

# **Service Manual**

Model:CH-S09FTXE-NG CH-S12FTXE-NG CH-S09FTXQ-NG CH-S12FTXQ-NG

Refrigerant R32

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# Part | : Technical Information

# 1. Summary

CH-S09FTXQ-NG CH-S12FTXQ-NG

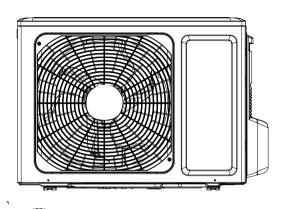


CH-S09FTXE-NG CH-S12FTXE-NG

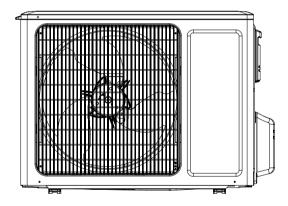


## **Outdoor Unit**

CH-S09FTXE-NG CH-S09FTXQ-NG



CH-S12FTXE-NG CH-S12FTXQ-NG



## **Remote Controller**



Paramete	r	Unit	Value
- siailioto	·	J	Tuido
Model			CH-S09FTXE-NG CH-S09FTXQ-NG
	Rated Voltage	V~	220-240
Power	Rated Frequency	Hz	50
Supply	Phases	112	1
Power Su	pply Mode		Outdoor
	apacity(Min~Max)	W	2600(440~3000)
	apacity(Min~Max)	W	2800(600~3200)
	ower Input(Min~Max)	W	720(160~1400)
	ower Input(Min~Max)	W	710(200~1500)
	urrent Input	A	3.9
	urrent Input	A	3.4
Rated Inp		W	1500
Rated Cui		A	6.3
	/olume(SH/H/M//L/SL)	m <sup>3</sup> /h	560/490/430/330/-
	fying Volume	L/h	0.8
EER	ying volume	W/W	3.62
COP		W/W	3.93
SEER		W/W	6.1
	erage/Warmer/Colder)	W/W	4.6/5.1/3.2
Applicatio		m <sup>2</sup>	12-18
Applicatio	Fan Type	111	Cross-flow
	Fan Diameter Length(DXL)	mm	Ф98X580
	Cooling Speed(SH/H/M//L/SL)	r/min	1300/1200/1050/800/-
	Heating Speed(SH/H/M//L/SL)	r/min	1300/1200/1050/800/-
	Fan Motor Power Output	W	20
Indoor	Fan Motor RLA	A	0.215
Unit		μF	0.213
	Fan Motor Capacitor Evaporator Form	μΓ	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Ф5
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	_	584X22.8X266.7
	Swing Motor Model	mm	MP24AA
	Swing Motor Power Output	W	1.5
		A	3.15
	Fuse Current Sound Pressure Level(SH/H/M//L/SL)	dB (A)	36/30/26/23/-
	Sound Pressure Level(SH/H/M//L/SL)	dB (A)	39/36/32/28/-
	Dimension (WXHXD)		790X275X200
	Dimension of Carton Box (LXWXH)	mm	
	` ,	mm	863X268X352
	Dimension of Package(LXWXH)	mm	866X271X367
	Net Weight	kg	9
	Gross Weight	kg	11

	T T		ZHUHAI LANDA
	Compressor Manufacturer		COMPRESSOR CO.,LTD
	Compressor Model		QXF-B096zE190A
	Compressor Oil		FW68DA
	Compressor Type		Rotary
	Compressor LRA.	Α	20.00
	Compressor RLA	A	4.21
	Compressor RLA  Compressor Power Input	W	943
	Compressor Fower input	VV	1NT11L-6233 HPC115/95U1
	Compressor Overload Protector		KSD115°C
	Throttling Method		Capillary
	Set Temperature Range	°C	16~30
	Cooling Operation Ambient Temperature Range	°C	-15~48
	Heating Operation Ambient Temperature Range	°C	-15~24
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Ф7
	Condenser Rows-fin Gap	mm	1-1.4
	Condenser Coil Length (LXDXW)	mm	710X19.05X508
Outdoor	Fan Motor Speed	rpm	900
Unit	Fan Motor Power Output	W	30
	Fan Motor RLA	Α	0.36
	Fan Motor Capacitor	μF	
	Outdoor Unit Air Flow Volume	m³/h	1600
	Fan Type	,	Axial-flow
	Fan Diameter	mm	Φ400
	Defrosting Method	111111	Automatic Defrosting
	Climate Type		T1
	Isolation		
	Moisture Protection		IPX4
	Permissible Excessive Operating Pressure for		II AT
	the Discharge Side	MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level (H/M/L)	dB (A)	49/-/-
1	Sound Power Level (H/M/L)	dB (A)	52/-/-
	Dimension(WXHXD)	mm	782X540X320
	Dimension of Carton Box (LXWXH)	mm	820X355X580
	Dimension of Package(LXWXH)	mm	823X358X595
	Net Weight	kg	29.5
	Gross Weight	kg	32
	Refrigerant		R32
1	Refrigerant Charge	kg	0.6
	Connection Pipe Length	m	5
	Connection Pipe Gas Additional Charge	g/m	
	Outer Diameter Liquid Pipe	mm	Ф6
Connection	Outer Diameter Gas Pipe	mm	Ф9.52
Pipe	Max Distance Height	m	10
	Max Distance Length	m	19
1	IMAN DISTAINS ECHISTI	111	10

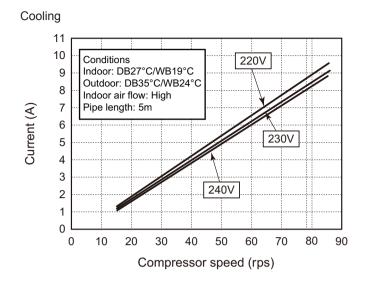
The above data is subject to change without notice. Please refer to the nameplate of the unit.

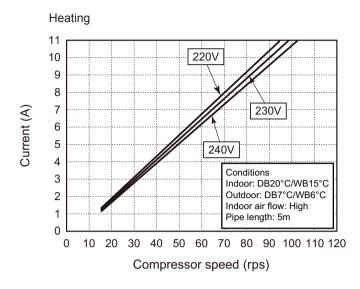
Model			CH-S12FTXE-NG CH-S12FTXQ-NG		
D	Rated Voltage	V~	220-240		
Power	Rated Frequency	Hz	50		
Supply	Phases		1		
Power Su	pply Mode		Outdoor		
Cooling C	apacity(Min~Max)	W	3500 (600~3600)		
Heating C	apacity(Min~Max)	W	3600 (600~3800)		
Cooling Po	ower Input(Min~Max)	W	970 (120~1400)		
Heating P	ower Input(Min~Max)	W	920 (120~1500)		
Cooling C	urrent Input	Α	4.42		
	urrent Input	Α	4.30		
Rated Inp	ut	W	1500		
Rated Cur		Α	6.21		
Air Flow V	olume(SH/H/M/L/SL)	m³/h	560/330/480/282/-		
	fying Volume	L/h	1.4		
EER	<i>.</i>	W/W	3.60		
COP		W/W	3.93		
SEER			6.10		
SCOP(Ave	erage)		4.60		
HSPF			1		
Application	n Area	m <sup>2</sup>	12-18		
	Fan Type		Cross-flow		
	Fan Diameter Length(DXL)		Ф98Х580		
	Cooling Speed(SH/H/M/L/SL)	r/min	1350/1200/1050/750/-		
	Heating Speed(SH/H/M/L/SL)	r/min	1350/1200/1050/850/-		
	Fan Motor Power Output	W	20		
	Fan Motor RLA	Α	0.215		
	Fan Motor Capacitor	μF	1		
	Evaporator Form		Aluminum Fin-copper Tube		
Indoor	Evaporator Pipe Diameter	mm	Ф5		
Unit	Evaporator Row-fin Gap	mm	2-1.4		
	Evaporator Coil Length(LXDXW)	mm	584X22.8X266.7		
	Swing Motor Model		MP24AA		
	Swing Motor Power Output	W	1.5		
	Fuse Current	Α	3.15		
	Sound Pressure Level(SH/H/M/L/SL)		37/32/28/24/-		
	Sound Power Level(SH/H/M/L/SL)		42/37/34/28/-		
	Dimension(WXHXD)		790X275X200		
	Dimension of Carton Box(LXWXH)	mm	850X339X262		
	Dimension of Package(LXWXH)	mm	852X355X273		
	Net Weight	kg	9		
1	Gross Weight	kg	11		

	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD					
	Compressor Model		QXF-B096zE190A					
	Compressor Oil		FW68DA					
	Compressor Type		Rotary					
	L.R.A.	Α	20.0					
	Compressor RLA		4.21					
	<u>'</u>	A						
	Compressor Power Input	W	943					
	Overload Protector		1NT11L-6233					
	Throttling Method		Capillary					
	Operation temp	°C	16~30					
	Ambient temp (cooling)	°C	-15~48					
	Ambient temp (heating)	°C	-15~24					
	Condenser Form		Aluminum Fin-copper Tube					
	Pipe Diameter	mm	Ф7.94					
	Rows-fin Gap	mm	1-1.4					
	Coil Length (LXDXW)	mm	731X19.05X550					
	Fan Motor Speed	rpm	900					
Outdoor	Output of Fan Motor	W	30					
Outdoor	Fan Motor RLA	Α	0.36					
Unit	Fan Motor Capacitor	μF	1					
	Air Flow Volume of Outdoor Unit	m <sup>3</sup> /h	2200					
	Fan Type		Axial-flow					
	Fan Diameter	mm	Ф438					
	Defrosting Method		Automatic Defrosting					
	Climate Type		T1					
	Isolation		ſ					
	Moisture Protection		IPX4					
	Permissible Excessive Operating							
	Pressure for the Discharge Side	MPa	4.3					
	Permissible Excessive Operating							
	Pressure for the Suction Side	MPa	2.5					
	Sound Pressure Level (H/M/L)	dB (A)	51/-/-					
	Sound Power Level (H/M/L)	dB (A)	54/-/-					
	Dimension (WXHXD)	mm	848X596X320					
	Dimension of Carton Box (LXWXH)	mm	878X360X630					
	Dimension of Package (LXWXH)	mm	881X363X645					
	Net Weight	kg	31					
	Gross Weight	kg	34					
	Refrigerant		R32					
	Refrigerant Charge	kg	0.59					
	Length	m	5					
	Gas Additional Charge	g/m	20					
Connection	Outer Diameter Liquid Pipe	mm	Ф6					
Pipe	Outer Diameter Gas Pipe Max Distance Height	mm m	Ф9.52 10					
	Max Distance Length	m m	20					
	Note: The connection pipe applies met							
	Total The connection pipe applies metric diameter.							

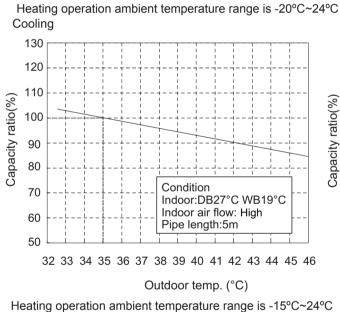
The above data is subject to change without notice; please refer to the nameplate of the unit.

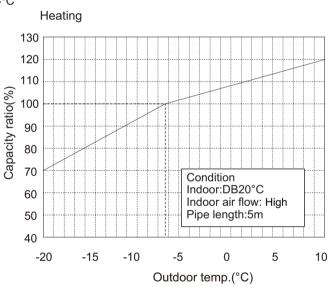
## 2.2 Operation Characteristic Curve

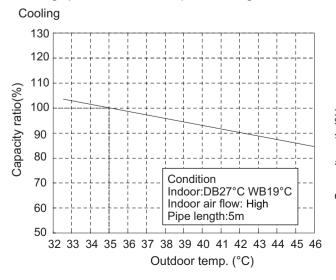


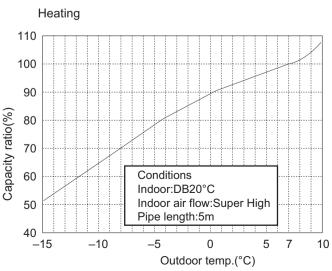


## 2.3 Capacity Variation Ratio According to Temperature









## 2.4 Cooling and Heating Data Sheet in Rated Frequency

## Cooling:

Rated condition(°0	cooling C) (DB/WB)	Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	revolution
Indoor	Outdoor		P (MPa)	T1 (°C)	T2 (°C)			(rps)
27/19	35/24	09K	0.8 ~ 1.1	12 to 15	65 to 38	TURBO	Lliab	49
27/19	33/24	12K	0.0 ~ 1.1	11 to 14	64 to 37	TURBU	High	60
27/19	35/24	18K	0.9 ~ 1.1	12 to 14	75 to 37	Super High	High	52

## Heating:

Rated cooling condition(°C) (DB/WB) Model		Pressure of gas pipe connecting indoor and outdoor unit			Fan speed of indoor unit	Fan speed of outdoor unit	revolution			
Indoor	Outdoor		P (MPa)	T1 (°C)	T2 (°C)			(rps)		
20/-	7/6	09K	2.8 ~ 3.2	35 to 63	2 to 5	TUDDO	Lliab	59		
20/-	//6	//6	170	12K	2.0 ~ 3.2	35 to 65	2 to 5	TURBO	High	67
20/-	7/6	18K	2.2 ~ 2.4	70 to35	2 to 4	Super High	High	65		

#### Instruction:

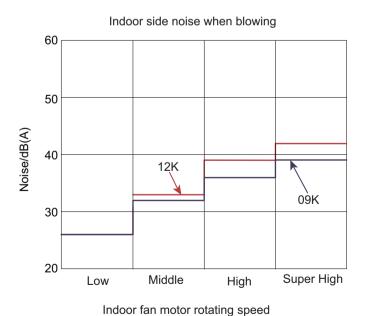
T1: Inlet and outlet pipe temperature of evaporator

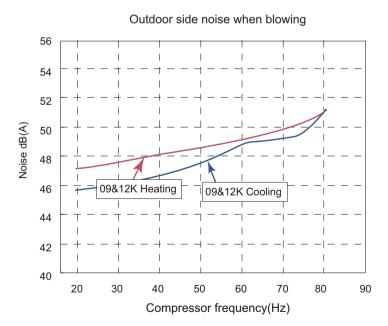
T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve Connection pipe length: 5 m.

