

*eco*clima

Service manual

(INVERTER 50Hz **R410A**)

Split system:

EC(-W)/I-09QC(-B,-G,-W)

EC(-W)/I-12QC(-B,-G,-W)

EC(-W)/I-18QC(-B,-G,-W)

EC(-W)/I-24QC(-B,-G,-W)

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1.Range & Conditions

	Rated Operating Conditions	
	Indoor Temperature	Outdoor Temperature
Cooling	27°C DB/19°C WB	35°C DB/24°C WB
Heating	20°C	7°C DB/6°C WB
Tubing Length (m)	3	
	Max. Operating Value	
	Indoor Temperature	Outdoor Temperature
Cooling	32°C DB/23°C WB	52°C DB
Heating	27°C	24°C DB/18°C WB

DB: Dry-bulb temperature
WB: Wet-bulb temperature

2. Control Specifications

2.1 General introduction

The indoor fan motor uses PG; The compressor is 4 poles brushless motor which rotary speed can be adjusted within 25-100rps. The outdoor controller has IPM transducer which can control the compressor and PFC control circuit, and the power factor of complete unit reaches up to more than 95%.

The aim of controlling: Temperature difference between indoor temperature and set temperature. This unit has the following control:

2.1.1 Indoor fan motor controls (PG motor)

Fan speed: High, medium, low, gentle.

2.1.2 Outdoor fan motor (AC machine)

Fan speed: High, low.

2.1.3 Capacity control

Change the capacity of cooling and heating through changing the rotate speed of compressor. The transducer can convert the voltage AC220V into volts d.c. and control the power supply condition of compressor by IPM module.

2.1.4 Over current protection

Outdoor controller examines input current and the compressor begins to run after accepting the order from indoor unit. When the current value exceeds the prescribed value, the outdoor controller will decrease the rotate speed of compressor, in that case, compressor can run at the speed by the order from indoor unit within the range of the current value does not exceed the prescribed value.

2.1.5 High-loaded prevention (freeze-prevention)

Indoor heat exchanger examines the condensation temperature of refrigerant when the unit is in heating operation. (evaporate temperature of refrigerant when cooling and heating) .If the temperature exceeds the prescribed value, (or lower than the prescribed value) , then decrease the rotary speed of compressor to make compressor runs at the speed within the prescribed temperature range in order to keep high pressure from excessive rising. (Or keeping indoor heat exchanger from freezing.)

2.1.6 Blades control

Users can realize tridimensional airflow through controlling vertical blades.

Control the position of blades automatically according to operating condition. Press "vertical airflow" button to set the position of vertical blades freely. Electric control will store the position of blades when the current is switched on.

2.1.7 Power-failure automatic reset

2.2 Panel display

2.2.1. See Q model for the details of panel display.

2.2.2 Emergency Run button: The unit will be turned off when pressing this button when the unit is in operation;

The unit will be turned on and operates in Smart mode after pressing this button when the unit is in off status.

2.2.3 Press any key when the unit is in operation, the buzzer will give a buzz sound ; When the unit is in off status, press the button of “on/off”, “air refresh” or “smart”, the unit will be turned on with a buzz sound.

2.2.4 Please see the operating instructions for the usage of remote controller.

2.3 Blades Control

The blades range for vertical blades is from 1-5 point position. Press “vertical airflow” button, the blades will swing according to “1-2-3-4-5-swing-1-... “.But sometimes the blades can not be controlled because the unit is in protect function.

2.3.1 Cooling, Dehumidification and Air refresh function:

The blades will swing circularly within the range of 1-4.

In cooling and dehumidification operation, louver blades can change the position automatically to prevent from dripping.

2.3.2 Heating:

The blades will swing circularly within the range of 2-5.

During the course of heating beginning or defrosting (namely when the unit is in the pause condition) , the blades are in fixed position to avoid blowing cold airflow because of the too low temperature of indoor evaporator. Only when the temperature of evaporator is higher than 32℃, will the unit enter normal control.

2.4 Cooling

2.4.1 Indoor blower control:

The fan speed can be set as high, medium, low and auto level.

If changed to auto level, the indoor blower will choose the fan speed according to room temperature and set temperature.

2.4.2 Cooling capacity control:

Calculating the difference value between the temperature detected by indoor pipe temperature sensor and the prescribed indoor pipe value temperature to determine the correction of frequency command signal, correct the frequency command signal currently existing. When the indoor pipe temperature is lower than the prescribed indoor pipe value temperature, the unit will decrease the rotary speed of compressor.

2.4.3 Freeze-prevention control:

Pipe coil sensor detects the temperature of indoor heat exchanger. If the temperature is lower than the prescribed value, then the unit decreases the rotary speed of compressor to keep the indoor heat exchanger from freezing. If the temperature exceeds the lower limit

value, then please stop decreasing frequency; If the temperature exceeds the upper limit value, then the unit will exist freeze-prevention protection. If the temperature is lower than certain prescribed value, the unit will stop.

2.4.4 Over current-prevention control

If the value of input current detected by outdoor current sensor is higher than the prescribed value, the rotary speed of compressor will be decreased and controlled in order to keep the current value not higher than the upper limit value; compressor will come to normal operation when the current value drops to the lower limit value; If current value is higher than the upper limit value, compressor will stop.

2.4.5 Cooling overload working

In cooling operation, if the temperature of outdoor heat exchanger is too high, the speed of compressor will be adjusted to a lower gear automatically, and sometimes compressor may be stopped.

2.4.6 Sleep control (soft operation)

Press "sleep" button on remote controller, the unit will control rotary speed of compressor and indoor fan motor and enters sleep operation:

Rotary speed of fan motor: medium level or low level

Rotary speed of compressor: decrease

The set temperature will increase 1°C automatically after running for 1 hour; After running for about 1 hour, the set temperature will increase 1°C; After running for another 1 hour, the set temperature will go on increasing 1°C. The temperature will not increase when the set temperature is higher than the prescribed value. The temperature will not exceed the prescribed value when lower than the prescribed value.

2.4.7 The highest rotary speed of compressor controlled by wind rate grade

To determine the highest rotary speed of compressor according to indoor and outdoor temperature.

2.4.8 Outdoor Motor Control

The speed of outdoor motor is decided in low or higher according to the outdoor surroundings temperature and the indoor pipe temperature.

2.4.9 Dry Mildew Proofing Operation

Indoor fan motor will go on running for a period of time after the unit is turned off to dry surplus moisture remain in unit.

2.4.10 Compressor frequency control

A Frequency range of compressor is 25-100Hz.

B Original frequency of compressor: Set by original indoor temperature and surroundings temperature.

C Running frequency of compressor is controlled by artificial intelligence.

2.5 Heating

2.5.1 Indoor fan motor control

Fan speed: High,medium,low,auto.

If choosing “Auto” mode, then indoor fan motor chooses fan speed according to indoor temperature and the set temperature.

2.5.2 Cool-airflow-prevention while heating

Avoid cool airflow: At the beginning of heating mode, if the temperature of indoor pipe coil is lower than the prescribed value, and compressor stops or running time less than the prescribed time (If exceeding the prescribed time,the unit will exist cool-airflow-prevention.) , the unit is in cool-airflow-prevention condition, then louver blades can not swing and indoor fan motor stops. The PAUSE indicator lights during cool-airflow-prevention period.

2.5.3 Heating capacity control

Calculating the difference value between the temperature detected by indoor pipe temperature sensor and the prescribed indoor pipe value temperature to determine the correction of frequency command signal, correct the frequency command signal currently existing. When the indoor pipe temperature is higher than the prescribed indoor pipe value temperature, the unit will decrease the rotary speed of compressor.

