

Inverter Air Conditioner

Service Manual

Models

CS-YE9WKU1(indoor unit)

CU-YE9WKU1(outdoor unit)

CS-YE12WKU1(indoor unit)

CU-YE12WKU1(outdoor unit)

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

•The specifications and the parts of this product are subject to change without notice for performance improvement or other purposes.

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1. Precaution

1.1 SAFETY RULES AND RECOMMENDATIONS FOR THE INSTALLATION

- Read this guide before installing and using the appliance.
- During the installation of the indoor and outdoor units the access to the working area should be forbidden to children.
Unforeseeable accidents could happen.
- Make sure that the base of the outdoor unit is firmly fixed.
- Check that air cannot enter the refrigerant system and check for refrigerant leaks when moving the air conditioner.
- Check that air cannot enter the refrigerant system and check for refrigerant leaks when moving the air conditioner.
- The ratings of the fuse installed in the built in-control unit are T 5A / 250V.
- The user must protect the indoor unit with a fuse of suitable capacity for the maximum input current or with another overload protection device.
- Ensure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket, thereby avoiding the risk of electric shock or fire due to insufficient contact.
- Check that the socket is suitable for the plug, otherwise have the socket changed.
- The appliance must be fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under over voltage category III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.
- The air conditioner must be installed by professional or qualified persons. Do not install the appliance at a distance of less than 50 cm from inflammable substances (alcohol, etc.) Or from pressurized containers (e.g. spray cans).
- If the appliance is used in areas without the possibility of ventilation, precautions must be taken to prevent any leaks of refrigerant gas from remaining in the environment and creating a danger of fire.
- The packaging materials are recyclable and should be disposed of in the separate waste bins. Take the air conditioner at the end of its useful life to a special waste collection center for disposal.
- Only use the air conditioner as instructed in this booklet. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, common sense and caution are therefore always recommended for installation, operation and maintenance.
- The appliance must be installed in accordance with applicable national regulations.
- Before accessing the terminals, all the power circuits must be disconnected from the power supply.
- The appliance shall be installed in accordance with national wiring regulations.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

1.2 SAFETY RULES AND RECOMMENDATIONS FOR THE USER

- Do not try to install the conditioner alone; always contact specialized technical personnel. Cleaning and maintenance must be carried out by specialized technical personnel. In any case disconnect the appliance from the mains electricity supply before carrying out any cleaning or maintenance.
- Ensure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket, thereby avoiding the risk of electric shock or fire due to insufficient contact.
- Do not pull out the plug to switch off the appliance when it is in operation, since this could create a spark and cause a fire, etc.
- This appliance has been made for air conditioning domestic environments and must not be used for any other purpose, such as for drying clothes, cooling food, etc.
- The packaging materials are recyclable and should be disposed of in the separate waste bins. Take the air conditioner at the end of its useful life to a special waste collection center for disposal.
- Always use the appliance with the air filter mounted. The use of the conditioner without air filter could cause an excessive accumulation of dust or waste on the inner parts of the device with possible subsequent failures.
- The user is responsible for having the appliance installed by a qualified technician, who must check that it is earthed in accordance with current legislation and insert a thermomagnetic circuit breaker.
- The batteries in remote controller must be recycled or disposed of properly. Disposal of Scrap Batteries
--- Please discard the batteries as sorted municipal waste at the accessible collection point.
- Never remain directly exposed to the flow of cold air for a long time. The direct and prolonged exposition to cold air could be dangerous for your health. Particular care should be taken in the rooms where there are children, old or sick people.
- If the appliance gives off smoke or there is a smell of burning, immediately cut off the power supply and contact the Service Centre.
- The prolonged use of the device in such conditions could cause fire or electrocution.
- Have repairs carried out only by an authoritative Service Centre of the manufacturer. Incorrect repair could expose the user to the risk of electric shock, etc.
- Unhook the automatic switch if you foresee not to use the device for a long time. The airflow direction must be properly adjusted.
- The flaps must be directed downwards in the heating mode and upwards in the cooling mode.
- Only use the air conditioner as instructed in this booklet. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, common sense and caution are therefore always recommended for installation, operation and maintenance.
- Ensure that the appliance is disconnected from the power supply when it will remain inoperative for a long period and before carrying out any cleaning or maintenance.
- Selecting the most suitable temperature can prevent damage to the appliance.

1.3 SAFETY RULES AND PROHIBITIONS

- Do not bend, tug or compress the power cord since this could damage it. Electrical shocks or fire are probably due to a damaged power cord. Specialized technical personnel only must replace a damaged power cord.
- Do not use extensions or gang modules.
- Do not touch the appliance when barefoot or parts of the body are wet or damp.
- Do not obstruct the air inlet or outlet of the indoor or the outdoor unit. The obstruction of these openings causes a reduction in the operative efficiency of the conditioner with possible consequent failures or damages.
- In no way alter the characteristics of the appliance.
- Do not install the appliance in environments where the air could contain gas, oil or sulphur or near sources of heat.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Do not climb onto or place any heavy or hot objects on top of the appliance.
- Do not leave windows or doors open for long when the air conditioner is operating.
- Do not direct the airflow onto plants or animals.
- A long direct exposition to the flow of cold air of the conditioner could have negative effects on plants and animals.
- Do not put the conditioner in contact with water. The electrical insulation could be damaged and thus causing electrocution.
- Do not climb onto or place any objects on the outdoor unit
- Never insert a stick or similar object into the appliance. It could cause injury.
- Children should be supervised to ensure that they do not play with the appliance. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

2. Important Notice

This service manual is intended for use by individuals possessing adequate backgrounds of electrical, electronic and mechanical experience. Any attempt to repair the appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

The information, specifications and parameter are subject to change due to technical modification or improvement without any prior notice. The accurate specifications are presented on the nameplate label.

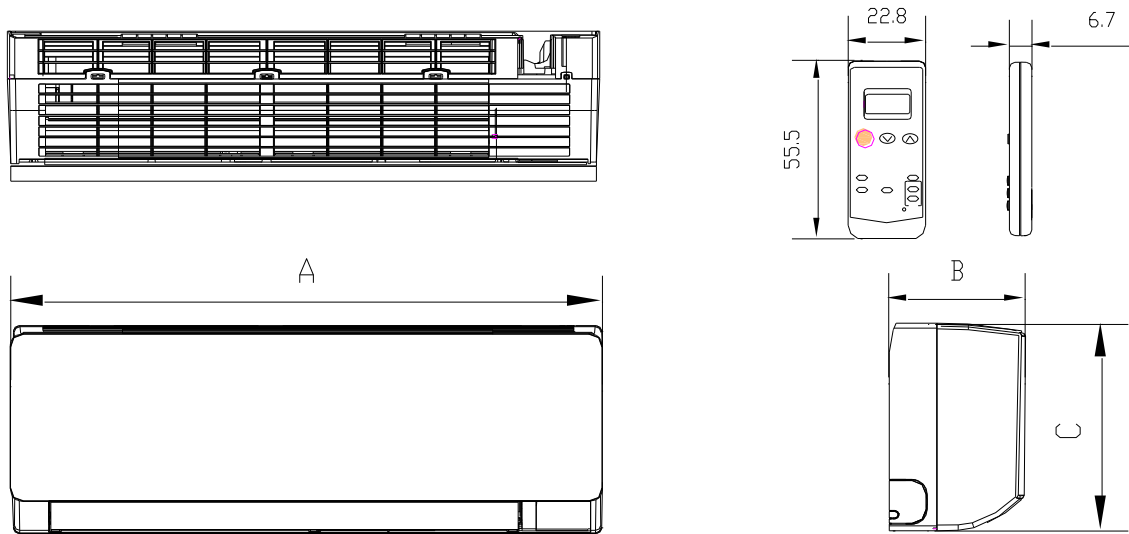
How to order spare parts

To have your order filled promptly and correctly, please furnish the following information:

1. Model No. with Indoor or Outdoor
2. No. in the Exploded View
3. Part Name
4. The quantity you ordered

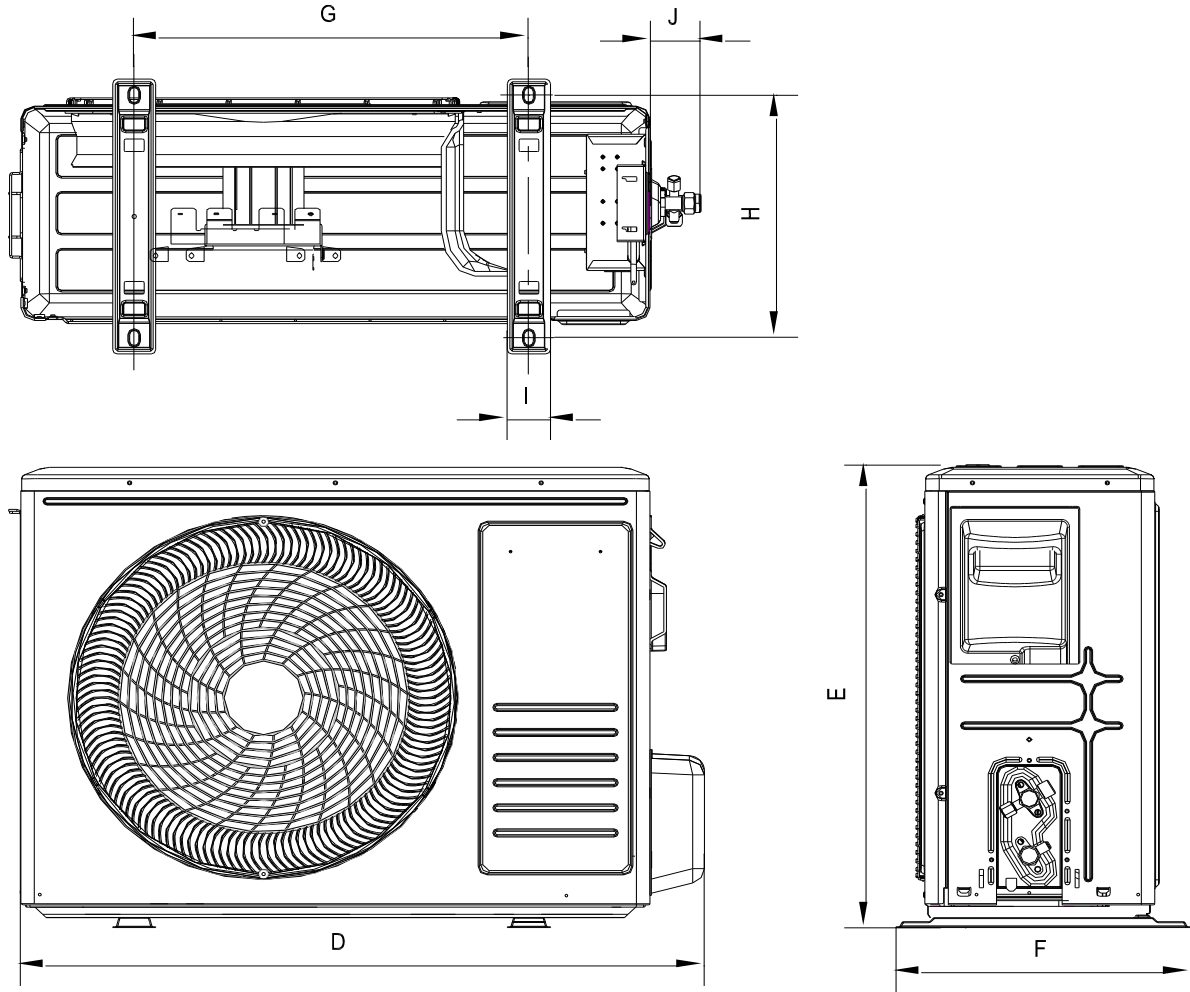
3. Product Dimensions

Indoor Unit:



Model	Indoor unit(mm/inch)		
	A	B	C
CS-YE9WKU1	811(31.9)	292(11.5)	203(7.99)
CS-YEFGWKU1	811(31.9)	292(11.5)	203(7.99)

Outdoor Unit:



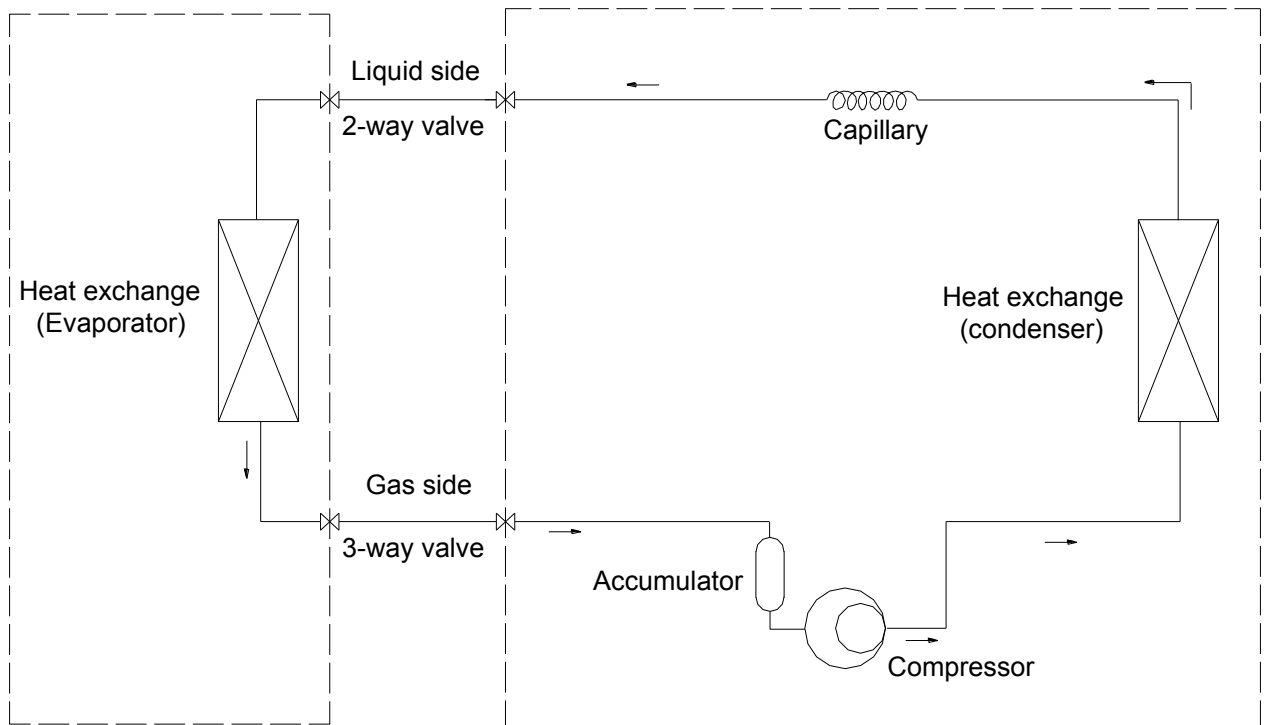
Model	Outdoor unit(mm/inch)						
	D	E	F	G	I	J	K
CU-YE9WKU1	787(31.0)	498(19.6)	290(11.4)	415(16.3)	225(8.9)	48.5(1.9)	52(2)
7I -M%K ?I %	787(31.0)	498(19.6)	290(11.4)	415(16.3)	225(8.9)	48.5(1.9)	52(2)

