



**Version: 1.3**

SPLIT TYPE AIR CONDITIONER

## SERVICE MANUAL

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### **HISENSE VIBE PRO CARBON MULTI EU DC Inverter R32 2026**

AMS-09UW4RYCHB00(B)

AMS-12UW4RWUHB00(B)

AMS-18UW4RXPHB00(B)

AMS-24UW4RFWHB00(B)

Hisense Corporation

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## MODEL:

|                     |
|---------------------|
| IDU                 |
| AMS-09UW4RYCHB00(B) |
| AMS-12UW4RWUHB00(B) |
| AMS-18UW4RXPHB00(B) |
| AMS-24UW4RFWHB00(B) |

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# 1. Safety Considerations

## IMPORTANT!

### Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system, so it operates safely and efficiently.

#### For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.



**WARNING**

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



**CAUTION**

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

#### If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

#### In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

### SPECIAL PRECAUTIONS

#### When Wiring

**WARNING**



**ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

#### When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

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## When Installing

### ● In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

### ● In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

### ● In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

### ● In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

### ● In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

## When Connecting Refrigerant Tubing

△ Use the flare method for connecting tubing.

△ Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak free connection.

△ Check carefully for leaks before starting the test run.

## When Servicing

△ Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.

△ Keep your fingers and clothing away from any moving parts.

△ Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

## Others



△ Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.

△ Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

## NOTE:

*The figure, size and parameter of the product may not be identical with the service manual, please take the actual product as the standard.*

## Precautions for using R32 refrigerant

The basic installation work procedures are the same as the conventional refrigerant (R22 or R410A). However, pay attention to the following points:

1. Transport of equipment containing flammable refrigerants Compliance with the transport regulations
2. Marking of equipment using signs Compliance with local regulations
3. Disposal of equipment using flammable refrigerants Compliance with national regulations
4. Storage of equipment/appliances The storage of equipment should be in accordance with the manufacturer's instructions.
5. Storage of packed (unsold) equipment Storage package protection should be constructed such that

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mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge.

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

## 6. Information on servicing

### 6-1 Checks to the area

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

### 6-2 Work procedure

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

### 6-3 General work area

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

The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

### 6-4 Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

### 6-5 Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.

Have a dry powder or CO<sub>2</sub> fire extinguisher adjacent to the charging area.

### 6-6 No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.

Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

### 6-7 Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.

A degree of ventilation shall continue during the period that the work is carried out.

The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

### 6-8 Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.

At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

- The charge size is in accordance with the room size within which the refrigerant containing parts are installed;
- The ventilation machinery and outlets are operating adequately and are not obstructed;

- 
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
  - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
  - Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

#### 6-9 Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.

If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.

If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.

This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include:

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

#### 7. Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.

If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected.

This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

#### **NOTE:**

The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

#### 8. Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer.

Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

#### 9. Cabling

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

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

#### 10. Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.

A halide torch (or any other detector using a naked flame) shall not be used.

#### 11. Leak detection methods

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

- Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
- Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
- Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leak is suspected, all naked flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.
- Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

#### 12. Removal and evacuation

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

However, it is important that best practice is followed since flammability is a consideration.

The following procedure shall be adhered to:

- Remove refrigerant;
- Purge the circuit with inert gas;
- Evacuate;
- Purge again with inert gas;
- Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders.

The system shall be “flushed” with OFN to render the unit safe.

This process may need to be repeated several times.

Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.

This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

#### 13. Charging procedures

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

- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Cylinders shall be kept upright.

- 
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigeration system.

Prior to recharging the system it shall be pressure tested with OFN.

The system shall be leak tested on completion of charging but prior to commissioning.

A follow up leak test shall be carried out prior to leaving the site.

#### 14.Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.

It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential

that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure ensure that:

- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- All personal protective equipment is available and being used correctly;
- The recovery process is supervised at all times by a competent person;
- Recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with manufacturer's instructions.

h) Do not overfill cylinders. (No more than 80 % volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

#### 15.Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.

The label shall be dated and signed.

Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

#### 16.Recovery

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

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.

Ensure that the correct number of cylinders for holding the total system charge is available.

All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).

Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.

Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.

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In addition, a set of calibrated weighing scales shall be available and in good working order.

Hoses shall be complete with leak-free disconnect couplings and in good condition.

Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.

Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.

Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.

The evacuation process shall be carried out prior to returning the compressor to the suppliers.

Only electric heating to the compressor body shall be employed to accelerate this process.

When oil is drained from a system, it shall be carried out safely.

When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.

Do not place any other electrical products or household belongings under indoor unit or outdoor unit. Condensation dripping from the unit might get them wet, and may cause damage or malfunction of your property.

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example, open flames, an operating gas appliance or an operating electric heater).

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.

To keep ventilation openings clear of obstruction.

The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.

The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).

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

Servicing shall only be performed as recommended by the equipment manufacturer.

Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

Appliance shall be installed, operated and stored in a room with a floor area larger than 10 m<sup>2</sup>.

The installation of pipe-work shall be kept to a room with a floor area larger than 10 m<sup>2</sup>.

The pipe-work shall be compliance with national gas regulations. The maximum refrigerant charge amount is 2.5 kg.

Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed.

When flared joints are reused indoors, the flare part shall be re-fabricated.

The installation of pipe-work shall be kept to a minimum.

Mechanical connections shall be accessible for maintenance purposes.

The indoor unit shall only be connected to outdoor units suitable for the same refrigerant.

The unit is a partial unit air conditioner, complying with partial unit requirements of the International Standard,

and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements.

**Explanation of symbols displayed on the indoor unit or outdoor unit.**

|                                                                                   |                |                                                                                                                                                                          |
|-----------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>WARNING</b> | This symbol shows that this appliance uses a flammable refrigerant.<br>If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire. |
|  | <b>CAUTION</b> | This symbol shows that the operation manual should be read carefully.                                                                                                    |
|  | <b>CAUTION</b> | This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.                                                  |
|  | <b>CAUTION</b> | This symbol shows that information is available such as the operating manual or installation manual.                                                                     |

## 2. Product Specifications

To see in technical manual.

## 3. Product Picture and Drawing

### 3-1. Product Pictures

Indoor units:

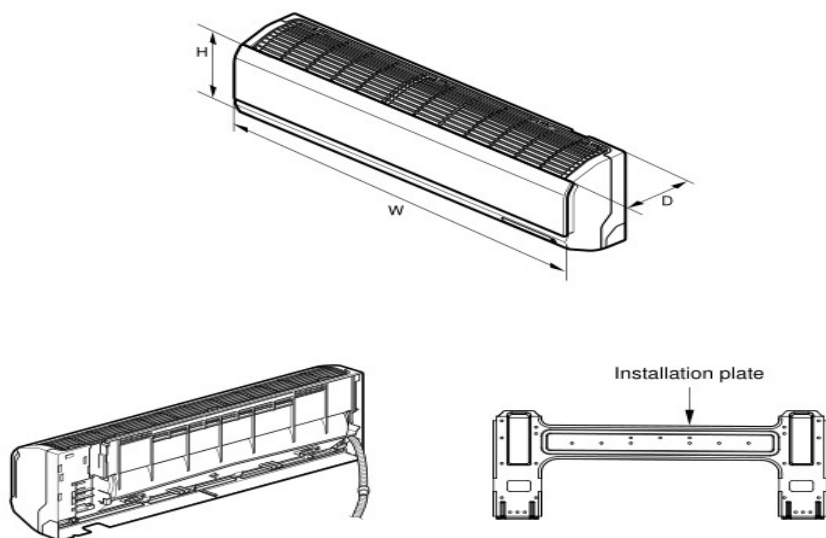
| Front Panel | VIBE PRO CARBON EU DC Inverter                                                      |
|-------------|-------------------------------------------------------------------------------------|
| View        |  |

Remote controller:

| Model | RCH-RZY1-0                                                                          |
|-------|-------------------------------------------------------------------------------------|
| View  |  |

## 3-2. Product dimensions

Indoor units:



| Model               | W (mm) | H (mm) | D (mm) |
|---------------------|--------|--------|--------|
| AMS-09UW4RYCHB00(B) | 800    | 272    | 203    |
| AMS-12UW4RWUHB00(B) | 850    | 291    | 203    |
| AMS-18UW4RXPHB00(B) | 973    | 300    | 226    |
| AMS-24UW4RFWHB00(B) | 1069   | 322    | 230    |

## 4. Installation Instruction



### WARNING

To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow. And, more than 1 meter away from any antenna or power lines or connecting wires used for TV, radio, telephone, security system, or intercom. Electrical noise from any of these sources may affect operation.

### 4-1. Installation Place and Condition

#### Indoor unit

##### Avoid:

- △ direct sunlight.
- △ nearby heat sources that may affect performance of the unit.
- △ areas where leakage of flammable gas may be expected.
- △ places where large amounts of oil mist exist.

##### Do:

- △ Select an appropriate position from which every corner of the room can be uniformly cooled.
- △ Select a location that will hold the weight of the unit.
- △ Select a location where tubing and drain hose have the shortest run to the outside. (See a)
- △ Allow room for operation and maintenance as well as unrestricted air flow around the unit. (See b)
- △ Install the unit within the maximum elevation difference (H) above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed (See table 1 and c)

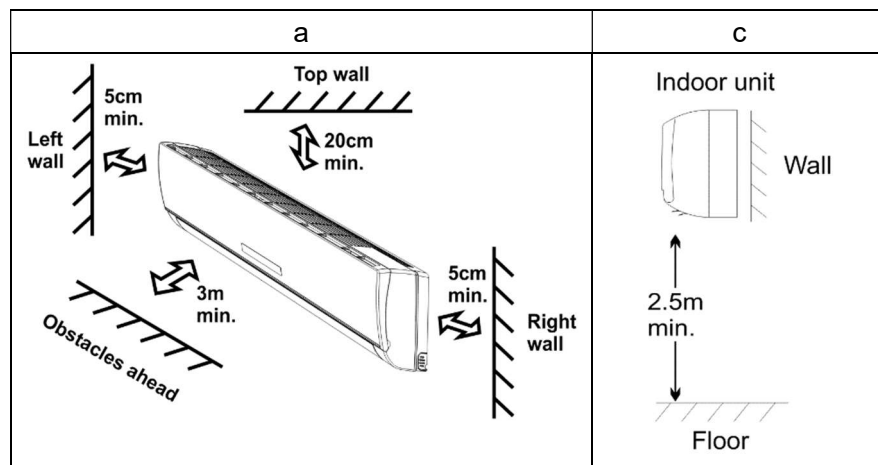


table 1

| Model | Pipe Size    |             |
|-------|--------------|-------------|
|       | GAS          | LIQUID      |
| 9,12  | 3/8"(Ø9.52)  | 1/4"(Ø6.35) |
| 18    | 1/2"(Ø12.7)  | 1/4"(Ø6.35) |
| 24    | 5/8"(Ø15.88) | 3/8"(Ø9.52) |

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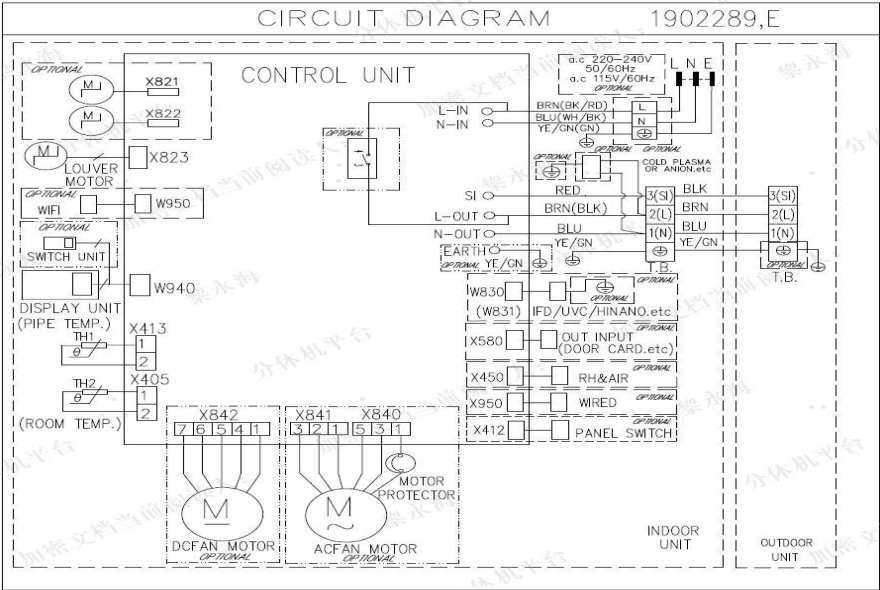
**Recommended Wire Diameter:**

| Model      | Wire Diameter(mm <sup>2</sup> ) |
|------------|---------------------------------|
| 9,12,18,24 | 4x1.5 (Connect wire)            |

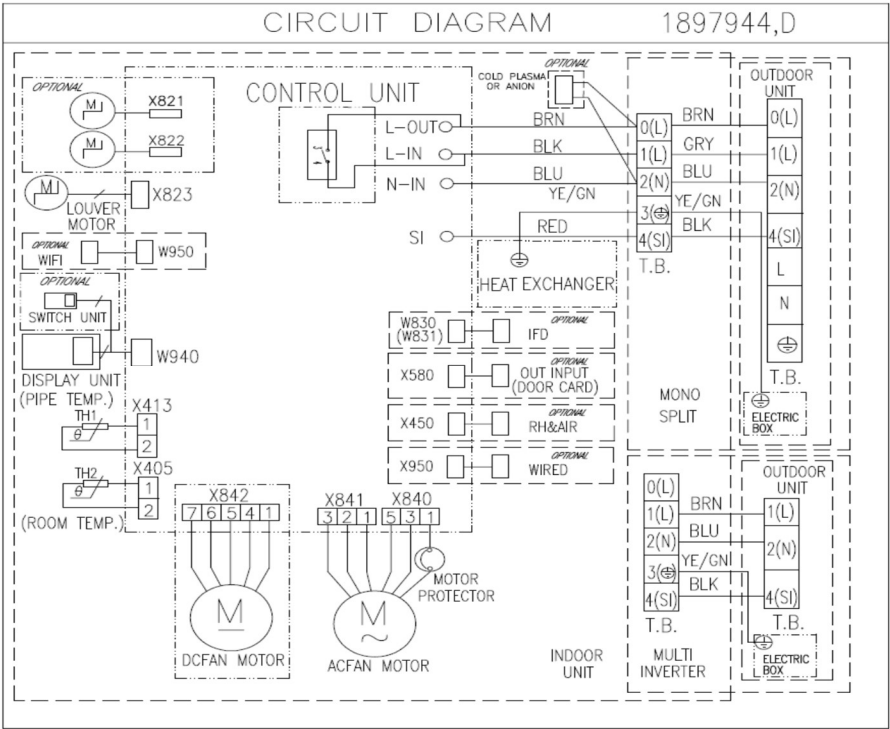
4-2. Electric Wiring Diagram

| Model               | Indoor Unit DIAGRAM |
|---------------------|---------------------|
| AMS-09UW4RYCHB00(B) | 1902289             |
| AMS-12UW4RWUHB00(B) | 1902289             |
| AMS-18UW4RXPHB00(B) | 1897944             |
| AMS-24UW4RFWHB00(B) | 1897944             |