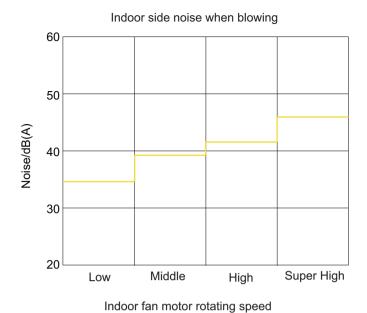
## 2.5 Noise Curve

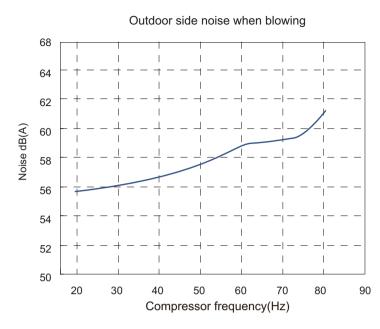
## 09/12K





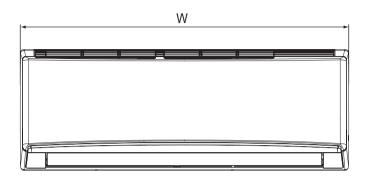
18K





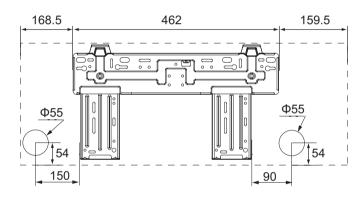
# 3. Outline Dimension Diagram

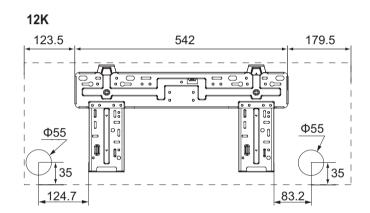
## 3.1 Indoor Unit









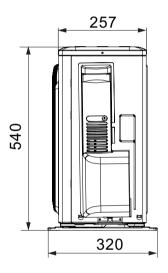


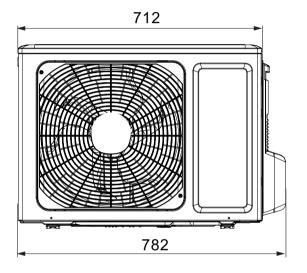
Model	W	Н	D
09K	790	275	200
12K	845	289	209

Unit:mm

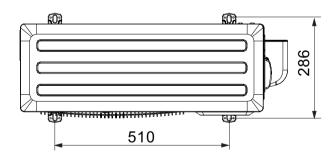
## 3.2 Outdoor Unit

CH-S09FTXE-NG CH-S09FTXQ-NG

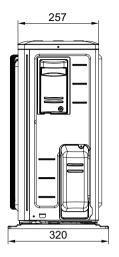


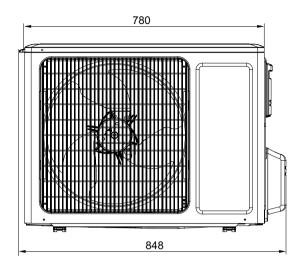


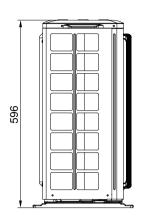
Unit:mm

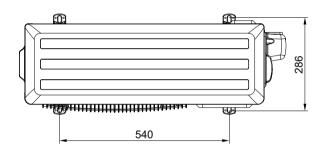


## CH-S12FTXE-NG, CH-S12FTXQ-NG





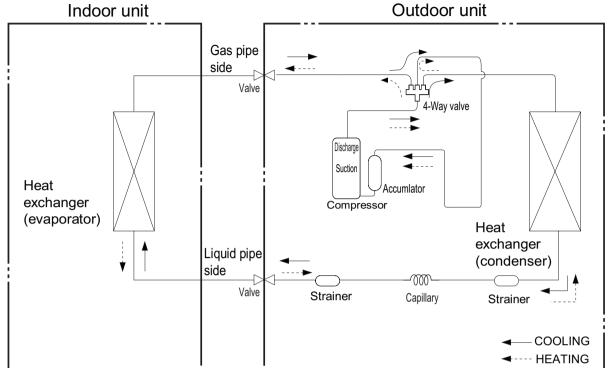




Unit:mm

# 4. Refrigerant System Diagram

09/12K



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

## 5. Electrical Part

## 5.1 Wiring Diagram

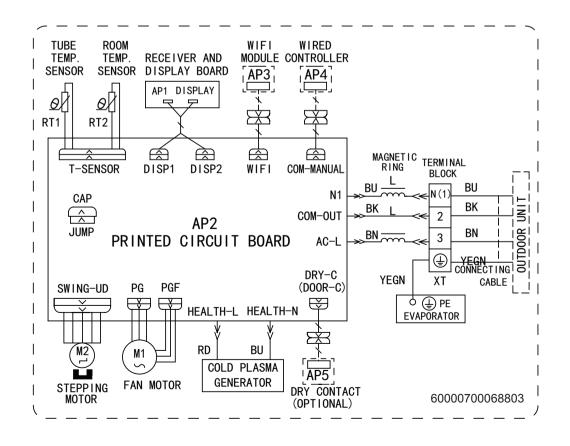
## Instruction

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	1
VT	Violet	OG	Orange	/	1

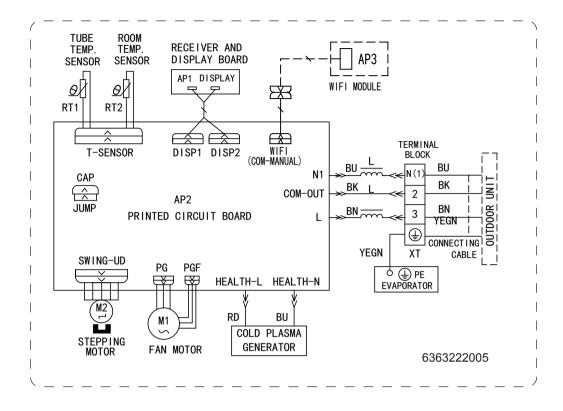
Note: Jumper cap is used to determine fan speed and the swing angle of horizontal lover for this model.

## • Indoor Unit

CH-S09FTXE-NG CH-S09FTXQ-NG



## CH-12FTXE-NG CH-12FTXE-NG

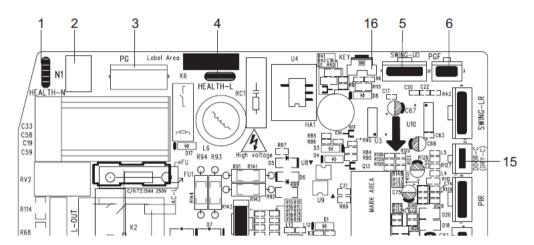


## **5.2 PCB Printed Diagram**

## **Indoor Unit**

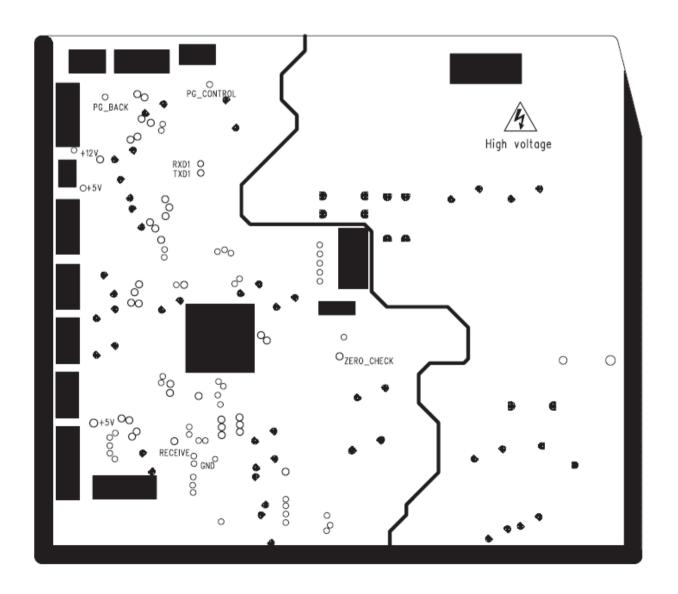
CH-S09FTXE-NG, CH-S09FTXQ-NG

## • Top view



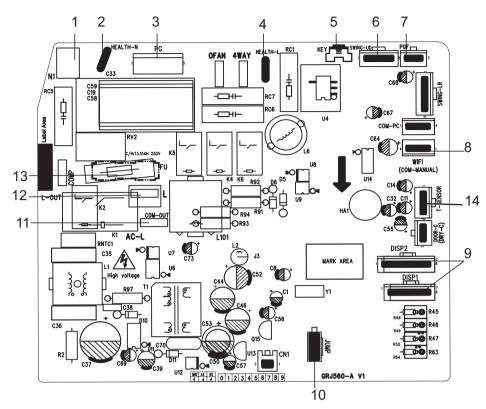
No.	Name
1	Neutral wire interface of cold plasma(only for the mode with this function)
2	Neutral wire interface of power supply
3	Interface of indoor fan
4	Interface of health function live wire
5	Interface of up&down swing motor

## Bottom view



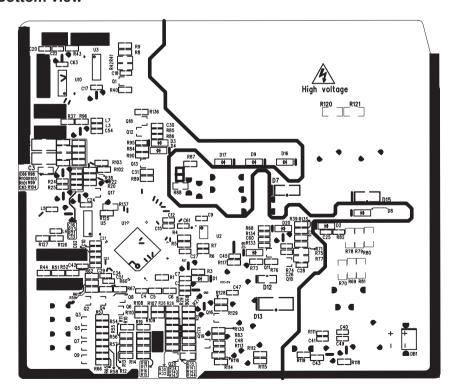
## CH-S12FTXE-NG, CH-S12FTXQ-NG

## • Top view



No	Name
1	Neutral wire 2 Neutral wire for
he	alth function
3	fan motor 4 Live wire for health
5	Auto button 6 Up and down
SW	ing terminal 7 Feedback
int	erface of indoor fan 8 WIFI 9
Dis	splay
10	Jumper cap
11	Indoor unit and outdoor
	unit communication
12	Live wire
13	Fuse
14	Terminal of Temperature Sensor

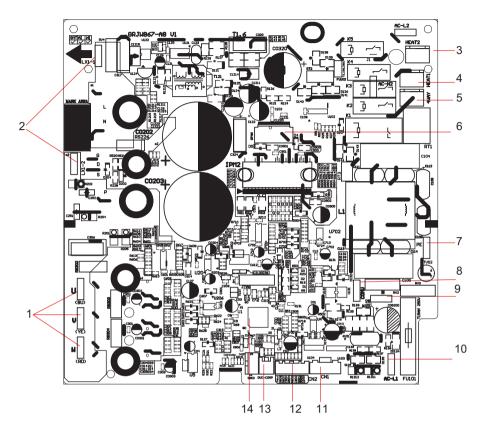
## • Bottom view



## **Outdoor Unit**

## All models

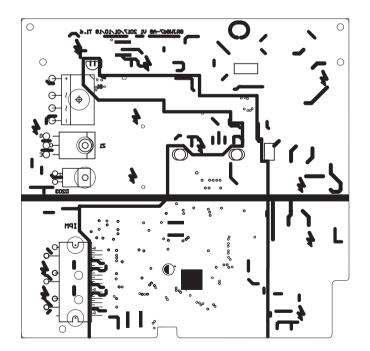
## • Top view



Name
Interface of compressor wire
Interface of reactor
Terminal of chassis
electric heater
Terminal of
compressor electric
heater
Terminal of 4-way valve
Interface of outdoor fan
Interface of earthing wire
Communication interface
Interface of netural wire
Interface of netural wire
Interface of live wire
Terminal of
electronic expansion
valve
Interface of temperature
sensor

- Overload interface of compressor
- 14 Main chip

## • Bottom view



## 6. Function and Control

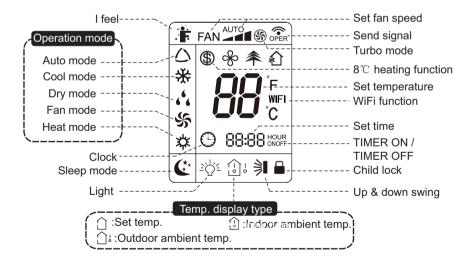
## 6.1 Remote Controller Introduction YAN1F6(WIFI)

### **Buttons on remote controller**



- ON/OFF button
- MODE button
- 3 FAN button
- 4 SWING button
- 5 TURBO button
- 6 ▲/ ▼button
- SLEEP button
- 8 TEMP button
- 9 WiFi button
- 10 LIGHT button
- 11 CLOCK button
- 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 doesnt 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 indictor " () " is ON (red indicator. the colour is different for different models). After that, you can operate the air conditioner by using remote controller.
- Under on status, pressing the button on the remote controller, the signal icon " > "on the display of remote controller will blink once and the air conditioner will give out a "de" sound, which means the signal has been sent to the air conditioner.
- Under off status, set temperature and clock icon will be displayed on the display of remote controller (If timer on, timer off and light functions are set, the corre-sponding icons will be displayed on the display of remote controller at the same time); Under on status, the display will show the corresponding set function icons.

#### 1. ON/OFF button

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

#### 2. MODE button

Press this button to select your required operation mode.



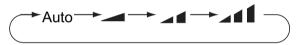
- When selecting auto mode, air conditioner will operate automatically according to ex-factory setting. Set temperature cant be adjusted and will not be displayed as well. Press "FAN" button can adjust fan speed. Press "SWING" button can adjust fan blowing angle.
- After selecting cool mode, air conditioner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

#### Note:

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

#### 3. FAN button

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



#### Note:

- Under AUTO speed, air conditioner will select proper fan speed automatically according to ex-factory setting.
- Fan speed under dry mode is low speed.
- X-FAN function: Hold fan speed button for 2s in COOL or DRY mode, the icon " " is displayed and the indoor fan will continue operation for a few minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

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

- Having set X-FAN function on: After turning off the unit by pressing ON/OFF button indoor fan will continue running for a few minutes.at low speed. In this period, Hold fan speed button for 2s to stop indoor fan directly.
- Having set X-FAN function off: After turning off the unit by pressing ON/OFF button, the complete unit will be off directly.

## 4. SWING button

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

- When selecting " 🚉 📢 ", air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.
- Hold " 🔰 "button above 2s to set your required swing angle. When reaching your required angle, release the button.

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

## 5. TURBO button

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

#### 6. ▲/▼ button

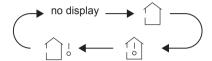
- Press "▲" or "▼" button once increase or decrease set temperature 1°C . Holding "▲" or "▼" button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly. (Temperature cant be adjusted under auto mode)
- When setting TIMER ON, TIMER OFF or CLOCK, press "▲" or "▲" button to adjust time. (Refer to CLOCK, TIMER ON, TIMER OFF buttons) When setting TIMER ON, TIMER OFF or CLOCK, press "▲" or "▲" button to adjust time. (Refer to CLOCK, TIMER ON, TIMER OFF buttons)

## 7. SLEEP button

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

#### 8. TEMP button

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



- When selecting "  $\bigcirc$  " or no display with remote controller, temperature indicator on indoor unit displays set temperature.
- When selecting " [ ] " with remote controller, temperature indicator on indoor unit displays indoor ambient temperature.
- When selecting " 🗀 \" with remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.

#### Note:

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

#### 9. WIFI button

Press " WiFi " button to turn on or turn off WiFi function. When WiFi function is turned on, the " WiFi " icon will be displayed on remote controller; Under status of remote controller off, press "MODE" and " WiFi " buttons simultaneously for 1s, WiFi modulewill restore to factory default setting.

#### 10. LIGHT button

Press this button to turn off display light on indoor unit. "  $\stackrel{>}{=}\stackrel{<}{\bigcirc}\stackrel{<}{=}$  " icon on remote controller disappears. Press this button again to turn on display light. "  $\stackrel{>}{=}\stackrel{<}{\bigcirc}\stackrel{<}{=}$  " icon is displayed.

### 11. CLOCK button

- Clock time adopts 24-hour mode.
- The interval between two operation cant exceeds 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.

## 12. TIMER ON / TIMER OFF button

### • TIMER ON button

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

• TIMER OFF button

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

#### Note:

- Under on and off status, you can set TIMER OFF or TIMER ON simultaneously.
- Before setting TIMER ON or TIMER OFF, please adjust the clock time.
- After starting up TIMER ON or TIMER OFF, set the constant circulating valid. After that, air conditioner will be turned on or turned off
  according to setting time. ON/OFF button has no effect on setting. If you dont need this function, please use remote controller to cancel it.

#### **Health function**

Health function will be set during operation of indoor fan.

Turn off the unit will also turn off health function.

This function is only available for some models.

#### **Function introduction for combination buttons**

#### 1. Energy-saving function

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

#### Note:

- Under energy-saving function, fan speed is defaulted at auto speed and it cant be adjusted.
- Under energy-saving function, set temperature cant be adjusted. Press "TURBO" button and the remote controller wont send signal.
- Sleep function and energy-saving function cant operate at the same time. If energy-saving function has been set under cooling mode, press sleep button will cancel energy-saving function. If sleep function has been set under cooling mode, start up the energy-saving function will cancel sleep function.

#### 2. 8 <sup>°</sup>C heating function

Under heating mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off  $8^{\circ}$ C heating function. When this function is started up, " \$\infty\$" and "8\infty\$" will be shown on remote controller, and the air conditioner keep the heating status at  $8^{\circ}$ C. Press "TEMP" and "CLOCK" buttons simultaneously again to exit  $8^{\circ}$ C heating function.

#### Note:

- Under 8°C heating function, fan speed is defaulted at auto speed and it cant be adjusted.
- Under 8°C heating function, set temperature cant be adjusted. Press "TURBO" button and the remote controller wont send signal.
- Sleep function and 8°C heating function cant operate at the same time. If 8°C heating function has been set under cooling mode, press sleep button will cancel 8°C heating function. If sleep function has been set under cooling mode, start up the 8°C heating function will cancel sleep function.
- ullet Under  ${}^{\circ}\! F$  temperature display, the remote controller will display 46  ${}^{\circ}\! F$  heating.

#### 3. Child lock function

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

### 4. Temperature display switchover function

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

#### 5. I FELL Function

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

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

#### Operation guide

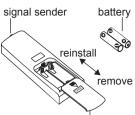
- 1. After putting through the power, press "ON/OFF" button on remote controller to turn on the air conditioner.
- 2. Press "MODE" button to select your required mode: AUTO, COOL, DRY, FAN, HEAT.
- 3. Press "▲" or "▼" button to set your required temperature. (Temperature cant be adjusted under auto mode).
- 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.

