

Royal Clima Inverter air
conditioner

Service Manual 2018

Models

RCI-E28HN

RCI-E37HN

RCI-E54HN

RCI-E72HN

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1. Important Notice

This service manual is intended for use by individuals possessing adequate background 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 parameters are subject to change due to technical modification or improvement without any prior notice. The accurate specifications are presented on the nameplate label.

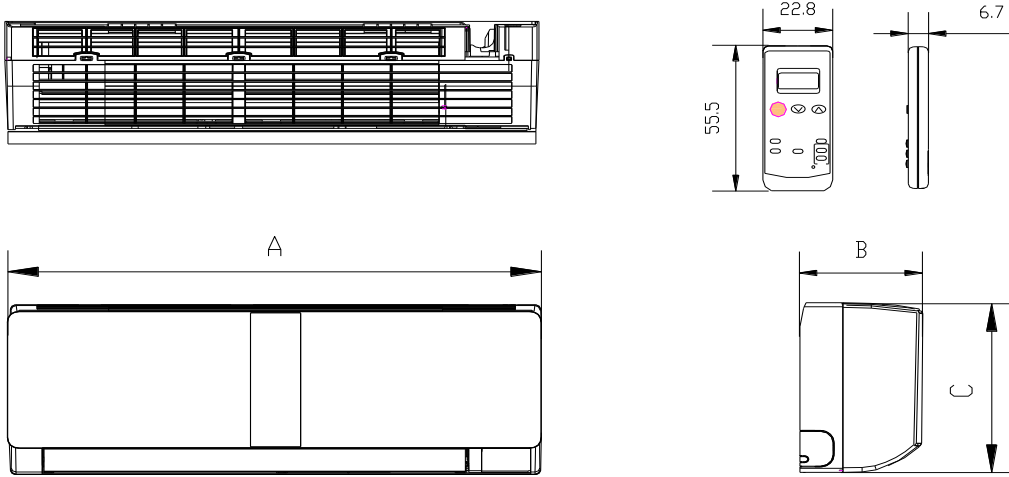
How to order spare parts

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

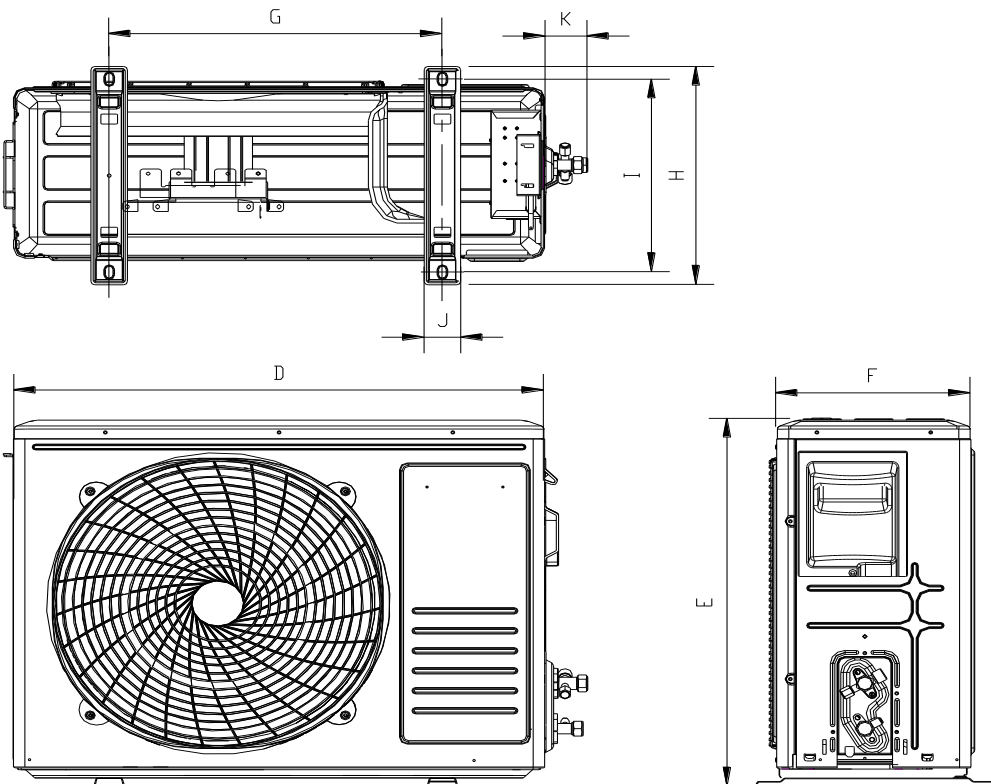
1. Model No. with Indoor or Outdoor
2. No. in the Explosion View
3. Part Name
4. The quantity you ordered

2. Product Dimensions

Indoor Unit:



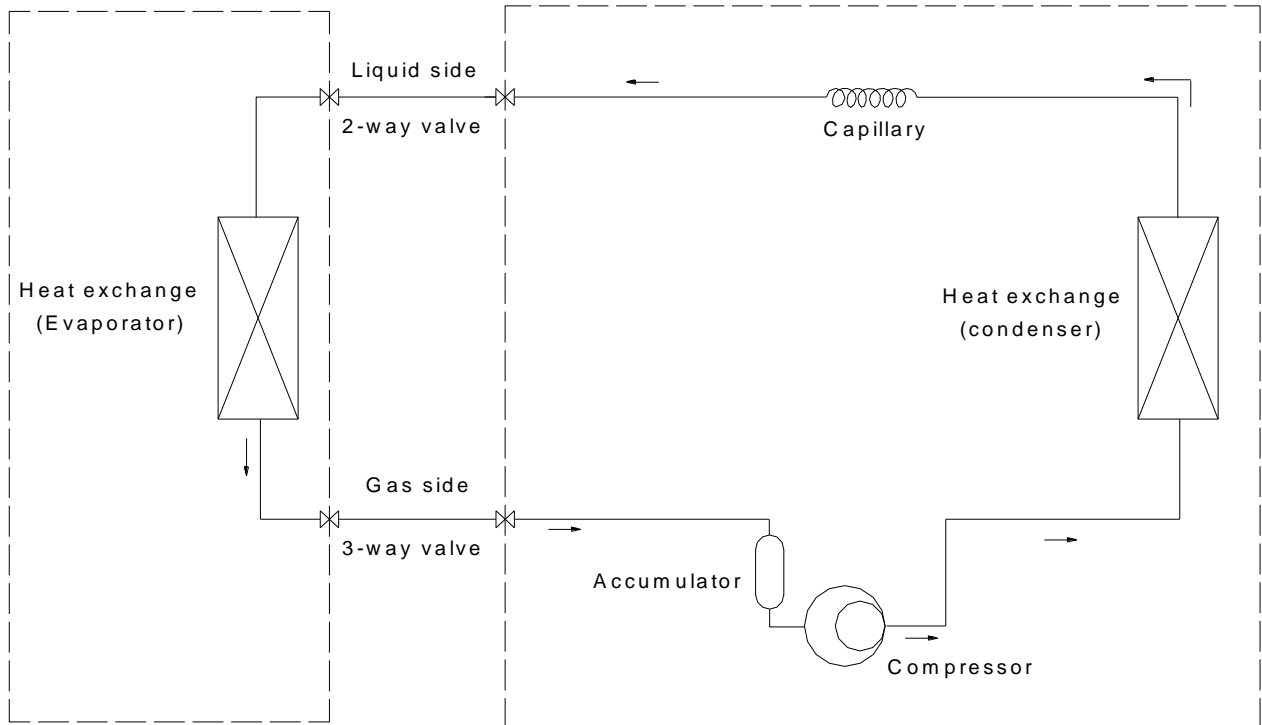
Outdoor Unit:



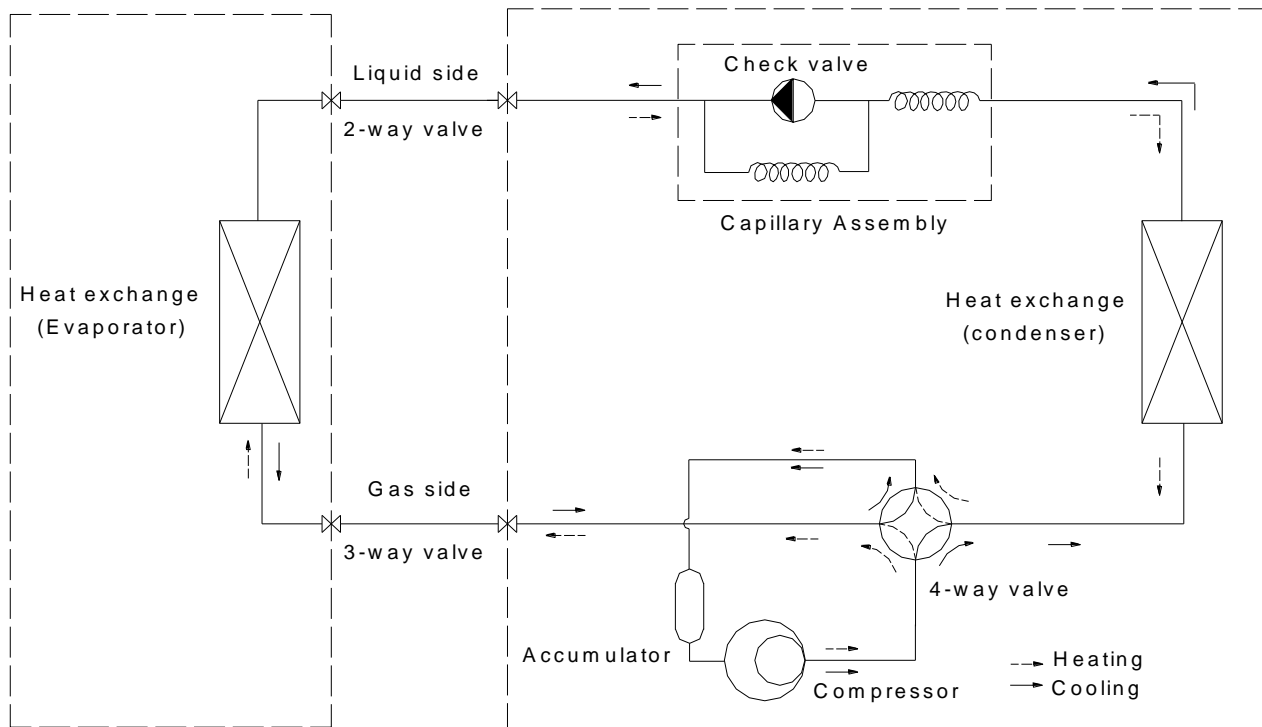
Model	A	B	C	D	E	F	G	H	I	J	K
9K	718	240	180	600	500	232	375	276	256	52	55
12K	770	240	180	700	552	256	439.2	302	277.8	48	55
18K	898	280	202	820	605	300	518	357	329	55	63
24K	1033	202	313	902	650	307	753.5	399	349	65	63

3. Refrigeration cycle diagram

Cooling only

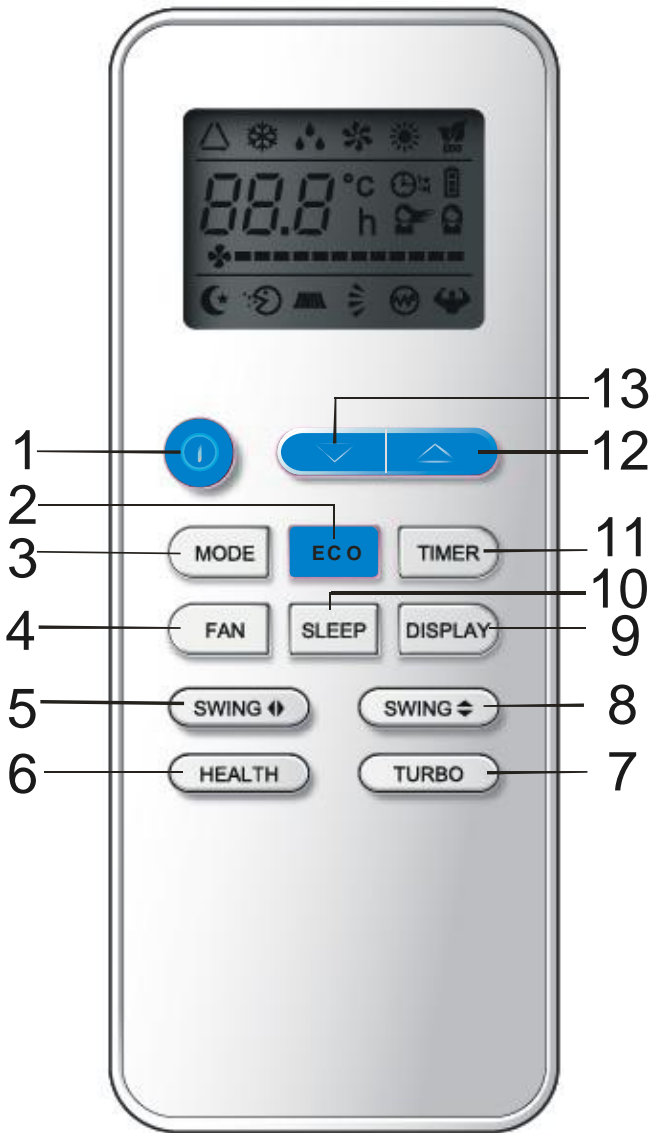


Heat pump



4. Operation details

Remote controller



- 1 ON/OFF button**
To switch the conditioner on and off.
- 2 ECO button**
In cooling mode, press this button, the temperature will increase 2°C on the base of setting temperature: In heating mode, press this button, the temperature will decrease 2°C on the base of setting temperature.
- 3 MODE button**
To select the mode of operation.
- 4 FAN SPEED button**
To select the fan speed of auto/low/mid/high.
- 5 SWING button**
To activate or deactivate of the movement of the "DEFLECTORS" .
- 6 HEALTH button**
To switch - on /off HEALTHY function. It is a button which controls the ionizer or plasma generator only for inverter type.
- 7 TURBO button**
In cooling mode, press this button, the unit will give the maximum cooling temperature with 16°C. In heating mode, press this button, the unit will give the maximum heating temperature with 31°C.
- 8 SWING button**
To activate or deactivate of the movement of the "DEFLECTORS" .
- 9 DISPLAY button**
To switch on/off the LED display (if present)
- 10 SLEEP button**
To activate the function "SLEEP" .
- 11 TIMER button**
To set automatic switching-on/off.
- 12 TEMP UP button**
Increase the temperature or time by 1 unit.
- 13 TEMP DOWN button**
Decrease the temperature or time by 1 unit.

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

Remote controller:

The remote controller is not preset as Cooling Only Air Conditioner or Heat Pump by manufacturer.

Each time after the remote controller replace batteries or is energized, the arrow head will flash on the front of **Heat** or **Cool** on LCD of the remote controller.

User can preset the remote controller depending on the air conditioner type you have purchased as follows:

Press any button when the arrow head flashes on the front of **Cool**, Cooling Only is set.

Press any button when the arrow head 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.

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 CANNOT preset the Heating operation with the remote controller.

Electronic Controller

1. Safety Protection

- (1) Time Delay for Safety protection

- 3minutesdelayforcompressor---Thecompressorisceasedfor3minutesbefore restarting to balancethe pressure in the refrigeration cycle in order to protect the compressor.
 - 2minutesdelayfor4-wayvalve---The4-wayvalvewillbeceasedfor2minuteslateaftercompressor 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 shutdown the compressor and the display board will show the error code.
 - (3) Low voltage protection
When AC voltage $\leq 158V$ and keep it for 10 seconds, unit will be shutdown for protection.
 - (4) Overvoltage protection
When AC voltage $\geq 260V$, unit will be shutdown and recover while $AC \leq 255V$.
 - (5) Overcurrent protection
When the current of outdoor unit is overload, controller shutdown 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 shutdown, and show error code.
 - (7) IPM module protection
IPM module has high temperature & overcurrent protection itself, if there is signal feedback to IPM, the outdoor unit will shutdown, LED on outdoor PCB will show the error code.

2. “IFeel” Mode Operation

- (1) When the “IFeel” 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.
- (2) If the mode is changed to “IFeel” from other mode, the “IFeel” mode does not operate until compressor stop for more than 3 minutes.

Mode	Initial Room Temperature	Initial Set Temperature
COOLING	RT=26°C	23°C
DRY	26°C > RT ≥ 20°C	RT-2°C
HEATING for Heat Pump/ FAN for Cooling Only	RT < 20°C	-

- In the “IFeel” mode, when the controller receives the up or down signal of temperature, the set temperature can adjust by 1°C upper or lower. The biggest you can adjust by 2°C 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.

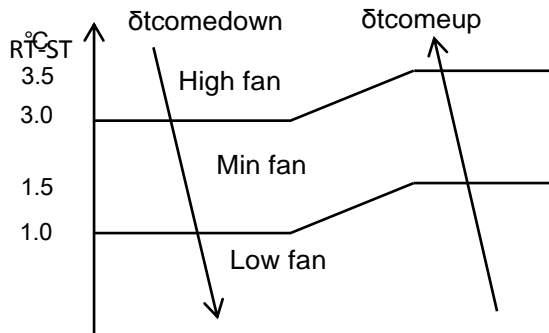
- (2) Outdoor temperature affects running frequency of the compressor

Outdoor temperature affects compressor’s running frequency. Difference in 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, the controller will shutdown compressor and show error code, while the ambient temperature is over 1 °C, the compressor will run automatically.

(3) Auto fan control in cooling mode

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

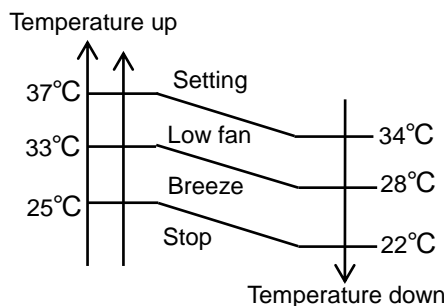


4. "DRY" Mode Operation

- (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". After that, the system will operate in cooling mode with lowest fan speed for 30 minutes and then change to middle speed for 30 seconds 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 $RT \leq 12^\circ C$, the compressor will stop and operates again at $RT \geq 14^\circ C$.