Indoor Unit DIAGRAM:  
1902289

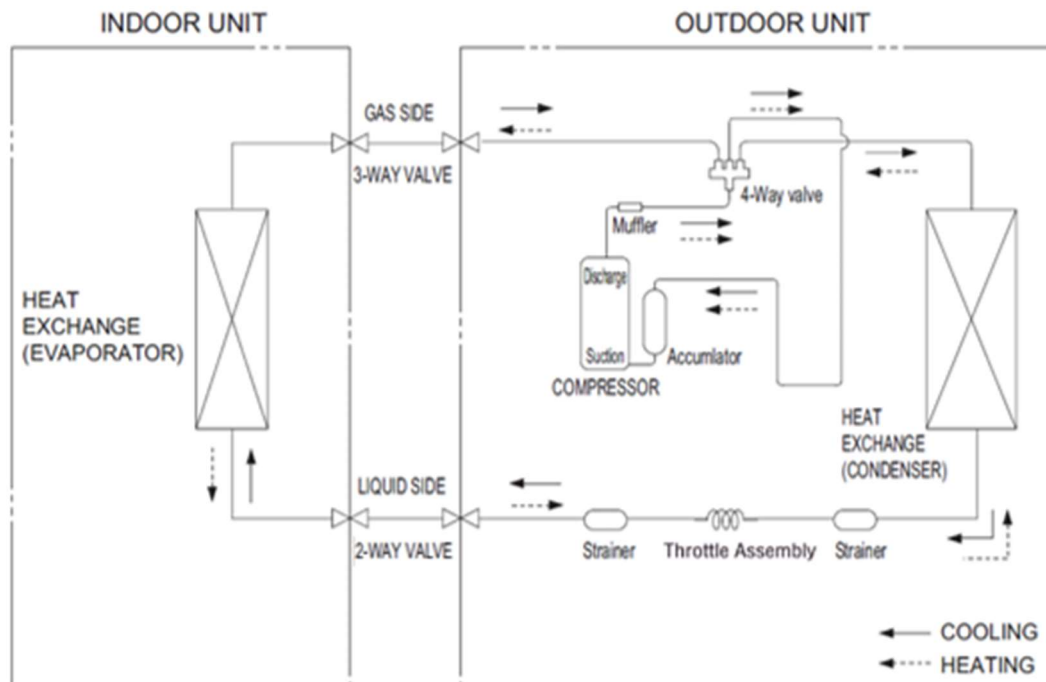


1897944



## 4-3. Refrigerant Flow System

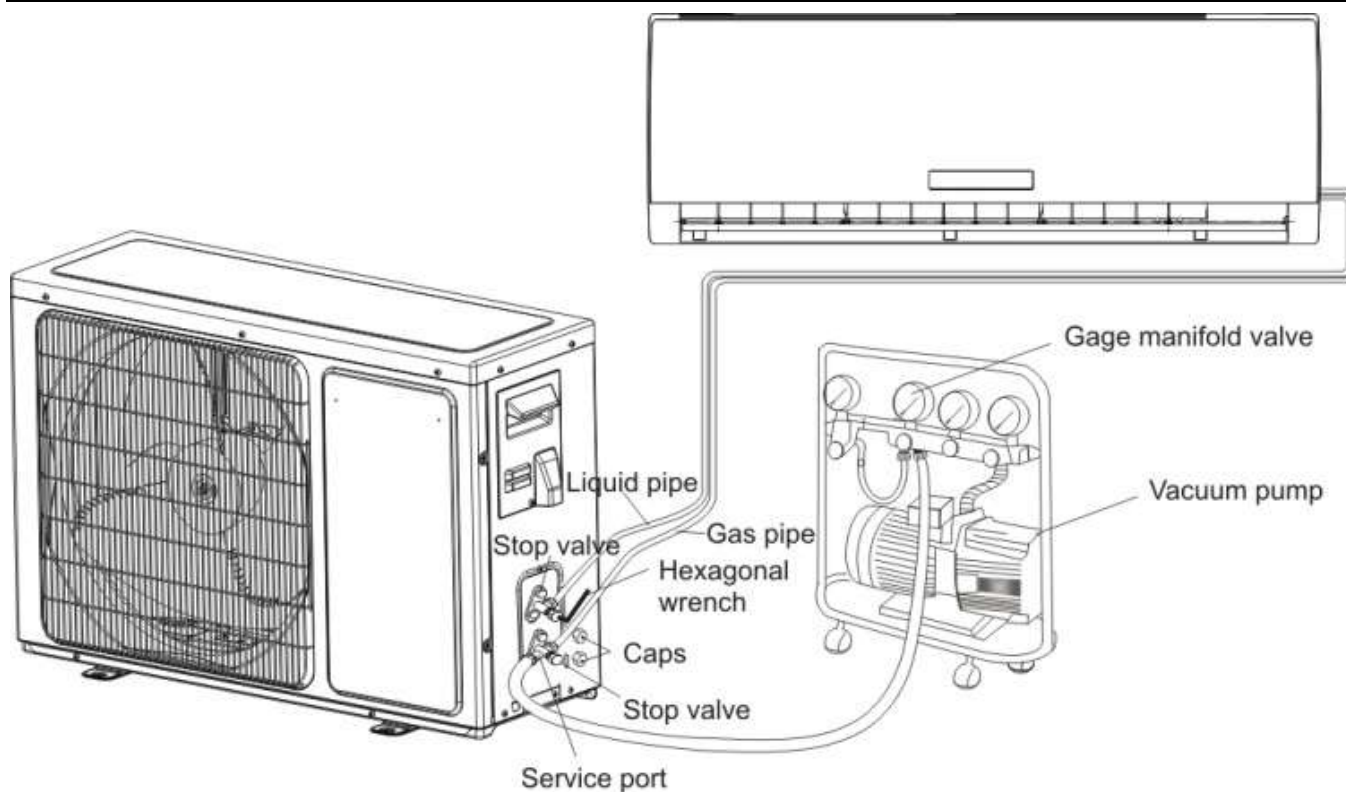
### (2)Cooling&Heating



NOTE: In different models, the throttle assembly may be Capillary or Electronic expansion valve.

## 4-4. Air Purging and Leakage Test

1. Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
  2. Connect joint of charging hose to vacuum pump.
  3. Fully open the handle of Lo manifold valve.
  4. Open the vacuum pump to evacuate. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut.
  5. Keep evacuating for more than 15mins and make sure the reading of multi-meter is  $-1.0 \times 10^5$  pa (-76cmHg).
  6. Check the vacuum with the gage manifold valve, then close the gage manifold valve, and stop the vacuum pump.
  7. Leave it for one or two minutes. Make sure the pointer of the gage manifold valve remains in the same position.
  8. Remove the gage manifold valve quickly from the service port of the stop valve.
- After refrigerant pipes are connected and evacuated, fully open all stop valves on gas and liquid pipe sides.
9. Opening without fully opening lowers the performance and cause dangerous.
  10. Tighten the cap to the service port to obtain the initial status.
  11. Retighten the cap
  12. Leak test



## 4-5. Test Running

### △ Check after Installation

| Items to be checked                                                            | Possible malfunction                                     |
|--------------------------------------------------------------------------------|----------------------------------------------------------|
| Has it been fixed firmly?                                                      | The unit may drop, shake or emit noise.                  |
| Have you done the refrigerant leakage test?                                    | It may cause insufficient cooling(heating)capacity       |
| Is heat insulation sufficient?                                                 | It may cause condensation and dripping.                  |
| Is water drainage satisfactory?                                                | It may cause condensation and dripping.                  |
| Is the voltage in accordance with the rated voltage marked on the nameplate?   | It may cause electric malfunction or damage the product. |
| Is the electric wiring and piping connection installed correctly and securely? | It may cause electric malfunction or damage the part.    |
| Has the unit been connected to a secure earth connection?                      | It may cause electrical leakage.                         |
| Is the power cord specified?                                                   | It may cause electric malfunction or damage the part.    |
| Are the inlet and outlet openings blocked?                                     | It may cause insufficient cooling(heating)capacity.      |
| Is the length of connection pipes and refrigerant capacity been recorded?      | The refrigerant capacity is not accurate.                |

---

## **ΔOperation Test**

### **1. Before Operation Test**

- (1) Do not switch on power before installation is finished completely.
- (2) Electric wiring must be connected correctly and securely.
- (3) Cut-off valves of the connection pipes should be opened.
- (4) All the impurities such as scraps and thrums must be cleared from the unit.

### **2. Operation Test Method**

- (1) Switch on power and press "ON/OFF" button on the remote controller to start the operation.
- (2) Press MODE button to select the COOL, HEAT (Cooling only unit is not available), FAN to check whether the operation is normal or not.

---

## 5. Function Operation

### 5-1. Operation Range (cooling and heating)

| Temperature        |     | Cooling operation | Heating operation |
|--------------------|-----|-------------------|-------------------|
| Indoor temperature | Max | 30°C              | 30°C              |
|                    | Min | 16°C              | 16°C              |

## 5-2. Remote Controller Operation & Function

### △Remote Controller Instruction

RCH-RZY1-0

## Remote controller

### Remote controller

The remote controller transmits signals to the system.

#### 1 MODE

Press this button to select the operation mode.

#### 3 HI-NANO

Used to set or cancel HI-NANO operation.

#### 6 SUPER

Used to start or stop the fast cooling/heating.  
(Fast cooling operates at high fan speed with 16°C(61°F) set temp automatically; Fast heating operates at auto fan speed with 30°C(86°F) set temp automatically)

#### 8 SLEEP

Used to set or cancel Sleep Mode operation.

#### 9 ECO

Used to set or cancel ECO Mode operation.

#### 11 ON/OFF TIMER

Used to set or cancel the timer operation.

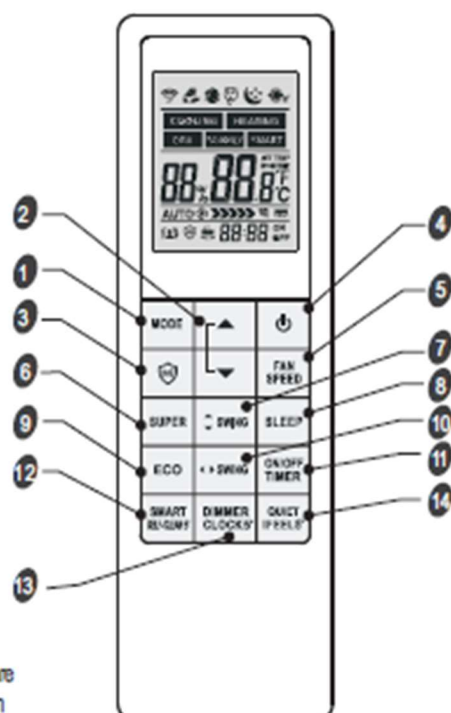
#### 12 SMART (invalid for multi system)

Used to enter fuzzy logic operation directly when the unit is on.  
When the Air conditioner and Remote controller are in standby, and the mode of remote controller is in Cooling or Dry, press this button for about 5 seconds to enter the auto-clean mode and then the indicator "☼" will display on LCD. Press SMART or POWER or MODE button will escape from auto-clean mode, and then the indicator "☼" will disappear. (After the clean process finish, the air conditioner will return to Cooling or Dry as preset, while the indicator "☼" on remote controller will display for about 30 mins)

#### 13 DIMMER/CLOCK

When you press this button, all the display of indoor unit will be closed. Press any button to resume display.

Used to set the current time.



#### 2

Used to adjust the room temperature and the timer, also real time.

#### 4 ON/OFF

The appliance will be started when it is energized or will be stopped when it is in operation, if you press this button.

#### 5 FAN SPEED

Used to select fan speed in sequence auto, higher, high, medium, low and lower.

#### 7 SWING

Used to stop or start vertical adjustment lower swinging and set the desired up/down airflow direction.

#### 10 SWING

Used to stop or start Horizontal adjustment lower swinging and set the desired left/right airflow direction.

#### 14 IFEEL/QUIET

Press to set IFEEL Mode operation. In IFEEL mode, the Air Conditioner operates basis temperature sensor fitted in remote instead of machine. Advice to use IFEEL mode and the remote put where the indoor unit receive signal easily. Press this button above 5 seconds, start or stop IFEEL mode.

Used to set or cancel Quiet Mode operation.

#### 2(▲)+7 8°C HEAT (optional)

Used to start or stop 8°C HEAT mode.

### Indication symbols on LCD:

|                                  |                              |                                    |                                  |                              |
|----------------------------------|------------------------------|------------------------------------|----------------------------------|------------------------------|
| <b>COOLING</b> Cooling indicator | <b>DRY</b> Dry indicator     | <b>FAN ONLY</b> Fan only indicator | <b>HEATING</b> Heating indicator | <b>SMART</b> Smart indicator |
| Auto  Auto fan speed             | Higher fan speed             | High fan speed                     | Medium fan speed                 | Low fan speed                |
| Lower fan speed                  | Quiet indicator              | Economy indicator                  | Super indicator                  | Sleep indicator              |
| IFEEL                            | 8°C Heat indicator           | HI-NANO indicator                  |                                  |                              |
| Auto-clean indicator             | 88.88°C Display temperature  | 88.88 ON OFF Display set timer     |                                  |                              |
| Swing (up/down) indicator        | Swing (left/right) indicator | Signal indicator                   |                                  |                              |

---

## **ΔFunction Instruction**

### **1. Major general technical parameters**

1-1 Remote receiver distance (front of the air conditioner) : 8 m.

1-2 Remote receiver angle: Less than 60 degrees.

1-3 Temperature control accuracy:  $\pm 1^{\circ}\text{C}$ .

1-4 Time error: Less than 1%.

### **2. Functions of the controller**

#### **2-1 Display panel**

I. Control functions of the remote controller (See operating and installation manual)

II. Display of the indoor unit

Information on the screen:

#### **Displaying Scheme:**

**7-segment tube:** Display set temperature or indoor temperature , and display fault code in trouble indicating. An error code is displayed according to the signal from the indoor CPU. The error code will flash for 5 seconds while displayed.

**Running LED:** It is on during operation. It is flashing when the unit defrost.

**TIMER LED:** When the timer mode works, the LED will be lighted.

**Sleep LED:** When the sleep mode works, the LED will be lighted, and after 10s, the LED will be off.

**Compressor LED:** It lights up when compressor is running.

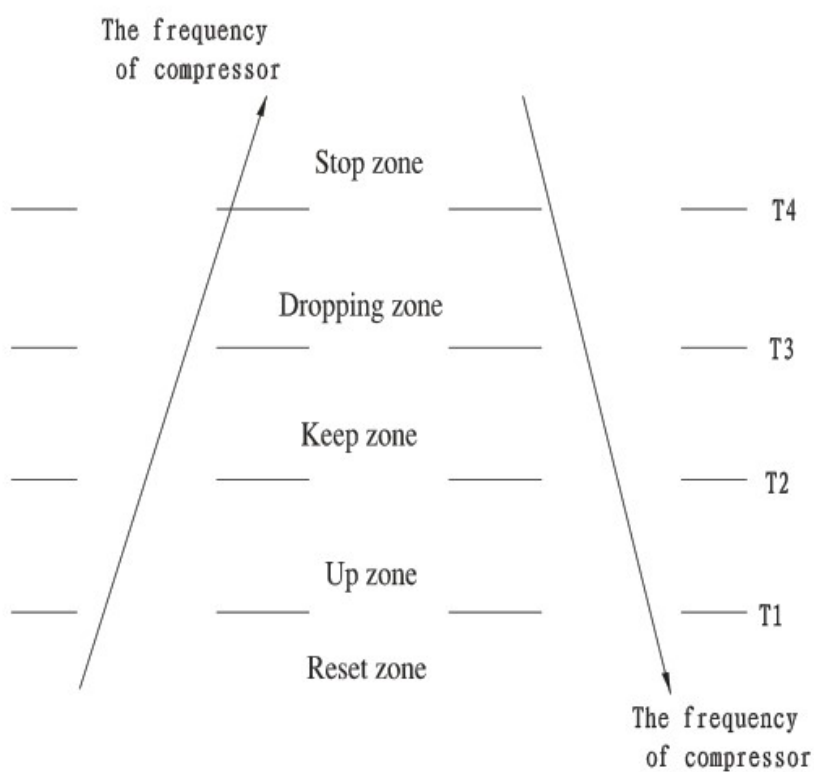
**Remote control receiver:** This section receives signals from the remote control.