4. Technical Specifications

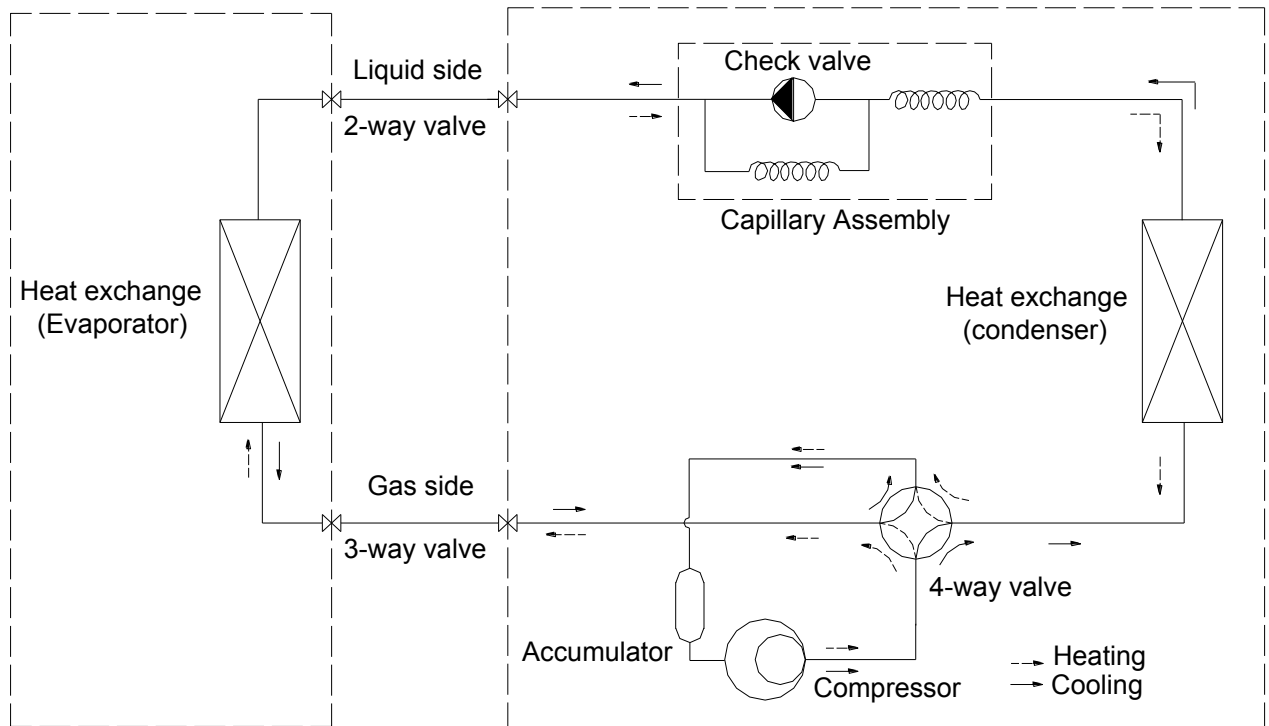
Technical Specifications					
Model			CS-YE9WKU1 (indoor unit) CU-YE9WKU1 (outdoor unit)	CS-YE12WKU1 (indoor unit) CU-YE12WKU1 (outdoor unit)	
Type			cooling&heating		cooling&heating
Control type			remote		remote
Power supply			115V~/60Hz/1P		115V~/60Hz/1P
Rated cooling capacity		Btu/h	9000	12000	
Rated Heating capacity		Btu/h	9500	12000	
SEER		Btu/W.h	20.0	20.0	
HSPF Rating (Region IV)		Btu/W.h	10.5	10.0	
EER		Btu/W.h	12.0	10.5	
COP		W/W	3.4	3.0	
MXimum Operation Pressure		PSIG	650	650	
MXimum Fuse Size		A	25	30	
Moisture removal		Liters/h	1.1	1.6	
Indoor noise level at cooling	High	dB(A)	38	40	
	Med.	dB(A)	35	37	
	Low	dB(A)	32	34	
Outdoor noise level		dB(A)	50	52	
Connecting Pipe	Gas	inches	3/8"	3/8"	
	Liquid	inches	1/4"	1/4"	
Connecting Wiring	Size x Core number		4x16AWG	4x16AWG	
Suitable area		m ²	12-17	17-25	
Net dimensions (W x H x D)	Indoor	mm	811x292x205	811x292x205	
		inch	31.92x11.49x8.07	31.92x11.49x8.07	
	Outdoor	mm	728x550x285	728x550x285	
		inch	28.66x21.65x11.22	28.66x21.65x11.22	
Net weight	Indoor	kg/lbs	8/17.6	8/17.6	
	Outdoor	kg/lbs	27/59.5	29/63.9	
Indoor Packing dimensions (W x H x D)		mm	885x366x278	885x366x278	
		inch	34.84x14.40x10.94	34.84x14.40x10.94	
Outdoor Packing dimensions (W x H x D)(without pipe)		mm	840x605x340	840x605x340	
		inch	33.07x23.82x13.39	33.07x23.82x13.39	
Gross weight	Indoor	kg/lbs	11/24.2	11/24.2	
	Outdoor(without pipe)	kg/lbs	30/66.1	32/70.5	
*** Indoor Unit ***					
Indoor Motor	Motor Brand		Weilling/Broad-Ocean	Weilling/Broad-Ocean	
	Motor Model(Factory Code)		AC	AC	
Indoor air circulation/Hi		m ³ /h	600	650	
Evaporator		mm	Φ7x2	Φ7x2	
*** Outdoor Unit ***					
Compressor Brand			GMCC	GMCC	
Compressor Model			ASN98D32UEZ	ASN98D32UEZ	
Outdoor Motor	Motor Brand		Weilling/Broad-Ocean/SHIBURA	Weilling/Broad-Ocean/SHIBURA	
	Motor Model		DC	DC	
Condenser		mm	Φ7x1	Φ7x2	
Factory Refrigerant charge(7.5m pipe)		g/oz	810g / 28.57ozs	1002g / 35.34ozs	
Factory Precharge Line		(m/ft)	7.5 / 25	7.5 / 25	
MXimum Line Length		(m/ft)	15 / 50	15 / 50	
MXimum Height Difference Between Indoor and Outdoor		(m/ft)	5 / 16.4	5 / 16.4	
Operation temperature		℃	16~31	16~31	
Room temperature	Indoor(cooling/ heating)	℃	>=17/<=30	>=17/<=30	
	Outdoor(cooling/heating)	℃	-15~50/-25~30	-15~50/-25~30	

5. Refrigeration cycle diagram

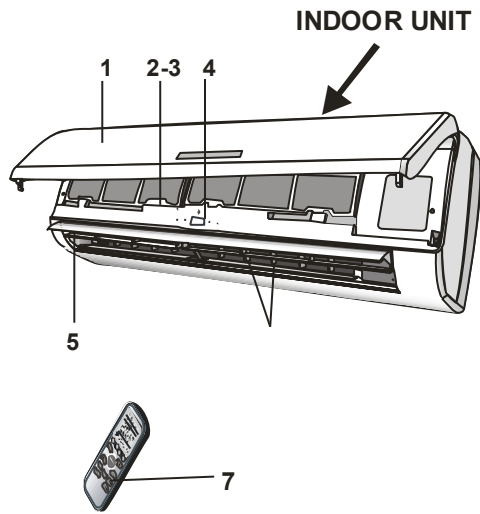
Cooling only



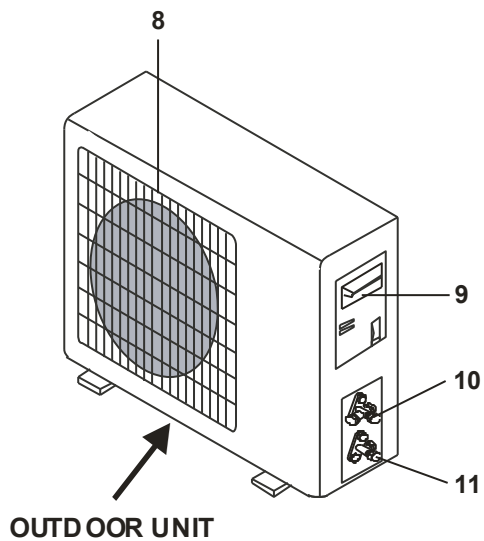
Heat pump



6.Names of parts



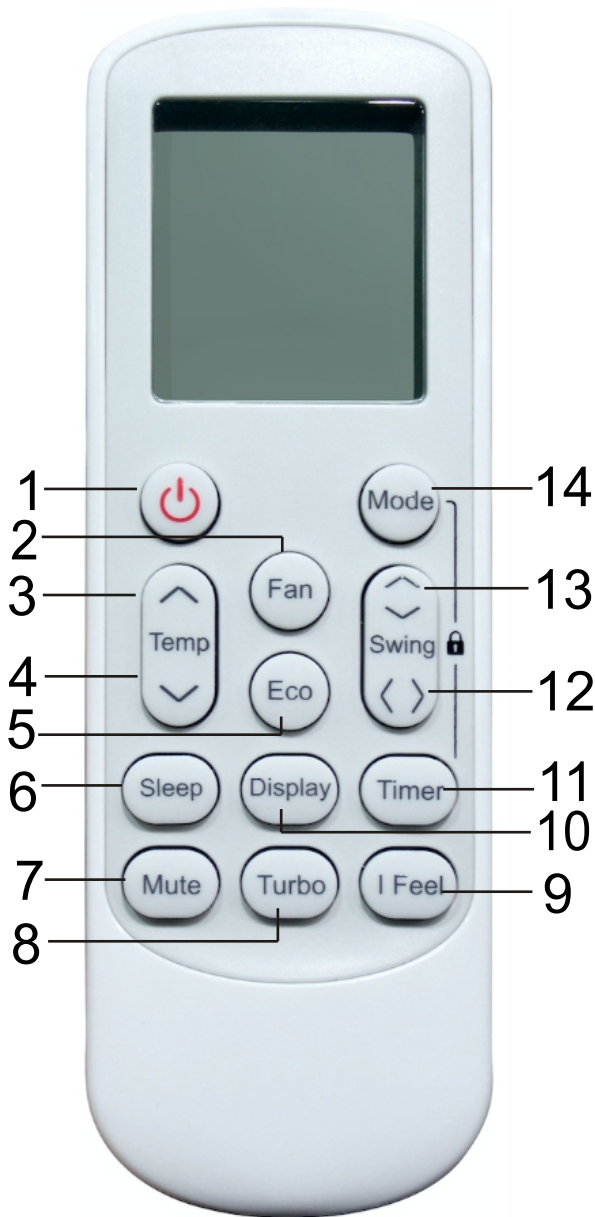
Indoor unit	
No.	Name
1	Front panel
2	Air filter
3	Special filter(option)
4	Display PCB
5	Vertical vane
6	Horizontal vane
7	Remote controller



Outdoor unit	
No.	Name
8	Air outlet grille
9	Electronic box cover
10	2-way valve
11	3-way valve

7.Operation Details

Remote controller



- 1 ON/OFF button**
To switch the conditioner on and off.
- 2 FAN SPEED button**
To select the fan speed of auto/low/mid/high.
- 3 TEMP UP button**
To crease the temperature or time by 1 unit.
- 4 TEMP DOWN button**
To decrease the temperature or time by 1 unit.
- 5 ECO button**
In cooling mode,press this button ,the temperature will increase 2℃(35.6℉) on the base of setting temperature: In heating mode, press this button, the temperature will decrease 2℃(35.6℉) on the base of setting temperature.
- 6 SLEEP button**
To activate the function “SLEEP” .
- 7 MUTE button**
To activate the function of Mute.
- 8 TURBO button**
In cooling mode, press this button, the unit will give the maximum cooling temperature with 16℃(60.8℉) In heating mode, press this button, the unit will give the maximum heating temperature with 31℃(87.8℉).
- 9 I FEEL button**
To switch - activr/deactive “I FEEL” function. The air conditioner will regulate the room temperature base on the temperature(0℃(32℉)~50℃(122℉)) around the remote controller.This function will terminate 2 hours later once it's active.
- 10 DISPLAY button**
To switch on/off the LED display (if present)
- 11 TIMER button**
To set automatic switching-on/off.
- 12 VERTICAL SWING button**
To activate or deactivate of the movement of the left or right “DEFLECTORS” .
- 13 HORIZONTAL SWING button**
To activate or deactivate of the movement of the up or down “DEFLECTORS” .
- 14 MODE button**
To select the mode of operation.

Note: Each mode and relevant function will be further specified in following pages.

Remote Control

The remote controller is not presetting as Cooling Only Air Conditioner or Heat Pump by manufacturer. Each time after the remote controller replace batteries or is energized, the arrowhead will flash on the front of “Heat” or “Cool” on LCD of the remote controller.

User can preset the remote controller type depending on the air conditioner type you have purchased as follows: Press any button when the arrowhead flashes on the front of “Cool” , Cooling Only is set.

Press any button when the arrowhead flashes on the front of “Heat” , Heat Pump is set.

If you don't press any button within 10 seconds, the remote controller is preset as Heat Pump automatically.

LOCK/UNLOCK

When you press the buttons "MODE" and "TIMER" at the same time, the remote controller will be locked, all buttons

of the remote controller will be deactive and it displays "Lo" . You can operate again as the same way to unlock the remote controller.

Note :

If the air conditioner you purchased is a Cooling Only one, but you preset the remote controller as Heat Pump, it doesn't bring any matter. But if the air conditioner you purchased is a Heat Pump one, and you preset the remote controller as Cooling Only, then you CAN NOT preset the Heating operation with the remote controller.

Electronic Controller

1. Safety Protection

- (1) Time Delay for Safety protection
 - 3 minutes delay for compressor ---The compressor is ceased for 3minutes before restarting to balance the pressure in the refrigeration cycle in order to protect the compressor.
 - 2 minutes delay for 4-way valve---The 4-way valve will be ceased for 2 minutes late after compressor to prevent the refrigerant-gas abnormal noise when the HEATING operation is OFF or switch to the other operation mode.
- (2) Discharge temperature protection
There is a temperature sensor on top of compressor, when temperature on top of compressor exceeded the limit, system control will shut down the compressor and the display board will show the error code.
- (3) Lower voltage protection
When AC voltage $\leq 158V$ and keep it for 10 seconds, unit will be shut down for protection.
- (4) Over voltage protection
When AC voltage $\geq 260V$, unit will be shut down and recover while $AC \leq 255V$.
- (5) Over current protection
When the current of outdoor unit is overload, controller shut down the unit immediately and show error code.
- (6) Compressor abnormality protection
When compressor start on or in the process of running, if there is no feedback to controller or load of compressor is abnormality, the air conditioner will shut down, and show error code.
- (7) **IPM** module protection
IPM module has high temperature & over current protection itself, if there is signal feedback to IPM, the outdoor unit will shut down, LED on outdoor PCB will show the error code.

2. "Feel" Mode Operation

- (8) When the "Feel" mode is selected, the operation mode and initial temperature set are determined by the initial room temperature at start-up of the operation except to turn off the air conditioner and operates it again.
- (9) If the mode is change to "Feel" from other mode, the "Feel" mode doesn't operate until compressor stop for more than 3 minutes.

Mode	Initial Room Temperature	Initial Set Temperature
COOLING	$RT \geq 26^{\circ}C(78.8^{\circ}F)$	$23^{\circ}C(73.4^{\circ}F)$
DRY	$26^{\circ}C(78.8^{\circ}F) > RT \geq 20^{\circ}C(68^{\circ}F)$	$RT - 2^{\circ}C(RT - 35.6^{\circ}F)$
HEATING for Heat Pump/ FAN for Cooling Only	$RT < 20^{\circ}C(68^{\circ}F)$	-

- In the "Feel" mode, when the controller receives the up or down signal of temperature, the set temperature can adjust by $1^{\circ}C(33.8^{\circ}F)$ upper or lower. The biggest you can adjust by $2^{\circ}C(35.6^{\circ}F)$ upper or lower.

3. "COOLING" Mode Operation

- (1) Compressor frequency control
According to difference room temperature and set temperature ($\delta t = RT - ST$), running frequency of compressor is controlled by electronic controller. When room temperature is much higher than set temperature, the compressor will start at a high frequency, and as room temperature goes

down, the compressor running frequency will go down. When room temperature is lower than set temperature, the compressor will run at very low frequency. In general, unit will change its running frequency according to δt to make room temperature closing to set temperature.

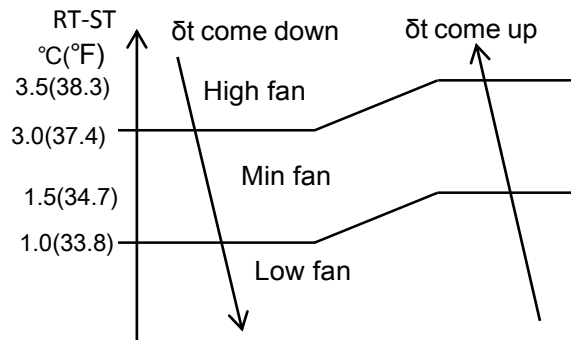
(2) Outdoor temperature affects running frequency of the compressor

Outdoor temperature affect compressor's running frequency. Difference inlet temperature of outdoor unit is adapted by difference compressor running frequency. While outdoor temperature is about 30°C, the compressor will run in high frequency.