## Replacement of batteries in remote controller

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

#### Note:

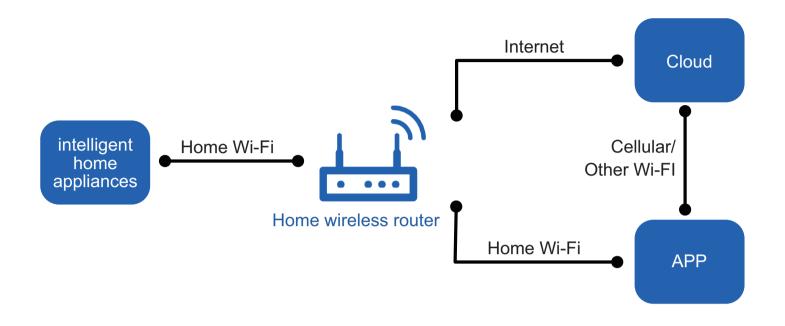
- During operation, point the remote control signal sender at the receiving window on indoor unit.
- The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.
- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace new batteries of the same model when replacement is required.
- When you dont use remote controller for a long time, please take out the batteries.
- If the display on remote controller is fuzzy or theres no display, please replace batteries.



Cover of battery box

## 6.2 Ewpe Smart App Operation Manual

## **Control Flow Chart**



## **Operating Systems**

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and above version

## Download and installation



App Download Linkage

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

## 6.3 Brief Description of Modes and Functions

## Indoor Unit

## 1.Basic function of system

## (1)Cooling mode

- (1) Under this mode, fan and swing operates at setting status. Temperature setting range is 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 Tpreset=20°C and standard cooling Tpreset=25°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 (Tamb.-Tcompensation) for heat pump unit and Tamb. for cooling only unit.
- 4. If theres I feel function, Tcompensation is 0. Others are same as above.

#### (5)Fan mode

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

#### 2. Other control

## (1) Buzzer

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

### (2) Auto button

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

## (3) Auto fan

Heating mode: During auto heating mode or normal heating ode, 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 cant 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)Entry condition for compulsory defrosting function

When turn on the unit under heating ode and set temperature is  $16^{\circ}$ C (or  $16.5^{\circ}$ C by remote controller), press "+, -, +, -," button successively within 5s and then indoor unit will enter into compulsory defrosting setting status:

- (1) If theres only indoor units controller, it enters into indoor normal defrosting mode.
- (2) If theres indoor units controller and outdoor units controller, indoor unit will send compulsory defrosting mode signal to outdoor unit and then outdoor unit will operate under normal defrosting mode. After indoor unit received the signal that outdoor unit has entered into defrosting status, indoor unit will cancel to send compulsory mode to outdoor unit. If outdoor unit hasnt received feedback signal from outdoor unit after 3min, indoor unit will also cancel to send compulsory defrosting signal.

## (10)Refrigerant recovery function:

Enter into Freon recovery mode actively: Within 5min after energization, turn on the unit at 16°C under cooling mode, and press light button for 3 times within 3s to enter into Freon recovery mode. Fo is displayed and Freon recovery mode will be sent to outdoor unit.

#### (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 cant be less than  $180+Ts(0\le T\le 15)$ . T is the variable of controller. Thats to say the minimum stop time of compressor is  $180s\sim195s$ . Read-in T into memory chip when refurbish the memory chip each time. After power recovery, compressor can only be started up after 180+Ts 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 function

Turbo function can be set under cooling and heating modes. Press Fan Speed button to cancel turbo setting. Turbo function is not available under auto, drying and fan modes.

#### Outdoor Unit

#### 1. Cooling mode:

Working condition and process of cooling mode:

- ① When Tindoor ambient temperature≥Tpreset, unit enters into cooling mode. Indoor fan, outdoor fan and compressor start operation. Indoor fan operates according to set fan speed.
- ② When Tindoor ambient temperature≤Tpreset-2℃, compressor stops operation and outdoor fan will stop 30s later. Indoor fan operates according to set fan speed.
- ③ When Tpreset-2°C < Tindoor ambient temperature < Tpreset, unit operates according to the previous status.</p>

Under cooling mode, 4-way valve is not energized. Temperature setting range is 16~30 ℃. If compressor stops because of malfunction in cooling mode, indoor fan and swing motor will work according to the original status.

### 2. Drying mode

- (1) Working condition and process of drying mode
- ① When Tindoor ambient temperature > Tpreset, unit will be in drying mode. Outdoor fan and compressor start operation while indoor fan will operate at low fan speed.
- ② When Tpreset-2℃ ≤Tindoor ambient temperature≤Tpreset, unit operates according to the previous status.
- ③ When Tindoor ambient temperature < Tpreset-2℃, compressor stops operation and outdoor fan will stop 30s later.
- (2) Under drying mode, 4-way valve is not energized. Temperature setting range is 16~30 ℃.
- (3) Protection function: same as in cooling mode.

#### 3. Fan mode

- (1) Under this mode, indoor fan can select different fan speed (except Turbo) or auto fan speed. Compressor, outdoor fan and 4-way valve all stop operation.
- (2) In fan mode, temperature setting range is 16~30°C.

### 4. Heating mode

Working condition and process of heating mode:

- ① When Tpreset-(Tindoor ambient temperature-Tcompensation)≥1 °C , unit enters into heating mode. Compressor, outdoor fan and 4-way valve start operation.
- ② When -2  $^{\circ}$ C < Tpreset-(Tindoor ambient temperature-Tcompensation) < 1  $^{\circ}$ C , unit operates according to the previous status.
- ③ When Tpreset-(Tindoor ambient temperature-Tcompensation)≤-2°C, compressor stops operation and outdoor fan will stop 30s later. Indoor fan will be in residual-heat blowing status.
- ④ When unit is turned off under heating mode or changed to other modes from heating mode, 4-way valve will be power-off 2min after compressor stops working (compressor is in operation status under heating mode).
- ⑤ When Toutdoor ambient temperature > 30 ℃, compressor stops operation immediately. Outdoor fan will stop 30s later.
- ⑥ Under the condition that compressor is turned on, when unit is changed to heating mode from cooling or drying mode, 4-way valve will be energized in 2~3mins delay.

Note: Tcompensation is determined by IDU and ODU. If IDU controls the compensation temperature, then Tcompensation is determined according to the value sent by IDU to ODU; If IDU does not control the compensation temperature, then Tcompensation will default to 3°C by the ODU.

### 5. Freon recovery mode

After the Freon recovery signal from IDU is received, cooling at rated frequency will be forcibly turned on to recover Freon. Indoor unit will display Fo. If any signal from remote controller is received, unit will exit from Freon recovery mode and indoor unit stops displaying Fo.

#### 6. Compulsory defrosting

If unit is turned on under heating mode and set temperature is 16°C (by remote controller), press "+, -, +, -, \*, -, \*, -, \*, -, \*, -, \* within 5s, unit will enter into compulsory defrosting mode and send the signal to ODU. When the compulsory defrosting signal from ODU is received, IDU will exit from the compulsory defrosting mode and stop sending the signal to ODU.

After ODU receives the compulsory defrosting code, it will start compulsory defrosting. Defrosting frequency and opening angle will be the same as in normal defrosting mode. When compulsory defrosting is finished, the complete unit resumes original status.

## 7. Auto mode

Auto mode is determined by controller of IDU. See IDU logic for details.

## 8.8°C heating

Set temperature is 8°C. Display board of IDU displays 8°C. Under this mode, "Cold air prevention" function is shielded. If compressor is operating under this mode, fan speed will adjust according to auto fan speed; if compressor stops operation under this mode, indoor fan will be in residual-heat blowing status.

When power on, communication light will be blinking in a normal way (after receiving a group of correct signals, blinking stops for 0.2s~0.3s). If theres no communication, communication light will be always on. If other ODU has malfunction, communication light will be on for 1s and off for 1s in a circular way.

## Part | : 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.

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

46 Installation and Maintenance

## Safety Precautions for Installing and Relocating the Unit:

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



## **Warnings**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Poor connections may lead to electric shock or fire.

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

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

## Safety Precautions for Refrigerant

- •To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R32, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can leads to explosion under certain conditions. But the flammability of the refrigerant is very low. It can be ignited only by fire.
- •Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the greenhouse effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.

#### **WARNING:**

•Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacture. Should repair be necessary, contact your nearest authorized Service Centre. Any repairs carried out by unqualified personnel may be dangerous. The appliance shall be stored in a room without continuously operating ignition sources. (for example:open flames, an operating gas appliance or an operating electric heater.)

- •Do not pierce or burn.
- Appliance shall be installed, operated and stored in a room with a floor area larger than 4m (or 6m).
- •Appliance filled with flammable gas R32. For repairs, strictly follow manufacturers instructions only.Be aware that refrigrants not contain odour.
- •Read specialists manual.









## Safety Operation of Flammable Refrigerant

## Qualification requirement for installation and maintenance man

- •All the work men who are engaging in the refrigeration system should bear the valid certification awarded by the authoritative organization and the qualification for dealing with the refrigeration system recognized by this industry. If it needs other technician to maintain and repair the appliance, they should be supervised by the person who bears the qualification for using the flammable refrigerant.
- •It can only be repaired by the method suggested by the equipments manufacturer.

#### Installation notes

- •The air conditioner is not allowed to use in a room that has running fire (such as fire source,working coal gas ware, operating heater).
- •It is not allowed to drill hole or burn the connection pipe.
- •The air conditioner must be installed in a room that is larger than the minimum room area.

The minimum room area is shown on the nameplate or following table a.

Leak test is a must after installation.

table a - Minimum room area(m2)

	Charge amount (kg)	≤1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5
Minimum room area(m²)	floor location	/	14.5	16.8	19.3	22	24.8	27.8	31	34.3	37.8	41.5	45.4	49.4	53.6
	wall mounted	/	5.2	6.1	7	7.9	8.9	10	11.2	12.4	13.6	15	16.3	17.8	19.3
	window mounted	/	1.6	1.9	2.1	2.4	2.8	3.1	3.4	3.8	4.2	4.6	5	5.5	6
	ceiling mounted	/	1.1	1.3	1.4	1.6	1.8	2.1	2.3	2.6	2.8	3.1	3.4	3.7	4

### Maintenance notes

- Check whether the maintenance area or the room area meet the requirement of the nameplate.
- Its only allowed to be operated in the rooms that meet the requirement of the nameplate.
- Check whether the maintenance area is well-ventilated.
- The continuous ventilation status should be kept during the operation process.
- Check whether there is fire source or potential fire source in the maintenance area.
- The naked flame is prohibited in the maintenance area; and the "no smoking" warning board should be hanged.
- •Check whether the appliance mark is in good condition.
- Replace the vague or damaged warning mark.

#### Welding

- •If you should cut or weld the refrigerant system pipes in the process of maintaining, please follow the steps as below:
- a. Shut down the unit and cut power supply
- b. Eliminate the refrigerant
- c. Vacuuming
- d. Clean it with N2 gas
- e. Cutting or welding
- f. Carry back to the service spot for welding
- Make sure that there isnt any naked flame near the outlet of the vacuum pump and its well-ventilated.
- •The refrigerant should be recycled into the specialized storage tank.

## Filling the refrigerant

- •Use the refrigerant filling appliances specialized for R32. Make sure that different kinds of refrigerant wont contaminate with each other.
- •The refrigerant tank should be kept upright at the time of filling refrigerant.
- •Stick the label on the system after filling is finished (or havent finished).
- Dont overfilling
- After filling is finished, please do the leakage detection before test running; another time of leak detection should be done when its removed.

## Safety instructions for transportation and storage

- Please use the flammable gas detector to check before unload and open the container.
- •No fire source and smoking.
- According to the local rules and laws.

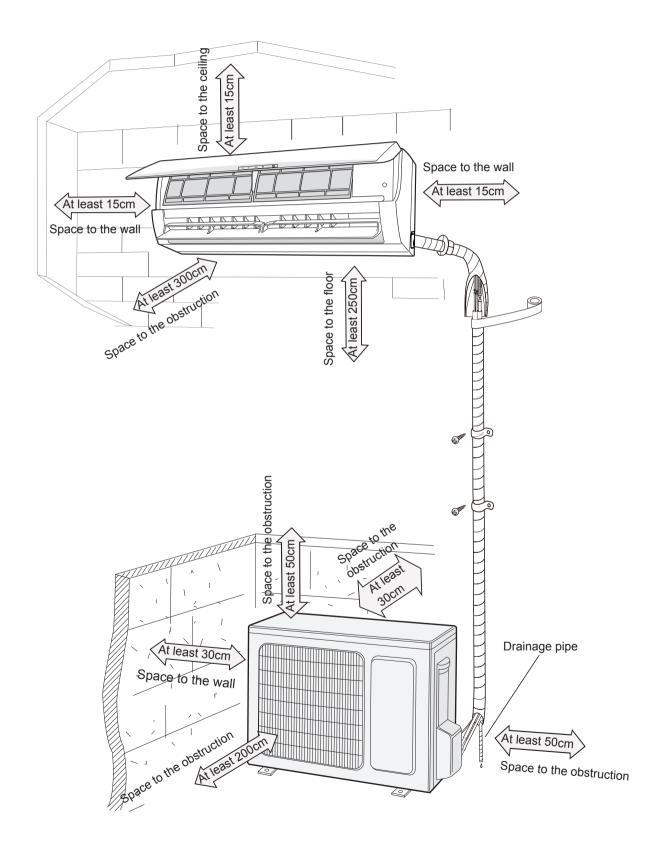
Installation and Maintenance

## **Main Tools for Installation and Maintenance**

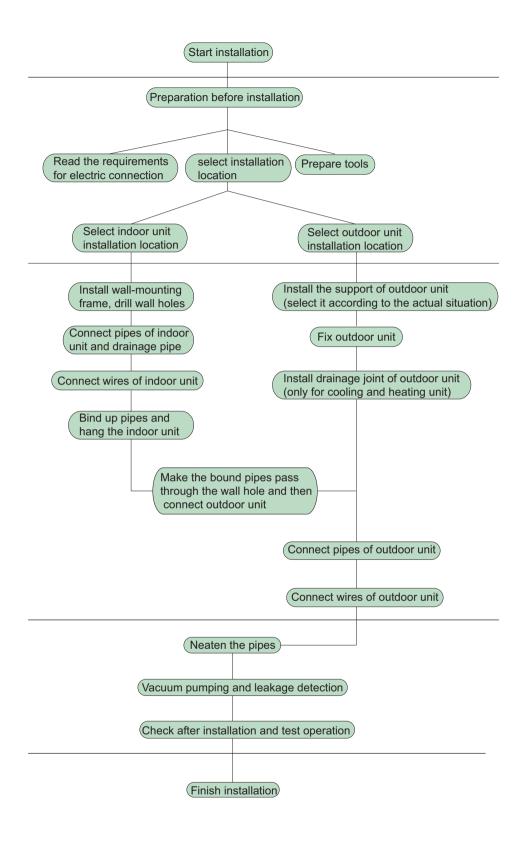


## 8. Installation

## 8.1 Installation Dimension Diagram



50 Installation and Maintenance



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 nine	10	Support of outdoor		
3	Connection pipe	10	unit		
4	Drainage pipe	11	Fixing screw		
5	Wall-mounting	12	Drainage plug(cooling		
3	frame	12	and heating unit)		
6	Connecting	13	Owners manual,		
6	cable(power cord)	13	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 sulfureted gas.
- (6) Other places with special circumstances.
- (7) The appliance shall nost be installed in the laundry.

#### 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 andwort 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) Please try your best to keep way from fluorescent lamp.

#### 3. Outdoor Unit:

- (1) Select a location where the noise and outflow air emitted by the outdoor unit will not affect neighborhood.
- (2) The location should be well ventilated and 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 Requirements for electric connection

#### 1. Safety Precaution

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

Air-conditioner	Air switch capacity
09K	9A
12K GWH18QD-K6DNB4B	13A
18K	16A

- (4) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (5) Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- (6) Do not put through the power before finishing installation.
- (7) If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- (9) The appliance shall be installed in accordance with national wiring regulations.
- (10) Appliance shall be installed, operated and stored in a room with a floor area larger than "X"m (see table 1).



Please notice that the unit is filled with flammable gas R32. Inappropriate treatment of the unit involves the risk of severe damages of people and material. Details to this refrigerant are found in chapter "refrigerant".

#### 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

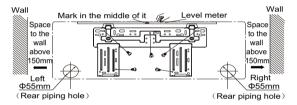
Recommend the installation location to the client and then confirm it with the client.

#### 2. Install Wall-mounting Frame

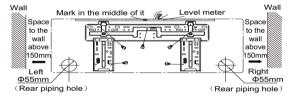
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle)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

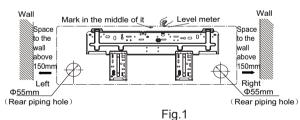
(1) Choose the position of piping hole according to the direction of outlet pipe. The position of piping hole should be a little lower than the wall-mounted frame.(As show in Fig.1) 09K:



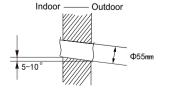
#### 12K:



#### 18K:



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



# **Note:**

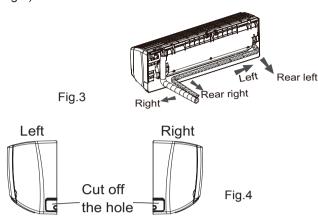
(1) Pay attention to dust prevention and take relevant safety measures when opening the hole.

Fig.2

(2) The plastic expansion particles are not provided and should be bought locally.

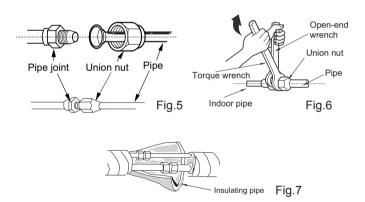
#### 4. Outlet pipe

- (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)



#### 5. Connect the Pipe of Indoor Unit

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

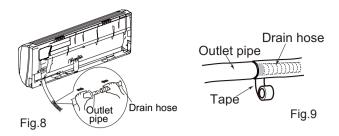


Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)		
Ф6	15~20		
Ф9.52	30~40		
Ф12	45~55		
Ф16	60~65		
Ф19	70~75		

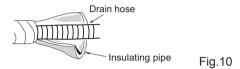
#### 6. Install Drain Hose

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



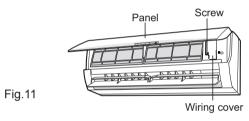
#### **Note:** ∧

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



#### 7. Connect Wire of Indoor Unit

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



(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)

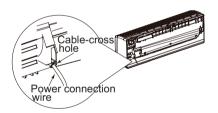
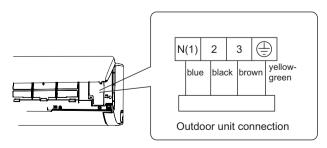


Fig.12

(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 board is for reference only, please refer to the actual one.

Fig.13

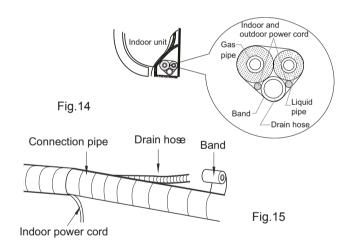
- (4) Put wiring cover back and then tighten the screw.
- (5) Close the panel.

#### **⚠** 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 vourself.
- (3) For the air conditioner with plug, the plug should be reachable after finishing installation.
- (4) For the air conditioner without plug, an air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

#### 8. Bind up Pipe

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

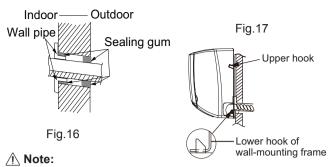


# **Note:**

- (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)



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

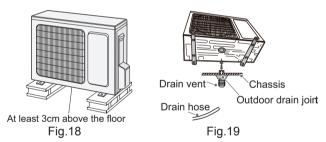
# 8.6 Installation of Outdoor Unit

# 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.

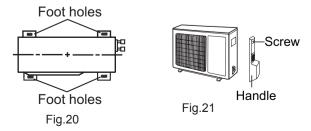


#### 2. Install Drain Joint(Only for cooling and heating unit)

- (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)

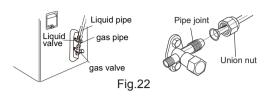
### 3. Fix Outdoor Unit

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



#### 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)



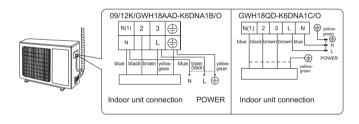
- (3) Pretightening the union nut with hand.
- (4) Tighten the union nut with torque wrench.

Refer to the following table for wrench moment of force:

Hex nut diameter(mm)	Tightening torque(N·m)
Ф6	15~20
Ф9.52	30~40
Ф12	45~55
Ф16	60~65
Ф19	70~75

#### 5. Connect Outdoor Electric Wire

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



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

Fig.23

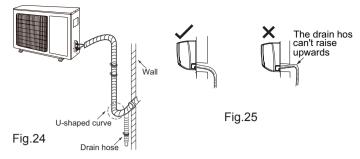
(2) Fix the power connection wire and signal control wire with wire clip (only for cooling and heating unit).

#### **⚠** 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.

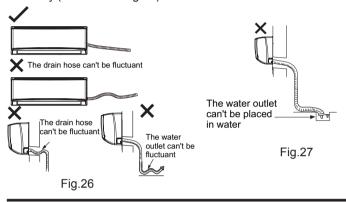
#### 6. Neaten the Pipes

- (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)



#### **Note: Note:**

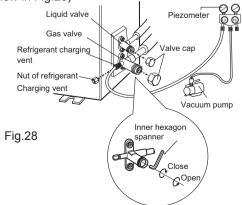
- (1) The through-wall height of drain hose shouldnt be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose cant be curved, raised and fluctuant, etc.(As show in Fig.26)
- (3) The water outlet cant be placed in water in order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



#### 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, theres a leakage.

# 8.8 Check after Installation and Test Operation

#### 1. Check after Installation

Check according to the following requirement after finishing installation.

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

### 2. Test Operation

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

# 8.9 Wired Controller

If the product you bought is equipped with wired controller, please refer to the following introductions of wired controller.

# 1.Displaying Part

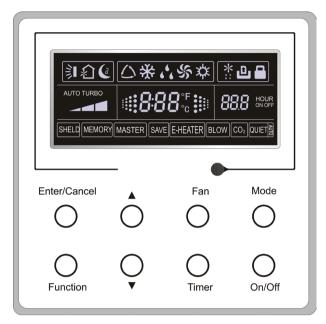


Fig1.1.1 Outline of wired controller

# 1.1 LCD Display of Wired Controller

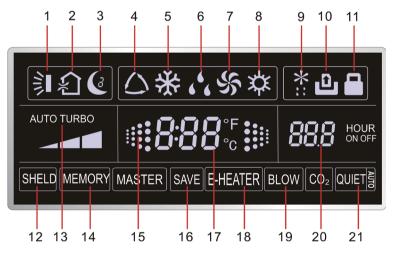


Fig.1.1.2 LCD display

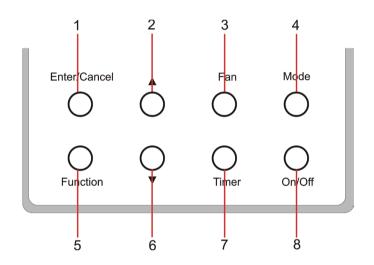
#### 1.2 Instruction to LCD Display

No.	Symbols	Description
1	訓	Swing function
2	£	Air exchange function (this function is yet unavailable for this unit)
3	C	Sleep function (Only sleep 1)
4	$\triangle$	Each kind of running mode of indoor unit (auto mode)
5	*	Cooling mode
6	44	Dry mode
7	ર્	Fan mode
8	*	Heating mode
9	*	Defrosting function for the outdoor unit
10	٥	Gate-control function (this function is yet unavailable for this unit)

11		Lock function					
12	SHIELD	Shield functions (Button operation, temperature setting, On/Off operation, Mode setting are					
12	SHILLD	disabled by the remote monitoring system.)					
13	TURBO	Turbo function state					
14	MEMORY	Memory function (The indoor unit resumes the original setting state after power failure and					
14	IVILIVIOITI	then power recovery)					
15		It blinks under on state of the unit without operation of any button					
16	SAVE	Energy-saving function					
17	<del>888</del> °.	Ambient/setting temperature value					
18	E-HEATER	Electric auxiliary heating function(this function is yet unavailable for this unit)					
19	BLOW	Blow function					
20	88.8	Timing value					
21	QUIET	Quiet function (two types: quiet and auto quiet)(this function is yet unavailable for this unit).					

# 2 Buttons

# 2.1 Layout of Buttons



# 2.2 Functions of Buttons

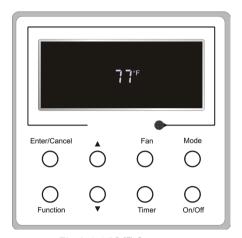
No.	Name	Function
1	Enter/Cancel	Function selection and cancellation.
2	<b>A</b>	① Running temperature setting of the indoor unit, range:16~30°C.
6	▼	② Timer setting, range:0.5-24 hr.
3	Fan	Setting of the high/middle/low/auto fan speed.
4	Mode	Setting of the Cooling/Heating/Fan/Dry/Auto mode of the indoor unit.
6	Function	Switchover among the functions of Turbo/Save/E-heater/Blow etc.
7	Timer	Timer setting.
8	On/Off	Turn on/off the indoor unit.
		Press them for 5s under off state of the unit to enter/cancel the Memory function(If memory
4+2	▲+Mode	is set, indoor unit after power failure and then power recovery will resume the original
7.2	_ Iviouc	setting state. If not, the indoor unit is defaulted to be off after power recovery. Memory off is
		default before delivery.).
		By pressing them at the same time under off state of the unit, 💥 will be displayed on the
3+6	Fan+▼	wired controller for the cooling only unit, while 💢 will be displayed on the wired controller
		for the cooling and heating unit.
		Upon startup of the unit without malfunction or under off state of the unit,press them at the
2+6	<b>▲</b> +▼	same time for 5s to enter the lock state, in which case, any other buttons wont respond the
		press. Repress them for 5s to quit this state.

#### **3 Operation Instructions**

#### 3.1 On/Off

Press On/Off to turn on the unit and turn it off by another press.

Note: The state shown in Fig.3.1.1 indicates the "Off" state of the unit after power on. The state shown in Fig.3.1.2 indicates the "On" state of the unit after power on.



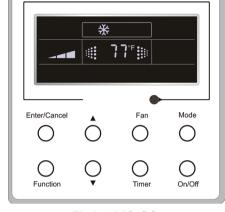


Fig.3.1.1 "Off" State

Fig.3.1.2 "On" State

#### 3.2 Mode Setting

Under ON state of the unit, press the Mode to switch the operation modes as the following sequence: Auto-Cooling-Dry-Fan-Heating.



#### 3.3 Temperature Setting

Press ▲or ▼ to increase/decrease the preset temperature. If pressing either of them continuously, the temperature will be increased or decreased by 1°C every 0.5s,as shown in Fig.3.3.1.

In the Cooling, Dry, Fan or Heating mode, the temperature setting range is 16~30°C(61~86°F).

In the Auto mode, the setting temperature is unadjustable.

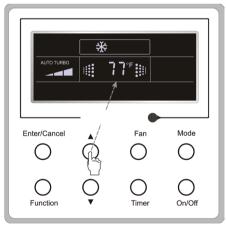


Fig.3.3.1

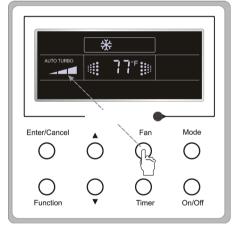
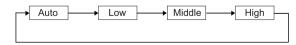


Fig.3.4.1

# 3.4 Fan Setting

Under the "On" state of the unit, press Fan and then fan speed of the indoor unit will change circularly as shown in Fig.3.4.1.



#### 3.5 Timer Setting

Under on-state of the unit, Press Timer button to set timer off of the unit. Under off-state of the unit, press Timer button to set timer on of the unit in the same way.

• Timer on setting:

Under off-state of the unit without timer setting, if Timer button is pressed, LCD will display xx.Hour,with ON blinking. In this case, press ▲ or ▼ button to adjust timer on and then press Timer to confirm.

#### · Timer off setting:

Under on-state of the unit without timer setting, if Timer button is pressed, LCD will display xx. Hour, with OFF blinking. In this case, press ▲ or ▼ button to adjust timer on and then press Timer to confirm.

#### · Cancel timer:

After setting of timer, if Timer button is pressed, LCD wont display xx. Hour so that timer setting is canceled. Timer off setting under the "On" state of the unit is shown as Fig.3.5.1.

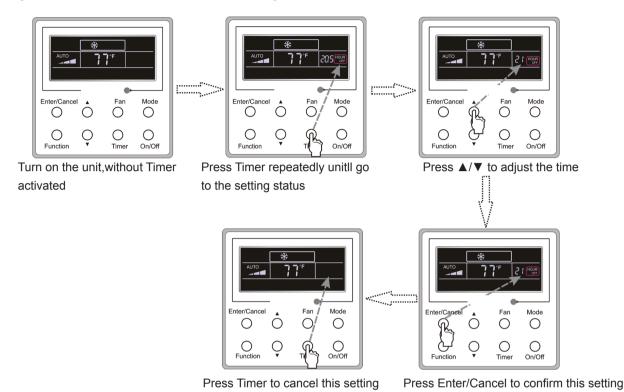


Fig.3.5.1 Timer off Setting under the "On" State of the Unit

Timer on setting under the "Off" state of the unit is shown as Fig.3.5.2.

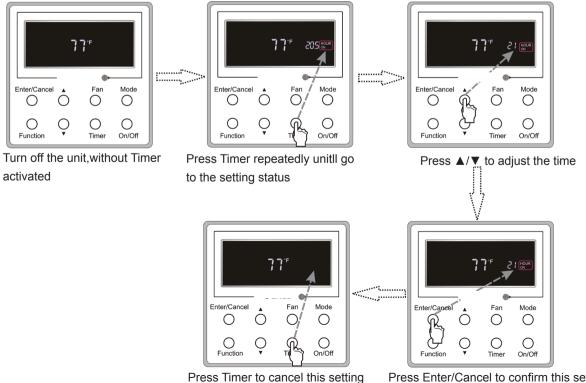


Fig.3.5.2 Timer on Setting under the "Off" State of the Unit

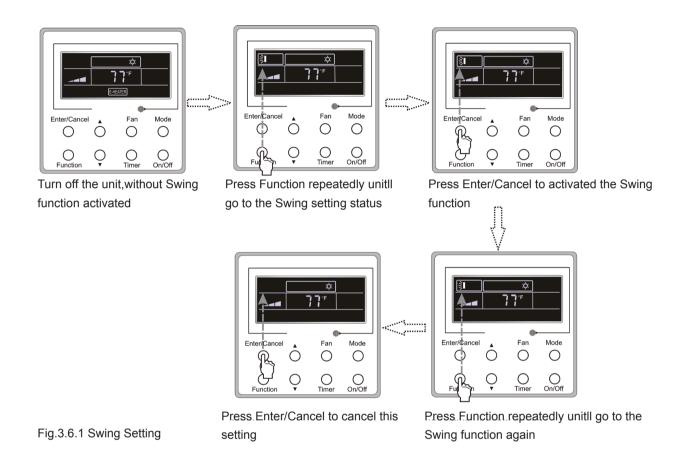
Press Enter/Cancel to confirm this setting

Timer range: 0.5-24hr. Every press of ▲or ▼ will make the set time increased or decreased by 0.5hr. If either of them is pressed continuously, the set time will increase/ decrease by 0.5hr every 0.5s.

#### 3.6 Swing Setting

Swing On: Press Function under on state of the unit to activate the swing function. In this case, will blink, After that, press Enter/Cancel to make a confirmation.

Swing Off: When the Swing function is on, press Function to enter the Swing setting interface, with blinking. After that, press Enter/Cancel to cancel this function. Swing setting is shown as Fig.3.6.1.



#### Notes:

(1)Sleep, Turbo or Blow setting is the same as the Swing setting.

(2)After the setting has been done, it has to press the key "Enter/Cancel" to back to the setting status or quit automatically five seconds later.

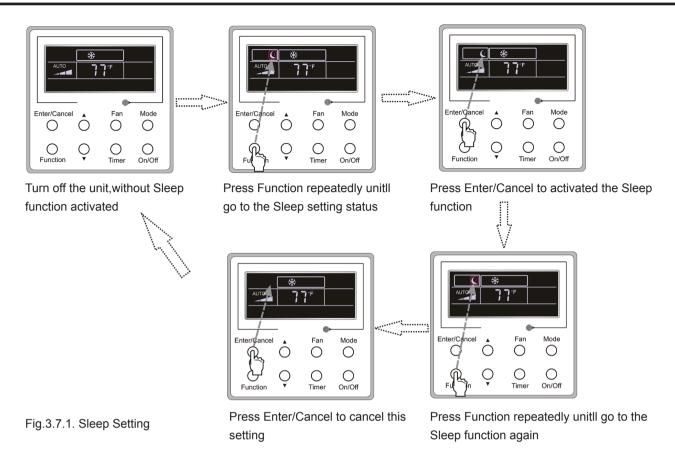
#### 3.7 Sleep Setting

Sleep on: Press Function under the On state of the unit till the unit enters the Sleep setting state. After that, press Enter/Cancel to confirm this setting.

Sleep off: When the Sleep function is activated, press Function to enter the Sleep setting status. After that, press Enter/Cancel to cancel this function.

In the Cooling or Dry mode, the temperature will increase by  $1^{\circ}C(1\sim2^{\circ}F)$  after the unit runs under Sleep1 for 1hr and  $1^{\circ}C(1\sim2^{\circ}F)$  after another 1hr.After that, the unit will run at this temperature.

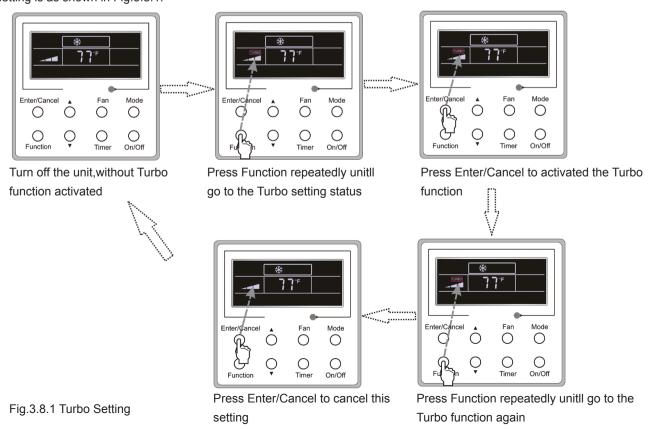
In the Heating mode, the temperature will decrease by  $1^{\circ}C(1\sim2^{\circ}F)$  after the unit runs under Sleep 1 for 1hr and  $1^{\circ}C(1\sim2^{\circ}F)$  after another 1hr. After that, the unit will run at this temperature.



#### 3.8 Turbo Setting

Turbo function: The unit at the high fan speed can realize quick cooling or heating so that the room temperature can quickly approach the setting value.

In the Cooling or Heating mode, press Function till the unit enters the Turbo setting status and then press Enter/Cancel to confirm the setting. When the Turbo function is activated, press Function to enter the Turbo setting status and then press Enter/Cancel to cancel this function. Turbo function setting is as shown in Fig.3.8.1.



#### 3.9 E-heater Setting

E-heater (auxiliary electric heating function): In the Heating mode, E-heater is allowed to be turned on for improvement of effciency.

Once the wired controller or the remote controller enters the Heating mode, this function will be turned on automatically.

Press Function in the Heating mode to enter the E-heater setting interface and then press Enter/Cancel to cancel this function.

Press Function to enter the E-heater setting status, if the E-heater function is not activated, and then press Enter/Cancel to activate it.

The setting of this function is shown as Fig.3.9.1 below  $\bigcirc$ 0 0 0 0  $\bigcirc$ 0 Function 0 0 0 0 Press Function repeatedly unitll Press Enter/Cancel to activated the E-heater Turn off the unit, without E-heater go to the E-heater setting status function function activated  $\bigcirc$  $\bigcirc$ 0  $\bigcirc$ 0  $\bigcirc$  $\bigcirc$ On/Off

#### Fig.3.9.1 E-heater Setting

# 3.10 Blow Setting

Blow function: After the unit is turned off, the water in evaporator of indoor unit will be automatically evaporated to avoid mildew. In the Cooling or Dry mode, press Function till the unit enters the Blow setting status and then press Enter/Cancel to active this function. When the Blow function is activated, press Function to the Blow setting status and then press Enter/Cancel to cancel this function.

Press Enter/Cancel to cancel this

setting

setting

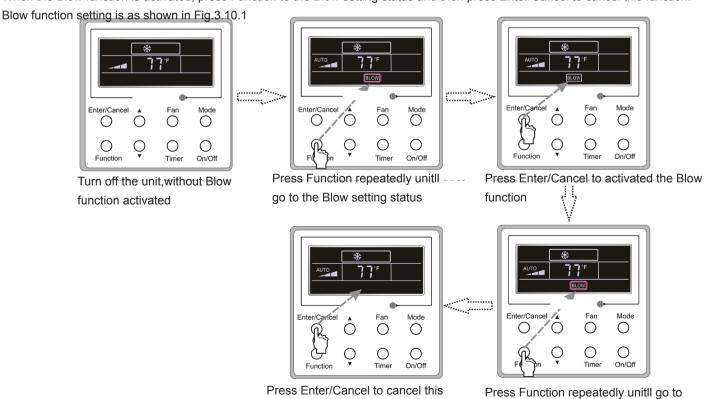


Fig.3.9.1 E-heater Setting

the Blow setting function again

Press Function repeatedly unitly go to

the E-heater setting function again

#### Notes:

(1)When the Blow function is activated, if turning off the unit by pressing On/Off or by the remote controller, the indoor fan will run at the low fan speed for 2 min, with "BLOW" displayed on the LCD. While, if the Blow function is deactivated, the indoor fan will be turned off directly.

(2)Blow function is unavailable in the Fan or Heating mode.

#### 3.11 Other Functions

#### a. Lock

Upon startup of the unit without malfunction or under the "Off" state of the unit, press ▲ and ▼ at the same time for 5s till the wired controller enters the Lock function. In this case, LCD displays ▶.

After that, repress these two buttons at the same time for 5s to quit this function.

Under the Lock state, any other button press wont get any response.

#### b. Memory

Memory switchover: Under the "Off" state of the unit, press Mode and ▲ at the same time for 5s to switch memory states between memory on and memory off. When this function is activated, Memory will be displayed. If this function is not set, the unit will be under the "Off" state after power failure and then power recovery.

Memory recovery: If this function has been set for the wired controller, the wired controller after power failure will resume its original running state upon power recovery. Memory contents: On/Off, Mode, set temperature, set fan speed and Lock function.

#### 4. Installation and Dismantlement

- 4.1 Connection of the Signal Line of the Wired Controller
- Open the cover of the electric control box of the indoor unit.
- Let the single line of the wired controller through the rubber ring.
- Connect the signal line of the wired control to the 4-pin socket of the indoor unit PCB.
- Tighten the signal wire with ties.
- The communication distance between the main board and the wired controller can be up to 20 meters (the standard distance is 8 meters)
- 4.2 Installation of the Wired Controller

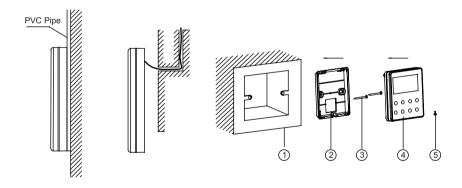


Fig.4.1 Accessories for the Installation of the Wired Controller

No.	1	2	3	4	5	
Nama	Socket box embedded	Soleplate of the Wired	Screw M4X25	Front Panel of the	Screw ST 2.9X6	
Name	in the wall	Controller	Sciew W4A25	Wired Controller	3016W 31 2.9X0	

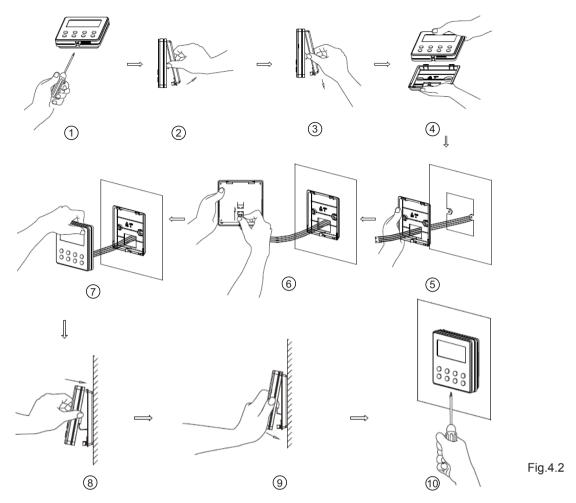


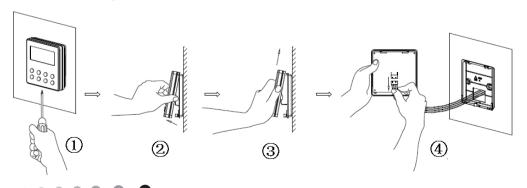
Fig.4.2 shows the installation steps of the wired controller, but there are some issues that need your attention.

- (1) Prior to the installation, please firstly cut off the power supply of the wire buried in the installation hole, that is, no operation is allowed with electricity during the whole installation.
- (2) Pull out the four-core twisted pair line from the installation holes and then let it go through the rectangular hole behind the soleplate of the wired controller.
- (3) Stick the soleplate of the wire controller to the wall over the installation hole and then fix it with screws M4X25.
- (4) Insert the four-core twisted pair line into the slot of the wired controller and then buckle the front panel and the soleplate of the wired controller together.
- (5) Finally, fix the front panel and the soleplate of the wired controller tightly by screws ST2.9X6.

### CAUTION!

Please pay special attention to the followings during the connection to avoid the malfunction of the air conditioning unit due to electromagnetic interference.

- (1) Separate the signal and communication lines of the wired controller from the power cord and connection lines between the indoor and outdoor unit, with a minimum interval of 20cm, otherwise the communication of the unit will probably work abnormally.
- (2) If the air conditioning unit is installed where is vulnerable to electromagnetic interference, then the signal and communication lines of the wired controller must be the shielding twisted pair lines.



# **5 Errors Display**

If there is an error occurring during the operation of the system, the error code will be displayed on the LCD, as show in Fig.5.1. If multi errors occur at the same time, their codes will be displayed circularly.

Note: In event of any error, please turn off the unit and contact the professionally skilled personnel.

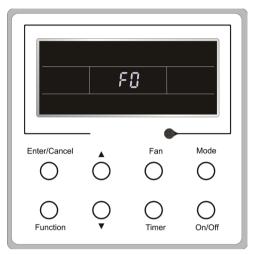


Fig.5.1

# 9. Maintenance

# 9.1 Error Code List

Note:All models is except 18K

			play Metho	d of Indoo	r Unit	Display Method of Outdoor Unit(Only for the mode with this function)					
NO.	Malfunction Name	Dual-8 Code Display	0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			A/C status	Possible Causes	
		Diopiay	Operation Indicator		Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator			
1	High pressure protection of system	E1							During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (including filth blockage of heat exchanger and bad radiating environment ); Ambient temperature is too high.	
2	Antifreezing protection	E2				OFF 3S and blink 3 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	Poor air-return in indoor unit;     Fan speed is abnormal;     Evaporator is dirty.	
3	In defect of refrigerant	F0					OFF 1S and blink 9 times		The Dual-8 Code Display will show F0 and the complete unit stops.	In defect of refrigerant;     Indoor evaporator temperature sensor works abnormally;     The unit has been plugged up somewhere.	
4	High discharge temperature protection of compressor	E4				OFF 3S and blink 7 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload).	
5	Overcurrent protection	E5				OFF 3S and blink 5 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Supply voltage is unstable;     Supply voltage is too low and load is too high;     Evaporator is dirty.	
6	Communi- cation Malfunction	E6						OFF	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.	
7	High temperature resistant protection	E8				OFF 3S and blink 6 times			During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant).	
8	EEPROM malfunction	EE				OFF 3S and blink 11 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1	
9	Limit/ decrease frequency due to high temperature of module	EU							All loads operate normally, while operation frequency for compressor is decreased	Discharging after the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.	
10	Malfunction protection of jumper cap	C5							Wireless remote receiver and button are effective, but can not dispose the related command	No jumper cap insert on mainboard.     Incorrect insert of jumper cap.     Jumper cap damaged.     Abnormal detecting circuit of mainboard.	

		Dis	play Metho	d of Indoc	or Unit	Unit(Only	Method of for the rais function	node with			
NO.	Malfunction Name	Code	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			A/C status	Possible Causes	
		Display	Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator			
11	Gathering refrigerant	Fo							When the outdoor unit receive signal of Gathering refrigerant ,the system will be forced to run under cooling mode for gathering refrigerant	Nominal cooling mode	
12	Indoor ambient temperature sensor is open/short circuited	F1							During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal.     Components in mainboard fell down leads short circuit.     Indoor ambient temp. sensor damaged.(check with sensor resistance value chart)     Mainboard damaged.	
13	Indoor evaporator temperature sensor is open/short circuited	F2							AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) 4. Mainboard damaged.	
14	Outdoor ambient temperature sensor is open/short circuited	F3					OFF 3S and blink 6 times		During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)	
15	Outdoor condenser temperature sensor is open/short circuited	F4					OFF 3S and blink 5 times		During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)	
16	Outdoor discharge temperature sensor is open/short circuited	F5					OFF 3S and blink 7 times		During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	1.Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)  2.The head of temperature sensor hasnt been inserted into the copper tube	
17	Limit/ decrease frequency due to overload	F6					OFF 3S and blink 3 times		All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)	
18	Decrease frequency due to overcurrent	F8					OFF 3S and blink once		All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload	

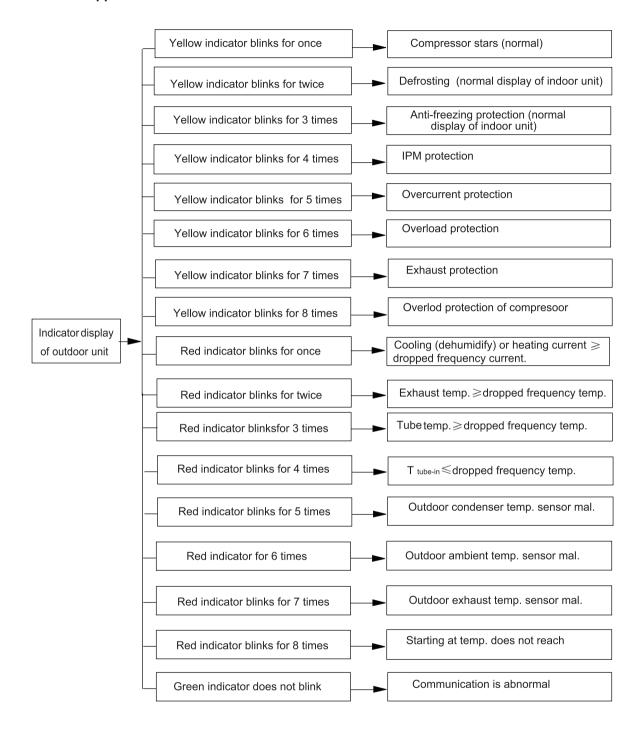
		Disp	olay Method	d of Indoo	r Unit	Display Method of Outdoor Unit(Only for the mode with this function)					
NO.	Malfunction Name	Code	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			A/C status	Possible Causes	
		Display	Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator			
19	Decrease frequency due to high air discharge	F9					OFF 3S and blink twice		All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)	
20	Limit/ decrease frequency due to antifreezing	FH					OFF 3S and blink 4 times		All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low	
21	Voltage for DC bus-bar is too high	РΗ				OFF 3S and blink 13 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range.  2. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)	
22	Voltage of DC bus-bar is too low	PL				OFF 3S and blink 12 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range.  2. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)	
23	Compressor Min frequence in test state	P0								Showing during min. cooling or min. heating test	
24	Compressor rated frequence in test state	P1								Showing during nominal cooling or nominal heating test	
25	Compressor maximum frequence in test state	P2								Showing during max. cooling or max. heating test	

NO.		Dis	olay Metho	d of Indoo	r Unit	Display Method of Outdoor Unit(Only for the mode with this function)				
	Malfunction Name	Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			A/C status	Possible Causes
			Operation Indicator	I	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
26	Compressor intermediate frequence in test state	P3								Showing during middle cooling or middle heating test
27	Overcurrent protection of phase current for compressor	P5							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
28	Charging malfunction of capacitor	PU							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor
29	Malfunction of module temperature sensor circuit	P7							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
30	Module high temperature protection	P8							During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de- energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
31	Overload protection for compressor	НЗ				OFF 3S and blink 8 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 10hm.      Refer to the malfunction analysis (discharge protection, overload)
32	IPM protection	H5				OFF 3S and blink 4 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
33	Malfunction of zero-cross detection circuit	U8							The complete unit stops	1.Power supply is abnormal;     2.Detection circuit of indoor control mainboard is abnormal.

	Malfunction Name	Dis	olay Metho	d of Indoo	r Unit	Display Method of Outdoor Unit(Only for the mode with this function)				
NO.		Dual-8 Code	I() 5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			A/C status	Possible Causes
		Display	Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
34	Internal motor (fan motor) do not operate	Н6							Internal fan motor, external fan motor, compressor and electric heater stop operation,guide louver stops at present location.	1. Bad contact of DC motor feedback terminal. 2. Bad contact of DC motor control end. 3. Fan motor is stalling. 4. Motor malfunction. 5. Malfunction of mainboard rev detecting circuit.
35	Desynchro- nizing of compressor	H7							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor.
36	PFC protection	НС				OFF 3S and blink 14 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
37	Outdoor DC fan motor malfunction	L3					OFF 3S and blink 14 times		Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed
38	power protection	L9				OFF 3S and blink 9 times			compressor stop operation and Outdoor fan motor will stop 30s latter, 3 minutes latter fan motor and compressor will restart	To protect the electronical components when detect high power
39	Indoor unit and outdoor unit doesnt match	LP				OFF 3S and blink 16 times			compressor and Outdoor fan motor cant work	Indoor unit and outdoor unit doesnt match
40	Failure start- up	LC							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
41	Normal communication							contino- usly		
42	Defrosting				OFF 3S and blink once (during blinking, ON 10s and OFF 0.5s)	OFF 3S and blink twice			Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	Its the normal state

NO.	Malfunction Name	Disp	olay Method	d of Indoor	r Unit	Display Method of Outdoor Unit(Only for the mode with this function)				
		Dual-8	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			A/C status	Possible Causes
			Operation Indicator		Heating Indicator	Yellow Indicator	Red Indicator	Green Indicator		
43	Malfunction of phase current detection circuit for compressor	U1							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1
44	Malfunction of voltage dropping for DC bus-bar	U3							During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
45	Malfunction of complete units current detection	U5							During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	Theres circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.
46	The four-way valve is abnormal	U7							If this malfunction occurs during heating operation, the complete unit will stop operation.	1.Supply voltage is lower than AC175V; 2.Wiring terminal 4V is loosened or broken; 3.4V is damaged, please replace 4V.
47	Frequency limiting (power)						OFF 3S and blink 13 times			
48	Compressor is open-circuited					OFF 3S and blink once				
49	The temperature for turning on the unit is reached						OFF 3S and blink 8 times			
50	Frequency limiting (module temperature)						OFF 3S and blink 11 times			
51	Malfunction of detecting plate(WIFI)	JF								

If malfunction occurs, corresponding code will display and the unit will resume normal until protection or malfunction disappears.



#### Analysis or processing of some of the malfunction display:

#### 1. Compressor discharge protection

Possible causes: shortage of refrigerant; blockage of air filter; poor ventilation or air flow short pass for condenser; the system has noncondensing gas (such as air, water etc.); blockage of capillary assy (including filter); leakage inside four-way valve causes incorrect operation; malfunction of compressor; malfunction of protection relay; malfunction of discharge sensor; outdoor temperature too high.

Processing method: refer to the malfunction analysis in the above section.

#### 2. Low voltage overcurrent protection

Possible cause: Sudden drop of supply voltage.

3.

Processing method: Check if communication signal cable is connected reliably.

#### 4. Sensor open or short circuit

Processing method: Check whether sensor is normal, connected with the corre sponding position on the controller and if damage of lead wire is found.

#### 5. Compressor over load protection

Possible causes: insufficient or too much refrigrant; blockage of capillary and increase of suction temp.; improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.

Processing method: adjust refrigerant amount; replace the capillary; replace the compressor; use universal meter to check if the contactor of compress or is fine when it is not overheated, if not replace the protector.

#### 6. System malfunction

i.e.overload protection. When tube temperature (Check the temperature of outdoor heat exchanger when cooling and check the temperature of indoor heat exchanger when heating) is too high, protection will be activated.

Possible causes: Outdoor temperature is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction. please refer to the malfunction analysis in the previous section for handling method.

#### 7. IPM module protection

Processing method:Once the module malfunction happens, if it persists for a long time and can not be selfcanceled, cut off the power and turn off the unit, and then re-energize the unit again after about 10 min. After repeating the procedure for sever times, if the malfunction still exists, replace the module.

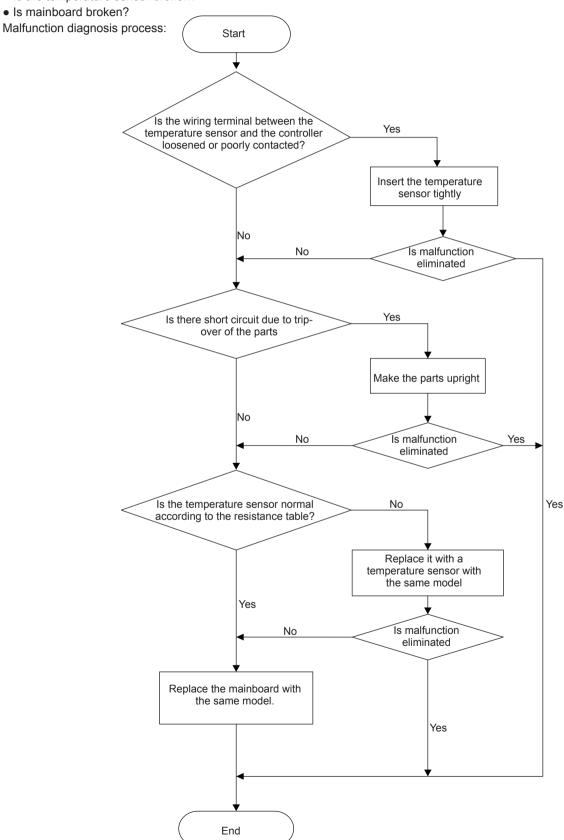
# 9.2 Procedure of Troubleshooting

#### Indoor unit

(1) Malfunction of Temperature Sensor F1, F2

Main detection points:

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



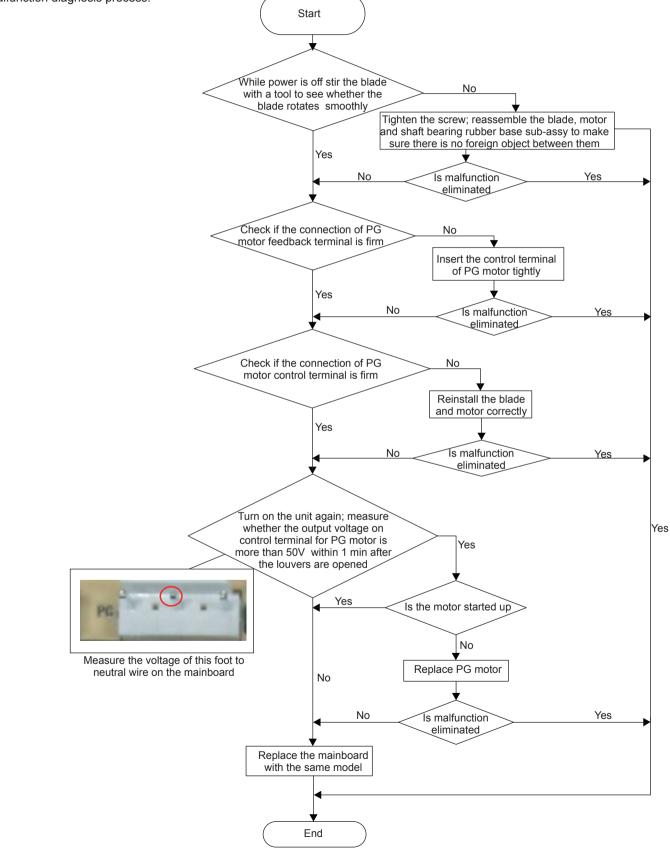
### (2) Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

- SmoothlyIs the control terminal of PG motor connected tightly?
- SmoothlyIs 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:

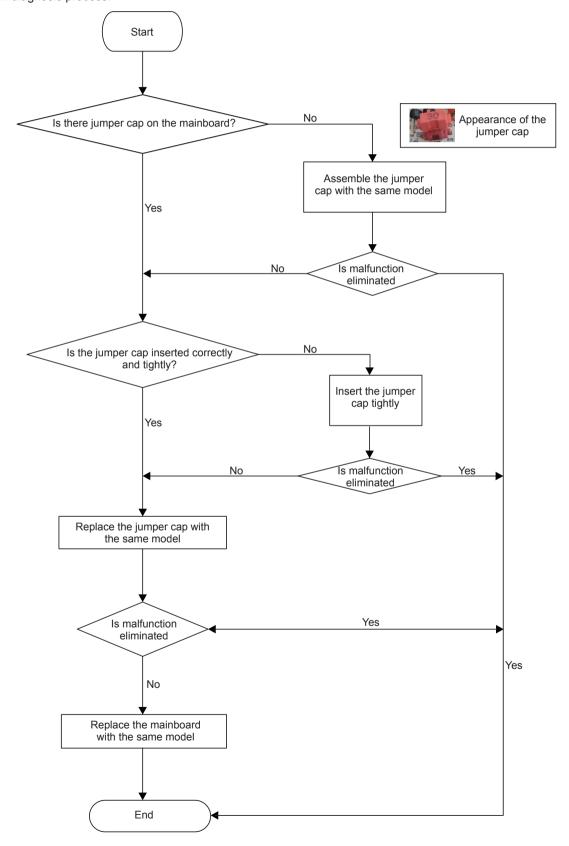


# (3) Malfunction of Protection of Jumper Cap C5

Main detection points:

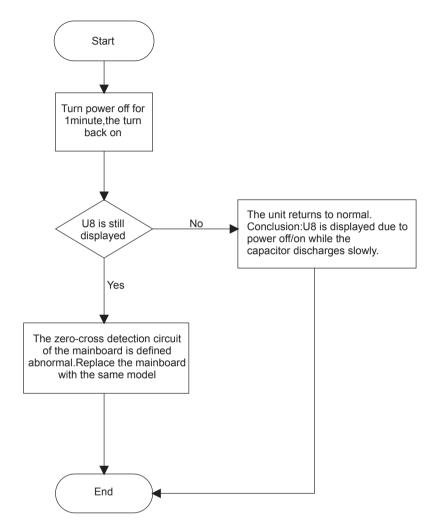
- Is there jumper cap on the mainboard?
- Is the jumper cap inserted correctly and tightly?
- The jumper is broken?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:

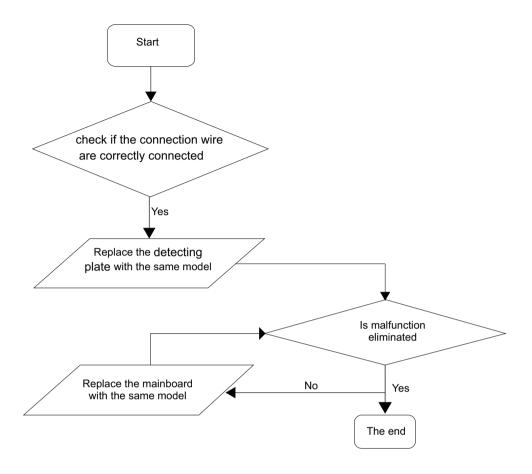


# (4) Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8 Main detection points:

- Instant energization afte de-energization while the capacitordischarges slowly?
- The zero-cross detectioncircuit of the mainboard is defined abnormal? Malfunction diagnosis process:

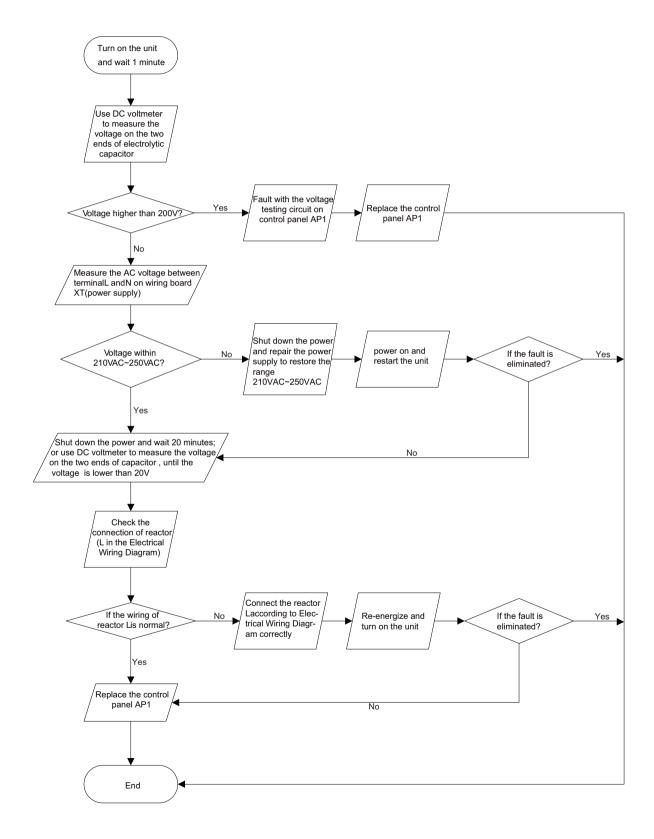


# (5) Malfunction of detecting plate(WIFI) JF



#### **Outdoor unit:**

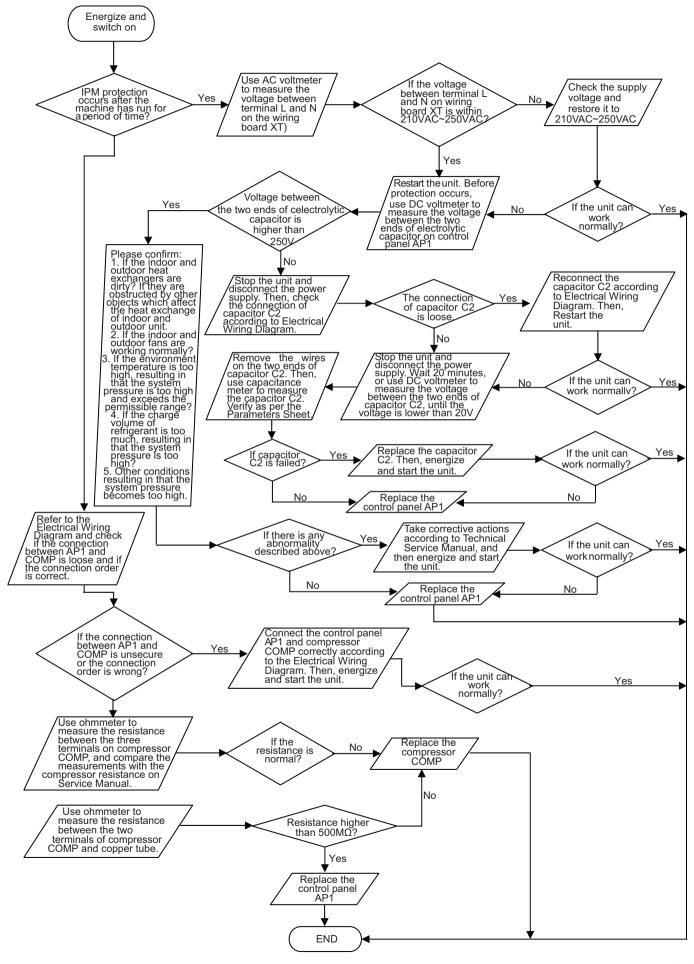
- (1) Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)
- Main Check Points:
- •Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.
- •Is the reactor (L) correctly connected? Is the connection loose or fallen? Is the reactor (L) damaged? Fault diagnosis process:



# (2) IPM Protection, Out-of-step Fault, Compressor Phase Overcurrent (AP1 below refers to the outdoor control panel) Main check points:

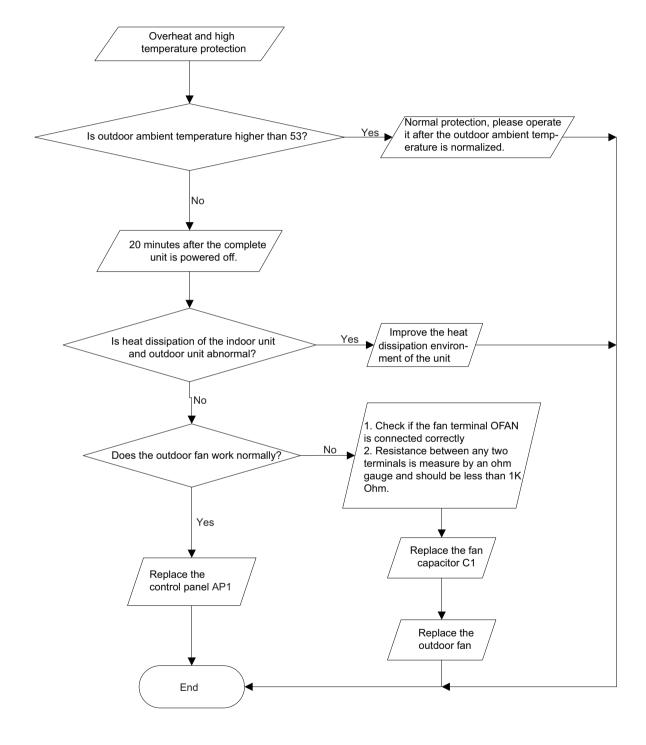
- •Is the connection between control panel AP1 and compressor COMP secure? Loose? Is the connection in correct order?
- •Is the voltage input of the machine within normal range? (Use AC voltmeter to measure the voltage between terminal L and N on the wiring board XT)
- •Is the compressor coil resistance normal? Is the insulation of compressor coil against the copper tube in good condition?
- •Is the working load of the machine too high? Is the radiation good?
- •Is the charge volume of refrigerant correct?

Fault diagnosis process:



- (3) High temperature and overload protection diagnosis (AP1 hereinafter refers to the control board of the outdoor unit) Mainly detect:
- •Is outdoor ambient temperature in normal range?
- Are the outdoor and indoor fans operating normally?
- •Is the heat dissipation environment inside and outside the unit good?

Fault diagnosis process:

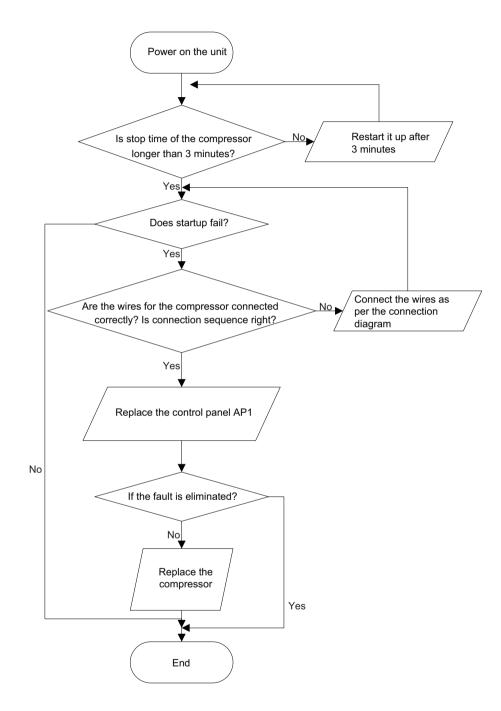


#### (4) Start-up failure (following AP1 for outdoor unit control board)

Mainly detect:

- •Whether the compressor wiring is connected correct?
- •Is compressor broken?
- •Is time for compressor stopping enough?

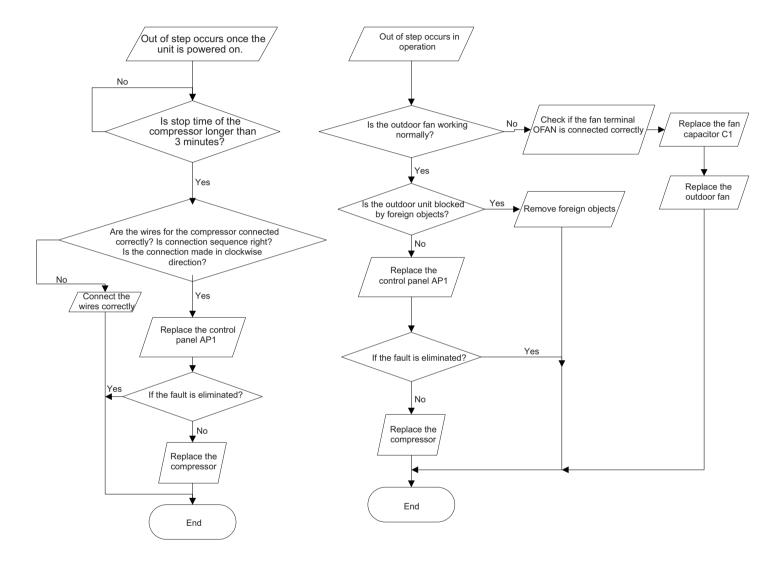
Fault diagnosis process:



# (5) Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit) Mainly detect:

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

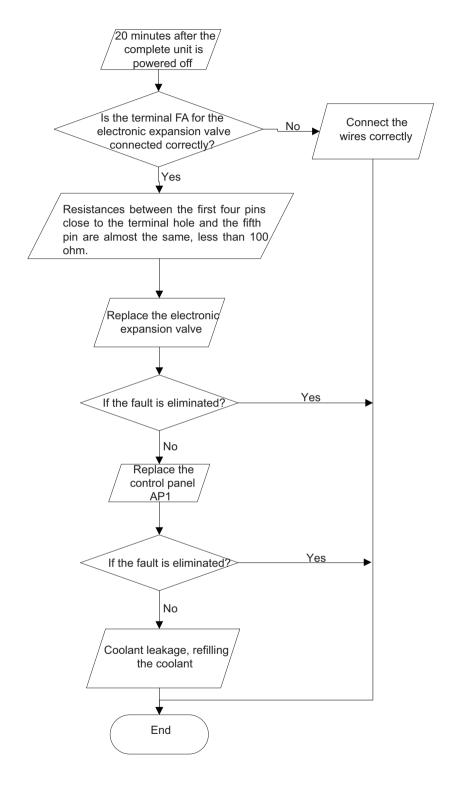
Fault diagnosis process:



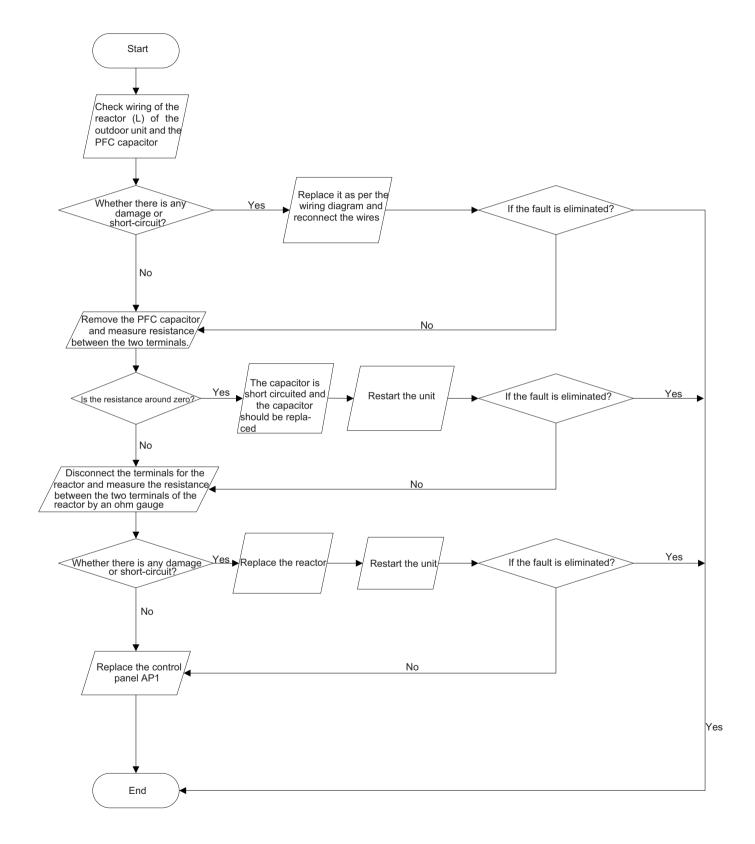
# (6) Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit control board) Mainly detect:

- •Is the PMV connected well or not? Is PMV damaged?
- •Is refrigerant leaked?

Fault diagnosis process:



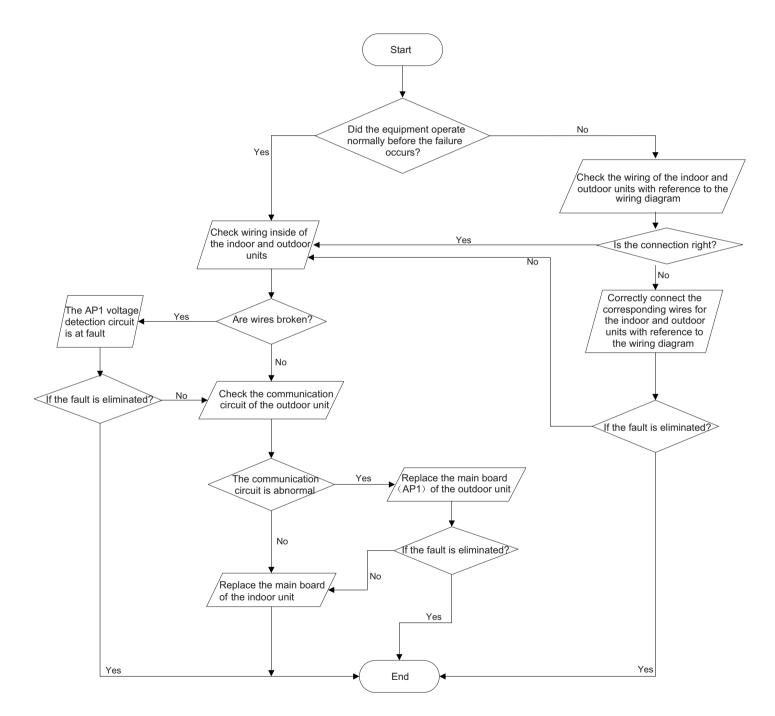
- (7) Power factor correct or (PFC) fault (a fault of outdoor unit) (AP1 hereinafter refers to the control board of the outdoor unit) Mainly detect:
- Check if the reactor (L) of the outdoor unit and the PFC capacitor are broken Fault diagnosis process:



# (8) Communication malfunction: (following AP1 for outdoor unit control board) Mainly detect:

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

Fault diagnosis process:

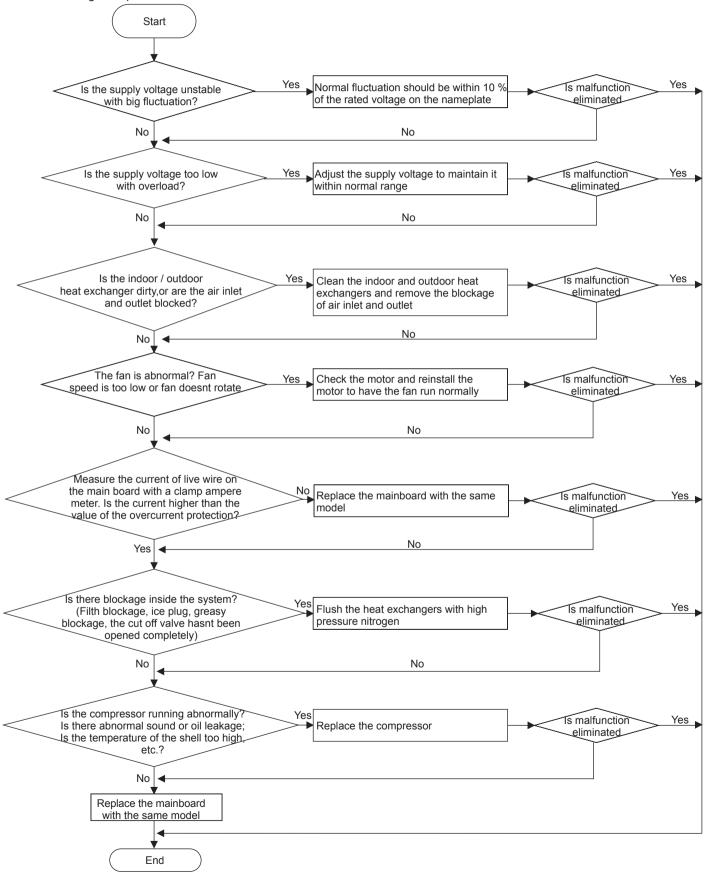


#### (9) Malfunction of Overcurrent Protection

Main detection points:

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

Malfunction diagnosis process:



# 9.3 Troubleshooting for Normal Malfunction

### 1. Air Conditioner Cant be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
1 1 2 1	After energization, operation indicator isnt bright	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 operation indicator isnt bright after energization terminals		Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firmly
Electric leakage for all 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 After energization, air switch trips off		Select proper air switch
Malfunction of remote controller while no display on remote controller of 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
	Check whether the installation postion 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; Unitt 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	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. ODU Fan Motor Cant Operate

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

#### 5. Compressor Cant Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
IL OIL OF COMPRESSOR IS DURNE OUT	Use universal meter to measure the resistance between compressor terminals and its 0	Repair or replace compressor
Cylinder of compressor is blocked Compressor cant operate Repair or replace compressor		

### 6. Air Conditioner is Leaking

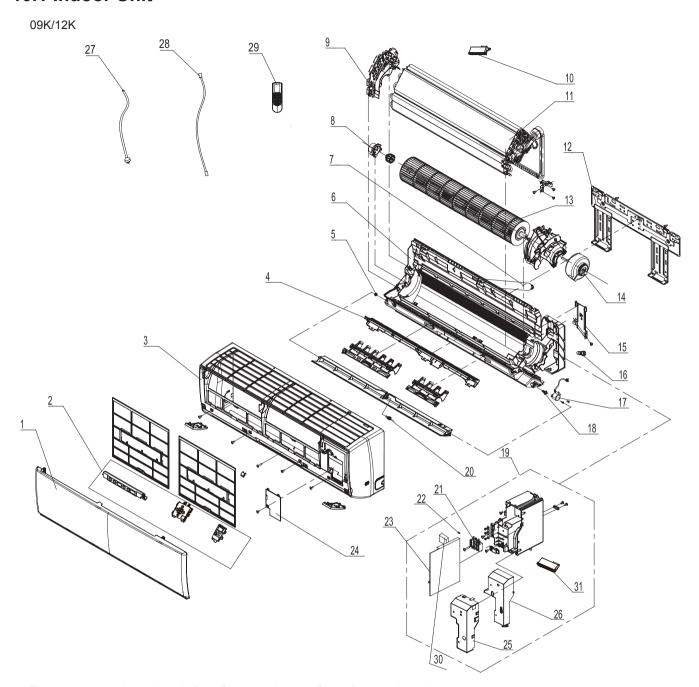
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain
Drain pipe is blocked		pipe
Drain pipe is broken Water leaking from drain pipe		Replace drain pipe
Wrapping is not tight	Water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

### 7. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and theres abnormal sound	II heres the soling 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	IVVater_riinning soling can ne nearg	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	Ulitagor linit dives olit appormal solina	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

# 10. Exploded View and Parts List

### **10.1 Indoor Unit**



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

NO.	Barrietta	Part Code		
	Description	CH-S09FTXE-NG	CH-S09FTXQ-NG	Qty
	Product Code	CB444N07400	CB470N02200	
1	Front Panel	20000300105S	200003000065T	1
2	Display Board	30565260	300001000081	1
3	Front Case Assy	00000200040	00000200040	1
4	Helicoid Tongue	26112508	26112508	1
5	Left Axile Bush	10512037	10512037	1
6	Rear Case assy	20162010	20162010	1
7	Drainage Hose	0523001408	0523001408	1
8	Ring of Bearing	26152022	26152022	1
9	Evaporator Support	24212180	24212180	1
10	Cold Plasma Generator	1114001603	1114001603	1
11	Evaporator Assy	0100200004406	0100200004406	1
12	Wall Mounting Frame	01252043	01252043	1
13	Cross Flow Fan	10352059	10352059	1
14	Fan Motor	150120874	150120874	1
15	Connecting pipe clamp	2611216401	2611216401	1
16	Rubber Plug (Water Tray)	76712012	76712012	1
17	Stepping Motor	1521212901	1521212901	1
18	Crank	73012005	73012005	1
19	Electric Box Assy	100002003790	100002002491	1
20	Axile Bush	10542036	10542036	1
21	Terminal Board	42011233	42011233	1
22	Jumper	4202021904	4202021904	1
23	Main Board	300002000288	300002000288	1
24	Electric Box Cover Sub-Assy	0140206501	0140206501	1
25	Shield Cover of Electric Box Cover	01592150	01592150	1
26	Electric Box Cover	20112207	20112207	1
27	Power Cord	/	1	/
28	Connecting Cable	4002052317	4002052317	0
29	Remote Controller	305001000087	305001000087	1
30	Capacitor CBB61	33010747	33010747	1
31	Detecting Plate	30110154	30110154	1

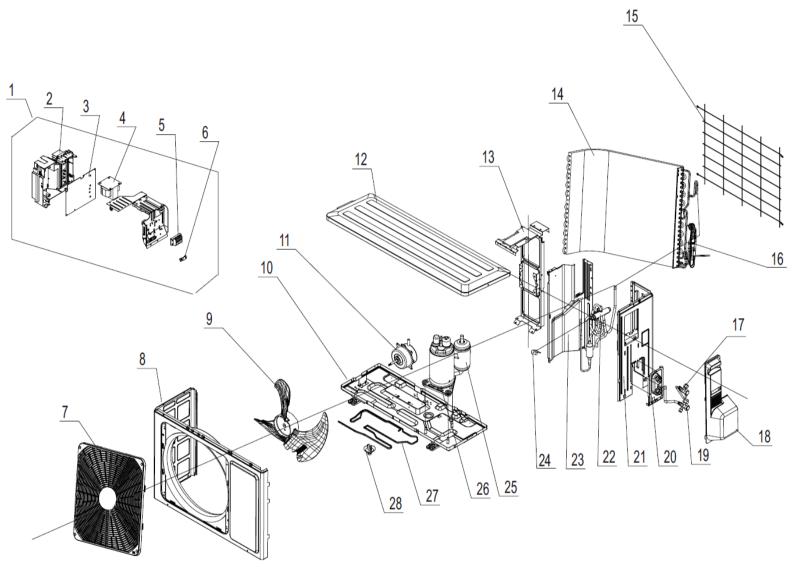
Above data is subject to change without notice.

NO.	Bookistics	Part Code		
	Description	CH-S12FTXE-NG	CH-S12FTXQ-NG	Qty
	Product Code	CB444N07500	CB470N02300	
1	Front Panel	20000300105S	200003000065T	1
2	Display Board	30565260	300001000081	1
3	Front Case Assy	00000200040	00000200040	1
4	Helicoid Tongue	26112508	26112508	1
5	Left Axile Bush	10512037	10512037	1
6	Rear Case assy	20162010	20162010	1
7	Drainage Hose	0523001408	0523001408	1
8	Ring of Bearing	26152022	26152022	1
9	Evaporator Support	24212180	24212180	1
10	Cold Plasma Generator	1114001603	1114001603	1
11	Evaporator Assy	0110010009507	0110010009507	1
12	Wall Mounting Frame	01252043	01252043	1
13	Cross Flow Fan	10352059	10352059	1
14	Fan Motor	150120874	150120874	1
15	Connecting pipe clamp	2611216401	2611216401	1
16	Rubber Plug (Water Tray)	76712012	76712012	1
17	Stepping Motor	1521212901	1521212901	1
18	Crank	73012005	73012005	1
19	Electric Box Assy	100002002895	100002002712	1
20	Axile Bush	10542036	10542036	1
21	Terminal Board	42011233	42011233	1
22	Jumper	4202021911	4202021911	1
23	Main Board	30145096	30145096	1
24	Electric Box Cover Sub-Assy	0140206501	0140206501	1
25	Shield Cover of Electric Box Cover	01592150	01592150	1
26	Electric Box Cover	20112207	20112207	1
27	Power Cord	/	/	1
28	Connecting Cable	4002052317	4002052317	0
29	Remote Controller	305001000087	305001000087	1
30	Capacitor CBB61	33010747	33010747	1
31	Detecting Plate	30110154	30110154	1

Above data is subject to change without notice.

## **10.2 Outdoor Unit**

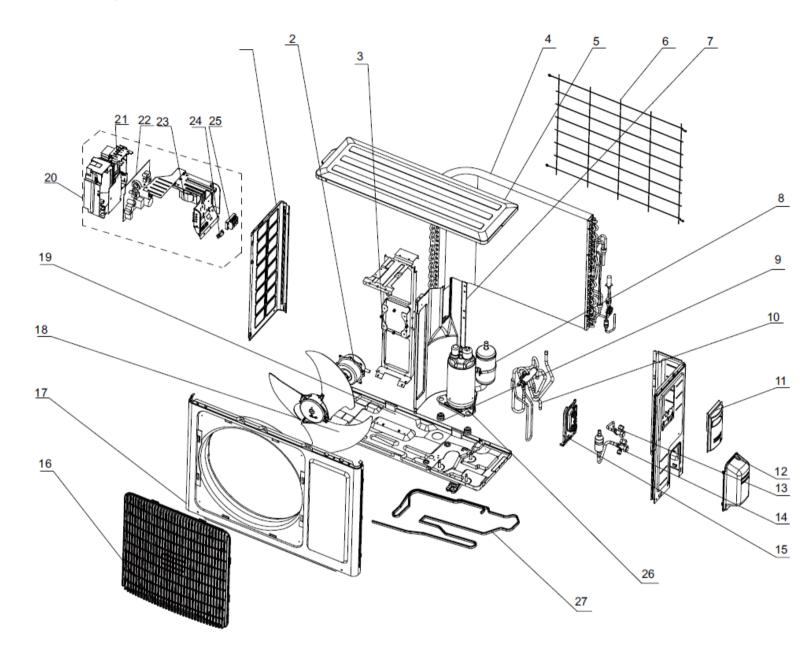
CH-S09FTXE-NG, CH-S09FTXQ-NG



	Description _	Part Code	
NO.	Description	CH-S09FTXE-NG, CH-S09FTXQ-NG	Qty
	Product Code	CB438W07400	
1	Electric Box Assy	100002001193	
2	Electric Box	20113034	1
3	Main Board	300027000249	1
4	Reactor	43130184	1
5	Terminal Board	42010313	1
6	Wire Clamp	71010103	2
7	Front Grill	22413049	1
8	Front Panel	01533034P	1
9	Axial Flow Fan	10333004	1
10	Chassis Sub-assy	01700000134P	1
11	Brushless DC Motor	1501308507	1
12	Top Cover Sub-Assy	01253073	1
13	Motor Support	01703104	1
14	Condenser Assy	011002000372	1
15	Rear Grill	01473009	1
16	Capillary Sub-assy	030006000337	1
17	Cut off Valve	071302391	1
18	Big Handle	262334332	1
19	Cut off Valve	07130239	1
20	Valve Support	0171314201P	1
21	Right Side Plate Sub-Assy	0130317801	1
22	4-Way Valve Assy	030152000171	1
23	Clapboard Sub-Assy	0123338502	1
24	Magnet Coil	4300040050	1
25	Compressor and Fittings	00103925G	1
26	Electrical Heater	I	1
27	Electrical Heater (Chassis)	I	/
28	Drainage Connecter	06123401	1

Above data is subject to change without notice.

CH-S12FTXE-NG, CH-S12FTXQ-NG



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

	Description	Part Code	
NO.	Description	CH-S12FTXE-NG, CH-S12FTXQ-NG	Qty
	Product Code	CB438W06800	
1	Left Side Plate	01303200P	1
2	Fan Motor	1501308507	1
3	Motor Support	01703136	1
4	Condenser Assy	011002000588	1
5	Top Cover Sub-Assy	000051060003	1
6	Rear Grill	01475014	1
7	Clapboard Sub-Assy	01233180	1
8	Compressor and Fittings	009001000175	1
9	Compressor Gasket	76710287	3
10	4-Way Valve Assy	030152000016	1
11	Big Handle	2623343106	1
12	Valve Cover	22243006	1
13	Cut off Valve	071302391	1
14	Cut off Valve	07130239	1
15	Valve Support	0171314201P	1
16	Front Grill	22413044	1
17	Cabinet	01433033P	1
18	Axial Flow Fan	10333011	1
19	Chassis Sub-assy	01700000091P	1
20	Electric Box Assy	100002002902	1
21	Electric Box	20113034	1
22	Main Board	300027000482	1
23	Reactor	43130184	1
24	Wire Clamp	71010103	2
25	Terminal Board	42010313	1
26	Electrical Heater	1	/
27	Electrical Heater (Chassis)	1	1

Above data is subject to change without notice.

# 11. Removal Procedure

09/12K

### 11.1 Removal Procedure of Indoor Unit



### **(1)** Caution: discharge the refrigerant completely before removal.

Step		Procedure
1. Remo	ove filter assembly	Front panel
	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.	Left filter Front case  Right filter
2. Remo	ove horizontal louver	
	Push out the axile 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.	Horizontal louver  Axile bush
3. Remo	ove panel	
a	① A1/B6/C2/C4 display: Screw off the 2 screws that are locking the display board. Separate the display board from the front panel. ② A2/A3 display: Screw off the 2 screws that are locking the display board. This display can be disassembled only after removing the front case (refer to step 5 of disassembly). ③ A5/B2/B4/B8/C6/D2 display: Screw off the 2 screws that are locking the display board. Separate the panel rotation shaft from	A1/B6/C2/C8/D4/D6/E6/ E4 display  Screws  Panel  Front panel  A3 display  Screws  Groove
	the groove fixing the front panel and then removes the front panel.	A5/B2/B4/B8/C4/C6/D2 displa

## Step **Procedure** 4. Remove detecting plate(wifi) and electric box cover2 Remove the screws fixing detecting plate and remove detecting plate(wifi). Detecting plate(WIFI) Remove the screws fixing electric box cober2 and remove electric box2. Electric box cove₽ 5. Remove front case sub-assy Screws а 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 Front case case sub-assy is different for different sub-assy Screw caps models. Clasp b Loosen the connection clasps between Front case front case sub-assy and bottom case. Lift sub-assy up the front case sub-assy and take it out. 6. Remove vertical louver Loosen the connection clasps between vertical louver and bottom case to remove **Bottom** vertical louver. case Vertical louver

Clasps

Vertical

louver

### Step **Procedure** 7. Remove electric box assy Screw а Loosen the connection clasps between Clasps shield cover of electric box sub-assy and electric box, and then remove the shield cover of electric box sub-assy. Remove the screw fixing electric box assy . Electric box Shield cover of electric box sub-assy Indoor tube temperature Grounding screw Electric box assy sensor b ① Take off the water retaining sheet. Remove the cold plasma generator by screwing off the locking screw on the generator. Cold plasm ② Take off the indoor tube temperature generator sensor. ③ Screw off 1 grounding screw. Wiring 4 Remove the wiring terminals of motor and terminal Screw stepping motor. of motor ⑤ Remove the electric box assy. Wiring Water retaining terminal sheet of stepping motor Screw Main board С Twist off the screws that are locking each lead wire and rotate the electric box assy. Twist off the screws that are locking the wire clip. Loosen the power cord and remove its wiring terminal. Lift up the main board and take it off. Power cord Screw Wire clip

Step		Procedure
	Instruction: Some wiring terminal of this product is with lock catch and other devices. The pulling method is as below:  1.Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals.  2.Pull out the holder for some terminals at first (holder is not available for some wiring terminal), hold the connector and then pull the terminal.	circlip holder soft sheath connector
8. Rem	ove evaporator assy	Screws Evaporator assy
а	Remove 3 screws fixing evaporator assy.	
b	At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.	Connection pipe clamp Screw
С	First remove the left side of the evaporator from the groove of bottom case and then remove the right side from the clasp on the bottom case.	Groove Bottom case  Clasp  Evaporator assy
d	Adjust the position of connection pipe on evaporator slightly and then lift the evaporator upwards to remove it.	Connection pipe

Step		Procedure
9. Remo	ve motor and cross flow blade	
а	Remove the screws fixing motor clamp and then remove the motor clamp.	Screws Motor clamp
b	Remove the screws at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them.  Remove the bearing holder sub-assy.  Remove the screw fixing step motor and then remove the step motor.	Holder sub-assy  Screws  Screws  Step motor

### 18K

# Step **Procedure** 1.Remove fifter assy Front panel Open the front panel. Push the left and rightfilters to make them break away from thegroove on the front case. Then remove the leftand right filters one by one. Left filter Front Right filter Groove case 2.Remove horizontal louver Push out the axile bush on horizontal louver, Bend the horizontal louver with hand and then separate the horizontal louver from the crank shaft of step motor to remove it. Horizontal louver Location of step motor Axile bush 3. Remove panel and display A1display Separate the panel rotation shaft from Screws Panel the groove fixing the front panel and then Front panel removes the front panel. Screw off the 2 screws that are locking the display board. Panel rotation Groove Screws

## Step **Procedure** 3.Remove electric box cover 2 and detecting plate WIFI Remove the screws on the electric box cover 2 and detecting plate(WIFI), then remove the electric box cover 2 and detecting plate(WIFI). Electric box cover2 Note: The position of detection Detecting plate(WIFI) Electric box cover board(WIFI) may be different for different models. Screws 5.Remove front case sub-assy Remove the screws fixing front case. Note: а ① Open the screw caps before removing the screws arround the air outlet. Front case ② The quantity of screws fixing the front sub-assv case sub-assy is different for different Screw Screw caps models. Loosen the connection clasps between front Clasp case sub-assy and bottom case. Lift up the front case sub-assy and take it out. Front case sub-assy 6.Remove display Screw off the 2 screws that are locking the display board.

124 Installation and Maintenance

Screws

### Step **Procedure** 7.Remove vertical louver Vertical louver а Loosen the connection clasps between vertical louver and bottom case to remove vertion louver. **Bottom** Swing motor case b Screw off the screws that are locking the swing motor and take the motor off. Screws Clasps 8.Remove electric box assy Screw Loosen the connection clasps between а shield cover of electric box sub-assy and electric box, and then remove the shield Clasps cover of electric box sub-assy. Remove the screw fixing electric box assy. Electric box Shield cover of electric box sub-assy Indoor tube Electric box assy ① Cut off the wire binder and pull out b temperature sensor the indoor tube temperature sensor. 2 Screw off one grounding screw. Main ③ Remove the wiring terminals of motor board and stepping motor. G rounding ④ Remove the electric box assy. screw Wiring ⑤ Screw off the screws thar are locking terminal of motor each lead wire. Wire binder Wiring <u>t</u>erminal of stepping motor Screw

Step	Prod	cedure
C	Rotate the electric box assy. Twist offthe screwsthat 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. Instruction:Some wiring terminal of this products is with lock catch and other devices.The pulling method is as below:  ① Remove the soft sheath for some terminals at first, hold the circlip and then pull out the terminals, ② Pull out the holder for some terminals at first(holder is not available for some wiring terminal).hold the connector and then pull the terminal.	Power cord  Wire clip  Circlip  Holder  Connector
9.Remo	Remove 3 screws fixing evaporator assy.	Screws Evaporator assy
b	At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.	Connection pipe clamp Screw
С	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.	Groove  Rear case assy  Clasp

Step	Prod	cedure
d	Adjust the position of conncetion pipe on evaporator up wards to remove it.	Connection pipe
10.Ren	nove motor and cross flow blade	
а	Remove the screws fixing motor clamp and then remove the motor clamp.	Screws Motor clamp
b	Remove the screws at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them.      Remove the bearing holder sub-assy.     Remove the screw fixing step motor and then remove the step motor.	Holder sub-assy Screws Screws Step motor

### **Appendix:**

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

Conversion formula for Fahrenheit degree and Celsius degree: Tf=Tcx1.8+32 Set temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature	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	Fahrenheit (°F)	Celsius(°C)	Fahrenheit display temperature	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature	Fahrenheit	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 pipeFor the unit with standard connection pipe of 5m, there is no limitation for themin length of connection pipe. For the unit with standard connection pipe of 7.5m and 8m, the min length of connection pipe is 3m.
- 3.Max length of connection pipe (More details please refer to the specifications)
- 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):
- Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See Sheet 2.
- Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R32											
Diameter of con	nection pipe	Indoor unit throttl	Indoor unit throttl Outdoor unit throttle								
Liquid pipe	Liquid pipe Gas pipe		Cooling only(g / m)	Cooling and heating(g / m)							
Ф6	Φ6 Φ9.5 or Φ12		12	16							
Ф6 ог Ф9.5	Ф16 or Ф19	40	12	40							
Ф12	Ф19 or Ф22.2	80	24	96							
Ф16	Ф25.4 ог Ф31.8	136	48	96							
Ф19	Ф19 /		200	200							
Ф22.2	Ф22.2 /		280	280							

Note: The additional refrigerant charging amount in Sheet 2 is recommended value, not compulsory.

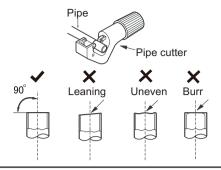
### **Appendix 3: Pipe Expanding Method**

**Note:** 

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

A:Cut the pip

- 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

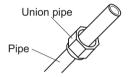
• Remove the burrs with shaper and prevent the burrs from getting into the pipe.

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.



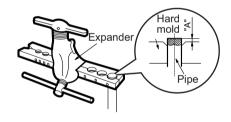
E:Expand the port

• Expand the port with expander.

**Note: Note:** 

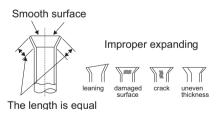
• "A" is different according to the diameter, please refer to the sheet below:

Outor diameter/mm)	A(m	ım)
Outer diameter(mm)	Max	Min
Ф6 - 6.35 (1/4")	1.3	0.7
Ф9.52 (3/8")	1.6	1.0
Ф12 - 12.70 (1/2")	1.8	1.0
Ф16 - 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