## 5-3. Control Function

### 1、Discharge pipe temperature control

By monitoring the compressor's exhaust temperature, the current operating status of the machine is determined, and the exhaust protection controls the frequency increase, decrease, and shutdown of the compressor to achieve the purpose of protecting the machine.

| the discharge temperature T | Operation                                                                                                       |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|
| $T < T_1$                   | Compressor restart                                                                                              |
| $T_1 < T < T_2$             | Compressor frequency increasing operation                                                                       |
| $T_2 < T < T_3$             | Compressor keeps operating at the current frequency                                                             |
| $T_3 < T < T_4$             | Compressor frequency decreasing operation                                                                       |
| $T_4 < T$                   | Compressor shutdown due to exceeding exhaust protection value, outdoor fan keeps operating at the current state |



## 2、Heating Anti-Cold Air Protection

When the heating mode is turned on, to avoid discomfort caused by cold air blowing out immediately after startup, a cold air prevention function is set. The operation of the cold air prevention function during the startup of the heating mode is as follows

$T1=30^{\circ}\text{C}$ ,

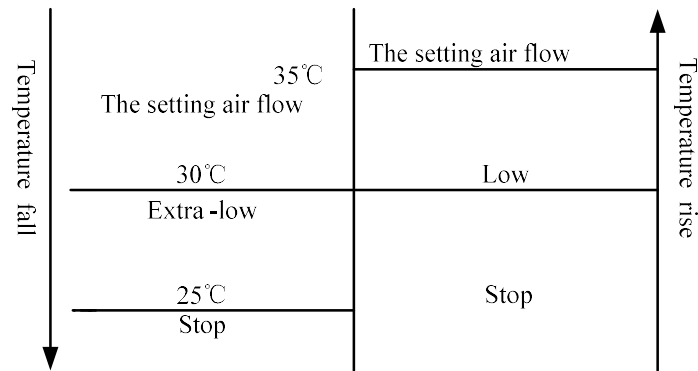
$T2=35^{\circ}\text{C}$

| Detect the indoor coil temperature     | Operation                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| coil temperature $< T1$                | The indoor fan swing is set to the cold air prevention angle, and the indoor fan does not start.             |
| $T1 \leq \text{coil temperature} < T2$ | The indoor fan swing remains at the cold air prevention angle, and the indoor fan rotates at a gentle speed. |
| coil temperature $\geq T2$             | The indoor fan swing moves to the maximum angle, and the indoor fan rotates at the set speed.                |

## 3、Control of Indoor Motor Speed During Heating Process

During the heating process, the indoor fan speed operates based on the coil temperature according to the following mode. When the unit is turned off, the indoor fan stops simultaneously with the low coil temperature, while if the temperature is high, it continues to run for approximately half a minute to dissipate residual heat

|                                                                                                                             | Indoor coil temperature T                        | Indoor motor speed                                       | Indoor fan swing position:                       |
|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------|--------------------------------------------------|
| During the heating operation, the indoor motor speed changes with the coil speed.                                           | $T \geq 30^{\circ}\text{C}$                      | Operate according to the speed set on the remote control | Maximum angle or angle set by the remote control |
|                                                                                                                             | $25^{\circ}\text{C} \leq T < 30^{\circ}\text{C}$ | Operate at the slightest breeze speed                    | Cold air prevention angle                        |
|                                                                                                                             | $T < 25^{\circ}\text{C}$                         | Motor stops running                                      | Cold air prevention angle                        |
| During the heating process, after the indoor motor stops operating, the indoor fan speed changes with the coil temperature. | $T < 30^{\circ}\text{C}$                         | Motor remains stopped                                    | Cold air prevention angle                        |
|                                                                                                                             | $30^{\circ}\text{C} \leq T < 35^{\circ}\text{C}$ | Motor operates at a gentle breeze speed                  | Cold air prevention angle                        |
|                                                                                                                             | $T \geq 35^{\circ}\text{C}$                      | Motor operates at the set speed                          | Maximum angle or angle set by the remote control |



During the heating operation in automatic mode, the indoor fan speed operates in the following ways:

| Indoor environmental temperature difference with set temperature T | Indoor fan speed           |
|--------------------------------------------------------------------|----------------------------|
| $T < 2^{\circ}\text{C}$                                            | Low fan speed              |
| $T = 2^{\circ}\text{C}$                                            | Maintain current fan speed |
| $2^{\circ}\text{C} < T < 4^{\circ}\text{C}$                        | Medium fan speed           |
| $T = 4^{\circ}\text{C}$                                            | Maintain current fan speed |
| $T > 4^{\circ}\text{C}$                                            | High fan speed             |

### 3.1、Control Method of Indoor Motor During Cooling

During cooling, the indoor fan speed can be controlled using the remote control. When in the automatic fan speed mode, it operates in the following way; upon shutdown, the indoor fan will continue to operate for half a minute to blow off water from the evaporator, serving the purpose of mold prevention and cleaning.

When the cooling mode is turned on in automatic mode, the fan speed defaults to low. Then, every 5 minutes or so, the current temperature is detected and it operates in the following manner:

| Indoor environmental temperature difference with set temperature T | Indoor fan speed           |
|--------------------------------------------------------------------|----------------------------|
| $T < 2^{\circ}\text{C}$                                            | Low fan speed              |
| $T = 2^{\circ}\text{C}$                                            | Maintain current fan speed |
| $2^{\circ}\text{C} < T < 4^{\circ}\text{C}$                        | Medium fan speed           |
| $T = 4^{\circ}\text{C}$                                            | Maintain current fan speed |
| $T > 4^{\circ}\text{C}$                                            | High fan speed             |

### 3.2、Control Method of Indoor Motor in Dehumidification Mode

In dehumidification mode, the indoor fan speed is not adjustable, but the indoor airflow direction is adjustable. Upon shutdown, the indoor fan will continue to operate for half a minute to blow off water from the evaporator, serving the purpose of mold prevention and cleaning.

### 4、Control of Outdoor Motor Speed During Heating Process

During heating, the outdoor motor speed operates as follows:

When the outdoor motor is a single-speed motor, it defaults to high speed. If the outdoor motor has three speeds (high, medium, and low), it is controlled according to the following rules.

Where T1 is the temperature threshold between the outdoor low and medium temperature zones, and T2 is the temperature threshold between the outdoor medium and high temperature zones.

| Outdoor ambient temperature T                         | Outdoor Fan Speed                          |
|-------------------------------------------------------|--------------------------------------------|
| $T < T1 + 1^{\circ}\text{C}$                          | High speed                                 |
| $T = T1 + 1^{\circ}\text{C}$                          | Transition from high speed to medium speed |
| $T = T1 - 1^{\circ}\text{C}$                          | Transition from medium speed to high speed |
| $T1 + 1^{\circ}\text{C} < T < T2 + 1^{\circ}\text{C}$ | Medium speed                               |
| $T = T2 + 1^{\circ}\text{C}$                          | Transition from medium speed to low speed  |
| $T = T2 - 1^{\circ}\text{C}$                          | Transition from low speed to medium speed  |

#### 4.1、Control of Outdoor Motor Speed During Cooling

During cooling, the outdoor motor speed operates as follows:

When the outdoor motor is a single-speed motor, it defaults to high speed. If the outdoor motor has three speeds (high, medium, and low), it is controlled according to the following rules.

Where T1 is the temperature threshold between the outdoor low and medium temperature zones, and T2 is the temperature threshold between the outdoor medium and high temperature zones.

| Outdoor ambient temperature T                         | Outdoor Fan Speed                          |
|-------------------------------------------------------|--------------------------------------------|
| $T < T1 + 1^{\circ}\text{C}$                          | Low speed                                  |
| $T = T1 + 1^{\circ}\text{C}$                          | Transition from low speed to medium speed  |
| $T = T1 - 1^{\circ}\text{C}$                          | Transition from medium speed to low speed  |
| $T1 + 1^{\circ}\text{C} < T < T2 + 1^{\circ}\text{C}$ | Medium speed                               |
| $T = T2 + 1^{\circ}\text{C}$                          | Transition from medium speed to high speed |
| $T = T2 - 1^{\circ}\text{C}$                          | Transition from high speed to medium speed |

## 5、Anti-Freeze Protection

To prevent the indoor evaporator from frosting due to excessively low refrigerant temperature within the system, an indoor anti-freeze protection mechanism is implemented during the operation of the air conditioning unit. The key temperature thresholds are defined as follows:

T: Indoor coil temperature

T1: Anti-freeze deactivation temperature

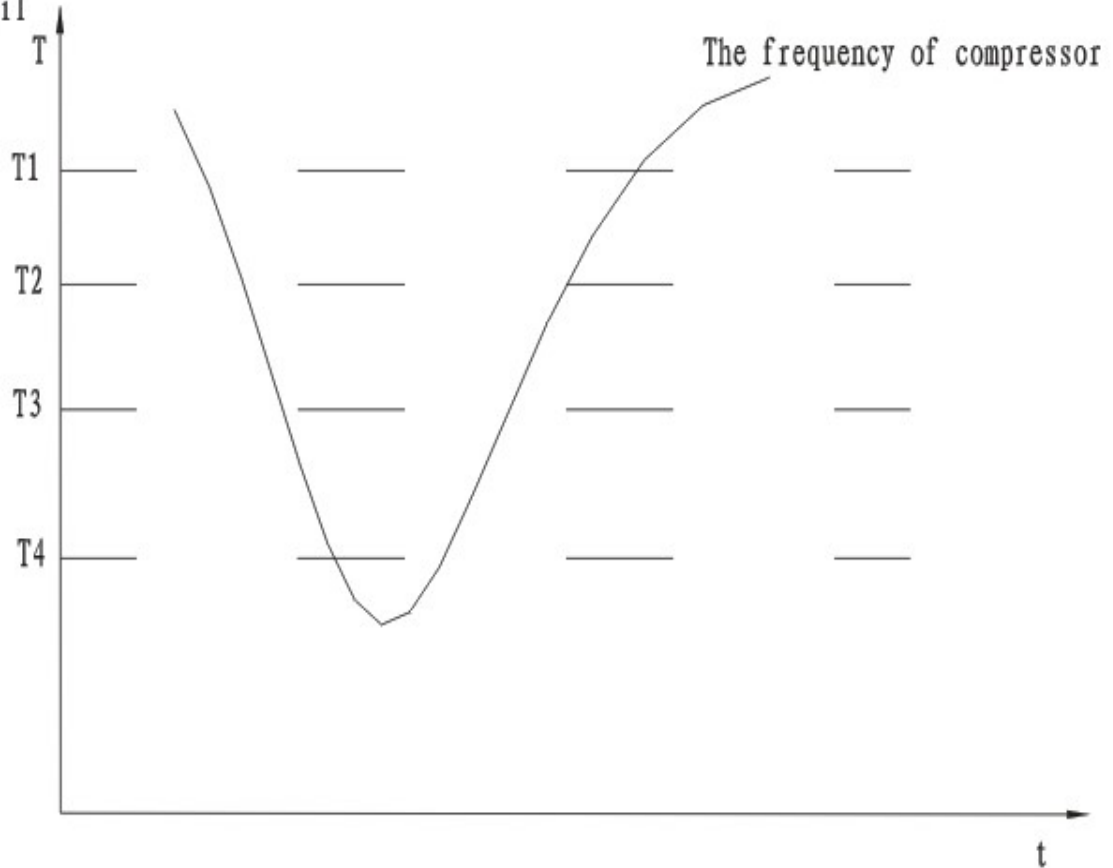
T2: Anti-freeze frequency-up prohibition temperature

T3: Anti-freeze frequency-down temperature

T4: Anti-freeze shutdown temperature

|                                                                                                          | Indoor Coil Temperature T | Machine Operating Status                                                                                                                     |
|----------------------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| During the cooling operation, the indoor coil temperature has an impact on the operation of the machine. | $T \geq T1$               | The machine operates at the current frequency and control settings, maintaining the current frequency or adjusting the frequency up or down. |
|                                                                                                          | $T3 < T \leq T2$          | The machine operates at the current frequency, with frequency increases prohibited.                                                          |
|                                                                                                          | $T4 < T \leq T3$          | The machine begins to reduce its frequency.                                                                                                  |
|                                                                                                          | $T \leq T4$               | The outdoor compressor and fan of the machine stop operating, while the indoor fan continues to run.                                         |
|                                                                                                          | $T \geq T1$               | The outdoor compressor and fan of the machine resume operation.                                                                              |

The temperature  
of indoor coil



## 6、Heating Low-temperature Protection

When the outdoor environment is extremely cold, it will trigger outdoor low-temperature protection, and its operation is as follows:

T1: Heating outdoor low-temperature protection temperature

|                                                                                                         | Outdoor ambient temperature T         | Machine operation status                                                                                               |
|---------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| During the heating operation, the outdoor ambient temperature has an impact on the machine's operation. | $T > T1$                              | The machine operates at the current control, maintaining the current frequency or increasing/decreasing the frequency. |
|                                                                                                         | $T \leq T1$ for one continuous minute | The compressor and fan of the outdoor stop operating, while the indoor fan continues to run.                           |
|                                                                                                         | $T \geq T1 + 3^{\circ}\text{C}$       | The compressor and fan of the outdoor resume operation.                                                                |

## 7、Outdoor High-Temperature Protection for Cooling

When the outdoor environment is extremely hot, it will trigger outdoor high-temperature protection, and its operation is as follows:

T1: Outdoor high-temperature protection temperature for cooling

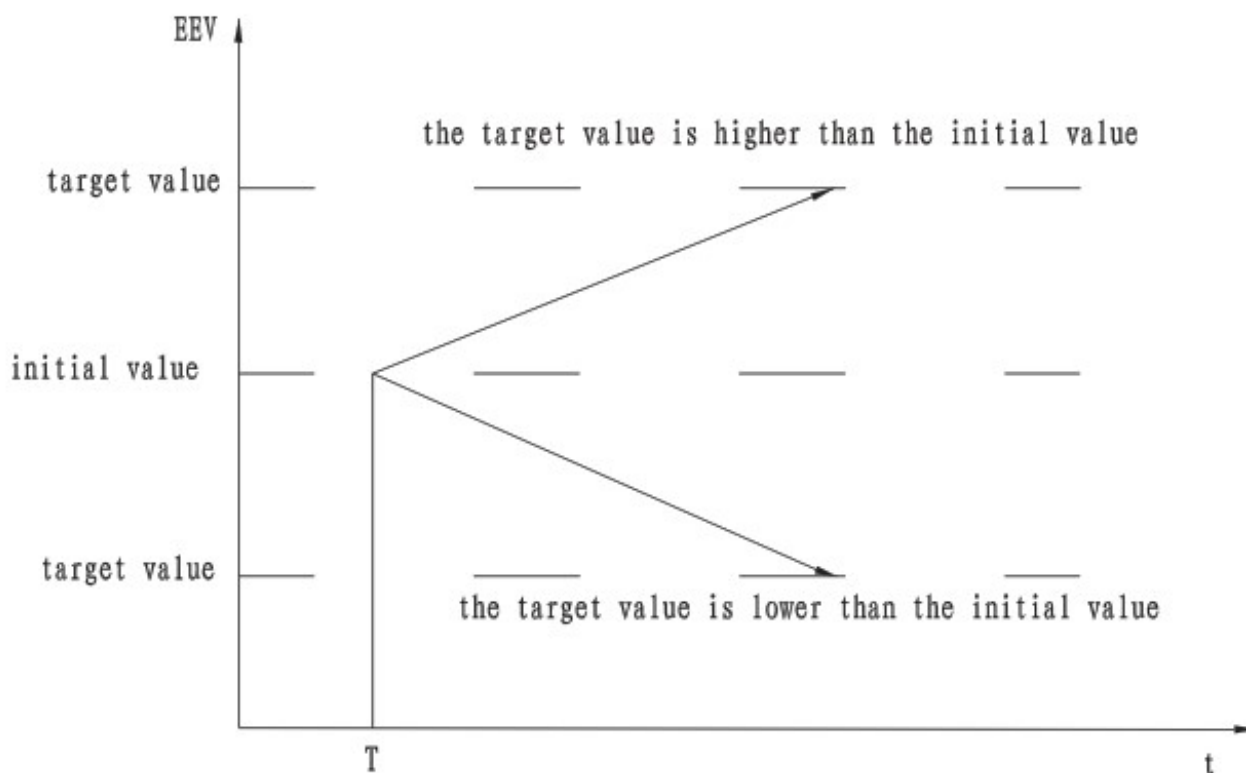
|                                                                                                         | Outdoor ambient temperature T         | Machine operation status                                                                                               |
|---------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| During the cooling operation, the outdoor ambient temperature has an impact on the machine's operation. | $T < T1$                              | The machine operates at the current control, maintaining the current frequency or increasing/decreasing the frequency. |
|                                                                                                         | $T \geq T1$ for one continuous minute | The compressor and fan of the outdoor stop operating, while the indoor fan continues to run.                           |
|                                                                                                         | $T \leq T1 - 3^{\circ}\text{C}$       | The compressor and fan of the outdoor resume operation.                                                                |