2.5.4 High-loaded control

Indoor pipe coil temperature sensor examines evaporator temperature, if temperature exceeds the prescribed value, the frequency does not increase; if temperature exceeds upper limit value, the rotary speed of compressor will be gradually decreased to avoid too high heat load; if temperature is lower than the prescribed value, the frequency does not decrease; if temperature is lower than lower limit value, unit will exist high-loaded control and enters normal operation.

2.5.5 Over current control

If the value of input current detected by outdoor current sensor is higher than the prescribed value, the rotary speed of compressor will be decreased and controlled in order to keep the current value not higher than the upper limit value; compressor will come to normal operation when the current value drops to the lower limit value; If current value is higher than the prescribed value, compressor stops.

2.5.6 Defrosting control

2.5.6.1 Defrosting test

When machine is in heating mode, it controls defrosting through defrosting sensor (Te) detecting the frost level of heat exchanger.

2.5.6.1.1 The first conditions of entering defrosting:

2.5.6.1.1.1 The prerequisite of defrosting: heating compressor is running for 10 minutes and 45 minutes in total (general defrosting)/ 90 minutes 【 (low temperature defrosting: outer environmental temperature is under -6°C)】 ;

2.5.6.1.1.2 Sufficient conditions of entering defrosting as below:

2.5.6.1.1.2.1 Not to enter defrosting if outer environmental temperature is above 15°C;

2.5.6.1.1.2.2 Enter defrosting if outer environmental temperature is under -6°C and defrosting temperature is less or equal to -15°C for 5 minutes;

2.5.6.1.1.2.3 Enter defrosting if outer environmental temperature is between 【5°C—15°C】 and defrosting temperature is less or equal to -6°C for 5 minutes;

2.5.6.1.1.2.4 Enter defrosting if outer environmental temperature is between 【-6°C—5°C】 and defrosting temperature is less or equal to TeS for 5 minutes.

$TeS = C * \text{outer environmental temperature} - A$ $A = 8$ Outer environmental temperature < 0°C
 $C = 0.8$ outer environmental temperature ≥ 0°C $C = 0.6$

2.5.6.1.2 The second conditions of entering defrosting:

Compressor runs for 3 hours, but not to enter defrosting and temperature of condenser pipe is less -2°C for 3 minutes

2.5.6.2 Defrosting operation

Stop compressor first and turn off 4-way valve relay and outdoor fan motor; Turn on compressor again. Outdoor fan stops while defrosting.

2.5.6.3 Existing defrosting

Defrosting operation will change into heating operation when meeting any of the following condition:

- 1) Outdoor heat exchange is higher than the prescribed value.
- 2) Outdoor heat exchange is higher than the prescribed value for a consecutive period of time.
- 3) Time of defrosting is longer than the longest time of prescribed time.

2.5.6.3 Defrosting note:

2.5.6.3.1 Machine will not stop when the compressor frequency doesn't go up to 80Hz, switched to non-heating mode after entering defrosting.

2.5.6.3.2 Sensor error code will not be shown in the display of indoor during defrosting even if the sensor has problems, but the error code will be shown 3 minute after the compressor starts to run when the machine is restarted after defrosting exits, or the compressor will open or close according to the environmental temperature.

2.5.6.3.3 The outdoor unit will not detect the temperature of indoor sensor during defrosting. (The outdoor unit always detects the inner environmental temperature, but the detected result is no use for outdoor unit.)

2.5.6.3.4 The conditions of ending defrosting must be detected 2 minutes after the compressor starts to run.

2.5.6.3.5 Compressor running time record will not be refreshed if the machine is not switched to non-heating mode, even if the machine is turned off.

2.5.7 Blowing surplus energy function

When turning off compressor, indoor fan motor chooses low speed operation (gentle/stop)

according to temperature of indoor pipe coil to make the best of surplus energy of indoor pipe coil.

2.5.8 Temperature control for compressor vent

Vent temperature sensor detects the temperature of refrigerant air exhausted from compressor and control rotary speed of compressor (same as cooling and heating) to ensure high efficient operation of system.

2.5.9 Sleep control (soft operation)

Press "sleep" button on remote controller, the unit will control rotary speed of compressor and indoor fan motor and enters sleep operation:

Rotary speed of fan motor: medium level or lower level

Rotary speed of compressor: decrease

The set temperature will decrease 1°C automatically after running for 1 hour; After running for another 1 hour, the set temperature will go on decreasing 1°C. But the set temperature displayed on LED will remain unchanged.

2.5.10 Outdoor fan motor control (except defrosting)

The speed of outdoor motor is decided in low or higher according to the outdoor surroundings temperature and the indoor pipe temperature.

2.5.11 compressor frequency control

A Frequency range of compressor is 25-100Hz.

B Original frequency of compressor: Set by original indoor temperature and surroundings temperature.

C Running frequency of compressor is controlled by artificial intelligence.

2.6 "Smart"function

The unit will judge the operation mode automatically after receiving the SMART signal.

2.6.1 Original set temperature: Choosing indoor temperature according to set temperature.

2.6.2 Original mode : Choosing original mode according to outdoor temperature and indoor temperature. There are three modes are available: cooling, heating, fan sweep

Fan sweep mode: High level, louver blades swing automatically and can be adjustable.

In "Smart" mode, all additional function is available. Indoor fan speed is set as automatic and louver swing automatically. Outdoor rotary speed is controlled according to the corresponding mode, and users can adjust position of louver and temperature.

Unit will judge next working mode after finishing operation of a kind of mode. If in fan sweep mode, unit will enter mode to judge program every per minute until enter cooling or heating mode.

2.6.3 Judge mode again: Choosing cooling (heating/fan sweep) mode according to indoor, outdoor temperature and the set temperature.

2.7 Dehumidification

2.7.1 When indoor temperature is higher than a certain temperature value, and higher than(set temperature) , unit operates in cooling mode and outdoor fan speed is the same with the speed in cooling operation; or unit operates in dehumidifying operation according to indoor temperature and outdoor fan motor is at low speed level.

When indoor temperature is higher than the upper limit value, compressor operates by a certain prescribed frequency.

When indoor temperature is between upper limit temperature and lower limit temperature, compressor operates by a prescribed frequency.

When indoor temperature is lower than lower limit temperature, compressor stops.

2.7.2 Fan motor runs at low speed level.

2.7.3 Freeze-prevention control: same as cooling mode.

2.7.4 Dry Mildew Proofing Operation: same as cooling mode.

2.8 Other functions

2.8.1 Timelag protection function for compressor

In order to protect compressor (expect for defrost mode) ,there will be a 3-minute delay to restart when compressor stops from working condition. And there is still 3 minute delay when the compressor is firstly started.

2.8.2 Automatic restart

This function refers to: When the electricity comes again after power failure, the unit is required to get back to the condition before power failure automatically. The mode, set temperature, air refresh, sleep, lock for the safety of children, humidification and air ventilation all keep in the same condition before power failure.

This function can be set or cancelled through EEPROM device on electric board or the installation of peripheral circuit.

2.8.3 Independent air refresh function

Press "air refresh"button on remote controller when the unit is in off status, the unit is in Fan Sweep mode. Press this button again, this function can be cancelled.

2.8.4.Timing on/off

1. Turn on the air conditioner on timer: The air conditioner will starts operation at the set time. "time on"function is only effective for once in 24 hours. If user turns on the air condition by pressing on/off button on the remote controller before the set time, then" timing on" function will be cancelled. If user select "timing on" when the air conditioner is in on status, the air conditioner will stop immediately and restart automatically at set time.