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

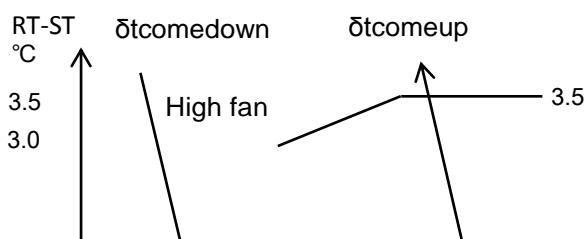
- (1) Frequency control
Same as the frequency control in cooling mode, the running frequency of compressor is controlled by controller. Unit change its running frequency according to δt to make the room temperature closing to the set temperature.
- (2) Indoor fan motor control
 - 1) Cold Air Prevention 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.

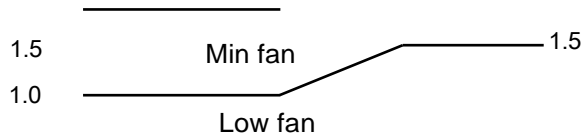


- In heating operation, if air conditioner turn off, the indoor fan motor will run most for 30 seconds since the stop of compressor.

2) Auto fan control (heating)

In heating mode (include in "I 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.

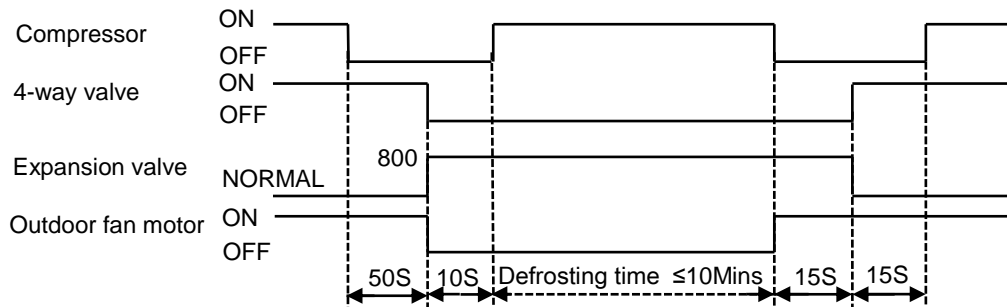
(4) Defrosting

Defrosting is controlled by the microprocessor.

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

- a. Outdoor heat exchanger Temperature (OPT) is continuously less than 3 °C while the unit runs for more than 40 minutes, and OPT is keeping under -6 °C for more than 3 minutes.
 - b. Outdoor heat exchanger Temperature (OPT) is continuously less than 3 °C meanwhile the unit runs for more than 80 minutes, and OPT is keeping under -4 °C for more than 3 minutes.
 - c. Outdoor heat exchanger Temperature (OPT) is continuously less than 3 °C while the unit runs for more than 120 minutes, and OPT is keeping below -2 °C for more than 3 minutes.
- Before the air comes into defrosting, compressor running frequency drops 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 functions are available.



In defrosting, LED showing by winking.

No matter what AC

comes 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:

- a. Outdoor coil Temperature (OPT) ≥ 15 °C.
- b. 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,

unit comes into indoor exchanger overheat protection. The compressor drops its frequency toward to F1 level until IPT ≤ 52 °C

If IPT ≤ 52 °C and keep for 5 minutes, control system doesn't limit running frequency.

If IPT > 62 °C, control system shutdown compressor, and recover while IPT drops less than 50 °C.

5. "SLEEP" mode

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

- The indoor fans 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 1 hour later and by 2°C 2 hours later.
- When selecting HEATING operation with SLEEP mode, the set temperature will be dropped by 1°C 1 hour later and 2°C 2 hours later.
- After the System operates in SLEEP mode for 8 hours, it will stop automatically.

6. EMERGENCY Operation

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

When the remote controller is 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.

7. AUTO-RESTART Function (Option)

While the 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 cutoff 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 has been activated.

8. 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 related 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 failure	RUN、TIMER—bothwinking	E0
Outdoor communication failure	RUN、TIMER—bothwinking	EC

Indoorroom temperature sensor (IRT)	RUN-1time/8s	E1
Indoor coiltemperaturesensor (IPT)	RUN-2times/8s	E2
Outdoor coil temperature sensor (OPT)	RUN-3times/8s	E3
Systemabnormity	RUN-4times/8s	E4
Model configuration wrong	RUN-5times/8s	E5
Indoor fanmotor fault	RUN-6times/8s	E6
Outdoortemperaturesensor	RUN-7times/8s	E7
Exhaust temp. sensor	RUN-8times/8s	E8
IPM drive and module fault	RUN-9times/8s	E9
Outdoor fan motor fault (DC motor)	RUN-10times/8s	EF
Current sensor fault	RUN-11times/8s	EA
Indoor unit EEPROM fault	RUN-12times/8s	EE
Temp. switch fault (on top of the compressor)	RUN-13times/8s	EP
Voltage sensor fault	RUN-14times/8s	EU

● Protection display code list:

Protection Type	Function Indicator (flash)	DigitalLEDCode
Overvoltage /lower voltage protection	RUN: Blink; TIMER: 1 blink /8 sec	P1
Overcurrent protection	RUN: Blink; TIMER: 2 blink /8 sec	P2
Exhaust overtemperature 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 overtemperature / 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 failedisplay

ThereisaLEDonoutdoorpowerboard,it blinks 1s ON and 1s OFF while compressor standby and it always light (ON) while compressorrunning;lfthere is failurehappened 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:

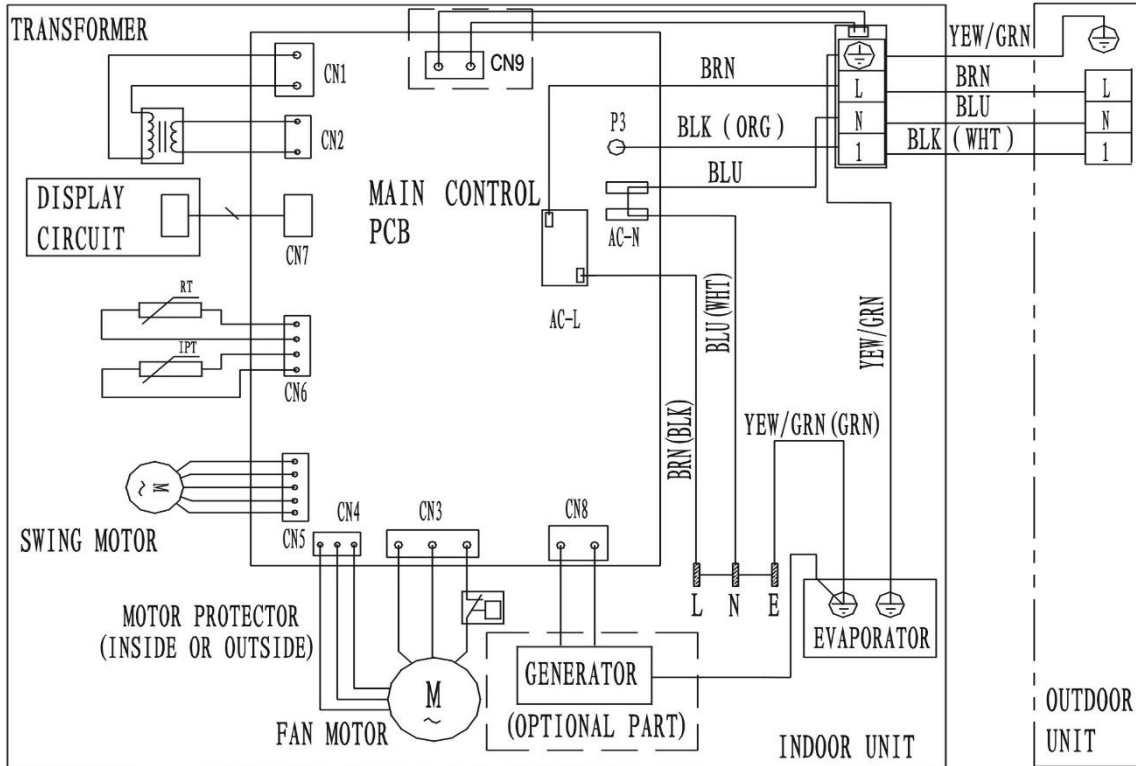
Display on outdoor power source board:

blink time (n)	Failure
1	IPM protection
2	Overvoltage /lower voltage
3	Overcurrent
4	Exhaust overtemperature protection
5	Outdoor coil overtemperature 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

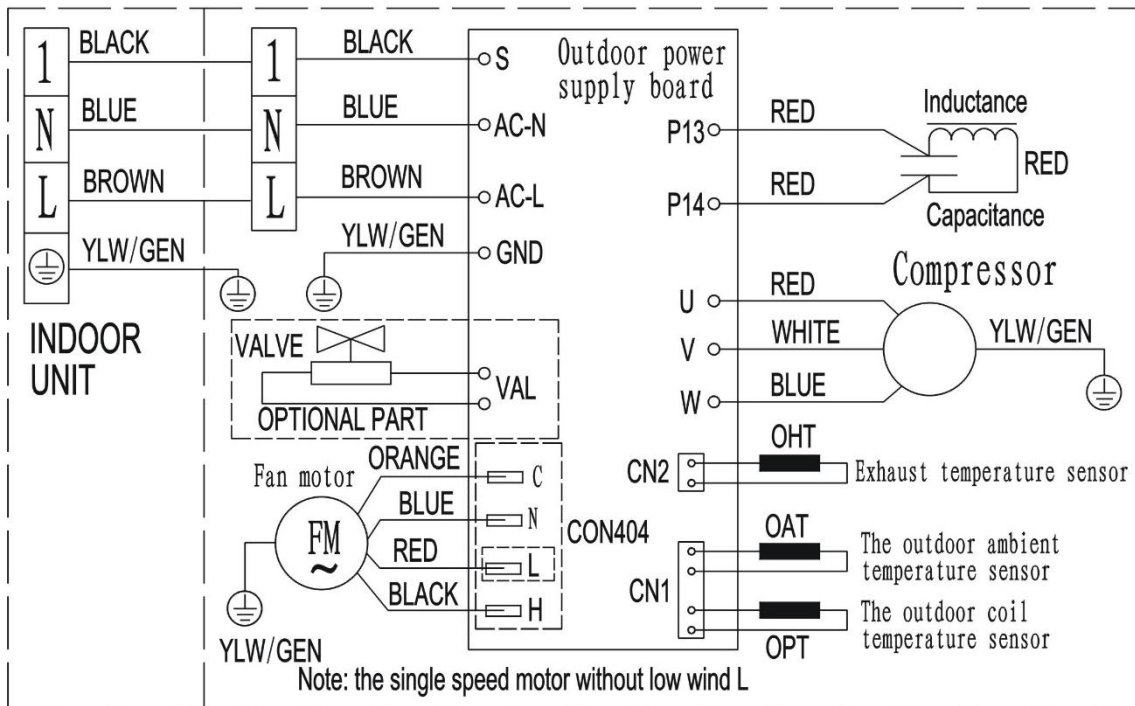
6.Wiring diagram

MODEL:RCI-E28HN,RCI-E37HN

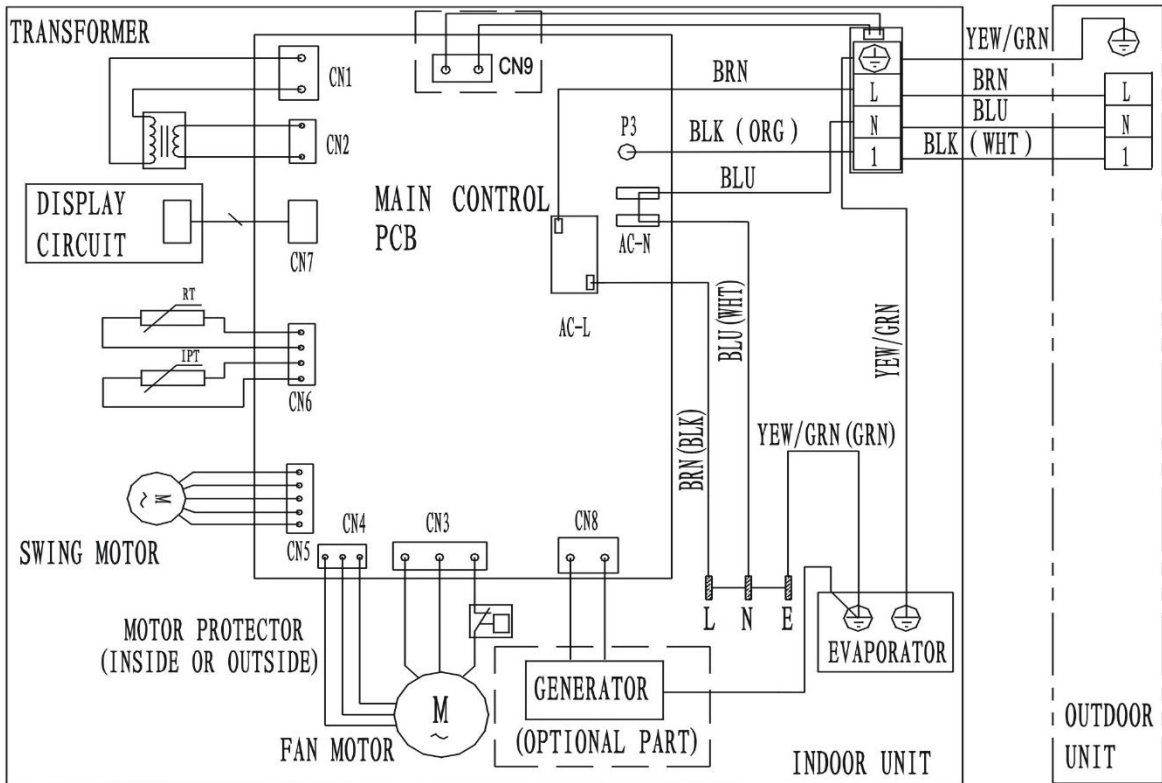
INDOORUNIT:



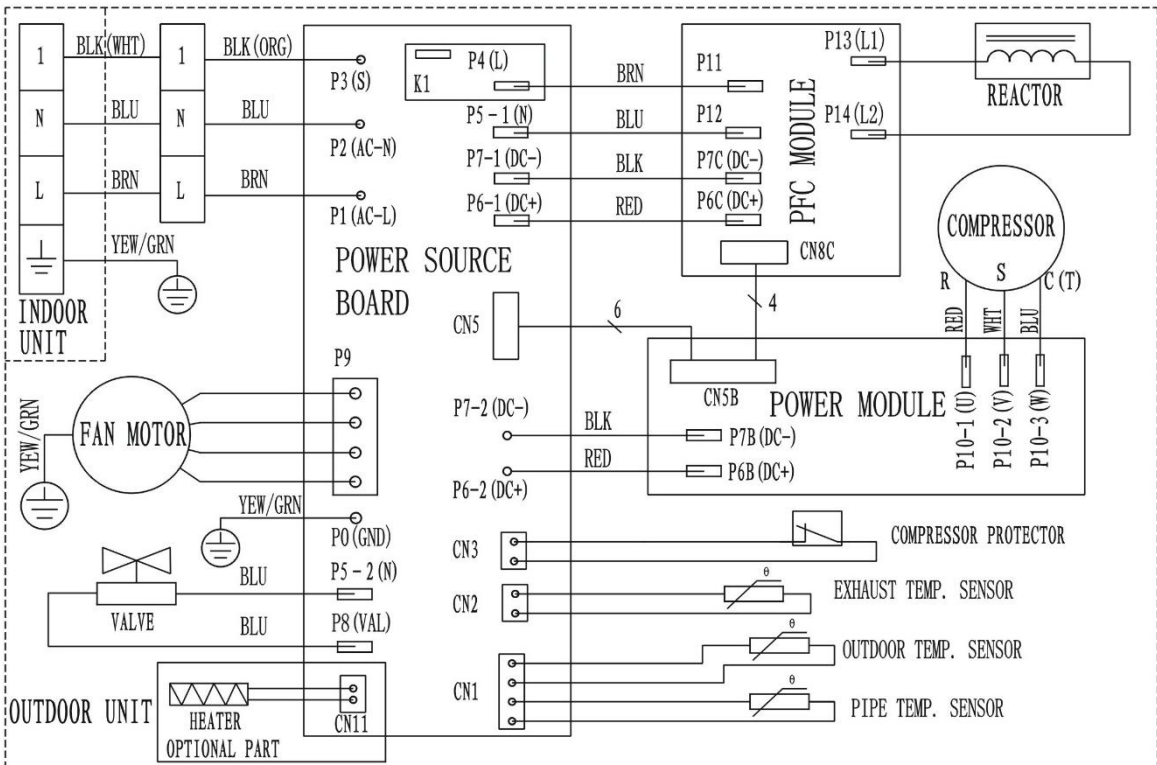
OUTDOORUNIT



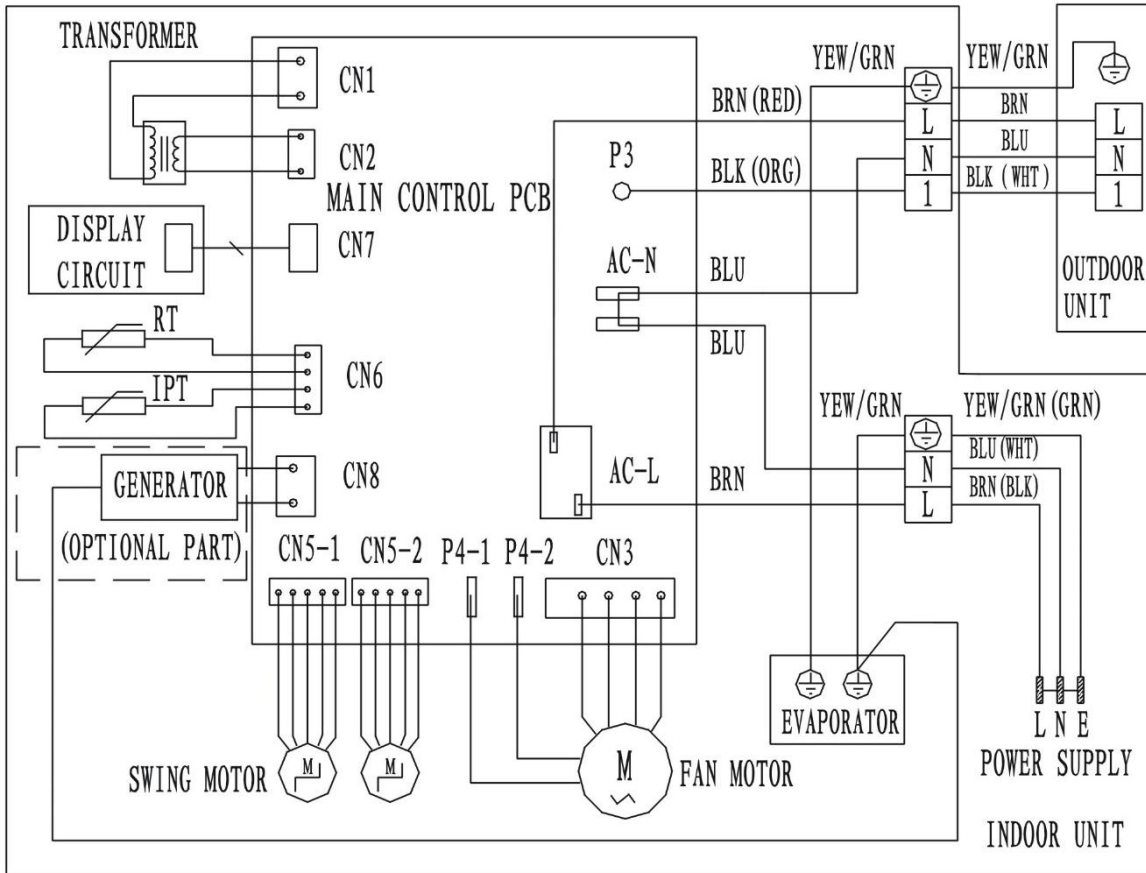
MODEL:RCI-E54HN
INDOOR UNIT



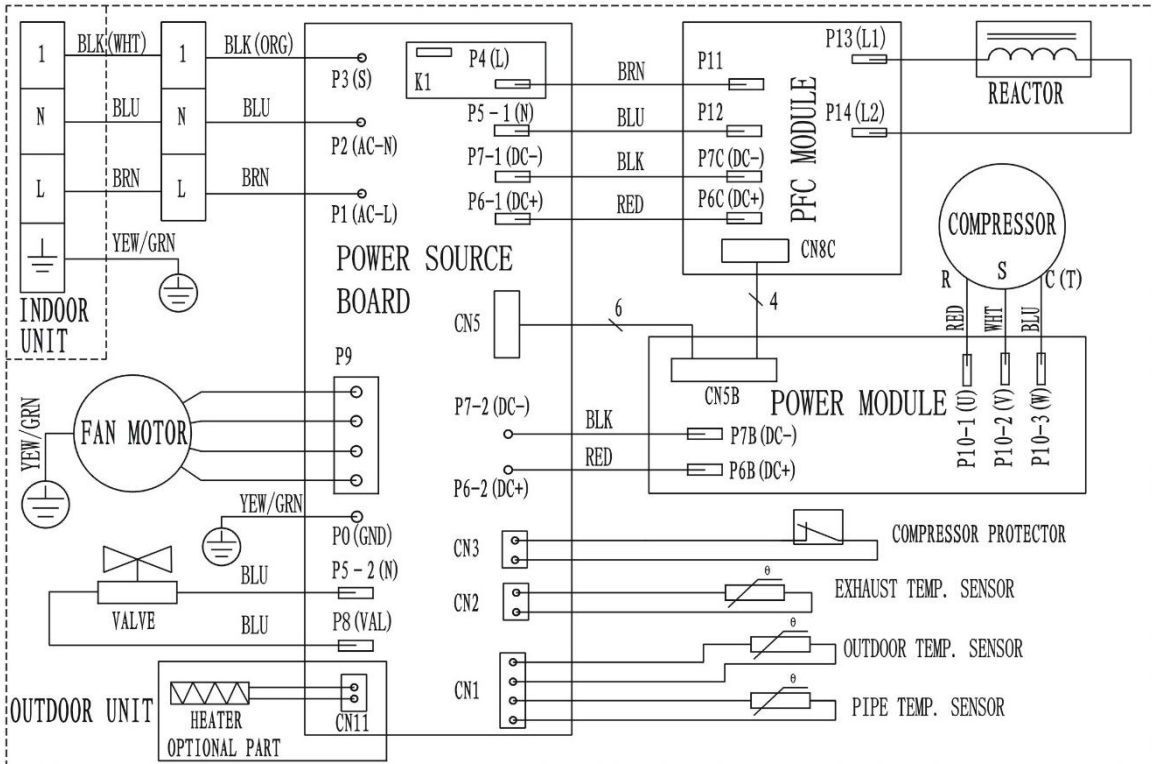
OUTDOOR UNIT



MODEL: RCI-E72HN
INDOOR UNIT



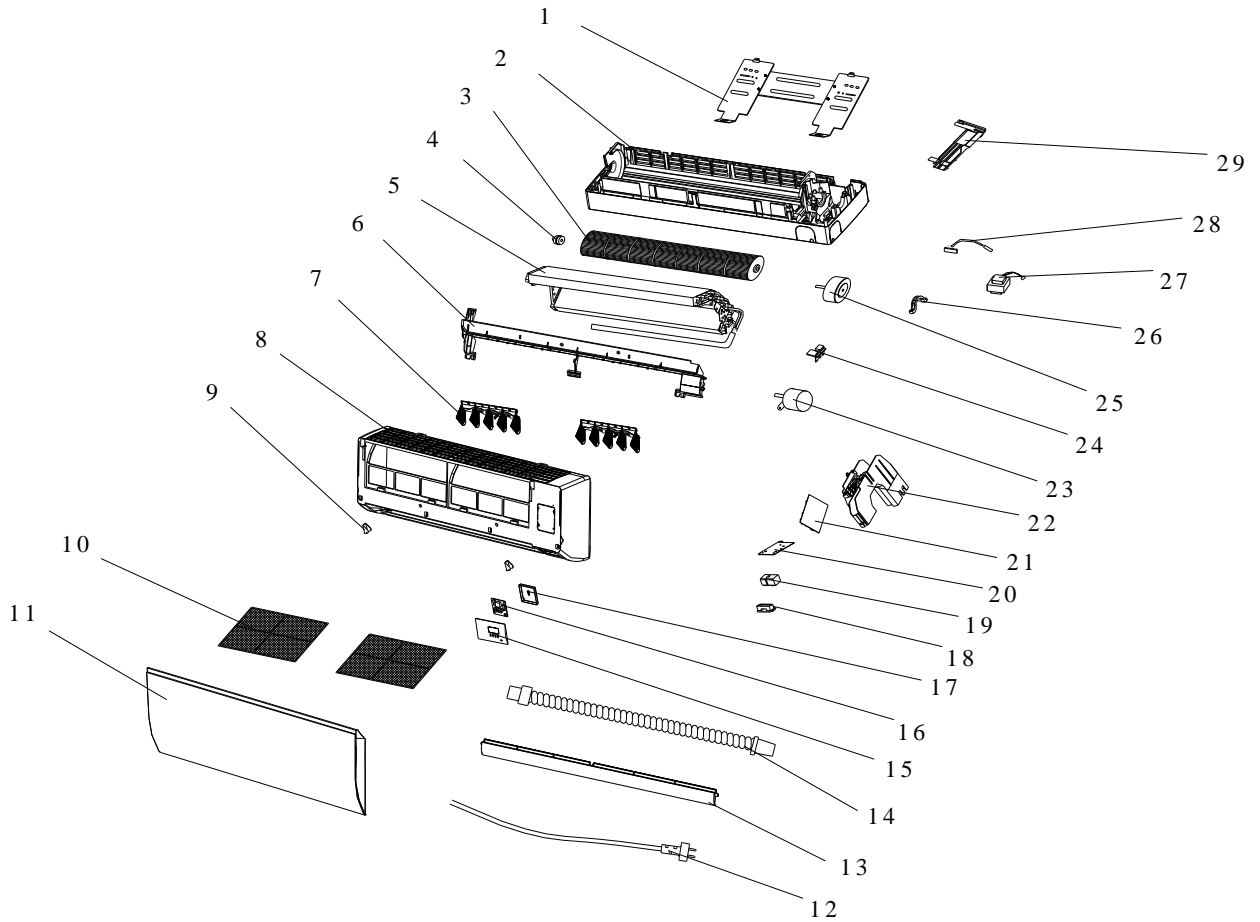
OUTDOOR UNIT



7. Explosion view and parts

Mode:RCI-E28HM/N,RCI-E37HM/N, RCI-E54HM/N

INDOORUNIT:



Parts List**Indoor Unit- RCI-E28HN/IN**

No.	Part No.	Part Name	Q'ty	Remark
1	1080030003	Installation Plate	1	
2	1080320807AC	Base	1	
3	1070020017AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	211230474	Evaporator	1	
6	210736244	Water Drainage Assembly	1	
7	1070321035	Vertical Vane Assembly	2	
8	1070251841AN	Face Frame	1	
9	1070321022AC	Screw Cover	2	
10	1070250106	Air Filter	2	
11	210705782A	Front Panel	1	
12	1170120044	Power Supply Cord	1	
13	210704929A	Vane	1	
14	1070110011	Drainage Hose	1	
15	210735519C	Display PCB Cover	1	
16	210901122C	Display PCB	1	
17	210735520	Display PCB Box	1	
18	1070040004	Cable Clamp	1	
19	1170200042	Terminal	1	
20	1070250109	Terminal fixing board	1	
21	210900001AE	Main PCB	1	
22	1070320113	Electrical Box	1	
23	1170020011	Vane Motor	1	
24	1073030201	Sensor Holder	1	
25	1170030047	Indoor Motor	1	
26	1070320111	Indoor Motor Cover	1	
27	1170240001	Transformer	1	
28	1170230001	Indoor Sensor Assembly	1	
29	1080320818AB	In And Out Pipe Fixer	1	
30	210901291A	Remote Controller	1	Not shown in Explosion view
31	210708230	Remote Controller Supporter	1	
32	1190060827APH	Indoor Carton	1	
33	211310246	Left Foaming	1	
34	211310247	Right Foaming	1	

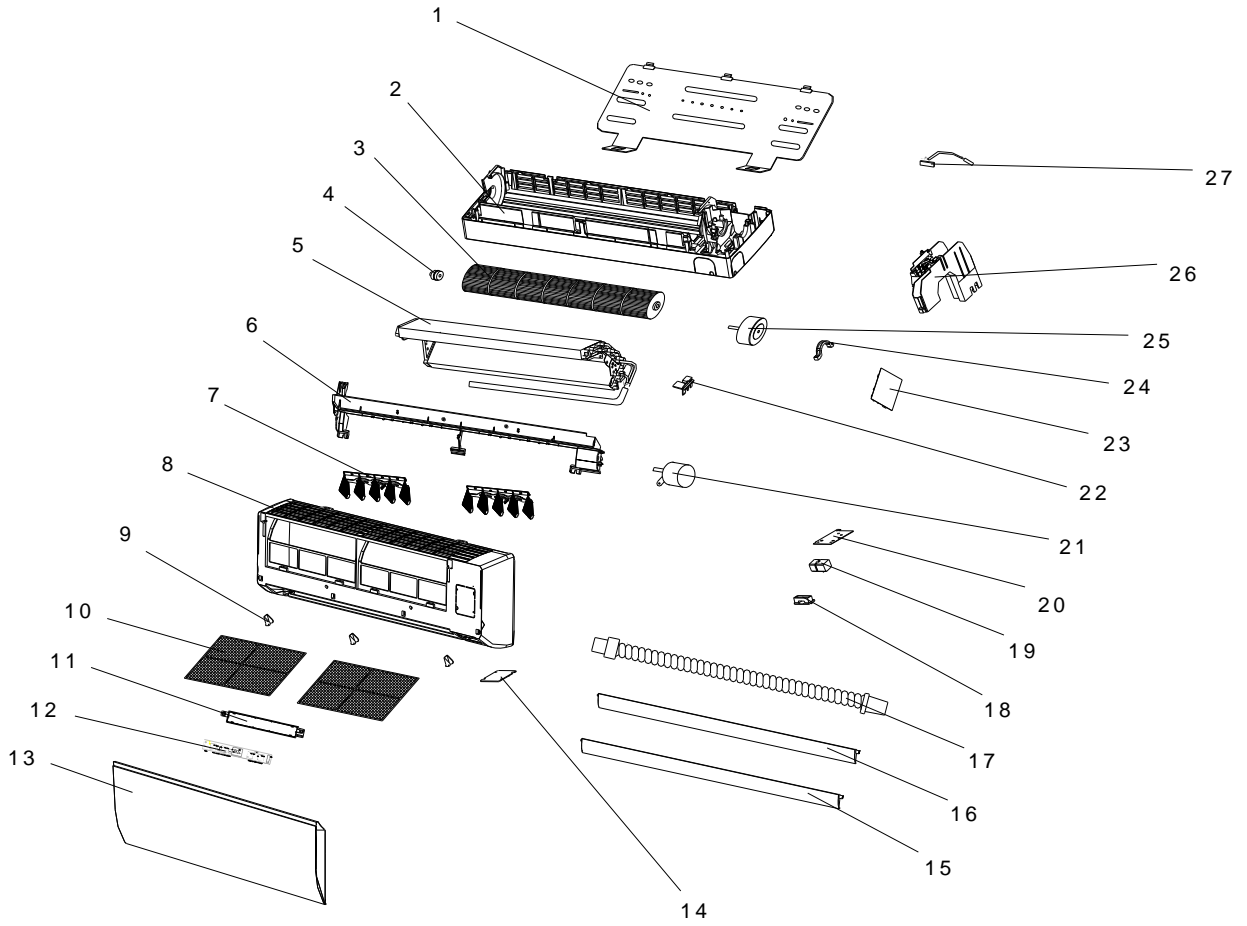
Indoor Unit- RCI-E37HN/IN

No.	Part No.	Part Name	Q'ty	Remark
1	1080030008	Installation Plate	1	
2	1080320806AC	Base	1	
3	1070020026AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	211205800	Evaporator	1	
6	210704823B	Water Drainage Assembly	1	
7	1070321035	Vertical Vane Assembly	2	
8	1070321440B	Face Frame	1	
9	1070321022AC	Screw Cover	2	
10	1070320109	Air Filter	2	
11	210705783A	Front Panel	1	
12	1170120045	Power Supply Cord	1	
13	210704930A	Vane	1	
14	1070110011	Drainage Hose	1	
15	210735519C	Display PCB Cover	1	
16	210901122C	Display PCB	1	
17	210735520	Display PCB Box	1	
18	1070040004	Cable Clamp	1	
19	1170200042	Terminal	1	
20	1070250109	Terminal fixing board	1	
21	210900001AF	Main PCB	1	
22	1070320113	Electrical Box	1	
23	1170020011	Vane Motor	1	
24	1073030201	Sensor Holder	1	
25	1170030067	Indoor Motor	1	
26	1070320111	Indoor Motor Cover	1	
27	1170240001	Transformer	1	
28	1170230001	Indoor Sensor Assembly	1	
29	1080320818AB	In And Out Pipe Fixer	1	
30	210901291A	Remote Controller	1	Not shown in Explosion view
31	210708230	Remote Controller Supporter	1	
32	1190060828CFD	Indoor Carton	1	
33	211310246	Left Foaming	1	
34	211310247	Right Foaming	1	

Indoor Unit- RCI-E54HN/IN

No.	Part No.	Part Name	Q'ty	Remark
1	1080030021	Installation Plate	1	
2	1070350872AD	Base	1	
3	1070020024AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	211205865	Evaporator	1	
6	1070450385AH	Water Drainage Assembly	1	
7	1070350141	Vertical Vane Assembly	1	
8	1070450390AK	Face Frame	1	
9	1070350135AF	Screw Cover	3	
10	1070450397	Air Filter	2	
11	210705784B	Front Panel	1	
12	1170120045	Power Supply Cord	1	
13	1070450387AM	Vane	1	
14	210735518C	Display PCB Cover	1	
15	210901122C	Display PCB	1	
16	210735520	Display PCB Box	1	
17	1070110011	Drainage Hose	1	
18	1070040004	Cable Clamp	1	
19	1170200042	Terminal	1	
20	210800637	Terminal fixing board	1	
21	210900001AM	Main PCB	1	
22	1070451080	Electrical Box	1	
23	1170020041A	Vane Motor	2	
24	1073010501	Sensor Holder	1	
25	1170030065	Indoor Motor	1	
26	1070350152	Indoor Motor Cover	1	
27	1170240001	Transformer	1	
28	1170230001	Indoor Sensor Assembly	1	
29	1070350245AD	In And Out Pipe Fixer	1	
30	210901291A	Remote Controller	1	Not shown in Explosion view
31	210708230	Remote Controller Supporter	1	
32	1190470001CBZ	Indoor Carton	1	
33	1190060803	Left Foaming	1	
34	1190060804	Right Foaming	1	
35	211310757	Middle Pasteboard Supporter	1	