## 8、Heating at 8°C

When the machine receives the 8°C heating function command from the remote control, it will operate in the following manner:

| Machine Receiving Information                                                               | Machine operation status                                                                                                                           |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| The remote control activates the 8°C heating function and the machine receives the command. | At this point, the machine operates according to the set temperature of 8°C, and the indoor anti-cold air function does not function at this time. |

## 9、Electronic Expansion Valve Control



After the machine is turned on and starts operating, the electronic expansion valve maintains its initial opening for a period of time (T). Once the operating time exceeds T, the electronic expansion valve begins to adjust its opening based on the outdoor ambient temperature and the current compressor frequency.

## 10、Indoor Self-Cleaning

The indoor self-cleaning process is as follows:

|                                        | Step                                                                                                                                                                                                                                                                                        | Machine Operation Status                                                                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Indoor self-cleaning operation process | The machine can enter the indoor self-cleaning mode while in standby, cooling, heating (for heat-cool models), dehumidifying, air blowing, or auto mode, provided that the indoor ambient temperature T meets the following condition: $0^{\circ}\text{C} \leq T \leq 32^{\circ}\text{C}$ . | The indoor motor stops operating, and the indoor air deflector remains in the anti-cold air position until the self-cleaning process is complete. After completion, it returns to the previous state before entering the self-cleaning mode. |
|                                        | The indoor coil temperature is $\leq -19^{\circ}\text{C}$ and this condition persists for 6 minutes, or the indoor temperature is $\leq 5^{\circ}\text{C}$ and this condition persists for 6 minutes or up to a maximum of 12 minutes.                                                      | The machine operates in heating mode, with the set defrosting frequency and opening degree. At this time, the indoor motor runs at a gentle fan speed.                                                                                       |
|                                        | The indoor coil temperature is $\geq 40^{\circ}\text{C}$ and this condition persists for 60 seconds or up to a maximum of 7 minutes.                                                                                                                                                        | The machine exits this mode and returns to the state before entering the self-cleaning process.                                                                                                                                              |

## 11、Outdoor Self-Cleaning

|                                         | Step                                                                                                                                                                                                                                                                                          | Machine Operation Status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| outdoor self-cleaning operation process | The machine can enter the outdoor self-cleaning mode while in standby, cooling, heating (for heat-cool models), dehumidifying, air blowing, or auto mode, provided that the outdoor ambient temperature T meets the following condition: $0^{\circ}\text{C} \leq T \leq 32^{\circ}\text{C}$ . | <p>The indoor air deflector remains in the anti-cold air position until the self-cleaning process is complete and then returns to the previous state.</p> <p>The indoor motor operates as follows:</p> <p>If the indoor coil temperature T is less than <math>32^{\circ}\text{C}</math>, it stops operating.</p> <p>If the indoor coil temperature T is between <math>32^{\circ}\text{C}</math> and <math>50^{\circ}\text{C}</math> (inclusive), it operates at a low fan speed for self-cleaning.</p> <p>If the indoor coil temperature T is greater than <math>50^{\circ}\text{C}</math>, it operates at a medium fan speed for self-cleaning.</p> |
|                                         | Outdoor Frosting Phase                                                                                                                                                                                                                                                                        | <p>Compressor: It operates according to the outdoor self-cleaning frequency. Currently, if the machine enters the self-cleaning mode from the cooling mode, the compressor will stop for 3 minutes before restarting, and the four-way valve will delay for approximately 1 minute to change directions.</p> <p>Outdoor Motor: It stops. Currently, if the machine enters the self-cleaning mode from the cooling mode, the outdoor motor will delay for approximately half a minute before stopping.</p>                                                                                                                                            |
|                                         | End Conditions of Frosting                                                                                                                                                                                                                                                                    | When the indoor coil temperature is $\leq -19^{\circ}\text{C}$ and this condition persists for 7 minutes or up to a maximum of 12 minutes,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                         | Defrosting                                                                                                                                                                                                                                                                                    | <p>When the outdoor temperature T is <math>\leq 10^{\circ}\text{C}</math>, operate according to the defrosting conditions;</p> <p>When the outdoor temperature T is <math>&gt; 10^{\circ}\text{C}</math>, the outdoor motor operates at a high fan speed.</p>                                                                                                                                                                                                                                                                                                                                                                                        |

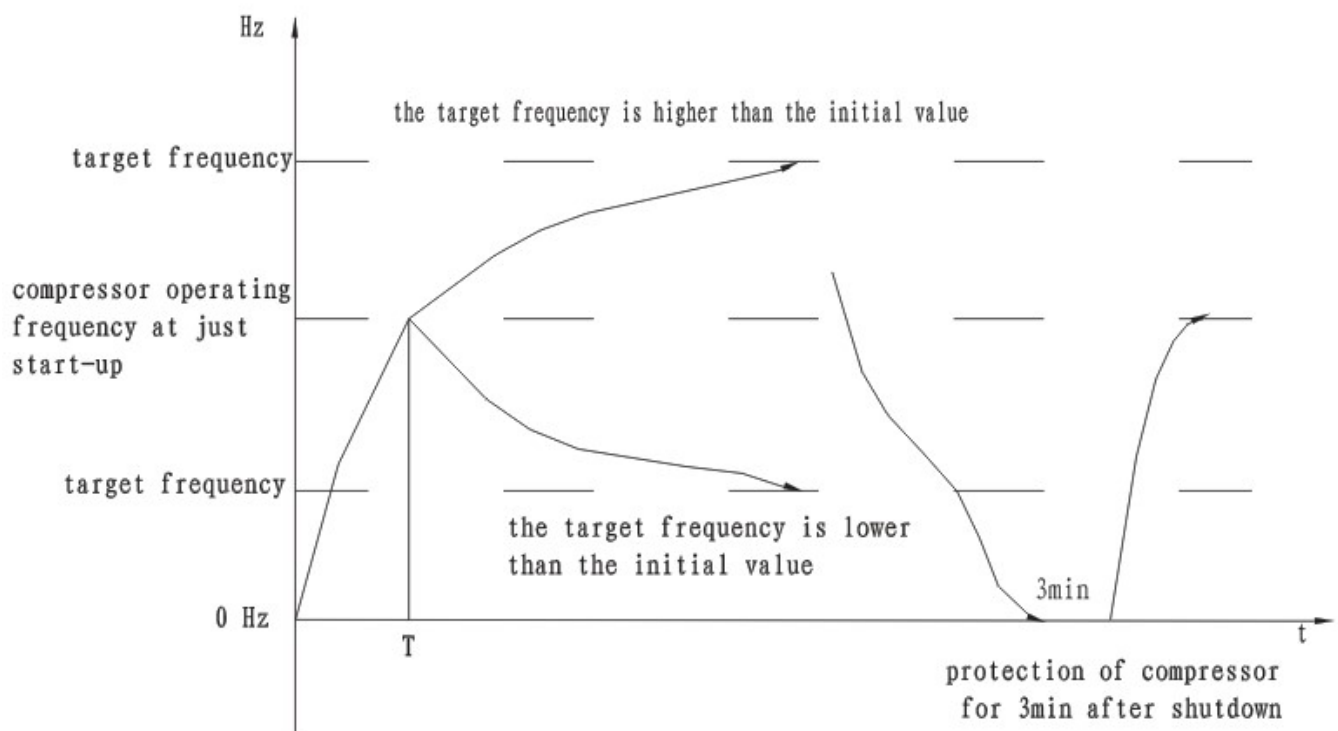
## 12、Silent Mode

|             | Components  | Operation                                                                                                                           |
|-------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Silent Mode | Compressor  | Operate within the frequency range set for silent mode                                                                              |
|             | Indoor Fan  | Operate at the silent mode speed setting                                                                                            |
|             | Outdoor Fan | Operate at the silent mode speed setting. During cooling, if the outdoor temperature is high, it will operate at the current speed. |

## 12、Automatic Mode Operation Control

|                      | Current Indoor Temperature T                     | Machine Operation Action |
|----------------------|--------------------------------------------------|--------------------------|
| Heat Pump Model      | $T > 26^{\circ}\text{C}$                         | Cooling Mode             |
|                      | $23^{\circ}\text{C} < T \leq 26^{\circ}\text{C}$ | Dehumidification Mode    |
|                      | $21^{\circ}\text{C} < T \leq 23^{\circ}\text{C}$ | Air Supply Mode          |
|                      | $T \leq 21^{\circ}\text{C}$                      | Heating Mode             |
| Single Cooling Model | $T > 26^{\circ}\text{C}$                         | Cooling Mode             |
|                      | $23^{\circ}\text{C} < T \leq 26^{\circ}\text{C}$ | Dehumidification Mode    |
|                      | $T \leq 23^{\circ}\text{C}$                      | Air Supply Mode          |

## 13、Control of Compressor Operating Frequency



| Machine Status               | Operation                                                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| During Startup               | The compressor stabilizes at the first frequency for a short period of time T after starting.                                                                         |
| After Startup Time Exceeds T | The compressor increases or decreases its frequency according to the target frequency.                                                                                |
| During Operation             | The compressor operates at the target frequency while being subject to exhaust protection, high-temperature protection, overcurrent protection, and other mechanisms. |

|                            |                                                                          |
|----------------------------|--------------------------------------------------------------------------|
| After Shutdown and Restart | The compressor stops, and needs to wait for 3 minutes before restarting. |
|----------------------------|--------------------------------------------------------------------------|

#### 14、Defrosting

The following conditions need to be met simultaneously:

T1: Outdoor ambient temperature

T2: Outdoor unit coil temperature

T3: A temperature value set during product development

T4: A temperature value set during product development

| Conditions            | Parameter                                                                            |
|-----------------------|--------------------------------------------------------------------------------------|
| Time Condition        | The continuous heating operation time reaches the duration of t1                     |
| Temperature Condition | $T1 - T2 \geq T3$ , and this condition is maintained for a continuous duration of t2 |
| Temperature Condition | $T2 \leq T4$ and this condition is maintained for a continuous duration of t2        |

After meeting the above conditions, the defrosting process will be initiated, and the defrosting actions are as follows:

| Component                     | operating during defrosting start                                                                       | During defrosting                                                                           | At the end of defrosting                 | After exiting the defrosting mode                                                                    |
|-------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------|
| Indoor unit                   | The indoor motor stops running, and the air swing is adjusted to the anti-cold-air angle.               |                                                                                             |                                          | Operate at the mode before defrosting.                                                               |
| Compressor                    | The compressor stops.                                                                                   | After a certain period of shutdown, the operation is performed at the defrosting frequency. | The compressor stops.                    | Operate at the heating frequency.                                                                    |
| The fan motor of outdoor unit | The outdoor fan stops after the compressor has been off for seconds                                     | The outdoor fan stops                                                                       | The outdoor fan stops                    | When the compressor starts, the outdoor fan starts simultaneously                                    |
| 4-way valve                   | After the compressor stops for a few seconds, the four-way valve switches from heating to cooling mode. | 4-way valve is operating in cooling mode                                                    | 4-way valve is operating in cooling mode | Before starting the compressor, the four-way valve first switches from cooling mode to heating mode. |

## 15、Sleep Mode

Sleep mode is valid in cooling, heating (models with heating function), and dehumidification modes, and is invalid in other modes.

Sleep mode lasts for 8 hours. When the timing shutdown function is set at the same time:

If the timing duration is less than 8 hours, the sleep mode will be maintained until the shutdown;

If the timing duration is greater than 8 hours, the machine will shut down and the timing shutdown function will be canceled when the sleep mode ends.

| Sleep Mode1 |                                                                            |                                                                                     |
|-------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cooling     | After running for 1 hour, the set temperature value increases by 1 degree. | After running for 2 hours, the set temperature value increases by another 1 degree. |
| Heating     | After running for 1 hour, the set temperature value decreases by 1 degree. | After running for 2 hours, the set temperature value decreases by another 1 degree. |

| Sleep Mode2 |                                                                            |                                                                                     |                                                                            |                                                                                     |
|-------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cooling     | After running for 1 hour, the set temperature value increases by 1 degree. | After running for 2 hours, the set temperature value increases by another 1 degree. | After running for 6 hour, the set temperature value decreases by 1 degree. | After running for 7 hours, the set temperature value decreases by another 1 degree. |
| Heating     | After running for 1 hour, the set temperature value decreases by 1 degree. | After running for 2 hours, the set temperature value decreases by another 1 degree. | After running for 6 hour, the set temperature value increases by 1 degree  | After running for 7 hours, the set temperature value increases by another 1 degree. |

| Sleep Mode3 |                                                                            |                                                                                     |                                                                            |                                                                                     |
|-------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Cooling     | After running for 1 hour, the set temperature value increases by 1 degree. | After running for 2 hours, the set temperature value increases by another 2 degree. | After running for 6 hour, the set temperature value decreases by 2 degree. | After running for 7 hours, the set temperature value decreases by another 2 degree. |

|         |                                                                            |                                                                                     |                                                                           |                                                                                     |
|---------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Heating | After running for 1 hour, the set temperature value decreases by 2 degree. | After running for 2 hours, the set temperature value decreases by another 2 degree. | After running for 6 hour, the set temperature value increases by 2 degree | After running for 7 hours, the set temperature value increases by another 2 degree. |
|---------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------|

|             |                                  |
|-------------|----------------------------------|
| Sleep Mode4 |                                  |
| Cooling     | keep the current set temperature |
| Heating     | keep the current set temperature |
|             |                                  |

