Tap "Add scene" and edit the scene name, for example, "Back home". Add execution devices.

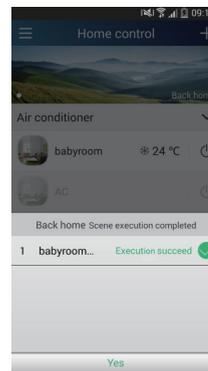
Tap  to add commands. On the page "Select execution device", select the air conditioner named "babyroom". Then select "ON" or "OFF".



Continue to select the next execution device as instructed above. Tap  to set the interval.



Tap "Save". Tap the scene picture displayed in "Home control" home page to send the command. Then the scene "Back home" will be in execution. You may view the execution condition of the scene.

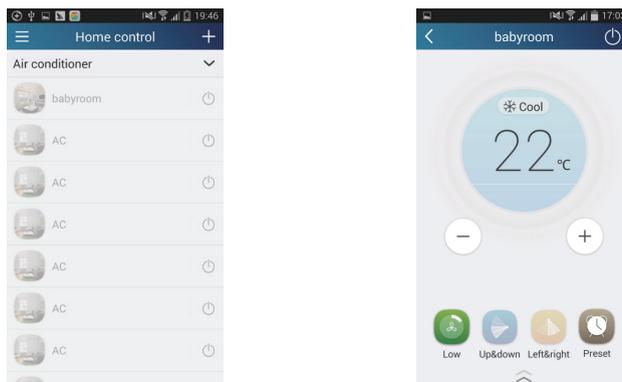


(3) Preset includes single-device preset and multi-device preset

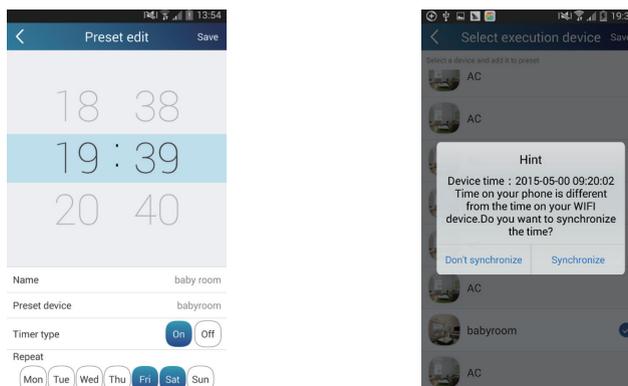
Single-device preset: This can preset a certain device to be On/Off at a specific time.

On the homepage "Device", take air conditioner "babyroom" as an example.

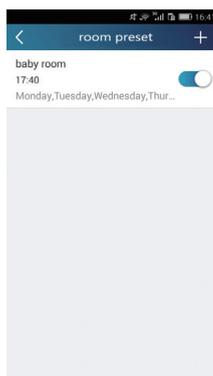
Tap  at the bottom of the page "babyroom". Then you will enter the page "Preset edit".



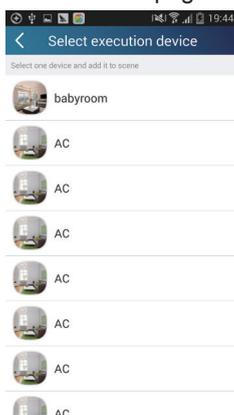
Slide up and down to set the time. If you want to synchronize the time, tap "synchronize". If such "Hint" interface hasn't appeared, please skip this operation procedure.



Tap "Name" to customize the preset name. Preset device can't be selected and it will default to "babyroom". Select "On" for the timer type. Select repeating days to complete the preset.



Multi-device preset: This can preset multiple devices to execute a command at a specific time. Please refer to the instructions as how to set preset time, name, timer type and repeating days for a single device. Tap "Preset device" to select one or more devices. Then return to the page "Home control".

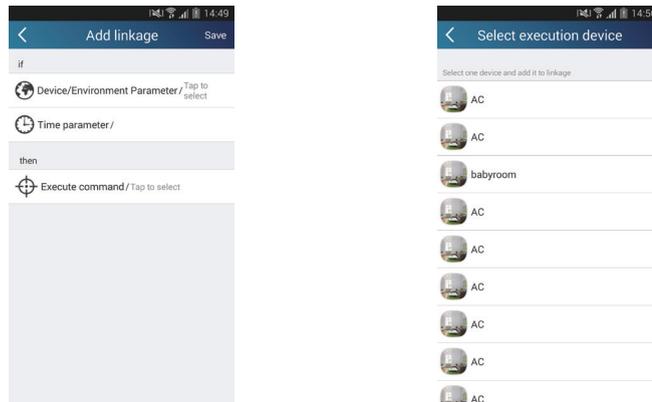


(4) Link(This function is applicable to partial of models)

set in the master device, slave devices will execute commands to realize devices Select a master device. When the environment has satisfied the parameters as linkage.

Step 1: Set the parameters of master device (Select master device, select environment parameters, select master device status).

Tap **+** at the top right corner of the homepage "Device". Select "Link" and enter the page "Add linkage". Tap "Device parameter" to enter the page "Select device". Take "baby room" as an example. Tap "baby room".

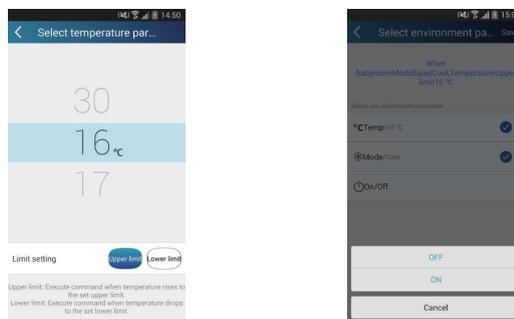


Enter the page "Select environment parameters".



Tap "Temperature" to enter the page "Select temperature parameter". Slide up or down to adjust temperature. Tap "Upper limit" or "Lower limit".

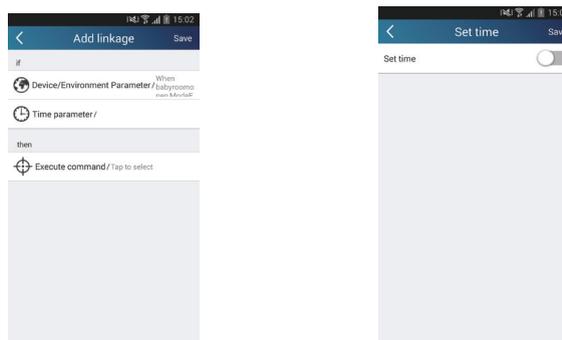
Tap "Mode" and "On/Off" to select the status of master device. Then tap "Save".



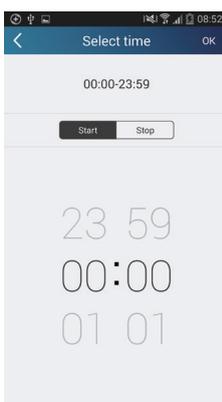
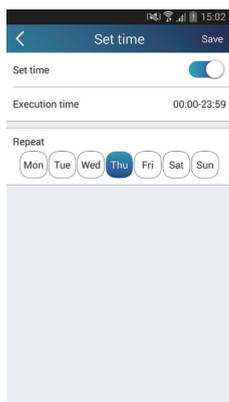
Step 2: Set time parameter for linkage. Tap "Time parameter" to enter the page "Set time". Slide



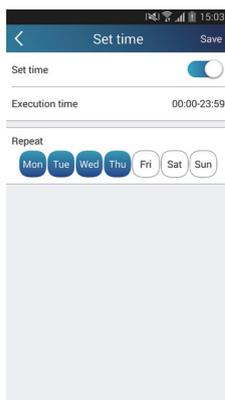
rightwards to turn on the setting time.



Tap "Execution time"; Then tap "Start" and "Stop" to set start time and stop time respectively. Tap "OK" at the top right corner to save the setting.

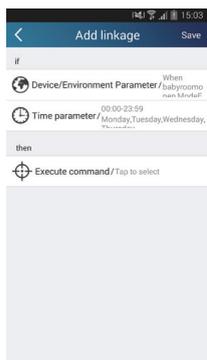


Tap the days below "Repeat" to select the repeating days. Then tap "Save".

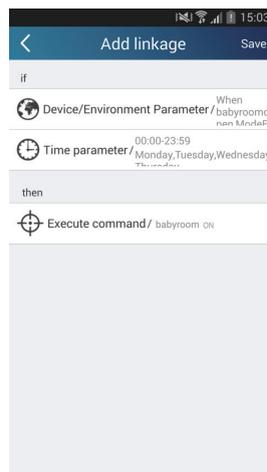


Step 3: Select "Execute command"

Tap "Execute command" and enter the page "Select device".



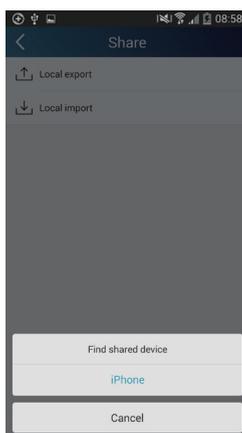
Tap the name of device that you want to control. Tap "ON" or "OFF" and then tap "Save" to complete the linkage.







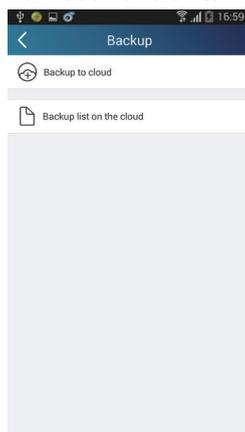
Step 2: Another smart phone to be imported.  
Tap the model name and wait for the download.



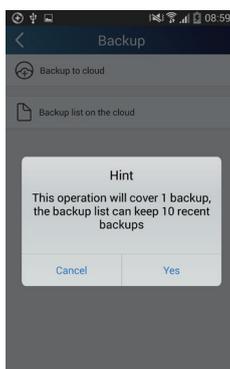
(2) Backup: To keep backup of the quick configuration information and units information, including backup to cloud and backup list on the cloud.

Backup to cloud

Enter the "Menu" on the left and tap "Backup".



Tap "Backup to cloud" and then tap "Yes". Then wait for the data download.





## 6.4 Brief Description of Modes and Functions

### 1. Basic function of system

#### (1) Cooling mode

- (1) Under this mode, fan and swing operates at setting status. Temperature setting range is 16~30°C.
- (2) During malfunction of outdoor unit or the unit is stopped because of protection, indoor unit keeps original operation status.

#### (2) Drying mode

- (1) Under this mode, fan operates at low speed and swing operates at setting status. Temperature setting range is 16~30°C.
- (2) During malfunction of outdoor unit or the unit is stopped because of protection, indoor unit keeps original operation status.
- (3) Protection status is same as that under cooling mode.
- (4) Sleep function is not available for drying mode.

#### (3) Heating mode

- (1) Under this mode, Temperature setting range is 16~30°C.
- (2) Working condition and process for heating mode:

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

#### (4) Working method for AUTO mode:

1. Working condition and process for AUTO mode:
  - a. Under AUTO mode, standard heating  $T_{\text{preset}}=20^{\circ}\text{C}$  and standard cooling  $T_{\text{preset}}=25^{\circ}\text{C}$ . The unit will switch mode automatically according to ambient temperature.
2. Protection function
  - a. During cooling operation, protection function is same as that under cooling mode.
  - b. During heating operation, protection function is same as that under heating mode.
3. Display: Set temperature is the set value under each condition. Ambient temperature is ( $T_{\text{amb.}}-T_{\text{compensation}}$ ) for heat pump unit and  $T_{\text{amb.}}$  for cooling only unit.
4. If there's I feel function,  $T_{\text{compensation}}$  is 0. Others are same as above.

#### (5) Fan mode

Under this mode, indoor fan operates at set fan speed. Compressor, outdoor fan, 4-way valve and electric heating tube stop operation. Indoor fan can select to operate at high, medium, low or auto fan speed. Temperature setting range is 16~30°C.

### 2. Other control

#### (1) Buzzer

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

#### (2) Auto button

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

#### (3) Auto fan

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

#### (4) Sleep

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

#### (5) Timer function:

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

#### (6) Memory function

memorize compensation temperature, off-peak energization value.

Memory content: mode, up&down swing, light, set temperature, set fan speed, general timer (clock timer can't be memorized).

After power recovery, the unit will be turned on automatically according to memory content.

#### (7) Health function

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

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

### **(8)I feel control mode**

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

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

#### **(1) Start up compulsory defrosting function**

Under ON status, set heating mode with remote controller and adjust the temperature to 16°C. Press “+, -, +, -, +,-” button successively within 5s and the complete unit will enter into compulsory defrosting status. Meanwhile, heating indicator on indoor unit will ON 10s and OFF 0.5s successively. (Note: If complete unit has malfunction or stops operation due to protection, compulsory defrosting function can be started up after malfunction or protection is resumed.

#### **(2) Exit compulsory defrosting mode**

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

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

#### **(1) Enter refrigerant recycling function**

Within 5min after energizing (unit ON or OFF status is ok), continuously press LIGHT button for 3 times within 3s to enter refrigerant recycling mode; Fo is displayed and refrigerant recycling function is started. At this moment, the maintenance people closes liquid valve. After 5min, stick the thimble of maintenance valve with a tool. If there is no refrigerant spraying out, close the gas valve immediately and then turn off the unit to remove the connection pipe.

#### **(2) Exit refrigerant recycling function**

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

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

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

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

Under this mode, indoor fan operates at set fan speed. Compressor, outdoor fan, 4-way valve and electric heating tube stop operation. Indoor fan can select to operate at high, medium, low or auto fan speed. Temperature setting range is 16~30°C.

### **(12)Off-peak energization function:**

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

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

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

The unit operates at SE status.

### **(14) X-fan mode**

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

### **(15) 8°C heating function**

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

### **(16) Turbo fan control function**

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

No turbo function under auto, dry or fan mode.

## Outdoor Units

### 1. Input Parameter Compensation and Calibration

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

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

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

#### (2) Check effective judgment controls of parameters

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

a. Judgment of exhaust detection temperature change:

After the compressor starts up and runs for 10 minutes, if the compressor frequency  $f \geq 40\text{Hz}$ , and the rising value  $T_{\text{exhaust}}$  ( $T_{\text{exhaust}}$  (after start-up for 10 minutes) -  $T_{\text{exhaust}}$  (before start-up))  $< 2^{\circ}\text{C}$ , the outdoor exhaust temperature thermo-bulb can be judged not to be connected into place (judging once when the power is on the first time).

b. Comparative judgment of exhaust detection temperature and condenser detection temperature ( $T_{\text{pipe temperature}} = T_{\text{outdoor pipe temperature}}$  in cooling mode,  $T_{\text{pipe temperature}} = T_{\text{indoor pipe temperature}}$  in heating mode): After the compressor starts up and runs for 10 minutes, if the compressor frequency  $f \geq 40\text{Hz}$ , and  $T_{\text{pipe temperature}} \geq (T_{\text{exhaust}} + 3)$ , the outdoor exhaust temperature thermobulb can be judged not to be connected into place (judging once when power is on the first time).

### 2. Basic Functions

#### (1) Cooling Mode

##### 1. Conditions and processes of cooling operation:

(1) If the compressor is shut down, and  $[T_{\text{set up}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] \leq 0.5^{\circ}\text{C}$ , start up the machine for cooling, the cooling operation will start;

(2) During operations of cooling, if  $0^{\circ}\text{C} \leq [T_{\text{set up}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 2^{\circ}\text{C}$ , the cooling operation will be still running;

(3) During operations of cooling, if  $2^{\circ}\text{C} \leq [T_{\text{set up}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})]$ , the cooling operation will stop after reaching the temperature point.

##### 2. Temperature setting range

(1) If  $T_{\text{outdoor ambient temperature}} \geq [T_{\text{low-temperature cooling temperature}}]$ , the temperature can be set at: 16~30°C (Cooling at room temperature);

(2) If  $T_{\text{outdoor ambient temperature}} < [T_{\text{low-temperature cooling temperature}}]$ , the temperature can be set at: 25~30°C (Cooling at low temperature), that is, the minimum setting temperature for outer units judgment is 25°C .