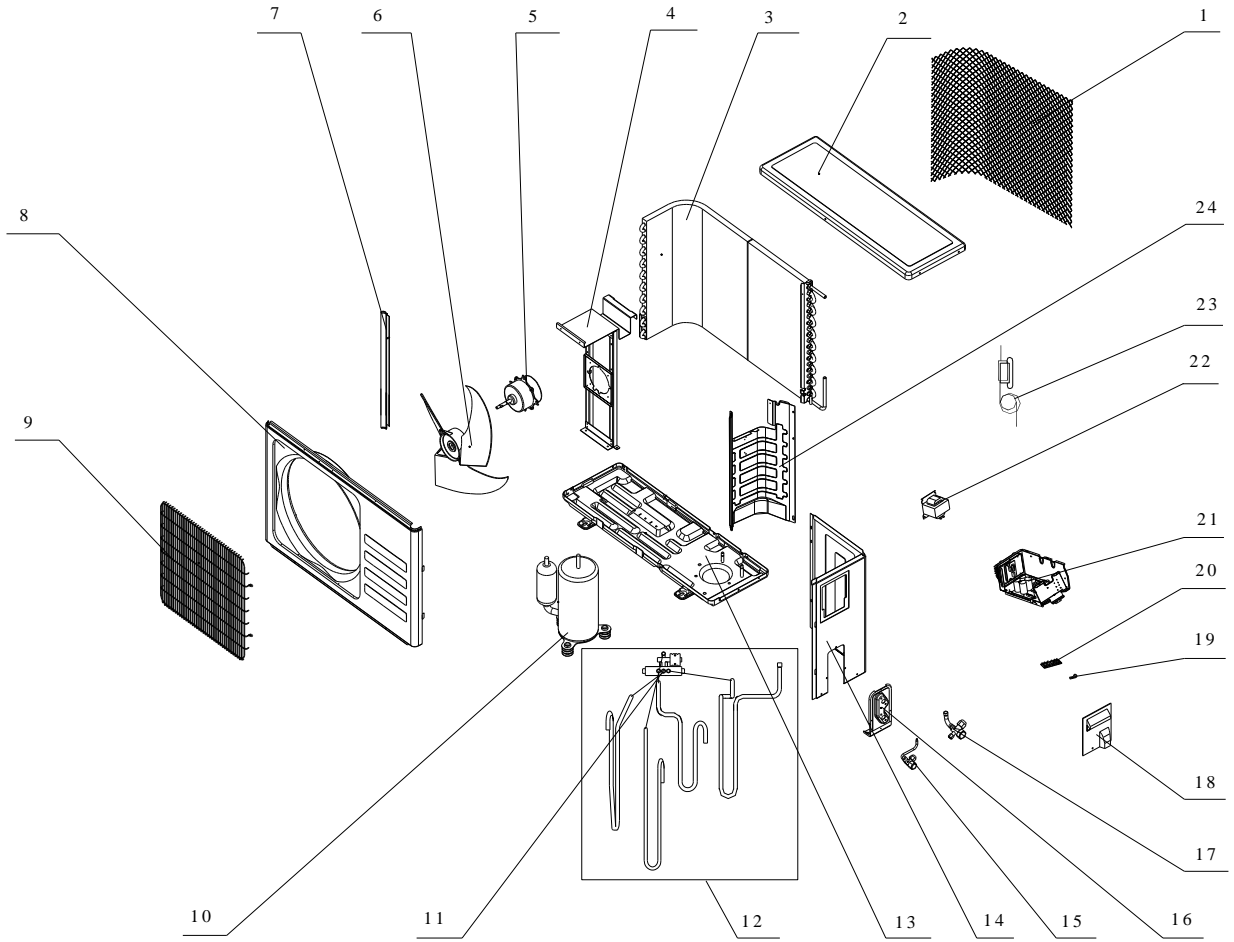
Mode:RCI-E72HN/IN
INDOORUNIT:



Indoor Unit- RCI-E72HN/IN

No.	Part No.	Part Name	Q'ty	Remark
1	1080030001	Installation Plate	1	
2	1080320810AC	Base	1	
3	1070020014AA	Cross Fan	1	
4	1070100010	Bearing Mount	1	
5	211206020	Evaporator	1	
6	1070701048AF	Water Drainage Assembly	1	
7	1070701050	Vertical Vane Assembly A	1	
	1070701051	Vertical Vane Assembly B	1	
8	1070701060AL	Face Frame	1	
9	1073073232A	Screw Cover	3	
10	1070190058	Left Air Filter	1	
	1070190059	Right Air Filter	1	
11	210705785A	Front Panel	1	
12	210735495D	Display PCB Cover	1	
13	210901122D	Display PCB	1	
14	1070701052AD	Vane A	1	
15	1070701053AD	Vane B	1	
16	1070110011	Drainage Hose	1	
17	1070040003	Cable Clamp1	1	
	1070040008	Cable Clamp2	1	
18	1170200038	Terminal1	1	
	1170200042	Terminal2	1	
19	1083090108	Terminal fixing board	1	
20	1170020041	Vane Motor	2	
21	1073030201	Sensor Holder	1	
22	1090500628	Main PCB	1	
23	1073090120	Indoor Motor Cover	1	
24	1170030084	Indoor Motor	1	
25	1070701063	Electrical Box	1	
26	1173090107	Transformer	1	
27	1170230001	Indoor Sensor Assembly	1	
28	210901291A	Remote Controller	1	Not shown in Explosion view
29	210708230	Remote Controller Supporter	1	
30	1190060003ARP	Indoor Carton	1	
31	211319277	Left Foaming	1	
32	211319278	Right Foaming	1	
33	1190060002	Middle Pasteboard Supporter	1	
34	1190060021	Middle Foaming Supporter	1	

Mode:RCI-E28HN/OUT,RCI-E37HN/OUT
OUTDOORUNIT:



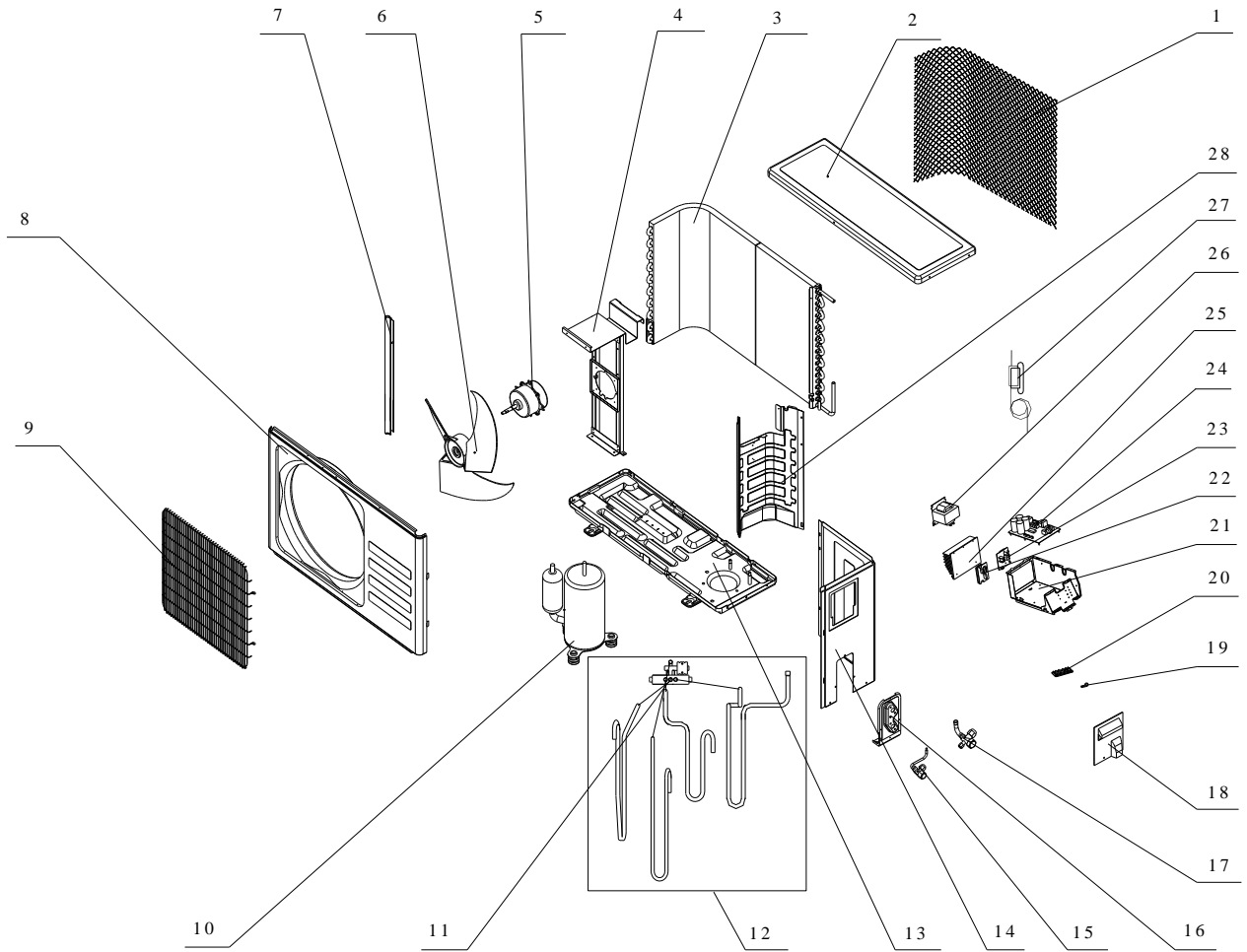
Model:RCI-E28HN/OUT

No.	Part No.	Part Name	Q'ty	Remark
1	1071990039	Grille	1	
2	1080320105	Top cover	1	
3	211202308A	Condenser	1	
4	1080050004	Outdoor motor supporter	1	
5	1170040058	Outdoor motor	1	
6	1070030050AA	Propeller fan	1	
7	1080050001	Left grille supporter	2	
8	210800274	Front plate	2	
9	1070251931	Fan guard	1	
10	211230505	Compressor and accessories	1	
11	1120110016	4-way valve	1	
12	211231930	4-way valve assembly	1	
13	210800466	Base	1	
14	1080050002	Right plate	1	
15	1120120021	Two-way valve	1	
16	1080050003	Valve supporter	1	
17	1120130083	Three-way valve	1	
18	1070350971	Electrical box cover	1	
19	1070040008	Cable clamp	1	
20	1170200061	Terminal	1	
21	210900958	Outdoor PCB assembly	1	
22	1160100002	Inductor	1	
23	211206873	Capillary assembly	1	
24	1081990328	Partition plate	1	
25	1170230007A	Pipe Temp. sensor and outdoor Temp. sensor	1	
26	1170230006A	Discharge Temp. sensor	1	
27	211311435	Base carton	1	Not shown in explosion view
28	211311098ND	Cabinet carton	1	
29	211311099	Base foaming	1	
30	211311100	Cover foaming	1	

Model:RCI-E37HN/OUT

No.	Part No.	Part Name	Q'ty	Remark
1	1071990039	Grille	1	
2	1080320105	Top cover	1	
3	211230380	Condenser	1	
4	1080050004	Outdoor motor supporter	1	
5	1170040058	Outdoor motor	1	
6	1070030050AA	Propeller fan	1	
7	1080050001	Left grille supporter	2	
8	210800274	Front plate	2	
9	1070251931	Fan guard	1	
10	211230505	Compressor and accessories	1	
11	1120110016	4-way valve	1	
12	211231930	4-way valve assembly	1	
13	210800466	Base	1	
14	1080050002	Right plate	1	
15	1120120021	Two-way valve	1	
16	1080050003	Valve supporter	1	
17	1120130083	Three-way valve	1	
18	1070350971	Electrical box cover	1	
19	1070040008	Cable clamp	1	
20	1170200061	Terminal	1	
21	210900990E	Outdoor PCB assembly	1	
22	1160100002	Inductor	1	
23	211204787	Capillary assembly	1	
24	1081990328	Partition plate	1	
25	1170230007A	Pipe Temp. sensor and outdoor Temp. sensor	1	
26	1170230006A	Discharge Temp. sensor	1	
27	211311435	Base carton	1	Not shown in explosion view
28	211311098JZ	Cabinet carton	1	
29	211311099	Base foaming	1	
30	211311100	Cover foaming	1	

Mode:RCI-E54HN/OUT,RCI-E72HN/OUT
OUTDOORUNIT:



Outdoor Unit- RCI-E54HN/OUT

No.	Part No.	Part Name	Q'ty	Remark
1	1083520101	Grille	1	
2	1081990056	Top Cover	1	
3	214115531	Condenser	1	
4	1081990060	Outdoor Motor Supporter	1	
5	1170040118	Outdoor Motor	1	
6	1070030040AA	Propeller Fan	1	
7	1081990053	Left Grille Supporter	1	
8	1081990058	Front Plate	1	
9	1071990096	Fan Guard	1	
10	1100060147	Compressor And It Accessories	1	
11	1120500226	4-way Valve	1	
12	1120520680	4-way Valve Assembly	1	
13	210800571	Base	1	
14	1081990054	Right Plate	1	
15	1120120021	Two-way Valve	1	
16	1081990055	Valve Supporter	1	
17	1120130032	Three-way Valve	1	
18	1070350971	Electrical Box Cover	1	
19	1070040008	Cable Clamp(φ6)	1	
20	1170200061	Terminal	1	
21	1080520142	Electrical Parts Box	1	
22	1090320295	PFC Board	1	
23	1090520620	Inverter module	1	
24	1090520619	Power source board	1	
25	1170330004	Radiator	1	
26	1170190002	Inductor	1	
27	1120520685	Capillary assembly	1	
28	1081990095	Partition plate	1	
29	1170230007	Pipe Temp. sensor and outdoor Temp. sensor	1	Not shown in Explosion view
30	1170230006	Discharge Temp. sensor	1	
31	211312854	Base Carton	1	
32	211312855FM	Cabinet Carton	1	
33	211312852	Base Foaming	1	
34	211312851	Cover Forming	1	

Indoor Unit- RCI-E72HN

No.	Part No.	Part Name	Q'ty	Remark
1	1081990041	Grille	1	
2	1081990038	Top Cover	1	
3	1110061374	Condenser	1	
4	1081990042	Outdoor Motor Supporter	1	
5	1091990052	Outdoor Motor	1	
6	1170120146AA	Propeller Fan	1	
7	1081990040	Left Grille Supporter	1	
8	210800277	Front Plate	1	
9	1070251945	Fan Guard	1	
10	1100060146	Compressor And It Accessories	1	
11	1120110017	4-way Valve	1	
12	1120640208	4-way Valve Assembly	1	
13	1080640004	Base	1	
14	1081990039	Right Plate	1	
15	1120120024	Two-way Valve	1	
16	1081990041	Valve Supporter	1	
17	1120130037	Three-way Valve	1	
18	1070350971	Electrical Box Cover	1	
19	1070040008	Cable Clamp(φ8)	1	
20	1170200061	Terminal	1	
21	1300520300	Electrical Parts Box	1	
22	1090640014	PFC Board	1	
23	1090520620	Inverter module	1	
24	1090640007	Power source board	1	
25	1170330004	Radiator	1	
26	1170190002	Inductor	1	
27	1120640209	Capillary assembly	1	
28	1071990072	Partition plate	1	
29	1170230007	Pipe Temp. sensor and outdoor Temp. sensor	1	Not shown in Explosion view
30	1170230006	Discharge Temp. sensor	1	
31	1190060191	Base Carton	1	
32	1190500707APT	Cabinet Carton	1	
33	211310615	Cover Forming	1	
34	211310616	Base Foaming	1	

8. Precaution

8.1 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 rating of the fuse installed in the built-in control unit are T5A/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 overvoltage 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.

8.2 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 main 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,

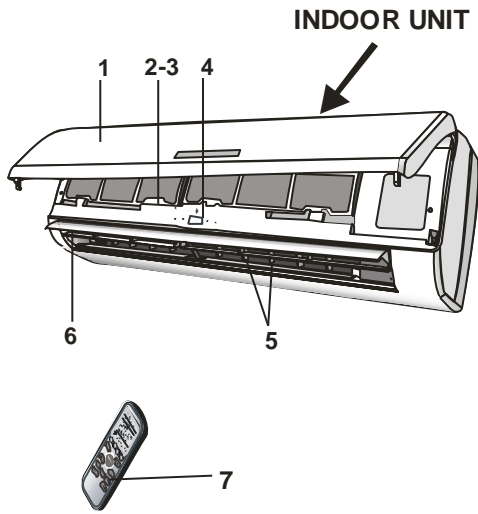
commonsense andcaution are therefore alwaysrecommended for installation, operation and maintenance.

- Ensurethattheapplianceisdisconnectedfromthepowersupplywhenitwillremaininoperativeforalongperiod and before carrying out any cleaning or maintenance.
- Selecting the most suitable temperaturecan preventdamage to the appliance.