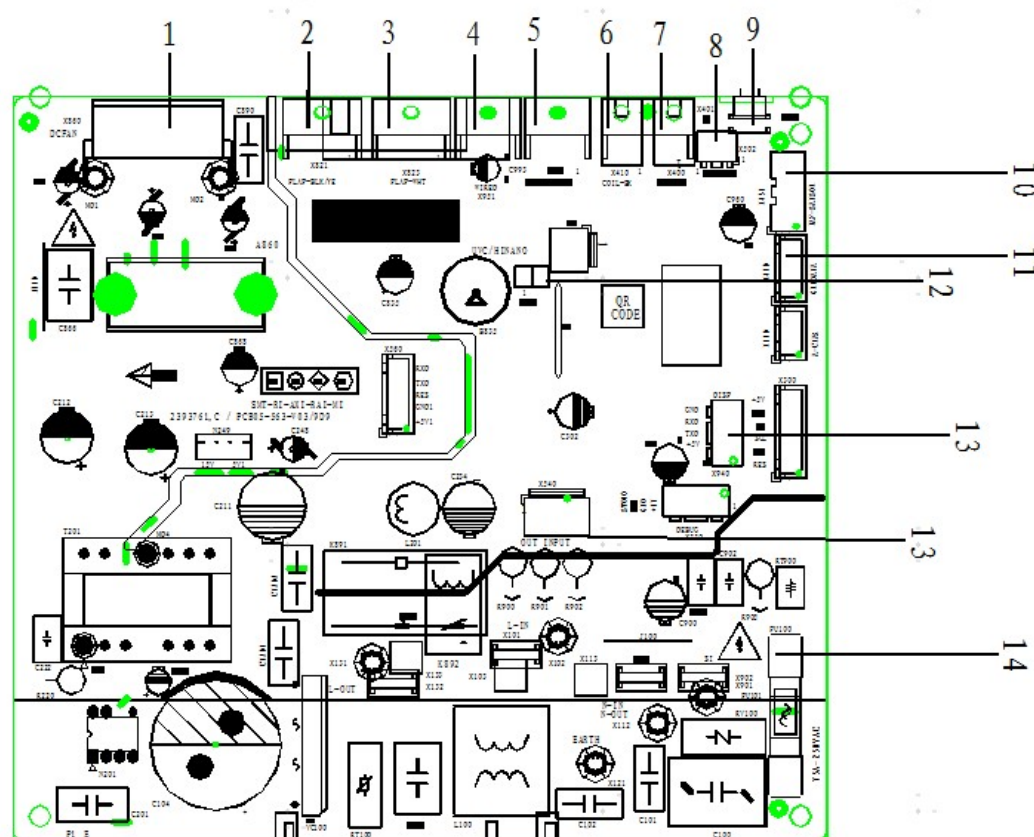
## 6. Electrical Characteristics

### 6-1. Print Circuit Board (Indoor)

| Model               | Indoor Unit |
|---------------------|-------------|
| AMS-09UW4RYCHB00(B) | 2393761     |
| AMS-12UW4RWUHB00(B) | 2393761     |
| AMS-18UW4RXPHB00(B) |             |
| AMS-24UW4RFWHB00(B) |             |

**Model of indoor unit:**

**2393761**

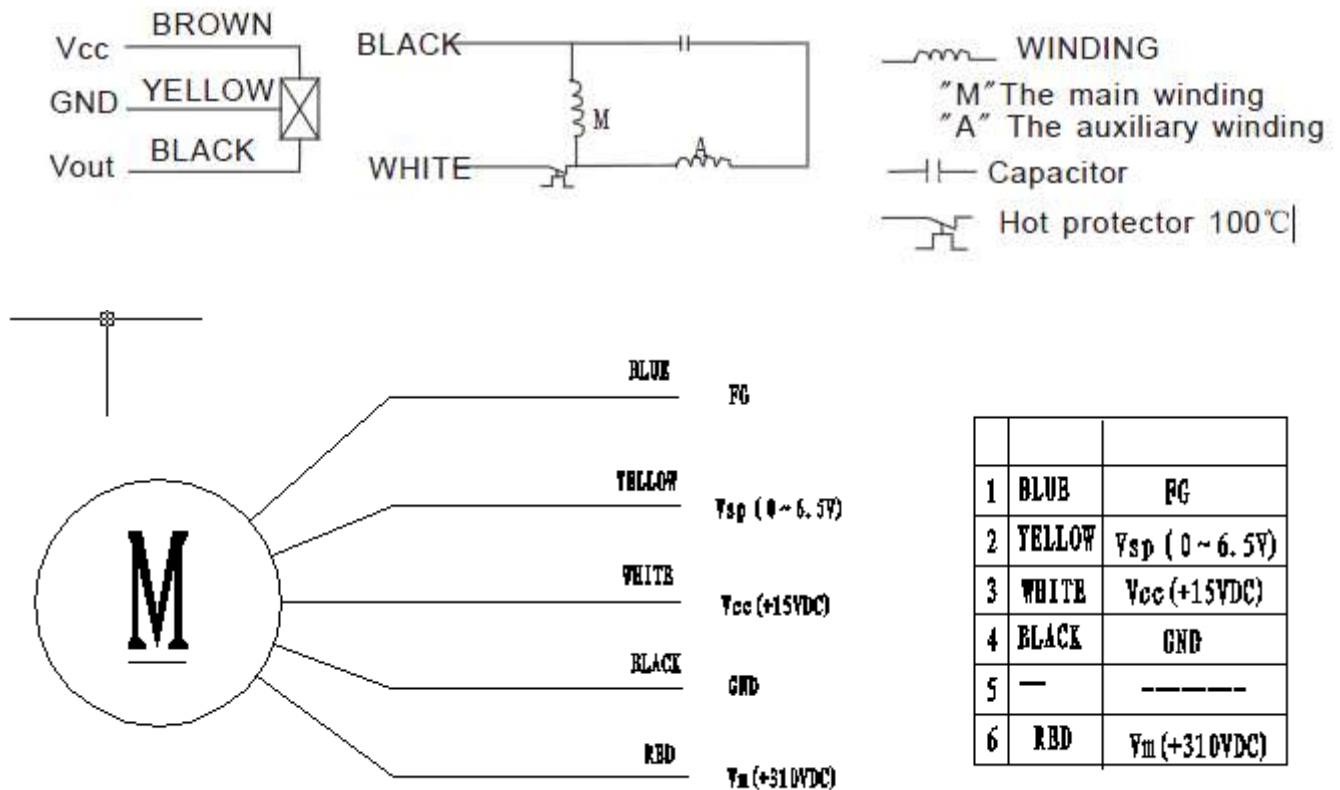


|   |                                 |    |                       |
|---|---------------------------------|----|-----------------------|
| 1 | Interface of DC motor(WHITE)    | 8  | Panel switch          |
| 2 | Up&down swing                   | 9  | Switch button         |
| 3 | Left&right swing                | 10 | Ref-sensor interface  |
| 4 | Wiring control interface(WHITE) | 11 | Grid eye interface    |
| 5 | Humidity detection interface    | 12 | Ifd control interface |
| 6 | Pipe temperature sensor         | 13 | Out input interface   |
| 7 | Room temperature sensor         | 14 | Protective tube       |
|   |                                 |    |                       |

## 6-2. Fan Motor

### Drawings attached:

DG13G1-16、DG13G2-07



Test in resistance.

TOOL: Multimeter.

Test the resistance of the main winding. The indoor fan motor is fault if the resistance of main winding 0(short circuit) or  $\infty$  (open circuit) .

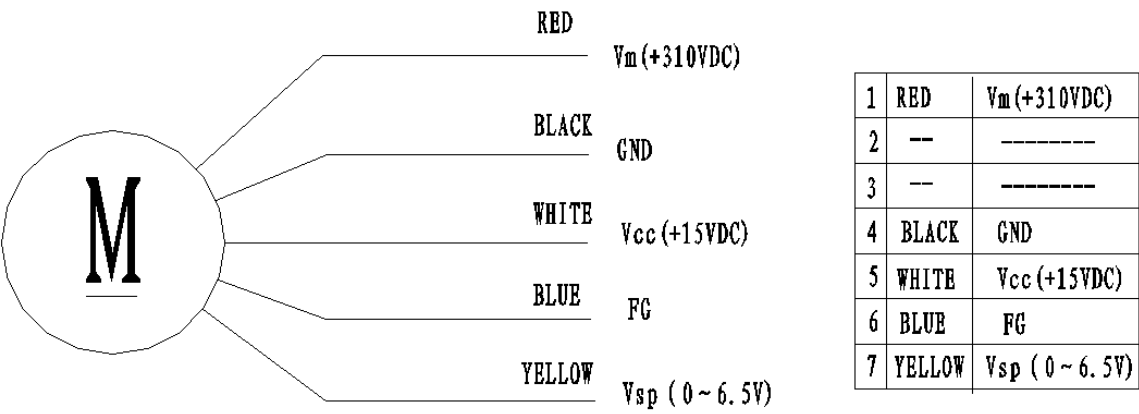
Test in voltage

TOOL: Multimeter.

Insert screwdriver into to rotate indoor fan motor slowly for 1 revolution or over, and measure voltage "YELLOW" and "GND" on motor. The voltage repeat 0V DC and 5V DC.

Notes:

- 1) Please don't hold motor by lead wires.
- 2) Please don't plug IN/OUT the motor connector while power ON.
- 3) Please don't drop or dump motor against hard material. Malfunction may not be observed at early stage after such shock. But it may be found later, this type of mishandling void our warranty.



## 6-3. Temperature Sensor

Parameter table attached:

1. THE PARAMETER OF THE INDOOR COIL AND INDOOR ROOM SENSOR ,THE PARAMETER OF THE OUTDOOR COIL AND OUTDOOR ENVIRONMENT SENSOR:

( $R(0)=15k$   $B(0/100)=3450$ )

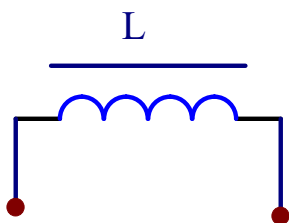
| Temperature(°C) | Resistance(k) | Voltage(V) |  | Temperature(°C) | Resistance(k) | Voltage(V)  |
|-----------------|---------------|------------|--|-----------------|---------------|-------------|
| -20             | 38.757        | 0.58143512 |  | 31              | 4.292         | 2.715076661 |
| -19             | 36.844        | 0.60795346 |  | 32              | 4.137         | 2.76063657  |
| -18             | 35.038        | 0.63530819 |  | 33              | 3.989         | 2.805589174 |
| -17             | 33.331        | 0.66352684 |  | 34              | 3.847         | 2.850117358 |
| -16             | 31.719        | 0.69257720 |  | 35              | 3.711         | 2.894109636 |
| -15             | 30.196        | 0.72246147 |  | 36              | 3.58          | 2.937788018 |
| -14             | 28.755        | 0.75321223 |  | 37              | 3.455         | 2.980713033 |
| -13             | 27.392        | 0.78480857 |  | 38              | 3.335         | 3.023117961 |
| -12             | 26.103        | 0.81722911 |  | 39              | 3.219         | 3.065272268 |
| -11             | 24.882        | 0.85051031 |  | 40              | 3.108         | 3.106725146 |
| -10             | 23.727        | 0.88458737 |  | 41              | 3.001         | 3.147759536 |
| -9              | 22.632        | 0.91951536 |  | 42              | 2.899         | 3.187898487 |
| -8              | 21.594        | 0.95527085 |  | 43              | 2.801         | 3.227439565 |
| -7              | 20.611        | 0.99179340 |  | 44              | 2.706         | 3.266717909 |
| -6              | 19.678        | 1.02913875 |  | 45              | 2.615         | 3.305249514 |
| -5              | 18.794        | 1.06721353 |  | 46              | 2.528         | 3.342947037 |
| -4              | 17.954        | 1.10609872 |  | 47              | 2.444         | 3.380169671 |
| -3              | 17.158        | 1.14565549 |  | 48              | 2.363         | 3.416856492 |
| -2              | 16.401        | 1.18599135 |  | 49              | 2.286         | 3.45247766  |
| -1              | 15.683        | 1.22696435 |  | 50              | 2.211         | 3.487894953 |
| 0               | 15            | 1.26865672 |  | 51              | 2.139         | 3.522585993 |
| 1               | 14.351        | 1.31098658 |  | 52              | 2.07          | 3.556485356 |
| 2               | 13.734        | 1.35393437 |  | 53              | 2.003         | 3.590032381 |
| 3               | 13.148        | 1.39741342 |  | 54              | 1.939         | 3.622673675 |
| 4               | 12.589        | 1.44157386 |  | 55              | 1.877         | 3.654865988 |
| 5               | 12.058        | 1.48618720 |  | 56              | 1.818         | 3.686036427 |
| 6               | 11.553        | 1.53125563 |  | 57              | 1.76          | 3.717201166 |
| 7               | 11.071        | 1.57689691 |  | 58              | 1.705         | 3.747244673 |
| 8               | 10.613        | 1.62286005 |  | 59              | 1.652         | 3.776658768 |
| 9               | 10.176        | 1.66928515 |  | 60              | 1.6           | 3.805970149 |
| 10              | 9.76          | 1.71601615 |  | 61              | 1.551         | 3.834009923 |
| 11              | 9.363         | 1.76311968 |  | 62              | 1.503         | 3.861880963 |
| 12              | 8.985         | 1.81043663 |  | 63              | 1.457         | 3.888973616 |
| 13              | 8.624         | 1.85805887 |  | 64              | 1.413         | 3.91524643  |
| 14              | 8.279         | 1.90597205 |  | 65              | 1.37          | 3.941267388 |
| 15              | 7.951         | 1.95387327 |  | 66              | 1.328         | 3.967019291 |
| 16              | 7.637         | 2.00204130 |  | 67              | 1.289         | 3.991234935 |
| 17              | 7.337         | 2.05033368 |  | 68              | 1.25          | 4.015748031 |

|    |       |            |  |    |       |             |
|----|-------|------------|--|----|-------|-------------|
| 18 | 7.051 | 2.09859271 |  | 69 | 1.213 | 4.039284017 |
| 19 | 6.778 | 2.14682606 |  | 70 | 1.177 | 4.062450215 |
| 20 | 6.516 | 2.19524793 |  | 71 | 1.142 | 4.085229093 |
| 21 | 6.267 | 2.24333597 |  | 72 | 1.109 | 4.106941536 |
| 22 | 6.028 | 2.29151689 |  | 73 | 1.076 | 4.12888601  |
| 23 | 5.8   | 2.33944954 |  | 74 | 1.045 | 4.149715216 |
| 24 | 5.581 | 2.38741691 |  | 75 | 1.015 | 4.17007359  |
| 25 | 5.372 | 2.43506494 |  | 76 | 0.986 | 4.189944134 |
| 26 | 5.172 | 2.48247664 |  | 77 | 0.957 | 4.210004953 |
| 27 | 4.981 | 2.52951096 |  | 78 | 0.93  | 4.228855721 |
| 28 | 4.797 | 2.57653834 |  | 79 | 0.904 | 4.247168554 |
| 29 | 4.622 | 2.62291710 |  | 80 | 0.878 | 4.265640683 |
| 30 | 4.453 | 2.66931854 |  |    |       |             |

Note: the AD value in the table is calculated on the basis of the pull-down resistor is 5.1K.

## 6-4. Electric Reactor

Drawings attached:



Familiar error:

- 1) Sound abnormality
- 2) Insulation resistance disqualification.

## 7.Trouble Shooting

### 7-1. Error Code Table

#### 1.Indication by the indoor unit:

1.1.The 7-segment tube of the indoor display board will show the error code automatically when the unit has the following trouble:

| Error code | Content                                                                                                    | The root cause is may be one of the following                                                                                                                        |
|------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EA         | the error code will display when the communication between display board and control board have in trouble | a. The connection between the display board and control board is loose;<br>b. The indoor control board is failure.<br>c. The wiring of the display board is failure. |

1.2.When the unit has the following trouble and the compressor stops running, press the sleep button on the remote controller for 4 times in ten seconds and the 7-segment tube of the display board will show the error code as the following, if two malfunction happened at the same time, it need press the sleep button for 4 times again, the LED will show the other error code.