#### (2) Dehumidifying Mode

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

2. The temperature setting range is: 16~30°C ;

#### (3) Air-supplying Mode

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

2. The temperature setting range is: 16~30°C.

#### (4) Heating Mode

1. Conditions and processes of heating operations: (T<sub>indoor ambient temperature</sub> is the actual detection temperature of indoor environment thermo-bulb, T<sub>heating indoor ambient temperature compensation</sub> is the indoor ambient temperature compensation during heating operations)

(1) If the compressor is shut down, and  $[(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{set up}}] \leq 0.5^{\circ}\text{C}$ , start the machine to enter into heating operations for heating;

(2) During operations of heating, if  $0^{\circ}\text{C} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{set up}}] < 2^{\circ}\text{C}$ , the heating operation will be still running;

(3) During operations of heating, if  $2^{\circ}\text{C} \leq [(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{set up}}]$ , the heating operation will stop after reaching the temperature point.

2. The temperature setting range in this mode is: 16~30°C .

### 3. Special Functions

#### Defrosting Control

① Conditions for starting defrosting

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

② Conditions of finishing defrosting

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

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

④ The continuous running time of defrosting reaches [tmax. defrosting time].

#### 4. Control Logic

##### (1) Compressor Control

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

##### 1. Cooling mode

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

##### 2. Dehumidifying mode

Same as the cooling mode.

##### 3. Air-supplying mode

The compressor is switched off.

##### 4. Heating mode

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

(2) Defrosting:

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

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

##### (2) Outer Fans Control

Notes:

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

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

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

##### (3) 4-way valve control

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

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

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

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

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

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

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

(3) Defrosting control under heating mode:

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

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

##### (4) Evaporator frozen-preventing protection function

At the mode of Cooling, dehumidifying:

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

**1. Starting estimation:**

After the compressor stopped working for 180s, if  $T_{\text{inner pipe}} > [T_{\text{frozen-preventing frequency-limited temperature}}$  (the temperature of hysteresis is 2 °C), the machine is only allowed to start for operating, otherwise it should not be started, and should be stopped to treat according to the frozen-preventing protection: Clear the trouble under the mode of power turn-off / heating, and the protection times are not counted.

**2. Frequency limited**

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

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

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

**4. Reducing frequency at high speed:**

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

**5. Power turn-off:**

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

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

**(5) Overload protection function**

Overload protection function at the mode of cooling and dehumidifying

**1. Starting estimation:**

After the compressor stopped working for 180s, if  $T_{\text{outer pipe}} < [T_{\text{Cooling overload frequency-limited temperature}}]$  (the temperature of hysteresis is 2°C), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection: Clear the trouble at the mode of power turn-off / heating, and the protection times are not counted.

**2. Frequency limited**

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

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

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

**4. Reducing frequency at high speed and stop machine:**

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

**5. Power turn-off:**

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

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

**Overload protection function at the mode of heating****Starting estimation :**

After the compressor stopped working for 180s, if  $T_{\text{inner pipe}} T_{\text{heating overload frequency-limited temperature}}$  (the temperature of hysteresis is 2 °C), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the overload protection:

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

### 1. Frequency limited

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

### 2. Reducing frequency at normal speed and stopping machine:

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

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

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

### 4. Power turn-off:

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

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

### 1. Starting estimation:

After the compressor stopped working for 180s, if  $T_{\text{Discharge}} < T_{\text{Discharge limited temperature}}$  (the temperature of hysteresis is  $2^{\circ}\text{C}$ ), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the discharge temperature:

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

### 2. Frequency limited

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

### 3. Reducing frequency at normal speed and stopping machine:

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

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

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

### 5. Power turn-off:

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

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

### 7. Frequency limited

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

### 8. Reducing frequency:

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

### 9. Power turn-off:

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

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

## (6) Voltage sag protection

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

## (7) Communication fault

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

## (8) Module protection

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

## (9) Module overheating protection

### 1. Starting estimation:

After the compressor stopped working for 180s, if  $T_{\text{Module}} < [T_{\text{Module frequency limited temperature}}]$  (the temperature of hysteresis is 2), the machine is allowed to start, otherwise it should not be started, and should be stopped to treat according to the module overheating protection: The machine should be stopped or transferred to supply air, the trouble should be cleared immediately, and the protection times are not counted.

### 2. Frequency limited

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

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

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

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

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

### 5. Power turn-off:

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

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

## (10) Compressor overloads protection

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

## (11) Phase current overcurrent protection of compressor

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

### 1. Frequency limited

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

### 2. Reducing Frequency

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

### 3. Power turn-off

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

4. If the overcurrent protection of compressor phase current continuously occurs for six times, it should not be resumed automatically, and you should press the ON/OFF button to resume. During the process of running, if the running time of compressor exceeds the [ $t_{\text{Clearing Time of Compressor Phase Current Times}}$ ], the overcurrent protection is cleared to recount.

**(12) Starting-up Failure Protection for Compressor**

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

**(13) Out-of-Step Protection for Compressor**

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

**(14) Voltage Abnormity Protection for DC Bus**

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

**1.Over-High Voltage Protection for DC Bus:**

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

**2.Over-Low Voltage Protection for DC Bus:**

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

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

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

**(15)Abnormity Protection for Four-way Valve**

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

Attention: the protection shall be shielded during the testing mode and defrosting process, and it shall be cleared out the failure and its times immediately when turning off or delivering wind / cooling / dehumidifying mode conversed (the inverted mode don't clear out the failure when it can't recover to operate).

**(16) PFC Protection**

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

**(17) Failure Detection for Sensor**

1. Outdoor Ambient Sensor: detect the failure of sensor at all times.
2. Outdoor Tube Sensor: You should not detect the failure of outdoor tube sensor within 10 minutes heating operation compressor except the defrosting, and you could detect it at other time.
3. Outdoor Exhaust Sensor:
  - (a) The compressor only detect the sensor failure after it start up 3 min in normal mode;
  - (b) It should detect the exhaust sensor failure immediately in the testing mode.
4. Module Temperature Sensor:
  - (a) Short-Circuit Detection: the compressor should be detected immediately when the module temperature sensor occurs short-circuits;
  - (b) Open-Circuit Detection: the compressor should be detected on open-circuit when it runs 3min (it needn't 30s avoiding the module over-heated).
  - (c) Detect the sensor failure at all times in the testing mode.
5. Disposal for Sensor Protection
  - (1) When the short-circuit of sensor is detected within 30s, It is regarded as the temperature of sensor over-high (or infinitely high), and now according to the over-high sensor, the machine should carry out the corresponding protection to stop working, and show the corresponding temperature shutdown protection and sensor failure at the same time (for example: the compressor stops immediately when the outdoor tube sensor short-circuit, and the machine shall show the overload protection and outdoor tube sensor failure).
  - (2) When the open-circuit of sensor is detected within 30s, The protection shall be stopped and it shall show the corresponding sensor failure.

## 6. Electric Heating Function of Chassis

- (1) When  $T_{\text{outdoor amb.}} \leq 0^{\circ}\text{C}$ , the electric heating of chassis will operate;
- (2) When  $T_{\text{outdoor amb.}} > 2^{\circ}\text{C}$ , the electric heating of chassis will stop operation;
- (3) When  $0^{\circ}\text{C} < T_{\text{outdoor amb.}} \leq 2^{\circ}\text{C}$ , the electric heating of chassis will keep original status.

## 7. Electric Heating Function of Compressor

- (1) When  $T_{\text{outdoor amb.}} \leq -5^{\circ}\text{C}$ , compressor stops operation, while the electric heating of compressor starts operation;
- (2) When  $T_{\text{outdoor amb.}} > -2^{\circ}\text{C}$ , the electric heating of compressor stops operation;
- (3) When  $-5^{\circ}\text{C} < T_{\text{outdoor amb.}} \leq -2^{\circ}\text{C}$ , the electric heating of compressor will keep original status.

# Part II : Installation and Maintenance

## 7. Notes for Installation and Maintenance

### Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

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



### Warnings

#### Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire 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. 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.

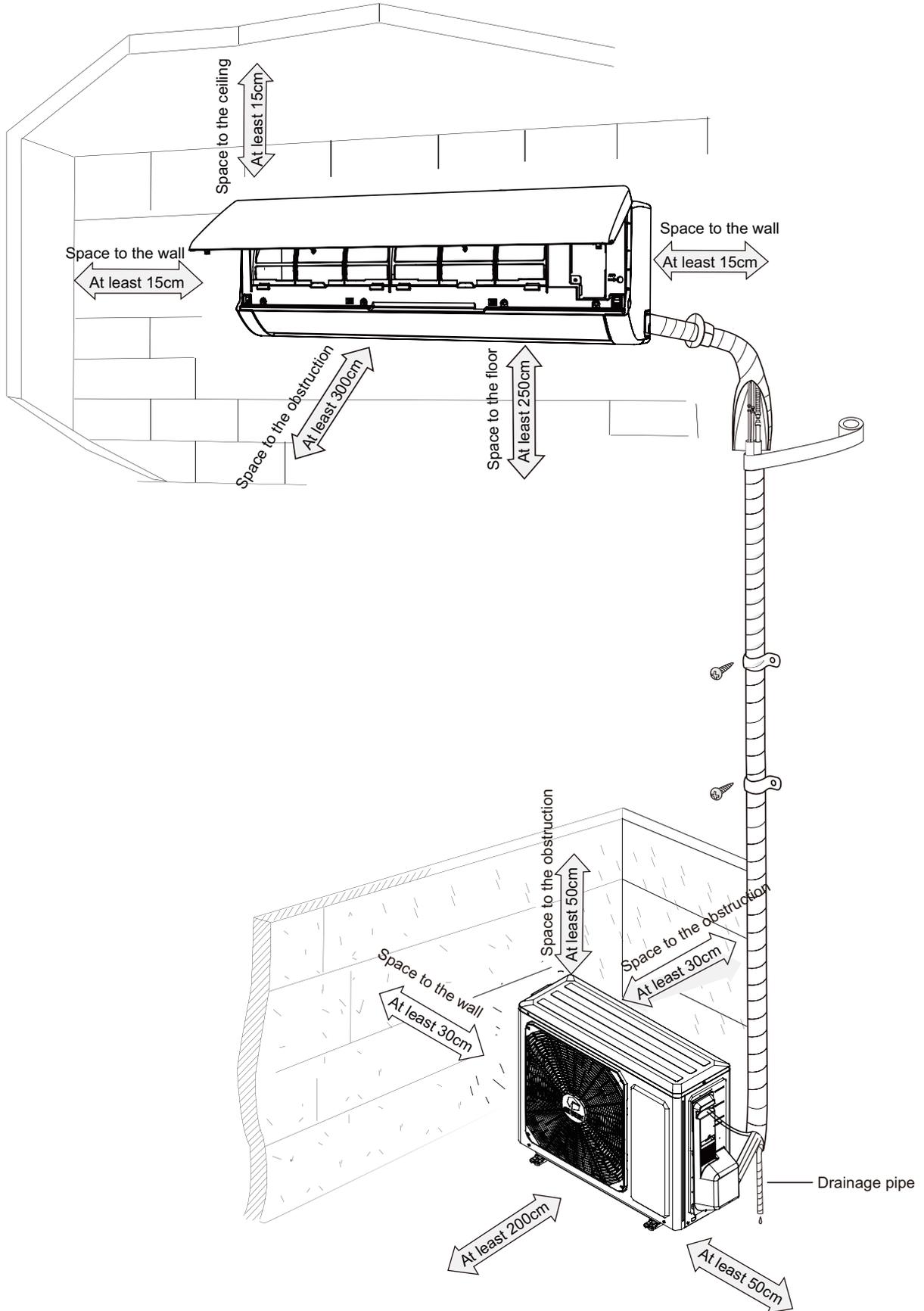
Improper installation may lead to fire hazard, explosion, electric shock or injury.

## Main Tools for Installation and Maintenance

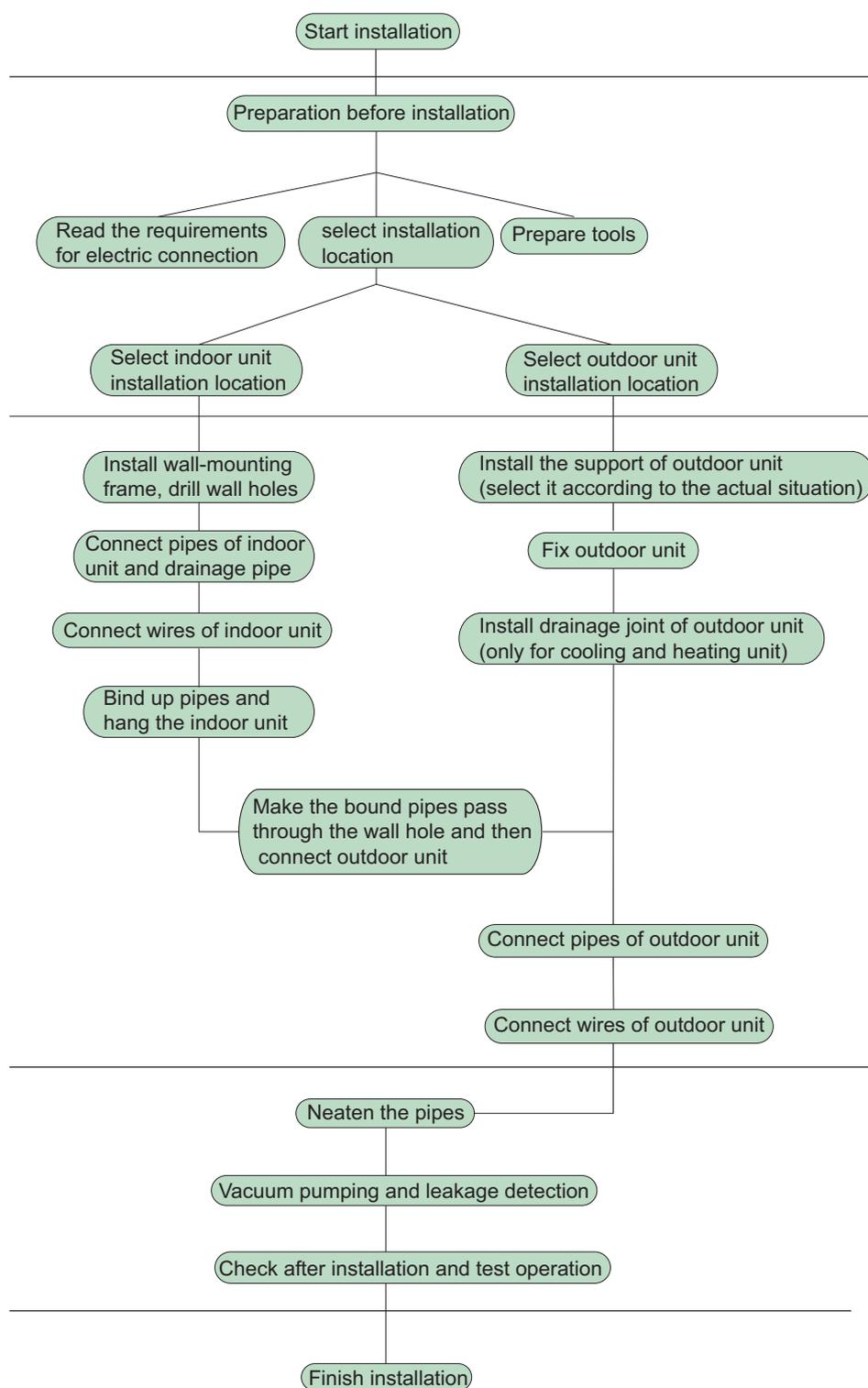
<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure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

# 8. Installation

## 8.1 Installation Dimension Diagram



## Installation procedures



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

## 8.2 Installation Parts-checking

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

**⚠ Note:**

- 1.Please contact the local agent for installation.
- 2.Dont use unqualified power cord.