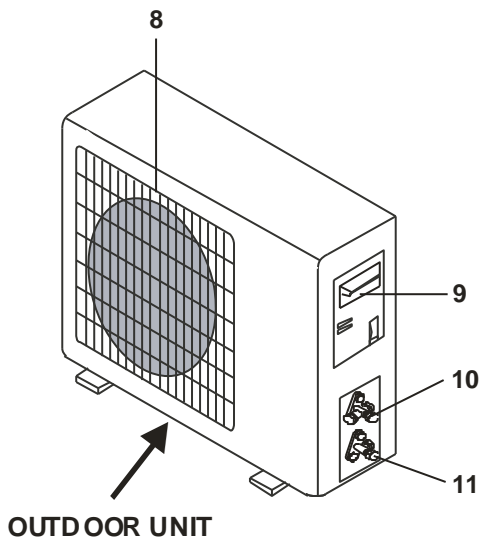
8.3 SAFETYRULESANDPROHIBITIONS

- Donot bend, tugor compress the power cordsincethis could damage it.Electricalshocks or fireareprobably duetoa damagedpowercord.Specializedtechnical personnel only must replace adamagedpower cord.
- Do not use extensions organg modules.
- Do not touchthe appliance when barefoot or partsof the body are wet or damp.
- Do not obstruct the air inlet or outlet of the indoor orthe outdoor unit. Theobstruction of these openingscauses a reduction in theoperative efficiency of the conditioner with possibleconsequent failures ordamages.
- In no way alter the characteristics of theappliance.
- Do not install the appliance in environments where their could contain gas, oilorsulphurornearsources of heat.
- This appliance is not intended for useby persons(includingchildren)with reduced physical, sensoryormental capabilities,or lackof experienceand knowledge, unless they have beengiven supervision orinstructionconcerning useofthe appliance bya person responsiblefortheir safety.
- Do not climbonto or placeany heavy or hot objectson top of the appliance.
- Do not leavewindows or doors open for long when the air conditioner is operating.
- Do not direct the airflow onto plants oranimals.
- Alongdirectexpositiontotheflowofcoldairoftheconditionercouldhavenegativeeffectsonplants andanimals.
- Do not put theconditionerin contact with water.Theelectrical insulation could be damaged and thuscausing electrocution.
- Do not climbonto or placeany objectson the outdoorunit
- Never insert a stickorsimilarobjectinto the appliance. It could cause injury.
- Children should be supervised toensurethatthey donot play with theappliance.Ifthe supplycord isdamaged,itmustbereplacedbythemanufacturer,itserviceagentorsimilarlyqualifiedpersonsinorderto avoid ahazard.

9.Names of parts



Indoorunit	
No.	Name
1	Front panel
2	Airfilter
3	Special filter(option)
4	Display PCB
5	Vertical vane
6	Horizontal vane
7	Remotecontroller



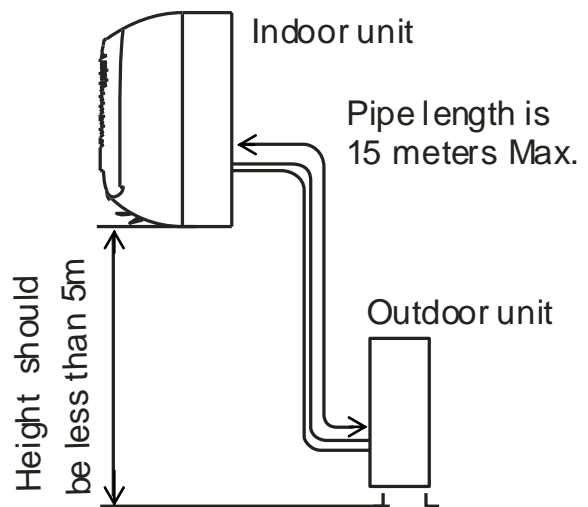
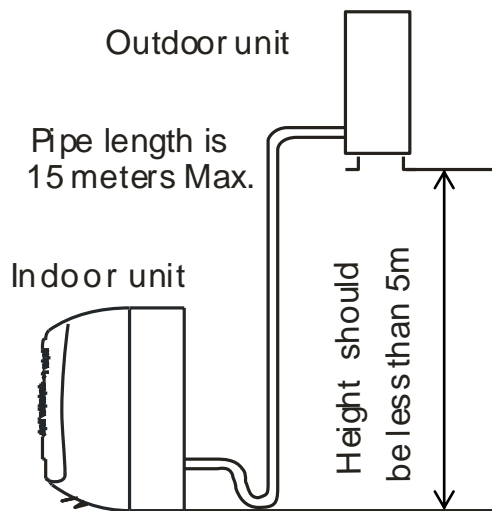
Outdoor unit	
No.	Name
8	Air outlet grille
9	Electronic box cover
10	2-way valve
11	3-way valve

10.Installation manual

10.1 InstallationDetails

Connectingpipelength

Model	Pipe size(Inch)	
	Liquid	Gas
RCI-E28HN	1/4	3/8
RCI-E37HN	1/4	3/8
RCI-E54HN	1/4	1/2
RCI-E72HN	3/8	5/8



Mode	Standard length: m	Refrigerant piping Max.length: m	Additional refrigerant Calculation: $\times g=20g/m(A-5m)$
RCI-E28HN	3.0	15	20g/m
RCI-E37HN	3.5	15	20g/m
RCI-E54HN	5.0	15	30g/m
RCI-E72HN	5.0	15	30g/m

Connectingcables

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

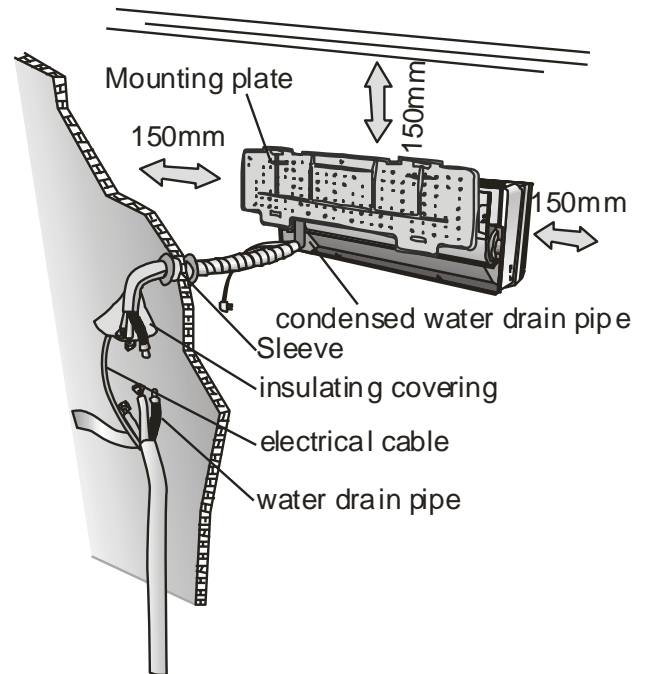
Appliance Amps	Wire Size
5	AWG21/0.75 mm ²
10	AWG18/1.0 mm ²
13	AWG15 /1.5 mm ²
18	AWG14/1.6 mm ²
25	AWG12/2.0 mm ²
30	AWG10/2.5 mm ²

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 reconnection 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.

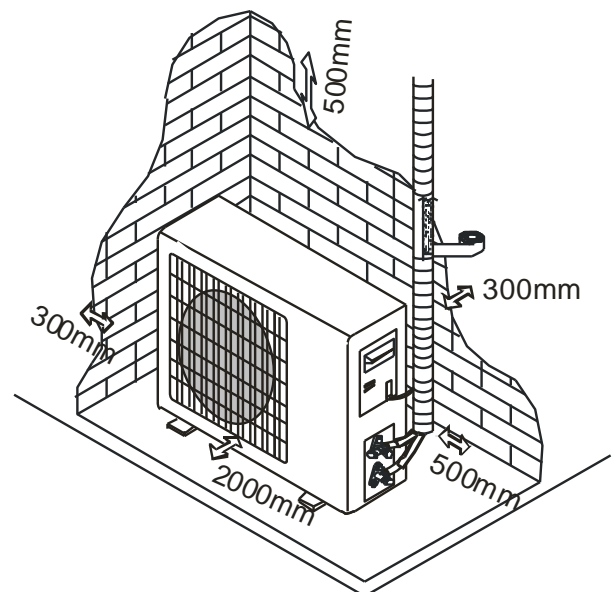
corridors or communal areas.



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 (otherwise use a protection, if necessary, that should not interfere with the airflow).
- 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 installation in

Minimum space to be left (mm) showing in the picture.



be pulled out if necessary.

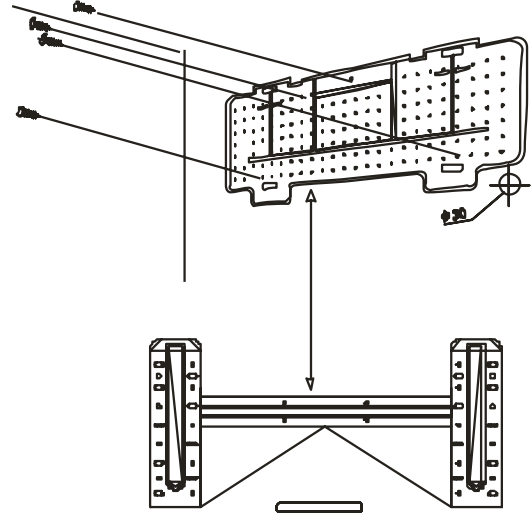
- Install the indoor unit at a height of at least 2.5m from the ground.

To install, proceed as follows:

10.2.1 Installation of the mounting plate.

- 1) By using a level, put the mounting plate in a perfect square position vertically and horizontally.
- 2) Drill 32mm deep holes in the wall to fix the plate.
- 3) Insert the plastic anchors into the hole.
- 4) Fix the mounting plate by using the provided tapping screws.
- 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.

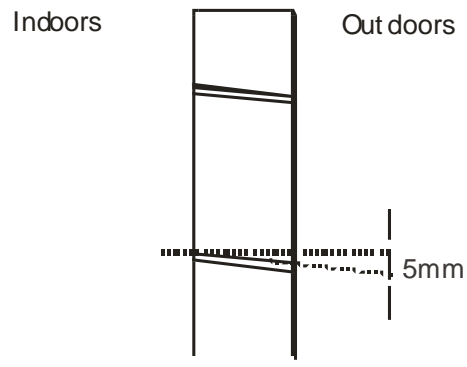


10.2.2 Drilling a hole in the wall for the piping

- 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.

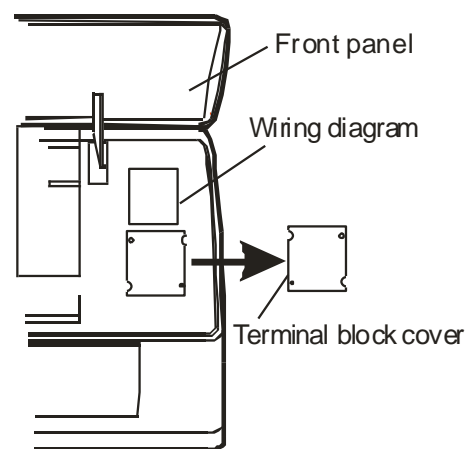
The hole must slope downwards towards the exterior.

Note: Keep the drain pipe down toward 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 sizes suitable to the electric power input (see nameplate 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 appliance has been installed so that it can

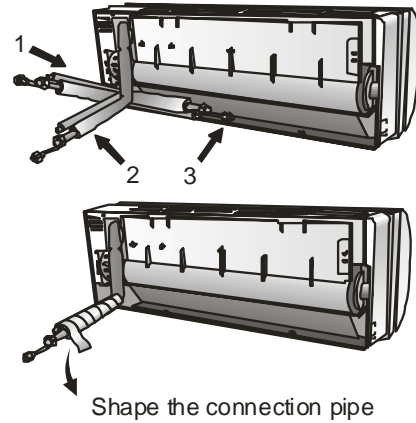


- 7). An efficient earth connection must be ensured.
- 8). If the power cable is damaged, it must be replaced by an authorized Service Centre.

10.2.4 Refrigerant piping connection

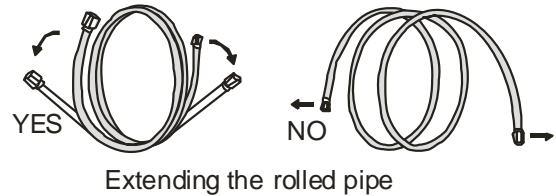
The piping can be run in the 3 directions indicated by numbers in the picture. When the piping is run in direction 1 or 3, cut a notch along the groove on the side of the indoor unit with a cutter.

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.



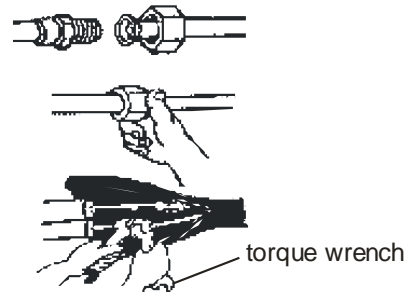
10.2.5 Connecting the pipes.

- 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.



10.2.6 Connections to the indoor unit

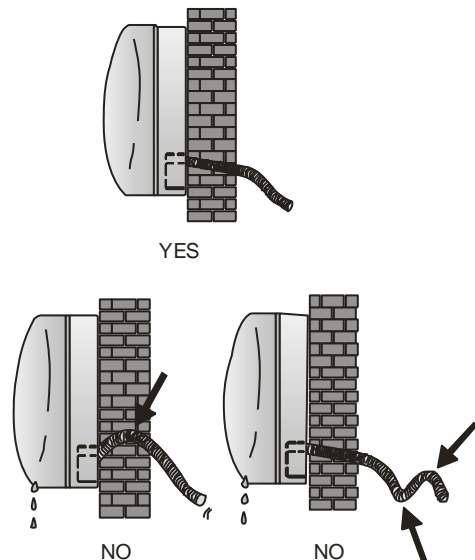
- 1). Remove the indoor unit pipe cap (check that there is no debris inside).
- 2). Insert the flare nut and create a flange at the extreme end of the connection pipe.
- 3). Tighten the connections by using two wrenches working in opposite directions.



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.

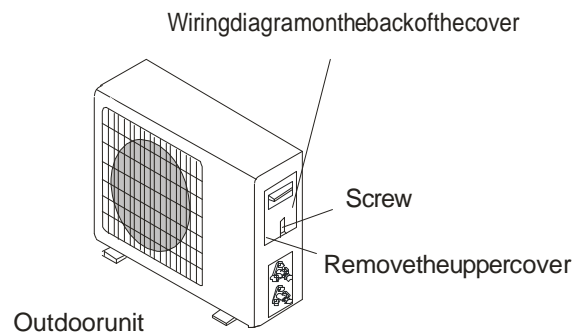


4). If the piping is installed to the right, the pipes, power cable and drain hose must be lagged and secured onto the rear of the unit with a pipe connection.

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

10.2.8 Electronic connections

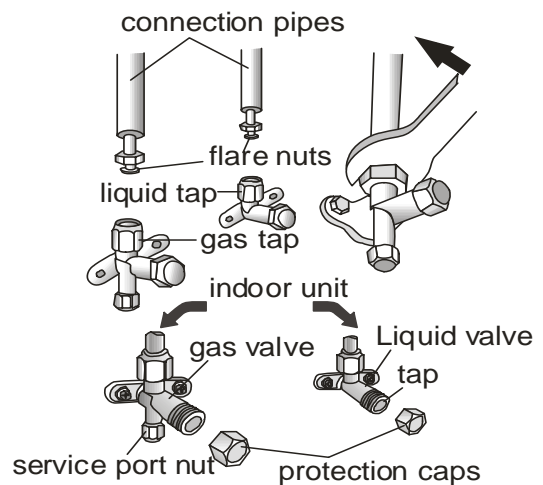
1. Take the cover away.
2. Connect the cable wires to the terminal board using the same numbering as in the indoor unit.
3. For the electrical connections, see the wiring diagram on the back of the cover
4. Fasten the cables with a cable-clamp.
5. An efficient earth connection must be ensured.
6. Replace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

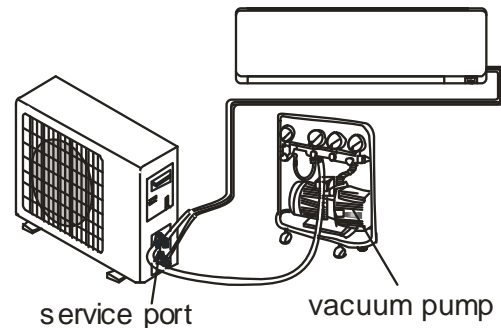
Note: If the tightening torque is not sufficient, there will probably be some leakage. With excessive tightening torque there will also be some leakage, as the flange could be damaged.



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.

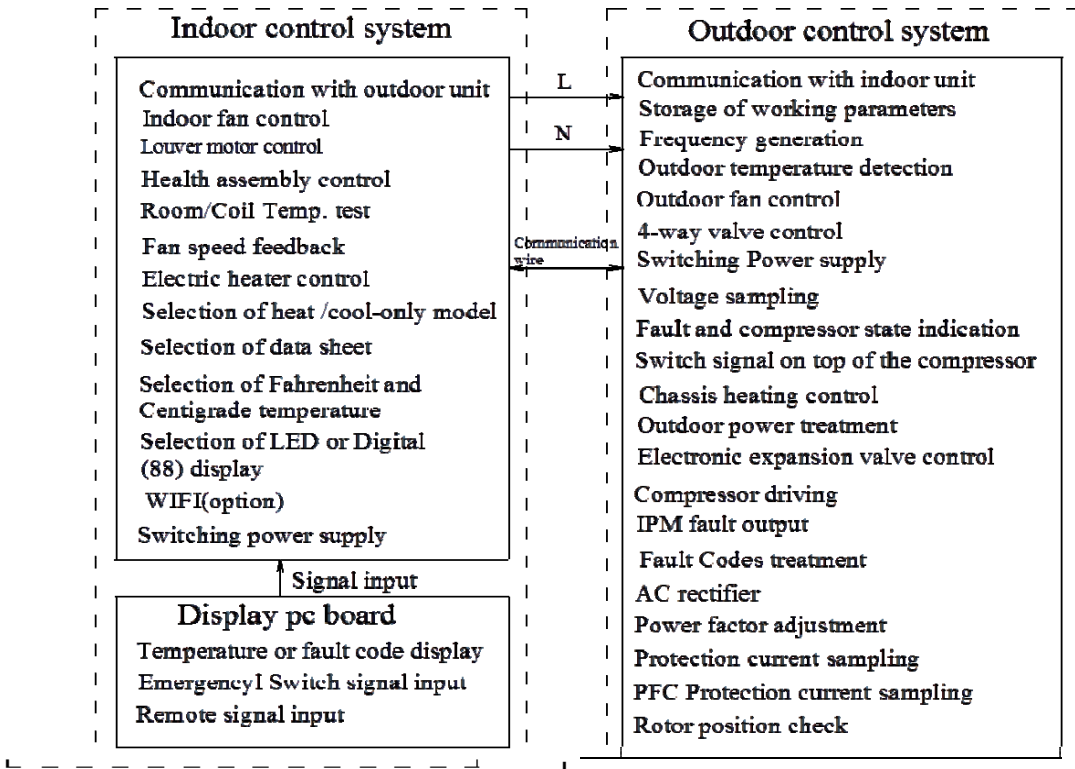
The air and humidity left inside the refrigerant circulation can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circulation using a vacuum pump.