Refer to the remote controller which the sleep key can set into 4 different combination ways (Hisense's new design remote controller), when using to check the error codes need exit all the sleep mode first and then press the sleep button 10 times in ten seconds instead of 4 times.

| Error code | Content                                                        | The root cause is may be one of the following                                                                                                                                                                                            |
|------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0          | Normal                                                         |                                                                                                                                                                                                                                          |
| 1          | The failure for temperature sensor of outdoor coil             | a. The outdoor temperature sensor loose;<br>b. the outdoor temperature sensor is failure;<br>c. The indoor control board is failure                                                                                                      |
| 2          | Compressor exhaust temperature sensor in trouble               | a. the compressor exhaust temperature sensor connect loose;<br>b. the compressor exhaust temperature sensor is failure;<br>c. the outdoor control board is failure                                                                       |
| 5          | IPM module protection                                          | a. The IPM board is failure;<br>b. The outdoor fan is broken;<br>c. The outdoor fan motor is failure;<br>d. The outdoor fan has been blocked ;<br>e. The condenser is dirty;<br>f. The outdoor unit has been installed without standard. |
| 6          | AC voltage higher or lower protection                          | a. the supply voltage is higher or lower than normal;<br>b. the inner supply voltage of the unit is higher or lower than normal                                                                                                          |
| 7          | Communication failure between the indoor unit and outdoor unit | a. the communication cable connect loose;<br>b. the communication cable is failure;                                                                                                                                                      |

|    |                                                                            |                                                                                                                                                                                                                                                                                                                                                                                          |
|----|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                            | <b>c.</b> the connection between the filter board and the outdoor control board is incorrect or loose;<br><b>d.</b> the connection between the filter board and the terminal is incorrect or loose;<br><b>e.</b> the indoor control board is failure;<br><b>f.</b> the PFC board is failure;<br><b>g.</b> the power board is failure;<br><b>h.</b> the outdoor control board is failure. |
| 8  | Current overload protection                                                | <b>a.</b> the fan motor run abnormally;<br><b>b.</b> the condenser and evaporator is dirty;<br><b>c.</b> the air inlet and outlet is abnormally                                                                                                                                                                                                                                          |
| 9  | Maximum current protection                                                 | <b>a.</b> the outdoor control board is short circuit;<br><b>b.</b> the drive board is short circuit;<br><b>c.</b> the other components is short circuit                                                                                                                                                                                                                                  |
| 10 | Communication trouble between outdoor unit and driver                      | <b>a.</b> the connection wires connect loose<br><b>b.</b> the outdoor board or drive board is failure;                                                                                                                                                                                                                                                                                   |
| 11 | Outdoor EEPROM in trouble                                                  | <b>a.</b> the EEPROM chip is loose;<br><b>b.</b> the EEPROM chip inserted with opposite direction;<br><b>c.</b> the EEPROM chip is failure                                                                                                                                                                                                                                               |
| 12 | Outdoor ambient temperature too low or too high protection                 | Outdoor ambient temperature too low or too high                                                                                                                                                                                                                                                                                                                                          |
| 13 | Compressor exhaust temperature too high protection                         | <b>a.</b> the compressor exhaust temperature sensor is failure;<br><b>b.</b> the refrigerant of the unit is not enough                                                                                                                                                                                                                                                                   |
| 14 | Outdoor ambient temperature sensor in trouble                              | <b>a.</b> the outdoor ambient temperature sensor connect loose<br><b>b.</b> the outdoor ambient temperature sensor is failure;<br><b>c.</b> the outdoor control board is failure                                                                                                                                                                                                         |
| 15 | Compressor shell temperature too high protection                           | <b>a.</b> the compressor exhaust temperature sensor connect loose<br><b>b.</b> the refrigerant of the unit is not enough                                                                                                                                                                                                                                                                 |
| 16 | Anti-freeze protection with cooling or overload protection with heating in | <b>a.</b> the indoor coil temperature sensor connect loose;<br><b>b.</b> the indoor coil temperature sensor is failure;<br><b>c.</b> the indoor control board is failure<br><b>d.</b> the refrigerant system is abnormal.                                                                                                                                                                |
| 17 | PFC protection                                                             | <b>a.</b> the PFC is failure;<br><b>b.</b> the outdoor drive board is failure                                                                                                                                                                                                                                                                                                            |
| 18 | DC compressor start failure                                                | <b>a.</b> the outdoor drive board is failure;<br><b>b.</b> the compressor is failure                                                                                                                                                                                                                                                                                                     |
| 19 | Compressor drive in trouble                                                | <b>a.</b> the outdoor drive board is failure;<br><b>b.</b> the compressor is failure<br><b>c.</b> the outdoor control board is failure                                                                                                                                                                                                                                                   |
| 20 | Outdoor fan motor locked rotor protection                                  | <b>a.</b> the connection of the outdoor fan motor is loose;<br><b>b.</b> there are something block the outdoor fan;<br><b>c.</b> the fan motor is failure;                                                                                                                                                                                                                               |

|    |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                | <b>d.</b> the outdoor control board is failure                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 21 | Outdoor coil anti-overload protection with cooling             | <b>a.</b> the refrigerant is too much;<br><b>b.</b> the outdoor fan motor is failure;<br><b>c.</b> the outdoor fan is broken;<br><b>d.</b> the condenser is dirty;<br><b>e.</b> the air inlet and air outlet of the indoor unit and the outdoor unit is not normally                                                                                                                                                                                                                          |
| 22 | Compressor pre heating process                                 | it is normal mode in cold weather                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 23 | There is a leak in the product (suitable for some models))     | <b>a.</b> There is a leak in the indoor<br><b>b.</b> There is a leak in the outdoor<br><b>c.</b> There is a leak in the connecting pipe                                                                                                                                                                                                                                                                                                                                                       |
| 24 | Chip in outdoor board in trouble                               | <b>a.</b> Using the wrong drive board;<br><b>b.</b> Using the wrong compressor.                                                                                                                                                                                                                                                                                                                                                                                                               |
| 26 | Overheated outdoor radiator                                    | <b>a.</b> Radiator sensor fails<br><b>b.</b> Detection circuit of the sensor on the control panel fails                                                                                                                                                                                                                                                                                                                                                                                       |
| 27 | Protection against too high system pressure                    | <b>a.</b> The pressure switch fails<br><b>b.</b> The pressure detection switch on the control panel fails<br><b>c.</b> The measured value of system pressure exceeds the limit                                                                                                                                                                                                                                                                                                                |
| 33 | The failure for temperature sensor of indoor room              | <b>a.</b> The indoor room temperature sensor loose;<br><b>b.</b> The indoor room temperature sensor is failure;<br><b>c.</b> The indoor control board is failure.                                                                                                                                                                                                                                                                                                                             |
| 34 | The failure for temperature sensor of indoor coil temperature  | <b>a.</b> The indoor coil temperature sensor loose;<br><b>b.</b> The indoor coil temperature sensor is failure;<br><b>c.</b> The indoor control board is failure.                                                                                                                                                                                                                                                                                                                             |
| 36 | Communication failure between the indoor unit and outdoor unit | <b>a.</b> the communication cable connect loose;<br><b>b.</b> the communication cable is failure;<br><b>c.</b> the connection between the filter board and the outdoor control board is incorrect or loose;<br><b>d.</b> the connection between the filter board and the terminal is incorrect or loose;<br><b>e.</b> the indoor control board is failure;<br><b>f.</b> the PFC board is failure;<br><b>g.</b> the power board is failure;<br><b>h.</b> the outdoor control board is failure. |
| 38 | Indoor EEPROM failure                                          | <b>a.</b> The EEPROM chip loose;<br><b>b.</b> The indoor control board is failure                                                                                                                                                                                                                                                                                                                                                                                                             |
| 39 | Indoor fan motor run abnormally                                | <b>a.</b> There are something block the indoor fan motor;<br><b>b.</b> The fan motor cord connect loose;<br><b>c.</b> The fan motor is failure;<br><b>d.</b> The indoor control board is failure                                                                                                                                                                                                                                                                                              |

|    |                                                    |                                                                                                                                             |
|----|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 41 | The failure for Indoor grounding protective        | The indoor control board is failure                                                                                                         |
| 50 | Fresh air failure (suitable for some models)       | <b>a.</b> The fresh air motor is failure;<br><b>b.</b> the connecting line is loose<br><b>c.</b> The indoor control board is failure.       |
| 70 | Light sensation failure (suitable for some models) | <b>a.</b> The display control board is failure;<br><b>b.</b> the connecting line is loose<br><b>c.</b> The indoor control board is failure. |
| 74 | CO2 failure (suitable for some models)             | <b>a.</b> The sensor is failure;<br><b>b.</b> the connecting line is loose<br><b>c.</b> The indoor control board is failure.                |

The failure is detected when the room temperature sensor broken or shorted over 5 sec.

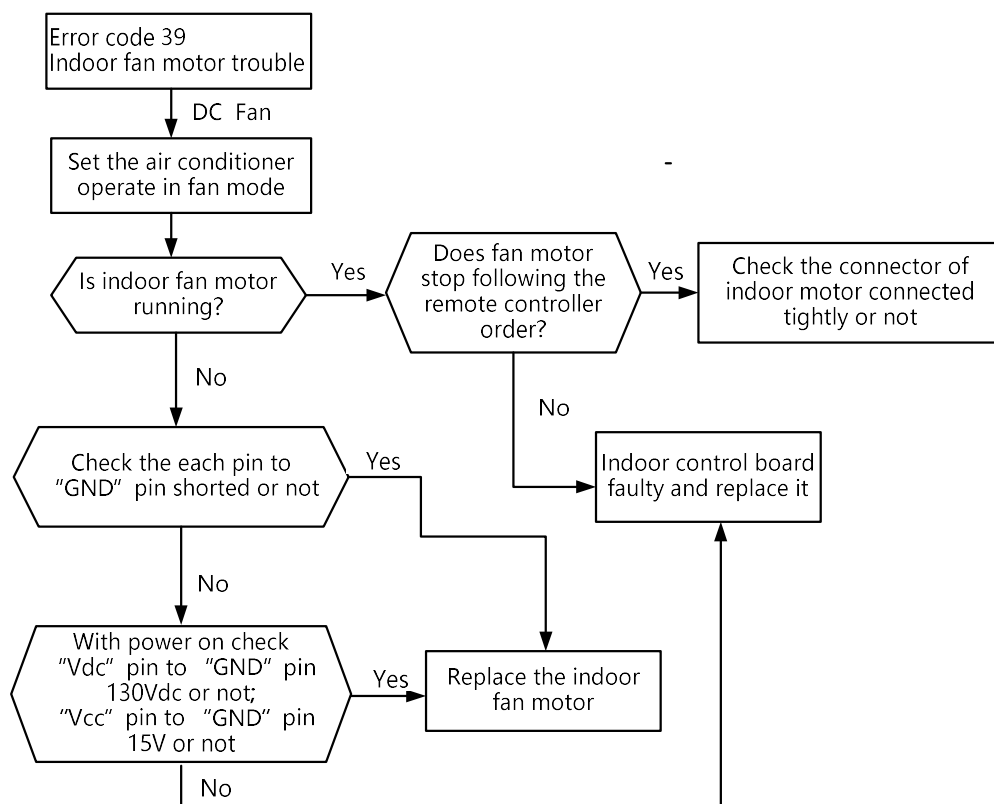
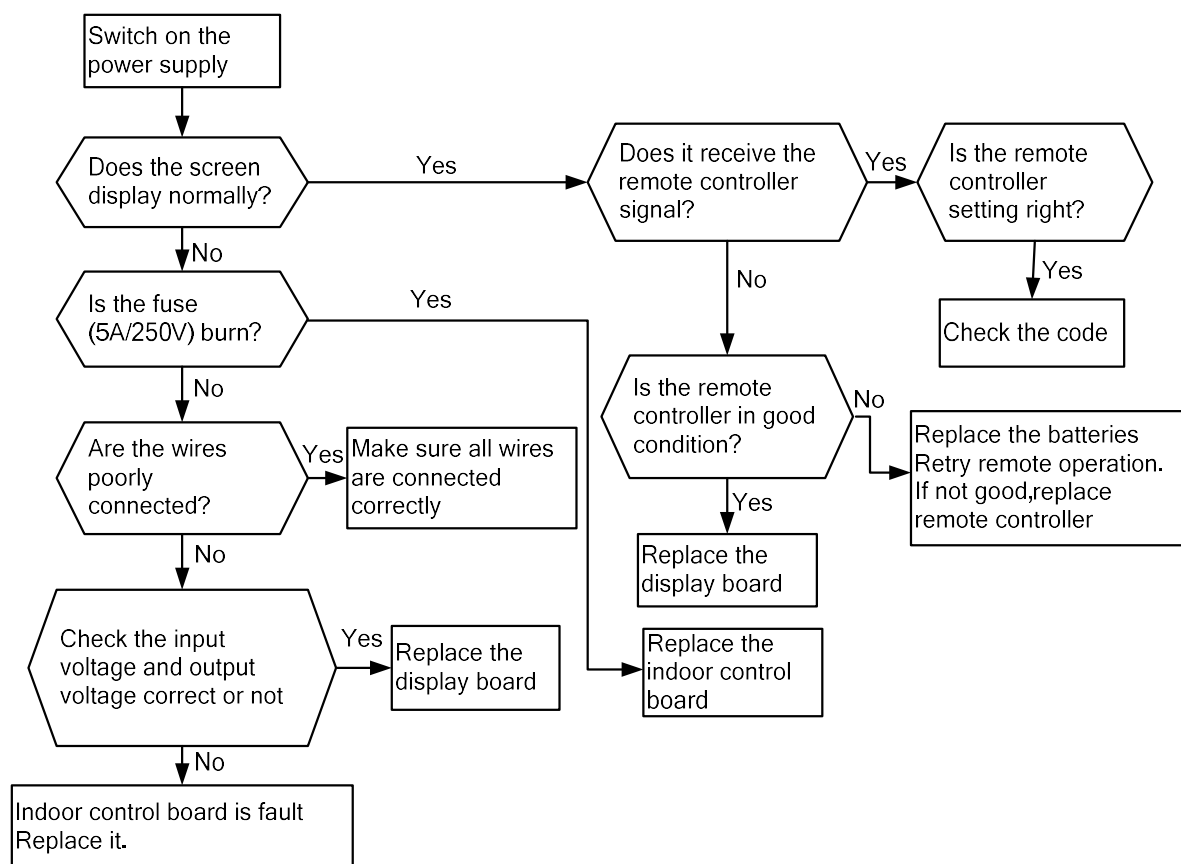
The failure is detected when the temperature sensor of heater exchange broken or shorted over 5 sec.

The failure is detected when each setting data is not match after the EEPOM self-check two times.

The failure is occur when the grounding signal is not detected after the appliance power ON.