If unit run in "cooling" mode and outdoor temperature is less than -2°C(-35.6°F), the controller will shut down compressor and show error code, while the ambient temperature is over 1°C(33.8°F), the compressor will run automatically.

(3) Auto fan control in cooling mode

In cooling mode (include cooling in "Feel" mode), fan speed is determined by δt , as the following diagram:



4. "DRY" Mode Operation

(1) The system for DRY operation used the same refrigerant circle as the cooling one.

(2) When the system operates in DRY mode, at first it operates in cooling mode, the set temperature (ST) is "RT-2°C(35.6°F)". After that, the system will operate in cooling mode with lowest fan speed for 30 minutes and then change to middle speed for 30seconds as a cycle. During the course of this operation, you can't use remote controller to adjust the fan speed but you can control the vane direction.

(3) In the dry mode, when $RT \leq 12^\circ\text{C}(53.6^\circ\text{F})$, the compressor will stop and operates again at $RT \geq 14^\circ\text{C}(57.2^\circ\text{F})$.

5. "HEATING" Mode Operation (available for Heat Pump only)

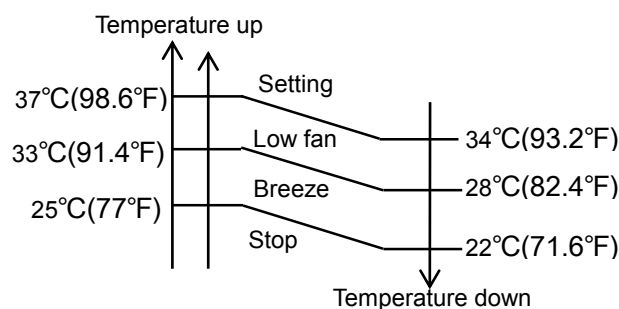
(1) Frequency control

Same as the frequency control in cooling mode, the running frequency of compressor is controlled by controller. Unit change its running frequency according to δt to make the room temperature closing to the set temperature.

(2) Indoor fan motor control

1) Cold Air Prevention Control

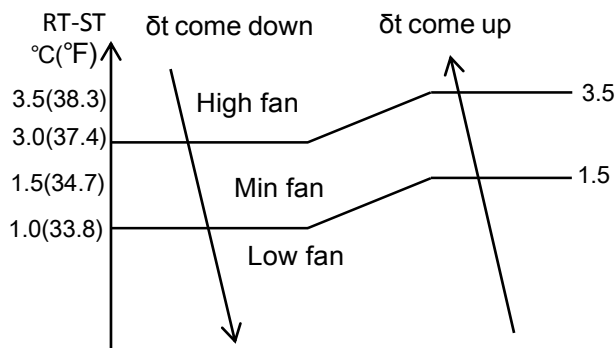
- The function is intended to prevent cold air from being discharged when heating mode selected or while in defrosting.
- The indoor fan speed will be controlled as following.



- In heating operation, if air conditioner turn off, the indoor fan motor will run most for 30 seconds since the stop of compressor.

2) Auto fan control (heating)

In heating mode (include in "FEEL" mode), fan speed is determined by δt as the following:



(3) 4-way valve control

In heating mode, 4-way valve will power on ahead of compressor for 5 seconds, and cut off for 2 minutes later than compressor. 4-way valve will not power off unless the machine to be switched off, mode changed or on the process of defrosting.

(4) Defrosting

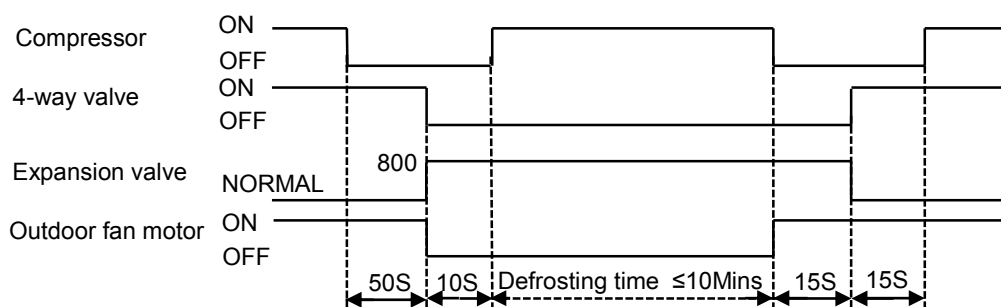
Defrosting is controlled by the microprocessor.

When one of the following conditions is satisfied, unit comes into defrosting:

- Outdoor heat exchanger Temperature (OPT) is continuously less than 3°C (37.4°F) while the unit runs for more than 40 minutes, and OPT is keeping under -6°C for more than 3 minutes.
- Outdoor heat exchanger Temperature (OPT) is continuously less than 3°C (37.4°F) meanwhile the unit runs for more than 80 minutes, and OPT is keeping under -4°C (-39.2°F) for more than 3 minutes.
- Outdoor heat exchanger Temperature (OPT) is continuously less than 3°C (37.4°F) while the unit runs for more than 120 minutes, and OPT is keeping below -2°C (35.6°F) for more than 3 minutes.

Before the air con comes into defrosting, compressor running frequency drop down to a lower frequency firstly, then the compressor shuts down.

In defrosting, the max. frequency of compressor is F9 (a little less than the highest frequency). In this period all protection function are available.



In defrosting, LED showing by blinking.

No matter what AC come into or out of defrosting, indoor fan motor speed is the same as Cold Air Prevention Control.

While one of the following conditions is satisfied, unit comes out of defrosting and shifts to heating mode:

- Outdoor coil Temperature (OPT) $\geq 15^{\circ}\text{C}$ (59°F).
- The time of defrosting keeps for more than 10 minutes.

(5) Indoor exchanger overheat protection

When Indoor exchanger Temperature (IPT) is higher than 55°C(131°F), unit comes into indoor exchanger overheat protection. The compressor drops its frequency toward to F1 level until $IPT \leq 52^{\circ}\text{C}(125.6^{\circ}\text{F})$

If $IPT \leq 52^{\circ}\text{C}(125.6^{\circ}\text{F})$ and keep for 5 minutes, control system doesn't limit running frequency.

If $IPT > 62^{\circ}\text{C}(143.6^{\circ}\text{F})$, control system shut down compressor, and recover while IPT drop less than 50°C(122°F).

6. "SLEEP" mode

When the SLEEP button is pressed, the AC operates as following:

- The indoor fan speed is set at low speed, the power lamp and the sleep lamp is on, the display of temperature will close after 5 minutes.
- When selecting COOLING/DRY operation with SLEEP mode, the set temperature will be raised by 1°C(33.8°F) 1 hour later and by 2°C(35.6°F) 2 hour later.
- When selecting HEATING operation with SLEEP mode, the set temperature will be dropped by 1°C(33.8°F) 1 hour later and 2°C(35.6°F) 2 hours later.
- After the System operates in SLEEP mode for 8 hours, it will stop automatically.

7. EMERGENCY Operation

When the EMERGENCY Operation switch is pressed one time, COOLING mode is selected and if the EMERGENCY Operation switch press again within 3s, HEATING mode selected, while press once again, the unit will switch off.

When the remote controller missing, failed or the batteries run down, press the EMERGENCY Operation switch on front of the indoor unit for function test.

NOTE: Do not press the EMERGENCY Operation switch during normal operation.

8. AUTO-RESTART Function (Option)

While air conditioner is operating in one mode, all of its operation data, such as working mode, preset temperature etc. would be memorized into IC by main PCB. If power supply cut off due to reasons and recover again, the AUTO-RESTART function will set synchronously and the air conditioner would work at the same mode as before.

Auto-restart Pre-setting (optional):

If Auto-restart function is needed, follow the steps below to activate this function:

- 1) Pulling the air-con's plug out of socket.
- 2) Pressing and holding the Emergency button (ON/OFF) on the indoor, then insert the plug into the socket again.
- 3) Keep pressing the Emergency button for more than 10 seconds until three short beeps heard, the Auto-restart function been activated.

9. Protection and Failure Display

- When protection display is available, controller will show error code, digital LED shows error code and setting temperature by turns.
- If there is more than one failure, it will show error codes according to the error list sequence.
- To insure the signal communication of indoor and outdoor unit, any failure code relates to outdoor unit will remain display for 2 minutes maximum after it's recovered.
- Among all the failure codes, sensor failure can be recovery automatically once it comes normal.

● Error list

Failure Type	LED Code	Digital LED Code
Indoor and outdoor communication fault	RUN、TIMER—both winking	E0
Outdoor communication failure	RUN、TIMER—both winking	EC
Indoor room temperature sensor (IRT) fault	RUN-1 time/8s	E1
Indoor coil temperature sensor (IPT) fault	RUN-2 times /8s	E2
Outdoor coil temperature sensor (OPT)	RUN-3 times /8s	E3
System abnormality	RUN-4 times /8s	E4
Model configuration wrong	RUN-5 times /8s	E5
Indoor fan motor fault	RUN-6 times /8s	E6
Outdoor temperature sensor	RUN-7 times /8s	E7
Exhaust temp. sensor	RUN-8 times /8s	E8
IPM drive and module fault	RUN-9 times /8s	E9
Outdoor fan motor fault (DC motor)	RUN-10 times /8s	EF
Current sensor fault	RUN—11 times /8s	EA
EEPROM fault	RUN-12 times /8s	EE
Temp. switch fault (on top of the compressor)	RUN-13 times /8s	EP
Voltage sensor fault	RUN-14 times /8s	EU
Air filter duty		CL

● Protection display code list:

Protection Type	Function Indicator (flash)	Digital LED Code
Overvoltage /lower voltage protection	RUN: Blink; TIMER: 1 blink /8 sec	P1
Overcurrent protection	RUN: Blink; TIMER: 2 blink /8 sec	P2
Exhaust over temperature protection	RUN: Blink; TIMER: 4 blink /8 sec	P4
Too cool protection in cooling mode	RUN: Bright; TIMER: 5 blink /8 sec	P5
Overheat protection in cooling mode	RUN: Bright; TIMER: 6 blink /8 sec	P6
Overheat protection in heating mode	RUN: Bright; TIMER: 7 blink /8 sec	P7
Outdoor over temperature / lower temperature protection	RUN: Bright; TIMER: 8 blink /8 sec	P8
Drive protection (software control)	RUN: Blink; TIMER: 9 blink /8 sec	P9
Module protection (hardware control)	RUN: Blink; TIMER: 10 blink /8 sec	P0

● Outdoor failure display

There is a LED on outdoor power board, it blinks 1s ON and 1s OFF while compressor standby and it always light (ON) while compressor running; If there is failure happened on ODU, The indicator (LED) alerts the fault in a cycle as such that it is bright for 0.5 seconds, dark for 0.5 seconds, blinks “n” times and then dark for 3 seconds. For details as table below:

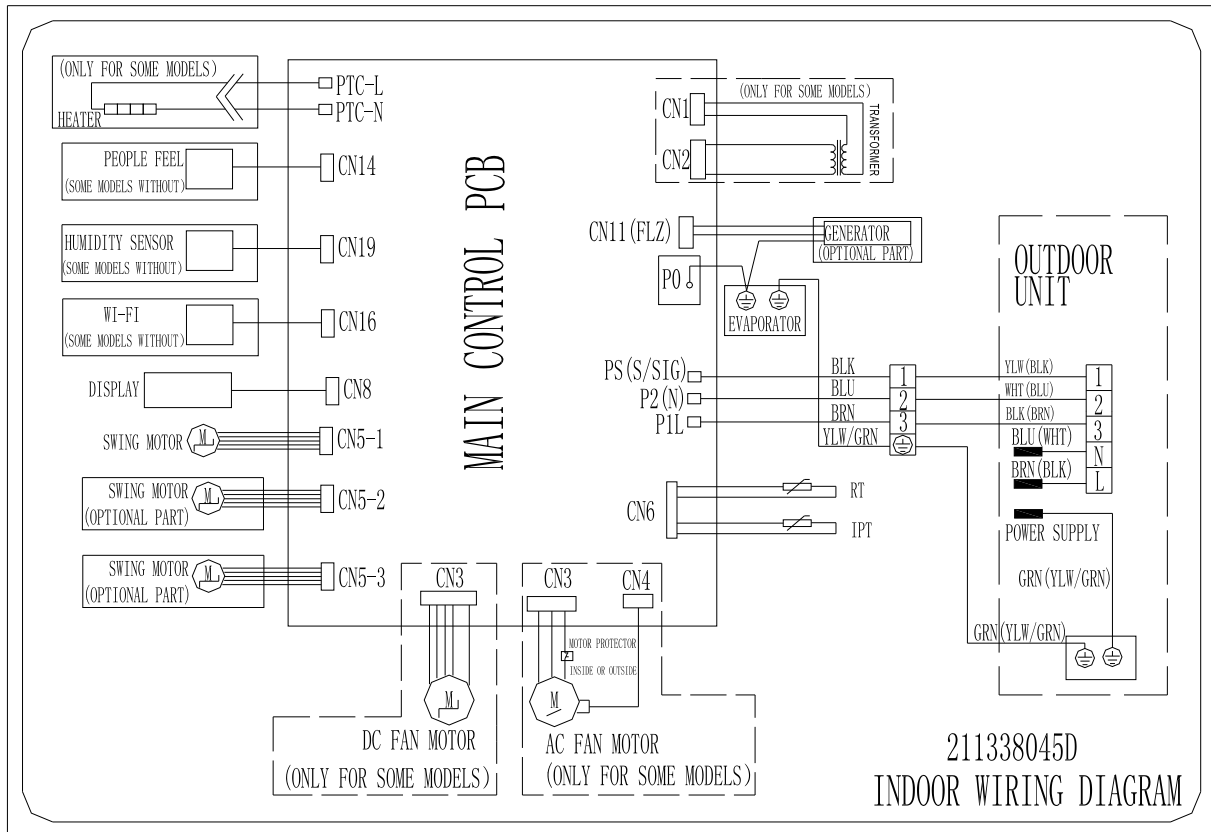
Display on outdoor power source board:

blink time (n)	Failure
1	IPM protection
2	Over voltage /lower voltage
3	Overcurrent
4	Exhaust over temperature protection
5	Outdoor coil over temperature protection
6	Drive fault and protection (V1, VP1)
7	Communication fault with indoor unit
8	Compressor overheat fault (compressor top switch)
9	Short-circuit / open-circuit fault of outdoor temperature sensor
10	Short circuit / open-circuit fault of outdoor heat exchanger temperature sensor
11	Short-circuit / open-circuit fault of exhaust temperature sensor
12	Voltage sensor fault
13	Current sensor fault
14	IPM fault
15	Communication fault between power source board and IPM
16	No feedback from DC fan motor(outdoor unit)
17	Defrost state
18	Suction temperature sensor fault
19	Outdoor EEPROM fault
20	Outdoor fan motor protection
21	Indoor fan motor protection
23	System fault
24	Model configuration wrong
25	Indoor room temperature sensor fault
26	Indoor coil temperature sensor fault
27	Indoor EEPROM fault
28	Indoor fan motor fault
30	IPM drive fault
31	Outdoor environment temperature protection
32	Indoor anti-frosting protection
33	Indoor over-heat protection

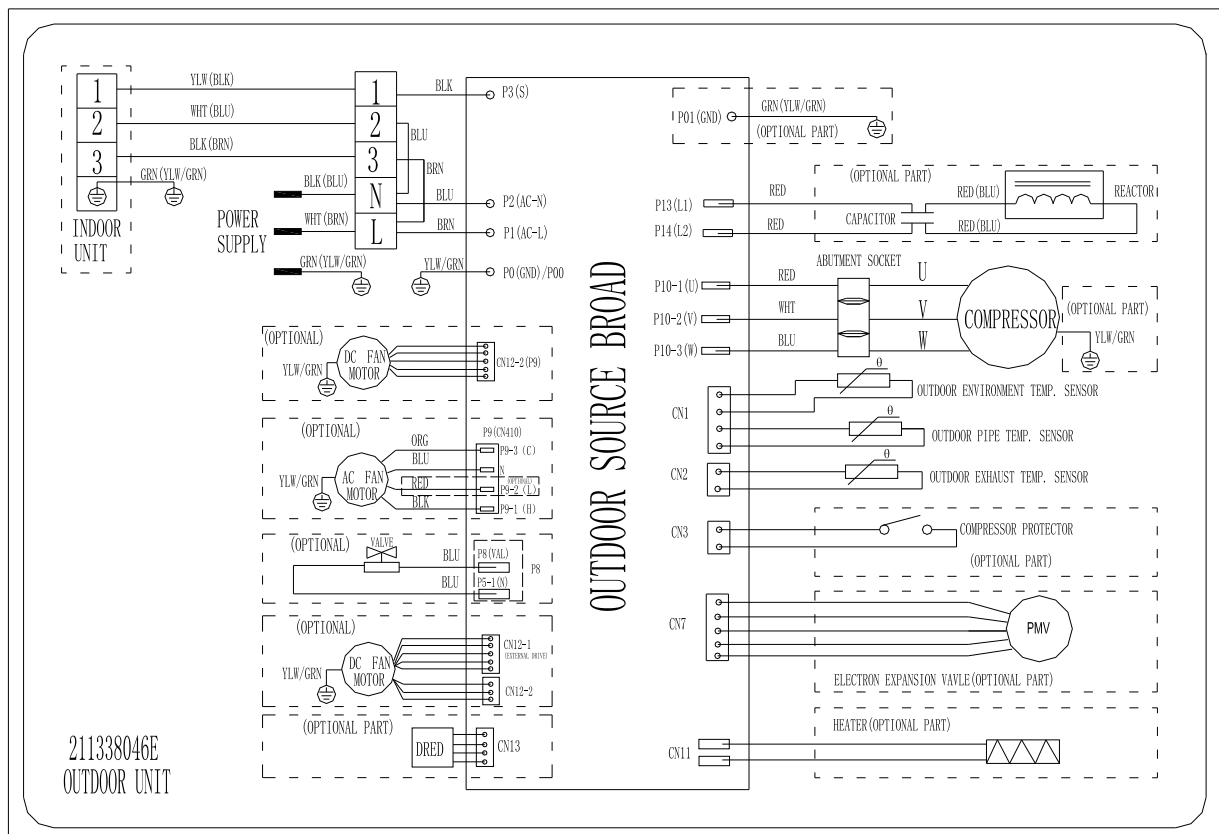
8. Wiring diagram

MODEL: CS-YE9WKU1/CU-YE9WKU1 . CS-YE12WKU1/CU-YE12WKU1

INDOOR UNIT:

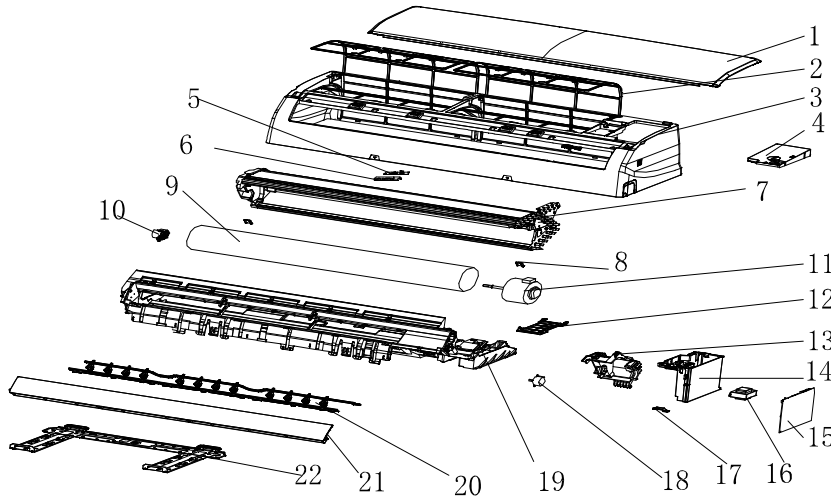


OUTDOOR UNIT



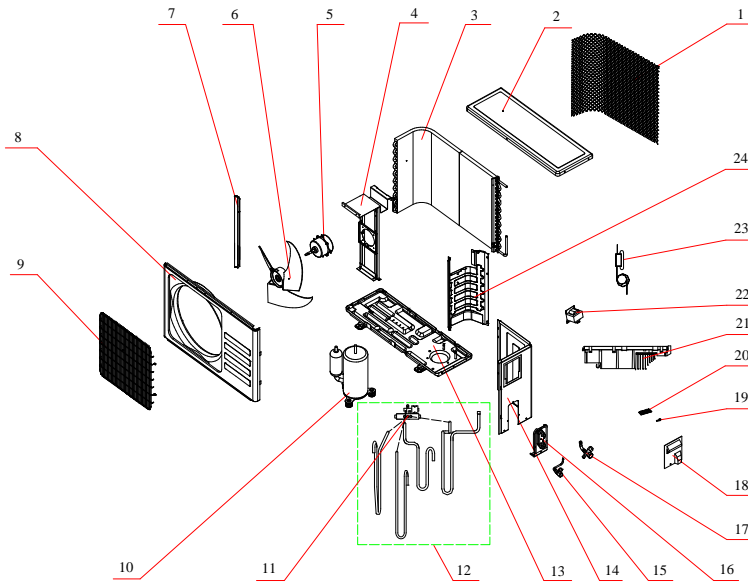
9. Explosion view and parts

Indoor Unit- CS-YE9WKU1



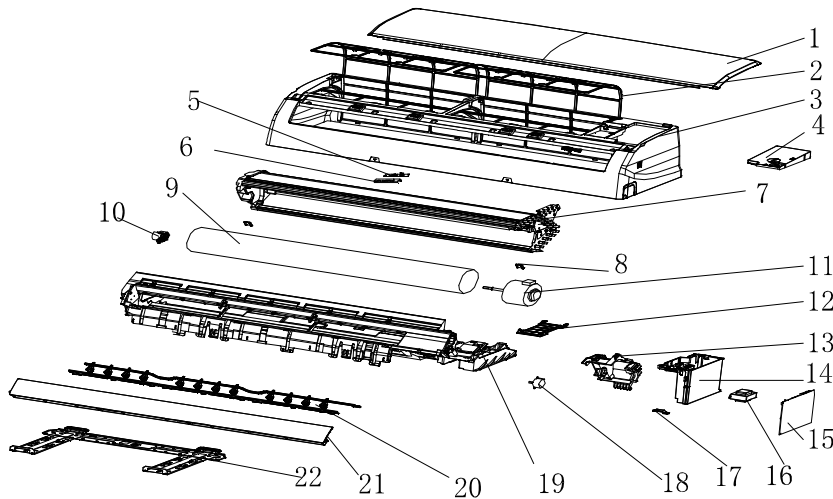
No.	Part No.	Part Name	Q'ty	Remark
1	210737962C	Front Panel	1	
2	210703004	Air Filter	2	
3	210755165	Face Frame	1	
4	214160196	Electrical Box Cover	1	
5	210901127R	Display PCB	1	
6	210705767	Display PCB Box	1	
7	211245758	Evaporator	1	
8	210701846	Screw Cover	2	
9	210737666	Cross Fan	1	
10	1070100010	Bearing Mount	1	
11	1170030067Q	Indoor Motor	1	
12	210736813	In And Out Pipe Fixer	1	
13	210737665	Indoor Motor Cover	1	
14	210737097	Electrical Box	1	
15	210901816S	Main PCB	1	
16	NO	Transformer	1	
17	210736832	Cable Clamp	1	
18	1170020011	Vane Motor 1	1	
	210900129	Vane Motor 2	1	
19	210755166B	Base	1	
20	210701883	Vertical Vane Assembly	2	
21	210737672	Vane	1	
22	210838037	Installation Plate	1	
23	210900333	Indoor Sensor Assembly	1	Not shown in Explosion view
24	210902224	Remote Controller	1	
25	210737091	Drainage Hose	1	
26	210902148	wifi	1	
27	1190540002	Indoor Carton	1	
28	211363352	Left Foaming	1	
29	211363353	Right Foaming	1	

Outdoor Unit- CU-YE9WKU1



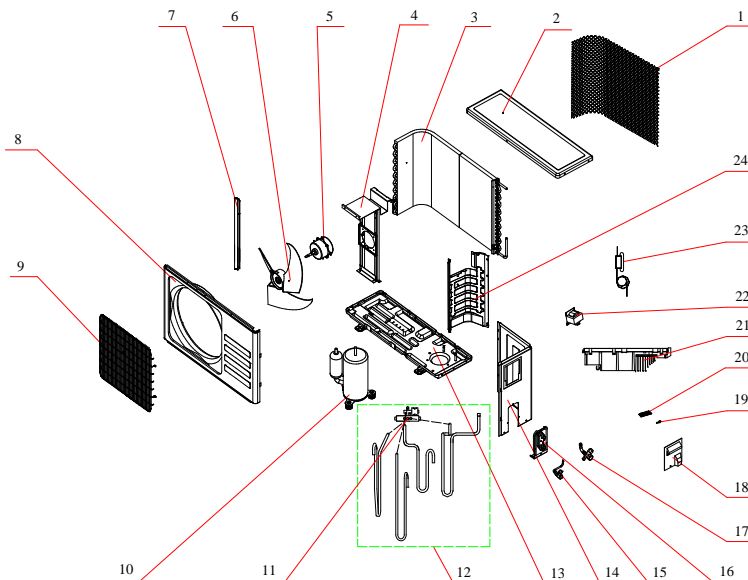
No.	Part No.	Part Name	Q'ty	Remark
1	NO	Grille	1	Optional
2	210836833	Top Cover	1	
3	211239456A	Condenser	1	
4	210836836	Outdoor Motor Supporter	1	
5	1170040162AB	Outdoor Motor	1	
6	210754952	Propeller Fan	1	
7	210836831	Left grille supporter	1	
8	210836834D	Front Plate	1	
9	210838166	Fan Guard	1	
10	211203309	Compressor	1	
11	211203820B	4-way Valve	1	
12	211245369	4-way Valve Assembly	1	
13	210836845M	Base	1	
14	210836829F	Right Plate	1	
15	211242785A	Two-way Valve	1	
16	210836832	Valve Supporter	1	
17	211242786	Three-way Valve	1	
18	210838244	Electrical Box Cover	1	
19	210900313A	Terminal	1	
20	1070040008	Cable clamp1	1	
	1070040003	Cable clamp2	1	
21	210901751C	Outdoor PCB Assembly	1	
22	210901734	Inductor	1	
23	211245434	Capillary Assembly	1	
24	210836835D	Partition plate	1	
25	1170230007E	Pipe Temp. sensor and outdoor Temp. sensor	1	Not shown in explosion view
26	1170230006D	Discharge Temp. sensor	1	
27	211367328	Base carton	1	
28	211367327	Cabinet carton	1	
29	211367325	Base foaming	1	
30	211367326	Cover foaming	1	

Indoor Unit- CS-YE12WKU1



No.	Part No.	Part Name	Q'ty	Remark
1	210737962C	Front Panel	1	
2	210703004	Air Filter	2	
3	210755165	Face Frame	1	
4	214160196	Electrical Box Cover	1	
5	210901127R	Display PCB	1	
6	210705767	Display PCB Box	1	
7	211245758	Evaporator	1	
8	210701846	Screw Cover	2	
9	210737666	Cross Fan	1	
10	1070100010	Bearing Mount	1	
11	1170030067Q	Indoor Motor	1	
12	210736813	In And Out Pipe Fixer	1	
13	210737665	Indoor Motor Cover	1	
14	210737097	Electrical Box	1	
15	210901816X	Main PCB	1	
16	NO	Transformer	1	
17	210736832	Cable Clamp	1	
18	1170020011	Vane Motor 1	1	
	210900129	Vane Motor 2	1	
19	210755166B	Base	1	
20	210701883	Vertical Vane Assembly	2	
21	210737672	Vane	1	
22	210838037	Installation Plate	1	
23	210900333	Indoor Sensor Assembly	1	Not shown in Explosion view
24	210902224	Remote Controller	1	
25	210737091	Drainage Hose	1	
26	210902148	wifi	1	
27	1190540002	Indoor Carton	1	
28	211363352	Left Foaming	1	
29	211363353	Right Foaming	1	

Outdoor Unit- CU-YE12WKU1



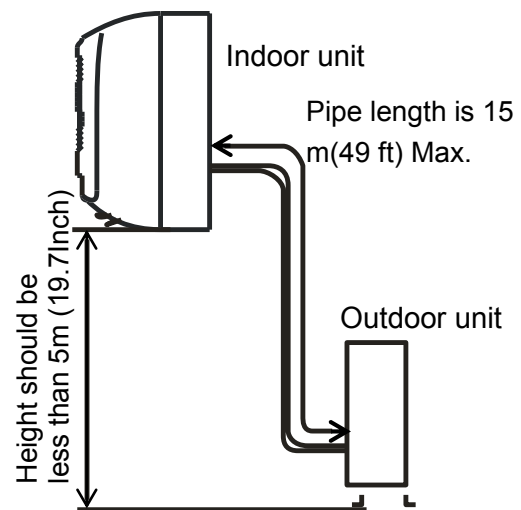
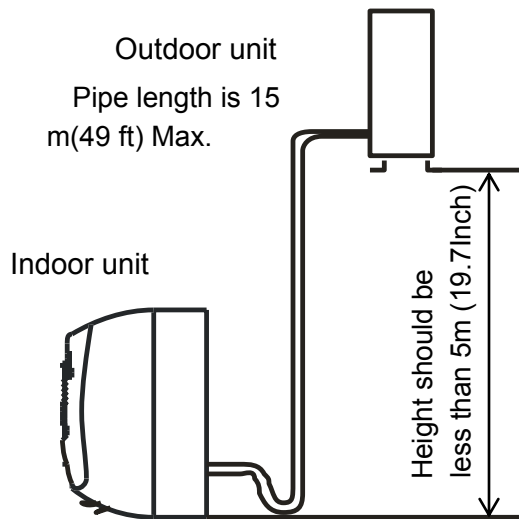
No.	Part No.	Part Name	Q'ty	Remark
1	NO	Grille	1	Optional
2	210836833	Top Cover	1	
3	211244513A	Condenser	1	
4	210836836B	Outdoor Motor Supporter	1	
5	1170040162AB	Outdoor Motor	1	
6	210738509	Propeller Fan	1	
7	210836831	Left grille supporter	1	
8	210836834D	Front Plate	1	
9	210838166	Fan Guard	1	
10	211203309	Compressor	1	
11	211203820B	4-way Valve	1	
12	211245377	4-way Valve Assembly	1	
13	210836845M	Base	1	
14	210836829F	Right Plate	1	
15	211242786	Two-way Valve	1	
16	210836832	Valve Supporter	1	
17	211242785A	Three-way Valve	1	
18	210838244	Electrical Box Cover	1	
19	210901213B	Terminal	1	
20	1070040008	Cable clamp1	1	
	1070040003	Cable clamp2	1	
21	210901751D	Outdoor PCB Assembly	1	
22	210901734	Inductor	1	
23	211245477	Capillary Assembly	1	
24	210836835D	Partition plate	1	
25	1170230007E	Pipe Temp. sensor and outdoor Temp. sensor	1	Not shown in explosion view
26	1170230006D	Discharge Temp. sensor	1	
27	211367328	Base carton	1	
28	211367327	Cabinet carton	1	
29	211367325	Base foaming	1	
30	211367326	Cover foaming	1	

10. Installation manual

10.1 Installation Details

Connecting pipe length

Model	Pipe size(Inch)	
	Liquid	Gas
CS-YE9WKU1/CU-YE9WKU1	1/4	3/8
CS-YE12WKU1/CU-YE12WKU1	1/4	3/8



Model	Standard length: m (Inch)	Refrigerant piping Max. length: m (ft) A	Additional refrigerant B Calculation: $\times g = Bg/m(A-5m)$
CS-YE9WKU1/CU-YE9WKU1	5.0(197)	15(49)	20g/m(20g/39.4In)
CS-YE12WKU1/CU-YE12WKU1	5.0(197)	15(49)	20g/m(20g/39.4In)

Connecting cables

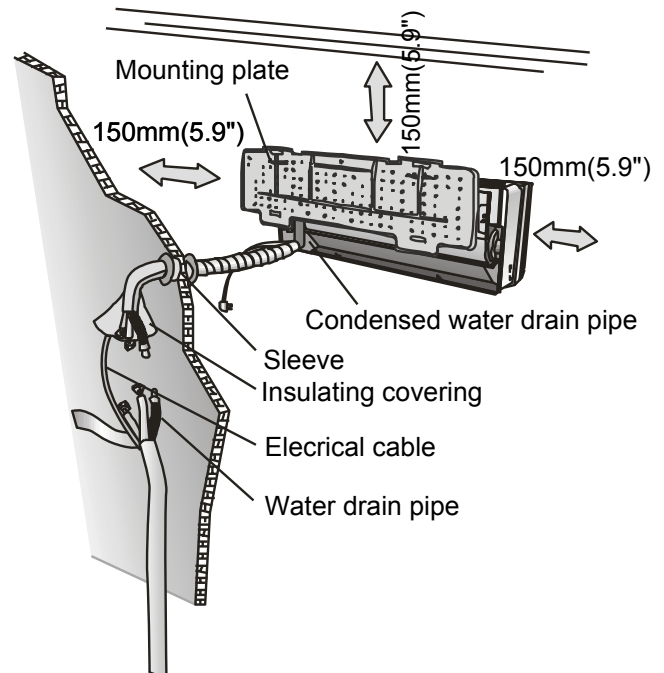
The power cord should be selected according to the following specifications sheet.

Appliance Amps	Wire Size
5	AWG21/0.75 mm ²
10	AWG18/1.0 mm ²
13	AWG15 /1. 5 mm ²
18	AWG14/1.6 mm ²
25	AWG12/2.0 mm ²
30	AWG10/2.5 mm ²

10.2 Installation for the first time

Indoor unit

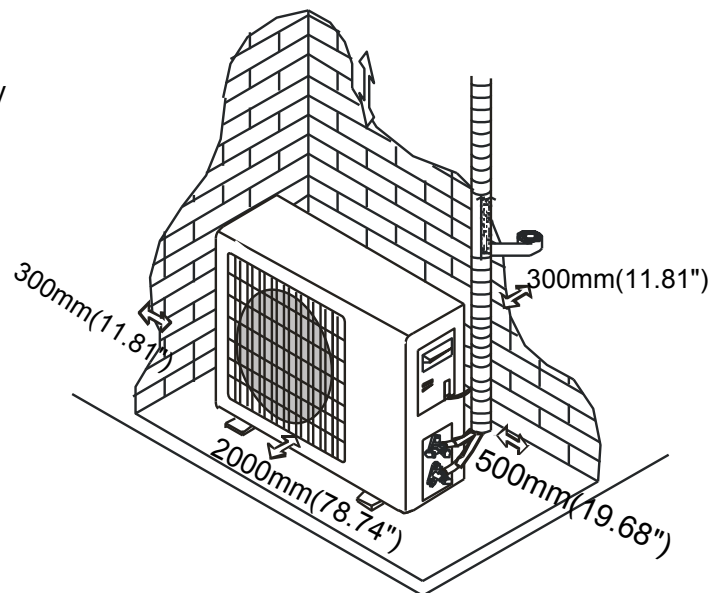
- Install the indoor unit level on a strong wall that is not subject to vibrations
- The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
- Do not install the unit near a source of heat, steam, or flammable gas.
- Install the unit near an electric socket or private circuit.
- Do not install the unit where it will be exposed to direct sunlight.
- Install the unit where connection between indoor and outdoor unit is as easy as possible.
- Install the unit where it is easy to drain the condensed water.
- Check the machine operation regularly and leave the necessary spaces as shown in the picture.
- Install the indoor unit where the filter can be easily accessible.



Minimum space to be left showing in the picture.

OUTDOOR UNIT

- Do not install the outdoor unit near sources of heat, steam or flammable gas.
- Do not install the unit in too windy or dusty places.
- Do not install the unit where people often pass. Select a place where the air discharge and operating sound level will not disturb the neighbours.
- Avoid installing the unit where it will be exposed to direct sunlight (other wise use a protection, if necessary, that should not interfere with the air flow).
- Leave the spaces as shown in the picture for
- The air to circulate freely.
- Install the outdoor unit in a safe and solid place.
- If the outdoor unit is subject to vibration, place rubber gaskets onto the feet of the unit.
- Install the indoor unit in the room to be air conditioning, avoiding to installation in corridors or communal areas.



- Install the indoor unit at a height of at least 2.5m(0.1") from the ground.

appliance has been installed so that it can be pulled out if necessary.

To install, proceed as follows:

10.2.1 Installation of the mounting plate.

F€2.2.1 By using a level, put the mounting plate in a perfect square position vertically and horizontally.

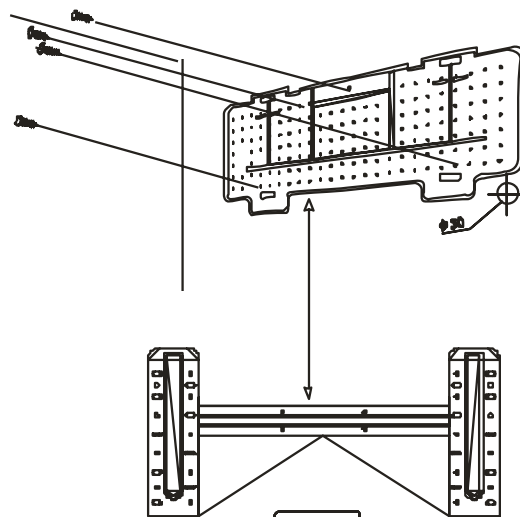
F€2.1.2 Drill 32mm(1.26") deep holes in the wall to fix the plate.

F€2.1.3 Insert the plastic anchors into the hole.

F€2.1.4 Fix the mounting plate by using the provided tapping screws.

F€2.1.5 Check that the mounting plate is correctly fixed.

Note: The shape of the mounting plate may be different from the one above, but installation method is similar.

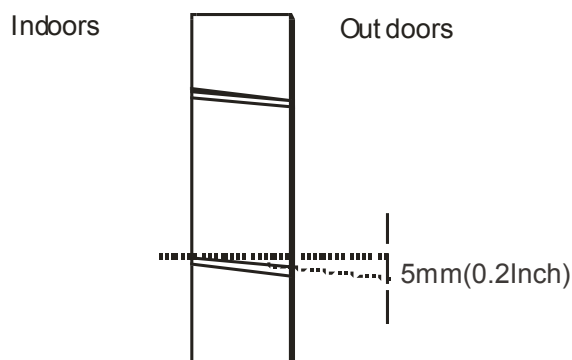


10.2.2 Drilling a hole in the wall for the piping

- 1) Decide where to drill the hole in the wall for the piping (if necessary) according to the position of the mounting plate
- 2) Install a flexible flange through the hole in the wall to keep the latter intact and clean.

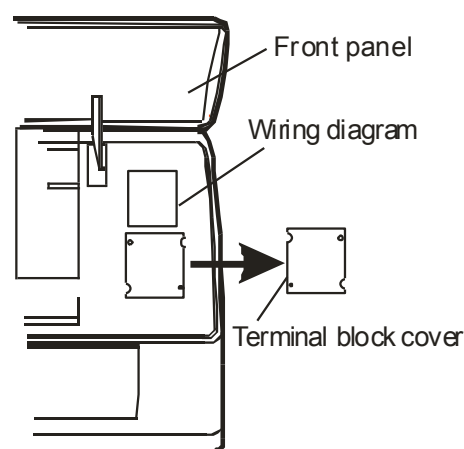
The hole must slope downwards towards the exterior.

Note: Keep the drain pipe down towards the direction of the wall hole, otherwise leakage may occur.



10.2.3 Electrical connections---Indoor unit

- 1).Lift the front panel.
- 2).Take off the cover as indicated in the picture (by removing a screw or by breaking the hooks).
- 3).For the electrical connections, see the circuit diagram on the right part of the unit under the front panel.
- 4).Connect the cable wires to the screw terminals by following the numbering, Use wire size suitable to the electric power input (see name plate on the unit) and according to all current national safety code requirements.
- 5).The cable connecting the outdoor and indoor units must be suitable for outdoor use.
- 6).The plug must be accessible also after the



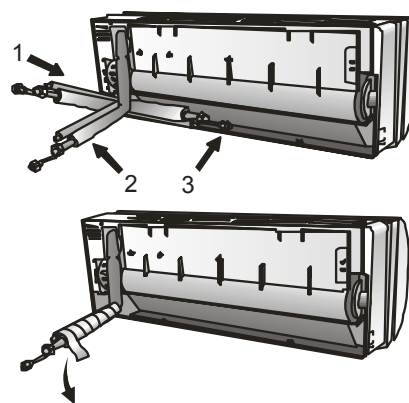
7).An efficient earth connection must be ensured.

8).If the power cable is damaged, it must be replaced by an authorized Service Centre.

10.2.4 Refrigerant piping connection

The piping can be run in the 3 directions indicated by numbers in the picture. When the piping is run in direction 1 or 3, cut a notch along the groove on the side of the indoor unit with a cutter.

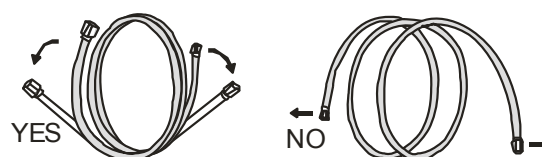
Run the piping in the direction of the wall hole and bind the copper pipes, the drain pipe and the power cables together with the tape with the drain pipe at the bottom, so that water can flow freely.



Shape the connection pipe

10.2.5 Connecting the pipes.

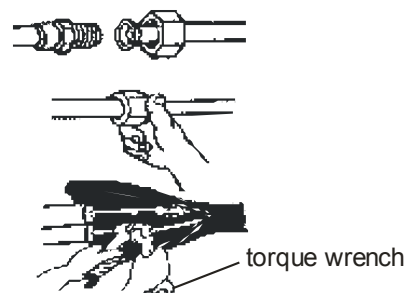
- Do not remove the cap from the pipe until connecting it, to avoid dampness or dirt from entering.
- If the pipe is bent or pulled too often, it will become stiff. Do not bend the pipe more than three times at one point.
- When extending the rolled pipe, straighten the pipe by unwinding it gently as shown in the picture.



Extending the rolled pipe

10.2.6 Connections to the indoor unit

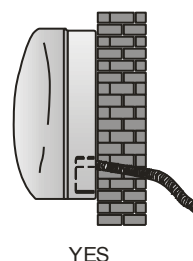
- 1).Remove the indoor unit pipe cap (check that there is no debris inside).
- 2).Insert the flare nut and create a flange at the extreme end of the connection pipe.
- 3).Tighten the connections by using two wrenches working in opposite directions.



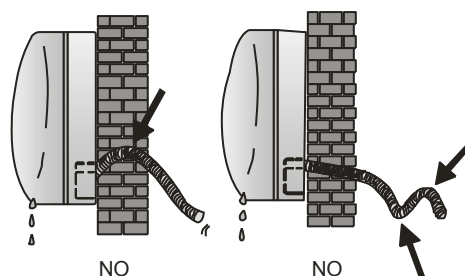
10.2.7 Indoor unit condensed water drainage

The indoor unit condensed water drainage is fundamental for the success of the installation.

- 1).Place the drain hose below the piping, taking care not to create siphons.
- 2).The drain hose must slant downwards to aid drainage.
- 3).Do not bend the drain hose or leave it protruding or twisted and do not put the end of it in water. If an extension is connected to the drain hose, ensure that it is lagged when it passes into the indoor unit.



YES



NO

NO

4). If the piping is installed to the right, the pipes, power cable and drain hose must be lagged and secured onto the rear of the unit with a pipe connection.

- Insert the pipe connection into the relative slot.
- Press to join the pipe connection to the base.

10.2.8 Electronic connections

1. Take the cover away.
2. Connect the cable wires to the terminal board using the same numbering as in the indoor unit.
3. For the electrical connections, see the wiring diagram on the back of the cover
4. Fasten the cables with a cable-clamp.
5. An efficient earth connection must be ensured.
6. Replace the covers.

10.2.9 Connecting the pipe

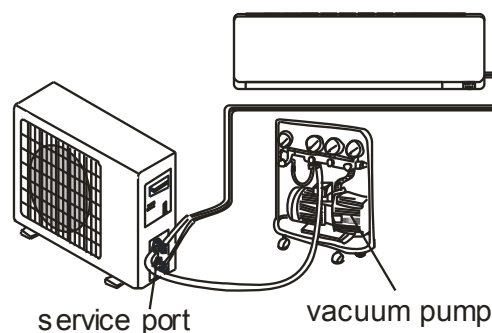
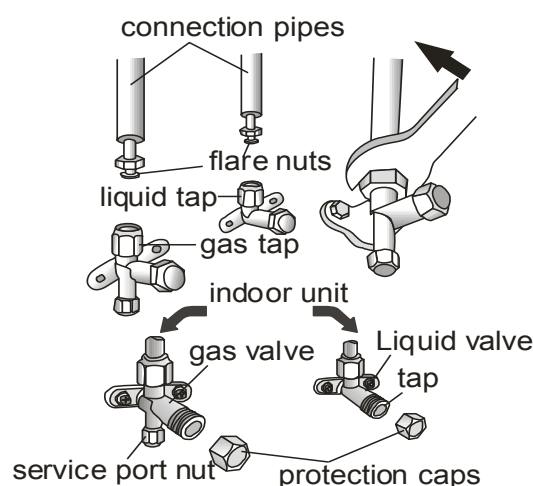
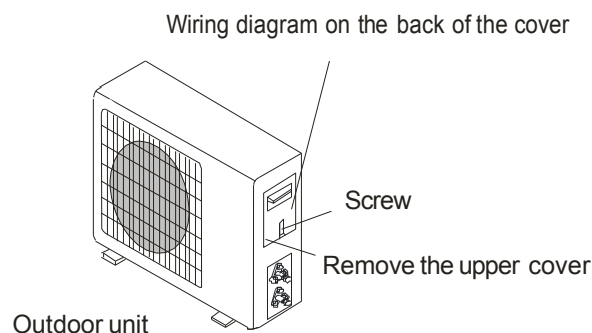
Screw the flare nuts to the outdoor unit coupling with the same tightening procedures described for the indoor unit.

Note: If the tightening torque is not sufficient, there will probably be some leakage. With excessive tightening torque there will also be some leakage, as the flange could be damaged.

10.2.10 Bleeding

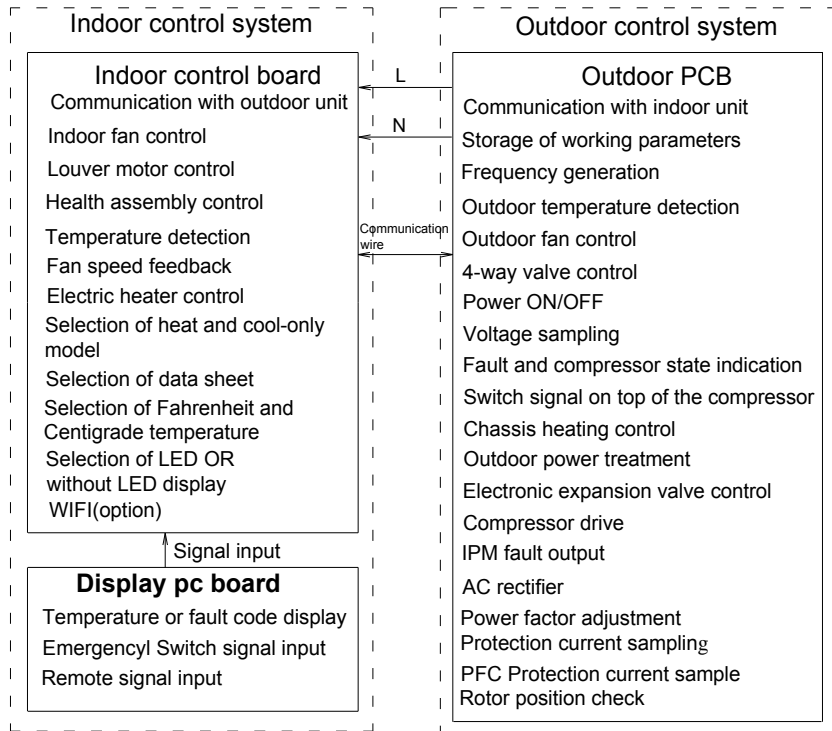
Air and humidity left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit by using a vacuum pump.

The air and humidity left inside the refrigerant circulation can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circulation using a vacuum pump.



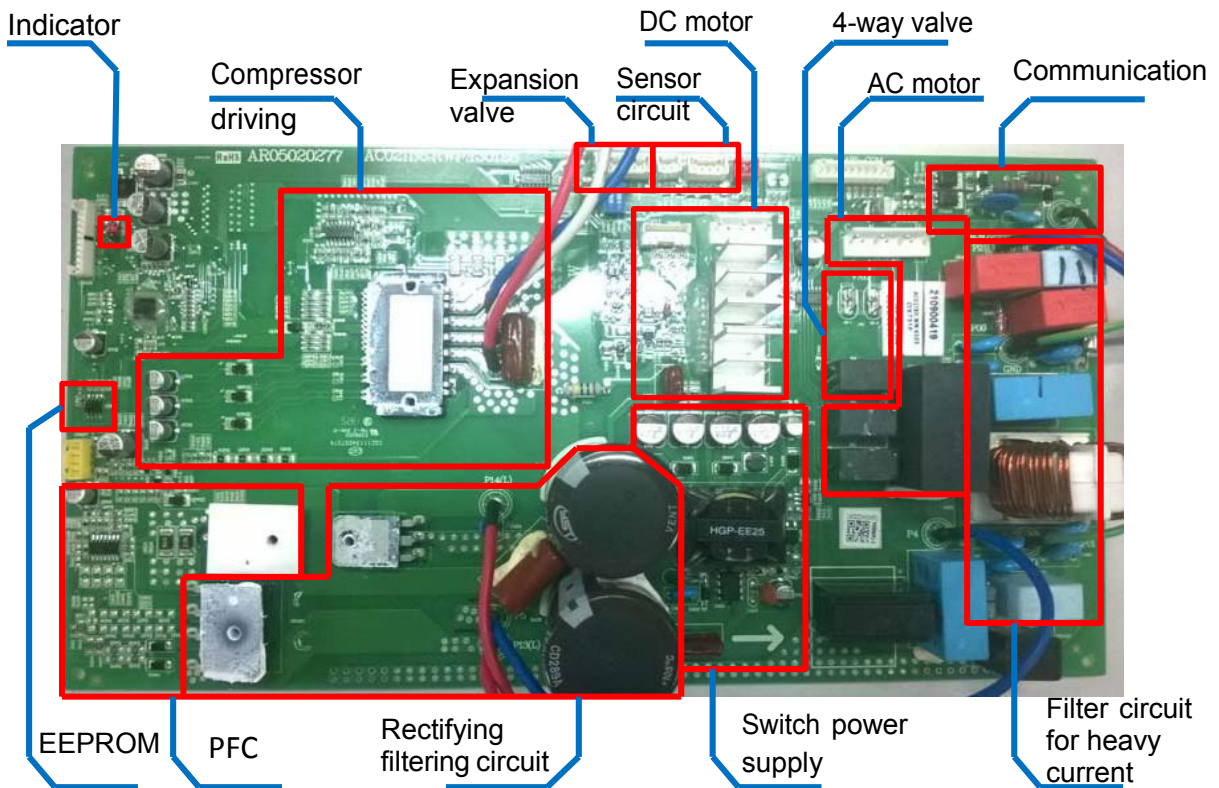
11. Trouble shooting

11.1 Outdoor control diagram



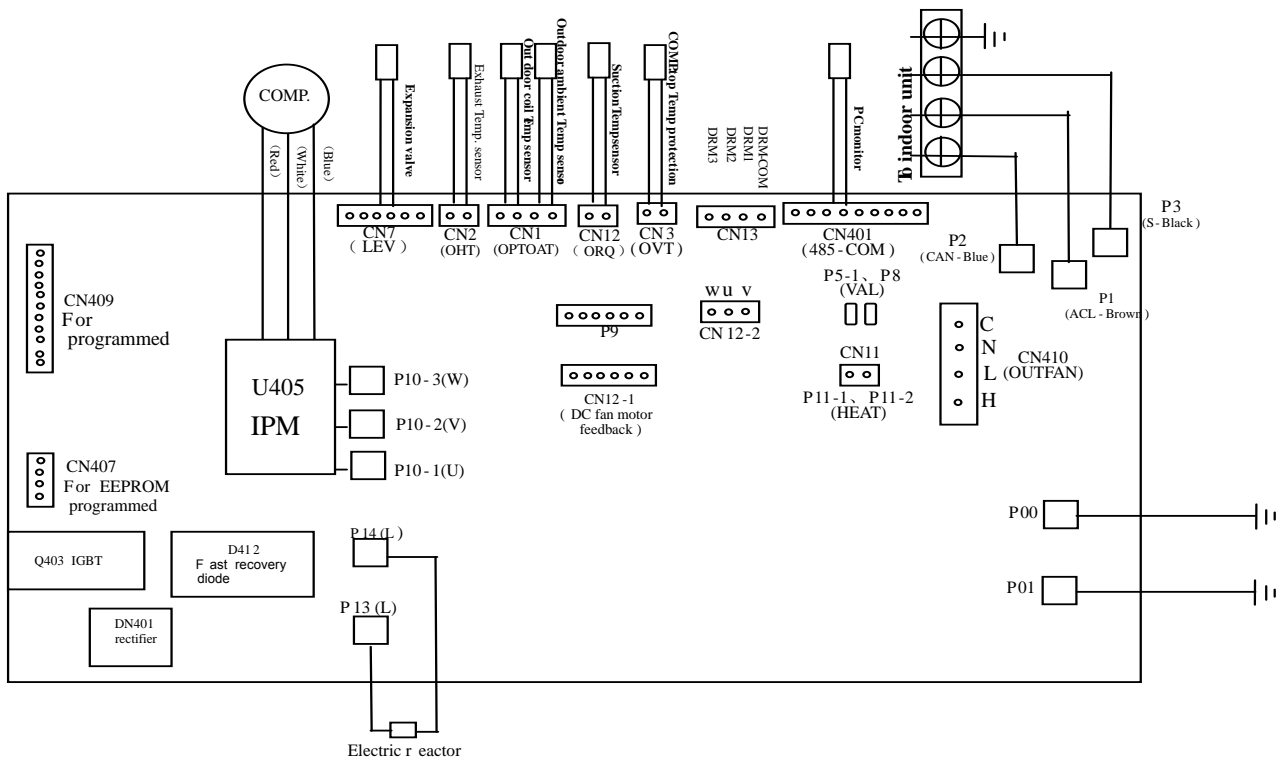
11.2 The structure of ODU PCB

CS-YE9WKU1/CU-YE9WKU1;CS-YE12WKU1/CU-YE12WKU1

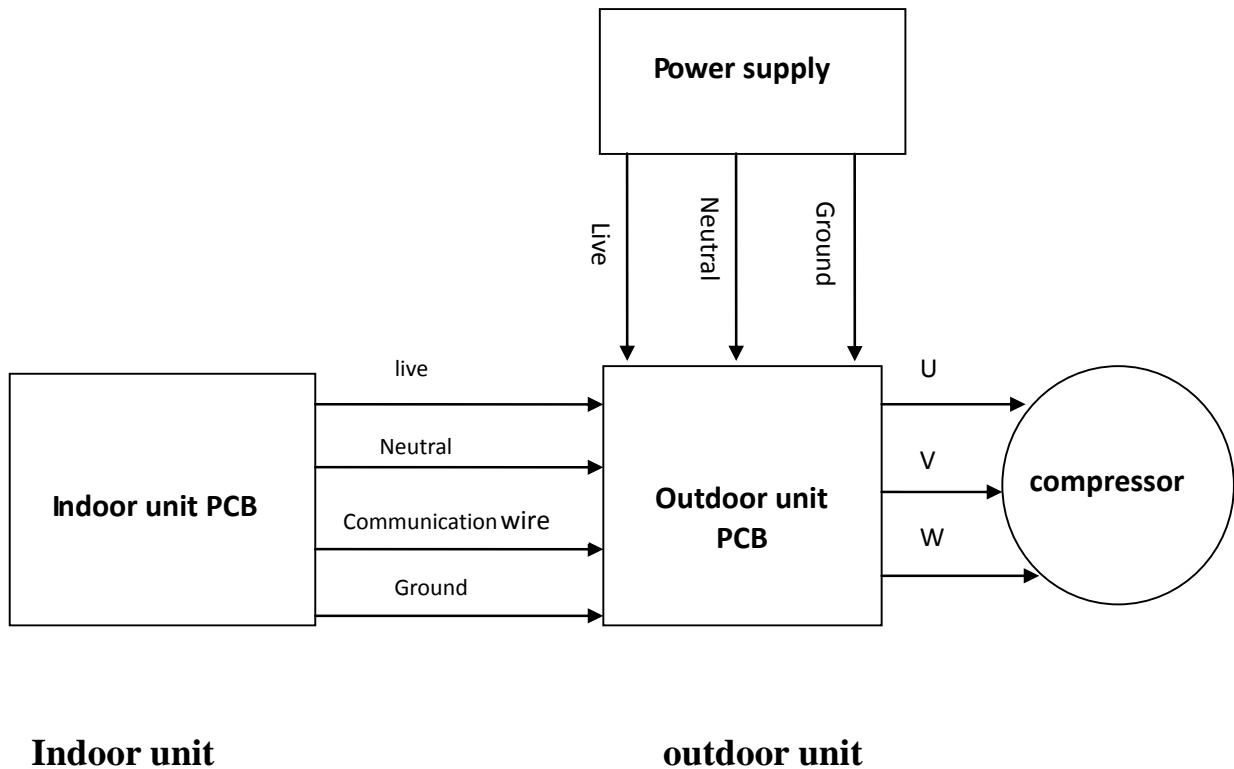


11.3 Connection of ODU PCB

CS-YE9WKU1/CU-YE9WKU1;CS-YE12WKU1/CU-YE12WKU1



11.4 Current flow

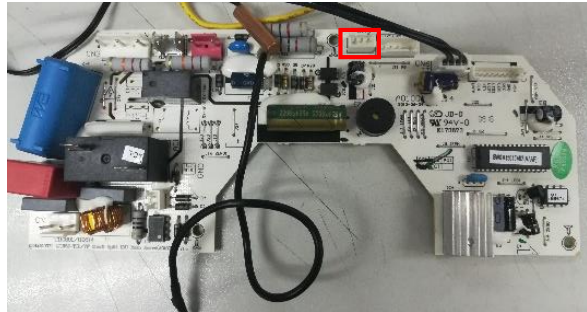
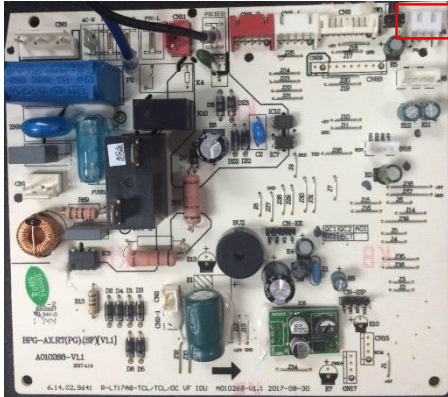


11.5 Examples of repairing

11.5.1 Display E1 or E2

Reasons:

- 1) The sensor connection terminal loose or not plugged in.



Solution: Check the connector of sensor and slot (CN6), if loose or not plugged in, please connect again.

- 2) Room temperature sensor (IRT) and Indoor pipe (coil) temperature sensor (IPT) damage (short or broken).

Solution: check the resistance of the sensor R (25°C) =5 kΩ, if short or broken please replace it.



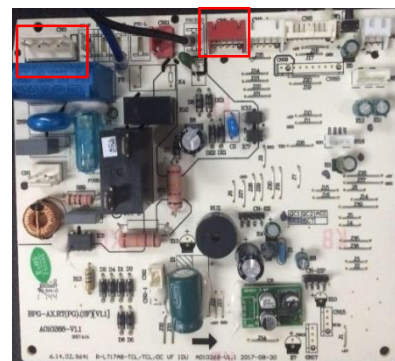
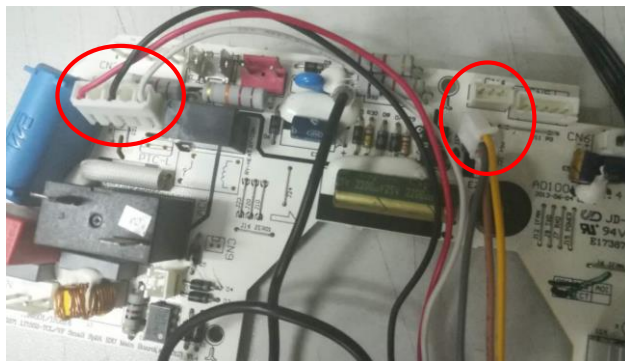
- 3) The PCB fail.

Solution: Replace the indoor main PCB.

11.5.2 Display E6

Reasons:

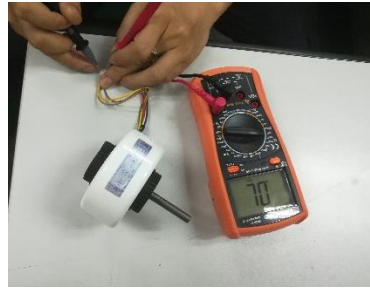
- 1) The indoor motor connection terminal loose or not plugged in.



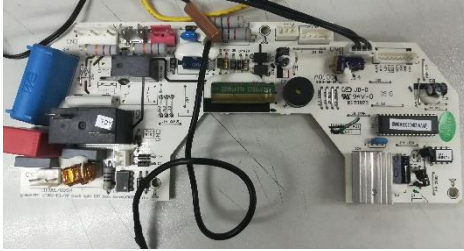
Solution: Check the connector of indoor motor and slot (CN3) and (CN4), if loose or not plugged in, please connect again.

- 2) The indoor motor damage.

Solution: Check and replace the motor.



3) The indoor main PCB damage.



Solution: Replace the indoor main PCB.

11.5.3 Display E3, E7

Reasons:

1) Outdoor pipe temp sensor, outdoor temp sensor connection terminal loose or not plugged in.



Solution: Check the connector of sensor and slot, if loose or not plugged in, please connect again.

2) Outdoor pipe temp sensor and outdoor temp sensor damage (short or broken).

Solution: Check and replace the sensor.



3) Outdoor PCB damage.

Solution: Check and replace the outdoor PCB.

11.5.4 Display E8

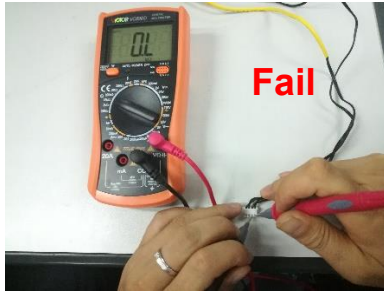
Reasons:

1) Outdoor discharge pipe temp sensor connection terminal loose or not plugged in.



Solution: Check the connector of sensor and slot, if loose or not plugged in, please connect again.

2) Outdoor pipe temp sensor damage.



Solution: Check and replace the sensor.

3) Outdoor PCB damage.

Solution: Check and replace the outdoor PCB.

11.5.5 Display E0,E5

Reason: Indoor / outdoor communication damage.

Description:

When unit works, the CPUs on IDU and ODU PCB will detect communication condition both side continuously, any time if the communication abnormal for 2 minutes constantly (with TXD out but no RXD received, for example), then the AC will be stopped to operate, and shows E0.

Solution:

(1). E0 found in the process of new unit installation, please check the wiring connection of IDU & ODU.

(2). Low insulation resistance will influence the TXD and RXD, try to replace a new communication wiring to connect IDU & ODU

Power off the unit and power on again after 3 minutes, check the status of GREEN LED on ODU PCB, (the green LED shows the communication condition)

① If the LED ON, then test voltage between 1 and N(2).

a. The voltage no change or change from 0~24V, -----replace IDU PCB.

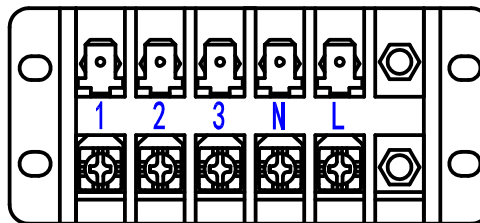
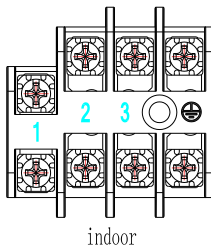
b. Voltage change from 0~13V, replace ODU PCB.

②. If the LED OFF, test voltage between L (3)& N(2).

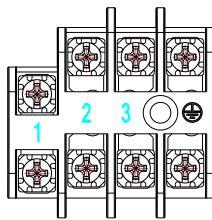
a. Without 115V, ----- check the power supply.

b. With 115V ----- replace ODU PCB.

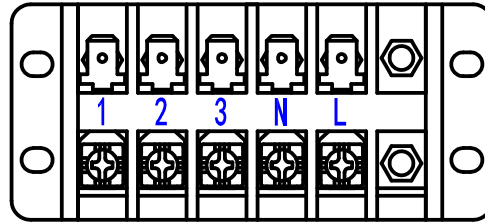
3) If the 1 & 2(N) which connect to indoor unit voltage is normal, measure the voltage between the outdoor terminal 1 and N. If the voltage change occurs between 0~12V(change pulse voltage), but there is no 24V, please replace outdoor PCB.



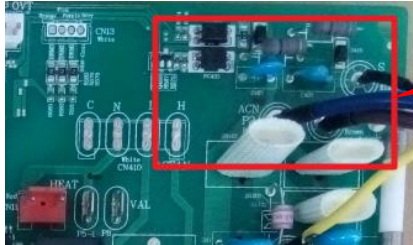
4) If the 1 & N voltage is normal, measure the voltage between the outdoor terminal 1 and N. If the voltage has no change, firstly replace the indoor main PCB. If the fault remains unsolved, replace the outdoor PCB.



indoor

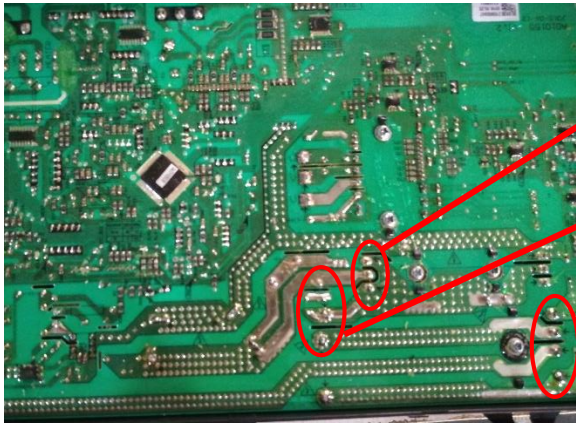


5) Communication fault if resistance or optical coupler broken, replace outdoor PCB.



Communication circuit

6) Is there any burnt on PCB? If no, test the rectifier, FRD, IGBT etc. any component broken, replace PCB.

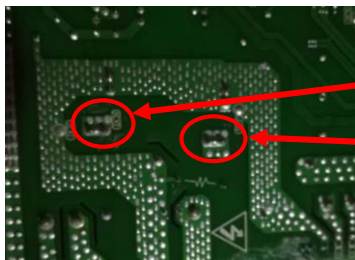


Any of 2 pins should be no short circuit

Any of 2 pins should be no short circuit

Any of 2 pins should be no short circuit

7) Test the DC voltage between DC+ and DC-. If the voltage is less than 50V approximately, please replace outdoor PCB.



DC-

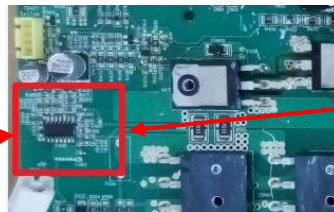
DC+

11.5.6 Display EA

Reason: Current sensor fault.

Solution:

- 1) Check for refrigerant leakage, to find the leakage point and recharge the refrigerant.
- 2) Current sampling circuit broken on the outdoor PCB and replace outdoor PCB.



Current sampling circuit

11.5.7 Display E9 (first display P0 or P9)

Reason: Outdoor PCB drive circuit damage.

Solution:

Re-energize and check the protection code on display. Firstly display P0.

- 1) If this code is displayed when the compressor is started for several seconds or even not started, check the compressor connection for correctness, if no insert wrong, replace outdoor PCB.



Compressor U,V,W connection

- 2) Check if the outdoor module is tightly installed onto the radiating fins and if the silicone is applied evenly, fix the screws again if loose.



Heat radiation problem easily happened while the screw is not fixed tightly.

- 3) Check the system pressure, recharge refrigerant if the pressure is low, and discharge some refrigerant if the pressure is too high.
 - 4) Check the outdoor ventilation and if there is any obstruction that affects the normal radiating of the air conditioner, and installation again.
 - 5) If the above inspections are normal, but the fault remains unsolved, please replace the outdoor PCB.
- Re-energize and check the protection code on display. Firstly display P9.
- a) Check the Compressor U, V, W connection, if is correctness or loose please connect again.



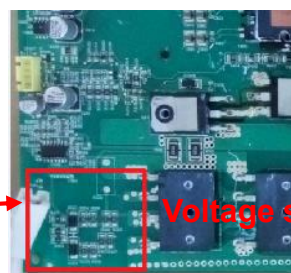
Compressor U, V, W connection

- b) If this code is displayed when the compressor is started for several seconds or even not started, check the compressor connection for correctness, if no insert wrong, replace outdoor PCB.

11.5.8 Display EU.

Reason: Voltage sensor damage.

Solution: Please replace outdoor PCB.

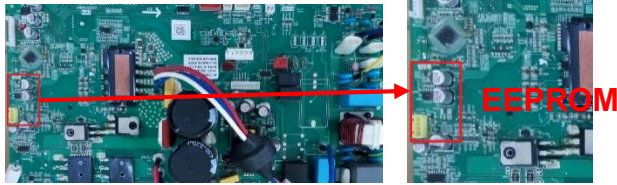


Voltage sensor

11.5.9 Display EE

Reason: EEPROM fault.

Solution: Shut down power supply and reenergize it, if the fault remains there, check the EEPROM installation, if no problem, please replace outdoor PCB.



11.5.10 Display CL

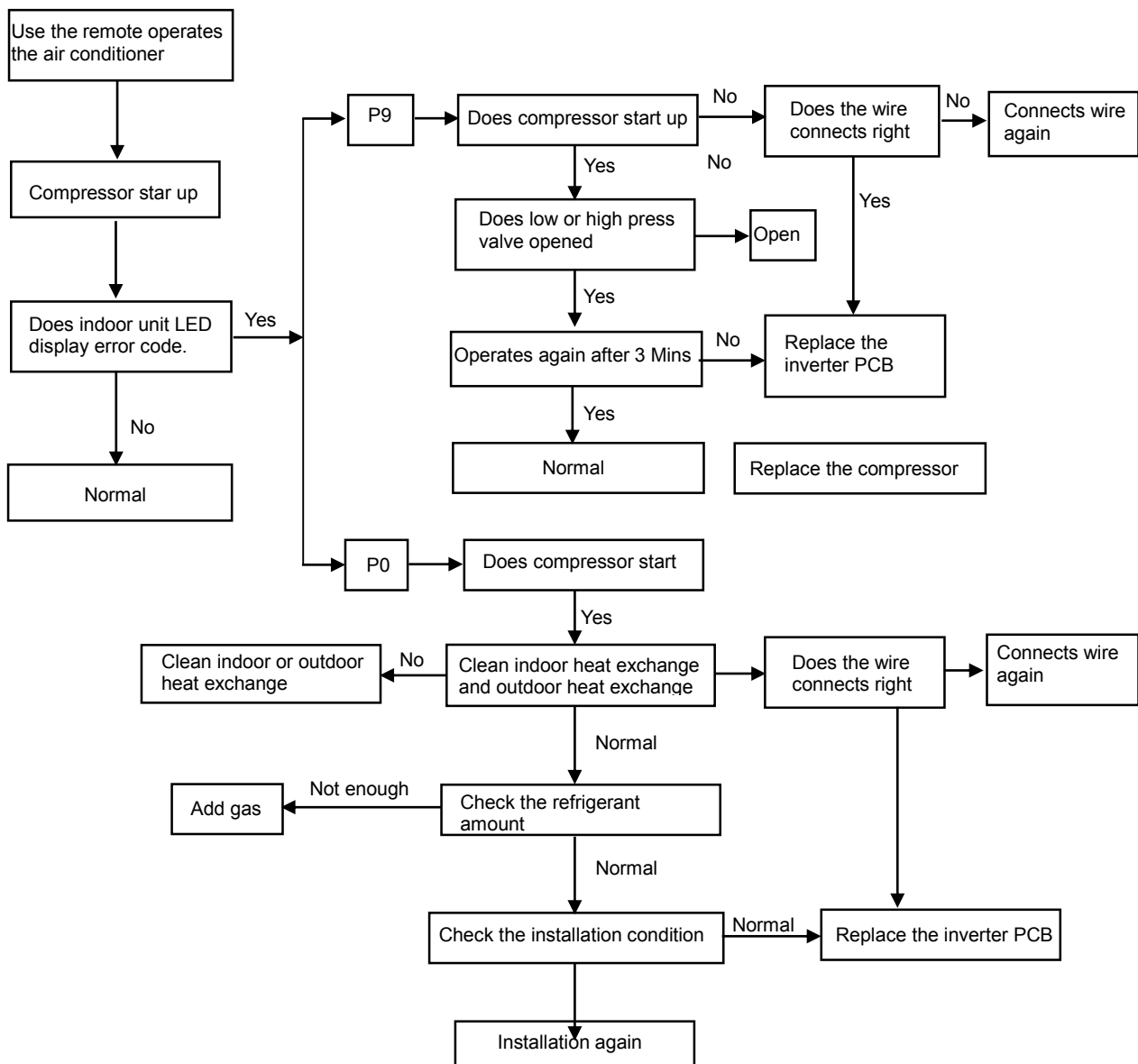
Cause: Air filter dirty, the unit operation Cumulative time 500 hours, the controller will confirmation the filter dirty and display CL.

Solution: Clean the air filter then cut off the power and supply again.

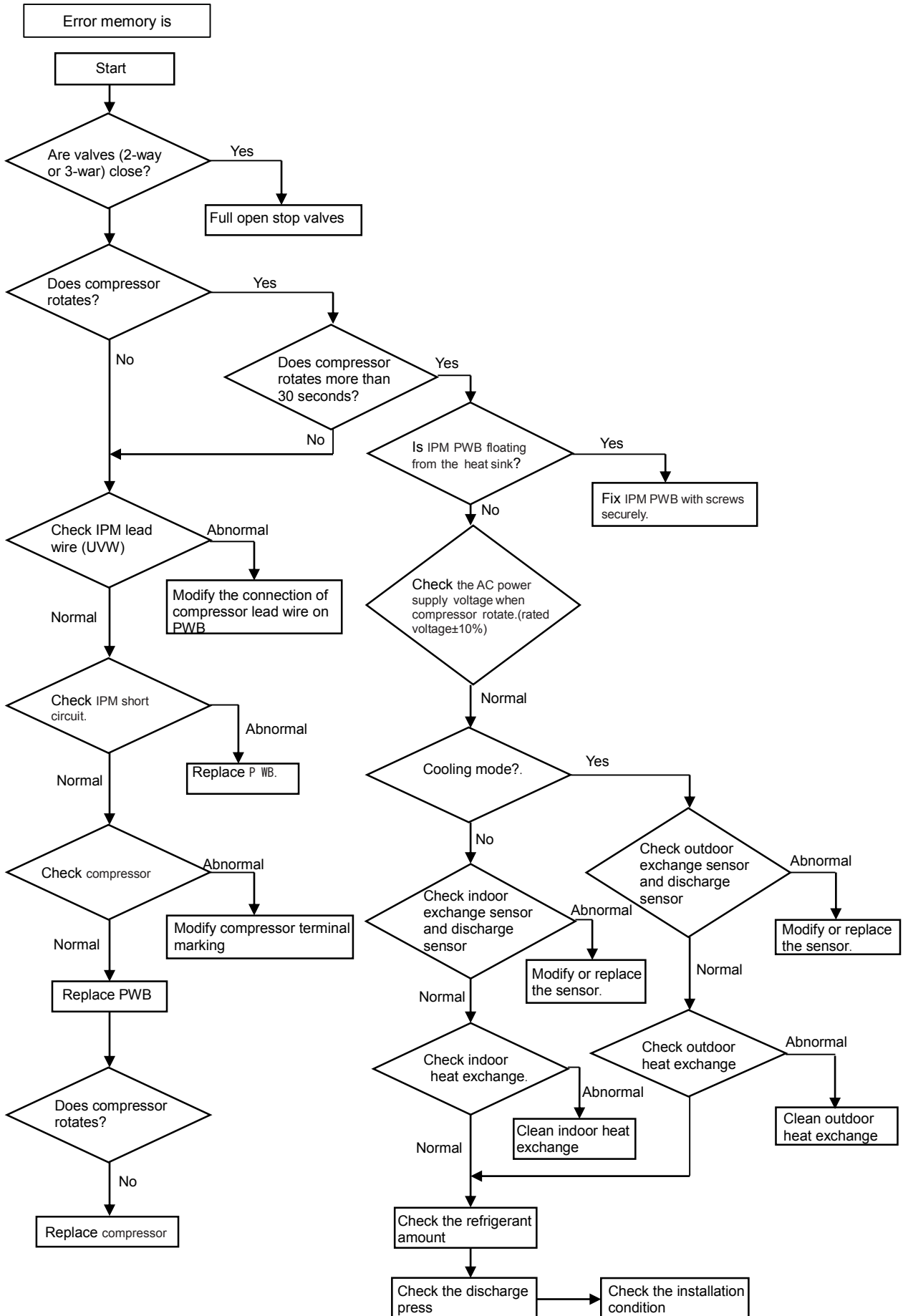
11.6 MALFUNCTION (PARTS) CHECK METHOD

11.6.1 Procedure for determining defective outdoor unit IPM/compressor

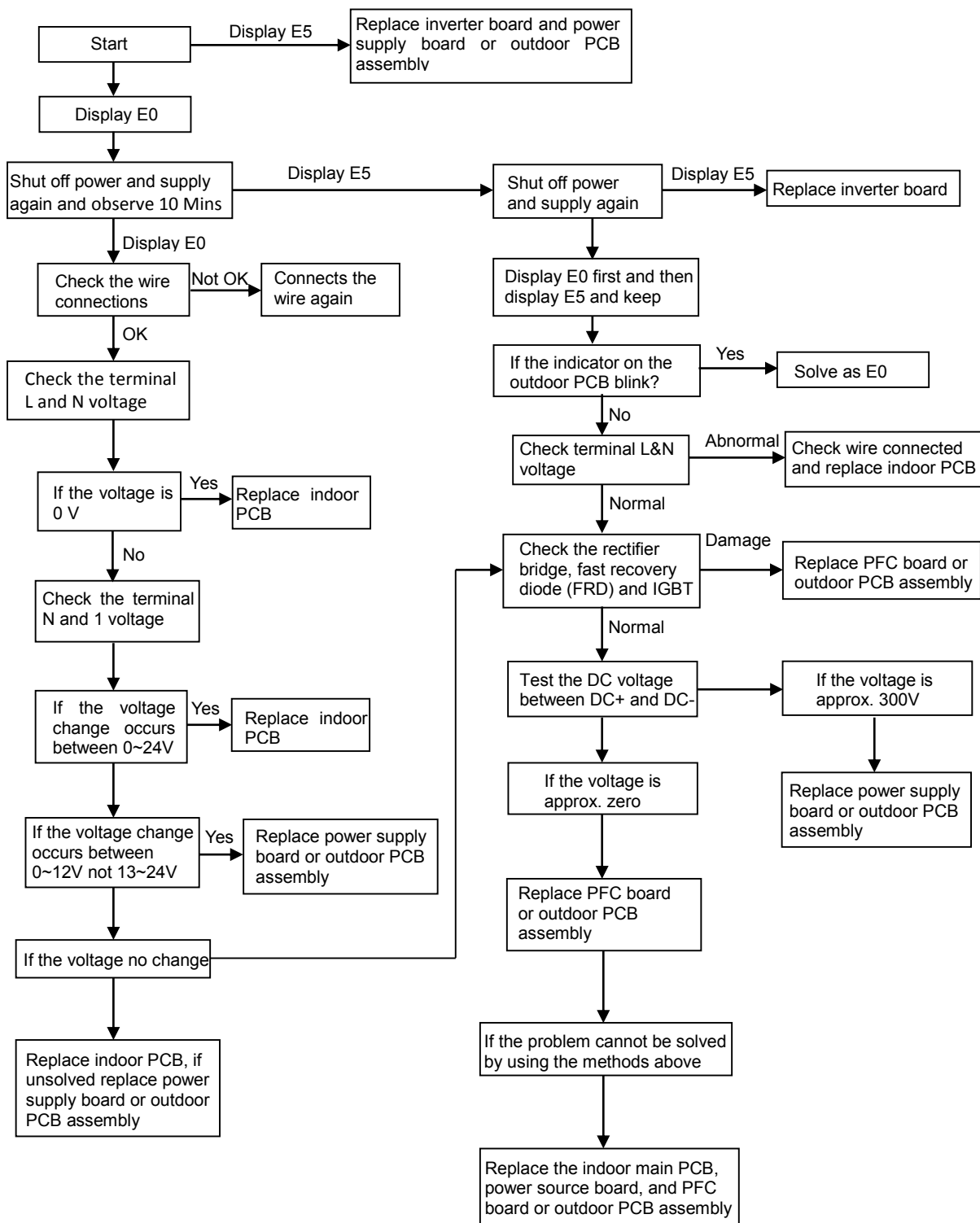
The following flow chart shows a procedure for locating the cause of a malfunction when the compressor does not start up and a DC overcurrent indication error occurs.



11.6.2 DC Over Current Error



11.6.3 E0,E5 Error

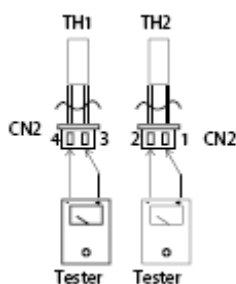


11.7 THERMISTOR TEMPERATURE CHARACTERISTICS

1. Indoor unit and outdoor exchange temperature and outside air temperature sensor temperature characteristics

TEMP. °C(°F)	Resistance (k Ohm)	Voltage of resistance	TEMP. °C(°F)	Resistance (k Ohm)	Voltage of resistance	TEMP. °C(°F)	Resistance (k Ohm)	Voltage of resistance
-30(-86)	63.513	4.628	15(59)	7.447	2.968	60(140)	1.464	1.115
-29(-84.2)	60.135	4.609	16(60.8)	7.148	2.918	61(141.8)	1.418	1.088
-28(-82.4)	56.956	4.589	17(62.6)	6.863	2.868	62(143.6)	1.374	1.061
-27(-89.6)	53.963	4.568	18(64.4)	6.591	2.819	63(145.4)	1.331	1.035
-26(-78.8)	51.144	4.547	19(66.2)	6.332	2.769	64(147.2)	1.290	1.009
-25(-77)	48.488	4.524	20(68)	6.084	2.720	65(149)	1.250	0.984
-24(-75.2)	45.985	4.501	21(69.8)	5.847	2.671	66(150.8)	1.212	0.960
-23(-73.4)	43.627	4.477	22(71.6)	5.621	2.621	67(152.6)	1.175	0.936
-22(-71.6)	41.403	4.452	23(73.4)	5.404	2.572	68(154.4)	1.139	0.913
-21(-69.8)	39.305	4.426	24(75.2)	5.198	2.524	69(156.2)	1.105	0.890
-20(-68)	37.326	4.399	25(77)	5.000	2.475	70(158)	1.072	0.868
-19(-66.2)	35.458	4.371	26(78.8)	4.811	2.427	71(159.8)	1.040	0.847
-18(-64.4)	33.695	4.343	27(89.6)	4.630	2.379	72(161.6)	1.009	0.825
-17(-62.6)	32.030	4.313	28(82.4)	4.457	2.332	73(163.4)	0.979	0.805
-16(-60.8)	30.458	4.283	29(84.2)	4.292	2.285	74(165.2)	0.950	0.785
-15(-59)	28.972	4.252	30(86)	4.133	2.238	75(167)	0.922	0.765
-14(-57.2)	27.567	4.219	31(87.8)	3.981	2.192	76(168.8)	0.895	0.746
-13(-55.4)	26.239	4.186	32(89.6)	3.836	2.146	77(170.6)	0.869	0.728
-12(-53.6)	24.984	4.152	33(91.4)	3.697	2.101	78(172.4)	0.843	0.710
-11(-51.8)	23.795	4.117	34(93.2)	3.563	2.057	79(174.2)	0.819	0.692
-10(-50)	22.671	4.082	35(95)	3.435	2.012	80(176)	0.795	0.675
-9(-48.2)	21.606	4.045	36(96.8)	3.313	1.969	81(177.8)	0.773	0.658
-8(-46.4)	20.598	4.008	37(98.6)	3.195	1.926	82(179.6)	0.751	0.641
-7(-44.6)	19.644	3.969	38(100.4)	3.082	1.883	83(181.4)	0.729	0.625
-6(-42.8)	18.732	3.930	39(102.2)	2.974	1.842	84(183.2)	0.709	0.610
-5(-41)	17.881	3.890	40(104)	2.870	1.800	85(185)	0.689	0.595
-4(-39.2)	17.068	3.850	41(105.8)	2.770	1.760	86(186.8)	0.669	0.580
-3(-37.4)	16.297	3.808	42(107.6)	2.674	1.720	87(188.6)	0.651	0.566
-2(-35.6)	15.565	3.766	43(109.4)	2.583	1.681	88(190.4)	0.633	0.552
-1(-33.8)	14.871	3.723	44(111.2)	2.494	1.642	89(192.2)	0.615	0.538
0(32)	14.212	3.680	45(113)	2.410	1.604	90(194)	0.598	0.525
1(33.8)	13.586	3.635	46(114.8)	2.328	1.567	91(195.8)	0.582	0.512
2(35.6)	12.991	3.590	47(116.6)	2.250	1.530	92(197.6)	0.566	0.499
3(37.4)	12.426	3.545	48(118.4)	2.174	1.495	93(199.4)	0.550	0.487
4(39.2)	11.889	3.499	49(120.2)	2.102	1.459	94(201.2)	0.535	0.475
5(41)	11.378	3.452	50(122)	2.032	1.425	95(203)	0.521	0.463
6(42.8)	10.893	3.406	51(123.8)	1.965	1.391	96(204.8)	0.507	0.452
7(44.6)	10.431	3.358	52(125.6)	1.901	1.357	97(206.6)	0.493	0.441
8(46.4)	9.991	3.310	53(127.4)	1.839	1.325	98(208.4)	0.480	0.430
9(48.2)	9.573	3.262	54(129.2)	1.779	1.293	99(210.2)	0.467	0.419
10(50)	9.174	3.214	55(131)	1.721	1.262	100(212)	0.455	0.409
11(51.8)	8.795	3.165	56(132.8)	1.666	1.231			
12(53.6)	8.433	3.116	57(134.6)	1.613	1.201			
13(55.4)	8.089	3.067	58(136.4)	1.561	1.172			
14(57.2)	7.760	3.017	59(138.2)	1.512	1.143			

Resistance at 25°C(77°F): 5 kΩ.



TH1: indoor room temperature sensor and outside air temperature sensor

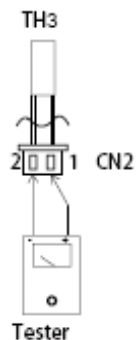
TH2: indoor exchange temperature sensor and outside exchange temperature sensor

Before measuring resistance, disconnect connectors as shown above.

2. Outdoor unit sensor temperature characteristics

TEMP. °C(°F)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	TEMP. °C(°F)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)	TEMP. °C(°F)	R min (k Ohm)	R(t) (k Ohm)	R max (k Ohm)
-30(-86)	283.3	322.9	367.7	24(75.2)	19.36	20.89	22.52	78(172.4)	2.563	2.654	2.745
-29(-84.2)	267.4	304.4	346.3	25(77)	18.55	20	21.54	79(174.2)	2.481	2.567	2.654
-28(-82.4)	252.5	287.1	307.4	26(78.8)	17.77	19.14	20.6	80(176)	2.402	2.484	2.567
-27(-89.6)	238.5	270.9	307.4	27(79.6)	17.03	18.32	19.7	81(177.8)	2.327	2.404	2.483
-26(-78.8)	225.4	255.7	289.8	28(82.4)	16.32	17.55	18.85	82(179.6)	2.254	2.327	2.401
-25(-77)	213.1	241.4	273.3	29(84.2)	15.65	16.81	18.04	83(181.4)	2.183	2.253	2.323
-24(-75.2)	201.5	228	257.9	30(86)	15	16.1	17.27	84(183.2)	2.115	2.182	2.248
-23(-73.4)	190.6	215.5	243.4	31(87.8)	14.39	15.43	16.54	85(185)	2.05	2.113	2.176
-22(-71.6)	180.3	203.6	229.8	32(89.6)	13.81	14.79	15.34	86(186.8)	1.985	2.047	2.109
-21(-69.8)	170.7	192.5	217	33(91.4)	13.25	14.18	15.17	87(188.6)	1.922	1.983	2.045
-20(-68)	161.6	182.1	205	34(93.2)	12.72	13.6	14.54	88(190.4)	1.861	1.922	1.983
-19(-66.2)	153.1	172.3	193.7	35(95)	12.21	13.05	13.93	89(192.2)	1.802	1.862	1.923
-18(-64.4)	145	163.1	183.2	36(96.8)	11.72	12.52	13.36	90(194)	1.746	1.805	1.865
-17(-62.6)	137.5	154.4	173.2	37(98.6)	11.26	12.01	12.81	91(195.8)	1.692	1.75	1.809
-16(-60.8)	130.3	146.2	163.9	38(100.4)	10.82	11.53	12.29	92(197.6)	1.639	1.697	1.755
-15(-59)	123.6	138.5	155.1	39(102.2)	10.29	11.07	11.78	93(199.4)	1.589	1.646	1.703
-14(-57.2)	117.3	131.3	146.8	40(104)	9.986	10.63	11.31	94(201.2)	1.54	1.596	1.653
-13(-55.4)	111.3	124.4	139	41(105.8)	9.6	10.21	10.85	95(203)	1.493	1.549	1.604
-12(-53.6)	105.6	118	131.7	42(107.6)	9.231	9.813	10.42	96(204.8)	1.448	1.502	1.558
-11(-51.8)	100.3	111.9	124.7	43(109.4)	8.878	9.43	10	97(206.6)	1.404	1.458	1.512
-10(-50)	95.24	106.2	118.2	44(111.2)	8.54	9.064	9.612	98(208.4)	1.362	1.415	1.469
-9(-48.2)	90.49	100.8	112.1	45(113)	8.217	8.714	9.233	99(210.2)	1.321	1.373	1.426
-8(-46.4)	85.99	95.68	106.3	46(114.8)	7.908	8.38	8.872	100(212)	1.284	1.335	1.387
-7(-44.6)	81.75	90.86	100.8	47(116.6)	7.612	8.06	8.526	101(213.8)	1.245	1.296	1.348
-6(-42.8)	77.74	86.31	95.74	48(118.4)	7.328	7.754	8.196	102(215.6)	1.209	1.258	1.309
-5(-41)	73.94	82.01	90.88	49(120.2)	7.057	7.461	7.88	103(217.4)	1.173	1.222	1.272
-4(-39.2)	70.35	77.95	86.29	50(122)	6.797	7.18	7.578	104(219.2)	1.139	1.187	1.236
-3(37.4)	66.96	74.11	81.96	51(123.8)	6.548	6.912	7.289	105(221)	1.105	1.153	1.202

-2(-35.6)	63.74	70.48	77.87	52(125.6)	6.309	6.655	7.013	106(222.8)	1.073	1.12	1.168
-1(-33.8)	60.69	67.05	74	53(127.4)	6.08	6.409	6.748	107(224.6)	1.042	1.089	1.136
0(32)	57.81	63.8	70.34	54(129.2)	5.861	6.173	6.495	108(226.4)	1.013	1.058	1.104
1(33.8)	55.08	60.72	66.88	55(131)	5.651	5.947	6.253	109(228.2)	0.9833	1.028	1.074
2(35.6)	52.49	57.81	63.61	56(132.8)	5.449	5.73	6.02	110(230)	0.9553	0.9997	1.045
3(37.4)	50.03	55.05	60.52	57(134.6)	5.255	5.522	5.798	111(231.8)	0.9283	0.9719	1.016
4(39.2)	47.71	52.44	57.59	58(136.4)	5.07	5.323	5.585	112(233.6)	0.9021	0.9451	0.9892
5(41)	45.5	49.97	54.82	59(138.2)	4.891	5.132	5.381	113(235.4)	0.8765	0.9191	0.9626
6(42.8)	43.41	47.62	52.2	60(140)	4.72	4.949	5.101	114(237.2)	0.8524	0.894	0.9367
7(44.6)	41.42	45.4	49.71	61(141.8)	4.556	4.774	4.997	115(239)	0.8087	0.8595	0.9117
8(46.4)	39.53	43.2	42.33	62(143.6)	4.398	4.605	4.817	116(240.8)	0.8059	0.8461	0.8875
9(48.2)	37.74	41.29	45.12	63(145.4)	4.247	4.448	4.644	117(242.6)	0.7837	0.8233	0.8641
10(50)	36.04	39.39	43.01	64(147.2)	4.101	4.288	4.479	118(244.4)	0.7623	0.8012	0.8413
11(51.8)	34.42	37.59	41	65(149)	3.961	4.139	4.32	119(246.2)	0.7415	0.7798	0.8193
12(53.6)	32.89	35.87	39.1	66(150.8)	3.827	3.995	4.167	120(248)			
13(55.4)	31.43	34.25	37.29	67(152.6)	3.698	3.858	4.021	121(249.8)	0.702	0.7386	0.7773
14(57.2)	30.04	32.71	35.58	68(154.4)				122(251.6)	0.6631	0.7195	0.7572
15(59)	29.72	31.24	33.95	69(156.2)				123(253.4)	0.6649	0.7007	0.7378
16(60.8)				70(158)	3.339	3.476	3.616	124(255.2)	0.6472	0.6824	0.7189
17(62.6)				71(159.8)	3.229	3.359	3.491	125(257)	0.6301	0.6647	0.7006
18(64.4)	25.13	27.26	29.55	72(161.6)	3.122	3.246	3.372	126(258.8)	0.6135	0.6476	0.6829
19(66.2)	24.05	26.07	28.23	73(163.4)	3.02	3.138	3.257	127(260.6)	0.5974	0.6309	0.6657
20(68)	23.02	24.93	26.97	74(165.2)	2.921	3.033	3.146	128(262.4)	0.5818	0.6148	0.649
21(69.8)	22.04	23.84	25.77	75(167)	2.827	2.933	3.04	129(264.2)	0.5667	0.5991	0.6328
22(71.6)	21.1	22.81	24.63	76(168.8)	2.735	2.836	2.938	130(266)	0.5521	0.5839	0.6171
23(73.4)	20.21	21.83	23.55	77(170.6)	2.647	2.743	2.84				

R—Resistance**Resistance at 25°C(77°F): 20 kΩ****TH3: Outdoor unit discharge pipe sensor****Before measuring resistance, disconnect connectors as shown above.**