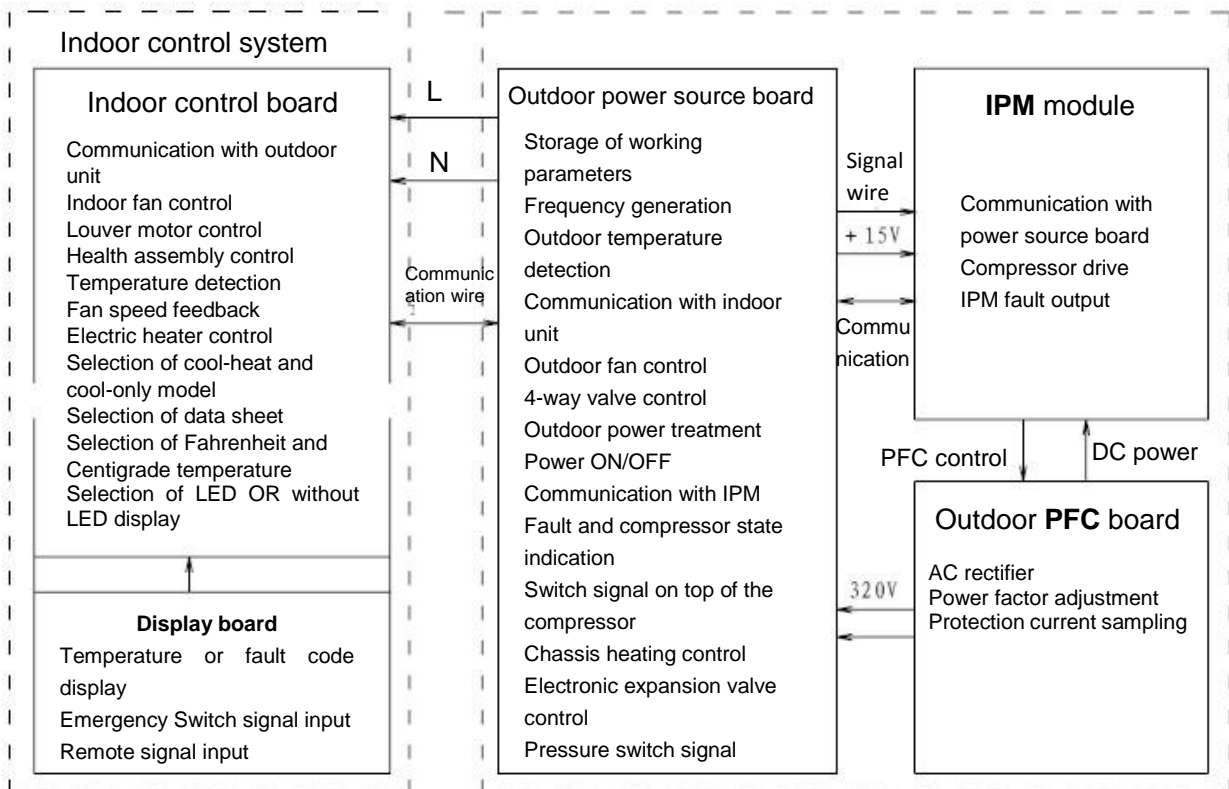
11. Trouble shooting

11.1 Outdoor controldiagram

RCI-E28HN, RCI-E37HN

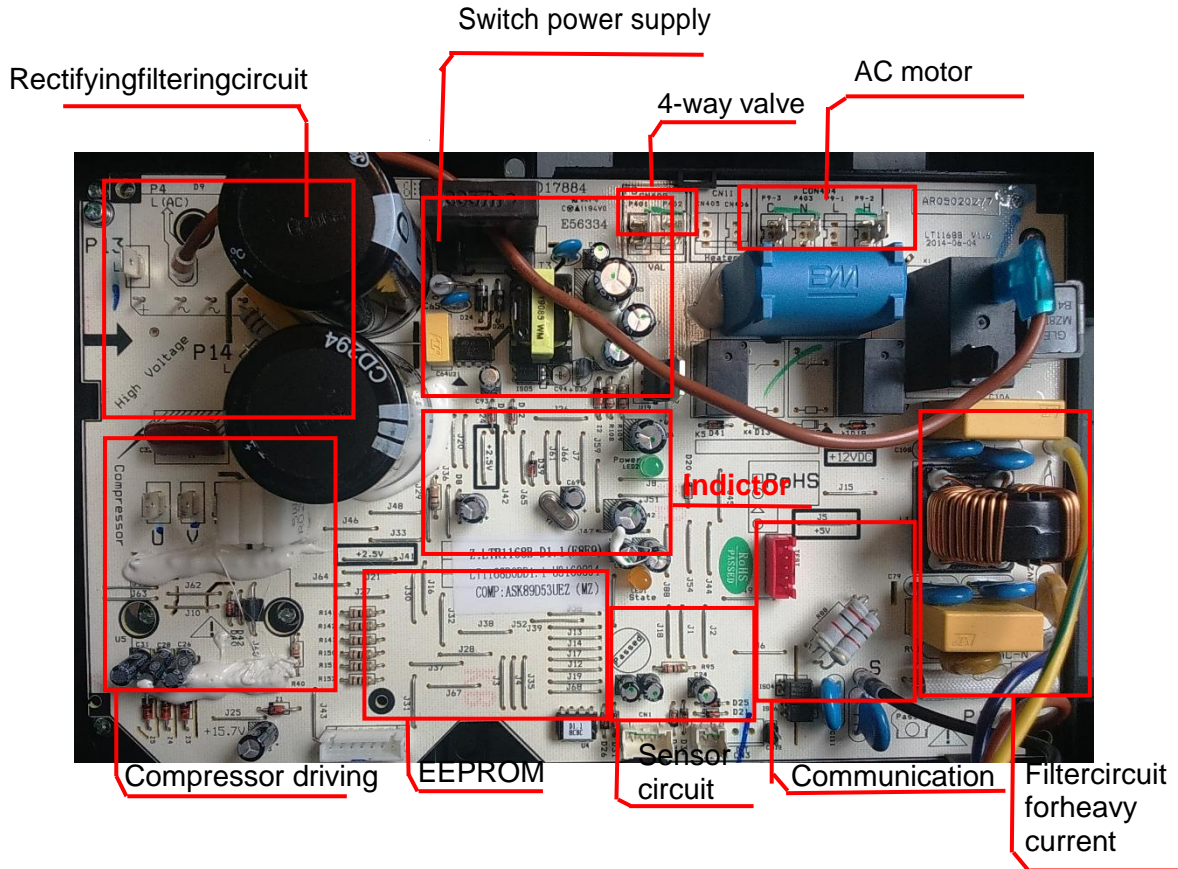


RCI-E54HN, RCI-E72HN

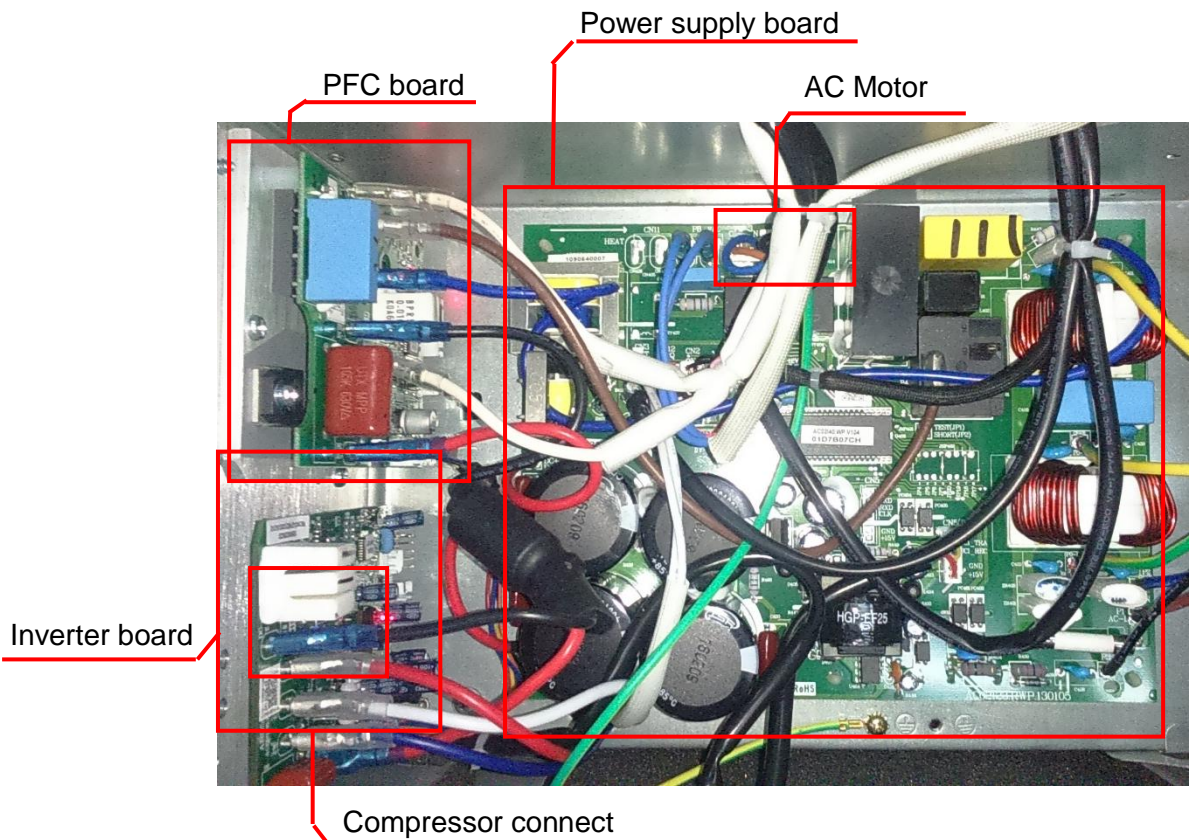


11.2The structure of ODU PCB

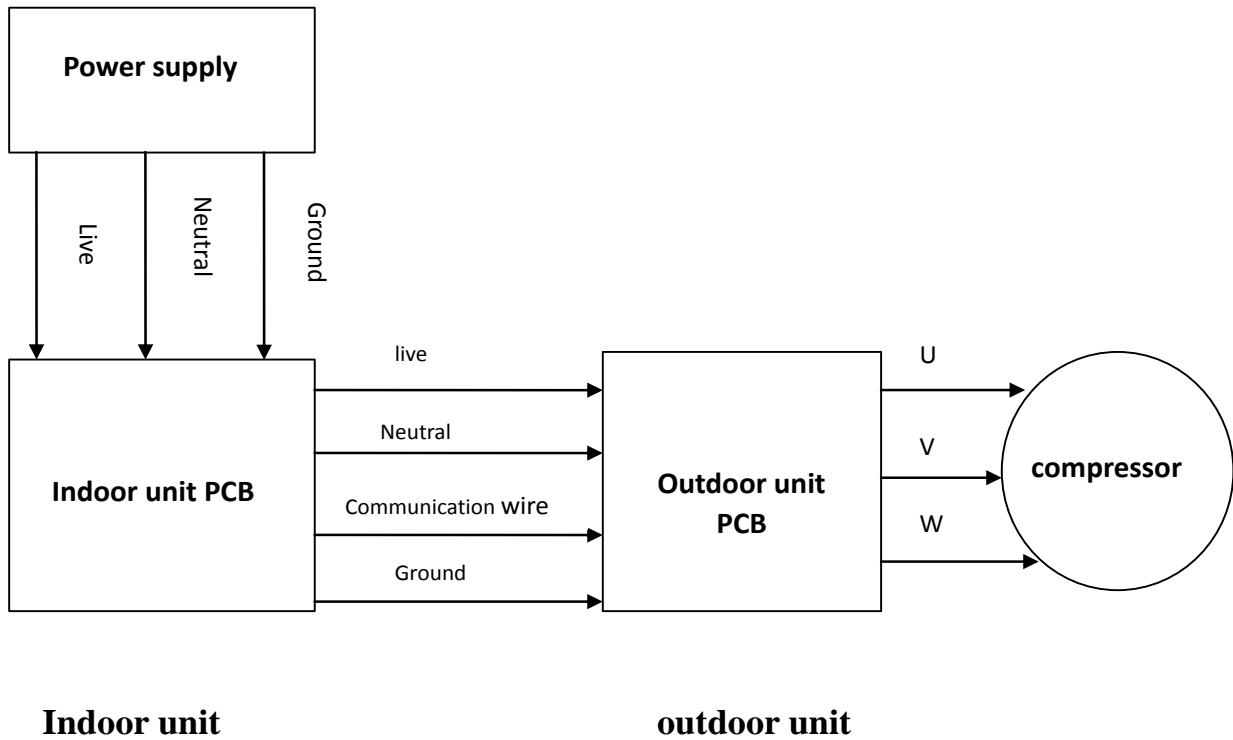
RCI-E28HN, RCI-E37HN



RCI-E54HN, RCI-E72HN



11.3 Current flow



Indoor unit

outdoor unit

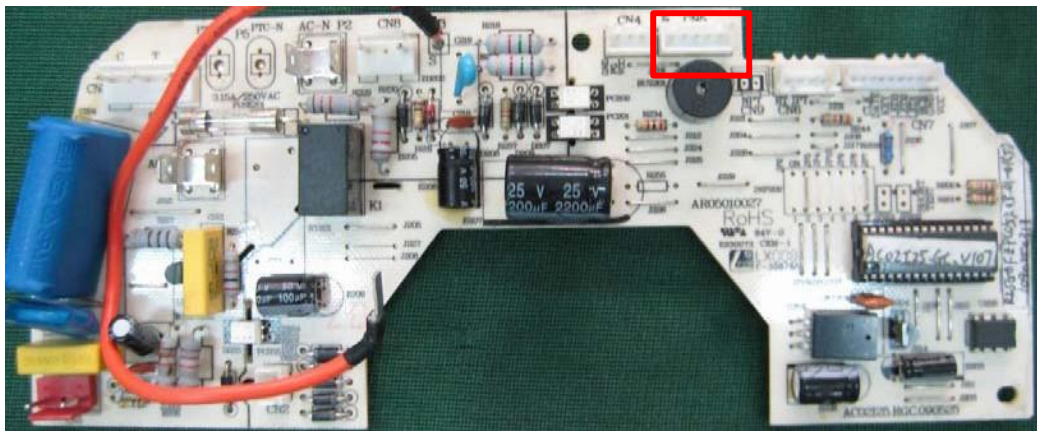
11.4 Examples of repairing

11.4.1 DisplayE1 or E2

Cause: Room temperaturesensor (IRT)and Indoor pipe(coil) temperature sensor(IPT) or indoor mainPCB fault.

Solution:

- 1) Check the connector of sensor and slot(CN6), if loose please connect again.
- 2) Measure the resistance on the two ends of indoor temperature sensor, if short or broken please replace it.
- 3) If the above testing is normal, please replace the indoor main PCB.



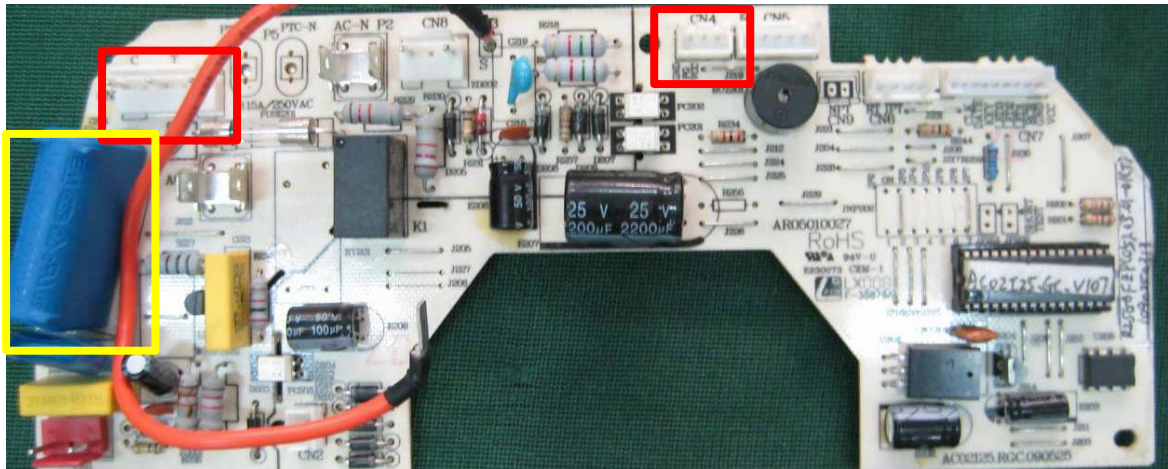
11.4.2 DisplayE6

Cause: indoor fan motor or indoor main PCB fail.

Solution:

- 1) Check the indoor fan blade lock or not, if lock please readjust it.

- 2) Check the indoor fan motor wire connected to the PCB (CN3, CN4), if loose please connect again.
- 3) Check the startup capacitance value, if capacitance incorrect, replace with a new capacitor.
- 4) Measure the resistance on the two ends of indoor fan motor, if short or broken please replace the indoor fan motor.
- 5) If above inspections are normal, please replace the indoor main PCB.



11.4.3 Display E3, E7 or E8

Cause: outdoor pipe temp sensor, outdoor temp sensor & exhaust temp sensor fault.

Solution:

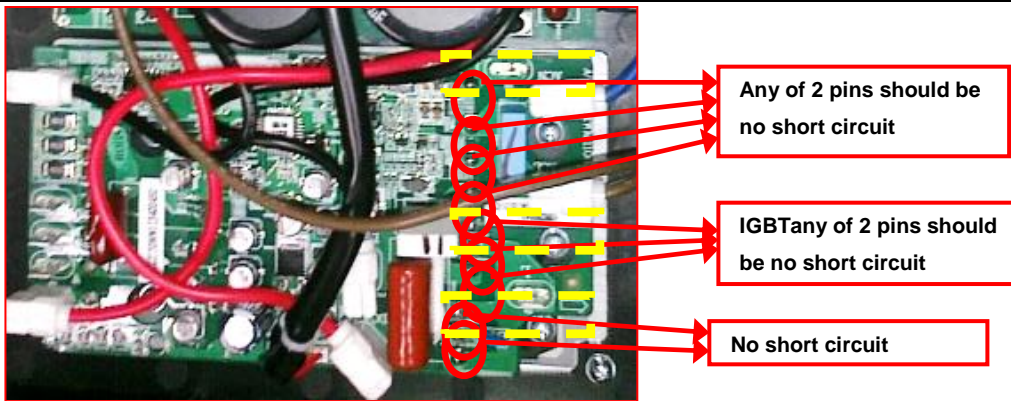
- 1) Check the connector of sensor and slot (CN6), if loose please connect again.
- 2) Measure the resistance on the two ends of indoor temperature sensor, if short or broken please replace it.
- 3) If the above testing is normal, please replace the outdoor PCB.



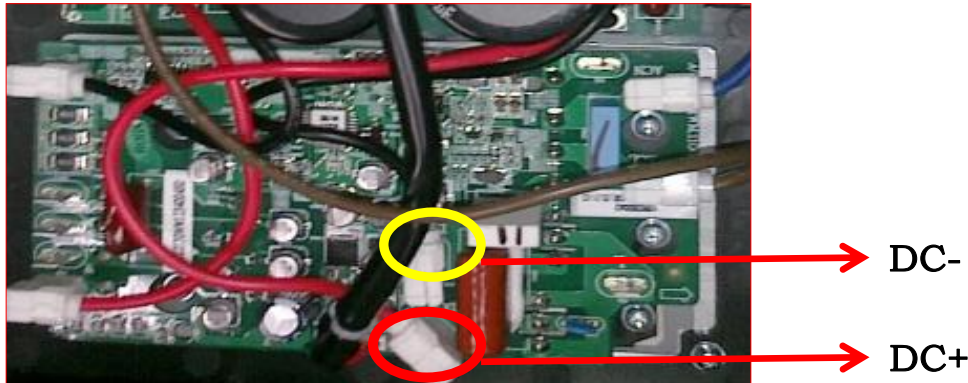
11.4.4 Display E0, E5

Cause: Indoor / outdoor communication fault. Solution:

- 1) Check if the indoor and outdoor connections are correct. The terminal L1 and L2 which connect to indoor unit shall correspond to each other on indoor and outdoor units. Measure the voltage on outdoor terminal L1 and L2 (before display of E0 fault). If the voltage is "0", please replace indoor main PCB.
- 2) If the L1 & L2 which connect to indoor unit voltage is normal, measure the voltage between the outdoor terminal L2 and 1. If the voltage change occurs between 0~24V (change pulse voltage), please replace indoor main PCB.
- 3) If the L1 & L2 which connect to indoor unit voltage is normal, measure the voltage between the outdoor terminal L2 and 1. If the voltage change occurs between 0~12V (change pulse voltage), but there is no 24V, please replace the outdoor PCB.
- 4) If the L1 & L2 voltage is normal, measure the voltage between the outdoor terminal L2 and 1. If the voltage has no change, firstly replace the indoor main PCB. If the fault remains unsolved, replace the outdoor PCB.
- 5) Is there any burnt on outdoor PCB? If no, test the rectifier, FRD, IGBT etc. any component broken, replace outdoor PCB.



6) Test the DC voltage between DC+ and DC-. If the voltage is approx 300V or 0V, please replace outdoor PCB.



11.4.5 Display EA

Cause: 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.

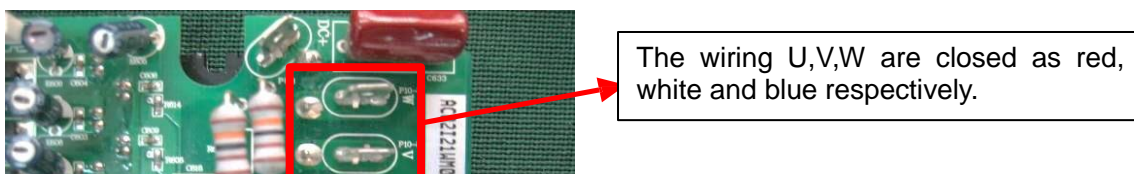
11.4.6 Display E9 (first display P0 or P9)

Cause: Outdoor

PCB drive circuit broken. 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.
- 2) Check if the outdoor module is tightly installed on the radiating fins and if the silicone is applied evenly, fix the screws again if loose.
- 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 U, V, W connection, if it is correct or loose please connect again.
 - 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.
 - c) When the compressor is restarted immediately after stop, this might also cause P9 protection because the cooling system is not stable, try starting the air conditioner again after a longer period of stop.



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

11.4.7 DisplayEU.

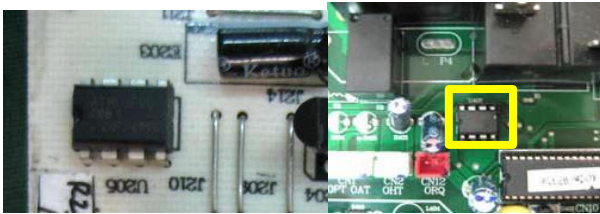
Cause: Voltage sensor fault.

Solution: Please replace outdoor PCB.

11.4.8 DisplayEE

Cause: EEPROM fault

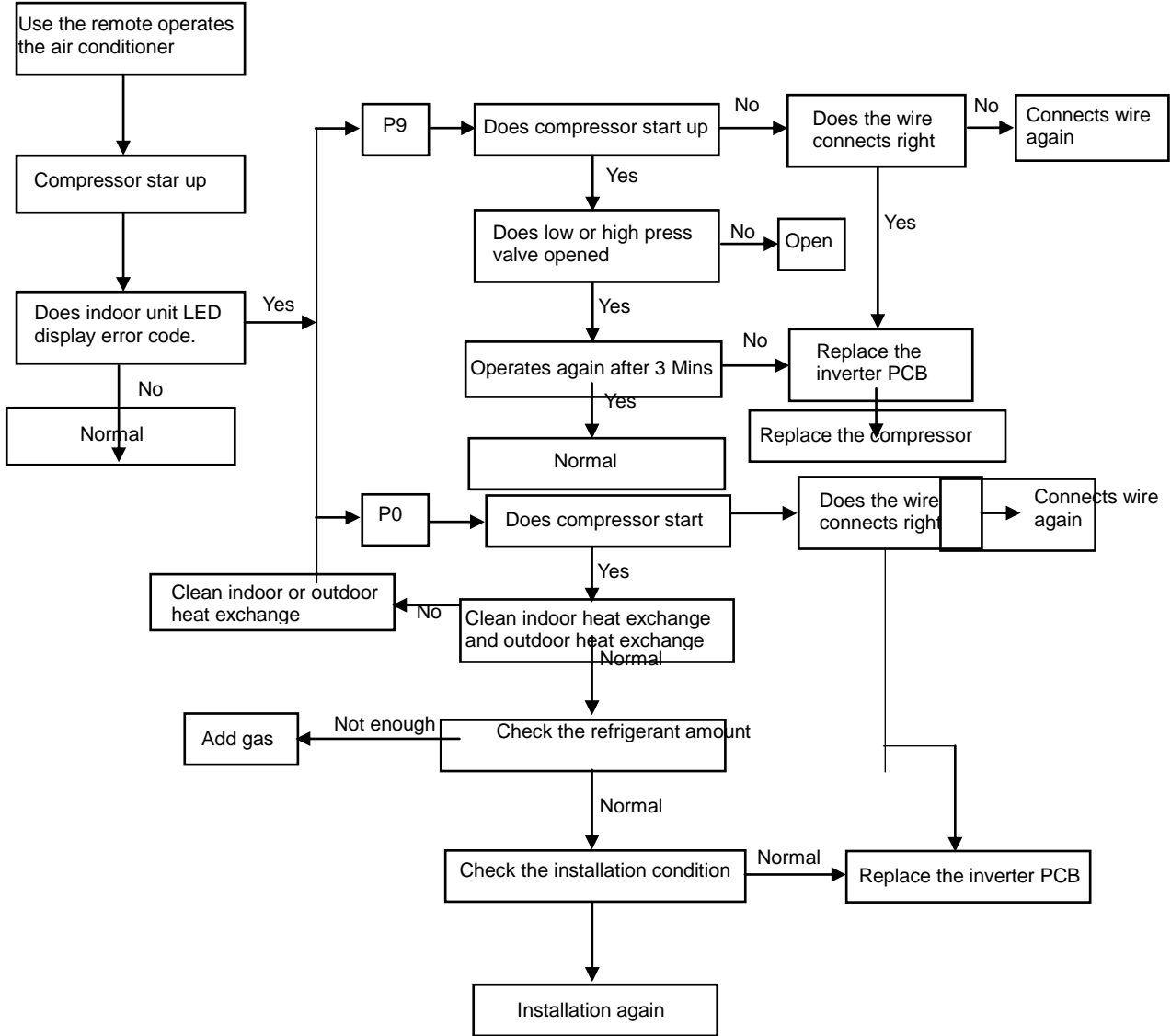
Solution: Shut down power supply and reenergize it, if the fault remains there, check the EEPROM installation, if no problem, please replace indoor PCB or



11.5 MALFUNCTION(PARTS) CHECK METHOD

11.5.1 Procedure for determining defective outdoor unit IPM/compressor

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

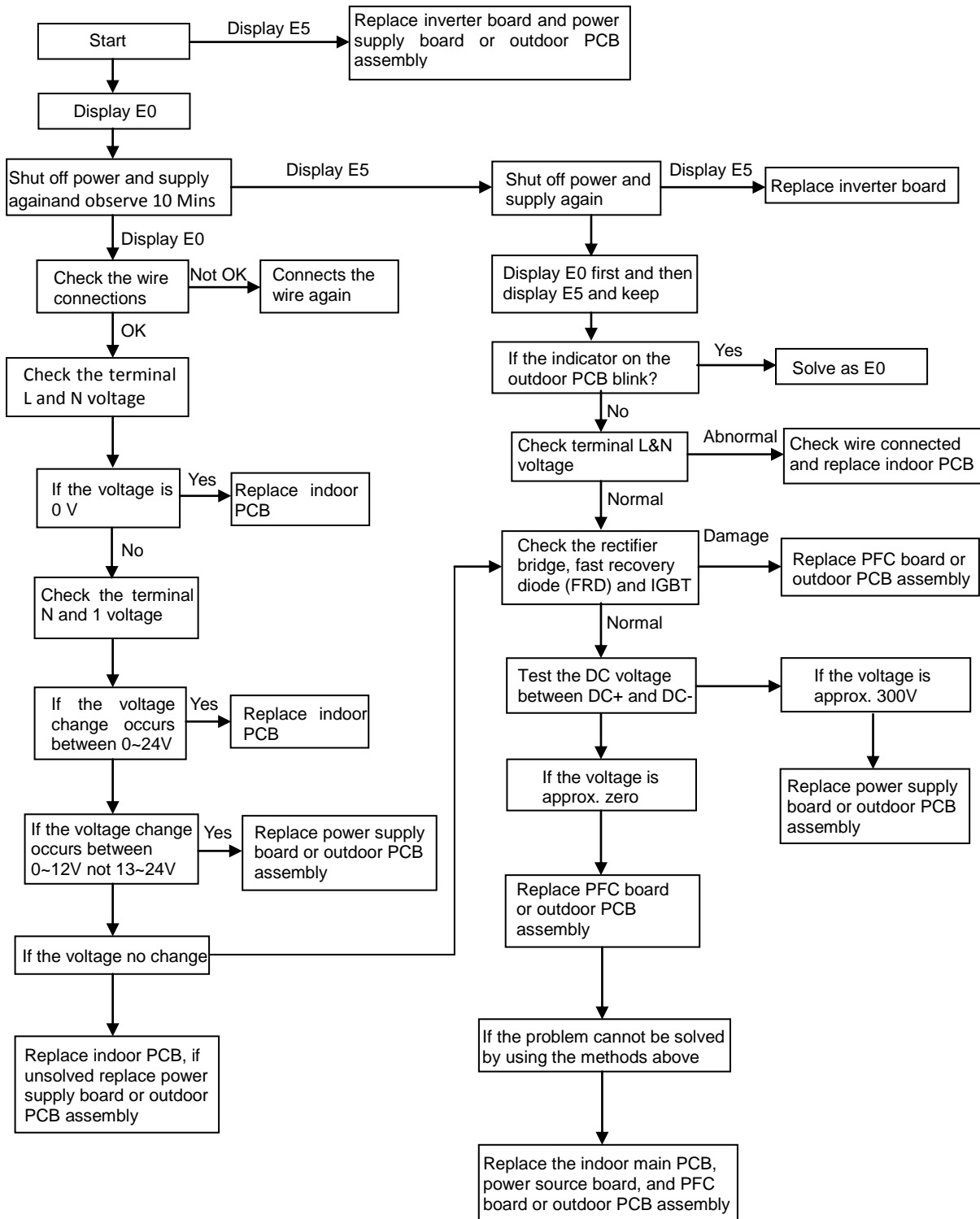


11.5.2 DC Over Current Error

Error memory is recorded

Start

11.5.3 E0,E5 Error

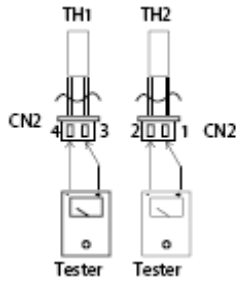


11.6 THERMISTOR TEMPERATURE CHARACTERISTICS

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

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

Resistance at 25°C : 5kΩ.



TH1:indoorroomtemperaturesensorandoutsideairtemperaturesensor

TH2:indoorexchangetemperaturesensorandoutsideexchangetemperaturesensor

Beforemeasuringresistance,disconnectconnectorsasshownabove.

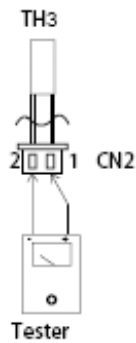
2. Outdoorunitsensortemperaturecharacteristics

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

-2	63.74	70.48	77.87	52	6.309	6.655	7.013	106	1.073	1.12	1.168
-1	60.69	67.05	74	53	6.08	6.409	6.748	107	1.042	1.089	1.136
0	57.81	63.8	70.34	54	5.861	6.173	6.495	108	1.013	1.058	1.104
1	55.08	60.72	66.88	55	5.651	5.947	6.253	109	0.9833	1.028	1.074
2	52.49	57.81	63.61	56	5.449	5.73	6.02	110	0.9553	0.9997	1.045
3	50.03	55.05	60.52	57	5.255	5.522	5.798	111	0.9283	0.9719	1.016
4	47.71	52.44	57.59	58	5.07	5.323	5.585	112	0.9021	0.9451	0.9892
5	45.5	49.97	54.82	59	4.891	5.132	5.381	113	0.8765	0.9191	0.9626
6	43.41	47.62	52.2	60	4.72	4.949	5.101	114	0.8524	0.894	0.9367
7	41.42	45.4	49.71	61	4.556	4.774	4.997	115	0.8087	0.8595	0.9117
8	39.53	43.2	42.33	62	4.398	4.605	4.817	116	0.8059	0.8461	0.8875
9	37.74	41.29	45.12	63	4.247	4.448	4.644	117	0.7837	0.8233	0.8641
10	36.04	39.39	43.01	64	4.101	4.288	4.479	118	0.7623	0.8012	0.8413
11	34.42	37.59	41	65	3.961	4.139	4.32	119	0.7415	0.7798	0.8193
12	32.89	35.87	39.1	66	3.827	3.995	4.167	120			
13	31.43	34.25	37.29	67	3.698	3.858	4.021	121	0.702	0.7386	0.7773
14	30.04	32.71	35.58	68				122	0.6631	0.7195	0.7572
15	29.72	31.24	33.95	69				123	0.6649	0.7007	0.7378
16				70	3.339	3.476	3.616	124	0.6472	0.6824	0.7189
17				71	3.229	3.359	3.491	125	0.6301	0.6647	0.7006
18	25.13	27.26	29.55	72	3.122	3.246	3.372	126	0.6135	0.6476	0.6829
19	24.05	26.07	28.23	73	3.02	3.138	3.257	127	0.5974	0.6309	0.6657
20	23.02	24.93	26.97	74	2.921	3.033	3.146	128	0.5818	0.6148	0.649
21	22.04	23.84	25.77	75	2.827	2.933	3.04	129	0.5667	0.5991	0.6328
22	21.1	22.81	24.63	76	2.735	2.836	2.938	130	0.5521	0.5839	0.6171
23	20.21	21.83	23.55	77	2.647	2.743	2.84				

R—Resistance

Resistance at 25°C : 20kΩ





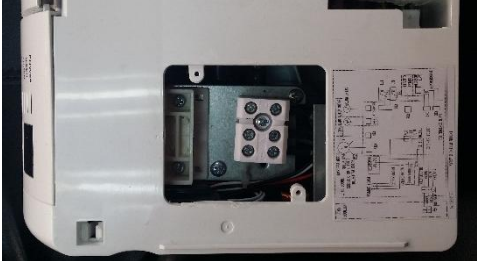

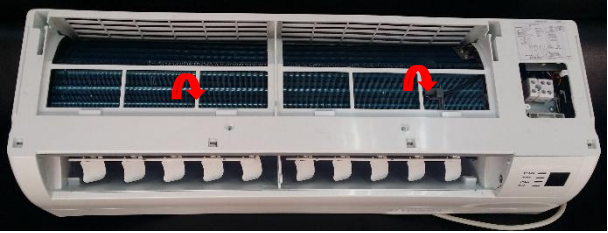
TH3: Outdoor unit discharge pipe sensor

Before measuring resistance, disconnect connectors as shown above.

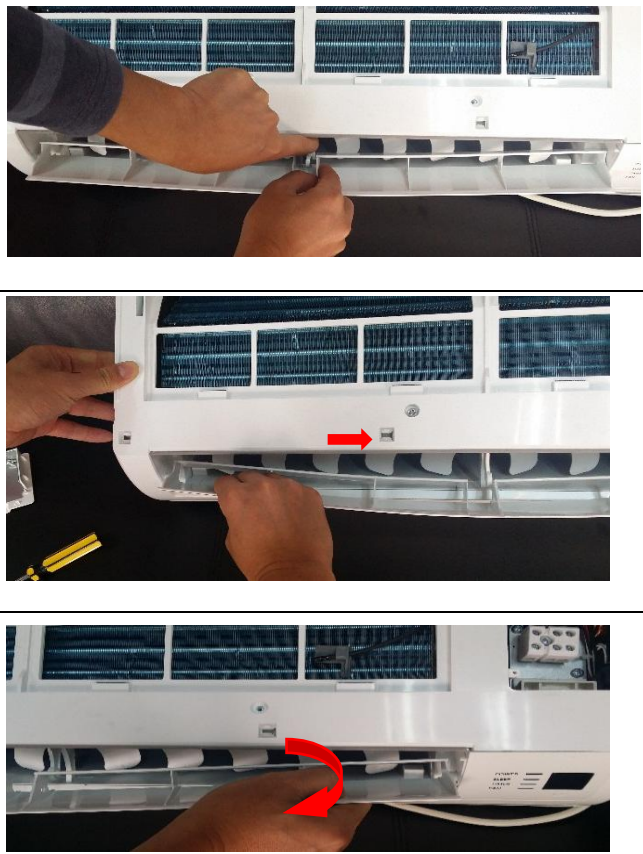
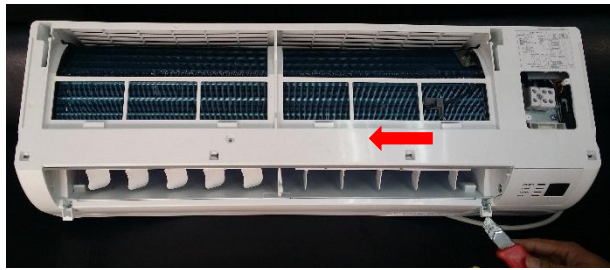
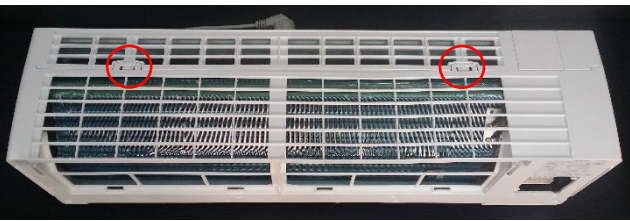
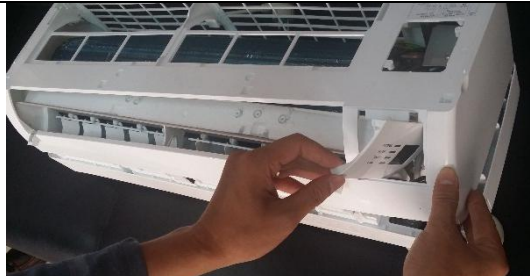
12. DISASSEMBLY PROCEDURE



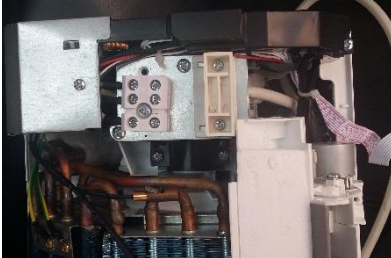



If, in carrying out repairs and modifications, the work requires the use of arc-and-flame-producing apparatus, such as welding, brazing and soldering equipment, this work shall only be started after the room has been thoroughly ventilated. While the work is being carried out, the mechanical ventilation, if any, shall be kept in constant operation and all windows and doors kept open. In the case of repairs to part of the refrigerant circuit, it may be necessary that not only the workman but also a second person shall be present for observation and assistance. Necessary protective equipment shall be available and, in the case of open flames or arcs, fire extinguishing apparatus shall be ready to hand. Welding and brazing shall be carried out by qualified workmen.

[1] INDOOR UNIT

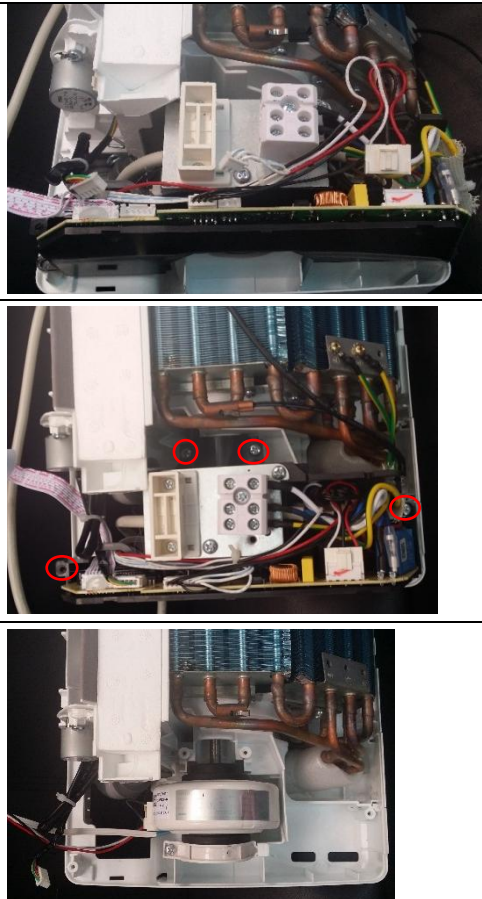
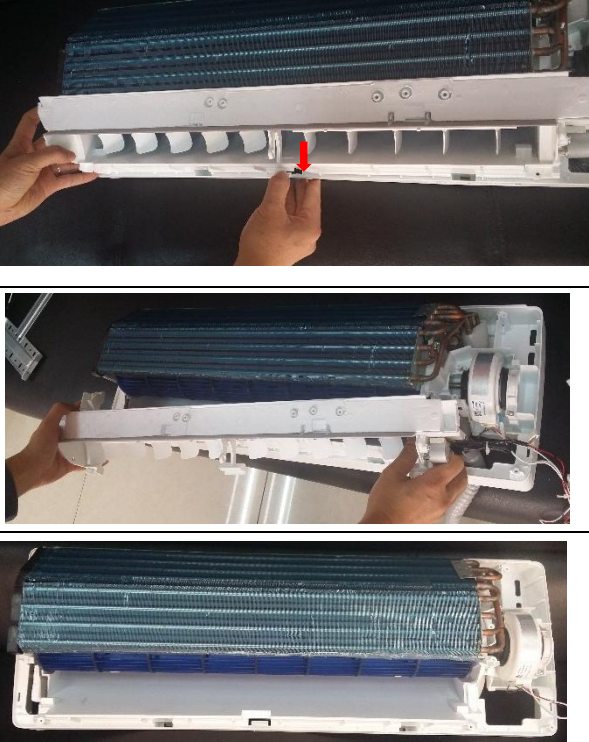
No.	Content	Picture
1	Open the front panel and remove it.	
2	Remove 1 screw fixing on the terminal cover.	
3	Remove the terminal cover.	
4	Slide out the 2 air filters.	
		



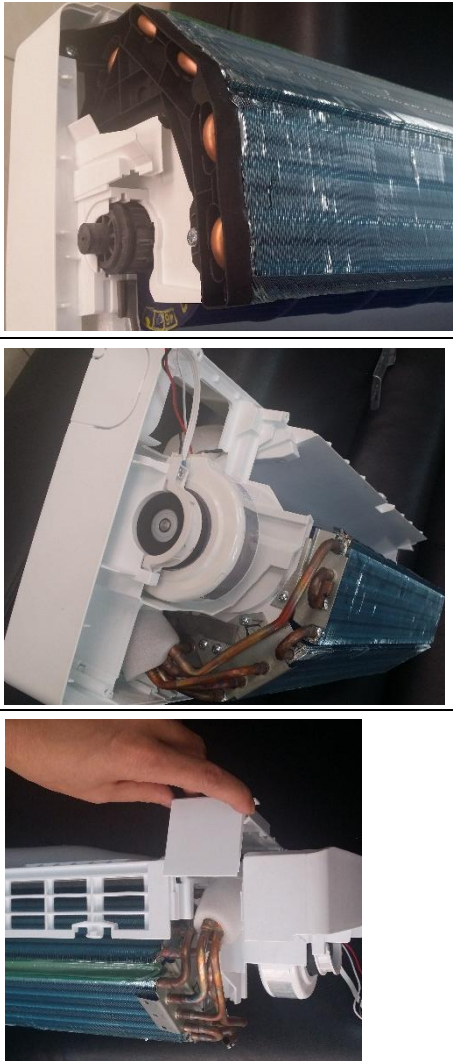

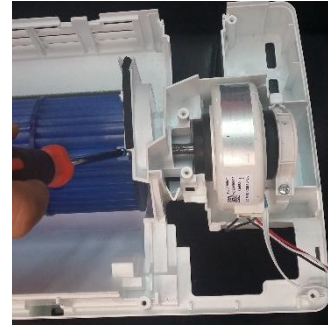

<p>5</p>	<p>Take out the vane from the water drainage assembly.</p>	
<p>6</p>	<p>Take out the screw cover and remove screws fixing on the frame.</p>	
<p>7</p>	<p>Unfasten the front panel and pull forward it slightly. (2 circled positions hooked.)</p>	
<p>8</p>	<p>Take off the display PCB cover.</p>	

9	Take out the face frame.	
		
10	Remove 2 screws and take out the electronic box cover.	
		
		
		




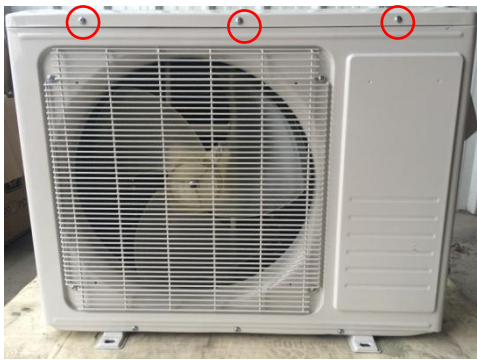



<p>11</p>	<p>Remove the 3 screws and the 4 connectors and remove the control box.</p>	
<p>12</p>	<p>Take out the water drainage assemble.</p>	

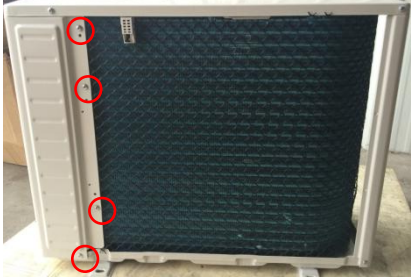


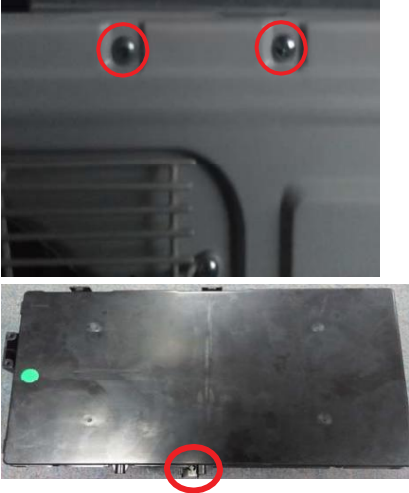



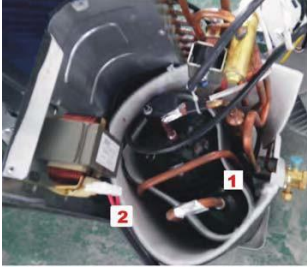
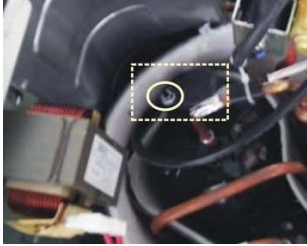


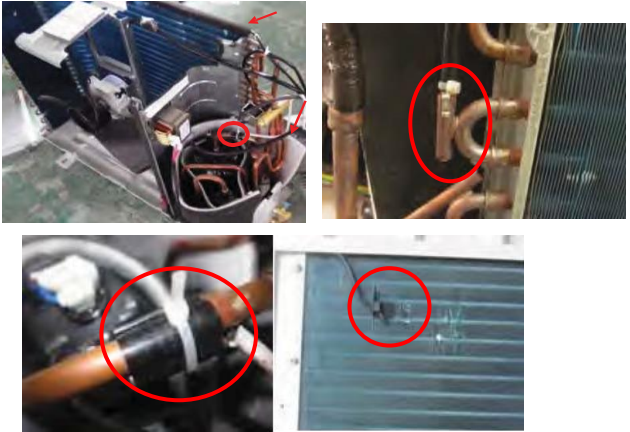
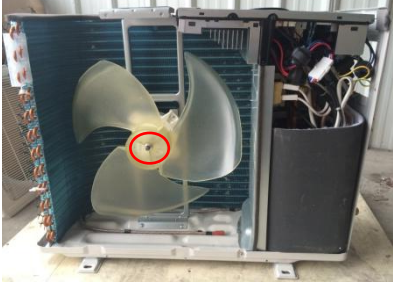
<p>13</p>	<p>Remove 4 screws and the In And Out Pipe Fixer.</p>	
<p>14</p>	<p>Take out the evaporator</p>	
<p>15</p>	<p>Loosen the screw of crossflow fan and separate the crossflow fan and the fan motor</p>	
<p>16</p>	<p>Remark: When assembling, insert the crossflow fan to the ring position.</p>	



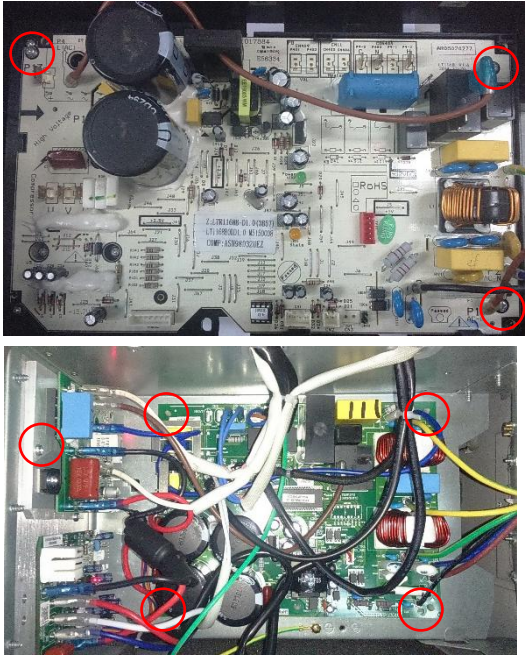
[2]OUTDOOR UNIT:

No.	Content	Picture
1	Remove the fixed screw and controlboxcover.	
2	Take out the 2 screws on the right side of top plate.	
3	Take out screws on the left side of top plate.	
4	The screws of the front of a front panel removed.	

<p>5</p>	<p>The screws on the right, front and left side of front plate removed.</p>	
<p>6</p>	<p>The screws on the left and back side of grille supporter removed.</p>	
<p>7</p>	<p>The screws on the right side of right plate removed</p>	

<p>8</p>	<p>Unscrew the 4 screws on the backside of right plate and removed the right plate.</p>	
<p>9</p>	<p>Remove the screws fixed on the control box.</p>	
<p>10</p>	<p>Remove the reactor in the control box.</p>	
<p>11</p>	<p>Remove the screws fixed the control box.</p>	
<p>12</p>	<p>Remove the screws fixed the bulkhead plate.</p>	

<p>13</p>	<p>Removethecompressorcovers1and2.</p>	
<p>14</p>	<p>Removethenut,andremovetheterminalcover.</p>	
<p>15</p>	<p>Removetheleadwireandthecovergasket.</p>	
<p>16</p>	<p>Removethecompressorcover</p>	
<p>17</p>	<p>Removethe3thermistors.</p>	
<p>18</p>	<p>Removetheoutdoorfan</p>	

<p>19</p>	<p>Takeoffleadwiresfromterminalassembly. (Bluewire,Brownwire,Blackwire)</p>	 <p>A photograph of a terminal assembly inside an air conditioner. Three wires (blue, brown, and black) are connected to terminals. A red circle highlights the terminal assembly.</p>
<p>20</p>	<p>Takeoffscrew(earth). Take offearthleadwire(green/yellow)fromelectronicbox.</p>	 <p>A photograph of a terminal assembly. A green and yellow earth lead wire is connected to a terminal. A red circle highlights the terminal.</p>
<p>21</p>	<p>Takeoffthe screws Take off the supporters</p>	 <p>Two photographs showing the internal electronic components. The top photo shows a printed circuit board (PCB) with various components like capacitors, resistors, and a transformer. Red circles highlight four screws on the board. The bottom photo shows the same board with various colored wires connected to it. Red circles highlight four screws on the board.</p>