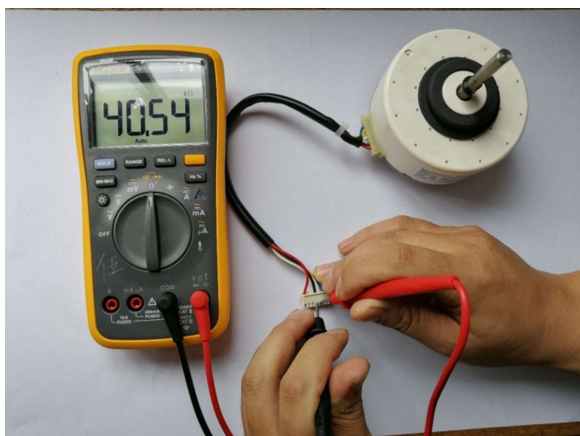
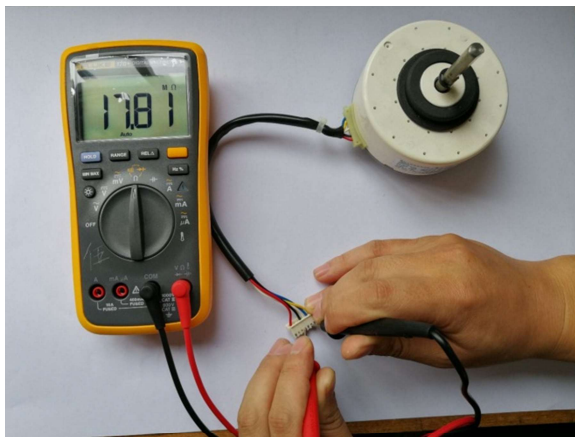
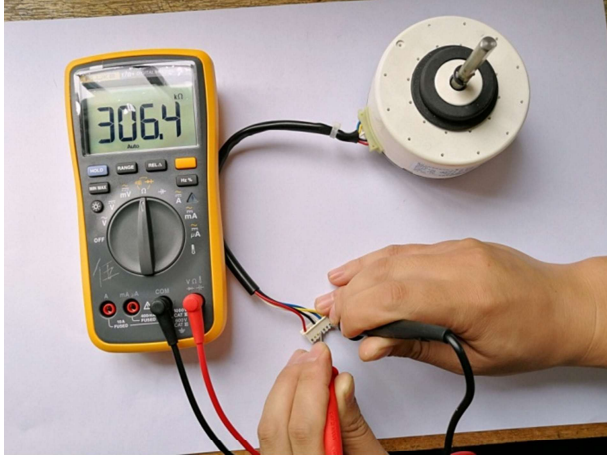
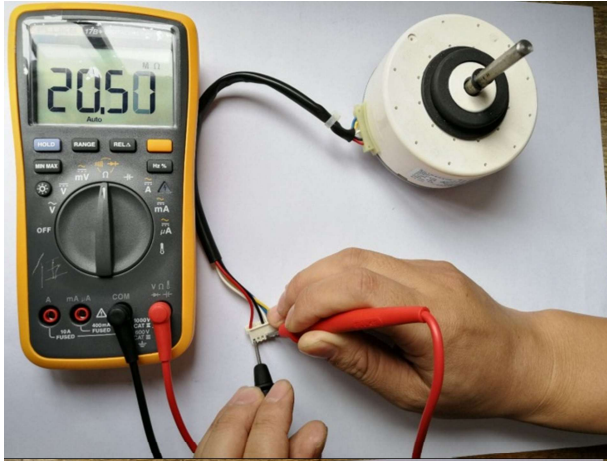
## 7-2. Diagnosis and Solution

1.

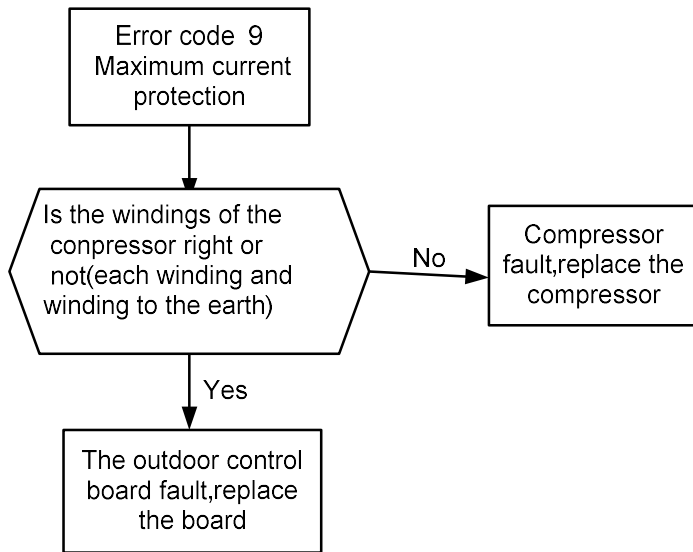


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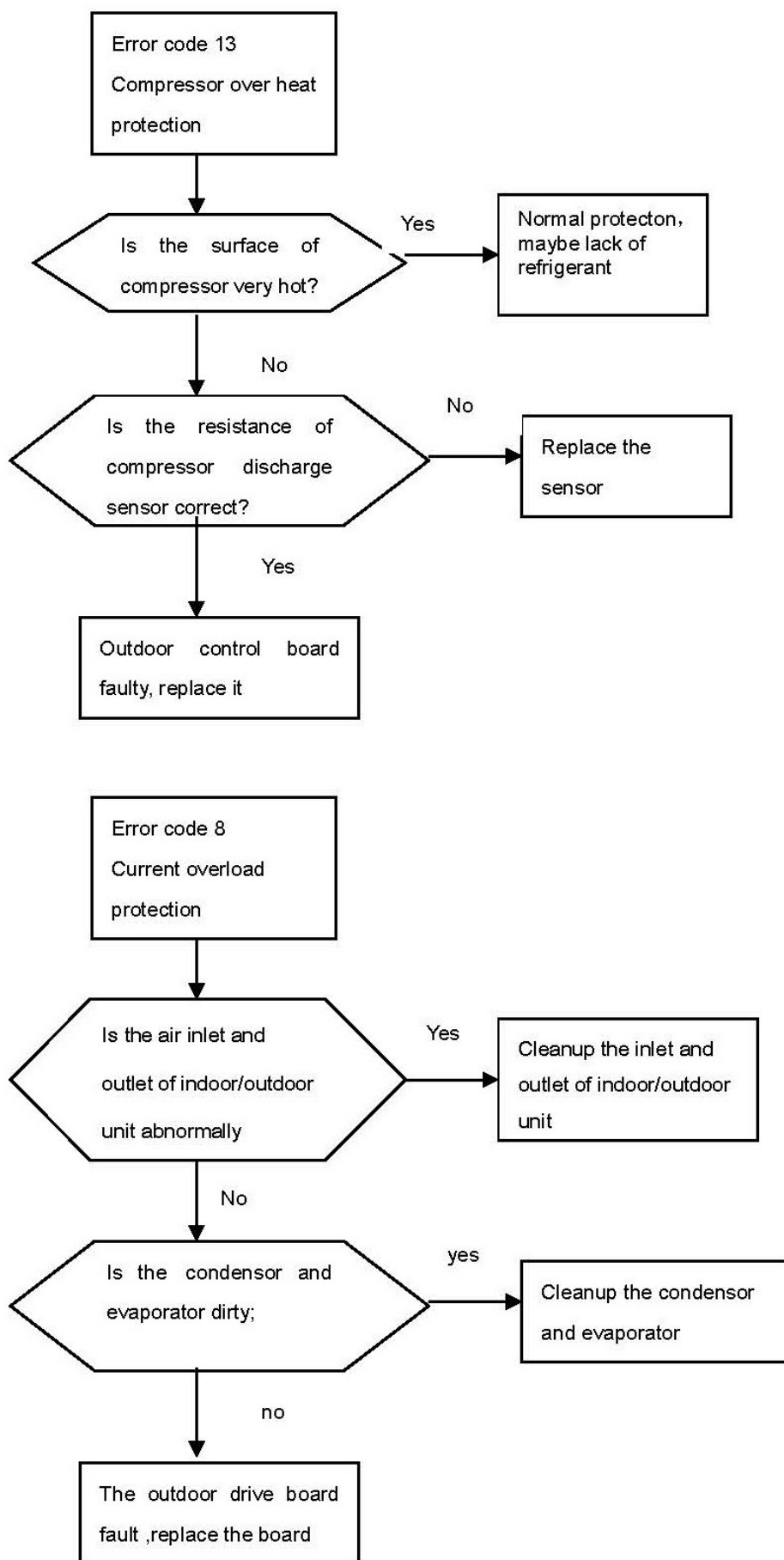
DC Fan test point:



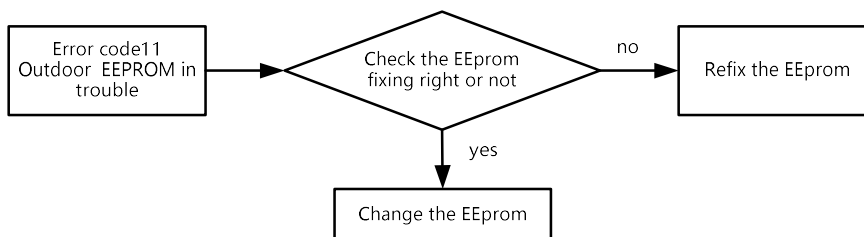
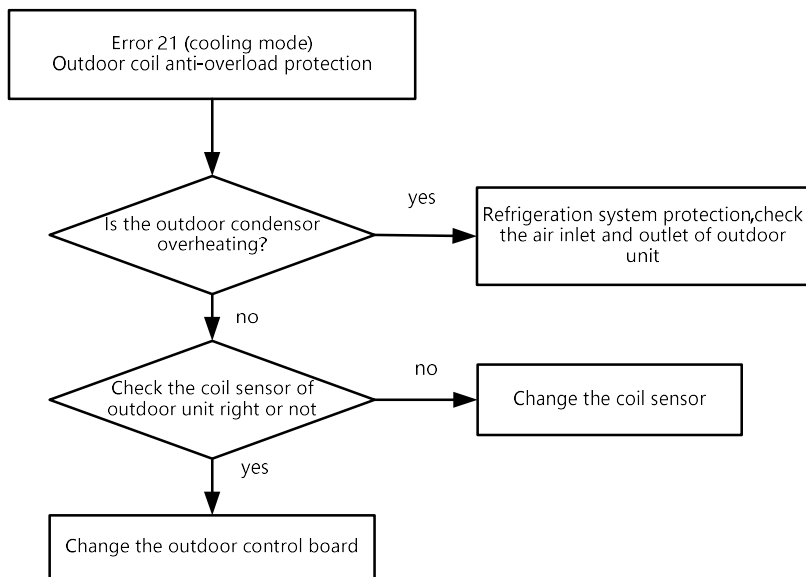
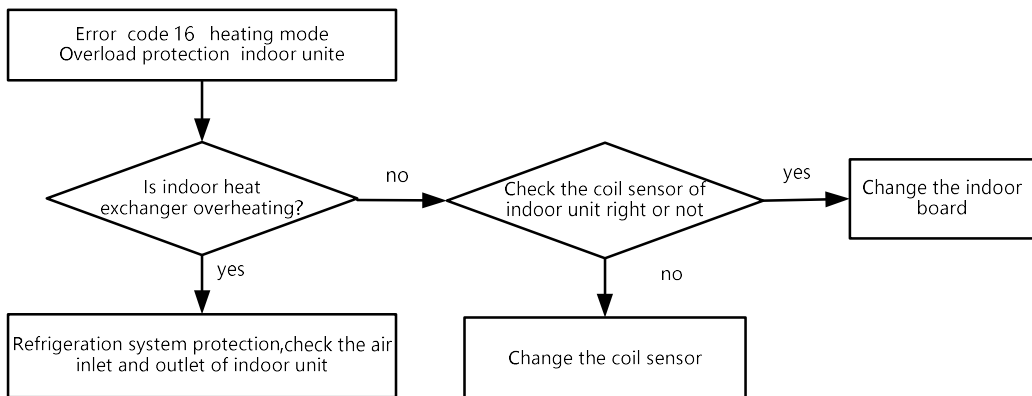
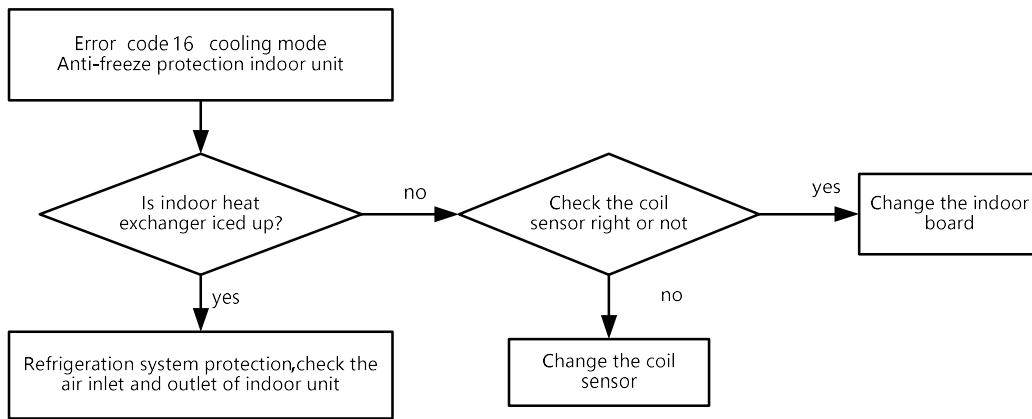
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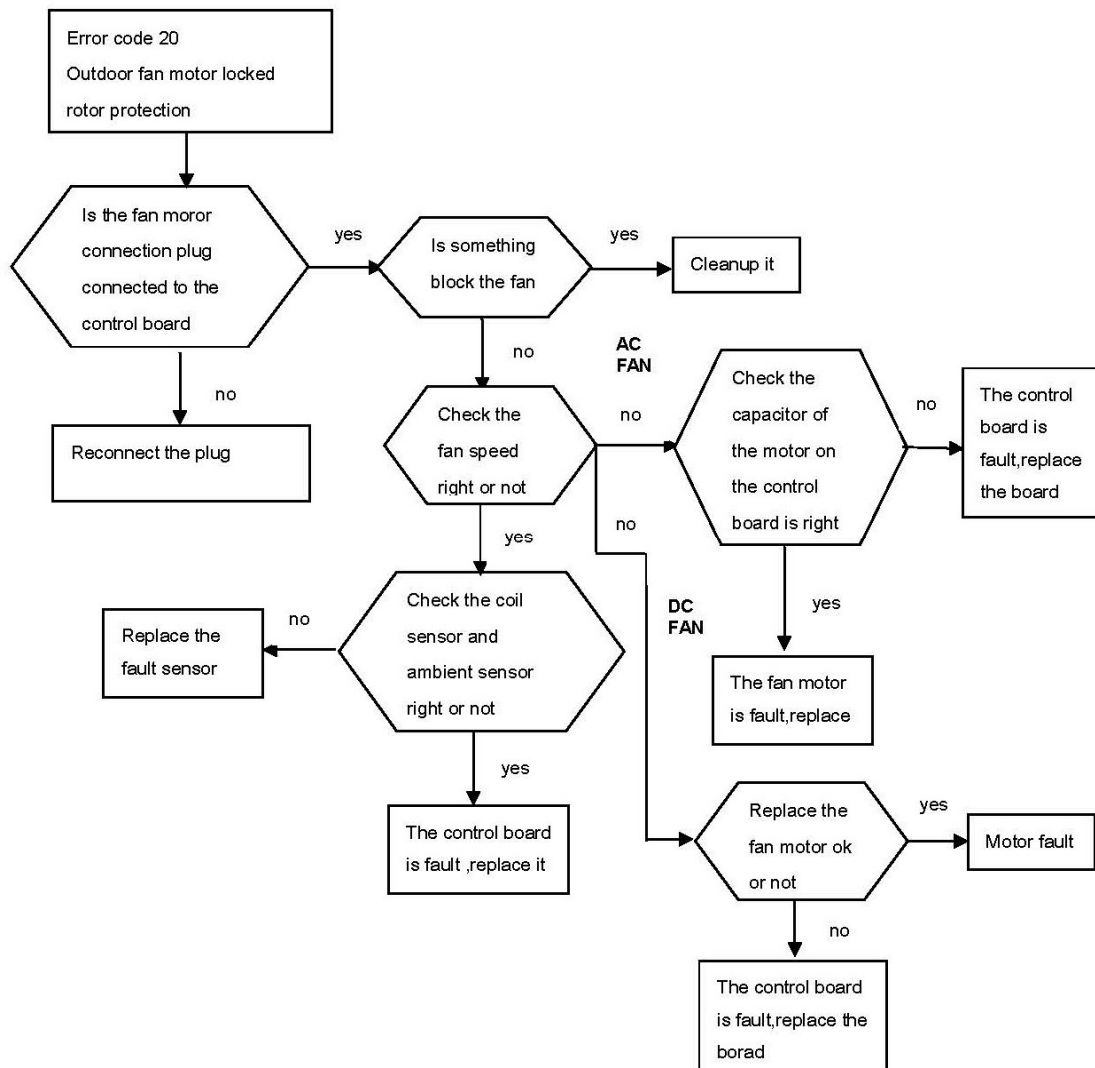