2. Timing off: The air conditioner will exit running at set time. " timing off" function is only effective for once in 24 hours. If user turns off the air condition by pressing on/off button on

the remote controller before the set time, then” timing on” function will be cancelled. If user selects “timing off” when the air conditioner is in off status, the air conditioner will run immediately and stop automatically at set time.

3. Program timing control: Air conditioner is turned on/off automatically at set time every day. if user turn off the air conditioner by pressing off button before the set time, then the “timing off” function will be cancelled but the “timing on” function is still effective; If user turns off the air conditioner by pressing on the emergency button before the set time, then the program timing control will be cancelled. If user turn on the air conditioner by pressing on the on button on the remote controller before the set time, then timing on function will be cancelled but the timing off function is still effective; if the user turn of the air conditioner by pressing on emergency button before set time, then the program timing control will be cancelled.

2.8.5 Induction function(of remote controller)

The remote controller sends the room temperature signal to air conditioner once time in every 3 minutes, and the unit will run according the signal. To detect the room temperature, remote controller must be placed in the area where the signal of remote control can be received. If the signal from remote control can not be received in 5 minutes, the air conditioner will operate according to the temperature which detected by indoor temperature sensor.

2.9 Failure indication

A. Failure indication for outdoor unit:

The red light will flash when there is any failure happened. Otherwise, no red light is on.

The green light will be on when outdoor unit is with electricity.

B. Failure indication for indoor unit:

1. PG motor failure---F0
2. Indoor temperature sensor failure---F1
3. Outdoor temperature sensor failure---F2(The red light on outdoor PCB will flash twice)
4. Indoor pipe coil temperature sensor failure---F3
5. Outdoor pipe coil temperature sensor failure---F4(The red light on outdoor PCB will flash one time)
6. Exhausting temperature sensor failure---F5(The red light on outdoor PCB will flash 4 times)
7. Indoor communications can not be accepted---F6(The red light on outdoor PCB will flash 6 times)
8. Outdoor unit and IPDU communications failure---F8(The red light on outdoor PCB will flash 14 times)
9. IPM module protection---F9(The red light on outdoor PCB will flash 7 times)
10. Indoor EEPROM on PCB failure---FD
11. Outdoor EEPROM on PCB failure---FE(The red light on outdoor PCB will flash 5 time)
12. Compressor overhead protection----E0(The red light on outdoor PCB will flash 11 times)
13. IPM over current protection---E3(The red light on outdoor PCB will flash 12 times)
14. IPDU current sensor (no or failure)---E3(The red light on outdoor PCB will flash 12 times)
15. IPDU position circuit failure ---E6(The red light on outdoor PCB will flash 19 times)
16. Compressor speed up abnormally---E7(The red light on outdoor PCB will flash 18 times)
17. Compressor is stemmed ---E7(The red light on outdoor PCB will flash 15 times)
18. Compressor desynchronizing while running---E7(The red light on outdoor PCB will flash 17 times)
19. Compressor failure ---E8(The red light on outdoor PCB will flash 16 or 20 times)
20. Board temperature too high---E9(The red light on outdoor PCB will flash 13 times)

C. Failure indication for indoor unit: :

1. Protection for compressor exhausting temperature----P1(The red light on outdoor PCB will flash 25 times)
2. Defrosting----P3
3. Heating overload----P4(The red light on outdoor PCB will flash 27 times)
4. Freeze-prevention----P5(The red light on outdoor PCB will flash 28 times)
5. Cooling overload----P6(The red light on outdoor PCB will flash 26 times)

2.10 UVC function and specifications

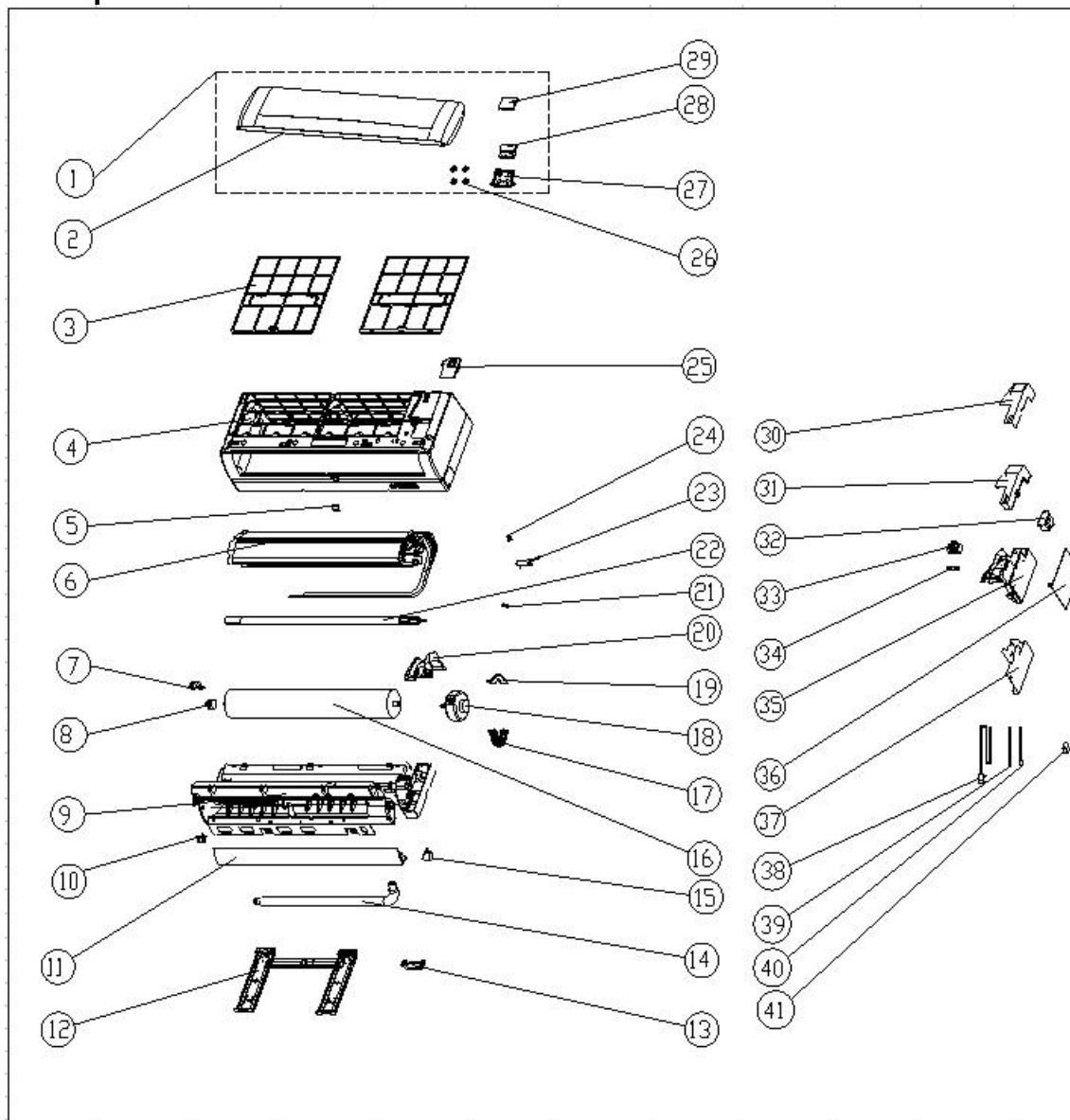
Press the UVC button on remote controller to start or stop UVC sterilize function.

Note: Read the maintenance instructions before opening the device.

- 1.This appliance contains a UVC lamp.
- 2.Unintended use of the appliance or damage to the housing may result in the escape of dangerous UVC radiation. UVC radiation may, even in small doses, cause harm to the eyes and skin.
- 3.Appliances that are obviously damaged must not be operated. Prior to cleaning or other maintenance, the appliance must be disconnected from the supply mains.
- 4.If applicable, precautions to be taken when replacing UVC emitters and starters;
- 5.Disconnect the power supply before replacing the UVC lamp;
- 6.Doors and access panels with a UV radiation hazard symbol may have UVC spectral irradiance greater than 1,7 W/ cm² and are equipped with an interlock switch to disconnect UVC lamp power for safety. Don't go beyond;
- 7.It is recommended to disconnect the power supply before opening doors and access panels with UV hazard symbols for user maintenance.
- 8.UVC barriers with UV radiation hazard symbols should not be removed;
- 9.For appliances fitted with UVC lamps, provide information on replacement of UVC lamps, including model number and/or part number;
- 10.In the case of field installation, a factory-designated UVC sterilization lamp system approved for use in this product shall be specified in the operating instructions by a particular model;
- 11.Do not operate THE UVC lamp outside the device

3. Exploded view

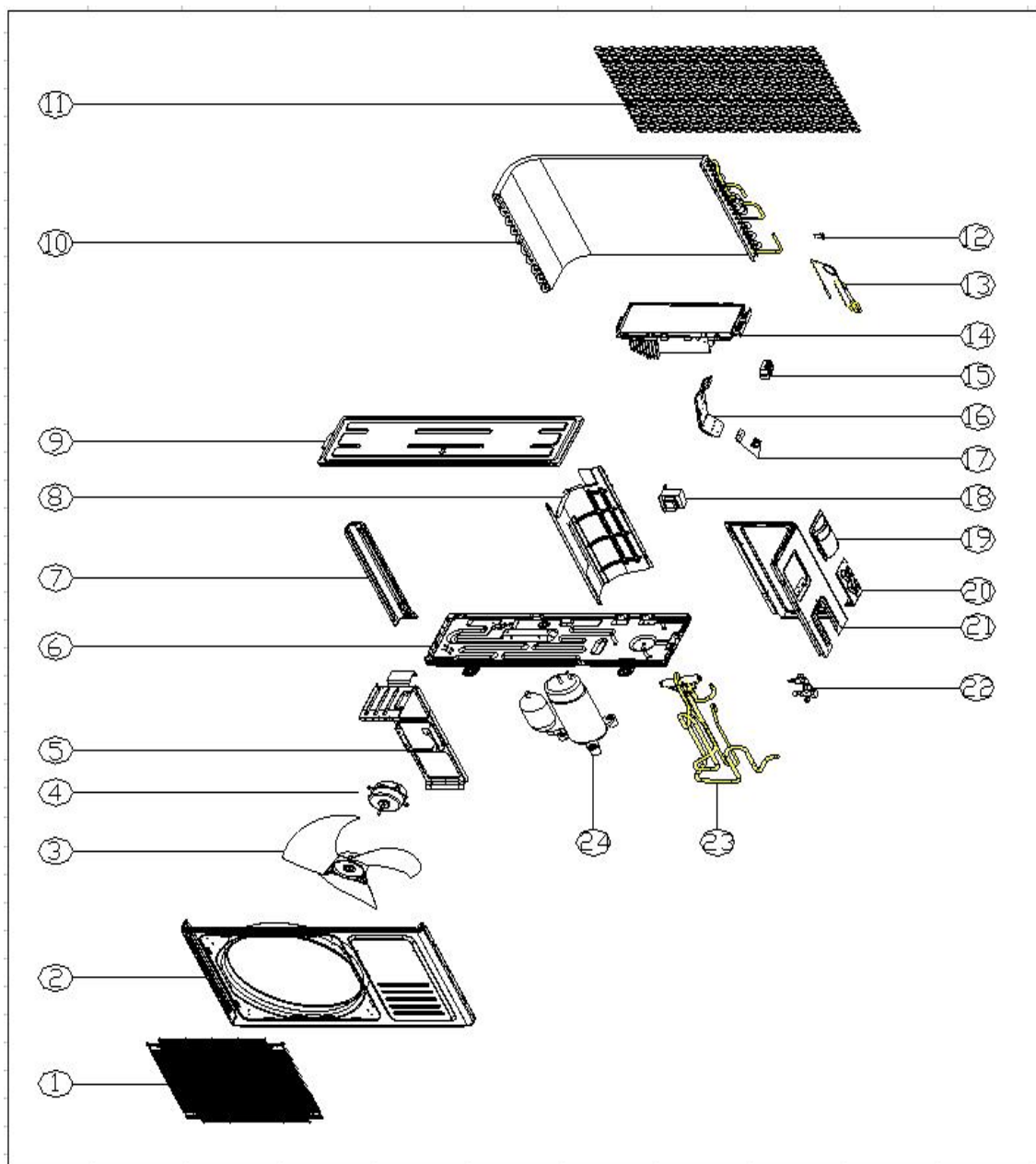
3.1 Exploded view for indoor unit



NO.	Materails Description	NO.	Materails Description
1	Front panel subassembly	22	electric heating tube
2	Front panel	23	Positive and negative ion generate
3	Air filter	24	Sensor bracket
4	Medium frame subassembly	25	Electric control board
5	Screw cover	26	Spring
6	Evaporator subassembly	27	Display box
7	pressure plate	28	Display P.C.B assembly
8	Bearing	29	WIFI subassembly
9	Bottom frame subassembly	30	Electric control box board(metal)
10	Stepping motor	31	Cover of electirc control box
11	Blade	32	Transformer
12	Wall-Mounting frame	33	Terminal board
13	Pipe pressure plate	34	Wire pressure plate
14	Drainage pipe subassembly	35	Electirc control box
15	Stepping motor	36	P.C.B assembly
16	Crossflow fan	37	Electric control box(metal shell)
17	Motor Bracket (bottom)	38	Power line
18	Fan motor	39	Room temperature sensor
19	Motor Bracket (top)	40	Pipe temperature sensor
20	Motor cover	41	Negative ion generator
21	Negative ion generator		

NOTE:Actual product may be different from above graphics,please refer to actual products.

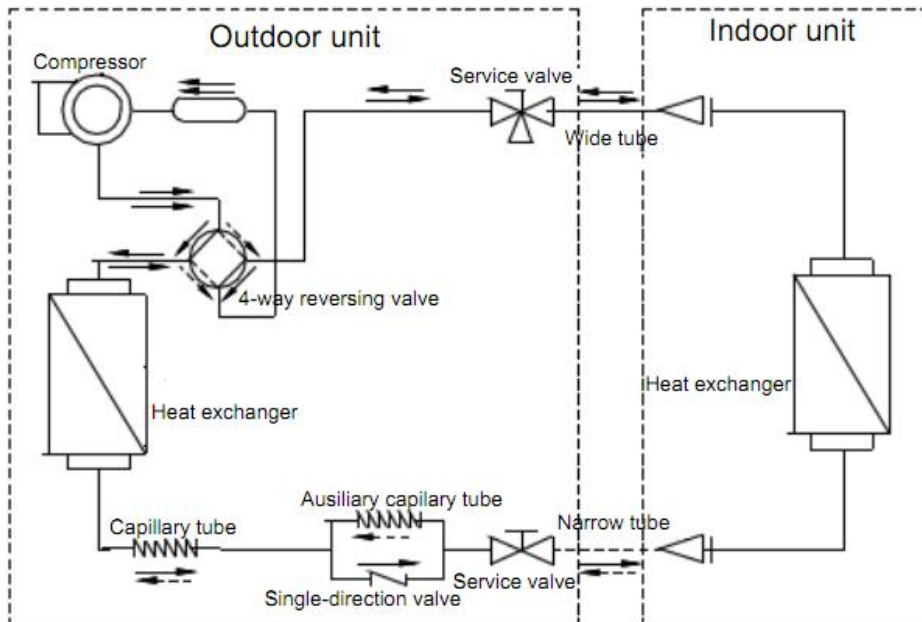
3.2 Exploded view for outdoor unit



NO.	English description
1	front net cover
2	front plate subassembly
3	propeller fan
4	fan motor
5	motor bracket subassembly
6	bottom plate subassembly
7	Metal support
8	partition board
9	Top cover assembly
10	condenser subassembly
11	rear net cover
12	Sensor holder
13	capillary subassembly
14	outdoor electric control subassembly
15	Platen
16	Terminal seat
17	Electrical inseallation board
	Electrical inseallation board
18	reactor
19	electric cover subassembly
20	Valve mounting plate
21	Lateral plate assembly
22	cut-off valve 3/8
	cut-off valve 1/4
23	four-way valve subassembly
24	compressor

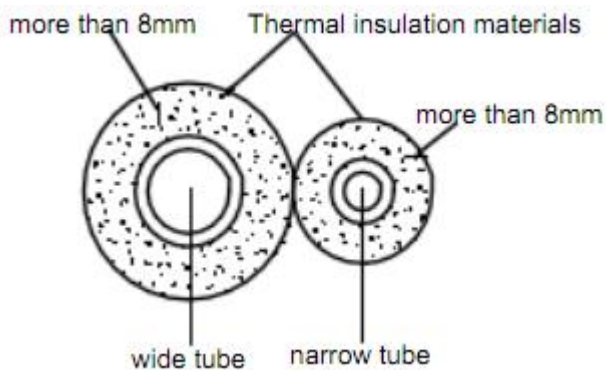
NOTE:Actual product may be different from above graphics,please refer to actual products.

4. Refrigerant Flow Diagram



Thermal insulating of refrigerant pipeline

To prevent heat loss and condensed water from dropping on the floor, the wide and narrow tube of air conditioner should be wrapped with thermal insulating materials. For using capillary tube, and the tubes are in low temperature, the thickness of thermal insulating materials shall be more than 8mm.

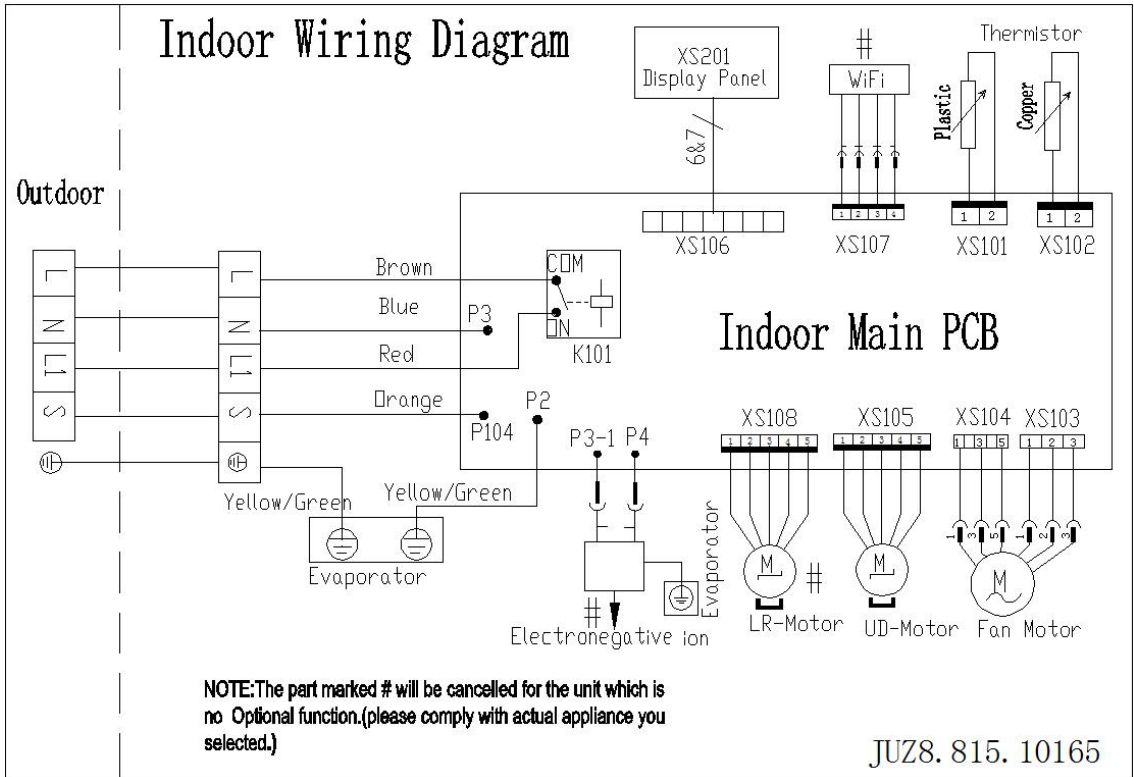


5. Circuit Diagram

5.1 Electrical wiring diagram for indoor unit



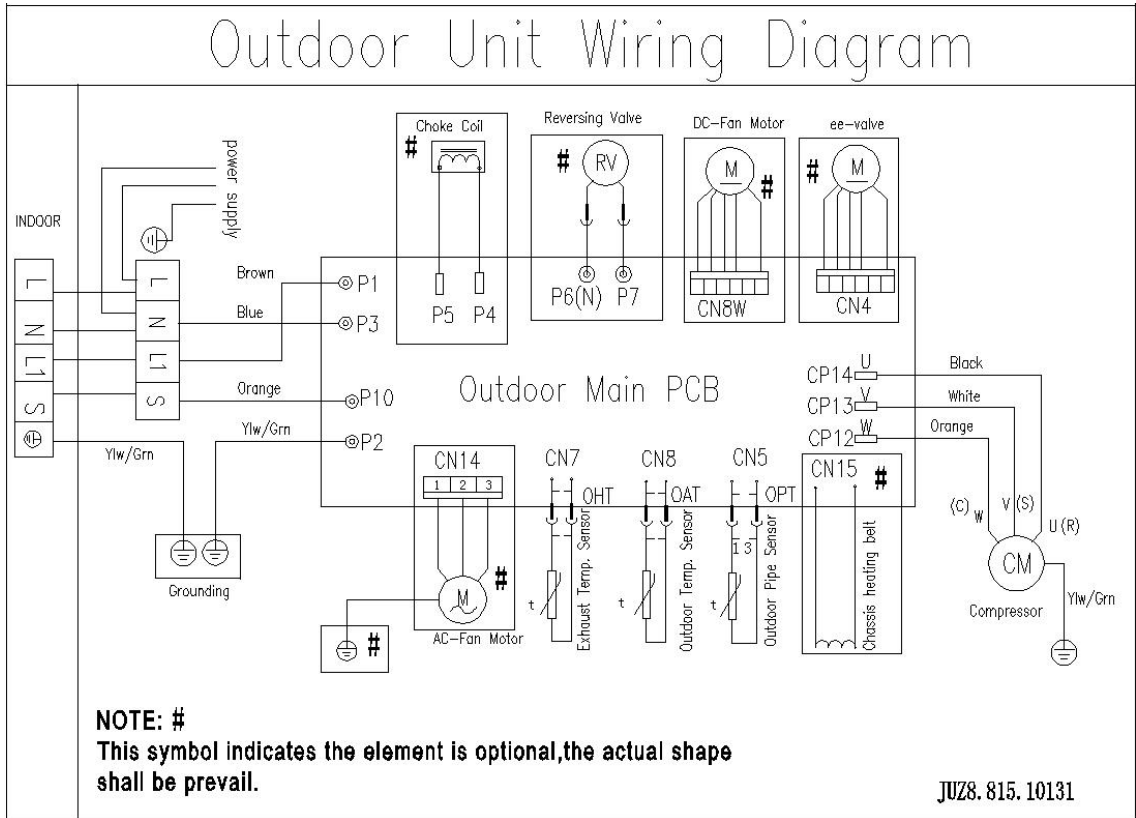
To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



5.2 Electrical wiring diagram for outdoor unit

Warning

To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



6. Troubleshooting

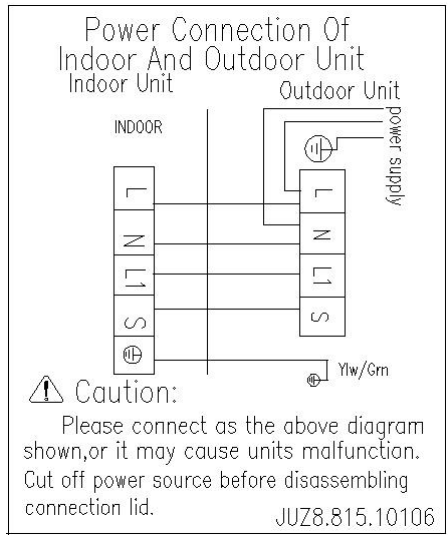
6.1 Check before troubleshooting

Warning:

High-voltage will result in electric shock or death.
Always cut off the power before checking and maintaining.

Check power line

To check whether the power line is connected correctly according to the wiring diagram.



6.1.2 Check unit wiring

To check whether the inter-unit wires are connected correctly.

6.1.3 Check power supply

To check whether the power supply is in the specified range ($220 \pm 10\%$).

To check whether the power supply is being supplied.

6.1.4 Check connector and lead wire of indoor and outdoor units.

To check whether the insulating cover of the lead wire is damaged.

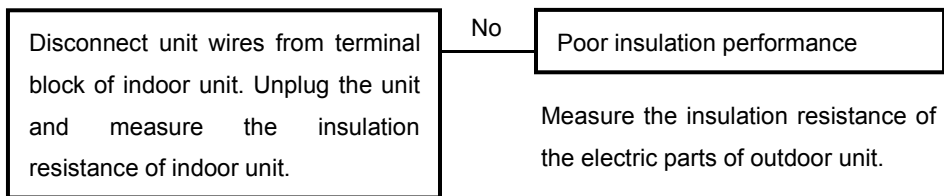
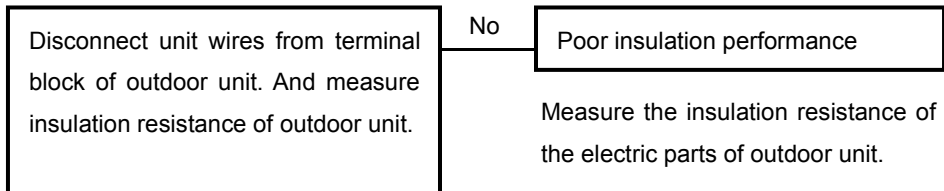
To check whether the lead wire and the connector are connected well

To check wires.

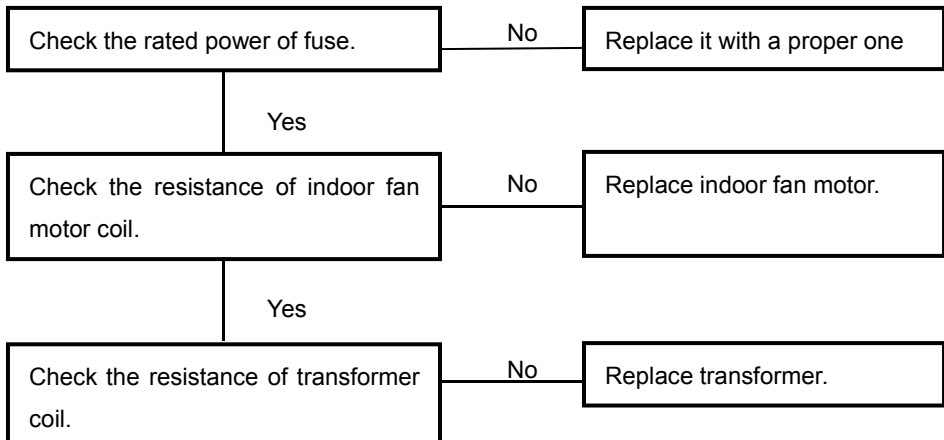
6.2 The air conditioner does not work

6.2.1 Leakage protector is open or fuse is burnt.

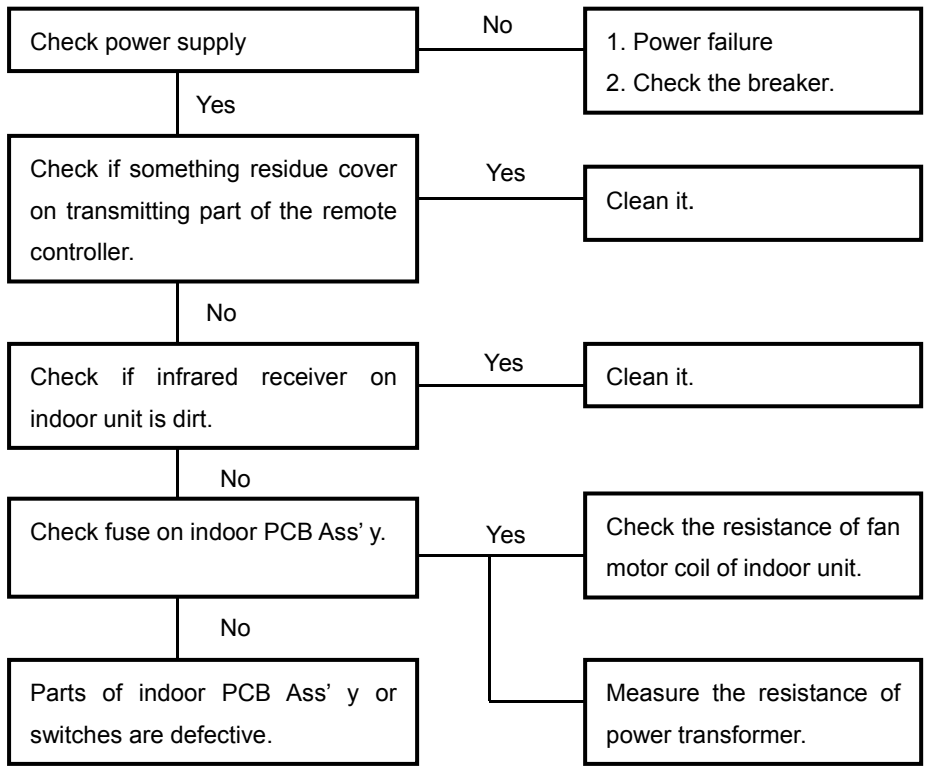
- A. Setting leakage protector to "ON", it opens immediately (can not reset).
There is possibility of ground fault.
Check insulation resistance (The insulation resistance shall be more than $2M\Omega$).
- B. Leakage protector is **OFF**.



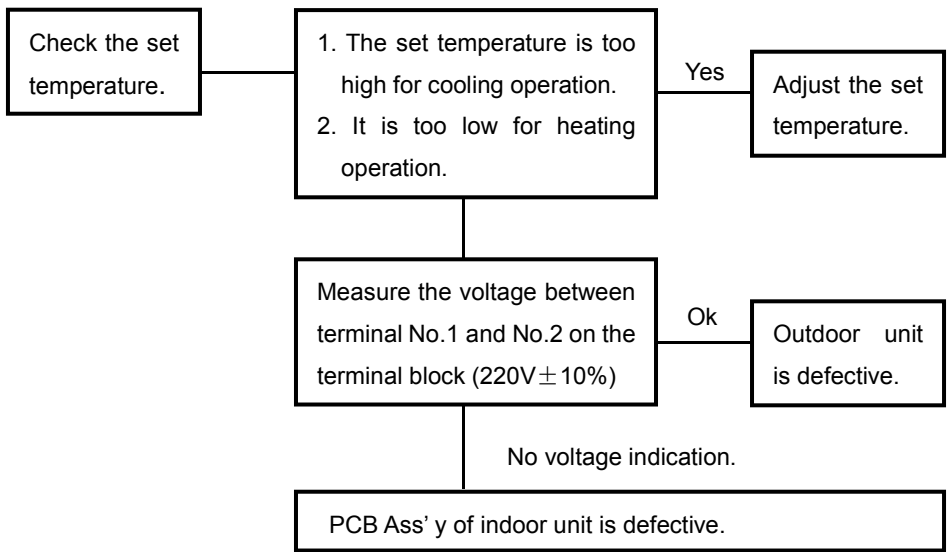
- C. The fuse is open in several minutes after turning air conditioner on.



6.2.2 The indoor and outdoor units do not work.



6.2.3 Only outdoor unit does not work:

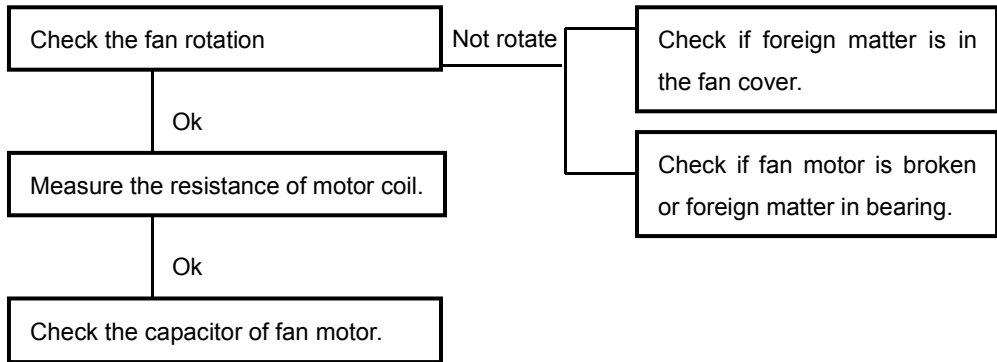


6.2.4 Only indoor unit does not work.

Indoor PCB Ass'y is defective.

6.3 Some parts of the air conditioner do not work

6.3.1 Only indoor fan does not work.

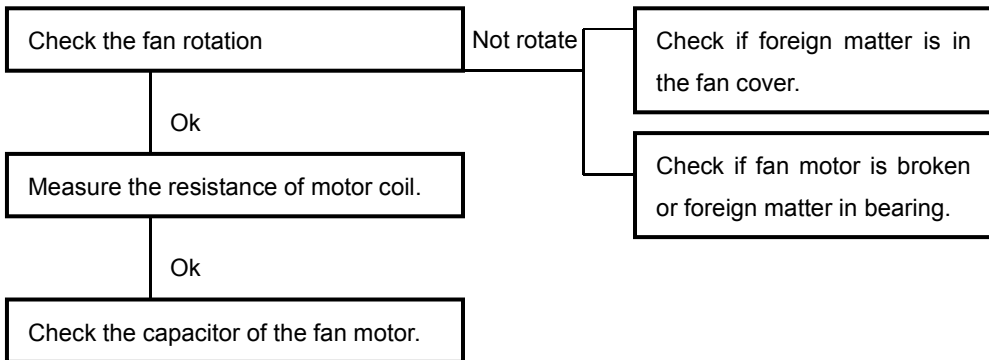


6.3.2 Only louver motor does not run.

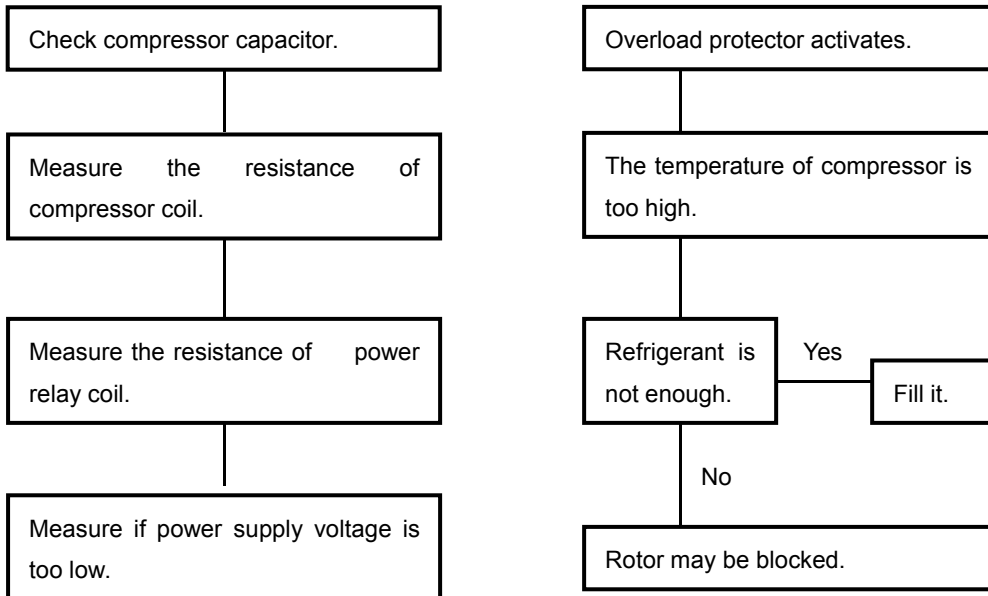
Measure the resistance of the louver motor coil.

Check the connector.

6.3.3 Only outdoor fan motor does not run.



6.3.4 Compressor does not run.



6.4 Air conditioner operates, but abnormalities are observed

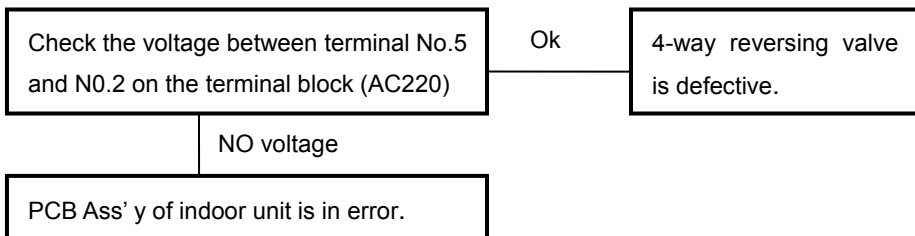
6.4.1 Bad shifting between cooling and heating mode

(Not available in cooling type).

Remote controller may be defective.

Measure the coil resistance of 4-way reversing valve.

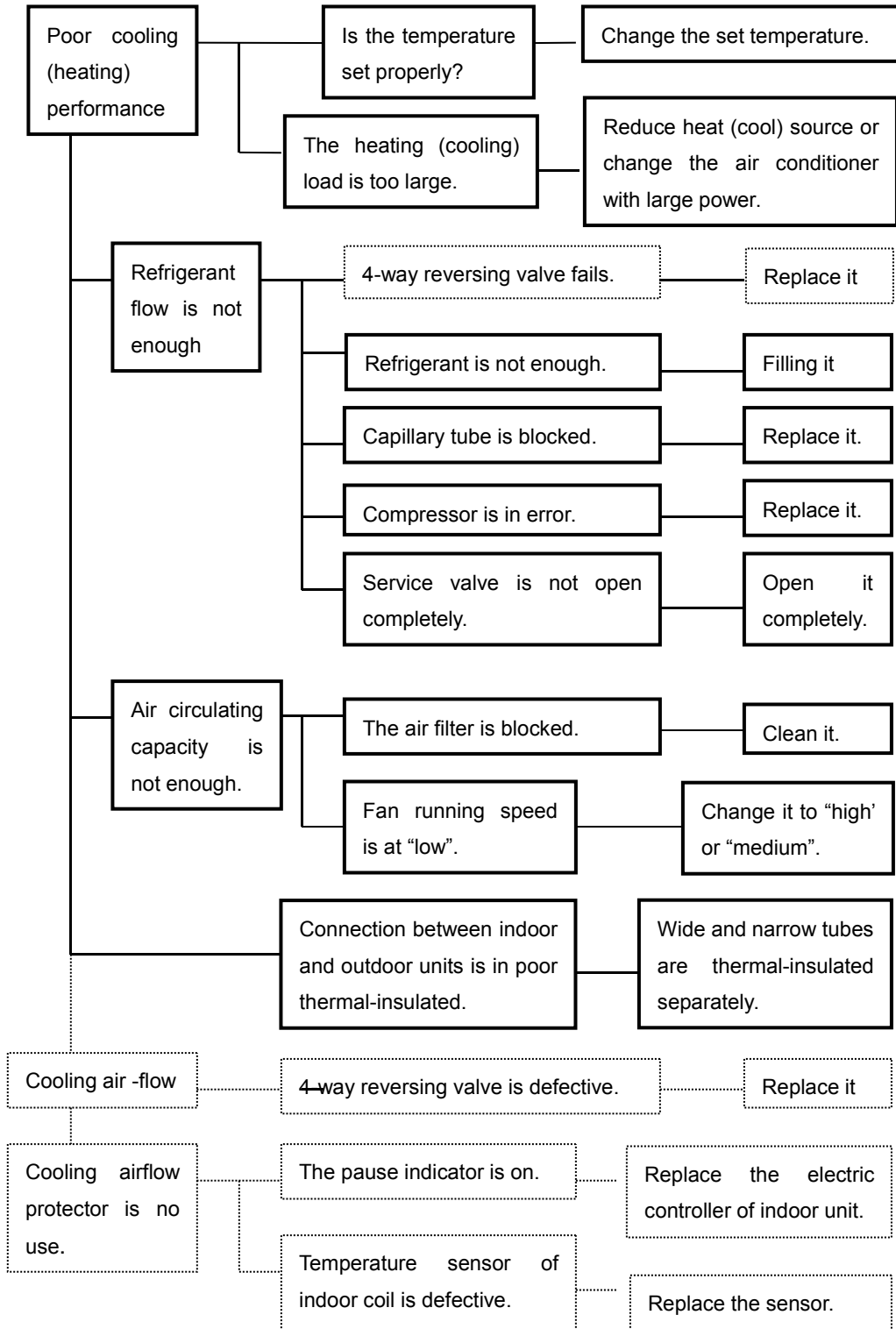
Cooling → Heating



Cooling → Heating

Measure the voltage between terminal No.5 and No.2 on the terminal block (ov).

Poor cooling or heating phenomena.



Note: Only in heat pump air conditioner.

6.5 Over cooling or heating.

Check the set temperature.

6.6 Sensor is defective

6.6.1 Temperature sensor of indoor heat exchanger is defective.

The timer of indoor unit is flash.

The sensor is open or short.

Replace it.

Definition of open or short circuit of sensor (thermal resistor):

Short circuit: The protective cover of a lead wire has been damaged, and the exposed wire is touching another metal parts. Or both lead wires have become exposed and are touching each other. Or the circuit inside the temperature sensor is closed.

Open: The lead wires are broken, or the circuit inside the temperature sensor is open.

7. Checking Electrical Components

7.1 Measure insulation resistance

The insulation is in good condition if the resistance exceeds 2 MΩ.

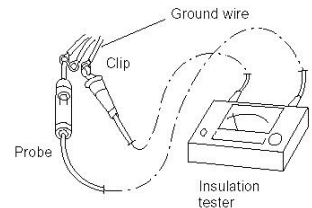


Fig. 1

7.1.1 Power supply wires

Clamp the ground pins of the power plug with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the ground wire and the other power wire. (Fig. 1)

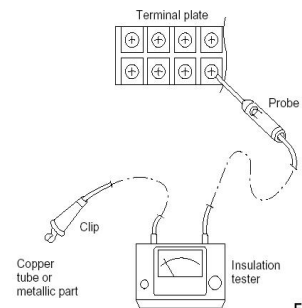


Fig. 2

7.1.2 Indoor unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw on the terminal plate. (Fig. 2)

Note that the ground line terminal should be skipped for the check.

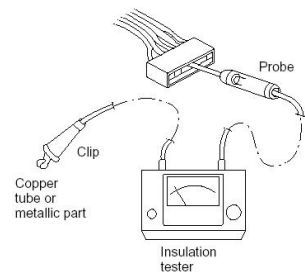


Fig. 3

7.1.3 Outdoor unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

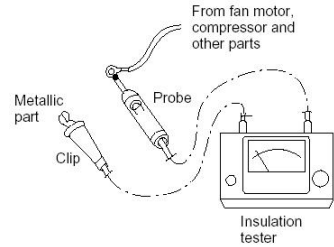


Fig. 4

7.1.4 Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate. Capacitor, etc.

Similarly disconnect the connector. Then measure the insulation resistance. (Fig. 3 and 4)

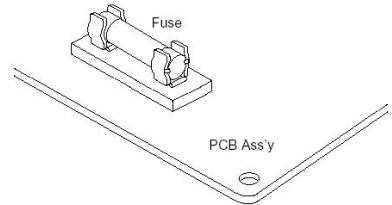


Fig. 5

Note:
Refer to electric wiring diagram.
If the probe can't enter the poles because the hole is too narrow then use a probe with a thinner pin.

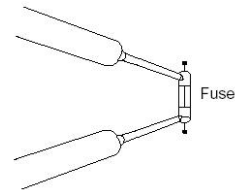


Fig. 6

7.2 Checking continuity of fuse on PCB ass'y

Remove the PCB ass'y from the electrical component box. Then pull out the fuse from the PCB ass'y. (Fig. 5)

Check for continuity using a multimeter as shown in Fig. 6

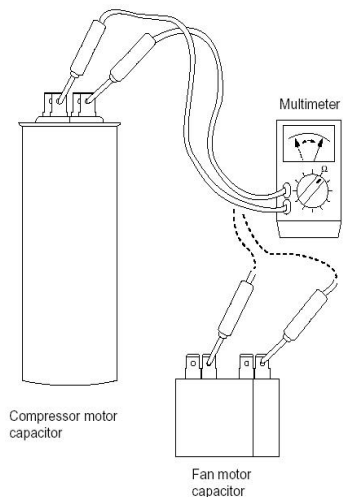


Fig. 7

7.3 Checking motor capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capacitor.