## 8.3 Selection of Installation Location

### 1. Basic Requirement:

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

- (1) The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
- (2) The place with high-frequency devices (such as welding machine, medical equipment).
- (3) The place near coast area.
- (4) The place with oil or fumes in the air.
- (5) The place with sulfured gas.
- (6) Other places with special circumstances.

### 2. Indoor Unit:

- (1) There should be no obstruction near air inlet and air outlet.
- (2) Select a location where the condensation water can be dispersed easily and wont affect other people.
- (3) Select a location which is convenient to connect the outdoor unit and near the power socket.
- (4) Select a location which is out of reach for children.
- (5) The location should be able to withstand the weight of indoor unit and wont increase noise and vibration.
- (6) The appliance must be installed 2.5m above floor.
- (7) Dont install the indoor unit right above the electric appliance.
- (8) The appliance shall not be installed in the laundry.

### 3. Outdoor Unit:

- (1) Select a location where the noise and outflow air emitted by the outdoor unit will not affect neighborhood.
- (2) The location should be well ventilated and dry, in which the outdoor unit wont be exposed directly to sunlight or strong wind.
- (3) The location should be able to withstand the weight of outdoor unit.
- (4) Make sure that the installation follows the requirement of installation dimension diagram.
- (5) Select a location which is out of reach for children and far away from animals or plants.If it is unavoidable, please add fence for safety purpose.

## 8.4 Electric Connection Requirement

### 1. Safety Precaution

- (1) Must follow the electric safety regulations when installing the unit.
- (2) According to the local safety regulations, use qualified power supply circuit and air switch.
- (3) Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring may result in electric shock,fire hazard or malfunction. Please install proper power supply cables before using the air conditioner.

Air-conditioner	Air switch capacity
09/18K	10A

- (4) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- (6) Do not put through the power before finishing installation.
- (7) If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

### 2. Grounding Requirement:

- (1) The air conditioner is first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- (2) The yellow-green wire in air conditioner is grounding wire, which cant be used for other purposes.
- (3) The grounding resistance should comply with national electric safety regulations.
- (4) The appliance must be positioned so that the plug is accessible.
- (5) An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
- (6) Including an air switch with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload. (Caution: please do not use the fuse only for protect the circuit)

## 8.5 Installation of Indoor Unit

### 1. Choosing Installation location

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

### 2. Install Wall-mounting Frame

- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles

in the holes.

(3) Fix the wall-mounting frame on the wall with tapping screws (ST4.2X25TA) and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

### 3. Install Wall-mounting Frame

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

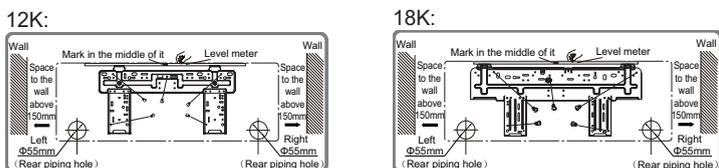


Fig.1

(2) Open a piping hole with the diameter of  $\Phi 55\text{mm}$  on the selected outlet pipe position. In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of  $5\text{-}10^\circ$ . (As show in Fig.2)

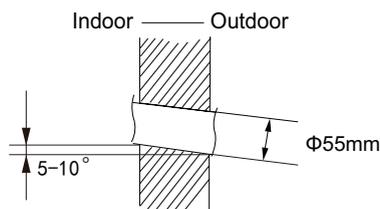


Fig.2

#### ⚠ Note:

- (1) Pay attention to dust prevention and take relevant safety measures when opening the hole.
- (2) The plastic expansion particles are not provided and should be bought locally.

### 4. Outlet Pipe

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

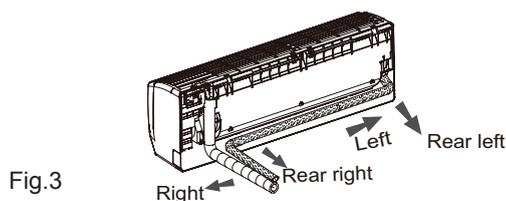


Fig.3

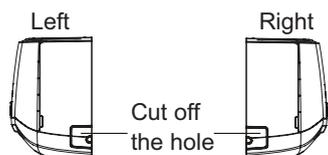


Fig.4

### 5. Connect the Pipe of Indoor Unit

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

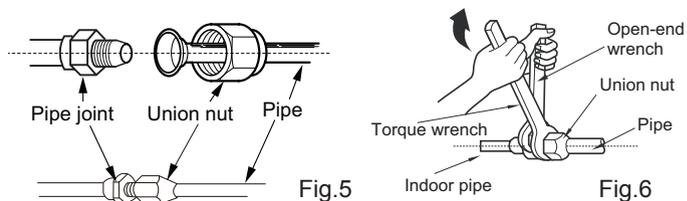


Fig.5

Fig.6

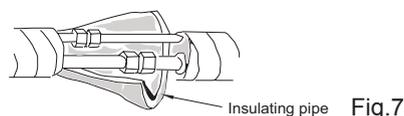


Fig.7

Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)
$\Phi 6$	15~20
$\Phi 9.52$	30~40
$\Phi 12$	45~55
$\Phi 16$	60~65
$\Phi 19$	70~75

### 6. Install Drain Hose

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

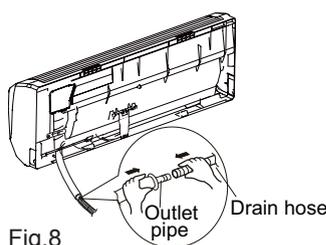


Fig.8

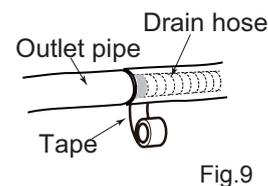


Fig.9

#### ⚠ Note:

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

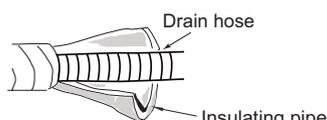


Fig.10

### 7. Connect Wire of Indoor Unit

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

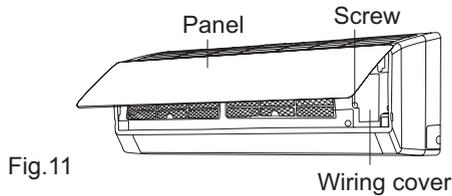


Fig.11

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

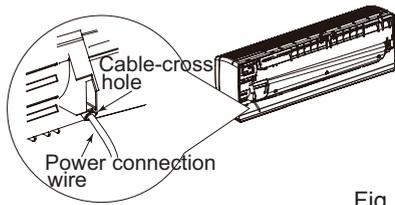
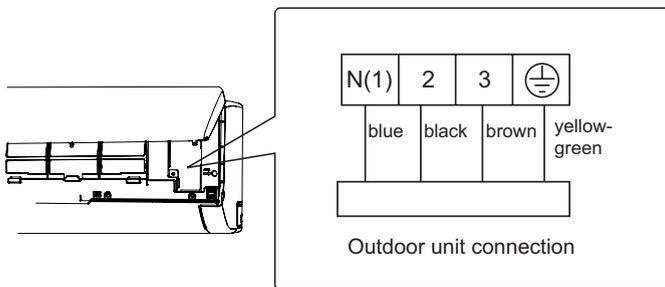


Fig.12

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



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

Fig.13

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

**⚠ Note:**

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

### 8. Bind up Pipe

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

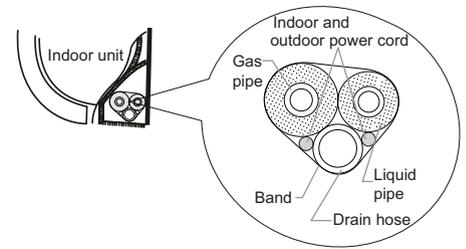


Fig.14

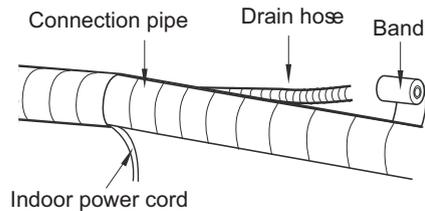


Fig.15

**⚠ Note:**

- (1) The power cord and control wire cant be crossed or winding.
- (2) The drain hose should be bound at the bottom.

### 9. Hang the Indoor Unit

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

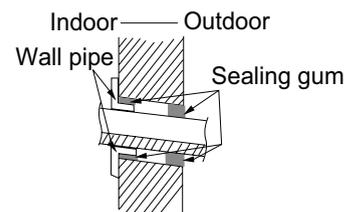


Fig.16

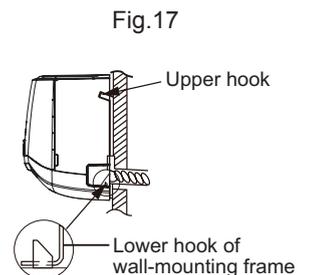


Fig.17

**⚠ Note:**

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

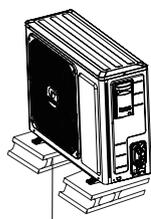
## 8.6 Installation of Outdoor Unit

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

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

**⚠ Note:**

- (1) Take sufficient protective measures when installing the outdoor unit.
- (2) Make sure the support can withstand at least four times the unit weight.
- (3) The outdoor unit should be installed at least 3cm above the floor in order to install drain joint.(As show in Fig.18)
- (4) For the unit with cooling capacity of 2300W~5000W, 6 expansion screws are needed; for the unit with cooling capacity of 6000W~8000W, 8 expansion screws are needed; for the unit with cooling capacity of 10000W~16000W, 10 expansion screws are needed.



At least 3cm above the floor  
Fig.18

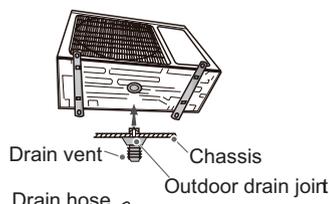


Fig.19

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

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

### 3. Fix Outdoor Unit

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

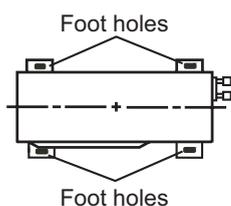


Fig.20

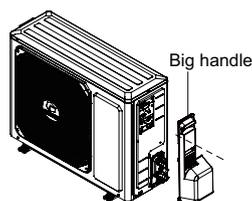


Fig.21

### 4. Connect Indoor and Outdoor Pipes

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

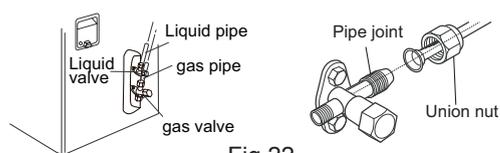


Fig.22

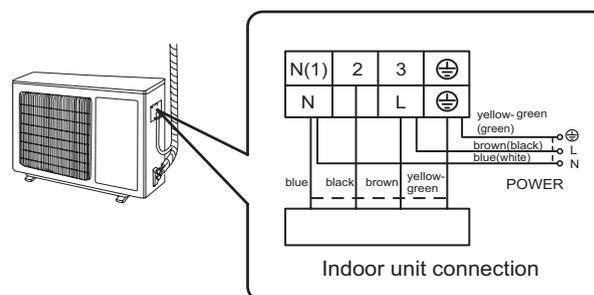
- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench .

Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)
Φ6	15~20
Φ9.52	30~40
Φ12	45~55
Φ16	60~65
Φ19	70~75

### 5. Connect Outdoor Electric Wire

- (1) Remove the wire clip; connect the power connection wire and power cord to the wiring terminal according to the color; fix them with screws.(As show in Fig.23)



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

Fig.23

- (2) Fix the power connection wire with wire clip.

**⚠ Note:**

- (1) After tightening the screw, pull the power cord slightly to check if it is firm.
- (2) Never cut the power connection wire to prolong or shorten the distance.

### 6. Neaten the Pipes

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

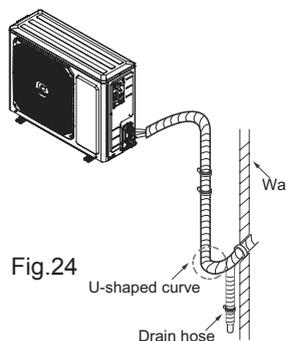


Fig.24

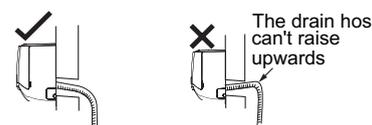


Fig.25

**⚠ Note:**

- (1) The through-wall height of drain hose shouldnt be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose cant be curved, raised and fluctuant, etc.(As show in Fig.26)

(3) The water outlet can't be placed in water in order to drain smoothly.(As show in Fig.27)

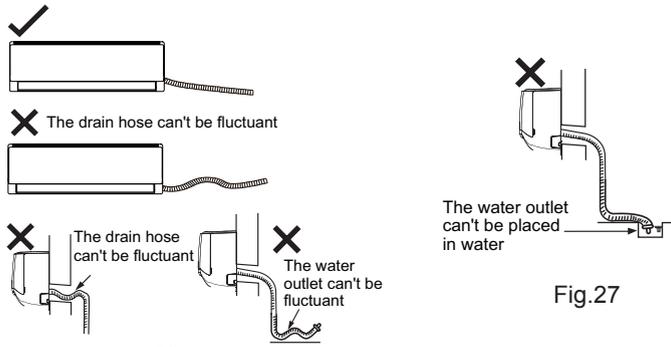


Fig.26

Fig.27

## 8.7 Vacuum Pumping and Leak Detection

### 1. Use Vacuum Pump

- (1) Remove the valve caps on the liquid valve and gas valve and the nut of refrigerant charging vent.
- (2) Connect the charging hose of piezometer to the refrigerant charging vent of gas valve and then connect the other charging hose to the vacuum pump.
- (3) Open the piezometer completely and operate for 10-15min to check if the pressure of piezometer remains in -0.1MPa.
- (4) Close the vacuum pump and maintain this status for 1-2min to check if the pressure of piezometer remains in -0.1MPa. If the pressure decreases, there may be leakage.
- (5) Remove the piezometer, open the valve core of liquid valve and gas valve completely with inner hexagon spanner.
- (6) Tighten the screw caps of valves and refrigerant charging vent. (As show in Fig.28)

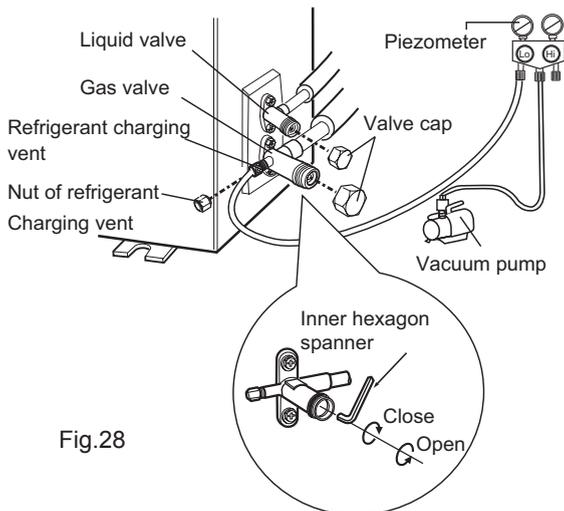


Fig.28

### 2. Leakage Detection

- (1) With leakage detector:  
Check if there is leakage with leakage detector.
- (2) With soap water:  
If leakage detector is not available, please use soap water for leakage detection. Apply soap water at the suspected position and keep the soap water for more than 3min. If there are air bubbles coming out of this position, there's a leakage.

## 8.8 Check after Installation and Test Operation

### 1. Check after Installation

Check according to the following requirement after finishing installation.

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

### 2. Test Operation

- (1) Preparation of test operation
  - The client approves the air conditioner installation.
  - Specify the important notes for air conditioner to the client.
- (2) Method of test operation
  - Put through the power, press ON/OFF button on the remote controller to start operation.
  - Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
  - If the ambient temperature is lower than 16°C, the air conditioner can't start cooling.

## 9. Maintenance

### 9.1 Error Code List

No.	Malfunction Name	Display Method of Indoor Unit		A/C Status	Possible Causes	Countermeasures	
		Display of dual-8 nixie tube	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)				
			Operation Indicator				Heat Indicator
1	High pressure protection	E1	Flash once every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Refrigerant is superabundant;	1. Reduce refrigerant volume;	
					Poor heat-exchanging (including heat exchanger is dirty and radiating environment is not good);	2. Clean the heat exchanger; improve radiating environment of unit;	
					Ambient temperature is too high;	3. Reduce load	
					Poor connection of LPP;	4. After de-energization, reinsert LPP terminal tightly;	
					Pressure switch is damaged;	5. Replace pressure switch;	
					Hardware malfunction of outdoor units main board;	6. Replace outdoor units main board;	
2	Freeze protection	E2	Flash twice every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Poor air return of indoor unit;	1. Check whether indoor units horizontal louver can close normally;	
					Rotation speed of indoor fan is abnormal;	2. Replace indoor units main board→ replace indoor fan	
					Evaporator is dirty;	3. Clean evaporator of indoor unit;	

3	High discharge temperature protection of compressor	E4	Flash 4 times every 3s		During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of overheating prevention and overload protection)	Refer to maintenance flowchart
4	Overcurrent protection	E5	Flash 5 times every 3s		During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Power voltage is unstable, big fluctuation.	1. Check whether power supply network is abnormal;
						Power voltage is too low; overload.	2. Reduce load;
						Malfunction of hardware.	3. Replace outdoor units main board AP1
5	Communication malfunction	E6	Flash 6 times every 3s		During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of communication malfunction)	Refer to maintenance flowchart
6	Overload protection	E8	Flash 8 times every 3s		During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3(diagnosis of overheating prevention and overload protection)	Refer to maintenance flowchart

7	Indoor ambient temperature sensor is open/ short- circuited	F1			The unit will stop operation as it reaches the temperature point. During cooling and drying operation, compressor and outdoor unit stop, while indoor fan operates; During heating operation, the complete unit stops operation.	<p>Connection terminal between indoor ambient temperature sensor and main board is loose or poor connection.</p> <p>Theres short circuit due to trip-over of the parts on main board;</p> <p>Indoor ambient temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor)</p> <p>Main board is damaged.</p>	Refer to maintenance flowchart
8	Indoor evaporator temperature sensor is open/ short-circuited	F2			The unit will stop operation as it reaches the temperature point. During cooling and drying operation, compressor and outdoor unit stop, while indoor fan operates; During heating operation, the complete unit stops operation.	<p>Connection terminal between indoor evaporator temperature sensor and main board is loose or poor connection.</p> <p>Theres short circuit due to trip-over of the parts on main board;</p> <p>Indoor evaporator temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor)</p> <p>Main board is damaged.</p>	Refer to maintenance flowchart

9	Blockage protection of indoor unit	H6	Flash 11 times every 3s		Indoor fan, outdoor fan, compressor and electric heating tube all stop operation; horizontal louver stops at current position.	Feedback terminal of PG motor hasnt been inserted tightly.	Refer to maintenance flowchart
						Control terminal of PG motor is not inserted tightly.	
						Fan is blocked	
						Malfunction of motor.	
						Circuit malfunction of main board.	
10	Malfunction protection of jumper cap	C5	Flash 15 times every 3s		Operation of remote controller or control panel is available, but the unit wont act.	Jumper cap hasnt been inserted on main board.	Refer to maintenance flowchart
						Jumper cap hasnt been inserted correctly and tightly.	
						Jumper cap is damaged.	
						Circuit of main board is abnormal.	
11	Indoor fan circuit malfunction by zero cross detection	U8	Flash 17 times every 3s		Operation of remote controller or control panel is available, but the unit wont act.	1. Discharging speed of capacitor is slow, which lead to wrong judgement of controller.	Refer to maintenance flowchart
						Zero-crossing detection circuit of main board is abnormal	

12	Malfunction of outdoor ambient temperature sensor	F3			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.		
13	Malfunction of outdoor condenser temperature sensor	F4			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1.T-SENSOR terminal hasnt been inserted tightly; 2. Hardware malfunction of outdoor units main board;	1. After de-energization, reinsert T-SENSOR terminal tightly; 2. Replace outdoor units main board AP1;
14	Malfunction of outdoor discharge temperature sensor	F5			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.		
15	Limit/decrease frequency due to overload	F6			All loads operates normally, while operation frequency of compressor decreases.	See 9.3(diagnosis of overheating prevention and overload protection)	Refer to maintenance flowchart
16	Decrease frequency due to overcurrent	F8			All loads operates normally, while operation frequency of compressor decreases.	Input power voltage is too low;	1. Check whether power supply network is abnormal;
						Pressure of system is too high; overload	2. Reduce load;

17	Decrease frequency due to high air discharge	F9			All loads operates normally, while operation frequency of compressor decreases.	Overload; ambient temperature is too high;	1. Reduce load;
						Refrigerant is not enough	2. Add refrigerant
						Malfunction of electronic expansion valve (EKV)	3. Replace electronic expansion valve → replace outdoor units main board AP1
18	DC busbar voltage is too high	PH			During cooling and drying operation, compressor stops while indoor fan operates. During heating operation, all loads stop.	1. Measure the voltage at position L and N on wiring board (XT). If the voltage is higher than 265VAC, wait until the power voltage is decreased within normal range and then turn on the unit;	1. Check whether power supply network is abnormal;
						2. If AC input is normal, measure the voltage between A and B ends of electrolytic capacitor (fig. 30 in 9.1) on control board (AP1) after turning on the unit. If its normal, the circuit has malfunction. Please replace the main board of outdoor unit.	2. Replace outdoor units main board AP1;
19	Detection malfunction of system current	U5			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Malfunction of circuit on outdoor units main board AP1. Replace outdoor units main board AP1.	1. Replace outdoor units main board AP1

20	Overcurrent protection of phase current	P5			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of IPM protection, desynchronizing malfunction, overcurrent protection of phase current of compressor)	Refer to maintenance flowchart
21	Defrosting			Flash once every 3s		Normal function	
22	Overload protection of compressor	H3		Flash 3 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1:Wiring terminal OVC-COMP is loose (Under normal circumstances, the resistance between both ends of this terminal should be less than 1Ω.) 2: See 9.3 (diagnosis of overload and discharge protection)	1. After de-energization, insert OVC-COMP terminal tightly; 2. Refer to maintenance flowchart
23	System is abnormal	H4		Flash 4 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3(diagnosis of overheating prevention and overload protection)	Refer to maintenance flowchart
24	IPM protection	H5		Flash 5 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of IPM protection, desynchronizing malfunction, overcurrent protection of phase current of compressor)	Refer to maintenance flowchart

25	PFC protection	HC		Flash 6 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of PFC protection)	Refer to maintenance flowchart
26	Desynchronizing of compressor	H7		Flash 7 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of IPM protection, desynchronizing malfunction, overcurrent protection of phase current of compressor)	Refer to maintenance flowchart
27		H0		Flash 10 times every 3s		See 9.3(diagnosis of overheating prevention and overload protection)	Refer to maintenance flowchart
28	Failure startup	Lc		Flash 11 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of failure startup)	Refer to maintenance flowchart
29	Circuit malfunction of phase current circuit detection for compressor	U1		Flash 13 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Hardware malfunction of outdoor units main board;	1. Replace outdoor units main board AP1

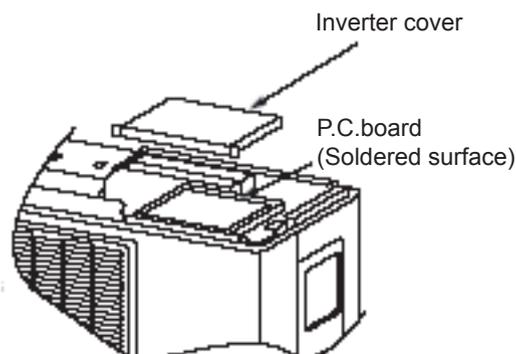
30	malfunction of read EEPROM	EE		Flash 15 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Wrong match between indoor unit and outdoor unit;	1. Check whether the capacity of indoor unit and outdoor unit is matching with each other;
						Hardware malfunction of indoor units main board;	2. Replace indoor units main board AP2;
						Hardware malfunction of outdoor units main board;	3. Replace outdoor units main board AP1;
31	Charging malfunction of capacitor	PU		Flash 17 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	See 9.3 (diagnosis of charging malfunction for capacitor)	Refer to maintenance flowchart
32	Circuit malfunction of module temperature sensor	P7		Flash 18 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Hardware malfunction of outdoor units main board;	1. Replace outdoor units main board AP1;
33	Module temperature protection	P8		Flash 19 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Radiating grease on IPM module of outdoor units main board is not enough; screws haven't been fixed tightly;	1. After the system is de-energized for 20min and discharge, check whether radiating grease on IPM Module of outdoor control board AP1 is enough and whether the radiating is fixed tightly;
						Hardware malfunction of outdoor units main board;	2. Replace outdoor units main board AP1;

34	Drop malfunction of DC busbar voltage	U3		Flash 20 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Power voltage is unstable, big fluctuation.	1. Check whether power supply network is abnormal;
35	Low voltage protection of DC bus bar	PL		Flash 21 times every 3s	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	The voltage at positions L and N on wiring board (XT) is lower than 150 VAC	1. Check whether power supply network is abnormal;
						Hardware malfunction of outdoor units main board;	2. Replace outdoor units main board AP1;
36	Limit/decrease frequency due to module temperature protection	EU			All loads operates normally, while operation frequency of compressor decreases.	Radiating grease on IPM module of outdoor units main board is not enough; screws haven't been fixed tightly;	1. After the system is de-energized for 20min and discharge, check whether radiating grease on IPM Module of outdoor control board AP1 is enough and whether the radiating is fixed tightly;
						Hardware malfunction of outdoor units main board;	2. Replace outdoor units main board AP1;
37	4-way valve is abnormal	U7			This malfunction occurs under heating operation: all loads stop.	Power voltage is lower than AC175V	
						Wiring terminal 4V is loose or broken	2. After de-energization, insert OVC-COMP tightly or replace wiring
						Hardware malfunction of outdoor units main board;	3. Replace outdoor units main board AP1;

38	Zero-crossing malfunction of outdoor unit	U9			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Hardware malfunction of outdoor units main board;	1. Replace outdoor units main board AP1;
39	Limit/decrease frequency due to freeze protection	FH			All loads operates normally, while operation frequency of compressor decreases.	Poor air return of indoor unit or speed of fan is too low	1. Check whether indoor units horizontal louver can close normally → replace indoor units main board → replace indoor units motor;

●Discharging method

(1) remove the inverter cover(Outdoor Unit)



(2)As shown below,connect the discharge resistance(approx.100Ω20W)or plug of the sold ering iron to voltage between + - terminals of the electrolytic capacitor on PC Board for 30s, and then peformedischarging.

NOTE:

A large-capacity electrolytic capacitor is used in the outdoor unit controller(inverter).Therefore,if the power supply is turned off,charge(charging voltage DC280V to 380V)remains and disc harging takes a lot of time.. After turning off the power source,if touching the charging section before discharging, an electrical shock may be caused. Discharge the electrol ytic capacitor completely by using soldering iron,etc.

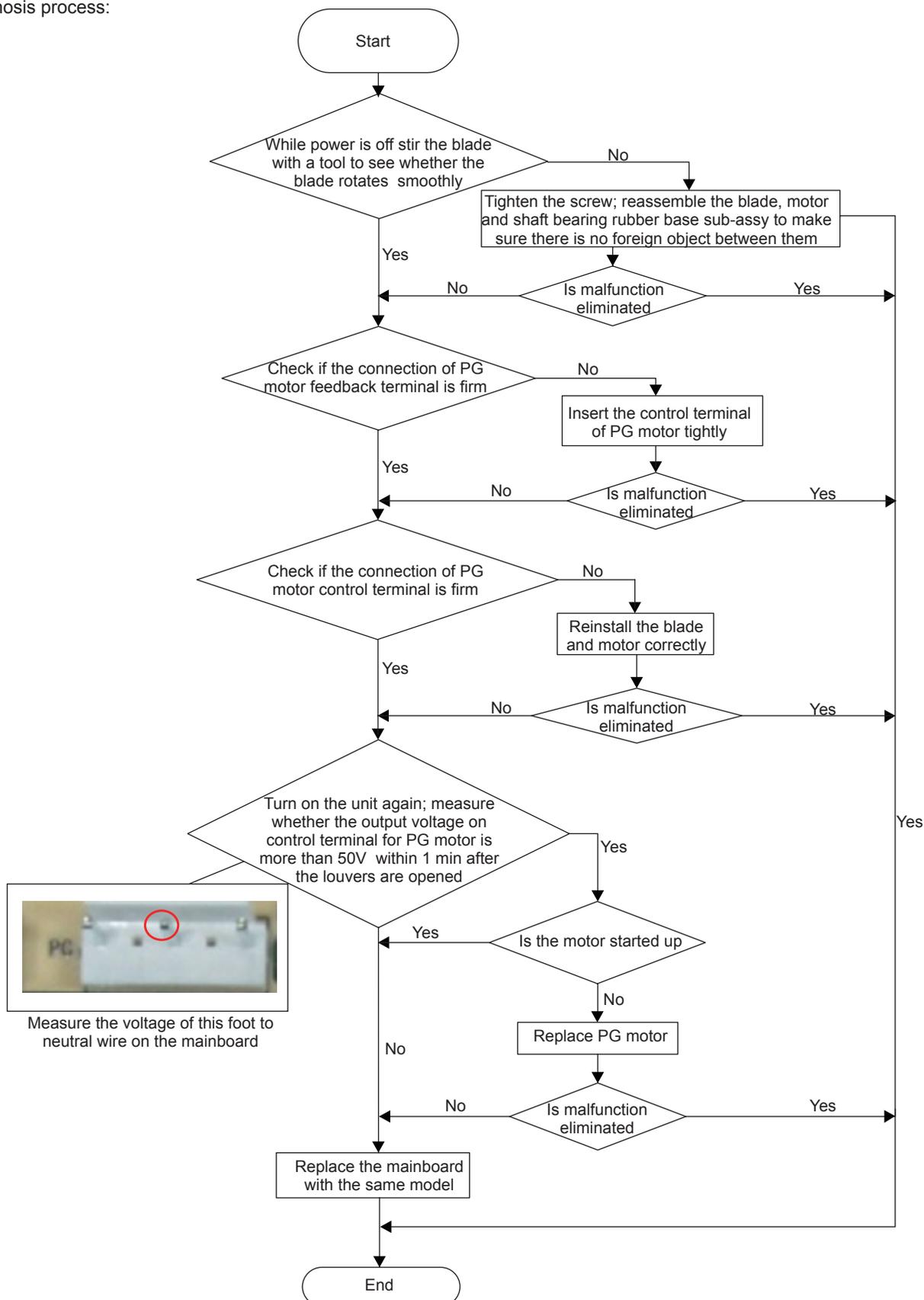


## 2. Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

- Is the control terminal of PG motor connected tightly?
- Is the feedback interface of PG motor connected tightly?
- The fan motor cant operate ?
- The motor is broken?
- Detectioncircuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



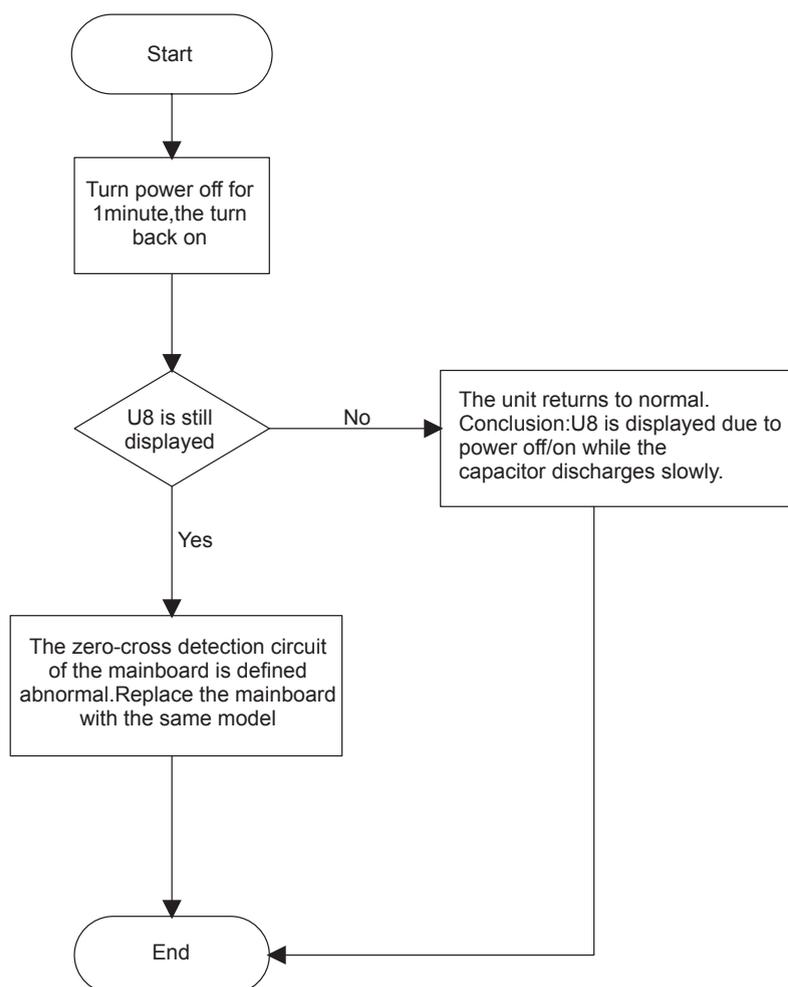


#### 4. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8

Main detection points:

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

Malfunction diagnosis process:



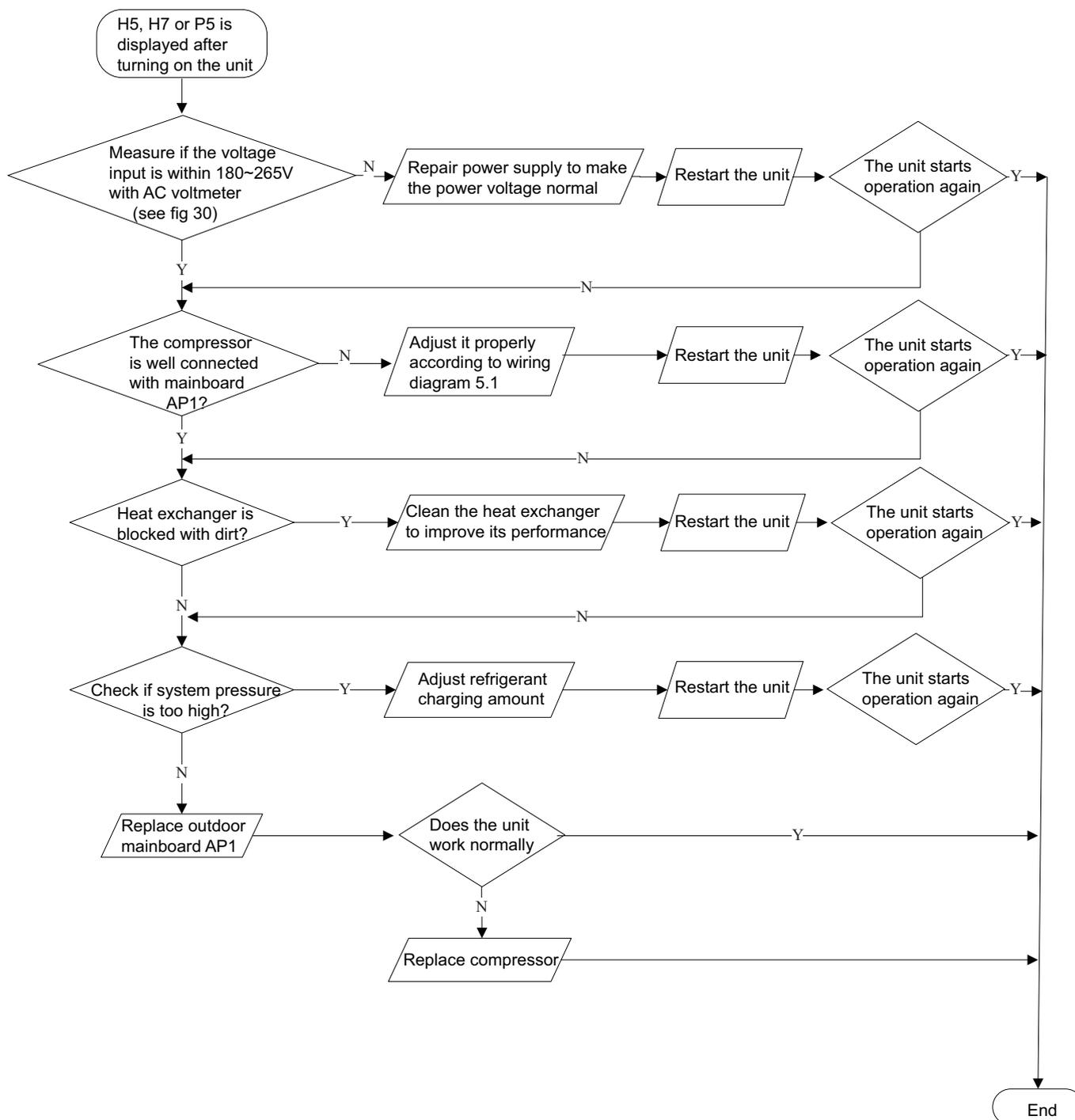


**2. IPM protection(H5), desynchronizing malfunction(H7), overcurrent of compressor phase current (P5) (AP1 below means control board of outdoor unit)**

Main detection points:

- Is voltage input within the normal range
- If the control board AP1 is well connected with compressor COMP? If they are loosened? If the connection sequence is correct?
- Heat exchange of unit is not good (heat exchanger is dirty and unit radiating environment is bad);
- If the system pressure is too high?
- If the refrigerant charging amount is appropriate?
- If coil resistance of compressor is normal? Is compressor coil insulating to copper pipe well?
- If the work load of unit is heavy? If radiating of unit is good?

Malfunction diagnosis process:



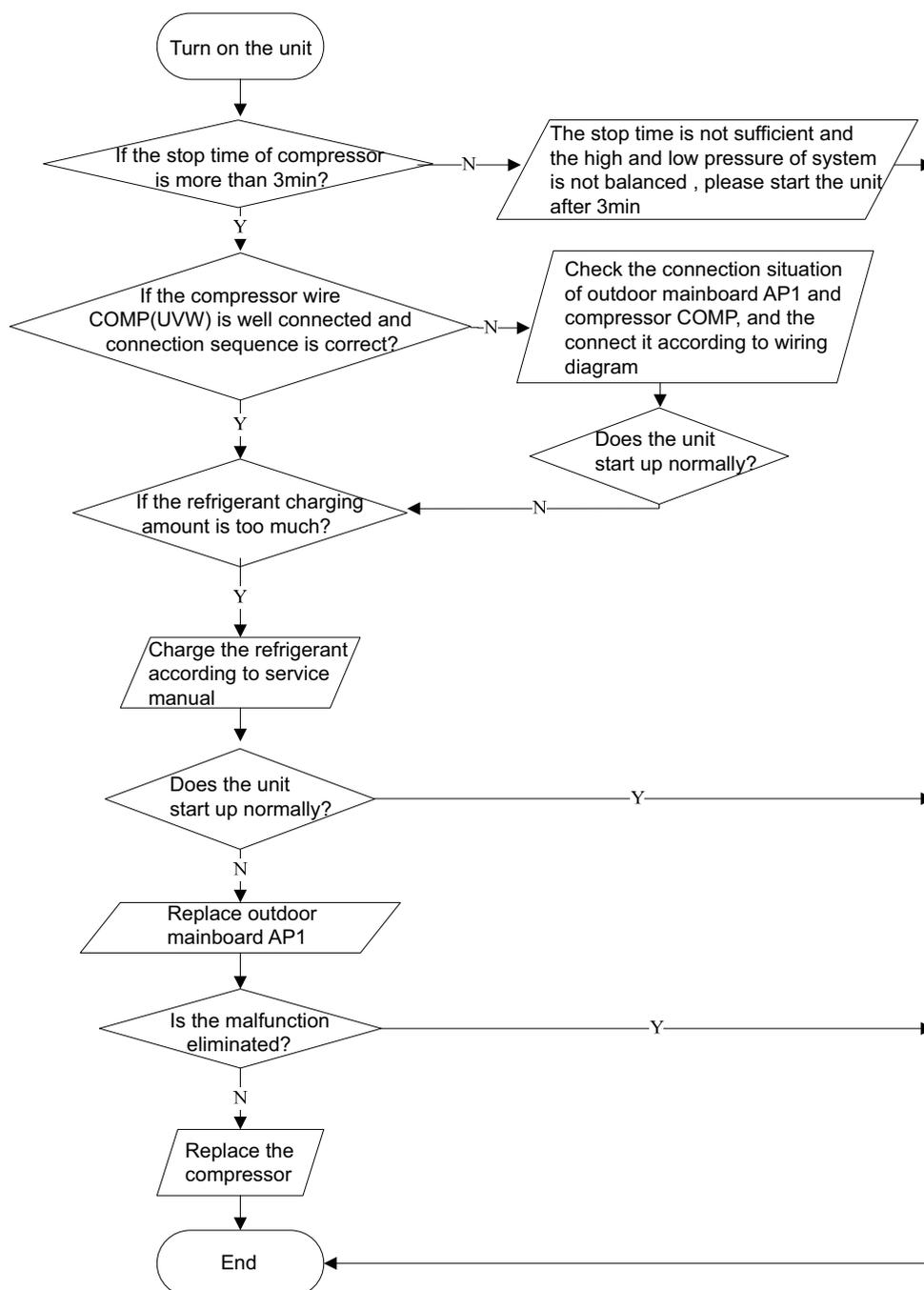


#### 4. Start-up failure (LC) (AP1 below means control board of outdoor unit)

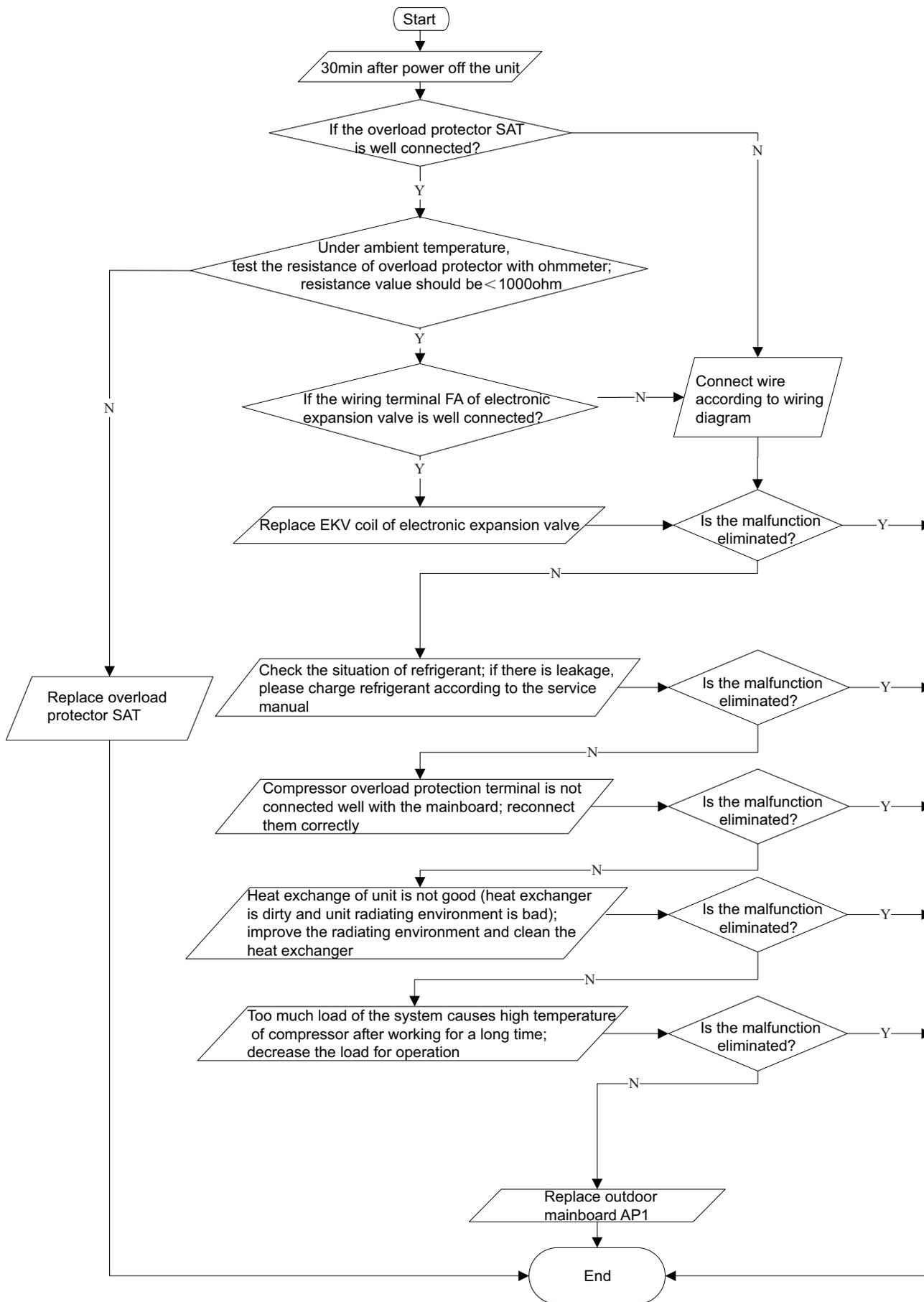
Main detection points:

- If the compressor wiring is correct?
- If the stop time of compressor is sufficient?
- If the compressor is damaged?
- If the refrigerant charging amount is too much?

Malfunction diagnosis process:







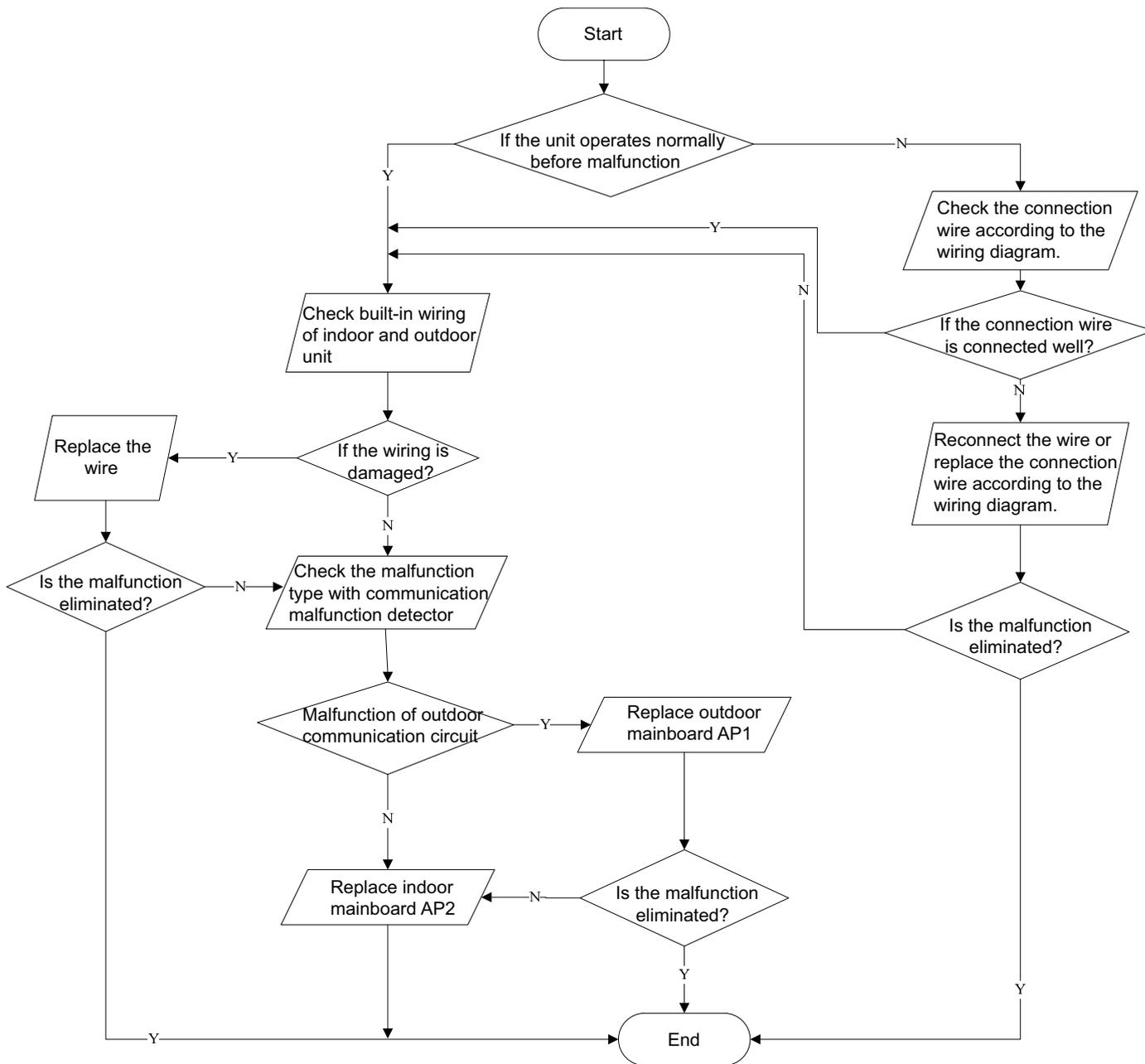


7. Communication malfunction

Main detection points:

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

Malfunction diagnosis process:



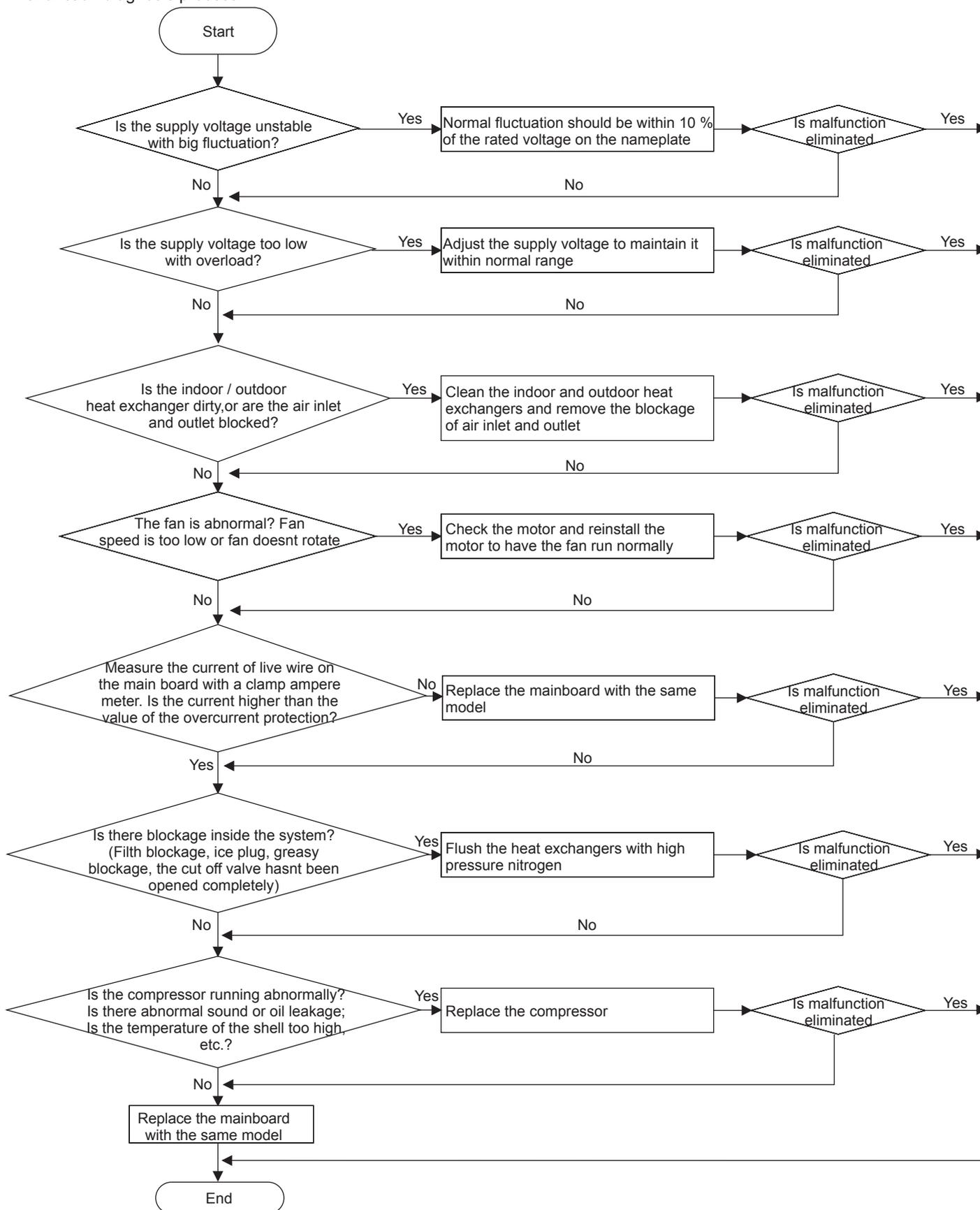


### 9. Malfunction of Overcurrent Protection E5

Main detection points:

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

Malfunction diagnosis process:



## 9.3 Troubleshooting for Normal Malfunction

### 1. Air Conditioner Cant be Started Up

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

### 2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see its blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit pressure is much lower than regulated range. If refrigerant isnt leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver cant swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor cant operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor cant operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor cant operate	Refer to point 5 of maintenance method for details

### 3. Horizontal Louver Cant Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor cant operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver cant operate	Replace the main board with the same model

**4. Air Conditioner is Leaking**

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

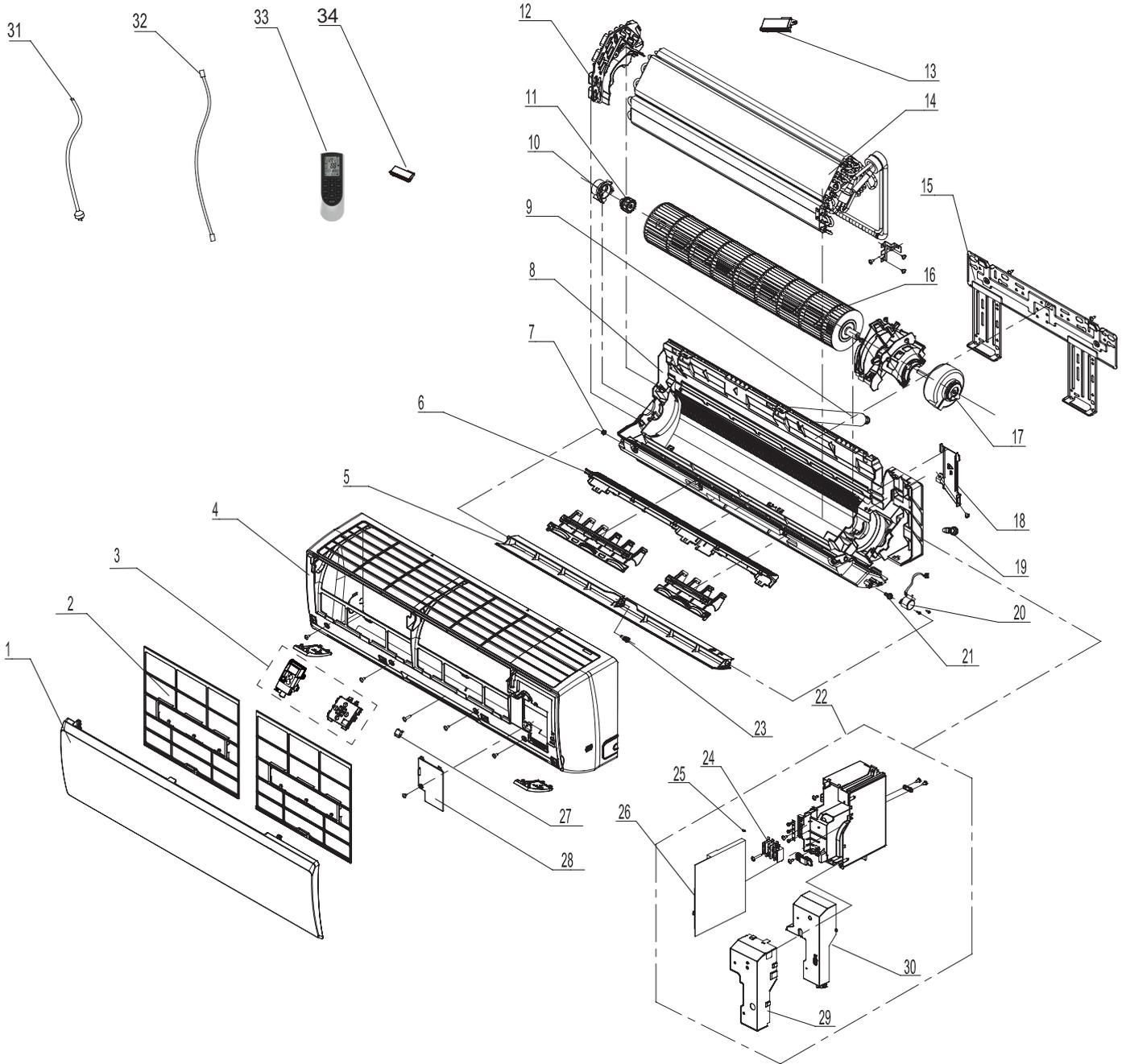
**5. Abnormal Sound and Vibration**

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

# 10. Exploded View and Parts List

## 10.1 Indoor Unit

GWH12QB-K3DNA6D/I GWH12QB-K3DNC4D/I GWH12QB-K3DNE2D/I GWH12QB-K3DNA5D/I



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

No.	Description	Part Code		Qty
		GWH12QB-K3DNA6D/I		
		Product Code		
		CB427N04702	CB427N04703	
1	Front Panel	2002269601S	2002269601S	1
2	Filter Sub-Assy	11122219	11122219	2
3	Display Board	30565265	30565265	1
4	Front Case Assy	2002273001	2002273001	1
5	Guide Louver	1051276301	1051276301	1
6	Helicoid Tongue	26112508	26112508	1
7	Left Axile Bush	10512037	10512037	1
8	Rear Case assy	20162010	20162010	1
9	Drainage Hose	0523001408	0523001408	1
10	Ring of Bearing	26152022	26152022	1
11	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
12	Evaporator Supper 2	24212180	24212180	1
13	Cold Plasma Generator	1114001603	/	1
14	Evaporator Assy	0100200004406	0100200004407	1
15	Wall Mounting Frame	01252043	01252043	1
16	Cross Flow Fan	10352059	10352059	1
17	Fan Motor	150120874	150120874	1
18	Connecting pipe clamp	2611216401	2611216401	1
19	Rubber Plug (Water Tray)	76712012	76712012	1
20	Stepping Motor	1521212901	1521212901	1
21	Crank	73012005	73012005	1
22	Electric Box Assy	100002000251	100002000797	1
23	Axile Bush	10542036	10542036	1
24	Terminal Board	42011233	42011233	1
25	Jumper	4202021911	4202021911	1
26	Main Board	30145096	30145095	1
27	Screw Cover	2425203001	2425203001	1
28	Electric Box Cover Sub-Assy	0140206501	0140206501	1
29	Shield Cover of Electric Box Cover	01592150	01592150	1
30	Electric Box Cover	20112207	20112207	1
31	Connecting Cable	/	/	/
32	Connecting Cable	4002052317	4002052317	0
33	Remote Controller	30510474	30510474	1
34	Detecting plate(WIFI )	30110154	30110154	1

Above data is subject to change without notice.

No.	Description	Part Code		Qty
		GWH12QB-K3DNE2D/I	GWH12QB-K3DNA5D/I	
		Product Code		
1	Front Panel	200003000011S	2002267001	1
2	Filter Sub-Assy	11122219	11122219	2
3	Display Board	3056504301	30565260	1
4	Front Case Assy	00000200040	2002249501	1
5	Guide Louver	1051276301	1051272202	1
6	Helicoid Tongue	26112508	26112508	1
7	Left Axile Bush	10512037	10512037	1
8	Rear Case assy	20162010	20162010	1
9	Drainage Hose	0523001408	0523001408	1
10	Ring of Bearing	26152022	26152022	1
11	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
12	Evaporator Supper 2	24212180	24212180	1
13	Cold Plasma Generator	/	1114001603	/
14	Evaporator Assy	0100200004407	0100200004406	1
15	Wall Mounting Frame	01252043	01252043	1
16	Cross Flow Fan	10352059	10352059	1
17	Fan Motor	150120874	150120874	1
18	Connecting pipe clamp	2611216401	2611216401	1
19	Rubber Plug (Water Tray)	76712012	76712012	1
20	Stepping Motor	1521212901	1521212901	1
21	Crank	73012005	73012005	1
22	Electric Box Assy	10000205031	10000205063	1
23	Axile Bush	10542036	10542036	1
24	Terminal Board	42011233	42011233	1
25	Jumper	4202021911	4202021903	1
26	Main Board	30145095	30145096	1
27	Screw Cover	2425203001	2425203001	1
28	Electric Box Cover Sub-Assy	0140206501	0140206501	1
29	Shield Cover of Electric Box Cover	01592150	01592150	1
30	Electric Box Cover	20112207	20112207	1
31	Connecting Cable	/	/	/
32	Connecting Cable	4002052317	4002052317	0
33	Remote Controller	30510474	30510474	1
34	Detecting plate(WIFI )	30110154	30110154	1

Above data is subject to change without notice.

No.	Description	Part Code	Qty
		GWH12QB-K3DNC4D/I	
Product Code		CB444N01502	
1	Front Panel	20000300105S	1
2	Filter Sub-Assy	11122219	2
3	Display Board	30565260	1
4	Front Case Assy	00000200040	1
5	Guide Louver	1051276301	1
6	Helicoid Tongue	26112508	1
7	Left Axile Bush	10512037	1
8	Rear Case assy	20162010	1
9	Drainage Hose	0523001408	1
10	Ring of Bearing	26152022	1
11	O-Gasket sub-assy of Bearing	7651205102	1
12	Evaporator Supper 2	24212180	1
13	Cold Plasma Generator	/	1
14	Evaporator Assy	0100200004407	1
15	Wall Mounting Frame	01252043	1
16	Cross Flow Fan	10352059	1
17	Fan Motor	150120874	1
18	Connecting pipe clamp	2611216401	1
19	Rubber Plug (Water Tray)	76712012	1
20	Stepping Motor	1521212901	1
21	Crank	73012005	1
22	Electric Box Assy	10000204999	1
23	Axile Bush	10542036	1
24	Terminal Board	42011233	1
25	Jumper	4202021911	1
26	Main Board	30145095	1
27	Screw Cover	2425203001	1
28	Electric Box Cover Sub-Assy	0140206501	1
29	Shield Cover of Electric Box Cover	01592150	1
30	Electric Box Cover	20112207	1
31	Connecting Cable	/	/
32	Connecting Cable	4002052317	0
33	Remote Controller	30510474	1
34	Detecting plate(WIFI )	30110154	1

Above data is subject to change without notice.



No.	Description	Part Code		Qty
		GWH18QD-K3DNA6E/I		
		Product Code		
		CB427N06400	CB427N06401	
1	Front Panel	2002269501S	2002269501S	1
2	Display Board	30565264	30565264	1
3	Filter Sub-Assy	11122089	11122089	2
4	Decorative Board	2019267001	2019267001	1
5	Front Case	2002248401	2002248401	1
6	Guide Louver	1051276501	1051276501	1
7	Axile Bush	10542036	10542036	2
8	Air Louver(Manual)	10512732	10512732	3
9	Helicoid tongue	26112512	26112512	1
10	Left Axile Bush	10512037	10512037	1
11	Rear Case assy	22202571	22202571	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
14	Ring of Bearing	26152025	26152025	1
15	Evaporator Support	24212177	24212177	1
16	Evaporator Assy	01100100020	01100100020	1
17	Cross Flow Fan	10352060	10352060	1
18	Fan Motor	1501214502	1501214502	1
19	Motor Press Plate	26112511	26112511	1
20	Wall Mounting Frame	01362026	01362026	1
21	Connecting pipe clamp	2611218801	2611218801	1
22	Crank	73012005	73012005	1
23	Stepping Motor	1521240212	1521240212	1
24	Drainage hose	05230014	05230014	1
25	Electric Box Assy	10000204674	10000200802	1
26	Lower Shield of Electric Box	01592139	01592139	1
27	Electric Box	20112211	20112211	1
28	Jumper	4202021921	4202021921	1
29	Main Board	30145099	30145098	1
30	Shield Cover of Electric Box	01592139	01592139	1
31	Electric Box Cover	20112209	20112209	1
32	Terminal Board	42011233	42011233	1
33	Decorative Board	2019267001	2019267001	1
34	Screw Cover	2425201726	2425201726	3
35	Electric Box Cover2	20112210	20112210	1
36	Connecting Cable	4002052317	4002052317	0
37	Remote Controller	30510474	30510474	1
38	Cold Plasma Generator	1114001602	/	1
39	Detecting plate(WIFI )	30110144	30110144	1

Above data is subject to change without notice.

No.	Description	Part Code		Qty
		GWH18QD-K3DNC4E/I	GWH18QD-K3DNE2E/I	
	Product Code	CB444N02900	CB462N00300	
1	Front Panel	20000300106S	200003000021S	1
2	Display Board	30565260	3056504301	1
3	Filter Sub-Assy	11122089	11122089	2
4	Decorative Board	00000200042	00000200042	1
5	Front Case	2002248401	2002248401	1
6	Guide Louver	1051276501	1051276501	1
7	Axile Bush	10542036	10542036	2
8	Air Louver(Manual)	10512732	10512732	3
9	Helicoid tongue	26112512	26112512	1
10	Left Axile Bush	10512037	10512037	1
11	Rear Case assy	22202571	22202571	1
12	Rubber Plug (Water Tray)	76712012	76712012	1
13	O-Gasket sub-assy of Bearing	7651205102	7651205102	1
14	Ring of Bearing	26152025	26152025	1
15	Evaporator Support	24212177	24212177	1
16	Evaporator Assy	01100100020	01100100020	1
17	Cross Flow Fan	10352060	10352060	1
18	Fan Motor	1501214502	1501214502	1
19	Motor Press Plate	26112511	26112511	1
20	Wall Mounting Frame	01362026	01362026	1
21	Connecting pipe clamp	2611218801	2611218801	1
22	Crank	73012005	73012005	1
23	Stepping Motor	1521240212	1521240212	1
24	Drainage hose	05230014	05230014	1
25	Electric Box Assy	10000205013	10000205056	1
26	Lower Shield of Electric Box	01592139	01592139	1
27	Electric Box	20112211	20112211	1
28	Jumper	4202021921	4202021921	1
29	Main Board	30145098	30145098	1
30	Shield Cover of Electric Box	01592139	01592176	1
31	Electric Box Cover	20112209	20112209	1
32	Terminal Board	42011233	42011233	1
33	Decorative Board	2425201726	2425201726	1
34	Screw Cover	2425201726	2425201726	3
35	Electric Box Cover2	20112210	20112210	1
36	Connecting Cable	4002052317	4002052317	0
37	Remote Controller	30510474	30510474	1
38	Cold Plasma Generator	/	/	/
39	Detecting plate(WIFI )	30110144	30110144	1

Above data is subject to change without notice.

No.	Description	Part Code	Qty
		GWH18QD-K3DNA5E/I	
		Product Code	
		CB425N07100	
1	Front Panel	2002266901S01	1
2	Display Board	30565260	1
3	Filter Sub-Assy	11122089	2
4	Decorative Board	00000200023	1
5	Front Case	2002248401	1
6	Guide Louver	1051273402	1
7	Axile Bush	10542036	2
8	Air Louver(Manual)	10512732	3
9	Helicoid tongue	26112512	1
10	Left Axile Bush	10512037	1
11	Rear Case assy	22202571	1
12	Rubber Plug (Water Tray)	76712012	1
13	O-Gasket sub-assy of Bearing	7651205102	1
14	Ring of Bearing	26152025	1
15	Evaporator Support	24212177	1
16	Evaporator Assy	01100100020	1
17	Cross Flow Fan	10352060	1
18	Fan Motor	1501214502	1
19	Motor Press Plate	26112511	1
20	Wall Mounting Frame	01362026	1
21	Connecting pipe clamp	2611218801	1
22	Crank	73012005	1
23	Stepping Motor	1521240212	1
24	Drainage hose	05230014	1
25	Electric Box Assy	10000204564	1
26	Lower Shield of Electric Box	01592139	1
27	Electric Box	20112211	1
28	Jumper	4202021912	1
29	Main Board	30145099	1
30	Shield Cover of Electric Box	01592139	1
31	Electric Box Cover	20112209	1
32	Terminal Board	42011233	1
33	Decorative Board	2425201726	1
34	Screw Cover	2425201726	3
35	Electric Box Cover2	20112210	1
36	Connecting Cable	4002052317	0
37	Remote Controller	30510474	1
38	Cold Plasma Generator	1114001602	1
39	Detecting plate(WIFI )	30110144	1

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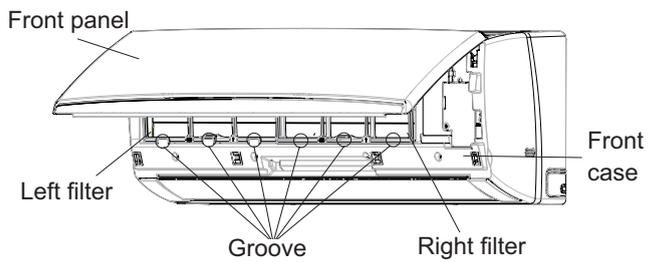
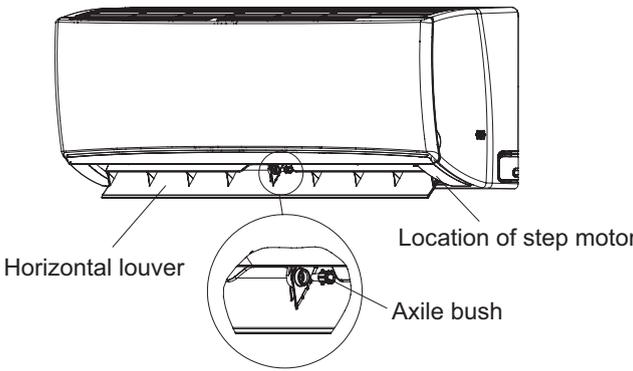
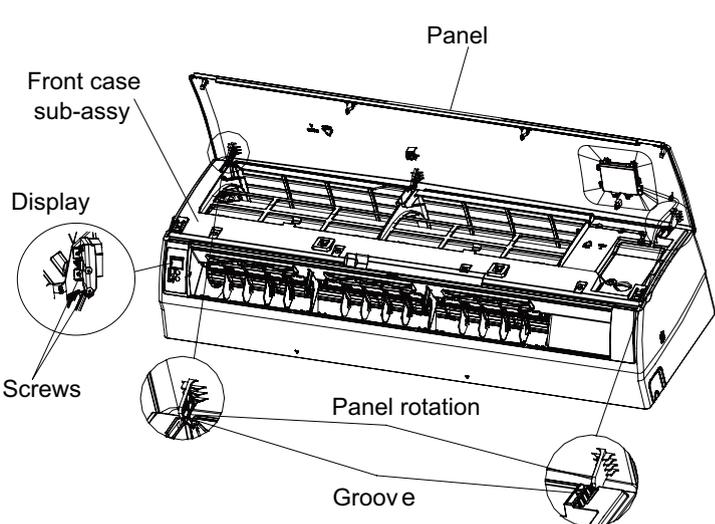
No.	Description	Part Code		Qty
		GWH12QB-K3DNA6D/O	GWH18QD-K3DNA6E/O	
		Product Code	Product Code	
1	Left Side Plate	01303200P	01303200P	1
2	Fan Motor	15013085	15013085	1
3	Motor Support	01703136	01703136	1
4	Condenser Assy	01100200658	011002000015	1
5	Top Cover Sub-Assy	01253081	01253081	1
6	Rear Grill	01475014	01475014	1
7	Clapboard Sub-Assy	01233180	01233180	1
8	Compressor and Fittings	00103364	00103388	1
9	Discharge Tube	03500800859	035008000191	1
10	Compressor Gasket	/	/	/
11	Inhalation Tube Sub-assy	03001000432	03001000432	1
12	Big Handle	2623343106	2623343106	1
13	Cut off Valve	07130239	07130239	1
14	Cut off Valve	07130239	07130239	1
15	Valve Support	0171314201P	0171314201P	1
16	Front Grill	22413047	22413047	1
17	Cabinet	01433033P	01433033P	1
18	Axial Flow Fan	10333011	10333011	1
19	Chassis Sub-assy	01700000091P	01700000086P	1
20	Electric Box Assy	100002000323	100002000019	1
21	Electric Box	20113032	20113032	1
22	Main Board	30138001122	30138001137	1
23	Reactor	43130184	43130184	1
24	Wire Clamp	71010103	71010103	1
25	Terminal Board	42010313	42010313	1

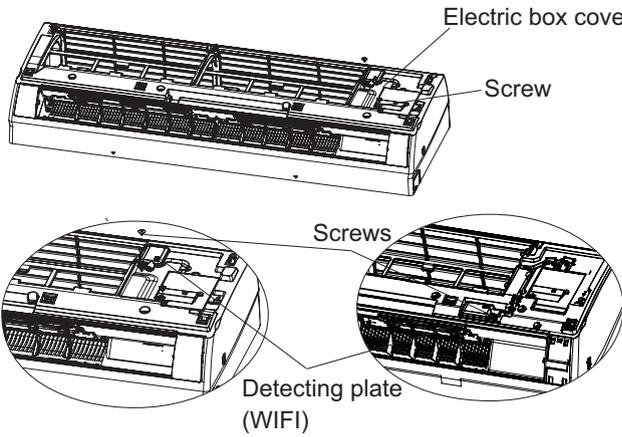
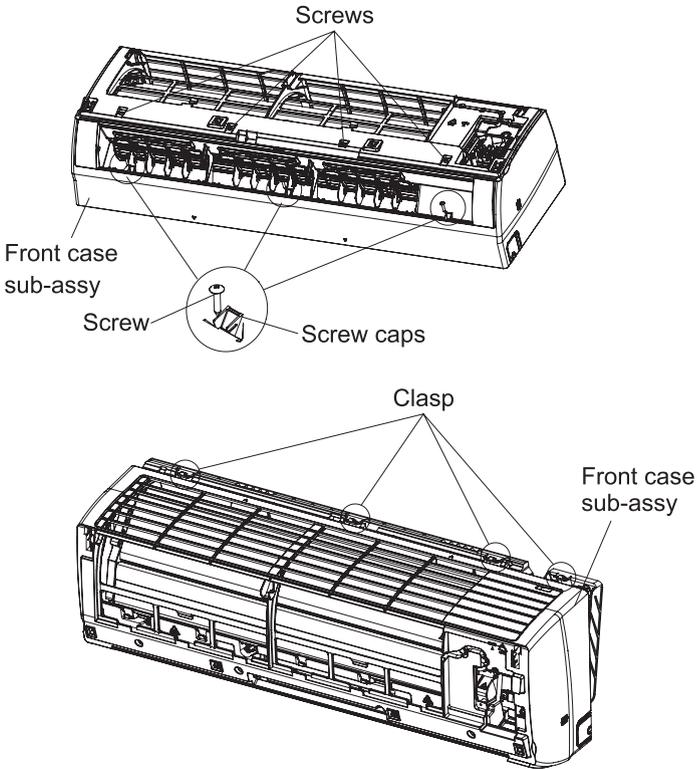
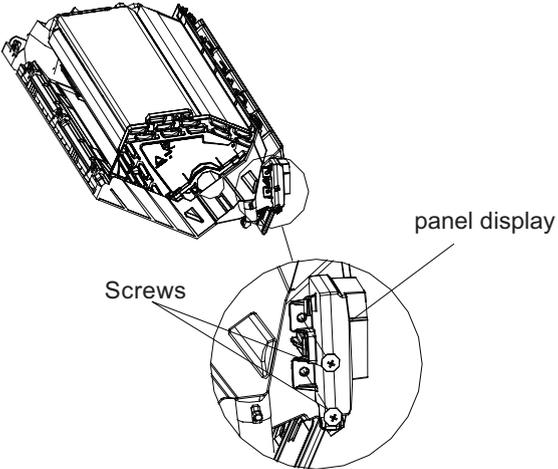
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# 11. Removal Procedure

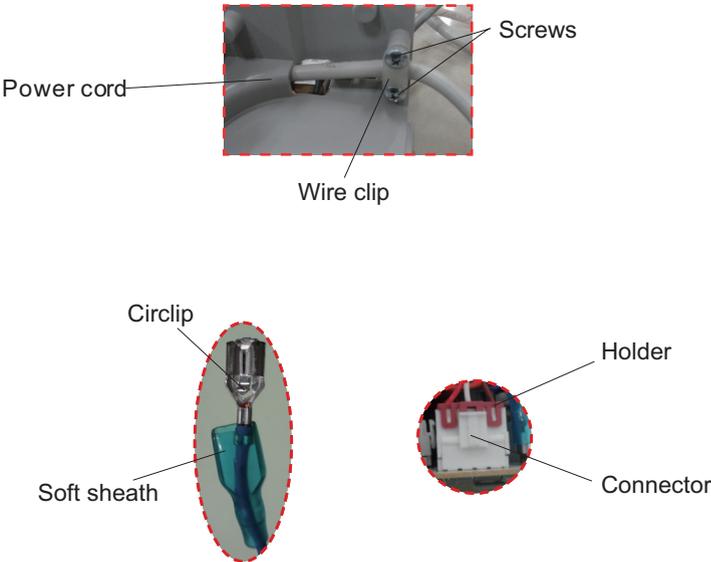
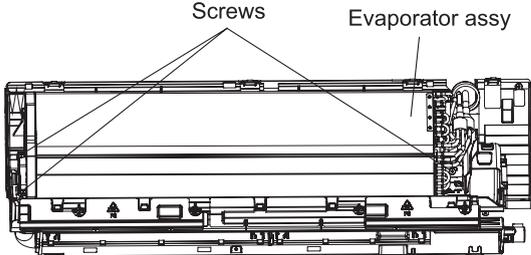
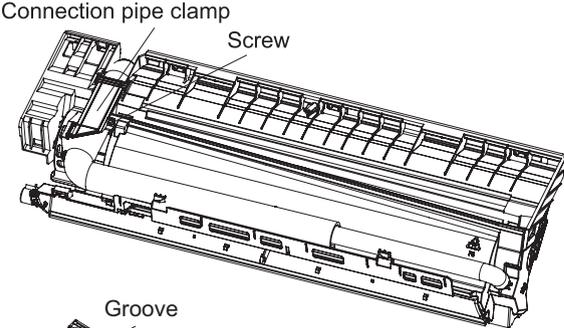
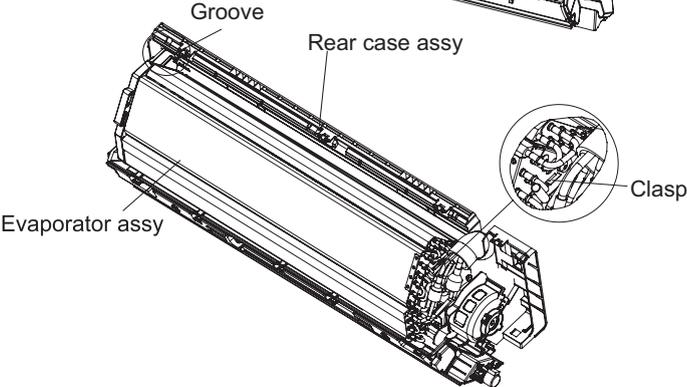
**!** Caution: discharge the refrigerant completely before removal.

## 11.1 Removal Procedure of Indoor Unit

Step	Procedure
1. Remove filter assembly	<p>Open the front panel. Push the left filter and right filter until they are separate from the groove on the front panel. Remove the left filter and right filter respectively.</p> 
2. Remove horizontal louver	<p>Push out the axle bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p> 
3. Remove panel	<p>Open the front panel; separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p> 

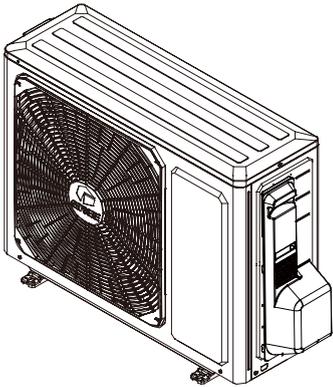
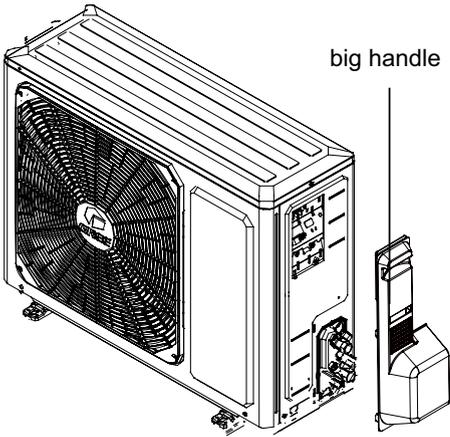
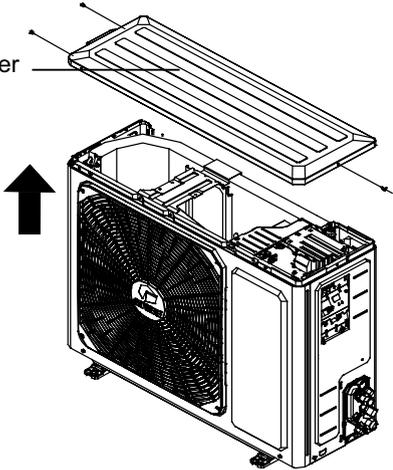
Step	Procedure	
4. Remove electric box cover 2 and detecting plate(WIFI)	<p>Remove the screws on the electric box cover 2 and detecting plate(WIFI), then remove the electric box cover 2 and detecting plate(WIFI).</p>	 <p>Electric box cover 2</p> <p>Screw</p> <p>Screws</p> <p>Detecting plate (WIFI)</p>
5. Remove front case sub-assy	<p>a Remove the screws fixing front case. Note: ① Open the screw caps before removing the screws around the air outlet. ② The quantity of screws fixing the front case sub-assy is different for different models.</p> <p>b Loosen the connection clasps between front case sub-assy and bottom case. Lift up the front case sub-assy and take it out.</p>	 <p>Screws</p> <p>Front case sub-assy</p> <p>Screw</p> <p>Screw caps</p> <p>Clasp</p> <p>Front case sub-assy</p>
6. Remove display	<p>Screw off the 2 screws that are locking the display board.</p>	 <p>panel display</p> <p>Screws</p>



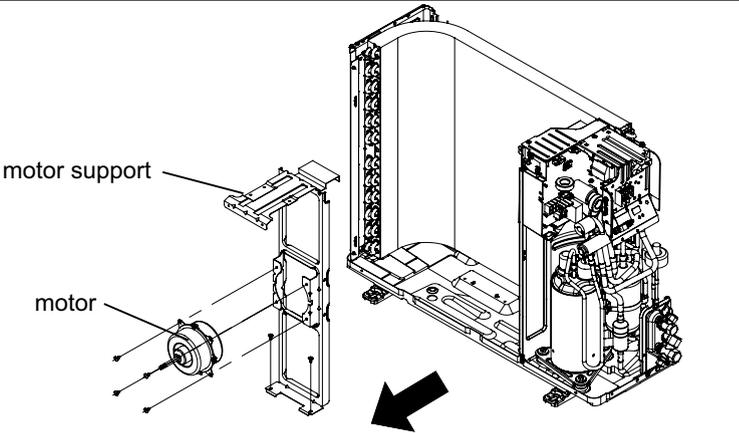
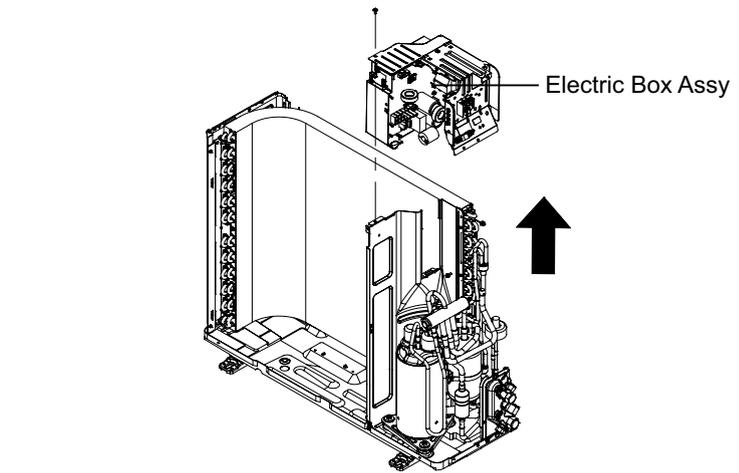
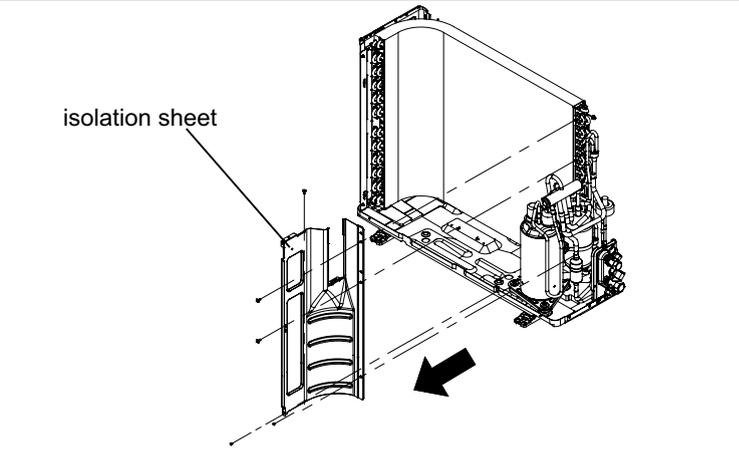
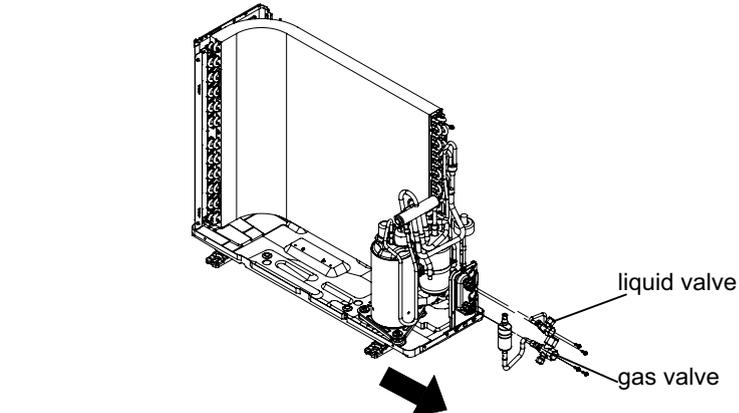
Step	Procedure	
c	<p>Rotate the electric box assy. Twist off the screws that are locking the wire clip and loosen the power cord. Remove the wiring terminal of power cord. Lift up the main board and take it off.</p> <p>Instruction: Some wiring terminal of this products is with lock catch and other devices. The pulling method is as below:</p> <p>① Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals,</p> <p>② Pull out the holder for some wiring terminal at first (holder is not available for some wiring terminal). hold the connector and then pull the terminal.</p>	 <p>Power cord</p> <p>Screws</p> <p>Wire clip</p> <p>Circlip</p> <p>Soft sheath</p> <p>Holder</p> <p>Connector</p>
9. Remove evaporator assy		
a	Remove 3 screws fixing evaporator assy.	 <p>Screws</p> <p>Evaporator assy</p>
b	At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.	 <p>Connection pipe clamp</p> <p>Screw</p>
c	First remove the left side of evaporator from the groove on the rear case assy. Then remove the right side from the clasp on the rear case assy.	 <p>Groove</p> <p>Rear case assy</p> <p>Evaporator assy</p> <p>Clasp</p>



## 11.2 Removal Procedure of Outdoor Unit

Steps	Procedure
<p><b>1. Before disassembly</b></p>	
<p><b>2. Remove big handle</b></p> <p>Remove the connection screw fixing the big handle and then remove it.</p>	 <p>big handle</p>
<p><b>3. Remove top cover</b></p> <p>Remove connection screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.</p>	 <p>top cover</p>



Steps	Procedure	Procedure
<p><b>8. Remove motor and motor support</b></p>	<p>Remove the tapping screws fixing the motor and disconnect the leading wire insert of the motor. Then remove the motor. Remove the tapping screws fixing the motor support and lift the motor support to remove it.</p>	
<p><b>9. Remove Electric Box Assy</b></p>	<p>Remove screws fixing the electric box subassembly; loosen the wire bundle and unplug the wiring terminals. Then lift the electric box to remove it.</p>	
<p><b>10. Remove isolation sheet</b></p>	<p>Remove the screws fixing the isolation sheet and then remove the isolation sheet.</p>	
<p><b>11. Remove compressor</b></p> <p>a</p>	<p>Unsolder the welding joint connecting the capillary, valves and the outlet pipe of condenser to remove the capillary. Do not block the capillary with welding slag during unsoldering.</p>	



## Appendix:

### Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

#### Set temperature

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

#### Ambient temperature

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

### Appendix 2: Configuration of Connection Pipe

1. Standard length of connection pipe

- 5m, 7.5m, 8m.

2. Min. length of connection pipe is 3m.

3. Max. length of connection pipe and max. high difference.

4. The additional refrigerant oil and refrigerant charging required after prolonging connection pipe

- After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.

- The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):

Cooling capacity	Max length of connection pipe	Max height difference
5000 Btu/h(1465 W)	15 m	5 m
7000 Btu/h(2051 W)	15 m	5 m
9000 Btu/h(2637 W)	15 m	10 m
12000 Btu/h(3516 W)	20 m	10 m
18000 Btu/h(5274 W)	25 m	10 m
24000 Btu/h(7032 W)	25 m	10 m
28000 Btu/h(8204 W)	30 m	10 m
36000 Btu/h(10548 W)	30 m	20 m
42000 Btu/h(12306 W)	30 m	20 m
48000 Btu/h(14064 W)	30 m	20 m

- When the length of connection pipe is above 5m, add refrigerant according to the prolonged length of liquid pipe. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

- Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe(mm)	Gas pipe(mm)	Cooling only(g/m)	Cooling and heating(g/m)
Φ6	Φ9.5 or Φ12	15	20
Φ6 or Φ9.5	Φ16 or Φ19	15	20
Φ12	Φ19 or Φ22.2	30	120
Φ16	Φ25.4 or Φ31.8	60	120
Φ19	/	250	250
Φ22.2	/	350	350

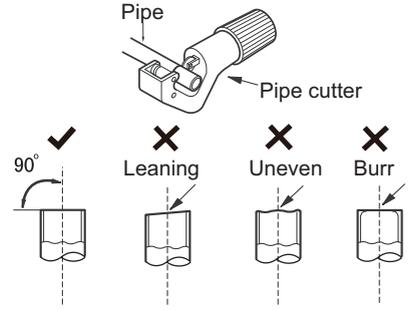
## Appendix 3: Pipe Expanding Method

**⚠ Note:**

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

**A: Cut the pipe**

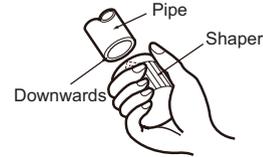
- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.



**B: Remove the burrs**

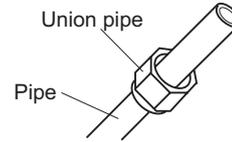
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.

**C: Put on suitable insulating pipe**



**D: Put on the union nut**

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



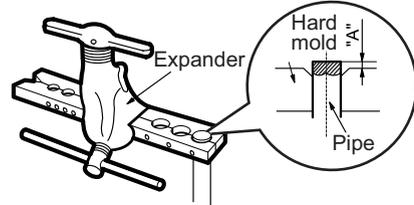
**E: Expand the port**

- Expand the port with expander.

**⚠ Note:**

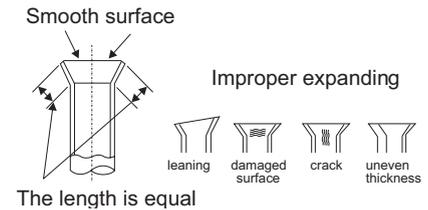
- "A" is different according to the diameter, please refer to the sheet below:

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



**F: Inspection**

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



## Appendix 4: List of Resistance for Temperature Sensor

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor (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 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	181.4	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

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

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-29	853.5	10	98	49	18.34	88	4.75
-28	799.8	11	93.42	50	17.65	89	4.61
-27	750	12	89.07	51	16.99	90	4.47
-26	703.8	13	84.95	52	16.36	91	4.33
-25	660.8	14	81.05	53	15.75	92	4.20
-24	620.8	15	77.35	54	15.17	93	4.08
-23	580.6	16	73.83	55	14.62	94	3.96
-22	548.9	17	70.5	56	14.09	95	3.84
-21	516.6	18	67.34	57	13.58	96	3.73
-20	486.5	19	64.33	58	13.09	97	3.62
-19	458.3	20	61.48	59	12.62	98	3.51
-18	432	21	58.77	60	12.17	99	3.41
-17	407.4	22	56.19	61	11.74	100	3.32
-16	384.5	23	53.74	62	11.32	101	3.22
-15	362.9	24	51.41	63	10.93	102	3.13
-14	342.8	25	49.19	64	10.54	103	3.04
-13	323.9	26	47.08	65	10.18	104	2.96
-12	306.2	27	45.07	66	9.83	105	2.87
-11	289.6	28	43.16	67	9.49	106	2.79
-10	274	29	41.34	68	9.17	107	2.72
-9	259.3	30	39.61	69	8.85	108	2.64
-8	245.6	31	37.96	70	8.56	109	2.57
-7	232.6	32	36.38	71	8.27	110	2.50
-6	220.5	33	34.88	72	7.99	111	2.43
-5	209	34	33.45	73	7.73	112	2.37
-4	198.3	35	32.09	74	7.47	113	2.30
-3	199.1	36	30.79	75	7.22	114	2.24
-2	178.5	37	29.54	76	7.00	115	2.18
-1	169.5	38	28.36	77	6.76	116	2.12
0	161	39	27.23	78	6.54	117	2.07
1	153	40	26.15	79	6.33	118	2.02
2	145.4	41	25.11	80	6.13	119	1.96
3	138.3	42	24.13	81	5.93	120	1.91
4	131.5	43	23.19	82	5.75	121	1.86
5	125.1	44	22.29	83	5.57	122	1.82
6	119.1	45	21.43	84	5.39	123	1.77
7	113.4	46	20.6	85	5.22	124	1.73
8	108	47	19.81	86	5.06	125	1.68
9	102.8	48	19.06	87	4.90	126	1.64

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