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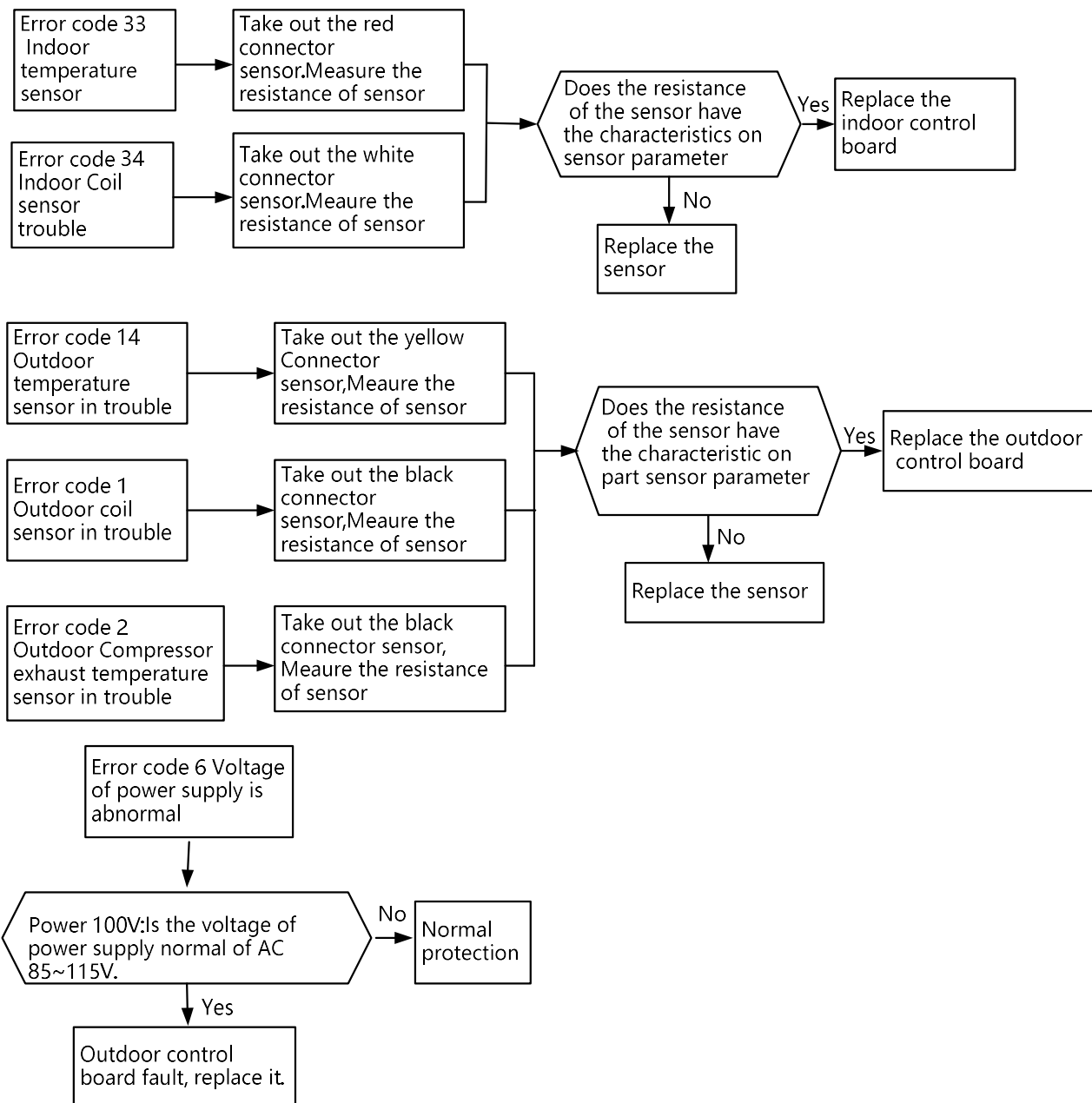
## 5.





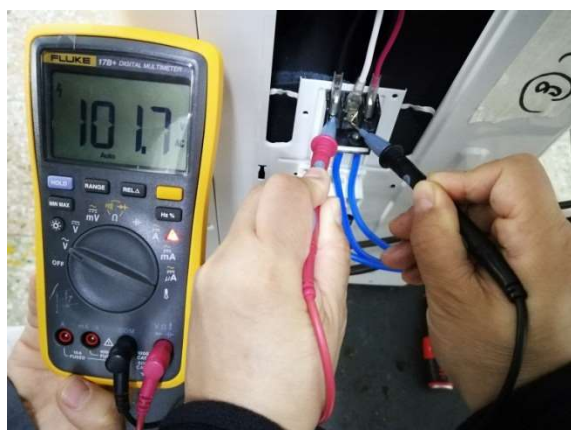
DC fan motor test point:





The Voltage protection values is different according to the model

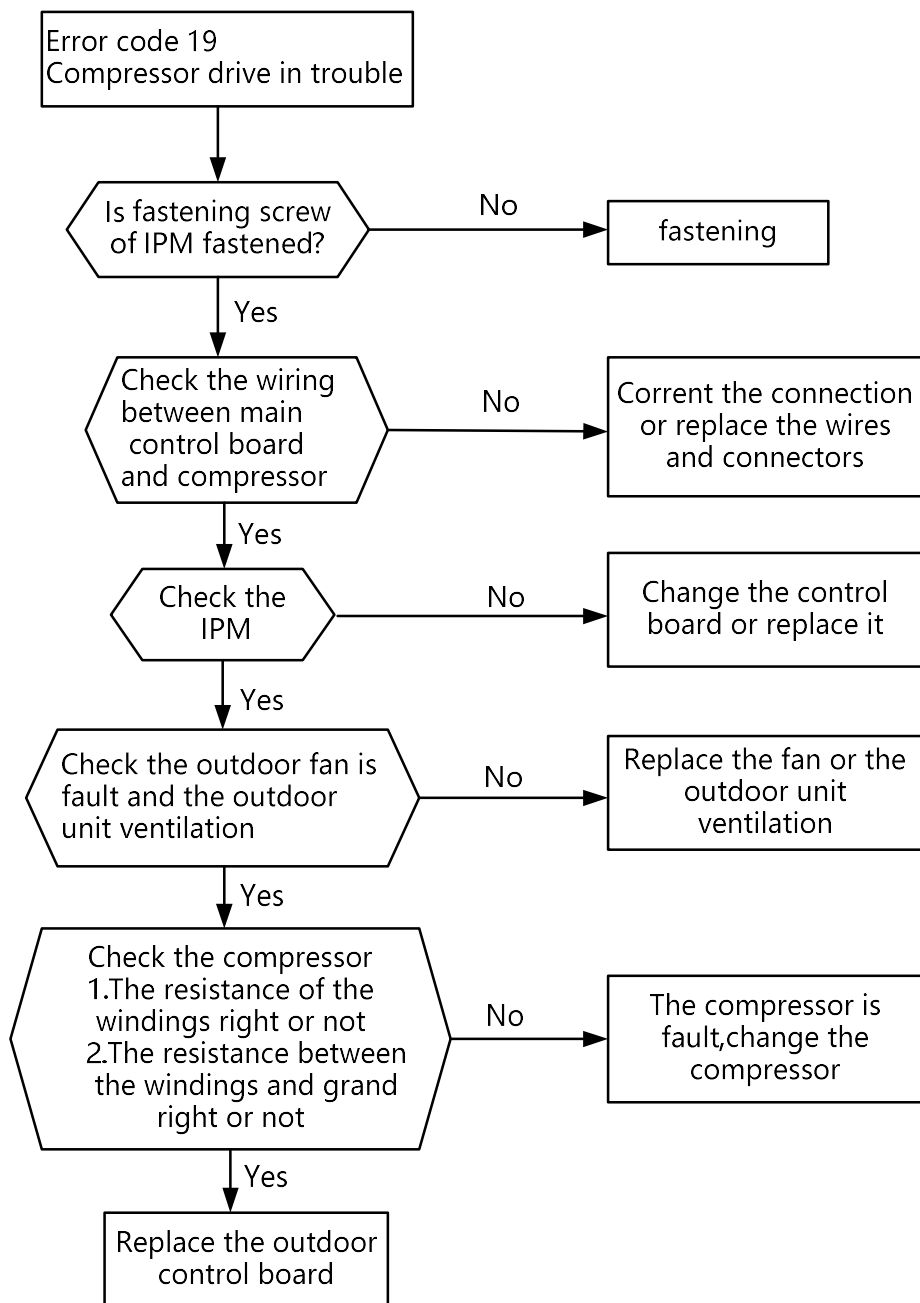
AC voltage test point:



Sensor test point:

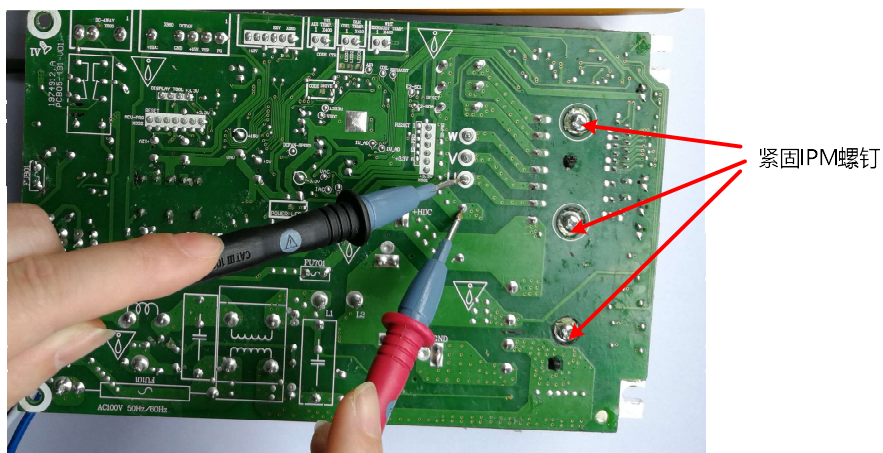


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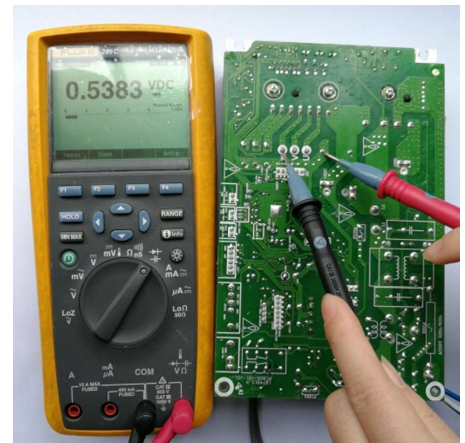
test point:

Check the screw of IPM fastening:

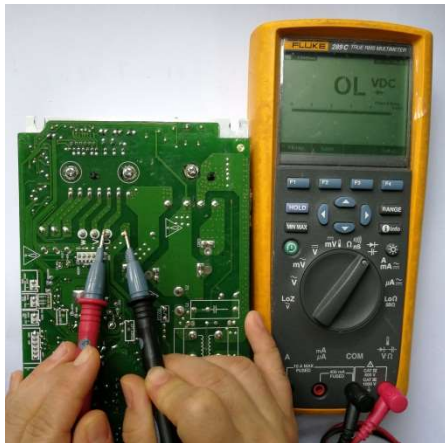


test point:

Forward of IPM P-U/P-V/P-W test :



Reverse of IPM P-U/P-V/P-W test:



Forward of IPM N-U/N-V/N-W test :



Reverse of IPM N-U/N-V/N-W test :

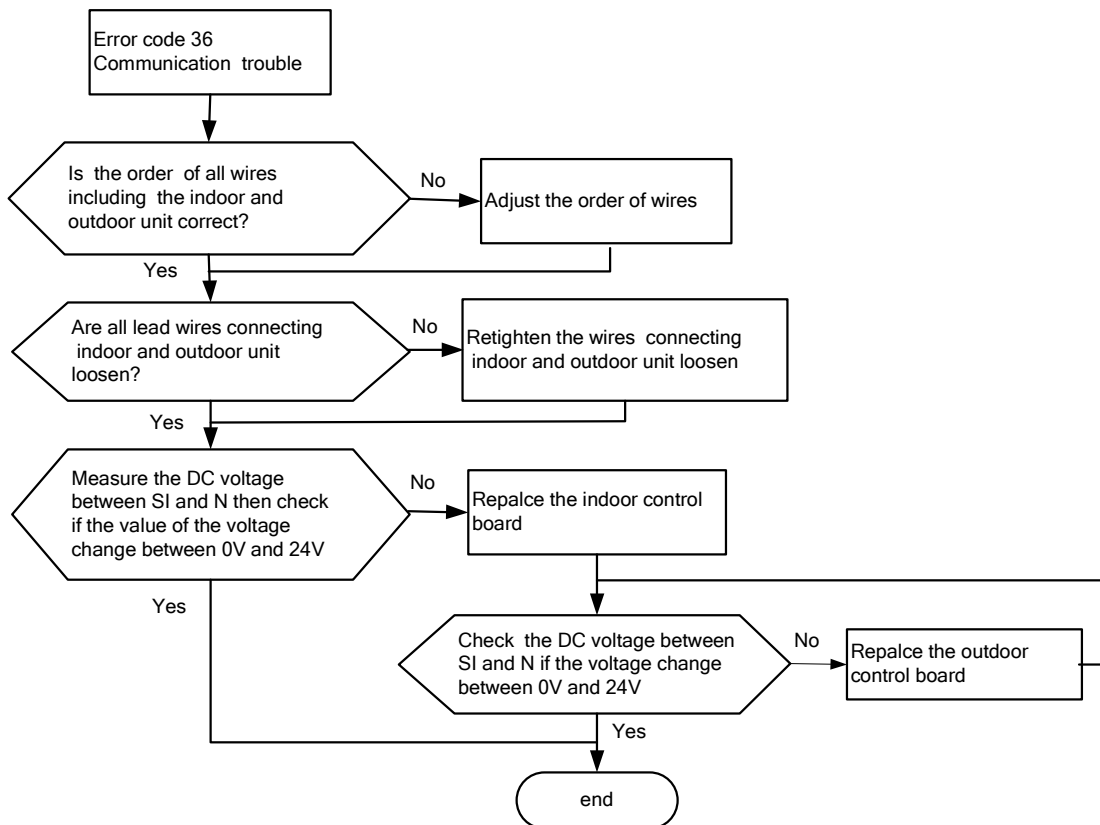


test point:

The resistance of the compressor U-W\W-W



7.



SI and N test point:

