



ALL-MATCH INVERTER SERIES_R32

Service Manual

DUC30HP230V1R32AH

DUC36HP230V1R32AH

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI



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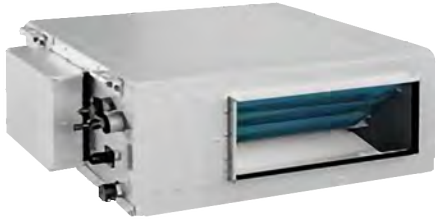
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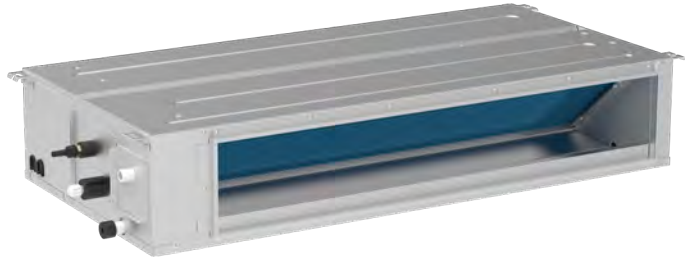
1. Summary

Indoor Unit:

GFH(12)DA-D6DNA1A/I



DUC36HP230V1R32AH



DUC30HP230V1R32AH

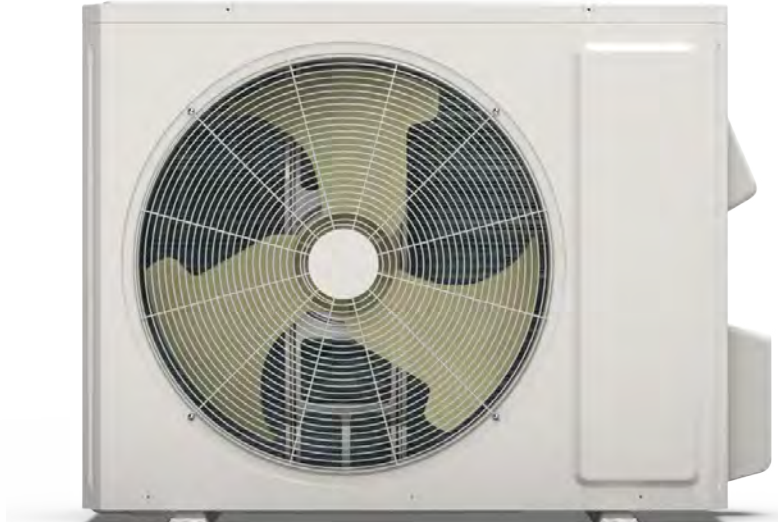


Outdoor Unit:

GWH12AUCXD-D6DNA1B/O

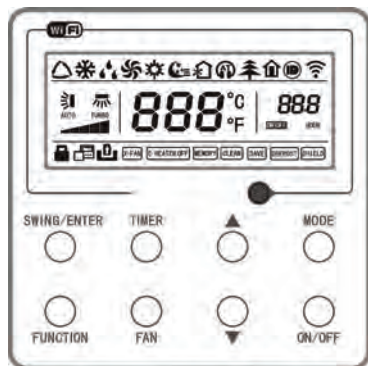


LIV30HP230V1R32AO
LIV36HP230V1R32AO



Wired Controller:

XE72-44/E



Model list:

No.	Model	product code	Indoor model	Indoor product code	Outdoor model	Outdoor product code
1	GWH12AUCXD-D6DNA1B/O GFH(12)DA-D6DNA1A/I	CN210N0390-F	GFH(12)DA-D6DNA1A/I	CN210N0390	GWH12AUCXD-D6DNA1B/O	CB575W01700
2	LIV30HP230V1R32AO DUC30HP230V1R32AH	CB574W19100-F	DUC30HP230V1R32AH	CN210N0560	LIV30HP230V1R32AO	CB574W19100
3	LIV36HP230V1R32AO DUC36HP230V1R32AH	CB574W18100-F	DUC36HP230V1R32AH	CN210N0540	LIV36HP230V1R32AO	CB574W18100

2. Specifications

Model			GWH12AUCXD-D6DNA1B/O GFH(12)DA-D6DNA1A/I	LIV30HP230V1R32AO DUC30HP230V1R32AH
Product Code		-	CN210N0390-F	CB574W19100-F
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases	-	1	1
Power Supply Mode		-	Outdoor	Outdoor
Cooling Capacity		Btu/h	12000	30000
Heating Capacity		Btu/h	12000	30000
Cooling Power Input		W	923	2600
Heating Power Input		W	923	2750
Cooling Current Input		A	4.41	12
Heating Current Input		A	4.41	12
Rated Input		W	1600	5000
Rated Cooling Current		A	6.56	18
Rated Heating Current		A	7.13	22
Air Flow Volume		CFM	353/288/247/212	883/736/677/647
Dehumidifying Volume		L/h	2.96	7.40
EER		(Btu/h)/W	13	11.26
COP		(Btu/h)/W	13	10.9
SEER		-	21	18.5
HSPF		-	9.0	8.5
Application Area		m ²	16-24	46-70
Indoor Unit	Indoor Unit Model	-	GFH(12)DA-D6DNA1A/I	DUC30HP230V1R32AH
	Indoor Unit Product Code	-	CN210N0390	CN210N0560
	Fan Type	-	Centrifugal	Centrifugal
	Fan Diameter Length (DXL)	mm	Φ202X107	Φ161.5X187
	Cooling Speed	r/min	940/770/640/570	1350/1100/1000/960
	Heating Speed	r/min	940/770/640/570	1300/1100/1000/960
	Fan Motor Power Output	W	150	80
	Fan Motor RLA	A	0.5	1.6
	Fan Motor Capacitor	μF	/	/
	Evaporator Form	-	/	/
	Evaporator Pipe Diameter	mm	Φ7.94	Φ7
	Evaporator Row-fin Gap	mm	2-1.8	3-1.4
	Evaporator Coil Length	mm	/	/
	Swing Motor Model	-	/	/
	Swing Motor Power Output	W	/	/
	Fuse Current	A	/	3.15
	Sound Pressure Level	dB (A)	Cooling:38/33/29/26 Heating:38/32/27/24	Cooling:45/40/38/36 Heating:44/40/38/37
	Sound Power Level	dB (A)	Cooling:48/43/39/36 Heating:48/42/37/34	Cooling:55/50/48/46 Heating:54/50/48/47
	Dimension (WXHXD)	inch	32 43/64 X 29 11/16 X 11 13/16	35 7/16 X 10 15/64 X 25 25/32
	Dimension of Carton Box (LXWXH)	inch	35 13/64 X 31 11/16 X 13 37/64	43 25/32 X 30 9/32 X 12 1/64
Dimension of Package (LXWXH)	inch	35 5/16 X 31 13/16 X 14 11/64	43 57/64 X 30 25/64 X 12 19/32	
Net Weight	lb	70.56	66.2	
Gross Weight	lb	83.79	77.2	

Outdoor Unit	Outdoor Unit Model	--	GWH12AUCXD-D6DNA1B/O	LIV30HP230V1R32AO
	Outdoor Unit Product Code	--	CB575W01700	CB574W19100
	Compressor Manufacturer	--	ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model	--	QXF-M098zE170	QXFS-B221zX070S
	Compressor Oil	--	FW68L	FW68DA or equivalent
	Compressor Type	--	Rotary	Twin Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	/	38
	Compressor Rated Load Amp (RLA)	A	7	18.5
	Compressor Power Input	W	856.6	1775
	Compressor Overload Protector	--	/	/
	Throttling Method	--	Electron expansion valve	Electron expansion valve
	Set Temperature Range	°F	61~86	61~86
	Cooling Operation Ambient Temperature Range	°F	-20~122	-4~122
	Heating Operation Ambient Temperature Range	°F	-22~86	-13~75
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7	Φ7
	Condenser Rows-fin Gap	mm	2-1.4	2 - 1.4
	Condenser Coil Length (LxDxW)	mm	761.5X38.1X528	955X38.1X704
	Fan Motor Speed	rpm	810	850
	Fan Motor Power Output	W	30	90
	Fan Motor RLA	A	0.7	1.7
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume	m3/h	2200	4500
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	Φ420	Φ570
	Defrosting Method	--	Automatic Defrosting	Automatic Defrosting
	Climate Type	--	T1	T1
	Isolation	--	I	I
	Moisture Protection	--	IPX4	IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Sound Pressure Level	dB (A)	52	62
	Sound Power Level	dB (A)	62	72
Dimension(WXHXD)	inch	31 37/64X21 27/32X13 25/32	39 3/8 X 29 3/8 X 16 13/16	
Dimension of Carton Box (LXWXH)	inch	34 7/32X15 35/64X23 25/64	42 13/32 X 18 57/64 X 30 29/32	
Dimension of Package(LXWXH)	inch	34 21/64X15 43/64X24 13/32	42 33/64 X 19 1/64 X 31 57/64	
Net Weight	lb	67.3	116.8	
Gross Weight	lb	72.8	127.9	
Refrigerant	--	R32	R32	
Refrigerant Charge	oz	28.2	56.4	
Connection Pipe	Connection Pipe Length	ft	24.6	24.6
	Connection Pipe Gas Additional Charge	oz/ft.	0.2	0.4
	Outer Diameter of Liquid Pipe	inch	1/4	1/4
	Outer Diameter of Gas Pipe	inch	1/2	5/8
	Max Distance Height	ft	40	82
	Max Distance Length	ft	65.6	131.2
Note: The connection pipe applies metric diameter.				

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

Model			LIV36HP230V1R32AO DUC36HP230V1R32AH
Product Code		-	CB574W18100-F
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases	-	1
Power Supply Mode		-	Outdoor
Cooling Capacity		Btu/h	33600
Heating Capacity		Btu/h	34000
Cooling Power Input		W	2814
Heating Power Input		W	2622
Cooling Current Input		A	13.5
Heating Current Input		A	14.7
Rated Input		W	4000
Rated Cooling Current		A	20
Rated Heating Current		A	20
Air Flow Volume		CFM	1324/942/912/853
Dehumidifying Volume		L/h	7.82
EER		(Btu/h)/W	11.95
COP		(Btu/h)/W	12.97
SEER		-	20
HSPF		-	8.5
Application Area		m ²	46-70
Indoor Unit	Indoor Unit Model	-	DUC36HP230V1R32AH
	Indoor Unit Product Code	-	CN210N0540
	Fan Type	-	Centrifugal
	Fan Diameter Length (DXL)	mm	Φ161.5X187
	Cooling Speed	r/min	1310/1210/1140/1100
	Heating Speed	r/min	1310/1210/1140/1100
	Fan Motor Power Output	W	200
	Fan Motor RLA	A	/
	Fan Motor Capacitor	μF	/
	Evaporator Form	-	/
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	3-1.4
	Evaporator Coil Length	mm	/
	Swing Motor Model	-	/
	Swing Motor Power Output	W	/
	Fuse Current	A	5
	Sound Pressure Level	dB (A)	Cooling:43/41/39/38 Heating:44/42/40/39
	Sound Power Level	dB (A)	Cooling:53/51/49/48 Heating:54/52/50/49
	Dimension (WXHDX)	inch	52 3/4 X 25 25/32 X 10 15/64
	Dimension of Carton Box (LXWXH)	inch	61 39/64 X 30 13/64 X 12 1/8
Dimension of Package (LXWXH)	inch	61 47/64 X 30 5/16 X 12 23/32	
Net Weight	lb	94.8	
Gross Weight	lb	108	

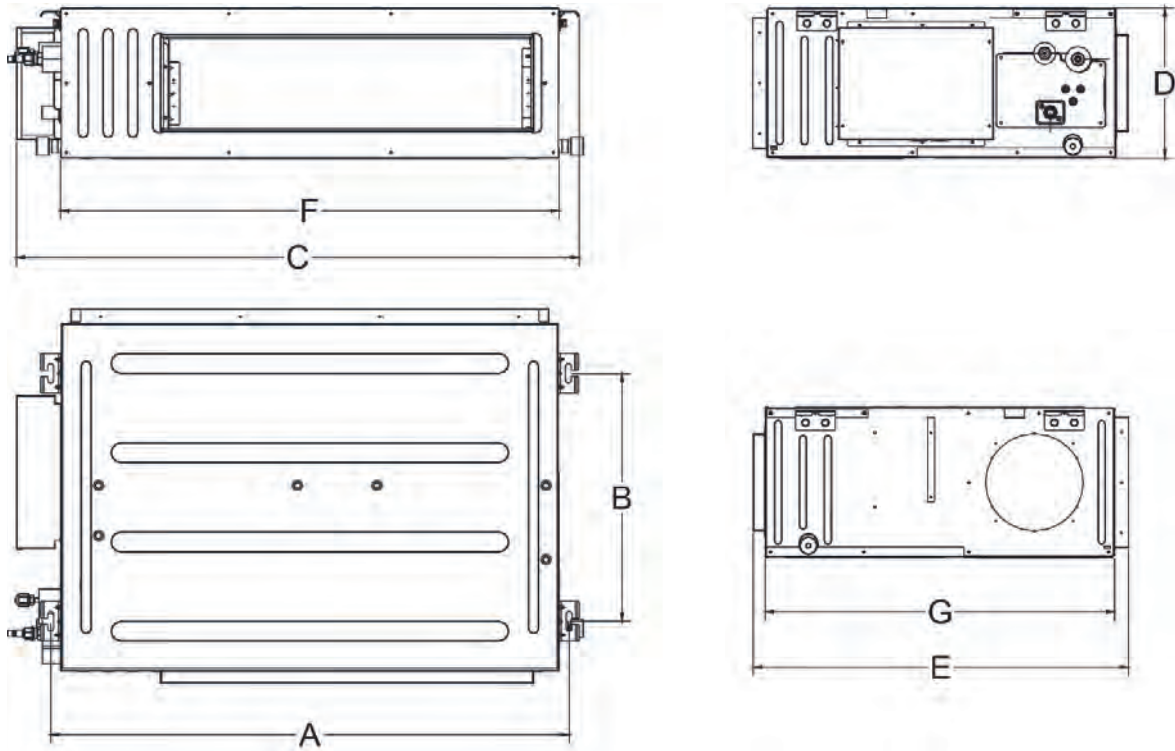
Outdoor Unit	Outdoor Unit Model	--	LIV36HP230V1R32AO
	Outdoor Unit Product Code	--	CB574W18100
	Compressor Manufacturer	--	ZHUHAI LANDA COMPRESSOR CO., LTD.
	Compressor Model	--	QXFS-D280zX070
	Compressor Oil	--	FW68DA or equivalent
	Compressor Type	--	Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	40
	Compressor Rated Load Amp (RLA)	A	16
	Compressor Power Input	W	2294
	Compressor Overload Protector	--	/
	Throttling Method	--	Electron expansion valve
	Set Temperature Range	°F	61~86
	Cooling Operation Ambient Temperature Range	°F	-4~122
	Heating Operation Ambient Temperature Range	°F	-13~75
	Condenser Form	--	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	2 - 1.4
	Condenser Coil Length (LxD×W)	mm	955X38.1X704
	Fan Motor Speed	rpm	850
	Fan Motor Power Output	W	90
	Fan Motor RLA	A	1.7
	Fan Motor Capacitor	μF	/
	Air Flow Volume	m3/h	4500
	Fan Type	--	Axial-flow
	Fan Diameter	mm	Φ570
	Defrosting Method	--	Automatic Defrosting
	Climate Type	--	T1
	Isolation	--	I
	Moisture Protection	--	IPX4
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	6.0
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5
	Sound Pressure Level	dB (A)	62
	Sound Power Level	dB (A)	72
Dimension(WXHXD)	inch	39 3/8 X 29 3/8 X 16 13/16	
Dimension of Carton Box (LXWXH)	inch	42 13/32 X 18 57/64 X 30 29/32	
Dimension of Package(LXWXH)	inch	42 33/64 X 19 1/64 X 31 57/64	
Net Weight	lb	122.4	
Gross Weight	lb	133.4	
Refrigerant	--	R32	
Refrigerant Charge	oz	56.4	
Connection Pipe	Connection Pipe Length	ft	24.6
	Connection Pipe Gas Additional Charge	oz/ft.	0.4
	Outer Diameter of Liquid Pipe	inch	1/4
	Outer Diameter of Gas Pipe	inch	5/8
	Max Distance Height	ft	82
	Max Distance Length	ft	131.2
Note: The connection pipe applies metric diameter.			

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

3. Outline Dimension Diagram

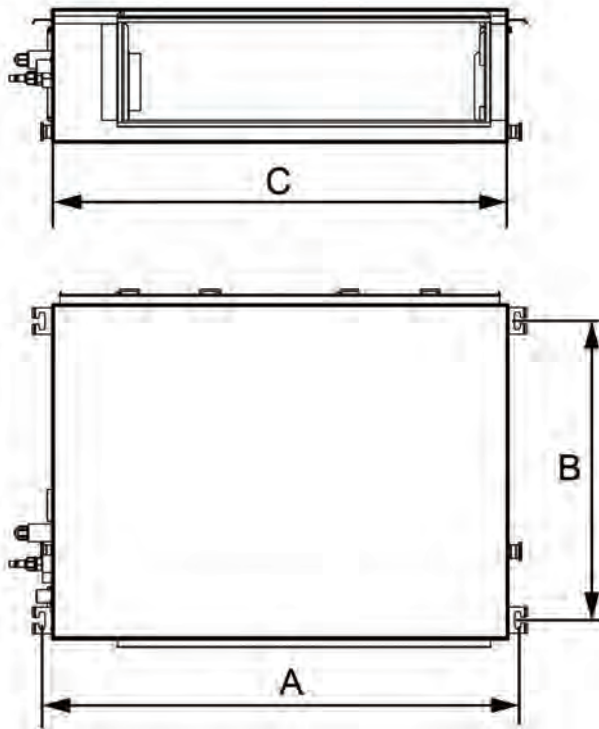
3.1 Indoor Unit

Duct Type

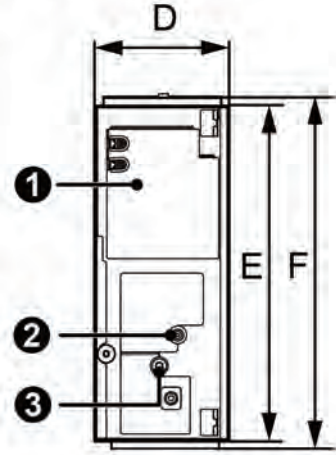


Unit: inch

Model	A	B	C	D	E	F	G
12K	29 9/64	19 11/16	32 43/64	11 13/16	29 11/16	27 9/16	27 9/16



- ① Electric Box
- ② Gas pipe
- ③ Liquid pipe

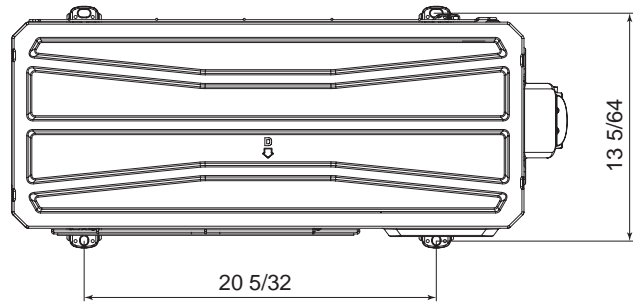
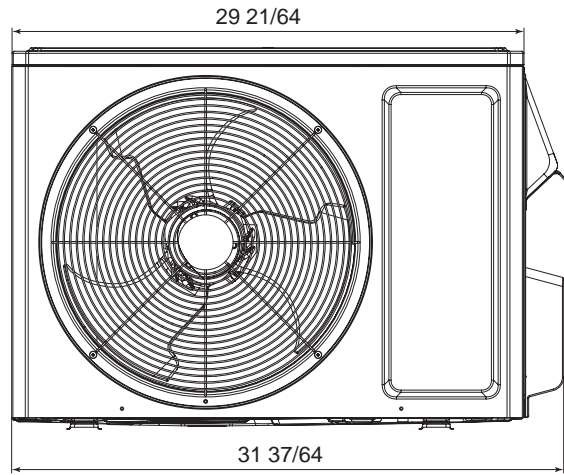
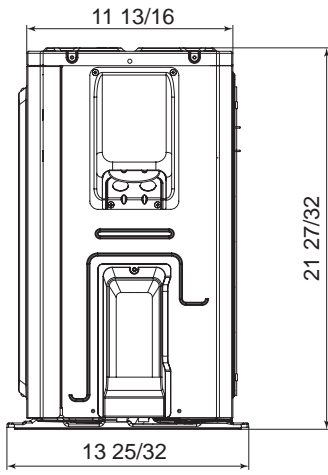


Unit: inch

Model	A	B	C	D	E	F
30K	37 3/32	23 15/64	35 7/16	10 15/64	25 25/32	27 1/4
36K	54 3/8	23 1/32	52 3/4	10 15/64	25 25/32	27 7/16

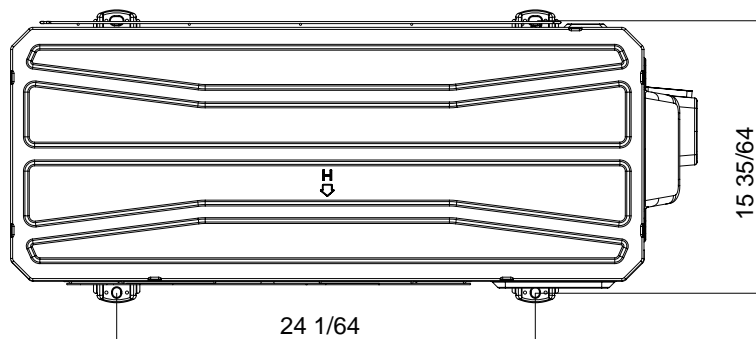
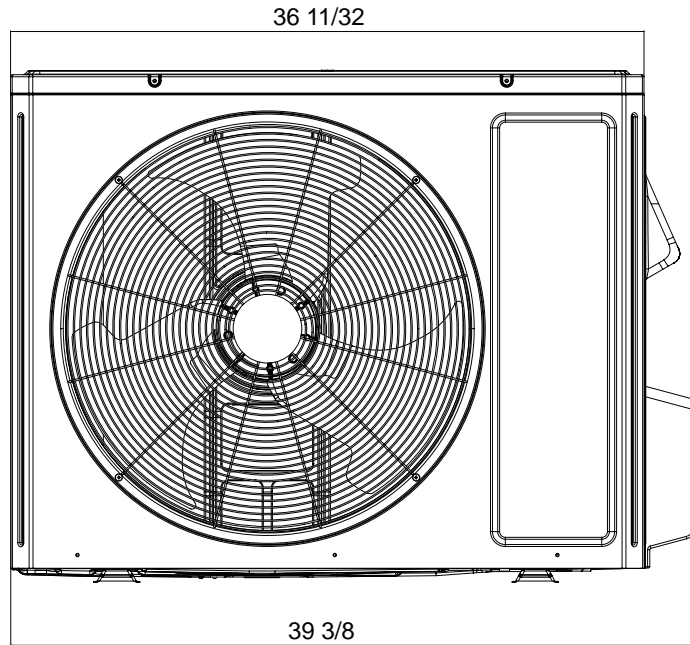
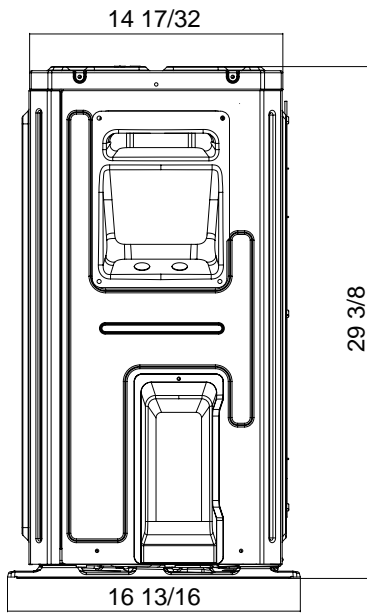
3.2 Outdoor Unit

XD



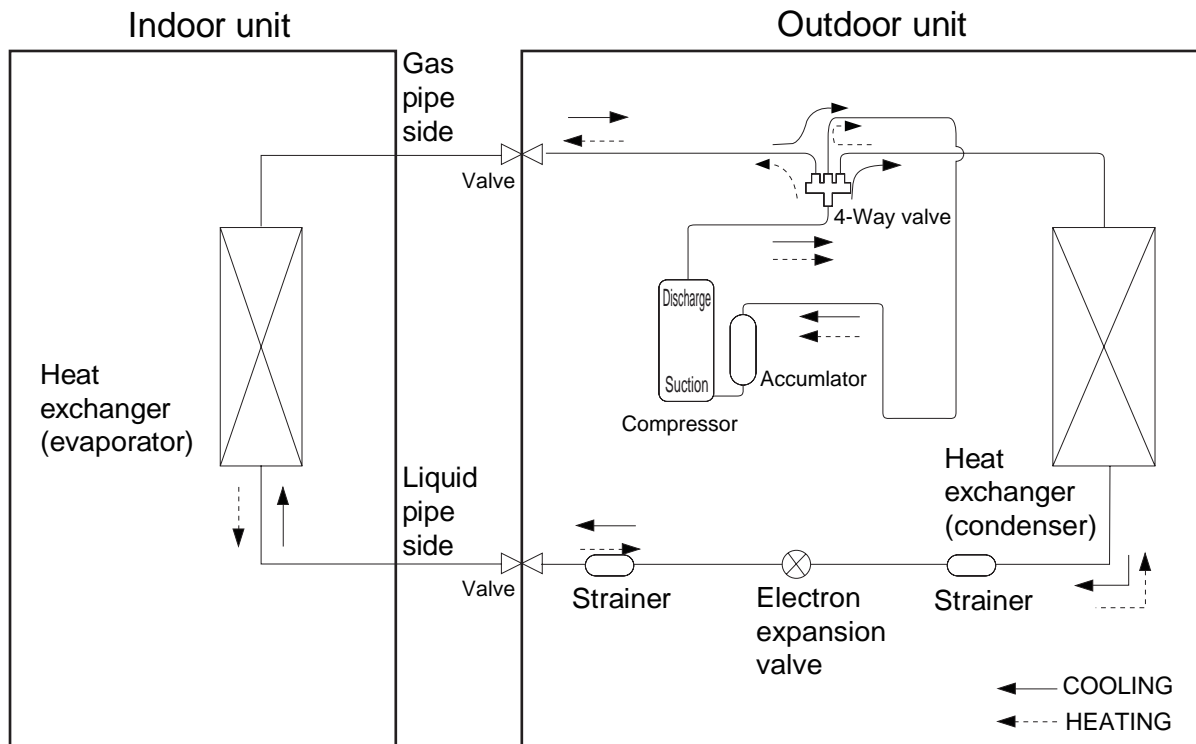
Unit:inch

XH



Unit:inch

4. Refrigerant System Diagram



Connection pipe specification:

Liquid pipe: 1/4"


Gas pipe: 1/2" 12K

Gas pipe: 5/8" 30/36K

5. Electrical Part

5.1 Wiring Diagram

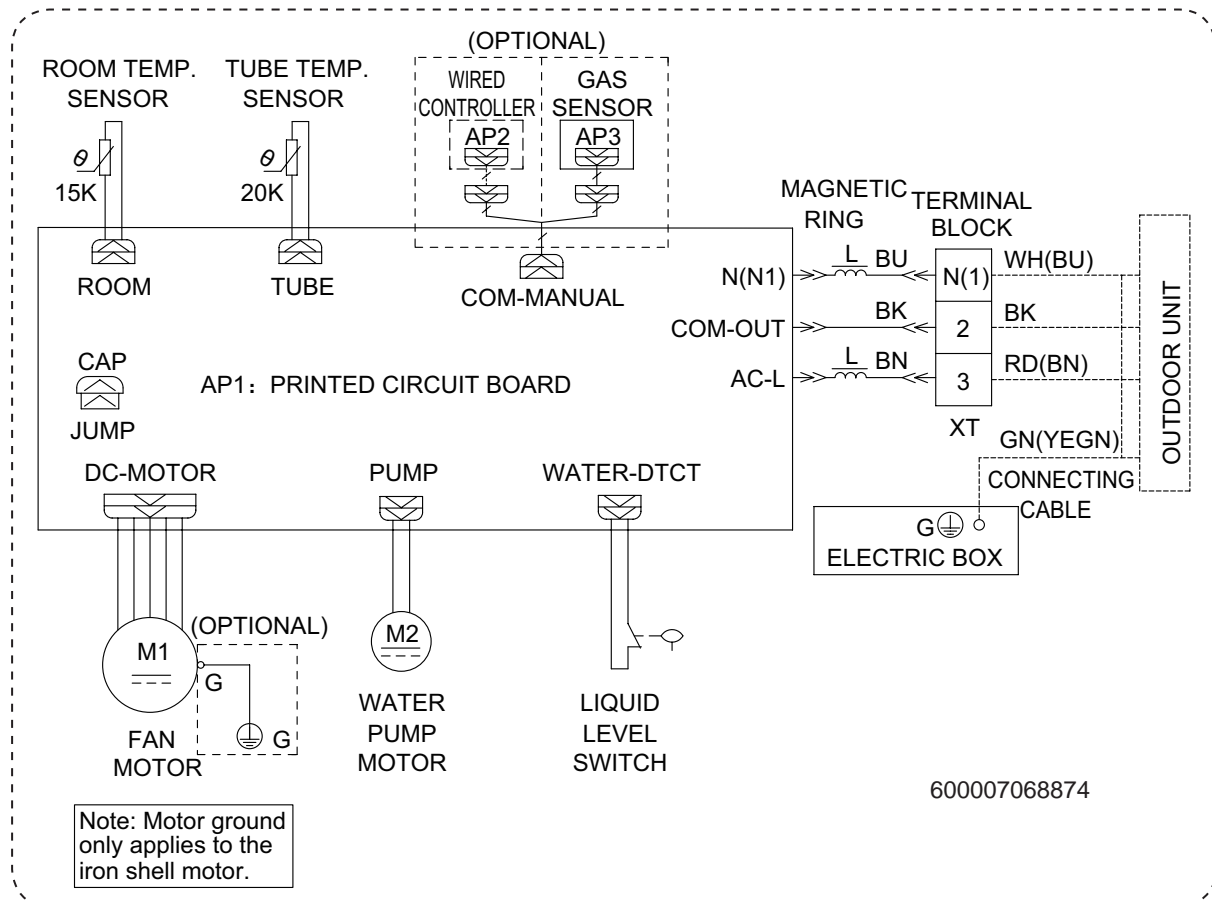
• Instruction

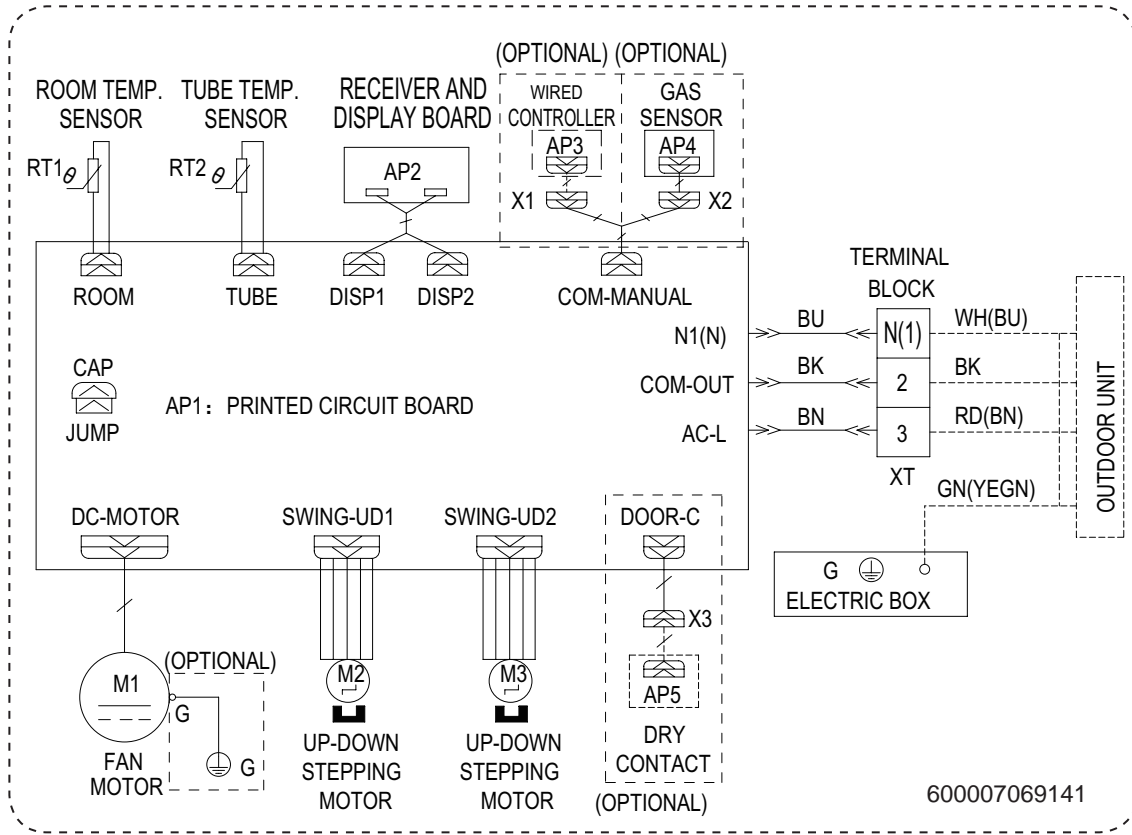
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

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

• Indoor Unit

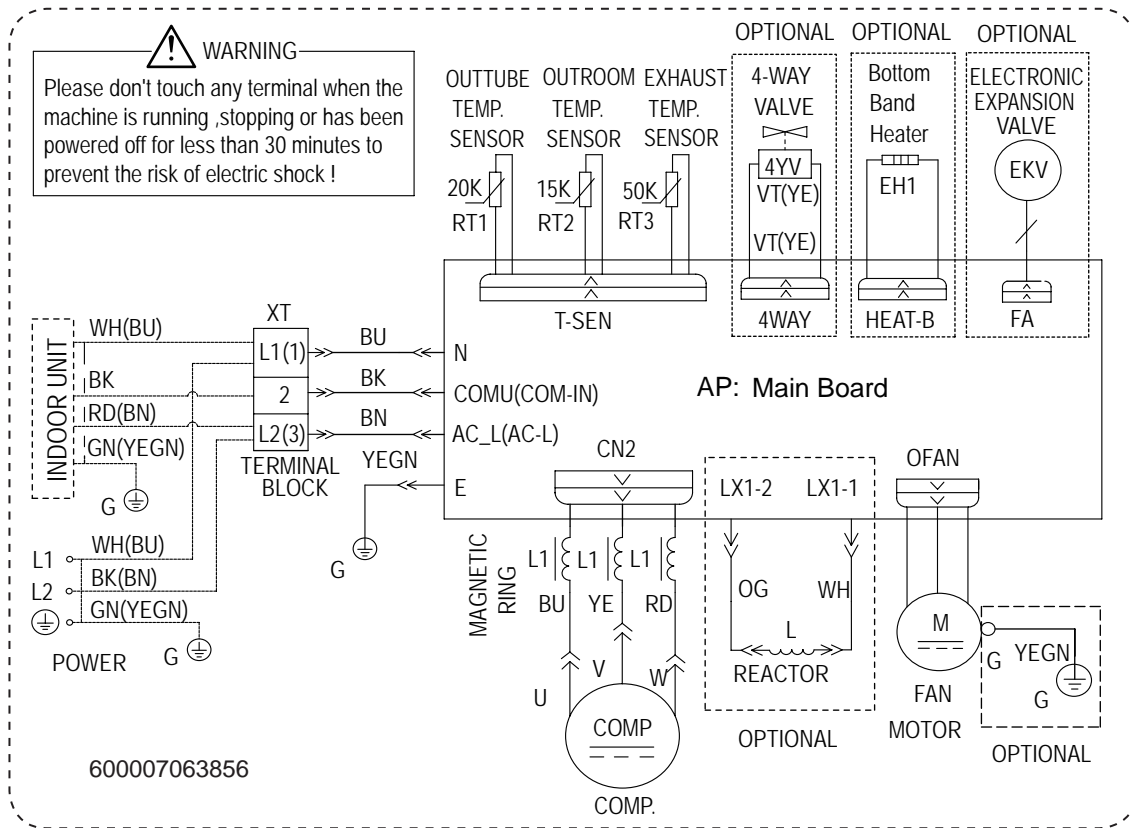
12K



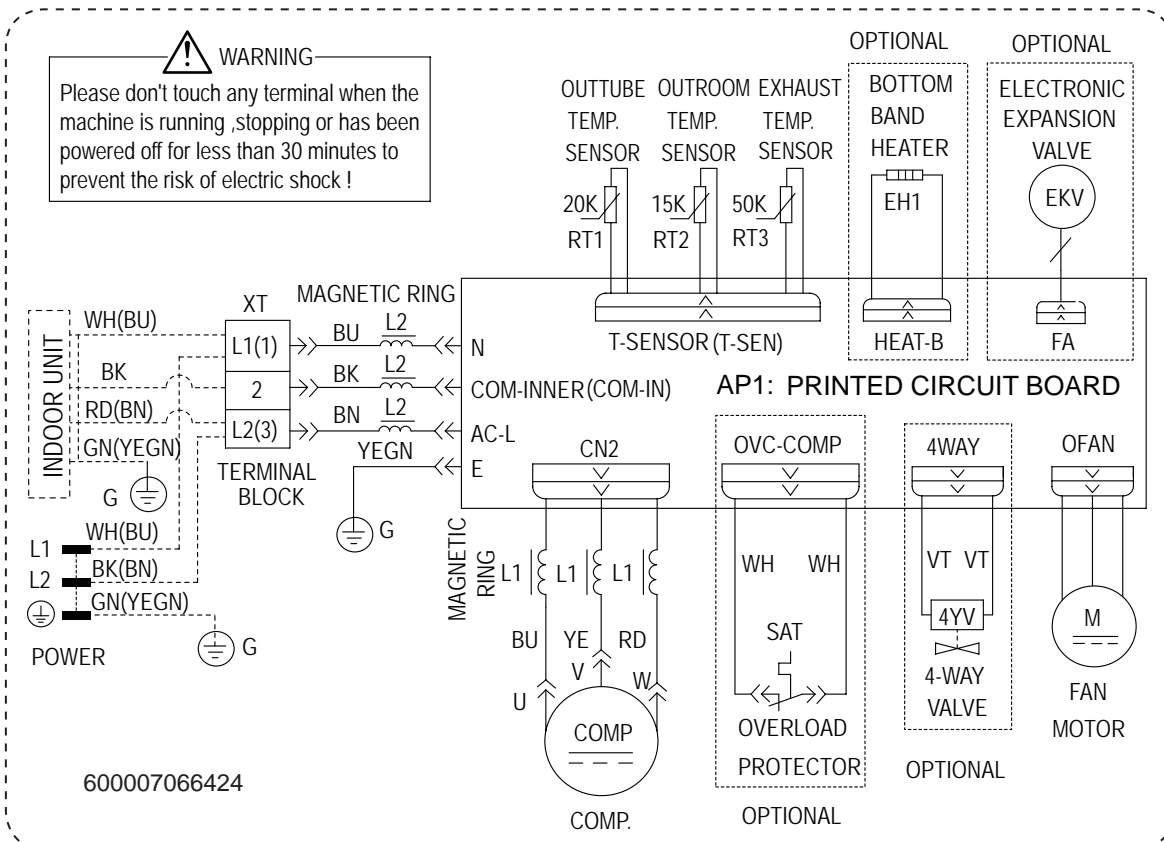


● Outdoor Unit

12K



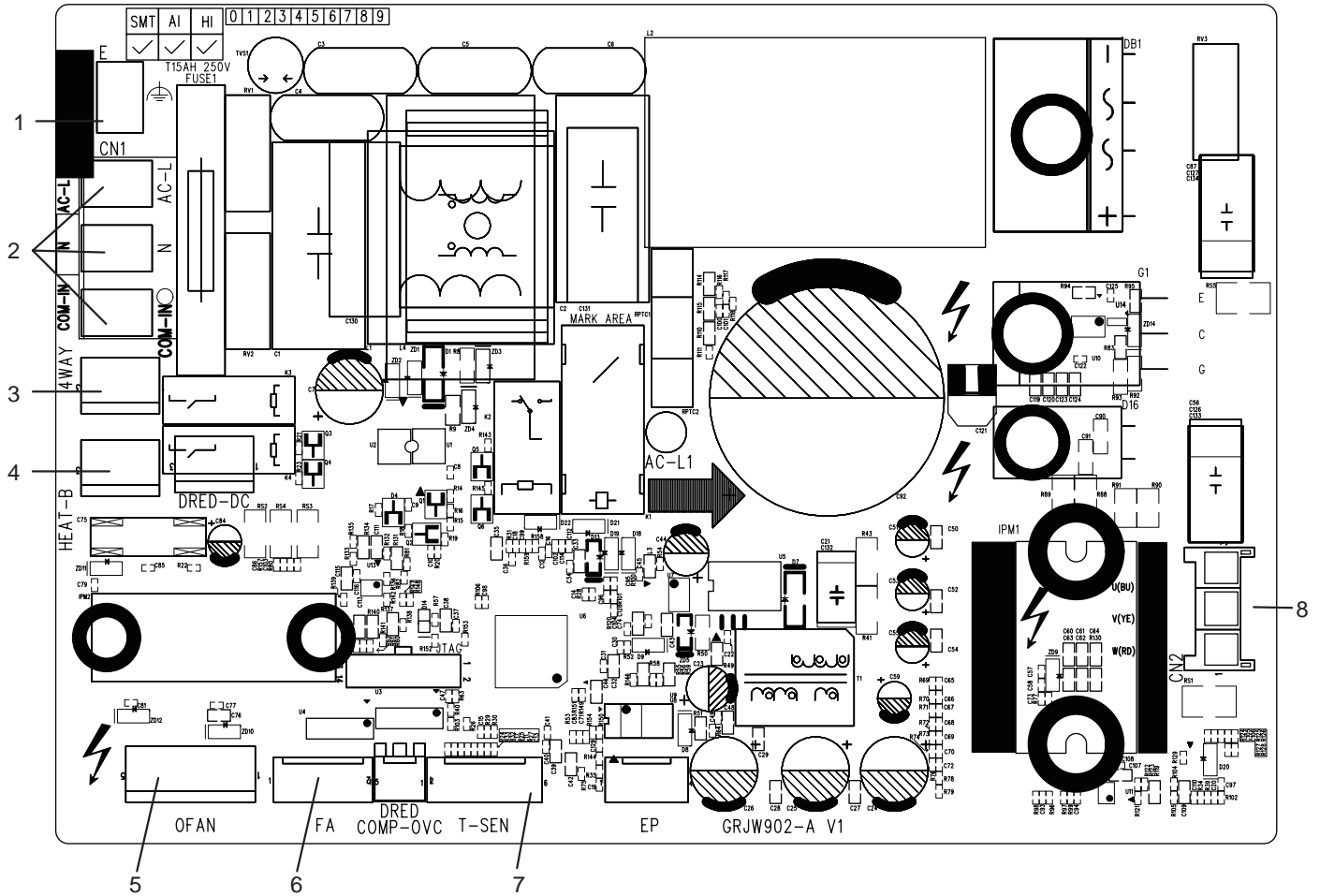
30/36K



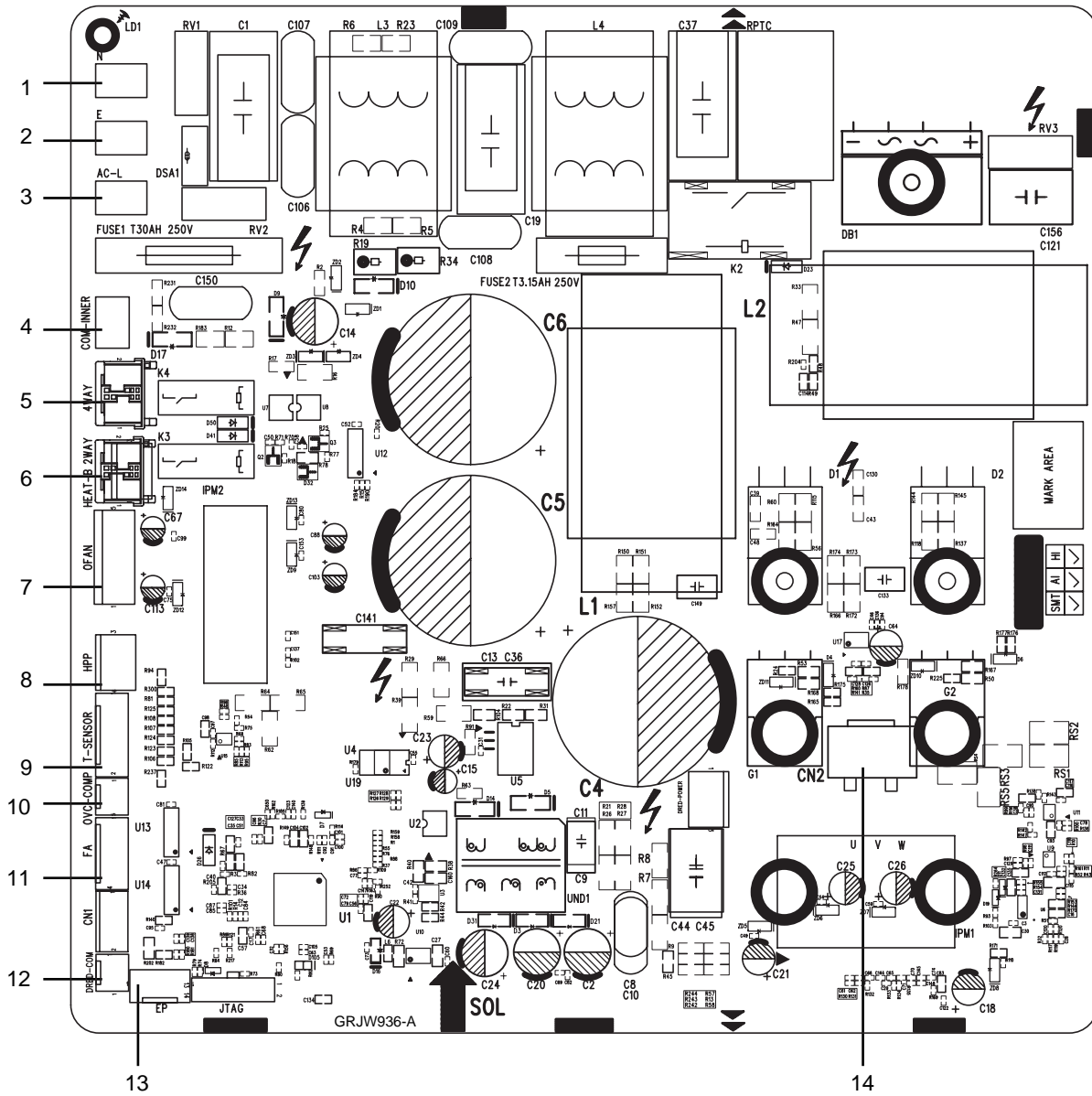
These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

Outdoor Unit

12K



No.	Name
1	Earthing wire
2	Neutral wire, live wire and communication cable
3	4-way valve
4	Electric heating belt of chassis
5	Outdoor fan
6	Electronic expansion valve
7	Temperature sensor
8	Three-phase terminal of compressor



No.	Name	No.	Name
1	Neutral wire	8	Terminal of high pressure protection
2	Earthing wire	9	Temperature sensor
3	Live wire	10	Overload
4	Communication wire	11	Terminal of electronic expansion valve
5	4-way valve	12	Terminal of DRED
6	Electric heating belt of chassis	13	E disk (Reserved)
7	DC fan	14	Terminal of compressor

6. Function and Control

6.1 Wired Controller for XE72-44/E

1 Symbols on LCD

1.1 Outside View of the Wired Controller

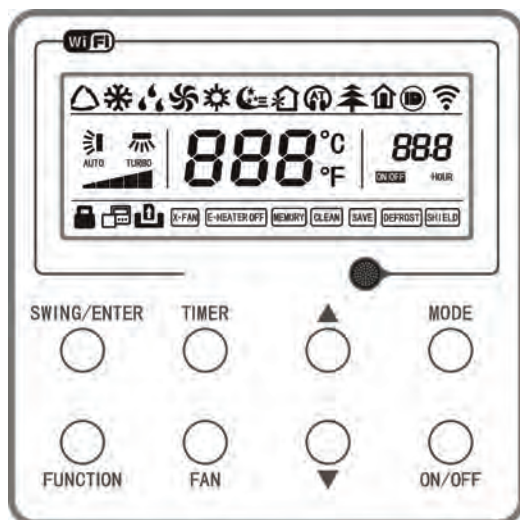


Fig.1 Outside View of the Wired Controller

1.2 LCD of the Wired Controller

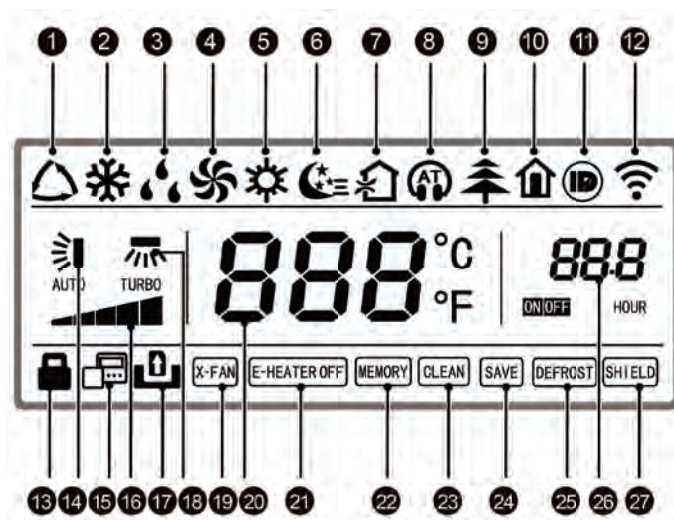


Fig.2 LCD of the Wired Controller

Table 1

No.	Display	Instruction of Display	No.	Display	Instruction of Display
1	Auto	Automatic mode (under auto mode, the indoor unit will select its operating mode according to the variation of room temperature)	15	Slave wired controller	Icon of slave wired controller, it will display when slave wired controller is set (this function is unavailable for this unit)
2	Cool	Cooling mode	16	Fan speed	The fan speed set currently (including auto, low, medium low, medium, medium high, high, and turbo)
3	Dry	Dry mode	17	No card	No card in gate control system
4	Fan	Fan mode	18	Left & right swing	Display when left and right swing function is set
5	Heat	Heating mode	19	X-fan	Display when X-fan function is set
6	Sleep	Display when sleep function is set	20	Temperature	It will display the setting temperature
7	Fresh air	Display when fresh air function is set	21	E-heater	On/off switch of auxiliary heating
8	Quiet	Display when quiet function is set	22	Memory	Memory status (After power failure and reenergizing the unit, it will resume to ON/OFF status of unit before the power failure)
9	Health	Display when health function is set	23	Clean	Filter washing reminder (this function is unavailable for this unit)
10	Absent	Display when absent function is set	24	Save	Display when energy-saving function is set
11	I-DEMAND	Display when I-DEMAND function is set	25	Defrost	Defrosting status
12	WiFi	Display when WiFi function is set	26	Defrost	Display when timer status is set
13	Child-lock	Child-lock status, display when child-lock function is set	27	Shield	Shielding status
14	Up & down swing	Display when up and down swing function is set			

2 Buttons

2.1 Buttons on the Wired Controller

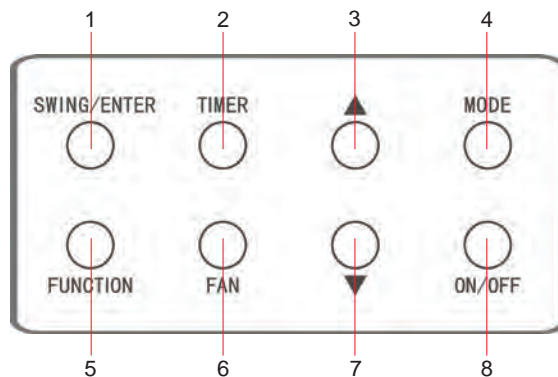


Fig. 3 Buttons on the Wired Controller

2.2 Function of the Buttons

Table 2

No.	Name	Function
1	SWING/ENTER	1. Function selection and cancellation. 2. Setting of the up and down swing function.
3	▲	1. Running temperature setting of the indoor unit, range:16~30°C(61~86°F). 2. Timer setting, range: 0.5-24 hr.
7	▼	
6	FAN	Setting of the auto/low/medium low/medium/high fan speed.
4	MODE	Setting of the Cooling/Heating/Fan/Dry/Auto mode of the indoor unit.
5	FUNCTION	Switchover among the functions of Turbo/WiFi/E-heater/X-fan etc..
2	TIMER	TIMER
8	ON/OFF	Turn on/off the indoor unit.
3+4	▲+MODE	Press them for 5s under off state of the unit to Enter/Cancel the Memory function(If memory is set, indoor unit after power failure and then power recovery will resume the original setting state. If not, the indoor unit is defaulted to be off after power recovery. Memory off is default before delivery.).
6+7	FAN+▼	By pressing them at the same time under off state of the unit, ☒ will be displayed on the wired controller for the cooling only unit, while ☑ will be displayed on the wired controller for the cooling and heating unit.
3+7	▲+▼	Upon startup of the unit without malfunction or under off state of the unit, press them at the same time for 5s to enter the lock state, in which case, any other buttons won't respond the press. Repress them for 5 seconds to quit this state.
4+7	MODE+▼	Under OFF state, the Celsius and Fahrenheit scales can be switched by pressing "MODE" and "▼" for 5s.
2+5	TIMER+FUNCTION	Under OFF state, it is available to go to the commissioning status by pressing "FUNCTION" and "TIMER" for five seconds, and let "00" displayed on the temperature display area by pressing "MODE", then adjust the options which is shown on the timer area by pressing "▲" and "▼". There are totally four options, as follows: 1. Indoor ambient temperature is sensed by the return air temperature sensor (01 displayed on the timer area). 2. Indoor ambient temperature is sensed by the wired controller (02 displayed on the timer area). 3. The return air temperature sensor is selected under the cooling, dry, or fan mode; while the wired controller temperature sensor is selected under the heating or auto mode. (03 is displayed on the timer area). 4. The wired controller temperature sensor is selected under the cooling, dry, or fan mode; while the return air temperature sensor is selected under the heating mode. (04 is displayed on the timer display area).
2+5	TIMER+FUNCTION	Under OFF state, it is available to go to the commissioning status by pressing "FUNCTION" and "TIMER" for five seconds. Press "MODE" button to until "01" icon is shown at the temperature display area. The setting status will be shown at timer area. Press "▲" and "▼" button to adjust and two options are available: 1. Three low levels (01); 2. Three high levels (02).
5+6	FUNCTION+FAN	Reset the WiFi function: Under off status, press "FUNCTION" + "FAN" combination buttons on its wired controller for 5s. Once "°C" is displayed, this indicates that reset was successful.

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.4 indicates the "OFF" state of the unit after power on. The state shown in Fig.5 indicates the "ON" state of the unit after power on.

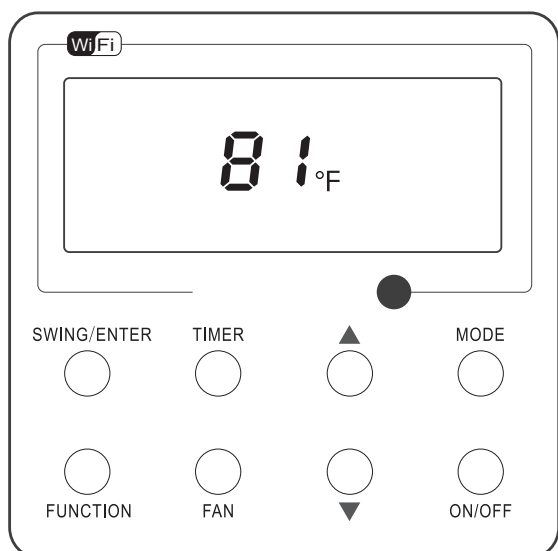


Fig. 4 "OFF" State

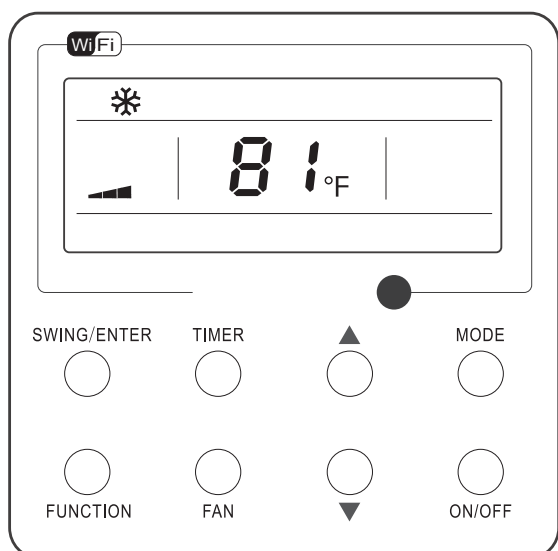
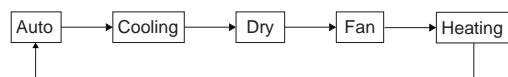


Fig. 5 "ON" State

3.2 Mode Setting

Under the "ON" state of the unit, press 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 press either of them continuously, the temperature will be increased or decreased by 1°C(1°F) every 0.5s, as shown in Fig.6.

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

In the Auto mode, the setting temperature is unadjustable.

NOTE: If the wired controller receives the signals of remote controller, the wired controller can analyze the set temperature adjustment function of automatic mode of the remote controller, but it needs to be used with an indoor unit with the set temperature adjustment function of automatic mode.

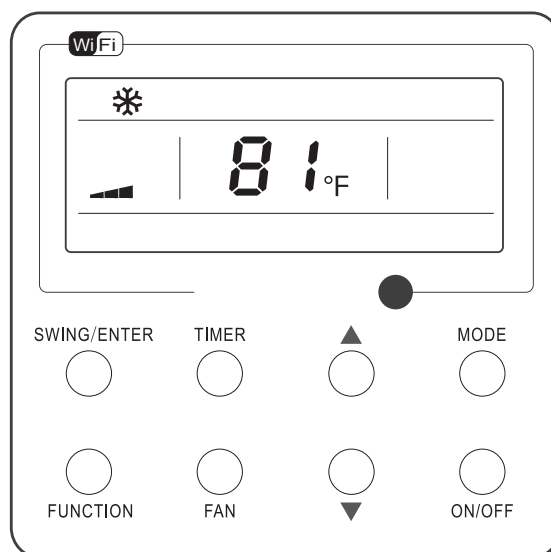


Fig. 6

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.7.

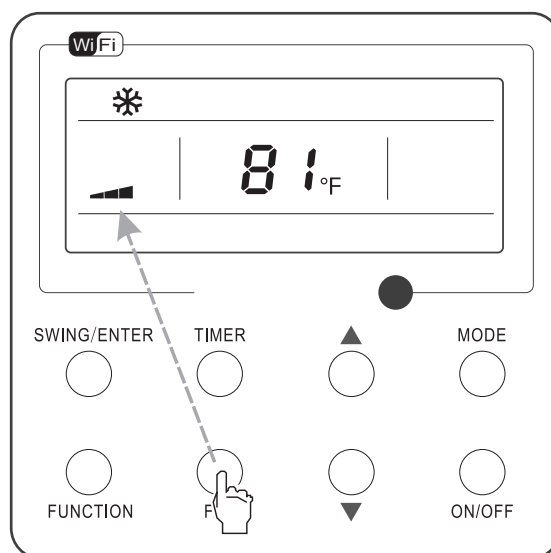
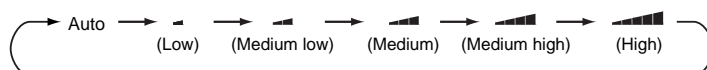




Fig. 7

3.7 Left & Right 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 SWING/ENTER 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 SWING/ENTER to cancel this function.

Swing setting is shown as Fig.9.

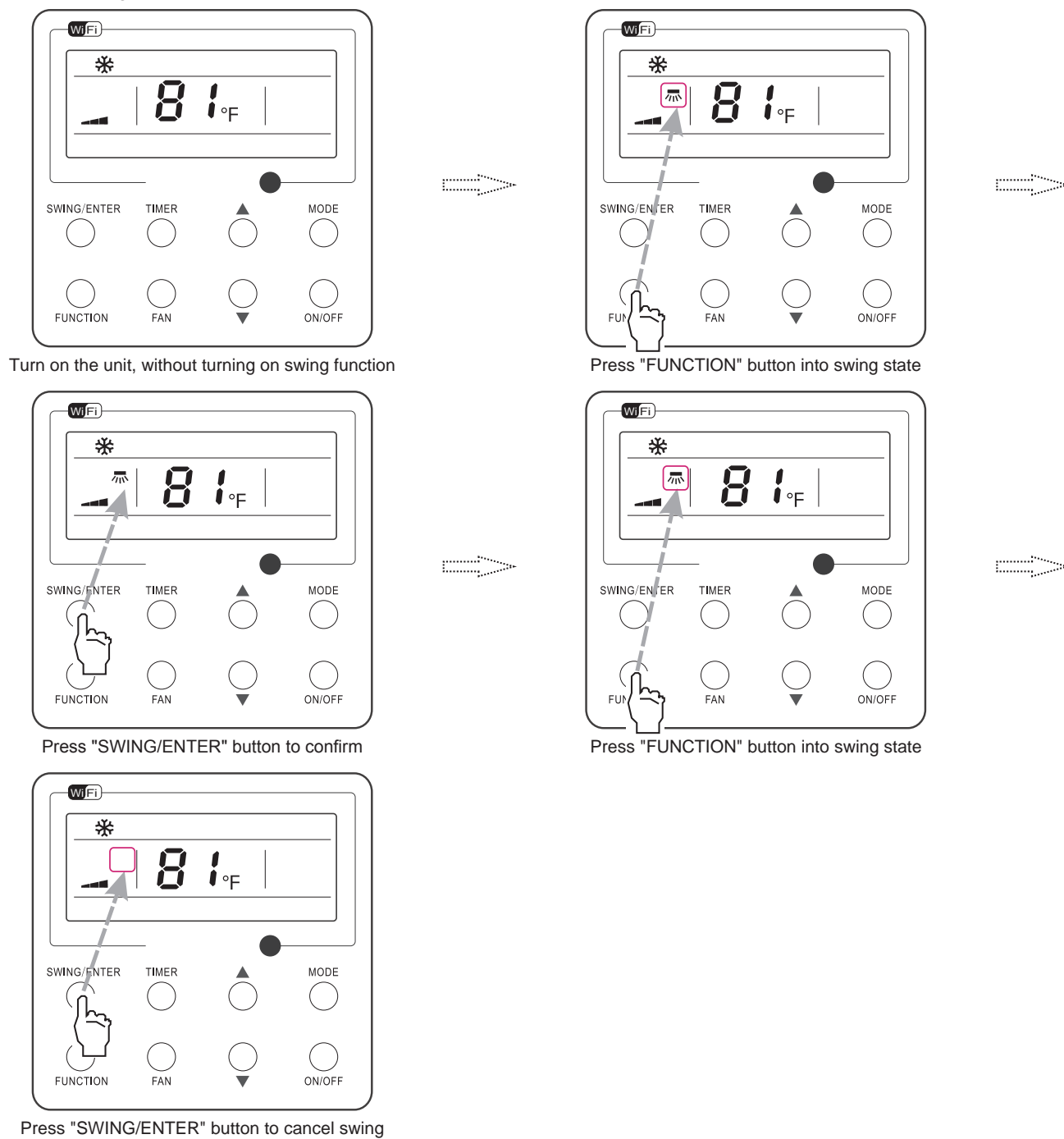



Fig. 9 Swing Setting


- NOTE:**
1. Sleep, Turbo or X-fan setting is the same as the Swing setting.
 2. After the setting has been done, it has to press the key "SWING/ENTER" to back to the setting status or quit automatically five seconds later.

3.8 Fresh Air Valve Function Setting

- Turn on fresh air valve function:

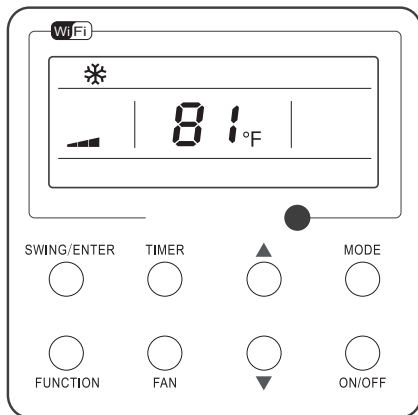
Under unit on status, press FUNCTION button on the panel to select "Fresh air valve" function option. When  icon flashes, it enters fresh air valve setting mode. Previous temperature display position will display the level of fresh air valve. Press ▲ or ▼ button to adjust the level of fresh air valve within the range from 1 to 10. Then press SWING/ENTER button to activate this function.

- Turn off fresh air valve function:

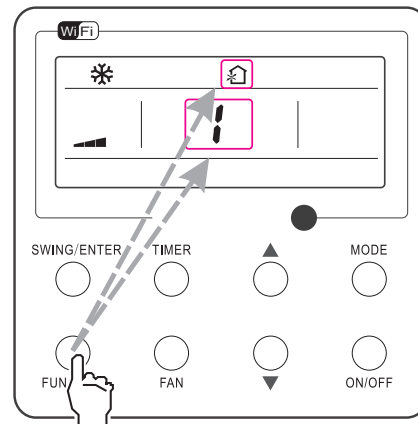
If fresh air valve function has been set, press FUNCTION button on the panel to select "Fresh air valve" function option. When icon  flashes, if you press SWING/ENTER button without pressing ▲ or ▼ button, fresh air valve function will be canceled; if you press SWING/ENTER button after pressing ▲ or ▼ button, fresh air valve function will be activated.

NOTE:

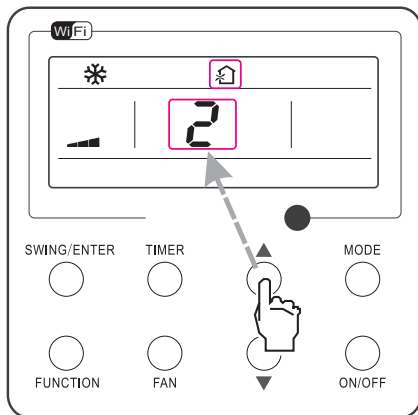
1. If you press panel button to set fresh air valve function on, ventilation (ventilation 1) function will be activated too; if you press panel button to set fresh air valve function off, ventilation function will be canceled too.
2. This function is invalid when working with the model with two-way ventilation system.



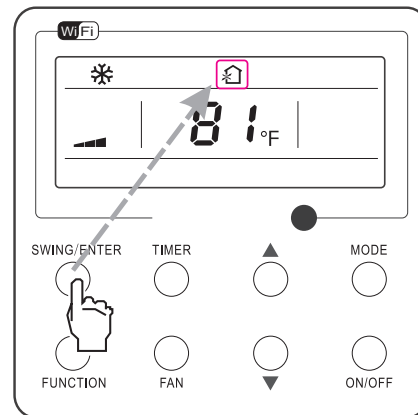
Turn on the unit with the "Fresh Air" function deactivated



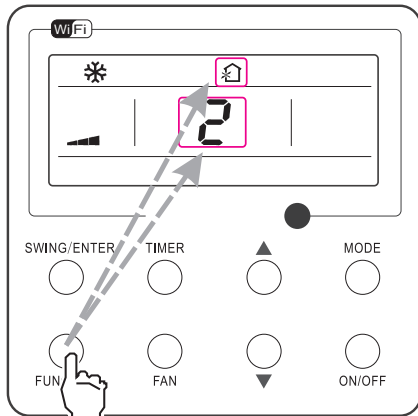
Press "FUNCTION" button to select the "Fresh Air" function option



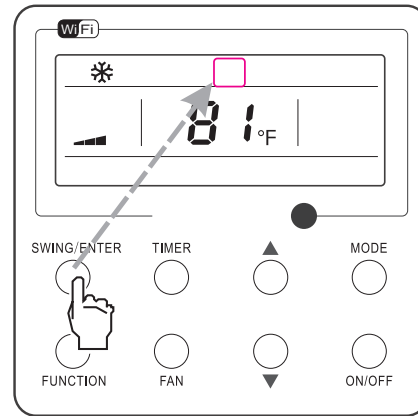
Press ▲ or ▼ to adjust the "Fresh Air" type



Press "SWING/ENTER" button to activate the "Fresh Air" function



Press "FUNCTION" button to select the "Fresh Air" function option



Press "SWING/ENTER" button to deactivate the "Fresh Air" function

Fig. 10 Fresh Air Valve Function Setting

3.9 Sleep Setting

- Sleep on: Press FUNCTION under on state of the unit till the unit enters the Sleep setting interface. Press SWING/ENTER to confirm the setting.
- Sleep off: When the Sleep function is activated, press FUNCTION to enter the Sleep setting interface. After that, press SWING/ENTER to can this function.

Sleep setting is shown as Fig.11.

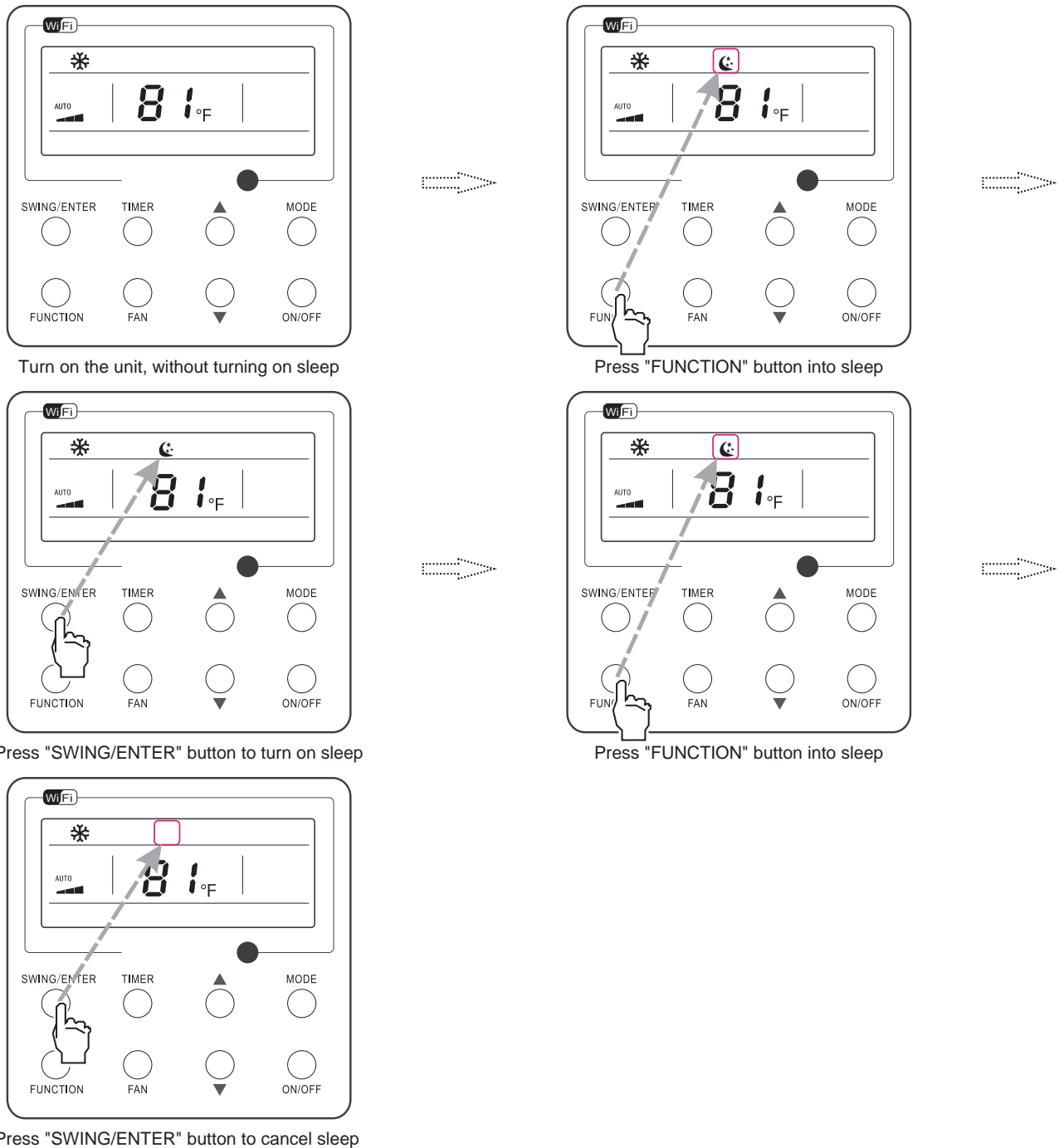


Fig. 11 Sleep Setting

3.10 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 interface and then press SWING/ENTER to confirm the setting.

When the Turbo function is activated, press FUNCTION to enter the Turbo setting interface and then press SWING/ENTER to cancel this function.

Turbo function setting is as shown in Fig.12.

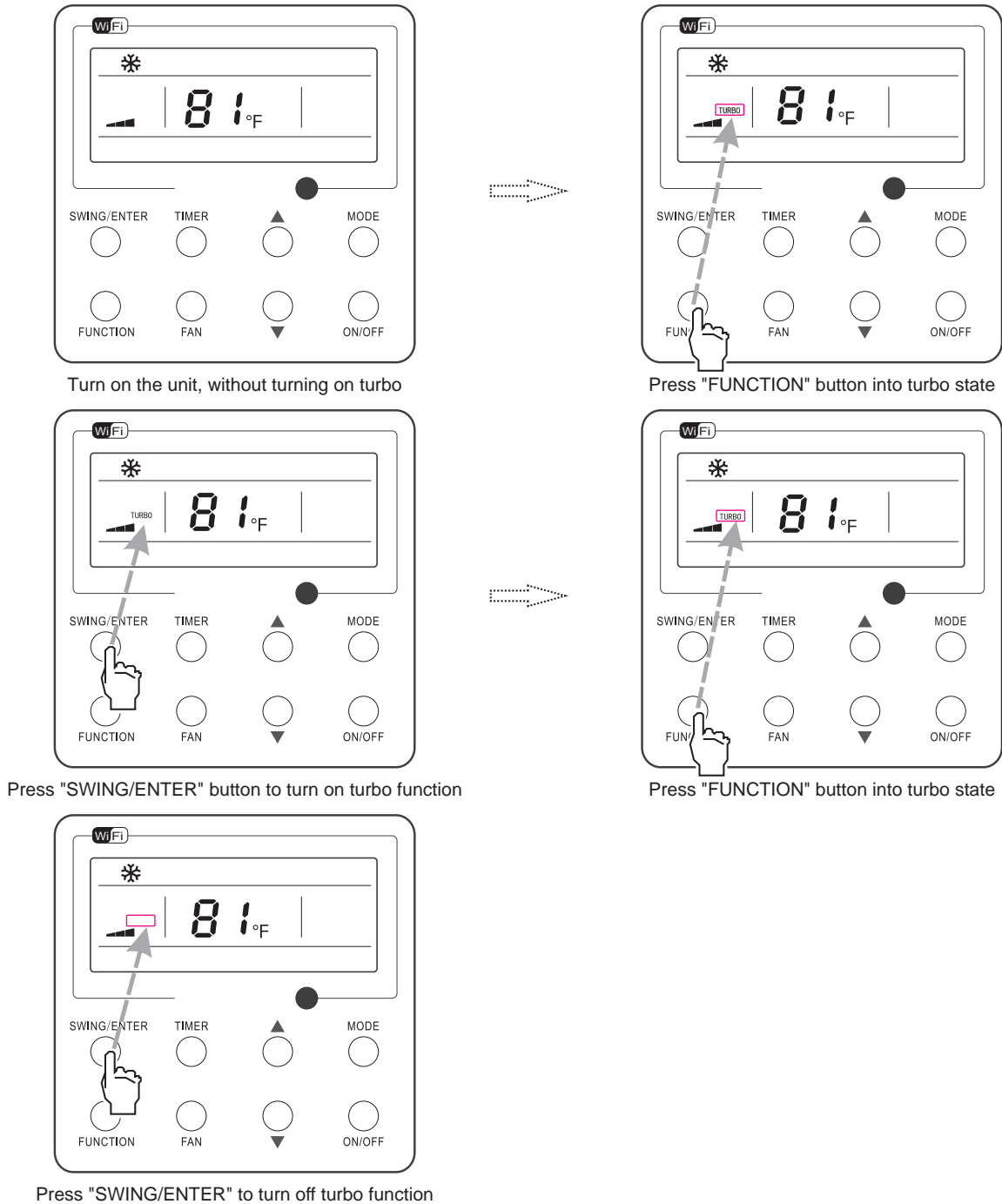


Fig. 12 Turbo Setting

3.11 Energy Saving Function Setting

- Turn on energy saving function:

1. Energy Saving Setting for Cooling


When the unit runs under the COOL or DRY mode, press FUNCTION button to select "SAVE" function option, with "SAVE" flashing, and then press ▲ or ▼ to adjust the lower limit, after that, press the SWING/ENTER button to activate this function.

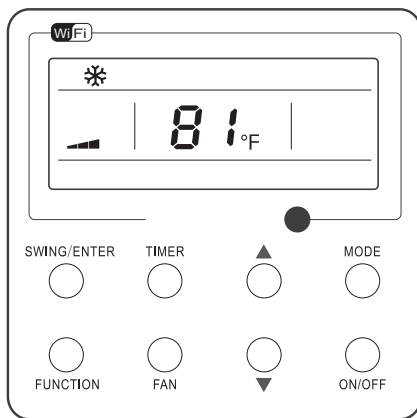
2. Energy Saving Setting for Heating

When the unit runs under the HEAT mode, press FUNCTION button to select "SAVE" function option, with "SAVE" flashing, and then press ▲ or ▼ to adjust the upper limit, after that, press SWING/ENTER button to activate this function.

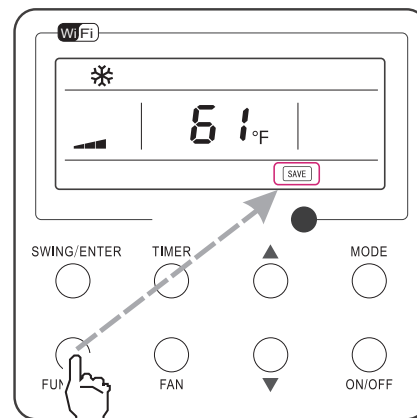
NOTE: Under energy saving setting mode, press "MODE" button to switch the energy saving setting for COOL or HEAT mode.

- Cancel energy saving function:

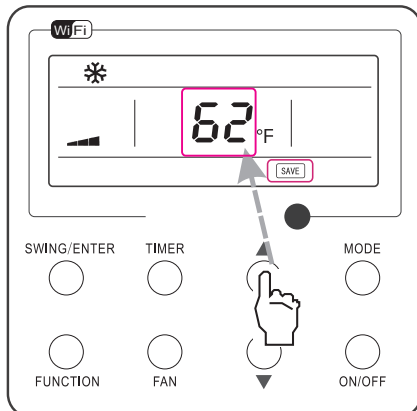
If energy saving function has been set, press FUNCTION button on the panel to select "SAVE" function option. When  icon flashes, if you press SWING/ENTER button without pressing ▲ or ▼ button, energy saving function will be canceled; if you press SWING/ENTER button after pressing ▲ or ▼ button, energy saving function will be activated.



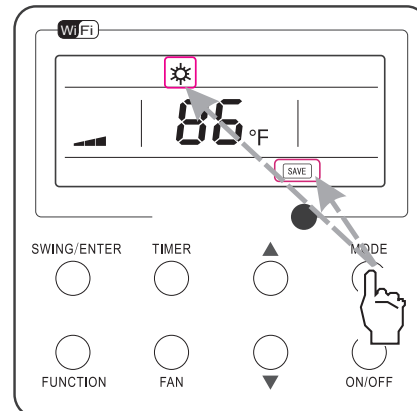
Turn on the unit with the "SAVE" function deactivated



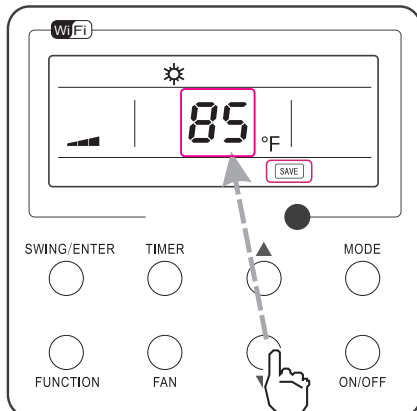
Press "FUNCTION" button to select the "SAVE" function option



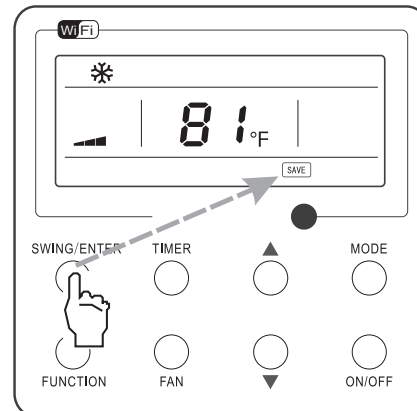
Press ▲ or ▼ to adjust the lower limit



Press "MODE" button to switch to the "SAVE" setting for heating



Press ▲ or ▼ to adjust the upper limit



Press "SWING/ENTER" button to activate the "SAVE" function

Fig. 13 Energy Saving Function Setting

3.12 E-heater Setting

E-heater (auxiliary electric heating function): In the Heating mode, E-heater is allowed to be turned on for improvement of efficiency. 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 SWING/ENTER to cancel this function. Press FUNCTION to enter the E-heater setting interface, if the E-heater function is not activated, and then press SWING/ENTER to turn it on. The setting of this function is shown as Fig.14 below:

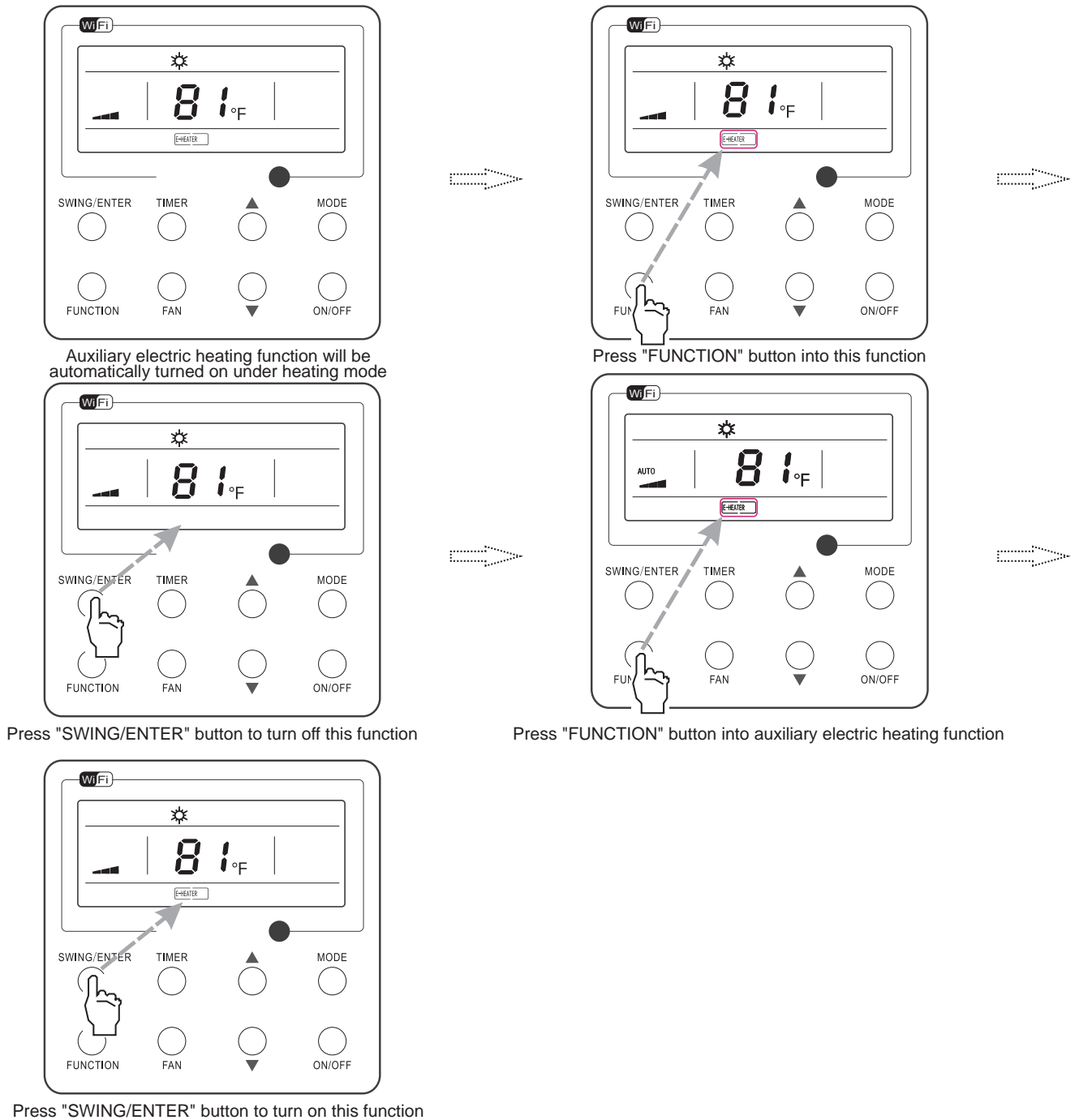


Fig. 14 E-heater Setting

3.13 X-fan Setting

X-fan 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 X-fan setting interface and then press SWING/ENTER to activate this function.

When the X-fan function is activated, press FUNCTION to the X-fan setting interface and then press SWING/ENTER to cancel this function.

X-fan function setting is as shown in Fig.15.

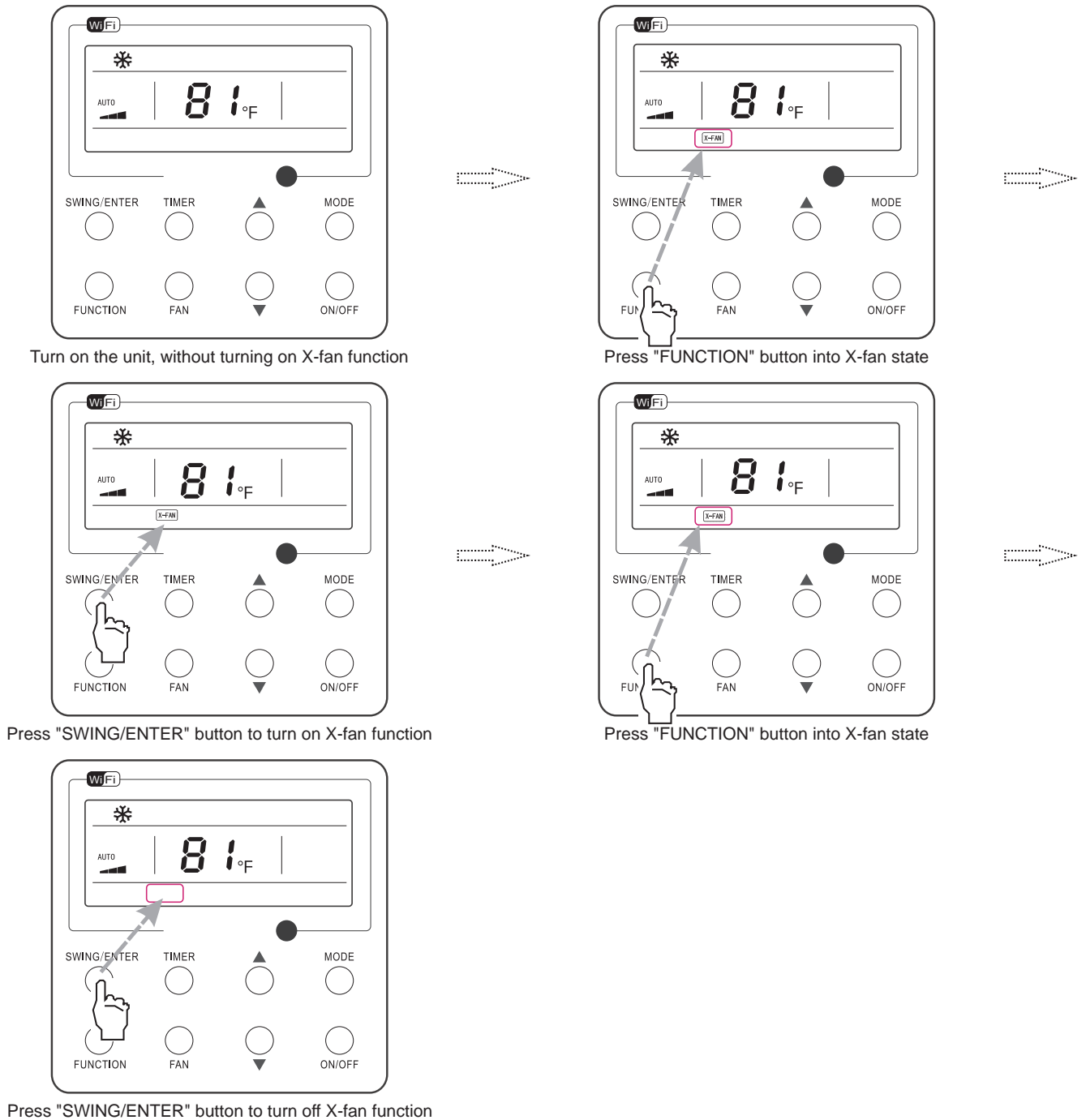


Fig. 15 X-fan Setting

- NOTE:**
- When the X-fan 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 minutes, with "X-FAN" displayed on the LCD. While, if the X-fan function is deactivated, the indoor fan will be turned off directly.
 - X-fan function is unavailable in the Fan or Heating mode.

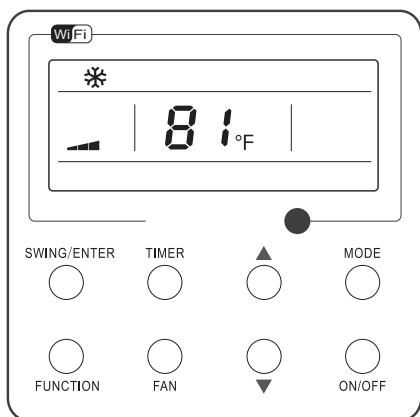
3.14 Quiet Function Setting

- Turn on quiet function:

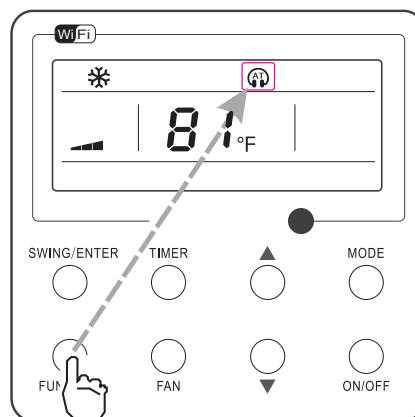
Under unit on status, press FUNCTION button on the panel to select "Quiet" function option. When "Quiet" or "Auto quiet" flashes, it enters quiet function setting mode. Press ▲ or ▼ button to switch between "Quiet" and "Auto quiet" function. Then press SWING/ENTER button to activate this function.

- Cancel quiet function:

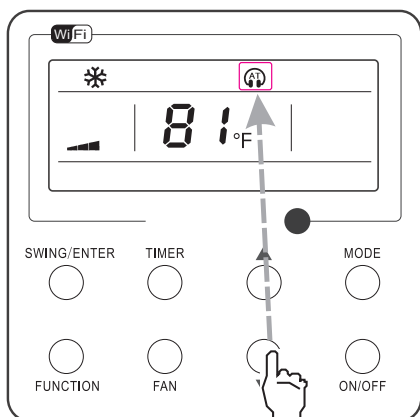
If quiet function has been set, press FUNCTION button on the panel to select "Quiet" function option. When "Quiet" or "Auto quiet" flashes, if you press SWING/ENTER button without pressing ▲ or ▼ button, quiet function will be canceled; if you press SWING/ENTER button after pressing ▲ or ▼ button, quiet function will be activated.



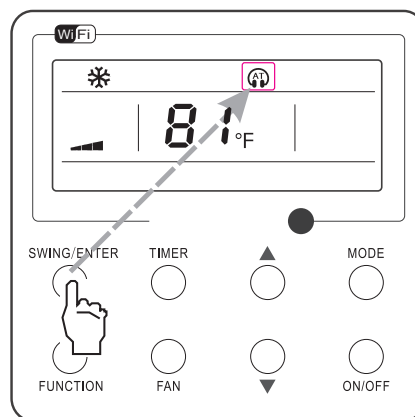
Turn on the unit with the "Quiet" function deactivated



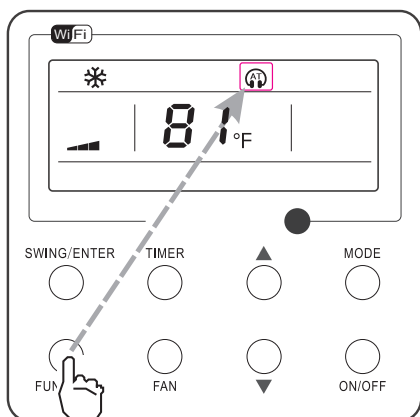
Press "FUNCTION" button to select the "Quiet" function option



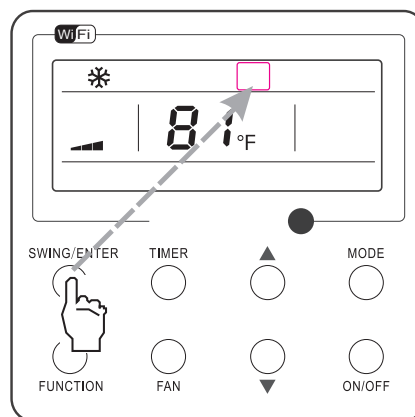
Press ▲ or ▼ to select the desired type, "QUIET" or "AUTO QUIET"



Press "SWING/ENTER" button to activate this function



Press the Function button to select the "Quiet" function option



Press "SWING/ENTER" button to deactivate this function

Fig. 16 Setting of Quiet Function

3.15 Health Setting

- Health on: Press FUNCTION under on state of the unit till the unit enters the Health setting interface. Press SWING/ENTER to confirm the setting.
- Health off: When the Health function is activated, press FUNCTION to enter the Health setting interface. After that, press SWING/ENTER to cancel this function.

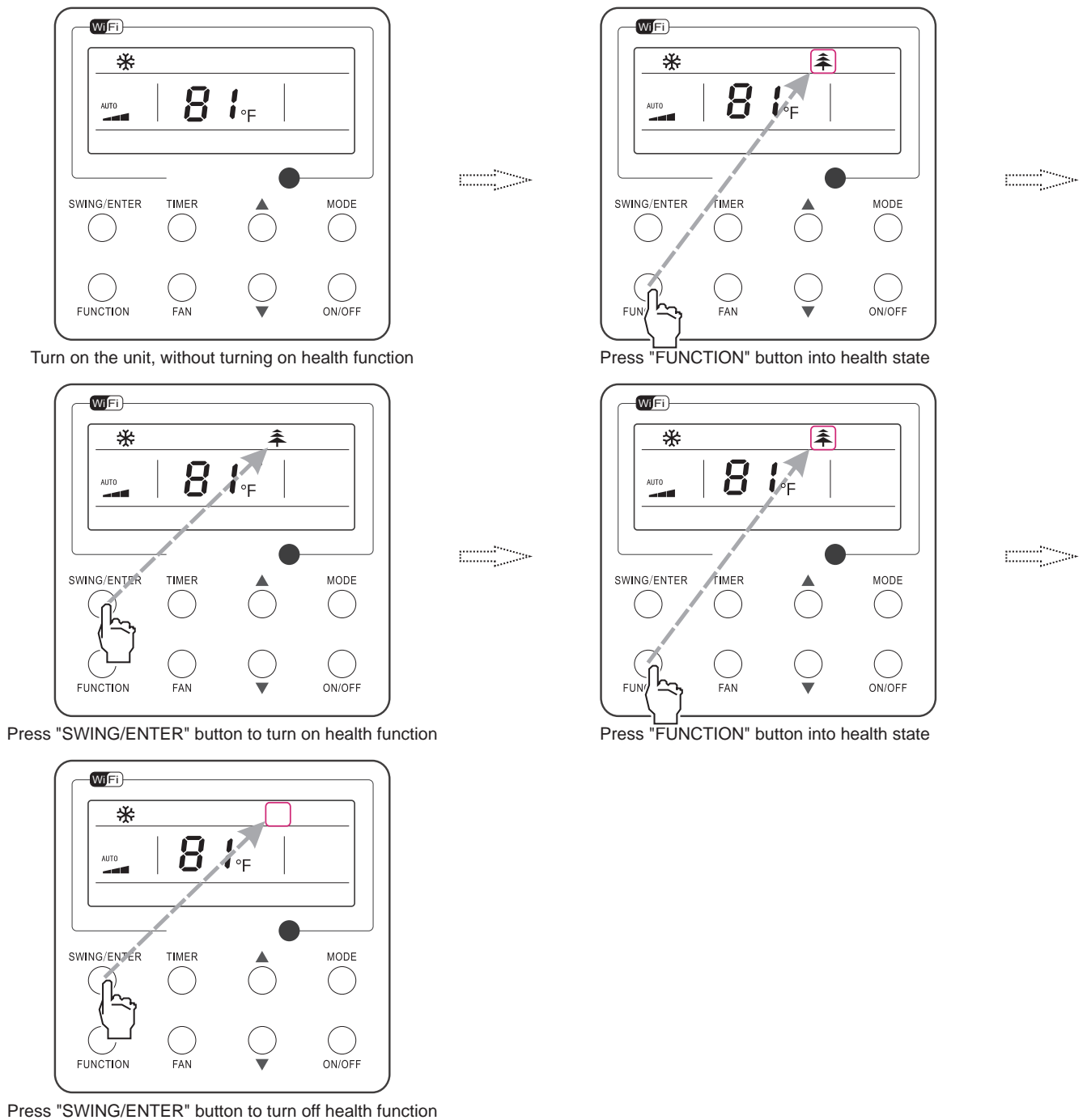


Fig. 17 Health Setting

3.16 Absent Setting

- Absent on: Press FUNCTION under on state of the unit till the unit enters the Absent setting interface. Press SWING/ENTER to confirm the setting.
- Absent off: When the Absent function is activated, press FUNCTION to enter the Absent setting interface. After that, press SWING/ENTER to cancel this function.

- NOTE:**
1. This function is only available in heating mode.
 2. When this function has been set, set temperature is displayed in 8°C(46°F). In this case, temperature setting and fan speed setting are shielded.
 3. This function will be cancelled when switching modes.
 4. This function and sleep function cannot be on simultaneously. If Absent function is set firstly and then sleep/quiet function is set, Absent function will be cancelled while sleep function will be valid, and vice versa.

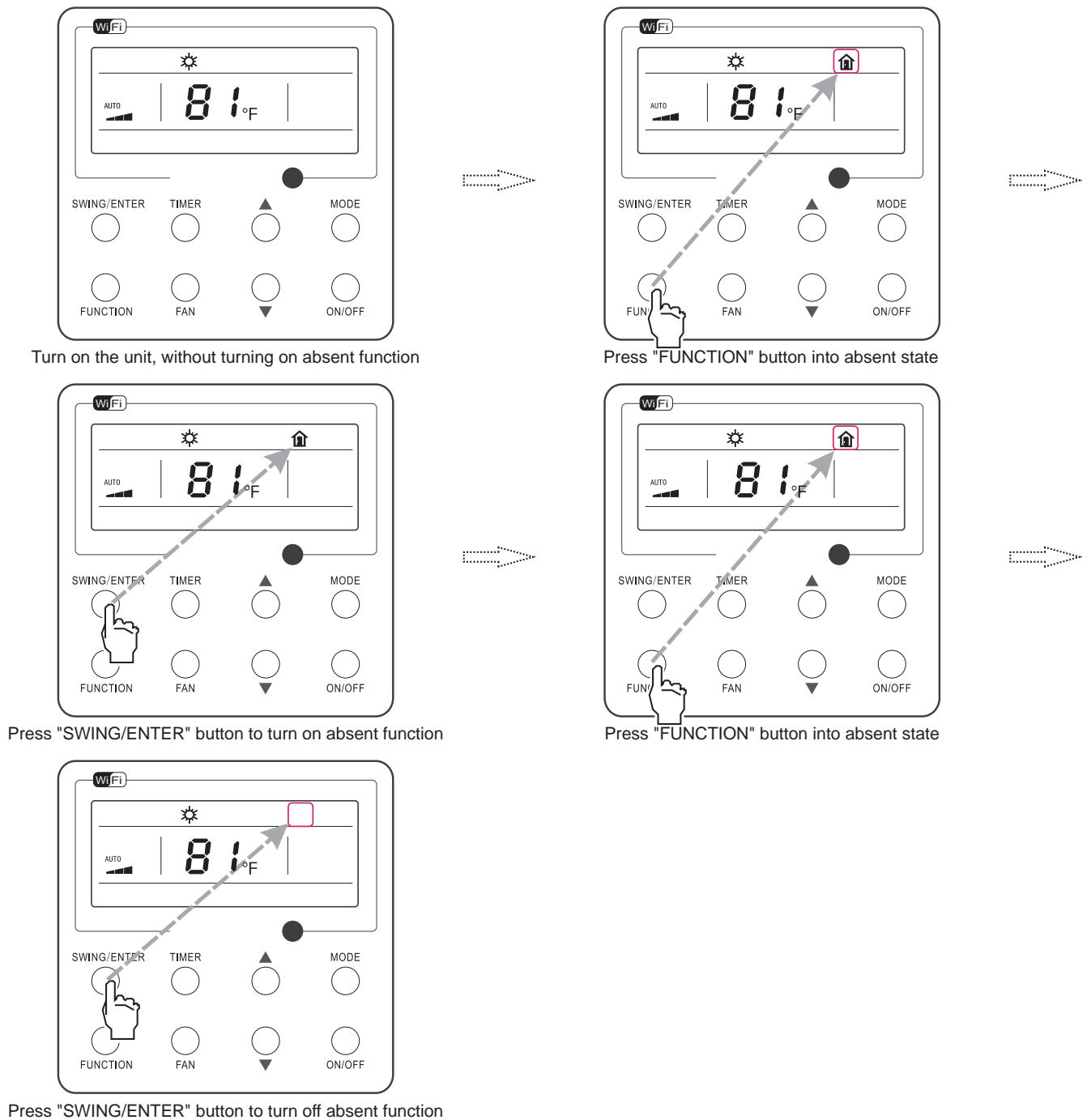
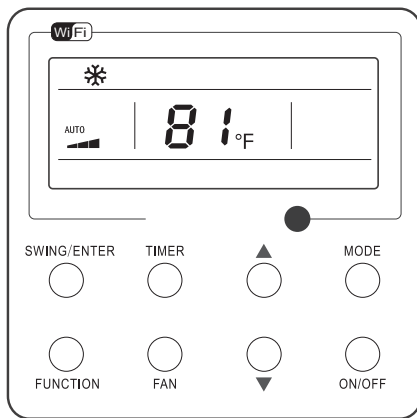


Fig. 18 Absent Setting

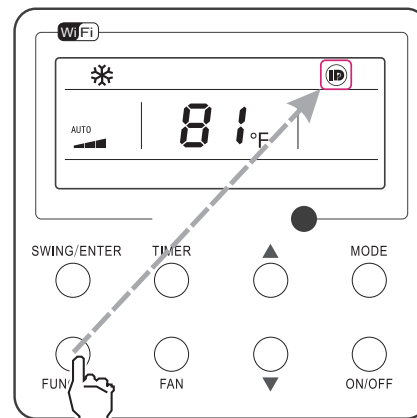
3.17 I-Demand Setting

- I-Demand on: Press FUNCTION under on state of the unit till the unit enters the I-Demand setting interface. Press SWING/ENTER to confirm the setting.
- I-Demand off: When the I-Demand function is activated, press FUNCTION to enter the I-Demand setting interface. After that, press SWING/ENTER to cancel this function.

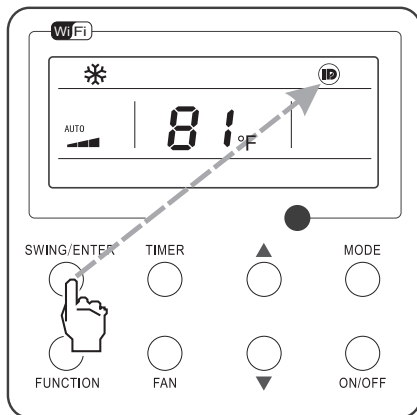
- NOTE:**
1. This function is only available in cooling mode.
 2. When this function has been set, set temperature is displayed in SE. In this case, temperature setting and fan speed setting are shielded.
 3. This function will be cancelled when switching modes.
 4. This function and sleep function cannot be on simultaneously. If I-demand function is set firstly and then sleep/quiet function is set, I-demand function will be cancelled while sleep function will be valid, and vice versa.



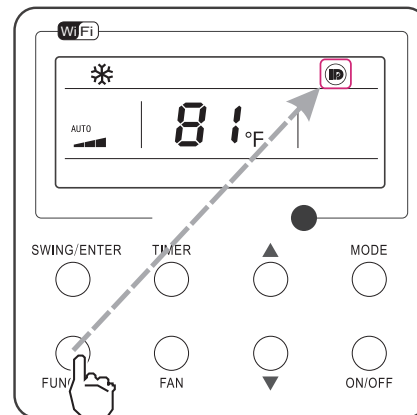
Turn on the unit, without turning on I-demand function



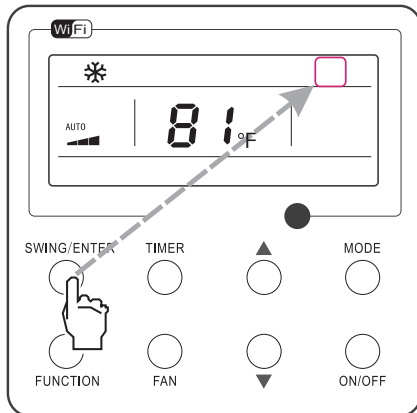
Press "FUNCTION" button into I-demand state



Press "SWING/ENTER" button to turn on I-demand function



Press "FUNCTION" button into I-demand state



Press "SWING/ENTER" button to turn off I-demand function

Fig. 19 I-Demand Setting

3.18 WiFi Function Setting

"Gree+" APP can be used to control it. Please scan the QR code to download it.

APP can only set some common functions of WiFi wired controller: ON/OFF, mode, set temperature, FAN speed, etc.

When using the APP for the first time, please reset the WiFi function of wired controller (reset WiFi to exfactory setting): Under off status, press "FUNCTION" + "FAN" combination buttons on its wired controller for 5 seconds. Once "°C" is displayed, this indicates that reset was successful.

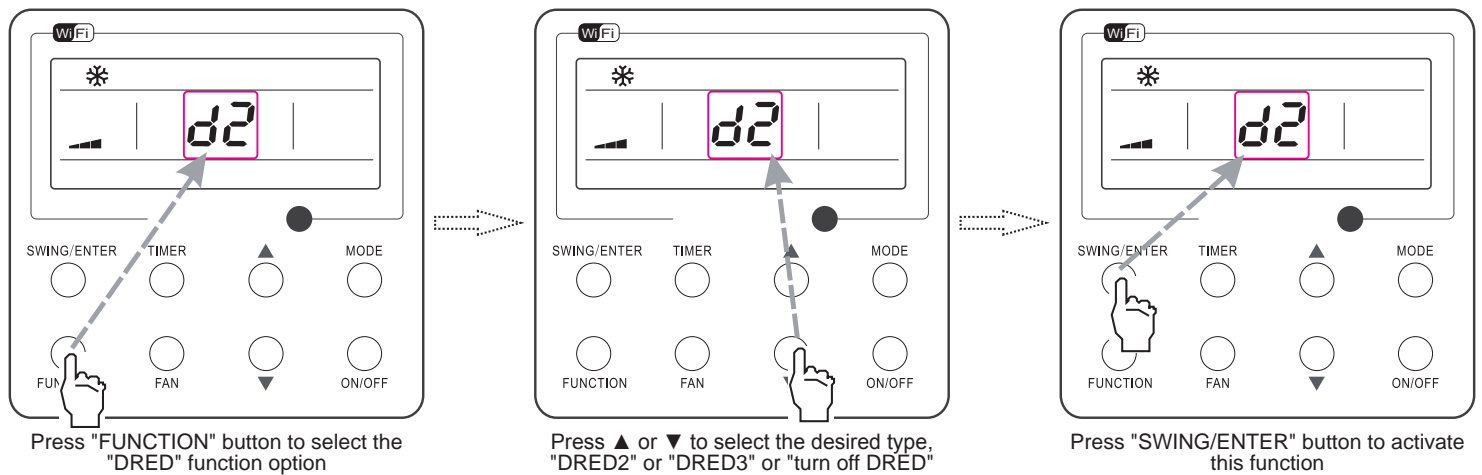
If there is a communication failure for WiFi, after resetting WiFi, the temperature display area of wired controller displays "JF" for 5 seconds, which indicates that the current reset is invalid.

Press FUNCTION under on state of the unit till the unit enters the WiFi setting interface, the temperature area will display the WiFi status. Press "▲" or "▼" button to turn on WiFi ("ON" is displayed) or turn off WiFi ("OFF" is displayed), and then press "SWING/ENTER" button to confirm it.

3.19 Dred Function Setting

When outdoor unit enters DRED mode: when it detects DRED signal, the whole unit executes DRED mode. When it enters DRED mode, the outdoor unit does timekeeping and feeds back the signal to indoor unit. Under power-on state, the set temperature area displays corresponding code, DRED1, DRED2, DRED3 correspond to "d1", "d2", "d3". The panel cannot be used to set the DRED mode.

When indoor unit enters DRED mode: under power-on state, use "Function" button on the panel to switch to "DRED" function. The set temperature area will display DRED state and flicker. Through "▲" and "▼" buttons can select DRED2 (set temperature area displays d2), DRED3 (set temperature area displays d3), or turn off DRED (set temperature area displays "--"); press "SWING/ENTER" button to confirm the selection, it will display the set state for 3 seconds. After entering the setting, if there is no button operation for 5 seconds, it will quit the interface without saving the setting.




Dred Function Setting

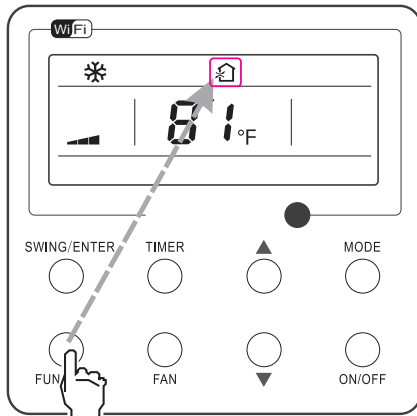
NOTE:

- DRED mode startup method is set by indoor units.
- When outdoor unit enters DRED mode: it does not receive the DRED control of remote control, the whole unit will run the DRED mode, and the wired controller displays the state only.
- When indoor unit enters DRED mode:
 1. When the wired controller receives the DRED command sent from remote control, the set temperature area displays d2 or d3, and it will display for 3 seconds.
 2. Under power-off or air supply mode, the DRED mode is turned off.

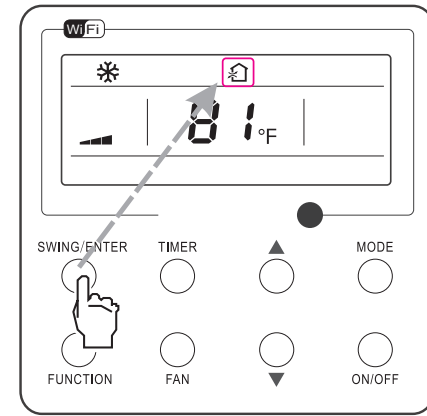
3.20 Two-way Ventilation Function Setting

Under the "On/Off" state of the unit, press FUNCTION button on the panel to select "Two-way Ventilation" function option. Then press SWING/ENTER button to start up or turn off two-way ventilation function. When two-way ventilation function is started up,  will be shown on wired controller.

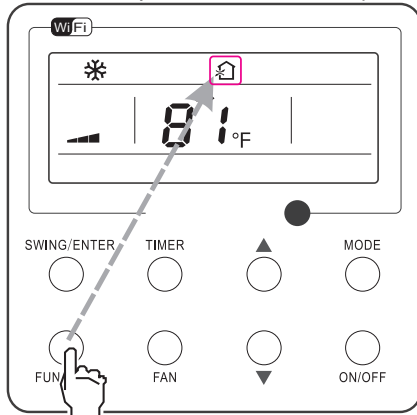
- NOTE:**
- Switch to power-off status, two-way ventilation function is turned off.
 - In power-off status, if the two-way ventilation function is activated, fan speed can be adjusted by fan speed button, and quiet or turbo function can be set.
 - This function is invalid when working with the model without two-way ventilation system.



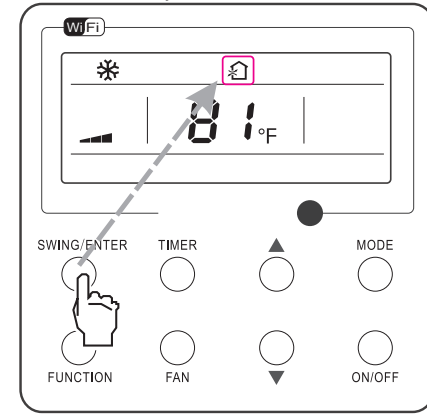
Press "FUNCTION" button to select the "Two-way Ventilation" function option



Press "SWING/ENTER" button to activate the "Two-way Ventilation" function



Press "FUNCTION" button to select the "Two-way Ventilation" function option




Press "SWING/ENTER" button to deactivate the "Two-way Ventilation" function

Two-way Ventilation Function Setting

3.21 Other Functions

1. Lock

Upon startup of the unit without malfunction or under the "OFF" state of the unit, press and at the same time for 5 seconds till the wired controller enters the Lock function. In this case, LCD displays . After that, repress these two buttons at the same time for 5 seconds to quit this function.

Under the Lock state, any other button press won't get any response.

2. Memory

Memory switchover: Under the "OFF" state of the unit, press Mode and at the same time for 5 seconds 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.

3. Selection of the Temperature Sensor

Under OFF state of the unit, press both "FUNCTION" and "TIMER" for five seconds to go the commissioning status. Under this status, adjust the display in the temperature display area to "00" through the button "MODE", and then adjust the option of the temperature sensor in the timer display area through the button ▲ or ▼.

- (1) Indoor ambient temperature is sensed at the return air inlet (01 in the timer display area).
- (2) Indoor ambient temperature is the sensed at the wired controller (02 in the timer display area).
- (3) Select the temperature sensor at the return air inlet under the cooling, dry and fan modes, while select the temperature sensor at the wired controller under the heating and auto modes. (03 in the timer display area).
- (4) Select the temperature sensor at the wired controller under the cooling, dry and fan modes, and select the temperature sensor at the return air inlet under the heating mode and auto modes (04 displayed in the timer display area).

After the setting, press "SWING/ENTER" to make a confirmation and quit this setting status.

Pressing the button "ON/OFF" also can quit this commissioning status but the set data won't be memorized.

Under the commissioning status, if there is no any operation in 20 seconds after the last button press, it will back to the previous

state without memorizing the current data.

NOTE:

After connected with indoor unit, if the type of ambient temperature sensor has not been manually set, the wired controller will select the ambient temperature sensor according to the model of connected IDU; if it connects to cassette type IDU, duct type IDU, floor ceiling type IDU, ceiling type IDU, it will adopt (3), otherwise it will adopt (1). If the type of ambient temperature sensor is set manually, the wired controller will subject to the manual setting, and will not set according to automatic IDU model selection.

4. Selection of the Fan Speed

Under OFF state of the unit, press both the buttons "FUNCTION" and "TIMER" for five seconds to go to the commissioning status, and then adjust the display in the temperature display area to 01 through the button "MODE" and adjust the setting of the fan speed, which comes to two options.

01: Three low fan speeds; 02: Three high fan speeds

After the setting, press "SWING/ENTER" to make a confirmation and quit this setting status.

Pressing the button "ON/OFF" also can quit this commissioning status but the set data won't be memorized.


Under the commissioning status, if there is no any operation in 20 seconds after the last button press, it will back to the previous state without memorizing the current data.

5. Inquiry of Ambient Temperature

Under off or on status, press and hold "SWING/ENTER" button for 5 seconds to enter into ambient temperature inquiry interface, then timer area displays the ambient temperature type 01 or 02, and ambient temperature area displays the corresponding ambient temperature of corresponding type. In which, 01 refers to outdoor ambient temperature, 02 refers to indoor ambient temperature. Press "MODE" button can switch between type 01 and 02. Press buttons other than "MODE" or when the unit receives remote control signal, it will quit the inquiry status. If there is no any operation for 5 seconds, it will quit automatically.

3.20 Other Functions

1. Lock

Upon startup of the unit without malfunction or under the "OFF" state of the unit, press and at the same time for 5 seconds till the wired controller enters the Lock function. In this case, LCD displays . After that, repress these two buttons at the same time for 5 seconds to quit this function.

Under the Lock state, any other button press won't get any response.

2. Memory

Memory switchover: Under the "OFF" state of the unit, press Mode and at the same time for 5 seconds 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.

3. Selection of the Temperature Sensor

Under OFF state of the unit, press both "FUNCTION" and "TIMER" for five seconds to go the commissioning status. Under this status, adjust the display in the temperature display area to "00" through the button "MODE", and then adjust the option of the temperature sensor in the timer display area through the button ▲ or ▼.

- (1) Indoor ambient temperature is sensed at the return air inlet (01 in the timer display area).
- (2) Indoor ambient temperature is the sensed at the wired controller (02 in the timer display area).
- (3) Select the temperature sensor at the return air inlet under the cooling, dry and fan modes, while select the temperature sensor at the wired controller under the heating and auto modes. (03 in the timer display area).
- (4) Select the temperature sensor at the wired controller under the cooling, dry and fan modes, and select the temperature sensor at the return air inlet under the heating mode and auto modes (04 displayed in the timer display area).

After the setting, press "SWING/ENTER" to make a confirmation and quit this setting status.

Pressing the button "ON/OFF" also can quit this commissioning status but the set data won't be memorized.

Under the commissioning status, if there is no any operation in 20 seconds after the last button press, it will back to the previous

state without memorizing the current data.

NOTE:

After connected with indoor unit, if the type of ambient temperature sensor has not been manually set, the wired controller will select the ambient temperature sensor according to the model of connected IDU; if it connects to cassette type IDU, duct type IDU, floor ceiling type IDU, ceiling type IDU, it will adopt (3), otherwise it will adopt (1). If the type of ambient temperature sensor is set manually, the wired controller will subject to the manual setting, and will not set according to automatic IDU model selection.

4. Selection of the Fan Speed

Under OFF state of the unit, press both the buttons "FUNCTION" and "TIMER" for five seconds to go to the commissioning status, and then adjust the display in the temperature display area to 01 through the button "MODE" and adjust the setting of the fan speed, which comes to two options.

01: Three low fan speeds; 02: Three high fan speeds

After the setting, press "SWING/ENTER" to make a confirmation and quit this setting status.

Pressing the button "ON/OFF" also can quit this commissioning status but the set data won't be memorized.

Under the commissioning status, if there is no any operation in 20 seconds after the last button press, it will back to the previous state without memorizing the current data.

5. Inquiry of Ambient Temperature

Under off or on status, press and hold "SWING/ENTER" button for 5 seconds to enter into ambient temperature inquiry interface, then timer area displays the ambient temperature type 01 or 02, and ambient temperature area displays the corresponding ambient temperature of corresponding type. In which, 01 refers to outdoor ambient temperature, 02 refers to indoor ambient temperature. Press "MODE" button can switch between type 01 and 02. Press buttons other than "MODE" or when the unit receives remote control signal, it will quit the inquiry status. If there is no any operation for 5 seconds, it will quit automatically.

6.2 Brief Description of Models 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°C (or 16.5°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≤T≤15). T is the variable of controller. Thats to say the minimum stop time of compressor is 180s~195s. Read-in T into memory chip when refurbish the memory chip each time. After

power recovery, compressor can only be started up after 180+T s at least.

(13) SE control mode

The unit operates at SE status.

(14) X-fan mode

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

(15) 8°C heating function

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

(16) Turbo 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. Basic Functions

(1) Cooling Mode

1. Conditions and processes of cooling operation:

(1) If the compressor is shut down, and $[T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 0^{\circ}\text{C}$, start up the machine for cooling, the cooling operation will start;

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

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

2. Temperature setting range

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

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

(2) Dehumidifying Mode

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

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

(3) Air-supplying Mode

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

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

(4) Heating Mode

1. Conditions and processes of heating operations:

($T_{\text{indoor ambient temperature}}$ is the actual detection temperature of indoor environment thermo-bulb, $T_{\text{heating indoor ambient temperature compensation}}$ is the indoor ambient temperature compensation during heating operations)

(1) If the compressor is shut down, and $[(T_{\text{indoor ambient temperature}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] < 0^{\circ}\text{C}$, start the machine to enter into heating operations for heating;

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

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

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

3. Special Functions

Defrosting Control

① Conditions for starting defrosting

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

② Conditions of finishing defrosting

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

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

④ The continuous running time of defrosting reaches $[t_{\text{max. defrosting time}}]$.

4. Control Logic

(1) Compressor Control

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

1. Cooling mode

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

2. Dehumidifying mode

Same as the cooling mode.

3. Air-supplying mode

The compressor is switched off.

4. Heating mode

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

(2) Defrosting:

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

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

(2) Outer Fans Control

Notes:

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

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

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

(3) 4-way valve control

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

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

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

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

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

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

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

(3) Defrosting control under heating mode:

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

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

(4) Evaporator frozen-preventing protection function

1. Starting estimation:

When the indoor unit is running 6 minutes (the compressor is turned on), the $T_{\text{inner pipe}} \leq T_{\text{frozen-preventing stop}}$ (the temperature of hysteresis is 2 °C) is detected in 3 minutes., then enter the frozen-preventing protection.

2. Frequency limited

When the indoor unit enters frozen-preventing protection, according to cooling reaches temperature point stop.

(5) Compressor overloads protection

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

(6) Communication fault

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

(7) Module protection

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

(9) Module overheating protection

1. Starting estimation:

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

2. Frequency limited

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

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

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

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

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

5. Power turn-off:

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

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

(10) Phase current overcurrent protection of compressor

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

1. Frequency limited

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

2. Reducing Frequency

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

3. Power turn-off

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

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

(11) Starting-up Failure Protection for Compressor

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

(12) Out-of-Step Protection for Compressor

The out-of-step protection signal should be detected immediately after starting-up compressor, and once find the out-of-step protection signal, the out-of-step protection shall be stopped; if it can run for lasting power turn-off 3 min, the machine shall be

allowed to operate. If it still can't run automatically when the out-of-step protection for compressor happens to stop working for 6 times in succession, it needs to press ON/OFF to operate. And if the running time is more than 10 min, the power turn-off times for out-of-step protection shall be cleared and recounted.

(13) Voltage Abnormity Protection for DC Bus

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

1. Over-Low Voltage Protection for DC Bus:

When the compressor is running, the DC bus voltage is detected. If the PFC is not opened, the bus voltage is smaller than the VPFC does not open the undervoltage protection valuetime, if the PFC is turned on, the bus voltage is smaller than the VPFC Open undervoltage protection value Times Under voltage protection, under pressure protection, the compressor is closed, and the PFC is closed, and the compressor will clear the fault sign after 3 minutes.

2. Over-High Voltage Protection for DC Bus

When the compressor is running, if the DC bus voltage is detected is greater than the VPFC output protection value, the voltage protection is reported, the stopper, the PFC, and the compressor will clear the fault flag after 3 minutes.

(14) Abnormity Protection for Four-way Valve

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

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

(15) PFC Protection

1. After start up the PFC, it should detect the protection signal of PFC immediately; under the condition of PFC protection, it should turn off the PFC and compressor at one time;

2. It shows the failure is cleared out if PFC Protection stopped working 3 min and recovers to run automatically;

3. If it still can't run when it occurs PFC protection for 3 times in succession, it is available if presses ON/OFF; and clear the PFC Protection times when start up PFC for 10min.

(16) Failure Detection for Sensor

1. Outdoor Ambient Sensor: detect the failure of sensor at all times.

2. Outdoor Tube Sensor: You should not detect the failure of outdoor tube sensor within 10 minutes heating operation compressor except the defrosting, and you could detect it at other time.

3. Outdoor Exhaust Sensor:

(a) The compressor only detect the sensor failure after it start up 3 min in normal mode;

(b) It should detect the exhaust sensor failure immediately in the testing mode.

4. Module Temperature Sensor:

(a) Short-Circuit Detection: the compressor should be detected immediately when the module temperature sensor occurs short-circuits;

(b) Open-Circuit Detection: the compressor should be detected on open-circuit when it runs 3min (it needn't 30s avoiding the module over-heated).

(c) Detect the sensor failure at all times in the testing mode.

5. Disposal for Sensor Protection

(1) When the short-circuit of sensor is detected within 30s, It is regarded as the temperature of sensor over-high (or infinitely high), and now

according to the over-high sensor, the machine should carry out the corresponding protection to stop working, and show the corresponding

temperature shutdown protection and sensor failure at the same time (for example: the compressor stops immediately when the outdoor tube

sensor short-circuit, and the machine shall show the overload protection and outdoor tube sensor failure).

(2) When the open-circuit of sensor is detected within 30s, The protection shall be stopped and it shall show the corresponding sensor failure.

6. Electric Heating Function of Chassis

(1) When $T_{\text{outdoor amb.}} \leq 0$, the electric heating of chassis will operate;

(2) When $T_{\text{outdoor amb.}} > 2$, the electric heating of chassis will stop operation;

(3) When $0 < T_{\text{outdoor amb.}} \leq 2$, the electric heating of chassis will keep original status.

7. Electric Heating Function of Compressor

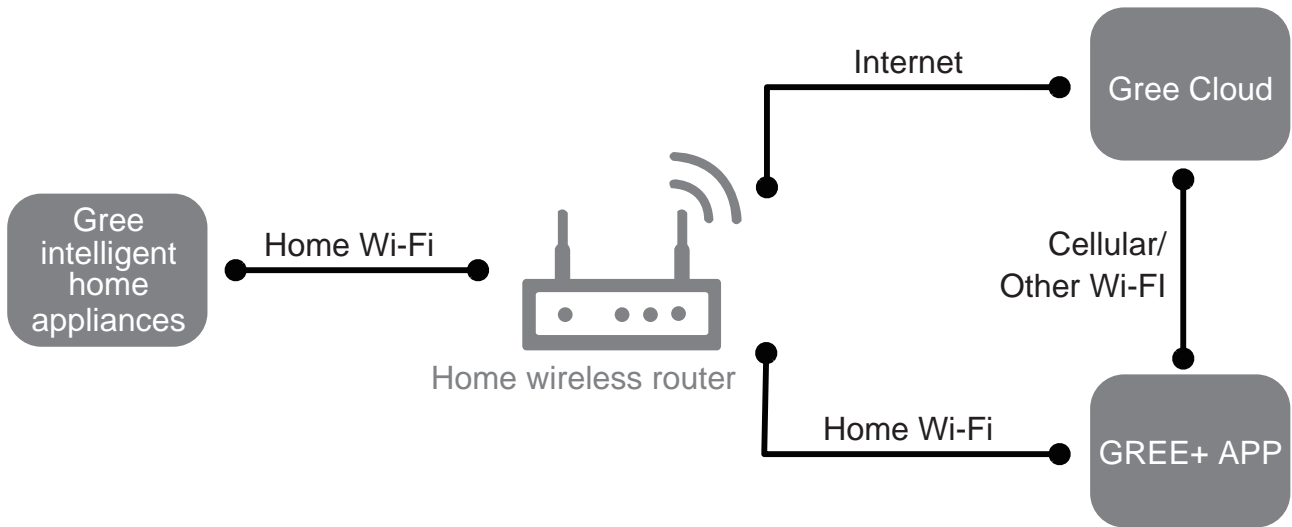
(1) When $T_{\text{outdoor amb.}} \leq -5$, compressor stops operation, while the electric heating of compressor starts operation;

(2) When $T_{\text{outdoor amb.}} > -2$, the electric heating of compressor stops operation;

(3) When $-5 < T_{\text{outdoor amb.}} \leq -2$, the electric heating of compressor will keep original status.

6.3 GREE+ App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation



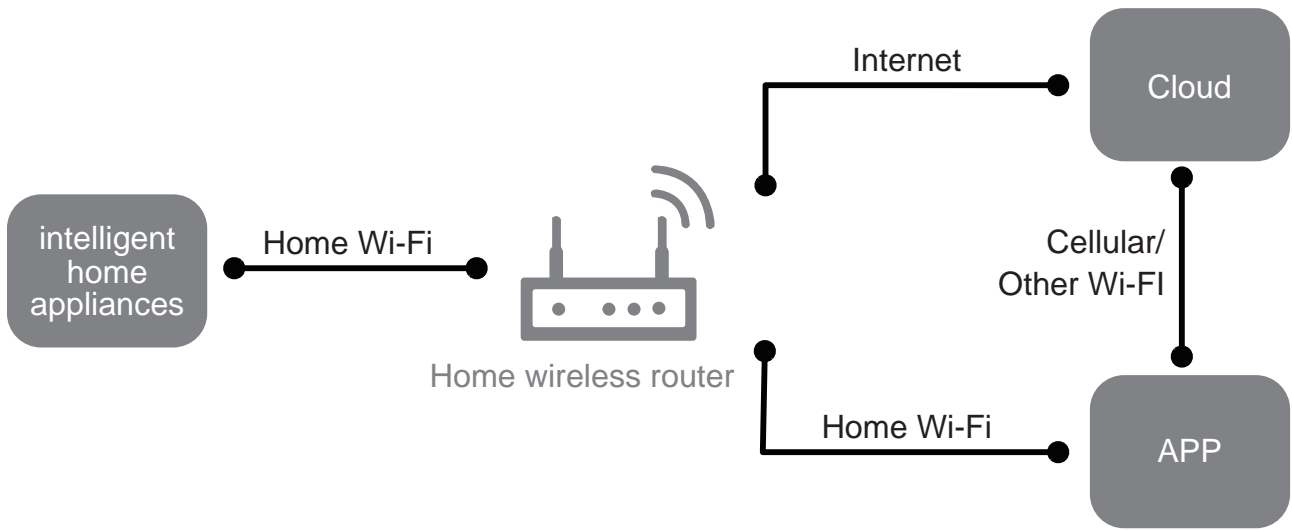
GREE+ App Download Linkage

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

For more information, please refer to "Help" in App.

6.4 Ewpe Smart App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation



App Download Linkage

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

For more information, please refer to "Help" in App.

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

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

WARNINGS

Electrical Safety Precautions:

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

by yourself.

11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.
12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; Don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

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

Refrigerant Safety Precautions:

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

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

Safety Precautions for Installing and Relocating the Unit:

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

WARNINGS

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

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

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

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

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

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

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

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

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

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

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

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

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

Poor connections may lead to electric shock or fire.

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

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



Refrigerant
Safety Group

A2L R32 refrigerant warning

- 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 odorless. Furthermore, it can lead to explosion under certain conditions. But the flammability of the refrigerant is very low. It can be ignited only by fire.
- Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozone layer. The influence upon the greenhouse effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.

WARNING

- Appliance filled with flammable gas R32.
- Appliance shall be installed, operated and stored in a room with a floor area not less than 7.1m (76.5ft)
- The appliance shall be stored in a room without continuously operating ignition sources.
(for example: open flames, an operating gas appliance or an operating electric heater.)
- The appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specified for operation.
- The appliance shall be stored so as to prevent mechanical damage from occurring.
- Ducts connected to an appliance shall not contain an ignition source.
- Keep any required ventilation openings clear of obstruction.
- Do not pierce or burn.
- Be aware that refrigerants may not contain and outdoor.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- Servicing shall be performed only as recommended by the manufacturer.
- Should repair be necessary, contact your nearest authorized Service Centre. Any repairs carried out by unqualified personnel may be dangerous.
- Compliance with national gas regulations shall be observed.
- Read specialist's manual.



Refrigerant
Safety Group

A2L



Safety operation of flammable refrigerant

Qualification of workers

Qualification of the working personnel for maintenance, service and repair operations should according to UL 60335-2 -40, CAN/CSA- C22.2 No. 60335-2-40: 22 Annex HH..

Every working procedure that affects safety means shall only be carried out by competent persons according to Annex HH. Special training additional to usual refrigerating equipment repair procedures is required when equipment with **FLAMMABLE REFRIGERANTS** is affected.

Installation notes

- 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.
- It is not allowed to drill hole or burn the connection pipe.
- Leak test is a must after installation.

table a - Minimum room area (m²)

Based on UL 60335-2-40 requirements

The following installation height and area for customer reference

Charge amount (kg)	Installation height (m)				
	0.6	1.8	2.2	2.5	3
	Minimum room area (m ²)				
≤1.836	/	/	/	/	/
1.85	29.39	6.72	5.50	4.84	4.04
1.9	31.01	6.90	5.65	4.97	4.14
1.95	32.66	7.09	5.80	5.10	4.25
2	34.35	7.27	5.95	5.23	4.36
2.05	36.09	7.45	6.10	5.36	4.47
2.1	37.87	7.63	6.24	5.50	4.58
2.15	39.70	7.81	6.39	5.63	4.69
2.2	41.57	7.99	6.54	5.76	4.80
2.3	45.43	8.36	6.84	6.02	5.02
2.4	49.47	8.72	7.14	6.28	5.23
2.5	53.68	9.08	7.43	6.54	5.45
2.6	58.05	9.45	7.73	6.80	5.67
2.7	62.61	9.81	8.03	7.06	5.89
2.8	67.33	10.17	8.32	7.33	6.11
2.9	72.22	10.54	8.62	7.59	6.32
3	77.29	10.90	8.92	7.85	6.54
3.1	82.53	11.26	9.21	8.11	6.76
3.2	87.94	11.62	9.51	8.37	6.98
3.3	93.52	11.99	9.81	8.63	7.19
3.4	99.27	12.35	10.11	8.89	7.41
3.5	105.20	12.71	10.40	9.16	7.63

Maintenance notes

- Check whether the maintenance area or the room area meet the requirement of the nameplate.
 - It's only allowed to be operated in the rooms that meet the requirement of the nameplate.
- Check whether the maintenance area is wellventilated.
 - 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
- The refrigerant should be recycled into the specialized storage tank.
- Make sure that there isn't any naked flame near the outlet of the vacuum pump and it's wellventilated.

Filling the refrigerant

- Use the refrigerant filling appliances specialized for R32. Make sure that different kinds of refrigerant won't 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 haven't finished).
- Don't overfilling.
- After filling is finished, please do the leakage detection before test running; another time of leak detection should be done when it's 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.

Safety of Construction

- For appliances using FLAMMABLE REFRIGERANTS, all joints made in the installation between parts of the REFRIGERATING SYSTEM, with at least one part charged, shall be made in accordance with the following:

- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the REFRIGERATING SYSTEM parts. A vacuum valve shall be provided to evacuate the interconnecting pipe or any uncharged REFRIGERATING SYSTEM part.

Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be refabricated.

Refrigerant tubing shall be protected or enclosed to avoid damage.

– Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during NORMAL OPERATION shall be protected against mechanical damage.

Pressure test and leak detect

- After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements.

The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

- Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

Notices for using refrigerant sensor

- The refrigerant sensor can monitor the concentration of R32 refrigerant in real time. When the detected concentration exceeds the threshold, it will trigger the alarm and protection action of the whole unit. During use, avoid oil and dust covering the vent chamber of the refrigerant sensor. If the sensor is abnormal due to special external environment (such as electromagnetic interference, chemical pollution, etc.), please contact our aftersales service team.

- If the sensor life expires or is damaged, and the "FE" code appears on the display of indoor unit, please contact the after sales service team to replace the refrigerant sensor.

- After the unit is powered on, the refrigerant sensor monitors the concentration of R32 refrigerant in real time. If the detection concentration exceeds the threshold, the indoor unit display displays "EA" code, and buzzer of indoor unit buzzes, the indoor unit fan runs, and the outdoor unit stops. If the refrigerant leaks,

please open the window for ventilation to reduce the concentration of the refrigerant, and there can be no ignition source nearby. Once you reach the safe area, contact the aftersales service team to troubleshoot possible leaks such as evaporators or connecting pipes and fix them.

Specialist's manual

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

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

b. Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other ssukupleerdv ipseioronso onfn tehle s phearlls obne ccoamrripeedt eonutt iunn tdheer uthsee of flammable refrigerants.

That pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

● **Checks to the area**

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

● **Work procedure**

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

● **General work area**

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

● **Checking for presence of refrigerant**

The area shall be checked with an appropriate, refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking adequately sealed or intrinsically safe.

● **Presence of fire extinguisher**

If any hot work is to be conducted on the refrigerating equipment or

any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

● **No ignition sources**

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

● **Ventilated area**

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

● **Checks to the refrigerating equipment**

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

- the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

● **Checks to electrical devices**

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

This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

● Repairs to sealed components

Sealed electrical components shall be replaced.

● Repair to intrinsically safe components

Intrinsically safe components must be replaced.

● Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.

The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

● Detection of flammable refrigerants

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

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

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)

Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.

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

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

NOTE: Examples of leak detection fluids are bubble method, fluorescent method agents.

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

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Removal of refrigerant shall be according to clause Removal and evacuation.

● Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose –conventional procedures shall be used.

However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);
- continuously flush or purge with inert gas when using flame to open circuit; and open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times.

Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L).

This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

● Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system. Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

● Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-

use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure, ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate in accordance with instructions.
- h) Do not overfill cylinders (no more than 80 % volume liquid charge).
- i) Do not exceed the maximum working pressure of the cylinder even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

Labelling

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

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible cooled before recovery occurs.

The recovery equipment shall be in good working order with a

set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

Transportation, marking and storage for units Transport of equipment containing flammable refrigerants.

Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.

Marking of equipment using signs

Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.

All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs.

The effectiveness of signs should not be diminished by too many signs being placed together.

Any pictograms used should be as simple as possible and contain only essential details.

Disposal of equipment using flammable refrigerants

See national regulations.

Storage of equipment/appliances

The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.

Avoid other heat sources or direct sun light.

Avoid a place where it is possible for inflammable gas to leak out.

Storage of packed (unsold) equipment

Storage package protection should be constructed such a way that mechanical damage to the equipment inside the package will

not cause a leak of the REFRIGERANT CHARGE.

The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

Main Tools for Installation and Maintenance



Level meter



Measuring tape



Screw driver



Impact drill



Drill head



Electric drill



Electroprobe



Universal meter



Torque wrench



Open-end wrench



Inner hexagon spanner



Electronic leakage detector



Vacuum pump



Pressure meter



Pipe pliers



Pipe pliers



Pipe cutter



Pipe expander



Pipe bender



Soldering appliance



Refrigerant container

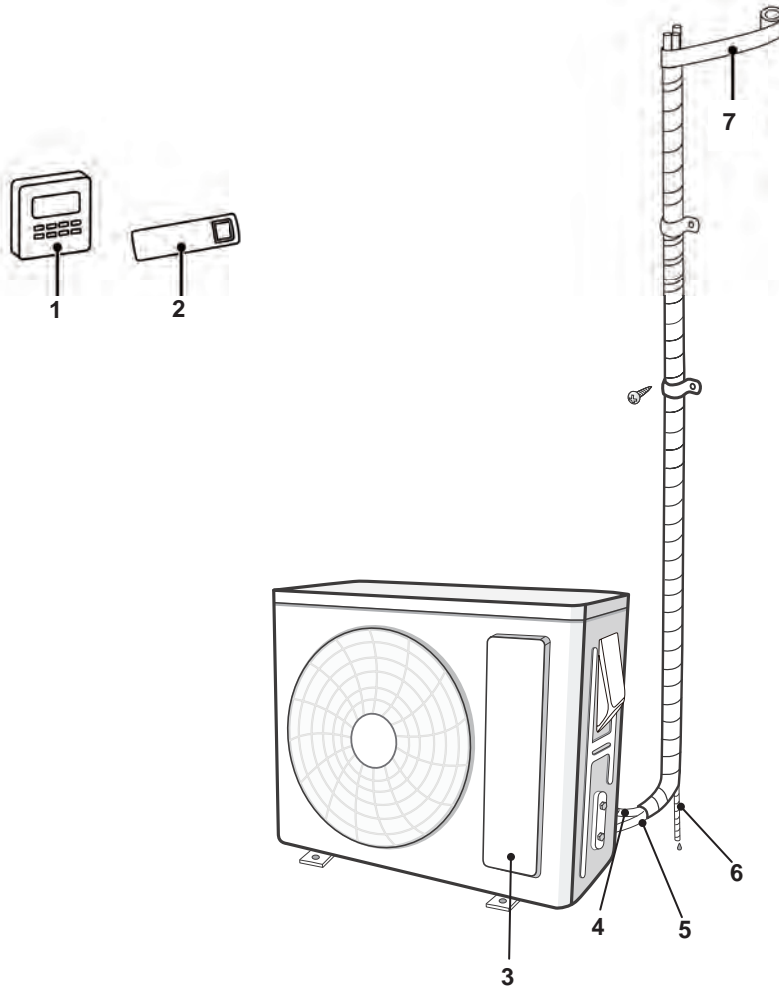
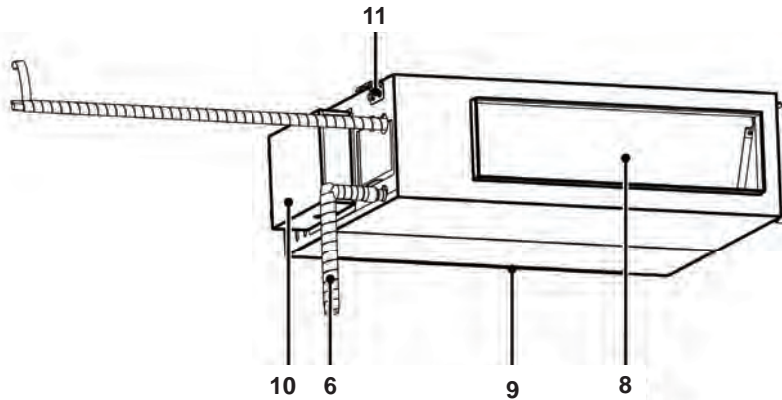


Electronic scale

8. Product introduction

8.1 Outline of the Unit and Main Parts

Duct Type


















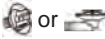


1. Wired controller
2. Wireless controller
3. Front board
4. Liquid pipe
5. Gas pipe
6. Drain pipe
7. Binding tape
8. Air outlet
9. Air inlet
10. Electric box
11. Hanger

⚠ Note:

- The connection pipe, drain pipe, power cord for this unit should be prepared by the user.
- The unit is standard equipped with rectangular duct.

8.2 Standard Accessories

No.	Name	Appearance	Quantity	Usage
Duct Type Accessories				
1	Wired Controller		1	To control the indoor unit.
2	Nut with Washer		4	To fix the hook on the cabinet of the unit.
3	Nut		4	To be used together with the hanger bolt for installing the unit.
4	Washer		4	To be used together with the hanger bolt for installing the unit.
5	Insulation		1	To insulate the gas pipe.
6	Insulation		1	To insulate the liquid pipe.
7	Fastener		8	To fasten the sponge.
8	Sponge		2	To insulate the drain pipe.
9	Ordinary Nut		1	To prevent the removal of the gas pipe connecting nut. (Refer to the fittings included in delivery.)
10	Ordinary Nut		1	To prevent the removal of the liquid pipe connecting nut. (Refer to the fittings included in delivery.)
11	Sponge (20x20mm)		2	For moisture-proof of wire controller
12	Screw (M4x25)		2	For installation of wire controller
13	Drain Hose Assembly		1	To connect with the hard PVC drain pipe
14	Special Nut		1	To be used for connecting the refrigerant pipe
15	M10X8 Nut with Washer		4	To be used together with the hanger bolt for installing the unit
16	M10 Nut (M10X8.4 Nut)		4	To be used together with the hanger bolt for installing the unit
17	M10 Washer (Spring Washer M10X2.6)		4	To be used together with the hanger bolt for installing the unit
Outdoor Unit Accessories				
1	Drain Plug		0 or 3	To plug the unused drain hole.
2	Drainage Connector		0 or 1	To connect with the hard PVC drain pipe.

9. Installation

9.1 Installation Preparation

1. Notice on Installation

- (1) When installing an outdoor unit with single or double fans, hold the handle and then lift it up slowly (Do not touch the condenser with your hand or other objects). If you hold only one side of the casing, the casing may be pulled out of shape, so please hold the base of the unit as well. During installation, be sure to use the components specified in the instruction manual.
- (2) Please use the charging machine specialized for R32 refrigerant, before charging, keep the refrigerant tank in an upright position. After charging, stick a label on the air conditioner saying no excessive charging.
- (3) The following tools will be used:
 - 1) Liquid-level gauge
 - 2) Screwdriver
 - 3) Electric driven rotary hammer
 - 4) Drill
 - 5) Pipe expander
 - 6) Torque wrench
 - 7) Open-end wrench
 - 8) Pipe cutter
 - 9) Leak detector
 - 10) Vacuum pump
 - 11) Pressure gauge
 - 12) Universal meter
 - 13) Hexagon wrench
 - 14) Tapeline

2. Selection of Installation Location

⚠ WARNING!

- If the outdoor unit will be exposed in strong wind, it must be securely located, otherwise it may fall down.
- Install the air conditioner at a place where the inclination is less than 5°.
- Do not install the unit at a place with direct sunlight.
- Do not install the unit at a place with leakage of inflammable gas.

Selection of Installation Location for Indoor Unit (Select a location pursuant to the following condition).

- (1) Air inlet and outlet of the indoor unit should be away from obstacles to make sure the unit's air flow can reach the entire room. Do not install the unit in a kitchen or a laundry.
- (2) Install the unit in a room without naked flame, fire source or the risk of getting the refrigerant on fire.
- (3) Select a location that can withstand 4 times the unit weight without increasing operating noise and vibration.
- (4) The installation location must be level.
- (5) The indoor piping length and wiring length should be within the allowable range.
- (6) Select a place that can easily drain condensate and connect to the drain system of the air conditioner.
- (7) If hoisting screw bolts are to be used, check whether the installation location is safe enough. If not safe, reinforce the

location before installation.

- (8) Indoor unit, power cord, connecting wires should be at least 1m from television and radio. This is to prevent image interference or noise (Even at a distance of 1m, a very strong electric wave may still generate noise).

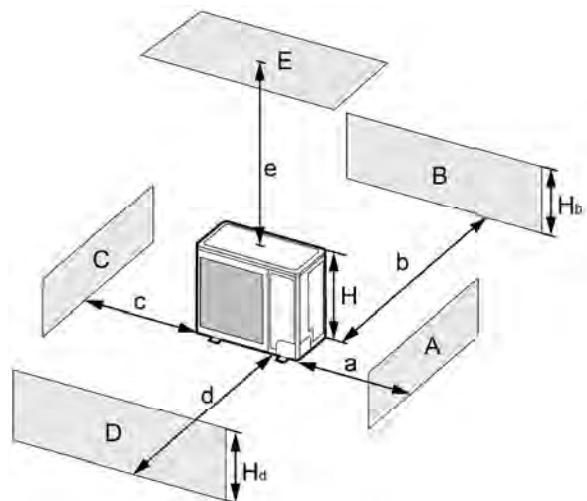
Selection of Installation Location for Outdoor Unit (Select a location pursuant to the following condition).

- (1) Noise and air flow produced by the outdoor unit will not disturb the neighbors.
- (2) Select a location that is safe and away from animals and plants. If not, please add safety fences to protect the unit.
- (3) Install at a place with good ventilation. Make sure the outdoor unit stays at a well-ventilated place with no obstacles nearby that may obstruct the air inlet and outlet.
- (4) The installation location should be able to withstand the weight and vibration of outdoor unit and allow the installation to be carried out safely.
- (5) Avoid installing at a place with leakage of inflammable gas, oil smoke or corrosive gas.
- (6) Keep it away from strong wind because strong wind will affect the outdoor fan and lead to insufficient air flow volume and thus affecting the unit's performance.
- (7) Install the outdoor unit at a place that is convenient for it to be connected to the indoor unit.
- (8) Away from any object that may get the air conditioner generating noise.
- (9) Install the outdoor unit at a place where condensate can be easily drained.

3. Diagram of Unit Installation Space and Location

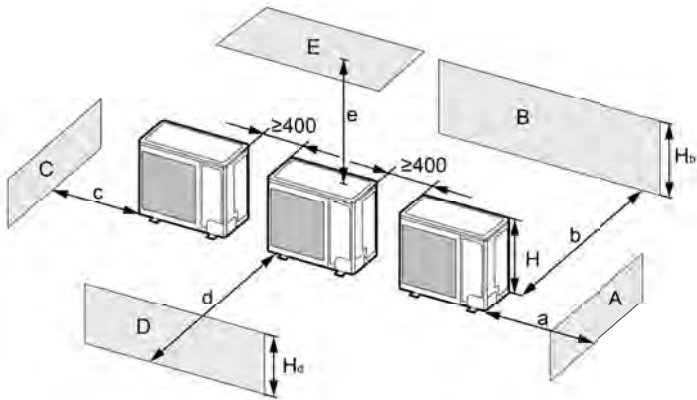
- (1) Diagram of installation space and location for outdoor unit (Notice: for best performance of the outdoor unit, make sure its installation space conforms to the following installation dimensions).

- 1) When one outdoor unit is to be installed.



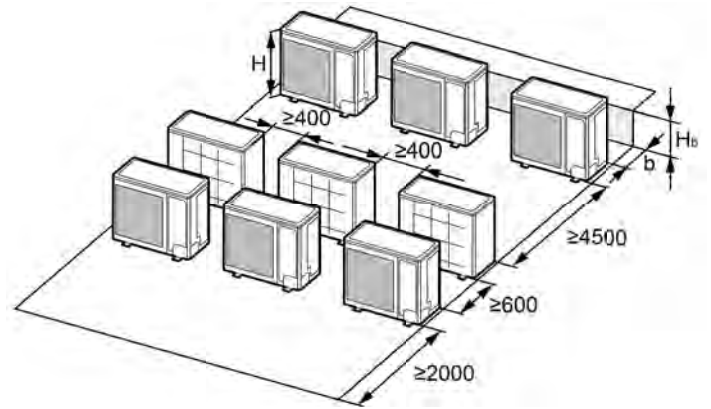
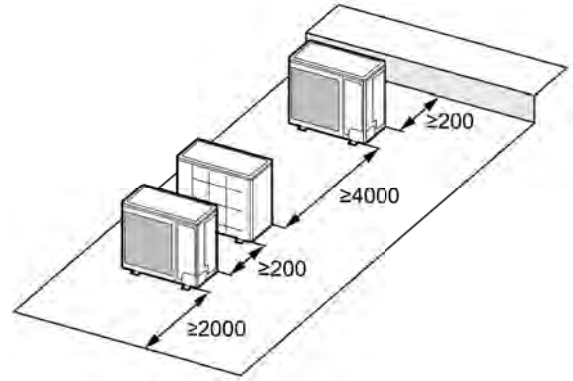
A-E	H_b H_d H		(mm)				
			a	b	c	d	e
B	—		—	≥ 100	—	—	—
A,B,C	—		≥ 300	≥ 100	≥ 100	—	—
B,E	—		—	≥ 100	—	—	≥ 1000
A,B,C,E	—		≥ 300	≥ 150	≥ 150	—	≥ 1000
D	—		—	—	—	≥ 1000	—
D,E	—		—	—	—	≥ 1000	≥ 1000
B,D	$H_b < H_d$	$H_d > H$	—	≥ 100	—	≥ 1000	—
	$H_b > H_d$	$H_d < H$	—	≥ 100	—	≥ 1000	—
B,D,E	$H_b < H_d$	$H_b \leq 1/2 H$	—	≥ 250	—	≥ 2000	≥ 1000
		$1/2 H < H_b \leq H$	—	≥ 250	—	≥ 2000	≥ 1000
	$H_b > H$		Prohibited				
	$H_b > H_d$	$H_d \leq 1/2 H$	—	≥ 100	—	≥ 2000	≥ 1000
		$1/2 H < H_d \leq H$	—	≥ 200	—	≥ 2000	≥ 1000
		$H_d > H$		Prohibited			

2) When two or more outdoor units are to be installed side by side.



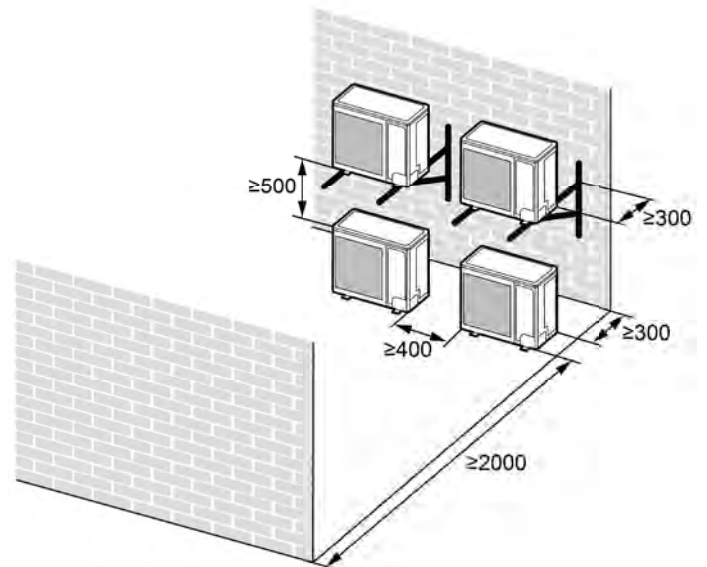
A-E	H_b H_d H		(mm)				
			a	b	c	d	e
A,B,C	—		≥ 300	≥ 300	≥ 1000	—	—
A,B,C,E	—		≥ 300	≥ 300	≥ 1000	—	≥ 1000
D	—		—	—	—	≥ 2000	—
D,E	—		—	—	—	≥ 2000	≥ 1000
B,D	$H_b < H_d$	$H_d > H$	—	≥ 300	—	≥ 2000	—
	$H_b > H_d$	$H_d < H$	—	≥ 250	—	≥ 2000	—
$1/2 H < H_d \leq H$		—	≥ 300	—	≥ 2500	—	
B,D,E	$H_b < H_d$	$H_b \leq 1/2 H$	—	≥ 300	—	≥ 2000	≥ 1000
		$1/2 H < H_b \leq H$	—	≥ 300	—	≥ 2500	≥ 1000
	$H_b > H$		Prohibited				
	$H_b > H_d$	$H_d \leq 1/2 H$	—	≥ 250	—	≥ 2500	≥ 1000
		$1/2 H < H_d \leq H$	—	≥ 300	—	≥ 2500	≥ 1000
		$H_d > H$		Prohibited			

3) When outdoor units are installed in rows.



H_b H	(mm)
$H_b \leq 1/2 H$	$b \geq 250$
$1/2 H < H_b \leq H$	$b \geq 300$
$H_b > H$	Prohibited

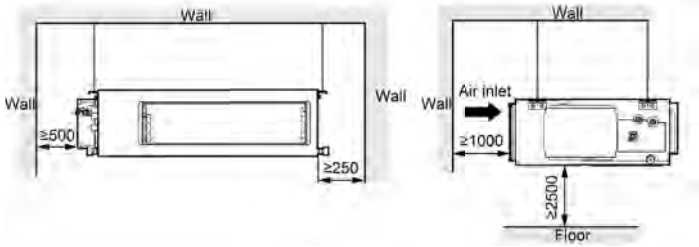
4) When outdoor units are installed one above another.



(2) Diagram of installation location and space for indoor unit (Notice: for the best performance of indoor unit, make sure its installation space conforms to the following installation dimensions).

• **Duct Type:**

Unit: mm



9.2 Unit Installation

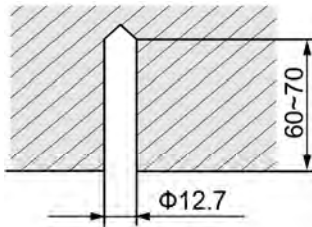
1. Installation for Duct Type

(1) Preparation for Installing the Indoor Unit

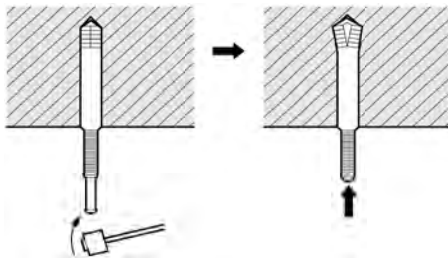
NOTES!

- Please tighten the nut and bolt to prevent the air conditioner from falling down.
- The unit might be loose if fixing the panel rack only. Be careful during installation.

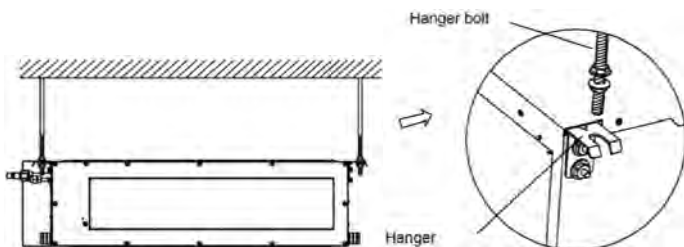
- 1) Install the bolts to the ceiling at a place strong enough to hang the unit. Mark the bolt positions from the installation template. With a concrete drill for 12.7mm diameter holes. See the following figure.



- 2) Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer. See the following figure.

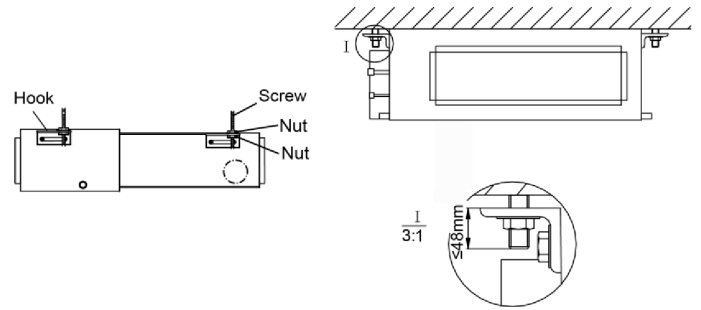


- 3) Install the hanger to the unit. See the following figure.



- 4) Pass the unit hangers over the bolts installed to the ceiling and install the unit with the special nut. See the following

figure.



(2) Leveling

After installing the indoor unit, level detection of the unit shall be conducted. Place the unit horizontally and leave the left and right side with a downward slope of at least 1/100~1/50 in drainage direction, as shown below.



4. Installation for Outdoor Unit

- 1) If the outdoor unit is installed on a solid ground such as concrete, use M10 screw bolts and nuts to secure the unit and make sure the unit stands erect and level.
- 2) Do not install it on top of the building.
- 3) If it vibrates and causes noise, please add rubber cushion between the outdoor unit and the installation base.

5. Installation for Connection Pipe

(1) Installation Notice and Requirement on Connection Pipe

Installation method: Connect the connection pipes first to the indoor unit and then to the outdoor unit. When bending a connection pipe, be careful not to damage the pipe. Do not over-tighten the screw nut, otherwise leakage will occur. Besides, the outside of connection pipe should be added with a layer of insulating cotton to protect it from mechanical damage during installation, maintenance and transportation.

Model	Item	Size of Fitting Pipe(inch)		Maximum Pipe Length(m)	Biggest Drop between Indoor and Outdoor Units (m)
		Liquid Pipe	Gas Pipe		
12K		1/4	1/2	20	12.19
30K		1/4	5/8	40	25
36K		1/4	5/8	50	30

- Connection pipe should adopt water-proof insulating material. Its wall thickness should be 0.5-1.0mm and the

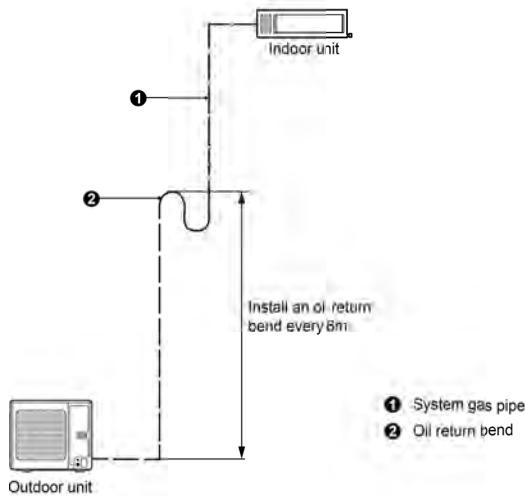
pipe wall should be able to withstand 6.0MPa. The longer the connection pipe is, the worse cooling and heating performance it has.

- When the drop between indoor and outdoor units is larger than 10m, an oil return bend should be added every 6m.
- The requirement on the adding of oil return bend is as below:

1) Outdoor unit is beneath the indoor unit.

There's no need to add non-return bend at the lowest or highest position of the vertical pipe, as shown below:

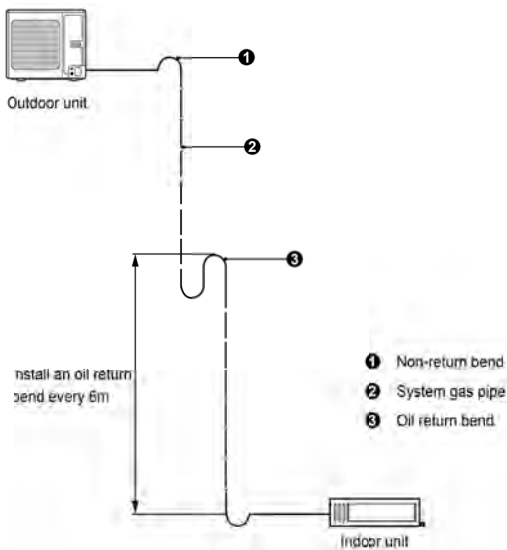
• Duct type



2) Outdoor unit is above the indoor unit.

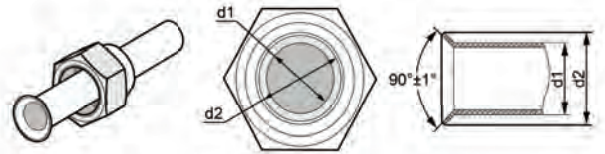
It's necessary to add oil return bend and non-return bend at the lowest and highest position of the vertical pipe, as shown below:

• Duct type



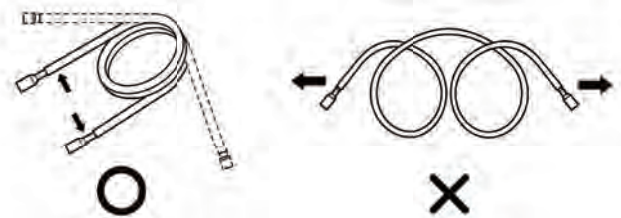
(2) Pipe Flaring

- 1) Cut the connection pipe with a pipe cutter.
- 2) The mouth of connection pipe should face downward. Remove burrs with the cut surface so that the chips do not enter the pipe.
- 3) Remove the cut-off valve of outdoor unit and take out the flare nut from the bag of indoor unit accessories. Then fit the flare nut on the pipe and use a flaring tool to flare the mouth of connection pipe.
- 4) Check whether the flaring part has cracked (see the figure below).

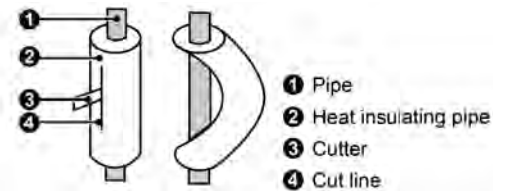


(3) Pipe Bending

- 1) The pipes are shaped by your hands. Be careful not to collapse them.



- 2) Do not bend the pipes in an angle more than 90°.
- 3) If the pipe is repeatedly bent or extended, it will become hard and difficult to be bent or extended. So do not bend or extend the pipe for more than 3 times.
- 4) When bending the pipe, do not bend it excessively, otherwise it will get broken. As shown beside, use a sharp cutter to cut the heat insulating pipe and bend it after the pipe is exposed. After bending, place the heat insulating pipe back on the pipeline and fix it with adhesive tape.

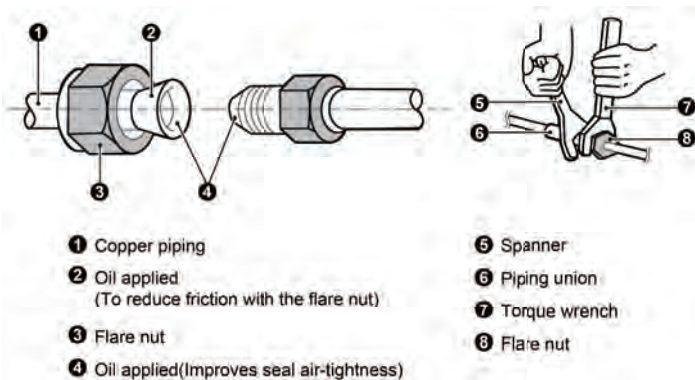
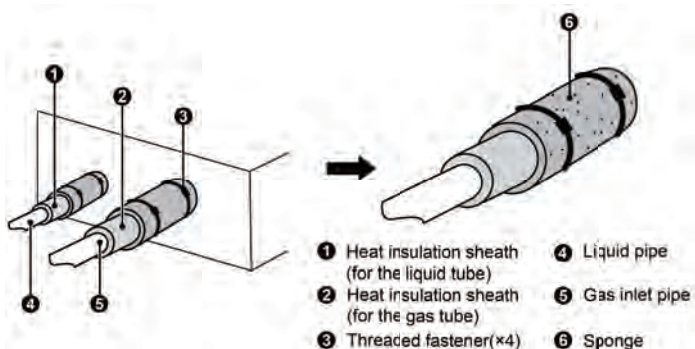


(4) Connection Pipe of Indoor and Outdoor Units

⚠ NOTES!

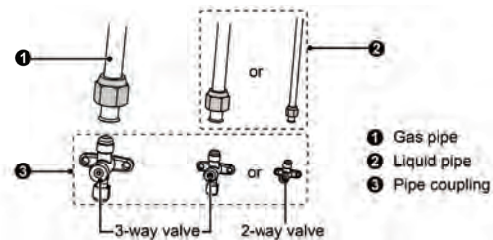
- Connect the pipe to the unit. Please follow the instructions stated in the figures below. Use both spanner and torque wrench.
- When connecting the tapered screw nut, first apply chilled machine oil on its inner and outer surface and then screw it up for 3~4 circles.

- Confirm the tightening torque by referring to the following table (If the screw nut is over-twisted, it may be damaged and cause leakage).
- Check whether gas leakage occurs to the connection pipe and then apply thermal insulation, as shown below.
- Wind sponge around the joint of gas pipe and heat insulation sheath of gas collecting pipe.
- Be sure to connect gas pipe after liquid pipe is connected.
- The installation of pipe-work shall be kept to a minimum.
- Pipe-work shall be protected from physical damage and shall not be installed in an unventilated space.



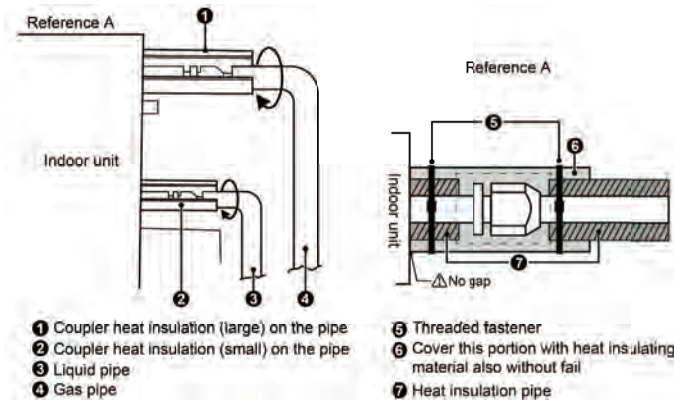
Pipe Diameter (inch)	Tightening Torque (ft-lb)
1/4	11-22
3/8	25-29
1/2	33-36
5/8	44-48
3/4	51-55
7/8	59-62

Screw on the flare nut of the flaring connecting pipe on the outdoor unit valve. The method of screwing the flare nut is the same with that for indoor unit.



(5) Thermal Insulation of Pipe Joint (Only for Indoor Unit)

Stick coupler heat insulation (large and small) to the place where connecting pipes.



5. Connection Pipe Vacuum Pumping and Leak Detection

(1) Vacuum Pumping

⚠ NOTES!

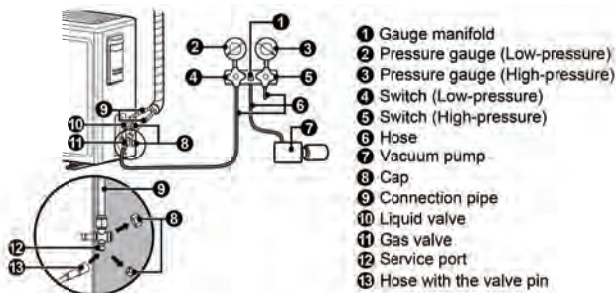
- Make sure the outlet of vacuum pump is away from fire source and is well-ventilated.

- 1) Remove the caps of the liquid valve, gas valve and also the service port.
- 2) Connect the hose at the low pressure side of the manifold valve assembly to the service port of the unit's gas valve, and meanwhile the gas and liquid valves should be kept closed in case of refrigerant leak.
- 3) Connect the hose used for evacuation to the vacuum pump.
- 4) Open the switch at the lower pressure side of the manifold valve assembly and start the vacuum pump. Meanwhile, the switch at the high pressure side of the manifold valve assembly should be kept closed, otherwise evacuation would fail.
- 5) The evacuation duration depends on the unit's capacity generally.

Model	Time(min)
12/30/36K	20

And verify if the pressure gauge at the low pressure side of the manifold valve assembly reads -0.1MPa (-750mmHg); if not, it indicates there is leak somewhere. Then close the switch fully and then stop the vacuum pump.

- 6) Wait for 10min to see if the system pressure can remain unchanged. If the pressure increase, there may be leakage.
- 7) Slightly open the liquid valve and let some refrigerant go to the connection pipe to balance the pressure inside and outside of the connection pipe, so that air will not come into the connection pipe when removing the hose. Note that the gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
- 8) Place back the caps of the liquid valve, gas valve and also the service port.



NOTE

- For large-size units, there are maintenance ports for liquid valve and gas valve. During evacuation, you may connect the two hoses of the branch valve assembly to the maintenance ports to speed up the evacuation.

(2) Leak Detection Methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration (Detection equipment shall be calibrated in a refrigerant-free area).

Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) is confirmed.

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

If a leak is suspected, all naked flames shall be removed/ extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

6. Refrigerant Adding

NOTES!

- Before and during operation, use an appropriate refrigerant leak detector to monitor the operation area and make sure the technicians can be well aware of any potential or actual leakage of inflammable gas. Make sure the leak detecting device is applicable to inflammable refrigerant. For example, it should be free of sparks, completely sealed and safe in nature.

See the following table for the amount of additional refrigerant.

Model	Item	Standard Pipe Length (m)	Unnecessary Length Charge Pipe(m)	Additional Refrigerant Amount for Extra Pipe (g/m)
12K		7.5	≤7.5	16
30K		5.0	≤7.0	12g
36K		5.0	≤7.0	20g

7. Installation of Drain Pipe

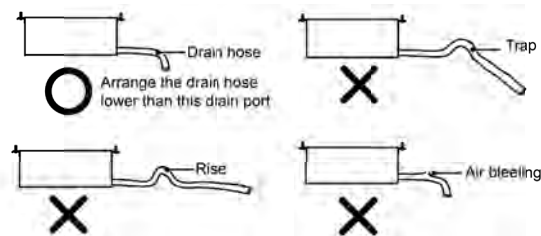
- (1) It is not allowed to connect the condensate drain pipe into waste pipe or other pipelines which are likely to produce corrosive or peculiar smell to prevent the smell from entering indoors or corrupt the unit.
- (2) It is not allowed to connect the condensate drain pipe into rain pipe to prevent rain water from pouring in and cause property loss or personal injury.
- (3) Condensate drain pipe should be connected into special drain system for air conditioner.

Indoor Side Drain Pipe (Duct Type)

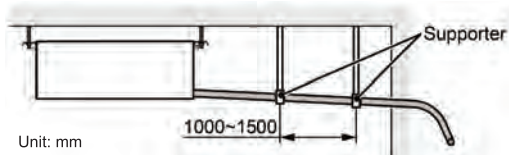
NOTES!

- Install the drain hose in accordance with the instructions in this installation manual and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

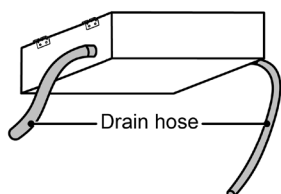
- (1) Install the drain hose with downward gradient (1/50 to 1/100) and no risers or traps are used for the hose. See the following figure.
- (2) Be sure there is no crack or leak on the drain hose to avoid the formation of air pocket. See the following figure.



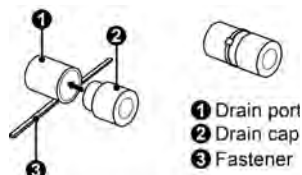
- (3) When the hose is long, install supporters. See the following figure.



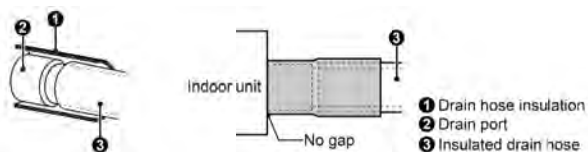
- (4) Always use the drain hose which has been insulated properly.
- (5) Use a suitable drain hose.
- (6) There is a drain port on both the left and right sides. Select the drain port to match the local conditions. See the following figure.



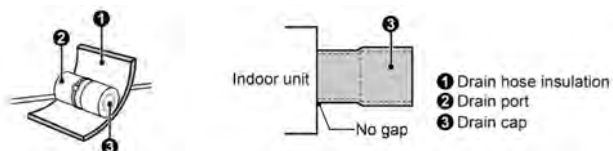
- (7) When the unit is shipped from the factory, the drain port is defaulted to be the one on the left side (electric box side).
- (8) When using the drain port on the right side of the unit, reinstall the drain cap to the left side drain port. See the following figure.



- (9) Be sure to insulate where the drain port and the drain hose is connected. See the following figure.



- (10) The unused drain port also should be insulated properly. See the following figure.



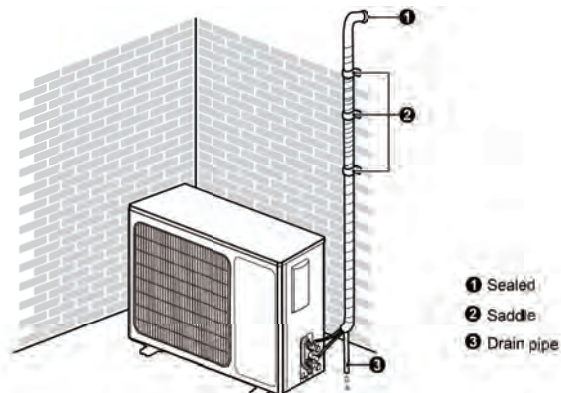
- (11) There is adhesive on one side of the insulation so that after removing the protective paper over it the insulation can be directly attached to the drain hose.

• Outdoor Side Drain Pipe

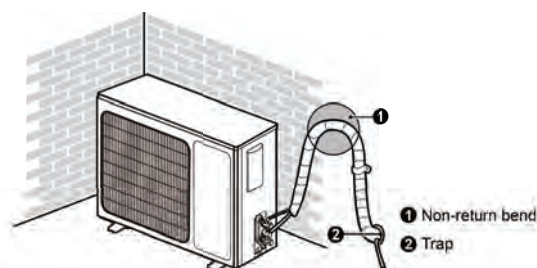
- (1) If the outdoor unit is underneath the indoor unit, arrange the pipeline according to the following diagram.
 - Drain hose should be placed on the ground and its end should not be immersed into water. The whole pipeline

should be supported and fixed onto the wall.

- Wind the insulating tape from bottom to top.
- The whole pipeline should be wound with insulating tape and fixed onto the wall with saddles.



- (2) If the outdoor unit is above the indoor unit, arrange the pipeline according to the following diagram.
 - Wind the insulating tape from bottom to top.
 - The whole pipeline should be wound together to avoid water returning to the room.
 - Use saddles to fix the whole pipeline onto the wall.



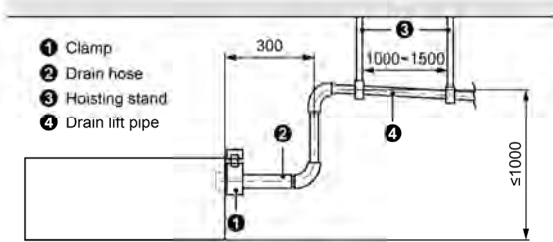
• Drainage Riser with Pump Unit Considerations (Duct Type)

- (1) For the unit with the condensate pump, only one drain port at the side close to the electric box is prepared and only through it the drain hose can be connected.

Model	Item	Drain pipe (inside dimension)(mm)
12K		Φ25
30/36K		Φ26

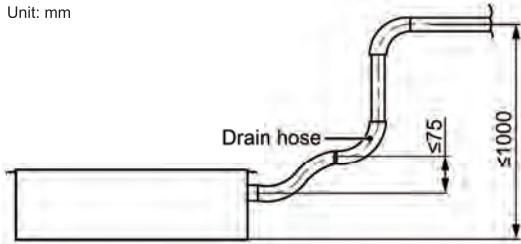
- (2) For the unit with the condensate pump, two drain ports at the bottom are defaulted to be factory plugged with drain caps. After the installation of the drain hose, these two drain ports also need to be insulated properly with the same way aforementioned.
- (3) The lifted installation height of drainage pipe is less than 1,000mm, as is shown in the following figure.

Unit: mm

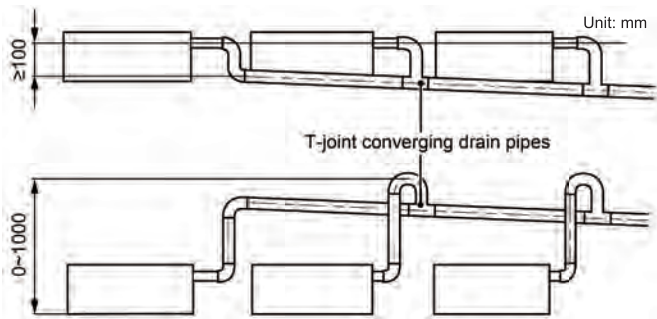


The vertical height of the drain hose should be 75mm or less so that it is unnecessary for the drain port to withstand additional force.

Unit: mm



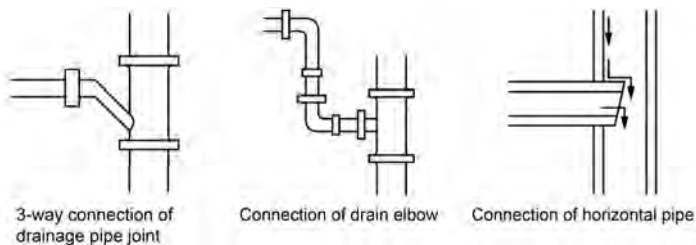
When multiple drain hoses are used, their installation should be performed as shown in the figure below.



NOTES!

- The specification of the selected merged drainage pipe shall be appropriate for the operation capacity of the unit.

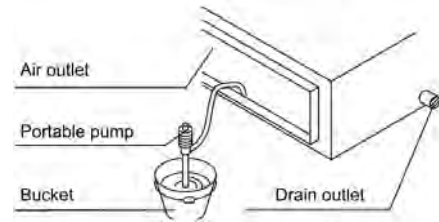
- Drain branch should be connected to the vertical or horizontal part of the main drain pipe.
- Horizontal pipe should not be connected to the vertical pipe that is on the same level. It should be connected in the following way:
 - Attach the 3-way connection of the drainage pipe joint.
 - Attach the drain elbow.
 - Attach the horizontal pipe.



Check Drainage (Duct Type)

After piping work is finished, check if drainage flows smoothly.

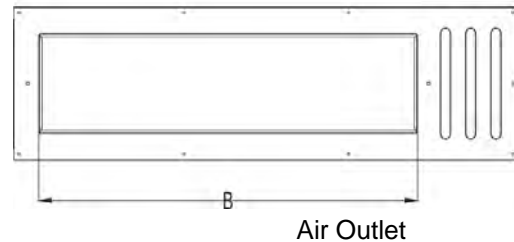
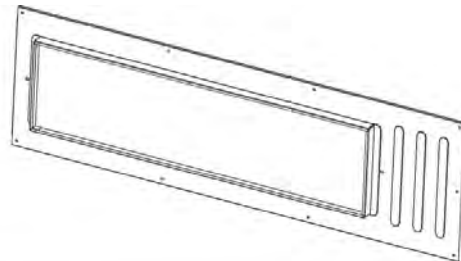
As shown in the figure, add approximately 1liter of water slowly into the drain pan and check drainage flow during COOL running.



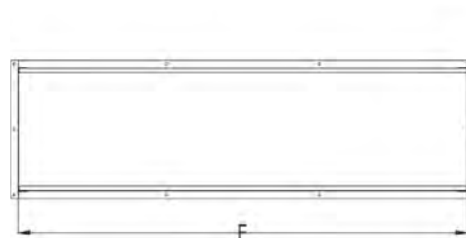
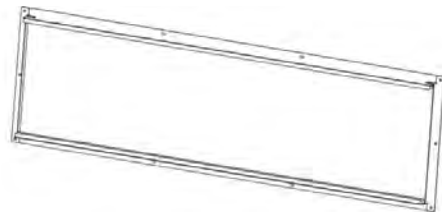
8. Installation of the Duct (Duct Type)

Dimensions of the Supply Air Outlet/Return Air Inlet

12K



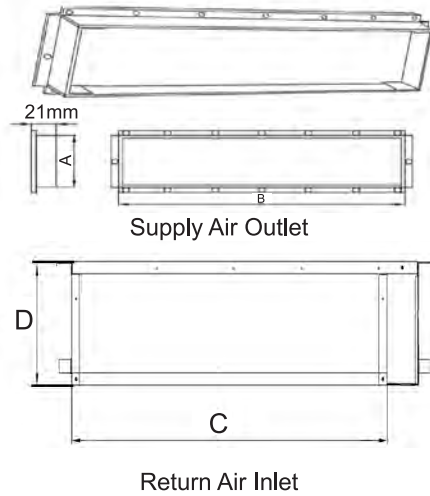
Air Outlet



Air-return Opening

Model	Size of Air Outlet			Size of Air-return Opening		
	A	B	C	D	E	F
12K	195	451	25	264	660	29

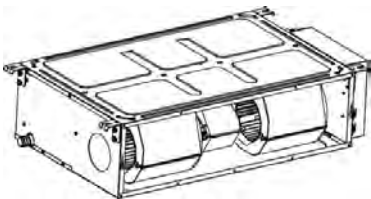
36K



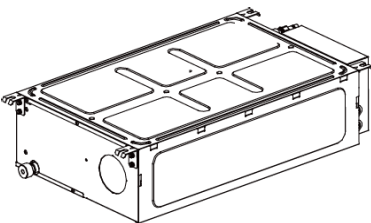
Model	Item	Supply Air Outlet		Return Air Inlet	
		A	B	C	D
30K		215	740	871	234
36K		215	1153	1188	220

● **Return Air Method**

- (1) The default ex-factory return air method is from the back. The return air cover shall be installed at the bottom of the unit, as is shown in the following figure.



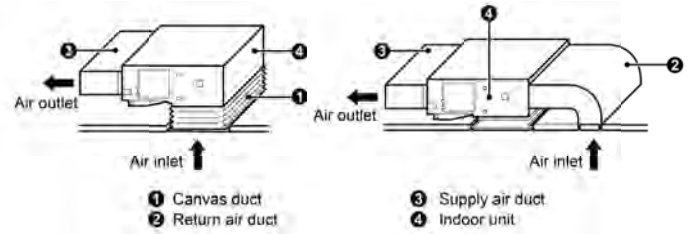
- (2) If the downward return air method is adopted, then install the return air cover at the back of the unit after dismantling it.



- (3) Connect the return duct to the return air inlet of indoor unit with rivet, and the other side shall be connected to the return air inlet. For the convenience of free height adjustment, canvas duct can be made and reinforced with iron wire to a folding shape.
- (4) The noise of downward return air is obvious bigger than that of rear return air. For downward return air, silencer and static pressure carton shall be added to conduct noise reduction treatment.

● **Installation of Supply Air Duct and Return Air Duct**

Installation method shall be selected by entirely considering the conditions of buildings, maintenance, etc., as is shown in the following figure.



Please refer to below table for the rated ex-factory static pressure of unit.

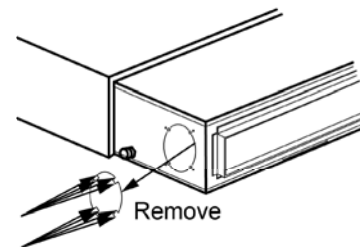
Model	Item	External Static Pressure (Pa)
12K		25
30K		37
36K		30

⚠ **NOTES!**

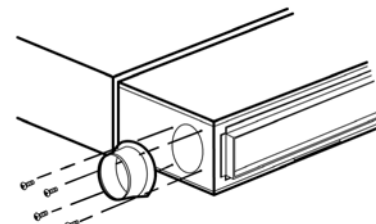
- The return air pipe must be connected to the air duct, and the internal components cannot be touched by hands after installation. During installation and maintenance of the unit, the disassembly must be done by the professionals.

● **Installation of Fresh Air Duct**

- (1) While connecting the fresh air duct, cut off the fresh air baffle plate as is shown in the following figure. If the fresh air duct is not used, block the gap of fresh air baffle plate with sponge.



- (2) Install the round flange so that it can be connected to the fresh air duct, as is shown in the following figure.



- (3) The air duct and round flange duct shall be concealed and kept warm well.
- (4) The fresh air is the air after filtration.

⚠ **NOTES!**

- The supply air duct, return air duct and fresh air duct shall have thermalinsulation layer to prevent heat leakage and

condensation. Stick the plastic nail to the air duct, then attach the heat preservation cotton with tinfoil and fix it with plastic nail cover, finally, seal the connection joint with tinfoil tape tightly; Other materials with good thermal insulation effect can also be used.

- Each supply air duct and return air duct shall be fixed on the floorprefabricated slab with iron support; The air duct joint shall be tightly sealed with glue to prevent leakage.
- The design and construction of air duct shall meet related nationalengineering specifications and requirements.
- The distance between the edge of return air duct and wall is suggested tobe above 150mm, add filter screen for the return air inlet.
- Noise reduction and shock absorption shall be considered in air duct designand construction. Moreover, the noise source shall avoid the crowd, e.g. the return air inlet shall never be designed at the top of the user (office and rest area).

9.3 Electrical Installation

1. Requirement and Notice on Electrical Installation

⚠ WARNING!

The electrical installation for the air conditioner should observe the following requirements:

- The electrical installation must be conducted by professionals in compliance with local laws and regulations and the instructions in this manual. Never extend the power cord. The electric circuit must be equipped with a circuit breaker and air switch both with sufficient capacity.
- The unit's operating power must be within the nominal range stated in the instruction manual. Use a specialized power circuit for the air conditioner. Do not draw power from another power circuit.
- The air conditioner circuit should be at least 1.5m away from any inflammable surface.
- The external power cord, connection wire of indoor and outdoor units and the communication cords must be effectively fixed.
- The external power cord, connection wire of indoor and outdoor units and the communication cords can't directly contact any hot objects. For example: they must not contact chimney pipes, warm gas pipes or other hot objects.
- The external power cord, communication cords, and the connection wire of indoor and outdoor units must not be squeezed. Never pull, stretch or bend the wires.
- The external power cord, communication cords and the connection wire of indoor and outdoor units must not collide with any metal beam or edge on the ceiling, or touch any

metal burrs or sharp metal edge around.

- Connect wires correspondingly by referring to the circuit diagram labeled on the unit or electric box. Screws must be tightened up. Slipped screws must be replaced by specialized flat-head screws.
- Please use the power cables that are delivered along with the air conditioner. Do not change the power cables arbitrarily. Do not change the length and terminals of the power cables. If you want to change the power cables, please contact Gree's local service center.
- Wiring terminals should be connected firmly to the terminal board. Loose connection is forbidden.
- After the electrical installation is finished, please use wire clamps to secure the power cord, connection wire of indoor and outdoor units. Make sure the wires are not clamped too tight.
- The wire gauge of power cord should be large enough. Damaged power cord or other wires must be replaced by specialized wires. Wiring work must be done according to national wiring rules and regulations.

2. Wire Specifications and Fuse Capacity

Model	Power Supply (V/Ph/Hz)	Fuse capacity (A)	Min. Power Supply Cord
12/30/36K	208/230V-1ph-60Hz	5	4XAWG14

⚠ NOTES!

- Fuse is located on the main board.
- Install a circuit breaker at every power terminal near the units (indoor and outdoor units) with at least 3mm contact gap. The units must be able to be plugged or unplugged.
- Circuit breaker and power cord specifications listed in the above table are determined based on the maximum power input of the units.
- Supply cords of parts of appliabces for outdoor use shall not be lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC 57)
- Specifications of circuit breaker are based on a working condition where the working temperature is 40°C. If working condition changes, please adjust the specifications according to national standards.
- Adopt AWG18 power cords between indoor and outdoor units. The maximum length of 50-100 units is 30m and the maximum length of 125-160 units is 75m.(For Cassette Type) Please select a proper length according to local conditions. To be in compliance EN 55014, it is necessary to use 8 meters long wire.

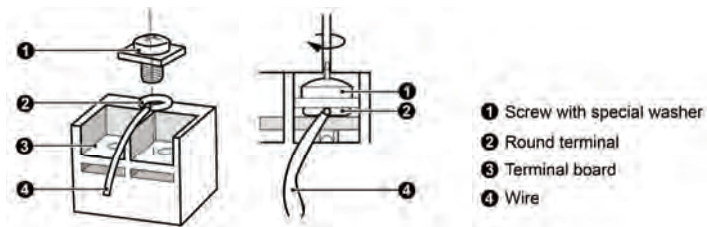
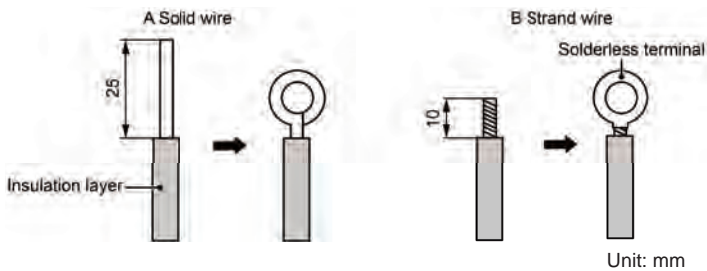
3. Connection of Power Cord and Communication Cord

(1) For solid wires (as shown below):

- 1) Use wire cutters to cut off the wire end and then peel away about 25mm of the insulation layer.
- 2) Use a screwdriver to unscrew the terminal screw on the terminal board.
- 3) Use nippers to bend the solid wire into a ring that fits the terminal screw.
- 4) Form a proper ring and then put it on the terminal board. Use a screwdriver to tighten up the terminal screw.

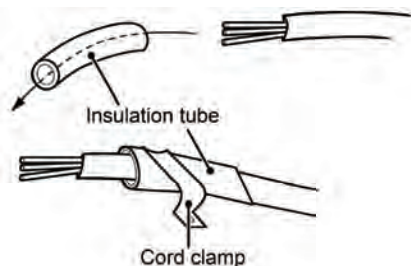
(2) For strand wires (as shown below):

- 1) Use wire cutters to cut off the wire end and then peel away about 10mm of the insulation layer.
- 2) Use a screwdriver to unscrew the terminal screw on the terminal board.
- 3) Use a round terminal fastener or clamp to fix the round terminal firmly on the peeled wire end.
- 4) Locate the round terminal conduit. Use a screwdriver to replace it and tighten up the terminal screw (as shown below).



(3) How to connect the connection wire and power cord:

Lead the connection wire and power cord through the insulation tube. Then fix the wires with wire clamps (as shown in the next figure).

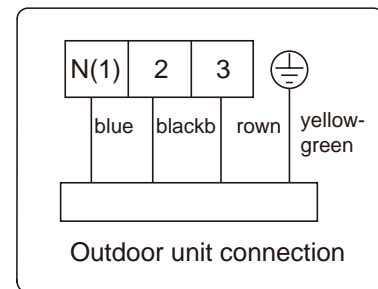


⚠ WARNING!

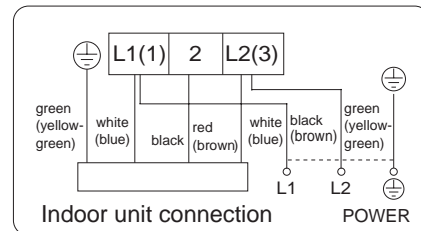
- Before working, please check whether the indoor and outdoor units are powered on.
- Match the terminal numbers and wire colors with the colors indicated in the indoor unit.
- Wrong wire connection may burn the electrical components.
- Connect the wires firmly to the wiring box. Incomplete installation may lead to fire hazard.
- Please use wire clamps to secure the external covers of connecting wires. (Insulators must be clamped securely; otherwise, electric leakage may occur.)
- Ground wire should be connected.

(4) Wire between indoor and outdoor unit

• Duct Type:



• Outdoor Unit:



(5) Electrical wiring of indoor unit and Electrical wiring of outdoor unit.

⚠ WARNING!

- High and low voltage wires should be led through different rubber rings of the electric box cover.
- Do not bundle up the connection wire of wired controller or lay them side by side, otherwise errors will occur.
- Tighten the screw and fix the power connection wire with the small wire clip.
- Use screws to tighten up the connection wires and power cords of indoor and outdoor units on the terminal board. Wrong connection may lead to fire hazard.
- If the connection wires of indoor unit (outdoor unit) and power cords are not correctly connected, the air conditioner may get damaged.
- Ground the indoor and outdoor units through connecting the ground wire.

- The units should comply with applicable local and national rules and regulations on power consumption.
- When connecting the power cord, make sure the phase sequence of the power supply matches with the corresponding terminals, otherwise the compressor will get reversed and operate abnormally

- If you use remote controller to turn off the unit and then immediately turn the unit on again, compressor will need 3min to restart. Even if you press "ON/OFF" button on the remote controller, it won't be started up right away.
- If there's no display on the wired controller, it's probably because the connection wire between the indoor unit and wired controller is not connected. Please check again.

9.4 Check after Installation

Check Items after Installation

Check items	Possible events due to improper installation
Is the main body installed securely?	The unit may fall down, vibrate or produce noise.
Did you do water leakage test?	Cooling capacity may become unsatisfactory.
Is the unit well insulated from heat?	Condensate, water drops may occur.
Does water drainage go well?	Condensate, water drops may occur.
Is the voltage consistent with that stated on the nameplate?	The unit may fail or its components may get burned.
Are the wires and pipes installed correctly?	The unit may fail or its components may get burned.
Has the unit been safely grounded?	Risk of electric leakage.
Do the specifications of wires comply with the requirement?	The unit may fail or its components may get burned.
Is there any obstacle blocking the air inlet and outlet of the indoor or outdoor units?	Cooling capacity may become unsatisfactory.
Have you recorded the length of refrigerant pipe and the refrigerant charging amount?	The refrigerant charging amount can't be controlled.

9.5 Test Running

1. Preparation before connecting the power.

- (1) Power must not be connected if the installation work is not completed.
- (2) Control circuit is correct and all the wires are firmly connected.
- (3) Cut-off valves of the gas pipe and liquid pipe are open.
- (4) The inside of the unit should be clean. Take irrelevant objects out if there is any.
- (5) After checking, re-install the front side plate.

2. Operation after connecting the power.

- (1) If all the above works are finished, power on the unit.
- (2) Make sure the indoor and outdoor units can run normally.
- (3) If there's sound of liquid shock when the compressor is running, then stop the air conditioner immediately. Wait until the electric heating belt is heated enough, and then restart the air conditioner.
- (4) Feel the air flow of the indoor unit to see if it is normal.
- (5) Press the swing button or speed control button on remote controller or wired controller to see if the fan can run normally.

⚠ NOTES!

10. Maintenance

10.1 Error Code List

Error code	Malfunction name	AC status	Possible causes
C5	Malfunction of jumper cap	The complete unit stops operation	1. Jumper cap is not installed in control panel; 2. Poor contact of jumper cap; 3. Jumper cap is damaged; 4. The tested circuit of jumper cap on control panel is abnormal.
E6	Communication malfunction between indoor unit and outdoor unit	Cool: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Communication malfunction"
H5	IPM protection	Cool/Dry: compressor stops operation, while indoor fan operates. Heat: all loads stops operation.	See "IPM protection, over-phase current of compressor"
L3 LA	Malfunction of outdoor fan/ malfunction of DC motor	Cool/Dry: all loads stops operation except indoor fan. Heat: all loads stops operation.	1. Outdoor condenser, air inlet and air outlet are blocked by filth or dirt; 2. Fan is blocked or loosened; 3. Motor or connection wire of motor is damaged; 4. Main board of outdoor unit is damaged; (As for dual-outdoor fan, L3 indicates fan 1; LA indicates fan 2)
H3	Overload protection of compressor	Cool/Dry: compressor stops operation, while indoor fan operates. Heat: all loads stops operation.	1. Overload wire of compressor is loose; 2. The overload protector is damaged. Under normal circumstances, the resistance between both ends of terminal is less than 1ohm. 3. See "Overload protection of compressor , High discharge temperature protection of compressor"
F0	Refrigerant insufficient protection, cut-off protection of refrigerant	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: Compressor, outdoor fan and indoor fan stops operation.	1. Is system cooling under high humidity environment, thus temperature difference of heat transfer is small; 2. Check whether the big valve and small valve of outdoor unit are opened completely; 3. Is the temperature sensor of evaporator of indoor unit loose? 4. Is the temperature sensor of condenser of outdoor unit loose? 5. Is the capillary or the electronic expansion valve blocked? 6. Is refrigerant leaking?
F1	Indoor ambient temperature sensor is open/short-circuited	Cool/Dry: indoor fan operates, while compressor and outdoor fan stops operation; Heat: all loads stops operation.	1. Temperature sensor is not well connected; 2. Temperature sensor is damaged 3. Main board of indoor unit is damaged.
F2	Indoor evaporator temperature sensor is open/short-circuited	Cool/Dry: indoor fan operates, while compressor and outdoor fan stops operation; Heat: all loads stops operation.	1. Temperature sensor is not well connected; 2. Temperature sensor is damaged 3. Main board of indoor unit is damaged.
H6	No feedback from indoor unit's motor	The complete unit stops operation	1. Is the fan blocked? 2. Is the motor terminal loose? 3. Is the connection wire of motor damaged? 4. Is the motor damaged? 5. Is the main board of indoor unit damaged?
LP	Indoor unit and outdoor can be matched with each other	Heat: compressor, outdoor unit and indoor fan stops operation.	Capacity of indoor unit and outdoor unit can't be matched.
C4	Malfunction of jumper cap of outdoor unit	Heat: all loads are stopped; other modes: outdoor unit stops operation.	Jumper cap of outdoor unit hasn't been installed.
b7	Gas valve temperature sensor is ON / short-circuited		1. Temperature sensor is not well connected or damaged; 2. The wire of temperature sensor is damaged, causing short circuit to copper pipe or outer casing; 3. Main board of outdoor unit is damaged.

Error code	Malfunction name	AC status	Possible causes
b5	Liquid valve temperature sensor is ON / short-circuited		<ol style="list-style-type: none"> 1. Temperature sensor is not well connected or damaged; 2. The wire of temperature sensor is damaged, causing short circuit to copper pipe or outer casing; 3. Main board of outdoor unit is damaged.
E1	High pressure protection of system	Cool/Dry: all loads stops operation except indoor fan; Heat: all loads stops operation.	<ol style="list-style-type: none"> 1. Heat exchange of outdoor unit is too dirty, or it blocked the air inlet/outlet; 2. Is power voltage normal; (three-phase unit) 3. Ambient temperature is too high; 4. Wiring of high pressure switch is loose or high pressure switch is damaged; 5. The internal system is blocked; (dirt blockage, ice blockage, oil blockage, angle valve is not completely opened) 6. Main board of outdoor unit is damaged; 7. Refrigerant is too much.
E3	Low pressure/low system pressure protection/ compressor low pressure protection	Cool: compressor, outdoor fan and indoor fan stop operation; Heat: compressor and outdoor fan stop operation at first. About 1min later, indoor fan stops operation; 2mins later, the 4-way valve stop operation.	<ol style="list-style-type: none"> 1. Low pressure switch is damaged; 2. Refrigerant inside the system is insufficient.
E4	High discharge temperature protection of compressor	Cool/Dry: compressor and outdoor fan stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Overload protection of compressor , High discharge temperature protection of compressor"
E5	AC overcurrent protection	Cool/Dry: compressor and outdoor fan stops operation, while indoor fan operates; Heat: all loads stops operation.	<ol style="list-style-type: none"> 1. Power voltage is unstable; 2. Power voltage is too low; 3. System load is too high, which leads to high current; 4. Heat exchange of indoor unit is too dirty, or it blocked the air inlet/outlet; 5. Fan motor operation is abnormal; the fan speed is too low or not functioning; 6. Compressor is blocked; 7. The internal system is blocked; (dirt blockage, ice blockage, oil blockage, angle valve is not completely opened) 8. Main board of outdoor unit is damaged. See "AC overcurrent protection"
E7	Mode shock/sysmte mode shock	Load of indoor unit stops operation (indoor fan, E-heater, swing)	Malfunction of one-to-more system; there may be two indoor units which has set the shock mode, such as one is cooling and the other is heating.
E8	High temperature prevention protection	Cool: compressor stops operation while indoor fan operates; Heat: all loads stops operation.	See "High temperature prevention protection; high power; system isabnormal"
EE	Malfunction of EEPROM	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	Main board of outdoor unit is damaged.
F0	Refrigerant-recovery mode	Cool/Dry: compressor and outdoor fan stops operation, while indoor fan operates.	Refrigerant recovery. The maintenance personnel operate it when he is maintaining the unit.
F3	Outdoor ambient temperature is open/short-circuited	Cool/Dry: compressor and outdoor fan stop operation, while indoor fan operates; Heat: all loads stops operation.	<ol style="list-style-type: none"> 1. Temperature sensor is not connected well or damaged; 2. Temperature sensor wire of outdoor unit is damaged; short circuit between the temperature sensor and copper pipe or outer case 3. Main board of outdoor unit is damaged;

Error code	Malfunction name	AC status	Possible causes
F4	Outdoor condenser temperature sensor is open/short-circuited	Cool/Dry: compressor and outdoor fan stop operation, while indoor fan operates; Heat: after operating for 3mins, all loads stops operation.	1. Temperature sensor is not connected well or damaged; 2. Temperature sensor wire of outdoor unit is damaged; short circuit between the temperature sensor and copper pipe or outer case; 3. Main board of outdoor unit is damaged.
F5	Outdoor air discharge temperature is open/short-circuited	Complete unit stops operation; motor of sliding door is cut off power.	1. The exhaust temperature sensor is not connected well or damaged. 2. Temperature sensor wire of outdoor unit is damaged; short circuit between the temperature sensor and copper pipe or outer case 3. Main board of outdoor unit is damaged;
FC	Malfunction of micro switch	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. The sliding door is blocked; 2. Malfunction of the photoelectric inspection panel of sliding door;
H4	System is abnormal	Cool/Dry: all loads stops operation except indoor fan; Heat: all loads stops operation.	See "High temperature prevention protection; high power; system is abnormal"
H7	Desynchronizing of compressor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Desynchronization diagnosis for compressor"
HC	PFC protection	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. The power grid quality is bad; AC input voltage fluctuates sharply; 2. Power plug of air conditioner or wiring board or reactor is not connected reliably; 3. Indoor and outdoor heat exchanger is too dirty, or air inlet/outlet is blocked; 4. Main board of outdoor unit is damaged.
HE	Demagnetization protection of compressor	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The main board of outdoor unit is damaged; 2. Compressor is damaged;
UF	Communication malfunction between indoor unit and inspection board	Normal operation	1. Poor connection between the indoor unit and the inspection board. 2. The main board of indoor unit is damaged; 3. The inspection board is damaged;
L1	Malfunction of humidity sensor	Compressor, outdoor fan and indoor fan stop operation;	The inspection board is damaged.
L9	High power protection	Cool: compressor and outdoor fan stops operation, while indoor fan operates.	See "High temperature prevention protection; high power; system is abnormal"
Lc	Start-up failed	Cool/Dry: compressor stops, while indoor fan operates; Heat: all loads stops operation.	See "Malfunction diagnosis for failure startup"
Ld	Lost phase	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The main board of outdoor unit is damaged; 2. The compressor is damaged; 3. The connection wire of compressor is not connected well.
PS	Over-phase current protection of compressor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Overload protection of compressor , High discharge temperature protection of compressor"

Error code	Malfunction name	AC status	Possible causes
oE	Undefined outdoor unit error	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stop operation.	1. Outdoor ambient temperature exceeds the operation range of unit (eg: less than -20°C or more than 60°C for cooling; more than 30°C for heating); 2. Are wires of compressor not connected tightly? 3. Failure startup of compressor? 4. Is compressor damaged? 5. Is main board damaged?
P6	Communication malfunction between the drive board and the main board	Cool: compressor and outdoor fan stops operation; Heat: compressor and outdoor fan stop at first; about 1min later, indoor fan stops operation;	1. The drive board is damaged; 2. The main board of outdoor unit is damaged; 3. The drive board and the main board is not connected well.
P7	Circuit malfunction of module temperature sensor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	Replace outdoor control board
P8	Module overheating protection	Cool: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. Air inlet / air outlet of outdoor unit are blocked by filth or dirt; 2. Condenser of outdoor unit is blocked by filth or dirt; 3. IPM screw of main board is not tightened; 4. Main board of outdoor unit is damaged;
PF	Malfunction of ambient temperature sensor of drive board	Cool: compressor, outdoor fan and indoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The ambient temperature sensor of the drive board is not connected well; 2. Malfunction of the ambient temperature sensor of drive board.
PH	DC bus voltage is too high	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. Measure the voltage between position L and position N on the wiring board (XT). If it's higher than 265 VAC, please turn on the unit until the power voltage is decreased to the normal range; 2. If the AC input is normal, please replace the outdoor control board.
PL	DC bus voltage is too low	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	1. Measure the voltage between position L and position N on the wiring board (XT). If it's lower than 150 VAC, please turn on the unit until the power voltage is increased to the normal range; 2. If the AC input is normal, please replace the outdoor control board.
PU	Charging malfunction of capacitor	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	See "Charging malfunction of capacitor"
rF	Malfunction of RF module	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The connection wire of RF module is not connected well. 2. Malfunction of RF module;
U1	Phase current detection circuit malfunction of	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stops operation.	The control board is damaged
U2	Lost phase protection of compressor	Cool: compressor and outdoor fan stop operation; Heat: compressor and outdoor fan stop operation at first; about 1min later, indoor fan stops operation.	1. The main board of outdoor unit is damaged; 2. The compressor is damaged; 3. The connection wire of compressor is not connected well.

Error code	Malfunction name	AC status	Possible causes
U3	DC bus voltage drop malfunction	Cool/Dry: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	The power voltage is unstable.
U5	Current detection malfunction of unit	Cool: compressor and outdoor fan stops operation, while indoor fan operates; Heat: compressor, outdoor fan and indoor fan stops operation.	1. Is the complete unit lacking of refrigerant? 2. There's malfunction for the circuit of control board of outdoor unit. Replace the control board of outdoor unit.
U7	4-way valve is abnormal	This malfunction occurs when the unit is heating. All loads stops operation.	1. Power voltage is lower than AC175V; 2. Wiring terminal of 4-way valve is loose or broken;3. 4-way valve is damaged. Replace the 4-way valve.
U8	Malfunction of zero-crossing signal of indoor unit	Compressor, outdoor fan and indoor fan stop operation.	1. The power is abnormal; 2. Main board of indoor unit is damaged.
U9	Zero-crossing malfunction of outdoor unit	Cool: compressor stops operation, while indoor fan operates; Heat: all loads stops operation.	Replace the control board of outdoor unit.
EA	Refrigerant leak alarm		The air conditioner may have refrigerant leakage.
E2	Evaporator anti-freezing protection		Not error code, it is the status code in cooling process
E9	Anti cold air protection		Not error code, it is the status code in cooling process
	Defrosting	Heat indicator Flash once/10s	Not error code, it is the status code in cooling process

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 non-condensing 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.Communication malfunction

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 corresponding position on the controller and if damage of lead wire is found.

5. Compressor over load protection

Possible causes: insufficient or too much refrigerant; 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

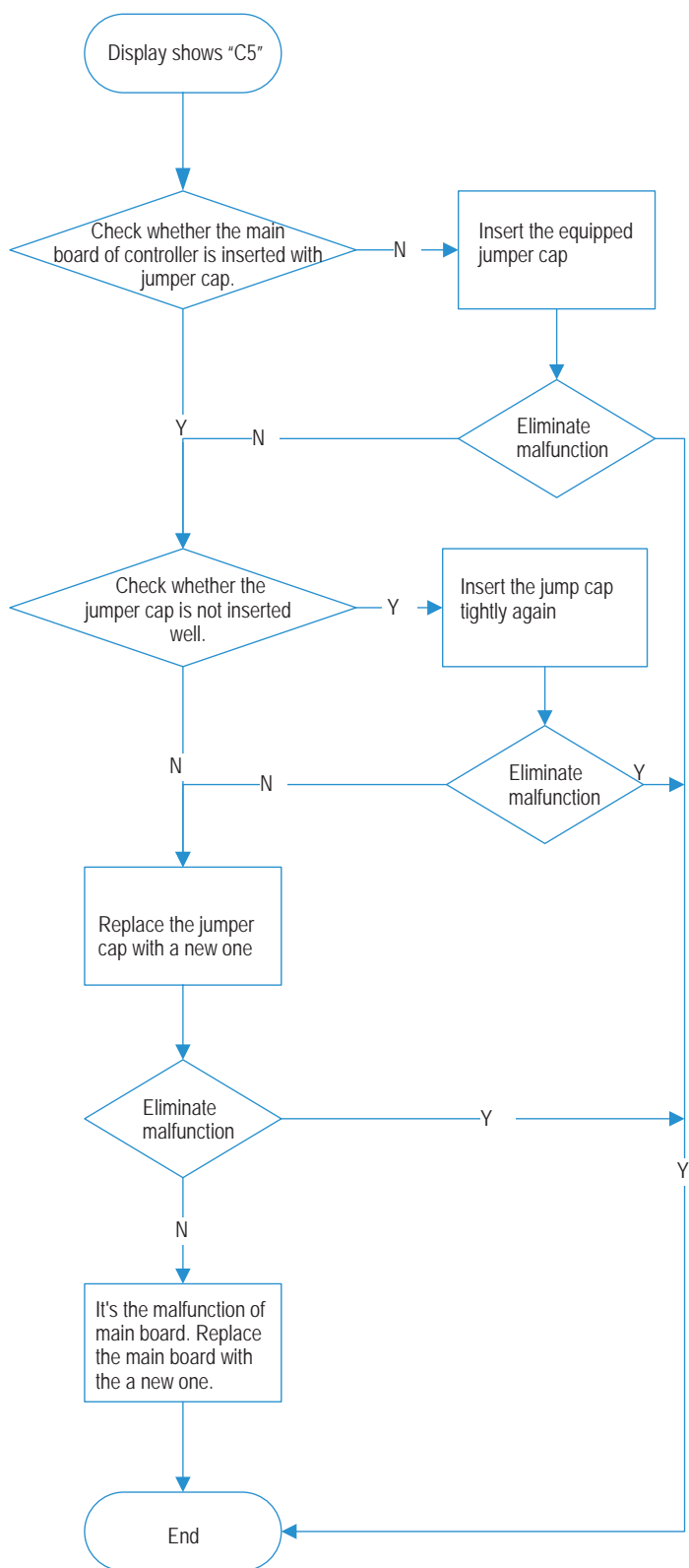
Processing method: Once the module malfunction happens,if it persists for a long time and can not be self canceled, cut off the power and turn off the unit,and then re-energize the unit again after about 10 min. After repeating the procedure for sever times, if the malfunction still exists,replace the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

10.2 Procedure of Troubleshooting

1. Troubleshooting for jumper cap C5

Main check points:

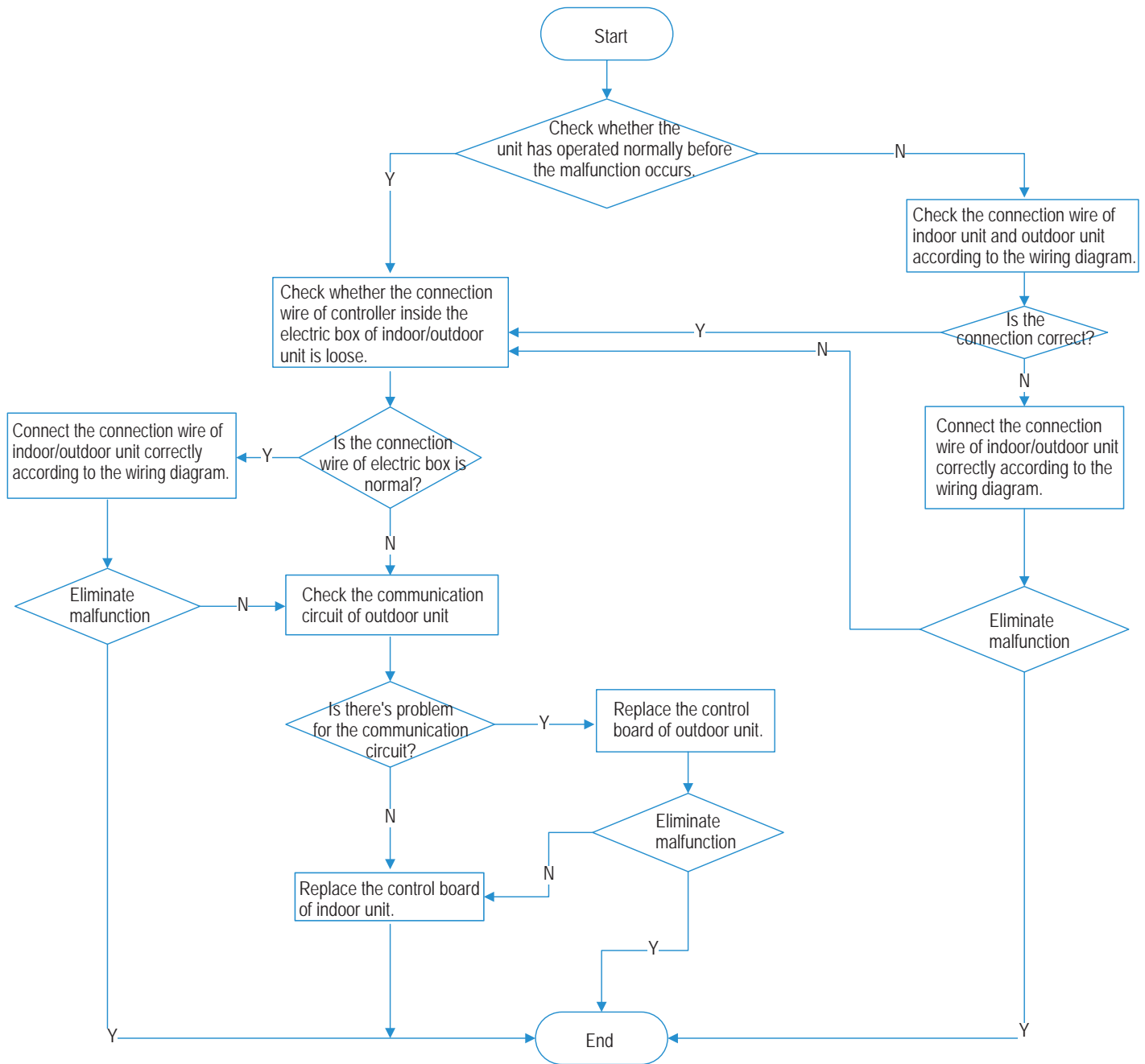
- (1) jumper cap (2) control board of indoor unit



2. Communication malfunction E5

Main check points:

- (1) Connection wire between indoor unit and outdoor unit
- (2) Wiring inside the unit
- (3) Communication circuit of control board of indoor unit
- (4) Communication circuit of control board of outdoor unit



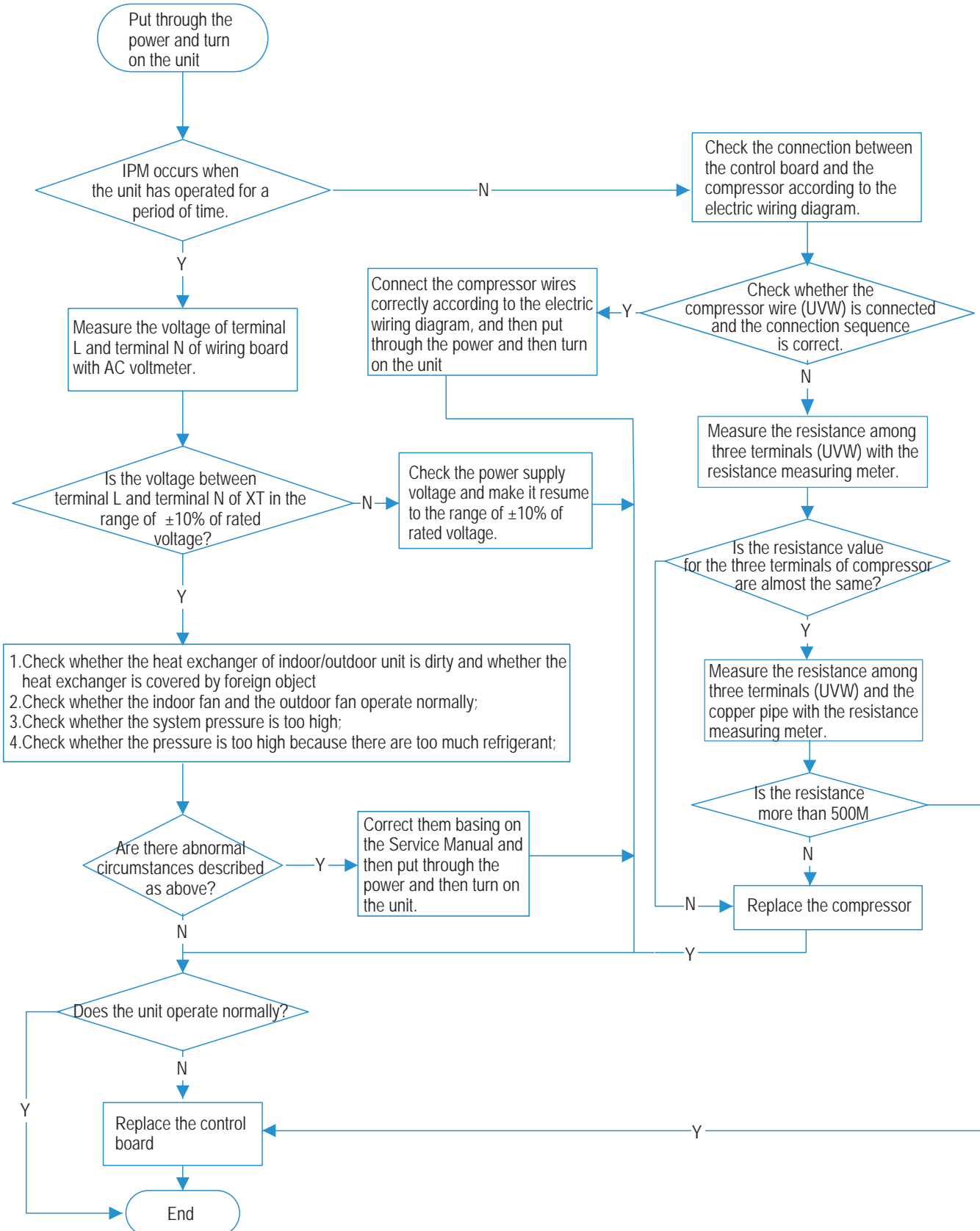
Note: method for checking the communication circuit of inverter split type and floor standing unit: cut off the communication wires of indoor/outdoor unit, and then measure the voltage between COM and N of the control board of outdoor unit (DC notch, about 56V)

3. IPM protection H5, over-phase current of compressor P5

Main check points:

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

NOTE: The control board as below means the control board of outdoor unit.

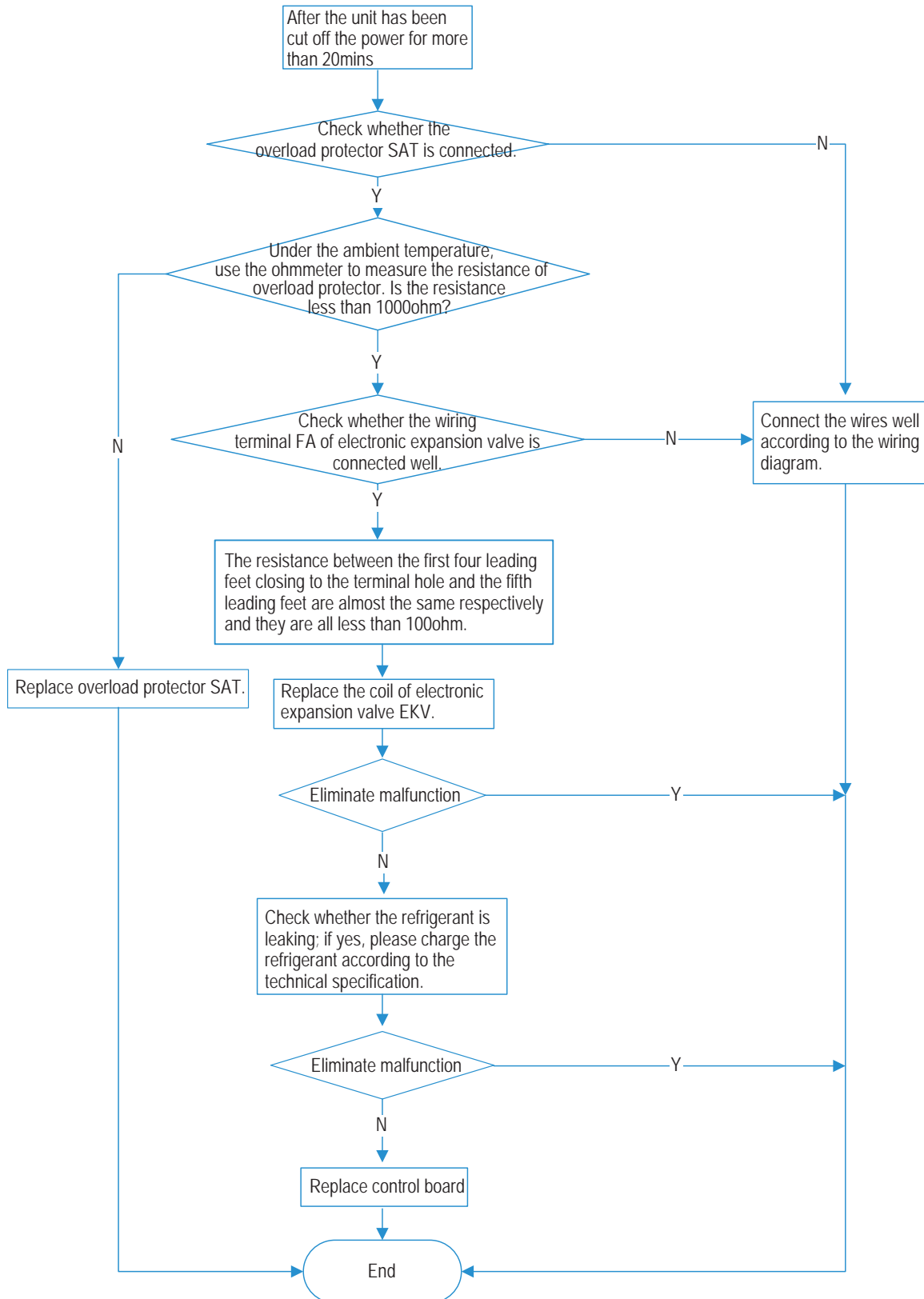


4. Overload protection of compressor H3, high discharge temperature, protection of compressor E4

Main check points:

- (1) electronic expansion valve (2) expansion valve terminal
- (3) charging amount of refrigerant (4) overload protector

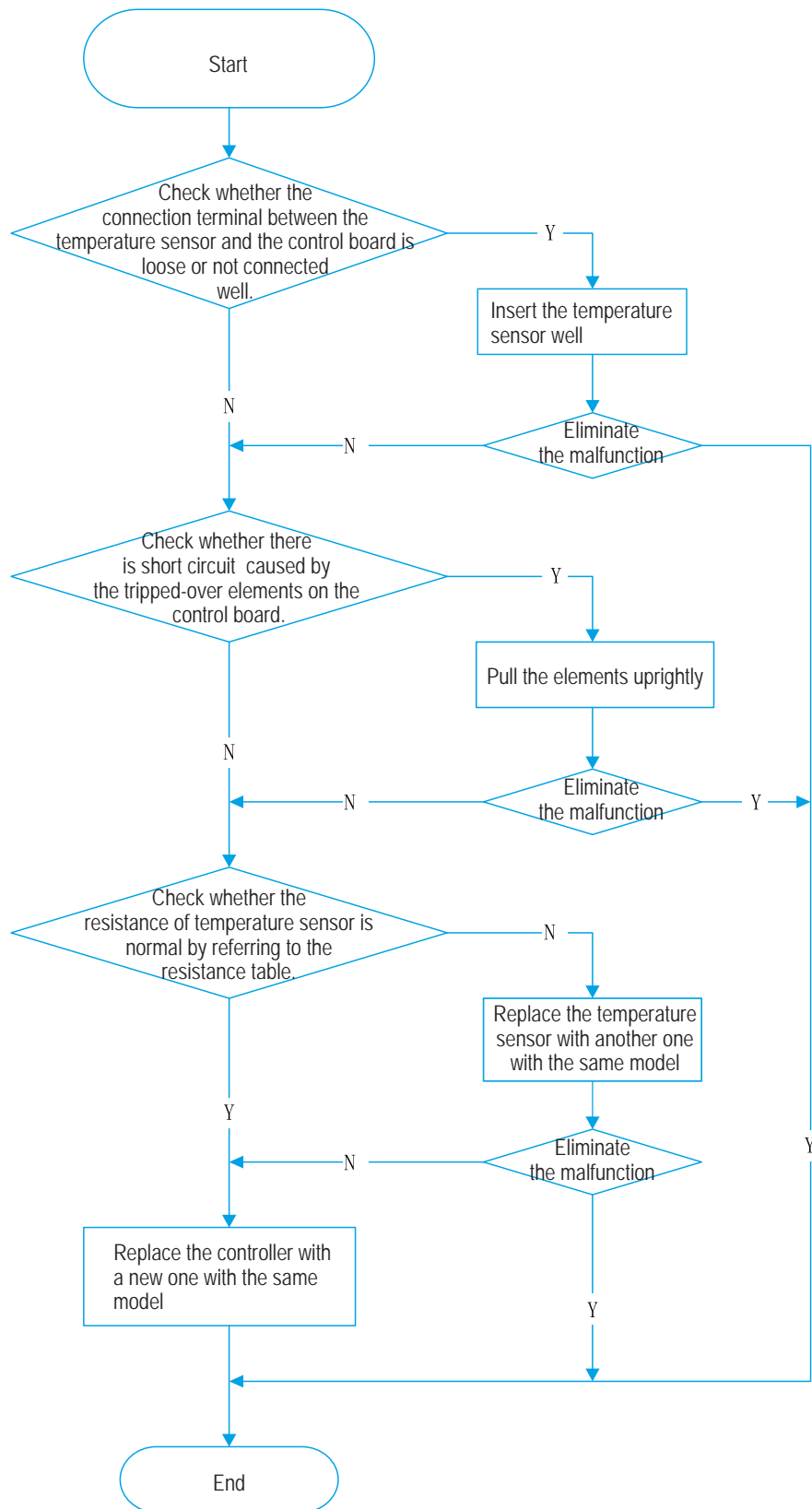
NOTE: The control board as below means the control board of outdoor unit.



5. Troubleshooting for temperature sensor F1, F2, F3, F4, F5

Main check points:

- (1) connection terminal
- (2) temperature sensor
- (3) main board

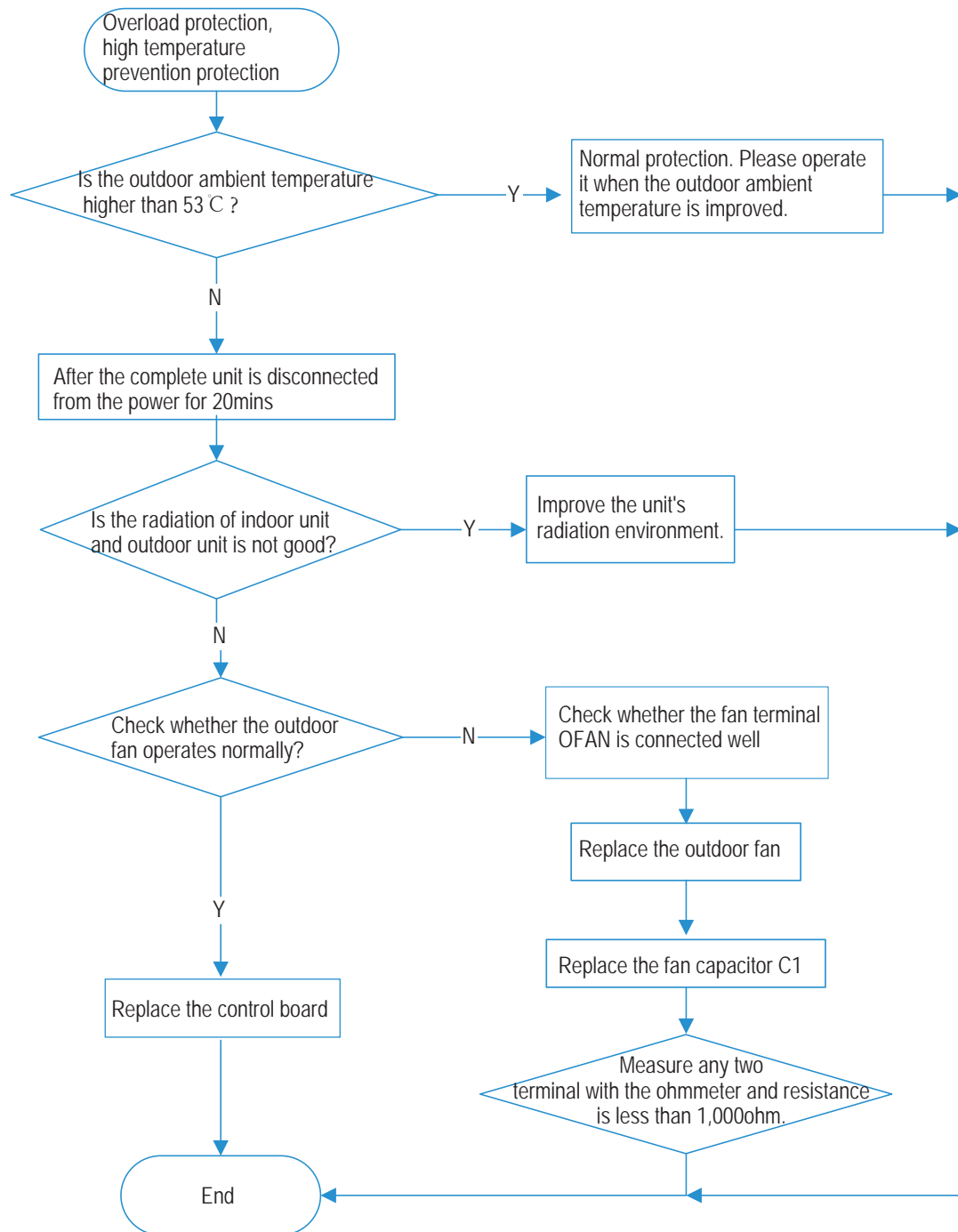


6.High temperature prevention protection E8; high power L9; system is abnormal H4

Main check points:

(1) outdoor temperature (2) fan (3)air inlet and air outlet of indoor/outdoor unit

NOTE:The control board as below means the control board of outdoor unit.

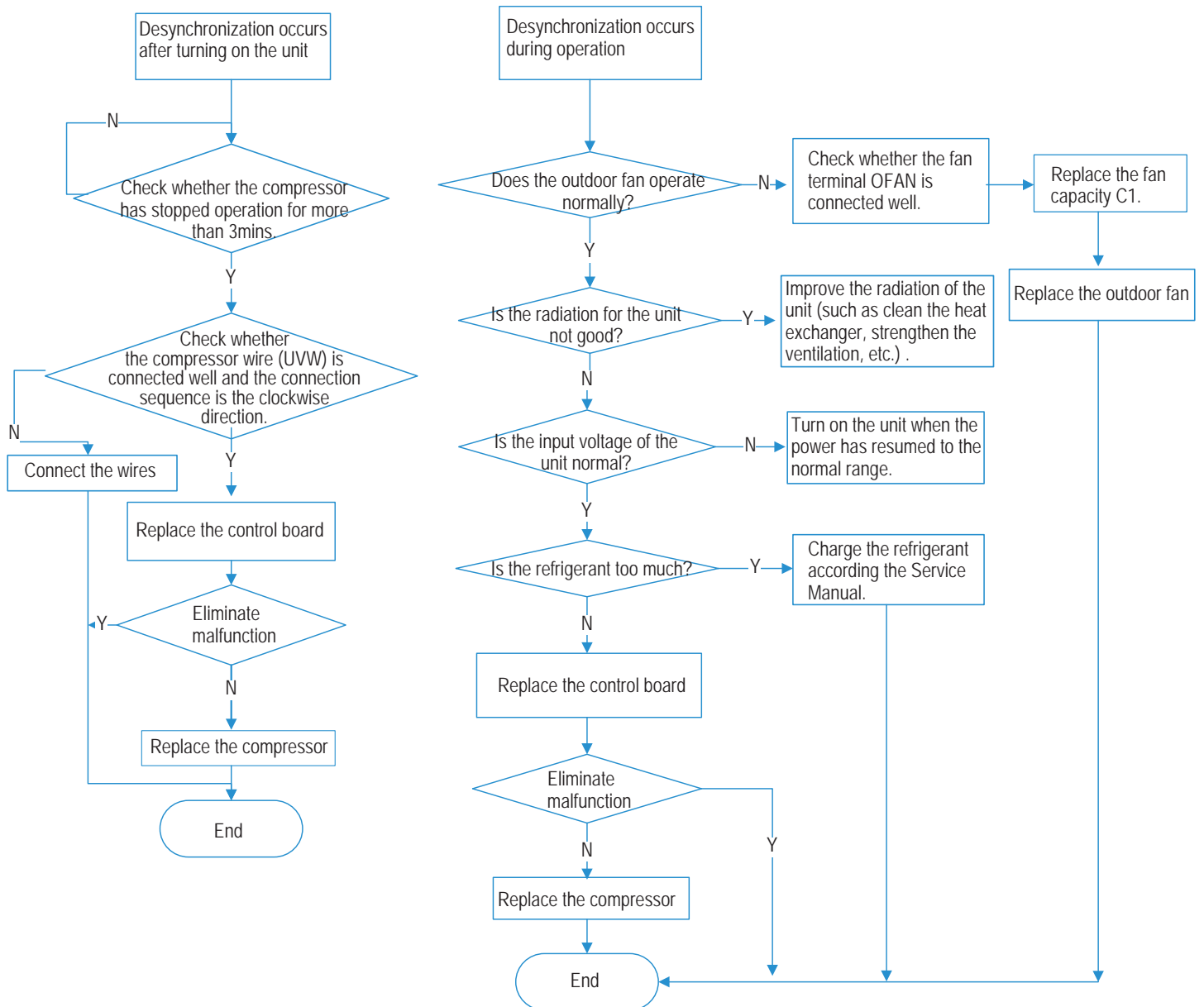


7.Desynchronization diagnosis for compressor H7

Main check point:

(1) system pressure (2) power supply voltage

NOTE:The control board as below means the control board of outdoor unit.

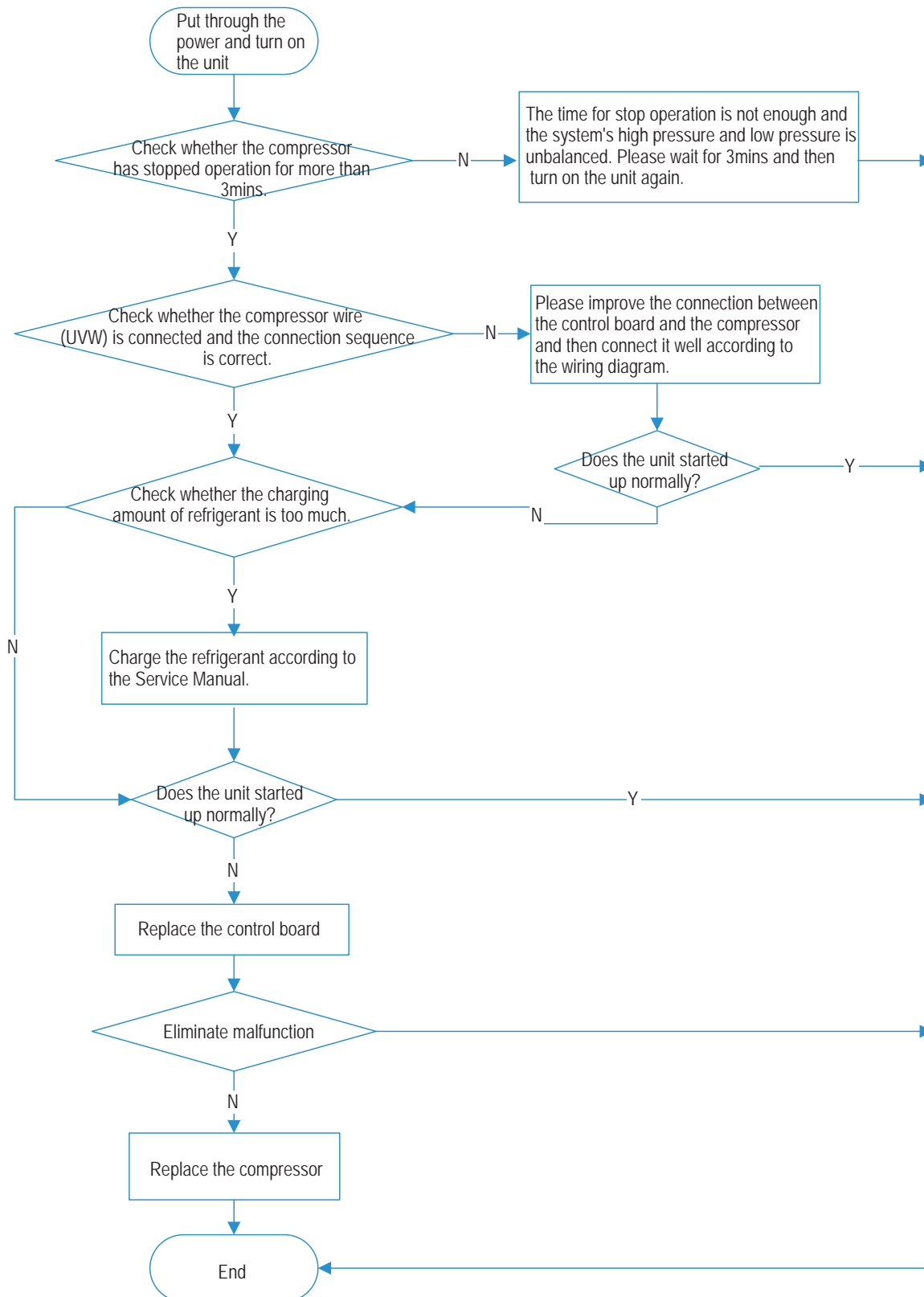


8. Malfunction diagnosis for failure startup \perp c

Main check points:

(1) compressor wire (2) compressor (3) charging amount of refrigerant

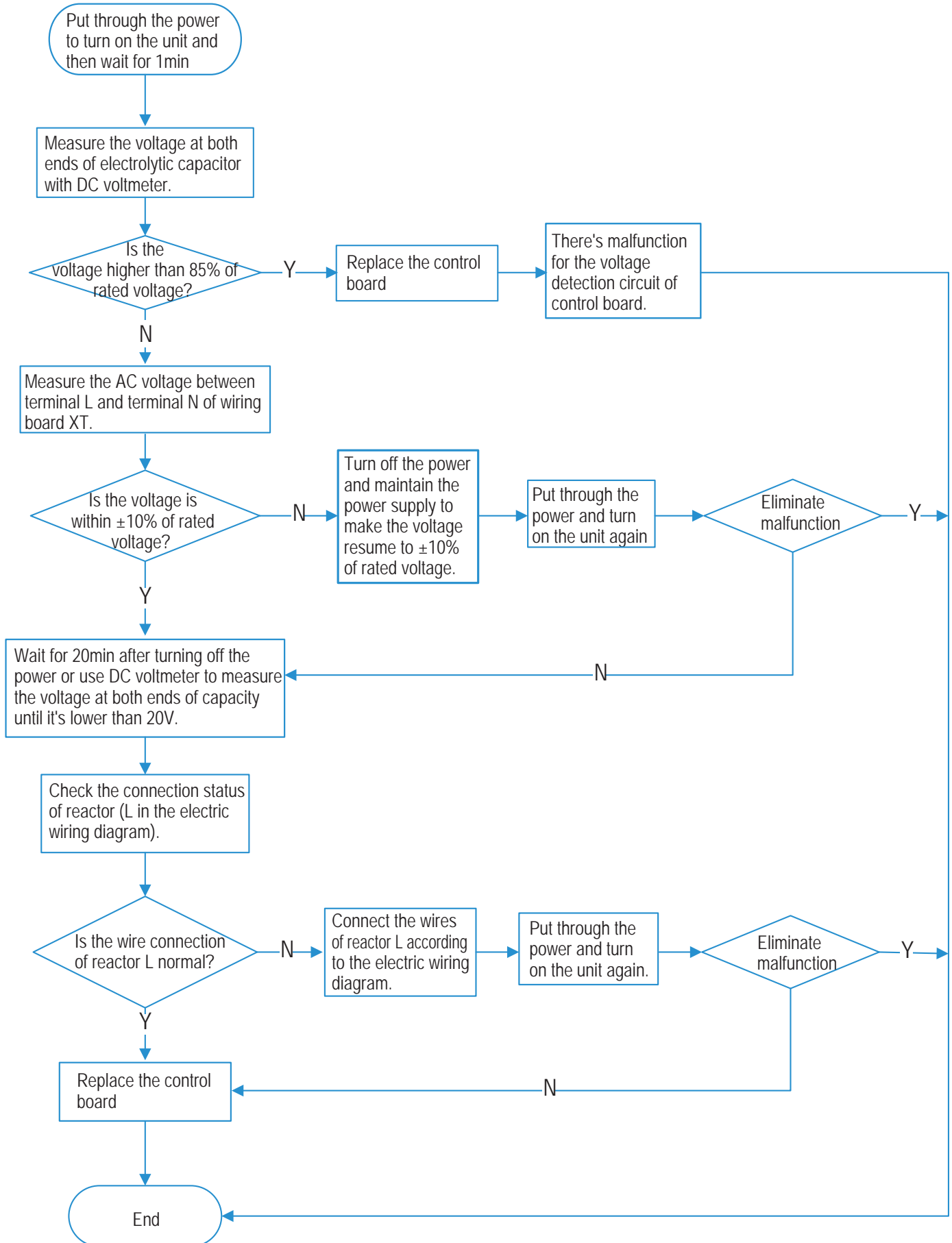
NOTE: The control board as below means the control board of outdoor unit.



9. Charging malfunction of capacitor PU

Main check points: (1) wiring board XT (2) reactor

NOTE: The control board as below means the control board of outdoor unit.

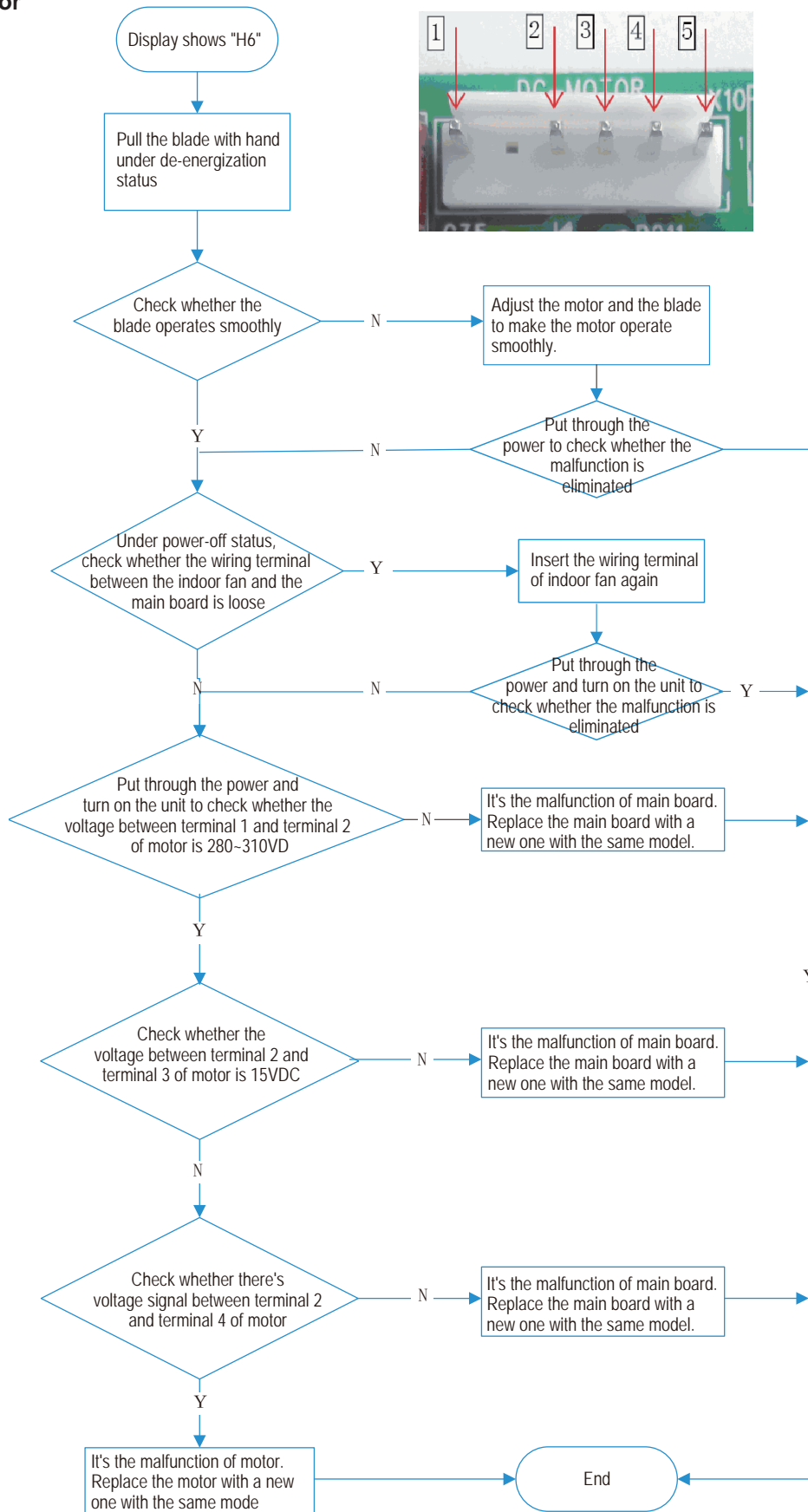


10. Troubleshooting-motor(indoor fan) doesn't operate H6

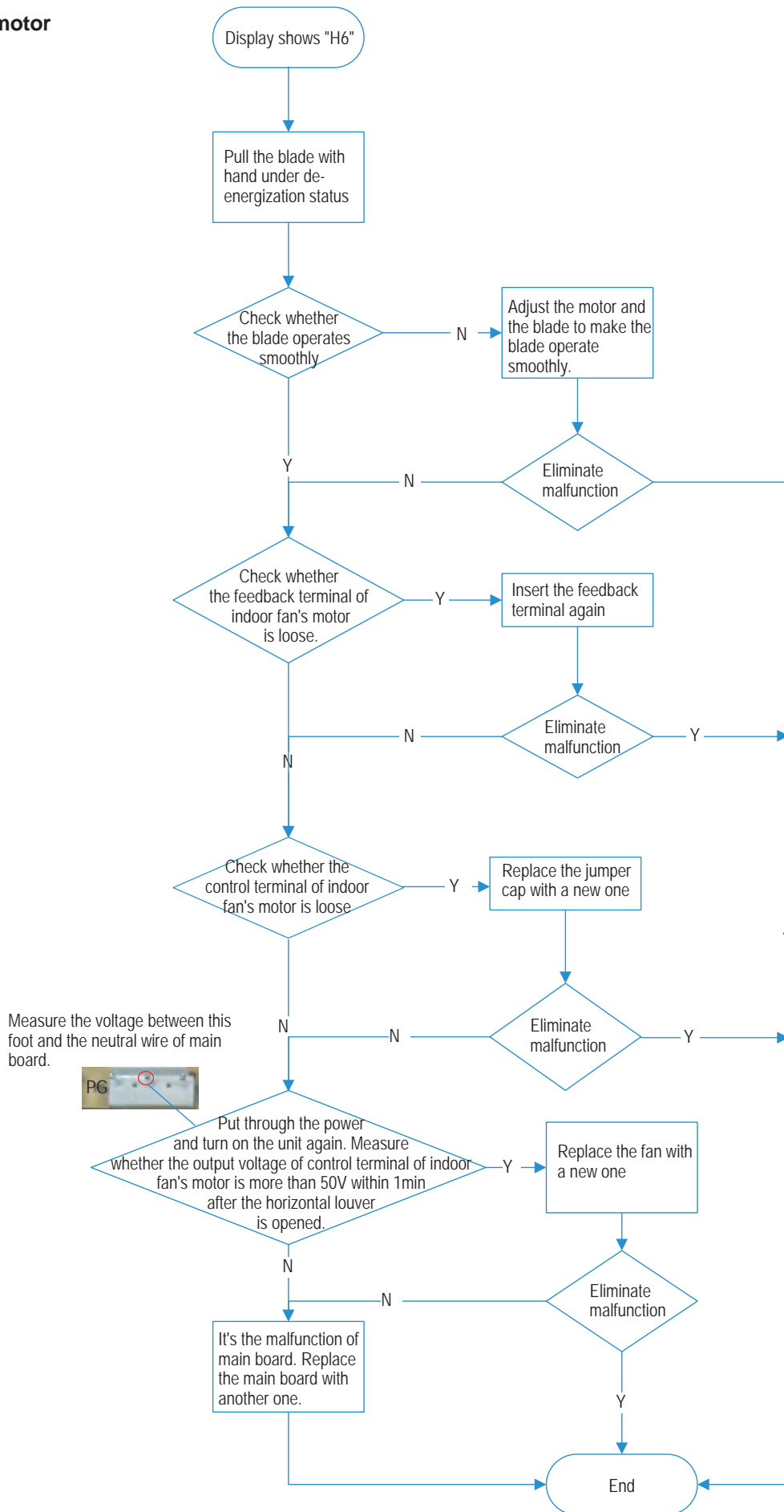
Main check points:

(1) connection terminal (2) motor (3) control board AP1 of indoor unit (4) blade

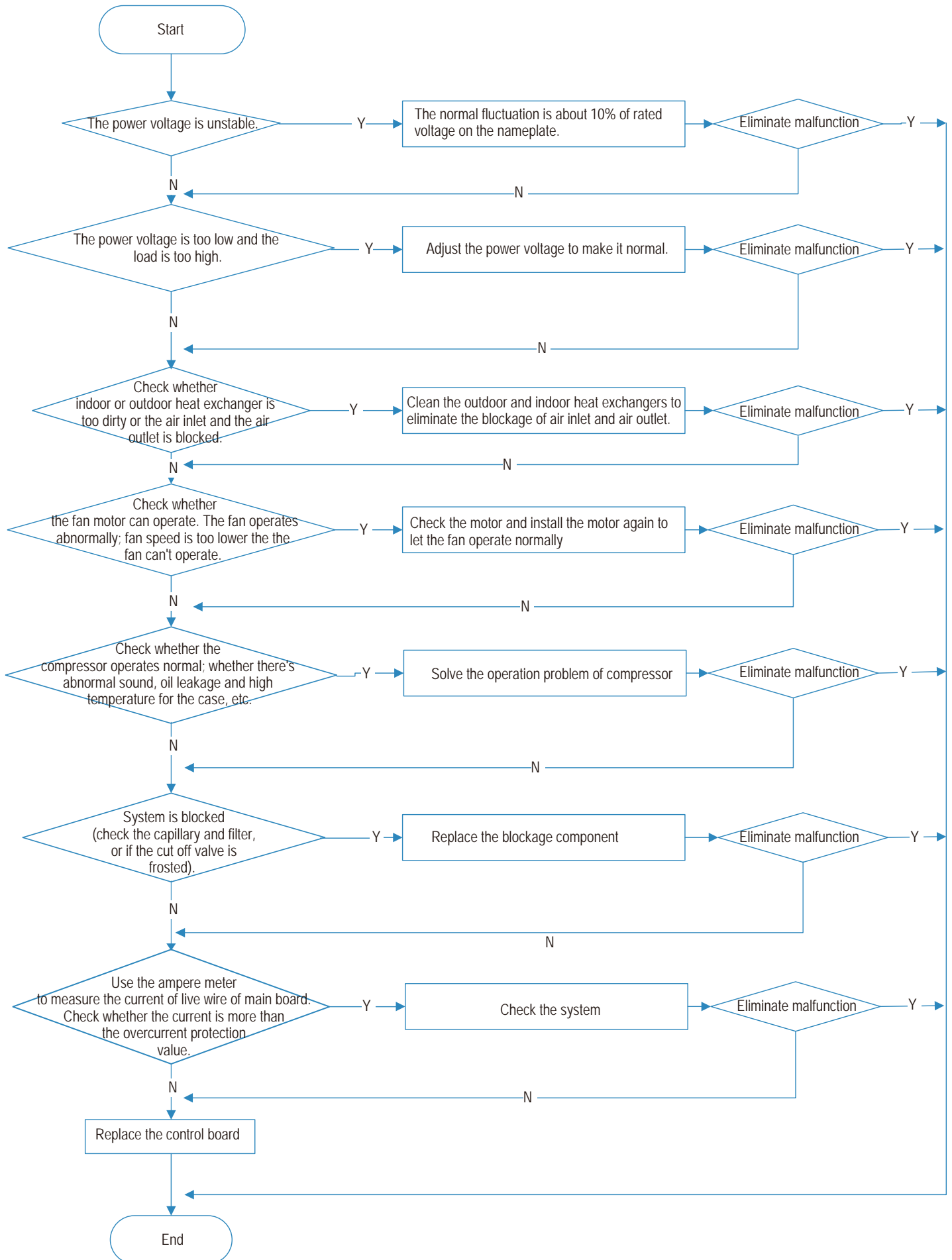
10.1 DC motor



10.2 PG motor



11. AC overcurrent protection E5



10.3 Troubleshooting for Normal Malfunction

1. Air Conditioner can't be Started Up

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

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see if it's blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver can't swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor can't operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor can't operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver can't Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor can't operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver can't operate	Replace the main board with the same model

4. ODU Fan Motor can't Operate

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

5. Compressor can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and its 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor can't operate	Repair or replace compressor

6. Air Conditioner is Leaking

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

7. Abnormal Sound and Vibration

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

11. Removal Procedure

11.1 Removal Procedure of Indoor Unit

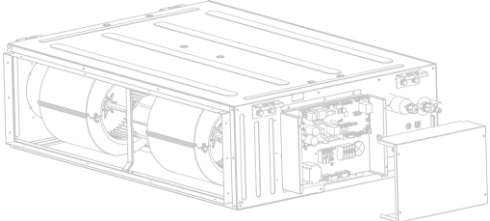
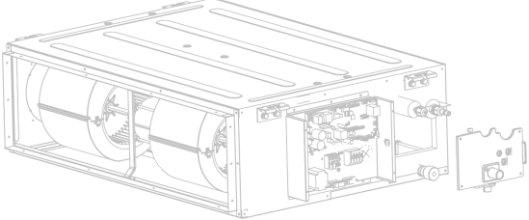
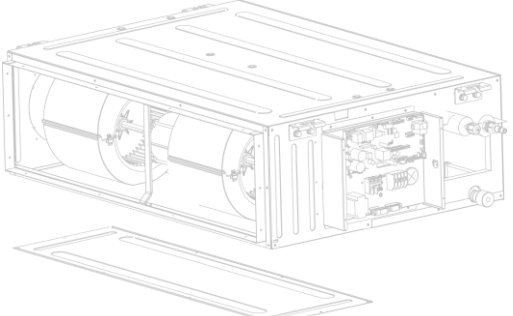
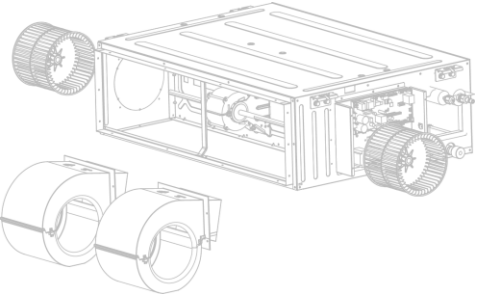
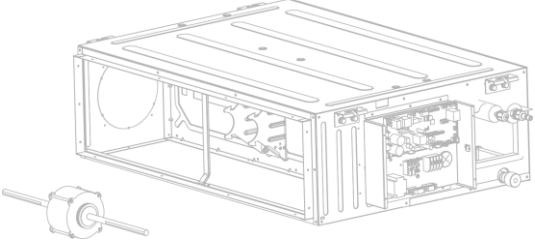
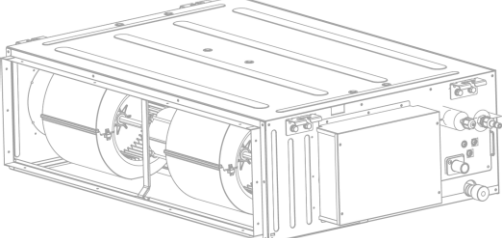


Caution: discharge the refrigerant completely before removal.

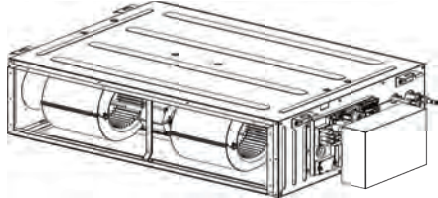
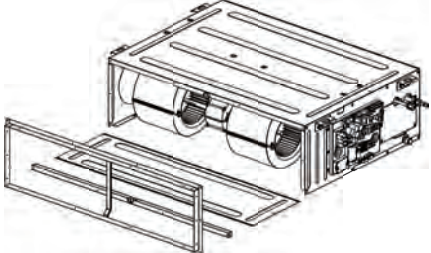
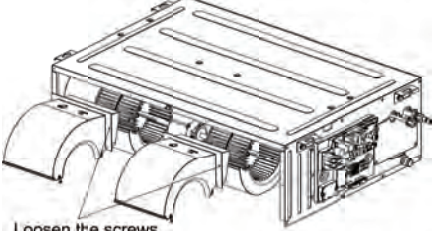
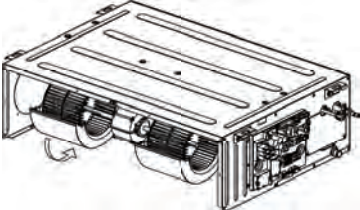
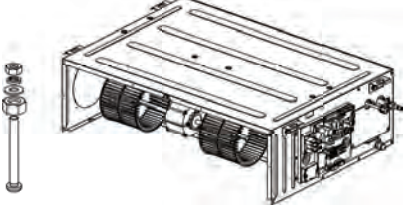
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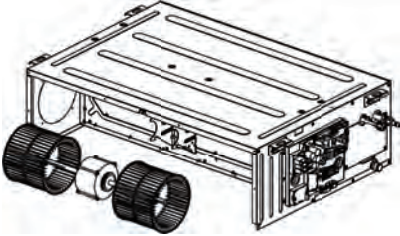
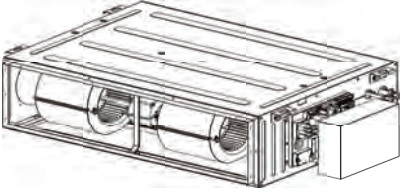
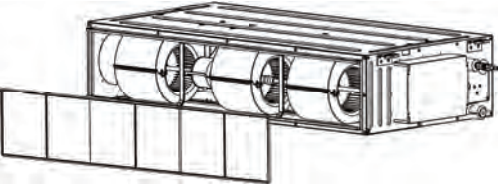
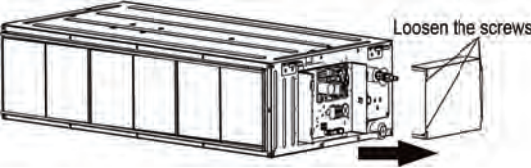
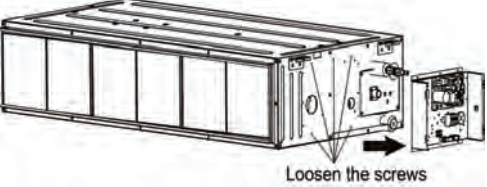
Motor and fan

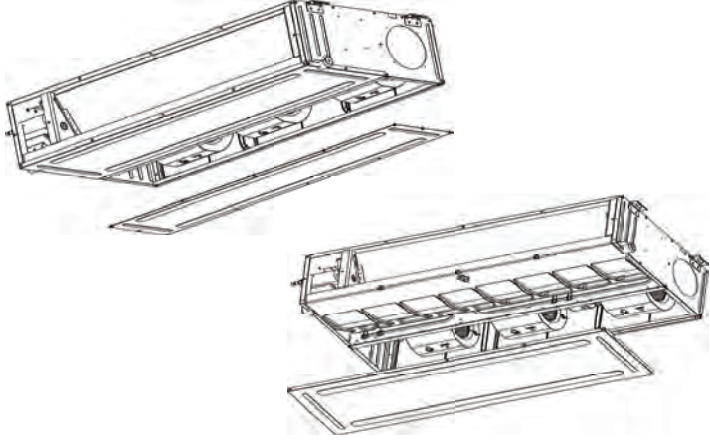
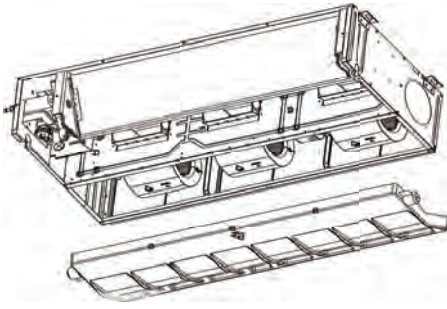
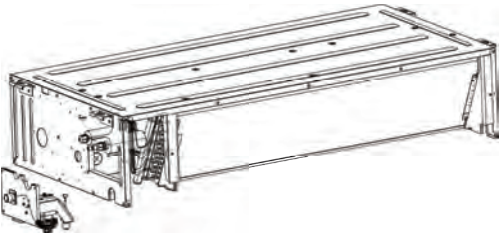
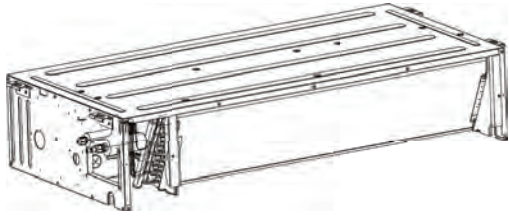
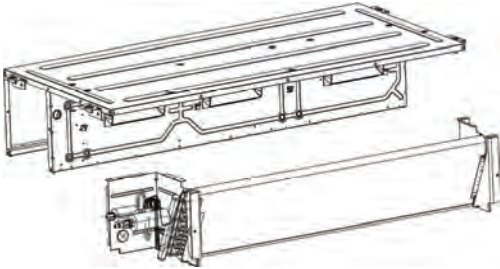
Precondition: The power supply has been disconnected.

Step	Diagram	Operation Procedure
1. Remove the line connecting to the motor.		<ul style="list-style-type: none"> ● Use a screwdriver to unscrew the electric box cover. ● Remove from the master board the line connecting to the motor and remove the tie.
2. Disassemble the seal plate and cover plate.		<ul style="list-style-type: none"> ● Use a screwdriver to unscrew the seal plate and cover plate and then remove them.
3. Remove the grille.		<ul style="list-style-type: none"> ● Use a screwdriver to unscrew the cover plate component.
4. Remove the centrifugal fan.		<ul style="list-style-type: none"> ● Use a screwdriver to unscrew the front volute casing and then remove the volute casing.
5. Remove the motor.		<ul style="list-style-type: none"> ● Remove the motor from the support and remove the centrifugal fan from the motor axle. Then, remove the motor. ● For motors that are accompanied with supports, the supports need removing as well.
6. Install a new motor.		<ul style="list-style-type: none"> ● Assemble units based on the reverse order of this procedure and power on the units for test.

30/36K

Step	Procedure	Image
1. Remove the cover of electric box	<ul style="list-style-type: none"> ● Turn off the power supply of indoor unit. Use a screwdriver to remove the cover of electric box. Disconnect the motor wire inside the electric box. 	
2. Remove air return plate, the longitudinal component and air return frame.	<ul style="list-style-type: none"> ● Use a hex wrench to loosen the screws of fan. ● Order of removal: air return plate, air return frame, longitudinal component, cross beam. 	
3. Remove the upper volute	<ul style="list-style-type: none"> ● Loosen the screws of upper volute and then pull out the upper volute. 	 <p>Loosen the screws</p>
4. Remove the lower volute.	<ul style="list-style-type: none"> ● Loosen the screws of lower volute and then rotate in the direction shown by the arrow. 	
5. Remove the motor and fan	<ul style="list-style-type: none"> ● Use a screwdriver to remove the clamping band of motor. Then remove the motor and fan as a whole. 	

Step	Procedure	Procedure
6. Replace the motor	<ul style="list-style-type: none"> ● Remove the motor from the motor support. ● Use a hex wrench to loosen the screws of fan. ● Remove the fan from the motor. ● Replace with a new motor. 	
7. Re-install the device in a reverse order of the removal procedure	<ul style="list-style-type: none"> ● Re-install the device in a reverse order of the removal procedure. Then connect power and test it. 	
8. Remove air return filter	<ul style="list-style-type: none"> ● Press the air return filters on the guide way sponge. There are 2 or 3 air return filters. 	
9. Remove the cover of electric box	<ul style="list-style-type: none"> ● Loosen the screws as shown by the circle and the box. Remove the box in the direction shown by the arrow. 	
10. Remove the electric box.	<ul style="list-style-type: none"> ● Loosen the securing screws and remove the electric box. 	




Step	Procedure
<p>11.Remove the cover plate.</p>	<p>●Loosen the screws of cover plate and then remove the cover plate. (As shown in the picture, the circle indicates 6 screws of the cover plate).</p> 
<p>12.Remove the water tray</p>	<p>●Loosen the screws of water trap. Pull it up and remove it. The removed water tray is as shown in the picture.</p> 
<p>13.Remove the screws on the side plate of evaporator.</p>	<p>●Remove the screws of evaporator and the screws that connect the upper cover plate to the left and right side plates.</p> 
<p>14.Remove the sealing plate the connects to the evaporator valve and the screws that connect to the flange</p>	<p>●Remove the screws of the sealing plate of valve. Then remove the sealing plate of valve. Remove the screws that connect the evaporator to the flange.</p> 
<p>15.Remove the evaporator</p>	<p>●Take off the evaporator. The removed evaporator is as shown in the picture.</p> 

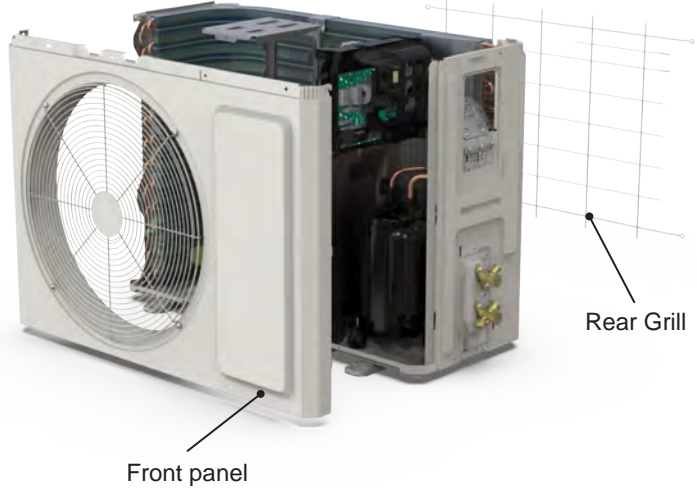
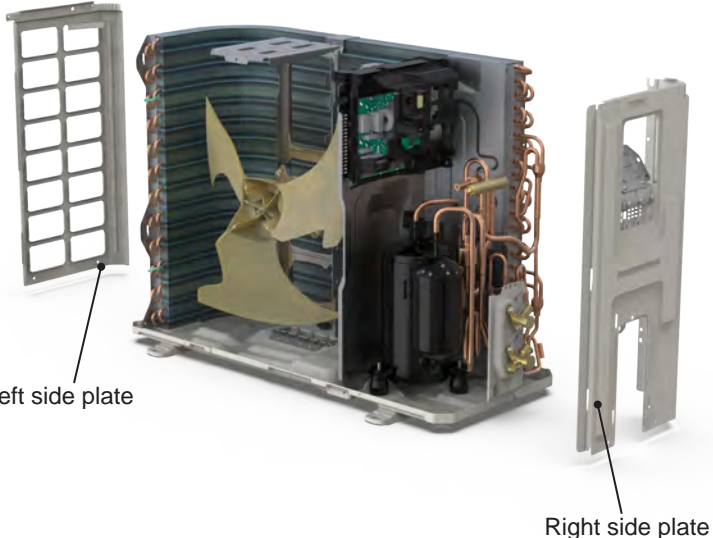
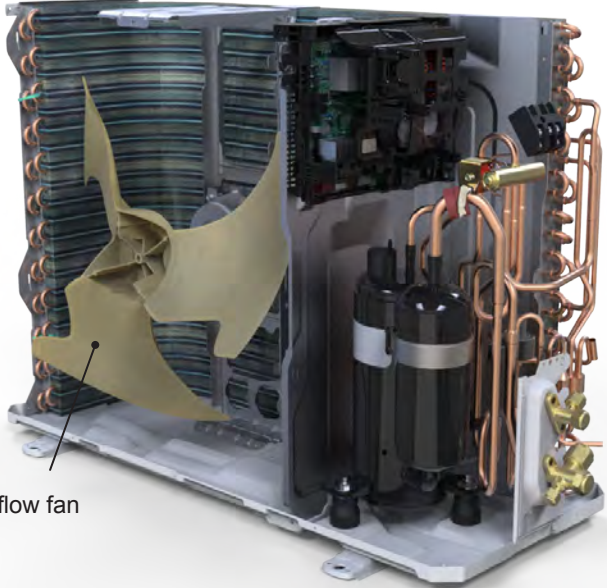
11.2 Removal Procedure of Outdoor Unit

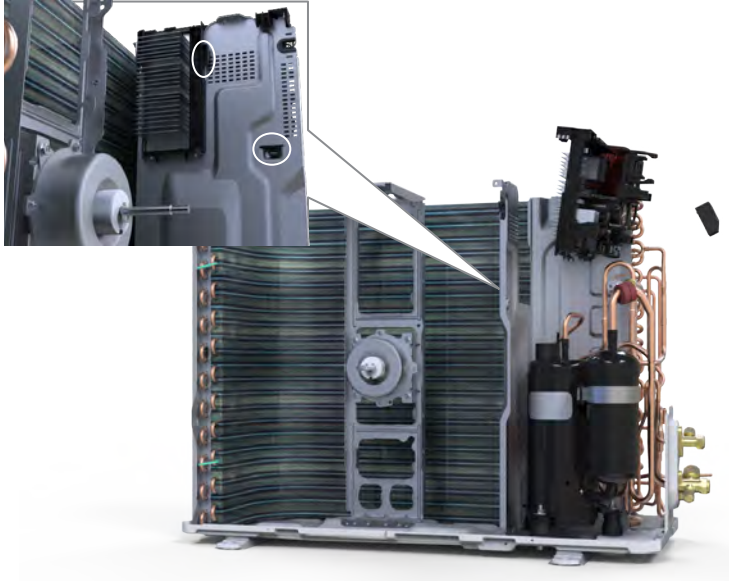
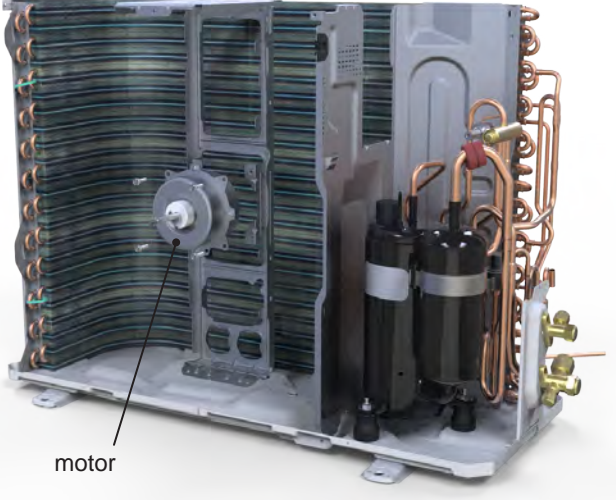



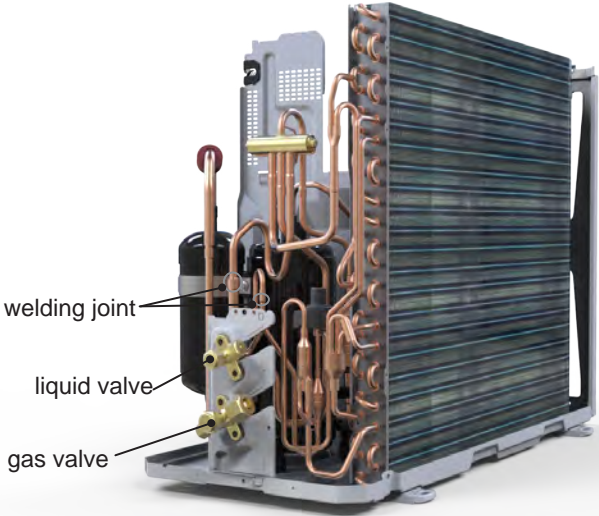
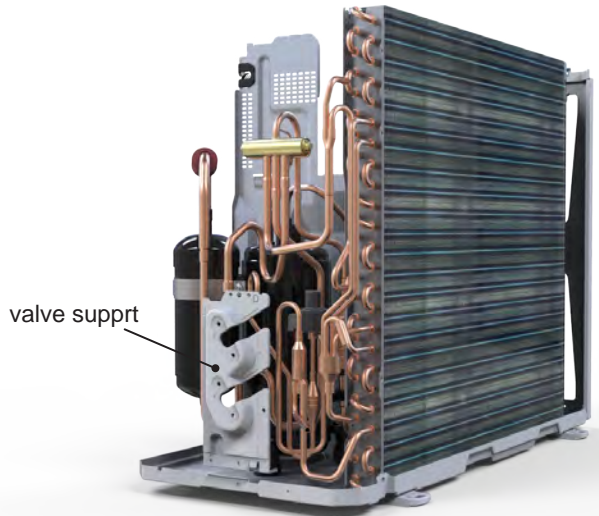
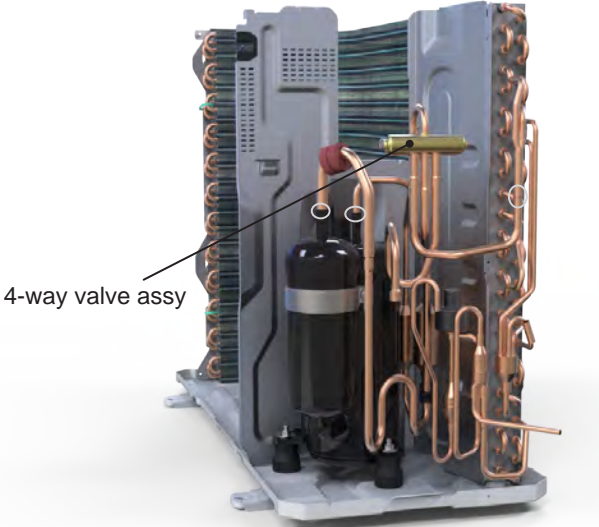
Warning: Before disassembly, please disconnect the power supply. Before disconnection the pipeline, please discharge all the refrigerant according to the local laws and regulations.

XD

Step	Procedure
<p>1. Before disassembly</p>	
<p>2. Remove Cover of Pass Wire and valve cover</p>	<p>Remove the screws fixing Cover of Pass Wire, valve cover and then remove them.</p> 
<p>3. Remove top cover</p>	<p>Remove the screws fixing top panel and then remove the top panel.</p> 

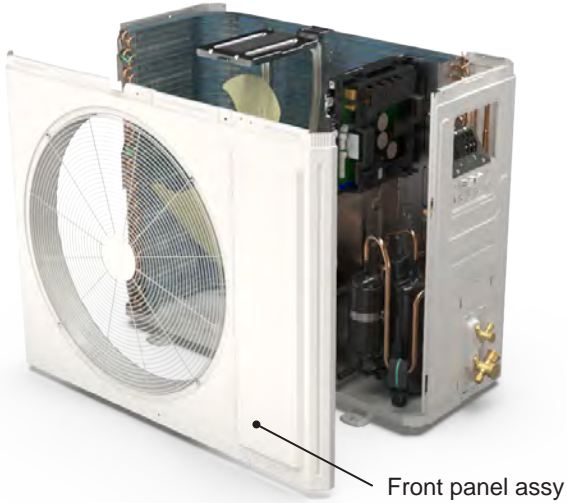
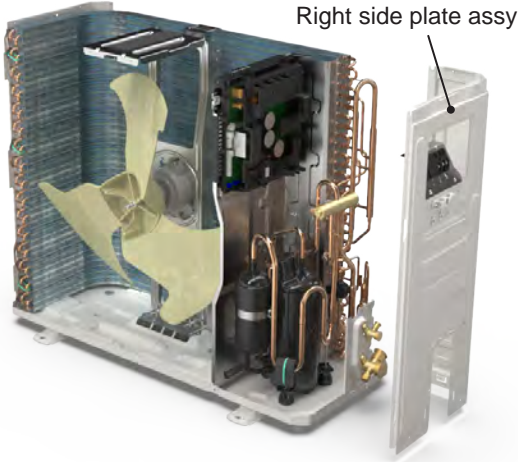
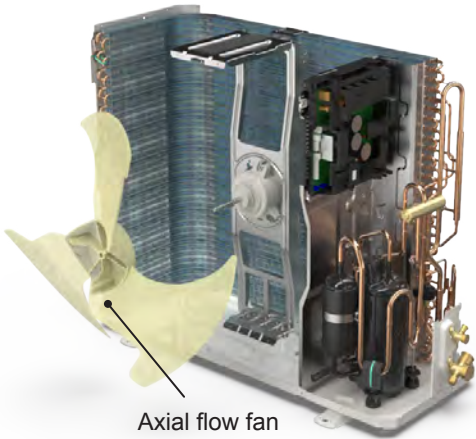
Step	Procedure
<p>4. Remove front panel assy and Rear Grill</p>	<p>Remove connection screws connecting the front panel assy and Rear Grill, and then remove the front panel assy and Rear Grill.</p> 
<p>5. Remove right side plate assy and left side plate</p>	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right side plate, and remove the right side plate assy. Rescrew the screws fixing the left side plate, and remove the left side plate assy.</p> 
<p>6. Remove axial flow fan</p>	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

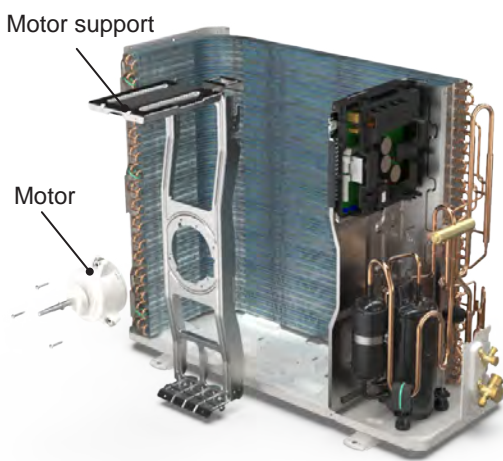
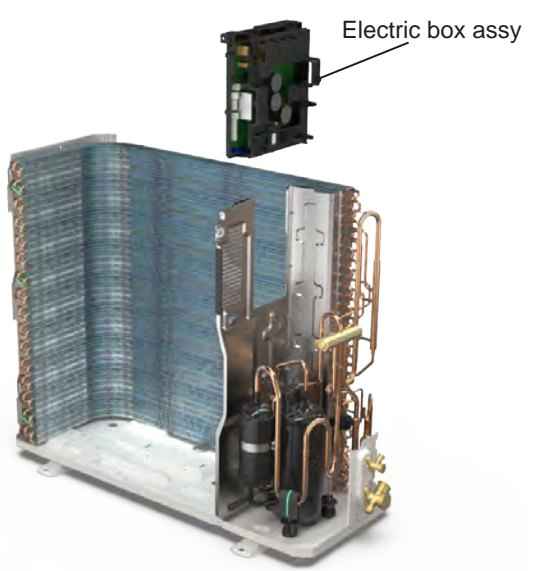
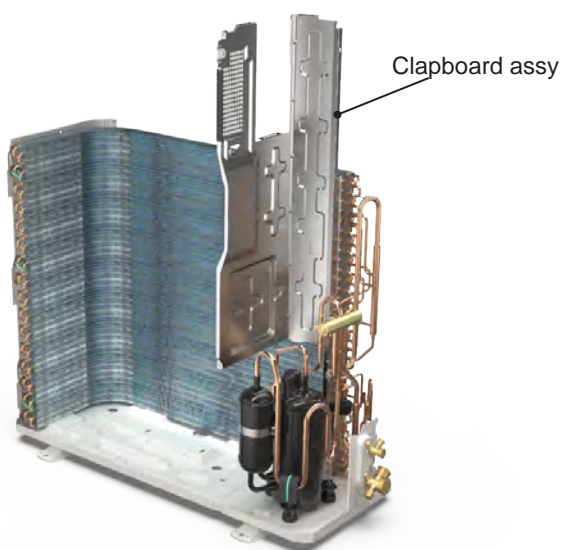
Step	Procedure
<p>7. Remove electric box assy</p>	<p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p> 
<p>8. Remove motor</p>	<p>Remove the screws fixing the motor and then remove the motor.</p> 
<p>9. Remove motor support</p>	<p>Remove the screws fixing the motor support and lift the motor support to remove it.</p> 

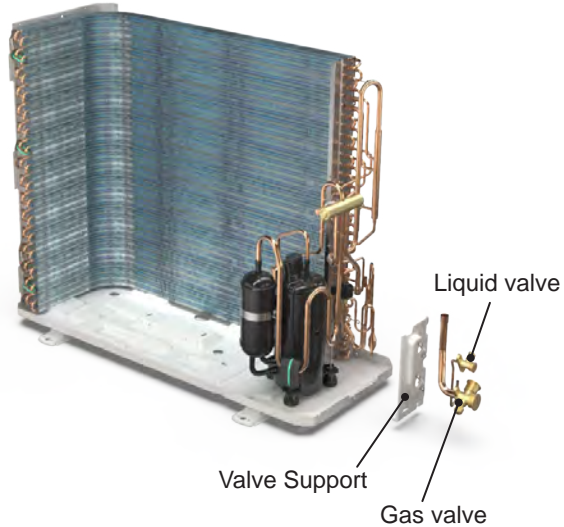
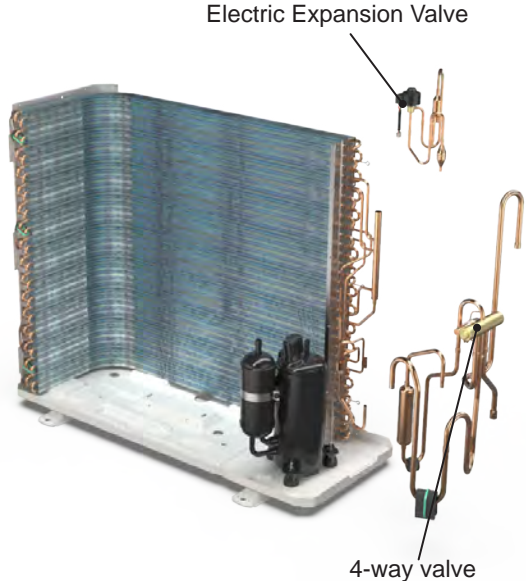
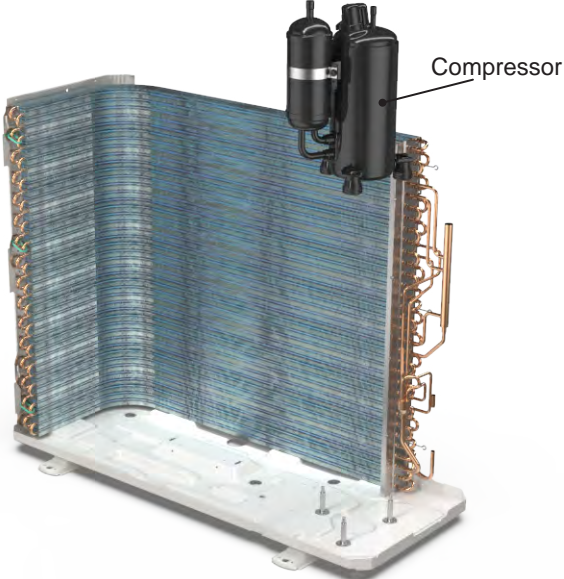
Step	Procedure
<p>10. Remove gas valve and liquid valve</p> <p>Remove the valve support bolck, remove the screws fixing the gas valve and the liquid valve,unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>	 <p>welding joint</p> <p>liquid valve</p> <p>gas valve</p>
<p>11. Remove valve support</p> <p>Remove the screws fixing valve support, then remove the valve support.</p>	 <p>valve support</p>
<p>12. Remove 4-way valve assy</p> <p>Unsolder the welding joints connecting the 4-way valve assy, remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>	 <p>4-way valve assy</p>

Step	Procedure
<p>13. Remove electronic expansion</p>	<p>Unsolder the welding joints connecting electronic expansion valve assy then remove the electronic expansion valve assy.</p> 
<p>14. Remove clapboard assy</p>	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 
<p>15. Remove compressor</p>	<p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p> 

Step	Procedure
<p>1. Before disassembly</p>	
<p>2. Remove big handle and valve cover</p>	<p>Remove the screws fixing big handle, valve cover and then remove them.</p> 
<p>3. Remove top cover</p>	<p>Remove the screws fixing top panel and then remove the top panel.</p> 

Step	Procedure
<p>4. Remove front panel assy</p>	<p>Remove connection screws connecting the front panel assy with the chassis and the motor support, and then remove the front panel assy.</p> 
<p>5. Remove right side plate assy</p>	<p>Rescrew the ground screws, remove the ground wires, loosen the screws fixing terminal board, remove the terminal board, rescrew the screws fixing the right plate, and remove the right side plate assy.</p> 
<p>6. Remove axial flow fan</p>	<p>Remove the nut on the fan and then remove the axial flow fan.</p> 

Step	Procedure
<p>7. Remove motor support and motor</p>	<p>Remove the screws fixing the motor support and lift the motor support to remove it. Remove the screws fixing the motor and then remove the motor.</p> 
<p>8. Remove electric box assy</p>	<p>Remove the terminals, lift up and rotate the electrical box assy to the right so that the snaps on the clapboard are removed and the electrical box assy are removed.</p> 
<p>9. Remove clapboard assy</p>	<p>Remove the screws fixing the clapboard assy and then remove the clapboard assy.</p> 

Step	Procedure
<p>10. Remove gas valve and liquid valve</p> <p>Remove the valve support block, remove the screws fixing the gas valve and the liquid valve, unsolder the welding joint connecting the gas valve and the liquid valve, remove them.</p> <p>Note: Discharge the refrigerant completely before unsoldering; when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p>	 <p>The diagram shows a 3D perspective of the evaporator coil assembly. A white plastic valve support block is mounted on the coil. A gas valve and a liquid valve are attached to the support block. Labels with leader lines point to the 'Valve Support', 'Gas valve', and 'Liquid valve'.</p>
<p>11. Remove 4-way valve and electric expansion valve</p> <p>Unsolder the welding joints connecting the 4-way valve and electric expansion valve, and then remove them.</p>	 <p>The diagram shows the evaporator coil assembly with the 4-way valve and electric expansion valve removed. Labels with leader lines point to the 'Electric Expansion Valve' and the '4-way valve'.</p>
<p>12. Remove compressor</p> <p>Remove the 3 foot nuts on the compressor and then remove the compressor.</p>	 <p>The diagram shows the evaporator coil assembly with the compressor removed. A label with a leader line points to the 'Compressor'.</p>

Appendix

Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

Set temperature

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

Ambient temperature

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

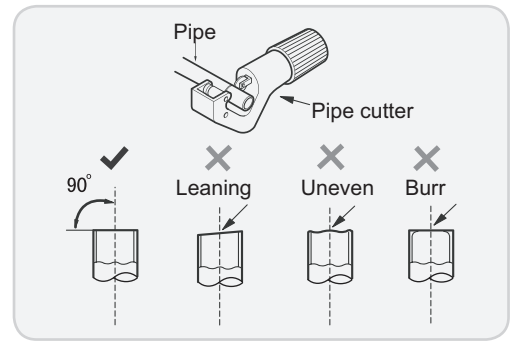
Appendix 2: Pipe Expanding Method

⚠ Note:

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

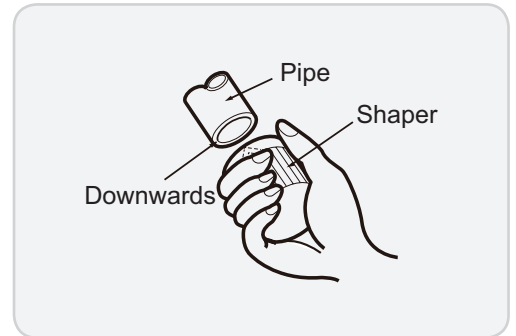
A: Cut the pipe

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



B: Remove the burrs

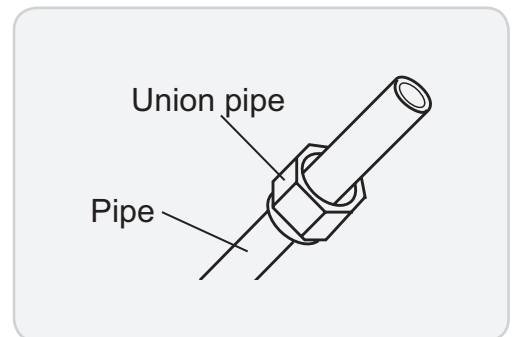
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe.

D: Put on the union nut

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



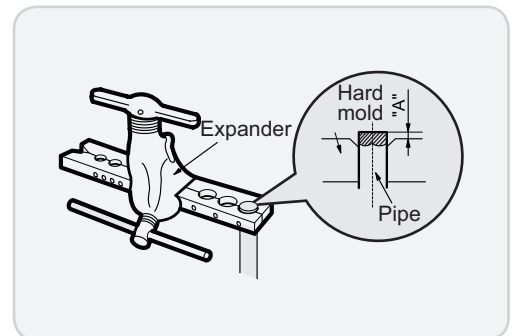
E: Expand the port

- Expand the port with expander.

⚠ Note:

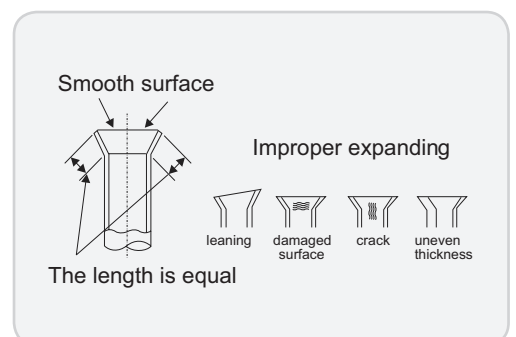
- "A" is different according to the diameter, please refer to the sheet below:

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



F: Inspection

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



Appendix 3: List of Resistance for Temperature Sensor

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

Temp(°C)	Resistance(kΩ)
-19	138.10
-18	128.60
-16	115.00
-14	102.90
-12	92.22
-10	82.75
-8	74.35
-6	66.88
-4	60.23
-2	54.31

Temp(°C)	Resistance(kΩ)
0	49.02
2	44.31
4	40.09
6	36.32
8	32.94
10	29.90
12	27.18
14	24.73
16	22.53
18	20.54

Temp(°C)	Resistance(kΩ)
20	18.75
22	17.14
24	15.68
26	14.36
28	13.16
30	12.07
32	11.09
34	10.20
36	9.38
38	8.64

Temp(°C)	Resistance(kΩ)
40	7.97
42	7.35
44	6.79
46	6.28
48	5.81
50	5.38
52	4.99
54	4.63
56	4.29
58	3.99

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

Temp(°C)	Resistance(kΩ)
-19	181.40
-15	145.00
-10	110.30
-5	84.61
0	65.37
5	50.87
10	39.87
15	31.47

Temp(°C)	Resistance(kΩ)
20	25.01
25	20.00
30	16.10
35	13.04
40	10.62
45	8.71
50	7.17
55	5.94

Temp(°C)	Resistance(kΩ)
60	4.95
65	4.14
70	3.48
75	2.94
80	2.50
85	2.13
90	1.82
95	1.56

Temp(°C)	Resistance(kΩ)
100	1.35
105	1.16
110	1.01
115	0.88
120	0.77
125	0.67
130	0.59
135	0.52

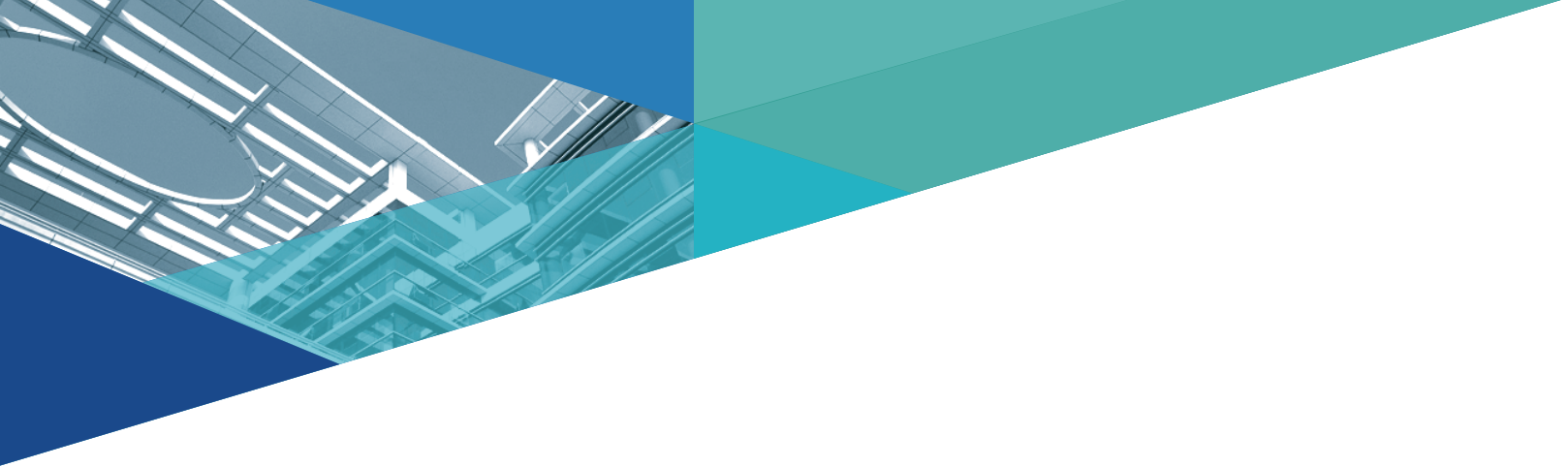
Resistance Table of Discharge Temperature Sensor for Outdoor(50K)

Temp(°C)	Resistance(kΩ)
-30	911.400
-25	660.8
-20	486.5
-15	362.9
-10	274
-5	209
0	161
5	125.1

Temp(°C)	Resistance(kΩ)
10	98
15	77.35
20	61.48
25	49.19
30	39.61
35	32.09
40	26.15
45	21.43

Temp(°C)	Resistance(kΩ)
50	17.65
55	14.62
60	12.17
65	10.18
70	8.555
75	7.224
80	6.129
85	5.222

Temp(°C)	Resistance(kΩ)
90	4.469
95	3.841
100	3.315
105	2.872
110	2.498
115	2.182
120	1.912
125	1.682



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